

APPENDIX I
AIR QUALITY TECHNICAL REPORT
May 2020

U.S. Department of Transportation

Federal Highway Administration

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

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ABBREVIATIONS AND ACRONYMS

AADT	Average Annual Daily Traffic
ADT	Average Daily Traffic
AVMT	Annual Vehicle Miles Traveled
CAAA	Clean Air Act Amendments
CCA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	Methane
CLRP	Constrained Long-Range Plan
CO_2	Carbon Dioxide
EIA	Energy Information Administration
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ETL	Express Toll Lanes
FAST	Fixing America's Surface Transportation Act
FAQ	Frequently Asked Questions
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
GGRA	Greenhouse Gas Reduction Act
GHGs	Greenhouse Gases
GP	General Purpose
HEI	Health Effects Institute
HOT	High-Occupancy Toll
HOV	High-Occupancy Vehicle
IRIS	Integrated Risk Information System
LOS	Level of Service
MDE	Maryland Department of The Environment
MDOT SHA	Maryland Department of Transportation State Highway Administration
MOVES	Motor Vehicle Emissions Simulator
MPO	Metropolitan Planning Organization
MSATs	Mobile Source Air Toxics
MWCOG	Metropolitan Washington Council of Governments
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NCRTPB	National Capital Region Transportation Planning Board
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
PM	Particulate Matter
POM	Polycyclic Organic Matter
SIP	State Implementation Plan

SO_2	Sulfur Dioxide
TCI	Transportation and Climate Initiative
TIP	Transportation Improvement Program
TPB	Transportation Planning Board
TPY	Tons per Year
VMT	Vehicle Miles Traveled
VPD	Vehicles per Day
VPH	Vehicles per Hour
VPHPL	Vehicles per Hour per Lane

1

1 INTRODUCTION

1.1 Overview

The Federal Highway Administration (FHWA), as the Lead Federal Agency, and the Maryland Department of Transportation State Highway Administration (MDOT SHA), as the Local Project Sponsor, are preparing an Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA) for the I-495 & I-270 Managed Lanes Study (Study). The Study is evaluating potential transportation improvements to portions of the I-495 and I-270 corridors in Montgomery and Prince George's Counties, Maryland, and Fairfax County, Virginia.

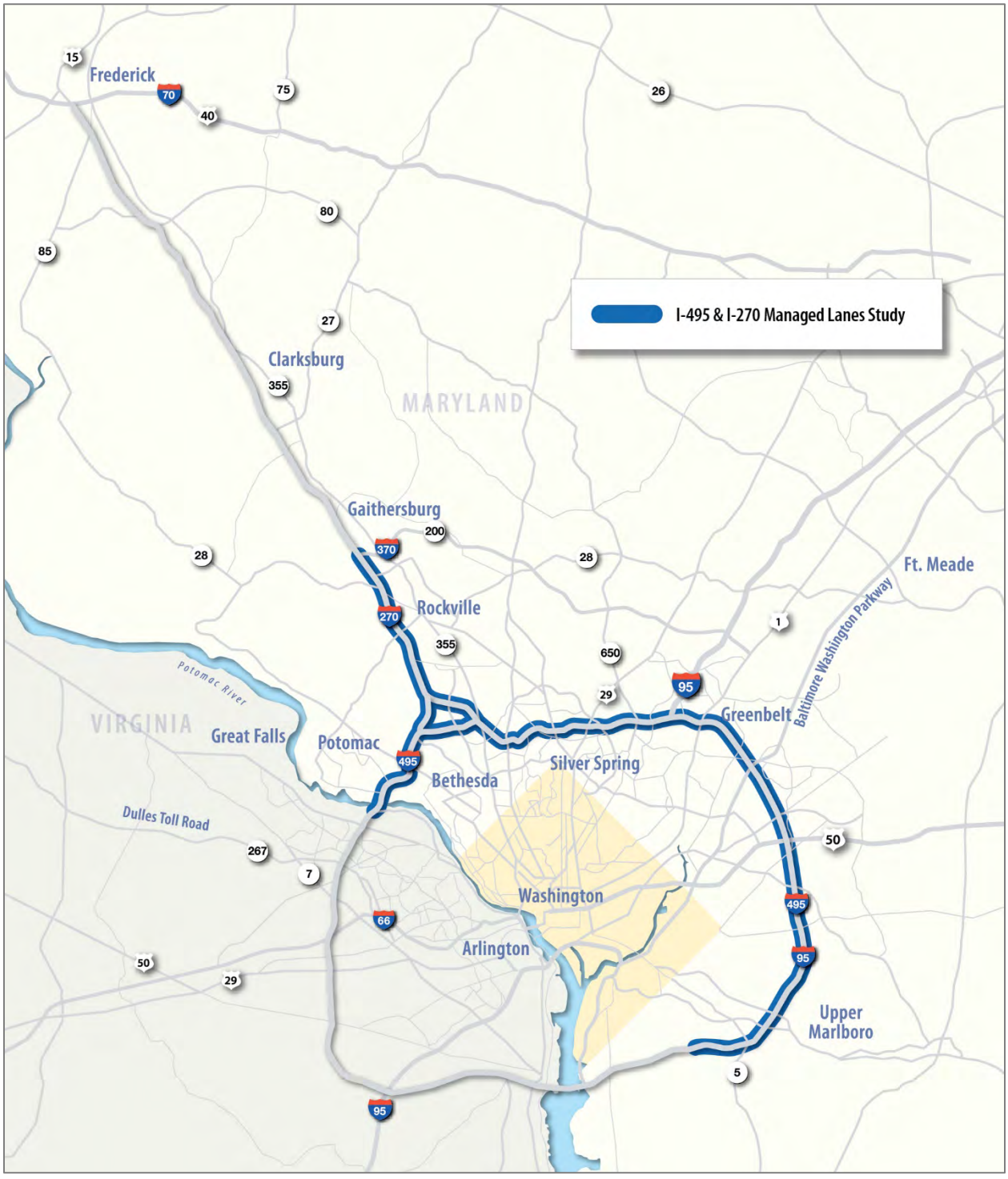
This EIS is being prepared in accordance with FHWA and Council on Environmental Quality (CEQ) regulations for implementing NEPA and provisions of the Fixing America's Surface Transportation (FAST) Act. The content of the EIS also conforms to CEQ guidelines, which provide direction regarding implementation of the procedural provisions of NEPA, and the FHWA's Guidance for *Preparing and Processing Environmental and Section 4(f) Documents* (Technical Advisory T6640.8A, October 1987).

The purpose of the Air Quality Technical Report is to present the potential air quality impacts associated with the Study in compliance with NEPA and the Clean Air Act and Amendments (CAA), and has been prepared to support and inform the EIS. This report begins with a description of the study corridors, followed by a summary of the Purpose and Need, and a description of the alternatives evaluated.

1.2 Study Corridors

I-495 and I-270 in Maryland are the two most heavily traveled freeways in the National Capital Region, each with Average Annual Daily Traffic (AADT) volume up to 260,000 vehicles per day in 2018 (MDOT SHA, 2019). I-495 is the only circumferential route in the region that provides interregional connections to many radial routes in the region, such as I-270, US 29 (Colesville Road), I-95, the Baltimore-Washington Parkway, US 50 (John Hanson Highway), and MD 5 (Branch Avenue). I-270 is the only freeway link between I-495 and the fast-growing northwest suburbs in northern Montgomery County and the suburban areas in Frederick County. In addition to heavy commuter traffic demand, I-495 provides connectivity along the East Coast, as it merges with I-95 in Maryland for 25 miles around the east side of Washington, DC. **Figure 1-1** presents the study area corridors.

Figure 1-1: Study Area Corridors



1.3 Study Purpose and Need

The purpose of the Study is to develop a travel demand management solution(s) that addresses congestion and improves trip reliability on I-495 and I-270 within the study limits and enhances existing and planned multimodal mobility and connectivity. The study will address the following needs:

- **Accommodate Existing Traffic and Long-Term Traffic Growth** - High travel demand from commuter, business, and recreational trips results in severe congestion from seven to ten hours per day on the study corridors, which is expected to deteriorate further by the planning horizon year of 2040. Additional capacity is needed to address existing and future travel demand and congestion, reduce travel times, and allow travelers to use the facilities efficiently.

- **Enhance Trip Reliability -** Congestion on I-495 and I-270 results in unpredictable travel times. Travelers and freight commodities place a high value on reaching their destinations in a timely and safe manner, and in recent years, the study corridors have become so unreliable that uncertain travel times are experienced daily. More dependable travel times are needed to ensure trip reliability.

- **Provide Additional Roadway Travel Choices -** Travelers on I-495 and I-270 do not have enough options for efficient travel during extensive periods of congestion. Additional roadway management options are needed to improve travel choices, while retaining the general purpose (GP) lanes.

- **Accommodate Homeland Security** - The National Capital Region is considered the main hub of government, military, and community installations related to homeland security. These agencies and installations rely on quick, unobstructed roadway access during a homeland security threat. Additional capacity would assist in accommodating a population evacuation and improving emergency response access should an event related to homeland security occur.

- **Improve Movement of Goods and Services** - I-495 and I-270 are major regional transportation networks that support the movement of passenger and freight travel within the National Capital Region. Existing congestion along both corridors increases the cost of doing business due to longer travel times and unreliable trips. The effects of this congestion on the movement of goods and services is a detriment to the health of the local, regional, and national economy. Efficient and reliable highway movement is necessary to accommodate passenger and freight travel, moving goods and services through the region.

Additional capacity and improvements to enhance reliability must be financially viable. MDOT's traditional funding sources would be unable to effectively finance, construct, operate, and maintain improvements of this magnitude. Revenue sources that provide adequate funding, such as pricing options, are needed to achieve congestion relief and address existing high travel demand.

Given the highly constrained area surrounding the interstates in the study corridors, MDOT SHA recognizes the need to plan and design this project in an environmentally responsible manner. MDOT SHA will strive to avoid and minimize community, natural, cultural, and other environmental impacts, and mitigate for any unavoidable impacts at an equal or greater value. MDOT SHA will work with our federal,

state, and local resource agency partners in a streamlined, collaborative, and cooperative way to meet all regulatory requirements to ensure the protection of environmental resources to the maximum extent practicable. Any screened alternatives will adequately offset unavoidable impacts while prioritizing and coordinating comprehensive mitigation measures near the study area which are meaningful to the environment and the community.

1.4 Alternatives Evaluated

Eight alternatives are being evaluated and compared in the technical reports supporting the EIS. These include Alternatives 1, 5, 8, 9, 9M, 10, 13B, and 13C and are illustrated in the typical sections shown in **Figure 1-2**.

The following terms are used in the description of the alternatives.

- **GP Lanes** are lanes on a freeway or expressway that are open to all motor vehicles.[1]
- **Managed Lanes** are highway facilities, or a set of lanes, where operational strategies are proactively implemented and managed in response to changing conditions.[2]
- **High-Occupancy Toll (HOT) Lanes** are High-Occupancy Vehicle (HOV) facilities that allow lower-occupancy vehicles, such as solo drivers, to use the facilities in return for toll payments, which could vary by time of day and level of congestion.[1]
- **Express Toll Lanes (ETL)** are dedicated managed lanes within highway rights-of-way that motorists may use by paying a variably priced toll.[3]
- **High-Occupancy Vehicle (HOV) Lanes** are any preferential lane designated for exclusive use by vehicles with two or more occupants for all or part of a day, including a designated lane on a freeway, other highway or a street, or independent roadway on a separate right-of-way.[4]
- **Reversible Lanes** are facilities in which the direction of traffic flow can be changed at different times of the day to match peak direction of travel, typically inbound in the morning and outbound in the afternoon.[1]

A. Alternative 1: No Build

The No Build Alternative, often called the base case, includes all projects in the Visualize2045 Plan, the latest Constrained Long-Range Plan (CLRP) which was approved by the National Capital Region Transportation Planning Board (NCRTPB) on October 17, 2018.[5] This includes other projects impacting the facilities that are subject to this Study. Specifically, the CLRP reflects the Purple Line which is currently under construction (Spring 2019), and the extension of the I-495 Express Lanes in Virginia from north of the Dulles Toll Road interchange to the American Legion Bridge (Virginia's 495 Express Lanes Northern Extension [NEXT] Project). Alternative 1 also includes the I-270 Innovative Congestion Management Contracts, which are providing a series of construction projects to improve mobility and safety at key

[1] National Cooperative Highway Research Program, Research Report 835, Guidelines for Implementing Managed Lanes. Transportation Research Board. 2016

[2] https://ops.fhwa.dot.gov/publications/managelanes_primer/index.htm

[3] https://www.fhwa.dot.gov/ipd/tolling_and_pricing/defined/demand_mgmt_tool.aspx

[4] https://ops.fhwa.dot.gov/freewaymgmt/hovguidance/glossary.htm

[5] https://www.mwcog.org/visualize2045/document-library/

points along I-270 targeted to reduce congestion at key bottlenecks along the corridor. All improvements are being implemented within the existing roadway right-of-way and are anticipated to be completed by in 2021. While these improvements will improve mobility and safety, they will not address the long-term roadway capacity needs for the I-270 corridor. Routine maintenance and safety improvements along I-495 and I-270 are included in the No Build Alternative, but it does not include new capacity improvements to I-495 and I-270. Consistent with NEPA requirements, Alternative 1 will be carried forward for further evaluation to serve as a base case for comparing the other alternatives.

B. Alternative 5: 1-Lane, High-Occupancy Toll Managed Lane Network

This alternative consists of adding one HOT managed lane in each direction on I-495 and converting the one existing HOV lane in each direction to a HOT managed lane on I-270. Buses would be permitted to use the managed lanes.

C. Alternative 8: 2-Lane, Express Toll Lane Managed Lanes Network on I-495 and 1-Lane Express Toll Lane and 1-Lane HOV Managed Lane Network on I-270

This alternative consists of adding two ETL managed lanes in each direction on I-495, retaining one existing HOV lane in each direction on I-270, and adding one ETL managed lane in each direction on I-270. Buses would be permitted to use the managed lanes.

D. Alternative 9: 2-Lane, High-Occupancy Toll Managed Lanes Network

This alternative consists of adding two HOT managed lanes in each direction on I-495, converting the one existing HOV lane in each direction on I-270 to a HOT managed lane, and adding one HOT managed lane in each direction on I-270, resulting in a two-lane, managed lane network on both highways. Buses would be permitted to use the managed lanes.

E. Alternative 10: 2-Lane, Express Toll Lane Managed Lanes Network and 1-Lane HOV Managed Lane Network on I-270 Only

This alternative consists of adding two ETL managed lanes in each direction on I-495, retaining one existing HOV lane per direction on I-270, and adding two ETL managed lanes in each direction on I-270. Buses would be permitted to use the managed lanes.

F. Alternative 13B: 2-Lane, High-Occupancy Toll Managed Lanes Network on I-495 and HOT Managed Reversible Lanes Network on I-270

This alternative consists of adding two HOT managed lanes in each direction on I-495 and converting the existing HOV lanes in both directions to two HOT managed, reversible lanes on I-270. Buses would be permitted to use the managed lanes.

G. Alternative 13C: 2-Lane, ETL Managed Lanes Network on I-495 and ETL Managed, Reversible Lanes Network and 1-Lane HOV Managed Lane Network on I-270

This alternative consists of adding two ETL managed lanes in each direction on I-495 and retaining the existing HOV lanes in both directions and adding two ETL managed, reversible lanes on I-270. Alternative 13C would maintain the existing roadway network on I-270 with HOV lanes to allow for HOV travel while adding two managed, reversible lanes. Buses would be permitted to use the managed lanes.

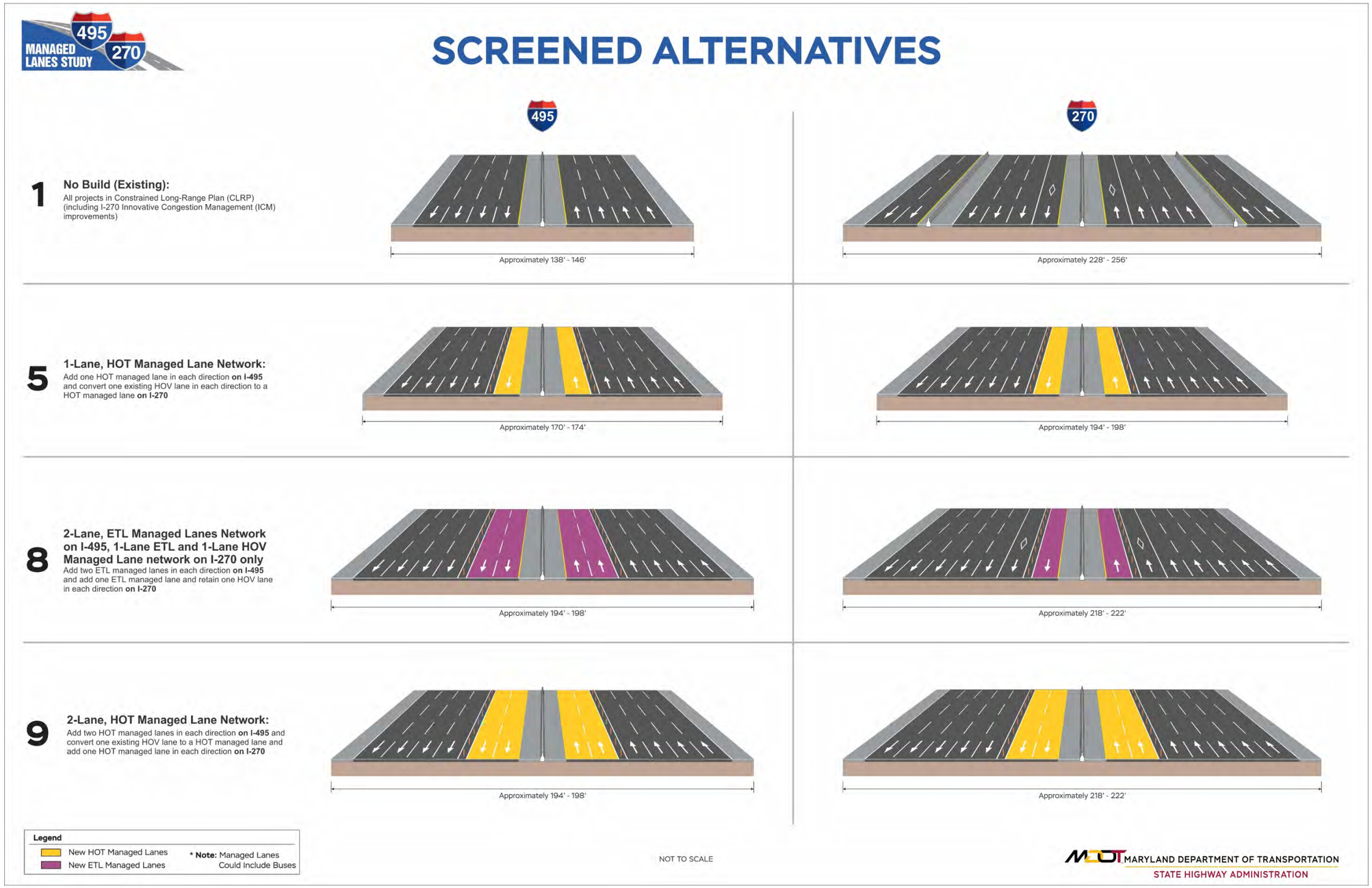
H. Consideration of Alternative 9M

The analysis for the Screened Alternatives summarized above was completed in Spring of 2019 and reflects information available to MDOT SHA at that time. As the Study progressed through the NEPA process, the project team obtained comments as a result of cooperating agency coordination. As a result of this continued effort, MDOT SHA and FHWA have evaluated an additional alternative for the Study known as Alternative 9M. Alternative 9M is considered a blend of two Screened Alternatives, Alternative 5 (one-lane HOT) and Alternative 9 (two-lane HOT).

Alternative 9M has the same LOD as Alternative 9 along I-495 from south of the George Washington Memorial Parkway in Virginia to the I-270 West Spur and from the I-95 interchange to west of MD 5 as well as along I-270 from I-495 to I-370. Alternative 9M has the same LOD as Alternative 5 along I-495 from I-270 West Spur to the I-95 interchange. Alternative 9M includes the same build elements as the other Screened Alternatives including direct access locations and interchange improvements.

Because Alternative 9M is a blend of Alternatives 9 and 5, the environmental impacts associated with Alternative 9M are covered in this Technical Report. Specific impacts associated with Alternative 9M have been quantified and are shown in the DEIS for comparison with the other Screened Alternatives. Any differences in the quantity or intensity of impacts between Alternative 9M and other alternatives are noted either in tables or text in the DEIS.

Figure 1-2: Typical Sections of Alternatives Considered



SCREENED ALTERNATIVES

10
2-Lane, ETL Managed Lane Network and 1-Lane HOV Managed Lane Network on I-270 only

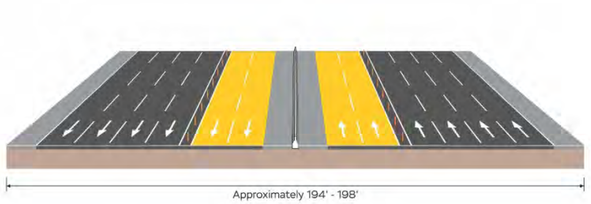
Add two ETL managed lanes in each direction **on I-495 and on I-270** and retain one existing HOV lane in each direction **on I-270 only**

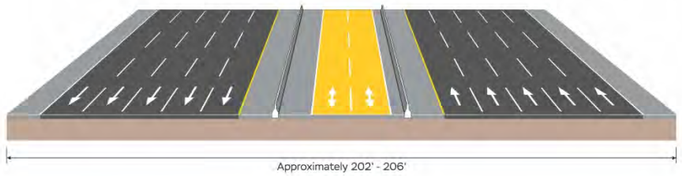




13B
2-Lane, HOT Managed Lane Network on I-495; HOT Managed, Reversible Lane Network on I-270:

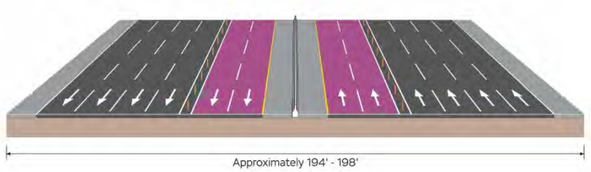
Add two HOT managed lanes in each direction on I-495 and convert existing HOV lanes to two HOT managed reversible lanes **on I-270** while maintaining GP lanes

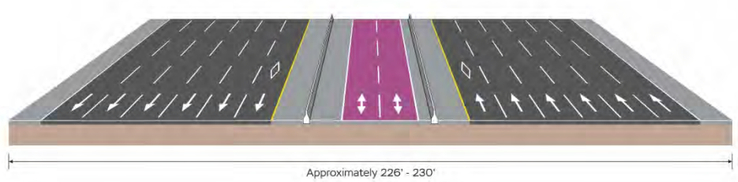




13C
2-Lane, ETL Managed Lane Network on I-495; ETL Managed, Reversible Lane Network and 1-Lane HOV Managed Lane Network on I-270

Add two ETL managed lanes in each direction on I-495, maintain existing HOV managed lanes on I-270 and add two reversible ETL managed lanes on I-270





Legend

New HOT Managed Lanes

New ETL Managed Lanes

* **Note:** Managed Lanes Could Include Buses

NOT TO SCALE

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

2

2 EXISTING CONDITIONS

2.1 Regulatory Framework

2.1.1 National Environmental Policy Act of 1969

Federal requirements for air quality analyses for transportation projects derive from NEPA and, where applicable, the federal transportation conformity rule (40 CFR Parts 51 and 93). NEPA guidance for air quality analyses for transportation projects may be found on or via the FHWA website for planning and the environment.[6]

For purposes of NEPA, general guidance for project-level air quality analyses is provided in the FHWA 1987 Technical Advisory 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*,[7] which focuses on carbon monoxide.

A. Mobile Source Air Toxics

On October 18, 2016, FHWA issued updated interim guidance regarding Mobile Source Air Toxics (MSATs) in a NEPA analysis to include the US Environmental Protection Agency's (EPA) recent Motor Vehicle Emissions Simulator (MOVES), Version 2014a emission model along with updated research on air toxic emissions from mobile sources.

The EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer drivers from their 1999 National Air Toxics Assessment. The nine compounds identified were: acetaldehyde; acrolein; benzene; 1, 3-butadiene; diesel particulate matter (PM) plus diesel exhaust organic gases; ethylbenzene; formaldehyde; naphthalene; and polycyclic organic matter (POM). While FHWA considers these the priority MSATs, the list is subject to change and may be adjusted in consideration of future EPA rules.

The October 2016 FHWA guidance presents a tiered approach for assessing MSATs in NEPA documents. The three levels are for projects with: (1) no meaningful MSAT effects; (2) low potential MSAT effects; and (3) high potential MSAT effects, respectively. The FHWA guidance defines the levels of analysis for each type of MSAT effect as:

[6] http://www.fhwa.dot.gov/environment/index.cfm

[7] https://www.environment.fhwa.dot.gov/projdev/impTA6640.asp

- No analysis for projects with no potential for meaningful MSAT effects;
- A qualitative analysis for projects with low potential MSAT effects; and
- A quantitative analysis for projects with high potential MSAT effects.

Each Screened Alternative was evaluated against each threshold criteria in order to determine the type of MSAT analysis required to satisfy NEPA. As demonstrated in **Section 3.4**, in accordance with the latest 2016 MSAT guidance, the project is best characterized as one with "higher potential MSAT effects" since the projected Design Year traffic is expected to reach the 140,000 to 150,000 AADT criteria. As a result, a quantitative assessment of MSAT emissions projections was conducted for the affected network for each Alternative.

2.1.2 Clean Air Act

The CAA is the overarching statute regulating air quality in the US. The CAA requires the EPA to set standards for air pollutants, approve state plans and enforce deadlines for reducing air pollution, among many other responsibilities. The CAA Amendments of 1990 direct EPA to implement environmental policies and regulations that ensure acceptable levels of air quality. EPA's transportation conformity rule (40 CFR part 93) provides the criteria and procedures for implementing the transportation conformity provisions of the CAA.

A. National Ambient Air Quality Standards

As required by the CAA, EPA sets the National Ambient Air Quality Standards (NAAQS) for airborne pollutants that have adverse impacts on human health and the environment. The NAAQS are a set of baseline standards over which state governments can choose to impose stricter standards.

Table 2-1 presents the NAAQS established by the EPA for criteria air pollutants, namely: carbon monoxide (CO), sulfur dioxide (SO_2), ozone (O_3), PM, nitrogen dioxide (NO_2), and lead (Pb). There are two types of NAAQS—primary and secondary: "Primary standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings."[8]

Table 2-1: National Ambient Air Quality Standards

Pollutant	Primary/Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)	primary	8 hours	9 ppm	Not to be exceeded more than once per year
		1 hour	35 ppm	
Lead (Pb)	primary and secondary	Rolling 3-month average	0.15 µg/m$^{3(1)}$	Not to be exceeded

[8] From the EPA preamble to the NAAQS table: https://www.epa.gov/criteria-air-pollutants/naaqs-table

Pollutant		Primary/Secondary	Averaging Time	Level	Form
Nitrogen Dioxide (NO_2)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum 8-hour concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb (2)	Annual Mean
Ozone (O_3)		primary and secondary	8 hours	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	$PM_{2.5}$	primary	1 year	12.0 µg/m^3	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m^3	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24 hours	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		primary	1 hour	75 ppb (4)	98th percentile of 1-hour daily maximum 8-hour concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

(1) In areas designated nonattainment for the Pb standards prior to promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m3 as a calendar quarter average) also remain in effect.
(2) The level of the annual NO2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clear comparison to the 1-hour standard level.
(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.
(4) The previous SO2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO2 standards or is not meeting the requirements of a SIP call under the previous SO2 standards (40 CFR50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

Source: https://www.epa.gov/criteria-air-pollutants/naaqs-table, accessed July 30,2018.

The EPA is required to publish a list of all geographic areas in and out of compliance with the NAAQS. Attainment status is determined on a pollutant by pollutant basis. Areas that routinely exceed a NAAQS for a particular pollutant are designated as “nonattainment areas”. Areas which were designated “nonattainment” but have been redesignated to “attainment” are called “maintenance areas”. The attainment classifications are described in the following bullets:

- Attainment – area has monitored air quality that meets the NAAQS.
- Nonattainment – area has monitored air quality that does not meet the NAAQS.
- Maintenance – Once a nonattainment area meets the standards and additional redesignation requirements in the CAA [Section 107(d)(3)(E)], EPA will designate the area as a "maintenance area.".
- Unclassifiable and Unclassifiable/Attainment – An area that cannot be designated based on available information as meeting or not meeting the NAAQS.

When a region is designated as a nonattainment area, it must develop a plan for meeting the appropriate standard. The plan is known as an attainment plan and must be submitted to the EPA for approval. After the area has met the standard, the state may request that the area be redesignated. As part of the request to redesignate the area, the region must develop a Maintenance State Implementation Plan (SIP) to demonstrate that it will continue to meet the criteria. Transportation plans, programs and projects in nonattainment and maintenance areas must be found to “conform” to the purpose of the SIP before the project can receive federal funds or approvals. A transportation improvement program (TIP) presents projects over the next several years and a long-range plan (LRP) covers a longer period of time. The metropolitan planning organization (MPO) is designated to develop the TIP and LRP for a region, and to document conformity with SIP provisions.

B. Criteria Pollutants

As shown in **Table 2-1**, pollutants that have established NAAQS are referred to as criteria pollutants. The criteria pollutants are ozone, carbon monoxide, PM ($PM_{2.5}$ and PM_{10}), nitrogen dioxide, SO_2, and lead. Transportation conformity is required in areas designated nonattainment and maintenance by the EPA for the transportation-related criteria pollutants: ozone, PM, nitrogen dioxide, and carbon monoxide.[9] Effects on human health and the general environment, as well as how they disperse and are deposited in the atmosphere, vary from pollutant to pollutant. A description of each criteria pollutant is provided in **Table 2-2**.[10] While the Study Area is an EPA attainment area for CO and PM2.5, a CO analysis of emissions from affected intersections and interchanges was conducted for transparency and informational purposes since CO is a proxy for transportation emissions.

[9] https://www.fhwa.dot.gov/Environment/air_quality/conformity/policy_and_guidance/faqs/genfaqsmemo.cfm
[10] https://www.des.nh.gov/organization/commissioner/pip/factsheets/ard/documents/ard-41.pdf

Table 2-2: Criteria Pollutant Descriptions

Pollutant	Sources	Health and Environmental Effects
Ozone (O_3) Ground-level - A colorless gas that forms as a result of chemical reactions between volatile organic compounds, nitrogen oxides, and oxygen in the presence of heat and sunlight.	Motor vehicles, electric utilities, factories, landfills, industrial solvents, and miscellaneous small sources such as gas stations, lawn equipment, etc.	Causes coughing, chest tightness, wheezing and can inflame and damage lung tissue. Aggravates asthma and can even be a cause of asthma. Irritates the respiratory system, reduces lung function and makes it more difficult to breathe. Aggravates chronic lung diseases and may cause permanent lung damage. May reduce yield of agricultural crops and damages forests and other vegetation.
Carbon Monoxide (CO) - An odorless, colorless gas resulting from incomplete fossil fuel combustion.	Motor vehicles (the majority of CO in NH), small engines, some industrial processes, boilers and incinerators. High concentrations can be found in confined spaces like parking garages, poorly ventilated tunnels, or traffic intersections especially during peak hours.	Impairs the ability of blood to deliver oxygen to vital tissues affecting the cardiovascular, pulmonary, and nervous systems. Symptoms include dizziness, headaches, nausea, fatigue, memory and visual impairment, and decreased muscular control.
Nitrogen Dioxide (NO_2) - A brownish gas that forms quickly when fuel is burned at high temperatures. Contributes to the formation of ground-level ozone and fine particle pollution.	Motor vehicles, electric utilities, industrial boilers, and off-road equipment.	Irritates the lungs, may cause lung damage and lower resistance to respiratory infections such as influenza. May adversely affect terrestrial and aquatic ecosystems through regional transport and deposition.
Particulate Matter (PM) - Mixture of solid particles and liquid droplets in the air; particles may be visible or microscopic.	Formed directly from windblown dust, crushing and grinding operations, unpaved roads and construction, fuel combustion (from motor vehicles, power plants, industrial facilities), wood stoves, and agriculture (plowing, burning off fields). May also be formed in the atmosphere from gases such as SO_2 and NO_x.	Causes eye, nose and throat irritation, decreased lung function, aggravated asthma, development of chronic bronchitis, irregular heartbeat, nonfatal heart attacks, and premature death in people with heart or lung disease. Serves as a carrier for toxic metals, damages human-made materials, and is a major cause of reduced visibility in many parts of the US.
Sulfur Dioxide (SO_2) A highly reactive colorless gas, odorless at low concentrations, but pungent at very high concentrations.	Formed when fuel containing sulfur (mainly oil and coal) is burned in industrial, institutional, utility, and residential furnaces and boilers. Other sources include petroleum refineries, smelters, paper mills, and chemical plants.	May cause breathing problems, respiratory illness, alterations in the lung's defenses, aggravation of existing cardiovascular disease, and permanent damage to lungs. Forms acid aerosols and sulfuric acid, which are associated with acidification of lakes and streams, accelerated corrosion of buildings and monuments, and reduced visibility.
Lead - A heavy metal found naturally in the environment and in manufactured products.	Soil, dust, paint, etc., transportation sources using lead in their fuels, coal combustion, smelters, car battery plants, and combustion of garbage containing lead products.	Elevated levels can cause brain and other nervous system damage and adversely affect kidney function, blood chemistry, and digestion if ingested or directly inhaled. Children are at special risk due to cumulative effects even at low doses. Lead can also harm wildlife through deposition onto leaves which are a food source for grazing animals.

Source: New Hampshire Department of Environmental Services, 2012

C. Transportation Conformity

The CAA, Section 176(c) (42 USC 7506(c)), requires that highway projects receiving federal funding and approval "conform to" state air quality implementation plans. Pursuant to this statute, the EPA issued the federal transportation conformity rule (40 CFR Parts 51 and 93) pursuant to transportation conformity requirements in the CAA as amended. Copies of the EPA conformity regulation and associated guidance are available on the EPA website. In general, the rule requires conformity determinations for transportation plans, programs and projects in "nonattainment or maintenance areas for transportation-related criteria pollutants for which the area is designated nonattainment or has a maintenance plan" (40 CFR 93.102(b)). Federal conformity requirements, including specifically 40 CFR 93.114 and 40 CFR 93.115, apply as the area in which the project located is designated as nonattainment for ozone. The study area is in an attainment area for fine PM ($PM_{2.5}$), therefore, transportation conformity requirements pertaining to $PM_{2.5}$ do not apply for this Project[11] and no further analysis of $PM_{2.5}$ emissions were evaluated per FHWA guidance.[12]

D. Criteria and Procedures for Determining Conformity

The criteria and procedures for determining conformity of transportation plans, programs, and projects are provided in 40 CFR 93.109.

For projects in nonattainment or maintenance areas, the federal transportation conformity rule requires a currently conforming transportation plan and program at the time of project approval (40 CFR 93.114) and for the project to be from a conforming plan and program (40 CFR 93.115). If the project is of a type that is not required to be specifically identified in the plan, the project must be consistent with the policies and purpose of the transportation plan and not interfere with other projects specifically included in the transportation plan (40 CFR 93.115(b)).

Additionally, the design concept and scope of the project as specified in the program at the time of the regional conformity determination should be adequate to determine the project's contribution to regional emissions, and any mitigation measures associated with the project should have written commitments from the project sponsor and/or operator (40 CFR 93.115(c)).

In CO and PM nonattainment and maintenance areas, an analysis of localized emissions may be required for federally funded or approved projects. This analysis is called a "hot-spot" analysis. The CO and PM hot spot test requirements are provided in 40 CFR 93.116.

2.1.3 Greenhouse Gases and State of Maryland Policies

Greenhouse gases (GHGs) are another pollutant monitored by EPA. GHGs trap heat from the sun in the atmosphere and warm the planet to acceptable temperatures to support liquid water and life. According

[11] For background, the EPA issued a final rule (81 FR 58010), effective October 24, 2016, on "Fine Particulate Matter National Ambient Air Quality Standards: State Implementation Plan Requirements" that stated, in part: "Additionally, in this document the EPA is revoking the 1997 primary annual standard for areas designated as attainment for that standard because the EPA revised the primary annual standard in 2012." (See: https://www.gpo.gov/fdsys/pkg/FR-2016-08-24/pdf/2016-18768.pdf). Accordingly, Fairfax County is no longer designated as maintenance for PM2.5, and the associated USEPA regulatory requirements for conformity for PM2.5 are eliminated for northern Virginia

[12] Guidance for Preparing and Processing Environmental and Section 4(f) Documents October 30, 1987. https://www.environment.fhwa.dot.gov/projdev/impTA6640.asp

the National Oceanic and Atmospheric Administration (NOAA), without GHGs, the average temperature of the Earth would be around 0° F, instead of its present 57° F.

The combustion of coal, oil, and gas by humans has increased the amount of GHGs in the atmosphere, mostly in the form CO_2. According to the NOAA, pre-industrial levels of CO_2 in the atmosphere were approximately 280 parts per million by volume (ppmv). Current levels are over 380 ppmv and have been steadily increasing at a rate of 1.9 ppmv per year since the year 2000. This level exceeds the natural range of the past 650,000 years of 180 to 300 ppmv.

In 2009, the state of Maryland passed the Greenhouse Gas Reduction Act (GGRA). The GGRA, which led to the creation of Maryland's wide-ranging Greenhouse Gas Reduction Plan, directed the state to reduce GHG levels by 25 percent by 2020. In 2015, the MDE issued a report stating that Maryland was on track to the meet the 25 percent reduction goal by 2020. In 2016, the governor of Maryland reauthorized the GGRA and extended its GHG reduction goals to 40 percent by 2030. In late 2019, the MDE released and began taking stakeholder comments on the 2019 GGRA Draft Plan which outlines Maryland's strategies to achieve the goal of reducing emissions 40 percent by 2030. A description of the four primary GHGs in the Earth's atmosphere that are emitted by human-generated activities is provided below.

Carbon Dioxide (CO_2). Carbon dioxide is the most prevalent of the four human-generated GHGs. CO_2 is emitted primarily from the burning of fossil fuels (oil, natural gas, coal) by power plants and motor vehicles, the burning of solid waste, trees, and wood products, and as a result of chemical reactions such as the manufacture of cement. CO_2 is removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.

Methane (CH_4). Methane is emitted during the production and transport of various energy sources, including coal, natural gas, and oil. CH_4 also comes from agricultural practices and from landfills as waste decays.

Nitrous Oxide (N_2O). Nitrous Oxide is emitted during various agricultural and manufacturing activities as well as during combustion of fossil fuels and solid waste.

Fluorinated Gases. Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic gases that are emitted from a variety of industrial processes. Fluorinated gases may be used in place of ozone-depleting gases such as chlorofluorocarbons. While these gases may be emitted in smaller quantities than the others, they are very potent and have a High Global Warming Potential. For mobile source analyses based on fossil fuel consumption, CO_2 is the predominant GHG emitted; therefore, this analysis focuses on CO_2 to represent GHG emissions. Regulation of GHG emissions is a focal point of the Maryland Clean Car Program, which was introduced to reduce GHG emissions from vehicular sources and improve air quality in its densely populated counties. In 2007, Maryland became the 12th state to adopt the California Low Emission Vehicle Tier II (Cal LEV II) standards, a set of tailpipe emission standards more stringent than the federal Tier II standards at that time. In 2009, the federal government announced that the federal standards will be fully merged with the stricter California standards by Model Year 2016.

GHG emissions from transportation sources account for approximately 29 percent of the US total GHG making it the largest contributor of US GHG emissions. As such, for transparency purposes, MDOT prepared a summary of GHG emissions from the Proposed Alternatives.

2.2 Monitored Ambient Air Quality

MDE's Air and Radiation Management Administration is responsible for implementing and enforcing regulations to ensure that the air Maryland citizens breathe is clean and healthful. One of their functions is to operate a statewide network of air quality monitors that continuously measure air quality. This data is made available through the EPA's AirData website.[13] A review of data provided for the most recent three years (2016-2018) at the monitoring stations nearest the study area are used to describe the existing ambient air quality in the study area and are presented in **Table 2-3** through **Table 2-5** for CO, $PM_{2.5}$, and ozone, respectively. The monitoring locations are also depicted in **Figure 2-1** through **Figure 2-3** for each pollutant. The measured ambient air concentrations closest to the study area were all well below the corresponding NAAQS, except for the exceedance of the 2015 8-hour ozone standard recorded at some of the monitor locations.

Table 2-3: Carbon Monoxide Monitoring Data (2016-2018)

Site ID	Location	2016				2017				2018				CO NAAQS	
		1-Hr Avg. (ppm)		8-Hr Avg. (ppm)		1-Hr Avg. (ppm)		8-Hr Avg. (ppm)		1-Hr Avg. (ppm)		8-Hr Avg. (ppm)			
		1st Max	2nd Max	1st Max	2nd Max	1st Max	2nd Max	1st Max	2nd Max	1st Max	2nd Max	1st Max	2nd Max	1-hr PPM	8-hr PPM
110010023	District of Columbia	2.2	2.1	2	1.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	35	9
110010041	District of Columbia	2.7	2.7	2.3	2.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	35	9
110010043	District of Columbia	1.6	1.6	1.3	1.3	1.8	1.8	1.4	1.3	2.1	1.6	1.3	1.1	35	9
110010051	District of Columbia	2.2	2	1.8	1.7	2.7	2.7	2.6	2.3	2.2	2.1	2.0	1.9	35	9
240330030	Prince George's	2	1.9	1.1	0.8	1	0.9	0.7	0.7	1.2	0.8	0.8	0.7	35	9
510130020	Arlington	3.7	3.7	1.8	1.6	2.1	2	1.6	1.2	1.6	1.6	1.2	1.2	35	9
515100021	Alexandria City	3.1	2.5	1.9	1.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	35	9
510590031	Fairfax	1.9	1.1	1	1	1.5	1.5	1.1	1.1	1.3	1.2	1.0	0.9	35	9

Source: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report

[13] https://www.epa.gov/outdoor-air-quality-data/monitor-values-report

Figure 2-1: Carbon Monoxide Monitoring Locations

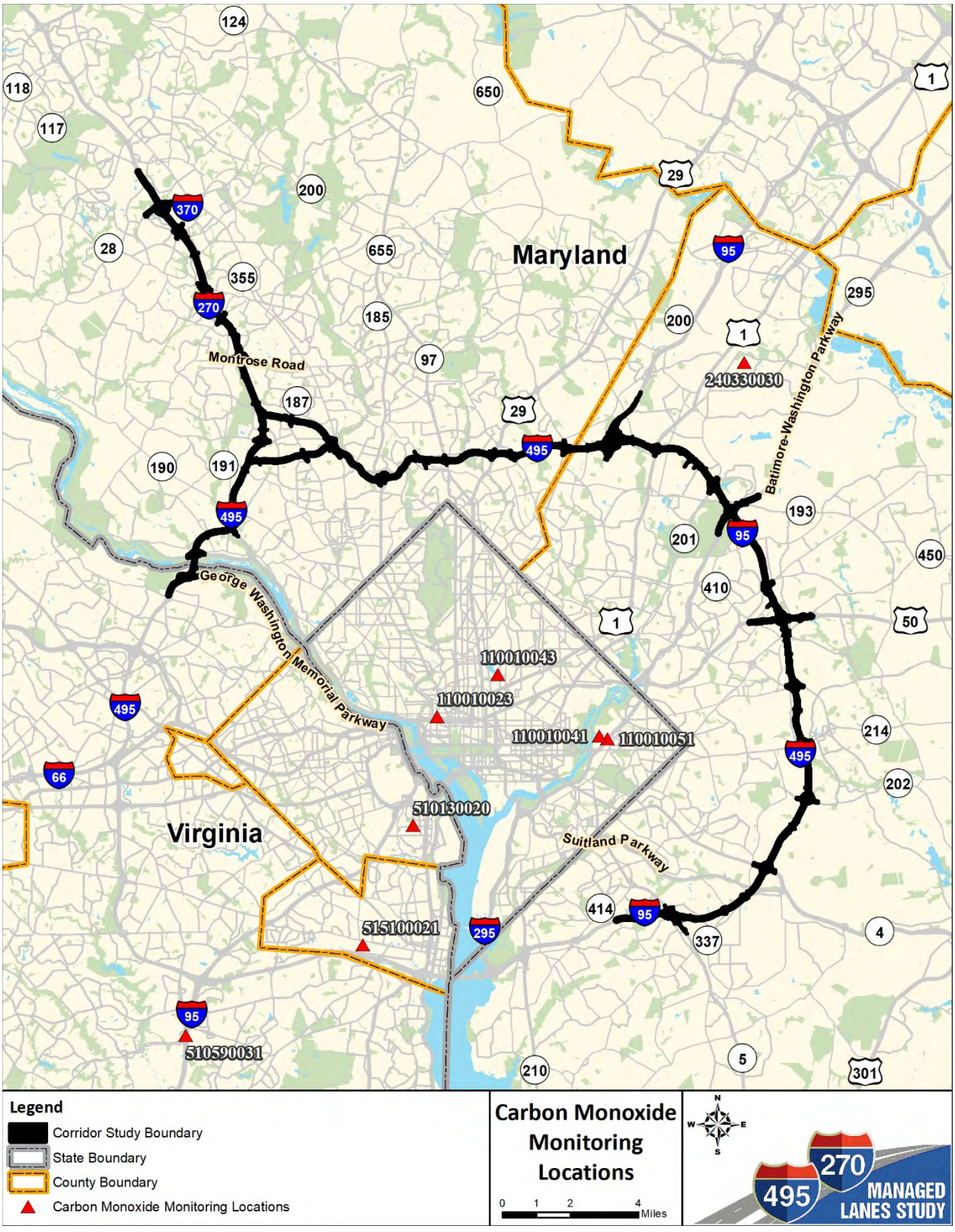


Table 2-4: $PM_{2.5}$ Monitoring Data (2016-2018)

Site ID	Monitor #	Location	2016		2017		2018		$PM_{2.5}$ NAAQS	
			98th Percentile (ug/m^3)	Weighted Arithmetic Mean (ug/m3)	98th Percentile (ug/m^3)	Weighted Arithmetic Mean (ug/m3)	98th Percentile (ug/m^3)	Weighted Arithmetic Mean (ug/m3)	24-hour (ug/m3)	Annual (ug/m3)
110010041	1	District of Columbia	16	7.9*	18	8.9	21	8.8	35	12
110010042	1	District of Columbia	20	8.0*	18	9.1*	N/A	N/A	35	12
110010043	1	District of Columbia	17	7.9*	15	7.5	19	8.7	35	12
	2	District of Columbia	21	8.2*	N/A	N/A	N/A	N/A	35	12
	4	District of Columbia	20	9.6*	22	9.7	23	7.6	35	12
110010051	1	District of Columbia	23	9.8*	19	10.2	21	9.5	35	12
	2	District of Columbia	N/A	N/A	N/A	N/A	N/A	N/A	35	12
240313001	3	Montgomery	16	6.4	15	6.1	18	8.8*	35	12
240330030	1	Prince George's	16	7	14	6.6	15	6.5	35	12
	2	Prince George's	21	6.9	14	6.5	14	6	35	12
	3	Prince George's	18	8.6	15	7.3	16	5.8	35	12
240338003	1	Prince George's	16	6.7	N/A	N/A	N/A	N/A	35	12
	2	Prince George's	25	8.3*	N/A	N/A	N/A	N/A	35	12
510130020	1	Arlington	18	7.5	16	7.7	16	7.4	35	12
	2	Arlington	19	7.5	16	7.7	16	7.4	35	12
510590030	1	Fairfax	17	6.7	15	6.9	17	6.9	35	12
510590031	3	Fairfax	15	8.1*	19	9.0*	20	8.9	35	12

Source: *https://www.epa.gov/outdoor-air-quality-data/monitor-values-report*

Note: * indicates the mean does not satisfy minimum data requirements.

Table 2-5: Ozone Monitoring Data (2016-2018)

Site ID	Location	2016	2017	2018	2015 Ozone NAAQS
		4th Max 8-Hour (ppm)	4th Max 8-Hour (ppm)	4th Max 8-Hour (ppm)	8-hour PPM
110010041	District of Columbia	0.065	0.056	0.050	0.070
110010043	District of Columbia	0.072	0.071	0.073	0.070
110010050	District of Columbia	0.071	0.067	0.073	0.070
240313001	Montgomery	0.065	0.065	0.069	0.070
240330030	Prince George's	0.069	0.069	0.070	0.070
240338003	Prince George's	0.073	0.072	0.070	0.070
240339991	Prince George's	0.07	0.07	0.073	0.070
510130020	Arlington	0.072	0.07	0.070	0.070
510590030	Fairfax	0.073	0.068	0.066	0.070

Source: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report

Figure 2-2: $PM_{2.5}$ Monitoring Locations

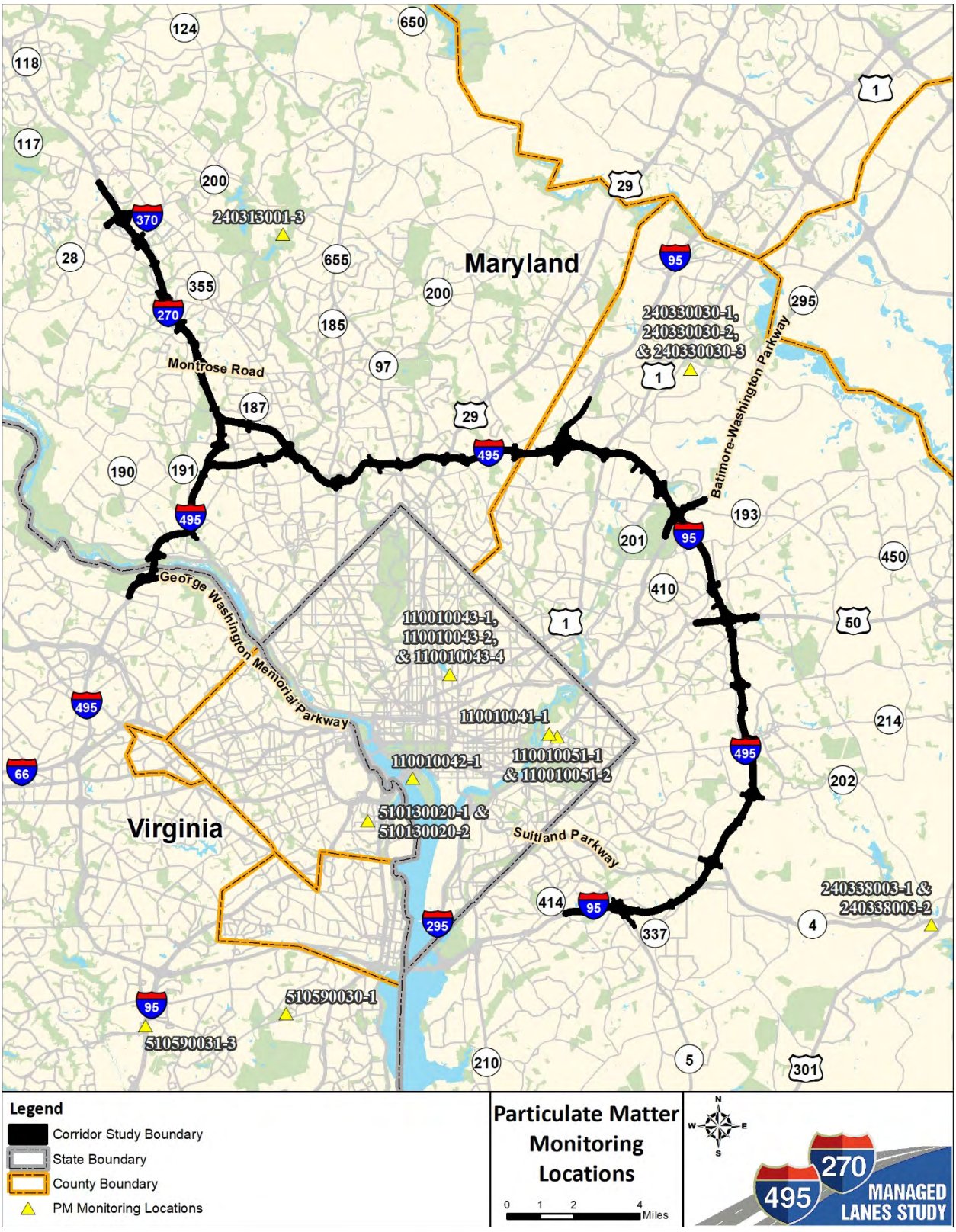


Figure 2-3: Ozone Monitor Locations



2.3 Climate and Meteorology

The Washington, DC Metropolitan Area is located along the Potomac River between the Blue Ridge Mountains and Atlantic Ocean. As is typical with many mid-Atlantic cities along the coast, the DC area is known for its hot, humid summers, pleasant springs and falls, and mild winters. The combination of heat humidity in the summer brings frequent thunderstorms which can occasionally produce tornadoes. During the winter, nor'easters can affect the area producing the largest amounts of snowfall. The average annual precipitation is approximately 40 inches. The annual average temperature is 56° F with the lowest temperatures occurring in January and the highest in July.[14]

2.4 Attainment Status

The study corridor is within the EPA defined Washington DC-MD-VA area which includes portions of Montgomery County and Prince George's County, Maryland as well as a small area in Fairfax County, Virginia. The EPA Green Book[15] lists these counties as attainment for all NAAQS with the exception of the 2015 8-hour ozone standard,[16] for which the counties are nonattainment. The EPA recently redesignated the area to maintenance/attainment for the 2008 8-hour ozone standard.[17]

The Maryland counties were redesignated from a nonattainment area to attainment and entered a 20-year maintenance period for carbon monoxide (CO) in March 1996. The area was considered a maintenance area for the 20 years following until March 2016 when the counties completed the maintenance period. Since the Maryland counties have completed the maintenance period, transportation conformity no longer applies for CO. The study corridor is in an attainment area for fine PM ($PM_{2.5}$).[18] Similarly, Fairfax County is designated attainment for CO, and is also considered attainment for the 1997 fine PM per the EPA 2016 ruling.

[14] https://www.usclimatedata.com/climate/district-of-columbia/united-states/3178

[15] https://www.epa.gov/green-book

[16] https://www.federalregister.gov/documents/2019/04/15/2019-06128/air-plan-approval-district-of-columbia-maryland-and-virginia-maryland-and-virginia-redesignation).

[17] https://www.federalregister.gov/documents/2019/04/15/2019-06128/air-plan-approval-district-of-columbia-maryland-and-virginia-maryland-and-virginia-redesignation

[18] The USEPA issued a final rule (81 FR 58010), effective October 24, 2016, on "Fine Particulate Matter National Ambient Air Quality Standards: State Implementation Plan Requirements" that stated, in part: "Additionally, in this document the EPA is revoking the 1997 primary annual standard for areas designated as attainment for that standard because the EPA revised the primary annual standard in 2012." (See: https://www.gpo.gov/fdsys/pkg/FR-2016-08-24/pdf/2016-18768.pdf). Accordingly, Washington, DC-MD-VA is no longer designated as maintenance for PM2.5, and the associated USEPA regulatory requirements for conformity for PM2.5 are eliminated for Washington (DC-MD-VA).

3

3 ENVIRONMENTAL CONSEQUENCES

3.1 Regional Conformity

The Study is currently included in the NCRTPB Fiscal Year (FY) 2019 – 2024 TIP [TIP ID 6432 and Agency ID AW0731 (planning activities)][19] and the NCRTPB Visualize 2045 Long Range Plan (CEID 1182, CEID 3281, and Appendix B page 56).[20] This Study is included in the Air Quality Conformity Analysis[21] that accompanies the Visualize 2045 Plan. As part of the conformity analysis, consultation with affected agencies such as the EPA, FHWA, FTA, and the Metropolitan Washington Air Quality Committee (MWAQC), as well as with the public was completed. Prior to the Record of Decision being signed, the selected alternative will be included in the TIP and Long Range Plan, along with a Transportation Conformity Determination.

3.2 Carbon Monoxide Analysis

As the Study is located in a region that is attainment of the NAAQS for CO, only NEPA applies; EPA project-level ("hot-spot") transportation conformity requirements do not apply. The Maryland counties were redesignated from a nonattainment area to attainment and entered a 20-year maintenance period for CO in March 1996. The area was considered a maintenance area for the 20 years following until March 2016 when the counties completed the maintenance period. Since the Maryland counties have completed the maintenance period, transportation conformity no longer applies for CO. Similarly, Fairfax County is designated attainment for CO. In addition, as discussed in **Section 2.1.1**, CO is highlighted in the FHWA 1987 guidance as a transportation pollutant to be summarized in an EIS. A CO analysis is not required for conformity since the study area is designated as maintenance for CO, however, since CO is a proxy for transportation emissions, potential impacts for CO were still analyzed for transparency under NEPA for affected intersections and interchanges impacted by the Study.

[19] FY 2019 – 2024 Transportation Improvement Program for the National Capital Region. October 17, 2018. https://www.mwcog.org/visualize2045/document-library/

[20] Visualize 2045: A Long-Range Transportation Plan for the National Capital Region. October 17, 2018. https://www.mwcog.org/visualize2045/document-library/

[21] Air Quality Conformity Analysis of Visualize 2045 and the FY 2019 – 2024 Transportation Improvement Program. October 17, 2018. https://www.mwcog.org/visualize2045/document-library/

The methodologies and assumptions applied for the analysis are consistent with FHWA[22] and EPA guidance.[23] Air quality modeling was performed using MOVES emission factors, VISSIM traffic data, and the CAL3QHC Version 2.0 dispersion model. CO concentrations were estimated for the No Build Alternative and the Screened Alternatives at worst-case intersections throughout the study area.

3.2.1 Traffic Information

Traffic forecasts were developed for the existing (2016), opening (2025) and design year (2040) conditions for each Screened Alternative and the No Build Alternative, including AM and PM peak hour Level of Service (LOS), volume and delay for intersections and interchanges in the Study area and consistent with the traffic analysis developed for the Study. Traffic data are included in **Appendix A** and were used for ranking and selecting the worst-case intersections and interchanges for comparison to the CO NAAQS.

3.2.2 Methodology

A detailed effort was undertaken as part of the traffic analysis to identify all signalized intersections and interchanges that were likely significantly impacted by the Study. These intersections and interchanges are shown in **Figure 3-1** through **Figure 3-3**. These selected intersections interchanges served as the starting point for selecting the top three worst-case intersections and interchanges for quantitative analysis (i.e., CO Hot-Spot modeling). The traffic analysis team completed an operations analysis of each intersection using traffic forecasts developed on an intersection-by-intersection basis and the Synchro simulation package. The delay, LOS and traffic volume for every intersection identified was completed, and the results placed in an Excel table in order to rank the intersections using the EPA's detailed guidance.[24] The flowchart in **Figure 3-4** is an excerpt from EPA's 1992 Guideline which presents the methodology for screening/ranking intersections for a quantitative analysis.

[22] Guidance for Preparing and Processing Environmental and Section 4(f) Documents. October 30, 1987. https://www.environment.fhwa.dot.gov/projdev/impTA6640.asp

[23] Guideline for Modeling Carbon Monoxide from Roadway Intersections. July 19, 1993. https://www3.epa.gov/scram001/guidance/guide/coguide.pdf; Using MOVES2014 in Project-Level Carbon Monoxide Analyses. March 2015. https://nepis.epa.gov/Exe/ZyPdf.cgi?Dockey=P100M2FB.pdf

[24] US part, Guideline for Modeling Carbon Monoxide from Roadway Intersections, USEPA-454/R-92-005, Office of Air Quality Planning and Standards, November 1992.

Figure 3-1: CO Study Area Intersection and Interchanges

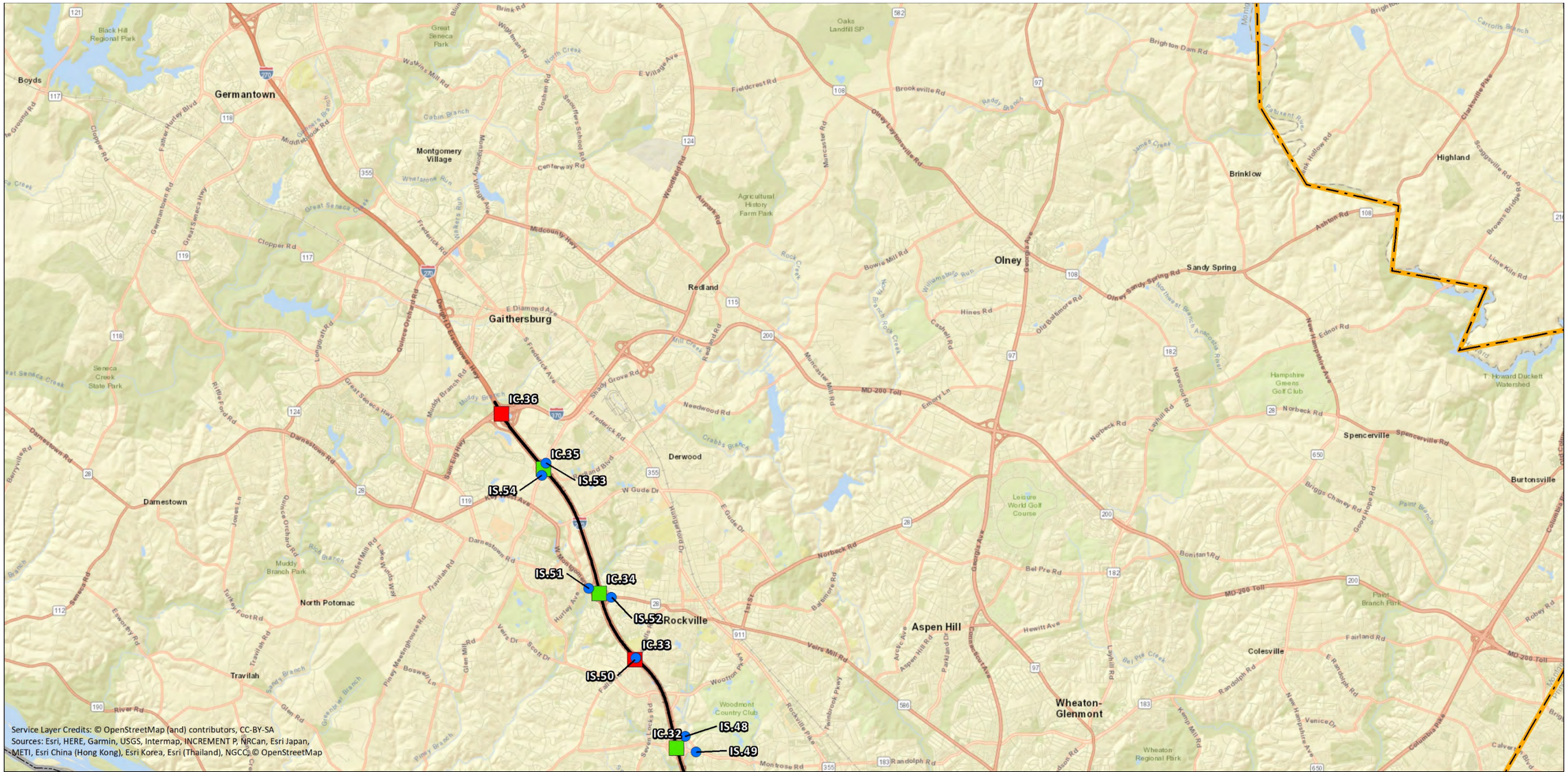


Figure 3-2: CO Study Area Intersection and Interchanges

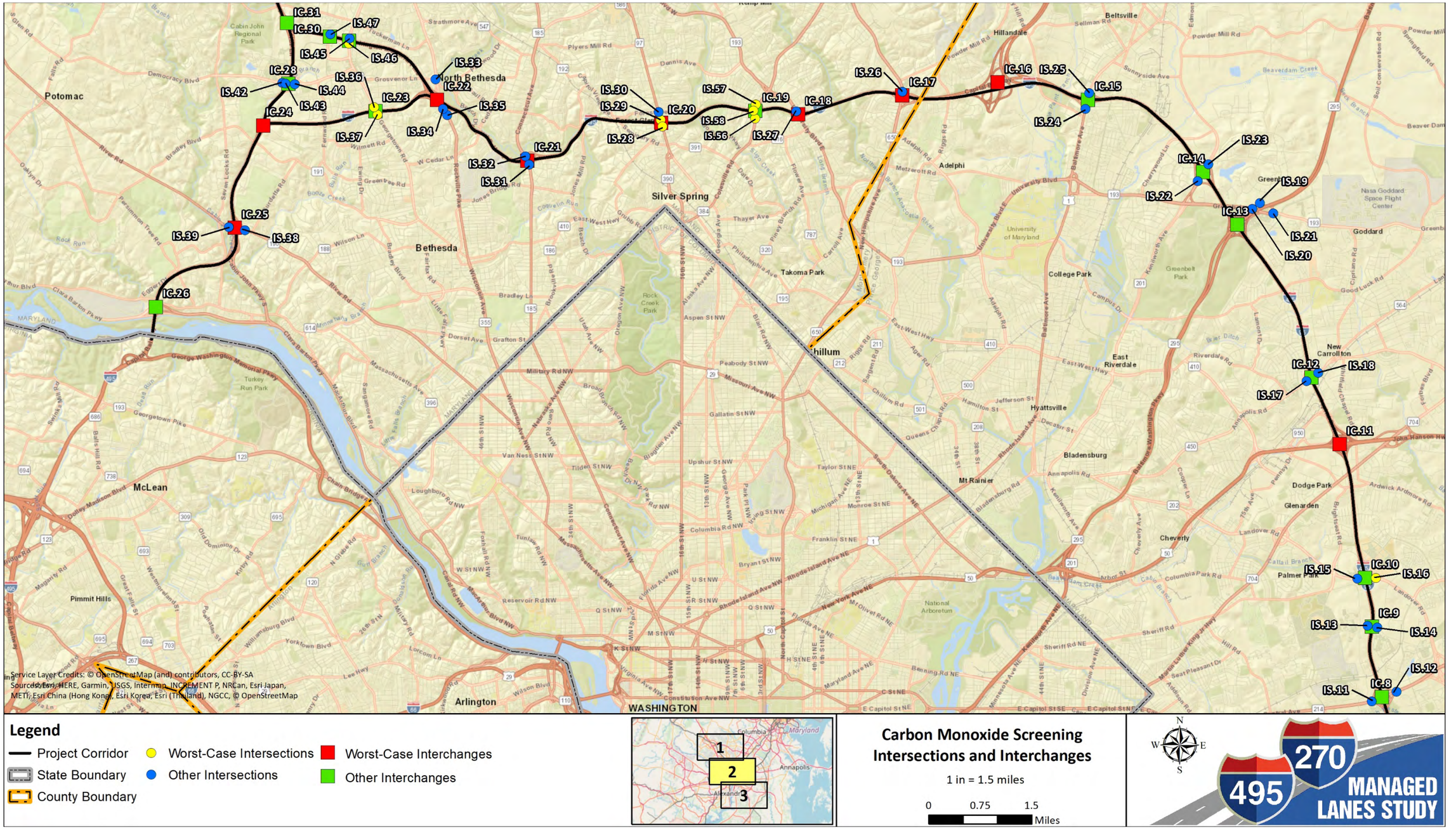
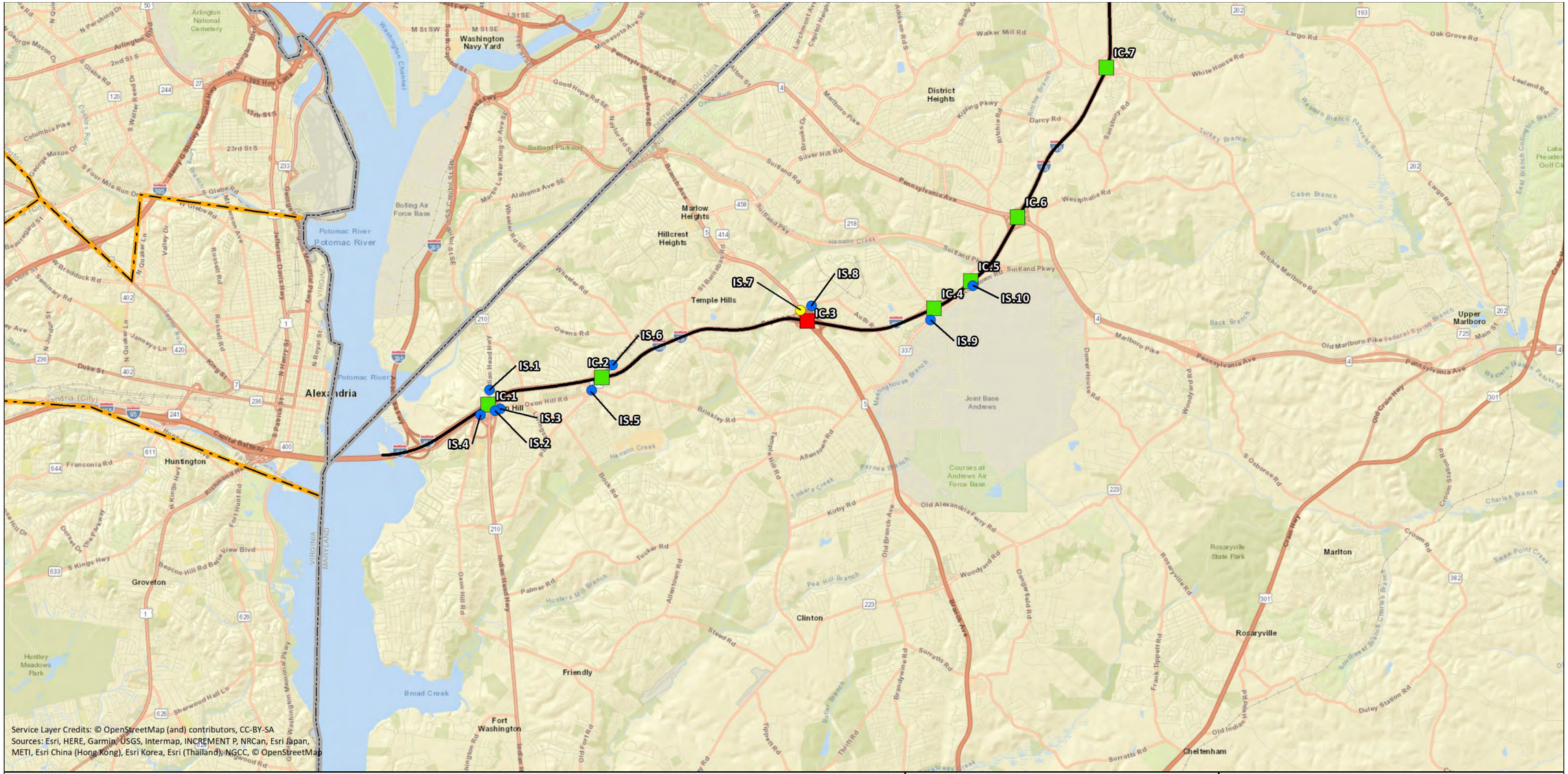
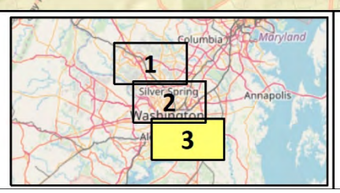


Figure 3-3: CO Study Area Intersection and Interchanges



Legend

- Project Corridor
- State Boundary
- County Boundary
- Worst-Case Intersections
- Other Intersections
- Worst-Case Interchanges
- Other Interchanges

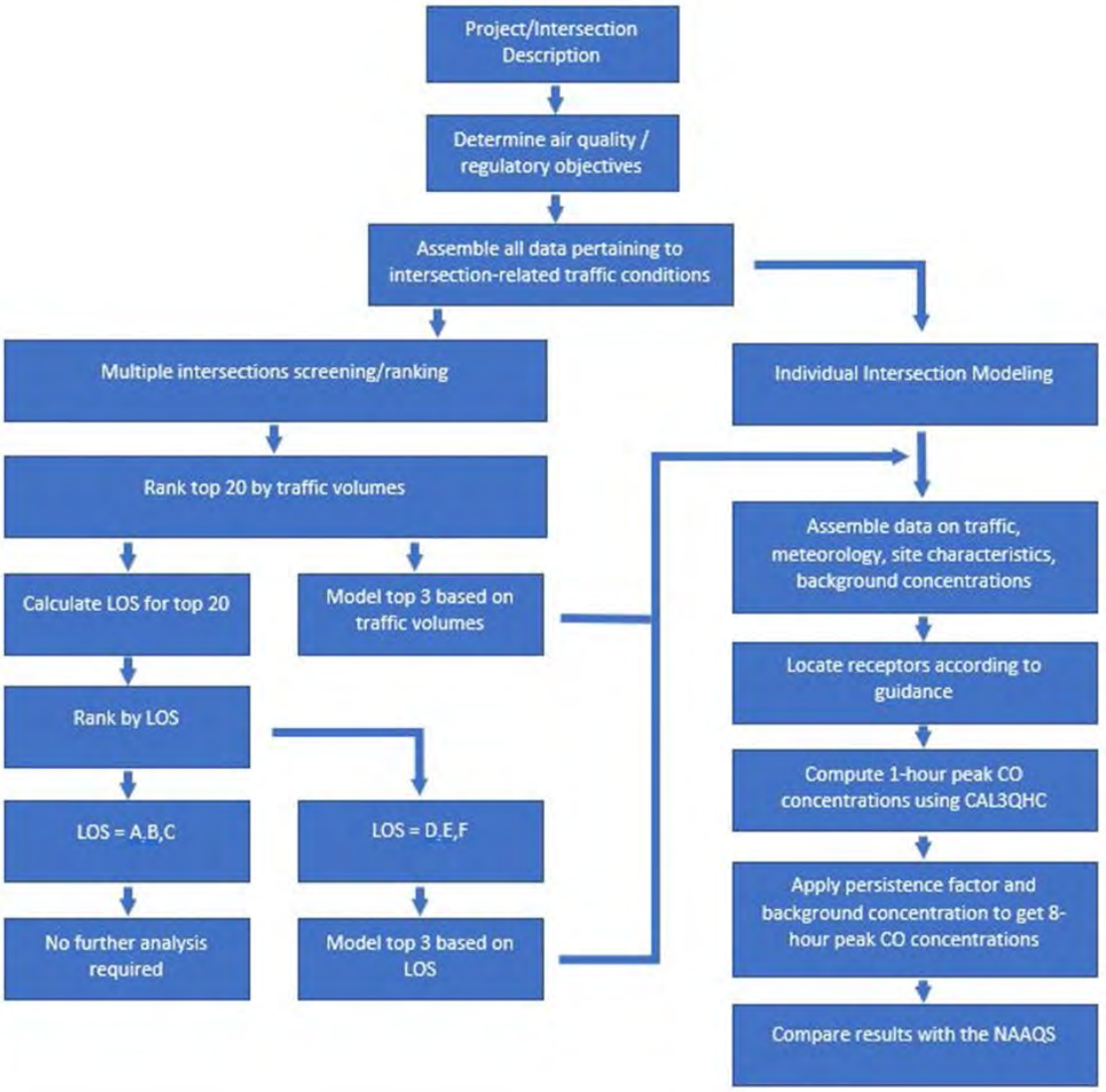


Carbon Monoxide Screening Intersections and Interchanges

1 in = 1.5 miles

0 0.75 1.5 Miles

Figure 3-4: CO Intersection Screening Flowchart



It is assumed that if the selected worst-case intersections and interchanges evaluated in the quantitative analysis do not show an exceedance of the NAAQS, none of the ranked intersections or interchanges will. This assumes that these intersection/interchanges will have the highest CO impacts and those intersections/interchanges with lower traffic volumes and less congestion will have lower ambient air impacts. Thus, if no exceedances of the CO NAAQS occur for the opening and design years when the results of the modeling are added to monitored background levels at each of the worst-case intersections/interchanges evaluated, then it can reasonably be assumed that the alternatives would not cause or contribute to a violation of the CO NAAQS at any location throughout the study corridor.

A. Intersection Rankings

An analysis of the LOS and peak hourly volumes were evaluated for the Screened Alternatives to confirm the worst-case intersection locations for consideration for CO hot-spot modeling. The intersections were summarized by worst-case peak AM or PM volumes and LOS for all Screened Alternatives for opening and design year conditions. Traffic volumes used in the ranking of the signalized intersections are included in **Appendix A.** The signalized intersections were ranked by LOS and the higher of the AM or PM peak hourly-ranked volumes and were summarized for each of the Screened Alternatives. A summary of the ranked intersections including LOS, peak AM and PM hourly volumes and delay are included in **Appendix C** for each Alternative.

Table 3-1 through **Table 3-12** show the top three worst-case intersections ranked by LOS and the higher of the peak AM or PM volumes for all Screened Alternatives for 2025 and 2040, respectively. The top three maximum peak hour volumes and maximum peak hour delays are highlighted in yellow in each table These worst-case intersections are also denoted as a yellow circle in **Figure 3-1** through **Figure 3-3** above. The traffic analysis, as summarized below, demonstrates that the top three intersections selected for evaluation in the CO hot-spot analysis have the highest traffic volumes and worst-case LOS (i.e., LOS A being the best and LOS F being the worst) for all Screened Alternatives. Therefore, they are representative of the locations where peak CO concentrations would be expected to occur throughout the corridor. It should be noted that the top three intersections may be common to alternatives, e.g., common intersections. As mentioned above, it is assumed that if these intersections show peak ground level CO concentrations below the CO NAAQS, then all other locations in the study area would also be below the CO NAAQS.

The top three ranked intersections for volume and LOS for each alternative were chosen for dispersion modeling consistent with the November 1992 EPA Guidance. For the highway intersections, a worst-case analysis approach was taken using MOVES2014b and CAL3QHC (invoked via the latest version of the FHWA CAL3i interface software) to develop conservative estimates for CO concentrations. This approach is designed to overestimate CO emissions of the Study and produce worst-case results from the air quality/dispersion modeling. CAL3i provides a user-friendly interface for the EPA CAL3QHC model that serves to facilitate and streamline the modeling process, particularly for worst-case analyses. Details on the assumptions used for the worst-case modeling analyses are provided later in this report.

Table 3-1: Opening Year (2025) Alternative 5 Intersection Volume and Level of Service Ranking

Volume Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,170	6,375	7,170	92,150	F	101.5	C	34.3
2		7.IS	MD 5	Auth Road	6,710	5,655	6,710	80,770	A	1.6	A	0.8
3	New Intersections	58.IS	US 29	Direct Access Ramp	6,240	5,870	6,240	78,770	A	7.8	C	22.6

LOS Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay	Max Peak Hour Delay
1		46.IS	MD 187	I-270 SB Ramp	2,820	4,485	4,485	54,410	B	15.6	F	125.8	125.8
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,170	6,375	7,170	92,150	F	101.5	C	34.3	101.5
3	Replaced by Single-Point Urban Interchange	36.IS	MD 187	Capital Beltway	3,320	3,960	3,960	36,675	E	71.7	B	14.2	71.7

Table 3-2: Design Year (2040) Alternative 5 Intersection Volume and Level of Service Ranking

Volume Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,625	6,780	7,625	98,000	F	113.1	D	46.3
2		7.IS	MD 5	Auth Road	7,135	6,015	7,135	85,900	C	24.4	A	1.0
3	New Intersections	58.IS	US 29	Direct Access Ramp	6,645	6,250	6,645	83,875	A	6.1	C	28.0

LOS Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)	Max Peak Hour Delay
1		46.IS	MD 187	I-270 SB Ramp	2,995	4,775	4,775	57,875	B	16.4	F	140.7	140.7
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,625	6,780	7,625	98,000	F	113.1	D	46.3	113.1
3	New Intersections	56.IS	US 29	Inner Loop	4,655	5,150	5,150	65,475	B	13.0	D	52.3	52.3

Table 3-3: Opening Year (2025) Alternative 8 Intersection Volume and Level of Service Ranking

Volume Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,070	6,345	7,070	91,315	F	101.7	D	39.0
2	New Intersections	58.IS	US 29	Direct Access Ramp	7,015	6,590	7,015	84,325	A	8.4	C	34.0
3		7.IS	MD 5	Auth Road	6,700	5,650	6,700	81,010	A	2.8	A	0.8

LOS Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay	Max Peak Hour Delay
1		46.IS	MD 187	I-270 SB Ramp	2,870	4,505	4,505	54,335	B	15.8	F	103.3	103.3
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,070	6,345	7,070	91,315	F	101.7	D	39.0	101.7
3	New Intersections	57.IS	US 29	Outer Loop	6,015	6,140	6,140	74,835	F	82.3	B	19.1	82.3

Table 3-4: Design Year (2040) Alternative 8 Intersection Volume and Level of Service Ranking

Volume Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,570	6,735	7,570	97,375	F	112.7	E	61.4
2	New Intersections	58.IS	US 29	Direct Access Ramp	7,430	7,010	7,430	89,500	B	11.8	D	36.4
3		7.IS	MD 5	Auth Road	7,125	5,955	7,125	85,800	A	1.9	A	1.0

LOS Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)	Max Peak Hour Delay
1		46.IS	MD 187	I-270 SB Ramp	3,055	4,790	4,790	57,800	B	15.8	F	140.5	140.5
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,570	6,735	7,570	97,375	F	112.7	E	61.4	112.7
3	New Intersections	57.IS	US 29	Outer Loop	6,495	6,495	6,495	79,975	F	93.6	D	41.5	93.6

Table 3-5: Opening Year (2025) Alternative 9 Intersection Volume and Level of Service Ranking

Volume Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
1	New Intersections	58.IS	US 29	Direct Access Ramp	7,370	6,740	7,370	86,100	B	13.1	C	30.2
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,305	6,450	7,305	94,525	F	114.3	D	39.0
3		7.IS	MD 5	Auth Road	7,010	5,720	7,010	83,460	A	4.4	A	0.8

LOS Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay	Max Peak Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,305	6,450	7,305	94,525	F	114.3	D	39.0	114.3
2		46.IS	MD 187	I-270 SB Ramp	2,960	4,570	4,570	55,420	B	16.0	E	79.7	79.7
3	New Intersections	57.IS	US 29	Outer Loop	6,315	6,300	6,315	78,060	E	63.3	B	19.9	63.3

Table 3-6: Design Year (2040) Alternative 9 Intersection Volume and Level of Service Ranking

Volume Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS (s)	Peak PM Hour Delay
1	New Intersections	58.IS	US 29	Direct Access Ramp	7,520	7,020	7,520	88,725	A	9.3	C	34.6
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,455	6,715	7,455	97,375	F	112.4	E	55.1
3		7.IS	MD 5	Auth Road	7,150	5,960	7,150	85,950	C	20.1	A	0.9

LOS Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)	Max Peak Hour Delay
1		46.IS	MD 187	I-270 SB Ramp	3,015	4,760	4,760	57,225	B	15.6	F	138.2	138.2
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,455	6,715	7,455	97,375	F	112.4	E	55.1	112.4
3	New Intersections	57.IS	US 29	Outer Loop	6,440	6,565	6,565	80,475	E	74.1	C	28.2	74.1

Table 3-7: Opening Year (2025) Alternative 10 Intersection Volume and Level of Service Ranking

Volume Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
1	New Intersections	58.IS	US 29	Direct Access Ramp	7,075	6,610	7,075	83,510	B	11.0	C	30.4
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,005	6,310	7,005	91,500	F	104.0	D	39.3
3		7.IS	MD 5	Auth Road	6,725	5,605	6,725	80,835	A	1.7	A	0.8

LOS Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay	Max Peak Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,005	6,310	7,005	91,500	F	104.0	D	39.3	104.0
2	New Intersections	57.IS	US 29	Outer Loop	6,055	6,180	6,180	75,710	E	60.4	C	22.7	60.4
3		46.IS	MD 187	I-270 SB Ramp	2,640	4,370	4,370	53,000	B	16.0	D	50.5	50.5

Table 3-8: Design Year (2040) Alternative 10 Intersection Volume and Level of Service Ranking

Volume Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)
1	New Intersections	58.IS	US 29	Direct Access Ramp	7,520	7,020	7,520	88,725	B	12.2	D	36.8
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,455	6,715	7,455	97,375	F	112.9	E	59.4
3		7.IS	MD 5	Auth Road	7,150	5,960	7,150	85,950	B	19.3	A	0.9

LOS Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)	Max Peak Hour Delay
1		46.IS	MD 187	I-270 SB Ramp	2,805	4,655	4,655	56,400	C	30.6	F	125.0	125.0
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,455	6,715	7,455	97,375	F	112.9	E	59.4	112.9
3	New Intersections	57.IS	US 29	Outer Loop	6,440	6,565	6,565	80,475	E	70.2	C	28.3	70.2

Table 3-9: Opening Year (2025) Alternative 13B Intersection Volume and Level of Service Ranking

Volume Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
1	New Intersections	58.IS	US 29	Direct Access Ramp	7,040	6,600	7,040	83,550	B	10.5	B	19.3
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,000	6,295	7,000	90,960	F	112.8	D	40.8
3		7.IS	MD 5	Auth Road	6,715	5,605	6,715	81,395	A	2.6	A	0.8

LOS Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay	Max Peak Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,000	6,295	7,000	90,960	F	112.8	D	40.8	112.8
2		46.IS	MD 187	I-270 SB Ramp	2,900	4,545	4,545	55,075	B	16.1	F	106.3	106.3
3		16.IS	MD 202	Outer Loop Ramp	3,245	4,420	4,420	54,545	C	21.8	D	44.3	44.3

Table 3-10: Design Year (2040) Alternative 13B Intersection Volume and Level of Service Ranking

Volume Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,505	6,695	7,505	97,150	F	122.4	E	56.3
2	New Intersections	58.IS	US 29	Direct Access Ramp	7,480	7,025	7,480	88,850	B	11.3	C	28.6
3		7.IS	MD 5	Auth Road	7,140	5,960	7,140	86,550	B	19.8	A	0.9

LOS Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	New Intersections	56.IS	US 29	Inner Loop	4,695	5,080	5,080	63,775	A	9.5	F	152.8	152.8
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,505	6,695	7,505	97,150	F	122.4	E	56.3	122.4
3		46.IS	MD 187	I-270 SB Ramp	3,085	4,840	4,840	58,625	B	16.1	F	120.7	120.7

Table 3-11: Opening Year (2025) Alternative 13C Intersection Volume and Ranking

Volume Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,050	6,365	91,215	7,050	F	113.4	D	46.7
2	New Intersections	58.IS	US 29	Direct Access Ramp	6,985	6,520	83,375	6,985	B	10.6	C	22.1
3		7.IS	MD 5	Auth Road	6,735	5,605	80,975	6,735	A	1.9	A	0.8

LOS Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay	Max Peak Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,050	6,365	7,050	91,215	F	113.4	D	46.7	113.4
2		46.IS	MD 187	I-270 SB Ramp	2,795	4,510	4,510	54,375	B	16.2	F	94.0	94.0
3	New Intersections	57.IS	US 29	Outer Loop	5,990	6,060	6,060	73,720	E	62.3	B	17.1	62.3

Table 3-12: Design Year (2040) Alternative 13C Intersection Volume and Level of Service Ranking

Volume Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,550	6,775	7,550	97,400	F	128.4	E	69.3
2	New Intersections	58.IS	US 29	Direct Access Ramp	7,435	6,945	7,435	88,775	B	12.6	D	37.1
3		7.IS	MD 5	Auth Road	7,165	5,960	7,165	86,125	A	6.5	A	0.8

LOS Rank	Build Condition Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	Replaced by Diamond Intersection	46.IS	MD 187	I-270 SB Ramp	2,975	4,790	4,790	57,800	B	15.6	F	134.6	134.6
2	New Intersections	28.IS	MD 97	Inner Loop Ramp	7,550	6,775	7,550	97,400	F	128.4	E	69.3	128.4
3		29.IS	MD 97	Outer Loop Ramp	6,320	6,445	6,445	88,725	E	68.7	B	14.0	68.7

B. Interchange Rankings

Interchanges were also ranked for each Screened Alternative by worst-case volumes for the mainline traveling through each interchange. Traffic volumes used in the ranking of the interchanges are included in **Appendix C**. The interchange locations studied for each Alternative are shown **Table 3-1** through **Table 3-11**. A summary of the ranked interchanges by volume and delay are included in **Appendix C** for each Alternative. The top three interchanges by volume and delay for each Screened Alternative were chosen for dispersion modeling. **Table 3-13** through **Table 3-24** presents the top three interchanges ranked by volume for each Alternative for the 2025 and 2040 condition, respectively. Similarly, the top three maximum peak hour volumes and maximum peak hour delays are highlighted in yellow in each table. These worst-case interchanges are also denoted as a red box in **Figure 3-1** through **Figure 3-3**, above. A review of the worst-case interchanges demonstrates the top three interchanges for each Alternative clearly have the highest traffic volumes and delays.

Table 3-13: Opening Year (2025) Alternative 5 Interchange Volume and Delay Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	33.IC	I-270	MD 189	34,330	39,024	39,024	6.6	2.0	6.6
2	11.IC	Capital Beltway	US 50	26,352	27,207	27,207	7.9	2.3	7.9
3	16.IC	Capital Beltway	I-95	23,057	25,471	25,471	2.8	3.6	3.6

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	22.IC	Capital Beltway	I-270 and MD 355	22,400	20,356	22,400	12.1	120.0	120.0
2	21.IC	Capital Beltway	MD 185	24,606	23,147	24,606	4.2	63.9	63.9
3	17.IC	Capital Beltway	MD 650	20,966	24,562	24,562	63.8	6.9	63.8

Table 3-14: Design Year (2040) Alternative 5 Interchange Volume and Delay Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)
1	33.IC	I-270	MD 189	32,565	37,832	37,832	1.6	5.4
2	11.IC	Capital Beltway	US 50	26,679	28,656	28,656	13.5	2.5
3	16.IC	Capital Beltway	I-95	21,112	26,522	26,522	135.0	3.7

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay	Max Peak Hour Delay (s)
1	16.IC	Capital Beltway	I-95	21,112	26,522	26,522	135.0	3.7	135.0
2	22.IC	Capital Beltway	I-270 and MD 355	22,964	20,718	22,964	2.9	134.9	134.9
3	3.IC	Capital Beltway	MD 5	21,963	25,665	25,665	99.4	1.7	99.4

Table 3-15: Opening Year (2025) Alternative 8 Interchange Volume and Delay Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	33.IC	I-270	MD 189	38,280	42,856	42,856	1.6	1.9	1.9
2	25.IC	Capital Beltway	MD 190	29,333	25,806	29,333	5.2	2.6	5.2
3	11.IC	Capital Beltway	US 50	28,724	28,588	28,724	3.5	2.1	3.5

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	22.IC	Capital Beltway	I-270 and MD 355	25,458	25,499	25,499	4.4	65.9	65.9
2	21.IC	Capital Beltway	MD 185	27,138	27,682	27,682	3.4	39.8	39.8
3	18.IC	Capital Beltway	MD 193	22,628	26,313	26,313	6.9	33.1	33.1

Table 3-16: Design Year (2040) Alternative 8 Interchange Volume and Delay Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)
1	33.IC	I-270	MD 189	40,246	43,137	43,137	14.3	3.1
2	11.IC	Capital Beltway	US 50	30,123	30,162	30,162	3.2	2.3
3	25.IC	Capital Beltway	MD 190	29,729	24,540	29,729	6.1	61.9

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay	Max Peak Hour Delay (s)
1	22.IC	Capital Beltway	I-270 and MD 355	24,671	26,026	26,026	32.0	72.1	72.1
2	25.IC	Capital Beltway	MD 190	29,729	24,540	29,729	6.1	61.9	61.9
3	24.IC	Capital Beltway	I-270 Spur	23,726	18,638	23,726	33.0	53.8	53.8

Table 3-17: Opening Year (2025) Alternative 9 Interchange Volume and Delay Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	33.IC	I-270	MD 189	36,745	42,984	42,984	1.8	1.8	1.8
2	11.IC	Capital Beltway	US 50	29,443	29,258	29,443	3.8	2.3	3.8
3	25.IC	Capital Beltway	MD 190	28,749	27,025	28,749	29.4	3.0	29.4

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	22.IC	Capital Beltway	I-270 and MD 355	26,379	25,449	26,379	27.0	62.7	62.7
2	21.IC	Capital Beltway	MD 185	27,880	27,142	27,880	3.9	41.2	41.2
3	25.IC	Capital Beltway	MD 190	28,749	27,025	28,749	29.4	3.0	29.4

Table 3-18: Design Year (2040) Alternative 9 Interchange Volume and Delay Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)
1	33.IC	I-270	MD 189	34,837	42,529	42,529	1.5	2.0
2	11.IC	Capital Beltway	US 50	29,372	30,185	30,185	3.5	2.3
3	20.IC	Capital Beltway	MD 97	28,909	29,034	29,034	24.8	25.7

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	3.IC	Capital Beltway	MD 5	23,079	26,297	26,297	81.4	2.0	81.4
2	22.IC	Capital Beltway	I-270 and MD 355	27,304	26,135	27,304	3.1	71.6	71.6
3	24.IC	Capital Beltway	I-270 Spur	22,922	20,480	22,922	12.0	47.3	47.3

Table 3-19: Opening Year (2025) Alternative 10 Interchange Volume and Delay Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	33.IC	I-270	MD 189	39,264	46,360	46,360	3.6	2.3	3.6
2	25.IC	Capital Beltway	MD 190	28,729	27,624	28,729	27.5	2.9	27.5
3	11.IC	Capital Beltway	US 50	28,381	28,639	28,639	3.1	2.2	3.1

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	24.IC	Capital Beltway	I-270 Spur	22,849	21,094	22,849	42.6	1.9	42.6
2	21.IC	Capital Beltway	MD 185	27,202	26,942	27,202	3.2	42.6	42.6
3	18.IC	Capital Beltway	MD 193	22,695	26,022	26,022	8.2	31.2	31.2

Table 3-20: Design Year (2040) Alternative 10 Interchange Volume and Delay Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)
1	33.IC	I-270	MD 189	40,900	47,317	47,317	7.7	8.2
2	11.IC	Capital Beltway	US 50	29,435	30,253	30,253	3.5	2.3
3	25.IC	Capital Beltway	MD 190	29,365	28,789	29,365	28.2	6.0

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	3.IC	Capital Beltway	MD 5	23,280	26,354	26,354	95.3	2.0	95.3
2	22.IC	Capital Beltway	I-270 and MD 355	26,259	25,889	26,259	10.5	85.5	85.5
3	21.IC	Capital Beltway	MD 185	27,780	27,863	27,863	16.0	72.4	72.4

Table 3-21: Opening Year (2025) Alternative 13B Interchange Volume and Delay Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	33.IC	I-270	MD 189	35,561	41,028	41,028	2.0	2.0	2.0
2	11.IC	Capital Beltway	US 50	28,132	28,769	28,769	2.9	2.2	2.9
3	20.IC	Capital Beltway	MD 97	27,795	28,197	28,197	16.6	19.7	19.7

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	21.IC	Capital Beltway	MD 185	27,387	27,152	27,387	2.9	36.6	36.6
2	22.IC	Capital Beltway	I-270 and MD 355	26,335	25,382	26,335	3.0	32.7	32.7
3	25.IC	Capital Beltway	MD 190	27,918	26,555	27,918	28.5	2.7	28.5

Table 3-22: Design Year (2040) Alternative 13B Interchange Volume and Delay Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)
1	33.IC	I-270	MD 189	36,952	38,924	38,924	2.7	9.8
2	11.IC	Capital Beltway	US 50	29,756	29,948	29,948	3.3	2.3
3	25.IC	Capital Beltway	MD 190	28,244	26,334	28,244	32.2	13.6

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	22.IC	Capital Beltway	I-270 and MD 355	25,780	24,652	25,780	58.2	83.2	83.2
2	3.IC	Capital Beltway	MD 5	23,906	26,226	26,226	67.8	1.9	67.8
3	36.IC	I-270	I-370	21,212	22,327	22,327	15.6	60.4	60.4

Table 3-23: Opening Year (2025) Alternative 13C Interchange Volume and Delay Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	33.IC	I-270	MD 189	38,060	43,777	43,777	2.2	2.4	2.4
2	25.IC	Capital Beltway	MD 190	29,012	26,886	29,012	26.7	2.6	26.7
3	11.IC	Capital Beltway	US 50	28,319	28,867	28,867	4.1	2.3	4.1

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	24.IC	Capital Beltway	I-270 Spur	23,429	21,104	23,429	54.4	3.0	54.4
2	36.IC	I-270	I-370	20,893	25,389	25,389	4.9	49.3	49.3
3	21.IC	Capital Beltway	MD 185	27,175	27,229	27,229	3.0	37.2	37.2

Table 3-24: Design Year (2040) Alternative 13C Interchange Volume and Delay Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)
1	33.IC	I-270	MD 189	38,379	45,112	45,112	25.2	3.4
2	11.IC	Capital Beltway	US 50	29,907	30,284	30,284	3.5	3.3
3	25.IC	Capital Beltway	MD 190	29,576	27,524	29,576	27.2	34.1

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	22.IC	Capital Beltway	I-270 and MD 355	25,379	25,107	25,379	40.3	74.5	74.5
2	21.IC	Capital Beltway	MD 185	26,443	27,369	27,369	28.7	64.6	64.6
3	24.IC	Capital Beltway	I-270 Spur	23,931	21,232	23,931	54.3	5.4	54.3

The traffic analysis, as summarized above, demonstrates that the top three interchanges for each Screened Alternative selected for evaluation in the CO hot-spot analysis have the highest traffic volumes and delays, and therefore are representative of the locations where peak CO concentrations would be expected to occur throughout the corridor. It should be noted that the top three interchanges may be common to Alternatives, e.g., common interchanges (i.e., worst-case intersections for one Alternative may be the same for other Alternatives). For example, I-270/MD 89 interchange is in the top three ranked interchanges for all Alternatives, therefore this interchange is common to all Alternatives.

As mentioned earlier, it is assumed that if these interchanges show peak ground level CO concentrations below the CO NAAQS, then all other locations in the study area would also be below the CO NAAQS. Similar to the intersections, for the highway interchanges, a worst-case analysis approach was taken using MOVES2014b and CAL3QHC (invoked via the latest version of the FHWA CAL3i interface software) to develop conservative estimates for CO concentrations. Details on the assumptions used for the worst-case modeling analyses are provided in the following sections.

C. MOVES Emission Rates

Vehicle emission rates for CO were estimated using the latest version of the EPA Motor Vehicle Emissions Simulator model (MOVES2014b). The methodologies and assumptions used for the MOVES modeling are consistent with FHWA and EPA guidance.[25],[26] Modeling was conducted for the opening and design years, 2025 and 2040 respectively, in addition to the existing year (2016) for both Build and No Build conditions, specifically:

- Vehicle and fuels data required for input into the MOVES model was provided by MDOT SHA, Metropolitan Washington Council of Governments (MWCOG), and EPA Defaults data for 2016, 2025 and 2040 conditions, consistent with the latest planning assumptions for the study corridor.
- Fuel data, vehicle population, and age distribution data were provided by MDOT SHA/MWCOG/EPA Defaults to populate the MOVES project data manager database for the areas where the worst-case interchanges and intersections are located (i.e., Montgomery County and Prince Georges County).
- MOVES link files were developed for each worst-case intersection/interchange studied for each analysis year. The link file includes road type, worst-case volumes, link lengths, roadway speed, and roadway grade.
- The roadway grades for the interchanges were derived from plans where available, or from profile data based on US Geological Survey elevation data from Geographic Information System files or Google Earth data.
- Mobile source emissions were calculated based on peak-period congested speeds at which vehicles travel through the interchange/intersection, and idle emissions were used to represent queuing vehicles.
- Worst-case meteorological data for the areas where the worst-case interchanges are located were also assumed in the project data manager database.

[25] Guidance for Preparing and Processing Environmental and Section 4(f) Documents. October 30, 1987. https://www.environment.fhwa.dot.gov/projdev/impTA6640.asp and

[26] Guideline for Modeling Carbon Monoxide from Roadway Intersections. July 19, 1993. https://www3.epa.gov/scram001/guidance/guide/coguide.pdf; Using MOVES2014 in Project-Level Carbon Monoxide Analyses. March 2015. https://nepis.epa.gov/Exe/ZyPdf.cgi?Dockey=P100M2FB.pdf

The geographic bounds of the CO analysis were determined based on the locations of affected intersections and interchanges. Since all the affected intersections and interchanges are located in Montgomery and Prince Georges counties in Maryland, the geographic area for the CO analysis was based on these counties. A summary of the MOVES inputs is presented in **Table 3-25**.

Table 3-25: MOVES2014b Input Parameters

Parameter	Assumption
Scale Menu	Domain: Project Calculation Type: Inventory
Evaluation Month	January
Time Span	Year = 2016, 2025, 2040 Hour = 7 AM to 8 AM Days = Weekdays
Geographic Bounds	Montgomery County Prince George's County
Vehicles Equipment	All vehicle types for diesel and gasoline and compressed natural gas transit buses only
Link Files	Roadway Specific
Roadway Grade and Link Speeds	Plans where available or Google Earth data and posted speed limits
Meteorology	Average Temp and Humidity in January 2016
Fuel Inputs	Provided by MDOT SHA/MWCOG/EPA Defaults
Vehicle Population and Age Distribution	Provided by MDOT SHA/MWCOG/EPA Default
Pollutants and Process Panel	CO Running and CO Crankcase
Output Panel	Grams and Miles Selected as Units Population and Distance Traveled

The MOVES runs generated CO emission rates for input into the CAL3QHC dispersion.

D. Emission Factors

Mobile source emission factors are calculated based on posted speeds at which vehicles travel through the intersections/interchanges. The MOVES runs were used to generate CO emission rates for input into the CAL3QHC dispersion model for the existing (2016), opening (2025) and design year (2040) conditions.

As an example of the CO emission rates, **Table 3-26** and **Table 3-27** summarize the emission factors generated by MOVES for each year and vehicle speed for each of the interchanges and intersections modeled using MOVES2014b for Montgomery County and Prince Georges County, respectively. A sample MOVES input and output file is provided in **Appendix D**. A complete set of MOVES input/output files can be made available upon request.

Table 3-26: MOVES2014b Prince Georges County Emission Factor Results

Speed	Description	Roadway Grade	2016		2025		2040	
			Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)
65	INTERSTATE_65MPH_00	0	3.02		1.61		0.70	
65	INTERSTATE_65MPH_01	1	4.15		2.31		1.06	
65	INTERSTATE_65MPH_02	2	5.42		3.06		1.44	
65	INTERSTATE_65MPH_03	3	7.01		3.94		1.87	
65	INTERSTATE_65MPH_04	4	8.89		5.02		2.40	
65	INTERSTATE_65MPH_05	5	11.21		6.37		3.05	
65	INTERSTATE_65MPH_06	6	13.32		7.59		3.63	
60	INTERSTATE_60MPH_00	0	2.84		1.49		0.63	
60	INTERSTATE_60MPH_01	1	3.76		2.07		0.92	
60	INTERSTATE_60MPH_02	2	4.91		2.75		1.27	
60	INTERSTATE_60MPH_03	3	6.41		3.60		1.69	
60	INTERSTATE_60MPH_04	4	8.09		4.55		2.15	
60	INTERSTATE_60MPH_05	5	10.06		5.68		2.70	
60	INTERSTATE_60MPH_06	6	12.33		7.01		3.33	
55	INTERSTATE_55MPH_00	0	2.89		1.50		0.61	
55	INTERSTATE_55MPH_01	1	3.73		2.02		0.88	
55	INTERSTATE_55MPH_02	2	4.80		2.67		1.21	
55	INTERSTATE_55MPH_03	3	6.18		3.47		1.61	
55	INTERSTATE_55MPH_04	4	7.79		4.37		2.05	
55	INTERSTATE_55MPH_05	5	9.61		5.40		2.55	
55	INTERSTATE_55MPH_06	6	11.76		6.65		3.15	
45	INTERSTATE_RAMPS_45MPH_00	0	3.06		1.55		0.62	
45	INTERSTATE_RAMPS_45MPH_01	1	3.85		2.04		0.86	
45	INTERSTATE_RAMPS_45MPH_02	2	4.81		2.61		1.15	
45	INTERSTATE_RAMPS_45MPH_03	3	5.90		3.26		1.48	
45	INTERSTATE_RAMPS_45MPH_04	4	7.30		4.07		1.88	
45	INTERSTATE_RAMPS_45MPH_05	5	9.01		5.03		2.35	
45	INTERSTATE_RAMPS_45MPH_06	6	10.69		5.99		2.81	
35	INTERSTATE_RAMPS_35MPH_00	0	3.34		1.68		0.64	
35	INTERSTATE_RAMPS_35MPH_01	1	3.94		2.03		0.81	
35	INTERSTATE_RAMPS_35MPH_02	2	4.69		2.45		1.01	
35	INTERSTATE_RAMPS_35MPH_03	3	5.63		3.01		1.29	
35	INTERSTATE_RAMPS_35MPH_04	4	6.73		3.63		1.59	
35	INTERSTATE_RAMPS_35MPH_05	5	8.14		4.43		1.98	
35	INTERSTATE_RAMPS_35MPH_06	6	9.54		5.23		2.36	
25	INTERSTATE_RAMPS_25MPH_00	0	3.82		1.89		0.68	
25	INTERSTATE_RAMPS_25MPH_01	1	4.34		2.16		0.80	
25	INTERSTATE_RAMPS_25MPH_02	2	4.96		2.48		0.94	
25	INTERSTATE_RAMPS_25MPH_03	3	5.76		2.94		1.15	
25	INTERSTATE_RAMPS_25MPH_04	4	6.64		3.43		1.39	
25	INTERSTATE_RAMPS_25MPH_05	5	7.70		4.04		1.68	
25	INTERSTATE_RAMPS_25MPH_06	6	8.95		4.77		2.04	

Speed	Description	Roadway Grade	2016		2025		2040	
			Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)
0	INTERSTATE_RAMPS_QUEUE	0		**17.47**		**4.01**		**0.80**
55	OTHERFREEWAY_55MPH_00	0	2.89		1.51		0.62	
55	OTHERFREEWAY_55MPH_01	1	3.74		2.04		0.89	
55	OTHERFREEWAY_55MPH_02	2	4.80		2.69		1.23	
55	OTHERFREEWAY_55MPH_03	3	6.19		3.50		1.63	
55	OTHERFREEWAY_55MPH_04	4	7.81		4.41		2.08	
55	OTHERFREEWAY_55MPH_05	5	9.65		5.46		2.58	
55	OTHERFREEWAY_55MPH_06	6	11.82		6.72		3.19	
50	OTHERFREEWAY_50MPH_00	0	2.97		1.53		0.62	
50	OTHERFREEWAY_50MPH_01	1	3.79		2.04		0.88	
50	OTHERFREEWAY_50MPH_02	2	4.81		2.66		1.20	
50	OTHERFREEWAY_50MPH_03	3	6.04		3.40		1.57	
50	OTHERFREEWAY_50MPH_04	4	7.56		4.26		2.00	
50	OTHERFREEWAY_50MPH_05	5	9.35		5.28		2.49	
50	OTHERFREEWAY_50MPH_06	6	11.29		6.40		3.03	
45	OTHERFREEWAY_45MPH_00	0	3.06		1.56		0.62	
45	OTHERFREEWAY_45MPH_01	1	3.85		2.05		0.87	
45	OTHERFREEWAY_45MPH_02	2	4.80		2.62		1.16	
45	OTHERFREEWAY_45MPH_03	3	5.89		3.28		1.49	
45	OTHERFREEWAY_45MPH_04	4	7.29		4.10		1.90	
45	OTHERFREEWAY_45MPH_05	5	9.01		5.07		2.37	
45	OTHERFREEWAY_45MPH_06	6	10.71		6.03		2.84	
35	OTHERFREEWAY_35MPH_00	0	3.33		1.68		0.64	
35	OTHERFREEWAY_35MPH_01	1	3.93		2.03		0.81	
35	OTHERFREEWAY_35MPH_02	2	4.66		2.45		1.01	
35	OTHERFREEWAY_35MPH_03	3	5.60		3.02		1.30	
35	OTHERFREEWAY_35MPH_04	4	6.70		3.65		1.60	
35	OTHERFREEWAY_35MPH_05	5	8.11		4.45		1.99	
35	OTHERFREEWAY_35MPH_06	6	9.52		5.26		2.38	
0	OTHERFREEWAY_QUEUE	0		**17.66**		**4.06**		**0.83**
45	MAJOR_ARTERIAL_45MPH_00	0	3.12		1.61		0.65	
45	MAJOR_ARTERIAL_45MPH_01	1	3.91		2.09		0.88	
45	MAJOR_ARTERIAL_45MPH_02	2	4.85		2.64		1.16	
45	MAJOR_ARTERIAL_45MPH_03	3	6.01		3.32		1.49	
45	MAJOR_ARTERIAL_45MPH_04	4	7.51		4.19		1.93	
45	MAJOR_ARTERIAL_45MPH_05	5	9.16		5.16		2.40	
45	MAJOR_ARTERIAL_45MPH_06	6	10.89		6.18		2.90	
40	MAJOR_ARTERIAL_40MPH_00	0	3.31		1.70		0.67	
40	MAJOR_ARTERIAL_40MPH_01	1	4.06		2.15		0.89	
40	MAJOR_ARTERIAL_40MPH_02	2	4.95		2.67		1.14	
40	MAJOR_ARTERIAL_40MPH_03	3	5.97		3.26		1.43	
40	MAJOR_ARTERIAL_40MPH_04	4	7.35		4.06		1.82	
40	MAJOR_ARTERIAL_40MPH_05	5	8.86		4.96		2.27	

Speed	Description	Roadway Grade	2016		2025		2040	
			Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)
40	MAJOR_ARTERIAL_40MPH_06	6	10.49		5.94		2.75	
35	MAJOR_ARTERIAL_35MPH_00	0	3.59		1.86		0.72	
35	MAJOR_ARTERIAL_35MPH_01	1	4.24		2.23		0.90	
35	MAJOR_ARTERIAL_35MPH_02	2	5.10		2.72		1.13	
35	MAJOR_ARTERIAL_35MPH_03	3	5.97		3.22		1.37	
35	MAJOR_ARTERIAL_35MPH_04	4	7.11		3.88		1.69	
35	MAJOR_ARTERIAL_35MPH_05	5	8.46		4.69		2.09	
35	MAJOR_ARTERIAL_35MPH_06	6	10.05		5.67		2.59	
0	MAJOR_ARTERIAL_QUEUE	0		**17.83**		**4.17**		**0.91**
45	MAJOR_COLLECTOR_45MPH_00	0	3.13		1.62		0.66	
45	MAJOR_COLLECTOR_45MPH_01	1	3.92		2.09		0.89	
45	MAJOR_COLLECTOR_45MPH_02	2	4.86		2.65		1.17	
45	MAJOR_COLLECTOR_45MPH_03	3	6.02		3.33		1.50	
45	MAJOR_COLLECTOR_45MPH_04	4	7.51		4.20		1.94	
45	MAJOR_COLLECTOR_45MPH_05	5	9.16		5.17		2.41	
45	MAJOR_COLLECTOR_45MPH_06	6	10.89		6.18		2.91	
35	MAJOR_COLLECTOR_35MPH_00	0	3.60		1.86		0.73	
35	MAJOR_COLLECTOR_35MPH_01	1	4.25		2.24		0.91	
35	MAJOR_COLLECTOR_35MPH_02	2	5.10		2.73		1.14	
35	MAJOR_COLLECTOR_35MPH_03	3	5.97		3.23		1.38	
35	MAJOR_COLLECTOR_35MPH_04	4	7.11		3.88		1.69	
35	MAJOR_COLLECTOR_35MPH_05	5	8.46		4.69		2.10	
35	MAJOR_COLLECTOR_35MPH_06	6	10.04		5.68		2.60	
25	MAJOR_COLLECTOR_25MPH_00	0	4.24		2.14		0.79	
25	MAJOR_COLLECTOR_25MPH_01	1	4.88		2.51		0.97	
25	MAJOR_COLLECTOR_25MPH_02	2	5.51		2.88		1.16	
25	MAJOR_COLLECTOR_25MPH_03	3	6.16		3.25		1.33	
25	MAJOR_COLLECTOR_25MPH_04	4	7.15		3.85		1.62	
25	MAJOR_COLLECTOR_25MPH_05	5	8.81		4.89		2.14	
25	MAJOR_COLLECTOR_25MPH_06	6	10.01		5.63		2.51	
0	MAJOR_COLLECTOR_QUEUE	0		**17.92**		**4.27**		**0.99**
45	MINOR_ARTERIAL_45MPH_00	0	3.04		1.59		0.64	
45	MINOR_ARTERIAL_45MPH_01	1	3.83		2.06		0.88	
45	MINOR_ARTERIAL_45MPH_02	2	4.75		2.61		1.15	
45	MINOR_ARTERIAL_45MPH_03	3	5.89		3.29		1.49	
45	MINOR_ARTERIAL_45MPH_04	4	7.37		4.16		1.92	
45	MINOR_ARTERIAL_45MPH_05	5	9.01		5.13		2.40	
45	MINOR_ARTERIAL_45MPH_06	6	10.72		6.15		2.90	
35	MINOR_ARTERIAL_35MPH_00	0	3.51		1.83		0.72	
35	MINOR_ARTERIAL_35MPH_01	1	4.15		2.20		0.89	
35	MINOR_ARTERIAL_35MPH_02	2	4.98		2.69		1.12	
35	MINOR_ARTERIAL_35MPH_03	3	5.83		3.19		1.36	
35	MINOR_ARTERIAL_35MPH_04	4	6.95		3.84		1.68	

Speed	Description	Roadway Grade	2016		2025		2040	
			Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)
35	MINOR_ARTERIAL_35MPH_05	5	8.28		4.65		2.08	
35	MINOR_ARTERIAL_35MPH_06	6	9.86		5.63		2.59	
25	MINOR_ARTERIAL_25MPH_00	0	4.13		2.10		0.78	
25	MINOR_ARTERIAL_25MPH_01	1	4.75		2.47		0.96	
25	MINOR_ARTERIAL_25MPH_02	2	5.36		2.83		1.14	
25	MINOR_ARTERIAL_25MPH_03	3	5.98		3.20		1.31	
25	MINOR_ARTERIAL_25MPH_04	4	6.95		3.79		1.60	
25	MINOR_ARTERIAL_25MPH_05	5	8.60		4.83		2.12	
25	MINOR_ARTERIAL_25MPH_06	6	9.78		5.56		2.50	
0	MINOR_ARTERIAL_QUEUE	0		**17.56**		**4.09**		**0.88**
25	LOCAL_25MPH_00	0	4.31		2.15		0.80	
25	LOCAL_25MPH_01	1	4.97		2.54		0.98	
25	LOCAL_25MPH_02	2	5.63		2.91		1.17	
25	LOCAL_25MPH_03	3	6.29		3.28		1.34	
25	LOCAL_25MPH_04	4	7.30		3.88		1.63	
25	LOCAL_25MPH_05	5	8.96		4.91		2.15	
25	LOCAL_25MPH_06	6	10.17		5.65		2.51	
0	LOCAL_QUEUE	0		**18.02**		**4.36**		**1.03**

Notes: Grams per mile is denoted as (g/mi), grams per hour denoted as (g/hr)

Table 3-27: MOVES2014b Montgomery County Emission Factor Results

Speed	Description	Roadway Grade	2016		2025		2040	
			Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)
65	INTERSTATE_65MPH_00	0	2.75		1.61		0.70	
65	INTERSTATE_65MPH_01	1	3.80		2.30		1.05	
65	INTERSTATE_65MPH_02	2	4.98		3.06		1.43	
65	INTERSTATE_65MPH_03	3	6.40		3.95		1.86	
65	INTERSTATE_65MPH_04	4	8.08		5.03		2.39	
65	INTERSTATE_65MPH_05	5	10.17		6.38		3.04	
65	INTERSTATE_65MPH_06	6	12.06		7.60		3.62	
60	INTERSTATE_60MPH_00	0	2.58		1.49		0.62	
60	INTERSTATE_60MPH_01	1	3.43		2.06		0.92	
60	INTERSTATE_60MPH_02	2	4.51		2.76		1.26	
60	INTERSTATE_60MPH_03	3	5.89		3.61		1.68	
60	INTERSTATE_60MPH_04	4	7.38		4.56		2.14	
60	INTERSTATE_60MPH_05	5	9.14		5.69		2.69	
60	INTERSTATE_60MPH_06	6	11.18		7.01		3.32	
55	INTERSTATE_55MPH_00	0	2.62		1.49		0.61	
55	INTERSTATE_55MPH_01	1	3.41		2.02		0.88	
55	INTERSTATE_55MPH_02	2	4.41		2.67		1.21	
55	INTERSTATE_55MPH_03	3	5.68		3.48		1.61	
55	INTERSTATE_55MPH_04	4	7.13		4.38		2.04	

Speed	Description	Roadway Grade	2016		2025		2040	
			Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)
55	INTERSTATE_55MPH_05	5	8.76		5.41		2.54	
55	INTERSTATE_55MPH_06	6	10.69		6.66		3.14	
45	INTERSTATE_RAMPS_45MPH_00	0	2.77		1.54		0.62	
45	INTERSTATE_RAMPS_45MPH_01	1	3.52		2.03		0.86	
45	INTERSTATE_RAMPS_45MPH_02	2	4.42		2.61		1.14	
45	INTERSTATE_RAMPS_45MPH_03	3	5.44		3.27		1.47	
45	INTERSTATE_RAMPS_45MPH_04	4	6.73		4.08		1.88	
45	INTERSTATE_RAMPS_45MPH_05	5	8.27		5.05		2.34	
45	INTERSTATE_RAMPS_45MPH_06	6	9.78		6.00		2.80	
35	INTERSTATE_RAMPS_35MPH_00	0	3.04		1.67		0.64	
35	INTERSTATE_RAMPS_35MPH_01	1	3.61		2.03		0.80	
35	INTERSTATE_RAMPS_35MPH_02	2	4.31		2.45		1.00	
35	INTERSTATE_RAMPS_35MPH_03	3	5.20		3.02		1.28	
35	INTERSTATE_RAMPS_35MPH_04	4	6.22		3.65		1.58	
35	INTERSTATE_RAMPS_35MPH_05	5	7.51		4.45		1.97	
35	INTERSTATE_RAMPS_35MPH_06	6	8.79		5.25		2.35	
25	INTERSTATE_RAMPS_25MPH_00	0	3.48		1.89		0.68	
25	INTERSTATE_RAMPS_25MPH_01	1	3.98		2.16		0.80	
25	INTERSTATE_RAMPS_25MPH_02	2	4.57		2.49		0.94	
25	INTERSTATE_RAMPS_25MPH_03	3	5.33		2.95		1.15	
25	INTERSTATE_RAMPS_25MPH_04	4	6.16		3.45		1.39	
25	INTERSTATE_RAMPS_25MPH_05	5	7.15		4.06		1.68	
25	INTERSTATE_RAMPS_25MPH_06	6	8.31		4.80		2.04	
0	INTERSTATE_RAMPS_QUEUE	0		**13.64**		**3.77**		**0.80**
55	OTHERFREEWAY_55MPH_00	0	2.61		1.50		0.62	
55	OTHERFREEWAY_55MPH_01	1	3.40		2.03		0.89	
55	OTHERFREEWAY_55MPH_02	2	4.39		2.69		1.22	
55	OTHERFREEWAY_55MPH_03	3	5.67		3.50		1.63	
55	OTHERFREEWAY_55MPH_04	4	7.12		4.41		2.07	
55	OTHERFREEWAY_55MPH_05	5	8.76		5.46		2.57	
55	OTHERFREEWAY_55MPH_06	6	10.70		6.72		3.18	
50	OTHERFREEWAY_50MPH_00	0	2.68		1.52		0.62	
50	OTHERFREEWAY_50MPH_01	1	3.45		2.04		0.88	
50	OTHERFREEWAY_50MPH_02	2	4.40		2.66		1.19	
50	OTHERFREEWAY_50MPH_03	3	5.54		3.40		1.56	
50	OTHERFREEWAY_50MPH_04	4	6.92		4.27		1.99	
50	OTHERFREEWAY_50MPH_05	5	8.52		5.29		2.48	
50	OTHERFREEWAY_50MPH_06	6	10.25		6.40		3.02	
45	OTHERFREEWAY_45MPH_00	0	2.76		1.55		0.62	
45	OTHERFREEWAY_45MPH_01	1	3.50		2.04		0.86	
45	OTHERFREEWAY_45MPH_02	2	4.39		2.62		1.15	
45	OTHERFREEWAY_45MPH_03	3	5.41		3.28		1.49	
45	OTHERFREEWAY_45MPH_04	4	6.69		4.10		1.89	

Speed	Description	Roadway Grade	2016		2025		2040	
			Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)
45	OTHERFREEWAY_45MPH_05	5	8.23		5.08		2.37	
45	OTHERFREEWAY_45MPH_06	6	9.75		6.04		2.83	
35	OTHERFREEWAY_35MPH_00	0	3.02		1.68		0.64	
35	OTHERFREEWAY_35MPH_01	1	3.58		2.03		0.81	
35	OTHERFREEWAY_35MPH_02	2	4.27		2.45		1.01	
35	OTHERFREEWAY_35MPH_03	3	5.15		3.02		1.29	
35	OTHERFREEWAY_35MPH_04	4	6.16		3.65		1.60	
35	OTHERFREEWAY_35MPH_05	5	7.45		4.46		1.99	
35	OTHERFREEWAY_35MPH_06	6	8.73		5.27		2.37	
0	OTHERFREEWAY_QUEUE	0		**13.72**		**3.80**		**0.83**
45	MAJOR_ARTERIAL_45MPH_00	0	2.83		1.60		0.65	
45	MAJOR_ARTERIAL_45MPH_01	1	3.56		2.08		0.88	
45	MAJOR_ARTERIAL_45MPH_02	2	4.44		2.64		1.15	
45	MAJOR_ARTERIAL_45MPH_03	3	5.52		3.32		1.49	
45	MAJOR_ARTERIAL_45MPH_04	4	6.89		4.20		1.92	
45	MAJOR_ARTERIAL_45MPH_05	5	8.39		5.17		2.39	
45	MAJOR_ARTERIAL_45MPH_06	6	9.96		6.19		2.89	
40	MAJOR_ARTERIAL_40MPH_00	0	3.00		1.70		0.67	
40	MAJOR_ARTERIAL_40MPH_01	1	3.70		2.15		0.89	
40	MAJOR_ARTERIAL_40MPH_02	2	4.54		2.67		1.14	
40	MAJOR_ARTERIAL_40MPH_03	3	5.48		3.26		1.42	
40	MAJOR_ARTERIAL_40MPH_04	4	6.75		4.07		1.82	
40	MAJOR_ARTERIAL_40MPH_05	5	8.14		4.97		2.26	
40	MAJOR_ARTERIAL_40MPH_06	6	9.62		5.95		2.74	
35	MAJOR_ARTERIAL_35MPH_00	0	3.27		1.85		0.72	
35	MAJOR_ARTERIAL_35MPH_01	1	3.87		2.23		0.90	
35	MAJOR_ARTERIAL_35MPH_02	2	4.68		2.73		1.13	
35	MAJOR_ARTERIAL_35MPH_03	3	5.49		3.23		1.36	
35	MAJOR_ARTERIAL_35MPH_04	4	6.54		3.89		1.68	
35	MAJOR_ARTERIAL_35MPH_05	5	7.79		4.70		2.08	
35	MAJOR_ARTERIAL_35MPH_06	6	9.27		5.69		2.58	
0	MAJOR_ARTERIAL_QUEUE	0		**13.89**		**3.92**		**0.90**
45	MAJOR_COLLECTOR_45MPH_00	0	2.83		1.61		0.65	
45	MAJOR_COLLECTOR_45MPH_01	1	3.57		2.09		0.89	
45	MAJOR_COLLECTOR_45MPH_02	2	4.45		2.65		1.16	
45	MAJOR_COLLECTOR_45MPH_03	3	5.52		3.33		1.50	
45	MAJOR_COLLECTOR_45MPH_04	4	6.89		4.21		1.93	
45	MAJOR_COLLECTOR_45MPH_05	5	8.39		5.17		2.40	
45	MAJOR_COLLECTOR_45MPH_06	6	9.95		6.19		2.90	
35	MAJOR_COLLECTOR_35MPH_00	0	3.27		1.86		0.73	
35	MAJOR_COLLECTOR_35MPH_01	1	3.88		2.24		0.90	
35	MAJOR_COLLECTOR_35MPH_02	2	4.68		2.73		1.14	
35	MAJOR_COLLECTOR_35MPH_03	3	5.49		3.23		1.37	

Speed	Description	Roadway Grade	2016		2025		2040	
			Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)	Emission Factor (g/mi)	Emission Factor (g/hr)
35	MAJOR_COLLECTOR_35MPH_04	4	6.54		3.89		1.69	
35	MAJOR_COLLECTOR_35MPH_05	5	7.79		4.71		2.09	
35	MAJOR_COLLECTOR_35MPH_06	6	9.26		5.69		2.59	
25	MAJOR_COLLECTOR_25MPH_00	0	3.84		2.13		0.79	
25	MAJOR_COLLECTOR_25MPH_01	1	4.46		2.51		0.97	
25	MAJOR_COLLECTOR_25MPH_02	2	5.07		2.89		1.15	
25	MAJOR_COLLECTOR_25MPH_03	3	5.69		3.26		1.32	
25	MAJOR_COLLECTOR_25MPH_04	4	6.62		3.86		1.61	
25	MAJOR_COLLECTOR_25MPH_05	5	8.17		4.91		2.14	
25	MAJOR_COLLECTOR_25MPH_06	6	9.30		5.65		2.51	
0	MAJOR_COLLECTOR_QUEUE	0		**13.99**		**4.02**		**0.99**
45	MINOR_ARTERIAL_45MPH_00	0	2.75		1.58		0.64	
45	MINOR_ARTERIAL_45MPH_01	1	3.47		2.05		0.87	
45	MINOR_ARTERIAL_45MPH_02	2	4.33		2.61		1.15	
45	MINOR_ARTERIAL_45MPH_03	3	5.38		3.28		1.48	
45	MINOR_ARTERIAL_45MPH_04	4	6.73		4.16		1.92	
45	MINOR_ARTERIAL_45MPH_05	5	8.21		5.13		2.39	
45	MINOR_ARTERIAL_45MPH_06	6	9.76		6.15		2.89	
35	MINOR_ARTERIAL_35MPH_00	0	3.18		1.82		0.71	
35	MINOR_ARTERIAL_35MPH_01	1	3.77		2.19		0.89	
35	MINOR_ARTERIAL_35MPH_02	2	4.55		2.68		1.12	
35	MINOR_ARTERIAL_35MPH_03	3	5.33		3.18		1.36	
35	MINOR_ARTERIAL_35MPH_04	4	6.36		3.84		1.67	
35	MINOR_ARTERIAL_35MPH_05	5	7.59		4.65		2.07	
35	MINOR_ARTERIAL_35MPH_06	6	9.05		5.63		2.58	
25	MINOR_ARTERIAL_25MPH_00	0	3.73		2.08		0.77	
25	MINOR_ARTERIAL_25MPH_01	1	4.32		2.46		0.95	
25	MINOR_ARTERIAL_25MPH_02	2	4.90		2.83		1.13	
25	MINOR_ARTERIAL_25MPH_03	3	5.49		3.20		1.30	
25	MINOR_ARTERIAL_25MPH_04	4	6.40		3.79		1.59	
25	MINOR_ARTERIAL_25MPH_05	5	7.94		4.83		2.12	
25	MINOR_ARTERIAL_25MPH_06	6	9.04		5.57		2.49	
0	MINOR_ARTERIAL_QUEUE	0		**13.62**		**3.82**		**0.88**
25	LOCAL_25MPH_00	0	3.93		2.15		0.80	
25	LOCAL_25MPH_01	1	4.57		2.54		0.98	
25	LOCAL_25MPH_02	2	5.21		2.93		1.16	
25	LOCAL_25MPH_03	3	5.85		3.31		1.33	
25	LOCAL_25MPH_04	4	6.80		3.90		1.62	
25	LOCAL_25MPH_05	5	8.36		4.94		2.14	
25	LOCAL_25MPH_06	6	9.51		5.68		2.51	
0	LOCAL_QUEUE	0		**14.17**		**4.12**		**1.03**

Notes: Grams per mile is denoted as (g/mi), grams per hour denoted as (g/hr)

E. Dispersion Modeling Scenarios

Normally, the worst case ranked intersection and interchanges would be modeled individually for comparison to the NAAQS in order to evaluate CO impacts for each Alternative. As shown in Tables 3-26 and 3-27, CO emission factors are expected to decline over time due to improved fuel quality and continued fleet turnover to vehicles constructed to more stringent exhaust emission standards for CO. Therefore, future CO impacts from the Screened Alternatives are not expected to exceed the NAAQS and existing CO concentrations at worst case intersection and interchanges are expected to be higher than those for 2025 and 2040. Therefore, in an effort to streamline the CO analysis, a screening analysis was conducted using a worst-case modeling approach for interchanges and intersections in lieu of separate Alternative analysis. This worst-case screening approach has been used by other state Departments of Transportation for NEPA purposes and has been reviewed by FHWA. The worst-case assumptions serve to overestimate the project's CO emissions and concentrations. Worst-case traffic volumes (set at the theoretical per lane maximum 2,200 vehicles per hour per lane [vphpl])[27] were assumed for the CO analyses at the worst-case interchanges and intersections. This is a conservative assumption as the worst-case traffic volumes tend to be significantly higher than the forecast design and opening year modeled volumes. In addition, ramp lanes tend to accommodate fewer vehicles per hour, but this conservative approach assumes full utilization at a capacity of a mainline travel lane. The screening analysis was conducted for 2016, 2025 and 2040 Build and No Build scenarios for the worst-case intersections and interchanges. Since the intersections and interchanges are common to all alternatives, they would all be covered by the screening analysis. For the No Build analysis, forecasted No Build traffic volumes were used for each worst-case intersection and interchange.

F. Dispersion Modeling

The latest version of the CAL3QHC model (04244) was used to predict worst-case 1-hour CO concentrations from free-flow links using the latest version of the FHWA CAL3i. CAL3i is a software package that incorporates the EPA CAL3QHC dispersion model and various worst-case default parameters per EPA guidance. The peak 1-hour concentrations from CAL3QHC were scaled by a persistence factor of 0.70 (EPA default) to estimate 8-hour concentrations. A summary of inputs used in the CAL3Interface model are shown in **Table 3-28**.

Table 3-28: Summary of CAL3QHC Input Parameters

CAL3QHC Parameters	Worst-Case Analysis Inputs
Surface Roughness Coefficient	108 centimeters
Background CO Concentrations	1-hour: 1.9 ppm 8-hour: 0.8 ppm
Wind Speed	1.0 m/s
Stability Class	Urban D
Mixing Height	1,000 meters
Wind Direction	10-degree increments
Volumes (VPH)	Worst-Case or Project Specific
Saturation Flow Rates	1,600 vphpl (CAL3QHC default)[1]

[27] Highway Capacity Manual: A Guide for Multimodal Mobility Analysis, Version 6.0, Exhibit 12-4

CAL3QHC Parameters	Worst-Case Analysis Inputs
Signal Type	1=pretimed, clearance lost time=2 seconds
Arrival Rate	3=average
Average Cycle Length	120 seconds
Average Red Time	62 seconds

Notes: CAL3QHC saturation flow of 1,600 vphpl is for default for signalized intersections for each queue line.

Worst-case modeled concentrations from CAL3QHC were added to appropriate background CO concentrations in the affected intersection/interchange area of Montgomery and Prince Georges counties for comparison to the NAAQS. The 1-hour and 8-hour CO background concentrations were based on the most recent (2016) design values for Prince George's County[28]. Prince George's County was chosen as there is no data available for Montgomery County. Therefore, a 1-hour background concentration of 1.9 ppm and an 8-hour background concentration of 0.8 ppm were added to modeled results. CAL3QHC Input and Output files are contained in **Appendix E**.

G. Receptors

Receptor locations are placed in the vicinity of each interchange and intersection at worst-case locations such as sidewalks, property lines, and parking lots where the public generally has access. For worst-case analyses for freeways, receptors are placed 20 feet from the roadway edge; for arterial streets (including intersections), the receptors are placed 10 feet from the roadway edge (i.e., at the nearest possible location for the model, which assumes a 10-foot mixing zone next to the roadway).

Receptor locations for each worst-case interchange and intersection were generated in CAL3i consistent with EPA modeling guidelines which indicate the receptors must be located a minimum of 3 meters from the edge of the roadway and positioned at a height of 1.8 meters (5.9 feet) above the ground. **Figure 3-5** through **Figure 3-26** shows the receptor locations (in blue along with the roadway geometry in green) at the interchanges and intersections as displayed in the CAL3i interface. The modeled conditions are conservative as the theoretical worst-case traffic volumes along with other assumptions were applied which together would serve to overestimate impacts and yield conservative results. If the peak CO concentrations at the worst-case areas selected in the analysis are below the NAAQS for CO, it is assumed that all other locations in the corridor would also remain below the thresholds.

[28] USEPA Air Quality Design Values. https://www.epa.gov/air-trends/air-quality-design-values#report Last accessed on 4/30/2018.

Figure 3-5: MD 5 and Authority Road Receptor Locations



Figure 3-6: MD 97 and Inner Loop Ramp Receptor Locations

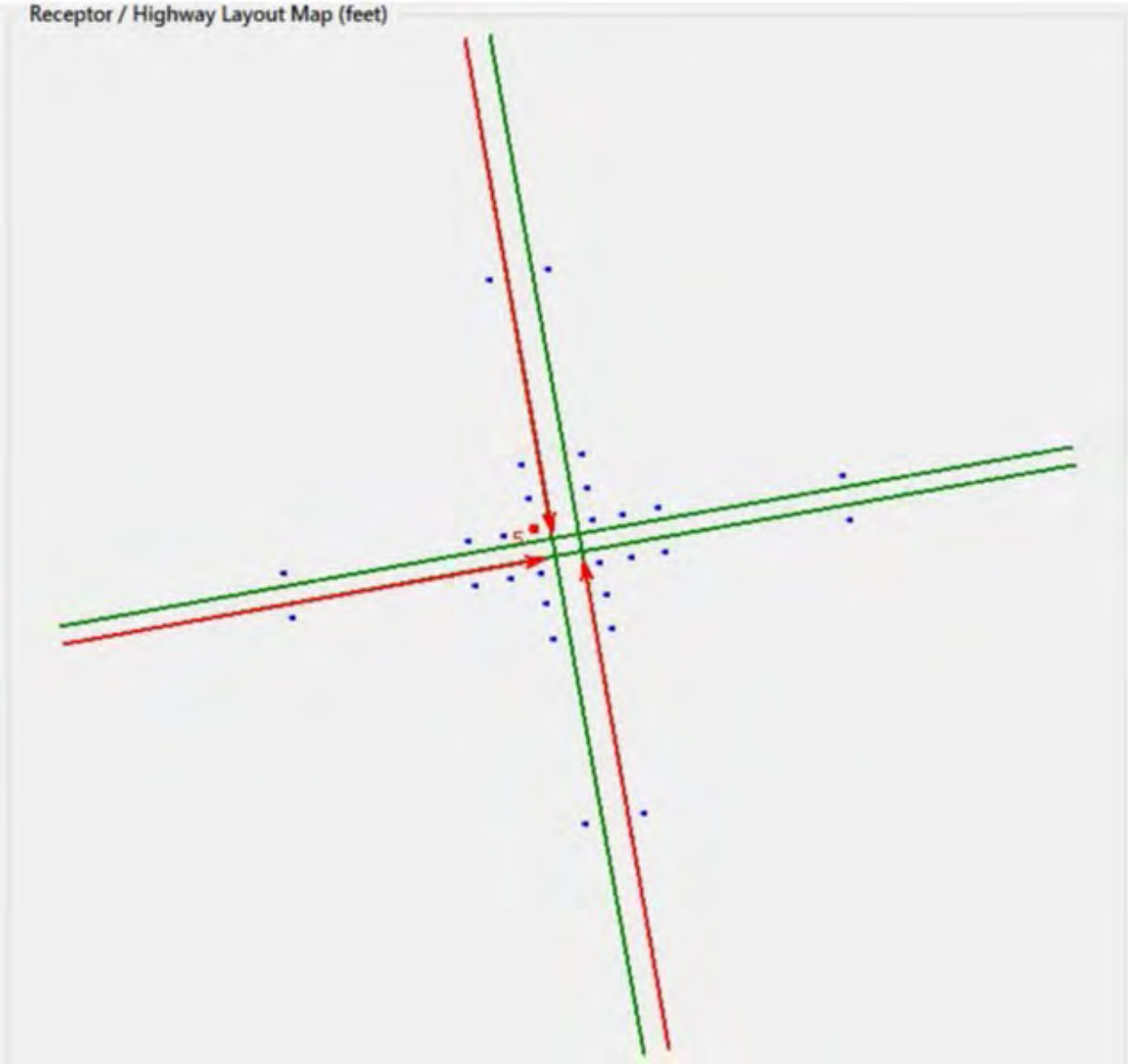


Figure 3-7: MD 187 and I-270 South Bound Ramp Receptor Locations

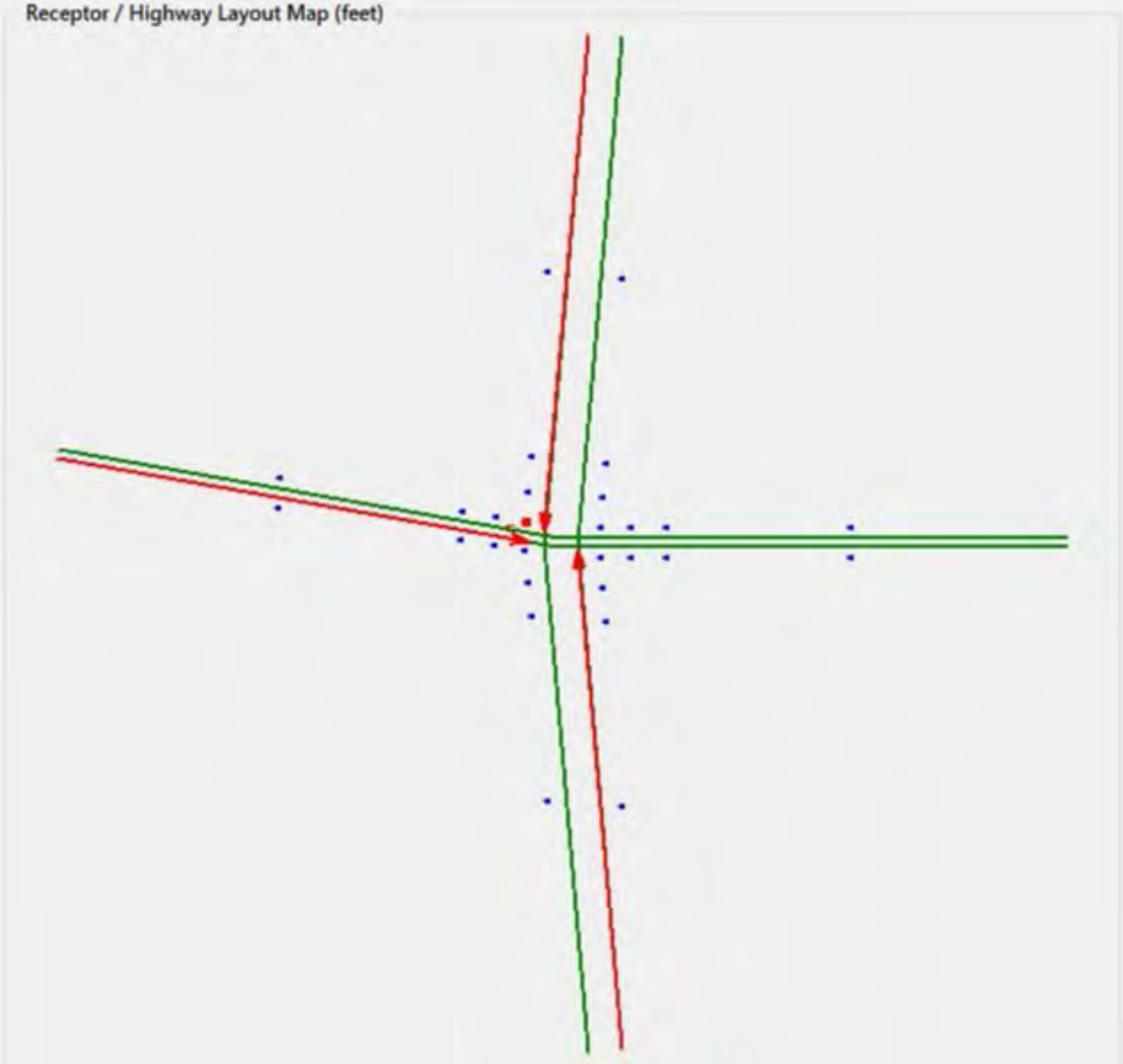


Figure 3-8: US 29 and Direct Access Ramp 2 HOT Lanes Receptor Locations

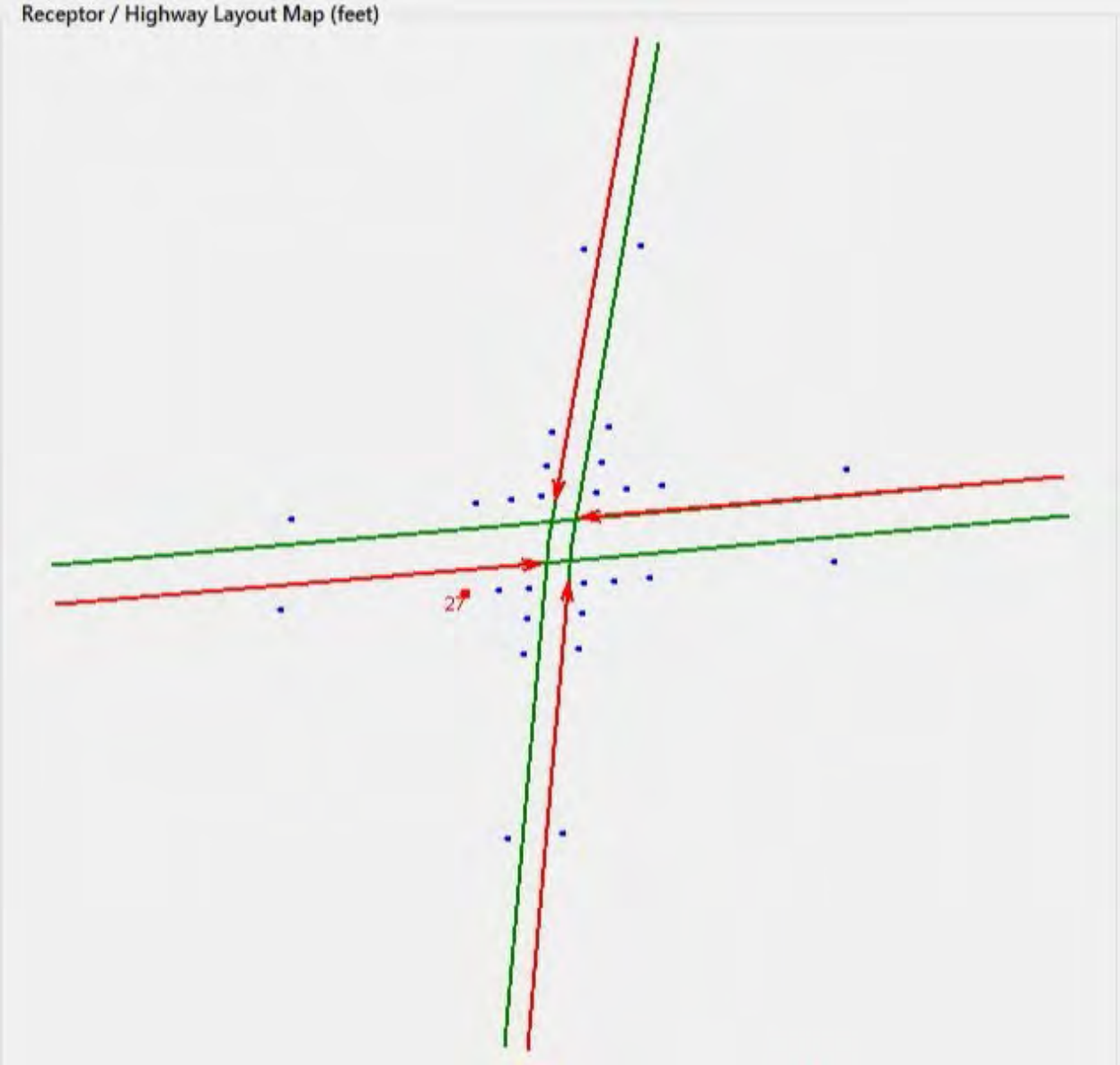


Figure 3-9: US 29 and Direct Access Ramp ALT 5 Receptor Locations

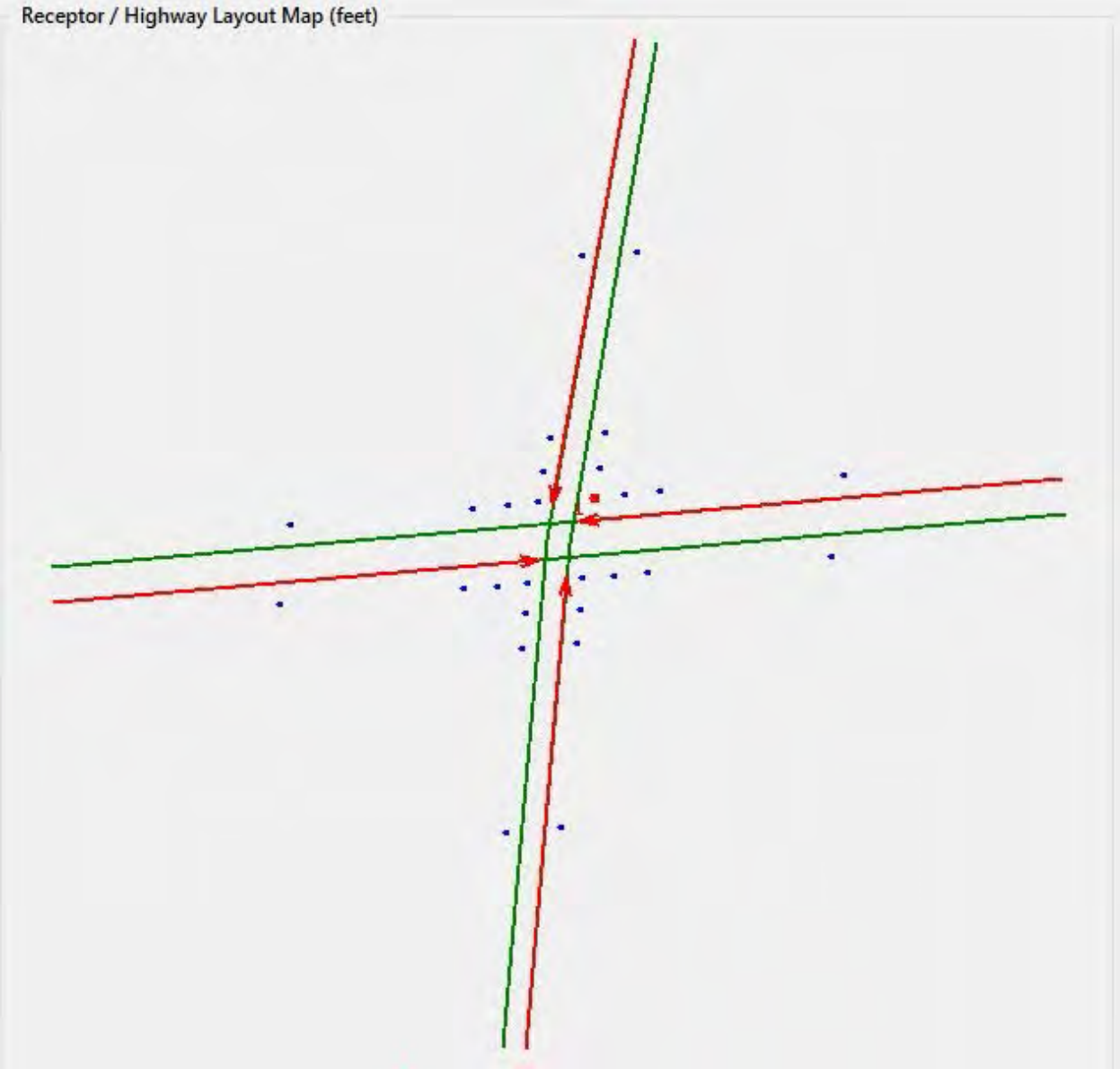


Figure 3-10: US 29 and Inner Loop Ramp Receptor Locations

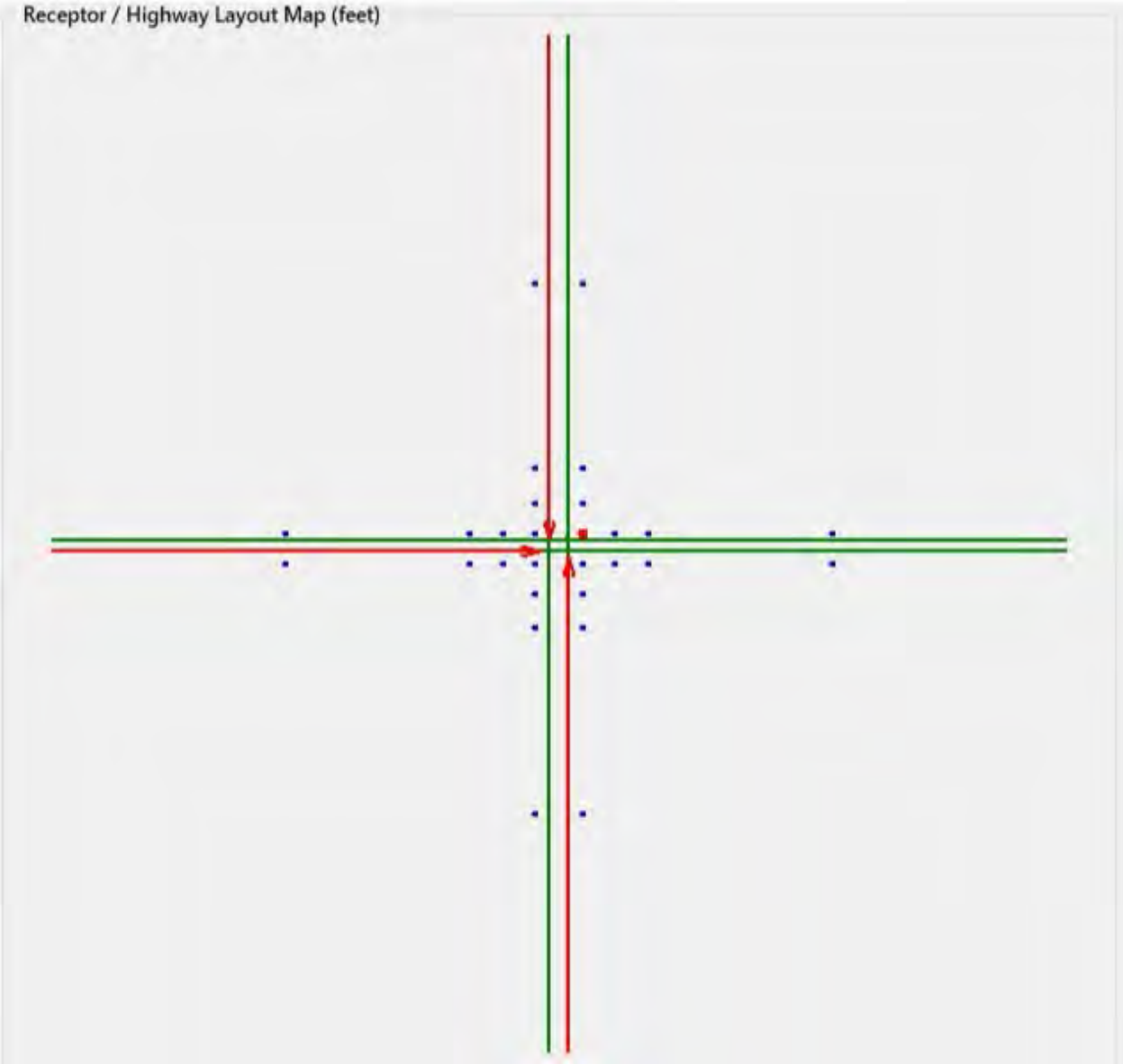


Figure 3-11: US 29 and Outer Loop Ramp Receptor Locations



Figure 3-12: I-270 and I-370 Receptor Locations

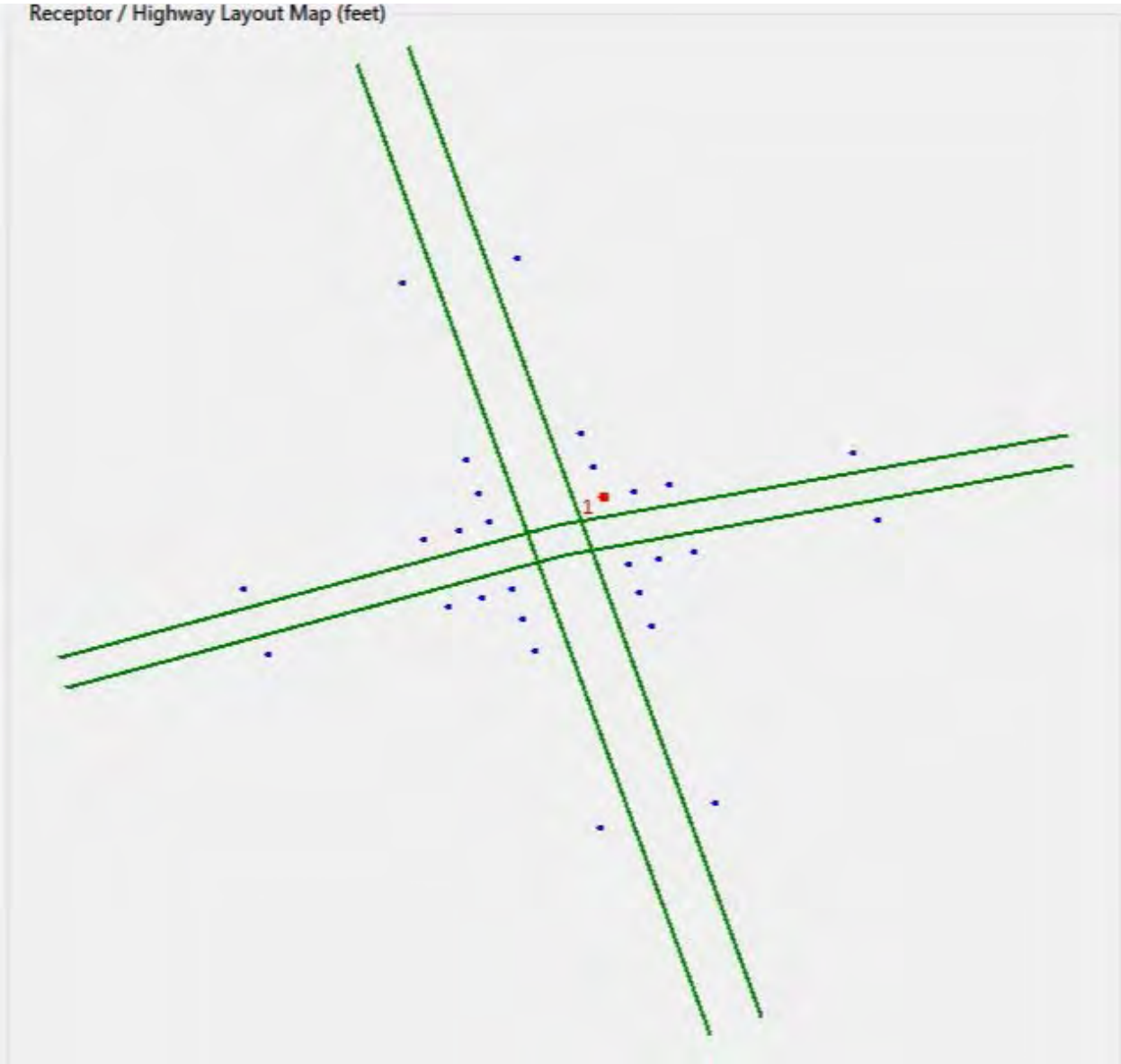


Figure 3-13: I-270 and MD189 Receptor Locations



Figure 3-14: I-495 and I-95 Receptor Locations

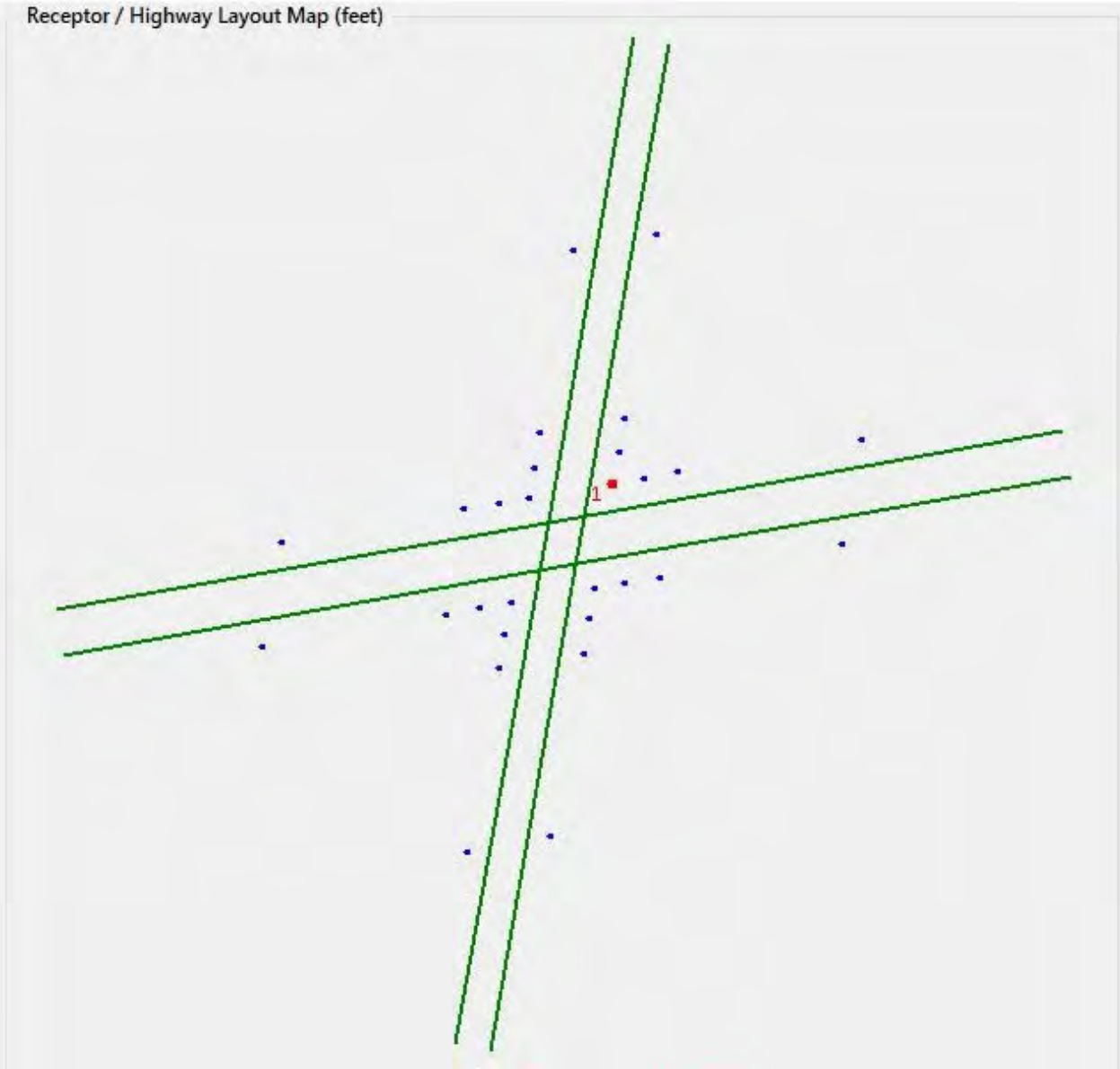


Figure 3-15: I-495 and I-270 and MD 355 Receptor Locations

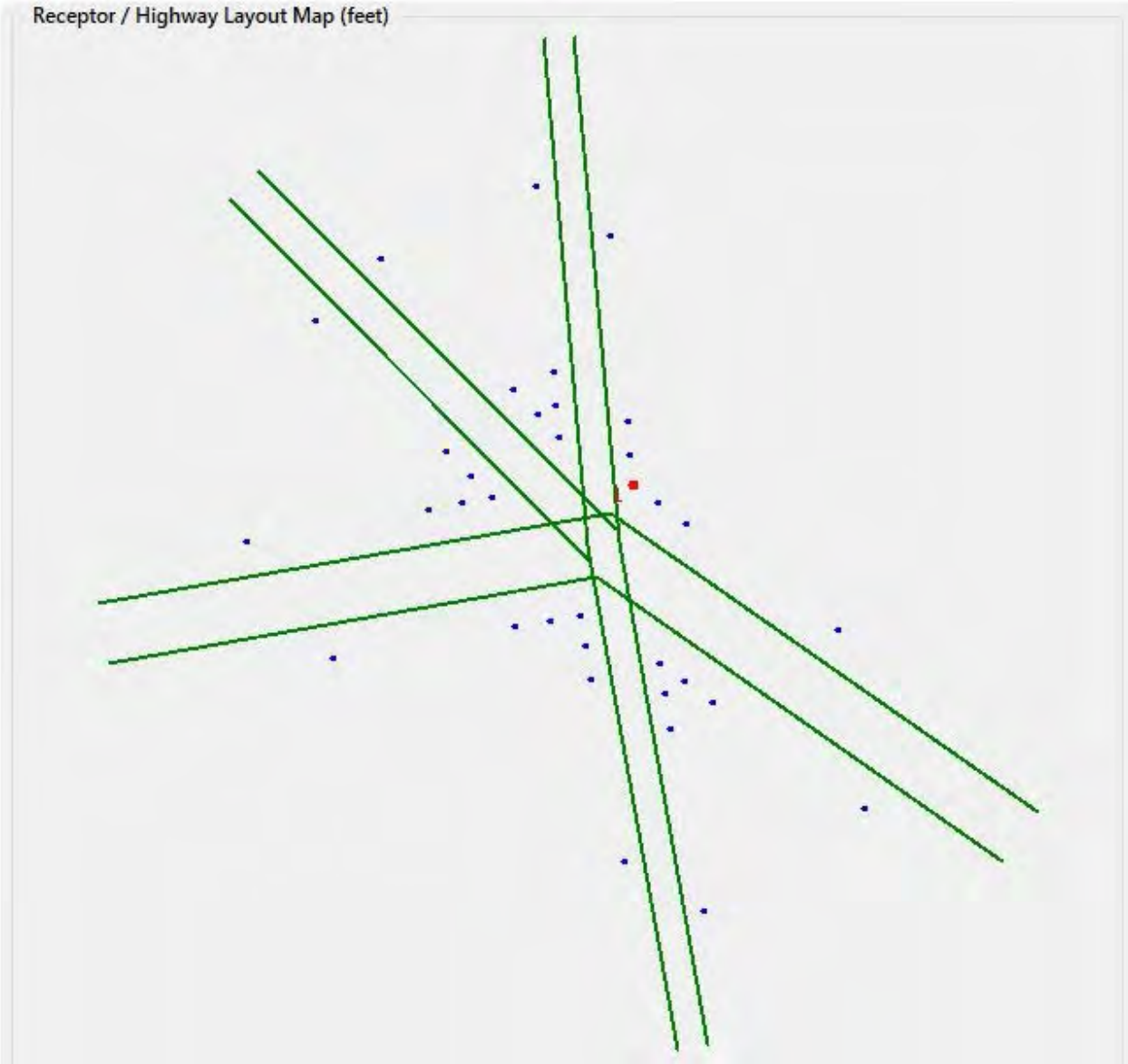


Figure 3-16: I-495 and I-270 Spur Receptor Locations

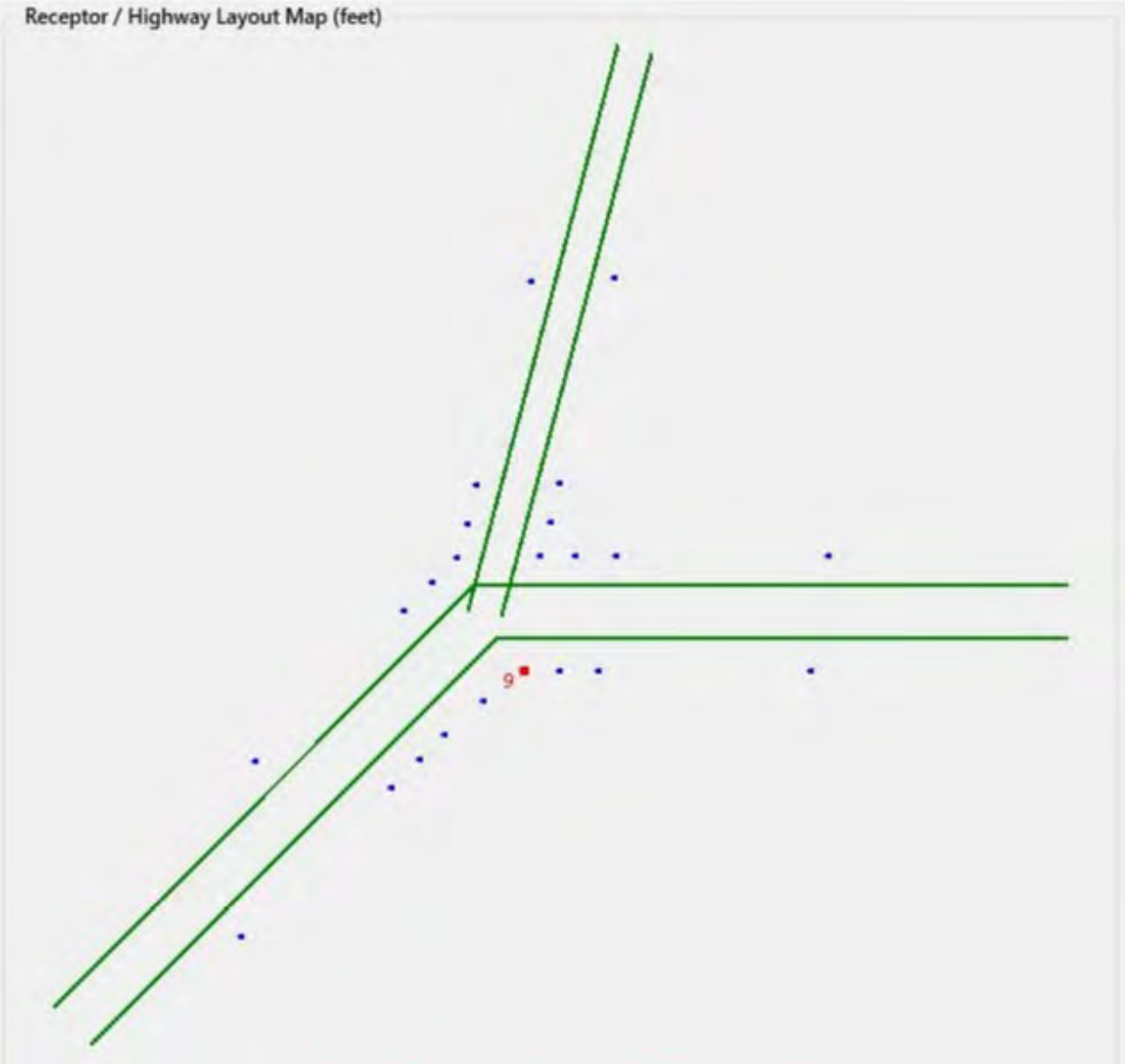


Figure 3-17: I-495 and MD 193 Receptor Locations

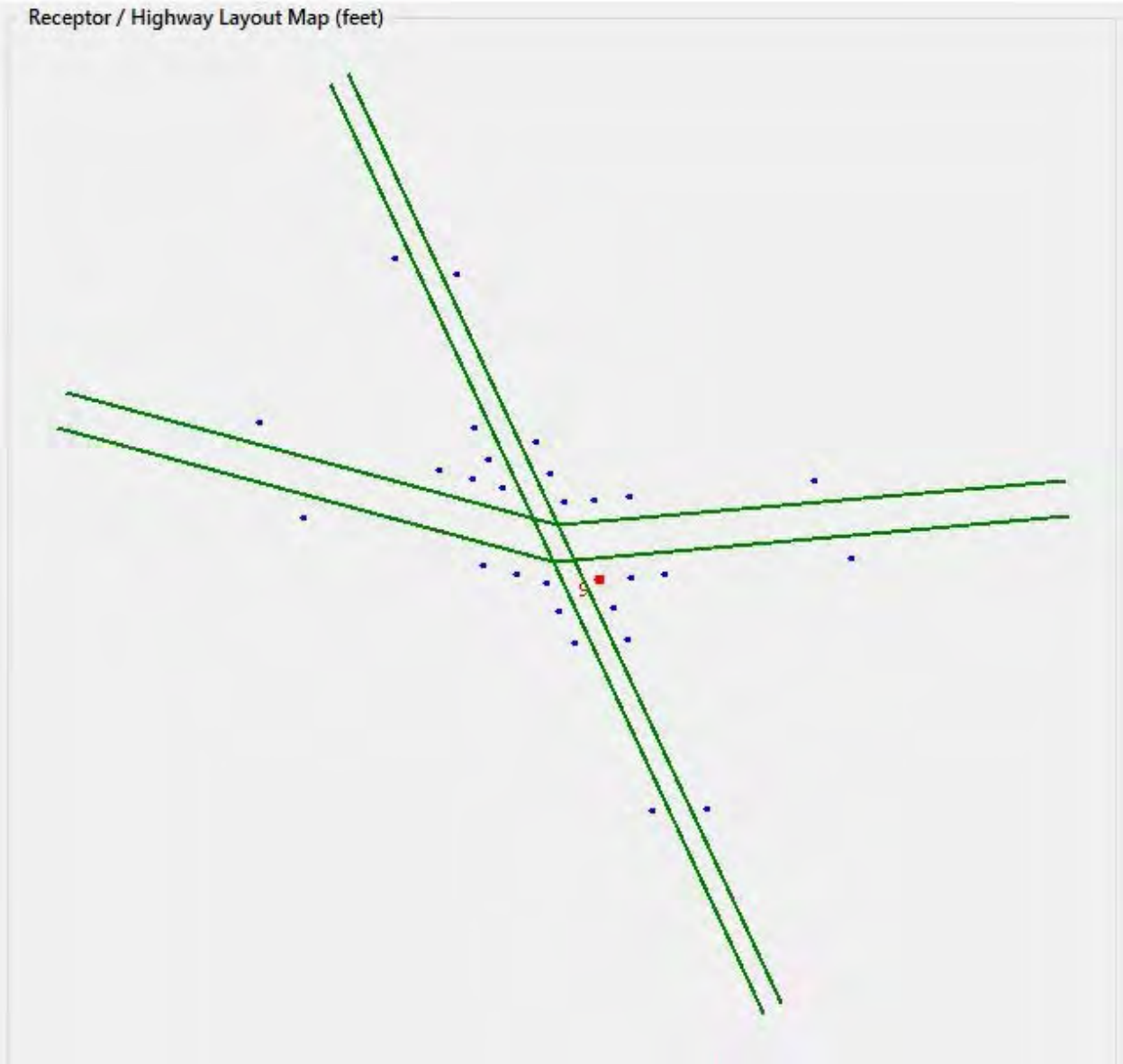


Figure 3-18: I-495 and MD 650 Receptor Locations

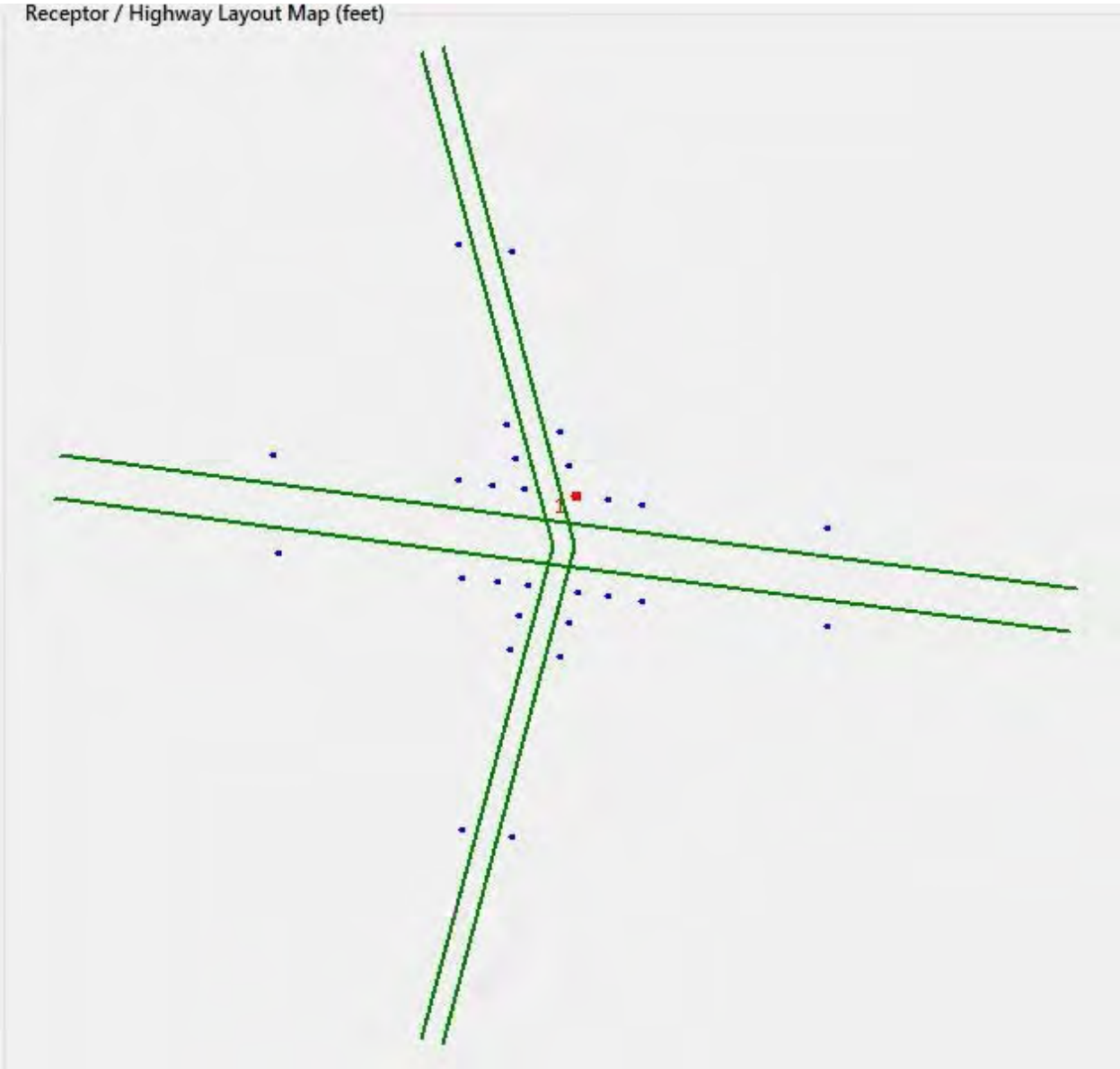


Figure 3-19: I-495 and MD 5 Receptor Locations

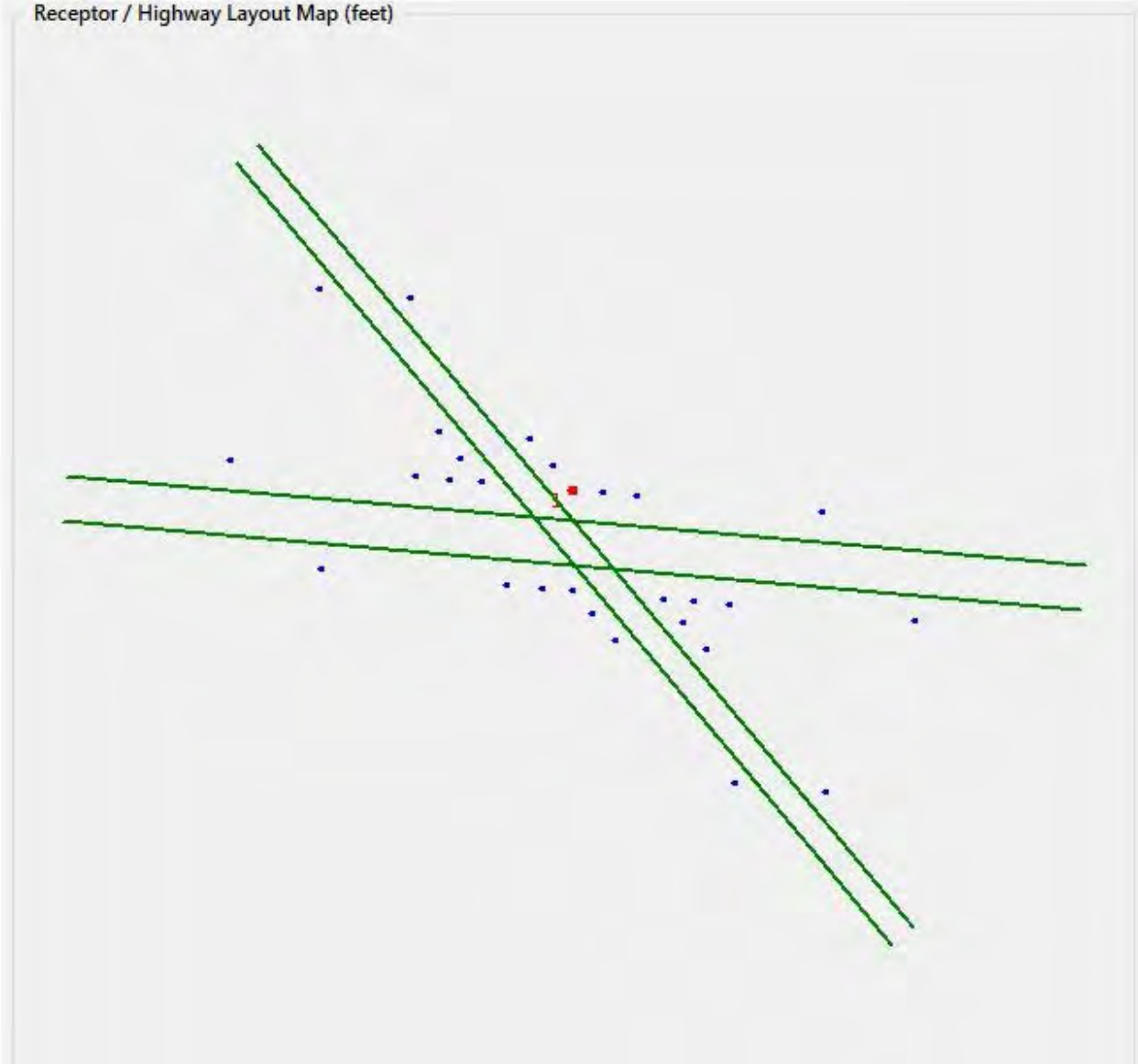


Figure 3-20: I-495 and MD 97 Receptor Locations

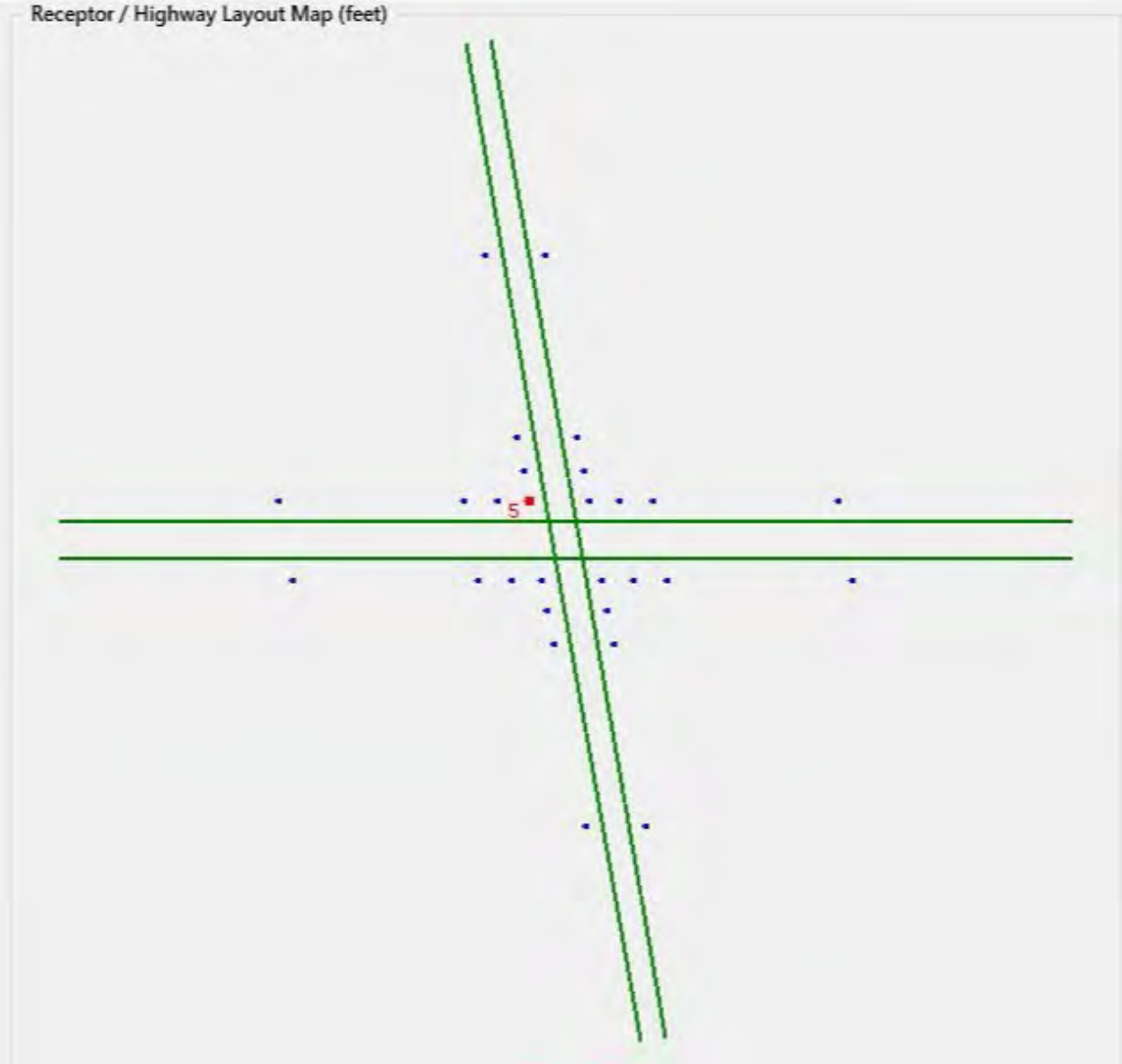


Figure 3-21: I-495 and MD 185 Receptor Locations

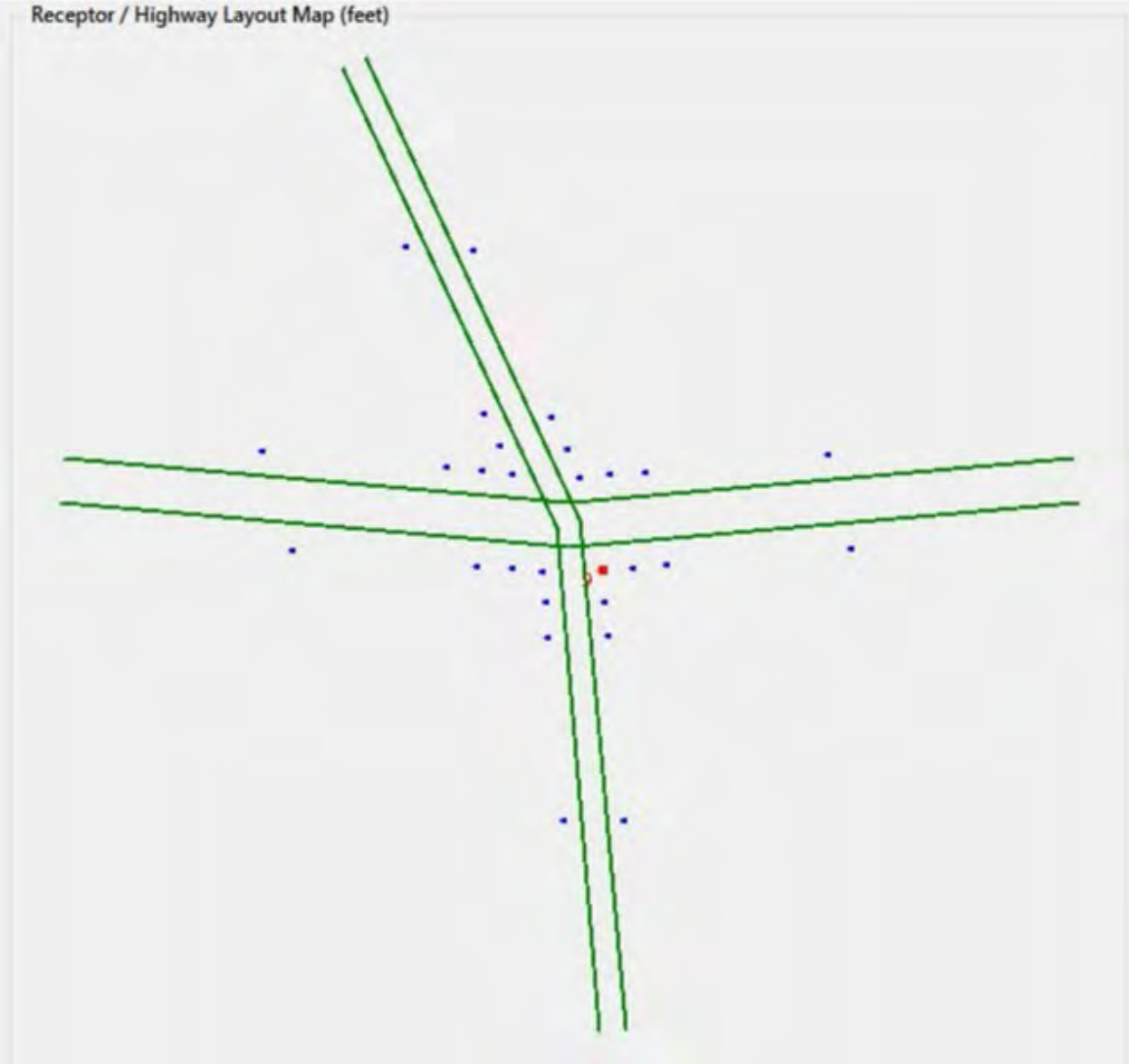


Figure 3-22: I-495 and MD 190 Receptor Locations

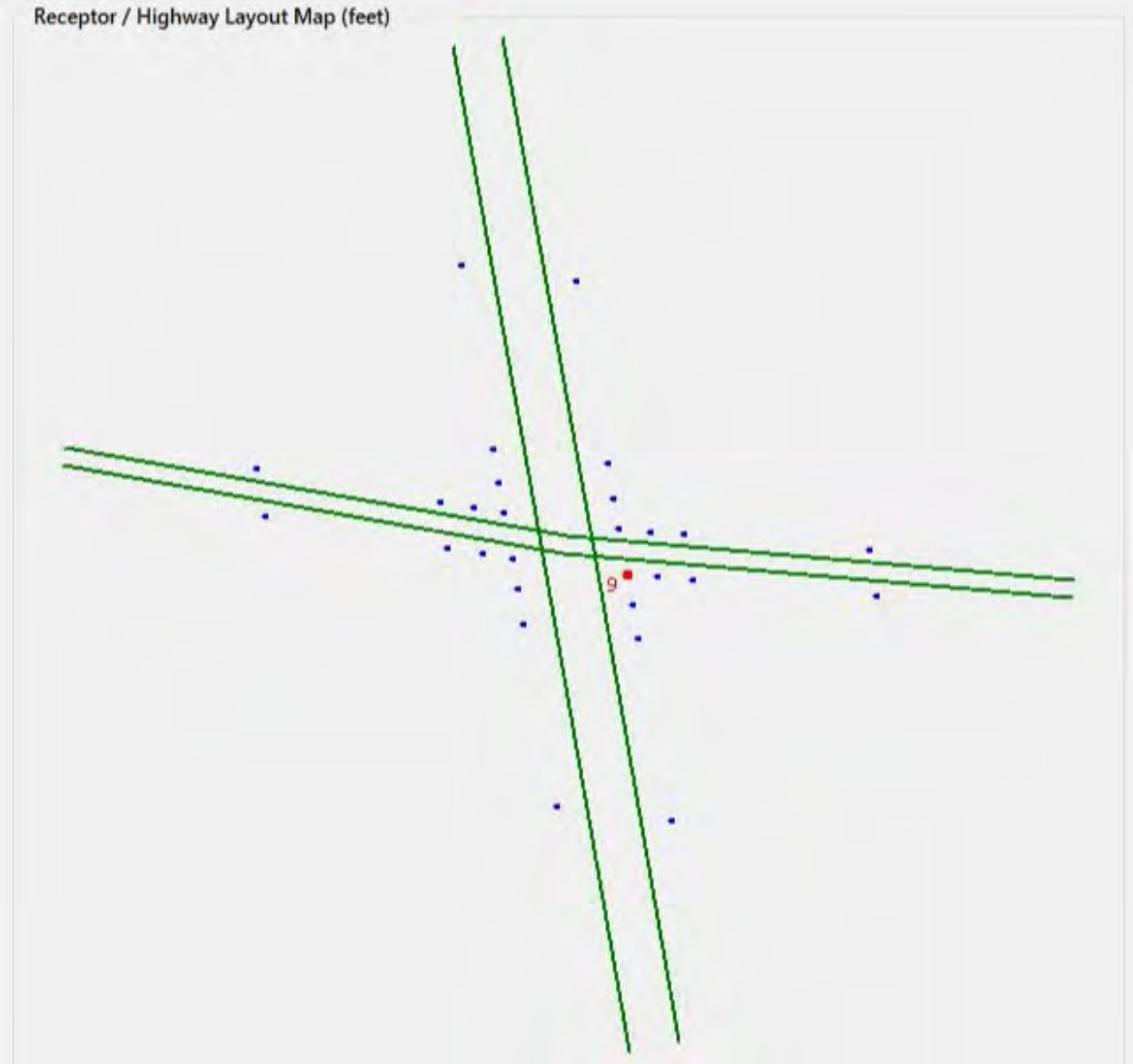


Figure 3-23: I-495 and US 50 Receptor Locations

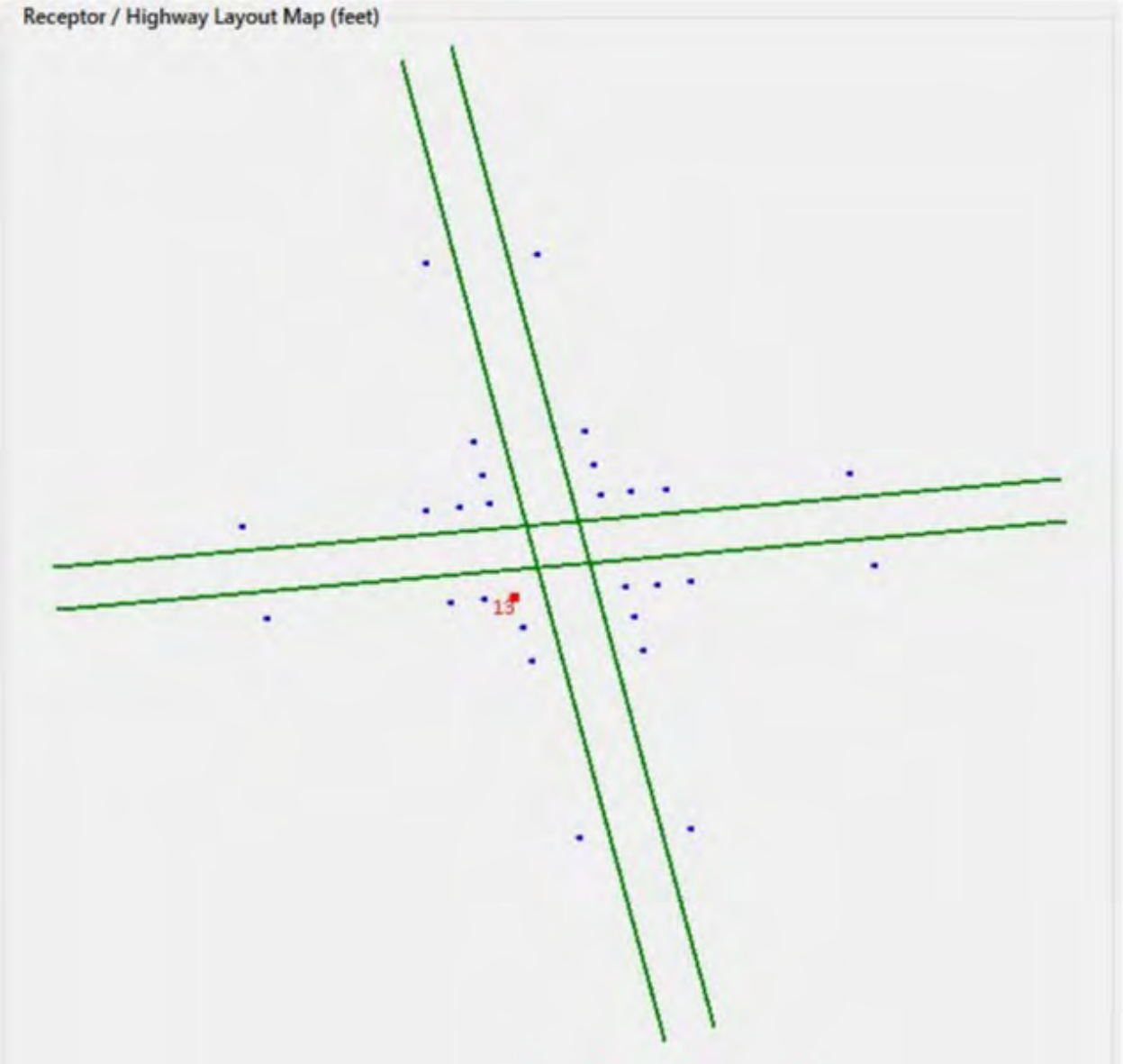


Figure 3-24: MD 97 and Outer Loop Ramp Receptor Locations



Figure 3-25: MD 187 and SPUR Receptor Locations

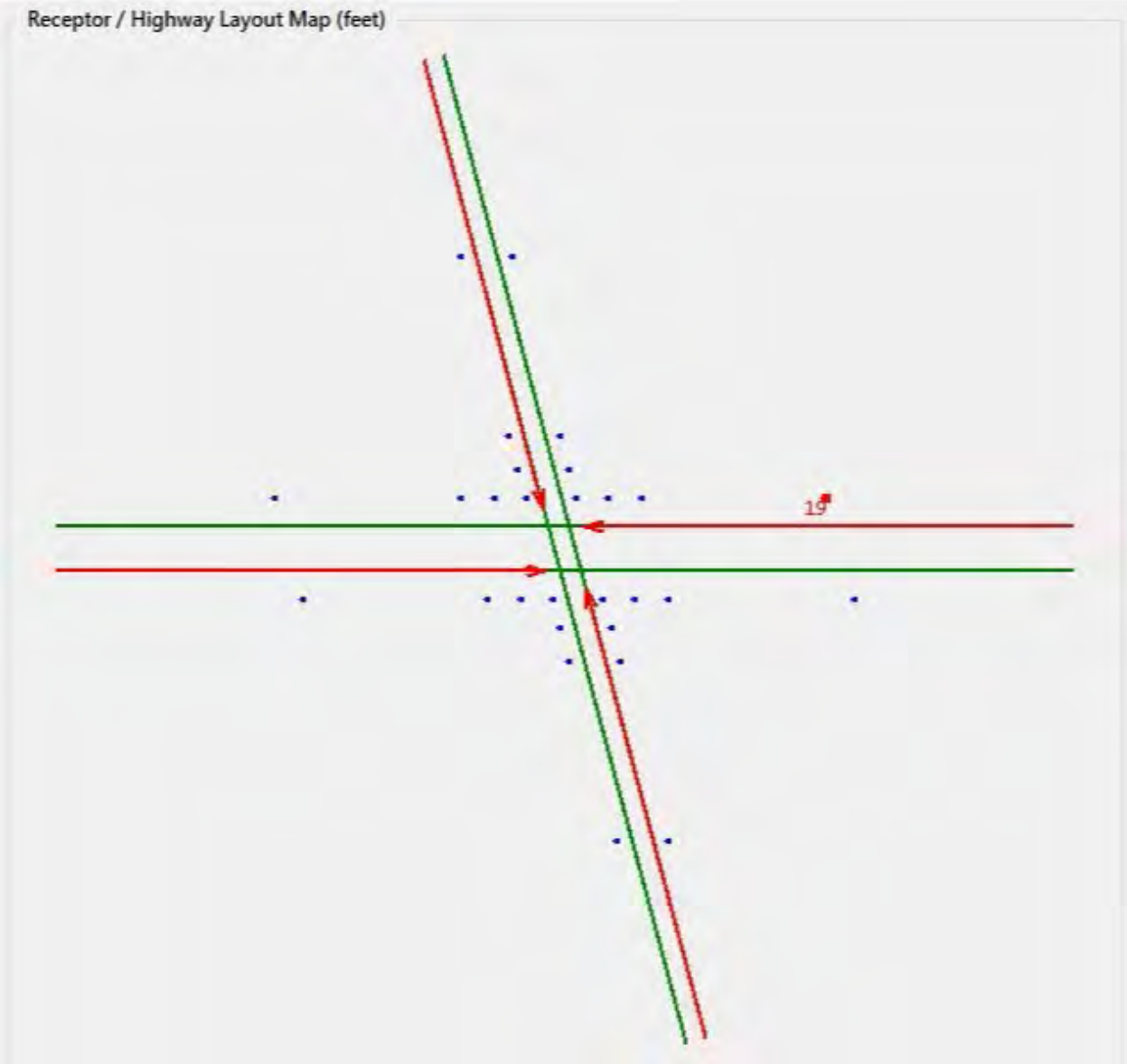


Figure 3-26: MD 202 and Outer Loop Ramp Receptor Locations



3.2.3 Dispersion Modeling Results

The results of the 1-hour and 8-hour CO hot-spot analysis for the worst-case interchange and intersection locations are presented in **Table 3-29** and **Table 3-30**, respectively for the opening and design year Build and No Build conditions. As documented in Section 3.2, this analysis conservatively assumed worst-case conditions, overestimating the emissions results for each alternative compared to forecast volumes. As such, there is no comparison between Alternatives as discussed above, however this screening analysis approach is designed to streamline the analysis and still demonstrate CO impacts are expected to be below the NAAQS for all Alternatives. The tables include the overall worst-case modeled concentrations for the AM and PM peak periods as well as the modeled receptor number. The concentrations in **Table 3-29** and **Table 3-30** also include the appropriate 1-hour and 8-hour background concentrations of 1.9 ppm and 0.8 ppm, respectively, for comparison to the CO NAAQS. The highest 1-hour predicted concentrations at the interchanges for the opening and design year Build conditions were 8.6 ppm and 4.9 ppm, respectively. The maximum 1-hour concentration for all future Build conditions was predicted to occur at the I-495 and I-270/MD 355 interchange. Similarly, the highest 1-hour predicted concentrations at the intersections for the opening and design year Build conditions were 7.3 ppm and 4.3 ppm, respectively. The maximum 1-hour concentrations for all Build conditions were predicted to occur at the US 29 and Direct Access Ramp intersection. ***All predicted peak 1-hour CO concentrations are below the 1-hour CO NAAQS of 35 ppm.***

The peak 1-hour values generated by CAL3QHC were scaled by a persistence factor of 0.7 (EPA default) to generate peak 8-hour CO concentrations. These values were then added to the appropriate background concentration for comparison to the CO NAAQS. As the CAL3QHC model only predicts a 1-hour concentration, a persistence factor is used to estimate an 8-hour concentration from the 1-hour concentration. The highest 8-hour concentrations for the opening and design year Build conditions for the interchanges were 5.5 ppm and 2.9 ppm, respectively. Similar to the peak 1-hour concentrations, the maximum 8-hour CO concentration was also predicted to occur at the same interchange for the future Build and No Build conditions. Similarly, the highest 8-hour concentrations for the opening and design year Build conditions for intersections were 4.6 ppm and 2.5 ppm, respectively and are expected to occur at the same intersection as the maximum 1-hour concentrations. ***All predicted peak 8-hour CO concentrations are below the 8-hour CO NAAQS of 9 ppm.***

These results demonstrate that the worst-case interchanges and intersections for each Screened and No Build alternative, using very conservative assumptions, would not cause or contribute to a violation of the CO NAAQS within the study corridor. Therefore, expected CO concentrations for all Alternatives assuming forecast traffic volumes are expected to be lower compared to the worst case and also below the CO NAAQS.

Table 3-29: CAL3QHC CO Modeling Results for Worst-Case Interchanges

Interchange CO Modeling Results			Existing 2016		2025				2040				NAAQS
					Build		No Build		Build		No Build		
			Conc. (ppm)	Rec. (#)	Conc. (ppm)	Rec. (#)	Conc. (ppm)	Rec. (#)	Conc. (ppm)	Rec. (#)	Conc. (ppm)	Rec. (#)	PPM
IC.3	I-495 & MD 5	1-Hr	9.40	1	6.40	1	3.60	1	3.90	1	2.70	1	35
		8-Hr	6.05		3.95		1.99		2.20		1.36		9
IC.11	I-495 & US 50	1-Hr	9.50	13	7.10	13	4.00	9	4.30	13	3.00	13	35
		8-Hr	6.12		4.44		2.27		2.48		1.57		9
IC.16	I-495 & I-95	1-Hr	9.60	1	7.00	1	**4.60**	1	4.10	1	3.00	1	35
		8-Hr	6.19		4.37		**2.69**		2.34		1.57		9
IC.17	I-495 & MD 650	1-Hr	6.90	1	5.20	1	3.30		3.30	1	2.60		35
		8-Hr	4.30		3.11		1.78		1.78		1.29		9
IC.18	I-495 & MD 193	1-Hr	6.60	9	5.00	9	3.30		3.20	9	2.70		35
		8-Hr	4.09		2.97		1.78		1.71		1.36		9
IC.20	I-495 & MD 97	1-Hr	8.90	1	6.50	1	3.80	1	3.90	1	2.80	5	35
		8-Hr	5.70		4.02		2.13		2.20		1.43		9
IC.21	I-495 & MD 185	1-Hr	7.40	9	5.50	9	3.10	9	3.40	9	2.50	13	35
		8-Hr	4.65		3.32		1.64		1.85		1.22		9
IC.22	I-495 & I-270/MD 355	1-Hr	11.90	1	**8.60**	1	4.00	1	**4.90**	1	2.80	1	35
		8-Hr	7.80		**5.49**		2.27		**2.90**		1.43		9
IC.33	I-270 & MD 189	1-Hr	7.40	1	5.30	1	3.10	5	3.40	1	2.50	1	35
		8-Hr	4.65		3.18		1.64		1.85		1.22		9
IC.36	I-270 & I-370	1-Hr	8.10	5	6.10	1	3.80	1	3.80	1	2.80	1	35
		8-Hr	5.14		3.74		2.13		2.13		1.43		9
IC.24	I-495 & I-270 Spur	1-Hr	8.00	9	6.40	9	4.40	9	4.00	9	**3.10**	9	35
		8-Hr	5.07		3.95		2.55		2.27		**1.64**		9
IC.25	I-495 & MD 190	1-Hr	7.90	13	6.20	13	3.60	9	3.80	9	2.70	13	35
		8-Hr	5.00		3.81		1.99		2.13		1.36		9

Notes:
1. Receptor Number represents the modeled receptor number of maximum modeled concentration from CAL3QHC.
2. Modeled concentrations include 1-hour Background Value of 1.9 ppm and 8-hour background value of 0.8 ppm.
3. Bold numbers reflect overall maximum concentrations.

Table 3-30: CAL3QHC CO Modeling Results for Worst-Case Intersections

Intersection CO Modeling Results			2016		2025				2040				NAAQS
					Build		No Build		Build		No Build		
			Conc. (ppm)	Rec. (#)	Conc. (ppm)	Rec. (#)	Conc. (ppm)	Rec. (#)	Conc. (ppm)	Rec. (#)	Conc. (ppm)	Rec. (#)	PPM
IS.7	MD 5 & Auth Road	1-Hr	6.10	1	4.10	1	2.50	1	2.90	1	**2.30**	13	35
		8-Hr	3.74		2.34		1.22		1.50		**1.08**		9
IS.16	MD 202 & Outer Loop Ramp	1-Hr	4.60	9	3.20	2	2.50	4	2.40	2	2.20	1	35
		8-Hr	2.69		1.71		1.22		1.15		1.01		9
IS.28	MD 97 & Inner Loop Ramp	1-Hr	5.10	5	4.30	5	2.50	5	2.90	5	2.10	1	35
		8-Hr	3.04		2.48		1.22		1.50		0.94		9
IS.29	MD 97 & Outer Loop Ramp	1-Hr	5.20	8	4.20	1	**2.80**	4	2.90	9	**2.30**	4	35
		8-Hr	3.11		2.41		**1.43**		1.50		**1.08**		9
IS.46	MD 187 & I-270 SB Ramp	1-Hr	5.50	13	3.90	5	2.30	1	2.80	5	2.00	1	35
		8-Hr	3.32		2.20		1.08		1.43		0.87		9
IS.58	US 29 & Direct Access Ramp	1-Hr	BUILD ONLY	X	**7.30**	18	BUILD ONLY	X	**4.30**	27	BUILD ONLY	X	35
		8-Hr			**4.58**				**2.48**				9
IS.56	US 29 and Outer Loop	1-Hr	BUILD ONLY	X	4.00	5	BUILD ONLY	X	2.80	1	BUILD ONLY	X	35
		8-Hr			2.27				1.43				9
IS.57	US 29 and Inner Loop	1-Hr	BUILD ONLY	X	3.90	9	BUILD ONLY	X	2.80	1	BUILD ONLY	X	35
		8-Hr			2.20				1.43				9

Notes:
1. Receptor Number represents the modeled receptor number of maximum modeled concentration from CAL3QHC.
2. Modeled concentrations include 1-hour Background Value of 1.9 ppm and 8-hour background value of 0.8 ppm
3. Bold numbers reflect overall maximum concentrations.

3.3 Particulate Matter ($PM_{2.5}$)

The study area (i.e., Montgomery County, Prince George's County, and Fairfax County) is in an attainment area for fine PM ($PM_{2.5}$), therefore, transportation conformity requirements pertaining to $PM_{2.5}$ do not apply for this Project[29] and no further analysis of $PM_{2.5}$ emissions were evaluated per FHWA guidance.[30]

3.4 Mobile Source Air Toxics Analysis

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants. The EPA assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are part of EPA's Integrated Risk Information System (IRIS). In addition, EPA identified the nine compounds noted above in **Section 3.4** with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment.

FHWA most recently updated its guidance for the assessment of MSATs in the NEPA process for highway projects in 2016. The guidance identifies nine priority MSATs*: "1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter."* It also specifies three possible categories or tiers of analysis: 1) projects with no meaningful potential MSAT effects or exempt projects (for which MSAT analyses are not required), 2) projects with low potential MSAT effects (requiring only qualitative analyses), and 3) projects with higher potential MSAT effects (requiring quantitative analyses).

3.4.1 MSAT Research

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how potential public health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA.

Nonetheless, air toxics concerns continue to arise on highway projects during the NEPA process. Even as the science emerges, the public and other agencies expect FHWA to address MSAT impacts in its environmental documents. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated

[29] For background, the EPA issued a final rule (81 FR 58010), effective October 24, 2016, on "Fine Particulate Matter National Ambient Air Quality Standards: State Implementation Plan Requirements" that stated, in part: "Additionally, in this document the EPA is revoking the 1997 primary annual standard for areas designated as attainment for that standard because the EPA revised the primary annual standard in 2012." (See: https://www.gpo.gov/fdsys/pkg/FR-2016-08-24/pdf/2016-18768.pdf). Accordingly, Fairfax County is no longer designated as maintenance for PM2.5, and the associated USEPA regulatory requirements for conformity for PM2.5 are eliminated for northern Virginia

[30] Guidance for Preparing and Processing Environmental and Section 4(f) Documents October 30, 1987. https://www.environment.fhwa.dot.gov/projdev/impTA6640.asp

with highway projects. The FHWA will continue to monitor the developing research in this field. An overview of recent research is provided in Appendix D of FHWA guidance.

3.4.2 MSAT Modeling Methodology

In accordance with the latest MSAT guidance,[31] the Study is best characterized as one with "higher potential MSAT effects" since the projected Design Year traffic is expected to reach the 140,000 to 150,000 AADT criteria. Each of the alternatives (including the No Build) are expected to have average daily traffic (ADT) volumes ranging from 344,956 vehicles per day (vpd) to 399,682 vpd along the segment of I-495 between River Road and Bradley Boulevard (Map ID A in **Figure 3-27**). **Table 3-31** summarizes the ADT throughout the study corridor for each alternative. **Figure 3-27** illustrates the locations where ADT volumes were collected.

The data presented in **Table 3-31** demonstrates that the predicted ADT volumes would be greater than the 140,000 to 150,000 AADT MSAT criteria. As a result, a quantitative assessment of MSAT emissions projections was conducted for this Study utilizing the 2016 FHWA Interim Guidance and the Frequently Asked Questions (FAQ) Conducting Quantitative MSAT Analysis for FHWA NEPA Documents[32] to develop the Affected Networks and MOVES modeling. A summary of modeling inputs is presented in **Appendix F**.

Table 3-31: Average Daily Traffic Volumes

Map ID	Location	From	To	Design- Year (2040)						
				No Build	Alt5	Alt 8	Alt 9	Alt 10	Alt 13B	Alt 13C
A	I-495	River Rd	Bradley Blvd	344,956	362,190	397,450	386,633	399,682	377,087	395,524
B	I-270	Falls Rd	Montrose Rd	335,117	323,560	354,944	339,632	359,821	329,405	355,160
C	I-495	I-95	MD 650	292,711	328,429	348,139	347,029	348,637	345,693	345,941
D	I-495	US 50	MD 202	240,129	256,835	268,860	269,043	269,484	269,041	269,011

Using EPA's MOVES2014a model, as shown in **Figure 3-28**, FHWA estimates that even if vehicle miles traveled (VMT) increases by 45 percent from 2010 to 2050 as forecast, a combined reduction of 91 percent in the total annual emissions for the priority MSAT is projected for the same time period.[33]

Diesel PM is the dominant component of MSAT emissions, making up 50 to 70 percent of all priority MSAT pollutants by mass, depending on calendar year.

[31] https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/

[32] *Frequently Asked Questions (FAQ) Conducting Quantitative MSAT Analysis for FHWA NEPA Documents*. https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/moves_msat_faq.cfm

[33] *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*. October 18, 2016. https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/

Figure 3-27: Average Daily Traffic Locations

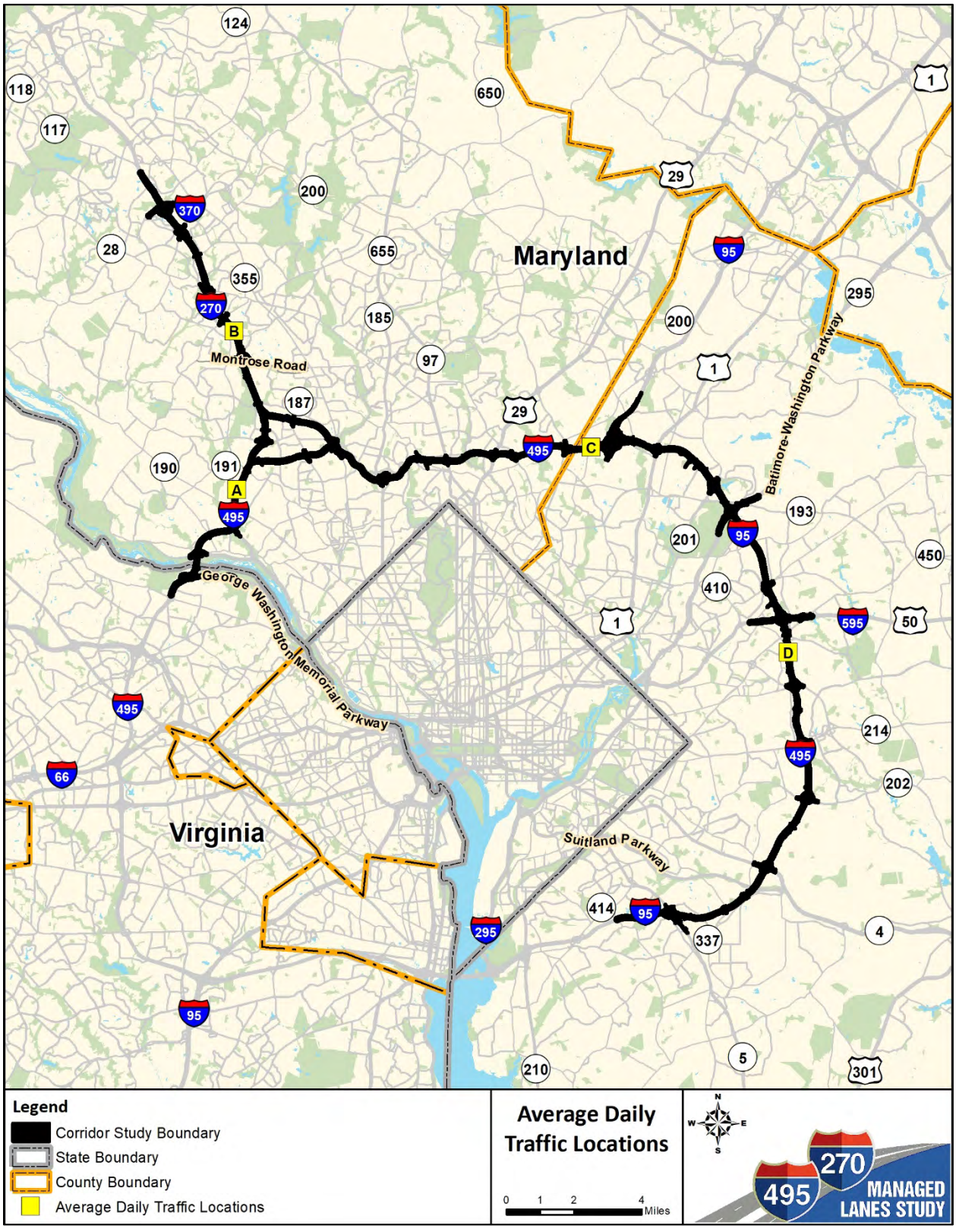
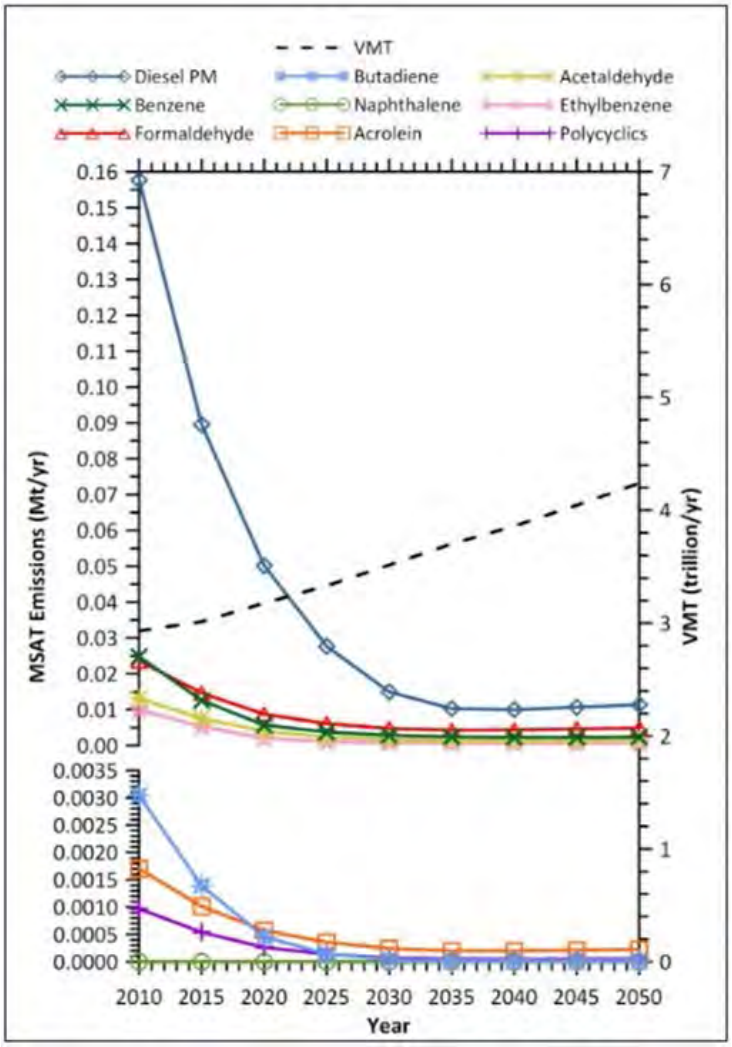


Figure 3-28: National MSAT Emission Trends 2010 – 2050 for Vehicles Operating on Roadways



Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors.
Source: USEPA MOVES2014a model runs conducted by FHWA, September 2016.

The Affected Network was determined using the Regional Travel Demand Forecast MWCOG Regional Travel Demand Model as a base for each alternative and analysis year within the Study Area along with suggested criteria for evaluating to establish the affected network where general meaningful changes in emissions could occur as a result of the Study Alternatives. After the analysis using project specific traffic data, a subset of the links from the regional model that met suggested criteria were used as the affected network.

The latest MWCOG Model available at the time the air quality analysis was initiated included a base model year of 2016 and a design year of 2040. Data sets for the years 2016 and 2040 Screened Alternatives were developed by the study team for use in the MSAT analysis, in addition to the interim year 2025 (Build and No Build). It should be noted that

The Study's *Traffic Analysis Technical Report* and *Air Quality Technical Report* were developed concurrently using the same base data. The base traffic data for both the Traffic Analysis Technical Report and the Air Quality Technical Report came from the MWCOG Regional Forecasting Model, Version 2.3.71. This version of the MWCOG model was developed specifically for the statewide Traffic Relief Plan program, which the I-495 & I-270 Managed Lanes Study is a subset. Because the project area is so large, the MWCOG version 2.3.71 model included the full geographical limits of the regional model, rather than a subarea. The MWCOG 2.3.71 model was validated based on existing (2016) conditions, and MWCOG also developed models for 2040 No Build conditions, and two generic 2040 Build scenarios – one managed lane in each direction and two managed lanes in each direction. These models were provided to MDOT SHA to refine based on the alternatives retained. MDOT SHA also created 2025 models for use in the air quality analysis.

For the *Air Quality Technical Report*, the MWCOG models were used to determine the affected network and extract the necessary data for the MSAT analysis. For the *Traffic Analysis Technical Report*, the MWCOG models were used to develop peak hour forecasts for use in operational analysis using VISSIM simulation software. VISSIM outputs at the intersection level were also used to support the CO evaluation in the *Air Quality Technical Report*.

Since this project encompasses a large area, it has the potential to not only affect MSAT emissions within the Study Area but could also cause changes in traffic outside of the project area in the form of alternative routes and/or traffic diversion. Because of the size of the project and to take a conservative approach, the larger MWCOG network was used to capture these effects using the criteria cited below. The Affected Network was developed for each Alternative and includes the anticipated changes within the project study area including affected portions of I-495 and I-270 as well as those segment areas outside the project study area where meaningful changes could occur as a result of the Study Alternatives. To evaluate those segments where meaningful changes could occur within the MWCOG network, the following criteria where applied:

- Changes of ± 5 percent or more in AADT on congested highway links of LOS D or worse;
- Changes of ± 10 percent or more in AADT on uncongested highway links of LOS C or better;
- Changes of ± 10 percent or more in travel time; and
- Changes of ± 10 percent or more in intersection delay.

The Affected Network links within the MWCOG traffic data (reflected in Red in the Figures) that included traffic along the project study areas of I-495 and I-270 as well as those where meaningful changes could occur as a result of the Study Alternatives that met all four criterion, are presented in **Figure 3-29** through **Figure 3-40** for each Screened Alternative for the 2025 and 2040 conditions. This is a conservative approach as the process for determining the Affected Networks included applying all four FHWA suggested criterion. In addition, there was no deviation from these criteria such as exclusions of modeling artifacts (i.e. far removed links) that may not result from the project and could be excluded from the analysis per FHWA FAQ guidance. Since the alternatives vary and Affected Networks were developed for each, the team made the decision not to remove the artifacts so a more direct comparison could be made among alternatives. **Appendix H** shows the segment links and the meaningful change criteria they met

and whether they were excluded from the affected network. It should also be noted that the segment links in **Figure 3-29** through **Figure 3-40** which are highlighted in grey were included in the MWCOG regional model and were segment links that were evaluated but did not meet any of the above criterion and were not included in the Affected Network. Only the red links in the figures were evaluated for the No build and Screened Alternative Affected Networks. For informational purposes, a flowchart showing the analysis process to determine the affected network for each alternative has been included along with a timeline for developing the traffic data for the analysis are provided in **Appendix G**.

The MOVES model was run for each Affected Network using project specific traffic data developed for each Alternative consistent with the overall project traffic analysis as noted above. MOVES MSAT emissions for each Alternative Affected Network are presented in **Table 3-34**, while the net change in emissions are presented in **Table 3-35** and percent change in MSAT emissions are presented in **Table 3-36**. The MOVES emission results for the Affected Network for each pollutant are depicted in **Figure 3-41** through **Figure 3-49** and are consistent with the National MSAT emission trends presented in **Figure 3-28**.

By using all four of the suggested possible metrics for determining the Affected Network, MDOT SHA took a conservative approach in determining the Affected Network for each Study Alternative, the VMT and resulting MSAT emissions will be slightly larger than if a smaller Affected Network focused on just the Study Area was used. However, MSAT results would be expected to be similar for either size Affected Network where there could be a slight increase in VMT but a slight decrease in MSAT emissions as a result of the Build Alternatives. For example, the 2040 Build and No Build percentage changes in Table 3-36 show that while there will be slightly more VMT (ranging from 4.1% to 5%) for the Build Alternatives compared to the No Build condition, MSAT emissions are still expected to decline for most pollutants for each Build Alternative. The MSATs results presented for each of the Affected Networks are consistent with the Purpose and Need of the Project to address future travel demand and congestion, reduce travel times, and allow travelers to use the facilities efficiently.

Figure 3-29: MSAT Affected Network 2025 Screened Alternative 5

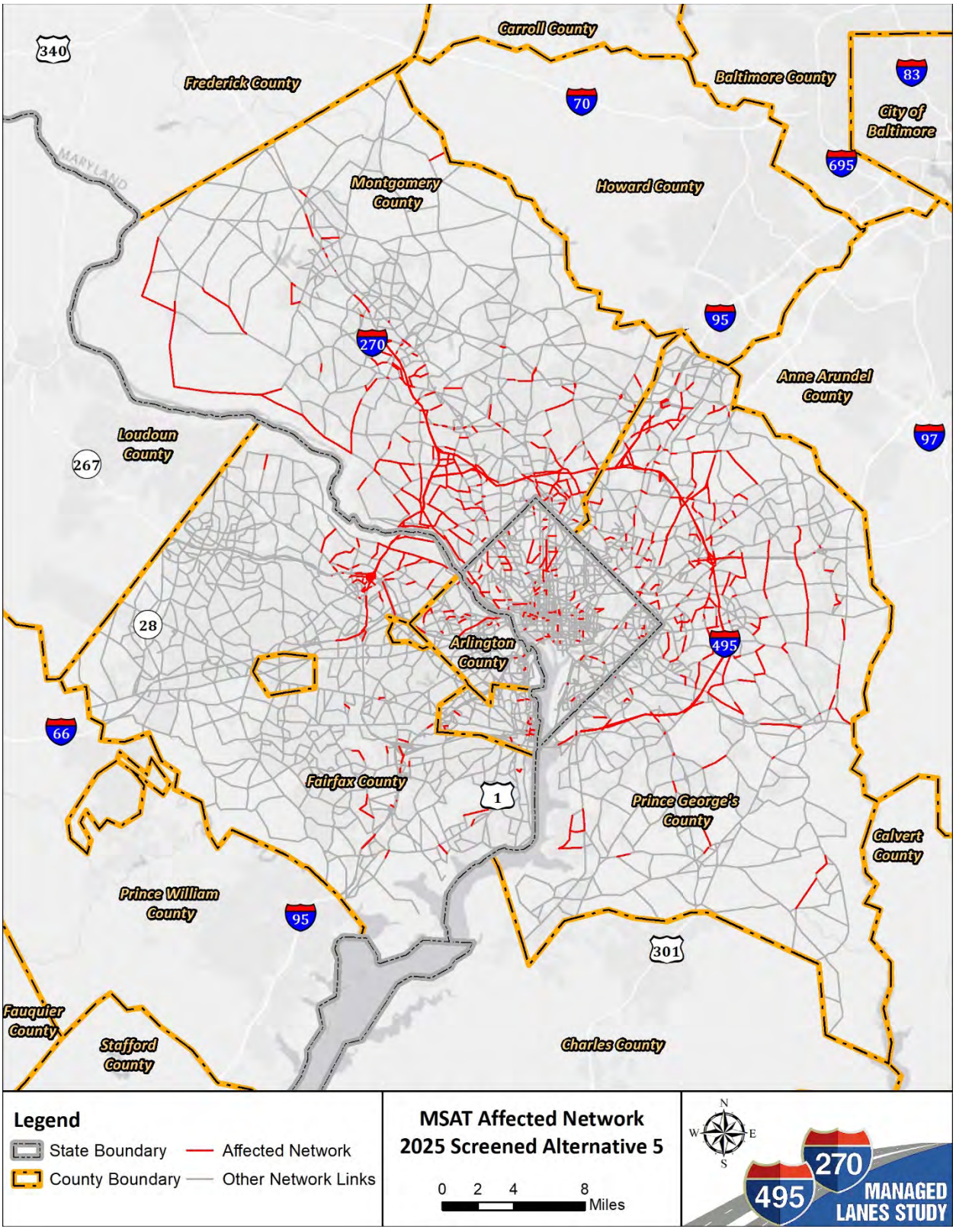


Figure 3-30: MSAT Affected Network 2025 Screened Alternative 8

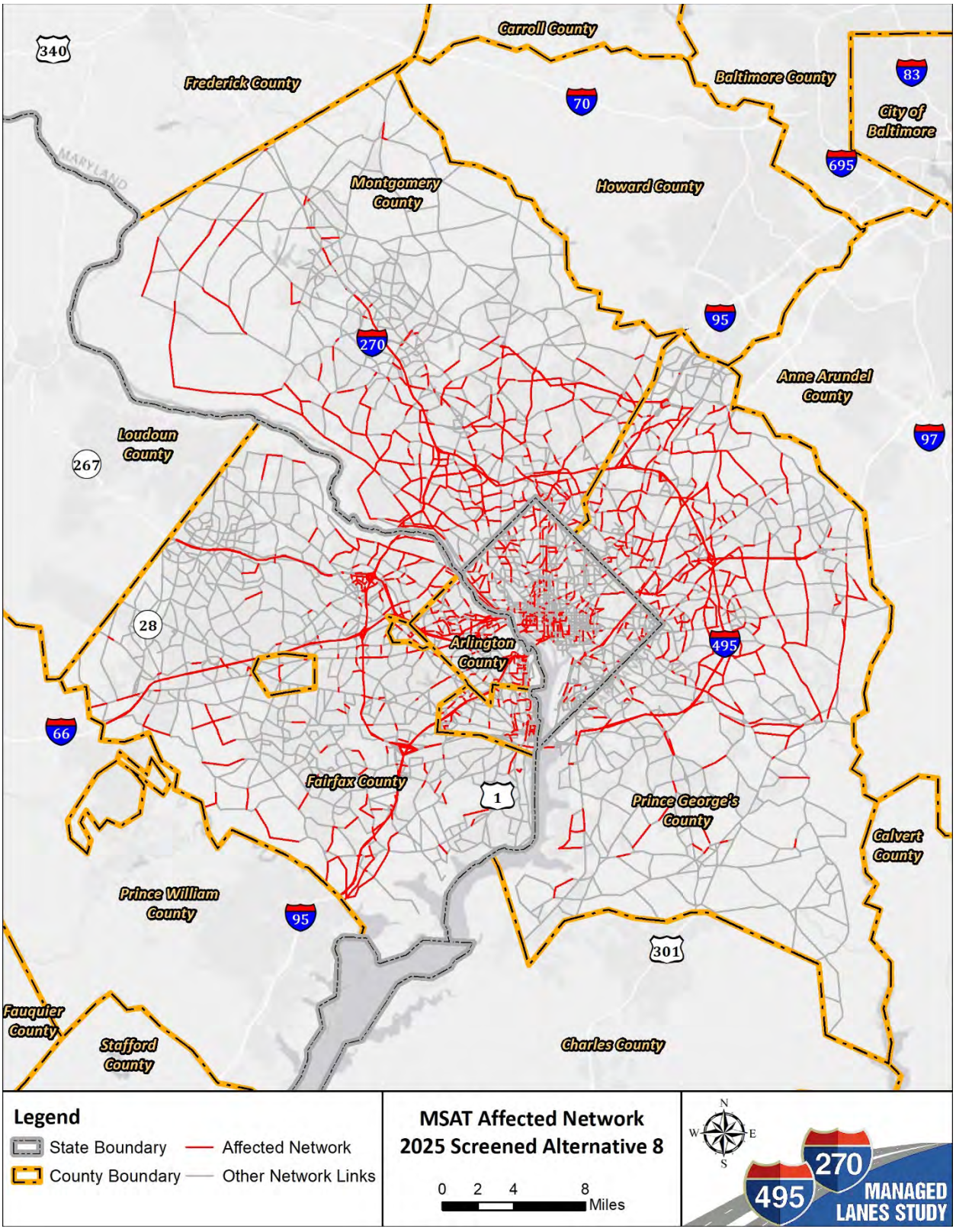


Figure 3-31: MSAT Affected Network 2025 Screened Alternative 9

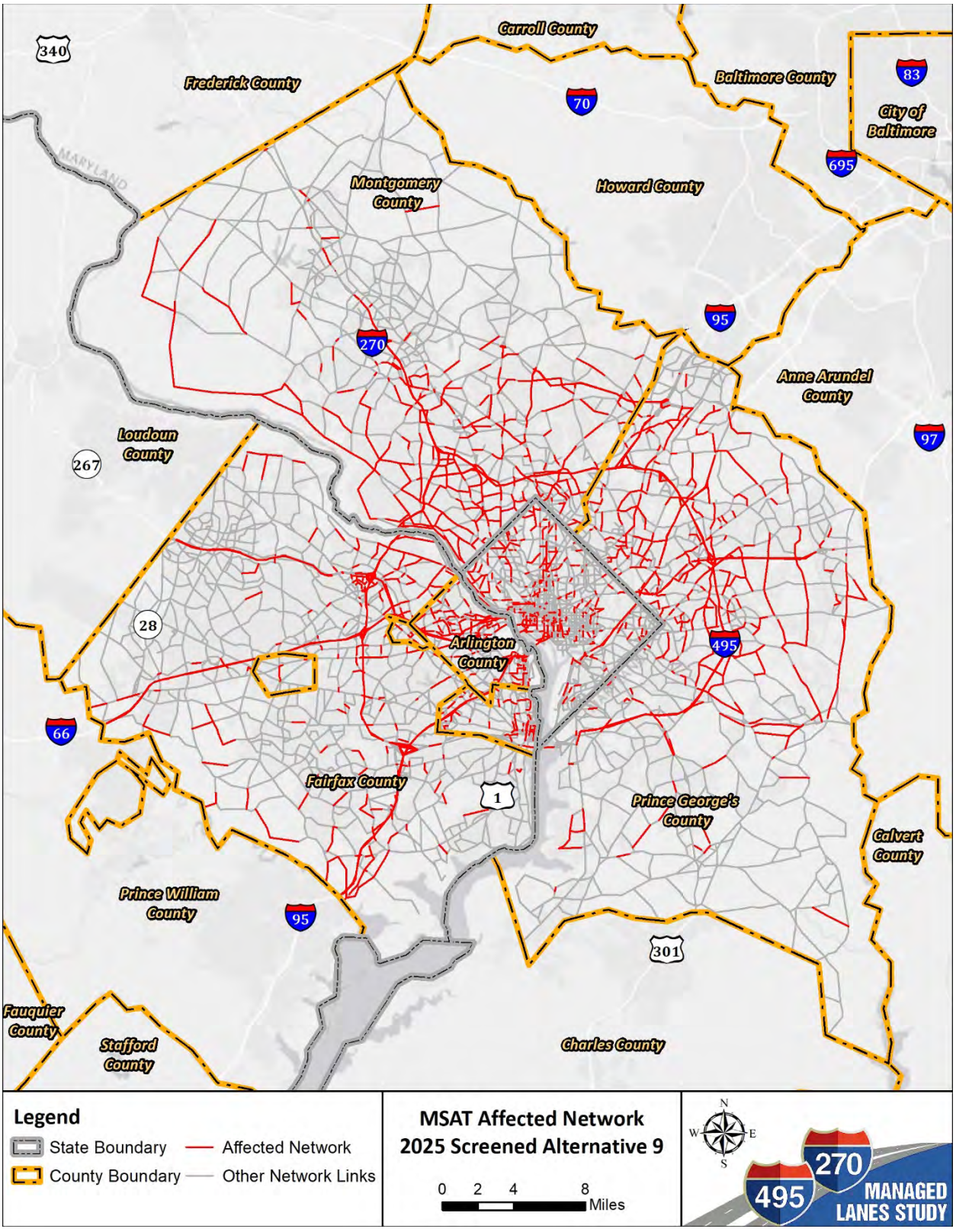


Figure 3-32: MSAT Affected Network 2025 Screened Alternative 10

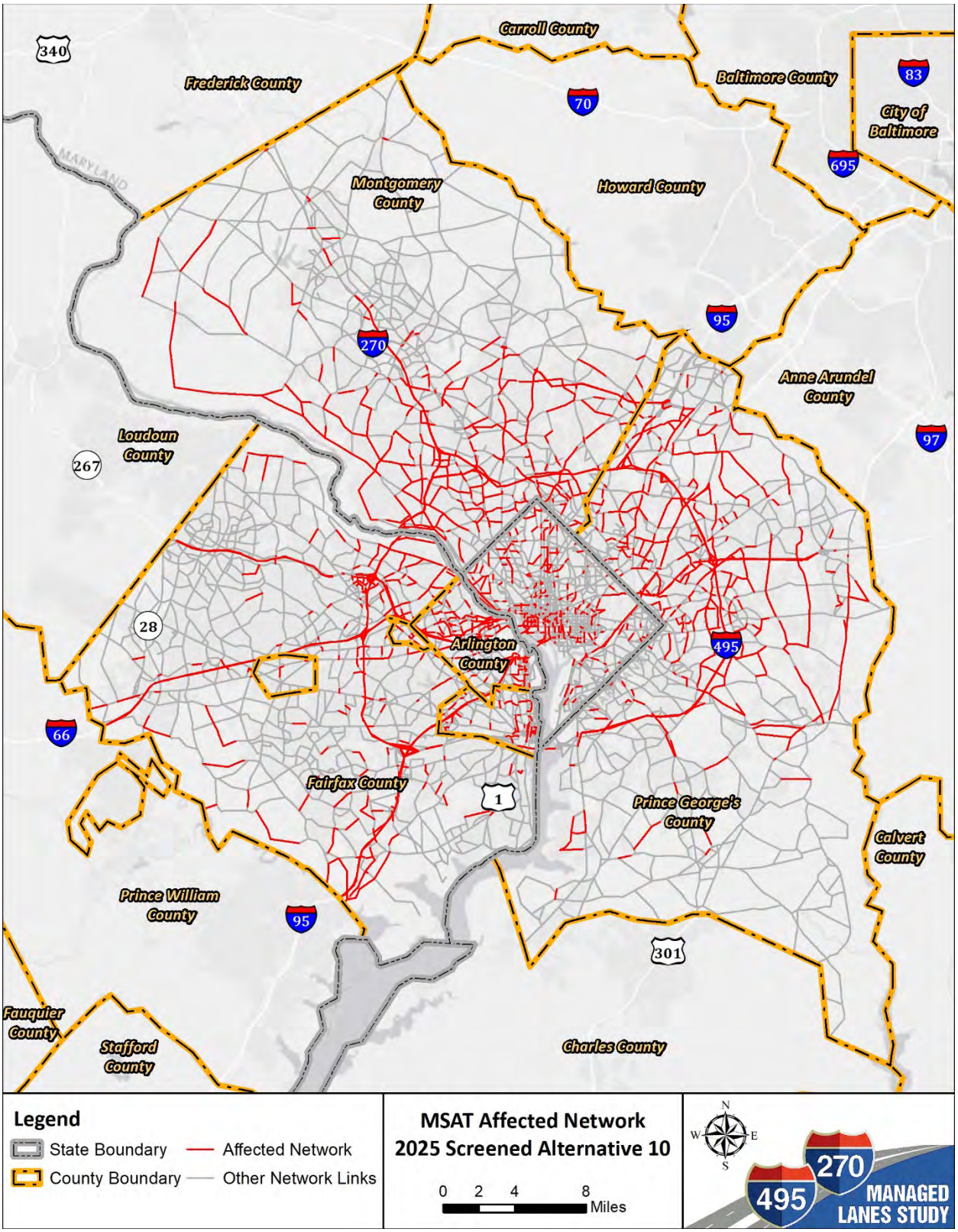


Figure 3-33: MSAT Affected Network 2025 Screened Alternative 13B

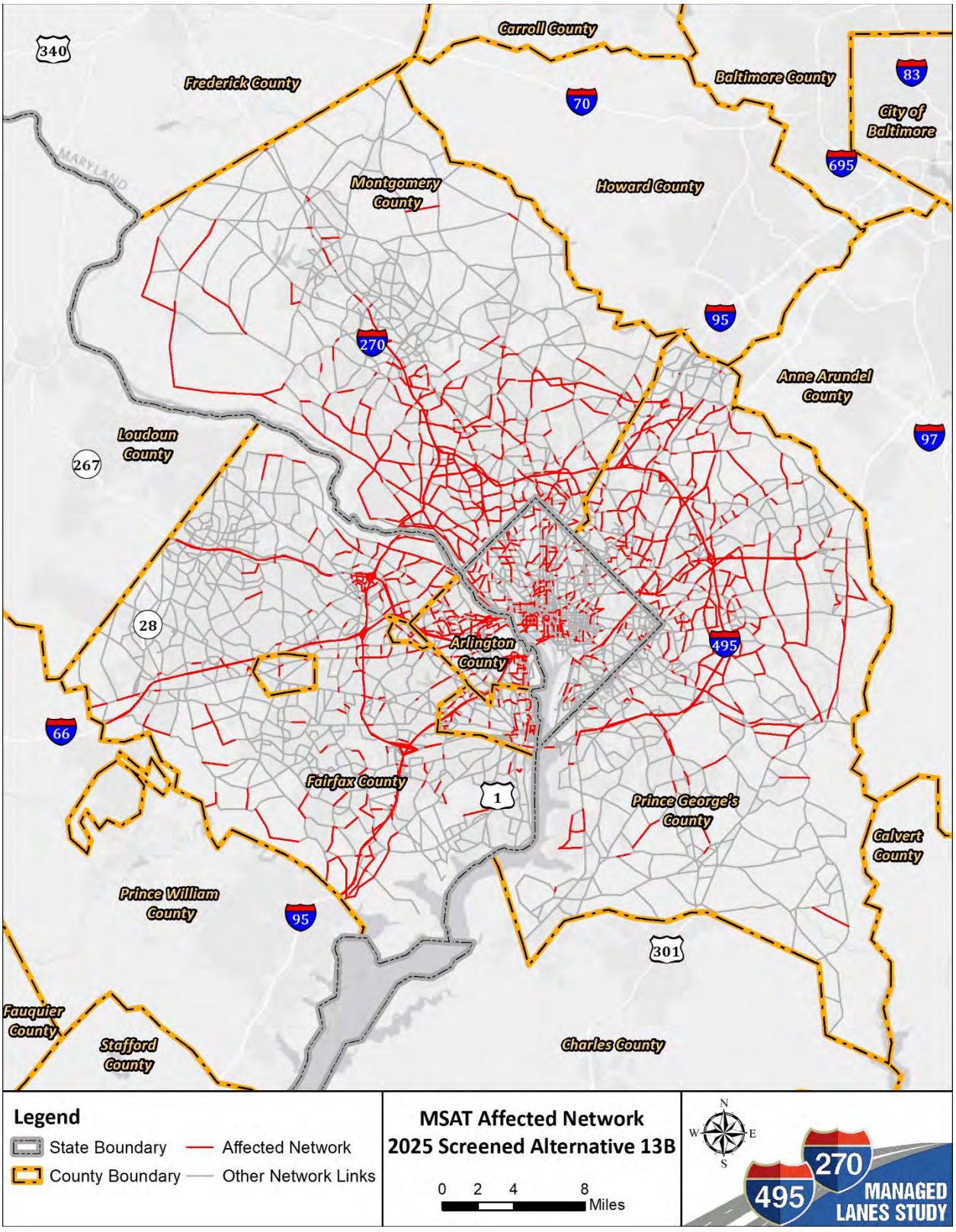


Figure 3-34: MSAT Affected Network 2025 Screened Alternative 13C

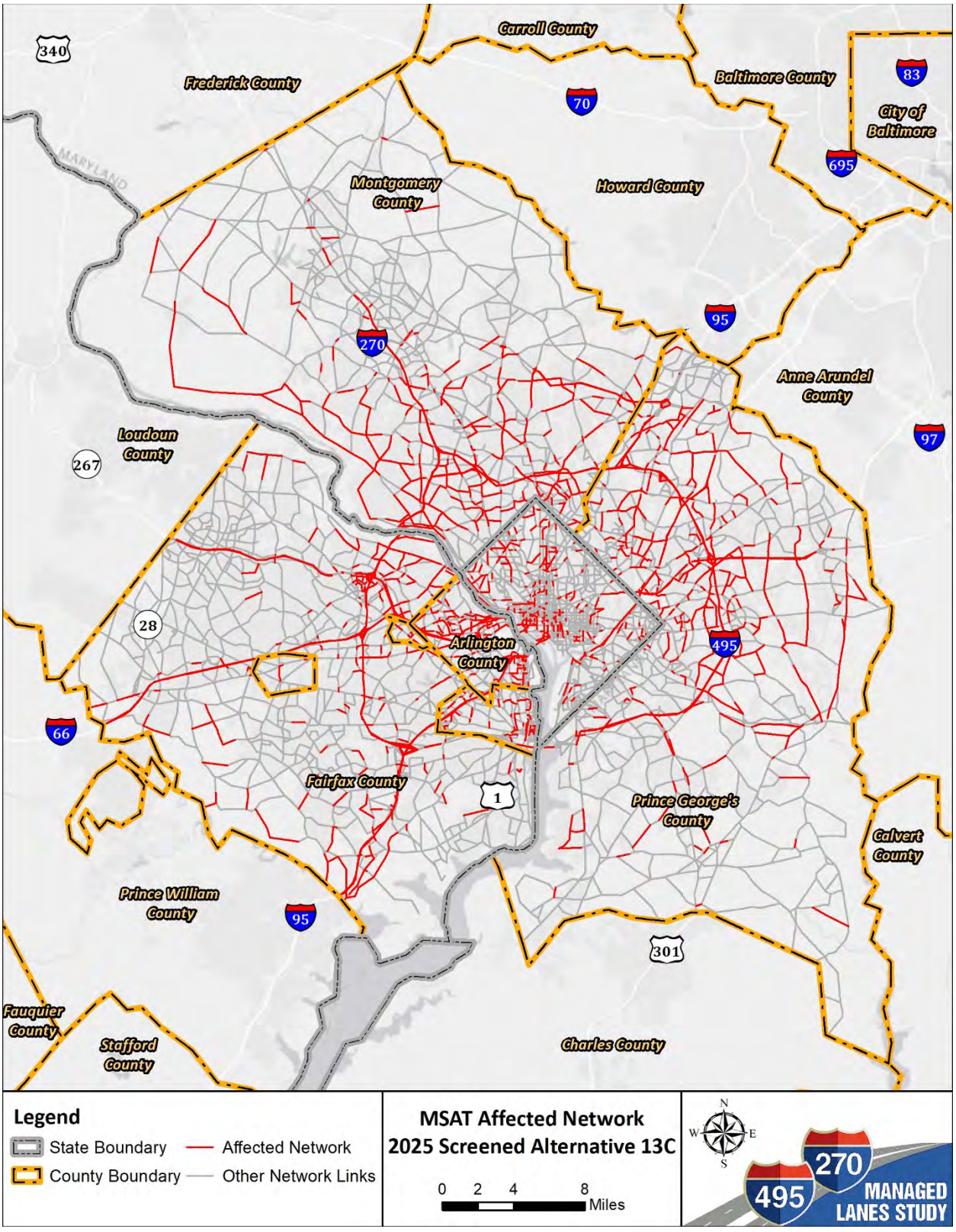


Figure 3-35: MSAT Affected Network 2040 Screened Alternative 5

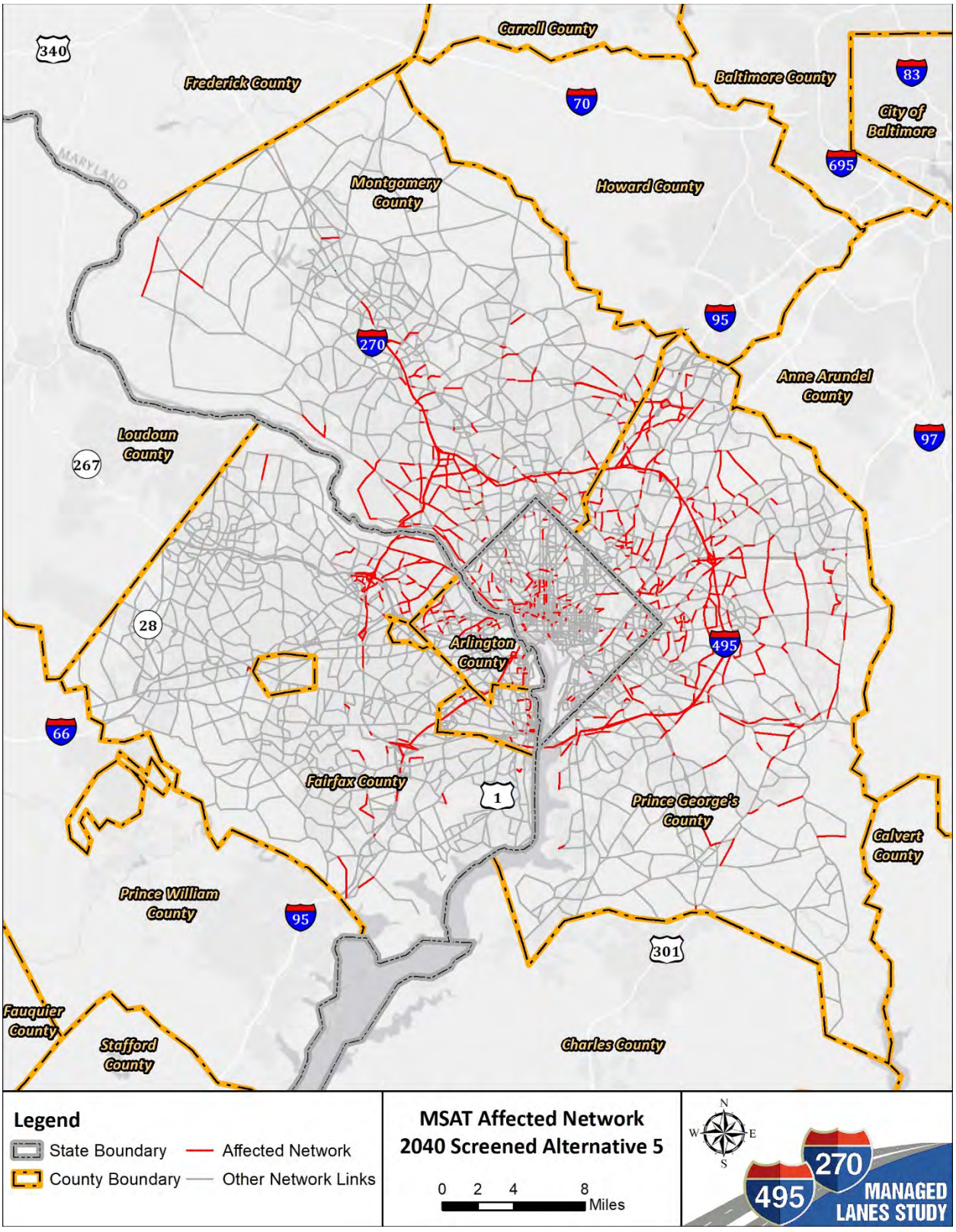


Figure 3-36: MSAT Affected Network 2040 Screened Alternative 8

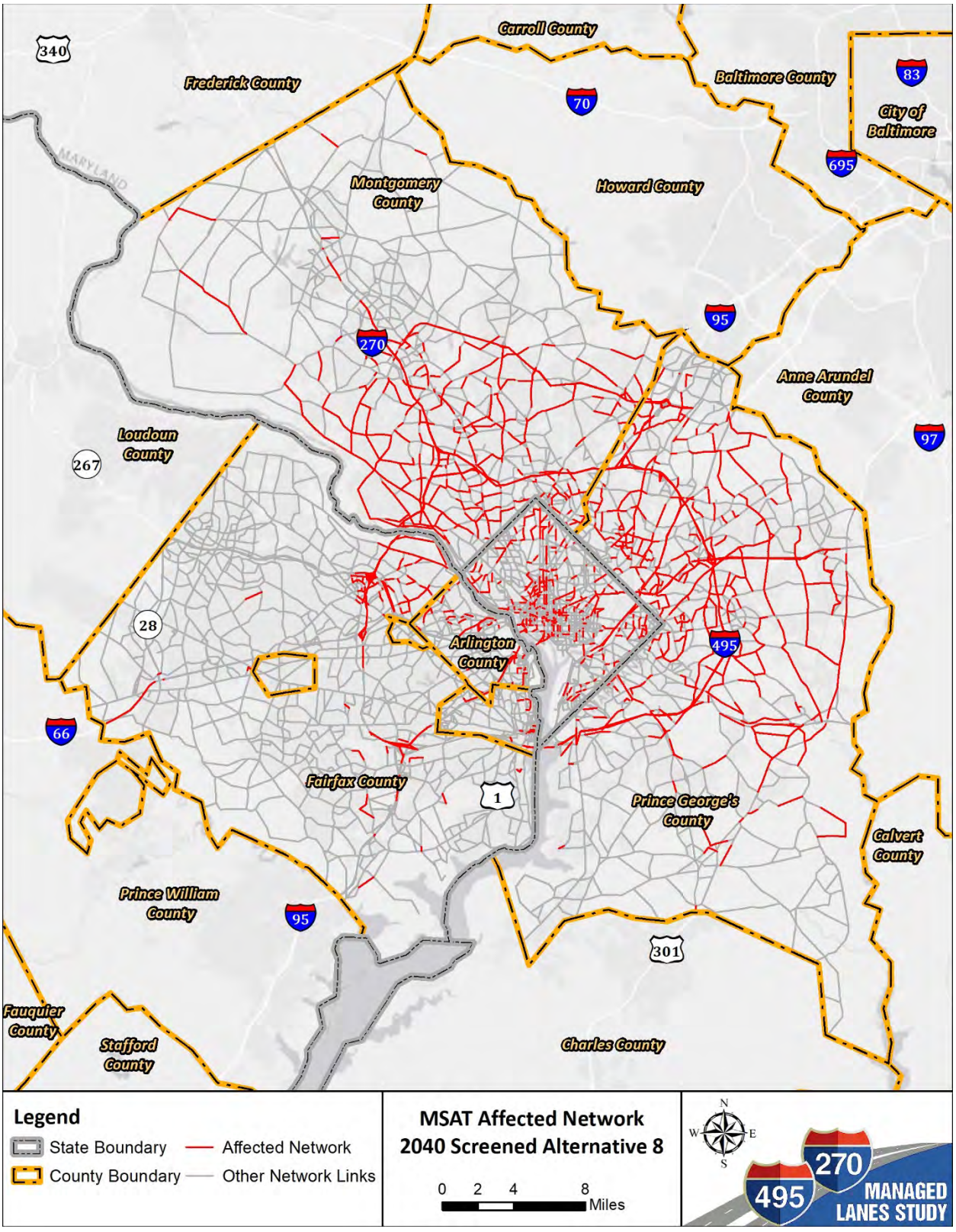


Figure 3-37: MSAT Affected Network 2040 Screened Alternative 9

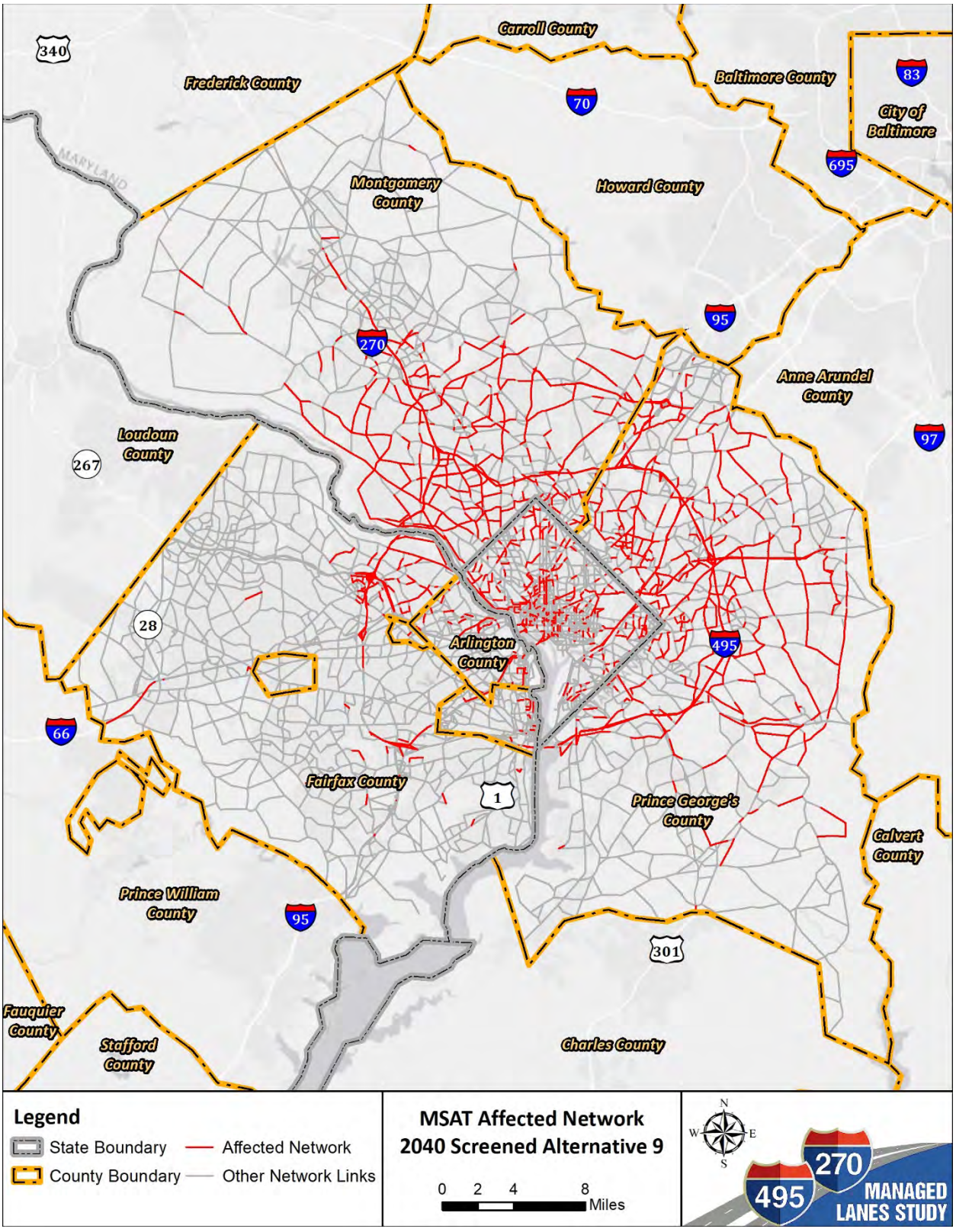


Figure 3-38: MSAT Affected Network 2040 Screened Alternative 10

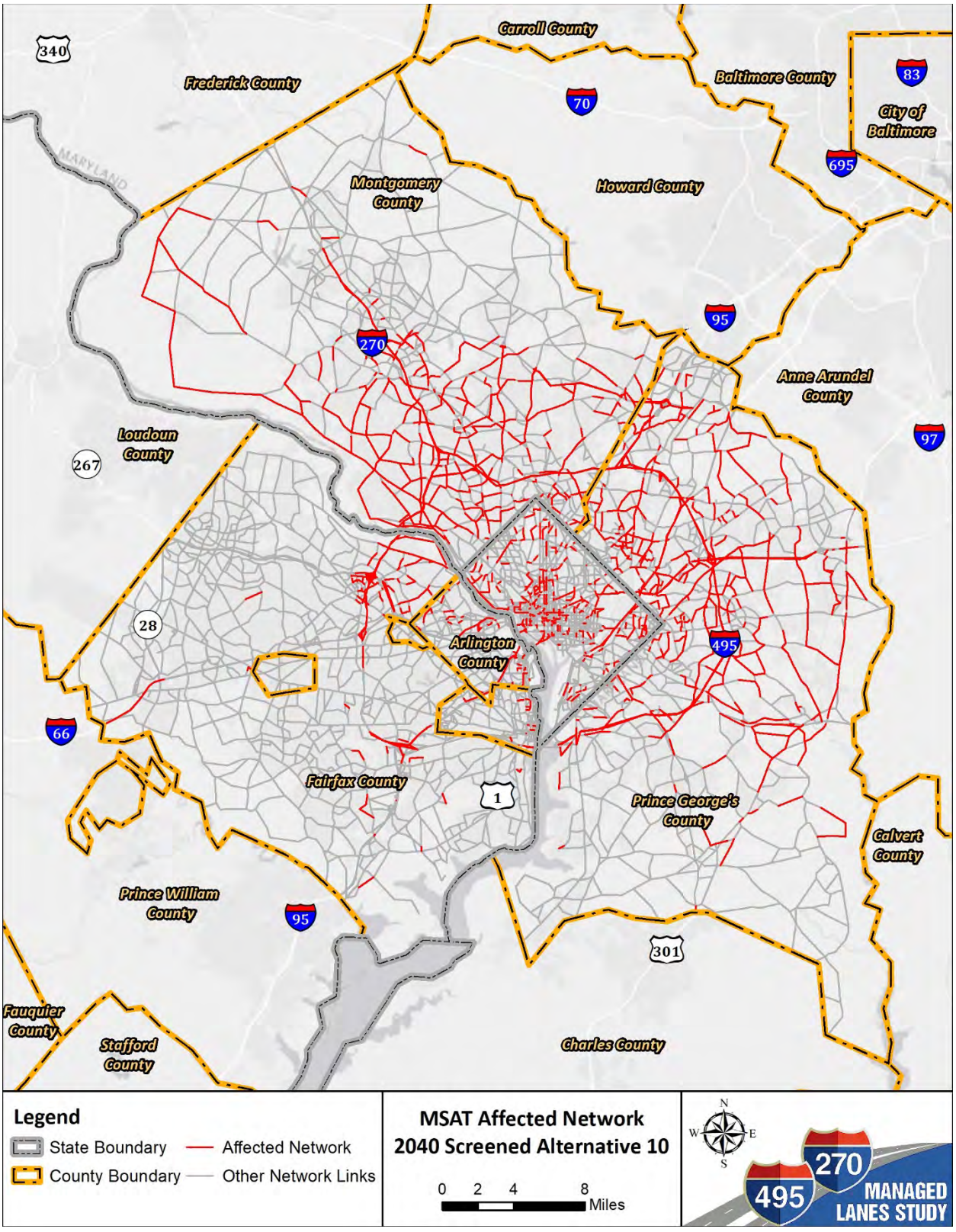


Figure 3-39: MSAT Affected Network 2040 Screened Alternative 13B

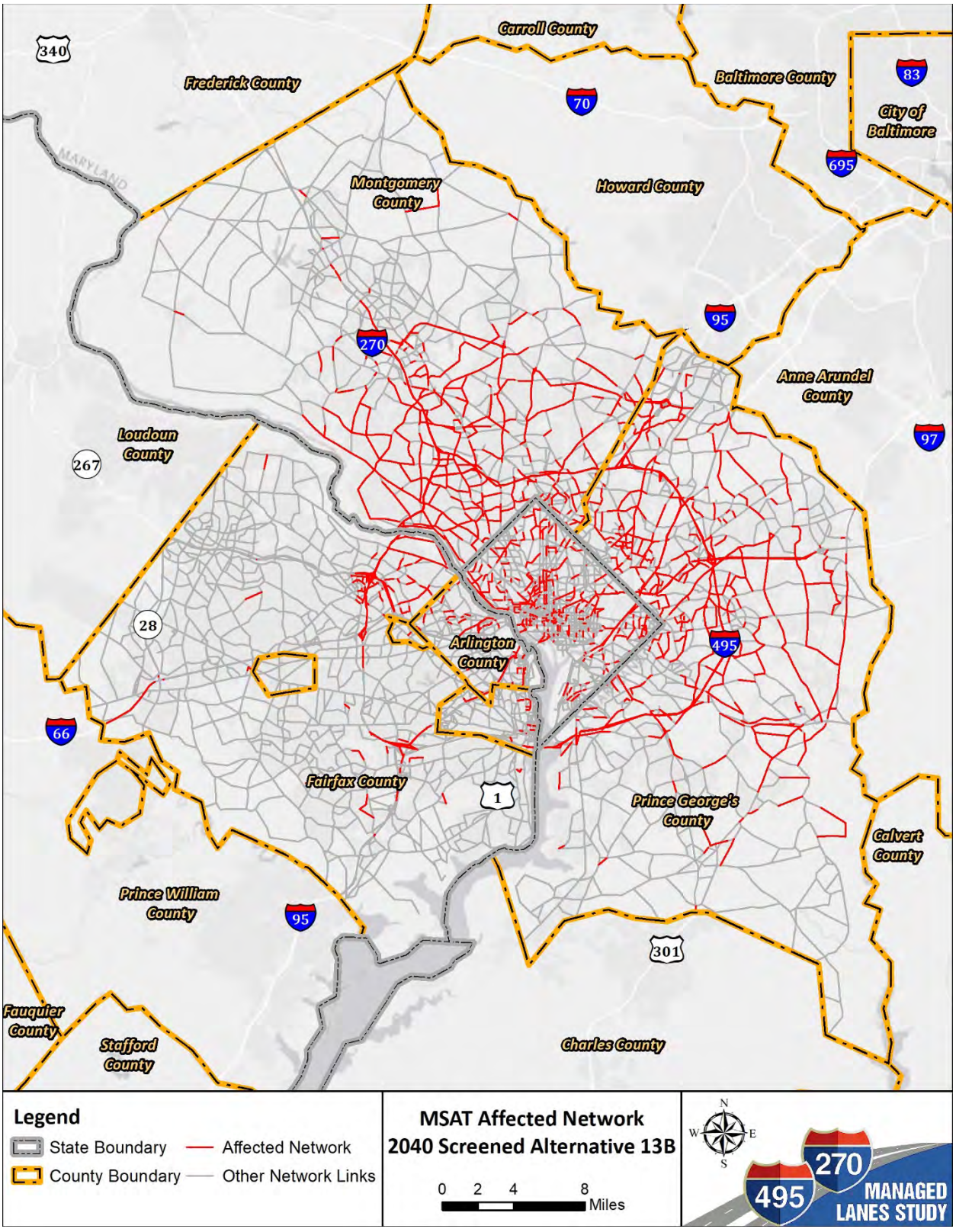
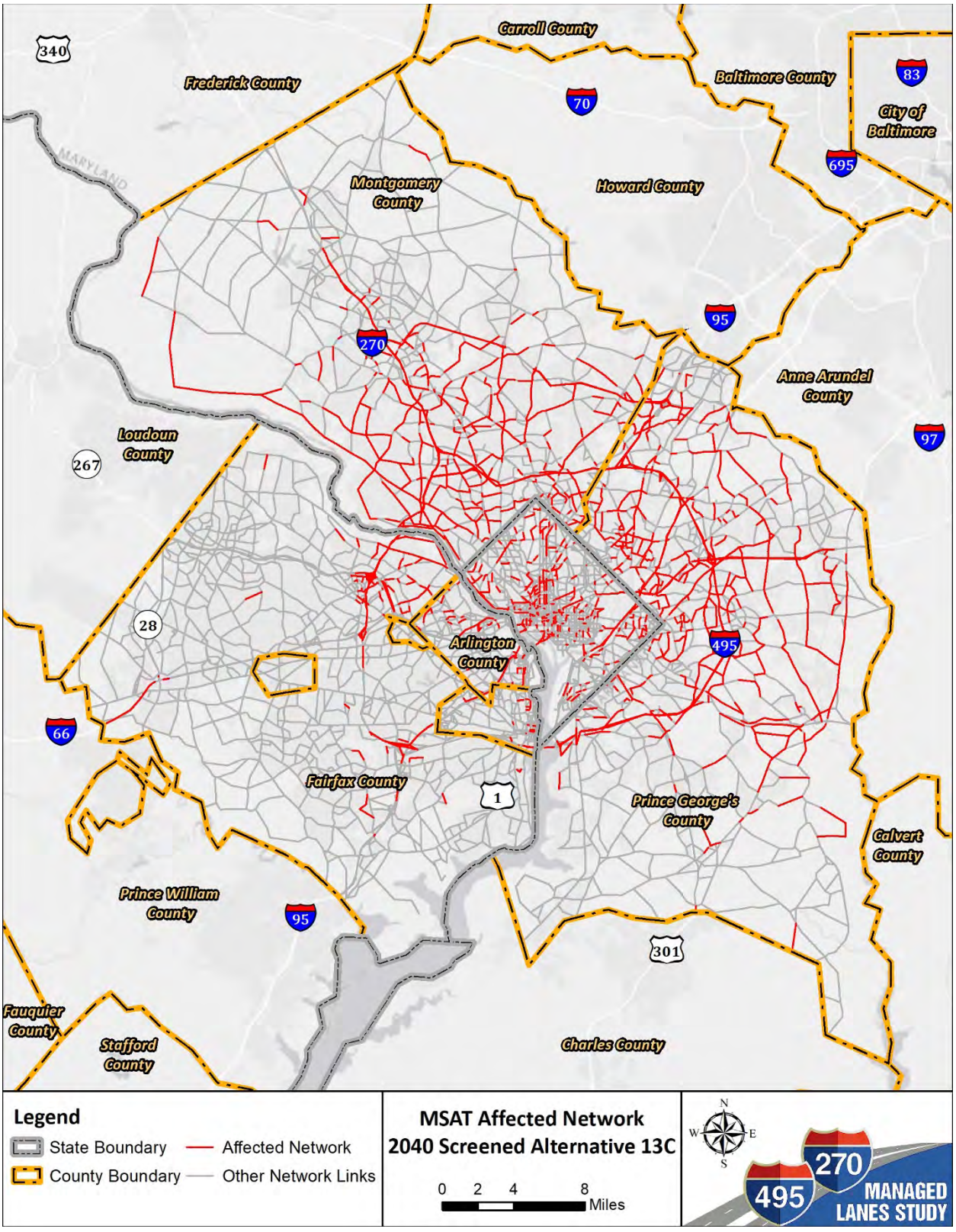


Figure 3-40: MSAT Affected Network 2040 Screened Alternative 13C



The EPA MOVES2014b model was used to calculate emissions estimates for 1,3-butadiene; acetaldehyde; acrolein; benzene; diesel PM; ethylbenzene; formaldehyde; naphthalene; and POM. **Table 3-32** identifies the MOVES RunSpec inputs that were used for the MSAT emissions modeling.

Table 3-32: Proposed MOVES RunSpec Inputs for MSAT Emissions Modeling

MOVES Panel	Input
Scale	County Scale and Inventory Mode
Time Span	"Hour" aggregation level Base (2016), Opening (2025), Design (2040) Years January, April, July, October Weekdays 24 hours
Geographic Bounds	Montgomery County[1]
Vehicles/Equipment	All vehicle types for diesel and gasoline and CNG transit buses only
Road Type	Urban Restricted/Unrestricted Access
Pollutants/Processes	Pollutants: Primary Exhaust PM10-Total (as Diesel PM) Benzene 1,3-Butadiene Formaldehyde Acrolein POM-All PAHs minus naphthalene gas and naphthalene particle Naphthalene-naphthalene gas plus naphthalene particle Ethyl Benzene Acetaldehyde Processes: Running exhaust, crankcase running exhaust, evaporation permeation, and evaporation fuel leaks
General Output	Grams and Distance Travelled
Output Emissions Detail	Road Type

Note: 1. Montgomery County was chosen as representative of the study area since it has the highest population of the two counties, based on the latest Census data and also contains a greater area of the study area.

Table 3-33 identifies the County Data Manager input sources as well as the variation in the use per alternative and year. The MOVES RunSpec files are presented in **Appendix F**.

Table 3-33: MOVES County Data Manager for MSAT Emissions Modeling

Input	Detail	Data Source
Age Distribution	Same for all runs. Changes by Year	MWCOG*
Sourcetype Population	Same for all runs	MWCOG*
Meteorology	Same for all runs	MWCOG*
Fuels	Same for all runs. Changes by Year	MWCOG*/EPA Defaults
I/M Programs	Same for all runs	MWCOG*
Highway Performance Monitoring System VMT Vehicle Type	Unique for each run	Project-specific traffic modeling

Input	Detail	Data Source
Average Speed Distribution	Unique for each run	Project-specific traffic modeling
Road Type Distribution	Unique for each run	Project-specific traffic modeling
Day and Month VMT Fractions	Same for all runs	MWCOG*
Hour VMT Fractions	Same for all runs	MWCOG*

*The most recent data available was used.

The *HPMS VMT Vehicle Type* was study specific for each alternative and year and was calculated from the regional traffic demand model output for all modeling scenarios. The total VMT was apportioned into six main MOVES source types for passenger cars, other 2-axle/4-axle vehicles, single-unit trucks, buses, combination trucks, and motorcycles.

The *Average Speed Distribution* was study specific for each alternative and year. Vehicle speed fractions were estimated from vehicle speeds contained in the regional traffic demand model output for each link included in the affected network and was apportioned using the MOVES average speed bin table of bins (i.e., 1 to 16) for each road type.

The *Road Type Distribution* was study specific for each alternative and the road type distribution fractions were derived from the regional traffic modeling for each MOVES road type and source type. Default *Ramp Fractions* were assumed.

3.4.3 MSAT Results

The results of the quantitative MSAT analysis are presented in **Table 3-34** while changes in emissions compared to the 2025 and 2040 No Build condition and between the Screened Alternatives and base year condition are provided in **Table 3-35** and **Table 3-36**. A graphical representation of the projected annual MSAT emissions for the Base year, 2025 and 2040 No Build and Screened Alternatives by pollutant are presented in **Figure 3-41** through **Figure 3-49.** These tables and figures show that in general, all of the MSAT emissions are expected to increase slightly for the Screened Alternative scenario conditions when compared to the No Build condition for 2025, except for Alternative 5 which is expected to show a slight decrease. In general, MSAT emissions are expected to remain the same or slightly decrease for all Screened Alternatives when compared to the No Build condition for 2040. In addition, all MSAT pollutant emissions are expected to significantly decline in the Opening and Design years when compared to Existing conditions. These reductions occur despite projected increase in VMT from 2016 to the 2025 and 2040 Build scenarios.

It should be noted, that since MDOT SHA took a conservative approach in determining the Affected Network for each Study Alternative, the VMT and resulting MSAT emissions will be slightly larger than if a smaller Affected Network focused on just the Study Area was used. However, MSAT results would be expected to be similar for either size Affected Network where there could be a slight increase in VMT but a slight decrease in MSAT emissions as a result of the Screened Alternatives. For example, the 2040 Build and No Build percentage changes in Table 3-36 show that while there will be slightly more VMT (ranging from 4.1% to 5%) for the Screened Alternatives compared to the No Build condition, MSAT emissions are still expected to decline for most pollutants for each Screened Alternative. The MSATs results presented for each of the Affected Networks are consistent with the Purpose and Need of the Study to address future travel demand and congestion, reduce travel times, and allow travelers to use the facilities efficiently.

Table 3-34: Projected Annual MSAT Emissions (Tons Per Year) on "Affected Network"

Projected Annual MSAT Emissions in Tons Per Year (TPY) on "Affected Network"		Annual Vehicle Miles Traveled (Million AVMT)	Acrolein (TPY)	Benzene (TPY)	1,3 Butadiene (TPY)	Diesel PM (TPY)	Formaldehyde (TPY)	Naphthalene (TPY)	Polycyclic Organic Matter (TPY)	Acetaldehyde (TPY)	Ethylbenzene (TPY)
2016 Base Year	Alternative 5	5,490.2	1.54	15.82	1.75	141.87	22.86	2.54	1.30	11.03	8.41
	Alternative 8	8,193.1	2.34	23.89	2.65	213.26	34.57	3.85	1.97	16.68	12.72
	Alternative 9	8,347.2	2.39	24.43	2.71	218.63	35.40	3.94	2.01	17.08	13.02
	Alternative 10	8,284.1	2.37	24.20	2.68	216.31	35.07	3.90	2.00	16.92	12.89
	Alternative 13B	8,515.4	2.45	24.95	2.77	223.18	36.16	4.02	2.06	17.44	13.30
	Alternative 13C	8,336.2	2.38	24.33	2.70	217.51	35.23	3.92	2.00	17.00	12.96
2025 Opening Year	Alternative 5	5,500.6	0.52	5.37	0.31	38.42	9.26	0.88	0.38	3.88	3.42
	No Build	5,981.1	0.59	5.87	0.35	43.38	10.39	0.99	0.42	4.34	3.81
	Alternative 8	10,339.7	1.00	10.24	0.60	72.99	17.70	1.69	0.72	7.42	6.55
	No Build	9,044.8	0.91	9.04	0.55	66.79	16.09	1.53	0.65	6.72	5.91
	Alternative 9	10,349.1	1.00	10.26	0.60	73.22	17.74	1.69	0.72	7.44	6.57
	No Build	9,242.8	0.93	9.25	0.56	68.53	16.49	1.57	0.67	6.89	6.05
	Alternative 10	10,400.6	1.01	10.31	0.61	73.50	17.82	1.70	0.73	7.47	6.59
	No Build	9,298.4	0.94	9.31	0.56	68.96	16.62	1.58	0.67	6.94	6.10
	Alternative 13B	10,204.5	0.99	10.14	0.60	72.36	17.54	1.67	0.72	7.36	6.49
	No Build	9,346.5	0.95	9.38	0.57	69.51	16.73	1.59	0.68	6.99	6.14
	Alternative 13C	10,321.1	1.00	10.23	0.60	72.89	17.68	1.69	0.72	7.41	6.54
	No Build	9,340.9	0.94	9.34	0.56	69.19	16.65	1.58	0.67	6.95	6.11
2040 Design Year	Alternative 5	6,659.7	0.29	2.81	0.021	13.58	6.56	0.52	0.14	2.31	2.45
	No Build	6,394.7	0.30	2.75	0.021	13.66	6.64	0.53	0.13	2.33	2.47
	Alternative 8	10,148.0	0.46	4.34	0.032	20.90	10.19	0.81	0.21	3.58	3.81
	No Build	9,694.2	0.47	4.26	0.033	21.03	10.37	0.82	0.21	3.63	3.87
	Alternative 9	10,297.5	0.47	4.42	0.033	21.32	10.40	0.83	0.22	3.66	3.89
	No Build	9,890.8	0.48	4.36	0.034	21.55	10.62	0.84	0.21	3.72	3.97
	Alternative 10	10,462.9	0.47	4.48	0.033	21.56	10.52	0.84	0.22	3.70	3.94

Projected Annual MSAT Emissions in Tons Per Year (TPY) on "Affected Network"		Annual Vehicle Miles Traveled (Million AVMT)	Acrolein (TPY)	Benzene (TPY)	1,3 Butadiene (TPY)	Diesel PM (TPY)	Formaldehyde (TPY)	Naphthalene (TPY)	Polycyclic Organic Matter (TPY)	Acetaldehyde (TPY)	Ethylbenzene (TPY)
	No Build	9,964.8	0.48	4.39	0.034	21.72	10.72	0.85	0.21	3.75	4.00
	Alternative 13B	10,373.4	0.47	4.46	0.033	21.51	10.51	0.84	0.22	3.70	3.94
	No Build	10,001.8	0.48	4.41	0.034	21.83	10.76	0.85	0.21	3.76	4.02
	Alternative 13C	10,469.2	0.47	4.49	0.033	21.57	10.52	0.84	0.22	3.70	3.94
	No Build	10,006.8	0.48	4.40	0.034	21.78	10.73	0.85	0.21	3.75	4.00

Table 3-35: Projected Annual MSAT Change in Emissions on "Affected Network"

Projected Annual MSAT Change in Emissions on "Affected Network"		Annual Vehicle Miles Traveled (Million AVMT)	Acrolein (TPY)	Benzene (TPY)	1,3 Butadiene (TPY)	Diesel PM (TPY)	Formaldehyde (TPY)	Naphthalene (TPY)	Polycyclic Organic Matter (TPY)	Acetaldehyde (TPY)	Ethylbenzene (TPY)
2025 Opening Year	Difference (Build Alt 5 - Base)	10.4	-1.02	-10.45	-1.43	-103.44	-13.60	-1.66	-0.92	-7.15	-4.99
	Difference (Build Alt 5 - No Build)	-480.5	-0.06	-0.50	-0.04	-4.96	-1.12	-0.10	-0.04	-0.46	-0.39
	Difference (Build Alt 8 - Base)	2,146.6	-1.34	-13.65	-2.04	-140.26	-16.87	-2.16	-1.24	-9.26	-6.17
	Difference (Build Alt 8 - No Build)	1,294.9	0.09	1.20	0.06	6.20	1.61	0.16	0.07	0.70	0.65
	Difference (Build Alt 9 - Base)	2,001.9	-1.39	-14.17	-2.11	-145.41	-17.66	-2.25	-1.29	-9.64	-6.45
	Difference (Build Alt 9 - No Build)	1,106.3	0.07	1.01	0.04	4.68	1.25	0.12	0.06	0.55	0.52
	Difference (Build Alt 10 - Base)	2,116.5	-1.36	-13.90	-2.08	-142.82	-17.26	-2.20	-1.27	-9.45	-6.30
	Difference (Build Alt 10 - No Build)	1,102.2	0.07	0.99	0.04	4.53	1.20	0.12	0.06	0.53	0.50

Projected Annual MSAT Change in Emissions on "Affected Network"		Annual Vehicle Miles Traveled (Million AVMT)	Acrolein (TPY)	Benzene (TPY)	1,3 Butadiene (TPY)	Diesel PM (TPY)	Formaldehyde (TPY)	Naphthalene (TPY)	Polycyclic Organic Matter (TPY)	Acetaldehyde (TPY)	Ethylbenzene (TPY)
	Difference (Build Alt 13B - Base)	1,689.1	-1.45	-14.82	-2.17	-150.83	-18.61	-2.35	-1.34	-10.09	-6.80
	Difference (Build Alt 13B - No Build)	858.0	0.04	0.76	0.03	2.85	0.81	0.08	0.04	0.37	0.35
	Difference (Build Alt 13C - Base)	1,984.9	-1.38	-14.10	-2.09	-144.62	-17.55	-2.23	-1.28	-9.58	-6.41
	Difference (Build Alt 13C - No Build)	980.2	0.06	0.89	0.04	3.70	1.03	0.10	0.05	0.46	0.43
2040 Design Year	Difference (Build Alt 5 - Base)	1,169.5	-1.25	-13.02	-1.73	-128.29	-16.31	-2.02	-1.16	-8.72	-5.97
	Difference (Build Alt 5 - No Build)	265.0	0.00	0.05	0.00	-0.08	-0.08	-0.01	0.00	-0.02	-0.02
	Difference (Build Alt 8 - Base)	1,954.9	-1.88	-19.55	-2.61	-192.36	-24.38	-3.04	-1.75	-13.10	-8.91
	Difference (Build Alt 8 - No Build)	453.8	-0.01	0.08	0.00	-0.14	-0.18	-0.01	0.00	-0.05	-0.06
	Difference (Build Alt 9 - Base)	1,950.3	-1.93	-20.01	-2.68	-197.31	-25.00	-3.11	-1.80	-13.42	-9.12
	Difference (Build Alt 9 - No Build)	406.7	-0.01	0.06	0.00	-0.23	-0.22	-0.02	0.00	-0.06	-0.07
	Difference (Build Alt 10 - Base)	2,178.8	-1.90	-19.72	-2.65	-194.75	-24.55	-3.06	-1.78	-13.22	-8.95
	Difference (Build Alt 10 - No Build)	498.1	-0.01	0.09	0.00	-0.17	-0.20	-0.01	0.01	-0.05	-0.06
	Difference (Build Alt 13B - Base)	1,858.0	-1.97	-20.49	-2.73	-201.67	-25.64	-3.19	-1.84	-13.75	-9.36
	Difference (Build Alt 13B - No Build)	371.6	-0.01	0.05	0.00	-0.31	-0.24	-0.02	0.00	-0.07	-0.08
	Difference (Build Alt 13C - Base)	2,133.0	-1.91	-19.84	-2.66	-195.94	-24.71	-3.08	-1.79	-13.30	-9.02
	Difference (Build Alt 13C - No Build)	462.4	-0.01	0.08	0.00	-0.20	-0.20	-0.01	0.00	-0.05	-0.06

Table 3-36: Projected Annual MSAT Percent Change in Emissions on "Affected Network"

Projected Annual MSAT Percent Change in Emissions on "Affected Network"		Annual Vehicle Miles Traveled (Million AVMT)	Acrolein (TPY)	Benzene (TPY)	1,3 Butadiene (TPY)	Diesel PM (TPY)	Formaldehyde (TPY)	Naphthalene (TPY)	Polycyclic Organic Matter (TPY)	Acetaldehyde (TPY)	Ethylbenzene (TPY)
2025 Opening Year	Difference (Build Alt 5 - Base)	0.2%	-66.1%	-66.1%	-82.0%	-72.9%	-59.5%	-65.3%	-70.9%	-64.8%	-59.3%
	Difference (Build Alt 5 - No Build)	-8.0%	-10.9%	-8.6%	-10.6%	-11.4%	-10.8%	-10.6%	-10.2%	-10.5%	-10.1%
	Difference (Build Alt 8 - Base)	26.2%	-57.2%	-57.1%	-77.3%	-65.8%	-48.8%	-56.1%	-63.2%	-55.5%	-48.5%
	Difference (Build Alt 8 - No Build)	14.3%	9.9%	13.3%	10.3%	9.3%	10.0%	10.3%	10.9%	10.4%	10.9%
	Difference (Build Alt 9 - Base)	24.0%	-58.1%	-58.0%	-77.7%	-66.5%	-49.9%	-57.1%	-64.0%	-56.4%	-49.5%
	Difference (Build Alt 9 - No Build)	12.0%	7.4%	10.9%	7.9%	6.8%	7.6%	7.8%	8.5%	8.0%	8.5%
	Difference (Build Alt 10 - Base)	25.5%	-57.5%	-57.4%	-77.4%	-66.0%	-49.2%	-56.5%	-63.5%	-55.8%	-48.9%
	Difference (Build Alt 10 - No Build)	11.9%	7.1%	10.7%	7.5%	6.6%	7.2%	7.5%	8.2%	7.7%	8.2%
	Difference (Build Alt 13B - Base)	19.8%	-59.4%	-59.4%	-78.4%	-67.6%	-51.5%	-58.4%	-65.2%	-57.8%	-51.2%
	Difference (Build Alt 13B - No Build)	9.2%	4.7%	8.1%	5.1%	4.1%	4.8%	5.1%	5.7%	5.3%	5.8%
	Difference (Build Alt 13C - Base)	23.8%	-58.0%	-58.0%	-77.7%	-66.5%	-49.8%	-57.0%	-64.0%	-56.4%	-49.5%
	Difference (Build Alt 13C - No Build)	10.5%	6.0%	9.5%	6.4%	5.3%	6.2%	6.4%	7.1%	6.6%	7.1%
2040 Design Year	Difference (Build Alt 5 - Base)	21.3%	-80.9%	-82.3%	-98.8%	-90.4%	-71.3%	-79.5%	-89.4%	-79.1%	-70.9%
	Difference (Build Alt 5 - No Build)	4.1%	-1.3%	1.9%	-1.9%	-0.6%	-1.2%	-1.0%	2.3%	-0.8%	-1.0%
	Difference (Build Alt 8 - Base)	23.9%	-80.4%	-81.8%	-98.8%	-90.2%	-70.5%	-78.9%	-89.2%	-78.5%	-70.0%
	Difference (Build Alt 8 - No Build)	4.7%	-1.8%	1.8%	-2.5%	-0.7%	-1.7%	-1.4%	2.2%	-1.3%	-1.5%
	Difference (Build Alt 9 - Base)	23.4%	-80.5%	-81.9%	-98.8%	-90.2%	-70.6%	-79.0%	-89.3%	-78.6%	-70.1%
	Difference (Build Alt 9 - No Build)	4.1%	-2.2%	1.4%	-3.0%	-1.1%	-2.1%	-1.8%	1.7%	-1.7%	-1.9%

Projected Annual MSAT Percent Change in Emissions on "Affected Network"		Annual Vehicle Miles Traveled (Million AVMT)	Acrolein (TPY)	Benzene (TPY)	1,3 Butadiene (TPY)	Diesel PM (TPY)	Formaldehyde (TPY)	Naphthalene (TPY)	Polycyclic Organic Matter (TPY)	Acetaldehyde (TPY)	Ethylbenzene (TPY)
	Difference (Build Alt 10 - Base)	26.3%	-80.0%	-81.5%	-98.8%	-90.0%	-70.0%	-78.5%	-89.0%	-78.1%	-69.4%
	Difference (Build Alt 10 - No Build)	5.0%	-1.9%	2.1%	-2.7%	-0.8%	-1.8%	-1.5%	2.5%	-1.3%	-1.5%
	Difference (Build Alt 13B - Base)	21.8%	-80.7%	-82.1%	-98.8%	-90.4%	-70.9%	-79.2%	-89.4%	-78.8%	-70.4%
	Difference (Build Alt 13B - No Build)	3.7%	-2.3%	1.1%	-3.0%	-1.4%	-2.3%	-2.0%	1.4%	-1.8%	-2.0%
	Difference (Build Alt 13C - Base)	25.6%	-80.1%	-81.6%	-98.8%	-90.1%	-70.1%	-78.6%	-89.1%	-78.2%	-69.6%
	Difference (Build Alt 13C - No Build)	4.6%	-2.0%	1.9%	-2.7%	-0.9%	-1.9%	-1.6%	2.2%	-1.4%	-1.6%

Figure 3-41: 1,3 Butadiene Results for Base, Opening, and Design Year Conditions

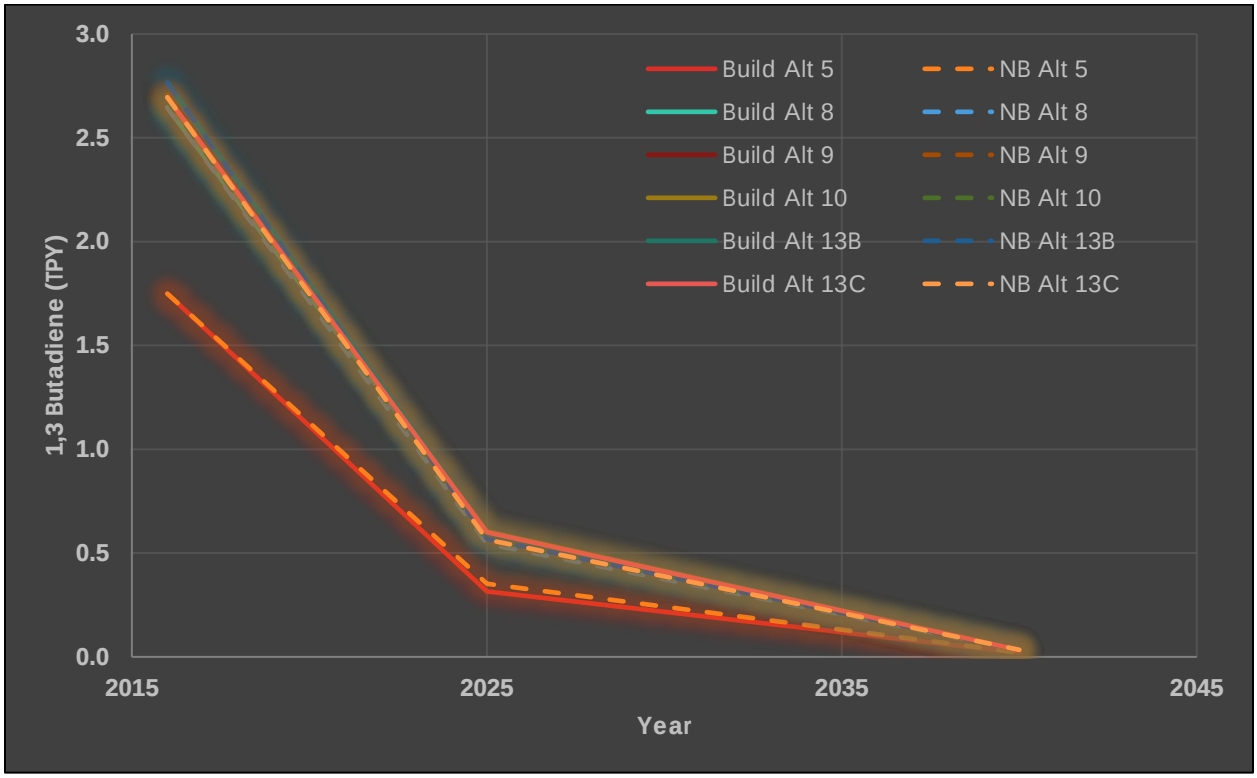


Figure 3-42: Acetaldehyde Results for Base, Opening, and Design Year Conditions

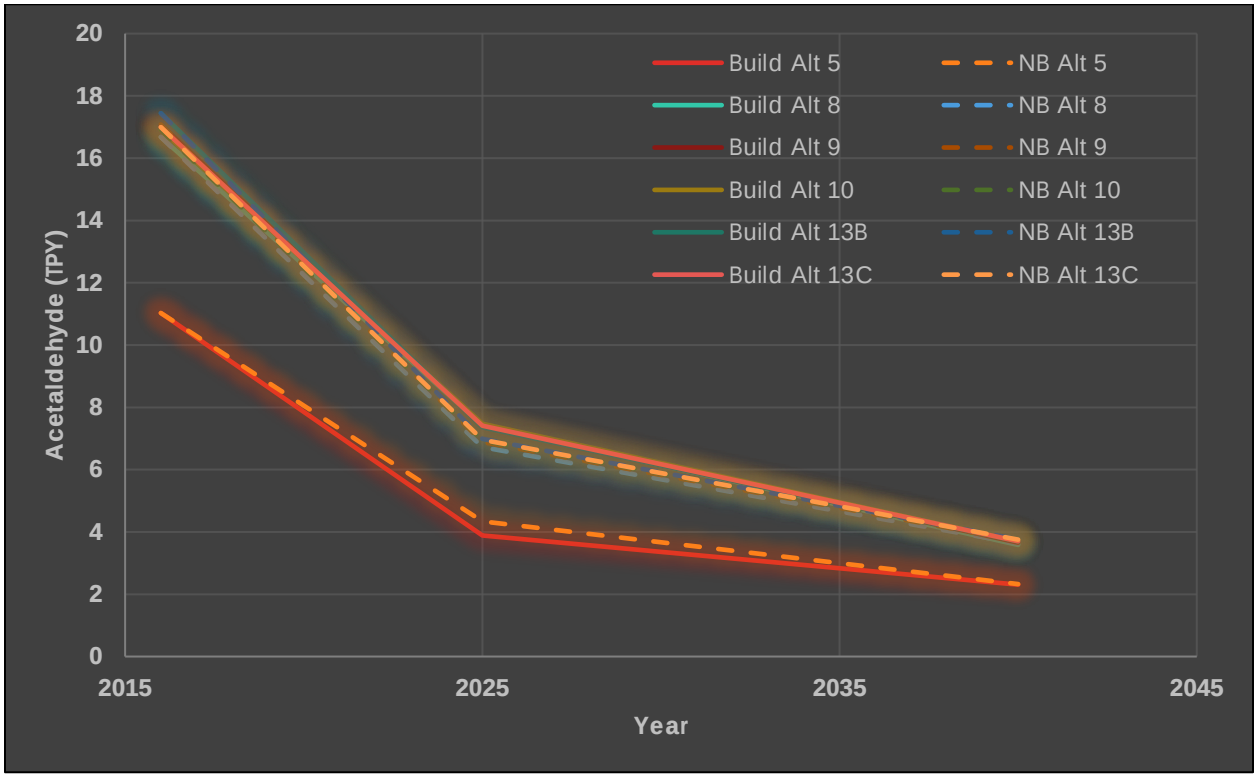


Figure 3-43: Acrolein Results for Base, Opening, and Design Year Conditions

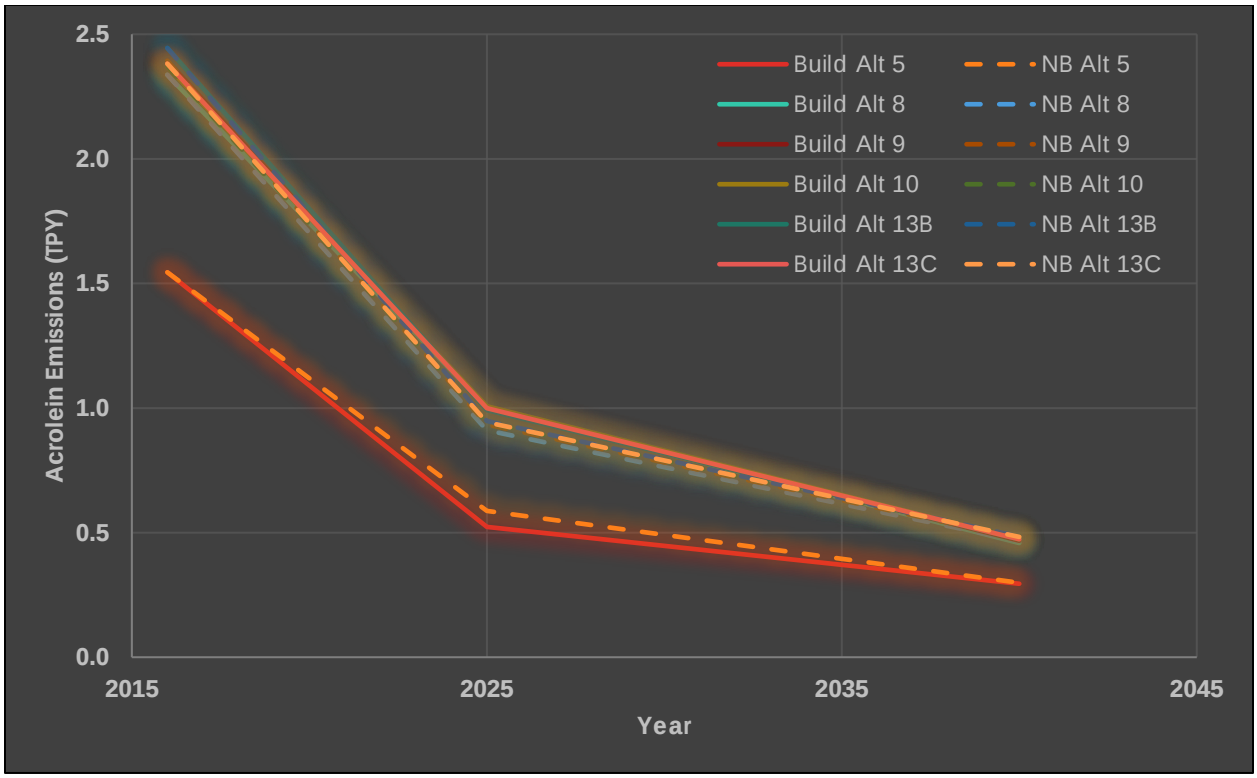


Figure 3-44: Benzene Results for Base, Opening, and Design Year Conditions

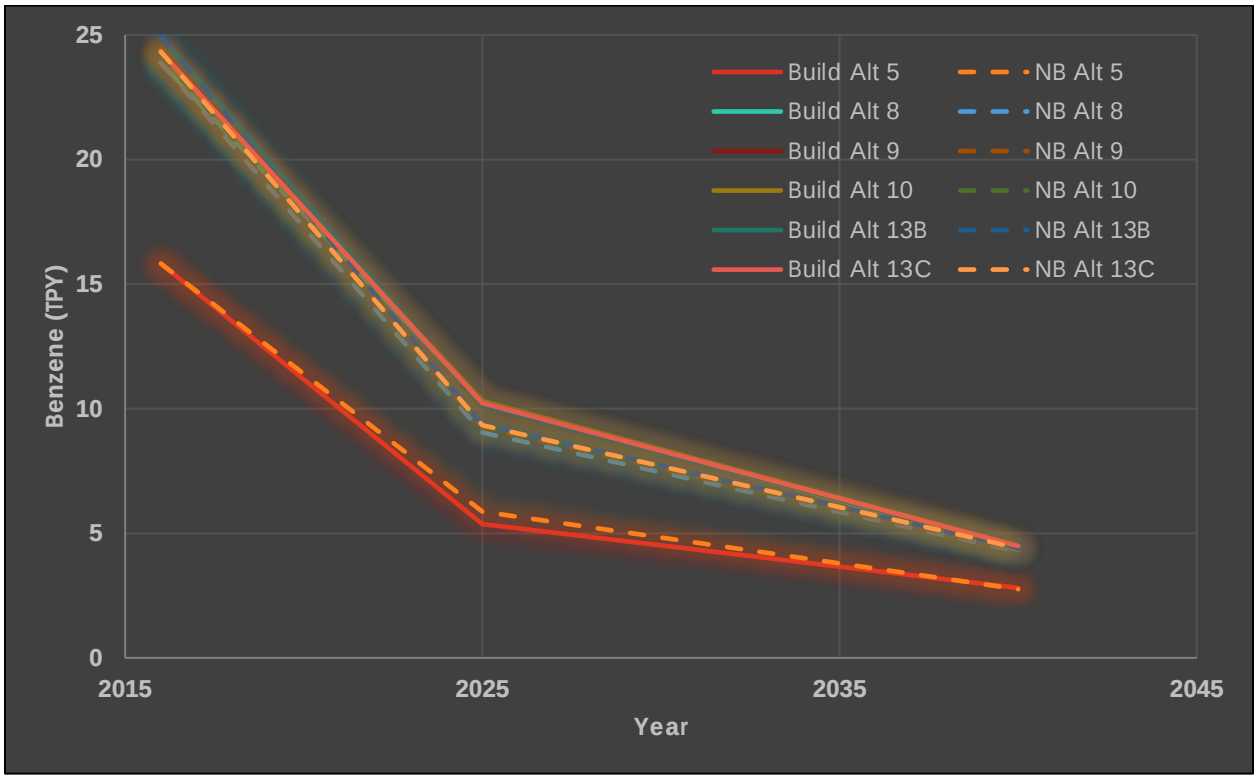


Figure 3-45: Diesel PM Results for Base, Opening, and Design Year Conditions

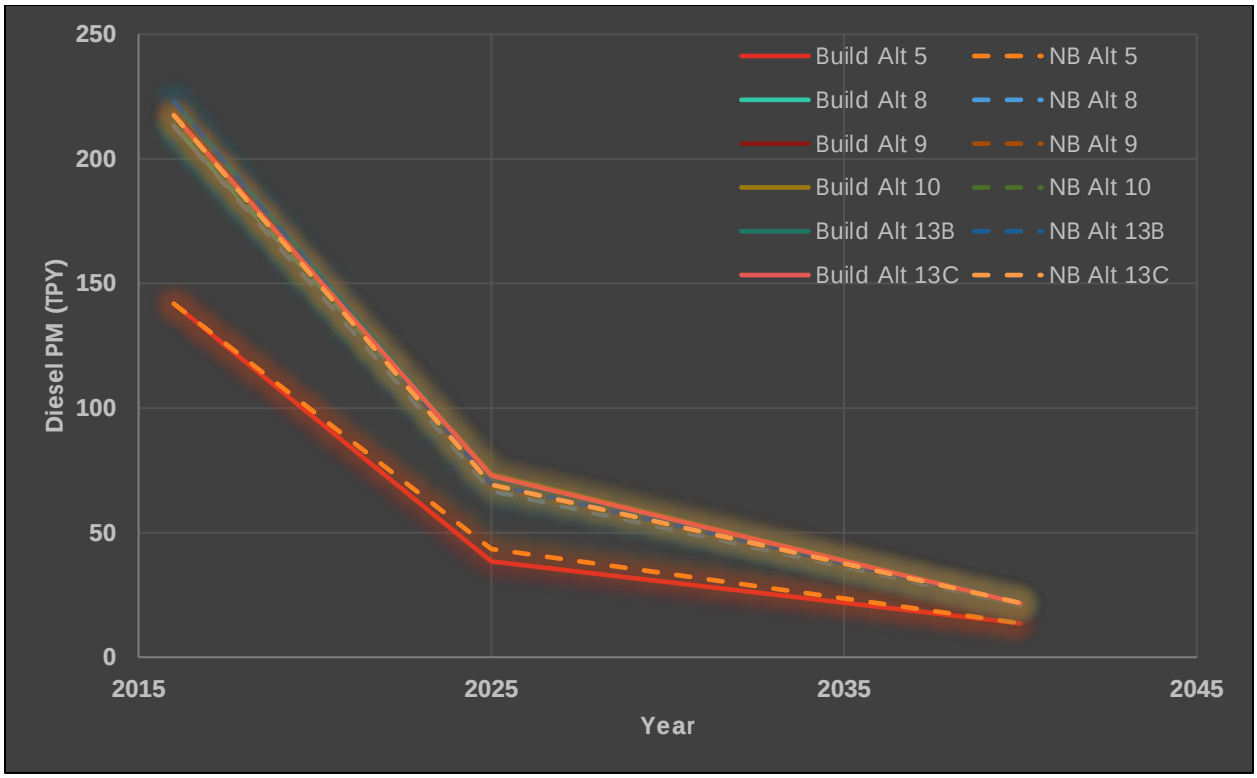


Figure 3-46: Ethylbenzene Results for Base, Opening, and Design Year Conditions

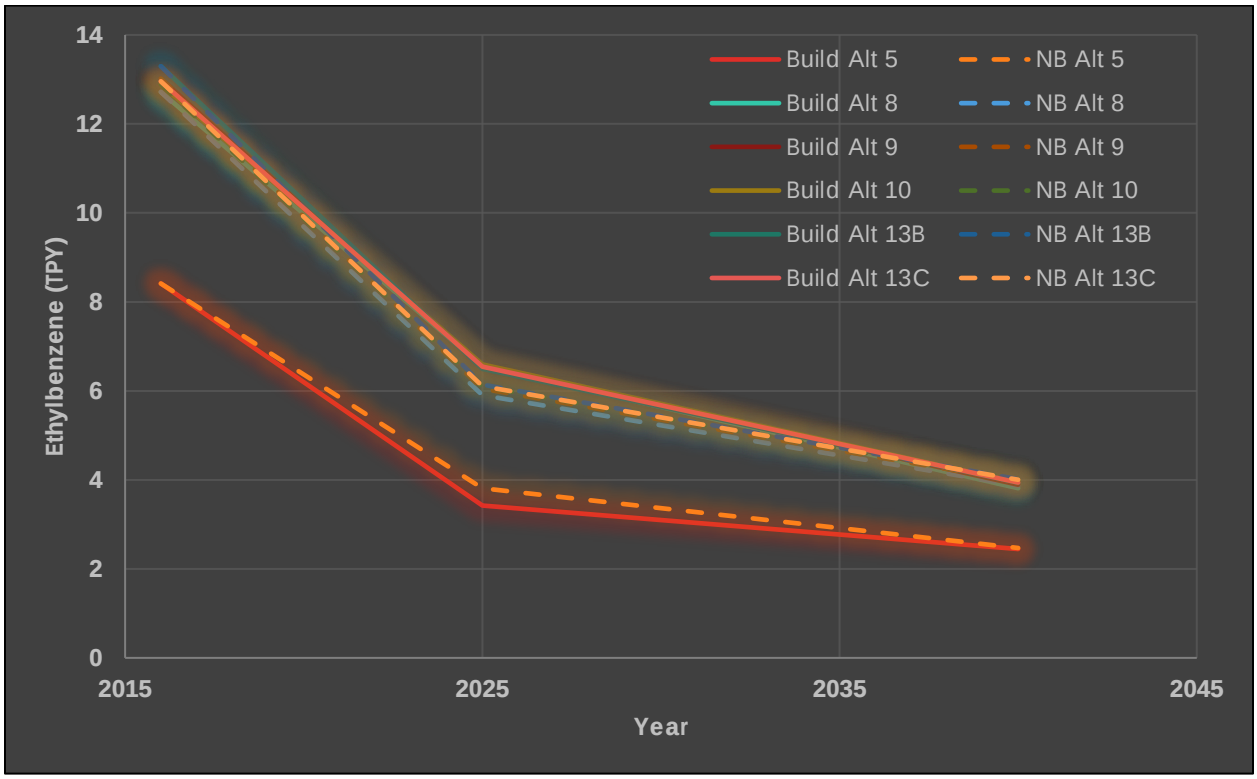


Figure 3-47: Formaldehyde Results for Base, Opening, and Design Year Conditions

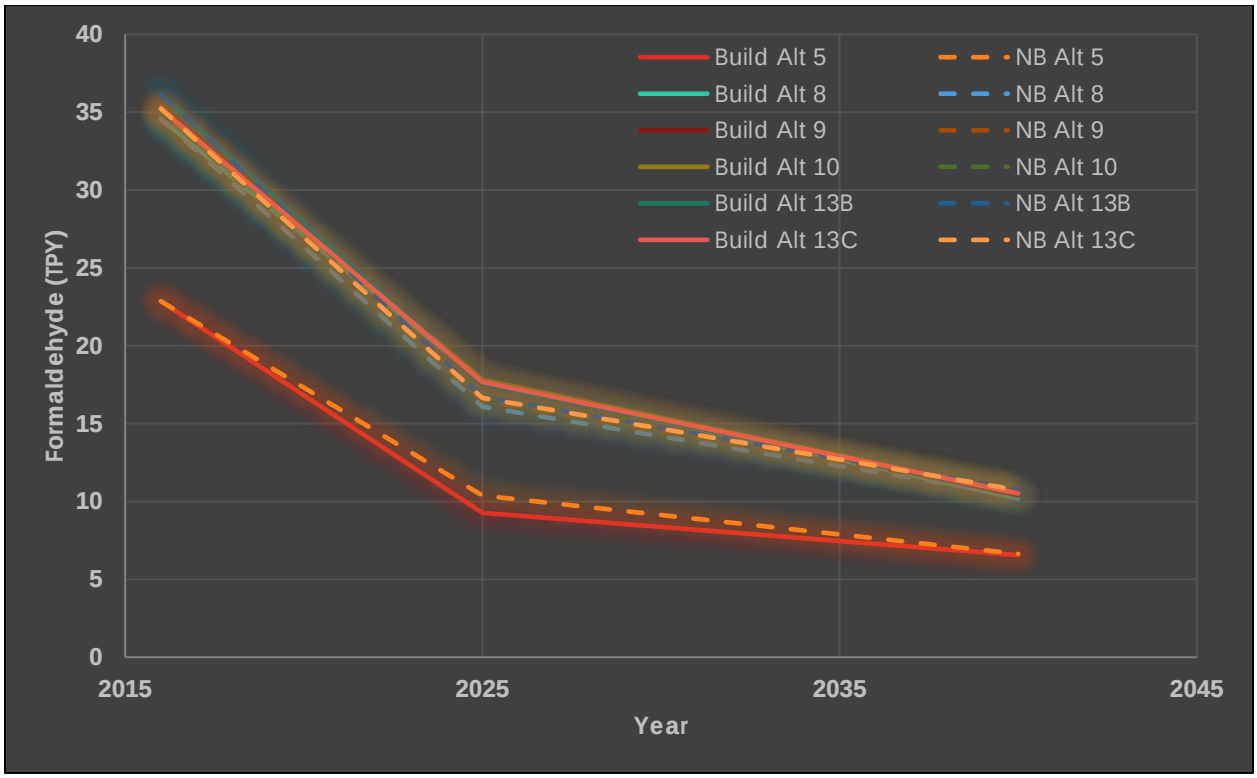


Figure 3-48: Naphthalene Results for Base, Opening, and Design Year Conditions

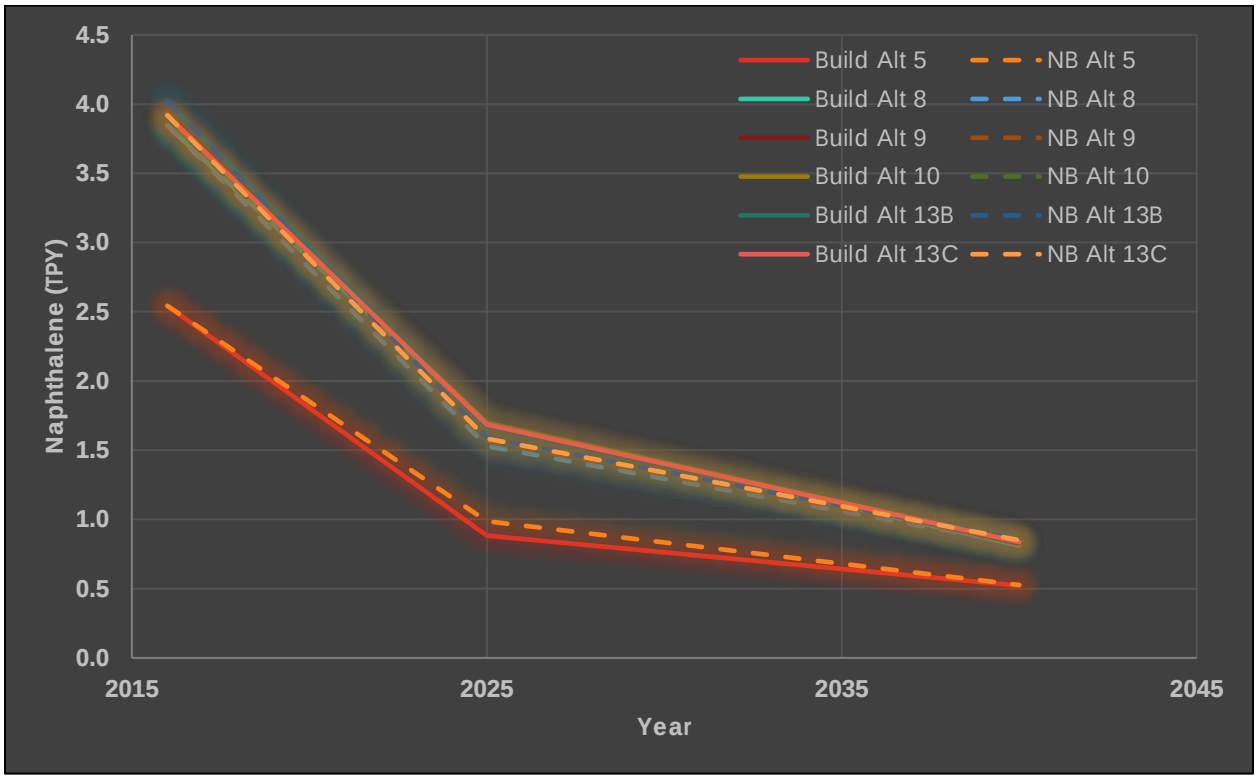
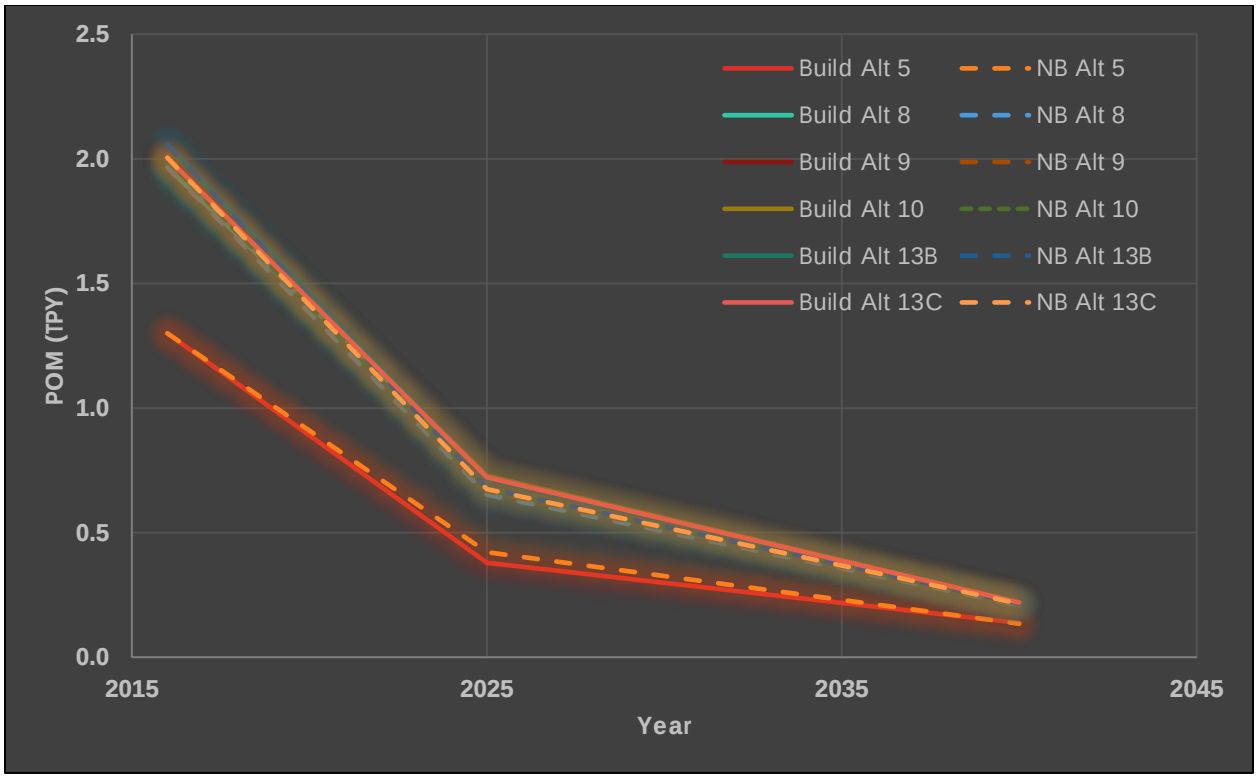


Figure 3-49: POM Results for Base, Opening, and Design Year Conditions



In general:

- For each MSAT and Alternative, the long-term trend in emissions is downward. The downward trend in emissions is a result of technological improvements (i.e., more stringent vehicle emission and fuel quality standards coupled with ongoing fleet turnover) and is achieved despite increased VMT in this period.
- For each MSAT and Alternative, the forecast emissions for Build and No Build are nearly coincidental (i.e., the differences in emissions between Build and No Build are small), especially compared to the long-term downward trend in emissions for each MSAT.
- For each MSAT, emission estimates vary with Alternative, which is expected given the substantial differences (i.e., traffic volumes, delays, travel speeds, affected links, etc.) in the Alternatives.
- The Screened Alternative conditions are expected to result in significant reductions in all MSATs compared to the Base Year in both the Opening and Design years as shown in **Figure 3-41** through **Figure 3-49**.

3.4.4 Incomplete or Unavailable Information for Project Specific MSAT Health Impacts Analysis

Information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives.[34] The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the CAA and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the IRIS, which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, https://www.epa.gov/iris/). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix D of FHWA's *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*. Among the adverse health effects linked to MSAT compounds at high exposures are: cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects) or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

[34] Appendix C, Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents. October 18, 2016. https://www.fhwa.dot.gov/environMent/air_quality/air_toxics/policy_and_guidance/msat/page03.cfm

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxicscritical-review-literature-exposure-and-health-effects). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA states that with respect to diesel engine exhaust, "[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk (https://www.epa.gov/iris)."

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the CAA to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the US Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable.[35]

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

3.4.5 MSAT Conclusions

What is known about mobile source air toxics is still evolving. Information is currently incomplete or unavailable to credibly predict the study-specific health impacts due to changes in MSAT emissions associated with each of the study Alternatives. Under each of the Screened Alternatives, there may be slightly higher or lower MSAT emissions in the design year relative to the No Build Alternative due to increased VMT or increased vehicle speeds. There could also be increases in MSAT levels in a few localized areas where VMT increases. However, lower MSAT levels are expected in the future due to cleaner engine standards coupled with fleet turnover. The magnitude of the EPA-projected reductions is so great that, even after accounting for VMT growth, MSAT emissions in the study area would be significantly lower in the future than they are today, regardless of the Alternative selected.

[35] https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf).

3.5 Greenhouse Gases and State of Maryland Policies

GHGs are generated through burning fossil fuels and other human activities. CO_2 is the largest component of GHG emissions; other prominent emissions include CH_4, N_2O, and hydrofluorocarbons. These emissions are different from criteria air pollutants since their effects in the atmosphere are global rather than localized, and also since they remain in the atmosphere for decades to centuries.

On December 18, 2018, a coalition of nine Northeast and Mid-Atlantic states and the District of Columbia (Connecticut, Delaware, Maryland, Massachusetts, New Jersey, Pennsylvania, Rhode Island, Vermont, Virginia all members of the Transportation and Climate Initiative (TCI)) announced[36] their intent to design a new regional low-carbon transportation policy proposal that would cap and reduce carbon emissions from the combustion of transportation fuels and invest proceeds from the program into low-carbon and more resilient transportation infrastructure. The TCI is actively developing a regional policy work plan, "that lives up to this commitment. This workplan was designed with the goal of developing a policy that accelerates the transition to a low-carbon transportation future and delivers a better, cleaner, more resilient transportation system that benefits all our communities particularly those underserved by current transportation options and overburdened by pollution, while making significant reductions in GHGs and other harmful air pollution across the region."[37]

Maryland has been a leader in adopting strategies to advance cleaner vehicles and fuels, via the Maryland Clean Cars Program, which implemented California's low emissions vehicle (LEV) standards to vehicles purchased in Maryland starting with model year 2011. Since then, adopted and proposed enhancements in Federal motor vehicle emissions standards overlap with this program, and further improvements in vehicle technologies and fuels are anticipated to play a key role in significantly improving air quality and reducing GHG emissions.

MDOT recognizes that highway transportation accounts for approximately 28 percent of GHGs in Maryland. In response to the GGRA, MDOT is exploring and implementing transportation and land use strategies to reduce GHG emissions programmatically as described in the GGRA Plan (2012)[38]. The general GHG reduction strategies presented for the transportation sector in the Plan include: Transportation Technologies, such as vehicle emission and fuel standards, on-road technologies, and low emission vehicle initiatives; Public Transportation Initiatives; Pricing Initiatives; GHG Emission Impact evaluation of Major New Transportation Projects; and Bike and Pedestrian Initiatives. Initiatives outlined in the Plan will also help with restoration of the Chesapeake Bay, improving air quality and improving water quality throughout the State. In late 2019, the MDE released and began taking stakeholder comments on the 2019 GGRA Draft Plan[39] which outlines Maryland's strategies to achieve the goal of reducing emissions 40 percent by 2030. The 2019 GGRA Draft Plan presents a comprehensive set of measures to reduce and sequester GHGs, including investments in energy efficiency and clean and renewable energy solutions,

[36] https://www.transportationandclimate.org/nine-states-and-dc-design-regional-approach-cap-greenhouse-gas-pollution-transportation

[37] https://www.transportationandclimate.org/main-menu/tcis-regional-policy-design-process-2019

[38] https://climatechangemde.maryland.gov/wp-content/uploads/sites/16/2014/11/GGRA_Report_Final_11-2-15programs/Air/ClimateChange/MCCC/Publications/GGRAPlan2012.pdf

[39] https://mde.maryland.gov/programs/Air/ClimateChange/Documents/2019GGRAPlan/2019%20GGRA%20Draft%20Plan%20(10-15-2019)%20POSTED.pdf

widespread adoption of electric vehicles, and improved management of forests and farms to sequester more carbon in trees and soils.

3.5.1 Greenhouse Gas Emissions Analysis

GHG emissions from the study will be generated from construction, from vehicles using roadways, and during operations and maintenance activities of the roadways. Construction emissions are discussed in Section 3.6. GHG emissions from vehicles using roadways are a function of distance traveled (expressed as VMT), vehicle speed, and road grade. To evaluate VMT for each Alternative, the VMT derived from the MSAT Affected Network for each Alternative (refer to Section 3.4.2) was used to characterize the VMT changes between the Build and No Build for the GHG discussion. The links identified in the Affected Network in Section 3.4.2 include only roadway links that could significantly impact the study area. The results of the quantitative CO_2 equivalent analysis are presented in **Table 3-37** while the percent change in emissions are presented in **Table 3-38** for the 2025 and 2040 No Build condition and between the Screened Alternatives and base year condition. A graphical representation of the projected annual GHG related emissions for the Base year, 2025 and 2040 No Build and Screened Alternatives by pollutant are presented in **Figure 3-50** through **Figure 3-55.** The analysis shows GHG emissions are expected to increase slightly for the Screened Alternative scenario conditions when compared to the No Build condition for 2025, except for Screened Alternative 5 which is expected to show a slight decrease. In general, GHG emissions are expected to increase for all Screened Alternatives when compared to the No Build condition for 2040. GHG emissions are expected to significantly decline in the Opening and Design years when compared to existing conditions. These reductions occur despite projected increase in VMT from 2016 to the 2025 and 2040 Build scenarios.

Under the No Build Alternative, VMT would gradually increase the in the study area for each Alternative between 2016 and 2040 as employment and population in the area increases. Furthermore, under the Screened Alternatives, increased capacity and less congestion lead to an increase in VMT relative to the No Build Alternative (**Table 3-39**).

Table 3-37: Projected Annual CO2 Equivalent Emissions in Tons Per Year (TPY) on "Affected Network"

Projected Annual CO2 Equivalent Emissions in Tons Per Year (TPY) on "Affected Network"		Annual Vehicle Miles Traveled (Million AVMT)	Total Energy Consumption (MMBtu)	Total Gaseous Hydrocarbons (TPY)	Methane (TPY)	Nitrous Oxide (TPY)	Atmospheric CO2 (TPY)	CO2 Equivalent (TPY)
2016 Base Year	Alternative 5	5,490.2	35,686,779	677.3	71.03	15.28	3,000,135	3,006,446
	Alternative 8	8,193.1	53,742,683	1,023.7	107.00	23.26	4,517,999	4,527,577
	Alternative 9	8,347.2	54,895,431	1,047.6	109.31	23.88	4,614,923	4,624,744
	Alternative 10	8,284.1	54,423,451	1,037.9	108.34	23.64	4,575,230	4,584,950
	Alternative 13B	8,515.4	56,050,814	1,070.1	111.61	24.40	4,712,048	4,722,082
	Alternative 13C	8,336.2	54,709,897	1,042.9	108.95	23.72	4,599,321	4,609,085
2025 Opening Year	Alternative 5	5,500.6	28,330,872	290.9	52.29	9.91	2,383,219	2,387,468
	No-Build	5,981.1	31,188,787	322.9	57.60	11.31	2,623,693	2,628,495
	Alternative 8	10,339.7	53,826,223	556.0	99.72	19.09	4,527,861	4,536,022
	No-Build	9,044.8	47,895,938	499.8	88.75	17.74	4,029,102	4,036,588
	Alternative 9	10,349.1	53,949,670	557.4	99.94	19.15	4,538,266	4,546,450
	No-Build	9,242.8	49,023,530	512.1	90.88	18.21	4,123,967	4,131,649
	Alternative 10	10,400.6	54,178,805	559.7	100.36	19.22	4,557,524	4,565,741
	No-Build	9,298.4	49,348,775	515.8	91.49	18.36	4,151,320	4,159,063
	Alternative 13B	10,204.5	53,291,831	551.1	98.76	18.96	4,482,920	4,491,020
	No-Build	9,346.5	49,675,696	519.5	92.16	18.50	4,178,825	4,186,627
	Alternative 13C	10,321.1	53,755,765	555.3	99.56	19.06	4,521,930	4,530,078
	No-Build	9,340.9	49,507,555	516.9	91.76	18.37	4,164,681	4,172,435
2040 Design Year	Alternative 5	6,659.7	28,475,819	203.7	52.13	11.57	2,398,060	2,402,802
	No-Build	6,394.7	28,011,305	204.5	51.96	11.91	2,359,013	2,363,853
	Alternative 8	10,148.0	43,912,870	316.8	80.79	18.15	3,697,977	3,705,391
	No-Build	9,694.2	43,240,036	319.6	80.76	18.84	3,641,419	3,649,041
	Alternative 9	10,297.5	44,694,796	323.0	81.81	18.56	3,763,849	3,771,425
	No-Build	9,890.8	44,200,356	327.1	82.62	19.32	3,722,309	3,730,120
	Alternative 10	10,462.9	45,345,907	327.3	83.44	18.76	3,818,658	3,826,319
	No-Build	9,964.8	44,563,010	330.1	83.36	19.51	3,752,846	3,760,730
	Alternative 13B	10,373.4	45,128,511	326.6	83.18	18.79	3,800,366	3,808,031
	No-Build	10,001.8	44,736,713	331.2	83.63	19.58	3,767,477	3,775,389
	Alternative 13C	10,469.2	45,360,998	327.2	83.42	18.75	3,819,933	3,827,592
	No-Build	10,006.8	44,664,664	330.2	83.43	19.49	3,761,410	3,769,291

Table 3-38: Projected Annual CO2 Equivalent Emissions (Tons Per Year) on "Affected Network"

Projected Annual CO2 Equivalent Change in Emissions on "Affected Network"		Annual Vehicle Miles Traveled (Million AVMT)	Total Energy Consumption (MMBtu)	Total Gaseous Hydrocarbons (TPY)	Methane (TPY)	Nitrous Oxide (TPY)	Atmospheric CO2 (TPY)	CO2 Equivalent (TPY)
2025 Opening Year	Difference (Build Alt 5 - Existing)	10.4	-7,355,906.6	-386.5	-18.7	-5.4	-616,916.6	-618,978.1
	Difference (Build Alt 5 - No Build)	-480.5	-2,857,914.9	-32.1	-5.3	-1.4	-240,474.9	-241,027.2
	Difference (Build Alt 8 - Existing)	2,146.6	83,539.9	-467.7	-7.3	-4.2	9,862.0	8,445.3
	Difference (Build Alt 8 - No Build)	1,294.9	5,930,284.9	56.2	11.0	1.4	498,759.2	499,434.2
	Difference (Build Alt 9 - Existing)	2,001.9	-945,760.4	-490.2	-9.4	-4.7	-76,656.9	-78,293.9
	Difference (Build Alt 9 - No Build)	1,106.3	4,926,140.7	45.3	9.1	0.9	414,299.3	414,801.3
	Difference (Build Alt 10 - Existing)	2,116.5	-244,646.3	-478.1	-8.0	-4.4	-17,705.4	-19,209.2
	Difference (Build Alt 10 - No Build)	1,102.2	4,830,029.7	44.0	8.9	0.9	406,203.9	406,677.2
	Difference (Build Alt 13B - Existing)	1,689.1	-2,758,983.8	-519.0	-12.8	-5.4	-229,127.6	-231,062.1
	Difference (Build Alt 13B - No Build)	858.0	3,616,134.6	31.6	6.6	0.5	304,094.9	304,393.5
	Difference (Build Alt 13C - Existing)	1,984.9	-954,132.8	-487.6	-9.4	-4.7	-77,390.5	-79,006.5
	Difference (Build Alt 13C - No Build)	980.2	4,248,210.0	38.4	7.8	0.7	357,249.3	357,643.6
2040 Design Year	Difference (Build Alt 5 - Existing)	1,169.5	-7,210,959.7	-473.6	-18.9	-3.7	-602,075.4	-603,644.2
	Difference (Build Alt 5 - No Build)	265.0	464,513.9	-0.8	0.2	-0.3	39,046.4	38,949.0
	Difference (Build Alt 8 - Existing)	1,954.9	-9,829,813.2	-707.0	-26.2	-5.1	-820,022.4	-822,185.8
	Difference (Build Alt 8 - No Build)	453.8	672,834.1	-2.8	0.0	-0.7	56,557.9	56,350.2
	Difference (Build Alt 9 - Existing)	1,950.3	-10,200,635.1	-724.6	-27.5	-5.3	-851,073.9	-853,319.3
	Difference (Build Alt 9 - No Build)	406.7	494,439.8	-4.1	-0.8	-0.8	41,539.8	41,304.7

Projected Annual CO2 Equivalent Change in Emissions on "Affected Network"		Annual Vehicle Miles Traveled (Million AVMT)	Total Energy Consumption (MMBtu)	Total Gaseous Hydrocarbons (TPY)	Methane (TPY)	Nitrous Oxide (TPY)	Atmospheric CO2 (TPY)	CO2 Equivalent (TPY)
	Difference (Build Alt 10 - Existing)	2,178.8	-9,077,544.4	-710.6	-24.9	-4.9	-756,571.6	-758,630.7
	Difference (Build Alt 10 - No Build)	498.1	782,896.9	-2.8	0.1	-0.8	65,811.7	65,588.6
	Difference (Build Alt 13B - Existing)	1,858.0	-10,922,303.9	-743.5	-28.4	-5.6	-911,681.9	-914,051.4
	Difference (Build Alt 13B - No Build)	371.6	391,798.0	-4.6	-0.4	-0.8	32,888.6	32,641.9
	Difference (Build Alt 13C - Existing)	2,133.0	-9,348,899.2	-715.7	-25.5	-5.0	-779,387.9	-781,492.6
	Difference (Build Alt 13C - No Build)	462.4	696,334.3	-3.0	0.0	-0.7	58,523.2	58,301.3

Table 3-39: Projected Annual CO2 Equivalent Emissions (Percent Change) on "Affected Network"

Projected Annual CO2 Equivalent Percent Change in Emissions on "Affected Network"		Annual Vehicle Miles Traveled (Million AVMT)	Total Energy Consumption (MMBtu)	Total Gaseous Hydrocarbons (TPY)	Methane (TPY)	Nitrous Oxide (TPY)	Atmospheric CO2 (TPY)	CO2 Equivalent (TPY)
2025 Opening Year	Difference (Build Alt 5 - Existing)	0.2%	-20.6%	-57.1%	-26.4%	-35.1%	-20.6%	-20.6%
	Difference (Build Alt 5 - No Build)	-8.0%	-9.2%	-9.9%	-9.2%	-12.4%	-9.2%	-9.2%
	Difference (Build Alt 8 - Existing)	26.2%	0.2%	-45.7%	-6.8%	-17.9%	0.2%	0.2%
	Difference (Build Alt 8 - No Build)	14.3%	12.4%	11.2%	12.4%	7.6%	12.4%	12.4%
	Difference (Build Alt 9 - Existing)	24.0%	-1.7%	-46.8%	-8.6%	-19.8%	-1.7%	-1.7%
	Difference (Build Alt 9 - No Build)	12.0%	10.0%	8.8%	10.0%	5.1%	10.0%	10.0%
	Difference (Build Alt 10 - Existing)	25.5%	-0.4%	-46.1%	-7.4%	-18.7%	-0.4%	-0.4%
	Difference (Build Alt 10 - No Build)	11.9%	9.8%	8.5%	9.7%	4.7%	9.8%	9.8%

Projected Annual CO2 Equivalent Percent Change in Emissions on "Affected Network"		Annual Vehicle Miles Traveled (Million AVMT)	Total Energy Consumption (MMBtu)	Total Gaseous Hydrocarbons (TPY)	Methane (TPY)	Nitrous Oxide (TPY)	Atmospheric CO2 (TPY)	CO2 Equivalent (TPY)
	Difference (Build Alt 13B - Existing)	19.8%	-4.9%	-48.5%	-11.5%	-22.3%	-4.9%	-4.9%
	Difference (Build Alt 13B - No Build)	9.2%	7.3%	6.1%	7.2%	2.5%	7.3%	7.3%
	Difference (Build Alt 13C - Existing)	23.8%	-1.7%	-46.8%	-8.6%	-19.6%	-1.7%	-1.7%
	Difference (Build Alt 13C - No Build)	10.5%	8.6%	7.4%	8.5%	3.7%	8.6%	8.6%
2040 Design Year	Difference (Build Alt 5 - Existing)	21.3%	-20.2%	-69.9%	-26.6%	-24.3%	-20.1%	-20.1%
	Difference (Build Alt 5 - No Build)	4.1%	1.7%	-0.4%	0.3%	-2.8%	1.7%	1.6%
	Difference (Build Alt 8 - Existing)	23.9%	-18.3%	-69.1%	-24.5%	-22.0%	-18.2%	-18.2%
	Difference (Build Alt 8 - No Build)	4.7%	1.6%	-0.9%	0.0%	-3.7%	1.6%	1.5%
	Difference (Build Alt 9 - Existing)	23.4%	-18.6%	-69.2%	-25.2%	-22.3%	-18.4%	-18.5%
	Difference (Build Alt 9 - No Build)	4.1%	1.1%	-1.3%	-1.0%	-4.0%	1.1%	1.1%
	Difference (Build Alt 10 - Existing)	26.3%	-16.7%	-68.5%	-23.0%	-20.7%	-16.5%	-16.5%
	Difference (Build Alt 10 - No Build)	5.0%	1.8%	-0.8%	0.1%	-3.9%	1.8%	1.7%
	Difference (Build Alt 13B - Existing)	21.8%	-19.5%	-69.5%	-25.5%	-23.0%	-19.3%	-19.4%
	Difference (Build Alt 13B - No Build)	3.7%	0.9%	-1.4%	-0.5%	-4.0%	0.9%	0.9%
	Difference (Build Alt 13C - Existing)	25.6%	-17.1%	-68.6%	-23.4%	-21.0%	-16.9%	-17.0%
	Difference (Build Alt 13C - No Build)	4.6%	1.6%	-0.9%	-0.01%	-3.8%	1.6%	1.5%

Figure 3-50: Total Energy Consumption Results for Base, Opening, and Design Year Conditions

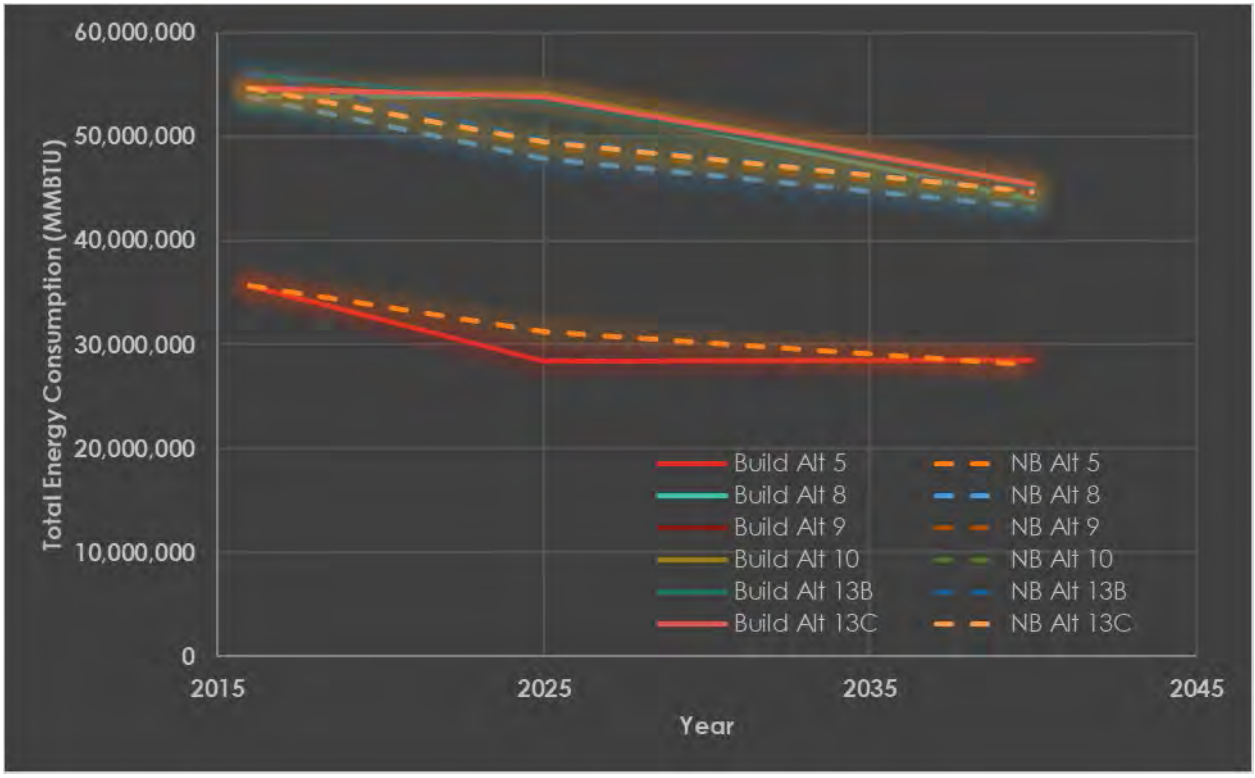


Figure 3-51: Total Gases Hydrocarbons Results for Base, Opening, and Design Year Conditions

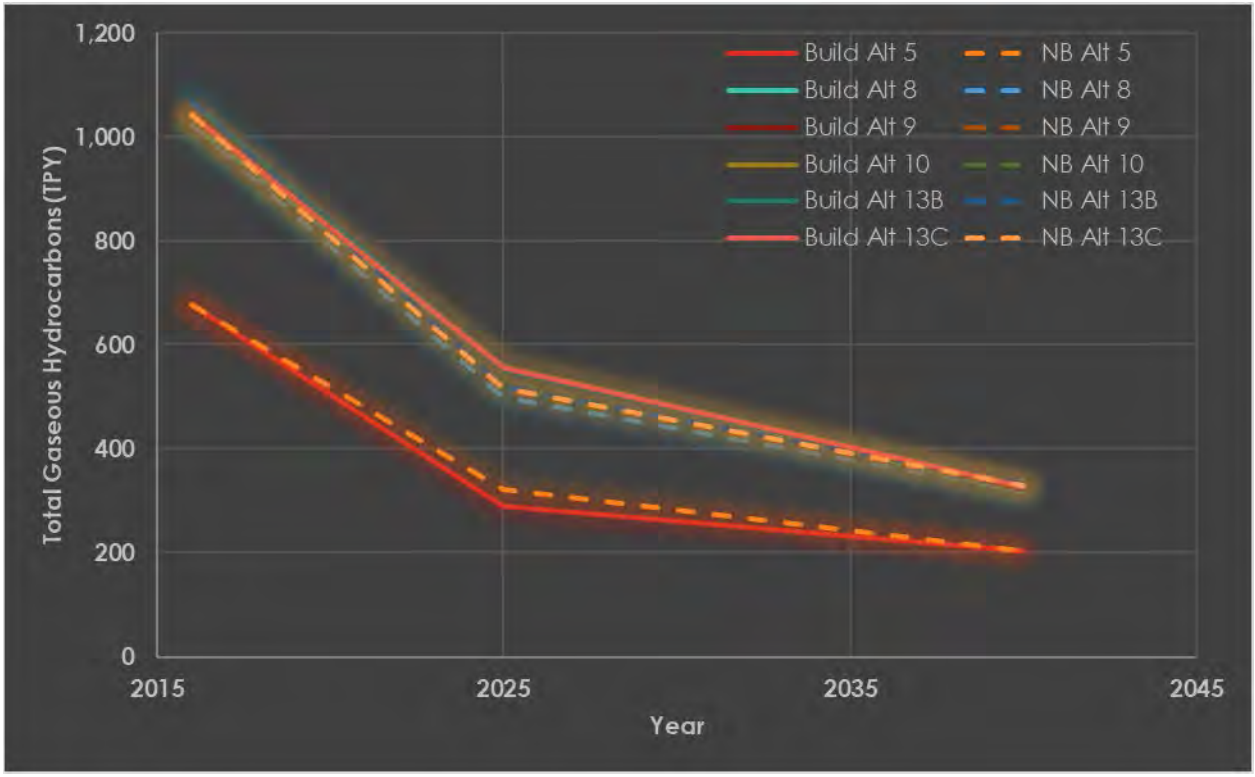


Figure 3-52: Methane Results for Base, Opening, and Design Year Conditions

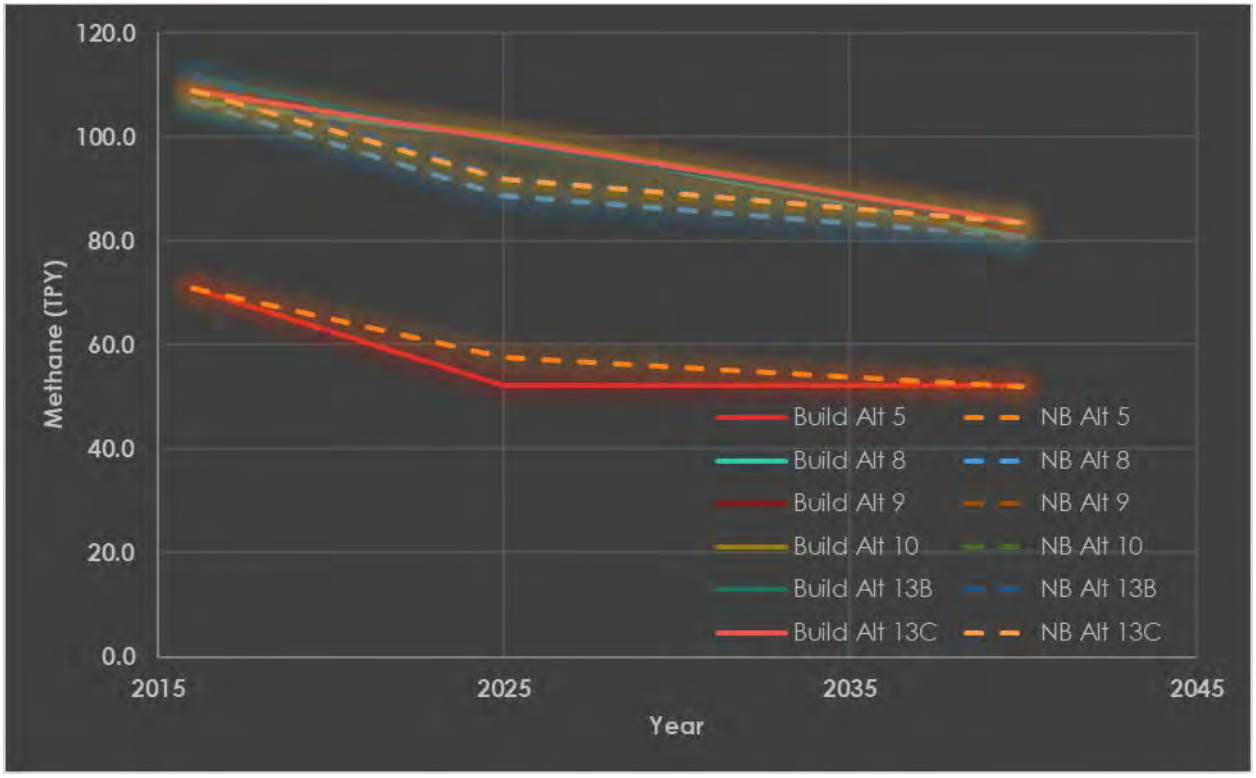


Figure 3-53: Nitrous Oxide Results for Base, Opening, and Design Year Conditions

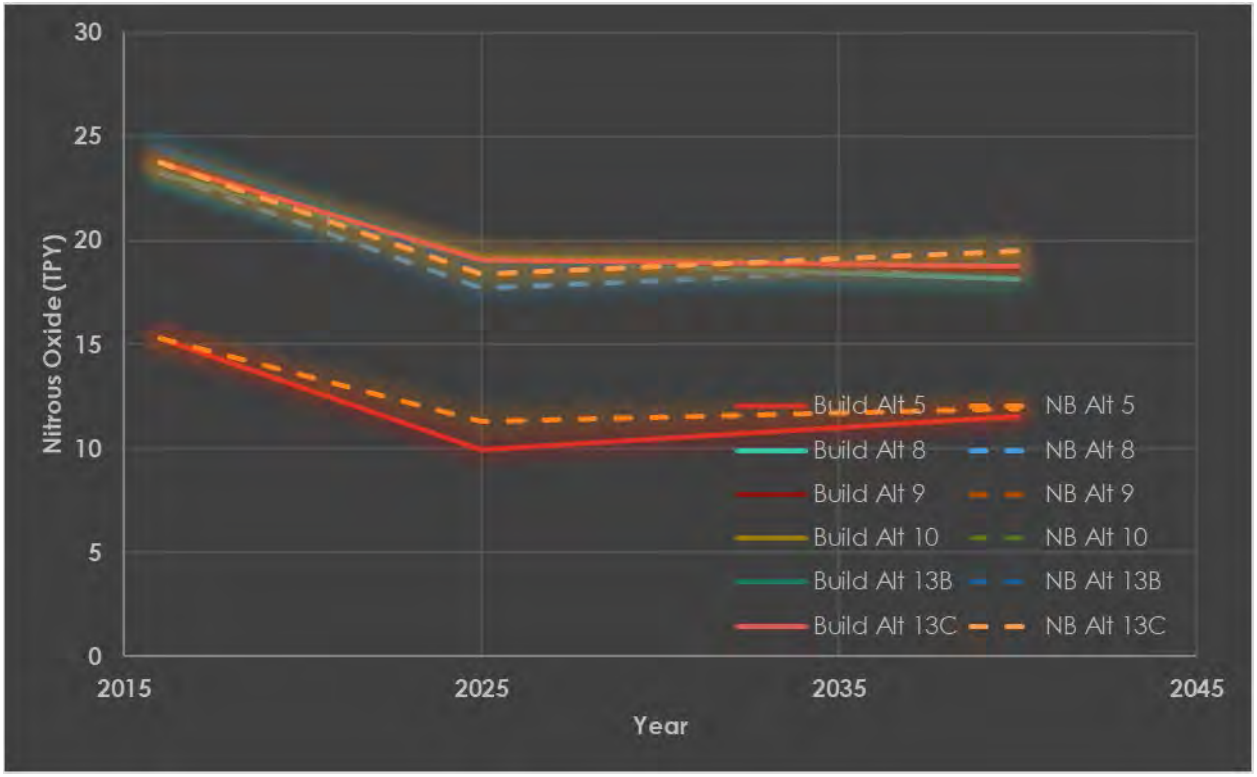


Figure 3-54: Atmospheric CO2 Results for Base, Opening, and Design Year Conditions

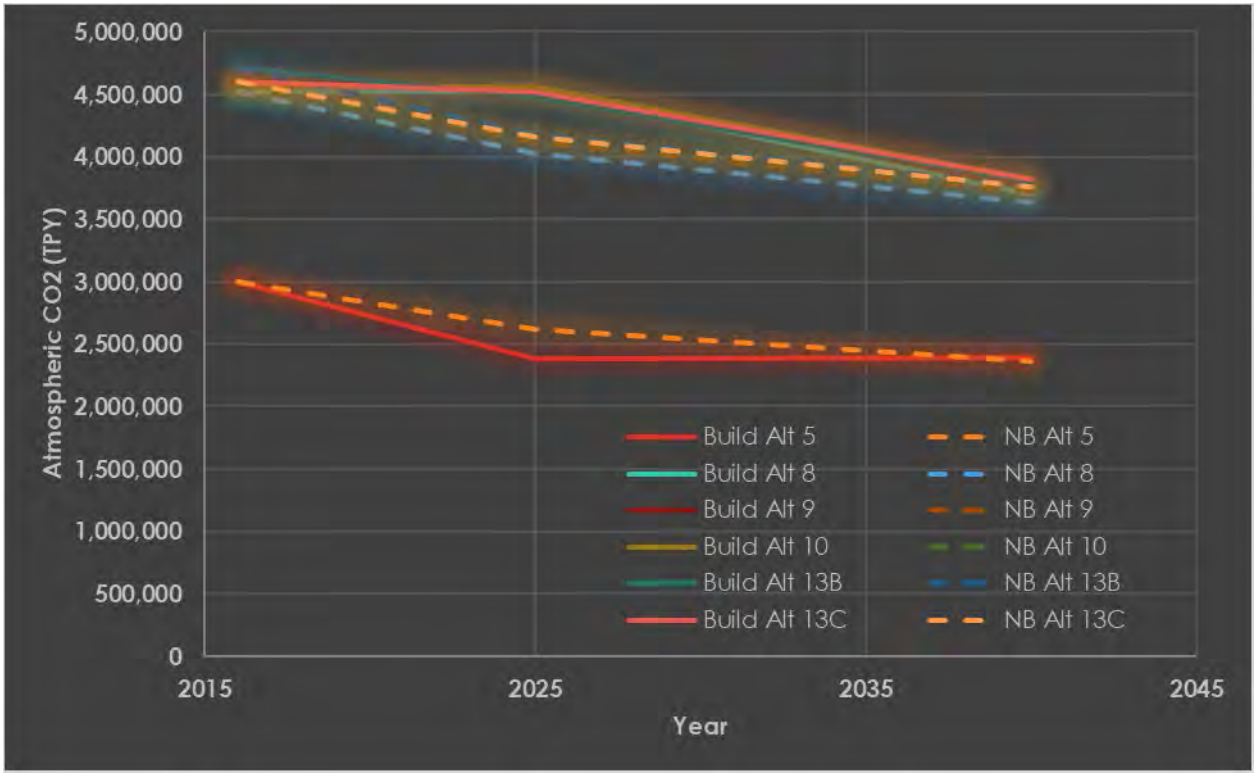
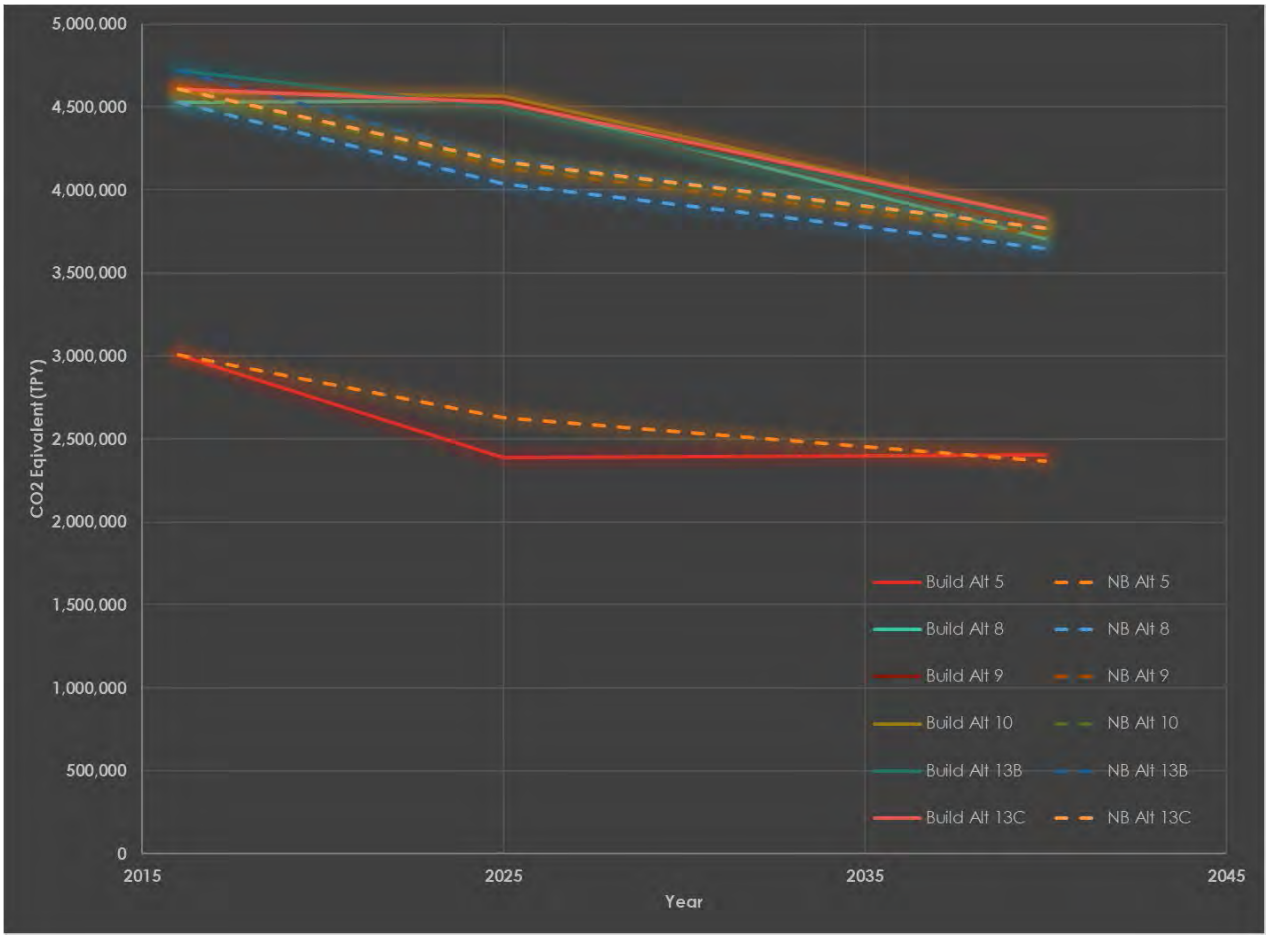


Figure 3-55: CO2 Equivalent Results for Base, Opening, and Design Year Conditions



Under the No Build Alternative, VMT increases on average approximately 17.9 percent (the increase ranges from 16.5 percent to 20 percent depending on Alternative) between 2016 and 2040. Under the Screened Alternatives, VMT would increase on average approximately 23.7 percent compared to 2016 levels (the increases range from 21.3 percent to 26.3 percent depending on Alternative). Nationally, the Energy Information Administration (EIA) estimates that VMT will increase by approximately 22 percent between 2019 and 2050,[40] so the VMT increase under the Screened Alternatives is still in line with the projected national rate.

A major factor in mitigating the GHG emissions associated with this increase in VMT is more stringent fuel economy standards. EIA projects that energy use per passenger-mile of travel in light-duty vehicles declines nearly 35% by 2050 as newer, more fuel-efficient vehicles enter the market, including both more efficient conventional gasoline vehicles and highly efficient alternatives such as battery electric vehicles. Energy efficiencies for light-duty vehicles are affected by current federal fuel economy and GHG emissions standards.[41] This improvement in vehicle emissions rates will help mitigate the increase in VMT for both the No Build and Screened Alternatives. It should be noted that the Safer Affordable Fuel-Efficient (SAFE)

[40] https://www.eia.gov/outlooks/aeo/pdf/AEO2020%20Full%20Report.pdf.

[41] https://www.eia.gov/outlooks/aeo/pdf/AEO2020%20Transportation.pdf

Vehicles Rule, finalized on March 30, 2020 may affect the EIA estimates. This new rule would require less stringent CAFE and CO_2 emissions standards through 2026 compared to the standards implemented in 2012 which it replaces. Other factors related to the Study would also help reduce GHG emissions relative to the No Build Alternative which include reducing congestion and improving vehicle speeds.

3.5.2 GHG Conclusions

Tailpipe emissions on the affected transportation network for all modeled alternatives are projected to be lower in the opening and design years compared to base year conditions. All Screened Alternatives with the exception of Alternative 5 in the opening year are projected to increase annual tailpipe GHG emissions compared to the No Build Alternative. Mitigation factors related to the Screened Alternatives including reducing congestion and improving vehicle speeds compared to the No Build Alternative will also help reduce GHG emissions. In addition, the increase in maintenance needs due to the addition of new roadway infrastructure would be partially offset by the reduced need for maintenance on existing routes (because of lower total traffic on those routes).

3.6 Construction Impacts

The construction duration of the project is not anticipated to exceed five years in any single location; thus, most emissions associated with construction are considered short-term or temporary in nature. The primary air quality concerns during construction would be a potential short-term localized increase in the concentration of fugitive dust (including airborne PM, $PM_{2.5}$ and PM_{10}), as well as mobile source emissions.

Mobile source emissions include pollutants such as CO. Since CO emissions from motor vehicles generally increase with decreasing vehicle speed, disruption of traffic during construction (such as temporary reduction of roadway capacity and increased queue lengths) could result in short-term elevated concentrations of CO. To minimize the amount of emissions generated, efforts would be made during construction to limit traffic disruptions, especially during peak travel hours.

Construction and subsequent maintenance of the project would also generate GHG emissions. Preparation of the roadway corridor (e.g., earth-moving activities) involves a considerable amount of energy consumption and resulting GHG emissions; manufacture of the materials used in construction and fuel used by construction equipment also contribute to GHG emissions; and on-road vehicle delay during construction would also increase fuel use, resulting in GHG emissions. A quantitative analysis of the construction related GHG emissions for the Preferred Alternative will be conducted using FHWA's Infrastructure Carbon Estimator tool. The tool uses inputs that relate to the characteristics of the roadway facility such as new lane miles added and number of bridges being constructed or reconstructed. As a result, estimated emissions for each of the screened alternatives would likely be very similar so screening each alternative would not provide meaningful information to differentiate between alternatives. Bridges and interchanges are common across alternatives and the number of lane miles added would be the same with the exception of Alternative 13B which proposes the conversion of the existing HOV lane on I-270. The results of the construction emissions analysis will be included in the Final Environmental Impact Statement (FEIS) for the Study.

All required construction-related permits would be obtained from MDE prior to construction. The construction contractor may use the following dust control measures, to minimize, to the greatest extent practicable, impacts to air quality.

Mitigation measures to be used during construction could include:

- Minimize land disturbance;
- Cover trucks when hauling soil, stone, and debris (MDE Law);
- Use water trucks to minimize dust;
- Use dust suppressants if environmentally acceptable;
- Stabilize or cover stockpiles;
- Construct stabilized construction entrances per construction standard specifications;
- Regularly sweep all paved areas including public roads;
- Stabilize onsite haul roads using stone;
- Temporarily stabilize disturbed areas per MDE erosion and sediment standards.

Mitigation measures to be used post-construction could include:

- Remove/grade stockpile areas;
- Remove haul roads and grade to drain;
- Permanently stabilize/landscape any remaining disturbed areas.

Mobile source emissions can also be minimized during construction by not permitting idling delivery trucks or other equipment during periods of unloading or other non-active use. Any proposed mitigation measures will be incorporated into the Record of Decision for the Study.

3.7 Indirect Effects and Cumulative Impacts Assessment

3.7.1 Indirect Effects

The quantitative assessment conducted for project-specific CO, quantitative analysis for MSAT impacts, and NCRTPB's Air Quality Conformity Analysis[42] can be considered indirect effects analyses because they look at air quality impacts attributable to the project that occur in the future. These analyses demonstrate that, in the future 1) air quality impacts from CO will not cause or contribute to violations of the CO NAAQS, 2) MSAT emissions will be significantly lower than they are today, and 3) the mobile source emissions budgets established for the region for purposes of meeting the ozone NAAQS will not be exceeded. Therefore, the indirect effects of the project are not expected be significant.

[42] Air Quality Conformity Analysis of Visualize 2045 and the FY 2019 – 2024 Transportation Improvement Program. October 17, 2018. https://www.mwcog.org/visualize2045/document-library/

3.7.2 Cumulative Impacts

NCRTPB's Air Quality Conformity Analysis[43] represents a cumulative impact assessment for purposes of regional air quality. Federal conformity requirements, including specifically 40 CFR 93.114 and 40 CFR 93.115, apply as the area in which the project located is designated as nonattainment for ozone. Accordingly, there must be a currently conforming transportation plan and program at the time of project approval, and the project must come from a conforming plan and program (or otherwise meet criteria specified in 40 CR 93.109(b)).

- The existing air quality designations for the region are based, in part, on the accumulated mobile source emissions from past and present actions, and these pollutants serve as a baseline for the current conformity analysis.
- The conformity analysis quantifies the amount of mobile source emissions for which the area is designated nonattainment/maintenance that will result from the implementation of all reasonably foreseeable regionally significant transportation projects in the region (i.e., those proposed for construction funding over the life of the region's transportation plan).
- NCRTPB's most recent conformity analysis was completed in October 2018, with FHWA and Federal Transit Administration (FTA) issuing a conformity finding on October 17, 2018 for the TIP and CLRP covered by that analysis. This analysis demonstrates that the incremental impact of worst-case assumptions for the proposed project on mobile source emissions, when added to the emissions from other past, present, and reasonably foreseeable future actions, is in conformance with the SIP and would likely not cause or contribute to a new violation, increase the frequency or severity of any violation, or delay timely attainment of the NAAQS established by EPA.

Therefore, the cumulative impacts of the project are not expected to be significant.

[43] Air Quality Conformity Analysis of Visualize 2045 and the FY 2019 – 2024 Transportation Improvement Program. October 17, 2018. https://www.mwcog.org/visualize2045/document-library/

4

4 MITIGATION

Since the Screened Alternatives are not predicted to increase emission burdens compared to the No Build Alternative, nor cause or contribute to a violation of the NAAQS, no long-term or regional air quality impacts are anticipated, and no mitigation measures are warranted.

As the project's construction is not anticipated to last more than five years in any single location, construction impacts are considered to be temporary. Short-term mitigation measures to control dust during construction are outlined in **Section 3.6**.

5

5 CONCLUSIONS

The Study is located in Montgomery County and Prince George's County, Maryland as well as a small area in Fairfax County, Virginia. The EPA Green Book[44] lists these counties as attainment for all NAAQS with the exception of the 2015 8-hour ozone standard, for which the counties are nonattainment.

The Study is currently included in the NCRTPB FY 2019 – 2024 TIP [TIP ID 6432 and Agency ID AW0731 (planning activities)] and the NCRTPB Visualize 2045 Long-Range Plan (CEID 1182, CEID 3281, and Appendix B page 56). This Study is included in the Air Quality Conformity Analysis that accompanies the Visualize 2045 Plan. Prior to the Record of Decision being signed, the selected alternative will be included in the TIP and Long-Range Plan along with a transportation conformity determination.

Carbon Monoxide

The CO analysis included a review of both intersections and interchanges in the study area to identify the worst-case locations for assessment. EPA guidance was applied to identify the worst-case intersections and interchanges to consider for the analysis based on forecasts of peak volumes and intersection LOS.

The top three ranked intersections for volume and LOS for each Alternative for opening and design year were chosen for dispersion modeling consistent with the November 1992 EPA Guidance. The worst-case modeling was conducted using EPA models (MOVES2014b and CAL3QHC) and worst-case assumptions including peak hour AM and PM traffic volumes, meteorology, receptor locations on the right of way edge, which together result in worst-case estimates for near-road concentrations. The modeled worst-case CO concentrations for all alternatives remain well below the CO NAAQS at all receptor locations for each intersection.

The top three ranked interchanges by volume for all Alternatives for Opening and Design year where chosen for dispersion modeling. Worst-case CO concentrations were estimated using EPA models (MOVES2014b and CAL3QHC). The results of the worst-case modeling for each of the short-listed (worst-case) interchanges indicate that, using worst-case assumptions for traffic volumes, roadway configuration and receptor placement, the modeled worst-case CO concentrations for all Alternatives remain well below

[44] https://www.epa.gov/green-book

the CO NAAQS at all receptor locations for each interchange. Refer to **Section 3.2.3** for detailed results of the CO analysis.

Mobile Source Air Toxics

For MSATs, the Screened Alternatives were evaluated following the latest FHWA guidance. As the Screened Alternatives are anticipated to add significant capacity to the existing and/or proposed new roadway networks where design year traffic is projected to be 140,000 to 150,000 AADT or greater, the Screened Alternatives are best characterized as one with "High Potential MSAT Effects"; therefore, a quantitative MSAT analysis was conducted consistent with the guidance. While there may be slightly higher MSAT emissions in the design year for each Screened Alternative relative to the No Build Alternative due to increased VMT, and there could also be small increases in MSAT levels in a few localized areas where VMT increases, significantly lower MSAT levels are projected in the future due to cleaner engine standards coupled with fleet turnover. The quantitative MSAT analysis estimated that future MSAT emissions in the study corridor are expected to be significantly below today's levels for all alternatives analyzed. See **Section 3.4.3** for detailed results of the MSAT analysis.

Greenhouse Gas Emissions

GHG emissions are expected to increase for all Screened Alternatives when compared to the No Build condition for 2040. GHG emissions are expected to significantly decline in the Opening and Design Years when compared to existing conditions. These reductions occur despite projected increase in VMT from 2016 to the 2025 and 2040 Build scenarios. Under the No Build and Build conditions, VMT in the region is expected to increase between 2015 and 2040. Nationally, the EIA estimates that VMT will increase by approximately 38 percent between 2012 and 2040. While VMT is expected to increase under the Screened Alternatives, the increase is still at or below the projected national rate. A major factor in mitigating this increase in VMT is more stringent fuel economy standards. EIA projects that vehicle energy efficiency (and thus, GHG emissions) on a per-mile basis will improve by 28 percent between 2012 and 2040. While VMT is expected to increase for the Screened Alternatives and No Build Alternative, this improvement in vehicle emissions rates would help mitigate the increase in VMT. In addition, average vehicle speeds are expected to be higher for the Screened Alternatives when compared to the No Build in all scenarios. By reducing congestion and increasing speeds, vehicle travel duration and the associated amount of fuel combustion and associated emissions will decrease minimizing the impacts of GHGs. Regional accessibility will be increased through providing additional lanes so that motorists can more easily pass slow-moving vehicles. See **Section 3.5.1** for detailed results of the GHG analysis.

Indirect and Cumulative Impacts

For indirect and cumulative impacts, the quantitative assessments conducted for the project-specific CO and MSAT impacts were considered analyses of indirect effects. The CO and MSAT quantitative assessments conducted for this study are considered indirect effects analyses because they address air quality impacts attributable to the project that occur at a later time in the future. Those assessments demonstrate that in the future: (1) air quality impacts from CO would not cause or contribute to violations of the CO NAAQS; (2) MSAT emissions from the affected network would be significantly lower than they are today; and 3) the mobile source emissions budgets established for the region for purposes of meeting the ozone NAAQS would not be exceeded.

Second, the annual conformity analysis conducted by the NCRTPB represents a cumulative impact assessment for purposes of regional air quality. Federal conformity requirements, including specifically 40 CFR 93.114 and 40 CFR 93.115, apply as the study area is designated as nonattainment for ozone. Accordingly, there must be a currently conforming transportation plan and program at the time of project approval, and the project must come from a conforming plan and program (or otherwise meet criteria specified in 40 CR 93.109(b)).

- The existing air quality designations for the region are based, in part, on the accumulated mobile source emissions from past and present actions, and these pollutants serve as a baseline for the current conformity analysis.

- The conformity analysis quantifies the amount of mobile source emissions for which the area is designated nonattainment/maintenance that will result from the implementation of all reasonably foreseeable regionally significant transportation projects in the region (i.e., those proposed for construction funding over the life of the region's transportation plan).

- The most recent conformity analysis was completed in October 2018, with FHWA and FTA issuing a conformity finding on October 17, 2018 for the TIP and CLRP covered by that analysis. This analysis demonstrates that the incremental impact of the proposed project on mobile source emissions, when added to the emissions from other past, present, and reasonably foreseeable future actions, is in conformance with the SIP and would likely not cause or contribute to a new violation, increase the frequency or severity of any violation, or delay timely attainment of the NAAQS established by EPA.

Therefore, the cumulative impacts of the project are not expected to be significant.

Mitigation

Since the Screened Alternatives are not predicted to increase emission burdens compared to the No Build Alternative, nor cause or contribute to a violation of the NAAQS, no long-term or regional air quality impacts are anticipated, and no mitigation measures are warranted.

Construction

As the study's construction is not anticipated to last more than five years in any single location, construction impacts are considered to be temporary. Short-term mitigation measures to control dust during construction will be implemented. A quantitative analysis of the construction related GHG emissions for the Preferred Alternative will be conducted using FHWA's Infrastructure Carbon Estimator tool and the results will be presented in the FEIS.

6

6 REFERENCES

National Capital Region Transportation Planning Board. *FY 2019 – 2024 Transportation Improvement Program for the National Capital Region*. October 17, 2018. https://www.mwcog.org/visualize2045/document-library/

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APPENDIX A – RAW TRAFFIC DATA

Table 1: Intersection Data – Existing (2016) 1
Table 2: Interchange Data – Existing (2016) 2
Table 3: Intersection Data – Opening Year (2025) No-Build 3
Table 4: Interchange Data – Opening Year (2025) No-Build 5
Table 5: Intersection Data – Design Year (2040) No-Build 6
Table 6: Interchange Data – Design Year (2040) No-Build 7
Table 7: Intersection Data – Opening Year (2025) Alternative 5 9
Table 8: Interchange Data – Opening Year (2025) Alternative 5 10
Table 9: Intersection Data – Design Year (2040) Alternative 5 11
Table 10: Interchange Data – Design Year (2040) Alternative 5 13
Table 11: Intersection Data –Opening Year (2025) Alternative 8 14
Table 12: Interchange Data –Opening Year (2025) Alternative 8 16
Table 13: Intersection Data –Design Year (2040) Alternative 8 17
Table 14: Interchange Data –Design Year (2040) Alternative 8 19
Table 15: Intersection Data –Opening Year (2025) Alternative 9 20
Table 16: Interchange Data –Opening Year (2025) Alternative 9 22
Table 17: Intersection Data – Design Year (2040) Alternative 9 23
Table 18: Interchange Data – Design Year (2040) Alternative 9 25
Table 19: Intersection Data – Opening Year (2025) Alternative 10 26
Table 20: Interchange Data – Opening Year (2025) Alternative 10 28
Table 21: Intersection Data – Design Year (2040) Alternative 10 29
Table 22: Interchange Data – Design Year (2040) Alternative 10 31
Table 23: Intersection Data – Opening Year (2025) Alternative 13B 32
Table 24: Interchange Data – Opening Year (2025) Alternative 13B 34
Table 25: Intersection Data – Design Year (2040) Alternative 13B 35
Table 26: Interchange Data – Design Year (2040) Alternative 13B 37
Table 27: Intersection Data – Opening Year (2025) Alternative 13C 38
Table 28: Interchange Data – Opening Year (2025) Alternative 13C 40
Table 29: Intersection Data – Design Year (2040) Alternative 13C 41
Table 30: Interchange Data – Design Year (2040) Alternative 13C 43

Table 1: Intersection Data – Existing (2016)

ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
1.IS	MD 210	Inner Loop Ramp	3785	3645	53325	C	32	C	24
2.IS	MD 210	MD 414	2365	2140	30350	B	10	B	12
3.IS	MD 414	Outer Loop Ramp (1)	2300	2730	36250	B	16	E	61
4.IS	MD 414 EB	Bald Eagle Road	1785	1830	24375	C	25	D	50
5.IS	MD 414	Outer Loop Ramp (2)	3160	4125	51800	B	17	C	27
6.IS	MD 414	Inner Loop Ramp	3250	3625	47400	B	19	B	18
7.IS	MD 5	Auth Road	6420	5750	76275	A	4	A	1
8.IS	Auth Road	Inner Loop Ramp	2145	1470	20725	B	17	B	16
9.IS	MD 337	Outer Loop Ramp	2580	2910	37050	No Data	No Data	No Data	No Data
10.IS	Forestville Road	Allentown Road	2360	2350	30350	No Data	No Data	No Data	No Data
11.IS	MD 214	Inner Loop Ramp	4420	5040	65075	C	23	B	20
12.IS	MD 214	Outer Loop Ramp	3450	4395	53050	B	14	B	12
13.IS	Arena Drive	Inner Loop Ramp	1545	2275	26175	C	20	C	25
14.IS	Arena Drive	Outer Loop Ramp	1850	2275	28675	A	10	A	7
15.IS	MD 202	Inner Loop Ramp	1515	2380	30875	A	4	A	6
16.IS	MD 202	Outer Loop Ramp	3450	4395	53050	C	20	B	16
17.IS	MD 450	Inner Loop Ramp	3205	4500	50725	B	19	B	16
18.IS	MD 450	Outer Loop Ramp	3405	4480	57425	B	11	B	11
19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	B	18	B	14
20.IS	MD 193	South Way	No Data	No Data	No Data	A	8	B	13
21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	B	19	B	13
22.IS	MD 201	Inner Loop Ramp	3365	3505	35700	A	10	A	8
23.IS	MD 201	Outer Loop Ramp	3290	3300	40725	B	18	B	12
24.IS	US 1	Inner Loop Ramp	3965	4015	53475	B	14	B	17
25.IS	US 1	Outer Loop Ramp	4010	4505	61650	C	26	C	24
26.IS	MD 650	Outer Loop Ramp	2120	2660	29550	B	19	B	18
27.IS	MD 193	Outer Loop Exit 29	3440	3530	42625	A	5	B	17
28.IS	MD 97	Inner Loop Ramp	4710	4120	58225	B	14	A	10
29.IS	MD 97	Outer Loop Ramp	5010	5055	61500	A	6	A	10
30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
31.IS	MD 185	Inner Loop Ramp	2465	3435	55450	A	8	A	7
32.IS	MD 185	Outer Loop Ramp	3460	3780	41725	C	33	B	17
33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0	A	0
34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	9	B	12
35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0	A	0
36.IS	MD 187	Inner Loop Ramp	3230	3965	41075	B	17	B	15
37.IS	MD 187	Outer Loop Ramp	4020	4500	41100	C	25	B	14
38.IS	MD 190	Inner Loop Ramp	1595	2560	33850	A	1	A	1

ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
39.IS	MD 190	Outer Loop Ramp	2105	2775	29950	B	10	A	8
40.IS	Georgetown Pike	Inner Loop Ramp	2315	2400	16200	B	19	F	118
41.IS	Georgetown Pike	Outer Loop Ramp	1975	1755	33325	C	27	C	24
42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1000	2140	25175	B	17	A	9
43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	945	2420	17400	A	10	A	8
44.IS	Democracy Boulevard	I-270 Spur NB	1040	2880	26900	A	3	A	8
45.IS	MD 187	I-270 NB Ramp	2570	4290	49575	C	22	B	15
46.IS	MD 187	I-270 SB Ramp	2565	4280	49375	B	13	D	44
47.IS	Rockledge Boulevard	I-270 NB Ramp	1555	1700	19650	A	5	A	6
48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	5	A	5
49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	B	13	A	8
50.IS	MD 189	I-270 Ramp	2340	2290	30125	A	6	A	3
51.IS	MD 28	I-270 SB Ramp	2520	3515	59475	B	15	B	16
52.IS	MD 28	I-270 NB Ramp / Nelson Street	2070	3085	39500	B	11	C	23
53.IS	Shady Grove Road	I-270 NB Ramp	2530	2225	31850	B	18	B	17
54.IS	Shady Grove Road	I-270 SB Ramp	2045	1880	22675	C	22	A	9
55.IS	MD 117	I-270 NB Off Ramp	2235	3410	42150	A	9	A	1

Table 2: Interchange Data – Existing (2016)

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	15659	17803	98	1
2.IC	Capital Beltway	MD 414	14440	18231	54	2
3.IC	Capital Beltway	MD 5	22003	23444	4	3
4.IC	Capital Beltway	Suitland Road	12471	13574	2	36
5.IC	Capital Beltway	Forestville Road	13159	14398	2	39
6.IC	Capital Beltway	MD 4	18266	18802	9	4
7.IC	Capital Beltway	Ritchie Marlboro Road	17649	17642	6	22
8.IC	Capital Beltway	MD 214	22349	21824	5	50
9.IC	Capital Beltway	Arena Drive	17408	17882	8	79
10.IC	Capital Beltway	MD 202	20763	21450	10	64
11.IC	Capital Beltway	US 50	25371	25768	5	52
12.IC	Capital Beltway	MD 450	20193	20995	15	23
13.IC	Capital Beltway	Baltimore Washington Parkway	22581	21645	5	64
14.IC	Capital Beltway	MD 201	20562	21247	4	50
15.IC	Capital Beltway	US 1	20149	20854	8	57
16.IC	Capital Beltway	I-95	21525	23183	57	28

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
17.IC	Capital Beltway	MD 650	19571	21558	112	13
18.IC	Capital Beltway	MD 193	17278	18858	63	45
19.IC	Capital Beltway	US 29	16967	18923	81	22
20.IC	Capital Beltway	MD 97	22283	22353	38	31
21.IC	Capital Beltway	MD 185	22215	20974	5	72
22.IC	Capital Beltway	I-270 and MD 355	20163	19294	3	49
23.IC	Capital Beltway	MD 187	12820	12390	5	13
24.IC	Capital Beltway	I-270 Spur	17850	16200	7	42
25.IC	Capital Beltway	MD 190	22809	21972	3	90
26.IC	Capital Beltway	Clara Barton Parkway	18447	17025	12	59
27.IC	Capital Beltway	George Washington Memorial Parkway	18352	17165	70	149
28.IC	I-270 Spur	Democracy Boulevard	10555	12638	36	30
29.IC	I-270	MD 187	11467	14115	11	8
30.IC	I-270	Rockledge Boulevard	10907	11884	5	6
31.IC	I-270	I-270 Spur	16363	18355	20	18
32.IC	I-270	Montrose Road	18243	22358	41	4
33.IC	I-270	MD 189	15828	19718	21	2
34.IC	I-270	MD 28	18596	23868	33	2
35.IC	I-270	Shady Grove Road	17799	21992	35	19
36.IC	I-270	I-370	18076	22661	110	50
37.IC	I-270	MD 117	15161	19938	44	32

Table 3: Intersection Data – Opening Year (2025) No-Build

ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
1.IS	MD 210	Inner Loop Ramp	3900	3745	55370	C	34	C	24
2.IS	MD 210	MD 414	2455	2210	31730	B	10	B	12
3.IS	MD 414	Outer Loop Ramp (1)	2375	2810	37740	B	17	E	73
4.IS	MD 414 EB	Bald Eagle Road	1865	1915	25985	C	26	D	54
5.IS	MD 414	Outer Loop Ramp (2)	3265	4265	54070	B	17	C	22
6.IS	MD 414	Inner Loop Ramp	3330	3715	49020	C	21	B	20
7.IS	MD 5	Auth Road	6620	5925	79415	A	9	A	1
8.IS	Auth Road	Inner Loop Ramp	2290	1550	22610	B	18	B	16
9.IS	MD 337	Outer Loop Ramp	2750	3100	40280	No Data	No Data	No Data	No Data
10.IS	Forestville Road	Allentown Road	2480	2475	32455	No Data	No Data	No Data	No Data
11.IS	MD 214	Inner Loop Ramp	4545	5170	67425	C	25	C	20
12.IS	MD 214	Outer Loop Ramp	3545	4505	54835	B	14	B	12

ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
13.IS	Arena Drive	Inner Loop Ramp	1625	2425	27440	B	19	C	25
14.IS	Arena Drive	Outer Loop Ramp	1945	2350	29990	B	12	A	8
15.IS	MD 202	Inner Loop Ramp	1555	2450	32075	A	4	A	6
16.IS	MD 202	Outer Loop Ramp	2170	3120	54835	C	34	B	17
17.IS	MD 450	Inner Loop Ramp	3295	4620	52535	B	20	B	16
18.IS	MD 450	Outer Loop Ramp	3495	4595	59425	B	12	B	12
19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	C	21	B	16
20.IS	MD 193	South Way	No Data	No Data	No Data	A	8	B	14
21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	B	19	B	13
22.IS	MD 201	Inner Loop Ramp	3710	3660	36995	A	9	A	8
23.IS	MD 201	Outer Loop Ramp	3025	2475	42135	B	18	B	12
24.IS	US 1	Inner Loop Ramp	4070	4105	55055	B	15	B	17
25.IS	US 1	Outer Loop Ramp	4140	4595	63330	C	26	C	23
26.IS	MD 650	Outer Loop Ramp	2180	2700	30165	C	20	B	18
27.IS	MD 193	Outer Loop Exit 29	3570	3635	44775	A	5	B	17
28.IS	MD 97	Inner Loop Ramp	4860	4230	60405	B	14	A	9
29.IS	MD 97	Outer Loop Ramp	5125	5170	62880	A	6	B	10
30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
31.IS	MD 185	Inner Loop Ramp	2515	3505	56685	A	8	A	7
32.IS	MD 185	Outer Loop Ramp	3515	3830	42390	C	29	B	17
33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0	A	0
34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	9	B	10
35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0	A	0
36.IS	MD 187	Inner Loop Ramp	3310	4070	42490	B	17	B	15
37.IS	MD 187	Outer Loop Ramp	1590	1750	42530	C	29	B	14
38.IS	MD 190	Inner Loop Ramp	1635	2625	34745	A	1	A	2
39.IS	MD 190	Outer Loop Ramp	2125	2840	30740	B	12	A	9
40.IS	Georgetown Pike	Inner Loop Ramp	2470	2470	17755	B	18	F	162
41.IS	Georgetown Pike	Outer Loop Ramp	2045	1800	37250	C	28	B	20
42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1030	2185	25990	B	18	A	10
43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	970	2465	17930	A	9	A	8
44.IS	Democracy Boulevard	I-270 Spur NB	1065	2950	27275	A	4	A	9
45.IS	MD 187	I-270 NB Ramp	2695	4475	52490	C	23	B	15
46.IS	MD 187	I-270 SB Ramp	2690	4460	52280	B	15	E	79
47.IS	Rockledge Boulevard	I-270 NB Ramp	1590	1750	20625	A	6	A	6
48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	5	A	6
49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	B	13	A	9
50.IS	MD 189	I-270 Ramp	2425	2930	31650	A	3	A	3
51.IS	MD 28	I-270 SB Ramp	2595	3605	61970	B	15	B	13

ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
52.IS	MD 28	I-270 NB Ramp / Nelson Street	2145	3200	41620	B	14	D	55
53.IS	Shady Grove Road	I-270 NB Ramp	2585	2280	32950	C	27	C	26
54.IS	Shady Grove Road	I-270 SB Ramp	2080	1920	23290	C	23	B	16
55.IS	MD 117	I-270 NB Off Ramp	2135	3625	43295	A	10	A	1

Table 4: Interchange Data – Opening Year (2025) No-Build

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	15506	17659	98	1
2.IC	Capital Beltway	MD 414	14114	18201	129	2
3.IC	Capital Beltway	MD 5	22466	23456	7	3
4.IC	Capital Beltway	Suitland Road	12635	13517	3	39
5.IC	Capital Beltway	Forestville Road	13349	14378	2	39
6.IC	Capital Beltway	MD 4	18681	18782	10	16
7.IC	Capital Beltway	Ritchie Marlboro Road	17968	17428	6	66
8.IC	Capital Beltway	MD 214	22596	21996	4	51
9.IC	Capital Beltway	Arena Drive	17757	17990	10	82
10.IC	Capital Beltway	MD 202	21046	21481	11	67
11.IC	Capital Beltway	US 50	25654	25070	7	79
12.IC	Capital Beltway	MD 450	20098	19911	29	71
13.IC	Capital Beltway	Baltimore Washington Parkway	22451	19791	5	147
14.IC	Capital Beltway	MD 201	20470	19860	4	113
15.IC	Capital Beltway	US 1	19694	20128	4	74
16.IC	Capital Beltway	I-95	20892	22368	84	36
17.IC	Capital Beltway	MD 650	19635	21324	116	8
18.IC	Capital Beltway	MD 193	17501	18803	66	45
19.IC	Capital Beltway	US 29	16923	18977	84	28
20.IC	Capital Beltway	MD 97	22623	22202	39	33
21.IC	Capital Beltway	MD 185	22548	21051	5	75
22.IC	Capital Beltway	I-270 and MD 355	20706	19842	3	63
23.IC	Capital Beltway	MD 187	12975	12357	7	49
24.IC	Capital Beltway	I-270 Spur	18245	16647	31	37
25.IC	Capital Beltway	MD 190	23366	22193	2	86
26.IC	Capital Beltway	Clara Barton Parkway	19151	17285	6	66
27.IC	Capital Beltway	George Washington Memorial Parkway	18503	17416	80	190
28.IC	I-270 Spur	Democracy Boulevard	11124	13152	1	8

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
29.IC	I-270	MD 187	12004	14271	6	12
30.IC	I-270	Rockledge Boulevard	11337	11979	7	9
31.IC	I-270	I-270 Spur	17224	18900	3	3
32.IC	I-270	Montrose Road	19600	22980	4	3
33.IC	I-270	MD 189	33901	40485	2	2
34.IC	I-270	MD 28	19978	24269	13	7
35.IC	I-270	Shady Grove Road	18927	23268	21	3
36.IC	I-270	I-370	19662	23919	32	3
37.IC	I-270	MD 117	16287	20739	25	4

Table 5: Intersection Data – Design Year (2040) No-Build

ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
1.IS	MD 210	Inner Loop Ramp	4130	3950	59200	D	45	C	25
2.IS	MD 210	MD 414	2610	2355	30350	A	9	B	12
3.IS	MD 414	Outer Loop Ramp (1)	2515	2975	40525	B	18	E	76
4.IS	MD 414 EB	Bald Eagle Road	2045	2085	29025	C	29	D	54
5.IS	MD 414	Outer Loop Ramp (2)	3460	4515	58325	B	16	C	24
6.IS	MD 414	Inner Loop Ramp	3485	3915	52075	B	17	B	19
7.IS	MD 5	Auth Road	6995	6265	85300	C	25	A	1
8.IS	Auth Road	Inner Loop Ramp	2565	1715	26125	C	22	B	16
9.IS	MD 337	Outer Loop Ramp	3065	3455	46325	No Data	No Data	No Data	No Data
10.IS	Forestville Road	Allentown Road	2715	2720	36400	No Data	No Data	No Data	No Data
11.IS	MD 214	Inner Loop Ramp	4775	5425	71825	C	25	C	21
12.IS	MD 214	Outer Loop Ramp	3710	4715	58175	B	15	B	13
13.IS	Arena Drive	Inner Loop Ramp	1790	2570	29825	B	19	C	28
14.IS	Arena Drive	Outer Loop Ramp	2120	2480	32450	B	11	A	10
15.IS	MD 202	Inner Loop Ramp	1640	2580	34325	A	5	A	8
16.IS	MD 202	Outer Loop Ramp	2290	3290	58175	D	49	B	17
17.IS	MD 450	Inner Loop Ramp	3450	4845	55925	B	18	B	16
18.IS	MD 450	Outer Loop Ramp	3660	4825	63175	B	13	B	12
19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	C	22	B	15
20.IS	MD 193	South Way	No Data	No Data	No Data	A	8	B	15
21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	C	21	B	13
22.IS	MD 201	Inner Loop Ramp	3615	3770	39425	B	10	A	8
23.IS	MD 201	Outer Loop Ramp	3515	3545	44775	B	17	B	11
24.IS	US 1	Inner Loop Ramp	4285	4275	58000	B	14	B	17

ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
25.IS	US 1	Outer Loop Ramp	4380	4765	66475	C	28	C	23
26.IS	MD 650	Outer Loop Ramp	2290	2780	31325	C	20	B	18
27.IS	MD 193	Outer Loop Exit 29	3810	3840	48800	A	7	D	38
28.IS	MD 97	Inner Loop Ramp	5150	4450	64500	D	45	E	76
29.IS	MD 97	Outer Loop Ramp	5345	5390	65475	C	32	E	60
30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
31.IS	MD 185	Inner Loop Ramp	2600	3630	58975	C	22	E	65
32.IS	MD 185	Outer Loop Ramp	3625	3920	43625	C	27	B	17
33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0	A	0
34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	9	A	8
35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0	A	2
36.IS	MD 187	Inner Loop Ramp	3465	4270	45150	B	16	B	11
37.IS	MD 187	Outer Loop Ramp	4250	4845	45200	C	25	B	13
38.IS	MD 190	Inner Loop Ramp	1700	2750	36425	A	1	A	4
39.IS	MD 190	Outer Loop Ramp	2155	2975	32250	B	10	A	9
40.IS	Georgetown Pike	Inner Loop Ramp	2530	2610	19025	B	20	F	424
41.IS	Georgetown Pike	Outer Loop Ramp	2165	1895	39600	C	29	F	87
42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1085	2260	27500	B	19	B	11
43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	1025	2550	18925	A	10	A	9
44.IS	Democracy Boulevard	I-270 Spur NB	1110	3070	27975	A	4	A	7
45.IS	MD 187	I-270 NB Ramp	2940	4800	57975	C	25	B	15
46.IS	MD 187	I-270 SB Ramp	2935	4795	57725	B	16	F	109
47.IS	Rockledge Boulevard	I-270 NB Ramp	1665	1855	22450	A	7	A	6
48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	5	A	6
49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	B	15	B	12
50.IS	MD 189	I-270 Ramp	2580	3135	34525	A	3	A	3
51.IS	MD 28	I-270 SB Ramp	2720	3775	66650	B	15	B	16
52.IS	MD 28	I-270 NB Ramp / Nelson Street	2295	3410	45600	B	14	E	57
53.IS	Shady Grove Road	I-270 NB Ramp	2700	2375	35000	C	28	C	25
54.IS	Shady Grove Road	I-270 SB Ramp	2155	1990	24425	C	23	B	15
55.IS	MD 117	I-270 NB Off Ramp	2370	3615	45425	A	9	A	1

Table 6: Interchange Data – Design Year (2040) No-Build

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	15167	17863	120	1
2.IC	Capital Beltway	MD 414	13688	18487	152	2

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay
3.IC	Capital Beltway	MD 5	21017	23746	80	62
4.IC	Capital Beltway	Suitland Road	12717	13443	2	41
5.IC	Capital Beltway	Forestville Road	13498	14265	2	43
6.IC	Capital Beltway	MD 4	19086	18773	18	22
7.IC	Capital Beltway	Ritchie Marlboro Road	18188	17183	22	75
8.IC	Capital Beltway	MD 214	22465	21570	29	67
9.IC	Capital Beltway	Arena Drive	17597	17661	51	103
10.IC	Capital Beltway	MD 202	20959	21379	30	85
11.IC	Capital Beltway	US 50	25924	25152	6	85
12.IC	Capital Beltway	MD 450	20275	20021	28	65
13.IC	Capital Beltway	Baltimore Washington Parkway	22751	20600	6	104
14.IC	Capital Beltway	MD 201	20852	20835	4	63
15.IC	Capital Beltway	US 1	20058	21076	13	66
16.IC	Capital Beltway	I-95	20375	23552	93	22
17.IC	Capital Beltway	MD 650	18324	21694	119	18
18.IC	Capital Beltway	MD 193	15938	17717	93	101
19.IC	Capital Beltway	US 29	15478	17045	103	128
20.IC	Capital Beltway	MD 97	20318	18549	67	123
21.IC	Capital Beltway	MD 185	20350	16799	58	225
22.IC	Capital Beltway	I-270 and MD 355	19280	16710	75	224
23.IC	Capital Beltway	MD 187	12243	10090	101	278
24.IC	Capital Beltway	I-270 Spur	18211	13437	41	85
25.IC	Capital Beltway	MD 190	23395	19516	2	108
26.IC	Capital Beltway	Clara Barton Parkway	20315	16117	8	74
27.IC	Capital Beltway	George Washington Memorial Parkway	18622	16302	148	187
28.IC	I-270 Spur	Democracy Boulevard	11517	12409	1	7
29.IC	I-270	MD 187	11944	13181	7	40
30.IC	I-270	Rockledge Boulevard	11105	10795	8	38
31.IC	I-270	I-270 Spur	17123	17812	3	4
32.IC	I-270	Montrose Road	19788	22519	18	4
33.IC	I-270	MD 189	34086	39887	3	2
34.IC	I-270	MD 28	20315	24261	17	7
35.IC	I-270	Shady Grove Road	19031	23362	24	3
36.IC	I-270	I-370	19861	24371	67	3
37.IC	I-270	MD 117	16363	20521	29	7

Table 7: Intersection Data – Opening Year (2025) Alternative 5

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	1.IS	MD 210	Inner Loop Ramp	3765	3180	55120	C	30	C	22
	2.IS	MD 210	MD 414	2400	2205	31680	B	11	B	14
	3.IS	MD 414	Outer Loop Ramp (1)	2295	2710	36595	B	17	D	37
	4.IS	MD 414 EB	Bald Eagle Road	1925	1580	27415	C	27	D	54
	5.IS	MD 414	Outer Loop Ramp (2)	3100	3925	53650	B	18	C	22
	6.IS	MD 414	Inner Loop Ramp	3020	3435	48720	C	27	B	18
	7.IS	MD 5	Auth Road	6710	5655	80770	A	2	A	1
	8.IS	Auth Road	Inner Loop Ramp	2705	1670	24485	B	14	B	11
	9.IS	MD 337	Outer Loop Ramp	2770	3085	41975	C	24	B	19
	10.IS	Forestville Road	Allentown Road	2510	2440	33485	No Data	No Data	No Data	No Data
	11.IS	MD 214	Inner Loop Ramp	3860	4440	67545	C	24	B	19
	12.IS	MD 214	Outer Loop Ramp	4395	4655	54700	B	14	B	13
	13.IS	Arena Drive	Inner Loop Ramp	1705	2635	28260	B	17	C	26
	14.IS	Arena Drive	Outer Loop Ramp	2020	2380	30615	C	21	A	9
	15.IS	MD 202	Inner Loop Ramp	3450	4230	32265	A	4	A	5
	16.IS	MD 202	Outer Loop Ramp	3490	4450	54695	D	46	C	22
	17.IS	MD 450	Inner Loop Ramp	2935	4275	52865	B	19	B	19
	18.IS	MD 450	Outer Loop Ramp	3485	4685	59785	B	11	B	12
	19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	A	0	A	0
	20.IS	MD 193	South Way	No Data	No Data	No Data	A	0	A	0
	21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	A	1	A	1
	22.IS	MD 201	Inner Loop Ramp	2735	3310	37575	A	9	A	8
	23.IS	MD 201	Outer Loop Ramp	3345	3280	42165	B	18	B	15
	24.IS	US 1	Inner Loop Ramp	3955	3995	54080	B	15	B	17
	25.IS	US 1	Outer Loop Ramp	3350	3365	63080	C	30	C	26
	26.IS	MD 650	Outer Loop Ramp	4960	5140	29675	C	26	B	17
Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5055	4995	65045	C	33	D	44
Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7170	6375	92150	F	102	C	34
	29.IS	MD 97	Outer Loop Ramp	5880	5990	82950	B	15	B	14
	30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	31.IS	MD 185	Inner Loop Ramp	2505	3365	56255	A	8	A	7
	32.IS	MD 185	Outer Loop Ramp	3040	3310	41360	C	29	B	16
	33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0	C	29
	34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	1	C	24
	35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0	A	1
Replaced by SPUI	36.IS	MD 187	Capital Beltway	3320	3960	36675	E	72	B	14
	37.IS	MD 187								
	38.IS	MD 190	Inner Loop Ramp	3120	3435	40505	A	0	A	1

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3110	4005	19450	C	29	B	19
	40.IS	Georgetown Pike	Inner Loop Ramp	2800	2185	20575	B	15	B	11
	41.IS	Georgetown Pike	Outer Loop Ramp	1920	1405	21975	D	37	C	21
	42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1290	2200	25000	B	16	A	7
	43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	885	2205	27420	A	7	A	6
	44.IS	Democracy Boulevard	I-270 Spur NB	730	1930	27940	B	13	B	12
	45.IS	MD 187	I-270 NB Ramp	2820	4495	54650	C	26	B	16
	46.IS	MD 187	I-270 SB Ramp	2820	4485	54410	B	16	F	126
	47.IS	Rockledge Boulevard	I-270 NB Ramp	1570	1710	20305	A	5	A	6
	48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	3	A	7
	49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	50.IS	MD 189	I-270 Ramp	1795	2320	30840	A	3	A	3
	51.IS	MD 28	I-270 SB Ramp	2360	3435	61660	B	13	B	12
	52.IS	MD 28	I-270 NB Ramp / Nelson Street	2215	3195	42770	B	13	D	43
	53.IS	Shady Grove Road	I-270 NB Ramp	2120	1825	32110	C	26	C	27
	54.IS	Shady Grove Road	I-270 SB Ramp	2405	2175	23650	C	21	B	18
	55.IS	MD 117	I-270 NB Off Ramp	2230	3390	42670	C	16	A	1
New Intersections										
New Intersections	56.IS	US 29	Inner Loop	4370	4840	61500	B	15	E	62
New Intersections	57.IS	US 29	Outer Loop	5125	5405	69095	B	13	B	17
New Intersections	58.IS	US 29	Direct Access Ramp	6240	5870	78770	A	8	C	23
New Intersections	59.IS	Cherrywood lane	Direct Access Ramp	930	960	9520	A	8	A	10
New Intersections	60.IS	West Lake Terrace	Direct Access Ramp	925	1530	19755	No Data	No Data	No Data	No Data
New Intersections	61.IS	Montrose Road	Direct Access Ramp	3210	3905	53950	A	5	B	12
New Intersections	62.IS	Gude Drive	Direct Access Ramp	No Data	No Data	No Data	A	10	A	7
New Intersections	63.IS	MD 193	Inner Loop	3840	3755	48495	C	27	B	15

Table 8: Interchange Data – Opening Year (2025) Alternative 5

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	15842	17926	87	1
2.IC	Capital Beltway	MD 414	15694	18629	73	2
3.IC	Capital Beltway	MD 5	23196	24518	2	2
4.IC	Capital Beltway	Suitland Road	13632	14614	2	1
5.IC	Capital Beltway	Forestville Road	14903	15820	2	9

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
6.IC	Capital Beltway	MD 4	19514	20322	5	3
7.IC	Capital Beltway	Ritchie Marlboro Road	18587	19700	27	9
8.IC	Capital Beltway	MD 214	23403	23847	3	2
9.IC	Capital Beltway	Arena Drive	18963	19749	4	2
10.IC	Capital Beltway	MD 202	21773	23813	3	2
11.IC	Capital Beltway	US 50	26352	27207	8	2
12.IC	Capital Beltway	MD 450	20759	22882	4	5
13.IC	Capital Beltway	Baltimore Washington Parkway	23402	24015	3	4
14.IC	Capital Beltway	MD 201	21297	23237	3	2
15.IC	Capital Beltway	US 1	20173	22242	6	4
16.IC	Capital Beltway	I-95	23057	25471	3	4
17.IC	Capital Beltway	MD 650	20966	24562	64	7
18.IC	Capital Beltway	MD 193	19516	23290	21	46
19.IC	Capital Beltway	US 29	No Data	No Data	No Data	No Data
20.IC	Capital Beltway	MD 97	25172	24559	20	34
21.IC	Capital Beltway	MD 185	24606	23147	4	64
22.IC	Capital Beltway	I-270 and MD 355	22400	20356	12	120
23.IC	Capital Beltway	MD 187	No Data	No Data	No Data	No Data
24.IC	Capital Beltway	I-270 Spur	19585	17418	35	9
25.IC	Capital Beltway	MD 190	25190	23533	32	3
26.IC	Capital Beltway	Clara Barton Parkway	21565	19072	9	4
27.IC	Capital Beltway	George Washington Memorial Parkway	31790	19899	14	3
28.IC	I-270 Spur	Democracy Boulevard	11667	12579	1	4
29.IC	I-270	MD 187	11982	12367	6	44
30.IC	I-270	Rockledge Boulevard	15289	10007	3	93
31.IC	I-270	I-270 Spur	17508	16558	5	55
32.IC	I-270	Montrose Road	No Data	No Data	No Data	No Data
33.IC	I-270	MD 189	34330	39024	7	2
34.IC	I-270	MD 28	19868	23790	2	7
35.IC	I-270	Shady Grove Road	19194	22416	3	9
36.IC	I-270	I-370	20161	23434	5	4
37.IC	I-270	MD 117	16437	19767	4	5

Table 9: Intersection Data – Design Year (2040) Alternative 5

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	1.IS	MD 210	Inner Loop Ramp	4220	3390	60400	C	33	C	23

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	2.IS	MD 210	MD 414	2550	2345	33675	A	10	B	14
	3.IS	MD 414	Outer Loop Ramp (1)	2435	2885	38900	B	18	E	66
	4.IS	MD 414 EB	Bald Eagle Road	2055	1675	29175	C	27	D	53
	5.IS	MD 414	Outer Loop Ramp (2)	3300	4180	57125	B	18	C	25
	6.IS	MD 414	Inner Loop Ramp	3215	3645	51775	C	26	B	19
	7.IS	MD 5	Auth Road	7135	6015	85900	C	24	A	1
	8.IS	Auth Road	Inner Loop Ramp	2870	1780	26025	C	28	B	11
	9.IS	MD 337	Outer Loop Ramp	2950	3285	44700	C	26	C	21
	10.IS	Forestville Road	Allentown Road	2670	2600	35650	No Data	No Data	No Data	No Data
	11.IS	MD 214	Inner Loop Ramp	4110	4725	71900	C	26	C	21
	12.IS	MD 214	Outer Loop Ramp	4680	4945	58175	B	15	B	16
	13.IS	Arena Drive	Inner Loop Ramp	1810	2290	30000	B	16	C	28
	14.IS	Arena Drive	Outer Loop Ramp	2155	2530	32600	B	16	A	8
	15.IS	MD 202	Inner Loop Ramp	3670	4500	34325	A	5	A	6
	16.IS	MD 202	Outer Loop Ramp	3710	4735	58175	C	26	C	29
	17.IS	MD 450	Inner Loop Ramp	3125	4550	56275	B	19	B	19
	18.IS	MD 450	Outer Loop Ramp	3710	4985	63625	B	11	B	12
	19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	A	0	A	0
	20.IS	MD 193	South Way	No Data	No Data	No Data	A	0	A	0
	21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	A	1	A	1
	22.IS	MD 201	Inner Loop Ramp	2910	3525	40000	A	8	A	8
	23.IS	MD 201	Outer Loop Ramp	3560	3495	44900	B	18	B	16
	24.IS	US 1	Inner Loop Ramp	4205	4255	57550	B	14	B	17
	25.IS	US 1	Outer Loop Ramp	3560	3580	67075	C	31	C	27
	26.IS	MD 650	Outer Loop Ramp	5270	5460	31525	C	25	B	16
Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5380	5320	69250	D	43	D	44
Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7625	6780	98000	F	113	D	46
	29.IS	MD 97	Outer Loop Ramp	6255	6370	88225	B	17	B	15
	30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	31.IS	MD 185	Inner Loop Ramp	2665	3580	59850	A	7	B	14
	32.IS	MD 185	Outer Loop Ramp	3235	3520	44000	C	28	B	17
	33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0	E	67
	34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	0	C	23
	35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0	D	41
Replaced by SPUI	36.IS	MD 187	Capital Beltway	3685	4215	39800	B	14	B	15
	37.IS	MD 187								
	38.IS	MD 190	Inner Loop Ramp	3320	3655	43100	A	0	A	1
Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3305	4265	19450	C	34	C	22
	40.IS	Georgetown Pike	Inner Loop Ramp	2975	2325	21875	B	16	B	13

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	41.IS	Georgetown Pike	Outer Loop Ramp	2040	1500	21975	D	39	C	22
	42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1370	2340	25000	B	15	A	6
	43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	940	2345	29150	A	8	A	6
	44.IS	Democracy Boulevard	I-270 Spur NB	775	2050	29675	B	12	B	12
	45.IS	MD 187	I-270 NB Ramp	3000	4780	58125	C	27	B	16
	46.IS	MD 187	I-270 SB Ramp	2995	4775	57875	B	16	F	141
	47.IS	Rockledge Boulevard	I-270 NB Ramp	1665	1820	21575	A	5	A	6
	48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	4	A	8
	49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	50.IS	MD 189	I-270 Ramp	1960	2470	33200	A	3	A	4
	51.IS	MD 28	I-270 SB Ramp	2515	3655	65650	B	12	B	16
	52.IS	MD 28	I-270 NB Ramp / Nelson Street	2360	3395	45500	B	13	E	77
	53.IS	Shady Grove Road	I-270 NB Ramp	2260	1940	32575	C	25	C	26
	54.IS	Shady Grove Road	I-270 SB Ramp	2560	2315	25175	C	26	C	35
	55.IS	MD 117	I-270 NB Off Ramp	2365	3605	45325	C	16	A	1
New Intersections										
New Intersections	56.IS	US 29	Inner Loop	4655	5150	65475	B	13	D	52
New Intersections	57.IS	US 29	Outer Loop	5455	5750	73525	B	13	B	19
New Intersections	58.IS	US 29	Direct Access Ramp	6645	6250	83875	A	6	C	28
New Intersections	59.IS	Cherrywood lane	Direct Access Ramp	985	1020	10100	A	8	A	9
New Intersections	60.IS	West Lake Terrace	Direct Access Ramp	980	1630	21000	No Data	No Data	No Data	No Data
New Intersections	61.IS	Montrose Road	Direct Access Ramp	3415	4155	57400	A	5	B	15
New Intersections	62.IS	Gude Drive	Direct Access Ramp	No Data	No Data	No Data	A	9	A	7
New Intersections	63.IS	MD 193	Inner Loop	4085	4000	51625	D	49	B	19

Table 10: Interchange Data – Design Year (2040) Alternative 5

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	15673	18420	92	1
2.IC	Capital Beltway	MD 414	15776	19284	132	2
3.IC	Capital Beltway	MD 5	21963	25665	99	2
4.IC	Capital Beltway	Suitland Road	13181	15218	1	1
5.IC	Capital Beltway	Forestville Road	14569	16452	2	24
6.IC	Capital Beltway	MD 4	19464	21350	7	3
7.IC	Capital Beltway	Ritchie Marlboro Road	18478	20700	26	16
8.IC	Capital Beltway	MD 214	23304	25042	3	3

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
9.IC	Capital Beltway	Arena Drive	18777	20727	3	3
10.IC	Capital Beltway	MD 202	21786	24963	3	2
11.IC	Capital Beltway	US 50	26679	28656	14	2
12.IC	Capital Beltway	MD 450	20634	24177	4	5
13.IC	Capital Beltway	Baltimore Washington Parkway	23308	25126	3	5
14.IC	Capital Beltway	MD 201	20839	24401	3	2
15.IC	Capital Beltway	US 1	19349	23275	4	7
16.IC	Capital Beltway	I-95	21112	26522	135	4
17.IC	Capital Beltway	MD 650	20728	25562	95	7
18.IC	Capital Beltway	MD 193	18852	23997	28	51
19.IC	Capital Beltway	US 29	No Data	No Data	No Data	No Data
20.IC	Capital Beltway	MD 97	24993	25444	23	36
21.IC	Capital Beltway	MD 185	24598	23962	4	69
22.IC	Capital Beltway	I-270 and MD 355	22964	20718	3	135
23.IC	Capital Beltway	MD 187	No Data	No Data	No Data	No Data
24.IC	Capital Beltway	I-270 Spur	19822	17507	28	13
25.IC	Capital Beltway	MD 190	25604	23824	32	51
26.IC	Capital Beltway	Clara Barton Parkway	21722	19527	11	33
27.IC	Capital Beltway	George Washington Memorial Parkway	31771	20529	37	9
28.IC	I-270 Spur	Democracy Boulevard	11424	12425	1	4
29.IC	I-270	MD 187	11924	12426	6	50
30.IC	I-270	Rockledge Boulevard	14718	10066	3	108
31.IC	I-270	I-270 Spur	16859	16057	2	93
32.IC	I-270	Montrose Road	No Data	No Data	No Data	No Data
33.IC	I-270	MD 189	32565	37832	2	5
34.IC	I-270	MD 28	19063	22374	2	28
35.IC	I-270	Shady Grove Road	20432	20984	3	46
36.IC	I-270	I-370	20643	21531	5	57
37.IC	I-270	MD 117	17080	17729	5	43

Table 11: Intersection Data –Opening Year (2025) Alternative 8

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	1.IS	MD 210	Inner Loop Ramp	3800	3280	55280	C	30	C	22
	2.IS	MD 210	MD 414	2350	2055	30695	B	10	B	15
	3.IS	MD 414	Outer Loop Ramp (1)	2235	2570	36945	B	18	E	77
	4.IS	MD 414 EB	Bald Eagle Road	1950	1640	27030	C	34	D	53

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	5.IS	MD 414	Outer Loop Ramp (2)	3150	3995	53975	B	18	C	23
	6.IS	MD 414	Inner Loop Ramp	2995	3415	48805	C	23	B	18
	7.IS	MD 5	Auth Road	6700	5650	81010	A	3	A	1
	8.IS	Auth Road	Inner Loop Ramp	2350	1560	23140	B	16	B	11
	9.IS	MD 337	Outer Loop Ramp	2750	3110	41460	C	24	B	20
	10.IS	Forestville Road	Allentown Road	2530	2525	33600	No Data	No Data	No Data	No Data
	11.IS	MD 214	Inner Loop Ramp	3835	4380	67465	C	24	B	20
	12.IS	MD 214	Outer Loop Ramp	4335	4555	54235	B	15	B	13
	13.IS	Arena Drive	Inner Loop Ramp	1670	2190	28045	B	18	C	26
	14.IS	Arena Drive	Outer Loop Ramp	2035	2405	30990	B	17	A	8
	15.IS	MD 202	Inner Loop Ramp	3555	4375	32695	A	5	A	5
	16.IS	MD 202	Outer Loop Ramp	3480	4415	54025	D	47	D	39
	17.IS	MD 450	Inner Loop Ramp	2890	4205	52545	B	20	B	20
	18.IS	MD 450	Outer Loop Ramp	3480	4665	59600	B	11	B	12
	19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	A	0	A	0
	20.IS	MD 193	South Way	No Data	No Data	No Data	A	0	A	0
	21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	A	1	A	1
	22.IS	MD 201	Inner Loop Ramp	2595	3240	37180	B	11	A	8
	23.IS	MD 201	Outer Loop Ramp	3370	3325	42015	B	18	B	15
	24.IS	US 1	Inner Loop Ramp	4040	3980	54345	B	14	B	17
	25.IS	US 1	Outer Loop Ramp	3340	3210	63700	C	34	C	30
	26.IS	MD 650	Outer Loop Ramp	4970	5105	29675	C	26	B	17
Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5075	5140	66340	B	18	C	26
Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7070	6345	91315	F	102	D	39
	29.IS	MD 97	Outer Loop Ramp	5850	6055	82935	B	17	B	14
	30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	31.IS	MD 185	Inner Loop Ramp	2380	3400	56525	A	8	A	8
	32.IS	MD 185	Outer Loop Ramp	2990	3340	42595	C	29	B	17
	33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0	A	0
	34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	0	C	28
	35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0	A	0
Replaced by SPUI	36.IS	MD 187	Capital Beltway	3360	3855	38745	B	14	B	16
	37.IS	MD 187								
	38.IS	MD 190	Inner Loop Ramp	3400	3240	38310	A	0	A	1
Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3160	3925	21950	C	30	B	18
	40.IS	Georgetown Pike	Inner Loop Ramp	2800	2215	22305	B	17	B	14
	41.IS	Georgetown Pike	Outer Loop Ramp	2040	1500	23850	C	29	C	25
	42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1315	2140	24875	B	19	B	14

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	645	2750	31350	A	7	A	8
	44.IS	Democracy Boulevard	I-270 Spur NB	690	1760	27470	B	14	A	8
	45.IS	MD 187	I-270 NB Ramp	2875	4515	54615	C	27	B	12
	46.IS	MD 187	I-270 SB Ramp	2870	4505	54335	B	16	F	103
	47.IS	Rockledge Boulevard	I-270 NB Ramp	1665	1820	21850	A	5	A	8
	48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	4	A	6
	49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	50.IS	MD 189	I-270 Ramp	1790	2355	31535	A	2	A	3
	51.IS	MD 28	I-270 SB Ramp	2305	3420	63665	B	16	B	14
	52.IS	MD 28	I-270 NB Ramp / Nelson Street	2110	3185	42535	B	16	D	39
	53.IS	Shady Grove Road	I-270 NB Ramp	2290	2070	33720	C	27	C	24
	54.IS	Shady Grove Road	I-270 SB Ramp	2335	2115	23090	C	21	A	9
	55.IS	MD 117	I-270 NB Off Ramp	2270	3475	43275	C	16	A	1
New Intersections										
New Intersections	56.IS	US 29	Inner Loop	4425	4670	60185	B	12	B	18
New Intersections	57.IS	US 29	Outer Loop	6015	6140	74835	F	82	B	19
New Intersections	58.IS	US 29	Direct Access Ramp	7015	6590	84325	A	8	C	34
New Intersections	59.IS	Cherrywood lane	Direct Access Ramp	1205	1055	10110	A	8	A	8
New Intersections	60.IS	West Lake Terrace	Direct Access Ramp	780	1500	20450	No Data	No Data	No Data	No Data
New Intersections	61.IS	Montrose Road	Direct Access Ramp	3335	4030	54965	A	5	B	12
New Intersections	62.IS	Gude Drive	Direct Access Ramp	No Data	No Data	No Data	A	9	A	9
New Intersections	63.IS	MD 193	Inner Loop	3680	3825	48655	B	14	B	14

Table 12: Interchange Data –Opening Year (2025) Alternative 8

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	16008	17805	82	2
2.IC	Capital Beltway	MD 414	16165	18890	81	2
3.IC	Capital Beltway	MD 5	24441	25183	2	2
4.IC	Capital Beltway	Suitland Road	15084	15164	2	1
5.IC	Capital Beltway	Forestville Road	16229	16224	2	6
6.IC	Capital Beltway	MD 4	21345	20827	7	3
7.IC	Capital Beltway	Ritchie Marlboro Road	20740	20979	24	8
8.IC	Capital Beltway	MD 214	25580	25220	3	2

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
9.IC	Capital Beltway	Arena Drive	21229	21229	3	2
10.IC	Capital Beltway	MD 202	24214	25392	2	2
11.IC	Capital Beltway	US 50	28724	28588	4	2
12.IC	Capital Beltway	MD 450	22772	24087	3	4
13.IC	Capital Beltway	Baltimore Washington Parkway	25294	25048	4	3
14.IC	Capital Beltway	MD 201	22434	24052	3	2
15.IC	Capital Beltway	US 1	21131	22766	4	4
16.IC	Capital Beltway	I-95	25238	27563	7	6
17.IC	Capital Beltway	MD 650	23805	27067	14	6
18.IC	Capital Beltway	MD 193	22628	26313	7	33
19.IC	Capital Beltway	US 29	No Data	No Data	No Data	No Data
20.IC	Capital Beltway	MD 97	27497	28620	19	30
21.IC	Capital Beltway	MD 185	27138	27682	3	40
22.IC	Capital Beltway	I-270 and MD 355	25458	25499	4	66
23.IC	Capital Beltway	MD 187	No Data	No Data	No Data	No Data
24.IC	Capital Beltway	I-270 Spur	23452	19568	29	13
25.IC	Capital Beltway	MD 190	29333	25806	5	3
26.IC	Capital Beltway	Clara Barton Parkway	23184	20166	9	3
27.IC	Capital Beltway	George Washington Memorial Parkway	32800	21207	5	3
28.IC	I-270 Spur	Democracy Boulevard	13842	12805	2	3
29.IC	I-270	MD 187	12969	15668	6	55
30.IC	I-270	Rockledge Boulevard	16993	13860	8	79
31.IC	I-270	I-270 Spur	20038	20320	2	5
32.IC	I-270	Montrose Road	No Data	No Data	No Data	No Data
33.IC	I-270	MD 189	38280	42856	2	2
34.IC	I-270	MD 28	22592	25706	2	5
35.IC	I-270	Shady Grove Road	20642	22986	2	3
36.IC	I-270	I-370	20611	0	24	0
37.IC	I-270	MD 117	17060	20643	5	3

Table 13: Intersection Data –Design Year (2040) Alternative 8

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	1.IS	MD 210	Inner Loop Ramp	4235	3485	60275	C	34	C	21
	2.IS	MD 210	MD 414	2510	2190	32750	B	11	B	15
	3.IS	MD 414	Outer Loop Ramp (1)	2380	2725	38250	B	19	E	77
	4.IS	MD 414 EB	Bald Eagle Road	2075	1750	28800	D	39	D	54

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	5.IS	MD 414	Outer Loop Ramp (2)	3400	4255	57825	C	20	C	29
	6.IS	MD 414	Inner Loop Ramp	3175	3635	51850	C	21	C	21
	7.IS	MD 5	Auth Road	7125	5955	85800	A	2	A	1
	8.IS	Auth Road	Inner Loop Ramp	2465	1675	24500	B	16	B	11
	9.IS	MD 337	Outer Loop Ramp	2930	3310	44150	No Data	No Data	No Data	No Data
	10.IS	Forestville Road	Allentown Road	2690	2685	35725	No Data	No Data	No Data	No Data
	11.IS	MD 214	Inner Loop Ramp	4080	4660	71775	C	26	C	21
	12.IS	MD 214	Outer Loop Ramp	4610	4840	57650	B	14	B	15
	13.IS	Arena Drive	Inner Loop Ramp	1785	2330	29900	B	17	C	26
	14.IS	Arena Drive	Outer Loop Ramp	2150	2560	32875	B	16	A	9
	15.IS	MD 202	Inner Loop Ramp	3810	4655	34900	A	4	A	5
	16.IS	MD 202	Outer Loop Ramp	3730	4695	57650	E	72	D	47
	17.IS	MD 450	Inner Loop Ramp	3075	4480	55950	B	20	B	19
	18.IS	MD 450	Outer Loop Ramp	3720	4965	63550	B	11	B	12
	19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	A	0	A	0
	20.IS	MD 193	South Way	No Data	No Data	No Data	A	0	A	0
	21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	A	1	A	1
	22.IS	MD 201	Inner Loop Ramp	2760	3400	39250	B	11	A	8
	23.IS	MD 201	Outer Loop Ramp	3585	3550	44775	B	18	B	16
	24.IS	US 1	Inner Loop Ramp	4295	4235	57800	B	14	B	16
	25.IS	US 1	Outer Loop Ramp	3555	3365	67300	D	39	D	35
	26.IS	MD 650	Outer Loop Ramp	5295	5425	31575	C	26	B	16
Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5390	5450	70400	D	36	C	29
Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7570	6735	97375	F	113	E	61
	29.IS	MD 97	Outer Loop Ramp	6270	6430	88475	C	20	B	14
	30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	31.IS	MD 185	Inner Loop Ramp	2630	3575	58550	A	8	A	8
	32.IS	MD 185	Outer Loop Ramp	3260	3605	44225	C	30	B	16
	33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0	A	0
	34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	0	C	25
	35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0	A	0
Replaced by SPUI	36.IS	MD 187	Capital Beltway	3430	4075	40300	D	48	B	16
	37.IS	MD 187								
	38.IS	MD 190	Inner Loop Ramp	3560	3360	39925	A	0	A	0
Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3475	4090	21950	C	34	C	23
	40.IS	Georgetown Pike	Inner Loop Ramp	2980	2360	23750	B	17	B	18
	41.IS	Georgetown Pike	Outer Loop Ramp	2140	1610	23850	C	29	C	23
	42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1350	2335	24875	B	18	B	11
	43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	890	2405	30425	A	7	A	7

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	44.IS	Democracy Boulevard	I-270 Spur NB	765	2080	31900	B	15	A	7
	45.IS	MD 187	I-270 NB Ramp	3060	4795	58050	C	29	B	13
	46.IS	MD 187	I-270 SB Ramp	3055	4790	57800	B	16	F	141
	47.IS	Rockledge Boulevard	I-270 NB Ramp	1670	1835	21975	A	5	A	7
	48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	3	A	6
	49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	50.IS	MD 189	I-270 Ramp	1985	2510	34200	A	3	A	3
	51.IS	MD 28	I-270 SB Ramp	2495	3620	68000	B	17	B	14
	52.IS	MD 28	I-270 NB Ramp / Nelson Street	2280	3415	45750	B	13	E	76
	53.IS	Shady Grove Road	I-270 NB Ramp	2425	2220	35925	C	28	C	31
	54.IS	Shady Grove Road	I-270 SB Ramp	2475	2270	23875	C	20	A	9
	55.IS	MD 117	I-270 NB Off Ramp	2410	3700	46025	C	19	A	1
New Intersections										
New Intersections	56.IS	US 29	Inner Loop	4815	4940	64550	B	11	C	30
New Intersections	57.IS	US 29	Outer Loop	6495	6495	79975	F	94	D	42
New Intersections	58.IS	US 29	Direct Access Ramp	7430	7010	89500	B	12	D	36
New Intersections	59.IS	Cherrywood lane	Direct Access Ramp	1285	1085	10600	A	8	A	8
New Intersections	60.IS	West Lake Terrace	Direct Access Ramp	830	1545	21300	No Data	No Data	No Data	No Data
New Intersections	61.IS	Montrose Road	Direct Access Ramp	3810	4585	62650	A	5	B	17
New Intersections	62.IS	Gude Drive	Direct Access Ramp	No Data	No Data	No Data	B	10	A	9
New Intersections	63.IS	MD 193	Inner Loop	3905	4070	51700	D	51	B	14

Table 14: Interchange Data –Design Year (2040) Alternative 8

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	16015	18318	91	2
2.IC	Capital Beltway	MD 414	16390	19636	122	3
3.IC	Capital Beltway	MD 5	25582	26419	35	2
4.IC	Capital Beltway	Suitland Road	15775	15781	2	1
5.IC	Capital Beltway	Forestville Road	17022	16918	5	7
6.IC	Capital Beltway	MD 4	22379	21831	9	3
7.IC	Capital Beltway	Ritchie Marlboro Road	21662	22050	25	12
8.IC	Capital Beltway	MD 214	26749	26579	3	3
9.IC	Capital Beltway	Arena Drive	22127	22391	3	3
10.IC	Capital Beltway	MD 202	25235	26624	7	4
11.IC	Capital Beltway	US 50	30123	30162	3	2

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
12.IC	Capital Beltway	MD 450	23800	25329	4	5
13.IC	Capital Beltway	Baltimore Washington Parkway	26275	26111	6	4
14.IC	Capital Beltway	MD 201	23345	25138	3	2
15.IC	Capital Beltway	US 1	21878	23806	6	5
16.IC	Capital Beltway	I-95	25981	28647	7	7
17.IC	Capital Beltway	MD 650	24400	27971	27	8
18.IC	Capital Beltway	MD 193	22952	27130	12	34
19.IC	Capital Beltway	US 29	No Data	No Data	No Data	No Data
20.IC	Capital Beltway	MD 97	28073	29190	25	34
21.IC	Capital Beltway	MD 185	27156	28369	8	45
22.IC	Capital Beltway	I-270 and MD 355	24671	26026	32	72
23.IC	Capital Beltway	MD 187	No Data	No Data	0	0
24.IC	Capital Beltway	I-270 Spur	23726	18638	33	54
25.IC	Capital Beltway	MD 190	29729	24540	6	62
26.IC	Capital Beltway	Clara Barton Parkway	23411	19459	10	39
27.IC	Capital Beltway	George Washington Memorial Parkway	32949	20825	36	41
28.IC	I-270 Spur	Democracy Boulevard	14390	11698	2	3
29.IC	I-270	MD 187	13149	15388	19	55
30.IC	I-270	Rockledge Boulevard	17392	13575	16	117
31.IC	I-270	I-270 Spur	20844	18562	6	105
32.IC	I-270	Montrose Road	No Data	No Data	No Data	No Data
33.IC	I-270	MD 189	40246	43137	14	3
34.IC	I-270	MD 28	23370	26066	13	11
35.IC	I-270	Shady Grove Road	20853	22853	8	13
36.IC	I-270	I-370	20686	0	28	0
37.IC	I-270	MD 117	16771	19808	45	26

Table 15: Intersection Data –Opening Year (2025) Alternative 9

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	1.IS	MD 210	Inner Loop Ramp	3875	3295	56330	C	32	C	22
	2.IS	MD 210	MD 414	2500	2165	32125	B	11	B	14
	3.IS	MD 414	Outer Loop Ramp (1)	2340	2630	36935	B	17	D	54
	4.IS	MD 414 EB	Bald Eagle Road	2095	1770	29145	C	28	D	53
	5.IS	MD 414	Outer Loop Ramp (2)	3175	3980	54475	B	18	C	26
	6.IS	MD 414	Inner Loop Ramp	3105	3485	50370	C	23	B	20
	7.IS	MD 5	Auth Road	7010	5720	83460	A	4	A	1

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	8.IS	Auth Road	Inner Loop Ramp	2575	1640	24475	B	16	B	11
	9.IS	MD 337	Outer Loop Ramp	2855	3175	42900	C	25	C	21
	10.IS	Forestville Road	Allentown Road	2585	2550	34365	No Data	No Data	No Data	No Data
	11.IS	MD 214	Inner Loop Ramp	4010	4490	69605	C	25	C	21
	12.IS	MD 214	Outer Loop Ramp	4490	4630	56240	B	14	B	13
	13.IS	Arena Drive	Inner Loop Ramp	1750	2150	28865	B	17	C	24
	14.IS	Arena Drive	Outer Loop Ramp	2075	2380	31425	B	17	A	9
	15.IS	MD 202	Inner Loop Ramp	3710	4450	33680	A	5	A	5
	16.IS	MD 202	Outer Loop Ramp	3665	4510	56180	B	19	D	49
	17.IS	MD 450	Inner Loop Ramp	3025	4305	54295	B	20	B	19
	18.IS	MD 450	Outer Loop Ramp	3635	4765	61595	B	11	B	11
	19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	A	0	A	0
	20.IS	MD 193	South Way	No Data	No Data	No Data	A	0	A	0
	21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	A	1	A	1
	22.IS	MD 201	Inner Loop Ramp	2850	3425	38940	B	10	A	7
	23.IS	MD 201	Outer Loop Ramp	3525	3440	43730	B	19	B	16
	24.IS	US 1	Inner Loop Ramp	4135	4010	55395	B	15	B	17
	25.IS	US 1	Outer Loop Ramp	3370	3270	65505	D	40	C	33
	26.IS	MD 650	Outer Loop Ramp	5135	5135	30040	C	25	B	17
Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5300	5155	68405	D	41	C	28
Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7305	6450	94525	F	114	D	39
	29.IS	MD 97	Outer Loop Ramp	6065	6095	85430	B	17	B	14
	30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	31.IS	MD 185	Inner Loop Ramp	2505	3390	56170	A	8	A	8
	32.IS	MD 185	Outer Loop Ramp	3115	3420	42480	C	30	B	16
	33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0	A	0
	34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	1	C	26
	35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0	A	1
Replaced by SPUI	36.IS	MD 187	Capital Beltway	3800	3075	34440	D	49	A	9
	37.IS	MD 187								
	38.IS	MD 190	Inner Loop Ramp	3340	3575	41840	A	0	A	0
Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3365	4625	21325	C	32	C	28
	40.IS	Georgetown Pike	Inner Loop Ramp	3000	2295	21440	B	17	B	13
	41.IS	Georgetown Pike	Outer Loop Ramp	2080	1540	22125	C	31	C	23
	42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1290	2195	24550	B	15	B	11
	43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	860	2145	27685	A	7	A	7
	44.IS	Democracy Boulevard	I-270 Spur NB	725	1785	28165	B	13	A	9
	45.IS	MD 187	I-270 NB Ramp	2960	4575	55630	C	25	B	15
	46.IS	MD 187	I-270 SB Ramp	2960	4570	55420	B	16	E	80

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	47.IS	Rockledge Boulevard	I-270 NB Ramp	1645	1745	20685	A	6	A	6
	48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	4	A	7
	49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	50.IS	MD 189	I-270 Ramp	1860	2360	31900	A	3	A	3
	51.IS	MD 28	I-270 SB Ramp	2595	3890	63520	B	14	B	14
	52.IS	MD 28	I-270 NB Ramp / Nelson Street	2145	3185	43350	B	14	E	58
	53.IS	Shady Grove Road	I-270 NB Ramp	2285	2035	33640	C	27	C	24
	54.IS	Shady Grove Road	I-270 SB Ramp	2420	2195	23465	C	21	B	15
	55.IS	MD 117	I-270 NB Off Ramp	2335	3490	44040	C	16	A	1
New Intersections										
New Intersections	56.IS	US 29	Inner Loop	4540	4735	62255	B	12	B	11
New Intersections	57.IS	US 29	Outer Loop	6315	6300	78060	E	63	B	20
New Intersections	58.IS	US 29	Direct Access Ramp	7370	6740	86100	B	13	C	30
New Intersections	59.IS	Cherrywood lane	Direct Access Ramp	1230	1060	9995	A	7	A	8
New Intersections	60.IS	West Lake Terrace	Direct Access Ramp	985	1765	23820	No Data	No Data	No Data	No Data
New Intersections	61.IS	Montrose Road	Direct Access Ramp	4160	4765	63495	B	16	C	30
New Intersections	62.IS	Gude Drive	Direct Access Ramp	No Data	No Data	No Data	B	10	A	9
New Intersections	63.IS	MD 193	Inner Loop	3835	3850	50085	D	41	B	14

Table 16: Interchange Data –Opening Year (2025) Alternative 9

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	15871	17939	79	2
2.IC	Capital Beltway	MD 414	16078	19102	123	3
3.IC	Capital Beltway	MD 5	25142	25577	8	2
4.IC	Capital Beltway	Suitland Road	14953	15339	1	1
5.IC	Capital Beltway	Forestville Road	16252	16412	1	4
6.IC	Capital Beltway	MD 4	21524	21195	9	3
7.IC	Capital Beltway	Ritchie Marlboro Road	21263	21321	25	15
8.IC	Capital Beltway	MD 214	26099	25824	3	2
9.IC	Capital Beltway	Arena Drive	21472	21691	3	2
10.IC	Capital Beltway	MD 202	24330	25891	3	4
11.IC	Capital Beltway	US 50	29443	29258	4	2
12.IC	Capital Beltway	MD 450	23069	24609	4	5
13.IC	Capital Beltway	Baltimore Washington Parkway	25611	25504	4	3
14.IC	Capital Beltway	MD 201	22989	24503	3	2

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
15.IC	Capital Beltway	US 1	21203	23090	4	4
16.IC	Capital Beltway	I-95	25949	27662	5	7
17.IC	Capital Beltway	MD 650	24502	27085	13	7
18.IC	Capital Beltway	MD 193	22848	26254	13	28
19.IC	Capital Beltway	US 29	No Data	No Data	No Data	No Data
20.IC	Capital Beltway	MD 97	28293	28415	22	24
21.IC	Capital Beltway	MD 185	27880	27142	4	41
22.IC	Capital Beltway	I-270 and MD 355	26379	25449	27	63
23.IC	Capital Beltway	MD 187	No Data	No Data	No Data	No Data
24.IC	Capital Beltway	I-270 Spur	22896	20665	20	2
25.IC	Capital Beltway	MD 190	28749	27025	29	3
26.IC	Capital Beltway	Clara Barton Parkway	23661	20934	9	2
27.IC	Capital Beltway	George Washington Memorial Parkway	34154	22039	15	3
28.IC	I-270 Spur	Democracy Boulevard	12036	13516	1	3
29.IC	I-270	MD 187	13573	15176	7	15
30.IC	I-270	Rockledge Boulevard	16311	12761	4	9
31.IC	I-270	I-270 Spur	18910	20394	3	1
32.IC	I-270	Montrose Road	No Data	No Data	No Data	No Data
33.IC	I-270	MD 189	36745	42984	2	2
34.IC	I-270	MD 28	21856	26185	2	7
35.IC	I-270	Shady Grove Road	20011	23894	2	3
36.IC	I-270	I-370	20441	24301	5	5
37.IC	I-270	MD 117	16297	20239	55	9

Table 17: Intersection Data – Design Year (2040) Alternative 9

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	1.IS	MD 210	Inner Loop Ramp	4140	3430	59475	C	32.030894	C	21.204536
	2.IS	MD 210	MD 414	2555	2255	33125	B	10.583533	B	15.230473
	3.IS	MD 414	Outer Loop Ramp (1)	2390	2740	38125	B	15.813208	E	73.257948
	4.IS	MD 414 EB	Bald Eagle Road	2135	1840	29975	C	28.175604	D	54.006234
	5.IS	MD 414	Outer Loop Ramp (2)	3240	4145	56225	B	18.89118	C	28.195179
	6.IS	MD 414	Inner Loop Ramp	3175	3635	52050	C	23.127304	C	20.801507
	7.IS	MD 5	Auth Road	7150	5960	85950	C	20.115421	A	0.882316
	8.IS	Auth Road	Inner Loop Ramp	2625	1715	25200	C	26.996044	B	11.023299
	9.IS	MD 337	Outer Loop Ramp	2915	3305	44250	No Data	No Data	No Data	No Data
	10.IS	Forestville Road	Allentown Road	2635	2655	35400	No Data	No Data	No Data	No Data

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	11.IS	MD 214	Inner Loop Ramp	4090	4675	71775	C	27.231191	C	20.690772
	12.IS	MD 214	Outer Loop Ramp	4580	4825	58000	B	14.136976	B	13.229918
	13.IS	Arena Drive	Inner Loop Ramp	1790	2240	29825	B	18.095806	C	25.207121
	14.IS	Arena Drive	Outer Loop Ramp	2120	2480	32450	B	16.1322	A	9.293349
	15.IS	MD 202	Inner Loop Ramp	3790	4635	34775	A	4.915731	A	4.96175
	16.IS	MD 202	Outer Loop Ramp	3740	4700	58000	B	19.111242	D	46.637309
	17.IS	MD 450	Inner Loop Ramp	3085	4485	56075	B	19.330708	B	19.139832
	18.IS	MD 450	Outer Loop Ramp	3705	4965	63575	B	11.035749	B	11.672071
	19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	A	0	A	0
	20.IS	MD 193	South Way	No Data	No Data	No Data	A	0	A	0
	21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	A	0.557974	A	0.599456
	22.IS	MD 201	Inner Loop Ramp	2905	3565	40150	A	9.719224	A	7.952002
	23.IS	MD 201	Outer Loop Ramp	3595	3580	45050	B	19.213654	B	16.079957
	24.IS	US 1	Inner Loop Ramp	4205	4180	57025	B	14.196388	B	16.546871
	25.IS	US 1	Outer Loop Ramp	3440	3405	67525	D	42.105414	D	35.378303
	26.IS	MD 650	Outer Loop Ramp	5235	5415	31150	C	25.055423	B	16.346533
Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5405	5370	70500	C	23.83447	C	27.3425
Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7455	6715	97375	F	112.350166	E	55.074097
	29.IS	MD 97	Outer Loop Ramp	6190	6350	88100	B	17.780152	B	13.978406
	30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	31.IS	MD 185	Inner Loop Ramp	2560	3535	58075	A	7.658796	A	7.623809
	32.IS	MD 185	Outer Loop Ramp	3185	3565	43875	C	29.752783	B	17.17718
	33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0.189543	A	0.218512
	34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	1.057637	C	24.399682
	35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0.403421	A	5.318291
Replaced by SPUI	36.IS	MD 187	Capital Beltway	3850	4360	41125	B	10.789797	B	12.014673
	37.IS	MD 187								
	38.IS	MD 190	Inner Loop Ramp	3410	3730	43200	A	0.298963	A	0.761863
Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3430	4820	21325	D	35.163512	C	34.867013
	40.IS	Georgetown Pike	Inner Loop Ramp	3055	2385	22025	B	16.379286	B	12.792631
	41.IS	Georgetown Pike	Outer Loop Ramp	2125	1605	22125	C	29.526815	C	22.836124
	42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1315	2285	24550	B	14.155289	B	10.635904
	43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	880	2235	28700	A	7.546262	A	6.934295
	44.IS	Democracy Boulevard	I-270 Spur NB	740	1860	29175	B	12.05469	A	7.777927
	45.IS	MD 187	I-270 NB Ramp	3020	4765	57475	C	25.220728	B	16.285661
	46.IS	MD 187	I-270 SB Ramp	3015	4760	57225	B	15.589205	F	138.183517
	47.IS	Rockledge Boulevard	I-270 NB Ramp	1680	1815	21325	A	5.922493	A	6.214658
	48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	3.794291	A	7.602823
	49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	No Data	No Data	No Data	No Data

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	50.IS	MD 189	I-270 Ramp	1945	2460	33300	A	2.545533	A	2.684785
	51.IS	MD 28	I-270 SB Ramp	2650	4050	65625	B	12.077761	B	12.888752
	52.IS	MD 28	I-270 NB Ramp / Nelson Street	2190	3315	44775	B	14.227255	E	62.32763
	53.IS	Shady Grove Road	I-270 NB Ramp	2335	2115	34650	C	25.374234	C	23.337607
	54.IS	Shady Grove Road	I-270 SB Ramp	2470	2285	24175	C	26.300651	C	22.388998
	55.IS	MD 117	I-270 NB Off Ramp	2380	3635	45475	C	16.708427	A	1.178133
New Intersections										
New Intersections	56.IS	US 29	Inner Loop	4635	4930	64200	B	12.143991	B	18.196323
New Intersections	57.IS	US 29	Outer Loop	6440	6565	80475	E	74.060958	C	28.174396
New Intersections	58.IS	US 29	Direct Access Ramp	7520	7020	88725	A	9.317045	C	34.584599
New Intersections	59.IS	Cherrywood lane	Direct Access Ramp	1255	1105	10300	A	7.956409	A	7.87858
New Intersections	60.IS	Westlake Terrace	Direct Access Ramp	1000	1840	24600	No Data	No Data	No Data	No Data
New Intersections	61.IS	Montrose Road	Direct Access Ramp-I-270	4245	4965	65525	B	14.322119	C	30.601193
New Intersections	62.IS	Gude Drive	Direct Access Ramp-I-270	No Data	No Data	No Data	A	9.100447	A	9.719039
New Intersections	63.IS	MD 193	Inner Loop	3910	4015	51650	C	23.126301	B	14.066277

Table 18: Interchange Data – Design Year (2040) Alternative 9

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	15811	18232	89	2
2.IC	Capital Beltway	MD 414	15995	19519	128	3
3.IC	Capital Beltway	MD 5	23079	26297	81	2
4.IC	Capital Beltway	Suitland Road	14188	15722	1	1
5.IC	Capital Beltway	Forestville Road	15590	16883	1	7
6.IC	Capital Beltway	MD 4	20961	21747	7	3
7.IC	Capital Beltway	Ritchie Marlboro Road	21022	21987	25	17
8.IC	Capital Beltway	MD 214	25731	26581	3	3
9.IC	Capital Beltway	Arena Drive	21184	22417	3	2
10.IC	Capital Beltway	MD 202	24192	26708	3	4
11.IC	Capital Beltway	US 50	29372	30185	3	2
12.IC	Capital Beltway	MD 450	23011	25395	4	5
13.IC	Capital Beltway	Baltimore Washington Parkway	25677	26208	4	4
14.IC	Capital Beltway	MD 201	23001	25173	3	2
15.IC	Capital Beltway	US 1	21319	23795	4	5
16.IC	Capital Beltway	I-95	26140	28495	5	13
17.IC	Capital Beltway	MD 650	24687	27721	16	10

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
18.IC	Capital Beltway	MD 193	23295	26912	10	32
19.IC	Capital Beltway	US 29	No Data	No Data	No Data	No Data
20.IC	Capital Beltway	MD 97	28909	29034	25	26
21.IC	Capital Beltway	MD 185	28467	27972	4	45
22.IC	Capital Beltway	I-270 and MD 355	27304	26135	3	72
23.IC	Capital Beltway	MD 187	No Data	No Data	0	0
24.IC	Capital Beltway	I-270 Spur	22922	20480	12	47
25.IC	Capital Beltway	MD 190	28929	27238	13	36
26.IC	Capital Beltway	Clara Barton Parkway	23762	21868	10	2
27.IC	Capital Beltway	George Washington Memorial Parkway	34169	23038	25	3
28.IC	I-270 Spur	Democracy Boulevard	11582	13359	1	3
29.IC	I-270	MD 187	13529	14994	7	28
30.IC	I-270	Rockledge Boulevard	15696	12773	4	18
31.IC	I-270	I-270 Spur	18136	20284	1	1
32.IC	I-270	Montrose Road	No Data	No Data	No Data	No Data
33.IC	I-270	MD 189	34837	42529	1	2
34.IC	I-270	MD 28	20584	25885	1	7
35.IC	I-270	Shady Grove Road	20708	23724	3	6
36.IC	I-270	I-370	20381	22700	5	32
37.IC	I-270	MD 117	16654	18685	55	30

Table 19: Intersection Data – Opening Year (2025) Alternative 10

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	1.IS	MD 210	Inner Loop Ramp	3710	3225	54485	C	30	C	21
	2.IS	MD 210	MD 414	2405	2120	31160	B	11	B	15
	3.IS	MD 414	Outer Loop Ramp (1)	2245	2580	36900	B	16	E	56
	4.IS	MD 414 EB	Bald Eagle Road	2000	1725	28090	C	25	D	53
	5.IS	MD 414	Outer Loop Ramp (2)	3045	3895	52835	B	18	C	23
	6.IS	MD 414	Inner Loop Ramp	2985	3415	48915	C	21	B	20
	7.IS	MD 5	Auth Road	6725	5605	80835	A	2	A	1
	8.IS	Auth Road	Inner Loop Ramp	2480	1615	23775	B	16	B	11
	9.IS	MD 337	Outer Loop Ramp	2735	3100	41510	C	25	C	20
	10.IS	Forestville Road	Allentown Road	2475	2495	33260	No Data	No Data	No Data	No Data
	11.IS	MD 214	Inner Loop Ramp	3840	4395	67435	C	25	C	20
	12.IS	MD 214	Outer Loop Ramp	4310	4535	54545	B	14	B	15
	13.IS	Arena Drive	Inner Loop Ramp	1680	2110	28050	B	17	C	24

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	14.IS	Arena Drive	Outer Loop Ramp	1995	2330	30510	B	17	A	8
	15.IS	MD 202	Inner Loop Ramp	3560	4355	32670	A	5	A	5
	16.IS	MD 202	Outer Loop Ramp	3515	4420	54530	C	22	D	45
	17.IS	MD 450	Inner Loop Ramp	2900	4215	52705	B	20	B	19
	18.IS	MD 450	Outer Loop Ramp	3485	4665	59760	B	11	B	12
	19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	A	0	A	0
	20.IS	MD 193	South Way	No Data	No Data	No Data	A	0	A	0
	21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	A	1	A	0
	22.IS	MD 201	Inner Loop Ramp	2735	3350	37760	A	9	A	7
	23.IS	MD 201	Outer Loop Ramp	3380	3365	42350	B	18	B	16
	24.IS	US 1	Inner Loop Ramp	3960	3925	53625	B	15	B	17
	25.IS	US 1	Outer Loop Ramp	3240	3195	63480	D	36	C	33
	26.IS	MD 650	Outer Loop Ramp	4930	5095	30110	C	25	B	17
Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5085	5040	66245	B	18	C	27
Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7005	6310	91500	F	104	D	39
	29.IS	MD 97	Outer Loop Ramp	5820	5970	82830	B	16	B	14
	30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	31.IS	MD 185	Inner Loop Ramp	2410	3320	56360	A	7	A	8
	32.IS	MD 185	Outer Loop Ramp	2995	3345	42470	C	27	B	16
	33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0	A	0
	34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	1	C	26
	35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0	A	0
Replaced by SPUI	36.IS	MD 187	Capital Beltway	3230	4025	37355	C	22	A	10
	37.IS	MD 187								
	38.IS	MD 190	Inner Loop Ramp	3455	3595	39175	A	0	A	0
Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3160	4380	20900	C	30	C	25
	40.IS	Georgetown Pike	Inner Loop Ramp	2900	2245	20795	B	16	B	12
	41.IS	Georgetown Pike	Outer Loop Ramp	2005	1495	22250	C	30	C	22
	42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1285	2100	23775	C	20	B	12
	43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	800	2075	27155	A	8	A	7
	44.IS	Democracy Boulevard	I-270 Spur NB	650	1705	27780	B	14	A	10
	45.IS	MD 187	I-270 NB Ramp	2640	4380	53235	C	26	B	15
	46.IS	MD 187	I-270 SB Ramp	2640	4370	53000	B	16	D	51
	47.IS	Rockledge Boulevard	I-270 NB Ramp	1625	1735	20890	A	6	A	6
	48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	4	A	8
	49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	50.IS	MD 189	I-270 Ramp	1750	2415	31785	A	2	A	3
	51.IS	MD 28	I-270 SB Ramp	2430	3720	62295	B	13	B	13
	52.IS	MD 28	I-270 NB Ramp / Nelson Street	2155	3200	42680	B	13	E	59

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	53.IS	Shady Grove Road	I-270 NB Ramp	2200	2035	32900	C	26	C	24
	54.IS	Shady Grove Road	I-270 SB Ramp	2335	2190	22980	C	22	B	15
	55.IS	MD 117	I-270 NB Off Ramp	2285	3485	43275	C	17	A	1
New Intersections										
New Intersections	56.IS	US 29	Inner Loop	4360	4640	60410	B	12	B	12
New Intersections	57.IS	US 29	Outer Loop	6055	6180	75710	E	60	C	23
New Intersections	58.IS	US 29	Direct Access Ramp	7075	6610	83510	B	11	C	30
New Intersections	59.IS	Cherrywood lane	Direct Access Ramp	1175	1035	9645	A	7	A	8
New Intersections	60.IS	West Lake Terrace	Direct Access Ramp	950	1815	22325	No Data	No Data	No Data	No Data
New Intersections	61.IS	Montrose Road	Direct Access Ramp	3665	4610	59890	A	5	B	15
New Intersections	62.IS	Gude Drive	Direct Access Ramp	No Data	No Data	No Data	A	9	B	10
New Intersections	63.IS	MD 193	Inner Loop	3680	3770	48555	B	16	B	14

Table 20: Interchange Data – Opening Year (2025) Alternative 10

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	15819	17634	87	1
2.IC	Capital Beltway	MD 414	15404	18852	24	2
3.IC	Capital Beltway	MD 5	24142	25116	2	2
4.IC	Capital Beltway	Suitland Road	14501	15137	2	1
5.IC	Capital Beltway	Forestville Road	15815	16229	1	5
6.IC	Capital Beltway	MD 4	20850	20869	6	3
7.IC	Capital Beltway	Ritchie Marlboro Road	20604	20906	26	14
8.IC	Capital Beltway	MD 214	25243	25288	3	2
9.IC	Capital Beltway	Arena Drive	20918	21252	3	2
10.IC	Capital Beltway	MD 202	23645	25441	2	2
11.IC	Capital Beltway	US 50	28381	28639	3	2
12.IC	Capital Beltway	MD 450	22280	24171	3	5
13.IC	Capital Beltway	Baltimore Washington Parkway	24838	25012	3	3
14.IC	Capital Beltway	MD 201	22369	24023	3	2
15.IC	Capital Beltway	US 1	20630	22671	4	4
16.IC	Capital Beltway	I-95	25303	27381	4	9
17.IC	Capital Beltway	MD 650	23924	26826	9	6
18.IC	Capital Beltway	MD 193	22695	26022	8	31
19.IC	Capital Beltway	US 29	No Data	No Data	No Data	No Data
20.IC	Capital Beltway	MD 97	27765	28024	22	24

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
21.IC	Capital Beltway	MD 185	27202	26942	3	43
22.IC	Capital Beltway	I-270 and MD 355	25774	24915	2	27
23.IC	Capital Beltway	MD 187	No Data	No Data	No Data	No Data
24.IC	Capital Beltway	I-270 Spur	22849	21094	43	2
25.IC	Capital Beltway	MD 190	28729	27624	27	3
26.IC	Capital Beltway	Clara Barton Parkway	23433	20905	9	2
27.IC	Capital Beltway	George Washington Memorial Parkway	33780	21942	15	3
28.IC	I-270 Spur	Democracy Boulevard	13424	15660	2	4
29.IC	I-270	MD 187	13769	15532	18	7
30.IC	I-270	Rockledge Boulevard	17145	13140	9	7
31.IC	I-270	I-270 Spur	20702	22001	3	2
32.IC	I-270	Montrose Road	No Data	No Data	No Data	No Data
33.IC	I-270	MD 189	39264	46360	4	2
34.IC	I-270	MD 28	22837	27636	2	7
35.IC	I-270	Shady Grove Road	21070	25114	2	4
36.IC	I-270	I-370	21269	24162	6	17
37.IC	I-270	MD 117	16992	19697	4	17

Table 21: Intersection Data – Design Year (2040) Alternative 10

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	1.IS	MD 210	Inner Loop Ramp	4140	3430	59475	C	32	C	22
	2.IS	MD 210	MD 414	2555	2255	33125	B	11	B	15
	3.IS	MD 414	Outer Loop Ramp (1)	2390	2740	38125	B	16	E	68
	4.IS	MD 414 EB	Bald Eagle Road	2135	1840	29975	C	28	D	54
	5.IS	MD 414	Outer Loop Ramp (2)	3240	4145	56225	B	18	C	29
	6.IS	MD 414	Inner Loop Ramp	3175	3635	52050	C	24	C	20
	7.IS	MD 5	Auth Road	7150	5960	85950	B	19	A	1
	8.IS	Auth Road	Inner Loop Ramp	2625	1715	25200	C	28	B	11
	9.IS	MD 337	Outer Loop Ramp	2915	3305	44250	No Data	No Data	No Data	No Data
	10.IS	Forestville Road	Allentown Road	2635	2655	35400	No Data	No Data	No Data	No Data
	11.IS	MD 214	Inner Loop Ramp	4090	4675	71775	C	26	C	21
	12.IS	MD 214	Outer Loop Ramp	4580	4825	58000	B	15	B	13
	13.IS	Arena Drive	Inner Loop Ramp	1790	2240	29825	B	18	C	26
	14.IS	Arena Drive	Outer Loop Ramp	2120	2480	32450	B	17	A	9
	15.IS	MD 202	Inner Loop Ramp	3790	4635	34775	A	5	A	5
	16.IS	MD 202	Outer Loop Ramp	3740	4700	58000	B	20	D	46

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	17.IS	MD 450	Inner Loop Ramp	3085	4485	56075	B	19	B	19
	18.IS	MD 450	Outer Loop Ramp	3705	4965	63575	B	11	B	12
	19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	A	0	A	0
	20.IS	MD 193	South Way	No Data	No Data	No Data	A	0	A	0
	21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	A	1	A	1
	22.IS	MD 201	Inner Loop Ramp	2905	3565	40150	A	10	A	8
	23.IS	MD 201	Outer Loop Ramp	3595	3580	45050	B	19	B	16
	24.IS	US 1	Inner Loop Ramp	4205	4180	57025	B	14	B	16
	25.IS	US 1	Outer Loop Ramp	3440	3405	67525	D	42	D	36
	26.IS	MD 650	Outer Loop Ramp	5235	5415	31150	C	25	B	16
Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5405	5370	70500	B	20	C	29
Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7455	6715	97375	F	113	E	59
	29.IS	MD 97	Outer Loop Ramp	6190	6350	88100	D	50	B	14
	30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	31.IS	MD 185	Inner Loop Ramp	2560	3535	58075	A	7	A	8
	32.IS	MD 185	Outer Loop Ramp	3185	3565	43875	C	31	B	17
	33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0	A	1
	34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	1	C	25
	35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0	D	40
Replaced by SPUI	36.IS	MD 187	Capital Beltway	3435	4280	39725	D	49	A	10
	37.IS	MD 187								
	38.IS	MD 190	Inner Loop Ramp	3675	3825	41675	A	0	A	1
Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3360	4665	20900	C	35	C	27
	40.IS	Georgetown Pike	Inner Loop Ramp	3085	2395	22150	B	15	B	13
	41.IS	Georgetown Pike	Outer Loop Ramp	2135	1590	22250	C	28	C	22
	42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1370	2240	23775	C	20	B	11
	43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	850	2210	28900	A	8	A	7
	44.IS	Democracy Boulevard	I-270 Spur NB	690	1815	29550	B	14	A	10
	45.IS	MD 187	I-270 NB Ramp	2810	4660	56650	E	67	B	16
	46.IS	MD 187	I-270 SB Ramp	2805	4655	56400	C	31	F	125
	47.IS	Rockledge Boulevard	I-270 NB Ramp	1730	1845	22225	A	6	A	6
	48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	3	A	7
	49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	50.IS	MD 189	I-270 Ramp	1915	2570	34225	A	3	A	3
	51.IS	MD 28	I-270 SB Ramp	2590	3965	66400	B	13	B	14
	52.IS	MD 28	I-270 NB Ramp / Nelson Street	2285	3405	45350	B	14	E	65
	53.IS	Shady Grove Road	I-270 NB Ramp	2340	2165	35000	C	28	C	24
	54.IS	Shady Grove Road	I-270 SB Ramp	2480	2330	24425	C	22	B	15
	55.IS	MD 117	I-270 NB Off Ramp	2425	3705	45975	C	17	A	1

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
New Intersections										
New Intersections	56.IS	US 29	Inner Loop	4635	4930	64200	B	10	B	15
New Intersections	57.IS	US 29	Outer Loop	6440	6565	80475	E	70	C	28
New Intersections	58.IS	US 29	Direct Access Ramp	7520	7020	88725	B	12	D	37
New Intersections	59.IS	Cherrywood lane	Direct Access Ramp	1255	1105	10300	A	8	A	8
New Intersections	60.IS	Westlake Terrace	Direct Access Ramp	1005	1930	23700	No Data	No Data	No Data	No Data
New Intersections	61.IS	Montrose Road	Direct Access Ramp-I-270	3900	4905	63725	A	6	D	44
New Intersections	62.IS	Gude Drive	Direct Access ramp-I-270	No Data	No Data	No Data	A	9	B	12
New Intersections	63.IS	MD 193	Inner Loop	3910	4015	51650	C	24	B	14

Table 22: Interchange Data – Design Year (2040) Alternative 10

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	15943	18265	83	2
2.IC	Capital Beltway	MD 414	15936	19575	131	3
3.IC	Capital Beltway	MD 5	23280	26354	95	2
4.IC	Capital Beltway	Suitland Road	14206	15755	1	1
5.IC	Capital Beltway	Forestville Road	15634	16921	1	6
6.IC	Capital Beltway	MD 4	20999	21799	8	3
7.IC	Capital Beltway	Ritchie Marlboro Road	21056	22113	27	16
8.IC	Capital Beltway	MD 214	25732	26659	3	3
9.IC	Capital Beltway	Arena Drive	21160	22491	3	3
10.IC	Capital Beltway	MD 202	24203	26759	3	3
11.IC	Capital Beltway	US 50	29435	30253	3	2
12.IC	Capital Beltway	MD 450	23056	25518	5	5
13.IC	Capital Beltway	Baltimore Washington Parkway	25666	26274	4	4
14.IC	Capital Beltway	MD 201	23016	25248	3	2
15.IC	Capital Beltway	US 1	21338	23886	5	5
16.IC	Capital Beltway	I-95	26166	28608	9	18
17.IC	Capital Beltway	MD 650	24766	28016	12	15
18.IC	Capital Beltway	MD 193	23456	27033	10	31
19.IC	Capital Beltway	US 29	No Data	No Data	No Data	No Data
20.IC	Capital Beltway	MD 97	28039	28807	38	33
21.IC	Capital Beltway	MD 185	27780	27863	16	72
22.IC	Capital Beltway	I-270 and MD 355	26259	25889	10	86
23.IC	Capital Beltway	MD 187	No Data	No Data	0	0

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
24.IC	Capital Beltway	I-270 Spur	23395	21885	56	4
25.IC	Capital Beltway	MD 190	29365	28789	28	6
26.IC	Capital Beltway	Clara Barton Parkway	23939	21740	9	2
27.IC	Capital Beltway	George Washington Memorial Parkway	34442	22847	31	3
28.IC	I-270 Spur	Democracy Boulevard	14353	15653	65	5
29.IC	I-270	MD 187	14121	14744	24	57
30.IC	I-270	Rockledge Boulevard	17289	12229	18	117
31.IC	I-270	I-270 Spur	21237	21552	19	46
32.IC	I-270	Montrose Road	No Data	No Data	No Data	No Data
33.IC	I-270	MD 189	40900	47317	8	8
34.IC	I-270	MD 28	23543	27781	2	28
35.IC	I-270	Shady Grove Road	21586	25452	2	45
36.IC	I-270	I-370	21700	25038	18	24
37.IC	I-270	MD 117	17377	20250	37	20

Table 23: Intersection Data – Opening Year (2025) Alternative 13B

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	1.IS	MD 210	Inner Loop Ramp	3715	3225	54525	C	30	C	21
	2.IS	MD 210	MD 414	2405	2120	31160	B	11	B	15
	3.IS	MD 414	Outer Loop Ramp (1)	2245	2580	36900	B	17	E	65
	4.IS	MD 414 EB	Bald Eagle Road	2000	1725	28090	C	26	D	54
	5.IS	MD 414	Outer Loop Ramp (2)	3005	3895	52815	B	19	C	25
	6.IS	MD 414	Inner Loop Ramp	2935	3415	48535	C	24	B	19
	7.IS	MD 5	Auth Road	6715	5605	81395	A	3	A	1
	8.IS	Auth Road	Inner Loop Ramp	2475	1615	23775	B	14	B	11
	9.IS	MD 337	Outer Loop Ramp	2735	3100	41510	C	25	B	20
	10.IS	Forestville Road	Allentown Road	2475	2495	33260	No Data	No Data	No Data	No Data
	11.IS	MD 214	Inner Loop Ramp	3840	4395	67435	C	25	B	20
	12.IS	MD 214	Outer Loop Ramp	4310	4535	54545	B	16	B	13
	13.IS	Arena Drive	Inner Loop Ramp	1680	2110	28050	B	17	C	25
	14.IS	Arena Drive	Outer Loop Ramp	1995	2330	30510	B	17	A	8
	15.IS	MD 202	Inner Loop Ramp	3290	4355	31555	A	5	A	5
	16.IS	MD 202	Outer Loop Ramp	3245	4420	54545	C	22	D	44
	17.IS	MD 450	Inner Loop Ramp	2900	4215	52705	B	19	B	19
	18.IS	MD 450	Outer Loop Ramp	3485	4665	59760	B	10	B	12
	19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	A	0	A	0

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	20.IS	MD 193	South Way	No Data	No Data	No Data	A	0	A	0
	21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	A	1	A	1
	22.IS	MD 201	Inner Loop Ramp	2730	3345	37735	A	9	A	8
	23.IS	MD 201	Outer Loop Ramp	3375	3360	42325	B	18	B	15
	24.IS	US 1	Inner Loop Ramp	3955	3920	53550	B	15	B	17
	25.IS	US 1	Outer Loop Ramp	3235	3195	63430	D	36	C	31
	26.IS	MD 650	Outer Loop Ramp	4880	5105	30175	C	27	B	17
Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	4995	5035	66370	C	21	C	26
Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7000	6295	90960	F	113	D	41
	29.IS	MD 97	Outer Loop Ramp	5805	5970	82245	B	16	B	14
	30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	31.IS	MD 185	Inner Loop Ramp	2445	3345	56360	A	8	A	8
	32.IS	MD 185	Outer Loop Ramp	3030	3385	42570	C	28	B	17
	33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0	A	0
	34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	1	C	25
	35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0	A	0
Replaced by SPUI	36.IS	MD 187	Capital Beltway	4115	4165	37980	B	11	B	12
	37.IS	MD 187								
	38.IS	MD 190	Inner Loop Ramp	3195	3455	39125	A	0	A	0
Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3140	4385	20600	D	37	C	25
	40.IS	Georgetown Pike	Inner Loop Ramp	2885	2255	20835	B	14	B	13
	41.IS	Georgetown Pike	Outer Loop Ramp	1995	1515	22250	C	28	C	24
	42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1290	2215	25470	B	15	B	11
	43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	875	2170	28405	A	7	A	6
	44.IS	Democracy Boulevard	I-270 Spur NB	745	1815	28875	B	13	A	9
	45.IS	MD 187	I-270 NB Ramp	2905	4555	55350	C	24	B	16
	46.IS	MD 187	I-270 SB Ramp	2900	4545	55075	B	16	F	106
	47.IS	Rockledge Boulevard	I-270 NB Ramp	1640	1740	20395	A	6	A	6
	48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	4	A	6
	49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	50.IS	MD 189	I-270 Ramp	1775	2270	30745	A	3	A	3
	51.IS	MD 28	I-270 SB Ramp	2255	3310	60540	B	13	B	13
	52.IS	MD 28	I-270 NB Ramp / Nelson Street	1940	3005	41790	B	13	E	57
	53.IS	Shady Grove Road	I-270 NB Ramp	2135	1895	32510	C	29	C	27
	54.IS	Shady Grove Road	I-270 SB Ramp	2285	2140	23118	C	24	B	15
	55.IS	MD 117	I-270 NB Off Ramp	2225	3405	42315	C	16	A	1
New Intersections										
New Intersections	56.IS	US 29	Inner Loop	4325	4820	59665	B	11	B	16

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
New Intersections	57.IS	US 29	Outer Loop	5945	6205	74000	B	16	B	19
New Intersections	58.IS	US 29	Direct Access Ramp	7040	6600	83550	B	10	B	19
New Intersections	59.IS	Cherrywood lane	Direct Access Ramp	1160	1030	9660	A	6	A	7
New Intersections	60.IS	West Lake Terrace	Direct Access Ramp	915	1565	20825	No Data	No Data	No Data	No Data
New Intersections	61.IS	Montrose Road	Direct Access Ramp	3260	4105	56450	B	16	B	11
New Intersections	62.IS	Gude Drive	Direct Access Ramp	No Data	No Data	No Data	A	3	B	11
New Intersections	63.IS	MD 193	Inner Loop	3660	3765	48355	B	19	B	14

Table 24: Interchange Data – Opening Year (2025) Alternative 13B

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	16268	17659	78	1
2.IC	Capital Beltway	MD 414	16070	18928	93	2
3.IC	Capital Beltway	MD 5	24098	25198	2	2
4.IC	Capital Beltway	Suitland Road	14357	15206	1	1
5.IC	Capital Beltway	Forestville Road	15624	16301	1	3
6.IC	Capital Beltway	MD 4	20624	20932	6	3
7.IC	Capital Beltway	Ritchie Marlboro Road	20406	20983	24	12
8.IC	Capital Beltway	MD 214	25008	25380	3	3
9.IC	Capital Beltway	Arena Drive	20611	21342	2	2
10.IC	Capital Beltway	MD 202	23362	25541	2	2
11.IC	Capital Beltway	US 50	28132	28769	3	2
12.IC	Capital Beltway	MD 450	21966	24237	3	5
13.IC	Capital Beltway	Baltimore Washington Parkway	24537	25056	4	3
14.IC	Capital Beltway	MD 201	22071	24105	3	2
15.IC	Capital Beltway	US 1	20466	22831	4	4
16.IC	Capital Beltway	I-95	25100	27197	5	6
17.IC	Capital Beltway	MD 650	23479	26721	13	5
18.IC	Capital Beltway	MD 193	22385	25926	10	26
19.IC	Capital Beltway	US 29	No Data	No Data	No Data	No Data
20.IC	Capital Beltway	MD 97	27795	28197	17	20
21.IC	Capital Beltway	MD 185	27387	27152	3	37
22.IC	Capital Beltway	I-270 and MD 355	26335	25382	3	33
23.IC	Capital Beltway	MD 187	No Data	No Data	No Data	No Data
24.IC	Capital Beltway	I-270 Spur	22223	20360	15	2
25.IC	Capital Beltway	MD 190	27918	26555	28	3
26.IC	Capital Beltway	Clara Barton Parkway	23046	20685	12	3

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay
27.IC	Capital Beltway	George Washington Memorial Parkway	33064	21848	15	3
28.IC	I-270 Spur	Democracy Boulevard	11365	13178	1	3
29.IC	I-270	MD 187	13108	14400	6	10
30.IC	I-270	Rockledge Boulevard	15728	12091	4	9
31.IC	I-270	I-270 Spur	17780	19137	2	1
32.IC	I-270	Montrose Road	No Data	No Data	No Data	No Data
33.IC	I-270	MD 189	35561	41028	2	2
34.IC	I-270	MD 28	21155	24703	2	7
35.IC	I-270	Shady Grove Road	19753	22931	2	4
36.IC	I-270	I-370	20557	23614	5	4
37.IC	I-270	MD 117	16801	19785	4	7

Table 25: Intersection Data – Design Year (2040) Alternative 13B

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	1.IS	MD 210	Inner Loop Ramp	4140	3430	59475	C	31	C	22
	2.IS	MD 210	MD 414	2555	2255	33125	B	11	B	15
	3.IS	MD 414	Outer Loop Ramp (1)	2390	2740	38125	B	16	E	78
	4.IS	MD 414 EB	Bald Eagle Road	2135	1840	29975	C	29	D	55
	5.IS	MD 414	Outer Loop Ramp (2)	3240	4145	56525	B	19	C	26
	6.IS	MD 414	Inner Loop Ramp	3175	3635	52050	C	24	B	20
	7.IS	MD 5	Auth Road	7140	5960	86550	B	20	A	1
	8.IS	Auth Road	Inner Loop Ramp	2620	1715	25200	C	28	B	12
	9.IS	MD 337	Outer Loop Ramp	2915	3305	44250	No Data	No Data	No Data	No Data
	10.IS	Forestville Road	Allentown Road	2635	2655	35400	No Data	No Data	No Data	No Data
	11.IS	MD 214	Inner Loop Ramp	4090	4675	71775	C	25	C	22
	12.IS	MD 214	Outer Loop Ramp	4580	4825	58000	B	15	B	14
	13.IS	Arena Drive	Inner Loop Ramp	1790	2240	29825	B	17	C	25
	14.IS	Arena Drive	Outer Loop Ramp	2120	2480	32450	B	17	A	9
	15.IS	MD 202	Inner Loop Ramp	3790	4635	34775	A	5	A	5
	16.IS	MD 202	Outer Loop Ramp	3740	4700	58000	C	20	D	45
	17.IS	MD 450	Inner Loop Ramp	3085	4485	56075	B	19	B	18
	18.IS	MD 450	Outer Loop Ramp	3705	4965	63575	B	12	B	12
	19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	A	0	A	0
	20.IS	MD 193	South Way	No Data	No Data	No Data	A	0	A	0
	21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	A	1	A	1
	22.IS	MD 201	Inner Loop Ramp	2900	3560	40125	A	9	A	8

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	23.IS	MD 201	Outer Loop Ramp	3590	3575	45025	B	19	B	16
	24.IS	US 1	Inner Loop Ramp	4200	4175	56950	B	14	B	16
	25.IS	US 1	Outer Loop Ramp	3435	3405	67475	D	47	D	37
	26.IS	MD 650	Outer Loop Ramp	5235	5425	31350	C	28	B	16
Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5260	5360	70275	C	34	C	28
Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7505	6695	97150	F	122	E	56
	29.IS	MD 97	Outer Loop Ramp	6230	6355	87900	C	27	B	14
	30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	31.IS	MD 185	Inner Loop Ramp	2665	3555	58075	B	11	A	7
	32.IS	MD 185	Outer Loop Ramp	3295	3600	44150	C	28	B	16
	33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0	A	0
	34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	1	C	26
	35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0	A	1
Replaced by SPUI	36.IS	MD 187	Capital Beltway	4320	4515	40525	E	59	B	14
	37.IS	MD 187								
	38.IS	MD 190	Inner Loop Ramp	3400	3700	41775	A	0	A	1
Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3360	4665	20600	C	33	C	27
	40.IS	Georgetown Pike	Inner Loop Ramp	3070	2395	22150	C	23	B	13
	41.IS	Georgetown Pike	Outer Loop Ramp	2130	1610	22250	D	38	C	23
	42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1365	2355	26025	B	16	A	7
	43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	930	2305	30175	A	7	A	6
	44.IS	Democracy Boulevard	I-270 Spur NB	790	1925	30625	B	12	A	9
	45.IS	MD 187	I-270 NB Ramp	3090	4845	58875	C	25	B	17
	46.IS	MD 187	I-270 SB Ramp	3085	4840	58625	B	16	F	121
	47.IS	Rockledge Boulevard	I-270 NB Ramp	1745	1855	21725	A	6	A	6
	48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	4	A	7
	49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	50.IS	MD 189	I-270 Ramp	1940	2415	33100	A	2	A	5
	51.IS	MD 28	I-270 SB Ramp	2395	3525	64400	B	14	B	13
	52.IS	MD 28	I-270 NB Ramp / Nelson Street	2055	3190	44325	B	13	E	75
	53.IS	Shady Grove Road	I-270 NB Ramp	2275	2010	33750	C	28	C	26
	54.IS	Shady Grove Road	I-270 SB Ramp	2430	2275	23950	C	23	B	15
	55.IS	MD 117	I-270 NB Off Ramp	2365	3625	45050	C	17	A	1
New Intersections										
New Intersections	56.IS	US 29	Inner Loop	4695	5080	63775	A	10	F	153
New Intersections	57.IS	US 29	Outer Loop	6440	6605	79450	E	62	B	14
New Intersections	58.IS	US 29	Direct Access Ramp	7480	7025	88850	B	11	C	29
New Intersections	59.IS	Cherrywood lane	Direct Access Ramp	1235	1100	10300	A	7	A	8

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
New Intersections	60.IS	Westlake Terrace	Direct Access Ramp	970	1665	22125	No Data	No Data	No Data	No Data
New Intersections	61.IS	Montrose Road	Direct Access Ramp-I-270	3470	4365	60055	A	7	B	17
New Intersections	62.IS	Gude Drive	Direct Access Ramp-I-270	No Data	No Data	No Data	A	3	B	12
New Intersections	63.IS	MD 193	Inner Loop	3890	4010	51450	D	46	B	14

Table 26: Interchange Data – Design Year (2040) Alternative 13B

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	16193	18254	85	2
2.IC	Capital Beltway	MD 414	16397	19499	125	2
3.IC	Capital Beltway	MD 5	23906	26226	68	2
4.IC	Capital Beltway	Suitland Road	14605	15688	1	1
5.IC	Capital Beltway	Forestville Road	15963	16818	1	9
6.IC	Capital Beltway	MD 4	21412	21690	11	3
7.IC	Capital Beltway	Ritchie Marlboro Road	21465	21774	24	14
8.IC	Capital Beltway	MD 214	26105	26436	3	2
9.IC	Capital Beltway	Arena Drive	21483	22269	3	2
10.IC	Capital Beltway	MD 202	24584	26494	3	4
11.IC	Capital Beltway	US 50	29756	29948	3	2
12.IC	Capital Beltway	MD 450	23307	25188	3	5
13.IC	Capital Beltway	Baltimore Washington Parkway	25907	25890	4	4
14.IC	Capital Beltway	MD 201	23232	24927	3	2
15.IC	Capital Beltway	US 1	21455	23460	4	4
16.IC	Capital Beltway	I-95	26181	27201	7	5
17.IC	Capital Beltway	MD 650	24288	26566	17	7
18.IC	Capital Beltway	MD 193	22782	25762	12	4
19.IC	Capital Beltway	US 29	No Data	No Data	No Data	No Data
20.IC	Capital Beltway	MD 97	27127	28082	44	29
21.IC	Capital Beltway	MD 185	26362	26907	53	53
22.IC	Capital Beltway	I-270 and MD 355	25780	24652	58	83
23.IC	Capital Beltway	MD 187	No Data	No Data	0	0
24.IC	Capital Beltway	I-270 Spur	22643	19394	24	33
25.IC	Capital Beltway	MD 190	28244	26334	32	14
26.IC	Capital Beltway	Clara Barton Parkway	23155	20890	14	2
27.IC	Capital Beltway	George Washington Memorial Parkway	32893	21951	49	3
28.IC	I-270 Spur	Democracy Boulevard	11920	12006	1	3
29.IC	I-270	MD 187	13210	13204	7	43

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
30.IC	I-270	Rockledge Boulevard	16211	10784	4	96
31.IC	I-270	I-270 Spur	18385	16775	3	96
32.IC	I-270	Montrose Road	No Data	No Data	No Data	No Data
33.IC	I-270	MD 189	36952	38924	3	10
34.IC	I-270	MD 28	22008	24669	2	14
35.IC	I-270	Shady Grove Road	20673	22213	3	19
36.IC	I-270	I-370	21212	22327	16	60
37.IC	I-270	MD 117	17611	18506	7	43

Table 27: Intersection Data – Opening Year (2025) Alternative 13C

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	1.IS	MD 210	Inner Loop Ramp	3740	3215	54855	C	31	C	22
	2.IS	MD 210	MD 414	2370	1990	30490	A	10	B	14
	3.IS	MD 414	Outer Loop Ramp (1)	2250	2520	36870	B	17	D	46
	4.IS	MD 414 EB	Bald Eagle Road	1935	1600	26855	C	26	D	53
	5.IS	MD 414	Outer Loop Ramp (2)	3175	4025	54785	B	18	C	29
	6.IS	MD 414	Inner Loop Ramp	3000	3425	48940	C	21	B	19
	7.IS	MD 5	Auth Road	6735	5605	80975	A	2	A	1
	8.IS	Auth Road	Inner Loop Ramp	2520	1650	24080	B	14	B	11
	9.IS	MD 337	Outer Loop Ramp	2770	3115	41955	C	24	C	21
	10.IS	Forestville Road	Allentown Road	2535	2530	33775	No Data	No Data	No Data	No Data
	11.IS	MD 214	Inner Loop Ramp	3830	4360	67285	C	24	C	21
	12.IS	MD 214	Outer Loop Ramp	4310	4550	54205	B	15	B	13
	13.IS	Arena Drive	Inner Loop Ramp	1660	2160	27900	B	17	C	25
	14.IS	Arena Drive	Outer Loop Ramp	2035	2365	30945	B	16	A	7
	15.IS	MD 202	Inner Loop Ramp	3585	4355	32830	A	5	A	5
	16.IS	MD 202	Outer Loop Ramp	3490	4395	54200	C	21	D	49
	17.IS	MD 450	Inner Loop Ramp	2890	4200	52540	C	20	B	19
	18.IS	MD 450	Outer Loop Ramp	3490	4660	59740	B	11	B	11
	19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	A	0	A	0
	20.IS	MD 193	South Way	No Data	No Data	No Data	A	0	A	0
	21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	A	1	A	1
	22.IS	MD 201	Inner Loop Ramp	2555	3255	36835	A	9	A	8
	23.IS	MD 201	Outer Loop Ramp	3330	3335	42020	B	20	B	17
	24.IS	US 1	Inner Loop Ramp	4010	3945	54170	B	14	B	17
	25.IS	US 1	Outer Loop Ramp	3245	3200	63205	C	30	C	30

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
	26.IS	MD 650	Outer Loop Ramp	5010	5130	30190	C	23	B	17
Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5060	5085	66925	C	21	C	32
Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7050	6365	91215	F	113	D	47
	29.IS	MD 97	Outer Loop Ramp	5895	6055	83060	B	16	B	14
	30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	31.IS	MD 185	Inner Loop Ramp	2410	3415	56675	A	7	A	8
	32.IS	MD 185	Outer Loop Ramp	2935	3335	42385	C	28	B	16
	33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0	A	0
	34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	1	C	27
	35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0	A	0
Replaced by SPUI	36.IS	MD 187	Capital Beltway	3640	3655	38165	D	38	A	9
	37.IS	MD 187								
	38.IS	MD 190	Inner Loop Ramp	3295	3110	36875	A	0	A	0
Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3195	3885	21625	D	36	C	27
	40.IS	Georgetown Pike	Inner Loop Ramp	2795	2215	22280	C	20	C	21
	41.IS	Georgetown Pike	Outer Loop Ramp	2025	1510	23850	C	29	C	22
	42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1285	2235	25330	B	17	B	10
	43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	850	2260	28845	A	7	A	6
	44.IS	Democracy Boulevard	I-270 Spur NB	695	1895	29705	B	14	A	10
	45.IS	MD 187	I-270 NB Ramp	2800	4515	54615	C	25	B	15
	46.IS	MD 187	I-270 SB Ramp	2795	4510	54375	B	16	F	94
	47.IS	Rockledge Boulevard	I-270 NB Ramp	1575	1725	20690	A	6	A	7
	48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	3	A	8
	49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	50.IS	MD 189	I-270 Ramp	1795	2360	31755	A	2	A	3
	51.IS	MD 28	I-270 SB Ramp	2285	3195	63090	B	15	B	16
	52.IS	MD 28	I-270 NB Ramp / Nelson Street	2195	3245	43350	B	13	D	43
	53.IS	Shady Grove Road	I-270 NB Ramp	2295	2120	33795	C	27	E	62
	54.IS	Shady Grove Road	I-270 SB Ramp	2340	2230	23090	C	21	B	16
	55.IS	MD 117	I-270 NB Off Ramp	2250	3450	43010	C	16	A	1
New Intersections										
New Intersections	56.IS	US 29	Inner Loop	4365	4640	59275	B	12	B	13
New Intersections	57.IS	US 29	Outer Loop	5990	6060	73720	E	62	B	17
New Intersections	58.IS	US 29	Direct Access Ramp	6985	6520	83375	B	11	C	22
New Intersections	59.IS	Cherrywood lane	Direct Access Ramp	1100	975	9650	A	6	A	8
New Intersections	60.IS	West Lake Terrace	Direct Access Ramp	865	1485	20510	No Data	No Data	No Data	No Data
New Intersections	61.IS	Montrose Road	Direct Access Ramp	3105	4275	56700	A	4	A	10
New Intersections	62.IS	Gude Drive	Direct Access Ramp	No Data	No Data	No Data	A	1	B	10

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay	Peak PM Hour LOS	Peak PM Hour Delay
New Intersections	63.IS	MD 193	Inner Loop	3635	3755	48420	C	20	B	16

Table 28: Interchange Data – Opening Year (2025) Alternative 13C

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	15796	17969	93	1
2.IC	Capital Beltway	MD 414	15343	19154	35	3
3.IC	Capital Beltway	MD 5	23971	25325	2	2
4.IC	Capital Beltway	Suitland Road	14671	15333	2	1
5.IC	Capital Beltway	Forestville Road	15872	16391	1	4
6.IC	Capital Beltway	MD 4	20878	21031	6	3
7.IC	Capital Beltway	Ritchie Marlboro Road	20554	21079	24	12
8.IC	Capital Beltway	MD 214	25167	25421	3	3
9.IC	Capital Beltway	Arena Drive	20808	21432	3	2
10.IC	Capital Beltway	MD 202	23530	25526	2	3
11.IC	Capital Beltway	US 50	28319	28867	4	2
12.IC	Capital Beltway	MD 450	22303	24406	3	4
13.IC	Capital Beltway	Baltimore Washington Parkway	24794	25262	4	4
14.IC	Capital Beltway	MD 201	22158	24234	3	2
15.IC	Capital Beltway	US 1	20196	22644	4	4
16.IC	Capital Beltway	I-95	24740	27176	7	7
17.IC	Capital Beltway	MD 650	23949	27033	14	6
18.IC	Capital Beltway	MD 193	22569	26346	10	23
19.IC	Capital Beltway	US 29	No Data	No Data	No Data	No Data
20.IC	Capital Beltway	MD 97	27756	28519	21	22
21.IC	Capital Beltway	MD 185	27175	27229	3	37
22.IC	Capital Beltway	I-270 and MD 355	25397	25483	13	7
23.IC	Capital Beltway	MD 187	No Data	No Data	No Data	No Data
24.IC	Capital Beltway	I-270 Spur	23429	21104	54	3
25.IC	Capital Beltway	MD 190	29012	26886	27	3
26.IC	Capital Beltway	Clara Barton Parkway	23651	20490	8	2
27.IC	Capital Beltway	George Washington Memorial Parkway	34272	21664	19	3
28.IC	I-270 Spur	Democracy Boulevard	13649	15148	35	3
29.IC	I-270	MD 187	13256	15268	15	9
30.IC	I-270	Rockledge Boulevard	16635	12841	9	8
31.IC	I-270	I-270 Spur	19835	20885	4	2
32.IC	I-270	Montrose Road	No Data	No Data	No Data	No Data
33.IC	I-270	MD 189	38060	43777	2	2

34.IC	I-270	MD 28	22261	26289	2	6
35.IC	I-270	Shady Grove Road	20938	23939	2	9
36.IC	I-270	I-370	20893	25389	5	49
37.IC	I-270	MD 117	16977	20004	4	18

Table 29: Intersection Data – Design Year (2040) Alternative 13C

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
	1.IS	MD 210	Inner Loop Ramp	4165	3420	59825	C	33	C	22
	2.IS	MD 210	MD 414	2525	2115	32450	B	10	B	14
	3.IS	MD 414	Outer Loop Ramp (1)	2395	2680	38025	B	16	E	74
	4.IS	MD 414 EB	Bald Eagle Road	2060	1705	28600	C	26	D	52
	5.IS	MD 414	Outer Loop Ramp (2)	3380	4285	58325	B	19	D	43
	6.IS	MD 414	Inner Loop Ramp	3190	3640	52025	C	25	C	20
	7.IS	MD 5	Auth Road	7165	5960	86125	A	7	A	1
	8.IS	Auth Road	Inner Loop Ramp	2670	1750	25525	C	20	B	11
	9.IS	MD 337	Outer Loop Ramp	2950	3320	44700	No Data	No Data	No Data	No Data
	10.IS	Forestville Road	Allentown Road	2700	2695	35975	No Data	No Data	No Data	No Data
	11.IS	MD 214	Inner Loop Ramp	4075	4640	71600	C	26	C	21
	12.IS	MD 214	Outer Loop Ramp	4580	4835	57600	B	15	B	14
	13.IS	Arena Drive	Inner Loop Ramp	1770	2300	29725	B	17	C	26
	14.IS	Arena Drive	Outer Loop Ramp	2165	2520	32950	B	16	A	8
	15.IS	MD 202	Inner Loop Ramp	3810	4630	34900	A	5	A	5
	16.IS	MD 202	Outer Loop Ramp	3710	4670	57600	C	24	D	53
	17.IS	MD 450	Inner Loop Ramp	3075	4475	55950	B	19	B	19
	18.IS	MD 450	Outer Loop Ramp	3710	4960	63550	B	11	B	12
	19.IS	MD 295	WB Ramp South Way	No Data	No Data	No Data	A	0	A	0
	20.IS	MD 193	South Way	No Data	No Data	No Data	A	0	A	0
	21.IS	MD 193	EB MD 295 Ramp	No Data	No Data	No Data	A	1	A	1
	22.IS	MD 201	Inner Loop Ramp	2710	3465	39150	A	9	A	8
	23.IS	MD 201	Outer Loop Ramp	3540	3550	44700	B	20	B	17
	24.IS	US 1	Inner Loop Ramp	4255	4200	57575	B	14	B	17
	25.IS	US 1	Outer Loop Ramp	3450	3405	67225	C	28	C	32
	26.IS	MD 650	Outer Loop Ramp	5325	5450	31400	C	25	B	16
Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5330	5410	70850	C	20	D	41
Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7550	6775	97400	F	128	E	69
	29.IS	MD 97	Outer Loop Ramp	6320	6445	88725	E	69	B	14
	30.IS	MD 97	MD 192	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	31.IS	MD 185	Inner Loop Ramp	2630	3630	58975	A	7	A	7
	32.IS	MD 185	Outer Loop Ramp	3190	3545	43625	C	27	B	16

Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
	33.IS	Rockville Pike	Grosvenor Lane	No Data	No Data	No Data	A	0	A	3
	34.IS	Rockville Pike	Inner Loop Ramp	No Data	No Data	No Data	A	1	C	25
	35.IS	Rockville Pike	Pooks Hill Road	No Data	No Data	No Data	A	0	A	0
Replaced by SPUI	36.IS	MD 187	Capital Beltway	3715	3845	39550	E	59	A	9
	37.IS	MD 187								
	38.IS	MD 190	Inner Loop Ramp	3550	3315	39525	A	1	A	1
Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3495	4125	21625	D	42	C	34
	40.IS	Georgetown Pike	Inner Loop Ramp	2980	2360	23750	B	20	C	21
	41.IS	Georgetown Pike	Outer Loop Ramp	2160	1610	23850	C	29	C	24
	42.IS	Democracy Boulevard	I-270 Spur SB Off Ramp	1370	2380	25625	B	17	A	8
	43.IS	Democracy Boulevard	I-270 Spur SB On Ramp	905	2405	30700	A	8	A	6
	44.IS	Democracy Boulevard	I-270 Spur NB	740	2015	31600	B	14	A	10
	45.IS	MD 187	I-270 NB Ramp	2980	4795	58050	C	25	B	15
	46.IS	MD 187	I-270 SB Ramp	2975	4790	57800	B	16	F	135
	47.IS	Rockledge Boulevard	I-270 NB Ramp	1670	1835	21975	A	7	A	6
	48.IS	Tower Oaks Boulevard	I-270 NB Ramp	No Data	No Data	No Data	A	4	A	8
	49.IS	Montrose Road	Tower Oaks Boulevard	No Data	No Data	No Data	No Data	No Data	No Data	No Data
	50.IS	MD 189	I-270 Ramp	1965	2510	34200	A	5	A	3
	51.IS	MD 28	I-270 SB Ramp	2435	3400	67175	B	15	B	16
	52.IS	MD 28	I-270 NB Ramp / Nelson Street	2330	3455	46100	B	13	E	76
	53.IS	Shady Grove Road	I-270 NB Ramp	2445	2255	35975	C	28	F	80
	54.IS	Shady Grove Road	I-270 SB Ramp	2490	2370	23875	C	21	B	16
	55.IS	MD 117	I-270 NB Off Ramp	2390	3670	45725	C	15	A	1
New Intersections										
New Intersections	56.IS	US 29	Inner Loop	4745	4940	63750	B	11	B	18
New Intersections	57.IS	US 29	Outer Loop	6475	6450	79075	E	68	C	21
New Intersections	58.IS	US 29	Direct Access Ramp	7435	6945	88775	B	13	D	37
New Intersections	59.IS	Cherrywood lane	Direct Access Ramp	1175	1040	10300	A	7	A	8
New Intersections	60.IS	Westlake Terrace	Direct Access Ramp	915	1580	21775	No Data	No Data	No Data	No Data
New Intersections	61.IS	Montrose Road	Direct Access Ramp-I-270	3305	4550	60350	C	25	B	16
New Intersections	62.IS	Gude Drive	Direct Access ramp-I-270	No Data	No Data	No Data	A	3	B	10
New Intersections	63.IS	MD 193	Inner Loop	3865	3995	51500	C	21	B	16

Table 30: Interchange Data – Design Year (2040) Alternative 13C

ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Peak AM Hour Delay	Peak PM Hour Delay
1.IC	Capital Beltway	MD 210 & MD 414	15725	18441	91	1
2.IC	Capital Beltway	MD 414	15748	19739	129	7
3.IC	Capital Beltway	MD 5	25519	26443	19	2
4.IC	Capital Beltway	Suitland Road	15373	15896	2	1
5.IC	Capital Beltway	Forestville Road	16714	17020	1	7
6.IC	Capital Beltway	MD 4	22064	21893	8	3
7.IC	Capital Beltway	Ritchie Marlboro Road	22003	22143	24	15
8.IC	Capital Beltway	MD 214	26666	26674	3	3
9.IC	Capital Beltway	Arena Drive	21924	22517	3	3
10.IC	Capital Beltway	MD 202	24872	26709	3	6
11.IC	Capital Beltway	US 50	29907	30284	4	3
12.IC	Capital Beltway	MD 450	23510	25575	3	5
13.IC	Capital Beltway	Baltimore Washington Parkway	26074	26246	4	4
14.IC	Capital Beltway	MD 201	23206	25289	3	2
15.IC	Capital Beltway	US 1	21424	23566	4	4
16.IC	Capital Beltway	I-95	26363	28153	8	19
17.IC	Capital Beltway	MD 650	25051	27947	17	12
18.IC	Capital Beltway	MD 193	23653	27030	10	36
19.IC	Capital Beltway	US 29	No Data	No Data	No Data	No Data
20.IC	Capital Beltway	MD 97	27545	28742	49	27
21.IC	Capital Beltway	MD 185	26443	27369	29	65
22.IC	Capital Beltway	I-270 and MD 355	25379	25107	40	75
23.IC	Capital Beltway	MD 187	No Data	No Data	0	0
24.IC	Capital Beltway	I-270 Spur	23931	21232	54	5
25.IC	Capital Beltway	MD 190	29576	27524	27	34
26.IC	Capital Beltway	Clara Barton Parkway	23978	21075	11	2
27.IC	Capital Beltway	George Washington Memorial Parkway	33890	22395	59	4
28.IC	I-270 Spur	Democracy Boulevard	13980	14514	59	4
29.IC	I-270	MD 187	13274	14100	7	56
30.IC	I-270	Rockledge Boulevard	16382	11494	15	117
31.IC	I-270	I-270 Spur	19942	19143	34	58
32.IC	I-270	Montrose Road	No Data	No Data	No Data	No Data
33.IC	I-270	MD 189	38379	45112	25	3
34.IC	I-270	MD 28	23012	27068	6	11
35.IC	I-270	Shady Grove Road	21458	23960	5	24
36.IC	I-270	I-370	21430	25983	6	34
37.IC	I-270	MD 117	17247	20075	28	24

APPENDIX B – ALTERNATIVE CONCEPTS

Proposed Lane Configurations – Alternative 5 1
Proposed Lane Configurations – Alternative 8 7
Proposed Lane Configurations – Alternative 9 13
Proposed Lane Configurations – Alternative 10 19
Proposed Lane Configurations – Alternative 13B 25
Proposed Lane Configurations – Alternative 13C 31

LEGEND

- General Purpose (GP) Lane — 3 # of General Purpose (GP) Lanes
- PM Lane — 3 # of PM Lanes
- CD Road Lane — 3 # of CD Road Lanes
- HOT Lane — 2 # of HOT Lanes
- Future HOT Lane

N

I-370

I-370 Interchange
See Figure 7C

Lane configurations include ongoing I-270 ICM project improvements

Shady Grove Road

Gude Drive Interchange

Gude Drive

I-270

Gude Drive

MD 28

MD 189

Montrose Road Interchange

I-270

Direct Access Ramps

Montrose Road

New Signal

Montrose Road

West Lake Terrace Interchange

I-270

West Lake Terrace

I-270 "Y" Split Interchange
See Figure 7B

I-270 "Y" Split

West Lake Terrace

Rockledge Drive

MD 187

MD 187 Interchange

I-495

MD 187

I-270 East Spur

Democracy Boulevard

I-270 West Spur Interchange
See Figure 7A

I-270 West Spur

I-495

INTERSTATE 495

George Washington Parkway Interchange

I-495

G-W Parkway

Continuation of two-managed lane system to be provided by VDOT. Limits of each project to be decided.

Slip ramp from GP to PEL lanes

MD 190/Cabin John Parkway Interchange

MD 190

MD 190

I-495

Cabin John Parkway

Clara Barton Parkway

American Legion Bridge

MD Potomac River VA

Slip ramp from PEL to GP lanes

George Washington Memorial Parkway

SR 193

SR 193 Interchange

I-495

SR 193

INTERSTATE 495

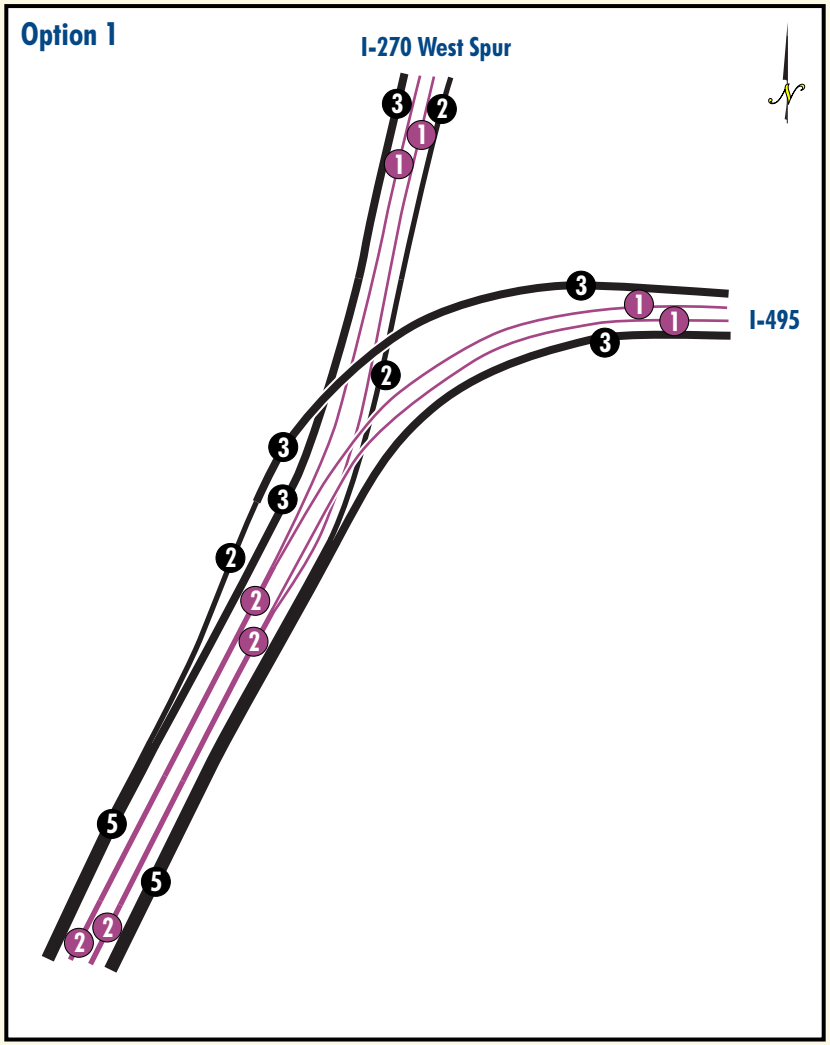
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495 MANAGED LANES STUDY 270

I-495/I-270 MANAGED LANES STUDY

Alternative 5 Proposed Lane Configuration
Add 2 Priced Managed (PM) Lanes
I-495 from SR 193 to I-270 at I-370

Date:	Figure:
October 2018	7



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LEGEND

General Purpose (GP) Lane

PM Lane

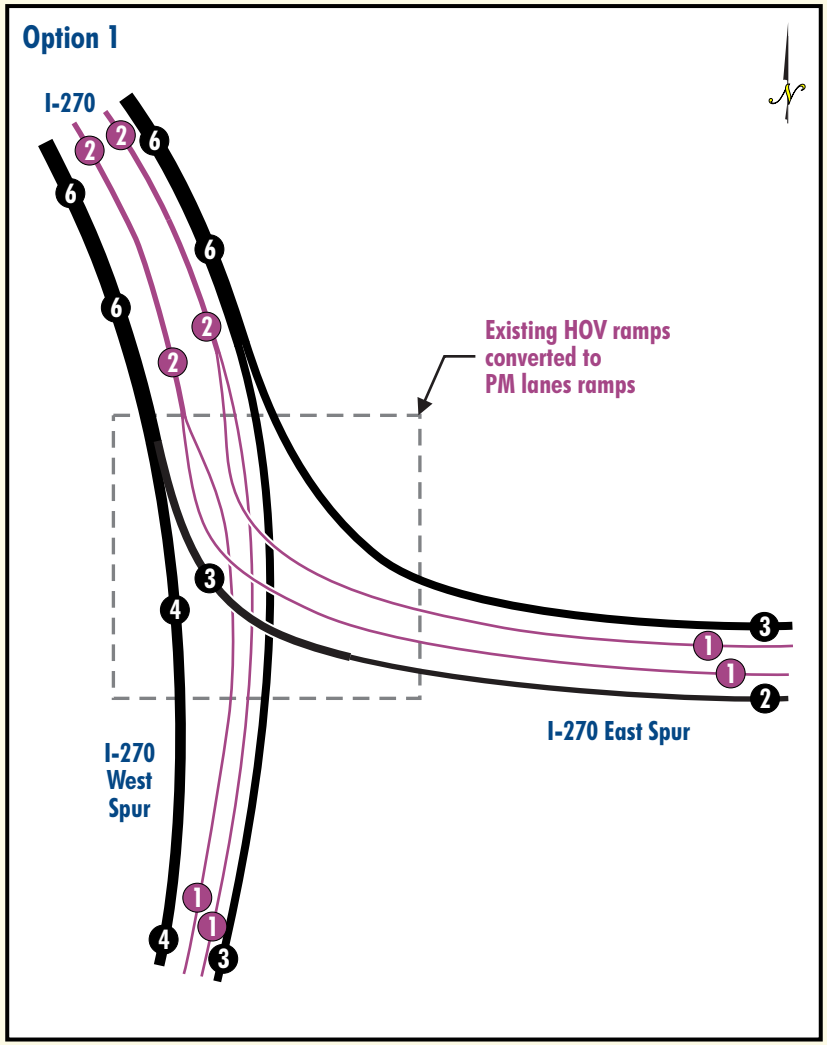
3 # of General Purpose (GP) Lanes

3 # of PM Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 5
Proposed Lane Configuration Options
I-270 West Spur Interchange

Date:	Figure:
October 2018	7A



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LEGEND

General Purpose (GP) Lane

PM Lane

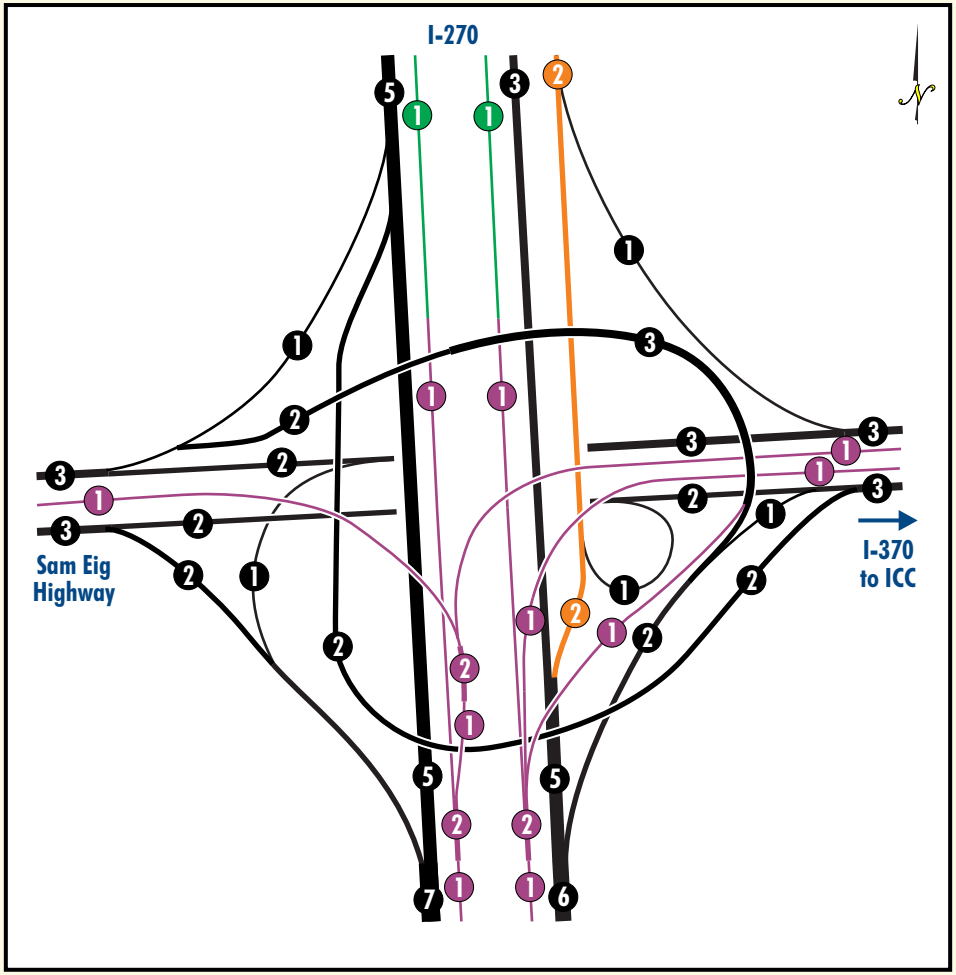
3 # of General Purpose (GP) Lanes

3 # of PM Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 5
Proposed Lane Configuration Options
I-270 "Y" Split Interchange

Date:	Figure:
October 2018	7B



DRAFT

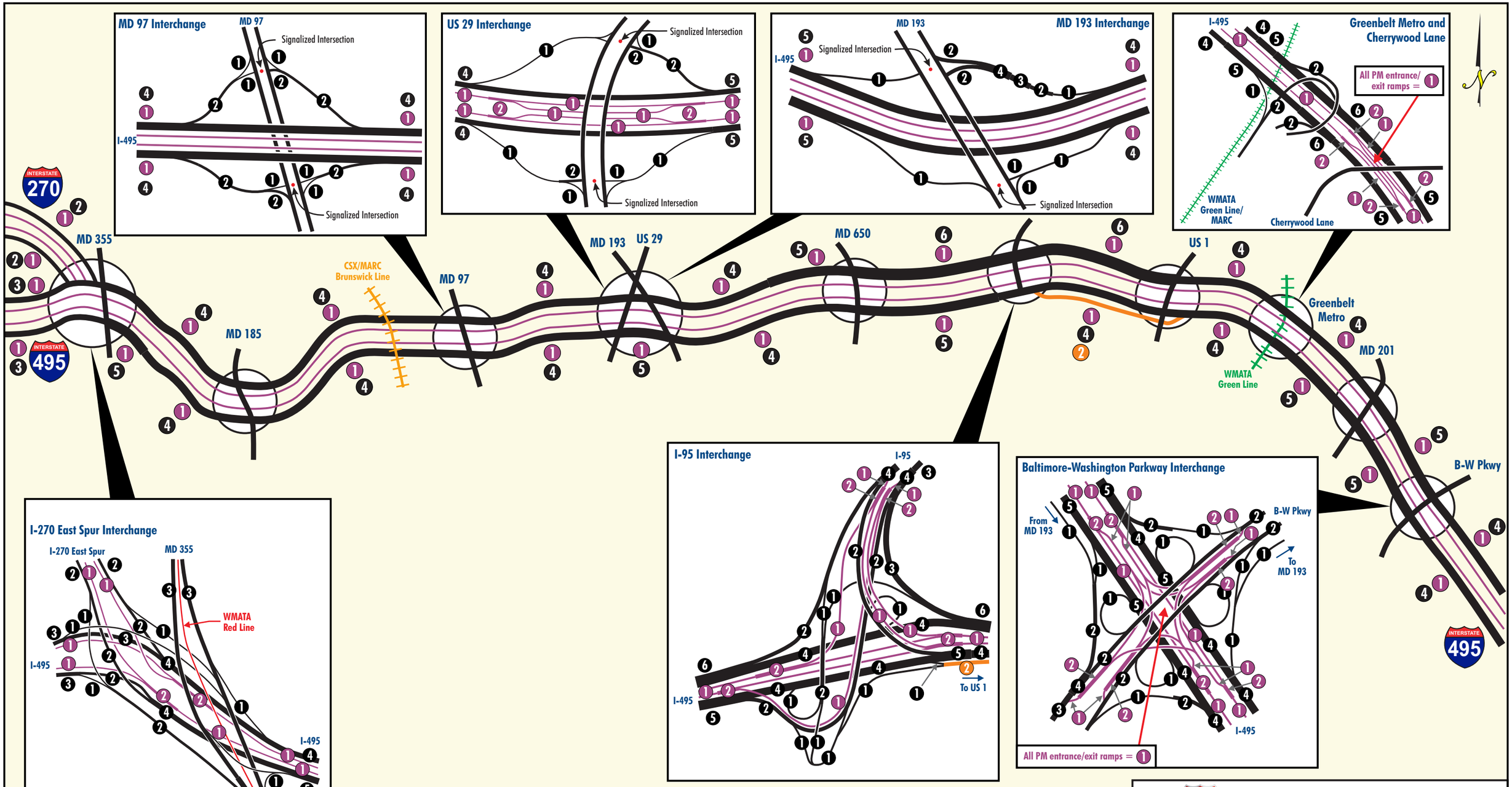
LEGEND

- General Purpose (GP) Lane
- PM Lane
- CD Road Lane
- HOV Lane
- # of General Purpose (GP) Lanes
- # of PM Lanes
- # of CD Road Lanes
- # of HOV Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 5
Proposed Lane Configuration Options
I-270 at I-370 Interchange

Date:	Figure:
October 2018	7C

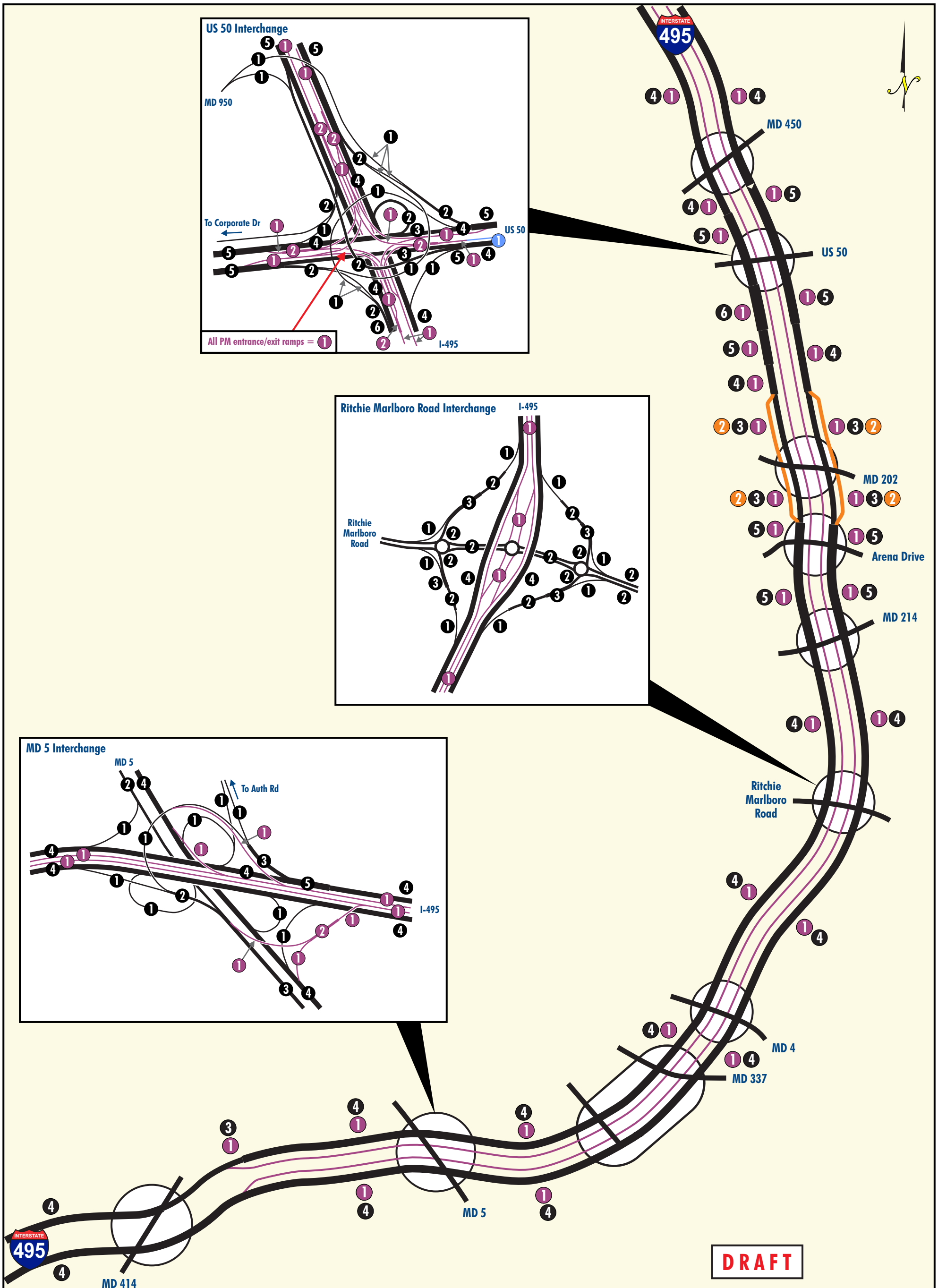


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I-495/I-270 MANAGED LANES STUDY

Alternative 5 Proposed Lane Configuration
Add 2 Priced Managed (PM) Lanes
I-495 from I-270 East Spur Interchange to B-W Parkway

Date:	Figure:
October 2018	8


US 50 Interchange
MD 950
To Corporate Dr
US 50
All PM entrance/exit ramps = 1
I-495
Ritchie Marlboro Road Interchange
I-495
Ritchie Marlboro Road
MD 5 Interchange
MD 5
To Auth Rd
I-495
INTERSTATE 495
MD 450
US 50
MD 202
Arena Drive
MD 214
Ritchie Marlboro Road
MD 4
MD 337
MD 5
MD 414
INTERSTATE 495
DRAFT
LEGEND
General Purpose (GP) Lane
PM Lane
CD Road Lane
HOV Lane
# of General Purpose (GP) Lanes
# of PM Lanes
# of CD Road Lanes
# of HOV Lanes
MANAGED LANES STUDY 495 270
I-495/I-270 MANAGED LANES STUDY
Alternative 5 Proposed Lane Configuration
Add 2 Priced Managed (PM) Lanes
I-495 from MD 450 to MD 414
Date:
October 2018
Figure:
9

LEGEND

- General Purpose (GP) Lane — 3 # of General Purpose (GP) Lanes
- PM Lane — 3 # of PM Lanes
- CD Road Lane — 3 # of CD Road Lanes
- HOV Lane — 1 # of HOV Lanes
- HOT Lane — 2 # of HOT Lanes
- Future HOT Lane

N

INTERSTATE 270

I-370

I-370 Interchange
See Figure 13C

1 1 6

7 1 1

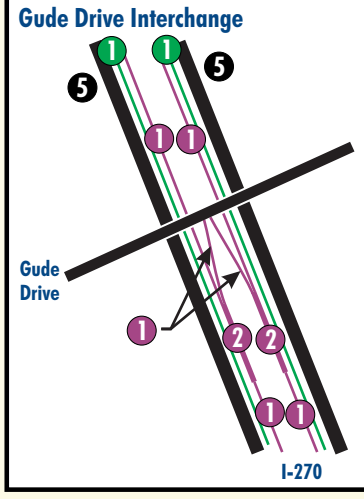
Shady Grove Road

1 1 5

5 1 1

Lane configurations include ongoing I-270 ICM project improvements

Gude Drive Interchange



Gude Drive

5 1 1

1 1 5

MD 28

1 1 6

6 1 1

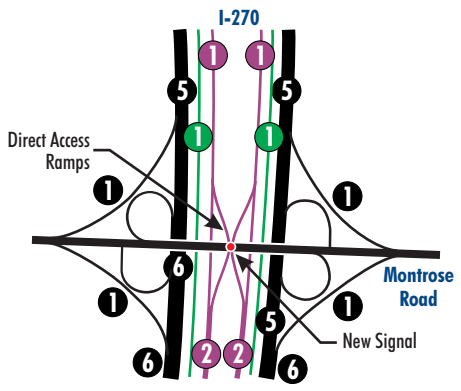
MD 189

5 1 1

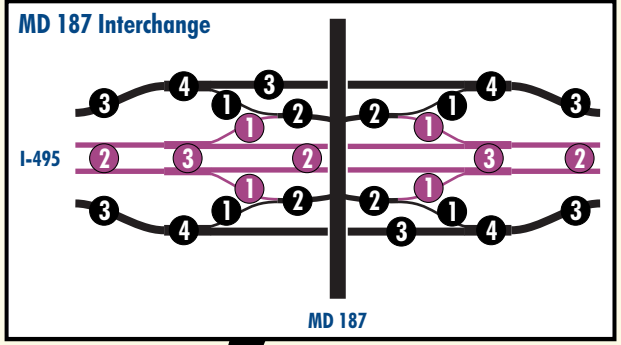
1 1 5

Montrose Road

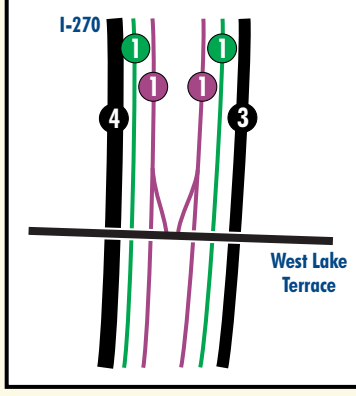
Montrose Road



MD 187 Interchange



West Lake Terrace Interchange



6 1 2

2 1 6

I-270 "Y" Split Interchange
See Figure 13B

I-270 "Y" Split

4 1 1

1 1 3

West Lake Terrace

Rockledge Drive

MD 187

I-270 East Spur

4 1 1

3 1 1

Democracy Boulevard

1 1 3

1 1 2

I-270 West Spur Interchange
See Figure 13A

3 1 1

1 1 3

I-495

I-270 West Spur

3

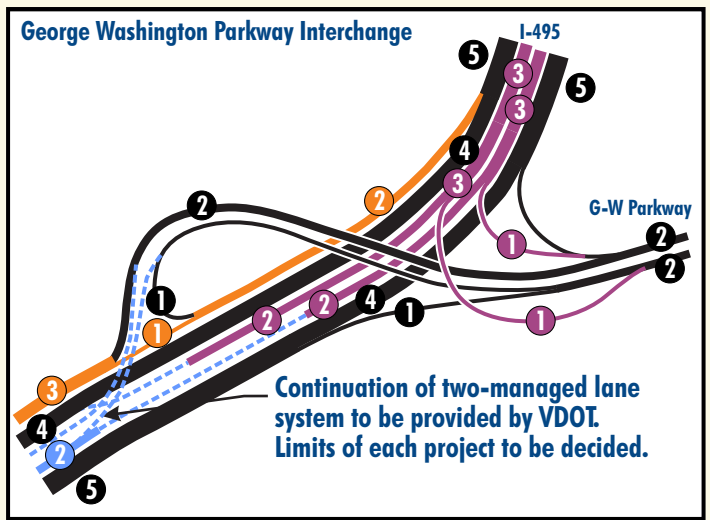
2

2

3

INTERSTATE 495

George Washington Parkway Interchange

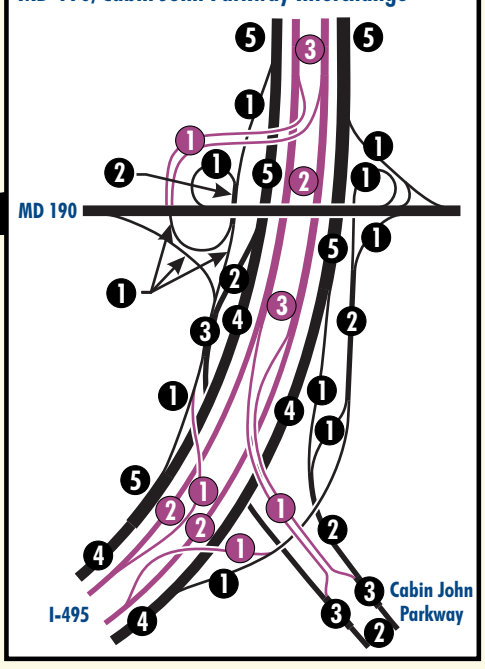


Slip ramp from GP to PEL lanes

5 3

3 5

MD 190/Cabin John Parkway Interchange



MD 190

4 2

2 4

Slip ramp from PEL to GP lanes

Clara Barton Parkway

American Legion Bridge

MD Potomac River VA

5 2

2 5

5 3

3 5

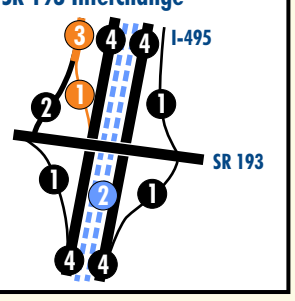
George Washington Memorial Parkway

4 3

2 5

SR 193

SR 193 Interchange



4 2

2 4

INTERSTATE 495

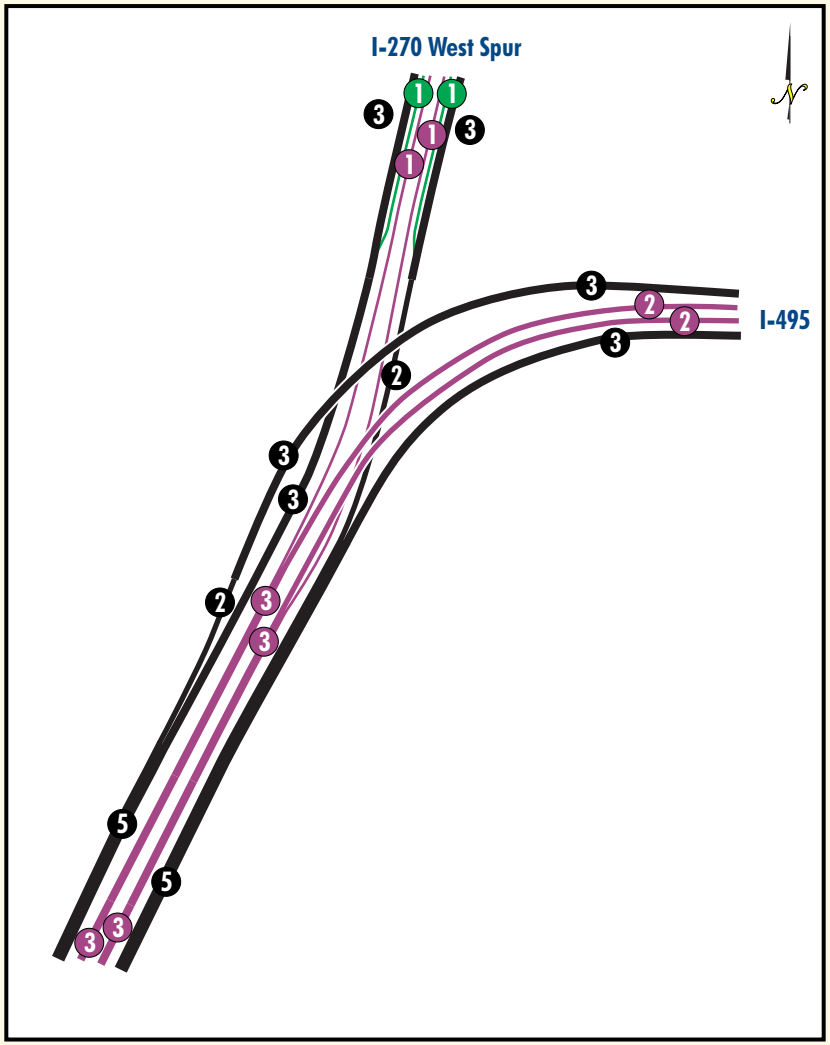
DRAFT

495 MANAGED LANES STUDY 270

I-495/I-270 MANAGED LANES STUDY

Alternative 8
Proposed Lane Configuration
I-495 from SR 193 to I-270 at I-370

Date:	Figure:
October 2018	13



DRAFT

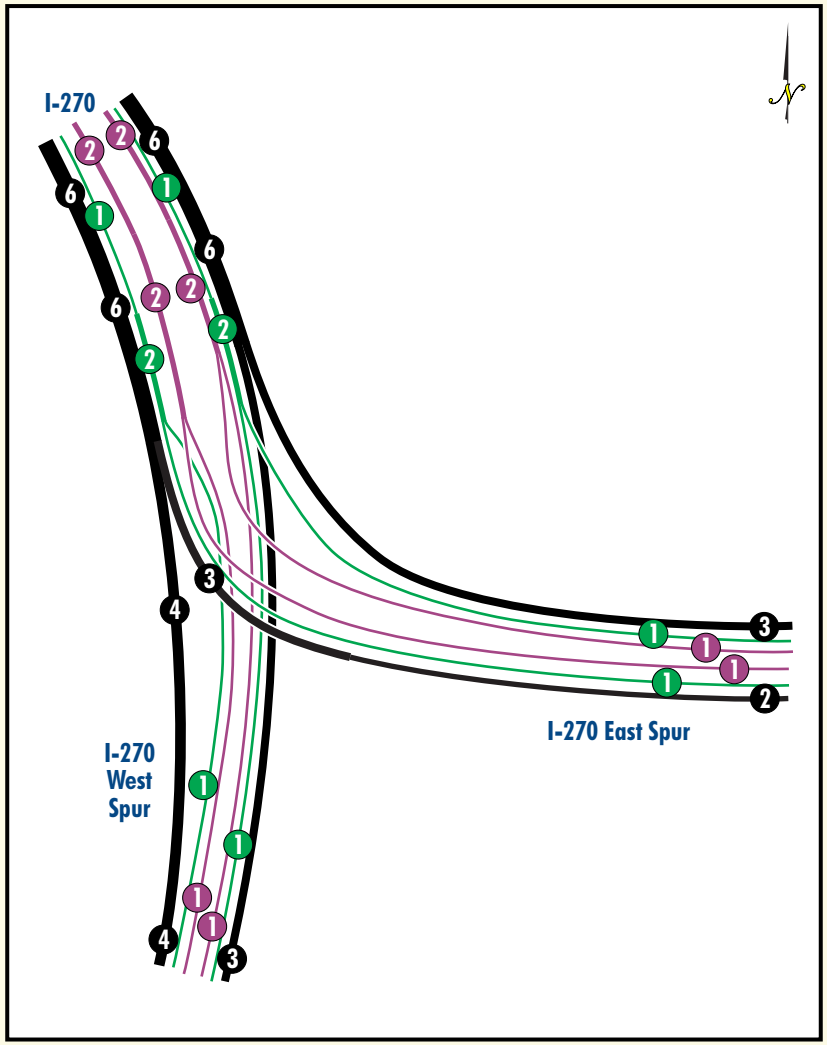
LEGEND

- General Purpose (GP) Lane — 3 # of General Purpose (GP) Lanes
- PM Lane — 3 # of PM Lanes
- HOV Lane — 1 # of HOV Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 8
Proposed Lane Configuration Options
I-270 West Spur Interchange

Date:	Figure:
October 2018	13A



DRAFT

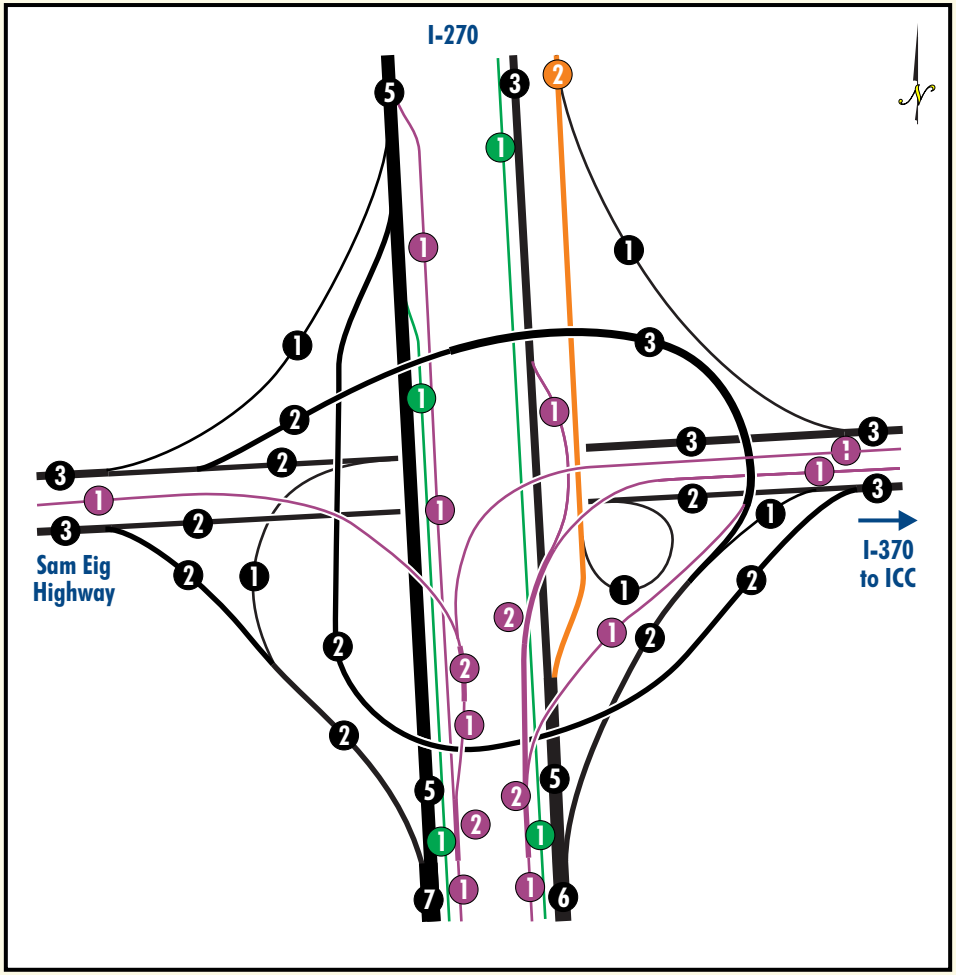
LEGEND

- General Purpose (GP) Lane — 3 # of General Purpose (GP) Lanes
- PM Lane — 3 # of PM Lanes
- HOV Lane — 1 # of HOV Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 8
Proposed Lane Configuration Options
I-270 "Y" Split Interchange

Date:	Figure:
October 2018	13B



DRAFT

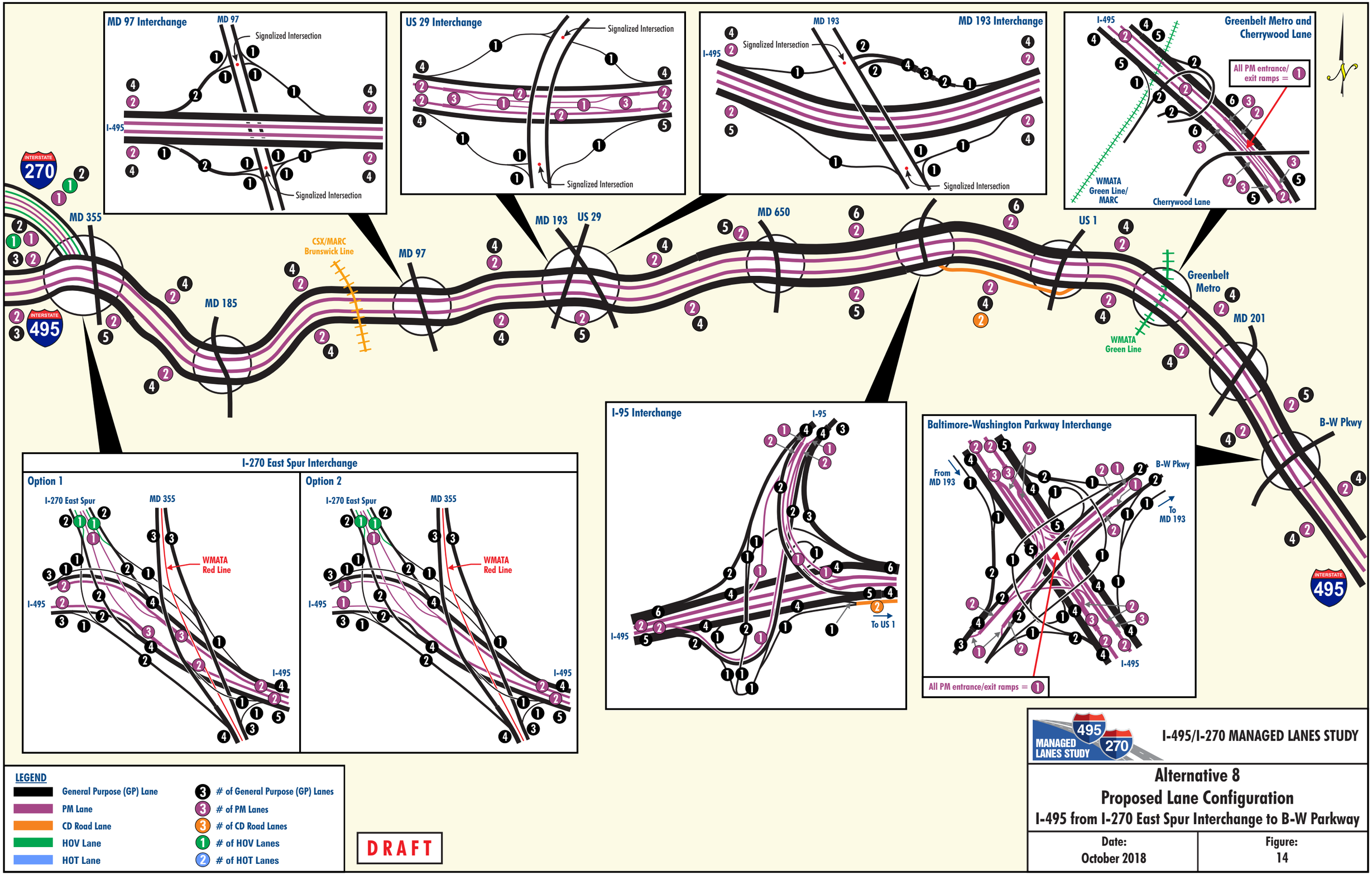
LEGEND

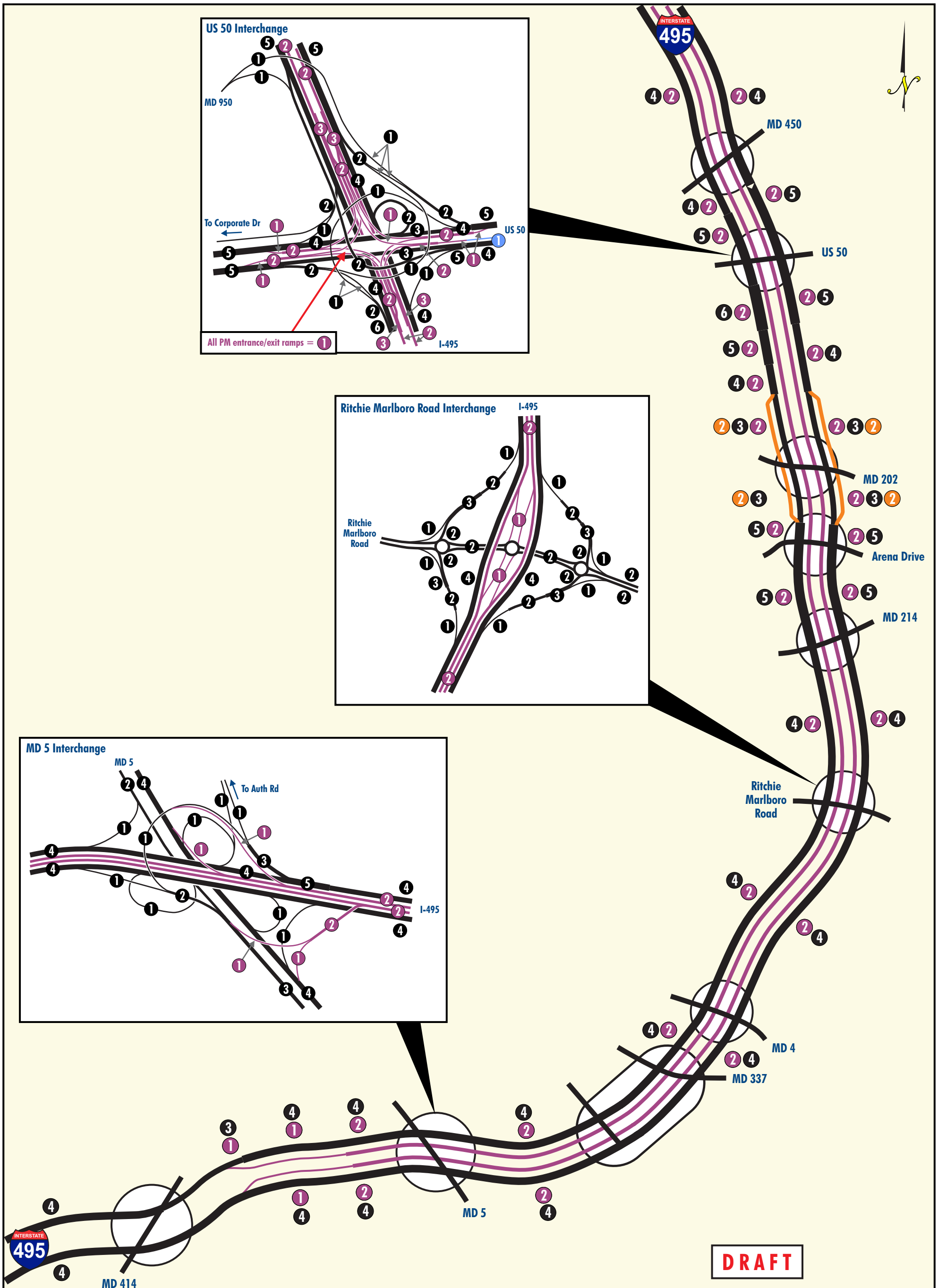
- General Purpose (GP) Lane
- PM Lane
- CD Road Lane
- HOV Lane
- # of General Purpose (GP) Lanes
- # of PM Lanes
- # of CD Road Lanes
- # of HOV Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 8
Proposed Lane Configuration Options
I-270 at I-370 Interchange

Date:	Figure:
October 2018	13C


MD 97 Interchange
MD 97
Signalized Intersection
I-495
Signalized Intersection
US 29 Interchange
Signalized Intersection
Signalized Intersection
MD 193 Interchange
MD 193
I-495
Signalized Intersection
Signalized Intersection
Greenbelt Metro and Cherrywood Lane
I-495
All PM entrance/ exit ramps = 1
WMATA Green Line/ MARC
Cherrywood Lane
INTERSTATE 270
INTERSTATE 495
MD 355
MD 185
CSX/MARC Brunswick Line
MD 97
MD 193
US 29
MD 650
US 1
Greenbelt Metro
WMATA Green Line
MD 201
B-W Pkwy
I-270 East Spur Interchange
Option 1
I-270 East Spur
MD 355
WMATA Red Line
I-495
I-495
Option 2
I-270 East Spur
MD 355
WMATA Red Line
I-495
I-495
I-95 Interchange
I-95
I-495
To US 1
Baltimore-Washington Parkway Interchange
From MD 193
B-W Pkwy
To MD 193
I-495
All PM entrance/exit ramps = 1
LEGEND
General Purpose (GP) Lane
PM Lane
CD Road Lane
HOV Lane
HOT Lane
# of General Purpose (GP) Lanes
# of PM Lanes
# of CD Road Lanes
# of HOV Lanes
# of HOT Lanes
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MANAGED LANES STUDY
I-495/I-270 MANAGED LANES STUDY
Alternative 8
Proposed Lane Configuration
I-495 from I-270 East Spur Interchange to B-W Parkway
Date:
October 2018
Figure:
14


US 50 Interchange
MD 950
To Corporate Dr
US 50
All PM entrance/exit ramps = 1
I-495
Ritchie Marlboro Road Interchange
I-495
Ritchie Marlboro Road
MD 5 Interchange
MD 5
To Auth Rd
I-495
INTERSTATE 495
MD 450
US 50
MD 202
Arena Drive
MD 214
Ritchie Marlboro Road
MD 4
MD 337
MD 5
MD 414
INTERSTATE 495
DRAFT
LEGEND
General Purpose (GP) Lane
PM Lane
CD Road Lane
HOV Lane
# of General Purpose (GP) Lanes
# of PM Lanes
# of CD Road Lanes
# of HOV Lanes
MANAGED LANES STUDY 495 270
I-495/I-270 MANAGED LANES STUDY
Alternative 8
Proposed Lane Configuration
I-495 from MD 450 to MD 414
Date:
October 2018
Figure:
15

LEGEND

General Purpose (GP) Lane — # of General Purpose (GP) Lanes
PM Lane — # of PM Lanes
CD Road Lane — # of CD Road Lanes
HOT Lane — # of HOT Lanes
Future HOT Lane

N

INTERSTATE 270

I-370

I-370 Interchange
See Figure 4C

Lane configurations include ongoing I-270 ICM project improvements

Shady Grove Road

Gude Drive Interchange
Gude Drive
I-270

Gude Drive

MD 28

MD 189

Montrose Road

Montrose Road - Option 1
I-270
Direct Access Ramps
Montrose Road
New Signal

Montrose Road - Option 2
I-270
Direct Access Ramps
Montrose Road
New Signal

MD 187 Interchange
I-495
MD 187

West Lake Terrace Interchange
I-270
West Lake Terrace

I-270 "Y" Split Interchange
See Figure 4B

I-270 "Y" Split

West Lake Terrace

Rockledge Drive

MD 187

I-270 East Spur

Democracy Boulevard

I-270 West Spur Interchange
See Figure 4A

I-270 West Spur

I-495

INTERSTATE 495

George Washington Parkway Interchange
I-495
G-W Parkway
Continuation of two-managed lane system to be provided by VDOT.
Limits of each project to be decided.

Slip ramp from GP to PEL lanes

MD 190/Cabin John Parkway Interchange
MD 190
I-495
Cabin John Parkway

MD 190

Slip ramp from PEL to GP lanes

Clara Barton Parkway

American Legion Bridge

MD Potomac River VA

George Washington Memorial Parkway

SR 193

SR 193 Interchange
I-495
SR 193

INTERSTATE 495

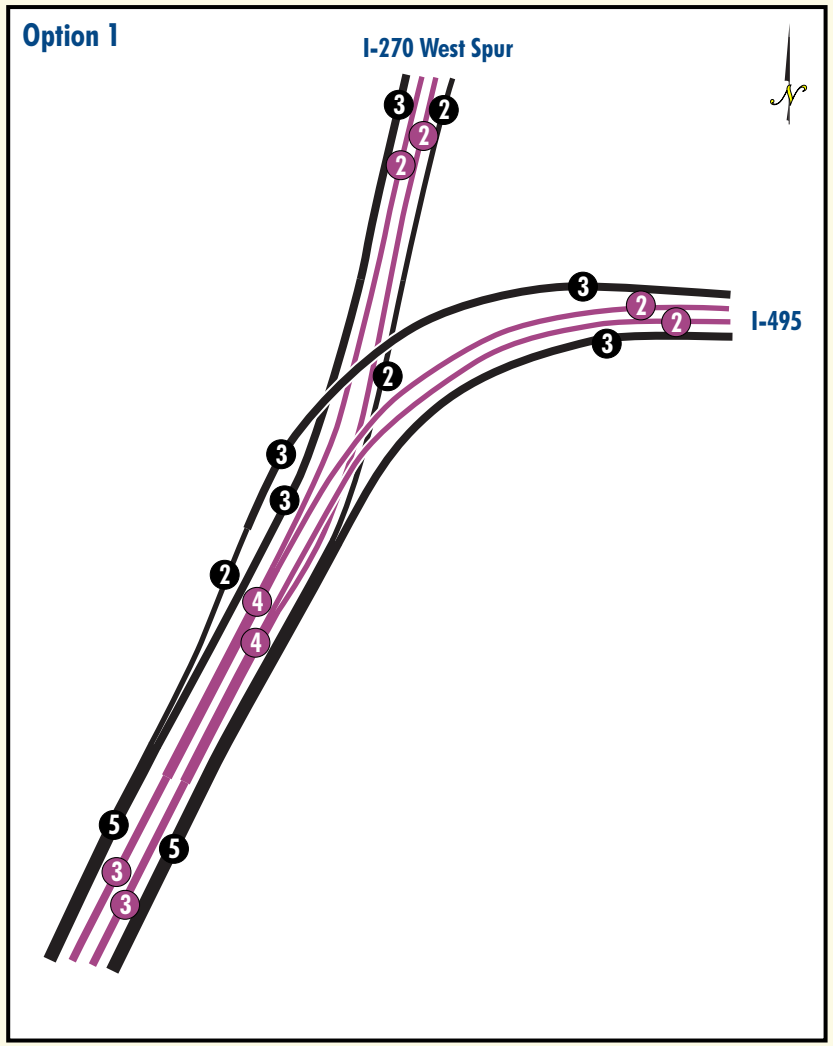
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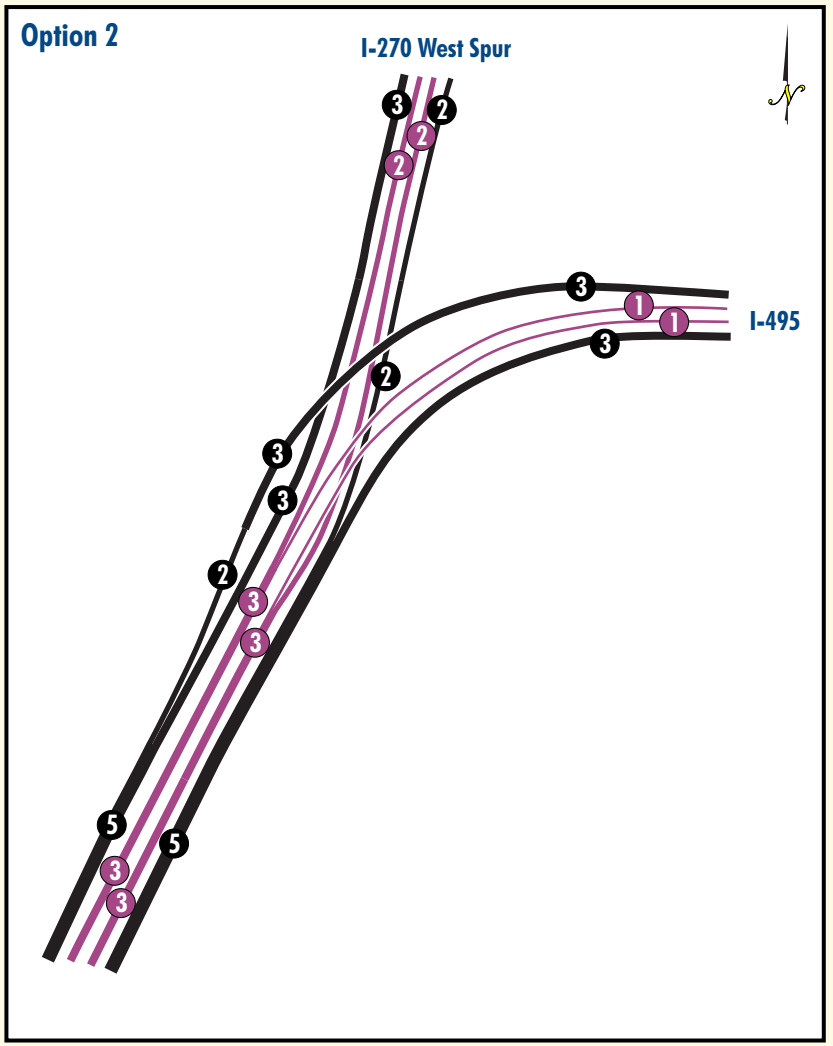
495 MANAGED LANES STUDY 270

I-495/I-270 MANAGED LANES STUDY

Alternative 9 Proposed Lane Configuration
Add 4 Priced Managed (PM) Lanes
I-495 from SR 193 to I-270 at I-370

Date:	Figure:
October 2018	4





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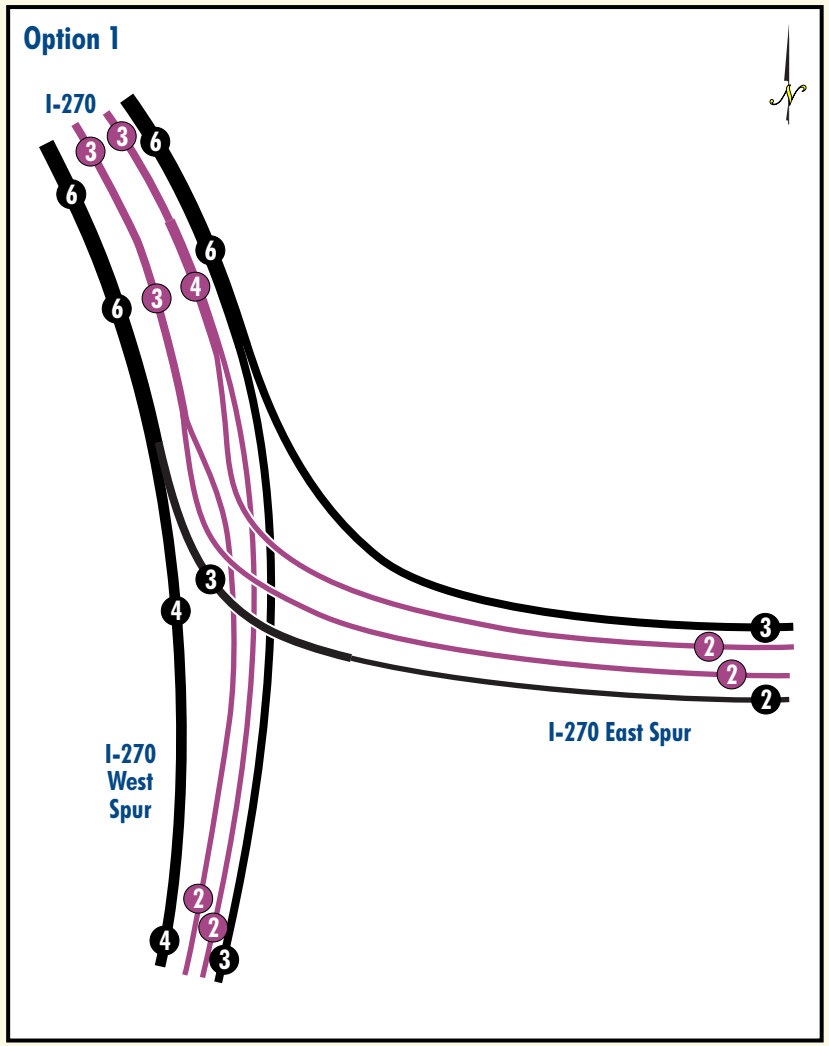
LEGEND

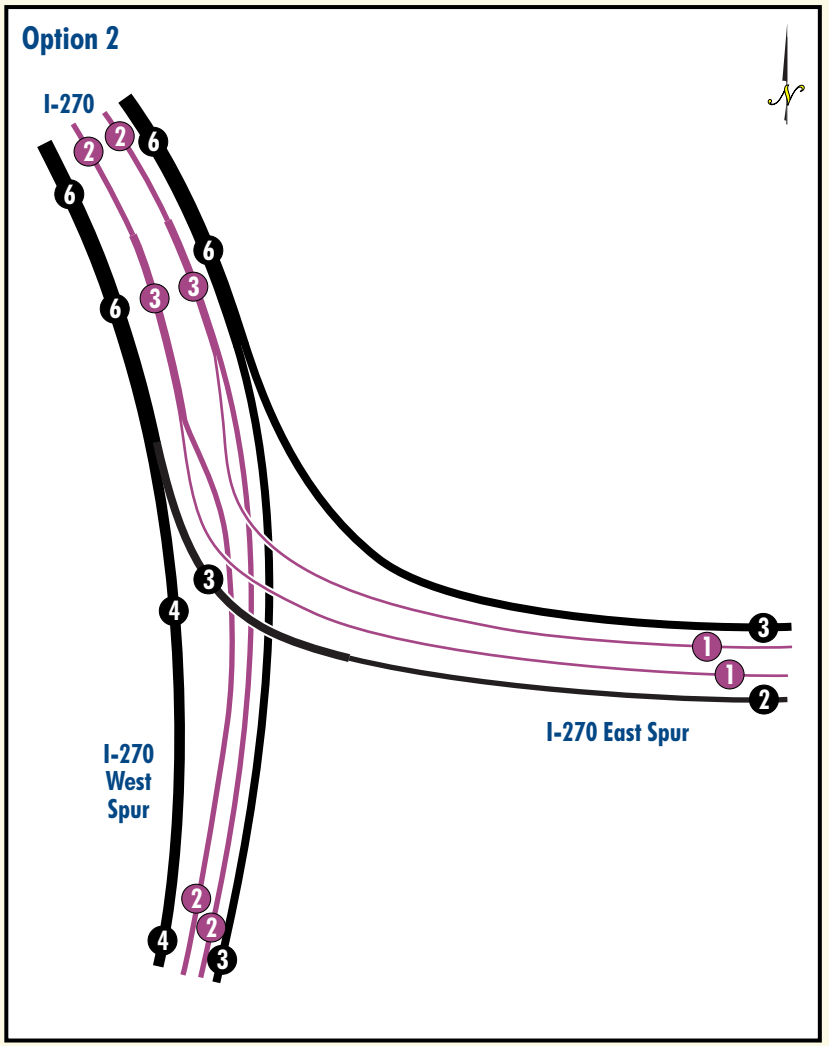
- General Purpose (GP) Lane
- PM Lane
- 3 # of General Purpose (GP) Lanes
- 3 # of PM Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 9
Proposed Lane Configuration Options
I-270 West Spur Interchange

Date:	Figure:
October 2018	4A





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LEGEND

General Purpose (GP) Lane

PM Lane

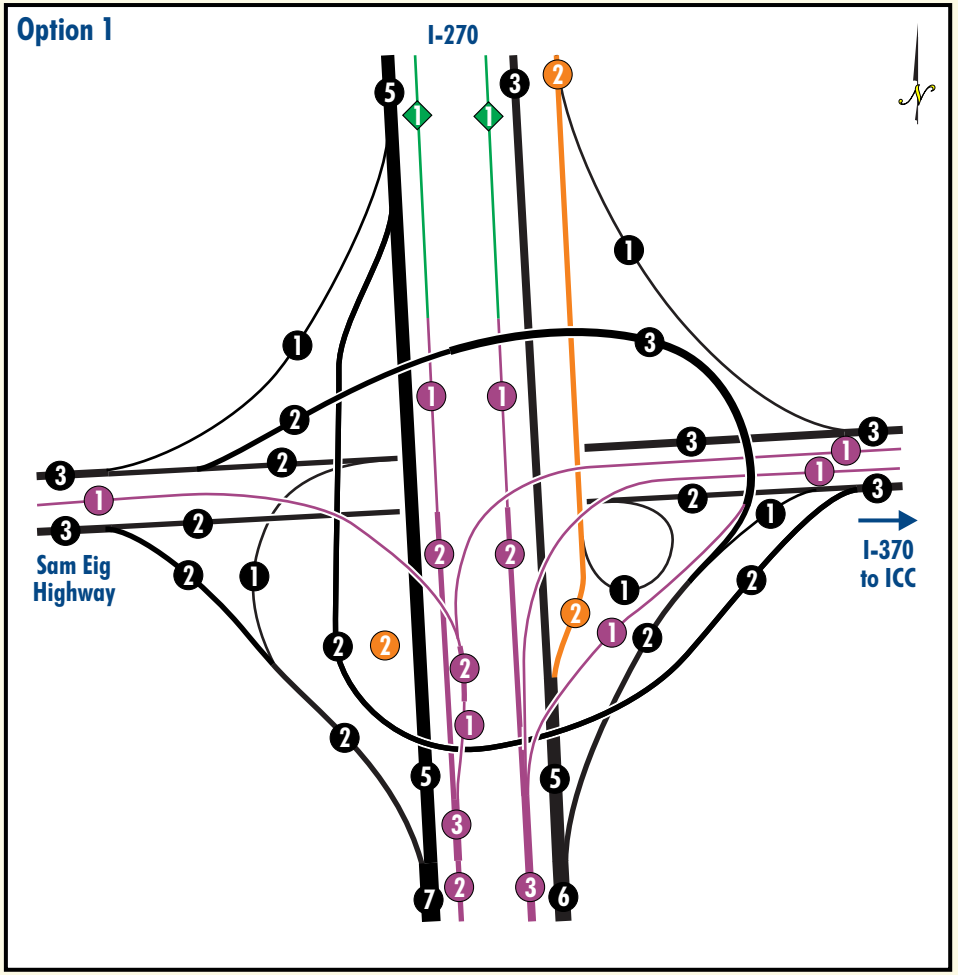
3 # of General Purpose (GP) Lanes

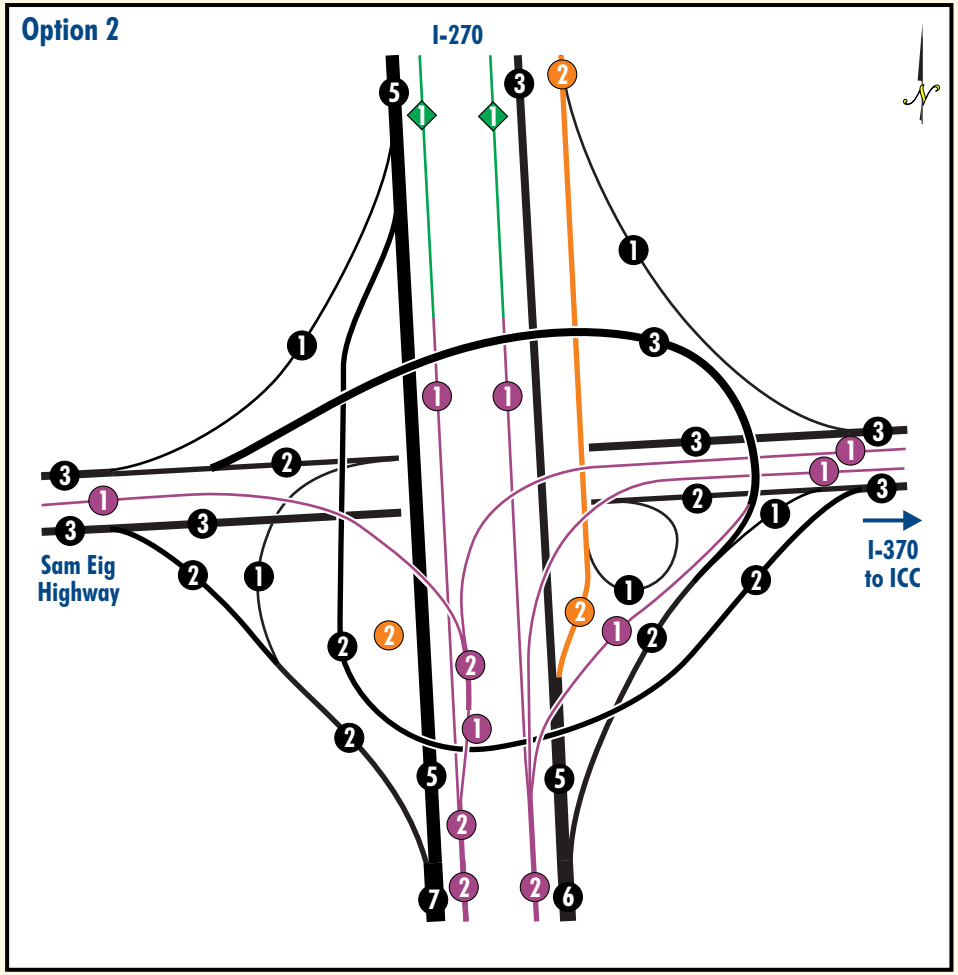
3 # of PM Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 9
Proposed Lane Configuration Options
I-270 "Y" Split Interchange

Date:	Figure:
October 2018	4B





DRAFT

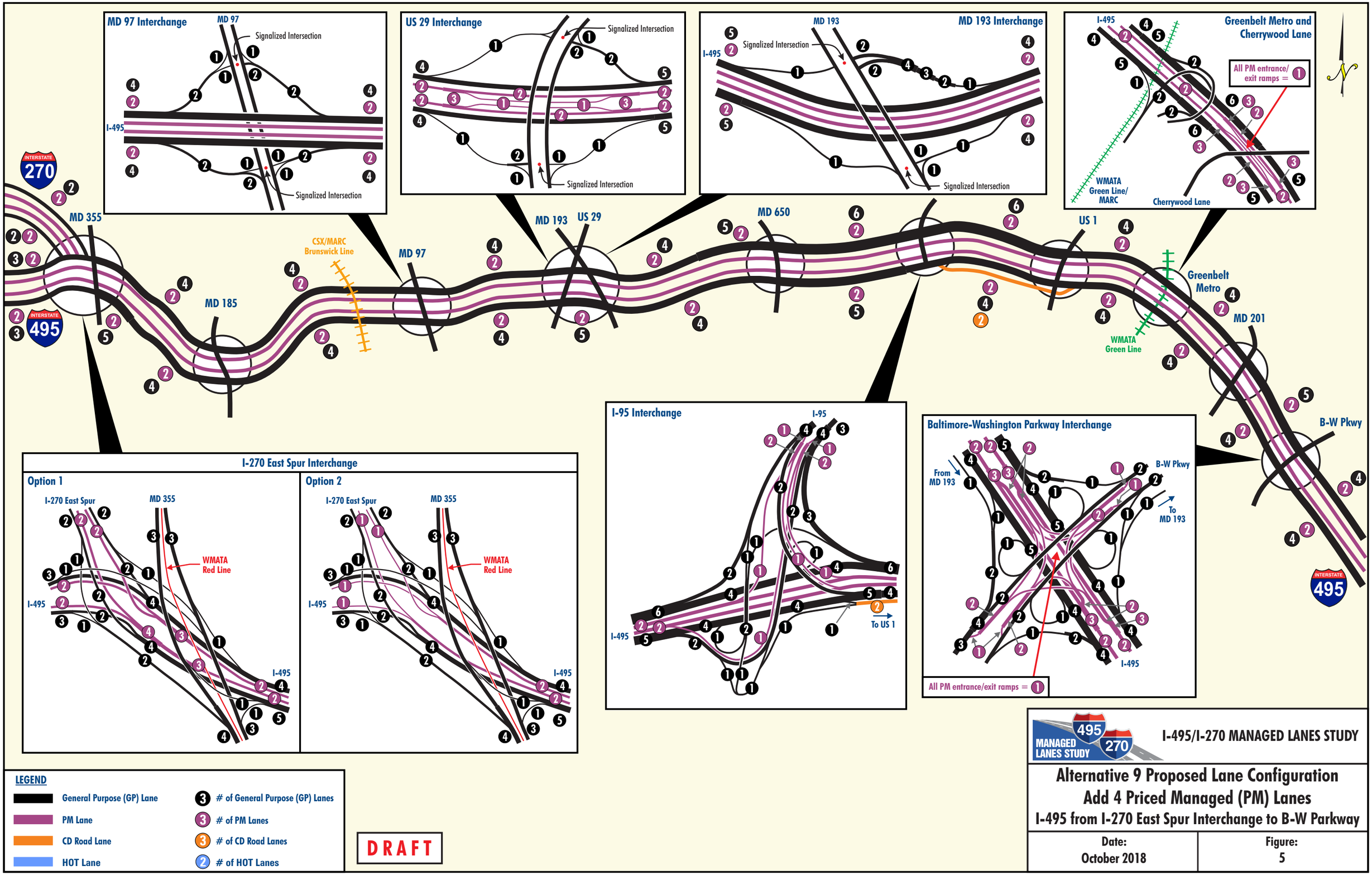
LEGEND

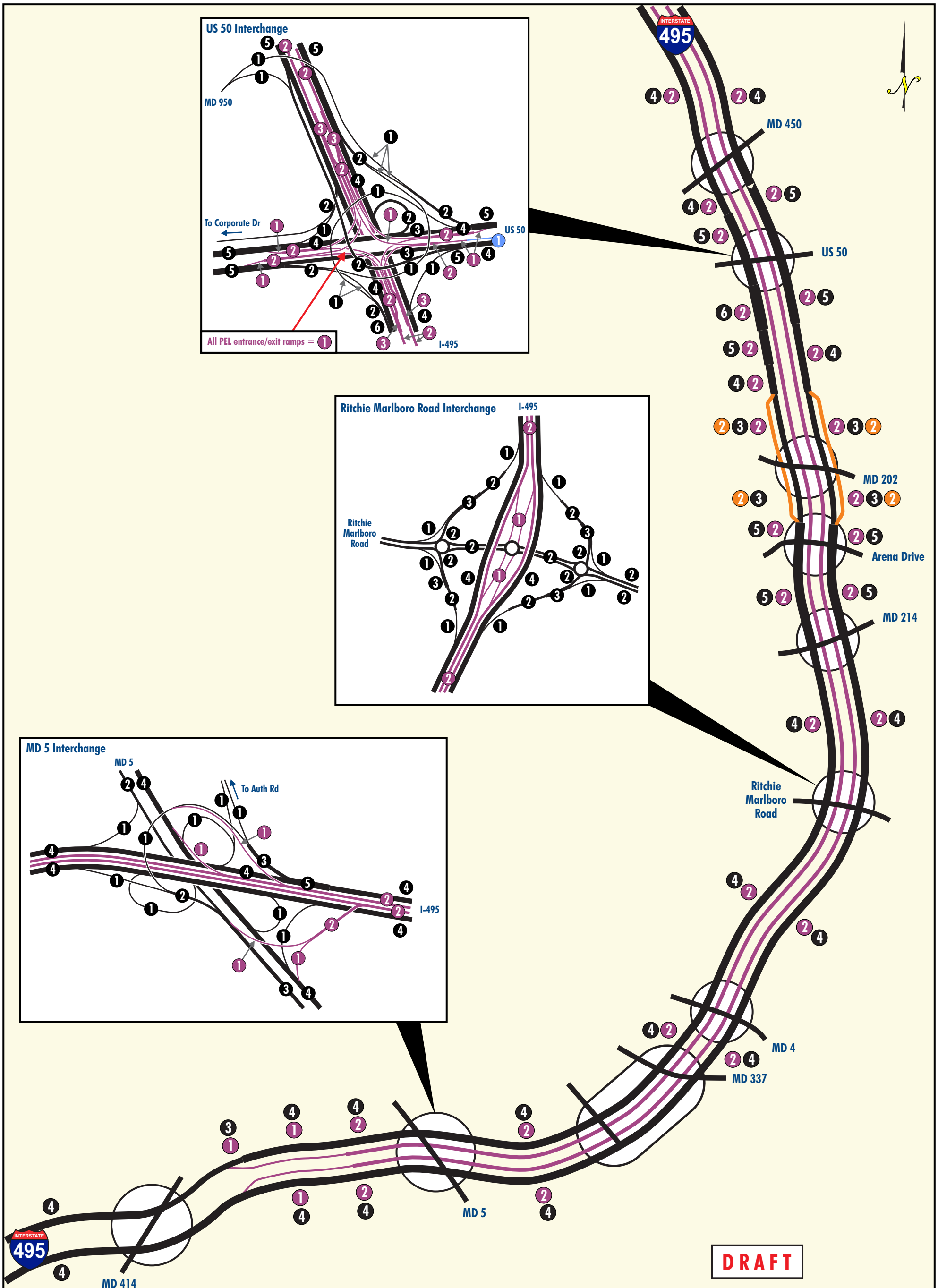
General Purpose (GP) Lane	# of General Purpose (GP) Lanes
PM Lane	# of PM Lanes
CD Road Lane	# of CD Road Lanes
HOV Lane	# of HOV Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 9
Proposed Lane Configuration Options
I-270 at I-370 Interchange

Date:	Figure:
October 2018	4C


MD 97 Interchange
MD 97
Signalized Intersection
I-495
Signalized Intersection
US 29 Interchange
Signalized Intersection
Signalized Intersection
MD 193 Interchange
MD 193
I-495
Signalized Intersection
Signalized Intersection
Greenbelt Metro and Cherrywood Lane
I-495
All PM entrance/ exit ramps = 1
WMATA Green Line/ MARC
Cherrywood Lane
INTERSTATE 270
INTERSTATE 495
MD 355
MD 185
CSX/MARC Brunswick Line
MD 97
MD 193
US 29
MD 650
US 1
Greenbelt Metro
WMATA Green Line
MD 201
B-W Pkwy
I-270 East Spur Interchange
Option 1
I-270 East Spur
MD 355
WMATA Red Line
I-495
I-495
Option 2
I-270 East Spur
MD 355
WMATA Red Line
I-495
I-495
I-95 Interchange
I-95
I-495
To US 1
Baltimore-Washington Parkway Interchange
From MD 193
B-W Pkwy
To MD 193
I-495
All PM entrance/exit ramps = 1
LEGEND
General Purpose (GP) Lane
PM Lane
CD Road Lane
HOT Lane
# of General Purpose (GP) Lanes
# of PM Lanes
# of CD Road Lanes
# of HOT Lanes
DRAFT
MANAGED LANES STUDY
I-495/I-270 MANAGED LANES STUDY
Alternative 9 Proposed Lane Configuration
Add 4 Priced Managed (PM) Lanes
I-495 from I-270 East Spur Interchange to B-W Parkway
Date:
October 2018
Figure:
5


US 50 Interchange
MD 950
To Corporate Dr
US 50
All PEL entrance/exit ramps = 1
I-495
Ritchie Marlboro Road Interchange
I-495
Ritchie Marlboro Road
MD 5 Interchange
MD 5
To Auth Rd
I-495
INTERSTATE 495
MD 450
US 50
MD 202
Arena Drive
MD 214
Ritchie Marlboro Road
MD 4
MD 337
MD 5
MD 414
INTERSTATE 495
DRAFT
LEGEND
General Purpose (GP) Lane
PM Lane
CD Road Lane
HOV Lane
# of General Purpose (GP) Lanes
# of PM Lanes
# of CD Road Lanes
# of HOV Lanes
MANAGED LANES STUDY 495 270
I-495/I-270 MANAGED LANES STUDY
Alternative 9 Proposed Lane Configuration
Add 4 Priced Managed (PM) Lanes
I-495 from MD 450 to MD 414
Date:
October 2018
Figure:
6

LEGEND

- General Purpose (GP) Lane
- PM Lane
- CD Road Lane
- HOV Lane
- HOT Lane
- Future HOT Lane

- # of General Purpose (GP) Lanes
- # of PM Lanes
- # of CD Road Lanes
- # of HOV Lanes
- # of HOT Lanes

N

I-370

I-370 Interchange
See Figure 16C

Lane configurations include ongoing I-270 ICM project improvements

Shady Grove Road

Gude Drive Interchange

Gude Drive

I-270

Gude Drive

Montrose Road - Option 1

I-270

Direct Access Ramps

Montrose Road

New Signal

Montrose Road - Option 2

I-270

Direct Access Ramps

Montrose Road

New Signal

MD 28

MD 189

Montrose Road

MD 187 Interchange

I-495

MD 187

West Lake Terrace Interchange

I-270

West Lake Terrace

I-270 "Y" Split Interchange
See Figure 16B

I-270 "Y" Split

West Lake Terrace

Rockledge Drive

MD 187

I-270 East Spur

Democracy Boulevard

I-270 West Spur Interchange
See Figure 16A

I-270 West Spur

I-495

INTERSTATE 495

George Washington Parkway Interchange

I-495

G-W Parkway

Continuation of two-managed lane system to be provided by VDOT. Limits of each project to be decided.

Slip ramp from GP to PEL lanes

MD 190/Cabin John Parkway Interchange

MD 190

I-495

Cabin John Parkway

MD 190

Slip ramp from PEL to GP lanes

Clara Barton Parkway

American Legion Bridge

MD Potomac River VA

George Washington Memorial Parkway

SR 193

SR 193 Interchange

I-495

SR 193

INTERSTATE 495

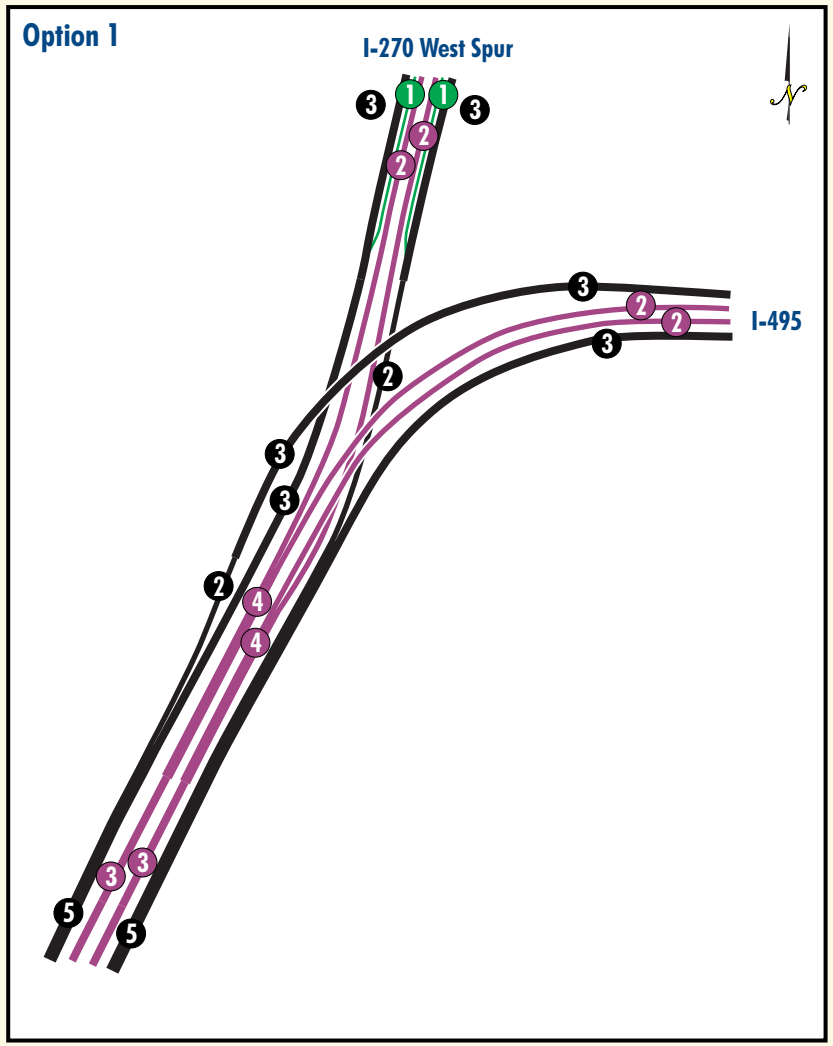
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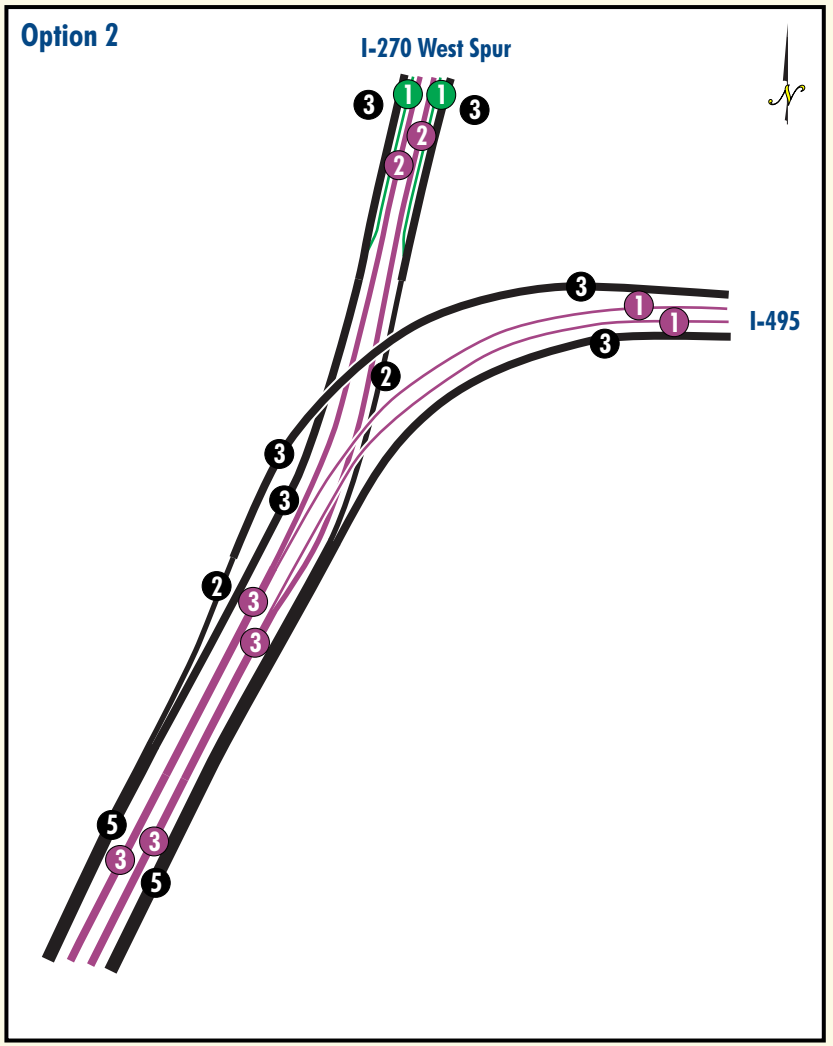
495 MANAGED LANES STUDY 270

I-495/I-270 MANAGED LANES STUDY

Alternative 10
Proposed Lane Configuration
I-495 from SR 193 to I-270 at I-370

Date:	Figure:
October 2018	16





DRAFT

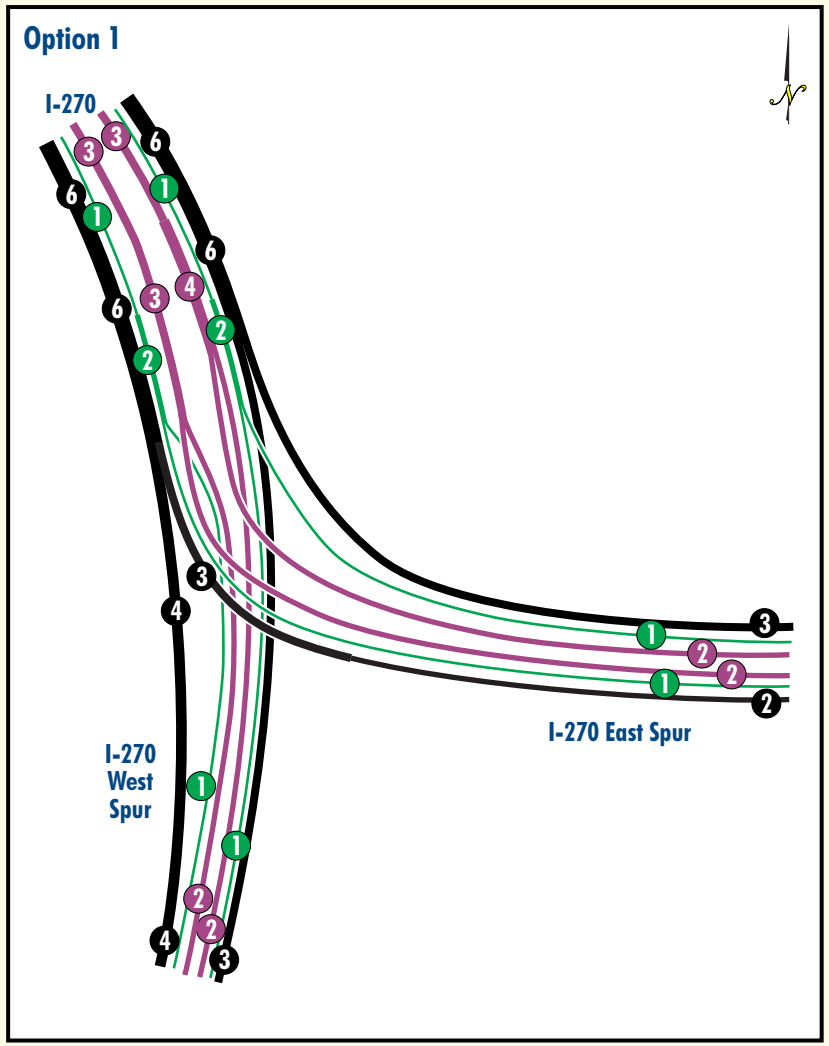
LEGEND

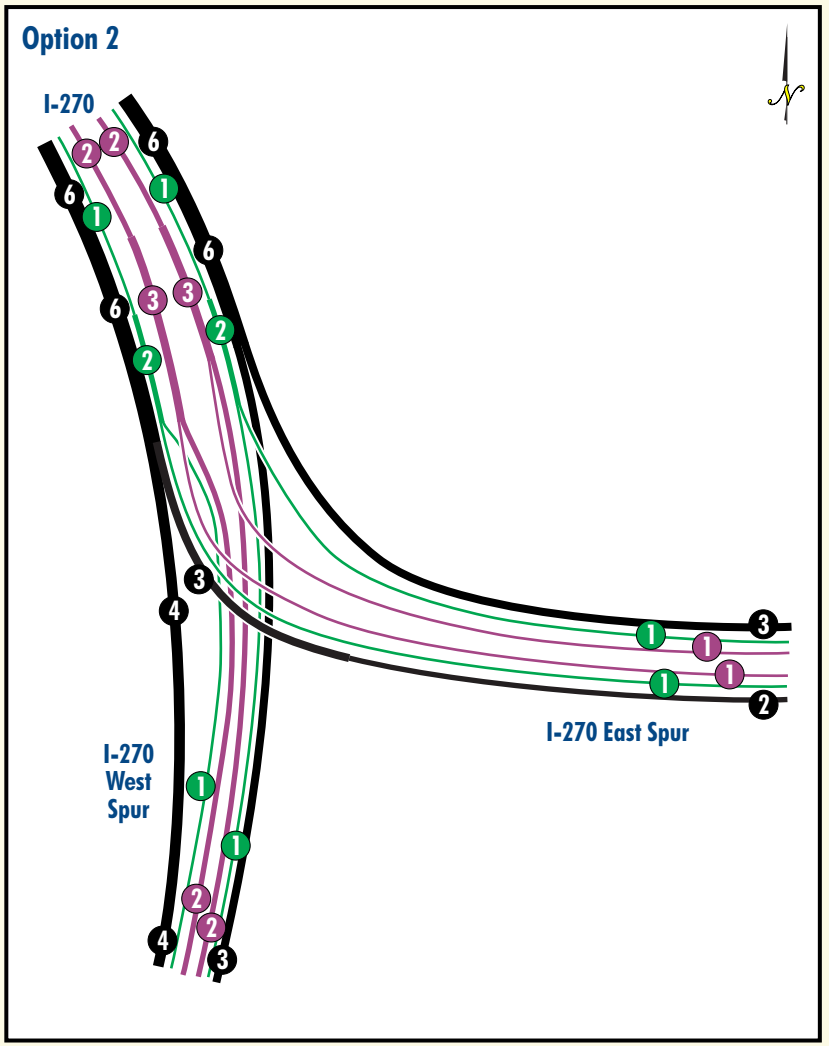
- General Purpose (GP) Lane
- PM Lane
- HOV Lane
- 3 # of General Purpose (GP) Lanes
- 3 # of PM Lanes
- 1 # of HOV Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 10
Proposed Lane Configuration Options
I-270 West Spur Interchange

Date:	Figure:
October 2018	16A





DRAFT

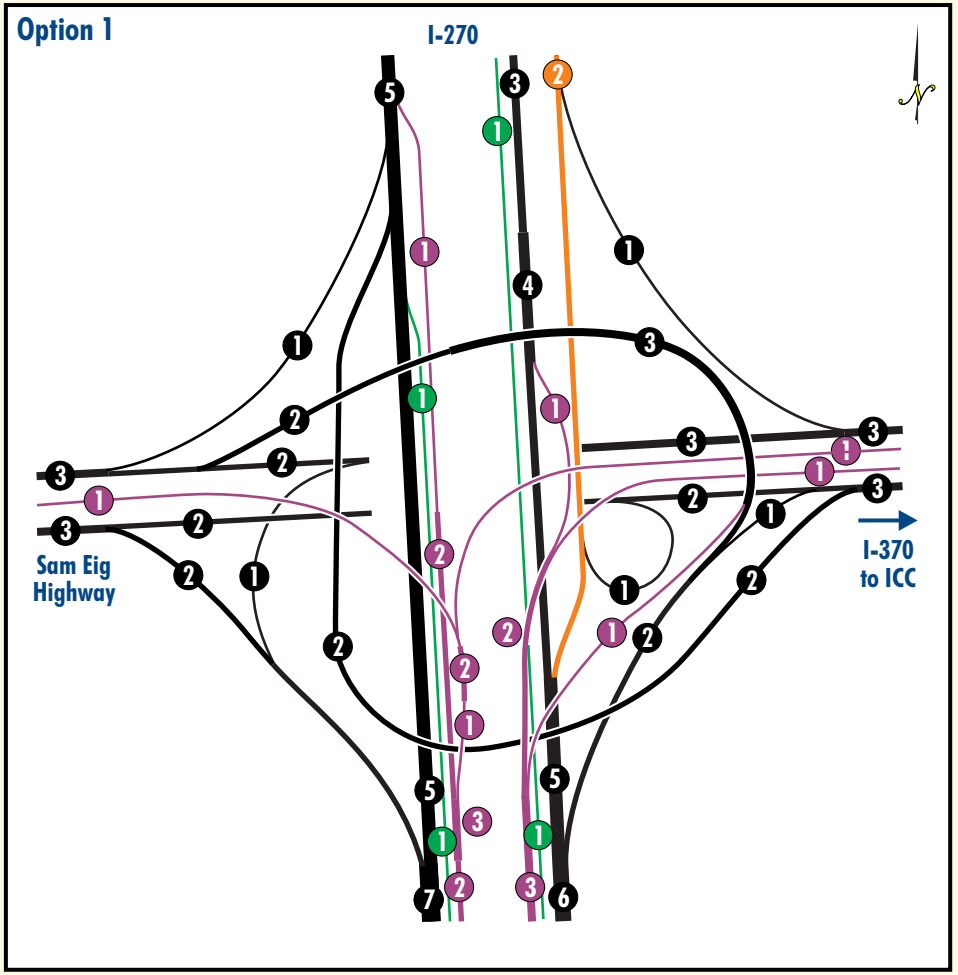
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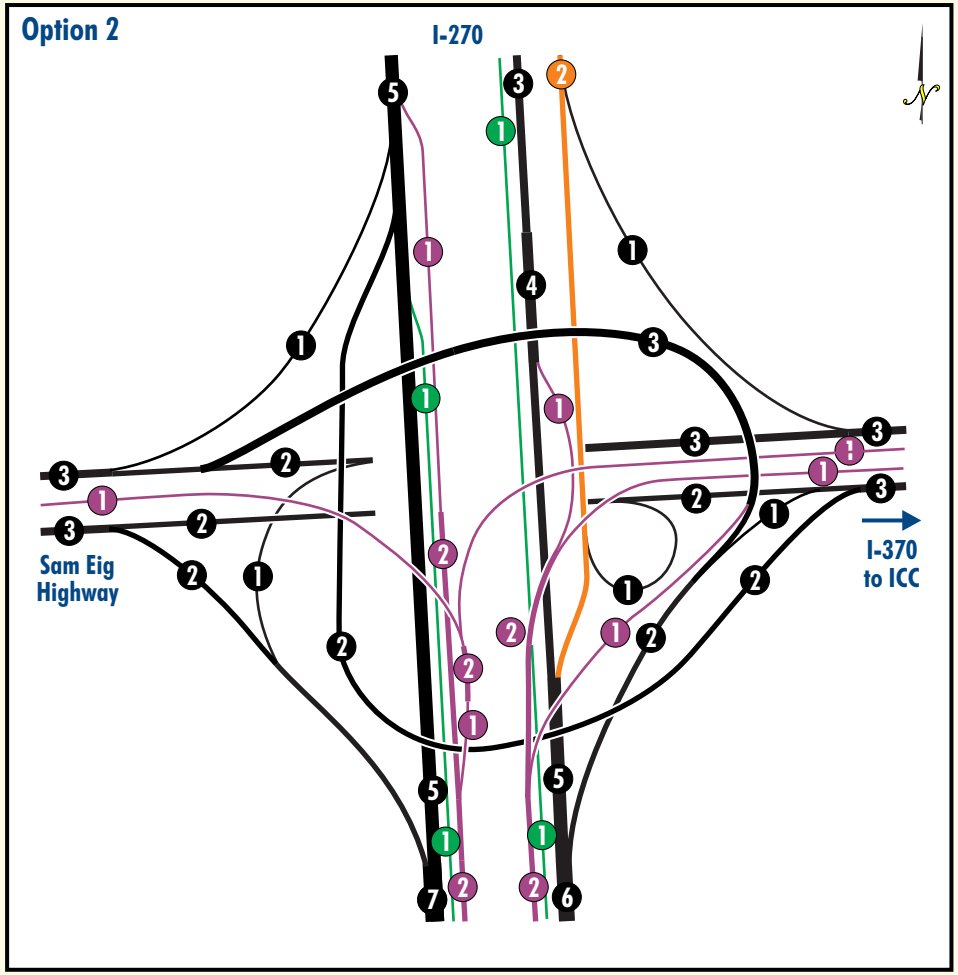
- General Purpose (GP) Lane
- PM Lane
- HOV Lane
- 3 # of General Purpose (GP) Lanes
- 3 # of PM Lanes
- 1 # of HOV Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 10
Proposed Lane Configuration Options
I-270 "Y" Split Interchange

Date:	Figure:
October 2018	16B





DRAFT

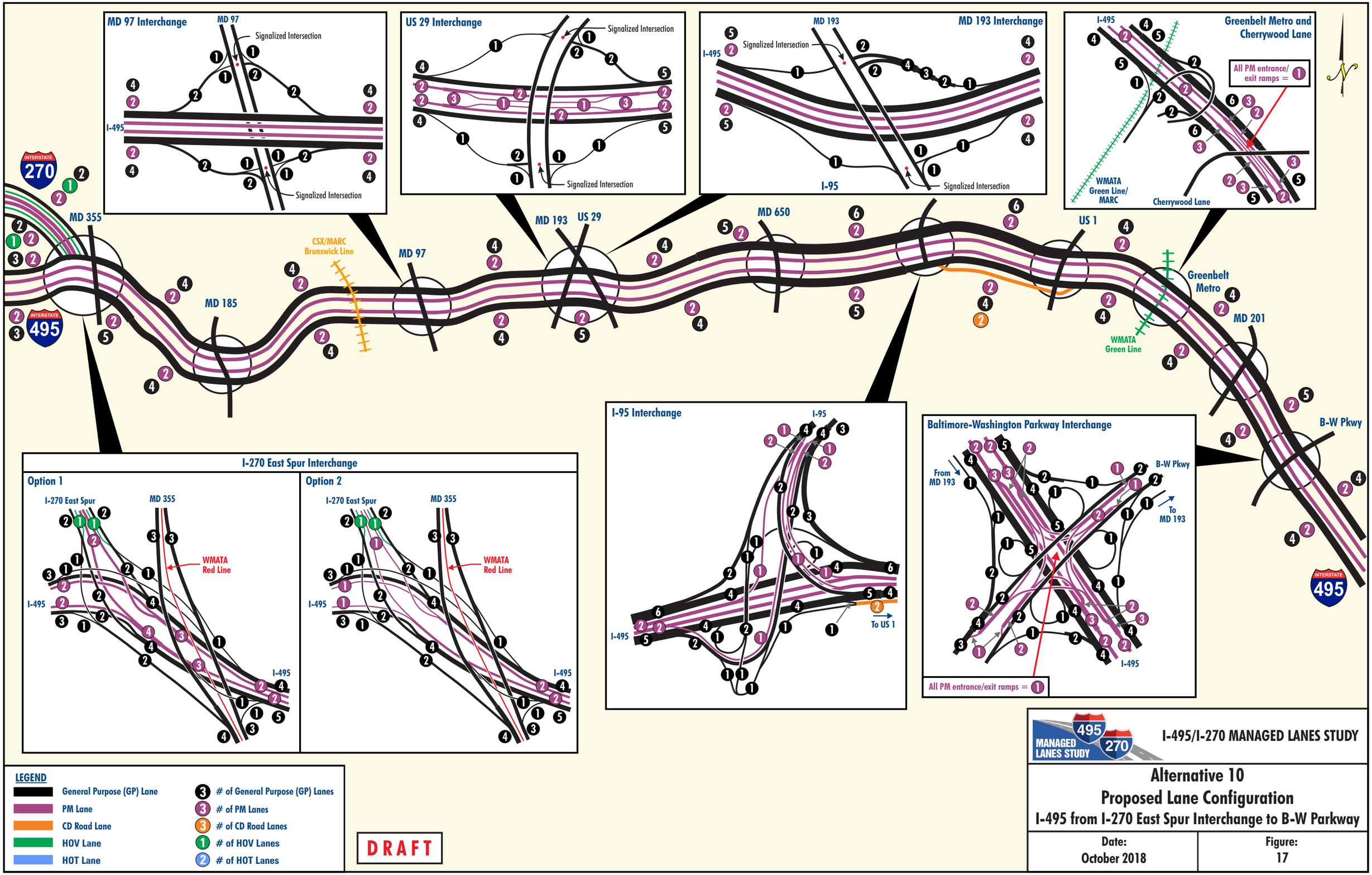
LEGEND

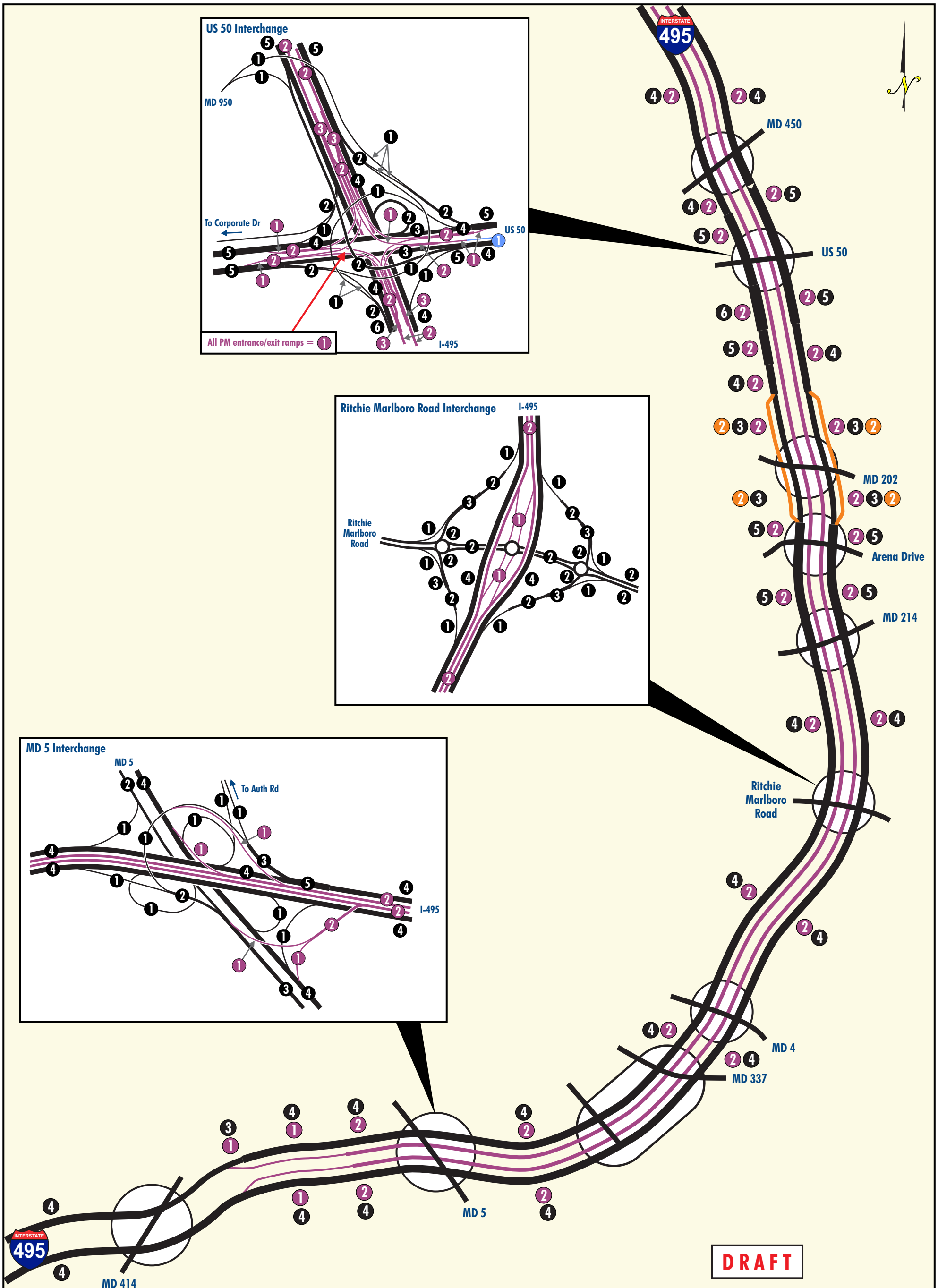
General Purpose (GP) Lane	# of General Purpose (GP) Lanes
PM Lane	# of PM Lanes
CD Road Lane	# of CD Road Lanes
HOV Lane	# of HOV Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 10
Proposed Lane Configuration Options
I-270 at I-370 Interchange

Date:	Figure:
October 2018	16C


MD 97 Interchange
MD 97
Signalized Intersection
I-495
Signalized Intersection
US 29 Interchange
Signalized Intersection
Signalized Intersection
MD 193 Interchange
MD 193
I-495
Signalized Intersection
I-95
Signalized Intersection
Greenbelt Metro and Cherrywood Lane
I-495
All PM entrance/ exit ramps = 1
WMATA Green Line/ MARC
Cherrywood Lane
INTERSTATE 270
INTERSTATE 495
MD 355
MD 185
CSX/MARC Brunswick Line
MD 97
MD 193
US 29
MD 650
US 1
Greenbelt Metro
WMATA Green Line
MD 201
B-W Pkwy
I-270 East Spur Interchange
Option 1
I-270 East Spur
MD 355
WMATA Red Line
I-495
I-495
Option 2
I-270 East Spur
MD 355
WMATA Red Line
I-495
I-495
I-95 Interchange
I-95
I-495
To US 1
Baltimore-Washington Parkway Interchange
From MD 193
B-W Pkwy
To MD 193
I-495
All PM entrance/exit ramps = 1
LEGEND
General Purpose (GP) Lane
PM Lane
CD Road Lane
HOV Lane
HOT Lane
# of General Purpose (GP) Lanes
# of PM Lanes
# of CD Road Lanes
# of HOV Lanes
# of HOT Lanes
DRAFT
MANAGED LANES STUDY
I-495/I-270 MANAGED LANES STUDY
Alternative 10
Proposed Lane Configuration
I-495 from I-270 East Spur Interchange to B-W Parkway
Date:
October 2018
Figure:
17


US 50 Interchange
MD 950
To Corporate Dr
US 50
I-495
All PM entrance/exit ramps = 1
Ritchie Marlboro Road Interchange
I-495
Ritchie Marlboro Road
MD 5 Interchange
MD 5
To Auth Rd
I-495
INTERSTATE 495
MD 450
US 50
MD 202
Arena Drive
MD 214
Ritchie Marlboro Road
MD 4
MD 337
MD 5
MD 414
INTERSTATE 495
DRAFT
LEGEND
General Purpose (GP) Lane
PM Lane
CD Road Lane
HOV Lane
# of General Purpose (GP) Lanes
# of PM Lanes
# of CD Road Lanes
# of HOV Lanes
I-495/I-270 MANAGED LANES STUDY
Alternative 10
Proposed Lane Configuration
I-495 from MD 450 to MD 414
Date: October 2018
Figure: 18

LEGEND

General Purpose (GP) Lane — # of General Purpose (GP) Lanes

PM Lane — # of PM Lanes

CD Road Lane — # of CD Road Lanes

HOT Lane — # of HOT Lanes

Future HOT Lane

N

INTERSTATE 270

I-370

I-370 Interchange
See Figure 19C

Lane configurations include ongoing I-270 ICM project improvements

Shady Grove Road

Gude Drive Interchange

Gude Drive

I-270

Gude Drive

MD 28

MD 189

Montrose Road

Montrose Road

I-270

Direct Access Ramps

Montrose Road

New Signal

MD 187 Interchange

I-495

MD 187

West Lake Terrace Interchange

I-270

West Lake Terrace

I-270 "Y" Split Interchange
See Figure 19B

I-270 "Y" Split

West Lake Terrace

Rockledge Drive

MD 187

I-270 East Spur

Democracy Boulevard

I-270 West Spur Interchange
See Figure 19A

I-270 West Spur

I-495

INTERSTATE 495

George Washington Parkway Interchange

I-495

G-W Parkway

Continuation of two-managed lane system to be provided by VDOT. Limits of each project to be decided.

Slip ramp from GP to PEL lanes

MD 190/Cabin John Parkway Interchange

MD 190

I-495

Cabin John Parkway

MD 190

Slip ramp from PEL to GP lanes

Clara Barton Parkway

American Legion Bridge

MD Potomac River VA

George Washington Memorial Parkway

SR 193 Interchange

I-495

SR 193

SR 193

INTERSTATE 495

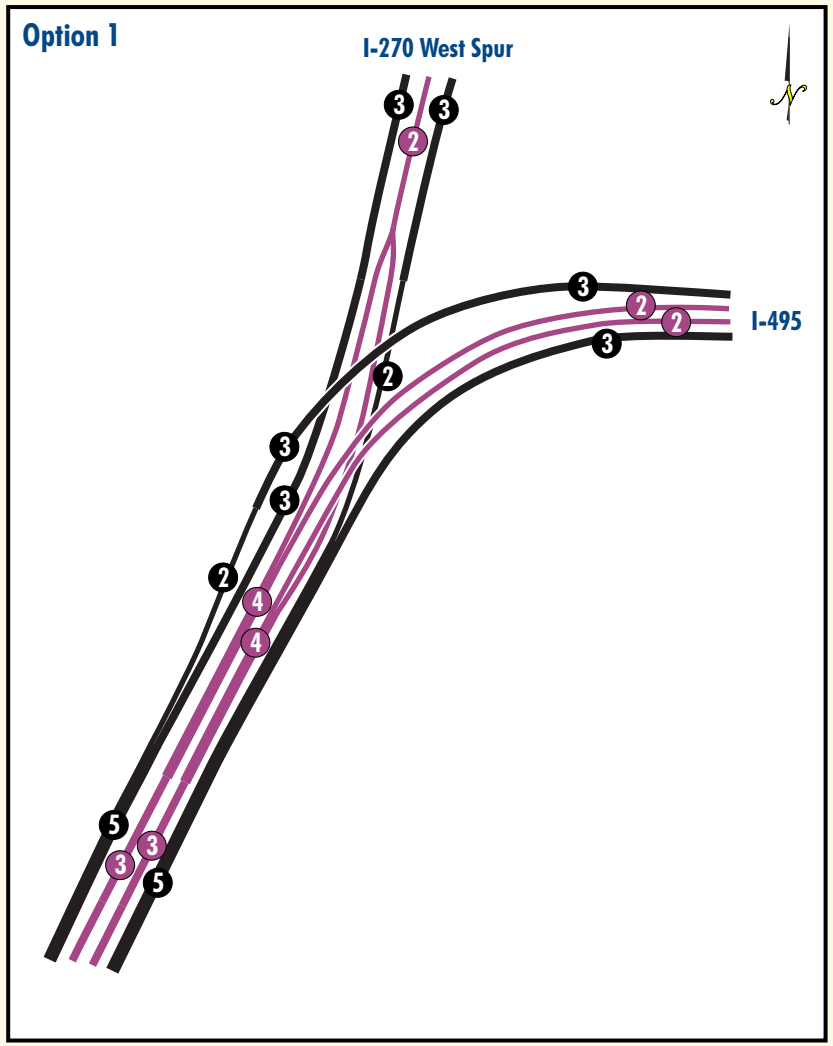
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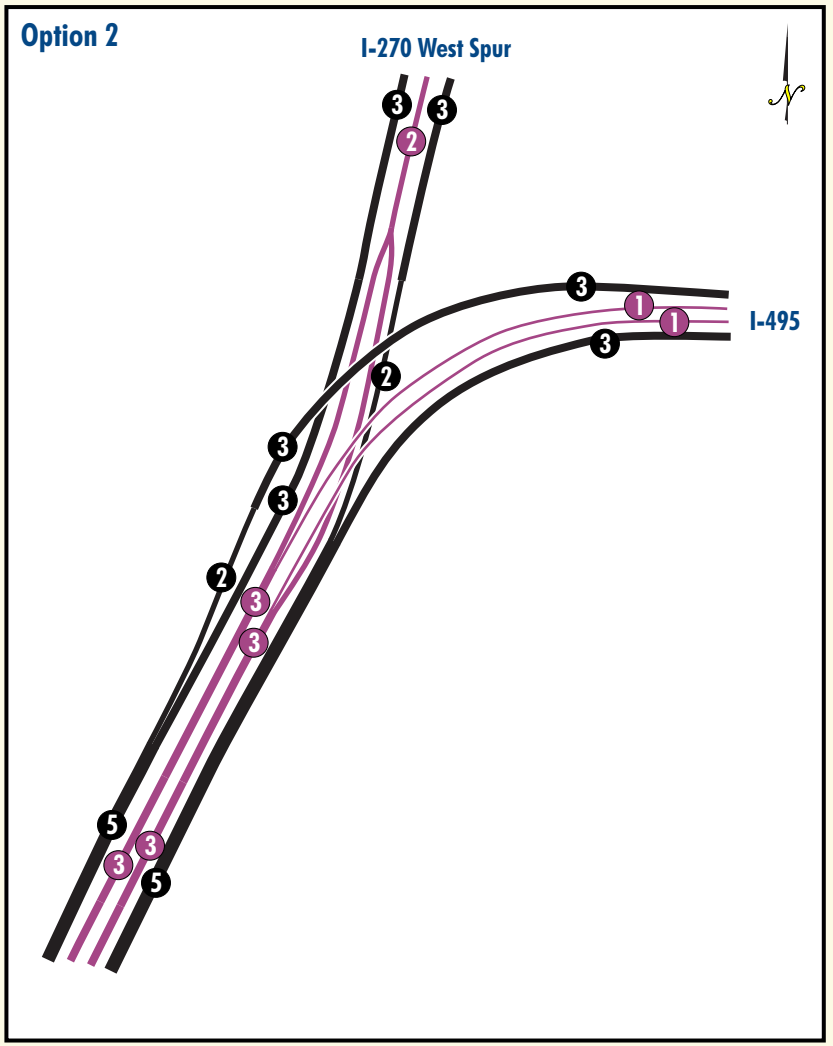
495 MANAGED LANES STUDY 270

I-495/I-270 MANAGED LANES STUDY

Alternative 13B
Proposed Lane Configuration
I-495 from SR 193 to I-270 at I-370

Date:	Figure:
October 2018	19





DRAFT

LEGEND

General Purpose (GP) Lane

PM Lane

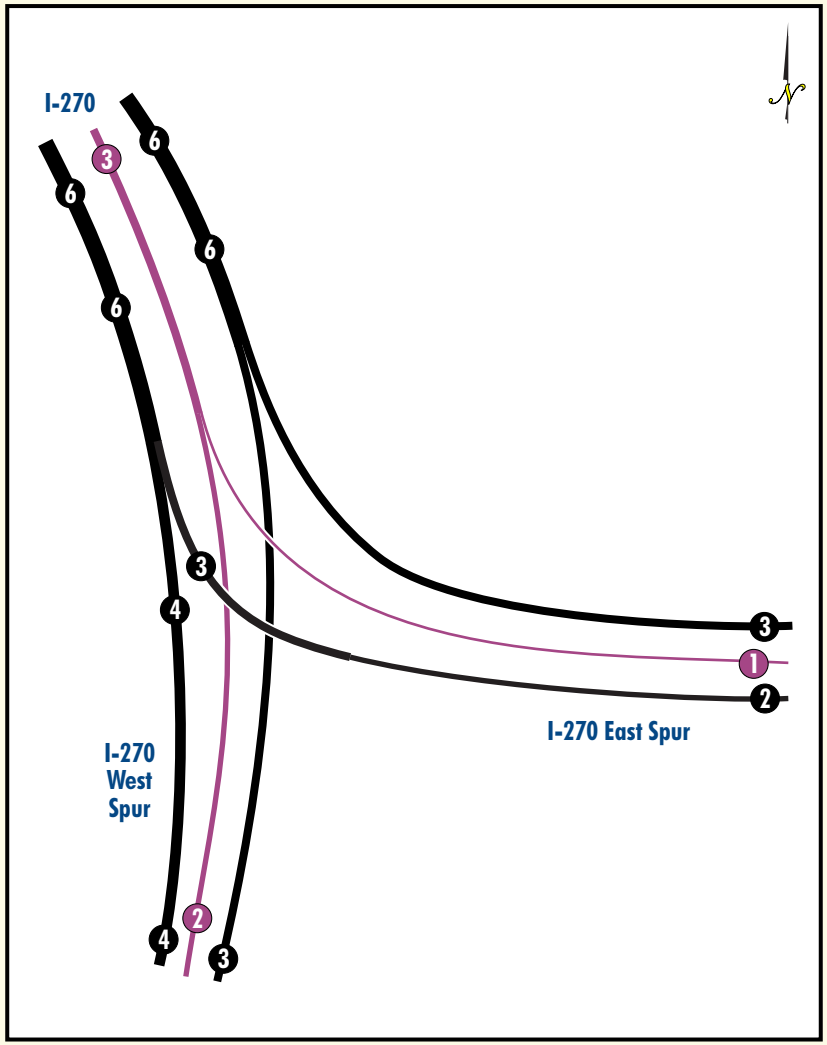
3 # of General Purpose (GP) Lanes

3 # of PM Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 13B
Proposed Lane Configuration Options
I-270 West Spur Interchange

Date:	Figure:
October 2018	19A



DRAFT

LEGEND

General Purpose (GP) Lane

PM Lane

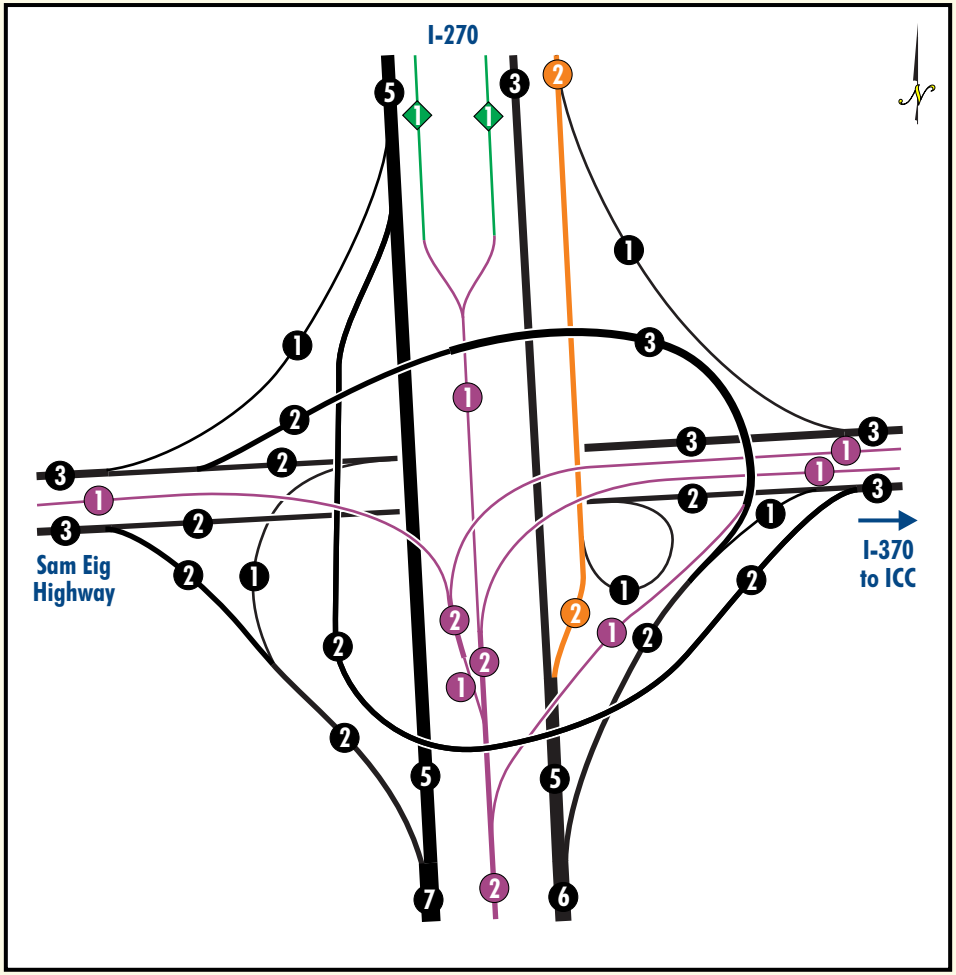
3 # of General Purpose (GP) Lanes

3 # of PM Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 13B
Proposed Lane Configuration Options
I-270 "Y" Split Interchange

Date:	Figure:
October 2018	19B



DRAFT

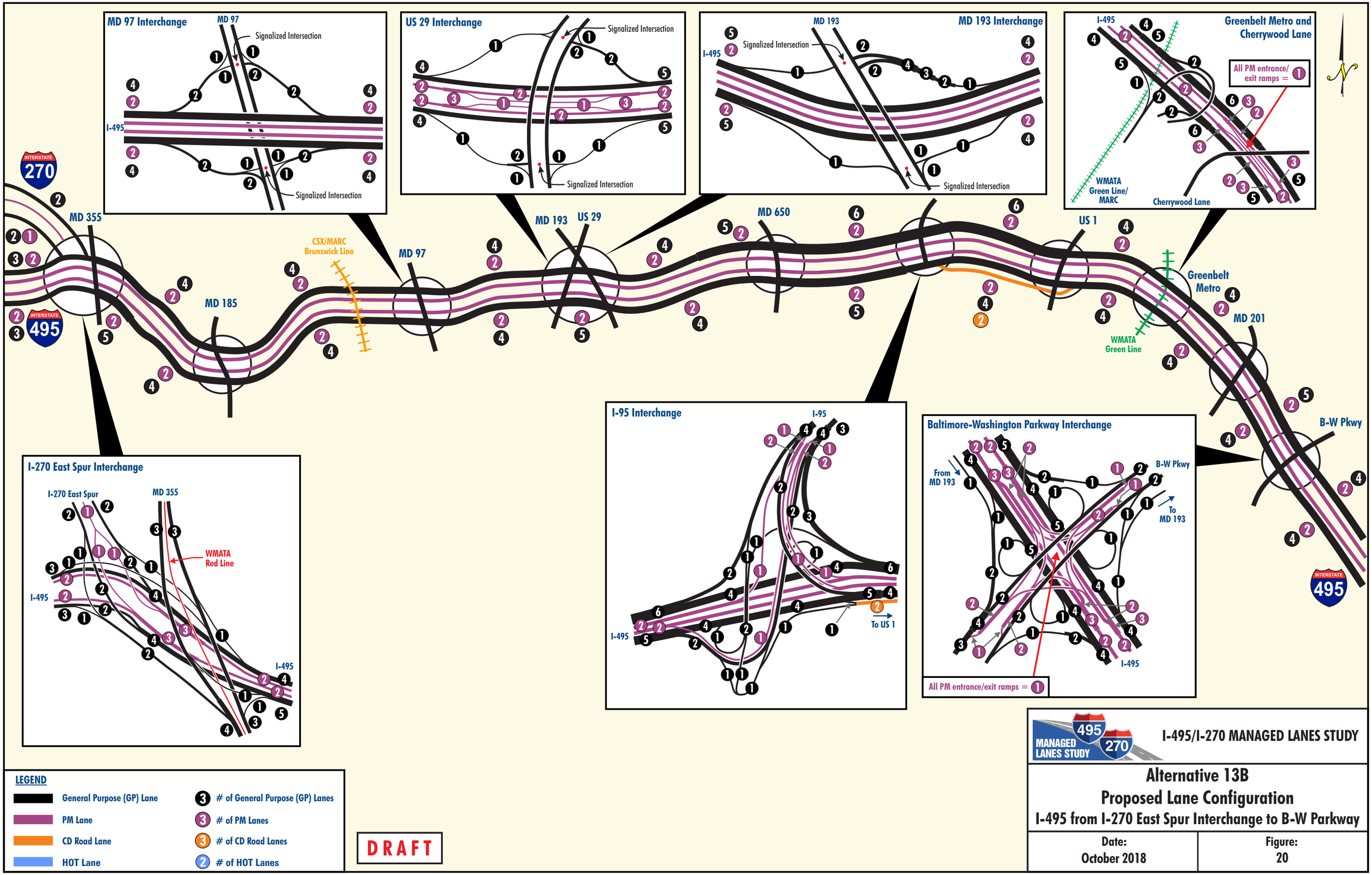
LEGEND

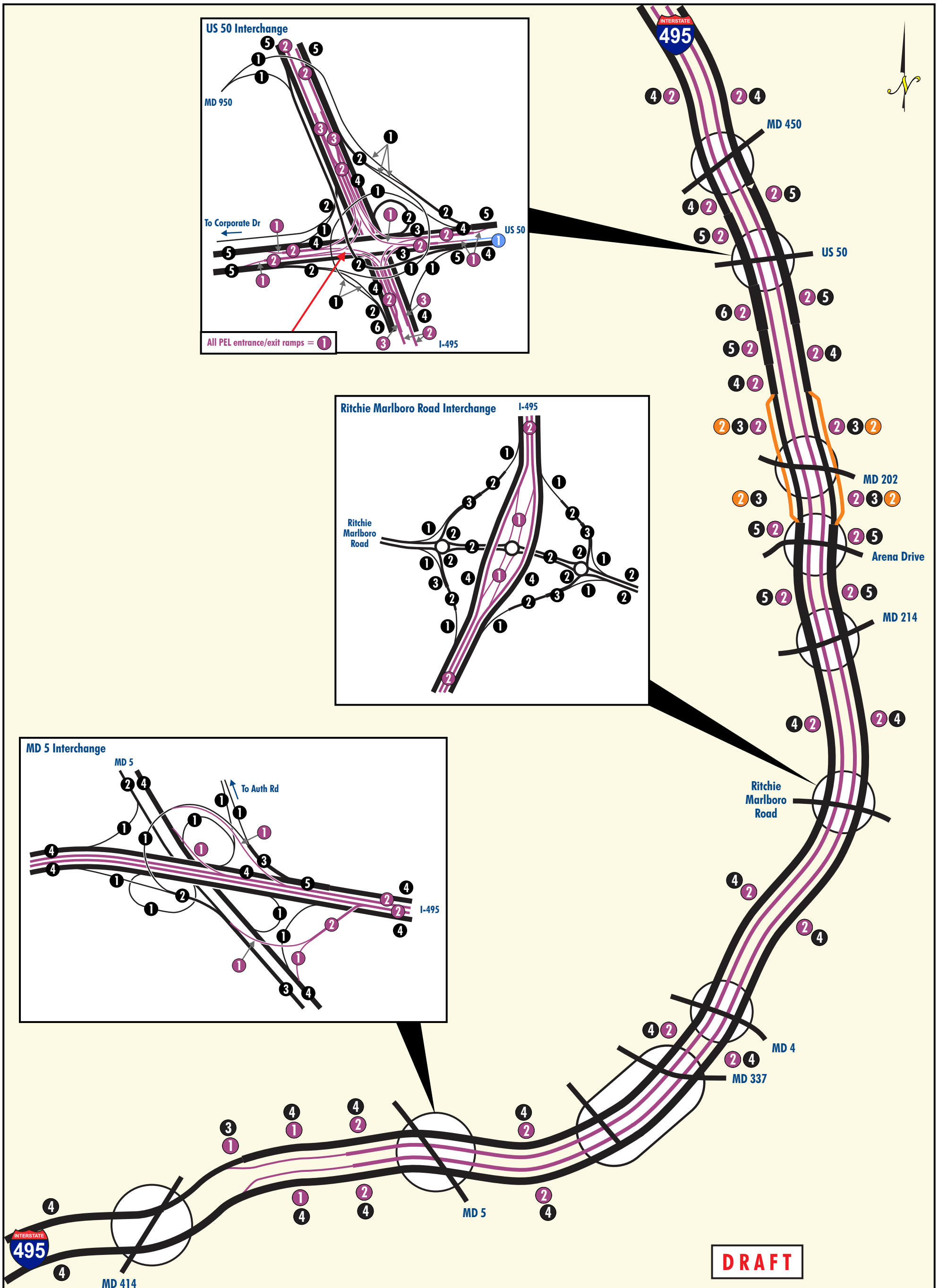
- General Purpose (GP) Lane — 3 # of General Purpose (GP) Lanes
- PM Lane — 3 # of PM Lanes
- CD Road Lane — 3 # of CD Road Lanes
- HOV Lane — 1 # of HOV Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 13B
Proposed Lane Configuration Options
I-270 at I-370 Interchange

Date:	Figure:
October 2018	19C


MD 97 Interchange
MD 97
Signalized Intersection
I-495
Signalized Intersection
US 29 Interchange
Signalized Intersection
Signalized Intersection
MD 193 Interchange
MD 193
I-495
Signalized Intersection
Signalized Intersection
Greenbelt Metro and Cherrywood Lane
I-495
All PM entrance/ exit ramps = 1
WMATA Green Line/ MARC
Cherrywood Lane
INTERSTATE 270
INTERSTATE 495
MD 355
MD 185
CSX/MARC Brunswick Line
MD 97
MD 193
US 29
MD 650
US 1
Greenbelt Metro
WMATA Green Line
MD 201
B-W Pkwy
I-270 East Spur Interchange
I-270 East Spur
MD 355
WMATA Red Line
I-495
I-495
I-95 Interchange
I-95
I-495
To US 1
Baltimore-Washington Parkway Interchange
From MD 193
B-W Pkwy
To MD 193
I-495
All PM entrance/exit ramps = 1
LEGEND
General Purpose (GP) Lane
PM Lane
CD Road Lane
HOT Lane
# of General Purpose (GP) Lanes
# of PM Lanes
# of CD Road Lanes
# of HOT Lanes
DRAFT
MANAGED LANES STUDY
I-495/I-270 MANAGED LANES STUDY
Alternative 13B
Proposed Lane Configuration
I-495 from I-270 East Spur Interchange to B-W Parkway
Date:
October 2018
Figure:
20



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I-495/I-270 MANAGED LANES STUDY

Alternative 13B
Proposed Lane Configuration
I-495 from MD 450 to MD 414

Date:	Figure:
October 2018	21

LEGEND

- General Purpose (GP) Lane
- PM Lane
- CD Road Lane
- HOV Lane
- HOT Lane
- Future HOT Lane
- # of General Purpose (GP) Lanes
- # of PM Lanes
- # of CD Road Lanes
- # of HOV Lanes
- # of HOT Lanes

N

INTERSTATE 270

I-370

I-370 Interchange
See Figure 22C

Lane configurations include ongoing I-270 ICM project improvements

Shady Grove Road

Gude Drive Interchange

Gude Drive

I-270

Gude Drive

MD 28

MD 189

Montrose Road

Montrose Road

I-270

Direct Access Ramps

Montrose Road

New Signal

West Lake Terrace Interchange

I-270

West Lake Terrace

I-270 "Y" Split Interchange
See Figure 22B

I-270 "Y" Split

West Lake Terrace

Rockledge Drive

MD 187

MD 187 Interchange

I-495

MD 187

I-270 East Spur

Democracy Boulevard

I-270 West Spur Interchange
See Figure 22A

I-270 West Spur

I-495

INTERSTATE 495

George Washington Parkway Interchange

I-495

G-W Parkway

Continuation of two-managed lane system to be provided by VDOT.
Limits of each project to be decided.

Slip ramp from GP to PEL lanes

MD 190

MD 190/Cabin John Parkway Interchange

MD 190

I-495

Cabin John Parkway

Slip ramp from PEL to GP lanes

Clara Barton Parkway

American Legion Bridge

MD

Potomac River

VA

George Washington Memorial Parkway

SR 193

SR 193 Interchange

I-495

SR 193

INTERSTATE 495

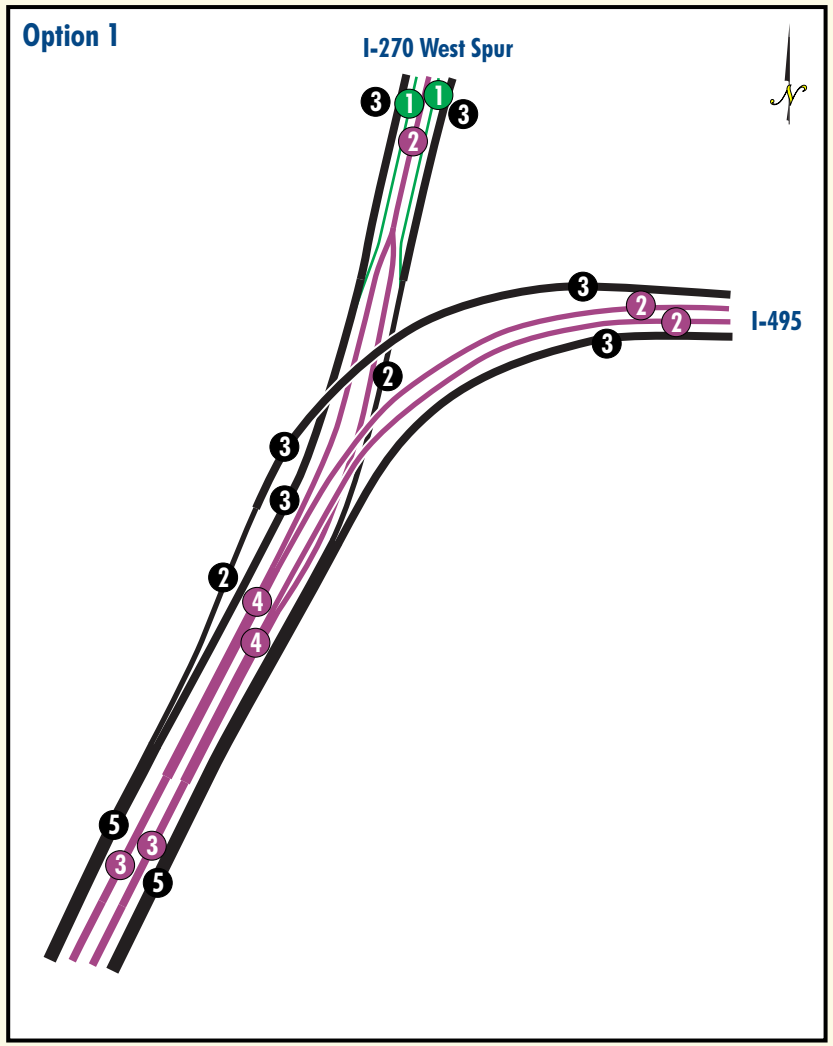
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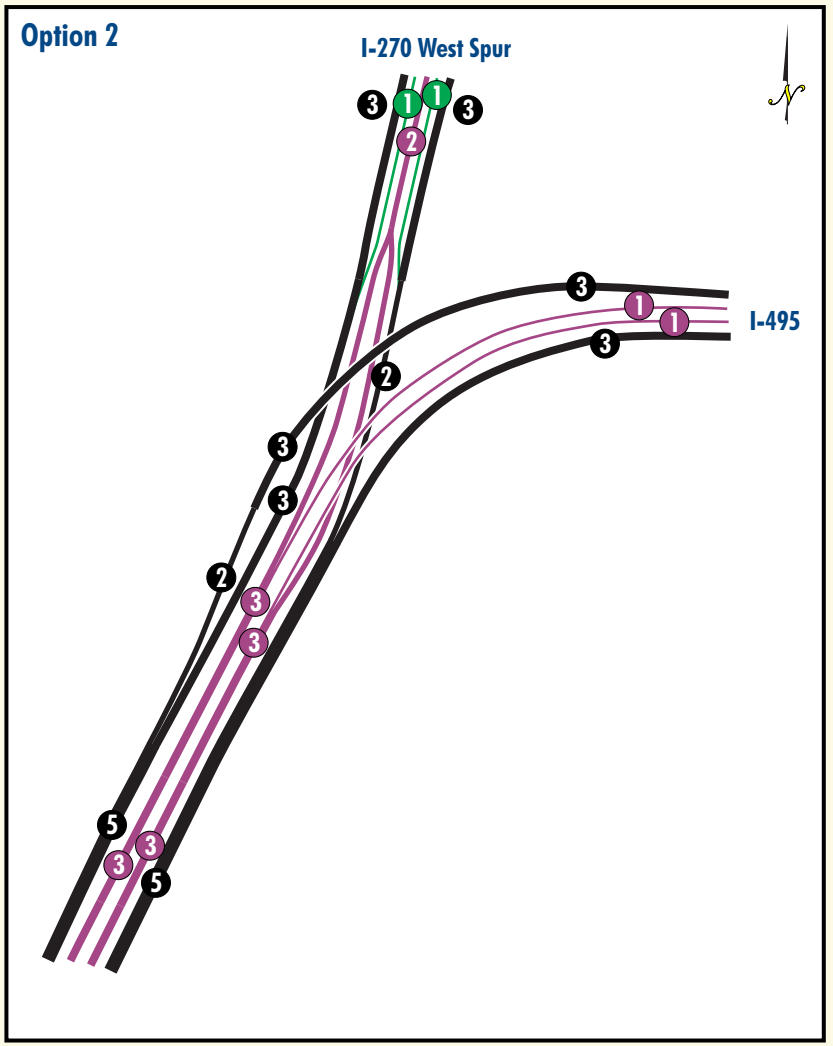
495 MANAGED LANES STUDY 270

I-495/I-270 MANAGED LANES STUDY

Alternative 13C
Proposed Lane Configuration
I-495 from SR 193 to I-270 at I-370

Date:	Figure:
October 2018	22





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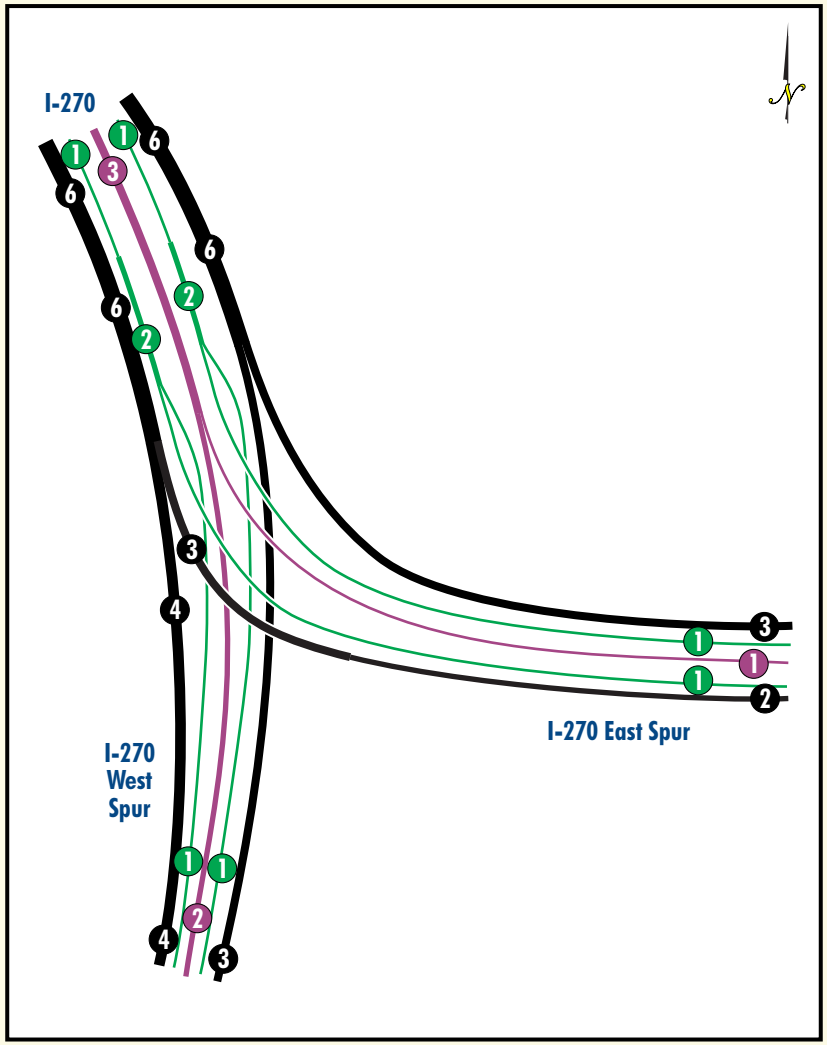
LEGEND

- General Purpose (GP) Lane
- PM Lane
- HOV Lane
- # of General Purpose (GP) Lanes
- # of PM Lanes
- # of HOV Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 13C
Proposed Lane Configuration Options
I-270 West Spur Interchange

Date:	Figure:
October 2018	22A



DRAFT

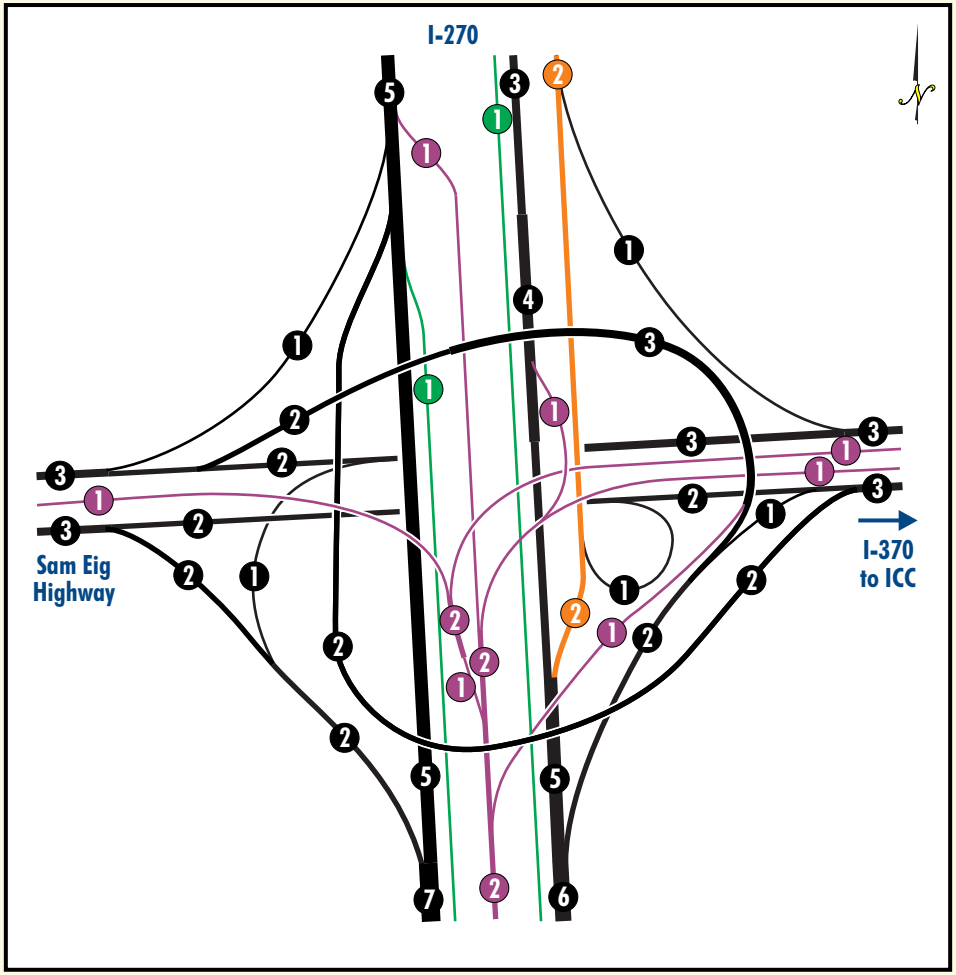
LEGEND

- General Purpose (GP) Lane — 3 # of General Purpose (GP) Lanes
- PM Lane — 3 # of PM Lanes
- HOV Lane — 1 # of HOV Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 13C
Proposed Lane Configuration Options
I-270 "Y" Split Interchange

Date:	Figure:
October 2018	22B



DRAFT

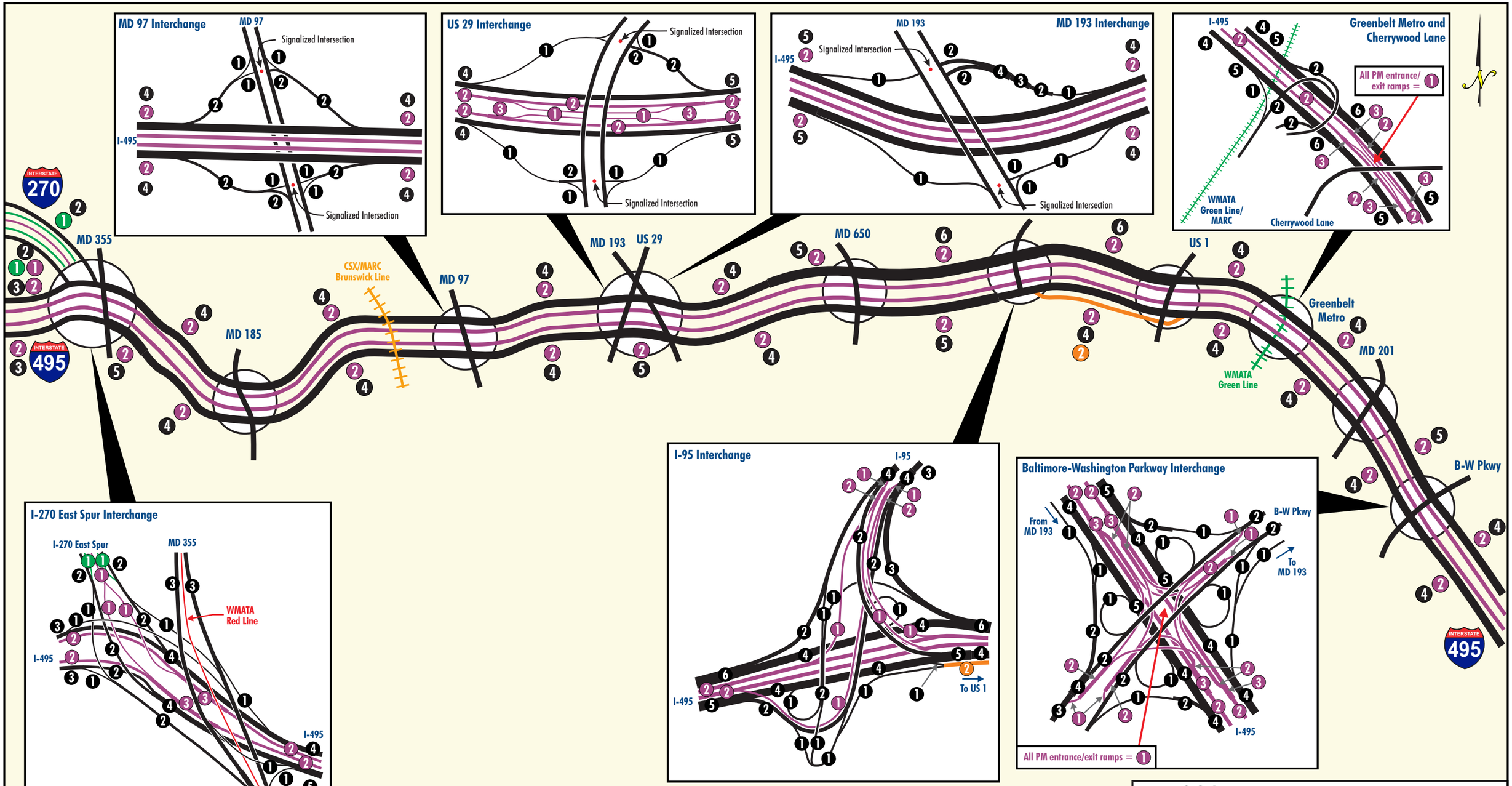
LEGEND

- General Purpose (GP) Lane
- PM Lane
- CD Road Lane
- HOV Lane
- # of General Purpose (GP) Lanes
- # of PM Lanes
- # of CD Road Lanes
- # of HOV Lanes

I-495/I-270 MANAGED LANES STUDY

Alternative 13C
Proposed Lane Configuration Options
I-270 at I-370 Interchange

Date:	Figure:
October 2018	22C

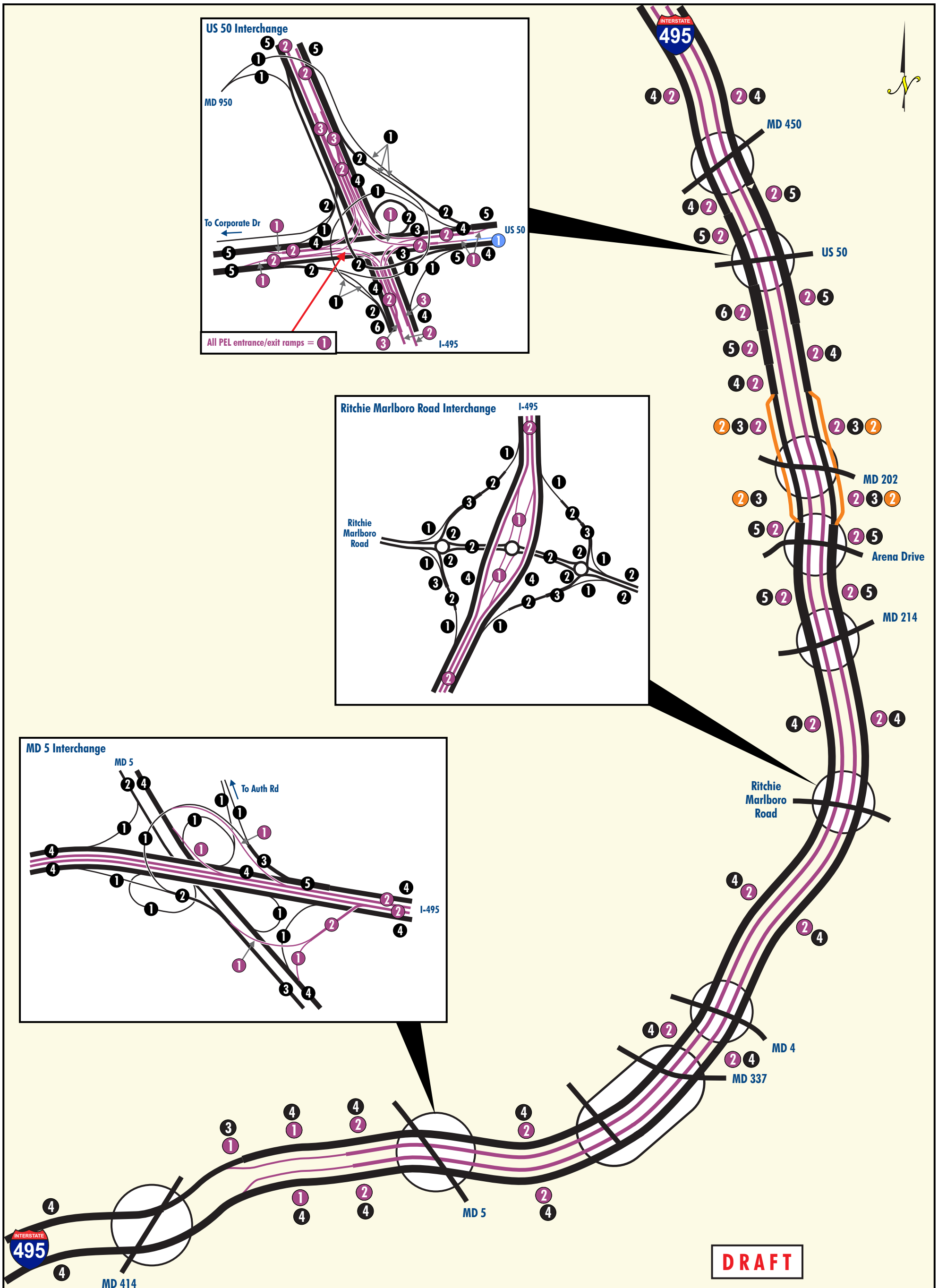


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I-495/I-270 MANAGED LANES STUDY

Alternative 13C
Proposed Lane Configuration
I-495 from I-270 East Spur Interchange to B-W Parkway

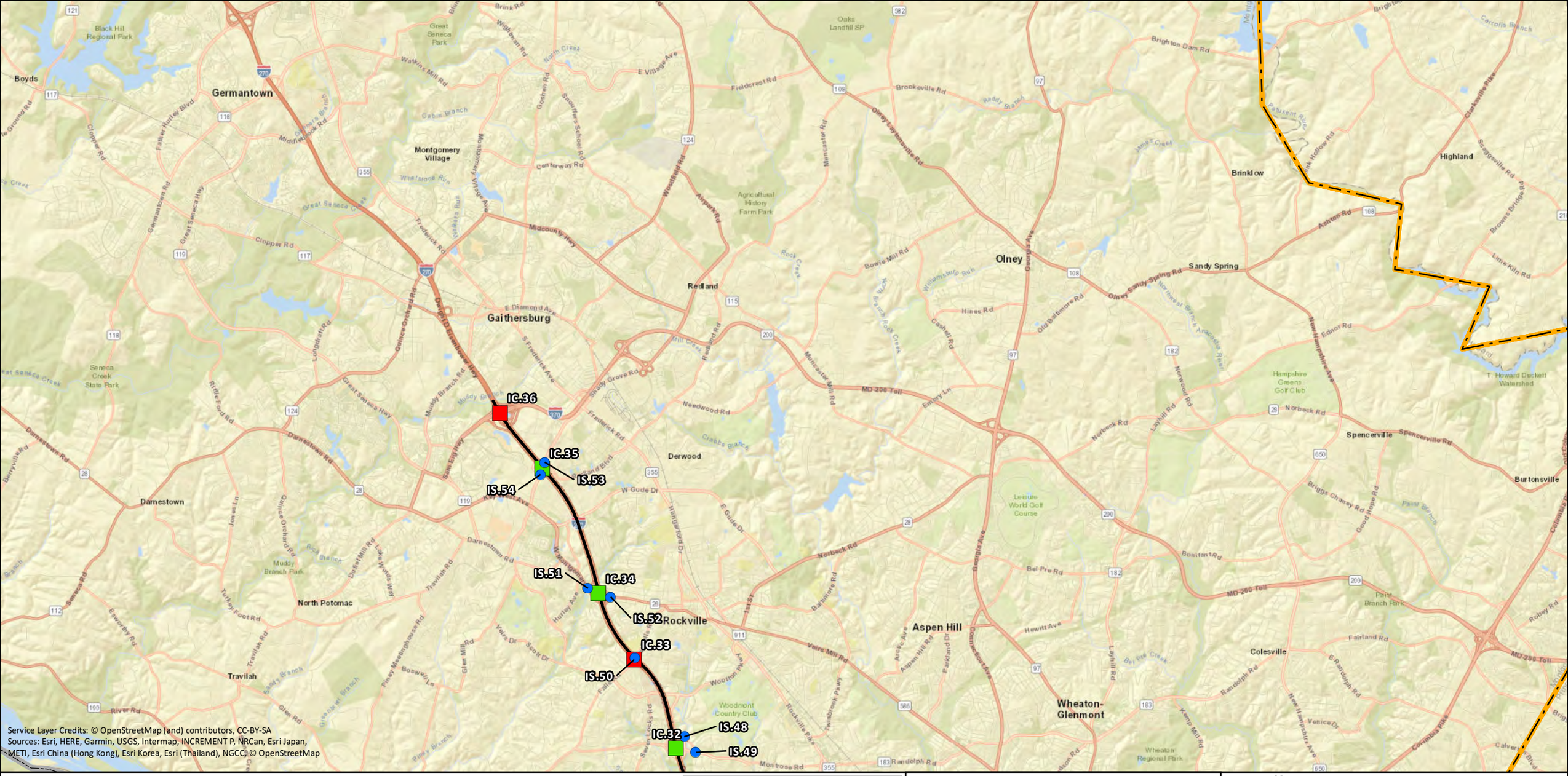
Date:	Figure:
October 2018	23


US 50 Interchange
MD 950
To Corporate Dr
US 50
I-495
All PEL entrance/exit ramps = 1
Ritchie Marlboro Road Interchange
I-495
Ritchie Marlboro Road
MD 5 Interchange
MD 5
To Auth Rd
I-495
INTERSTATE 495
MD 450
US 50
MD 202
Arena Drive
MD 214
Ritchie Marlboro Road
MD 4
MD 337
MD 5
MD 414
INTERSTATE 495
DRAFT
LEGEND
General Purpose (GP) Lane
PM Lane
CD Road Lane
HOV Lane
# of General Purpose (GP) Lanes
# of PM Lanes
# of CD Road Lanes
# of HOV Lanes
I-495/I-270 MANAGED LANES STUDY
Alternative 13C
Proposed Lane Configuration
I-495 from MD 450 to MD 414
Date:
October 2018
Figure:
24

APPENDIX C – TRAFFIC RANKINGS

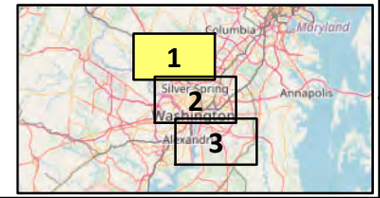
Carbon Monoxide Screening Intersections and Interchanges Map 1
Table 1: Opening Year (2025) Alternative 5 Intersection Volume Ranking 4
Table 2: Opening Year (2025) Alternative 5 Intersection Level-of-Service Ranking 5
Table 3: Opening Year (2025) Alternative 8 Intersection Volume Ranking 6
Table 4: Opening Year (2025) Alternative 8 Intersection Level-of-Service Ranking 7
Table 5: Opening Year (2025) Alternative 9 Intersection Volume Ranking 8
Table 6: Opening Year (2025) Alternative 9 Intersection Level-of-Service Ranking 9
Table 7: Opening Year (2025) Alternative 10 Intersection Volume Ranking 10
Table 8: Opening Year (2025) Alternative 10 Intersection Level-of-Service Ranking 11
Table 9: Opening Year (2025) Alternative 13B Intersection Volume Ranking 12
Table 10: Opening Year (2025) Alternative 13B Intersection Level-of-Service Ranking 13
Table 11: Opening Year (2025) Alternative 13C Intersection Volume Ranking 14
Table 12: Opening Year (2025) Alternative 13C Intersection Level-of-Service Ranking 15
Table 13: Opening Year (2025) Alternative 5 Interchange Volume Ranking 16
Table 14: Opening Year (2025) Alternative 5 Interchange Delay Ranking 17
Table 15: Opening Year (2025) Alternative 8 Interchange Volume Ranking 18
Table 16: Opening Year (2025) Alternative 8 Interchange Delay Ranking 19
Table 17: Opening Year (2025) Alternative 9 Interchange Volume Ranking 20
Table 18: Opening Year (2025) Alternative 9 Interchange Delay Ranking 21
Table 19: Opening Year (2025) Alternative 10 Interchange Volume Ranking 22
Table 20: Opening Year (2025) Alternative 10 Interchange Delay Ranking 23
Table 21: Opening Year (2025) Alternative 13B Interchange Volume Ranking 24
Table 22: Opening Year (2025) Alternative 13B Interchange Delay Ranking 25
Table 23: Opening Year (2025) Alternative 13C Interchange Volume Ranking 26
Table 24: Opening Year (2025) Alternative 13C Interchange Delay Ranking 27
Table 25: Design Year (2040) Alternative 5 Intersection Volume Ranking 28
Table 26: Design Year (2040) Alternative 5 Intersection Level-of-Service Ranking 29
Table 27: Design Year (2040) Alternative 8 Intersection Volume Ranking 30
Table 28: Design Year (2040) Alternative 8 Intersection Level-of-Service Ranking 31
Table 29: Design Year (2040) Alternative 9 Intersection Volume Ranking 32
Table 30: Design Year (2040) Alternative 9 Intersection Level-of-Service Ranking 33
Table 31: Design Year (2040) Alternative 10 Intersection Volume Ranking 34
Table 32: Design Year (2040) Alternative 10 Intersection Level-of-Service Ranking 35
Table 33: Design Year (2040) Alternative 13B Intersection Volume Ranking 36
Table 34: Design Year (2040) Alternative 13B Intersection Level-of-Service Ranking 37
Table 35: Design Year (2040) Alternative 13C Intersection Volume Ranking 38
Table 36: Design Year (2040) Alternative 13C Intersection Level-of-Service Ranking 39
Table 37: Design Year (2040) Alternative 5 Interchange Volume Ranking 40

Table 38: Design Year (2040) Alternative 5 Interchange Delay Ranking 41
Table 39: Design Year (2040) Alternative 8 Interchange Volume Ranking 42
Table 40: Design Year (2040) Alternative 8 Interchange Delay Ranking 43
Table 41: Design Year (2040) Alternative 9 Interchange Volume Ranking 44
Table 42: Design Year (2040) Alternative 9 Interchange Delay Ranking 45
Table 43: Design Year (2040) Alternative 10 Interchange Volume Ranking 46
Table 44: Design Year (2040) Alternative 10 Interchange Delay Ranking 47
Table 45: Design Year (2040) Alternative 13B Interchange Volume Ranking 48
Table 46: Design Year (2040) Alternative 13B Interchange Delay Ranking 49
Table 47: Design Year (2040) Alternative 13C Interchange Volume Ranking 50
Table 48: Design Year (2040) Alternative 13C Interchange Delay Ranking 51



Legend

- Project Corridor
- State Boundary
- County Boundary
- Worst-Case Intersections
- Other Intersections
- Worst-Case Interchanges
- Other Interchanges



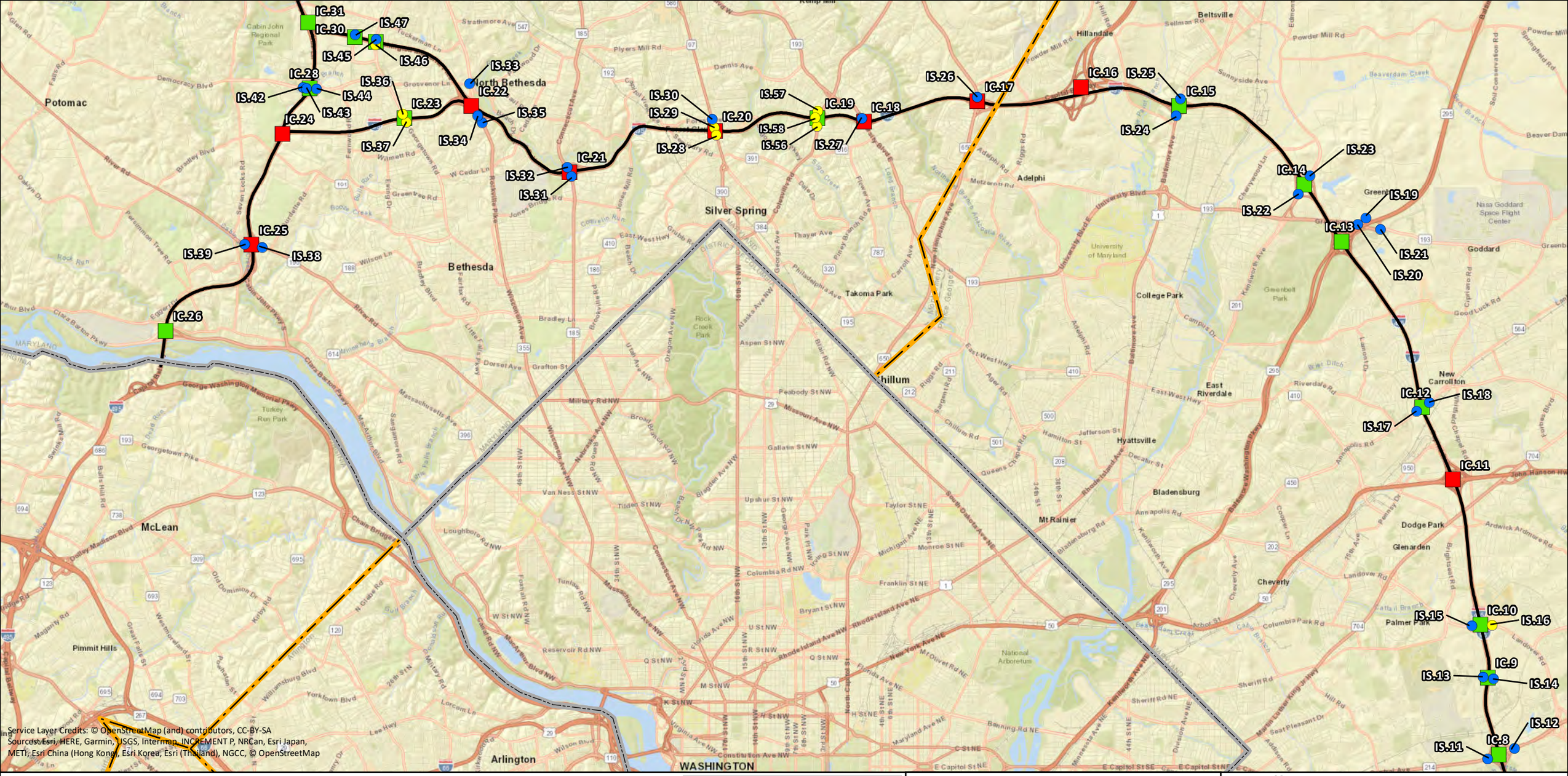
Carbon Monoxide Screening Intersections and Interchanges

1 in = 1.5 miles

0 0.75 1.5 Miles

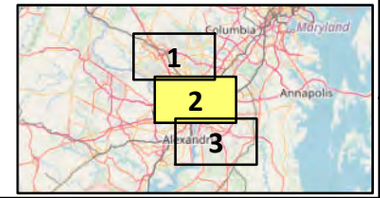
N W E S

270 495 MANAGED LANES STUDY



Legend

- Project Corridor
- State Boundary
- County Boundary
- Worst-Case Intersections
- Other Intersections
- Worst-Case Interchanges
- Other Interchanges



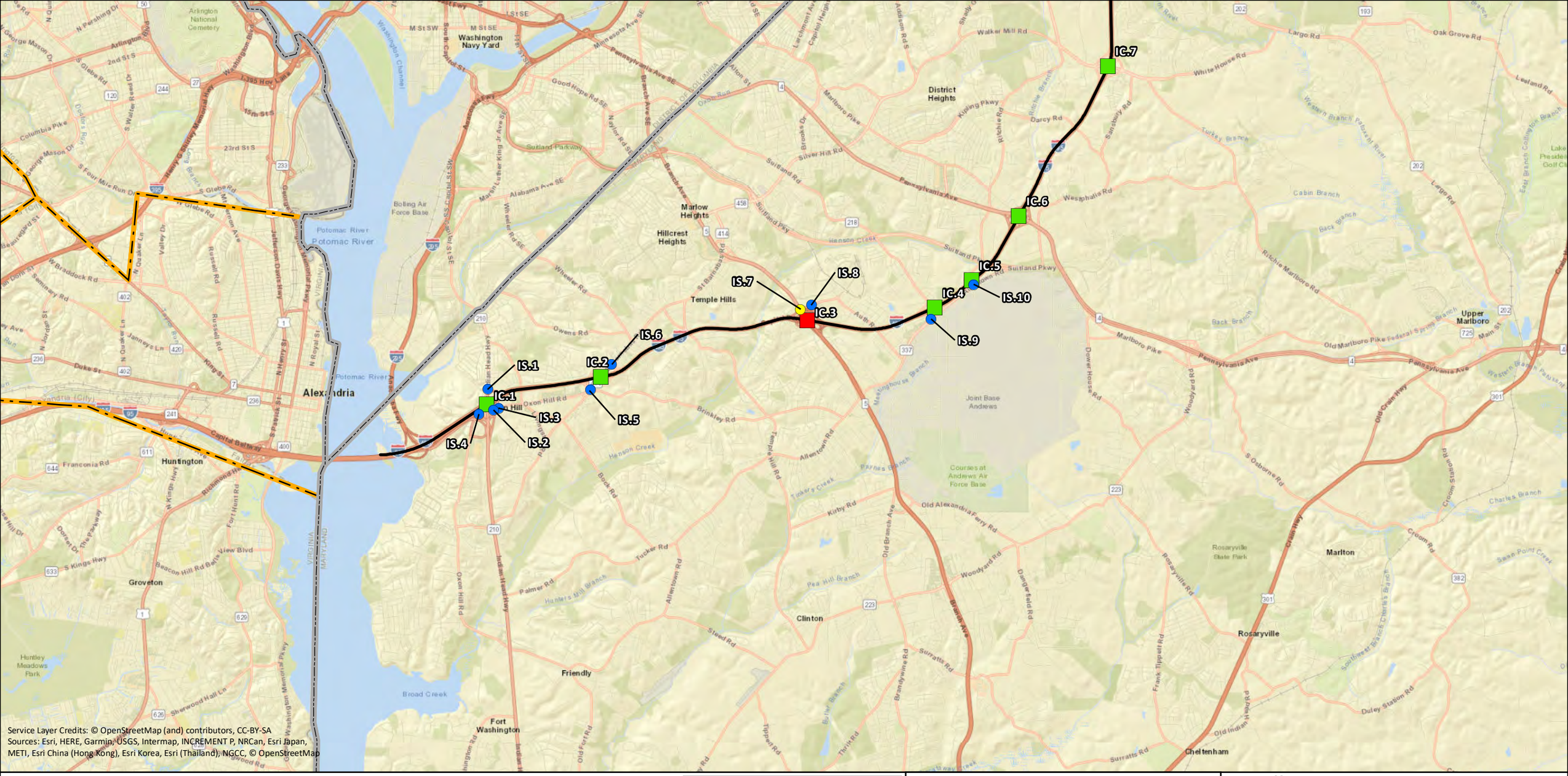
Carbon Monoxide Screening Intersections and Interchanges

1 in = 1.5 miles

0 0.75 1.5 Miles

N W E S

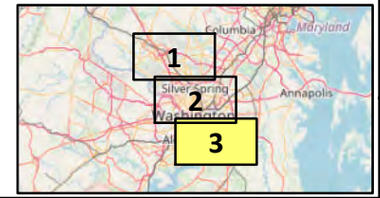
270 495 MANAGED LANES STUDY



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Legend

- Project Corridor
- State Boundary
- County Boundary
- Worst-Case Intersections
- Other Intersections
- Worst-Case Interchanges
- Other Interchanges



Carbon Monoxide Screening
Intersections and Interchanges

1 in = 1.5 miles

0 0.75 1.5 Miles

N W E S

270 495 MANAGED LANES STUDY

Table 1: Opening Year (2025) Alternative 5 Intersection Volume Ranking

Volume Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,170	6,375	7,170	92,150	F	101.5	C	34.3
2		7.IS	MD 5	Auth Road	6,710	5,655	6,710	80,770	A	1.6	A	0.8
3	New Intersections	58.IS	US 29	Direct Access Ramp	6,240	5,870	6,240	78,770	A	7.8	C	22.6
4	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	5,880	5,990	5,990	82,950	B	15.4	B	13.9
5	New Intersections	57.IS	US 29	Outer Loop	5,125	5,405	5,405	69,095	B	12.8	B	17.2
6		26.IS	MD 650	Outer Loop Ramp	4,960	5,140	5,140	29,675	C	25.6	B	17.0
7	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,055	4,995	5,055	65,045	C	32.9	D	44.5
8	New Intersections	56.IS	US 29	Inner Loop	4,370	4,840	4,840	61,500	B	15.4	E	61.8
9		18.IS	MD 450	Outer Loop Ramp	3,485	4,685	4,685	59,785	B	11.3	B	11.5
10		12.IS	MD 214	Outer Loop Ramp	4,395	4,655	4,655	54,700	B	14.3	B	12.8
11		45.IS	MD 187	I-270 NB Ramp	2,820	4,495	4,495	54,650	C	26.0	B	15.9
12		46.IS	MD 187	I-270 SB Ramp	2,820	4,485	4,485	54,410	B	15.6	F	125.8
13		16.IS	MD 202	Outer Loop Ramp	3,490	4,450	4,450	54,695	D	45.8	C	22.2
14		11.IS	MD 214	Inner Loop Ramp	3,860	4,440	4,440	67,545	C	24.4	B	19.4
15		17.IS	MD 450	Inner Loop Ramp	2,935	4,275	4,275	52,865	B	18.8	B	19.2
16		15.IS	MD 202	Inner Loop Ramp	3,450	4,230	4,230	32,265	A	4.4	A	4.7
17	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,110	4,005	4,005	19,450	C	28.9	B	19.1
18		24.IS	US 1	Inner Loop Ramp	3,955	3,995	3,995	54,080	B	14.5	B	17.0
19	Replaced by SPUI	36.IS	MD 187	Capital Beltway	3,320	3,960	3,960	36,675	E	71.7	B	14.2
20		5.IS	MD 414	Outer Loop Ramp (2)	3,100	3,925	3,925	53,650	B	18.0	C	22.3

Table 2: Opening Year (2025) Alternative 5 Intersection Level-of-Service Ranking

LOS Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay	Max Peak Hour Delay
1		46.IS	MD 187	I-270 SB Ramp	2,820	4,485	4,485	54,410	B	15.6	F	125.8	125.8
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,170	6,375	7,170	92,150	F	101.5	C	34.3	101.5
3	Replaced by SPUI	36.IS	MD 187	Capital Beltway	3,320	3,960	3,960	36,675	E	71.7	B	14.2	71.7
4	New Intersections	56.IS	US 29	Inner Loop	4,370	4,840	4,840	61,500	B	15.4	E	61.8	61.8
5		16.IS	MD 202	Outer Loop Ramp	3,490	4,450	4,450	54,695	D	45.8	C	22.2	45.8
6	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,055	4,995	5,055	65,045	C	32.9	D	44.5	44.5
7	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,110	4,005	4,005	19,450	C	28.9	B	19.1	28.9
8		45.IS	MD 187	I-270 NB Ramp	2,820	4,495	4,495	54,650	C	26.0	B	15.9	26.0
9		26.IS	MD 650	Outer Loop Ramp	4,960	5,140	5,140	29,675	C	25.6	B	17.0	25.6
10		11.IS	MD 214	Inner Loop Ramp	3,860	4,440	4,440	67,545	C	24.4	B	19.4	24.4
11	New Intersections	58.IS	US 29	Direct Access Ramp	6,240	5,870	6,240	78,770	A	7.8	C	22.6	22.6
12		5.IS	MD 414	Outer Loop Ramp (2)	3,100	3,925	3,925	53,650	B	18.0	C	22.3	22.3
13		17.IS	MD 450	Inner Loop Ramp	2,935	4,275	4,275	52,865	B	18.8	B	19.2	19.2
14	New Intersections	57.IS	US 29	Outer Loop	5,125	5,405	5,405	69,095	B	12.8	B	17.2	17.2
15		24.IS	US 1	Inner Loop Ramp	3,955	3,995	3,995	54,080	B	14.5	B	17.0	17.0
16	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	5,880	5,990	5,990	82,950	B	15.4	B	13.9	15.4
17		12.IS	MD 214	Outer Loop Ramp	4,395	4,655	4,655	54,700	B	14.3	B	12.8	14.3
18		18.IS	MD 450	Outer Loop Ramp	3,485	4,685	4,685	59,785	B	11.3	B	11.5	11.5
19		15.IS	MD 202	Inner Loop Ramp	3,450	4,230	4,230	32,265	A	4.4	A	4.7	4.7
20		7.IS	MD 5	Auth Road	6,710	5,655	6,710	80,770	A	1.6	A	0.8	1.6

Table 3: Opening Year (2025) Alternative 8 Intersection Volume Ranking

Volume Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,070	6,345	7,070	91,315	F	101.7	D	39.0
2	New Intersections	58.IS	US 29	Direct Access Ramp	7,015	6,590	7,015	84,325	A	8.4	C	34.0
3		7.IS	MD 5	Auth Road	6,700	5,650	6,700	81,010	A	2.8	A	0.8
4	New Intersections	57.IS	US 29	Outer Loop	6,015	6,140	6,140	74,835	F	82.3	B	19.1
5	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	5,850	6,055	6,055	82,935	B	17.1	B	13.6
6	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,075	5,140	5,140	66,340	B	18.4	C	26.2
7		26.IS	MD 650	Outer Loop Ramp	4,970	5,105	5,105	29,675	C	25.7	B	16.7
8	New Intersections	56.IS	US 29	Inner Loop	4,425	4,670	4,670	60,185	B	11.9	B	18.5
9		18.IS	MD 450	Outer Loop Ramp	3,480	4,665	4,665	59,600	B	10.7	B	11.5
10		12.IS	MD 214	Outer Loop Ramp	4,335	4,555	4,555	54,235	B	15.0	B	13.3
11		45.IS	MD 187	I-270 NB Ramp	2,875	4,515	4,515	54,615	C	27.1	B	12.0
12		46.IS	MD 187	I-270 SB Ramp	2,870	4,505	4,505	54,335	B	15.8	F	103.3
13		16.IS	MD 202	Outer Loop Ramp	3,480	4,415	4,415	54,025	D	47.1	D	38.7
14		11.IS	MD 214	Inner Loop Ramp	3,835	4,380	4,380	67,465	C	23.6	B	19.9
15		15.IS	MD 202	Inner Loop Ramp	3,555	4,375	4,375	32,695	A	4.6	A	5.4
16		17.IS	MD 450	Inner Loop Ramp	2,890	4,205	4,205	52,545	B	19.8	B	19.7
17		24.IS	US 1	Inner Loop Ramp	4,040	3,980	4,040	54,345	B	14.4	B	16.9
18	New Intersections	61.IS	Montrose Road	Direct Access Ramp	3,335	4,030	4,030	54,965	A	4.7	B	12.4
19		5.IS	MD 414	Outer Loop Ramp (2)	3,150	3,995	3,995	53,975	B	18.1	C	23.5
20	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,160	3,925	3,925	21,950	C	30.3	B	18.3

Table 4: Opening Year (2025) Alternative 8 Intersection Level-of-Service Ranking

LOS Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay	Max Peak Hour Delay
1		46.IS	MD 187	I-270 SB Ramp	2,870	4,505	4,505	54,335	B	15.8	F	103.3	103.3
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,070	6,345	7,070	91,315	F	101.7	D	39.0	101.7
3	New Intersections	57.IS	US 29	Outer Loop	6,015	6,140	6,140	74,835	F	82.3	B	19.1	82.3
4		16.IS	MD 202	Outer Loop Ramp	3,480	4,415	4,415	54,025	D	47.1	D	38.7	47.1
5	New Intersections	58.IS	US 29	Direct Access Ramp	7,015	6,590	7,015	84,325	A	8.4	C	34.0	34.0
6	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,160	3,925	3,925	21,950	C	30.3	B	18.3	30.3
7		45.IS	MD 187	I-270 NB Ramp	2,875	4,515	4,515	54,615	C	27.1	B	12.0	27.1
8	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,075	5,140	5,140	66,340	B	18.4	C	26.2	26.2
9		26.IS	MD 650	Outer Loop Ramp	4,970	5,105	5,105	29,675	C	25.7	B	16.7	25.7
10		11.IS	MD 214	Inner Loop Ramp	3,835	4,380	4,380	67,465	C	23.6	B	19.9	23.6
11		5.IS	MD 414	Outer Loop Ramp (2)	3,150	3,995	3,995	53,975	B	18.1	C	23.5	23.5
12		17.IS	MD 450	Inner Loop Ramp	2,890	4,205	4,205	52,545	B	19.8	B	19.7	19.8
13	New Intersections	56.IS	US 29	Inner Loop	4,425	4,670	4,670	60,185	B	11.9	B	18.5	18.5
14	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	5,850	6,055	6,055	82,935	B	17.1	B	13.6	17.1
15		24.IS	US 1	Inner Loop Ramp	4,040	3,980	4,040	54,345	B	14.4	B	16.9	16.9
16		12.IS	MD 214	Outer Loop Ramp	4,335	4,555	4,555	54,235	B	15.0	B	13.3	15.0
17	New Intersections	61.IS	Montrose Road	Direct Access Ramp	3,335	4,030	4,030	54,965	A	4.7	B	12.4	12.4
18		18.IS	MD 450	Outer Loop Ramp	3,480	4,665	4,665	59,600	B	10.7	B	11.5	11.5
19		15.IS	MD 202	Inner Loop Ramp	3,555	4,375	4,375	32,695	A	4.6	A	5.4	5.4
20		7.IS	MD 5	Auth Road	6,700	5,650	6,700	81,010	A	2.8	A	0.8	2.8

Table 5: Opening Year (2025) Alternative 9 Intersection Volume Ranking

Volume Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
1	New Intersections	58.IS	US 29	Direct Access Ramp	7,370	6,740	7,370	86,100	B	13.1	C	30.2
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,305	6,450	7,305	94,525	F	114.3	D	39.0
3		7.IS	MD 5	Auth Road	7,010	5,720	7,010	83,460	A	4.4	A	0.8
4	New Intersections	57.IS	US 29	Outer Loop	6,315	6,300	6,315	78,060	E	63.3	B	19.9
5	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	6,065	6,095	6,095	85,430	B	16.9	B	14.2
6	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,300	5,155	5,300	68,405	D	41.1	C	27.6
7		26.IS	MD 650	Outer Loop Ramp	5,135	5,135	5,135	30,040	C	24.8	B	16.5
8		18.IS	MD 450	Outer Loop Ramp	3,635	4,765	4,765	61,595	B	10.9	B	11.4
9	New Intersections	61.IS	Montrose Road	Direct Access Ramp	4,160	4,765	4,765	63,495	B	16.4	C	29.6
10	New Intersections	56.IS	US 29	Inner Loop	4,540	4,735	4,735	62,255	B	12.4	B	11.5
11		12.IS	MD 214	Outer Loop Ramp	4,490	4,630	4,630	56,240	B	14.0	B	13.4
12	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,365	4,625	4,625	21,325	C	31.8	C	27.6
13		45.IS	MD 187	I-270 NB Ramp	2,960	4,575	4,575	55,630	C	24.8	B	15.3
14		46.IS	MD 187	I-270 SB Ramp	2,960	4,570	4,570	55,420	B	16.0	E	79.7
15		16.IS	MD 202	Outer Loop Ramp	3,665	4,510	4,510	56,180	B	19.2	D	48.9
16		11.IS	MD 214	Inner Loop Ramp	4,010	4,490	4,490	69,605	C	25.1	C	20.5
17		15.IS	MD 202	Inner Loop Ramp	3,710	4,450	4,450	33,680	A	5.0	A	5.4
18		17.IS	MD 450	Inner Loop Ramp	3,025	4,305	4,305	54,295	B	19.6	B	19.0
19		24.IS	US 1	Inner Loop Ramp	4,135	4,010	4,135	55,395	B	14.5	B	16.9
20		5.IS	MD 414	Outer Loop Ramp (2)	3,175	3,980	3,980	54,475	B	18.4	C	25.8

Table 6: Opening Year (2025) Alternative 9 Intersection Level-of-Service Ranking

LOS Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay	Max Peak Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,305	6,450	7,305	94,525	F	114.3	D	39.0	114.3
2		46.IS	MD 187	I-270 SB Ramp	2,960	4,570	4,570	55,420	B	16.0	E	79.7	79.7
3	New Intersections	57.IS	US 29	Outer Loop	6,315	6,300	6,315	78,060	E	63.3	B	19.9	63.3
4		16.IS	MD 202	Outer Loop Ramp	3,665	4,510	4,510	56,180	B	19.2	D	48.9	48.9
5	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,300	5,155	5,300	68,405	D	41.1	C	27.6	41.1
6	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,365	4,625	4,625	21,325	C	31.8	C	27.6	31.8
7	New Intersections	58.IS	US 29	Direct Access Ramp	7,370	6,740	7,370	86,100	B	13.1	C	30.2	30.2
8	New Intersections	61.IS	Montrose Road	Direct Access Ramp	4,160	4,765	4,765	63,495	B	16.4	C	29.6	29.6
9		5.IS	MD 414	Outer Loop Ramp (2)	3,175	3,980	3,980	54,475	B	18.4	C	25.8	25.8
10		11.IS	MD 214	Inner Loop Ramp	4,010	4,490	4,490	69,605	C	25.1	C	20.5	25.1
11		26.IS	MD 650	Outer Loop Ramp	5,135	5,135	5,135	30,040	C	24.8	B	16.5	24.8
12		45.IS	MD 187	I-270 NB Ramp	2,960	4,575	4,575	55,630	C	24.8	B	15.3	24.8
13		17.IS	MD 450	Inner Loop Ramp	3,025	4,305	4,305	54,295	B	19.6	B	19.0	19.6
14		24.IS	US 1	Inner Loop Ramp	4,135	4,010	4,135	55,395	B	14.5	B	16.9	16.9
15	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	6,065	6,095	6,095	85,430	B	16.9	B	14.2	16.9
16		12.IS	MD 214	Outer Loop Ramp	4,490	4,630	4,630	56,240	B	14.0	B	13.4	14.0
17	New Intersections	56.IS	US 29	Inner Loop	4,540	4,735	4,735	62,255	B	12.4	B	11.5	12.4
18		18.IS	MD 450	Outer Loop Ramp	3,635	4,765	4,765	61,595	B	10.9	B	11.4	11.4
19		15.IS	MD 202	Inner Loop Ramp	3,710	4,450	4,450	33,680	A	5.0	A	5.4	5.4
20		7.IS	MD 5	Auth Road	7,010	5,720	7,010	83,460	A	4.4	A	0.8	4.4

Table 7: Opening Year (2025) Alternative 10 Intersection Volume Ranking

Volume Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
1	New Intersections	58.IS	US 29	Direct Access Ramp	7,075	6,610	7,075	83,510	B	11.0	C	30.4
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,005	6,310	7,005	91,500	F	104.0	D	39.3
3		7.IS	MD 5	Auth Road	6,725	5,605	6,725	80,835	A	1.7	A	0.8
4	New Intersections	57.IS	US 29	Outer Loop	6,055	6,180	6,180	75,710	E	60.4	C	22.7
5	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	5,820	5,970	5,970	82,830	B	15.8	B	13.7
6		26.IS	MD 650	Outer Loop Ramp	4,930	5,095	5,095	30,110	C	25.0	B	16.7
7	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,085	5,040	5,085	66,245	B	18.0	C	26.8
8		18.IS	MD 450	Outer Loop Ramp	3,485	4,665	4,665	59,760	B	10.6	B	11.6
9	New Intersections	56.IS	US 29	Inner Loop	4,360	4,640	4,640	60,410	B	11.6	B	12.0
10	New Intersections	61.IS	Montrose Road	Direct Access Ramp	3,665	4,610	4,610	59,890	A	5.4	B	15.3
11		12.IS	MD 214	Outer Loop Ramp	4,310	4,535	4,535	54,545	B	13.7	B	14.9
12		16.IS	MD 202	Outer Loop Ramp	3,515	4,420	4,420	54,530	C	21.9	D	44.6
13		11.IS	MD 214	Inner Loop Ramp	3,840	4,395	4,395	67,435	C	25.1	C	20.4
14	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,160	4,380	4,380	20,900	C	29.8	C	24.7
15		45.IS	MD 187	I-270 NB Ramp	2,640	4,380	4,380	53,235	C	26.1	B	15.1
16		46.IS	MD 187	I-270 SB Ramp	2,640	4,370	4,370	53,000	B	16.0	D	50.5
17		15.IS	MD 202	Inner Loop Ramp	3,560	4,355	4,355	32,670	A	4.7	A	5.4
18		17.IS	MD 450	Inner Loop Ramp	2,900	4,215	4,215	52,705	B	19.8	B	19.4
19	Replaced by SPUI	36.IS	MD 187	Capital Beltway	3,230	4,025	4,025	37,355	C	21.9	A	9.5
20		24.IS	US 1	Inner Loop Ramp	3,960	3,925	3,960	53,625	B	14.7	B	16.9

Table 8: Opening Year (2025) Alternative 10 Intersection Level-of-Service Ranking

LOS Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay	Max Peak Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,005	6,310	7,005	91,500	F	104.0	D	39.3	104.0
2	New Intersections	57.IS	US 29	Outer Loop	6,055	6,180	6,180	75,710	E	60.4	C	22.7	60.4
3		46.IS	MD 187	I-270 SB Ramp	2,640	4,370	4,370	53,000	B	16.0	D	50.5	50.5
4		16.IS	MD 202	Outer Loop Ramp	3,515	4,420	4,420	54,530	C	21.9	D	44.6	44.6
5	New Intersections	58.IS	US 29	Direct Access Ramp	7,075	6,610	7,075	83,510	B	11.0	C	30.4	30.4
6	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,160	4,380	4,380	20,900	C	29.8	C	24.7	29.8
7	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,085	5,040	5,085	66,245	B	18.0	C	26.8	26.8
8		45.IS	MD 187	I-270 NB Ramp	2,640	4,380	4,380	53,235	C	26.1	B	15.1	26.1
9		11.IS	MD 214	Inner Loop Ramp	3,840	4,395	4,395	67,435	C	25.1	C	20.4	25.1
10		26.IS	MD 650	Outer Loop Ramp	4,930	5,095	5,095	30,110	C	25.0	B	16.7	25.0
11	Replaced by SPUI	36.IS	MD 187	Capital Beltway	3,230	4,025	4,025	37,355	C	21.9	A	9.5	21.9
12		17.IS	MD 450	Inner Loop Ramp	2,900	4,215	4,215	52,705	B	19.8	B	19.4	19.8
13		24.IS	US 1	Inner Loop Ramp	3,960	3,925	3,960	53,625	B	14.7	B	16.9	16.9
14	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	5,820	5,970	5,970	82,830	B	15.8	B	13.7	15.8
15	New Intersections	61.IS	Montrose Road	Direct Access Ramp	3,665	4,610	4,610	59,890	A	5.4	B	15.3	15.3
16		12.IS	MD 214	Outer Loop Ramp	4,310	4,535	4,535	54,545	B	13.7	B	14.9	14.9
17	New Intersections	56.IS	US 29	Inner Loop	4,360	4,640	4,640	60,410	B	11.6	B	12.0	12.0
18		18.IS	MD 450	Outer Loop Ramp	3,485	4,665	4,665	59,760	B	10.6	B	11.6	11.6
19		15.IS	MD 202	Inner Loop Ramp	3,560	4,355	4,355	32,670	A	4.7	A	5.4	5.4
20		7.IS	MD 5	Auth Road	6,725	5,605	6,725	80,835	A	1.7	A	0.8	1.7

Table 9: Opening Year (2025) Alternative 13B Intersection Volume Ranking

Volume Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
1	New Intersections	58.IS	US 29	Direct Access Ramp	7,040	6,600	7,040	83,550	B	10.5	B	19.3
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,000	6,295	7,000	90,960	F	112.8	D	40.8
3		7.IS	MD 5	Auth Road	6,715	5,605	6,715	81,395	A	2.6	A	0.8
4	New Intersections	57.IS	US 29	Outer Loop	5,945	6,205	6,205	74,000	B	15.7	B	18.7
5	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	5,805	5,970	5,970	82,245	B	15.6	B	13.8
6		26.IS	MD 650	Outer Loop Ramp	4,880	5,105	5,105	30,175	C	26.7	B	16.5
7	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	4,995	5,035	5,035	66,370	C	20.6	C	26.3
8	New Intersections	56.IS	US 29	Inner Loop	4,325	4,820	4,820	59,665	B	11.0	B	15.6
9		18.IS	MD 450	Outer Loop Ramp	3,485	4,665	4,665	59,760	B	10.2	B	11.7
10		45.IS	MD 187	I-270 NB Ramp	2,905	4,555	4,555	55,350	C	24.4	B	15.8
11		46.IS	MD 187	I-270 SB Ramp	2,900	4,545	4,545	55,075	B	16.1	F	106.3
12		12.IS	MD 214	Outer Loop Ramp	4,310	4,535	4,535	54,545	B	15.6	B	12.7
13		16.IS	MD 202	Outer Loop Ramp	3,245	4,420	4,420	54,545	C	21.8	D	44.3
14		11.IS	MD 214	Inner Loop Ramp	3,840	4,395	4,395	67,435	C	25.4	B	19.8
15	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,140	4,385	4,385	20,600	D	36.6	C	25.2
16		15.IS	MD 202	Inner Loop Ramp	3,290	4,355	4,355	31,555	A	4.6	A	5.3
17		17.IS	MD 450	Inner Loop Ramp	2,900	4,215	4,215	52,705	B	19.4	B	19.5
18	Replaced by SPUI	36.IS	MD 187	Capital Beltway	4,115	4,165	4,165	37,980	B	11.2	B	11.8
19	New Intersections	61.IS	Montrose Road	Direct Access Ramp	3,260	4,105	4,105	56,450	B	15.6	B	10.6
20		24.IS	US 1	Inner Loop Ramp	3,955	3,920	3,955	53,550	B	15.0	B	17.3

Table 10: Opening Year (2025) Alternative 13B Intersection Level-of-Service Ranking

LOS Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay	Max Peak Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,000	6,295	7,000	90,960	F	112.8	D	40.8	112.8
2		46.IS	MD 187	I-270 SB Ramp	2,900	4,545	4,545	55,075	B	16.1	F	106.3	106.3
3		16.IS	MD 202	Outer Loop Ramp	3,245	4,420	4,420	54,545	C	21.8	D	44.3	44.3
4	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,140	4,385	4,385	20,600	D	36.6	C	25.2	36.6
5		26.IS	MD 650	Outer Loop Ramp	4,880	5,105	5,105	30,175	C	26.7	B	16.5	26.7
6	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	4,995	5,035	5,035	66,370	C	20.6	C	26.3	26.3
7		11.IS	MD 214	Inner Loop Ramp	3,840	4,395	4,395	67,435	C	25.4	B	19.8	25.4
8		45.IS	MD 187	I-270 NB Ramp	2,905	4,555	4,555	55,350	C	24.4	B	15.8	24.4
9		17.IS	MD 450	Inner Loop Ramp	2,900	4,215	4,215	52,705	B	19.4	B	19.5	19.5
10	New Intersections	58.IS	US 29	Direct Access Ramp	7,040	6,600	7,040	83,550	B	10.5	B	19.3	19.3
11	New Intersections	57.IS	US 29	Outer Loop	5,945	6,205	6,205	74,000	B	15.7	B	18.7	18.7
12		24.IS	US 1	Inner Loop Ramp	3,955	3,920	3,955	53,550	B	15.0	B	17.3	17.3
13	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	5,805	5,970	5,970	82,245	B	15.6	B	13.8	15.6
14		12.IS	MD 214	Outer Loop Ramp	4,310	4,535	4,535	54,545	B	15.6	B	12.7	15.6
15	New Intersections	61.IS	Montrose Road	Direct Access Ramp	3,260	4,105	4,105	56,450	B	15.6	B	10.6	15.6
16	New Intersections	56.IS	US 29	Inner Loop	4,325	4,820	4,820	59,665	B	11.0	B	15.6	15.6
17	Replaced by SPUI	36.IS	MD 187	Capital Beltway	4,115	4,165	4,165	37,980	B	11.2	B	11.8	11.8
18		18.IS	MD 450	Outer Loop Ramp	3,485	4,665	4,665	59,760	B	10.2	B	11.7	11.7
19		15.IS	MD 202	Inner Loop Ramp	3,290	4,355	4,355	31,555	A	4.6	A	5.3	5.3
20		7.IS	MD 5	Auth Road	6,715	5,605	6,715	81,395	A	2.6	A	0.8	2.6

Table 11: Opening Year (2025) Alternative 13C Intersection Volume Ranking

Volume Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,050	6,365	91,215	7,050	F	113.4	D	46.7
2	New Intersections	58.IS	US 29	Direct Access Ramp	6,985	6,520	83,375	6,985	B	10.6	C	22.1
3		7.IS	MD 5	Auth Road	6,735	5,605	80,975	6,735	A	1.9	A	0.8
4	New Intersections	57.IS	US 29	Outer Loop	5,990	6,060	73,720	6,060	E	62.3	B	17.1
5	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	5,895	6,055	83,060	6,055	B	16.2	B	13.7
6		26.IS	MD 650	Outer Loop Ramp	5,010	5,130	30,190	5,130	C	23.3	B	16.6
7	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,060	5,085	66,925	5,085	C	20.9	C	32.3
8		18.IS	MD 450	Outer Loop Ramp	3,490	4,660	59,740	4,660	B	10.9	B	11.2
9	New Intersections	56.IS	US 29	Inner Loop	4,365	4,640	59,275	4,640	B	11.8	B	12.9
10		12.IS	MD 214	Outer Loop Ramp	4,310	4,550	54,205	4,550	B	15.4	B	12.7
11		45.IS	MD 187	I-270 NB Ramp	2,800	4,515	54,615	4,515	C	25.0	B	14.8
12		46.IS	MD 187	I-270 SB Ramp	2,795	4,510	54,375	4,510	B	16.2	F	94.0
13		16.IS	MD 202	Outer Loop Ramp	3,490	4,395	54,200	4,395	C	20.8	D	48.7
14		11.IS	MD 214	Inner Loop Ramp	3,830	4,360	67,285	4,360	C	24.5	C	21.0
15		15.IS	MD 202	Inner Loop Ramp	3,585	4,355	32,830	4,355	A	4.9	A	4.9
16	New Intersections	61.IS	Montrose Road	Direct Access Ramp	3,105	4,275	56,700	4,275	A	3.6	A	9.9
17		17.IS	MD 450	Inner Loop Ramp	2,890	4,200	52,540	4,200	C	20.2	B	19.1
18		5.IS	MD 414	Outer Loop Ramp (2)	3,175	4,025	54,785	4,025	B	18.1	C	29.1
19		24.IS	US 1	Inner Loop Ramp	4,010	3,945	54,170	4,010	B	14.4	B	17.3
20	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,195	3,885	21,625	3,885	D	35.7	C	26.7

Table 12: Opening Year (2025) Alternative 13C Intersection Level-of-Service Ranking

LOS Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay	Max Peak Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,050	6,365	7,050	91,215	F	113.4	D	46.7	113.4
2		46.IS	MD 187	I-270 SB Ramp	2,795	4,510	4,510	54,375	B	16.2	F	94.0	94.0
3	New Intersections	57.IS	US 29	Outer Loop	5,990	6,060	6,060	73,720	E	62.3	B	17.1	62.3
4		16.IS	MD 202	Outer Loop Ramp	3,490	4,395	4,395	54,200	C	20.8	D	48.7	48.7
5	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,195	3,885	3,885	21,625	D	35.7	C	26.7	35.7
6	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,060	5,085	5,085	66,925	C	20.9	C	32.3	32.3
7		5.IS	MD 414	Outer Loop Ramp (2)	3,175	4,025	4,025	54,785	B	18.1	C	29.1	29.1
8		45.IS	MD 187	I-270 NB Ramp	2,800	4,515	4,515	54,615	C	25.0	B	14.8	25.0
9		11.IS	MD 214	Inner Loop Ramp	3,830	4,360	4,360	67,285	C	24.5	C	21.0	24.5
10		26.IS	MD 650	Outer Loop Ramp	5,010	5,130	5,130	30,190	C	23.3	B	16.6	23.3
11	New Intersections	58.IS	US 29	Direct Access Ramp	6,985	6,520	6,985	83,375	B	10.6	C	22.1	22.1
12		17.IS	MD 450	Inner Loop Ramp	2,890	4,200	4,200	52,540	C	20.2	B	19.1	20.2
13		24.IS	US 1	Inner Loop Ramp	4,010	3,945	4,010	54,170	B	14.4	B	17.3	17.3
14	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	5,895	6,055	6,055	83,060	B	16.2	B	13.7	16.2
15		12.IS	MD 214	Outer Loop Ramp	4,310	4,550	4,550	54,205	B	15.4	B	12.7	15.4
16	New Intersections	56.IS	US 29	Inner Loop	4,365	4,640	4,640	59,275	B	11.8	B	12.9	12.9
17		18.IS	MD 450	Outer Loop Ramp	3,490	4,660	4,660	59,740	B	10.9	B	11.2	11.2
18	New Intersections	61.IS	Montrose Road	Direct Access Ramp	3,105	4,275	4,275	56,700	A	3.6	A	9.9	9.9
19		15.IS	MD 202	Inner Loop Ramp	3,585	4,355	4,355	32,830	A	4.9	A	4.9	4.9
20		7.IS	MD 5	Auth Road	6,735	5,605	6,735	80,975	A	1.9	A	0.8	1.9

Table 13: Opening Year (2025) Alternative 5 Interchange Volume Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	33.IC	I-270	MD 189	34,330	39,024	39,024	6.6	2.0	6.6
2	11.IC	Capital Beltway	US 50	26,352	27,207	27,207	7.9	2.3	7.9
3	16.IC	Capital Beltway	I-95	23,057	25,471	25,471	2.8	3.6	3.6
4	25.IC	Capital Beltway	MD 190	25,190	23,533	25,190	31.5	2.8	31.5
5	20.IC	Capital Beltway	MD 97	25,172	24,559	25,172	20.5	34.3	34.3
6	21.IC	Capital Beltway	MD 185	24,606	23,147	24,606	4.2	63.9	63.9
7	17.IC	Capital Beltway	MD 650	20,966	24,562	24,562	63.8	6.9	63.8
8	3.IC	Capital Beltway	MD 5	23,196	24,518	24,518	1.8	1.6	1.8
9	13.IC	Capital Beltway	Baltimore Washington Parkway	23,402	24,015	24,015	3.5	4.0	4.0
10	8.IC	Capital Beltway	MD 214	23,403	23,847	23,847	3.4	2.4	3.4
11	10.IC	Capital Beltway	MD 202	21,773	23,813	23,813	2.9	1.9	2.9
12	34.IC	I-270	MD 28	19,868	23,790	23,790	1.5	7.2	7.2
13	36.IC	I-270	I-370	20,161	23,434	23,434	4.7	3.6	4.7
14	18.IC	Capital Beltway	MD 193	19,516	23,290	23,290	21.2	46.5	46.5
15	14.IC	Capital Beltway	MD 201	21,297	23,237	23,237	3.1	2.5	3.1
16	12.IC	Capital Beltway	MD 450	20,759	22,882	22,882	4.3	4.9	4.9
17	35.IC	I-270	Shady Grove Road	19,194	22,416	22,416	2.8	9.1	9.1
18	22.IC	Capital Beltway	I-270 and MD 355	22,400	20,356	22,400	12.1	120.0	120.0
19	15.IC	Capital Beltway	US 1	20,173	22,242	22,242	6.1	4.1	6.1
20	26.IC	Capital Beltway	Clara Barton Parkway	21,565	19,072	21,565	9.3	4.5	9.3

Table 14: Opening Year (2025) Alternative 5 Interchange Delay Ranking

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	22.IC	Capital Beltway	I-270 and MD 355	22,400	20,356	22,400	12.1	120.0	120.0
2	21.IC	Capital Beltway	MD 185	24,606	23,147	24,606	4.2	63.9	63.9
3	17.IC	Capital Beltway	MD 650	20,966	24,562	24,562	63.8	6.9	63.8
4	18.IC	Capital Beltway	MD 193	19,516	23,290	23,290	21.2	46.5	46.5
5	20.IC	Capital Beltway	MD 97	25,172	24,559	25,172	20.5	34.3	34.3
6	25.IC	Capital Beltway	MD 190	25,190	23,533	25,190	31.5	2.8	31.5
7	26.IC	Capital Beltway	Clara Barton Parkway	21,565	19,072	21,565	9.3	4.5	9.3
8	35.IC	I-270	Shady Grove Road	19,194	22,416	22,416	2.8	9.1	9.1
9	11.IC	Capital Beltway	US 50	26,352	27,207	27,207	7.9	2.3	7.9
10	34.IC	I-270	MD 28	19,868	23,790	23,790	1.5	7.2	7.2
11	33.IC	I-270	MD 189	34,330	39,024	39,024	6.6	2.0	6.6
12	15.IC	Capital Beltway	US 1	20,173	22,242	22,242	6.1	4.1	6.1
13	12.IC	Capital Beltway	MD 450	20,759	22,882	22,882	4.3	4.9	4.9
14	36.IC	I-270	I-370	20,161	23,434	23,434	4.7	3.6	4.7
15	13.IC	Capital Beltway	Baltimore Washington Parkway	23,402	24,015	24,015	3.5	4.0	4.0
16	16.IC	Capital Beltway	I-95	23,057	25,471	25,471	2.8	3.6	3.6
17	8.IC	Capital Beltway	MD 214	23,403	23,847	23,847	3.4	2.4	3.4
18	14.IC	Capital Beltway	MD 201	21,297	23,237	23,237	3.1	2.5	3.1
19	10.IC	Capital Beltway	MD 202	21,773	23,813	23,813	2.9	1.9	2.9
20	3.IC	Capital Beltway	MD 5	23,196	24,518	24,518	1.8	1.6	1.8

Table 15: Opening Year (2025) Alternative 8 Interchange Volume Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	33.IC	I-270	MD 189	38,280	42,856	42,856	1.6	1.9	1.9
2	25.IC	Capital Beltway	MD 190	29,333	25,806	29,333	5.2	2.6	5.2
3	11.IC	Capital Beltway	US 50	28,724	28,588	28,724	3.5	2.1	3.5
4	20.IC	Capital Beltway	MD 97	27,497	28,620	28,620	18.7	29.9	29.9
5	21.IC	Capital Beltway	MD 185	27,138	27,682	27,682	3.4	39.8	39.8
6	16.IC	Capital Beltway	I-95	25,238	27,563	27,563	7.0	5.9	7.0
7	17.IC	Capital Beltway	MD 650	23,805	27,067	27,067	14.2	6.5	14.2
8	18.IC	Capital Beltway	MD 193	22,628	26,313	26,313	6.9	33.1	33.1
9	34.IC	I-270	MD 28	22,592	25,706	25,706	1.8	5.1	5.1
10	8.IC	Capital Beltway	MD 214	25,580	25,220	25,580	2.9	2.2	2.9
11	22.IC	Capital Beltway	I-270 and MD 355	25,458	25,499	25,499	4.4	65.9	65.9
12	10.IC	Capital Beltway	MD 202	24,214	25,392	25,392	2.4	1.6	2.4
13	13.IC	Capital Beltway	Baltimore Washington Parkway	25,294	25,048	25,294	4.1	2.9	4.1
14	3.IC	Capital Beltway	MD 5	24,441	25,183	25,183	2.0	1.7	2.0
15	12.IC	Capital Beltway	MD 450	22,772	24,087	24,087	2.9	4.2	4.2
16	14.IC	Capital Beltway	MD 201	22,434	24,052	24,052	2.6	1.9	2.6
17	24.IC	Capital Beltway	I-270 Spur	23,452	19,568	23,452	28.9	12.7	28.9
18	26.IC	Capital Beltway	Clara Barton Parkway	23,184	20,166	23,184	9.3	2.6	9.3
19	35.IC	I-270	Shady Grove Road	20,642	22,986	22,986	2.2	3.2	3.2
20	15.IC	Capital Beltway	US 1	21,131	22,766	22,766	4.4	4.5	4.5

Table 16: Opening Year (2025) Alternative 8 Interchange Delay Ranking

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	22.IC	Capital Beltway	I-270 and MD 355	25,458	25,499	25,499	4.4	65.9	65.9
2	21.IC	Capital Beltway	MD 185	27,138	27,682	27,682	3.4	39.8	39.8
3	18.IC	Capital Beltway	MD 193	22,628	26,313	26,313	6.9	33.1	33.1
4	20.IC	Capital Beltway	MD 97	27,497	28,620	28,620	18.7	29.9	29.9
5	24.IC	Capital Beltway	I-270 Spur	23,452	19,568	23,452	28.9	12.7	28.9
6	17.IC	Capital Beltway	MD 650	23,805	27,067	27,067	14.2	6.5	14.2
7	26.IC	Capital Beltway	Clara Barton Parkway	23,184	20,166	23,184	9.3	2.6	9.3
8	16.IC	Capital Beltway	I-95	25,238	27,563	27,563	7.0	5.9	7.0
9	25.IC	Capital Beltway	MD 190	29,333	25,806	29,333	5.2	2.6	5.2
10	34.IC	I-270	MD 28	22,592	25,706	25,706	1.8	5.1	5.1
11	15.IC	Capital Beltway	US 1	21,131	22,766	22,766	4.4	4.5	4.5
12	12.IC	Capital Beltway	MD 450	22,772	24,087	24,087	2.9	4.2	4.2
13	13.IC	Capital Beltway	Baltimore Washington Parkway	25,294	25,048	25,294	4.1	2.9	4.1
14	11.IC	Capital Beltway	US 50	28,724	28,588	28,724	3.5	2.1	3.5
15	35.IC	I-270	Shady Grove Road	20,642	22,986	22,986	2.2	3.2	3.2
16	8.IC	Capital Beltway	MD 214	25,580	25,220	25,580	2.9	2.2	2.9
17	14.IC	Capital Beltway	MD 201	22,434	24,052	24,052	2.6	1.9	2.6
18	10.IC	Capital Beltway	MD 202	24,214	25,392	25,392	2.4	1.6	2.4
19	3.IC	Capital Beltway	MD 5	24,441	25,183	25,183	2.0	1.7	2.0
20	33.IC	I-270	MD 189	38,280	42,856	42,856	1.6	1.9	1.9

Table 17: Opening Year (2025) Alternative 9 Interchange Volume Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	33.IC	I-270	MD 189	36,745	42,984	42,984	1.8	1.8	1.8
2	11.IC	Capital Beltway	US 50	29,443	29,258	29,443	3.8	2.3	3.8
3	25.IC	Capital Beltway	MD 190	28,749	27,025	28,749	29.4	3.0	29.4
4	20.IC	Capital Beltway	MD 97	28,293	28,415	28,415	22.1	24.1	24.1
5	21.IC	Capital Beltway	MD 185	27,880	27,142	27,880	3.9	41.2	41.2
6	16.IC	Capital Beltway	I-95	25,949	27,662	27,662	5.3	6.7	6.7
7	17.IC	Capital Beltway	MD 650	24,502	27,085	27,085	13.3	6.6	13.3
8	22.IC	Capital Beltway	I-270 and MD 355	26,379	25,449	26,379	27.0	62.7	62.7
9	18.IC	Capital Beltway	MD 193	22,848	26,254	26,254	12.6	28.0	28.0
10	34.IC	I-270	MD 28	21,856	26,185	26,185	1.5	6.6	6.6
11	8.IC	Capital Beltway	MD 214	26,099	25,824	26,099	3.3	2.4	3.3
12	10.IC	Capital Beltway	MD 202	24,330	25,891	25,891	2.6	3.9	3.9
13	13.IC	Capital Beltway	Baltimore Washington Parkway	25,611	25,504	25,611	3.6	3.2	3.6
14	3.IC	Capital Beltway	MD 5	25,142	25,577	25,577	8.1	1.9	8.1
15	12.IC	Capital Beltway	MD 450	23,069	24,609	24,609	3.6	4.6	4.6
16	14.IC	Capital Beltway	MD 201	22,989	24,503	24,503	3.0	2.1	3.0
17	36.IC	I-270	I-370	20,441	24,301	24,301	4.8	4.6	4.8
18	35.IC	I-270	Shady Grove Road	20,011	23,894	23,894	2.2	3.2	3.2
19	26.IC	Capital Beltway	Clara Barton Parkway	23,661	20,934	23,661	8.9	2.4	8.9
20	15.IC	Capital Beltway	US 1	21,203	23,090	23,090	4.5	4.2	4.5

Table 18: Opening Year (2025) Alternative 9 Interchange Delay Ranking

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	22.IC	Capital Beltway	I-270 and MD 355	26,379	25,449	26,379	27.0	62.7	62.7
2	21.IC	Capital Beltway	MD 185	27,880	27,142	27,880	3.9	41.2	41.2
3	25.IC	Capital Beltway	MD 190	28,749	27,025	28,749	29.4	3.0	29.4
4	18.IC	Capital Beltway	MD 193	22,848	26,254	26,254	12.6	28.0	28.0
5	20.IC	Capital Beltway	MD 97	28,293	28,415	28,415	22.1	24.1	24.1
6	17.IC	Capital Beltway	MD 650	24,502	27,085	27,085	13.3	6.6	13.3
7	26.IC	Capital Beltway	Clara Barton Parkway	23,661	20,934	23,661	8.9	2.4	8.9
8	3.IC	Capital Beltway	MD 5	25,142	25,577	25,577	8.1	1.9	8.1
9	16.IC	Capital Beltway	I-95	25,949	27,662	27,662	5.3	6.7	6.7
10	34.IC	I-270	MD 28	21,856	26,185	26,185	1.5	6.6	6.6
11	36.IC	I-270	I-370	20,441	24,301	24,301	4.8	4.6	4.8
12	12.IC	Capital Beltway	MD 450	23,069	24,609	24,609	3.6	4.6	4.6
13	15.IC	Capital Beltway	US 1	21,203	23,090	23,090	4.5	4.2	4.5
14	10.IC	Capital Beltway	MD 202	24,330	25,891	25,891	2.6	3.9	3.9
15	11.IC	Capital Beltway	US 50	29,443	29,258	29,443	3.8	2.3	3.8
16	13.IC	Capital Beltway	Baltimore Washington Parkway	25,611	25,504	25,611	3.6	3.2	3.6
17	8.IC	Capital Beltway	MD 214	26,099	25,824	26,099	3.3	2.4	3.3
18	35.IC	I-270	Shady Grove Road	20,011	23,894	23,894	2.2	3.2	3.2
19	14.IC	Capital Beltway	MD 201	22,989	24,503	24,503	3.0	2.1	3.0
20	33.IC	I-270	MD 189	36,745	42,984	42,984	1.8	1.8	1.8

Table 19: Opening Year (2025) Alternative 10 Interchange Volume Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	33.IC	I-270	MD 189	39,264	46,360	46,360	3.6	2.3	3.6
2	25.IC	Capital Beltway	MD 190	28,729	27,624	28,729	27.5	2.9	27.5
3	11.IC	Capital Beltway	US 50	28,381	28,639	28,639	3.1	2.2	3.1
4	20.IC	Capital Beltway	MD 97	27,765	28,024	28,024	21.7	23.6	23.6
5	34.IC	I-270	MD 28	22,837	27,636	27,636	1.6	7.1	7.1
6	16.IC	Capital Beltway	I-95	25,303	27,381	27,381	3.9	8.5	8.5
7	21.IC	Capital Beltway	MD 185	27,202	26,942	27,202	3.2	42.6	42.6
8	17.IC	Capital Beltway	MD 650	23,924	26,826	26,826	8.7	5.7	8.7
9	18.IC	Capital Beltway	MD 193	22,695	26,022	26,022	8.2	31.2	31.2
10	22.IC	Capital Beltway	I-270 and MD 355	25,774	24,915	25,774	2.4	27.0	27.0
11	10.IC	Capital Beltway	MD 202	23,645	25,441	25,441	2.4	2.2	2.4
12	8.IC	Capital Beltway	MD 214	25,243	25,288	25,288	3.0	2.4	3.0
13	3.IC	Capital Beltway	MD 5	24,142	25,116	25,116	1.9	1.9	1.9
14	35.IC	I-270	Shady Grove Road	21,070	25,114	25,114	2.0	3.8	3.8
15	13.IC	Capital Beltway	Baltimore Washington Parkway	24,838	25,012	25,012	3.4	3.1	3.4
16	12.IC	Capital Beltway	MD 450	22,280	24,171	24,171	3.1	4.6	4.6
17	36.IC	I-270	I-370	21,269	24,162	24,162	6.0	17.0	17.0
18	14.IC	Capital Beltway	MD 201	22,369	24,023	24,023	2.9	2.1	2.9
19	26.IC	Capital Beltway	Clara Barton Parkway	23,433	20,905	23,433	9.1	2.0	9.1
20	24.IC	Capital Beltway	I-270 Spur	22,849	21,094	22,849	42.6	1.9	42.6

Table 20: Opening Year (2025) Alternative 10 Interchange Delay Ranking

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	24.IC	Capital Beltway	I-270 Spur	22,849	21,094	22,849	42.6	1.9	42.6
2	21.IC	Capital Beltway	MD 185	27,202	26,942	27,202	3.2	42.6	42.6
3	18.IC	Capital Beltway	MD 193	22,695	26,022	26,022	8.2	31.2	31.2
4	25.IC	Capital Beltway	MD 190	28,729	27,624	28,729	27.5	2.9	27.5
5	22.IC	Capital Beltway	I-270 and MD 355	25,774	24,915	25,774	2.4	27.0	27.0
6	20.IC	Capital Beltway	MD 97	27,765	28,024	28,024	21.7	23.6	23.6
7	36.IC	I-270	I-370	21,269	24,162	24,162	6.0	17.0	17.0
8	26.IC	Capital Beltway	Clara Barton Parkway	23,433	20,905	23,433	9.1	2.0	9.1
9	17.IC	Capital Beltway	MD 650	23,924	26,826	26,826	8.7	5.7	8.7
10	16.IC	Capital Beltway	I-95	25,303	27,381	27,381	3.9	8.5	8.5
11	34.IC	I-270	MD 28	22,837	27,636	27,636	1.6	7.1	7.1
12	12.IC	Capital Beltway	MD 450	22,280	24,171	24,171	3.1	4.6	4.6
13	35.IC	I-270	Shady Grove Road	21,070	25,114	25,114	2.0	3.8	3.8
14	33.IC	I-270	MD 189	39,264	46,360	46,360	3.6	2.3	3.6
15	13.IC	Capital Beltway	Baltimore Washington Parkway	24,838	25,012	25,012	3.4	3.1	3.4
16	11.IC	Capital Beltway	US 50	28,381	28,639	28,639	3.1	2.2	3.1
17	8.IC	Capital Beltway	MD 214	25,243	25,288	25,288	3.0	2.4	3.0
18	14.IC	Capital Beltway	MD 201	22,369	24,023	24,023	2.9	2.1	2.9
19	10.IC	Capital Beltway	MD 202	23,645	25,441	25,441	2.4	2.2	2.4
20	3.IC	Capital Beltway	MD 5	24,142	25,116	25,116	1.9	1.9	1.9

Table 21: Opening Year (2025) Alternative 13B Interchange Volume Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	33.IC	I-270	MD 189	35,561	41,028	41,028	2.0	2.0	2.0
2	11.IC	Capital Beltway	US 50	28,132	28,769	28,769	2.9	2.2	2.9
3	20.IC	Capital Beltway	MD 97	27,795	28,197	28,197	16.6	19.7	19.7
4	25.IC	Capital Beltway	MD 190	27,918	26,555	27,918	28.5	2.7	28.5
5	21.IC	Capital Beltway	MD 185	27,387	27,152	27,387	2.9	36.6	36.6
6	16.IC	Capital Beltway	I-95	25,100	27,197	27,197	4.7	5.7	5.7
7	17.IC	Capital Beltway	MD 650	23,479	26,721	26,721	12.5	5.3	12.5
8	22.IC	Capital Beltway	I-270 and MD 355	26,335	25,382	26,335	3.0	32.7	32.7
9	18.IC	Capital Beltway	MD 193	22,385	25,926	25,926	9.9	25.8	25.8
10	10.IC	Capital Beltway	MD 202	23,362	25,541	25,541	2.1	1.9	2.1
11	8.IC	Capital Beltway	MD 214	25,008	25,380	25,380	2.8	2.6	2.8
12	3.IC	Capital Beltway	MD 5	24,098	25,198	25,198	1.9	1.7	1.9
13	13.IC	Capital Beltway	Baltimore Washington Parkway	24,537	25,056	25,056	3.6	3.3	3.6
14	34.IC	I-270	MD 28	21,155	24,703	24,703	1.7	7.1	7.1
15	12.IC	Capital Beltway	MD 450	21,966	24,237	24,237	2.8	4.6	4.6
16	14.IC	Capital Beltway	MD 201	22,071	24,105	24,105	2.6	2.1	2.6
17	36.IC	I-270	I-370	20,557	23,614	23,614	4.8	4.2	4.8
18	26.IC	Capital Beltway	Clara Barton Parkway	23,046	20,685	23,046	11.6	2.9	11.6
19	35.IC	I-270	Shady Grove Road	19,753	22,931	22,931	2.1	3.6	3.6
20	15.IC	Capital Beltway	US 1	20,466	22,831	22,831	4.0	4.3	4.3

Table 22: Opening Year (2025) Alternative 13B Interchange Delay Ranking

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	21.IC	Capital Beltway	MD 185	27,387	27,152	27,387	2.9	36.6	36.6
2	22.IC	Capital Beltway	I-270 and MD 355	26,335	25,382	26,335	3.0	32.7	32.7
3	25.IC	Capital Beltway	MD 190	27,918	26,555	27,918	28.5	2.7	28.5
4	18.IC	Capital Beltway	MD 193	22,385	25,926	25,926	9.9	25.8	25.8
5	20.IC	Capital Beltway	MD 97	27,795	28,197	28,197	16.6	19.7	19.7
6	17.IC	Capital Beltway	MD 650	23,479	26,721	26,721	12.5	5.3	12.5
7	26.IC	Capital Beltway	Clara Barton Parkway	23,046	20,685	23,046	11.6	2.9	11.6
8	34.IC	I-270	MD 28	21,155	24,703	24,703	1.7	7.1	7.1
9	16.IC	Capital Beltway	I-95	25,100	27,197	27,197	4.7	5.7	5.7
10	36.IC	I-270	I-370	20,557	23,614	23,614	4.8	4.2	4.8
11	12.IC	Capital Beltway	MD 450	21,966	24,237	24,237	2.8	4.6	4.6
12	15.IC	Capital Beltway	US 1	20,466	22,831	22,831	4.0	4.3	4.3
13	35.IC	I-270	Shady Grove Road	19,753	22,931	22,931	2.1	3.6	3.6
14	13.IC	Capital Beltway	Baltimore Washington Parkway	24,537	25,056	25,056	3.6	3.3	3.6
15	11.IC	Capital Beltway	US 50	28,132	28,769	28,769	2.9	2.2	2.9
16	8.IC	Capital Beltway	MD 214	25,008	25,380	25,380	2.8	2.6	2.8
17	14.IC	Capital Beltway	MD 201	22,071	24,105	24,105	2.6	2.1	2.6
18	10.IC	Capital Beltway	MD 202	23,362	25,541	25,541	2.1	1.9	2.1
19	33.IC	I-270	MD 189	35,561	41,028	41,028	2.0	2.0	2.0
20	3.IC	Capital Beltway	MD 5	24,098	25,198	25,198	1.9	1.7	1.9

Table 23: Opening Year (2025) Alternative 13C Interchange Volume Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	33.IC	I-270	MD 189	38,060	43,777	43,777	2.2	2.4	2.4
2	25.IC	Capital Beltway	MD 190	29,012	26,886	29,012	26.7	2.6	26.7
3	11.IC	Capital Beltway	US 50	28,319	28,867	28,867	4.1	2.3	4.1
4	20.IC	Capital Beltway	MD 97	27,756	28,519	28,519	21.0	21.9	21.9
5	21.IC	Capital Beltway	MD 185	27,175	27,229	27,229	3.0	37.2	37.2
6	16.IC	Capital Beltway	I-95	24,740	27,176	27,176	6.8	7.2	7.2
7	17.IC	Capital Beltway	MD 650	23,949	27,033	27,033	13.5	5.6	13.5
8	18.IC	Capital Beltway	MD 193	22,569	26,346	26,346	10.0	23.3	23.3
9	34.IC	I-270	MD 28	22,261	26,289	26,289	1.7	5.5	5.5
10	10.IC	Capital Beltway	MD 202	23,530	25,526	25,526	2.5	2.8	2.8
11	22.IC	Capital Beltway	I-270 and MD 355	25,397	25,483	25,483	13.0	7.4	13.0
12	8.IC	Capital Beltway	MD 214	25,167	25,421	25,421	3.0	2.7	3.0
13	36.IC	I-270	I-370	20,893	25,389	25,389	4.9	49.3	49.3
14	3.IC	Capital Beltway	MD 5	23,971	25,325	25,325	1.8	1.9	1.9
15	13.IC	Capital Beltway	Baltimore Washington Parkway	24,794	25,262	25,262	3.6	3.5	3.6
16	12.IC	Capital Beltway	MD 450	22,303	24,406	24,406	3.2	4.3	4.3
17	14.IC	Capital Beltway	MD 201	22,158	24,234	24,234	2.9	2.2	2.9
18	35.IC	I-270	Shady Grove Road	20,938	23,939	23,939	2.0	9.4	9.4
19	26.IC	Capital Beltway	Clara Barton Parkway	23,651	20,490	23,651	7.7	2.2	7.7
20	24.IC	Capital Beltway	I-270 Spur	23,429	21,104	23,429	54.4	3.0	54.4

Table 24: Opening Year (2025) Alternative 13C Interchange Delay Ranking

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	24.IC	Capital Beltway	I-270 Spur	23,429	21,104	23,429	54.4	3.0	54.4
2	36.IC	I-270	I-370	20,893	25,389	25,389	4.9	49.3	49.3
3	21.IC	Capital Beltway	MD 185	27,175	27,229	27,229	3.0	37.2	37.2
4	25.IC	Capital Beltway	MD 190	29,012	26,886	29,012	26.7	2.6	26.7
5	18.IC	Capital Beltway	MD 193	22,569	26,346	26,346	10.0	23.3	23.3
6	20.IC	Capital Beltway	MD 97	27,756	28,519	28,519	21.0	21.9	21.9
7	17.IC	Capital Beltway	MD 650	23,949	27,033	27,033	13.5	5.6	13.5
8	22.IC	Capital Beltway	I-270 and MD 355	25,397	25,483	25,483	13.0	7.4	13.0
9	35.IC	I-270	Shady Grove Road	20,938	23,939	23,939	2.0	9.4	9.4
10	26.IC	Capital Beltway	Clara Barton Parkway	23,651	20,490	23,651	7.7	2.2	7.7
11	16.IC	Capital Beltway	I-95	24,740	27,176	27,176	6.8	7.2	7.2
12	34.IC	I-270	MD 28	22,261	26,289	26,289	1.7	5.5	5.5
13	12.IC	Capital Beltway	MD 450	22,303	24,406	24,406	3.2	4.3	4.3
14	11.IC	Capital Beltway	US 50	28,319	28,867	28,867	4.1	2.3	4.1
15	13.IC	Capital Beltway	Baltimore Washington Parkway	24,794	25,262	25,262	3.6	3.5	3.6
16	8.IC	Capital Beltway	MD 214	25,167	25,421	25,421	3.0	2.7	3.0
17	14.IC	Capital Beltway	MD 201	22,158	24,234	24,234	2.9	2.2	2.9
18	10.IC	Capital Beltway	MD 202	23,530	25,526	25,526	2.5	2.8	2.8
19	33.IC	I-270	MD 189	38,060	43,777	43,777	2.2	2.4	2.4
20	3.IC	Capital Beltway	MD 5	23,971	25,325	25,325	1.8	1.9	1.9

Table 25: Design Year (2040) Alternative 5 Intersection Volume Ranking

Volume Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,625	6,780	7,625	98,000	F	113.1	D	46.3
2		7.IS	MD 5	Auth Road	7,135	6,015	7,135	85,900	C	24.4	A	1.0
3	New Intersections	58.IS	US 29	Direct Access Ramp	6,645	6,250	6,645	83,875	A	6.1	C	28.0
4	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	6,255	6,370	6,370	88,225	B	16.8	B	15.0
5	New Intersections	57.IS	US 29	Outer Loop	5,455	5,750	5,750	73,525	B	12.6	B	19.3
6		26.IS	MD 650	Outer Loop Ramp	5,270	5,460	5,460	31,525	C	25.2	B	16.5
7	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,380	5,320	5,380	69,250	D	42.9	D	43.9
8	New Intersections	56.IS	US 29	Inner Loop	4,655	5,150	5,150	65,475	B	13.0	D	52.3
9		18.IS	MD 450	Outer Loop Ramp	3,710	4,985	4,985	63,625	B	11.3	B	11.6
10		12.IS	MD 214	Outer Loop Ramp	4,680	4,945	4,945	58,175	B	15.5	B	15.6
11		45.IS	MD 187	I-270 NB Ramp	3,000	4,780	4,780	58,125	C	27.2	B	16.5
12		46.IS	MD 187	I-270 SB Ramp	2,995	4,775	4,775	57,875	B	16.4	F	140.7
13		16.IS	MD 202	Outer Loop Ramp	3,710	4,735	4,735	58,175	C	25.6	C	29.0
14		11.IS	MD 214	Inner Loop Ramp	4,110	4,725	4,725	71,900	C	26.2	C	20.7
15		17.IS	MD 450	Inner Loop Ramp	3,125	4,550	4,550	56,275	B	18.8	B	18.7
16		15.IS	MD 202	Inner Loop Ramp	3,670	4,500	4,500	34,325	A	4.9	A	5.5
17	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,305	4,265	4,265	19,450	C	34.2	C	22.1
18		24.IS	US 1	Inner Loop Ramp	4,205	4,255	4,255	57,550	B	13.6	B	16.9
19		1.IS	MD 210	Inner Loop Ramp	4,220	3,390	4,220	60,400	C	32.6	C	23.1
20	Replaced by SPUI	36.IS	MD 187	Capital Beltway	3,685	4,215	4,215	39,800	B	14.0	B	14.7

Table 26: Design Year (2040) Alternative 5 Intersection Level-of-Service Ranking

LOS Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)	Max Peak Hour Delay
1		46.IS	MD 187	I-270 SB Ramp	2,995	4,775	4,775	57,875	B	16.4	F	140.7	140.7
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,625	6,780	7,625	98,000	F	113.1	D	46.3	113.1
3	New Intersections	56.IS	US 29	Inner Loop	4,655	5,150	5,150	65,475	B	13.0	D	52.3	52.3
4	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,380	5,320	5,380	69,250	D	42.9	D	43.9	43.9
5	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,305	4,265	4,265	19,450	C	34.2	C	22.1	34.2
6		1.IS	MD 210	Inner Loop Ramp	4,220	3,390	4,220	60,400	C	32.6	C	23.1	32.6
7		16.IS	MD 202	Outer Loop Ramp	3,710	4,735	4,735	58,175	C	25.6	C	29.0	29.0
8	New Intersections	58.IS	US 29	Direct Access Ramp	6,645	6,250	6,645	83,875	A	6.1	C	28.0	28.0
9		45.IS	MD 187	I-270 NB Ramp	3,000	4,780	4,780	58,125	C	27.2	B	16.5	27.2
10		11.IS	MD 214	Inner Loop Ramp	4,110	4,725	4,725	71,900	C	26.2	C	20.7	26.2
11		26.IS	MD 650	Outer Loop Ramp	5,270	5,460	5,460	31,525	C	25.2	B	16.5	25.2
12		7.IS	MD 5	Auth Road	7,135	6,015	7,135	85,900	C	24.4	A	1.0	24.4
13	New Intersections	57.IS	US 29	Outer Loop	5,455	5,750	5,750	73,525	B	12.6	B	19.3	19.3
14		17.IS	MD 450	Inner Loop Ramp	3,125	4,550	4,550	56,275	B	18.8	B	18.7	18.8
15		24.IS	US 1	Inner Loop Ramp	4,205	4,255	4,255	57,550	B	13.6	B	16.9	16.9
16	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	6,255	6,370	6,370	88,225	B	16.8	B	15.0	16.8
17		12.IS	MD 214	Outer Loop Ramp	4,680	4,945	4,945	58,175	B	15.5	B	15.6	15.6
18	Replaced by SPUI	36.IS	MD 187	Capital Beltway	3,685	4,215	4,215	39,800	B	14.0	B	14.7	14.7
19		18.IS	MD 450	Outer Loop Ramp	3,710	4,985	4,985	63,625	B	11.3	B	11.6	11.6
20		15.IS	MD 202	Inner Loop Ramp	3,670	4,500	4,500	34,325	A	4.9	A	5.5	5.5

Table 27: Design Year (2040) Alternative 8 Intersection Volume Ranking

Volume Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,570	6,735	7,570	97,375	F	112.7	E	61.4
2	New Intersections	58.IS	US 29	Direct Access Ramp	7,430	7,010	7,430	89,500	B	11.8	D	36.4
3		7.IS	MD 5	Auth Road	7,125	5,955	7,125	85,800	A	1.9	A	1.0
4	New Intersections	57.IS	US 29	Outer Loop	6,495	6,495	6,495	79,975	F	93.6	D	41.5
5	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	6,270	6,430	6,430	88,475	C	20.1	B	14.4
6	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,390	5,450	5,450	70,400	D	36.1	C	28.5
7		26.IS	MD 650	Outer Loop Ramp	5,295	5,425	5,425	31,575	C	25.7	B	16.3
8		18.IS	MD 450	Outer Loop Ramp	3,720	4,965	4,965	63,550	B	11.3	B	11.6
9	New Intersections	56.IS	US 29	Inner Loop	4,815	4,940	4,940	64,550	B	11.1	C	30.0
10		12.IS	MD 214	Outer Loop Ramp	4,610	4,840	4,840	57,650	B	14.2	B	15.5
11		45.IS	MD 187	I-270 NB Ramp	3,060	4,795	4,795	58,050	C	28.7	B	12.5
12		46.IS	MD 187	I-270 SB Ramp	3,055	4,790	4,790	57,800	B	15.8	F	140.5
13		16.IS	MD 202	Outer Loop Ramp	3,730	4,695	4,695	57,650	E	72.5	D	46.5
14		11.IS	MD 214	Inner Loop Ramp	4,080	4,660	4,660	71,775	C	25.9	C	20.7
15		15.IS	MD 202	Inner Loop Ramp	3,810	4,655	4,655	34,900	A	4.1	A	5.1
16	New Intersections	61.IS	Montrose Road	Direct Access Ramp	3,810	4,585	4,585	62,650	A	4.9	B	17.0
17		17.IS	MD 450	Inner Loop Ramp	3,075	4,480	4,480	55,950	B	19.7	B	18.7
18		24.IS	US 1	Inner Loop Ramp	4,295	4,235	4,295	57,800	B	14.1	B	16.4
19		5.IS	MD 414	Outer Loop Ramp (2)	3,400	4,255	4,255	57,825	C	20.4	C	29.0
20		1.IS	MD 210	Inner Loop Ramp	4,235	3,485	4,235	60,275	C	33.7	C	21.2

Table 28: Design Year (2040) Alternative 8 Intersection Level-of-Service Ranking

LOS Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)	Max Peak Hour Delay
1		46.IS	MD 187	I-270 SB Ramp	3,055	4,790	4,790	57,800	B	15.8	F	140.5	140.5
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,570	6,735	7,570	97,375	F	112.7	E	61.4	112.7
3	New Intersections	57.IS	US 29	Outer Loop	6,495	6,495	6,495	79,975	F	93.6	D	41.5	93.6
4		16.IS	MD 202	Outer Loop Ramp	3,730	4,695	4,695	57,650	E	72.5	D	46.5	72.5
5	New Intersections	58.IS	US 29	Direct Access Ramp	7,430	7,010	7,430	89,500	B	11.8	D	36.4	36.4
6	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,390	5,450	5,450	70,400	D	36.1	C	28.5	36.1
7		1.IS	MD 210	Inner Loop Ramp	4,235	3,485	4,235	60,275	C	33.7	C	21.2	33.7
8	New Intersections	56.IS	US 29	Inner Loop	4,815	4,940	4,940	64,550	B	11.1	C	30.0	30.0
9		5.IS	MD 414	Outer Loop Ramp (2)	3,400	4,255	4,255	57,825	C	20.4	C	29.0	29.0
10		45.IS	MD 187	I-270 NB Ramp	3,060	4,795	4,795	58,050	C	28.7	B	12.5	28.7
11		11.IS	MD 214	Inner Loop Ramp	4,080	4,660	4,660	71,775	C	25.9	C	20.7	25.9
12		26.IS	MD 650	Outer Loop Ramp	5,295	5,425	5,425	31,575	C	25.7	B	16.3	25.7
13	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	6,270	6,430	6,430	88,475	C	20.1	B	14.4	20.1
14		17.IS	MD 450	Inner Loop Ramp	3,075	4,480	4,480	55,950	B	19.7	B	18.7	19.7
15	New Intersections	61.IS	Montrose Road	Direct Access Ramp	3,810	4,585	4,585	62,650	A	4.9	B	17.0	17.0
16		24.IS	US 1	Inner Loop Ramp	4,295	4,235	4,295	57,800	B	14.1	B	16.4	16.4
17		12.IS	MD 214	Outer Loop Ramp	4,610	4,840	4,840	57,650	B	14.2	B	15.5	15.5
18		18.IS	MD 450	Outer Loop Ramp	3,720	4,965	4,965	63,550	B	11.3	B	11.6	11.6
19		15.IS	MD 202	Inner Loop Ramp	3,810	4,655	4,655	34,900	A	4.1	A	5.1	5.1
20		7.IS	MD 5	Auth Road	7,125	5,955	7,125	85,800	A	1.9	A	1.0	1.9

Table 29: Design Year (2040) Alternative 9 Intersection Volume Ranking

Volume Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS (s)	Peak PM Hour Delay
1	New Intersections	58.IS	US 29	Direct Access Ramp	7,520	7,020	7,520	88,725	A	9.3	C	34.6
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,455	6,715	7,455	97,375	F	112.4	E	55.1
3		7.IS	MD 5	Auth Road	7,150	5,960	7,150	85,950	C	20.1	A	0.9
4	New Intersections	57.IS	US 29	Outer Loop	6,440	6,565	6,565	80,475	E	74.1	C	28.2
5	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	6,190	6,350	6,350	88,100	B	17.8	B	14.0
6		26.IS	MD 650	Outer Loop Ramp	5,235	5,415	5,415	31,150	C	25.1	B	16.3
7	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,405	5,370	5,405	70,500	C	23.8	C	27.3
8	New Intersections	61.IS	Montrose Road	Direct Access Ramp-I-270	4,245	4,965	4,965	65,525	B	14.3	C	30.6
9		18.IS	MD 450	Outer Loop Ramp	3,705	4,965	4,965	63,575	B	11.0	B	11.7
10	New Intersections	56.IS	US 29	Inner Loop	4,635	4,930	4,930	64,200	B	12.1	B	18.2
11		12.IS	MD 214	Outer Loop Ramp	4,580	4,825	4,825	58,000	B	14.1	B	13.2
12	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,430	4,820	4,820	21,325	D	35.2	C	34.9
13		45.IS	MD 187	I-270 NB Ramp	3,020	4,765	4,765	57,475	C	25.2	B	16.3
14		46.IS	MD 187	I-270 SB Ramp	3,015	4,760	4,760	57,225	B	15.6	F	138.2
15		16.IS	MD 202	Outer Loop Ramp	3,740	4,700	4,700	58,000	B	19.1	D	46.6
16		11.IS	MD 214	Inner Loop Ramp	4,090	4,675	4,675	71,775	C	27.2	C	20.7
17		15.IS	MD 202	Inner Loop Ramp	3,790	4,635	4,635	34,775	A	4.9	A	5.0
18		17.IS	MD 450	Inner Loop Ramp	3,085	4,485	4,485	56,075	B	19.3	B	19.1
19	Replaced by SPUI	36.IS	MD 187	Capital Beltway	3,850	4,360	4,360	41,125	B	10.8	B	12.0
20		24.IS	US 1	Inner Loop Ramp	4,205	4,180	4,205	57,025	B	14.2	B	16.5

Table 30: Design Year (2040) Alternative 9 Intersection Level-of-Service Ranking

LOS Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)	Max Peak Hour Delay
1		46.IS	MD 187	I-270 SB Ramp	3,015	4,760	4,760	57,225	B	15.6	F	138.2	138.2
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,455	6,715	7,455	97,375	F	112.4	E	55.1	112.4
3	New Intersections	57.IS	US 29	Outer Loop	6,440	6,565	6,565	80,475	E	74.1	C	28.2	74.1
4		16.IS	MD 202	Outer Loop Ramp	3,740	4,700	4,700	58,000	B	19.1	D	46.6	46.6
5	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,430	4,820	4,820	21,325	D	35.2	C	34.9	35.2
6	New Intersections	58.IS	US 29	Direct Access Ramp	7,520	7,020	7,520	88,725	A	9.3	C	34.6	34.6
7	New Intersections	61.IS	Montrose Road	Direct Access Ramp-I-270	4,245	4,965	4,965	65,525	B	14.3	C	30.6	30.6
8	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,405	5,370	5,405	70,500	C	23.8	C	27.3	27.3
9		11.IS	MD 214	Inner Loop Ramp	4,090	4,675	4,675	71,775	C	27.2	C	20.7	27.2
10		45.IS	MD 187	I-270 NB Ramp	3,020	4,765	4,765	57,475	C	25.2	B	16.3	25.2
11		26.IS	MD 650	Outer Loop Ramp	5,235	5,415	5,415	31,150	C	25.1	B	16.3	25.1
12		7.IS	MD 5	Auth Road	7,150	5,960	7,150	85,950	C	20.1	A	0.9	20.1
13		17.IS	MD 450	Inner Loop Ramp	3,085	4,485	4,485	56,075	B	19.3	B	19.1	19.3
14	New Intersections	56.IS	US 29	Inner Loop	4,635	4,930	4,930	64,200	B	12.1	B	18.2	18.2
15	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	6,190	6,350	6,350	88,100	B	17.8	B	14.0	17.8
16		24.IS	US 1	Inner Loop Ramp	4,205	4,180	4,205	57,025	B	14.2	B	16.5	16.5
17		12.IS	MD 214	Outer Loop Ramp	4,580	4,825	4,825	58,000	B	14.1	B	13.2	14.1
18	Replaced by SPUI	36.IS	MD 187	Capital Beltway	3,850	4,360	4,360	41,125	B	10.8	B	12.0	12.0
19		18.IS	MD 450	Outer Loop Ramp	3,705	4,965	4,965	63,575	B	11.0	B	11.7	11.7
20		15.IS	MD 202	Inner Loop Ramp	3,790	4,635	4,635	34,775	A	4.9	A	5.0	5.0

Table 31: Design Year (2040) Alternative 10 Intersection Volume Ranking

Volume Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)
1	New Intersections	58.IS	US 29	Direct Access Ramp	7,520	7,020	7,520	88,725	B	12.2	D	36.8
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,455	6,715	7,455	97,375	F	112.9	E	59.4
3		7.IS	MD 5	Auth Road	7,150	5,960	7,150	85,950	B	19.3	A	0.9
4	New Intersections	57.IS	US 29	Outer Loop	6,440	6,565	6,565	80,475	E	70.2	C	28.3
5	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	6,190	6,350	6,350	88,100	D	49.9	B	14.1
6		26.IS	MD 650	Outer Loop Ramp	5,235	5,415	5,415	31,150	C	25.1	B	16.3
7	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,405	5,370	5,405	70,500	B	19.5	C	28.7
8		18.IS	MD 450	Outer Loop Ramp	3,705	4,965	4,965	63,575	B	11.1	B	11.6
9	New Intersections	56.IS	US 29	Inner Loop	4,635	4,930	4,930	64,200	B	10.2	B	15.2
10	New Intersections	61.IS	Montrose Road	Direct Access Ramp-I-270	3,900	4,905	4,905	63,725	A	5.9	D	44.5
11		12.IS	MD 214	Outer Loop Ramp	4,580	4,825	4,825	58,000	B	14.8	B	13.1
12		16.IS	MD 202	Outer Loop Ramp	3,740	4,700	4,700	58,000	B	19.5	D	45.7
13		11.IS	MD 214	Inner Loop Ramp	4,090	4,675	4,675	71,775	C	26.4	C	20.9
14	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,360	4,665	4,665	20,900	C	35.0	C	26.6
15		45.IS	MD 187	I-270 NB Ramp	2,810	4,660	4,660	56,650	E	67.0	B	15.6
16		46.IS	MD 187	I-270 SB Ramp	2,805	4,655	4,655	56,400	C	30.6	F	125.0
17		15.IS	MD 202	Inner Loop Ramp	3,790	4,635	4,635	34,775	A	4.8	A	5.5
18		17.IS	MD 450	Inner Loop Ramp	3,085	4,485	4,485	56,075	B	19.3	B	18.9
19	Replaced by SPUI	36.IS	MD 187	Capital Beltway	3,435	4,280	4,280	39,725	D	49.1	A	9.7
20		24.IS	US 1	Inner Loop Ramp	4,205	4,180	4,205	57,025	B	14.2	B	16.4

Table 32: Design Year (2040) Alternative 10 Intersection Level-of-Service Ranking

LOS Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)	Max Peak Hour Delay
1		46.IS	MD 187	I-270 SB Ramp	2,805	4,655	4,655	56,400	C	30.6	F	125.0	125.0
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,455	6,715	7,455	97,375	F	112.9	E	59.4	112.9
3	New Intersections	57.IS	US 29	Outer Loop	6,440	6,565	6,565	80,475	E	70.2	C	28.3	70.2
4		45.IS	MD 187	I-270 NB Ramp	2,810	4,660	4,660	56,650	E	67.0	B	15.6	67.0
5	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	6,190	6,350	6,350	88,100	D	49.9	B	14.1	49.9
6	Replaced by SPUI	36.IS	MD 187	Capital Beltway	3,435	4,280	4,280	39,725	D	49.1	A	9.7	49.1
7		16.IS	MD 202	Outer Loop Ramp	3,740	4,700	4,700	58,000	B	19.5	D	45.7	45.7
8	New Intersections	61.IS	Montrose Road	Direct Access Ramp-I-270	3,900	4,905	4,905	63,725	A	5.9	D	44.5	44.5
9	New Intersections	58.IS	US 29	Direct Access Ramp	7,520	7,020	7,520	88,725	B	12.2	D	36.8	36.8
10	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,360	4,665	4,665	20,900	C	35.0	C	26.6	35.0
11	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,405	5,370	5,405	70,500	B	19.5	C	28.7	28.7
12		11.IS	MD 214	Inner Loop Ramp	4,090	4,675	4,675	71,775	C	26.4	C	20.9	26.4
13		26.IS	MD 650	Outer Loop Ramp	5,235	5,415	5,415	31,150	C	25.1	B	16.3	25.1
14		7.IS	MD 5	Auth Road	7,150	5,960	7,150	85,950	B	19.3	A	0.9	19.3
15		17.IS	MD 450	Inner Loop Ramp	3,085	4,485	4,485	56,075	B	19.3	B	18.9	19.3
16		24.IS	US 1	Inner Loop Ramp	4,205	4,180	4,205	57,025	B	14.2	B	16.4	16.4
17	New Intersections	56.IS	US 29	Inner Loop	4,635	4,930	4,930	64,200	B	10.2	B	15.2	15.2
18		12.IS	MD 214	Outer Loop Ramp	4,580	4,825	4,825	58,000	B	14.8	B	13.1	14.8
19		18.IS	MD 450	Outer Loop Ramp	3,705	4,965	4,965	63,575	B	11.1	B	11.6	11.6
20		15.IS	MD 202	Inner Loop Ramp	3,790	4,635	4,635	34,775	A	4.8	A	5.5	5.5

Table 33: Design Year (2040) Alternative 13B Intersection Volume Ranking

Volume Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,505	6,695	7,505	97,150	F	122.4	E	56.3
2	New Intersections	58.IS	US 29	Direct Access Ramp	7,480	7,025	7,480	88,850	B	11.3	C	28.6
3		7.IS	MD 5	Auth Road	7,140	5,960	7,140	86,550	B	19.8	A	0.9
4	New Intersections	57.IS	US 29	Outer Loop	6,440	6,605	6,605	79,450	E	61.9	B	14.1
5	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	6,230	6,355	6,355	87,900	C	27.2	B	14.4
6		26.IS	MD 650	Outer Loop Ramp	5,235	5,425	5,425	31,350	C	28.0	B	16.2
7	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,260	5,360	5,360	70,275	C	34.0	C	28.1
8	New Intersections	56.IS	US 29	Inner Loop	4,695	5,080	5,080	63,775	A	9.5	F	152.8
9		18.IS	MD 450	Outer Loop Ramp	3,705	4,965	4,965	63,575	B	11.6	B	11.5
10		45.IS	MD 187	I-270 NB Ramp	3,090	4,845	4,845	58,875	C	25.3	B	16.6
11		46.IS	MD 187	I-270 SB Ramp	3,085	4,840	4,840	58,625	B	16.1	F	120.7
12		12.IS	MD 214	Outer Loop Ramp	4,580	4,825	4,825	58,000	B	14.9	B	13.8
13		16.IS	MD 202	Outer Loop Ramp	3,740	4,700	4,700	58,000	C	20.5	D	45.2
14		11.IS	MD 214	Inner Loop Ramp	4,090	4,675	4,675	71,775	C	24.6	C	21.9
15	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,360	4,665	4,665	20,600	C	33.1	C	27.0
16		15.IS	MD 202	Inner Loop Ramp	3,790	4,635	4,635	34,775	A	4.9	A	5.3
17	Replaced by SPUI	36.IS	MD 187	Capital Beltway	4,320	4,515	4,515	40,525	E	58.9	B	14.2
18		17.IS	MD 450	Inner Loop Ramp	3,085	4,485	4,485	56,075	B	18.9	B	18.5
19	New Intersections	61.IS	Montrose Road	Direct Access Ramp-I-270	3,470	4,365	4,365	60,055	A	7.1	B	17.1
20		24.IS	US 1	Inner Loop Ramp	4,200	4,175	4,200	56,950	B	14.3	B	16.4

Table 34: Design Year (2040) Alternative 13B Intersection Level-of-Service Ranking

LOS Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	New Intersections	56.IS	US 29	Inner Loop	4,695	5,080	5,080	63,775	A	9.5	F	152.8	152.8
2	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,505	6,695	7,505	97,150	F	122.4	E	56.3	122.4
3		46.IS	MD 187	I-270 SB Ramp	3,085	4,840	4,840	58,625	B	16.1	F	120.7	120.7
4	New Intersections	57.IS	US 29	Outer Loop	6,440	6,605	6,605	79,450	E	61.9	B	14.1	61.9
5	Replaced by SPUI	36.IS	MD 187	Capital Beltway	4,320	4,515	4,515	40,525	E	58.9	B	14.2	58.9
6		16.IS	MD 202	Outer Loop Ramp	3,740	4,700	4,700	58,000	C	20.5	D	45.2	45.2
7	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,260	5,360	5,360	70,275	C	34.0	C	28.1	34.0
8	Intersection Modified	39.IS	MD 190	Outer Loop Ramp+Direct Access ramp	3,360	4,665	4,665	20,600	C	33.1	C	27.0	33.1
9	New Intersections	58.IS	US 29	Direct Access Ramp	7,480	7,025	7,480	88,850	B	11.3	C	28.6	28.6
10		26.IS	MD 650	Outer Loop Ramp	5,235	5,425	5,425	31,350	C	28.0	B	16.2	28.0
11	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	6,230	6,355	6,355	87,900	C	27.2	B	14.4	27.2
12		45.IS	MD 187	I-270 NB Ramp	3,090	4,845	4,845	58,875	C	25.3	B	16.6	25.3
13		11.IS	MD 214	Inner Loop Ramp	4,090	4,675	4,675	71,775	C	24.6	C	21.9	24.6
14		7.IS	MD 5	Auth Road	7,140	5,960	7,140	86,550	B	19.8	A	0.9	19.8
15		17.IS	MD 450	Inner Loop Ramp	3,085	4,485	4,485	56,075	B	18.9	B	18.5	18.9
16	New Intersections	61.IS	Montrose Road	Direct Access Ramp-I-270	3,470	4,365	4,365	60,055	A	7.1	B	17.1	17.1
17		24.IS	US 1	Inner Loop Ramp	4,200	4,175	4,200	56,950	B	14.3	B	16.4	16.4
18		12.IS	MD 214	Outer Loop Ramp	4,580	4,825	4,825	58,000	B	14.9	B	13.8	14.9
19		18.IS	MD 450	Outer Loop Ramp	3,705	4,965	4,965	63,575	B	11.6	B	11.5	11.6
20		15.IS	MD 202	Inner Loop Ramp	3,790	4,635	4,635	34,775	A	4.9	A	5.3	5.3

Table 35: Design Year (2040) Alternative 13C Intersection Volume Ranking

Volume Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)
1	Replaced by Diamond Intersection	28.IS	MD 97	Inner Loop Ramp	7,550	6,775	7,550	97,400	F	128.4	E	69.3
2	New Intersections	58.IS	US 29	Direct Access Ramp	7,435	6,945	7,435	88,775	B	12.6	D	37.1
3		7.IS	MD 5	Auth Road	7,165	5,960	7,165	86,125	A	6.5	A	0.8
4	New Intersections	57.IS	US 29	Outer Loop	6,475	6,450	6,475	79,075	E	67.9	C	20.8
5	Replaced by Diamond Intersection	29.IS	MD 97	Outer Loop Ramp	6,320	6,445	6,445	88,725	E	68.7	B	14.0
6		26.IS	MD 650	Outer Loop Ramp	5,325	5,450	5,450	31,400	C	25.1	B	16.1
7	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,330	5,410	5,410	70,850	C	20.1	D	40.8
8		18.IS	MD 450	Outer Loop Ramp	3,710	4,960	4,960	63,550	B	11.4	B	11.9
9	New Intersections	56.IS	US 29	Inner Loop	4,745	4,940	4,940	63,750	B	11.5	B	17.7
10		12.IS	MD 214	Outer Loop Ramp	4,580	4,835	4,835	57,600	B	14.7	B	14.4
11		45.IS	MD 187	I-270 NB Ramp	2,980	4,795	4,795	58,050	C	24.7	B	15.3
12		46.IS	MD 187	I-270 SB Ramp	2,975	4,790	4,790	57,800	B	15.6	F	134.6
13		16.IS	MD 202	Outer Loop Ramp	3,710	4,670	4,670	57,600	C	23.6	D	53.1
14		11.IS	MD 214	Inner Loop Ramp	4,075	4,640	4,640	71,600	C	25.5	C	21.3
15		15.IS	MD 202	Inner Loop Ramp	3,810	4,630	4,630	34,900	A	5.1	A	5.2
16	New Intersections	61.IS	Montrose Road	Direct Access Ramp-I-270	3,305	4,550	4,550	60,350	C	24.9	B	16.3
17		17.IS	MD 450	Inner Loop Ramp	3,075	4,475	4,475	55,950	B	19.3	B	19.1
18		5.IS	MD 414	Outer Loop Ramp (2)	3,380	4,285	4,285	58,325	B	19.2	D	42.7
19		24.IS	US 1	Inner Loop Ramp	4,255	4,200	4,255	57,575	B	14.2	B	16.7
20		1.IS	MD 210	Inner Loop Ramp	4,165	3,420	4,165	59,825	C	33.0	C	22.3

Table 36: Design Year (2040) Alternative 13C Intersection Level-of-Service Ranking

LOS Rank	Modification Notes	ID	Mainline	Cross Street	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Daily Volume	Peak AM Hour LOS	Peak AM Hour Delay (s)	Peak PM Hour LOS	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	Replaced by Diamond Intersection	46.IS	MD 187	I-270 SB Ramp	2,975	4,790	4,790	57,800	B	15.6	F	134.6	134.6
2	New Intersections	28.IS	MD 97	Inner Loop Ramp	7,550	6,775	7,550	97,400	F	128.4	E	69.3	128.4
3		29.IS	MD 97	Outer Loop Ramp	6,320	6,445	6,445	88,725	E	68.7	B	14.0	68.7
4	New Intersections	57.IS	US 29	Outer Loop	6,475	6,450	6,475	79,075	E	67.9	C	20.8	67.9
5	Replaced by Diamond Intersection	16.IS	MD 202	Outer Loop Ramp	3,710	4,670	4,670	57,600	C	23.6	D	53.1	53.1
6		5.IS	MD 414	Outer Loop Ramp (2)	3,380	4,285	4,285	58,325	B	19.2	D	42.7	42.7
7	Intersection Modified	27.IS	MD 193	Outer Loop Exit 29	5,330	5,410	5,410	70,850	C	20.1	D	40.8	40.8
8		58.IS	US 29	Direct Access Ramp	7,435	6,945	7,435	88,775	B	12.6	D	37.1	37.1
9	New Intersections	1.IS	MD 210	Inner Loop Ramp	4,165	3,420	4,165	59,825	C	33.0	C	22.3	33.0
10		11.IS	MD 214	Inner Loop Ramp	4,075	4,640	4,640	71,600	C	25.5	C	21.3	25.5
11		26.IS	MD 650	Outer Loop Ramp	5,325	5,450	5,450	31,400	C	25.1	B	16.1	25.1
12		61.IS	Montrose Road	Direct Access Ramp-I-270	3,305	4,550	4,550	60,350	C	24.9	B	16.3	24.9
13		45.IS	MD 187	I-270 NB Ramp	2,980	4,795	4,795	58,050	C	24.7	B	15.3	24.7
14		17.IS	MD 450	Inner Loop Ramp	3,075	4,475	4,475	55,950	B	19.3	B	19.1	19.3
15		56.IS	US 29	Inner Loop	4,745	4,940	4,940	63,750	B	11.5	B	17.7	17.7
16	New Intersections	24.IS	US 1	Inner Loop Ramp	4,255	4,200	4,255	57,575	B	14.2	B	16.7	16.7
17		12.IS	MD 214	Outer Loop Ramp	4,580	4,835	4,835	57,600	B	14.7	B	14.4	14.7
18		18.IS	MD 450	Outer Loop Ramp	3,710	4,960	4,960	63,550	B	11.4	B	11.9	11.9
19		7.IS	MD 5	Auth Road	7,165	5,960	7,165	86,125	A	6.5	A	0.8	6.5
20		15.IS	MD 202	Inner Loop Ramp	3,810	4,630	4,630	34,900	A	5.1	A	5.2	5.2

Table 37: Design Year (2040) Alternative 5 Interchange Volume Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)
1	33.IC	I-270	MD 189	32,565	37,832	37,832	1.6	5.4
2	11.IC	Capital Beltway	US 50	26,679	28,656	28,656	13.5	2.5
3	16.IC	Capital Beltway	I-95	21,112	26,522	26,522	135.0	3.7
4	3.IC	Capital Beltway	MD 5	21,963	25,665	25,665	99.4	1.7
5	25.IC	Capital Beltway	MD 190	25,604	23,824	25,604	32.0	51.3
6	17.IC	Capital Beltway	MD 650	20,728	25,562	25,562	94.7	7.1
7	20.IC	Capital Beltway	MD 97	24,993	25,444	25,444	23.0	35.9
8	13.IC	Capital Beltway	Baltimore Washington Parkway	23,308	25,126	25,126	3.4	4.6
9	8.IC	Capital Beltway	MD 214	23,304	25,042	25,042	3.3	2.6
10	10.IC	Capital Beltway	MD 202	21,786	24,963	24,963	2.9	1.9
11	21.IC	Capital Beltway	MD 185	24,598	23,962	24,598	4.2	68.8
12	14.IC	Capital Beltway	MD 201	20,839	24,401	24,401	2.8	2.4
13	12.IC	Capital Beltway	MD 450	20,634	24,177	24,177	3.9	5.0
14	18.IC	Capital Beltway	MD 193	18,852	23,997	23,997	28.5	50.9
15	15.IC	Capital Beltway	US 1	19,349	23,275	23,275	3.8	7.0
16	22.IC	Capital Beltway	I-270 and MD 355	22,964	20,718	22,964	2.9	134.9
17	34.IC	I-270	MD 28	19,063	22,374	22,374	1.5	28.4
18	26.IC	Capital Beltway	Clara Barton Parkway	21,722	19,527	21,722	11.0	33.0
19	36.IC	I-270	I-370	20,643	21,531	21,531	5.2	56.9
20	6.IC	Capital Beltway	MD 4	19,464	21,350	21,350	7.3	3.3

Table 38: Design Year (2040) Alternative 5 Interchange Delay Ranking

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay	Max Peak Hour Delay (s)
1	16.IC	Capital Beltway	I-95	21,112	26,522	26,522	135.0	3.7	135.0
2	22.IC	Capital Beltway	I-270 and MD 355	22,964	20,718	22,964	2.9	134.9	134.9
3	3.IC	Capital Beltway	MD 5	21,963	25,665	25,665	99.4	1.7	99.4
4	17.IC	Capital Beltway	MD 650	20,728	25,562	25,562	94.7	7.1	94.7
5	21.IC	Capital Beltway	MD 185	24,598	23,962	24,598	4.2	68.8	68.8
6	36.IC	I-270	I-370	20,643	21,531	21,531	5.2	56.9	56.9
7	25.IC	Capital Beltway	MD 190	25,604	23,824	25,604	32.0	51.3	51.3
8	18.IC	Capital Beltway	MD 193	18,852	23,997	23,997	28.5	50.9	50.9
9	20.IC	Capital Beltway	MD 97	24,993	25,444	25,444	23.0	35.9	35.9
10	26.IC	Capital Beltway	Clara Barton Parkway	21,722	19,527	21,722	11.0	33.0	33.0
11	34.IC	I-270	MD 28	19,063	22,374	22,374	1.5	28.4	28.4
12	11.IC	Capital Beltway	US 50	26,679	28,656	28,656	13.5	2.5	13.5
13	6.IC	Capital Beltway	MD 4	19,464	21,350	21,350	7.3	3.3	7.3
14	15.IC	Capital Beltway	US 1	19,349	23,275	23,275	3.8	7.0	7.0
15	33.IC	I-270	MD 189	32,565	37,832	37,832	1.6	5.4	5.4
16	12.IC	Capital Beltway	MD 450	20,634	24,177	24,177	3.9	5.0	5.0
17	13.IC	Capital Beltway	Baltimore Washington Parkway	23,308	25,126	25,126	3.4	4.6	4.6
18	8.IC	Capital Beltway	MD 214	23,304	25,042	25,042	3.3	2.6	3.3
19	10.IC	Capital Beltway	MD 202	21,786	24,963	24,963	2.9	1.9	2.9
20	14.IC	Capital Beltway	MD 201	20,839	24,401	24,401	2.8	2.4	2.8

Table 39: Design Year (2040) Alternative 8 Interchange Volume Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)
1	33.IC	I-270	MD 189	40,246	43,137	43,137	14.3	3.1
2	11.IC	Capital Beltway	US 50	30,123	30,162	30,162	3.2	2.3
3	25.IC	Capital Beltway	MD 190	29,729	24,540	29,729	6.1	61.9
4	20.IC	Capital Beltway	MD 97	28,073	29,190	29,190	25.3	34.0
5	16.IC	Capital Beltway	I-95	25,981	28,647	28,647	7.1	7.3
6	21.IC	Capital Beltway	MD 185	27,156	28,369	28,369	8.4	45.2
7	17.IC	Capital Beltway	MD 650	24,400	27,971	27,971	27.3	7.5
8	18.IC	Capital Beltway	MD 193	22,952	27,130	27,130	12.3	34.2
9	8.IC	Capital Beltway	MD 214	26,749	26,579	26,749	3.1	2.5
10	10.IC	Capital Beltway	MD 202	25,235	26,624	26,624	6.9	3.9
11	3.IC	Capital Beltway	MD 5	25,582	26,419	26,419	35.1	2.0
12	13.IC	Capital Beltway	Baltimore Washington Parkway	26,275	26,111	26,275	6.3	3.7
13	34.IC	I-270	MD 28	23,370	26,066	26,066	13.5	11.4
14	22.IC	Capital Beltway	I-270 and MD 355	24,671	26,026	26,026	32.0	72.1
15	12.IC	Capital Beltway	MD 450	23,800	25,329	25,329	3.6	4.8
16	14.IC	Capital Beltway	MD 201	23,345	25,138	25,138	3.0	2.2
17	15.IC	Capital Beltway	US 1	21,878	23,806	23,806	5.9	4.8
18	24.IC	Capital Beltway	I-270 Spur	23,726	18,638	23,726	33.0	53.8
19	26.IC	Capital Beltway	Clara Barton Parkway	23,411	19,459	23,411	9.8	39.1
20	35.IC	I-270	Shady Grove Road	20,853	22,853	22,853	7.9	12.8

Table 40: Design Year (2040) Alternative 8 Interchange Delay Ranking

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay	Max Peak Hour Delay (s)
1	22.IC	Capital Beltway	I-270 and MD 355	24,671	26,026	26,026	32.0	72.1	72.1
2	25.IC	Capital Beltway	MD 190	29,729	24,540	29,729	6.1	61.9	61.9
3	24.IC	Capital Beltway	I-270 Spur	23,726	18,638	23,726	33.0	53.8	53.8
4	21.IC	Capital Beltway	MD 185	27,156	28,369	28,369	8.4	45.2	45.2
5	26.IC	Capital Beltway	Clara Barton Parkway	23,411	19,459	23,411	9.8	39.1	39.1
6	3.IC	Capital Beltway	MD 5	25,582	26,419	26,419	35.1	2.0	35.1
7	18.IC	Capital Beltway	MD 193	22,952	27,130	27,130	12.3	34.2	34.2
8	20.IC	Capital Beltway	MD 97	28,073	29,190	29,190	25.3	34.0	34.0
9	17.IC	Capital Beltway	MD 650	24,400	27,971	27,971	27.3	7.5	27.3
10	33.IC	I-270	MD 189	40,246	43,137	43,137	14.3	3.1	14.3
11	34.IC	I-270	MD 28	23,370	26,066	26,066	13.5	11.4	13.5
12	35.IC	I-270	Shady Grove Road	20,853	22,853	22,853	7.9	12.8	12.8
13	16.IC	Capital Beltway	I-95	25,981	28,647	28,647	7.1	7.3	7.3
14	10.IC	Capital Beltway	MD 202	25,235	26,624	26,624	6.9	3.9	6.9
15	13.IC	Capital Beltway	Baltimore Washington Parkway	26,275	26,111	26,275	6.3	3.7	6.3
16	15.IC	Capital Beltway	US 1	21,878	23,806	23,806	5.9	4.8	5.9
17	12.IC	Capital Beltway	MD 450	23,800	25,329	25,329	3.6	4.8	4.8
18	11.IC	Capital Beltway	US 50	30,123	30,162	30,162	3.2	2.3	3.2
19	8.IC	Capital Beltway	MD 214	26,749	26,579	26,749	3.1	2.5	3.1
20	14.IC	Capital Beltway	MD 201	23,345	25,138	25,138	3.0	2.2	3.0

Table 41: Design Year (2040) Alternative 9 Interchange Volume Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)
1	33.IC	I-270	MD 189	34,837	42,529	42,529	1.5	2.0
2	11.IC	Capital Beltway	US 50	29,372	30,185	30,185	3.5	2.3
3	20.IC	Capital Beltway	MD 97	28,909	29,034	29,034	24.8	25.7
4	25.IC	Capital Beltway	MD 190	28,929	27,238	28,929	12.9	36.3
5	16.IC	Capital Beltway	I-95	26,140	28,495	28,495	5.5	12.5
6	21.IC	Capital Beltway	MD 185	28,467	27,972	28,467	3.6	45.0
7	17.IC	Capital Beltway	MD 650	24,687	27,721	27,721	15.7	10.2
8	22.IC	Capital Beltway	I-270 and MD 355	27,304	26,135	27,304	3.1	71.6
9	18.IC	Capital Beltway	MD 193	23,295	26,912	26,912	10.1	32.2
10	10.IC	Capital Beltway	MD 202	24,192	26,708	26,708	2.5	3.5
11	8.IC	Capital Beltway	MD 214	25,731	26,581	26,581	3.2	2.6
12	3.IC	Capital Beltway	MD 5	23,079	26,297	26,297	81.4	2.0
13	13.IC	Capital Beltway	Baltimore Washington Parkway	25,677	26,208	26,208	3.9	4.0
14	34.IC	I-270	MD 28	20,584	25,885	25,885	1.5	6.6
15	12.IC	Capital Beltway	MD 450	23,011	25,395	25,395	4.0	5.0
16	14.IC	Capital Beltway	MD 201	23,001	25,173	25,173	2.9	2.4
17	15.IC	Capital Beltway	US 1	21,319	23,795	23,795	4.4	5.0
18	26.IC	Capital Beltway	Clara Barton Parkway	23,762	21,868	23,762	9.7	2.5
19	35.IC	I-270	Shady Grove Road	20,708	23,724	23,724	2.7	6.1
20	24.IC	Capital Beltway	I-270 Spur	22,922	20,480	22,922	12.0	47.3

Table 42: Design Year (2040) Alternative 9 Interchange Delay Ranking

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	3.IC	Capital Beltway	MD 5	23,079	26,297	26,297	81.4	2.0	81.4
2	22.IC	Capital Beltway	I-270 and MD 355	27,304	26,135	27,304	3.1	71.6	71.6
3	24.IC	Capital Beltway	I-270 Spur	22,922	20,480	22,922	12.0	47.3	47.3
4	21.IC	Capital Beltway	MD 185	28,467	27,972	28,467	3.6	45.0	45.0
5	25.IC	Capital Beltway	MD 190	28,929	27,238	28,929	12.9	36.3	36.3
6	18.IC	Capital Beltway	MD 193	23,295	26,912	26,912	10.1	32.2	32.2
7	20.IC	Capital Beltway	MD 97	28,909	29,034	29,034	24.8	25.7	25.7
8	17.IC	Capital Beltway	MD 650	24,687	27,721	27,721	15.7	10.2	15.7
9	16.IC	Capital Beltway	I-95	26,140	28,495	28,495	5.5	12.5	12.5
10	26.IC	Capital Beltway	Clara Barton Parkway	23,762	21,868	23,762	9.7	2.5	9.7
11	34.IC	I-270	MD 28	20,584	25,885	25,885	1.5	6.6	6.6
12	35.IC	I-270	Shady Grove Road	20,708	23,724	23,724	2.7	6.1	6.1
13	15.IC	Capital Beltway	US 1	21,319	23,795	23,795	4.4	5.0	5.0
14	12.IC	Capital Beltway	MD 450	23,011	25,395	25,395	4.0	5.0	5.0
15	13.IC	Capital Beltway	Baltimore Washington Parkway	25,677	26,208	26,208	3.9	4.0	4.0
16	10.IC	Capital Beltway	MD 202	24,192	26,708	26,708	2.5	3.5	3.5
17	11.IC	Capital Beltway	US 50	29,372	30,185	30,185	3.5	2.3	3.5
18	8.IC	Capital Beltway	MD 214	25,731	26,581	26,581	3.2	2.6	3.2
19	14.IC	Capital Beltway	MD 201	23,001	25,173	25,173	2.9	2.4	2.9
20	33.IC	I-270	MD 189	34,837	42,529	42,529	1.5	2.0	2.0

Table 43: Design Year (2040) Alternative 10 Interchange Volume Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)
1	33.IC	I-270	MD 189	40,900	47,317	47,317	7.7	8.2
2	11.IC	Capital Beltway	US 50	29,435	30,253	30,253	3.5	2.3
3	25.IC	Capital Beltway	MD 190	29,365	28,789	29,365	28.2	6.0
4	20.IC	Capital Beltway	MD 97	28,039	28,807	28,807	37.7	32.9
5	16.IC	Capital Beltway	I-95	26,166	28,608	28,608	8.7	18.1
6	17.IC	Capital Beltway	MD 650	24,766	28,016	28,016	11.6	15.3
7	21.IC	Capital Beltway	MD 185	27,780	27,863	27,863	16.0	72.4
8	34.IC	I-270	MD 28	23,543	27,781	27,781	1.7	28.3
9	18.IC	Capital Beltway	MD 193	23,456	27,033	27,033	9.6	31.2
10	10.IC	Capital Beltway	MD 202	24,203	26,759	26,759	2.6	3.3
11	8.IC	Capital Beltway	MD 214	25,732	26,659	26,659	3.0	2.8
12	3.IC	Capital Beltway	MD 5	23,280	26,354	26,354	95.3	2.0
13	13.IC	Capital Beltway	Baltimore Washington Parkway	25,666	26,274	26,274	4.1	4.0
14	22.IC	Capital Beltway	I-270 and MD 355	26,259	25,889	26,259	10.5	85.5
15	12.IC	Capital Beltway	MD 450	23,056	25,518	25,518	4.9	5.3
16	35.IC	I-270	Shady Grove Road	21,586	25,452	25,452	2.5	45.4
17	14.IC	Capital Beltway	MD 201	23,016	25,248	25,248	2.9	2.3
18	36.IC	I-270	I-370	21,700	25,038	25,038	17.6	24.0
19	26.IC	Capital Beltway	Clara Barton Parkway	23,939	21,740	23,939	8.9	2.1
20	15.IC	Capital Beltway	US 1	21,338	23,886	23,886	5.5	5.2

Table 44: Design Year (2040) Alternative 10 Interchange Delay Ranking

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	3.IC	Capital Beltway	MD 5	23,280	26,354	26,354	95.3	2.0	95.3
2	22.IC	Capital Beltway	I-270 and MD 355	26,259	25,889	26,259	10.5	85.5	85.5
3	21.IC	Capital Beltway	MD 185	27,780	27,863	27,863	16.0	72.4	72.4
4	35.IC	I-270	Shady Grove Road	21,586	25,452	25,452	2.5	45.4	45.4
5	20.IC	Capital Beltway	MD 97	28,039	28,807	28,807	37.7	32.9	37.7
6	18.IC	Capital Beltway	MD 193	23,456	27,033	27,033	9.6	31.2	31.2
7	34.IC	I-270	MD 28	23,543	27,781	27,781	1.7	28.3	28.3
8	25.IC	Capital Beltway	MD 190	29,365	28,789	29,365	28.2	6.0	28.2
9	36.IC	I-270	I-370	21,700	25,038	25,038	17.6	24.0	24.0
10	16.IC	Capital Beltway	I-95	26,166	28,608	28,608	8.7	18.1	18.1
11	17.IC	Capital Beltway	MD 650	24,766	28,016	28,016	11.6	15.3	15.3
12	26.IC	Capital Beltway	Clara Barton Parkway	23,939	21,740	23,939	8.9	2.1	8.9
13	33.IC	I-270	MD 189	40,900	47,317	47,317	7.7	8.2	8.2
14	15.IC	Capital Beltway	US 1	21,338	23,886	23,886	5.5	5.2	5.5
15	12.IC	Capital Beltway	MD 450	23,056	25,518	25,518	4.9	5.3	5.3
16	13.IC	Capital Beltway	Baltimore Washington Parkway	25,666	26,274	26,274	4.1	4.0	4.1
17	11.IC	Capital Beltway	US 50	29,435	30,253	30,253	3.5	2.3	3.5
18	10.IC	Capital Beltway	MD 202	24,203	26,759	26,759	2.6	3.3	3.3
19	8.IC	Capital Beltway	MD 214	25,732	26,659	26,659	3.0	2.8	3.0
20	14.IC	Capital Beltway	MD 201	23,016	25,248	25,248	2.9	2.3	2.9

Table 45: Design Year (2040) Alternative 13B Interchange Volume Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)
1	33.IC	I-270	MD 189	36,952	38,924	38,924	2.7	9.8
2	11.IC	Capital Beltway	US 50	29,756	29,948	29,948	3.3	2.3
3	25.IC	Capital Beltway	MD 190	28,244	26,334	28,244	32.2	13.6
4	20.IC	Capital Beltway	MD 97	27,127	28,082	28,082	44.4	28.6
5	16.IC	Capital Beltway	I-95	26,181	27,201	27,201	6.6	5.5
6	21.IC	Capital Beltway	MD 185	26,362	26,907	26,907	53.3	52.6
7	17.IC	Capital Beltway	MD 650	24,288	26,566	26,566	16.9	7.4
8	10.IC	Capital Beltway	MD 202	24,584	26,494	26,494	2.5	3.9
9	8.IC	Capital Beltway	MD 214	26,105	26,436	26,436	3.1	2.5
10	3.IC	Capital Beltway	MD 5	23,906	26,226	26,226	67.8	1.9
11	13.IC	Capital Beltway	Baltimore Washington Parkway	25,907	25,890	25,907	3.8	3.9
12	22.IC	Capital Beltway	I-270 and MD 355	25,780	24,652	25,780	58.2	83.2
13	18.IC	Capital Beltway	MD 193	22,782	25,762	25,762	12.5	4.4
14	12.IC	Capital Beltway	MD 450	23,307	25,188	25,188	3.5	5.3
15	14.IC	Capital Beltway	MD 201	23,232	24,927	24,927	3.1	2.3
16	34.IC	I-270	MD 28	22,008	24,669	24,669	1.6	14.3
17	15.IC	Capital Beltway	US 1	21,455	23,460	23,460	4.1	4.3
18	26.IC	Capital Beltway	Clara Barton Parkway	23,155	20,890	23,155	14.2	2.0
19	24.IC	Capital Beltway	I-270 Spur	22,643	19,394	22,643	23.6	32.5
20	36.IC	I-270	I-370	21,212	22,327	22,327	15.6	60.4

Table 46: Design Year (2040) Alternative 13B Interchange Delay Ranking

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	22.IC	Capital Beltway	I-270 and MD 355	25,780	24,652	25,780	58.2	83.2	83.2
2	3.IC	Capital Beltway	MD 5	23,906	26,226	26,226	67.8	1.9	67.8
3	36.IC	I-270	I-370	21,212	22,327	22,327	15.6	60.4	60.4
4	21.IC	Capital Beltway	MD 185	26,362	26,907	26,907	53.3	52.6	53.3
5	20.IC	Capital Beltway	MD 97	27,127	28,082	28,082	44.4	28.6	44.4
6	24.IC	Capital Beltway	I-270 Spur	22,643	19,394	22,643	23.6	32.5	32.5
7	25.IC	Capital Beltway	MD 190	28,244	26,334	28,244	32.2	13.6	32.2
8	17.IC	Capital Beltway	MD 650	24,288	26,566	26,566	16.9	7.4	16.9
9	34.IC	I-270	MD 28	22,008	24,669	24,669	1.6	14.3	14.3
10	26.IC	Capital Beltway	Clara Barton Parkway	23,155	20,890	23,155	14.2	2.0	14.2
11	18.IC	Capital Beltway	MD 193	22,782	25,762	25,762	12.5	4.4	12.5
12	33.IC	I-270	MD 189	36,952	38,924	38,924	2.7	9.8	9.8
13	16.IC	Capital Beltway	I-95	26,181	27,201	27,201	6.6	5.5	6.6
14	12.IC	Capital Beltway	MD 450	23,307	25,188	25,188	3.5	5.3	5.3
15	15.IC	Capital Beltway	US 1	21,455	23,460	23,460	4.1	4.3	4.3
16	10.IC	Capital Beltway	MD 202	24,584	26,494	26,494	2.5	3.9	3.9
17	13.IC	Capital Beltway	Baltimore Washington Parkway	25,907	25,890	25,907	3.8	3.9	3.9
18	11.IC	Capital Beltway	US 50	29,756	29,948	29,948	3.3	2.3	3.3
19	8.IC	Capital Beltway	MD 214	26,105	26,436	26,436	3.1	2.5	3.1
20	14.IC	Capital Beltway	MD 201	23,232	24,927	24,927	3.1	2.3	3.1

Table 47: Design Year (2040) Alternative 13C Interchange Volume Ranking

Volume Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)
1	33.IC	I-270	MD 189	38,379	45,112	45,112	25.2	3.4
2	11.IC	Capital Beltway	US 50	29,907	30,284	30,284	3.5	3.3
3	25.IC	Capital Beltway	MD 190	29,576	27,524	29,576	27.2	34.1
4	20.IC	Capital Beltway	MD 97	27,545	28,742	28,742	49.4	27.4
5	16.IC	Capital Beltway	I-95	26,363	28,153	28,153	8.4	19.1
6	17.IC	Capital Beltway	MD 650	25,051	27,947	27,947	17.5	11.7
7	21.IC	Capital Beltway	MD 185	26,443	27,369	27,369	28.7	64.6
8	34.IC	I-270	MD 28	23,012	27,068	27,068	6.1	10.9
9	18.IC	Capital Beltway	MD 193	23,653	27,030	27,030	10.0	35.7
10	10.IC	Capital Beltway	MD 202	24,872	26,709	26,709	2.9	6.2
11	8.IC	Capital Beltway	MD 214	26,666	26,674	26,674	3.4	2.9
12	3.IC	Capital Beltway	MD 5	25,519	26,443	26,443	19.4	2.0
13	13.IC	Capital Beltway	Baltimore Washington Parkway	26,074	26,246	26,246	4.0	4.3
14	36.IC	I-270	I-370	21,430	25,983	25,983	6.1	34.3
15	12.IC	Capital Beltway	MD 450	23,510	25,575	25,575	3.5	5.3
16	22.IC	Capital Beltway	I-270 and MD 355	25,379	25,107	25,379	40.3	74.5
17	14.IC	Capital Beltway	MD 201	23,206	25,289	25,289	3.2	2.2
18	26.IC	Capital Beltway	Clara Barton Parkway	23,978	21,075	23,978	10.7	2.1
19	35.IC	I-270	Shady Grove Road	21,458	23,960	23,960	4.8	23.9
20	24.IC	Capital Beltway	I-270 Spur	23,931	21,232	23,931	54.3	5.4

Table 48: Design Year (2040) Alternative 13C Interchange Delay Ranking

Delay Rank	ID	Mainline	Cross Road	Peak AM Hour Volume	Peak PM Hour Volume	Max Peak Hour Volume	Peak AM Hour Delay (s)	Peak PM Hour Delay (s)	Max Peak Hour Delay
1	22.IC	Capital Beltway	I-270 and MD 355	25,379	25,107	25,379	40.3	74.5	74.5
2	21.IC	Capital Beltway	MD 185	26,443	27,369	27,369	28.7	64.6	64.6
3	24.IC	Capital Beltway	I-270 Spur	23,931	21,232	23,931	54.3	5.4	54.3
4	20.IC	Capital Beltway	MD 97	27,545	28,742	28,742	49.4	27.4	49.4
5	18.IC	Capital Beltway	MD 193	23,653	27,030	27,030	10.0	35.7	35.7
6	36.IC	I-270	I-370	21,430	25,983	25,983	6.1	34.3	34.3
7	25.IC	Capital Beltway	MD 190	29,576	27,524	29,576	27.2	34.1	34.1
8	33.IC	I-270	MD 189	38,379	45,112	45,112	25.2	3.4	25.2
9	35.IC	I-270	Shady Grove Road	21,458	23,960	23,960	4.8	23.9	23.9
10	3.IC	Capital Beltway	MD 5	25,519	26,443	26,443	19.4	2.0	19.4
11	16.IC	Capital Beltway	I-95	26,363	28,153	28,153	8.4	19.1	19.1
12	17.IC	Capital Beltway	MD 650	25,051	27,947	27,947	17.5	11.7	17.5
13	34.IC	I-270	MD 28	23,012	27,068	27,068	6.1	10.9	10.9
14	26.IC	Capital Beltway	Clara Barton Parkway	23,978	21,075	23,978	10.7	2.1	10.7
15	10.IC	Capital Beltway	MD 202	24,872	26,709	26,709	2.9	6.2	6.2
16	12.IC	Capital Beltway	MD 450	23,510	25,575	25,575	3.5	5.3	5.3
17	13.IC	Capital Beltway	Baltimore Washington Parkway	26,074	26,246	26,246	4.0	4.3	4.3
18	11.IC	Capital Beltway	US 50	29,907	30,284	30,284	3.5	3.3	3.5
19	8.IC	Capital Beltway	MD 214	26,666	26,674	26,674	3.4	2.9	3.4
20	14.IC	Capital Beltway	MD 201	23,206	25,289	25,289	3.2	2.2	3.2

APPENDIX D – MOVES RUNSPECS CO

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<outputshp value="false"/>
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        </savedata>

        <donotexecute>

        </donotexecute>

        <generatordatabase shouldsave="false" servername="" databasename=""
description=""/>
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        <lookuptableflags scenarioid="" truncateoutput="true"
truncateactivity="true" truncatebaserates="true"/>
</runspec>
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Year: 2016
County: Prince George's
Pollutant: CO]]></description>
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        </models>
        <modelscale value="Inv"/>
        <modeldomain value="PROJECT"/>
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- Prince George's County"/>
        </geographicselections>
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                <month id="1"/>
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                <endhour id="8"/>
                <aggregateBy key="Hour"/>
        </timespan>
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                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="62" sourcetypename="Combination Long-haul Truck"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="61" sourcetypename="Combination Short-haul Truck"/>
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sourcetypeid="41" sourcetypename="Intercity Bus"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
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sourcetypeid="54" sourcetypename="Motor Home"/>
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sourcetypeid="21" sourcetypename="Passenger Car"/>
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sourcetypeid="31" sourcetypename="Passenger Truck"/>
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sourcetypeid="51" sourcetypename="Refuse Truck"/>
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sourcetypeid="43" sourcetypename="School Bus"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="53" sourcetypename="Single Unit Long-haul Truck"/>
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sourcetypeid="52" sourcetypename="Single Unit Short-haul Truck"/>
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sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
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sourcetypeid="21" sourcetypename="Passenger Car"/>
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sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
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sourcetypeid="21" sourcetypename="Passenger Car"/>
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sourcetypeid="31" sourcetypename="Passenger Truck"/>
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sourcetypeid="61" sourcetypename="Combination Short-haul Truck"/>
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sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
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sourcetypeid="54" sourcetypename="Motor Home"/>
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sourcetypeid="11" sourcetypename="Motorcycle"/>
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sourcetypeid="21" sourcetypename="Passenger Car"/>
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sourcetypeid="31" sourcetypename="Passenger Truck"/>
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sourcetypeid="51" sourcetypename="Refuse Truck"/>
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sourcetypeid="52" sourcetypename="Single Unit Short-haul Truck"/>
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        </offroadvehicleselections>
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modelCombination="M1"/>
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modelCombination="M1"/>
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Monoxide (CO)" processkey="1" processname="Running Exhaust"/>
<pollutantprocessassociation pollutantkey="2" pollutantname="Carbon Monoxide (CO)" processkey="15" processname="Crankcase Running Exhaust"/>
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</databaseselections>
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]]></internalcontrolstrategy>
</internalcontrolstrategies>
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<fueltype selected="false"/>
<fuelsubtype selected="false"/>
<emissionprocess selected="false"/>
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<roadtype selected="false"/>
<sourceusetype selected="false"/>
<movesvehicletype selected="false"/>
<onroadscc selected="false"/>
<estimateuncertainty selected="false" numberOfIterations="2" keepSampledData="false" keepIterations="false"/>
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<engtechid selected="false"/>
<hpclass selected="false"/>
<regclassid selected="false"/>
</outputemissionsbreakdownselection>
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<outputsho value="false"/>
<outputsh value="false"/>
<outputshp value="false"/>
<outputshidling value="false"/>
<outputstarts value="false"/>
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<pmsize value="0"/>

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                <massfactors selected="true" units="Grams" energyunits="Joules"/>
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        </savedata>

        <donotexecute>

        </donotexecute>

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description=""/>
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truncateactivity="true" truncatebaserates="true"/>
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Year: 2025
County: Montgomery
Pollutant: CO]]></description>
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        </models>
        <modelscale value="Inv"/>
        <modeldomain value="PROJECT"/>
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- Montgomery County"/>
        </geographicselections>
        <timespan>
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                <day id="5"/>
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                <endhour id="8"/>
                <aggregateBy key="Hour"/>
        </timespan>
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Natural Gas (CNG)" sourcetypeid="42" sourcetypename="Transit Bus"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="62" sourcetypename="Combination Long-haul Truck"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="61" sourcetypename="Combination Short-haul Truck"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="41" sourcetypename="Intercity Bus"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="54" sourcetypename="Motor Home"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="21" sourcetypename="Passenger Car"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="31" sourcetypename="Passenger Truck"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="51" sourcetypename="Refuse Truck"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="43" sourcetypename="School Bus"/>
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sourcetypeid="53" sourcetypename="Single Unit Long-haul Truck"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="52" sourcetypename="Single Unit Short-haul Truck"/>
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```
sourcetypeid="42" sourcetypename="Transit Bus"/>
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sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
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sourcetypeid="21" sourcetypename="Passenger Car"/>
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sourcetypeid="31" sourcetypename="Passenger Truck"/>
                <onroadvehicleselection fueltypeid="5" fueltypedesc="Ethanol (E-85)"
sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
                <onroadvehicleselection fueltypeid="5" fueltypedesc="Ethanol (E-85)"
sourcetypeid="21" sourcetypename="Passenger Car"/>
                <onroadvehicleselection fueltypeid="5" fueltypedesc="Ethanol (E-85)"
sourcetypeid="31" sourcetypename="Passenger Truck"/>
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sourcetypeid="61" sourcetypename="Combination Short-haul Truck"/>
                <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline"
sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
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sourcetypeid="54" sourcetypename="Motor Home"/>
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sourcetypeid="11" sourcetypename="Motorcycle"/>
                <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline"
sourcetypeid="21" sourcetypename="Passenger Car"/>
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sourcetypeid="31" sourcetypename="Passenger Truck"/>
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sourcetypeid="51" sourcetypename="Refuse Truck"/>
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sourcetypeid="43" sourcetypename="School Bus"/>
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sourcetypeid="53" sourcetypename="Single Unit Long-haul Truck"/>
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sourcetypeid="52" sourcetypename="Single Unit Short-haul Truck"/>
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sourcetypeid="42" sourcetypename="Transit Bus"/>
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        <offroadvehicleselections>
        </offroadvehicleselections>
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        </offroadvehiclesccs>
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modelCombination="M1"/>
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modelCombination="M1"/>
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Monoxide (CO)" processkey="1" processname="Running Exhaust"/>
<pollutantprocessassociation pollutantkey="2" pollutantname="Carbon Monoxide (CO)" processkey="15" processname="Crankcase Running Exhaust"/>
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<emissionprocess selected="false"/>
<onroadoffroad selected="true"/>
<roadtype selected="false"/>
<sourceusetype selected="false"/>
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<onroadscc selected="false"/>
<estimateuncertainty selected="false" numberOfIterations="2" keepSampledData="false" keepIterations="false"/>
<sector selected="false"/>
<engtechid selected="false"/>
<hpclass selected="false"/>
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<outputvmtdata value="false"/>
<outputsho value="false"/>
<outputsh value="false"/>
<outputshp value="false"/>
<outputshidling value="false"/>
<outputstarts value="false"/>
<outputpopulation value="false"/>
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        </outputfactors>
        <savedata>

        </savedata>

        <donotexecute>

        </donotexecute>

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description=""/>
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truncateactivity="true" truncatebaserates="true"/>
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Year: 2025
County: Prince George's
Pollutant: CO]]></description>
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        </models>
        <modelscale value="Inv"/>
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- Prince George's County"/>
        </geographicselections>
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                <month id="1"/>
                <day id="5"/>
                <beginhour id="8"/>
                <endhour id="8"/>
                <aggregateBy key="Hour"/>
        </timespan>
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                <onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed
Natural Gas (CNG)" sourcetypeid="42" sourcetypename="Transit Bus"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="62" sourcetypename="Combination Long-haul Truck"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="61" sourcetypename="Combination Short-haul Truck"/>
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sourcetypeid="41" sourcetypename="Intercity Bus"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
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sourcetypeid="54" sourcetypename="Motor Home"/>
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sourcetypeid="21" sourcetypename="Passenger Car"/>
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sourcetypeid="31" sourcetypename="Passenger Truck"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="51" sourcetypename="Refuse Truck"/>
                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="43" sourcetypename="School Bus"/>
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sourcetypeid="53" sourcetypename="Single Unit Long-haul Truck"/>
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sourcetypeid="52" sourcetypename="Single Unit Short-haul Truck"/>
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```
sourcetypeid="42" sourcetypename="Transit Bus"/>
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sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
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sourcetypeid="21" sourcetypename="Passenger Car"/>
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sourcetypeid="31" sourcetypename="Passenger Truck"/>
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sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
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sourcetypeid="21" sourcetypename="Passenger Car"/>
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sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
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sourcetypeid="54" sourcetypename="Motor Home"/>
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sourcetypeid="11" sourcetypename="Motorcycle"/>
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sourcetypeid="21" sourcetypename="Passenger Car"/>
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sourcetypeid="51" sourcetypename="Refuse Truck"/>
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sourcetypeid="43" sourcetypename="School Bus"/>
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sourcetypeid="42" sourcetypename="Transit Bus"/>
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        <offroadvehicleselections>
        </offroadvehicleselections>
        <offroadvehiclesccs>
        </offroadvehiclesccs>
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                <roadtype roadtypeid="4" roadtypename="Urban Restricted Access"
modelCombination="M1"/>
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modelCombination="M1"/>
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                <pollutantprocessassociation pollutantkey="2" pollutantname="Carbon
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Monoxide (CO)" processkey="1" processname="Running Exhaust"/>
<pollutantprocessassociation pollutantkey="2" pollutantname="Carbon Monoxide (CO)" processkey="15" processname="Crankcase Running Exhaust"/>
</pollutantprocessassociations>
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]]></internalcontrolstrategy>
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<emissionprocess selected="false"/>
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<roadtype selected="false"/>
<sourceusetype selected="false"/>
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<estimateuncertainty selected="false" numberOfIterations="2" keepSampledData="false" keepIterations="false"/>
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<outputshp value="false"/>
<outputshidling value="false"/>
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<scaleinputdatabase servername="localhost" databasename="2025_mls_pgcounty_co_in" description=""/>
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        <savedata>

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        <donotexecute>

        </donotexecute>

        <generatordatabase shouldsave="false" servername="" databasename=""
description=""/>
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truncateactivity="true" truncatebaserates="true"/>
</runspec>
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Year: 2040
County: Montgomery
Pollutant: CO]]></description>
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        <modelscale value="Inv"/>
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- Montgomery County"/>
        </geographicselections>
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                <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="62" sourcetypename="Combination Long-haul Truck"/>
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County: Prince George's
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APPENDIX E – CAL3QHC INPUT AND OUTPUT

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2016 CO MD5 & Auth Rd NB OUT 3
2016 CO MD97 & Inner Loop Ramp NB INP 10
2016 CO MD97 & Inner Loop Ramp NB OUT 12
2016 CO MD187 & I270 SB Ramp NB INP 19
2016 CO MD187 & I270 SB Ramp NB OUT 21
2016 I270 & I370 NB INP 28
2016 I270 & I370 NB OUT 30
2016 I270 & MD189 NB INP 37
2016 I270 & MD189 NB OUT 39
2016 I495 & I95 NB INP 46
2016 I495 & I95 NB OUT 48
2016 I495 & I270_MD355 NB INP 55
2016 I495 & I270_MD355 NB OUT 57
2016 I495 & I270Spur NB INP 65
2016 I495 & I270Spur NB OUT 66
2016 I495 & MD5 NB INP 72
2016 I495 & MD5 NB OUT 74
2016 I495 & MD97 NB INP 81
2016 I495 & MD97 NB OUT 83
2016 I495 & MD185 NB INP 90
2016 I495 & MD185 NB OUT 92
2016 I495 & MD190 NB INP 99
2016 I495 & MD190 NB OUT 101
2016 I495 & MD 193 NB INP 108
2016 I495 & MD 193 NB OUT 110
2016 I495 & MD 650 NB INP 117
2016 I495 & MD 650 NB OUT 119
2016 I495 & US50 NB INP 126
2016 I495 & US50 NB OUT 128
2016 MD97 & Outer Loop Ramp NB INP 135
2016 MD97 & Outer Loop Ramp NB OUT 137
2016 MD202 & Outer Loop Ramp NB INP 143
2016 MD202 & Outer Loop Ramp NB OUT 145
2025 I270 & I370 INP 152
2025 I270 & I370 OUT 154
2025 I270 & MD189 INP 161
2025 I270 & MD189 OUT 163

2025 I495 & I95 INP 170
2025 I495 & I95 OUT 172
2025 I495 & I270_MD355 INP 179
2025 I495 & I270_MD355 OUT 181
2025 I495 & I270Spur INP 189
2025 I495 & I270Spur OUT 190
2025 I495 & MD5 INP 196
2025 I495 & MD5 OUT 198
2025 I495 & MD97 INP 205
2025 I495 & MD97 OUT 207
2025 I495 & MD185 INP 214
2025 I495 & MD185 OUT 216
2025 I495 & MD190 INP 223
2025 I495 & MD190 OUT 225
2025 I495 & MD 193 INP 232
2025 I495 & MD 193 OUT 234
2025 I495 & MD 650 INP 241
2025 I495 & MD 650 OUT 243
2025 I495 & US50 INP 250
2025 I495 & US50 OUT 252
2025 MD5 & Auth Rd INP 259
2025 MD5 & Auth Rd OUT 261
2025 MD97 & Inner Loop Ramp INP 268
2025 MD97 & Inner Loop Ramp OUT 270
2025 MD97 & Outer Loop Ramp INP 277
2025 MD97 & Outer Loop Ramp OUT 279
2025 MD187 & I270 SB Ramp INP 286
2025 MD187 & I270 SB Ramp OUT 288
2025 MD187 SPUI INP 295
2025 MD187 SPUI OUT 297
2025 MD202 & Outer Loop Ramp INP 304
2025 MD202 & Outer Loop Ramp OUT 306
2025 NoBuild I270 & I370 rev IN 313
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2025 NoBuild I495 & I95 rev OUT 333
2025 NoBuild I495 & I270_MD355 rev IN 340
2025 NoBuild I495 & I270_MD355 rev OUT 342
2025 NoBuild I495 & I270Spur rev IN 350
2025 NoBuild I495 & I270Spur rev OUT 351
2025 NoBuild I495 & MD5 rev IN 357
2025 NoBuild I495 & MD5 rev OUT 359

2025 NoBuild I495 & MD97 rev IN 366
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2025 NoBuild I495 & MD185 rev IN 375
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2025 NoBuild I495 & MD190 OUT 384
2025 NoBuild I495 & MD190 rev IN 386
2025 NoBuild I495 & MD 193 IN 393
2025 NoBuild I495 & MD 193 OUT 395
2025 NoBuild I495 & MD650 IN 402
2025 NoBuild I495 & MD650 OUT 404
2025 NoBuild I495 & US50 rev IN 411
2025 NoBuild I495 & US50 rev OUT 413
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2025 NoBuild MD97 & Outer Loop Ramp rev NB INP 436
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2025 NoBuild MD187 & I270 SB Ramp rev NB OUT 446
2025 NoBuild MD202 & Outer Loop Ramp rev NB INP 453
2025 NoBuild MD202 & Outer Loop Ramp rev NB OUT 455
2025 US29 & Direct Access Ramps INP 461
2025 US29 & Direct Access Ramps OUT 463
2025 US29 & Inner Loop Ramp INP 470
2025 US29 & Inner Loop Ramp OUT 472
2025 US29 & Outer Loop Ramp INP 479
2025 US29 & Outer Loop Ramp OUT 481
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2040 CO MD187 & I270 SB Ramp OUT 508
2040 CO US29 & Direct Access Ramps INP 515
2040 CO US29 & Direct Access Ramps OUT 517
2040 CO US29 & Inner Loop Ramp INP 524
2040 CO US29 & Inner Loop Ramp OUT 526
2040 CO US29 & Outer Loop Ramp INP 533
2040 CO US29 & Outer Loop Ramp OUT 535
2040 I270 & I370 INP 542
2040 I270 & I370 OUT 544
2040 I270 & MD189 INP 551
2040 I270 & MD189 OUT 553

2040 I495 & I95 INP 560
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2040 I495 & I270_MD355 INP 569
2040 I495 & I270_MD355 OUT 571
2040 I495 & I270Spur INP 579
2040 I495 & I270Spur OUT 580
2040 I495 & MD5 INP 586
2040 I495 & MD5 OUT 588
2040 I495 & MD97 INP 595
2040 I495 & MD97 OUT 597
2040 I495 & MD185 INP 604
2040 I495 & MD185 OUT 606
2040 I495 & MD190 INP 613
2040 I495 & MD190 OUT 615
2040 I495 & MD 193 INP 622
2040 I495 & MD 193 OUT 624
2040 I495 & MD 650 INP 631
2040 I495 & MD 650 OUT 633
2040 I495 & US50 INP 640
2040 I495 & US50 OUT 642
2040 MD97 & Outer Loop Ramp INP 649
2040 MD97 & Outer Loop Ramp OUT 651
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2040 MD187 SPUI OUT 660
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2040 NoBuild I495 & US50 rev OUT 776
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2040 NoBuild MD5 & Auth Rd rev NB OUT 784
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'E Leg, S Side-Midblk',624.7,178.4,5.9
'W Leg, S Side - 25 m',-97.5,-162.6,5.9
'W Leg, S Side - 50 m',-155.5,-220.6,5.9
'W Leg, S Side-Midblk',-463.8,-528.9,5.9
'2016 MD5 & Auth Rd (IS.7)',9,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-34,-12,-444,1115,13200,3.8,0.0,91.7
1
'N Leg Dep - FreeFlow','AG',23,8,-388,1136,8800,3.0,0.0,67.7
1
'S Leg App - FreeFlow','AG',23,8,433,-1119,8800,6.0,0.0,67.7
1
'S Leg Dep - FreeFlow','AG',-34,-12,377,-1140,13200,3.0,0.0,91.7
1
'E Leg App - FreeFlow','AG',-7,10,1124,422,2074,3.6,0.0,43.7
2
'E Leg App - Queue','AG',41,28,1124,422,0.0,24.0,2
120,62,2,2074,17.9,1600,1,3
```

```
1
'E Leg Dep - FreeFlow','AG',10,-16,1134,394,3111,5.1,0.0,55.7
1
'W Leg App - FreeFlow','AG',10,-16,-836,-861,2200,3.3,0.0,55.7
1
'W Leg Dep - FreeFlow','AG',-7,10,-857,-840,4400,3.3,0.0,43.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2016 MD5 & Auth Rd (IS.7)

DATE : 1/ 4/19
TIME : 13:26:35

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-34.0	-12.0	-444.0	1115.0	*	1199.	340.	AG	13200.	3.8	0.0	91.7		
2. N Leg Dep - FreeFlow	*	23.0	8.0	-388.0	1136.0	*	1201.	340.	AG	8800.	3.0	0.0	67.7		
3. S Leg App - FreeFlow	*	23.0	8.0	433.0	-1119.0	*	1199.	160.	AG	8800.	6.0	0.0	67.7		
4. S Leg Dep - FreeFlow	*	-34.0	-12.0	377.0	-1140.0	*	1201.	160.	AG	13200.	3.0	0.0	91.7		
5. E Leg App - FreeFlow	*	-7.0	10.0	1124.0	422.0	*	1204.	70.	AG	2074.	3.6	0.0	43.7		
6. E Leg App - Queue	*	41.0	28.0	3480.1	1279.2	*	3660.	70.	AG	50.	100.0	0.0	24.0	1.44	185.9
7. E Leg Dep - FreeFlow	*	10.0	-16.0	1134.0	394.0	*	1196.	70.	AG	3111.	5.1	0.0	55.7		
8. W Leg App - FreeFlow	*	10.0	-16.0	-836.0	-861.0	*	1196.	225.	AG	2200.	3.3	0.0	55.7		
9. W Leg Dep - FreeFlow	*	-7.0	10.0	-857.0	-840.0	*	1202.	225.	AG	4400.	3.3	0.0	43.7		

JOB: I-495 & I-270 MLS RUN: 2016 MD5 & Auth Rd (IS.7)

DATE : 1/ 4/19
TIME : 13:26:35

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
6. E Leg App - Queue	* 120	62	2.0	2074	1600	17.90	1	3

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	* 42.9	51.8	5.9
2. N Leg, E Side - 25 m	* 18.2	119.5	5.9
3. N Leg, E Side - 50 m	* -9.8	196.5	5.9
4. N Leg, E Side-Midblk	* -158.9	606.2	5.9
5. N Leg, W Side-Corner	* -76.8	-28.7	5.9
6. N Leg, W Side - 25 m	* -101.4	39.0	5.9
7. N Leg, W Side - 50 m	* -129.5	116.0	5.9
8. N Leg, W Side-Midblk	* -278.6	525.7	5.9
9. S Leg, E Side-Corner	* 70.2	-23.4	5.9
10. S Leg, E Side - 25 m	* 94.9	-91.1	5.9
11. S Leg, E Side - 50 m	* 122.9	-168.1	5.9
12. S Leg, E Side-Midblk	* 272.0	-577.8	5.9
13. S Leg, W Side-Corner	* -46.6	-111.7	5.9
14. S Leg, W Side - 25 m	* -22.0	-179.3	5.9
15. S Leg, W Side - 50 m	* 6.1	-256.4	5.9
16. S Leg, W Side-Midblk	* 155.2	-666.1	5.9
17. E Leg, N Side - 25 m	* 110.6	76.4	5.9
18. E Leg, N Side - 50 m	* 187.6	104.5	5.9
19. E Leg, N Side-Midblk	* 597.3	253.6	5.9
20. W Leg, N Side - 25 m	* -127.7	-79.7	5.9
21. W Leg, N Side - 50 m	* -185.7	-137.6	5.9
22. W Leg, N Side-Midblk	* -494.0	-445.9	5.9

23. E Leg, S Side - 25 m *	137.9	1.2	5.9	*
24. E Leg, S Side - 50 m *	215.0	29.3	5.9	*
25. E Leg, S Side-Midblk *	624.7	178.4	5.9	*
26. W Leg, S Side - 25 m *	-97.5	-162.6	5.9	*
27. W Leg, S Side - 50 m *	-155.5	-220.6	5.9	*
28. W Leg, S Side-Midblk *	-463.8	-528.9	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.1000	0.1000	0.1000	0.1000	2.4000	2.3000	2.3000	2.3000	0.9000	0.5000	0.5000	0.3000	2.6000	2.6000	2.5000
20.	* 0.1000	0.1000	0.1000	0.1000	2.2000	2.1000	2.1000	2.1000	1.0000	0.7000	0.5000	0.3000	2.5000	2.2000	2.3000
30.	* 0.1000	0.1000	0.1000	0.1000	1.9000	1.9000	1.9000	1.9000	1.0000	0.7000	0.5000	0.3000	2.5000	2.3000	2.4000
40.	* 0.1000	0.1000	0.1000	0.1000	1.9000	1.7000	1.7000	1.7000	1.1000	0.6000	0.4000	0.1000	2.5000	2.1000	2.1000
50.	* 0.1000	0.0000	0.0000	0.0000	2.3000	1.7000	1.6000	1.6000	1.1000	0.6000	0.4000	0.1000	2.5000	2.2000	2.1000
60.	* 0.4000	0.0000	0.0000	0.0000	2.8000	1.8000	1.7000	1.7000	1.2000	0.5000	0.1000	0.0000	2.5000	2.2000	1.9000
70.	* 0.9000	0.3000	0.0000	0.0000	3.5000	2.2000	1.9000	1.8000	1.0000	0.1000	0.1000	0.0000	2.3000	2.0000	1.9000
80.	* 1.2000	0.4000	0.3000	0.0000	3.3000	2.3000	2.1000	1.7000	0.4000	0.0000	0.0000	0.0000	1.9000	1.8000	1.8000
90.	* 1.1000	0.5000	0.4000	0.0000	2.8000	2.3000	2.0000	1.6000	0.3000	0.1000	0.1000	0.1000	1.8000	1.8000	1.8000
100.	* 1.0000	0.6000	0.5000	0.1000	2.6000	2.5000	2.1000	1.8000	0.2000	0.1000	0.1000	0.1000	1.8000	1.8000	1.8000

110. * 0.9000 0.5000 0.4000 0.2000 2.6000 2.6000 2.2000 2.0000 0.3000
0.2000 0.2000 0.2000 0.2000 2.0000 2.0000 2.0000
120. * 0.9000 0.5000 0.4000 0.2000 2.8000 2.9000 2.5000 2.2000 0.2000
0.2000 0.2000 0.2000 0.2000 2.2000 2.2000 2.2000
130. * 0.8000 0.5000 0.4000 0.2000 3.2000 2.9000 2.9000 2.4000 0.2000
0.2000 0.2000 0.2000 0.2000 2.5000 2.5000 2.5000
140. * 1.1000 0.7000 0.5000 0.3000 3.4000 3.2000 3.2000 3.0000 0.5000
0.5000 0.5000 0.4000 2.7000 2.7000 2.7000
150. * 1.9000 1.5000 1.2000 1.0000 3.4000 3.3000 3.3000 3.1000 1.3000
1.3000 1.3000 1.2000 2.8000 2.8000 2.6000
160. * 3.5000 2.7000 2.4000 2.2000 2.7000 2.5000 2.4000 2.4000 2.9000
2.9000 2.8000 2.4000 2.0000 1.9000 1.9000
170. * 4.2000 3.3000 3.1000 2.7000 1.5000 1.2000 1.3000 1.1000 3.7000
3.7000 3.7000 3.2000 0.8000 0.8000 0.8000
180. * 3.8000 3.1000 2.9000 2.6000 1.1000 0.6000 0.6000 0.4000 3.5000
3.5000 3.5000 3.3000 0.3000 0.3000 0.3000
190. * 3.3000 2.6000 2.4000 2.3000 0.9000 0.5000 0.5000 0.3000 3.1000
3.1000 3.1000 3.1000 0.1000 0.1000 0.1000
200. * 3.1000 2.4000 2.2000 2.1000 1.0000 0.5000 0.4000 0.3000 2.7000
2.7000 2.7000 2.7000 0.1000 0.1000 0.1000
210. * 3.0000 2.3000 2.2000 1.9000 1.2000 0.5000 0.4000 0.1000 2.6000
2.5000 2.5000 2.5000 0.2000 0.1000 0.1000
220. * 3.1000 2.2000 1.9000 1.7000 1.2000 0.4000 0.2000 0.1000 2.7000
2.3000 2.3000 2.3000 0.6000 0.1000 0.1000
230. * 2.7000 1.8000 1.6000 1.6000 0.7000 0.1000 0.1000 0.1000 2.7000
2.4000 2.3000 2.2000 0.7000 0.2000 0.1000
240. * 2.4000 1.6000 1.6000 1.6000 0.3000 0.0000 0.0000 0.0000 2.8000
2.5000 2.4000 2.2000 0.8000 0.3000 0.2000
250. * 2.0000 1.7000 1.7000 1.7000 0.1000 0.0000 0.0000 0.0000 3.1000
2.6000 2.5000 2.3000 0.7000 0.3000 0.3000
260. * 1.8000 1.6000 1.6000 1.6000 0.1000 0.0000 0.0000 0.0000 3.0000
2.5000 2.4000 2.2000 0.6000 0.3000 0.3000
270. * 1.6000 1.6000 1.6000 1.6000 0.0000 0.1000 0.1000 0.1000 3.0000
2.4000 2.4000 2.3000 0.6000 0.3000 0.2000
280. * 1.7000 1.7000 1.7000 1.7000 0.1000 0.1000 0.1000 0.1000 3.1000
2.6000 2.5000 2.4000 0.6000 0.4000 0.3000
290. * 1.9000 1.9000 1.9000 1.9000 0.1000 0.1000 0.1000 0.1000 3.2000
2.9000 2.7000 2.6000 0.6000 0.4000 0.3000
300. * 2.0000 2.0000 2.0000 2.0000 0.1000 0.2000 0.2000 0.2000 3.4000
3.1000 2.9000 2.8000 0.6000 0.4000 0.3000
310. * 2.2000 2.2000 2.2000 2.2000 0.2000 0.2000 0.2000 0.2000 3.3000
3.4000 3.4000 3.2000 0.6000 0.4000 0.3000
320. * 2.5000 2.5000 2.5000 2.4000 0.4000 0.4000 0.4000 0.3000 3.7000
3.7000 3.6000 3.6000 0.9000 0.6000 0.5000
330. * 2.5000 2.4000 2.4000 2.1000 1.0000 1.0000 1.0000 0.8000 3.6000
3.5000 3.7000 3.8000 1.5000 1.3000 1.2000
340. * 1.8000 1.8000 1.8000 1.5000 2.1000 2.1000 2.1000 1.8000 2.9000
2.8000 2.8000 3.0000 2.6000 2.4000 2.1000

```
 350.  *  0.8000  0.8000  0.8000  0.6000  2.9000  2.8000  2.7000  2.5000  1.9000
1.4000  1.5000  1.5000  3.2000  2.8000  2.9000
 360.  *  0.2000  0.2000  0.2000  0.2000  2.7000  2.7000  2.7000  2.6000  1.1000
0.7000  0.8000  0.5000  3.0000  2.7000  2.7000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  4.2000  3.3000  3.1000  2.7000  3.5000  3.3000  3.3000  3.1000  3.7000
3.7000  3.7000  3.8000  3.2000  2.8000  2.9000
 DEGR. *    170     170     170     170      70     150     150     150     170
170     170     330     350     150     350
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  2.5000  0.0000  0.0000  0.0000  1.4000  1.1000  0.4000  0.8000  0.8000
0.8000  1.8000  1.5000  0.9000
  20.  *  2.3000  0.0000  0.0000  0.0000  1.3000  1.0000  0.5000  0.8000  0.8000
0.8000  1.9000  1.4000  1.1000
  30.  *  2.2000  0.0000  0.0000  0.0000  1.3000  0.9000  0.6000  0.9000  0.9000
0.9000  1.9000  1.6000  1.1000
  40.  *  1.8000  0.0000  0.0000  0.0000  1.5000  1.2000  1.1000  1.0000  1.0000
1.0000  1.9000  1.5000  1.2000
  50.  *  1.8000  0.1000  0.1000  0.1000  1.8000  1.8000  1.5000  1.1000  1.1000
1.1000  1.8000  1.3000  0.9000
  60.  *  1.8000  0.4000  0.4000  0.4000  2.5000  2.3000  1.6000  1.2000  1.2000
1.2000  1.8000  1.3000  0.6000
  70.  *  1.9000  0.9000  0.9000  0.8000  2.8000  2.1000  1.3000  1.0000  1.0000
0.9000  1.4000  0.9000  0.4000
```

```
  80.  *  1.8000  1.2000  1.2000  1.0000  2.3000  1.7000  1.2000  0.4000  0.4000
0.4000  1.2000  0.8000  0.4000
  90.  *  1.8000  1.1000  1.1000  1.1000  2.1000  1.6000  1.2000  0.2000  0.2000
0.1000  1.2000  0.8000  0.4000
 100.  *  1.8000  1.0000  1.0000  1.0000  2.0000  1.6000  1.1000  0.1000  0.1000
0.1000  1.3000  0.9000  0.4000
 110.  *  2.0000  0.9000  0.9000  0.9000  2.0000  1.7000  1.1000  0.1000  0.1000
0.1000  1.3000  1.0000  0.4000
 120.  *  2.2000  0.9000  0.9000  0.9000  2.0000  1.6000  1.0000  0.0000  0.0000
0.0000  1.4000  1.0000  0.4000
 130.  *  2.3000  0.8000  0.8000  0.7000  2.2000  1.7000  0.9000  0.0000  0.0000
0.0000  1.5000  1.0000  0.2000
 140.  *  2.5000  0.7000  0.7000  0.7000  2.2000  1.7000  0.7000  0.0000  0.0000
0.0000  1.5000  1.0000  0.0000
 150.  *  2.2000  0.8000  0.7000  0.7000  1.8000  1.3000  0.6000  0.1000  0.0000
0.0000  1.2000  0.5000  0.0000
 160.  *  1.5000  1.5000  1.1000  0.8000  1.3000  0.9000  0.7000  0.7000  0.3000
0.0000  0.5000  0.2000  0.0000
 170.  *  0.6000  2.0000  1.4000  0.7000  0.8000  0.7000  0.7000  1.3000  0.6000
0.0000  0.1000  0.0000  0.0000
 180.  *  0.3000  2.4000  1.8000  0.8000  0.8000  0.8000  0.8000  1.7000  1.0000
0.1000  0.0000  0.0000  0.0000
 190.  *  0.1000  2.3000  1.8000  1.0000  0.8000  0.8000  0.8000  1.6000  1.0000
0.3000  0.0000  0.0000  0.0000
 200.  *  0.1000  2.3000  1.9000  1.3000  0.9000  0.9000  0.9000  1.4000  1.0000
0.4000  0.0000  0.0000  0.0000
 210.  *  0.1000  2.4000  1.9000  1.3000  1.1000  1.1000  1.1000  1.5000  1.1000
0.5000  0.1000  0.1000  0.1000
 220.  *  0.1000  2.4000  1.9000  1.4000  1.1000  1.1000  1.0000  1.6000  1.1000
0.5000  0.4000  0.4000  0.3000
 230.  *  0.0000  2.4000  2.2000  1.6000  0.7000  0.7000  0.6000  1.7000  1.1000
0.5000  0.7000  0.7000  0.6000
 240.  *  0.0000  1.9000  1.9000  1.6000  0.3000  0.3000  0.2000  1.9000  1.4000
0.9000  0.8000  0.8000  0.7000
 250.  *  0.0000  1.4000  1.3000  1.4000  0.1000  0.1000  0.1000  2.0000  1.7000
1.4000  0.7000  0.7000  0.7000
 260.  *  0.0000  1.1000  0.9000  0.7000  0.1000  0.1000  0.1000  2.2000  1.8000
1.6000  0.6000  0.6000  0.6000
 270.  *  0.1000  1.1000  0.8000  0.4000  0.0000  0.0000  0.0000  2.1000  1.8000
1.4000  0.6000  0.6000  0.6000
 280.  *  0.2000  1.0000  0.8000  0.3000  0.0000  0.0000  0.0000  2.0000  1.7000
1.3000  0.5000  0.5000  0.5000
 290.  *  0.2000  1.0000  0.8000  0.3000  0.0000  0.0000  0.0000  2.0000  1.7000
1.2000  0.5000  0.5000  0.5000
 300.  *  0.2000  1.2000  0.8000  0.3000  0.0000  0.0000  0.0000  1.9000  1.6000
1.1000  0.5000  0.5000  0.5000
 310.  *  0.2000  1.2000  0.8000  0.2000  0.0000  0.0000  0.0000  2.0000  1.6000
1.0000  0.5000  0.5000  0.5000
```

```
 320.  *  0.4000  1.2000  0.8000  0.0000  0.0000  0.0000  0.0000  2.0000  1.6000
0.8000  0.5000  0.5000  0.5000
 330.  *  1.2000  1.0000  0.5000  0.0000  0.1000  0.0000  0.0000  1.8000  1.3000
0.8000  0.6000  0.5000  0.5000
 340.  *  2.2000  0.4000  0.2000  0.0000  0.6000  0.2000  0.0000  1.1000  0.9000
0.7000  1.1000  0.8000  0.5000
 350.  *  2.9000  0.1000  0.0000  0.0000  1.2000  0.7000  0.0000  0.9000  0.8000
0.8000  1.7000  1.2000  0.5000
 360.  *  2.9000  0.0000  0.0000  0.0000  1.3000  0.9000  0.2000  0.8000  0.8000
0.8000  2.1000  1.6000  0.8000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  2.9000  2.4000  2.2000  1.6000  2.8000  2.3000  1.6000  2.2000  1.8000
1.6000  2.1000  1.6000  1.2000
 DEGR. *    350     180     230     230      70      60      60     260     260
260     360      30      40

 THE HIGHEST CONCENTRATION OF   4.2000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
5,5,2,1,2200,2200,2200,2200,2200,2200,2200,2200,1036.6,1036.6,2200,2200,1036.6,1036.
6,2200,2200,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,120
0,-1200,0,0,0,0,0,0,-10,-10,5,-20,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',62.9,46.3,5.9
'N Leg, E Side - 25 m',50.4,117.2,5.9
'N Leg, E Side - 50 m',36.2,198.0,5.9
'N Leg, E Side-Midblk',-39.5,627.3,5.9
'N Leg, W Side-Corner',-76.1,28.7,5.9
'N Leg, W Side - 25 m',-88.7,99.7,5.9
'N Leg, W Side - 50 m',-102.9,180.4,5.9
'N Leg, W Side-Midblk',-178.6,609.8,5.9
'S Leg, E Side-Corner',72.8,-9.7,5.9
'S Leg, E Side - 25 m',85.3,-80.6,5.9
'S Leg, E Side - 50 m',99.5,-161.4,5.9
'S Leg, E Side-Midblk',175.2,-590.7,5.9
'S Leg, W Side-Corner',-66.1,-28.3,5.9
'S Leg, W Side - 25 m',-53.6,-99.3,5.9
'S Leg, W Side - 50 m',-39.3,-180.1,5.9
'S Leg, W Side-Midblk',36.4,-609.4,5.9
'E Leg, N Side - 25 m',130.6,70.9,5.9
'E Leg, N Side - 50 m',207.7,99.0,5.9
'E Leg, N Side-Midblk',617.3,248.1,5.9
'W Leg, N Side - 25 m',-147.9,35.0,5.9
'W Leg, N Side - 50 m',-229.6,42.2,5.9
'W Leg, N Side-Midblk',-663.9,80.2,5.9
'E Leg, S Side - 25 m',140.5,14.9,5.9
'E Leg, S Side - 50 m',217.5,43.0,5.9
'E Leg, S Side-Midblk',627.2,192.1,5.9
'W Leg, S Side - 25 m',-137.8,-22.1,5.9
'W Leg, S Side - 50 m',-219.5,-14.9,5.9
'W Leg, S Side-Midblk',-653.8,23.1,5.9
'2016 CO MD97 & Inner Loop Ramp (IS.28)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-30,-5,-238,1177,5183,4.68,0.0,79.7
2
'N Leg App - Queue','AG',-32,7,-238,1177,0.0,60.0,5
120,62,2,5183,13.89,1600,1,3
1
'N Leg Dep - FreeFlow','AG',30,5,-179,1187,5183,3.27,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,5,238,-1177,5183,3.27,0.0,79.7
2
'S Leg App - Queue','AG',34,-18,238,-1177,0.0,60.0,5
120,62,2,5183,13.89,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-30,-5,179,-1187,5183,6.54,0.0,79.7
1
'E Leg App - FreeFlow','AG',-1,6,1126,416,2200,3.48,0.0,31.7
1
'E Leg Dep - FreeFlow','AG',2,-12,1132,399,4400,3.48,0.0,43.7
1
'W Leg App - FreeFlow','AG',2,-12,-1196,93,4400,3.48,0.0,43.7
2
'W Leg App - Queue','AG',-61,-7,-1196,93,0.0,24.0,2
120,62,2,4400,13.64,1600,1,3
1
'W Leg Dep - FreeFlow','AG',-1,6,-1195,111,2200,7.51,0.0,31.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface
CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2016 CO MD97 & Inner Loop Ramp (IS.28)

DATE : 1/ 4/19
TIME : 14:59:44

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-30.0	-5.0	-238.0	1177.0	*	1200.	350.	AG	5183.	4.7	0.0	79.7		
2. N Leg App - Queue	*	-32.0	7.0	-664.8	3601.0	*	3649.	350.	AG	96.	100.0	0.0	60.0	1.44	185.4
3. N Leg Dep - FreeFlow	*	30.0	5.0	-179.0	1187.0	*	1200.	350.	AG	5183.	3.3	0.0	79.7		
4. S Leg App - FreeFlow	*	30.0	5.0	238.0	-1177.0	*	1200.	170.	AG	5183.	3.3	0.0	79.7		
5. S Leg App - Queue	*	34.0	-18.0	666.6	-3612.0	*	3649.	170.	AG	96.	100.0	0.0	60.0	1.44	185.4
6. S Leg Dep - FreeFlow	*	-30.0	-5.0	179.0	-1187.0	*	1200.	170.	AG	5183.	6.5	0.0	79.7		
7. E Leg App - FreeFlow	*	-1.0	6.0	1126.0	416.0	*	1199.	70.	AG	2200.	3.5	0.0	31.7		
8. E Leg Dep - FreeFlow	*	2.0	-12.0	1132.0	399.0	*	1202.	70.	AG	4400.	3.5	0.0	43.7		
9. W Leg App - FreeFlow	*	2.0	-12.0	-1196.0	93.0	*	1203.	275.	AG	4400.	3.5	0.0	43.7		
10. W Leg App - Queue	*	-61.0	-7.0	-15712.0	1371.9	*	*****								

275. AG 38. 100.0 0.0 24.0 3.06 798.1
11. W Leg Dep - FreeFlow* -1.0 6.0 -1195.0 111.0 * 1199.
275. AG 2200. 7.5 0.0 31.7

JOB: I-495 & I-270 MLS RUN: 2016 CO MD97 & Inner Loop Ramp (IS.28)

DATE : 1/ 4/19
TIME : 14:59:44

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	* 120	62	2.0	5183	1600	13.89	1	3
5. S Leg App - Queue	* 120	62	2.0	5183	1600	13.89	1	3
10. W Leg App - Queue	* 120	62	2.0	4400	1600	13.64	1	3

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z *
1. N Leg, E Side-Corner	* 62.9	46.3	5.9 *
2. N Leg, E Side - 25 m	* 50.4	117.2	5.9 *
3. N Leg, E Side - 50 m	* 36.2	198.0	5.9 *
4. N Leg, E Side-Midblk	* -39.5	627.3	5.9 *
5. N Leg, W Side-Corner	* -76.1	28.7	5.9 *
6. N Leg, W Side - 25 m	* -88.7	99.7	5.9 *
7. N Leg, W Side - 50 m	* -102.9	180.4	5.9 *
8. N Leg, W Side-Midblk	* -178.6	609.8	5.9 *
9. S Leg, E Side-Corner	* 72.8	-9.7	5.9 *
10. S Leg, E Side - 25 m	* 85.3	-80.6	5.9 *
11. S Leg, E Side - 50 m	* 99.5	-161.4	5.9 *
12. S Leg, E Side-Midblk	* 175.2	-590.7	5.9 *
13. S Leg, W Side-Corner	* -66.1	-28.3	5.9 *
14. S Leg, W Side - 25 m	* -53.6	-99.3	5.9 *

15. S Leg, W Side - 50 m *	-39.3	-180.1	5.9	*
16. S Leg, W Side-Midblk *	36.4	-609.4	5.9	*
17. E Leg, N Side - 25 m *	130.6	70.9	5.9	*
18. E Leg, N Side - 50 m *	207.7	99.0	5.9	*
19. E Leg, N Side-Midblk *	617.3	248.1	5.9	*
20. W Leg, N Side - 25 m *	-147.9	35.0	5.9	*
21. W Leg, N Side - 50 m *	-229.6	42.2	5.9	*
22. W Leg, N Side-Midblk *	-663.9	80.2	5.9	*
23. E Leg, S Side - 25 m *	140.5	14.9	5.9	*
24. E Leg, S Side - 50 m *	217.5	43.0	5.9	*
25. E Leg, S Side-Midblk *	627.2	192.1	5.9	*
26. W Leg, S Side - 25 m *	-137.8	-22.1	5.9	*
27. W Leg, S Side - 50 m *	-219.5	-14.9	5.9	*
28. W Leg, S Side-Midblk *	-653.8	23.1	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.1000	0.1000	0.1000	0.1000	1.9000	1.9000	1.9000	1.8000	0.8000	0.5000	0.4000	0.2000	3.0000	2.2000	2.3000
20.	* 0.1000	0.1000	0.1000	0.1000	1.6000	1.6000	1.6000	1.6000	0.8000	0.4000	0.4000	0.2000	2.6000	2.0000	2.0000
30.	* 0.1000	0.1000	0.1000	0.1000	1.4000	1.4000	1.4000	1.4000	0.8000	0.5000	0.4000	0.2000	2.3000	1.8000	1.9000
40.	* 0.0000	0.0000	0.0000	0.0000	1.3000	1.3000	1.3000	1.3000	0.9000	0.4000	0.3000	0.1000	2.3000	1.9000	1.7000
50.	* 0.1000	0.0000	0.0000	0.0000	1.4000	1.3000	1.3000	1.3000	1.0000	0.4000	0.3000	0.0000	2.3000	1.7000	1.6000
60.	* 0.5000	0.0000	0.0000	0.0000	1.5000	1.1000	1.1000	1.1000	1.2000	0.4000	0.2000	0.0000	2.8000	1.8000	1.7000

```
  70.  *  1.0000  0.2000  0.0000  0.0000  1.7000  1.5000  1.3000  1.3000  1.0000
0.2000  0.1000  0.0000  2.9000  1.6000  1.4000
  80.  *  1.2000  0.3000  0.2000  0.0000  2.1000  1.6000  1.5000  1.3000  0.5000
0.0000  0.0000  0.0000  2.6000  1.5000  1.4000
  90.  *  1.2000  0.4000  0.3000  0.0000  2.3000  1.6000  1.5000  1.3000  0.2000
0.0000  0.0000  0.0000  2.1000  1.3000  1.3000
 100.  *  1.0000  0.4000  0.3000  0.0000  2.3000  1.4000  1.4000  1.2000  0.1000
0.0000  0.0000  0.0000  1.6000  1.4000  1.4000
 110.  *  0.8000  0.3000  0.3000  0.1000  2.7000  1.6000  1.5000  1.4000  0.1000
0.0000  0.0000  0.0000  1.4000  1.4000  1.4000
 120.  *  0.8000  0.3000  0.3000  0.1000  2.5000  1.6000  1.5000  1.4000  0.0000
0.0000  0.0000  0.0000  1.6000  1.5000  1.5000
 130.  *  0.7000  0.4000  0.3000  0.2000  2.8000  2.1000  1.7000  1.5000  0.1000
0.1000  0.1000  0.1000  1.8000  1.7000  1.7000
 140.  *  0.6000  0.4000  0.3000  0.2000  3.0000  2.3000  1.8000  1.7000  0.1000
0.1000  0.1000  0.1000  1.9000  1.8000  1.8000
 150.  *  0.8000  0.4000  0.3000  0.2000  3.2000  2.4000  2.2000  2.0000  0.1000
0.1000  0.1000  0.1000  2.2000  2.2000  2.2000
 160.  *  1.3000  0.9000  0.8000  0.6000  3.0000  2.6000  2.4000  2.1000  0.7000
0.7000  0.6000  0.4000  2.2000  2.2000  2.2000
 170.  *  2.2000  1.7000  1.5000  1.3000  2.7000  2.1000  1.8000  1.8000  1.5000
1.4000  1.4000  1.1000  1.7000  1.7000  1.7000
 180.  *  2.6000  2.2000  2.0000  1.6000  1.7000  1.0000  1.0000  0.8000  2.0000
2.0000  2.0000  1.8000  0.7000  0.7000  0.7000
 190.  *  2.5000  2.0000  1.9000  1.7000  1.3000  0.6000  0.5000  0.4000  1.9000
1.9000  1.9000  1.8000  0.3000  0.3000  0.3000
 200.  *  2.3000  1.8000  1.6000  1.6000  1.0000  0.5000  0.3000  0.3000  1.8000
1.8000  1.8000  1.8000  0.1000  0.1000  0.1000
 210.  *  2.1000  1.6000  1.4000  1.5000  1.1000  0.5000  0.4000  0.3000  1.6000
1.5000  1.5000  1.5000  0.1000  0.1000  0.1000
 220.  *  1.9000  1.5000  1.2000  1.3000  1.2000  0.5000  0.4000  0.3000  1.5000
1.4000  1.4000  1.4000  0.1000  0.1000  0.1000
 230.  *  2.0000  1.5000  1.3000  1.3000  1.3000  0.5000  0.4000  0.2000  1.4000
1.4000  1.4000  1.4000  0.2000  0.1000  0.1000
 240.  *  2.0000  1.3000  1.4000  1.2000  1.4000  0.6000  0.4000  0.0000  1.5000
1.2000  1.2000  1.2000  0.1000  0.0000  0.0000
 250.  *  2.1000  1.4000  1.4000  1.1000  1.6000  0.7000  0.4000  0.0000  1.8000
1.4000  1.4000  1.4000  0.1000  0.0000  0.0000
 260.  *  2.1000  1.5000  1.2000  1.0000  1.9000  0.7000  0.3000  0.0000  2.4000
1.4000  1.4000  1.4000  0.4000  0.0000  0.0000
 270.  *  1.9000  1.4000  1.2000  1.1000  1.8000  0.5000  0.2000  0.0000  2.9000
1.7000  1.4000  1.4000  1.0000  0.2000  0.0000
 280.  *  1.5000  1.1000  1.0000  1.0000  1.2000  0.2000  0.0000  0.0000  2.9000
1.8000  1.5000  1.3000  1.6000  0.5000  0.2000
 290.  *  1.2000  1.1000  1.1000  1.1000  0.6000  0.0000  0.0000  0.0000  2.4000
2.2000  1.9000  1.4000  1.7000  0.8000  0.4000
 300.  *  1.1000  1.1000  1.1000  1.1000  0.2000  0.1000  0.1000  0.1000  1.9000
2.2000  1.8000  1.6000  1.5000  0.8000  0.5000
```

```
 310.  *  1.3000  1.3000  1.3000  1.3000  0.2000  0.1000  0.1000  0.1000  1.9000
1.9000  1.9000  1.7000  1.3000  0.7000  0.5000
 320.  *  1.4000  1.4000  1.4000  1.4000  0.2000  0.1000  0.1000  0.1000  2.1000
2.0000  1.9000  2.0000  1.1000  0.7000  0.5000
 330.  *  1.5000  1.5000  1.5000  1.5000  0.2000  0.2000  0.2000  0.2000  2.2000
2.0000  2.1000  2.1000  1.1000  0.7000  0.6000
 340.  *  1.6000  1.6000  1.5000  1.3000  0.7000  0.7000  0.7000  0.5000  2.3000
2.0000  1.9000  2.1000  1.6000  1.1000  1.1000
 350.  *  1.1000  1.0000  1.0000  0.8000  1.6000  1.6000  1.6000  1.3000  1.8000
1.5000  1.4000  1.5000  2.5000  2.0000  1.9000
 360.  *  0.5000  0.5000  0.4000  0.3000  2.0000  2.0000  2.0000  1.8000  1.1000
0.7000  0.7000  0.7000  3.0000  2.4000  2.3000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  2.6000  2.2000  2.0000  1.7000  3.2000  2.6000  2.4000  2.1000  2.9000
2.2000  2.1000  2.1000  3.0000  2.4000  2.3000
 DEGR. *    180     180     180     190     150     160     160     160     270
290     330     330      10     360      10
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  2.1000  0.0000  0.0000  0.0000  0.9000  0.6000  0.1000  0.7000  0.7000
0.7000  1.9000  1.6000  1.1000
  20.  *  1.9000  0.0000  0.0000  0.0000  0.9000  0.6000  0.2000  0.8000  0.8000
0.8000  1.9000  1.6000  1.2000
  30.  *  1.8000  0.0000  0.0000  0.0000  0.8000  0.6000  0.2000  0.8000  0.8000
0.8000  1.8000  1.6000  1.2000
```

```
  40.  *  1.6000  0.0000  0.0000  0.0000  0.8000  0.6000  0.2000  0.9000  0.9000
0.9000  1.7000  1.6000  1.2000
  50.  *  1.4000  0.1000  0.1000  0.1000  0.8000  0.7000  0.3000  1.0000  1.0000
1.0000  1.8000  1.7000  1.3000
  60.  *  1.4000  0.5000  0.5000  0.4000  0.8000  0.6000  0.3000  1.2000  1.2000
1.1000  2.0000  1.8000  1.5000
  70.  *  1.4000  1.0000  0.9000  0.8000  1.1000  0.8000  0.3000  1.0000  1.0000
0.9000  2.4000  1.9000  1.7000
  80.  *  1.4000  1.2000  1.1000  1.1000  1.3000  1.1000  0.7000  0.5000  0.5000
0.4000  2.2000  2.1000  1.9000
  90.  *  1.4000  1.2000  1.2000  1.1000  1.7000  1.6000  1.5000  0.2000  0.2000
0.2000  1.7000  1.8000  1.7000
 100.  *  1.4000  1.0000  1.0000  1.0000  2.1000  2.0000  1.8000  0.1000  0.1000
0.1000  1.3000  1.1000  1.1000
 110.  *  1.4000  0.8000  0.8000  0.8000  2.1000  2.2000  2.1000  0.1000  0.1000
0.1000  1.0000  0.7000  0.7000
 120.  *  1.5000  0.8000  0.8000  0.8000  2.2000  2.2000  1.9000  0.0000  0.0000
0.0000  1.0000  0.8000  0.4000
 130.  *  1.7000  0.7000  0.7000  0.7000  2.2000  2.1000  1.7000  0.0000  0.0000
0.0000  1.0000  0.8000  0.4000
 140.  *  1.8000  0.6000  0.6000  0.6000  2.2000  2.0000  1.5000  0.0000  0.0000
0.0000  0.9000  0.8000  0.2000
 150.  *  2.0000  0.7000  0.7000  0.7000  2.2000  1.9000  1.3000  0.0000  0.0000
0.0000  1.0000  0.7000  0.1000
 160.  *  2.0000  0.7000  0.7000  0.7000  2.0000  1.6000  1.1000  0.0000  0.0000
0.0000  0.9000  0.5000  0.0000
 170.  *  1.4000  1.1000  1.0000  0.7000  1.5000  1.2000  1.0000  0.4000  0.3000
0.0000  0.5000  0.2000  0.0000
 180.  *  0.6000  1.6000  1.2000  0.7000  1.2000  1.1000  1.1000  0.8000  0.4000
0.0000  0.1000  0.0000  0.0000
 190.  *  0.3000  1.7000  1.3000  0.8000  1.1000  1.1000  1.1000  1.0000  0.6000
0.1000  0.0000  0.0000  0.0000
 200.  *  0.1000  1.8000  1.4000  1.0000  1.0000  1.0000  1.0000  1.0000  0.6000
0.2000  0.0000  0.0000  0.0000
 210.  *  0.1000  1.6000  1.4000  1.0000  1.1000  1.1000  1.1000  1.0000  0.7000
0.3000  0.0000  0.0000  0.0000
 220.  *  0.1000  1.6000  1.5000  1.2000  1.2000  1.2000  1.2000  0.9000  0.7000
0.3000  0.0000  0.0000  0.0000
 230.  *  0.1000  1.7000  1.5000  1.3000  1.3000  1.3000  1.3000  0.9000  0.7000
0.4000  0.1000  0.1000  0.0000
 240.  *  0.0000  1.6000  1.6000  1.3000  1.4000  1.4000  1.4000  1.1000  0.9000
0.7000  0.1000  0.1000  0.1000
 250.  *  0.0000  1.5000  1.3000  1.2000  1.6000  1.6000  1.6000  1.3000  1.3000
1.2000  0.1000  0.1000  0.1000
 260.  *  0.0000  1.6000  1.2000  0.8000  1.9000  1.9000  1.8000  1.9000  1.7000
1.5000  0.4000  0.4000  0.2000
 270.  *  0.0000  1.4000  1.1000  0.4000  1.8000  1.8000  1.6000  2.5000  2.1000
1.5000  0.9000  0.9000  0.9000
```

```
 280.  *  0.0000  0.9000  0.7000  0.2000  1.2000  1.2000  1.1000  2.0000  1.7000
1.1000  1.6000  1.6000  1.5000
 290.  *  0.1000  0.7000  0.5000  0.2000  0.5000  0.5000  0.4000  1.7000  1.3000
1.0000  1.6000  1.6000  1.6000
 300.  *  0.1000  0.7000  0.5000  0.2000  0.1000  0.1000  0.1000  1.5000  1.3000
1.0000  1.5000  1.5000  1.5000
 310.  *  0.3000  0.7000  0.5000  0.2000  0.1000  0.1000  0.1000  1.4000  1.2000
0.9000  1.3000  1.3000  1.3000
 320.  *  0.3000  0.7000  0.5000  0.0000  0.1000  0.1000  0.1000  1.4000  1.2000
0.9000  1.1000  1.1000  1.1000
 330.  *  0.4000  0.7000  0.5000  0.0000  0.0000  0.0000  0.0000  1.4000  1.2000
0.7000  1.0000  1.0000  1.0000
 340.  *  0.9000  0.6000  0.3000  0.0000  0.1000  0.0000  0.0000  1.3000  1.0000
0.7000  1.1000  1.0000  1.0000
 350.  *  1.8000  0.3000  0.1000  0.0000  0.4000  0.2000  0.0000  1.1000  0.8000
0.7000  1.4000  1.2000  1.0000
 360.  *  2.2000  0.0000  0.0000  0.0000  0.8000  0.4000  0.0000  0.7000  0.7000
0.7000  1.8000  1.4000  1.0000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  2.2000  1.8000  1.6000  1.3000  2.2000  2.2000  2.1000  2.5000  2.1000
1.5000  2.4000  2.1000  1.9000
 DEGR. *    360     200     240     230     120     110     110     270     270
260      70      80      80

 THE HIGHEST CONCENTRATION OF   3.2000 PPM OCCURRED AT RECEPTOR     5.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
7,6,2,2,2200,2200,2200,2200,2200,2200,2200,2200,1036.85714285714,1036.83333333333,22
00,2200,1036.85714285714,1036.83333333333,2200,2200,12,12,12,12,10,10,10,10,0,0,-120
0,1200,0,0,1200,-1200,-1200,1200,0,0,1200,-1200,0,0,0,0,0,0,-5,5,10,0,0,0,0,0,0,0,0,
0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',97.3,34.0,5.9
'N Leg, E Side - 25 m',103.6,105.7,5.9
'N Leg, E Side - 50 m',110.8,187.5,5.9
'N Leg, E Side-Midblk',148.8,621.8,5.9
'N Leg, W Side-Corner',-78.1,48.3,5.9
'N Leg, W Side - 25 m',-71.8,120.0,5.9
'N Leg, W Side - 50 m',-64.7,201.7,5.9
'N Leg, W Side-Midblk',-26.7,636.0,5.9
'S Leg, E Side-Corner',97.3,-34.0,5.9
'S Leg, E Side - 25 m',103.6,-105.7,5.9
'S Leg, E Side - 50 m',110.8,-187.5,5.9
'S Leg, E Side-Midblk',148.8,-621.8,5.9
'S Leg, W Side-Corner',-80.5,-20.3,5.9
'S Leg, W Side - 25 m',-74.3,-92.1,5.9
'S Leg, W Side - 50 m',-67.1,-173.8,5.9
'S Leg, W Side-Midblk',-29.1,-608.1,5.9
'E Leg, N Side - 25 m',169.4,34.0,5.9
'E Leg, N Side - 50 m',251.4,34.0,5.9
'E Leg, N Side-Midblk',687.3,34.0,5.9
'W Leg, N Side - 25 m',-149.0,60.8,5.9
'W Leg, N Side - 50 m',-229.8,75.0,5.9
'W Leg, N Side-Midblk',-659.1,150.7,5.9
'E Leg, S Side - 25 m',169.4,-34.0,5.9
'E Leg, S Side - 50 m',251.4,-34.0,5.9
'E Leg, S Side-Midblk',687.3,-34.0,5.9
'W Leg, S Side - 25 m',-151.5,-7.8,5.9
'W Leg, S Side - 50 m',-232.2,6.4,5.9
'W Leg, S Side-Midblk',-661.6,82.1,5.9
'2016 MD187 & I-270 SB Ramp (IS.46)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-36,0,69,1199,6221,3.0,0.0,91.7
2
'N Leg App - Queue','AG',-34,27,69,1199,0.0,72.0,6
120,62,2,6221,13.89,1600,1,3
1
'N Leg Dep - FreeFlow','AG',42,0,146,1192,7258,3.7,0.0,103.7
1
'S Leg App - FreeFlow','AG',42,0,146,-1192,7258,3.7,0.0,103.7
2
'S Leg App - Queue','AG',44,-20,146,-1192,0.0,84.0,7
120,62,2,7258,13.89,1600,1,3
```

```
1
'S Leg Dep - FreeFlow','AG',-36,0,69,-1199,6221,3.0,0.0,91.7
1
'E Leg App - FreeFlow','AG',1,12,1200,12,4400,2.77,0.0,43.7
1
'E Leg Dep - FreeFlow','AG',-1,-12,1200,-12,4400,2.77,0.0,43.7
1
'W Leg App - FreeFlow','AG',-1,-12,-1184,197,4400,6.73,0.0,43.7
2
'W Leg App - Queue','AG',-73,1,-1184,197,0.0,24.0,2
120,62,2,4400,13.64,1600,1,3
1
'W Leg Dep - FreeFlow','AG',1,12,-1180,220,4400,6.73,0.0,43.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2016 MD187 & I-270 SB Ramp (IS.46)

DATE : 1/15/19
TIME : 8:48:49

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-36.0	0.0	69.0	1199.0	*	1204.	5.	AG	6221.	3.0	0.0	91.7		
2. N Leg App - Queue	*	-34.0	27.0	285.5	3662.3	*	3649.	5.	AG	115.	100.0	0.0	72.0	1.44	185.4
3. N Leg Dep - FreeFlow	*	42.0	0.0	146.0	1192.0	*	1197.	5.	AG	7258.	3.7	0.0	****		
4. S Leg App - FreeFlow	*	42.0	0.0	146.0	-1192.0	*	1197.	175.	AG	7258.	3.7	0.0	****		
5. S Leg App - Queue	*	44.0	-20.0	360.4	-3655.5	*	3649.	175.	AG	135.	100.0	0.0	84.0	1.44	185.4
6. S Leg Dep - FreeFlow	*	-36.0	0.0	69.0	-1199.0	*	1204.	175.	AG	6221.	3.0	0.0	91.7		
7. E Leg App - FreeFlow	*	1.0	12.0	1200.0	12.0	*	1199.	90.	AG	4400.	2.8	0.0	43.7		
8. E Leg Dep - FreeFlow	*	-1.0	-12.0	1200.0	-12.0	*	1201.	90.	AG	4400.	2.8	0.0	43.7		
9. W Leg App - FreeFlow	*	-1.0	-12.0	-1184.0	197.0	*	1201.	280.	AG	4400.	6.7	0.0	43.7		
10. W Leg App - Queue	*	-73.0	1.0	-15545.7	2730.7	*	*****								

280. AG 38. 100.0 0.0 24.0 3.06 798.1
11. W Leg Dep - FreeFlow* 1.0 12.0 -1180.0 220.0 * 1199.
280. AG 4400. 6.7 0.0 43.7

JOB: I-495 & I-270 MLS RUN: 2016 MD187 & I-270 SB Ramp (IS.46)

DATE : 1/15/19
TIME : 8:48:49

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	*	120	62	2.0	6221	1600	13.89	1	3
5. S Leg App - Queue	*	120	62	2.0	7258	1600	13.89	1	3
10. W Leg App - Queue	*	120	62	2.0	4400	1600	13.64	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	97.3	34.0	5.9	*
2. N Leg, E Side - 25 m	*	103.6	105.7	5.9	*
3. N Leg, E Side - 50 m	*	110.8	187.5	5.9	*
4. N Leg, E Side-Midblk	*	148.8	621.8	5.9	*
5. N Leg, W Side-Corner	*	-78.1	48.3	5.9	*
6. N Leg, W Side - 25 m	*	-71.8	120.0	5.9	*
7. N Leg, W Side - 50 m	*	-64.7	201.7	5.9	*
8. N Leg, W Side-Midblk	*	-26.7	636.0	5.9	*
9. S Leg, E Side-Corner	*	97.3	-34.0	5.9	*
10. S Leg, E Side - 25 m	*	103.6	-105.7	5.9	*
11. S Leg, E Side - 50 m	*	110.8	-187.5	5.9	*
12. S Leg, E Side-Midblk	*	148.8	-621.8	5.9	*
13. S Leg, W Side-Corner	*	-80.5	-20.3	5.9	*
14. S Leg, W Side - 25 m	*	-74.3	-92.1	5.9	*

15. S Leg, W Side - 50 m *	-67.1	-173.8	5.9	*
16. S Leg, W Side-Midblk *	-29.1	-608.1	5.9	*
17. E Leg, N Side - 25 m *	169.4	34.0	5.9	*
18. E Leg, N Side - 50 m *	251.4	34.0	5.9	*
19. E Leg, N Side-Midblk *	687.3	34.0	5.9	*
20. W Leg, N Side - 25 m *	-149.0	60.8	5.9	*
21. W Leg, N Side - 50 m *	-229.8	75.0	5.9	*
22. W Leg, N Side-Midblk *	-659.1	150.7	5.9	*
23. E Leg, S Side - 25 m *	169.4	-34.0	5.9	*
24. E Leg, S Side - 50 m *	251.4	-34.0	5.9	*
25. E Leg, S Side-Midblk *	687.3	-34.0	5.9	*
26. W Leg, S Side - 25 m *	-151.5	-7.8	5.9	*
27. W Leg, S Side - 50 m *	-232.2	6.4	5.9	*
28. W Leg, S Side-Midblk *	-661.6	82.1	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	* 1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	* 0.9000	0.9000	0.9000	0.7000	1.6000	1.6000	1.6000	1.4000	1.4000
1.0000	0.8000	0.4000	3.6000	2.6000	2.1000				
20.	* 0.3000	0.3000	0.3000	0.2000	1.9000	1.9000	1.9000	1.7000	0.9000
0.5000	0.3000	0.1000	3.5000	2.5000	2.0000				
30.	* 0.1000	0.1000	0.1000	0.1000	1.6000	1.6000	1.6000	1.6000	0.7000
0.5000	0.3000	0.2000	3.1000	2.3000	1.7000				
40.	* 0.1000	0.1000	0.1000	0.1000	1.6000	1.5000	1.5000	1.5000	0.7000
0.5000	0.3000	0.3000	3.1000	1.8000	1.5000				
50.	* 0.1000	0.1000	0.1000	0.1000	1.5000	1.4000	1.4000	1.4000	0.8000
0.5000	0.3000	0.1000	3.0000	1.6000	1.4000				
60.	* 0.2000	0.1000	0.1000	0.1000	1.3000	1.2000	1.2000	1.2000	1.0000
0.4000	0.2000	0.0000	3.0000	1.5000	1.4000				

```
  70.  *  0.1000  0.0000  0.0000  0.0000  1.3000  1.2000  1.2000  1.2000  1.1000
0.4000  0.2000  0.0000  3.0000  1.6000  1.4000
  80.  *  0.5000  0.0000  0.0000  0.0000  1.6000  1.2000  1.2000  1.2000  1.2000
0.4000  0.2000  0.0000  3.1000  1.5000  1.3000
  90.  *  1.0000  0.2000  0.0000  0.0000  2.1000  1.4000  1.2000  1.2000  1.0000
0.2000  0.0000  0.0000  2.8000  1.3000  1.2000
 100.  *  1.2000  0.4000  0.2000  0.0000  2.6000  1.6000  1.4000  1.2000  0.5000
0.0000  0.0000  0.0000  2.2000  1.1000  1.1000
 110.  *  1.1000  0.4000  0.2000  0.0000  2.9000  1.6000  1.4000  1.2000  0.1000
0.0000  0.0000  0.0000  1.6000  1.1000  1.1000
 120.  *  1.0000  0.4000  0.2000  0.0000  2.9000  1.7000  1.4000  1.2000  0.2000
0.1000  0.1000  0.1000  1.3000  1.1000  1.1000
 130.  *  0.8000  0.5000  0.3000  0.1000  3.3000  1.9000  1.4000  1.3000  0.1000
0.1000  0.1000  0.1000  1.4000  1.3000  1.3000
 140.  *  0.7000  0.5000  0.3000  0.3000  3.4000  2.0000  1.6000  1.6000  0.1000
0.1000  0.1000  0.1000  1.4000  1.3000  1.3000
 150.  *  0.7000  0.5000  0.3000  0.2000  3.4000  2.4000  2.1000  1.6000  0.1000
0.1000  0.1000  0.1000  1.5000  1.4000  1.4000
 160.  *  1.0000  0.5000  0.3000  0.1000  3.4000  2.6000  2.4000  1.7000  0.4000
0.4000  0.4000  0.3000  1.8000  1.7000  1.7000
 170.  *  1.6000  1.1000  0.9000  0.4000  3.1000  2.5000  2.5000  2.1000  1.1000
1.1000  1.1000  0.9000  1.3000  1.3000  1.3000
 180.  *  2.4000  1.9000  1.6000  1.0000  2.5000  2.0000  1.8000  1.9000  1.9000
1.9000  1.9000  1.6000  0.7000  0.7000  0.7000
 190.  *  2.7000  2.1000  1.9000  1.6000  2.1000  1.2000  1.1000  1.2000  2.1000
2.1000  2.1000  1.9000  0.2000  0.2000  0.2000
 200.  *  2.5000  1.8000  1.7000  1.8000  1.8000  0.9000  0.7000  0.5000  1.8000
1.8000  1.8000  1.8000  0.1000  0.1000  0.1000
 210.  *  2.2000  1.7000  1.7000  1.7000  1.7000  0.9000  0.7000  0.3000  1.6000
1.6000  1.6000  1.6000  0.1000  0.1000  0.1000
 220.  *  2.0000  1.8000  1.6000  1.6000  1.8000  0.9000  0.7000  0.3000  1.5000
1.5000  1.5000  1.5000  0.2000  0.1000  0.1000
 230.  *  2.0000  1.6000  1.6000  1.5000  1.9000  1.0000  0.7000  0.3000  1.4000
1.4000  1.4000  1.4000  0.1000  0.0000  0.0000
 240.  *  2.0000  1.9000  1.8000  1.4000  2.1000  0.9000  0.6000  0.2000  1.4000
1.2000  1.2000  1.2000  0.1000  0.0000  0.0000
 250.  *  2.4000  1.9000  1.7000  1.3000  2.4000  1.0000  0.6000  0.2000  1.3000
1.2000  1.2000  1.2000  0.1000  0.0000  0.0000
 260.  *  2.7000  1.9000  1.7000  1.1000  2.8000  1.2000  0.6000  0.0000  1.8000
1.3000  1.3000  1.3000  0.3000  0.0000  0.0000
 270.  *  2.9000  2.1000  1.6000  1.2000  2.9000  1.0000  0.4000  0.0000  2.6000
1.5000  1.3000  1.3000  1.2000  0.1000  0.0000
 280.  *  2.6000  1.6000  1.4000  1.2000  2.3000  0.6000  0.2000  0.0000  3.5000
2.0000  1.4000  1.2000  2.4000  0.6000  0.2000
 290.  *  1.7000  1.2000  1.1000  1.1000  1.1000  0.1000  0.0000  0.0000  3.5000
2.4000  1.9000  1.2000  3.1000  1.0000  0.6000
 300.  *  1.4000  1.1000  1.1000  1.1000  0.3000  0.0000  0.0000  0.0000  2.6000
2.4000  2.1000  1.6000  2.9000  1.2000  0.7000
```

```
 310.  *  1.2000  1.2000  1.2000  1.2000  0.1000  0.0000  0.0000  0.0000  2.3000
2.2000  2.0000  1.7000  2.4000  1.2000  0.8000
 320.  *  1.3000  1.3000  1.3000  1.3000  0.2000  0.1000  0.1000  0.1000  2.2000
2.2000  2.1000  1.8000  2.1000  1.1000  0.7000
 330.  *  1.4000  1.4000  1.4000  1.4000  0.2000  0.1000  0.1000  0.1000  2.1000
2.0000  2.2000  2.0000  1.9000  1.0000  0.7000
 340.  *  1.5000  1.5000  1.5000  1.5000  0.2000  0.1000  0.1000  0.1000  2.3000
2.0000  2.1000  2.2000  1.9000  0.9000  0.7000
 350.  *  1.7000  1.7000  1.7000  1.5000  0.3000  0.3000  0.3000  0.3000  2.4000
2.1000  2.0000  1.9000  2.0000  1.3000  1.2000
 360.  *  1.5000  1.5000  1.5000  1.3000  0.9000  0.9000  0.9000  0.7000  2.1000
1.7000  1.6000  1.2000  2.7000  2.0000  1.7000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  2.9000  2.1000  1.9000  1.8000  3.4000  2.6000  2.5000  2.1000  3.5000
2.4000  2.2000  2.2000  3.6000  2.6000  2.1000
 DEGR. *    270     190     190     200     140     160     170     170     290
290     330     340      10      10      10
```


JOB: I-495 & I-270 MLS RUN: 2016 MD187 & I-270 SB Ramp (IS.46)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  1.8000  0.1000  0.0000  0.0000  0.6000  0.3000  0.0000  0.8000  0.7000
0.7000  2.5000  2.1000  1.8000
  20.  *  1.5000  0.0000  0.0000  0.0000  0.9000  0.6000  0.1000  0.7000  0.7000
0.7000  2.6000  2.3000  1.8000
  30.  *  1.5000  0.0000  0.0000  0.0000  0.9000  0.6000  0.1000  0.7000  0.7000
0.7000  2.7000  2.3000  1.8000
```

```
  40.  *  1.5000  0.0000  0.0000  0.0000  0.9000  0.7000  0.4000  0.7000  0.7000
0.7000  2.6000  2.4000  2.1000
  50.  *  1.3000  0.0000  0.0000  0.0000  0.9000  0.6000  0.4000  0.8000  0.8000
0.8000  2.8000  2.6000  2.3000
  60.  *  1.1000  0.1000  0.1000  0.1000  0.9000  0.6000  0.4000  1.0000  1.0000
1.0000  2.8000  2.6000  2.4000
  70.  *  1.1000  0.1000  0.1000  0.1000  0.9000  0.6000  0.4000  1.1000  1.1000
1.1000  3.0000  2.8000  2.7000
  80.  *  1.1000  0.5000  0.4000  0.4000  1.2000  0.9000  0.6000  1.2000  1.2000
1.0000  3.2000  3.1000  3.0000
  90.  *  1.1000  1.0000  1.0000  0.8000  1.6000  1.5000  1.4000  1.0000  1.0000
0.8000  3.0000  2.9000  3.3000
 100.  *  1.1000  1.2000  1.2000  1.0000  2.4000  2.5000  2.5000  0.5000  0.4000
0.4000  2.0000  2.5000  2.5000
 110.  *  1.1000  1.1000  1.1000  1.1000  2.9000  2.8000  3.0000  0.1000  0.1000
0.1000  1.3000  1.3000  1.4000
 120.  *  1.1000  1.0000  1.0000  1.0000  2.9000  3.0000  3.0000  0.1000  0.1000
0.1000  0.9000  0.8000  0.6000
 130.  *  1.3000  0.8000  0.8000  0.8000  2.9000  2.9000  2.7000  0.0000  0.0000
0.0000  0.9000  0.7000  0.4000
 140.  *  1.3000  0.7000  0.7000  0.7000  3.0000  2.7000  2.4000  0.0000  0.0000
0.0000  0.9000  0.7000  0.4000
 150.  *  1.4000  0.7000  0.7000  0.7000  3.0000  2.6000  2.3000  0.0000  0.0000
0.0000  1.1000  0.7000  0.4000
 160.  *  1.5000  0.7000  0.7000  0.7000  2.7000  2.3000  1.9000  0.0000  0.0000
0.0000  1.0000  0.6000  0.2000
 170.  *  1.1000  0.9000  0.7000  0.7000  2.4000  2.0000  1.7000  0.2000  0.1000
0.0000  0.6000  0.3000  0.0000
 180.  *  0.6000  1.3000  0.9000  0.7000  2.0000  1.7000  1.7000  0.6000  0.2000
0.0000  0.2000  0.0000  0.0000
 190.  *  0.2000  1.7000  1.3000  0.8000  1.8000  1.8000  1.8000  1.0000  0.6000
0.1000  0.0000  0.0000  0.0000
 200.  *  0.1000  1.6000  1.4000  0.9000  1.7000  1.7000  1.7000  0.9000  0.7000
0.1000  0.0000  0.0000  0.0000
 210.  *  0.1000  1.6000  1.4000  1.0000  1.7000  1.7000  1.7000  0.9000  0.7000
0.3000  0.0000  0.0000  0.0000
 220.  *  0.1000  1.5000  1.3000  1.0000  1.8000  1.8000  1.8000  0.9000  0.7000
0.3000  0.1000  0.1000  0.1000
 230.  *  0.0000  1.6000  1.4000  1.1000  1.9000  1.9000  1.9000  0.8000  0.6000
0.3000  0.1000  0.1000  0.1000
 240.  *  0.0000  1.6000  1.4000  1.3000  2.1000  2.1000  2.1000  0.9000  0.7000
0.4000  0.1000  0.1000  0.1000
 250.  *  0.0000  2.0000  1.6000  1.4000  2.4000  2.4000  2.4000  0.9000  0.6000
0.4000  0.1000  0.1000  0.1000
 260.  *  0.0000  2.2000  1.8000  1.5000  2.8000  2.8000  2.6000  1.3000  1.0000
0.9000  0.3000  0.3000  0.3000
 270.  *  0.0000  2.6000  1.9000  1.3000  2.9000  2.9000  2.6000  2.3000  1.8000
1.3000  1.2000  1.1000  1.1000
```

```
 280.  *  0.0000  1.9000  1.6000  0.8000  2.3000  2.3000  2.0000  2.8000  2.2000
1.7000  2.4000  2.4000  2.1000
 290.  *  0.0000  1.1000  0.8000  0.3000  1.1000  1.0000  1.0000  2.6000  1.9000
1.5000  3.0000  3.0000  2.7000
 300.  *  0.0000  0.8000  0.7000  0.3000  0.3000  0.3000  0.3000  1.8000  1.6000
1.2000  2.9000  2.9000  2.7000
 310.  *  0.3000  0.7000  0.6000  0.2000  0.1000  0.1000  0.1000  1.5000  1.4000
1.0000  2.4000  2.4000  2.4000
 320.  *  0.3000  0.8000  0.6000  0.3000  0.1000  0.1000  0.1000  1.4000  1.3000
1.0000  2.1000  2.1000  2.1000
 330.  *  0.3000  0.8000  0.6000  0.3000  0.1000  0.1000  0.1000  1.5000  1.3000
1.0000  1.9000  1.9000  1.9000
 340.  *  0.4000  0.8000  0.6000  0.1000  0.1000  0.1000  0.1000  1.5000  1.3000
0.9000  1.8000  1.8000  1.8000
 350.  *  1.1000  0.9000  0.5000  0.0000  0.0000  0.0000  0.0000  1.6000  1.2000
0.7000  1.7000  1.7000  1.7000
 360.  *  1.6000  0.5000  0.2000  0.0000  0.2000  0.0000  0.0000  1.2000  0.9000
0.7000  1.9000  1.7000  1.7000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.8000  2.6000  1.9000  1.5000  3.0000  3.0000  3.0000  2.8000  2.2000
1.7000  3.2000  3.1000  3.3000
 DEGR. *     10     270     270     260     140     120     110     280     280
280      80      80      90

 THE HIGHEST CONCENTRATION OF   3.6000 PPM OCCURRED AT RECEPTOR    13.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
7,8,5,5,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-20,-20,-15,-10,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',69.7,83.4,5.9
'N Leg, E Side - 25 m',45.1,151.0,5.9
'N Leg, E Side - 50 m',17.0,228.1,5.9
'N Leg, E Side-Midblk',-132.1,637.8,5.9
'N Leg, W Side-Corner',-126.8,38.5,5.9
'N Leg, W Side - 25 m',-151.4,106.2,5.9
'N Leg, W Side - 50 m',-179.5,183.2,5.9
'N Leg, W Side-Midblk',-328.6,592.9,5.9
'S Leg, E Side-Corner',118.3,-50.2,5.9
'S Leg, E Side - 25 m',142.9,-117.9,5.9
'S Leg, E Side - 50 m',171.0,-195.0,5.9
'S Leg, E Side-Midblk',320.1,-604.6,5.9
'S Leg, W Side-Corner',-78.7,-93.6,5.9
'S Leg, W Side - 25 m',-54.1,-161.2,5.9
'S Leg, W Side - 50 m',-26.1,-238.3,5.9
'S Leg, W Side-Midblk',123.0,-648.0,5.9
'E Leg, N Side - 25 m',140.6,95.9,5.9
'E Leg, N Side - 50 m',221.4,110.1,5.9
'E Leg, N Side-Midblk',650.7,185.8,5.9
'W Leg, N Side - 25 m',-196.4,19.8,5.9
'W Leg, N Side - 50 m',-275.6,-1.4,5.9
'W Leg, N Side-Midblk',-696.7,-114.2,5.9
'E Leg, S Side - 25 m',189.2,-37.7,5.9
'E Leg, S Side - 50 m',270.0,-23.5,5.9
'E Leg, S Side-Midblk',699.3,52.2,5.9
'W Leg, S Side - 25 m',-148.3,-112.2,5.9
'W Leg, S Side - 50 m',-227.5,-133.4,5.9
'W Leg, S Side-Midblk',-648.6,-246.3,5.9
'2016 I270 & I370 (IC.36)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-45,-16,-456,1111,17600,2.62,0.0,115.7
1
'N Leg Dep - FreeFlow','AG',39,14,-371,1142,15400,5.68,0.0,103.7
1
'S Leg App - FreeFlow','AG',39,14,450,-1113,15400,2.62,0.0,103.7
1
'S Leg Dep - FreeFlow','AG',-45,-16,365,-1144,17600,5.68,0.0,115.7
1
'E Leg App - FreeFlow','AG',-6,29,1177,238,11000,2.62,0.0,79.7
1
'E Leg Dep - FreeFlow','AG',6,-29,1187,179,11000,4.41,0.0,79.7
1
```

```
'W Leg App - FreeFlow','AG',6,-29,-1151,-340,11000,2.62,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',-6,29,-1167,-282,11000,5.68,0.0,79.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2016 I270 & I370 (IC.36)

DATE : 3/ 1/19
TIME : 13:57:31

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-45.0	-16.0	-456.0	1111.0	*	1200.	340.	AG	17600.	2.6	0.0	****		
2. N Leg Dep - FreeFlow	*	39.0	14.0	-371.0	1142.0	*	1200.	340.	AG	15400.	5.7	0.0	****		
3. S Leg App - FreeFlow	*	39.0	14.0	450.0	-1113.0	*	1200.	160.	AG	15400.	2.6	0.0	****		
4. S Leg Dep - FreeFlow	*	-45.0	-16.0	365.0	-1144.0	*	1200.	160.	AG	17600.	5.7	0.0	****		
5. E Leg App - FreeFlow	*	-6.0	29.0	1177.0	238.0	*	1201.	80.	AG	11000.	2.6	0.0	79.7		
6. E Leg Dep - FreeFlow	*	6.0	-29.0	1187.0	179.0	*	1199.	80.	AG	11000.	4.4	0.0	79.7		
7. W Leg App - FreeFlow	*	6.0	-29.0	-1151.0	-340.0	*	1198.	255.	AG	11000.	2.6	0.0	79.7		
8. W Leg Dep - FreeFlow	*	-6.0	29.0	-1167.0	-282.0	*	1202.	255.	AG	11000.	5.7	0.0	79.7		

I370 (IC.36)

DATE : 3/ 1/19
TIME : 13:57:31

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	69.7	83.4	5.9
2. N Leg, E Side - 25 m	45.1	151.0	5.9
3. N Leg, E Side - 50 m	17.0	228.1	5.9
4. N Leg, E Side-Midblk	-132.1	637.8	5.9
5. N Leg, W Side-Corner	-126.8	38.5	5.9
6. N Leg, W Side - 25 m	-151.4	106.2	5.9
7. N Leg, W Side - 50 m	-179.5	183.2	5.9
8. N Leg, W Side-Midblk	-328.6	592.9	5.9
9. S Leg, E Side-Corner	118.3	-50.2	5.9
10. S Leg, E Side - 25 m	142.9	-117.9	5.9
11. S Leg, E Side - 50 m	171.0	-195.0	5.9
12. S Leg, E Side-Midblk	320.1	-604.6	5.9
13. S Leg, W Side-Corner	-78.7	-93.6	5.9
14. S Leg, W Side - 25 m	-54.1	-161.2	5.9
15. S Leg, W Side - 50 m	-26.1	-238.3	5.9
16. S Leg, W Side-Midblk	123.0	-648.0	5.9
17. E Leg, N Side - 25 m	140.6	95.9	5.9
18. E Leg, N Side - 50 m	221.4	110.1	5.9
19. E Leg, N Side-Midblk	650.7	185.8	5.9
20. W Leg, N Side - 25 m	-196.4	19.8	5.9
21. W Leg, N Side - 50 m	-275.6	-1.4	5.9
22. W Leg, N Side-Midblk	-696.7	-114.2	5.9
23. E Leg, S Side - 25 m	189.2	-37.7	5.9
24. E Leg, S Side - 50 m	270.0	-23.5	5.9
25. E Leg, S Side-Midblk	699.3	52.2	5.9
26. W Leg, S Side - 25 m	-148.3	-112.2	5.9

27. W Leg, S Side - 50 m	*	-227.5	-133.4	5.9 *
28. W Leg, S Side-Midblk	*	-648.6	-246.3	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.3000	0.3000	0.3000	0.3000	3.0000	2.9000	2.9000	2.8000	1.9000	1.2000	0.9000	0.4000	5.6000	5.2000	5.0000
20.	* 0.3000	0.2000	0.2000	0.2000	2.7000	2.7000	2.7000	2.7000	1.9000	1.2000	0.9000	0.4000	5.4000	4.9000	4.6000
30.	* 0.3000	0.2000	0.2000	0.2000	2.7000	2.5000	2.5000	2.5000	2.1000	1.3000	0.9000	0.4000	5.4000	4.5000	4.1000
40.	* 0.3000	0.2000	0.2000	0.2000	2.5000	2.3000	2.3000	2.3000	2.3000	1.3000	1.0000	0.4000	5.3000	4.2000	3.9000
50.	* 0.2000	0.1000	0.1000	0.1000	2.5000	2.2000	2.2000	2.2000	2.5000	1.3000	0.9000	0.1000	5.3000	4.0000	3.6000
60.	* 0.2000	0.0000	0.0000	0.0000	2.8000	2.3000	2.3000	2.3000	2.8000	1.3000	0.9000	0.0000	5.4000	4.1000	3.7000
70.	* 0.7000	0.1000	0.0000	0.0000	3.8000	2.5000	2.4000	2.4000	2.9000	1.1000	0.5000	0.0000	5.6000	4.2000	3.7000
80.	* 1.7000	0.4000	0.2000	0.0000	4.9000	2.9000	2.5000	2.3000	2.3000	0.5000	0.1000	0.0000	4.6000	3.3000	3.0000
90.	* 2.3000	1.1000	0.6000	0.1000	5.7000	3.3000	2.8000	2.2000	1.1000	0.1000	0.0000	0.0000	3.7000	3.0000	2.9000
100.	* 2.5000	1.5000	0.9000	0.2000	5.8000	3.6000	3.2000	2.5000	0.4000	0.1000	0.1000	0.1000	3.2000	3.0000	3.0000
110.	* 2.2000	1.4000	1.1000	0.4000	5.5000	3.8000	3.4000	2.7000	0.3000	0.1000	0.1000	0.1000	3.3000	3.2000	3.2000
120.	* 2.0000	1.3000	1.0000	0.5000	5.3000	3.9000	3.5000	3.0000	0.2000	0.1000	0.1000	0.1000	3.6000	3.5000	3.5000

130. * 1.9000 1.4000 1.1000 0.6000 5.4000 4.2000 3.7000 3.1000 0.2000
0.1000 0.1000 0.1000 0.1000 4.0000 3.9000 3.9000
140. * 1.9000 1.5000 1.2000 0.8000 6.0000 4.7000 4.2000 3.6000 0.3000
0.2000 0.2000 0.2000 0.2000 4.5000 4.5000 4.4000
150. * 2.6000 2.3000 2.0000 1.9000 6.2000 5.0000 4.4000 3.9000 0.8000
0.8000 0.7000 0.6000 4.7000 4.6000 4.6000
160. * 4.2000 3.9000 3.8000 4.2000 5.5000 4.2000 3.6000 2.8000 2.0000
2.0000 1.9000 1.4000 3.5000 3.4000 3.4000
170. * 5.5000 5.1000 5.2000 5.3000 3.7000 2.5000 2.2000 1.4000 3.2000
3.1000 3.0000 2.3000 1.5000 1.5000 1.5000
180. * 5.7000 5.5000 5.4000 5.0000 2.4000 1.7000 1.2000 0.7000 3.3000
3.3000 3.3000 2.8000 0.6000 0.6000 0.6000
190. * 5.2000 5.2000 5.1000 4.2000 2.3000 1.4000 1.1000 0.6000 3.1000
3.1000 3.1000 3.0000 0.3000 0.3000 0.3000
200. * 5.3000 5.0000 4.4000 3.8000 2.4000 1.4000 1.1000 0.5000 2.9000
2.8000 2.8000 2.8000 0.4000 0.3000 0.3000
210. * 5.3000 4.7000 4.3000 3.5000 2.6000 1.6000 1.1000 0.5000 2.7000
2.6000 2.6000 2.6000 0.3000 0.2000 0.2000
220. * 5.3000 4.5000 4.0000 3.3000 3.0000 1.6000 1.2000 0.4000 2.6000
2.5000 2.5000 2.5000 0.3000 0.2000 0.2000
230. * 5.7000 4.3000 3.7000 3.1000 3.2000 1.7000 1.2000 0.2000 2.6000
2.4000 2.4000 2.4000 0.2000 0.1000 0.1000
240. * 6.0000 4.4000 3.6000 2.7000 3.7000 1.5000 0.8000 0.0000 2.8000
2.4000 2.4000 2.4000 0.4000 0.0000 0.0000
250. * 6.1000 4.1000 3.5000 2.9000 3.4000 1.0000 0.4000 0.0000 3.7000
2.7000 2.5000 2.5000 1.3000 0.2000 0.0000
260. * 4.8000 3.2000 2.8000 2.7000 2.1000 0.3000 0.1000 0.0000 4.8000
3.2000 2.8000 2.4000 2.3000 0.8000 0.4000
270. * 3.5000 2.9000 2.8000 2.8000 0.8000 0.1000 0.1000 0.1000 5.3000
3.6000 3.1000 2.3000 2.7000 1.4000 0.8000
280. * 3.1000 2.9000 2.9000 2.9000 0.4000 0.1000 0.1000 0.1000 5.2000
3.9000 3.5000 2.7000 2.6000 1.7000 1.2000
290. * 3.2000 3.1000 3.1000 3.1000 0.3000 0.1000 0.1000 0.1000 5.0000
3.9000 3.5000 2.9000 2.3000 1.5000 1.1000
300. * 3.5000 3.4000 3.4000 3.4000 0.3000 0.1000 0.1000 0.1000 4.9000
4.0000 3.8000 3.2000 2.2000 1.6000 1.2000
310. * 3.9000 3.8000 3.8000 3.7000 0.3000 0.2000 0.2000 0.2000 5.0000
4.0000 3.8000 3.4000 2.0000 1.5000 1.2000
320. * 4.4000 4.3000 4.3000 3.9000 0.4000 0.3000 0.3000 0.2000 5.4000
4.4000 4.1000 3.7000 2.2000 1.7000 1.3000
330. * 4.4000 4.4000 4.4000 3.8000 0.8000 0.8000 0.8000 0.6000 5.7000
4.6000 4.2000 3.8000 2.8000 2.3000 2.1000
340. * 3.4000 3.3000 3.3000 2.7000 2.0000 2.0000 1.9000 1.4000 4.7000
3.7000 3.2000 2.9000 4.4000 4.0000 3.9000
350. * 1.5000 1.5000 1.5000 1.2000 3.0000 3.0000 2.9000 2.3000 3.2000
2.2000 1.8000 1.4000 5.6000 5.2000 5.3000
360. * 0.5000 0.5000 0.5000 0.5000 3.2000 3.2000 3.1000 2.8000 2.1000
1.3000 1.1000 0.5000 5.7000 5.4000 5.6000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  6.1000  5.5000  5.4000  5.3000  6.2000  5.0000  4.4000  3.9000  5.7000
4.6000  4.2000  3.8000  5.7000  5.4000  5.6000
 DEGR. *    250     180     180     170     150     150     150     150     330
330     330     330     360     360     360
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  4.3000  0.0000  0.0000  0.0000  1.9000  1.5000  0.3000  1.8000  1.8000
1.8000  3.7000  3.3000  2.3000
  20.  *  3.8000  0.1000  0.1000  0.1000  1.9000  1.4000  0.6000  1.8000  1.8000
1.8000  3.7000  3.2000  2.4000
  30.  *  3.5000  0.1000  0.1000  0.1000  1.8000  1.5000  0.8000  2.0000  2.0000
2.0000  3.8000  3.2000  2.7000
  40.  *  3.3000  0.1000  0.1000  0.1000  1.8000  1.4000  0.8000  2.2000  2.2000
2.2000  3.9000  3.4000  2.9000
  50.  *  3.1000  0.1000  0.1000  0.1000  1.9000  1.5000  0.9000  2.5000  2.5000
2.5000  4.0000  3.6000  3.1000
  60.  *  2.9000  0.2000  0.2000  0.2000  2.2000  1.9000  1.3000  2.8000  2.8000
2.6000  4.3000  3.8000  3.3000
  70.  *  3.1000  0.7000  0.7000  0.6000  3.2000  2.9000  2.7000  2.9000  2.9000
2.6000  4.3000  3.8000  3.1000
  80.  *  2.8000  1.7000  1.5000  1.3000  4.6000  4.5000  4.2000  2.3000  2.2000
1.8000  3.6000  2.8000  2.0000
  90.  *  2.9000  2.3000  2.3000  1.9000  5.2000  5.0000  4.4000  1.1000  1.0000
0.8000  2.6000  2.1000  1.0000
```

100.	*	3.0000	2.3000	2.3000	2.2000	4.9000	4.6000	4.0000	0.3000	0.3000	0.3000	2.2000	1.5000	0.8000
110.	*	3.2000	2.1000	2.1000	2.0000	4.7000	4.2000	3.6000	0.2000	0.2000	0.2000	2.1000	1.5000	0.8000
120.	*	3.5000	1.9000	1.9000	1.9000	4.6000	4.0000	3.2000	0.1000	0.1000	0.1000	2.3000	1.7000	0.8000
130.	*	3.9000	1.8000	1.8000	1.8000	4.5000	3.9000	2.8000	0.1000	0.1000	0.1000	2.4000	1.7000	0.5000
140.	*	4.1000	1.6000	1.6000	1.6000	4.5000	3.7000	2.4000	0.1000	0.1000	0.1000	2.3000	1.5000	0.1000
150.	*	3.9000	1.7000	1.6000	1.6000	4.0000	3.2000	2.1000	0.1000	0.0000	0.0000	1.8000	1.0000	0.0000
160.	*	2.8000	2.2000	1.8000	1.6000	3.2000	2.6000	2.3000	0.5000	0.2000	0.0000	0.9000	0.3000	0.0000
170.	*	1.3000	3.1000	2.3000	1.6000	2.5000	2.3000	2.3000	1.3000	0.7000	0.0000	0.2000	0.0000	0.0000
180.	*	0.5000	3.6000	2.9000	1.7000	2.1000	2.1000	2.1000	2.0000	1.3000	0.0000	0.0000	0.0000	0.0000
190.	*	0.3000	3.4000	3.0000	1.8000	2.2000	2.2000	2.2000	1.9000	1.4000	0.2000	0.0000	0.0000	0.0000
200.	*	0.3000	3.4000	3.0000	2.2000	2.3000	2.3000	2.3000	2.0000	1.5000	0.6000	0.1000	0.1000	0.1000
210.	*	0.3000	3.5000	3.0000	2.3000	2.5000	2.5000	2.5000	1.8000	1.4000	0.7000	0.1000	0.1000	0.1000
220.	*	0.2000	3.7000	3.1000	2.5000	2.9000	2.9000	2.9000	1.8000	1.3000	0.7000	0.1000	0.1000	0.1000
230.	*	0.1000	4.1000	3.5000	2.7000	3.2000	3.2000	3.1000	1.9000	1.4000	0.8000	0.1000	0.1000	0.1000
240.	*	0.0000	4.8000	3.8000	3.1000	3.7000	3.6000	3.2000	2.1000	1.6000	1.0000	0.4000	0.3000	0.3000
250.	*	0.0000	4.7000	4.1000	3.3000	3.3000	3.3000	2.7000	2.9000	2.4000	1.8000	1.2000	1.2000	0.9000
260.	*	0.0000	3.7000	3.4000	2.6000	2.1000	1.9000	1.7000	4.1000	3.8000	3.2000	2.3000	2.2000	1.7000
270.	*	0.1000	2.6000	2.2000	1.4000	0.7000	0.7000	0.7000	4.8000	4.5000	3.7000	2.7000	2.7000	2.3000
280.	*	0.4000	2.1000	1.6000	0.8000	0.3000	0.3000	0.3000	4.5000	4.2000	3.5000	2.5000	2.5000	2.4000
290.	*	0.6000	2.0000	1.5000	0.7000	0.2000	0.2000	0.2000	4.2000	3.8000	3.1000	2.2000	2.2000	2.2000
300.	*	0.7000	2.1000	1.5000	0.7000	0.2000	0.2000	0.2000	3.9000	3.6000	2.8000	2.1000	2.1000	2.1000
310.	*	0.7000	2.3000	1.6000	0.5000	0.1000	0.1000	0.1000	4.2000	3.5000	2.5000	1.9000	1.9000	1.9000
320.	*	1.0000	2.3000	1.6000	0.2000	0.1000	0.1000	0.1000	4.0000	3.3000	2.1000	1.9000	1.9000	1.9000
330.	*	1.9000	1.8000	0.9000	0.0000	0.1000	0.0000	0.0000	3.7000	2.8000	1.8000	1.9000	1.8000	1.8000

```
 340.  *  4.1000  0.8000  0.3000  0.0000  0.5000  0.2000  0.0000  2.7000  2.2000
1.8000  2.4000  2.0000  1.8000
 350.  *  5.4000  0.2000  0.0000  0.0000  1.3000  0.6000  0.0000  2.1000  1.9000
1.9000  3.2000  2.6000  1.8000
 360.  *  5.1000  0.0000  0.0000  0.0000  1.9000  1.1000  0.0000  1.8000  1.8000
1.8000  3.6000  3.1000  2.0000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  5.4000  4.8000  4.1000  3.3000  5.2000  5.0000  4.4000  4.8000  4.5000
3.7000  4.3000  3.8000  3.3000
 DEGR. *    350     240     250     250      90      90      90     270     270
270      70      60      60

 THE HIGHEST CONCENTRATION OF   6.2000 PPM OCCURRED AT RECEPTOR     5.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
9,9,5,5,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-40,-40,-40,-45,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',38.6,137.6,5.9
'N Leg, E Side - 25 m',-7.7,192.8,5.9
'N Leg, E Side - 50 m',-60.4,255.6,5.9
'N Leg, E Side-Midblk',-340.7,589.6,5.9
'N Leg, W Side-Corner',-135.4,-22.2,5.9
'N Leg, W Side - 25 m',-181.7,32.9,5.9
'N Leg, W Side - 50 m',-234.4,95.8,5.9
'N Leg, W Side-Midblk',-514.6,429.7,5.9
'S Leg, E Side-Corner',128.9,29.9,5.9
'S Leg, E Side - 25 m',175.2,-25.2,5.9
'S Leg, E Side - 50 m',227.9,-88.1,5.9
'S Leg, E Side-Midblk',508.2,-422.0,5.9
'S Leg, W Side-Corner',-45.4,-129.5,5.9
'S Leg, W Side - 25 m',0.9,-184.6,5.9
'S Leg, W Side - 50 m',53.6,-247.5,5.9
'S Leg, W Side-Midblk',333.8,-581.4,5.9
'E Leg, N Side - 25 m',89.5,188.5,5.9
'E Leg, N Side - 50 m',147.5,246.5,5.9
'E Leg, N Side-Midblk',455.8,554.8,5.9
'W Leg, N Side - 25 m',-190.6,-68.5,5.9
'W Leg, N Side - 50 m',-253.4,-121.2,5.9
'W Leg, N Side-Midblk',-587.4,-401.5,5.9
'E Leg, S Side - 25 m',179.9,80.9,5.9
'E Leg, S Side - 50 m',237.8,138.9,5.9
'E Leg, S Side-Midblk',546.1,447.1,5.9
'W Leg, S Side - 25 m',-100.6,-175.8,5.9
'W Leg, S Side - 50 m',-163.4,-228.5,5.9
'W Leg, S Side-Midblk',-497.4,-508.7,5.9
'2016 I270 & MD189 (IC.33)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-64,-8,-813,885,19800,3.41,0.0,127.7
1
'N Leg Dep - FreeFlow','AG',64,8,-730,954,19800,2.62,0.0,127.7
1
'S Leg App - FreeFlow','AG',64,8,813,-885,19800,3.41,0.0,127.7
1
'S Leg Dep - FreeFlow','AG',-64,-8,730,-954,19800,2.62,0.0,127.7
1
'E Leg App - FreeFlow','AG',-20,22,827,870,11000,6.36,0.0,79.7
1
'E Leg Dep - FreeFlow','AG',20,-22,870,827,11000,3.18,0.0,79.7
1
```

```
'W Leg App - FreeFlow','AG',20,-22,-900,-794,11000,3.77,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',-20,22,-939,-748,11000,3.18,0.0,79.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

```
 *** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i
graphical user interface
                        CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated
13045                       PAGE  1

      JOB: I-495 & I-270 MLS                                    RUN: 2016 I270 &
MD189 (IC.33)

      DATE :  1/16/19
      TIME : 15:21:40

         The MODE flag has been set for calculating concentrations for POLLUTANT:
CO

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 108. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =
1000. M   AMB =  0.0 PPM

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH
BRG TYPE   VPH    EF      H   W    V/C QUEUE
                               *   X1        Y1        X2        Y2     *     (FT)
(DEG)           (G/MI)  (FT) (FT)       (VEH)

------------------------*-----------------------------------------*-----------------
---------------------------------------
       1. N Leg App - FreeFlow*    -64.0      -8.0    -813.0     885.0 *    1166.
320. AG  19800.   3.4   0.0 ****
       2. N Leg Dep - FreeFlow*     64.0       8.0    -730.0     954.0 *    1235.
320. AG  19800.   2.6   0.0 ****
       3. S Leg App - FreeFlow*     64.0       8.0     813.0    -885.0 *    1166.
140. AG  19800.   3.4   0.0 ****
       4. S Leg Dep - FreeFlow*    -64.0      -8.0     730.0    -954.0 *    1235.
140. AG  19800.   2.6   0.0 ****
       5. E Leg App - FreeFlow*    -20.0      22.0     827.0     870.0 *    1199.
45. AG  11000.   6.4   0.0 79.7
       6. E Leg Dep - FreeFlow*     20.0     -22.0     870.0     827.0 *    1201.
45. AG  11000.   3.2   0.0 79.7
       7. W Leg App - FreeFlow*     20.0     -22.0    -900.0    -794.0 *    1201.
230. AG  11000.   3.8   0.0 79.7
       8. W Leg Dep - FreeFlow*    -20.0      22.0    -939.0    -748.0 *    1199.
230. AG  11000.   3.2   0.0 79.7

                            PAGE  2
      JOB: I-495 & I-270 MLS                                    RUN: 2016 I270 &
```

MD189 (IC.33)

DATE : 1/16/19
TIME : 15:21:40

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	38.6	137.6	5.9
2. N Leg, E Side - 25 m	-7.7	192.8	5.9
3. N Leg, E Side - 50 m	-60.4	255.6	5.9
4. N Leg, E Side-Midblk	-340.7	589.6	5.9
5. N Leg, W Side-Corner	-135.4	-22.2	5.9
6. N Leg, W Side - 25 m	-181.7	32.9	5.9
7. N Leg, W Side - 50 m	-234.4	95.8	5.9
8. N Leg, W Side-Midblk	-514.6	429.7	5.9
9. S Leg, E Side-Corner	128.9	29.9	5.9
10. S Leg, E Side - 25 m	175.2	-25.2	5.9
11. S Leg, E Side - 50 m	227.9	-88.1	5.9
12. S Leg, E Side-Midblk	508.2	-422.0	5.9
13. S Leg, W Side-Corner	-45.4	-129.5	5.9
14. S Leg, W Side - 25 m	0.9	-184.6	5.9
15. S Leg, W Side - 50 m	53.6	-247.5	5.9
16. S Leg, W Side-Midblk	333.8	-581.4	5.9
17. E Leg, N Side - 25 m	89.5	188.5	5.9
18. E Leg, N Side - 50 m	147.5	246.5	5.9
19. E Leg, N Side-Midblk	455.8	554.8	5.9
20. W Leg, N Side - 25 m	-190.6	-68.5	5.9
21. W Leg, N Side - 50 m	-253.4	-121.2	5.9
22. W Leg, N Side-Midblk	-587.4	-401.5	5.9
23. E Leg, S Side - 25 m	179.9	80.9	5.9
24. E Leg, S Side - 50 m	237.8	138.9	5.9
25. E Leg, S Side-Midblk	546.1	447.1	5.9
26. W Leg, S Side - 25 m	-100.6	-175.8	5.9

27. W Leg, S Side - 50 m	*	-163.4	-228.5	5.9 *
28. W Leg, S Side-Midblk	*	-497.4	-508.7	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.3000	0.1000	0.1000	0.1000	2.5000	2.4000	2.4000	2.4000	2.7000	1.6000	1.3000	0.5000	4.6000	3.6000	3.3000
20.	*	0.5000	0.1000	0.1000	0.1000	2.4000	2.2000	2.2000	2.2000	3.0000	1.8000	1.2000	0.3000	5.0000	3.8000	3.3000
30.	*	1.0000	0.1000	0.1000	0.1000	2.7000	2.2000	2.1000	2.1000	3.2000	1.6000	1.0000	0.1000	5.3000	3.6000	2.9000
40.	*	2.3000	0.4000	0.1000	0.0000	3.7000	2.5000	2.2000	2.1000	2.7000	0.9000	0.4000	0.0000	5.2000	3.1000	2.5000
50.	*	3.8000	1.1000	0.5000	0.0000	5.1000	3.4000	2.8000	2.3000	1.5000	0.3000	0.0000	0.0000	4.1000	2.5000	2.3000
60.	*	4.1000	1.7000	0.9000	0.0000	5.5000	3.8000	3.1000	2.1000	0.5000	0.0000	0.0000	0.0000	2.8000	2.0000	2.0000
70.	*	3.7000	1.9000	1.3000	0.2000	4.9000	3.8000	3.2000	2.5000	0.3000	0.1000	0.1000	0.1000	2.3000	2.0000	2.0000
80.	*	3.3000	1.9000	1.2000	0.4000	4.6000	3.7000	3.3000	2.6000	0.2000	0.1000	0.1000	0.1000	2.2000	2.1000	2.1000
90.	*	2.9000	1.7000	1.2000	0.5000	4.3000	3.9000	3.4000	2.9000	0.3000	0.2000	0.2000	0.2000	2.3000	2.2000	2.2000
100.	*	2.7000	1.6000	1.2000	0.6000	4.3000	3.8000	3.6000	3.1000	0.3000	0.2000	0.2000	0.2000	2.4000	2.4000	2.4000
110.	*	2.6000	1.6000	1.2000	0.6000	4.5000	3.9000	3.8000	3.3000	0.3000	0.2000	0.2000	0.2000	2.7000	2.6000	2.6000
120.	*	2.7000	1.8000	1.3000	0.7000	4.7000	4.2000	4.0000	3.7000	0.4000	0.4000	0.4000	0.3000	2.9000	2.9000	2.9000

130. * 3.5000 2.5000 2.0000 1.4000 4.7000 4.1000 3.9000 4.0000 1.0000
1.0000 0.9000 0.8000 2.7000 2.7000 2.7000
140. * 4.9000 3.7000 3.2000 2.6000 3.8000 3.3000 3.1000 2.8000 2.3000
2.3000 2.2000 1.8000 1.9000 1.9000 1.8000
150. * 5.5000 4.5000 3.9000 3.6000 2.4000 2.0000 1.8000 1.5000 3.3000
3.1000 3.1000 2.6000 0.8000 0.7000 0.7000
160. * 5.4000 4.6000 3.9000 3.2000 1.8000 1.4000 1.2000 0.7000 3.4000
3.2000 3.2000 2.9000 0.3000 0.3000 0.3000
170. * 5.3000 4.1000 3.4000 3.0000 1.7000 1.3000 1.0000 0.6000 3.0000
2.9000 2.9000 2.8000 0.3000 0.2000 0.2000
180. * 5.2000 3.7000 3.1000 2.8000 1.8000 1.3000 1.0000 0.6000 2.7000
2.6000 2.6000 2.6000 0.2000 0.1000 0.1000
190. * 5.1000 3.5000 3.1000 2.6000 2.0000 1.3000 1.0000 0.5000 2.5000
2.4000 2.4000 2.4000 0.2000 0.1000 0.1000
200. * 5.2000 3.2000 2.9000 2.3000 2.2000 1.3000 0.9000 0.3000 2.3000
2.3000 2.2000 2.2000 0.3000 0.1000 0.1000
210. * 5.1000 3.2000 2.7000 2.1000 2.5000 1.4000 0.9000 0.1000 2.6000
2.2000 2.1000 2.1000 0.4000 0.1000 0.1000
220. * 5.1000 3.0000 2.5000 2.0000 2.6000 1.0000 0.5000 0.0000 3.3000
2.2000 2.1000 2.1000 0.9000 0.1000 0.0000
230. * 4.2000 2.6000 2.3000 2.1000 1.8000 0.5000 0.2000 0.0000 4.4000
2.9000 2.6000 2.3000 2.0000 0.4000 0.1000
240. * 2.9000 2.1000 2.0000 2.0000 0.8000 0.1000 0.0000 0.0000 5.0000
3.3000 2.7000 2.1000 2.7000 1.0000 0.5000
250. * 2.4000 2.0000 2.0000 2.0000 0.4000 0.1000 0.1000 0.1000 4.7000
3.5000 3.0000 2.3000 2.7000 1.4000 0.9000
260. * 2.3000 2.1000 2.1000 2.1000 0.2000 0.1000 0.1000 0.1000 4.5000
3.6000 3.1000 2.5000 2.4000 1.4000 0.9000
270. * 2.4000 2.2000 2.2000 2.2000 0.3000 0.2000 0.2000 0.2000 4.6000
3.7000 3.1000 2.8000 2.2000 1.3000 0.9000
280. * 2.6000 2.4000 2.4000 2.3000 0.3000 0.2000 0.2000 0.2000 4.7000
4.0000 3.5000 3.0000 2.0000 1.2000 0.9000
290. * 2.7000 2.6000 2.6000 2.5000 0.3000 0.2000 0.2000 0.2000 4.9000
4.1000 3.9000 3.3000 1.9000 1.2000 0.9000
300. * 2.9000 2.9000 2.8000 2.5000 0.4000 0.4000 0.4000 0.3000 5.1000
4.5000 4.1000 3.6000 2.0000 1.4000 1.0000
310. * 2.7000 2.7000 2.7000 2.0000 1.0000 0.9000 0.9000 0.8000 5.2000
4.4000 4.3000 4.1000 2.6000 2.0000 1.7000
320. * 1.9000 1.9000 1.7000 1.4000 2.3000 2.2000 2.2000 1.8000 4.2000
3.5000 3.3000 2.9000 4.1000 3.3000 2.9000
330. * 0.8000 0.7000 0.7000 0.6000 3.3000 3.1000 3.1000 2.6000 2.9000
2.3000 2.0000 1.6000 4.9000 4.0000 3.8000
340. * 0.4000 0.3000 0.3000 0.3000 3.3000 3.2000 3.2000 2.9000 2.3000
1.7000 1.4000 0.8000 4.8000 4.1000 3.8000
350. * 0.4000 0.2000 0.2000 0.2000 3.0000 2.9000 2.9000 2.8000 2.3000
1.6000 1.2000 0.7000 4.5000 3.8000 3.5000
360. * 0.3000 0.1000 0.1000 0.1000 2.7000 2.6000 2.6000 2.6000 2.4000
1.6000 1.3000 0.7000 4.4000 3.7000 3.4000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  5.5000  4.6000  3.9000  3.6000  5.5000  4.2000  4.0000  4.0000  5.2000
4.5000  4.3000  4.1000  5.3000  4.1000  3.8000
 DEGR. *    150     160     150     150      60     120     120     130     310
300     310     310      30     340     340
```


JOB: I-495 & I-270 MLS RUN: 2016 I270 & MD189 (IC.33)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  2.7000  0.2000  0.2000  0.2000  1.7000  1.3000  0.6000  2.7000  2.7000
2.6000  3.7000  3.2000  2.6000
  20.  *  2.4000  0.4000  0.4000  0.4000  1.7000  1.2000  0.6000  3.0000  3.0000
2.7000  4.2000  3.6000  2.8000
  30.  *  2.0000  0.8000  0.8000  0.8000  1.9000  1.5000  0.9000  3.1000  3.1000
2.7000  4.7000  4.3000  3.4000
  40.  *  2.0000  2.3000  2.3000  1.9000  2.8000  2.5000  1.7000  2.7000  2.5000
2.0000  4.6000  4.4000  3.7000
  50.  *  2.1000  3.8000  3.8000  3.2000  4.2000  3.6000  2.9000  1.5000  1.3000
1.1000  3.6000  3.4000  3.1000
  60.  *  2.0000  4.1000  4.1000  3.7000  4.4000  3.9000  3.4000  0.5000  0.5000
0.4000  2.1000  2.0000  1.5000
  70.  *  2.0000  3.6000  3.6000  3.6000  4.0000  3.5000  3.0000  0.2000  0.2000
0.2000  1.7000  1.4000  0.8000
  80.  *  2.1000  3.2000  3.2000  3.2000  3.5000  3.2000  2.7000  0.1000  0.1000
0.1000  1.6000  1.3000  0.7000
  90.  *  2.2000  2.8000  2.8000  2.9000  3.5000  3.0000  2.6000  0.1000  0.1000
0.1000  1.6000  1.3000  0.7000
```

```
 100.  *  2.3000  2.7000  2.7000  2.7000  3.3000  3.0000  2.3000  0.1000  0.1000
0.1000  1.7000  1.3000  0.5000
 110.  *  2.5000  2.5000  2.5000  2.5000  3.4000  2.9000  2.1000  0.1000  0.1000
0.1000  1.8000  1.3000  0.3000
 120.  *  2.5000  2.4000  2.4000  2.4000  3.3000  2.7000  1.7000  0.0000  0.0000
0.0000  1.7000  1.1000  0.0000
 130.  *  2.0000  2.7000  2.6000  2.6000  2.9000  2.3000  1.6000  0.1000  0.0000
0.0000  1.2000  0.6000  0.0000
 140.  *  1.4000  3.2000  2.8000  2.6000  2.2000  2.0000  1.7000  0.6000  0.2000
0.0000  0.5000  0.1000  0.0000
 150.  *  0.6000  3.9000  3.2000  2.4000  1.7000  1.6000  1.6000  1.3000  0.7000
0.0000  0.1000  0.0000  0.0000
 160.  *  0.3000  4.4000  3.7000  2.6000  1.6000  1.6000  1.6000  1.9000  1.3000
0.2000  0.0000  0.0000  0.0000
 170.  *  0.2000  4.4000  4.0000  3.1000  1.7000  1.7000  1.7000  1.9000  1.3000
0.4000  0.1000  0.1000  0.1000
 180.  *  0.1000  4.5000  4.1000  3.4000  1.8000  1.8000  1.8000  1.8000  1.3000
0.6000  0.1000  0.1000  0.1000
 190.  *  0.1000  4.5000  4.3000  3.8000  2.0000  2.0000  2.0000  1.7000  1.3000
0.6000  0.1000  0.1000  0.1000
 200.  *  0.1000  4.9000  4.5000  4.1000  2.2000  2.2000  2.1000  1.8000  1.3000
0.7000  0.2000  0.2000  0.2000
 210.  *  0.1000  5.1000  4.9000  4.6000  2.5000  2.5000  2.2000  1.9000  1.5000
0.9000  0.3000  0.3000  0.3000
 220.  *  0.0000  4.8000  4.6000  4.5000  2.5000  2.4000  2.1000  2.7000  2.4000
2.1000  0.9000  0.9000  0.7000
 230.  *  0.0000  3.7000  3.2000  3.0000  1.8000  1.8000  1.4000  3.9000  3.6000
3.3000  2.0000  1.9000  1.6000
 240.  *  0.0000  2.2000  2.0000  1.4000  0.8000  0.8000  0.6000  4.2000  4.1000
3.9000  2.7000  2.6000  2.2000
 250.  *  0.1000  1.8000  1.4000  0.9000  0.3000  0.3000  0.2000  4.1000  3.9000
3.4000  2.7000  2.6000  2.4000
 260.  *  0.3000  1.7000  1.3000  0.7000  0.1000  0.1000  0.1000  3.9000  3.5000
3.2000  2.3000  2.3000  2.3000
 270.  *  0.4000  1.7000  1.4000  0.8000  0.1000  0.1000  0.1000  3.8000  3.6000
3.0000  2.1000  2.1000  2.1000
 280.  *  0.5000  1.8000  1.4000  0.6000  0.1000  0.1000  0.1000  3.8000  3.4000
2.7000  1.9000  1.9000  1.9000
 290.  *  0.6000  1.8000  1.3000  0.3000  0.1000  0.1000  0.1000  3.8000  3.3000
2.4000  1.8000  1.8000  1.8000
 300.  *  0.6000  1.7000  1.1000  0.0000  0.0000  0.0000  0.0000  3.7000  3.2000
2.2000  1.7000  1.7000  1.7000
 310.  *  1.3000  1.2000  0.6000  0.0000  0.1000  0.0000  0.0000  3.5000  2.8000
2.2000  1.8000  1.7000  1.7000
 320.  *  2.7000  0.5000  0.1000  0.0000  0.6000  0.2000  0.0000  2.7000  2.4000
2.2000  2.4000  2.0000  1.8000
 330.  *  3.6000  0.1000  0.0000  0.0000  1.3000  0.7000  0.0000  2.2000  2.1000
2.1000  3.2000  2.5000  1.7000
```

```
 340.  *  3.3000  0.1000  0.1000  0.1000  1.8000  1.2000  0.1000  2.1000  2.1000
2.1000  3.4000  2.9000  1.8000
 350.  *  3.1000  0.2000  0.2000  0.2000  1.9000  1.3000  0.4000  2.2000  2.2000
2.2000  3.4000  3.1000  2.1000
 360.  *  2.9000  0.2000  0.2000  0.2000  1.8000  1.3000  0.6000  2.4000  2.4000
2.4000  3.7000  3.2000  2.4000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  3.6000  5.1000  4.9000  4.6000  4.4000  3.9000  3.4000  4.2000  4.1000
3.9000  4.7000  4.4000  3.7000
 DEGR. *    330     210     210     210      60      60      60     240     240
240      30      40      40

 THE HIGHEST CONCENTRATION OF   5.5000 PPM OCCURRED AT RECEPTOR     5.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,5,7,7,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,10,10,-10,-10,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',90.7,111.4,5.9
'N Leg, E Side - 25 m',103.2,182.4,5.9
'N Leg, E Side - 50 m',117.5,263.2,5.9
'N Leg, E Side-Midblk',193.2,692.5,5.9
'N Leg, W Side-Corner',-56.0,85.6,5.9
'N Leg, W Side - 25 m',-43.5,156.5,5.9
'N Leg, W Side - 50 m',-29.2,237.3,5.9
'N Leg, W Side-Midblk',46.5,666.6,5.9
'S Leg, E Side-Corner',56.0,-85.6,5.9
'S Leg, E Side - 25 m',43.5,-156.5,5.9
'S Leg, E Side - 50 m',29.2,-237.3,5.9
'S Leg, E Side-Midblk',-46.5,-666.6,5.9
'S Leg, W Side-Corner',-90.7,-111.4,5.9
'S Leg, W Side - 25 m',-103.2,-182.4,5.9
'S Leg, W Side - 50 m',-117.5,-263.2,5.9
'S Leg, W Side-Midblk',-193.2,-692.5,5.9
'E Leg, N Side - 25 m',161.7,124.0,5.9
'E Leg, N Side - 50 m',242.4,138.2,5.9
'E Leg, N Side-Midblk',671.8,213.9,5.9
'W Leg, N Side - 25 m',-126.9,73.1,5.9
'W Leg, N Side - 50 m',-207.7,58.8,5.9
'W Leg, N Side-Midblk',-637.0,-16.9,5.9
'E Leg, S Side - 25 m',126.9,-73.1,5.9
'E Leg, S Side - 50 m',207.7,-58.8,5.9
'E Leg, S Side-Midblk',637.0,16.9,5.9
'W Leg, S Side - 25 m',-161.7,-124.0,5.9
'W Leg, S Side - 50 m',-242.4,-138.2,5.9
'W Leg, S Side-Midblk',-671.8,-213.9,5.9
'2016 I495 & I95 (IC.16)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-30,5,179,1187,11000,2.89,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',30,-5,238,1177,11000,5.42,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,-5,-179,-1187,11000,2.89,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-30,5,-238,-1177,11000,2.89,0.0,79.7
1
'E Leg App - FreeFlow','AG',-7,41,1174,250,15400,6.18,0.0,103.7
1
'E Leg Dep - FreeFlow','AG',7,-41,1189,167,15400,2.89,0.0,103.7
1
```

```
'W Leg App - FreeFlow','AG',7,-41,-1174,-250,15400,2.89,0.0,103.7
1
'W Leg Dep - FreeFlow','AG',-7,41,-1189,-167,15400,7.79,0.0,103.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2016 I495 & I95 (IC.16)

DATE : 1/16/19
TIME : 16:17:20

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-30.0	5.0	179.0	1187.0	*	1200.	10.	AG	11000.	2.9	0.0	79.7		
2. N Leg Dep - FreeFlow	*	30.0	-5.0	238.0	1177.0	*	1200.	10.	AG	11000.	5.4	0.0	79.7		
3. S Leg App - FreeFlow	*	30.0	-5.0	-179.0	-1187.0	*	1200.	190.	AG	11000.	2.9	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-30.0	5.0	-238.0	-1177.0	*	1200.	190.	AG	11000.	2.9	0.0	79.7		
5. E Leg App - FreeFlow	*	-7.0	41.0	1174.0	250.0	*	1199.	80.	AG	15400.	6.2	0.0	****		
6. E Leg Dep - FreeFlow	*	7.0	-41.0	1189.0	167.0	*	1200.	80.	AG	15400.	2.9	0.0	****		
7. W Leg App - FreeFlow	*	7.0	-41.0	-1174.0	-250.0	*	1199.	260.	AG	15400.	2.9	0.0	****		
8. W Leg Dep - FreeFlow	*	-7.0	41.0	-1189.0	-167.0	*	1200.	260.	AG	15400.	7.8	0.0	****		

(IC.16)

DATE : 1/16/19
TIME : 16:17:20

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	90.7	111.4	5.9
2. N Leg, E Side - 25 m	103.2	182.4	5.9
3. N Leg, E Side - 50 m	117.5	263.2	5.9
4. N Leg, E Side-Midblk	193.2	692.5	5.9
5. N Leg, W Side-Corner	-56.0	85.6	5.9
6. N Leg, W Side - 25 m	-43.5	156.5	5.9
7. N Leg, W Side - 50 m	-29.2	237.3	5.9
8. N Leg, W Side-Midblk	46.5	666.6	5.9
9. S Leg, E Side-Corner	56.0	-85.6	5.9
10. S Leg, E Side - 25 m	43.5	-156.5	5.9
11. S Leg, E Side - 50 m	29.2	-237.3	5.9
12. S Leg, E Side-Midblk	-46.5	-666.6	5.9
13. S Leg, W Side-Corner	-90.7	-111.4	5.9
14. S Leg, W Side - 25 m	-103.2	-182.4	5.9
15. S Leg, W Side - 50 m	-117.5	-263.2	5.9
16. S Leg, W Side-Midblk	-193.2	-692.5	5.9
17. E Leg, N Side - 25 m	161.7	124.0	5.9
18. E Leg, N Side - 50 m	242.4	138.2	5.9
19. E Leg, N Side-Midblk	671.8	213.9	5.9
20. W Leg, N Side - 25 m	-126.9	73.1	5.9
21. W Leg, N Side - 50 m	-207.7	58.8	5.9
22. W Leg, N Side-Midblk	-637.0	-16.9	5.9
23. E Leg, S Side - 25 m	126.9	-73.1	5.9
24. E Leg, S Side - 50 m	207.7	-58.8	5.9
25. E Leg, S Side-Midblk	637.0	16.9	5.9
26. W Leg, S Side - 25 m	-161.7	-124.0	5.9

27. W Leg, S Side - 50 m	*	-242.4	-138.2	5.9 *
28. W Leg, S Side-Midblk	*	-671.8	-213.9	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	2.9000	2.7000	2.7000	2.2000	1.9000	1.9000	1.9000	1.4000	5.0000	4.0000	3.3000	2.6000	4.7000	3.9000	3.6000
20.	*	1.5000	1.3000	1.3000	1.0000	2.7000	2.7000	2.7000	2.2000	3.6000	2.8000	2.3000	1.5000	5.5000	4.8000	4.1000
30.	*	0.7000	0.5000	0.5000	0.4000	2.8000	2.8000	2.7000	2.5000	3.0000	2.1000	1.7000	0.8000	5.6000	4.4000	4.0000
40.	*	0.5000	0.2000	0.2000	0.2000	2.4000	2.4000	2.4000	2.4000	3.0000	2.0000	1.5000	0.7000	5.1000	4.1000	3.3000
50.	*	0.5000	0.2000	0.2000	0.2000	2.3000	2.2000	2.2000	2.2000	3.2000	2.1000	1.6000	0.6000	5.3000	3.8000	3.2000
60.	*	0.8000	0.2000	0.2000	0.2000	2.4000	2.0000	2.0000	2.0000	3.6000	2.2000	1.5000	0.3000	5.2000	3.7000	3.1000
70.	*	1.8000	0.3000	0.1000	0.1000	3.6000	2.1000	1.9000	1.9000	3.5000	1.6000	0.9000	0.1000	4.9000	3.2000	2.4000
80.	*	3.7000	1.0000	0.4000	0.1000	5.8000	2.7000	2.2000	1.8000	2.2000	0.7000	0.2000	0.0000	3.6000	2.0000	1.6000
90.	*	4.8000	1.8000	0.9000	0.0000	7.2000	3.9000	2.9000	1.9000	0.8000	0.1000	0.0000	0.0000	2.4000	1.6000	1.4000
100.	*	4.6000	2.3000	1.4000	0.0000	6.9000	4.3000	3.5000	2.0000	0.3000	0.0000	0.0000	0.0000	1.7000	1.4000	1.4000
110.	*	4.1000	2.4000	1.6000	0.3000	6.4000	4.3000	3.5000	2.3000	0.2000	0.0000	0.0000	0.0000	1.5000	1.4000	1.4000
120.	*	3.7000	2.3000	1.7000	0.6000	5.9000	3.9000	3.4000	2.4000	0.1000	0.0000	0.0000	0.0000	1.4000	1.3000	1.3000

130. * 3.4000 2.2000 1.6000 0.8000 5.7000 3.9000 3.4000 2.6000 0.2000
0.1000 0.1000 0.1000 1.6000 1.5000 1.5000
140. * 3.3000 2.3000 1.6000 0.9000 5.5000 4.1000 3.4000 2.8000 0.2000
0.1000 0.1000 0.1000 1.7000 1.6000 1.6000
150. * 3.0000 2.2000 1.6000 0.8000 5.5000 4.3000 3.6000 2.8000 0.1000
0.1000 0.1000 0.1000 1.7000 1.7000 1.7000
160. * 3.1000 2.2000 1.7000 0.9000 5.7000 4.3000 3.9000 3.0000 0.1000
0.1000 0.1000 0.1000 1.8000 1.8000 1.8000
170. * 3.5000 2.5000 1.8000 1.1000 6.1000 4.4000 3.9000 3.3000 0.3000
0.3000 0.3000 0.2000 2.2000 2.2000 2.2000
180. * 4.0000 3.1000 2.6000 2.0000 5.8000 4.5000 3.9000 3.5000 0.8000
0.8000 0.7000 0.6000 2.2000 2.2000 2.2000
190. * 5.1000 4.4000 4.1000 3.7000 5.2000 4.1000 3.3000 2.7000 1.6000
1.6000 1.6000 1.3000 1.6000 1.6000 1.6000
200. * 6.1000 5.3000 5.0000 4.5000 4.4000 3.3000 2.5000 1.6000 2.2000
2.2000 2.2000 1.8000 0.9000 0.7000 0.7000
210. * 6.4000 5.3000 5.0000 4.2000 4.2000 2.8000 2.0000 1.0000 2.2000
2.2000 2.2000 2.0000 0.4000 0.3000 0.3000
220. * 6.6000 5.4000 4.6000 3.7000 4.4000 2.7000 2.0000 0.9000 1.8000
1.8000 1.8000 1.8000 0.2000 0.1000 0.1000
230. * 7.2000 5.3000 4.5000 3.4000 5.0000 3.0000 2.0000 0.7000 1.7000
1.7000 1.7000 1.7000 0.3000 0.1000 0.1000
240. * 7.5000 5.2000 4.3000 2.8000 5.7000 2.9000 2.0000 0.5000 1.7000
1.6000 1.6000 1.6000 0.4000 0.1000 0.1000
250. * 7.7000 4.7000 3.7000 2.4000 6.0000 2.5000 1.4000 0.2000 2.4000
1.7000 1.5000 1.5000 1.0000 0.2000 0.1000
260. * 6.3000 3.4000 2.7000 2.1000 4.5000 1.1000 0.5000 0.0000 3.8000
2.1000 1.5000 1.3000 2.4000 0.7000 0.2000
270. * 4.1000 2.4000 2.2000 2.1000 2.1000 0.2000 0.1000 0.0000 5.2000
3.2000 2.4000 1.4000 3.7000 1.6000 0.7000
280. * 3.0000 2.3000 2.3000 2.3000 0.7000 0.0000 0.0000 0.0000 5.5000
3.8000 3.0000 1.4000 3.9000 2.3000 1.4000
290. * 2.4000 2.1000 2.1000 2.1000 0.4000 0.0000 0.0000 0.0000 5.0000
3.7000 3.2000 1.7000 3.5000 2.3000 1.7000
300. * 2.4000 2.1000 2.1000 2.1000 0.3000 0.0000 0.0000 0.0000 4.6000
3.5000 2.9000 1.9000 3.3000 2.2000 1.6000
310. * 2.5000 2.3000 2.3000 2.3000 0.4000 0.1000 0.1000 0.1000 4.6000
3.5000 3.1000 2.2000 3.1000 2.2000 1.7000
320. * 2.6000 2.4000 2.4000 2.4000 0.3000 0.1000 0.1000 0.1000 4.6000
3.5000 3.1000 2.3000 3.0000 2.1000 1.6000
330. * 2.8000 2.7000 2.7000 2.6000 0.2000 0.1000 0.1000 0.1000 4.6000
3.7000 3.2000 2.4000 2.9000 2.1000 1.6000
340. * 2.9000 2.9000 2.9000 2.9000 0.1000 0.1000 0.1000 0.1000 5.0000
4.0000 3.5000 2.5000 2.9000 2.1000 1.6000
350. * 3.5000 3.5000 3.5000 3.2000 0.3000 0.3000 0.3000 0.2000 5.5000
4.2000 3.8000 2.9000 3.2000 2.3000 1.7000
360. * 3.6000 3.6000 3.6000 3.1000 0.9000 0.8000 0.7000 0.7000 5.6000
4.7000 4.1000 3.2000 3.7000 2.8000 2.4000

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  7.7000  5.4000  5.0000  4.5000  7.2000  4.5000  3.9000  3.5000  5.6000
4.7000  4.1000  3.2000  5.6000  4.8000  4.1000
 DEGR. *    250     220     200     200      90     180     170     180     360
360     360     360      30      20      20
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  2.7000  0.7000  0.3000  0.1000  0.6000  0.3000  0.1000  3.2000  2.8000
2.5000  3.3000  2.9000  2.7000
  20.  *  3.2000  0.3000  0.2000  0.2000  1.4000  0.8000  0.2000  2.6000  2.5000
2.5000  4.3000  3.6000  2.9000
  30.  *  2.7000  0.2000  0.2000  0.2000  1.8000  1.3000  0.5000  2.7000  2.7000
2.7000  4.5000  4.1000  3.2000
  40.  *  2.4000  0.3000  0.3000  0.3000  1.7000  1.3000  0.6000  2.9000  2.9000
2.9000  4.5000  4.1000  3.6000
  50.  *  2.3000  0.3000  0.3000  0.3000  1.8000  1.4000  0.9000  3.1000  3.1000
3.0000  4.6000  4.3000  4.1000
  60.  *  1.9000  0.6000  0.6000  0.5000  1.9000  1.6000  1.3000  3.5000  3.5000
3.0000  4.8000  4.4000  4.4000
  70.  *  1.5000  1.6000  1.5000  1.3000  3.1000  2.8000  2.5000  3.3000  3.2000
2.5000  4.4000  4.4000  4.4000
  80.  *  1.3000  3.6000  3.5000  2.8000  5.2000  5.1000  5.2000  2.1000  2.1000
1.6000  3.2000  3.1000  3.0000
  90.  *  1.4000  4.7000  4.7000  3.9000  6.6000  6.4000  6.5000  0.8000  0.8000
0.6000  1.9000  1.6000  1.2000
```

```
 100.  *  1.4000  4.6000  4.6000  4.2000  6.3000  6.2000  6.1000  0.3000  0.3000
0.3000  1.2000  0.9000  0.5000
 110.  *  1.4000  4.1000  4.1000  4.0000  5.8000  5.6000  5.0000  0.2000  0.2000
0.2000  1.0000  0.7000  0.4000
 120.  *  1.3000  3.6000  3.6000  3.6000  5.3000  5.1000  4.6000  0.1000  0.1000
0.1000  1.0000  0.7000  0.3000
 130.  *  1.5000  3.3000  3.3000  3.3000  4.9000  4.6000  4.3000  0.1000  0.1000
0.1000  1.0000  0.7000  0.4000
 140.  *  1.6000  3.1000  3.1000  3.1000  4.5000  4.4000  4.0000  0.1000  0.1000
0.1000  1.0000  0.8000  0.4000
 150.  *  1.7000  2.8000  2.8000  2.9000  4.4000  4.1000  3.6000  0.0000  0.0000
0.0000  1.0000  0.7000  0.2000
 160.  *  1.8000  2.9000  2.9000  2.9000  4.5000  4.2000  3.7000  0.0000  0.0000
0.0000  1.0000  0.7000  0.1000
 170.  *  2.0000  3.1000  3.1000  3.2000  4.9000  4.5000  3.8000  0.0000  0.0000
0.0000  1.0000  0.7000  0.0000
 180.  *  1.8000  3.0000  2.9000  2.9000  4.4000  4.0000  3.5000  0.1000  0.0000
0.0000  0.8000  0.5000  0.0000
 190.  *  1.2000  3.3000  3.0000  2.8000  3.8000  3.6000  3.4000  0.4000  0.2000
0.0000  0.4000  0.1000  0.0000
 200.  *  0.5000  4.2000  3.6000  3.1000  3.8000  3.7000  3.7000  1.0000  0.6000
0.1000  0.2000  0.1000  0.1000
 210.  *  0.2000  4.5000  4.0000  3.5000  4.0000  4.0000  4.0000  1.2000  0.8000
0.2000  0.1000  0.1000  0.1000
 220.  *  0.1000  5.0000  4.5000  3.8000  4.4000  4.4000  4.4000  1.1000  0.8000
0.3000  0.1000  0.1000  0.1000
 230.  *  0.1000  5.7000  5.0000  4.3000  4.9000  5.0000  4.8000  1.1000  0.8000
0.5000  0.2000  0.2000  0.2000
 240.  *  0.1000  6.4000  5.8000  5.0000  5.6000  5.6000  5.2000  1.2000  1.0000
0.6000  0.3000  0.3000  0.3000
 250.  *  0.1000  6.9000  6.4000  5.8000  5.9000  5.8000  5.1000  1.8000  1.6000
1.3000  0.9000  0.8000  0.6000
 260.  *  0.0000  5.5000  5.1000  4.5000  4.5000  4.4000  3.7000  3.4000  3.1000
3.0000  2.2000  2.2000  1.6000
 270.  *  0.0000  3.3000  2.8000  2.3000  2.1000  2.0000  1.7000  4.7000  4.7000
4.4000  3.5000  3.4000  2.6000
 280.  *  0.0000  1.9000  1.5000  1.1000  0.7000  0.7000  0.7000  4.7000  4.6000
4.1000  3.9000  3.9000  3.3000
 290.  *  0.2000  1.6000  1.3000  0.7000  0.4000  0.4000  0.4000  4.5000  4.3000
3.6000  3.5000  3.5000  3.4000
 300.  *  0.6000  1.7000  1.2000  0.7000  0.3000  0.3000  0.3000  4.3000  4.0000
3.3000  3.3000  3.3000  3.3000
 310.  *  0.8000  1.6000  1.1000  0.6000  0.3000  0.3000  0.3000  4.0000  3.6000
3.0000  3.0000  3.0000  3.0000
 320.  *  0.8000  1.6000  1.2000  0.6000  0.2000  0.2000  0.2000  3.9000  3.5000
2.9000  2.9000  2.9000  2.9000
 330.  *  0.8000  1.6000  1.1000  0.4000  0.1000  0.1000  0.1000  3.8000  3.4000
2.8000  2.8000  2.8000  2.8000
```

```
 340.  *  0.8000  1.5000  1.1000  0.1000  0.0000  0.0000  0.0000  3.9000  3.5000
2.7000  2.8000  2.8000  2.8000
 350.  *  0.9000  1.6000  1.0000  0.0000  0.0000  0.0000  0.0000  4.2000  3.7000
2.7000  2.9000  2.9000  2.9000
 360.  *  1.6000  1.3000  0.7000  0.0000  0.1000  0.0000  0.0000  3.8000  3.2000
2.4000  3.0000  2.8000  2.8000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  3.2000  6.9000  6.4000  5.8000  6.6000  6.4000  6.5000  4.7000  4.7000
4.4000  4.8000  4.4000  4.4000
 DEGR. *     20     250     250     250      90      90      90     270     270
270      60      60      60

 THE HIGHEST CONCENTRATION OF   7.7000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
6,6,8,8,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-10,-5,-10,35,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,35,0.3048,1,0
'N Leg, E Side-Corner',75.6,76.4,5.9
'N Leg, E Side - 25 m',69.3,148.2,5.9
'N Leg, E Side - 50 m',62.2,229.9,5.9
'N Leg, E Side-Midblk',24.2,664.2,5.9
'S Leg, E Side-Corner',121.0,-214.1,5.9
'S Leg, E Side - 25 m',133.5,-285.1,5.9
'S Leg, E Side - 50 m',147.8,-365.8,5.9
'S Leg, E Side-Midblk',223.5,-795.2,5.9
'S Leg, W Side-Corner',-62.3,-118.6,5.9
'S Leg, W Side - 25 m',-49.8,-189.6,5.9
'S Leg, W Side - 50 m',-35.6,-270.3,5.9
'S Leg, W Side-Midblk',40.1,-699.7,5.9
'E Leg, N Side - 25 m',134.6,35.1,5.9
'E Leg, N Side - 50 m',201.8,-11.9,5.9
'E Leg, N Side-Midblk',558.9,-262.0,5.9
'E Leg, S Side - 25 m',180.0,-255.5,5.9
'E Leg, S Side - 50 m',247.2,-302.5,5.9
'E Leg, S Side-Midblk',604.3,-552.6,5.9
'W Leg, S Side - 25 m',-133.3,-131.1,5.9
'W Leg, S Side - 50 m',-214.0,-145.4,5.9
'W Leg, S Side-Midblk',-643.4,-221.1,5.9
'New1',-101.3,217.3,5.9
'New2',-107.6,289,5.9
'New3',-114.7,370.7,5.9
'New4',-152.7,805,5.9
'New5',-152.3,268.2,5.9
'New6',-210.2,326.2,5.9
'New7',-518.5,634.5,5.9
'New8',-190.1,74.1,5.9
'New9',-241,125,5.9
'New10',-299,183,5.9
'New11',-607.3,491.3,5.9
'New12',-261,61.6,5.9
'New13',-341.8,47.4,5.9
'New14',-771.1,-28.3,5.9
'2016 I495 & I270/MD355 (IC.22)',10,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-36,-5,-140,1192,13200,4.39,0.0,91.7
1
'N Leg Dep - FreeFlow','AG',36,5,-69,1199,13200,2.76,0.0,91.7
1
'S Leg App - FreeFlow','AG',36,5,244,-1176,13200,2.76,0.0,91.7
```

```
1
'S Leg Dep - FreeFlow','AG',-36,-5,173,-1188,13200,2.76,0.0,91.7
1
'E Leg App - FreeFlow','AG',11,51,1011,-649,17600,2.62,0.0,115.7
1
'E Leg Dep - FreeFlow','AG',-11,-51,955,-728,17600,3.41,0.0,115.7
1
'W Leg App - FreeFlow','AG',-11,-51,-1173,-256,17600,2.62,0.0,115.7
1
'W Leg Dep - FreeFlow','AG',11,51,-1190,-161,17600,7.13,0.0,115.7
1
'I-270 App - FreeFlow','AG',-23,-28,-874,823,13200,2.62,0.0,91.7
1
'I-270 App - FreeFlow','AG',23,28,-823,874,13200,7.13,0.0,91.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

♠ CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2016 I495 & I270/MD355 (IC.22)

DATE : 2/ 7/19
TIME : 11:28:19

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-36.0	-5.0	-140.0	1192.0	*	1202.	355.	AG	13200.	4.4	0.0	91.7		
2. N Leg Dep - FreeFlow	*	36.0	5.0	-69.0	1199.0	*	1199.	355.	AG	13200.	2.8	0.0	91.7		
3. S Leg App - FreeFlow	*	36.0	5.0	244.0	-1176.0	*	1199.	170.	AG	13200.	2.8	0.0	91.7		
4. S Leg Dep - FreeFlow	*	-36.0	-5.0	173.0	-1188.0	*	1201.	170.	AG	13200.	2.8	0.0	91.7		
5. E Leg App - FreeFlow	*	11.0	51.0	1011.0	-649.0	*	1221.	125.	AG	17600.	2.6	0.0	****		
6. E Leg Dep - FreeFlow	*	-11.0	-51.0	955.0	-728.0	*	1180.	125.	AG	17600.	3.4	0.0	****		
7. W Leg App - FreeFlow	*	-11.0	-51.0	-1173.0	-256.0	*	1180.	260.	AG	17600.	2.6	0.0	****		
8. W Leg Dep - FreeFlow	*	11.0	51.0	-1190.0	-161.0	*	1220.	260.	AG	17600.	7.1	0.0	****		
9. I-270 App - FreeFlow	*	-23.0	-28.0	-874.0	823.0	*	1203.	315.	AG	13200.	2.6	0.0	91.7		
10. I-270 App - FreeFlow	*	23.0	28.0	-823.0	874.0	*	1196.								

315. AG 13200.   7.1   0.0 91.7

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	* 75.6	76.4	5.9 *
2. N Leg, E Side - 25 m	* 69.3	148.2	5.9 *
3. N Leg, E Side - 50 m	* 62.2	229.9	5.9 *
4. N Leg, E Side-Midblk	* 24.2	664.2	5.9 *
5. S Leg, E Side-Corner	* 121.0	-214.1	5.9 *
6. S Leg, E Side - 25 m	* 133.5	-285.1	5.9 *
7. S Leg, E Side - 50 m	* 147.8	-365.8	5.9 *
8. S Leg, E Side-Midblk	* 223.5	-795.2	5.9 *
9. S Leg, W Side-Corner	* -62.3	-118.6	5.9 *
10. S Leg, W Side - 25 m	* -49.8	-189.6	5.9 *
11. S Leg, W Side - 50 m	* -35.6	-270.3	5.9 *
12. S Leg, W Side-Midblk	* 40.1	-699.7	5.9 *
13. E Leg, N Side - 25 m	* 134.6	35.1	5.9 *
14. E Leg, N Side - 50 m	* 201.8	-11.9	5.9 *
15. E Leg, N Side-Midblk	* 558.9	-262.0	5.9 *
16. E Leg, S Side - 25 m	* 180.0	-255.5	5.9 *
17. E Leg, S Side - 50 m	* 247.2	-302.5	5.9 *
18. E Leg, S Side-Midblk	* 604.3	-552.6	5.9 *
19. W Leg, S Side - 25 m	* -133.3	-131.1	5.9 *
20. W Leg, S Side - 50 m	* -214.0	-145.4	5.9 *
21. W Leg, S Side-Midblk	* -643.4	-221.1	5.9 *
22. New1	* -101.3	217.3	5.9 *

23. New2	*	-107.6	289.0	5.9	*
24. New3	*	-114.7	370.7	5.9	*
25. New4	*	-152.7	805.0	5.9	*
26. New5	*	-152.3	268.2	5.9	*
27. New6	*	-210.2	326.2	5.9	*
28. New7	*	-518.5	634.5	5.9	*
29. New8	*	-190.1	74.1	5.9	*
30. New9	*	-241.0	125.0	5.9	*
31. New10	*	-299.0	183.0	5.9	*
32. New11	*	-607.3	491.3	5.9	*
33. New12	*	-261.0	61.6	5.9	*
34. New13	*	-341.8	47.4	5.9	*
35. New14	*	-771.1	-28.3	5.9	*

JOB: I-495 & I-270 MLS RUN: 2016 I495 & I270/MD355 (IC.22)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.400	0.400	0.400	0.400	2.300	1.800	1.500	0.800	7.200	5.500	4.500	3.000	0.100	0.100	0.100
20.	*	0.200	0.200	0.200	0.200	2.100	1.600	1.300	0.600	6.200	4.300	3.700	2.500	0.000	0.000	0.000
30.	*	0.100	0.100	0.100	0.100	2.200	1.600	1.300	0.700	5.200	3.800	3.100	2.300	0.000	0.000	0.000
40.	*	0.100	0.100	0.100	0.100	2.200	1.600	1.300	0.700	4.500	3.200	2.800	2.200	0.000	0.000	0.000
50.	*	0.100	0.100	0.100	0.100	2.100	1.600	1.300	0.600	3.800	3.000	2.700	2.100	0.000	0.000	0.000
60.	*	0.200	0.100	0.100	0.100	2.000	1.500	1.200	0.600	3.600	2.900	2.600	2.000	0.100	0.100	0.100
70.	*	0.100	0.000	0.000	0.000	2.100	1.600	1.200	0.500	3.700						

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2.800   2.500   2.000   0.100   0.100   0.100
  80.  *   0.100   0.000   0.000   0.000   2.400   1.600   1.300   0.400   3.900
3.100   2.700   2.100   0.100   0.100   0.100
  90.  *   0.100   0.000   0.000   0.000   2.600   1.800   1.400   0.100   3.700
3.000   2.700   1.800   0.100   0.100   0.100
 100.  *   0.200   0.000   0.000   0.000   2.800   1.900   1.300   0.000   3.900
3.100   2.700   1.600   0.200   0.200   0.200
 110.  *   0.400   0.100   0.100   0.100   3.200   1.700   1.000   0.100   4.100
3.000   2.600   1.600   0.400   0.400   0.400
 120.  *   1.400   0.500   0.200   0.100   2.800   1.100   0.600   0.100   3.400
2.600   2.100   1.700   1.300   1.200   1.000
 130.  *   2.500   1.100   0.700   0.100   1.600   0.400   0.200   0.100   2.500
2.000   1.900   1.800   2.300   2.300   1.900
 140.  *   2.900   1.700   1.200   0.300   0.700   0.100   0.100   0.100   2.200
2.000   2.000   1.900   2.800   2.800   2.400
 150.  *   2.800   2.000   1.500   0.600   0.600   0.300   0.300   0.200   2.300
2.300   2.300   2.100   2.600   2.600   2.400
 160.  *   3.000   2.200   1.800   1.100   1.000   0.800   0.600   0.500   2.300
2.300   2.200   1.800   2.400   2.300   2.300
 170.  *   3.700   3.000   2.700   2.100   1.900   1.500   1.500   1.100   1.700
1.700   1.700   1.300   2.800   2.500   2.200
 180.  *   4.300   3.900   3.800   3.600   2.400   2.200   2.200   1.600   0.800
0.800   0.800   0.600   3.100   2.600   2.000
 190.  *   4.300   4.300   4.300   4.300   2.400   2.300   2.300   2.000   0.400
0.300   0.300   0.200   3.200   2.800   1.900
 200.  *   4.100   4.800   5.000   4.000   2.000   2.000   2.000   1.900   0.200
0.100   0.100   0.100   3.000   2.700   2.000
 210.  *   4.500   5.400   5.500   3.900   1.800   1.800   1.800   1.800   0.200
0.100   0.100   0.100   3.100   2.800   2.300
 220.  *   5.400   6.000   5.600   3.800   1.700   1.700   1.700   1.700   0.200
0.100   0.100   0.100   3.000   2.800   2.300
 230.  *   6.500   6.800   5.700   3.300   1.600   1.600   1.600   1.600   0.300
0.100   0.100   0.100   3.100   2.700   2.200
 240.  *   8.000   7.500   5.500   2.900   1.600   1.500   1.500   1.500   0.300
0.000   0.000   0.000   4.000   2.900   2.300
 250.  *   9.700   7.300   5.000   2.700   1.600   1.500   1.500   1.500   0.800
0.100   0.000   0.000   5.700   3.700   2.400
 260.  *  10.000   6.000   4.100   2.700   2.200   1.800   1.600   1.600   2.200
0.600   0.200   0.000   7.300   5.200   2.800
 270.  *   8.500   4.500   3.500   2.600   2.800   2.200   1.900   1.500   3.400
1.500   0.700   0.000   7.400   6.000   3.400
 280.  *   7.100   4.000   3.500   2.300   3.400   2.800   2.400   1.500   3.800
2.300   1.400   0.000   6.300   5.800   4.100
 290.  *   6.400   4.000   3.500   2.000   3.800   3.100   2.800   1.900   3.600
2.400   1.800   0.400   5.600   5.300   4.300
 300.  *   6.100   4.100   3.400   1.900   4.600   3.300   3.000   2.300   3.300
2.300   1.700   0.800   5.400   4.800   3.900
 310.  *   4.900   3.500   2.800   2.100   5.700   4.200   3.400   2.500   3.500
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2.300   1.900   0.800   4.200   3.700   2.500
 320.  *   3.600   2.700   2.500   2.300   6.900   5.200   4.400   3.000   4.300
3.000   2.300   1.000   2.600   2.200   1.100
 330.  *   2.700   2.600   2.500   2.400   6.800   6.000   5.000   3.600   5.200
3.900   3.000   1.400   1.900   1.400   0.600
 340.  *   2.800   2.800   2.700   2.400   6.300   5.500   4.700   3.800   5.700
4.600   3.800   2.100   1.600   1.100   0.300
 350.  *   2.300   2.300   2.300   1.800   4.800   4.100   3.900   3.000   6.900
5.600   4.700   3.500   1.100   0.600   0.100
 360.  *   1.300   1.200   1.200   1.000   3.200   2.700   2.300   1.500   7.500
6.300   5.100   3.500   0.400   0.200   0.100

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  10.000   7.500   5.700   4.300   6.900   6.000   5.000   3.800   7.500
6.300   5.100   3.500   7.400   6.000   4.300
 DEGR. *    260     240     230     190     320     330     330     340     360
360     360     350     270     270     290
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JOB: I-495 & I-270 MLS RUN: 2016 I495 & I270/MD355 (IC.22)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

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WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28      29      30

------*-------------------------------------------------------------------------
----------------------------------------
  10.  *   2.000   2.000   2.000   5.800   4.900   3.400   3.600   3.300   3.200
2.700   1.900   1.300   0.200   3.800   3.300
  20.  *   2.000   2.000   2.000   5.700   5.100   3.700   3.100   3.000   3.000
2.800   1.900   1.400   0.100   3.900   3.400
  30.  *   2.100   2.100   2.100   5.200   5.000   4.000   2.600   2.600   2.600
2.600   1.800   1.300   0.100   3.900   3.400
  40.  *   2.100   2.100   2.100   4.700   4.800   4.400   2.400   2.400   2.400
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2.400 1.700 1.200 0.400 3.900 3.300
50. * 2.000 2.000 2.000 3.900 4.500 4.500 2.200 2.200 2.200
2.200 1.500 1.200 0.500 3.900 3.200
60. * 2.000 2.000 2.000 3.200 3.500 4.300 2.100 2.100 2.100
2.100 1.500 1.200 0.600 4.000 3.200
70. * 2.100 2.100 2.100 3.000 3.200 3.800 2.100 2.000 2.000
2.000 1.500 1.300 0.600 4.700 3.300
80. * 2.400 2.400 2.300 3.000 2.600 2.400 2.400 2.200 2.200
2.200 1.600 1.400 0.800 6.000 3.500
90. * 2.600 2.600 2.400 2.800 2.200 1.500 2.500 2.200 2.200
2.200 1.700 1.500 0.900 6.700 3.900
100. * 2.800 2.800 2.500 2.800 2.100 1.200 2.300 2.000 2.000
2.000 1.700 1.500 0.800 7.500 4.900
110. * 3.000 3.000 2.400 2.600 1.800 0.900 2.600 2.100 2.100
2.100 2.000 1.700 1.000 8.200 6.000
120. * 2.600 2.500 1.900 2.000 1.300 0.500 3.700 2.500 2.300
2.200 2.800 2.400 1.800 8.200 6.400
130. * 1.500 1.400 1.000 1.300 0.900 0.400 5.700 3.400 3.000
2.400 4.900 4.500 3.800 7.200 5.700
140. * 0.500 0.500 0.500 1.300 1.000 0.300 7.400 4.700 3.900
2.900 6.700 6.300 5.900 5.800 4.600
150. * 0.300 0.300 0.200 1.300 0.800 0.100 8.400 5.900 4.700
3.500 7.500 6.900 6.300 4.900 3.800
160. * 0.300 0.200 0.200 0.900 0.500 0.000 8.900 6.700 5.700
4.300 7.300 6.600 5.400 4.400 3.200
170. * 0.700 0.300 0.200 0.400 0.100 0.000 8.300 6.600 5.600
4.400 6.400 5.800 4.600 4.300 2.900
180. * 1.100 0.700 0.100 0.100 0.000 0.000 6.900 5.400 4.500
3.200 5.400 4.900 4.300 3.700 2.600
190. * 1.400 0.900 0.100 0.100 0.100 0.100 5.700 4.300 3.400
2.100 4.600 4.400 4.000 3.500 2.600
200. * 1.300 0.900 0.000 0.100 0.100 0.100 5.000 3.900 3.200
1.800 4.500 4.200 3.700 3.700 2.700
210. * 1.200 0.900 0.200 0.100 0.100 0.100 5.000 3.800 3.100
1.700 4.500 4.200 3.500 4.000 2.700
220. * 1.100 0.900 0.300 0.100 0.100 0.100 5.200 4.000 3.000
1.600 4.700 4.400 3.400 4.400 2.800
230. * 1.100 0.900 0.400 0.200 0.200 0.200 5.300 3.900 2.900
1.200 4.800 4.400 3.100 4.900 3.100
240. * 1.100 0.900 0.500 0.300 0.300 0.200 5.000 3.700 2.700
1.000 4.300 3.800 2.800 5.600 3.100
250. * 1.100 1.000 0.500 0.800 0.800 0.600 4.300 2.900 2.100
0.800 3.700 3.400 2.900 5.800 2.500
260. * 1.400 1.300 0.600 2.100 2.100 1.500 3.800 2.400 1.800
0.800 3.400 3.300 3.100 4.400 1.200
270. * 2.000 1.600 0.700 3.400 3.300 2.500 3.600 2.400 1.800
0.600 3.500 3.500 3.500 2.000 0.300
280. * 2.600 2.200 1.200 3.800 3.700 3.200 3.800 2.500 1.800

```
0.200   3.800   3.800   3.800   0.900   0.100
 290.  *   3.100   2.600   1.600   3.500   3.500   3.300   4.500   2.800   2.000
0.200   4.300   4.300   4.100   0.600   0.200
 300.  *   3.800   3.600   2.900   3.300   3.300   3.200   5.000   2.600   1.700
0.100   4.900   4.900   4.100   0.900   0.400
 310.  *   5.100   5.000   4.200   3.100   2.900   2.900   4.700   1.900   1.000
0.200   4.500   4.400   3.400   1.700   1.300
 320.  *   6.200   5.700   4.200   3.500   3.200   2.800   2.900   0.900   0.400
0.200   2.600   2.600   2.000   2.800   2.600
 330.  *   5.800   4.900   3.500   4.100   3.600   2.700   1.300   0.400   0.300
0.300   1.000   1.000   0.900   3.400   3.300
 340.  *   4.700   3.800   2.800   4.500   4.000   2.900   1.100   0.600   0.600
0.500   0.600   0.400   0.400   3.200   3.200
 350.  *   3.200   2.900   2.400   4.900   4.300   3.200   2.000   1.700   1.600
1.200   0.800   0.400   0.300   3.100   3.000
 360.  *   2.400   2.300   2.100   5.400   4.400   3.400   3.200   2.900   2.900
2.100   1.400   0.800   0.300   3.400   3.100

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *   6.200   5.700   4.200   5.800   5.100   4.500   8.900   6.700   5.700
4.400   7.500   6.900   6.300   8.200   6.400
 DEGR. *    320     320     310      10      20      50     160     160     160
170     150     150     150     110     120
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MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 31	32	33	34	35
10.	3.000	2.500	2.500	1.800	0.700
20.	3.300	2.400	2.900	2.200	0.900
30.	3.200	2.400	3.000	2.400	1.200
40.	3.200	2.600	3.000	2.500	1.300

50.	*	3.200	2.800	3.000	2.500	1.300
60.	*	3.100	2.800	3.200	2.700	1.600
70.	*	3.200	2.900	3.900	3.200	2.700
80.	*	3.300	3.000	5.200	4.800	5.000
90.	*	3.600	3.200	6.200	6.200	6.400
100.	*	4.000	3.400	6.600	6.400	6.100
110.	*	4.900	3.800	6.900	6.500	5.600
120.	*	5.500	4.300	6.500	5.900	4.800
130.	*	4.900	4.200	5.600	4.900	4.100
140.	*	3.900	2.800	4.500	4.300	3.800
150.	*	3.000	1.600	4.100	3.900	3.400
160.	*	2.600	1.300	4.000	3.800	3.500
170.	*	2.200	1.000	3.900	3.800	3.800
180.	*	2.000	1.000	3.500	3.500	3.500
190.	*	2.000	1.000	3.400	3.400	3.400
200.	*	2.000	1.000	3.600	3.600	3.600
210.	*	2.000	0.800	4.000	4.000	4.000
220.	*	2.000	0.500	4.400	4.400	4.400
230.	*	2.100	0.200	4.900	4.800	4.700
240.	*	1.900	0.000	5.600	5.600	4.900
250.	*	1.200	0.100	5.600	5.500	4.500
260.	*	0.500	0.100	4.200	4.100	3.200
270.	*	0.200	0.100	1.900	1.800	1.500
280.	*	0.100	0.100	0.800	0.700	0.700
290.	*	0.200	0.200	0.400	0.400	0.400
300.	*	0.400	0.300	0.400	0.400	0.400
310.	*	1.200	0.900	0.600	0.300	0.300
320.	*	2.500	1.600	1.200	0.600	0.200
330.	*	3.200	2.400	1.900	1.100	0.100
340.	*	3.200	2.800	2.000	1.400	0.000
350.	*	2.900	2.800	2.000	1.500	0.200
360.	*	2.900	2.700	2.100	1.400	0.400
------	*	----------	----------	----------	----------	----------
MAX	*	5.500	4.300	6.900	6.500	6.400
DEGR.	*	120	120	110	110	90

THE HIGHEST CONCENTRATION OF 10.000 PPM OCCURRED AT RECEPTOR 1.

```
Q,EPA,,F,,0,T,T,F,F,0.7,
3,3,6,6,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,0,0,15,-45,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,23,0.3048,1,0
'N Leg, E Side-Corner',69.6,82.0,5.9
'N Leg, E Side - 25 m',88.2,151.6,5.9
'N Leg, E Side - 50 m',109.5,230.8,5.9
'N Leg, E Side-Midblk',222.3,651.9,5.9
'N Leg, W Side-Corner',-22.6,93.4,5.9
'N Leg, W Side - 25 m',-4.0,162.9,5.9
'N Leg, W Side - 50 m',17.3,242.2,5.9
'N Leg, W Side-Midblk',130.1,663.3,5.9
'S Leg, E Side-Corner',46.0,-82.0,5.9
'S Leg, W Side-Corner',-46.0,-162.0,5.9
'E Leg, N Side - 25 m',141.6,82.0,5.9
'E Leg, N Side - 50 m',223.6,82.0,5.9
'E Leg, N Side-Midblk',659.6,82.0,5.9
'W Leg, N Side - 25 m',-73.5,42.4,5.9
'W Leg, N Side - 50 m',-131.5,-15.6,5.9
'W Leg, N Side-Midblk',-439.8,-323.8,5.9
'E Leg, S Side - 25 m',118.0,-82.0,5.9
'E Leg, S Side - 50 m',200.0,-82.0,5.9
'E Leg, S Side-Midblk',636.0,-82.0,5.9
'W Leg, S Side - 25 m',-96.9,-212.9,5.9
'W Leg, S Side - 50 m',-154.9,-270.9,5.9
'W Leg, S Side-Midblk',-463.2,-579.2,5.9
'S Side - Midblk',0,-122,5.9
'2016 I495 & I270 Spur (IC.24)',6,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-18,2,293,1164,6600,2.62,0.0,55.7
1
'N Leg Dep - FreeFlow','AG',18,-2,328,1154,6600,5.68,0.0,55.7
1
'E Leg App - FreeFlow','AG',-15,36,1200,36,13200,2.62,0.0,91.7
1
'E Leg Dep - FreeFlow','AG',15,-36,1200,-36,13200,8.76,0.0,91.7
1
'W Leg App - FreeFlow','AG',15,-36,-823,-874,13200,4.41,0.0,91.7
1
'W Leg Dep - FreeFlow','AG',-15,36,-874,-823,13200,2.62,0.0,91.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2016 I495 & I270 Spur (IC.24)

DATE : 2/28/19
TIME : 13:53: 3

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)		(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-18.0	2.0	293.0	1164.0	*	1203.	15.	AG	6600.	2.6	0.0	55.7		
2. N Leg Dep - FreeFlow	*	18.0	-2.0	328.0	1154.0	*	1197.	15.	AG	6600.	5.7	0.0	55.7		
3. E Leg App - FreeFlow	*	-15.0	36.0	1200.0	36.0	*	1215.	90.	AG	13200.	2.6	0.0	91.7		
4. E Leg Dep - FreeFlow	*	15.0	-36.0	1200.0	-36.0	*	1185.	90.	AG	13200.	8.8	0.0	91.7		
5. W Leg App - FreeFlow	*	15.0	-36.0	-823.0	-874.0	*	1185.	225.	AG	13200.	4.4	0.0	91.7		
6. W Leg Dep - FreeFlow	*	-15.0	36.0	-874.0	-823.0	*	1215.	225.	AG	13200.	2.6	0.0	91.7		

PAGE 2
JOB: I-495 & I-270 MLS RUN: 2016 I495 & I270 Spur (IC.24)

DATE : 2/28/19
TIME : 13:53: 3

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	* 69.6	82.0	5.9 *
2. N Leg, E Side - 25 m	* 88.2	151.6	5.9 *
3. N Leg, E Side - 50 m	* 109.5	230.8	5.9 *
4. N Leg, E Side-Midblk	* 222.3	651.9	5.9 *
5. N Leg, W Side-Corner	* -22.6	93.4	5.9 *
6. N Leg, W Side - 25 m	* -4.0	162.9	5.9 *
7. N Leg, W Side - 50 m	* 17.3	242.2	5.9 *
8. N Leg, W Side-Midblk	* 130.1	663.3	5.9 *
9. S Leg, E Side-Corner	* 46.0	-82.0	5.9 *
10. S Leg, W Side-Corner	* -46.0	-162.0	5.9 *
11. E Leg, N Side - 25 m	* 141.6	82.0	5.9 *
12. E Leg, N Side - 50 m	* 223.6	82.0	5.9 *
13. E Leg, N Side-Midblk	* 659.6	82.0	5.9 *
14. W Leg, N Side - 25 m	* -73.5	42.4	5.9 *
15. W Leg, N Side - 50 m	* -131.5	-15.6	5.9 *
16. W Leg, N Side-Midblk	* -439.8	-323.8	5.9 *
17. E Leg, S Side - 25 m	* 118.0	-82.0	5.9 *
18. E Leg, S Side - 50 m	* 200.0	-82.0	5.9 *
19. E Leg, S Side-Midblk	* 636.0	-82.0	5.9 *
20. W Leg, S Side - 25 m	* -96.9	-212.9	5.9 *
21. W Leg, S Side - 50 m	* -154.9	-270.9	5.9 *
22. W Leg, S Side-Midblk	* -463.2	-579.2	5.9 *
23. S Side - Midblk	* 0.0	-122.0	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 2.5000	2.5000	2.5000	2.2000	1.0000	1.0000	1.0000	0.8000	5.0000	3.6000	0.7000	0.3000	0.0000	0.4000	0.3000
20.	* 1.6000	1.6000	1.6000	1.3000	1.8000	1.8000	1.8000	1.5000	4.2000	3.9000	0.2000	0.1000	0.0000	0.9000	0.6000
30.	* 0.7000	0.6000	0.6000	0.5000	2.0000	2.0000	2.0000	1.8000	3.9000	3.5000	0.1000	0.1000	0.1000	1.3000	1.0000
40.	* 0.3000	0.2000	0.2000	0.2000	1.8000	1.8000	1.8000	1.8000	4.0000	3.1000	0.1000	0.1000	0.1000	1.4000	1.4000
50.	* 0.2000	0.1000	0.1000	0.1000	1.6000	1.6000	1.6000	1.6000	4.3000	2.8000	0.1000	0.1000	0.1000	1.5000	1.7000
60.	* 0.2000	0.1000	0.1000	0.1000	1.5000	1.5000	1.5000	1.5000	4.8000	2.8000	0.1000	0.1000	0.1000	1.7000	2.1000
70.	* 0.3000	0.1000	0.1000	0.1000	1.5000	1.4000	1.4000	1.4000	5.6000	2.7000	0.2000	0.2000	0.2000	2.1000	2.7000
80.	* 0.9000	0.3000	0.1000	0.1000	1.8000	1.5000	1.3000	1.3000	6.1000	2.3000	0.8000	0.8000	0.6000	3.2000	4.2000
90.	* 2.2000	0.7000	0.2000	0.0000	3.1000	2.0000	1.5000	1.3000	4.7000	1.2000	2.2000	2.1000	1.5000	4.6000	5.2000
100.	* 3.5000	1.6000	0.8000	0.0000	4.3000	2.8000	2.1000	1.3000	2.2000	0.3000	3.4000	3.4000	2.7000	5.4000	4.4000
110.	* 3.7000	2.2000	1.4000	0.0000	4.6000	3.3000	2.7000	1.4000	0.8000	0.1000	3.7000	3.7000	3.2000	4.9000	3.0000
120.	* 3.4000	2.1000	1.5000	0.3000	4.3000	3.2000	2.8000	1.6000	0.4000	0.0000	3.4000	3.4000	3.3000	3.8000	2.1000
130.	* 3.2000	2.1000	1.6000	0.6000	4.0000	3.3000	2.8000	1.9000	0.3000	0.0000	3.1000	3.1000	3.1000	2.9000	1.9000
140.	* 3.0000	2.0000	1.6000	0.8000	3.6000	3.2000	2.8000	2.1000	0.3000	0.0000	2.9000	2.9000	2.8000	2.3000	1.8000
150.	* 2.9000	2.0000	1.5000	0.8000	3.5000	3.1000	2.9000	2.2000	0.2000	0.0000	2.8000	2.8000	2.7000	2.0000	1.8000
160.	* 2.8000	1.9000	1.4000	0.8000	3.3000	3.1000	2.8000	2.3000	0.1000	0.1000	2.7000	2.7000	2.7000	1.9000	1.8000
170.	* 2.9000	2.0000	1.6000	0.9000	2.8000	2.9000	2.8000	2.5000	0.0000						

```
0.1000  2.7000  2.7000  2.7000  1.9000  1.9000
 180.  *  3.1000  2.2000  1.8000  1.3000  2.5000  2.4000  2.6000  2.6000  0.1000
0.2000  2.8000  2.8000  2.8000  2.0000  2.1000
 190.  *  3.3000  2.6000  2.5000  2.1000  2.3000  2.1000  2.2000  2.2000  0.1000
0.2000  2.6000  2.6000  2.7000  2.2000  2.2000
 200.  *  3.8000  3.4000  3.2000  3.1000  2.4000  2.1000  1.8000  1.5000  0.1000
0.3000  2.8000  2.7000  2.7000  2.5000  2.5000
 210.  *  4.6000  4.2000  3.8000  3.1000  2.5000  1.9000  1.5000  0.9000  0.4000
0.6000  3.3000  3.0000  2.8000  2.7000  2.7000
 220.  *  5.2000  4.2000  3.5000  2.7000  2.2000  1.3000  0.9000  0.3000  1.3000
1.7000  4.0000  3.5000  2.9000  2.3000  2.2000
 230.  *  4.8000  3.4000  2.6000  1.9000  1.2000  0.6000  0.4000  0.1000  2.5000
3.0000  4.3000  4.1000  3.2000  1.3000  1.3000
 240.  *  3.6000  2.3000  1.9000  1.8000  0.4000  0.2000  0.1000  0.1000  3.0000
3.3000  3.5000  3.8000  3.8000  0.4000  0.4000
 250.  *  2.9000  1.7000  1.6000  1.6000  0.1000  0.0000  0.0000  0.0000  2.8000
3.0000  2.5000  2.9000  4.0000  0.2000  0.2000
 260.  *  2.3000  1.5000  1.5000  1.5000  0.0000  0.0000  0.0000  0.0000  2.7000
2.6000  2.0000  2.0000  3.4000  0.1000  0.1000
 270.  *  2.0000  1.4000  1.4000  1.4000  0.0000  0.0000  0.0000  0.0000  3.0000
2.4000  1.6000  1.4000  2.2000  0.1000  0.1000
 280.  *  1.7000  1.5000  1.5000  1.5000  0.0000  0.0000  0.0000  0.0000  3.0000
2.2000  1.1000  1.0000  1.0000  0.1000  0.1000
 290.  *  1.6000  1.5000  1.5000  1.5000  0.0000  0.0000  0.0000  0.0000  2.9000
2.0000  1.0000  0.8000  0.5000  0.1000  0.1000
 300.  *  1.6000  1.5000  1.5000  1.4000  0.0000  0.0000  0.0000  0.0000  3.1000
1.9000  0.9000  0.7000  0.4000  0.0000  0.0000
 310.  *  1.6000  1.5000  1.5000  1.5000  0.0000  0.0000  0.0000  0.0000  3.4000
2.1000  0.9000  0.7000  0.4000  0.0000  0.0000
 320.  *  1.7000  1.6000  1.6000  1.6000  0.0000  0.0000  0.0000  0.0000  3.4000
2.1000  0.9000  0.7000  0.4000  0.0000  0.0000
 330.  *  1.9000  1.8000  1.8000  1.8000  0.1000  0.1000  0.1000  0.1000  3.6000
1.9000  0.9000  0.7000  0.4000  0.0000  0.0000
 340.  *  1.9000  1.9000  1.9000  1.9000  0.1000  0.1000  0.1000  0.1000  4.3000
2.0000  1.0000  0.6000  0.1000  0.0000  0.1000
 350.  *  2.3000  2.3000  2.3000  2.2000  0.1000  0.1000  0.1000  0.1000  5.1000
2.2000  1.0000  0.7000  0.0000  0.0000  0.1000
 360.  *  2.6000  2.6000  2.6000  2.4000  0.4000  0.4000  0.4000  0.2000  5.4000
2.7000  1.0000  0.5000  0.0000  0.0000  0.1000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  5.2000  4.2000  3.8000  3.1000  4.6000  3.3000  2.9000  2.6000  6.1000
3.9000  4.3000  4.1000  4.0000  5.4000  5.2000
 DEGR. *    220     210     210     200     110     110     150     180      80
20     230     230     250     100      90
```

JOB: I-495 & I-270 MLS RUN: 2016 I495 & I270 Spur (IC.24)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 16	17	18	19	20	21	22	23
10.	0.1000	4.0000	3.8000	3.5000	3.2000	2.9000	2.6000	4.1000
20.	0.3000	3.6000	3.4000	3.4000	3.6000	3.5000	3.1000	4.1000
30.	0.6000	3.7000	3.7000	3.7000	3.6000	3.7000	3.6000	3.7000
40.	1.4000	4.0000	4.0000	4.0000	3.0000	3.1000	3.3000	3.3000
50.	2.4000	4.4000	4.4000	4.4000	2.5000	2.5000	2.4000	3.2000
60.	3.2000	4.8000	4.8000	4.8000	2.3000	2.0000	1.4000	3.3000
70.	3.4000	5.6000	5.6000	5.3000	2.1000	1.8000	0.9000	3.5000
80.	3.0000	6.0000	5.9000	5.3000	1.6000	1.2000	0.4000	3.2000
90.	2.3000	4.7000	4.6000	3.9000	0.8000	0.5000	0.2000	1.9000
100.	1.9000	2.2000	2.2000	1.8000	0.2000	0.1000	0.1000	0.6000
110.	1.8000	0.8000	0.8000	0.8000	0.1000	0.1000	0.1000	0.1000
120.	1.8000	0.4000	0.4000	0.4000	0.0000	0.0000	0.0000	0.0000
130.	1.8000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000
140.	1.8000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000
150.	1.8000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000
160.	1.8000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000
170.	1.9000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000
180.	2.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
190.	2.2000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
200.	2.3000	0.1000	0.1000	0.1000	0.3000	0.3000	0.3000	0.2000
210.	2.4000	0.3000	0.2000	0.2000	0.6000	0.6000	0.6000	0.5000
220.	1.9000	0.7000	0.4000	0.3000	1.7000	1.7000	1.3000	1.5000
230.	1.0000	1.4000	1.0000	0.4000	2.9000	2.9000	2.3000	2.8000
240.	0.4000	2.0000	1.5000	0.7000	3.3000	3.3000	2.8000	3.1000
250.	0.2000	2.2000	1.9000	1.3000	3.0000	2.9000	2.8000	2.8000
260.	0.1000	2.5000	2.4000	2.4000	2.6000	2.6000	2.6000	2.5000
270.	0.1000	3.0000	3.4000	4.5000	2.4000	2.4000	2.4000	2.3000
280.	0.1000	3.5000	4.1000	5.7000	2.2000	2.2000	2.2000	2.1000
290.	0.1000	3.8000	4.5000	5.6000	2.0000	2.0000	2.0000	1.9000
300.	0.0000	4.0000	4.8000	5.1000	1.9000	1.9000	1.9000	1.9000

310.	*	0.0000	4.2000	4.7000	4.7000	2.1000	2.1000	2.1000	2.0000
320.	*	0.0000	4.3000	4.5000	4.3000	2.1000	2.1000	2.1000	2.0000
330.	*	0.0000	4.2000	4.2000	4.0000	1.9000	1.9000	1.9000	1.9000
340.	*	0.1000	4.1000	3.9000	3.6000	2.0000	2.0000	2.0000	2.2000
350.	*	0.1000	4.3000	4.1000	3.6000	2.2000	2.1000	2.2000	2.6000
360.	*	0.1000	4.5000	4.2000	3.8000	2.5000	2.4000	2.4000	3.3000
MAX	*	3.4000	6.0000	5.9000	5.7000	3.6000	3.7000	3.6000	4.1000
DEGR.	*	70	80	80	280	20	30	30	10

THE HIGHEST CONCENTRATION OF 6.1000 PPM OCCURRED AT RECEPTOR 9.

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,6,5,7,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-40,-40,5,5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',13.2,93.2,5.9
'N Leg, E Side - 25 m',-33.1,148.4,5.9
'N Leg, E Side - 50 m',-85.8,211.2,5.9
'N Leg, E Side-Midblk',-366.1,545.2,5.9
'N Leg, W Side-Corner',-201.0,111.9,5.9
'N Leg, W Side - 25 m',-247.3,167.1,5.9
'N Leg, W Side - 50 m',-300.0,229.9,5.9
'N Leg, W Side-Midblk',-580.2,563.9,5.9
'S Leg, E Side-Corner',162.3,-84.5,5.9
'S Leg, E Side - 25 m',208.5,-139.6,5.9
'S Leg, E Side - 50 m',261.3,-202.5,5.9
'S Leg, E Side-Midblk',541.5,-536.4,5.9
'S Leg, W Side-Corner',-51.9,-65.7,5.9
'S Leg, W Side - 25 m',-5.6,-120.9,5.9
'S Leg, W Side - 50 m',47.1,-183.7,5.9
'S Leg, W Side-Midblk',327.4,-517.7,5.9
'E Leg, N Side - 25 m',84.9,86.9,5.9
'E Leg, N Side - 50 m',166.6,79.8,5.9
'E Leg, N Side-Midblk',600.9,41.8,5.9
'W Leg, N Side - 25 m',-272.7,118.2,5.9
'W Leg, N Side - 50 m',-354.4,125.4,5.9
'W Leg, N Side-Midblk',-788.7,163.4,5.9
'E Leg, S Side - 25 m',234.0,-90.7,5.9
'E Leg, S Side - 50 m',315.7,-97.9,5.9
'E Leg, S Side-Midblk',750.0,-135.9,5.9
'W Leg, S Side - 25 m',-123.6,-59.5,5.9
'W Leg, S Side - 50 m',-205.3,-52.3,5.9
'W Leg, S Side-Midblk',-639.6,-14.3,5.9
'2016 I495 & MD5 (IC.3)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-28,-23,-799,896,13200,2.97,0.0,91.7
1
'N Leg Dep - FreeFlow','AG',23,19,-748,939,11000,4.81,0.0,79.7
1
'S Leg App - FreeFlow','AG',23,19,794,-900,11000,6.04,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-28,-23,744,-942,13200,2.97,0.0,91.7
1
'E Leg App - FreeFlow','AG',0,42,1199,-63,15400,7.79,0.0,103.7
1
'E Leg Dep - FreeFlow','AG',-3,-30,1193,-134,11000,2.89,0.0,79.7
1
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'W Leg App - FreeFlow','AG',-3,-30,-1198,75,11000,3.73,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',0,42,-1192,146,15400,2.89,0.0,103.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2016 I495 & MD5 (IC.3)

DATE : 1/17/19
TIME : 7:34:26

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-28.0	-23.0	-799.0	896.0	*	1200.	320.	AG	13200.	3.0	0.0	91.7		
2. N Leg Dep - FreeFlow	*	23.0	19.0	-748.0	939.0	*	1200.	320.	AG	11000.	4.8	0.0	79.7		
3. S Leg App - FreeFlow	*	23.0	19.0	794.0	-900.0	*	1200.	140.	AG	11000.	6.0	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-28.0	-23.0	744.0	-942.0	*	1200.	140.	AG	13200.	3.0	0.0	91.7		
5. E Leg App - FreeFlow	*	0.0	42.0	1199.0	-63.0	*	1204.	95.	AG	15400.	7.8	0.0	****		
6. E Leg Dep - FreeFlow	*	-3.0	-30.0	1193.0	-134.0	*	1201.	95.	AG	11000.	2.9	0.0	79.7		
7. W Leg App - FreeFlow	*	-3.0	-30.0	-1198.0	75.0	*	1200.	275.	AG	11000.	3.7	0.0	79.7		
8. W Leg Dep - FreeFlow	*	0.0	42.0	-1192.0	146.0	*	1197.	275.	AG	15400.	2.9	0.0	****		

(IC.3)

DATE : 1/17/19
TIME : 7:34:26

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	13.2	93.2	5.9
2. N Leg, E Side - 25 m	-33.1	148.4	5.9
3. N Leg, E Side - 50 m	-85.8	211.2	5.9
4. N Leg, E Side-Midblk	-366.1	545.2	5.9
5. N Leg, W Side-Corner	-201.0	111.9	5.9
6. N Leg, W Side - 25 m	-247.3	167.1	5.9
7. N Leg, W Side - 50 m	-300.0	229.9	5.9
8. N Leg, W Side-Midblk	-580.2	563.9	5.9
9. S Leg, E Side-Corner	162.3	-84.5	5.9
10. S Leg, E Side - 25 m	208.5	-139.6	5.9
11. S Leg, E Side - 50 m	261.3	-202.5	5.9
12. S Leg, E Side-Midblk	541.5	-536.4	5.9
13. S Leg, W Side-Corner	-51.9	-65.7	5.9
14. S Leg, W Side - 25 m	-5.6	-120.9	5.9
15. S Leg, W Side - 50 m	47.1	-183.7	5.9
16. S Leg, W Side-Midblk	327.4	-517.7	5.9
17. E Leg, N Side - 25 m	84.9	86.9	5.9
18. E Leg, N Side - 50 m	166.6	79.8	5.9
19. E Leg, N Side-Midblk	600.9	41.8	5.9
20. W Leg, N Side - 25 m	-272.7	118.2	5.9
21. W Leg, N Side - 50 m	-354.4	125.4	5.9
22. W Leg, N Side-Midblk	-788.7	163.4	5.9
23. E Leg, S Side - 25 m	234.0	-90.7	5.9
24. E Leg, S Side - 50 m	315.7	-97.9	5.9
25. E Leg, S Side-Midblk	750.0	-135.9	5.9
26. W Leg, S Side - 25 m	-123.6	-59.5	5.9

27. W Leg, S Side - 50 m	*	-205.3	-52.3	5.9 *
28. W Leg, S Side-Midblk	*	-639.6	-14.3	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.1000	0.1000	0.1000	0.1000	2.0000	2.0000	2.0000	2.0000	3.0000	2.3000	1.8000	1.0000	4.0000	4.0000	3.8000
20.	*	0.2000	0.1000	0.1000	0.1000	1.8000	1.8000	1.8000	1.8000	2.8000	2.2000	1.7000	0.9000	4.3000	4.0000	3.7000
30.	*	0.3000	0.1000	0.1000	0.1000	1.9000	1.8000	1.8000	1.8000	2.9000	2.2000	1.7000	0.9000	4.6000	4.1000	3.6000
40.	*	0.3000	0.0000	0.0000	0.0000	1.9000	1.8000	1.8000	1.8000	3.0000	2.1000	1.6000	0.8000	5.1000	4.1000	3.6000
50.	*	0.3000	0.0000	0.0000	0.0000	2.0000	1.9000	1.9000	1.9000	3.2000	2.2000	1.7000	0.7000	5.3000	4.3000	3.8000
60.	*	0.4000	0.0000	0.0000	0.0000	1.9000	1.8000	1.8000	1.8000	3.5000	2.4000	1.9000	0.3000	5.6000	4.4000	3.9000
70.	*	0.5000	0.1000	0.1000	0.1000	2.1000	1.8000	1.8000	1.8000	3.9000	2.6000	1.9000	0.1000	5.9000	4.5000	3.9000
80.	*	1.3000	0.2000	0.1000	0.1000	2.6000	1.9000	1.8000	1.8000	4.1000	2.3000	1.5000	0.1000	6.4000	4.5000	3.7000
90.	*	3.3000	1.0000	0.4000	0.1000	4.2000	2.8000	2.3000	1.9000	3.3000	1.5000	0.8000	0.2000	5.7000	3.7000	3.0000
100.	*	5.5000	2.4000	1.4000	0.3000	6.1000	4.4000	3.5000	2.4000	1.8000	0.6000	0.4000	0.2000	4.3000	3.0000	2.7000
110.	*	6.0000	3.3000	2.2000	0.7000	6.2000	5.1000	4.4000	3.0000	0.8000	0.3000	0.3000	0.3000	3.1000	2.6000	2.6000
120.	*	5.5000	3.5000	2.5000	1.3000	5.8000	4.9000	4.6000	3.5000	0.7000	0.5000	0.5000	0.5000	3.2000	3.0000	3.0000

130. * 5.6000 3.9000 3.3000 2.3000 5.4000 4.7000 4.4000 3.8000 1.5000
1.4000 1.4000 1.1000 3.1000 3.0000 2.9000
140. * 7.0000 5.4000 4.6000 3.7000 4.2000 3.7000 3.4000 2.8000 3.2000
3.0000 2.9000 2.4000 2.1000 2.1000 2.0000
150. * 7.5000 5.8000 5.0000 4.4000 2.7000 2.2000 1.9000 1.5000 4.1000
4.0000 4.0000 3.3000 0.8000 0.8000 0.8000
160. * 7.0000 5.4000 4.6000 3.8000 2.0000 1.6000 1.2000 0.8000 3.9000
3.9000 3.8000 3.5000 0.3000 0.3000 0.3000
170. * 6.3000 4.7000 4.0000 3.4000 1.8000 1.3000 1.1000 0.5000 3.4000
3.4000 3.4000 3.2000 0.1000 0.1000 0.1000
180. * 5.9000 4.0000 3.5000 3.0000 1.8000 1.4000 1.1000 0.6000 3.0000
3.0000 3.0000 3.0000 0.1000 0.1000 0.1000
190. * 5.2000 3.4000 3.3000 2.8000 1.8000 1.4000 1.1000 0.6000 2.7000
2.7000 2.7000 2.7000 0.1000 0.1000 0.1000
200. * 4.7000 3.4000 3.2000 2.6000 1.8000 1.3000 1.1000 0.5000 2.5000
2.5000 2.5000 2.5000 0.1000 0.1000 0.1000
210. * 4.3000 3.3000 3.0000 2.5000 1.7000 1.3000 1.0000 0.5000 2.4000
2.4000 2.4000 2.4000 0.1000 0.0000 0.0000
220. * 4.2000 3.3000 3.0000 2.5000 1.8000 1.3000 1.0000 0.5000 2.5000
2.4000 2.4000 2.4000 0.1000 0.0000 0.0000
230. * 4.5000 3.6000 3.2000 2.7000 1.9000 1.4000 1.0000 0.3000 2.7000
2.6000 2.6000 2.6000 0.1000 0.0000 0.0000
240. * 4.5000 3.4000 3.0000 2.3000 2.2000 1.4000 1.0000 0.1000 2.5000
2.4000 2.4000 2.4000 0.1000 0.0000 0.0000
250. * 4.7000 3.7000 3.2000 2.2000 2.4000 1.5000 1.1000 0.0000 2.4000
2.3000 2.3000 2.3000 0.2000 0.0000 0.0000
260. * 5.0000 3.7000 3.1000 2.2000 2.7000 1.4000 0.9000 0.1000 2.9000
2.6000 2.5000 2.5000 0.5000 0.2000 0.1000
270. * 4.7000 3.3000 2.7000 2.3000 2.3000 0.9000 0.5000 0.1000 4.2000
3.1000 2.9000 2.7000 1.5000 0.5000 0.3000
280. * 3.8000 2.9000 2.6000 2.5000 1.3000 0.4000 0.2000 0.1000 5.6000
4.1000 3.7000 3.1000 2.6000 1.2000 0.7000
290. * 3.2000 2.8000 2.8000 2.8000 0.5000 0.1000 0.1000 0.1000 6.2000
4.9000 4.5000 3.7000 3.0000 1.7000 1.1000
300. * 3.4000 3.2000 3.2000 3.0000 0.5000 0.3000 0.3000 0.2000 6.6000
5.7000 5.0000 4.3000 2.8000 1.9000 1.4000
310. * 3.5000 3.4000 3.3000 2.9000 0.9000 0.8000 0.8000 0.6000 7.0000
5.9000 5.4000 4.9000 3.2000 2.4000 2.0000
320. * 2.7000 2.6000 2.4000 2.1000 2.0000 1.8000 1.8000 1.2000 6.1000
5.1000 4.8000 4.0000 4.1000 3.4000 3.1000
330. * 1.2000 1.2000 1.2000 0.9000 2.7000 2.6000 2.6000 1.9000 4.2000
3.5000 2.9000 2.4000 4.8000 4.1000 3.9000
340. * 0.4000 0.4000 0.4000 0.4000 2.8000 2.7000 2.7000 2.3000 3.3000
2.6000 2.1000 1.3000 4.7000 4.0000 4.0000
350. * 0.2000 0.2000 0.2000 0.2000 2.4000 2.4000 2.4000 2.3000 2.9000
2.3000 1.8000 1.1000 4.3000 3.9000 3.8000
360. * 0.2000 0.2000 0.2000 0.2000 2.2000 2.2000 2.2000 2.2000 3.0000
2.3000 1.8000 1.0000 4.1000 4.0000 3.9000

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  7.5000  5.8000  5.0000  4.4000  6.2000  5.1000  4.6000  3.8000  7.0000
5.9000  5.4000  4.9000  6.4000  4.5000  4.0000
 DEGR. *    150     150     150     150     110     110     120     130     310
310     310     310      80      70     340
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  3.0000  0.0000  0.0000  0.0000  1.5000  1.0000  0.4000  2.8000  2.8000
2.8000  3.4000  2.9000  2.4000
  20.  *  2.9000  0.1000  0.1000  0.1000  1.3000  1.0000  0.5000  2.7000  2.7000
2.7000  3.1000  2.8000  2.3000
  30.  *  2.8000  0.2000  0.2000  0.2000  1.4000  1.1000  0.6000  2.8000  2.8000
2.8000  3.3000  2.8000  2.3000
  40.  *  2.8000  0.3000  0.3000  0.3000  1.4000  1.1000  0.6000  3.0000  3.0000
3.0000  3.5000  3.1000  2.5000
  50.  *  2.9000  0.3000  0.3000  0.3000  1.4000  1.1000  0.6000  3.2000  3.2000
3.2000  4.1000  3.3000  2.6000
  60.  *  2.6000  0.4000  0.4000  0.4000  1.4000  1.1000  0.6000  3.5000  3.5000
3.3000  4.8000  3.8000  2.8000
  70.  *  2.3000  0.5000  0.5000  0.5000  1.6000  1.2000  0.7000  3.7000  3.7000
3.4000  5.4000  4.5000  3.3000
  80.  *  2.1000  1.2000  1.2000  1.1000  2.0000  1.6000  1.0000  3.9000  3.8000
3.0000  5.7000  5.4000  3.8000
  90.  *  2.2000  3.2000  3.1000  2.7000  3.5000  3.1000  2.3000  3.0000  3.0000
2.1000  5.1000  4.8000  3.8000
```

```
 100.  *  2.5000  5.4000  5.2000  4.6000  5.2000  4.5000  3.7000  1.5000  1.4000
1.0000  3.5000  3.1000  2.5000
 110.  *  2.6000  5.7000  5.7000  5.3000  5.3000  4.5000  3.6000  0.5000  0.5000
0.3000  2.3000  1.8000  1.3000
 120.  *  2.8000  5.1000  5.1000  4.9000  4.5000  4.0000  2.9000  0.2000  0.2000
0.2000  2.1000  1.5000  0.7000
 130.  *  2.5000  4.6000  4.5000  4.4000  3.9000  3.1000  2.3000  0.3000  0.1000
0.1000  1.6000  1.1000  0.3000
 140.  *  1.6000  4.9000  4.5000  4.0000  2.8000  2.3000  1.9000  1.0000  0.5000
0.1000  0.9000  0.5000  0.1000
 150.  *  0.7000  5.6000  4.8000  3.7000  2.0000  1.9000  1.8000  1.8000  1.0000
0.1000  0.3000  0.1000  0.1000
 160.  *  0.3000  5.6000  4.8000  3.5000  1.7000  1.7000  1.7000  2.1000  1.4000
0.0000  0.1000  0.1000  0.1000
 170.  *  0.1000  5.4000  4.8000  3.7000  1.7000  1.7000  1.7000  2.0000  1.4000
0.1000  0.0000  0.0000  0.0000
 180.  *  0.1000  5.5000  4.9000  4.2000  1.7000  1.7000  1.7000  2.0000  1.3000
0.4000  0.0000  0.0000  0.0000
 190.  *  0.1000  5.2000  4.9000  4.2000  1.7000  1.7000  1.7000  1.8000  1.3000
0.6000  0.0000  0.0000  0.0000
 200.  *  0.1000  5.1000  4.5000  3.9000  1.7000  1.7000  1.6000  1.7000  1.2000
0.6000  0.0000  0.0000  0.0000
 210.  *  0.0000  5.0000  4.7000  4.0000  1.7000  1.7000  1.7000  1.7000  1.2000
0.6000  0.1000  0.1000  0.1000
 220.  *  0.0000  5.1000  4.8000  4.3000  1.8000  1.8000  1.8000  1.8000  1.3000
0.7000  0.1000  0.1000  0.1000
 230.  *  0.0000  5.2000  5.3000  4.6000  1.9000  1.9000  1.9000  1.8000  1.3000
0.7000  0.1000  0.1000  0.1000
 240.  *  0.0000  5.1000  5.6000  5.0000  2.2000  2.2000  2.0000  1.8000  1.3000
0.7000  0.1000  0.1000  0.1000
 250.  *  0.0000  5.2000  5.7000  5.6000  2.4000  2.3000  2.2000  1.8000  1.4000
0.8000  0.2000  0.2000  0.2000
 260.  *  0.1000  5.5000  5.7000  6.3000  2.6000  2.5000  2.1000  2.2000  1.6000
1.2000  0.5000  0.5000  0.5000
 270.  *  0.1000  4.9000  5.0000  6.0000  2.2000  2.1000  1.5000  3.2000  2.7000
2.3000  1.5000  1.4000  1.2000
 280.  *  0.1000  3.7000  3.4000  3.8000  1.2000  1.2000  0.8000  4.5000  4.1000
3.7000  2.6000  2.5000  2.1000
 290.  *  0.3000  2.6000  2.2000  1.7000  0.4000  0.4000  0.4000  5.1000  4.5000
4.6000  2.9000  2.9000  2.6000
 300.  *  0.6000  2.2000  1.6000  1.0000  0.2000  0.2000  0.2000  5.2000  4.8000
4.2000  2.6000  2.6000  2.5000
 310.  *  1.4000  1.9000  1.3000  0.6000  0.2000  0.1000  0.1000  4.9000  4.3000
3.7000  2.5000  2.4000  2.3000
 320.  *  2.8000  1.1000  0.7000  0.3000  0.7000  0.3000  0.1000  4.0000  3.5000
3.2000  2.7000  2.4000  2.1000
 330.  *  3.8000  0.4000  0.4000  0.3000  1.3000  0.8000  0.1000  3.2000  3.1000
3.0000  3.4000  2.8000  2.0000
```

```
 340.  *  3.8000  0.2000  0.2000  0.2000  1.7000  1.2000  0.1000  2.8000  2.8000
2.8000  3.5000  2.9000  1.8000
 350.  *  3.4000  0.0000  0.1000  0.1000  1.5000  1.2000  0.1000  2.7000  2.7000
2.7000  3.4000  3.0000  2.0000
 360.  *  3.3000  0.0000  0.0000  0.0000  1.5000  1.2000  0.2000  2.8000  2.8000
2.8000  3.4000  3.1000  2.3000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  3.8000  5.7000  5.7000  6.3000  5.3000  4.5000  3.7000  5.2000  4.8000
4.6000  5.7000  5.4000  3.8000
 DEGR. *    330     110     250     260     110     100     100     300     300
290      80      80      90

 THE HIGHEST CONCENTRATION OF   7.5000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,5,7,7,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-10,-10,0,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',54.5,94.0,5.9
'N Leg, E Side - 25 m',42.0,164.9,5.9
'N Leg, E Side - 50 m',27.8,245.7,5.9
'N Leg, E Side-Midblk',-47.9,675.0,5.9
'N Leg, W Side-Corner',-87.7,94.0,5.9
'N Leg, W Side - 25 m',-100.2,164.9,5.9
'N Leg, W Side - 50 m',-114.4,245.7,5.9
'N Leg, W Side-Midblk',-190.1,675.0,5.9
'S Leg, E Side-Corner',87.7,-94.0,5.9
'S Leg, E Side - 25 m',100.2,-164.9,5.9
'S Leg, E Side - 50 m',114.4,-245.7,5.9
'S Leg, E Side-Midblk',190.1,-675.0,5.9
'S Leg, W Side-Corner',-54.5,-94.0,5.9
'S Leg, W Side - 25 m',-42.0,-164.9,5.9
'S Leg, W Side - 50 m',-27.8,-245.7,5.9
'S Leg, W Side-Midblk',47.9,-675.0,5.9
'E Leg, N Side - 25 m',126.5,94.0,5.9
'E Leg, N Side - 50 m',208.5,94.0,5.9
'E Leg, N Side-Midblk',644.5,94.0,5.9
'W Leg, N Side - 25 m',-159.7,94.0,5.9
'W Leg, N Side - 50 m',-241.7,94.0,5.9
'W Leg, N Side-Midblk',-677.7,94.0,5.9
'E Leg, S Side - 25 m',159.7,-94.0,5.9
'E Leg, S Side - 50 m',241.7,-94.0,5.9
'E Leg, S Side-Midblk',677.7,-94.0,5.9
'W Leg, S Side - 25 m',-126.5,-94.0,5.9
'W Leg, S Side - 50 m',-208.5,-94.0,5.9
'W Leg, S Side-Midblk',-644.5,-94.0,5.9
'2016 I495 & MD97 (IC.20)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-30,-5,-238,1177,11000,3.27,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',30,5,-179,1187,11000,5.49,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,5,238,-1177,11000,3.27,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-30,-5,179,-1187,11000,5.49,0.0,79.7
1
'E Leg App - FreeFlow','AG',0,42,1200,42,15400,7.13,0.0,103.7
1
'E Leg Dep - FreeFlow','AG',0,-42,1200,-42,15400,2.62,0.0,103.7
1
```

```
'W Leg App - FreeFlow','AG',0,-42,-1200,-42,15400,4.41,0.0,103.7
1
'W Leg Dep - FreeFlow','AG',0,42,-1200,42,15400,2.62,0.0,103.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2016 I495 & MD97 (IC.20)

DATE : 1/17/19
TIME : 7:11:12

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-30.0	-5.0	-238.0	1177.0	*	1200.	350.	AG	11000.	3.3	0.0	79.7		
2. N Leg Dep - FreeFlow	*	30.0	5.0	-179.0	1187.0	*	1200.	350.	AG	11000.	5.5	0.0	79.7		
3. S Leg App - FreeFlow	*	30.0	5.0	238.0	-1177.0	*	1200.	170.	AG	11000.	3.3	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-30.0	-5.0	179.0	-1187.0	*	1200.	170.	AG	11000.	5.5	0.0	79.7		
5. E Leg App - FreeFlow	*	0.0	42.0	1200.0	42.0	*	1200.	90.	AG	15400.	7.1	0.0	****		
6. E Leg Dep - FreeFlow	*	0.0	-42.0	1200.0	-42.0	*	1200.	90.	AG	15400.	2.6	0.0	****		
7. W Leg App - FreeFlow	*	0.0	-42.0	-1200.0	-42.0	*	1200.	270.	AG	15400.	4.4	0.0	****		
8. W Leg Dep - FreeFlow	*	0.0	42.0	-1200.0	42.0	*	1200.	270.	AG	15400.	2.6	0.0	****		

MD97 (IC.20)

DATE : 1/17/19
TIME : 7:11:12

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	54.5	94.0	5.9
2. N Leg, E Side - 25 m	42.0	164.9	5.9
3. N Leg, E Side - 50 m	27.8	245.7	5.9
4. N Leg, E Side-Midblk	-47.9	675.0	5.9
5. N Leg, W Side-Corner	-87.7	94.0	5.9
6. N Leg, W Side - 25 m	-100.2	164.9	5.9
7. N Leg, W Side - 50 m	-114.4	245.7	5.9
8. N Leg, W Side-Midblk	-190.1	675.0	5.9
9. S Leg, E Side-Corner	87.7	-94.0	5.9
10. S Leg, E Side - 25 m	100.2	-164.9	5.9
11. S Leg, E Side - 50 m	114.4	-245.7	5.9
12. S Leg, E Side-Midblk	190.1	-675.0	5.9
13. S Leg, W Side-Corner	-54.5	-94.0	5.9
14. S Leg, W Side - 25 m	-42.0	-164.9	5.9
15. S Leg, W Side - 50 m	-27.8	-245.7	5.9
16. S Leg, W Side-Midblk	47.9	-675.0	5.9
17. E Leg, N Side - 25 m	126.5	94.0	5.9
18. E Leg, N Side - 50 m	208.5	94.0	5.9
19. E Leg, N Side-Midblk	644.5	94.0	5.9
20. W Leg, N Side - 25 m	-159.7	94.0	5.9
21. W Leg, N Side - 50 m	-241.7	94.0	5.9
22. W Leg, N Side-Midblk	-677.7	94.0	5.9
23. E Leg, S Side - 25 m	159.7	-94.0	5.9
24. E Leg, S Side - 50 m	241.7	-94.0	5.9
25. E Leg, S Side-Midblk	677.7	-94.0	5.9
26. W Leg, S Side - 25 m	-126.5	-94.0	5.9

27. W Leg, S Side - 50 m	*	-208.5	-94.0	5.9 *
28. W Leg, S Side-Midblk	*	-644.5	-94.0	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.5000	0.5000	0.5000	0.4000	3.0000	3.0000	3.0000	2.7000	3.0000	2.1000	1.6000	1.0000	6.0000	5.4000	4.8000
20.	*	0.3000	0.2000	0.2000	0.2000	2.6000	2.6000	2.6000	2.6000	2.7000	1.9000	1.4000	0.8000	6.1000	5.0000	4.4000
30.	*	0.4000	0.2000	0.2000	0.2000	2.4000	2.3000	2.3000	2.3000	2.7000	1.9000	1.4000	0.8000	5.9000	4.6000	4.1000
40.	*	0.5000	0.2000	0.2000	0.2000	2.3000	2.2000	2.2000	2.2000	2.8000	2.0000	1.5000	0.8000	5.8000	4.5000	3.9000
50.	*	0.4000	0.1000	0.1000	0.1000	2.1000	2.0000	2.0000	2.0000	3.1000	2.1000	1.6000	0.7000	5.7000	4.2000	3.8000
60.	*	0.5000	0.1000	0.1000	0.1000	2.1000	1.9000	1.9000	1.9000	3.3000	2.1000	1.5000	0.3000	5.8000	4.3000	3.7000
70.	*	0.7000	0.0000	0.0000	0.0000	2.4000	2.0000	2.0000	2.0000	3.5000	2.1000	1.4000	0.0000	6.2000	4.3000	3.6000
80.	*	2.0000	0.2000	0.0000	0.0000	3.7000	2.3000	2.2000	2.1000	3.3000	1.4000	0.7000	0.0000	6.2000	4.0000	3.2000
90.	*	4.2000	1.0000	0.3000	0.0000	5.5000	3.1000	2.5000	2.0000	2.1000	0.6000	0.2000	0.0000	4.8000	2.8000	2.4000
100.	*	5.6000	2.2000	1.2000	0.1000	6.3000	4.2000	3.1000	1.9000	0.9000	0.1000	0.0000	0.0000	3.2000	2.3000	2.2000
110.	*	5.2000	2.7000	1.7000	0.3000	6.0000	4.6000	3.7000	2.2000	0.4000	0.1000	0.1000	0.1000	2.5000	2.3000	2.3000
120.	*	4.7000	2.7000	2.0000	0.7000	5.4000	4.5000	4.0000	2.7000	0.2000	0.1000	0.1000	0.1000	2.6000	2.5000	2.5000

130. * 4.2000 2.6000 1.9000 0.9000 4.8000 4.3000 3.9000 3.0000 0.2000
0.1000 0.1000 0.1000 2.9000 2.8000 2.8000
140. * 3.8000 2.4000 1.8000 0.9000 4.9000 4.2000 3.9000 3.3000 0.2000
0.1000 0.1000 0.1000 3.2000 3.1000 3.0000
150. * 3.8000 2.6000 2.0000 1.1000 4.9000 4.3000 4.1000 3.7000 0.4000
0.3000 0.3000 0.3000 3.7000 3.6000 3.6000
160. * 4.4000 3.4000 2.8000 2.1000 5.2000 4.4000 4.0000 3.7000 0.9000
0.8000 0.8000 0.7000 3.8000 3.7000 3.6000
170. * 5.9000 4.8000 4.3000 3.8000 4.4000 3.7000 3.5000 2.9000 2.1000
2.1000 2.0000 1.6000 2.9000 2.8000 2.8000
180. * 6.9000 5.9000 5.3000 4.6000 3.2000 2.4000 1.9000 1.6000 2.9000
2.9000 2.9000 2.3000 1.4000 1.3000 1.3000
190. * 7.0000 5.7000 4.8000 4.1000 2.4000 1.6000 1.3000 0.8000 3.0000
3.0000 3.0000 2.7000 0.5000 0.5000 0.5000
200. * 6.9000 5.0000 4.2000 3.5000 2.1000 1.4000 1.0000 0.6000 2.6000
2.6000 2.6000 2.6000 0.3000 0.2000 0.2000
210. * 6.4000 4.3000 3.8000 3.3000 2.1000 1.4000 1.1000 0.6000 2.4000
2.3000 2.3000 2.3000 0.3000 0.2000 0.2000
220. * 6.2000 4.1000 3.5000 3.0000 2.2000 1.5000 1.1000 0.6000 2.3000
2.2000 2.2000 2.2000 0.4000 0.2000 0.2000
230. * 5.8000 3.8000 3.4000 2.8000 2.4000 1.6000 1.2000 0.5000 2.1000
2.0000 2.0000 2.0000 0.3000 0.1000 0.1000
240. * 5.8000 3.7000 3.3000 2.4000 2.6000 1.5000 1.1000 0.2000 2.0000
1.9000 1.9000 1.9000 0.3000 0.1000 0.1000
250. * 6.0000 3.8000 3.3000 2.2000 2.8000 1.6000 1.0000 0.0000 2.3000
2.0000 2.0000 2.0000 0.4000 0.0000 0.0000
260. * 6.1000 3.7000 3.0000 2.4000 2.8000 1.1000 0.6000 0.0000 3.2000
2.2000 2.1000 2.1000 1.2000 0.1000 0.0000
270. * 4.9000 2.7000 2.4000 2.2000 1.8000 0.5000 0.2000 0.0000 4.5000
2.7000 2.3000 2.0000 2.7000 0.7000 0.2000
280. * 3.3000 2.3000 2.2000 2.2000 0.8000 0.1000 0.0000 0.0000 5.1000
3.4000 2.7000 1.9000 3.7000 1.5000 0.9000
290. * 2.6000 2.3000 2.3000 2.3000 0.4000 0.1000 0.1000 0.1000 5.0000
3.8000 3.1000 2.1000 3.5000 1.9000 1.2000
300. * 2.7000 2.5000 2.5000 2.5000 0.2000 0.1000 0.1000 0.1000 4.8000
3.8000 3.4000 2.6000 3.2000 2.0000 1.5000
310. * 2.9000 2.8000 2.8000 2.8000 0.2000 0.1000 0.1000 0.1000 4.6000
3.8000 3.5000 2.8000 2.9000 1.9000 1.4000
320. * 3.2000 3.1000 3.0000 3.0000 0.2000 0.1000 0.1000 0.1000 4.9000
4.0000 3.7000 3.1000 2.7000 1.7000 1.4000
330. * 3.7000 3.6000 3.6000 3.4000 0.4000 0.3000 0.3000 0.3000 5.3000
4.4000 4.0000 3.5000 2.7000 1.9000 1.5000
340. * 3.8000 3.7000 3.6000 3.2000 0.9000 0.8000 0.8000 0.7000 5.7000
4.6000 4.1000 3.6000 3.4000 2.8000 2.3000
350. * 2.9000 2.8000 2.8000 2.3000 2.1000 2.1000 2.0000 1.6000 5.0000
4.1000 3.7000 3.0000 4.9000 4.2000 3.9000
360. * 1.4000 1.3000 1.3000 1.0000 2.9000 2.9000 2.9000 2.3000 3.8000
2.8000 2.3000 1.7000 5.9000 5.4000 5.0000

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  7.0000  5.9000  5.3000  4.6000  6.3000  4.6000  4.1000  3.7000  5.7000
4.6000  4.1000  3.6000  6.2000  5.4000  5.0000
 DEGR. *    190     180     180     180     100     110     150     150     340
340     340     340      80     360     360
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  4.2000  0.0000  0.0000  0.0000  1.5000  0.9000  0.0000  2.6000  2.6000
2.6000  3.8000  3.4000  2.3000
  20.  *  3.7000  0.1000  0.1000  0.1000  1.5000  1.0000  0.2000  2.6000  2.6000
2.6000  3.7000  3.3000  2.5000
  30.  *  3.5000  0.2000  0.2000  0.2000  1.5000  1.1000  0.4000  2.6000  2.6000
2.6000  4.0000  3.3000  2.7000
  40.  *  3.2000  0.3000  0.3000  0.3000  1.4000  1.1000  0.6000  2.7000  2.7000
2.7000  4.4000  3.7000  3.0000
  50.  *  2.9000  0.3000  0.3000  0.3000  1.4000  1.0000  0.6000  3.0000  3.0000
2.9000  4.8000  4.0000  3.2000
  60.  *  2.5000  0.4000  0.4000  0.4000  1.4000  1.0000  0.6000  3.3000  3.3000
3.1000  5.3000  4.6000  3.6000
  70.  *  2.3000  0.7000  0.7000  0.7000  1.7000  1.3000  0.8000  3.5000  3.5000
3.0000  5.5000  5.0000  4.0000
  80.  *  2.4000  1.9000  1.8000  1.6000  2.7000  2.2000  1.5000  3.3000  3.1000
2.4000  5.4000  5.1000  4.5000
  90.  *  2.2000  4.1000  4.0000  3.4000  4.4000  3.8000  3.0000  2.1000  2.0000
1.5000  4.0000  3.7000  3.5000
```

```
 100.  *  2.2000  5.4000  5.3000  4.6000  5.2000  4.6000  3.7000  0.8000  0.8000
0.6000  2.5000  2.1000  1.8000
 110.  *  2.3000  5.1000  5.1000  4.8000  4.6000  3.9000  3.2000  0.3000  0.3000
0.2000  1.8000  1.3000  0.9000
 120.  *  2.5000  4.5000  4.5000  4.4000  4.1000  3.5000  3.0000  0.1000  0.1000
0.1000  1.6000  1.2000  0.7000
 130.  *  2.8000  4.0000  4.0000  4.0000  3.7000  3.3000  2.8000  0.1000  0.1000
0.1000  1.8000  1.2000  0.7000
 140.  *  3.0000  3.7000  3.7000  3.6000  3.6000  3.2000  2.4000  0.1000  0.1000
0.1000  1.8000  1.4000  0.5000
 150.  *  3.4000  3.4000  3.4000  3.4000  3.6000  3.1000  2.2000  0.1000  0.1000
0.1000  1.8000  1.1000  0.2000
 160.  *  3.2000  3.3000  3.2000  3.2000  3.4000  2.7000  2.0000  0.1000  0.0000
0.0000  1.5000  0.8000  0.1000
 170.  *  2.3000  3.9000  3.5000  3.3000  2.7000  2.3000  2.0000  0.5000  0.2000
0.0000  0.6000  0.3000  0.0000
 180.  *  1.0000  4.7000  4.2000  3.5000  2.2000  2.1000  2.1000  1.2000  0.6000
0.0000  0.1000  0.0000  0.0000
 190.  *  0.4000  4.8000  4.4000  3.3000  2.0000  2.0000  2.0000  1.5000  0.9000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.2000  4.7000  4.3000  3.5000  2.0000  2.0000  2.0000  1.5000  1.0000
0.2000  0.1000  0.1000  0.1000
 210.  *  0.2000  4.9000  4.3000  3.8000  2.0000  2.0000  2.0000  1.5000  1.1000
0.4000  0.1000  0.1000  0.1000
 220.  *  0.2000  5.3000  4.7000  4.1000  2.1000  2.1000  2.1000  1.4000  1.1000
0.6000  0.2000  0.2000  0.2000
 230.  *  0.1000  5.5000  5.0000  4.5000  2.3000  2.3000  2.3000  1.4000  1.0000
0.6000  0.2000  0.2000  0.2000
 240.  *  0.1000  5.8000  5.5000  5.1000  2.6000  2.5000  2.5000  1.4000  1.0000
0.6000  0.2000  0.2000  0.2000
 250.  *  0.0000  5.8000  5.8000  5.5000  2.8000  2.8000  2.4000  1.6000  1.2000
0.7000  0.4000  0.4000  0.4000
 260.  *  0.0000  5.5000  5.7000  5.9000  2.7000  2.6000  2.1000  2.3000  1.9000
1.4000  1.2000  1.1000  1.0000
 270.  *  0.0000  4.4000  4.3000  4.6000  1.8000  1.8000  1.4000  3.6000  3.2000
2.8000  2.7000  2.5000  2.1000
 280.  *  0.1000  2.7000  2.4000  2.3000  0.8000  0.8000  0.6000  4.3000  4.0000
3.9000  3.6000  3.5000  3.0000
 290.  *  0.2000  2.0000  1.5000  1.2000  0.3000  0.3000  0.2000  4.1000  3.9000
3.8000  3.4000  3.4000  3.2000
 300.  *  0.5000  1.7000  1.4000  0.9000  0.1000  0.1000  0.1000  4.1000  3.8000
3.7000  3.1000  3.1000  2.9000
 310.  *  0.7000  1.9000  1.3000  0.8000  0.1000  0.1000  0.1000  4.1000  3.7000
3.5000  2.7000  2.7000  2.7000
 320.  *  0.7000  1.9000  1.5000  0.6000  0.1000  0.1000  0.1000  4.1000  3.8000
3.0000  2.5000  2.5000  2.5000
 330.  *  0.9000  1.9000  1.2000  0.3000  0.1000  0.1000  0.1000  4.2000  3.7000
2.8000  2.3000  2.3000  2.3000
```

```
 340.  *  1.9000  1.5000  0.8000  0.1000  0.1000  0.0000  0.0000  4.0000  3.3000
2.6000  2.3000  2.2000  2.2000
 350.  *  3.6000  0.6000  0.3000  0.0000  0.5000  0.2000  0.0000  3.3000  2.8000
2.6000  2.9000  2.5000  2.3000
 360.  *  4.6000  0.1000  0.0000  0.0000  1.2000  0.6000  0.0000  2.8000  2.7000
2.7000  3.6000  3.1000  2.4000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  4.6000  5.8000  5.8000  5.9000  5.2000  4.6000  3.7000  4.3000  4.0000
3.9000  5.5000  5.1000  4.5000
 DEGR. *    360     240     250     260     100     100     100     280     280
280      70      80      80

 THE HIGHEST CONCENTRATION OF   7.0000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,5,7,6,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,0,-5,-25,5,-5,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',37.3,85.6,5.9
'N Leg, E Side - 25 m',6.9,150.9,5.9
'N Leg, E Side - 50 m',-27.8,225.2,5.9
'N Leg, E Side-Midblk',-212.0,620.3,5.9
'N Leg, W Side-Corner',-120.5,92.9,5.9
'N Leg, W Side - 25 m',-151.0,158.1,5.9
'N Leg, W Side - 50 m',-185.6,232.5,5.9
'N Leg, W Side-Midblk',-369.9,627.6,5.9
'S Leg, E Side-Corner',77.9,-87.5,5.9
'S Leg, E Side - 25 m',84.2,-159.3,5.9
'S Leg, E Side - 50 m',91.4,-241.0,5.9
'S Leg, E Side-Midblk',129.3,-675.3,5.9
'S Leg, W Side-Corner',-62.5,-88.9,5.9
'S Leg, W Side - 25 m',-56.2,-160.6,5.9
'S Leg, W Side - 50 m',-49.1,-242.3,5.9
'S Leg, W Side-Midblk',-11.1,-676.6,5.9
'E Leg, N Side - 25 m',109.1,91.9,5.9
'E Leg, N Side - 50 m',190.8,99.0,5.9
'E Leg, N Side-Midblk',625.1,137.0,5.9
'W Leg, N Side - 25 m',-192.3,99.1,5.9
'W Leg, N Side - 50 m',-274.0,106.3,5.9
'W Leg, N Side-Midblk',-708.3,144.3,5.9
'E Leg, S Side - 25 m',149.7,-81.3,5.9
'E Leg, S Side - 50 m',231.4,-74.1,5.9
'E Leg, S Side-Midblk',665.7,-36.1,5.9
'W Leg, S Side - 25 m',-134.2,-82.6,5.9
'W Leg, S Side - 50 m',-215.9,-75.5,5.9
'W Leg, S Side-Midblk',-650.2,-37.5,5.9
'2016 I495 & MD185 (IC.21)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-29,-8,-534,1075,11000,5.49,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',29,8,-480,1100,11000,3.27,0.0,79.7
1
'S Leg App - FreeFlow','AG',29,8,134,-1193,11000,3.27,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-29,-8,75,-1198,11000,6.54,0.0,79.7
1
'E Leg App - FreeFlow','AG',0,36,1192,140,13200,2.62,0.0,91.7
1
'E Leg Dep - FreeFlow','AG',0,-42,1199,63,15400,3.41,0.0,103.7
1
```

```
'W Leg App - FreeFlow','AG',0,-42,-1199,63,15400,2.62,0.0,103.7
1
'W Leg Dep - FreeFlow','AG',0,36,-1192,140,13200,2.62,0.0,91.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

```
 *** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i
graphical user interface
                        CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated
13045                       PAGE  1

      JOB: I-495 & I-270 MLS                                    RUN: 2016 I495 &
MD185 (IC.21)

      DATE :  1/17/19
      TIME :  8:12:24

         The MODE flag has been set for calculating concentrations for POLLUTANT:
CO

       SITE & METEOROLOGICAL VARIABLES
       -------------------------------
       VS =   0.0 CM/S       VD =   0.0 CM/S       Z0 = 108. CM
        U =  1.0 M/S         CLAS =   4  (D)     ATIM =  60. MINUTES     MIXH =
1000. M   AMB =  0.0 PPM

       LINK VARIABLES
       --------------
         LINK DESCRIPTION     *         LINK COORDINATES (FT)          *    LENGTH
BRG TYPE   VPH    EF      H   W    V/C QUEUE
                               *   X1        Y1        X2        Y2     *     (FT)
(DEG)           (G/MI)  (FT) (FT)       (VEH)

------------------------*-----------------------------------------*-----------------
---------------------------------------
       1. N Leg App - FreeFlow*    -29.0      -8.0    -534.0    1075.0 *    1195.
335. AG  11000.   5.5   0.0 79.7
       2. N Leg Dep - FreeFlow*     29.0       8.0    -480.0    1100.0 *    1205.
335. AG  11000.   3.3   0.0 79.7
       3. S Leg App - FreeFlow*     29.0       8.0     134.0   -1193.0 *    1206.
175. AG  11000.   3.3   0.0 79.7
       4. S Leg Dep - FreeFlow*    -29.0      -8.0      75.0   -1198.0 *    1195.
175. AG  11000.   6.5   0.0 79.7
       5. E Leg App - FreeFlow*      0.0      36.0    1192.0     140.0 *    1197.
85. AG  13200.   2.6   0.0 91.7
       6. E Leg Dep - FreeFlow*      0.0     -42.0    1199.0      63.0 *    1204.
85. AG  15400.   3.4   0.0 ****
       7. W Leg App - FreeFlow*      0.0     -42.0   -1199.0      63.0 *    1204.
275. AG  15400.   2.6   0.0 ****
       8. W Leg Dep - FreeFlow*      0.0      36.0   -1192.0     140.0 *    1197.
275. AG  13200.   2.6   0.0 91.7
                            PAGE  2
      JOB: I-495 & I-270 MLS                                    RUN: 2016 I495 &
```

MD185 (IC.21)

DATE : 1/17/19
TIME : 8:12:24

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	37.3	85.6	5.9
2. N Leg, E Side - 25 m	6.9	150.9	5.9
3. N Leg, E Side - 50 m	-27.8	225.2	5.9
4. N Leg, E Side-Midblk	-212.0	620.3	5.9
5. N Leg, W Side-Corner	-120.5	92.9	5.9
6. N Leg, W Side - 25 m	-151.0	158.1	5.9
7. N Leg, W Side - 50 m	-185.6	232.5	5.9
8. N Leg, W Side-Midblk	-369.9	627.6	5.9
9. S Leg, E Side-Corner	77.9	-87.5	5.9
10. S Leg, E Side - 25 m	84.2	-159.3	5.9
11. S Leg, E Side - 50 m	91.4	-241.0	5.9
12. S Leg, E Side-Midblk	129.3	-675.3	5.9
13. S Leg, W Side-Corner	-62.5	-88.9	5.9
14. S Leg, W Side - 25 m	-56.2	-160.6	5.9
15. S Leg, W Side - 50 m	-49.1	-242.3	5.9
16. S Leg, W Side-Midblk	-11.1	-676.6	5.9
17. E Leg, N Side - 25 m	109.1	91.9	5.9
18. E Leg, N Side - 50 m	190.8	99.0	5.9
19. E Leg, N Side-Midblk	625.1	137.0	5.9
20. W Leg, N Side - 25 m	-192.3	99.1	5.9
21. W Leg, N Side - 50 m	-274.0	106.3	5.9
22. W Leg, N Side-Midblk	-708.3	144.3	5.9
23. E Leg, S Side - 25 m	149.7	-81.3	5.9
24. E Leg, S Side - 50 m	231.4	-74.1	5.9
25. E Leg, S Side-Midblk	665.7	-36.1	5.9
26. W Leg, S Side - 25 m	-134.2	-82.6	5.9

27. W Leg, S Side - 50 m	*	-215.9	-75.5	5.9 *
28. W Leg, S Side-Midblk	*	-650.2	-37.5	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.1000	0.1000	0.1000	0.1000	2.9000	2.9000	2.9000	2.9000	2.0000	1.5000	1.2000	0.7000	4.7000	4.3000	4.3000
20.	*	0.2000	0.1000	0.1000	0.1000	2.6000	2.6000	2.6000	2.6000	1.9000	1.3000	1.1000	0.5000	4.6000	4.3000	4.3000
30.	*	0.2000	0.1000	0.1000	0.1000	2.5000	2.4000	2.4000	2.4000	2.0000	1.3000	1.0000	0.5000	4.7000	4.3000	4.0000
40.	*	0.2000	0.1000	0.1000	0.1000	2.3000	2.2000	2.2000	2.2000	2.1000	1.4000	1.0000	0.5000	4.7000	4.2000	3.8000
50.	*	0.1000	0.0000	0.0000	0.0000	2.3000	2.2000	2.2000	2.2000	2.4000	1.4000	1.0000	0.4000	4.9000	4.0000	3.7000
60.	*	0.2000	0.0000	0.0000	0.0000	2.4000	2.3000	2.3000	2.3000	2.7000	1.5000	1.0000	0.2000	4.9000	4.0000	3.5000
70.	*	0.4000	0.0000	0.0000	0.0000	2.5000	2.3000	2.3000	2.3000	2.9000	1.4000	0.7000	0.0000	5.4000	4.0000	3.4000
80.	*	1.2000	0.3000	0.1000	0.0000	3.0000	2.4000	2.2000	2.2000	2.6000	0.8000	0.4000	0.0000	5.4000	3.6000	3.0000
90.	*	2.1000	0.9000	0.5000	0.1000	4.0000	2.9000	2.6000	2.2000	1.5000	0.2000	0.1000	0.0000	4.5000	3.0000	2.7000
100.	*	2.7000	1.4000	0.9000	0.1000	4.7000	3.6000	3.2000	2.4000	0.5000	0.0000	0.0000	0.0000	3.3000	2.5000	2.5000
110.	*	2.5000	1.5000	1.0000	0.3000	4.8000	3.7000	3.5000	2.8000	0.3000	0.1000	0.1000	0.1000	2.7000	2.5000	2.5000
120.	*	2.2000	1.4000	1.0000	0.5000	4.9000	4.1000	3.8000	3.3000	0.3000	0.1000	0.1000	0.1000	2.8000	2.7000	2.7000

130. * 2.0000 1.3000 1.1000 0.6000 4.8000 4.2000 4.0000 3.6000 0.2000
0.1000 0.1000 0.1000 3.1000 3.0000 3.0000
140. * 2.1000 1.4000 1.2000 0.8000 4.8000 4.4000 4.1000 4.1000 0.2000
0.1000 0.1000 0.1000 3.3000 3.3000 3.3000
150. * 2.2000 1.9000 1.8000 1.7000 4.9000 4.5000 4.2000 4.0000 0.3000
0.2000 0.2000 0.2000 3.8000 3.8000 3.7000
160. * 3.1000 2.8000 2.9000 3.2000 4.6000 4.0000 3.4000 2.8000 0.5000
0.5000 0.5000 0.4000 4.3000 4.2000 4.2000
170. * 4.2000 4.2000 4.2000 3.8000 3.7000 2.8000 2.3000 1.5000 1.5000
1.5000 1.5000 1.1000 3.9000 3.9000 3.8000
180. * 5.4000 4.9000 4.5000 3.5000 2.4000 1.9000 1.5000 0.8000 2.8000
2.7000 2.7000 2.1000 2.4000 2.3000 2.3000
190. * 5.3000 4.7000 3.8000 2.9000 1.8000 1.4000 1.0000 0.6000 3.3000
3.3000 3.2000 2.7000 0.9000 0.9000 0.8000
200. * 4.7000 3.7000 3.1000 2.7000 1.7000 1.3000 1.0000 0.6000 3.1000
3.0000 3.0000 2.9000 0.4000 0.4000 0.4000
210. * 4.3000 3.2000 3.0000 2.6000 1.6000 1.2000 0.9000 0.5000 2.8000
2.7000 2.7000 2.7000 0.3000 0.2000 0.2000
220. * 4.2000 3.1000 2.8000 2.4000 1.7000 1.2000 0.9000 0.5000 2.6000
2.5000 2.5000 2.5000 0.3000 0.2000 0.2000
230. * 4.0000 3.0000 2.7000 2.3000 1.8000 1.1000 0.8000 0.3000 2.5000
2.4000 2.4000 2.4000 0.3000 0.2000 0.2000
240. * 4.1000 3.1000 2.8000 2.2000 1.9000 1.2000 0.9000 0.2000 2.3000
2.2000 2.2000 2.2000 0.2000 0.1000 0.1000
250. * 4.1000 3.2000 2.9000 2.1000 2.2000 1.2000 0.9000 0.0000 2.4000
2.1000 2.1000 2.1000 0.2000 0.0000 0.0000
260. * 4.2000 3.1000 2.6000 1.9000 2.3000 1.1000 0.7000 0.0000 3.0000
2.2000 2.2000 2.2000 0.4000 0.0000 0.0000
270. * 3.9000 2.7000 2.3000 2.0000 2.1000 0.8000 0.4000 0.1000 4.0000
2.5000 2.3000 2.2000 1.1000 0.2000 0.1000
280. * 3.2000 2.5000 2.3000 2.2000 1.3000 0.4000 0.1000 0.1000 4.7000
2.9000 2.5000 2.1000 2.1000 0.7000 0.3000
290. * 2.5000 2.3000 2.3000 2.3000 0.6000 0.2000 0.2000 0.2000 4.9000
3.3000 3.0000 2.2000 2.5000 1.2000 0.7000
300. * 2.5000 2.5000 2.5000 2.5000 0.4000 0.2000 0.2000 0.2000 4.8000
3.8000 3.1000 2.6000 2.3000 1.4000 1.0000
310. * 2.8000 2.8000 2.8000 2.7000 0.4000 0.3000 0.3000 0.3000 5.0000
4.0000 3.3000 2.8000 2.1000 1.3000 1.0000
320. * 3.1000 3.1000 3.0000 2.7000 0.8000 0.7000 0.7000 0.6000 5.4000
4.5000 3.9000 3.1000 2.1000 1.4000 1.0000
330. * 2.6000 2.6000 2.5000 2.1000 2.1000 2.0000 2.0000 1.6000 5.5000
4.9000 4.6000 3.7000 2.8000 2.0000 1.4000
340. * 1.5000 1.4000 1.4000 1.1000 3.5000 3.3000 3.3000 2.7000 4.4000
4.2000 4.3000 3.9000 3.8000 2.9000 2.4000
350. * 0.5000 0.5000 0.5000 0.4000 3.8000 3.6000 3.6000 3.2000 3.4000
3.1000 3.1000 3.3000 4.6000 3.9000 3.5000
360. * 0.2000 0.2000 0.2000 0.2000 3.3000 3.2000 3.2000 3.2000 2.5000
2.0000 1.8000 1.8000 4.7000 4.2000 4.2000

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  5.4000  4.9000  4.5000  3.8000  4.9000  4.5000  4.2000  4.1000  5.5000
4.9000  4.6000  3.9000  5.4000  4.3000  4.3000
 DEGR. *    180     180     180     170     120     150     150     140     330
330     330     340      70      20      10
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  4.6000  0.0000  0.0000  0.0000  1.7000  1.2000  0.3000  1.7000  1.7000
1.7000  2.9000  2.6000  1.8000
  20.  *  4.0000  0.1000  0.1000  0.1000  1.6000  1.2000  0.4000  1.8000  1.8000
1.8000  2.8000  2.5000  2.0000
  30.  *  3.8000  0.1000  0.1000  0.1000  1.5000  1.1000  0.6000  1.9000  1.9000
1.9000  2.9000  2.4000  2.0000
  40.  *  3.5000  0.1000  0.1000  0.1000  1.5000  1.1000  0.6000  2.0000  2.0000
2.0000  2.9000  2.5000  2.1000
  50.  *  3.0000  0.1000  0.1000  0.1000  1.5000  1.1000  0.6000  2.3000  2.3000
2.3000  3.4000  2.7000  2.2000
  60.  *  2.7000  0.2000  0.2000  0.2000  1.5000  1.1000  0.6000  2.6000  2.6000
2.4000  3.7000  3.3000  2.4000
  70.  *  2.5000  0.4000  0.4000  0.3000  1.6000  1.1000  0.7000  2.9000  2.9000
2.5000  4.2000  3.6000  2.8000
  80.  *  2.6000  1.2000  1.1000  0.9000  2.1000  1.6000  1.1000  2.6000  2.4000
2.1000  4.3000  3.8000  3.1000
  90.  *  2.6000  2.1000  2.1000  1.7000  3.0000  2.6000  1.9000  1.4000  1.4000
1.1000  3.5000  3.2000  2.8000
```

```
 100.  *  2.5000  2.5000  2.5000  2.2000  3.8000  3.5000  2.8000  0.5000  0.5000
0.5000  2.3000  2.1000  1.7000
 110.  *  2.5000  2.4000  2.4000  2.2000  3.8000  3.3000  2.8000  0.2000  0.2000
0.2000  1.8000  1.5000  0.9000
 120.  *  2.7000  2.1000  2.1000  2.1000  3.8000  3.1000  2.4000  0.2000  0.2000
0.2000  1.7000  1.2000  0.7000
 130.  *  3.0000  2.0000  2.0000  2.0000  3.3000  2.9000  2.4000  0.1000  0.1000
0.1000  1.8000  1.2000  0.6000
 140.  *  3.3000  1.8000  1.8000  1.8000  3.2000  2.6000  2.2000  0.1000  0.1000
0.1000  1.9000  1.4000  0.5000
 150.  *  3.6000  1.7000  1.7000  1.7000  3.1000  2.7000  1.9000  0.1000  0.1000
0.1000  2.0000  1.4000  0.4000
 160.  *  3.9000  1.8000  1.7000  1.7000  2.9000  2.4000  1.6000  0.0000  0.0000
0.0000  1.9000  1.2000  0.1000
 170.  *  3.3000  2.2000  1.9000  1.7000  2.4000  1.9000  1.5000  0.3000  0.0000
0.0000  1.1000  0.5000  0.0000
 180.  *  1.9000  3.1000  2.3000  1.7000  1.7000  1.6000  1.5000  1.0000  0.4000
0.0000  0.4000  0.1000  0.0000
 190.  *  0.8000  3.7000  2.9000  1.7000  1.5000  1.5000  1.5000  1.6000  0.9000
0.0000  0.1000  0.0000  0.0000
 200.  *  0.3000  3.7000  3.0000  2.0000  1.5000  1.5000  1.5000  1.8000  1.2000
0.3000  0.0000  0.0000  0.0000
 210.  *  0.2000  3.4000  3.1000  2.3000  1.5000  1.5000  1.5000  1.7000  1.2000
0.4000  0.1000  0.1000  0.1000
 220.  *  0.2000  3.4000  3.0000  2.5000  1.6000  1.6000  1.6000  1.6000  1.2000
0.6000  0.1000  0.1000  0.1000
 230.  *  0.2000  3.3000  3.0000  2.6000  1.8000  1.8000  1.8000  1.6000  1.3000
0.7000  0.1000  0.1000  0.1000
 240.  *  0.1000  3.4000  3.2000  2.7000  1.9000  1.9000  1.9000  1.6000  1.2000
0.7000  0.1000  0.1000  0.1000
 250.  *  0.0000  3.4000  3.1000  3.0000  2.2000  2.1000  2.0000  1.8000  1.5000
1.0000  0.2000  0.2000  0.2000
 260.  *  0.0000  3.5000  3.1000  2.8000  2.3000  2.3000  1.9000  2.3000  2.2000
2.0000  0.4000  0.4000  0.4000
 270.  *  0.0000  2.9000  2.4000  1.6000  2.0000  1.9000  1.5000  3.3000  3.3000
3.2000  1.1000  1.1000  0.9000
 280.  *  0.0000  2.0000  1.6000  1.0000  1.1000  1.0000  0.9000  4.2000  3.9000
3.5000  2.1000  1.9000  1.6000
 290.  *  0.1000  1.6000  1.2000  0.7000  0.4000  0.4000  0.3000  4.3000  3.8000
3.2000  2.4000  2.3000  2.0000
 300.  *  0.4000  1.6000  1.2000  0.6000  0.2000  0.2000  0.2000  4.2000  3.6000
2.8000  2.1000  2.1000  2.0000
 310.  *  0.5000  1.6000  1.2000  0.4000  0.1000  0.1000  0.1000  4.0000  3.3000
2.4000  1.9000  1.9000  1.9000
 320.  *  0.5000  1.6000  1.0000  0.1000  0.1000  0.1000  0.1000  3.8000  3.0000
2.1000  1.7000  1.7000  1.7000
 330.  *  0.9000  1.0000  0.5000  0.1000  0.5000  0.2000  0.1000  3.1000  2.5000
1.8000  1.9000  1.7000  1.6000
```

```
 340.  *  1.5000  0.3000  0.1000  0.0000  1.1000  0.5000  0.1000  2.3000  1.9000
1.7000  2.4000  1.9000  1.5000
 350.  *  2.9000  0.0000  0.0000  0.0000  1.6000  1.0000  0.0000  1.9000  1.8000
1.8000  2.9000  2.4000  1.5000
 360.  *  4.4000  0.0000  0.0000  0.0000  1.7000  1.2000  0.1000  1.8000  1.8000
1.8000  3.1000  2.6000  1.6000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  4.6000  3.7000  3.2000  3.0000  3.8000  3.5000  2.8000  4.3000  3.9000
3.5000  4.3000  3.8000  3.1000
 DEGR. *     10     190     240     250     110     100     100     290     280
280      80      80      80

 THE HIGHEST CONCENTRATION OF   5.5000 PPM OCCURRED AT RECEPTOR     9.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
7,7,4,3,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-10,-10,10,5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',88.7,38.4,5.9
'N Leg, E Side - 25 m',76.2,109.3,5.9
'N Leg, E Side - 50 m',61.9,190.1,5.9
'N Leg, E Side-Midblk',-13.8,619.5,5.9
'N Leg, W Side-Corner',-107.0,65.6,5.9
'N Leg, W Side - 25 m',-119.5,136.5,5.9
'N Leg, W Side - 50 m',-133.8,217.3,5.9
'N Leg, W Side-Midblk',-209.5,646.6,5.9
'S Leg, E Side-Corner',107.4,-67.6,5.9
'S Leg, E Side - 25 m',119.9,-138.5,5.9
'S Leg, E Side - 50 m',134.1,-219.3,5.9
'S Leg, E Side-Midblk',209.8,-648.7,5.9
'S Leg, W Side-Corner',-87.8,-43.4,5.9
'S Leg, W Side - 25 m',-75.3,-114.3,5.9
'S Leg, W Side - 50 m',-61.0,-195.1,5.9
'S Leg, W Side-Midblk',14.7,-624.5,5.9
'E Leg, N Side - 25 m',160.4,32.1,5.9
'E Leg, N Side - 50 m',242.1,25.0,5.9
'E Leg, N Side-Midblk',676.4,-13.0,5.9
'W Leg, N Side - 25 m',-177.9,78.1,5.9
'W Leg, N Side - 50 m',-258.7,92.3,5.9
'W Leg, N Side-Midblk',-688.1,168.0,5.9
'E Leg, S Side - 25 m',179.1,-73.9,5.9
'E Leg, S Side - 50 m',260.8,-81.0,5.9
'E Leg, S Side-Midblk',695.1,-119.0,5.9
'W Leg, S Side - 25 m',-158.7,-30.9,5.9
'W Leg, S Side - 50 m',-239.5,-16.7,5.9
'W Leg, S Side-Midblk',-668.8,59.0,5.9
'2016 I495 & MD 190 (IC.25)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-41,-7,-250,1174,15400,2.62,0.0,103.7
1
'N Leg Dep - FreeFlow','AG',41,7,-167,1189,15400,4.41,0.0,103.7
1
'S Leg App - FreeFlow','AG',41,7,250,-1174,15400,2.62,0.0,103.7
1
'S Leg Dep - FreeFlow','AG',-41,-7,167,-1189,15400,4.41,0.0,103.7
1
'E Leg App - FreeFlow','AG',2,18,1197,-87,6600,2.83,0.0,55.7
1
'E Leg Dep - FreeFlow','AG',-3,-24,1193,-128,8800,6.89,0.0,67.7
1
```

```
'W Leg App - FreeFlow','AG',-3,-24,-1186,185,8800,5.38,0.0,67.7
1
'W Leg Dep - FreeFlow','AG',2,18,-1179,226,6600,2.83,0.0,55.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2016 I495 & MD 190 (IC.25)

DATE : 2/28/19
TIME : 11:31: 2

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-41.0	-7.0	-250.0	1174.0	*	1199.	350.	AG	15400.	2.6	0.0	****		
2. N Leg Dep - FreeFlow	*	41.0	7.0	-167.0	1189.0	*	1200.	350.	AG	15400.	4.4	0.0	****		
3. S Leg App - FreeFlow	*	41.0	7.0	250.0	-1174.0	*	1199.	170.	AG	15400.	2.6	0.0	****		
4. S Leg Dep - FreeFlow	*	-41.0	-7.0	167.0	-1189.0	*	1200.	170.	AG	15400.	4.4	0.0	****		
5. E Leg App - FreeFlow	*	2.0	18.0	1197.0	-87.0	*	1200.	95.	AG	6600.	2.8	0.0	55.7		
6. E Leg Dep - FreeFlow	*	-3.0	-24.0	1193.0	-128.0	*	1201.	95.	AG	8800.	6.9	0.0	67.7		
7. W Leg App - FreeFlow	*	-3.0	-24.0	-1186.0	185.0	*	1201.	280.	AG	8800.	5.4	0.0	67.7		
8. W Leg Dep - FreeFlow	*	2.0	18.0	-1179.0	226.0	*	1199.	280.	AG	6600.	2.8	0.0	55.7		

190 (IC.25)

DATE : 2/28/19
TIME : 11:31: 2

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	88.7	38.4	5.9
2. N Leg, E Side - 25 m	76.2	109.3	5.9
3. N Leg, E Side - 50 m	61.9	190.1	5.9
4. N Leg, E Side-Midblk	-13.8	619.5	5.9
5. N Leg, W Side-Corner	-107.0	65.6	5.9
6. N Leg, W Side - 25 m	-119.5	136.5	5.9
7. N Leg, W Side - 50 m	-133.8	217.3	5.9
8. N Leg, W Side-Midblk	-209.5	646.6	5.9
9. S Leg, E Side-Corner	107.4	-67.6	5.9
10. S Leg, E Side - 25 m	119.9	-138.5	5.9
11. S Leg, E Side - 50 m	134.1	-219.3	5.9
12. S Leg, E Side-Midblk	209.8	-648.7	5.9
13. S Leg, W Side-Corner	-87.8	-43.4	5.9
14. S Leg, W Side - 25 m	-75.3	-114.3	5.9
15. S Leg, W Side - 50 m	-61.0	-195.1	5.9
16. S Leg, W Side-Midblk	14.7	-624.5	5.9
17. E Leg, N Side - 25 m	160.4	32.1	5.9
18. E Leg, N Side - 50 m	242.1	25.0	5.9
19. E Leg, N Side-Midblk	676.4	-13.0	5.9
20. W Leg, N Side - 25 m	-177.9	78.1	5.9
21. W Leg, N Side - 50 m	-258.7	92.3	5.9
22. W Leg, N Side-Midblk	-688.1	168.0	5.9
23. E Leg, S Side - 25 m	179.1	-73.9	5.9
24. E Leg, S Side - 50 m	260.8	-81.0	5.9
25. E Leg, S Side-Midblk	695.1	-119.0	5.9
26. W Leg, S Side - 25 m	-158.7	-30.9	5.9

27. W Leg, S Side - 50 m	*	-239.5	-16.7	5.9 *
28. W Leg, S Side-Midblk	*	-668.8	59.0	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.4000	0.4000	0.4000	0.4000	2.8000	2.8000	2.8000	2.4000	2.4000	1.4000	1.1000	0.6000	4.8000	4.2000	4.4000
20.	*	0.2000	0.2000	0.2000	0.2000	2.6000	2.6000	2.6000	2.5000	2.1000	1.3000	0.9000	0.5000	4.5000	4.2000	4.0000
30.	*	0.2000	0.2000	0.2000	0.2000	2.3000	2.3000	2.3000	2.3000	2.1000	1.3000	0.9000	0.5000	4.3000	4.0000	3.6000
40.	*	0.2000	0.2000	0.2000	0.2000	2.1000	2.1000	2.1000	2.1000	2.4000	1.3000	1.0000	0.5000	4.3000	3.9000	3.4000
50.	*	0.2000	0.1000	0.1000	0.1000	2.1000	2.0000	2.0000	2.0000	2.6000	1.3000	1.0000	0.5000	4.4000	3.6000	3.2000
60.	*	0.2000	0.1000	0.1000	0.1000	2.1000	2.0000	2.0000	2.0000	2.7000	1.4000	0.9000	0.2000	4.8000	3.6000	3.2000
70.	*	0.1000	0.0000	0.0000	0.0000	2.1000	2.0000	2.0000	2.0000	3.1000	1.5000	1.0000	0.1000	5.1000	3.8000	3.3000
80.	*	0.4000	0.0000	0.0000	0.0000	2.4000	2.1000	2.1000	2.1000	3.7000	1.4000	0.7000	0.0000	6.0000	4.0000	3.3000
90.	*	1.3000	0.3000	0.1000	0.0000	2.9000	2.3000	2.1000	2.0000	3.4000	0.9000	0.4000	0.0000	5.7000	3.4000	2.8000
100.	*	2.4000	1.0000	0.5000	0.1000	4.0000	2.7000	2.3000	1.9000	2.2000	0.3000	0.1000	0.0000	4.7000	2.7000	2.3000
110.	*	2.8000	1.4000	0.8000	0.1000	4.5000	3.2000	2.8000	2.1000	0.9000	0.1000	0.1000	0.1000	3.3000	2.4000	2.3000
120.	*	2.5000	1.5000	1.1000	0.4000	4.3000	3.4000	3.0000	2.4000	0.5000	0.1000	0.1000	0.1000	2.8000	2.5000	2.5000

130. * 2.3000 1.4000 1.0000 0.5000 4.4000 3.4000 3.0000 2.7000 0.3000
0.1000 0.1000 0.1000 2.9000 2.7000 2.7000
140. * 2.2000 1.3000 1.0000 0.6000 4.4000 3.6000 3.2000 2.9000 0.3000
0.1000 0.1000 0.1000 3.2000 3.0000 3.1000
150. * 2.1000 1.4000 1.2000 0.8000 4.7000 3.9000 3.4000 3.1000 0.3000
0.2000 0.2000 0.2000 3.5000 3.4000 3.4000
160. * 2.6000 2.0000 1.8000 1.6000 4.8000 4.0000 3.7000 3.3000 0.9000
0.8000 0.8000 0.6000 3.7000 3.6000 3.5000
170. * 3.7000 3.4000 3.1000 3.2000 3.9000 3.2000 2.8000 2.7000 1.8000
1.8000 1.8000 1.4000 2.7000 2.7000 2.5000
180. * 4.8000 4.4000 4.2000 4.1000 2.6000 1.9000 1.6000 1.2000 2.8000
2.7000 2.6000 2.1000 1.2000 1.2000 1.2000
190. * 4.8000 4.4000 4.2000 4.0000 1.9000 1.2000 0.9000 0.5000 2.8000
2.8000 2.8000 2.4000 0.4000 0.4000 0.4000
200. * 4.5000 4.1000 4.0000 3.4000 1.6000 1.0000 0.7000 0.4000 2.6000
2.6000 2.6000 2.5000 0.2000 0.2000 0.2000
210. * 4.4000 3.9000 3.6000 3.0000 1.6000 1.0000 0.7000 0.4000 2.4000
2.3000 2.3000 2.3000 0.2000 0.2000 0.2000
220. * 4.4000 3.6000 3.2000 2.8000 1.7000 1.0000 0.8000 0.4000 2.2000
2.1000 2.1000 2.1000 0.3000 0.2000 0.2000
230. * 4.2000 3.4000 3.0000 2.6000 1.7000 1.0000 0.8000 0.4000 2.2000
2.0000 2.0000 2.0000 0.2000 0.1000 0.1000
240. * 4.4000 3.2000 2.9000 2.5000 1.8000 1.0000 0.7000 0.3000 2.2000
2.0000 2.0000 2.0000 0.3000 0.1000 0.1000
250. * 4.5000 3.3000 3.0000 2.5000 2.0000 1.1000 0.7000 0.1000 2.3000
2.0000 2.0000 2.0000 0.2000 0.0000 0.0000
260. * 4.6000 3.5000 3.1000 2.4000 2.3000 1.1000 0.7000 0.0000 2.8000
2.1000 2.1000 2.1000 0.4000 0.0000 0.0000
270. * 4.4000 3.2000 2.8000 2.3000 2.3000 0.9000 0.5000 0.0000 3.7000
2.2000 2.0000 2.0000 1.2000 0.1000 0.0000
280. * 3.7000 2.7000 2.4000 2.2000 1.6000 0.5000 0.2000 0.0000 5.0000
2.6000 2.2000 1.9000 2.3000 0.6000 0.3000
290. * 2.8000 2.4000 2.3000 2.3000 0.8000 0.2000 0.1000 0.1000 5.4000
3.2000 2.6000 2.0000 3.0000 1.1000 0.6000
300. * 2.7000 2.5000 2.5000 2.5000 0.3000 0.1000 0.1000 0.1000 5.3000
3.5000 2.9000 2.2000 2.7000 1.5000 1.0000
310. * 2.8000 2.7000 2.7000 2.7000 0.2000 0.1000 0.1000 0.1000 5.1000
3.5000 3.1000 2.6000 2.4000 1.4000 1.0000
320. * 3.1000 3.0000 3.0000 3.0000 0.2000 0.1000 0.1000 0.1000 5.0000
3.8000 3.3000 2.8000 2.1000 1.3000 1.0000
330. * 3.4000 3.4000 3.4000 3.2000 0.3000 0.2000 0.2000 0.2000 5.2000
4.2000 3.5000 3.1000 2.1000 1.4000 1.1000
340. * 3.6000 3.6000 3.5000 3.1000 0.8000 0.8000 0.7000 0.6000 5.2000
4.2000 3.8000 3.2000 2.6000 1.9000 1.7000
350. * 2.7000 2.7000 2.5000 2.1000 1.8000 1.8000 1.8000 1.4000 4.5000
3.4000 3.0000 2.6000 3.6000 3.3000 3.1000
360. * 1.2000 1.2000 1.2000 1.0000 2.8000 2.7000 2.6000 2.1000 3.2000
2.1000 1.8000 1.3000 4.6000 4.2000 4.1000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  4.8000  4.4000  4.2000  4.1000  4.8000  4.0000  3.7000  3.3000  5.4000
4.2000  3.8000  3.2000  6.0000  4.2000  4.4000
 DEGR. *    180     180     180     180     160     160     160     160     290
330     340     340      80      10      10
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  4.0000  0.0000  0.0000  0.0000  1.6000  1.0000  0.0000  2.1000  2.1000
2.1000  3.4000  2.9000  1.8000
  20.  *  3.5000  0.0000  0.0000  0.0000  1.6000  1.1000  0.2000  2.0000  2.0000
2.0000  3.3000  2.8000  1.8000
  30.  *  3.1000  0.0000  0.0000  0.0000  1.5000  1.1000  0.4000  2.0000  2.0000
2.0000  3.1000  2.7000  2.0000
  40.  *  2.9000  0.0000  0.0000  0.0000  1.5000  1.1000  0.5000  2.3000  2.3000
2.3000  3.3000  2.9000  2.3000
  50.  *  2.7000  0.1000  0.1000  0.1000  1.5000  1.1000  0.6000  2.5000  2.5000
2.5000  3.1000  2.9000  2.4000
  60.  *  2.5000  0.1000  0.1000  0.1000  1.4000  1.1000  0.6000  2.7000  2.7000
2.7000  3.6000  3.1000  2.6000
  70.  *  2.4000  0.1000  0.1000  0.1000  1.4000  1.1000  0.6000  3.1000  3.1000
3.0000  4.0000  3.5000  2.8000
  80.  *  2.4000  0.4000  0.4000  0.4000  1.6000  1.2000  0.7000  3.6000  3.6000
3.4000  4.6000  4.0000  3.2000
  90.  *  2.3000  1.3000  1.2000  1.0000  2.3000  1.9000  1.4000  3.4000  3.4000
2.9000  4.9000  4.3000  3.7000
```

```
 100.  *  2.2000  2.3000  2.2000  1.8000  3.5000  3.0000  2.5000  2.1000  2.1000
1.8000  4.0000  3.6000  3.1000
 110.  *  2.3000  2.8000  2.7000  2.4000  3.9000  3.5000  3.0000  0.8000  0.8000
0.7000  2.6000  2.1000  1.7000
 120.  *  2.5000  2.5000  2.5000  2.4000  3.7000  3.4000  2.8000  0.3000  0.3000
0.3000  2.0000  1.6000  0.9000
 130.  *  2.7000  2.3000  2.3000  2.3000  3.7000  3.2000  2.6000  0.2000  0.2000
0.2000  1.9000  1.4000  0.7000
 140.  *  3.0000  2.1000  2.1000  2.1000  3.5000  3.0000  2.3000  0.2000  0.2000
0.2000  2.0000  1.5000  0.6000
 150.  *  3.2000  1.9000  1.9000  1.9000  3.4000  2.9000  2.0000  0.1000  0.1000
0.1000  1.9000  1.3000  0.3000
 160.  *  3.1000  2.0000  1.9000  1.9000  3.2000  2.4000  1.6000  0.2000  0.1000
0.1000  1.5000  0.9000  0.1000
 170.  *  2.1000  2.2000  1.9000  1.7000  2.1000  1.8000  1.4000  0.5000  0.2000
0.0000  0.7000  0.3000  0.0000
 180.  *  1.0000  3.1000  2.4000  1.8000  1.7000  1.5000  1.5000  1.1000  0.6000
0.0000  0.1000  0.0000  0.0000
 190.  *  0.4000  3.4000  2.9000  1.8000  1.6000  1.6000  1.6000  1.6000  1.0000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.2000  3.2000  2.8000  1.9000  1.5000  1.5000  1.5000  1.5000  1.1000
0.2000  0.0000  0.0000  0.0000
 210.  *  0.2000  3.3000  3.0000  2.4000  1.5000  1.5000  1.5000  1.6000  1.2000
0.5000  0.0000  0.0000  0.0000
 220.  *  0.2000  3.3000  2.9000  2.4000  1.6000  1.6000  1.6000  1.6000  1.1000
0.6000  0.1000  0.1000  0.1000
 230.  *  0.1000  3.4000  3.1000  2.6000  1.6000  1.6000  1.6000  1.6000  1.2000
0.7000  0.1000  0.1000  0.1000
 240.  *  0.1000  3.5000  3.3000  2.8000  1.8000  1.8000  1.8000  1.5000  1.2000
0.7000  0.2000  0.2000  0.2000
 250.  *  0.0000  3.7000  3.3000  3.0000  2.0000  2.0000  2.0000  1.6000  1.3000
0.8000  0.2000  0.2000  0.2000
 260.  *  0.0000  3.7000  3.6000  3.0000  2.3000  2.3000  2.2000  2.1000  1.7000
1.4000  0.4000  0.4000  0.4000
 270.  *  0.0000  3.6000  3.4000  3.0000  2.3000  2.3000  1.9000  3.2000  2.9000
2.7000  1.2000  1.2000  0.9000
 280.  *  0.1000  2.8000  2.4000  1.8000  1.6000  1.6000  1.3000  4.7000  4.4000
4.1000  2.3000  2.3000  2.0000
 290.  *  0.1000  2.1000  1.5000  1.0000  0.7000  0.7000  0.5000  4.8000  4.8000
4.3000  3.0000  2.9000  2.6000
 300.  *  0.3000  1.7000  1.3000  0.6000  0.2000  0.2000  0.2000  4.5000  4.1000
3.6000  2.7000  2.7000  2.7000
 310.  *  0.5000  1.8000  1.3000  0.6000  0.1000  0.1000  0.1000  4.3000  3.8000
3.2000  2.4000  2.4000  2.3000
 320.  *  0.5000  1.9000  1.4000  0.5000  0.1000  0.1000  0.1000  4.2000  3.7000
2.9000  2.1000  2.1000  2.1000
 330.  *  0.7000  1.8000  1.1000  0.1000  0.1000  0.1000  0.1000  4.0000  3.6000
2.6000  1.9000  1.9000  1.9000
```

```
 340.  *  1.5000  1.4000  0.8000  0.0000  0.1000  0.0000  0.0000  3.6000  2.8000
2.0000  1.9000  1.8000  1.8000
 350.  *  3.3000  0.7000  0.2000  0.0000  0.5000  0.2000  0.0000  2.7000  2.3000
2.0000  2.2000  1.8000  1.6000
 360.  *  4.2000  0.1000  0.0000  0.0000  1.2000  0.6000  0.0000  2.2000  2.1000
2.1000  2.9000  2.3000  1.6000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  4.2000  3.7000  3.6000  3.0000  3.9000  3.5000  3.0000  4.8000  4.8000
4.3000  4.9000  4.3000  3.7000
 DEGR. *    360     260     260     250     110     110     110     290     290
290      90      90      90

 THE HIGHEST CONCENTRATION OF   6.0000 PPM OCCURRED AT RECEPTOR    13.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
4,4,5,5,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-25,-25,15,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',30.0,72.9,5.9
'N Leg, E Side - 25 m',-0.4,138.2,5.9
'N Leg, E Side - 50 m',-35.1,212.5,5.9
'N Leg, E Side-Midblk',-219.3,607.6,5.9
'N Leg, W Side-Corner',-111.8,102.4,5.9
'N Leg, W Side - 25 m',-142.2,167.7,5.9
'N Leg, W Side - 50 m',-176.9,242.0,5.9
'N Leg, W Side-Midblk',-361.1,637.1,5.9
'S Leg, E Side-Corner',93.0,-62.1,5.9
'S Leg, E Side - 25 m',123.4,-127.4,5.9
'S Leg, E Side - 50 m',158.1,-201.7,5.9
'S Leg, E Side-Midblk',342.3,-596.9,5.9
'S Leg, W Side-Corner',-34.5,-63.2,5.9
'S Leg, W Side - 25 m',-4.1,-128.5,5.9
'S Leg, W Side - 50 m',30.6,-202.8,5.9
'S Leg, W Side-Midblk',214.8,-597.9,5.9
'E Leg, N Side - 25 m',101.8,79.2,5.9
'E Leg, N Side - 50 m',183.5,86.3,5.9
'E Leg, N Side-Midblk',617.8,124.3,5.9
'W Leg, N Side - 25 m',-181.3,121.1,5.9
'W Leg, N Side - 50 m',-260.5,142.3,5.9
'W Leg, N Side-Midblk',-681.6,255.1,5.9
'E Leg, S Side - 25 m',164.7,-55.9,5.9
'E Leg, S Side - 50 m',246.4,-48.7,5.9
'E Leg, S Side-Midblk',680.7,-10.7,5.9
'W Leg, S Side - 25 m',-104.1,-44.6,5.9
'W Leg, S Side - 50 m',-183.3,-23.4,5.9
'W Leg, S Side-Midblk',-604.4,89.5,5.9
'2016 Capital Beltway & MD193 IC.18',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-22,-10,-529,1077,8800,4.54,0.0,67.7
1
'N Leg Dep - FreeFlow','AG',22,10,-485,1098,8800,3.00,0.0,67.7
1
'S Leg App - FreeFlow','AG',22,10,529,-1077,8800,3.70,0.0,67.7
1
'S Leg Dep - FreeFlow','AG',-22,-10,485,-1098,8800,3.00,0.0,67.7
1
'E Leg App - FreeFlow','AG',3,30,1193,134,11000,3.41,0.0,79.7
1
'E Leg Dep - FreeFlow','AG',-3,-30,1198,75,11000,2.62,0.0,79.7
1
```

```
'W Leg App - FreeFlow','AG',-3,-30,-1167,282,11000,3.41,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',3,30,-1151,340,11000,3.41,0.0,79.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2016 Capital Beltway & MD193 IC.18

DATE : 5/ 2/19
TIME : 8:36:32

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-22.0	-10.0	-529.0	1077.0	*	1199.	335.	AG	8800.	4.5	0.0	67.7		
2. N Leg Dep - FreeFlow	*	22.0	10.0	-485.0	1098.0	*	1200.	335.	AG	8800.	3.0	0.0	67.7		
3. S Leg App - FreeFlow	*	22.0	10.0	529.0	-1077.0	*	1199.	155.	AG	8800.	3.7	0.0	67.7		
4. S Leg Dep - FreeFlow	*	-22.0	-10.0	485.0	-1098.0	*	1200.	155.	AG	8800.	3.0	0.0	67.7		
5. E Leg App - FreeFlow	*	3.0	30.0	1193.0	134.0	*	1195.	85.	AG	11000.	3.4	0.0	79.7		
6. E Leg Dep - FreeFlow	*	-3.0	-30.0	1198.0	75.0	*	1206.	85.	AG	11000.	2.6	0.0	79.7		
7. W Leg App - FreeFlow	*	-3.0	-30.0	-1167.0	282.0	*	1205.	285.	AG	11000.	3.4	0.0	79.7		
8. W Leg Dep - FreeFlow	*	3.0	30.0	-1151.0	340.0	*	1195.	285.	AG	11000.	3.4	0.0	79.7		

PAGE 2
JOB: I-495 & I-270 MLS RUN: 2016 Capital

Beltway & MD193 IC.18

DATE : 5/ 2/19
TIME : 8:36:32

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	30.0	72.9	5.9
2. N Leg, E Side - 25 m	-0.4	138.2	5.9
3. N Leg, E Side - 50 m	-35.1	212.5	5.9
4. N Leg, E Side-Midblk	-219.3	607.6	5.9
5. N Leg, W Side-Corner	-111.8	102.4	5.9
6. N Leg, W Side - 25 m	-142.2	167.7	5.9
7. N Leg, W Side - 50 m	-176.9	242.0	5.9
8. N Leg, W Side-Midblk	-361.1	637.1	5.9
9. S Leg, E Side-Corner	93.0	-62.1	5.9
10. S Leg, E Side - 25 m	123.4	-127.4	5.9
11. S Leg, E Side - 50 m	158.1	-201.7	5.9
12. S Leg, E Side-Midblk	342.3	-596.9	5.9
13. S Leg, W Side-Corner	-34.5	-63.2	5.9
14. S Leg, W Side - 25 m	-4.1	-128.5	5.9
15. S Leg, W Side - 50 m	30.6	-202.8	5.9
16. S Leg, W Side-Midblk	214.8	-597.9	5.9
17. E Leg, N Side - 25 m	101.8	79.2	5.9
18. E Leg, N Side - 50 m	183.5	86.3	5.9
19. E Leg, N Side-Midblk	617.8	124.3	5.9
20. W Leg, N Side - 25 m	-181.3	121.1	5.9
21. W Leg, N Side - 50 m	-260.5	142.3	5.9
22. W Leg, N Side-Midblk	-681.6	255.1	5.9
23. E Leg, S Side - 25 m	164.7	-55.9	5.9
24. E Leg, S Side - 50 m	246.4	-48.7	5.9
25. E Leg, S Side-Midblk	680.7	-10.7	5.9
26. W Leg, S Side - 25 m	-104.1	-44.6	5.9

27. W Leg, S Side - 50 m	*	-183.3	-23.4	5.9 *
28. W Leg, S Side-Midblk	*	-604.4	89.5	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.1000	0.1000	0.1000	0.1000	2.1000	2.1000	2.1000	2.1000	1.5000	1.0000	0.7000	0.4000	3.7000	2.8000	2.3000
20.	* 0.2000	0.1000	0.1000	0.1000	1.9000	1.9000	1.9000	1.9000	1.5000	1.0000	0.7000	0.4000	3.4000	2.3000	2.1000
30.	* 0.2000	0.1000	0.1000	0.1000	1.7000	1.7000	1.7000	1.7000	1.6000	1.0000	0.8000	0.4000	3.3000	2.3000	2.1000
40.	* 0.1000	0.0000	0.0000	0.0000	1.7000	1.6000	1.6000	1.6000	1.6000	1.0000	0.7000	0.3000	3.2000	2.3000	2.1000
50.	* 0.1000	0.0000	0.0000	0.0000	1.7000	1.6000	1.6000	1.6000	1.7000	1.0000	0.8000	0.2000	3.2000	2.4000	2.1000
60.	* 0.2000	0.0000	0.0000	0.0000	1.8000	1.7000	1.7000	1.7000	2.0000	1.1000	0.8000	0.0000	3.4000	2.6000	2.2000
70.	* 0.5000	0.0000	0.0000	0.0000	1.9000	1.7000	1.7000	1.7000	2.2000	1.1000	0.6000	0.0000	3.9000	2.5000	2.1000
80.	* 1.3000	0.3000	0.1000	0.0000	2.1000	1.7000	1.6000	1.6000	2.0000	0.7000	0.3000	0.0000	3.6000	2.1000	1.6000
90.	* 2.2000	0.7000	0.3000	0.0000	2.9000	2.2000	1.9000	1.6000	1.1000	0.2000	0.0000	0.0000	3.0000	1.6000	1.4000
100.	* 2.5000	1.2000	0.7000	0.1000	3.6000	2.6000	2.3000	1.7000	0.4000	0.1000	0.1000	0.1000	2.0000	1.4000	1.4000
110.	* 2.2000	1.2000	0.9000	0.3000	4.1000	2.8000	2.6000	2.1000	0.2000	0.1000	0.1000	0.1000	1.8000	1.6000	1.6000
120.	* 2.0000	1.2000	0.9000	0.4000	4.3000	3.0000	2.7000	2.4000	0.2000	0.1000	0.1000	0.1000	1.7000	1.7000	1.7000

130. * 1.9000 1.2000 0.8000 0.5000 4.3000 3.5000 3.1000 2.7000 0.3000
0.2000 0.2000 0.2000 2.0000 2.0000 2.0000
140. * 2.0000 1.3000 1.2000 0.7000 4.6000 3.7000 3.5000 3.1000 0.6000
0.5000 0.4000 0.4000 2.2000 2.2000 2.2000
150. * 2.8000 2.1000 1.9000 1.5000 4.3000 3.7000 3.4000 3.2000 1.3000
1.3000 1.3000 1.1000 2.0000 2.0000 2.0000
160. * 3.6000 3.0000 2.7000 2.6000 3.2000 2.7000 2.2000 2.0000 2.2000
2.2000 2.1000 1.8000 1.2000 1.1000 1.1000
170. * 3.8000 3.3000 3.0000 2.7000 2.2000 1.8000 1.3000 0.9000 2.3000
2.3000 2.3000 2.1000 0.4000 0.4000 0.4000
180. * 3.6000 2.9000 2.9000 2.5000 1.8000 1.3000 1.1000 0.6000 2.0000
2.0000 2.0000 2.0000 0.2000 0.2000 0.2000
190. * 3.4000 2.8000 2.5000 2.3000 1.8000 1.2000 1.0000 0.5000 1.9000
1.9000 1.9000 1.9000 0.1000 0.1000 0.1000
200. * 3.1000 2.7000 2.5000 2.1000 1.8000 1.2000 1.0000 0.5000 1.6000
1.6000 1.6000 1.6000 0.1000 0.1000 0.1000
210. * 3.2000 2.6000 2.3000 2.0000 1.7000 1.2000 1.0000 0.5000 1.6000
1.5000 1.5000 1.5000 0.1000 0.1000 0.1000
220. * 3.2000 2.4000 2.2000 1.8000 1.7000 1.3000 1.0000 0.5000 1.5000
1.4000 1.4000 1.4000 0.1000 0.0000 0.0000
230. * 3.3000 2.5000 2.2000 1.8000 1.8000 1.2000 0.9000 0.4000 1.5000
1.4000 1.4000 1.4000 0.1000 0.0000 0.0000
240. * 3.4000 2.7000 2.4000 1.9000 1.9000 1.2000 0.9000 0.3000 1.6000
1.5000 1.5000 1.5000 0.1000 0.0000 0.0000
250. * 3.7000 2.7000 2.4000 1.8000 2.1000 1.3000 0.9000 0.2000 1.7000
1.5000 1.5000 1.5000 0.1000 0.0000 0.0000
260. * 3.7000 2.7000 2.3000 1.5000 2.4000 1.4000 0.9000 0.0000 1.9000
1.4000 1.4000 1.4000 0.2000 0.0000 0.0000
270. * 3.9000 2.7000 2.3000 1.4000 2.7000 1.4000 0.9000 0.1000 2.6000
1.5000 1.4000 1.4000 0.5000 0.0000 0.0000
280. * 3.6000 2.4000 2.0000 1.6000 2.4000 1.0000 0.5000 0.1000 3.8000
2.2000 1.8000 1.5000 1.4000 0.4000 0.2000
290. * 2.7000 2.0000 1.8000 1.7000 1.4000 0.4000 0.2000 0.1000 4.7000
3.1000 2.4000 1.6000 2.4000 1.0000 0.6000
300. * 2.1000 1.9000 1.9000 1.9000 0.6000 0.1000 0.1000 0.1000 4.6000
3.4000 2.9000 2.1000 2.7000 1.4000 1.0000
310. * 2.1000 2.1000 2.1000 2.1000 0.4000 0.2000 0.2000 0.2000 4.3000
3.6000 3.2000 2.4000 2.6000 1.5000 1.1000
320. * 2.4000 2.3000 2.3000 2.1000 0.7000 0.6000 0.5000 0.5000 4.2000
3.6000 3.3000 3.0000 2.6000 1.7000 1.4000
330. * 2.1000 2.1000 2.1000 1.7000 1.7000 1.5000 1.5000 1.2000 3.7000
3.5000 3.1000 2.9000 3.4000 2.6000 2.3000
340. * 1.2000 1.2000 1.2000 1.0000 2.7000 2.5000 2.4000 2.1000 2.7000
2.2000 2.0000 1.6000 4.3000 3.3000 2.9000
350. * 0.5000 0.5000 0.5000 0.3000 2.8000 2.7000 2.7000 2.5000 1.9000
1.4000 1.1000 0.7000 4.1000 3.5000 3.0000
360. * 0.2000 0.2000 0.2000 0.2000 2.4000 2.4000 2.4000 2.3000 1.5000
1.1000 0.8000 0.5000 3.8000 3.0000 2.8000

```
------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  3.9000  3.3000  3.0000  2.7000  4.6000  3.7000  3.5000  3.2000  4.7000
3.6000  3.3000  3.0000  4.3000  3.5000  3.0000
 DEGR. *    270     170     170     170     140     140     140     150     290
320     320     320     340     350     350
```


JOB: I-495 & I-270 MLS RUN: 2016 Capital Beltway & MD193 IC.18

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  2.0000  0.0000  0.0000  0.0000  1.2000  0.9000  0.2000  1.4000  1.4000
1.4000  2.9000  2.6000  2.0000
  20.  *  1.9000  0.1000  0.1000  0.1000  1.2000  0.8000  0.3000  1.4000  1.4000
1.4000  2.9000  2.5000  2.0000
  30.  *  1.7000  0.1000  0.1000  0.1000  1.0000  0.8000  0.3000  1.5000  1.5000
1.5000  2.6000  2.4000  1.9000
  40.  *  1.6000  0.1000  0.1000  0.1000  1.1000  0.9000  0.4000  1.6000  1.6000
1.6000  2.7000  2.4000  1.9000
  50.  *  1.5000  0.1000  0.1000  0.1000  1.1000  0.9000  0.4000  1.7000  1.7000
1.7000  3.0000  2.7000  2.1000
  60.  *  1.6000  0.2000  0.2000  0.2000  1.1000  0.9000  0.4000  2.0000  2.0000
1.9000  3.1000  2.8000  2.2000
  70.  *  1.4000  0.5000  0.4000  0.4000  1.1000  0.9000  0.4000  2.2000  2.2000
1.9000  3.7000  3.3000  2.4000
  80.  *  1.3000  1.3000  1.3000  1.1000  1.5000  1.2000  0.5000  1.9000  1.8000
1.5000  3.9000  3.5000  2.8000
  90.  *  1.3000  2.2000  2.2000  1.9000  2.0000  1.7000  1.0000  1.1000  1.0000
0.8000  2.9000  3.3000  3.2000
```

```
 100.  *  1.4000  2.4000  2.4000  2.2000  2.8000  2.3000  1.9000  0.3000  0.3000
0.3000  2.1000  2.3000  2.8000
 110.  *  1.6000  2.2000  2.2000  2.1000  3.2000  3.0000  2.7000  0.1000  0.1000
0.1000  1.6000  1.3000  1.6000
 120.  *  1.7000  2.0000  2.0000  2.0000  3.3000  3.1000  3.0000  0.1000  0.1000
0.1000  1.2000  1.1000  0.8000
 130.  *  1.9000  1.7000  1.7000  1.7000  3.4000  3.1000  2.7000  0.1000  0.1000
0.1000  1.2000  1.0000  0.4000
 140.  *  2.0000  1.6000  1.6000  1.6000  3.2000  2.8000  2.3000  0.1000  0.1000
0.1000  1.2000  0.8000  0.3000
 150.  *  1.6000  1.8000  1.6000  1.5000  2.6000  2.3000  1.9000  0.3000  0.0000
0.0000  0.8000  0.5000  0.1000
 160.  *  0.9000  2.2000  1.8000  1.5000  2.1000  2.0000  1.8000  0.6000  0.3000
0.0000  0.4000  0.2000  0.1000
 170.  *  0.3000  2.7000  2.2000  1.6000  1.6000  1.6000  1.6000  1.0000  0.6000
0.0000  0.1000  0.1000  0.1000
 180.  *  0.2000  2.7000  2.3000  1.7000  1.6000  1.6000  1.6000  1.0000  0.7000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  2.5000  2.2000  1.7000  1.7000  1.7000  1.7000  1.0000  0.7000
0.2000  0.0000  0.0000  0.0000
 200.  *  0.1000  2.3000  2.2000  1.8000  1.7000  1.7000  1.7000  1.0000  0.7000
0.2000  0.0000  0.0000  0.0000
 210.  *  0.1000  2.5000  2.3000  1.9000  1.6000  1.6000  1.6000  0.9000  0.8000
0.4000  0.0000  0.0000  0.0000
 220.  *  0.0000  2.7000  2.2000  2.0000  1.6000  1.6000  1.6000  0.9000  0.6000
0.4000  0.1000  0.1000  0.1000
 230.  *  0.0000  2.6000  2.3000  2.3000  1.8000  1.8000  1.8000  0.9000  0.6000
0.3000  0.1000  0.1000  0.1000
 240.  *  0.0000  2.8000  2.6000  2.3000  1.9000  1.9000  1.9000  0.9000  0.6000
0.3000  0.1000  0.1000  0.1000
 250.  *  0.0000  2.8000  2.7000  2.7000  2.1000  2.1000  2.1000  1.0000  0.7000
0.5000  0.1000  0.1000  0.1000
 260.  *  0.0000  3.0000  2.6000  2.6000  2.4000  2.4000  2.2000  1.5000  1.3000
1.3000  0.2000  0.2000  0.2000
 270.  *  0.0000  3.0000  2.5000  1.9000  2.6000  2.6000  2.3000  2.4000  2.3000
2.5000  0.5000  0.5000  0.4000
 280.  *  0.1000  2.3000  1.9000  1.0000  2.3000  2.2000  1.8000  3.3000  3.1000
2.8000  1.3000  1.3000  1.1000
 290.  *  0.1000  1.6000  1.2000  0.5000  1.3000  1.3000  1.1000  3.8000  3.2000
2.5000  2.4000  2.3000  2.0000
 300.  *  0.3000  1.3000  0.8000  0.4000  0.5000  0.5000  0.4000  3.3000  2.7000
2.0000  2.6000  2.6000  2.3000
 310.  *  0.6000  1.2000  0.8000  0.3000  0.2000  0.2000  0.2000  3.0000  2.4000
1.8000  2.4000  2.4000  2.2000
 320.  *  0.8000  1.2000  0.7000  0.1000  0.1000  0.1000  0.1000  2.6000  2.2000
1.5000  2.1000  2.1000  2.1000
 330.  *  1.7000  0.8000  0.5000  0.1000  0.4000  0.2000  0.1000  2.2000  1.8000
1.4000  2.3000  2.0000  1.9000
```

```
 340.  *  2.6000  0.2000  0.0000  0.0000  0.9000  0.5000  0.1000  1.6000  1.4000
1.4000  2.8000  2.2000  1.8000
 350.  *  2.4000  0.0000  0.0000  0.0000  1.4000  0.8000  0.1000  1.4000  1.4000
1.4000  2.9000  2.4000  1.6000
 360.  *  2.2000  0.0000  0.0000  0.0000  1.3000  0.9000  0.0000  1.4000  1.4000
1.4000  2.9000  2.5000  1.7000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  2.6000  3.0000  2.7000  2.7000  3.4000  3.1000  3.0000  3.8000  3.2000
2.8000  3.9000  3.5000  3.2000
 DEGR. *    340     270     250     250     130     120     120     290     290
280      80      80      90

 THE HIGHEST CONCENTRATION OF   4.7000 PPM OCCURRED AT RECEPTOR     9.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
4,4,5,6,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,15,-15,7.5,7.5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',39.3,77.5,5.9
'N Leg, E Side - 25 m',20.6,147.1,5.9
'N Leg, E Side - 50 m',-0.6,226.3,5.9
'N Leg, E Side-Midblk',-113.4,647.4,5.9
'N Leg, W Side-Corner',-85.2,93.9,5.9
'N Leg, W Side - 25 m',-103.9,163.5,5.9
'N Leg, W Side - 50 m',-125.1,242.7,5.9
'N Leg, W Side-Midblk',-237.9,663.8,5.9
'S Leg, E Side-Corner',39.7,-75.8,5.9
'S Leg, E Side - 25 m',21.1,-145.4,5.9
'S Leg, E Side - 50 m',-0.1,-224.6,5.9
'S Leg, E Side-Midblk',-113.0,-645.7,5.9
'S Leg, W Side-Corner',-76.3,-60.6,5.9
'S Leg, W Side - 25 m',-94.9,-130.1,5.9
'S Leg, W Side - 50 m',-116.1,-209.4,5.9
'S Leg, W Side-Midblk',-229.0,-630.5,5.9
'E Leg, N Side - 25 m',110.7,68.1,5.9
'E Leg, N Side - 50 m',192.0,57.4,5.9
'E Leg, N Side-Midblk',624.2,0.5,5.9
'W Leg, N Side - 25 m',-156.6,103.3,5.9
'W Leg, N Side - 50 m',-237.9,114.0,5.9
'W Leg, N Side-Midblk',-670.2,170.9,5.9
'E Leg, S Side - 25 m',111.1,-85.2,5.9
'E Leg, S Side - 50 m',192.5,-95.9,5.9
'E Leg, S Side-Midblk',624.7,-152.8,5.9
'W Leg, S Side - 25 m',-147.7,-51.2,5.9
'W Leg, S Side - 50 m',-229.0,-40.5,5.9
'W Leg, S Side-Midblk',-661.2,16.4,5.9
'2016 I495 & MD650 IC.17',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-25,0,-334,1153,8800,3.70,0.0,67.7
1
'N Leg Dep - FreeFlow','AG',25,0,-287,1165,8800,3.70,0.0,67.7
1
'S Leg App - FreeFlow','AG',25,0,-287,-1165,8800,3.70,0.0,67.7
1
'S Leg Dep - FreeFlow','AG',-25,0,-334,-1153,8800,3.70,0.0,67.7
1
'E Leg App - FreeFlow','AG',5,36,1194,-121,13200,4.41,0.0,91.7
1
'E Leg Dep - FreeFlow','AG',-4,-30,1186,-186,11000,2.62,0.0,79.7
1
```

```
'W Leg App - FreeFlow','AG',-4,-30,-1194,127,11000,4.41,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',5,36,-1185,192,13200,2.62,0.0,91.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2016 I495 & MD650 IC.17

DATE : 5/ 2/19
TIME : 13:22:33

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-25.0	0.0	-334.0	1153.0	*	1194.	345.	AG	8800.	3.7	0.0	67.7		
2. N Leg Dep - FreeFlow	*	25.0	0.0	-287.0	1165.0	*	1206.	345.	AG	8800.	3.7	0.0	67.7		
3. S Leg App - FreeFlow	*	25.0	0.0	-287.0	-1165.0	*	1206.	195.	AG	8800.	3.7	0.0	67.7		
4. S Leg Dep - FreeFlow	*	-25.0	0.0	-334.0	-1153.0	*	1194.	195.	AG	8800.	3.7	0.0	67.7		
5. E Leg App - FreeFlow	*	5.0	36.0	1194.0	-121.0	*	1199.	98.	AG	13200.	4.4	0.0	91.7		
6. E Leg Dep - FreeFlow	*	-4.0	-30.0	1186.0	-186.0	*	1200.	97.	AG	11000.	2.6	0.0	79.7		
7. W Leg App - FreeFlow	*	-4.0	-30.0	-1194.0	127.0	*	1200.	278.	AG	11000.	4.4	0.0	79.7		
8. W Leg Dep - FreeFlow	*	5.0	36.0	-1185.0	192.0	*	1200.	277.	AG	13200.	2.6	0.0	91.7		

MD650 IC.17

DATE : 5/ 2/19
TIME : 13:22:33

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	39.3	77.5	5.9
2. N Leg, E Side - 25 m	20.6	147.1	5.9
3. N Leg, E Side - 50 m	-0.6	226.3	5.9
4. N Leg, E Side-Midblk	-113.4	647.4	5.9
5. N Leg, W Side-Corner	-85.2	93.9	5.9
6. N Leg, W Side - 25 m	-103.9	163.5	5.9
7. N Leg, W Side - 50 m	-125.1	242.7	5.9
8. N Leg, W Side-Midblk	-237.9	663.8	5.9
9. S Leg, E Side-Corner	39.7	-75.8	5.9
10. S Leg, E Side - 25 m	21.1	-145.4	5.9
11. S Leg, E Side - 50 m	-0.1	-224.6	5.9
12. S Leg, E Side-Midblk	-113.0	-645.7	5.9
13. S Leg, W Side-Corner	-76.3	-60.6	5.9
14. S Leg, W Side - 25 m	-94.9	-130.1	5.9
15. S Leg, W Side - 50 m	-116.1	-209.4	5.9
16. S Leg, W Side-Midblk	-229.0	-630.5	5.9
17. E Leg, N Side - 25 m	110.7	68.1	5.9
18. E Leg, N Side - 50 m	192.0	57.4	5.9
19. E Leg, N Side-Midblk	624.2	0.5	5.9
20. W Leg, N Side - 25 m	-156.6	103.3	5.9
21. W Leg, N Side - 50 m	-237.9	114.0	5.9
22. W Leg, N Side-Midblk	-670.2	170.9	5.9
23. E Leg, S Side - 25 m	111.1	-85.2	5.9
24. E Leg, S Side - 50 m	192.5	-95.9	5.9
25. E Leg, S Side-Midblk	624.7	-152.8	5.9
26. W Leg, S Side - 25 m	-147.7	-51.2	5.9

27. W Leg, S Side - 50 m *	-229.0	-40.5	5.9	*
28. W Leg, S Side-Midblk *	-661.2	16.4	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.2000	0.2000	0.2000	0.2000	2.2000	2.2000	2.2000	2.1000	2.6000	2.3000	2.5000	2.7000	3.8000	2.8000	2.3000
20.	* 0.1000	0.1000	0.1000	0.1000	2.0000	2.0000	2.0000	2.0000	2.2000	1.8000	1.6000	1.6000	3.8000	2.9000	2.7000
30.	* 0.2000	0.1000	0.1000	0.1000	1.8000	1.8000	1.8000	1.8000	2.0000	1.5000	1.1000	0.7000	3.6000	3.1000	2.8000
40.	* 0.2000	0.1000	0.1000	0.1000	1.7000	1.6000	1.6000	1.6000	1.9000	1.3000	1.0000	0.6000	4.0000	3.2000	2.7000
50.	* 0.2000	0.0000	0.0000	0.0000	1.6000	1.5000	1.5000	1.5000	2.1000	1.3000	1.0000	0.5000	4.1000	3.1000	2.6000
60.	* 0.2000	0.0000	0.0000	0.0000	1.6000	1.5000	1.5000	1.5000	2.2000	1.4000	1.0000	0.4000	4.2000	3.0000	2.6000
70.	* 0.3000	0.0000	0.0000	0.0000	1.7000	1.6000	1.6000	1.6000	2.5000	1.4000	1.1000	0.3000	4.3000	2.9000	2.6000
80.	* 0.5000	0.0000	0.0000	0.0000	2.0000	1.6000	1.6000	1.6000	2.6000	1.4000	0.8000	0.0000	4.5000	2.9000	2.3000
90.	* 1.5000	0.2000	0.1000	0.0000	2.8000	1.7000	1.6000	1.5000	2.4000	0.9000	0.4000	0.0000	4.3000	2.5000	2.0000
100.	* 2.8000	0.8000	0.4000	0.0000	4.0000	2.4000	1.9000	1.5000	1.5000	0.4000	0.2000	0.0000	3.4000	2.0000	1.8000
110.	* 3.4000	1.5000	0.9000	0.1000	4.4000	3.0000	2.5000	1.7000	0.6000	0.0000	0.0000	0.0000	2.3000	1.6000	1.6000
120.	* 3.1000	1.7000	1.2000	0.4000	4.1000	3.2000	2.9000	2.1000	0.2000	0.0000	0.0000	0.0000	1.8000	1.5000	1.5000

130. * 2.7000 1.6000 1.2000 0.5000 3.8000 3.3000 2.9000 2.4000 0.1000
0.0000 0.0000 0.0000 1.6000 1.5000 1.5000
140. * 2.4000 1.6000 1.2000 0.6000 3.6000 3.4000 2.9000 2.5000 0.2000
0.1000 0.1000 0.1000 1.7000 1.6000 1.6000
150. * 2.4000 1.6000 1.2000 0.8000 3.5000 3.1000 2.9000 2.7000 0.2000
0.1000 0.1000 0.1000 1.9000 1.8000 1.8000
160. * 2.5000 1.9000 1.6000 1.6000 3.5000 2.9000 2.7000 2.7000 0.2000
0.1000 0.1000 0.1000 2.1000 2.0000 2.0000
170. * 2.8000 2.5000 2.6000 2.7000 3.3000 2.5000 2.4000 1.9000 0.2000
0.2000 0.2000 0.2000 2.2000 2.2000 2.2000
180. * 3.5000 3.2000 3.4000 3.1000 3.1000 2.3000 1.8000 1.1000 0.5000
0.5000 0.5000 0.4000 2.5000 2.5000 2.5000
190. * 4.6000 4.1000 3.7000 2.8000 2.7000 1.9000 1.5000 0.8000 1.3000
1.3000 1.3000 1.1000 2.3000 2.3000 2.3000
200. * 5.0000 3.9000 3.3000 2.4000 2.1000 1.3000 1.0000 0.5000 2.3000
2.3000 2.3000 1.9000 1.3000 1.3000 1.3000
210. * 4.7000 3.4000 2.6000 2.2000 1.8000 1.2000 0.9000 0.5000 2.5000
2.5000 2.5000 2.2000 0.6000 0.5000 0.5000
220. * 4.1000 2.8000 2.4000 2.0000 1.8000 1.2000 0.9000 0.5000 2.2000
2.2000 2.2000 2.1000 0.3000 0.2000 0.2000
230. * 4.0000 2.7000 2.4000 1.9000 1.8000 1.2000 0.9000 0.4000 2.0000
2.0000 2.0000 2.0000 0.2000 0.1000 0.1000
240. * 3.8000 2.7000 2.4000 1.8000 2.1000 1.2000 0.9000 0.2000 1.8000
1.8000 1.8000 1.8000 0.3000 0.1000 0.1000
250. * 4.1000 2.9000 2.6000 1.8000 2.2000 1.3000 0.9000 0.1000 1.8000
1.6000 1.6000 1.6000 0.3000 0.1000 0.1000
260. * 4.4000 2.9000 2.4000 1.6000 2.5000 1.3000 0.8000 0.0000 1.9000
1.5000 1.5000 1.5000 0.5000 0.0000 0.0000
270. * 4.1000 2.4000 2.0000 1.5000 2.3000 0.9000 0.4000 0.0000 2.7000
1.7000 1.5000 1.5000 1.3000 0.2000 0.0000
280. * 3.1000 1.8000 1.6000 1.5000 1.5000 0.3000 0.1000 0.0000 4.1000
2.4000 1.9000 1.6000 2.6000 0.7000 0.3000
290. * 2.2000 1.6000 1.6000 1.6000 0.7000 0.1000 0.1000 0.1000 4.5000
2.9000 2.3000 1.6000 3.1000 1.3000 0.7000
300. * 1.9000 1.8000 1.8000 1.8000 0.3000 0.1000 0.1000 0.1000 4.0000
3.0000 2.4000 1.6000 2.8000 1.4000 0.9000
310. * 2.0000 2.0000 2.0000 2.0000 0.2000 0.1000 0.1000 0.1000 4.0000
2.9000 2.4000 1.8000 2.5000 1.4000 0.9000
320. * 2.2000 2.2000 2.2000 2.1000 0.3000 0.2000 0.2000 0.2000 3.9000
2.9000 2.5000 1.9000 2.3000 1.3000 1.0000
330. * 2.5000 2.5000 2.5000 2.2000 0.6000 0.5000 0.4000 0.4000 4.4000
3.4000 2.7000 2.2000 2.3000 1.3000 0.9000
340. * 2.3000 2.3000 2.3000 1.9000 1.4000 1.3000 1.3000 1.0000 4.7000
3.9000 3.3000 2.4000 2.6000 1.6000 1.1000
350. * 1.3000 1.3000 1.3000 1.1000 2.3000 2.3000 2.2000 1.9000 4.3000
4.1000 3.7000 2.7000 3.2000 2.1000 1.5000
360. * 0.5000 0.5000 0.5000 0.4000 2.5000 2.5000 2.5000 2.2000 3.4000
3.1000 3.4000 3.1000 3.7000 2.5000 2.0000

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  5.0000  4.1000  3.7000  3.1000  4.4000  3.4000  2.9000  2.7000  4.7000
4.1000  3.7000  3.1000  4.5000  3.2000  2.8000
 DEGR. *    200     190     190     180     110     140     130     150     340
350     350     360      80      40      30
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  1.9000  0.0000  0.0000  0.0000  1.2000  0.7000  0.0000  1.8000  1.8000
1.8000  2.9000  2.7000  2.0000
  20.  *  2.7000  0.0000  0.0000  0.0000  1.1000  0.7000  0.2000  1.7000  1.7000
1.7000  2.8000  2.6000  2.1000
  30.  *  2.7000  0.1000  0.1000  0.1000  1.0000  0.7000  0.2000  1.8000  1.8000
1.8000  2.8000  2.5000  2.1000
  40.  *  2.5000  0.1000  0.1000  0.1000  1.0000  0.8000  0.4000  1.8000  1.8000
1.8000  2.9000  2.6000  2.2000
  50.  *  2.4000  0.2000  0.2000  0.2000  1.0000  0.8000  0.4000  2.0000  2.0000
2.0000  3.0000  2.8000  2.3000
  60.  *  2.1000  0.2000  0.2000  0.2000  1.0000  0.7000  0.4000  2.1000  2.1000
2.1000  3.5000  3.0000  2.6000
  70.  *  1.9000  0.2000  0.2000  0.2000  1.0000  0.8000  0.4000  2.4000  2.4000
2.2000  3.7000  3.4000  2.8000
  80.  *  1.5000  0.5000  0.5000  0.5000  1.3000  1.0000  0.6000  2.6000  2.6000
2.3000  4.1000  3.7000  3.4000
  90.  *  1.5000  1.5000  1.4000  1.2000  2.1000  1.8000  1.4000  2.3000  2.3000
1.9000  3.9000  3.8000  3.6000
```

```
 100.  *  1.6000  2.8000  2.7000  2.3000  3.2000  2.9000  2.5000  1.4000  1.4000
1.1000  2.9000  2.6000  2.5000
 110.  *  1.6000  3.3000  3.2000  2.9000  3.6000  3.3000  2.8000  0.6000  0.6000
0.4000  1.6000  1.4000  1.1000
 120.  *  1.5000  3.0000  3.0000  2.8000  3.2000  3.0000  2.7000  0.2000  0.2000
0.2000  1.1000  0.9000  0.5000
 130.  *  1.5000  2.6000  2.6000  2.6000  2.9000  2.6000  2.3000  0.1000  0.1000
0.1000  1.1000  0.8000  0.4000
 140.  *  1.6000  2.3000  2.3000  2.3000  2.6000  2.5000  2.1000  0.1000  0.1000
0.1000  1.1000  0.9000  0.4000
 150.  *  1.8000  2.2000  2.2000  2.2000  2.4000  2.4000  2.0000  0.1000  0.1000
0.1000  1.1000  0.8000  0.3000
 160.  *  2.0000  2.0000  2.0000  2.0000  2.5000  2.3000  1.9000  0.1000  0.1000
0.0000  1.2000  0.8000  0.3000
 170.  *  2.1000  1.9000  1.9000  1.9000  2.5000  2.3000  1.8000  0.0000  0.0000
0.0000  1.1000  0.7000  0.1000
 180.  *  2.2000  2.0000  1.9000  1.9000  2.3000  2.1000  1.6000  0.0000  0.0000
0.0000  1.0000  0.6000  0.0000
 190.  *  1.9000  2.6000  2.1000  2.0000  2.2000  1.9000  1.7000  0.3000  0.0000
0.0000  0.7000  0.3000  0.0000
 200.  *  1.1000  3.1000  2.4000  1.9000  1.7000  1.6000  1.6000  0.7000  0.3000
0.0000  0.3000  0.0000  0.0000
 210.  *  0.4000  3.4000  2.8000  2.0000  1.7000  1.7000  1.7000  1.0000  0.7000
0.0000  0.1000  0.1000  0.1000
 220.  *  0.2000  3.4000  3.0000  2.3000  1.7000  1.7000  1.7000  1.2000  0.8000
0.3000  0.1000  0.1000  0.1000
 230.  *  0.1000  3.5000  3.0000  2.5000  1.8000  1.8000  1.8000  1.2000  0.8000
0.3000  0.1000  0.1000  0.1000
 240.  *  0.1000  3.6000  3.4000  2.8000  2.1000  2.1000  2.0000  1.1000  0.8000
0.4000  0.2000  0.2000  0.2000
 250.  *  0.1000  3.9000  3.5000  3.0000  2.2000  2.2000  2.2000  1.0000  0.8000
0.3000  0.2000  0.2000  0.2000
 260.  *  0.0000  4.0000  3.9000  3.5000  2.5000  2.5000  2.2000  1.3000  0.9000
0.5000  0.5000  0.5000  0.4000
 270.  *  0.0000  3.8000  3.6000  3.7000  2.3000  2.3000  1.8000  2.0000  1.6000
1.3000  1.3000  1.3000  1.2000
 280.  *  0.0000  2.7000  2.7000  2.5000  1.4000  1.4000  1.0000  3.1000  2.9000
2.7000  2.6000  2.6000  2.1000
 290.  *  0.0000  1.7000  1.5000  1.3000  0.6000  0.5000  0.4000  3.6000  3.3000
2.9000  3.1000  3.1000  2.7000
 300.  *  0.1000  1.3000  1.0000  0.7000  0.2000  0.2000  0.2000  3.3000  3.0000
2.8000  2.8000  2.8000  2.7000
 310.  *  0.3000  1.3000  0.9000  0.5000  0.1000  0.1000  0.1000  3.2000  2.9000
2.6000  2.5000  2.5000  2.5000
 320.  *  0.4000  1.4000  0.9000  0.4000  0.1000  0.1000  0.1000  3.3000  2.9000
2.3000  2.2000  2.2000  2.2000
 330.  *  0.5000  1.3000  0.8000  0.1000  0.1000  0.1000  0.1000  3.4000  2.8000
2.0000  2.1000  2.1000  2.1000
```

```
 340.  *  0.5000  0.9000  0.4000  0.1000  0.4000  0.1000  0.1000  2.9000  2.3000
1.8000  2.1000  1.9000  1.9000
 350.  *  0.7000  0.3000  0.1000  0.0000  0.7000  0.3000  0.0000  2.2000  1.8000
1.8000  2.4000  2.2000  1.9000
 360.  *  1.1000  0.0000  0.0000  0.0000  1.0000  0.7000  0.0000  1.8000  1.7000
1.7000  2.8000  2.4000  1.9000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  2.7000  4.0000  3.9000  3.7000  3.6000  3.3000  2.8000  3.6000  3.3000
2.9000  4.1000  3.8000  3.6000
 DEGR. *     30     260     260     270     110     110     110     290     290
290      80      90      90

 THE HIGHEST CONCENTRATION OF   5.0000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
7,7,6,7,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-15,-15,-5,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',70.4,100.5,5.9
'N Leg, E Side - 25 m',51.7,170.1,5.9
'N Leg, E Side - 50 m',30.5,249.3,5.9
'N Leg, E Side-Midblk',-82.3,670.4,5.9
'N Leg, W Side-Corner',-119.8,83.9,5.9
'N Leg, W Side - 25 m',-138.4,153.4,5.9
'N Leg, W Side - 50 m',-159.7,232.7,5.9
'N Leg, W Side-Midblk',-272.5,653.8,5.9
'S Leg, E Side-Corner',116.6,-72.1,5.9
'S Leg, E Side - 25 m',135.3,-141.7,5.9
'S Leg, E Side - 50 m',156.5,-220.9,5.9
'S Leg, E Side-Midblk',269.3,-642.0,5.9
'S Leg, W Side-Corner',-73.5,-88.7,5.9
'S Leg, W Side - 25 m',-54.9,-158.3,5.9
'S Leg, W Side - 50 m',-33.7,-237.5,5.9
'S Leg, W Side-Midblk',79.2,-658.6,5.9
'E Leg, N Side - 25 m',142.1,106.8,5.9
'E Leg, N Side - 50 m',223.8,113.9,5.9
'E Leg, N Side-Midblk',658.1,151.9,5.9
'W Leg, N Side - 25 m',-191.5,77.6,5.9
'W Leg, N Side - 50 m',-273.2,70.5,5.9
'W Leg, N Side-Midblk',-707.5,32.5,5.9
'E Leg, S Side - 25 m',188.4,-65.8,5.9
'E Leg, S Side - 50 m',270.1,-58.7,5.9
'E Leg, S Side-Midblk',704.4,-20.7,5.9
'W Leg, S Side - 25 m',-145.3,-95.0,5.9
'W Leg, S Side - 50 m',-227.0,-102.2,5.9
'W Leg, S Side-Midblk',-661.3,-140.2,5.9
'2016 I495 & US50 (11.IC)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-41,-11,-351,1148,15400,4.80,0.0,103.7
1
'N Leg Dep - FreeFlow','AG',41,11,-270,1170,15400,2.89,0.0,103.7
1
'S Leg App - FreeFlow','AG',41,11,351,-1148,15400,2.89,0.0,103.7
1
'S Leg Dep - FreeFlow','AG',-41,-11,270,-1170,15400,6.18,0.0,103.7
1
'E Leg App - FreeFlow','AG',0,42,1192,146,15400,2.89,0.0,103.7
1
'E Leg Dep - FreeFlow','AG',3,-36,1199,69,13200,6.18,0.0,91.7
1
```

'W Leg App - FreeFlow','AG',3,-36,-1192,-140,13200,5.89,0.0,91.7
1
'W Leg Dep - FreeFlow','AG',0,42,-1199,-63,15400,3.06,0.0,103.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2016 I495 & US50 (11.IC)

DATE : 1/16/19
TIME : 15:52:40

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-41.0	-11.0	-351.0	1148.0	*	1200.	345.	AG	15400.	4.8	0.0	****		
2. N Leg Dep - FreeFlow	*	41.0	11.0	-270.0	1170.0	*	1200.	345.	AG	15400.	2.9	0.0	****		
3. S Leg App - FreeFlow	*	41.0	11.0	351.0	-1148.0	*	1200.	165.	AG	15400.	2.9	0.0	****		
4. S Leg Dep - FreeFlow	*	-41.0	-11.0	270.0	-1170.0	*	1200.	165.	AG	15400.	6.2	0.0	****		
5. E Leg App - FreeFlow	*	0.0	42.0	1192.0	146.0	*	1197.	85.	AG	15400.	2.9	0.0	****		
6. E Leg Dep - FreeFlow	*	3.0	-36.0	1199.0	69.0	*	1201.	85.	AG	13200.	6.2	0.0	91.7		
7. W Leg App - FreeFlow	*	3.0	-36.0	-1192.0	-140.0	*	1200.	265.	AG	13200.	5.9	0.0	91.7		
8. W Leg Dep - FreeFlow	*	0.0	42.0	-1199.0	-63.0	*	1204.	265.	AG	15400.	3.1	0.0	****		

US50 (11.IC)

DATE : 1/16/19
TIME : 15:52:40

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	70.4	100.5	5.9
2. N Leg, E Side - 25 m	51.7	170.1	5.9
3. N Leg, E Side - 50 m	30.5	249.3	5.9
4. N Leg, E Side-Midblk	-82.3	670.4	5.9
5. N Leg, W Side-Corner	-119.8	83.9	5.9
6. N Leg, W Side - 25 m	-138.4	153.4	5.9
7. N Leg, W Side - 50 m	-159.7	232.7	5.9
8. N Leg, W Side-Midblk	-272.5	653.8	5.9
9. S Leg, E Side-Corner	116.6	-72.1	5.9
10. S Leg, E Side - 25 m	135.3	-141.7	5.9
11. S Leg, E Side - 50 m	156.5	-220.9	5.9
12. S Leg, E Side-Midblk	269.3	-642.0	5.9
13. S Leg, W Side-Corner	-73.5	-88.7	5.9
14. S Leg, W Side - 25 m	-54.9	-158.3	5.9
15. S Leg, W Side - 50 m	-33.7	-237.5	5.9
16. S Leg, W Side-Midblk	79.2	-658.6	5.9
17. E Leg, N Side - 25 m	142.1	106.8	5.9
18. E Leg, N Side - 50 m	223.8	113.9	5.9
19. E Leg, N Side-Midblk	658.1	151.9	5.9
20. W Leg, N Side - 25 m	-191.5	77.6	5.9
21. W Leg, N Side - 50 m	-273.2	70.5	5.9
22. W Leg, N Side-Midblk	-707.5	32.5	5.9
23. E Leg, S Side - 25 m	188.4	-65.8	5.9
24. E Leg, S Side - 50 m	270.1	-58.7	5.9
25. E Leg, S Side-Midblk	704.4	-20.7	5.9
26. W Leg, S Side - 25 m	-145.3	-95.0	5.9

27. W Leg, S Side - 50 m	*	-227.0	-102.2	5.9 *
28. W Leg, S Side-Midblk	*	-661.3	-140.2	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.2000	0.2000	0.2000	0.2000	3.6000	3.6000	3.6000	3.4000	3.0000	2.0000	1.5000	0.8000	6.8000	5.9000	5.6000
20.	*	0.2000	0.1000	0.1000	0.1000	3.2000	3.1000	3.1000	3.1000	2.9000	1.9000	1.4000	0.7000	6.4000	5.6000	5.1000
30.	*	0.2000	0.1000	0.1000	0.1000	2.9000	2.8000	2.8000	2.8000	3.1000	1.9000	1.4000	0.7000	6.3000	5.1000	4.7000
40.	*	0.2000	0.1000	0.1000	0.1000	2.8000	2.7000	2.7000	2.7000	3.3000	2.0000	1.5000	0.7000	6.4000	5.1000	4.5000
50.	*	0.2000	0.1000	0.1000	0.1000	2.6000	2.5000	2.5000	2.5000	3.7000	2.2000	1.5000	0.5000	6.7000	4.9000	4.4000
60.	*	0.2000	0.0000	0.0000	0.0000	2.6000	2.4000	2.4000	2.4000	4.0000	2.2000	1.4000	0.1000	6.9000	5.1000	4.3000
70.	*	0.4000	0.0000	0.0000	0.0000	2.9000	2.5000	2.5000	2.5000	4.6000	2.0000	1.1000	0.0000	7.6000	5.1000	4.2000
80.	*	1.4000	0.3000	0.1000	0.0000	4.0000	2.8000	2.6000	2.5000	4.1000	1.2000	0.5000	0.0000	7.4000	4.4000	3.6000
90.	*	2.7000	0.9000	0.4000	0.0000	5.3000	3.5000	2.9000	2.4000	2.5000	0.5000	0.1000	0.0000	5.5000	3.4000	3.0000
100.	*	3.4000	1.7000	1.1000	0.1000	6.0000	4.1000	3.6000	2.5000	1.0000	0.2000	0.1000	0.1000	3.9000	3.1000	3.0000
110.	*	3.2000	1.9000	1.4000	0.3000	5.9000	4.4000	4.1000	3.0000	0.5000	0.1000	0.1000	0.1000	3.6000	3.2000	3.2000
120.	*	2.9000	1.9000	1.4000	0.6000	5.7000	4.6000	4.1000	3.3000	0.4000	0.1000	0.1000	0.1000	3.6000	3.5000	3.5000

130. * 2.7000 1.8000 1.3000 0.7000 5.8000 5.1000 4.4000 3.7000 0.3000
0.1000 0.1000 0.1000 4.0000 3.8000 3.8000
140. * 2.6000 1.8000 1.4000 0.8000 6.2000 5.5000 4.9000 4.1000 0.4000
0.2000 0.2000 0.2000 4.6000 4.4000 4.4000
150. * 2.8000 2.2000 1.8000 1.1000 6.9000 6.1000 5.5000 4.8000 0.6000
0.5000 0.4000 0.4000 5.0000 4.9000 4.8000
160. * 3.9000 3.3000 2.8000 2.1000 6.4000 5.8000 5.2000 4.6000 1.5000
1.4000 1.4000 1.0000 4.5000 4.4000 4.3000
170. * 5.3000 4.5000 4.1000 3.7000 4.9000 4.0000 3.6000 2.9000 2.9000
2.7000 2.7000 2.0000 2.7000 2.6000 2.5000
180. * 5.9000 5.1000 4.8000 4.0000 3.2000 2.4000 1.9000 1.3000 3.6000
3.4000 3.4000 2.8000 1.0000 1.0000 1.0000
190. * 5.6000 4.9000 4.3000 3.5000 2.6000 1.9000 1.4000 0.8000 3.4000
3.3000 3.3000 3.0000 0.4000 0.4000 0.4000
200. * 5.3000 4.4000 4.0000 3.2000 2.4000 1.7000 1.3000 0.7000 3.2000
3.1000 3.1000 3.0000 0.4000 0.3000 0.3000
210. * 5.1000 4.1000 3.7000 3.0000 2.5000 1.8000 1.4000 0.7000 3.0000
2.8000 2.8000 2.8000 0.5000 0.3000 0.3000
220. * 5.1000 4.0000 3.5000 2.8000 2.8000 1.9000 1.4000 0.7000 2.8000
2.6000 2.6000 2.6000 0.4000 0.2000 0.2000
230. * 5.1000 4.0000 3.5000 2.7000 2.9000 1.8000 1.4000 0.5000 2.8000
2.5000 2.5000 2.5000 0.5000 0.2000 0.2000
240. * 5.4000 4.0000 3.4000 2.4000 3.2000 1.9000 1.3000 0.2000 2.9000
2.5000 2.5000 2.5000 0.5000 0.1000 0.1000
250. * 5.7000 3.9000 3.1000 2.1000 3.4000 1.7000 1.0000 0.0000 3.3000
2.5000 2.4000 2.4000 0.9000 0.1000 0.0000
260. * 5.0000 3.2000 2.6000 2.1000 2.7000 1.0000 0.4000 0.0000 4.9000
2.9000 2.5000 2.4000 2.4000 0.5000 0.1000
270. * 3.8000 2.5000 2.3000 2.2000 1.5000 0.3000 0.0000 0.0000 6.7000
3.8000 3.1000 2.5000 4.1000 1.4000 0.6000
280. * 2.7000 2.2000 2.2000 2.2000 0.6000 0.1000 0.1000 0.1000 7.1000
4.6000 3.8000 2.6000 4.6000 2.2000 1.3000
290. * 2.5000 2.3000 2.3000 2.3000 0.4000 0.2000 0.2000 0.2000 6.5000
4.7000 4.1000 2.9000 4.2000 2.3000 1.6000
300. * 2.6000 2.5000 2.5000 2.5000 0.3000 0.2000 0.2000 0.2000 6.2000
4.9000 4.3000 3.4000 3.7000 2.3000 1.8000
310. * 2.8000 2.7000 2.7000 2.7000 0.3000 0.2000 0.2000 0.2000 5.9000
5.0000 4.2000 3.6000 3.4000 2.2000 1.6000
320. * 3.1000 3.0000 3.0000 2.7000 0.4000 0.3000 0.3000 0.3000 6.0000
4.9000 4.5000 3.9000 3.3000 2.2000 1.6000
330. * 3.3000 3.1000 3.1000 2.6000 0.9000 0.8000 0.7000 0.6000 5.9000
5.2000 4.7000 4.4000 3.6000 2.6000 2.2000
340. * 2.7000 2.5000 2.5000 2.0000 2.0000 2.0000 2.0000 1.5000 5.3000
4.6000 4.2000 3.7000 5.0000 4.1000 3.7000
350. * 1.5000 1.3000 1.3000 1.1000 3.6000 3.5000 3.4000 2.8000 4.4000
3.2000 2.8000 2.1000 6.8000 5.8000 5.5000
360. * 0.5000 0.5000 0.5000 0.4000 3.9000 3.9000 3.9000 3.4000 3.3000
2.3000 1.7000 1.1000 7.3000 6.4000 6.1000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  5.9000  5.1000  4.8000  4.0000  6.9000  6.1000  5.5000  4.8000  7.1000
5.2000  4.7000  4.4000  7.6000  6.4000  6.1000
 DEGR. *    180     180     180     180     150     150     150     150     280
330     330     330      70     360     360
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  5.0000  0.0000  0.0000  0.0000  1.9000  1.3000  0.1000  2.7000  2.7000
2.7000  4.6000  3.9000  2.9000
  20.  *  4.4000  0.1000  0.1000  0.1000  1.9000  1.4000  0.4000  2.8000  2.8000
2.8000  4.4000  4.0000  3.1000
  30.  *  4.1000  0.1000  0.1000  0.1000  1.9000  1.4000  0.6000  3.0000  3.0000
3.0000  4.7000  4.3000  3.6000
  40.  *  3.8000  0.1000  0.1000  0.1000  1.8000  1.3000  0.7000  3.2000  3.2000
3.2000  4.8000  4.4000  3.8000
  50.  *  3.5000  0.1000  0.1000  0.1000  1.8000  1.3000  0.6000  3.6000  3.6000
3.6000  5.4000  4.6000  4.0000
  60.  *  3.2000  0.2000  0.2000  0.2000  1.8000  1.4000  0.7000  4.0000  4.0000
3.8000  5.9000  5.2000  4.5000
  70.  *  3.0000  0.4000  0.4000  0.4000  2.1000  1.7000  1.0000  4.6000  4.5000
4.0000  6.7000  6.1000  5.1000
  80.  *  3.0000  1.4000  1.4000  1.0000  3.2000  2.9000  2.3000  4.1000  4.0000
3.4000  6.1000  5.7000  5.0000
  90.  *  2.9000  2.6000  2.6000  2.0000  4.6000  4.3000  3.8000  2.5000  2.4000
2.0000  4.6000  3.9000  3.2000
```

```
 100.  *  3.0000  3.3000  3.2000  2.7000  5.0000  4.6000  4.1000  0.9000  0.9000
0.8000  2.9000  2.3000  1.5000
 110.  *  3.2000  3.1000  3.1000  2.9000  5.0000  4.5000  3.7000  0.4000  0.4000
0.4000  2.4000  1.7000  1.1000
 120.  *  3.5000  2.8000  2.8000  2.7000  4.9000  4.2000  3.5000  0.3000  0.3000
0.3000  2.3000  1.7000  0.9000
 130.  *  3.8000  2.6000  2.6000  2.6000  4.7000  4.2000  3.2000  0.2000  0.2000
0.2000  2.4000  1.8000  0.8000
 140.  *  4.2000  2.4000  2.4000  2.4000  4.8000  3.9000  2.7000  0.2000  0.2000
0.2000  2.5000  1.8000  0.5000
 150.  *  4.3000  2.3000  2.3000  2.3000  4.5000  3.6000  2.3000  0.1000  0.1000
0.1000  2.4000  1.4000  0.2000
 160.  *  3.6000  2.6000  2.4000  2.3000  3.8000  2.9000  2.2000  0.3000  0.0000
0.0000  1.4000  0.6000  0.0000
 170.  *  2.2000  3.4000  2.9000  2.3000  2.9000  2.4000  2.3000  1.0000  0.4000
0.0000  0.5000  0.1000  0.0000
 180.  *  0.9000  4.2000  3.4000  2.3000  2.4000  2.3000  2.3000  1.7000  0.9000
0.0000  0.1000  0.0000  0.0000
 190.  *  0.4000  4.3000  3.8000  2.5000  2.2000  2.2000  2.2000  2.0000  1.4000
0.2000  0.0000  0.0000  0.0000
 200.  *  0.3000  4.2000  3.7000  2.8000  2.2000  2.2000  2.2000  2.1000  1.5000
0.4000  0.1000  0.1000  0.1000
 210.  *  0.3000  4.2000  3.8000  3.0000  2.3000  2.3000  2.3000  2.1000  1.6000
0.8000  0.2000  0.2000  0.2000
 220.  *  0.2000  4.4000  3.7000  3.2000  2.6000  2.6000  2.6000  1.9000  1.5000
0.8000  0.2000  0.2000  0.2000
 230.  *  0.2000  4.4000  4.1000  3.3000  2.8000  2.8000  2.7000  2.0000  1.6000
0.9000  0.3000  0.3000  0.2000
 240.  *  0.1000  4.6000  4.3000  3.7000  3.2000  3.1000  2.9000  2.1000  1.7000
1.0000  0.4000  0.4000  0.4000
 250.  *  0.0000  5.1000  4.7000  4.2000  3.3000  3.2000  2.7000  2.6000  2.3000
1.5000  0.9000  0.8000  0.7000
 260.  *  0.0000  4.4000  4.2000  3.7000  2.7000  2.6000  2.0000  4.2000  3.8000
3.3000  2.4000  2.3000  1.9000
 270.  *  0.1000  3.0000  2.7000  2.3000  1.5000  1.4000  1.1000  5.9000  5.5000
5.0000  3.9000  3.9000  3.3000
 280.  *  0.2000  2.0000  1.6000  1.0000  0.5000  0.5000  0.4000  6.3000  5.9000
5.4000  4.4000  4.4000  3.9000
 290.  *  0.5000  1.7000  1.3000  0.7000  0.2000  0.2000  0.2000  5.7000  5.2000
4.6000  4.0000  4.0000  3.8000
 300.  *  0.8000  1.8000  1.3000  0.6000  0.1000  0.1000  0.1000  5.3000  4.7000
4.1000  3.5000  3.5000  3.5000
 310.  *  0.9000  1.8000  1.3000  0.6000  0.1000  0.1000  0.1000  5.0000  4.5000
3.7000  3.2000  3.2000  3.2000
 320.  *  1.0000  1.8000  1.4000  0.3000  0.1000  0.1000  0.1000  4.9000  4.3000
3.3000  3.0000  3.0000  3.0000
 330.  *  1.6000  1.7000  1.1000  0.1000  0.1000  0.1000  0.1000  4.3000  3.8000
2.8000  2.8000  2.7000  2.7000
```

```
 340.  *  3.4000  0.9000  0.4000  0.0000  0.3000  0.1000  0.0000  3.7000  3.2000
2.7000  3.0000  2.7000  2.6000
 350.  *  5.2000  0.3000  0.1000  0.0000  1.1000  0.5000  0.0000  3.2000  3.0000
2.9000  4.1000  3.3000  2.8000
 360.  *  5.6000  0.0000  0.0000  0.0000  1.7000  1.0000  0.0000  2.9000  2.9000
2.9000  4.7000  3.9000  2.8000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  5.6000  5.1000  4.7000  4.2000  5.0000  4.6000  4.1000  6.3000  5.9000
5.4000  6.7000  6.1000  5.1000
 DEGR. *    360     250     250     250     100     100     100     280     280
280      70      70      70

 THE HIGHEST CONCENTRATION OF   7.6000 PPM OCCURRED AT RECEPTOR    13.
```

```
Q,EPA,,F,,0,T,T,T,T,0.7,
3,1,5,4,2200,2200,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.75,2200,2200,1
036.8,1036.75,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1
200,-1200,0,0,0,0,0,0,15,0,0,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,23,0.3048,1,0
'N Leg, E Side-Corner',46.0,58.0,5.9
'N Leg, E Side - 0 m',0.0,58.0,5.9
'N Leg, W Side-Corner',-22.0,58.0,5.9
'S Leg, E Side-Corner',28.9,-70.0,5.9
'S Leg, E Side - 25 m',10.2,-139.6,5.9
'S Leg, E Side - 50 m',-11.0,-218.8,5.9
'S Leg, E Side-Midblk',-123.8,-639.9,5.9
'S Leg, W Side-Corner',-41.5,-70.0,5.9
'S Leg, W Side - 25 m',-60.2,-139.6,5.9
'S Leg, W Side - 50 m',-81.4,-218.8,5.9
'S Leg, W Side-Midblk',-194.2,-639.9,5.9
'E Leg, N Side - 25 m',118.0,58.0,5.9
'E Leg, N Side - 50 m',200.0,58.0,5.9
'E Leg, N Side-Midblk',636.0,58.0,5.9
'W Leg, N Side - 25 m',-94.0,58.0,5.9
'W Leg, N Side - 50 m',-176.0,58.0,5.9
'W Leg, N Side-Midblk',-612.0,58.0,5.9
'E Leg, S Side - 25 m',100.9,-70.0,5.9
'E Leg, S Side - 50 m',182.9,-70.0,5.9
'E Leg, S Side-Midblk',618.9,-70.0,5.9
'W Leg, S Side - 25 m',-113.6,-70.0,5.9
'W Leg, S Side - 50 m',-195.6,-70.0,5.9
'W Leg, S Side-Midblk',-631.5,-70.0,5.9
'2016 MD97 & Outer Loop Ramp (IS.29)',9,1,0,'CO'
1
'S Leg App - FreeFlow','AG',25,24,-293,-1164,6600,3.61,0.0,55.7
2
'S Leg App - Queue','AG',2,-63,-293,-1164,0.0,36.0,3
120,62,2,6600,13.64,1600,1,3
1
'S Leg Dep - FreeFlow','AG',0,24,-316,-1158,2200,3.61,0.0,31.7
1
'E Leg App - FreeFlow','AG',0,24,1200,24,4147,3.27,0.0,67.7
2
'E Leg App - Queue','AG',36,24,1200,24,0.0,48.0,4
120,62,2,4147,13.89,1600,1,3
1
'E Leg Dep - FreeFlow','AG',0,-30,1200,-30,5184,7.79,0.0,79.7
1
'W Leg App - FreeFlow','AG',0,-30,-1200,-30,5184,3.87,0.0,79.7
2
'W Leg App - Queue','AG',-12,-30,-1200,-30,0.0,60.0,5
```

120,62,2,5184,13.89,1600,1,3
1
'W Leg Dep - FreeFlow','AG',0,24,-1200,24,4147,3.27,0.0,67.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2016 MD97 & Outer Loop Ramp (IS.29)

DATE : 2/28/19
TIME : 8:15:59

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. S Leg App - FreeFlow	*	25.0	24.0	-293.0	-1164.0	*	1230.	195.	AG	6600.	3.6	0.0	55.7		
2. S Leg App - Queue	*	2.0	-63.0	-4064.3	-15239.3	*	*****	195.	AG	57.	100.0	0.0	36.0	3.06	798.1
3. S Leg Dep - FreeFlow	*	0.0	24.0	-316.0	-1158.0	*	1224.	195.	AG	2200.	3.6	0.0	31.7		
4. E Leg App - FreeFlow	*	0.0	24.0	1200.0	24.0	*	1200.	90.	AG	4147.	3.3	0.0	67.7		
5. E Leg App - Queue	*	36.0	24.0	3685.3	24.0	*	3649.	90.	AG	77.	100.0	0.0	48.0	1.44	185.4
6. E Leg Dep - FreeFlow	*	0.0	-30.0	1200.0	-30.0	*	1200.	90.	AG	5184.	7.8	0.0	79.7		
7. W Leg App - FreeFlow	*	0.0	-30.0	-1200.0	-30.0	*	1200.	270.	AG	5184.	3.9	0.0	79.7		
8. W Leg App - Queue	*	-12.0	-30.0	-3661.3	-30.0	*	3649.	270.	AG	96.	100.0	0.0	60.0	1.44	185.4
9. W Leg Dep - FreeFlow	*	0.0	24.0	-1200.0	24.0	*	1200.	270.	AG	4147.	3.3	0.0	67.7		

JOB: I-495 & I-270 MLS RUN: 2016 MD97 & Outer Loop Ramp (IS.29)

DATE : 2/28/19
TIME : 8:15:59

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. S Leg App - Queue	* 120	62	2.0	6600	1600	13.64	1	3
5. E Leg App - Queue	* 120	62	2.0	4147	1600	13.89	1	3
8. W Leg App - Queue	* 120	62	2.0	5184	1600	13.89	1	3

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	* 46.0	58.0	5.9
2. N Leg, E Side - 0 m	* 0.0	58.0	5.9
3. N Leg, W Side-Corner	* -22.0	58.0	5.9
4. S Leg, E Side-Corner	* 28.9	-70.0	5.9
5. S Leg, E Side - 25 m	* 10.2	-139.6	5.9
6. S Leg, E Side - 50 m	* -11.0	-218.8	5.9
7. S Leg, E Side-Midblk	* -123.8	-639.9	5.9
8. S Leg, W Side-Corner	* -41.5	-70.0	5.9
9. S Leg, W Side - 25 m	* -60.2	-139.6	5.9
10. S Leg, W Side - 50 m	* -81.4	-218.8	5.9
11. S Leg, W Side-Midblk	* -194.2	-639.9	5.9
12. E Leg, N Side - 25 m	* 118.0	58.0	5.9
13. E Leg, N Side - 50 m	* 200.0	58.0	5.9
14. E Leg, N Side-Midblk	* 636.0	58.0	5.9
15. W Leg, N Side - 25 m	* -94.0	58.0	5.9
16. W Leg, N Side - 50 m	* -176.0	58.0	5.9
17. W Leg, N Side-Midblk	* -612.0	58.0	5.9
18. E Leg, S Side - 25 m	* 100.9	-70.0	5.9

19. E Leg, S Side - 50 m *	182.9	-70.0	5.9	*
20. E Leg, S Side-Midblk *	618.9	-70.0	5.9	*
21. W Leg, S Side - 25 m *	-113.6	-70.0	5.9	*
22. W Leg, S Side - 50 m *	-195.6	-70.0	5.9	*
23. W Leg, S Side-Midblk *	-631.5	-70.0	5.9	*

JOB: I-495 & I-270 MLS RUN: 2016 MD97 & Outer Loop Ramp (IS.29)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
*	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10. *	0.0000	0.0000	0.0000	2.0000	1.5000	1.7000	1.9000	1.4000	1.1000
1.0000	1.0000	0.0000	0.0000	0.0000	0.0000				
20. *	0.0000	0.0000	0.0000	1.8000	1.3000	1.2000	1.1000	1.6000	1.5000
1.5000	1.5000	0.0000	0.0000	0.0000	0.0000				
30. *	0.0000	0.0000	0.0000	1.6000	1.2000	0.9000	0.7000	2.1000	1.9000
1.9000	2.0000	0.0000	0.0000	0.0000	0.0000				
40. *	0.0000	0.0000	0.0000	1.6000	1.1000	0.8000	0.4000	2.3000	2.2000
1.9000	1.8000	0.0000	0.0000	0.0000	0.0000				
50. *	0.0000	0.0000	0.0000	1.9000	1.1000	0.8000	0.4000	2.6000	2.2000
2.1000	1.7000	0.0000	0.0000	0.0000	0.0000				
60. *	0.1000	0.1000	0.0000	2.1000	1.2000	0.8000	0.3000	2.8000	2.1000
1.9000	1.4000	0.1000	0.1000	0.1000	0.0000				
70. *	0.1000	0.1000	0.1000	2.4000	1.2000	0.8000	0.2000	3.2000	2.2000
1.8000	1.2000	0.1000	0.1000	0.1000	0.1000				
80. *	0.5000	0.5000	0.5000	2.5000	0.9000	0.6000	0.0000	3.3000	1.9000
1.6000	1.0000	0.5000	0.5000	0.5000	0.6000				
90. *	1.4000	1.4000	1.4000	1.9000	0.6000	0.1000	0.0000	2.8000	1.6000
1.1000	1.0000	1.4000	1.4000	1.1000	1.4000				
100. *	2.0000	1.9000	1.9000	0.8000	0.1000	0.0000	0.0000	1.7000	1.1000
1.0000	1.0000	2.0000	1.9000	1.7000	1.9000				
110. *	2.0000	1.9000	1.9000	0.3000	0.0000	0.0000	0.0000	1.2000	1.0000

```
1.0000  1.0000  2.0000  1.9000  1.8000  2.0000
 120.  *  1.8000  1.7000  1.8000  0.2000  0.0000  0.0000  0.0000  1.0000  1.0000
1.0000  1.0000  1.8000  1.8000  1.8000  1.7000
 130.  *  1.6000  1.6000  1.7000  0.1000  0.0000  0.0000  0.0000  1.0000  1.0000
1.0000  1.0000  1.6000  1.6000  1.6000  1.7000
 140.  *  1.4000  1.6000  1.7000  0.2000  0.1000  0.1000  0.1000  1.1000  1.1000
1.1000  1.1000  1.4000  1.4000  1.4000  1.4000
 150.  *  1.4000  1.7000  1.8000  0.2000  0.1000  0.1000  0.1000  1.2000  1.2000
1.2000  1.2000  1.4000  1.4000  1.4000  1.4000
 160.  *  1.4000  1.8000  1.8000  0.1000  0.1000  0.1000  0.1000  1.4000  1.4000
1.4000  1.4000  1.3000  1.3000  1.3000  1.5000
 170.  *  1.5000  2.1000  2.1000  0.2000  0.2000  0.2000  0.1000  1.5000  1.5000
1.5000  1.5000  1.3000  1.3000  1.3000  1.6000
 180.  *  2.0000  2.4000  2.1000  0.5000  0.5000  0.5000  0.4000  1.7000  1.7000
1.7000  1.7000  1.3000  1.3000  1.3000  1.6000
 190.  *  2.5000  2.6000  1.9000  1.2000  1.2000  1.2000  1.1000  1.6000  1.6000
1.6000  1.4000  1.6000  1.4000  1.3000  1.5000
 200.  *  2.7000  1.9000  1.6000  1.8000  1.8000  1.8000  1.6000  1.0000  1.0000
1.0000  0.8000  1.9000  1.6000  1.3000  1.1000
 210.  *  2.5000  1.4000  1.2000  1.8000  1.8000  1.8000  1.8000  0.3000  0.3000
0.3000  0.3000  2.1000  1.9000  1.4000  1.0000
 220.  *  1.8000  1.1000  1.0000  1.5000  1.5000  1.5000  1.5000  0.2000  0.1000
0.1000  0.1000  2.1000  1.9000  1.5000  1.0000
 230.  *  1.6000  1.1000  1.1000  1.4000  1.4000  1.4000  1.4000  0.1000  0.0000
0.0000  0.0000  2.1000  2.0000  1.7000  1.1000
 240.  *  1.5000  1.1000  1.2000  1.3000  1.3000  1.3000  1.3000  0.1000  0.0000
0.0000  0.0000  2.0000  2.0000  1.9000  1.2000
 250.  *  1.4000  1.3000  1.4000  1.3000  1.2000  1.2000  1.2000  0.2000  0.0000
0.0000  0.0000  2.0000  2.0000  1.9000  1.4000
 260.  *  1.3000  1.3000  1.3000  1.5000  1.1000  1.1000  1.1000  0.6000  0.0000
0.0000  0.0000  1.6000  1.8000  2.1000  1.3000
 270.  *  1.2000  1.1000  1.1000  2.4000  1.5000  1.3000  1.1000  1.3000  0.4000
0.2000  0.0000  1.2000  1.4000  1.4000  1.0000
 280.  *  0.4000  0.4000  0.4000  3.0000  1.7000  1.5000  1.1000  1.8000  0.6000
0.4000  0.0000  0.6000  0.4000  0.5000  0.4000
 290.  *  0.1000  0.1000  0.1000  2.7000  1.9000  1.5000  1.2000  1.6000  0.8000
0.4000  0.0000  0.1000  0.1000  0.1000  0.1000
 300.  *  0.0000  0.1000  0.1000  2.5000  1.9000  1.6000  1.3000  1.5000  0.8000
0.5000  0.2000  0.0000  0.1000  0.1000  0.1000
 310.  *  0.0000  0.0000  0.0000  2.3000  1.9000  1.5000  1.3000  1.3000  0.8000
0.4000  0.1000  0.0000  0.0000  0.0000  0.0000
 320.  *  0.0000  0.0000  0.0000  2.3000  1.8000  1.6000  1.4000  1.1000  0.6000
0.4000  0.2000  0.0000  0.0000  0.0000  0.0000
 330.  *  0.0000  0.0000  0.0000  2.2000  1.9000  1.7000  1.5000  1.1000  0.6000
0.4000  0.2000  0.0000  0.0000  0.0000  0.0000
 340.  *  0.0000  0.0000  0.0000  2.2000  1.9000  1.8000  1.6000  1.0000  0.5000
0.4000  0.2000  0.0000  0.0000  0.0000  0.0000
 350.  *  0.0000  0.0000  0.0000  2.3000  1.9000  2.0000  1.7000  1.1000  0.7000
```

0.5000 0.3000 0.0000 0.0000 0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 2.2000 1.9000 1.8000 1.9000 1.2000 0.6000
0.6000 0.5000 0.0000 0.0000 0.0000 0.0000

------*---

 MAX   * 2.7000 2.6000 2.1000 3.0000 1.9000 2.0000 1.9000 3.3000 2.2000
2.1000 2.0000 2.1000 2.0000 2.1000 2.0000
 DEGR. *   200   190   170   280   330   350   10   80   50
50   30   210   230   260   110

JOB: I-495 & I-270 MLS RUN: 2016 MD97 & Outer Loop Ramp (IS.29)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) 16	17	18	19	20	21	22	23
10.	0.0000	0.0000	1.4000	1.4000	1.4000	1.0000	1.0000	1.0000
20.	0.0000	0.0000	1.4000	1.4000	1.4000	0.9000	0.9000	1.0000
30.	0.0000	0.0000	1.4000	1.4000	1.4000	1.0000	1.1000	1.1000
40.	0.0000	0.0000	1.5000	1.5000	1.5000	1.3000	1.1000	1.1000
50.	0.0000	0.0000	1.8000	1.8000	1.8000	1.4000	1.2000	1.3000
60.	0.1000	0.1000	2.0000	2.0000	2.0000	2.0000	1.5000	1.5000
70.	0.1000	0.1000	2.3000	2.3000	2.3000	2.3000	2.1000	1.7000
80.	0.6000	0.5000	2.5000	2.5000	2.3000	2.7000	2.4000	1.9000
90.	1.4000	1.3000	1.9000	1.8000	1.7000	2.2000	1.9000	1.7000
100.	1.9000	1.7000	0.8000	0.8000	0.7000	1.2000	0.9000	0.7000
110.	1.9000	1.4000	0.3000	0.3000	0.3000	0.7000	0.5000	0.2000
120.	1.5000	1.3000	0.2000	0.2000	0.2000	0.6000	0.4000	0.2000
130.	1.5000	1.2000	0.1000	0.1000	0.1000	0.6000	0.4000	0.2000
140.	1.3000	1.1000	0.1000	0.1000	0.1000	0.6000	0.5000	0.2000
150.	1.4000	1.1000	0.1000	0.1000	0.1000	0.6000	0.5000	0.1000
160.	1.5000	1.1000	0.0000	0.0000	0.0000	0.6000	0.5000	0.1000
170.	1.5000	1.0000	0.0000	0.0000	0.0000	0.6000	0.5000	0.0000
180.	1.4000	1.0000	0.0000	0.0000	0.0000	0.6000	0.4000	0.0000

190.	*	1.2000	1.0000	0.2000	0.0000	0.0000	0.5000	0.2000	0.0000
200.	*	1.0000	1.0000	0.5000	0.2000	0.0000	0.2000	0.0000	0.0000
210.	*	1.0000	1.0000	0.8000	0.6000	0.1000	0.0000	0.0000	0.0000
220.	*	1.0000	1.0000	0.8000	0.6000	0.2000	0.1000	0.1000	0.1000
230.	*	1.1000	1.1000	0.7000	0.6000	0.2000	0.1000	0.1000	0.1000
240.	*	1.2000	1.2000	0.7000	0.6000	0.3000	0.1000	0.1000	0.1000
250.	*	1.4000	1.2000	0.9000	0.7000	0.4000	0.2000	0.2000	0.1000
260.	*	1.3000	1.2000	1.3000	1.1000	0.9000	0.5000	0.5000	0.5000
270.	*	1.0000	0.9000	2.2000	2.0000	2.1000	1.3000	1.3000	1.1000
280.	*	0.4000	0.3000	2.6000	2.4000	2.5000	1.8000	1.8000	1.6000
290.	*	0.1000	0.1000	2.5000	2.2000	2.2000	1.6000	1.6000	1.6000
300.	*	0.1000	0.1000	2.2000	2.0000	2.0000	1.5000	1.5000	1.5000
310.	*	0.0000	0.0000	1.9000	1.8000	1.8000	1.3000	1.3000	1.3000
320.	*	0.0000	0.0000	1.7000	1.5000	1.5000	1.1000	1.1000	1.1000
330.	*	0.0000	0.0000	1.5000	1.4000	1.4000	1.1000	1.1000	1.1000
340.	*	0.0000	0.0000	1.3000	1.3000	1.4000	1.0000	1.0000	1.0000
350.	*	0.0000	0.0000	1.4000	1.4000	1.4000	1.0000	1.0000	1.0000
360.	*	0.0000	0.0000	1.5000	1.5000	1.5000	1.1000	1.1000	1.1000
------	*								
MAX	*	1.9000	1.7000	2.6000	2.5000	2.5000	2.7000	2.4000	1.9000
DEGR.	*	110	100	280	80	280	80	80	80

THE HIGHEST CONCENTRATION OF 3.3000 PPM OCCURRED AT RECEPTOR 8.

Q,EPA,,F,,0,T,T,F,T,0.7,
4,1,5,2,2200,2200,2200,2200,2200,2200,2200,2200,1036.75,1037,1036.8,1037,1036.75,103
7,1036.8,1037,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1
200,-1200,0,0,0,0,0,0,15,-35,5,10,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 and I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',53.2,25.1,5.9
'N Leg, E Side - 25 m',11.9,84.1,5.9
'N Leg, E Side - 50 m',-35.2,151.3,5.9
'N Leg, E Side-Midblk',-285.2,508.4,5.9
'N Leg, W Side-Corner',-54.1,38.9,5.9
'N Leg, W Side - 25 m',-95.4,97.9,5.9
'N Leg, W Side - 50 m',-142.4,165.0,5.9
'N Leg, W Side-Midblk',-392.5,522.2,5.9
'S Leg, E Side-Corner',39.2,-78.0,5.9
'S Leg, E Side - 25 m',20.5,-147.6,5.9
'S Leg, E Side - 50 m',-0.7,-226.8,5.9
'S Leg, E Side-Midblk',-113.6,-647.9,5.9
'S Leg, W Side-Corner',-40.7,-66.7,5.9
'S Leg, W Side - 25 m',-59.3,-136.3,5.9
'S Leg, W Side - 50 m',-80.5,-215.5,5.9
'S Leg, W Side-Midblk',-193.4,-636.6,5.9
'E Leg, N Side - 25 m',124.1,12.6,5.9
'E Leg, N Side - 50 m',204.9,-1.6,5.9
'E Leg, N Side-Midblk',634.2,-77.3,5.9
'W Leg, N Side - 25 m',-125.8,45.1,5.9
'W Leg, N Side - 50 m',-207.5,52.3,5.9
'W Leg, N Side-Midblk',-641.8,90.3,5.9
'E Leg, S Side - 25 m',110.1,-90.5,5.9
'E Leg, S Side - 50 m',190.9,-104.7,5.9
'E Leg, S Side-Midblk',620.2,-180.4,5.9
'W Leg, S Side - 25 m',-112.4,-60.4,5.9
'W Leg, S Side - 50 m',-194.1,-53.3,5.9
'W Leg, S Side-Midblk',-628.4,-15.3,5.9
'2016 MD202 & Outer Loop Rmp (IS.16)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-7,-1,-693,980,1037,3.73,0.0,31.7
1
'N Leg Dep - FreeFlow','AG',26,5,-669,997,4147,3.73,0.0,67.7
1
'S Leg App - FreeFlow','AG',26,5,-287,-1165,4147,6.18,0.0,67.7
2
'S Leg App - Queue','AG',8,-64,-287,-1165,0.0,48.0,4
120,62,2,4147,17.47,1600,1,3
1
'S Leg Dep - FreeFlow','AG',-7,-1,-316,-1158,1037,3.82,0.0,31.7
1
'E Leg App - FreeFlow','AG',2,12,1184,-197,2074,3.91,0.0,43.7

```
2
'E Leg App - Queue','AG',49,3,1184,-197,0.0,24.0,2
120,62,2,2074,17.83,1600,1,3
1
'E Leg Dep - FreeFlow','AG',-4,-30,1177,-238,5184,3.91,0.0,79.7
1
'W Leg App - FreeFlow','AG',-4,-30,-1198,75,5184,3.12,0.0,79.7
2
'W Leg App - Queue','AG',-15,-29,-1198,75,0.0,60.0,5
120,62,2,5184,17.83,1600,1,3
1
'W Leg Dep - FreeFlow','AG',2,12,-1194,117,2074,6.01,0.0,43.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface
CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 and I-270 MLS RUN: 2016 MD202 & Outer Loop Rmp (IS.16)

DATE : 4/30/19
TIME : 16:48: 8

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-7.0	-1.0	-693.0	980.0	*	1197.	325.	AG	1037.	3.7	0.0	31.7		
2. N Leg Dep - FreeFlow	*	26.0	5.0	-669.0	997.0	*	1211.	325.	AG	4147.	3.7	0.0	67.7		
3. S Leg App - FreeFlow	*	26.0	5.0	-287.0	-1165.0	*	1211.	195.	AG	4147.	6.2	0.0	67.7		
4. S Leg App - Queue	*	8.0	-64.0	-936.5	-3588.9	*	3649.	195.	AG	97.	100.0	0.0	48.0	1.44	185.4
5. S Leg Dep - FreeFlow	*	-7.0	-1.0	-316.0	-1158.0	*	1198.	195.	AG	1037.	3.8	0.0	31.7		
6. E Leg App - FreeFlow	*	2.0	12.0	1184.0	-197.0	*	1200.	100.	AG	2074.	3.9	0.0	43.7		
7. E Leg App - Queue	*	49.0	3.0	3653.1	-632.1	*	3660.	100.	AG	49.	100.0	0.0	24.0	1.44	185.9
8. E Leg Dep - FreeFlow	*	-4.0	-30.0	1177.0	-238.0	*	1199.	100.	AG	5184.	3.9	0.0	79.7		
9. W Leg App - FreeFlow	*	-4.0	-30.0	-1198.0	75.0	*	1199.	275.	AG	5184.	3.1	0.0	79.7		
10. W Leg App - Queue	*	-15.0	-29.0	-3650.3	290.6	*	3649.								

275. AG 124. 100.0 0.0 60.0 1.44 185.4
  11. W Leg Dep - FreeFlow* 2.0 12.0 -1194.0 117.0 * 1201.
275. AG 2074. 6.0 0.0 43.7

JOB: I-495 and I-270 MLS RUN: 2016 MD202 & Outer Loop Rmp (IS.16)

DATE : 4/30/19
TIME : 16:48: 8

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
4. S Leg App - Queue	*	120	62	2.0	4147	1600	17.47	1	3
7. E Leg App - Queue	*	120	62	2.0	2074	1600	17.83	1	3
10. W Leg App - Queue	*	120	62	2.0	5184	1600	17.83	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	53.2	25.1	5.9	*
2. N Leg, E Side - 25 m	*	11.9	84.1	5.9	*
3. N Leg, E Side - 50 m	*	-35.2	151.3	5.9	*
4. N Leg, E Side-Midblk	*	-285.2	508.4	5.9	*
5. N Leg, W Side-Corner	*	-54.1	38.9	5.9	*
6. N Leg, W Side - 25 m	*	-95.4	97.9	5.9	*
7. N Leg, W Side - 50 m	*	-142.4	165.0	5.9	*
8. N Leg, W Side-Midblk	*	-392.5	522.2	5.9	*
9. S Leg, E Side-Corner	*	39.2	-78.0	5.9	*
10. S Leg, E Side - 25 m	*	20.5	-147.6	5.9	*
11. S Leg, E Side - 50 m	*	-0.7	-226.8	5.9	*
12. S Leg, E Side-Midblk	*	-113.6	-647.9	5.9	*
13. S Leg, W Side-Corner	*	-40.7	-66.7	5.9	*
14. S Leg, W Side - 25 m	*	-59.3	-136.3	5.9	*

15. S Leg, W Side - 50 m *	-80.5	-215.5	5.9	*
16. S Leg, W Side-Midblk *	-193.4	-636.6	5.9	*
17. E Leg, N Side - 25 m *	124.1	12.6	5.9	*
18. E Leg, N Side - 50 m *	204.9	-1.6	5.9	*
19. E Leg, N Side-Midblk *	634.2	-77.3	5.9	*
20. W Leg, N Side - 25 m *	-125.8	45.1	5.9	*
21. W Leg, N Side - 50 m *	-207.5	52.3	5.9	*
22. W Leg, N Side-Midblk *	-641.8	90.3	5.9	*
23. E Leg, S Side - 25 m *	110.1	-90.5	5.9	*
24. E Leg, S Side - 50 m *	190.9	-104.7	5.9	*
25. E Leg, S Side-Midblk *	620.2	-180.4	5.9	*
26. W Leg, S Side - 25 m *	-112.4	-60.4	5.9	*
27. W Leg, S Side - 50 m *	-194.1	-53.3	5.9	*
28. W Leg, S Side-Midblk *	-628.4	-15.3	5.9	*

JOB: I-495 and I-270 MLS RUN: 2016 MD202 & Outer Loop Rmp (IS.16)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.1000	0.0000	0.0000	0.0000	0.7000	0.7000	0.7000	0.7000	1.3000	1.3000	1.4000	1.8000	1.6000	0.9000	0.7000
20.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	1.1000	0.9000	1.0000	1.1000	1.3000	1.2000	1.2000
30.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.9000	0.6000	0.6000	0.5000	1.7000	1.5000	1.5000
40.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.9000	0.5000	0.4000	0.2000	1.7000	1.6000	1.7000
50.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.9000	0.5000	0.4000	0.2000	1.7000	1.6000	1.6000
60.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	1.0000	0.7000	0.4000	0.2000	1.8000	1.6000	1.6000

```
  70.  *  0.0000  0.0000  0.0000  0.0000  0.6000  0.5000  0.5000  0.5000  1.2000
0.7000  0.5000  0.2000  2.0000  1.6000  1.3000
  80.  *  0.1000  0.0000  0.0000  0.0000  0.7000  0.5000  0.5000  0.5000  1.2000
0.6000  0.3000  0.0000  2.0000  1.5000  1.2000
  90.  *  0.4000  0.0000  0.0000  0.0000  1.2000  0.5000  0.5000  0.5000  1.3000
0.5000  0.2000  0.0000  2.1000  1.4000  1.1000
 100.  *  1.0000  0.4000  0.1000  0.0000  1.8000  1.1000  0.9000  0.7000  1.0000
0.2000  0.1000  0.0000  2.0000  1.2000  1.1000
 110.  *  1.3000  0.7000  0.5000  0.1000  2.1000  1.4000  1.1000  0.7000  0.4000
0.0000  0.0000  0.0000  1.3000  1.0000  1.0000
 120.  *  1.3000  0.8000  0.6000  0.2000  2.1000  1.5000  1.2000  0.9000  0.2000
0.0000  0.0000  0.0000  1.0000  0.9000  0.9000
 130.  *  1.2000  0.8000  0.6000  0.3000  1.9000  1.3000  1.2000  1.0000  0.1000
0.0000  0.0000  0.0000  0.9000  0.9000  0.9000
 140.  *  1.0000  0.8000  0.8000  0.6000  1.7000  1.3000  1.1000  0.9000  0.2000
0.1000  0.1000  0.1000  1.0000  1.0000  1.0000
 150.  *  1.0000  0.9000  0.9000  1.0000  1.8000  1.2000  0.9000  0.6000  0.2000
0.1000  0.1000  0.1000  1.3000  1.3000  1.3000
 160.  *  1.0000  1.1000  1.3000  1.2000  1.7000  1.2000  0.9000  0.6000  0.1000
0.1000  0.1000  0.1000  1.3000  1.3000  1.3000
 170.  *  0.9000  1.4000  1.5000  1.4000  1.8000  1.2000  0.8000  0.5000  0.1000
0.1000  0.1000  0.1000  1.5000  1.5000  1.5000
 180.  *  1.5000  2.1000  1.9000  1.2000  2.0000  1.3000  0.8000  0.5000  0.5000
0.5000  0.4000  0.4000  1.8000  1.8000  1.8000
 190.  *  2.3000  2.3000  1.7000  0.9000  1.8000  0.9000  0.6000  0.3000  1.2000
1.2000  1.1000  1.1000  1.5000  1.5000  1.5000
 200.  *  2.5000  2.0000  1.3000  0.9000  1.3000  0.8000  0.4000  0.3000  1.8000
1.8000  1.8000  1.7000  0.9000  0.9000  0.9000
 210.  *  2.2000  1.5000  0.9000  0.8000  1.1000  0.6000  0.4000  0.3000  1.9000
1.9000  1.9000  1.9000  0.2000  0.2000  0.2000
 220.  *  1.9000  1.1000  1.0000  0.8000  1.1000  0.6000  0.4000  0.3000  1.6000
1.6000  1.6000  1.6000  0.0000  0.0000  0.0000
 230.  *  1.7000  1.3000  1.1000  0.9000  1.2000  0.7000  0.5000  0.3000  1.4000
1.5000  1.5000  1.5000  0.1000  0.0000  0.0000
 240.  *  1.9000  1.4000  1.2000  0.9000  1.2000  0.7000  0.5000  0.2000  1.3000
1.3000  1.3000  1.3000  0.1000  0.0000  0.0000
 250.  *  1.9000  1.3000  1.1000  0.6000  1.4000  0.8000  0.6000  0.1000  1.2000
1.2000  1.2000  1.2000  0.1000  0.0000  0.0000
 260.  *  2.1000  1.3000  1.1000  0.6000  1.7000  0.8000  0.6000  0.1000  1.4000
1.1000  1.1000  1.1000  0.3000  0.0000  0.0000
 270.  *  2.0000  1.2000  0.9000  0.6000  1.5000  0.6000  0.3000  0.0000  1.8000
1.3000  1.1000  1.1000  0.9000  0.2000  0.0000
 280.  *  1.5000  0.9000  0.7000  0.6000  0.9000  0.3000  0.1000  0.0000  2.5000
1.7000  1.4000  1.2000  1.6000  0.5000  0.2000
 290.  *  1.1000  0.7000  0.7000  0.7000  0.2000  0.0000  0.0000  0.0000  2.7000
1.9000  1.7000  1.3000  1.7000  0.8000  0.5000
 300.  *  0.8000  0.8000  0.8000  0.8000  0.1000  0.0000  0.0000  0.0000  2.1000
1.8000  1.6000  1.2000  1.5000  0.7000  0.5000
```

```
 310.  *  0.9000  0.9000  0.9000  0.9000  0.3000  0.2000  0.2000  0.2000  2.1000
1.8000  1.5000  1.3000  1.2000  0.7000  0.4000
 320.  *  0.9000  0.9000  0.9000  0.8000  0.5000  0.5000  0.5000  0.4000  2.2000
1.9000  1.6000  1.4000  1.2000  0.6000  0.4000
 330.  *  0.5000  0.5000  0.5000  0.5000  0.9000  0.8000  0.8000  0.7000  2.2000
2.1000  1.8000  1.6000  1.4000  0.7000  0.5000
 340.  *  0.2000  0.2000  0.2000  0.2000  1.0000  0.9000  0.9000  0.8000  2.2000
2.2000  2.1000  1.7000  1.3000  0.9000  0.6000
 350.  *  0.1000  0.1000  0.1000  0.1000  0.8000  0.8000  0.8000  0.8000  1.7000
2.0000  2.0000  1.9000  1.3000  0.9000  0.6000
 360.  *  0.1000  0.1000  0.1000  0.1000  0.7000  0.7000  0.7000  0.7000  1.5000
1.7000  1.8000  2.0000  1.4000  0.8000  0.8000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  2.5000  2.3000  1.9000  1.4000  2.1000  1.5000  1.2000  1.0000  2.7000
2.2000  2.1000  2.0000  2.1000  1.8000  1.8000
 DEGR. *    200     190     180     170     110     120     120     130     290
340     340     360      90     180     180
```


JOB: I-495 and I-270 MLS RUN: 2016 MD202 & Outer Loop Rmp (IS.16)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.9000  0.0000  0.0000  0.0000  0.4000  0.2000  0.1000  0.8000  0.8000
0.8000  1.2000  1.2000  1.1000
  20.  *  1.4000  0.0000  0.0000  0.0000  0.4000  0.2000  0.1000  0.7000  0.7000
0.7000  1.1000  1.1000  1.0000
  30.  *  1.7000  0.0000  0.0000  0.0000  0.4000  0.2000  0.1000  0.7000  0.7000
0.7000  1.1000  1.0000  1.0000
```

```
  40.  *  1.5000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.8000  0.8000
0.8000  1.3000  1.2000  1.2000
  50.  *  1.4000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.8000  0.8000
0.8000  1.4000  1.2000  1.2000
  60.  *  1.4000  0.0000  0.0000  0.0000  0.3000  0.3000  0.2000  0.9000  0.9000
0.9000  1.5000  1.3000  1.3000
  70.  *  1.1000  0.0000  0.0000  0.0000  0.4000  0.3000  0.2000  1.1000  1.1000
1.1000  1.6000  1.5000  1.5000
  80.  *  0.9000  0.1000  0.1000  0.1000  0.4000  0.4000  0.3000  1.2000  1.2000
1.2000  1.7000  1.9000  1.7000
  90.  *  0.9000  0.4000  0.4000  0.4000  1.0000  1.0000  0.9000  1.3000  1.3000
1.1000  1.8000  1.5000  1.5000
 100.  *  1.0000  1.0000  1.0000  0.9000  1.7000  1.5000  1.5000  1.0000  1.0000
0.9000  1.6000  1.2000  0.9000
 110.  *  1.0000  1.3000  1.3000  1.2000  2.0000  2.0000  1.7000  0.4000  0.4000
0.4000  0.9000  0.6000  0.4000
 120.  *  0.9000  1.3000  1.3000  1.3000  1.8000  1.7000  1.5000  0.2000  0.2000
0.1000  0.7000  0.5000  0.2000
 130.  *  0.9000  1.2000  1.2000  1.2000  1.6000  1.6000  1.4000  0.1000  0.1000
0.1000  0.7000  0.5000  0.2000
 140.  *  1.0000  1.0000  1.0000  1.0000  1.7000  1.5000  1.3000  0.1000  0.1000
0.1000  0.7000  0.5000  0.1000
 150.  *  1.3000  1.0000  1.0000  1.0000  1.5000  1.4000  1.2000  0.1000  0.1000
0.1000  0.6000  0.4000  0.1000
 160.  *  1.3000  0.9000  0.9000  0.9000  1.6000  1.5000  1.2000  0.0000  0.0000
0.0000  0.6000  0.4000  0.1000
 170.  *  1.4000  0.7000  0.7000  0.7000  1.5000  1.4000  1.0000  0.0000  0.0000
0.0000  0.8000  0.4000  0.0000
 180.  *  1.7000  0.8000  0.8000  0.8000  1.6000  1.4000  1.1000  0.0000  0.0000
0.0000  0.7000  0.4000  0.0000
 190.  *  1.3000  1.2000  0.9000  0.9000  1.4000  1.3000  1.1000  0.2000  0.0000
0.0000  0.6000  0.2000  0.0000
 200.  *  0.8000  1.4000  1.1000  0.8000  1.1000  1.0000  1.0000  0.5000  0.2000
0.0000  0.2000  0.0000  0.0000
 210.  *  0.2000  1.6000  1.2000  0.8000  1.1000  1.1000  1.1000  0.7000  0.4000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  1.7000  1.3000  1.1000  1.1000  1.1000  1.1000  0.8000  0.4000
0.1000  0.0000  0.0000  0.0000
 230.  *  0.0000  1.7000  1.4000  1.1000  1.2000  1.2000  1.2000  0.8000  0.5000
0.2000  0.1000  0.1000  0.0000
 240.  *  0.0000  1.6000  1.4000  1.1000  1.2000  1.2000  1.2000  0.7000  0.5000
0.2000  0.1000  0.1000  0.1000
 250.  *  0.0000  1.8000  1.7000  1.3000  1.4000  1.4000  1.4000  0.6000  0.5000
0.2000  0.1000  0.1000  0.1000
 260.  *  0.0000  2.1000  1.7000  1.3000  1.7000  1.7000  1.6000  0.8000  0.5000
0.2000  0.3000  0.3000  0.3000
 270.  *  0.0000  1.9000  1.9000  1.6000  1.5000  1.5000  1.3000  1.2000  1.2000
0.7000  0.9000  0.9000  0.7000
```

```
 280.  *  0.0000  1.3000  1.3000  1.2000  0.9000  0.9000  0.8000  1.8000  1.7000
1.3000  1.6000  1.6000  1.3000
 290.  *  0.1000  0.8000  0.7000  0.5000  0.2000  0.2000  0.2000  1.8000  1.7000
1.6000  1.7000  1.7000  1.6000
 300.  *  0.1000  0.5000  0.3000  0.2000  0.1000  0.1000  0.1000  1.6000  1.4000
1.3000  1.5000  1.5000  1.4000
 310.  *  0.2000  0.5000  0.2000  0.1000  0.1000  0.1000  0.1000  1.8000  1.4000
1.2000  1.2000  1.2000  1.2000
 320.  *  0.2000  0.3000  0.2000  0.0000  0.1000  0.0000  0.0000  1.6000  1.2000
0.9000  1.1000  1.1000  1.1000
 330.  *  0.3000  0.1000  0.0000  0.0000  0.3000  0.1000  0.0000  1.2000  0.9000
0.8000  1.2000  1.2000  1.1000
 340.  *  0.2000  0.0000  0.0000  0.0000  0.4000  0.2000  0.0000  1.0000  0.8000
0.8000  1.2000  1.0000  0.9000
 350.  *  0.3000  0.0000  0.0000  0.0000  0.4000  0.3000  0.0000  0.7000  0.7000
0.7000  1.2000  1.1000  0.9000
 360.  *  0.5000  0.0000  0.0000  0.0000  0.4000  0.2000  0.1000  0.7000  0.7000
0.7000  1.3000  1.2000  1.1000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.7000  2.1000  1.9000  1.6000  2.0000  2.0000  1.7000  1.8000  1.7000
1.6000  1.8000  1.9000  1.7000
 DEGR. *    180     260     270     270     110     110     110     310     280
290      90      80      80

 THE HIGHEST CONCENTRATION OF   2.7000 PPM OCCURRED AT RECEPTOR     9.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
10,11,6,6,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8
,1036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,12
00,0,0,1200,-1200,0,0,0,0,0,0,-20,-20,-15,-10,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',101.5,101.2,5.9
'N Leg, E Side - 25 m',76.9,168.8,5.9
'N Leg, E Side - 50 m',48.8,245.9,5.9
'N Leg, E Side-Midblk',-100.3,655.6,5.9
'N Leg, W Side-Corner',-165.8,40.5,5.9
'N Leg, W Side - 25 m',-190.5,108.1,5.9
'N Leg, W Side - 50 m',-218.5,185.2,5.9
'N Leg, W Side-Midblk',-367.6,594.9,5.9
'S Leg, E Side-Corner',158.5,-55.3,5.9
'S Leg, E Side - 25 m',183.1,-123.0,5.9
'S Leg, E Side - 50 m',211.2,-200.1,5.9
'S Leg, E Side-Midblk',360.3,-609.7,5.9
'S Leg, W Side-Corner',-109.5,-114.2,5.9
'S Leg, W Side - 25 m',-84.9,-181.9,5.9
'S Leg, W Side - 50 m',-56.8,-259.0,5.9
'S Leg, W Side-Midblk',92.3,-668.7,5.9
'E Leg, N Side - 25 m',172.4,113.7,5.9
'E Leg, N Side - 50 m',253.2,127.9,5.9
'E Leg, N Side-Midblk',682.6,203.6,5.9
'W Leg, N Side - 25 m',-235.4,21.8,5.9
'W Leg, N Side - 50 m',-314.6,0.6,5.9
'W Leg, N Side-Midblk',-735.7,-112.2,5.9
'E Leg, S Side - 25 m',229.4,-42.8,5.9
'E Leg, S Side - 50 m',310.2,-28.6,5.9
'E Leg, S Side-Midblk',739.5,47.1,5.9
'W Leg, S Side - 25 m',-179.1,-132.9,5.9
'W Leg, S Side - 50 m',-258.3,-154.1,5.9
'W Leg, S Side-Midblk',-679.4,-266.9,5.9
'2025 I270 & I370 (IC.36)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-62,-23,-472,1105,24200,1.49,0.0,151.7
1
'N Leg Dep - FreeFlow','AG',56,21,-354,1148,22000,3.48,0.0,139.7
1
'S Leg App - FreeFlow','AG',56,21,467,-1107,22000,1.49,0.0,139.7
1
'S Leg Dep - FreeFlow','AG',-62,-23,348,-1150,24200,3.48,0.0,151.7
1
'E Leg App - FreeFlow','AG',-8,35,1176,244,13200,1.49,0.0,91.7
1
'E Leg Dep - FreeFlow','AG',8,-35,1188,173,13200,2.67,0.0,91.7
1
```

```
'W Leg App - FreeFlow','AG',8,-35,-1150,-345,13200,1.49,0.0,91.7
1
'W Leg Dep - FreeFlow','AG',-8,35,-1168,-276,13200,3.48,0.0,91.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 I270 & I370 (IC.36)

DATE : 3/ 1/19
TIME : 14:41:29

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-62.0	-23.0	-472.0	1105.0	*	1200.	340.	AG	24200.	1.5	0.0	****		
2. N Leg Dep - FreeFlow	*	56.0	21.0	-354.0	1148.0	*	1199.	340.	AG	22000.	3.5	0.0	****		
3. S Leg App - FreeFlow	*	56.0	21.0	467.0	-1107.0	*	1201.	160.	AG	22000.	1.5	0.0	****		
4. S Leg Dep - FreeFlow	*	-62.0	-23.0	348.0	-1150.0	*	1199.	160.	AG	24200.	3.5	0.0	****		
5. E Leg App - FreeFlow	*	-8.0	35.0	1176.0	244.0	*	1202.	80.	AG	13200.	1.5	0.0	91.7		
6. E Leg Dep - FreeFlow	*	8.0	-35.0	1188.0	173.0	*	1198.	80.	AG	13200.	2.7	0.0	91.7		
7. W Leg App - FreeFlow	*	8.0	-35.0	-1150.0	-345.0	*	1199.	255.	AG	13200.	1.5	0.0	91.7		
8. W Leg Dep - FreeFlow	*	-8.0	35.0	-1168.0	-276.0	*	1201.	255.	AG	13200.	3.5	0.0	91.7		

I370 (IC.36)

DATE : 3/ 1/19
TIME : 14:41:29

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	101.5	101.2	5.9
2. N Leg, E Side - 25 m	76.9	168.8	5.9
3. N Leg, E Side - 50 m	48.8	245.9	5.9
4. N Leg, E Side-Midblk	-100.3	655.6	5.9
5. N Leg, W Side-Corner	-165.8	40.5	5.9
6. N Leg, W Side - 25 m	-190.5	108.1	5.9
7. N Leg, W Side - 50 m	-218.5	185.2	5.9
8. N Leg, W Side-Midblk	-367.6	594.9	5.9
9. S Leg, E Side-Corner	158.5	-55.3	5.9
10. S Leg, E Side - 25 m	183.1	-123.0	5.9
11. S Leg, E Side - 50 m	211.2	-200.1	5.9
12. S Leg, E Side-Midblk	360.3	-609.7	5.9
13. S Leg, W Side-Corner	-109.5	-114.2	5.9
14. S Leg, W Side - 25 m	-84.9	-181.9	5.9
15. S Leg, W Side - 50 m	-56.8	-259.0	5.9
16. S Leg, W Side-Midblk	92.3	-668.7	5.9
17. E Leg, N Side - 25 m	172.4	113.7	5.9
18. E Leg, N Side - 50 m	253.2	127.9	5.9
19. E Leg, N Side-Midblk	682.6	203.6	5.9
20. W Leg, N Side - 25 m	-235.4	21.8	5.9
21. W Leg, N Side - 50 m	-314.6	0.6	5.9
22. W Leg, N Side-Midblk	-735.7	-112.2	5.9
23. E Leg, S Side - 25 m	229.4	-42.8	5.9
24. E Leg, S Side - 50 m	310.2	-28.6	5.9
25. E Leg, S Side-Midblk	739.5	47.1	5.9
26. W Leg, S Side - 25 m	-179.1	-132.9	5.9

27. W Leg, S Side - 50 m	*	-258.3	-154.1	5.9 *
28. W Leg, S Side-Midblk	*	-679.4	-266.9	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.2000	0.2000	0.2000	0.2000	2.1000	2.0000	2.0000	1.8000	1.3000	0.9000	0.7000	0.4000	3.9000	3.7000	3.8000
20.	* 0.2000	0.2000	0.2000	0.2000	2.0000	1.9000	1.9000	1.8000	1.3000	0.9000	0.7000	0.4000	3.7000	3.6000	3.4000
30.	* 0.3000	0.2000	0.2000	0.2000	1.8000	1.7000	1.7000	1.7000	1.4000	0.9000	0.7000	0.4000	3.7000	3.3000	2.9000
40.	* 0.2000	0.1000	0.1000	0.1000	1.8000	1.7000	1.7000	1.7000	1.5000	0.9000	0.7000	0.3000	3.7000	3.0000	2.8000
50.	* 0.2000	0.1000	0.1000	0.1000	1.8000	1.6000	1.6000	1.6000	1.7000	1.0000	0.6000	0.1000	3.8000	2.8000	2.7000
60.	* 0.1000	0.0000	0.0000	0.0000	2.0000	1.6000	1.6000	1.6000	1.9000	0.9000	0.6000	0.0000	3.7000	2.9000	2.7000
70.	* 0.5000	0.0000	0.0000	0.0000	2.6000	1.8000	1.7000	1.7000	1.9000	0.8000	0.4000	0.0000	3.8000	3.0000	2.7000
80.	* 1.0000	0.3000	0.1000	0.0000	3.4000	1.9000	1.8000	1.6000	1.5000	0.4000	0.1000	0.0000	3.3000	2.5000	2.2000
90.	* 1.5000	0.7000	0.5000	0.1000	3.9000	2.4000	2.0000	1.6000	0.6000	0.1000	0.0000	0.0000	2.5000	2.2000	2.1000
100.	* 1.5000	0.9000	0.6000	0.1000	3.7000	2.5000	2.2000	1.8000	0.3000	0.1000	0.1000	0.1000	2.3000	2.2000	2.2000
110.	* 1.4000	1.1000	0.7000	0.4000	3.9000	2.6000	2.4000	1.9000	0.2000	0.1000	0.1000	0.1000	2.4000	2.4000	2.3000
120.	* 1.2000	0.9000	0.7000	0.4000	3.7000	2.8000	2.5000	2.1000	0.2000	0.1000	0.1000	0.1000	2.6000	2.6000	2.6000

130. * 1.3000 0.9000 0.7000 0.5000 3.9000 3.0000 2.6000 2.2000 0.2000
0.1000 0.1000 0.1000 2.8000 2.8000 2.8000
140. * 1.3000 1.0000 0.8000 0.7000 4.1000 3.3000 2.9000 2.5000 0.3000
0.2000 0.2000 0.1000 3.2000 3.2000 3.2000
150. * 1.7000 1.5000 1.4000 1.3000 4.2000 3.5000 3.1000 2.4000 0.4000
0.4000 0.4000 0.3000 3.3000 3.2000 3.1000
160. * 2.7000 2.6000 2.5000 2.7000 3.6000 2.8000 2.5000 1.9000 1.2000
1.2000 1.1000 0.8000 2.4000 2.3000 2.3000
170. * 3.6000 3.5000 3.6000 3.8000 2.4000 1.7000 1.5000 0.9000 2.0000
1.9000 1.9000 1.3000 1.0000 1.0000 1.0000
180. * 3.8000 3.8000 3.8000 3.8000 1.6000 1.1000 0.9000 0.5000 2.2000
2.2000 2.1000 1.6000 0.4000 0.4000 0.4000
190. * 3.6000 3.6000 3.7000 3.2000 1.6000 1.0000 0.8000 0.4000 2.1000
2.1000 2.1000 2.0000 0.2000 0.2000 0.2000
200. * 3.6000 3.5000 3.5000 2.8000 1.7000 1.0000 0.8000 0.4000 2.1000
2.0000 2.0000 1.9000 0.2000 0.2000 0.2000
210. * 3.6000 3.4000 3.2000 2.5000 1.8000 1.1000 0.8000 0.4000 2.0000
1.9000 1.9000 1.8000 0.3000 0.2000 0.2000
220. * 3.7000 3.2000 2.9000 2.4000 2.1000 1.1000 0.9000 0.2000 1.8000
1.7000 1.7000 1.7000 0.3000 0.2000 0.2000
230. * 4.0000 3.3000 2.8000 2.1000 2.2000 1.2000 0.8000 0.1000 1.8000
1.7000 1.7000 1.7000 0.2000 0.1000 0.1000
240. * 4.2000 3.2000 2.8000 2.0000 2.5000 1.0000 0.6000 0.0000 2.0000
1.7000 1.7000 1.7000 0.2000 0.0000 0.0000
250. * 4.2000 3.0000 2.6000 2.2000 2.2000 0.6000 0.2000 0.0000 2.6000
2.0000 1.8000 1.8000 0.7000 0.2000 0.0000
260. * 3.4000 2.3000 2.1000 2.0000 1.4000 0.2000 0.0000 0.0000 3.1000
2.2000 1.9000 1.7000 1.5000 0.5000 0.2000
270. * 2.5000 2.0000 2.0000 2.0000 0.5000 0.0000 0.0000 0.0000 3.6000
2.4000 2.2000 1.7000 1.7000 1.0000 0.6000
280. * 2.3000 2.1000 2.1000 2.1000 0.3000 0.1000 0.1000 0.1000 3.4000
2.7000 2.3000 1.9000 1.7000 1.2000 0.8000
290. * 2.3000 2.2000 2.2000 2.2000 0.2000 0.1000 0.1000 0.1000 3.4000
2.7000 2.4000 2.1000 1.5000 1.2000 0.8000
300. * 2.6000 2.5000 2.5000 2.5000 0.2000 0.1000 0.1000 0.1000 3.3000
2.7000 2.6000 2.3000 1.5000 1.1000 0.8000
310. * 2.9000 2.8000 2.8000 2.7000 0.2000 0.1000 0.1000 0.1000 3.5000
2.8000 2.6000 2.4000 1.3000 1.0000 0.8000
320. * 3.1000 3.1000 3.1000 2.8000 0.3000 0.2000 0.2000 0.2000 3.7000
3.2000 2.7000 2.6000 1.4000 1.2000 0.9000
330. * 3.1000 3.1000 3.1000 2.5000 0.4000 0.4000 0.4000 0.3000 3.9000
3.2000 2.9000 2.5000 1.8000 1.6000 1.5000
340. * 2.3000 2.3000 2.2000 1.8000 1.2000 1.1000 1.1000 0.7000 3.1000
2.6000 2.4000 1.8000 3.0000 2.6000 2.6000
350. * 1.0000 1.0000 1.0000 0.8000 1.9000 1.8000 1.8000 1.2000 2.1000
1.4000 1.3000 0.9000 3.7000 3.5000 3.6000
360. * 0.4000 0.4000 0.4000 0.3000 2.2000 2.1000 2.1000 1.6000 1.4000
0.9000 0.8000 0.5000 4.0000 3.8000 3.8000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  4.2000  3.8000  3.8000  3.8000  4.2000  3.5000  3.1000  2.5000  3.9000
3.2000  2.9000  2.6000  4.0000  3.8000  3.8000
 DEGR. *    240     180     180     180     150     150     150     140     330
330     330     320     360     360     360
```


JOB: I-495 & I-270 MLS RUN: 2025 I270 & I370 (IC.36)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  3.2000  0.0000  0.0000  0.0000  1.5000  1.1000  0.3000  1.2000  1.2000
1.2000  2.6000  2.2000  1.4000
  20.  *  2.9000  0.0000  0.0000  0.0000  1.5000  1.1000  0.5000  1.2000  1.2000
1.2000  2.6000  2.2000  1.7000
  30.  *  2.6000  0.1000  0.1000  0.1000  1.4000  1.1000  0.6000  1.3000  1.3000
1.3000  2.6000  2.4000  1.9000
  40.  *  2.5000  0.1000  0.1000  0.1000  1.3000  1.1000  0.6000  1.4000  1.4000
1.4000  2.6000  2.3000  2.0000
  50.  *  2.3000  0.1000  0.1000  0.1000  1.4000  1.2000  0.7000  1.7000  1.7000
1.6000  3.0000  2.6000  2.1000
  60.  *  2.1000  0.1000  0.1000  0.1000  1.5000  1.4000  1.0000  1.9000  1.9000
1.7000  3.1000  2.5000  2.2000
  70.  *  2.3000  0.5000  0.4000  0.3000  2.3000  2.1000  2.0000  1.9000  1.9000
1.6000  3.1000  2.6000  2.0000
  80.  *  2.1000  1.0000  0.9000  0.7000  3.3000  3.1000  3.0000  1.4000  1.4000
1.2000  2.5000  2.0000  1.3000
  90.  *  2.1000  1.4000  1.4000  1.1000  3.6000  3.4000  3.1000  0.6000  0.6000
0.5000  1.8000  1.5000  0.8000
```

```
 100.  *  2.2000  1.5000  1.5000  1.3000  3.6000  3.4000  2.7000  0.2000  0.2000
0.2000  1.7000  1.2000  0.6000
 110.  *  2.3000  1.3000  1.3000  1.3000  3.2000  3.1000  2.4000  0.1000  0.1000
0.1000  1.7000  1.3000  0.6000
 120.  *  2.5000  1.2000  1.2000  1.2000  3.2000  2.9000  2.2000  0.1000  0.1000
0.1000  1.8000  1.4000  0.6000
 130.  *  2.8000  1.2000  1.2000  1.2000  3.3000  2.9000  2.0000  0.1000  0.1000
0.1000  1.8000  1.3000  0.4000
 140.  *  2.8000  1.1000  1.1000  1.1000  3.2000  2.7000  1.6000  0.1000  0.1000
0.1000  1.8000  1.1000  0.1000
 150.  *  2.6000  1.1000  1.0000  1.0000  2.9000  2.2000  1.4000  0.0000  0.0000
0.0000  1.4000  0.7000  0.0000
 160.  *  1.8000  1.3000  1.2000  1.0000  2.2000  1.7000  1.5000  0.3000  0.1000
0.0000  0.6000  0.2000  0.0000
 170.  *  0.8000  2.1000  1.7000  1.1000  1.6000  1.5000  1.5000  0.9000  0.4000
0.0000  0.1000  0.0000  0.0000
 180.  *  0.4000  2.4000  2.0000  1.0000  1.4000  1.4000  1.4000  1.4000  0.9000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.2000  2.5000  2.1000  1.3000  1.5000  1.5000  1.5000  1.5000  1.1000
0.2000  0.0000  0.0000  0.0000
 200.  *  0.2000  2.5000  2.2000  1.6000  1.6000  1.6000  1.6000  1.5000  1.2000
0.4000  0.0000  0.0000  0.0000
 210.  *  0.2000  2.4000  2.2000  1.8000  1.7000  1.7000  1.7000  1.4000  1.2000
0.6000  0.1000  0.1000  0.1000
 220.  *  0.2000  2.7000  2.1000  1.8000  2.0000  2.0000  1.9000  1.4000  1.1000
0.7000  0.1000  0.1000  0.1000
 230.  *  0.1000  2.9000  2.4000  1.8000  2.2000  2.2000  2.0000  1.4000  1.1000
0.6000  0.1000  0.1000  0.1000
 240.  *  0.0000  3.2000  2.8000  2.0000  2.5000  2.4000  2.1000  1.6000  1.2000
0.7000  0.2000  0.2000  0.2000
 250.  *  0.0000  3.3000  2.9000  2.2000  2.2000  2.2000  1.8000  2.1000  1.7000
1.2000  0.7000  0.7000  0.5000
 260.  *  0.0000  2.6000  2.4000  1.8000  1.3000  1.3000  1.0000  2.9000  2.6000
2.1000  1.4000  1.3000  1.0000
 270.  *  0.1000  1.9000  1.5000  0.8000  0.5000  0.5000  0.4000  3.2000  3.1000
2.7000  1.7000  1.7000  1.4000
 280.  *  0.3000  1.7000  1.2000  0.7000  0.2000  0.2000  0.2000  3.1000  2.9000
2.3000  1.7000  1.7000  1.6000
 290.  *  0.4000  1.6000  1.2000  0.7000  0.1000  0.1000  0.1000  2.9000  2.7000
2.3000  1.5000  1.5000  1.5000
 300.  *  0.5000  1.8000  1.3000  0.6000  0.1000  0.1000  0.1000  2.9000  2.5000
1.9000  1.4000  1.4000  1.4000
 310.  *  0.5000  1.9000  1.3000  0.5000  0.1000  0.1000  0.1000  2.9000  2.5000
1.7000  1.2000  1.2000  1.2000
 320.  *  0.7000  1.7000  1.1000  0.1000  0.1000  0.1000  0.1000  2.9000  2.4000
1.3000  1.2000  1.2000  1.2000
 330.  *  1.4000  1.3000  0.7000  0.0000  0.0000  0.0000  0.0000  2.6000  1.9000
1.2000  1.3000  1.2000  1.2000
```

```
 340.  *  2.8000  0.6000  0.2000  0.0000  0.3000  0.1000  0.0000  1.9000  1.4000
1.2000  1.6000  1.3000  1.2000
 350.  *  3.8000  0.1000  0.0000  0.0000  0.9000  0.4000  0.0000  1.4000  1.3000
1.3000  2.1000  1.7000  1.2000
 360.  *  3.7000  0.0000  0.0000  0.0000  1.3000  0.8000  0.0000  1.2000  1.2000
1.2000  2.6000  2.1000  1.2000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  3.8000  3.3000  2.9000  2.2000  3.6000  3.4000  3.1000  3.2000  3.1000
2.7000  3.1000  2.6000  2.2000
 DEGR. *    350     250     250     250      90      90      90     270     270
270      60      50      60

 THE HIGHEST CONCENTRATION OF   4.2000 PPM OCCURRED AT RECEPTOR     5.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
11,11,5,5,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8
,1036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,12
00,0,0,1200,-1200,0,0,0,0,0,0,-40,-40,-40,-45,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',55.6,154.6,5.9
'N Leg, E Side - 25 m',9.3,209.8,5.9
'N Leg, E Side - 50 m',-43.4,272.6,5.9
'N Leg, E Side-Midblk',-323.6,606.6,5.9
'N Leg, W Side-Corner',-153.8,-37.7,5.9
'N Leg, W Side - 25 m',-200.1,17.5,5.9
'N Leg, W Side - 50 m',-252.8,80.4,5.9
'N Leg, W Side-Midblk',-533.0,414.3,5.9
'S Leg, E Side-Corner',146.0,47.0,5.9
'S Leg, E Side - 25 m',192.3,-8.2,5.9
'S Leg, E Side - 50 m',245.0,-71.0,5.9
'S Leg, E Side-Midblk',525.2,-405.0,5.9
'S Leg, W Side-Corner',-63.8,-144.9,5.9
'S Leg, W Side - 25 m',-17.5,-200.1,5.9
'S Leg, W Side - 50 m',35.2,-262.9,5.9
'S Leg, W Side-Midblk',315.5,-596.9,5.9
'E Leg, N Side - 25 m',106.6,205.5,5.9
'E Leg, N Side - 50 m',164.5,263.5,5.9
'E Leg, N Side-Midblk',472.8,571.8,5.9
'W Leg, N Side - 25 m',-208.9,-83.9,5.9
'W Leg, N Side - 50 m',-271.8,-136.7,5.9
'W Leg, N Side-Midblk',-605.7,-416.9,5.9
'E Leg, S Side - 25 m',196.9,97.9,5.9
'E Leg, S Side - 50 m',254.9,155.9,5.9
'E Leg, S Side-Midblk',563.2,464.2,5.9
'W Leg, S Side - 25 m',-119.0,-191.2,5.9
'W Leg, S Side - 50 m',-181.8,-243.9,5.9
'W Leg, S Side-Midblk',-515.7,-524.1,5.9
'2025 I270 & MD189 (IC.33)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-51,-42,-822,877,24200,2.02,0.0,151.7
1
'N Leg Dep - FreeFlow','AG',51,42,-721,962,24200,1.49,0.0,151.7
1
'S Leg App - FreeFlow','AG',51,42,822,-877,24200,2.02,0.0,151.7
1
'S Leg Dep - FreeFlow','AG',-51,-42,721,-962,24200,1.49,0.0,151.7
1
'E Leg App - FreeFlow','AG',-20,22,827,870,11000,3.84,0.0,79.7
1
'E Leg Dep - FreeFlow','AG',20,-22,870,827,11000,1.82,0.0,79.7
1
```

'W Leg App - FreeFlow','AG',20,-22,-900,-794,11000,2.19,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',-20,22,-939,-748,11000,1.82,0.0,79.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 I270 & MD189 (IC.33)

DATE : 2/ 8/19
TIME : 10: 5:12

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-51.0	-42.0	-822.0	877.0	*	1200.	320.	AG	24200.	2.0	0.0	****		
2. N Leg Dep - FreeFlow	*	51.0	42.0	-721.0	962.0	*	1201.	320.	AG	24200.	1.5	0.0	****		
3. S Leg App - FreeFlow	*	51.0	42.0	822.0	-877.0	*	1200.	140.	AG	24200.	2.0	0.0	****		
4. S Leg Dep - FreeFlow	*	-51.0	-42.0	721.0	-962.0	*	1201.	140.	AG	24200.	1.5	0.0	****		
5. E Leg App - FreeFlow	*	-20.0	22.0	827.0	870.0	*	1199.	45.	AG	11000.	3.8	0.0	79.7		
6. E Leg Dep - FreeFlow	*	20.0	-22.0	870.0	827.0	*	1201.	45.	AG	11000.	1.8	0.0	79.7		
7. W Leg App - FreeFlow	*	20.0	-22.0	-900.0	-794.0	*	1201.	230.	AG	11000.	2.2	0.0	79.7		
8. W Leg Dep - FreeFlow	*	-20.0	22.0	-939.0	-748.0	*	1199.	230.	AG	11000.	1.8	0.0	79.7		

MD189 (IC.33)

DATE : 2/ 8/19
TIME : 10: 5:12

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	55.6	154.6	5.9
2. N Leg, E Side - 25 m	9.3	209.8	5.9
3. N Leg, E Side - 50 m	-43.4	272.6	5.9
4. N Leg, E Side-Midblk	-323.6	606.6	5.9
5. N Leg, W Side-Corner	-153.8	-37.7	5.9
6. N Leg, W Side - 25 m	-200.1	17.5	5.9
7. N Leg, W Side - 50 m	-252.8	80.4	5.9
8. N Leg, W Side-Midblk	-533.0	414.3	5.9
9. S Leg, E Side-Corner	146.0	47.0	5.9
10. S Leg, E Side - 25 m	192.3	-8.2	5.9
11. S Leg, E Side - 50 m	245.0	-71.0	5.9
12. S Leg, E Side-Midblk	525.2	-405.0	5.9
13. S Leg, W Side-Corner	-63.8	-144.9	5.9
14. S Leg, W Side - 25 m	-17.5	-200.1	5.9
15. S Leg, W Side - 50 m	35.2	-262.9	5.9
16. S Leg, W Side-Midblk	315.5	-596.9	5.9
17. E Leg, N Side - 25 m	106.6	205.5	5.9
18. E Leg, N Side - 50 m	164.5	263.5	5.9
19. E Leg, N Side-Midblk	472.8	571.8	5.9
20. W Leg, N Side - 25 m	-208.9	-83.9	5.9
21. W Leg, N Side - 50 m	-271.8	-136.7	5.9
22. W Leg, N Side-Midblk	-605.7	-416.9	5.9
23. E Leg, S Side - 25 m	196.9	97.9	5.9
24. E Leg, S Side - 50 m	254.9	155.9	5.9
25. E Leg, S Side-Midblk	563.2	464.2	5.9
26. W Leg, S Side - 25 m	-119.0	-191.2	5.9

27. W Leg, S Side - 50 m * -181.8 -243.9 5.9 *
28. W Leg, S Side-Midblk * -515.7 -524.1 5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.2000	0.1000	0.1000	0.1000	1.6000	1.5000	1.5000	1.5000	1.5000	1.1000	0.7000	0.3000	2.9000	2.2000	1.9000
20.	* 0.3000	0.1000	0.1000	0.1000	1.5000	1.4000	1.4000	1.4000	1.7000	1.1000	0.7000	0.2000	3.1000	2.2000	1.9000
30.	* 0.5000	0.0000	0.0000	0.0000	1.7000	1.4000	1.4000	1.4000	1.9000	0.9000	0.6000	0.1000	3.4000	2.4000	1.8000
40.	* 1.4000	0.2000	0.0000	0.0000	2.3000	1.6000	1.5000	1.4000	1.6000	0.6000	0.2000	0.0000	3.2000	1.9000	1.5000
50.	* 2.3000	0.6000	0.3000	0.0000	3.2000	2.1000	1.8000	1.5000	0.8000	0.2000	0.0000	0.0000	2.5000	1.5000	1.3000
60.	* 2.5000	1.0000	0.5000	0.0000	3.3000	2.3000	2.0000	1.4000	0.2000	0.0000	0.0000	0.0000	1.6000	1.2000	1.2000
70.	* 2.2000	1.1000	0.7000	0.1000	3.1000	2.5000	2.1000	1.5000	0.2000	0.1000	0.1000	0.1000	1.4000	1.3000	1.3000
80.	* 1.9000	1.2000	0.8000	0.3000	2.9000	2.3000	2.2000	1.7000	0.2000	0.1000	0.1000	0.1000	1.5000	1.4000	1.4000
90.	* 1.8000	1.1000	0.8000	0.4000	2.8000	2.4000	2.2000	1.8000	0.2000	0.1000	0.1000	0.1000	1.5000	1.4000	1.4000
100.	* 1.5000	1.0000	0.8000	0.4000	2.7000	2.5000	2.3000	1.9000	0.1000	0.1000	0.1000	0.1000	1.6000	1.5000	1.5000
110.	* 1.5000	1.0000	0.7000	0.4000	2.8000	2.4000	2.5000	2.2000	0.1000	0.1000	0.1000	0.1000	1.6000	1.6000	1.6000
120.	* 1.6000	1.1000	0.8000	0.5000	2.9000	2.6000	2.5000	2.3000	0.2000	0.2000	0.2000	0.2000	1.8000	1.8000	1.8000

```
 130.  *  2.1000  1.3000  1.2000  0.8000  2.8000  2.6000  2.4000  2.5000  0.6000
0.6000  0.6000  0.5000  1.7000  1.7000  1.6000
 140.  *  2.9000  2.1000  1.9000  1.6000  2.4000  1.9000  1.8000  1.8000  1.4000
1.4000  1.4000  1.1000  1.1000  1.1000  1.0000
 150.  *  3.4000  2.6000  2.5000  2.0000  1.4000  1.2000  0.9000  0.8000  2.0000
2.0000  2.0000  1.5000  0.4000  0.4000  0.4000
 160.  *  3.4000  2.8000  2.4000  2.0000  1.1000  0.9000  0.6000  0.4000  2.1000
2.0000  2.0000  1.8000  0.2000  0.2000  0.2000
 170.  *  3.3000  2.5000  2.2000  1.9000  1.1000  0.7000  0.5000  0.3000  1.9000
1.9000  1.9000  1.8000  0.1000  0.1000  0.1000
 180.  *  3.2000  2.4000  2.0000  1.7000  1.0000  0.7000  0.5000  0.3000  1.7000
1.6000  1.7000  1.6000  0.2000  0.1000  0.1000
 190.  *  3.3000  2.2000  1.9000  1.6000  1.2000  0.7000  0.5000  0.3000  1.6000
1.5000  1.5000  1.5000  0.2000  0.1000  0.1000
 200.  *  3.4000  2.0000  1.7000  1.6000  1.3000  0.8000  0.5000  0.2000  1.5000
1.4000  1.4000  1.4000  0.2000  0.1000  0.1000
 210.  *  3.3000  1.9000  1.6000  1.3000  1.4000  0.8000  0.5000  0.1000  1.6000
1.4000  1.4000  1.4000  0.2000  0.0000  0.0000
 220.  *  3.4000  1.7000  1.5000  1.2000  1.4000  0.5000  0.3000  0.0000  2.1000
1.5000  1.4000  1.4000  0.5000  0.0000  0.0000
 230.  *  2.5000  1.6000  1.4000  1.3000  1.0000  0.3000  0.1000  0.0000  3.0000
1.9000  1.6000  1.5000  1.2000  0.3000  0.1000
 240.  *  1.8000  1.2000  1.2000  1.2000  0.5000  0.0000  0.0000  0.0000  3.2000
2.0000  1.7000  1.4000  1.6000  0.6000  0.3000
 250.  *  1.5000  1.3000  1.3000  1.3000  0.2000  0.1000  0.1000  0.1000  3.2000
2.2000  1.9000  1.4000  1.5000  0.8000  0.5000
 260.  *  1.5000  1.4000  1.4000  1.4000  0.2000  0.1000  0.1000  0.1000  3.1000
2.2000  2.0000  1.6000  1.3000  0.8000  0.6000
 270.  *  1.5000  1.4000  1.4000  1.4000  0.2000  0.1000  0.1000  0.1000  2.8000
2.3000  2.0000  1.7000  1.2000  0.8000  0.6000
 280.  *  1.6000  1.5000  1.5000  1.5000  0.2000  0.1000  0.1000  0.1000  3.1000
2.6000  2.4000  1.8000  1.1000  0.7000  0.6000
 290.  *  1.7000  1.6000  1.6000  1.5000  0.1000  0.1000  0.1000  0.1000  3.0000
2.6000  2.6000  2.1000  1.0000  0.7000  0.6000
 300.  *  1.8000  1.8000  1.8000  1.5000  0.2000  0.2000  0.2000  0.2000  3.2000
2.9000  2.7000  2.3000  1.1000  0.8000  0.6000
 310.  *  1.7000  1.7000  1.6000  1.1000  0.6000  0.6000  0.6000  0.5000  3.1000
2.8000  2.6000  2.4000  1.4000  1.2000  1.0000
 320.  *  1.1000  1.1000  1.0000  0.8000  1.4000  1.4000  1.4000  1.0000  2.6000
2.1000  2.0000  1.9000  2.4000  1.9000  1.8000
 330.  *  0.4000  0.4000  0.4000  0.4000  2.0000  2.0000  2.0000  1.5000  1.6000
1.4000  1.1000  0.9000  2.8000  2.5000  2.3000
 340.  *  0.3000  0.2000  0.2000  0.2000  2.0000  2.0000  2.0000  1.8000  1.4000
1.0000  0.8000  0.5000  3.0000  2.6000  2.2000
 350.  *  0.2000  0.1000  0.1000  0.1000  1.9000  1.9000  1.9000  1.8000  1.3000
0.9000  0.7000  0.4000  2.8000  2.4000  2.3000
 360.  *  0.2000  0.1000  0.1000  0.1000  1.7000  1.6000  1.7000  1.6000  1.4000
0.9000  0.7000  0.4000  2.7000  2.3000  2.0000
```

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  3.4000  2.8000  2.5000  2.0000  3.3000  2.6000  2.5000  2.5000  3.2000
2.9000  2.7000  2.4000  3.4000  2.6000  2.3000
 DEGR. *    200     160     150     150      60     120     120     130     240
300     300     310      30     340     330
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  1.7000  0.1000  0.1000  0.1000  1.2000  0.9000  0.4000  1.5000  1.5000
1.5000  2.2000  2.0000  1.5000
  20.  *  1.6000  0.2000  0.2000  0.2000  1.1000  0.9000  0.4000  1.7000  1.7000
1.6000  2.5000  2.1000  1.6000
  30.  *  1.3000  0.5000  0.5000  0.5000  1.2000  1.0000  0.5000  1.9000  1.8000
1.5000  2.8000  2.7000  1.9000
  40.  *  1.2000  1.4000  1.3000  1.1000  1.8000  1.6000  1.0000  1.5000  1.5000
1.1000  3.0000  2.7000  2.2000
  50.  *  1.3000  2.3000  2.3000  1.9000  2.7000  2.2000  1.8000  0.8000  0.8000
0.6000  2.1000  1.9000  1.6000
  60.  *  1.2000  2.5000  2.5000  2.2000  2.8000  2.6000  2.0000  0.2000  0.2000
0.2000  1.4000  1.3000  0.9000
  70.  *  1.3000  2.2000  2.2000  2.1000  2.6000  2.3000  1.8000  0.1000  0.1000
0.1000  1.0000  1.0000  0.6000
  80.  *  1.4000  1.9000  1.9000  1.9000  2.2000  2.0000  1.7000  0.1000  0.1000
0.1000  1.0000  0.9000  0.5000
  90.  *  1.4000  1.8000  1.8000  1.8000  2.1000  1.9000  1.6000  0.1000  0.1000
0.1000  1.1000  0.9000  0.5000
```

```
 100.  *  1.5000  1.5000  1.5000  1.5000  2.1000  1.8000  1.4000  0.0000  0.0000
0.0000  1.2000  0.9000  0.5000
 110.  *  1.5000  1.4000  1.4000  1.4000  2.1000  1.8000  1.2000  0.0000  0.0000
0.0000  1.1000  0.8000  0.2000
 120.  *  1.5000  1.4000  1.4000  1.4000  2.1000  1.6000  0.9000  0.0000  0.0000
0.0000  1.0000  0.7000  0.0000
 130.  *  1.2000  1.6000  1.5000  1.5000  1.7000  1.3000  0.9000  0.1000  0.0000
0.0000  0.7000  0.4000  0.0000
 140.  *  0.8000  2.0000  1.6000  1.5000  1.4000  1.1000  1.0000  0.3000  0.1000
0.0000  0.3000  0.1000  0.0000
 150.  *  0.4000  2.3000  1.9000  1.4000  1.0000  0.9000  0.9000  0.9000  0.5000
0.0000  0.1000  0.0000  0.0000
 160.  *  0.2000  2.6000  2.2000  1.5000  0.9000  0.9000  0.9000  1.2000  0.8000
0.1000  0.0000  0.0000  0.0000
 170.  *  0.1000  2.7000  2.4000  1.8000  1.0000  1.0000  1.0000  1.3000  0.9000
0.3000  0.0000  0.0000  0.0000
 180.  *  0.1000  2.8000  2.6000  2.1000  1.0000  1.0000  1.0000  1.3000  1.0000
0.4000  0.1000  0.1000  0.1000
 190.  *  0.1000  2.9000  2.7000  2.3000  1.2000  1.2000  1.2000  1.2000  0.9000
0.4000  0.1000  0.1000  0.1000
 200.  *  0.1000  3.1000  2.7000  2.5000  1.3000  1.3000  1.3000  1.1000  0.9000
0.4000  0.1000  0.1000  0.1000
 210.  *  0.0000  3.2000  3.0000  2.8000  1.4000  1.4000  1.3000  1.3000  1.1000
0.5000  0.2000  0.2000  0.2000
 220.  *  0.0000  3.0000  2.9000  2.7000  1.4000  1.4000  1.2000  1.8000  1.5000
1.3000  0.5000  0.5000  0.4000
 230.  *  0.0000  2.2000  2.0000  1.8000  1.0000  1.0000  0.8000  2.6000  2.3000
2.1000  1.2000  1.2000  0.9000
 240.  *  0.0000  1.5000  1.3000  0.9000  0.5000  0.5000  0.3000  2.6000  2.6000
2.3000  1.6000  1.5000  1.3000
 250.  *  0.0000  1.1000  1.0000  0.6000  0.1000  0.1000  0.1000  2.7000  2.4000
2.1000  1.5000  1.5000  1.4000
 260.  *  0.2000  1.0000  0.9000  0.5000  0.1000  0.1000  0.1000  2.4000  2.1000
1.9000  1.3000  1.3000  1.3000
 270.  *  0.3000  1.1000  0.9000  0.5000  0.1000  0.1000  0.1000  2.3000  2.2000
1.8000  1.2000  1.2000  1.2000
 280.  *  0.3000  1.2000  0.9000  0.4000  0.1000  0.1000  0.1000  2.3000  2.1000
1.7000  1.1000  1.1000  1.1000
 290.  *  0.3000  1.2000  0.9000  0.3000  0.0000  0.0000  0.0000  2.3000  2.0000
1.4000  1.0000  1.0000  1.0000
 300.  *  0.4000  1.0000  0.7000  0.0000  0.0000  0.0000  0.0000  2.3000  1.9000
1.2000  0.9000  0.9000  0.9000
 310.  *  0.7000  0.7000  0.3000  0.0000  0.1000  0.0000  0.0000  2.1000  1.7000
1.3000  1.0000  0.9000  0.9000
 320.  *  1.5000  0.3000  0.1000  0.0000  0.3000  0.1000  0.0000  1.7000  1.4000
1.3000  1.5000  1.1000  1.0000
 330.  *  2.1000  0.1000  0.0000  0.0000  0.9000  0.4000  0.0000  1.3000  1.2000
1.2000  1.8000  1.4000  0.9000
```

```
 340.  *  2.0000  0.1000  0.1000  0.1000  1.2000  0.7000  0.0000  1.2000  1.2000
1.2000  2.1000  1.7000  1.0000
 350.  *  2.0000  0.1000  0.1000  0.1000  1.3000  0.9000  0.2000  1.3000  1.3000
1.3000  2.2000  1.9000  1.3000
 360.  *  1.8000  0.1000  0.1000  0.1000  1.3000  1.0000  0.4000  1.4000  1.4000
1.4000  2.2000  1.8000  1.3000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  2.1000  3.2000  3.0000  2.8000  2.8000  2.6000  2.0000  2.7000  2.6000
2.3000  3.0000  2.7000  2.2000
 DEGR. *    330     210     210     210      60      60      60     250     240
240      40      30      40

 THE HIGHEST CONCENTRATION OF   3.4000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
7,7,9,9,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,10,10,-10,-10,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',120.3,141.0,5.9
'N Leg, E Side - 25 m',132.8,212.0,5.9
'N Leg, E Side - 50 m',147.1,292.7,5.9
'N Leg, E Side-Midblk',222.8,722.1,5.9
'N Leg, W Side-Corner',-76.7,106.3,5.9
'N Leg, W Side - 25 m',-64.2,177.2,5.9
'N Leg, W Side - 50 m',-50.0,258.0,5.9
'N Leg, W Side-Midblk',25.7,687.3,5.9
'S Leg, E Side-Corner',76.7,-106.3,5.9
'S Leg, E Side - 25 m',64.2,-177.2,5.9
'S Leg, E Side - 50 m',50.0,-258.0,5.9
'S Leg, E Side-Midblk',-25.7,-687.3,5.9
'S Leg, W Side-Corner',-120.3,-141.0,5.9
'S Leg, W Side - 25 m',-132.8,-212.0,5.9
'S Leg, W Side - 50 m',-147.1,-292.7,5.9
'S Leg, W Side-Midblk',-222.8,-722.1,5.9
'E Leg, N Side - 25 m',191.2,153.5,5.9
'E Leg, N Side - 50 m',272.0,167.8,5.9
'E Leg, N Side-Midblk',701.4,243.5,5.9
'W Leg, N Side - 25 m',-147.6,93.8,5.9
'W Leg, N Side - 50 m',-228.4,79.5,5.9
'W Leg, N Side-Midblk',-657.7,3.8,5.9
'E Leg, S Side - 25 m',147.6,-93.8,5.9
'E Leg, S Side - 50 m',228.4,-79.5,5.9
'E Leg, S Side-Midblk',657.7,-3.8,5.9
'W Leg, S Side - 25 m',-191.2,-153.5,5.9
'W Leg, S Side - 50 m',-272.0,-167.8,5.9
'W Leg, S Side-Midblk',-701.4,-243.5,5.9
'2025 I495 & I95 (IC.16)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-41,7,167,1189,15400,1.5,0.0,103.7
1
'N Leg Dep - FreeFlow','AG',41,-7,250,1174,15400,3.06,0.0,103.7
1
'S Leg App - FreeFlow','AG',41,-7,-167,-1189,15400,1.5,0.0,103.7
1
'S Leg Dep - FreeFlow','AG',-41,7,-250,-1174,15400,1.5,0.0,103.7
1
'E Leg App - FreeFlow','AG',-9,53,1172,262,19800,3.47,0.0,127.7
1
'E Leg Dep - FreeFlow','AG',9,-53,1191,155,19800,1.5,0.0,127.7
1
```

'W Leg App - FreeFlow','AG',9,-53,-1172,-262,19800,1.5,0.0,127.7
1
'W Leg Dep - FreeFlow','AG',-9,53,-1191,-155,19800,4.37,0.0,127.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 I495 & I95 (IC.16)

DATE : 2/ 8/19
TIME : 9:20: 8

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-41.0	7.0	167.0	1189.0	*	1200.	10.	AG	15400.	1.5	0.0	****		
2. N Leg Dep - FreeFlow	*	41.0	-7.0	250.0	1174.0	*	1199.	10.	AG	15400.	3.1	0.0	****		
3. S Leg App - FreeFlow	*	41.0	-7.0	-167.0	-1189.0	*	1200.	190.	AG	15400.	1.5	0.0	****		
4. S Leg Dep - FreeFlow	*	-41.0	7.0	-250.0	-1174.0	*	1199.	190.	AG	15400.	1.5	0.0	****		
5. E Leg App - FreeFlow	*	-9.0	53.0	1172.0	262.0	*	1199.	80.	AG	19800.	3.5	0.0	****		
6. E Leg Dep - FreeFlow	*	9.0	-53.0	1191.0	155.0	*	1200.	80.	AG	19800.	1.5	0.0	****		
7. W Leg App - FreeFlow	*	9.0	-53.0	-1172.0	-262.0	*	1199.	260.	AG	19800.	1.5	0.0	****		
8. W Leg Dep - FreeFlow	*	-9.0	53.0	-1191.0	-155.0	*	1200.	260.	AG	19800.	4.4	0.0	****		

(IC.16)

DATE : 2/ 8/19
TIME : 9:20: 8

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	120.3	141.0	5.9
2. N Leg, E Side - 25 m	132.8	212.0	5.9
3. N Leg, E Side - 50 m	147.1	292.7	5.9
4. N Leg, E Side-Midblk	222.8	722.1	5.9
5. N Leg, W Side-Corner	-76.7	106.3	5.9
6. N Leg, W Side - 25 m	-64.2	177.2	5.9
7. N Leg, W Side - 50 m	-50.0	258.0	5.9
8. N Leg, W Side-Midblk	25.7	687.3	5.9
9. S Leg, E Side-Corner	76.7	-106.3	5.9
10. S Leg, E Side - 25 m	64.2	-177.2	5.9
11. S Leg, E Side - 50 m	50.0	-258.0	5.9
12. S Leg, E Side-Midblk	-25.7	-687.3	5.9
13. S Leg, W Side-Corner	-120.3	-141.0	5.9
14. S Leg, W Side - 25 m	-132.8	-212.0	5.9
15. S Leg, W Side - 50 m	-147.1	-292.7	5.9
16. S Leg, W Side-Midblk	-222.8	-722.1	5.9
17. E Leg, N Side - 25 m	191.2	153.5	5.9
18. E Leg, N Side - 50 m	272.0	167.8	5.9
19. E Leg, N Side-Midblk	701.4	243.5	5.9
20. W Leg, N Side - 25 m	-147.6	93.8	5.9
21. W Leg, N Side - 50 m	-228.4	79.5	5.9
22. W Leg, N Side-Midblk	-657.7	3.8	5.9
23. E Leg, S Side - 25 m	147.6	-93.8	5.9
24. E Leg, S Side - 50 m	228.4	-79.5	5.9
25. E Leg, S Side-Midblk	657.7	-3.8	5.9
26. W Leg, S Side - 25 m	-191.2	-153.5	5.9

     27. W Leg, S Side - 50 m *   -272.0   -167.8   5.9   *
     28. W Leg, S Side-Midblk *   -701.4   -243.5   5.9   *

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND * CONCENTRATION
ANGLE *   (PPM)
(DEGR)*   1   2   3   4   5   6   7   8   9
10   11   12   13   14   15

------*---
----
  10. * 1.8000 1.7000 1.7000 1.3000 1.1000 1.1000 1.1000 0.8000 3.2000
2.6000 2.2000 1.6000 2.9000 2.6000 2.2000
  20. * 0.9000 0.8000 0.7000 0.6000 1.7000 1.6000 1.6000 1.3000 2.2000
1.8000 1.3000 0.9000 3.5000 3.0000 2.8000
  30. * 0.5000 0.3000 0.3000 0.3000 1.7000 1.7000 1.7000 1.5000 1.8000
1.4000 1.1000 0.5000 3.5000 2.9000 2.5000
  40. * 0.4000 0.2000 0.2000 0.2000 1.6000 1.6000 1.6000 1.5000 1.9000
1.4000 1.1000 0.6000 3.5000 2.6000 2.3000
  50. * 0.3000 0.1000 0.1000 0.1000 1.6000 1.5000 1.5000 1.4000 2.0000
1.4000 1.1000 0.4000 3.4000 2.6000 2.0000
  60. * 0.5000 0.1000 0.1000 0.1000 1.6000 1.3000 1.3000 1.3000 2.2000
1.4000 1.0000 0.3000 3.2000 2.3000 1.9000
  70. * 1.1000 0.2000 0.1000 0.1000 2.3000 1.4000 1.3000 1.3000 2.0000
0.9000 0.4000 0.0000 3.0000 1.9000 1.5000
  80. * 2.2000 0.5000 0.2000 0.1000 3.7000 1.9000 1.4000 1.2000 1.2000
0.3000 0.2000 0.0000 2.2000 1.3000 1.0000
  90. * 3.0000 1.2000 0.6000 0.0000 4.6000 2.6000 2.0000 1.3000 0.5000
0.1000 0.0000 0.0000 1.4000 1.0000 0.9000
 100. * 2.9000 1.6000 1.0000 0.0000 4.6000 2.9000 2.3000 1.4000 0.2000
0.0000 0.0000 0.0000 1.0000 0.9000 0.9000
 110. * 2.6000 1.6000 1.2000 0.1000 4.1000 2.8000 2.5000 1.6000 0.1000
0.0000 0.0000 0.0000 1.0000 0.9000 0.9000
 120. * 2.3000 1.5000 1.1000 0.5000 4.0000 2.6000 2.3000 1.6000 0.1000
0.0000 0.0000 0.0000 0.9000 0.8000 0.8000

130. * 2.2000 1.5000 1.2000 0.5000 3.6000 2.7000 2.4000 1.7000 0.1000
0.0000 0.0000 0.0000 1.0000 0.9000 0.9000
140. * 2.1000 1.5000 1.1000 0.5000 3.7000 2.7000 2.2000 1.7000 0.2000
0.1000 0.1000 0.1000 1.1000 1.0000 1.0000
150. * 2.0000 1.4000 1.1000 0.5000 3.6000 2.7000 2.4000 1.9000 0.1000
0.1000 0.1000 0.1000 1.1000 1.1000 1.1000
160. * 2.0000 1.5000 1.2000 0.6000 3.6000 2.8000 2.6000 2.0000 0.1000
0.1000 0.1000 0.1000 1.2000 1.2000 1.2000
170. * 2.3000 1.5000 1.1000 0.7000 3.7000 3.0000 2.6000 2.1000 0.1000
0.1000 0.1000 0.1000 1.3000 1.3000 1.3000
180. * 2.5000 2.0000 1.5000 1.2000 3.7000 2.8000 2.6000 2.3000 0.4000
0.4000 0.4000 0.3000 1.3000 1.3000 1.3000
190. * 3.3000 2.9000 2.5000 2.3000 3.4000 2.6000 2.2000 1.7000 1.0000
0.9000 0.9000 0.8000 0.9000 0.9000 0.9000
200. * 3.8000 3.4000 3.2000 3.0000 2.7000 2.1000 1.6000 0.9000 1.3000
1.3000 1.3000 1.1000 0.5000 0.4000 0.4000
210. * 4.1000 3.7000 3.4000 3.0000 2.8000 1.8000 1.4000 0.6000 1.3000
1.3000 1.3000 1.2000 0.2000 0.1000 0.1000
220. * 4.5000 3.7000 3.2000 2.5000 2.9000 1.9000 1.4000 0.6000 1.2000
1.2000 1.2000 1.2000 0.2000 0.1000 0.1000
230. * 4.7000 3.6000 3.1000 2.4000 3.2000 2.0000 1.5000 0.6000 1.1000
1.1000 1.1000 1.1000 0.2000 0.1000 0.1000
240. * 4.9000 3.5000 2.9000 1.8000 3.6000 2.0000 1.4000 0.3000 1.1000
1.0000 1.0000 1.0000 0.3000 0.1000 0.1000
250. * 5.1000 3.1000 2.4000 1.6000 3.7000 1.6000 0.8000 0.0000 1.4000
1.0000 0.9000 0.9000 0.5000 0.0000 0.0000
260. * 4.1000 2.2000 1.7000 1.4000 2.8000 0.8000 0.3000 0.0000 2.1000
1.2000 1.0000 0.8000 1.3000 0.3000 0.1000
270. * 2.5000 1.6000 1.4000 1.4000 1.2000 0.2000 0.0000 0.0000 3.1000
2.0000 1.5000 0.9000 2.1000 0.9000 0.4000
280. * 1.9000 1.6000 1.6000 1.6000 0.5000 0.0000 0.0000 0.0000 3.3000
2.4000 1.9000 0.9000 2.4000 1.4000 0.8000
290. * 1.6000 1.4000 1.4000 1.4000 0.3000 0.0000 0.0000 0.0000 3.2000
2.4000 2.1000 1.1000 2.2000 1.5000 1.1000
300. * 1.6000 1.4000 1.4000 1.4000 0.2000 0.0000 0.0000 0.0000 3.1000
2.2000 2.0000 1.2000 2.0000 1.4000 1.2000
310. * 1.7000 1.5000 1.5000 1.5000 0.2000 0.0000 0.0000 0.0000 2.9000
2.2000 1.9000 1.4000 1.9000 1.4000 1.0000
320. * 1.8000 1.7000 1.7000 1.7000 0.3000 0.1000 0.1000 0.1000 2.9000
2.3000 1.9000 1.4000 1.9000 1.5000 1.1000
330. * 1.9000 1.8000 1.8000 1.8000 0.2000 0.1000 0.1000 0.1000 3.0000
2.5000 2.1000 1.6000 1.8000 1.4000 1.1000
340. * 2.0000 2.0000 2.0000 2.0000 0.1000 0.1000 0.1000 0.1000 3.1000
2.7000 2.1000 1.7000 1.9000 1.4000 1.1000
350. * 2.3000 2.3000 2.3000 2.1000 0.1000 0.1000 0.1000 0.1000 3.4000
2.9000 2.5000 1.9000 1.9000 1.4000 1.1000
360. * 2.4000 2.3000 2.3000 1.8000 0.5000 0.5000 0.5000 0.3000 3.6000
2.9000 2.8000 2.1000 2.3000 1.7000 1.5000

```
------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  5.1000  3.7000  3.4000  3.0000  4.6000  3.0000  2.6000  2.3000  3.6000
2.9000  2.8000  2.1000  3.5000  3.0000  2.8000
 DEGR. *    250     210     210     200      90     170     160     180     360
350     360     360      30      20      20
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  1.6000  0.6000  0.2000  0.1000  0.4000  0.3000  0.1000  2.0000  1.7000
1.5000  2.1000  1.9000  1.7000
  20.  *  2.2000  0.2000  0.1000  0.1000  1.0000  0.6000  0.2000  1.7000  1.6000
1.6000  2.6000  2.3000  1.8000
  30.  *  1.8000  0.2000  0.2000  0.2000  1.2000  0.9000  0.3000  1.6000  1.6000
1.6000  3.0000  2.6000  2.0000
  40.  *  1.7000  0.2000  0.2000  0.2000  1.2000  1.0000  0.4000  1.8000  1.8000
1.7000  2.8000  2.7000  2.3000
  50.  *  1.5000  0.2000  0.2000  0.2000  1.2000  0.9000  0.6000  1.9000  1.9000
1.8000  2.9000  2.9000  2.5000
  60.  *  1.1000  0.4000  0.4000  0.3000  1.3000  1.1000  0.8000  2.1000  2.1000
1.7000  2.9000  2.9000  2.8000
  70.  *  0.9000  0.9000  0.9000  0.8000  2.0000  1.9000  1.6000  1.9000  1.8000
1.3000  2.7000  2.5000  2.6000
  80.  *  0.8000  2.1000  2.1000  1.6000  3.5000  3.4000  3.3000  1.2000  1.2000
0.8000  2.0000  1.9000  1.7000
  90.  *  0.9000  2.9000  2.9000  2.3000  4.3000  4.2000  4.2000  0.4000  0.4000
0.3000  1.1000  1.1000  0.8000
```

```
 100.  *  0.9000  2.9000  2.9000  2.6000  4.2000  4.0000  3.8000  0.2000  0.2000
0.1000  0.7000  0.6000  0.4000
 110.  *  0.9000  2.6000  2.6000  2.5000  3.7000  3.7000  3.3000  0.1000  0.1000
0.1000  0.7000  0.6000  0.3000
 120.  *  0.8000  2.3000  2.3000  2.3000  3.4000  3.4000  3.0000  0.1000  0.1000
0.1000  0.7000  0.6000  0.3000
 130.  *  0.9000  2.1000  2.1000  2.1000  3.2000  3.0000  2.8000  0.1000  0.1000
0.1000  0.7000  0.6000  0.3000
 140.  *  1.0000  2.0000  2.0000  2.0000  2.9000  2.9000  2.6000  0.1000  0.1000
0.1000  0.8000  0.6000  0.3000
 150.  *  1.1000  1.9000  1.9000  1.9000  2.8000  2.7000  2.5000  0.0000  0.0000
0.0000  0.7000  0.5000  0.2000
 160.  *  1.2000  1.9000  1.9000  1.9000  3.0000  2.8000  2.4000  0.0000  0.0000
0.0000  0.7000  0.5000  0.0000
 170.  *  1.2000  2.1000  2.1000  2.1000  3.3000  3.0000  2.5000  0.0000  0.0000
0.0000  0.7000  0.5000  0.0000
 180.  *  1.0000  2.0000  1.9000  1.9000  2.9000  2.6000  2.3000  0.0000  0.0000
0.0000  0.6000  0.3000  0.0000
 190.  *  0.6000  2.2000  2.0000  1.9000  2.6000  2.4000  2.3000  0.3000  0.1000
0.0000  0.3000  0.1000  0.0000
 200.  *  0.3000  2.7000  2.3000  2.0000  2.5000  2.4000  2.4000  0.7000  0.4000
0.1000  0.1000  0.1000  0.1000
 210.  *  0.1000  3.0000  2.6000  2.2000  2.6000  2.6000  2.6000  0.8000  0.6000
0.1000  0.1000  0.1000  0.1000
 220.  *  0.1000  3.3000  2.8000  2.5000  2.8000  2.8000  2.8000  0.8000  0.6000
0.3000  0.1000  0.1000  0.1000
 230.  *  0.1000  3.7000  3.3000  2.8000  3.1000  3.1000  3.1000  0.8000  0.6000
0.3000  0.1000  0.1000  0.1000
 240.  *  0.1000  4.2000  3.8000  3.3000  3.5000  3.5000  3.3000  0.9000  0.6000
0.4000  0.2000  0.2000  0.1000
 250.  *  0.0000  4.5000  4.0000  3.7000  3.7000  3.6000  3.1000  1.1000  1.0000
0.8000  0.5000  0.4000  0.3000
 260.  *  0.0000  3.6000  3.3000  3.0000  2.7000  2.7000  2.2000  2.2000  2.0000
1.7000  1.2000  1.2000  0.8000
 270.  *  0.0000  2.1000  1.8000  1.4000  1.2000  1.2000  1.0000  2.8000  2.6000
2.5000  2.0000  1.9000  1.3000
 280.  *  0.0000  1.3000  1.1000  0.7000  0.4000  0.4000  0.4000  3.0000  2.9000
2.7000  2.3000  2.3000  1.7000
 290.  *  0.1000  1.1000  0.9000  0.5000  0.3000  0.3000  0.3000  2.9000  2.7000
2.2000  2.2000  2.2000  2.0000
 300.  *  0.3000  1.1000  0.9000  0.5000  0.2000  0.2000  0.2000  2.7000  2.7000
2.0000  2.0000  2.0000  2.0000
 310.  *  0.4000  1.2000  0.9000  0.5000  0.2000  0.2000  0.2000  2.6000  2.4000
1.9000  1.9000  1.9000  1.8000
 320.  *  0.6000  1.2000  0.8000  0.4000  0.2000  0.2000  0.2000  2.5000  2.4000
1.9000  1.8000  1.8000  1.8000
 330.  *  0.6000  1.2000  0.9000  0.4000  0.1000  0.1000  0.1000  2.6000  2.3000
1.8000  1.7000  1.7000  1.7000
```

```
 340.  *  0.6000  1.2000  0.8000  0.1000  0.0000  0.0000  0.0000  2.6000  2.3000
1.7000  1.8000  1.8000  1.8000
 350.  *  0.6000  1.2000  0.8000  0.0000  0.0000  0.0000  0.0000  2.8000  2.4000
1.6000  1.8000  1.8000  1.8000
 360.  *  1.1000  0.9000  0.5000  0.0000  0.0000  0.0000  0.0000  2.6000  2.1000
1.6000  1.9000  1.8000  1.8000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  2.2000  4.5000  4.0000  3.7000  4.3000  4.2000  4.2000  3.0000  2.9000
2.7000  3.0000  2.9000  2.8000
 DEGR. *     20     250     250     250      90      90      90     280     280
280      30      50      60

 THE HIGHEST CONCENTRATION OF   5.1000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
6,6,12,12,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8
,1036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,12
00,0,0,1200,-1200,0,0,0,0,0,0,-10,-5,-10,35,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS ',60,108,0.0,0.0,35,0.3048,1,0
'N Leg, E Side-Corner',70.2,138.9,5.9
'N Leg, E Side - 25 m',63.9,210.6,5.9
'N Leg, E Side - 50 m',56.7,292.3,5.9
'N Leg, E Side-Midblk',18.7,726.6,5.9
'S Leg, E Side-Corner',132.8,-281.0,5.9
'S Leg, E Side - 25 m',145.3,-351.9,5.9
'S Leg, E Side - 50 m',159.6,-432.7,5.9
'S Leg, E Side-Midblk',235.3,-862.0,5.9
'S Leg, W Side-Corner',-54.0,-165.9,5.9
'S Leg, W Side - 25 m',-41.5,-236.8,5.9
'S Leg, W Side - 50 m',-27.3,-317.6,5.9
'S Leg, W Side-Midblk',48.4,-746.9,5.9
'E Leg, N Side - 25 m',129.2,97.6,5.9
'E Leg, N Side - 50 m',196.3,50.5,5.9
'E Leg, N Side-Midblk',553.5,-199.5,5.9
'E Leg, S Side - 25 m',191.8,-322.3,5.9
'E Leg, S Side - 50 m',259.0,-369.4,5.9
'E Leg, S Side-Midblk',616.1,-619.4,5.9
'W Leg, S Side - 25 m',-124.9,-178.4,5.9
'W Leg, S Side - 50 m',-205.7,-192.6,5.9
'W Leg, S Side-Midblk',-635.0,-268.4,5.9
'New1',-104.5,254.5,5.9
'New2',-110.9,326.2,5.9
'New3',-118,407.9,5.9
'New4',-156,842.2,5.9
'New5',-155.5,305.4,5.9
'New6',-213.5,363.4,5.9
'New7',-521.8,671.7,5.9
'New8',-260.4,110.5,5.9
'New9',-311.3,161.4,5.9
'New10',-369.3,219.4,5.9
'New11',-677.6,527.7,5.9
'New12',-331.3,98,5.9
'New13',-412.1,83.7,5.9
'New14',-841.4,8,5.9
'2025 I-495 & I270/MD 355 (IC.22)',10,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-36,-5,-140,1192,13200,2.62,0.0,91.7
1
'N Leg Dep - FreeFlow','AG',36,5,-69,1199,13200,1.55,0.0,91.7
1
'S Leg App - FreeFlow','AG',36,5,244,-1176,13200,1.55,0.0,91.7
```

```
1
'S Leg Dep - FreeFlow','AG',-36,-5,173,-1188,13200,1.55,0.0,91.7
1
'E Leg App - FreeFlow','AG',17,76,1024,-629,26400,1.49,0.0,163.7
1
'E Leg Dep - FreeFlow','AG',-17,-76,942,-747,26400,2.02,0.0,163.7
1
'W Leg App - FreeFlow','AG',-17,-76,-1169,-279,26400,1.49,0.0,163.7
1
'W Leg Dep - FreeFlow','AG',17,76,-1194,-137,26400,4.38,0.0,163.7
1
'I270 App - FreeFlow','AG',-31,-37,-882,815,17600,1.49,0.0,115.7
1
'I270 Dep - FreeFlow','AG',31,37,-815,882,17600,4.38,0.0,115.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 I-495 & I270/MD 355 (IC.22)

DATE : 2/ 8/19
TIME : 9:49:11

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-36.0	-5.0	-140.0	1192.0	*	1202.	355.	AG	13200.	2.6	0.0	91.7		
2. N Leg Dep - FreeFlow	*	36.0	5.0	-69.0	1199.0	*	1199.	355.	AG	13200.	1.5	0.0	91.7		
3. S Leg App - FreeFlow	*	36.0	5.0	244.0	-1176.0	*	1199.	170.	AG	13200.	1.5	0.0	91.7		
4. S Leg Dep - FreeFlow	*	-36.0	-5.0	173.0	-1188.0	*	1201.	170.	AG	13200.	1.5	0.0	91.7		
5. E Leg App - FreeFlow	*	17.0	76.0	1024.0	-629.0	*	1229.	125.	AG	26400.	1.5	0.0	****		
6. E Leg Dep - FreeFlow	*	-17.0	-76.0	942.0	-747.0	*	1170.	125.	AG	26400.	2.0	0.0	****		
7. W Leg App - FreeFlow	*	-17.0	-76.0	-1169.0	-279.0	*	1170.	260.	AG	26400.	1.5	0.0	****		
8. W Leg Dep - FreeFlow	*	17.0	76.0	-1194.0	-137.0	*	1230.	260.	AG	26400.	4.4	0.0	****		
9. I270 App - FreeFlow	*	-31.0	-37.0	-882.0	815.0	*	1204.	315.	AG	17600.	1.5	0.0	****		
10. I270 Dep - FreeFlow	*	31.0	37.0	-815.0	882.0	*	1196.								

315. AG 17600.   4.4   0.0 ****
↟

JOB: I-495 & I-270 MLS RUN: 2025 I-495 & I270/MD 355 (IC.22)

DATE : 2/ 8/19
TIME : 9:49:11

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	70.2	138.9	5.9
2. N Leg, E Side - 25 m	63.9	210.6	5.9
3. N Leg, E Side - 50 m	56.7	292.3	5.9
4. N Leg, E Side-Midblk	18.7	726.6	5.9
5. S Leg, E Side-Corner	132.8	-281.0	5.9
6. S Leg, E Side - 25 m	145.3	-351.9	5.9
7. S Leg, E Side - 50 m	159.6	-432.7	5.9
8. S Leg, E Side-Midblk	235.3	-862.0	5.9
9. S Leg, W Side-Corner	-54.0	-165.9	5.9
10. S Leg, W Side - 25 m	-41.5	-236.8	5.9
11. S Leg, W Side - 50 m	-27.3	-317.6	5.9
12. S Leg, W Side-Midblk	48.4	-746.9	5.9
13. E Leg, N Side - 25 m	129.2	97.6	5.9
14. E Leg, N Side - 50 m	196.3	50.5	5.9
15. E Leg, N Side-Midblk	553.5	-199.5	5.9
16. E Leg, S Side - 25 m	191.8	-322.3	5.9
17. E Leg, S Side - 50 m	259.0	-369.4	5.9
18. E Leg, S Side-Midblk	616.1	-619.4	5.9
19. W Leg, S Side - 25 m	-124.9	-178.4	5.9
20. W Leg, S Side - 50 m	-205.7	-192.6	5.9
21. W Leg, S Side-Midblk	-635.0	-268.4	5.9
22. New1	-104.5	254.5	5.9

23. New2	*	-110.9	326.2	5.9	*
24. New3	*	-118.0	407.9	5.9	*
25. New4	*	-156.0	842.2	5.9	*
26. New5	*	-155.5	305.4	5.9	*
27. New6	*	-213.5	363.4	5.9	*
28. New7	*	-521.8	671.7	5.9	*
29. New8	*	-260.4	110.5	5.9	*
30. New9	*	-311.3	161.4	5.9	*
31. New10	*	-369.3	219.4	5.9	*
32. New11	*	-677.6	527.7	5.9	*
33. New12	*	-331.3	98.0	5.9	*
34. New13	*	-412.1	83.7	5.9	*
35. New14	*	-841.4	8.0	5.9	*

JOB: I-495 & I-270 MLS RUN: 2025 I-495 & I270/MD 355 (IC.22)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	* 0.2000	0.2000	0.2000	0.2000	1.5000	1.3000	1.1000	0.6000	4.4000
3.5000	3.0000	2.2000	0.0000	0.1000	0.1000				
20.	* 0.1000	0.1000	0.1000	0.1000	1.5000	1.3000	1.0000	0.6000	3.7000
2.7000	2.3000	1.6000	0.0000	0.0000	0.0000				
30.	* 0.1000	0.1000	0.1000	0.1000	1.6000	1.3000	1.0000	0.6000	3.3000
2.4000	1.9000	1.6000	0.0000	0.0000	0.0000				
40.	* 0.1000	0.1000	0.1000	0.1000	1.6000	1.3000	1.0000	0.6000	2.9000
2.0000	1.8000	1.4000	0.0000	0.0000	0.0000				
50.	* 0.0000	0.0000	0.0000	0.0000	1.4000	1.2000	0.9000	0.5000	2.4000
1.9000	1.7000	1.3000	0.0000	0.0000	0.0000				
60.	* 0.1000	0.0000	0.0000	0.0000	1.4000	1.2000	1.0000	0.5000	2.4000
2.0000	1.7000	1.3000	0.1000	0.1000	0.1000				
70.	* 0.1000	0.0000	0.0000	0.0000	1.5000	1.3000	1.0000	0.4000	2.5000

```
1.9000  1.7000  1.3000  0.1000  0.1000  0.1000
  80.  *  0.1000  0.0000  0.0000  0.0000  1.7000  1.3000  1.0000  0.3000  2.6000
2.2000  1.9000  1.3000  0.1000  0.1000  0.1000
  90.  *  0.1000  0.0000  0.0000  0.0000  1.9000  1.4000  1.0000  0.1000  2.6000
2.1000  1.8000  1.1000  0.1000  0.1000  0.1000
 100.  *  0.1000  0.0000  0.0000  0.0000  2.1000  1.4000  0.9000  0.0000  2.7000
2.2000  1.8000  0.9000  0.1000  0.1000  0.1000
 110.  *  0.3000  0.0000  0.0000  0.0000  2.1000  1.2000  0.6000  0.0000  2.8000
1.9000  1.6000  0.8000  0.3000  0.3000  0.2000
 120.  *  0.8000  0.2000  0.1000  0.0000  1.8000  0.8000  0.3000  0.1000  2.4000
1.6000  1.2000  0.9000  0.8000  0.7000  0.6000
 130.  *  1.6000  0.8000  0.5000  0.1000  1.0000  0.3000  0.2000  0.1000  1.7000
1.3000  1.2000  1.0000  1.5000  1.4000  1.1000
 140.  *  2.0000  1.3000  0.9000  0.3000  0.4000  0.1000  0.1000  0.1000  1.4000
1.2000  1.2000  1.0000  1.8000  1.8000  1.5000
 150.  *  1.9000  1.3000  1.0000  0.5000  0.3000  0.1000  0.1000  0.1000  1.4000
1.3000  1.3000  1.1000  1.9000  1.8000  1.6000
 160.  *  1.9000  1.5000  1.3000  0.7000  0.5000  0.4000  0.4000  0.3000  1.4000
1.3000  1.2000  1.0000  1.7000  1.6000  1.6000
 170.  *  2.4000  2.0000  1.8000  1.4000  1.0000  0.8000  0.8000  0.5000  1.1000
0.9000  0.9000  0.7000  1.8000  1.6000  1.5000
 180.  *  2.7000  2.6000  2.6000  2.3000  1.3000  1.2000  1.2000  0.8000  0.4000
0.4000  0.4000  0.3000  2.0000  1.7000  1.4000
 190.  *  3.2000  3.4000  3.3000  2.7000  1.4000  1.3000  1.3000  1.0000  0.1000
0.1000  0.1000  0.1000  2.1000  1.9000  1.4000
 200.  *  3.8000  3.9000  3.7000  2.7000  1.2000  1.2000  1.1000  1.0000  0.2000
0.1000  0.1000  0.1000  2.0000  1.8000  1.5000
 210.  *  4.3000  4.2000  3.6000  2.6000  1.1000  1.1000  1.1000  1.0000  0.2000
0.1000  0.1000  0.1000  2.1000  1.9000  1.6000
 220.  *  4.9000  4.5000  4.0000  2.5000  0.9000  0.9000  0.9000  0.9000  0.2000
0.1000  0.1000  0.1000  2.5000  1.9000  1.6000
 230.  *  5.4000  5.0000  4.0000  2.3000  0.8000  0.8000  0.8000  0.8000  0.1000
0.0000  0.0000  0.0000  3.0000  1.8000  1.5000
 240.  *  6.0000  5.1000  3.9000  1.7000  0.9000  0.8000  0.8000  0.8000  0.2000
0.0000  0.0000  0.0000  4.3000  2.5000  1.6000
 250.  *  6.7000  4.8000  3.3000  1.6000  0.9000  0.8000  0.8000  0.8000  0.4000
0.1000  0.0000  0.0000  5.6000  3.5000  1.6000
 260.  *  6.4000  3.8000  2.6000  1.7000  1.2000  0.9000  0.9000  0.9000  1.3000
0.3000  0.1000  0.0000  6.2000  4.8000  2.0000
 270.  *  5.1000  2.9000  2.3000  1.5000  1.5000  1.2000  1.0000  0.8000  2.1000
1.0000  0.5000  0.0000  5.4000  4.8000  2.6000
 280.  *  3.9000  2.5000  2.2000  1.4000  2.1000  1.6000  1.3000  0.8000  2.6000
1.6000  1.0000  0.0000  4.4000  4.1000  3.0000
 290.  *  3.5000  2.6000  2.2000  1.1000  2.4000  2.0000  1.7000  1.0000  2.5000
1.8000  1.4000  0.2000  3.8000  3.6000  2.9000
 300.  *  3.4000  2.6000  2.1000  1.2000  2.8000  2.1000  1.9000  1.3000  2.5000
1.8000  1.4000  0.7000  3.3000  3.1000  2.6000
 310.  *  2.7000  2.0000  1.6000  1.2000  3.7000  2.7000  2.2000  1.7000  2.6000
```

```
2.0000  1.5000  0.8000  2.3000  2.2000  1.6000
 320.  *  1.8000  1.5000  1.4000  1.3000  4.4000  3.3000  2.7000  1.9000  3.1000
2.3000  1.7000  0.9000  1.4000  1.3000  0.7000
 330.  *  1.6000  1.5000  1.4000  1.4000  4.8000  4.1000  3.5000  2.2000  3.8000
2.7000  2.2000  1.1000  1.1000  0.9000  0.3000
 340.  *  1.5000  1.5000  1.5000  1.3000  4.2000  3.9000  3.3000  2.5000  4.0000
3.3000  2.8000  1.6000  0.8000  0.7000  0.3000
 350.  *  1.3000  1.3000  1.3000  1.0000  3.3000  2.9000  2.6000  1.9000  4.7000
3.9000  3.2000  2.2000  0.5000  0.4000  0.1000
 360.  *  0.7000  0.7000  0.7000  0.5000  2.2000  1.9000  1.6000  1.2000  5.0000
4.0000  3.4000  2.3000  0.2000  0.1000  0.1000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  6.7000  5.1000  4.0000  2.7000  4.8000  4.1000  3.5000  2.5000  5.0000
4.0000  3.4000  2.3000  6.2000  4.8000  3.0000
 DEGR. *    250     240     220     200     330     330     330     340     360
360     360     360     260     260     280
```


JOB: I-495 & I-270 MLS RUN: 2025 I-495 & I270/MD 355 (IC.22)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28      29      30

------*-------------------------------------------------------------------------
----------------------------------------
  10.  *  1.4000  1.4000  1.4000  4.0000  3.4000  2.4000  2.2000  2.0000  1.9000
1.5000  1.2000  0.8000  0.2000  2.3000  2.1000
  20.  *  1.4000  1.4000  1.4000  3.7000  3.6000  2.7000  1.9000  1.8000  1.8000
1.6000  1.2000  0.8000  0.1000  2.5000  2.1000
  30.  *  1.5000  1.5000  1.5000  3.3000  3.3000  2.8000  1.6000  1.6000  1.6000
1.5000  1.1000  0.7000  0.1000  2.5000  2.1000
  40.  *  1.5000  1.5000  1.5000  2.6000  2.9000  3.0000  1.4000  1.4000  1.4000
```

```
1.4000  1.0000  0.7000  0.3000  2.5000  2.1000
  50.  *  1.4000  1.4000  1.4000  2.1000  2.5000  3.1000  1.3000  1.3000  1.3000
1.3000  1.0000  0.7000  0.3000  2.5000  2.1000
  60.  *  1.4000  1.4000  1.4000  2.1000  1.9000  2.8000  1.2000  1.2000  1.2000
1.2000  0.9000  0.7000  0.3000  2.5000  2.1000
  70.  *  1.5000  1.5000  1.5000  2.0000  1.9000  2.3000  1.3000  1.2000  1.2000
1.2000  1.0000  0.8000  0.4000  3.0000  2.1000
  80.  *  1.7000  1.7000  1.6000  2.1000  1.8000  1.5000  1.4000  1.2000  1.2000
1.2000  1.0000  0.9000  0.5000  4.1000  2.4000
  90.  *  1.9000  1.9000  1.6000  2.0000  1.6000  1.1000  1.4000  1.2000  1.2000
1.2000  1.0000  0.9000  0.5000  4.7000  2.8000
 100.  *  2.0000  1.9000  1.5000  2.0000  1.5000  0.8000  1.4000  1.2000  1.2000
1.2000  1.1000  0.9000  0.5000  5.2000  3.6000
 110.  *  2.0000  2.0000  1.3000  1.8000  1.3000  0.6000  1.6000  1.2000  1.2000
1.2000  1.3000  1.1000  0.6000  5.7000  4.4000
 120.  *  1.6000  1.6000  1.0000  1.3000  0.9000  0.3000  2.4000  1.5000  1.4000
1.3000  1.9000  1.7000  1.1000  5.6000  4.7000
 130.  *  0.9000  0.8000  0.6000  1.0000  0.6000  0.3000  3.7000  2.3000  1.8000
1.4000  3.3000  3.0000  2.5000  4.9000  4.2000
 140.  *  0.3000  0.3000  0.3000  0.8000  0.6000  0.2000  5.1000  3.2000  2.6000
1.8000  4.6000  4.6000  4.3000  3.9000  3.3000
 150.  *  0.2000  0.2000  0.2000  0.6000  0.4000  0.0000  5.9000  4.1000  3.1000
2.2000  5.4000  5.2000  4.6000  3.4000  2.6000
 160.  *  0.1000  0.1000  0.1000  0.5000  0.3000  0.0000  6.4000  4.9000  4.0000
2.9000  5.3000  4.9000  3.9000  3.1000  2.3000
 170.  *  0.4000  0.2000  0.1000  0.3000  0.1000  0.0000  5.9000  4.9000  4.1000
3.0000  4.5000  4.4000  3.5000  3.1000  2.2000
 180.  *  0.7000  0.4000  0.1000  0.0000  0.0000  0.0000  5.0000  4.2000  3.5000
2.4000  4.1000  3.8000  3.2000  2.8000  2.2000
 190.  *  0.9000  0.6000  0.1000  0.0000  0.0000  0.0000  4.3000  3.4000  2.6000
1.6000  3.8000  3.4000  3.0000  2.7000  2.2000
 200.  *  0.7000  0.5000  0.0000  0.1000  0.1000  0.1000  4.1000  3.2000  2.5000
1.4000  3.6000  3.3000  3.0000  2.7000  2.2000
 210.  *  0.7000  0.5000  0.0000  0.1000  0.1000  0.1000  3.8000  3.1000  2.4000
1.3000  3.4000  3.3000  2.7000  3.0000  2.3000
 220.  *  0.7000  0.5000  0.2000  0.1000  0.1000  0.1000  4.1000  3.2000  2.5000
1.2000  3.7000  3.5000  2.6000  3.3000  2.4000
 230.  *  0.6000  0.5000  0.2000  0.1000  0.1000  0.1000  4.2000  3.2000  2.5000
0.9000  3.8000  3.4000  2.3000  3.7000  2.5000
 240.  *  0.7000  0.6000  0.3000  0.2000  0.2000  0.2000  4.0000  3.0000  2.1000
0.7000  3.4000  3.0000  2.0000  4.0000  2.4000
 250.  *  0.7000  0.6000  0.3000  0.4000  0.4000  0.4000  3.4000  2.4000  1.5000
0.6000  2.9000  2.5000  2.2000  3.9000  1.7000
 260.  *  0.8000  0.6000  0.3000  1.2000  1.2000  0.8000  2.7000  1.9000  1.3000
0.6000  2.5000  2.4000  2.3000  3.0000  0.8000
 270.  *  1.1000  1.0000  0.3000  2.1000  2.0000  1.3000  2.6000  1.8000  1.4000
0.4000  2.5000  2.5000  2.5000  1.4000  0.3000
 280.  *  1.8000  1.5000  0.7000  2.6000  2.5000  1.8000  2.8000  1.9000  1.5000
```

```
0.2000  2.8000  2.8000  2.6000  0.6000  0.1000
 290.  *  2.1000  1.8000  1.1000  2.5000  2.5000  2.2000  3.2000  2.1000  1.5000
0.1000  3.1000  3.1000  2.8000  0.4000  0.1000
 300.  *  2.6000  2.4000  2.0000  2.4000  2.4000  2.3000  3.6000  2.0000  1.2000
0.1000  3.5000  3.4000  2.7000  0.5000  0.2000
 310.  *  3.3000  3.1000  2.8000  2.3000  2.2000  2.2000  3.2000  1.3000  0.6000
0.1000  3.1000  3.0000  2.1000  1.1000  0.7000
 320.  *  4.0000  3.9000  3.0000  2.6000  2.3000  2.1000  2.0000  0.5000  0.2000
0.1000  1.8000  1.7000  1.2000  1.8000  1.5000
 330.  *  3.9000  3.6000  2.5000  2.9000  2.5000  1.9000  0.9000  0.3000  0.2000
0.1000  0.7000  0.7000  0.5000  2.3000  2.1000
 340.  *  3.3000  2.8000  2.1000  3.2000  2.9000  2.1000  0.7000  0.4000  0.4000
0.3000  0.3000  0.3000  0.3000  2.1000  2.1000
 350.  *  2.4000  2.0000  1.7000  3.5000  3.2000  2.4000  1.2000  1.0000  1.0000
0.7000  0.4000  0.3000  0.2000  2.0000  2.0000
 360.  *  1.7000  1.5000  1.5000  3.8000  3.3000  2.4000  1.9000  1.7000  1.7000
1.2000  0.8000  0.5000  0.2000  1.9000  1.9000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  4.0000  3.9000  3.0000  4.0000  3.6000  3.1000  6.4000  4.9000  4.1000
3.0000  5.4000  5.2000  4.6000  5.7000  4.7000
 DEGR. *    320     320     320      10      20      50     160     170     170
170     150     150     150     110     120
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 31	32	33	34	35
10.	1.9000	1.8000	1.7000	1.2000	0.5000
20.	2.1000	1.7000	1.8000	1.5000	0.7000
30.	2.0000	1.6000	2.0000	1.7000	0.9000
40.	2.0000	1.7000	2.0000	1.7000	1.0000

50.	*	2.0000	1.8000	1.9000	1.6000	1.0000
60.	*	2.0000	1.9000	2.0000	1.8000	1.2000
70.	*	2.1000	2.0000	2.5000	2.3000	1.9000
80.	*	2.2000	2.1000	3.7000	3.4000	3.4000
90.	*	2.3000	2.1000	4.4000	4.2000	4.6000
100.	*	2.9000	2.3000	4.6000	4.8000	4.9000
110.	*	3.4000	2.6000	4.9000	4.7000	4.3000
120.	*	4.0000	3.0000	4.7000	4.3000	3.6000
130.	*	3.7000	2.9000	4.1000	3.7000	3.2000
140.	*	3.0000	1.9000	3.3000	3.1000	2.7000
150.	*	2.2000	1.2000	2.9000	2.8000	2.6000
160.	*	1.9000	0.9000	2.9000	2.8000	2.7000
170.	*	1.7000	0.9000	2.9000	2.9000	2.9000
180.	*	1.7000	0.9000	2.7000	2.7000	2.7000
190.	*	1.7000	0.9000	2.6000	2.6000	2.6000
200.	*	1.7000	0.8000	2.7000	2.7000	2.7000
210.	*	1.6000	0.6000	3.0000	3.0000	3.0000
220.	*	1.7000	0.3000	3.3000	3.3000	3.2000
230.	*	1.8000	0.1000	3.7000	3.7000	3.3000
240.	*	1.5000	0.0000	4.0000	3.9000	3.1000
250.	*	0.9000	0.0000	3.9000	3.8000	2.7000
260.	*	0.3000	0.1000	2.8000	2.8000	2.0000
270.	*	0.1000	0.1000	1.2000	1.2000	0.9000
280.	*	0.1000	0.1000	0.5000	0.5000	0.4000
290.	*	0.1000	0.1000	0.3000	0.3000	0.3000
300.	*	0.2000	0.2000	0.3000	0.3000	0.3000
310.	*	0.7000	0.4000	0.5000	0.3000	0.3000
320.	*	1.4000	0.8000	0.8000	0.4000	0.2000
330.	*	2.0000	1.3000	1.2000	0.7000	0.1000
340.	*	2.1000	1.7000	1.4000	0.9000	0.0000
350.	*	2.0000	1.8000	1.4000	1.0000	0.1000
360.	*	1.8000	1.8000	1.5000	1.0000	0.3000
------	*	----------	----------	----------	----------	----------
MAX	*	4.0000	3.0000	4.9000	4.8000	4.9000
DEGR.	*	120	120	110	100	100

THE HIGHEST CONCENTRATION OF 6.7000 PPM OCCURRED AT RECEPTOR 1.

```
Q,EPA,,F,,0,T,T,F,F,0.7,
6,6,9,9,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,0,0,15,-45,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,23,0.3048,1,0
'N Leg, E Side-Corner',116.5,118.0,5.9
'N Leg, E Side - 25 m',135.2,187.6,5.9
'N Leg, E Side - 50 m',156.4,266.8,5.9
'N Leg, E Side-Midblk',269.2,687.9,5.9
'N Leg, W Side-Corner',-54.9,112.0,5.9
'N Leg, W Side - 25 m',-36.2,181.6,5.9
'N Leg, W Side - 50 m',-15.0,260.8,5.9
'N Leg, W Side-Midblk',97.8,681.9,5.9
'S Leg, E Side-Corner',82.0,-118.0,5.9
'S Leg, W Side-Corner',-82.0,-248.9,5.9
'E Leg, N Side - 25 m',188.5,118.0,5.9
'E Leg, N Side - 50 m',270.6,118.0,5.9
'E Leg, N Side-Midblk',706.5,118.0,5.9
'W Leg, N Side - 25 m',-105.8,61.1,5.9
'W Leg, N Side - 50 m',-163.8,3.1,5.9
'W Leg, N Side-Midblk',-472.1,-305.2,5.9
'E Leg, S Side - 25 m',154.0,-118.0,5.9
'E Leg, S Side - 50 m',236.0,-118.0,5.9
'E Leg, S Side-Midblk',672.0,-118.0,5.9
'W Leg, S Side - 25 m',-132.9,-299.8,5.9
'W Leg, S Side - 50 m',-190.9,-357.8,5.9
'W Leg, S Side-Midblk',-499.2,-666.1,5.9
'S Side - Midblk',0,-183,5.9
'2025 I495 & I270 Spur (IC.24)',6,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-36,5,276,1168,13200,1.49,0.0,91.7
1
'N Leg Dep - FreeFlow','AG',36,-5,345,1150,13200,3.48,0.0,91.7
1
'E Leg App - FreeFlow','AG',-22,54,1200,54,19800,1.49,0.0,127.7
1
'E Leg Dep - FreeFlow','AG',22,-54,1200,-54,19800,5.41,0.0,127.7
1
'W Leg App - FreeFlow','AG',22,-54,-810,-887,19800,2.67,0.0,127.7
1
'W Leg Dep - FreeFlow','AG',-22,54,-887,-810,19800,1.49,0.0,127.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 I495 & I270 Spur (IC.24)

DATE : 2/28/19
TIME : 15:39:31

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)		(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-36.0	5.0	276.0	1168.0	*	1204.	15.	AG	13200.		1.5	0.0	91.7	
2. N Leg Dep - FreeFlow	*	36.0	-5.0	345.0	1150.0	*	1196.	15.	AG	13200.		3.5	0.0	91.7	
3. E Leg App - FreeFlow	*	-22.0	54.0	1200.0	54.0	*	1222.	90.	AG	19800.		1.5	0.0	****	
4. E Leg Dep - FreeFlow	*	22.0	-54.0	1200.0	-54.0	*	1178.	90.	AG	19800.		5.4	0.0	****	
5. W Leg App - FreeFlow	*	22.0	-54.0	-810.0	-887.0	*	1177.	225.	AG	19800.		2.7	0.0	****	
6. W Leg Dep - FreeFlow	*	-22.0	54.0	-887.0	-810.0	*	1223.	225.	AG	19800.		1.5	0.0	****	

PAGE 2
JOB: I-495 & I-270 MLS RUN: 2025 I495 & I270 Spur (IC.24)

DATE : 2/28/19
TIME : 15:39:31

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	116.5	118.0	5.9
2. N Leg, E Side - 25 m	135.2	187.6	5.9
3. N Leg, E Side - 50 m	156.4	266.8	5.9
4. N Leg, E Side-Midblk	269.2	687.9	5.9
5. N Leg, W Side-Corner	-54.9	112.0	5.9
6. N Leg, W Side - 25 m	-36.2	181.6	5.9
7. N Leg, W Side - 50 m	-15.0	260.8	5.9
8. N Leg, W Side-Midblk	97.8	681.9	5.9
9. S Leg, E Side-Corner	82.0	-118.0	5.9
10. S Leg, W Side-Corner	-82.0	-248.9	5.9
11. E Leg, N Side - 25 m	188.5	118.0	5.9
12. E Leg, N Side - 50 m	270.6	118.0	5.9
13. E Leg, N Side-Midblk	706.5	118.0	5.9
14. W Leg, N Side - 25 m	-105.8	61.1	5.9
15. W Leg, N Side - 50 m	-163.8	3.1	5.9
16. W Leg, N Side-Midblk	-472.1	-305.2	5.9
17. E Leg, S Side - 25 m	154.0	-118.0	5.9
18. E Leg, S Side - 50 m	236.0	-118.0	5.9
19. E Leg, S Side-Midblk	672.0	-118.0	5.9
20. W Leg, S Side - 25 m	-132.9	-299.8	5.9
21. W Leg, S Side - 50 m	-190.9	-357.8	5.9
22. W Leg, S Side-Midblk	-499.2	-666.1	5.9
23. S Side - Midblk	0.0	-183.0	5.9

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 2.2000	2.2000	2.2000	1.8000	0.8000	0.7000	0.7000	0.6000	4.0000	2.7000	0.7000	0.2000	0.0000	0.3000	0.3000
20.	* 1.4000	1.4000	1.3000	1.0000	1.5000	1.4000	1.4000	1.0000	3.3000	3.0000	0.2000	0.0000	0.0000	0.8000	0.6000
30.	* 0.6000	0.5000	0.5000	0.4000	1.8000	1.7000	1.7000	1.4000	3.0000	2.7000	0.1000	0.1000	0.1000	1.3000	1.0000
40.	* 0.3000	0.2000	0.2000	0.2000	1.7000	1.7000	1.7000	1.6000	3.1000	2.4000	0.1000	0.1000	0.1000	1.4000	1.3000
50.	* 0.2000	0.1000	0.1000	0.1000	1.5000	1.5000	1.5000	1.5000	3.4000	2.1000	0.1000	0.1000	0.1000	1.6000	1.4000
60.	* 0.2000	0.1000	0.1000	0.1000	1.4000	1.4000	1.4000	1.4000	3.7000	2.0000	0.1000	0.1000	0.1000	1.5000	1.5000
70.	* 0.3000	0.1000	0.1000	0.1000	1.3000	1.2000	1.2000	1.2000	4.3000	1.8000	0.2000	0.2000	0.1000	1.7000	2.1000
80.	* 0.6000	0.1000	0.1000	0.1000	1.7000	1.3000	1.2000	1.2000	4.5000	1.3000	0.5000	0.5000	0.3000	2.4000	2.9000
90.	* 1.4000	0.4000	0.2000	0.0000	2.7000	1.7000	1.4000	1.2000	3.4000	0.5000	1.3000	1.3000	0.8000	3.5000	3.7000
100.	* 2.3000	1.0000	0.5000	0.0000	3.6000	2.5000	1.9000	1.2000	1.5000	0.2000	2.2000	2.1000	1.5000	4.2000	3.5000
110.	* 2.6000	1.6000	1.0000	0.0000	3.8000	3.0000	2.4000	1.2000	0.6000	0.1000	2.6000	2.6000	2.0000	3.9000	2.5000
120.	* 2.5000	1.7000	1.3000	0.2000	3.5000	3.0000	2.6000	1.5000	0.3000	0.0000	2.5000	2.5000	2.3000	3.1000	1.8000
130.	* 2.4000	1.8000	1.4000	0.5000	3.2000	2.9000	2.6000	1.7000	0.3000	0.0000	2.3000	2.3000	2.3000	2.3000	1.5000
140.	* 2.2000	1.7000	1.3000	0.6000	2.9000	2.7000	2.4000	1.8000	0.3000	0.0000	2.1000	2.1000	2.1000	1.8000	1.4000
150.	* 2.2000	1.6000	1.3000	0.7000	2.6000	2.6000	2.4000	2.0000	0.2000	0.0000	2.1000	2.1000	2.1000	1.5000	1.3000
160.	* 2.1000	1.6000	1.2000	0.6000	2.1000	2.4000	2.4000	2.0000	0.1000	0.1000	2.0000	2.0000	2.0000	1.5000	1.3000
170.	* 2.2000	1.7000	1.4000	0.8000	1.8000	2.0000	2.3000	2.1000	0.0000						

```
0.1000  2.0000  2.0000  2.0000  1.4000  1.4000
 180.  *  2.3000  1.7000  1.5000  1.0000  1.7000  1.7000  1.9000  2.1000  0.0000
0.1000  2.0000  2.0000  2.0000  1.5000  1.5000
 190.  *  2.7000  2.2000  2.0000  1.9000  1.7000  1.7000  1.7000  1.8000  0.0000
0.1000  2.0000  2.0000  2.0000  1.7000  1.7000
 200.  *  3.1000  2.8000  2.7000  2.7000  1.9000  1.6000  1.3000  1.1000  0.1000
0.2000  2.0000  1.9000  2.0000  1.8000  1.8000
 210.  *  3.7000  3.4000  3.4000  2.9000  1.9000  1.4000  1.2000  0.6000  0.2000
0.4000  2.6000  2.3000  2.1000  1.9000  1.9000
 220.  *  4.2000  3.7000  3.4000  2.6000  1.5000  0.9000  0.6000  0.3000  0.5000
1.1000  3.0000  2.6000  2.1000  1.5000  1.5000
 230.  *  3.8000  3.1000  2.6000  1.9000  0.8000  0.4000  0.3000  0.1000  1.5000
2.1000  3.2000  3.1000  2.4000  0.8000  0.7000
 240.  *  3.1000  2.4000  1.9000  1.7000  0.3000  0.1000  0.1000  0.1000  2.0000
2.4000  2.6000  2.7000  2.8000  0.3000  0.2000
 250.  *  2.5000  1.8000  1.6000  1.6000  0.1000  0.0000  0.0000  0.0000  2.0000
2.2000  2.2000  2.2000  2.8000  0.1000  0.1000
 260.  *  2.1000  1.5000  1.5000  1.5000  0.0000  0.0000  0.0000  0.0000  2.1000
2.0000  1.8000  1.8000  2.1000  0.1000  0.1000
 270.  *  1.9000  1.4000  1.4000  1.4000  0.0000  0.0000  0.0000  0.0000  2.4000
1.8000  1.5000  1.4000  1.4000  0.1000  0.1000
 280.  *  1.7000  1.5000  1.5000  1.5000  0.0000  0.0000  0.0000  0.0000  2.5000
1.7000  1.1000  1.0000  0.7000  0.1000  0.1000
 290.  *  1.6000  1.5000  1.5000  1.5000  0.0000  0.0000  0.0000  0.0000  2.5000
1.6000  1.0000  0.8000  0.5000  0.0000  0.0000
 300.  *  1.5000  1.4000  1.4000  1.4000  0.0000  0.0000  0.0000  0.0000  2.5000
1.5000  1.0000  0.8000  0.4000  0.0000  0.0000
 310.  *  1.6000  1.5000  1.5000  1.5000  0.0000  0.0000  0.0000  0.0000  2.8000
1.6000  1.0000  0.8000  0.4000  0.0000  0.0000
 320.  *  1.7000  1.6000  1.6000  1.6000  0.0000  0.0000  0.0000  0.0000  2.9000
1.6000  1.0000  0.8000  0.4000  0.0000  0.0000
 330.  *  1.8000  1.7000  1.7000  1.7000  0.1000  0.1000  0.1000  0.1000  3.2000
1.5000  1.1000  0.8000  0.4000  0.0000  0.0000
 340.  *  2.0000  1.9000  1.9000  1.9000  0.1000  0.1000  0.1000  0.1000  3.6000
1.5000  1.1000  0.8000  0.1000  0.0000  0.0000
 350.  *  2.2000  2.2000  2.2000  2.1000  0.1000  0.1000  0.1000  0.1000  4.1000
1.8000  1.2000  0.8000  0.0000  0.0000  0.1000
 360.  *  2.5000  2.5000  2.4000  2.1000  0.2000  0.2000  0.2000  0.2000  4.5000
2.0000  1.1000  0.6000  0.0000  0.0000  0.1000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  4.2000  3.7000  3.4000  2.9000  3.8000  3.0000  2.6000  2.1000  4.5000
3.0000  3.2000  3.1000  2.8000  4.2000  3.7000
 DEGR. *    220     220     210     210     110     110     120     170      80
20     230     230     240     100      90
```

JOB: I-495 & I-270 MLS RUN: 2025 I495 & I270 Spur (IC.24)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 16	17	18	19	20	21	22	23
10.	0.1000	3.4000	3.0000	2.8000	2.4000	2.3000	2.0000	3.4000
20.	0.3000	2.9000	2.7000	2.7000	3.0000	2.8000	2.4000	3.3000
30.	0.5000	2.8000	2.8000	2.8000	2.8000	2.8000	2.7000	2.8000
40.	0.9000	3.1000	3.1000	3.1000	2.3000	2.4000	2.7000	2.4000
50.	1.6000	3.4000	3.4000	3.4000	2.0000	1.9000	1.8000	2.2000
60.	2.2000	3.8000	3.8000	3.7000	1.7000	1.5000	1.0000	2.4000
70.	2.7000	4.3000	4.3000	3.9000	1.5000	1.3000	0.7000	2.4000
80.	2.5000	4.5000	4.4000	3.7000	1.0000	0.7000	0.3000	2.0000
90.	1.8000	3.3000	3.3000	2.6000	0.3000	0.2000	0.1000	1.0000
100.	1.4000	1.5000	1.5000	1.2000	0.1000	0.1000	0.1000	0.2000
110.	1.3000	0.6000	0.6000	0.5000	0.1000	0.1000	0.1000	0.0000
120.	1.3000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000
130.	1.4000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000
140.	1.4000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000
150.	1.3000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000
160.	1.3000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000
170.	1.4000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.0000
180.	1.5000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000
190.	1.6000	0.0000	0.0000	0.0000	0.1000	0.1000	0.2000	0.1000
200.	1.7000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000	0.1000
210.	1.6000	0.2000	0.2000	0.2000	0.4000	0.4000	0.4000	0.2000
220.	1.1000	0.5000	0.4000	0.3000	1.1000	1.1000	0.8000	0.8000
230.	0.6000	1.0000	0.8000	0.3000	2.0000	2.0000	1.4000	1.7000
240.	0.2000	1.5000	1.1000	0.5000	2.4000	2.3000	1.8000	2.2000
250.	0.1000	1.6000	1.4000	1.0000	2.2000	2.2000	2.0000	2.0000
260.	0.1000	1.8000	1.9000	1.8000	2.0000	2.0000	1.9000	1.8000
270.	0.1000	2.4000	2.6000	3.2000	1.8000	1.8000	1.8000	1.7000
280.	0.1000	2.7000	3.0000	4.3000	1.7000	1.7000	1.7000	1.6000
290.	0.0000	2.9000	3.5000	4.4000	1.6000	1.6000	1.6000	1.5000
300.	0.0000	3.2000	3.7000	4.0000	1.5000	1.5000	1.5000	1.5000

310.	*	0.0000	3.3000	3.7000	3.7000	1.6000	1.6000	1.6000	1.5000
320.	*	0.0000	3.5000	3.7000	3.4000	1.6000	1.6000	1.6000	1.6000
330.	*	0.0000	3.6000	3.5000	3.1000	1.5000	1.5000	1.5000	1.4000
340.	*	0.0000	3.6000	3.4000	3.0000	1.6000	1.6000	1.6000	1.5000
350.	*	0.1000	3.8000	3.5000	2.9000	1.7000	1.7000	1.7000	2.0000
360.	*	0.1000	3.9000	3.5000	3.0000	2.0000	1.8000	1.8000	2.8000
------	*								
MAX	*	2.7000	4.5000	4.4000	4.4000	3.0000	2.8000	2.7000	3.4000
DEGR.	*	70	80	80	290	20	20	30	10

THE HIGHEST CONCENTRATION OF 4.5000 PPM OCCURRED AT RECEPTOR 9.

```
Q,EPA,,F,,0,T,T,F,F,0.7,
6,5,8,10,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,
1036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,120
0,0,0,1200,-1200,0,0,0,0,0,0,-40,-40,5,5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',-2.7,130.7,5.9
'N Leg, E Side - 25 m',-48.9,185.9,5.9
'N Leg, E Side - 50 m',-101.7,248.7,5.9
'N Leg, E Side-Midblk',-381.9,582.7,5.9
'N Leg, W Side-Corner',-216.8,149.5,5.9
'N Leg, W Side - 25 m',-263.1,204.6,5.9
'N Leg, W Side - 50 m',-315.8,267.5,5.9
'N Leg, W Side-Midblk',-596.0,601.4,5.9
'S Leg, E Side-Corner',211.9,-124.9,5.9
'S Leg, E Side - 25 m',258.2,-180.1,5.9
'S Leg, E Side - 50 m',310.9,-242.9,5.9
'S Leg, E Side-Midblk',591.1,-576.9,5.9
'S Leg, W Side-Corner',-2.3,-106.2,5.9
'S Leg, W Side - 25 m',44.0,-161.4,5.9
'S Leg, W Side - 50 m',96.8,-224.2,5.9
'S Leg, W Side-Midblk',377.0,-558.2,5.9
'E Leg, N Side - 25 m',69.1,124.5,5.9
'E Leg, N Side - 50 m',150.8,117.3,5.9
'E Leg, N Side-Midblk',585.1,79.3,5.9
'W Leg, N Side - 25 m',-288.5,155.7,5.9
'W Leg, N Side - 50 m',-370.2,162.9,5.9
'W Leg, N Side-Midblk',-804.5,200.9,5.9
'E Leg, S Side - 25 m',283.6,-131.2,5.9
'E Leg, S Side - 50 m',365.3,-138.4,5.9
'E Leg, S Side-Midblk',799.6,-176.4,5.9
'W Leg, S Side - 25 m',-74.0,-99.9,5.9
'W Leg, S Side - 50 m',-155.7,-92.8,5.9
'W Leg, S Side-Midblk',-590.0,-54.8,5.9
'2025 I495 & MD5 (IC.3)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-23,-19,-794,900,11000,1.53,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',28,23,-744,942,13200,2.66,0.0,91.7
1
'S Leg App - FreeFlow','AG',28,23,799,-896,13200,3.40,0.0,91.7
1
'S Leg Dep - FreeFlow','AG',-23,-19,748,-939,11000,1.53,0.0,79.7
1
'E Leg App - FreeFlow','AG',5,60,1201,-45,22000,4.37,0.0,139.7
1
'E Leg Dep - FreeFlow','AG',0,-48,1191,-152,17600,1.50,0.0,115.7
1
```

```
'W Leg App - FreeFlow','AG',0,-48,-1200,57,17600,2.02,0.0,115.7
1
'W Leg Dep - FreeFlow','AG',5,60,-1190,164,22000,1.50,0.0,139.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 I495 & MD5 (IC.3)

DATE : 2/ 8/19
TIME : 8:58:13

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-23.0	-19.0	-794.0	900.0	*	1200.	320.	AG	11000.	1.5	0.0	79.7		
2. N Leg Dep - FreeFlow	*	28.0	23.0	-744.0	942.0	*	1200.	320.	AG	13200.	2.7	0.0	91.7		
3. S Leg App - FreeFlow	*	28.0	23.0	799.0	-896.0	*	1200.	140.	AG	13200.	3.4	0.0	91.7		
4. S Leg Dep - FreeFlow	*	-23.0	-19.0	748.0	-939.0	*	1200.	140.	AG	11000.	1.5	0.0	79.7		
5. E Leg App - FreeFlow	*	5.0	60.0	1201.0	-45.0	*	1201.	95.	AG	22000.	4.4	0.0	****		
6. E Leg Dep - FreeFlow	*	0.0	-48.0	1191.0	-152.0	*	1196.	95.	AG	17600.	1.5	0.0	****		
7. W Leg App - FreeFlow	*	0.0	-48.0	-1200.0	57.0	*	1205.	275.	AG	17600.	2.0	0.0	****		
8. W Leg Dep - FreeFlow	*	5.0	60.0	-1190.0	164.0	*	1200.	275.	AG	22000.	1.5	0.0	****		

(IC.3)

DATE : 2/ 8/19
TIME : 8:58:13

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	-2.7	130.7	5.9
2. N Leg, E Side - 25 m	-48.9	185.9	5.9
3. N Leg, E Side - 50 m	-101.7	248.7	5.9
4. N Leg, E Side-Midblk	-381.9	582.7	5.9
5. N Leg, W Side-Corner	-216.8	149.5	5.9
6. N Leg, W Side - 25 m	-263.1	204.6	5.9
7. N Leg, W Side - 50 m	-315.8	267.5	5.9
8. N Leg, W Side-Midblk	-596.0	601.4	5.9
9. S Leg, E Side-Corner	211.9	-124.9	5.9
10. S Leg, E Side - 25 m	258.2	-180.1	5.9
11. S Leg, E Side - 50 m	310.9	-242.9	5.9
12. S Leg, E Side-Midblk	591.1	-576.9	5.9
13. S Leg, W Side-Corner	-2.3	-106.2	5.9
14. S Leg, W Side - 25 m	44.0	-161.4	5.9
15. S Leg, W Side - 50 m	96.8	-224.2	5.9
16. S Leg, W Side-Midblk	377.0	-558.2	5.9
17. E Leg, N Side - 25 m	69.1	124.5	5.9
18. E Leg, N Side - 50 m	150.8	117.3	5.9
19. E Leg, N Side-Midblk	585.1	79.3	5.9
20. W Leg, N Side - 25 m	-288.5	155.7	5.9
21. W Leg, N Side - 50 m	-370.2	162.9	5.9
22. W Leg, N Side-Midblk	-804.5	200.9	5.9
23. E Leg, S Side - 25 m	283.6	-131.2	5.9
24. E Leg, S Side - 50 m	365.3	-138.4	5.9
25. E Leg, S Side-Midblk	799.6	-176.4	5.9
26. W Leg, S Side - 25 m	-74.0	-99.9	5.9

27. W Leg, S Side - 50 m *	-155.7	-92.8	5.9 *
28. W Leg, S Side-Midblk *	-590.0	-54.8	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.1000	0.1000	0.1000	0.1000	1.1000	1.1000	1.1000	1.1000	1.9000	1.5000	1.3000	0.8000	2.9000	2.7000	2.5000
20.	* 0.1000	0.1000	0.1000	0.1000	1.1000	1.1000	1.1000	1.1000	1.9000	1.5000	1.3000	0.7000	2.9000	2.7000	2.5000
30.	* 0.0000	0.0000	0.0000	0.0000	1.1000	1.0000	1.0000	1.0000	1.9000	1.6000	1.2000	0.7000	3.1000	2.7000	2.3000
40.	* 0.1000	0.0000	0.0000	0.0000	1.2000	1.1000	1.1000	1.1000	2.0000	1.5000	1.2000	0.6000	3.2000	2.7000	2.4000
50.	* 0.1000	0.0000	0.0000	0.0000	1.2000	1.1000	1.1000	1.1000	2.1000	1.6000	1.3000	0.4000	3.4000	2.8000	2.5000
60.	* 0.1000	0.0000	0.0000	0.0000	1.2000	1.1000	1.1000	1.1000	2.2000	1.7000	1.4000	0.2000	3.5000	2.9000	2.6000
70.	* 0.3000	0.0000	0.0000	0.0000	1.1000	1.0000	1.0000	1.0000	2.4000	1.7000	1.2000	0.0000	3.6000	3.0000	2.5000
80.	* 0.8000	0.2000	0.1000	0.1000	1.6000	1.2000	1.1000	1.1000	2.5000	1.4000	0.9000	0.1000	3.8000	2.9000	2.3000
90.	* 2.1000	0.6000	0.3000	0.1000	2.6000	1.6000	1.4000	1.1000	1.8000	0.9000	0.4000	0.1000	3.1000	2.2000	1.7000
100.	* 3.6000	1.6000	1.0000	0.2000	3.8000	2.6000	2.2000	1.4000	0.9000	0.3000	0.1000	0.1000	2.2000	1.7000	1.5000
110.	* 3.9000	2.4000	1.6000	0.5000	3.8000	3.2000	2.7000	1.8000	0.4000	0.2000	0.2000	0.2000	1.8000	1.6000	1.6000
120.	* 3.6000	2.5000	2.0000	0.9000	3.7000	3.4000	2.9000	2.2000	0.4000	0.3000	0.3000	0.3000	1.8000	1.7000	1.7000

130. * 3.6000 2.8000 2.3000 1.4000 3.4000 3.0000 2.7000 2.2000 0.9000
0.8000 0.8000 0.6000 1.7000 1.6000 1.6000
140. * 4.3000 3.5000 3.0000 2.3000 2.6000 2.3000 2.0000 1.8000 1.9000
1.7000 1.7000 1.3000 1.2000 1.1000 1.1000
150. * 4.5000 3.6000 3.3000 2.5000 1.5000 1.3000 1.2000 0.9000 2.5000
2.4000 2.2000 1.8000 0.5000 0.4000 0.4000
160. * 3.9000 3.4000 2.7000 2.3000 1.2000 1.0000 0.8000 0.5000 2.3000
2.3000 2.2000 2.0000 0.1000 0.1000 0.1000
170. * 3.5000 2.7000 2.3000 2.0000 1.2000 1.0000 0.8000 0.5000 1.9000
1.9000 1.9000 1.9000 0.1000 0.1000 0.1000
180. * 3.1000 2.4000 2.1000 1.8000 1.2000 1.0000 0.8000 0.5000 1.8000
1.8000 1.8000 1.8000 0.1000 0.1000 0.1000
190. * 2.7000 2.1000 2.0000 1.7000 1.1000 0.9000 0.7000 0.4000 1.6000
1.6000 1.6000 1.6000 0.0000 0.0000 0.0000
200. * 2.2000 2.1000 1.9000 1.6000 1.1000 0.9000 0.7000 0.4000 1.5000
1.5000 1.5000 1.5000 0.0000 0.0000 0.0000
210. * 2.3000 2.1000 1.9000 1.6000 1.1000 0.9000 0.7000 0.4000 1.4000
1.4000 1.4000 1.4000 0.0000 0.0000 0.0000
220. * 2.4000 2.2000 1.9000 1.6000 1.2000 1.0000 0.7000 0.3000 1.5000
1.5000 1.4000 1.4000 0.1000 0.0000 0.0000
230. * 2.7000 2.3000 2.0000 1.7000 1.3000 1.0000 0.7000 0.2000 1.7000
1.6000 1.6000 1.6000 0.1000 0.0000 0.0000
240. * 2.7000 2.2000 2.0000 1.4000 1.4000 1.0000 0.8000 0.1000 1.5000
1.4000 1.4000 1.5000 0.1000 0.0000 0.0000
250. * 2.8000 2.3000 2.0000 1.3000 1.6000 1.1000 0.8000 0.0000 1.5000
1.4000 1.4000 1.4000 0.1000 0.0000 0.0000
260. * 3.0000 2.2000 1.8000 1.2000 1.6000 0.9000 0.6000 0.0000 1.8000
1.5000 1.5000 1.5000 0.3000 0.0000 0.0000
270. * 2.8000 1.9000 1.6000 1.3000 1.3000 0.5000 0.2000 0.0000 2.4000
1.9000 1.7000 1.6000 1.0000 0.2000 0.1000
280. * 2.2000 1.6000 1.5000 1.4000 0.9000 0.2000 0.1000 0.1000 3.3000
2.5000 2.2000 1.8000 1.8000 0.9000 0.5000
290. * 1.9000 1.6000 1.6000 1.6000 0.4000 0.1000 0.1000 0.1000 3.7000
3.3000 2.7000 2.1000 2.0000 1.3000 0.9000
300. * 1.9000 1.8000 1.8000 1.8000 0.2000 0.1000 0.1000 0.1000 4.1000
3.5000 3.1000 2.6000 2.0000 1.2000 0.9000
310. * 2.1000 1.9000 1.9000 1.7000 0.5000 0.4000 0.4000 0.3000 4.2000
3.7000 3.4000 2.8000 2.0000 1.5000 1.2000
320. * 1.5000 1.4000 1.4000 1.2000 1.1000 1.0000 0.9000 0.6000 3.8000
3.2000 2.9000 2.5000 2.6000 2.2000 1.9000
330. * 0.8000 0.6000 0.6000 0.5000 1.5000 1.4000 1.4000 1.0000 2.8000
2.3000 1.9000 1.6000 2.8000 2.6000 2.5000
340. * 0.4000 0.2000 0.2000 0.2000 1.6000 1.5000 1.5000 1.2000 2.2000
1.8000 1.5000 1.0000 2.8000 2.6000 2.6000
350. * 0.1000 0.1000 0.1000 0.1000 1.4000 1.4000 1.4000 1.2000 2.0000
1.6000 1.4000 0.8000 2.6000 2.7000 2.5000
360. * 0.1000 0.1000 0.1000 0.1000 1.3000 1.3000 1.3000 1.2000 1.9000
1.5000 1.3000 0.8000 2.8000 2.7000 2.6000

```
------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  4.5000  3.6000  3.3000  2.5000  3.8000  3.4000  2.9000  2.2000  4.2000
3.7000  3.4000  2.8000  3.8000  3.0000  2.6000
 DEGR. *    150     150     150     150     100     120     120     130     310
310     310     310      80      70      60
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  2.0000  0.0000  0.0000  0.0000  0.8000  0.6000  0.2000  1.8000  1.8000
1.8000  2.1000  1.9000  1.6000
  20.  *  1.9000  0.1000  0.1000  0.1000  0.7000  0.6000  0.3000  1.8000  1.8000
1.8000  2.2000  1.8000  1.5000
  30.  *  1.8000  0.1000  0.2000  0.1000  0.8000  0.6000  0.4000  1.9000  1.9000
1.9000  2.6000  1.8000  1.5000
  40.  *  1.9000  0.2000  0.2000  0.2000  0.8000  0.7000  0.4000  2.0000  2.0000
2.0000  2.9000  2.1000  1.7000
  50.  *  1.8000  0.2000  0.2000  0.2000  0.8000  0.7000  0.4000  2.1000  2.1000
2.0000  3.0000  2.4000  1.8000
  60.  *  1.6000  0.3000  0.3000  0.3000  0.8000  0.7000  0.4000  2.2000  2.2000
2.0000  3.2000  3.0000  2.0000
  70.  *  1.4000  0.4000  0.4000  0.3000  0.8000  0.7000  0.4000  2.4000  2.3000
1.9000  3.5000  3.4000  2.2000
  80.  *  1.3000  0.8000  0.8000  0.7000  1.1000  0.9000  0.6000  2.3000  2.3000
1.4000  3.6000  3.3000  2.7000
  90.  *  1.3000  2.0000  1.9000  1.7000  2.2000  2.0000  1.4000  1.7000  1.6000
1.0000  3.0000  2.8000  2.5000
```

```
 100.  *  1.4000  3.5000  3.5000  2.9000  3.1000  2.8000  2.3000  0.8000  0.7000
0.4000  2.0000  1.8000  1.5000
 110.  *  1.5000  3.9000  3.9000  3.5000  3.4000  3.0000  2.3000  0.2000  0.2000
0.2000  1.3000  1.1000  0.7000
 120.  *  1.5000  3.5000  3.5000  3.3000  2.9000  2.5000  1.9000  0.1000  0.1000
0.1000  1.2000  0.9000  0.4000
 130.  *  1.3000  3.2000  3.1000  3.0000  2.3000  2.1000  1.5000  0.2000  0.1000
0.1000  1.0000  0.6000  0.2000
 140.  *  0.8000  3.3000  2.9000  2.7000  1.7000  1.5000  1.3000  0.6000  0.3000
0.1000  0.4000  0.3000  0.1000
 150.  *  0.3000  3.6000  3.1000  2.5000  1.4000  1.2000  1.2000  1.1000  0.6000
0.1000  0.1000  0.1000  0.1000
 160.  *  0.1000  3.5000  3.2000  2.4000  1.1000  1.1000  1.1000  1.2000  0.8000
0.0000  0.0000  0.1000  0.1000
 170.  *  0.1000  3.4000  3.2000  2.5000  1.1000  1.1000  1.1000  1.2000  0.9000
0.1000  0.0000  0.0000  0.0000
 180.  *  0.1000  3.5000  3.3000  2.9000  1.1000  1.1000  1.1000  1.1000  0.8000
0.1000  0.0000  0.0000  0.0000
 190.  *  0.0000  3.6000  3.3000  2.9000  1.1000  1.1000  1.1000  1.1000  0.8000
0.3000  0.0000  0.0000  0.0000
 200.  *  0.0000  3.5000  3.1000  2.7000  1.1000  1.1000  1.1000  1.0000  0.8000
0.4000  0.0000  0.0000  0.0000
 210.  *  0.0000  3.2000  3.2000  2.7000  1.1000  1.1000  1.1000  1.0000  0.8000
0.4000  0.1000  0.1000  0.1000
 220.  *  0.0000  3.1000  3.2000  2.9000  1.2000  1.2000  1.2000  1.1000  0.9000
0.5000  0.1000  0.1000  0.1000
 230.  *  0.0000  2.9000  3.3000  3.1000  1.3000  1.3000  1.2000  1.1000  0.9000
0.5000  0.1000  0.1000  0.1000
 240.  *  0.0000  3.1000  3.3000  3.4000  1.4000  1.4000  1.3000  1.1000  0.9000
0.5000  0.1000  0.1000  0.1000
 250.  *  0.0000  3.1000  3.4000  3.7000  1.6000  1.6000  1.3000  1.1000  0.9000
0.4000  0.1000  0.1000  0.1000
 260.  *  0.0000  3.4000  3.4000  4.2000  1.6000  1.6000  1.1000  1.3000  1.1000
0.6000  0.3000  0.3000  0.3000
 270.  *  0.0000  2.9000  3.0000  3.8000  1.3000  1.3000  0.8000  1.9000  1.6000
1.3000  0.9000  0.9000  0.7000
 280.  *  0.1000  2.1000  2.0000  2.2000  0.6000  0.6000  0.5000  2.7000  2.3000
2.4000  1.7000  1.7000  1.3000
 290.  *  0.3000  1.4000  1.2000  1.0000  0.3000  0.2000  0.2000  3.0000  3.0000
3.0000  2.0000  2.0000  1.7000
 300.  *  0.5000  1.1000  1.0000  0.6000  0.1000  0.1000  0.1000  3.1000  3.0000
2.6000  1.8000  1.8000  1.7000
 310.  *  1.0000  0.9000  0.8000  0.4000  0.1000  0.1000  0.1000  3.0000  2.7000
2.3000  1.7000  1.6000  1.6000
 320.  *  1.6000  0.5000  0.4000  0.2000  0.4000  0.2000  0.1000  2.7000  2.3000
2.1000  1.9000  1.7000  1.5000
 330.  *  2.3000  0.1000  0.2000  0.2000  0.7000  0.5000  0.1000  2.1000  2.0000
2.0000  2.2000  1.9000  1.4000
```

```
 340.  *  2.3000  0.0000  0.2000  0.1000  1.0000  0.6000  0.1000  1.9000  1.9000
1.9000  2.1000  1.9000  1.2000
 350.  *  2.3000  0.0000  0.1000  0.1000  0.9000  0.7000  0.0000  1.8000  1.8000
1.8000  2.1000  1.9000  1.4000
 360.  *  2.1000  0.0000  0.0000  0.0000  0.8000  0.6000  0.2000  1.8000  1.8000
1.8000  2.1000  1.9000  1.6000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  2.3000  3.9000  3.9000  4.2000  3.4000  3.0000  2.3000  3.1000  3.0000
3.0000  3.6000  3.4000  2.7000
 DEGR. *    340     110     110     260     110     110     100     300     290
290      80      70      80

 THE HIGHEST CONCENTRATION OF   4.5000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,5,9,9,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-10,-10,0,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',50.3,118.0,5.9
'N Leg, E Side - 25 m',37.8,188.9,5.9
'N Leg, E Side - 50 m',23.5,269.7,5.9
'N Leg, E Side-Midblk',-52.2,699.0,5.9
'N Leg, W Side-Corner',-91.9,118.0,5.9
'N Leg, W Side - 25 m',-104.4,188.9,5.9
'N Leg, W Side - 50 m',-118.6,269.7,5.9
'N Leg, W Side-Midblk',-194.3,699.0,5.9
'S Leg, E Side-Corner',91.9,-118.0,5.9
'S Leg, E Side - 25 m',104.4,-188.9,5.9
'S Leg, E Side - 50 m',118.6,-269.7,5.9
'S Leg, E Side-Midblk',194.3,-699.0,5.9
'S Leg, W Side-Corner',-50.3,-118.0,5.9
'S Leg, W Side - 25 m',-37.8,-188.9,5.9
'S Leg, W Side - 50 m',-23.5,-269.7,5.9
'S Leg, W Side-Midblk',52.2,-699.0,5.9
'E Leg, N Side - 25 m',122.3,118.0,5.9
'E Leg, N Side - 50 m',204.3,118.0,5.9
'E Leg, N Side-Midblk',640.3,118.0,5.9
'W Leg, N Side - 25 m',-163.9,118.0,5.9
'W Leg, N Side - 50 m',-245.9,118.0,5.9
'W Leg, N Side-Midblk',-681.9,118.0,5.9
'E Leg, S Side - 25 m',163.9,-118.0,5.9
'E Leg, S Side - 50 m',245.9,-118.0,5.9
'E Leg, S Side-Midblk',681.9,-118.0,5.9
'W Leg, S Side - 25 m',-122.3,-118.0,5.9
'W Leg, S Side - 50 m',-204.3,-118.0,5.9
'W Leg, S Side-Midblk',-640.3,-118.0,5.9
'2025 I495 & MD97 (IC.20)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-30,-5,-238,1177,11000,1.85,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',30,5,-179,1187,11000,3.23,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,5,238,-1177,11000,1.85,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-30,-5,179,-1187,11000,3.23,0.0,79.7
1
'E Leg App - FreeFlow','AG',0,54,1200,54,19800,4.38,0.0,127.7
1
'E Leg Dep - FreeFlow','AG',0,-54,1200,-54,19800,1.49,0.0,127.7
1
```

```
'W Leg App - FreeFlow','AG',0,-54,-1200,-54,19800,2.67,0.0,127.7
1
'W Leg Dep - FreeFlow','AG',0,54,-1200,54,19800,1.49,0.0,127.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 I495 & MD97 (IC.20)

DATE : 2/ 8/19
TIME : 9:32:52

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-30.0	-5.0	-238.0	1177.0	*	1200.	350.	AG	11000.	1.9	0.0	79.7		
2. N Leg Dep - FreeFlow	*	30.0	5.0	-179.0	1187.0	*	1200.	350.	AG	11000.	3.2	0.0	79.7		
3. S Leg App - FreeFlow	*	30.0	5.0	238.0	-1177.0	*	1200.	170.	AG	11000.	1.9	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-30.0	-5.0	179.0	-1187.0	*	1200.	170.	AG	11000.	3.2	0.0	79.7		
5. E Leg App - FreeFlow	*	0.0	54.0	1200.0	54.0	*	1200.	90.	AG	19800.	4.4	0.0	****		
6. E Leg Dep - FreeFlow	*	0.0	-54.0	1200.0	-54.0	*	1200.	90.	AG	19800.	1.5	0.0	****		
7. W Leg App - FreeFlow	*	0.0	-54.0	-1200.0	-54.0	*	1200.	270.	AG	19800.	2.7	0.0	****		
8. W Leg Dep - FreeFlow	*	0.0	54.0	-1200.0	54.0	*	1200.	270.	AG	19800.	1.5	0.0	****		

MD97 (IC.20)

DATE : 2/ 8/19
TIME : 9:32:52

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	50.3	118.0	5.9
2. N Leg, E Side - 25 m	37.8	188.9	5.9
3. N Leg, E Side - 50 m	23.5	269.7	5.9
4. N Leg, E Side-Midblk	-52.2	699.0	5.9
5. N Leg, W Side-Corner	-91.9	118.0	5.9
6. N Leg, W Side - 25 m	-104.4	188.9	5.9
7. N Leg, W Side - 50 m	-118.6	269.7	5.9
8. N Leg, W Side-Midblk	-194.3	699.0	5.9
9. S Leg, E Side-Corner	91.9	-118.0	5.9
10. S Leg, E Side - 25 m	104.4	-188.9	5.9
11. S Leg, E Side - 50 m	118.6	-269.7	5.9
12. S Leg, E Side-Midblk	194.3	-699.0	5.9
13. S Leg, W Side-Corner	-50.3	-118.0	5.9
14. S Leg, W Side - 25 m	-37.8	-188.9	5.9
15. S Leg, W Side - 50 m	-23.5	-269.7	5.9
16. S Leg, W Side-Midblk	52.2	-699.0	5.9
17. E Leg, N Side - 25 m	122.3	118.0	5.9
18. E Leg, N Side - 50 m	204.3	118.0	5.9
19. E Leg, N Side-Midblk	640.3	118.0	5.9
20. W Leg, N Side - 25 m	-163.9	118.0	5.9
21. W Leg, N Side - 50 m	-245.9	118.0	5.9
22. W Leg, N Side-Midblk	-681.9	118.0	5.9
23. E Leg, S Side - 25 m	163.9	-118.0	5.9
24. E Leg, S Side - 50 m	245.9	-118.0	5.9
25. E Leg, S Side-Midblk	681.9	-118.0	5.9
26. W Leg, S Side - 25 m	-122.3	-118.0	5.9

27. W Leg, S Side - 50 m	*	-204.3	-118.0	5.9 *
28. W Leg, S Side-Midblk	*	-640.3	-118.0	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.3000	0.3000	0.3000	0.3000	1.6000	1.6000	1.6000	1.5000	2.0000	1.5000	1.2000	0.6000	4.0000	3.3000	3.1000
20.	* 0.2000	0.1000	0.1000	0.1000	1.5000	1.5000	1.5000	1.5000	1.8000	1.4000	1.1000	0.6000	4.0000	3.3000	2.8000
30.	* 0.3000	0.1000	0.1000	0.1000	1.4000	1.4000	1.4000	1.4000	1.9000	1.4000	1.1000	0.6000	3.9000	2.9000	2.6000
40.	* 0.3000	0.1000	0.1000	0.1000	1.3000	1.2000	1.2000	1.2000	1.9000	1.5000	1.1000	0.6000	3.8000	2.8000	2.5000
50.	* 0.3000	0.1000	0.1000	0.1000	1.3000	1.2000	1.2000	1.2000	2.0000	1.4000	1.1000	0.4000	3.8000	2.8000	2.5000
60.	* 0.3000	0.0000	0.0000	0.0000	1.2000	1.1000	1.1000	1.1000	2.2000	1.5000	1.1000	0.2000	3.7000	2.7000	2.4000
70.	* 0.5000	0.0000	0.0000	0.0000	1.4000	1.1000	1.1000	1.1000	2.4000	1.4000	0.9000	0.0000	3.9000	2.7000	2.3000
80.	* 1.2000	0.1000	0.0000	0.0000	2.2000	1.4000	1.2000	1.2000	2.1000	0.9000	0.4000	0.0000	3.7000	2.4000	1.8000
90.	* 2.8000	0.7000	0.2000	0.0000	3.5000	1.9000	1.4000	1.1000	1.3000	0.3000	0.1000	0.0000	2.8000	1.7000	1.5000
100.	* 3.7000	1.5000	0.8000	0.0000	4.2000	2.7000	1.9000	1.1000	0.5000	0.0000	0.0000	0.0000	1.8000	1.3000	1.2000
110.	* 3.6000	2.0000	1.3000	0.2000	4.0000	3.1000	2.5000	1.4000	0.2000	0.0000	0.0000	0.0000	1.6000	1.4000	1.4000
120.	* 3.2000	2.0000	1.5000	0.5000	3.5000	2.9000	2.6000	1.7000	0.2000	0.1000	0.1000	0.1000	1.5000	1.5000	1.5000

130. * 2.9000 1.9000 1.4000 0.6000 3.3000 2.8000 2.6000 1.9000 0.2000
0.1000 0.1000 0.1000 1.6000 1.6000 1.6000
140. * 2.7000 1.8000 1.2000 0.6000 3.0000 2.7000 2.5000 2.0000 0.2000
0.1000 0.1000 0.1000 1.8000 1.8000 1.8000
150. * 2.7000 1.9000 1.3000 0.8000 3.1000 2.7000 2.6000 2.1000 0.3000
0.2000 0.2000 0.1000 2.1000 2.1000 2.0000
160. * 2.9000 2.3000 1.9000 1.4000 3.1000 2.7000 2.5000 2.4000 0.5000
0.5000 0.5000 0.3000 2.2000 2.2000 2.2000
170. * 3.9000 3.1000 2.7000 2.2000 2.7000 2.1000 2.1000 1.7000 1.1000
1.1000 1.1000 0.9000 1.7000 1.7000 1.6000
180. * 4.6000 3.6000 3.2000 2.6000 2.1000 1.6000 1.3000 0.9000 1.7000
1.6000 1.6000 1.3000 0.8000 0.7000 0.7000
190. * 4.6000 3.5000 3.1000 2.4000 1.6000 1.1000 0.9000 0.4000 1.6000
1.6000 1.6000 1.5000 0.3000 0.3000 0.3000
200. * 4.4000 3.2000 2.6000 2.1000 1.4000 1.0000 0.8000 0.4000 1.5000
1.5000 1.5000 1.5000 0.2000 0.1000 0.1000
210. * 4.1000 2.7000 2.3000 1.9000 1.5000 1.1000 0.8000 0.4000 1.4000
1.4000 1.4000 1.4000 0.2000 0.1000 0.1000
220. * 3.9000 2.4000 2.2000 1.8000 1.5000 1.1000 0.8000 0.4000 1.3000
1.2000 1.2000 1.2000 0.2000 0.1000 0.1000
230. * 3.7000 2.5000 2.2000 1.7000 1.5000 1.1000 0.8000 0.3000 1.3000
1.2000 1.2000 1.2000 0.2000 0.1000 0.1000
240. * 3.6000 2.3000 2.1000 1.4000 1.7000 1.1000 0.9000 0.2000 1.2000
1.1000 1.1000 1.1000 0.2000 0.0000 0.0000
250. * 3.8000 2.4000 2.1000 1.3000 1.9000 1.0000 0.6000 0.0000 1.3000
1.1000 1.1000 1.1000 0.3000 0.0000 0.0000
260. * 3.6000 2.2000 1.7000 1.3000 1.8000 0.7000 0.4000 0.0000 1.9000
1.3000 1.2000 1.2000 0.8000 0.1000 0.0000
270. * 3.0000 1.6000 1.4000 1.3000 1.1000 0.3000 0.1000 0.0000 2.8000
1.6000 1.3000 1.1000 1.7000 0.5000 0.1000
280. * 1.8000 1.3000 1.2000 1.2000 0.4000 0.0000 0.0000 0.0000 3.2000
2.1000 1.7000 1.1000 2.4000 1.0000 0.5000
290. * 1.6000 1.4000 1.4000 1.4000 0.2000 0.0000 0.0000 0.0000 3.3000
2.5000 2.0000 1.3000 2.4000 1.4000 0.9000
300. * 1.5000 1.5000 1.5000 1.5000 0.2000 0.1000 0.1000 0.1000 3.0000
2.4000 2.2000 1.5000 2.2000 1.4000 1.1000
310. * 1.6000 1.6000 1.6000 1.6000 0.2000 0.1000 0.1000 0.1000 3.0000
2.4000 2.2000 1.8000 2.0000 1.3000 1.0000
320. * 1.8000 1.8000 1.8000 1.8000 0.2000 0.1000 0.1000 0.1000 2.9000
2.4000 2.2000 1.9000 1.8000 1.2000 0.9000
330. * 2.1000 2.1000 2.0000 2.0000 0.3000 0.2000 0.2000 0.1000 3.2000
2.6000 2.5000 1.9000 1.9000 1.3000 1.0000
340. * 2.2000 2.2000 2.2000 1.8000 0.5000 0.5000 0.5000 0.3000 3.4000
2.8000 2.6000 2.3000 2.2000 1.8000 1.6000
350. * 1.7000 1.7000 1.6000 1.3000 1.1000 1.1000 1.1000 0.9000 3.1000
2.4000 2.3000 1.8000 3.1000 2.6000 2.5000
360. * 0.8000 0.7000 0.7000 0.6000 1.7000 1.6000 1.6000 1.3000 2.5000
1.9000 1.6000 1.0000 3.8000 3.3000 3.0000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  4.6000  3.6000  3.2000  2.6000  4.2000  3.1000  2.6000  2.4000  3.4000
2.8000  2.6000  2.3000  4.0000  3.3000  3.1000
 DEGR. *    180     180     180     180     100     110     120     160     340
340     340     340      10     360      10
```


JOB: I-495 & I-270 MLS RUN: 2025 I495 & MD97 (IC.20)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  2.5000  0.0000  0.0000  0.0000  0.9000  0.5000  0.0000  1.8000  1.8000
1.8000  2.5000  2.2000  1.6000
  20.  *  2.3000  0.1000  0.1000  0.1000  0.9000  0.7000  0.1000  1.7000  1.7000
1.7000  2.5000  2.2000  1.7000
  30.  *  2.1000  0.2000  0.2000  0.2000  1.0000  0.6000  0.3000  1.8000  1.8000
1.8000  2.6000  2.2000  1.8000
  40.  *  2.0000  0.2000  0.2000  0.2000  0.8000  0.6000  0.4000  1.8000  1.8000
1.8000  3.0000  2.4000  2.0000
  50.  *  1.8000  0.2000  0.2000  0.2000  0.8000  0.6000  0.4000  2.0000  2.0000
2.0000  3.4000  2.7000  2.2000
  60.  *  1.5000  0.3000  0.3000  0.3000  0.8000  0.6000  0.4000  2.2000  2.2000
2.0000  3.4000  3.2000  2.4000
  70.  *  1.3000  0.5000  0.5000  0.4000  0.9000  0.7000  0.4000  2.3000  2.3000
1.9000  3.5000  3.5000  2.8000
  80.  *  1.3000  1.2000  1.2000  1.0000  1.6000  1.3000  0.9000  2.0000  1.9000
1.4000  3.3000  3.4000  3.1000
  90.  *  1.3000  2.7000  2.7000  2.2000  2.8000  2.5000  1.8000  1.2000  1.2000
0.8000  2.5000  2.4000  2.3000
```

```
 100.  *  1.2000  3.7000  3.6000  3.1000  3.6000  2.9000  2.4000  0.5000  0.5000
0.3000  1.5000  1.3000  1.1000
 110.  *  1.4000  3.5000  3.5000  3.3000  3.1000  2.7000  2.1000  0.2000  0.2000
0.1000  1.1000  0.8000  0.6000
 120.  *  1.5000  3.1000  3.1000  3.1000  2.6000  2.2000  1.9000  0.1000  0.1000
0.1000  0.9000  0.8000  0.5000
 130.  *  1.6000  2.8000  2.8000  2.8000  2.5000  2.1000  1.8000  0.1000  0.1000
0.1000  1.0000  0.7000  0.4000
 140.  *  1.8000  2.6000  2.6000  2.6000  2.2000  2.0000  1.6000  0.1000  0.1000
0.1000  1.1000  0.7000  0.3000
 150.  *  2.0000  2.4000  2.4000  2.4000  2.3000  2.1000  1.5000  0.1000  0.1000
0.1000  1.1000  0.7000  0.1000
 160.  *  1.8000  2.3000  2.3000  2.3000  2.0000  1.7000  1.3000  0.0000  0.0000
0.0000  0.9000  0.5000  0.1000
 170.  *  1.3000  2.7000  2.5000  2.3000  1.7000  1.4000  1.4000  0.3000  0.1000
0.0000  0.4000  0.1000  0.0000
 180.  *  0.6000  3.3000  2.9000  2.5000  1.5000  1.4000  1.4000  0.6000  0.4000
0.0000  0.1000  0.0000  0.0000
 190.  *  0.3000  3.2000  2.9000  2.3000  1.4000  1.4000  1.4000  0.9000  0.5000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.1000  3.2000  3.0000  2.5000  1.3000  1.3000  1.3000  0.9000  0.7000
0.1000  0.1000  0.1000  0.1000
 210.  *  0.1000  3.2000  2.9000  2.6000  1.4000  1.4000  1.4000  1.0000  0.6000
0.3000  0.1000  0.1000  0.1000
 220.  *  0.1000  3.6000  3.2000  2.9000  1.4000  1.4000  1.4000  0.8000  0.6000
0.4000  0.1000  0.1000  0.1000
 230.  *  0.1000  3.8000  3.4000  3.1000  1.5000  1.5000  1.5000  0.8000  0.6000
0.4000  0.1000  0.1000  0.1000
 240.  *  0.0000  3.6000  3.9000  3.5000  1.7000  1.7000  1.6000  0.8000  0.6000
0.4000  0.2000  0.2000  0.2000
 250.  *  0.0000  3.6000  3.8000  3.8000  1.9000  1.8000  1.5000  0.9000  0.7000
0.4000  0.3000  0.3000  0.3000
 260.  *  0.0000  3.5000  3.7000  4.1000  1.6000  1.6000  1.2000  1.3000  1.1000
0.8000  0.7000  0.7000  0.6000
 270.  *  0.0000  2.7000  2.8000  3.1000  1.1000  1.1000  0.8000  2.2000  2.0000
1.7000  1.7000  1.7000  1.3000
 280.  *  0.0000  1.7000  1.6000  1.6000  0.4000  0.4000  0.3000  2.8000  2.5000
2.4000  2.4000  2.3000  2.0000
 290.  *  0.2000  1.2000  0.9000  0.8000  0.2000  0.2000  0.1000  2.6000  2.5000
2.4000  2.3000  2.3000  2.1000
 300.  *  0.4000  1.0000  0.8000  0.6000  0.1000  0.1000  0.1000  2.4000  2.3000
2.4000  2.1000  2.1000  2.0000
 310.  *  0.5000  1.1000  0.8000  0.5000  0.1000  0.1000  0.1000  2.6000  2.3000
2.3000  1.9000  1.9000  1.9000
 320.  *  0.5000  1.2000  0.8000  0.4000  0.1000  0.1000  0.1000  2.5000  2.5000
2.0000  1.7000  1.7000  1.7000
 330.  *  0.7000  1.2000  0.8000  0.2000  0.1000  0.1000  0.1000  2.7000  2.5000
1.9000  1.6000  1.6000  1.6000
```

```
 340.  *  1.2000  0.9000  0.5000  0.1000  0.0000  0.0000  0.0000  2.5000  2.1000
1.7000  1.5000  1.5000  1.5000
 350.  *  2.1000  0.4000  0.1000  0.0000  0.3000  0.1000  0.0000  2.2000  1.9000
1.8000  2.0000  1.8000  1.6000
 360.  *  2.7000  0.1000  0.0000  0.0000  0.6000  0.4000  0.0000  1.9000  1.8000
1.8000  2.5000  2.1000  1.7000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  2.7000  3.8000  3.9000  4.1000  3.6000  2.9000  2.4000  2.8000  2.5000
2.4000  3.5000  3.5000  3.1000
 DEGR. *    360     230     240     260     100     100     100     280     290
280      70      70      80

 THE HIGHEST CONCENTRATION OF   4.6000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,5,9,8,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,0,-5,-25,5,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',26.5,108.7,5.9
'N Leg, E Side - 25 m',-3.9,174.0,5.9
'N Leg, E Side - 50 m',-38.6,248.3,5.9
'N Leg, E Side-Midblk',-222.8,643.4,5.9
'N Leg, W Side-Corner',-132.2,118.0,5.9
'N Leg, W Side - 25 m',-162.7,183.2,5.9
'N Leg, W Side - 50 m',-197.4,257.6,5.9
'N Leg, W Side-Midblk',-381.6,652.7,5.9
'S Leg, E Side-Corner',80.0,-111.5,5.9
'S Leg, E Side - 25 m',86.3,-183.2,5.9
'S Leg, E Side - 50 m',93.4,-264.9,5.9
'S Leg, E Side-Midblk',131.4,-699.2,5.9
'S Leg, W Side-Corner',-60.4,-113.2,5.9
'S Leg, W Side - 25 m',-54.1,-184.9,5.9
'S Leg, W Side - 50 m',-46.9,-266.6,5.9
'S Leg, W Side-Midblk',-8.9,-700.9,5.9
'E Leg, N Side - 25 m',98.3,115.0,5.9
'E Leg, N Side - 50 m',180.0,122.2,5.9
'E Leg, N Side-Midblk',614.3,160.1,5.9
'W Leg, N Side - 25 m',-204.0,124.3,5.9
'W Leg, N Side - 50 m',-285.7,131.4,5.9
'W Leg, N Side-Midblk',-720.0,169.4,5.9
'E Leg, S Side - 25 m',151.8,-105.2,5.9
'E Leg, S Side - 50 m',233.5,-98.0,5.9
'E Leg, S Side-Midblk',667.8,-60.0,5.9
'W Leg, S Side - 25 m',-132.1,-106.9,5.9
'W Leg, S Side - 50 m',-213.8,-99.7,5.9
'W Leg, S Side-Midblk',-648.1,-61.7,5.9
'2025 I495 & MD185 (IC.21)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-29,-8,-534,1075,11000,3.23,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',29,8,-480,1100,11000,1.85,0.0,79.7
1
'S Leg App - FreeFlow','AG',29,8,134,-1193,11000,1.85,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-29,-8,75,-1198,11000,3.89,0.0,79.7
1
'E Leg App - FreeFlow','AG',0,48,1191,152,17600,1.49,0.0,115.7
1
'E Leg Dep - FreeFlow','AG',0,-54,1200,51,19800,2.02,0.0,127.7
1
```

```
'W Leg App - FreeFlow','AG',0,-54,-1200,51,19800,1.49,0.0,127.7
1
'W Leg Dep - FreeFlow','AG',0,48,-1191,152,17600,2.02,0.0,115.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 I495 & MD185 (IC.21)

DATE : 2/ 8/19
TIME : 9:37:53

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-29.0	-8.0	-534.0	1075.0	*	1195.	335.	AG	11000.	3.2	0.0	79.7		
2. N Leg Dep - FreeFlow	*	29.0	8.0	-480.0	1100.0	*	1205.	335.	AG	11000.	1.9	0.0	79.7		
3. S Leg App - FreeFlow	*	29.0	8.0	134.0	-1193.0	*	1206.	175.	AG	11000.	1.9	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-29.0	-8.0	75.0	-1198.0	*	1195.	175.	AG	11000.	3.9	0.0	79.7		
5. E Leg App - FreeFlow	*	0.0	48.0	1191.0	152.0	*	1196.	85.	AG	17600.	1.5	0.0	****		
6. E Leg Dep - FreeFlow	*	0.0	-54.0	1200.0	51.0	*	1205.	85.	AG	19800.	2.0	0.0	****		
7. W Leg App - FreeFlow	*	0.0	-54.0	-1200.0	51.0	*	1205.	275.	AG	19800.	1.5	0.0	****		
8. W Leg Dep - FreeFlow	*	0.0	48.0	-1191.0	152.0	*	1196.	275.	AG	17600.	2.0	0.0	****		

MD185 (IC.21)

DATE : 2/ 8/19
TIME : 9:37:53

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	26.5	108.7	5.9
2. N Leg, E Side - 25 m	-3.9	174.0	5.9
3. N Leg, E Side - 50 m	-38.6	248.3	5.9
4. N Leg, E Side-Midblk	-222.8	643.4	5.9
5. N Leg, W Side-Corner	-132.2	118.0	5.9
6. N Leg, W Side - 25 m	-162.7	183.2	5.9
7. N Leg, W Side - 50 m	-197.4	257.6	5.9
8. N Leg, W Side-Midblk	-381.6	652.7	5.9
9. S Leg, E Side-Corner	80.0	-111.5	5.9
10. S Leg, E Side - 25 m	86.3	-183.2	5.9
11. S Leg, E Side - 50 m	93.4	-264.9	5.9
12. S Leg, E Side-Midblk	131.4	-699.2	5.9
13. S Leg, W Side-Corner	-60.4	-113.2	5.9
14. S Leg, W Side - 25 m	-54.1	-184.9	5.9
15. S Leg, W Side - 50 m	-46.9	-266.6	5.9
16. S Leg, W Side-Midblk	-8.9	-700.9	5.9
17. E Leg, N Side - 25 m	98.3	115.0	5.9
18. E Leg, N Side - 50 m	180.0	122.2	5.9
19. E Leg, N Side-Midblk	614.3	160.1	5.9
20. W Leg, N Side - 25 m	-204.0	124.3	5.9
21. W Leg, N Side - 50 m	-285.7	131.4	5.9
22. W Leg, N Side-Midblk	-720.0	169.4	5.9
23. E Leg, S Side - 25 m	151.8	-105.2	5.9
24. E Leg, S Side - 50 m	233.5	-98.0	5.9
25. E Leg, S Side-Midblk	667.8	-60.0	5.9
26. W Leg, S Side - 25 m	-132.1	-106.9	5.9

27. W Leg, S Side - 50 m	*	-213.8	-99.7	5.9 *
28. W Leg, S Side-Midblk	*	-648.1	-61.7	5.9 *

JOB: I-495 & I-270 MLS RUN: 2025 I495 & MD185 (IC.21)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.1000	0.1000	0.1000	0.1000	1.7000	1.7000	1.7000	1.7000	1.3000	1.1000	0.8000	0.5000	3.0000	2.8000	2.9000
20.	* 0.1000	0.1000	0.1000	0.1000	1.5000	1.5000	1.5000	1.5000	1.3000	1.0000	0.7000	0.4000	3.1000	2.9000	2.7000
30.	* 0.1000	0.0000	0.0000	0.0000	1.5000	1.4000	1.4000	1.4000	1.4000	1.0000	0.7000	0.4000	3.0000	2.6000	2.5000
40.	* 0.1000	0.0000	0.0000	0.0000	1.4000	1.3000	1.2000	1.2000	1.5000	1.1000	0.8000	0.4000	2.9000	2.6000	2.5000
50.	* 0.1000	0.0000	0.0000	0.0000	1.3000	1.2000	1.2000	1.2000	1.6000	1.0000	0.7000	0.3000	2.9000	2.5000	2.4000
60.	* 0.1000	0.0000	0.0000	0.0000	1.4000	1.3000	1.3000	1.3000	1.7000	1.0000	0.7000	0.1000	3.1000	2.5000	2.2000
70.	* 0.2000	0.0000	0.0000	0.0000	1.5000	1.3000	1.3000	1.3000	2.0000	0.9000	0.5000	0.0000	3.3000	2.5000	2.1000
80.	* 0.7000	0.1000	0.0000	0.0000	1.8000	1.3000	1.2000	1.2000	1.7000	0.5000	0.2000	0.0000	3.3000	2.1000	1.8000
90.	* 1.4000	0.5000	0.3000	0.0000	2.4000	1.7000	1.4000	1.2000	1.0000	0.2000	0.0000	0.0000	2.7000	1.7000	1.6000
100.	* 1.7000	0.9000	0.5000	0.0000	3.1000	2.2000	1.9000	1.4000	0.3000	0.0000	0.0000	0.0000	1.9000	1.4000	1.4000
110.	* 1.6000	1.1000	0.8000	0.3000	3.1000	2.4000	2.1000	1.7000	0.2000	0.0000	0.0000	0.0000	1.7000	1.5000	1.5000
120.	* 1.5000	1.1000	0.8000	0.4000	3.2000	2.5000	2.4000	2.0000	0.1000	0.0000	0.0000	0.0000	1.7000	1.7000	1.7000

```
 130.  *  1.4000  0.9000  0.8000  0.4000  3.3000  2.8000  2.5000  2.2000  0.2000
0.1000  0.1000  0.1000  1.8000  1.8000  1.8000
 140.  *  1.4000  1.0000  0.8000  0.5000  3.1000  2.7000  2.7000  2.3000  0.2000
0.1000  0.1000  0.1000  2.0000  2.0000  2.0000
 150.  *  1.4000  1.2000  1.2000  1.2000  3.2000  2.9000  2.7000  2.4000  0.2000
0.1000  0.1000  0.1000  2.2000  2.2000  2.2000
 160.  *  1.9000  1.9000  1.9000  2.0000  3.0000  2.6000  2.2000  1.8000  0.2000
0.2000  0.2000  0.2000  2.5000  2.5000  2.5000
 170.  *  2.7000  2.8000  2.5000  2.3000  2.4000  1.9000  1.4000  1.0000  0.8000
0.8000  0.8000  0.6000  2.3000  2.3000  2.3000
 180.  *  3.2000  3.1000  2.9000  1.9000  1.8000  1.3000  1.0000  0.5000  1.6000
1.6000  1.5000  1.2000  1.4000  1.4000  1.4000
 190.  *  3.3000  2.8000  2.4000  1.7000  1.5000  1.0000  0.8000  0.4000  1.9000
1.9000  1.9000  1.6000  0.5000  0.5000  0.5000
 200.  *  2.9000  2.3000  2.0000  1.7000  1.3000  0.9000  0.8000  0.4000  1.7000
1.7000  1.7000  1.6000  0.2000  0.2000  0.2000
 210.  *  2.6000  2.2000  1.8000  1.5000  1.3000  1.0000  0.7000  0.4000  1.6000
1.5000  1.5000  1.5000  0.1000  0.1000  0.1000
 220.  *  2.5000  2.0000  1.8000  1.4000  1.4000  1.0000  0.8000  0.4000  1.6000
1.5000  1.5000  1.5000  0.2000  0.1000  0.1000
 230.  *  2.5000  2.0000  1.8000  1.4000  1.4000  0.9000  0.7000  0.3000  1.4000
1.3000  1.3000  1.3000  0.2000  0.1000  0.1000
 240.  *  2.7000  2.1000  2.0000  1.4000  1.5000  1.0000  0.8000  0.1000  1.3000
1.2000  1.2000  1.2000  0.2000  0.1000  0.1000
 250.  *  3.0000  2.2000  2.0000  1.3000  1.8000  1.0000  0.7000  0.0000  1.4000
1.2000  1.2000  1.2000  0.1000  0.0000  0.0000
 260.  *  3.0000  2.1000  1.7000  1.1000  1.9000  1.0000  0.6000  0.0000  1.8000
1.3000  1.3000  1.3000  0.2000  0.0000  0.0000
 270.  *  2.7000  1.6000  1.4000  1.1000  1.7000  0.6000  0.3000  0.1000  2.4000
1.5000  1.3000  1.3000  0.7000  0.1000  0.0000
 280.  *  2.0000  1.4000  1.2000  1.2000  1.0000  0.3000  0.1000  0.1000  3.0000
1.8000  1.5000  1.2000  1.4000  0.4000  0.2000
 290.  *  1.6000  1.4000  1.4000  1.4000  0.4000  0.1000  0.1000  0.1000  3.3000
2.2000  1.7000  1.2000  1.8000  0.9000  0.6000
 300.  *  1.5000  1.4000  1.4000  1.4000  0.2000  0.1000  0.1000  0.1000  3.2000
2.4000  2.0000  1.5000  1.6000  1.0000  0.8000
 310.  *  1.5000  1.5000  1.5000  1.5000  0.3000  0.2000  0.2000  0.2000  3.2000
2.4000  2.3000  1.7000  1.5000  1.0000  0.8000
 320.  *  1.7000  1.7000  1.7000  1.5000  0.5000  0.4000  0.4000  0.4000  3.6000
2.8000  2.4000  1.9000  1.5000  1.0000  0.7000
 330.  *  1.5000  1.5000  1.5000  1.1000  1.3000  1.1000  1.1000  0.9000  3.4000
3.1000  2.7000  2.1000  1.9000  1.3000  1.0000
 340.  *  0.8000  0.8000  0.8000  0.6000  2.1000  2.0000  1.9000  1.5000  2.9000
2.7000  2.7000  2.3000  2.5000  1.9000  1.5000
 350.  *  0.2000  0.2000  0.2000  0.2000  2.1000  2.1000  2.1000  1.9000  2.3000
2.1000  1.9000  2.1000  2.8000  2.4000  2.1000
 360.  *  0.1000  0.1000  0.1000  0.1000  1.9000  1.9000  1.9000  1.8000  1.6000
1.3000  1.1000  1.3000  2.9000  2.7000  2.8000
```

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  3.3000  3.1000  2.9000  2.3000  3.3000  2.9000  2.7000  2.4000  3.6000
3.1000  2.7000  2.3000  3.3000  2.9000  2.9000
 DEGR. *    190     180     180     170     130     150     150     150     320
330     330     340      70      20      10
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28
------*-------------------------------------------------------------------------
--------------------------
  10.  *  2.6000  0.0000  0.0000  0.0000  1.0000  0.7000  0.1000  1.2000  1.2000
1.2000  1.9000  1.7000  1.3000
  20.  *  2.5000  0.0000  0.0000  0.0000  0.9000  0.6000  0.3000  1.2000  1.2000
1.2000  1.7000  1.6000  1.4000
  30.  *  2.3000  0.1000  0.1000  0.1000  0.9000  0.7000  0.4000  1.3000  1.3000
1.3000  1.8000  1.7000  1.4000
  40.  *  2.1000  0.1000  0.1000  0.1000  0.9000  0.7000  0.4000  1.4000  1.4000
1.4000  2.1000  1.7000  1.5000
  50.  *  2.0000  0.1000  0.1000  0.1000  0.9000  0.7000  0.4000  1.6000  1.6000
1.6000  2.3000  1.9000  1.6000
  60.  *  1.6000  0.1000  0.1000  0.1000  0.9000  0.7000  0.4000  1.7000  1.7000
1.6000  2.6000  2.1000  1.7000
  70.  *  1.4000  0.2000  0.2000  0.2000  0.9000  0.7000  0.4000  2.0000  1.8000
1.6000  2.6000  2.4000  2.0000
  80.  *  1.5000  0.7000  0.7000  0.5000  1.3000  1.1000  0.7000  1.6000  1.6000
1.3000  2.7000  2.4000  2.1000
  90.  *  1.5000  1.3000  1.3000  1.1000  2.0000  1.7000  1.4000  1.0000  0.8000
0.7000  2.1000  1.9000  1.7000
```

```
 100.  *  1.4000  1.7000  1.7000  1.4000  2.6000  2.4000  2.3000  0.3000  0.3000
0.3000  1.5000  1.3000  1.1000
 110.  *  1.5000  1.5000  1.5000  1.4000  2.6000  2.4000  2.3000  0.2000  0.2000
0.1000  1.1000  0.9000  0.5000
 120.  *  1.7000  1.4000  1.4000  1.4000  2.5000  2.3000  1.9000  0.1000  0.1000
0.1000  1.0000  0.8000  0.4000
 130.  *  1.8000  1.3000  1.3000  1.3000  2.3000  2.1000  1.8000  0.1000  0.1000
0.1000  1.1000  0.8000  0.4000
 140.  *  1.9000  1.3000  1.3000  1.3000  2.3000  2.0000  1.7000  0.1000  0.1000
0.1000  1.2000  0.8000  0.4000
 150.  *  2.1000  1.1000  1.1000  1.1000  2.1000  2.0000  1.4000  0.1000  0.1000
0.1000  1.2000  0.8000  0.2000
 160.  *  2.2000  1.1000  1.1000  1.1000  2.0000  1.7000  1.2000  0.0000  0.0000
0.0000  1.0000  0.6000  0.0000
 170.  *  2.0000  1.5000  1.2000  1.1000  1.7000  1.5000  1.2000  0.2000  0.0000
0.0000  0.6000  0.3000  0.0000
 180.  *  1.2000  2.0000  1.5000  1.1000  1.4000  1.3000  1.3000  0.6000  0.2000
0.0000  0.2000  0.1000  0.0000
 190.  *  0.5000  2.3000  1.8000  1.1000  1.3000  1.3000  1.3000  0.9000  0.5000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.2000  2.3000  1.9000  1.3000  1.2000  1.2000  1.2000  1.1000  0.7000
0.1000  0.0000  0.0000  0.0000
 210.  *  0.1000  2.2000  1.9000  1.6000  1.2000  1.2000  1.2000  1.1000  0.7000
0.3000  0.0000  0.0000  0.0000
 220.  *  0.1000  2.0000  1.8000  1.6000  1.3000  1.3000  1.3000  0.9000  0.7000
0.4000  0.1000  0.1000  0.1000
 230.  *  0.1000  2.2000  2.0000  1.7000  1.4000  1.4000  1.4000  0.9000  0.7000
0.4000  0.1000  0.1000  0.1000
 240.  *  0.1000  2.2000  2.0000  1.8000  1.5000  1.5000  1.5000  0.9000  0.7000
0.5000  0.1000  0.1000  0.1000
 250.  *  0.0000  2.2000  2.1000  1.8000  1.8000  1.8000  1.6000  1.1000  0.8000
0.6000  0.1000  0.1000  0.1000
 260.  *  0.0000  2.4000  2.1000  1.8000  1.8000  1.8000  1.5000  1.4000  1.3000
1.3000  0.2000  0.2000  0.2000
 270.  *  0.0000  1.9000  1.6000  1.1000  1.5000  1.5000  1.2000  2.0000  1.9000
2.1000  0.7000  0.7000  0.5000
 280.  *  0.0000  1.3000  1.0000  0.6000  0.9000  0.9000  0.6000  2.8000  2.5000
2.6000  1.4000  1.2000  1.0000
 290.  *  0.1000  1.1000  0.7000  0.4000  0.3000  0.3000  0.3000  2.9000  2.7000
2.1000  1.6000  1.6000  1.3000
 300.  *  0.2000  1.0000  0.8000  0.3000  0.1000  0.1000  0.1000  2.8000  2.4000
1.9000  1.5000  1.5000  1.4000
 310.  *  0.3000  1.0000  0.8000  0.3000  0.1000  0.1000  0.1000  2.6000  2.2000
1.6000  1.4000  1.4000  1.4000
 320.  *  0.4000  0.9000  0.6000  0.1000  0.1000  0.1000  0.1000  2.4000  2.1000
1.4000  1.3000  1.3000  1.3000
 330.  *  0.5000  0.6000  0.2000  0.0000  0.3000  0.1000  0.1000  2.1000  1.6000
1.2000  1.3000  1.2000  1.2000
```

```
 340.  *  1.0000  0.2000  0.0000  0.0000  0.7000  0.4000  0.1000  1.6000  1.4000
1.2000  1.6000  1.4000  1.1000
 350.  *  1.8000  0.0000  0.0000  0.0000  1.0000  0.5000  0.0000  1.3000  1.2000
1.2000  1.9000  1.6000  1.1000
 360.  *  2.7000  0.0000  0.0000  0.0000  1.0000  0.7000  0.0000  1.2000  1.2000
1.2000  2.0000  1.7000  1.2000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  2.7000  2.4000  2.1000  1.8000  2.6000  2.4000  2.3000  2.9000  2.7000
2.6000  2.7000  2.4000  2.1000
 DEGR. *    360     260     250     260     100     100     100     290     290
280      80      80      80

 THE HIGHEST CONCENTRATION OF   3.6000 PPM OCCURRED AT RECEPTOR     9.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
10,10,4,3,2200,2200,2200,2200,2200,2200,1114,2200,1036.8,1036.8,1036.8,1036.8,1036.8
,1036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,12
00,0,0,1200,-1200,0,0,0,0,0,0,-10,-10,10,5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',125.8,35.2,5.9
'N Leg, E Side - 25 m',113.3,106.1,5.9
'N Leg, E Side - 50 m',99.1,186.9,5.9
'N Leg, E Side-Midblk',23.4,616.2,5.9
'N Leg, W Side-Corner',-144.7,72.2,5.9
'N Leg, W Side - 25 m',-157.2,143.2,5.9
'N Leg, W Side - 50 m',-171.5,223.9,5.9
'N Leg, W Side-Midblk',-247.2,653.3,5.9
'S Leg, E Side-Corner',144.5,-70.9,5.9
'S Leg, E Side - 25 m',157.0,-141.8,5.9
'S Leg, E Side - 50 m',171.2,-222.6,5.9
'S Leg, E Side-Midblk',247.0,-651.9,5.9
'S Leg, W Side-Corner',-125.5,-36.8,5.9
'S Leg, W Side - 25 m',-113.0,-107.7,5.9
'S Leg, W Side - 50 m',-98.8,-188.5,5.9
'S Leg, W Side-Midblk',-23.1,-617.8,5.9
'E Leg, N Side - 25 m',197.6,28.9,5.9
'E Leg, N Side - 50 m',279.3,21.7,5.9
'E Leg, N Side-Midblk',713.6,-16.3,5.9
'W Leg, N Side - 25 m',-215.7,84.7,5.9
'W Leg, N Side - 50 m',-296.4,99.0,5.9
'W Leg, N Side-Midblk',-725.8,174.7,5.9
'E Leg, S Side - 25 m',216.2,-77.1,5.9
'E Leg, S Side - 50 m',298.0,-84.3,5.9
'E Leg, S Side-Midblk',732.3,-122.3,5.9
'W Leg, S Side - 25 m',-196.5,-24.3,5.9
'W Leg, S Side - 50 m',-277.2,-10.0,5.9
'W Leg, S Side-Midblk',-706.6,65.7,5.9
'2025 I495 & MD 190 (IC.25)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-64,17,-267,1171,22000,1.61,0.0,139.7
1
'N Leg Dep - FreeFlow','AG',64,-17,-149,1192,22000,3.06,0.0,139.7
1
'S Leg App - FreeFlow','AG',64,-17,267,-1171,22000,1.61,0.0,139.7
1
'S Leg Dep - FreeFlow','AG',-64,17,149,-1192,22000,3.06,0.0,139.7
1
'E Leg App - FreeFlow','AG',2,18,1197,-87,6600,1.60,0.0,55.7
1
'E Leg Dep - FreeFlow','AG',-3,-24,1193,-128,8800,4.20,0.0,67.7
1
```

```
'W Leg App - FreeFlow','AG',-3,-24,-1186,185,8800,3.28,0.0,67.7
1
'W Leg Dep - FreeFlow','AG',2,18,-1179,226,6600,1.60,0.0,55.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 I495 & MD 190 (IC.25)

DATE : 2/28/19
TIME : 12:41: 6

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-64.0	17.0	-267.0	1171.0	*	1172.	350.	AG	22000.	1.6	0.0	****		
2. N Leg Dep - FreeFlow	*	64.0	-17.0	-149.0	1192.0	*	1228.	350.	AG	22000.	3.1	0.0	****		
3. S Leg App - FreeFlow	*	64.0	-17.0	267.0	-1171.0	*	1172.	170.	AG	22000.	1.6	0.0	****		
4. S Leg Dep - FreeFlow	*	-64.0	17.0	149.0	-1192.0	*	1228.	170.	AG	22000.	3.1	0.0	****		
5. E Leg App - FreeFlow	*	2.0	18.0	1197.0	-87.0	*	1200.	95.	AG	6600.	1.6	0.0	55.7		
6. E Leg Dep - FreeFlow	*	-3.0	-24.0	1193.0	-128.0	*	1201.	95.	AG	8800.	4.2	0.0	67.7		
7. W Leg App - FreeFlow	*	-3.0	-24.0	-1186.0	185.0	*	1201.	280.	AG	8800.	3.3	0.0	67.7		
8. W Leg Dep - FreeFlow	*	2.0	18.0	-1179.0	226.0	*	1199.	280.	AG	6600.	1.6	0.0	55.7		

190 (IC.25)

DATE : 2/28/19
TIME : 12:41: 6

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	125.8	35.2	5.9
2. N Leg, E Side - 25 m	113.3	106.1	5.9
3. N Leg, E Side - 50 m	99.1	186.9	5.9
4. N Leg, E Side-Midblk	23.4	616.2	5.9
5. N Leg, W Side-Corner	-144.7	72.2	5.9
6. N Leg, W Side - 25 m	-157.2	143.2	5.9
7. N Leg, W Side - 50 m	-171.5	223.9	5.9
8. N Leg, W Side-Midblk	-247.2	653.3	5.9
9. S Leg, E Side-Corner	144.5	-70.9	5.9
10. S Leg, E Side - 25 m	157.0	-141.8	5.9
11. S Leg, E Side - 50 m	171.2	-222.6	5.9
12. S Leg, E Side-Midblk	247.0	-651.9	5.9
13. S Leg, W Side-Corner	-125.5	-36.8	5.9
14. S Leg, W Side - 25 m	-113.0	-107.7	5.9
15. S Leg, W Side - 50 m	-98.8	-188.5	5.9
16. S Leg, W Side-Midblk	-23.1	-617.8	5.9
17. E Leg, N Side - 25 m	197.6	28.9	5.9
18. E Leg, N Side - 50 m	279.3	21.7	5.9
19. E Leg, N Side-Midblk	713.6	-16.3	5.9
20. W Leg, N Side - 25 m	-215.7	84.7	5.9
21. W Leg, N Side - 50 m	-296.4	99.0	5.9
22. W Leg, N Side-Midblk	-725.8	174.7	5.9
23. E Leg, S Side - 25 m	216.2	-77.1	5.9
24. E Leg, S Side - 50 m	298.0	-84.3	5.9
25. E Leg, S Side-Midblk	732.3	-122.3	5.9
26. W Leg, S Side - 25 m	-196.5	-24.3	5.9

27. W Leg, S Side - 50 m	*	-277.2	-10.0	5.9 *
28. W Leg, S Side-Midblk	*	-706.6	65.7	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.3000	0.3000	0.3000	0.3000	2.2000	2.2000	2.1000	1.7000	1.5000	0.9000	0.7000	0.4000	3.6000	3.4000	3.4000
20.	*	0.2000	0.2000	0.2000	0.2000	2.0000	2.0000	2.0000	1.8000	1.2000	0.8000	0.6000	0.3000	3.3000	3.0000	3.2000
30.	*	0.2000	0.2000	0.2000	0.2000	1.8000	1.8000	1.8000	1.8000	1.2000	0.8000	0.6000	0.3000	3.2000	3.0000	3.1000
40.	*	0.2000	0.2000	0.2000	0.2000	1.7000	1.7000	1.7000	1.7000	1.3000	0.8000	0.6000	0.3000	3.1000	3.0000	2.8000
50.	*	0.1000	0.1000	0.1000	0.1000	1.6000	1.6000	1.6000	1.6000	1.5000	0.8000	0.6000	0.3000	3.2000	2.9000	2.4000
60.	*	0.1000	0.1000	0.1000	0.1000	1.5000	1.5000	1.5000	1.5000	1.6000	0.8000	0.5000	0.1000	3.6000	2.9000	2.5000
70.	*	0.1000	0.0000	0.0000	0.0000	1.6000	1.6000	1.6000	1.6000	1.8000	0.9000	0.6000	0.0000	3.9000	3.0000	2.4000
80.	*	0.3000	0.0000	0.0000	0.0000	1.8000	1.6000	1.6000	1.6000	2.2000	0.8000	0.5000	0.0000	4.3000	3.1000	2.6000
90.	*	0.8000	0.2000	0.0000	0.0000	2.3000	1.8000	1.6000	1.6000	2.1000	0.6000	0.2000	0.0000	4.1000	2.5000	2.1000
100.	*	1.4000	0.5000	0.3000	0.1000	2.8000	1.9000	1.8000	1.5000	1.3000	0.2000	0.0000	0.0000	3.4000	2.0000	1.9000
110.	*	1.6000	0.8000	0.5000	0.1000	3.3000	2.3000	2.0000	1.6000	0.6000	0.1000	0.1000	0.1000	2.5000	1.9000	1.9000
120.	*	1.5000	0.9000	0.7000	0.3000	3.2000	2.3000	2.2000	1.8000	0.3000	0.1000	0.1000	0.1000	2.3000	2.0000	2.0000

130. * 1.3000 0.8000 0.7000 0.3000 3.1000 2.5000 2.1000 2.0000 0.2000
0.1000 0.1000 0.1000 2.4000 2.3000 2.3000
140. * 1.2000 0.9000 0.7000 0.4000 3.3000 2.6000 2.4000 2.2000 0.2000
0.1000 0.1000 0.1000 2.6000 2.5000 2.5000
150. * 1.2000 1.0000 0.7000 0.5000 3.5000 2.8000 2.7000 2.2000 0.3000
0.2000 0.2000 0.2000 2.9000 2.8000 2.8000
160. * 1.6000 1.4000 1.2000 1.2000 3.6000 3.1000 2.6000 2.4000 0.6000
0.5000 0.4000 0.4000 2.9000 2.8000 2.8000
170. * 2.6000 2.4000 2.3000 2.3000 2.9000 2.4000 2.1000 1.8000 1.2000
1.2000 1.2000 0.9000 2.1000 2.0000 2.0000
180. * 3.3000 3.2000 3.1000 3.3000 1.7000 1.3000 1.1000 0.7000 1.9000
1.9000 1.9000 1.3000 0.9000 0.9000 0.9000
190. * 3.4000 3.5000 3.4000 3.2000 1.1000 0.8000 0.6000 0.3000 2.2000
2.2000 2.1000 1.7000 0.3000 0.3000 0.3000
200. * 3.3000 3.2000 3.2000 2.6000 0.9000 0.7000 0.5000 0.2000 2.0000
2.0000 2.0000 1.8000 0.2000 0.2000 0.2000
210. * 3.4000 3.3000 3.0000 2.4000 0.9000 0.7000 0.5000 0.2000 1.9000
1.8000 1.8000 1.8000 0.2000 0.2000 0.2000
220. * 3.1000 2.9000 2.6000 2.1000 0.9000 0.7000 0.5000 0.2000 1.8000
1.7000 1.7000 1.7000 0.3000 0.2000 0.2000
230. * 3.4000 2.8000 2.3000 2.0000 1.0000 0.7000 0.5000 0.2000 1.7000
1.6000 1.6000 1.6000 0.2000 0.1000 0.1000
240. * 3.3000 2.7000 2.3000 1.9000 1.1000 0.6000 0.4000 0.1000 1.6000
1.5000 1.5000 1.5000 0.2000 0.1000 0.1000
250. * 3.6000 2.6000 2.2000 1.9000 1.2000 0.6000 0.4000 0.0000 1.8000
1.6000 1.6000 1.6000 0.1000 0.0000 0.0000
260. * 3.7000 2.7000 2.4000 2.0000 1.4000 0.6000 0.4000 0.0000 2.0000
1.6000 1.6000 1.6000 0.3000 0.0000 0.0000
270. * 3.4000 2.4000 2.1000 1.8000 1.3000 0.5000 0.3000 0.0000 2.8000
1.7000 1.6000 1.6000 0.7000 0.1000 0.0000
280. * 2.7000 2.1000 1.9000 1.8000 0.9000 0.3000 0.0000 0.0000 3.6000
1.9000 1.6000 1.5000 1.4000 0.5000 0.2000
290. * 2.2000 1.9000 1.9000 1.9000 0.5000 0.1000 0.1000 0.1000 4.0000
2.3000 2.0000 1.6000 1.8000 0.7000 0.5000
300. * 2.1000 2.0000 2.0000 2.0000 0.2000 0.1000 0.1000 0.1000 3.9000
2.4000 2.2000 1.8000 1.7000 0.9000 0.7000
310. * 2.3000 2.3000 2.3000 2.3000 0.1000 0.1000 0.1000 0.1000 3.8000
2.5000 2.3000 1.9000 1.4000 1.0000 0.7000
320. * 2.5000 2.5000 2.5000 2.4000 0.1000 0.1000 0.1000 0.1000 3.7000
2.8000 2.4000 2.1000 1.3000 0.8000 0.6000
330. * 2.8000 2.8000 2.8000 2.5000 0.2000 0.2000 0.2000 0.2000 3.9000
2.9000 2.8000 2.2000 1.2000 0.9000 0.6000
340. * 2.9000 2.8000 2.8000 2.4000 0.5000 0.5000 0.4000 0.4000 4.0000
3.1000 2.8000 2.4000 1.5000 1.3000 1.2000
350. * 2.1000 2.0000 2.0000 1.6000 1.2000 1.2000 1.2000 0.9000 3.2000
2.5000 2.2000 1.8000 2.6000 2.3000 2.3000
360. * 0.9000 0.9000 0.9000 0.7000 1.9000 1.9000 1.9000 1.3000 2.1000
1.4000 1.2000 0.8000 3.3000 3.1000 3.1000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  3.7000  3.5000  3.4000  3.3000  3.6000  3.1000  2.7000  2.4000  4.0000
3.1000  2.8000  2.4000  4.3000  3.4000  3.4000
 DEGR. *    260     190     190     180     160     160     150     160     340
340     340     340      80      10      10
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  3.2000  0.0000  0.0000  0.0000  1.3000  0.8000  0.0000  1.3000  1.3000
1.3000  2.5000  2.0000  1.1000
  20.  *  2.7000  0.0000  0.0000  0.0000  1.3000  1.0000  0.2000  1.2000  1.2000
1.2000  2.3000  2.0000  1.2000
  30.  *  2.5000  0.0000  0.0000  0.0000  1.3000  1.0000  0.3000  1.2000  1.2000
1.2000  2.3000  2.0000  1.4000
  40.  *  2.2000  0.0000  0.0000  0.0000  1.3000  1.0000  0.5000  1.3000  1.3000
1.3000  2.2000  2.0000  1.5000
  50.  *  2.1000  0.0000  0.0000  0.0000  1.2000  0.9000  0.5000  1.5000  1.5000
1.5000  2.3000  2.0000  1.6000
  60.  *  2.0000  0.0000  0.0000  0.0000  1.1000  0.9000  0.5000  1.6000  1.6000
1.6000  2.4000  2.1000  1.7000
  70.  *  1.9000  0.1000  0.1000  0.1000  1.1000  0.9000  0.5000  1.8000  1.8000
1.8000  2.8000  2.4000  1.9000
  80.  *  2.0000  0.3000  0.3000  0.1000  1.2000  1.0000  0.6000  2.2000  2.1000
2.0000  3.3000  2.7000  2.2000
  90.  *  1.8000  0.7000  0.7000  0.5000  1.7000  1.4000  1.0000  2.1000  2.1000
1.7000  3.6000  3.0000  2.4000
```

```
 100.  *  1.8000  1.4000  1.3000  1.0000  2.5000  2.2000  1.7000  1.3000  1.3000
1.0000  2.9000  2.5000  2.1000
 110.  *  1.9000  1.6000  1.6000  1.4000  2.8000  2.3000  1.9000  0.5000  0.5000
0.4000  2.0000  1.7000  1.1000
 120.  *  2.0000  1.5000  1.5000  1.4000  2.7000  2.2000  1.7000  0.2000  0.2000
0.2000  1.7000  1.2000  0.7000
 130.  *  2.3000  1.3000  1.3000  1.3000  2.3000  2.3000  1.8000  0.1000  0.1000
0.1000  1.7000  1.2000  0.7000
 140.  *  2.4000  1.2000  1.2000  1.2000  2.7000  2.2000  1.5000  0.1000  0.1000
0.1000  1.7000  1.3000  0.5000
 150.  *  2.5000  1.1000  1.1000  1.1000  2.6000  2.1000  1.2000  0.1000  0.1000
0.1000  1.7000  1.2000  0.2000
 160.  *  2.4000  1.2000  1.1000  1.1000  2.2000  1.6000  0.9000  0.2000  0.1000
0.1000  1.3000  0.8000  0.1000
 170.  *  1.6000  1.4000  1.1000  1.0000  1.6000  1.1000  0.9000  0.3000  0.1000
0.0000  0.6000  0.2000  0.0000
 180.  *  0.7000  1.9000  1.5000  1.0000  1.0000  0.9000  0.9000  0.8000  0.5000
0.0000  0.1000  0.0000  0.0000
 190.  *  0.3000  2.4000  1.8000  1.0000  0.9000  0.9000  0.9000  1.3000  0.8000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.2000  2.3000  2.0000  1.2000  0.9000  0.9000  0.9000  1.3000  1.0000
0.2000  0.0000  0.0000  0.0000
 210.  *  0.2000  2.4000  2.1000  1.5000  0.9000  0.9000  0.9000  1.4000  1.1000
0.4000  0.0000  0.0000  0.0000
 220.  *  0.2000  2.3000  2.1000  1.6000  0.9000  0.9000  0.9000  1.4000  1.1000
0.6000  0.1000  0.1000  0.1000
 230.  *  0.1000  2.4000  2.1000  1.7000  1.0000  1.0000  1.0000  1.3000  1.0000
0.6000  0.1000  0.1000  0.1000
 240.  *  0.1000  2.5000  2.2000  1.8000  1.1000  1.1000  1.1000  1.2000  1.0000
0.6000  0.1000  0.1000  0.1000
 250.  *  0.0000  2.8000  2.4000  2.0000  1.2000  1.2000  1.2000  1.3000  1.1000
0.7000  0.1000  0.1000  0.1000
 260.  *  0.0000  2.8000  2.6000  2.1000  1.4000  1.4000  1.2000  1.6000  1.4000
1.0000  0.2000  0.2000  0.2000
 270.  *  0.0000  2.7000  2.3000  2.2000  1.3000  1.3000  1.1000  2.4000  2.2000
1.8000  0.6000  0.6000  0.6000
 280.  *  0.1000  2.2000  1.8000  1.4000  0.9000  0.9000  0.7000  3.2000  3.1000
2.8000  1.4000  1.4000  1.2000
 290.  *  0.1000  1.6000  1.3000  0.7000  0.4000  0.4000  0.3000  3.5000  3.3000
2.6000  1.8000  1.7000  1.6000
 300.  *  0.3000  1.5000  1.1000  0.6000  0.1000  0.1000  0.1000  3.3000  3.1000
2.3000  1.7000  1.7000  1.6000
 310.  *  0.3000  1.5000  1.1000  0.4000  0.0000  0.0000  0.0000  2.9000  2.6000
2.1000  1.4000  1.4000  1.4000
 320.  *  0.3000  1.6000  1.1000  0.4000  0.0000  0.0000  0.0000  3.0000  2.6000
1.9000  1.3000  1.3000  1.2000
 330.  *  0.4000  1.5000  1.0000  0.1000  0.0000  0.0000  0.0000  2.9000  2.4000
1.4000  1.1000  1.1000  1.1000
```

```
 340.  *  1.1000  1.2000  0.6000  0.0000  0.1000  0.0000  0.0000  2.5000  1.9000
1.2000  1.1000  1.0000  1.0000
 350.  *  2.3000  0.6000  0.2000  0.0000  0.3000  0.1000  0.0000  1.8000  1.4000
1.2000  1.4000  1.1000  1.0000
 360.  *  3.3000  0.1000  0.0000  0.0000  0.8000  0.5000  0.0000  1.4000  1.3000
1.3000  1.9000  1.5000  1.0000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  3.3000  2.8000  2.6000  2.2000  2.8000  2.3000  1.9000  3.5000  3.3000
2.8000  3.6000  3.0000  2.4000
 DEGR. *    360     250     260     270     110     110     110     290     290
280      90      90      90

 THE HIGHEST CONCENTRATION OF   4.3000 PPM OCCURRED AT RECEPTOR    13.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
4,4,7,7,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-25,-25,15,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',19.2,96.0,5.9
'N Leg, E Side - 25 m',-11.2,161.3,5.9
'N Leg, E Side - 50 m',-45.9,235.6,5.9
'N Leg, E Side-Midblk',-230.1,630.8,5.9
'N Leg, W Side-Corner',-125.0,130.8,5.9
'N Leg, W Side - 25 m',-155.4,196.1,5.9
'N Leg, W Side - 50 m',-190.1,270.4,5.9
'N Leg, W Side-Midblk',-374.3,665.5,5.9
'S Leg, E Side-Corner',103.8,-85.3,5.9
'S Leg, E Side - 25 m',134.2,-150.6,5.9
'S Leg, E Side - 50 m',168.9,-224.9,5.9
'S Leg, E Side-Midblk',353.1,-620.0,5.9
'S Leg, W Side-Corner',-21.3,-91.6,5.9
'S Leg, W Side - 25 m',9.2,-156.9,5.9
'S Leg, W Side - 50 m',43.8,-231.2,5.9
'S Leg, W Side-Midblk',228.1,-626.3,5.9
'E Leg, N Side - 25 m',91.0,102.3,5.9
'E Leg, N Side - 50 m',172.7,109.5,5.9
'E Leg, N Side-Midblk',607.0,147.5,5.9
'W Leg, N Side - 25 m',-194.6,149.4,5.9
'W Leg, N Side - 50 m',-273.8,170.7,5.9
'W Leg, N Side-Midblk',-694.9,283.5,5.9
'E Leg, S Side - 25 m',175.5,-79.0,5.9
'E Leg, S Side - 50 m',257.2,-71.9,5.9
'E Leg, S Side-Midblk',691.5,-33.9,5.9
'W Leg, S Side - 25 m',-90.8,-73.0,5.9
'W Leg, S Side - 50 m',-170.1,-51.7,5.9
'W Leg, S Side-Midblk',-591.2,61.1,5.9
'2025 Capital Beltway & MD193 IC.18',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-22,-10,-529,1077,8800,2.67,0.0,67.7
1
'N Leg Dep - FreeFlow','AG',22,10,-485,1098,8800,1.70,0.0,67.7
1
'S Leg App - FreeFlow','AG',22,10,529,-1077,8800,2.15,0.0,67.7
1
'S Leg Dep - FreeFlow','AG',-22,-10,485,-1098,8800,1.70,0.0,67.7
1
'E Leg App - FreeFlow','AG',4,42,1192,146,15400,2.02,0.0,103.7
1
'E Leg Dep - FreeFlow','AG',-4,-42,1199,63,15400,1.49,0.0,103.7
1
```

```
'W Leg App - FreeFlow','AG',-4,-42,-1170,270,15400,2.02,0.0,103.7
1
'W Leg Dep - FreeFlow','AG',4,42,-1148,351,15400,2.02,0.0,103.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 Capital Beltway & MD193 IC.18

DATE : 5/ 2/19
TIME : 8:50:48

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-22.0	-10.0	-529.0	1077.0	*	1199.	335.	AG	8800.	2.7	0.0	67.7		
2. N Leg Dep - FreeFlow	*	22.0	10.0	-485.0	1098.0	*	1200.	335.	AG	8800.	1.7	0.0	67.7		
3. S Leg App - FreeFlow	*	22.0	10.0	529.0	-1077.0	*	1199.	155.	AG	8800.	2.2	0.0	67.7		
4. S Leg Dep - FreeFlow	*	-22.0	-10.0	485.0	-1098.0	*	1200.	155.	AG	8800.	1.7	0.0	67.7		
5. E Leg App - FreeFlow	*	4.0	42.0	1192.0	146.0	*	1193.	85.	AG	15400.	2.0	0.0	****		
6. E Leg Dep - FreeFlow	*	-4.0	-42.0	1199.0	63.0	*	1208.	85.	AG	15400.	1.5	0.0	****		
7. W Leg App - FreeFlow	*	-4.0	-42.0	-1170.0	270.0	*	1207.	285.	AG	15400.	2.0	0.0	****		
8. W Leg Dep - FreeFlow	*	4.0	42.0	-1148.0	351.0	*	1193.	285.	AG	15400.	2.0	0.0	****		

Beltway & MD193 IC.18

DATE : 5/ 2/19
TIME : 8:50:48

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	19.2	96.0	5.9
2. N Leg, E Side - 25 m	-11.2	161.3	5.9
3. N Leg, E Side - 50 m	-45.9	235.6	5.9
4. N Leg, E Side-Midblk	-230.1	630.8	5.9
5. N Leg, W Side-Corner	-125.0	130.8	5.9
6. N Leg, W Side - 25 m	-155.4	196.1	5.9
7. N Leg, W Side - 50 m	-190.1	270.4	5.9
8. N Leg, W Side-Midblk	-374.3	665.5	5.9
9. S Leg, E Side-Corner	103.8	-85.3	5.9
10. S Leg, E Side - 25 m	134.2	-150.6	5.9
11. S Leg, E Side - 50 m	168.9	-224.9	5.9
12. S Leg, E Side-Midblk	353.1	-620.0	5.9
13. S Leg, W Side-Corner	-21.3	-91.6	5.9
14. S Leg, W Side - 25 m	9.2	-156.9	5.9
15. S Leg, W Side - 50 m	43.8	-231.2	5.9
16. S Leg, W Side-Midblk	228.1	-626.3	5.9
17. E Leg, N Side - 25 m	91.0	102.3	5.9
18. E Leg, N Side - 50 m	172.7	109.5	5.9
19. E Leg, N Side-Midblk	607.0	147.5	5.9
20. W Leg, N Side - 25 m	-194.6	149.4	5.9
21. W Leg, N Side - 50 m	-273.8	170.7	5.9
22. W Leg, N Side-Midblk	-694.9	283.5	5.9
23. E Leg, S Side - 25 m	175.5	-79.0	5.9
24. E Leg, S Side - 50 m	257.2	-71.9	5.9
25. E Leg, S Side-Midblk	691.5	-33.9	5.9
26. W Leg, S Side - 25 m	-90.8	-73.0	5.9

27. W Leg, S Side - 50 m * -170.1 -51.7 5.9 *
28. W Leg, S Side-Midblk * -591.2 61.1 5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.1000	0.1000	0.1000	0.1000	1.2000	1.2000	1.2000	1.2000	1.0000	0.8000	0.7000	0.3000	2.1000	1.9000	1.5000
20.	* 0.0000	0.0000	0.0000	0.0000	1.1000	1.1000	1.1000	1.1000	1.1000	0.8000	0.7000	0.3000	2.1000	1.5000	1.5000
30.	* 0.1000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.1000	0.7000	0.6000	0.2000	1.8000	1.6000	1.5000
40.	* 0.1000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.2000	0.8000	0.6000	0.2000	1.8000	1.6000	1.4000
50.	* 0.1000	0.0000	0.0000	0.0000	1.0000	0.9000	0.9000	0.9000	1.2000	0.8000	0.6000	0.2000	1.9000	1.5000	1.3000
60.	* 0.1000	0.0000	0.0000	0.0000	1.1000	1.0000	1.0000	1.0000	1.4000	0.8000	0.6000	0.0000	2.1000	1.6000	1.3000
70.	* 0.3000	0.0000	0.0000	0.0000	1.1000	1.0000	1.0000	1.0000	1.5000	0.7000	0.4000	0.0000	2.3000	1.5000	1.2000
80.	* 0.9000	0.1000	0.0000	0.0000	1.2000	1.0000	0.9000	0.9000	1.2000	0.5000	0.2000	0.0000	2.1000	1.2000	0.9000
90.	* 1.5000	0.5000	0.3000	0.0000	1.9000	1.4000	1.1000	1.0000	0.7000	0.1000	0.0000	0.0000	1.5000	0.9000	0.8000
100.	* 1.8000	0.8000	0.6000	0.0000	2.4000	1.6000	1.4000	1.0000	0.2000	0.0000	0.0000	0.0000	1.1000	0.9000	0.9000
110.	* 1.6000	0.9000	0.6000	0.2000	2.5000	1.7000	1.6000	1.3000	0.2000	0.1000	0.1000	0.1000	1.0000	0.9000	0.9000
120.	* 1.5000	1.0000	0.7000	0.4000	2.6000	1.9000	1.7000	1.4000	0.2000	0.1000	0.1000	0.1000	1.0000	1.0000	1.0000

130. * 1.4000 0.9000 0.7000 0.4000 2.7000 2.2000 1.9000 1.5000 0.2000
0.1000 0.1000 0.1000 1.1000 1.1000 1.1000
140. * 1.3000 0.9000 0.8000 0.4000 2.9000 2.6000 2.1000 1.8000 0.4000
0.3000 0.3000 0.2000 1.3000 1.2000 1.2000
150. * 1.8000 1.5000 1.2000 1.0000 2.6000 2.4000 2.2000 2.0000 0.7000
0.7000 0.7000 0.6000 1.1000 1.1000 1.1000
160. * 2.3000 1.8000 1.7000 1.6000 2.1000 1.7000 1.5000 1.4000 1.3000
1.3000 1.2000 1.1000 0.6000 0.6000 0.6000
170. * 2.5000 2.0000 1.7000 1.8000 1.4000 1.1000 1.0000 0.7000 1.4000
1.4000 1.3000 1.2000 0.2000 0.2000 0.2000
180. * 2.3000 1.9000 1.7000 1.5000 1.2000 0.9000 0.8000 0.4000 1.1000
1.1000 1.1000 1.1000 0.1000 0.1000 0.1000
190. * 2.2000 2.0000 1.8000 1.5000 1.3000 0.9000 0.8000 0.5000 1.0000
1.0000 1.0000 1.0000 0.1000 0.1000 0.1000
200. * 2.3000 1.7000 1.7000 1.4000 1.3000 0.9000 0.8000 0.5000 0.9000
0.9000 0.9000 0.9000 0.0000 0.0000 0.0000
210. * 2.1000 1.8000 1.6000 1.3000 1.2000 1.0000 0.8000 0.4000 1.0000
0.9000 0.9000 0.9000 0.0000 0.0000 0.0000
220. * 2.1000 1.6000 1.5000 1.2000 1.2000 0.9000 0.7000 0.4000 0.9000
0.8000 0.8000 0.8000 0.0000 0.0000 0.0000
230. * 2.2000 1.6000 1.5000 1.2000 1.3000 0.9000 0.7000 0.3000 0.9000
0.8000 0.8000 0.8000 0.1000 0.0000 0.0000
240. * 2.3000 1.8000 1.5000 1.1000 1.4000 1.0000 0.7000 0.2000 1.0000
0.9000 0.9000 0.9000 0.1000 0.0000 0.0000
250. * 2.4000 1.8000 1.5000 1.0000 1.5000 1.0000 0.7000 0.1000 1.0000
0.9000 0.9000 0.9000 0.1000 0.0000 0.0000
260. * 2.5000 1.8000 1.5000 0.9000 1.7000 1.1000 0.7000 0.0000 1.1000
0.8000 0.8000 0.8000 0.1000 0.0000 0.0000
270. * 2.6000 1.7000 1.4000 0.8000 1.8000 0.9000 0.6000 0.0000 1.6000
0.9000 0.8000 0.8000 0.3000 0.0000 0.0000
280. * 2.5000 1.6000 1.3000 1.0000 1.7000 0.7000 0.4000 0.1000 2.3000
1.4000 1.0000 0.9000 0.9000 0.3000 0.1000
290. * 1.8000 1.2000 1.1000 1.0000 1.0000 0.3000 0.1000 0.1000 2.9000
1.9000 1.5000 0.9000 1.6000 0.7000 0.4000
300. * 1.3000 1.1000 1.1000 1.1000 0.4000 0.1000 0.1000 0.1000 3.1000
2.4000 1.8000 1.2000 2.0000 1.2000 0.8000
310. * 1.3000 1.2000 1.2000 1.2000 0.2000 0.1000 0.1000 0.1000 2.9000
2.3000 2.0000 1.5000 1.7000 1.1000 0.9000
320. * 1.5000 1.4000 1.3000 1.2000 0.4000 0.3000 0.3000 0.3000 2.6000
2.4000 2.2000 1.8000 1.8000 1.2000 1.0000
330. * 1.3000 1.2000 1.2000 1.0000 1.0000 0.9000 0.9000 0.7000 2.3000
2.1000 1.9000 1.8000 2.1000 1.7000 1.3000
340. * 0.7000 0.7000 0.7000 0.5000 1.6000 1.5000 1.4000 1.1000 1.8000
1.5000 1.4000 1.1000 2.6000 2.1000 1.7000
350. * 0.2000 0.2000 0.2000 0.2000 1.6000 1.5000 1.5000 1.4000 1.2000
1.0000 0.8000 0.5000 2.6000 2.0000 1.8000
360. * 0.1000 0.1000 0.1000 0.1000 1.3000 1.3000 1.3000 1.3000 1.1000
0.8000 0.7000 0.3000 2.2000 2.0000 1.7000

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  2.6000  2.0000  1.8000  1.8000  2.9000  2.6000  2.2000  2.0000  3.1000
2.4000  2.2000  1.8000  2.6000  2.1000  1.8000
 DEGR. *    270     170     190     170     140     140     150     150     300
300     320     320     340     340     350
```


JOB: I-495 & I-270 MLS RUN: 2025 Capital Beltway & MD193 IC.18

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  1.2000  0.0000  0.0000  0.0000  0.7000  0.5000  0.1000  0.9000  0.9000
0.9000  1.9000  1.7000  1.4000
  20.  *  1.1000  0.0000  0.0000  0.0000  0.7000  0.5000  0.2000  1.0000  1.0000
1.0000  1.9000  1.7000  1.4000
  30.  *  1.1000  0.1000  0.1000  0.1000  0.6000  0.5000  0.2000  1.1000  1.1000
1.1000  1.7000  1.6000  1.3000
  40.  *  1.0000  0.1000  0.1000  0.1000  0.6000  0.4000  0.2000  1.2000  1.2000
1.2000  2.0000  1.5000  1.4000
  50.  *  0.9000  0.1000  0.1000  0.1000  0.7000  0.5000  0.3000  1.2000  1.2000
1.2000  1.9000  1.8000  1.5000
  60.  *  0.7000  0.1000  0.1000  0.1000  0.7000  0.5000  0.3000  1.4000  1.3000
1.3000  2.3000  1.9000  1.6000
  70.  *  0.7000  0.3000  0.3000  0.3000  0.7000  0.5000  0.3000  1.5000  1.5000
1.2000  2.3000  2.5000  1.7000
  80.  *  0.7000  0.9000  0.9000  0.7000  0.9000  0.6000  0.3000  1.2000  1.2000
0.9000  2.3000  2.4000  2.1000
  90.  *  0.8000  1.5000  1.5000  1.2000  1.3000  1.0000  0.7000  0.7000  0.7000
0.5000  1.8000  2.0000  2.4000
```

```
 100.  *  0.9000  1.8000  1.7000  1.6000  1.9000  1.5000  1.3000  0.2000  0.2000
0.2000  1.2000  1.4000  1.8000
 110.  *  0.9000  1.6000  1.6000  1.5000  2.1000  1.9000  1.7000  0.1000  0.1000
0.1000  1.0000  0.9000  1.0000
 120.  *  1.0000  1.4000  1.4000  1.4000  2.1000  2.1000  2.0000  0.1000  0.1000
0.1000  0.7000  0.6000  0.5000
 130.  *  1.1000  1.3000  1.3000  1.3000  2.2000  2.0000  1.8000  0.1000  0.1000
0.1000  0.7000  0.5000  0.3000
 140.  *  1.1000  1.1000  1.1000  1.1000  2.2000  1.8000  1.7000  0.1000  0.1000
0.1000  0.7000  0.5000  0.1000
 150.  *  0.9000  1.1000  1.0000  1.0000  1.8000  1.6000  1.4000  0.1000  0.0000
0.0000  0.5000  0.3000  0.1000
 160.  *  0.5000  1.4000  1.2000  1.0000  1.5000  1.3000  1.3000  0.4000  0.1000
0.0000  0.3000  0.1000  0.1000
 170.  *  0.2000  1.7000  1.4000  1.1000  1.2000  1.2000  1.2000  0.6000  0.3000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.1000  1.7000  1.5000  1.1000  1.1000  1.1000  1.1000  0.6000  0.4000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  1.5000  1.4000  1.2000  1.2000  1.2000  1.2000  0.5000  0.4000
0.1000  0.0000  0.0000  0.0000
 200.  *  0.0000  1.7000  1.3000  1.2000  1.2000  1.2000  1.2000  0.5000  0.3000
0.2000  0.0000  0.0000  0.0000
 210.  *  0.0000  1.7000  1.4000  1.3000  1.1000  1.1000  1.1000  0.6000  0.4000
0.3000  0.0000  0.0000  0.0000
 220.  *  0.0000  1.7000  1.6000  1.5000  1.2000  1.2000  1.2000  0.6000  0.4000
0.3000  0.0000  0.0000  0.0000
 230.  *  0.0000  1.9000  1.7000  1.6000  1.3000  1.3000  1.3000  0.6000  0.4000
0.3000  0.1000  0.1000  0.1000
 240.  *  0.0000  1.8000  1.9000  1.7000  1.4000  1.4000  1.4000  0.6000  0.4000
0.3000  0.1000  0.1000  0.1000
 250.  *  0.0000  1.9000  1.8000  1.9000  1.5000  1.5000  1.5000  0.6000  0.5000
0.4000  0.1000  0.1000  0.1000
 260.  *  0.0000  2.2000  2.0000  1.7000  1.7000  1.7000  1.5000  0.9000  0.8000
0.9000  0.1000  0.1000  0.1000
 270.  *  0.0000  2.0000  1.8000  1.3000  1.8000  1.8000  1.5000  1.5000  1.3000
1.5000  0.3000  0.3000  0.3000
 280.  *  0.0000  1.6000  1.3000  0.8000  1.6000  1.5000  1.1000  2.1000  2.1000
2.0000  0.9000  0.9000  0.7000
 290.  *  0.0000  1.1000  0.8000  0.3000  0.9000  0.9000  0.6000  2.7000  2.2000
1.7000  1.6000  1.6000  1.3000
 300.  *  0.3000  0.8000  0.5000  0.3000  0.3000  0.3000  0.3000  2.3000  1.9000
1.4000  1.9000  1.8000  1.7000
 310.  *  0.4000  0.7000  0.5000  0.2000  0.1000  0.1000  0.1000  1.9000  1.7000
1.4000  1.7000  1.7000  1.6000
 320.  *  0.6000  0.7000  0.5000  0.1000  0.1000  0.1000  0.1000  1.7000  1.5000
1.1000  1.5000  1.5000  1.5000
 330.  *  1.0000  0.4000  0.2000  0.0000  0.2000  0.1000  0.1000  1.3000  1.2000
1.0000  1.6000  1.5000  1.4000
```

```
 340.  *  1.7000  0.2000  0.0000  0.0000  0.6000  0.4000  0.1000  1.1000  0.9000
0.9000  1.8000  1.6000  1.3000
 350.  *  1.6000  0.0000  0.0000  0.0000  0.7000  0.4000  0.0000  1.0000  1.0000
1.0000  2.0000  1.6000  1.2000
 360.  *  1.3000  0.0000  0.0000  0.0000  0.7000  0.5000  0.0000  1.0000  1.0000
1.0000  1.8000  1.6000  1.2000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.7000  2.2000  2.0000  1.9000  2.2000  2.1000  2.0000  2.7000  2.2000
2.0000  2.3000  2.5000  2.4000
 DEGR. *    340     260     260     250     130     120     120     290     290
280      70      70      90

 THE HIGHEST CONCENTRATION OF   3.1000 PPM OCCURRED AT RECEPTOR     9.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
4,4,8,9,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,15,-15,7.5,7.5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',29.2,115.2,5.9
'N Leg, E Side - 25 m',10.5,184.7,5.9
'N Leg, E Side - 50 m',-10.7,264.0,5.9
'N Leg, E Side-Midblk',-123.5,685.1,5.9
'N Leg, W Side-Corner',-95.3,131.6,5.9
'N Leg, W Side - 25 m',-113.9,201.1,5.9
'N Leg, W Side - 50 m',-135.2,280.4,5.9
'N Leg, W Side-Midblk',-248.0,701.5,5.9
'S Leg, E Side-Corner',30.3,-110.9,5.9
'S Leg, E Side - 25 m',11.7,-180.5,5.9
'S Leg, E Side - 50 m',-9.5,-259.7,5.9
'S Leg, E Side-Midblk',-122.4,-680.8,5.9
'S Leg, W Side-Corner',-85.7,-95.6,5.9
'S Leg, W Side - 25 m',-104.3,-165.2,5.9
'S Leg, W Side - 50 m',-125.5,-244.4,5.9
'S Leg, W Side-Midblk',-238.4,-665.5,5.9
'E Leg, N Side - 25 m',100.6,105.8,5.9
'E Leg, N Side - 50 m',181.9,95.1,5.9
'E Leg, N Side-Midblk',614.1,38.2,5.9
'W Leg, N Side - 25 m',-166.7,141.0,5.9
'W Leg, N Side - 50 m',-248.0,151.7,5.9
'W Leg, N Side-Midblk',-680.3,208.6,5.9
'E Leg, S Side - 25 m',101.7,-120.3,5.9
'E Leg, S Side - 50 m',183.1,-131.0,5.9
'E Leg, S Side-Midblk',615.3,-187.9,5.9
'W Leg, S Side - 25 m',-157.1,-86.2,5.9
'W Leg, S Side - 50 m',-238.4,-75.5,5.9
'W Leg, S Side-Midblk',-670.6,-18.6,5.9
'2025 I495 & MD650 IC.17',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-25,0,-334,1153,8800,2.15,0.0,67.7
1
'N Leg Dep - FreeFlow','AG',25,0,-287,1165,8800,2.15,0.0,67.7
1
'S Leg App - FreeFlow','AG',25,0,-287,-1165,8800,2.15,0.0,67.7
1
'S Leg Dep - FreeFlow','AG',-25,0,-334,-1153,8800,2.15,0.0,67.7
1
'E Leg App - FreeFlow','AG',7,54,1197,-103,19800,2.67,0.0,127.7
1
'E Leg Dep - FreeFlow','AG',-6,-48,1183,-204,17600,1.49,0.0,115.7
1
```

```
'W Leg App - FreeFlow','AG',-6,-48,-1196,109,17600,2.67,0.0,115.7
1
'W Leg Dep - FreeFlow','AG',7,54,-1183,210,19800,1.49,0.0,127.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 I495 & MD650 IC.17

DATE : 5/ 2/19
TIME : 13:32:34

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-25.0	0.0	-334.0	1153.0	*	1194.	345.	AG	8800.	2.2	0.0	67.7		
2. N Leg Dep - FreeFlow	*	25.0	0.0	-287.0	1165.0	*	1206.	345.	AG	8800.	2.2	0.0	67.7		
3. S Leg App - FreeFlow	*	25.0	0.0	-287.0	-1165.0	*	1206.	195.	AG	8800.	2.2	0.0	67.7		
4. S Leg Dep - FreeFlow	*	-25.0	0.0	-334.0	-1153.0	*	1194.	195.	AG	8800.	2.2	0.0	67.7		
5. E Leg App - FreeFlow	*	7.0	54.0	1197.0	-103.0	*	1200.	98.	AG	19800.	2.7	0.0	****		
6. E Leg Dep - FreeFlow	*	-6.0	-48.0	1183.0	-204.0	*	1199.	97.	AG	17600.	1.5	0.0	****		
7. W Leg App - FreeFlow	*	-6.0	-48.0	-1196.0	109.0	*	1200.	278.	AG	17600.	2.7	0.0	****		
8. W Leg Dep - FreeFlow	*	7.0	54.0	-1183.0	210.0	*	1200.	277.	AG	19800.	1.5	0.0	****		

MD650 IC.17

DATE : 5/ 2/19
TIME : 13:32:34

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	29.2	115.2	5.9
2. N Leg, E Side - 25 m	10.5	184.7	5.9
3. N Leg, E Side - 50 m	-10.7	264.0	5.9
4. N Leg, E Side-Midblk	-123.5	685.1	5.9
5. N Leg, W Side-Corner	-95.3	131.6	5.9
6. N Leg, W Side - 25 m	-113.9	201.1	5.9
7. N Leg, W Side - 50 m	-135.2	280.4	5.9
8. N Leg, W Side-Midblk	-248.0	701.5	5.9
9. S Leg, E Side-Corner	30.3	-110.9	5.9
10. S Leg, E Side - 25 m	11.7	-180.5	5.9
11. S Leg, E Side - 50 m	-9.5	-259.7	5.9
12. S Leg, E Side-Midblk	-122.4	-680.8	5.9
13. S Leg, W Side-Corner	-85.7	-95.6	5.9
14. S Leg, W Side - 25 m	-104.3	-165.2	5.9
15. S Leg, W Side - 50 m	-125.5	-244.4	5.9
16. S Leg, W Side-Midblk	-238.4	-665.5	5.9
17. E Leg, N Side - 25 m	100.6	105.8	5.9
18. E Leg, N Side - 50 m	181.9	95.1	5.9
19. E Leg, N Side-Midblk	614.1	38.2	5.9
20. W Leg, N Side - 25 m	-166.7	141.0	5.9
21. W Leg, N Side - 50 m	-248.0	151.7	5.9
22. W Leg, N Side-Midblk	-680.3	208.6	5.9
23. E Leg, S Side - 25 m	101.7	-120.3	5.9
24. E Leg, S Side - 50 m	183.1	-131.0	5.9
25. E Leg, S Side-Midblk	615.3	-187.9	5.9
26. W Leg, S Side - 25 m	-157.1	-86.2	5.9

27. W Leg, S Side - 50 m	*	-238.4	-75.5	5.9 *
28. W Leg, S Side-Midblk	*	-670.6	-18.6	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.1000	0.1000	0.1000	0.1000	1.2000	1.2000	1.2000	1.2000	2.0000	1.9000	1.8000	1.8000	2.6000	2.0000	1.6000
20.	*	0.1000	0.1000	0.1000	0.1000	1.1000	1.1000	1.1000	1.1000	1.7000	1.4000	1.2000	1.0000	2.6000	2.2000	2.0000
30.	*	0.2000	0.1000	0.1000	0.1000	1.0000	1.0000	1.0000	1.0000	1.4000	1.1000	0.9000	0.6000	2.7000	2.2000	2.0000
40.	*	0.1000	0.0000	0.0000	0.0000	1.1000	1.0000	1.0000	1.0000	1.5000	1.0000	0.8000	0.4000	2.7000	2.2000	1.8000
50.	*	0.1000	0.0000	0.0000	0.0000	1.0000	0.9000	0.9000	0.9000	1.6000	1.1000	0.9000	0.4000	2.9000	2.0000	1.9000
60.	*	0.1000	0.0000	0.0000	0.0000	0.9000	0.8000	0.8000	0.8000	1.7000	1.2000	0.9000	0.4000	3.0000	2.1000	1.8000
70.	*	0.2000	0.0000	0.0000	0.0000	1.0000	0.9000	0.9000	0.9000	1.7000	1.1000	0.8000	0.2000	3.1000	2.1000	1.8000
80.	*	0.4000	0.0000	0.0000	0.0000	1.2000	0.9000	0.9000	0.9000	1.9000	1.0000	0.6000	0.0000	3.1000	2.0000	1.6000
90.	*	1.0000	0.2000	0.0000	0.0000	1.6000	1.0000	0.9000	0.8000	1.7000	0.7000	0.3000	0.0000	2.8000	1.5000	1.2000
100.	*	2.0000	0.6000	0.2000	0.0000	2.7000	1.6000	1.2000	0.9000	1.0000	0.3000	0.0000	0.0000	2.1000	1.2000	1.0000
110.	*	2.4000	1.1000	0.6000	0.0000	3.2000	2.1000	1.7000	1.1000	0.3000	0.0000	0.0000	0.0000	1.3000	0.9000	0.9000
120.	*	2.4000	1.4000	1.0000	0.3000	2.8000	2.3000	1.9000	1.3000	0.1000	0.0000	0.0000	0.0000	0.9000	0.8000	0.8000

130. * 2.1000 1.4000 1.0000 0.5000 2.7000 2.2000 1.9000 1.5000 0.1000
0.0000 0.0000 0.0000 1.0000 0.9000 0.9000
140. * 1.9000 1.3000 0.9000 0.5000 2.5000 2.3000 1.9000 1.6000 0.1000
0.0000 0.0000 0.0000 1.1000 1.0000 1.0000
150. * 1.7000 1.3000 0.9000 0.6000 2.4000 2.2000 2.1000 1.7000 0.2000
0.1000 0.1000 0.1000 1.1000 1.0000 1.0000
160. * 1.8000 1.5000 1.2000 1.0000 2.1000 2.1000 1.8000 1.8000 0.1000
0.1000 0.1000 0.1000 1.2000 1.1000 1.1000
170. * 2.1000 1.9000 1.9000 1.8000 2.0000 1.7000 1.5000 1.2000 0.1000
0.1000 0.1000 0.1000 1.2000 1.2000 1.2000
180. * 2.8000 2.3000 2.2000 1.9000 2.2000 1.6000 1.3000 0.8000 0.3000
0.3000 0.3000 0.2000 1.5000 1.4000 1.4000
190. * 3.3000 2.6000 2.4000 1.7000 1.9000 1.3000 1.0000 0.4000 0.7000
0.7000 0.7000 0.7000 1.3000 1.3000 1.3000
200. * 3.2000 2.4000 2.1000 1.4000 1.5000 1.1000 0.8000 0.4000 1.3000
1.3000 1.3000 1.1000 0.7000 0.7000 0.7000
210. * 2.8000 2.0000 1.8000 1.3000 1.3000 1.1000 0.8000 0.4000 1.5000
1.4000 1.4000 1.3000 0.4000 0.3000 0.3000
220. * 2.5000 2.0000 1.7000 1.3000 1.3000 1.0000 0.7000 0.3000 1.2000
1.2000 1.2000 1.2000 0.2000 0.1000 0.1000
230. * 2.3000 1.9000 1.6000 1.2000 1.4000 1.0000 0.7000 0.3000 1.1000
1.1000 1.1000 1.1000 0.2000 0.1000 0.1000
240. * 2.5000 1.8000 1.6000 1.0000 1.6000 1.0000 0.8000 0.2000 1.0000
1.0000 1.0000 1.0000 0.2000 0.1000 0.1000
250. * 2.6000 2.0000 1.7000 1.0000 1.7000 1.1000 0.8000 0.0000 1.0000
1.0000 1.0000 1.0000 0.2000 0.0000 0.0000
260. * 2.8000 2.0000 1.5000 0.9000 1.8000 1.0000 0.6000 0.0000 1.1000
0.9000 0.9000 0.9000 0.3000 0.0000 0.0000
270. * 2.5000 1.5000 1.1000 0.8000 1.5000 0.6000 0.3000 0.0000 1.8000
0.9000 0.8000 0.8000 0.9000 0.1000 0.0000
280. * 1.9000 1.2000 1.0000 0.9000 0.9000 0.3000 0.0000 0.0000 2.7000
1.5000 1.1000 0.9000 1.9000 0.6000 0.2000
290. * 1.3000 1.0000 1.0000 1.0000 0.3000 0.0000 0.0000 0.0000 3.2000
2.0000 1.4000 0.9000 2.4000 1.0000 0.5000
300. * 1.1000 1.0000 1.0000 1.0000 0.2000 0.1000 0.1000 0.1000 2.9000
2.0000 1.6000 0.9000 2.2000 1.2000 0.8000
310. * 1.2000 1.1000 1.1000 1.1000 0.2000 0.1000 0.1000 0.1000 2.6000
2.0000 1.8000 1.2000 2.0000 1.1000 0.9000
320. * 1.2000 1.2000 1.2000 1.2000 0.2000 0.1000 0.1000 0.1000 2.7000
2.0000 1.8000 1.3000 1.7000 1.1000 0.9000
330. * 1.5000 1.4000 1.4000 1.3000 0.4000 0.3000 0.3000 0.2000 3.0000
2.2000 1.8000 1.3000 1.7000 1.2000 0.8000
340. * 1.3000 1.3000 1.3000 1.1000 0.8000 0.7000 0.7000 0.6000 3.1000
2.5000 2.1000 1.4000 1.9000 1.2000 0.9000
350. * 0.7000 0.7000 0.7000 0.7000 1.3000 1.3000 1.3000 1.0000 3.0000
2.6000 2.5000 1.7000 2.1000 1.4000 1.1000
360. * 0.3000 0.3000 0.3000 0.2000 1.4000 1.4000 1.4000 1.2000 2.4000
2.2000 2.2000 1.9000 2.3000 1.7000 1.3000

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  3.3000  2.6000  2.4000  1.9000  3.2000  2.3000  2.1000  1.8000  3.2000
2.6000  2.5000  1.9000  3.1000  2.2000  2.0000
 DEGR. *    190     190     190     180     110     120     150     160     290
350     350     360      80      20      20
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28
------*-------------------------------------------------------------------------
--------------------------
  10.  *  1.2000  0.0000  0.0000  0.0000  0.7000  0.4000  0.0000  1.4000  1.4000
1.4000  2.1000  2.0000  1.6000
  20.  *  1.8000  0.0000  0.0000  0.0000  0.7000  0.4000  0.1000  1.3000  1.3000
1.3000  2.0000  1.9000  1.7000
  30.  *  1.7000  0.1000  0.1000  0.1000  0.6000  0.4000  0.2000  1.3000  1.3000
1.3000  2.0000  1.9000  1.7000
  40.  *  1.5000  0.1000  0.1000  0.1000  0.6000  0.5000  0.3000  1.3000  1.3000
1.3000  2.0000  1.9000  1.8000
  50.  *  1.4000  0.1000  0.1000  0.1000  0.6000  0.5000  0.3000  1.5000  1.5000
1.5000  2.2000  2.1000  1.9000
  60.  *  1.3000  0.1000  0.1000  0.1000  0.6000  0.5000  0.3000  1.6000  1.6000
1.6000  2.6000  2.2000  2.0000
  70.  *  1.2000  0.2000  0.2000  0.2000  0.6000  0.5000  0.3000  1.7000  1.7000
1.6000  2.8000  2.7000  2.3000
  80.  *  0.9000  0.4000  0.4000  0.3000  0.7000  0.7000  0.4000  1.9000  1.9000
1.6000  2.9000  2.8000  2.8000
  90.  *  0.8000  1.0000  0.9000  0.8000  1.3000  1.2000  0.9000  1.6000  1.6000
1.2000  2.6000  2.6000  2.5000
```

```
 100.  *  0.9000  2.0000  1.9000  1.6000  2.2000  2.0000  1.8000  0.9000  0.9000
0.7000  1.7000  1.8000  1.9000
 110.  *  0.9000  2.4000  2.4000  2.1000  2.5000  2.3000  2.0000  0.3000  0.3000
0.3000  1.0000  0.9000  0.8000
 120.  *  0.8000  2.3000  2.3000  2.1000  2.4000  2.2000  2.0000  0.1000  0.1000
0.1000  0.7000  0.6000  0.4000
 130.  *  0.9000  2.0000  2.0000  2.0000  2.1000  1.9000  1.8000  0.1000  0.1000
0.1000  0.6000  0.5000  0.3000
 140.  *  1.0000  1.8000  1.8000  1.8000  1.9000  1.6000  1.7000  0.1000  0.1000
0.1000  0.6000  0.5000  0.3000
 150.  *  1.0000  1.6000  1.6000  1.6000  1.8000  1.7000  1.5000  0.1000  0.1000
0.1000  0.6000  0.5000  0.3000
 160.  *  1.1000  1.5000  1.5000  1.5000  1.7000  1.7000  1.5000  0.0000  0.0000
0.0000  0.7000  0.5000  0.3000
 170.  *  1.2000  1.5000  1.4000  1.4000  1.7000  1.6000  1.2000  0.0000  0.0000
0.0000  0.7000  0.4000  0.0000
 180.  *  1.3000  1.6000  1.5000  1.5000  1.7000  1.5000  1.3000  0.0000  0.0000
0.0000  0.6000  0.3000  0.0000
 190.  *  1.1000  2.0000  1.7000  1.6000  1.5000  1.4000  1.3000  0.1000  0.0000
0.0000  0.3000  0.2000  0.0000
 200.  *  0.6000  2.5000  1.8000  1.5000  1.2000  1.2000  1.2000  0.4000  0.2000
0.0000  0.1000  0.0000  0.0000
 210.  *  0.2000  2.5000  1.9000  1.4000  1.2000  1.2000  1.2000  0.6000  0.3000
0.0000  0.1000  0.1000  0.1000
 220.  *  0.1000  2.6000  2.1000  1.7000  1.3000  1.3000  1.3000  0.8000  0.5000
0.1000  0.1000  0.1000  0.1000
 230.  *  0.1000  2.6000  2.3000  2.0000  1.4000  1.4000  1.4000  0.7000  0.5000
0.3000  0.1000  0.1000  0.1000
 240.  *  0.1000  2.5000  2.4000  2.1000  1.6000  1.6000  1.4000  0.6000  0.5000
0.3000  0.1000  0.1000  0.1000
 250.  *  0.0000  2.6000  2.7000  2.4000  1.7000  1.7000  1.5000  0.6000  0.5000
0.3000  0.2000  0.2000  0.2000
 260.  *  0.0000  2.7000  2.8000  2.8000  1.8000  1.7000  1.4000  0.8000  0.6000
0.4000  0.3000  0.3000  0.3000
 270.  *  0.0000  2.5000  2.5000  2.7000  1.5000  1.5000  1.1000  1.4000  1.3000
0.9000  0.9000  0.9000  0.8000
 280.  *  0.0000  1.8000  1.8000  1.8000  0.9000  0.8000  0.6000  2.2000  2.0000
1.8000  1.9000  1.9000  1.5000
 290.  *  0.0000  0.9000  0.9000  0.8000  0.3000  0.3000  0.3000  2.6000  2.2000
2.1000  2.4000  2.3000  1.9000
 300.  *  0.0000  0.7000  0.6000  0.4000  0.1000  0.1000  0.1000  2.4000  2.2000
2.0000  2.2000  2.2000  2.1000
 310.  *  0.2000  0.8000  0.5000  0.4000  0.1000  0.1000  0.1000  2.1000  2.1000
1.8000  2.0000  2.0000  1.9000
 320.  *  0.3000  0.8000  0.5000  0.3000  0.1000  0.1000  0.1000  2.1000  1.9000
1.7000  1.7000  1.7000  1.7000
 330.  *  0.4000  0.8000  0.5000  0.1000  0.1000  0.1000  0.1000  2.3000  2.0000
1.4000  1.6000  1.6000  1.6000
```

```
 340.  *  0.4000  0.6000  0.3000  0.1000  0.2000  0.1000  0.1000  2.1000  1.7000
1.3000  1.6000  1.5000  1.5000
 350.  *  0.4000  0.1000  0.0000  0.0000  0.4000  0.2000  0.0000  1.6000  1.4000
1.3000  1.8000  1.6000  1.5000
 360.  *  0.7000  0.0000  0.0000  0.0000  0.7000  0.3000  0.0000  1.4000  1.3000
1.3000  2.0000  1.8000  1.5000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.8000  2.7000  2.8000  2.8000  2.5000  2.3000  2.0000  2.6000  2.2000
2.1000  2.9000  2.8000  2.8000
 DEGR. *     20     260     260     260     110     110     110     290     290
290      80      80      80

 THE HIGHEST CONCENTRATION OF   3.3000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
10,10,9,8,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8
,1036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,12
00,0,0,1200,-1200,0,0,0,0,0,0,-15,-15,-5,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',103.6,115.5,5.9
'N Leg, E Side - 25 m',85.0,185.0,5.9
'N Leg, E Side - 50 m',63.8,264.3,5.9
'N Leg, E Side-Midblk',-49.1,685.4,5.9
'N Leg, W Side-Corner',-159.4,92.5,5.9
'N Leg, W Side - 25 m',-178.0,162.0,5.9
'N Leg, W Side - 50 m',-199.2,241.3,5.9
'N Leg, W Side-Midblk',-312.1,662.4,5.9
'S Leg, E Side-Corner',162.5,-104.2,5.9
'S Leg, E Side - 25 m',181.2,-173.8,5.9
'S Leg, E Side - 50 m',202.4,-253.0,5.9
'S Leg, E Side-Midblk',315.2,-674.1,5.9
'S Leg, W Side-Corner',-100.5,-127.2,5.9
'S Leg, W Side - 25 m',-81.9,-196.8,5.9
'S Leg, W Side - 50 m',-60.6,-276.0,5.9
'S Leg, W Side-Midblk',52.2,-697.1,5.9
'E Leg, N Side - 25 m',175.4,121.7,5.9
'E Leg, N Side - 50 m',257.1,128.9,5.9
'E Leg, N Side-Midblk',691.4,166.9,5.9
'W Leg, N Side - 25 m',-231.1,86.2,5.9
'W Leg, N Side - 50 m',-312.8,79.0,5.9
'W Leg, N Side-Midblk',-747.1,41.0,5.9
'E Leg, S Side - 25 m',234.3,-98.0,5.9
'E Leg, S Side - 50 m',316.0,-90.8,5.9
'E Leg, S Side-Midblk',750.3,-52.8,5.9
'W Leg, S Side - 25 m',-172.2,-133.5,5.9
'W Leg, S Side - 50 m',-253.9,-140.7,5.9
'W Leg, S Side-Midblk',-688.2,-178.7,5.9
'2025 Build I495 & US50 (IC.11)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-64,7,-369,1144,22000,2.67,0.0,139.7
1
'N Leg Dep - FreeFlow','AG',64,-7,-253,1175,22000,1.5,0.0,139.7
1
'S Leg App - FreeFlow','AG',64,-7,369,-1144,22000,1.5,0.0,139.7
1
'S Leg Dep - FreeFlow','AG',-64,7,253,-1175,22000,3.47,0.0,139.7
1
'E Leg App - FreeFlow','AG',0,48,1191,152,17600,1.5,0.0,115.7
1
'E Leg Dep - FreeFlow','AG',5,-54,1200,51,19800,3.47,0.0,127.7
1
```

```
'W Leg App - FreeFlow','AG',5,-54,-1191,-158,19800,3.28,0.0,127.7
1
'W Leg Dep - FreeFlow','AG',0,48,-1200,-57,17600,1.56,0.0,115.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 Build I495 & US50 (IC.11)

DATE : 2/ 8/19
TIME : 9: 9:38

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-64.0	7.0	-369.0	1144.0	*	1177.	345.	AG	22000.	2.7	0.0	****		
2. N Leg Dep - FreeFlow	*	64.0	-7.0	-253.0	1175.0	*	1224.	345.	AG	22000.	1.5	0.0	****		
3. S Leg App - FreeFlow	*	64.0	-7.0	369.0	-1144.0	*	1177.	165.	AG	22000.	1.5	0.0	****		
4. S Leg Dep - FreeFlow	*	-64.0	7.0	253.0	-1175.0	*	1224.	165.	AG	22000.	3.5	0.0	****		
5. E Leg App - FreeFlow	*	0.0	48.0	1191.0	152.0	*	1196.	85.	AG	17600.	1.5	0.0	****		
6. E Leg Dep - FreeFlow	*	5.0	-54.0	1200.0	51.0	*	1200.	85.	AG	19800.	3.5	0.0	****		
7. W Leg App - FreeFlow	*	5.0	-54.0	-1191.0	-158.0	*	1201.	265.	AG	19800.	3.3	0.0	****		
8. W Leg Dep - FreeFlow	*	0.0	48.0	-1200.0	-57.0	*	1205.	265.	AG	17600.	1.6	0.0	****		

& US50 (IC.11)

DATE : 2/ 8/19
TIME : 9: 9:38

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	103.6	115.5	5.9
2. N Leg, E Side - 25 m	85.0	185.0	5.9
3. N Leg, E Side - 50 m	63.8	264.3	5.9
4. N Leg, E Side-Midblk	-49.1	685.4	5.9
5. N Leg, W Side-Corner	-159.4	92.5	5.9
6. N Leg, W Side - 25 m	-178.0	162.0	5.9
7. N Leg, W Side - 50 m	-199.2	241.3	5.9
8. N Leg, W Side-Midblk	-312.1	662.4	5.9
9. S Leg, E Side-Corner	162.5	-104.2	5.9
10. S Leg, E Side - 25 m	181.2	-173.8	5.9
11. S Leg, E Side - 50 m	202.4	-253.0	5.9
12. S Leg, E Side-Midblk	315.2	-674.1	5.9
13. S Leg, W Side-Corner	-100.5	-127.2	5.9
14. S Leg, W Side - 25 m	-81.9	-196.8	5.9
15. S Leg, W Side - 50 m	-60.6	-276.0	5.9
16. S Leg, W Side-Midblk	52.2	-697.1	5.9
17. E Leg, N Side - 25 m	175.4	121.7	5.9
18. E Leg, N Side - 50 m	257.1	128.9	5.9
19. E Leg, N Side-Midblk	691.4	166.9	5.9
20. W Leg, N Side - 25 m	-231.1	86.2	5.9
21. W Leg, N Side - 50 m	-312.8	79.0	5.9
22. W Leg, N Side-Midblk	-747.1	41.0	5.9
23. E Leg, S Side - 25 m	234.3	-98.0	5.9
24. E Leg, S Side - 50 m	316.0	-90.8	5.9
25. E Leg, S Side-Midblk	750.3	-52.8	5.9
26. W Leg, S Side - 25 m	-172.2	-133.5	5.9

27. W Leg, S Side - 50 m	*	-253.9	-140.7	5.9 *
28. W Leg, S Side-Midblk	*	-688.2	-178.7	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.1000	0.1000	0.1000	0.1000	2.4000	2.4000	2.3000	2.1000	1.9000	1.4000	1.0000	0.5000	4.4000	4.2000	3.8000
20.	*	0.1000	0.1000	0.1000	0.1000	2.1000	2.1000	2.1000	2.0000	1.9000	1.4000	1.0000	0.5000	4.2000	3.8000	3.6000
30.	*	0.2000	0.1000	0.1000	0.1000	2.0000	1.9000	1.9000	1.9000	2.1000	1.5000	1.0000	0.5000	4.2000	3.8000	3.2000
40.	*	0.2000	0.1000	0.1000	0.1000	1.9000	1.8000	1.8000	1.8000	2.3000	1.5000	1.1000	0.5000	4.4000	3.5000	3.1000
50.	*	0.2000	0.1000	0.1000	0.1000	1.7000	1.6000	1.6000	1.6000	2.4000	1.6000	1.1000	0.3000	4.3000	3.5000	3.0000
60.	*	0.1000	0.0000	0.0000	0.0000	1.7000	1.6000	1.6000	1.6000	2.7000	1.6000	1.0000	0.1000	4.7000	3.6000	3.1000
70.	*	0.2000	0.0000	0.0000	0.0000	1.9000	1.7000	1.7000	1.7000	3.1000	1.4000	0.7000	0.0000	5.2000	3.5000	3.0000
80.	*	0.8000	0.2000	0.0000	0.0000	2.6000	1.9000	1.7000	1.7000	2.7000	0.8000	0.3000	0.0000	4.9000	3.1000	2.6000
90.	*	1.6000	0.6000	0.2000	0.0000	3.5000	2.3000	2.0000	1.6000	1.6000	0.2000	0.1000	0.0000	3.7000	2.3000	2.1000
100.	*	2.1000	1.2000	0.8000	0.1000	3.9000	2.8000	2.4000	1.6000	0.7000	0.1000	0.1000	0.1000	2.6000	2.0000	2.0000
110.	*	2.1000	1.4000	1.0000	0.3000	4.0000	3.1000	2.6000	2.1000	0.4000	0.1000	0.1000	0.1000	2.5000	2.2000	2.2000
120.	*	1.9000	1.4000	1.0000	0.4000	4.1000	3.1000	2.9000	2.3000	0.3000	0.1000	0.1000	0.1000	2.5000	2.3000	2.3000

130. * 1.8000 1.3000 1.0000 0.5000 4.1000 3.6000 3.2000 2.5000 0.3000
0.1000 0.1000 0.1000 2.8000 2.6000 2.6000
140. * 1.7000 1.2000 1.0000 0.5000 4.3000 3.7000 3.5000 2.9000 0.3000
0.1000 0.1000 0.1000 3.1000 3.0000 2.8000
150. * 1.7000 1.4000 1.2000 0.6000 4.6000 4.1000 3.9000 3.4000 0.4000
0.3000 0.3000 0.2000 3.3000 3.2000 3.2000
160. * 2.5000 2.0000 1.8000 1.4000 4.1000 3.8000 3.6000 3.0000 0.8000
0.8000 0.7000 0.5000 2.8000 2.8000 2.7000
170. * 3.3000 2.8000 2.6000 2.3000 3.1000 2.7000 2.4000 2.0000 1.6000
1.5000 1.5000 1.0000 1.7000 1.5000 1.5000
180. * 3.8000 3.4000 3.1000 2.6000 2.0000 1.7000 1.3000 0.9000 2.1000
2.1000 2.0000 1.4000 0.6000 0.6000 0.6000
190. * 3.6000 3.3000 2.9000 2.2000 1.7000 1.3000 1.0000 0.6000 2.2000
2.1000 2.1000 1.7000 0.3000 0.3000 0.3000
200. * 3.4000 3.0000 2.8000 2.1000 1.6000 1.3000 1.0000 0.6000 2.0000
1.9000 1.9000 1.8000 0.3000 0.2000 0.2000
210. * 3.3000 3.0000 2.4000 2.0000 1.7000 1.3000 1.0000 0.6000 2.0000
1.8000 1.8000 1.8000 0.3000 0.2000 0.2000
220. * 3.3000 2.7000 2.5000 1.9000 1.8000 1.3000 1.0000 0.4000 1.9000
1.7000 1.7000 1.7000 0.4000 0.2000 0.2000
230. * 3.2000 2.7000 2.3000 1.7000 2.0000 1.3000 1.0000 0.3000 1.8000
1.6000 1.6000 1.6000 0.3000 0.1000 0.1000
240. * 3.4000 2.7000 2.3000 1.6000 2.0000 1.2000 0.8000 0.0000 1.8000
1.6000 1.6000 1.6000 0.4000 0.1000 0.1000
250. * 3.6000 2.5000 2.1000 1.4000 2.0000 1.1000 0.6000 0.0000 2.2000
1.6000 1.6000 1.6000 0.6000 0.0000 0.0000
260. * 3.1000 2.1000 1.8000 1.4000 1.6000 0.5000 0.2000 0.0000 3.3000
1.9000 1.7000 1.6000 1.5000 0.2000 0.1000
270. * 2.2000 1.6000 1.4000 1.4000 0.8000 0.1000 0.0000 0.0000 4.3000
2.5000 2.1000 1.6000 2.6000 0.9000 0.4000
280. * 1.6000 1.4000 1.4000 1.4000 0.3000 0.1000 0.1000 0.1000 4.7000
3.1000 2.5000 1.7000 3.0000 1.4000 0.8000
290. * 1.6000 1.5000 1.5000 1.5000 0.2000 0.1000 0.1000 0.1000 4.5000
3.2000 2.7000 2.0000 2.8000 1.7000 1.2000
300. * 1.7000 1.6000 1.6000 1.5000 0.3000 0.2000 0.2000 0.2000 4.3000
3.2000 2.8000 2.2000 2.5000 1.6000 1.2000
310. * 1.8000 1.7000 1.7000 1.6000 0.3000 0.2000 0.2000 0.2000 4.0000
3.3000 3.0000 2.3000 2.3000 1.6000 1.2000
320. * 2.0000 1.9000 1.9000 1.6000 0.3000 0.2000 0.2000 0.2000 4.0000
3.3000 3.0000 2.5000 2.2000 1.5000 1.1000
330. * 1.9000 1.9000 1.8000 1.4000 0.5000 0.5000 0.5000 0.4000 3.8000
3.4000 3.1000 2.7000 2.3000 1.9000 1.5000
340. * 1.5000 1.4000 1.4000 1.0000 1.3000 1.2000 1.1000 0.9000 3.4000
2.9000 2.6000 2.2000 3.3000 2.8000 2.5000
350. * 0.8000 0.8000 0.7000 0.5000 2.2000 2.2000 2.1000 1.7000 2.8000
2.1000 1.7000 1.4000 4.3000 4.0000 3.7000
360. * 0.3000 0.3000 0.3000 0.2000 2.6000 2.6000 2.5000 2.1000 2.1000
1.6000 1.2000 0.6000 4.7000 4.3000 4.0000

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  3.8000  3.4000  3.1000  2.6000  4.6000  4.1000  3.9000  3.4000  4.7000
3.4000  3.1000  2.7000  5.2000  4.3000  4.0000
 DEGR. *    180     180     180     180     150     150     150     150     280
330     330     330      70     360     360
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  3.3000  0.0000  0.0000  0.0000  1.4000  0.9000  0.1000  1.8000  1.8000
1.8000  3.2000  2.7000  1.9000
  20.  *  3.0000  0.0000  0.0000  0.0000  1.3000  1.0000  0.3000  1.8000  1.8000
1.8000  3.3000  2.8000  2.1000
  30.  *  2.7000  0.1000  0.1000  0.1000  1.4000  1.1000  0.5000  2.0000  2.0000
2.0000  3.3000  3.0000  2.4000
  40.  *  2.6000  0.1000  0.1000  0.1000  1.3000  1.0000  0.5000  2.2000  2.2000
2.2000  3.4000  3.1000  2.5000
  50.  *  2.4000  0.1000  0.1000  0.1000  1.3000  1.0000  0.5000  2.4000  2.4000
2.4000  3.7000  3.3000  2.7000
  60.  *  2.2000  0.1000  0.1000  0.1000  1.2000  1.0000  0.5000  2.7000  2.7000
2.5000  4.1000  3.8000  3.1000
  70.  *  2.1000  0.2000  0.2000  0.2000  1.4000  1.2000  0.6000  3.0000  2.9000
2.5000  4.5000  4.2000  3.5000
  80.  *  2.1000  0.8000  0.7000  0.5000  2.1000  1.7000  1.3000  2.6000  2.6000
2.1000  4.2000  3.7000  3.5000
  90.  *  2.0000  1.5000  1.5000  1.0000  2.9000  2.8000  2.4000  1.5000  1.4000
1.1000  3.0000  2.7000  2.1000
```

```
 100.  *  2.0000  2.1000  2.0000  1.5000  3.6000  3.3000  2.9000  0.6000  0.6000
0.5000  1.9000  1.7000  1.1000
 110.  *  2.2000  2.0000  2.0000  1.8000  3.4000  3.1000  2.5000  0.3000  0.3000
0.3000  1.7000  1.3000  0.7000
 120.  *  2.3000  1.8000  1.8000  1.8000  3.4000  2.8000  2.4000  0.2000  0.2000
0.2000  1.7000  1.4000  0.7000
 130.  *  2.5000  1.7000  1.7000  1.7000  3.3000  3.0000  2.2000  0.2000  0.2000
0.2000  1.9000  1.4000  0.6000
 140.  *  2.7000  1.6000  1.6000  1.6000  3.4000  2.9000  1.9000  0.2000  0.2000
0.1000  1.8000  1.3000  0.3000
 150.  *  2.7000  1.5000  1.5000  1.5000  3.1000  2.5000  1.6000  0.1000  0.1000
0.1000  1.6000  0.9000  0.1000
 160.  *  2.2000  1.7000  1.5000  1.5000  2.4000  1.9000  1.5000  0.1000  0.0000
0.0000  0.9000  0.4000  0.0000
 170.  *  1.2000  2.2000  1.8000  1.5000  1.8000  1.6000  1.6000  0.5000  0.2000
0.0000  0.3000  0.1000  0.0000
 180.  *  0.5000  2.7000  2.2000  1.5000  1.5000  1.6000  1.6000  1.1000  0.6000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.3000  2.9000  2.5000  1.7000  1.5000  1.5000  1.4000  1.4000  1.0000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.2000  2.9000  2.6000  1.8000  1.5000  1.5000  1.5000  1.5000  1.1000
0.3000  0.1000  0.1000  0.1000
 210.  *  0.2000  3.1000  2.7000  2.1000  1.6000  1.6000  1.6000  1.5000  1.2000
0.5000  0.1000  0.1000  0.1000
 220.  *  0.2000  2.9000  2.7000  2.2000  1.7000  1.7000  1.7000  1.4000  1.2000
0.7000  0.2000  0.2000  0.2000
 230.  *  0.1000  3.1000  2.7000  2.3000  1.9000  1.9000  1.7000  1.4000  1.2000
0.7000  0.2000  0.2000  0.2000
 240.  *  0.1000  3.2000  2.8000  2.4000  2.0000  2.0000  1.7000  1.4000  1.2000
0.8000  0.3000  0.3000  0.2000
 250.  *  0.0000  3.2000  3.0000  2.9000  2.0000  2.0000  1.5000  1.8000  1.5000
1.1000  0.5000  0.5000  0.5000
 260.  *  0.0000  2.8000  2.5000  2.2000  1.5000  1.5000  1.0000  2.8000  2.6000
2.2000  1.5000  1.4000  1.1000
 270.  *  0.1000  2.0000  1.7000  1.3000  0.7000  0.7000  0.5000  4.1000  3.6000
3.5000  2.5000  2.5000  2.0000
 280.  *  0.1000  1.3000  1.1000  0.6000  0.2000  0.2000  0.2000  4.3000  4.1000
3.6000  2.9000  2.8000  2.4000
 290.  *  0.3000  1.1000  1.0000  0.5000  0.1000  0.1000  0.1000  4.0000  3.7000
3.0000  2.6000  2.6000  2.4000
 300.  *  0.6000  1.2000  1.0000  0.5000  0.1000  0.1000  0.1000  3.7000  3.4000
2.9000  2.3000  2.3000  2.3000
 310.  *  0.6000  1.3000  1.0000  0.4000  0.1000  0.1000  0.1000  3.4000  3.0000
2.6000  2.1000  2.1000  2.1000
 320.  *  0.7000  1.3000  0.9000  0.3000  0.1000  0.1000  0.1000  3.1000  2.8000
2.2000  2.0000  2.0000  2.0000
 330.  *  1.0000  1.0000  0.6000  0.0000  0.0000  0.0000  0.0000  2.9000  2.5000
1.8000  1.8000  1.8000  1.8000
```

```
 340.  *  2.2000  0.6000  0.3000  0.0000  0.2000  0.1000  0.0000  2.4000  2.1000
1.8000  2.0000  1.9000  1.7000
 350.  *  3.4000  0.1000  0.0000  0.0000  0.7000  0.2000  0.0000  2.0000  1.9000
1.9000  2.6000  2.2000  1.8000
 360.  *  3.8000  0.0000  0.0000  0.0000  1.2000  0.6000  0.0000  1.9000  1.9000
1.9000  3.1000  2.6000  1.8000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  3.8000  3.2000  3.0000  2.9000  3.6000  3.3000  2.9000  4.3000  4.1000
3.6000  4.5000  4.2000  3.5000
 DEGR. *    360     240     250     250     100     100     100     280     280
280      70      70      70

 THE HIGHEST CONCENTRATION OF   5.2000 PPM OCCURRED AT RECEPTOR    13.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
4,6,3,2,2200,2200,2200,2200,2200,2200,2200,2200,2200,2200,1036.66666666667,1037,2200
,2200,1036.66666666667,1037,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1
200,1200,0,0,1200,-1200,0,0,0,0,0,0,-20,-20,-45,-20,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',42.9,51.8,5.9
'N Leg, E Side - 25 m',18.2,119.5,5.9
'N Leg, E Side - 50 m',-9.8,196.5,5.9
'N Leg, E Side-Midblk',-158.9,606.2,5.9
'N Leg, W Side-Corner',-76.8,-28.7,5.9
'N Leg, W Side - 25 m',-101.4,39.0,5.9
'N Leg, W Side - 50 m',-129.5,116.0,5.9
'N Leg, W Side-Midblk',-278.6,525.7,5.9
'S Leg, E Side-Corner',70.2,-23.4,5.9
'S Leg, E Side - 25 m',94.9,-91.1,5.9
'S Leg, E Side - 50 m',122.9,-168.1,5.9
'S Leg, E Side-Midblk',272.0,-577.8,5.9
'S Leg, W Side-Corner',-46.6,-111.7,5.9
'S Leg, W Side - 25 m',-22.0,-179.3,5.9
'S Leg, W Side - 50 m',6.1,-256.4,5.9
'S Leg, W Side-Midblk',155.2,-666.1,5.9
'E Leg, N Side - 25 m',110.6,76.4,5.9
'E Leg, N Side - 50 m',187.6,104.5,5.9
'E Leg, N Side-Midblk',597.3,253.6,5.9
'W Leg, N Side - 25 m',-127.7,-79.7,5.9
'W Leg, N Side - 50 m',-185.7,-137.6,5.9
'W Leg, N Side-Midblk',-494.0,-445.9,5.9
'E Leg, S Side - 25 m',137.9,1.2,5.9
'E Leg, S Side - 50 m',215.0,29.3,5.9
'E Leg, S Side-Midblk',624.7,178.4,5.9
'W Leg, S Side - 25 m',-97.5,-162.6,5.9
'W Leg, S Side - 50 m',-155.5,-220.6,5.9
'W Leg, S Side-Midblk',-463.8,-528.9,5.9
'2025 Build MD5 & Auth Rd (IS.7)',9,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-34,-12,-444,1115,13200,2.04,0.0,91.7
1
'N Leg Dep - FreeFlow','AG',23,8,-388,1136,8800,1.53,0.0,67.7
1
'S Leg App - FreeFlow','AG',23,8,433,-1119,8800,3.40,0.0,67.7
1
'S Leg Dep - FreeFlow','AG',-34,-12,377,-1140,13200,1.53,0.0,91.7
1
'E Leg App - FreeFlow','AG',-7,10,1124,422,2074,1.86,0.0,43.7
2
'E Leg App - Queue','AG',41,28,1124,422,0.0,24.0,2
120,62,2,2074,4.27,1600,1,3
```

```
1
'E Leg Dep - FreeFlow','AG',10,-16,1134,394,3111,2.73,0.0,55.7
1
'W Leg App - FreeFlow','AG',10,-16,-836,-861,2200,1.68,0.0,55.7
1
'W Leg Dep - FreeFlow','AG',-7,10,-857,-840,4400,1.68,0.0,43.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 Build MD5 & Auth Rd (IS.7)

DATE : 2/ 8/19
TIME : 13:14:24

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-34.0	-12.0	-444.0	1115.0	*	1199.	340.	AG	13200.	2.0	0.0	91.7		
2. N Leg Dep - FreeFlow	*	23.0	8.0	-388.0	1136.0	*	1201.	340.	AG	8800.	1.5	0.0	67.7		
3. S Leg App - FreeFlow	*	23.0	8.0	433.0	-1119.0	*	1199.	160.	AG	8800.	3.4	0.0	67.7		
4. S Leg Dep - FreeFlow	*	-34.0	-12.0	377.0	-1140.0	*	1201.	160.	AG	13200.	1.5	0.0	91.7		
5. E Leg App - FreeFlow	*	-7.0	10.0	1124.0	422.0	*	1204.	70.	AG	2074.	1.9	0.0	43.7		
6. E Leg App - Queue	*	41.0	28.0	3480.1	1279.2	*	3660.	70.	AG	12.	100.0	0.0	24.0	1.44	185.9
7. E Leg Dep - FreeFlow	*	10.0	-16.0	1134.0	394.0	*	1196.	70.	AG	3111.	2.7	0.0	55.7		
8. W Leg App - FreeFlow	*	10.0	-16.0	-836.0	-861.0	*	1196.	225.	AG	2200.	1.7	0.0	55.7		
9. W Leg Dep - FreeFlow	*	-7.0	10.0	-857.0	-840.0	*	1202.	225.	AG	4400.	1.7	0.0	43.7		

JOB: I-495 & I-270 MLS RUN: 2040 Build MD5 & Auth Rd (IS.7)

DATE : 2/ 8/19
TIME : 13:14:24

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
6. E Leg App - Queue	120	62	2.0	2074	1600	4.27	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	42.9	51.8	5.9
2. N Leg, E Side - 25 m	18.2	119.5	5.9
3. N Leg, E Side - 50 m	-9.8	196.5	5.9
4. N Leg, E Side-Midblk	-158.9	606.2	5.9
5. N Leg, W Side-Corner	-76.8	-28.7	5.9
6. N Leg, W Side - 25 m	-101.4	39.0	5.9
7. N Leg, W Side - 50 m	-129.5	116.0	5.9
8. N Leg, W Side-Midblk	-278.6	525.7	5.9
9. S Leg, E Side-Corner	70.2	-23.4	5.9
10. S Leg, E Side - 25 m	94.9	-91.1	5.9
11. S Leg, E Side - 50 m	122.9	-168.1	5.9
12. S Leg, E Side-Midblk	272.0	-577.8	5.9
13. S Leg, W Side-Corner	-46.6	-111.7	5.9
14. S Leg, W Side - 25 m	-22.0	-179.3	5.9
15. S Leg, W Side - 50 m	6.1	-256.4	5.9
16. S Leg, W Side-Midblk	155.2	-666.1	5.9
17. E Leg, N Side - 25 m	110.6	76.4	5.9
18. E Leg, N Side - 50 m	187.6	104.5	5.9
19. E Leg, N Side-Midblk	597.3	253.6	5.9
20. W Leg, N Side - 25 m	-127.7	-79.7	5.9
21. W Leg, N Side - 50 m	-185.7	-137.6	5.9
22. W Leg, N Side-Midblk	-494.0	-445.9	5.9

23. E Leg, S Side - 25 m *	137.9	1.2	5.9	*
24. E Leg, S Side - 50 m *	215.0	29.3	5.9	*
25. E Leg, S Side-Midblk *	624.7	178.4	5.9	*
26. W Leg, S Side - 25 m *	-97.5	-162.6	5.9	*
27. W Leg, S Side - 50 m *	-155.5	-220.6	5.9	*
28. W Leg, S Side-Midblk *	-463.8	-528.9	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	* 1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	* 0.1000	0.1000	0.1000	0.1000	1.2000	1.3000	1.3000	1.2000	0.5000
0.2000	0.2000	0.1000	1.2000	1.2000	1.4000				
20.	* 0.0000	0.0000	0.0000	0.0000	1.1000	1.1000	1.1000	1.1000	0.5000
0.2000	0.2000	0.1000	1.2000	1.2000	1.2000				
30.	* 0.0000	0.0000	0.0000	0.0000	1.1000	1.0000	1.0000	1.0000	0.5000
0.3000	0.2000	0.1000	1.2000	1.1000	1.2000				
40.	* 0.0000	0.0000	0.0000	0.0000	1.0000	0.9000	0.9000	0.9000	0.5000
0.4000	0.2000	0.1000	1.2000	1.1000	1.1000				
50.	* 0.0000	0.0000	0.0000	0.0000	1.1000	0.9000	0.9000	0.9000	0.6000
0.3000	0.1000	0.0000	1.3000	1.1000	1.1000				
60.	* 0.2000	0.0000	0.0000	0.0000	1.6000	0.9000	0.9000	0.9000	0.6000
0.1000	0.1000	0.0000	1.3000	1.1000	1.1000				
70.	* 0.4000	0.1000	0.0000	0.0000	1.7000	1.2000	1.0000	1.0000	0.5000
0.1000	0.0000	0.0000	1.2000	1.1000	1.1000				
80.	* 0.6000	0.2000	0.1000	0.0000	1.8000	1.2000	1.0000	0.9000	0.2000
0.0000	0.0000	0.0000	1.0000	1.0000	1.0000				
90.	* 0.6000	0.2000	0.1000	0.0000	1.4000	1.3000	1.1000	0.9000	0.1000
0.0000	0.0000	0.0000	1.0000	1.0000	1.0000				
100.	* 0.5000	0.2000	0.1000	0.0000	1.6000	1.2000	1.1000	0.9000	0.1000
0.1000	0.1000	0.1000	1.0000	1.0000	1.0000				

110. * 0.4000 0.2000 0.1000 0.0000 1.4000 1.4000 1.2000 1.0000 0.1000 0.1000 0.1000 0.1000 1.1000 1.1000 1.1000

120. * 0.3000 0.2000 0.1000 0.0000 1.5000 1.4000 1.3000 1.1000 0.1000 0.1000 0.1000 0.1000 1.2000 1.2000 1.2000

130. * 0.3000 0.2000 0.2000 0.1000 1.6000 1.5000 1.5000 1.2000 0.1000 0.1000 0.1000 0.1000 1.3000 1.3000 1.3000

140. * 0.5000 0.4000 0.3000 0.1000 1.8000 1.7000 1.7000 1.4000 0.3000 0.3000 0.3000 0.3000 1.5000 1.5000 1.5000

150. * 1.0000 0.8000 0.7000 0.5000 1.8000 1.8000 1.8000 1.7000 0.8000 0.8000 0.8000 0.6000 1.5000 1.4000 1.4000

160. * 1.7000 1.6000 1.3000 1.0000 1.4000 1.4000 1.3000 1.4000 1.6000 1.6000 1.5000 1.3000 1.1000 1.0000 0.9000

170. * 2.2000 1.8000 1.7000 1.4000 0.9000 0.8000 0.7000 0.6000 2.0000 2.0000 2.0000 1.8000 0.5000 0.5000 0.5000

180. * 2.1000 1.5000 1.3000 1.3000 0.5000 0.4000 0.2000 0.2000 2.0000 2.0000 2.0000 1.8000 0.1000 0.1000 0.1000

190. * 1.7000 1.4000 1.3000 1.2000 0.5000 0.3000 0.2000 0.1000 1.6000 1.6000 1.6000 1.6000 0.1000 0.1000 0.1000

200. * 1.6000 1.3000 1.2000 1.1000 0.6000 0.3000 0.2000 0.1000 1.5000 1.5000 1.5000 1.5000 0.1000 0.1000 0.1000

210. * 1.5000 1.2000 1.0000 0.9000 0.7000 0.3000 0.2000 0.1000 1.4000 1.4000 1.4000 1.4000 0.2000 0.1000 0.1000

220. * 1.5000 1.2000 1.0000 0.9000 0.6000 0.1000 0.2000 0.1000 1.5000 1.3000 1.3000 1.3000 0.2000 0.0000 0.0000

230. * 1.4000 1.0000 0.9000 0.9000 0.4000 0.0000 0.0000 0.0000 1.4000 1.3000 1.2000 1.2000 0.4000 0.2000 0.0000

240. * 1.2000 0.9000 0.9000 0.9000 0.1000 0.0000 0.0000 0.0000 1.7000 1.4000 1.3000 1.2000 0.4000 0.2000 0.1000

250. * 1.0000 0.9000 0.9000 0.9000 0.1000 0.0000 0.0000 0.0000 1.7000 1.5000 1.4000 1.3000 0.4000 0.2000 0.1000

260. * 0.9000 0.9000 0.9000 0.9000 0.0000 0.0000 0.0000 0.0000 1.7000 1.4000 1.3000 1.2000 0.4000 0.2000 0.1000

270. * 0.9000 0.9000 0.9000 0.9000 0.0000 0.0000 0.0000 0.0000 1.7000 1.3000 1.3000 1.2000 0.3000 0.2000 0.1000

280. * 0.9000 0.9000 0.9000 0.9000 0.0000 0.1000 0.1000 0.1000 1.7000 1.5000 1.4000 1.3000 0.3000 0.2000 0.1000

290. * 0.9000 0.9000 0.9000 0.9000 0.1000 0.1000 0.1000 0.1000 1.8000 1.5000 1.5000 1.4000 0.4000 0.3000 0.2000

300. * 1.1000 1.1000 1.1000 1.1000 0.1000 0.1000 0.1000 0.1000 1.8000 1.6000 1.7000 1.5000 0.4000 0.3000 0.2000

310. * 1.2000 1.2000 1.2000 1.2000 0.1000 0.1000 0.1000 0.1000 1.9000 2.0000 1.8000 1.6000 0.3000 0.3000 0.2000

320. * 1.3000 1.3000 1.3000 1.2000 0.2000 0.2000 0.2000 0.2000 1.8000 1.9000 1.9000 1.9000 0.4000 0.4000 0.2000

330. * 1.3000 1.3000 1.2000 1.1000 0.5000 0.5000 0.5000 0.4000 2.0000 2.0000 2.0000 2.1000 0.6000 0.6000 0.5000

340. * 0.9000 0.9000 0.9000 0.7000 1.1000 1.1000 1.1000 1.0000 1.6000 1.4000 1.5000 1.7000 1.4000 1.2000 1.1000

```
 350.  *  0.4000  0.4000  0.4000  0.3000  1.5000  1.5000  1.5000  1.4000  0.9000
0.7000  0.7000  0.7000  1.7000  1.5000  1.5000
 360.  *  0.1000  0.1000  0.1000  0.1000  1.4000  1.5000  1.5000  1.3000  0.5000
0.3000  0.3000  0.2000  1.5000  1.5000  1.3000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  2.2000  1.8000  1.7000  1.4000  1.8000  1.8000  1.8000  1.7000  2.0000
2.0000  2.0000  2.1000  1.7000  1.5000  1.5000
 DEGR. *    170     170     170     170      80     150     150     150     170
170     170     330     350     360     350
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  1.2000  0.0000  0.0000  0.0000  0.7000  0.5000  0.2000  0.4000  0.4000
0.4000  1.0000  0.8000  0.6000
  20.  *  1.2000  0.0000  0.0000  0.0000  0.7000  0.4000  0.3000  0.4000  0.4000
0.4000  0.9000  0.9000  0.6000
  30.  *  1.1000  0.0000  0.0000  0.0000  0.7000  0.5000  0.3000  0.4000  0.4000
0.4000  0.9000  0.8000  0.6000
  40.  *  1.0000  0.0000  0.0000  0.0000  0.8000  0.6000  0.4000  0.5000  0.5000
0.5000  0.9000  1.0000  0.6000
  50.  *  1.0000  0.0000  0.0000  0.0000  1.1000  0.9000  0.7000  0.6000  0.6000
0.5000  0.9000  0.6000  0.4000
  60.  *  1.0000  0.2000  0.2000  0.1000  1.3000  1.2000  0.8000  0.6000  0.6000
0.6000  0.7000  0.5000  0.3000
  70.  *  1.1000  0.4000  0.4000  0.3000  1.4000  1.0000  0.7000  0.5000  0.5000
0.4000  0.7000  0.6000  0.2000
```

```
  80.  *  1.0000  0.6000  0.6000  0.5000  1.1000  0.9000  0.6000  0.2000  0.2000
0.2000  0.6000  0.5000  0.2000
  90.  *  1.0000  0.6000  0.6000  0.6000  1.0000  0.8000  0.6000  0.1000  0.1000
0.1000  0.6000  0.4000  0.2000
 100.  *  1.0000  0.5000  0.5000  0.5000  1.0000  0.9000  0.6000  0.0000  0.0000
0.0000  0.6000  0.5000  0.2000
 110.  *  1.1000  0.4000  0.4000  0.4000  1.1000  0.8000  0.5000  0.0000  0.0000
0.0000  0.7000  0.5000  0.2000
 120.  *  1.2000  0.3000  0.3000  0.3000  1.1000  0.9000  0.5000  0.0000  0.0000
0.0000  0.8000  0.6000  0.2000
 130.  *  1.2000  0.3000  0.3000  0.3000  1.1000  0.9000  0.5000  0.0000  0.0000
0.0000  0.8000  0.6000  0.0000
 140.  *  1.3000  0.3000  0.3000  0.3000  1.1000  0.9000  0.3000  0.0000  0.0000
0.0000  0.8000  0.6000  0.0000
 150.  *  1.1000  0.4000  0.3000  0.3000  1.0000  0.7000  0.3000  0.1000  0.0000
0.0000  0.6000  0.3000  0.0000
 160.  *  0.7000  0.7000  0.4000  0.3000  0.6000  0.4000  0.3000  0.4000  0.1000
0.0000  0.3000  0.1000  0.0000
 170.  *  0.3000  1.0000  0.7000  0.3000  0.4000  0.4000  0.4000  0.7000  0.4000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.1000  1.2000  0.9000  0.3000  0.4000  0.4000  0.4000  0.9000  0.6000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  1.2000  0.9000  0.5000  0.4000  0.4000  0.4000  0.9000  0.6000
0.2000  0.0000  0.0000  0.0000
 200.  *  0.1000  1.1000  0.8000  0.5000  0.5000  0.5000  0.5000  0.8000  0.5000
0.2000  0.0000  0.0000  0.0000
 210.  *  0.1000  1.0000  0.9000  0.6000  0.6000  0.5000  0.5000  0.8000  0.5000
0.2000  0.1000  0.1000  0.1000
 220.  *  0.0000  1.2000  1.0000  0.7000  0.6000  0.5000  0.5000  0.7000  0.5000
0.2000  0.2000  0.2000  0.1000
 230.  *  0.0000  1.3000  0.9000  0.8000  0.3000  0.3000  0.3000  1.0000  0.7000
0.3000  0.4000  0.4000  0.3000
 240.  *  0.0000  1.0000  0.9000  0.7000  0.1000  0.1000  0.1000  1.0000  0.8000
0.4000  0.4000  0.4000  0.4000
 250.  *  0.0000  0.7000  0.7000  0.5000  0.1000  0.1000  0.1000  1.0000  0.8000
0.7000  0.4000  0.4000  0.4000
 260.  *  0.0000  0.6000  0.4000  0.3000  0.0000  0.0000  0.0000  1.1000  1.0000
0.7000  0.4000  0.4000  0.4000
 270.  *  0.0000  0.5000  0.3000  0.2000  0.0000  0.0000  0.0000  1.1000  0.9000
0.7000  0.3000  0.3000  0.3000
 280.  *  0.0000  0.5000  0.3000  0.2000  0.0000  0.0000  0.0000  1.0000  0.8000
0.7000  0.3000  0.3000  0.3000
 290.  *  0.1000  0.5000  0.4000  0.2000  0.0000  0.0000  0.0000  1.0000  0.8000
0.6000  0.3000  0.3000  0.3000
 300.  *  0.1000  0.6000  0.5000  0.2000  0.0000  0.0000  0.0000  1.0000  0.9000
0.6000  0.3000  0.3000  0.3000
 310.  *  0.1000  0.7000  0.5000  0.1000  0.0000  0.0000  0.0000  1.1000  0.9000
0.5000  0.2000  0.2000  0.2000
```

```
 320.  *  0.1000  0.7000  0.5000  0.0000  0.0000  0.0000  0.0000  1.0000  0.8000
0.3000  0.2000  0.2000  0.2000
 330.  *  0.4000  0.5000  0.3000  0.0000  0.1000  0.0000  0.0000  0.9000  0.7000
0.4000  0.3000  0.3000  0.3000
 340.  *  1.2000  0.2000  0.0000  0.0000  0.4000  0.1000  0.0000  0.6000  0.4000
0.4000  0.7000  0.4000  0.3000
 350.  *  1.5000  0.0000  0.0000  0.0000  0.6000  0.4000  0.0000  0.4000  0.4000
0.4000  0.9000  0.7000  0.3000
 360.  *  1.3000  0.0000  0.0000  0.0000  0.8000  0.5000  0.1000  0.3000  0.3000
0.3000  1.0000  0.8000  0.4000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.5000  1.3000  1.0000  0.8000  1.4000  1.2000  0.8000  1.1000  1.0000
0.7000  1.0000  1.0000  0.6000
 DEGR. *    350     230     220     230      70      60      60     310     260
250      10      40      10

 THE HIGHEST CONCENTRATION OF   2.2000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
5,5,4,3,2200,2200,2200,2200,2200,2200,2200,2200,1037,1037,2200,2200,1037,1037,2200,2
200,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1200,-1200,
0,0,0,0,0,0,-10,-10,-10,-10,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',60.9,57.5,5.9
'N Leg, E Side - 25 m',48.4,128.4,5.9
'N Leg, E Side - 50 m',34.2,209.2,5.9
'N Leg, E Side-Midblk',-41.5,638.5,5.9
'N Leg, W Side-Corner',-76.9,33.1,5.9
'N Leg, W Side - 25 m',-89.4,104.1,5.9
'N Leg, W Side - 50 m',-103.7,184.8,5.9
'N Leg, W Side-Midblk',-179.4,614.2,5.9
'S Leg, E Side-Corner',79.0,-45.0,5.9
'S Leg, E Side - 25 m',91.5,-115.9,5.9
'S Leg, E Side - 50 m',105.8,-196.7,5.9
'S Leg, E Side-Midblk',181.5,-626.0,5.9
'S Leg, W Side-Corner',-58.9,-69.3,5.9
'S Leg, W Side - 25 m',-46.4,-140.2,5.9
'S Leg, W Side - 50 m',-32.1,-221.0,5.9
'S Leg, W Side-Midblk',43.6,-650.3,5.9
'E Leg, N Side - 25 m',131.9,70.0,5.9
'E Leg, N Side - 50 m',212.7,84.2,5.9
'E Leg, N Side-Midblk',642.0,159.9,5.9
'W Leg, N Side - 25 m',-147.9,20.6,5.9
'W Leg, N Side - 50 m',-228.6,6.4,5.9
'W Leg, N Side-Midblk',-658.0,-69.3,5.9
'E Leg, S Side - 25 m',149.9,-32.5,5.9
'E Leg, S Side - 50 m',230.7,-18.2,5.9
'E Leg, S Side-Midblk',660.0,57.5,5.9
'W Leg, S Side - 25 m',-129.8,-81.8,5.9
'W Leg, S Side - 50 m',-210.6,-96.0,5.9
'W Leg, S Side-Midblk',-639.9,-171.7,5.9
'2025 MD97 & Inner Lp Rmp (IS.28)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-30,-5,-238,1177,5185,2.73,0.0,79.7
2
'N Leg App - Queue','AG',-36,30,-238,1177,0.0,60.0,5
120,62,2,5185,3.92,1600,1,3
1
'N Leg Dep - FreeFlow','AG',30,5,-179,1187,5185,1.85,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,5,238,-1177,5185,1.82,0.0,79.7
2
'S Leg App - Queue','AG',38,-42,238,-1177,0.0,60.0,5
120,62,2,5185,3.92,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-30,-5,179,-1187,5185,3.89,0.0,79.7
1
'E Leg App - FreeFlow','AG',-3,18,1179,226,6600,1.89,0.0,55.7
1
'E Leg Dep - FreeFlow','AG',4,-24,1186,185,8800,1.89,0.0,67.7
1
'W Leg App - FreeFlow','AG',4,-24,-1178,-232,8800,1.89,0.0,67.7
2
'W Leg App - Queue','AG',-55,-34,-1178,-232,0.0,48.0,4
120,62,2,8800,3.77,1600,1,3
1
'W Leg Dep - FreeFlow','AG',-3,18,-1185,-191,6600,3.89,0.0,55.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 MD97 & Inner Lp Rmp (IS.28)

DATE : 2/ 8/19
TIME : 13:27:16

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-30.0	-5.0	-238.0	1177.0	*	1200.	350.	AG	5185.	2.7	0.0	79.7		
2. N Leg App - Queue	*	-36.0	30.0	-670.7	3634.2	*	3660.	350.	AG	27.	100.0	0.0	60.0	1.44	185.9
3. N Leg Dep - FreeFlow	*	30.0	5.0	-179.0	1187.0	*	1200.	350.	AG	5185.	1.9	0.0	79.7		
4. S Leg App - FreeFlow	*	30.0	5.0	238.0	-1177.0	*	1200.	170.	AG	5185.	1.8	0.0	79.7		
5. S Leg App - Queue	*	38.0	-42.0	673.1	-3646.1	*	3660.	170.	AG	27.	100.0	0.0	60.0	1.44	185.9
6. S Leg Dep - FreeFlow	*	-30.0	-5.0	179.0	-1187.0	*	1200.	170.	AG	5185.	3.9	0.0	79.7		
7. E Leg App - FreeFlow	*	-3.0	18.0	1179.0	226.0	*	1200.	80.	AG	6600.	1.9	0.0	55.7		
8. E Leg Dep - FreeFlow	*	4.0	-24.0	1186.0	185.0	*	1200.	80.	AG	8800.	1.9	0.0	67.7		
9. W Leg App - FreeFlow	*	4.0	-24.0	-1178.0	-232.0	*	1200.	260.	AG	8800.	1.9	0.0	67.7		
10. W Leg App - Queue	*	-55.0	-34.0	-15528.0	-2762.1	*	*****								

260. AG 21. 100.0 0.0 48.0 3.06 798.1
11. W Leg Dep - FreeFlow* -3.0 18.0 -1185.0 -191.0 * 1200.
260. AG 6600. 3.9 0.0 55.7

JOB: I-495 & I-270 MLS RUN: 2025 MD97 & Inner Lp Rmp (IS.28)

DATE : 2/ 8/19
TIME : 13:27:16

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	*	120	62	2.0	5185	1600	3.92	1	3
5. S Leg App - Queue	*	120	62	2.0	5185	1600	3.92	1	3
10. W Leg App - Queue	*	120	62	2.0	8800	1600	3.77	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	60.9	57.5	5.9	*
2. N Leg, E Side - 25 m	*	48.4	128.4	5.9	*
3. N Leg, E Side - 50 m	*	34.2	209.2	5.9	*
4. N Leg, E Side-Midblk	*	-41.5	638.5	5.9	*
5. N Leg, W Side-Corner	*	-76.9	33.1	5.9	*
6. N Leg, W Side - 25 m	*	-89.4	104.1	5.9	*
7. N Leg, W Side - 50 m	*	-103.7	184.8	5.9	*
8. N Leg, W Side-Midblk	*	-179.4	614.2	5.9	*
9. S Leg, E Side-Corner	*	79.0	-45.0	5.9	*
10. S Leg, E Side - 25 m	*	91.5	-115.9	5.9	*
11. S Leg, E Side - 50 m	*	105.8	-196.7	5.9	*
12. S Leg, E Side-Midblk	*	181.5	-626.0	5.9	*
13. S Leg, W Side-Corner	*	-58.9	-69.3	5.9	*
14. S Leg, W Side - 25 m	*	-46.4	-140.2	5.9	*

15. S Leg, W Side - 50 m *	-32.1	-221.0	5.9	*
16. S Leg, W Side-Midblk *	43.6	-650.3	5.9	*
17. E Leg, N Side - 25 m *	131.9	70.0	5.9	*
18. E Leg, N Side - 50 m *	212.7	84.2	5.9	*
19. E Leg, N Side-Midblk *	642.0	159.9	5.9	*
20. W Leg, N Side - 25 m *	-147.9	20.6	5.9	*
21. W Leg, N Side - 50 m *	-228.6	6.4	5.9	*
22. W Leg, N Side-Midblk *	-658.0	-69.3	5.9	*
23. E Leg, S Side - 25 m *	149.9	-32.5	5.9	*
24. E Leg, S Side - 50 m *	230.7	-18.2	5.9	*
25. E Leg, S Side-Midblk *	660.0	57.5	5.9	*
26. W Leg, S Side - 25 m *	-129.8	-81.8	5.9	*
27. W Leg, S Side - 50 m *	-210.6	-96.0	5.9	*
28. W Leg, S Side-Midblk *	-639.9	-171.7	5.9	*

JOB: I-495 & I-270 MLS RUN: 2025 MD97 & Inner Lp Rmp (IS.28)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.1000	0.1000	0.1000	0.1000	1.0000	1.0000	1.0000	0.9000	0.7000	0.4000	0.4000	0.2000	2.0000	1.4000	1.5000
20.	* 0.0000	0.0000	0.0000	0.0000	0.9000	0.9000	0.9000	0.8000	0.7000	0.4000	0.3000	0.2000	1.8000	1.5000	1.1000
30.	* 0.0000	0.0000	0.0000	0.0000	0.9000	0.8000	0.8000	0.8000	0.7000	0.5000	0.3000	0.2000	1.8000	1.3000	1.2000
40.	* 0.0000	0.0000	0.0000	0.0000	0.8000	0.7000	0.7000	0.7000	0.9000	0.5000	0.3000	0.1000	1.7000	1.1000	1.1000
50.	* 0.1000	0.0000	0.0000	0.0000	0.8000	0.7000	0.7000	0.7000	1.0000	0.5000	0.3000	0.0000	1.7000	1.3000	1.1000
60.	* 0.1000	0.0000	0.0000	0.0000	0.9000	0.7000	0.7000	0.7000	1.1000	0.5000	0.3000	0.0000	1.7000	1.2000	1.0000

```
  70.  *  0.4000  0.0000  0.0000  0.0000  1.3000  0.7000  0.7000  0.7000  1.2000
0.4000  0.2000  0.0000  1.9000  1.1000  0.9000
  80.  *  0.9000  0.2000  0.0000  0.0000  1.9000  0.9000  0.7000  0.7000  1.0000
0.2000  0.1000  0.0000  1.8000  1.1000  0.9000
  90.  *  1.1000  0.4000  0.2000  0.0000  1.9000  1.1000  0.9000  0.7000  0.4000
0.0000  0.0000  0.0000  1.1000  0.7000  0.7000
 100.  *  1.2000  0.5000  0.3000  0.0000  2.1000  1.2000  1.1000  0.7000  0.1000
0.0000  0.0000  0.0000  0.9000  0.7000  0.7000
 110.  *  0.9000  0.5000  0.3000  0.0000  2.1000  1.2000  1.1000  0.8000  0.1000
0.0000  0.0000  0.0000  0.9000  0.8000  0.8000
 120.  *  0.9000  0.4000  0.3000  0.2000  2.0000  1.1000  1.0000  0.9000  0.1000
0.0000  0.0000  0.0000  0.9000  0.8000  0.8000
 130.  *  0.8000  0.4000  0.3000  0.2000  1.9000  1.4000  1.1000  1.0000  0.0000
0.0000  0.0000  0.0000  0.9000  0.9000  0.9000
 140.  *  0.8000  0.4000  0.3000  0.2000  2.2000  1.6000  1.2000  1.0000  0.0000
0.0000  0.0000  0.0000  1.1000  1.1000  1.1000
 150.  *  0.7000  0.4000  0.3000  0.3000  2.2000  1.6000  1.4000  1.0000  0.1000
0.1000  0.1000  0.1000  1.2000  1.2000  1.2000
 160.  *  1.0000  0.7000  0.5000  0.4000  2.4000  1.8000  1.5000  1.1000  0.3000
0.3000  0.2000  0.2000  1.3000  1.3000  1.3000
 170.  *  1.4000  1.1000  0.9000  0.8000  2.1000  1.5000  1.2000  1.1000  0.7000
0.7000  0.7000  0.5000  0.9000  0.9000  0.9000
 180.  *  1.7000  1.3000  1.0000  1.0000  1.5000  0.9000  0.8000  0.6000  1.0000
1.0000  1.0000  0.8000  0.4000  0.4000  0.4000
 190.  *  1.7000  1.4000  1.3000  1.0000  1.1000  0.8000  0.5000  0.3000  0.9000
0.9000  0.9000  0.9000  0.2000  0.2000  0.2000
 200.  *  1.6000  1.2000  1.0000  1.0000  1.2000  0.6000  0.6000  0.3000  0.9000
0.9000  0.9000  0.9000  0.1000  0.1000  0.1000
 210.  *  1.4000  1.2000  1.1000  0.8000  1.3000  0.6000  0.5000  0.2000  0.8000
0.8000  0.8000  0.8000  0.1000  0.1000  0.1000
 220.  *  1.5000  1.2000  1.0000  0.8000  1.4000  0.6000  0.5000  0.2000  0.9000
0.8000  0.8000  0.8000  0.2000  0.1000  0.1000
 230.  *  1.6000  1.3000  1.0000  0.7000  1.5000  0.8000  0.5000  0.1000  0.9000
0.7000  0.7000  0.8000  0.1000  0.0000  0.0000
 240.  *  1.9000  1.2000  0.9000  0.5000  2.0000  0.8000  0.5000  0.0000  0.8000
0.6000  0.6000  0.6000  0.1000  0.0000  0.0000
 250.  *  2.3000  1.2000  0.8000  0.5000  2.0000  0.6000  0.3000  0.0000  1.1000
0.7000  0.7000  0.7000  0.5000  0.0000  0.0000
 260.  *  1.8000  0.9000  0.6000  0.5000  1.6000  0.3000  0.1000  0.0000  2.0000
1.0000  0.9000  0.7000  1.2000  0.2000  0.1000
 270.  *  1.1000  0.6000  0.5000  0.5000  0.8000  0.1000  0.0000  0.0000  2.2000
1.3000  1.0000  0.7000  1.6000  0.6000  0.2000
 280.  *  0.7000  0.5000  0.5000  0.4000  0.3000  0.0000  0.0000  0.0000  2.1000
1.3000  1.0000  0.6000  1.5000  0.7000  0.4000
 290.  *  0.5000  0.5000  0.5000  0.5000  0.1000  0.0000  0.0000  0.0000  1.8000
1.4000  1.2000  1.0000  1.4000  0.7000  0.5000
 300.  *  0.5000  0.5000  0.5000  0.5000  0.1000  0.0000  0.0000  0.0000  1.6000
1.2000  1.2000  1.0000  1.2000  0.7000  0.5000
```

```
 310.  *  0.6000  0.6000  0.6000  0.6000  0.1000  0.0000  0.0000  0.0000  1.4000
1.3000  1.1000  1.0000  1.1000  0.7000  0.5000
 320.  *  0.8000  0.8000  0.8000  0.8000  0.2000  0.1000  0.1000  0.1000  1.5000
1.4000  1.1000  1.1000  1.2000  0.7000  0.5000
 330.  *  0.8000  0.8000  0.8000  0.8000  0.1000  0.1000  0.1000  0.1000  1.6000
1.4000  1.3000  1.1000  1.3000  0.7000  0.5000
 340.  *  0.9000  0.9000  0.9000  0.7000  0.3000  0.3000  0.3000  0.3000  1.6000
1.2000  1.2000  1.1000  1.4000  1.0000  0.8000
 350.  *  0.5000  0.5000  0.5000  0.4000  0.8000  0.8000  0.8000  0.7000  1.3000
1.0000  0.9000  0.9000  1.9000  1.5000  1.3000
 360.  *  0.2000  0.2000  0.2000  0.2000  1.0000  1.0000  1.0000  0.9000  0.9000
0.6000  0.5000  0.3000  2.1000  1.7000  1.4000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  2.3000  1.4000  1.3000  1.0000  2.4000  1.8000  1.5000  1.1000  2.2000
1.4000  1.3000  1.1000  2.1000  1.7000  1.5000
 DEGR. *    250     190     190     190     160     160     160     170     270
320     330     320     360     360      10
```


JOB: I-495 & I-270 MLS RUN: 2025 MD97 & Inner Lp Rmp (IS.28)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  1.2000  0.0000  0.0000  0.0000  0.5000  0.3000  0.0000  0.7000  0.7000
0.7000  1.6000  1.4000  1.1000
  20.  *  1.3000  0.0000  0.0000  0.0000  0.5000  0.4000  0.0000  0.7000  0.7000
0.7000  1.5000  1.4000  1.1000
  30.  *  1.1000  0.0000  0.0000  0.0000  0.4000  0.4000  0.2000  0.7000  0.7000
0.7000  1.4000  1.4000  1.2000
```

```
  40.  *  1.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.2000  0.9000  0.9000
0.9000  1.5000  1.5000  1.3000
  50.  *  0.9000  0.1000  0.1000  0.1000  0.4000  0.3000  0.2000  1.0000  1.0000
1.0000  1.5000  1.6000  1.5000
  60.  *  0.7000  0.1000  0.1000  0.1000  0.5000  0.4000  0.3000  1.1000  1.1000
1.1000  1.7000  1.7000  1.6000
  70.  *  0.7000  0.4000  0.4000  0.3000  0.9000  0.9000  0.8000  1.2000  1.2000
1.0000  1.7000  1.6000  1.7000
  80.  *  0.8000  0.9000  0.8000  0.7000  1.6000  1.6000  1.6000  0.9000  0.9000
0.8000  1.4000  1.4000  1.3000
  90.  *  0.7000  1.1000  1.1000  1.0000  2.2000  2.0000  2.1000  0.4000  0.4000
0.3000  0.9000  0.8000  0.6000
 100.  *  0.7000  1.1000  1.1000  1.0000  1.9000  2.0000  1.8000  0.1000  0.1000
0.1000  0.5000  0.4000  0.2000
 110.  *  0.8000  0.9000  0.9000  0.9000  1.9000  1.9000  1.6000  0.1000  0.1000
0.1000  0.5000  0.4000  0.2000
 120.  *  0.8000  0.9000  0.9000  0.9000  1.8000  1.7000  1.5000  0.1000  0.1000
0.1000  0.5000  0.4000  0.2000
 130.  *  0.9000  0.8000  0.8000  0.8000  1.7000  1.6000  1.4000  0.0000  0.0000
0.0000  0.5000  0.3000  0.1000
 140.  *  1.1000  0.8000  0.8000  0.8000  1.7000  1.6000  1.3000  0.0000  0.0000
0.0000  0.5000  0.3000  0.1000
 150.  *  1.2000  0.7000  0.7000  0.7000  1.5000  1.3000  1.0000  0.0000  0.0000
0.0000  0.5000  0.3000  0.0000
 160.  *  1.1000  0.7000  0.7000  0.7000  1.5000  1.4000  1.1000  0.0000  0.0000
0.0000  0.4000  0.2000  0.0000
 170.  *  0.8000  0.9000  0.7000  0.7000  1.3000  1.2000  1.1000  0.2000  0.0000
0.0000  0.2000  0.1000  0.0000
 180.  *  0.4000  1.2000  0.9000  0.7000  1.1000  1.1000  1.1000  0.5000  0.2000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  1.3000  1.0000  0.7000  1.0000  1.0000  1.0000  0.6000  0.3000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.1000  1.3000  1.1000  0.9000  1.2000  1.2000  1.2000  0.5000  0.3000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.1000  1.3000  1.1000  0.9000  1.3000  1.3000  1.3000  0.5000  0.3000
0.1000  0.0000  0.0000  0.0000
 220.  *  0.1000  1.2000  1.2000  1.0000  1.4000  1.4000  1.4000  0.5000  0.4000
0.2000  0.1000  0.1000  0.1000
 230.  *  0.0000  1.4000  1.3000  1.0000  1.5000  1.5000  1.5000  0.5000  0.4000
0.2000  0.1000  0.1000  0.1000
 240.  *  0.0000  1.7000  1.5000  1.1000  1.9000  1.9000  1.8000  0.4000  0.4000
0.2000  0.1000  0.1000  0.1000
 250.  *  0.0000  1.9000  1.8000  1.4000  2.0000  2.0000  1.8000  0.8000  0.8000
0.6000  0.5000  0.5000  0.4000
 260.  *  0.0000  1.5000  1.3000  1.1000  1.6000  1.4000  1.3000  1.5000  1.3000
1.2000  1.1000  1.1000  1.0000
 270.  *  0.0000  0.9000  0.7000  0.6000  0.8000  0.7000  0.6000  1.7000  1.7000
1.3000  1.6000  1.6000  1.3000
```

```
 280.  *  0.0000  0.6000  0.4000  0.2000  0.3000  0.3000  0.2000  1.6000  1.5000
1.3000  1.5000  1.5000  1.5000
 290.  *  0.1000  0.5000  0.3000  0.2000  0.1000  0.1000  0.1000  1.4000  1.2000
1.1000  1.4000  1.4000  1.4000
 300.  *  0.3000  0.4000  0.2000  0.1000  0.1000  0.1000  0.1000  1.2000  1.0000
1.0000  1.2000  1.2000  1.2000
 310.  *  0.3000  0.4000  0.2000  0.1000  0.1000  0.1000  0.1000  1.0000  0.9000
0.8000  1.1000  1.1000  1.1000
 320.  *  0.3000  0.4000  0.2000  0.0000  0.1000  0.1000  0.0000  1.1000  0.9000
0.7000  1.1000  1.1000  1.1000
 330.  *  0.3000  0.4000  0.2000  0.0000  0.0000  0.0000  0.0000  1.1000  0.9000
0.7000  1.1000  1.1000  1.1000
 340.  *  0.6000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  1.0000  0.9000
0.7000  1.1000  1.1000  1.1000
 350.  *  1.3000  0.2000  0.0000  0.0000  0.1000  0.0000  0.0000  0.9000  0.7000
0.7000  1.2000  1.1000  1.1000
 360.  *  1.3000  0.0000  0.0000  0.0000  0.4000  0.1000  0.0000  0.7000  0.7000
0.7000  1.5000  1.3000  1.1000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.3000  1.9000  1.8000  1.4000  2.2000  2.0000  2.1000  1.7000  1.7000
1.3000  1.7000  1.7000  1.7000
 DEGR. *     20     250     250     250      90      90      90     270     270
270      60      60      70

 THE HIGHEST CONCENTRATION OF   2.4000 PPM OCCURRED AT RECEPTOR     5.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
5,4,1,3,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.75,2200,2200,1036.8,1036
.75,2200,2200,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1
200,-1200,0,0,0,0,0,0,-5,-5,-10,30,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',69.1,13.2,5.9
'N Leg, E Side - 25 m',62.8,85.0,5.9
'N Leg, E Side - 50 m',55.7,166.7,5.9
'N Leg, E Side-Midblk',17.7,601.0,5.9
'N Leg, W Side-Corner',-61.4,35.9,5.9
'N Leg, W Side - 25 m',-67.6,107.6,5.9
'N Leg, W Side - 50 m',-74.8,189.3,5.9
'N Leg, W Side-Midblk',-112.8,623.6,5.9
'S Leg, E Side-Corner',76.3,-69.5,5.9
'S Leg, E Side - 25 m',82.6,-141.2,5.9
'S Leg, E Side - 50 m',89.8,-222.9,5.9
'S Leg, E Side-Midblk',127.8,-657.2,5.9
'S Leg, W Side-Corner',-55.4,-32.1,5.9
'S Leg, W Side - 25 m',-49.1,-103.9,5.9
'S Leg, W Side - 50 m',-42.0,-185.6,5.9
'S Leg, W Side-Midblk',-4.0,-619.9,5.9
'E Leg, N Side - 25 m',131.5,-22.8,5.9
'E Leg, N Side - 50 m',202.5,-63.8,5.9
'E Leg, N Side-Midblk',580.1,-281.8,5.9
'W Leg, N Side - 25 m',-132.3,23.4,5.9
'W Leg, N Side - 50 m',-213.1,9.1,5.9
'W Leg, N Side-Midblk',-642.4,-66.6,5.9
'E Leg, S Side - 25 m',138.7,-105.5,5.9
'E Leg, S Side - 50 m',209.8,-146.5,5.9
'E Leg, S Side-Midblk',587.3,-364.5,5.9
'W Leg, S Side - 25 m',-126.3,-44.6,5.9
'W Leg, S Side - 50 m',-207.1,-58.9,5.9
'W Leg, S Side-Midblk',-636.4,-134.6,5.9
'2025 MD97 & Outer Loop Ramp (IS.29)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-24,-2,-128,1193,4147,1.85,0.0,67.7
2
'N Leg App - Queue','AG',-27,34,-128,1193,0.0,48.0,4
120,62,2,4147,3.92,1600,1,3
1
'N Leg Dep - FreeFlow','AG',30,3,-75,1198,5184,4.70,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,3,134,-1193,5184,4.70,0.0,79.7
2
'S Leg App - Queue','AG',31,-9,134,-1193,0.0,60.0,5
120,62,2,5184,3.92,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-24,-2,81,-1198,4147,1.85,0.0,67.7
1
'E Leg App - FreeFlow','AG',3,19,1048,-584,6600,3.02,0.0,55.7
2
'E Leg App - Queue','AG',61,-14,1048,-584,0.0,36.0,3
120,62,2,6600,3.77,1600,1,3
1
'E Leg Dep - FreeFlow','AG',-1,-6,1036,-605,2200,3.02,0.0,31.7
1
'W Leg App - FreeFlow','AG',-1,-6,-1181,-214,2200,2.03,0.0,31.7
1
'W Leg Dep - FreeFlow','AG',3,19,-1185,-191,6600,2.03,0.0,55.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 MD97 & Outer Loop Ramp (IS.29)

DATE : 2/28/19
TIME : 10:43:42

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-24.0	-2.0	-128.0	1193.0	*	1200.	355.	AG	4147.	1.9	0.0	67.7		
2. N Leg App - Queue	*	-27.0	34.0	-343.8	3669.5	*	3649.	355.	AG	22.	100.0	0.0	48.0	1.44	185.4
3. N Leg Dep - FreeFlow	*	30.0	3.0	-75.0	1198.0	*	1200.	355.	AG	5184.	4.7	0.0	79.7		
4. S Leg App - FreeFlow	*	30.0	3.0	134.0	-1193.0	*	1201.	175.	AG	5184.	4.7	0.0	79.7		
5. S Leg App - Queue	*	31.0	-9.0	347.3	-3644.5	*	3649.	175.	AG	27.	100.0	0.0	60.0	1.44	185.4
6. S Leg Dep - FreeFlow	*	-24.0	-2.0	81.0	-1198.0	*	1201.	175.	AG	4147.	1.9	0.0	67.7		
7. E Leg App - FreeFlow	*	3.0	19.0	1048.0	-584.0	*	1206.	120.	AG	6600.	3.0	0.0	55.7		
8. E Leg App - Queue	*	61.0	-14.0	13666.7	-7871.4	*	*****	120.	AG	16.	100.0	0.0	36.0	3.06	798.1
9. E Leg Dep - FreeFlow	*	-1.0	-6.0	1036.0	-605.0	*	1198.	120.	AG	2200.	3.0	0.0	31.7		
10. W Leg App - FreeFlow	*	-1.0	-6.0	-1181.0	-214.0	*	1198.								

260. AG 2200. 2.0 0.0 31.7
     11. W Leg Dep - FreeFlow* 3.0 19.0 -1185.0 -191.0 * 1206.
260. AG 6600. 2.0 0.0 55.7

JOB: I-495 & I-270 MLS RUN: 2025 MD97 & Outer Loop Ramp (IS.29)

DATE : 2/28/19
TIME : 10:43:42

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC	SIGNAL TYPE	ARRIVAL RATE (gm/hr)
2. N Leg App - Queue	*	120	62	2.0	4147	1600	3.92	1	3
5. S Leg App - Queue	*	120	62	2.0	5184	1600	3.92	1	3
8. E Leg App - Queue	*	120	62	2.0	6600	1600	3.77	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	69.1	13.2	5.9	*
2. N Leg, E Side - 25 m	*	62.8	85.0	5.9	*
3. N Leg, E Side - 50 m	*	55.7	166.7	5.9	*
4. N Leg, E Side-Midblk	*	17.7	601.0	5.9	*
5. N Leg, W Side-Corner	*	-61.4	35.9	5.9	*
6. N Leg, W Side - 25 m	*	-67.6	107.6	5.9	*
7. N Leg, W Side - 50 m	*	-74.8	189.3	5.9	*
8. N Leg, W Side-Midblk	*	-112.8	623.6	5.9	*
9. S Leg, E Side-Corner	*	76.3	-69.5	5.9	*
10. S Leg, E Side - 25 m	*	82.6	-141.2	5.9	*
11. S Leg, E Side - 50 m	*	89.8	-222.9	5.9	*
12. S Leg, E Side-Midblk	*	127.8	-657.2	5.9	*
13. S Leg, W Side-Corner	*	-55.4	-32.1	5.9	*
14. S Leg, W Side - 25 m	*	-49.1	-103.9	5.9	*

15. S Leg, W Side - 50 m *	-42.0	-185.6	5.9	*
16. S Leg, W Side-Midblk *	-4.0	-619.9	5.9	*
17. E Leg, N Side - 25 m *	131.5	-22.8	5.9	*
18. E Leg, N Side - 50 m *	202.5	-63.8	5.9	*
19. E Leg, N Side-Midblk *	580.1	-281.8	5.9	*
20. W Leg, N Side - 25 m *	-132.3	23.4	5.9	*
21. W Leg, N Side - 50 m *	-213.1	9.1	5.9	*
22. W Leg, N Side-Midblk *	-642.4	-66.6	5.9	*
23. E Leg, S Side - 25 m *	138.7	-105.5	5.9	*
24. E Leg, S Side - 50 m *	209.8	-146.5	5.9	*
25. E Leg, S Side-Midblk *	587.3	-364.5	5.9	*
26. W Leg, S Side - 25 m *	-126.3	-44.6	5.9	*
27. W Leg, S Side - 50 m *	-207.1	-58.9	5.9	*
28. W Leg, S Side-Midblk *	-636.4	-134.6	5.9	*

JOB: I-495 & I-270 MLS RUN: 2025 MD97 & Outer Loop Ramp (IS.29)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR) *	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10. *	0.3000	0.3000	0.3000	0.3000	1.1000	1.1000	1.1000	1.0000	1.0000	0.7000	0.6000	0.4000	1.5000	1.3000	1.2000
20. *	0.1000	0.1000	0.1000	0.1000	1.0000	1.0000	1.0000	0.9000	0.8000	0.5000	0.4000	0.2000	1.6000	1.1000	1.0000
30. *	0.1000	0.1000	0.1000	0.1000	0.9000	0.9000	0.9000	0.9000	0.8000	0.5000	0.4000	0.2000	1.4000	1.1000	1.1000
40. *	0.1000	0.1000	0.1000	0.1000	0.9000	0.9000	0.9000	0.9000	0.8000	0.5000	0.4000	0.2000	1.2000	1.1000	1.1000
50. *	0.1000	0.1000	0.1000	0.1000	0.8000	0.8000	0.8000	0.8000	0.8000	0.5000	0.4000	0.2000	1.5000	1.0000	1.0000
60. *	0.0000	0.0000	0.0000	0.0000	0.9000	0.8000	0.8000	0.8000	0.7000	0.4000	0.3000	0.1000	1.4000	1.0000	1.0000

```
  70.  *  0.1000  0.0000  0.0000  0.0000  0.8000  0.7000  0.7000  0.7000  0.9000
0.4000  0.3000  0.1000  1.3000  1.0000  0.9000
  80.  *  0.1000  0.0000  0.0000  0.0000  0.9000  0.7000  0.7000  0.7000  0.9000
0.4000  0.3000  0.1000  1.3000  1.0000  0.9000
  90.  *  0.1000  0.0000  0.0000  0.0000  1.1000  0.7000  0.7000  0.7000  1.0000
0.5000  0.4000  0.0000  1.4000  1.0000  0.9000
 100.  *  0.2000  0.0000  0.0000  0.0000  1.6000  0.7000  0.7000  0.7000  1.3000
0.5000  0.3000  0.0000  1.3000  1.0000  0.9000
 110.  *  0.5000  0.1000  0.0000  0.0000  1.9000  0.9000  0.8000  0.8000  1.4000
0.4000  0.3000  0.0000  1.4000  1.1000  0.9000
 120.  *  1.2000  0.3000  0.2000  0.1000  2.0000  1.4000  1.0000  0.8000  1.1000
0.4000  0.2000  0.1000  1.1000  0.8000  0.8000
 130.  *  1.5000  0.6000  0.4000  0.1000  1.9000  1.7000  1.3000  0.9000  0.5000
0.1000  0.1000  0.1000  1.0000  0.9000  0.9000
 140.  *  1.4000  0.6000  0.5000  0.2000  1.7000  1.6000  1.3000  1.0000  0.3000
0.1000  0.1000  0.1000  0.9000  0.9000  0.9000
 150.  *  1.3000  0.6000  0.5000  0.2000  1.5000  1.5000  1.2000  1.0000  0.1000
0.1000  0.1000  0.1000  1.0000  1.0000  1.0000
 160.  *  1.3000  0.8000  0.7000  0.4000  1.6000  1.3000  1.3000  1.2000  0.3000
0.3000  0.3000  0.3000  1.1000  1.1000  1.1000
 170.  *  1.6000  1.4000  1.2000  1.0000  1.4000  1.1000  1.2000  1.1000  0.9000
0.8000  0.8000  0.7000  0.9000  0.9000  0.9000
 180.  *  2.0000  1.8000  1.7000  1.5000  1.0000  0.6000  0.6000  0.4000  1.4000
1.4000  1.3000  1.2000  0.5000  0.5000  0.5000
 190.  *  2.2000  1.9000  1.5000  1.3000  0.6000  0.4000  0.2000  0.2000  1.5000
1.5000  1.5000  1.3000  0.1000  0.1000  0.1000
 200.  *  2.0000  1.6000  1.5000  1.3000  0.5000  0.3000  0.1000  0.1000  1.3000
1.3000  1.3000  1.3000  0.0000  0.0000  0.0000
 210.  *  1.8000  1.4000  1.2000  1.1000  0.6000  0.3000  0.1000  0.1000  1.1000
1.1000  1.1000  1.1000  0.0000  0.0000  0.0000
 220.  *  1.7000  1.3000  1.1000  1.0000  0.6000  0.3000  0.2000  0.1000  1.0000
1.0000  1.0000  1.0000  0.0000  0.0000  0.0000
 230.  *  1.6000  1.2000  1.1000  0.9000  0.7000  0.3000  0.2000  0.0000  0.9000
0.9000  0.9000  0.9000  0.0000  0.0000  0.0000
 240.  *  1.7000  1.2000  1.0000  0.7000  0.8000  0.4000  0.2000  0.0000  0.8000
0.8000  0.8000  0.8000  0.1000  0.0000  0.0000
 250.  *  1.9000  1.2000  0.9000  0.7000  0.9000  0.3000  0.1000  0.0000  0.8000
0.8000  0.8000  0.8000  0.3000  0.0000  0.0000
 260.  *  2.3000  1.2000  0.9000  0.8000  0.8000  0.1000  0.0000  0.0000  1.1000
1.0000  0.9000  0.9000  0.7000  0.1000  0.0000
 270.  *  2.0000  0.9000  0.8000  0.8000  0.3000  0.0000  0.0000  0.0000  1.2000
1.0000  1.0000  0.9000  0.9000  0.3000  0.1000
 280.  *  1.6000  0.7000  0.7000  0.7000  0.1000  0.0000  0.0000  0.0000  1.3000
1.1000  0.9000  0.8000  0.8000  0.3000  0.1000
 290.  *  1.2000  0.7000  0.7000  0.7000  0.1000  0.0000  0.0000  0.0000  1.2000
1.1000  0.9000  0.8000  0.7000  0.3000  0.2000
 300.  *  1.2000  0.8000  0.8000  0.8000  0.0000  0.0000  0.0000  0.0000  1.6000
1.1000  1.0000  1.0000  0.6000  0.3000  0.1000
```

```
 310.  *  1.1000  0.9000  0.9000  0.9000  0.0000  0.0000  0.0000  0.0000  1.9000
1.1000  1.1000  1.1000  0.6000  0.3000  0.1000
 320.  *  1.1000  1.0000  1.0000  1.0000  0.0000  0.0000  0.0000  0.0000  2.0000
1.4000  1.2000  1.2000  0.6000  0.3000  0.1000
 330.  *  1.3000  1.2000  1.2000  1.2000  0.0000  0.0000  0.0000  0.0000  2.2000
1.7000  1.5000  1.4000  0.4000  0.3000  0.1000
 340.  *  1.5000  1.4000  1.4000  1.2000  0.1000  0.1000  0.1000  0.1000  2.3000
1.8000  1.7000  1.4000  0.5000  0.5000  0.2000
 350.  *  1.4000  1.3000  1.3000  1.1000  0.6000  0.6000  0.6000  0.4000  2.2000
1.7000  1.7000  1.7000  1.1000  0.8000  0.6000
 360.  *  0.8000  0.8000  0.7000  0.7000  0.9000  0.9000  0.9000  0.8000  1.6000
1.3000  1.2000  0.9000  1.3000  1.2000  1.0000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  2.3000  1.9000  1.7000  1.5000  2.0000  1.7000  1.3000  1.2000  2.3000
1.8000  1.7000  1.7000  1.6000  1.3000  1.2000
 DEGR. *    260     190     180     180     120     130     130     160     340
340     340     350      20      10      10
```


JOB: I-495 & I-270 MLS RUN: 2025 MD97 & Outer Loop Ramp (IS.29)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  1.2000  0.0000  0.0000  0.0000  0.4000  0.3000  0.0000  0.7000  0.7000
0.7000  0.9000  0.7000  0.4000
  20.  *  1.0000  0.0000  0.0000  0.0000  0.5000  0.4000  0.0000  0.7000  0.7000
0.7000  1.1000  1.0000  0.6000
  30.  *  1.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.1000  0.7000  0.7000
0.7000  1.0000  1.0000  0.7000
```

```
  40.  *  1.0000  0.0000  0.0000  0.0000  0.4000  0.3000  0.1000  0.7000  0.7000
0.7000  1.0000  0.9000  0.7000
  50.  *  0.8000  0.0000  0.0000  0.0000  0.5000  0.4000  0.2000  0.7000  0.7000
0.7000  1.0000  1.0000  0.8000
  60.  *  0.8000  0.0000  0.0000  0.0000  0.5000  0.4000  0.2000  0.7000  0.7000
0.7000  1.0000  1.0000  1.0000
  70.  *  0.7000  0.1000  0.1000  0.1000  0.6000  0.5000  0.4000  0.9000  0.9000
0.9000  1.2000  1.0000  0.9000
  80.  *  0.7000  0.1000  0.1000  0.1000  0.9000  0.8000  0.9000  0.9000  0.9000
0.9000  1.1000  0.9000  0.7000
  90.  *  0.6000  0.1000  0.1000  0.1000  1.1000  1.1000  1.0000  1.0000  1.0000
1.0000  0.9000  0.8000  0.4000
 100.  *  0.6000  0.2000  0.2000  0.2000  1.6000  1.5000  1.0000  1.3000  1.3000
1.3000  0.8000  0.7000  0.3000
 110.  *  0.7000  0.5000  0.5000  0.5000  1.6000  1.4000  0.9000  1.4000  1.4000
1.2000  0.8000  0.6000  0.1000
 120.  *  0.7000  1.2000  1.2000  1.1000  1.4000  1.2000  0.7000  1.0000  1.0000
0.9000  0.7000  0.4000  0.1000
 130.  *  0.9000  1.5000  1.5000  1.3000  1.2000  0.9000  0.7000  0.4000  0.4000
0.4000  0.4000  0.3000  0.1000
 140.  *  0.9000  1.3000  1.3000  1.3000  0.9000  0.9000  0.6000  0.2000  0.2000
0.1000  0.4000  0.4000  0.1000
 150.  *  0.9000  1.2000  1.2000  1.2000  1.0000  0.9000  0.5000  0.0000  0.0000
0.0000  0.5000  0.4000  0.0000
 160.  *  1.0000  1.0000  1.0000  1.0000  1.0000  0.8000  0.5000  0.0000  0.0000
0.0000  0.4000  0.3000  0.0000
 170.  *  0.8000  1.0000  0.9000  0.9000  0.8000  0.6000  0.5000  0.1000  0.0000
0.0000  0.3000  0.1000  0.0000
 180.  *  0.3000  1.3000  0.9000  0.7000  0.6000  0.5000  0.5000  0.6000  0.2000
0.0000  0.1000  0.0000  0.0000
 190.  *  0.1000  1.4000  1.1000  0.7000  0.5000  0.5000  0.5000  0.7000  0.4000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  1.4000  1.1000  0.7000  0.5000  0.5000  0.5000  0.7000  0.4000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  1.3000  1.1000  0.8000  0.6000  0.6000  0.6000  0.6000  0.4000
0.1000  0.0000  0.0000  0.0000
 220.  *  0.0000  1.3000  1.1000  0.8000  0.6000  0.6000  0.6000  0.6000  0.4000
0.1000  0.0000  0.0000  0.0000
 230.  *  0.0000  1.2000  1.1000  0.8000  0.7000  0.7000  0.7000  0.5000  0.4000
0.1000  0.0000  0.0000  0.0000
 240.  *  0.0000  1.2000  1.1000  0.8000  0.8000  0.8000  0.8000  0.5000  0.4000
0.1000  0.1000  0.1000  0.1000
 250.  *  0.0000  1.4000  1.3000  1.0000  0.9000  0.9000  0.8000  0.5000  0.4000
0.1000  0.3000  0.3000  0.2000
 260.  *  0.0000  1.7000  1.5000  1.1000  0.8000  0.8000  0.7000  0.6000  0.4000
0.1000  0.7000  0.7000  0.5000
 270.  *  0.0000  1.8000  1.7000  1.3000  0.3000  0.3000  0.3000  0.8000  0.5000
0.1000  0.9000  0.9000  0.8000
```

```
 280.  *  0.0000  1.8000  1.7000  1.5000  0.1000  0.1000  0.1000  0.9000  0.7000
0.3000  0.8000  0.8000  0.8000
 290.  *  0.0000  1.3000  1.4000  1.6000  0.1000  0.1000  0.1000  1.0000  0.8000
0.6000  0.7000  0.7000  0.7000
 300.  *  0.1000  1.1000  1.2000  1.2000  0.0000  0.0000  0.0000  1.2000  1.0000
1.0000  0.6000  0.6000  0.6000
 310.  *  0.1000  0.8000  0.7000  0.6000  0.0000  0.0000  0.0000  1.6000  1.6000
1.3000  0.6000  0.6000  0.6000
 320.  *  0.1000  0.7000  0.6000  0.3000  0.0000  0.0000  0.0000  1.6000  1.5000
1.4000  0.6000  0.6000  0.6000
 330.  *  0.1000  0.7000  0.5000  0.2000  0.0000  0.0000  0.0000  1.6000  1.4000
1.1000  0.4000  0.4000  0.4000
 340.  *  0.2000  0.7000  0.5000  0.2000  0.0000  0.0000  0.0000  1.5000  1.3000
1.0000  0.4000  0.4000  0.4000
 350.  *  0.4000  0.6000  0.3000  0.1000  0.1000  0.0000  0.0000  1.4000  1.1000
0.9000  0.7000  0.6000  0.6000
 360.  *  1.0000  0.2000  0.1000  0.0000  0.3000  0.1000  0.0000  0.9000  0.8000
0.7000  0.7000  0.5000  0.4000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.2000  1.8000  1.7000  1.6000  1.6000  1.5000  1.0000  1.6000  1.6000
1.4000  1.2000  1.0000  1.0000
 DEGR. *     10     280     270     290     100     100      90     310     310
320      70      20      60

 THE HIGHEST CONCENTRATION OF   2.3000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
7,6,2,2,2200,2200,2200,2200,2200,2200,2200,2200,1036.85714285714,1036.83333333333,22
00,2200,1036.85714285714,1036.83333333333,2200,2200,12,12,12,12,10,10,10,10,0,0,-120
0,1200,0,0,1200,-1200,-1200,1200,0,0,1200,-1200,0,0,0,0,0,0,-5,5,10,0,0,0,0,0,0,0,0,
0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',97.3,34.0,5.9
'N Leg, E Side - 25 m',103.6,105.7,5.9
'N Leg, E Side - 50 m',110.8,187.5,5.9
'N Leg, E Side-Midblk',148.8,621.8,5.9
'N Leg, W Side-Corner',-78.1,48.3,5.9
'N Leg, W Side - 25 m',-71.8,120.0,5.9
'N Leg, W Side - 50 m',-64.7,201.7,5.9
'N Leg, W Side-Midblk',-26.7,636.0,5.9
'S Leg, E Side-Corner',97.3,-34.0,5.9
'S Leg, E Side - 25 m',103.6,-105.7,5.9
'S Leg, E Side - 50 m',110.8,-187.5,5.9
'S Leg, E Side-Midblk',148.8,-621.8,5.9
'S Leg, W Side-Corner',-80.5,-20.3,5.9
'S Leg, W Side - 25 m',-74.3,-92.1,5.9
'S Leg, W Side - 50 m',-67.1,-173.8,5.9
'S Leg, W Side-Midblk',-29.1,-608.1,5.9
'E Leg, N Side - 25 m',169.4,34.0,5.9
'E Leg, N Side - 50 m',251.4,34.0,5.9
'E Leg, N Side-Midblk',687.3,34.0,5.9
'W Leg, N Side - 25 m',-149.0,60.8,5.9
'W Leg, N Side - 50 m',-229.8,75.0,5.9
'W Leg, N Side-Midblk',-659.1,150.7,5.9
'E Leg, S Side - 25 m',169.4,-34.0,5.9
'E Leg, S Side - 50 m',251.4,-34.0,5.9
'E Leg, S Side-Midblk',687.3,-34.0,5.9
'W Leg, S Side - 25 m',-151.5,-7.8,5.9
'W Leg, S Side - 50 m',-232.2,6.4,5.9
'W Leg, S Side-Midblk',-661.6,82.1,5.9
'2025 MD187 & I-270 SB Ramp (IS.46)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-36,0,69,1199,6221,1.7,0.0,91.7
2
'N Leg App - Queue','AG',-34,27,69,1199,0.0,72.0,6
120,62,2,6221,3.92,1600,1,3
1
'N Leg Dep - FreeFlow','AG',42,0,146,1192,7258,2.15,0.0,103.7
1
'S Leg App - FreeFlow','AG',42,0,146,-1192,7258,2.15,0.0,103.7
2
'S Leg App - Queue','AG',44,-20,146,-1192,0.0,84.0,7
120,62,2,7258,3.92,1600,1,3
```

```
1
'S Leg Dep - FreeFlow','AG',-36,0,69,-1199,6221,1.7,0.0,91.7
1
'E Leg App - FreeFlow','AG',1,12,1200,12,4400,1.54,0.0,43.7
1
'E Leg Dep - FreeFlow','AG',-1,-12,1200,-12,4400,1.54,0.0,43.7
1
'W Leg App - FreeFlow','AG',-1,-12,-1184,197,4400,4.08,0.0,43.7
2
'W Leg App - Queue','AG',-73,1,-1184,197,0.0,24.0,2
120,62,2,4400,3.77,1600,1,3
1
'W Leg Dep - FreeFlow','AG',1,12,-1180,220,4400,4.08,0.0,43.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045

JOB: I-495 & I-270 MLS RUN: 2025 MD187 & I-270 SB Ramp (IS.46)

DATE : 2/ 8/19
TIME : 14: 5:57

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-36.0	0.0	69.0	1199.0	*	1204.	5.	AG	6221.	1.7	0.0	91.7		
2. N Leg App - Queue	*	-34.0	27.0	285.5	3662.3	*	3649.	5.	AG	33.	100.0	0.0	72.0	1.44	185.4
3. N Leg Dep - FreeFlow	*	42.0	0.0	146.0	1192.0	*	1197.	5.	AG	7258.	2.2	0.0	****		
4. S Leg App - FreeFlow	*	42.0	0.0	146.0	-1192.0	*	1197.	175.	AG	7258.	2.2	0.0	****		
5. S Leg App - Queue	*	44.0	-20.0	360.4	-3655.5	*	3649.	175.	AG	38.	100.0	0.0	84.0	1.44	185.4
6. S Leg Dep - FreeFlow	*	-36.0	0.0	69.0	-1199.0	*	1204.	175.	AG	6221.	1.7	0.0	91.7		
7. E Leg App - FreeFlow	*	1.0	12.0	1200.0	12.0	*	1199.	90.	AG	4400.	1.5	0.0	43.7		
8. E Leg Dep - FreeFlow	*	-1.0	-12.0	1200.0	-12.0	*	1201.	90.	AG	4400.	1.5	0.0	43.7		
9. W Leg App - FreeFlow	*	-1.0	-12.0	-1184.0	197.0	*	1201.	280.	AG	4400.	4.1	0.0	43.7		
10. W Leg App - Queue	*	-73.0	1.0	-15545.7	2730.7	*	*****								

280. AG 10. 100.0 0.0 24.0 3.06 798.1
11. W Leg Dep - FreeFlow* 1.0 12.0 -1180.0 220.0 * 1199.
280. AG 4400. 4.1 0.0 43.7

JOB: I-495 & I-270 MLS RUN: 2025 MD187 & I-270 SB Ramp (IS.46)

DATE : 2/ 8/19
TIME : 14: 5:57

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	*	120	62	2.0	6221	1600	3.92	1	3
5. S Leg App - Queue	*	120	62	2.0	7258	1600	3.92	1	3
10. W Leg App - Queue	*	120	62	2.0	4400	1600	3.77	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	97.3	34.0	5.9	*
2. N Leg, E Side - 25 m	*	103.6	105.7	5.9	*
3. N Leg, E Side - 50 m	*	110.8	187.5	5.9	*
4. N Leg, E Side-Midblk	*	148.8	621.8	5.9	*
5. N Leg, W Side-Corner	*	-78.1	48.3	5.9	*
6. N Leg, W Side - 25 m	*	-71.8	120.0	5.9	*
7. N Leg, W Side - 50 m	*	-64.7	201.7	5.9	*
8. N Leg, W Side-Midblk	*	-26.7	636.0	5.9	*
9. S Leg, E Side-Corner	*	97.3	-34.0	5.9	*
10. S Leg, E Side - 25 m	*	103.6	-105.7	5.9	*
11. S Leg, E Side - 50 m	*	110.8	-187.5	5.9	*
12. S Leg, E Side-Midblk	*	148.8	-621.8	5.9	*
13. S Leg, W Side-Corner	*	-80.5	-20.3	5.9	*
14. S Leg, W Side - 25 m	*	-74.3	-92.1	5.9	*

15. S Leg, W Side - 50 m *	-67.1	-173.8	5.9	*
16. S Leg, W Side-Midblk *	-29.1	-608.1	5.9	*
17. E Leg, N Side - 25 m *	169.4	34.0	5.9	*
18. E Leg, N Side - 50 m *	251.4	34.0	5.9	*
19. E Leg, N Side-Midblk *	687.3	34.0	5.9	*
20. W Leg, N Side - 25 m *	-149.0	60.8	5.9	*
21. W Leg, N Side - 50 m *	-229.8	75.0	5.9	*
22. W Leg, N Side-Midblk *	-659.1	150.7	5.9	*
23. E Leg, S Side - 25 m *	169.4	-34.0	5.9	*
24. E Leg, S Side - 50 m *	251.4	-34.0	5.9	*
25. E Leg, S Side-Midblk *	687.3	-34.0	5.9	*
26. W Leg, S Side - 25 m *	-151.5	-7.8	5.9	*
27. W Leg, S Side - 50 m *	-232.2	6.4	5.9	*
28. W Leg, S Side-Midblk *	-661.6	82.1	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) * 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.4000	0.4000	0.4000	0.3000	0.8000	0.8000	0.8000	0.6000	0.7000	0.5000	0.4000	0.1000	1.8000	1.3000	1.1000
20.	* 0.2000	0.2000	0.2000	0.1000	0.9000	0.9000	0.9000	0.8000	0.5000	0.3000	0.3000	0.1000	1.9000	1.4000	1.0000
30.	* 0.1000	0.1000	0.1000	0.1000	0.8000	0.8000	0.8000	0.8000	0.4000	0.2000	0.2000	0.0000	1.7000	1.1000	0.7000
40.	* 0.0000	0.0000	0.0000	0.0000	0.8000	0.8000	0.8000	0.8000	0.4000	0.2000	0.2000	0.0000	1.8000	1.2000	0.8000
50.	* 0.0000	0.0000	0.0000	0.0000	0.8000	0.7000	0.7000	0.7000	0.5000	0.2000	0.2000	0.0000	1.5000	0.8000	0.8000
60.	* 0.0000	0.0000	0.0000	0.0000	0.8000	0.7000	0.6000	0.6000	0.5000	0.2000	0.2000	0.0000	1.7000	0.8000	0.8000

```
  70.  *  0.1000  0.0000  0.0000  0.0000  0.7000  0.6000  0.6000  0.6000  0.6000
0.2000  0.2000  0.0000  1.8000  0.7000  0.8000
  80.  *  0.3000  0.0000  0.0000  0.0000  0.8000  0.6000  0.6000  0.6000  0.6000
0.2000  0.1000  0.0000  1.8000  0.8000  0.8000
  90.  *  0.5000  0.1000  0.0000  0.0000  1.1000  0.7000  0.6000  0.6000  0.5000
0.1000  0.0000  0.0000  1.7000  0.8000  0.6000
 100.  *  0.6000  0.2000  0.1000  0.0000  1.6000  0.8000  0.7000  0.6000  0.3000
0.0000  0.0000  0.0000  1.2000  0.6000  0.6000
 110.  *  0.6000  0.2000  0.2000  0.0000  1.6000  0.8000  0.8000  0.6000  0.1000
0.0000  0.0000  0.0000  0.9000  0.6000  0.6000
 120.  *  0.5000  0.2000  0.2000  0.0000  1.7000  0.8000  0.8000  0.6000  0.0000
0.0000  0.0000  0.0000  0.8000  0.7000  0.7000
 130.  *  0.5000  0.2000  0.2000  0.0000  1.6000  0.9000  0.8000  0.6000  0.0000
0.0000  0.0000  0.0000  0.8000  0.7000  0.7000
 140.  *  0.4000  0.2000  0.2000  0.0000  1.9000  1.1000  0.9000  0.7000  0.0000
0.0000  0.0000  0.0000  0.9000  0.8000  0.8000
 150.  *  0.4000  0.2000  0.2000  0.0000  2.0000  1.3000  0.9000  0.8000  0.1000
0.1000  0.1000  0.1000  0.9000  0.8000  0.8000
 160.  *  0.5000  0.3000  0.3000  0.1000  1.9000  1.4000  1.3000  0.8000  0.2000
0.2000  0.2000  0.1000  0.9000  0.9000  0.9000
 170.  *  0.8000  0.6000  0.4000  0.1000  1.7000  1.5000  1.2000  1.0000  0.5000
0.5000  0.5000  0.4000  0.8000  0.8000  0.8000
 180.  *  1.2000  1.0000  0.9000  0.5000  1.5000  1.0000  1.0000  0.8000  1.0000
0.9000  0.9000  0.9000  0.4000  0.4000  0.4000
 190.  *  1.4000  1.2000  1.1000  0.9000  1.2000  0.7000  0.7000  0.6000  1.1000
1.1000  1.1000  0.9000  0.1000  0.1000  0.1000
 200.  *  1.4000  1.1000  0.8000  0.9000  1.0000  0.6000  0.5000  0.3000  0.9000
0.9000  0.9000  0.9000  0.1000  0.1000  0.1000
 210.  *  1.3000  0.9000  1.0000  1.0000  0.9000  0.5000  0.4000  0.2000  0.8000
0.8000  0.8000  0.8000  0.0000  0.0000  0.0000
 220.  *  1.2000  1.0000  0.9000  1.0000  1.0000  0.5000  0.4000  0.2000  0.7000
0.8000  0.8000  0.8000  0.0000  0.0000  0.0000
 230.  *  1.1000  1.0000  0.9000  0.9000  1.2000  0.5000  0.4000  0.2000  0.7000
0.7000  0.7000  0.7000  0.1000  0.0000  0.0000
 240.  *  1.2000  0.9000  1.0000  0.8000  1.2000  0.6000  0.4000  0.2000  0.7000
0.7000  0.7000  0.7000  0.1000  0.0000  0.0000
 250.  *  1.5000  1.1000  1.0000  0.8000  1.3000  0.6000  0.4000  0.0000  0.7000
0.7000  0.7000  0.7000  0.1000  0.0000  0.0000
 260.  *  1.6000  1.1000  1.0000  0.6000  1.6000  0.6000  0.4000  0.0000  0.8000
0.7000  0.7000  0.7000  0.2000  0.0000  0.0000
 270.  *  1.6000  1.1000  0.8000  0.6000  1.7000  0.5000  0.2000  0.0000  1.4000
0.8000  0.7000  0.7000  0.6000  0.0000  0.0000
 280.  *  1.3000  0.8000  0.7000  0.6000  1.4000  0.3000  0.1000  0.0000  1.9000
1.0000  0.9000  0.7000  1.4000  0.3000  0.1000
 290.  *  0.9000  0.6000  0.6000  0.6000  0.6000  0.0000  0.0000  0.0000  1.9000
1.3000  1.1000  0.7000  1.8000  0.5000  0.3000
 300.  *  0.6000  0.6000  0.6000  0.6000  0.2000  0.0000  0.0000  0.0000  1.5000
1.2000  1.1000  0.7000  1.6000  0.7000  0.4000
```

```
 310.  *  0.6000  0.6000  0.6000  0.6000  0.1000  0.0000  0.0000  0.0000  1.1000
1.2000  1.0000  1.0000  1.3000  0.6000  0.4000
 320.  *  0.6000  0.7000  0.7000  0.7000  0.1000  0.0000  0.0000  0.0000  1.1000
1.1000  1.2000  1.0000  1.2000  0.6000  0.4000
 330.  *  0.8000  0.8000  0.8000  0.8000  0.1000  0.0000  0.0000  0.0000  1.2000
1.1000  1.1000  1.1000  1.2000  0.5000  0.4000
 340.  *  0.9000  0.9000  0.9000  0.9000  0.1000  0.1000  0.1000  0.0000  1.4000
1.1000  0.9000  1.0000  1.0000  0.6000  0.5000
 350.  *  1.0000  1.0000  1.0000  0.8000  0.1000  0.1000  0.1000  0.1000  1.4000
1.2000  1.2000  1.0000  1.0000  0.7000  0.7000
 360.  *  0.9000  0.8000  0.8000  0.7000  0.5000  0.5000  0.5000  0.3000  1.1000
0.9000  0.8000  0.6000  1.5000  1.1000  1.1000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  1.6000  1.2000  1.1000  1.0000  2.0000  1.5000  1.3000  1.0000  1.9000
1.3000  1.2000  1.1000  1.9000  1.4000  1.1000
 DEGR. *    260     190     190     210     150     170     160     170     280
290     320     330      20      20      10
```


JOB: I-495 & I-270 MLS RUN: 2025 MD187 & I-270 SB Ramp (IS.46)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.9000  0.1000  0.0000  0.0000  0.3000  0.1000  0.0000  0.5000  0.4000
0.4000  1.3000  1.1000  1.0000
  20.  *  0.8000  0.0000  0.0000  0.0000  0.5000  0.2000  0.0000  0.4000  0.4000
0.4000  1.5000  1.2000  1.0000
  30.  *  0.8000  0.0000  0.0000  0.0000  0.5000  0.2000  0.0000  0.4000  0.4000
0.4000  1.5000  1.3000  1.0000
```

```
  40.  *  0.7000  0.0000  0.0000  0.0000  0.5000  0.3000  0.0000  0.4000  0.4000
0.4000  1.5000  1.3000  1.1000
  50.  *  0.6000  0.0000  0.0000  0.0000  0.6000  0.3000  0.3000  0.5000  0.5000
0.5000  1.6000  1.4000  1.4000
  60.  *  0.6000  0.0000  0.0000  0.0000  0.5000  0.3000  0.3000  0.5000  0.5000
0.5000  1.6000  1.4000  1.4000
  70.  *  0.6000  0.1000  0.1000  0.1000  0.5000  0.3000  0.2000  0.6000  0.6000
0.6000  1.7000  1.5000  1.4000
  80.  *  0.6000  0.3000  0.3000  0.2000  0.5000  0.4000  0.3000  0.6000  0.6000
0.6000  1.7000  1.8000  1.7000
  90.  *  0.6000  0.5000  0.5000  0.4000  0.9000  0.8000  0.7000  0.5000  0.5000
0.4000  1.7000  1.8000  1.6000
 100.  *  0.6000  0.6000  0.6000  0.6000  1.2000  1.3000  1.2000  0.3000  0.3000
0.2000  1.1000  1.3000  1.2000
 110.  *  0.6000  0.6000  0.6000  0.6000  1.6000  1.7000  1.7000  0.1000  0.1000
0.1000  0.7000  0.6000  0.7000
 120.  *  0.6000  0.5000  0.5000  0.5000  1.6000  1.6000  1.7000  0.0000  0.0000
0.0000  0.5000  0.4000  0.4000
 130.  *  0.7000  0.5000  0.5000  0.5000  1.6000  1.5000  1.5000  0.0000  0.0000
0.0000  0.5000  0.3000  0.3000
 140.  *  0.8000  0.4000  0.4000  0.4000  1.6000  1.5000  1.4000  0.0000  0.0000
0.0000  0.5000  0.4000  0.2000
 150.  *  0.8000  0.4000  0.4000  0.4000  1.7000  1.5000  1.2000  0.0000  0.0000
0.0000  0.6000  0.4000  0.1000
 160.  *  0.8000  0.4000  0.4000  0.4000  1.5000  1.2000  1.0000  0.0000  0.0000
0.0000  0.5000  0.2000  0.0000
 170.  *  0.6000  0.5000  0.4000  0.4000  1.3000  1.2000  1.0000  0.1000  0.0000
0.0000  0.2000  0.1000  0.0000
 180.  *  0.3000  0.8000  0.5000  0.4000  1.1000  1.0000  1.0000  0.4000  0.1000
0.0000  0.1000  0.0000  0.0000
 190.  *  0.1000  0.9000  0.8000  0.4000  1.0000  1.0000  1.0000  0.5000  0.4000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.9000  0.7000  0.4000  1.0000  1.0000  1.0000  0.5000  0.3000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.9000  0.7000  0.5000  0.9000  0.9000  0.9000  0.5000  0.3000
0.1000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.8000  0.7000  0.5000  1.0000  1.0000  1.0000  0.5000  0.3000
0.1000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.8000  0.8000  0.6000  1.2000  1.2000  1.2000  0.5000  0.3000
0.1000  0.1000  0.1000  0.1000
 240.  *  0.0000  0.8000  0.8000  0.6000  1.2000  1.2000  1.2000  0.4000  0.3000
0.1000  0.1000  0.1000  0.1000
 250.  *  0.0000  1.0000  0.8000  0.7000  1.3000  1.3000  1.3000  0.5000  0.4000
0.2000  0.1000  0.1000  0.1000
 260.  *  0.0000  1.4000  1.2000  0.9000  1.6000  1.6000  1.6000  0.6000  0.6000
0.3000  0.2000  0.2000  0.2000
 270.  *  0.0000  1.2000  1.2000  0.6000  1.7000  1.7000  1.6000  1.0000  1.0000
0.6000  0.6000  0.6000  0.6000
```

```
 280.  *  0.0000  0.9000  0.8000  0.5000  1.4000  1.4000  1.2000  1.7000  1.4000
0.9000  1.4000  1.4000  1.2000
 290.  *  0.0000  0.6000  0.6000  0.2000  0.6000  0.6000  0.6000  1.2000  1.0000
0.7000  1.8000  1.8000  1.7000
 300.  *  0.0000  0.3000  0.3000  0.1000  0.2000  0.2000  0.2000  1.0000  0.9000
0.6000  1.6000  1.6000  1.6000
 310.  *  0.2000  0.4000  0.3000  0.1000  0.1000  0.1000  0.1000  0.8000  0.8000
0.6000  1.3000  1.3000  1.3000
 320.  *  0.2000  0.4000  0.3000  0.1000  0.1000  0.1000  0.1000  0.7000  0.7000
0.5000  1.2000  1.2000  1.2000
 330.  *  0.2000  0.4000  0.3000  0.1000  0.1000  0.1000  0.1000  0.8000  0.7000
0.5000  1.2000  1.2000  1.2000
 340.  *  0.3000  0.4000  0.3000  0.0000  0.0000  0.0000  0.0000  0.8000  0.7000
0.4000  1.0000  1.0000  1.0000
 350.  *  0.5000  0.4000  0.3000  0.0000  0.0000  0.0000  0.0000  0.8000  0.7000
0.4000  0.9000  0.9000  0.9000
 360.  *  0.7000  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000  0.7000  0.5000
0.4000  1.1000  1.0000  1.0000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.9000  1.4000  1.2000  0.9000  1.7000  1.7000  1.7000  1.7000  1.4000
0.9000  1.8000  1.8000  1.7000
 DEGR. *     10     260     260     260     150     110     110     280     280
280     290     290      80

 THE HIGHEST CONCENTRATION OF   2.0000 PPM OCCURRED AT RECEPTOR     5.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
4,4,9,9,2200,2200,2200,2200,2200,2200,2200,2200,1036.75,1036.75,2200,2200,1036.75,10
36.75,2200,2200,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0
,1200,-1200,0,0,0,0,0,0,-15,-15,0,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',28.4,118.0,5.9
'N Leg, E Side - 25 m',9.8,187.6,5.9
'N Leg, E Side - 50 m',-11.4,266.8,5.9
'N Leg, E Side-Midblk',-124.3,687.9,5.9
'N Leg, W Side-Corner',-91.7,118.0,5.9
'N Leg, W Side - 25 m',-110.3,187.6,5.9
'N Leg, W Side - 50 m',-131.5,266.8,5.9
'N Leg, W Side-Midblk',-244.4,687.9,5.9
'S Leg, E Side-Corner',91.7,-118.0,5.9
'S Leg, E Side - 25 m',110.3,-187.6,5.9
'S Leg, E Side - 50 m',131.5,-266.8,5.9
'S Leg, E Side-Midblk',244.4,-687.9,5.9
'S Leg, W Side-Corner',-28.4,-118.0,5.9
'S Leg, W Side - 25 m',-9.8,-187.6,5.9
'S Leg, W Side - 50 m',11.4,-266.8,5.9
'S Leg, W Side-Midblk',124.3,-687.9,5.9
'E Leg, N Side - 25 m',100.4,118.0,5.9
'E Leg, N Side - 50 m',182.5,118.0,5.9
'E Leg, N Side-Midblk',618.4,118.0,5.9
'W Leg, N Side - 25 m',-163.7,118.0,5.9
'W Leg, N Side - 50 m',-245.7,118.0,5.9
'W Leg, N Side-Midblk',-681.7,118.0,5.9
'E Leg, S Side - 25 m',163.7,-118.0,5.9
'E Leg, S Side - 50 m',245.7,-118.0,5.9
'E Leg, S Side-Midblk',681.7,-118.0,5.9
'W Leg, S Side - 25 m',-100.4,-118.0,5.9
'W Leg, S Side - 50 m',-182.5,-118.0,5.9
'W Leg, S Side-Midblk',-618.4,-118.0,5.9
'2025 Build MD 187 SPUI IS.36',12,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-23,-6,-334,1153,4147,1.70,0.0,67.7
2
'N Leg App - Queue','AG',-51,98,-334,1153,0.0,48.0,4
120,62,2,4147,3.92,1600,1,3
1
'N Leg Dep - FreeFlow','AG',23,6,-287,1165,4147,3.26,0.0,67.7
1
'S Leg App - FreeFlow','AG',23,6,334,-1153,4147,1.70,0.0,67.7
2
'S Leg App - Queue','AG',51,-98,334,-1153,0.0,48.0,4
120,62,2,4147,3.92,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-23,-6,287,-1165,4147,2.15,0.0,67.7
1
'E Leg App - FreeFlow','AG',0,54,1200,54,19800,5.41,0.0,127.7
2
'E Leg App - Queue','AG',48,54,1200,54,0.0,108.0,9
120,62,2,19800,3.77,1600,1,3
1
'E Leg Dep - FreeFlow','AG',0,-54,1200,-54,19800,1.49,0.0,127.7
1
'W Leg App - FreeFlow','AG',0,-54,-1200,-54,19800,5.41,0.0,127.7
2
'W Leg App - Queue','AG',-48,-54,-1200,-54,0.0,108.0,9
120,62,2,19800,3.77,1600,1,3
1
'W Leg Dep - FreeFlow','AG',0,54,-1200,54,19800,1.49,0.0,127.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

♠ CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 Build MD 187 SPUI IS.36

DATE : 5/ 1/19
TIME : 7:20: 4

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-23.0	-6.0	-334.0	1153.0	*	1200.	345.	AG	4147.	1.7	0.0	67.7		
2. N Leg App - Queue	*	-51.0	98.0	-996.5	3622.7	*	3649.	345.	AG	22.	100.0	0.0	48.0	1.44	185.4
3. N Leg Dep - FreeFlow	*	23.0	6.0	-287.0	1165.0	*	1200.	345.	AG	4147.	3.3	0.0	67.7		
4. S Leg App - FreeFlow	*	23.0	6.0	334.0	-1153.0	*	1200.	165.	AG	4147.	1.7	0.0	67.7		
5. S Leg App - Queue	*	51.0	-98.0	996.5	-3622.7	*	3649.	165.	AG	22.	100.0	0.0	48.0	1.44	185.4
6. S Leg Dep - FreeFlow	*	-23.0	-6.0	287.0	-1165.0	*	1200.	165.	AG	4147.	2.2	0.0	67.7		
7. E Leg App - FreeFlow	*	0.0	54.0	1200.0	54.0	*	1200.	90.	AG	19800.	5.4	0.0	****		
8. E Leg App - Queue	*	48.0	54.0	15759.6	54.0	*	*****	90.	AG	47.	100.0	0.0	****	3.06	798.1
9. E Leg Dep - FreeFlow	*	0.0	-54.0	1200.0	-54.0	*	1200.	90.	AG	19800.	1.5	0.0	****		
10. W Leg App - FreeFlow	*	0.0	-54.0	-1200.0	-54.0	*	1200.								

```
270. AG  19800.   5.4   0.0 ****
     11. W Leg App - Queue    *    -48.0     -54.0  -15759.6     -54.0 *    *****
270. AG     47. 100.0   0.0 **** 3.06 798.1
     12. W Leg Dep - FreeFlow*      0.0      54.0   -1200.0      54.0 *    1200.
270. AG  19800.   1.5   0.0 ****
```


DATE : 5/ 1/19
TIME : 7:20: 4

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	120	62	2.0	4147	1600	3.92	1	3
5. S Leg App - Queue	120	62	2.0	4147	1600	3.92	1	3
8. E Leg App - Queue	120	62	2.0	19800	1600	3.77	1	3
11. W Leg App - Queue	120	62	2.0	19800	1600	3.77	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	28.4	118.0	5.9
2. N Leg, E Side - 25 m	9.8	187.6	5.9
3. N Leg, E Side - 50 m	-11.4	266.8	5.9
4. N Leg, E Side-Midblk	-124.3	687.9	5.9
5. N Leg, W Side-Corner	-91.7	118.0	5.9
6. N Leg, W Side - 25 m	-110.3	187.6	5.9
7. N Leg, W Side - 50 m	-131.5	266.8	5.9
8. N Leg, W Side-Midblk	-244.4	687.9	5.9
9. S Leg, E Side-Corner	91.7	-118.0	5.9
10. S Leg, E Side - 25 m	110.3	-187.6	5.9

11. S Leg, E Side - 50 m *	131.5	-266.8	5.9	*
12. S Leg, E Side-Midblk *	244.4	-687.9	5.9	*
13. S Leg, W Side-Corner *	-28.4	-118.0	5.9	*
14. S Leg, W Side - 25 m *	-9.8	-187.6	5.9	*
15. S Leg, W Side - 50 m *	11.4	-266.8	5.9	*
16. S Leg, W Side-Midblk *	124.3	-687.9	5.9	*
17. E Leg, N Side - 25 m *	100.4	118.0	5.9	*
18. E Leg, N Side - 50 m *	182.5	118.0	5.9	*
19. E Leg, N Side-Midblk *	618.4	118.0	5.9	*
20. W Leg, N Side - 25 m *	-163.7	118.0	5.9	*
21. W Leg, N Side - 50 m *	-245.7	118.0	5.9	*
22. W Leg, N Side-Midblk *	-681.7	118.0	5.9	*
23. E Leg, S Side - 25 m *	163.7	-118.0	5.9	*
24. E Leg, S Side - 50 m *	245.7	-118.0	5.9	*
25. E Leg, S Side-Midblk *	681.7	-118.0	5.9	*
26. W Leg, S Side - 25 m *	-100.4	-118.0	5.9	*
27. W Leg, S Side - 50 m *	-182.5	-118.0	5.9	*
28. W Leg, S Side-Midblk *	-618.4	-118.0	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	* 1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	* 0.1000	0.1000	0.1000	0.1000	0.7000	0.7000	0.7000	0.7000	2.1000
1.5000	1.2000	0.6000	3.7000	2.2000	1.8000				
20.	* 0.1000	0.0000	0.0000	0.0000	0.7000	0.7000	0.7000	0.7000	2.1000
1.5000	1.1000	0.5000	3.7000	2.1000	1.5000				
30.	* 0.2000	0.0000	0.0000	0.0000	0.6000	0.6000	0.6000	0.6000	2.2000
1.5000	1.2000	0.6000	3.4000	1.9000	1.6000				
40.	* 0.3000	0.0000	0.0000	0.0000	0.7000	0.6000	0.6000	0.6000	2.2000
1.6000	1.2000	0.5000	3.2000	2.0000	1.6000				

```
  50.  *  0.3000  0.0000  0.0000  0.0000  0.7000  0.6000  0.6000  0.6000  2.4000
1.8000  1.3000  0.4000  3.4000  2.1000  1.6000
  60.  *  0.3000  0.0000  0.0000  0.0000  0.6000  0.5000  0.5000  0.5000  2.6000
1.8000  1.3000  0.2000  3.5000  2.1000  1.6000
  70.  *  0.6000  0.0000  0.0000  0.0000  0.8000  0.5000  0.5000  0.5000  2.8000
1.7000  1.0000  0.0000  3.7000  2.2000  1.6000
  80.  *  1.6000  0.2000  0.0000  0.0000  1.8000  0.7000  0.6000  0.5000  2.4000
1.1000  0.6000  0.0000  3.3000  1.7000  1.1000
  90.  *  3.6000  1.0000  0.3000  0.0000  3.4000  1.6000  0.9000  0.5000  1.5000
0.4000  0.2000  0.0000  2.2000  0.7000  0.5000
 100.  *  4.7000  2.0000  1.1000  0.0000  4.3000  2.6000  1.7000  0.6000  0.5000
0.0000  0.0000  0.0000  0.9000  0.4000  0.3000
 110.  *  4.5000  2.4000  1.6000  0.2000  3.8000  2.9000  2.2000  0.8000  0.2000
0.0000  0.0000  0.0000  0.5000  0.4000  0.4000
 120.  *  3.9000  2.4000  1.7000  0.5000  2.9000  2.7000  2.3000  1.2000  0.1000
0.0000  0.0000  0.0000  0.4000  0.4000  0.4000
 130.  *  3.5000  2.2000  1.7000  0.6000  2.7000  2.4000  2.1000  1.3000  0.1000
0.0000  0.0000  0.0000  0.5000  0.5000  0.5000
 140.  *  3.3000  2.2000  1.6000  0.7000  2.4000  2.1000  1.9000  1.3000  0.1000
0.0000  0.0000  0.0000  0.6000  0.6000  0.6000
 150.  *  3.0000  2.2000  1.4000  0.8000  2.4000  2.1000  1.9000  1.4000  0.2000
0.1000  0.1000  0.1000  0.8000  0.8000  0.8000
 160.  *  3.2000  2.3000  1.9000  1.0000  2.3000  1.9000  1.7000  1.3000  0.4000
0.4000  0.4000  0.3000  0.6000  0.6000  0.6000
 170.  *  3.5000  2.6000  2.0000  1.5000  2.3000  1.6000  1.5000  0.9000  0.7000
0.7000  0.6000  0.5000  0.4000  0.4000  0.3000
 180.  *  3.9000  2.6000  2.2000  1.5000  2.2000  1.5000  1.2000  0.6000  0.7000
0.7000  0.7000  0.6000  0.1000  0.1000  0.1000
 190.  *  3.8000  2.4000  2.0000  1.3000  2.1000  1.5000  1.2000  0.6000  0.6000
0.6000  0.6000  0.6000  0.1000  0.1000  0.1000
 200.  *  3.8000  2.2000  1.7000  1.2000  2.1000  1.5000  1.1000  0.5000  0.6000
0.6000  0.6000  0.6000  0.1000  0.0000  0.0000
 210.  *  3.5000  2.1000  1.8000  1.2000  2.2000  1.5000  1.2000  0.6000  0.5000
0.5000  0.5000  0.5000  0.2000  0.0000  0.0000
 220.  *  3.3000  2.1000  1.7000  1.1000  2.2000  1.6000  1.2000  0.5000  0.6000
0.5000  0.5000  0.5000  0.3000  0.0000  0.0000
 230.  *  3.6000  2.3000  1.8000  1.0000  2.4000  1.8000  1.3000  0.4000  0.6000
0.5000  0.5000  0.5000  0.3000  0.0000  0.0000
 240.  *  3.7000  2.3000  1.8000  0.8000  2.6000  1.8000  1.3000  0.2000  0.6000
0.5000  0.5000  0.5000  0.3000  0.0000  0.0000
 250.  *  3.8000  2.3000  1.7000  0.5000  2.8000  1.7000  1.0000  0.0000  0.8000
0.5000  0.5000  0.5000  0.6000  0.0000  0.0000
 260.  *  3.4000  1.8000  1.2000  0.5000  2.4000  1.1000  0.6000  0.0000  1.8000
0.7000  0.6000  0.5000  1.6000  0.2000  0.0000
 270.  *  2.4000  0.9000  0.7000  0.5000  1.5000  0.4000  0.2000  0.0000  3.4000
1.6000  0.9000  0.5000  3.6000  1.0000  0.3000
 280.  *  1.1000  0.6000  0.5000  0.5000  0.5000  0.0000  0.0000  0.0000  4.2000
2.5000  1.6000  0.5000  4.7000  2.0000  1.1000
```

```
 290.  *  0.6000  0.5000  0.5000  0.5000  0.2000  0.0000  0.0000  0.0000  3.7000
2.8000  2.1000  0.7000  4.5000  2.4000  1.6000
 300.  *  0.6000  0.6000  0.6000  0.6000  0.1000  0.0000  0.0000  0.0000  2.9000
2.6000  2.2000  1.1000  3.9000  2.4000  1.7000
 310.  *  0.7000  0.7000  0.7000  0.7000  0.1000  0.0000  0.0000  0.0000  2.6000
2.3000  2.0000  1.2000  3.5000  2.2000  1.7000
 320.  *  0.8000  0.8000  0.8000  0.8000  0.1000  0.0000  0.0000  0.0000  2.4000
2.1000  1.8000  1.2000  3.2000  2.1000  1.5000
 330.  *  1.0000  1.0000  1.0000  0.9000  0.2000  0.1000  0.1000  0.1000  2.4000
2.2000  1.8000  1.3000  3.0000  2.2000  1.4000
 340.  *  0.8000  0.8000  0.8000  0.7000  0.4000  0.4000  0.4000  0.3000  2.4000
2.0000  1.8000  1.2000  3.1000  2.2000  1.8000
 350.  *  0.6000  0.5000  0.4000  0.4000  0.7000  0.7000  0.7000  0.5000  2.3000
1.7000  1.6000  1.0000  3.5000  2.5000  1.9000
 360.  *  0.2000  0.2000  0.2000  0.2000  0.8000  0.8000  0.8000  0.7000  2.2000
1.6000  1.2000  0.6000  3.9000  2.4000  2.1000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  4.7000  2.6000  2.2000  1.5000  4.3000  2.9000  2.3000  1.4000  4.2000
2.8000  2.2000  1.3000  4.7000  2.5000  2.1000
 DEGR. *    100     180     180     170     100     110     120     150     280
290     300     330     280     350     360
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  1.1000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  2.1000  2.1000
2.1000  3.2000  3.1000  2.9000
```

```
  20.  *  1.0000  0.1000  0.1000  0.1000  0.3000  0.2000  0.0000  2.1000  2.1000
2.1000  3.4000  3.0000  2.8000
  30.  *  1.0000  0.2000  0.2000  0.2000  0.4000  0.3000  0.2000  2.2000  2.2000
2.2000  3.7000  3.2000  3.0000
  40.  *  1.0000  0.3000  0.3000  0.3000  0.4000  0.3000  0.2000  2.2000  2.2000
2.2000  3.8000  3.6000  3.3000
  50.  *  0.9000  0.3000  0.3000  0.3000  0.4000  0.3000  0.2000  2.4000  2.4000
2.4000  4.2000  4.1000  3.6000
  60.  *  0.6000  0.3000  0.3000  0.3000  0.4000  0.3000  0.2000  2.6000  2.6000
2.4000  4.2000  4.6000  4.0000
  70.  *  0.4000  0.6000  0.6000  0.5000  0.6000  0.4000  0.4000  2.7000  2.7000
2.2000  4.3000  4.9000  4.8000
  80.  *  0.4000  1.6000  1.6000  1.4000  1.3000  1.2000  0.8000  2.3000  2.2000
1.6000  3.9000  4.5000  5.1000
  90.  *  0.3000  3.6000  3.5000  2.9000  2.9000  2.6000  1.9000  1.4000  1.4000
0.9000  2.6000  3.0000  3.8000
 100.  *  0.4000  4.7000  4.6000  4.1000  3.7000  3.2000  2.6000  0.5000  0.5000
0.3000  1.2000  1.3000  1.5000
 110.  *  0.4000  4.5000  4.5000  4.2000  3.1000  2.7000  2.7000  0.2000  0.2000
0.1000  0.6000  0.6000  0.6000
 120.  *  0.4000  3.9000  3.9000  3.8000  2.3000  2.2000  2.5000  0.1000  0.1000
0.1000  0.6000  0.5000  0.3000
 130.  *  0.5000  3.5000  3.5000  3.5000  2.4000  2.2000  2.4000  0.1000  0.1000
0.1000  0.5000  0.5000  0.3000
 140.  *  0.6000  3.2000  3.2000  3.2000  2.1000  2.3000  2.2000  0.1000  0.1000
0.1000  0.5000  0.5000  0.3000
 150.  *  0.6000  3.0000  2.9000  2.9000  2.3000  2.4000  2.2000  0.1000  0.1000
0.1000  0.5000  0.4000  0.2000
 160.  *  0.5000  2.8000  2.8000  2.8000  2.2000  2.1000  2.1000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
 170.  *  0.3000  3.1000  2.9000  2.9000  2.2000  2.1000  2.1000  0.2000  0.0000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.1000  3.3000  3.3000  3.1000  2.1000  2.1000  2.1000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  3.1000  3.1000  2.9000  2.1000  2.1000  2.1000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  3.3000  3.0000  2.8000  2.1000  2.1000  2.1000  0.2000  0.2000
0.0000  0.1000  0.1000  0.1000
 210.  *  0.0000  3.6000  3.2000  2.9000  2.2000  2.2000  2.2000  0.3000  0.3000
0.1000  0.2000  0.2000  0.2000
 220.  *  0.0000  3.9000  3.6000  3.2000  2.2000  2.2000  2.2000  0.3000  0.3000
0.1000  0.3000  0.3000  0.3000
 230.  *  0.0000  4.2000  4.2000  3.5000  2.4000  2.4000  2.4000  0.3000  0.3000
0.1000  0.3000  0.3000  0.3000
 240.  *  0.0000  4.3000  4.5000  3.9000  2.6000  2.6000  2.4000  0.3000  0.3000
0.1000  0.3000  0.3000  0.3000
 250.  *  0.0000  4.4000  4.9000  4.8000  2.7000  2.7000  2.2000  0.5000  0.4000
0.3000  0.6000  0.6000  0.5000
```

```
 260.  *  0.0000  4.0000  4.5000  5.1000  2.3000  2.2000  1.6000  1.2000  1.2000
0.7000  1.6000  1.6000  1.4000
 270.  *  0.0000  2.7000  3.0000  3.9000  1.4000  1.4000  0.9000  2.8000  2.6000
1.9000  3.6000  3.5000  2.9000
 280.  *  0.0000  1.3000  1.3000  1.6000  0.5000  0.5000  0.3000  3.6000  3.2000
2.6000  4.7000  4.6000  4.1000
 290.  *  0.2000  0.7000  0.6000  0.7000  0.2000  0.2000  0.1000  3.1000  2.7000
2.7000  4.5000  4.5000  4.2000
 300.  *  0.5000  0.6000  0.6000  0.4000  0.1000  0.1000  0.1000  2.3000  2.2000
2.6000  3.9000  3.9000  3.8000
 310.  *  0.6000  0.5000  0.6000  0.4000  0.1000  0.1000  0.1000  2.3000  2.2000
2.5000  3.5000  3.5000  3.5000
 320.  *  0.7000  0.6000  0.6000  0.3000  0.1000  0.1000  0.1000  2.2000  2.4000
2.2000  3.2000  3.2000  3.2000
 330.  *  0.7000  0.6000  0.4000  0.2000  0.1000  0.1000  0.1000  2.3000  2.5000
2.2000  3.0000  2.9000  2.9000
 340.  *  1.0000  0.4000  0.2000  0.1000  0.0000  0.0000  0.0000  2.3000  2.1000
2.1000  2.8000  2.8000  2.8000
 350.  *  1.2000  0.1000  0.0000  0.0000  0.2000  0.0000  0.0000  2.2000  2.1000
2.1000  3.1000  3.0000  2.9000
 360.  *  1.4000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  2.1000  2.1000
2.1000  3.4000  3.3000  3.1000

------*-------------------------------------------------------------------------
---------------------------
 MAX   *  1.4000  4.7000  4.9000  5.1000  3.7000  3.2000  2.7000  3.6000  3.2000
2.7000  4.7000  4.9000  5.1000
 DEGR. *    360     100     250     260     100     100     110     280     280
290     280      70      80

 THE HIGHEST CONCENTRATION OF   5.1000 PPM OCCURRED AT RECEPTOR    28.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
4,1,5,2,2200,2200,2200,2200,2200,2200,2200,2200,1036.75,1037,1036.8,1037,1036.75,103
7,1036.8,1037,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1
200,-1200,0,0,0,0,0,0,15,-35,5,10,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 and I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',53.2,25.1,5.9
'N Leg, E Side - 25 m',11.9,84.1,5.9
'N Leg, E Side - 50 m',-35.2,151.3,5.9
'N Leg, E Side-Midblk',-285.2,508.4,5.9
'N Leg, W Side-Corner',-54.1,38.9,5.9
'N Leg, W Side - 25 m',-95.4,97.9,5.9
'N Leg, W Side - 50 m',-142.4,165.0,5.9
'N Leg, W Side-Midblk',-392.5,522.2,5.9
'S Leg, E Side-Corner',39.2,-78.0,5.9
'S Leg, E Side - 25 m',20.5,-147.6,5.9
'S Leg, E Side - 50 m',-0.7,-226.8,5.9
'S Leg, E Side-Midblk',-113.6,-647.9,5.9
'S Leg, W Side-Corner',-40.7,-66.7,5.9
'S Leg, W Side - 25 m',-59.3,-136.3,5.9
'S Leg, W Side - 50 m',-80.5,-215.5,5.9
'S Leg, W Side-Midblk',-193.4,-636.6,5.9
'E Leg, N Side - 25 m',124.1,12.6,5.9
'E Leg, N Side - 50 m',204.9,-1.6,5.9
'E Leg, N Side-Midblk',634.2,-77.3,5.9
'W Leg, N Side - 25 m',-125.8,45.1,5.9
'W Leg, N Side - 50 m',-207.5,52.3,5.9
'W Leg, N Side-Midblk',-641.8,90.3,5.9
'E Leg, S Side - 25 m',110.1,-90.5,5.9
'E Leg, S Side - 50 m',190.9,-104.7,5.9
'E Leg, S Side-Midblk',620.2,-180.4,5.9
'W Leg, S Side - 25 m',-112.4,-60.4,5.9
'W Leg, S Side - 50 m',-194.1,-53.3,5.9
'W Leg, S Side-Midblk',-628.4,-15.3,5.9
'2025 Build MD202 & Outer Loop Rmp IS.16',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-7,-1,-693,980,1037,2.02,0.0,31.7
1
'N Leg Dep - FreeFlow','AG',26,5,-669,997,4147,2.02,0.0,67.7
1
'S Leg App - FreeFlow','AG',26,5,-287,-1165,4147,3.47,0.0,67.7
2
'S Leg App - Queue','AG',8,-64,-287,-1165,0.0,48.0,4
120,62,2,4147,4.01,1600,1,3
1
'S Leg Dep - FreeFlow','AG',-7,-1,-316,-1158,1037,1.89,0.0,31.7
1
'E Leg App - FreeFlow','AG',2,12,1184,-197,2074,2.09,0.0,43.7
```

```
2
'E Leg App - Queue','AG',49,3,1184,-197,0.0,24.0,2
120,62,2,2074,4.17,1600,1,3
1
'E Leg Dep - FreeFlow','AG',-4,-30,1177,-238,5184,2.09,0.0,79.7
1
'W Leg App - FreeFlow','AG',-4,-30,-1198,75,5184,1.61,0.0,79.7
2
'W Leg App - Queue','AG',-15,-29,-1198,75,0.0,60.0,5
120,62,2,5184,4.17,1600,1,3
1
'W Leg Dep - FreeFlow','AG',2,12,-1194,117,2074,3.32,0.0,43.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 and I-270 MLS RUN: 2025 Build MD202 & Outer Loop Rmp IS.16

DATE : 5/ 1/19
TIME : 6:25:18

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-7.0	-1.0	-693.0	980.0	*	1197.	325.	AG	1037.	2.0	0.0	31.7		
2. N Leg Dep - FreeFlow	*	26.0	5.0	-669.0	997.0	*	1211.	325.	AG	4147.	2.0	0.0	67.7		
3. S Leg App - FreeFlow	*	26.0	5.0	-287.0	-1165.0	*	1211.	195.	AG	4147.	3.5	0.0	67.7		
4. S Leg App - Queue	*	8.0	-64.0	-936.5	-3588.9	*	3649.	195.	AG	22.	100.0	0.0	48.0	1.44	185.4
5. S Leg Dep - FreeFlow	*	-7.0	-1.0	-316.0	-1158.0	*	1198.	195.	AG	1037.	1.9	0.0	31.7		
6. E Leg App - FreeFlow	*	2.0	12.0	1184.0	-197.0	*	1200.	100.	AG	2074.	2.1	0.0	43.7		
7. E Leg App - Queue	*	49.0	3.0	3653.1	-632.1	*	3660.	100.	AG	12.	100.0	0.0	24.0	1.44	185.9
8. E Leg Dep - FreeFlow	*	-4.0	-30.0	1177.0	-238.0	*	1199.	100.	AG	5184.	2.1	0.0	79.7		
9. W Leg App - FreeFlow	*	-4.0	-30.0	-1198.0	75.0	*	1199.	275.	AG	5184.	1.6	0.0	79.7		
10. W Leg App - Queue	*	-15.0	-29.0	-3650.3	290.6	*	3649.								

275. AG 29. 100.0 0.0 60.0 1.44 185.4
11. W Leg Dep - FreeFlow* 2.0 12.0 -1194.0 117.0 * 1201.
275. AG 2074. 3.3 0.0 43.7

JOB: I-495 and I-270 MLS RUN: 2025 Build MD202 & Outer Loop Rmp IS.16

DATE : 5/ 1/19
TIME : 6:25:18

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
4. S Leg App - Queue	*	120	62	2.0	4147	1600	4.01	1	3
7. E Leg App - Queue	*	120	62	2.0	2074	1600	4.17	1	3
10. W Leg App - Queue	*	120	62	2.0	5184	1600	4.17	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	53.2	25.1	5.9	*
2. N Leg, E Side - 25 m	*	11.9	84.1	5.9	*
3. N Leg, E Side - 50 m	*	-35.2	151.3	5.9	*
4. N Leg, E Side-Midblk	*	-285.2	508.4	5.9	*
5. N Leg, W Side-Corner	*	-54.1	38.9	5.9	*
6. N Leg, W Side - 25 m	*	-95.4	97.9	5.9	*
7. N Leg, W Side - 50 m	*	-142.4	165.0	5.9	*
8. N Leg, W Side-Midblk	*	-392.5	522.2	5.9	*
9. S Leg, E Side-Corner	*	39.2	-78.0	5.9	*
10. S Leg, E Side - 25 m	*	20.5	-147.6	5.9	*
11. S Leg, E Side - 50 m	*	-0.7	-226.8	5.9	*
12. S Leg, E Side-Midblk	*	-113.6	-647.9	5.9	*
13. S Leg, W Side-Corner	*	-40.7	-66.7	5.9	*
14. S Leg, W Side - 25 m	*	-59.3	-136.3	5.9	*

15. S Leg, W Side - 50 m	*	-80.5	-215.5	5.9	*
16. S Leg, W Side-Midblk	*	-193.4	-636.6	5.9	*
17. E Leg, N Side - 25 m	*	124.1	12.6	5.9	*
18. E Leg, N Side - 50 m	*	204.9	-1.6	5.9	*
19. E Leg, N Side-Midblk	*	634.2	-77.3	5.9	*
20. W Leg, N Side - 25 m	*	-125.8	45.1	5.9	*
21. W Leg, N Side - 50 m	*	-207.5	52.3	5.9	*
22. W Leg, N Side-Midblk	*	-641.8	90.3	5.9	*
23. E Leg, S Side - 25 m	*	110.1	-90.5	5.9	*
24. E Leg, S Side - 50 m	*	190.9	-104.7	5.9	*
25. E Leg, S Side-Midblk	*	620.2	-180.4	5.9	*
26. W Leg, S Side - 25 m	*	-112.4	-60.4	5.9	*
27. W Leg, S Side - 50 m	*	-194.1	-53.3	5.9	*
28. W Leg, S Side-Midblk	*	-628.4	-15.3	5.9	*

JOB: I-495 and I-270 MLS RUN: 2025 Build MD202 & Outer Loop Rmp IS.16

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.7000	0.6000	0.6000	0.8000	0.5000	0.5000	0.4000
20.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.6000	0.5000	0.4000	0.4000	0.7000	0.6000	0.6000
30.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.5000	0.3000	0.2000	0.2000	0.8000	0.8000	0.6000
40.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.5000	0.3000	0.2000	0.2000	0.9000	0.6000	0.8000
50.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.4000	0.2000	0.1000	0.2000	0.8000	0.7000	0.8000
60.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.5000	0.3000	0.1000	0.0000	0.9000	0.9000	0.7000

```
  70.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.3000  0.3000  0.5000
0.3000  0.1000  0.0000  1.0000  0.9000  0.7000
  80.  *  0.1000  0.0000  0.0000  0.0000  0.4000  0.3000  0.3000  0.3000  0.6000
0.3000  0.1000  0.0000  1.1000  0.9000  0.7000
  90.  *  0.2000  0.0000  0.0000  0.0000  0.6000  0.3000  0.3000  0.3000  0.7000
0.2000  0.1000  0.0000  1.1000  0.8000  0.7000
 100.  *  0.4000  0.2000  0.0000  0.0000  0.9000  0.5000  0.4000  0.3000  0.5000
0.1000  0.0000  0.0000  0.9000  0.7000  0.6000
 110.  *  0.7000  0.3000  0.2000  0.0000  1.1000  0.7000  0.6000  0.4000  0.2000
0.0000  0.0000  0.0000  0.7000  0.6000  0.6000
 120.  *  0.6000  0.3000  0.2000  0.0000  1.0000  0.7000  0.6000  0.5000  0.1000
0.0000  0.0000  0.0000  0.6000  0.6000  0.6000
 130.  *  0.5000  0.4000  0.3000  0.2000  1.0000  0.8000  0.6000  0.5000  0.0000
0.0000  0.0000  0.0000  0.6000  0.6000  0.6000
 140.  *  0.5000  0.4000  0.4000  0.4000  0.9000  0.6000  0.6000  0.4000  0.0000
0.0000  0.0000  0.0000  0.6000  0.6000  0.6000
 150.  *  0.5000  0.6000  0.5000  0.5000  0.7000  0.6000  0.5000  0.3000  0.0000
0.0000  0.0000  0.0000  0.6000  0.6000  0.6000
 160.  *  0.4000  0.6000  0.6000  0.5000  0.7000  0.4000  0.4000  0.1000  0.1000
0.1000  0.1000  0.1000  0.7000  0.7000  0.7000
 170.  *  0.4000  0.8000  0.7000  0.5000  0.8000  0.4000  0.4000  0.1000  0.1000
0.1000  0.1000  0.1000  0.7000  0.7000  0.7000
 180.  *  0.6000  0.8000  0.8000  0.4000  1.0000  0.4000  0.3000  0.0000  0.2000
0.2000  0.2000  0.2000  0.8000  0.8000  0.8000
 190.  *  1.0000  1.3000  0.7000  0.3000  0.8000  0.3000  0.3000  0.0000  0.6000
0.6000  0.6000  0.5000  0.7000  0.7000  0.7000
 200.  *  1.1000  0.8000  0.6000  0.3000  0.6000  0.2000  0.2000  0.0000  0.8000
0.8000  0.8000  0.8000  0.4000  0.4000  0.4000
 210.  *  1.1000  0.5000  0.4000  0.2000  0.5000  0.2000  0.2000  0.0000  0.9000
0.9000  0.9000  0.8000  0.1000  0.1000  0.1000
 220.  *  1.0000  0.4000  0.4000  0.2000  0.5000  0.2000  0.2000  0.0000  0.7000
0.7000  0.7000  0.7000  0.0000  0.0000  0.0000
 230.  *  0.7000  0.4000  0.4000  0.2000  0.6000  0.2000  0.2000  0.0000  0.7000
0.7000  0.7000  0.7000  0.0000  0.0000  0.0000
 240.  *  0.9000  0.4000  0.4000  0.2000  0.6000  0.2000  0.2000  0.0000  0.6000
0.6000  0.6000  0.6000  0.0000  0.0000  0.0000
 250.  *  1.0000  0.7000  0.4000  0.2000  0.8000  0.4000  0.2000  0.0000  0.5000
0.5000  0.5000  0.5000  0.0000  0.0000  0.0000
 260.  *  1.0000  0.7000  0.4000  0.2000  0.8000  0.4000  0.2000  0.0000  0.6000
0.5000  0.5000  0.5000  0.1000  0.0000  0.0000
 270.  *  0.9000  0.5000  0.5000  0.3000  0.7000  0.2000  0.1000  0.0000  0.9000
0.5000  0.5000  0.5000  0.4000  0.0000  0.0000
 280.  *  0.7000  0.4000  0.3000  0.3000  0.4000  0.0000  0.0000  0.0000  1.0000
0.7000  0.5000  0.5000  0.6000  0.2000  0.0000
 290.  *  0.4000  0.3000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  1.1000
0.9000  0.7000  0.5000  0.6000  0.4000  0.1000
 300.  *  0.4000  0.4000  0.4000  0.4000  0.1000  0.0000  0.0000  0.0000  1.0000
0.9000  0.7000  0.5000  0.5000  0.4000  0.2000
```

```
 310.  *  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  1.0000
0.7000  0.7000  0.5000  0.5000  0.3000  0.2000
 320.  *  0.4000  0.4000  0.4000  0.4000  0.3000  0.3000  0.3000  0.2000  1.1000
0.8000  0.7000  0.5000  0.6000  0.2000  0.2000
 330.  *  0.3000  0.3000  0.3000  0.3000  0.4000  0.4000  0.4000  0.4000  1.3000
0.9000  0.9000  0.6000  0.5000  0.3000  0.2000
 340.  *  0.1000  0.1000  0.1000  0.1000  0.5000  0.5000  0.4000  0.4000  1.0000
1.1000  0.9000  0.7000  0.6000  0.3000  0.3000
 350.  *  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.4000  1.0000
0.9000  0.9000  0.7000  0.6000  0.3000  0.3000
 360.  *  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.4000  0.8000
0.7000  0.9000  0.8000  0.6000  0.3000  0.3000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.1000  1.3000  0.8000  0.5000  1.1000  0.8000  0.6000  0.5000  1.3000
1.1000  0.9000  0.8000  1.1000  0.9000  0.8000
 DEGR. *    210     190     180     150     110     130     110     120     330
340     330      10      80      60      40
```


JOB: I-495 and I-270 MLS RUN: 2025 Build MD202 & Outer Loop Rmp IS.16

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.4000  0.4000
0.4000  0.5000  0.5000  0.4000
  20.  *  0.7000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.4000  0.4000
0.4000  0.5000  0.5000  0.4000
  30.  *  0.8000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.4000  0.4000
0.4000  0.5000  0.5000  0.4000
```

```
  40.  *  0.7000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.4000  0.4000
0.4000  0.5000  0.5000  0.4000
  50.  *  0.8000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.4000  0.4000
0.4000  0.6000  0.6000  0.5000
  60.  *  0.7000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.5000  0.5000
0.5000  0.8000  0.6000  0.5000
  70.  *  0.6000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.5000  0.5000
0.5000  0.6000  0.8000  0.5000
  80.  *  0.6000  0.0000  0.0000  0.0000  0.2000  0.2000  0.1000  0.6000  0.6000
0.6000  0.8000  0.7000  0.6000
  90.  *  0.6000  0.2000  0.2000  0.1000  0.5000  0.5000  0.4000  0.6000  0.6000
0.6000  0.8000  0.7000  0.7000
 100.  *  0.6000  0.4000  0.4000  0.3000  0.8000  0.9000  0.8000  0.4000  0.4000
0.4000  0.5000  0.4000  0.5000
 110.  *  0.6000  0.7000  0.7000  0.7000  1.0000  0.9000  1.0000  0.2000  0.2000
0.2000  0.4000  0.3000  0.2000
 120.  *  0.6000  0.6000  0.6000  0.6000  0.7000  0.8000  0.9000  0.1000  0.1000
0.1000  0.2000  0.1000  0.1000
 130.  *  0.6000  0.5000  0.5000  0.5000  0.9000  0.7000  0.7000  0.0000  0.0000
0.0000  0.2000  0.1000  0.1000
 140.  *  0.6000  0.5000  0.5000  0.5000  0.8000  0.7000  0.7000  0.0000  0.0000
0.0000  0.2000  0.2000  0.1000
 150.  *  0.6000  0.5000  0.5000  0.5000  0.7000  0.6000  0.6000  0.0000  0.0000
0.0000  0.2000  0.2000  0.1000
 160.  *  0.7000  0.3000  0.3000  0.3000  0.7000  0.6000  0.5000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 170.  *  0.7000  0.3000  0.3000  0.3000  0.7000  0.6000  0.5000  0.0000  0.0000
0.0000  0.3000  0.2000  0.0000
 180.  *  0.8000  0.3000  0.3000  0.3000  0.7000  0.6000  0.5000  0.0000  0.0000
0.0000  0.3000  0.1000  0.0000
 190.  *  0.6000  0.4000  0.3000  0.3000  0.6000  0.6000  0.5000  0.1000  0.0000
0.0000  0.2000  0.1000  0.0000
 200.  *  0.3000  0.5000  0.4000  0.3000  0.5000  0.5000  0.5000  0.2000  0.1000
0.0000  0.1000  0.0000  0.0000
 210.  *  0.1000  0.6000  0.5000  0.3000  0.5000  0.5000  0.5000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.6000  0.5000  0.3000  0.5000  0.5000  0.5000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.8000  0.7000  0.6000  0.6000  0.6000  0.6000  0.3000  0.2000
0.1000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.7000  0.7000  0.6000  0.6000  0.6000  0.6000  0.2000  0.2000
0.1000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.7000  0.7000  0.6000  0.8000  0.8000  0.6000  0.2000  0.2000
0.1000  0.0000  0.0000  0.0000
 260.  *  0.0000  1.0000  0.7000  0.7000  0.8000  0.8000  0.7000  0.3000  0.2000
0.2000  0.1000  0.1000  0.1000
 270.  *  0.0000  1.0000  0.8000  0.8000  0.7000  0.7000  0.7000  0.5000  0.3000
0.3000  0.4000  0.4000  0.3000
```

```
 280.  *  0.0000  0.5000  0.6000  0.5000  0.4000  0.4000  0.4000  0.8000  0.8000
0.5000  0.6000  0.6000  0.6000
 290.  *  0.0000  0.4000  0.3000  0.2000  0.1000  0.1000  0.1000  0.9000  0.7000
0.6000  0.6000  0.6000  0.6000
 300.  *  0.0000  0.2000  0.1000  0.0000  0.1000  0.1000  0.1000  0.8000  0.8000
0.7000  0.5000  0.5000  0.5000
 310.  *  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.9000  0.6000
0.5000  0.5000  0.5000  0.5000
 320.  *  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.8000  0.7000
0.5000  0.5000  0.5000  0.5000
 330.  *  0.0000  0.1000  0.0000  0.0000  0.1000  0.1000  0.0000  0.7000  0.5000
0.4000  0.5000  0.4000  0.4000
 340.  *  0.0000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.5000  0.4000
0.4000  0.5000  0.5000  0.4000
 350.  *  0.0000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.4000  0.4000
0.4000  0.5000  0.5000  0.4000
 360.  *  0.1000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.4000  0.4000
0.4000  0.5000  0.5000  0.4000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.8000  1.0000  0.8000  0.8000  1.0000  0.9000  1.0000  0.9000  0.8000
0.7000  0.8000  0.8000  0.7000
 DEGR. *     30     260     270     270     110     100     110     310     280
300      60      70      90

 THE HIGHEST CONCENTRATION OF   1.3000 PPM OCCURRED AT RECEPTOR     2.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
7,8,5,5,957,957,957,957,957,957,957,957,1036.8,1036.8,1036.8,1036.8,1036.8,1036.8,10
36.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,120
0,-1200,0,0,0,0,0,0,-20,-20,-15,-10,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',69.7,83.4,5.9
'N Leg, E Side - 25 m',45.1,151.0,5.9
'N Leg, E Side - 50 m',17.0,228.1,5.9
'N Leg, E Side-Midblk',-132.1,637.8,5.9
'N Leg, W Side-Corner',-126.8,38.5,5.9
'N Leg, W Side - 25 m',-151.4,106.2,5.9
'N Leg, W Side - 50 m',-179.5,183.2,5.9
'N Leg, W Side-Midblk',-328.6,592.9,5.9
'S Leg, E Side-Corner',118.3,-50.2,5.9
'S Leg, E Side - 25 m',142.9,-117.9,5.9
'S Leg, E Side - 50 m',171.0,-195.0,5.9
'S Leg, E Side-Midblk',320.1,-604.6,5.9
'S Leg, W Side-Corner',-78.7,-93.6,5.9
'S Leg, W Side - 25 m',-54.1,-161.2,5.9
'S Leg, W Side - 50 m',-26.1,-238.3,5.9
'S Leg, W Side-Midblk',123.0,-648.0,5.9
'E Leg, N Side - 25 m',140.6,95.9,5.9
'E Leg, N Side - 50 m',221.4,110.1,5.9
'E Leg, N Side-Midblk',650.7,185.8,5.9
'W Leg, N Side - 25 m',-196.4,19.8,5.9
'W Leg, N Side - 50 m',-275.6,-1.4,5.9
'W Leg, N Side-Midblk',-696.7,-114.2,5.9
'E Leg, S Side - 25 m',189.2,-37.7,5.9
'E Leg, S Side - 50 m',270.0,-23.5,5.9
'E Leg, S Side-Midblk',699.3,52.2,5.9
'W Leg, S Side - 25 m',-148.3,-112.2,5.9
'W Leg, S Side - 50 m',-227.5,-133.4,5.9
'W Leg, S Side-Midblk',-648.6,-246.3,5.9
'2025 NB I270 & I370 (IC.36)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-45,-16,-456,1111,7375,1.49,0.0,115.7
1
'N Leg Dep - FreeFlow','AG',39,14,-371,1142,10880,3.48,0.0,103.7
1
'S Leg App - FreeFlow','AG',39,14,450,-1113,10880,1.49,0.0,103.7
1
'S Leg Dep - FreeFlow','AG',-45,-16,365,-1144,7375,3.48,0.0,115.7
1
'E Leg App - FreeFlow','AG',-6,29,1177,238,4110,1.49,0.0,79.7
1
'E Leg Dep - FreeFlow','AG',6,-29,1187,179,2195,2.67,0.0,79.7
1
```

```
'W Leg App - FreeFlow','AG',6,-29,-1151,-340,2195,1.49,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',-6,29,-1167,-282,4110,3.48,0.0,79.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NB I270 & I370 (IC.36)

DATE : 5/16/19
TIME : 7:15:25

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-45.0	-16.0	-456.0	1111.0	*	1200.	340.	AG	7375.	1.5	0.0	****		
2. N Leg Dep - FreeFlow	*	39.0	14.0	-371.0	1142.0	*	1200.	340.	AG	10880.	3.5	0.0	****		
3. S Leg App - FreeFlow	*	39.0	14.0	450.0	-1113.0	*	1200.	160.	AG	10880.	1.5	0.0	****		
4. S Leg Dep - FreeFlow	*	-45.0	-16.0	365.0	-1144.0	*	1200.	160.	AG	7375.	3.5	0.0	****		
5. E Leg App - FreeFlow	*	-6.0	29.0	1177.0	238.0	*	1201.	80.	AG	4110.	1.5	0.0	79.7		
6. E Leg Dep - FreeFlow	*	6.0	-29.0	1187.0	179.0	*	1199.	80.	AG	2195.	2.7	0.0	79.7		
7. W Leg App - FreeFlow	*	6.0	-29.0	-1151.0	-340.0	*	1198.	255.	AG	2195.	1.5	0.0	79.7		
8. W Leg Dep - FreeFlow	*	-6.0	29.0	-1167.0	-282.0	*	1202.	255.	AG	4110.	3.5	0.0	79.7		

DATE : 5/16/19
TIME : 7:15:25

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	69.7	83.4	5.9
2. N Leg, E Side - 25 m	45.1	151.0	5.9
3. N Leg, E Side - 50 m	17.0	228.1	5.9
4. N Leg, E Side-Midblk	-132.1	637.8	5.9
5. N Leg, W Side-Corner	-126.8	38.5	5.9
6. N Leg, W Side - 25 m	-151.4	106.2	5.9
7. N Leg, W Side - 50 m	-179.5	183.2	5.9
8. N Leg, W Side-Midblk	-328.6	592.9	5.9
9. S Leg, E Side-Corner	118.3	-50.2	5.9
10. S Leg, E Side - 25 m	142.9	-117.9	5.9
11. S Leg, E Side - 50 m	171.0	-195.0	5.9
12. S Leg, E Side-Midblk	320.1	-604.6	5.9
13. S Leg, W Side-Corner	-78.7	-93.6	5.9
14. S Leg, W Side - 25 m	-54.1	-161.2	5.9
15. S Leg, W Side - 50 m	-26.1	-238.3	5.9
16. S Leg, W Side-Midblk	123.0	-648.0	5.9
17. E Leg, N Side - 25 m	140.6	95.9	5.9
18. E Leg, N Side - 50 m	221.4	110.1	5.9
19. E Leg, N Side-Midblk	650.7	185.8	5.9
20. W Leg, N Side - 25 m	-196.4	19.8	5.9
21. W Leg, N Side - 50 m	-275.6	-1.4	5.9
22. W Leg, N Side-Midblk	-696.7	-114.2	5.9
23. E Leg, S Side - 25 m	189.2	-37.7	5.9
24. E Leg, S Side - 50 m	270.0	-23.5	5.9
25. E Leg, S Side-Midblk	699.3	52.2	5.9
26. W Leg, S Side - 25 m	-148.3	-112.2	5.9

27. W Leg, S Side - 50 m	*	-227.5	-133.4	5.9 *
28. W Leg, S Side-Midblk	*	-648.6	-246.3	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.1000	0.1000	0.1000	0.1000	1.0000	1.0000	1.0000	1.0000	0.3000	0.2000	0.3000	0.1000	1.5000	1.3000	1.3000
20.	*	0.1000	0.1000	0.1000	0.1000	0.9000	0.9000	0.9000	0.9000	0.3000	0.2000	0.2000	0.0000	1.4000	1.3000	1.1000
30.	*	0.1000	0.1000	0.1000	0.1000	0.8000	0.8000	0.8000	0.8000	0.3000	0.2000	0.2000	0.0000	1.4000	1.1000	1.2000
40.	*	0.1000	0.1000	0.1000	0.1000	0.8000	0.8000	0.8000	0.8000	0.3000	0.2000	0.2000	0.0000	1.3000	1.1000	1.0000
50.	*	0.0000	0.0000	0.0000	0.0000	0.9000	0.7000	0.7000	0.7000	0.3000	0.2000	0.2000	0.0000	1.2000	1.0000	1.0000
60.	*	0.0000	0.0000	0.0000	0.0000	0.9000	0.8000	0.8000	0.8000	0.4000	0.2000	0.2000	0.0000	1.2000	1.0000	1.0000
70.	*	0.1000	0.0000	0.0000	0.0000	1.1000	0.8000	0.8000	0.8000	0.4000	0.2000	0.0000	0.0000	1.3000	1.1000	0.9000
80.	*	0.3000	0.1000	0.0000	0.0000	1.4000	0.9000	0.8000	0.8000	0.3000	0.0000	0.0000	0.0000	1.0000	0.8000	0.8000
90.	*	0.4000	0.2000	0.1000	0.0000	1.5000	0.9000	0.8000	0.7000	0.1000	0.0000	0.0000	0.0000	0.9000	0.8000	0.8000
100.	*	0.4000	0.3000	0.3000	0.1000	1.4000	1.0000	1.0000	0.8000	0.0000	0.0000	0.0000	0.0000	0.8000	0.8000	0.8000
110.	*	0.3000	0.3000	0.3000	0.1000	1.3000	1.1000	1.0000	0.8000	0.0000	0.0000	0.0000	0.0000	0.9000	0.9000	0.9000
120.	*	0.3000	0.3000	0.3000	0.1000	1.1000	0.9000	1.0000	0.9000	0.0000	0.0000	0.0000	0.0000	0.9000	1.0000	1.0000

130. * 0.3000 0.3000 0.3000 0.1000 1.4000 1.0000 0.9000 1.0000 0.1000
0.1000 0.1000 0.1000 1.1000 1.1000 1.1000
140. * 0.4000 0.3000 0.4000 0.2000 1.6000 1.2000 0.9000 1.0000 0.1000
0.1000 0.1000 0.1000 1.3000 1.3000 1.3000
150. * 0.7000 0.7000 0.7000 0.7000 1.6000 1.2000 1.0000 1.0000 0.3000
0.3000 0.3000 0.2000 1.3000 1.3000 1.2000
160. * 1.2000 1.3000 1.3000 1.4000 1.3000 1.0000 0.8000 0.8000 0.8000
0.8000 0.6000 0.6000 0.9000 0.9000 0.9000
170. * 1.7000 1.7000 1.8000 1.9000 0.9000 0.5000 0.5000 0.4000 1.1000
1.0000 1.0000 0.8000 0.4000 0.4000 0.4000
180. * 1.8000 1.8000 1.8000 1.9000 0.6000 0.2000 0.1000 0.2000 1.0000
1.0000 1.0000 0.9000 0.1000 0.1000 0.1000
190. * 1.6000 1.7000 1.8000 1.6000 0.5000 0.2000 0.1000 0.1000 1.0000
1.0000 1.0000 1.0000 0.1000 0.1000 0.1000
200. * 1.6000 1.7000 1.4000 1.5000 0.5000 0.2000 0.2000 0.1000 0.9000
0.9000 0.9000 0.9000 0.1000 0.1000 0.1000
210. * 1.5000 1.5000 1.4000 1.3000 0.6000 0.2000 0.2000 0.1000 0.9000
0.8000 0.8000 0.8000 0.1000 0.1000 0.1000
220. * 1.5000 1.3000 1.3000 1.2000 0.6000 0.3000 0.2000 0.0000 0.8000
0.8000 0.8000 0.8000 0.0000 0.0000 0.0000
230. * 1.7000 1.3000 1.3000 1.1000 0.7000 0.3000 0.2000 0.0000 0.8000
0.8000 0.8000 0.8000 0.0000 0.0000 0.0000
240. * 1.8000 1.4000 1.3000 1.1000 0.8000 0.3000 0.1000 0.0000 0.8000
0.8000 0.8000 0.8000 0.0000 0.0000 0.0000
250. * 1.8000 1.4000 1.3000 1.2000 0.7000 0.2000 0.1000 0.0000 1.1000
0.8000 0.8000 0.8000 0.2000 0.0000 0.0000
260. * 1.5000 1.2000 1.1000 1.1000 0.4000 0.1000 0.0000 0.0000 1.1000
0.9000 0.8000 0.8000 0.4000 0.1000 0.0000
270. * 1.2000 1.1000 1.1000 1.1000 0.2000 0.0000 0.0000 0.0000 1.2000
1.1000 0.9000 0.8000 0.5000 0.3000 0.1000
280. * 1.2000 1.1000 1.1000 1.1000 0.1000 0.0000 0.0000 0.0000 1.4000
1.1000 0.9000 0.8000 0.4000 0.3000 0.1000
290. * 1.2000 1.2000 1.2000 1.2000 0.0000 0.0000 0.0000 0.0000 1.2000
0.9000 0.9000 0.9000 0.4000 0.4000 0.2000
300. * 1.3000 1.4000 1.4000 1.4000 0.0000 0.0000 0.0000 0.0000 1.3000
1.0000 0.9000 1.0000 0.4000 0.4000 0.2000
310. * 1.5000 1.5000 1.5000 1.5000 0.0000 0.0000 0.0000 0.0000 1.4000
1.2000 1.0000 1.1000 0.4000 0.4000 0.2000
320. * 1.7000 1.7000 1.7000 1.5000 0.1000 0.1000 0.1000 0.1000 1.7000
1.3000 1.1000 1.3000 0.4000 0.4000 0.2000
330. * 1.9000 1.8000 1.7000 1.6000 0.2000 0.2000 0.2000 0.1000 1.9000
1.6000 1.4000 1.2000 0.5000 0.7000 0.5000
340. * 1.4000 1.4000 1.4000 1.1000 0.6000 0.6000 0.5000 0.4000 1.5000
1.3000 1.2000 1.0000 1.0000 1.1000 1.1000
350. * 0.6000 0.6000 0.6000 0.5000 1.0000 1.0000 0.8000 0.6000 0.8000
0.6000 0.7000 0.3000 1.4000 1.5000 1.4000
360. * 0.2000 0.2000 0.2000 0.2000 1.0000 1.0000 1.0000 0.9000 0.5000
0.4000 0.3000 0.1000 1.5000 1.5000 1.4000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.9000  1.8000  1.8000  1.9000  1.6000  1.2000  1.0000  1.0000  1.9000
1.6000  1.4000  1.3000  1.5000  1.5000  1.4000
 DEGR. *    330     180     180     170     140     140     120     150     330
330     330     320      10     360     350
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  1.0000  0.0000  0.0000  0.0000  0.6000  0.4000  0.1000  0.3000  0.3000
0.3000  1.0000  0.7000  0.4000
  20.  *  1.0000  0.0000  0.0000  0.0000  0.6000  0.4000  0.1000  0.3000  0.3000
0.3000  1.0000  0.7000  0.5000
  30.  *  0.9000  0.0000  0.0000  0.0000  0.6000  0.4000  0.3000  0.3000  0.3000
0.3000  0.9000  0.8000  0.7000
  40.  *  0.8000  0.0000  0.0000  0.0000  0.6000  0.4000  0.3000  0.3000  0.3000
0.3000  0.8000  0.7000  0.7000
  50.  *  0.8000  0.0000  0.0000  0.0000  0.7000  0.5000  0.3000  0.3000  0.3000
0.3000  1.0000  0.7000  0.6000
  60.  *  0.8000  0.0000  0.0000  0.0000  0.7000  0.5000  0.4000  0.4000  0.4000
0.4000  0.9000  0.9000  0.6000
  70.  *  0.9000  0.1000  0.1000  0.1000  0.9000  0.8000  0.5000  0.4000  0.4000
0.4000  0.8000  0.7000  0.5000
  80.  *  0.8000  0.3000  0.3000  0.2000  1.1000  1.0000  0.8000  0.3000  0.3000
0.2000  0.9000  0.7000  0.4000
  90.  *  0.8000  0.4000  0.4000  0.4000  1.2000  1.2000  1.0000  0.1000  0.1000
0.1000  0.6000  0.4000  0.2000
```

```
 100.  *  0.8000  0.4000  0.4000  0.4000  1.1000  1.0000  0.9000  0.0000  0.0000
0.0000  0.6000  0.4000  0.2000
 110.  *  0.9000  0.3000  0.3000  0.3000  1.0000  0.9000  0.8000  0.0000  0.0000
0.0000  0.6000  0.4000  0.2000
 120.  *  1.0000  0.3000  0.3000  0.3000  1.1000  1.0000  0.8000  0.0000  0.0000
0.0000  0.6000  0.4000  0.2000
 130.  *  1.0000  0.3000  0.3000  0.3000  1.1000  0.9000  0.6000  0.0000  0.0000
0.0000  0.7000  0.4000  0.1000
 140.  *  1.1000  0.3000  0.3000  0.3000  1.2000  0.9000  0.5000  0.0000  0.0000
0.0000  0.7000  0.4000  0.0000
 150.  *  1.0000  0.3000  0.3000  0.3000  1.0000  0.8000  0.5000  0.0000  0.0000
0.0000  0.5000  0.3000  0.0000
 160.  *  0.7000  0.5000  0.4000  0.3000  0.7000  0.6000  0.5000  0.2000  0.0000
0.0000  0.2000  0.1000  0.0000
 170.  *  0.3000  0.8000  0.5000  0.3000  0.5000  0.5000  0.5000  0.5000  0.2000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.1000  0.9000  0.7000  0.3000  0.5000  0.5000  0.5000  0.6000  0.4000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  0.9000  0.7000  0.5000  0.5000  0.5000  0.5000  0.6000  0.4000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.1000  0.9000  0.7000  0.5000  0.5000  0.5000  0.5000  0.6000  0.4000
0.2000  0.0000  0.0000  0.0000
 210.  *  0.1000  0.9000  0.7000  0.5000  0.6000  0.6000  0.6000  0.6000  0.4000
0.2000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.8000  0.7000  0.5000  0.6000  0.6000  0.6000  0.6000  0.4000
0.2000  0.0000  0.0000  0.0000
 230.  *  0.0000  1.0000  0.7000  0.5000  0.7000  0.7000  0.7000  0.6000  0.4000
0.2000  0.0000  0.0000  0.0000
 240.  *  0.0000  1.2000  0.8000  0.6000  0.8000  0.8000  0.7000  0.5000  0.4000
0.2000  0.0000  0.0000  0.0000
 250.  *  0.0000  1.3000  1.0000  0.7000  0.7000  0.7000  0.6000  0.7000  0.6000
0.3000  0.2000  0.2000  0.1000
 260.  *  0.0000  1.1000  0.9000  0.4000  0.4000  0.4000  0.4000  0.8000  0.9000
0.5000  0.4000  0.4000  0.2000
 270.  *  0.0000  0.9000  0.7000  0.3000  0.2000  0.2000  0.1000  1.0000  0.7000
0.6000  0.5000  0.5000  0.3000
 280.  *  0.0000  0.7000  0.5000  0.2000  0.1000  0.1000  0.1000  0.9000  0.9000
0.6000  0.4000  0.4000  0.4000
 290.  *  0.1000  0.7000  0.5000  0.2000  0.0000  0.0000  0.0000  0.9000  0.8000
0.5000  0.4000  0.4000  0.4000
 300.  *  0.2000  0.8000  0.6000  0.2000  0.0000  0.0000  0.0000  1.0000  0.8000
0.5000  0.4000  0.4000  0.4000
 310.  *  0.2000  0.8000  0.6000  0.1000  0.0000  0.0000  0.0000  1.0000  0.9000
0.5000  0.4000  0.4000  0.3000
 320.  *  0.2000  0.8000  0.6000  0.1000  0.0000  0.0000  0.0000  1.1000  0.9000
0.4000  0.3000  0.3000  0.3000
 330.  *  0.5000  0.7000  0.3000  0.0000  0.0000  0.0000  0.0000  1.0000  0.7000
0.3000  0.3000  0.3000  0.3000
```

```
 340.  *  1.0000  0.3000  0.1000  0.0000  0.2000  0.0000  0.0000  0.6000  0.4000
0.3000  0.5000  0.3000  0.3000
 350.  *  1.5000  0.1000  0.0000  0.0000  0.5000  0.2000  0.0000  0.4000  0.3000
0.3000  0.8000  0.6000  0.3000
 360.  *  1.3000  0.0000  0.0000  0.0000  0.6000  0.4000  0.0000  0.3000  0.3000
0.3000  0.9000  0.7000  0.3000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.5000  1.3000  1.0000  0.7000  1.2000  1.2000  1.0000  1.1000  0.9000
0.6000  1.0000  0.9000  0.7000
 DEGR. *    350     250     250     250      90      90      90     320     260
270      10      60      30

 THE HIGHEST CONCENTRATION OF   1.9000 PPM OCCURRED AT RECEPTOR     9.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
9,9,5,5,1446,1446,1446,1446,1446,1446,1446,1446,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-40,-40,-40,-45,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',38.6,137.6,5.9
'N Leg, E Side - 25 m',-7.7,192.8,5.9
'N Leg, E Side - 50 m',-60.4,255.6,5.9
'N Leg, E Side-Midblk',-340.7,589.6,5.9
'N Leg, W Side-Corner',-135.4,-22.2,5.9
'N Leg, W Side - 25 m',-181.7,32.9,5.9
'N Leg, W Side - 50 m',-234.4,95.8,5.9
'N Leg, W Side-Midblk',-514.6,429.7,5.9
'S Leg, E Side-Corner',128.9,29.9,5.9
'S Leg, E Side - 25 m',175.2,-25.2,5.9
'S Leg, E Side - 50 m',227.9,-88.1,5.9
'S Leg, E Side-Midblk',508.2,-422.0,5.9
'S Leg, W Side-Corner',-45.4,-129.5,5.9
'S Leg, W Side - 25 m',0.9,-184.6,5.9
'S Leg, W Side - 50 m',53.6,-247.5,5.9
'S Leg, W Side-Midblk',333.8,-581.4,5.9
'E Leg, N Side - 25 m',89.5,188.5,5.9
'E Leg, N Side - 50 m',147.5,246.5,5.9
'E Leg, N Side-Midblk',455.8,554.8,5.9
'W Leg, N Side - 25 m',-190.6,-68.5,5.9
'W Leg, N Side - 50 m',-253.4,-121.2,5.9
'W Leg, N Side-Midblk',-587.4,-401.5,5.9
'E Leg, S Side - 25 m',179.9,80.9,5.9
'E Leg, S Side - 50 m',237.8,138.9,5.9
'E Leg, S Side-Midblk',546.1,447.1,5.9
'W Leg, S Side - 25 m',-100.6,-175.8,5.9
'W Leg, S Side - 50 m',-163.4,-228.5,5.9
'W Leg, S Side-Midblk',-497.4,-508.7,5.9
'2025 NB I270 & MD189 (IC.33)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-64,-8,-813,885,8515,2.02,0.0,127.7
1
'N Leg Dep - FreeFlow','AG',64,8,-730,954,11920,1.49,0.0,127.7
1
'S Leg App - FreeFlow','AG',64,8,813,-885,11920,2.02,0.0,127.7
1
'S Leg Dep - FreeFlow','AG',-64,-8,730,-954,8515,1.49,0.0,127.7
1
'E Leg App - FreeFlow','AG',-20,22,827,870,1195,3.84,0.0,79.7
1
'E Leg Dep - FreeFlow','AG',20,-22,870,827,1040,1.82,0.0,79.7
1
```

```
'W Leg App - FreeFlow','AG',20,-22,-900,-794,1040,2.19,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',-20,22,-939,-748,1195,1.82,0.0,79.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NB I270 & MD189 (IC.33)

DATE : 5/15/19
TIME : 14:41:44

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-64.0	-8.0	-813.0	885.0	*	1166.	320.	AG	8515.	2.0	0.0	****		
2. N Leg Dep - FreeFlow	*	64.0	8.0	-730.0	954.0	*	1235.	320.	AG	11920.	1.5	0.0	****		
3. S Leg App - FreeFlow	*	64.0	8.0	813.0	-885.0	*	1166.	140.	AG	11920.	2.0	0.0	****		
4. S Leg Dep - FreeFlow	*	-64.0	-8.0	730.0	-954.0	*	1235.	140.	AG	8515.	1.5	0.0	****		
5. E Leg App - FreeFlow	*	-20.0	22.0	827.0	870.0	*	1199.	45.	AG	1195.	3.8	0.0	79.7		
6. E Leg Dep - FreeFlow	*	20.0	-22.0	870.0	827.0	*	1201.	45.	AG	1040.	1.8	0.0	79.7		
7. W Leg App - FreeFlow	*	20.0	-22.0	-900.0	-794.0	*	1201.	230.	AG	1040.	2.2	0.0	79.7		
8. W Leg Dep - FreeFlow	*	-20.0	22.0	-939.0	-748.0	*	1199.	230.	AG	1195.	1.8	0.0	79.7		

DATE : 5/15/19
TIME : 14:41:44

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	38.6	137.6	5.9
2. N Leg, E Side - 25 m	-7.7	192.8	5.9
3. N Leg, E Side - 50 m	-60.4	255.6	5.9
4. N Leg, E Side-Midblk	-340.7	589.6	5.9
5. N Leg, W Side-Corner	-135.4	-22.2	5.9
6. N Leg, W Side - 25 m	-181.7	32.9	5.9
7. N Leg, W Side - 50 m	-234.4	95.8	5.9
8. N Leg, W Side-Midblk	-514.6	429.7	5.9
9. S Leg, E Side-Corner	128.9	29.9	5.9
10. S Leg, E Side - 25 m	175.2	-25.2	5.9
11. S Leg, E Side - 50 m	227.9	-88.1	5.9
12. S Leg, E Side-Midblk	508.2	-422.0	5.9
13. S Leg, W Side-Corner	-45.4	-129.5	5.9
14. S Leg, W Side - 25 m	0.9	-184.6	5.9
15. S Leg, W Side - 50 m	53.6	-247.5	5.9
16. S Leg, W Side-Midblk	333.8	-581.4	5.9
17. E Leg, N Side - 25 m	89.5	188.5	5.9
18. E Leg, N Side - 50 m	147.5	246.5	5.9
19. E Leg, N Side-Midblk	455.8	554.8	5.9
20. W Leg, N Side - 25 m	-190.6	-68.5	5.9
21. W Leg, N Side - 50 m	-253.4	-121.2	5.9
22. W Leg, N Side-Midblk	-587.4	-401.5	5.9
23. E Leg, S Side - 25 m	179.9	80.9	5.9
24. E Leg, S Side - 50 m	237.8	138.9	5.9
25. E Leg, S Side-Midblk	546.1	447.1	5.9
26. W Leg, S Side - 25 m	-100.6	-175.8	5.9

27. W Leg, S Side - 50 m * -163.4 -228.5 5.9 *
28. W Leg, S Side-Midblk * -497.4 -508.7 5.9 *

JOB: I-495 & I-270 MLS RUN: 2025 NB I270 & MD189 (IC.33)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.6000	0.6000	0.6000	0.6000	0.2000	0.2000	0.1000	0.1000	0.7000	0.6000	0.7000
20.	* 0.0000	0.0000	0.0000	0.0000	0.6000	0.6000	0.6000	0.6000	0.2000	0.1000	0.0000	0.0000	0.7000	0.7000	0.6000
30.	* 0.1000	0.0000	0.0000	0.0000	0.6000	0.6000	0.6000	0.6000	0.2000	0.1000	0.0000	0.0000	0.8000	0.7000	0.6000
40.	* 0.1000	0.0000	0.0000	0.0000	0.7000	0.6000	0.6000	0.6000	0.2000	0.0000	0.0000	0.0000	0.9000	0.6000	0.6000
50.	* 0.2000	0.1000	0.0000	0.0000	0.7000	0.7000	0.6000	0.6000	0.1000	0.0000	0.0000	0.0000	0.5000	0.6000	0.6000
60.	* 0.2000	0.1000	0.0000	0.0000	0.8000	0.7000	0.6000	0.6000	0.0000	0.0000	0.0000	0.0000	0.6000	0.6000	0.6000
70.	* 0.2000	0.1000	0.1000	0.0000	0.9000	0.7000	0.7000	0.6000	0.0000	0.0000	0.0000	0.0000	0.6000	0.6000	0.6000
80.	* 0.2000	0.1000	0.1000	0.0000	0.6000	0.7000	0.7000	0.6000	0.0000	0.0000	0.0000	0.0000	0.6000	0.6000	0.6000
90.	* 0.1000	0.1000	0.1000	0.0000	0.8000	0.7000	0.6000	0.6000	0.1000	0.1000	0.1000	0.1000	0.6000	0.6000	0.6000
100.	* 0.1000	0.1000	0.0000	0.0000	0.9000	0.8000	0.8000	0.7000	0.1000	0.1000	0.1000	0.1000	0.7000	0.7000	0.7000
110.	* 0.1000	0.2000	0.1000	0.1000	0.9000	0.8000	0.9000	0.7000	0.1000	0.1000	0.1000	0.1000	0.8000	0.8000	0.8000
120.	* 0.3000	0.2000	0.1000	0.1000	1.0000	0.9000	1.0000	0.9000	0.1000	0.1000	0.1000	0.1000	0.9000	0.8000	0.8000

130. * 0.4000 0.4000 0.3000 0.3000 0.9000 0.9000 1.0000 1.0000 0.3000
0.3000 0.3000 0.3000 0.8000 0.8000 0.7000
140. * 0.9000 0.9000 0.7000 0.8000 0.6000 0.6000 0.6000 0.7000 0.8000
0.8000 0.7000 0.6000 0.5000 0.5000 0.5000
150. * 1.1000 1.2000 1.1000 0.9000 0.3000 0.2000 0.2000 0.2000 1.1000
1.0000 1.0000 0.9000 0.2000 0.2000 0.2000
160. * 1.1000 1.0000 0.9000 0.9000 0.1000 0.1000 0.1000 0.1000 1.1000
1.1000 1.1000 0.9000 0.1000 0.1000 0.1000
170. * 1.0000 1.0000 0.8000 0.8000 0.1000 0.0000 0.0000 0.1000 1.0000
1.0000 1.0000 0.9000 0.0000 0.0000 0.0000
180. * 0.9000 0.8000 0.7000 0.7000 0.1000 0.0000 0.0000 0.0000 0.9000
0.9000 0.9000 0.9000 0.0000 0.0000 0.0000
190. * 0.8000 0.6000 0.6000 0.6000 0.1000 0.0000 0.0000 0.0000 0.8000
0.8000 0.8000 0.8000 0.0000 0.0000 0.0000
200. * 0.6000 0.6000 0.6000 0.6000 0.1000 0.0000 0.0000 0.0000 0.7000
0.8000 0.8000 0.7000 0.0000 0.0000 0.0000
210. * 0.7000 0.6000 0.6000 0.6000 0.1000 0.0000 0.0000 0.0000 0.7000
0.7000 0.7000 0.7000 0.0000 0.0000 0.0000
220. * 0.8000 0.6000 0.6000 0.6000 0.1000 0.0000 0.0000 0.0000 0.7000
0.7000 0.7000 0.7000 0.0000 0.0000 0.0000
230. * 0.7000 0.6000 0.6000 0.6000 0.1000 0.0000 0.0000 0.0000 0.9000
0.8000 0.8000 0.8000 0.1000 0.0000 0.0000
240. * 0.6000 0.6000 0.6000 0.6000 0.0000 0.0000 0.0000 0.0000 0.7000
0.7000 0.7000 0.7000 0.1000 0.0000 0.0000
250. * 0.6000 0.6000 0.6000 0.6000 0.0000 0.0000 0.0000 0.0000 0.8000
0.7000 0.7000 0.7000 0.1000 0.0000 0.0000
260. * 0.6000 0.6000 0.6000 0.6000 0.0000 0.0000 0.0000 0.0000 0.8000
0.6000 0.7000 0.7000 0.1000 0.0000 0.0000
270. * 0.6000 0.6000 0.6000 0.6000 0.0000 0.0000 0.0000 0.0000 0.9000
0.8000 0.8000 0.8000 0.1000 0.0000 0.0000
280. * 0.7000 0.7000 0.7000 0.7000 0.0000 0.0000 0.0000 0.0000 1.0000
0.9000 0.8000 0.9000 0.1000 0.0000 0.0000
290. * 0.9000 0.9000 0.9000 0.8000 0.1000 0.1000 0.1000 0.1000 1.0000
0.9000 1.0000 0.9000 0.1000 0.0000 0.0000
300. * 1.0000 0.9000 0.9000 0.8000 0.1000 0.1000 0.1000 0.1000 1.1000
1.0000 1.1000 1.1000 0.1000 0.0000 0.1000
310. * 0.9000 0.9000 0.9000 0.7000 0.2000 0.2000 0.2000 0.2000 1.1000
1.1000 1.1000 1.1000 0.4000 0.2000 0.2000
320. * 0.6000 0.6000 0.6000 0.4000 0.6000 0.6000 0.6000 0.4000 0.9000
0.9000 0.8000 0.8000 0.7000 0.6000 0.5000
330. * 0.3000 0.2000 0.2000 0.2000 0.9000 0.9000 0.9000 0.7000 0.3000
0.4000 0.3000 0.4000 0.9000 0.8000 0.8000
340. * 0.1000 0.1000 0.1000 0.1000 0.9000 0.9000 0.9000 0.8000 0.3000
0.2000 0.1000 0.1000 1.0000 0.8000 0.8000
350. * 0.1000 0.1000 0.1000 0.1000 0.8000 0.8000 0.8000 0.7000 0.2000
0.2000 0.1000 0.1000 0.8000 0.7000 0.8000
360. * 0.0000 0.0000 0.0000 0.0000 0.7000 0.7000 0.7000 0.7000 0.2000
0.2000 0.1000 0.1000 0.7000 0.5000 0.6000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.1000  1.2000  1.1000  0.9000  1.0000  0.9000  1.0000  1.0000  1.1000
1.1000  1.1000  1.1000  1.0000  0.8000  0.8000
 DEGR. *    150     150     150     150     120     120     120     130     150
160     160     300     340     110     110
```


JOB: I-495 & I-270 MLS RUN: 2025 NB I270 & MD189 (IC.33)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.6000  0.0000  0.0000  0.0000  0.5000  0.3000  0.2000  0.2000  0.2000
0.2000  0.5000  0.4000  0.3000
  20.  *  0.6000  0.0000  0.0000  0.0000  0.5000  0.3000  0.2000  0.2000  0.2000
0.2000  0.5000  0.4000  0.3000
  30.  *  0.6000  0.1000  0.1000  0.0000  0.5000  0.3000  0.2000  0.2000  0.2000
0.2000  0.5000  0.5000  0.3000
  40.  *  0.6000  0.1000  0.1000  0.1000  0.5000  0.3000  0.2000  0.2000  0.2000
0.1000  0.6000  0.5000  0.2000
  50.  *  0.6000  0.2000  0.2000  0.2000  0.6000  0.4000  0.2000  0.1000  0.1000
0.0000  0.5000  0.3000  0.2000
  60.  *  0.6000  0.2000  0.2000  0.2000  0.6000  0.5000  0.2000  0.0000  0.0000
0.0000  0.4000  0.3000  0.2000
  70.  *  0.6000  0.2000  0.2000  0.2000  0.5000  0.4000  0.3000  0.0000  0.0000
0.0000  0.4000  0.3000  0.2000
  80.  *  0.6000  0.2000  0.2000  0.2000  0.6000  0.4000  0.3000  0.0000  0.0000
0.0000  0.4000  0.3000  0.2000
  90.  *  0.6000  0.1000  0.1000  0.1000  0.5000  0.4000  0.3000  0.0000  0.0000
0.0000  0.4000  0.3000  0.2000
```

```
 100.  *  0.7000  0.1000  0.1000  0.1000  0.6000  0.4000  0.3000  0.0000  0.0000
0.0000  0.5000  0.3000  0.2000
 110.  *  0.7000  0.1000  0.1000  0.1000  0.6000  0.5000  0.2000  0.0000  0.0000
0.0000  0.5000  0.4000  0.0000
 120.  *  0.6000  0.1000  0.1000  0.1000  0.6000  0.5000  0.1000  0.0000  0.0000
0.0000  0.4000  0.3000  0.0000
 130.  *  0.5000  0.1000  0.1000  0.1000  0.5000  0.3000  0.1000  0.0000  0.0000
0.0000  0.3000  0.2000  0.0000
 140.  *  0.3000  0.3000  0.2000  0.1000  0.3000  0.1000  0.1000  0.2000  0.1000
0.0000  0.1000  0.0000  0.0000
 150.  *  0.1000  0.6000  0.3000  0.1000  0.1000  0.1000  0.1000  0.5000  0.2000
0.0000  0.0000  0.0000  0.0000
 160.  *  0.1000  0.6000  0.5000  0.1000  0.1000  0.1000  0.1000  0.6000  0.4000
0.0000  0.0000  0.0000  0.0000
 170.  *  0.0000  0.6000  0.5000  0.2000  0.1000  0.1000  0.1000  0.5000  0.4000
0.1000  0.0000  0.0000  0.0000
 180.  *  0.0000  0.5000  0.5000  0.3000  0.1000  0.1000  0.1000  0.5000  0.4000
0.1000  0.0000  0.0000  0.0000
 190.  *  0.0000  0.6000  0.6000  0.4000  0.1000  0.1000  0.1000  0.5000  0.4000
0.2000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.6000  0.5000  0.4000  0.1000  0.1000  0.1000  0.5000  0.4000
0.2000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.5000  0.5000  0.3000  0.1000  0.1000  0.1000  0.4000  0.4000
0.2000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.6000  0.5000  0.3000  0.1000  0.1000  0.1000  0.4000  0.3000
0.2000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.5000  0.4000  0.3000  0.1000  0.1000  0.1000  0.6000  0.5000
0.2000  0.1000  0.1000  0.1000
 240.  *  0.0000  0.5000  0.3000  0.3000  0.0000  0.0000  0.0000  0.5000  0.5000
0.4000  0.1000  0.1000  0.1000
 250.  *  0.0000  0.5000  0.3000  0.2000  0.0000  0.0000  0.0000  0.6000  0.5000
0.4000  0.1000  0.1000  0.1000
 260.  *  0.0000  0.5000  0.3000  0.2000  0.0000  0.0000  0.0000  0.5000  0.5000
0.4000  0.1000  0.1000  0.1000
 270.  *  0.0000  0.5000  0.3000  0.2000  0.0000  0.0000  0.0000  0.7000  0.5000
0.4000  0.1000  0.1000  0.1000
 280.  *  0.0000  0.5000  0.3000  0.2000  0.0000  0.0000  0.0000  0.7000  0.5000
0.4000  0.1000  0.1000  0.1000
 290.  *  0.0000  0.5000  0.3000  0.0000  0.0000  0.0000  0.0000  0.7000  0.6000
0.3000  0.1000  0.1000  0.1000
 300.  *  0.1000  0.5000  0.3000  0.0000  0.0000  0.0000  0.0000  0.6000  0.4000
0.1000  0.1000  0.1000  0.1000
 310.  *  0.3000  0.4000  0.2000  0.0000  0.0000  0.0000  0.0000  0.6000  0.4000
0.2000  0.1000  0.1000  0.1000
 320.  *  0.5000  0.1000  0.0000  0.0000  0.1000  0.0000  0.0000  0.3000  0.3000
0.2000  0.2000  0.2000  0.1000
 330.  *  0.8000  0.0000  0.0000  0.0000  0.4000  0.2000  0.0000  0.1000  0.1000
0.1000  0.5000  0.3000  0.1000
```

```
 340.  *  0.8000  0.0000  0.0000  0.0000  0.5000  0.3000  0.0000  0.2000  0.2000
0.2000  0.6000  0.4000  0.1000
 350.  *  0.7000  0.0000  0.0000  0.0000  0.5000  0.4000  0.0000  0.2000  0.2000
0.2000  0.6000  0.5000  0.2000
 360.  *  0.7000  0.0000  0.0000  0.0000  0.5000  0.4000  0.2000  0.2000  0.2000
0.2000  0.6000  0.5000  0.3000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.8000  0.6000  0.6000  0.4000  0.6000  0.5000  0.3000  0.7000  0.6000
0.4000  0.6000  0.5000  0.3000
 DEGR. *    330     150     190     190      50      60      70     270     290
240      40      30      10

 THE HIGHEST CONCENTRATION OF   1.2000 PPM OCCURRED AT RECEPTOR     2.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,5,7,7,932,932,932,932,932,932,932,932,1036.8,1036.8,1036.8,1036.8,1036.8,1036.8,10
36.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,120
0,-1200,0,0,0,0,0,0,10,10,-10,-10,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',90.7,111.4,5.9
'N Leg, E Side - 25 m',103.2,182.4,5.9
'N Leg, E Side - 50 m',117.5,263.2,5.9
'N Leg, E Side-Midblk',193.2,692.5,5.9
'N Leg, W Side-Corner',-56.0,85.6,5.9
'N Leg, W Side - 25 m',-43.5,156.5,5.9
'N Leg, W Side - 50 m',-29.2,237.3,5.9
'N Leg, W Side-Midblk',46.5,666.6,5.9
'S Leg, E Side-Corner',56.0,-85.6,5.9
'S Leg, E Side - 25 m',43.5,-156.5,5.9
'S Leg, E Side - 50 m',29.2,-237.3,5.9
'S Leg, E Side-Midblk',-46.5,-666.6,5.9
'S Leg, W Side-Corner',-90.7,-111.4,5.9
'S Leg, W Side - 25 m',-103.2,-182.4,5.9
'S Leg, W Side - 50 m',-117.5,-263.2,5.9
'S Leg, W Side-Midblk',-193.2,-692.5,5.9
'E Leg, N Side - 25 m',161.7,124.0,5.9
'E Leg, N Side - 50 m',242.4,138.2,5.9
'E Leg, N Side-Midblk',671.8,213.9,5.9
'W Leg, N Side - 25 m',-126.9,73.1,5.9
'W Leg, N Side - 50 m',-207.7,58.8,5.9
'W Leg, N Side-Midblk',-637.0,-16.9,5.9
'E Leg, S Side - 25 m',126.9,-73.1,5.9
'E Leg, S Side - 50 m',207.7,-58.8,5.9
'E Leg, S Side-Midblk',637.0,16.9,5.9
'W Leg, S Side - 25 m',-161.7,-124.0,5.9
'W Leg, S Side - 50 m',-242.4,-138.2,5.9
'W Leg, S Side-Midblk',-671.8,-213.9,5.9
'2025 NB I495 & I95 (IC.16)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-30,5,179,1187,7390,1.50,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',30,-5,238,1177,7390,3.06,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,-5,-179,-1187,7390,1.5,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-30,5,-238,-1177,7390,1.5,0.0,79.7
1
'E Leg App - FreeFlow','AG',-7,41,1174,250,8945,3.47,0.0,103.7
1
'E Leg Dep - FreeFlow','AG',7,-41,1189,167,8605,1.5,0.0,103.7
1
```

'W Leg App - FreeFlow','AG',7,-41,-1174,-250,8605,1.5,0.0,103.7
1
'W Leg Dep - FreeFlow','AG',-7,41,-1189,-167,8945,4.37,0.0,103.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & I95 (IC.16)

DATE : 5/15/19
TIME : 10: 4:32

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-30.0	5.0	179.0	1187.0	*	1200.	10.	AG	7390.	1.5	0.0	79.7		
2. N Leg Dep - FreeFlow	*	30.0	-5.0	238.0	1177.0	*	1200.	10.	AG	7390.	3.1	0.0	79.7		
3. S Leg App - FreeFlow	*	30.0	-5.0	-179.0	-1187.0	*	1200.	190.	AG	7390.	1.5	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-30.0	5.0	-238.0	-1177.0	*	1200.	190.	AG	7390.	1.5	0.0	79.7		
5. E Leg App - FreeFlow	*	-7.0	41.0	1174.0	250.0	*	1199.	80.	AG	8945.	3.5	0.0	****		
6. E Leg Dep - FreeFlow	*	7.0	-41.0	1189.0	167.0	*	1200.	80.	AG	8605.	1.5	0.0	****		
7. W Leg App - FreeFlow	*	7.0	-41.0	-1174.0	-250.0	*	1199.	260.	AG	8605.	1.5	0.0	****		
8. W Leg Dep - FreeFlow	*	-7.0	41.0	-1189.0	-167.0	*	1200.	260.	AG	8945.	4.4	0.0	****		

DATE : 5/15/19
TIME : 10: 4:32

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	90.7	111.4	5.9
2. N Leg, E Side - 25 m	103.2	182.4	5.9
3. N Leg, E Side - 50 m	117.5	263.2	5.9
4. N Leg, E Side-Midblk	193.2	692.5	5.9
5. N Leg, W Side-Corner	-56.0	85.6	5.9
6. N Leg, W Side - 25 m	-43.5	156.5	5.9
7. N Leg, W Side - 50 m	-29.2	237.3	5.9
8. N Leg, W Side-Midblk	46.5	666.6	5.9
9. S Leg, E Side-Corner	56.0	-85.6	5.9
10. S Leg, E Side - 25 m	43.5	-156.5	5.9
11. S Leg, E Side - 50 m	29.2	-237.3	5.9
12. S Leg, E Side-Midblk	-46.5	-666.6	5.9
13. S Leg, W Side-Corner	-90.7	-111.4	5.9
14. S Leg, W Side - 25 m	-103.2	-182.4	5.9
15. S Leg, W Side - 50 m	-117.5	-263.2	5.9
16. S Leg, W Side-Midblk	-193.2	-692.5	5.9
17. E Leg, N Side - 25 m	161.7	124.0	5.9
18. E Leg, N Side - 50 m	242.4	138.2	5.9
19. E Leg, N Side-Midblk	671.8	213.9	5.9
20. W Leg, N Side - 25 m	-126.9	73.1	5.9
21. W Leg, N Side - 50 m	-207.7	58.8	5.9
22. W Leg, N Side-Midblk	-637.0	-16.9	5.9
23. E Leg, S Side - 25 m	126.9	-73.1	5.9
24. E Leg, S Side - 50 m	207.7	-58.8	5.9
25. E Leg, S Side-Midblk	637.0	16.9	5.9
26. W Leg, S Side - 25 m	-161.7	-124.0	5.9

27. W Leg, S Side - 50 m	*	-242.4	-138.2	5.9 *
28. W Leg, S Side-Midblk	*	-671.8	-213.9	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 1.0000	1.0000	1.0000	0.9000	0.7000	0.7000	0.7000	0.5000	1.7000	1.3000	1.1000	0.9000	1.5000	1.3000	1.2000
20.	* 0.6000	0.5000	0.5000	0.4000	1.0000	1.0000	1.0000	0.8000	1.2000	0.8000	0.7000	0.5000	1.8000	1.6000	1.4000
30.	* 0.3000	0.2000	0.2000	0.2000	1.0000	1.0000	1.0000	0.9000	1.0000	0.8000	0.5000	0.3000	1.7000	1.5000	1.3000
40.	* 0.2000	0.1000	0.1000	0.1000	0.9000	0.9000	0.9000	0.8000	0.9000	0.6000	0.5000	0.2000	1.9000	1.3000	1.1000
50.	* 0.2000	0.1000	0.1000	0.1000	0.8000	0.8000	0.8000	0.8000	0.9000	0.6000	0.5000	0.2000	1.7000	1.4000	1.1000
60.	* 0.3000	0.1000	0.1000	0.1000	0.8000	0.7000	0.7000	0.7000	1.1000	0.7000	0.5000	0.0000	1.8000	1.1000	1.0000
70.	* 0.5000	0.1000	0.0000	0.0000	1.2000	0.8000	0.7000	0.7000	1.0000	0.5000	0.2000	0.0000	1.5000	1.0000	0.8000
80.	* 1.2000	0.2000	0.1000	0.0000	2.0000	1.0000	0.8000	0.7000	0.7000	0.2000	0.0000	0.0000	1.2000	0.7000	0.5000
90.	* 1.6000	0.6000	0.2000	0.0000	2.4000	1.3000	1.1000	0.7000	0.2000	0.0000	0.0000	0.0000	0.8000	0.5000	0.5000
100.	* 1.4000	0.8000	0.5000	0.0000	2.3000	1.5000	1.2000	0.7000	0.1000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000
110.	* 1.3000	0.8000	0.5000	0.1000	2.1000	1.5000	1.2000	0.8000	0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000
120.	* 1.2000	0.7000	0.5000	0.1000	1.9000	1.4000	1.2000	0.8000	0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000

```
 130.  *  1.1000  0.6000  0.4000  0.3000  1.9000  1.3000  1.1000  1.0000  0.0000
0.0000  0.0000  0.0000  0.5000  0.5000  0.5000
 140.  *  1.1000  0.7000  0.5000  0.3000  1.7000  1.3000  1.1000  1.0000  0.0000
0.0000  0.0000  0.0000  0.5000  0.5000  0.5000
 150.  *  1.0000  0.7000  0.5000  0.3000  1.9000  1.4000  1.2000  1.0000  0.0000
0.0000  0.0000  0.0000  0.6000  0.6000  0.6000
 160.  *  1.1000  0.7000  0.5000  0.3000  1.9000  1.5000  1.3000  1.0000  0.0000
0.0000  0.0000  0.0000  0.6000  0.6000  0.6000
 170.  *  1.1000  0.7000  0.5000  0.4000  1.9000  1.6000  1.3000  1.1000  0.1000
0.1000  0.1000  0.1000  0.7000  0.7000  0.7000
 180.  *  1.3000  1.0000  0.8000  0.6000  2.0000  1.4000  1.4000  1.2000  0.2000
0.2000  0.2000  0.2000  0.8000  0.8000  0.8000
 190.  *  1.7000  1.5000  1.4000  1.3000  1.7000  1.2000  1.1000  0.9000  0.6000
0.6000  0.6000  0.5000  0.6000  0.6000  0.5000
 200.  *  2.0000  2.0000  2.0000  1.7000  1.5000  0.9000  0.7000  0.5000  0.8000
0.8000  0.8000  0.6000  0.2000  0.2000  0.2000
 210.  *  2.2000  1.9000  1.7000  1.5000  1.3000  0.8000  0.6000  0.4000  0.7000
0.7000  0.7000  0.7000  0.1000  0.1000  0.1000
 220.  *  2.3000  1.8000  1.6000  1.4000  1.4000  0.9000  0.6000  0.3000  0.6000
0.6000  0.6000  0.6000  0.0000  0.0000  0.0000
 230.  *  2.2000  1.9000  1.6000  1.2000  1.5000  0.9000  0.6000  0.2000  0.6000
0.6000  0.6000  0.6000  0.0000  0.0000  0.0000
 240.  *  2.6000  1.9000  1.5000  1.0000  1.8000  1.0000  0.6000  0.1000  0.5000
0.5000  0.5000  0.5000  0.1000  0.0000  0.0000
 250.  *  2.7000  1.6000  1.3000  0.8000  1.9000  0.8000  0.4000  0.0000  0.8000
0.5000  0.5000  0.5000  0.3000  0.0000  0.0000
 260.  *  2.2000  1.2000  0.9000  0.8000  1.5000  0.3000  0.1000  0.0000  1.3000
0.7000  0.5000  0.5000  0.8000  0.2000  0.0000
 270.  *  1.4000  0.9000  0.8000  0.8000  0.6000  0.1000  0.0000  0.0000  1.7000
1.0000  0.8000  0.5000  1.1000  0.5000  0.2000
 280.  *  1.1000  0.9000  0.9000  0.9000  0.2000  0.0000  0.0000  0.0000  1.7000
1.3000  1.0000  0.5000  1.2000  0.7000  0.5000
 290.  *  0.9000  0.8000  0.8000  0.8000  0.1000  0.0000  0.0000  0.0000  1.7000
1.2000  1.1000  0.6000  1.1000  0.7000  0.6000
 300.  *  0.9000  0.8000  0.8000  0.8000  0.1000  0.0000  0.0000  0.0000  1.5000
1.2000  1.1000  0.7000  1.0000  0.7000  0.6000
 310.  *  0.9000  0.8000  0.8000  0.8000  0.1000  0.0000  0.0000  0.0000  1.4000
1.1000  1.0000  0.8000  1.0000  0.6000  0.5000
 320.  *  1.0000  0.9000  0.9000  0.9000  0.1000  0.0000  0.0000  0.0000  1.5000
1.1000  0.9000  0.8000  0.9000  0.6000  0.4000
 330.  *  1.0000  1.0000  1.0000  1.0000  0.0000  0.0000  0.0000  0.0000  1.7000
1.2000  1.0000  0.9000  0.9000  0.6000  0.4000
 340.  *  1.1000  1.1000  1.1000  1.1000  0.0000  0.0000  0.0000  0.0000  1.6000
1.3000  1.2000  0.9000  0.9000  0.6000  0.4000
 350.  *  1.3000  1.3000  1.2000  1.2000  0.1000  0.1000  0.1000  0.1000  1.8000
1.5000  1.3000  1.0000  1.0000  0.7000  0.5000
 360.  *  1.3000  1.3000  1.3000  1.1000  0.3000  0.3000  0.3000  0.2000  1.8000
1.6000  1.4000  1.1000  1.1000  0.9000  0.8000
```

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  2.7000  2.0000  2.0000  1.7000  2.4000  1.6000  1.4000  1.2000  1.8000
1.6000  1.4000  1.1000  1.9000  1.6000  1.4000
 DEGR. *    250     200     200     200      90     170     180     180     350
360     360     360      40      20      20
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.8000  0.2000  0.1000  0.0000  0.2000  0.0000  0.0000  1.0000  0.8000
0.7000  1.1000  0.9000  0.9000
  20.  *  1.1000  0.1000  0.1000  0.1000  0.5000  0.3000  0.1000  0.9000  0.8000
0.8000  1.4000  1.2000  0.9000
  30.  *  0.9000  0.1000  0.1000  0.1000  0.6000  0.4000  0.1000  0.9000  0.9000
0.9000  1.5000  1.3000  1.0000
  40.  *  0.8000  0.1000  0.1000  0.1000  0.6000  0.4000  0.2000  0.9000  0.9000
0.9000  1.5000  1.3000  1.2000
  50.  *  0.8000  0.1000  0.1000  0.1000  0.6000  0.4000  0.3000  0.9000  0.9000
0.9000  1.4000  1.3000  1.2000
  60.  *  0.6000  0.2000  0.2000  0.2000  0.8000  0.5000  0.4000  1.0000  1.0000
0.9000  1.6000  1.3000  1.3000
  70.  *  0.5000  0.5000  0.5000  0.4000  1.1000  0.9000  0.9000  1.0000  1.0000
0.8000  1.5000  1.4000  1.3000
  80.  *  0.5000  1.2000  1.2000  0.9000  1.8000  1.6000  1.6000  0.6000  0.6000
0.5000  0.9000  0.9000  0.9000
  90.  *  0.5000  1.6000  1.5000  1.3000  2.2000  2.1000  2.0000  0.2000  0.2000
0.2000  0.6000  0.5000  0.2000
```

```
 100.  *  0.5000  1.4000  1.4000  1.4000  2.0000  2.0000  1.9000  0.1000  0.1000
0.1000  0.4000  0.3000  0.2000
 110.  *  0.5000  1.3000  1.3000  1.3000  1.8000  1.8000  1.6000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
 120.  *  0.5000  1.2000  1.2000  1.2000  1.8000  1.6000  1.5000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
 130.  *  0.5000  1.1000  1.1000  1.1000  1.6000  1.5000  1.4000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
 140.  *  0.5000  1.0000  1.0000  1.0000  1.4000  1.4000  1.4000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
 150.  *  0.6000  0.9000  0.9000  0.9000  1.4000  1.3000  1.2000  0.0000  0.0000
0.0000  0.3000  0.2000  0.0000
 160.  *  0.6000  1.0000  1.0000  1.0000  1.6000  1.4000  1.2000  0.0000  0.0000
0.0000  0.4000  0.2000  0.0000
 170.  *  0.7000  1.0000  1.0000  1.0000  1.6000  1.4000  1.2000  0.0000  0.0000
0.0000  0.3000  0.2000  0.0000
 180.  *  0.6000  1.0000  1.0000  1.0000  1.5000  1.4000  1.2000  0.0000  0.0000
0.0000  0.3000  0.2000  0.0000
 190.  *  0.5000  1.1000  0.9000  0.9000  1.3000  1.1000  1.1000  0.1000  0.0000
0.0000  0.1000  0.0000  0.0000
 200.  *  0.2000  1.3000  1.2000  1.0000  1.2000  1.2000  1.2000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.1000  1.5000  1.3000  1.1000  1.3000  1.3000  1.3000  0.4000  0.2000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  1.6000  1.3000  1.3000  1.4000  1.4000  1.4000  0.4000  0.2000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  1.8000  1.6000  1.5000  1.6000  1.6000  1.5000  0.3000  0.2000
0.2000  0.0000  0.0000  0.0000
 240.  *  0.0000  2.1000  1.9000  1.6000  1.8000  1.8000  1.7000  0.3000  0.3000
0.3000  0.1000  0.1000  0.1000
 250.  *  0.0000  2.3000  2.0000  1.8000  1.9000  1.9000  1.6000  0.6000  0.5000
0.4000  0.2000  0.2000  0.2000
 260.  *  0.0000  1.9000  1.7000  1.6000  1.5000  1.4000  1.2000  1.1000  0.9000
0.8000  0.6000  0.6000  0.5000
 270.  *  0.0000  1.1000  0.9000  0.7000  0.6000  0.6000  0.6000  1.4000  1.3000
1.3000  1.1000  1.1000  0.8000
 280.  *  0.0000  0.7000  0.5000  0.3000  0.2000  0.2000  0.2000  1.5000  1.5000
1.2000  1.2000  1.2000  1.0000
 290.  *  0.0000  0.6000  0.4000  0.2000  0.1000  0.1000  0.1000  1.5000  1.3000
1.0000  1.1000  1.1000  1.0000
 300.  *  0.2000  0.6000  0.4000  0.2000  0.1000  0.1000  0.1000  1.3000  1.2000
1.0000  1.0000  1.0000  1.0000
 310.  *  0.3000  0.6000  0.4000  0.2000  0.1000  0.1000  0.1000  1.3000  1.2000
1.0000  1.0000  1.0000  1.0000
 320.  *  0.3000  0.6000  0.5000  0.2000  0.1000  0.1000  0.1000  1.2000  1.2000
1.0000  0.9000  0.9000  0.9000
 330.  *  0.3000  0.5000  0.4000  0.1000  0.0000  0.0000  0.0000  1.2000  1.1000
0.9000  0.9000  0.9000  0.9000
```

```
 340.  *  0.3000  0.6000  0.4000  0.0000  0.0000  0.0000  0.0000  1.3000  1.1000
0.8000  0.9000  0.9000  0.9000
 350.  *  0.4000  0.6000  0.4000  0.0000  0.0000  0.0000  0.0000  1.4000  1.1000
0.7000  0.9000  0.9000  0.9000
 360.  *  0.5000  0.5000  0.3000  0.0000  0.0000  0.0000  0.0000  1.2000  1.0000
0.7000  0.8000  0.8000  0.9000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.1000  2.3000  2.0000  1.8000  2.2000  2.1000  2.0000  1.5000  1.5000
1.3000  1.6000  1.4000  1.3000
 DEGR. *     20     250     250     250      90      90      90     280     280
270      60      70      60

 THE HIGHEST CONCENTRATION OF   2.7000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
6,6,8,8,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-10,-5,-10,35,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,35,0.3048,1,0
'N Leg, E Side-Corner',75.6,76.4,5.9
'N Leg, E Side - 25 m',69.3,148.2,5.9
'N Leg, E Side - 50 m',62.2,229.9,5.9
'N Leg, E Side-Midblk',24.2,664.2,5.9
'S Leg, E Side-Corner',121.0,-214.1,5.9
'S Leg, E Side - 25 m',133.5,-285.1,5.9
'S Leg, E Side - 50 m',147.8,-365.8,5.9
'S Leg, E Side-Midblk',223.5,-795.2,5.9
'S Leg, W Side-Corner',-62.3,-118.6,5.9
'S Leg, W Side - 25 m',-49.8,-189.6,5.9
'S Leg, W Side - 50 m',-35.6,-270.3,5.9
'S Leg, W Side-Midblk',40.1,-699.7,5.9
'E Leg, N Side - 25 m',134.6,35.1,5.9
'E Leg, N Side - 50 m',201.8,-11.9,5.9
'E Leg, N Side-Midblk',558.9,-262.0,5.9
'E Leg, S Side - 25 m',180.0,-255.5,5.9
'E Leg, S Side - 50 m',247.2,-302.5,5.9
'E Leg, S Side-Midblk',604.3,-552.6,5.9
'W Leg, S Side - 25 m',-133.3,-131.1,5.9
'W Leg, S Side - 50 m',-214.0,-145.4,5.9
'W Leg, S Side-Midblk',-643.4,-221.1,5.9
'New1',-101.3,217.3,5.9
'New2',-107.6,289,5.9
'New3',-114.7,370.7,5.9
'New4',-152.7,805,5.9
'New5',-152.3,268.2,5.9
'New6',-210.2,326.2,5.9
'New7',-518.5,634.5,5.9
'New8',-190.1,74.1,5.9
'New9',-241,125,5.9
'New10',-299,183,5.9
'New11',-607.3,491.3,5.9
'New12',-261,61.6,5.9
'New13',-341.8,47.4,5.9
'New14',-771.1,-28.3,5.9
'2025 NB I495 & I270/MD355 (IC.22)',10,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-36,-5,-140,1192,2615,2.62,0.0,91.7
1
'N Leg Dep - FreeFlow','AG',36,5,-69,1199,1835,1.55,0.0,91.7
1
'S Leg App - FreeFlow','AG',36,5,244,-1176,1835,1.55,0.0,91.7
```

```
1
'S Leg Dep - FreeFlow','AG',-36,-5,173,-1188,2615,1.55,0.0,91.7
1
'E Leg App - FreeFlow','AG',11,51,1011,-649,7920,1.49,0.0,115.7
1
'E Leg Dep - FreeFlow','AG',-11,-51,955,-728,4230,2.02,0.0,115.7
1
'W Leg App - FreeFlow','AG',-11,-51,-1173,-256,4230,1.49,0.0,115.7
1
'W Leg Dep - FreeFlow','AG',11,51,-1190,-161,7920,4.38,0.0,115.7
1
'I-270 App - FreeFlow','AG',-23,-28,-874,823,4610,1.49,0.0,91.7
1
'I-270 App - FreeFlow','AG',23,28,-823,874,4610,4.38,0.0,91.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & I270/MD355 (IC.22)

DATE : 5/15/19
TIME : 14: 2:29

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-36.0	-5.0	-140.0	1192.0	*	1202.	355.	AG	2615.	2.6	0.0	91.7		
2. N Leg Dep - FreeFlow	*	36.0	5.0	-69.0	1199.0	*	1199.	355.	AG	1835.	1.5	0.0	91.7		
3. S Leg App - FreeFlow	*	36.0	5.0	244.0	-1176.0	*	1199.	170.	AG	1835.	1.5	0.0	91.7		
4. S Leg Dep - FreeFlow	*	-36.0	-5.0	173.0	-1188.0	*	1201.	170.	AG	2615.	1.5	0.0	91.7		
5. E Leg App - FreeFlow	*	11.0	51.0	1011.0	-649.0	*	1221.	125.	AG	7920.	1.5	0.0	****		
6. E Leg Dep - FreeFlow	*	-11.0	-51.0	955.0	-728.0	*	1180.	125.	AG	4230.	2.0	0.0	****		
7. W Leg App - FreeFlow	*	-11.0	-51.0	-1173.0	-256.0	*	1180.	260.	AG	4230.	1.5	0.0	****		
8. W Leg Dep - FreeFlow	*	11.0	51.0	-1190.0	-161.0	*	1220.	260.	AG	7920.	4.4	0.0	****		
9. I-270 App - FreeFlow	*	-23.0	-28.0	-874.0	823.0	*	1203.	315.	AG	4610.	1.5	0.0	91.7		
10. I-270 App - FreeFlow	*	23.0	28.0	-823.0	874.0	*	1196.								

315. AG   4610.   4.4   0.0 91.7
↟

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & I270/MD355 (IC.22)

DATE : 5/15/19
TIME : 14: 2:29

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	* 75.6	76.4	5.9 *
2. N Leg, E Side - 25 m	* 69.3	148.2	5.9 *
3. N Leg, E Side - 50 m	* 62.2	229.9	5.9 *
4. N Leg, E Side-Midblk	* 24.2	664.2	5.9 *
5. S Leg, E Side-Corner	* 121.0	-214.1	5.9 *
6. S Leg, E Side - 25 m	* 133.5	-285.1	5.9 *
7. S Leg, E Side - 50 m	* 147.8	-365.8	5.9 *
8. S Leg, E Side-Midblk	* 223.5	-795.2	5.9 *
9. S Leg, W Side-Corner	* -62.3	-118.6	5.9 *
10. S Leg, W Side - 25 m	* -49.8	-189.6	5.9 *
11. S Leg, W Side - 50 m	* -35.6	-270.3	5.9 *
12. S Leg, W Side-Midblk	* 40.1	-699.7	5.9 *
13. E Leg, N Side - 25 m	* 134.6	35.1	5.9 *
14. E Leg, N Side - 50 m	* 201.8	-11.9	5.9 *
15. E Leg, N Side-Midblk	* 558.9	-262.0	5.9 *
16. E Leg, S Side - 25 m	* 180.0	-255.5	5.9 *
17. E Leg, S Side - 50 m	* 247.2	-302.5	5.9 *
18. E Leg, S Side-Midblk	* 604.3	-552.6	5.9 *
19. W Leg, S Side - 25 m	* -133.3	-131.1	5.9 *
20. W Leg, S Side - 50 m	* -214.0	-145.4	5.9 *
21. W Leg, S Side-Midblk	* -643.4	-221.1	5.9 *
22. New1	* -101.3	217.3	5.9 *

23. New2	*	-107.6	289.0	5.9	*
24. New3	*	-114.7	370.7	5.9	*
25. New4	*	-152.7	805.0	5.9	*
26. New5	*	-152.3	268.2	5.9	*
27. New6	*	-210.2	326.2	5.9	*
28. New7	*	-518.5	634.5	5.9	*
29. New8	*	-190.1	74.1	5.9	*
30. New9	*	-241.0	125.0	5.9	*
31. New10	*	-299.0	183.0	5.9	*
32. New11	*	-607.3	491.3	5.9	*
33. New12	*	-261.0	61.6	5.9	*
34. New13	*	-341.8	47.4	5.9	*
35. New14	*	-771.1	-28.3	5.9	*

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & I270/MD355 (IC.22)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.2000	0.2000	1.2000	0.8000	0.6000	0.4000	0.0000	0.0000	0.0000
20.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.2000	0.1000	1.0000	0.5000	0.3000	0.3000	0.0000	0.0000	0.0000
30.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.2000	0.2000	0.7000	0.3000	0.3000	0.2000	0.0000	0.0000	0.0000
40.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.2000	0.2000	0.6000	0.3000	0.3000	0.2000	0.0000	0.0000	0.0000
50.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.2000	0.1000	0.4000	0.3000	0.3000	0.2000	0.0000	0.0000	0.0000
60.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.2000	0.2000	0.2000	0.4000	0.3000	0.3000	0.2000	0.0000	0.0000	0.0000
70.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.3000	0.2000	0.1000	0.5000						

0.3000 0.3000 0.2000 0.0000 0.0000 0.0000
80. * 0.0000 0.0000 0.0000 0.0000 0.4000 0.3000 0.2000 0.0000 0.6000
0.3000 0.3000 0.1000 0.0000 0.0000 0.0000
90. * 0.0000 0.0000 0.0000 0.0000 0.5000 0.3000 0.2000 0.0000 0.5000
0.3000 0.3000 0.1000 0.0000 0.0000 0.0000
100. * 0.0000 0.0000 0.0000 0.0000 0.5000 0.3000 0.2000 0.0000 0.5000
0.4000 0.3000 0.1000 0.0000 0.0000 0.0000
110. * 0.1000 0.0000 0.0000 0.0000 0.5000 0.3000 0.2000 0.0000 0.4000
0.3000 0.3000 0.1000 0.1000 0.1000 0.1000
120. * 0.3000 0.1000 0.0000 0.0000 0.4000 0.1000 0.1000 0.0000 0.4000
0.2000 0.1000 0.1000 0.3000 0.3000 0.2000
130. * 0.6000 0.2000 0.1000 0.0000 0.2000 0.0000 0.0000 0.0000 0.2000
0.1000 0.1000 0.1000 0.6000 0.6000 0.4000
140. * 0.6000 0.3000 0.3000 0.0000 0.1000 0.0000 0.0000 0.0000 0.2000
0.2000 0.2000 0.1000 0.6000 0.6000 0.6000
150. * 0.5000 0.3000 0.3000 0.1000 0.0000 0.0000 0.0000 0.0000 0.3000
0.3000 0.3000 0.2000 0.5000 0.5000 0.5000
160. * 0.5000 0.3000 0.3000 0.1000 0.1000 0.1000 0.0000 0.0000 0.2000
0.2000 0.2000 0.2000 0.5000 0.5000 0.5000
170. * 0.5000 0.4000 0.2000 0.2000 0.1000 0.1000 0.1000 0.1000 0.2000
0.2000 0.2000 0.1000 0.4000 0.4000 0.4000
180. * 0.6000 0.6000 0.7000 0.4000 0.2000 0.2000 0.2000 0.1000 0.1000
0.1000 0.1000 0.1000 0.5000 0.4000 0.4000
190. * 0.6000 0.8000 0.5000 0.4000 0.2000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000 0.0000 0.6000 0.4000 0.4000
200. * 0.7000 0.8000 0.8000 0.5000 0.2000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000 0.0000 0.6000 0.4000 0.4000
210. * 0.8000 0.9000 1.0000 0.5000 0.2000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000 0.0000 0.6000 0.4000 0.4000
220. * 0.8000 1.3000 1.0000 0.5000 0.2000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000 0.0000 0.4000 0.4000 0.4000
230. * 1.2000 1.3000 1.1000 0.5000 0.2000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000 0.0000 0.4000 0.4000 0.4000
240. * 1.6000 1.5000 1.1000 0.4000 0.2000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000 0.0000 0.6000 0.4000 0.4000
250. * 2.1000 1.6000 0.9000 0.3000 0.2000 0.2000 0.2000 0.2000 0.1000
0.0000 0.0000 0.0000 1.0000 0.6000 0.4000
260. * 2.1000 1.2000 0.7000 0.3000 0.2000 0.2000 0.2000 0.2000 0.4000
0.1000 0.0000 0.0000 1.5000 0.9000 0.4000
270. * 1.8000 0.8000 0.6000 0.3000 0.5000 0.3000 0.3000 0.2000 0.7000
0.3000 0.1000 0.0000 1.7000 1.3000 0.6000
280. * 1.4000 0.7000 0.6000 0.3000 0.6000 0.5000 0.4000 0.2000 0.8000
0.5000 0.4000 0.0000 1.3000 1.1000 0.7000
290. * 1.2000 0.7000 0.6000 0.2000 0.7000 0.6000 0.5000 0.3000 0.7000
0.5000 0.4000 0.1000 1.1000 1.1000 0.9000
300. * 1.1000 0.7000 0.6000 0.2000 0.7000 0.6000 0.5000 0.3000 0.7000
0.5000 0.4000 0.1000 1.1000 0.9000 0.7000
310. * 0.9000 0.5000 0.3000 0.2000 1.0000 0.8000 0.4000 0.3000 0.8000

0.5000 0.4000 0.2000 0.8000 0.6000 0.3000
 320. * 0.4000 0.3000 0.2000 0.2000 1.0000 0.8000 0.6000 0.3000 1.0000
0.6000 0.6000 0.1000 0.5000 0.3000 0.2000
 330. * 0.3000 0.2000 0.2000 0.2000 1.1000 0.9000 0.8000 0.4000 1.1000
0.8000 0.7000 0.2000 0.2000 0.1000 0.0000
 340. * 0.2000 0.2000 0.2000 0.2000 0.9000 0.7000 0.6000 0.4000 1.2000
0.8000 0.8000 0.3000 0.2000 0.1000 0.0000
 350. * 0.2000 0.2000 0.2000 0.1000 0.6000 0.6000 0.6000 0.1000 1.3000
0.9000 0.9000 0.3000 0.0000 0.0000 0.0000
 360. * 0.1000 0.1000 0.1000 0.1000 0.4000 0.3000 0.2000 0.2000 1.3000
0.9000 0.6000 0.4000 0.0000 0.0000 0.0000

------*---

 MAX   * 2.1000 1.6000 1.1000 0.5000 1.1000 0.9000 0.8000 0.4000 1.3000
0.9000 0.9000 0.4000 1.7000 1.3000 0.9000
 DEGR. *   250   250   230   200   330   330   330   330   350
350   350   10   270   270   290

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND * CONCENTRATION
ANGLE *   (PPM)
(DEGR)*   16   17   18   19   20   21   22   23   24
25   26   27   28   29   30

------*---
----
  10. * 0.4000 0.4000 0.4000 1.0000 1.0000 0.7000 0.4000 0.3000 0.3000
0.3000 0.2000 0.1000 0.0000 0.6000 0.6000
  20. * 0.4000 0.4000 0.4000 1.0000 1.0000 0.8000 0.4000 0.4000 0.4000
0.3000 0.2000 0.1000 0.0000 0.7000 0.6000
  30. * 0.4000 0.4000 0.4000 1.0000 1.1000 0.8000 0.3000 0.3000 0.3000
0.2000 0.1000 0.1000 0.0000 0.7000 0.6000
  40. * 0.4000 0.4000 0.4000 0.9000 0.9000 0.8000 0.2000 0.2000 0.2000

```
0.2000  0.1000  0.1000  0.0000  0.7000  0.6000
  50.  *  0.4000  0.4000  0.4000  0.6000  0.8000  0.8000  0.2000  0.2000  0.2000
0.2000  0.1000  0.1000  0.0000  0.7000  0.6000
  60.  *  0.4000  0.4000  0.4000  0.4000  0.4000  0.8000  0.2000  0.2000  0.2000
0.2000  0.1000  0.1000  0.0000  0.8000  0.6000
  70.  *  0.4000  0.4000  0.4000  0.4000  0.4000  0.5000  0.2000  0.2000  0.2000
0.2000  0.1000  0.1000  0.0000  0.9000  0.6000
  80.  *  0.4000  0.4000  0.4000  0.4000  0.3000  0.4000  0.2000  0.2000  0.2000
0.2000  0.1000  0.1000  0.0000  1.2000  0.6000
  90.  *  0.5000  0.5000  0.5000  0.3000  0.3000  0.2000  0.3000  0.2000  0.2000
0.2000  0.2000  0.2000  0.1000  1.5000  0.7000
 100.  *  0.5000  0.5000  0.4000  0.4000  0.2000  0.1000  0.3000  0.2000  0.2000
0.2000  0.2000  0.2000  0.1000  1.6000  1.0000
 110.  *  0.5000  0.5000  0.4000  0.4000  0.2000  0.0000  0.3000  0.2000  0.2000
0.2000  0.2000  0.2000  0.1000  1.7000  1.2000
 120.  *  0.4000  0.4000  0.3000  0.3000  0.1000  0.0000  0.5000  0.3000  0.2000
0.2000  0.4000  0.4000  0.2000  1.6000  1.2000
 130.  *  0.2000  0.2000  0.1000  0.1000  0.0000  0.0000  0.9000  0.3000  0.3000
0.2000  0.9000  0.8000  0.6000  1.5000  1.0000
 140.  *  0.1000  0.1000  0.1000  0.1000  0.1000  0.0000  1.2000  0.6000  0.4000
0.3000  1.1000  1.1000  1.2000  1.2000  0.9000
 150.  *  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  1.4000  0.8000  0.7000
0.5000  1.3000  1.4000  1.1000  1.0000  0.8000
 160.  *  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  1.7000  1.1000  0.8000
0.4000  1.3000  1.2000  1.1000  1.0000  0.6000
 170.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  1.5000  1.1000  0.7000
0.5000  1.2000  1.1000  1.0000  1.0000  0.7000
 180.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  1.3000  0.9000  0.8000
0.4000  1.0000  1.0000  0.9000  0.9000  0.6000
 190.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  1.3000  0.9000  0.8000
0.3000  1.0000  1.0000  0.9000  0.9000  0.7000
 200.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  1.1000  0.8000  0.7000
0.2000  0.9000  0.9000  0.8000  0.9000  0.7000
 210.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  1.1000  0.8000  0.7000
0.2000  1.1000  0.9000  0.7000  1.0000  0.7000
 220.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  1.2000  1.0000  0.7000
0.2000  1.1000  0.9000  0.7000  1.1000  0.7000
 230.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  1.2000  0.9000  0.7000
0.2000  1.1000  0.9000  0.6000  1.2000  0.8000
 240.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  1.2000  0.8000  0.6000
0.1000  0.9000  0.8000  0.6000  1.5000  0.8000
 250.  *  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.9000  0.7000  0.5000
0.1000  0.8000  0.7000  0.6000  1.5000  0.6000
 260.  *  0.0000  0.0000  0.0000  0.4000  0.4000  0.3000  0.8000  0.6000  0.4000
0.1000  0.8000  0.7000  0.7000  1.1000  0.3000
 270.  *  0.1000  0.1000  0.0000  0.7000  0.7000  0.4000  0.7000  0.5000  0.4000
0.1000  0.7000  0.7000  0.7000  0.5000  0.1000
 280.  *  0.4000  0.3000  0.1000  0.7000  0.7000  0.6000  0.8000  0.5000  0.4000
```

```
0.1000  0.8000  0.8000  0.8000  0.2000  0.0000
 290.  *  0.6000  0.5000  0.2000  0.7000  0.7000  0.7000  0.9000  0.6000  0.4000
0.0000  0.9000  0.9000  0.9000  0.1000  0.0000
 300.  *  0.6000  0.4000  0.4000  0.7000  0.7000  0.7000  1.0000  0.6000  0.4000
0.0000  1.0000  1.0000  0.9000  0.2000  0.1000
 310.  *  0.8000  0.6000  0.6000  0.7000  0.7000  0.7000  1.0000  0.3000  0.1000
0.0000  1.0000  1.0000  0.7000  0.4000  0.3000
 320.  *  1.0000  0.9000  0.7000  0.9000  0.7000  0.7000  0.6000  0.1000  0.0000
0.0000  0.5000  0.5000  0.4000  0.6000  0.5000
 330.  *  0.9000  0.8000  0.5000  0.9000  0.8000  0.6000  0.2000  0.0000  0.0000
0.0000  0.2000  0.2000  0.2000  0.7000  0.7000
 340.  *  0.7000  0.7000  0.5000  0.9000  0.9000  0.6000  0.2000  0.1000  0.1000
0.1000  0.1000  0.1000  0.1000  0.7000  0.7000
 350.  *  0.4000  0.4000  0.4000  1.0000  1.0000  0.8000  0.3000  0.2000  0.2000
0.1000  0.1000  0.1000  0.1000  0.6000  0.6000
 360.  *  0.4000  0.4000  0.4000  1.0000  0.9000  0.7000  0.4000  0.3000  0.3000
0.2000  0.2000  0.1000  0.1000  0.6000  0.5000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.0000  0.9000  0.7000  1.0000  1.1000  0.8000  1.7000  1.1000  0.8000
0.5000  1.3000  1.4000  1.2000  1.7000  1.2000
 DEGR. *    320     320     320      30      30      20     160     160     160
150     150     150     140     110     110
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 31	32	33	34	35
10.	0.5000	0.5000	0.4000	0.3000	0.1000
20.	0.6000	0.5000	0.5000	0.5000	0.2000
30.	0.6000	0.5000	0.5000	0.5000	0.2000
40.	0.6000	0.5000	0.5000	0.5000	0.2000

50.	*	0.6000	0.5000	0.5000	0.5000	0.2000
60.	*	0.6000	0.5000	0.6000	0.6000	0.3000
70.	*	0.6000	0.5000	0.7000	0.8000	0.6000
80.	*	0.6000	0.5000	1.1000	1.2000	1.2000
90.	*	0.6000	0.5000	1.5000	1.4000	1.6000
100.	*	0.7000	0.6000	1.4000	1.5000	1.5000
110.	*	1.0000	0.7000	1.5000	1.4000	1.2000
120.	*	1.1000	0.8000	1.3000	1.3000	1.1000
130.	*	0.9000	0.8000	1.1000	1.0000	1.0000
140.	*	0.6000	0.5000	0.9000	0.9000	0.9000
150.	*	0.6000	0.3000	0.9000	0.9000	0.9000
160.	*	0.5000	0.2000	0.9000	0.9000	0.9000
170.	*	0.5000	0.2000	1.0000	1.0000	1.0000
180.	*	0.5000	0.2000	0.9000	0.9000	0.9000
190.	*	0.5000	0.2000	0.9000	0.9000	0.9000
200.	*	0.5000	0.2000	0.9000	0.9000	0.9000
210.	*	0.5000	0.2000	1.0000	1.0000	1.0000
220.	*	0.6000	0.1000	1.1000	1.1000	1.1000
230.	*	0.6000	0.0000	1.2000	1.2000	1.2000
240.	*	0.4000	0.0000	1.5000	1.4000	1.3000
250.	*	0.3000	0.0000	1.5000	1.5000	1.2000
260.	*	0.1000	0.0000	1.1000	1.1000	0.9000
270.	*	0.0000	0.0000	0.5000	0.5000	0.4000
280.	*	0.0000	0.0000	0.2000	0.2000	0.2000
290.	*	0.0000	0.0000	0.1000	0.1000	0.1000
300.	*	0.1000	0.1000	0.1000	0.1000	0.1000
310.	*	0.3000	0.1000	0.1000	0.1000	0.1000
320.	*	0.5000	0.3000	0.3000	0.1000	0.1000
330.	*	0.6000	0.5000	0.3000	0.2000	0.0000
340.	*	0.7000	0.6000	0.4000	0.3000	0.0000
350.	*	0.6000	0.5000	0.4000	0.3000	0.0000
360.	*	0.5000	0.5000	0.4000	0.3000	0.1000
------	*	----------	----------	----------	----------	----------
MAX	*	1.1000	0.8000	1.5000	1.5000	1.6000
DEGR.	*	120	120	90	100	90

THE HIGHEST CONCENTRATION OF 2.1000 PPM OCCURRED AT RECEPTOR 1.

```
Q,EPA,,F,,0,T,T,F,F,0.7,
3,3,6,6,1014,1014,1014,1014,1014,1014,1014,1014,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,0,0,15,-45,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,23,0.3048,1,0
'N Leg, E Side-Corner',69.6,82.0,5.9
'N Leg, E Side - 25 m',88.2,151.6,5.9
'N Leg, E Side - 50 m',109.5,230.8,5.9
'N Leg, E Side-Midblk',222.3,651.9,5.9
'N Leg, W Side-Corner',-22.6,93.4,5.9
'N Leg, W Side - 25 m',-4.0,162.9,5.9
'N Leg, W Side - 50 m',17.3,242.2,5.9
'N Leg, W Side-Midblk',130.1,663.3,5.9
'S Leg, E Side-Corner',46.0,-82.0,5.9
'S Leg, W Side-Corner',-46.0,-162.0,5.9
'E Leg, N Side - 25 m',141.6,82.0,5.9
'E Leg, N Side - 50 m',223.6,82.0,5.9
'E Leg, N Side-Midblk',659.6,82.0,5.9
'W Leg, N Side - 25 m',-73.5,42.4,5.9
'W Leg, N Side - 50 m',-131.5,-15.6,5.9
'W Leg, N Side-Midblk',-439.8,-323.8,5.9
'E Leg, S Side - 25 m',118.0,-82.0,5.9
'E Leg, S Side - 50 m',200.0,-82.0,5.9
'E Leg, S Side-Midblk',636.0,-82.0,5.9
'W Leg, S Side - 25 m',-96.9,-212.9,5.9
'W Leg, S Side - 50 m',-154.9,-270.9,5.9
'W Leg, S Side-Midblk',-463.2,-579.2,5.9
'S Side - Midblk',0,-122,5.9
'2025 NB I495 & I270 Spur (IC.24)',6,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-18,2,293,1164,5785,1.49,0.0,55.7
1
'N Leg Dep - FreeFlow','AG',18,-2,328,1154,5785,3.48,0.0,55.7
1
'E Leg App - FreeFlow','AG',-15,36,1200,36,4705,1.49,0.0,91.7
1
'E Leg Dep - FreeFlow','AG',15,-36,1200,-36,9200,5.41,0.0,91.7
1
'W Leg App - FreeFlow','AG',15,-36,-823,-874,9200,2.67,0.0,91.7
1
'W Leg Dep - FreeFlow','AG',-15,36,-874,-823,4705,1.49,0.0,91.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & I270 Spur (IC.24)

DATE : 5/16/19
TIME : 7:25:13

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)		(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-18.0	2.0	293.0	1164.0	*	1203.	15.	AG	5785.		1.5	0.0		55.7
2. N Leg Dep - FreeFlow	*	18.0	-2.0	328.0	1154.0	*	1197.	15.	AG	5785.		3.5	0.0		55.7
3. E Leg App - FreeFlow	*	-15.0	36.0	1200.0	36.0	*	1215.	90.	AG	4705.		1.5	0.0		91.7
4. E Leg Dep - FreeFlow	*	15.0	-36.0	1200.0	-36.0	*	1185.	90.	AG	9200.		5.4	0.0		91.7
5. W Leg App - FreeFlow	*	15.0	-36.0	-823.0	-874.0	*	1185.	225.	AG	9200.		2.7	0.0		91.7
6. W Leg Dep - FreeFlow	*	-15.0	36.0	-874.0	-823.0	*	1215.	225.	AG	4705.		1.5	0.0		91.7

PAGE 2
JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & I270 Spur (IC.24)

DATE : 5/16/19
TIME : 7:25:13

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	* 69.6	82.0	5.9 *
2. N Leg, E Side - 25 m	* 88.2	151.6	5.9 *
3. N Leg, E Side - 50 m	* 109.5	230.8	5.9 *
4. N Leg, E Side-Midblk	* 222.3	651.9	5.9 *
5. N Leg, W Side-Corner	* -22.6	93.4	5.9 *
6. N Leg, W Side - 25 m	* -4.0	162.9	5.9 *
7. N Leg, W Side - 50 m	* 17.3	242.2	5.9 *
8. N Leg, W Side-Midblk	* 130.1	663.3	5.9 *
9. S Leg, E Side-Corner	* 46.0	-82.0	5.9 *
10. S Leg, W Side-Corner	* -46.0	-162.0	5.9 *
11. E Leg, N Side - 25 m	* 141.6	82.0	5.9 *
12. E Leg, N Side - 50 m	* 223.6	82.0	5.9 *
13. E Leg, N Side-Midblk	* 659.6	82.0	5.9 *
14. W Leg, N Side - 25 m	* -73.5	42.4	5.9 *
15. W Leg, N Side - 50 m	* -131.5	-15.6	5.9 *
16. W Leg, N Side-Midblk	* -439.8	-323.8	5.9 *
17. E Leg, S Side - 25 m	* 118.0	-82.0	5.9 *
18. E Leg, S Side - 50 m	* 200.0	-82.0	5.9 *
19. E Leg, S Side-Midblk	* 636.0	-82.0	5.9 *
20. W Leg, S Side - 25 m	* -96.9	-212.9	5.9 *
21. W Leg, S Side - 50 m	* -154.9	-270.9	5.9 *
22. W Leg, S Side-Midblk	* -463.2	-579.2	5.9 *
23. S Side - Midblk	* 0.0	-122.0	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 1.3000	1.3000	1.3000	1.1000	0.5000	0.5000	0.5000	0.4000	2.2000	1.6000	0.4000	0.1000	0.0000	0.2000	0.1000
20.	* 0.9000	0.8000	0.8000	0.8000	0.9000	0.9000	0.9000	0.7000	1.8000	1.7000	0.1000	0.0000	0.0000	0.5000	0.3000
30.	* 0.3000	0.3000	0.3000	0.3000	1.1000	1.1000	1.1000	1.0000	1.5000	1.5000	0.0000	0.0000	0.0000	0.6000	0.5000
40.	* 0.1000	0.1000	0.1000	0.1000	0.9000	0.9000	0.9000	0.9000	1.6000	1.3000	0.0000	0.0000	0.0000	0.6000	0.6000
50.	* 0.1000	0.1000	0.1000	0.1000	0.9000	0.9000	0.9000	0.9000	1.7000	1.1000	0.0000	0.0000	0.0000	0.7000	0.5000
60.	* 0.1000	0.1000	0.1000	0.1000	0.8000	0.8000	0.8000	0.8000	1.9000	1.2000	0.0000	0.0000	0.0000	0.7000	0.7000
70.	* 0.0000	0.0000	0.0000	0.0000	0.7000	0.7000	0.7000	0.7000	2.2000	1.1000	0.0000	0.0000	0.0000	0.7000	0.8000
80.	* 0.2000	0.0000	0.0000	0.0000	0.9000	0.7000	0.7000	0.7000	2.5000	1.0000	0.2000	0.2000	0.1000	1.1000	1.4000
90.	* 0.7000	0.3000	0.1000	0.0000	1.3000	1.0000	0.8000	0.7000	2.0000	0.5000	0.7000	0.7000	0.4000	1.7000	1.9000
100.	* 1.1000	0.5000	0.3000	0.0000	1.8000	1.2000	1.0000	0.7000	0.9000	0.2000	1.1000	1.1000	0.8000	2.0000	1.6000
110.	* 1.3000	0.7000	0.5000	0.0000	1.9000	1.4000	1.2000	0.7000	0.4000	0.0000	1.2000	1.2000	1.1000	1.8000	1.0000
120.	* 1.2000	0.7000	0.6000	0.1000	1.7000	1.3000	1.3000	0.8000	0.2000	0.0000	1.2000	1.2000	1.2000	1.4000	0.8000
130.	* 1.1000	0.7000	0.6000	0.2000	1.7000	1.4000	1.3000	0.9000	0.2000	0.0000	1.1000	1.1000	1.1000	1.0000	0.6000
140.	* 1.0000	0.7000	0.6000	0.2000	1.6000	1.4000	1.2000	0.9000	0.1000	0.0000	1.0000	1.0000	1.0000	0.8000	0.6000
150.	* 1.1000	0.7000	0.6000	0.3000	1.4000	1.3000	1.3000	1.0000	0.1000	0.0000	1.0000	1.0000	1.0000	0.6000	0.6000
160.	* 1.1000	0.7000	0.6000	0.3000	1.3000	1.2000	1.3000	1.1000	0.1000	0.0000	1.0000	1.0000	1.0000	0.6000	0.6000
170.	* 1.1000	0.8000	0.6000	0.3000	1.0000	1.2000	1.3000	1.1000	0.0000						

```
0.1000  1.0000  1.0000  1.0000  0.6000  0.6000
 180.  *  1.1000  0.8000  0.7000  0.5000  0.9000  1.2000  1.1000  1.2000  0.0000
0.1000  1.0000  1.0000  1.0000  0.6000  0.6000
 190.  *  1.3000  1.1000  1.0000  1.1000  0.8000  0.9000  1.0000  1.1000  0.0000
0.1000  0.9000  1.0000  1.0000  0.6000  0.6000
 200.  *  1.5000  1.4000  1.4000  1.5000  0.8000  0.7000  0.6000  0.6000  0.1000
0.1000  1.1000  1.0000  1.0000  0.8000  0.8000
 210.  *  1.9000  1.8000  1.7000  1.4000  0.9000  0.7000  0.5000  0.2000  0.2000
0.3000  1.1000  1.1000  1.0000  0.8000  0.8000
 220.  *  1.9000  1.9000  1.5000  1.2000  0.6000  0.3000  0.3000  0.1000  0.5000
0.7000  1.5000  1.3000  1.0000  0.6000  0.6000
 230.  *  1.8000  1.4000  1.2000  1.0000  0.3000  0.2000  0.0000  0.0000  1.0000
1.2000  1.3000  1.4000  1.2000  0.3000  0.3000
 240.  *  1.4000  1.0000  0.9000  0.9000  0.1000  0.0000  0.0000  0.0000  1.1000
1.2000  1.0000  1.3000  1.3000  0.1000  0.1000
 250.  *  1.1000  0.9000  0.9000  0.9000  0.0000  0.0000  0.0000  0.0000  1.0000
1.1000  0.9000  0.9000  1.3000  0.0000  0.0000
 260.  *  0.9000  0.8000  0.8000  0.8000  0.0000  0.0000  0.0000  0.0000  1.0000
0.9000  0.7000  0.7000  1.0000  0.0000  0.0000
 270.  *  0.9000  0.8000  0.8000  0.8000  0.0000  0.0000  0.0000  0.0000  1.1000
0.8000  0.5000  0.5000  0.5000  0.0000  0.0000
 280.  *  0.8000  0.8000  0.8000  0.8000  0.0000  0.0000  0.0000  0.0000  1.1000
0.8000  0.5000  0.4000  0.2000  0.0000  0.0000
 290.  *  0.8000  0.8000  0.8000  0.8000  0.0000  0.0000  0.0000  0.0000  1.2000
0.7000  0.4000  0.3000  0.1000  0.0000  0.0000
 300.  *  0.8000  0.8000  0.8000  0.8000  0.0000  0.0000  0.0000  0.0000  1.2000
0.7000  0.4000  0.3000  0.1000  0.0000  0.0000
 310.  *  0.8000  0.8000  0.8000  0.8000  0.0000  0.0000  0.0000  0.0000  1.2000
0.8000  0.4000  0.3000  0.1000  0.0000  0.0000
 320.  *  0.9000  0.9000  0.9000  0.9000  0.0000  0.0000  0.0000  0.0000  1.4000
0.8000  0.4000  0.3000  0.1000  0.0000  0.0000
 330.  *  0.9000  0.9000  0.9000  0.9000  0.0000  0.0000  0.0000  0.0000  1.6000
0.7000  0.4000  0.3000  0.1000  0.0000  0.0000
 340.  *  1.0000  1.0000  1.0000  1.0000  0.0000  0.0000  0.0000  0.0000  1.8000
0.7000  0.5000  0.3000  0.1000  0.0000  0.0000
 350.  *  1.2000  1.2000  1.2000  1.1000  0.1000  0.1000  0.1000  0.1000  2.1000
0.8000  0.5000  0.3000  0.0000  0.0000  0.0000
 360.  *  1.3000  1.3000  1.3000  1.3000  0.1000  0.1000  0.1000  0.1000  2.4000
1.0000  0.5000  0.3000  0.0000  0.0000  0.0000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  1.9000  1.9000  1.7000  1.5000  1.9000  1.4000  1.3000  1.2000  2.5000
1.7000  1.5000  1.4000  1.3000  2.0000  1.9000
 DEGR. *    210     220     210     200     110     110     120     180      80
20     220     230     240     100      90
```

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & I270 Spur (IC.24)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 16	17	18	19	20	21	22	23
10.	0.0000	1.7000	1.5000	1.4000	1.2000	1.1000	0.9000	1.8000
20.	0.0000	1.4000	1.3000	1.3000	1.4000	1.3000	1.2000	1.8000
30.	0.3000	1.4000	1.4000	1.4000	1.5000	1.5000	1.4000	1.4000
40.	0.4000	1.6000	1.6000	1.6000	1.3000	1.3000	1.3000	1.3000
50.	0.7000	1.7000	1.7000	1.7000	1.1000	1.0000	0.8000	1.2000
60.	0.9000	1.9000	1.9000	1.9000	1.0000	0.8000	0.6000	1.4000
70.	1.1000	2.2000	2.2000	2.1000	0.9000	0.7000	0.3000	1.4000
80.	0.9000	2.4000	2.4000	2.2000	0.6000	0.5000	0.2000	1.3000
90.	0.7000	2.0000	2.0000	1.6000	0.3000	0.2000	0.1000	0.7000
100.	0.6000	0.9000	0.9000	0.8000	0.1000	0.1000	0.1000	0.2000
110.	0.6000	0.4000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000
120.	0.6000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000
130.	0.6000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000
140.	0.6000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
150.	0.6000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
160.	0.6000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
170.	0.6000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.0000
180.	0.6000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000
190.	0.6000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000
200.	0.7000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
210.	0.7000	0.1000	0.1000	0.1000	0.3000	0.3000	0.2000	0.2000
220.	0.5000	0.2000	0.2000	0.1000	0.7000	0.7000	0.6000	0.6000
230.	0.3000	0.5000	0.3000	0.2000	1.2000	1.2000	0.9000	1.1000
240.	0.1000	0.8000	0.6000	0.3000	1.2000	1.2000	1.1000	1.2000
250.	0.0000	0.8000	0.8000	0.4000	1.1000	1.1000	1.0000	1.0000
260.	0.0000	1.0000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
270.	0.0000	1.2000	1.4000	1.8000	0.8000	0.8000	0.8000	0.8000
280.	0.0000	1.4000	1.7000	2.4000	0.8000	0.8000	0.8000	0.8000
290.	0.0000	1.5000	1.8000	2.3000	0.7000	0.7000	0.7000	0.7000
300.	0.0000	1.6000	2.0000	2.0000	0.7000	0.7000	0.7000	0.7000

310.	*	0.0000	1.7000	2.0000	1.8000	0.8000	0.8000	0.8000	0.7000
320.	*	0.0000	1.8000	1.8000	1.7000	0.8000	0.8000	0.8000	0.7000
330.	*	0.0000	1.8000	1.7000	1.5000	0.7000	0.7000	0.7000	0.7000
340.	*	0.0000	1.7000	1.6000	1.4000	0.7000	0.7000	0.7000	0.8000
350.	*	0.0000	1.8000	1.7000	1.4000	0.8000	0.8000	0.8000	1.0000
360.	*	0.0000	1.9000	1.8000	1.5000	0.9000	0.8000	0.8000	1.4000
------	*	----------	----------	----------	----------	----------	----------	----------	----------
MAX	*	1.1000	2.4000	2.4000	2.4000	1.5000	1.5000	1.4000	1.8000
DEGR.	*	70	80	80	280	30	30	30	20

THE HIGHEST CONCENTRATION OF 2.5000 PPM OCCURRED AT RECEPTOR 9.

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,6,5,7,1020,1020,1020,1020,1020,1020,1020,1020,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-40,-40,5,5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',13.2,93.2,5.9
'N Leg, E Side - 25 m',-33.1,148.4,5.9
'N Leg, E Side - 50 m',-85.8,211.2,5.9
'N Leg, E Side-Midblk',-366.1,545.2,5.9
'N Leg, W Side-Corner',-201.0,111.9,5.9
'N Leg, W Side - 25 m',-247.3,167.1,5.9
'N Leg, W Side - 50 m',-300.0,229.9,5.9
'N Leg, W Side-Midblk',-580.2,563.9,5.9
'S Leg, E Side-Corner',162.3,-84.5,5.9
'S Leg, E Side - 25 m',208.5,-139.6,5.9
'S Leg, E Side - 50 m',261.3,-202.5,5.9
'S Leg, E Side-Midblk',541.5,-536.4,5.9
'S Leg, W Side-Corner',-51.9,-65.7,5.9
'S Leg, W Side - 25 m',-5.6,-120.9,5.9
'S Leg, W Side - 50 m',47.1,-183.7,5.9
'S Leg, W Side-Midblk',327.4,-517.7,5.9
'E Leg, N Side - 25 m',84.9,86.9,5.9
'E Leg, N Side - 50 m',166.6,79.8,5.9
'E Leg, N Side-Midblk',600.9,41.8,5.9
'W Leg, N Side - 25 m',-272.7,118.2,5.9
'W Leg, N Side - 50 m',-354.4,125.4,5.9
'W Leg, N Side-Midblk',-788.7,163.4,5.9
'E Leg, S Side - 25 m',234.0,-90.7,5.9
'E Leg, S Side - 50 m',315.7,-97.9,5.9
'E Leg, S Side-Midblk',750.0,-135.9,5.9
'W Leg, S Side - 25 m',-123.6,-59.5,5.9
'W Leg, S Side - 50 m',-205.3,-52.3,5.9
'W Leg, S Side-Midblk',-639.6,-14.3,5.9
'2025 NB I495 & MD5 (IC.3)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-28,-23,-799,896,3740,1.53,0.0,91.7
1
'N Leg Dep - FreeFlow','AG',23,19,-748,939,3600,2.66,0.0,79.7
1
'S Leg App - FreeFlow','AG',23,19,794,-900,3600,3.40,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-28,-23,744,-942,3740,1.53,0.0,91.7
1
'E Leg App - FreeFlow','AG',0,42,1199,-63,7100,4.37,0.0,103.7
1
'E Leg Dep - FreeFlow','AG',-3,-30,1193,-134,6900,1.50,0.0,79.7
1
```

```
'W Leg App - FreeFlow','AG',-3,-30,-1198,75,6900,2.02,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',0,42,-1192,146,7100,1.50,0.0,103.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & MD5 (IC.3)

DATE : 5/15/19
TIME : 9:29:36

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-28.0	-23.0	-799.0	896.0	*	1200.	320.	AG	3740.	1.5	0.0	91.7		
2. N Leg Dep - FreeFlow	*	23.0	19.0	-748.0	939.0	*	1200.	320.	AG	3600.	2.7	0.0	79.7		
3. S Leg App - FreeFlow	*	23.0	19.0	794.0	-900.0	*	1200.	140.	AG	3600.	3.4	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-28.0	-23.0	744.0	-942.0	*	1200.	140.	AG	3740.	1.5	0.0	91.7		
5. E Leg App - FreeFlow	*	0.0	42.0	1199.0	-63.0	*	1204.	95.	AG	7100.	4.4	0.0	****		
6. E Leg Dep - FreeFlow	*	-3.0	-30.0	1193.0	-134.0	*	1201.	95.	AG	6900.	1.5	0.0	79.7		
7. W Leg App - FreeFlow	*	-3.0	-30.0	-1198.0	75.0	*	1200.	275.	AG	6900.	2.0	0.0	79.7		
8. W Leg Dep - FreeFlow	*	0.0	42.0	-1192.0	146.0	*	1197.	275.	AG	7100.	1.5	0.0	****		

DATE : 5/15/19
TIME : 9:29:36

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	13.2	93.2	5.9
2. N Leg, E Side - 25 m	-33.1	148.4	5.9
3. N Leg, E Side - 50 m	-85.8	211.2	5.9
4. N Leg, E Side-Midblk	-366.1	545.2	5.9
5. N Leg, W Side-Corner	-201.0	111.9	5.9
6. N Leg, W Side - 25 m	-247.3	167.1	5.9
7. N Leg, W Side - 50 m	-300.0	229.9	5.9
8. N Leg, W Side-Midblk	-580.2	563.9	5.9
9. S Leg, E Side-Corner	162.3	-84.5	5.9
10. S Leg, E Side - 25 m	208.5	-139.6	5.9
11. S Leg, E Side - 50 m	261.3	-202.5	5.9
12. S Leg, E Side-Midblk	541.5	-536.4	5.9
13. S Leg, W Side-Corner	-51.9	-65.7	5.9
14. S Leg, W Side - 25 m	-5.6	-120.9	5.9
15. S Leg, W Side - 50 m	47.1	-183.7	5.9
16. S Leg, W Side-Midblk	327.4	-517.7	5.9
17. E Leg, N Side - 25 m	84.9	86.9	5.9
18. E Leg, N Side - 50 m	166.6	79.8	5.9
19. E Leg, N Side-Midblk	600.9	41.8	5.9
20. W Leg, N Side - 25 m	-272.7	118.2	5.9
21. W Leg, N Side - 50 m	-354.4	125.4	5.9
22. W Leg, N Side-Midblk	-788.7	163.4	5.9
23. E Leg, S Side - 25 m	234.0	-90.7	5.9
24. E Leg, S Side - 50 m	315.7	-97.9	5.9
25. E Leg, S Side-Midblk	750.0	-135.9	5.9
26. W Leg, S Side - 25 m	-123.6	-59.5	5.9

27. W Leg, S Side - 50 m	*	-205.3	-52.3	5.9 *
28. W Leg, S Side-Midblk	*	-639.6	-14.3	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.8000	0.6000	0.4000	0.3000	1.1000	0.9000	0.8000
20.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.8000	0.6000	0.4000	0.3000	1.0000	0.8000	0.7000
30.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.8000	0.6000	0.4000	0.3000	1.1000	0.9000	0.7000
40.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.8000	0.6000	0.4000	0.3000	1.1000	0.9000	0.7000
50.	*	0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.9000	0.6000	0.4000	0.2000	1.1000	1.0000	0.8000
60.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	1.0000	0.6000	0.6000	0.1000	1.4000	0.9000	0.9000
70.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.3000	0.3000	0.3000	1.0000	0.7000	0.5000	0.0000	1.4000	1.0000	0.9000
80.	*	0.3000	0.0000	0.0000	0.0000	0.6000	0.4000	0.4000	0.4000	1.1000	0.6000	0.3000	0.0000	1.6000	1.0000	0.8000
90.	*	0.8000	0.2000	0.1000	0.0000	0.9000	0.5000	0.5000	0.4000	0.9000	0.4000	0.2000	0.0000	1.5000	0.9000	0.6000
100.	*	1.4000	0.6000	0.3000	0.0000	1.3000	0.9000	0.8000	0.4000	0.5000	0.2000	0.0000	0.0000	1.0000	0.6000	0.4000
110.	*	1.6000	0.8000	0.6000	0.1000	1.4000	1.0000	0.9000	0.5000	0.1000	0.0000	0.0000	0.0000	0.6000	0.4000	0.4000
120.	*	1.4000	0.8000	0.7000	0.3000	1.3000	0.9000	0.9000	0.7000	0.2000	0.1000	0.1000	0.1000	0.5000	0.5000	0.5000

130. * 1.5000 0.9000 0.7000 0.5000 1.2000 1.0000 0.9000 0.6000 0.2000
0.2000 0.2000 0.2000 0.5000 0.5000 0.5000
140. * 1.7000 1.2000 0.9000 0.6000 0.8000 0.6000 0.6000 0.6000 0.6000
0.6000 0.5000 0.4000 0.3000 0.3000 0.3000
150. * 1.7000 1.2000 1.0000 0.8000 0.6000 0.5000 0.3000 0.3000 0.7000
0.7000 0.7000 0.6000 0.1000 0.1000 0.1000
160. * 1.4000 1.1000 1.0000 0.7000 0.5000 0.4000 0.2000 0.2000 0.7000
0.7000 0.7000 0.6000 0.0000 0.0000 0.0000
170. * 1.3000 1.0000 0.6000 0.7000 0.5000 0.4000 0.2000 0.2000 0.6000
0.6000 0.6000 0.6000 0.0000 0.0000 0.0000
180. * 1.3000 0.8000 0.6000 0.6000 0.5000 0.4000 0.2000 0.2000 0.5000
0.5000 0.5000 0.5000 0.0000 0.0000 0.0000
190. * 1.3000 0.7000 0.6000 0.6000 0.5000 0.4000 0.2000 0.2000 0.5000
0.5000 0.5000 0.5000 0.0000 0.0000 0.0000
200. * 1.1000 0.8000 0.6000 0.6000 0.5000 0.4000 0.2000 0.2000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
210. * 1.0000 0.7000 0.5000 0.5000 0.5000 0.4000 0.2000 0.2000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
220. * 1.0000 0.8000 0.6000 0.6000 0.5000 0.4000 0.2000 0.2000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
230. * 1.1000 0.8000 0.6000 0.6000 0.5000 0.4000 0.2000 0.0000 0.5000
0.5000 0.5000 0.5000 0.0000 0.0000 0.0000
240. * 1.0000 0.8000 0.7000 0.4000 0.5000 0.4000 0.3000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
250. * 1.1000 0.8000 0.7000 0.4000 0.6000 0.4000 0.3000 0.0000 0.4000
0.4000 0.4000 0.4000 0.1000 0.0000 0.0000
260. * 1.1000 0.8000 0.6000 0.4000 0.7000 0.4000 0.2000 0.0000 0.6000
0.4000 0.4000 0.4000 0.2000 0.0000 0.0000
270. * 1.0000 0.7000 0.5000 0.4000 0.5000 0.3000 0.1000 0.0000 1.0000
0.6000 0.5000 0.5000 0.5000 0.1000 0.0000
280. * 0.8000 0.5000 0.4000 0.4000 0.3000 0.1000 0.0000 0.0000 1.3000
0.8000 0.7000 0.5000 0.9000 0.3000 0.2000
290. * 0.6000 0.5000 0.5000 0.5000 0.1000 0.0000 0.0000 0.0000 1.4000
0.9000 0.9000 0.7000 0.9000 0.4000 0.3000
300. * 0.5000 0.5000 0.5000 0.5000 0.0000 0.0000 0.0000 0.0000 1.4000
1.2000 1.0000 0.8000 0.8000 0.5000 0.3000
310. * 0.6000 0.6000 0.6000 0.5000 0.1000 0.1000 0.1000 0.1000 1.6000
1.1000 1.2000 0.8000 0.8000 0.6000 0.5000
320. * 0.5000 0.5000 0.5000 0.3000 0.3000 0.3000 0.3000 0.2000 1.4000
1.1000 1.0000 0.7000 0.9000 0.7000 0.6000
330. * 0.2000 0.2000 0.2000 0.2000 0.5000 0.4000 0.4000 0.3000 1.0000
0.9000 0.7000 0.5000 1.0000 0.9000 0.7000
340. * 0.1000 0.1000 0.1000 0.1000 0.4000 0.4000 0.4000 0.3000 0.9000
0.7000 0.5000 0.4000 1.0000 0.7000 0.9000
350. * 0.0000 0.0000 0.0000 0.0000 0.4000 0.4000 0.4000 0.4000 0.8000
0.6000 0.4000 0.3000 1.0000 0.8000 0.7000
360. * 0.0000 0.0000 0.0000 0.0000 0.4000 0.4000 0.4000 0.4000 0.8000
0.6000 0.4000 0.3000 0.9000 0.8000 0.9000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.7000  1.2000  1.0000  0.8000  1.4000  1.0000  0.9000  0.7000  1.6000
1.2000  1.2000  0.8000  1.6000  1.0000  0.9000
 DEGR. *    140     140     160     150     110     130     120     120     310
300     310     300      80      50     340
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.7000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.8000  0.8000
0.8000  0.8000  0.8000  0.6000
  20.  *  0.7000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.8000  0.8000
0.8000  0.8000  0.8000  0.6000
  30.  *  0.6000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.8000  0.8000
0.8000  0.8000  0.8000  0.6000
  40.  *  0.6000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.8000  0.8000
0.8000  0.8000  0.8000  0.6000
  50.  *  0.7000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.9000  0.9000
0.9000  0.9000  0.9000  0.6000
  60.  *  0.5000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  1.0000  1.0000
1.0000  1.4000  1.0000  0.7000
  70.  *  0.3000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  1.0000  1.0000
1.0000  1.2000  1.3000  0.8000
  80.  *  0.4000  0.3000  0.3000  0.3000  0.4000  0.4000  0.1000  1.1000  1.1000
0.9000  1.4000  1.2000  1.1000
  90.  *  0.4000  0.8000  0.8000  0.7000  0.7000  0.7000  0.4000  0.9000  0.9000
0.6000  1.3000  1.2000  1.0000
```

```
 100.  *  0.4000  1.4000  1.4000  1.2000  1.1000  1.0000  0.8000  0.4000  0.4000
0.4000  0.9000  0.8000  0.7000
 110.  *  0.4000  1.6000  1.5000  1.4000  1.3000  1.1000  0.8000  0.1000  0.1000
0.1000  0.5000  0.3000  0.3000
 120.  *  0.4000  1.4000  1.4000  1.3000  1.0000  1.0000  0.7000  0.1000  0.1000
0.0000  0.4000  0.3000  0.1000
 130.  *  0.3000  1.2000  1.2000  1.2000  0.7000  0.7000  0.5000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 140.  *  0.3000  1.2000  1.2000  1.1000  0.7000  0.5000  0.5000  0.1000  0.1000
0.0000  0.2000  0.0000  0.0000
 150.  *  0.1000  1.4000  1.1000  1.0000  0.5000  0.5000  0.5000  0.3000  0.1000
0.0000  0.0000  0.0000  0.0000
 160.  *  0.0000  1.3000  1.2000  0.9000  0.5000  0.5000  0.5000  0.4000  0.3000
0.0000  0.0000  0.0000  0.0000
 170.  *  0.0000  1.3000  1.2000  0.9000  0.5000  0.5000  0.5000  0.4000  0.3000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.0000  1.2000  1.2000  1.0000  0.5000  0.5000  0.5000  0.3000  0.3000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  1.2000  1.2000  1.0000  0.5000  0.5000  0.5000  0.3000  0.3000
0.1000  0.0000  0.0000  0.0000
 200.  *  0.0000  1.2000  1.1000  1.0000  0.5000  0.5000  0.5000  0.3000  0.3000
0.1000  0.0000  0.0000  0.0000
 210.  *  0.0000  1.3000  1.2000  1.0000  0.5000  0.5000  0.5000  0.3000  0.3000
0.1000  0.0000  0.0000  0.0000
 220.  *  0.0000  1.2000  1.2000  1.1000  0.5000  0.5000  0.5000  0.3000  0.3000
0.1000  0.0000  0.0000  0.0000
 230.  *  0.0000  1.2000  1.2000  1.2000  0.5000  0.5000  0.5000  0.3000  0.3000
0.1000  0.0000  0.0000  0.0000
 240.  *  0.0000  1.2000  1.2000  1.3000  0.5000  0.5000  0.5000  0.3000  0.3000
0.1000  0.0000  0.0000  0.0000
 250.  *  0.0000  1.3000  1.4000  1.4000  0.6000  0.6000  0.6000  0.3000  0.3000
0.2000  0.1000  0.1000  0.1000
 260.  *  0.0000  1.3000  1.4000  1.6000  0.7000  0.7000  0.5000  0.5000  0.4000
0.2000  0.2000  0.2000  0.2000
 270.  *  0.0000  1.2000  1.2000  1.4000  0.5000  0.5000  0.3000  0.8000  0.7000
0.6000  0.5000  0.5000  0.4000
 280.  *  0.0000  0.9000  0.9000  1.0000  0.3000  0.3000  0.2000  1.0000  0.9000
1.0000  0.8000  0.8000  0.7000
 290.  *  0.0000  0.5000  0.4000  0.4000  0.1000  0.1000  0.1000  1.4000  1.1000
1.1000  0.9000  0.9000  0.8000
 300.  *  0.2000  0.4000  0.3000  0.1000  0.0000  0.0000  0.0000  1.3000  1.3000
1.0000  0.8000  0.8000  0.8000
 310.  *  0.3000  0.4000  0.2000  0.1000  0.0000  0.0000  0.0000  1.3000  1.0000
1.0000  0.7000  0.7000  0.7000
 320.  *  0.5000  0.2000  0.2000  0.1000  0.1000  0.0000  0.0000  0.9000  1.0000
0.9000  0.7000  0.6000  0.6000
 330.  *  0.5000  0.1000  0.1000  0.1000  0.2000  0.1000  0.0000  0.8000  0.8000
0.8000  0.8000  0.8000  0.6000
```

```
 340.  *  0.6000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.8000  0.8000
0.8000  0.8000  0.8000  0.6000
 350.  *  0.7000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.8000  0.8000
0.8000  0.8000  0.8000  0.6000
 360.  *  0.7000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.8000  0.8000
0.8000  0.8000  0.8000  0.6000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.7000  1.6000  1.5000  1.6000  1.3000  1.1000  0.8000  1.4000  1.3000
1.1000  1.4000  1.3000  1.1000
 DEGR. *     10     110     110     260     110     110     100     290     300
290      60      70      80

 THE HIGHEST CONCENTRATION OF   1.7000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,5,7,7,847,847,847,847,847,847,847,847,1036.8,1036.8,1036.8,1036.8,1036.8,1036.8,10
36.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,120
0,-1200,0,0,0,0,0,0,-10,-10,0,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',54.5,94.0,5.9
'N Leg, E Side - 25 m',42.0,164.9,5.9
'N Leg, E Side - 50 m',27.8,245.7,5.9
'N Leg, E Side-Midblk',-47.9,675.0,5.9
'N Leg, W Side-Corner',-87.7,94.0,5.9
'N Leg, W Side - 25 m',-100.2,164.9,5.9
'N Leg, W Side - 50 m',-114.4,245.7,5.9
'N Leg, W Side-Midblk',-190.1,675.0,5.9
'S Leg, E Side-Corner',87.7,-94.0,5.9
'S Leg, E Side - 25 m',100.2,-164.9,5.9
'S Leg, E Side - 50 m',114.4,-245.7,5.9
'S Leg, E Side-Midblk',190.1,-675.0,5.9
'S Leg, W Side-Corner',-54.5,-94.0,5.9
'S Leg, W Side - 25 m',-42.0,-164.9,5.9
'S Leg, W Side - 50 m',-27.8,-245.7,5.9
'S Leg, W Side-Midblk',47.9,-675.0,5.9
'E Leg, N Side - 25 m',126.5,94.0,5.9
'E Leg, N Side - 50 m',208.5,94.0,5.9
'E Leg, N Side-Midblk',644.5,94.0,5.9
'W Leg, N Side - 25 m',-159.7,94.0,5.9
'W Leg, N Side - 50 m',-241.7,94.0,5.9
'W Leg, N Side-Midblk',-677.7,94.0,5.9
'E Leg, S Side - 25 m',159.7,-94.0,5.9
'E Leg, S Side - 50 m',241.7,-94.0,5.9
'E Leg, S Side-Midblk',677.7,-94.0,5.9
'W Leg, S Side - 25 m',-126.5,-94.0,5.9
'W Leg, S Side - 50 m',-208.5,-94.0,5.9
'W Leg, S Side-Midblk',-644.5,-94.0,5.9
'2025 NB I495 & MD97 (IC.20)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-30,-5,-238,1177,3255,1.85,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',30,5,-179,1187,2585,3.23,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,5,238,-1177,2585,1.85,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-30,-5,179,-1187,3255,3.23,0.0,79.7
1
'E Leg App - FreeFlow','AG',0,42,1200,42,8650,4.38,0.0,103.7
1
'E Leg Dep - FreeFlow','AG',0,-42,1200,-42,7930,1.49,0.0,103.7
1
```

```
'W Leg App - FreeFlow','AG',0,-42,-1200,-42,7930,2.67,0.0,103.7
1
'W Leg Dep - FreeFlow','AG',0,42,-1200,42,8650,1.49,0.0,103.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & MD97 (IC.20)

DATE : 5/15/19
TIME : 12: 8:56

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-30.0	-5.0	-238.0	1177.0	*	1200.	350.	AG	3255.	1.9	0.0	79.7		
2. N Leg Dep - FreeFlow	*	30.0	5.0	-179.0	1187.0	*	1200.	350.	AG	2585.	3.2	0.0	79.7		
3. S Leg App - FreeFlow	*	30.0	5.0	238.0	-1177.0	*	1200.	170.	AG	2585.	1.9	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-30.0	-5.0	179.0	-1187.0	*	1200.	170.	AG	3255.	3.2	0.0	79.7		
5. E Leg App - FreeFlow	*	0.0	42.0	1200.0	42.0	*	1200.	90.	AG	8650.	4.4	0.0	****		
6. E Leg Dep - FreeFlow	*	0.0	-42.0	1200.0	-42.0	*	1200.	90.	AG	7930.	1.5	0.0	****		
7. W Leg App - FreeFlow	*	0.0	-42.0	-1200.0	-42.0	*	1200.	270.	AG	7930.	2.7	0.0	****		
8. W Leg Dep - FreeFlow	*	0.0	42.0	-1200.0	42.0	*	1200.	270.	AG	8650.	1.5	0.0	****		

DATE : 5/15/19
TIME : 12: 8:56

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	54.5	94.0	5.9
2. N Leg, E Side - 25 m	42.0	164.9	5.9
3. N Leg, E Side - 50 m	27.8	245.7	5.9
4. N Leg, E Side-Midblk	-47.9	675.0	5.9
5. N Leg, W Side-Corner	-87.7	94.0	5.9
6. N Leg, W Side - 25 m	-100.2	164.9	5.9
7. N Leg, W Side - 50 m	-114.4	245.7	5.9
8. N Leg, W Side-Midblk	-190.1	675.0	5.9
9. S Leg, E Side-Corner	87.7	-94.0	5.9
10. S Leg, E Side - 25 m	100.2	-164.9	5.9
11. S Leg, E Side - 50 m	114.4	-245.7	5.9
12. S Leg, E Side-Midblk	190.1	-675.0	5.9
13. S Leg, W Side-Corner	-54.5	-94.0	5.9
14. S Leg, W Side - 25 m	-42.0	-164.9	5.9
15. S Leg, W Side - 50 m	-27.8	-245.7	5.9
16. S Leg, W Side-Midblk	47.9	-675.0	5.9
17. E Leg, N Side - 25 m	126.5	94.0	5.9
18. E Leg, N Side - 50 m	208.5	94.0	5.9
19. E Leg, N Side-Midblk	644.5	94.0	5.9
20. W Leg, N Side - 25 m	-159.7	94.0	5.9
21. W Leg, N Side - 50 m	-241.7	94.0	5.9
22. W Leg, N Side-Midblk	-677.7	94.0	5.9
23. E Leg, S Side - 25 m	159.7	-94.0	5.9
24. E Leg, S Side - 50 m	241.7	-94.0	5.9
25. E Leg, S Side-Midblk	677.7	-94.0	5.9
26. W Leg, S Side - 25 m	-126.5	-94.0	5.9

27. W Leg, S Side - 50 m * -208.5 -94.0 5.9 *
28. W Leg, S Side-Midblk * -644.5 -94.0 5.9 *

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & MD97 (IC.20)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.1000	0.1000	0.1000	0.1000	0.5000	0.5000	0.5000	0.5000	0.8000	0.6000	0.4000	0.3000	1.2000	1.1000	0.9000
20.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.9000	0.6000	0.4000	0.3000	1.4000	1.1000	0.9000
30.	* 0.1000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.9000	0.6000	0.4000	0.3000	1.5000	1.1000	0.9000
40.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.9000	0.6000	0.4000	0.3000	1.4000	1.0000	0.8000
50.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	1.0000	0.6000	0.4000	0.1000	1.6000	1.0000	0.9000
60.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	1.0000	0.7000	0.5000	0.1000	1.5000	1.1000	0.9000
70.	* 0.2000	0.0000	0.0000	0.0000	0.4000	0.3000	0.3000	0.3000	1.2000	0.6000	0.4000	0.0000	1.7000	1.1000	0.8000
80.	* 0.6000	0.1000	0.0000	0.0000	0.8000	0.4000	0.3000	0.3000	1.0000	0.5000	0.2000	0.0000	1.6000	0.9000	0.7000
90.	* 1.4000	0.3000	0.1000	0.0000	1.5000	0.6000	0.4000	0.3000	0.6000	0.2000	0.0000	0.0000	1.2000	0.6000	0.4000
100.	* 1.9000	0.7000	0.4000	0.0000	1.8000	1.0000	0.7000	0.3000	0.3000	0.0000	0.0000	0.0000	0.8000	0.4000	0.4000
110.	* 1.7000	0.8000	0.6000	0.1000	1.5000	1.1000	0.9000	0.4000	0.1000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000
120.	* 1.5000	0.8000	0.6000	0.1000	1.3000	1.0000	0.9000	0.6000	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000

130. * 1.4000 0.8000 0.6000 0.2000 1.2000 0.9000 0.8000 0.7000 0.0000
0.0000 0.0000 0.0000 0.5000 0.5000 0.5000
140. * 1.2000 0.7000 0.5000 0.3000 1.1000 0.8000 0.7000 0.7000 0.0000
0.0000 0.0000 0.0000 0.5000 0.5000 0.5000
150. * 1.2000 0.7000 0.6000 0.4000 1.2000 1.0000 0.9000 0.7000 0.0000
0.0000 0.0000 0.0000 0.6000 0.6000 0.6000
160. * 1.3000 0.8000 0.6000 0.4000 1.1000 1.0000 0.8000 0.6000 0.1000
0.1000 0.1000 0.1000 0.6000 0.6000 0.6000
170. * 1.4000 1.1000 0.9000 0.5000 1.1000 0.8000 0.6000 0.5000 0.3000
0.3000 0.3000 0.3000 0.4000 0.4000 0.4000
180. * 1.8000 1.1000 1.1000 0.8000 0.8000 0.6000 0.5000 0.3000 0.4000
0.4000 0.4000 0.3000 0.2000 0.2000 0.2000
190. * 1.7000 1.3000 0.9000 0.7000 0.6000 0.4000 0.3000 0.2000 0.4000
0.4000 0.4000 0.4000 0.1000 0.1000 0.1000
200. * 1.6000 1.1000 0.8000 0.6000 0.6000 0.4000 0.3000 0.2000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
210. * 1.5000 0.9000 0.7000 0.6000 0.6000 0.4000 0.3000 0.2000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
220. * 1.5000 0.9000 0.7000 0.6000 0.7000 0.4000 0.3000 0.2000 0.3000
0.3000 0.3000 0.3000 0.1000 0.0000 0.0000
230. * 1.5000 0.8000 0.7000 0.5000 0.7000 0.5000 0.4000 0.2000 0.3000
0.3000 0.3000 0.3000 0.1000 0.0000 0.0000
240. * 1.6000 0.8000 0.7000 0.3000 0.8000 0.5000 0.4000 0.0000 0.3000
0.3000 0.3000 0.3000 0.1000 0.0000 0.0000
250. * 1.6000 0.8000 0.7000 0.3000 0.9000 0.4000 0.4000 0.0000 0.4000
0.3000 0.3000 0.3000 0.1000 0.0000 0.0000
260. * 1.4000 0.7000 0.5000 0.3000 0.9000 0.4000 0.2000 0.0000 0.6000
0.3000 0.3000 0.3000 0.4000 0.0000 0.0000
270. * 1.3000 0.5000 0.3000 0.3000 0.6000 0.2000 0.0000 0.0000 1.0000
0.5000 0.4000 0.3000 0.9000 0.2000 0.1000
280. * 0.7000 0.3000 0.3000 0.3000 0.2000 0.0000 0.0000 0.0000 1.3000
0.8000 0.6000 0.3000 1.1000 0.4000 0.3000
290. * 0.4000 0.3000 0.3000 0.3000 0.1000 0.0000 0.0000 0.0000 1.2000
0.9000 0.7000 0.3000 1.0000 0.6000 0.4000
300. * 0.5000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.9000
0.8000 0.7000 0.4000 0.9000 0.6000 0.4000
310. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 1.2000
0.9000 0.7000 0.6000 0.8000 0.6000 0.4000
320. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 1.0000
0.8000 0.7000 0.6000 0.8000 0.4000 0.3000
330. * 0.5000 0.5000 0.5000 0.5000 0.0000 0.0000 0.0000 0.0000 1.1000
1.0000 0.9000 0.6000 0.7000 0.5000 0.4000
340. * 0.5000 0.5000 0.5000 0.5000 0.1000 0.1000 0.1000 0.1000 1.2000
1.0000 0.9000 0.6000 0.9000 0.6000 0.4000
350. * 0.4000 0.4000 0.4000 0.3000 0.4000 0.3000 0.3000 0.2000 1.2000
1.0000 0.7000 0.5000 1.2000 0.8000 0.8000
360. * 0.2000 0.2000 0.2000 0.1000 0.5000 0.5000 0.4000 0.4000 0.9000
0.8000 0.6000 0.4000 1.4000 1.1000 1.0000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.9000  1.3000  1.1000  0.8000  1.8000  1.1000  0.9000  0.7000  1.3000
1.0000  0.9000  0.6000  1.7000  1.1000  1.0000
 DEGR. *    100     190     180     180     100     110     110     130     280
330     330     310      70      10     360
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.7000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.8000  0.8000
0.8000  0.9000  0.9000  0.7000
  20.  *  0.8000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.9000  0.9000
0.9000  0.9000  0.9000  0.7000
  30.  *  0.8000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.9000  0.9000
0.9000  1.0000  0.9000  0.7000
  40.  *  0.7000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.9000  0.9000
0.9000  1.2000  1.1000  0.8000
  50.  *  0.6000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  1.0000  1.0000
1.0000  1.3000  1.2000  0.9000
  60.  *  0.5000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  1.0000  1.0000
1.0000  1.3000  1.2000  0.9000
  70.  *  0.4000  0.2000  0.2000  0.2000  0.4000  0.4000  0.1000  1.2000  1.1000
1.0000  1.5000  1.4000  1.1000
  80.  *  0.4000  0.6000  0.6000  0.5000  0.6000  0.6000  0.3000  1.0000  1.0000
0.8000  1.6000  1.4000  1.4000
  90.  *  0.4000  1.4000  1.4000  1.1000  1.2000  1.2000  0.9000  0.6000  0.6000
0.4000  1.2000  1.0000  1.0000
```

```
 100.  *  0.4000  1.9000  1.9000  1.6000  1.5000  1.4000  1.0000  0.2000  0.2000
0.2000  0.7000  0.5000  0.4000
 110.  *  0.4000  1.7000  1.7000  1.7000  1.3000  0.9000  0.9000  0.1000  0.1000
0.1000  0.4000  0.2000  0.1000
 120.  *  0.4000  1.5000  1.5000  1.5000  1.1000  0.9000  0.7000  0.0000  0.0000
0.0000  0.4000  0.2000  0.2000
 130.  *  0.5000  1.4000  1.4000  1.4000  1.1000  0.8000  0.8000  0.0000  0.0000
0.0000  0.4000  0.2000  0.1000
 140.  *  0.5000  1.3000  1.3000  1.3000  1.0000  0.8000  0.7000  0.0000  0.0000
0.0000  0.4000  0.2000  0.1000
 150.  *  0.6000  1.2000  1.2000  1.2000  0.9000  0.7000  0.6000  0.0000  0.0000
0.0000  0.3000  0.1000  0.0000
 160.  *  0.6000  1.1000  1.1000  1.1000  0.9000  0.7000  0.6000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 170.  *  0.4000  1.1000  1.1000  1.1000  0.7000  0.6000  0.6000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 180.  *  0.2000  1.4000  1.3000  1.2000  0.6000  0.6000  0.6000  0.2000  0.0000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  1.3000  1.3000  1.1000  0.6000  0.6000  0.6000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  1.3000  1.3000  1.1000  0.6000  0.6000  0.6000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  1.4000  1.3000  1.2000  0.6000  0.6000  0.6000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  1.5000  1.4000  1.3000  0.7000  0.7000  0.7000  0.2000  0.2000
0.0000  0.1000  0.1000  0.1000
 230.  *  0.0000  1.6000  1.4000  1.4000  0.7000  0.7000  0.7000  0.2000  0.2000
0.0000  0.1000  0.1000  0.1000
 240.  *  0.0000  1.5000  1.7000  1.5000  0.8000  0.8000  0.7000  0.2000  0.2000
0.0000  0.1000  0.1000  0.1000
 250.  *  0.0000  1.7000  1.7000  1.8000  0.9000  0.9000  0.8000  0.3000  0.3000
0.1000  0.1000  0.1000  0.1000
 260.  *  0.0000  1.6000  1.6000  1.9000  0.9000  0.9000  0.7000  0.5000  0.4000
0.3000  0.4000  0.3000  0.3000
 270.  *  0.0000  1.3000  1.4000  1.4000  0.5000  0.5000  0.5000  0.9000  0.8000
0.7000  0.8000  0.8000  0.6000
 280.  *  0.0000  0.6000  0.6000  0.6000  0.2000  0.2000  0.2000  1.2000  1.0000
1.1000  1.1000  1.1000  0.9000
 290.  *  0.0000  0.4000  0.4000  0.2000  0.1000  0.1000  0.1000  1.1000  1.0000
1.1000  1.1000  1.0000  1.0000
 300.  *  0.1000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  0.9000  1.1000
1.0000  0.9000  0.9000  0.9000
 310.  *  0.2000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  0.9000  1.1000
1.0000  0.9000  0.9000  0.9000
 320.  *  0.2000  0.4000  0.3000  0.1000  0.0000  0.0000  0.0000  1.0000  1.1000
0.9000  0.8000  0.8000  0.8000
 330.  *  0.3000  0.4000  0.3000  0.1000  0.0000  0.0000  0.0000  1.1000  1.1000
0.9000  0.7000  0.7000  0.7000
```

```
 340.  *  0.4000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  1.0000  0.9000
0.9000  0.7000  0.7000  0.7000
 350.  *  0.6000  0.1000  0.0000  0.0000  0.1000  0.0000  0.0000  0.9000  0.8000
0.8000  0.8000  0.7000  0.7000
 360.  *  0.8000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.8000  0.8000
0.8000  1.0000  0.9000  0.8000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.8000  1.9000  1.9000  1.9000  1.5000  1.4000  1.0000  1.2000  1.1000
1.1000  1.6000  1.4000  1.4000
 DEGR. *     20     100     100     260     100     100     100      70      70
280      80      70      80

 THE HIGHEST CONCENTRATION OF   1.9000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,5,7,6,980,980,980,980,980,980,980,980,1036.8,1036.8,1036.8,1036.8,1036.8,1036.8,10
36.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,120
0,-1200,0,0,0,0,0,0,-5,-25,5,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',37.3,85.6,5.9
'N Leg, E Side - 25 m',6.9,150.9,5.9
'N Leg, E Side - 50 m',-27.8,225.2,5.9
'N Leg, E Side-Midblk',-212.0,620.3,5.9
'N Leg, W Side-Corner',-120.5,92.9,5.9
'N Leg, W Side - 25 m',-151.0,158.1,5.9
'N Leg, W Side - 50 m',-185.6,232.5,5.9
'N Leg, W Side-Midblk',-369.9,627.6,5.9
'S Leg, E Side-Corner',77.9,-87.5,5.9
'S Leg, E Side - 25 m',84.2,-159.3,5.9
'S Leg, E Side - 50 m',91.4,-241.0,5.9
'S Leg, E Side-Midblk',129.3,-675.3,5.9
'S Leg, W Side-Corner',-62.5,-88.9,5.9
'S Leg, W Side - 25 m',-56.2,-160.6,5.9
'S Leg, W Side - 50 m',-49.1,-242.3,5.9
'S Leg, W Side-Midblk',-11.1,-676.6,5.9
'E Leg, N Side - 25 m',109.1,91.9,5.9
'E Leg, N Side - 50 m',190.8,99.0,5.9
'E Leg, N Side-Midblk',625.1,137.0,5.9
'W Leg, N Side - 25 m',-192.3,99.1,5.9
'W Leg, N Side - 50 m',-274.0,106.3,5.9
'W Leg, N Side-Midblk',-708.3,144.3,5.9
'E Leg, S Side - 25 m',149.7,-81.3,5.9
'E Leg, S Side - 50 m',231.4,-74.1,5.9
'E Leg, S Side-Midblk',665.7,-36.1,5.9
'W Leg, S Side - 25 m',-134.2,-82.6,5.9
'W Leg, S Side - 50 m',-215.9,-75.5,5.9
'W Leg, S Side-Midblk',-650.2,-37.5,5.9
'2025 NB I495 & MD185 (IC.21)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-29,-8,-534,1075,1505,3.23,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',29,8,-480,1100,3835,1.85,0.0,79.7
1
'S Leg App - FreeFlow','AG',29,8,134,-1193,3835,1.85,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-29,-8,75,-1198,1505,3.89,0.0,79.7
1
'E Leg App - FreeFlow','AG',0,36,1192,140,8145,1.49,0.0,91.7
1
'E Leg Dep - FreeFlow','AG',0,-42,1199,63,7200,2.02,0.0,103.7
1
```

'W Leg App - FreeFlow','AG',0,-42,-1199,63,7200,1.49,0.0,103.7
1
'W Leg Dep - FreeFlow','AG',0,36,-1192,140,8145,2.02,0.0,91.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & MD185 (IC.21)

DATE : 5/15/19
TIME : 12:15:30

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-29.0	-8.0	-534.0	1075.0	*	1195.	335.	AG	1505.	3.2	0.0	79.7		
2. N Leg Dep - FreeFlow	*	29.0	8.0	-480.0	1100.0	*	1205.	335.	AG	3835.	1.9	0.0	79.7		
3. S Leg App - FreeFlow	*	29.0	8.0	134.0	-1193.0	*	1206.	175.	AG	3835.	1.9	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-29.0	-8.0	75.0	-1198.0	*	1195.	175.	AG	1505.	3.9	0.0	79.7		
5. E Leg App - FreeFlow	*	0.0	36.0	1192.0	140.0	*	1197.	85.	AG	8145.	1.5	0.0	91.7		
6. E Leg Dep - FreeFlow	*	0.0	-42.0	1199.0	63.0	*	1204.	85.	AG	7200.	2.0	0.0	****		
7. W Leg App - FreeFlow	*	0.0	-42.0	-1199.0	63.0	*	1204.	275.	AG	7200.	1.5	0.0	****		
8. W Leg Dep - FreeFlow	*	0.0	36.0	-1192.0	140.0	*	1197.	275.	AG	8145.	2.0	0.0	91.7		

PAGE 2
JOB: I-495 & I-270 MLS RUN: 2025 NB I495 &

DATE : 5/15/19
TIME : 12:15:30

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	37.3	85.6	5.9
2. N Leg, E Side - 25 m	6.9	150.9	5.9
3. N Leg, E Side - 50 m	-27.8	225.2	5.9
4. N Leg, E Side-Midblk	-212.0	620.3	5.9
5. N Leg, W Side-Corner	-120.5	92.9	5.9
6. N Leg, W Side - 25 m	-151.0	158.1	5.9
7. N Leg, W Side - 50 m	-185.6	232.5	5.9
8. N Leg, W Side-Midblk	-369.9	627.6	5.9
9. S Leg, E Side-Corner	77.9	-87.5	5.9
10. S Leg, E Side - 25 m	84.2	-159.3	5.9
11. S Leg, E Side - 50 m	91.4	-241.0	5.9
12. S Leg, E Side-Midblk	129.3	-675.3	5.9
13. S Leg, W Side-Corner	-62.5	-88.9	5.9
14. S Leg, W Side - 25 m	-56.2	-160.6	5.9
15. S Leg, W Side - 50 m	-49.1	-242.3	5.9
16. S Leg, W Side-Midblk	-11.1	-676.6	5.9
17. E Leg, N Side - 25 m	109.1	91.9	5.9
18. E Leg, N Side - 50 m	190.8	99.0	5.9
19. E Leg, N Side-Midblk	625.1	137.0	5.9
20. W Leg, N Side - 25 m	-192.3	99.1	5.9
21. W Leg, N Side - 50 m	-274.0	106.3	5.9
22. W Leg, N Side-Midblk	-708.3	144.3	5.9
23. E Leg, S Side - 25 m	149.7	-81.3	5.9
24. E Leg, S Side - 50 m	231.4	-74.1	5.9
25. E Leg, S Side-Midblk	665.7	-36.1	5.9
26. W Leg, S Side - 25 m	-134.2	-82.6	5.9

27. W Leg, S Side - 50 m	*	-215.9	-75.5	5.9 *
28. W Leg, S Side-Midblk	*	-650.2	-37.5	5.9 *

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & MD185 (IC.21)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.5000	0.4000	0.4000	0.2000	0.8000	0.5000	0.7000
20.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.6000	0.3000	0.3000	0.2000	0.9000	0.8000	0.5000
30.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.6000	0.3000	0.3000	0.2000	0.9000	0.6000	0.5000
40.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.6000	0.3000	0.3000	0.2000	0.9000	0.6000	0.6000
50.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.7000	0.4000	0.3000	0.1000	0.9000	0.7000	0.6000
60.	* 0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.7000	0.4000	0.3000	0.0000	1.0000	0.8000	0.6000
70.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.2000	0.2000	0.2000	0.8000	0.4000	0.2000	0.0000	1.1000	0.7000	0.6000
80.	* 0.4000	0.1000	0.0000	0.0000	0.5000	0.2000	0.2000	0.2000	0.7000	0.3000	0.1000	0.0000	1.1000	0.6000	0.4000
90.	* 0.7000	0.3000	0.1000	0.0000	0.9000	0.4000	0.3000	0.2000	0.4000	0.1000	0.0000	0.0000	0.8000	0.4000	0.3000
100.	* 0.9000	0.4000	0.2000	0.0000	1.0000	0.6000	0.4000	0.2000	0.1000	0.0000	0.0000	0.0000	0.5000	0.3000	0.3000
110.	* 0.8000	0.4000	0.3000	0.0000	1.1000	0.7000	0.5000	0.3000	0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000
120.	* 0.7000	0.4000	0.3000	0.2000	1.1000	0.7000	0.5000	0.5000	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000

130. * 0.6000 0.4000 0.2000 0.2000 1.1000 0.7000 0.6000 0.5000 0.0000
0.0000 0.0000 0.0000 0.3000 0.3000 0.3000
140. * 0.5000 0.4000 0.3000 0.3000 1.0000 0.7000 0.7000 0.4000 0.0000
0.0000 0.0000 0.0000 0.3000 0.3000 0.3000
150. * 0.6000 0.5000 0.3000 0.3000 0.8000 0.7000 0.7000 0.4000 0.0000
0.0000 0.0000 0.0000 0.3000 0.3000 0.3000
160. * 0.7000 0.7000 0.5000 0.4000 0.9000 0.7000 0.6000 0.2000 0.1000
0.1000 0.1000 0.1000 0.4000 0.4000 0.4000
170. * 0.9000 0.8000 0.8000 0.5000 0.8000 0.6000 0.4000 0.2000 0.2000
0.2000 0.2000 0.2000 0.4000 0.4000 0.4000
180. * 1.0000 0.9000 0.8000 0.5000 0.7000 0.4000 0.3000 0.1000 0.4000
0.4000 0.4000 0.4000 0.2000 0.2000 0.2000
190. * 1.1000 0.8000 0.7000 0.5000 0.6000 0.4000 0.3000 0.1000 0.4000
0.4000 0.4000 0.4000 0.1000 0.1000 0.1000
200. * 1.0000 0.7000 0.6000 0.4000 0.6000 0.4000 0.3000 0.1000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
210. * 0.8000 0.7000 0.6000 0.4000 0.6000 0.4000 0.3000 0.1000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
220. * 0.8000 0.7000 0.6000 0.5000 0.7000 0.4000 0.3000 0.1000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
230. * 1.0000 0.7000 0.6000 0.4000 0.7000 0.4000 0.3000 0.1000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
240. * 1.1000 0.7000 0.6000 0.4000 0.8000 0.4000 0.3000 0.0000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
250. * 1.1000 0.7000 0.6000 0.3000 0.8000 0.4000 0.3000 0.0000 0.4000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
260. * 1.2000 0.7000 0.6000 0.3000 1.0000 0.4000 0.3000 0.0000 0.5000
0.3000 0.3000 0.3000 0.1000 0.0000 0.0000
270. * 1.1000 0.6000 0.4000 0.3000 0.8000 0.3000 0.1000 0.0000 0.8000
0.4000 0.3000 0.3000 0.4000 0.0000 0.0000
280. * 0.6000 0.4000 0.3000 0.3000 0.5000 0.1000 0.0000 0.0000 1.0000
0.6000 0.5000 0.3000 0.6000 0.2000 0.1000
290. * 0.4000 0.3000 0.3000 0.3000 0.2000 0.0000 0.0000 0.0000 1.2000
0.7000 0.5000 0.3000 0.8000 0.4000 0.2000
300. * 0.4000 0.4000 0.4000 0.4000 0.1000 0.0000 0.0000 0.0000 1.1000
0.7000 0.6000 0.3000 0.7000 0.4000 0.2000
310. * 0.4000 0.4000 0.4000 0.4000 0.1000 0.0000 0.0000 0.0000 1.0000
0.8000 0.6000 0.5000 0.6000 0.4000 0.3000
320. * 0.4000 0.4000 0.4000 0.4000 0.1000 0.1000 0.1000 0.1000 1.1000
0.9000 0.6000 0.6000 0.6000 0.4000 0.2000
330. * 0.4000 0.4000 0.4000 0.3000 0.1000 0.1000 0.1000 0.1000 1.1000
0.8000 0.9000 0.5000 0.6000 0.4000 0.2000
340. * 0.2000 0.2000 0.2000 0.2000 0.3000 0.3000 0.3000 0.3000 1.0000
0.9000 0.7000 0.5000 0.7000 0.6000 0.4000
350. * 0.1000 0.1000 0.1000 0.1000 0.3000 0.3000 0.3000 0.3000 0.8000
0.6000 0.5000 0.4000 0.8000 0.7000 0.5000
360. * 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.3000 0.7000
0.4000 0.4000 0.3000 0.8000 0.7000 0.6000

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  1.2000  0.9000  0.8000  0.5000  1.1000  0.7000  0.7000  0.5000  1.2000
0.9000  0.9000  0.6000  1.1000  0.8000  0.7000
 DEGR. *    260     180     170     170     110     120     140     120     290
320     330     320      70      20      10
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.5000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.5000  0.5000
0.5000  0.7000  0.7000  0.5000
  20.  *  0.5000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.5000  0.5000
0.5000  0.7000  0.7000  0.5000
  30.  *  0.5000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.6000  0.6000
0.6000  0.7000  0.7000  0.5000
  40.  *  0.5000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.6000  0.6000
0.6000  0.8000  0.6000  0.5000
  50.  *  0.4000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.7000  0.7000
0.7000  0.6000  0.6000  0.6000
  60.  *  0.3000  0.1000  0.1000  0.1000  0.3000  0.3000  0.1000  0.7000  0.7000
0.7000  0.8000  0.7000  0.6000
  70.  *  0.3000  0.1000  0.1000  0.1000  0.3000  0.3000  0.1000  0.8000  0.8000
0.7000  1.0000  0.8000  0.7000
  80.  *  0.3000  0.4000  0.4000  0.3000  0.4000  0.4000  0.2000  0.7000  0.7000
0.6000  1.0000  0.8000  0.8000
  90.  *  0.3000  0.7000  0.7000  0.6000  0.8000  0.8000  0.6000  0.4000  0.4000
0.3000  0.8000  0.8000  0.7000
```

```
 100.  *  0.3000  0.9000  0.9000  0.7000  1.0000  1.1000  1.0000  0.1000  0.1000
0.1000  0.4000  0.5000  0.3000
 110.  *  0.3000  0.8000  0.8000  0.7000  1.0000  1.0000  0.9000  0.1000  0.1000
0.1000  0.3000  0.3000  0.1000
 120.  *  0.3000  0.7000  0.7000  0.7000  1.1000  0.8000  0.8000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 130.  *  0.3000  0.6000  0.6000  0.6000  0.9000  1.0000  0.8000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 140.  *  0.3000  0.5000  0.5000  0.5000  0.9000  0.9000  0.7000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 150.  *  0.3000  0.5000  0.5000  0.5000  0.9000  0.9000  0.7000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 160.  *  0.4000  0.5000  0.5000  0.5000  0.8000  0.7000  0.6000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 170.  *  0.3000  0.6000  0.5000  0.5000  0.7000  0.6000  0.6000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 180.  *  0.1000  0.7000  0.6000  0.5000  0.6000  0.6000  0.6000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  0.8000  0.7000  0.5000  0.6000  0.6000  0.6000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.7000  0.7000  0.5000  0.6000  0.6000  0.6000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.7000  0.7000  0.5000  0.6000  0.6000  0.6000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.7000  0.8000  0.6000  0.7000  0.7000  0.7000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.7000  0.8000  0.7000  0.7000  0.7000  0.7000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.8000  0.7000  0.8000  0.8000  0.8000  0.8000  0.2000  0.3000
0.1000  0.0000  0.0000  0.0000
 250.  *  0.0000  1.0000  0.8000  0.7000  0.8000  0.8000  0.8000  0.3000  0.2000
0.1000  0.0000  0.0000  0.0000
 260.  *  0.0000  1.0000  0.9000  0.8000  1.0000  1.0000  0.8000  0.5000  0.4000
0.3000  0.1000  0.1000  0.1000
 270.  *  0.0000  0.8000  0.7000  0.5000  0.8000  0.8000  0.7000  0.8000  0.8000
0.8000  0.4000  0.4000  0.2000
 280.  *  0.0000  0.5000  0.3000  0.1000  0.4000  0.4000  0.4000  1.1000  0.9000
1.0000  0.6000  0.6000  0.5000
 290.  *  0.0000  0.3000  0.1000  0.1000  0.2000  0.2000  0.2000  1.0000  0.9000
0.7000  0.8000  0.8000  0.6000
 300.  *  0.0000  0.2000  0.1000  0.0000  0.1000  0.1000  0.1000  1.1000  0.8000
0.7000  0.7000  0.7000  0.7000
 310.  *  0.1000  0.2000  0.1000  0.0000  0.1000  0.1000  0.1000  0.9000  0.8000
0.6000  0.7000  0.7000  0.6000
 320.  *  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  1.0000  0.8000
0.6000  0.6000  0.6000  0.6000
 330.  *  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.7000  0.6000
0.5000  0.5000  0.5000  0.5000
```

```
 340.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.6000  0.5000
0.5000  0.6000  0.5000  0.5000
 350.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.6000  0.6000
0.6000  0.7000  0.7000  0.5000
 360.  *  0.4000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.6000  0.6000
0.6000  0.7000  0.7000  0.5000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.5000  1.0000  0.9000  0.8000  1.1000  1.1000  1.0000  1.1000  0.9000
1.0000  1.0000  0.8000  0.8000
 DEGR. *     10     250     100     260     120     100     100     280     290
280      70      70      80

 THE HIGHEST CONCENTRATION OF   1.2000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
7,7,4,3,1114,1114,1114,1114,1114,1114,1114,1114,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-10,-10,10,5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',88.7,38.4,5.9
'N Leg, E Side - 25 m',76.2,109.3,5.9
'N Leg, E Side - 50 m',61.9,190.1,5.9
'N Leg, E Side-Midblk',-13.8,619.5,5.9
'N Leg, W Side-Corner',-107.0,65.6,5.9
'N Leg, W Side - 25 m',-119.5,136.5,5.9
'N Leg, W Side - 50 m',-133.8,217.3,5.9
'N Leg, W Side-Midblk',-209.5,646.6,5.9
'S Leg, E Side-Corner',107.4,-67.6,5.9
'S Leg, E Side - 25 m',119.9,-138.5,5.9
'S Leg, E Side - 50 m',134.1,-219.3,5.9
'S Leg, E Side-Midblk',209.8,-648.7,5.9
'S Leg, W Side-Corner',-87.8,-43.4,5.9
'S Leg, W Side - 25 m',-75.3,-114.3,5.9
'S Leg, W Side - 50 m',-61.0,-195.1,5.9
'S Leg, W Side-Midblk',14.7,-624.5,5.9
'E Leg, N Side - 25 m',160.4,32.1,5.9
'E Leg, N Side - 50 m',242.1,25.0,5.9
'E Leg, N Side-Midblk',676.4,-13.0,5.9
'W Leg, N Side - 25 m',-177.9,78.1,5.9
'W Leg, N Side - 50 m',-258.7,92.3,5.9
'W Leg, N Side-Midblk',-688.1,168.0,5.9
'E Leg, S Side - 25 m',179.1,-73.9,5.9
'E Leg, S Side - 50 m',260.8,-81.0,5.9
'E Leg, S Side-Midblk',695.1,-119.0,5.9
'W Leg, S Side - 25 m',-158.7,-30.9,5.9
'W Leg, S Side - 50 m',-239.5,-16.7,5.9
'W Leg, S Side-Midblk',-668.8,59.0,5.9
'2025 NB I495 & MD 190 (IC.25)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-41,-7,-250,1174,10490,1.61,0.0,103.7
1
'N Leg Dep - FreeFlow','AG',41,7,-167,1189,9390,3.06,0.0,103.7
1
'S Leg App - FreeFlow','AG',41,7,250,-1174,9390,1.61,0.0,103.7
1
'S Leg Dep - FreeFlow','AG',-41,-7,167,-1189,10490,3.06,0.0,103.7
1
'E Leg App - FreeFlow','AG',2,18,1197,-87,1315,1.60,0.0,55.7
1
'E Leg Dep - FreeFlow','AG',-3,-24,1193,-128,1790,4.20,0.0,67.7
1
```

'W Leg App - FreeFlow','AG',-3,-24,-1186,185,1790,3.28,0.0,67.7
1
'W Leg Dep - FreeFlow','AG',2,18,-1179,226,1315,1.60,0.0,55.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & MD 190 (IC.25)

DATE : 5/16/19
TIME : 7:47:16

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-41.0	-7.0	-250.0	1174.0	*	1199.	350.	AG	10490.	1.6	0.0	****		
2. N Leg Dep - FreeFlow	*	41.0	7.0	-167.0	1189.0	*	1200.	350.	AG	9390.	3.1	0.0	****		
3. S Leg App - FreeFlow	*	41.0	7.0	250.0	-1174.0	*	1199.	170.	AG	9390.	1.6	0.0	****		
4. S Leg Dep - FreeFlow	*	-41.0	-7.0	167.0	-1189.0	*	1200.	170.	AG	10490.	3.1	0.0	****		
5. E Leg App - FreeFlow	*	2.0	18.0	1197.0	-87.0	*	1200.	95.	AG	1315.	1.6	0.0	55.7		
6. E Leg Dep - FreeFlow	*	-3.0	-24.0	1193.0	-128.0	*	1201.	95.	AG	1790.	4.2	0.0	67.7		
7. W Leg App - FreeFlow	*	-3.0	-24.0	-1186.0	185.0	*	1201.	280.	AG	1790.	3.3	0.0	67.7		
8. W Leg Dep - FreeFlow	*	2.0	18.0	-1179.0	226.0	*	1199.	280.	AG	1315.	1.6	0.0	55.7		

DATE : 5/16/19
TIME : 7:47:16

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	88.7	38.4	5.9
2. N Leg, E Side - 25 m	76.2	109.3	5.9
3. N Leg, E Side - 50 m	61.9	190.1	5.9
4. N Leg, E Side-Midblk	-13.8	619.5	5.9
5. N Leg, W Side-Corner	-107.0	65.6	5.9
6. N Leg, W Side - 25 m	-119.5	136.5	5.9
7. N Leg, W Side - 50 m	-133.8	217.3	5.9
8. N Leg, W Side-Midblk	-209.5	646.6	5.9
9. S Leg, E Side-Corner	107.4	-67.6	5.9
10. S Leg, E Side - 25 m	119.9	-138.5	5.9
11. S Leg, E Side - 50 m	134.1	-219.3	5.9
12. S Leg, E Side-Midblk	209.8	-648.7	5.9
13. S Leg, W Side-Corner	-87.8	-43.4	5.9
14. S Leg, W Side - 25 m	-75.3	-114.3	5.9
15. S Leg, W Side - 50 m	-61.0	-195.1	5.9
16. S Leg, W Side-Midblk	14.7	-624.5	5.9
17. E Leg, N Side - 25 m	160.4	32.1	5.9
18. E Leg, N Side - 50 m	242.1	25.0	5.9
19. E Leg, N Side-Midblk	676.4	-13.0	5.9
20. W Leg, N Side - 25 m	-177.9	78.1	5.9
21. W Leg, N Side - 50 m	-258.7	92.3	5.9
22. W Leg, N Side-Midblk	-688.1	168.0	5.9
23. E Leg, S Side - 25 m	179.1	-73.9	5.9
24. E Leg, S Side - 50 m	260.8	-81.0	5.9
25. E Leg, S Side-Midblk	695.1	-119.0	5.9
26. W Leg, S Side - 25 m	-158.7	-30.9	5.9

27. W Leg, S Side - 50 m * -239.5 -16.7 5.9 *
28. W Leg, S Side-Midblk * -668.8 59.0 5.9 *

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & MD 190 (IC.25)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.2000	0.2000	0.2000	0.2000	1.2000	1.2000	1.2000	1.0000	0.3000	0.2000	0.2000	0.1000	1.5000	1.5000	1.6000
20.	* 0.1000	0.1000	0.1000	0.1000	1.1000	1.1000	1.1000	1.1000	0.2000	0.1000	0.1000	0.1000	1.5000	1.5000	1.5000
30.	* 0.1000	0.1000	0.1000	0.1000	1.0000	1.0000	1.0000	1.0000	0.2000	0.1000	0.1000	0.0000	1.3000	1.5000	1.5000
40.	* 0.1000	0.1000	0.1000	0.1000	0.9000	0.9000	0.9000	0.9000	0.2000	0.1000	0.1000	0.0000	1.3000	1.2000	1.3000
50.	* 0.1000	0.1000	0.1000	0.1000	0.8000	0.8000	0.8000	0.8000	0.3000	0.1000	0.1000	0.0000	1.2000	1.2000	1.1000
60.	* 0.0000	0.0000	0.0000	0.0000	0.8000	0.8000	0.8000	0.8000	0.3000	0.1000	0.1000	0.0000	1.4000	1.2000	1.1000
70.	* 0.0000	0.0000	0.0000	0.0000	0.8000	0.8000	0.8000	0.8000	0.3000	0.1000	0.1000	0.0000	1.4000	1.2000	1.1000
80.	* 0.0000	0.0000	0.0000	0.0000	0.9000	0.9000	0.9000	0.9000	0.5000	0.1000	0.1000	0.0000	1.6000	1.3000	1.2000
90.	* 0.2000	0.0000	0.0000	0.0000	0.9000	0.8000	0.8000	0.8000	0.4000	0.1000	0.0000	0.0000	1.4000	1.1000	1.1000
100.	* 0.3000	0.1000	0.0000	0.0000	1.0000	0.9000	0.8000	0.8000	0.3000	0.0000	0.0000	0.0000	1.3000	1.0000	1.0000
110.	* 0.3000	0.2000	0.2000	0.1000	1.1000	0.9000	0.9000	0.8000	0.1000	0.0000	0.0000	0.0000	1.2000	1.0000	1.0000
120.	* 0.3000	0.2000	0.2000	0.1000	1.1000	1.1000	1.0000	0.9000	0.0000	0.0000	0.0000	0.0000	1.1000	1.1000	1.1000

130. * 0.3000 0.2000 0.2000 0.1000 1.3000 1.0000 1.1000 1.0000 0.0000
0.0000 0.0000 0.0000 1.2000 1.2000 1.2000
140. * 0.3000 0.2000 0.2000 0.1000 1.2000 1.1000 1.1000 1.1000 0.1000
0.1000 0.1000 0.1000 1.4000 1.4000 1.4000
150. * 0.4000 0.2000 0.2000 0.2000 1.5000 1.3000 1.1000 1.3000 0.1000
0.1000 0.1000 0.1000 1.6000 1.6000 1.6000
160. * 0.5000 0.6000 0.6000 0.6000 1.7000 1.4000 1.2000 1.3000 0.2000
0.2000 0.2000 0.2000 1.6000 1.6000 1.6000
170. * 1.0000 1.1000 1.1000 1.3000 1.3000 1.1000 1.1000 0.9000 0.7000
0.7000 0.7000 0.5000 1.2000 1.2000 1.2000
180. * 1.6000 1.5000 1.6000 1.6000 0.7000 0.5000 0.5000 0.4000 1.2000
1.1000 1.1000 0.8000 0.5000 0.5000 0.5000
190. * 1.6000 1.6000 1.5000 1.4000 0.4000 0.3000 0.2000 0.1000 1.2000
1.2000 1.2000 1.0000 0.2000 0.2000 0.2000
200. * 1.3000 1.4000 1.5000 1.3000 0.2000 0.2000 0.2000 0.1000 1.0000
1.0000 1.0000 1.0000 0.1000 0.1000 0.1000
210. * 1.3000 1.4000 1.3000 1.2000 0.2000 0.1000 0.1000 0.0000 1.0000
1.0000 1.0000 1.0000 0.1000 0.1000 0.1000
220. * 1.3000 1.3000 1.2000 1.0000 0.2000 0.1000 0.1000 0.0000 0.9000
0.9000 0.9000 0.9000 0.1000 0.1000 0.1000
230. * 1.1000 1.2000 1.0000 1.0000 0.2000 0.1000 0.1000 0.0000 0.9000
0.9000 0.9000 0.9000 0.1000 0.1000 0.1000
240. * 1.4000 1.1000 1.0000 0.9000 0.2000 0.1000 0.1000 0.0000 0.9000
0.9000 0.9000 0.9000 0.0000 0.0000 0.0000
250. * 1.2000 1.0000 1.0000 0.9000 0.2000 0.1000 0.1000 0.0000 0.9000
0.9000 0.9000 0.9000 0.0000 0.0000 0.0000
260. * 1.2000 1.1000 1.1000 1.0000 0.3000 0.1000 0.1000 0.0000 1.0000
0.9000 0.9000 0.9000 0.1000 0.0000 0.0000
270. * 1.2000 1.0000 0.9000 0.9000 0.2000 0.1000 0.0000 0.0000 1.0000
0.8000 0.9000 0.9000 0.1000 0.0000 0.0000
280. * 1.1000 0.9000 0.9000 0.9000 0.2000 0.0000 0.0000 0.0000 1.2000
1.0000 0.9000 0.9000 0.3000 0.1000 0.0000
290. * 1.0000 1.0000 1.0000 1.0000 0.1000 0.0000 0.0000 0.0000 1.2000
1.0000 1.0000 0.9000 0.3000 0.2000 0.2000
300. * 1.1000 1.1000 1.1000 1.1000 0.0000 0.0000 0.0000 0.0000 1.3000
1.0000 1.0000 0.9000 0.4000 0.2000 0.2000
310. * 1.2000 1.2000 1.2000 1.2000 0.0000 0.0000 0.0000 0.0000 1.2000
1.1000 1.1000 1.0000 0.2000 0.2000 0.2000
320. * 1.3000 1.3000 1.3000 1.3000 0.1000 0.1000 0.1000 0.1000 1.3000
1.0000 1.0000 1.0000 0.2000 0.2000 0.2000
330. * 1.5000 1.5000 1.4000 1.3000 0.1000 0.1000 0.1000 0.1000 1.5000
1.2000 1.2000 1.2000 0.3000 0.2000 0.2000
340. * 1.5000 1.5000 1.5000 1.2000 0.3000 0.3000 0.3000 0.2000 1.6000
1.3000 1.3000 1.2000 0.4000 0.5000 0.6000
350. * 1.1000 1.1000 1.1000 1.0000 0.8000 0.8000 0.8000 0.6000 1.2000
1.1000 1.0000 0.9000 1.1000 1.1000 1.2000
360. * 0.5000 0.5000 0.5000 0.4000 1.1000 1.1000 1.1000 0.9000 0.6000
0.5000 0.5000 0.3000 1.5000 1.5000 1.6000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.6000  1.6000  1.6000  1.6000  1.7000  1.4000  1.2000  1.3000  1.6000
1.3000  1.3000  1.2000  1.6000  1.6000  1.6000
 DEGR. *    180     190     180     180     160     160      10     150     340
340     340     330      80     160     160
```


JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & MD 190 (IC.25)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  1.6000  0.0000  0.0000  0.0000  0.6000  0.4000  0.0000  0.2000  0.2000
0.2000  0.9000  0.6000  0.2000
  20.  *  1.3000  0.0000  0.0000  0.0000  0.7000  0.5000  0.0000  0.2000  0.2000
0.2000  0.9000  0.7000  0.3000
  30.  *  1.2000  0.0000  0.0000  0.0000  0.6000  0.5000  0.2000  0.2000  0.2000
0.2000  0.8000  0.7000  0.4000
  40.  *  1.1000  0.0000  0.0000  0.0000  0.6000  0.5000  0.2000  0.2000  0.2000
0.2000  0.8000  0.7000  0.4000
  50.  *  1.0000  0.0000  0.0000  0.0000  0.6000  0.4000  0.2000  0.3000  0.3000
0.3000  0.8000  0.6000  0.4000
  60.  *  1.0000  0.0000  0.0000  0.0000  0.6000  0.4000  0.2000  0.3000  0.3000
0.3000  0.7000  0.6000  0.4000
  70.  *  1.0000  0.0000  0.0000  0.0000  0.6000  0.4000  0.2000  0.3000  0.3000
0.3000  0.7000  0.6000  0.4000
  80.  *  1.1000  0.0000  0.0000  0.0000  0.6000  0.4000  0.2000  0.5000  0.4000
0.4000  0.9000  0.7000  0.5000
  90.  *  1.0000  0.2000  0.2000  0.1000  0.7000  0.4000  0.3000  0.4000  0.4000
0.3000  1.1000  0.8000  0.5000
```

```
 100.  *  1.0000  0.3000  0.3000  0.2000  0.6000  0.6000  0.5000  0.3000  0.2000
0.2000  0.9000  0.7000  0.3000
 110.  *  1.0000  0.3000  0.3000  0.3000  0.7000  0.7000  0.4000  0.1000  0.1000
0.1000  0.9000  0.5000  0.3000
 120.  *  1.1000  0.3000  0.3000  0.3000  0.9000  0.7000  0.6000  0.0000  0.0000
0.0000  0.7000  0.5000  0.3000
 130.  *  1.2000  0.3000  0.3000  0.3000  0.9000  0.6000  0.5000  0.0000  0.0000
0.0000  0.8000  0.5000  0.3000
 140.  *  1.3000  0.3000  0.3000  0.3000  1.0000  0.7000  0.4000  0.0000  0.0000
0.0000  0.8000  0.5000  0.2000
 150.  *  1.4000  0.3000  0.3000  0.3000  1.0000  0.7000  0.3000  0.0000  0.0000
0.0000  0.8000  0.5000  0.1000
 160.  *  1.4000  0.3000  0.3000  0.3000  0.9000  0.6000  0.2000  0.0000  0.0000
0.0000  0.6000  0.4000  0.0000
 170.  *  1.0000  0.4000  0.2000  0.2000  0.6000  0.3000  0.2000  0.2000  0.0000
0.0000  0.3000  0.1000  0.0000
 180.  *  0.5000  0.9000  0.5000  0.3000  0.3000  0.2000  0.2000  0.4000  0.2000
0.0000  0.1000  0.0000  0.0000
 190.  *  0.2000  1.0000  0.8000  0.3000  0.2000  0.2000  0.2000  0.7000  0.4000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.1000  0.9000  0.7000  0.3000  0.2000  0.2000  0.2000  0.7000  0.5000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.1000  1.0000  0.8000  0.5000  0.2000  0.2000  0.2000  0.7000  0.5000
0.2000  0.0000  0.0000  0.0000
 220.  *  0.1000  0.9000  0.8000  0.5000  0.2000  0.2000  0.2000  0.6000  0.5000
0.2000  0.0000  0.0000  0.0000
 230.  *  0.1000  0.8000  0.8000  0.5000  0.2000  0.2000  0.2000  0.5000  0.5000
0.2000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.7000  0.8000  0.5000  0.2000  0.2000  0.2000  0.5000  0.5000
0.2000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.9000  0.6000  0.5000  0.2000  0.2000  0.2000  0.5000  0.5000
0.2000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.9000  0.8000  0.5000  0.3000  0.3000  0.2000  0.6000  0.6000
0.3000  0.1000  0.1000  0.0000
 270.  *  0.0000  0.7000  0.8000  0.4000  0.2000  0.2000  0.2000  0.8000  0.7000
0.4000  0.1000  0.1000  0.1000
 280.  *  0.0000  0.7000  0.6000  0.4000  0.2000  0.2000  0.2000  0.8000  0.9000
0.6000  0.3000  0.3000  0.2000
 290.  *  0.1000  0.7000  0.4000  0.2000  0.1000  0.1000  0.0000  1.0000  0.8000
0.6000  0.3000  0.3000  0.3000
 300.  *  0.1000  0.7000  0.5000  0.2000  0.0000  0.0000  0.0000  0.9000  0.7000
0.5000  0.4000  0.4000  0.3000
 310.  *  0.1000  0.7000  0.5000  0.2000  0.0000  0.0000  0.0000  0.9000  0.8000
0.5000  0.2000  0.2000  0.2000
 320.  *  0.1000  0.7000  0.6000  0.2000  0.0000  0.0000  0.0000  1.0000  0.9000
0.5000  0.2000  0.2000  0.2000
 330.  *  0.2000  0.8000  0.5000  0.1000  0.0000  0.0000  0.0000  0.9000  0.7000
0.3000  0.2000  0.2000  0.2000
```

```
 340.  *  0.6000  0.6000  0.3000  0.0000  0.0000  0.0000  0.0000  0.8000  0.6000
0.2000  0.2000  0.2000  0.2000
 350.  *  1.4000  0.2000  0.1000  0.0000  0.2000  0.0000  0.0000  0.6000  0.3000
0.2000  0.4000  0.3000  0.2000
 360.  *  1.7000  0.1000  0.0000  0.0000  0.5000  0.2000  0.0000  0.3000  0.2000
0.2000  0.7000  0.4000  0.2000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.7000  1.0000  0.8000  0.5000  1.0000  0.7000  0.6000  1.0000  0.9000
0.6000  1.1000  0.8000  0.5000
 DEGR. *    360     190     260     210     140     110     120     290     280
280      90      90      80

 THE HIGHEST CONCENTRATION OF   1.7000 PPM OCCURRED AT RECEPTOR     5.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
4,4,5,5,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-25,-25,15,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',30.0,72.9,5.9
'N Leg, E Side - 25 m',-0.4,138.2,5.9
'N Leg, E Side - 50 m',-35.1,212.5,5.9
'N Leg, E Side-Midblk',-219.3,607.6,5.9
'N Leg, W Side-Corner',-111.8,102.4,5.9
'N Leg, W Side - 25 m',-142.2,167.7,5.9
'N Leg, W Side - 50 m',-176.9,242.0,5.9
'N Leg, W Side-Midblk',-361.1,637.1,5.9
'S Leg, E Side-Corner',93.0,-62.1,5.9
'S Leg, E Side - 25 m',123.4,-127.4,5.9
'S Leg, E Side - 50 m',158.1,-201.7,5.9
'S Leg, E Side-Midblk',342.3,-596.9,5.9
'S Leg, W Side-Corner',-34.5,-63.2,5.9
'S Leg, W Side - 25 m',-4.1,-128.5,5.9
'S Leg, W Side - 50 m',30.6,-202.8,5.9
'S Leg, W Side-Midblk',214.8,-597.9,5.9
'E Leg, N Side - 25 m',101.8,79.2,5.9
'E Leg, N Side - 50 m',183.5,86.3,5.9
'E Leg, N Side-Midblk',617.8,124.3,5.9
'W Leg, N Side - 25 m',-181.3,121.1,5.9
'W Leg, N Side - 50 m',-260.5,142.3,5.9
'W Leg, N Side-Midblk',-681.6,255.1,5.9
'E Leg, S Side - 25 m',164.7,-55.9,5.9
'E Leg, S Side - 50 m',246.4,-48.7,5.9
'E Leg, S Side-Midblk',680.7,-10.7,5.9
'W Leg, S Side - 25 m',-104.1,-44.6,5.9
'W Leg, S Side - 50 m',-183.3,-23.4,5.9
'W Leg, S Side-Midblk',-604.4,89.5,5.9
'2025 NB Capital Beltway & MD193 IC.18',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-22,-10,-529,1077,1475,2.67,0.0,67.7
1
'N Leg Dep - FreeFlow','AG',22,10,-485,1098,2150,1.70,0.0,67.7
1
'S Leg App - FreeFlow','AG',22,10,529,-1077,2150,2.15,0.0,67.7
1
'S Leg Dep - FreeFlow','AG',-22,-10,485,-1098,1475,1.70,0.0,67.7
1
'E Leg App - FreeFlow','AG',3,30,1193,134,7850,2.02,0.0,79.7
1
'E Leg Dep - FreeFlow','AG',-3,-30,1198,75,7780,1.49,0.0,79.7
1
```

```
'W Leg App - FreeFlow','AG',-3,-30,-1167,282,7780,2.02,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',3,30,-1151,340,7850,2.02,0.0,79.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 Capital Beltway & MD193 IC.18

DATE : 5/17/19
TIME : 7:12:33

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-22.0	-10.0	-529.0	1077.0	*	1199.	335.	AG	1475.	2.7	0.0	67.7		
2. N Leg Dep - FreeFlow	*	22.0	10.0	-485.0	1098.0	*	1200.	335.	AG	2150.	1.7	0.0	67.7		
3. S Leg App - FreeFlow	*	22.0	10.0	529.0	-1077.0	*	1199.	155.	AG	2150.	2.2	0.0	67.7		
4. S Leg Dep - FreeFlow	*	-22.0	-10.0	485.0	-1098.0	*	1200.	155.	AG	1475.	1.7	0.0	67.7		
5. E Leg App - FreeFlow	*	3.0	30.0	1193.0	134.0	*	1195.	85.	AG	7850.	2.0	0.0	79.7		
6. E Leg Dep - FreeFlow	*	-3.0	-30.0	1198.0	75.0	*	1206.	85.	AG	7780.	1.5	0.0	79.7		
7. W Leg App - FreeFlow	*	-3.0	-30.0	-1167.0	282.0	*	1205.	285.	AG	7780.	2.0	0.0	79.7		
8. W Leg Dep - FreeFlow	*	3.0	30.0	-1151.0	340.0	*	1195.	285.	AG	7850.	2.0	0.0	79.7		

Beltway & MD193 IC.18

DATE : 5/17/19
TIME : 7:12:33

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	30.0	72.9	5.9
2. N Leg, E Side - 25 m	-0.4	138.2	5.9
3. N Leg, E Side - 50 m	-35.1	212.5	5.9
4. N Leg, E Side-Midblk	-219.3	607.6	5.9
5. N Leg, W Side-Corner	-111.8	102.4	5.9
6. N Leg, W Side - 25 m	-142.2	167.7	5.9
7. N Leg, W Side - 50 m	-176.9	242.0	5.9
8. N Leg, W Side-Midblk	-361.1	637.1	5.9
9. S Leg, E Side-Corner	93.0	-62.1	5.9
10. S Leg, E Side - 25 m	123.4	-127.4	5.9
11. S Leg, E Side - 50 m	158.1	-201.7	5.9
12. S Leg, E Side-Midblk	342.3	-596.9	5.9
13. S Leg, W Side-Corner	-34.5	-63.2	5.9
14. S Leg, W Side - 25 m	-4.1	-128.5	5.9
15. S Leg, W Side - 50 m	30.6	-202.8	5.9
16. S Leg, W Side-Midblk	214.8	-597.9	5.9
17. E Leg, N Side - 25 m	101.8	79.2	5.9
18. E Leg, N Side - 50 m	183.5	86.3	5.9
19. E Leg, N Side-Midblk	617.8	124.3	5.9
20. W Leg, N Side - 25 m	-181.3	121.1	5.9
21. W Leg, N Side - 50 m	-260.5	142.3	5.9
22. W Leg, N Side-Midblk	-681.6	255.1	5.9
23. E Leg, S Side - 25 m	164.7	-55.9	5.9
24. E Leg, S Side - 50 m	246.4	-48.7	5.9
25. E Leg, S Side-Midblk	680.7	-10.7	5.9
26. W Leg, S Side - 25 m	-104.1	-44.6	5.9

27. W Leg, S Side - 50 m	*	-183.3	-23.4	5.9 *
28. W Leg, S Side-Midblk	*	-604.4	89.5	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.6000	0.4000	0.2000	0.2000	1.0000	0.6000	0.4000
20.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.6000	0.4000	0.2000	0.2000	0.9000	0.6000	0.4000
30.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.6000	0.4000	0.2000	0.2000	0.8000	0.6000	0.5000
40.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.7000	0.4000	0.3000	0.2000	0.9000	0.6000	0.5000
50.	* 0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.7000	0.4000	0.3000	0.0000	1.0000	0.6000	0.6000
60.	* 0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.8000	0.4000	0.3000	0.0000	1.1000	0.6000	0.6000
70.	* 0.2000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.9000	0.4000	0.2000	0.0000	1.3000	0.7000	0.4000
80.	* 0.6000	0.1000	0.0000	0.0000	0.4000	0.2000	0.2000	0.2000	0.8000	0.3000	0.1000	0.0000	1.1000	0.5000	0.4000
90.	* 1.0000	0.3000	0.1000	0.0000	0.7000	0.5000	0.3000	0.2000	0.5000	0.1000	0.0000	0.0000	0.8000	0.3000	0.2000
100.	* 1.0000	0.4000	0.3000	0.0000	1.0000	0.5000	0.5000	0.2000	0.1000	0.0000	0.0000	0.0000	0.5000	0.2000	0.2000
110.	* 0.9000	0.5000	0.3000	0.1000	1.1000	0.5000	0.5000	0.3000	0.1000	0.0000	0.0000	0.0000	0.3000	0.2000	0.2000
120.	* 0.8000	0.5000	0.3000	0.1000	1.1000	0.6000	0.6000	0.4000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000

130. * 0.7000 0.4000 0.3000 0.2000 1.0000 0.7000 0.6000 0.5000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
140. * 0.7000 0.4000 0.3000 0.2000 1.0000 0.8000 0.7000 0.4000 0.1000
0.1000 0.1000 0.1000 0.2000 0.2000 0.2000
150. * 0.7000 0.6000 0.5000 0.2000 1.0000 0.6000 0.6000 0.4000 0.2000
0.2000 0.2000 0.1000 0.2000 0.2000 0.2000
160. * 0.9000 0.5000 0.5000 0.3000 0.9000 0.6000 0.4000 0.3000 0.2000
0.2000 0.2000 0.2000 0.1000 0.1000 0.1000
170. * 1.0000 0.7000 0.6000 0.5000 0.7000 0.5000 0.3000 0.3000 0.3000
0.3000 0.3000 0.2000 0.0000 0.0000 0.0000
180. * 1.0000 0.5000 0.5000 0.5000 0.7000 0.5000 0.4000 0.2000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
190. * 0.8000 0.6000 0.5000 0.4000 0.7000 0.5000 0.4000 0.2000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
200. * 0.7000 0.6000 0.5000 0.4000 0.7000 0.5000 0.4000 0.2000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
210. * 0.8000 0.7000 0.5000 0.4000 0.7000 0.5000 0.3000 0.2000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
220. * 0.9000 0.7000 0.5000 0.4000 0.7000 0.5000 0.4000 0.2000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
230. * 1.0000 0.7000 0.6000 0.4000 0.8000 0.5000 0.4000 0.2000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
240. * 1.1000 0.7000 0.6000 0.4000 0.8000 0.5000 0.4000 0.2000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
250. * 1.2000 0.7000 0.6000 0.3000 0.9000 0.5000 0.4000 0.0000 0.2000
0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
260. * 1.1000 0.7000 0.6000 0.2000 1.0000 0.5000 0.4000 0.0000 0.3000
0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
270. * 1.2000 0.7000 0.5000 0.2000 1.1000 0.5000 0.3000 0.0000 0.5000
0.1000 0.1000 0.1000 0.2000 0.0000 0.0000
280. * 1.0000 0.5000 0.4000 0.2000 1.0000 0.3000 0.2000 0.0000 1.1000
0.4000 0.2000 0.1000 0.6000 0.1000 0.0000
290. * 0.6000 0.3000 0.2000 0.2000 0.6000 0.1000 0.0000 0.0000 1.4000
0.7000 0.6000 0.3000 1.0000 0.4000 0.2000
300. * 0.3000 0.2000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 1.4000
0.9000 0.6000 0.4000 1.1000 0.6000 0.4000
310. * 0.3000 0.3000 0.3000 0.3000 0.1000 0.0000 0.0000 0.0000 1.1000
0.7000 0.6000 0.5000 1.0000 0.5000 0.4000
320. * 0.3000 0.3000 0.3000 0.3000 0.2000 0.1000 0.1000 0.0000 1.0000
0.9000 0.6000 0.5000 0.9000 0.5000 0.4000
330. * 0.3000 0.3000 0.3000 0.2000 0.1000 0.1000 0.1000 0.1000 0.9000
0.7000 0.7000 0.2000 0.9000 0.6000 0.6000
340. * 0.1000 0.1000 0.1000 0.1000 0.3000 0.3000 0.3000 0.2000 0.7000
0.6000 0.3000 0.2000 1.1000 0.7000 0.5000
350. * 0.1000 0.1000 0.1000 0.0000 0.3000 0.3000 0.3000 0.3000 0.6000
0.4000 0.2000 0.3000 0.9000 0.7000 0.7000
360. * 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.3000 0.6000
0.4000 0.2000 0.2000 0.8000 0.6000 0.4000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.2000  0.7000  0.6000  0.5000  1.1000  0.8000  0.7000  0.5000  1.4000
0.9000  0.7000  0.5000  1.3000  0.7000  0.7000
 DEGR. *    250     170     170     170     110     140     140     130     290
300     330     310      70      70     350
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28
------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.4000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.6000  0.6000
0.6000  0.9000  0.8000  0.7000
  20.  *  0.4000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.6000  0.6000
0.6000  0.9000  0.8000  0.7000
  30.  *  0.4000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.6000  0.6000
0.6000  0.8000  0.7000  0.7000
  40.  *  0.4000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.7000  0.7000
0.7000  0.8000  0.7000  0.7000
  50.  *  0.3000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.7000  0.7000
0.7000  0.8000  0.8000  0.8000
  60.  *  0.2000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.8000  0.8000
0.8000  1.0000  0.9000  0.8000
  70.  *  0.2000  0.2000  0.2000  0.2000  0.2000  0.1000  0.1000  0.9000  0.9000
0.8000  1.2000  1.0000  0.9000
  80.  *  0.2000  0.6000  0.6000  0.4000  0.3000  0.2000  0.1000  0.7000  0.7000
0.6000  1.3000  1.2000  1.0000
  90.  *  0.2000  1.0000  0.9000  0.8000  0.5000  0.4000  0.3000  0.4000  0.4000
0.3000  1.0000  1.1000  1.2000
```

```
 100.  *  0.2000  1.0000  1.0000  0.9000  0.9000  0.6000  0.7000  0.1000  0.1000
0.1000  0.6000  0.7000  1.1000
 110.  *  0.2000  0.9000  0.9000  0.8000  1.0000  0.9000  1.1000  0.1000  0.1000
0.1000  0.4000  0.4000  0.5000
 120.  *  0.2000  0.8000  0.8000  0.8000  1.0000  1.0000  1.1000  0.0000  0.0000
0.0000  0.3000  0.2000  0.2000
 130.  *  0.2000  0.7000  0.7000  0.7000  1.0000  0.8000  1.0000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
 140.  *  0.2000  0.7000  0.7000  0.7000  0.9000  0.9000  0.9000  0.0000  0.0000
0.0000  0.2000  0.0000  0.1000
 150.  *  0.2000  0.6000  0.6000  0.6000  0.8000  0.8000  0.8000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 160.  *  0.1000  0.7000  0.6000  0.6000  0.8000  0.8000  0.8000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 170.  *  0.0000  0.7000  0.7000  0.6000  0.7000  0.7000  0.7000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.0000  0.7000  0.7000  0.6000  0.7000  0.7000  0.7000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  0.7000  0.7000  0.6000  0.7000  0.7000  0.7000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.7000  0.7000  0.6000  0.7000  0.7000  0.7000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.7000  0.8000  0.7000  0.7000  0.7000  0.7000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.8000  0.7000  0.7000  0.7000  0.7000  0.7000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.8000  0.9000  0.8000  0.8000  0.8000  0.8000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.7000  0.9000  0.9000  0.8000  0.8000  0.8000  0.1000  0.1000
0.1000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.9000  0.9000  0.9000  0.9000  0.9000  0.9000  0.2000  0.1000
0.1000  0.1000  0.1000  0.1000
 260.  *  0.0000  1.0000  0.8000  1.0000  1.0000  1.0000  0.9000  0.4000  0.3000
0.4000  0.1000  0.1000  0.1000
 270.  *  0.0000  1.0000  0.8000  0.6000  1.1000  1.1000  0.9000  0.7000  0.7000
0.9000  0.2000  0.2000  0.2000
 280.  *  0.0000  0.7000  0.4000  0.4000  0.9000  0.9000  0.8000  1.1000  1.0000
1.0000  0.6000  0.6000  0.4000
 290.  *  0.0000  0.6000  0.2000  0.1000  0.6000  0.6000  0.4000  1.2000  1.1000
0.9000  0.9000  0.9000  0.9000
 300.  *  0.0000  0.2000  0.1000  0.1000  0.2000  0.2000  0.2000  1.0000  0.9000
0.7000  1.1000  1.1000  1.0000
 310.  *  0.2000  0.2000  0.0000  0.0000  0.1000  0.1000  0.1000  0.9000  0.7000
0.7000  1.0000  1.0000  0.9000
 320.  *  0.2000  0.2000  0.0000  0.0000  0.1000  0.1000  0.1000  0.8000  0.6000
0.6000  0.9000  0.9000  0.9000
 330.  *  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.7000  0.6000
0.6000  0.8000  0.8000  0.8000
```

```
 340.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.6000  0.6000
0.6000  0.9000  0.8000  0.8000
 350.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.6000  0.6000
0.6000  0.9000  0.8000  0.7000
 360.  *  0.4000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.6000  0.6000
0.6000  0.9000  0.8000  0.7000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.4000  1.0000  1.0000  1.0000  1.1000  1.1000  1.1000  1.2000  1.1000
1.0000  1.3000  1.2000  1.2000
 DEGR. *     10      90     100     260     270     270     110     290     290
280      80      80      90

 THE HIGHEST CONCENTRATION OF   1.4000 PPM OCCURRED AT RECEPTOR     9.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
4,4,7,6,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,15,-15,7.5,7.5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',39.3,77.5,5.9
'N Leg, E Side - 25 m',20.6,147.1,5.9
'N Leg, E Side - 50 m',-0.6,226.3,5.9
'N Leg, E Side-Midblk',-113.4,647.4,5.9
'N Leg, W Side-Corner',-85.2,93.9,5.9
'N Leg, W Side - 25 m',-103.9,163.5,5.9
'N Leg, W Side - 50 m',-125.1,242.7,5.9
'N Leg, W Side-Midblk',-237.9,663.8,5.9
'S Leg, E Side-Corner',33.5,-99.2,5.9
'S Leg, E Side - 25 m',14.8,-168.8,5.9
'S Leg, E Side - 50 m',-6.4,-248.0,5.9
'S Leg, E Side-Midblk',-119.2,-669.1,5.9
'S Leg, W Side-Corner',-82.5,-83.9,5.9
'S Leg, W Side - 25 m',-101.2,-153.5,5.9
'S Leg, W Side - 50 m',-122.4,-232.7,5.9
'S Leg, W Side-Midblk',-235.2,-653.8,5.9
'E Leg, N Side - 25 m',110.7,68.1,5.9
'E Leg, N Side - 50 m',192.0,57.4,5.9
'E Leg, N Side-Midblk',624.2,0.5,5.9
'W Leg, N Side - 25 m',-156.6,103.3,5.9
'W Leg, N Side - 50 m',-237.9,114.0,5.9
'W Leg, N Side-Midblk',-670.2,170.9,5.9
'E Leg, S Side - 25 m',104.9,-108.6,5.9
'E Leg, S Side - 50 m',186.2,-119.3,5.9
'E Leg, S Side-Midblk',618.4,-176.2,5.9
'W Leg, S Side - 25 m',-153.9,-74.5,5.9
'W Leg, S Side - 50 m',-235.3,-63.8,5.9
'W Leg, S Side-Midblk',-667.5,-6.9,5.9
'2025 NB I495 & MD650 IC.17',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-25,0,-334,1153,2740,2.15,0.0,67.7
1
'N Leg Dep - FreeFlow','AG',25,0,-287,1165,2980,2.15,0.0,67.7
1
'S Leg App - FreeFlow','AG',25,0,-287,-1165,2980,2.15,0.0,67.7
1
'S Leg Dep - FreeFlow','AG',-25,0,-334,-1153,2740,2.15,0.0,67.7
1
'E Leg App - FreeFlow','AG',5,36,1194,-121,8255,2.67,0.0,91.7
1
'E Leg Dep - FreeFlow','AG',-5,-42,1184,-198,8070,1.49,0.0,103.7
1
```

```
'W Leg App - FreeFlow','AG',-5,-42,-1195,115,8070,2.67,0.0,103.7
1
'W Leg Dep - FreeFlow','AG',5,36,-1185,192,8255,1.49,0.0,91.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & MD650 IC.17

DATE : 5/16/19
TIME : 8:28:36

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-25.0	0.0	-334.0	1153.0	*	1194.	345.	AG	2740.	2.2	0.0	67.7		
2. N Leg Dep - FreeFlow	*	25.0	0.0	-287.0	1165.0	*	1206.	345.	AG	2980.	2.2	0.0	67.7		
3. S Leg App - FreeFlow	*	25.0	0.0	-287.0	-1165.0	*	1206.	195.	AG	2980.	2.2	0.0	67.7		
4. S Leg Dep - FreeFlow	*	-25.0	0.0	-334.0	-1153.0	*	1194.	195.	AG	2740.	2.2	0.0	67.7		
5. E Leg App - FreeFlow	*	5.0	36.0	1194.0	-121.0	*	1199.	98.	AG	8255.	2.7	0.0	91.7		
6. E Leg Dep - FreeFlow	*	-5.0	-42.0	1184.0	-198.0	*	1199.	97.	AG	8070.	1.5	0.0	****		
7. W Leg App - FreeFlow	*	-5.0	-42.0	-1195.0	115.0	*	1200.	278.	AG	8070.	2.7	0.0	****		
8. W Leg Dep - FreeFlow	*	5.0	36.0	-1185.0	192.0	*	1200.	277.	AG	8255.	1.5	0.0	91.7		

MD650 IC.17

DATE : 5/16/19
TIME : 8:28:36

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	39.3	77.5	5.9
2. N Leg, E Side - 25 m	20.6	147.1	5.9
3. N Leg, E Side - 50 m	-0.6	226.3	5.9
4. N Leg, E Side-Midblk	-113.4	647.4	5.9
5. N Leg, W Side-Corner	-85.2	93.9	5.9
6. N Leg, W Side - 25 m	-103.9	163.5	5.9
7. N Leg, W Side - 50 m	-125.1	242.7	5.9
8. N Leg, W Side-Midblk	-237.9	663.8	5.9
9. S Leg, E Side-Corner	33.5	-99.2	5.9
10. S Leg, E Side - 25 m	14.8	-168.8	5.9
11. S Leg, E Side - 50 m	-6.4	-248.0	5.9
12. S Leg, E Side-Midblk	-119.2	-669.1	5.9
13. S Leg, W Side-Corner	-82.5	-83.9	5.9
14. S Leg, W Side - 25 m	-101.2	-153.5	5.9
15. S Leg, W Side - 50 m	-122.4	-232.7	5.9
16. S Leg, W Side-Midblk	-235.2	-653.8	5.9
17. E Leg, N Side - 25 m	110.7	68.1	5.9
18. E Leg, N Side - 50 m	192.0	57.4	5.9
19. E Leg, N Side-Midblk	624.2	0.5	5.9
20. W Leg, N Side - 25 m	-156.6	103.3	5.9
21. W Leg, N Side - 50 m	-237.9	114.0	5.9
22. W Leg, N Side-Midblk	-670.2	170.9	5.9
23. E Leg, S Side - 25 m	104.9	-108.6	5.9
24. E Leg, S Side - 50 m	186.2	-119.3	5.9
25. E Leg, S Side-Midblk	618.4	-176.2	5.9
26. W Leg, S Side - 25 m	-153.9	-74.5	5.9

27. W Leg, S Side - 50 m * -235.3 -63.8 5.9 *
28. W Leg, S Side-Midblk * -667.5 -6.9 5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.8000	0.7000	0.6000	0.5000	1.1000	0.7000	0.6000
20.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.7000	0.5000	0.4000	0.3000	1.0000	0.9000	0.7000
30.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.6000	0.5000	0.4000	0.3000	1.1000	0.8000	0.7000
40.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.6000	0.4000	0.3000	0.2000	1.1000	0.8000	0.7000
50.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.6000	0.5000	0.3000	0.2000	1.2000	0.7000	0.6000
60.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.8000	0.5000	0.3000	0.2000	1.2000	0.9000	0.6000
70.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.8000	0.5000	0.4000	0.0000	1.3000	0.8000	0.7000
80.	* 0.2000	0.0000	0.0000	0.0000	0.5000	0.3000	0.3000	0.3000	0.9000	0.5000	0.3000	0.0000	1.3000	0.8000	0.6000
90.	* 0.5000	0.1000	0.0000	0.0000	0.7000	0.4000	0.3000	0.3000	0.8000	0.3000	0.2000	0.0000	1.3000	0.7000	0.5000
100.	* 1.0000	0.4000	0.1000	0.0000	1.2000	0.7000	0.4000	0.3000	0.5000	0.1000	0.0000	0.0000	0.9000	0.4000	0.3000
110.	* 1.2000	0.5000	0.3000	0.0000	1.3000	0.8000	0.6000	0.3000	0.2000	0.0000	0.0000	0.0000	0.5000	0.3000	0.3000
120.	* 1.1000	0.6000	0.4000	0.1000	1.2000	0.9000	0.7000	0.4000	0.1000	0.0000	0.0000	0.0000	0.4000	0.3000	0.3000

130. * 1.0000 0.6000 0.4000 0.1000 1.1000 0.8000 0.7000 0.5000 0.0000
0.0000 0.0000 0.0000 0.3000 0.3000 0.3000
140. * 0.9000 0.5000 0.4000 0.2000 0.9000 0.7000 0.6000 0.6000 0.0000
0.0000 0.0000 0.0000 0.3000 0.3000 0.3000
150. * 0.8000 0.6000 0.4000 0.3000 1.0000 0.8000 0.8000 0.5000 0.0000
0.0000 0.0000 0.0000 0.3000 0.3000 0.3000
160. * 0.9000 0.6000 0.4000 0.3000 0.9000 0.8000 0.5000 0.4000 0.0000
0.0000 0.0000 0.0000 0.3000 0.3000 0.3000
170. * 1.0000 0.7000 0.6000 0.4000 0.9000 0.7000 0.6000 0.4000 0.0000
0.0000 0.0000 0.0000 0.4000 0.4000 0.4000
180. * 1.0000 0.9000 1.0000 0.6000 0.8000 0.7000 0.6000 0.3000 0.1000
0.1000 0.1000 0.1000 0.5000 0.5000 0.4000
190. * 1.3000 1.0000 0.8000 0.6000 0.8000 0.6000 0.4000 0.2000 0.2000
0.2000 0.2000 0.2000 0.4000 0.4000 0.4000
200. * 1.4000 1.0000 0.7000 0.5000 0.6000 0.4000 0.3000 0.2000 0.4000
0.4000 0.4000 0.4000 0.2000 0.2000 0.2000
210. * 1.2000 0.8000 0.6000 0.5000 0.6000 0.4000 0.3000 0.2000 0.4000
0.4000 0.4000 0.4000 0.1000 0.1000 0.1000
220. * 1.2000 0.7000 0.6000 0.5000 0.6000 0.4000 0.3000 0.2000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
230. * 1.1000 0.8000 0.6000 0.5000 0.8000 0.5000 0.3000 0.2000 0.3000
0.3000 0.3000 0.3000 0.1000 0.0000 0.0000
240. * 1.3000 0.8000 0.7000 0.5000 0.8000 0.5000 0.4000 0.1000 0.3000
0.3000 0.3000 0.3000 0.1000 0.0000 0.0000
250. * 1.3000 0.8000 0.7000 0.3000 0.9000 0.5000 0.4000 0.0000 0.3000
0.3000 0.3000 0.3000 0.1000 0.0000 0.0000
260. * 1.4000 0.9000 0.7000 0.3000 1.0000 0.5000 0.3000 0.0000 0.4000
0.3000 0.3000 0.3000 0.2000 0.0000 0.0000
270. * 1.3000 0.7000 0.5000 0.3000 0.9000 0.4000 0.2000 0.0000 0.8000
0.4000 0.3000 0.3000 0.5000 0.1000 0.0000
280. * 0.9000 0.5000 0.3000 0.3000 0.5000 0.1000 0.0000 0.0000 1.2000
0.6000 0.4000 0.3000 0.9000 0.2000 0.1000
290. * 0.4000 0.3000 0.3000 0.3000 0.2000 0.0000 0.0000 0.0000 1.4000
0.8000 0.6000 0.3000 1.2000 0.5000 0.3000
300. * 0.3000 0.3000 0.3000 0.3000 0.1000 0.0000 0.0000 0.0000 1.2000
0.9000 0.7000 0.3000 1.0000 0.5000 0.4000
310. * 0.3000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 1.2000
0.9000 0.7000 0.4000 0.9000 0.6000 0.4000
320. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 1.2000
0.7000 0.7000 0.5000 0.8000 0.5000 0.4000
330. * 0.4000 0.4000 0.4000 0.4000 0.1000 0.1000 0.1000 0.1000 1.2000
0.8000 0.6000 0.5000 0.8000 0.4000 0.3000
340. * 0.4000 0.4000 0.4000 0.4000 0.2000 0.2000 0.2000 0.2000 1.2000
0.9000 0.7000 0.5000 0.8000 0.4000 0.3000
350. * 0.2000 0.2000 0.2000 0.2000 0.4000 0.4000 0.4000 0.4000 1.2000
1.0000 0.9000 0.6000 0.9000 0.6000 0.4000
360. * 0.1000 0.1000 0.1000 0.1000 0.5000 0.5000 0.4000 0.4000 0.9000
0.8000 1.0000 0.5000 0.9000 0.7000 0.6000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.4000  1.0000  1.0000  0.6000  1.3000  0.9000  0.8000  0.6000  1.4000
1.0000  1.0000  0.6000  1.3000  0.9000  0.7000
 DEGR. *    200     190     180     180     110     120     150     140     290
350     360     350      70      20      20
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.6000  0.6000
0.6000  1.0000  1.0000  0.8000
  20.  *  0.5000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.6000  0.6000
0.6000  0.9000  0.9000  0.7000
  30.  *  0.5000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.6000  0.6000
0.6000  0.9000  0.9000  0.7000
  40.  *  0.6000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.6000  0.6000
0.6000  0.9000  1.0000  0.8000
  50.  *  0.5000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.6000  0.6000
0.6000  1.0000  1.0000  0.8000
  60.  *  0.5000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.8000  0.8000
0.8000  1.0000  0.9000  0.9000
  70.  *  0.4000  0.1000  0.1000  0.1000  0.2000  0.2000  0.1000  0.8000  0.8000
0.8000  1.1000  1.1000  1.0000
  80.  *  0.3000  0.2000  0.2000  0.2000  0.4000  0.4000  0.1000  0.9000  0.9000
0.8000  1.3000  1.1000  1.2000
  90.  *  0.3000  0.5000  0.5000  0.4000  0.7000  0.6000  0.4000  0.8000  0.8000
0.7000  1.2000  1.2000  1.3000
```

```
 100.  *  0.3000  1.0000  1.0000  0.9000  1.1000  1.0000  0.9000  0.5000  0.5000
0.3000  0.8000  0.9000  0.8000
 110.  *  0.3000  1.2000  1.2000  1.1000  1.2000  1.1000  1.0000  0.2000  0.2000
0.1000  0.5000  0.5000  0.3000
 120.  *  0.3000  1.1000  1.1000  1.1000  1.0000  0.8000  0.9000  0.1000  0.1000
0.1000  0.3000  0.3000  0.1000
 130.  *  0.3000  1.0000  1.0000  1.0000  0.9000  0.8000  0.8000  0.0000  0.0000
0.0000  0.3000  0.3000  0.1000
 140.  *  0.3000  0.9000  0.9000  0.9000  1.0000  0.9000  0.8000  0.0000  0.0000
0.0000  0.3000  0.3000  0.1000
 150.  *  0.3000  0.8000  0.8000  0.8000  0.8000  0.9000  0.7000  0.0000  0.0000
0.0000  0.3000  0.3000  0.1000
 160.  *  0.3000  0.8000  0.8000  0.8000  0.8000  0.8000  0.6000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 170.  *  0.4000  0.7000  0.7000  0.7000  0.8000  0.8000  0.6000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 180.  *  0.4000  0.8000  0.8000  0.8000  0.8000  0.6000  0.6000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 190.  *  0.4000  0.9000  0.8000  0.8000  0.6000  0.6000  0.6000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 200.  *  0.2000  1.0000  0.9000  0.8000  0.6000  0.6000  0.6000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.1000  1.0000  0.9000  0.7000  0.6000  0.6000  0.6000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  1.0000  1.0000  0.8000  0.6000  0.6000  0.6000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  1.1000  1.2000  0.9000  0.8000  0.8000  0.8000  0.2000  0.2000
0.0000  0.1000  0.1000  0.1000
 240.  *  0.0000  1.3000  1.1000  0.9000  0.8000  0.8000  0.8000  0.2000  0.2000
0.0000  0.1000  0.1000  0.1000
 250.  *  0.0000  1.3000  1.2000  1.0000  0.9000  0.9000  0.9000  0.2000  0.2000
0.0000  0.1000  0.1000  0.1000
 260.  *  0.0000  1.4000  1.4000  1.3000  1.0000  1.0000  0.8000  0.4000  0.4000
0.1000  0.2000  0.2000  0.2000
 270.  *  0.0000  1.3000  1.3000  1.3000  0.9000  0.9000  0.7000  0.6000  0.5000
0.3000  0.5000  0.4000  0.4000
 280.  *  0.0000  0.9000  0.9000  0.8000  0.5000  0.5000  0.3000  1.0000  0.9000
0.8000  0.9000  0.9000  0.7000
 290.  *  0.0000  0.4000  0.5000  0.3000  0.2000  0.2000  0.2000  1.1000  1.0000
1.0000  1.2000  1.1000  1.0000
 300.  *  0.0000  0.3000  0.3000  0.1000  0.1000  0.1000  0.1000  1.0000  0.9000
0.9000  1.0000  1.0000  1.0000
 310.  *  0.1000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  1.0000  1.0000
0.8000  0.9000  0.9000  0.9000
 320.  *  0.1000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  0.9000  0.9000
0.7000  0.8000  0.8000  0.8000
 330.  *  0.2000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  0.8000  0.8000
0.6000  0.8000  0.8000  0.8000
```

```
 340.  *  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.9000  0.7000
0.6000  0.7000  0.7000  0.7000
 350.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.7000  0.6000
0.6000  0.8000  0.7000  0.7000
 360.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.6000  0.6000
0.6000  0.9000  0.8000  0.7000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.6000  1.4000  1.4000  1.3000  1.2000  1.1000  1.0000  1.1000  1.0000
1.0000  1.3000  1.2000  1.3000
 DEGR. *     40     260     260     260     110     110     110     290     290
290      80      90      90

 THE HIGHEST CONCENTRATION OF   1.4000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
7,7,6,7,950,950,950,950,950,950,950,950,1036.8,1036.8,1036.8,1036.8,1036.8,1036.8,10
36.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,120
0,-1200,0,0,0,0,0,0,-15,-15,-5,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',70.4,100.5,5.9
'N Leg, E Side - 25 m',51.7,170.1,5.9
'N Leg, E Side - 50 m',30.5,249.3,5.9
'N Leg, E Side-Midblk',-82.3,670.4,5.9
'N Leg, W Side-Corner',-119.8,83.9,5.9
'N Leg, W Side - 25 m',-138.4,153.4,5.9
'N Leg, W Side - 50 m',-159.7,232.7,5.9
'N Leg, W Side-Midblk',-272.5,653.8,5.9
'S Leg, E Side-Corner',116.6,-72.1,5.9
'S Leg, E Side - 25 m',135.3,-141.7,5.9
'S Leg, E Side - 50 m',156.5,-220.9,5.9
'S Leg, E Side-Midblk',269.3,-642.0,5.9
'S Leg, W Side-Corner',-73.5,-88.7,5.9
'S Leg, W Side - 25 m',-54.9,-158.3,5.9
'S Leg, W Side - 50 m',-33.7,-237.5,5.9
'S Leg, W Side-Midblk',79.2,-658.6,5.9
'E Leg, N Side - 25 m',142.1,106.8,5.9
'E Leg, N Side - 50 m',223.8,113.9,5.9
'E Leg, N Side-Midblk',658.1,151.9,5.9
'W Leg, N Side - 25 m',-191.5,77.6,5.9
'W Leg, N Side - 50 m',-273.2,70.5,5.9
'W Leg, N Side-Midblk',-707.5,32.5,5.9
'E Leg, S Side - 25 m',188.4,-65.8,5.9
'E Leg, S Side - 50 m',270.1,-58.7,5.9
'E Leg, S Side-Midblk',704.4,-20.7,5.9
'W Leg, S Side - 25 m',-145.3,-95.0,5.9
'W Leg, S Side - 50 m',-227.0,-102.2,5.9
'W Leg, S Side-Midblk',-661.3,-140.2,5.9
'2025 NB I495 & US50 (11.IC)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-41,-11,-351,1148,8530,2.67,0.0,103.7
1
'N Leg Dep - FreeFlow','AG',41,11,-270,1170,7600,1.50,0.0,103.7
1
'S Leg App - FreeFlow','AG',41,11,351,-1148,7600,1.50,0.0,103.7
1
'S Leg Dep - FreeFlow','AG',-41,-11,270,-1170,8530,3.47,0.0,103.7
1
'E Leg App - FreeFlow','AG',0,42,1192,146,4530,1.56,0.0,103.7
1
'E Leg Dep - FreeFlow','AG',3,-36,1199,69,6080,3.28,0.0,91.7
1
```

```
'W Leg App - FreeFlow','AG',3,-36,-1192,-140,6080,3.28,0.0,91.7
1
'W Leg Dep - FreeFlow','AG',0,42,-1199,-63,4530,1.56,0.0,103.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & US50 (11.IC)

DATE : 5/15/19
TIME : 9:23:33

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-41.0	-11.0	-351.0	1148.0	*	1200.	345.	AG	8530.	2.7	0.0	****		
2. N Leg Dep - FreeFlow	*	41.0	11.0	-270.0	1170.0	*	1200.	345.	AG	7600.	1.5	0.0	****		
3. S Leg App - FreeFlow	*	41.0	11.0	351.0	-1148.0	*	1200.	165.	AG	7600.	1.5	0.0	****		
4. S Leg Dep - FreeFlow	*	-41.0	-11.0	270.0	-1170.0	*	1200.	165.	AG	8530.	3.5	0.0	****		
5. E Leg App - FreeFlow	*	0.0	42.0	1192.0	146.0	*	1197.	85.	AG	4530.	1.6	0.0	****		
6. E Leg Dep - FreeFlow	*	3.0	-36.0	1199.0	69.0	*	1201.	85.	AG	6080.	3.3	0.0	91.7		
7. W Leg App - FreeFlow	*	3.0	-36.0	-1192.0	-140.0	*	1200.	265.	AG	6080.	3.3	0.0	91.7		
8. W Leg Dep - FreeFlow	*	0.0	42.0	-1199.0	-63.0	*	1204.	265.	AG	4530.	1.6	0.0	****		

DATE : 5/15/19
TIME : 9:23:33

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	70.4	100.5	5.9
2. N Leg, E Side - 25 m	51.7	170.1	5.9
3. N Leg, E Side - 50 m	30.5	249.3	5.9
4. N Leg, E Side-Midblk	-82.3	670.4	5.9
5. N Leg, W Side-Corner	-119.8	83.9	5.9
6. N Leg, W Side - 25 m	-138.4	153.4	5.9
7. N Leg, W Side - 50 m	-159.7	232.7	5.9
8. N Leg, W Side-Midblk	-272.5	653.8	5.9
9. S Leg, E Side-Corner	116.6	-72.1	5.9
10. S Leg, E Side - 25 m	135.3	-141.7	5.9
11. S Leg, E Side - 50 m	156.5	-220.9	5.9
12. S Leg, E Side-Midblk	269.3	-642.0	5.9
13. S Leg, W Side-Corner	-73.5	-88.7	5.9
14. S Leg, W Side - 25 m	-54.9	-158.3	5.9
15. S Leg, W Side - 50 m	-33.7	-237.5	5.9
16. S Leg, W Side-Midblk	79.2	-658.6	5.9
17. E Leg, N Side - 25 m	142.1	106.8	5.9
18. E Leg, N Side - 50 m	223.8	113.9	5.9
19. E Leg, N Side-Midblk	658.1	151.9	5.9
20. W Leg, N Side - 25 m	-191.5	77.6	5.9
21. W Leg, N Side - 50 m	-273.2	70.5	5.9
22. W Leg, N Side-Midblk	-707.5	32.5	5.9
23. E Leg, S Side - 25 m	188.4	-65.8	5.9
24. E Leg, S Side - 50 m	270.1	-58.7	5.9
25. E Leg, S Side-Midblk	704.4	-20.7	5.9
26. W Leg, S Side - 25 m	-145.3	-95.0	5.9

27. W Leg, S Side - 50 m * -227.0 -102.2 5.9 *
28. W Leg, S Side-Midblk * -661.3 -140.2 5.9 *

JOB: I-495 & I-270 MLS RUN: 2025 NB I495 & US50 (11.IC)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.1000	0.1000	0.1000	0.0000	1.1000	1.1000	1.1000	1.0000	0.6000	0.4000	0.3000	0.2000	1.8000	1.7000	1.5000
20.	* 0.0000	0.0000	0.0000	0.0000	0.9000	0.9000	0.9000	0.9000	0.6000	0.4000	0.3000	0.1000	1.7000	1.4000	1.4000
30.	* 0.0000	0.0000	0.0000	0.0000	0.9000	0.9000	0.9000	0.9000	0.7000	0.4000	0.3000	0.1000	1.6000	1.4000	1.4000
40.	* 0.0000	0.0000	0.0000	0.0000	0.8000	0.8000	0.8000	0.8000	0.7000	0.4000	0.3000	0.1000	1.7000	1.4000	1.3000
50.	* 0.0000	0.0000	0.0000	0.0000	0.7000	0.7000	0.7000	0.7000	0.8000	0.5000	0.3000	0.1000	1.7000	1.3000	1.2000
60.	* 0.0000	0.0000	0.0000	0.0000	0.7000	0.7000	0.7000	0.7000	0.9000	0.5000	0.3000	0.0000	1.7000	1.4000	1.3000
70.	* 0.1000	0.0000	0.0000	0.0000	0.8000	0.8000	0.8000	0.8000	1.0000	0.5000	0.2000	0.0000	2.1000	1.5000	1.3000
80.	* 0.3000	0.0000	0.0000	0.0000	1.1000	0.8000	0.8000	0.8000	1.0000	0.2000	0.1000	0.0000	2.0000	1.3000	1.1000
90.	* 0.5000	0.2000	0.0000	0.0000	1.2000	0.9000	0.8000	0.7000	0.6000	0.1000	0.0000	0.0000	1.5000	1.0000	0.9000
100.	* 0.6000	0.3000	0.2000	0.0000	1.2000	1.0000	0.9000	0.7000	0.2000	0.0000	0.0000	0.0000	1.1000	0.9000	0.9000
110.	* 0.7000	0.3000	0.3000	0.0000	1.4000	1.1000	1.1000	0.8000	0.1000	0.0000	0.0000	0.0000	1.1000	1.0000	1.0000
120.	* 0.5000	0.3000	0.3000	0.1000	1.6000	1.1000	1.2000	1.0000	0.1000	0.0000	0.0000	0.0000	1.2000	1.1000	1.1000

130. * 0.5000 0.3000 0.3000 0.1000 1.5000 1.4000 1.1000 1.0000 0.1000
0.0000 0.0000 0.0000 1.3000 1.2000 1.2000
140. * 0.5000 0.3000 0.3000 0.2000 1.6000 1.4000 1.2000 1.1000 0.1000
0.1000 0.1000 0.0000 1.3000 1.3000 1.3000
150. * 0.7000 0.5000 0.4000 0.2000 1.9000 1.7000 1.6000 1.5000 0.1000
0.1000 0.1000 0.1000 1.5000 1.5000 1.5000
160. * 0.9000 0.7000 0.7000 0.6000 1.8000 1.5000 1.4000 1.3000 0.4000
0.4000 0.4000 0.2000 1.3000 1.3000 1.3000
170. * 1.3000 1.1000 1.0000 1.0000 1.2000 1.0000 1.0000 0.8000 0.8000
0.8000 0.8000 0.5000 0.8000 0.8000 0.8000
180. * 1.5000 1.3000 1.4000 1.1000 0.8000 0.5000 0.6000 0.3000 1.0000
1.0000 1.0000 0.8000 0.3000 0.3000 0.3000
190. * 1.4000 1.2000 1.2000 1.0000 0.6000 0.4000 0.4000 0.2000 0.9000
0.9000 0.9000 0.8000 0.1000 0.1000 0.1000
200. * 1.2000 1.1000 1.1000 0.9000 0.6000 0.4000 0.4000 0.2000 0.9000
0.9000 0.9000 0.9000 0.1000 0.1000 0.1000
210. * 1.4000 1.0000 1.0000 0.8000 0.6000 0.4000 0.4000 0.2000 0.8000
0.8000 0.8000 0.8000 0.1000 0.1000 0.1000
220. * 1.2000 1.0000 0.9000 0.7000 0.6000 0.4000 0.4000 0.2000 0.8000
0.7000 0.7000 0.7000 0.2000 0.1000 0.1000
230. * 1.2000 0.9000 0.9000 0.7000 0.5000 0.3000 0.3000 0.0000 0.8000
0.7000 0.7000 0.7000 0.1000 0.0000 0.0000
240. * 1.3000 0.9000 0.9000 0.6000 0.7000 0.3000 0.3000 0.0000 0.8000
0.7000 0.7000 0.7000 0.1000 0.0000 0.0000
250. * 1.2000 0.9000 0.8000 0.6000 0.6000 0.3000 0.2000 0.0000 0.9000
0.7000 0.7000 0.7000 0.2000 0.0000 0.0000
260. * 1.1000 0.8000 0.7000 0.6000 0.5000 0.2000 0.0000 0.0000 1.2000
0.8000 0.7000 0.7000 0.6000 0.1000 0.0000
270. * 0.9000 0.6000 0.6000 0.6000 0.3000 0.0000 0.0000 0.0000 1.7000
1.0000 0.8000 0.7000 1.0000 0.3000 0.1000
280. * 0.6000 0.6000 0.6000 0.6000 0.1000 0.0000 0.0000 0.0000 1.8000
1.2000 1.0000 0.7000 1.0000 0.5000 0.2000
290. * 0.6000 0.6000 0.6000 0.6000 0.1000 0.1000 0.1000 0.1000 1.6000
1.1000 1.1000 0.8000 1.0000 0.6000 0.5000
300. * 0.7000 0.7000 0.7000 0.7000 0.1000 0.1000 0.1000 0.1000 1.5000
1.1000 1.0000 0.9000 0.9000 0.6000 0.4000
310. * 0.8000 0.8000 0.8000 0.8000 0.1000 0.1000 0.1000 0.1000 1.7000
1.1000 1.3000 1.0000 0.8000 0.5000 0.4000
320. * 0.8000 0.8000 0.8000 0.7000 0.1000 0.1000 0.1000 0.1000 1.4000
1.2000 1.1000 1.0000 0.8000 0.5000 0.4000
330. * 0.9000 0.9000 0.9000 0.7000 0.2000 0.2000 0.2000 0.2000 1.5000
1.3000 1.1000 1.1000 0.8000 0.7000 0.6000
340. * 0.7000 0.7000 0.7000 0.5000 0.6000 0.6000 0.6000 0.5000 1.4000
1.1000 1.1000 1.0000 1.2000 1.1000 1.0000
350. * 0.4000 0.4000 0.4000 0.2000 1.1000 1.0000 1.0000 0.9000 1.0000
0.9000 0.7000 0.7000 1.8000 1.6000 1.5000
360. * 0.1000 0.1000 0.1000 0.1000 1.2000 1.2000 1.2000 1.0000 0.8000
0.5000 0.4000 0.2000 1.9000 1.8000 1.6000

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  1.5000  1.3000  1.4000  1.1000  1.9000  1.7000  1.6000  1.5000  1.8000
1.3000  1.3000  1.1000  2.1000  1.8000  1.6000
 DEGR. *    180     180     180     180     150     150     150     150     280
330     310     330      70     360     360
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  1.4000  0.0000  0.0000  0.0000  0.5000  0.4000  0.0000  0.6000  0.6000
0.6000  1.1000  1.0000  0.6000
  20.  *  1.3000  0.0000  0.0000  0.0000  0.5000  0.4000  0.1000  0.6000  0.6000
0.6000  1.1000  1.0000  0.7000
  30.  *  1.2000  0.0000  0.0000  0.0000  0.5000  0.4000  0.1000  0.7000  0.7000
0.7000  1.1000  1.1000  0.8000
  40.  *  1.1000  0.0000  0.0000  0.0000  0.5000  0.3000  0.1000  0.7000  0.7000
0.7000  1.2000  1.0000  0.9000
  50.  *  1.0000  0.0000  0.0000  0.0000  0.5000  0.3000  0.1000  0.8000  0.8000
0.8000  1.4000  1.1000  0.9000
  60.  *  0.9000  0.0000  0.0000  0.0000  0.4000  0.3000  0.1000  0.9000  0.9000
0.9000  1.5000  1.4000  1.0000
  70.  *  1.0000  0.1000  0.1000  0.1000  0.4000  0.4000  0.2000  1.0000  1.0000
0.9000  1.6000  1.5000  1.2000
  80.  *  1.0000  0.3000  0.3000  0.1000  0.7000  0.6000  0.4000  1.0000  1.0000
0.8000  1.6000  1.5000  1.1000
  90.  *  0.9000  0.5000  0.5000  0.3000  0.9000  0.8000  0.6000  0.6000  0.5000
0.5000  1.2000  0.9000  0.7000
```

```
 100.  *  0.9000  0.6000  0.6000  0.5000  1.0000  1.1000  0.8000  0.2000  0.2000
0.2000  0.8000  0.7000  0.3000
 110.  *  1.0000  0.7000  0.6000  0.6000  1.3000  1.0000  0.7000  0.1000  0.1000
0.1000  0.7000  0.5000  0.3000
 120.  *  1.1000  0.5000  0.5000  0.5000  1.1000  1.1000  0.7000  0.1000  0.1000
0.1000  0.7000  0.5000  0.3000
 130.  *  1.2000  0.5000  0.5000  0.5000  1.2000  0.9000  0.6000  0.1000  0.1000
0.1000  0.7000  0.6000  0.2000
 140.  *  1.3000  0.5000  0.5000  0.5000  1.2000  1.0000  0.6000  0.0000  0.0000
0.0000  0.7000  0.5000  0.1000
 150.  *  1.3000  0.5000  0.5000  0.5000  1.1000  0.9000  0.5000  0.0000  0.0000
0.0000  0.6000  0.4000  0.0000
 160.  *  1.2000  0.6000  0.5000  0.5000  1.0000  0.7000  0.5000  0.0000  0.0000
0.0000  0.5000  0.2000  0.0000
 170.  *  0.6000  0.8000  0.7000  0.5000  0.6000  0.5000  0.5000  0.2000  0.2000
0.0000  0.1000  0.0000  0.0000
 180.  *  0.3000  1.0000  0.8000  0.5000  0.5000  0.5000  0.5000  0.5000  0.3000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  1.1000  0.9000  0.5000  0.5000  0.5000  0.5000  0.6000  0.4000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.1000  1.1000  0.9000  0.6000  0.5000  0.5000  0.5000  0.6000  0.4000
0.1000  0.0000  0.0000  0.0000
 210.  *  0.1000  1.0000  0.9000  0.7000  0.5000  0.5000  0.5000  0.5000  0.4000
0.2000  0.0000  0.0000  0.0000
 220.  *  0.1000  1.0000  0.9000  0.7000  0.5000  0.5000  0.5000  0.6000  0.5000
0.3000  0.1000  0.1000  0.1000
 230.  *  0.0000  1.0000  0.8000  0.7000  0.5000  0.5000  0.5000  0.6000  0.4000
0.3000  0.1000  0.1000  0.1000
 240.  *  0.0000  1.0000  1.1000  0.7000  0.6000  0.6000  0.6000  0.6000  0.4000
0.3000  0.1000  0.1000  0.1000
 250.  *  0.0000  1.0000  1.0000  0.8000  0.6000  0.6000  0.5000  0.7000  0.6000
0.4000  0.2000  0.2000  0.2000
 260.  *  0.0000  0.9000  0.8000  0.7000  0.5000  0.5000  0.3000  1.1000  0.9000
0.7000  0.6000  0.5000  0.5000
 270.  *  0.0000  0.7000  0.6000  0.4000  0.3000  0.3000  0.1000  1.5000  1.3000
1.1000  1.0000  1.0000  0.8000
 280.  *  0.0000  0.4000  0.3000  0.3000  0.1000  0.1000  0.1000  1.5000  1.3000
1.2000  1.0000  1.0000  1.0000
 290.  *  0.1000  0.4000  0.3000  0.2000  0.0000  0.0000  0.0000  1.4000  1.4000
1.1000  0.9000  0.9000  0.9000
 300.  *  0.2000  0.5000  0.3000  0.2000  0.0000  0.0000  0.0000  1.3000  1.1000
1.0000  0.8000  0.8000  0.8000
 310.  *  0.2000  0.5000  0.3000  0.1000  0.0000  0.0000  0.0000  1.2000  1.0000
0.9000  0.7000  0.7000  0.7000
 320.  *  0.2000  0.5000  0.3000  0.0000  0.0000  0.0000  0.0000  1.2000  1.0000
0.8000  0.7000  0.7000  0.7000
 330.  *  0.4000  0.4000  0.2000  0.0000  0.0000  0.0000  0.0000  1.1000  0.9000
0.6000  0.6000  0.6000  0.6000
```

```
 340.  *  0.9000  0.2000  0.2000  0.0000  0.1000  0.0000  0.0000  0.9000  0.8000
0.6000  0.7000  0.6000  0.6000
 350.  *  1.6000  0.0000  0.0000  0.0000  0.4000  0.1000  0.0000  0.7000  0.6000
0.6000  1.0000  0.7000  0.6000
 360.  *  1.6000  0.0000  0.0000  0.0000  0.5000  0.3000  0.0000  0.6000  0.6000
0.6000  1.1000  0.9000  0.6000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.6000  1.1000  1.1000  0.8000  1.3000  1.1000  0.8000  1.5000  1.4000
1.2000  1.6000  1.5000  1.2000
 DEGR. *    350     190     240     250     110     100     100     280     290
280      70      70      70

 THE HIGHEST CONCENTRATION OF   2.1000 PPM OCCURRED AT RECEPTOR    13.
```

```
Q,EPA,,F,,0,T,T,T,T,0.7,
1,1,3,3,2200,2200,2200,2200,2200,2200,2200,2200,1120,303,348.333333333333,347.333333
333333,1120,303,348.333333333333,347.333333333333,12,12,12,12,10,10,10,10,0,0,-1200,
1200,0,0,1200,-1200,-1200,1200,0,0,1200,-1200,0,0,0,0,0,0,5,0,0,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,23,0.3048,1,0
'N Leg, E Side-Corner',22.0,46.0,5.9
'N Leg, E Side - 0 m',0.0,46.0,5.9
'N Leg, W Side-Corner',-22.0,46.0,5.9
'S Leg, E Side-Corner',18.1,-46.0,5.9
'S Leg, E Side - 25 m',11.8,-117.7,5.9
'S Leg, E Side - 50 m',4.6,-199.5,5.9
'S Leg, E Side-Midblk',-33.4,-633.8,5.9
'S Leg, W Side-Corner',-26.1,-46.0,5.9
'S Leg, W Side - 25 m',-32.4,-117.7,5.9
'S Leg, W Side - 50 m',-39.5,-199.5,5.9
'S Leg, W Side-Midblk',-77.5,-633.8,5.9
'E Leg, N Side - 25 m',94.0,46.0,5.9
'E Leg, N Side - 50 m',176.0,46.0,5.9
'E Leg, N Side-Midblk',612.0,46.0,5.9
'W Leg, N Side - 25 m',-94.0,46.0,5.9
'W Leg, N Side - 50 m',-176.0,46.0,5.9
'W Leg, N Side-Midblk',-612.0,46.0,5.9
'E Leg, S Side - 25 m',90.1,-46.0,5.9
'E Leg, S Side - 50 m',172.1,-46.0,5.9
'E Leg, S Side-Midblk',608.1,-46.0,5.9
'W Leg, S Side - 25 m',-98.1,-46.0,5.9
'W Leg, S Side - 50 m',-180.2,-46.0,5.9
'W Leg, S Side-Midblk',-616.1,-46.0,5.9
'2025 NoBuild MD5 & Auth Rd (IS.7)',7,1,0,'CO'
1
'S Leg App - FreeFlow','AG',8,18,-99,-1196,635,1.86,0.0,31.7
2
'S Leg App - Queue','AG',3,-36,-99,-1196,0.0,12.0,1
120,62,2,635,4.27,1600,1,3
1
'S Leg Dep - FreeFlow','AG',-4,18,-111,-1195,635,2.73,0.0,31.7
1
'E Leg App - FreeFlow','AG',0,18,1200,18,4260,2.04,0.0,55.7
1
'E Leg Dep - FreeFlow','AG',0,-18,1200,-18,1725,1.53,0.0,55.7
1
'W Leg App - FreeFlow','AG',0,-18,-1200,-18,1725,3.40,0.0,55.7
1
'W Leg Dep - FreeFlow','AG',0,18,-1200,18,4260,1.53,0.0,55.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NoBuild MD5 & Auth Rd (IS.7)

DATE : 5/10/19
TIME : 9: 7:50

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. S Leg App - FreeFlow	*	8.0	18.0	-99.0	-1196.0	*	1219.	185.	AG	635.	1.9	0.0	31.7		
2. S Leg App - Queue	*	3.0	-36.0	-18.3	-278.0	*	243.	185.	AG	6.	100.0	0.0	12.0	0.88	12.3
3. S Leg Dep - FreeFlow	*	-4.0	18.0	-111.0	-1195.0	*	1218.	185.	AG	635.	2.7	0.0	31.7		
4. E Leg App - FreeFlow	*	0.0	18.0	1200.0	18.0	*	1200.	90.	AG	4260.	2.0	0.0	55.7		
5. E Leg Dep - FreeFlow	*	0.0	-18.0	1200.0	-18.0	*	1200.	90.	AG	1725.	1.5	0.0	55.7		
6. W Leg App - FreeFlow	*	0.0	-18.0	-1200.0	-18.0	*	1200.	270.	AG	1725.	3.4	0.0	55.7		
7. W Leg Dep - FreeFlow	*	0.0	18.0	-1200.0	18.0	*	1200.	270.	AG	4260.	1.5	0.0	55.7		

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. S Leg App - Queue	120	62	2.0	635	1600	4.27	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	22.0	46.0	5.9
2. N Leg, E Side - 0 m	0.0	46.0	5.9
3. N Leg, W Side-Corner	-22.0	46.0	5.9
4. S Leg, E Side-Corner	18.1	-46.0	5.9
5. S Leg, E Side - 25 m	11.8	-117.7	5.9
6. S Leg, E Side - 50 m	4.6	-199.5	5.9
7. S Leg, E Side-Midblk	-33.4	-633.8	5.9
8. S Leg, W Side-Corner	-26.1	-46.0	5.9
9. S Leg, W Side - 25 m	-32.4	-117.7	5.9
10. S Leg, W Side - 50 m	-39.5	-199.5	5.9
11. S Leg, W Side-Midblk	-77.5	-633.8	5.9
12. E Leg, N Side - 25 m	94.0	46.0	5.9
13. E Leg, N Side - 50 m	176.0	46.0	5.9
14. E Leg, N Side-Midblk	612.0	46.0	5.9
15. W Leg, N Side - 25 m	-94.0	46.0	5.9
16. W Leg, N Side - 50 m	-176.0	46.0	5.9
17. W Leg, N Side-Midblk	-612.0	46.0	5.9
18. E Leg, S Side - 25 m	90.1	-46.0	5.9
19. E Leg, S Side - 50 m	172.1	-46.0	5.9
20. E Leg, S Side-Midblk	608.1	-46.0	5.9
21. W Leg, S Side - 25 m	-98.1	-46.0	5.9
22. W Leg, S Side - 50 m	-180.2	-46.0	5.9
23. W Leg, S Side-Midblk	-616.1	-46.0	5.9

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.1000	0.4000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
20.	*	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.0000	0.5000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000
30.	*	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.0000	0.3000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
40.	*	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.0000	0.3000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
50.	*	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.0000	0.5000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
60.	*	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.0000	0.5000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
70.	*	0.1000	0.1000	0.1000	0.3000	0.2000	0.1000	0.0000	0.5000	0.3000	0.2000	0.1000	0.1000	0.1000	0.1000	0.0000
80.	*	0.2000	0.2000	0.2000	0.4000	0.1000	0.1000	0.0000	0.5000	0.2000	0.2000	0.1000	0.2000	0.2000	0.2000	0.2000
90.	*	0.4000	0.4000	0.5000	0.2000	0.1000	0.0000	0.0000	0.4000	0.2000	0.1000	0.1000	0.4000	0.4000	0.4000	0.3000
100.	*	0.6000	0.6000	0.6000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.1000	0.6000	0.6000	0.6000	0.6000
110.	*	0.5000	0.5000	0.6000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.5000	0.5000	0.5000	0.5000
120.	*	0.5000	0.5000	0.5000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.5000	0.5000	0.5000	0.4000
130.	*	0.4000	0.4000	0.4000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.4000	0.4000	0.4000	0.3000
140.	*	0.4000	0.4000	0.3000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.4000	0.4000	0.4000	0.3000
150.	*	0.4000	0.3000	0.2000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000						

```
0.1000  0.1000  0.4000  0.4000  0.4000  0.3000
 160.  *  0.4000  0.2000  0.5000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000
0.1000  0.1000  0.4000  0.4000  0.4000  0.3000
 170.  *  0.4000  0.5000  0.4000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000
0.2000  0.1000  0.4000  0.4000  0.4000  0.3000
 180.  *  0.3000  0.5000  0.4000  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000
0.1000  0.1000  0.4000  0.4000  0.4000  0.3000
 190.  *  0.5000  0.5000  0.4000  0.2000  0.2000  0.2000  0.2000  0.1000  0.1000
0.1000  0.1000  0.4000  0.4000  0.4000  0.3000
 200.  *  0.5000  0.4000  0.3000  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000
0.0000  0.0000  0.4000  0.4000  0.4000  0.3000
 210.  *  0.5000  0.3000  0.3000  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000
0.0000  0.0000  0.4000  0.4000  0.4000  0.3000
 220.  *  0.4000  0.3000  0.3000  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000
0.0000  0.0000  0.4000  0.4000  0.4000  0.3000
 230.  *  0.4000  0.3000  0.3000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000
0.0000  0.0000  0.3000  0.4000  0.4000  0.4000
 240.  *  0.4000  0.4000  0.4000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000
0.0000  0.0000  0.5000  0.5000  0.5000  0.4000
 250.  *  0.6000  0.5000  0.5000  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000
0.0000  0.0000  0.5000  0.6000  0.5000  0.5000
 260.  *  0.6000  0.6000  0.6000  0.1000  0.0000  0.0000  0.0000  0.2000  0.0000
0.0000  0.0000  0.6000  0.6000  0.6000  0.6000
 270.  *  0.5000  0.4000  0.4000  0.4000  0.1000  0.0000  0.0000  0.4000  0.1000
0.0000  0.0000  0.5000  0.5000  0.4000  0.4000
 280.  *  0.1000  0.2000  0.2000  0.5000  0.2000  0.1000  0.0000  0.5000  0.2000
0.0000  0.0000  0.2000  0.2000  0.2000  0.2000
 290.  *  0.0000  0.1000  0.1000  0.4000  0.2000  0.2000  0.0000  0.5000  0.2000
0.2000  0.0000  0.1000  0.1000  0.1000  0.1000
 300.  *  0.0000  0.0000  0.0000  0.4000  0.2000  0.2000  0.0000  0.5000  0.2000
0.2000  0.0000  0.0000  0.0000  0.0000  0.0000
 310.  *  0.0000  0.0000  0.0000  0.4000  0.3000  0.3000  0.1000  0.4000  0.2000
0.2000  0.0000  0.0000  0.0000  0.0000  0.0000
 320.  *  0.0000  0.0000  0.0000  0.3000  0.3000  0.3000  0.1000  0.3000  0.2000
0.2000  0.0000  0.0000  0.0000  0.0000  0.0000
 330.  *  0.0000  0.0000  0.0000  0.4000  0.4000  0.4000  0.2000  0.3000  0.2000
0.2000  0.0000  0.0000  0.0000  0.0000  0.0000
 340.  *  0.0000  0.0000  0.0000  0.5000  0.4000  0.4000  0.2000  0.3000  0.2000
0.2000  0.0000  0.0000  0.0000  0.0000  0.0000
 350.  *  0.0000  0.0000  0.0000  0.2000  0.3000  0.2000  0.2000  0.3000  0.2000
0.2000  0.0000  0.0000  0.0000  0.0000  0.0000
 360.  *  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.2000  0.3000  0.3000
0.1000  0.1000  0.0000  0.0000  0.0000  0.0000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.6000  0.6000  0.6000  0.5000  0.4000  0.4000  0.2000  0.5000  0.3000
0.2000  0.2000  0.6000  0.6000  0.6000  0.6000
```

DEGR. * 100 100 100 280 330 330 190 20 70 20 20 100 100 100 100

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 16	17	18	19	20	21	22	23
10.	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
20.	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
30.	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
40.	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
50.	0.0000	0.0000	0.3000	0.3000	0.3000	0.4000	0.3000	0.4000
60.	0.0000	0.0000	0.3000	0.3000	0.3000	0.4000	0.3000	0.5000
70.	0.0000	0.1000	0.3000	0.3000	0.3000	0.4000	0.5000	0.5000
80.	0.2000	0.2000	0.4000	0.4000	0.3000	0.5000	0.5000	0.5000
90.	0.4000	0.5000	0.2000	0.2000	0.2000	0.3000	0.4000	0.5000
100.	0.6000	0.5000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
110.	0.5000	0.5000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000
120.	0.4000	0.4000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
130.	0.3000	0.4000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
140.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	0.4000	0.4000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	0.4000	0.4000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	0.5000	0.5000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
260.	0.6000	0.5000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000

270.	*	0.4000	0.4000	0.4000	0.3000	0.2000	0.4000	0.4000	0.4000
280.	*	0.2000	0.1000	0.5000	0.4000	0.3000	0.5000	0.5000	0.4000
290.	*	0.1000	0.1000	0.3000	0.4000	0.3000	0.5000	0.5000	0.5000
300.	*	0.0000	0.0000	0.4000	0.3000	0.3000	0.5000	0.5000	0.5000
310.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000
320.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
330.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
340.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
350.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
360.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
MAX	*	0.6000	0.5000	0.5000	0.4000	0.3000	0.5000	0.5000	0.5000
DEGR.	*	100	90	280	80	10	80	70	60

THE HIGHEST CONCENTRATION OF 0.6000 PPM OCCURRED AT RECEPTOR 1.

```
Q,EPA,,F,,0,T,T,F,T,0.7,
4,4,2,1,2200,2200,2200,2200,2200,2200,2200,2200,433,346,627.5,628,433,346,627.5,628,
12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1200,-1200,0,0,
0,0,0,0,-10,-10,5,-20,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',51.5,42.1,5.9
'N Leg, E Side - 25 m',39.0,113.1,5.9
'N Leg, E Side - 50 m',24.7,193.8,5.9
'N Leg, E Side-Midblk',-51.0,623.2,5.9
'N Leg, W Side-Corner',-63.8,27.7,5.9
'N Leg, W Side - 25 m',-76.3,98.6,5.9
'N Leg, W Side - 50 m',-90.5,179.4,5.9
'N Leg, W Side-Midblk',-166.2,608.7,5.9
'S Leg, E Side-Corner',61.3,-13.9,5.9
'S Leg, E Side - 25 m',73.8,-84.8,5.9
'S Leg, E Side - 50 m',88.1,-165.6,5.9
'S Leg, E Side-Midblk',163.8,-594.9,5.9
'S Leg, W Side-Corner',-53.7,-29.4,5.9
'S Leg, W Side - 25 m',-41.2,-100.4,5.9
'S Leg, W Side - 50 m',-27.0,-181.1,5.9
'S Leg, W Side-Midblk',48.7,-610.5,5.9
'E Leg, N Side - 25 m',119.1,66.8,5.9
'E Leg, N Side - 50 m',196.2,94.8,5.9
'E Leg, N Side-Midblk',605.9,243.9,5.9
'W Leg, N Side - 25 m',-135.5,33.9,5.9
'W Leg, N Side - 50 m',-217.2,41.1,5.9
'W Leg, N Side-Midblk',-651.5,79.1,5.9
'E Leg, S Side - 25 m',129.0,10.8,5.9
'E Leg, S Side - 50 m',206.1,38.8,5.9
'E Leg, S Side-Midblk',615.8,187.9,5.9
'W Leg, S Side - 25 m',-125.5,-23.2,5.9
'W Leg, S Side - 50 m',-207.2,-16.0,5.9
'W Leg, S Side-Midblk',-641.5,22.0,5.9
'2025 NoBuild MD97 & Inner Lp Rmp (IS.28)',12,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-24,-4,-232,1178,1660,2.73,0.0,67.7
2
'N Leg App - Queue','AG',-26,8,-232,1178,0.0,48.0,4
120,62,2,1660,3.92,1600,1,3
1
'N Leg Dep - FreeFlow','AG',24,4,-185,1186,2055,1.85,0.0,67.7
1
'S Leg App - FreeFlow','AG',24,4,232,-1178,2055,1.85,0.0,67.7
2
'S Leg App - Queue','AG',28,-19,232,-1178,0.0,48.0,4
120,62,2,2055,3.92,1600,1,3
1
```

'S Leg Dep - FreeFlow','AG',-24,-4,185,-1186,1660,3.89,0.0,67.7
1
'E Leg App - FreeFlow','AG',-1,6,1126,416,573,1.89,0.0,31.7
2
'E Leg App - Queue','AG',43,22,1126,416,0.0,12.0,1
120,62,2,573,3.77,1600,1,3
1
'E Leg Dep - FreeFlow','AG',2,-12,1132,399,1145,1.89,0.0,43.7
1
'W Leg App - FreeFlow','AG',2,-12,-1196,93,1145,1.89,0.0,43.7
2
'W Leg App - Queue','AG',-49,-8,-1196,93,0.0,24.0,2
120,62,2,1145,3.77,1600,1,3
1
'W Leg Dep - FreeFlow','AG',-1,6,-1195,111,573,1.89,0.0,31.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NoBuild MD97 & Inner Lp Rmp (IS.28)

DATE : 5/10/19
TIME : 10:43: 1

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-24.0	-4.0	-232.0	1178.0	*	1200.	350.	AG	1660.	2.7	0.0	67.7		
2. N Leg App - Queue	*	-26.0	8.0	-50.4	146.6	*	141.	350.	AG	22.	100.0	0.0	48.0	0.58	7.1
3. N Leg Dep - FreeFlow	*	24.0	4.0	-185.0	1186.0	*	1200.	350.	AG	2055.	1.9	0.0	67.7		
4. S Leg App - FreeFlow	*	24.0	4.0	232.0	-1178.0	*	1200.	170.	AG	2055.	1.9	0.0	67.7		
5. S Leg App - Queue	*	28.0	-19.0	58.1	-190.3	*	174.	170.	AG	22.	100.0	0.0	48.0	0.71	8.8
6. S Leg Dep - FreeFlow	*	-24.0	-4.0	185.0	-1186.0	*	1200.	170.	AG	1660.	3.9	0.0	67.7		
7. E Leg App - FreeFlow	*	-1.0	6.0	1126.0	416.0	*	1199.	70.	AG	573.	1.9	0.0	31.7		
8. E Leg App - Queue	*	43.0	22.0	226.6	88.8	*	195.	70.	AG	5.	100.0	0.0	12.0	0.80	9.9
9. E Leg Dep - FreeFlow	*	2.0	-12.0	1132.0	399.0	*	1202.	70.	AG	1145.	1.9	0.0	43.7		
10. W Leg App - FreeFlow	*	2.0	-12.0	-1196.0	93.0	*	1203.								

```
275. AG   1145.   1.9   0.0 43.7
     11. W Leg App - Queue    *    -49.0      -8.0    -243.0       9.1 *     195.
275. AG     10. 100.0   0.0 24.0 0.79   9.9
     12. W Leg Dep - FreeFlow*     -1.0       6.0   -1195.0     111.0 *    1199.
275. AG    573.   1.9   0.0 31.7
```


JOB: I-495 & I-270 MLS RUN: 2025 NoBuild MD97 & Inner Lp Rmp (IS.28)

DATE : 5/10/19
TIME : 10:43: 1

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	* 120	62	2.0	1660	1600	3.92	1	3
5. S Leg App - Queue	* 120	62	2.0	2055	1600	3.92	1	3
8. E Leg App - Queue	* 120	62	2.0	573	1600	3.77	1	3
11. W Leg App - Queue	* 120	62	2.0	1145	1600	3.77	1	3

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z *
1. N Leg, E Side-Corner	* 51.5	42.1	5.9 *
2. N Leg, E Side - 25 m	* 39.0	113.1	5.9 *
3. N Leg, E Side - 50 m	* 24.7	193.8	5.9 *
4. N Leg, E Side-Midblk	* -51.0	623.2	5.9 *
5. N Leg, W Side-Corner	* -63.8	27.7	5.9 *
6. N Leg, W Side - 25 m	* -76.3	98.6	5.9 *
7. N Leg, W Side - 50 m	* -90.5	179.4	5.9 *
8. N Leg, W Side-Midblk	* -166.2	608.7	5.9 *
9. S Leg, E Side-Corner	* 61.3	-13.9	5.9 *
10. S Leg, E Side - 25 m	* 73.8	-84.8	5.9 *

11. S Leg, E Side - 50 m *	88.1	-165.6	5.9	*
12. S Leg, E Side-Midblk *	163.8	-594.9	5.9	*
13. S Leg, W Side-Corner *	-53.7	-29.4	5.9	*
14. S Leg, W Side - 25 m *	-41.2	-100.4	5.9	*
15. S Leg, W Side - 50 m *	-27.0	-181.1	5.9	*
16. S Leg, W Side-Midblk *	48.7	-610.5	5.9	*
17. E Leg, N Side - 25 m *	119.1	66.8	5.9	*
18. E Leg, N Side - 50 m *	196.2	94.8	5.9	*
19. E Leg, N Side-Midblk *	605.9	243.9	5.9	*
20. W Leg, N Side - 25 m *	-135.5	33.9	5.9	*
21. W Leg, N Side - 50 m *	-217.2	41.1	5.9	*
22. W Leg, N Side-Midblk *	-651.5	79.1	5.9	*
23. E Leg, S Side - 25 m *	129.0	10.8	5.9	*
24. E Leg, S Side - 50 m *	206.1	38.8	5.9	*
25. E Leg, S Side-Midblk *	615.8	187.9	5.9	*
26. W Leg, S Side - 25 m *	-125.5	-23.2	5.9	*
27. W Leg, S Side - 50 m *	-207.2	-16.0	5.9	*
28. W Leg, S Side-Midblk *	-641.5	22.0	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	* 1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.3000	0.3000	0.3000	0.1000
0.0000	0.0000	0.0000	0.6000	0.4000	0.3000				
20.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.3000	0.3000	0.3000	0.1000
0.0000	0.0000	0.0000	0.5000	0.3000	0.3000				
30.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.3000	0.3000	0.3000	0.1000
0.0000	0.0000	0.0000	0.4000	0.2000	0.3000				
40.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.2000	0.2000	0.1000
0.0000	0.0000	0.0000	0.4000	0.3000	0.3000				

```
  50.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.2000  0.2000  0.1000
0.0000  0.0000  0.0000  0.4000  0.3000  0.3000
  60.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.2000  0.2000  0.1000
0.0000  0.0000  0.0000  0.3000  0.4000  0.3000
  70.  *  0.2000  0.0000  0.0000  0.0000  0.3000  0.3000  0.2000  0.2000  0.1000
0.0000  0.0000  0.0000  0.4000  0.3000  0.3000
  80.  *  0.2000  0.0000  0.0000  0.0000  0.4000  0.3000  0.2000  0.2000  0.1000
0.0000  0.0000  0.0000  0.5000  0.3000  0.3000
  90.  *  0.2000  0.0000  0.0000  0.0000  0.4000  0.3000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 100.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.3000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 110.  *  0.1000  0.0000  0.0000  0.0000  0.1000  0.3000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 120.  *  0.1000  0.0000  0.0000  0.0000  0.3000  0.3000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 130.  *  0.1000  0.0000  0.0000  0.0000  0.4000  0.4000  0.3000  0.3000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 140.  *  0.1000  0.0000  0.0000  0.0000  0.5000  0.5000  0.3000  0.3000  0.0000
0.0000  0.0000  0.0000  0.4000  0.4000  0.4000
 150.  *  0.1000  0.0000  0.0000  0.0000  0.5000  0.4000  0.5000  0.3000  0.0000
0.0000  0.0000  0.0000  0.4000  0.4000  0.4000
 160.  *  0.2000  0.0000  0.1000  0.1000  0.6000  0.4000  0.4000  0.3000  0.1000
0.1000  0.1000  0.1000  0.5000  0.5000  0.4000
 170.  *  0.3000  0.3000  0.3000  0.2000  0.5000  0.4000  0.2000  0.2000  0.3000
0.3000  0.3000  0.3000  0.3000  0.3000  0.3000
 180.  *  0.4000  0.3000  0.3000  0.3000  0.2000  0.2000  0.2000  0.1000  0.4000
0.3000  0.3000  0.3000  0.2000  0.1000  0.1000
 190.  *  0.5000  0.3000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  0.5000
0.5000  0.4000  0.3000  0.1000  0.1000  0.1000
 200.  *  0.4000  0.2000  0.2000  0.3000  0.1000  0.0000  0.0000  0.0000  0.4000
0.4000  0.3000  0.3000  0.0000  0.0000  0.0000
 210.  *  0.4000  0.3000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.3000
0.3000  0.2000  0.2000  0.0000  0.0000  0.0000
 220.  *  0.4000  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.3000
0.3000  0.2000  0.2000  0.0000  0.0000  0.0000
 230.  *  0.2000  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.3000
0.3000  0.2000  0.2000  0.0000  0.0000  0.0000
 240.  *  0.2000  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.3000
0.3000  0.2000  0.2000  0.0000  0.0000  0.0000
 250.  *  0.3000  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.2000
0.3000  0.3000  0.2000  0.0000  0.0000  0.0000
 260.  *  0.3000  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.4000
0.3000  0.3000  0.2000  0.0000  0.0000  0.0000
 270.  *  0.2000  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.4000
0.3000  0.3000  0.2000  0.1000  0.0000  0.0000
 280.  *  0.2000  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.4000
0.3000  0.3000  0.2000  0.1000  0.0000  0.0000
```

```
 290.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.3000
0.4000  0.3000  0.2000  0.1000  0.0000  0.0000
 300.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.4000
0.3000  0.3000  0.2000  0.1000  0.0000  0.0000
 310.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.4000
0.3000  0.3000  0.2000  0.1000  0.0000  0.0000
 320.  *  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  0.3000
0.3000  0.3000  0.3000  0.1000  0.0000  0.0000
 330.  *  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  0.4000
0.3000  0.4000  0.3000  0.1000  0.0000  0.0000
 340.  *  0.3000  0.3000  0.3000  0.3000  0.1000  0.1000  0.1000  0.1000  0.4000
0.3000  0.4000  0.3000  0.2000  0.2000  0.1000
 350.  *  0.3000  0.3000  0.3000  0.2000  0.2000  0.2000  0.2000  0.2000  0.3000
0.3000  0.3000  0.3000  0.4000  0.3000  0.3000
 360.  *  0.1000  0.1000  0.1000  0.1000  0.3000  0.3000  0.3000  0.3000  0.2000
0.1000  0.1000  0.1000  0.5000  0.4000  0.4000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.5000  0.3000  0.3000  0.3000  0.6000  0.5000  0.5000  0.3000  0.5000
0.5000  0.4000  0.3000  0.6000  0.5000  0.4000
 DEGR. *    190     170     170     180     160     140     150      10     190
190     190     170      10     160     140
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.4000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.1000  0.1000
0.1000  0.3000  0.2000  0.1000
```

```
  20.  *  0.4000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.1000  0.1000
0.1000  0.3000  0.2000  0.1000
  30.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.1000  0.1000
0.1000  0.3000  0.2000  0.1000
  40.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.1000  0.1000
0.1000  0.2000  0.2000  0.1000
  50.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.1000  0.1000
0.1000  0.2000  0.1000  0.1000
  60.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.1000  0.1000
0.1000  0.2000  0.1000  0.1000
  70.  *  0.3000  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.1000  0.1000
0.1000  0.2000  0.1000  0.1000
  80.  *  0.3000  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.1000  0.1000
0.1000  0.3000  0.1000  0.1000
  90.  *  0.3000  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000
0.0000  0.2000  0.1000  0.1000
 100.  *  0.3000  0.2000  0.2000  0.2000  0.2000  0.1000  0.2000  0.0000  0.0000
0.0000  0.1000  0.2000  0.1000
 110.  *  0.3000  0.1000  0.1000  0.1000  0.3000  0.2000  0.2000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 120.  *  0.3000  0.1000  0.1000  0.1000  0.3000  0.3000  0.2000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 130.  *  0.3000  0.1000  0.1000  0.1000  0.4000  0.3000  0.2000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 140.  *  0.4000  0.1000  0.1000  0.1000  0.3000  0.2000  0.1000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 150.  *  0.4000  0.1000  0.1000  0.1000  0.3000  0.2000  0.1000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 160.  *  0.4000  0.1000  0.1000  0.1000  0.2000  0.2000  0.1000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 170.  *  0.3000  0.1000  0.1000  0.1000  0.2000  0.1000  0.1000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 180.  *  0.1000  0.3000  0.1000  0.1000  0.1000  0.1000  0.1000  0.2000  0.0000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  0.3000  0.2000  0.1000  0.1000  0.1000  0.1000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.3000  0.2000  0.1000  0.1000  0.1000  0.1000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.3000  0.2000  0.1000  0.1000  0.1000  0.1000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.4000  0.3000  0.2000  0.1000  0.1000  0.1000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.3000  0.3000  0.2000  0.1000  0.1000  0.1000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.1000  0.2000  0.2000  0.2000  0.2000  0.2000  0.2000  0.1000
0.1000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.0000  0.0000  0.2000  0.2000  0.2000  0.2000  0.3000  0.1000
0.1000  0.0000  0.0000  0.0000
```

```
 260.  *  0.0000  0.1000  0.0000  0.0000  0.2000  0.2000  0.2000  0.1000  0.1000
0.1000  0.0000  0.0000  0.0000
 270.  *  0.0000  0.2000  0.0000  0.0000  0.2000  0.2000  0.2000  0.2000  0.1000
0.1000  0.1000  0.1000  0.1000
 280.  *  0.0000  0.2000  0.0000  0.0000  0.1000  0.1000  0.0000  0.1000  0.1000
0.1000  0.1000  0.1000  0.1000
 290.  *  0.0000  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.1000
0.1000  0.1000  0.1000  0.1000
 300.  *  0.0000  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.1000
0.1000  0.1000  0.1000  0.1000
 310.  *  0.0000  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.1000
0.1000  0.1000  0.1000  0.1000
 320.  *  0.0000  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.1000
0.1000  0.1000  0.1000  0.1000
 330.  *  0.1000  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.1000
0.1000  0.1000  0.1000  0.1000
 340.  *  0.1000  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.1000
0.1000  0.1000  0.1000  0.1000
 350.  *  0.3000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000
0.1000  0.1000  0.1000  0.1000
 360.  *  0.4000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.1000  0.1000
0.1000  0.2000  0.1000  0.1000

------*--------------------------------------------------------------------------
--------------------------
 MAX   *  0.4000  0.4000  0.3000  0.2000  0.4000  0.3000  0.2000  0.3000  0.1000
0.1000  0.3000  0.2000  0.1000
 DEGR. *     10     220     220      70     130     120     100     250      10
10      10      10      10

 THE HIGHEST CONCENTRATION OF   0.6000 PPM OCCURRED AT RECEPTOR    13.
```

```
Q,EPA,,F,,0,T,T,T,T,0.7,
2,1,4,4,2200,2200,2200,2200,2200,2200,2200,2200,310,310,765,372.5,310,310,765,372.5,
12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1200,-1200,0,0,
0,0,0,0,15,0,0,0,0,0,0,0,0,0,0,0
0,120,120,120,0,62,62,62,0,2,2,2,0,1600,1600,1600,0,1,1,1,0,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,23,0.3048,1,0
'N Leg, E Side-Corner',34.0,58.0,5.9
'N Leg, E Side - 0 m',0.0,58.0,5.9
'N Leg, W Side-Corner',-22.0,58.0,5.9
'S Leg, E Side-Corner',19.7,-58.0,5.9
'S Leg, E Side - 25 m',1.0,-127.6,5.9
'S Leg, E Side - 50 m',-20.2,-206.8,5.9
'S Leg, E Side-Midblk',-133.0,-627.9,5.9
'S Leg, W Side-Corner',-38.3,-58.0,5.9
'S Leg, W Side - 25 m',-57.0,-127.6,5.9
'S Leg, W Side - 50 m',-78.2,-206.8,5.9
'S Leg, W Side-Midblk',-191.0,-627.9,5.9
'E Leg, N Side - 25 m',106.0,58.0,5.9
'E Leg, N Side - 50 m',188.0,58.0,5.9
'E Leg, N Side-Midblk',624.0,58.0,5.9
'W Leg, N Side - 25 m',-94.0,58.0,5.9
'W Leg, N Side - 50 m',-176.0,58.0,5.9
'W Leg, N Side-Midblk',-612.0,58.0,5.9
'E Leg, S Side - 25 m',91.7,-58.0,5.9
'E Leg, S Side - 50 m',173.7,-58.0,5.9
'E Leg, S Side-Midblk',609.7,-58.0,5.9
'W Leg, S Side - 25 m',-110.3,-58.0,5.9
'W Leg, S Side - 50 m',-192.4,-58.0,5.9
'W Leg, S Side-Midblk',-628.3,-58.0,5.9
'2025 NB MD97 & Outer Loop Ramp (IS.29)',9,1,0,'CO'
1
'S Leg App - FreeFlow','AG',19,24,-299,-1162,620,2.03,0.0,43.7
2
'S Leg App - Queue','AG',-1,-49,-299,-1162,0.0,24.0,2
120,62,2,620,3.77,1600,1,3
1
'S Leg Dep - FreeFlow','AG',0,24,-316,-1158,310,2.03,0.0,31.7
1
'E Leg App - FreeFlow','AG',0,24,1200,24,1490,1.85,0.0,67.7
2
'E Leg App - Queue','AG',24,24,1200,24,0.0,48.0,4
120,62,2,1490,3.92,1600,1,3
1
'E Leg Dep - FreeFlow','AG',0,-24,1200,-24,3060,4.70,0.0,67.7
1
'W Leg App - FreeFlow','AG',0,-24,-1200,-24,3060,2.23,0.0,67.7
2
'W Leg App - Queue','AG',-12,-24,-1200,-24,0.0,48.0,4
```

120,62,2,3060,3.92,1600,1,3
1
'W Leg Dep - FreeFlow','AG',0,24,-1200,24,1490,1.85,0.0,67.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface
CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NB MD97 & Outer Loop Ramp (IS.29)

DATE : 5/10/19
TIME : 11:48:55

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. S Leg App - FreeFlow	*	19.0	24.0	-299.0	-1162.0	*	1228.	195.	AG	620.	2.0	0.0	43.7		
2. S Leg App - Queue	*	-1.0	-49.0	-28.2	-150.5	*	105.	195.	AG	10.	100.0	0.0	24.0	0.43	5.3
3. S Leg Dep - FreeFlow	*	0.0	24.0	-316.0	-1158.0	*	1224.	195.	AG	310.	2.0	0.0	31.7		
4. E Leg App - FreeFlow	*	0.0	24.0	1200.0	24.0	*	1200.	90.	AG	1490.	1.9	0.0	67.7		
5. E Leg App - Queue	*	24.0	24.0	150.1	24.0	*	126.	90.	AG	22.	100.0	0.0	48.0	0.52	6.4
6. E Leg Dep - FreeFlow	*	0.0	-24.0	1200.0	-24.0	*	1200.	90.	AG	3060.	4.7	0.0	67.7		
7. W Leg App - FreeFlow	*	0.0	-24.0	-1200.0	-24.0	*	1200.	270.	AG	3060.	2.2	0.0	67.7		
8. W Leg App - Queue	*	-12.0	-24.0	-852.9	-24.0	*	841.	270.	AG	22.	100.0	0.0	48.0	1.06	42.7
9. W Leg Dep - FreeFlow	*	0.0	24.0	-1200.0	24.0	*	1200.	270.	AG	1490.	1.9	0.0	67.7		

JOB: I-495 & I-270 MLS RUN: 2025 NB MD97 & Outer Loop Ramp (IS.29)

DATE : 5/10/19
TIME : 11:48:55

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. S Leg App - Queue	120	62	2.0	620	1600	3.77	1	3
5. E Leg App - Queue	120	62	2.0	1490	1600	3.92	1	3
8. W Leg App - Queue	120	62	2.0	3060	1600	3.92	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	34.0	58.0	5.9
2. N Leg, E Side - 0 m	0.0	58.0	5.9
3. N Leg, W Side-Corner	-22.0	58.0	5.9
4. S Leg, E Side-Corner	19.7	-58.0	5.9
5. S Leg, E Side - 25 m	1.0	-127.6	5.9
6. S Leg, E Side - 50 m	-20.2	-206.8	5.9
7. S Leg, E Side-Midblk	-133.0	-627.9	5.9
8. S Leg, W Side-Corner	-38.3	-58.0	5.9
9. S Leg, W Side - 25 m	-57.0	-127.6	5.9
10. S Leg, W Side - 50 m	-78.2	-206.8	5.9
11. S Leg, W Side-Midblk	-191.0	-627.9	5.9
12. E Leg, N Side - 25 m	106.0	58.0	5.9
13. E Leg, N Side - 50 m	188.0	58.0	5.9
14. E Leg, N Side-Midblk	624.0	58.0	5.9
15. W Leg, N Side - 25 m	-94.0	58.0	5.9
16. W Leg, N Side - 50 m	-176.0	58.0	5.9
17. W Leg, N Side-Midblk	-612.0	58.0	5.9
18. E Leg, S Side - 25 m	91.7	-58.0	5.9

19. E Leg, S Side - 50 m *	173.7	-58.0	5.9	*
20. E Leg, S Side-Midblk *	609.7	-58.0	5.9	*
21. W Leg, S Side - 25 m *	-110.3	-58.0	5.9	*
22. W Leg, S Side - 50 m *	-192.4	-58.0	5.9	*
23. W Leg, S Side-Midblk *	-628.3	-58.0	5.9	*

JOB: I-495 & I-270 MLS RUN: 2025 NB MD97 & Outer Loop Ramp (IS.29)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	* 1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	* 0.0000	0.0000	0.0000	0.4000	0.3000	0.2000	0.1000	0.3000	0.1000
0.1000	0.0000	0.0000	0.0000	0.0000	0.0000				
20.	* 0.0000	0.0000	0.0000	0.5000	0.2000	0.1000	0.1000	0.3000	0.2000
0.1000	0.0000	0.0000	0.0000	0.0000	0.0000				
30.	* 0.0000	0.0000	0.0000	0.5000	0.2000	0.1000	0.1000	0.3000	0.2000
0.1000	0.2000	0.0000	0.0000	0.0000	0.0000				
40.	* 0.0000	0.0000	0.0000	0.6000	0.2000	0.2000	0.1000	0.4000	0.2000
0.1000	0.1000	0.0000	0.0000	0.0000	0.0000				
50.	* 0.0000	0.0000	0.0000	0.6000	0.3000	0.2000	0.1000	0.5000	0.2000
0.2000	0.1000	0.0000	0.0000	0.0000	0.0000				
60.	* 0.0000	0.0000	0.0000	0.7000	0.3000	0.2000	0.1000	0.6000	0.3000
0.2000	0.1000	0.0000	0.0000	0.0000	0.0000				
70.	* 0.0000	0.0000	0.0000	0.8000	0.3000	0.2000	0.0000	0.7000	0.3000
0.2000	0.0000	0.0000	0.0000	0.0000	0.0000				
80.	* 0.2000	0.2000	0.2000	0.9000	0.3000	0.1000	0.0000	0.8000	0.3000
0.1000	0.0000	0.2000	0.1000	0.1000	0.1000				
90.	* 0.3000	0.3000	0.3000	0.7000	0.1000	0.1000	0.0000	0.6000	0.1000
0.1000	0.0000	0.3000	0.3000	0.2000	0.4000				
100.	* 0.4000	0.5000	0.4000	0.3000	0.0000	0.0000	0.0000	0.3000	0.0000
0.0000	0.0000	0.4000	0.4000	0.3000	0.5000				
110.	* 0.5000	0.5000	0.4000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000

0.0000 0.0000 0.4000 0.4000 0.4000 0.5000
 120. * 0.5000 0.5000 0.4000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.4000 0.4000 0.4000 0.3000
 130. * 0.5000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.4000 0.4000 0.4000 0.4000
 140. * 0.5000 0.4000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.5000 0.4000 0.4000 0.3000
 150. * 0.5000 0.4000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.5000 0.4000 0.4000 0.2000
 160. * 0.5000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.5000 0.4000 0.4000 0.2000
 170. * 0.5000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.5000 0.4000 0.4000 0.2000
 180. * 0.4000 0.3000 0.2000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.1000 0.5000 0.4000 0.4000 0.2000
 190. * 0.4000 0.4000 0.2000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
0.0000 0.0000 0.5000 0.4000 0.4000 0.2000
 200. * 0.5000 0.2000 0.2000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
0.0000 0.0000 0.5000 0.4000 0.4000 0.2000
 210. * 0.3000 0.2000 0.2000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
0.0000 0.0000 0.5000 0.4000 0.4000 0.2000
 220. * 0.2000 0.2000 0.2000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
0.0000 0.0000 0.4000 0.4000 0.4000 0.2000
 230. * 0.3000 0.2000 0.2000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
0.0000 0.0000 0.5000 0.4000 0.4000 0.2000
 240. * 0.2000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.4000 0.3000 0.4000 0.3000
 250. * 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.3000 0.5000 0.4000 0.3000
 260. * 0.3000 0.4000 0.4000 0.1000 0.0000 0.0000 0.0000 0.2000 0.0000
0.0000 0.0000 0.3000 0.4000 0.4000 0.2000
 270. * 0.2000 0.2000 0.2000 0.5000 0.1000 0.0000 0.0000 0.4000 0.1000
0.0000 0.0000 0.3000 0.3000 0.2000 0.2000
 280. * 0.0000 0.1000 0.1000 0.6000 0.1000 0.1000 0.0000 0.6000 0.1000
0.1000 0.0000 0.0000 0.0000 0.1000 0.1000
 290. * 0.0000 0.0000 0.0000 0.6000 0.1000 0.1000 0.0000 0.5000 0.1000
0.1000 0.0000 0.0000 0.0000 0.0000 0.0000
 300. * 0.0000 0.0000 0.0000 0.6000 0.1000 0.1000 0.0000 0.5000 0.1000
0.1000 0.0000 0.0000 0.0000 0.0000 0.0000
 310. * 0.0000 0.0000 0.0000 0.5000 0.1000 0.1000 0.0000 0.4000 0.1000
0.1000 0.0000 0.0000 0.0000 0.0000 0.0000
 320. * 0.0000 0.0000 0.0000 0.3000 0.1000 0.1000 0.0000 0.4000 0.1000
0.1000 0.0000 0.0000 0.0000 0.0000 0.0000
 330. * 0.0000 0.0000 0.0000 0.3000 0.1000 0.1000 0.0000 0.4000 0.1000
0.1000 0.0000 0.0000 0.0000 0.0000 0.0000
 340. * 0.0000 0.0000 0.0000 0.5000 0.2000 0.2000 0.1000 0.4000 0.1000
0.1000 0.0000 0.0000 0.0000 0.0000 0.0000
 350. * 0.0000 0.0000 0.0000 0.4000 0.3000 0.2000 0.1000 0.3000 0.1000

0.1000 0.0000 0.0000 0.0000 0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.4000 0.3000 0.1000 0.1000 0.3000 0.1000
0.1000 0.0000 0.0000 0.0000 0.0000 0.0000

------*---

 MAX   * 0.5000 0.5000 0.4000 0.9000 0.3000 0.2000 0.1000 0.8000 0.3000
0.2000 0.2000 0.5000 0.5000 0.4000 0.5000
 DEGR. *   110   100   100   80   10   10   10   80   60
50   30   140   250   110   100

JOB: I-495 & I-270 MLS RUN: 2025 NB MD97 & Outer Loop Ramp (IS.29)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) 16	17	18	19	20	21	22	23
10.	0.0000	0.0000	0.4000	0.4000	0.4000	0.3000	0.3000	0.3000
20.	0.0000	0.0000	0.5000	0.5000	0.5000	0.3000	0.4000	0.4000
30.	0.0000	0.0000	0.5000	0.5000	0.5000	0.4000	0.4000	0.4000
40.	0.0000	0.0000	0.6000	0.6000	0.6000	0.3000	0.4000	0.4000
50.	0.0000	0.0000	0.6000	0.6000	0.6000	0.3000	0.4000	0.4000
60.	0.0000	0.0000	0.7000	0.7000	0.7000	0.4000	0.4000	0.5000
70.	0.0000	0.0000	0.8000	0.8000	0.8000	0.6000	0.5000	0.5000
80.	0.1000	0.1000	0.9000	0.9000	0.7000	0.7000	0.7000	0.5000
90.	0.4000	0.3000	0.6000	0.6000	0.6000	0.5000	0.5000	0.5000
100.	0.5000	0.3000	0.3000	0.3000	0.3000	0.3000	0.2000	0.2000
110.	0.4000	0.3000	0.1000	0.1000	0.1000	0.0000	0.0000	0.1000
120.	0.3000	0.3000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
130.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
140.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

190.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.3000	0.3000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
250.	*	0.3000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
260.	*	0.2000	0.2000	0.2000	0.3000	0.3000	0.2000	0.2000	0.1000
270.	*	0.2000	0.2000	0.5000	0.5000	0.7000	0.4000	0.4000	0.3000
280.	*	0.1000	0.1000	0.8000	0.7000	0.7000	0.6000	0.6000	0.4000
290.	*	0.0000	0.0000	0.6000	0.7000	0.8000	0.5000	0.5000	0.5000
300.	*	0.0000	0.0000	0.6000	0.5000	0.7000	0.5000	0.5000	0.5000
310.	*	0.0000	0.0000	0.5000	0.6000	0.6000	0.4000	0.4000	0.4000
320.	*	0.0000	0.0000	0.5000	0.6000	0.6000	0.4000	0.4000	0.4000
330.	*	0.0000	0.0000	0.4000	0.5000	0.5000	0.4000	0.4000	0.4000
340.	*	0.0000	0.0000	0.4000	0.5000	0.5000	0.4000	0.4000	0.4000
350.	*	0.0000	0.0000	0.4000	0.4000	0.4000	0.3000	0.3000	0.3000
360.	*	0.0000	0.0000	0.5000	0.5000	0.5000	0.4000	0.4000	0.4000
------	*	----------	----------	----------	----------	----------	----------	----------	----------
MAX	*	0.5000	0.3000	0.9000	0.9000	0.8000	0.7000	0.7000	0.5000
DEGR.	*	100	90	80	80	70	80	80	60

THE HIGHEST CONCENTRATION OF 0.9000 PPM OCCURRED AT RECEPTOR 4.

```
Q,EPA,,F,,0,T,T,F,T,0.7,
6,5,2,2,2200,2200,2200,2200,2200,2200,2200,2200,412.5,308,222.5,222.5,412.5,308,222.
5,222.5,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1200,-1
200,0,0,0,0,0,0,-5,5,10,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',85.3,34.0,5.9
'N Leg, E Side - 25 m',91.6,105.7,5.9
'N Leg, E Side - 50 m',98.7,187.5,5.9
'N Leg, E Side-Midblk',136.7,621.8,5.9
'N Leg, W Side-Corner',-66.2,46.2,5.9
'N Leg, W Side - 25 m',-59.9,117.9,5.9
'N Leg, W Side - 50 m',-52.8,199.7,5.9
'N Leg, W Side-Midblk',-14.8,634.0,5.9
'S Leg, E Side-Corner',85.3,-34.0,5.9
'S Leg, E Side - 25 m',91.6,-105.7,5.9
'S Leg, E Side - 50 m',98.7,-187.5,5.9
'S Leg, E Side-Midblk',136.7,-621.8,5.9
'S Leg, W Side-Corner',-68.3,-22.5,5.9
'S Leg, W Side - 25 m',-62.0,-94.2,5.9
'S Leg, W Side - 50 m',-54.9,-175.9,5.9
'S Leg, W Side-Midblk',-16.9,-610.2,5.9
'E Leg, N Side - 25 m',157.3,34.0,5.9
'E Leg, N Side - 50 m',239.3,34.0,5.9
'E Leg, N Side-Midblk',675.3,34.0,5.9
'W Leg, N Side - 25 m',-137.2,58.7,5.9
'W Leg, N Side - 50 m',-217.9,73.0,5.9
'W Leg, N Side-Midblk',-647.3,148.7,5.9
'E Leg, S Side - 25 m',157.3,-34.0,5.9
'E Leg, S Side - 50 m',239.3,-34.0,5.9
'E Leg, S Side-Midblk',675.3,-34.0,5.9
'W Leg, S Side - 25 m',-139.2,-10.0,5.9
'W Leg, S Side - 50 m',-220.0,4.3,5.9
'W Leg, S Side-Midblk',-649.3,80.0,5.9
'2025 NoBuild MD187 & I270 SB Rmp (IS.46)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-30,0,75,1198,1540,1.7,0.0,79.7
2
'N Leg App - Queue','AG',-28,27,75,1198,0.0,60.0,5
120,62,2,1540,3.92,1600,1,3
1
'N Leg Dep - FreeFlow','AG',36,0,140,1192,2475,2.15,0.0,91.7
1
'S Leg App - FreeFlow','AG',36,0,140,-1192,2475,2.15,0.0,91.7
2
'S Leg App - Queue','AG',38,-21,140,-1192,0.0,72.0,6
120,62,2,2475,3.92,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-30,0,75,-1198,1540,1.7,0.0,79.7
1
'E Leg App - FreeFlow','AG',1,12,1200,12,445,1.54,0.0,43.7
1
'E Leg Dep - FreeFlow','AG',-1,-12,1200,-12,445,1.54,0.0,43.7
1
'W Leg App - FreeFlow','AG',-1,-12,-1184,197,445,4.08,0.0,43.7
2
'W Leg App - Queue','AG',-61,-1,-1184,197,0.0,24.0,2
120,62,2,445,3.77,1600,1,3
1
'W Leg Dep - FreeFlow','AG',1,12,-1180,220,445,4.08,0.0,43.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface
CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NoBuild MD187 & I270 SB Rmp (IS.46)

DATE : 5/10/19
TIME : 13:15:34

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-30.0	0.0	75.0	1198.0	*	1203.	5.	AG	1540.	1.7	0.0	79.7		
2. N Leg App - Queue	*	-28.0	27.0	-18.9	131.0	*	104.	5.	AG	27.	100.0	0.0	60.0	0.43	5.3
3. N Leg Dep - FreeFlow	*	36.0	0.0	140.0	1192.0	*	1197.	5.	AG	2475.	2.2	0.0	91.7		
4. S Leg App - FreeFlow	*	36.0	0.0	140.0	-1192.0	*	1197.	175.	AG	2475.	2.2	0.0	91.7		
5. S Leg App - Queue	*	38.0	-21.0	50.1	-160.1	*	140.	175.	AG	33.	100.0	0.0	72.0	0.57	7.1
6. S Leg Dep - FreeFlow	*	-30.0	0.0	75.0	-1198.0	*	1203.	175.	AG	1540.	1.7	0.0	79.7		
7. E Leg App - FreeFlow	*	1.0	12.0	1200.0	12.0	*	1199.	90.	AG	445.	1.5	0.0	43.7		
8. E Leg Dep - FreeFlow	*	-1.0	-12.0	1200.0	-12.0	*	1201.	90.	AG	445.	1.5	0.0	43.7		
9. W Leg App - FreeFlow	*	-1.0	-12.0	-1184.0	197.0	*	1201.	280.	AG	445.	4.1	0.0	43.7		
10. W Leg App - Queue	*	-61.0	-1.0	-135.1	12.1	*	75.								

280. AG   10. 100.0   0.0 24.0 0.31   3.8
     11. W Leg Dep - FreeFlow*   1.0   12.0   -1180.0   220.0 *   1199.
280. AG   445.   4.1   0.0 43.7

JOB: I-495 & I-270 MLS RUN: 2025 NoBuild MD187 & I270 SB Rmp (IS.46)

DATE : 5/10/19
TIME : 13:15:34

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	*	120	62	2.0	1540	1600	3.92	1	3
5. S Leg App - Queue	*	120	62	2.0	2475	1600	3.92	1	3
10. W Leg App - Queue	*	120	62	2.0	445	1600	3.77	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	85.3	34.0	5.9	*
2. N Leg, E Side - 25 m	*	91.6	105.7	5.9	*
3. N Leg, E Side - 50 m	*	98.7	187.5	5.9	*
4. N Leg, E Side-Midblk	*	136.7	621.8	5.9	*
5. N Leg, W Side-Corner	*	-66.2	46.2	5.9	*
6. N Leg, W Side - 25 m	*	-59.9	117.9	5.9	*
7. N Leg, W Side - 50 m	*	-52.8	199.7	5.9	*
8. N Leg, W Side-Midblk	*	-14.8	634.0	5.9	*
9. S Leg, E Side-Corner	*	85.3	-34.0	5.9	*
10. S Leg, E Side - 25 m	*	91.6	-105.7	5.9	*
11. S Leg, E Side - 50 m	*	98.7	-187.5	5.9	*
12. S Leg, E Side-Midblk	*	136.7	-621.8	5.9	*
13. S Leg, W Side-Corner	*	-68.3	-22.5	5.9	*
14. S Leg, W Side - 25 m	*	-62.0	-94.2	5.9	*

15. S Leg, W Side - 50 m *	-54.9	-175.9	5.9	*
16. S Leg, W Side-Midblk *	-16.9	-610.2	5.9	*
17. E Leg, N Side - 25 m *	157.3	34.0	5.9	*
18. E Leg, N Side - 50 m *	239.3	34.0	5.9	*
19. E Leg, N Side-Midblk *	675.3	34.0	5.9	*
20. W Leg, N Side - 25 m *	-137.2	58.7	5.9	*
21. W Leg, N Side - 50 m *	-217.9	73.0	5.9	*
22. W Leg, N Side-Midblk *	-647.3	148.7	5.9	*
23. E Leg, S Side - 25 m *	157.3	-34.0	5.9	*
24. E Leg, S Side - 50 m *	239.3	-34.0	5.9	*
25. E Leg, S Side-Midblk *	675.3	-34.0	5.9	*
26. W Leg, S Side - 25 m *	-139.2	-10.0	5.9	*
27. W Leg, S Side - 50 m *	-220.0	4.3	5.9	*
28. W Leg, S Side-Midblk *	-649.3	80.0	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	* 1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	* 0.1000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000	0.1000	0.1000
0.1000	0.0000	0.1000	0.3000	0.3000	0.3000				
20.	* 0.1000	0.1000	0.1000	0.1000	0.3000	0.2000	0.2000	0.2000	0.0000
0.0000	0.0000	0.0000	0.3000	0.3000	0.2000				
30.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.2000	0.2000	0.2000	0.0000
0.0000	0.0000	0.0000	0.3000	0.2000	0.3000				
40.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.2000	0.2000	0.2000	0.0000
0.0000	0.0000	0.0000	0.3000	0.2000	0.2000				
50.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.2000	0.2000	0.2000	0.0000
0.0000	0.0000	0.0000	0.3000	0.2000	0.2000				
60.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.2000	0.2000	0.2000	0.0000
0.0000	0.0000	0.0000	0.2000	0.2000	0.2000				

```
  70.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.2000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.3000  0.2000  0.2000
  80.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
  90.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.2000
 100.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 110.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 120.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 130.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 140.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.4000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 150.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 160.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.4000  0.2000  0.2000  0.1000
0.1000  0.1000  0.1000  0.2000  0.2000  0.2000
 170.  *  0.1000  0.1000  0.0000  0.1000  0.3000  0.4000  0.3000  0.2000  0.1000
0.1000  0.1000  0.1000  0.2000  0.2000  0.2000
 180.  *  0.2000  0.2000  0.2000  0.1000  0.2000  0.2000  0.2000  0.2000  0.2000
0.2000  0.2000  0.2000  0.1000  0.1000  0.1000
 190.  *  0.3000  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.1000  0.3000
0.2000  0.2000  0.2000  0.0000  0.0000  0.0000
 200.  *  0.4000  0.2000  0.3000  0.2000  0.1000  0.0000  0.0000  0.0000  0.4000
0.3000  0.2000  0.2000  0.0000  0.0000  0.0000
 210.  *  0.3000  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.3000
0.2000  0.2000  0.2000  0.0000  0.0000  0.0000
 220.  *  0.2000  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.3000
0.3000  0.2000  0.2000  0.0000  0.0000  0.0000
 230.  *  0.2000  0.1000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000  0.1000  0.0000  0.0000  0.0000
 240.  *  0.2000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000  0.1000  0.0000  0.0000  0.0000
 250.  *  0.1000  0.1000  0.1000  0.1000  0.2000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000  0.1000  0.0000  0.0000  0.0000
 260.  *  0.1000  0.1000  0.1000  0.1000  0.2000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000  0.1000  0.0000  0.0000  0.0000
 270.  *  0.2000  0.1000  0.1000  0.1000  0.2000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000  0.1000  0.1000  0.0000  0.0000
 280.  *  0.1000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.3000
0.2000  0.1000  0.1000  0.1000  0.0000  0.0000
 290.  *  0.1000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000  0.1000  0.2000  0.0000  0.0000
 300.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000
0.2000  0.1000  0.1000  0.2000  0.0000  0.0000
```

```
 310.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000
0.2000  0.3000  0.2000  0.2000  0.0000  0.0000
 320.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.2000
0.3000  0.3000  0.2000  0.1000  0.0000  0.0000
 330.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.2000
0.3000  0.3000  0.2000  0.1000  0.0000  0.0000
 340.  *  0.3000  0.3000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.3000
0.3000  0.4000  0.2000  0.1000  0.0000  0.0000
 350.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.2000
0.2000  0.2000  0.2000  0.1000  0.0000  0.0000
 360.  *  0.2000  0.2000  0.2000  0.2000  0.1000  0.1000  0.1000  0.1000  0.2000
0.2000  0.2000  0.1000  0.2000  0.1000  0.3000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  0.4000  0.3000  0.3000  0.2000  0.3000  0.4000  0.3000  0.2000  0.4000
0.3000  0.4000  0.2000  0.3000  0.3000  0.3000
 DEGR. *    200     340     200     190      20     140     170      20     200
200     340     180      10      10      10
```


JOB: I-495 & I-270 MLS RUN: 2025 NoBuild MD187 & I270 SB Rmp (IS.46)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.1000  0.1000  0.1000
  20.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000
0.0000  0.3000  0.1000  0.1000
  30.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
```

```
  40.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.1000
  50.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.1000
  60.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000
0.0000  0.2000  0.1000  0.1000
  70.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.2000
  80.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000
0.0000  0.1000  0.1000  0.2000
  90.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000
0.0000  0.1000  0.1000  0.2000
 100.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.0000  0.0000
0.0000  0.2000  0.1000  0.1000
 110.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.1000  0.2000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 120.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.1000  0.2000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 130.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.3000  0.2000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 140.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.2000  0.1000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 150.  *  0.2000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 160.  *  0.2000  0.0000  0.0000  0.0000  0.3000  0.1000  0.1000  0.0000  0.0000
0.0000  0.2000  0.0000  0.0000
 170.  *  0.1000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.1000  0.1000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  0.1000  0.1000  0.0000  0.1000  0.1000  0.1000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.1000  0.1000  0.0000  0.1000  0.1000  0.1000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.1000  0.1000  0.0000  0.1000  0.1000  0.1000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.1000  0.1000  0.0000  0.1000  0.1000  0.1000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.1000  0.1000  0.0000  0.1000  0.1000  0.1000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.1000  0.1000  0.0000  0.1000  0.1000  0.1000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.1000  0.0000  0.0000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 270.  *  0.0000  0.1000  0.0000  0.0000  0.2000  0.2000  0.1000  0.1000  0.0000
0.0000  0.1000  0.1000  0.0000
```

```
 280.  *  0.0000  0.1000  0.1000  0.0000  0.1000  0.1000  0.1000  0.1000  0.0000
0.0000  0.1000  0.1000  0.1000
 290.  *  0.0000  0.1000  0.1000  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.2000
 300.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000
0.0000  0.2000  0.2000  0.2000
 310.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000
0.0000  0.2000  0.2000  0.2000
 320.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000
0.0000  0.1000  0.1000  0.1000
 330.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000
0.0000  0.1000  0.1000  0.1000
 340.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000
0.0000  0.1000  0.1000  0.1000
 350.  *  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000
0.0000  0.1000  0.1000  0.1000
 360.  *  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000
0.0000  0.1000  0.1000  0.1000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.2000  0.1000  0.1000  0.0000  0.3000  0.3000  0.2000  0.1000  0.1000
0.0000  0.3000  0.2000  0.2000
 DEGR. *     10     180     190      10     150     130     110     180     190
10      20      30      70

 THE HIGHEST CONCENTRATION OF   0.4000 PPM OCCURRED AT RECEPTOR     6.
```

Q,EPA,,F,,0,T,T,T,T,0.7,
3,1,3,2,2200,2200,2200,2200,2200,2200,2200,2200,1036.66666666667,1037,1036.666666666
67,1037,1036.66666666667,1037,1036.66666666667,1037,12,12,12,12,10,10,10,10,0,0,-120
0,1200,0,0,1200,-1200,-1200,1200,0,0,1200,-1200,0,0,0,0,0,0,15,0,5,10,0,0,0,0,0,0,0,
0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 and I-270 MLS',60,108,0.0,0.0,23,0.3048,1,0
'N Leg, E Side-Corner',46.0,26.4,5.9
'N Leg, E Side - 0 m',0.0,34.5,5.9
'N Leg, W Side-Corner',-22.0,36.1,5.9
'S Leg, E Side-Corner',33.5,-52.6,5.9
'S Leg, E Side - 25 m',14.9,-122.2,5.9
'S Leg, E Side - 50 m',-6.3,-201.4,5.9
'S Leg, E Side-Midblk',-119.2,-622.5,5.9
'S Leg, W Side-Corner',-34.3,-43.2,5.9
'S Leg, W Side - 25 m',-53.0,-112.7,5.9
'S Leg, W Side - 50 m',-74.2,-192.0,5.9
'S Leg, W Side-Midblk',-187.0,-613.1,5.9
'E Leg, N Side - 25 m',116.9,13.9,5.9
'E Leg, N Side - 50 m',197.7,-0.3,5.9
'E Leg, N Side-Midblk',627.0,-76.0,5.9
'W Leg, N Side - 25 m',-93.7,42.3,5.9
'W Leg, N Side - 50 m',-175.5,49.5,5.9
'W Leg, N Side-Midblk',-609.8,87.5,5.9
'E Leg, S Side - 25 m',104.4,-65.1,5.9
'E Leg, S Side - 50 m',185.2,-79.4,5.9
'E Leg, S Side-Midblk',614.6,-155.1,5.9
'W Leg, S Side - 25 m',-106.1,-36.9,5.9
'W Leg, S Side - 50 m',-187.8,-29.7,5.9
'W Leg, S Side-Midblk',-622.1,8.3,5.9
'2025 NB MD202 & Outer Loop Rmp IS.16',9,1,0,'CO'
1
'S Leg App - FreeFlow','AG',21,8,-293,-1164,670,3.47,0.0,55.7
2
'S Leg App - Queue','AG',8,-39,-293,-1164,0.0,36.0,3
120,62,2,670,4.01,1600,1,3
1
'S Leg Dep - FreeFlow','AG',-3,12,-316,-1158,223,2.16,0.0,31.7
1
'E Leg App - FreeFlow','AG',2,12,1184,-197,1633,2.09,0.0,43.7
2
'E Leg App - Queue','AG',38,6,1184,-197,0.0,24.0,2
120,62,2,1633,4.17,1600,1,3
1
'E Leg Dep - FreeFlow','AG',-2,-18,1179,-226,2450,2.15,0.0,55.7
1
'W Leg App - FreeFlow','AG',-2,-18,-1197,87,2450,1.70,0.0,55.7
2

'W Leg App - Queue','AG',-14,-17,-1197,87,0.0,36.0,3
120,62,2,2450,4.17,1600,1,3
1
'W Leg Dep - FreeFlow','AG',2,12,-1194,117,1633,3.32,0.0,43.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 and I-270 MLS RUN: 2025 NB MD202 & Outer Loop Rmp IS.16

DATE : 5/10/19
TIME : 9:47:43

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. S Leg App - FreeFlow	*	21.0	8.0	-293.0	-1164.0	*	1213.	195.	AG	670.	3.5	0.0	55.7		
2. S Leg App - Queue	*	8.0	-39.0	-11.5	-112.0	*	76.	195.	AG	17.	100.0	0.0	36.0	0.31	3.8
3. S Leg Dep - FreeFlow	*	-3.0	12.0	-316.0	-1158.0	*	1211.	195.	AG	223.	2.2	0.0	31.7		
4. E Leg App - FreeFlow	*	2.0	12.0	1184.0	-197.0	*	1200.	100.	AG	1633.	2.1	0.0	43.7		
5. E Leg App - Queue	*	38.0	6.0	1386.5	-232.9	*	1369.	100.	AG	12.	100.0	0.0	24.0	1.13	69.6
6. E Leg Dep - FreeFlow	*	-2.0	-18.0	1179.0	-226.0	*	1199.	100.	AG	2450.	2.2	0.0	55.7		
7. W Leg App - FreeFlow	*	-2.0	-18.0	-1197.0	87.0	*	1200.	275.	AG	2450.	1.7	0.0	55.7		
8. W Leg App - Queue	*	-14.0	-17.0	-1378.2	102.9	*	1369.	275.	AG	17.	100.0	0.0	36.0	1.13	69.6
9. W Leg Dep - FreeFlow	*	2.0	12.0	-1194.0	117.0	*	1201.	275.	AG	1633.	3.3	0.0	43.7		

JOB: I-495 and I-270 MLS RUN: 2025 NB MD202 & Outer Loop Rmp IS.16

DATE : 5/10/19
TIME : 9:47:43

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. S Leg App - Queue	120	62	2.0	670	1600	4.01	1	3
5. E Leg App - Queue	120	62	2.0	1633	1600	4.17	1	3
8. W Leg App - Queue	120	62	2.0	2450	1600	4.17	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	46.0	26.4	5.9
2. N Leg, E Side - 0 m	0.0	34.5	5.9
3. N Leg, W Side-Corner	-22.0	36.1	5.9
4. S Leg, E Side-Corner	33.5	-52.6	5.9
5. S Leg, E Side - 25 m	14.9	-122.2	5.9
6. S Leg, E Side - 50 m	-6.3	-201.4	5.9
7. S Leg, E Side-Midblk	-119.2	-622.5	5.9
8. S Leg, W Side-Corner	-34.3	-43.2	5.9
9. S Leg, W Side - 25 m	-53.0	-112.7	5.9
10. S Leg, W Side - 50 m	-74.2	-192.0	5.9
11. S Leg, W Side-Midblk	-187.0	-613.1	5.9
12. E Leg, N Side - 25 m	116.9	13.9	5.9
13. E Leg, N Side - 50 m	197.7	-0.3	5.9
14. E Leg, N Side-Midblk	627.0	-76.0	5.9
15. W Leg, N Side - 25 m	-93.7	42.3	5.9
16. W Leg, N Side - 50 m	-175.5	49.5	5.9
17. W Leg, N Side-Midblk	-609.8	87.5	5.9
18. E Leg, S Side - 25 m	104.4	-65.1	5.9

19. E Leg, S Side - 50 m *	185.2	-79.4	5.9	*
20. E Leg, S Side-Midblk *	614.6	-155.1	5.9	*
21. W Leg, S Side - 25 m *	-106.1	-36.9	5.9	*
22. W Leg, S Side - 50 m *	-187.8	-29.7	5.9	*
23. W Leg, S Side-Midblk *	-622.1	8.3	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) * 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.3000	0.2000	0.1000	0.1000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20.	* 0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.1000	0.2000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000
30.	* 0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.0000	0.2000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
40.	* 0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.0000	0.1000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
50.	* 0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.0000	0.4000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
60.	* 0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.0000	0.4000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
70.	* 0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.0000	0.5000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000
80.	* 0.0000	0.0000	0.0000	0.4000	0.2000	0.1000	0.0000	0.5000	0.3000	0.2000	0.1000	0.0000	0.0000	0.0000	0.1000
90.	* 0.1000	0.1000	0.1000	0.4000	0.1000	0.0000	0.0000	0.5000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.3000
100.	* 0.3000	0.3000	0.4000	0.4000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.1000	0.3000	0.3000	0.3000	0.4000
110.	* 0.5000	0.4000	0.5000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000						

0.1000 0.1000 0.5000 0.5000 0.4000 0.4000
 120. * 0.5000 0.4000 0.4000 0.1000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.1000 0.5000 0.5000 0.5000 0.4000
 130. * 0.4000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.1000 0.4000 0.4000 0.4000 0.4000
 140. * 0.2000 0.2000 0.3000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.1000 0.2000 0.2000 0.2000 0.3000
 150. * 0.2000 0.3000 0.4000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.1000 0.2000 0.2000 0.2000 0.3000
 160. * 0.2000 0.3000 0.5000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.1000 0.2000 0.2000 0.2000 0.3000
 170. * 0.2000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.1000 0.2000 0.2000 0.2000 0.3000
 180. * 0.2000 0.3000 0.4000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.1000 0.2000 0.2000 0.2000 0.3000
 190. * 0.3000 0.3000 0.4000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000
0.1000 0.1000 0.2000 0.2000 0.2000 0.3000
 200. * 0.3000 0.4000 0.3000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.3000
 210. * 0.3000 0.3000 0.3000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.3000
 220. * 0.3000 0.3000 0.3000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.3000
 230. * 0.4000 0.3000 0.3000 0.2000 0.1000 0.1000 0.1000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.3000
 240. * 0.3000 0.3000 0.3000 0.2000 0.1000 0.1000 0.1000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.3000
 250. * 0.3000 0.4000 0.4000 0.2000 0.1000 0.1000 0.1000 0.0000 0.0000
0.0000 0.0000 0.3000 0.3000 0.4000 0.4000
 260. * 0.5000 0.5000 0.5000 0.1000 0.1000 0.1000 0.1000 0.1000 0.0000
0.0000 0.0000 0.4000 0.4000 0.4000 0.5000
 270. * 0.4000 0.4000 0.4000 0.3000 0.1000 0.1000 0.1000 0.3000 0.0000
0.0000 0.0000 0.3000 0.5000 0.3000 0.4000
 280. * 0.4000 0.3000 0.3000 0.6000 0.3000 0.1000 0.1000 0.4000 0.2000
0.0000 0.0000 0.3000 0.3000 0.3000 0.3000
 290. * 0.1000 0.1000 0.1000 0.6000 0.3000 0.1000 0.1000 0.5000 0.2000
0.0000 0.0000 0.2000 0.1000 0.1000 0.1000
 300. * 0.0000 0.0000 0.0000 0.4000 0.3000 0.3000 0.1000 0.4000 0.2000
0.2000 0.0000 0.0000 0.0000 0.0000 0.0000
 310. * 0.0000 0.0000 0.0000 0.4000 0.3000 0.2000 0.1000 0.4000 0.2000
0.1000 0.0000 0.0000 0.0000 0.0000 0.0000
 320. * 0.0000 0.0000 0.0000 0.4000 0.3000 0.2000 0.1000 0.3000 0.2000
0.1000 0.0000 0.0000 0.0000 0.0000 0.0000
 330. * 0.0000 0.0000 0.0000 0.4000 0.4000 0.1000 0.1000 0.3000 0.2000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 340. * 0.0000 0.0000 0.0000 0.3000 0.3000 0.1000 0.1000 0.3000 0.2000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 350. * 0.0000 0.0000 0.0000 0.4000 0.1000 0.1000 0.1000 0.2000 0.2000

0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.4000 0.2000 0.1000 0.1000 0.2000 0.2000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000

------*---

 MAX   * 0.5000 0.5000 0.5000 0.6000 0.4000 0.3000 0.1000 0.5000 0.3000
0.2000 0.1000 0.5000 0.5000 0.5000 0.5000
 DEGR. *   110   260   110   280   330   300   10   70   80
50   20   110   110   120   260

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) 16	17	18	19	20	21	22	23
10.	0.0000	0.0000	0.3000	0.3000	0.3000	0.2000	0.2000	0.2000
20.	0.0000	0.0000	0.3000	0.3000	0.3000	0.2000	0.2000	0.2000
30.	0.0000	0.0000	0.3000	0.3000	0.3000	0.2000	0.2000	0.2000
40.	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
50.	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.4000	0.4000
60.	0.0000	0.0000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000
70.	0.0000	0.0000	0.3000	0.3000	0.3000	0.5000	0.4000	0.4000
80.	0.1000	0.1000	0.4000	0.4000	0.4000	0.3000	0.5000	0.4000
90.	0.2000	0.2000	0.4000	0.4000	0.4000	0.3000	0.4000	0.4000
100.	0.4000	0.4000	0.4000	0.4000	0.2000	0.3000	0.2000	0.1000
110.	0.6000	0.4000	0.1000	0.1000	0.1000	0.1000	0.0000	0.1000
120.	0.4000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
130.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
140.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

190.	*	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	*	0.4000	0.4000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
260.	*	0.4000	0.4000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
270.	*	0.4000	0.4000	0.3000	0.2000	0.1000	0.3000	0.3000	0.1000
280.	*	0.3000	0.2000	0.3000	0.4000	0.2000	0.4000	0.4000	0.4000
290.	*	0.1000	0.1000	0.4000	0.4000	0.4000	0.5000	0.4000	0.4000
300.	*	0.0000	0.0000	0.4000	0.3000	0.4000	0.4000	0.4000	0.4000
310.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000
320.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.4000	0.4000	0.4000
330.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
340.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.2000	0.2000	0.2000
350.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.2000	0.2000	0.2000
360.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.2000	0.2000	0.2000
MAX	*	0.6000	0.4000	0.4000	0.4000	0.4000	0.5000	0.5000	0.4000
DEGR.	*	110	100	80	80	80	70	80	50

THE HIGHEST CONCENTRATION OF 0.6000 PPM OCCURRED AT RECEPTOR 16.

```
Q,EPA,,F,,0,T,T,F,T,0.7,
5,4,8,8,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.75,2200,2200,1036.8,1036
.75,2200,2200,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1
200,-1200,0,0,0,0,0,0,5,10,-5,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS ',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',91.2,114.4,5.9
'N Leg, E Side - 25 m',103.8,185.3,5.9
'N Leg, E Side - 50 m',118.0,266.1,5.9
'N Leg, E Side-Midblk',193.7,695.4,5.9
'N Leg, W Side-Corner',-40.8,102.8,5.9
'N Leg, W Side - 25 m',-28.3,173.8,5.9
'N Leg, W Side - 50 m',-14.0,254.5,5.9
'N Leg, W Side-Midblk',61.7,683.9,5.9
'S Leg, E Side-Corner',61.4,-101.0,5.9
'S Leg, E Side - 25 m',55.2,-172.8,5.9
'S Leg, E Side - 50 m',48.0,-254.5,5.9
'S Leg, E Side-Midblk',10.0,-688.8,5.9
'S Leg, W Side-Corner',-68.1,-112.4,5.9
'S Leg, W Side - 25 m',-74.3,-184.1,5.9
'S Leg, W Side - 50 m',-81.5,-265.8,5.9
'S Leg, W Side-Midblk',-119.5,-700.1,5.9
'E Leg, N Side - 25 m',163.0,120.7,5.9
'E Leg, N Side - 50 m',244.7,127.8,5.9
'E Leg, N Side-Midblk',679.0,165.8,5.9
'W Leg, N Side - 25 m',-112.5,96.6,5.9
'W Leg, N Side - 50 m',-194.2,89.4,5.9
'W Leg, N Side-Midblk',-628.5,51.4,5.9
'E Leg, S Side - 25 m',133.2,-94.8,5.9
'E Leg, S Side - 50 m',214.9,-87.6,5.9
'E Leg, S Side-Midblk',649.2,-49.6,5.9
'W Leg, S Side - 25 m',-139.8,-118.6,5.9
'W Leg, S Side - 50 m',-221.5,-125.8,5.9
'W Leg, S Side-Midblk',-655.8,-163.8,5.9
'2025 US29 & Direct Access Rmp (IS.58)',12,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-24,3,185,1186,4147,2.15,0.0,67.7
2
'N Leg App - Queue','AG',-7,99,185,1186,0.0,48.0,4
120,62,2,4147,3.92,1600,1,3
1
'N Leg Dep - FreeFlow','AG',30,-4,238,1177,5184,1.7,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,-4,-75,-1198,5184,4.97,0.0,79.7
2
'S Leg App - Queue','AG',22,-98,-75,-1198,0.0,60.0,5
120,62,2,5184,1.7,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-24,3,-128,-1193,4147,1.7,0.0,67.7
1
'E Leg App - FreeFlow','AG',0,48,1191,152,17600,6.00,0.0,115.7
2
'E Leg App - Queue','AG',56,53,1191,152,0.0,96.0,8
120,62,2,17600,3.77,1600,1,3
1
'E Leg Dep - FreeFlow','AG',0,-48,1200,57,17600,1.54,0.0,115.7
1
'W Leg App - FreeFlow','AG',0,-48,-1191,-152,17600,6.00,0.0,115.7
2
'W Leg App - Queue','AG',-44,-52,-1191,-152,0.0,96.0,8
120,62,2,17600,3.77,1600,1,3
1
'W Leg Dep - FreeFlow','AG',0,48,-1200,-57,17600,1.54,0.0,115.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface
♠ CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 US29 & Direct Access Rmp (IS.58)

DATE : 2/ 8/19
TIME : 13:52:14

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-24.0	3.0	185.0	1186.0	*	1201.	10.	AG	4147.	2.2	0.0	67.7		
2. N Leg App - Queue	*	-7.0	99.0	627.8	3692.6	*	3649.	10.	AG	22.	100.0	0.0	48.0	1.44	185.4
3. N Leg Dep - FreeFlow	*	30.0	-4.0	238.0	1177.0	*	1199.	10.	AG	5184.	1.7	0.0	79.7		
4. S Leg App - FreeFlow	*	30.0	-4.0	-75.0	-1198.0	*	1199.	185.	AG	5184.	5.0	0.0	79.7		
5. S Leg App - Queue	*	22.0	-98.0	-298.6	-3733.2	*	3649.	185.	AG	12.	100.0	0.0	60.0	1.44	185.4
6. S Leg Dep - FreeFlow	*	-24.0	3.0	-128.0	-1193.0	*	1201.	185.	AG	4147.	1.7	0.0	67.7		
7. E Leg App - FreeFlow	*	0.0	48.0	1191.0	152.0	*	1196.	85.	AG	17600.	6.0	0.0	****		
8. E Leg App - Queue	*	56.0	53.0	15708.2	1418.3	*	*****	85.	AG	42.	100.0	0.0	96.0	3.06	798.1
9. E Leg Dep - FreeFlow	*	0.0	-48.0	1200.0	57.0	*	1205.	85.	AG	17600.	1.5	0.0	****		
10. W Leg App - FreeFlow	*	0.0	-48.0	-1191.0	-152.0	*	1196.								

```
265. AG  17600.   6.0   0.0 ****
     11. W Leg App - Queue    *    -44.0     -52.0  -15696.2   -1416.6 *    *****
265. AG     42. 100.0   0.0 96.0 3.06 798.1
     12. W Leg Dep - FreeFlow*      0.0      48.0   -1200.0     -57.0 *    1205.
265. AG  17600.   1.5   0.0 ****
```


JOB: I-495 & I-270 MLS RUN: 2025 US29 & Direct Access Rmp (IS.58)

DATE : 2/ 8/19
TIME : 13:52:14

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	120	62	2.0	4147	1600	3.92	1	3
5. S Leg App - Queue	120	62	2.0	5184	1600	1.70	1	3
8. E Leg App - Queue	120	62	2.0	17600	1600	3.77	1	3
11. W Leg App - Queue	120	62	2.0	17600	1600	3.77	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	91.2	114.4	5.9
2. N Leg, E Side - 25 m	103.8	185.3	5.9
3. N Leg, E Side - 50 m	118.0	266.1	5.9
4. N Leg, E Side-Midblk	193.7	695.4	5.9
5. N Leg, W Side-Corner	-40.8	102.8	5.9
6. N Leg, W Side - 25 m	-28.3	173.8	5.9
7. N Leg, W Side - 50 m	-14.0	254.5	5.9
8. N Leg, W Side-Midblk	61.7	683.9	5.9
9. S Leg, E Side-Corner	61.4	-101.0	5.9
10. S Leg, E Side - 25 m	55.2	-172.8	5.9

11. S Leg, E Side - 50 m *	48.0	-254.5	5.9	*
12. S Leg, E Side-Midblk *	10.0	-688.8	5.9	*
13. S Leg, W Side-Corner *	-68.1	-112.4	5.9	*
14. S Leg, W Side - 25 m *	-74.3	-184.1	5.9	*
15. S Leg, W Side - 50 m *	-81.5	-265.8	5.9	*
16. S Leg, W Side-Midblk *	-119.5	-700.1	5.9	*
17. E Leg, N Side - 25 m *	163.0	120.7	5.9	*
18. E Leg, N Side - 50 m *	244.7	127.8	5.9	*
19. E Leg, N Side-Midblk *	679.0	165.8	5.9	*
20. W Leg, N Side - 25 m *	-112.5	96.6	5.9	*
21. W Leg, N Side - 50 m *	-194.2	89.4	5.9	*
22. W Leg, N Side-Midblk *	-628.5	51.4	5.9	*
23. E Leg, S Side - 25 m *	133.2	-94.8	5.9	*
24. E Leg, S Side - 50 m *	214.9	-87.6	5.9	*
25. E Leg, S Side-Midblk *	649.2	-49.6	5.9	*
26. W Leg, S Side - 25 m *	-139.8	-118.6	5.9	*
27. W Leg, S Side - 50 m *	-221.5	-125.8	5.9	*
28. W Leg, S Side-Midblk *	-655.8	-163.8	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10. *	0.6000	0.5000	0.5000	0.3000	0.6000	0.6000	0.6000	0.5000	2.6000
2.2000	1.8000	1.4000	3.7000	2.5000	2.0000				
20. *	0.4000	0.2000	0.2000	0.2000	0.8000	0.8000	0.8000	0.6000	2.5000
1.8000	1.4000	0.8000	4.1000	2.8000	2.2000				
30. *	0.3000	0.1000	0.1000	0.1000	0.7000	0.7000	0.7000	0.7000	2.4000
1.6000	1.3000	0.7000	4.1000	2.8000	2.2000				
40. *	0.3000	0.0000	0.0000	0.0000	0.7000	0.7000	0.7000	0.7000	2.4000
1.8000	1.3000	0.7000	4.4000	2.6000	2.1000				

```
  50.  *  0.3000  0.0000  0.0000  0.0000  0.6000  0.6000  0.6000  0.6000  2.6000
1.8000  1.4000  0.6000  4.5000  2.5000  2.0000
  60.  *  0.4000  0.0000  0.0000  0.0000  0.8000  0.6000  0.6000  0.6000  2.9000
1.9000  1.3000  0.4000  4.8000  2.7000  2.0000
  70.  *  1.0000  0.1000  0.0000  0.0000  1.3000  0.7000  0.6000  0.6000  2.8000
1.6000  0.9000  0.0000  4.7000  2.4000  1.7000
  80.  *  2.7000  0.4000  0.1000  0.0000  2.9000  1.0000  0.6000  0.5000  2.2000
0.9000  0.3000  0.0000  3.8000  1.6000  1.2000
  90.  *  4.5000  1.4000  0.6000  0.0000  4.6000  2.1000  1.4000  0.6000  0.9000
0.2000  0.0000  0.0000  2.3000  0.9000  0.7000
 100.  *  4.9000  2.2000  1.3000  0.0000  4.8000  3.0000  2.0000  0.6000  0.3000
0.0000  0.0000  0.0000  1.3000  0.7000  0.7000
 110.  *  4.2000  2.4000  1.6000  0.1000  4.1000  3.0000  2.2000  0.8000  0.1000
0.0000  0.0000  0.0000  0.9000  0.7000  0.7000
 120.  *  3.8000  2.3000  1.6000  0.4000  3.4000  2.7000  2.1000  1.0000  0.1000
0.0000  0.0000  0.0000  0.9000  0.7000  0.7000
 130.  *  3.4000  2.2000  1.4000  0.6000  3.1000  2.7000  2.0000  1.2000  0.2000
0.1000  0.1000  0.1000  0.9000  0.7000  0.7000
 140.  *  3.2000  2.1000  1.3000  0.6000  2.8000  2.5000  1.9000  1.2000  0.2000
0.1000  0.1000  0.1000  0.9000  0.7000  0.7000
 150.  *  2.9000  2.0000  1.4000  0.6000  2.6000  2.4000  1.9000  1.2000  0.1000
0.1000  0.1000  0.1000  1.0000  0.9000  0.9000
 160.  *  2.9000  2.0000  1.4000  0.6000  2.7000  2.4000  2.1000  1.3000  0.1000
0.1000  0.1000  0.1000  0.9000  0.9000  0.9000
 170.  *  3.2000  2.2000  1.5000  0.7000  2.9000  2.5000  2.3000  1.4000  0.3000
0.3000  0.3000  0.3000  1.0000  1.0000  1.0000
 180.  *  3.6000  2.4000  1.6000  0.9000  2.8000  2.5000  2.3000  1.6000  0.8000
0.8000  0.8000  0.7000  0.8000  0.8000  0.8000
 190.  *  3.8000  2.6000  2.3000  1.2000  2.6000  2.0000  1.8000  1.3000  1.4000
1.4000  1.4000  1.3000  0.5000  0.4000  0.4000
 200.  *  4.1000  2.9000  2.3000  1.2000  2.3000  1.8000  1.3000  0.7000  1.5000
1.5000  1.5000  1.4000  0.3000  0.1000  0.1000
 210.  *  4.3000  2.9000  2.3000  1.2000  2.3000  1.6000  1.3000  0.7000  1.2000
1.2000  1.2000  1.2000  0.2000  0.0000  0.0000
 220.  *  4.5000  2.6000  1.9000  1.1000  2.3000  1.7000  1.2000  0.6000  1.0000
1.0000  1.0000  1.0000  0.3000  0.0000  0.0000
 230.  *  4.4000  2.4000  1.9000  1.0000  2.5000  1.7000  1.3000  0.5000  0.9000
0.9000  0.9000  0.9000  0.3000  0.0000  0.0000
 240.  *  4.7000  2.6000  1.8000  0.9000  2.8000  1.8000  1.2000  0.3000  1.0000
0.9000  0.9000  0.9000  0.4000  0.0000  0.0000
 250.  *  4.6000  2.1000  1.4000  0.5000  2.8000  1.6000  0.9000  0.0000  1.5000
0.9000  0.8000  0.8000  1.0000  0.1000  0.0000
 260.  *  3.5000  1.5000  0.9000  0.4000  2.2000  0.9000  0.4000  0.0000  3.2000
1.3000  0.9000  0.8000  2.7000  0.4000  0.1000
 270.  *  1.9000  0.5000  0.3000  0.3000  0.9000  0.2000  0.0000  0.0000  4.8000
2.3000  1.6000  0.8000  4.5000  1.4000  0.6000
 280.  *  0.9000  0.4000  0.4000  0.4000  0.3000  0.0000  0.0000  0.0000  4.9000
3.2000  2.2000  0.8000  4.9000  2.2000  1.3000
```

```
 290.  *  0.6000  0.3000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  4.2000
3.2000  2.4000  1.0000  4.2000  2.4000  1.6000
 300.  *  0.7000  0.4000  0.4000  0.4000  0.1000  0.0000  0.0000  0.0000  3.5000
3.0000  2.3000  1.3000  3.8000  2.3000  1.5000
 310.  *  0.6000  0.4000  0.4000  0.4000  0.1000  0.0000  0.0000  0.0000  3.2000
2.7000  2.3000  1.5000  3.4000  2.2000  1.4000
 320.  *  0.7000  0.5000  0.5000  0.5000  0.1000  0.0000  0.0000  0.0000  2.9000
2.6000  2.2000  1.5000  3.2000  2.1000  1.3000
 330.  *  0.6000  0.5000  0.5000  0.5000  0.0000  0.0000  0.0000  0.0000  2.7000
2.5000  2.2000  1.6000  2.9000  2.0000  1.3000
 340.  *  0.5000  0.5000  0.5000  0.5000  0.0000  0.0000  0.0000  0.0000  2.7000
2.6000  2.5000  1.8000  2.9000  2.0000  1.3000
 350.  *  0.6000  0.6000  0.6000  0.6000  0.1000  0.1000  0.1000  0.1000  3.0000
2.4000  2.5000  2.0000  3.2000  2.1000  1.4000
 360.  *  0.6000  0.6000  0.6000  0.5000  0.2000  0.2000  0.2000  0.2000  3.0000
2.3000  2.1000  2.0000  3.2000  2.3000  1.7000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  4.9000  2.9000  2.3000  1.2000  4.8000  3.0000  2.3000  1.6000  4.9000
3.2000  2.5000  2.0000  4.9000  2.8000  2.2000
 DEGR. *    100     200     190     190     100     100     170     180     280
280     340     360     280      20      20
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  1.6000  0.2000  0.1000  0.1000  0.1000  0.0000  0.0000  2.2000  2.1000
2.1000  3.1000  2.9000  2.9000
```

```
  20.  *  1.5000  0.2000  0.2000  0.2000  0.3000  0.2000  0.0000  2.2000  2.2000
2.2000  3.3000  3.1000  2.9000
  30.  *  1.5000  0.2000  0.2000  0.2000  0.4000  0.3000  0.1000  2.3000  2.3000
2.3000  3.6000  3.4000  3.2000
  40.  *  1.5000  0.3000  0.3000  0.3000  0.4000  0.3000  0.1000  2.3000  2.3000
2.3000  4.1000  3.8000  3.4000
  50.  *  1.2000  0.3000  0.3000  0.3000  0.4000  0.3000  0.1000  2.5000  2.5000
2.5000  4.8000  4.5000  3.8000
  60.  *  1.0000  0.4000  0.4000  0.4000  0.4000  0.4000  0.1000  2.8000  2.8000
2.4000  4.9000  5.0000  4.4000
  70.  *  0.7000  1.0000  0.9000  0.8000  0.8000  0.8000  0.4000  2.7000  2.7000
2.1000  5.1000  5.3000  5.3000
  80.  *  0.7000  2.6000  2.6000  2.1000  2.3000  2.0000  1.3000  2.0000  2.0000
1.4000  4.0000  4.5000  4.9000
  90.  *  0.7000  4.4000  4.4000  3.7000  3.7000  3.3000  2.5000  0.9000  0.8000
0.6000  2.2000  2.4000  2.8000
 100.  *  0.7000  4.9000  4.9000  4.3000  3.8000  3.3000  2.8000  0.2000  0.2000
0.2000  1.0000  1.0000  1.0000
 110.  *  0.7000  4.2000  4.2000  4.1000  2.8000  2.6000  2.8000  0.1000  0.1000
0.1000  0.7000  0.7000  0.5000
 120.  *  0.7000  3.8000  3.8000  3.8000  2.3000  2.2000  2.6000  0.1000  0.1000
0.1000  0.7000  0.6000  0.4000
 130.  *  0.7000  3.4000  3.4000  3.4000  2.1000  2.3000  2.4000  0.1000  0.1000
0.1000  0.7000  0.6000  0.4000
 140.  *  0.7000  3.2000  3.2000  3.2000  2.2000  2.6000  2.4000  0.1000  0.1000
0.1000  0.6000  0.6000  0.3000
 150.  *  0.8000  2.9000  2.9000  2.9000  2.3000  2.5000  2.3000  0.0000  0.0000
0.0000  0.7000  0.6000  0.3000
 160.  *  0.9000  2.9000  2.9000  2.9000  2.4000  2.5000  2.1000  0.0000  0.0000
0.0000  0.6000  0.5000  0.1000
 170.  *  0.8000  3.1000  3.1000  3.1000  2.6000  2.5000  2.2000  0.0000  0.0000
0.0000  0.4000  0.3000  0.0000
 180.  *  0.6000  3.2000  3.1000  3.1000  2.5000  2.3000  2.2000  0.1000  0.0000
0.0000  0.3000  0.1000  0.0000
 190.  *  0.3000  3.3000  3.1000  2.9000  2.2000  2.1000  2.1000  0.3000  0.1000
0.0000  0.2000  0.1000  0.1000
 200.  *  0.1000  3.5000  3.3000  2.9000  2.2000  2.2000  2.2000  0.6000  0.4000
0.0000  0.2000  0.2000  0.2000
 210.  *  0.0000  3.7000  3.5000  3.3000  2.3000  2.3000  2.3000  0.7000  0.5000
0.2000  0.2000  0.2000  0.2000
 220.  *  0.0000  4.3000  4.0000  3.5000  2.3000  2.3000  2.3000  0.7000  0.5000
0.2000  0.3000  0.3000  0.3000
 230.  *  0.0000  4.7000  4.5000  3.9000  2.5000  2.5000  2.5000  0.6000  0.5000
0.2000  0.3000  0.3000  0.3000
 240.  *  0.0000  5.0000  5.0000  4.5000  2.8000  2.8000  2.5000  0.7000  0.6000
0.2000  0.4000  0.4000  0.4000
 250.  *  0.0000  5.0000  5.4000  5.4000  2.8000  2.7000  2.1000  1.1000  1.0000
0.5000  1.0000  0.9000  0.8000
```

```
 260.  *  0.0000  4.0000  4.5000  4.9000  2.0000  2.0000  1.4000  2.6000  2.2000
1.5000  2.7000  2.6000  2.1000
 270.  *  0.0000  2.2000  2.4000  2.7000  0.9000  0.8000  0.6000  3.8000  3.4000
2.6000  4.5000  4.4000  3.7000
 280.  *  0.0000  0.9000  1.0000  0.9000  0.2000  0.2000  0.2000  3.9000  3.1000
2.7000  4.9000  4.9000  4.3000
 290.  *  0.1000  0.5000  0.6000  0.4000  0.1000  0.1000  0.1000  3.0000  2.5000
2.7000  4.2000  4.2000  4.1000
 300.  *  0.5000  0.5000  0.5000  0.3000  0.1000  0.1000  0.1000  2.3000  2.4000
2.5000  3.8000  3.8000  3.8000
 310.  *  0.6000  0.5000  0.5000  0.3000  0.1000  0.1000  0.1000  2.2000  2.3000
2.3000  3.4000  3.4000  3.4000
 320.  *  0.6000  0.4000  0.4000  0.2000  0.1000  0.1000  0.1000  2.2000  2.3000
2.3000  3.2000  3.2000  3.2000
 330.  *  0.6000  0.5000  0.4000  0.2000  0.0000  0.0000  0.0000  2.2000  2.3000
2.2000  2.9000  2.9000  2.9000
 340.  *  0.6000  0.4000  0.3000  0.1000  0.0000  0.0000  0.0000  2.2000  2.3000
2.1000  2.9000  2.9000  2.9000
 350.  *  0.7000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  2.4000  2.4000
2.2000  3.1000  3.1000  3.1000
 360.  *  0.9000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  2.4000  2.4000
2.2000  3.1000  3.1000  3.1000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.6000  5.0000  5.4000  5.4000  3.8000  3.3000  2.8000  3.9000  3.4000
2.7000  5.1000  5.3000  5.3000
 DEGR. *     10     240     250     250     100     100     100     280     270
280      70      70      70

 THE HIGHEST CONCENTRATION OF   5.4000 PPM OCCURRED AT RECEPTOR    18.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
4,4,3,1,2200,2200,2200,2200,2200,2200,2200,2200,1036.75,1036.75,2200,2200,1036.75,10
36.75,2200,2200,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0
,1200,-1200,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',58.0,22.0,5.9
'N Leg, E Side - 25 m',58.0,94.0,5.9
'N Leg, E Side - 50 m',58.0,176.0,5.9
'N Leg, E Side-Midblk',58.0,612.0,5.9
'N Leg, W Side-Corner',-58.0,22.0,5.9
'N Leg, W Side - 25 m',-58.0,94.0,5.9
'N Leg, W Side - 50 m',-58.0,176.0,5.9
'N Leg, W Side-Midblk',-58.0,612.0,5.9
'S Leg, E Side-Corner',58.0,-46.0,5.9
'S Leg, E Side - 25 m',58.0,-118.0,5.9
'S Leg, E Side - 50 m',58.0,-200.0,5.9
'S Leg, E Side-Midblk',58.0,-636.0,5.9
'S Leg, W Side-Corner',-58.0,-46.0,5.9
'S Leg, W Side - 25 m',-58.0,-118.0,5.9
'S Leg, W Side - 50 m',-58.0,-200.0,5.9
'S Leg, W Side-Midblk',-58.0,-636.0,5.9
'E Leg, N Side - 25 m',130.0,22.0,5.9
'E Leg, N Side - 50 m',212.0,22.0,5.9
'E Leg, N Side-Midblk',648.0,22.0,5.9
'W Leg, N Side - 25 m',-130.0,22.0,5.9
'W Leg, N Side - 50 m',-212.0,22.0,5.9
'W Leg, N Side-Midblk',-648.0,22.0,5.9
'E Leg, S Side - 25 m',130.0,-46.0,5.9
'E Leg, S Side - 50 m',212.0,-46.0,5.9
'E Leg, S Side-Midblk',648.0,-46.0,5.9
'W Leg, S Side - 25 m',-130.0,-46.0,5.9
'W Leg, S Side - 50 m',-212.0,-46.0,5.9
'W Leg, S Side-Midblk',-648.0,-46.0,5.9
'2025 US29 & Inner Loop (IS.57)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-24,0,-24,1200,4147,1.70,0.0,67.7
2
'N Leg App - Queue','AG',-24,12,-24,1200,0.0,48.0,4
120,62,2,4147,3.92,1600,1,3
1
'N Leg Dep - FreeFlow','AG',24,0,24,1200,4147,4.97,0.0,67.7
1
'S Leg App - FreeFlow','AG',24,0,24,-1200,4147,4.07,0.0,67.7
2
'S Leg App - Queue','AG',24,-36,24,-1200,0.0,48.0,4
120,62,2,4147,3.92,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-24,0,-24,-1200,4147,1.70,0.0,67.7
1
'E Leg App - FreeFlow','AG',0,6,1200,6,2200,2.61,0.0,31.7
1
'E Leg Dep - FreeFlow','AG',0,-18,1200,-18,6600,2.61,0.0,55.7
1
'W Leg App - FreeFlow','AG',0,-18,-1200,-18,6600,1.54,0.0,55.7
2
'W Leg App - Queue','AG',-48,-18,-1200,-18,0.0,36.0,3
120,62,2,6600,3.77,1600,1,3
1
'W Leg Dep - FreeFlow','AG',0,6,-1200,6,2200,1.54,0.0,31.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 US29 & Inner Loop (IS.57)

DATE : 2/ 8/19
TIME : 14:26:15

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-24.0	0.0	-24.0	1200.0	*	1200.	360.	AG	4147.	1.7	0.0	67.7		
2. N Leg App - Queue	*	-24.0	12.0	-24.0	3661.3	*	3649.	360.	AG	22.	100.0	0.0	48.0	1.44	185.4
3. N Leg Dep - FreeFlow	*	24.0	0.0	24.0	1200.0	*	1200.	360.	AG	4147.	5.0	0.0	67.7		
4. S Leg App - FreeFlow	*	24.0	0.0	24.0	-1200.0	*	1200.	180.	AG	4147.	4.1	0.0	67.7		
5. S Leg App - Queue	*	24.0	-36.0	24.0	-3685.3	*	3649.	180.	AG	22.	100.0	0.0	48.0	1.44	185.4
6. S Leg Dep - FreeFlow	*	-24.0	0.0	-24.0	-1200.0	*	1200.	180.	AG	4147.	1.7	0.0	67.7		
7. E Leg App - FreeFlow	*	0.0	6.0	1200.0	6.0	*	1200.	90.	AG	2200.	2.6	0.0	31.7		
8. E Leg Dep - FreeFlow	*	0.0	-18.0	1200.0	-18.0	*	1200.	90.	AG	6600.	2.6	0.0	55.7		
9. W Leg App - FreeFlow	*	0.0	-18.0	-1200.0	-18.0	*	1200.	270.	AG	6600.	1.5	0.0	55.7		
10. W Leg App - Queue	*	-48.0	-18.0	-15759.6	-18.0	*	*****								

270. AG 16. 100.0 0.0 36.0 3.06 798.1
11. W Leg Dep - FreeFlow* 0.0 6.0 -1200.0 6.0 * 1200.
270. AG 2200. 1.5 0.0 31.7

JOB: I-495 & I-270 MLS RUN: 2025 US29 & Inner Loop (IS.57)

DATE : 2/ 8/19
TIME : 14:26:15

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	*	120	62	2.0	4147	1600	3.92	1	3
5. S Leg App - Queue	*	120	62	2.0	4147	1600	3.92	1	3
10. W Leg App - Queue	*	120	62	2.0	6600	1600	3.77	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	58.0	22.0	5.9	*
2. N Leg, E Side - 25 m	*	58.0	94.0	5.9	*
3. N Leg, E Side - 50 m	*	58.0	176.0	5.9	*
4. N Leg, E Side-Midblk	*	58.0	612.0	5.9	*
5. N Leg, W Side-Corner	*	-58.0	22.0	5.9	*
6. N Leg, W Side - 25 m	*	-58.0	94.0	5.9	*
7. N Leg, W Side - 50 m	*	-58.0	176.0	5.9	*
8. N Leg, W Side-Midblk	*	-58.0	612.0	5.9	*
9. S Leg, E Side-Corner	*	58.0	-46.0	5.9	*
10. S Leg, E Side - 25 m	*	58.0	-118.0	5.9	*
11. S Leg, E Side - 50 m	*	58.0	-200.0	5.9	*
12. S Leg, E Side-Midblk	*	58.0	-636.0	5.9	*
13. S Leg, W Side-Corner	*	-58.0	-46.0	5.9	*
14. S Leg, W Side - 25 m	*	-58.0	-118.0	5.9	*

15. S Leg, W Side - 50 m *	-58.0	-200.0	5.9	*
16. S Leg, W Side-Midblk *	-58.0	-636.0	5.9	*
17. E Leg, N Side - 25 m *	130.0	22.0	5.9	*
18. E Leg, N Side - 50 m *	212.0	22.0	5.9	*
19. E Leg, N Side-Midblk *	648.0	22.0	5.9	*
20. W Leg, N Side - 25 m *	-130.0	22.0	5.9	*
21. W Leg, N Side - 50 m *	-212.0	22.0	5.9	*
22. W Leg, N Side-Midblk *	-648.0	22.0	5.9	*
23. E Leg, S Side - 25 m *	130.0	-46.0	5.9	*
24. E Leg, S Side - 50 m *	212.0	-46.0	5.9	*
25. E Leg, S Side-Midblk *	648.0	-46.0	5.9	*
26. W Leg, S Side - 25 m *	-130.0	-46.0	5.9	*
27. W Leg, S Side - 50 m *	-212.0	-46.0	5.9	*
28. W Leg, S Side-Midblk *	-648.0	-46.0	5.9	*

JOB: I-495 & I-270 MLS RUN: 2025 US29 & Inner Loop (IS.57)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.5000	0.5000	0.5000	0.4000	1.0000	1.0000	0.9000	0.9000	1.0000	0.9000	0.6000	0.5000	1.4000	1.0000	1.0000
20.	* 0.2000	0.2000	0.2000	0.2000	0.9000	0.9000	0.9000	0.9000	0.8000	0.6000	0.3000	0.2000	1.3000	1.0000	1.0000
30.	* 0.1000	0.1000	0.1000	0.1000	0.9000	0.9000	0.9000	0.9000	0.6000	0.5000	0.3000	0.2000	1.1000	1.1000	0.8000
40.	* 0.1000	0.1000	0.1000	0.1000	0.8000	0.8000	0.8000	0.8000	0.7000	0.5000	0.3000	0.2000	1.2000	0.9000	0.8000
50.	* 0.1000	0.1000	0.1000	0.1000	0.7000	0.7000	0.7000	0.7000	0.8000	0.4000	0.3000	0.1000	1.2000	1.0000	0.8000
60.	* 0.0000	0.0000	0.0000	0.0000	0.7000	0.7000	0.7000	0.7000	0.9000	0.4000	0.3000	0.1000	1.3000	0.9000	0.8000

```
  70.  *  0.1000  0.0000  0.0000  0.0000  0.7000  0.7000  0.7000  0.7000  1.1000
0.4000  0.3000  0.0000  1.4000  0.9000  0.8000
  80.  *  0.4000  0.0000  0.0000  0.0000  1.0000  0.7000  0.7000  0.7000  1.2000
0.4000  0.1000  0.0000  1.5000  0.9000  0.7000
  90.  *  0.8000  0.2000  0.0000  0.0000  1.4000  0.9000  0.8000  0.7000  1.0000
0.2000  0.1000  0.0000  1.4000  0.7000  0.6000
 100.  *  1.1000  0.4000  0.1000  0.0000  1.5000  1.1000  0.8000  0.7000  0.4000
0.0000  0.0000  0.0000  0.9000  0.5000  0.5000
 110.  *  1.0000  0.4000  0.3000  0.0000  1.4000  1.1000  1.0000  0.7000  0.2000
0.0000  0.0000  0.0000  0.7000  0.5000  0.5000
 120.  *  0.9000  0.4000  0.3000  0.0000  1.3000  1.1000  1.0000  0.8000  0.1000
0.0000  0.0000  0.0000  0.5000  0.5000  0.5000
 130.  *  0.9000  0.5000  0.4000  0.2000  1.0000  1.1000  1.0000  0.8000  0.1000
0.0000  0.0000  0.0000  0.5000  0.5000  0.5000
 140.  *  0.7000  0.5000  0.4000  0.2000  1.1000  1.0000  1.1000  0.9000  0.1000
0.1000  0.1000  0.1000  0.7000  0.7000  0.7000
 150.  *  0.7000  0.4000  0.4000  0.2000  1.1000  1.0000  0.9000  1.0000  0.1000
0.1000  0.1000  0.1000  0.7000  0.7000  0.7000
 160.  *  0.7000  0.5000  0.4000  0.3000  1.2000  1.0000  1.0000  1.0000  0.1000
0.1000  0.1000  0.1000  0.7000  0.7000  0.7000
 170.  *  0.9000  0.7000  0.8000  0.6000  1.3000  0.9000  1.0000  1.0000  0.4000
0.4000  0.4000  0.3000  0.9000  0.9000  0.9000
 180.  *  1.7000  1.4000  1.1000  1.0000  0.9000  0.6000  0.6000  0.8000  1.0000
1.0000  0.9000  0.9000  0.5000  0.5000  0.5000
 190.  *  1.9000  1.6000  1.2000  1.2000  0.6000  0.4000  0.4000  0.1000  1.2000
1.2000  1.1000  1.0000  0.3000  0.3000  0.3000
 200.  *  1.8000  1.4000  1.4000  1.2000  0.4000  0.1000  0.1000  0.1000  1.1000
1.1000  1.1000  1.1000  0.1000  0.1000  0.1000
 210.  *  1.5000  1.2000  1.2000  1.0000  0.4000  0.1000  0.1000  0.0000  1.0000
1.0000  1.0000  1.0000  0.0000  0.0000  0.0000
 220.  *  1.5000  1.2000  0.9000  0.8000  0.4000  0.3000  0.1000  0.0000  0.8000
0.8000  0.8000  0.8000  0.0000  0.0000  0.0000
 230.  *  1.4000  0.9000  0.9000  0.8000  0.4000  0.3000  0.1000  0.0000  0.9000
0.8000  0.8000  0.8000  0.0000  0.0000  0.0000
 240.  *  1.4000  1.0000  0.8000  0.7000  0.6000  0.3000  0.1000  0.0000  0.8000
0.7000  0.7000  0.7000  0.0000  0.0000  0.0000
 250.  *  1.5000  1.0000  0.8000  0.7000  0.7000  0.3000  0.1000  0.0000  0.8000
0.7000  0.7000  0.7000  0.1000  0.0000  0.0000
 260.  *  1.5000  1.0000  0.8000  0.7000  0.7000  0.3000  0.1000  0.0000  1.1000
0.7000  0.7000  0.7000  0.3000  0.0000  0.0000
 270.  *  1.2000  0.8000  0.7000  0.7000  0.6000  0.1000  0.0000  0.0000  1.4000
0.8000  0.7000  0.7000  0.7000  0.1000  0.0000
 280.  *  1.0000  0.7000  0.7000  0.7000  0.2000  0.0000  0.0000  0.0000  1.5000
0.9000  0.8000  0.7000  0.8000  0.2000  0.1000
 290.  *  0.7000  0.7000  0.7000  0.7000  0.0000  0.0000  0.0000  0.0000  1.4000
0.9000  0.8000  0.7000  0.7000  0.2000  0.1000
 300.  *  0.7000  0.7000  0.7000  0.7000  0.0000  0.0000  0.0000  0.0000  1.6000
0.9000  0.8000  0.7000  0.6000  0.2000  0.1000
```

```
 310.  *  0.8000  0.8000  0.8000  0.8000  0.0000  0.0000  0.0000  0.0000  1.4000
0.9000  0.8000  0.8000  0.6000  0.2000  0.1000
 320.  *  0.8000  0.8000  0.8000  0.8000  0.0000  0.0000  0.0000  0.0000  1.4000
1.1000  0.9000  0.8000  0.6000  0.2000  0.1000
 330.  *  1.0000  1.0000  1.0000  1.0000  0.0000  0.0000  0.0000  0.0000  1.4000
1.2000  1.1000  1.0000  0.4000  0.2000  0.1000
 340.  *  1.2000  1.2000  1.2000  1.2000  0.1000  0.1000  0.1000  0.1000  1.7000
1.3000  1.4000  1.1000  0.4000  0.2000  0.1000
 350.  *  1.4000  1.4000  1.4000  1.2000  0.3000  0.3000  0.3000  0.1000  2.0000
1.5000  1.3000  1.2000  0.6000  0.5000  0.4000
 360.  *  1.0000  1.0000  1.0000  0.9000  0.7000  0.7000  0.7000  0.6000  1.7000
1.4000  1.2000  1.1000  1.1000  1.0000  0.7000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  1.9000  1.6000  1.4000  1.2000  1.5000  1.1000  1.1000  1.0000  2.0000
1.5000  1.4000  1.2000  1.5000  1.1000  1.0000
 DEGR. *    190     190     200     190     100     100     140     150     350
350     340     350      80      30      10
```


JOB: I-495 & I-270 MLS RUN: 2025 US29 & Inner Loop (IS.57)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.8000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.6000  0.6000
0.6000  0.7000  0.6000  0.4000
  20.  *  0.8000  0.0000  0.0000  0.0000  0.4000  0.3000  0.0000  0.6000  0.6000
0.6000  0.8000  0.7000  0.4000
  30.  *  0.8000  0.0000  0.0000  0.0000  0.4000  0.3000  0.1000  0.6000  0.6000
0.6000  0.8000  0.7000  0.5000
```

```
  40.  *  0.8000  0.0000  0.0000  0.0000  0.4000  0.3000  0.1000  0.7000  0.7000
0.7000  0.8000  0.8000  0.7000
  50.  *  0.6000  0.0000  0.0000  0.0000  0.4000  0.3000  0.1000  0.8000  0.8000
0.8000  0.9000  0.9000  0.7000
  60.  *  0.6000  0.0000  0.0000  0.0000  0.3000  0.3000  0.1000  0.9000  0.9000
0.9000  0.9000  0.9000  0.7000
  70.  *  0.5000  0.1000  0.1000  0.1000  0.3000  0.3000  0.1000  1.1000  1.1000
1.0000  1.0000  0.9000  0.8000
  80.  *  0.5000  0.4000  0.4000  0.4000  0.7000  0.6000  0.4000  1.1000  1.1000
1.0000  1.2000  1.0000  1.0000
  90.  *  0.5000  0.8000  0.8000  0.7000  1.1000  0.9000  0.6000  0.9000  0.9000
0.9000  1.1000  0.9000  0.6000
 100.  *  0.5000  1.1000  1.1000  1.0000  1.3000  1.1000  0.8000  0.4000  0.4000
0.4000  0.6000  0.6000  0.4000
 110.  *  0.5000  1.0000  1.0000  1.0000  1.2000  0.8000  0.8000  0.2000  0.2000
0.2000  0.5000  0.3000  0.2000
 120.  *  0.5000  0.9000  0.9000  0.9000  0.9000  0.8000  0.7000  0.1000  0.1000
0.1000  0.3000  0.3000  0.1000
 130.  *  0.5000  0.9000  0.9000  0.9000  0.7000  0.7000  0.5000  0.1000  0.1000
0.1000  0.3000  0.3000  0.1000
 140.  *  0.7000  0.7000  0.7000  0.7000  0.7000  0.7000  0.5000  0.0000  0.0000
0.0000  0.3000  0.3000  0.1000
 150.  *  0.7000  0.7000  0.7000  0.7000  0.7000  0.7000  0.4000  0.0000  0.0000
0.0000  0.3000  0.3000  0.0000
 160.  *  0.7000  0.6000  0.6000  0.6000  0.7000  0.7000  0.4000  0.0000  0.0000
0.0000  0.3000  0.3000  0.0000
 170.  *  0.8000  0.6000  0.6000  0.6000  0.7000  0.6000  0.4000  0.0000  0.0000
0.0000  0.3000  0.2000  0.0000
 180.  *  0.4000  0.9000  0.8000  0.7000  0.6000  0.4000  0.4000  0.2000  0.1000
0.0000  0.2000  0.0000  0.0000
 190.  *  0.1000  1.0000  0.7000  0.6000  0.4000  0.4000  0.4000  0.4000  0.1000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.1000  1.0000  0.9000  0.6000  0.4000  0.4000  0.4000  0.4000  0.3000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  1.1000  1.0000  0.8000  0.4000  0.4000  0.4000  0.4000  0.3000
0.1000  0.0000  0.0000  0.0000
 220.  *  0.0000  1.1000  1.0000  0.8000  0.4000  0.4000  0.4000  0.4000  0.3000
0.1000  0.0000  0.0000  0.0000
 230.  *  0.0000  1.2000  1.2000  1.0000  0.4000  0.4000  0.4000  0.5000  0.4000
0.2000  0.0000  0.0000  0.0000
 240.  *  0.0000  1.2000  1.2000  1.0000  0.6000  0.6000  0.6000  0.5000  0.4000
0.2000  0.0000  0.0000  0.0000
 250.  *  0.0000  1.3000  1.2000  1.1000  0.7000  0.7000  0.7000  0.5000  0.4000
0.3000  0.1000  0.1000  0.1000
 260.  *  0.0000  1.2000  1.2000  1.3000  0.7000  0.7000  0.7000  0.7000  0.7000
0.5000  0.3000  0.3000  0.2000
 270.  *  0.0000  1.1000  1.0000  0.9000  0.6000  0.6000  0.5000  1.1000  1.1000
1.0000  0.7000  0.7000  0.5000
```

```
 280.  *  0.0000  0.6000  0.6000  0.5000  0.2000  0.2000  0.2000  1.3000  1.4000
1.3000  0.8000  0.8000  0.8000
 290.  *  0.0000  0.5000  0.4000  0.2000  0.0000  0.0000  0.0000  1.2000  1.2000
1.1000  0.7000  0.7000  0.7000
 300.  *  0.0000  0.4000  0.3000  0.1000  0.0000  0.0000  0.0000  1.2000  1.1000
1.0000  0.6000  0.6000  0.6000
 310.  *  0.0000  0.4000  0.3000  0.1000  0.0000  0.0000  0.0000  1.1000  1.1000
0.9000  0.6000  0.6000  0.6000
 320.  *  0.0000  0.5000  0.3000  0.1000  0.0000  0.0000  0.0000  1.1000  1.0000
0.8000  0.6000  0.6000  0.6000
 330.  *  0.0000  0.5000  0.4000  0.1000  0.0000  0.0000  0.0000  1.1000  1.0000
0.7000  0.4000  0.4000  0.4000
 340.  *  0.1000  0.5000  0.3000  0.0000  0.0000  0.0000  0.0000  1.1000  1.0000
0.6000  0.4000  0.4000  0.4000
 350.  *  0.2000  0.5000  0.2000  0.0000  0.0000  0.0000  0.0000  1.1000  0.8000
0.6000  0.4000  0.4000  0.4000
 360.  *  0.7000  0.2000  0.1000  0.0000  0.2000  0.0000  0.0000  0.9000  0.8000
0.7000  0.6000  0.4000  0.4000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.8000  1.3000  1.2000  1.3000  1.3000  1.1000  0.8000  1.3000  1.4000
1.3000  1.2000  1.0000  1.0000
 DEGR. *     20     250     230     260     100     100     100     280     280
280      80      80      80

 THE HIGHEST CONCENTRATION OF   2.0000 PPM OCCURRED AT RECEPTOR     9.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
5,4,1,3,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.75,2200,2200,1036.8,1036
.75,2200,2200,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1
200,-1200,0,0,0,0,0,0,30,30,15,20,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',90.1,16.1,5.9
'N Leg, E Side - 25 m',126.2,78.5,5.9
'N Leg, E Side - 50 m',167.2,149.5,5.9
'N Leg, E Side-Midblk',385.1,527.1,5.9
'N Leg, W Side-Corner',-34.2,56.8,5.9
'N Leg, W Side - 25 m',1.8,119.2,5.9
'N Leg, W Side - 50 m',42.8,190.2,5.9
'N Leg, W Side-Midblk',260.8,567.7,5.9
'S Leg, E Side-Corner',55.6,-43.7,5.9
'S Leg, E Side - 25 m',19.6,-106.0,5.9
'S Leg, E Side - 50 m',-21.4,-177.1,5.9
'S Leg, E Side-Midblk',-239.4,-554.6,5.9
'S Leg, W Side-Corner',-69.4,-4.2,5.9
'S Leg, W Side - 25 m',-105.4,-66.6,5.9
'S Leg, W Side - 50 m',-146.4,-137.6,5.9
'S Leg, W Side-Midblk',-364.4,-515.1,5.9
'E Leg, N Side - 25 m',157.8,-8.5,5.9
'E Leg, N Side - 50 m',234.9,-36.5,5.9
'E Leg, N Side-Midblk',644.6,-185.7,5.9
'W Leg, N Side - 25 m',-103.8,75.4,5.9
'W Leg, N Side - 50 m',-183.0,96.7,5.9
'W Leg, N Side-Midblk',-604.1,209.5,5.9
'E Leg, S Side - 25 m',123.3,-68.3,5.9
'E Leg, S Side - 50 m',200.4,-96.3,5.9
'E Leg, S Side-Midblk',610.0,-245.4,5.9
'W Leg, S Side - 25 m',-139.0,14.5,5.9
'W Leg, S Side - 50 m',-218.2,35.7,5.9
'W Leg, S Side-Midblk',-639.3,148.5,5.9
'2025 US29 & Outer Loop Ramp (IS.56)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-21,12,579,1051,4147,2.23,0.0,67.7
2
'N Leg App - Queue','AG',-3,43,579,1051,0.0,48.0,4
120,62,2,4147,3.92,1600,1,3
1
'N Leg Dep - FreeFlow','AG',26,-15,626,1024,5184,2.23,0.0,79.7
1
'S Leg App - FreeFlow','AG',26,-15,-574,-1054,5184,2.23,0.0,79.7
2
'S Leg App - Queue','AG',20,-25,-574,-1054,0.0,60.0,5
120,62,2,5184,3.92,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-21,12,-621,-1027,4147,2.23,0.0,67.7
1
'E Leg App - FreeFlow','AG',5,17,1134,-394,6600,4.08,0.0,55.7
2
'E Leg App - Queue','AG',63,-4,1134,-394,0.0,36.0,3
120,62,2,6600,3.77,1600,1,3
1
'E Leg Dep - FreeFlow','AG',-2,-6,1126,-416,2200,4.08,0.0,31.7
1
'W Leg App - FreeFlow','AG',-2,-6,-1161,305,2200,2.03,0.0,31.7
1
'W Leg Dep - FreeFlow','AG',5,17,-1154,328,6600,2.03,0.0,55.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface
CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 US29 & Outer Loop Ramp (IS.56)

DATE : 2/ 8/19
TIME : 14:15:58

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-21.0	12.0	579.0	1051.0	*	1200.	30.	AG	4147.	2.2	0.0	67.7		
2. N Leg App - Queue	*	-3.0	43.0	1821.7	3203.3	*	3649.	30.	AG	22.	100.0	0.0	48.0	1.44	185.4
3. N Leg Dep - FreeFlow	*	26.0	-15.0	626.0	1024.0	*	1200.	30.	AG	5184.	2.2	0.0	79.7		
4. S Leg App - FreeFlow	*	26.0	-15.0	-574.0	-1054.0	*	1200.	210.	AG	5184.	2.2	0.0	79.7		
5. S Leg App - Queue	*	20.0	-25.0	-1804.4	-3185.5	*	3649.	210.	AG	27.	100.0	0.0	60.0	1.44	185.4
6. S Leg Dep - FreeFlow	*	-21.0	12.0	-621.0	-1027.0	*	1200.	210.	AG	4147.	2.2	0.0	67.7		
7. E Leg App - FreeFlow	*	5.0	17.0	1134.0	-394.0	*	1201.	110.	AG	6600.	4.1	0.0	55.7		
8. E Leg App - Queue	*	63.0	-4.0	14826.3	-5380.0	*	*****	110.	AG	16.	100.0	0.0	36.0	3.06	798.1
9. E Leg Dep - FreeFlow	*	-2.0	-6.0	1126.0	-416.0	*	1200.	110.	AG	2200.	4.1	0.0	31.7		
10. W Leg App - FreeFlow	*	-2.0	-6.0	-1161.0	305.0	*	1200.								

285. AG 2200. 2.0 0.0 31.7
     11. W Leg Dep - FreeFlow* 5.0 17.0 -1154.0 328.0 * 1200.
285. AG 6600. 2.0 0.0 55.7

JOB: I-495 & I-270 MLS RUN: 2025 US29 & Outer Loop Ramp (IS.56)

DATE : 2/ 8/19
TIME : 14:15:58

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	*	120	62	2.0	4147	1600	3.92	1	3
5. S Leg App - Queue	*	120	62	2.0	5184	1600	3.92	1	3
8. E Leg App - Queue	*	120	62	2.0	6600	1600	3.77	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	90.1	16.1	5.9	*
2. N Leg, E Side - 25 m	*	126.2	78.5	5.9	*
3. N Leg, E Side - 50 m	*	167.2	149.5	5.9	*
4. N Leg, E Side-Midblk	*	385.1	527.1	5.9	*
5. N Leg, W Side-Corner	*	-34.2	56.8	5.9	*
6. N Leg, W Side - 25 m	*	1.8	119.2	5.9	*
7. N Leg, W Side - 50 m	*	42.8	190.2	5.9	*
8. N Leg, W Side-Midblk	*	260.8	567.7	5.9	*
9. S Leg, E Side-Corner	*	55.6	-43.7	5.9	*
10. S Leg, E Side - 25 m	*	19.6	-106.0	5.9	*
11. S Leg, E Side - 50 m	*	-21.4	-177.1	5.9	*
12. S Leg, E Side-Midblk	*	-239.4	-554.6	5.9	*
13. S Leg, W Side-Corner	*	-69.4	-4.2	5.9	*
14. S Leg, W Side - 25 m	*	-105.4	-66.6	5.9	*

15. S Leg, W Side - 50 m *	-146.4	-137.6	5.9	*
16. S Leg, W Side-Midblk *	-364.4	-515.1	5.9	*
17. E Leg, N Side - 25 m *	157.8	-8.5	5.9	*
18. E Leg, N Side - 50 m *	234.9	-36.5	5.9	*
19. E Leg, N Side-Midblk *	644.6	-185.7	5.9	*
20. W Leg, N Side - 25 m *	-103.8	75.4	5.9	*
21. W Leg, N Side - 50 m *	-183.0	96.7	5.9	*
22. W Leg, N Side-Midblk *	-604.1	209.5	5.9	*
23. E Leg, S Side - 25 m *	123.3	-68.3	5.9	*
24. E Leg, S Side - 50 m *	200.4	-96.3	5.9	*
25. E Leg, S Side-Midblk *	610.0	-245.4	5.9	*
26. W Leg, S Side - 25 m *	-139.0	14.5	5.9	*
27. W Leg, S Side - 50 m *	-218.2	35.7	5.9	*
28. W Leg, S Side-Midblk *	-639.3	148.5	5.9	*

JOB: I-495 & I-270 MLS RUN: 2025 US29 & Outer Loop Ramp (IS.56)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR) *	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10. *	0.7000	0.7000	0.7000	0.7000	0.1000	0.1000	0.1000	0.1000	1.7000	1.2000	1.0000	0.9000	0.6000	0.4000	0.2000
20. *	0.8000	0.8000	0.8000	0.6000	0.2000	0.2000	0.2000	0.2000	1.8000	1.3000	1.1000	0.9000	0.9000	0.5000	0.3000
30. *	0.6000	0.6000	0.6000	0.5000	0.6000	0.6000	0.6000	0.6000	1.6000	1.1000	1.0000	0.9000	1.0000	1.0000	0.7000
40. *	0.2000	0.2000	0.2000	0.2000	0.8000	0.8000	0.8000	0.8000	1.2000	0.8000	0.5000	0.3000	1.3000	1.3000	1.0000
50. *	0.1000	0.1000	0.1000	0.1000	0.9000	0.9000	0.9000	0.8000	1.1000	0.6000	0.5000	0.2000	1.5000	1.1000	1.0000
60. *	0.1000	0.0000	0.0000	0.0000	0.8000	0.8000	0.8000	0.8000	1.2000	0.5000	0.4000	0.1000	1.2000	1.2000	1.0000

```
  70.  *  0.1000  0.0000  0.0000  0.0000  0.6000  0.6000  0.6000  0.6000  1.3000
0.5000  0.4000  0.1000  1.4000  1.0000  0.9000
  80.  *  0.1000  0.0000  0.0000  0.0000  0.6000  0.6000  0.6000  0.6000  1.5000
0.7000  0.4000  0.1000  1.5000  1.0000  0.9000
  90.  *  0.3000  0.0000  0.0000  0.0000  0.9000  0.6000  0.6000  0.6000  1.8000
0.7000  0.4000  0.0000  1.8000  1.2000  0.9000
 100.  *  0.8000  0.1000  0.0000  0.0000  1.3000  0.7000  0.6000  0.6000  1.8000
0.6000  0.3000  0.0000  2.0000  1.0000  0.8000
 110.  *  1.6000  0.3000  0.1000  0.0000  2.0000  1.0000  0.7000  0.6000  1.5000
0.3000  0.1000  0.0000  1.6000  0.8000  0.6000
 120.  *  1.9000  0.6000  0.3000  0.0000  2.1000  1.2000  0.9000  0.6000  0.6000
0.1000  0.0000  0.0000  1.0000  0.6000  0.5000
 130.  *  1.7000  0.6000  0.4000  0.0000  1.9000  1.3000  1.0000  0.6000  0.2000
0.0000  0.0000  0.0000  0.5000  0.5000  0.5000
 140.  *  1.5000  0.6000  0.4000  0.1000  1.5000  1.2000  1.0000  0.7000  0.1000
0.0000  0.0000  0.0000  0.5000  0.5000  0.5000
 150.  *  1.3000  0.6000  0.4000  0.1000  1.3000  1.2000  1.0000  0.7000  0.0000
0.0000  0.0000  0.0000  0.5000  0.5000  0.5000
 160.  *  1.2000  0.5000  0.4000  0.1000  1.2000  1.2000  1.0000  0.7000  0.0000
0.0000  0.0000  0.0000  0.5000  0.5000  0.5000
 170.  *  1.0000  0.5000  0.4000  0.1000  1.1000  1.1000  1.0000  0.7000  0.0000
0.0000  0.0000  0.0000  0.6000  0.6000  0.6000
 180.  *  1.0000  0.5000  0.4000  0.1000  1.1000  1.2000  1.1000  0.9000  0.0000
0.0000  0.0000  0.0000  0.8000  0.8000  0.8000
 190.  *  1.0000  0.6000  0.5000  0.2000  1.3000  1.1000  1.2000  0.9000  0.1000
0.1000  0.1000  0.1000  0.8000  0.8000  0.8000
 200.  *  1.4000  0.7000  0.6000  0.3000  1.4000  1.0000  1.1000  1.1000  0.2000
0.2000  0.2000  0.2000  0.8000  0.8000  0.8000
 210.  *  1.6000  1.2000  1.1000  0.8000  1.0000  0.8000  0.7000  0.8000  0.7000
0.7000  0.7000  0.6000  0.5000  0.5000  0.5000
 220.  *  1.9000  1.4000  1.2000  0.8000  0.7000  0.5000  0.3000  0.3000  0.9000
0.9000  0.9000  0.7000  0.2000  0.2000  0.2000
 230.  *  1.8000  1.3000  0.9000  0.8000  0.5000  0.3000  0.2000  0.2000  0.8000
0.8000  0.8000  0.8000  0.1000  0.1000  0.1000
 240.  *  1.7000  1.1000  0.8000  0.7000  0.6000  0.3000  0.2000  0.1000  0.7000
0.7000  0.7000  0.7000  0.0000  0.0000  0.0000
 250.  *  1.7000  1.1000  0.8000  0.7000  0.6000  0.3000  0.2000  0.1000  0.7000
0.7000  0.7000  0.7000  0.0000  0.0000  0.0000
 260.  *  1.9000  0.9000  0.8000  0.6000  0.7000  0.4000  0.2000  0.0000  0.6000
0.7000  0.7000  0.7000  0.0000  0.0000  0.0000
 270.  *  1.7000  0.9000  0.7000  0.5000  0.9000  0.4000  0.1000  0.0000  0.8000
0.6000  0.6000  0.6000  0.2000  0.0000  0.0000
 280.  *  1.7000  0.7000  0.6000  0.5000  0.9000  0.2000  0.1000  0.0000  1.0000
0.7000  0.6000  0.6000  0.5000  0.1000  0.0000
 290.  *  1.3000  0.6000  0.5000  0.5000  0.5000  0.1000  0.0000  0.0000  1.4000
0.9000  0.7000  0.6000  0.8000  0.3000  0.1000
 300.  *  0.9000  0.5000  0.5000  0.5000  0.2000  0.0000  0.0000  0.0000  1.7000
0.9000  0.7000  0.6000  0.9000  0.3000  0.1000
```

```
 310.  *  0.6000  0.5000  0.5000  0.5000  0.1000  0.0000  0.0000  0.0000  1.7000
0.9000  0.9000  0.6000  0.7000  0.3000  0.3000
 320.  *  0.6000  0.5000  0.5000  0.5000  0.0000  0.0000  0.0000  0.0000  1.6000
0.8000  0.7000  0.6000  0.7000  0.3000  0.2000
 330.  *  0.6000  0.5000  0.5000  0.5000  0.0000  0.0000  0.0000  0.0000  1.6000
0.8000  0.7000  0.7000  0.6000  0.3000  0.1000
 340.  *  0.7000  0.6000  0.6000  0.6000  0.0000  0.0000  0.0000  0.0000  1.6000
0.9000  0.8000  0.8000  0.6000  0.3000  0.1000
 350.  *  0.7000  0.6000  0.6000  0.6000  0.0000  0.0000  0.0000  0.0000  1.6000
1.1000  0.7000  0.8000  0.5000  0.3000  0.1000
 360.  *  0.6000  0.6000  0.6000  0.6000  0.0000  0.0000  0.0000  0.0000  1.7000
1.3000  1.0000  0.8000  0.4000  0.3000  0.1000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  1.9000  1.4000  1.2000  0.8000  2.1000  1.3000  1.2000  1.1000  1.8000
1.3000  1.1000  0.9000  2.0000  1.3000  1.0000
 DEGR. *    120     220     220     210     120     130     190     200      90
360      20      30     100      40      40
```



```
      JOB: I-495 & I-270 MLS                                  RUN: 2025 US29 &
Outer Loop Ramp (IS.56)

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:  10.-360.

 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.2000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  1.3000  1.2000
1.0000  0.6000  0.6000  0.6000
  20.  *  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000  1.3000  1.2000
1.0000  0.6000  0.6000  0.6000
  30.  *  0.7000  0.1000  0.0000  0.0000  0.2000  0.0000  0.0000  1.1000  1.0000
1.0000  0.6000  0.4000  0.4000
```

```
  40.  *  1.0000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  1.0000  1.0000
1.0000  0.8000  0.7000  0.5000
  50.  *  0.9000  0.0000  0.0000  0.0000  0.4000  0.2000  0.0000  1.0000  1.0000
1.0000  1.0000  0.8000  0.6000
  60.  *  0.9000  0.1000  0.1000  0.1000  0.4000  0.2000  0.0000  1.2000  1.2000
1.2000  1.0000  0.8000  0.6000
  70.  *  0.7000  0.1000  0.1000  0.1000  0.4000  0.2000  0.2000  1.3000  1.3000
1.3000  1.0000  0.8000  0.8000
  80.  *  0.6000  0.1000  0.1000  0.1000  0.4000  0.3000  0.2000  1.5000  1.5000
1.5000  1.0000  1.0000  0.8000
  90.  *  0.5000  0.3000  0.3000  0.2000  0.4000  0.4000  0.3000  1.8000  1.8000
1.7000  1.3000  1.3000  1.0000
 100.  *  0.5000  0.8000  0.7000  0.6000  0.9000  0.9000  0.6000  1.8000  1.8000
1.7000  1.5000  1.3000  0.9000
 110.  *  0.5000  1.5000  1.5000  1.4000  1.5000  1.3000  1.1000  1.5000  1.4000
1.2000  1.1000  1.0000  0.7000
 120.  *  0.5000  1.9000  1.8000  1.7000  1.5000  1.4000  0.9000  0.6000  0.6000
0.6000  0.6000  0.6000  0.3000
 130.  *  0.5000  1.7000  1.7000  1.7000  1.3000  1.1000  0.7000  0.2000  0.2000
0.2000  0.2000  0.2000  0.0000
 140.  *  0.5000  1.5000  1.5000  1.5000  1.0000  0.8000  0.7000  0.1000  0.1000
0.1000  0.2000  0.2000  0.1000
 150.  *  0.5000  1.3000  1.3000  1.3000  0.8000  0.8000  0.7000  0.0000  0.0000
0.0000  0.2000  0.2000  0.1000
 160.  *  0.5000  1.2000  1.2000  1.2000  0.7000  0.7000  0.6000  0.0000  0.0000
0.0000  0.2000  0.2000  0.1000
 170.  *  0.6000  1.0000  1.0000  1.0000  0.9000  0.7000  0.5000  0.0000  0.0000
0.0000  0.4000  0.2000  0.0000
 180.  *  0.8000  1.0000  1.0000  1.0000  0.9000  0.7000  0.5000  0.0000  0.0000
0.0000  0.4000  0.2000  0.0000
 190.  *  0.7000  1.0000  1.0000  1.0000  0.9000  0.7000  0.5000  0.0000  0.0000
0.0000  0.4000  0.2000  0.0000
 200.  *  0.8000  1.1000  1.1000  1.1000  0.8000  0.7000  0.5000  0.0000  0.0000
0.0000  0.3000  0.2000  0.0000
 210.  *  0.5000  1.1000  1.0000  1.0000  0.7000  0.5000  0.5000  0.1000  0.0000
0.0000  0.2000  0.0000  0.0000
 220.  *  0.2000  1.4000  1.2000  1.0000  0.5000  0.5000  0.5000  0.4000  0.2000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.1000  1.4000  1.2000  1.0000  0.5000  0.5000  0.5000  0.4000  0.2000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  1.4000  1.3000  1.1000  0.6000  0.6000  0.6000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 250.  *  0.0000  1.6000  1.5000  1.4000  0.6000  0.6000  0.6000  0.3000  0.2000
0.1000  0.0000  0.0000  0.0000
 260.  *  0.0000  1.7000  1.6000  1.6000  0.7000  0.7000  0.7000  0.3000  0.3000
0.2000  0.0000  0.0000  0.0000
 270.  *  0.0000  1.8000  1.8000  1.8000  0.9000  0.9000  0.8000  0.4000  0.3000
0.3000  0.2000  0.2000  0.2000
```

```
 280.  *  0.0000  1.7000  1.7000  1.9000  0.8000  0.8000  0.8000  0.9000  0.7000
0.7000  0.5000  0.5000  0.4000
 290.  *  0.0000  1.5000  1.4000  1.4000  0.5000  0.5000  0.4000  1.3000  1.3000
1.3000  0.8000  0.8000  0.7000
 300.  *  0.0000  0.8000  0.8000  0.6000  0.2000  0.2000  0.2000  1.7000  1.5000
1.8000  0.9000  0.9000  0.8000
 310.  *  0.0000  0.5000  0.4000  0.3000  0.1000  0.1000  0.1000  1.6000  1.7000
1.8000  0.7000  0.7000  0.7000
 320.  *  0.0000  0.4000  0.3000  0.2000  0.0000  0.0000  0.1000  1.6000  1.5000
1.6000  0.7000  0.7000  0.7000
 330.  *  0.1000  0.4000  0.3000  0.2000  0.0000  0.0000  0.0000  1.5000  1.5000
1.4000  0.6000  0.6000  0.6000
 340.  *  0.1000  0.4000  0.3000  0.2000  0.0000  0.0000  0.0000  1.5000  1.4000
1.3000  0.6000  0.6000  0.6000
 350.  *  0.1000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  1.3000  1.2000
1.1000  0.5000  0.5000  0.5000
 360.  *  0.1000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  1.3000  1.2000
1.0000  0.4000  0.4000  0.4000

------*-------------------------------------------------------------------------
---------------------------
 MAX   *  1.0000  1.9000  1.8000  1.9000  1.5000  1.4000  1.1000  1.8000  1.8000
1.8000  1.5000  1.3000  1.0000
 DEGR. *     40     120     270     280     110     120     110      90      90
300     100      90      90

 THE HIGHEST CONCENTRATION OF   2.1000 PPM OCCURRED AT RECEPTOR     5.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
4,6,3,2,2200,2200,2200,2200,2200,2200,2200,2200,2200,2200,1036.66666666667,1037,2200
,2200,1036.66666666667,1037,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1
200,1200,0,0,1200,-1200,0,0,0,0,0,0,-20,-20,-45,-20,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',42.9,51.8,5.9
'N Leg, E Side - 25 m',18.2,119.5,5.9
'N Leg, E Side - 50 m',-9.8,196.5,5.9
'N Leg, E Side-Midblk',-158.9,606.2,5.9
'N Leg, W Side-Corner',-76.8,-28.7,5.9
'N Leg, W Side - 25 m',-101.4,39.0,5.9
'N Leg, W Side - 50 m',-129.5,116.0,5.9
'N Leg, W Side-Midblk',-278.6,525.7,5.9
'S Leg, E Side-Corner',70.2,-23.4,5.9
'S Leg, E Side - 25 m',94.9,-91.1,5.9
'S Leg, E Side - 50 m',122.9,-168.1,5.9
'S Leg, E Side-Midblk',272.0,-577.8,5.9
'S Leg, W Side-Corner',-46.6,-111.7,5.9
'S Leg, W Side - 25 m',-22.0,-179.3,5.9
'S Leg, W Side - 50 m',6.1,-256.4,5.9
'S Leg, W Side-Midblk',155.2,-666.1,5.9
'E Leg, N Side - 25 m',110.6,76.4,5.9
'E Leg, N Side - 50 m',187.6,104.5,5.9
'E Leg, N Side-Midblk',597.3,253.6,5.9
'W Leg, N Side - 25 m',-127.7,-79.7,5.9
'W Leg, N Side - 50 m',-185.7,-137.6,5.9
'W Leg, N Side-Midblk',-494.0,-445.9,5.9
'E Leg, S Side - 25 m',137.9,1.2,5.9
'E Leg, S Side - 50 m',215.0,29.3,5.9
'E Leg, S Side-Midblk',624.7,178.4,5.9
'W Leg, S Side - 25 m',-97.5,-162.6,5.9
'W Leg, S Side - 50 m',-155.5,-220.6,5.9
'W Leg, S Side-Midblk',-463.8,-528.9,5.9
'2040 Build MD5 & Auth Rd (IS.7)',9,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-34,-12,-444,1115,13200,.88,0.0,91.7
1
'N Leg Dep - FreeFlow','AG',23,8,-388,1136,8800,.62,0.0,67.7
1
'S Leg App - FreeFlow','AG',23,8,433,-1119,8800,1.57,0.0,67.7
1
'S Leg Dep - FreeFlow','AG',-34,-12,377,-1140,13200,.62,0.0,91.7
1
'E Leg App - FreeFlow','AG',-7,10,1124,422,2074,.73,0.0,43.7
2
'E Leg App - Queue','AG',41,28,1124,422,0.0,24.0,2
120,62,2,2074,.99,1600,1,3
```

```
1
'E Leg Dep - FreeFlow','AG',10,-16,1134,394,3111,1.14,0.0,55.7
1
'W Leg App - FreeFlow','AG',10,-16,-836,-861,2200,.64,0.0,55.7
1
'W Leg Dep - FreeFlow','AG',-7,10,-857,-840,4400,.64,0.0,43.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 Build MD5 & Auth Rd (IS.7)

DATE : 1/ 4/19
TIME : 13:46:16

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-34.0	-12.0	-444.0	1115.0	*	1199.	340.	AG	13200.	0.9	0.0	91.7		
2. N Leg Dep - FreeFlow	*	23.0	8.0	-388.0	1136.0	*	1201.	340.	AG	8800.	0.6	0.0	67.7		
3. S Leg App - FreeFlow	*	23.0	8.0	433.0	-1119.0	*	1199.	160.	AG	8800.	1.6	0.0	67.7		
4. S Leg Dep - FreeFlow	*	-34.0	-12.0	377.0	-1140.0	*	1201.	160.	AG	13200.	0.6	0.0	91.7		
5. E Leg App - FreeFlow	*	-7.0	10.0	1124.0	422.0	*	1204.	70.	AG	2074.	0.7	0.0	43.7		
6. E Leg App - Queue	*	41.0	28.0	3480.1	1279.2	*	3660.	70.	AG	3.	100.0	0.0	24.0	1.44	185.9
7. E Leg Dep - FreeFlow	*	10.0	-16.0	1134.0	394.0	*	1196.	70.	AG	3111.	1.1	0.0	55.7		
8. W Leg App - FreeFlow	*	10.0	-16.0	-836.0	-861.0	*	1196.	225.	AG	2200.	0.6	0.0	55.7		
9. W Leg Dep - FreeFlow	*	-7.0	10.0	-857.0	-840.0	*	1202.	225.	AG	4400.	0.6	0.0	43.7		

JOB: I-495 & I-270 MLS RUN: 2040 Build MD5 & Auth Rd (IS.7)

DATE : 1/ 4/19
TIME : 13:46:16

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC	SIGNAL TYPE	ARRIVAL RATE (gm/hr)
6. E Leg App - Queue	* 120	62	2.0	2074	1600	0.99	1	3

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	* 42.9	51.8	5.9
2. N Leg, E Side - 25 m	* 18.2	119.5	5.9
3. N Leg, E Side - 50 m	* -9.8	196.5	5.9
4. N Leg, E Side-Midblk	* -158.9	606.2	5.9
5. N Leg, W Side-Corner	* -76.8	-28.7	5.9
6. N Leg, W Side - 25 m	* -101.4	39.0	5.9
7. N Leg, W Side - 50 m	* -129.5	116.0	5.9
8. N Leg, W Side-Midblk	* -278.6	525.7	5.9
9. S Leg, E Side-Corner	* 70.2	-23.4	5.9
10. S Leg, E Side - 25 m	* 94.9	-91.1	5.9
11. S Leg, E Side - 50 m	* 122.9	-168.1	5.9
12. S Leg, E Side-Midblk	* 272.0	-577.8	5.9
13. S Leg, W Side-Corner	* -46.6	-111.7	5.9
14. S Leg, W Side - 25 m	* -22.0	-179.3	5.9
15. S Leg, W Side - 50 m	* 6.1	-256.4	5.9
16. S Leg, W Side-Midblk	* 155.2	-666.1	5.9
17. E Leg, N Side - 25 m	* 110.6	76.4	5.9
18. E Leg, N Side - 50 m	* 187.6	104.5	5.9
19. E Leg, N Side-Midblk	* 597.3	253.6	5.9
20. W Leg, N Side - 25 m	* -127.7	-79.7	5.9
21. W Leg, N Side - 50 m	* -185.7	-137.6	5.9
22. W Leg, N Side-Midblk	* -494.0	-445.9	5.9

23. E Leg, S Side - 25 m *	137.9	1.2	5.9	*
24. E Leg, S Side - 50 m *	215.0	29.3	5.9	*
25. E Leg, S Side-Midblk *	624.7	178.4	5.9	*
26. W Leg, S Side - 25 m *	-97.5	-162.6	5.9	*
27. W Leg, S Side - 50 m *	-155.5	-220.6	5.9	*
28. W Leg, S Side-Midblk *	-463.8	-528.9	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) * 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.1000	0.2000	0.1000	0.1000	0.5000	0.6000	0.5000
20.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.5000	0.5000	0.5000	0.1000	0.1000	0.0000	0.0000	0.6000	0.5000	0.5000
30.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.1000	0.1000	0.0000	0.0000	0.3000	0.4000	0.4000
40.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.4000	0.4000	0.4000	0.2000	0.1000	0.0000	0.0000	0.5000	0.5000	0.4000
50.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.2000	0.1000	0.0000	0.0000	0.5000	0.5000	0.4000
60.	* 0.0000	0.0000	0.0000	0.0000	0.7000	0.4000	0.4000	0.4000	0.2000	0.1000	0.0000	0.0000	0.5000	0.4000	0.4000
70.	* 0.2000	0.0000	0.0000	0.0000	0.7000	0.4000	0.4000	0.4000	0.2000	0.0000	0.0000	0.0000	0.5000	0.4000	0.4000
80.	* 0.2000	0.0000	0.0000	0.0000	0.7000	0.5000	0.4000	0.4000	0.1000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000
90.	* 0.2000	0.1000	0.0000	0.0000	0.6000	0.5000	0.4000	0.4000	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000
100.	* 0.2000	0.1000	0.0000	0.0000	0.5000	0.6000	0.4000	0.4000	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000

110. * 0.2000 0.1000 0.0000 0.0000 0.5000 0.4000 0.4000 0.4000 0.0000
0.0000 0.0000 0.0000 0.4000 0.4000 0.4000
120. * 0.2000 0.0000 0.0000 0.0000 0.5000 0.6000 0.6000 0.5000 0.0000
0.0000 0.0000 0.0000 0.5000 0.5000 0.5000
130. * 0.1000 0.0000 0.0000 0.0000 0.7000 0.5000 0.7000 0.5000 0.1000
0.1000 0.1000 0.1000 0.6000 0.6000 0.6000
140. * 0.2000 0.0000 0.0000 0.0000 0.8000 0.7000 0.6000 0.6000 0.1000
0.1000 0.1000 0.1000 0.7000 0.7000 0.7000
150. * 0.4000 0.3000 0.2000 0.2000 0.7000 0.7000 0.7000 0.8000 0.3000
0.3000 0.3000 0.3000 0.6000 0.6000 0.6000
160. * 0.9000 0.6000 0.6000 0.5000 0.5000 0.4000 0.5000 0.6000 0.7000
0.7000 0.7000 0.7000 0.4000 0.4000 0.4000
170. * 1.0000 0.8000 0.6000 0.7000 0.3000 0.2000 0.2000 0.2000 1.0000
1.0000 0.9000 0.8000 0.2000 0.1000 0.1000
180. * 0.9000 0.7000 0.5000 0.6000 0.2000 0.0000 0.1000 0.1000 0.9000
0.9000 0.9000 0.9000 0.1000 0.1000 0.1000
190. * 0.8000 0.5000 0.5000 0.5000 0.1000 0.1000 0.0000 0.0000 0.8000
0.8000 0.8000 0.8000 0.0000 0.0000 0.0000
200. * 0.8000 0.4000 0.4000 0.4000 0.1000 0.1000 0.0000 0.0000 0.7000
0.7000 0.7000 0.7000 0.0000 0.0000 0.0000
210. * 0.6000 0.5000 0.4000 0.4000 0.2000 0.1000 0.0000 0.0000 0.7000
0.7000 0.7000 0.7000 0.0000 0.0000 0.0000
220. * 0.7000 0.5000 0.4000 0.4000 0.2000 0.0000 0.0000 0.0000 0.6000
0.6000 0.6000 0.6000 0.1000 0.0000 0.0000
230. * 0.5000 0.3000 0.3000 0.4000 0.1000 0.0000 0.0000 0.0000 0.5000
0.5000 0.5000 0.5000 0.2000 0.0000 0.0000
240. * 0.5000 0.4000 0.4000 0.4000 0.1000 0.0000 0.0000 0.0000 0.6000
0.5000 0.5000 0.5000 0.2000 0.0000 0.0000
250. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.7000
0.5000 0.5000 0.5000 0.2000 0.0000 0.0000
260. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.7000
0.5000 0.5000 0.5000 0.2000 0.0000 0.0000
270. * 0.4000 0.4000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.7000
0.5000 0.5000 0.5000 0.2000 0.0000 0.0000
280. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.7000
0.5000 0.6000 0.6000 0.1000 0.0000 0.0000
290. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.7000
0.5000 0.7000 0.7000 0.1000 0.0000 0.0000
300. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.7000
0.7000 0.7000 0.7000 0.1000 0.0000 0.0000
310. * 0.5000 0.5000 0.5000 0.5000 0.0000 0.0000 0.0000 0.0000 0.7000
0.8000 0.7000 0.8000 0.1000 0.0000 0.0000
320. * 0.6000 0.6000 0.6000 0.5000 0.1000 0.1000 0.1000 0.1000 0.9000
0.8000 0.9000 0.9000 0.1000 0.0000 0.0000
330. * 0.5000 0.5000 0.5000 0.5000 0.2000 0.2000 0.2000 0.2000 0.8000
0.7000 0.8000 0.9000 0.3000 0.2000 0.2000
340. * 0.3000 0.3000 0.3000 0.3000 0.5000 0.4000 0.4000 0.4000 0.6000
0.6000 0.6000 0.8000 0.6000 0.5000 0.5000

```
 350.  *  0.1000  0.1000  0.1000  0.1000  0.6000  0.6000  0.6000  0.6000  0.3000
0.4000  0.3000  0.3000  0.6000  0.6000  0.6000
 360.  *  0.0000  0.0000  0.0000  0.0000  0.6000  0.6000  0.6000  0.6000  0.1000
0.2000  0.1000  0.1000  0.8000  0.6000  0.6000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.0000  0.8000  0.6000  0.7000  0.8000  0.7000  0.7000  0.8000  1.0000
1.0000  0.9000  0.9000  0.8000  0.7000  0.7000
 DEGR. *    170     170     160     170     140     150     130     150     170
170     320     330     360     140     140
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.6000  0.0000  0.0000  0.0000  0.3000  0.3000  0.1000  0.1000  0.1000
0.1000  0.5000  0.4000  0.3000
  20.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.1000  0.1000
0.1000  0.5000  0.3000  0.3000
  30.  *  0.4000  0.0000  0.0000  0.0000  0.3000  0.1000  0.1000  0.1000  0.1000
0.1000  0.4000  0.4000  0.2000
  40.  *  0.4000  0.0000  0.0000  0.0000  0.4000  0.2000  0.1000  0.2000  0.2000
0.2000  0.3000  0.3000  0.2000
  50.  *  0.4000  0.0000  0.0000  0.0000  0.3000  0.2000  0.2000  0.2000  0.2000
0.2000  0.3000  0.2000  0.0000
  60.  *  0.4000  0.0000  0.0000  0.0000  0.5000  0.4000  0.3000  0.2000  0.2000
0.2000  0.3000  0.2000  0.1000
  70.  *  0.4000  0.2000  0.2000  0.2000  0.4000  0.4000  0.2000  0.2000  0.2000
0.2000  0.3000  0.2000  0.1000
```

```
  80.  *  0.4000  0.2000  0.2000  0.2000  0.4000  0.3000  0.2000  0.1000  0.1000
0.1000  0.3000  0.2000  0.1000
  90.  *  0.4000  0.2000  0.2000  0.2000  0.3000  0.3000  0.2000  0.0000  0.0000
0.0000  0.2000  0.2000  0.1000
 100.  *  0.4000  0.2000  0.2000  0.2000  0.4000  0.3000  0.2000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
 110.  *  0.4000  0.2000  0.2000  0.2000  0.4000  0.3000  0.2000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
 120.  *  0.5000  0.2000  0.2000  0.2000  0.4000  0.3000  0.1000  0.0000  0.0000
0.0000  0.3000  0.2000  0.0000
 130.  *  0.5000  0.1000  0.1000  0.1000  0.5000  0.3000  0.1000  0.0000  0.0000
0.0000  0.4000  0.2000  0.0000
 140.  *  0.5000  0.1000  0.1000  0.1000  0.5000  0.3000  0.1000  0.0000  0.0000
0.0000  0.4000  0.2000  0.0000
 150.  *  0.4000  0.1000  0.1000  0.1000  0.3000  0.3000  0.1000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 160.  *  0.4000  0.3000  0.2000  0.2000  0.3000  0.1000  0.1000  0.1000  0.0000
0.0000  0.1000  0.0000  0.0000
 170.  *  0.1000  0.4000  0.2000  0.1000  0.1000  0.1000  0.1000  0.3000  0.1000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.1000  0.5000  0.4000  0.1000  0.1000  0.1000  0.1000  0.4000  0.3000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  0.5000  0.4000  0.1000  0.1000  0.1000  0.1000  0.4000  0.3000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.5000  0.5000  0.3000  0.1000  0.1000  0.1000  0.3000  0.3000
0.1000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.5000  0.5000  0.3000  0.2000  0.2000  0.2000  0.3000  0.3000
0.1000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.5000  0.4000  0.3000  0.2000  0.2000  0.2000  0.3000  0.2000
0.1000  0.1000  0.1000  0.0000
 230.  *  0.0000  0.5000  0.4000  0.3000  0.1000  0.1000  0.1000  0.3000  0.2000
0.1000  0.2000  0.2000  0.1000
 240.  *  0.0000  0.5000  0.3000  0.2000  0.1000  0.1000  0.0000  0.4000  0.3000
0.2000  0.2000  0.2000  0.2000
 250.  *  0.0000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.4000  0.3000
0.2000  0.2000  0.2000  0.2000
 260.  *  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.2000  0.2000  0.2000  0.2000
 270.  *  0.0000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.3000  0.3000
0.2000  0.2000  0.2000  0.2000
 280.  *  0.0000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.4000  0.4000
0.3000  0.1000  0.1000  0.1000
 290.  *  0.0000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.3000  0.3000
0.2000  0.1000  0.1000  0.1000
 300.  *  0.0000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000
0.1000  0.1000  0.1000  0.1000
 310.  *  0.0000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000
0.1000  0.1000  0.1000  0.1000
```

```
 320.  *  0.1000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000
0.1000  0.1000  0.1000  0.1000
 330.  *  0.1000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000  0.2000
0.1000  0.1000  0.1000  0.1000
 340.  *  0.5000  0.1000  0.0000  0.0000  0.1000  0.0000  0.0000  0.3000  0.1000
0.1000  0.2000  0.1000  0.1000
 350.  *  0.7000  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.1000  0.1000
0.1000  0.4000  0.2000  0.1000
 360.  *  0.6000  0.0000  0.0000  0.0000  0.3000  0.3000  0.0000  0.1000  0.1000
0.1000  0.5000  0.5000  0.2000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.7000  0.5000  0.5000  0.3000  0.5000  0.4000  0.3000  0.4000  0.4000
0.3000  0.5000  0.5000  0.3000
 DEGR. *    350     180     200     200      60      60      60     180     260
280      10     360      10

 THE HIGHEST CONCENTRATION OF   1.0000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
5,5,4,3,2200,2200,2200,2200,2200,2200,2200,2200,1037,1037,2200,2200,1037,1037,2200,2
200,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1200,-1200,
0,0,0,0,0,0,-10,-10,-10,-10,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',60.9,57.5,5.9
'N Leg, E Side - 25 m',48.4,128.4,5.9
'N Leg, E Side - 50 m',34.2,209.2,5.9
'N Leg, E Side-Midblk',-41.5,638.5,5.9
'N Leg, W Side-Corner',-76.9,33.1,5.9
'N Leg, W Side - 25 m',-89.4,104.1,5.9
'N Leg, W Side - 50 m',-103.7,184.8,5.9
'N Leg, W Side-Midblk',-179.4,614.2,5.9
'S Leg, E Side-Corner',79.0,-45.0,5.9
'S Leg, E Side - 25 m',91.5,-115.9,5.9
'S Leg, E Side - 50 m',105.8,-196.7,5.9
'S Leg, E Side-Midblk',181.5,-626.0,5.9
'S Leg, W Side-Corner',-58.9,-69.3,5.9
'S Leg, W Side - 25 m',-46.4,-140.2,5.9
'S Leg, W Side - 50 m',-32.1,-221.0,5.9
'S Leg, W Side-Midblk',43.6,-650.3,5.9
'E Leg, N Side - 25 m',131.9,70.0,5.9
'E Leg, N Side - 50 m',212.7,84.2,5.9
'E Leg, N Side-Midblk',642.0,159.9,5.9
'W Leg, N Side - 25 m',-147.9,20.6,5.9
'W Leg, N Side - 50 m',-228.6,6.4,5.9
'W Leg, N Side-Midblk',-658.0,-69.3,5.9
'E Leg, S Side - 25 m',149.9,-32.5,5.9
'E Leg, S Side - 50 m',230.7,-18.2,5.9
'E Leg, S Side-Midblk',660.0,57.5,5.9
'W Leg, S Side - 25 m',-129.8,-81.8,5.9
'W Leg, S Side - 50 m',-210.6,-96.0,5.9
'W Leg, S Side-Midblk',-639.9,-171.7,5.9
'2040 MD97 & Inner Lp Rmp (IS.28)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-30,-5,-238,1177,5185,1.13,0.0,79.7
2
'N Leg App - Queue','AG',-36,30,-238,1177,0.0,60.0,5
120,62,2,5185,0.90,1600,1,3
1
'N Leg Dep - FreeFlow','AG',30,5,-179,1187,5185,0.72,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,5,238,-1177,5185,0.72,0.0,79.7
2
'S Leg App - Queue','AG',38,-42,238,-1177,0.0,60.0,5
120,62,2,5185,0.90,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-30,-5,179,-1187,5185,1.68,0.0,79.7
1
'E Leg App - FreeFlow','AG',-3,18,1179,226,6600,0.68,0.0,55.7
1
'E Leg Dep - FreeFlow','AG',4,-24,1186,185,8800,0.68,0.0,67.7
1
'W Leg App - FreeFlow','AG',4,-24,-1178,-232,8800,0.68,0.0,67.7
2
'W Leg App - Queue','AG',-55,-34,-1178,-232,0.0,48.0,4
120,62,2,8800,0.80,1600,1,3
1
'W Leg Dep - FreeFlow','AG',-3,18,-1185,-191,6600,1.68,0.0,55.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

2040 CO MD97 & Inner Loop Ramp
*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface
CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 MD97 & Inner Lp Rmp (IS.28)

DATE : 1/ 7/19
TIME : 8:14: 9

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-30.0	-5.0	-238.0	1177.0	*	1200.	350.	AG	5185.	1.1	0.0	79.7		
2. N Leg App - Queue	*	-36.0	30.0	-670.7	3634.2	*	3660.	350.	AG	6.	100.0	0.0	60.0	1.44	185.9
3. N Leg Dep - FreeFlow	*	30.0	5.0	-179.0	1187.0	*	1200.	350.	AG	5185.	0.7	0.0	79.7		
4. S Leg App - FreeFlow	*	30.0	5.0	238.0	-1177.0	*	1200.	170.	AG	5185.	0.7	0.0	79.7		
5. S Leg App - Queue	*	38.0	-42.0	673.1	-3646.1	*	3660.	170.	AG	6.	100.0	0.0	60.0	1.44	185.9
6. S Leg Dep - FreeFlow	*	-30.0	-5.0	179.0	-1187.0	*	1200.	170.	AG	5185.	1.7	0.0	79.7		
7. E Leg App - FreeFlow	*	-3.0	18.0	1179.0	226.0	*	1200.	80.	AG	6600.	0.7	0.0	55.7		
8. E Leg Dep - FreeFlow	*	4.0	-24.0	1186.0	185.0	*	1200.	80.	AG	8800.	0.7	0.0	67.7		
9. W Leg App - FreeFlow	*	4.0	-24.0	-1178.0	-232.0	*	1200.	260.	AG	8800.	0.7	0.0	67.7		
10. W Leg App - Queue	*	-55.0	-34.0	-15528.0	-2762.1	*	*****								

260. AG 4. 100.0 0.0 48.0 3.06 798.1
11. W Leg Dep - FreeFlow* -3.0 18.0 -1185.0 -191.0 * 1200.
260. AG 6600. 1.7 0.0 55.7

JOB: I-495 & I-270 MLS RUN: 2040 MD97 & Inner Lp Rmp (IS.28)

DATE : 1/ 7/19
TIME : 8:14: 9

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC	SIGNAL TYPE	ARRIVAL RATE (gm/hr)
2. N Leg App - Queue	*	120	62	2.0	5185	1600	0.90	1	3
5. S Leg App - Queue	*	120	62	2.0	5185	1600	0.90	1	3
10. W Leg App - Queue	*	120	62	2.0	8800	1600	0.80	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	60.9	57.5	5.9	*
2. N Leg, E Side - 25 m	*	48.4	128.4	5.9	*
3. N Leg, E Side - 50 m	*	34.2	209.2	5.9	*
4. N Leg, E Side-Midblk	*	-41.5	638.5	5.9	*
5. N Leg, W Side-Corner	*	-76.9	33.1	5.9	*
6. N Leg, W Side - 25 m	*	-89.4	104.1	5.9	*
7. N Leg, W Side - 50 m	*	-103.7	184.8	5.9	*
8. N Leg, W Side-Midblk	*	-179.4	614.2	5.9	*
9. S Leg, E Side-Corner	*	79.0	-45.0	5.9	*
10. S Leg, E Side - 25 m	*	91.5	-115.9	5.9	*
11. S Leg, E Side - 50 m	*	105.8	-196.7	5.9	*
12. S Leg, E Side-Midblk	*	181.5	-626.0	5.9	*
13. S Leg, W Side-Corner	*	-58.9	-69.3	5.9	*
14. S Leg, W Side - 25 m	*	-46.4	-140.2	5.9	*

15. S Leg, W Side - 50 m *	-32.1	-221.0	5.9	*
16. S Leg, W Side-Midblk *	43.6	-650.3	5.9	*
17. E Leg, N Side - 25 m *	131.9	70.0	5.9	*
18. E Leg, N Side - 50 m *	212.7	84.2	5.9	*
19. E Leg, N Side-Midblk *	642.0	159.9	5.9	*
20. W Leg, N Side - 25 m *	-147.9	20.6	5.9	*
21. W Leg, N Side - 50 m *	-228.6	6.4	5.9	*
22. W Leg, N Side-Midblk *	-658.0	-69.3	5.9	*
23. E Leg, S Side - 25 m *	149.9	-32.5	5.9	*
24. E Leg, S Side - 50 m *	230.7	-18.2	5.9	*
25. E Leg, S Side-Midblk *	660.0	57.5	5.9	*
26. W Leg, S Side - 25 m *	-129.8	-81.8	5.9	*
27. W Leg, S Side - 50 m *	-210.6	-96.0	5.9	*
28. W Leg, S Side-Midblk *	-639.9	-171.7	5.9	*

JOB: I-495 & I-270 MLS RUN: 2040 MD97 & Inner Lp Rmp (IS.28)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	* 1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.3000
0.1000	0.1000	0.0000	0.9000	0.7000	0.4000				
20.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000
0.2000	0.1000	0.0000	0.8000	0.5000	0.4000				
30.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000
0.2000	0.1000	0.0000	0.7000	0.4000	0.5000				
40.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000
0.2000	0.1000	0.0000	0.6000	0.6000	0.5000				
50.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000
0.2000	0.1000	0.0000	0.6000	0.5000	0.4000				
60.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.3000	0.3000	0.3000	0.4000
0.2000	0.1000	0.0000	0.6000	0.5000	0.4000				

```
  70.  *  0.1000  0.0000  0.0000  0.0000  0.5000  0.3000  0.3000  0.3000  0.4000
0.1000  0.0000  0.0000  0.7000  0.5000  0.4000
  80.  *  0.3000  0.0000  0.0000  0.0000  0.7000  0.3000  0.3000  0.3000  0.4000
0.1000  0.0000  0.0000  0.8000  0.5000  0.4000
  90.  *  0.5000  0.2000  0.0000  0.0000  1.0000  0.5000  0.3000  0.3000  0.1000
0.0000  0.0000  0.0000  0.5000  0.3000  0.3000
 100.  *  0.4000  0.2000  0.2000  0.0000  0.7000  0.5000  0.5000  0.3000  0.1000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 110.  *  0.4000  0.2000  0.2000  0.0000  0.7000  0.5000  0.5000  0.3000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 120.  *  0.3000  0.2000  0.2000  0.0000  0.8000  0.5000  0.5000  0.3000  0.0000
0.0000  0.0000  0.0000  0.4000  0.4000  0.4000
 130.  *  0.3000  0.2000  0.1000  0.0000  0.8000  0.4000  0.4000  0.3000  0.0000
0.0000  0.0000  0.0000  0.4000  0.4000  0.4000
 140.  *  0.2000  0.2000  0.1000  0.0000  0.8000  0.5000  0.2000  0.3000  0.0000
0.0000  0.0000  0.0000  0.4000  0.4000  0.4000
 150.  *  0.2000  0.2000  0.1000  0.0000  0.9000  0.7000  0.5000  0.4000  0.0000
0.0000  0.0000  0.0000  0.5000  0.5000  0.5000
 160.  *  0.3000  0.2000  0.1000  0.1000  0.9000  0.7000  0.6000  0.4000  0.1000
0.1000  0.1000  0.1000  0.5000  0.5000  0.5000
 170.  *  0.4000  0.5000  0.4000  0.2000  0.9000  0.6000  0.5000  0.3000  0.3000
0.3000  0.3000  0.1000  0.4000  0.4000  0.4000
 180.  *  0.6000  0.6000  0.3000  0.4000  0.5000  0.5000  0.4000  0.1000  0.4000
0.4000  0.4000  0.3000  0.2000  0.2000  0.2000
 190.  *  0.6000  0.6000  0.3000  0.3000  0.4000  0.3000  0.2000  0.0000  0.4000
0.4000  0.4000  0.4000  0.1000  0.1000  0.1000
 200.  *  0.6000  0.3000  0.4000  0.2000  0.4000  0.3000  0.2000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 210.  *  0.5000  0.5000  0.4000  0.3000  0.5000  0.3000  0.2000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 220.  *  0.7000  0.5000  0.4000  0.2000  0.5000  0.3000  0.2000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 230.  *  0.5000  0.5000  0.4000  0.2000  0.7000  0.3000  0.2000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 240.  *  0.8000  0.5000  0.4000  0.2000  0.8000  0.3000  0.2000  0.0000  0.2000
0.2000  0.2000  0.2000  0.1000  0.0000  0.0000
 250.  *  0.9000  0.5000  0.3000  0.2000  0.9000  0.3000  0.1000  0.0000  0.4000
0.2000  0.2000  0.2000  0.1000  0.0000  0.0000
 260.  *  0.8000  0.3000  0.2000  0.2000  0.7000  0.1000  0.0000  0.0000  0.7000
0.4000  0.2000  0.2000  0.4000  0.2000  0.0000
 270.  *  0.4000  0.2000  0.2000  0.2000  0.3000  0.0000  0.0000  0.0000  0.8000
0.4000  0.4000  0.2000  0.5000  0.2000  0.1000
 280.  *  0.2000  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.8000
0.5000  0.4000  0.2000  0.6000  0.3000  0.2000
 290.  *  0.2000  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.7000
0.5000  0.5000  0.3000  0.4000  0.3000  0.2000
 300.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.5000
0.4000  0.5000  0.3000  0.4000  0.2000  0.2000
```

```
 310.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.6000
0.4000  0.4000  0.3000  0.4000  0.2000  0.2000
 320.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.6000
0.5000  0.3000  0.3000  0.4000  0.2000  0.2000
 330.  *  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  0.6000
0.4000  0.4000  0.4000  0.4000  0.2000  0.3000
 340.  *  0.3000  0.3000  0.3000  0.3000  0.1000  0.1000  0.1000  0.1000  0.6000
0.4000  0.3000  0.3000  0.6000  0.4000  0.3000
 350.  *  0.3000  0.3000  0.3000  0.1000  0.2000  0.2000  0.2000  0.2000  0.5000
0.5000  0.4000  0.2000  0.7000  0.5000  0.5000
 360.  *  0.1000  0.1000  0.1000  0.1000  0.4000  0.4000  0.4000  0.3000  0.4000
0.2000  0.1000  0.1000  0.8000  0.6000  0.6000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  0.9000  0.6000  0.4000  0.4000  1.0000  0.7000  0.6000  0.4000  0.8000
0.5000  0.5000  0.4000  0.9000  0.7000  0.6000
 DEGR. *    250     180     170     180      90     150     160      10     270
280     290     190      10      10     360
```


JOB: I-495 & I-270 MLS RUN: 2040 MD97 & Inner Lp Rmp (IS.28)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.5000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.3000  0.3000
0.3000  0.6000  0.5000  0.4000
  20.  *  0.4000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.3000  0.3000
0.3000  0.6000  0.5000  0.4000
  30.  *  0.4000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.3000  0.3000
0.3000  0.5000  0.5000  0.4000
```

```
  40.  *  0.4000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.3000  0.3000
0.3000  0.5000  0.5000  0.4000
  50.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.3000  0.3000
0.3000  0.4000  0.5000  0.4000
  60.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.2000  0.1000  0.4000  0.4000
0.4000  0.6000  0.5000  0.6000
  70.  *  0.3000  0.1000  0.1000  0.1000  0.4000  0.3000  0.3000  0.4000  0.4000
0.4000  0.5000  0.6000  0.5000
  80.  *  0.4000  0.3000  0.3000  0.3000  0.6000  0.7000  0.6000  0.4000  0.4000
0.2000  0.4000  0.5000  0.3000
  90.  *  0.3000  0.5000  0.4000  0.3000  0.7000  0.8000  0.7000  0.1000  0.1000
0.1000  0.3000  0.3000  0.1000
 100.  *  0.3000  0.4000  0.4000  0.3000  1.0000  0.8000  0.8000  0.1000  0.1000
0.0000  0.1000  0.1000  0.0000
 110.  *  0.3000  0.4000  0.4000  0.4000  0.7000  0.7000  0.7000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 120.  *  0.4000  0.3000  0.3000  0.3000  0.6000  0.6000  0.5000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 130.  *  0.4000  0.3000  0.3000  0.3000  0.6000  0.6000  0.5000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 140.  *  0.4000  0.2000  0.2000  0.2000  0.7000  0.5000  0.4000  0.0000  0.0000
0.0000  0.3000  0.1000  0.0000
 150.  *  0.5000  0.2000  0.2000  0.2000  0.7000  0.5000  0.4000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 160.  *  0.4000  0.2000  0.2000  0.2000  0.6000  0.5000  0.4000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 170.  *  0.3000  0.2000  0.2000  0.2000  0.6000  0.5000  0.5000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 180.  *  0.2000  0.4000  0.2000  0.2000  0.4000  0.4000  0.4000  0.2000  0.0000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  0.4000  0.3000  0.2000  0.4000  0.4000  0.4000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.4000  0.3000  0.2000  0.4000  0.4000  0.4000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.5000  0.4000  0.3000  0.5000  0.5000  0.5000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.5000  0.4000  0.3000  0.5000  0.5000  0.5000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.5000  0.4000  0.4000  0.7000  0.7000  0.6000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.6000  0.6000  0.4000  0.8000  0.8000  0.7000  0.2000  0.1000
0.0000  0.1000  0.1000  0.0000
 250.  *  0.0000  0.5000  0.6000  0.4000  0.8000  0.7000  0.7000  0.4000  0.3000
0.1000  0.1000  0.1000  0.1000
 260.  *  0.0000  0.7000  0.5000  0.4000  0.6000  0.6000  0.6000  0.6000  0.5000
0.3000  0.4000  0.4000  0.3000
 270.  *  0.0000  0.4000  0.2000  0.1000  0.3000  0.3000  0.2000  0.7000  0.5000
0.5000  0.5000  0.5000  0.5000
```

```
 280.  *  0.0000  0.2000  0.0000  0.0000  0.1000  0.1000  0.1000  0.5000  0.5000
0.4000  0.6000  0.6000  0.5000
 290.  *  0.0000  0.2000  0.1000  0.0000  0.1000  0.1000  0.0000  0.5000  0.3000
0.3000  0.4000  0.4000  0.4000
 300.  *  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.3000  0.4000  0.4000  0.4000
 310.  *  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.5000  0.4000
0.3000  0.4000  0.4000  0.4000
 320.  *  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.5000  0.4000
0.3000  0.4000  0.4000  0.4000
 330.  *  0.1000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.5000  0.4000
0.3000  0.4000  0.4000  0.4000
 340.  *  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.5000  0.3000
0.3000  0.4000  0.4000  0.4000
 350.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.3000  0.3000
0.3000  0.5000  0.4000  0.4000
 360.  *  0.5000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.3000  0.3000
0.3000  0.5000  0.5000  0.4000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.5000  0.7000  0.6000  0.4000  1.0000  0.8000  0.8000  0.7000  0.5000
0.5000  0.6000  0.6000  0.6000
 DEGR. *     10     260     240     110     100      90     100     270     260
270      10      70      60

 THE HIGHEST CONCENTRATION OF   1.0000 PPM OCCURRED AT RECEPTOR     5.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
7,6,2,2,2200,2200,2200,2200,2200,2200,2200,2200,1036.85714285714,1036.83333333333,22
00,2200,1036.85714285714,1036.83333333333,2200,2200,12,12,12,12,10,10,10,10,0,0,-120
0,1200,0,0,1200,-1200,-1200,1200,0,0,1200,-1200,0,0,0,0,0,0,-5,5,10,0,0,0,0,0,0,0,0,
0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',97.3,34.0,5.9
'N Leg, E Side - 25 m',103.6,105.7,5.9
'N Leg, E Side - 50 m',110.8,187.5,5.9
'N Leg, E Side-Midblk',148.8,621.8,5.9
'N Leg, W Side-Corner',-78.1,48.3,5.9
'N Leg, W Side - 25 m',-71.8,120.0,5.9
'N Leg, W Side - 50 m',-64.7,201.7,5.9
'N Leg, W Side-Midblk',-26.7,636.0,5.9
'S Leg, E Side-Corner',97.3,-34.0,5.9
'S Leg, E Side - 25 m',103.6,-105.7,5.9
'S Leg, E Side - 50 m',110.8,-187.5,5.9
'S Leg, E Side-Midblk',148.8,-621.8,5.9
'S Leg, W Side-Corner',-80.5,-20.3,5.9
'S Leg, W Side - 25 m',-74.3,-92.1,5.9
'S Leg, W Side - 50 m',-67.1,-173.8,5.9
'S Leg, W Side-Midblk',-29.1,-608.1,5.9
'E Leg, N Side - 25 m',169.4,34.0,5.9
'E Leg, N Side - 50 m',251.4,34.0,5.9
'E Leg, N Side-Midblk',687.3,34.0,5.9
'W Leg, N Side - 25 m',-149.0,60.8,5.9
'W Leg, N Side - 50 m',-229.8,75.0,5.9
'W Leg, N Side-Midblk',-659.1,150.7,5.9
'E Leg, S Side - 25 m',169.4,-34.0,5.9
'E Leg, S Side - 50 m',251.4,-34.0,5.9
'E Leg, S Side-Midblk',687.3,-34.0,5.9
'W Leg, S Side - 25 m',-151.5,-7.8,5.9
'W Leg, S Side - 50 m',-232.2,6.4,5.9
'W Leg, S Side-Midblk',-661.6,82.1,5.9
'2040 Build MD187 & I-270 SB Ramp (IS.46)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-36,0,69,1199,6221,0.67,0.0,91.7
2
'N Leg App - Queue','AG',-34,27,69,1199,0.0,72.0,6
120,62,2,6221,0.90,1600,1,3
1
'N Leg Dep - FreeFlow','AG',42,0,146,1192,7258,0.89,0.0,103.7
1
'S Leg App - FreeFlow','AG',42,0,146,-1192,7258,0.89,0.0,103.7
2
'S Leg App - Queue','AG',44,-20,146,-1192,0.0,84.0,7
120,62,2,7258,0.90,1600,1,3
```

```
1
'S Leg Dep - FreeFlow','AG',-36,0,69,-1199,6221,0.67,0.0,91.7
1
'E Leg App - FreeFlow','AG',1,12,1200,12,4400,0.62,0.0,43.7
1
'E Leg Dep - FreeFlow','AG',-1,-12,1200,-12,4400,0.62,0.0,43.7
1
'W Leg App - FreeFlow','AG',-1,-12,-1184,197,4400,1.88,0.0,43.7
2
'W Leg App - Queue','AG',-73,1,-1184,197,0.0,24.0,2
120,62,2,4400,0.80,1600,1,3
1
'W Leg Dep - FreeFlow','AG',1,12,-1180,220,4400,1.88,0.0,43.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

2040 CO MD187 & I270 SB Ramp
*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface
CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 Build MD187 & I-270 SB Ramp (IS.46)

DATE : 1/15/19
TIME : 9:14:13

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-36.0	0.0	69.0	1199.0	*	1204.	5.	AG	6221.	0.7	0.0	91.7		
2. N Leg App - Queue	*	-34.0	27.0	285.5	3662.3	*	3649.	5.	AG	7.	100.0	0.0	72.0	1.44	185.4
3. N Leg Dep - FreeFlow	*	42.0	0.0	146.0	1192.0	*	1197.	5.	AG	7258.	0.9	0.0	****		
4. S Leg App - FreeFlow	*	42.0	0.0	146.0	-1192.0	*	1197.	175.	AG	7258.	0.9	0.0	****		
5. S Leg App - Queue	*	44.0	-20.0	360.4	-3655.5	*	3649.	175.	AG	9.	100.0	0.0	84.0	1.44	185.4
6. S Leg Dep - FreeFlow	*	-36.0	0.0	69.0	-1199.0	*	1204.	175.	AG	6221.	0.7	0.0	91.7		
7. E Leg App - FreeFlow	*	1.0	12.0	1200.0	12.0	*	1199.	90.	AG	4400.	0.6	0.0	43.7		
8. E Leg Dep - FreeFlow	*	-1.0	-12.0	1200.0	-12.0	*	1201.	90.	AG	4400.	0.6	0.0	43.7		
9. W Leg App - FreeFlow	*	-1.0	-12.0	-1184.0	197.0	*	1201.	280.	AG	4400.	1.9	0.0	43.7		
10. W Leg App - Queue	*	-73.0	1.0	-15545.7	2730.7	*	*****								

280. AG 2. 100.0 0.0 24.0 3.06 798.1
11. W Leg Dep - FreeFlow* 1.0 12.0 -1180.0 220.0 * 1199.
280. AG 4400. 1.9 0.0 43.7

JOB: I-495 & I-270 MLS RUN: 2040 Build MD187 & I-270 SB Ramp (IS.46)

DATE : 1/15/19
TIME : 9:14:13

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	*	120	62	2.0	6221	1600	0.90	1	3
5. S Leg App - Queue	*	120	62	2.0	7258	1600	0.90	1	3
10. W Leg App - Queue	*	120	62	2.0	4400	1600	0.80	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	97.3	34.0	5.9	*
2. N Leg, E Side - 25 m	*	103.6	105.7	5.9	*
3. N Leg, E Side - 50 m	*	110.8	187.5	5.9	*
4. N Leg, E Side-Midblk	*	148.8	621.8	5.9	*
5. N Leg, W Side-Corner	*	-78.1	48.3	5.9	*
6. N Leg, W Side - 25 m	*	-71.8	120.0	5.9	*
7. N Leg, W Side - 50 m	*	-64.7	201.7	5.9	*
8. N Leg, W Side-Midblk	*	-26.7	636.0	5.9	*
9. S Leg, E Side-Corner	*	97.3	-34.0	5.9	*
10. S Leg, E Side - 25 m	*	103.6	-105.7	5.9	*
11. S Leg, E Side - 50 m	*	110.8	-187.5	5.9	*
12. S Leg, E Side-Midblk	*	148.8	-621.8	5.9	*
13. S Leg, W Side-Corner	*	-80.5	-20.3	5.9	*
14. S Leg, W Side - 25 m	*	-74.3	-92.1	5.9	*

15. S Leg, W Side - 50 m *	-67.1	-173.8	5.9	*
16. S Leg, W Side-Midblk *	-29.1	-608.1	5.9	*
17. E Leg, N Side - 25 m *	169.4	34.0	5.9	*
18. E Leg, N Side - 50 m *	251.4	34.0	5.9	*
19. E Leg, N Side-Midblk *	687.3	34.0	5.9	*
20. W Leg, N Side - 25 m *	-149.0	60.8	5.9	*
21. W Leg, N Side - 50 m *	-229.8	75.0	5.9	*
22. W Leg, N Side-Midblk *	-659.1	150.7	5.9	*
23. E Leg, S Side - 25 m *	169.4	-34.0	5.9	*
24. E Leg, S Side - 50 m *	251.4	-34.0	5.9	*
25. E Leg, S Side-Midblk *	687.3	-34.0	5.9	*
26. W Leg, S Side - 25 m *	-151.5	-7.8	5.9	*
27. W Leg, S Side - 50 m *	-232.2	6.4	5.9	*
28. W Leg, S Side-Midblk *	-661.6	82.1	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR) *	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10. *	0.2000	0.2000	0.2000	0.1000	0.3000	0.3000	0.3000	0.2000	0.3000	0.1000	0.1000	0.1000	0.8000	0.5000	0.5000
20. *	0.1000	0.1000	0.1000	0.1000	0.3000	0.3000	0.3000	0.3000	0.2000	0.0000	0.0000	0.0000	0.8000	0.5000	0.3000
30. *	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.2000	0.0000	0.0000	0.0000	0.7000	0.5000	0.3000
40. *	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.7000	0.3000	0.2000
50. *	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.7000	0.3000	0.2000
60. *	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.7000	0.2000	0.2000

```
  70.  *  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000  0.2000  0.2000  0.3000
0.1000  0.0000  0.0000  0.7000  0.3000  0.2000
  80.  *  0.1000  0.0000  0.0000  0.0000  0.3000  0.2000  0.2000  0.2000  0.3000
0.0000  0.0000  0.0000  0.8000  0.3000  0.2000
  90.  *  0.2000  0.0000  0.0000  0.0000  0.4000  0.2000  0.2000  0.2000  0.2000
0.0000  0.0000  0.0000  0.7000  0.2000  0.2000
 100.  *  0.3000  0.0000  0.0000  0.0000  0.6000  0.2000  0.2000  0.2000  0.1000
0.0000  0.0000  0.0000  0.5000  0.2000  0.2000
 110.  *  0.3000  0.1000  0.0000  0.0000  0.7000  0.2000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.3000  0.2000  0.2000
 120.  *  0.2000  0.0000  0.0000  0.0000  0.6000  0.2000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.3000  0.2000  0.2000
 130.  *  0.2000  0.0000  0.0000  0.0000  0.6000  0.2000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 140.  *  0.2000  0.0000  0.0000  0.0000  0.8000  0.3000  0.2000  0.2000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 150.  *  0.2000  0.0000  0.0000  0.0000  0.8000  0.4000  0.3000  0.2000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 160.  *  0.2000  0.0000  0.0000  0.0000  0.8000  0.5000  0.2000  0.3000  0.1000
0.1000  0.1000  0.1000  0.3000  0.3000  0.3000
 170.  *  0.3000  0.1000  0.1000  0.1000  0.9000  0.5000  0.5000  0.3000  0.2000
0.2000  0.2000  0.1000  0.3000  0.3000  0.3000
 180.  *  0.4000  0.3000  0.2000  0.1000  0.6000  0.4000  0.5000  0.2000  0.3000
0.3000  0.3000  0.2000  0.1000  0.1000  0.1000
 190.  *  0.6000  0.4000  0.3000  0.2000  0.5000  0.2000  0.3000  0.1000  0.4000
0.4000  0.4000  0.4000  0.0000  0.0000  0.0000
 200.  *  0.6000  0.3000  0.4000  0.4000  0.5000  0.2000  0.2000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 210.  *  0.6000  0.3000  0.2000  0.3000  0.5000  0.2000  0.2000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 220.  *  0.5000  0.2000  0.4000  0.3000  0.5000  0.2000  0.2000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 230.  *  0.5000  0.4000  0.5000  0.3000  0.5000  0.2000  0.2000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 240.  *  0.6000  0.4000  0.5000  0.3000  0.5000  0.2000  0.2000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 250.  *  0.4000  0.5000  0.5000  0.3000  0.6000  0.3000  0.2000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 260.  *  0.7000  0.5000  0.5000  0.3000  0.8000  0.3000  0.2000  0.0000  0.4000
0.3000  0.3000  0.3000  0.1000  0.0000  0.0000
 270.  *  0.8000  0.5000  0.5000  0.3000  0.8000  0.2000  0.2000  0.0000  0.7000
0.3000  0.3000  0.3000  0.3000  0.0000  0.0000
 280.  *  0.6000  0.4000  0.3000  0.3000  0.6000  0.2000  0.0000  0.0000  0.8000
0.5000  0.3000  0.3000  0.7000  0.2000  0.0000
 290.  *  0.4000  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000  0.0000  0.6000
0.6000  0.5000  0.3000  0.8000  0.2000  0.2000
 300.  *  0.3000  0.3000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  0.7000
0.5000  0.5000  0.3000  0.8000  0.3000  0.2000
```

```
 310.  *  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  0.6000
0.4000  0.5000  0.3000  0.6000  0.3000  0.2000
 320.  *  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  0.5000
0.3000  0.4000  0.3000  0.5000  0.2000  0.2000
 330.  *  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  0.6000
0.3000  0.2000  0.3000  0.5000  0.2000  0.2000
 340.  *  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  0.6000
0.3000  0.4000  0.4000  0.5000  0.2000  0.2000
 350.  *  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.6000
0.4000  0.3000  0.2000  0.5000  0.2000  0.3000
 360.  *  0.3000  0.3000  0.3000  0.2000  0.1000  0.1000  0.1000  0.1000  0.4000
0.3000  0.2000  0.1000  0.6000  0.4000  0.4000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.8000  0.5000  0.5000  0.4000  0.9000  0.5000  0.5000  0.3000  0.8000
0.6000  0.5000  0.4000  0.8000  0.5000  0.5000
 DEGR. *    270     250     230     200     170     160     170      20     280
290     290     190      80      10      10
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.2000  0.2000
0.2000  0.6000  0.5000  0.5000
  20.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.2000  0.2000
0.2000  0.7000  0.5000  0.5000
  30.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.2000  0.2000
0.2000  0.7000  0.7000  0.5000
```

```
  40.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.2000  0.2000
0.2000  0.7000  0.7000  0.5000
  50.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.2000  0.2000
0.2000  0.7000  0.6000  0.5000
  60.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.2000  0.2000
0.2000  0.7000  0.6000  0.5000
  70.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.3000  0.3000
0.2000  0.8000  0.7000  0.6000
  80.  *  0.2000  0.1000  0.1000  0.1000  0.3000  0.2000  0.1000  0.3000  0.3000
0.3000  0.8000  0.6000  0.7000
  90.  *  0.2000  0.2000  0.2000  0.1000  0.3000  0.3000  0.3000  0.2000  0.2000
0.1000  0.7000  0.5000  0.7000
 100.  *  0.2000  0.3000  0.3000  0.3000  0.7000  0.4000  0.6000  0.1000  0.1000
0.1000  0.5000  0.4000  0.6000
 110.  *  0.2000  0.3000  0.3000  0.2000  0.5000  0.6000  0.7000  0.0000  0.0000
0.0000  0.3000  0.3000  0.3000
 120.  *  0.2000  0.2000  0.2000  0.2000  0.7000  0.7000  0.8000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
 130.  *  0.2000  0.2000  0.2000  0.2000  0.8000  0.7000  0.6000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 140.  *  0.2000  0.2000  0.2000  0.2000  0.7000  0.7000  0.5000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 150.  *  0.3000  0.2000  0.2000  0.2000  0.7000  0.7000  0.5000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 160.  *  0.3000  0.2000  0.2000  0.2000  0.7000  0.7000  0.5000  0.0000  0.0000
0.0000  0.2000  0.0000  0.0000
 170.  *  0.2000  0.2000  0.2000  0.2000  0.6000  0.5000  0.5000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 180.  *  0.1000  0.3000  0.2000  0.2000  0.5000  0.5000  0.5000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  0.3000  0.3000  0.2000  0.5000  0.5000  0.5000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.4000  0.3000  0.2000  0.5000  0.5000  0.5000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.3000  0.3000  0.2000  0.5000  0.5000  0.5000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.3000  0.3000  0.2000  0.5000  0.5000  0.5000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.3000  0.3000  0.2000  0.5000  0.5000  0.5000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.3000  0.3000  0.2000  0.5000  0.5000  0.5000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.4000  0.3000  0.2000  0.6000  0.6000  0.6000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.4000  0.4000  0.3000  0.8000  0.8000  0.8000  0.2000  0.2000
0.1000  0.1000  0.1000  0.1000
 270.  *  0.0000  0.6000  0.4000  0.4000  0.8000  0.8000  0.7000  0.4000  0.4000
0.2000  0.3000  0.3000  0.2000
```

```
 280.  *  0.0000  0.4000  0.4000  0.1000  0.6000  0.6000  0.5000  0.6000  0.4000
0.3000  0.6000  0.6000  0.5000
 290.  *  0.0000  0.2000  0.1000  0.0000  0.3000  0.3000  0.2000  0.5000  0.5000
0.2000  0.8000  0.8000  0.7000
 300.  *  0.0000  0.1000  0.1000  0.0000  0.1000  0.1000  0.1000  0.4000  0.3000
0.2000  0.8000  0.8000  0.8000
 310.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.2000  0.6000  0.6000  0.6000
 320.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.2000  0.5000  0.5000  0.5000
 330.  *  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.2000  0.5000  0.5000  0.5000
 340.  *  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000
0.2000  0.5000  0.5000  0.5000
 350.  *  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.2000  0.5000  0.5000  0.5000
 360.  *  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.2000
0.2000  0.5000  0.5000  0.5000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.3000  0.6000  0.4000  0.4000  0.8000  0.8000  0.8000  0.6000  0.5000
0.3000  0.8000  0.8000  0.8000
 DEGR. *     10     270     260     270     130     260     120     280     290
80      70     290     300

 THE HIGHEST CONCENTRATION OF   0.9000 PPM OCCURRED AT RECEPTOR     5.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
5,4,8,8,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.75,2200,2200,1036.8,1036
.75,2200,2200,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1
200,-1200,0,0,0,0,0,0,5,10,-5,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS ',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',91.2,114.4,5.9
'N Leg, E Side - 25 m',103.8,185.3,5.9
'N Leg, E Side - 50 m',118.0,266.1,5.9
'N Leg, E Side-Midblk',193.7,695.4,5.9
'N Leg, W Side-Corner',-40.8,102.8,5.9
'N Leg, W Side - 25 m',-28.3,173.8,5.9
'N Leg, W Side - 50 m',-14.0,254.5,5.9
'N Leg, W Side-Midblk',61.7,683.9,5.9
'S Leg, E Side-Corner',61.4,-101.0,5.9
'S Leg, E Side - 25 m',55.2,-172.8,5.9
'S Leg, E Side - 50 m',48.0,-254.5,5.9
'S Leg, E Side-Midblk',10.0,-688.8,5.9
'S Leg, W Side-Corner',-68.1,-112.4,5.9
'S Leg, W Side - 25 m',-74.3,-184.1,5.9
'S Leg, W Side - 50 m',-81.5,-265.8,5.9
'S Leg, W Side-Midblk',-119.5,-700.1,5.9
'E Leg, N Side - 25 m',163.0,120.7,5.9
'E Leg, N Side - 50 m',244.7,127.8,5.9
'E Leg, N Side-Midblk',679.0,165.8,5.9
'W Leg, N Side - 25 m',-112.5,96.6,5.9
'W Leg, N Side - 50 m',-194.2,89.4,5.9
'W Leg, N Side-Midblk',-628.5,51.4,5.9
'E Leg, S Side - 25 m',133.2,-94.8,5.9
'E Leg, S Side - 50 m',214.9,-87.6,5.9
'E Leg, S Side-Midblk',649.2,-49.6,5.9
'W Leg, S Side - 25 m',-139.8,-118.6,5.9
'W Leg, S Side - 50 m',-221.5,-125.8,5.9
'W Leg, S Side-Midblk',-655.8,-163.8,5.9
'2040 CO US29 & Direct Access Rmp (IS.58)',12,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-24,3,185,1186,4147,0.89,0.0,67.7
2
'N Leg App - Queue','AG',-7,99,185,1186,0.0,48.0,4
120,62,2,4147,0.90,1600,1,3
1
'N Leg Dep - FreeFlow','AG',30,-4,238,1177,5184,0.67,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,-4,-75,-1198,5184,2.26,0.0,79.7
2
'S Leg App - Queue','AG',22,-98,-75,-1198,0.0,60.0,5
120,62,2,5184,0.67,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-24,3,-128,-1193,4147,0.67,0.0,67.7
1
'E Leg App - FreeFlow','AG',0,48,1191,152,17600,2.80,0.0,115.7
2
'E Leg App - Queue','AG',56,53,1191,152,0.0,96.0,8
120,62,2,17600,0.80,1600,1,3
1
'E Leg Dep - FreeFlow','AG',0,-48,1200,57,17600,0.62,0.0,115.7
1
'W Leg App - FreeFlow','AG',0,-48,-1191,-152,17600,2.80,0.0,115.7
2
'W Leg App - Queue','AG',-44,-52,-1191,-152,0.0,96.0,8
120,62,2,17600,0.80,1600,1,3
1
'W Leg Dep - FreeFlow','AG',0,48,-1200,-57,17600,0.62,0.0,115.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface
♠ CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 CO US29 & Direct Access Rmp (IS.58)

DATE : 1/15/19
TIME : 12: 5:32

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-24.0	3.0	185.0	1186.0	*	1201.	10.	AG	4147.	0.9	0.0	67.7		
2. N Leg App - Queue	*	-7.0	99.0	627.8	3692.6	*	3649.	10.	AG	5.	100.0	0.0	48.0	1.44	185.4
3. N Leg Dep - FreeFlow	*	30.0	-4.0	238.0	1177.0	*	1199.	10.	AG	5184.	0.7	0.0	79.7		
4. S Leg App - FreeFlow	*	30.0	-4.0	-75.0	-1198.0	*	1199.	185.	AG	5184.	2.3	0.0	79.7		
5. S Leg App - Queue	*	22.0	-98.0	-298.6	-3733.2	*	3649.	185.	AG	5.	100.0	0.0	60.0	1.44	185.4
6. S Leg Dep - FreeFlow	*	-24.0	3.0	-128.0	-1193.0	*	1201.	185.	AG	4147.	0.7	0.0	67.7		
7. E Leg App - FreeFlow	*	0.0	48.0	1191.0	152.0	*	1196.	85.	AG	17600.	2.8	0.0	****		
8. E Leg App - Queue	*	56.0	53.0	15708.2	1418.3	*	*****	85.	AG	9.	100.0	0.0	96.0	3.06	798.1
9. E Leg Dep - FreeFlow	*	0.0	-48.0	1200.0	57.0	*	1205.	85.	AG	17600.	0.6	0.0	****		
10. W Leg App - FreeFlow	*	0.0	-48.0	-1191.0	-152.0	*	1196.								

```
265. AG  17600.   2.8   0.0 ****
      11. W Leg App - Queue    *    -44.0     -52.0  -15696.2   -1416.6 *    *****
265. AG      9. 100.0   0.0 96.0 3.06 798.1
      12. W Leg Dep - FreeFlow*      0.0      48.0   -1200.0     -57.0 *    1205.
265. AG  17600.   0.6   0.0 ****
```


ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC	SIGNAL TYPE	ARRIVAL RATE (gm/hr)
2. N Leg App - Queue	120	62	2.0	4147	1600	0.90	1	3
5. S Leg App - Queue	120	62	2.0	5184	1600	0.67	1	3
8. E Leg App - Queue	120	62	2.0	17600	1600	0.80	1	3
11. W Leg App - Queue	120	62	2.0	17600	1600	0.80	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	91.2	114.4	5.9
2. N Leg, E Side - 25 m	103.8	185.3	5.9
3. N Leg, E Side - 50 m	118.0	266.1	5.9
4. N Leg, E Side-Midblk	193.7	695.4	5.9
5. N Leg, W Side-Corner	-40.8	102.8	5.9
6. N Leg, W Side - 25 m	-28.3	173.8	5.9
7. N Leg, W Side - 50 m	-14.0	254.5	5.9
8. N Leg, W Side-Midblk	61.7	683.9	5.9
9. S Leg, E Side-Corner	61.4	-101.0	5.9
10. S Leg, E Side - 25 m	55.2	-172.8	5.9

11. S Leg, E Side - 50 m *	48.0	-254.5	5.9	*
12. S Leg, E Side-Midblk *	10.0	-688.8	5.9	*
13. S Leg, W Side-Corner *	-68.1	-112.4	5.9	*
14. S Leg, W Side - 25 m *	-74.3	-184.1	5.9	*
15. S Leg, W Side - 50 m *	-81.5	-265.8	5.9	*
16. S Leg, W Side-Midblk *	-119.5	-700.1	5.9	*
17. E Leg, N Side - 25 m *	163.0	120.7	5.9	*
18. E Leg, N Side - 50 m *	244.7	127.8	5.9	*
19. E Leg, N Side-Midblk *	679.0	165.8	5.9	*
20. W Leg, N Side - 25 m *	-112.5	96.6	5.9	*
21. W Leg, N Side - 50 m *	-194.2	89.4	5.9	*
22. W Leg, N Side-Midblk *	-628.5	51.4	5.9	*
23. E Leg, S Side - 25 m *	133.2	-94.8	5.9	*
24. E Leg, S Side - 50 m *	214.9	-87.6	5.9	*
25. E Leg, S Side-Midblk *	649.2	-49.6	5.9	*
26. W Leg, S Side - 25 m *	-139.8	-118.6	5.9	*
27. W Leg, S Side - 50 m *	-221.5	-125.8	5.9	*
28. W Leg, S Side-Midblk *	-655.8	-163.8	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	* 1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	* 0.1000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000	0.1000	1.2000
1.0000	0.7000	0.5000	1.7000	1.2000	0.9000				
20.	* 0.2000	0.1000	0.1000	0.1000	0.3000	0.3000	0.3000	0.3000	1.1000
0.8000	0.6000	0.4000	1.9000	1.4000	1.0000				
30.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	1.0000
0.7000	0.6000	0.4000	2.1000	1.1000	0.9000				
40.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	1.0000
0.7000	0.5000	0.3000	1.9000	1.1000	0.8000				

```
  50.  *  0.1000  0.0000  0.0000  0.0000  0.2000  0.2000  0.2000  0.2000  1.1000
0.8000  0.5000  0.2000  2.1000  1.2000  0.9000
  60.  *  0.2000  0.0000  0.0000  0.0000  0.3000  0.2000  0.2000  0.2000  1.2000
0.8000  0.5000  0.1000  2.1000  1.1000  0.8000
  70.  *  0.5000  0.0000  0.0000  0.0000  0.5000  0.2000  0.2000  0.2000  1.2000
0.7000  0.4000  0.0000  2.1000  1.0000  0.7000
  80.  *  1.2000  0.2000  0.1000  0.0000  1.2000  0.4000  0.3000  0.2000  0.8000
0.3000  0.2000  0.0000  1.7000  0.6000  0.5000
  90.  *  2.0000  0.6000  0.2000  0.0000  2.0000  0.9000  0.5000  0.2000  0.4000
0.0000  0.0000  0.0000  1.1000  0.4000  0.3000
 100.  *  2.2000  1.0000  0.6000  0.0000  2.2000  1.2000  0.8000  0.2000  0.1000
0.0000  0.0000  0.0000  0.6000  0.3000  0.3000
 110.  *  1.9000  1.0000  0.7000  0.1000  1.8000  1.2000  0.9000  0.3000  0.0000
0.0000  0.0000  0.0000  0.4000  0.3000  0.3000
 120.  *  1.7000  1.0000  0.7000  0.2000  1.6000  1.2000  0.9000  0.4000  0.0000
0.0000  0.0000  0.0000  0.4000  0.3000  0.3000
 130.  *  1.5000  0.9000  0.7000  0.2000  1.4000  1.1000  0.9000  0.4000  0.0000
0.0000  0.0000  0.0000  0.4000  0.3000  0.3000
 140.  *  1.4000  0.9000  0.6000  0.2000  1.1000  1.0000  0.8000  0.4000  0.0000
0.0000  0.0000  0.0000  0.4000  0.3000  0.3000
 150.  *  1.3000  0.9000  0.6000  0.2000  1.0000  1.1000  0.8000  0.4000  0.0000
0.0000  0.0000  0.0000  0.5000  0.4000  0.4000
 160.  *  1.2000  0.8000  0.6000  0.2000  1.0000  1.0000  0.9000  0.5000  0.1000
0.1000  0.1000  0.1000  0.4000  0.4000  0.4000
 170.  *  1.3000  0.8000  0.6000  0.2000  1.3000  1.0000  1.0000  0.5000  0.1000
0.1000  0.1000  0.1000  0.4000  0.4000  0.4000
 180.  *  1.5000  0.9000  0.7000  0.3000  1.3000  1.0000  0.9000  0.7000  0.4000
0.4000  0.4000  0.3000  0.3000  0.3000  0.3000
 190.  *  1.7000  1.2000  1.0000  0.5000  1.2000  1.0000  0.7000  0.5000  0.6000
0.6000  0.6000  0.5000  0.2000  0.2000  0.2000
 200.  *  1.9000  1.3000  0.8000  0.5000  1.0000  0.7000  0.6000  0.3000  0.7000
0.7000  0.7000  0.5000  0.1000  0.0000  0.0000
 210.  *  1.9000  1.1000  0.9000  0.5000  1.0000  0.7000  0.5000  0.3000  0.6000
0.6000  0.6000  0.6000  0.1000  0.0000  0.0000
 220.  *  1.9000  1.2000  0.8000  0.5000  1.0000  0.7000  0.5000  0.3000  0.5000
0.5000  0.5000  0.5000  0.1000  0.0000  0.0000
 230.  *  1.9000  1.1000  0.8000  0.5000  1.1000  0.8000  0.6000  0.3000  0.5000
0.5000  0.5000  0.5000  0.1000  0.0000  0.0000
 240.  *  2.1000  1.1000  0.8000  0.3000  1.2000  0.8000  0.5000  0.1000  0.4000
0.3000  0.3000  0.3000  0.2000  0.0000  0.0000
 250.  *  2.1000  0.9000  0.6000  0.2000  1.2000  0.7000  0.4000  0.0000  0.6000
0.3000  0.3000  0.3000  0.5000  0.0000  0.0000
 260.  *  1.7000  0.6000  0.4000  0.2000  0.9000  0.3000  0.2000  0.0000  1.3000
0.5000  0.4000  0.3000  1.2000  0.2000  0.1000
 270.  *  1.0000  0.4000  0.2000  0.2000  0.4000  0.0000  0.0000  0.0000  2.0000
1.0000  0.6000  0.3000  2.0000  0.6000  0.2000
 280.  *  0.5000  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  2.1000
1.3000  0.9000  0.3000  2.2000  1.0000  0.6000
```

```
 290.  *  0.3000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  1.8000
1.3000  1.0000  0.4000  1.9000  1.0000  0.7000
 300.  *  0.3000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  1.6000
1.2000  1.0000  0.5000  1.7000  1.0000  0.7000
 310.  *  0.3000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  1.3000
1.1000  1.0000  0.5000  1.5000  0.9000  0.7000
 320.  *  0.3000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  1.1000
1.1000  1.0000  0.7000  1.4000  0.9000  0.6000
 330.  *  0.3000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  1.0000
1.2000  1.0000  0.7000  1.3000  0.9000  0.6000
 340.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  1.2000
1.1000  1.0000  0.8000  1.2000  0.8000  0.6000
 350.  *  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  1.3000
1.1000  1.0000  0.9000  1.3000  0.8000  0.6000
 360.  *  0.3000  0.3000  0.3000  0.2000  0.1000  0.1000  0.1000  0.1000  1.3000
1.1000  1.1000  0.7000  1.4000  0.9000  0.7000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  2.2000  1.3000  1.0000  0.5000  2.2000  1.2000  1.0000  0.7000  2.1000
1.3000  1.1000  0.9000  2.2000  1.4000  1.0000
 DEGR. *    100     200     190     190     100     100     170     180     280
280     360     350     280      20      20
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.5000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.9000  0.9000
0.9000  1.2000  1.2000  1.2000
```

```
  20.  *  0.5000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.9000  0.9000
0.9000  1.3000  1.3000  1.3000
  30.  *  0.7000  0.1000  0.1000  0.1000  0.2000  0.0000  0.0000  1.0000  1.0000
1.0000  1.7000  1.4000  1.4000
  40.  *  0.7000  0.1000  0.1000  0.1000  0.2000  0.0000  0.0000  1.0000  1.0000
1.0000  1.7000  1.5000  1.6000
  50.  *  0.6000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  1.1000  1.1000
1.0000  2.0000  1.9000  1.7000
  60.  *  0.4000  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  1.2000  1.2000
1.1000  2.1000  2.2000  2.0000
  70.  *  0.3000  0.4000  0.4000  0.4000  0.3000  0.3000  0.2000  1.1000  1.1000
0.9000  2.2000  2.4000  2.3000
  80.  *  0.3000  1.1000  1.1000  0.9000  1.0000  0.7000  0.6000  0.8000  0.8000
0.6000  1.7000  1.9000  2.2000
  90.  *  0.3000  2.0000  2.0000  1.6000  1.7000  1.3000  1.1000  0.4000  0.4000
0.2000  1.0000  1.1000  1.3000
 100.  *  0.3000  2.2000  2.2000  1.9000  1.7000  1.3000  1.2000  0.1000  0.1000
0.1000  0.4000  0.4000  0.4000
 110.  *  0.3000  1.9000  1.9000  1.8000  1.3000  0.9000  1.1000  0.0000  0.0000
0.0000  0.3000  0.3000  0.3000
 120.  *  0.3000  1.7000  1.7000  1.7000  1.0000  1.0000  1.1000  0.0000  0.0000
0.0000  0.2000  0.2000  0.2000
 130.  *  0.3000  1.6000  1.6000  1.6000  0.9000  1.0000  1.1000  0.0000  0.0000
0.0000  0.2000  0.2000  0.2000
 140.  *  0.3000  1.4000  1.4000  1.4000  0.9000  1.0000  1.1000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
 150.  *  0.3000  1.3000  1.3000  1.3000  0.9000  1.0000  0.9000  0.0000  0.0000
0.0000  0.4000  0.2000  0.1000
 160.  *  0.4000  1.2000  1.2000  1.2000  1.1000  0.9000  0.9000  0.0000  0.0000
0.0000  0.3000  0.1000  0.0000
 170.  *  0.3000  1.3000  1.3000  1.3000  1.2000  1.1000  1.0000  0.0000  0.0000
0.0000  0.3000  0.1000  0.0000
 180.  *  0.2000  1.4000  1.3000  1.3000  1.1000  1.1000  1.0000  0.1000  0.0000
0.0000  0.1000  0.0000  0.0000
 190.  *  0.1000  1.3000  1.3000  1.2000  0.9000  0.9000  0.9000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  1.4000  1.4000  1.3000  1.0000  0.9000  0.9000  0.2000  0.1000
0.0000  0.1000  0.1000  0.1000
 210.  *  0.0000  1.6000  1.5000  1.4000  1.0000  1.0000  1.0000  0.2000  0.1000
0.0000  0.1000  0.1000  0.1000
 220.  *  0.0000  1.8000  1.6000  1.7000  1.0000  1.0000  1.0000  0.2000  0.1000
0.0000  0.1000  0.1000  0.1000
 230.  *  0.0000  2.1000  2.0000  1.8000  1.1000  1.1000  1.0000  0.2000  0.1000
0.1000  0.1000  0.1000  0.1000
 240.  *  0.0000  2.2000  2.3000  2.1000  1.2000  1.2000  1.1000  0.2000  0.1000
0.1000  0.2000  0.2000  0.2000
 250.  *  0.0000  2.2000  2.2000  2.3000  1.1000  1.1000  0.9000  0.5000  0.4000
0.3000  0.4000  0.4000  0.4000
```

```
 260.  *  0.0000  1.7000  1.9000  2.2000  0.8000  0.8000  0.6000  1.0000  0.8000
0.6000  1.1000  1.1000  0.9000
 270.  *  0.0000  1.0000  1.0000  1.2000  0.4000  0.4000  0.2000  1.7000  1.3000
1.1000  2.0000  2.0000  1.6000
 280.  *  0.0000  0.4000  0.3000  0.4000  0.1000  0.1000  0.1000  1.7000  1.5000
1.2000  2.2000  2.2000  1.9000
 290.  *  0.1000  0.3000  0.2000  0.2000  0.0000  0.0000  0.0000  1.3000  1.1000
1.1000  1.9000  1.9000  1.8000
 300.  *  0.2000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  1.0000  0.9000
1.0000  1.7000  1.7000  1.7000
 310.  *  0.2000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.9000  0.9000
1.0000  1.6000  1.6000  1.6000
 320.  *  0.2000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.9000  1.0000
1.0000  1.4000  1.4000  1.4000
 330.  *  0.2000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.9000  0.9000
0.9000  1.3000  1.3000  1.3000
 340.  *  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.9000  0.8000
0.9000  1.2000  1.2000  1.2000
 350.  *  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  1.1000  1.0000
1.0000  1.3000  1.3000  1.3000
 360.  *  0.4000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  1.1000  1.0000
1.0000  1.3000  1.3000  1.3000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.7000  2.2000  2.3000  2.3000  1.7000  1.3000  1.2000  1.7000  1.5000
1.2000  2.2000  2.4000  2.3000
 DEGR. *     30     100     240     250     100      90     100     270     280
280      70      70      70

 THE HIGHEST CONCENTRATION OF   2.4000 PPM OCCURRED AT RECEPTOR    27.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
4,4,3,1,2200,2200,2200,2200,2200,2200,2200,2200,1036.75,1036.75,2200,2200,1036.75,10
36.75,2200,2200,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0
,1200,-1200,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',58.0,22.0,5.9
'N Leg, E Side - 25 m',58.0,94.0,5.9
'N Leg, E Side - 50 m',58.0,176.0,5.9
'N Leg, E Side-Midblk',58.0,612.0,5.9
'N Leg, W Side-Corner',-58.0,22.0,5.9
'N Leg, W Side - 25 m',-58.0,94.0,5.9
'N Leg, W Side - 50 m',-58.0,176.0,5.9
'N Leg, W Side-Midblk',-58.0,612.0,5.9
'S Leg, E Side-Corner',58.0,-46.0,5.9
'S Leg, E Side - 25 m',58.0,-118.0,5.9
'S Leg, E Side - 50 m',58.0,-200.0,5.9
'S Leg, E Side-Midblk',58.0,-636.0,5.9
'S Leg, W Side-Corner',-58.0,-46.0,5.9
'S Leg, W Side - 25 m',-58.0,-118.0,5.9
'S Leg, W Side - 50 m',-58.0,-200.0,5.9
'S Leg, W Side-Midblk',-58.0,-636.0,5.9
'E Leg, N Side - 25 m',130.0,22.0,5.9
'E Leg, N Side - 50 m',212.0,22.0,5.9
'E Leg, N Side-Midblk',648.0,22.0,5.9
'W Leg, N Side - 25 m',-130.0,22.0,5.9
'W Leg, N Side - 50 m',-212.0,22.0,5.9
'W Leg, N Side-Midblk',-648.0,22.0,5.9
'E Leg, S Side - 25 m',130.0,-46.0,5.9
'E Leg, S Side - 50 m',212.0,-46.0,5.9
'E Leg, S Side-Midblk',648.0,-46.0,5.9
'W Leg, S Side - 25 m',-130.0,-46.0,5.9
'W Leg, S Side - 50 m',-212.0,-46.0,5.9
'W Leg, S Side-Midblk',-648.0,-46.0,5.9
'2040 Build US29 & Inner Loop (IS.57)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-24,0,-24,1200,4147,0.67,0.0,67.7
2
'N Leg App - Queue','AG',-24,12,-24,1200,0.0,48.0,4
120,62,2,4147,0.90,1600,1,3
1
'N Leg Dep - FreeFlow','AG',24,0,24,1200,4147,2.26,0.0,67.7
1
'S Leg App - FreeFlow','AG',24,0,24,-1200,4147,1.82,0.0,67.7
2
'S Leg App - Queue','AG',24,-36,24,-1200,0.0,48.0,4
120,62,2,4147,0.90,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-24,0,-24,-1200,4147,0.67,0.0,67.7
1
'E Leg App - FreeFlow','AG',0,6,1200,6,2200,1.14,0.0,31.7
1
'E Leg Dep - FreeFlow','AG',0,-18,1200,-18,6600,1.14,0.0,55.7
1
'W Leg App - FreeFlow','AG',0,-18,-1200,-18,6600,0.62,0.0,55.7
2
'W Leg App - Queue','AG',-48,-18,-1200,-18,0.0,36.0,3
120,62,2,6600,0.80,1600,1,3
1
'W Leg Dep - FreeFlow','AG',0,6,-1200,6,2200,0.62,0.0,31.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

2040 CO US29 & Inner Loop Ramp
*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface
CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 Build US29 & Inner Loop (IS.57)

DATE : 2/ 8/19
TIME : 14:35: 3

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-24.0	0.0	-24.0	1200.0	*	1200.	360.	AG	4147.	0.7	0.0	67.7		
2. N Leg App - Queue	*	-24.0	12.0	-24.0	3661.3	*	3649.	360.	AG	5.	100.0	0.0	48.0	1.44	185.4
3. N Leg Dep - FreeFlow	*	24.0	0.0	24.0	1200.0	*	1200.	360.	AG	4147.	2.3	0.0	67.7		
4. S Leg App - FreeFlow	*	24.0	0.0	24.0	-1200.0	*	1200.	180.	AG	4147.	1.8	0.0	67.7		
5. S Leg App - Queue	*	24.0	-36.0	24.0	-3685.3	*	3649.	180.	AG	5.	100.0	0.0	48.0	1.44	185.4
6. S Leg Dep - FreeFlow	*	-24.0	0.0	-24.0	-1200.0	*	1200.	180.	AG	4147.	0.7	0.0	67.7		
7. E Leg App - FreeFlow	*	0.0	6.0	1200.0	6.0	*	1200.	90.	AG	2200.	1.1	0.0	31.7		
8. E Leg Dep - FreeFlow	*	0.0	-18.0	1200.0	-18.0	*	1200.	90.	AG	6600.	1.1	0.0	55.7		
9. W Leg App - FreeFlow	*	0.0	-18.0	-1200.0	-18.0	*	1200.	270.	AG	6600.	0.6	0.0	55.7		
10. W Leg App - Queue	*	-48.0	-18.0	-15759.6	-18.0	*	*****								

270. AG 3. 100.0 0.0 36.0 3.06 798.1
11. W Leg Dep - FreeFlow* 0.0 6.0 -1200.0 6.0 * 1200.
270. AG 2200. 0.6 0.0 31.7

JOB: I-495 & I-270 MLS RUN: 2040 Build US29 & Inner Loop (IS.57)

DATE : 2/ 8/19
TIME : 14:35: 3

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	*	120	62	2.0	4147	1600	0.90	1	3
5. S Leg App - Queue	*	120	62	2.0	4147	1600	0.90	1	3
10. W Leg App - Queue	*	120	62	2.0	6600	1600	0.80	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	58.0	22.0	5.9	*
2. N Leg, E Side - 25 m	*	58.0	94.0	5.9	*
3. N Leg, E Side - 50 m	*	58.0	176.0	5.9	*
4. N Leg, E Side-Midblk	*	58.0	612.0	5.9	*
5. N Leg, W Side-Corner	*	-58.0	22.0	5.9	*
6. N Leg, W Side - 25 m	*	-58.0	94.0	5.9	*
7. N Leg, W Side - 50 m	*	-58.0	176.0	5.9	*
8. N Leg, W Side-Midblk	*	-58.0	612.0	5.9	*
9. S Leg, E Side-Corner	*	58.0	-46.0	5.9	*
10. S Leg, E Side - 25 m	*	58.0	-118.0	5.9	*
11. S Leg, E Side - 50 m	*	58.0	-200.0	5.9	*
12. S Leg, E Side-Midblk	*	58.0	-636.0	5.9	*
13. S Leg, W Side-Corner	*	-58.0	-46.0	5.9	*
14. S Leg, W Side - 25 m	*	-58.0	-118.0	5.9	*

15. S Leg, W Side - 50 m *	-58.0	-200.0	5.9	*
16. S Leg, W Side-Midblk *	-58.0	-636.0	5.9	*
17. E Leg, N Side - 25 m *	130.0	22.0	5.9	*
18. E Leg, N Side - 50 m *	212.0	22.0	5.9	*
19. E Leg, N Side-Midblk *	648.0	22.0	5.9	*
20. W Leg, N Side - 25 m *	-130.0	22.0	5.9	*
21. W Leg, N Side - 50 m *	-212.0	22.0	5.9	*
22. W Leg, N Side-Midblk *	-648.0	22.0	5.9	*
23. E Leg, S Side - 25 m *	130.0	-46.0	5.9	*
24. E Leg, S Side - 50 m *	212.0	-46.0	5.9	*
25. E Leg, S Side-Midblk *	648.0	-46.0	5.9	*
26. W Leg, S Side - 25 m *	-130.0	-46.0	5.9	*
27. W Leg, S Side - 50 m *	-212.0	-46.0	5.9	*
28. W Leg, S Side-Midblk *	-648.0	-46.0	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.2000	0.2000	0.2000	0.2000	0.4000	0.4000	0.3000	0.3000	0.4000	0.3000	0.3000	0.2000	0.4000	0.5000	0.3000
20.	* 0.1000	0.1000	0.1000	0.1000	0.3000	0.3000	0.3000	0.3000	0.2000	0.1000	0.1000	0.1000	0.4000	0.3000	0.3000
30.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.2000	0.1000	0.1000	0.0000	0.5000	0.4000	0.4000
40.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.4000	0.1000	0.1000	0.0000	0.4000	0.4000	0.3000
50.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.4000	0.1000	0.1000	0.0000	0.4000	0.3000	0.3000
60.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.4000	0.1000	0.1000	0.0000	0.5000	0.3000	0.3000

```
  70.  *  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.3000  0.3000  0.5000
0.1000  0.1000  0.0000  0.7000  0.3000  0.3000
  80.  *  0.2000  0.0000  0.0000  0.0000  0.5000  0.3000  0.3000  0.3000  0.5000
0.1000  0.1000  0.0000  0.7000  0.3000  0.3000
  90.  *  0.4000  0.1000  0.0000  0.0000  0.5000  0.4000  0.3000  0.3000  0.4000
0.1000  0.0000  0.0000  0.6000  0.3000  0.2000
 100.  *  0.5000  0.1000  0.1000  0.0000  0.7000  0.4000  0.4000  0.3000  0.2000
0.0000  0.0000  0.0000  0.3000  0.2000  0.2000
 110.  *  0.5000  0.1000  0.1000  0.0000  0.8000  0.4000  0.4000  0.3000  0.1000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 120.  *  0.4000  0.1000  0.1000  0.0000  0.5000  0.4000  0.4000  0.3000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 130.  *  0.3000  0.1000  0.1000  0.0000  0.5000  0.3000  0.4000  0.3000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 140.  *  0.3000  0.1000  0.1000  0.0000  0.4000  0.4000  0.4000  0.3000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 150.  *  0.3000  0.1000  0.1000  0.0000  0.4000  0.4000  0.4000  0.3000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 160.  *  0.3000  0.1000  0.2000  0.1000  0.4000  0.4000  0.3000  0.3000  0.1000
0.1000  0.1000  0.1000  0.3000  0.3000  0.3000
 170.  *  0.4000  0.3000  0.3000  0.2000  0.4000  0.5000  0.3000  0.3000  0.2000
0.2000  0.2000  0.2000  0.4000  0.4000  0.3000
 180.  *  0.7000  0.5000  0.5000  0.5000  0.3000  0.4000  0.3000  0.3000  0.3000
0.3000  0.3000  0.3000  0.2000  0.2000  0.2000
 190.  *  0.9000  0.6000  0.6000  0.5000  0.2000  0.1000  0.0000  0.1000  0.5000
0.5000  0.5000  0.4000  0.1000  0.1000  0.1000
 200.  *  0.8000  0.6000  0.5000  0.5000  0.1000  0.1000  0.0000  0.0000  0.5000
0.5000  0.5000  0.5000  0.0000  0.0000  0.0000
 210.  *  0.7000  0.4000  0.4000  0.5000  0.1000  0.1000  0.0000  0.0000  0.4000
0.4000  0.4000  0.4000  0.0000  0.0000  0.0000
 220.  *  0.7000  0.3000  0.4000  0.4000  0.2000  0.1000  0.0000  0.0000  0.4000
0.4000  0.4000  0.4000  0.0000  0.0000  0.0000
 230.  *  0.5000  0.4000  0.4000  0.4000  0.2000  0.1000  0.0000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 240.  *  0.6000  0.4000  0.4000  0.4000  0.2000  0.1000  0.0000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 250.  *  0.6000  0.4000  0.4000  0.4000  0.3000  0.1000  0.0000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 260.  *  0.6000  0.4000  0.3000  0.4000  0.3000  0.1000  0.0000  0.0000  0.5000
0.3000  0.3000  0.3000  0.1000  0.0000  0.0000
 270.  *  0.5000  0.4000  0.4000  0.4000  0.2000  0.0000  0.0000  0.0000  0.4000
0.3000  0.3000  0.3000  0.2000  0.0000  0.0000
 280.  *  0.3000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.6000
0.3000  0.2000  0.3000  0.2000  0.1000  0.0000
 290.  *  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.5000
0.4000  0.3000  0.3000  0.2000  0.1000  0.0000
 300.  *  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.5000
0.4000  0.3000  0.3000  0.2000  0.1000  0.0000
```

```
 310.  *  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.5000
0.3000  0.3000  0.3000  0.2000  0.1000  0.0000
 320.  *  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.5000
0.3000  0.4000  0.4000  0.1000  0.1000  0.0000
 330.  *  0.5000  0.5000  0.5000  0.5000  0.0000  0.0000  0.0000  0.0000  0.7000
0.5000  0.3000  0.4000  0.1000  0.1000  0.0000
 340.  *  0.5000  0.6000  0.6000  0.5000  0.0000  0.0000  0.0000  0.0000  0.7000
0.6000  0.4000  0.5000  0.1000  0.1000  0.0000
 350.  *  0.6000  0.6000  0.6000  0.5000  0.1000  0.1000  0.1000  0.1000  0.8000
0.6000  0.6000  0.5000  0.1000  0.1000  0.0000
 360.  *  0.4000  0.4000  0.4000  0.4000  0.2000  0.2000  0.2000  0.2000  0.6000
0.5000  0.5000  0.4000  0.3000  0.4000  0.3000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  0.9000  0.6000  0.6000  0.5000  0.8000  0.5000  0.4000  0.3000  0.8000
0.6000  0.6000  0.5000  0.7000  0.5000  0.4000
 DEGR. *    190     190     190     180     110     170     100      10     350
340     350     200      70      10      30
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

```
 WIND ANGLE RANGE:  10.-360.

 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.2000  0.2000
0.2000  0.2000  0.2000  0.1000
  20.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.2000  0.2000
0.2000  0.3000  0.2000  0.1000
  30.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.2000  0.2000
0.2000  0.3000  0.2000  0.1000
```

```
  40.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.4000  0.4000
0.4000  0.2000  0.2000  0.1000
  50.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.2000
  60.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.2000
  70.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.5000  0.5000
0.5000  0.4000  0.4000  0.2000
  80.  *  0.2000  0.2000  0.2000  0.2000  0.2000  0.2000  0.0000  0.5000  0.5000
0.5000  0.5000  0.3000  0.2000
  90.  *  0.2000  0.4000  0.4000  0.3000  0.5000  0.4000  0.3000  0.4000  0.4000
0.3000  0.4000  0.3000  0.3000
 100.  *  0.2000  0.5000  0.5000  0.5000  0.6000  0.3000  0.3000  0.2000  0.2000
0.2000  0.3000  0.3000  0.1000
 110.  *  0.2000  0.5000  0.5000  0.4000  0.4000  0.4000  0.3000  0.1000  0.1000
0.1000  0.1000  0.1000  0.0000
 120.  *  0.2000  0.4000  0.4000  0.4000  0.3000  0.3000  0.2000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 130.  *  0.2000  0.3000  0.3000  0.3000  0.3000  0.3000  0.2000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 140.  *  0.3000  0.3000  0.3000  0.3000  0.3000  0.3000  0.2000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 150.  *  0.3000  0.3000  0.3000  0.3000  0.3000  0.2000  0.1000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 160.  *  0.3000  0.3000  0.3000  0.3000  0.3000  0.2000  0.1000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 170.  *  0.2000  0.3000  0.3000  0.3000  0.2000  0.1000  0.1000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 180.  *  0.2000  0.4000  0.3000  0.3000  0.1000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  0.4000  0.4000  0.3000  0.1000  0.1000  0.1000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.4000  0.4000  0.3000  0.1000  0.1000  0.1000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.4000  0.4000  0.3000  0.1000  0.1000  0.1000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.4000  0.4000  0.3000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.4000  0.4000  0.3000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.4000  0.5000  0.4000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.5000  0.5000  0.4000  0.3000  0.3000  0.3000  0.2000  0.2000
0.1000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.5000  0.4000  0.5000  0.3000  0.3000  0.3000  0.3000  0.2000
0.2000  0.1000  0.1000  0.1000
 270.  *  0.0000  0.4000  0.4000  0.3000  0.2000  0.2000  0.2000  0.4000  0.4000
0.3000  0.2000  0.2000  0.2000
```

```
 280.  *  0.0000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.5000  0.4000
0.5000  0.2000  0.2000  0.2000
 290.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.6000  0.4000
0.5000  0.2000  0.2000  0.2000
 300.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.5000
0.4000  0.2000  0.2000  0.2000
 310.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.5000  0.5000
0.4000  0.2000  0.2000  0.2000
 320.  *  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.5000  0.5000
0.4000  0.1000  0.1000  0.1000
 330.  *  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000
0.2000  0.1000  0.1000  0.1000
 340.  *  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000
0.2000  0.1000  0.1000  0.1000
 350.  *  0.1000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000
0.2000  0.1000  0.1000  0.1000
 360.  *  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.2000
0.2000  0.1000  0.1000  0.1000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.3000  0.5000  0.5000  0.5000  0.6000  0.4000  0.3000  0.6000  0.5000
0.5000  0.5000  0.4000  0.3000
 DEGR. *     10     100     100     100     100      90      90     290      70
70      80      70      90

 THE HIGHEST CONCENTRATION OF   0.9000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
5,4,1,3,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.75,2200,2200,1036.8,1036
.75,2200,2200,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1
200,-1200,0,0,0,0,0,0,30,30,15,20,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',90.1,16.1,5.9
'N Leg, E Side - 25 m',126.2,78.5,5.9
'N Leg, E Side - 50 m',167.2,149.5,5.9
'N Leg, E Side-Midblk',385.1,527.1,5.9
'N Leg, W Side-Corner',-34.2,56.8,5.9
'N Leg, W Side - 25 m',1.8,119.2,5.9
'N Leg, W Side - 50 m',42.8,190.2,5.9
'N Leg, W Side-Midblk',260.8,567.7,5.9
'S Leg, E Side-Corner',55.6,-43.7,5.9
'S Leg, E Side - 25 m',19.6,-106.0,5.9
'S Leg, E Side - 50 m',-21.4,-177.1,5.9
'S Leg, E Side-Midblk',-239.4,-554.6,5.9
'S Leg, W Side-Corner',-69.4,-4.2,5.9
'S Leg, W Side - 25 m',-105.4,-66.6,5.9
'S Leg, W Side - 50 m',-146.4,-137.6,5.9
'S Leg, W Side-Midblk',-364.4,-515.1,5.9
'E Leg, N Side - 25 m',157.8,-8.5,5.9
'E Leg, N Side - 50 m',234.9,-36.5,5.9
'E Leg, N Side-Midblk',644.6,-185.7,5.9
'W Leg, N Side - 25 m',-103.8,75.4,5.9
'W Leg, N Side - 50 m',-183.0,96.7,5.9
'W Leg, N Side-Midblk',-604.1,209.5,5.9
'E Leg, S Side - 25 m',123.3,-68.3,5.9
'E Leg, S Side - 50 m',200.4,-96.3,5.9
'E Leg, S Side-Midblk',610.0,-245.4,5.9
'W Leg, S Side - 25 m',-139.0,14.5,5.9
'W Leg, S Side - 50 m',-218.2,35.7,5.9
'W Leg, S Side-Midblk',-639.3,148.5,5.9
'2040 US29 & Outer Loop Ramp (IS.56)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-21,12,579,1051,4147,0.90,0.0,67.7
2
'N Leg App - Queue','AG',-3,43,579,1051,0.0,48.0,4
120,62,2,4147,0.90,1600,1,3
1
'N Leg Dep - FreeFlow','AG',26,-15,626,1024,5184,0.90,0.0,79.7
1
'S Leg App - FreeFlow','AG',26,-15,-574,-1054,5184,0.90,0.0,79.7
2
'S Leg App - Queue','AG',20,-25,-574,-1054,0.0,60.0,5
120,62,2,5184,0.90,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-21,12,-621,-1027,4147,0.90,0.0,67.7
1
'E Leg App - FreeFlow','AG',5,17,1134,-394,6600,1.88,0.0,55.7
2
'E Leg App - Queue','AG',63,-4,1134,-394,0.0,36.0,3
120,62,2,6600,0.80,1600,1,3
1
'E Leg Dep - FreeFlow','AG',-2,-6,1126,-416,2200,1.88,0.0,31.7
1
'W Leg App - FreeFlow','AG',-2,-6,-1161,305,2200,0.86,0.0,31.7
1
'W Leg Dep - FreeFlow','AG',5,17,-1154,328,6600,0.86,0.0,55.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface
CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 US29 & Outer Loop Ramp (IS.56)

DATE : 1/15/19
TIME : 10:52:21

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-21.0	12.0	579.0	1051.0	*	1200.	30.	AG	4147.	0.9	0.0	67.7		
2. N Leg App - Queue	*	-3.0	43.0	1821.7	3203.3	*	3649.	30.	AG	5.	100.0	0.0	48.0	1.44	185.4
3. N Leg Dep - FreeFlow	*	26.0	-15.0	626.0	1024.0	*	1200.	30.	AG	5184.	0.9	0.0	79.7		
4. S Leg App - FreeFlow	*	26.0	-15.0	-574.0	-1054.0	*	1200.	210.	AG	5184.	0.9	0.0	79.7		
5. S Leg App - Queue	*	20.0	-25.0	-1804.4	-3185.5	*	3649.	210.	AG	6.	100.0	0.0	60.0	1.44	185.4
6. S Leg Dep - FreeFlow	*	-21.0	12.0	-621.0	-1027.0	*	1200.	210.	AG	4147.	0.9	0.0	67.7		
7. E Leg App - FreeFlow	*	5.0	17.0	1134.0	-394.0	*	1201.	110.	AG	6600.	1.9	0.0	55.7		
8. E Leg App - Queue	*	63.0	-4.0	14826.3	-5380.0	*	*****	110.	AG	3.	100.0	0.0	36.0	3.06	798.1
9. E Leg Dep - FreeFlow	*	-2.0	-6.0	1126.0	-416.0	*	1200.	110.	AG	2200.	1.9	0.0	31.7		
10. W Leg App - FreeFlow	*	-2.0	-6.0	-1161.0	305.0	*	1200.								

285. AG 2200. 0.9 0.0 31.7
11. W Leg Dep - FreeFlow* 5.0 17.0 -1154.0 328.0 * 1200.
285. AG 6600. 0.9 0.0 55.7

JOB: I-495 & I-270 MLS RUN: 2040 US29 & Outer Loop Ramp (IS.56)

DATE : 1/15/19
TIME : 10:52:21

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC	SIGNAL TYPE	ARRIVAL RATE (gm/hr)
2. N Leg App - Queue	*	120	62	2.0	4147	1600	0.90	1	3
5. S Leg App - Queue	*	120	62	2.0	5184	1600	0.90	1	3
8. E Leg App - Queue	*	120	62	2.0	6600	1600	0.80	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	90.1	16.1	5.9	*
2. N Leg, E Side - 25 m	*	126.2	78.5	5.9	*
3. N Leg, E Side - 50 m	*	167.2	149.5	5.9	*
4. N Leg, E Side-Midblk	*	385.1	527.1	5.9	*
5. N Leg, W Side-Corner	*	-34.2	56.8	5.9	*
6. N Leg, W Side - 25 m	*	1.8	119.2	5.9	*
7. N Leg, W Side - 50 m	*	42.8	190.2	5.9	*
8. N Leg, W Side-Midblk	*	260.8	567.7	5.9	*
9. S Leg, E Side-Corner	*	55.6	-43.7	5.9	*
10. S Leg, E Side - 25 m	*	19.6	-106.0	5.9	*
11. S Leg, E Side - 50 m	*	-21.4	-177.1	5.9	*
12. S Leg, E Side-Midblk	*	-239.4	-554.6	5.9	*
13. S Leg, W Side-Corner	*	-69.4	-4.2	5.9	*
14. S Leg, W Side - 25 m	*	-105.4	-66.6	5.9	*

15. S Leg, W Side - 50 m *	-146.4	-137.6	5.9	*
16. S Leg, W Side-Midblk *	-364.4	-515.1	5.9	*
17. E Leg, N Side - 25 m *	157.8	-8.5	5.9	*
18. E Leg, N Side - 50 m *	234.9	-36.5	5.9	*
19. E Leg, N Side-Midblk *	644.6	-185.7	5.9	*
20. W Leg, N Side - 25 m *	-103.8	75.4	5.9	*
21. W Leg, N Side - 50 m *	-183.0	96.7	5.9	*
22. W Leg, N Side-Midblk *	-604.1	209.5	5.9	*
23. E Leg, S Side - 25 m *	123.3	-68.3	5.9	*
24. E Leg, S Side - 50 m *	200.4	-96.3	5.9	*
25. E Leg, S Side-Midblk *	610.0	-245.4	5.9	*
26. W Leg, S Side - 25 m *	-139.0	14.5	5.9	*
27. W Leg, S Side - 50 m *	-218.2	35.7	5.9	*
28. W Leg, S Side-Midblk *	-639.3	148.5	5.9	*

JOB: I-495 & I-270 MLS RUN: 2040 US29 & Outer Loop Ramp (IS.56)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	* 1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	* 0.3000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.7000
0.6000	0.5000	0.3000	0.3000	0.1000	0.1000				
20.	* 0.3000	0.3000	0.3000	0.3000	0.1000	0.1000	0.1000	0.1000	0.7000
0.6000	0.4000	0.3000	0.4000	0.1000	0.2000				
30.	* 0.2000	0.2000	0.2000	0.2000	0.3000	0.3000	0.3000	0.1000	0.6000
0.5000	0.3000	0.2000	0.4000	0.4000	0.3000				
40.	* 0.1000	0.1000	0.1000	0.1000	0.3000	0.3000	0.3000	0.3000	0.5000
0.4000	0.2000	0.1000	0.6000	0.4000	0.3000				
50.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.4000
0.3000	0.1000	0.1000	0.6000	0.5000	0.4000				
60.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.6000
0.3000	0.1000	0.1000	0.6000	0.3000	0.3000				

```
  70.  *  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000  0.2000  0.2000  0.6000
0.3000  0.1000  0.1000  0.6000  0.4000  0.3000
  80.  *  0.1000  0.0000  0.0000  0.0000  0.2000  0.2000  0.2000  0.2000  0.7000
0.3000  0.1000  0.0000  0.6000  0.5000  0.3000
  90.  *  0.1000  0.0000  0.0000  0.0000  0.3000  0.2000  0.2000  0.2000  0.8000
0.3000  0.1000  0.0000  0.8000  0.5000  0.3000
 100.  *  0.3000  0.0000  0.0000  0.0000  0.6000  0.2000  0.2000  0.2000  0.8000
0.3000  0.1000  0.0000  0.8000  0.5000  0.3000
 110.  *  0.7000  0.1000  0.0000  0.0000  0.9000  0.3000  0.2000  0.2000  0.7000
0.1000  0.0000  0.0000  0.6000  0.3000  0.2000
 120.  *  0.8000  0.2000  0.1000  0.0000  0.9000  0.5000  0.3000  0.2000  0.2000
0.0000  0.0000  0.0000  0.4000  0.2000  0.2000
 130.  *  0.8000  0.3000  0.1000  0.0000  0.8000  0.6000  0.4000  0.2000  0.1000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 140.  *  0.6000  0.3000  0.2000  0.0000  0.6000  0.5000  0.4000  0.2000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 150.  *  0.6000  0.3000  0.1000  0.1000  0.6000  0.5000  0.3000  0.3000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 160.  *  0.5000  0.2000  0.1000  0.1000  0.6000  0.4000  0.3000  0.3000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 170.  *  0.5000  0.2000  0.1000  0.1000  0.5000  0.3000  0.3000  0.3000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 180.  *  0.5000  0.2000  0.1000  0.1000  0.5000  0.3000  0.3000  0.4000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 190.  *  0.5000  0.2000  0.1000  0.1000  0.5000  0.4000  0.3000  0.3000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 200.  *  0.6000  0.3000  0.2000  0.2000  0.5000  0.4000  0.3000  0.3000  0.1000
0.1000  0.1000  0.1000  0.3000  0.3000  0.3000
 210.  *  0.7000  0.4000  0.3000  0.2000  0.4000  0.4000  0.4000  0.2000  0.2000
0.2000  0.2000  0.2000  0.3000  0.3000  0.3000
 220.  *  0.9000  0.5000  0.5000  0.3000  0.3000  0.1000  0.2000  0.1000  0.3000
0.3000  0.3000  0.3000  0.1000  0.1000  0.1000
 230.  *  0.8000  0.5000  0.3000  0.3000  0.2000  0.1000  0.1000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 240.  *  0.8000  0.3000  0.3000  0.3000  0.2000  0.1000  0.1000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 250.  *  0.8000  0.4000  0.4000  0.3000  0.2000  0.1000  0.1000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 260.  *  0.6000  0.3000  0.3000  0.2000  0.3000  0.1000  0.1000  0.0000  0.2000
0.2000  0.2000  0.2000  0.0000  0.0000  0.0000
 270.  *  0.6000  0.3000  0.3000  0.2000  0.4000  0.1000  0.1000  0.0000  0.2000
0.2000  0.2000  0.2000  0.0000  0.0000  0.0000
 280.  *  0.7000  0.3000  0.2000  0.2000  0.3000  0.1000  0.0000  0.0000  0.4000
0.2000  0.2000  0.2000  0.2000  0.0000  0.0000
 290.  *  0.5000  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.6000
0.3000  0.2000  0.2000  0.3000  0.1000  0.0000
 300.  *  0.4000  0.2000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.7000
0.3000  0.3000  0.2000  0.3000  0.1000  0.1000
```

```
 310.  *  0.3000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.7000
0.3000  0.3000  0.2000  0.3000  0.1000  0.1000
 320.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.9000
0.3000  0.3000  0.2000  0.3000  0.1000  0.1000
 330.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.7000
0.3000  0.3000  0.2000  0.3000  0.1000  0.1000
 340.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.7000
0.2000  0.3000  0.2000  0.3000  0.1000  0.1000
 350.  *  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  0.6000
0.2000  0.4000  0.3000  0.2000  0.1000  0.1000
 360.  *  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  0.7000
0.4000  0.2000  0.3000  0.2000  0.1000  0.1000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  0.9000  0.5000  0.5000  0.3000  0.9000  0.6000  0.4000  0.4000  0.9000
0.6000  0.5000  0.3000  0.8000  0.5000  0.4000
 DEGR. *    220     220     220      10     110     130     130     180     320
10      10      10      90      50      50
```


JOB: I-495 & I-270 MLS RUN: 2040 US29 & Outer Loop Ramp (IS.56)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.6000  0.5000
0.4000  0.3000  0.3000  0.3000
  20.  *  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.5000  0.4000
0.4000  0.3000  0.3000  0.3000
  30.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.2000  0.2000  0.2000
```

```
  40.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.4000  0.4000
0.4000  0.4000  0.2000  0.2000
  50.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.4000  0.4000
0.4000  0.5000  0.3000  0.3000
  60.  *  0.4000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.6000  0.6000
0.6000  0.5000  0.3000  0.3000
  70.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.6000  0.6000
0.6000  0.5000  0.3000  0.3000
  80.  *  0.2000  0.1000  0.1000  0.1000  0.2000  0.0000  0.0000  0.7000  0.7000
0.6000  0.5000  0.3000  0.3000
  90.  *  0.2000  0.1000  0.1000  0.1000  0.4000  0.1000  0.1000  0.8000  0.8000
0.8000  0.4000  0.4000  0.3000
 100.  *  0.2000  0.3000  0.3000  0.3000  0.5000  0.2000  0.3000  0.8000  0.8000
0.8000  0.6000  0.5000  0.4000
 110.  *  0.2000  0.7000  0.7000  0.6000  0.7000  0.5000  0.4000  0.7000  0.7000
0.5000  0.5000  0.5000  0.3000
 120.  *  0.2000  0.8000  0.8000  0.8000  0.6000  0.6000  0.3000  0.2000  0.2000
0.2000  0.3000  0.1000  0.0000
 130.  *  0.2000  0.8000  0.7000  0.7000  0.4000  0.3000  0.3000  0.1000  0.1000
0.1000  0.2000  0.0000  0.0000
 140.  *  0.2000  0.6000  0.6000  0.6000  0.2000  0.2000  0.2000  0.0000  0.0000
0.0000  0.2000  0.0000  0.0000
 150.  *  0.2000  0.6000  0.6000  0.6000  0.4000  0.2000  0.2000  0.0000  0.0000
0.0000  0.2000  0.0000  0.0000
 160.  *  0.2000  0.5000  0.5000  0.5000  0.4000  0.2000  0.2000  0.0000  0.0000
0.0000  0.2000  0.0000  0.0000
 170.  *  0.2000  0.5000  0.5000  0.5000  0.4000  0.2000  0.2000  0.0000  0.0000
0.0000  0.2000  0.0000  0.0000
 180.  *  0.3000  0.5000  0.5000  0.5000  0.4000  0.2000  0.2000  0.0000  0.0000
0.0000  0.2000  0.0000  0.0000
 190.  *  0.3000  0.5000  0.5000  0.5000  0.4000  0.2000  0.2000  0.0000  0.0000
0.0000  0.2000  0.0000  0.0000
 200.  *  0.3000  0.5000  0.5000  0.5000  0.4000  0.2000  0.2000  0.0000  0.0000
0.0000  0.2000  0.0000  0.0000
 210.  *  0.1000  0.5000  0.5000  0.5000  0.2000  0.2000  0.2000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.1000  0.6000  0.5000  0.5000  0.2000  0.2000  0.2000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.7000  0.6000  0.5000  0.2000  0.2000  0.2000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.7000  0.6000  0.5000  0.2000  0.2000  0.2000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.7000  0.7000  0.6000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.6000  0.6000  0.6000  0.3000  0.3000  0.3000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 270.  *  0.0000  0.7000  0.7000  0.7000  0.4000  0.4000  0.3000  0.1000  0.0000
0.1000  0.0000  0.0000  0.0000
```

```
 280.  *  0.0000  0.7000  0.8000  0.8000  0.3000  0.3000  0.3000  0.3000  0.3000
0.2000  0.2000  0.2000  0.2000
 290.  *  0.0000  0.5000  0.5000  0.7000  0.2000  0.2000  0.2000  0.5000  0.5000
0.5000  0.3000  0.3000  0.3000
 300.  *  0.0000  0.3000  0.2000  0.3000  0.1000  0.1000  0.1000  0.6000  0.6000
0.8000  0.3000  0.3000  0.3000
 310.  *  0.0000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.8000  0.6000
0.7000  0.3000  0.3000  0.3000
 320.  *  0.0000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.7000  0.6000
0.6000  0.3000  0.3000  0.3000
 330.  *  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.7000  0.6000
0.6000  0.3000  0.3000  0.3000
 340.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.7000  0.7000
0.6000  0.3000  0.3000  0.3000
 350.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.5000  0.5000
0.4000  0.2000  0.2000  0.2000
 360.  *  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.6000  0.5000
0.4000  0.2000  0.2000  0.2000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.4000  0.8000  0.8000  0.8000  0.7000  0.6000  0.4000  0.8000  0.8000
0.8000  0.6000  0.5000  0.4000
 DEGR. *     60     120     280     120     110     120     110      90      90
90     100     100     100

 THE HIGHEST CONCENTRATION OF   0.9000 PPM OCCURRED AT RECEPTOR     5.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
10,11,6,6,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8
,1036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,12
00,0,0,1200,-1200,0,0,0,0,0,0,-20,-20,-15,-10,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',101.5,101.2,5.9
'N Leg, E Side - 25 m',76.9,168.8,5.9
'N Leg, E Side - 50 m',48.8,245.9,5.9
'N Leg, E Side-Midblk',-100.3,655.6,5.9
'N Leg, W Side-Corner',-165.8,40.5,5.9
'N Leg, W Side - 25 m',-190.5,108.1,5.9
'N Leg, W Side - 50 m',-218.5,185.2,5.9
'N Leg, W Side-Midblk',-367.6,594.9,5.9
'S Leg, E Side-Corner',158.5,-55.3,5.9
'S Leg, E Side - 25 m',183.1,-123.0,5.9
'S Leg, E Side - 50 m',211.2,-200.1,5.9
'S Leg, E Side-Midblk',360.3,-609.7,5.9
'S Leg, W Side-Corner',-109.5,-114.2,5.9
'S Leg, W Side - 25 m',-84.9,-181.9,5.9
'S Leg, W Side - 50 m',-56.8,-259.0,5.9
'S Leg, W Side-Midblk',92.3,-668.7,5.9
'E Leg, N Side - 25 m',172.4,113.7,5.9
'E Leg, N Side - 50 m',253.2,127.9,5.9
'E Leg, N Side-Midblk',682.6,203.6,5.9
'W Leg, N Side - 25 m',-235.4,21.8,5.9
'W Leg, N Side - 50 m',-314.6,0.6,5.9
'W Leg, N Side-Midblk',-735.7,-112.2,5.9
'E Leg, S Side - 25 m',229.4,-42.8,5.9
'E Leg, S Side - 50 m',310.2,-28.6,5.9
'E Leg, S Side-Midblk',739.5,47.1,5.9
'W Leg, S Side - 25 m',-179.1,-132.9,5.9
'W Leg, S Side - 50 m',-258.3,-154.1,5.9
'W Leg, S Side-Midblk',-679.4,-266.9,5.9
'2040 I270 & I370 (IC.36)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-62,-23,-472,1105,24200,0.61,0.0,151.7
1
'N Leg Dep - FreeFlow','AG',56,21,-354,1148,22000,1.61,0.0,139.7
1
'S Leg App - FreeFlow','AG',56,21,467,-1107,22000,0.61,0.0,139.7
1
'S Leg Dep - FreeFlow','AG',-62,-23,348,-1150,24200,1.61,0.0,151.7
1
'E Leg App - FreeFlow','AG',-8,35,1176,244,13200,0.61,0.0,91.7
1
'E Leg Dep - FreeFlow','AG',8,-35,1188,173,13200,1.21,0.0,91.7
1
```

```
'W Leg App - FreeFlow','AG',8,-35,-1150,-345,13200,0.61,0.0,91.7
1
'W Leg Dep - FreeFlow','AG',-8,35,-1168,-276,13200,1.61,0.0,91.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 I270 & I370 (IC.36)

DATE : 3/ 1/19
TIME : 14:36: 5

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-62.0	-23.0	-472.0	1105.0	*	1200.	340.	AG	24200.	0.6	0.0	****		
2. N Leg Dep - FreeFlow	*	56.0	21.0	-354.0	1148.0	*	1199.	340.	AG	22000.	1.6	0.0	****		
3. S Leg App - FreeFlow	*	56.0	21.0	467.0	-1107.0	*	1201.	160.	AG	22000.	0.6	0.0	****		
4. S Leg Dep - FreeFlow	*	-62.0	-23.0	348.0	-1150.0	*	1199.	160.	AG	24200.	1.6	0.0	****		
5. E Leg App - FreeFlow	*	-8.0	35.0	1176.0	244.0	*	1202.	80.	AG	13200.	0.6	0.0	91.7		
6. E Leg Dep - FreeFlow	*	8.0	-35.0	1188.0	173.0	*	1198.	80.	AG	13200.	1.2	0.0	91.7		
7. W Leg App - FreeFlow	*	8.0	-35.0	-1150.0	-345.0	*	1199.	255.	AG	13200.	0.6	0.0	91.7		
8. W Leg Dep - FreeFlow	*	-8.0	35.0	-1168.0	-276.0	*	1201.	255.	AG	13200.	1.6	0.0	91.7		

I370 (IC.36)

DATE : 3/ 1/19
TIME : 14:36: 5

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	101.5	101.2	5.9
2. N Leg, E Side - 25 m	76.9	168.8	5.9
3. N Leg, E Side - 50 m	48.8	245.9	5.9
4. N Leg, E Side-Midblk	-100.3	655.6	5.9
5. N Leg, W Side-Corner	-165.8	40.5	5.9
6. N Leg, W Side - 25 m	-190.5	108.1	5.9
7. N Leg, W Side - 50 m	-218.5	185.2	5.9
8. N Leg, W Side-Midblk	-367.6	594.9	5.9
9. S Leg, E Side-Corner	158.5	-55.3	5.9
10. S Leg, E Side - 25 m	183.1	-123.0	5.9
11. S Leg, E Side - 50 m	211.2	-200.1	5.9
12. S Leg, E Side-Midblk	360.3	-609.7	5.9
13. S Leg, W Side-Corner	-109.5	-114.2	5.9
14. S Leg, W Side - 25 m	-84.9	-181.9	5.9
15. S Leg, W Side - 50 m	-56.8	-259.0	5.9
16. S Leg, W Side-Midblk	92.3	-668.7	5.9
17. E Leg, N Side - 25 m	172.4	113.7	5.9
18. E Leg, N Side - 50 m	253.2	127.9	5.9
19. E Leg, N Side-Midblk	682.6	203.6	5.9
20. W Leg, N Side - 25 m	-235.4	21.8	5.9
21. W Leg, N Side - 50 m	-314.6	0.6	5.9
22. W Leg, N Side-Midblk	-735.7	-112.2	5.9
23. E Leg, S Side - 25 m	229.4	-42.8	5.9
24. E Leg, S Side - 50 m	310.2	-28.6	5.9
25. E Leg, S Side-Midblk	739.5	47.1	5.9
26. W Leg, S Side - 25 m	-179.1	-132.9	5.9

27. W Leg, S Side - 50 m *	-258.3	-154.1	5.9	*
28. W Leg, S Side-Midblk *	-679.4	-266.9	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.1000	0.1000	0.1000	0.1000	0.9000	0.9000	0.9000	0.8000	0.5000	0.4000	0.3000	0.1000	1.8000	1.5000	1.7000
20.	* 0.1000	0.1000	0.1000	0.1000	0.8000	0.8000	0.8000	0.8000	0.5000	0.4000	0.3000	0.1000	1.6000	1.5000	1.5000
30.	* 0.1000	0.1000	0.1000	0.1000	0.8000	0.7000	0.7000	0.7000	0.6000	0.4000	0.3000	0.1000	1.5000	1.5000	1.3000
40.	* 0.1000	0.1000	0.1000	0.1000	0.8000	0.7000	0.7000	0.7000	0.6000	0.4000	0.3000	0.1000	1.6000	1.3000	1.3000
50.	* 0.0000	0.0000	0.0000	0.0000	0.8000	0.7000	0.7000	0.7000	0.7000	0.4000	0.3000	0.0000	1.7000	1.2000	1.3000
60.	* 0.1000	0.0000	0.0000	0.0000	0.8000	0.7000	0.7000	0.7000	0.9000	0.4000	0.3000	0.0000	1.6000	1.3000	1.2000
70.	* 0.1000	0.0000	0.0000	0.0000	1.1000	0.7000	0.7000	0.7000	0.8000	0.4000	0.1000	0.0000	1.7000	1.4000	1.2000
80.	* 0.4000	0.1000	0.0000	0.0000	1.6000	0.9000	0.7000	0.7000	0.7000	0.1000	0.0000	0.0000	1.5000	1.1000	1.0000
90.	* 0.7000	0.2000	0.2000	0.0000	1.8000	1.0000	0.9000	0.7000	0.3000	0.0000	0.0000	0.0000	1.1000	1.0000	1.0000
100.	* 0.6000	0.5000	0.3000	0.1000	1.8000	1.0000	1.0000	0.7000	0.1000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000
110.	* 0.6000	0.4000	0.4000	0.1000	1.8000	1.2000	1.0000	0.8000	0.1000	0.0000	0.0000	0.0000	1.1000	1.1000	1.1000
120.	* 0.6000	0.4000	0.4000	0.2000	1.6000	1.0000	1.2000	0.9000	0.0000	0.0000	0.0000	0.0000	1.2000	1.2000	1.2000

```
 130.  *  0.5000  0.4000  0.3000  0.2000  1.7000  1.3000  1.1000  0.9000  0.0000
0.0000  0.0000  0.0000  1.3000  1.3000  1.3000
 140.  *  0.6000  0.4000  0.3000  0.3000  1.8000  1.5000  1.2000  1.1000  0.1000
0.1000  0.1000  0.1000  1.5000  1.5000  1.5000
 150.  *  0.6000  0.6000  0.6000  0.5000  1.9000  1.5000  1.3000  1.1000  0.2000
0.2000  0.2000  0.1000  1.5000  1.5000  1.4000
 160.  *  1.2000  1.1000  1.1000  1.3000  1.6000  1.3000  1.1000  0.8000  0.5000
0.5000  0.5000  0.3000  1.1000  1.0000  1.0000
 170.  *  1.5000  1.5000  1.5000  1.7000  1.1000  0.8000  0.6000  0.4000  0.9000
0.8000  0.8000  0.5000  0.5000  0.5000  0.5000
 180.  *  1.6000  1.6000  1.7000  1.6000  0.7000  0.5000  0.4000  0.2000  1.0000
1.0000  1.0000  0.7000  0.2000  0.2000  0.2000
 190.  *  1.6000  1.5000  1.7000  1.5000  0.6000  0.4000  0.3000  0.1000  0.9000
0.9000  0.9000  0.8000  0.1000  0.1000  0.1000
 200.  *  1.6000  1.6000  1.5000  1.2000  0.7000  0.4000  0.3000  0.1000  0.9000
0.9000  0.9000  0.9000  0.1000  0.1000  0.1000
 210.  *  1.6000  1.6000  1.3000  1.2000  0.7000  0.5000  0.3000  0.1000  0.8000
0.8000  0.8000  0.8000  0.1000  0.1000  0.1000
 220.  *  1.6000  1.6000  1.4000  1.1000  0.8000  0.5000  0.4000  0.1000  0.8000
0.8000  0.8000  0.8000  0.1000  0.1000  0.1000
 230.  *  1.7000  1.5000  1.3000  1.0000  1.0000  0.5000  0.4000  0.0000  0.9000
0.8000  0.8000  0.8000  0.0000  0.0000  0.0000
 240.  *  1.9000  1.5000  1.4000  1.0000  1.1000  0.5000  0.2000  0.0000  0.8000
0.7000  0.7000  0.7000  0.1000  0.0000  0.0000
 250.  *  1.9000  1.4000  1.1000  1.0000  1.0000  0.3000  0.1000  0.0000  1.1000
0.8000  0.8000  0.8000  0.3000  0.0000  0.0000
 260.  *  1.5000  1.1000  1.0000  1.0000  0.6000  0.1000  0.0000  0.0000  1.5000
0.9000  0.8000  0.7000  0.7000  0.2000  0.0000
 270.  *  1.2000  0.9000  0.9000  0.9000  0.2000  0.0000  0.0000  0.0000  1.6000
1.0000  1.1000  0.8000  0.8000  0.3000  0.2000
 280.  *  1.0000  1.0000  1.0000  1.0000  0.1000  0.0000  0.0000  0.0000  1.6000
1.1000  1.1000  0.8000  0.7000  0.6000  0.4000
 290.  *  1.1000  1.1000  1.1000  1.1000  0.1000  0.0000  0.0000  0.0000  1.4000
1.1000  1.0000  0.9000  0.7000  0.5000  0.4000
 300.  *  1.1000  1.1000  1.1000  1.1000  0.1000  0.0000  0.0000  0.0000  1.5000
1.2000  1.1000  1.0000  0.6000  0.5000  0.4000
 310.  *  1.3000  1.3000  1.3000  1.2000  0.0000  0.0000  0.0000  0.0000  1.6000
1.3000  1.0000  1.0000  0.5000  0.4000  0.4000
 320.  *  1.4000  1.4000  1.4000  1.2000  0.1000  0.1000  0.1000  0.1000  1.6000
1.4000  1.2000  1.2000  0.6000  0.4000  0.4000
 330.  *  1.4000  1.4000  1.4000  1.2000  0.2000  0.2000  0.2000  0.1000  1.8000
1.4000  1.4000  1.0000  0.7000  0.6000  0.7000
 340.  *  1.1000  1.0000  1.0000  0.8000  0.5000  0.5000  0.5000  0.3000  1.4000
1.2000  1.1000  0.8000  1.2000  1.1000  1.2000
 350.  *  0.5000  0.5000  0.4000  0.4000  0.8000  0.8000  0.8000  0.5000  0.9000
0.6000  0.6000  0.4000  1.6000  1.5000  1.8000
 360.  *  0.2000  0.2000  0.2000  0.2000  1.0000  0.9000  0.9000  0.8000  0.6000
0.3000  0.4000  0.2000  1.8000  1.8000  1.7000
```

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.9000  1.6000  1.7000  1.7000  1.9000  1.5000  1.3000  1.1000  1.8000
1.4000  1.4000  1.2000  1.8000  1.8000  1.8000
 DEGR. *    240     200     180     170     150     140     150     140     330
320     330     320      10     360     350
```


JOB: I-495 & I-270 MLS RUN: 2040 I270 & I370 (IC.36)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  1.5000  0.0000  0.0000  0.0000  0.7000  0.5000  0.0000  0.5000  0.5000
0.5000  1.1000  1.0000  0.6000
  20.  *  1.3000  0.0000  0.0000  0.0000  0.6000  0.5000  0.2000  0.5000  0.5000
0.5000  1.1000  1.0000  0.7000
  30.  *  1.2000  0.0000  0.0000  0.0000  0.6000  0.6000  0.3000  0.6000  0.6000
0.6000  1.1000  1.0000  0.8000
  40.  *  1.1000  0.0000  0.0000  0.0000  0.6000  0.6000  0.3000  0.6000  0.6000
0.6000  1.2000  1.0000  0.9000
  50.  *  1.1000  0.0000  0.0000  0.0000  0.6000  0.6000  0.3000  0.7000  0.7000
0.7000  1.3000  1.1000  0.9000
  60.  *  1.0000  0.1000  0.1000  0.0000  0.7000  0.7000  0.4000  0.9000  0.9000
0.7000  1.4000  1.1000  0.9000
  70.  *  1.1000  0.1000  0.1000  0.1000  1.1000  1.0000  0.7000  0.8000  0.8000
0.7000  1.2000  1.1000  0.9000
  80.  *  1.0000  0.4000  0.4000  0.4000  1.4000  1.3000  1.4000  0.7000  0.7000
0.5000  1.1000  0.9000  0.6000
  90.  *  1.0000  0.6000  0.6000  0.4000  1.7000  1.6000  1.2000  0.3000  0.3000
0.2000  0.9000  0.7000  0.4000
```

```
 100.  *  1.0000  0.6000  0.6000  0.5000  1.6000  1.4000  1.2000  0.1000  0.1000
0.1000  0.7000  0.5000  0.3000
 110.  *  1.1000  0.6000  0.6000  0.6000  1.4000  1.2000  1.1000  0.1000  0.1000
0.1000  0.7000  0.5000  0.3000
 120.  *  1.2000  0.6000  0.6000  0.6000  1.4000  1.2000  1.0000  0.0000  0.0000
0.0000  0.7000  0.5000  0.2000
 130.  *  1.3000  0.5000  0.5000  0.5000  1.4000  1.3000  0.8000  0.0000  0.0000
0.0000  0.8000  0.6000  0.1000
 140.  *  1.3000  0.5000  0.5000  0.5000  1.4000  1.2000  0.7000  0.0000  0.0000
0.0000  0.8000  0.5000  0.0000
 150.  *  1.1000  0.4000  0.4000  0.4000  1.3000  0.9000  0.6000  0.0000  0.0000
0.0000  0.6000  0.3000  0.0000
 160.  *  0.8000  0.6000  0.4000  0.4000  1.0000  0.8000  0.7000  0.1000  0.0000
0.0000  0.3000  0.1000  0.0000
 170.  *  0.4000  0.8000  0.6000  0.4000  0.8000  0.7000  0.7000  0.4000  0.2000
0.0000  0.1000  0.0000  0.0000
 180.  *  0.2000  1.0000  0.9000  0.4000  0.6000  0.6000  0.6000  0.6000  0.4000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  1.0000  0.9000  0.6000  0.6000  0.6000  0.6000  0.6000  0.5000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.1000  1.1000  1.0000  0.7000  0.7000  0.7000  0.7000  0.6000  0.5000
0.2000  0.0000  0.0000  0.0000
 210.  *  0.1000  1.1000  0.9000  0.8000  0.7000  0.7000  0.7000  0.6000  0.4000
0.3000  0.0000  0.0000  0.0000
 220.  *  0.1000  1.0000  1.0000  0.9000  0.8000  0.8000  0.8000  0.6000  0.4000
0.3000  0.0000  0.0000  0.0000
 230.  *  0.0000  1.2000  1.2000  0.9000  1.0000  1.0000  0.9000  0.7000  0.5000
0.4000  0.0000  0.0000  0.0000
 240.  *  0.0000  1.6000  1.2000  0.8000  1.1000  1.1000  1.0000  0.7000  0.5000
0.4000  0.1000  0.1000  0.1000
 250.  *  0.0000  1.4000  1.3000  1.0000  1.0000  1.0000  0.8000  1.0000  0.8000
0.6000  0.3000  0.3000  0.2000
 260.  *  0.0000  1.2000  1.0000  0.6000  0.6000  0.6000  0.5000  1.2000  1.0000
0.9000  0.6000  0.5000  0.4000
 270.  *  0.0000  0.8000  0.7000  0.4000  0.2000  0.2000  0.2000  1.4000  1.4000
1.1000  0.8000  0.8000  0.6000
 280.  *  0.1000  0.6000  0.5000  0.4000  0.1000  0.1000  0.1000  1.5000  1.4000
1.0000  0.7000  0.7000  0.7000
 290.  *  0.2000  0.7000  0.5000  0.3000  0.1000  0.1000  0.1000  1.1000  1.2000
1.0000  0.7000  0.7000  0.7000
 300.  *  0.2000  0.8000  0.5000  0.3000  0.1000  0.1000  0.1000  1.3000  1.1000
0.9000  0.6000  0.6000  0.6000
 310.  *  0.2000  0.8000  0.5000  0.1000  0.0000  0.0000  0.0000  1.3000  1.1000
0.7000  0.5000  0.5000  0.5000
 320.  *  0.3000  0.7000  0.5000  0.0000  0.0000  0.0000  0.0000  1.2000  1.0000
0.6000  0.5000  0.5000  0.5000
 330.  *  0.5000  0.6000  0.3000  0.0000  0.0000  0.0000  0.0000  1.1000  0.9000
0.5000  0.5000  0.5000  0.5000
```

```
                                  2040 I270 & I370
 340.  *  1.2000  0.3000  0.1000  0.0000  0.1000  0.0000  0.0000  0.8000  0.6000
0.5000  0.7000  0.5000  0.5000
 350.  *  1.7000  0.1000  0.0000  0.0000  0.4000  0.2000  0.0000  0.6000  0.5000
0.5000  0.9000  0.7000  0.5000
 360.  *  1.7000  0.0000  0.0000  0.0000  0.6000  0.4000  0.0000  0.5000  0.5000
0.5000  1.1000  0.9000  0.5000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.7000  1.6000  1.3000  1.0000  1.7000  1.6000  1.4000  1.5000  1.4000
1.1000  1.4000  1.1000  0.9000
 DEGR. *    350     240     250     250      90      90      80     280     270
270      60      50      60

 THE HIGHEST CONCENTRATION OF   1.9000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
11,11,5,5,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8
,1036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,12
00,0,0,1200,-1200,0,0,0,0,0,0,-40,-40,-40,-45,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',55.6,154.6,5.9
'N Leg, E Side - 25 m',9.3,209.8,5.9
'N Leg, E Side - 50 m',-43.4,272.6,5.9
'N Leg, E Side-Midblk',-323.6,606.6,5.9
'N Leg, W Side-Corner',-153.8,-37.7,5.9
'N Leg, W Side - 25 m',-200.1,17.5,5.9
'N Leg, W Side - 50 m',-252.8,80.4,5.9
'N Leg, W Side-Midblk',-533.0,414.3,5.9
'S Leg, E Side-Corner',146.0,47.0,5.9
'S Leg, E Side - 25 m',192.3,-8.2,5.9
'S Leg, E Side - 50 m',245.0,-71.0,5.9
'S Leg, E Side-Midblk',525.2,-405.0,5.9
'S Leg, W Side-Corner',-63.8,-144.9,5.9
'S Leg, W Side - 25 m',-17.5,-200.1,5.9
'S Leg, W Side - 50 m',35.2,-262.9,5.9
'S Leg, W Side-Midblk',315.5,-596.9,5.9
'E Leg, N Side - 25 m',106.6,205.5,5.9
'E Leg, N Side - 50 m',164.5,263.5,5.9
'E Leg, N Side-Midblk',472.8,571.8,5.9
'W Leg, N Side - 25 m',-208.9,-83.9,5.9
'W Leg, N Side - 50 m',-271.8,-136.7,5.9
'W Leg, N Side-Midblk',-605.7,-416.9,5.9
'E Leg, S Side - 25 m',196.9,97.9,5.9
'E Leg, S Side - 50 m',254.9,155.9,5.9
'E Leg, S Side-Midblk',563.2,464.2,5.9
'W Leg, S Side - 25 m',-119.0,-191.2,5.9
'W Leg, S Side - 50 m',-181.8,-243.9,5.9
'W Leg, S Side-Midblk',-515.7,-524.1,5.9
'2040 I270 & MD189 (IC.33)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-51,-42,-822,877,24200,0.88,0.0,151.7
1
'N Leg Dep - FreeFlow','AG',51,42,-721,962,24200,0.61,0.0,151.7
1
'S Leg App - FreeFlow','AG',51,42,822,-877,24200,0.88,0.0,151.7
1
'S Leg Dep - FreeFlow','AG',-51,-42,721,-962,24200,0.61,0.0,151.7
1
'E Leg App - FreeFlow','AG',-20,22,827,870,11000,1.67,0.0,79.7
1
'E Leg Dep - FreeFlow','AG',20,-22,870,827,11000,0.71,0.0,79.7
1
```

```
'W Leg App - FreeFlow','AG',20,-22,-900,-794,11000,0.89,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',-20,22,-939,-748,11000,0.71,0.0,79.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 I270 & MD189 (IC.33)

DATE : 1/16/19
TIME : 15:27:22

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-51.0	-42.0	-822.0	877.0	*	1200.	320.	AG	24200.	0.9	0.0	****		
2. N Leg Dep - FreeFlow	*	51.0	42.0	-721.0	962.0	*	1201.	320.	AG	24200.	0.6	0.0	****		
3. S Leg App - FreeFlow	*	51.0	42.0	822.0	-877.0	*	1200.	140.	AG	24200.	0.9	0.0	****		
4. S Leg Dep - FreeFlow	*	-51.0	-42.0	721.0	-962.0	*	1201.	140.	AG	24200.	0.6	0.0	****		
5. E Leg App - FreeFlow	*	-20.0	22.0	827.0	870.0	*	1199.	45.	AG	11000.	1.7	0.0	79.7		
6. E Leg Dep - FreeFlow	*	20.0	-22.0	870.0	827.0	*	1201.	45.	AG	11000.	0.7	0.0	79.7		
7. W Leg App - FreeFlow	*	20.0	-22.0	-900.0	-794.0	*	1201.	230.	AG	11000.	0.9	0.0	79.7		
8. W Leg Dep - FreeFlow	*	-20.0	22.0	-939.0	-748.0	*	1199.	230.	AG	11000.	0.7	0.0	79.7		

MD189 (IC.33)

DATE : 1/16/19
TIME : 15:27:22

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	55.6	154.6	5.9
2. N Leg, E Side - 25 m	9.3	209.8	5.9
3. N Leg, E Side - 50 m	-43.4	272.6	5.9
4. N Leg, E Side-Midblk	-323.6	606.6	5.9
5. N Leg, W Side-Corner	-153.8	-37.7	5.9
6. N Leg, W Side - 25 m	-200.1	17.5	5.9
7. N Leg, W Side - 50 m	-252.8	80.4	5.9
8. N Leg, W Side-Midblk	-533.0	414.3	5.9
9. S Leg, E Side-Corner	146.0	47.0	5.9
10. S Leg, E Side - 25 m	192.3	-8.2	5.9
11. S Leg, E Side - 50 m	245.0	-71.0	5.9
12. S Leg, E Side-Midblk	525.2	-405.0	5.9
13. S Leg, W Side-Corner	-63.8	-144.9	5.9
14. S Leg, W Side - 25 m	-17.5	-200.1	5.9
15. S Leg, W Side - 50 m	35.2	-262.9	5.9
16. S Leg, W Side-Midblk	315.5	-596.9	5.9
17. E Leg, N Side - 25 m	106.6	205.5	5.9
18. E Leg, N Side - 50 m	164.5	263.5	5.9
19. E Leg, N Side-Midblk	472.8	571.8	5.9
20. W Leg, N Side - 25 m	-208.9	-83.9	5.9
21. W Leg, N Side - 50 m	-271.8	-136.7	5.9
22. W Leg, N Side-Midblk	-605.7	-416.9	5.9
23. E Leg, S Side - 25 m	196.9	97.9	5.9
24. E Leg, S Side - 50 m	254.9	155.9	5.9
25. E Leg, S Side-Midblk	563.2	464.2	5.9
26. W Leg, S Side - 25 m	-119.0	-191.2	5.9

27. W Leg, S Side - 50 m	*	-181.8	-243.9	5.9 *
28. W Leg, S Side-Midblk	*	-515.7	-524.1	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.1000	0.0000	0.0000	0.0000	0.7000	0.7000	0.7000	0.7000	0.7000	0.3000	0.3000	0.1000	1.0000	0.9000	0.8000
20.	*	0.1000	0.0000	0.0000	0.0000	0.7000	0.6000	0.6000	0.6000	0.7000	0.4000	0.3000	0.0000	1.4000	1.1000	0.8000
30.	*	0.2000	0.0000	0.0000	0.0000	0.7000	0.6000	0.6000	0.6000	0.8000	0.3000	0.2000	0.0000	1.3000	0.9000	0.8000
40.	*	0.6000	0.1000	0.0000	0.0000	1.0000	0.7000	0.6000	0.6000	0.7000	0.2000	0.0000	0.0000	1.3000	0.8000	0.7000
50.	*	1.0000	0.2000	0.1000	0.0000	1.4000	1.0000	0.8000	0.7000	0.3000	0.0000	0.0000	0.0000	0.9000	0.6000	0.5000
60.	*	1.1000	0.4000	0.3000	0.0000	1.4000	1.0000	0.9000	0.6000	0.1000	0.0000	0.0000	0.0000	0.7000	0.5000	0.5000
70.	*	1.0000	0.5000	0.3000	0.0000	1.1000	0.9000	0.9000	0.6000	0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000
80.	*	0.9000	0.4000	0.3000	0.1000	1.3000	0.9000	0.9000	0.7000	0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000
90.	*	0.7000	0.4000	0.3000	0.1000	1.0000	0.9000	1.0000	0.8000	0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000
100.	*	0.6000	0.4000	0.3000	0.1000	1.2000	1.0000	0.9000	0.8000	0.1000	0.1000	0.1000	0.1000	0.7000	0.7000	0.7000
110.	*	0.6000	0.4000	0.3000	0.1000	1.3000	1.0000	1.0000	0.9000	0.1000	0.1000	0.1000	0.1000	0.7000	0.7000	0.7000
120.	*	0.6000	0.4000	0.4000	0.2000	1.3000	1.2000	1.2000	1.0000	0.1000	0.1000	0.1000	0.1000	0.8000	0.8000	0.8000

130. * 0.9000 0.6000 0.5000 0.4000 1.2000 1.0000 1.1000 1.0000 0.3000
0.3000 0.3000 0.2000 0.7000 0.7000 0.7000
140. * 1.2000 1.1000 0.9000 0.6000 1.0000 0.8000 0.8000 0.7000 0.6000
0.6000 0.6000 0.5000 0.5000 0.5000 0.5000
150. * 1.5000 1.1000 1.1000 0.8000 0.6000 0.4000 0.4000 0.2000 0.9000
0.8000 0.8000 0.6000 0.2000 0.2000 0.2000
160. * 1.5000 1.2000 1.0000 0.8000 0.4000 0.3000 0.3000 0.1000 0.9000
0.9000 0.9000 0.8000 0.1000 0.1000 0.1000
170. * 1.4000 1.1000 0.8000 0.7000 0.4000 0.3000 0.3000 0.1000 0.8000
0.8000 0.8000 0.8000 0.0000 0.0000 0.0000
180. * 1.4000 0.9000 0.9000 0.7000 0.4000 0.3000 0.3000 0.1000 0.7000
0.7000 0.7000 0.7000 0.0000 0.0000 0.0000
190. * 1.4000 0.9000 0.7000 0.6000 0.5000 0.2000 0.2000 0.0000 0.7000
0.7000 0.7000 0.7000 0.0000 0.0000 0.0000
200. * 1.5000 0.8000 0.7000 0.5000 0.5000 0.2000 0.2000 0.0000 0.7000
0.6000 0.6000 0.6000 0.0000 0.0000 0.0000
210. * 1.4000 0.7000 0.7000 0.5000 0.6000 0.3000 0.2000 0.0000 0.7000
0.6000 0.6000 0.6000 0.1000 0.0000 0.0000
220. * 1.4000 0.7000 0.7000 0.5000 0.6000 0.2000 0.1000 0.0000 0.8000
0.6000 0.6000 0.6000 0.2000 0.0000 0.0000
230. * 1.1000 0.6000 0.5000 0.5000 0.4000 0.1000 0.0000 0.0000 1.1000
0.8000 0.7000 0.7000 0.5000 0.1000 0.0000
240. * 0.7000 0.5000 0.5000 0.5000 0.2000 0.0000 0.0000 0.0000 1.3000
0.9000 0.8000 0.6000 0.6000 0.3000 0.1000
250. * 0.6000 0.5000 0.5000 0.5000 0.1000 0.0000 0.0000 0.0000 1.4000
0.8000 0.8000 0.6000 0.6000 0.3000 0.2000
260. * 0.6000 0.5000 0.5000 0.5000 0.0000 0.0000 0.0000 0.0000 1.2000
0.9000 0.8000 0.6000 0.6000 0.3000 0.2000
270. * 0.6000 0.5000 0.5000 0.5000 0.0000 0.0000 0.0000 0.0000 1.2000
1.1000 0.9000 0.7000 0.4000 0.3000 0.2000
280. * 0.7000 0.7000 0.7000 0.7000 0.1000 0.1000 0.1000 0.1000 1.2000
0.9000 1.0000 0.7000 0.4000 0.3000 0.2000
290. * 0.7000 0.7000 0.7000 0.6000 0.1000 0.1000 0.1000 0.1000 1.3000
1.2000 1.0000 0.8000 0.4000 0.3000 0.2000
300. * 0.8000 0.8000 0.8000 0.7000 0.1000 0.1000 0.1000 0.1000 1.4000
1.2000 1.2000 0.9000 0.4000 0.3000 0.3000
310. * 0.7000 0.7000 0.7000 0.5000 0.3000 0.3000 0.3000 0.2000 1.3000
1.1000 1.2000 1.1000 0.7000 0.6000 0.4000
320. * 0.5000 0.5000 0.4000 0.3000 0.6000 0.6000 0.6000 0.5000 1.1000
0.9000 0.9000 0.8000 1.1000 1.0000 0.8000
330. * 0.2000 0.2000 0.2000 0.1000 0.8000 0.8000 0.8000 0.6000 0.7000
0.5000 0.5000 0.3000 1.2000 1.0000 1.0000
340. * 0.1000 0.1000 0.1000 0.1000 0.9000 0.9000 0.9000 0.8000 0.5000
0.4000 0.4000 0.2000 1.3000 1.1000 1.0000
350. * 0.0000 0.0000 0.0000 0.0000 0.8000 0.8000 0.8000 0.8000 0.5000
0.4000 0.4000 0.2000 1.2000 1.1000 1.0000
360. * 0.1000 0.0000 0.0000 0.0000 0.7000 0.7000 0.7000 0.7000 0.6000
0.3000 0.4000 0.2000 1.2000 0.7000 0.8000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.5000  1.2000  1.1000  0.8000  1.4000  1.2000  1.2000  1.0000  1.4000
1.2000  1.2000  1.1000  1.4000  1.1000  1.0000
 DEGR. *    150     160     150     150      50     120     120     120     250
290     300     310      20     350     330

↟
                            PAGE  4
      JOB: I-495 & I-270 MLS                                   RUN: 2040 I270 &
MD189 (IC.33)

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:  10.-360.

 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.7000  0.1000  0.1000  0.1000  0.4000  0.3000  0.2000  0.7000  0.7000
0.6000  0.9000  0.7000  0.6000
  20.  *  0.5000  0.1000  0.1000  0.1000  0.4000  0.3000  0.2000  0.7000  0.7000
0.6000  1.0000  0.9000  0.8000
  30.  *  0.5000  0.2000  0.2000  0.2000  0.5000  0.3000  0.3000  0.8000  0.8000
0.7000  1.3000  1.1000  0.8000
  40.  *  0.5000  0.6000  0.5000  0.5000  0.7000  0.6000  0.4000  0.7000  0.6000
0.4000  1.1000  1.3000  0.8000
  50.  *  0.5000  1.0000  1.0000  0.8000  1.0000  0.9000  0.6000  0.3000  0.3000
0.2000  0.9000  0.7000  0.8000
  60.  *  0.5000  1.1000  1.1000  0.9000  1.2000  1.1000  0.8000  0.1000  0.1000
0.1000  0.5000  0.5000  0.4000
  70.  *  0.5000  1.0000  1.0000  0.8000  1.0000  0.9000  0.8000  0.0000  0.0000
0.0000  0.5000  0.5000  0.3000
  80.  *  0.5000  0.9000  0.9000  0.8000  0.8000  0.7000  0.7000  0.0000  0.0000
0.0000  0.4000  0.4000  0.2000
  90.  *  0.5000  0.7000  0.7000  0.7000  1.0000  0.8000  0.7000  0.0000  0.0000
0.0000  0.4000  0.4000  0.2000
```

```
 100.  *  0.7000  0.6000  0.6000  0.6000  0.8000  0.8000  0.6000  0.0000  0.0000
0.0000  0.4000  0.4000  0.2000
 110.  *  0.6000  0.6000  0.6000  0.6000  0.8000  0.8000  0.5000  0.0000  0.0000
0.0000  0.5000  0.4000  0.0000
 120.  *  0.7000  0.6000  0.6000  0.6000  0.9000  0.7000  0.4000  0.0000  0.0000
0.0000  0.5000  0.3000  0.0000
 130.  *  0.5000  0.6000  0.6000  0.6000  0.7000  0.6000  0.4000  0.0000  0.0000
0.0000  0.3000  0.1000  0.0000
 140.  *  0.3000  0.8000  0.7000  0.6000  0.5000  0.4000  0.4000  0.1000  0.1000
0.0000  0.1000  0.0000  0.0000
 150.  *  0.1000  1.0000  0.8000  0.6000  0.4000  0.4000  0.4000  0.4000  0.2000
0.0000  0.0000  0.0000  0.0000
 160.  *  0.1000  1.1000  1.0000  0.6000  0.4000  0.4000  0.4000  0.5000  0.3000
0.0000  0.0000  0.0000  0.0000
 170.  *  0.0000  1.1000  1.0000  0.7000  0.4000  0.4000  0.4000  0.6000  0.4000
0.1000  0.0000  0.0000  0.0000
 180.  *  0.0000  1.1000  1.0000  0.9000  0.4000  0.4000  0.4000  0.5000  0.3000
0.2000  0.0000  0.0000  0.0000
 190.  *  0.0000  1.1000  1.1000  1.1000  0.5000  0.5000  0.5000  0.4000  0.3000
0.2000  0.0000  0.0000  0.0000
 200.  *  0.0000  1.2000  1.1000  1.2000  0.5000  0.5000  0.5000  0.4000  0.3000
0.2000  0.0000  0.0000  0.0000
 210.  *  0.0000  1.4000  1.5000  1.1000  0.6000  0.5000  0.5000  0.5000  0.4000
0.3000  0.1000  0.1000  0.1000
 220.  *  0.0000  1.1000  1.0000  1.0000  0.6000  0.6000  0.4000  0.6000  0.6000
0.5000  0.2000  0.2000  0.2000
 230.  *  0.0000  0.9000  0.8000  0.7000  0.4000  0.4000  0.3000  0.9000  0.9000
0.9000  0.5000  0.5000  0.3000
 240.  *  0.0000  0.6000  0.6000  0.4000  0.2000  0.2000  0.1000  1.2000  1.0000
0.9000  0.6000  0.6000  0.5000
 250.  *  0.0000  0.5000  0.5000  0.3000  0.1000  0.1000  0.1000  1.0000  1.0000
0.9000  0.6000  0.6000  0.5000
 260.  *  0.0000  0.5000  0.5000  0.3000  0.0000  0.0000  0.0000  1.1000  0.9000
0.9000  0.6000  0.6000  0.5000
 270.  *  0.0000  0.5000  0.5000  0.3000  0.0000  0.0000  0.0000  0.9000  1.0000
0.8000  0.4000  0.4000  0.4000
 280.  *  0.0000  0.4000  0.4000  0.2000  0.0000  0.0000  0.0000  0.9000  0.9000
0.7000  0.4000  0.4000  0.4000
 290.  *  0.0000  0.5000  0.4000  0.0000  0.0000  0.0000  0.0000  0.9000  0.9000
0.5000  0.4000  0.4000  0.4000
 300.  *  0.1000  0.5000  0.3000  0.0000  0.0000  0.0000  0.0000  1.0000  0.8000
0.5000  0.4000  0.4000  0.4000
 310.  *  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000  0.8000  0.7000
0.5000  0.4000  0.4000  0.4000
 320.  *  0.5000  0.1000  0.0000  0.0000  0.1000  0.0000  0.0000  0.6000  0.5000
0.5000  0.6000  0.5000  0.4000
 330.  *  0.8000  0.0000  0.0000  0.0000  0.4000  0.1000  0.0000  0.5000  0.5000
0.5000  0.8000  0.6000  0.4000
```

```
 340.  *  1.0000  0.0000  0.0000  0.0000  0.5000  0.3000  0.0000  0.5000  0.5000
0.5000  0.9000  0.8000  0.4000
 350.  *  0.8000  0.0000  0.0000  0.0000  0.6000  0.4000  0.1000  0.5000  0.5000
0.5000  0.9000  0.8000  0.5000
 360.  *  0.8000  0.1000  0.1000  0.1000  0.4000  0.3000  0.1000  0.6000  0.6000
0.6000  0.8000  0.7000  0.6000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.0000  1.4000  1.5000  1.2000  1.2000  1.1000  0.8000  1.2000  1.0000
0.9000  1.3000  1.3000  0.8000
 DEGR. *    340     210     210     200      60      60      60     240     240
230      30      40      50

 THE HIGHEST CONCENTRATION OF   1.5000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
7,7,9,9,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,10,10,-10,-10,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',120.3,141.0,5.9
'N Leg, E Side - 25 m',132.8,212.0,5.9
'N Leg, E Side - 50 m',147.1,292.7,5.9
'N Leg, E Side-Midblk',222.8,722.1,5.9
'N Leg, W Side-Corner',-76.7,106.3,5.9
'N Leg, W Side - 25 m',-64.2,177.2,5.9
'N Leg, W Side - 50 m',-50.0,258.0,5.9
'N Leg, W Side-Midblk',25.7,687.3,5.9
'S Leg, E Side-Corner',76.7,-106.3,5.9
'S Leg, E Side - 25 m',64.2,-177.2,5.9
'S Leg, E Side - 50 m',50.0,-258.0,5.9
'S Leg, E Side-Midblk',-25.7,-687.3,5.9
'S Leg, W Side-Corner',-120.3,-141.0,5.9
'S Leg, W Side - 25 m',-132.8,-212.0,5.9
'S Leg, W Side - 50 m',-147.1,-292.7,5.9
'S Leg, W Side-Midblk',-222.8,-722.1,5.9
'E Leg, N Side - 25 m',191.2,153.5,5.9
'E Leg, N Side - 50 m',272.0,167.8,5.9
'E Leg, N Side-Midblk',701.4,243.5,5.9
'W Leg, N Side - 25 m',-147.6,93.8,5.9
'W Leg, N Side - 50 m',-228.4,79.5,5.9
'W Leg, N Side-Midblk',-657.7,3.8,5.9
'E Leg, S Side - 25 m',147.6,-93.8,5.9
'E Leg, S Side - 50 m',228.4,-79.5,5.9
'E Leg, S Side-Midblk',657.7,-3.8,5.9
'W Leg, S Side - 25 m',-191.2,-153.5,5.9
'W Leg, S Side - 50 m',-272.0,-167.8,5.9
'W Leg, S Side-Midblk',-701.4,-243.5,5.9
'2040 I495 & I95 (IC.16)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-41,7,167,1189,15400,0.61,0.0,103.7
1
'N Leg Dep - FreeFlow','AG',41,-7,250,1174,15400,1.44,0.0,103.7
1
'S Leg App - FreeFlow','AG',41,-7,-167,-1189,15400,0.61,0.0,103.7
1
'S Leg Dep - FreeFlow','AG',-41,7,-250,-1174,15400,0.61,0.0,103.7
1
'E Leg App - FreeFlow','AG',-9,53,1172,262,19800,1.61,0.0,127.7
1
'E Leg Dep - FreeFlow','AG',9,-53,1191,155,19800,0.61,0.0,127.7
1
```

```
'W Leg App - FreeFlow','AG',9,-53,-1172,-262,19800,0.61,0.0,127.7
1
'W Leg Dep - FreeFlow','AG',-9,53,-1191,-155,19800,2.05,0.0,127.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 I495 & I95 (IC.16)

DATE : 1/16/19
TIME : 16:23:48

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-41.0	7.0	167.0	1189.0	*	1200.	10.	AG	15400.	0.6	0.0	****		
2. N Leg Dep - FreeFlow	*	41.0	-7.0	250.0	1174.0	*	1199.	10.	AG	15400.	1.4	0.0	****		
3. S Leg App - FreeFlow	*	41.0	-7.0	-167.0	-1189.0	*	1200.	190.	AG	15400.	0.6	0.0	****		
4. S Leg Dep - FreeFlow	*	-41.0	7.0	-250.0	-1174.0	*	1199.	190.	AG	15400.	0.6	0.0	****		
5. E Leg App - FreeFlow	*	-9.0	53.0	1172.0	262.0	*	1199.	80.	AG	19800.	1.6	0.0	****		
6. E Leg Dep - FreeFlow	*	9.0	-53.0	1191.0	155.0	*	1200.	80.	AG	19800.	0.6	0.0	****		
7. W Leg App - FreeFlow	*	9.0	-53.0	-1172.0	-262.0	*	1199.	260.	AG	19800.	0.6	0.0	****		
8. W Leg Dep - FreeFlow	*	-9.0	53.0	-1191.0	-155.0	*	1200.	260.	AG	19800.	2.0	0.0	****		

(IC.16)

DATE : 1/16/19
TIME : 16:23:48

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	120.3	141.0	5.9
2. N Leg, E Side - 25 m	132.8	212.0	5.9
3. N Leg, E Side - 50 m	147.1	292.7	5.9
4. N Leg, E Side-Midblk	222.8	722.1	5.9
5. N Leg, W Side-Corner	-76.7	106.3	5.9
6. N Leg, W Side - 25 m	-64.2	177.2	5.9
7. N Leg, W Side - 50 m	-50.0	258.0	5.9
8. N Leg, W Side-Midblk	25.7	687.3	5.9
9. S Leg, E Side-Corner	76.7	-106.3	5.9
10. S Leg, E Side - 25 m	64.2	-177.2	5.9
11. S Leg, E Side - 50 m	50.0	-258.0	5.9
12. S Leg, E Side-Midblk	-25.7	-687.3	5.9
13. S Leg, W Side-Corner	-120.3	-141.0	5.9
14. S Leg, W Side - 25 m	-132.8	-212.0	5.9
15. S Leg, W Side - 50 m	-147.1	-292.7	5.9
16. S Leg, W Side-Midblk	-222.8	-722.1	5.9
17. E Leg, N Side - 25 m	191.2	153.5	5.9
18. E Leg, N Side - 50 m	272.0	167.8	5.9
19. E Leg, N Side-Midblk	701.4	243.5	5.9
20. W Leg, N Side - 25 m	-147.6	93.8	5.9
21. W Leg, N Side - 50 m	-228.4	79.5	5.9
22. W Leg, N Side-Midblk	-657.7	3.8	5.9
23. E Leg, S Side - 25 m	147.6	-93.8	5.9
24. E Leg, S Side - 50 m	228.4	-79.5	5.9
25. E Leg, S Side-Midblk	657.7	-3.8	5.9
26. W Leg, S Side - 25 m	-191.2	-153.5	5.9

27. W Leg, S Side - 50 m	*	-272.0	-167.8	5.9 *
28. W Leg, S Side-Midblk	*	-701.4	-243.5	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.9000	0.9000	0.7000	0.6000	0.4000	0.4000	0.4000	0.4000	1.4000	1.2000	0.9000	0.7000	1.4000	1.2000	0.9000
20.	* 0.5000	0.4000	0.4000	0.3000	0.7000	0.7000	0.7000	0.6000	1.0000	0.8000	0.7000	0.4000	1.5000	1.4000	1.1000
30.	* 0.2000	0.1000	0.1000	0.1000	0.8000	0.8000	0.8000	0.7000	0.8000	0.5000	0.4000	0.3000	1.6000	1.3000	1.2000
40.	* 0.2000	0.1000	0.1000	0.1000	0.7000	0.7000	0.7000	0.6000	0.7000	0.5000	0.4000	0.2000	1.6000	1.2000	0.9000
50.	* 0.2000	0.1000	0.1000	0.1000	0.7000	0.7000	0.7000	0.7000	0.9000	0.6000	0.5000	0.2000	1.5000	1.1000	0.8000
60.	* 0.3000	0.1000	0.1000	0.1000	0.8000	0.6000	0.6000	0.6000	0.9000	0.5000	0.3000	0.0000	1.4000	1.0000	0.8000
70.	* 0.4000	0.1000	0.0000	0.0000	0.9000	0.6000	0.5000	0.5000	0.8000	0.4000	0.2000	0.0000	1.2000	0.7000	0.5000
80.	* 1.0000	0.2000	0.1000	0.0000	1.7000	0.8000	0.6000	0.5000	0.5000	0.2000	0.0000	0.0000	0.9000	0.5000	0.3000
90.	* 1.3000	0.6000	0.2000	0.0000	2.0000	1.1000	0.8000	0.5000	0.2000	0.0000	0.0000	0.0000	0.5000	0.3000	0.3000
100.	* 1.4000	0.7000	0.5000	0.0000	2.1000	1.3000	1.1000	0.6000	0.1000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000
110.	* 1.2000	0.7000	0.5000	0.1000	1.8000	1.2000	1.0000	0.6000	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000
120.	* 1.1000	0.7000	0.5000	0.1000	1.8000	1.1000	1.0000	0.6000	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000

```
 130.  *  1.0000  0.6000  0.5000  0.1000  1.7000  1.1000  1.0000  0.8000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 140.  *  1.0000  0.7000  0.6000  0.4000  1.5000  1.2000  1.0000  0.9000  0.0000
0.0000  0.0000  0.0000  0.4000  0.4000  0.4000
 150.  *  1.0000  0.7000  0.6000  0.3000  1.7000  1.2000  1.0000  0.9000  0.0000
0.0000  0.0000  0.0000  0.5000  0.5000  0.5000
 160.  *  1.0000  0.7000  0.5000  0.4000  1.5000  1.4000  1.1000  1.0000  0.0000
0.0000  0.0000  0.0000  0.5000  0.5000  0.5000
 170.  *  1.1000  0.7000  0.5000  0.4000  1.7000  1.3000  1.1000  0.8000  0.1000
0.1000  0.1000  0.1000  0.6000  0.6000  0.6000
 180.  *  1.1000  0.9000  0.8000  0.5000  1.6000  1.2000  1.2000  1.0000  0.2000
0.2000  0.2000  0.1000  0.5000  0.5000  0.5000
 190.  *  1.5000  1.4000  1.1000  0.9000  1.5000  1.2000  0.9000  0.7000  0.4000
0.4000  0.4000  0.3000  0.4000  0.4000  0.3000
 200.  *  1.6000  1.5000  1.4000  1.3000  1.3000  0.9000  0.7000  0.4000  0.5000
0.5000  0.5000  0.5000  0.2000  0.2000  0.1000
 210.  *  2.0000  1.5000  1.6000  1.3000  1.2000  0.8000  0.5000  0.4000  0.6000
0.6000  0.6000  0.5000  0.1000  0.1000  0.1000
 220.  *  2.0000  1.7000  1.3000  1.3000  1.3000  0.8000  0.6000  0.3000  0.5000
0.5000  0.5000  0.4000  0.0000  0.0000  0.0000
 230.  *  2.1000  1.6000  1.3000  1.1000  1.5000  0.8000  0.6000  0.2000  0.5000
0.5000  0.5000  0.4000  0.0000  0.0000  0.0000
 240.  *  2.2000  1.5000  1.3000  0.8000  1.7000  0.9000  0.6000  0.1000  0.4000
0.4000  0.4000  0.4000  0.1000  0.0000  0.0000
 250.  *  2.2000  1.4000  1.2000  0.7000  1.7000  0.7000  0.3000  0.0000  0.4000
0.3000  0.3000  0.3000  0.2000  0.0000  0.0000
 260.  *  1.9000  0.9000  0.7000  0.6000  1.3000  0.3000  0.1000  0.0000  0.9000
0.5000  0.3000  0.3000  0.6000  0.2000  0.0000
 270.  *  1.1000  0.7000  0.6000  0.6000  0.6000  0.1000  0.0000  0.0000  1.3000
0.8000  0.5000  0.3000  0.9000  0.4000  0.2000
 280.  *  0.9000  0.7000  0.7000  0.7000  0.2000  0.0000  0.0000  0.0000  1.4000
1.0000  0.8000  0.4000  1.0000  0.6000  0.4000
 290.  *  0.7000  0.6000  0.6000  0.6000  0.1000  0.0000  0.0000  0.0000  1.3000
1.0000  0.9000  0.4000  1.0000  0.7000  0.5000
 300.  *  0.7000  0.6000  0.6000  0.6000  0.1000  0.0000  0.0000  0.0000  1.2000
0.9000  0.8000  0.5000  0.9000  0.6000  0.5000
 310.  *  0.8000  0.7000  0.7000  0.7000  0.1000  0.0000  0.0000  0.0000  1.2000
0.9000  0.7000  0.6000  0.8000  0.6000  0.4000
 320.  *  0.8000  0.7000  0.7000  0.7000  0.1000  0.0000  0.0000  0.0000  1.3000
1.0000  0.8000  0.7000  0.8000  0.6000  0.4000
 330.  *  0.9000  0.9000  0.9000  0.8000  0.0000  0.0000  0.0000  0.0000  1.3000
1.1000  0.8000  0.7000  0.8000  0.6000  0.4000
 340.  *  1.0000  1.0000  1.0000  0.9000  0.0000  0.0000  0.0000  0.0000  1.4000
1.0000  1.1000  0.8000  0.8000  0.6000  0.4000
 350.  *  1.1000  1.1000  1.1000  0.9000  0.1000  0.1000  0.1000  0.1000  1.6000
1.3000  1.2000  0.8000  0.8000  0.6000  0.4000
 360.  *  1.1000  1.1000  1.0000  0.9000  0.2000  0.2000  0.2000  0.1000  1.6000
1.3000  1.2000  0.9000  1.0000  0.8000  0.6000
```

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  2.2000  1.7000  1.6000  1.3000  2.1000  1.4000  1.2000  1.0000  1.6000
1.3000  1.2000  0.9000  1.6000  1.4000  1.2000
 DEGR. *    240     220     210     200     100     160     180     180     360
350     350     360      40      20      30
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.6000  0.2000  0.1000  0.0000  0.2000  0.0000  0.0000  0.9000  0.8000
0.7000  1.0000  0.8000  0.8000
  20.  *  0.8000  0.1000  0.1000  0.1000  0.5000  0.3000  0.1000  0.7000  0.7000
0.7000  1.2000  1.0000  0.8000
  30.  *  0.8000  0.1000  0.1000  0.1000  0.6000  0.4000  0.1000  0.7000  0.7000
0.7000  1.3000  1.1000  0.8000
  40.  *  0.7000  0.1000  0.1000  0.1000  0.6000  0.4000  0.2000  0.7000  0.7000
0.7000  1.2000  1.2000  1.0000
  50.  *  0.7000  0.1000  0.1000  0.1000  0.6000  0.4000  0.2000  0.9000  0.9000
0.8000  1.2000  1.3000  1.1000
  60.  *  0.5000  0.2000  0.2000  0.2000  0.7000  0.5000  0.3000  0.9000  0.9000
0.7000  1.2000  1.3000  1.1000
  70.  *  0.3000  0.4000  0.4000  0.4000  0.9000  0.8000  0.7000  0.8000  0.8000
0.6000  1.2000  1.2000  1.1000
  80.  *  0.3000  0.9000  0.9000  0.8000  1.5000  1.6000  1.5000  0.5000  0.5000
0.3000  0.8000  0.8000  0.6000
  90.  *  0.3000  1.3000  1.3000  1.0000  1.9000  1.9000  1.9000  0.2000  0.2000
0.1000  0.4000  0.4000  0.2000
```

```
 100.  *  0.4000  1.3000  1.3000  1.2000  1.9000  1.9000  1.7000  0.1000  0.1000
0.1000  0.2000  0.3000  0.1000
 110.  *  0.3000  1.2000  1.2000  1.2000  1.7000  1.7000  1.5000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 120.  *  0.3000  1.1000  1.1000  1.1000  1.5000  1.5000  1.3000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 130.  *  0.3000  1.0000  1.0000  1.0000  1.5000  1.3000  1.2000  0.0000  0.0000
0.0000  0.3000  0.2000  0.0000
 140.  *  0.4000  0.9000  0.9000  0.9000  1.2000  1.3000  1.1000  0.0000  0.0000
0.0000  0.3000  0.2000  0.0000
 150.  *  0.4000  0.9000  0.9000  0.9000  1.2000  1.3000  1.1000  0.0000  0.0000
0.0000  0.3000  0.2000  0.0000
 160.  *  0.4000  0.9000  0.9000  0.8000  1.3000  1.2000  1.0000  0.0000  0.0000
0.0000  0.3000  0.2000  0.0000
 170.  *  0.5000  1.0000  1.0000  1.0000  1.5000  1.4000  1.2000  0.0000  0.0000
0.0000  0.3000  0.2000  0.0000
 180.  *  0.4000  0.8000  0.8000  0.8000  1.4000  1.2000  1.0000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 190.  *  0.3000  1.0000  0.9000  0.9000  1.2000  1.1000  1.1000  0.1000  0.0000
0.0000  0.1000  0.0000  0.0000
 200.  *  0.1000  1.2000  1.1000  0.9000  1.1000  1.1000  1.1000  0.3000  0.1000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.1000  1.2000  1.2000  1.0000  1.2000  1.2000  1.2000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  1.6000  1.3000  1.1000  1.3000  1.3000  1.3000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  1.7000  1.5000  1.2000  1.5000  1.5000  1.5000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  2.0000  1.7000  1.5000  1.7000  1.7000  1.5000  0.3000  0.2000
0.1000  0.1000  0.1000  0.1000
 250.  *  0.0000  2.0000  1.8000  1.7000  1.7000  1.7000  1.5000  0.5000  0.4000
0.1000  0.2000  0.2000  0.1000
 260.  *  0.0000  1.6000  1.5000  1.4000  1.3000  1.2000  1.0000  0.7000  0.8000
0.7000  0.6000  0.5000  0.3000
 270.  *  0.0000  1.0000  0.8000  0.6000  0.6000  0.6000  0.5000  1.2000  1.2000
1.1000  0.9000  0.9000  0.6000
 280.  *  0.0000  0.5000  0.4000  0.3000  0.2000  0.2000  0.2000  1.2000  1.2000
1.1000  1.0000  1.0000  0.7000
 290.  *  0.0000  0.5000  0.4000  0.2000  0.1000  0.1000  0.1000  1.2000  1.1000
0.9000  1.0000  1.0000  0.9000
 300.  *  0.1000  0.5000  0.4000  0.2000  0.1000  0.1000  0.1000  1.2000  1.2000
0.8000  0.9000  0.9000  0.8000
 310.  *  0.3000  0.6000  0.4000  0.2000  0.1000  0.1000  0.1000  1.2000  1.1000
0.8000  0.8000  0.8000  0.8000
 320.  *  0.3000  0.6000  0.4000  0.2000  0.1000  0.1000  0.1000  1.0000  1.0000
0.8000  0.8000  0.8000  0.8000
 330.  *  0.3000  0.5000  0.4000  0.1000  0.0000  0.0000  0.0000  1.2000  1.1000
0.8000  0.8000  0.8000  0.8000
```

```
 340.  *  0.3000  0.5000  0.4000  0.0000  0.0000  0.0000  0.0000  1.2000  1.1000
0.8000  0.8000  0.8000  0.8000
 350.  *  0.4000  0.5000  0.4000  0.0000  0.0000  0.0000  0.0000  1.2000  1.1000
0.7000  0.8000  0.8000  0.8000
 360.  *  0.4000  0.4000  0.2000  0.0000  0.0000  0.0000  0.0000  1.2000  0.9000
0.7000  0.8000  0.8000  0.8000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.8000  2.0000  1.8000  1.7000  1.9000  1.9000  1.9000  1.2000  1.2000
1.1000  1.3000  1.3000  1.1000
 DEGR. *     20     240     250     250      90     100      90     270     270
270      30      60      50

 THE HIGHEST CONCENTRATION OF   2.2000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
6,6,12,12,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8
,1036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,12
00,0,0,1200,-1200,0,0,0,0,0,0,-10,-5,-10,35,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS ',60,108,0.0,0.0,35,0.3048,1,0
'N Leg, E Side-Corner',70.2,138.9,5.9
'N Leg, E Side - 25 m',63.9,210.6,5.9
'N Leg, E Side - 50 m',56.7,292.3,5.9
'N Leg, E Side-Midblk',18.7,726.6,5.9
'S Leg, E Side-Corner',132.8,-281.0,5.9
'S Leg, E Side - 25 m',145.3,-351.9,5.9
'S Leg, E Side - 50 m',159.6,-432.7,5.9
'S Leg, E Side-Midblk',235.3,-862.0,5.9
'S Leg, W Side-Corner',-54.0,-165.9,5.9
'S Leg, W Side - 25 m',-41.5,-236.8,5.9
'S Leg, W Side - 50 m',-27.3,-317.6,5.9
'S Leg, W Side-Midblk',48.4,-746.9,5.9
'E Leg, N Side - 25 m',129.2,97.6,5.9
'E Leg, N Side - 50 m',196.3,50.5,5.9
'E Leg, N Side-Midblk',553.5,-199.5,5.9
'E Leg, S Side - 25 m',191.8,-322.3,5.9
'E Leg, S Side - 50 m',259.0,-369.4,5.9
'E Leg, S Side-Midblk',616.1,-619.4,5.9
'W Leg, S Side - 25 m',-124.9,-178.4,5.9
'W Leg, S Side - 50 m',-205.7,-192.6,5.9
'W Leg, S Side-Midblk',-635.0,-268.4,5.9
'New1',-104.5,254.5,5.9
'New2',-110.9,326.2,5.9
'New3',-118,407.9,5.9
'New4',-156,842.2,5.9
'New5',-155.5,305.4,5.9
'New6',-213.5,363.4,5.9
'New7',-521.8,671.7,5.9
'New8',-260.4,110.5,5.9
'New9',-311.3,161.4,5.9
'New10',-369.3,219.4,5.9
'New11',-677.6,527.7,5.9
'New12',-331.3,98,5.9
'New13',-412.1,83.7,5.9
'New14',-841.4,8,5.9
'2040 I-495 & I270/MD 355 (IC.22)',10,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-36,-5,-140,1192,13200,1.15,0.0,91.7
1
'N Leg Dep - FreeFlow','AG',36,5,-69,1199,13200,0.62,0.0,91.7
1
'S Leg App - FreeFlow','AG',36,5,244,-1176,13200,0.62,0.0,91.7
```

```
1
'S Leg Dep - FreeFlow','AG',-36,-5,173,-1188,13200,0.62,0.0,91.7
1
'E Leg App - FreeFlow','AG',17,76,1024,-629,26400,0.61,0.0,163.7
1
'E Leg Dep - FreeFlow','AG',-17,-76,942,-747,26400,0.88,0.0,163.7
1
'W Leg App - FreeFlow','AG',-17,-76,-1169,-279,26400,0.61,0.0,163.7
1
'W Leg Dep - FreeFlow','AG',17,76,-1194,-137,26400,2.04,0.0,163.7
1
'I270 App - FreeFlow','AG',-31,-37,-882,815,17600,0.61,0.0,115.7
1
'I270 Dep - FreeFlow','AG',31,37,-815,882,17600,2.04,0.0,115.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 I-495 & I270/MD 355 (IC.22)

DATE : 2/ 7/19
TIME : 14:38: 1

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-36.0	-5.0	-140.0	1192.0	*	1202.	355.	AG	13200.	1.1	0.0	91.7		
2. N Leg Dep - FreeFlow	*	36.0	5.0	-69.0	1199.0	*	1199.	355.	AG	13200.	0.6	0.0	91.7		
3. S Leg App - FreeFlow	*	36.0	5.0	244.0	-1176.0	*	1199.	170.	AG	13200.	0.6	0.0	91.7		
4. S Leg Dep - FreeFlow	*	-36.0	-5.0	173.0	-1188.0	*	1201.	170.	AG	13200.	0.6	0.0	91.7		
5. E Leg App - FreeFlow	*	17.0	76.0	1024.0	-629.0	*	1229.	125.	AG	26400.	0.6	0.0	****		
6. E Leg Dep - FreeFlow	*	-17.0	-76.0	942.0	-747.0	*	1170.	125.	AG	26400.	0.9	0.0	****		
7. W Leg App - FreeFlow	*	-17.0	-76.0	-1169.0	-279.0	*	1170.	260.	AG	26400.	0.6	0.0	****		
8. W Leg Dep - FreeFlow	*	17.0	76.0	-1194.0	-137.0	*	1230.	260.	AG	26400.	2.0	0.0	****		
9. I270 App - FreeFlow	*	-31.0	-37.0	-882.0	815.0	*	1204.	315.	AG	17600.	0.6	0.0	****		
10. I270 Dep - FreeFlow	*	31.0	37.0	-815.0	882.0	*	1196.								

315. AG 17600.   2.0   0.0 ****
↟

JOB: I-495 & I-270 MLS RUN: 2040 I-495 & I270/MD 355 (IC.22)

DATE : 2/ 7/19
TIME : 14:38: 1

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	70.2	138.9	5.9
2. N Leg, E Side - 25 m	63.9	210.6	5.9
3. N Leg, E Side - 50 m	56.7	292.3	5.9
4. N Leg, E Side-Midblk	18.7	726.6	5.9
5. S Leg, E Side-Corner	132.8	-281.0	5.9
6. S Leg, E Side - 25 m	145.3	-351.9	5.9
7. S Leg, E Side - 50 m	159.6	-432.7	5.9
8. S Leg, E Side-Midblk	235.3	-862.0	5.9
9. S Leg, W Side-Corner	-54.0	-165.9	5.9
10. S Leg, W Side - 25 m	-41.5	-236.8	5.9
11. S Leg, W Side - 50 m	-27.3	-317.6	5.9
12. S Leg, W Side-Midblk	48.4	-746.9	5.9
13. E Leg, N Side - 25 m	129.2	97.6	5.9
14. E Leg, N Side - 50 m	196.3	50.5	5.9
15. E Leg, N Side-Midblk	553.5	-199.5	5.9
16. E Leg, S Side - 25 m	191.8	-322.3	5.9
17. E Leg, S Side - 50 m	259.0	-369.4	5.9
18. E Leg, S Side-Midblk	616.1	-619.4	5.9
19. W Leg, S Side - 25 m	-124.9	-178.4	5.9
20. W Leg, S Side - 50 m	-205.7	-192.6	5.9
21. W Leg, S Side-Midblk	-635.0	-268.4	5.9
22. New1	-104.5	254.5	5.9

23. New2	*	-110.9	326.2	5.9	*
24. New3	*	-118.0	407.9	5.9	*
25. New4	*	-156.0	842.2	5.9	*
26. New5	*	-155.5	305.4	5.9	*
27. New6	*	-213.5	363.4	5.9	*
28. New7	*	-521.8	671.7	5.9	*
29. New8	*	-260.4	110.5	5.9	*
30. New9	*	-311.3	161.4	5.9	*
31. New10	*	-369.3	219.4	5.9	*
32. New11	*	-677.6	527.7	5.9	*
33. New12	*	-331.3	98.0	5.9	*
34. New13	*	-412.1	83.7	5.9	*
35. New14	*	-841.4	8.0	5.9	*

JOB: I-495 & I-270 MLS RUN: 2040 I-495 & I270/MD 355 (IC.22)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	*	0.1000	0.1000	0.1000	0.1000	0.6000	0.6000	0.5000	0.3000	2.0000
1.5000	1.2000	0.6000	0.0000	0.0000	0.0000					
20.	*	0.0000	0.0000	0.0000	0.0000	0.6000	0.4000	0.4000	0.2000	1.5000
1.3000	0.9000	0.6000	0.0000	0.0000	0.0000					
30.	*	0.0000	0.0000	0.0000	0.0000	0.7000	0.5000	0.4000	0.2000	1.3000
0.8000	0.8000	0.6000	0.0000	0.0000	0.0000					
40.	*	0.0000	0.0000	0.0000	0.0000	0.7000	0.5000	0.4000	0.2000	1.1000
0.7000	0.7000	0.5000	0.0000	0.0000	0.0000					
50.	*	0.0000	0.0000	0.0000	0.0000	0.6000	0.4000	0.4000	0.2000	1.0000
0.7000	0.7000	0.5000	0.0000	0.0000	0.0000					
60.	*	0.0000	0.0000	0.0000	0.0000	0.6000	0.6000	0.4000	0.2000	1.0000
0.7000	0.7000	0.5000	0.0000	0.0000	0.0000					
70.	*	0.0000	0.0000	0.0000	0.0000	0.7000	0.5000	0.4000	0.2000	1.0000

```
0.8000  0.7000  0.5000  0.0000  0.0000  0.0000
  80.  *  0.0000  0.0000  0.0000  0.0000  0.7000  0.6000  0.4000  0.1000  1.1000
0.9000  0.7000  0.5000  0.0000  0.0000  0.0000
  90.  *  0.0000  0.0000  0.0000  0.0000  0.8000  0.6000  0.4000  0.0000  1.0000
0.9000  0.7000  0.4000  0.0000  0.0000  0.0000
 100.  *  0.1000  0.0000  0.0000  0.0000  0.9000  0.6000  0.4000  0.0000  1.1000
0.9000  0.7000  0.3000  0.1000  0.1000  0.1000
 110.  *  0.1000  0.0000  0.0000  0.0000  0.9000  0.5000  0.2000  0.0000  1.1000
0.8000  0.7000  0.3000  0.1000  0.1000  0.1000
 120.  *  0.3000  0.1000  0.0000  0.0000  0.8000  0.3000  0.1000  0.0000  1.0000
0.5000  0.4000  0.3000  0.3000  0.3000  0.2000
 130.  *  0.6000  0.3000  0.1000  0.0000  0.4000  0.1000  0.0000  0.0000  0.7000
0.5000  0.4000  0.4000  0.6000  0.6000  0.4000
 140.  *  0.7000  0.5000  0.3000  0.0000  0.2000  0.0000  0.0000  0.0000  0.6000
0.5000  0.4000  0.4000  0.7000  0.7000  0.6000
 150.  *  0.8000  0.5000  0.4000  0.2000  0.2000  0.1000  0.1000  0.0000  0.6000
0.6000  0.6000  0.4000  0.8000  0.8000  0.7000
 160.  *  0.9000  0.7000  0.5000  0.3000  0.2000  0.1000  0.1000  0.1000  0.5000
0.5000  0.5000  0.4000  0.7000  0.7000  0.7000
 170.  *  1.1000  0.8000  0.9000  0.4000  0.5000  0.4000  0.3000  0.2000  0.4000
0.4000  0.4000  0.3000  0.8000  0.7000  0.7000
 180.  *  1.1000  1.2000  1.0000  0.8000  0.5000  0.5000  0.5000  0.3000  0.2000
0.1000  0.1000  0.1000  0.9000  0.8000  0.6000
 190.  *  1.3000  1.3000  1.5000  1.0000  0.6000  0.5000  0.5000  0.4000  0.1000
0.1000  0.1000  0.1000  0.9000  0.8000  0.6000
 200.  *  1.5000  1.8000  1.7000  1.3000  0.4000  0.4000  0.4000  0.4000  0.0000
0.0000  0.0000  0.0000  0.7000  0.7000  0.5000
 210.  *  2.1000  1.9000  1.6000  1.3000  0.4000  0.4000  0.4000  0.4000  0.0000
0.0000  0.0000  0.0000  0.8000  0.7000  0.5000
 220.  *  2.2000  2.0000  1.6000  1.2000  0.3000  0.3000  0.3000  0.3000  0.0000
0.0000  0.0000  0.0000  1.0000  0.7000  0.5000
 230.  *  2.3000  2.1000  1.7000  0.9000  0.3000  0.3000  0.3000  0.3000  0.0000
0.0000  0.0000  0.0000  1.5000  0.8000  0.5000
 240.  *  2.7000  2.3000  1.7000  0.8000  0.3000  0.3000  0.3000  0.3000  0.1000
0.0000  0.0000  0.0000  1.8000  0.9000  0.6000
 250.  *  3.0000  2.1000  1.5000  0.7000  0.3000  0.3000  0.3000  0.3000  0.2000
0.0000  0.0000  0.0000  2.5000  1.6000  0.6000
 260.  *  2.9000  1.6000  1.1000  0.7000  0.4000  0.3000  0.3000  0.3000  0.5000
0.2000  0.0000  0.0000  2.6000  2.0000  0.9000
 270.  *  2.1000  1.2000  0.9000  0.6000  0.7000  0.5000  0.3000  0.3000  0.9000
0.4000  0.2000  0.0000  2.4000  2.1000  0.9000
 280.  *  1.7000  1.1000  1.0000  0.5000  0.9000  0.6000  0.6000  0.3000  1.1000
0.7000  0.5000  0.0000  2.0000  1.8000  1.2000
 290.  *  1.5000  1.1000  1.0000  0.4000  1.0000  0.9000  0.7000  0.4000  1.1000
0.8000  0.6000  0.1000  1.7000  1.6000  1.2000
 300.  *  1.4000  1.1000  0.9000  0.4000  1.1000  0.9000  0.7000  0.5000  1.0000
0.8000  0.6000  0.3000  1.4000  1.3000  1.1000
 310.  *  1.3000  0.9000  0.8000  0.5000  1.5000  1.2000  0.8000  0.7000  1.2000
```

```
0.7000  0.6000  0.3000  1.1000  1.0000  0.6000
 320.  *  0.9000  0.7000  0.6000  0.6000  2.1000  1.4000  1.2000  0.7000  1.3000
1.0000  0.8000  0.3000  0.6000  0.6000  0.3000
 330.  *  0.6000  0.6000  0.6000  0.6000  2.0000  1.7000  1.5000  1.0000  1.5000
1.2000  1.0000  0.5000  0.4000  0.3000  0.2000
 340.  *  0.7000  0.7000  0.7000  0.5000  1.8000  1.8000  1.5000  1.0000  1.9000
1.5000  1.2000  0.7000  0.4000  0.2000  0.0000
 350.  *  0.6000  0.6000  0.6000  0.4000  1.3000  1.1000  1.1000  0.9000  2.2000
1.8000  1.5000  1.0000  0.2000  0.2000  0.0000
 360.  *  0.3000  0.3000  0.3000  0.2000  1.0000  0.8000  0.5000  0.3000  2.1000
1.8000  1.4000  1.1000  0.0000  0.0000  0.0000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  3.0000  2.3000  1.7000  1.3000  2.1000  1.8000  1.5000  1.0000  2.2000
1.8000  1.5000  1.1000  2.6000  2.1000  1.2000
 DEGR. *    250     240     200     200     320     340     330     340     350
360     350     360     260     270     280
```


JOB: I-495 & I-270 MLS RUN: 2040 I-495 & I270/MD 355 (IC.22)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

```
 WIND ANGLE RANGE:  10.-360.

 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28      29      30

------*-------------------------------------------------------------------------
----------------------------------------
  10.  *  0.6000  0.6000  0.6000  1.6000  1.6000  1.2000  0.9000  0.8000  0.8000
0.7000  0.5000  0.4000  0.1000  1.0000  0.9000
  20.  *  0.6000  0.6000  0.6000  1.6000  1.6000  1.2000  0.9000  0.8000  0.8000
0.7000  0.6000  0.4000  0.1000  1.1000  0.9000
  30.  *  0.7000  0.7000  0.7000  1.3000  1.4000  1.4000  0.6000  0.6000  0.6000
0.6000  0.4000  0.3000  0.0000  1.1000  1.0000
  40.  *  0.7000  0.7000  0.7000  1.1000  1.3000  1.4000  0.6000  0.6000  0.6000
```

```
0.6000  0.4000  0.3000  0.1000  1.2000  1.0000
  50.  *  0.6000  0.6000  0.6000  0.9000  0.9000  1.3000  0.5000  0.5000  0.5000
0.5000  0.4000  0.3000  0.1000  1.2000  1.0000
  60.  *  0.6000  0.6000  0.6000  0.8000  0.8000  1.2000  0.5000  0.5000  0.5000
0.5000  0.4000  0.3000  0.1000  1.2000  0.9000
  70.  *  0.7000  0.7000  0.7000  0.8000  0.8000  1.0000  0.6000  0.5000  0.5000
0.5000  0.5000  0.4000  0.2000  1.4000  0.9000
  80.  *  0.7000  0.7000  0.7000  0.9000  0.8000  0.5000  0.6000  0.5000  0.5000
0.5000  0.5000  0.4000  0.2000  1.9000  1.1000
  90.  *  0.8000  0.8000  0.7000  0.9000  0.7000  0.4000  0.6000  0.5000  0.5000
0.5000  0.5000  0.4000  0.2000  2.3000  1.2000
 100.  *  0.9000  0.9000  0.7000  0.8000  0.7000  0.3000  0.6000  0.5000  0.5000
0.5000  0.5000  0.4000  0.2000  2.3000  1.5000
 110.  *  0.9000  0.8000  0.6000  0.7000  0.6000  0.1000  0.7000  0.5000  0.5000
0.5000  0.5000  0.4000  0.2000  2.2000  1.8000
 120.  *  0.8000  0.6000  0.5000  0.5000  0.4000  0.0000  0.9000  0.6000  0.5000
0.5000  0.7000  0.7000  0.4000  2.6000  2.0000
 130.  *  0.4000  0.4000  0.3000  0.3000  0.2000  0.0000  1.6000  0.9000  0.8000
0.6000  1.4000  1.3000  1.2000  2.2000  1.9000
 140.  *  0.1000  0.1000  0.1000  0.3000  0.2000  0.0000  2.2000  1.3000  1.1000
0.7000  2.0000  2.0000  1.9000  1.9000  1.5000
 150.  *  0.1000  0.1000  0.1000  0.3000  0.2000  0.0000  2.5000  1.8000  1.4000
1.0000  2.5000  2.4000  1.8000  1.6000  1.2000
 160.  *  0.1000  0.1000  0.1000  0.2000  0.1000  0.0000  2.8000  2.2000  1.7000
1.2000  2.4000  2.2000  1.8000  1.4000  1.0000
 170.  *  0.2000  0.1000  0.1000  0.1000  0.0000  0.0000  2.7000  2.2000  1.9000
1.1000  2.2000  1.9000  1.7000  1.4000  0.9000
 180.  *  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  2.2000  1.8000  1.5000
0.9000  1.7000  1.7000  1.6000  1.3000  0.9000
 190.  *  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  1.8000  1.5000  1.2000
0.8000  1.6000  1.5000  1.3000  1.2000  0.9000
 200.  *  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  1.8000  1.4000  1.2000
0.7000  1.5000  1.4000  1.3000  1.3000  0.9000
 210.  *  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  1.7000  1.3000  1.1000
0.6000  1.5000  1.5000  1.1000  1.4000  1.0000
 220.  *  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  1.8000  1.4000  1.2000
0.5000  1.7000  1.6000  1.1000  1.5000  1.1000
 230.  *  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  1.8000  1.4000  1.1000
0.4000  1.7000  1.6000  1.0000  1.7000  1.2000
 240.  *  0.2000  0.2000  0.0000  0.1000  0.1000  0.1000  1.7000  1.3000  0.9000
0.3000  1.5000  1.3000  0.9000  1.9000  1.1000
 250.  *  0.2000  0.2000  0.0000  0.2000  0.2000  0.1000  1.4000  1.0000  0.7000
0.3000  1.2000  1.1000  0.9000  1.8000  0.8000
 260.  *  0.3000  0.3000  0.1000  0.5000  0.5000  0.3000  1.2000  0.9000  0.6000
0.2000  1.1000  1.0000  1.0000  1.3000  0.3000
 270.  *  0.5000  0.5000  0.1000  0.9000  0.8000  0.5000  1.2000  0.8000  0.6000
0.2000  1.2000  1.2000  1.2000  0.6000  0.1000
 280.  *  0.8000  0.6000  0.2000  1.1000  1.1000  0.8000  1.3000  0.9000  0.6000
```

```
0.1000  1.3000  1.3000  1.2000  0.2000  0.0000
 290.  *  1.0000  0.7000  0.4000  1.1000  1.0000  0.9000  1.5000  0.9000  0.6000
0.0000  1.5000  1.5000  1.3000  0.1000  0.0000
 300.  *  1.1000  1.0000  0.7000  1.0000  1.0000  1.0000  1.6000  0.9000  0.6000
0.0000  1.5000  1.5000  1.3000  0.2000  0.1000
 310.  *  1.4000  1.4000  1.3000  1.0000  1.0000  1.0000  1.5000  0.5000  0.2000
0.0000  1.4000  1.4000  1.0000  0.4000  0.3000
 320.  *  1.8000  1.6000  1.2000  1.1000  1.0000  0.9000  0.8000  0.2000  0.1000
0.0000  0.8000  0.8000  0.6000  0.8000  0.7000
 330.  *  1.7000  1.6000  1.1000  1.4000  1.2000  0.9000  0.4000  0.1000  0.1000
0.1000  0.3000  0.3000  0.3000  1.0000  0.9000
 340.  *  1.4000  1.2000  0.8000  1.5000  1.3000  0.9000  0.3000  0.2000  0.2000
0.1000  0.1000  0.1000  0.1000  1.0000  1.0000
 350.  *  1.0000  0.9000  0.7000  1.6000  1.3000  1.0000  0.5000  0.4000  0.4000
0.3000  0.2000  0.1000  0.1000  0.8000  0.8000
 360.  *  0.7000  0.7000  0.7000  1.7000  1.4000  1.1000  0.9000  0.7000  0.7000
0.5000  0.3000  0.2000  0.1000  0.9000  0.8000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.8000  1.6000  1.3000  1.7000  1.6000  1.4000  2.8000  2.2000  1.9000
1.2000  2.5000  2.4000  1.9000  2.6000  2.0000
 DEGR. *    320     320     310     360      10      30     160     160     170
160     150     150     140     120     120
```


JOB: I-495 & I-270 MLS RUN: 2040 I-495 & I270/MD 355 (IC.22)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 31	32	33	34	35
10.	0.9000	0.8000	0.8000	0.5000	0.3000
20.	0.8000	0.7000	0.9000	0.6000	0.4000
30.	0.9000	0.7000	0.9000	0.7000	0.4000
40.	1.0000	0.8000	0.9000	0.7000	0.5000

50.	*	1.0000	0.9000	0.9000	0.6000	0.5000
60.	*	0.9000	0.8000	1.0000	0.7000	0.6000
70.	*	0.9000	0.8000	1.2000	0.9000	1.0000
80.	*	1.0000	0.9000	1.7000	1.5000	1.6000
90.	*	1.1000	0.9000	2.0000	1.8000	2.1000
100.	*	1.3000	0.9000	2.2000	2.0000	2.1000
110.	*	1.6000	1.1000	2.3000	2.0000	1.9000
120.	*	1.7000	1.3000	2.1000	1.9000	1.6000
130.	*	1.6000	1.0000	1.8000	1.7000	1.4000
140.	*	1.2000	0.8000	1.6000	1.5000	1.3000
150.	*	1.0000	0.5000	1.4000	1.3000	1.2000
160.	*	0.7000	0.4000	1.3000	1.3000	1.3000
170.	*	0.7000	0.4000	1.4000	1.4000	1.4000
180.	*	0.7000	0.4000	1.3000	1.3000	1.3000
190.	*	0.7000	0.4000	1.2000	1.2000	1.2000
200.	*	0.7000	0.4000	1.3000	1.3000	1.3000
210.	*	0.7000	0.3000	1.4000	1.4000	1.4000
220.	*	0.8000	0.1000	1.5000	1.5000	1.5000
230.	*	0.8000	0.0000	1.7000	1.7000	1.5000
240.	*	0.7000	0.0000	1.9000	1.9000	1.4000
250.	*	0.4000	0.0000	1.8000	1.8000	1.3000
260.	*	0.1000	0.0000	1.3000	1.2000	0.9000
270.	*	0.0000	0.0000	0.6000	0.6000	0.4000
280.	*	0.0000	0.0000	0.2000	0.2000	0.2000
290.	*	0.0000	0.0000	0.1000	0.1000	0.1000
300.	*	0.1000	0.1000	0.1000	0.1000	0.1000
310.	*	0.3000	0.2000	0.1000	0.1000	0.1000
320.	*	0.6000	0.4000	0.3000	0.1000	0.1000
330.	*	0.9000	0.6000	0.6000	0.4000	0.1000
340.	*	1.0000	0.8000	0.6000	0.4000	0.0000
350.	*	0.8000	0.8000	0.6000	0.4000	0.0000
360.	*	0.8000	0.8000	0.6000	0.4000	0.1000
MAX	*	1.7000	1.3000	2.3000	2.0000	2.1000
DEGR.	*	120	120	110	100	100

THE HIGHEST CONCENTRATION OF 3.0000 PPM OCCURRED AT RECEPTOR 1.

```
Q,EPA,,F,,0,T,T,F,F,0.7,
6,6,9,9,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,0,0,15,-45,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,23,0.3048,1,0
'N Leg, E Side-Corner',116.5,118.0,5.9
'N Leg, E Side - 25 m',135.2,187.6,5.9
'N Leg, E Side - 50 m',156.4,266.8,5.9
'N Leg, E Side-Midblk',269.2,687.9,5.9
'N Leg, W Side-Corner',-54.9,112.0,5.9
'N Leg, W Side - 25 m',-36.2,181.6,5.9
'N Leg, W Side - 50 m',-15.0,260.8,5.9
'N Leg, W Side-Midblk',97.8,681.9,5.9
'S Leg, E Side-Corner',82.0,-118.0,5.9
'S Leg, W Side-Corner',-82.0,-248.9,5.9
'E Leg, N Side - 25 m',188.5,118.0,5.9
'E Leg, N Side - 50 m',270.6,118.0,5.9
'E Leg, N Side-Midblk',706.5,118.0,5.9
'W Leg, N Side - 25 m',-105.8,61.1,5.9
'W Leg, N Side - 50 m',-163.8,3.1,5.9
'W Leg, N Side-Midblk',-472.1,-305.2,5.9
'E Leg, S Side - 25 m',154.0,-118.0,5.9
'E Leg, S Side - 50 m',236.0,-118.0,5.9
'E Leg, S Side-Midblk',672.0,-118.0,5.9
'W Leg, S Side - 25 m',-132.9,-299.8,5.9
'W Leg, S Side - 50 m',-190.9,-357.8,5.9
'W Leg, S Side-Midblk',-499.2,-666.1,5.9
'S Side - Midblk',0,-183,5.9
'2040 I495 & I270 Spur (IC.24)',6,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-36,5,276,1168,13200,0.61,0.0,91.7
1
'N Leg Dep - FreeFlow','AG',36,-5,345,1150,13200,1.61,0.0,91.7
1
'E Leg App - FreeFlow','AG',-22,54,1200,54,19800,0.61,0.0,127.7
1
'E Leg Dep - FreeFlow','AG',22,-54,1200,-54,19800,2.54,0.0,127.7
1
'W Leg App - FreeFlow','AG',22,-54,-810,-887,19800,1.21,0.0,127.7
1
'W Leg Dep - FreeFlow','AG',-22,54,-887,-810,19800,0.61,0.0,127.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 I495 & I270 Spur (IC.24)

DATE : 2/28/19
TIME : 15:52:28

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)		(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-36.0	5.0	276.0	1168.0	*	1204.	15.	AG	13200.	0.6	0.0	91.7		
2. N Leg Dep - FreeFlow	*	36.0	-5.0	345.0	1150.0	*	1196.	15.	AG	13200.	1.6	0.0	91.7		
3. E Leg App - FreeFlow	*	-22.0	54.0	1200.0	54.0	*	1222.	90.	AG	19800.	0.6	0.0	****		
4. E Leg Dep - FreeFlow	*	22.0	-54.0	1200.0	-54.0	*	1178.	90.	AG	19800.	2.5	0.0	****		
5. W Leg App - FreeFlow	*	22.0	-54.0	-810.0	-887.0	*	1177.	225.	AG	19800.	1.2	0.0	****		
6. W Leg Dep - FreeFlow	*	-22.0	54.0	-887.0	-810.0	*	1223.	225.	AG	19800.	0.6	0.0	****		

PAGE 2
JOB: I-495 & I-270 MLS RUN: 2040 I495 & I270 Spur (IC.24)

DATE : 2/28/19
TIME : 15:52:28

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	116.5	118.0	5.9
2. N Leg, E Side - 25 m	135.2	187.6	5.9
3. N Leg, E Side - 50 m	156.4	266.8	5.9
4. N Leg, E Side-Midblk	269.2	687.9	5.9
5. N Leg, W Side-Corner	-54.9	112.0	5.9
6. N Leg, W Side - 25 m	-36.2	181.6	5.9
7. N Leg, W Side - 50 m	-15.0	260.8	5.9
8. N Leg, W Side-Midblk	97.8	681.9	5.9
9. S Leg, E Side-Corner	82.0	-118.0	5.9
10. S Leg, W Side-Corner	-82.0	-248.9	5.9
11. E Leg, N Side - 25 m	188.5	118.0	5.9
12. E Leg, N Side - 50 m	270.6	118.0	5.9
13. E Leg, N Side-Midblk	706.5	118.0	5.9
14. W Leg, N Side - 25 m	-105.8	61.1	5.9
15. W Leg, N Side - 50 m	-163.8	3.1	5.9
16. W Leg, N Side-Midblk	-472.1	-305.2	5.9
17. E Leg, S Side - 25 m	154.0	-118.0	5.9
18. E Leg, S Side - 50 m	236.0	-118.0	5.9
19. E Leg, S Side-Midblk	672.0	-118.0	5.9
20. W Leg, S Side - 25 m	-132.9	-299.8	5.9
21. W Leg, S Side - 50 m	-190.9	-357.8	5.9
22. W Leg, S Side-Midblk	-499.2	-666.1	5.9
23. S Side - Midblk	0.0	-183.0	5.9

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 1.0000	1.0000	1.0000	0.8000	0.3000	0.3000	0.3000	0.2000	1.9000	1.1000	0.3000	0.1000	0.0000	0.2000	0.0000
20.	* 0.6000	0.6000	0.6000	0.5000	0.7000	0.7000	0.6000	0.4000	1.5000	1.4000	0.1000	0.0000	0.0000	0.4000	0.2000
30.	* 0.2000	0.2000	0.2000	0.2000	0.8000	0.8000	0.8000	0.6000	1.5000	1.2000	0.0000	0.0000	0.0000	0.5000	0.4000
40.	* 0.1000	0.1000	0.1000	0.1000	0.7000	0.7000	0.7000	0.7000	1.5000	1.1000	0.0000	0.0000	0.0000	0.6000	0.5000
50.	* 0.1000	0.1000	0.1000	0.1000	0.7000	0.7000	0.7000	0.7000	1.6000	1.0000	0.0000	0.0000	0.0000	0.6000	0.6000
60.	* 0.1000	0.1000	0.1000	0.1000	0.6000	0.6000	0.6000	0.6000	1.8000	0.9000	0.0000	0.0000	0.0000	0.7000	0.6000
70.	* 0.1000	0.0000	0.0000	0.0000	0.6000	0.5000	0.5000	0.5000	2.0000	0.9000	0.1000	0.1000	0.1000	0.8000	0.9000
80.	* 0.2000	0.0000	0.0000	0.0000	0.8000	0.5000	0.5000	0.5000	2.1000	0.7000	0.2000	0.2000	0.1000	1.1000	1.3000
90.	* 0.6000	0.2000	0.0000	0.0000	1.2000	0.7000	0.5000	0.5000	1.6000	0.3000	0.6000	0.6000	0.4000	1.6000	1.7000
100.	* 1.0000	0.5000	0.2000	0.0000	1.5000	1.1000	0.8000	0.5000	0.7000	0.1000	1.0000	1.0000	0.6000	1.8000	1.6000
110.	* 1.1000	0.7000	0.4000	0.0000	1.7000	1.2000	1.1000	0.5000	0.3000	0.0000	1.1000	1.1000	0.9000	1.6000	1.1000
120.	* 1.1000	0.8000	0.5000	0.0000	1.6000	1.3000	1.2000	0.6000	0.2000	0.0000	1.1000	1.1000	1.0000	1.4000	0.9000
130.	* 1.0000	0.7000	0.5000	0.1000	1.4000	1.3000	1.0000	0.8000	0.1000	0.0000	1.0000	1.0000	1.0000	0.9000	0.7000
140.	* 0.9000	0.7000	0.5000	0.3000	1.2000	1.2000	1.0000	0.8000	0.1000	0.0000	0.9000	0.9000	0.9000	0.7000	0.6000
150.	* 1.1000	0.8000	0.6000	0.4000	1.0000	1.1000	1.0000	0.9000	0.1000	0.0000	1.0000	1.0000	1.0000	0.7000	0.6000
160.	* 1.0000	0.8000	0.6000	0.4000	1.0000	1.1000	1.0000	1.0000	0.1000	0.0000	0.9000	0.9000	0.9000	0.6000	0.6000
170.	* 1.0000	0.8000	0.6000	0.4000	0.7000	0.9000	0.9000	1.0000	0.0000						

```
0.1000  0.9000  0.9000  0.9000  0.6000  0.6000
 180.  *  1.0000  0.9000  0.7000  0.5000  0.8000  0.7000  0.9000  0.9000  0.0000
0.1000  0.9000  0.9000  0.9000  0.6000  0.6000
 190.  *  1.3000  1.0000  0.9000  0.8000  0.7000  0.7000  0.5000  0.7000  0.0000
0.1000  0.9000  0.9000  0.9000  0.7000  0.7000
 200.  *  1.5000  1.3000  1.2000  1.2000  0.9000  0.6000  0.6000  0.5000  0.0000
0.1000  1.0000  0.9000  0.9000  0.8000  0.8000
 210.  *  1.7000  1.5000  1.5000  1.2000  0.7000  0.7000  0.5000  0.3000  0.1000
0.2000  1.1000  1.1000  1.0000  0.8000  0.8000
 220.  *  1.8000  1.7000  1.5000  1.1000  0.6000  0.3000  0.2000  0.0000  0.2000
0.5000  1.4000  1.1000  0.9000  0.6000  0.6000
 230.  *  1.8000  1.3000  1.1000  0.8000  0.4000  0.1000  0.1000  0.0000  0.6000
0.9000  1.4000  1.3000  1.1000  0.4000  0.3000
 240.  *  1.3000  0.9000  0.8000  0.7000  0.1000  0.0000  0.0000  0.0000  0.9000
1.1000  1.1000  1.3000  1.2000  0.1000  0.1000
 250.  *  1.0000  0.8000  0.7000  0.7000  0.0000  0.0000  0.0000  0.0000  1.0000
1.0000  0.9000  0.9000  1.2000  0.0000  0.0000
 260.  *  0.9000  0.6000  0.6000  0.6000  0.0000  0.0000  0.0000  0.0000  1.0000
0.9000  0.8000  0.7000  1.0000  0.0000  0.0000
 270.  *  0.8000  0.6000  0.6000  0.6000  0.0000  0.0000  0.0000  0.0000  1.0000
0.8000  0.6000  0.5000  0.5000  0.0000  0.0000
 280.  *  0.8000  0.7000  0.7000  0.7000  0.0000  0.0000  0.0000  0.0000  1.1000
0.8000  0.5000  0.4000  0.3000  0.0000  0.0000
 290.  *  0.7000  0.7000  0.7000  0.7000  0.0000  0.0000  0.0000  0.0000  1.1000
0.7000  0.4000  0.4000  0.2000  0.0000  0.0000
 300.  *  0.6000  0.6000  0.6000  0.6000  0.0000  0.0000  0.0000  0.0000  1.2000
0.7000  0.4000  0.3000  0.1000  0.0000  0.0000
 310.  *  0.6000  0.6000  0.6000  0.6000  0.0000  0.0000  0.0000  0.0000  1.1000
0.8000  0.4000  0.3000  0.1000  0.0000  0.0000
 320.  *  0.7000  0.7000  0.7000  0.7000  0.0000  0.0000  0.0000  0.0000  1.4000
0.8000  0.4000  0.3000  0.1000  0.0000  0.0000
 330.  *  0.7000  0.7000  0.7000  0.7000  0.0000  0.0000  0.0000  0.0000  1.5000
0.6000  0.5000  0.4000  0.1000  0.0000  0.0000
 340.  *  0.8000  0.8000  0.8000  0.8000  0.0000  0.0000  0.0000  0.0000  1.7000
0.7000  0.5000  0.4000  0.1000  0.0000  0.0000
 350.  *  1.0000  1.0000  1.0000  0.9000  0.0000  0.0000  0.0000  0.0000  1.8000
0.8000  0.5000  0.4000  0.0000  0.0000  0.0000
 360.  *  1.1000  1.1000  1.1000  1.0000  0.1000  0.1000  0.1000  0.1000  2.0000
0.9000  0.5000  0.2000  0.0000  0.0000  0.0000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.8000  1.7000  1.5000  1.2000  1.7000  1.3000  1.2000  1.0000  2.1000
1.4000  1.4000  1.3000  1.2000  1.8000  1.7000
 DEGR. *    220     220     210     200     110     120     120     160      80
20     230     230     240     100      90
```

JOB: I-495 & I-270 MLS RUN: 2040 I495 & I270 Spur (IC.24)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 16	17	18	19	20	21	22	23
10.	0.0000	1.4000	1.3000	1.2000	1.0000	1.1000	0.9000	1.5000
20.	0.0000	1.4000	1.3000	1.3000	1.3000	1.1000	1.1000	1.5000
30.	0.3000	1.3000	1.3000	1.3000	1.3000	1.4000	1.1000	1.3000
40.	0.4000	1.5000	1.5000	1.5000	1.1000	1.1000	1.1000	1.1000
50.	0.7000	1.6000	1.6000	1.6000	0.9000	0.9000	0.8000	1.0000
60.	1.0000	1.8000	1.8000	1.8000	0.8000	0.8000	0.4000	1.0000
70.	1.2000	2.0000	2.0000	1.8000	0.7000	0.6000	0.3000	1.1000
80.	1.2000	2.1000	2.0000	1.8000	0.5000	0.3000	0.1000	0.9000
90.	0.7000	1.5000	1.5000	1.2000	0.2000	0.2000	0.1000	0.4000
100.	0.6000	0.7000	0.7000	0.6000	0.1000	0.1000	0.1000	0.1000
110.	0.6000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000
120.	0.6000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000
130.	0.6000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
140.	0.6000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
150.	0.6000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
160.	0.6000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
170.	0.6000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.0000
180.	0.6000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.0000
190.	0.7000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.0000
200.	0.7000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000
210.	0.6000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000	0.1000
220.	0.5000	0.2000	0.1000	0.1000	0.5000	0.5000	0.4000	0.3000
230.	0.2000	0.4000	0.3000	0.1000	0.9000	0.9000	0.6000	0.8000
240.	0.1000	0.6000	0.5000	0.3000	1.0000	1.0000	0.8000	0.9000
250.	0.0000	0.7000	0.6000	0.4000	1.0000	1.0000	0.8000	0.9000
260.	0.0000	0.8000	0.8000	0.8000	0.9000	0.9000	0.8000	0.8000
270.	0.0000	1.0000	1.1000	1.5000	0.8000	0.8000	0.8000	0.8000
280.	0.0000	1.2000	1.4000	1.9000	0.8000	0.8000	0.8000	0.6000
290.	0.0000	1.3000	1.5000	2.0000	0.7000	0.7000	0.7000	0.6000
300.	0.0000	1.3000	1.7000	1.9000	0.7000	0.7000	0.6000	0.6000

310.	*	0.0000	1.6000	1.8000	1.7000	0.8000	0.8000	0.8000	0.6000
320.	*	0.0000	1.6000	1.8000	1.6000	0.8000	0.8000	0.8000	0.6000
330.	*	0.0000	1.6000	1.6000	1.4000	0.6000	0.7000	0.7000	0.6000
340.	*	0.0000	1.6000	1.6000	1.4000	0.7000	0.7000	0.7000	0.6000
350.	*	0.0000	1.7000	1.5000	1.2000	0.8000	0.8000	0.8000	0.9000
360.	*	0.0000	1.8000	1.7000	1.4000	0.8000	0.8000	0.8000	1.3000
MAX	*	1.2000	2.1000	2.0000	2.0000	1.3000	1.4000	1.1000	1.5000
DEGR.	*	70	80	70	290	20	30	20	10

THE HIGHEST CONCENTRATION OF 2.1000 PPM OCCURRED AT RECEPTOR 9.

```
Q,EPA,,F,,0,T,T,F,F,0.7,
6,5,8,10,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,
1036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,120
0,0,0,1200,-1200,0,0,0,0,0,0,-40,-40,5,5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',-2.7,130.7,5.9
'N Leg, E Side - 25 m',-48.9,185.9,5.9
'N Leg, E Side - 50 m',-101.7,248.7,5.9
'N Leg, E Side-Midblk',-381.9,582.7,5.9
'N Leg, W Side-Corner',-216.8,149.5,5.9
'N Leg, W Side - 25 m',-263.1,204.6,5.9
'N Leg, W Side - 50 m',-315.8,267.5,5.9
'N Leg, W Side-Midblk',-596.0,601.4,5.9
'S Leg, E Side-Corner',211.9,-124.9,5.9
'S Leg, E Side - 25 m',258.2,-180.1,5.9
'S Leg, E Side - 50 m',310.9,-242.9,5.9
'S Leg, E Side-Midblk',591.1,-576.9,5.9
'S Leg, W Side-Corner',-2.3,-106.2,5.9
'S Leg, W Side - 25 m',44.0,-161.4,5.9
'S Leg, W Side - 50 m',96.8,-224.2,5.9
'S Leg, W Side-Midblk',377.0,-558.2,5.9
'E Leg, N Side - 25 m',69.1,124.5,5.9
'E Leg, N Side - 50 m',150.8,117.3,5.9
'E Leg, N Side-Midblk',585.1,79.3,5.9
'W Leg, N Side - 25 m',-288.5,155.7,5.9
'W Leg, N Side - 50 m',-370.2,162.9,5.9
'W Leg, N Side-Midblk',-804.5,200.9,5.9
'E Leg, S Side - 25 m',283.6,-131.2,5.9
'E Leg, S Side - 50 m',365.3,-138.4,5.9
'E Leg, S Side-Midblk',799.6,-176.4,5.9
'W Leg, S Side - 25 m',-74.0,-99.9,5.9
'W Leg, S Side - 50 m',-155.7,-92.8,5.9
'W Leg, S Side-Midblk',-590.0,-54.8,5.9
'2040 I495 & MD5 (IC.3)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-23,-19,-794,900,11000,0.62,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',28,23,-744,942,13200,1.20,0.0,91.7
1
'S Leg App - FreeFlow','AG',28,23,799,-896,13200,1.57,0.0,91.7
1
'S Leg Dep - FreeFlow','AG',-23,-19,748,-939,11000,0.62,0.0,79.7
1
'E Leg App - FreeFlow','AG',5,60,1201,-45,22000,2.05,0.0,139.7
1
'E Leg Dep - FreeFlow','AG',0,-48,1191,-152,17600,0.61,0.0,115.7
1
```

```
'W Leg App - FreeFlow','AG',0,-48,-1200,57,17600,0.88,0.0,115.7
1
'W Leg Dep - FreeFlow','AG',5,60,-1190,164,22000,0.61,0.0,139.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 I495 & MD5 (IC.3)

DATE : 1/17/19
TIME : 7:42:12

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-23.0	-19.0	-794.0	900.0	*	1200.	320.	AG	11000.	0.6	0.0	79.7		
2. N Leg Dep - FreeFlow	*	28.0	23.0	-744.0	942.0	*	1200.	320.	AG	13200.	1.2	0.0	91.7		
3. S Leg App - FreeFlow	*	28.0	23.0	799.0	-896.0	*	1200.	140.	AG	13200.	1.6	0.0	91.7		
4. S Leg Dep - FreeFlow	*	-23.0	-19.0	748.0	-939.0	*	1200.	140.	AG	11000.	0.6	0.0	79.7		
5. E Leg App - FreeFlow	*	5.0	60.0	1201.0	-45.0	*	1201.	95.	AG	22000.	2.0	0.0	****		
6. E Leg Dep - FreeFlow	*	0.0	-48.0	1191.0	-152.0	*	1196.	95.	AG	17600.	0.6	0.0	****		
7. W Leg App - FreeFlow	*	0.0	-48.0	-1200.0	57.0	*	1205.	275.	AG	17600.	0.9	0.0	****		
8. W Leg Dep - FreeFlow	*	5.0	60.0	-1190.0	164.0	*	1200.	275.	AG	22000.	0.6	0.0	****		

(IC.3)

DATE : 1/17/19
TIME : 7:42:12

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	-2.7	130.7	5.9
2. N Leg, E Side - 25 m	-48.9	185.9	5.9
3. N Leg, E Side - 50 m	-101.7	248.7	5.9
4. N Leg, E Side-Midblk	-381.9	582.7	5.9
5. N Leg, W Side-Corner	-216.8	149.5	5.9
6. N Leg, W Side - 25 m	-263.1	204.6	5.9
7. N Leg, W Side - 50 m	-315.8	267.5	5.9
8. N Leg, W Side-Midblk	-596.0	601.4	5.9
9. S Leg, E Side-Corner	211.9	-124.9	5.9
10. S Leg, E Side - 25 m	258.2	-180.1	5.9
11. S Leg, E Side - 50 m	310.9	-242.9	5.9
12. S Leg, E Side-Midblk	591.1	-576.9	5.9
13. S Leg, W Side-Corner	-2.3	-106.2	5.9
14. S Leg, W Side - 25 m	44.0	-161.4	5.9
15. S Leg, W Side - 50 m	96.8	-224.2	5.9
16. S Leg, W Side-Midblk	377.0	-558.2	5.9
17. E Leg, N Side - 25 m	69.1	124.5	5.9
18. E Leg, N Side - 50 m	150.8	117.3	5.9
19. E Leg, N Side-Midblk	585.1	79.3	5.9
20. W Leg, N Side - 25 m	-288.5	155.7	5.9
21. W Leg, N Side - 50 m	-370.2	162.9	5.9
22. W Leg, N Side-Midblk	-804.5	200.9	5.9
23. E Leg, S Side - 25 m	283.6	-131.2	5.9
24. E Leg, S Side - 50 m	365.3	-138.4	5.9
25. E Leg, S Side-Midblk	799.6	-176.4	5.9
26. W Leg, S Side - 25 m	-74.0	-99.9	5.9

27. W Leg, S Side - 50 m	*	-155.7	-92.8	5.9 *
28. W Leg, S Side-Midblk	*	-590.0	-54.8	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	1.0000	0.8000	0.6000	0.4000	1.3000	1.2000	1.1000
20.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.8000	0.7000	0.5000	0.3000	1.4000	1.3000	1.1000
30.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.8000	0.7000	0.5000	0.3000	1.3000	1.2000	1.0000
40.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.9000	0.7000	0.5000	0.3000	1.3000	1.2000	1.0000
50.	* 0.1000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.9000	0.7000	0.5000	0.1000	1.4000	1.2000	1.0000
60.	* 0.1000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	1.0000	0.7000	0.6000	0.0000	1.5000	1.2000	1.2000
70.	* 0.1000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	1.1000	0.7000	0.6000	0.0000	1.6000	1.3000	1.1000
80.	* 0.3000	0.0000	0.0000	0.0000	0.7000	0.5000	0.5000	0.5000	1.0000	0.6000	0.3000	0.0000	1.7000	1.3000	1.0000
90.	* 0.9000	0.3000	0.1000	0.0000	1.2000	0.8000	0.6000	0.5000	0.8000	0.4000	0.3000	0.1000	1.4000	1.0000	0.8000
100.	* 1.6000	0.8000	0.4000	0.0000	1.7000	1.2000	0.9000	0.6000	0.4000	0.2000	0.1000	0.1000	1.0000	0.7000	0.6000
110.	* 1.8000	1.1000	0.8000	0.3000	1.7000	1.5000	1.2000	0.8000	0.2000	0.1000	0.1000	0.1000	0.8000	0.7000	0.7000
120.	* 1.8000	1.1000	0.9000	0.4000	1.4000	1.4000	1.2000	0.8000	0.1000	0.1000	0.1000	0.1000	0.7000	0.7000	0.7000

130. * 1.6000 1.2000 1.0000 0.8000 1.4000 1.4000 1.2000 0.9000 0.4000
0.4000 0.4000 0.3000 0.7000 0.7000 0.7000
140. * 1.9000 1.6000 1.4000 0.8000 1.0000 0.8000 1.0000 0.8000 0.9000
0.8000 0.7000 0.6000 0.5000 0.5000 0.5000
150. * 2.0000 1.6000 1.4000 1.1000 0.8000 0.5000 0.5000 0.3000 1.1000
1.1000 1.0000 0.8000 0.2000 0.1000 0.1000
160. * 1.8000 1.4000 1.3000 1.0000 0.5000 0.4000 0.3000 0.2000 1.0000
1.0000 1.0000 0.9000 0.1000 0.1000 0.1000
170. * 1.4000 1.2000 0.9000 0.9000 0.5000 0.4000 0.3000 0.2000 0.9000
0.9000 0.9000 0.8000 0.0000 0.0000 0.0000
180. * 1.4000 0.9000 0.9000 0.8000 0.5000 0.4000 0.3000 0.2000 0.8000
0.8000 0.8000 0.8000 0.0000 0.0000 0.0000
190. * 1.0000 1.0000 0.9000 0.8000 0.5000 0.4000 0.3000 0.2000 0.7000
0.7000 0.7000 0.7000 0.0000 0.0000 0.0000
200. * 1.1000 0.9000 0.8000 0.7000 0.5000 0.4000 0.3000 0.2000 0.6000
0.6000 0.6000 0.6000 0.0000 0.0000 0.0000
210. * 1.0000 0.9000 0.8000 0.7000 0.5000 0.4000 0.3000 0.2000 0.6000
0.6000 0.6000 0.6000 0.0000 0.0000 0.0000
220. * 1.0000 0.9000 0.8000 0.7000 0.5000 0.4000 0.3000 0.2000 0.6000
0.6000 0.6000 0.6000 0.0000 0.0000 0.0000
230. * 1.0000 0.9000 0.8000 0.7000 0.5000 0.4000 0.3000 0.1000 0.7000
0.7000 0.7000 0.7000 0.0000 0.0000 0.0000
240. * 1.1000 1.0000 0.8000 0.6000 0.6000 0.5000 0.3000 0.0000 0.6000
0.6000 0.6000 0.6000 0.0000 0.0000 0.0000
250. * 1.1000 1.0000 0.8000 0.5000 0.6000 0.5000 0.3000 0.0000 0.6000
0.6000 0.6000 0.6000 0.1000 0.0000 0.0000
260. * 1.2000 0.9000 0.8000 0.5000 0.7000 0.4000 0.3000 0.0000 0.8000
0.6000 0.6000 0.6000 0.1000 0.0000 0.0000
270. * 1.2000 0.9000 0.7000 0.6000 0.5000 0.2000 0.1000 0.0000 1.0000
0.8000 0.7000 0.7000 0.4000 0.1000 0.0000
280. * 0.9000 0.7000 0.6000 0.6000 0.3000 0.1000 0.0000 0.0000 1.4000
1.1000 1.0000 0.8000 0.7000 0.3000 0.1000
290. * 0.8000 0.7000 0.7000 0.7000 0.1000 0.0000 0.0000 0.0000 1.6000
1.2000 1.1000 1.0000 0.8000 0.4000 0.3000
300. * 0.9000 0.8000 0.8000 0.8000 0.1000 0.1000 0.1000 0.0000 1.8000
1.6000 1.4000 1.2000 0.7000 0.5000 0.3000
310. * 0.8000 0.8000 0.8000 0.8000 0.1000 0.1000 0.1000 0.1000 1.9000
1.5000 1.6000 1.4000 0.8000 0.7000 0.5000
320. * 0.7000 0.7000 0.7000 0.5000 0.4000 0.4000 0.4000 0.2000 1.8000
1.4000 1.3000 1.1000 1.1000 0.7000 0.8000
330. * 0.3000 0.3000 0.3000 0.2000 0.6000 0.6000 0.6000 0.4000 1.2000
1.1000 0.9000 0.7000 1.1000 1.1000 1.0000
340. * 0.1000 0.1000 0.1000 0.1000 0.6000 0.6000 0.6000 0.5000 0.9000
0.8000 0.6000 0.4000 1.2000 1.1000 1.2000
350. * 0.1000 0.1000 0.1000 0.1000 0.6000 0.6000 0.6000 0.6000 0.9000
0.8000 0.6000 0.4000 1.2000 1.1000 1.1000
360. * 0.0000 0.0000 0.0000 0.0000 0.5000 0.5000 0.5000 0.5000 1.0000
0.8000 0.6000 0.4000 1.2000 1.2000 1.0000

```
------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  2.0000  1.6000  1.4000  1.1000  1.7000  1.5000  1.2000  0.9000  1.9000
1.6000  1.6000  1.4000  1.7000  1.3000  1.2000
 DEGR. *    150     140     140     150     100     110     110     130     310
300     310     310      80      20      60
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.9000  0.0000  0.0000  0.0000  0.3000  0.3000  0.1000  0.9000  0.9000
0.9000  1.0000  0.9000  0.7000
  20.  *  0.9000  0.0000  0.0000  0.0000  0.3000  0.3000  0.1000  0.8000  0.8000
0.8000  1.0000  0.8000  0.6000
  30.  *  0.8000  0.1000  0.1000  0.1000  0.3000  0.3000  0.1000  0.8000  0.8000
0.8000  1.4000  1.0000  0.7000
  40.  *  0.8000  0.1000  0.1000  0.1000  0.3000  0.3000  0.1000  0.9000  0.9000
0.9000  1.2000  0.9000  0.7000
  50.  *  0.8000  0.1000  0.1000  0.1000  0.3000  0.3000  0.1000  0.9000  0.9000
0.9000  1.3000  1.1000  0.7000
  60.  *  0.6000  0.1000  0.1000  0.1000  0.3000  0.3000  0.1000  1.0000  1.0000
0.9000  1.4000  1.2000  0.8000
  70.  *  0.5000  0.2000  0.2000  0.2000  0.3000  0.3000  0.1000  1.1000  1.1000
0.8000  1.5000  1.5000  0.9000
  80.  *  0.6000  0.4000  0.4000  0.3000  0.5000  0.5000  0.2000  1.0000  0.9000
0.6000  1.6000  1.5000  1.1000
  90.  *  0.6000  0.9000  0.9000  0.8000  0.9000  0.9000  0.6000  0.7000  0.7000
0.4000  1.3000  1.2000  1.1000
```

```
 100.  *  0.6000  1.7000  1.6000  1.3000  1.4000  1.3000  1.0000  0.3000  0.3000
0.2000  0.8000  0.7000  0.6000
 110.  *  0.7000  1.8000  1.8000  1.6000  1.4000  1.3000  0.9000  0.1000  0.1000
0.1000  0.6000  0.4000  0.2000
 120.  *  0.7000  1.6000  1.7000  1.5000  1.3000  1.1000  0.7000  0.0000  0.0000
0.0000  0.5000  0.3000  0.2000
 130.  *  0.6000  1.5000  1.4000  1.4000  1.0000  0.9000  0.6000  0.1000  0.0000
0.0000  0.3000  0.3000  0.0000
 140.  *  0.3000  1.4000  1.3000  1.2000  0.7000  0.6000  0.5000  0.2000  0.1000
0.0000  0.2000  0.1000  0.0000
 150.  *  0.1000  1.6000  1.3000  1.1000  0.5000  0.5000  0.5000  0.5000  0.2000
0.0000  0.0000  0.0000  0.0000
 160.  *  0.0000  1.7000  1.4000  1.0000  0.5000  0.5000  0.5000  0.6000  0.4000
0.0000  0.0000  0.0000  0.0000
 170.  *  0.0000  1.5000  1.4000  1.1000  0.5000  0.5000  0.5000  0.5000  0.4000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.0000  1.5000  1.5000  1.2000  0.5000  0.5000  0.5000  0.5000  0.4000
0.1000  0.0000  0.0000  0.0000
 190.  *  0.0000  1.6000  1.5000  1.2000  0.5000  0.5000  0.5000  0.5000  0.4000
0.1000  0.0000  0.0000  0.0000
 200.  *  0.0000  1.6000  1.4000  1.1000  0.5000  0.5000  0.5000  0.5000  0.4000
0.1000  0.0000  0.0000  0.0000
 210.  *  0.0000  1.3000  1.4000  1.1000  0.5000  0.5000  0.5000  0.5000  0.4000
0.1000  0.0000  0.0000  0.0000
 220.  *  0.0000  1.4000  1.5000  1.2000  0.5000  0.5000  0.5000  0.5000  0.4000
0.1000  0.0000  0.0000  0.0000
 230.  *  0.0000  1.4000  1.4000  1.3000  0.5000  0.5000  0.5000  0.5000  0.4000
0.1000  0.0000  0.0000  0.0000
 240.  *  0.0000  1.3000  1.5000  1.5000  0.6000  0.6000  0.6000  0.5000  0.4000
0.1000  0.0000  0.0000  0.0000
 250.  *  0.0000  1.4000  1.6000  1.7000  0.6000  0.6000  0.5000  0.5000  0.4000
0.1000  0.1000  0.1000  0.1000
 260.  *  0.0000  1.4000  1.6000  1.9000  0.7000  0.7000  0.5000  0.6000  0.5000
0.2000  0.1000  0.1000  0.1000
 270.  *  0.0000  1.3000  1.3000  1.6000  0.5000  0.5000  0.3000  0.9000  0.7000
0.5000  0.4000  0.4000  0.3000
 280.  *  0.0000  0.8000  0.9000  1.0000  0.3000  0.3000  0.2000  1.1000  1.1000
1.0000  0.7000  0.7000  0.6000
 290.  *  0.1000  0.6000  0.6000  0.4000  0.1000  0.1000  0.1000  1.4000  1.1000
1.1000  0.8000  0.8000  0.7000
 300.  *  0.3000  0.5000  0.4000  0.3000  0.0000  0.0000  0.0000  1.4000  1.3000
1.2000  0.7000  0.7000  0.7000
 310.  *  0.3000  0.4000  0.3000  0.1000  0.0000  0.0000  0.0000  1.3000  1.2000
1.0000  0.7000  0.7000  0.7000
 320.  *  0.8000  0.2000  0.2000  0.1000  0.2000  0.0000  0.0000  1.1000  1.0000
0.9000  0.8000  0.6000  0.6000
 330.  *  0.9000  0.0000  0.1000  0.1000  0.3000  0.2000  0.0000  1.0000  0.9000
0.9000  0.9000  0.8000  0.6000
```

```
 340.  *  1.0000  0.0000  0.1000  0.1000  0.4000  0.3000  0.0000  0.8000  0.8000
0.8000  1.0000  0.9000  0.6000
 350.  *  1.0000  0.0000  0.0000  0.0000  0.3000  0.3000  0.0000  0.8000  0.8000
0.8000  0.9000  0.8000  0.5000
 360.  *  0.9000  0.0000  0.0000  0.0000  0.3000  0.3000  0.0000  0.9000  0.9000
0.9000  0.9000  0.9000  0.7000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.0000  1.8000  1.8000  1.9000  1.4000  1.3000  1.0000  1.4000  1.3000
1.2000  1.6000  1.5000  1.1000
 DEGR. *    340     110     110     260     100     110     100     290     300
300      80      70      80

 THE HIGHEST CONCENTRATION OF   2.0000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,5,9,9,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-10,-10,0,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',50.3,118.0,5.9
'N Leg, E Side - 25 m',37.8,188.9,5.9
'N Leg, E Side - 50 m',23.5,269.7,5.9
'N Leg, E Side-Midblk',-52.2,699.0,5.9
'N Leg, W Side-Corner',-91.9,118.0,5.9
'N Leg, W Side - 25 m',-104.4,188.9,5.9
'N Leg, W Side - 50 m',-118.6,269.7,5.9
'N Leg, W Side-Midblk',-194.3,699.0,5.9
'S Leg, E Side-Corner',91.9,-118.0,5.9
'S Leg, E Side - 25 m',104.4,-188.9,5.9
'S Leg, E Side - 50 m',118.6,-269.7,5.9
'S Leg, E Side-Midblk',194.3,-699.0,5.9
'S Leg, W Side-Corner',-50.3,-118.0,5.9
'S Leg, W Side - 25 m',-37.8,-188.9,5.9
'S Leg, W Side - 50 m',-23.5,-269.7,5.9
'S Leg, W Side-Midblk',52.2,-699.0,5.9
'E Leg, N Side - 25 m',122.3,118.0,5.9
'E Leg, N Side - 50 m',204.3,118.0,5.9
'E Leg, N Side-Midblk',640.3,118.0,5.9
'W Leg, N Side - 25 m',-163.9,118.0,5.9
'W Leg, N Side - 50 m',-245.9,118.0,5.9
'W Leg, N Side-Midblk',-681.9,118.0,5.9
'E Leg, S Side - 25 m',163.9,-118.0,5.9
'E Leg, S Side - 50 m',245.9,-118.0,5.9
'E Leg, S Side-Midblk',681.9,-118.0,5.9
'W Leg, S Side - 25 m',-122.3,-118.0,5.9
'W Leg, S Side - 50 m',-204.3,-118.0,5.9
'W Leg, S Side-Midblk',-640.3,-118.0,5.9
'2040 I495 & MD97 (IC.20)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-30,-5,-238,1177,11000,0.72,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',30,5,-179,1187,11000,1.36,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,5,238,-1177,11000,0.72,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-30,-5,179,-1187,11000,1.36,0.0,79.7
1
'E Leg App - FreeFlow','AG',0,54,1200,54,19800,2.04,0.0,127.7
1
'E Leg Dep - FreeFlow','AG',0,-54,1200,-54,19800,0.61,0.0,127.7
1
```

```
'W Leg App - FreeFlow','AG',0,-54,-1200,-54,19800,1.21,0.0,127.7
1
'W Leg Dep - FreeFlow','AG',0,54,-1200,54,19800,0.61,0.0,127.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 I495 & MD97 (IC.20)

DATE : 1/17/19
TIME : 7:22:17

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-30.0	-5.0	-238.0	1177.0	*	1200.	350.	AG	11000.	0.7	0.0	79.7		
2. N Leg Dep - FreeFlow	*	30.0	5.0	-179.0	1187.0	*	1200.	350.	AG	11000.	1.4	0.0	79.7		
3. S Leg App - FreeFlow	*	30.0	5.0	238.0	-1177.0	*	1200.	170.	AG	11000.	0.7	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-30.0	-5.0	179.0	-1187.0	*	1200.	170.	AG	11000.	1.4	0.0	79.7		
5. E Leg App - FreeFlow	*	0.0	54.0	1200.0	54.0	*	1200.	90.	AG	19800.	2.0	0.0	****		
6. E Leg Dep - FreeFlow	*	0.0	-54.0	1200.0	-54.0	*	1200.	90.	AG	19800.	0.6	0.0	****		
7. W Leg App - FreeFlow	*	0.0	-54.0	-1200.0	-54.0	*	1200.	270.	AG	19800.	1.2	0.0	****		
8. W Leg Dep - FreeFlow	*	0.0	54.0	-1200.0	54.0	*	1200.	270.	AG	19800.	0.6	0.0	****		

MD97 (IC.20)

DATE : 1/17/19
TIME : 7:22:17

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	50.3	118.0	5.9
2. N Leg, E Side - 25 m	37.8	188.9	5.9
3. N Leg, E Side - 50 m	23.5	269.7	5.9
4. N Leg, E Side-Midblk	-52.2	699.0	5.9
5. N Leg, W Side-Corner	-91.9	118.0	5.9
6. N Leg, W Side - 25 m	-104.4	188.9	5.9
7. N Leg, W Side - 50 m	-118.6	269.7	5.9
8. N Leg, W Side-Midblk	-194.3	699.0	5.9
9. S Leg, E Side-Corner	91.9	-118.0	5.9
10. S Leg, E Side - 25 m	104.4	-188.9	5.9
11. S Leg, E Side - 50 m	118.6	-269.7	5.9
12. S Leg, E Side-Midblk	194.3	-699.0	5.9
13. S Leg, W Side-Corner	-50.3	-118.0	5.9
14. S Leg, W Side - 25 m	-37.8	-188.9	5.9
15. S Leg, W Side - 50 m	-23.5	-269.7	5.9
16. S Leg, W Side-Midblk	52.2	-699.0	5.9
17. E Leg, N Side - 25 m	122.3	118.0	5.9
18. E Leg, N Side - 50 m	204.3	118.0	5.9
19. E Leg, N Side-Midblk	640.3	118.0	5.9
20. W Leg, N Side - 25 m	-163.9	118.0	5.9
21. W Leg, N Side - 50 m	-245.9	118.0	5.9
22. W Leg, N Side-Midblk	-681.9	118.0	5.9
23. E Leg, S Side - 25 m	163.9	-118.0	5.9
24. E Leg, S Side - 50 m	245.9	-118.0	5.9
25. E Leg, S Side-Midblk	681.9	-118.0	5.9
26. W Leg, S Side - 25 m	-122.3	-118.0	5.9

27. W Leg, S Side - 50 m	*	-204.3	-118.0	5.9 *
28. W Leg, S Side-Midblk	*	-640.3	-118.0	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.1000	0.1000	0.1000	0.1000	0.7000	0.7000	0.7000	0.7000	0.8000	0.6000	0.5000	0.4000	1.8000	1.4000	1.4000
20.	*	0.1000	0.1000	0.1000	0.1000	0.6000	0.6000	0.6000	0.6000	0.8000	0.6000	0.4000	0.3000	1.7000	1.2000	1.2000
30.	*	0.1000	0.0000	0.0000	0.0000	0.6000	0.6000	0.6000	0.6000	0.8000	0.6000	0.4000	0.3000	1.7000	1.3000	1.0000
40.	*	0.1000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.8000	0.6000	0.4000	0.3000	1.7000	1.2000	1.0000
50.	*	0.1000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.9000	0.6000	0.5000	0.1000	1.5000	1.1000	1.0000
60.	*	0.1000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	1.0000	0.7000	0.4000	0.1000	1.7000	1.2000	1.1000
70.	*	0.2000	0.0000	0.0000	0.0000	0.5000	0.4000	0.4000	0.4000	1.0000	0.6000	0.4000	0.0000	1.6000	1.1000	0.9000
80.	*	0.6000	0.1000	0.0000	0.0000	0.9000	0.5000	0.4000	0.4000	0.9000	0.4000	0.2000	0.0000	1.6000	1.0000	0.7000
90.	*	1.3000	0.3000	0.1000	0.0000	1.5000	0.7000	0.5000	0.4000	0.6000	0.2000	0.0000	0.0000	1.2000	0.7000	0.5000
100.	*	1.7000	0.7000	0.3000	0.0000	1.8000	1.1000	0.8000	0.5000	0.2000	0.0000	0.0000	0.0000	0.7000	0.5000	0.5000
110.	*	1.7000	0.8000	0.6000	0.1000	1.8000	1.3000	1.1000	0.6000	0.1000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000
120.	*	1.5000	0.8000	0.6000	0.1000	1.4000	1.2000	1.1000	0.7000	0.0000	0.0000	0.0000	0.0000	0.6000	0.6000	0.6000

130. * 1.3000 0.8000 0.6000 0.2000 1.3000 1.2000 1.1000 0.9000 0.0000
0.0000 0.0000 0.0000 0.6000 0.6000 0.6000
140. * 1.3000 0.8000 0.6000 0.4000 1.3000 1.1000 1.0000 0.9000 0.0000
0.0000 0.0000 0.0000 0.8000 0.8000 0.8000
150. * 1.2000 0.8000 0.6000 0.4000 1.1000 1.1000 1.1000 0.9000 0.1000
0.1000 0.1000 0.1000 0.9000 0.9000 0.9000
160. * 1.3000 1.0000 0.8000 0.5000 1.2000 1.1000 1.0000 0.8000 0.2000
0.2000 0.2000 0.1000 0.9000 0.9000 0.8000
170. * 1.7000 1.5000 1.2000 1.0000 1.2000 1.0000 0.8000 0.6000 0.4000
0.4000 0.4000 0.4000 0.7000 0.7000 0.7000
180. * 2.0000 1.7000 1.4000 1.1000 0.9000 0.6000 0.5000 0.4000 0.7000
0.7000 0.7000 0.6000 0.3000 0.3000 0.3000
190. * 2.0000 1.5000 1.4000 1.1000 0.6000 0.4000 0.4000 0.3000 0.7000
0.7000 0.7000 0.7000 0.1000 0.1000 0.1000
200. * 1.9000 1.2000 1.2000 1.0000 0.6000 0.4000 0.3000 0.2000 0.6000
0.6000 0.6000 0.6000 0.1000 0.1000 0.1000
210. * 1.8000 1.1000 0.9000 0.8000 0.6000 0.4000 0.3000 0.2000 0.6000
0.6000 0.6000 0.6000 0.0000 0.0000 0.0000
220. * 1.7000 1.0000 0.9000 0.8000 0.6000 0.4000 0.3000 0.2000 0.5000
0.5000 0.5000 0.5000 0.1000 0.0000 0.0000
230. * 1.5000 1.0000 0.8000 0.7000 0.6000 0.5000 0.3000 0.1000 0.5000
0.5000 0.5000 0.5000 0.1000 0.0000 0.0000
240. * 1.7000 1.0000 0.9000 0.5000 0.8000 0.5000 0.3000 0.0000 0.5000
0.5000 0.5000 0.5000 0.1000 0.0000 0.0000
250. * 1.6000 1.0000 0.8000 0.5000 0.7000 0.4000 0.3000 0.0000 0.5000
0.4000 0.4000 0.4000 0.1000 0.0000 0.0000
260. * 1.6000 0.9000 0.7000 0.5000 0.8000 0.3000 0.2000 0.0000 0.7000
0.4000 0.4000 0.4000 0.3000 0.0000 0.0000
270. * 1.2000 0.7000 0.5000 0.5000 0.5000 0.1000 0.0000 0.0000 1.1000
0.6000 0.5000 0.4000 0.8000 0.2000 0.1000
280. * 0.7000 0.5000 0.5000 0.5000 0.2000 0.0000 0.0000 0.0000 1.4000
0.9000 0.7000 0.5000 1.0000 0.5000 0.2000
290. * 0.5000 0.5000 0.5000 0.5000 0.1000 0.0000 0.0000 0.0000 1.4000
1.0000 0.9000 0.5000 1.1000 0.5000 0.4000
300. * 0.6000 0.6000 0.6000 0.6000 0.0000 0.0000 0.0000 0.0000 1.2000
1.0000 0.9000 0.6000 0.9000 0.5000 0.4000
310. * 0.6000 0.6000 0.6000 0.6000 0.0000 0.0000 0.0000 0.0000 1.1000
1.0000 1.0000 0.8000 0.9000 0.5000 0.4000
320. * 0.8000 0.8000 0.8000 0.8000 0.0000 0.0000 0.0000 0.0000 1.2000
1.0000 0.9000 0.8000 0.9000 0.6000 0.5000
330. * 0.9000 0.9000 0.9000 0.8000 0.1000 0.1000 0.1000 0.1000 1.1000
1.0000 1.1000 0.8000 0.9000 0.6000 0.5000
340. * 0.9000 0.9000 0.8000 0.8000 0.2000 0.2000 0.2000 0.1000 1.4000
1.1000 1.1000 0.9000 0.9000 0.8000 0.7000
350. * 0.7000 0.7000 0.7000 0.5000 0.4000 0.4000 0.4000 0.4000 1.4000
1.1000 0.9000 0.6000 1.3000 1.2000 1.0000
360. * 0.3000 0.3000 0.3000 0.3000 0.7000 0.7000 0.7000 0.6000 1.1000
0.8000 0.6000 0.5000 1.6000 1.5000 1.3000

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  2.0000  1.7000  1.4000  1.1000  1.8000  1.3000  1.1000  0.9000  1.4000
1.1000  1.1000  0.9000  1.8000  1.5000  1.4000
 DEGR. *    180     180     190     180     100     110     110     130     290
340     330     340      10     360      10
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  1.2000  0.0000  0.0000  0.0000  0.4000  0.2000  0.0000  0.8000  0.8000
0.8000  1.0000  0.8000  0.6000
  20.  *  1.1000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.8000  0.8000
0.8000  1.0000  1.0000  0.7000
  30.  *  0.9000  0.1000  0.1000  0.1000  0.3000  0.2000  0.0000  0.8000  0.8000
0.8000  1.2000  0.9000  0.8000
  40.  *  0.9000  0.1000  0.1000  0.1000  0.3000  0.2000  0.1000  0.8000  0.8000
0.8000  1.3000  1.0000  0.9000
  50.  *  0.7000  0.1000  0.1000  0.1000  0.3000  0.2000  0.1000  0.9000  0.9000
0.9000  1.3000  1.3000  1.0000
  60.  *  0.6000  0.1000  0.1000  0.1000  0.3000  0.2000  0.1000  1.0000  1.0000
0.9000  1.5000  1.4000  1.0000
  70.  *  0.5000  0.2000  0.2000  0.2000  0.4000  0.4000  0.2000  1.0000  1.0000
0.8000  1.5000  1.4000  1.2000
  80.  *  0.5000  0.6000  0.6000  0.5000  0.7000  0.6000  0.4000  0.9000  0.9000
0.6000  1.5000  1.5000  1.3000
  90.  *  0.5000  1.3000  1.2000  1.0000  1.3000  1.1000  0.9000  0.6000  0.5000
0.3000  1.0000  1.1000  1.0000
```

```
 100.  *  0.5000  1.7000  1.7000  1.5000  1.5000  1.3000  0.9000  0.2000  0.2000
0.1000  0.5000  0.6000  0.4000
 110.  *  0.5000  1.7000  1.7000  1.5000  1.3000  1.2000  0.9000  0.1000  0.1000
0.1000  0.4000  0.4000  0.2000
 120.  *  0.6000  1.5000  1.5000  1.5000  1.1000  0.9000  0.8000  0.0000  0.0000
0.0000  0.4000  0.4000  0.2000
 130.  *  0.6000  1.3000  1.3000  1.3000  0.9000  0.8000  0.7000  0.0000  0.0000
0.0000  0.5000  0.4000  0.2000
 140.  *  0.8000  1.2000  1.2000  1.2000  0.9000  0.9000  0.7000  0.0000  0.0000
0.0000  0.5000  0.4000  0.2000
 150.  *  0.8000  1.1000  1.1000  1.1000  1.0000  0.9000  0.6000  0.0000  0.0000
0.0000  0.4000  0.3000  0.0000
 160.  *  0.8000  1.1000  1.1000  1.1000  1.0000  0.7000  0.6000  0.0000  0.0000
0.0000  0.4000  0.1000  0.0000
 170.  *  0.5000  1.2000  1.0000  1.0000  0.7000  0.7000  0.6000  0.2000  0.0000
0.0000  0.1000  0.0000  0.0000
 180.  *  0.3000  1.5000  1.4000  1.2000  0.6000  0.6000  0.6000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  1.4000  1.2000  1.0000  0.6000  0.6000  0.6000  0.4000  0.2000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.1000  1.3000  1.4000  1.1000  0.6000  0.6000  0.6000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  1.5000  1.3000  1.2000  0.6000  0.6000  0.6000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  1.5000  1.4000  1.3000  0.6000  0.6000  0.6000  0.3000  0.2000
0.1000  0.1000  0.1000  0.1000
 230.  *  0.0000  1.6000  1.7000  1.4000  0.6000  0.6000  0.6000  0.3000  0.2000
0.1000  0.1000  0.1000  0.1000
 240.  *  0.0000  1.5000  1.7000  1.6000  0.8000  0.7000  0.7000  0.3000  0.2000
0.1000  0.1000  0.1000  0.1000
 250.  *  0.0000  1.6000  1.6000  1.7000  0.7000  0.7000  0.6000  0.3000  0.3000
0.2000  0.1000  0.1000  0.1000
 260.  *  0.0000  1.5000  1.7000  1.8000  0.7000  0.7000  0.5000  0.6000  0.5000
0.4000  0.3000  0.3000  0.3000
 270.  *  0.0000  1.1000  1.2000  1.4000  0.5000  0.5000  0.3000  1.0000  0.9000
0.8000  0.8000  0.7000  0.6000
 280.  *  0.0000  0.6000  0.7000  0.6000  0.2000  0.2000  0.1000  1.1000  1.0000
0.9000  1.0000  1.0000  0.9000
 290.  *  0.0000  0.4000  0.5000  0.3000  0.1000  0.1000  0.1000  1.1000  1.0000
1.0000  1.1000  1.1000  0.9000
 300.  *  0.1000  0.4000  0.4000  0.2000  0.0000  0.0000  0.0000  1.0000  0.9000
1.1000  1.0000  1.0000  0.9000
 310.  *  0.1000  0.5000  0.4000  0.2000  0.0000  0.0000  0.0000  1.0000  1.0000
1.0000  0.9000  0.9000  0.9000
 320.  *  0.3000  0.5000  0.4000  0.2000  0.0000  0.0000  0.0000  1.1000  1.1000
0.9000  0.8000  0.8000  0.8000
 330.  *  0.3000  0.5000  0.4000  0.1000  0.0000  0.0000  0.0000  1.2000  1.1000
0.8000  0.7000  0.7000  0.7000
```

```
 340.  *  0.4000  0.4000  0.1000  0.0000  0.0000  0.0000  0.0000  1.2000  0.9000
0.8000  0.7000  0.7000  0.7000
 350.  *  1.0000  0.1000  0.0000  0.0000  0.2000  0.0000  0.0000  0.9000  0.9000
0.8000  0.8000  0.6000  0.6000
 360.  *  1.0000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.8000  0.8000
0.8000  1.1000  1.0000  0.8000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.2000  1.7000  1.7000  1.8000  1.5000  1.3000  0.9000  1.2000  1.1000
1.1000  1.5000  1.5000  1.3000
 DEGR. *     10     100     230     260     100     100      90     330     320
300      60      80      80

 THE HIGHEST CONCENTRATION OF   2.0000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,5,9,8,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,0,-5,-25,5,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',26.5,108.7,5.9
'N Leg, E Side - 25 m',-3.9,174.0,5.9
'N Leg, E Side - 50 m',-38.6,248.3,5.9
'N Leg, E Side-Midblk',-222.8,643.4,5.9
'N Leg, W Side-Corner',-132.2,118.0,5.9
'N Leg, W Side - 25 m',-162.7,183.2,5.9
'N Leg, W Side - 50 m',-197.4,257.6,5.9
'N Leg, W Side-Midblk',-381.6,652.7,5.9
'S Leg, E Side-Corner',80.0,-111.5,5.9
'S Leg, E Side - 25 m',86.3,-183.2,5.9
'S Leg, E Side - 50 m',93.4,-264.9,5.9
'S Leg, E Side-Midblk',131.4,-699.2,5.9
'S Leg, W Side-Corner',-60.4,-113.2,5.9
'S Leg, W Side - 25 m',-54.1,-184.9,5.9
'S Leg, W Side - 50 m',-46.9,-266.6,5.9
'S Leg, W Side-Midblk',-8.9,-700.9,5.9
'E Leg, N Side - 25 m',98.3,115.0,5.9
'E Leg, N Side - 50 m',180.0,122.2,5.9
'E Leg, N Side-Midblk',614.3,160.1,5.9
'W Leg, N Side - 25 m',-204.0,124.3,5.9
'W Leg, N Side - 50 m',-285.7,131.4,5.9
'W Leg, N Side-Midblk',-720.0,169.4,5.9
'E Leg, S Side - 25 m',151.8,-105.2,5.9
'E Leg, S Side - 50 m',233.5,-98.0,5.9
'E Leg, S Side-Midblk',667.8,-60.0,5.9
'W Leg, S Side - 25 m',-132.1,-106.9,5.9
'W Leg, S Side - 50 m',-213.8,-99.7,5.9
'W Leg, S Side-Midblk',-648.1,-61.7,5.9
'2040 I495 & MD185 (IC.21)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-29,-8,-534,1075,11000,1.36,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',29,8,-480,1100,11000,0.72,0.0,79.7
1
'S Leg App - FreeFlow','AG',29,8,134,-1193,11000,0.72,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-29,-8,75,-1198,11000,1.68,0.0,79.7
1
'E Leg App - FreeFlow','AG',0,48,1191,152,17600,0.61,0.0,115.7
1
'E Leg Dep - FreeFlow','AG',0,-54,1200,51,19800,0.88,0.0,127.7
1
```

```
'W Leg App - FreeFlow','AG',0,-54,-1200,51,19800,0.61,0.0,127.7
1
'W Leg Dep - FreeFlow','AG',0,48,-1191,152,17600,0.88,0.0,115.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 I495 & MD185 (IC.21)

DATE : 1/17/19
TIME : 9:36:51

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-29.0	-8.0	-534.0	1075.0	*	1195.	335.	AG	11000.	1.4	0.0	79.7		
2. N Leg Dep - FreeFlow	*	29.0	8.0	-480.0	1100.0	*	1205.	335.	AG	11000.	0.7	0.0	79.7		
3. S Leg App - FreeFlow	*	29.0	8.0	134.0	-1193.0	*	1206.	175.	AG	11000.	0.7	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-29.0	-8.0	75.0	-1198.0	*	1195.	175.	AG	11000.	1.7	0.0	79.7		
5. E Leg App - FreeFlow	*	0.0	48.0	1191.0	152.0	*	1196.	85.	AG	17600.	0.6	0.0	****		
6. E Leg Dep - FreeFlow	*	0.0	-54.0	1200.0	51.0	*	1205.	85.	AG	19800.	0.9	0.0	****		
7. W Leg App - FreeFlow	*	0.0	-54.0	-1200.0	51.0	*	1205.	275.	AG	19800.	0.6	0.0	****		
8. W Leg Dep - FreeFlow	*	0.0	48.0	-1191.0	152.0	*	1196.	275.	AG	17600.	0.9	0.0	****		

MD185 (IC.21)

DATE : 1/17/19
TIME : 9:36:51

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	26.5	108.7	5.9
2. N Leg, E Side - 25 m	-3.9	174.0	5.9
3. N Leg, E Side - 50 m	-38.6	248.3	5.9
4. N Leg, E Side-Midblk	-222.8	643.4	5.9
5. N Leg, W Side-Corner	-132.2	118.0	5.9
6. N Leg, W Side - 25 m	-162.7	183.2	5.9
7. N Leg, W Side - 50 m	-197.4	257.6	5.9
8. N Leg, W Side-Midblk	-381.6	652.7	5.9
9. S Leg, E Side-Corner	80.0	-111.5	5.9
10. S Leg, E Side - 25 m	86.3	-183.2	5.9
11. S Leg, E Side - 50 m	93.4	-264.9	5.9
12. S Leg, E Side-Midblk	131.4	-699.2	5.9
13. S Leg, W Side-Corner	-60.4	-113.2	5.9
14. S Leg, W Side - 25 m	-54.1	-184.9	5.9
15. S Leg, W Side - 50 m	-46.9	-266.6	5.9
16. S Leg, W Side-Midblk	-8.9	-700.9	5.9
17. E Leg, N Side - 25 m	98.3	115.0	5.9
18. E Leg, N Side - 50 m	180.0	122.2	5.9
19. E Leg, N Side-Midblk	614.3	160.1	5.9
20. W Leg, N Side - 25 m	-204.0	124.3	5.9
21. W Leg, N Side - 50 m	-285.7	131.4	5.9
22. W Leg, N Side-Midblk	-720.0	169.4	5.9
23. E Leg, S Side - 25 m	151.8	-105.2	5.9
24. E Leg, S Side - 50 m	233.5	-98.0	5.9
25. E Leg, S Side-Midblk	667.8	-60.0	5.9
26. W Leg, S Side - 25 m	-132.1	-106.9	5.9

27. W Leg, S Side - 50 m	*	-213.8	-99.7	5.9 *
28. W Leg, S Side-Midblk	*	-648.1	-61.7	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.0000	0.0000	0.0000	0.0000	0.7000	0.7000	0.7000	0.7000	0.6000	0.5000	0.4000	0.2000	1.3000	1.1000	1.3000
20.	*	0.0000	0.0000	0.0000	0.0000	0.6000	0.6000	0.6000	0.6000	0.5000	0.4000	0.3000	0.1000	1.2000	1.3000	1.0000
30.	*	0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.5000	0.4000	0.3000	0.1000	1.3000	1.1000	1.1000
40.	*	0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.6000	0.4000	0.3000	0.1000	1.2000	1.0000	1.0000
50.	*	0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.7000	0.4000	0.3000	0.1000	1.3000	1.0000	0.9000
60.	*	0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.8000	0.4000	0.3000	0.0000	1.4000	1.0000	0.9000
70.	*	0.1000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.8000	0.4000	0.3000	0.0000	1.4000	1.0000	0.9000
80.	*	0.3000	0.0000	0.0000	0.0000	0.7000	0.5000	0.5000	0.5000	0.7000	0.2000	0.1000	0.0000	1.3000	0.9000	0.7000
90.	*	0.6000	0.2000	0.1000	0.0000	1.0000	0.7000	0.6000	0.5000	0.4000	0.1000	0.0000	0.0000	1.1000	0.7000	0.6000
100.	*	0.7000	0.4000	0.2000	0.0000	1.2000	0.9000	0.7000	0.5000	0.1000	0.0000	0.0000	0.0000	0.8000	0.6000	0.6000
110.	*	0.7000	0.4000	0.3000	0.0000	1.3000	1.0000	0.9000	0.6000	0.1000	0.0000	0.0000	0.0000	0.6000	0.6000	0.6000
120.	*	0.6000	0.4000	0.3000	0.2000	1.3000	1.0000	0.9000	0.9000	0.0000	0.0000	0.0000	0.0000	0.6000	0.6000	0.6000

130. * 0.6000 0.4000 0.3000 0.2000 1.4000 1.2000 1.0000 1.0000 0.0000
0.0000 0.0000 0.0000 0.7000 0.7000 0.7000
140. * 0.5000 0.5000 0.3000 0.3000 1.4000 1.3000 1.1000 1.0000 0.0000
0.0000 0.0000 0.0000 0.9000 0.9000 0.9000
150. * 0.5000 0.5000 0.4000 0.4000 1.4000 1.3000 1.2000 1.0000 0.0000
0.0000 0.0000 0.0000 1.0000 1.0000 1.0000
160. * 0.7000 0.7000 0.7000 0.6000 1.3000 1.0000 0.9000 0.6000 0.1000
0.1000 0.1000 0.1000 1.1000 1.1000 1.1000
170. * 1.1000 1.1000 1.1000 0.9000 1.0000 0.7000 0.7000 0.5000 0.3000
0.3000 0.3000 0.2000 1.0000 1.0000 1.0000
180. * 1.3000 1.4000 1.1000 0.9000 0.8000 0.5000 0.5000 0.3000 0.7000
0.7000 0.7000 0.5000 0.6000 0.5000 0.5000
190. * 1.4000 1.2000 1.0000 0.8000 0.6000 0.3000 0.3000 0.2000 0.8000
0.8000 0.8000 0.7000 0.2000 0.2000 0.2000
200. * 1.2000 0.9000 0.9000 0.8000 0.5000 0.3000 0.3000 0.2000 0.7000
0.7000 0.7000 0.7000 0.1000 0.1000 0.1000
210. * 1.0000 0.8000 0.8000 0.7000 0.6000 0.4000 0.3000 0.2000 0.7000
0.7000 0.7000 0.7000 0.1000 0.1000 0.1000
220. * 1.1000 0.9000 0.8000 0.7000 0.6000 0.4000 0.3000 0.2000 0.6000
0.6000 0.6000 0.6000 0.1000 0.1000 0.1000
230. * 1.0000 0.8000 0.7000 0.5000 0.6000 0.4000 0.3000 0.1000 0.5000
0.5000 0.5000 0.5000 0.0000 0.0000 0.0000
240. * 1.1000 0.8000 0.7000 0.5000 0.7000 0.4000 0.3000 0.0000 0.5000
0.5000 0.5000 0.5000 0.0000 0.0000 0.0000
250. * 1.2000 0.8000 0.7000 0.4000 0.7000 0.4000 0.3000 0.0000 0.6000
0.5000 0.5000 0.5000 0.0000 0.0000 0.0000
260. * 1.3000 0.8000 0.7000 0.4000 0.8000 0.4000 0.3000 0.0000 0.7000
0.5000 0.5000 0.5000 0.1000 0.0000 0.0000
270. * 1.1000 0.8000 0.6000 0.5000 0.7000 0.2000 0.1000 0.0000 0.9000
0.6000 0.5000 0.5000 0.3000 0.0000 0.0000
280. * 0.8000 0.6000 0.5000 0.5000 0.4000 0.1000 0.0000 0.0000 1.3000
0.8000 0.6000 0.5000 0.5000 0.2000 0.1000
290. * 0.7000 0.6000 0.6000 0.6000 0.1000 0.0000 0.0000 0.0000 1.2000
0.9000 0.7000 0.5000 0.7000 0.3000 0.2000
300. * 0.6000 0.6000 0.6000 0.6000 0.1000 0.0000 0.0000 0.0000 1.4000
0.9000 0.8000 0.5000 0.6000 0.4000 0.2000
310. * 0.6000 0.6000 0.6000 0.6000 0.1000 0.1000 0.1000 0.1000 1.2000
1.2000 0.8000 0.8000 0.7000 0.5000 0.3000
320. * 0.7000 0.7000 0.7000 0.6000 0.2000 0.2000 0.2000 0.2000 1.5000
1.2000 0.9000 0.9000 0.6000 0.5000 0.3000
330. * 0.6000 0.6000 0.6000 0.4000 0.4000 0.4000 0.4000 0.4000 1.4000
1.3000 1.2000 0.9000 0.8000 0.6000 0.4000
340. * 0.3000 0.3000 0.3000 0.2000 0.8000 0.8000 0.8000 0.7000 1.2000
1.2000 1.0000 0.9000 1.0000 0.8000 0.7000
350. * 0.1000 0.1000 0.1000 0.1000 0.9000 0.9000 0.9000 0.8000 0.9000
0.7000 0.9000 0.6000 1.2000 1.0000 0.9000
360. * 0.0000 0.0000 0.0000 0.0000 0.8000 0.8000 0.8000 0.7000 0.6000
0.5000 0.5000 0.4000 1.3000 1.1000 1.1000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.4000  1.4000  1.1000  0.9000  1.4000  1.3000  1.2000  1.0000  1.5000
1.3000  1.2000  0.9000  1.4000  1.3000  1.3000
 DEGR. *    190     180     170     170     130     140     150     130     320
330     330     320      60      20      10
```


JOB: I-495 & I-270 MLS RUN: 2040 I495 & MD185 (IC.21)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  1.1000  0.0000  0.0000  0.0000  0.4000  0.3000  0.0000  0.5000  0.5000
0.5000  0.8000  0.8000  0.6000
  20.  *  1.1000  0.0000  0.0000  0.0000  0.4000  0.3000  0.1000  0.5000  0.5000
0.5000  0.8000  0.8000  0.6000
  30.  *  1.0000  0.0000  0.0000  0.0000  0.4000  0.3000  0.1000  0.5000  0.5000
0.5000  0.9000  0.8000  0.6000
  40.  *  0.8000  0.0000  0.0000  0.0000  0.4000  0.3000  0.1000  0.6000  0.6000
0.6000  0.8000  0.7000  0.6000
  50.  *  0.7000  0.0000  0.0000  0.0000  0.3000  0.3000  0.1000  0.7000  0.7000
0.6000  1.0000  0.8000  0.6000
  60.  *  0.6000  0.0000  0.0000  0.0000  0.3000  0.3000  0.1000  0.8000  0.8000
0.7000  1.1000  0.8000  0.7000
  70.  *  0.6000  0.1000  0.1000  0.1000  0.4000  0.4000  0.2000  0.8000  0.8000
0.7000  1.2000  0.8000  0.7000
  80.  *  0.6000  0.3000  0.2000  0.2000  0.5000  0.5000  0.2000  0.7000  0.7000
0.5000  1.1000  1.0000  0.7000
  90.  *  0.6000  0.5000  0.5000  0.5000  0.9000  0.7000  0.6000  0.4000  0.4000
0.3000  0.9000  0.9000  0.8000
```

```
 100.  *  0.6000  0.7000  0.6000  0.6000  1.1000  1.0000  0.9000  0.1000  0.1000
0.1000  0.6000  0.5000  0.4000
 110.  *  0.6000  0.7000  0.7000  0.6000  1.0000  0.9000  0.9000  0.1000  0.1000
0.1000  0.5000  0.4000  0.2000
 120.  *  0.6000  0.6000  0.6000  0.6000  1.1000  0.9000  0.8000  0.0000  0.0000
0.0000  0.4000  0.3000  0.1000
 130.  *  0.7000  0.6000  0.6000  0.6000  1.0000  0.9000  0.8000  0.0000  0.0000
0.0000  0.4000  0.3000  0.1000
 140.  *  0.9000  0.5000  0.5000  0.5000  0.9000  0.9000  0.7000  0.0000  0.0000
0.0000  0.4000  0.3000  0.1000
 150.  *  1.0000  0.4000  0.4000  0.4000  1.0000  0.9000  0.6000  0.0000  0.0000
0.0000  0.5000  0.3000  0.0000
 160.  *  0.9000  0.4000  0.4000  0.4000  1.0000  0.9000  0.6000  0.0000  0.0000
0.0000  0.5000  0.3000  0.0000
 170.  *  0.9000  0.7000  0.5000  0.5000  0.7000  0.6000  0.5000  0.0000  0.0000
0.0000  0.3000  0.1000  0.0000
 180.  *  0.5000  0.9000  0.7000  0.5000  0.6000  0.6000  0.6000  0.2000  0.1000
0.0000  0.1000  0.0000  0.0000
 190.  *  0.2000  0.9000  0.7000  0.4000  0.6000  0.6000  0.6000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.1000  0.8000  0.7000  0.4000  0.5000  0.5000  0.5000  0.5000  0.3000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.1000  0.9000  0.8000  0.6000  0.6000  0.6000  0.6000  0.3000  0.3000
0.1000  0.0000  0.0000  0.0000
 220.  *  0.1000  1.1000  0.8000  0.7000  0.6000  0.6000  0.6000  0.3000  0.3000
0.1000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.7000  0.7000  0.7000  0.6000  0.6000  0.6000  0.3000  0.3000
0.1000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.9000  0.9000  0.7000  0.7000  0.7000  0.7000  0.4000  0.4000
0.2000  0.0000  0.0000  0.0000
 250.  *  0.0000  1.0000  0.9000  0.8000  0.7000  0.7000  0.6000  0.4000  0.4000
0.2000  0.0000  0.0000  0.0000
 260.  *  0.0000  1.1000  0.9000  0.7000  0.8000  0.8000  0.7000  0.6000  0.6000
0.4000  0.1000  0.1000  0.1000
 270.  *  0.0000  0.9000  0.7000  0.5000  0.7000  0.7000  0.5000  0.9000  1.0000
0.9000  0.3000  0.3000  0.2000
 280.  *  0.0000  0.5000  0.4000  0.2000  0.4000  0.3000  0.3000  1.1000  1.0000
1.0000  0.5000  0.5000  0.4000
 290.  *  0.0000  0.3000  0.2000  0.1000  0.1000  0.1000  0.1000  1.3000  1.1000
0.9000  0.7000  0.7000  0.5000
 300.  *  0.0000  0.3000  0.3000  0.1000  0.1000  0.1000  0.1000  1.0000  1.0000
0.8000  0.6000  0.6000  0.6000
 310.  *  0.3000  0.4000  0.3000  0.0000  0.0000  0.0000  0.0000  1.1000  1.0000
0.7000  0.6000  0.6000  0.6000
 320.  *  0.3000  0.4000  0.2000  0.0000  0.0000  0.0000  0.0000  1.1000  0.8000
0.5000  0.5000  0.5000  0.5000
 330.  *  0.3000  0.2000  0.1000  0.0000  0.1000  0.0000  0.0000  0.9000  0.7000
0.5000  0.6000  0.5000  0.5000
```

```
 340.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.7000  0.5000
0.5000  0.7000  0.6000  0.5000
 350.  *  0.7000  0.0000  0.0000  0.0000  0.4000  0.3000  0.0000  0.5000  0.5000
0.5000  0.8000  0.8000  0.5000
 360.  *  1.0000  0.0000  0.0000  0.0000  0.4000  0.3000  0.0000  0.5000  0.5000
0.5000  0.9000  0.8000  0.5000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.1000  1.1000  0.9000  0.8000  1.1000  1.0000  0.9000  1.3000  1.1000
1.0000  1.2000  1.0000  0.8000
 DEGR. *     10     220     240     250     100     100     110     290     290
280      70      80      90

 THE HIGHEST CONCENTRATION OF   1.5000 PPM OCCURRED AT RECEPTOR     9.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
10,10,4,3,2200,2200,2200,2200,2200,2200,1114,2200,1036.8,1036.8,1036.8,1036.8,1036.8
,1036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,12
00,0,0,1200,-1200,0,0,0,0,0,0,-10,-10,10,5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',125.8,35.2,5.9
'N Leg, E Side - 25 m',113.3,106.1,5.9
'N Leg, E Side - 50 m',99.1,186.9,5.9
'N Leg, E Side-Midblk',23.4,616.2,5.9
'N Leg, W Side-Corner',-144.7,72.2,5.9
'N Leg, W Side - 25 m',-157.2,143.2,5.9
'N Leg, W Side - 50 m',-171.5,223.9,5.9
'N Leg, W Side-Midblk',-247.2,653.3,5.9
'S Leg, E Side-Corner',144.5,-70.9,5.9
'S Leg, E Side - 25 m',157.0,-141.8,5.9
'S Leg, E Side - 50 m',171.2,-222.6,5.9
'S Leg, E Side-Midblk',247.0,-651.9,5.9
'S Leg, W Side-Corner',-125.5,-36.8,5.9
'S Leg, W Side - 25 m',-113.0,-107.7,5.9
'S Leg, W Side - 50 m',-98.8,-188.5,5.9
'S Leg, W Side-Midblk',-23.1,-617.8,5.9
'E Leg, N Side - 25 m',197.6,28.9,5.9
'E Leg, N Side - 50 m',279.3,21.7,5.9
'E Leg, N Side-Midblk',713.6,-16.3,5.9
'W Leg, N Side - 25 m',-215.7,84.7,5.9
'W Leg, N Side - 50 m',-296.4,99.0,5.9
'W Leg, N Side-Midblk',-725.8,174.7,5.9
'E Leg, S Side - 25 m',216.2,-77.1,5.9
'E Leg, S Side - 50 m',298.0,-84.3,5.9
'E Leg, S Side-Midblk',732.3,-122.3,5.9
'W Leg, S Side - 25 m',-196.5,-24.3,5.9
'W Leg, S Side - 50 m',-277.2,-10.0,5.9
'W Leg, S Side-Midblk',-706.6,65.7,5.9
'2040 I495 & MD 190 (IC.25)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-64,17,-267,1171,22000,0.70,0.0,139.7
1
'N Leg Dep - FreeFlow','AG',64,-17,-149,1192,22000,1.43,0.0,139.7
1
'S Leg App - FreeFlow','AG',64,-17,267,-1171,22000,0.70,0.0,139.7
1
'S Leg Dep - FreeFlow','AG',-64,17,149,-1192,22000,1.43,0.0,139.7
1
'E Leg App - FreeFlow','AG',2,18,1197,-87,6600,0.65,0.0,55.7
1
'E Leg Dep - FreeFlow','AG',-3,-24,1193,-128,8800,1.92,0.0,67.7
1
```

```
'W Leg App - FreeFlow','AG',-3,-24,-1186,185,8800,1.48,0.0,67.7
1
'W Leg Dep - FreeFlow','AG',2,18,-1179,226,6600,0.65,0.0,55.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 I495 & MD 190 (IC.25)

DATE : 2/28/19
TIME : 12: 7:13

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-64.0	17.0	-267.0	1171.0	*	1172.	350.	AG	22000.	0.7	0.0	****		
2. N Leg Dep - FreeFlow	*	64.0	-17.0	-149.0	1192.0	*	1228.	350.	AG	22000.	1.4	0.0	****		
3. S Leg App - FreeFlow	*	64.0	-17.0	267.0	-1171.0	*	1172.	170.	AG	22000.	0.7	0.0	****		
4. S Leg Dep - FreeFlow	*	-64.0	17.0	149.0	-1192.0	*	1228.	170.	AG	22000.	1.4	0.0	****		
5. E Leg App - FreeFlow	*	2.0	18.0	1197.0	-87.0	*	1200.	95.	AG	6600.	0.6	0.0	55.7		
6. E Leg Dep - FreeFlow	*	-3.0	-24.0	1193.0	-128.0	*	1201.	95.	AG	8800.	1.9	0.0	67.7		
7. W Leg App - FreeFlow	*	-3.0	-24.0	-1186.0	185.0	*	1201.	280.	AG	8800.	1.5	0.0	67.7		
8. W Leg Dep - FreeFlow	*	2.0	18.0	-1179.0	226.0	*	1199.	280.	AG	6600.	0.6	0.0	55.7		

190 (IC.25)

DATE : 2/28/19
TIME : 12: 7:13

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	125.8	35.2	5.9
2. N Leg, E Side - 25 m	113.3	106.1	5.9
3. N Leg, E Side - 50 m	99.1	186.9	5.9
4. N Leg, E Side-Midblk	23.4	616.2	5.9
5. N Leg, W Side-Corner	-144.7	72.2	5.9
6. N Leg, W Side - 25 m	-157.2	143.2	5.9
7. N Leg, W Side - 50 m	-171.5	223.9	5.9
8. N Leg, W Side-Midblk	-247.2	653.3	5.9
9. S Leg, E Side-Corner	144.5	-70.9	5.9
10. S Leg, E Side - 25 m	157.0	-141.8	5.9
11. S Leg, E Side - 50 m	171.2	-222.6	5.9
12. S Leg, E Side-Midblk	247.0	-651.9	5.9
13. S Leg, W Side-Corner	-125.5	-36.8	5.9
14. S Leg, W Side - 25 m	-113.0	-107.7	5.9
15. S Leg, W Side - 50 m	-98.8	-188.5	5.9
16. S Leg, W Side-Midblk	-23.1	-617.8	5.9
17. E Leg, N Side - 25 m	197.6	28.9	5.9
18. E Leg, N Side - 50 m	279.3	21.7	5.9
19. E Leg, N Side-Midblk	713.6	-16.3	5.9
20. W Leg, N Side - 25 m	-215.7	84.7	5.9
21. W Leg, N Side - 50 m	-296.4	99.0	5.9
22. W Leg, N Side-Midblk	-725.8	174.7	5.9
23. E Leg, S Side - 25 m	216.2	-77.1	5.9
24. E Leg, S Side - 50 m	298.0	-84.3	5.9
25. E Leg, S Side-Midblk	732.3	-122.3	5.9
26. W Leg, S Side - 25 m	-196.5	-24.3	5.9

27. W Leg, S Side - 50 m	*	-277.2	-10.0	5.9 *
28. W Leg, S Side-Midblk	*	-706.6	65.7	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.2000	0.2000	0.2000	0.1000	0.9000	0.9000	0.9000	0.8000	0.7000	0.6000	0.3000	0.2000	1.6000	1.5000	1.4000
20.	* 0.1000	0.1000	0.1000	0.1000	0.9000	0.9000	0.9000	0.9000	0.6000	0.3000	0.2000	0.1000	1.5000	1.4000	1.4000
30.	* 0.1000	0.1000	0.1000	0.1000	0.8000	0.8000	0.8000	0.8000	0.6000	0.4000	0.2000	0.1000	1.5000	1.3000	1.3000
40.	* 0.1000	0.1000	0.1000	0.1000	0.8000	0.8000	0.8000	0.8000	0.6000	0.4000	0.2000	0.1000	1.5000	1.5000	1.1000
50.	* 0.1000	0.1000	0.1000	0.1000	0.7000	0.7000	0.7000	0.7000	0.7000	0.4000	0.2000	0.1000	1.5000	1.2000	1.1000
60.	* 0.0000	0.0000	0.0000	0.0000	0.7000	0.7000	0.7000	0.7000	0.8000	0.4000	0.2000	0.0000	1.6000	1.4000	1.0000
70.	* 0.0000	0.0000	0.0000	0.0000	0.7000	0.7000	0.7000	0.7000	0.9000	0.4000	0.2000	0.0000	1.7000	1.3000	1.1000
80.	* 0.1000	0.0000	0.0000	0.0000	0.8000	0.8000	0.8000	0.8000	1.0000	0.4000	0.2000	0.0000	1.8000	1.4000	1.1000
90.	* 0.4000	0.0000	0.0000	0.0000	1.0000	0.7000	0.7000	0.7000	1.0000	0.2000	0.1000	0.0000	1.9000	1.2000	1.0000
100.	* 0.6000	0.2000	0.1000	0.0000	1.2000	1.0000	0.8000	0.7000	0.6000	0.1000	0.0000	0.0000	1.6000	1.0000	0.8000
110.	* 0.7000	0.4000	0.2000	0.1000	1.5000	1.0000	0.9000	0.7000	0.2000	0.0000	0.0000	0.0000	1.1000	0.9000	0.9000
120.	* 0.6000	0.5000	0.4000	0.1000	1.4000	1.1000	1.0000	0.9000	0.1000	0.0000	0.0000	0.0000	1.1000	1.0000	1.0000

```
 130.  *  0.6000  0.5000  0.4000  0.2000  1.4000  1.1000  1.0000  0.9000  0.1000
0.0000  0.0000  0.0000  1.0000  1.0000  1.0000
 140.  *  0.6000  0.4000  0.3000  0.2000  1.5000  1.2000  1.0000  1.0000  0.1000
0.0000  0.0000  0.0000  1.1000  1.1000  1.1000
 150.  *  0.5000  0.4000  0.3000  0.3000  1.6000  1.3000  1.3000  1.1000  0.1000
0.1000  0.1000  0.1000  1.3000  1.3000  1.3000
 160.  *  0.7000  0.6000  0.5000  0.5000  1.7000  1.4000  1.2000  1.0000  0.2000
0.2000  0.2000  0.2000  1.4000  1.3000  1.3000
 170.  *  1.1000  1.0000  0.9000  1.1000  1.3000  1.2000  0.9000  0.8000  0.5000
0.5000  0.5000  0.3000  1.0000  1.0000  0.9000
 180.  *  1.4000  1.4000  1.4000  1.5000  0.8000  0.6000  0.4000  0.4000  0.9000
0.9000  0.9000  0.6000  0.4000  0.4000  0.4000
 190.  *  1.5000  1.5000  1.4000  1.4000  0.5000  0.5000  0.2000  0.2000  0.9000
0.9000  0.9000  0.8000  0.2000  0.2000  0.2000
 200.  *  1.4000  1.5000  1.4000  1.3000  0.4000  0.3000  0.1000  0.1000  0.9000
0.9000  0.9000  0.9000  0.1000  0.1000  0.1000
 210.  *  1.4000  1.4000  1.3000  1.1000  0.4000  0.3000  0.1000  0.1000  0.8000
0.8000  0.8000  0.8000  0.1000  0.1000  0.1000
 220.  *  1.4000  1.5000  1.1000  1.1000  0.4000  0.3000  0.1000  0.1000  0.8000
0.8000  0.8000  0.8000  0.1000  0.1000  0.1000
 230.  *  1.5000  1.2000  1.0000  1.0000  0.4000  0.3000  0.1000  0.1000  0.8000
0.7000  0.7000  0.7000  0.1000  0.1000  0.1000
 240.  *  1.6000  1.2000  0.9000  0.9000  0.5000  0.3000  0.2000  0.0000  0.8000
0.7000  0.7000  0.7000  0.0000  0.0000  0.0000
 250.  *  1.6000  1.2000  1.1000  0.9000  0.5000  0.3000  0.2000  0.0000  0.8000
0.7000  0.7000  0.7000  0.1000  0.0000  0.0000
 260.  *  1.7000  1.2000  1.1000  0.9000  0.6000  0.3000  0.2000  0.0000  0.9000
0.8000  0.8000  0.8000  0.1000  0.0000  0.0000
 270.  *  1.4000  1.2000  1.0000  0.9000  0.6000  0.3000  0.1000  0.0000  1.2000
0.7000  0.7000  0.7000  0.3000  0.0000  0.0000
 280.  *  1.3000  1.0000  0.8000  0.8000  0.4000  0.1000  0.0000  0.0000  1.6000
0.9000  0.8000  0.7000  0.7000  0.1000  0.0000
 290.  *  1.0000  0.9000  0.9000  0.9000  0.2000  0.0000  0.0000  0.0000  1.8000
1.0000  0.8000  0.7000  0.8000  0.3000  0.2000
 300.  *  1.0000  1.0000  1.0000  1.0000  0.0000  0.0000  0.0000  0.0000  1.6000
1.2000  1.0000  0.8000  0.7000  0.5000  0.3000
 310.  *  1.0000  1.0000  1.0000  1.0000  0.0000  0.0000  0.0000  0.0000  1.6000
1.1000  1.1000  0.9000  0.6000  0.5000  0.3000
 320.  *  1.1000  1.1000  1.1000  1.1000  0.0000  0.0000  0.0000  0.0000  1.7000
1.1000  1.1000  1.0000  0.6000  0.4000  0.3000
 330.  *  1.3000  1.3000  1.3000  1.1000  0.1000  0.1000  0.1000  0.1000  1.8000
1.3000  1.3000  1.1000  0.5000  0.4000  0.2000
 340.  *  1.4000  1.3000  1.3000  1.1000  0.2000  0.2000  0.2000  0.2000  1.9000
1.4000  1.3000  1.0000  0.8000  0.6000  0.4000
 350.  *  1.0000  1.0000  0.9000  0.8000  0.5000  0.5000  0.5000  0.3000  1.5000
1.3000  1.0000  0.9000  1.2000  0.9000  0.9000
 360.  *  0.4000  0.4000  0.4000  0.3000  0.9000  0.9000  0.9000  0.6000  1.0000
0.7000  0.5000  0.4000  1.5000  1.4000  1.3000
```

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  1.7000  1.5000  1.4000  1.5000  1.7000  1.4000  1.3000  1.1000  1.9000
1.4000  1.3000  1.1000  1.9000  1.5000  1.4000
 DEGR. *    260     190     180     180     160     160     150     150     340
340     330     330      90      10      10
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  1.5000  0.0000  0.0000  0.0000  0.6000  0.4000  0.0000  0.6000  0.6000
0.6000  1.1000  0.9000  0.5000
  20.  *  1.3000  0.0000  0.0000  0.0000  0.6000  0.5000  0.0000  0.6000  0.6000
0.6000  1.1000  1.0000  0.5000
  30.  *  1.1000  0.0000  0.0000  0.0000  0.6000  0.5000  0.2000  0.6000  0.6000
0.6000  1.1000  1.0000  0.7000
  40.  *  1.1000  0.0000  0.0000  0.0000  0.6000  0.5000  0.2000  0.6000  0.6000
0.6000  1.0000  1.0000  0.7000
  50.  *  1.0000  0.0000  0.0000  0.0000  0.5000  0.4000  0.2000  0.7000  0.7000
0.7000  1.0000  0.9000  0.7000
  60.  *  0.9000  0.0000  0.0000  0.0000  0.5000  0.4000  0.2000  0.8000  0.8000
0.7000  1.2000  1.0000  0.8000
  70.  *  0.9000  0.0000  0.0000  0.0000  0.5000  0.4000  0.2000  0.9000  0.8000
0.8000  1.3000  1.0000  0.8000
  80.  *  0.9000  0.1000  0.1000  0.1000  0.5000  0.4000  0.2000  1.0000  1.0000
0.9000  1.4000  1.2000  0.9000
  90.  *  0.9000  0.4000  0.4000  0.2000  0.7000  0.6000  0.5000  1.0000  1.0000
0.7000  1.5000  1.3000  1.1000
```

```
 100.  *  0.8000  0.5000  0.5000  0.4000  1.0000  1.0000  0.7000  0.6000  0.6000
0.5000  1.4000  1.1000  0.7000
 110.  *  0.9000  0.7000  0.7000  0.6000  1.4000  1.1000  0.7000  0.2000  0.2000
0.2000  0.9000  0.7000  0.5000
 120.  *  1.0000  0.6000  0.6000  0.6000  1.1000  0.9000  0.8000  0.1000  0.1000
0.1000  0.7000  0.5000  0.4000
 130.  *  1.0000  0.6000  0.6000  0.6000  1.2000  0.9000  0.8000  0.1000  0.1000
0.1000  0.8000  0.6000  0.4000
 140.  *  1.1000  0.6000  0.6000  0.6000  1.2000  1.0000  0.7000  0.1000  0.1000
0.1000  0.8000  0.5000  0.1000
 150.  *  1.1000  0.5000  0.5000  0.5000  1.2000  0.9000  0.5000  0.0000  0.0000
0.0000  0.8000  0.5000  0.1000
 160.  *  1.1000  0.4000  0.4000  0.4000  1.0000  0.8000  0.4000  0.0000  0.0000
0.0000  0.6000  0.4000  0.0000
 170.  *  0.8000  0.6000  0.4000  0.4000  0.7000  0.5000  0.4000  0.1000  0.0000
0.0000  0.2000  0.1000  0.0000
 180.  *  0.3000  0.8000  0.6000  0.4000  0.5000  0.4000  0.4000  0.4000  0.2000
0.0000  0.1000  0.0000  0.0000
 190.  *  0.1000  1.0000  0.8000  0.4000  0.4000  0.4000  0.4000  0.6000  0.4000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.1000  1.0000  0.9000  0.4000  0.4000  0.4000  0.4000  0.6000  0.5000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.1000  1.0000  0.9000  0.6000  0.4000  0.4000  0.4000  0.6000  0.5000
0.2000  0.0000  0.0000  0.0000
 220.  *  0.1000  1.0000  1.0000  0.7000  0.4000  0.4000  0.4000  0.5000  0.5000
0.2000  0.0000  0.0000  0.0000
 230.  *  0.1000  1.1000  1.0000  0.8000  0.4000  0.4000  0.4000  0.6000  0.5000
0.3000  0.0000  0.0000  0.0000
 240.  *  0.0000  1.2000  1.0000  0.8000  0.5000  0.5000  0.5000  0.6000  0.5000
0.3000  0.0000  0.0000  0.0000
 250.  *  0.0000  1.2000  1.1000  0.8000  0.5000  0.5000  0.5000  0.6000  0.5000
0.3000  0.1000  0.1000  0.1000
 260.  *  0.0000  1.2000  1.1000  0.8000  0.6000  0.5000  0.5000  0.7000  0.6000
0.4000  0.1000  0.1000  0.1000
 270.  *  0.0000  1.2000  1.1000  0.8000  0.5000  0.5000  0.4000  1.0000  0.8000
0.8000  0.3000  0.3000  0.2000
 280.  *  0.0000  1.0000  0.7000  0.4000  0.4000  0.4000  0.3000  1.4000  1.4000
1.2000  0.7000  0.7000  0.5000
 290.  *  0.1000  0.6000  0.5000  0.4000  0.2000  0.2000  0.1000  1.5000  1.6000
1.2000  0.8000  0.8000  0.7000
 300.  *  0.1000  0.6000  0.4000  0.3000  0.0000  0.0000  0.0000  1.5000  1.2000
1.0000  0.7000  0.7000  0.7000
 310.  *  0.2000  0.7000  0.5000  0.3000  0.0000  0.0000  0.0000  1.3000  1.1000
1.1000  0.6000  0.6000  0.6000
 320.  *  0.2000  0.8000  0.5000  0.1000  0.0000  0.0000  0.0000  1.4000  1.2000
0.8000  0.6000  0.6000  0.6000
 330.  *  0.3000  0.8000  0.5000  0.1000  0.0000  0.0000  0.0000  1.4000  1.1000
0.7000  0.5000  0.5000  0.5000
```

```
 340.  *  0.5000  0.6000  0.4000  0.0000  0.0000  0.0000  0.0000  1.2000  1.0000
0.6000  0.5000  0.5000  0.5000
 350.  *  1.1000  0.2000  0.1000  0.0000  0.1000  0.0000  0.0000  0.9000  0.7000
0.6000  0.7000  0.5000  0.5000
 360.  *  1.5000  0.1000  0.0000  0.0000  0.4000  0.2000  0.0000  0.7000  0.6000
0.6000  0.9000  0.7000  0.5000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.5000  1.2000  1.1000  0.8000  1.4000  1.1000  0.8000  1.5000  1.6000
1.2000  1.5000  1.3000  1.1000
 DEGR. *     10     240     250     270     110     110     120     290     290
280      90      90      90

 THE HIGHEST CONCENTRATION OF   1.9000 PPM OCCURRED AT RECEPTOR     9.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
4,4,7,7,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-25,-25,15,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',19.2,96.0,5.9
'N Leg, E Side - 25 m',-11.2,161.3,5.9
'N Leg, E Side - 50 m',-45.9,235.6,5.9
'N Leg, E Side-Midblk',-230.1,630.8,5.9
'N Leg, W Side-Corner',-125.0,130.8,5.9
'N Leg, W Side - 25 m',-155.4,196.1,5.9
'N Leg, W Side - 50 m',-190.1,270.4,5.9
'N Leg, W Side-Midblk',-374.3,665.5,5.9
'S Leg, E Side-Corner',103.8,-85.3,5.9
'S Leg, E Side - 25 m',134.2,-150.6,5.9
'S Leg, E Side - 50 m',168.9,-224.9,5.9
'S Leg, E Side-Midblk',353.1,-620.0,5.9
'S Leg, W Side-Corner',-21.3,-91.6,5.9
'S Leg, W Side - 25 m',9.2,-156.9,5.9
'S Leg, W Side - 50 m',43.8,-231.2,5.9
'S Leg, W Side-Midblk',228.1,-626.3,5.9
'E Leg, N Side - 25 m',91.0,102.3,5.9
'E Leg, N Side - 50 m',172.7,109.5,5.9
'E Leg, N Side-Midblk',607.0,147.5,5.9
'W Leg, N Side - 25 m',-194.6,149.4,5.9
'W Leg, N Side - 50 m',-273.8,170.7,5.9
'W Leg, N Side-Midblk',-694.9,283.5,5.9
'E Leg, S Side - 25 m',175.5,-79.0,5.9
'E Leg, S Side - 50 m',257.2,-71.9,5.9
'E Leg, S Side-Midblk',691.5,-33.9,5.9
'W Leg, S Side - 25 m',-90.8,-73.0,5.9
'W Leg, S Side - 50 m',-170.1,-51.7,5.9
'W Leg, S Side-Midblk',-591.2,61.1,5.9
'2040 Capital Beltway & MD193 IC.18',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-22,-10,-529,1077,8800,1.14,0.0,67.7
1
'N Leg Dep - FreeFlow','AG',22,10,-485,1098,8800,0.67,0.0,67.7
1
'S Leg App - FreeFlow','AG',22,10,529,-1077,8800,0.89,0.0,67.7
1
'S Leg Dep - FreeFlow','AG',-22,-10,485,-1098,8800,0.67,0.0,67.7
1
'E Leg App - FreeFlow','AG',4,42,1192,146,15400,0.88,0.0,103.7
1
'E Leg Dep - FreeFlow','AG',-4,-42,1199,63,15400,0.61,0.0,103.7
1
```

```
'W Leg App - FreeFlow','AG',-4,-42,-1170,270,15400,0.88,0.0,103.7
1
'W Leg Dep - FreeFlow','AG',4,42,-1148,351,15400,0.88,0.0,103.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 Capital Beltway & MD193 IC.18

DATE : 5/ 2/19
TIME : 8:54:46

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	* LINK COORDINATES (FT) *				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	* X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	* -22.0	-10.0	-529.0	1077.0	*	1199.	335.	AG	8800.	1.1	0.0	67.7		
2. N Leg Dep - FreeFlow	* 22.0	10.0	-485.0	1098.0	*	1200.	335.	AG	8800.	0.7	0.0	67.7		
3. S Leg App - FreeFlow	* 22.0	10.0	529.0	-1077.0	*	1199.	155.	AG	8800.	0.9	0.0	67.7		
4. S Leg Dep - FreeFlow	* -22.0	-10.0	485.0	-1098.0	*	1200.	155.	AG	8800.	0.7	0.0	67.7		
5. E Leg App - FreeFlow	* 4.0	42.0	1192.0	146.0	*	1193.	85.	AG	15400.	0.9	0.0	****		
6. E Leg Dep - FreeFlow	* -4.0	-42.0	1199.0	63.0	*	1208.	85.	AG	15400.	0.6	0.0	****		
7. W Leg App - FreeFlow	* -4.0	-42.0	-1170.0	270.0	*	1207.	285.	AG	15400.	0.9	0.0	****		
8. W Leg Dep - FreeFlow	* 4.0	42.0	-1148.0	351.0	*	1193.	285.	AG	15400.	0.9	0.0	****		

PAGE 2
JOB: I-495 & I-270 MLS RUN: 2040 Capital

Beltway & MD193 IC.18

DATE : 5/ 2/19
TIME : 8:54:46

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	19.2	96.0	5.9
2. N Leg, E Side - 25 m	-11.2	161.3	5.9
3. N Leg, E Side - 50 m	-45.9	235.6	5.9
4. N Leg, E Side-Midblk	-230.1	630.8	5.9
5. N Leg, W Side-Corner	-125.0	130.8	5.9
6. N Leg, W Side - 25 m	-155.4	196.1	5.9
7. N Leg, W Side - 50 m	-190.1	270.4	5.9
8. N Leg, W Side-Midblk	-374.3	665.5	5.9
9. S Leg, E Side-Corner	103.8	-85.3	5.9
10. S Leg, E Side - 25 m	134.2	-150.6	5.9
11. S Leg, E Side - 50 m	168.9	-224.9	5.9
12. S Leg, E Side-Midblk	353.1	-620.0	5.9
13. S Leg, W Side-Corner	-21.3	-91.6	5.9
14. S Leg, W Side - 25 m	9.2	-156.9	5.9
15. S Leg, W Side - 50 m	43.8	-231.2	5.9
16. S Leg, W Side-Midblk	228.1	-626.3	5.9
17. E Leg, N Side - 25 m	91.0	102.3	5.9
18. E Leg, N Side - 50 m	172.7	109.5	5.9
19. E Leg, N Side-Midblk	607.0	147.5	5.9
20. W Leg, N Side - 25 m	-194.6	149.4	5.9
21. W Leg, N Side - 50 m	-273.8	170.7	5.9
22. W Leg, N Side-Midblk	-694.9	283.5	5.9
23. E Leg, S Side - 25 m	175.5	-79.0	5.9
24. E Leg, S Side - 50 m	257.2	-71.9	5.9
25. E Leg, S Side-Midblk	691.5	-33.9	5.9
26. W Leg, S Side - 25 m	-90.8	-73.0	5.9

27. W Leg, S Side - 50 m	*	-170.1	-51.7	5.9 *
28. W Leg, S Side-Midblk	*	-591.2	61.1	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.4000	0.2000	0.2000	0.1000	0.9000	0.5000	0.6000
20.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.4000	0.3000	0.2000	0.1000	0.8000	0.5000	0.6000
30.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.4000	0.3000	0.2000	0.1000	0.8000	0.7000	0.5000
40.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.5000	0.4000	0.2000	0.1000	0.8000	0.7000	0.5000
50.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.5000	0.4000	0.2000	0.0000	0.8000	0.7000	0.5000
60.	* 0.1000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.5000	0.4000	0.2000	0.0000	0.9000	0.7000	0.5000
70.	* 0.1000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.6000	0.3000	0.2000	0.0000	0.9000	0.7000	0.5000
80.	* 0.3000	0.1000	0.0000	0.0000	0.5000	0.4000	0.4000	0.4000	0.5000	0.2000	0.0000	0.0000	0.9000	0.5000	0.4000
90.	* 0.7000	0.3000	0.1000	0.0000	0.8000	0.5000	0.5000	0.4000	0.2000	0.0000	0.0000	0.0000	0.7000	0.3000	0.3000
100.	* 0.8000	0.4000	0.3000	0.0000	1.0000	0.7000	0.6000	0.4000	0.1000	0.0000	0.0000	0.0000	0.5000	0.4000	0.4000
110.	* 0.7000	0.4000	0.3000	0.0000	1.0000	0.7000	0.6000	0.4000	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000
120.	* 0.6000	0.3000	0.3000	0.1000	1.1000	0.9000	0.7000	0.6000	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000

130. * 0.5000 0.3000 0.3000 0.1000 1.2000 0.9000 0.8000 0.6000 0.0000
0.0000 0.0000 0.0000 0.5000 0.5000 0.5000
140. * 0.6000 0.4000 0.3000 0.2000 1.2000 1.2000 1.0000 0.7000 0.1000
0.1000 0.1000 0.1000 0.5000 0.5000 0.5000
150. * 0.7000 0.5000 0.4000 0.4000 1.0000 0.9000 0.8000 0.6000 0.3000
0.3000 0.3000 0.2000 0.4000 0.4000 0.4000
160. * 0.9000 0.9000 0.7000 0.5000 0.9000 0.7000 0.8000 0.5000 0.5000
0.5000 0.5000 0.5000 0.3000 0.3000 0.3000
170. * 0.8000 0.7000 0.8000 0.7000 0.6000 0.5000 0.4000 0.3000 0.5000
0.5000 0.5000 0.5000 0.1000 0.1000 0.1000
180. * 0.9000 0.9000 0.6000 0.7000 0.5000 0.5000 0.4000 0.3000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
190. * 1.0000 0.7000 0.7000 0.6000 0.5000 0.4000 0.3000 0.2000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
200. * 0.9000 0.7000 0.7000 0.6000 0.5000 0.4000 0.3000 0.2000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
210. * 0.8000 0.8000 0.7000 0.6000 0.5000 0.4000 0.3000 0.2000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
220. * 1.0000 0.8000 0.7000 0.6000 0.5000 0.4000 0.3000 0.2000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
230. * 1.0000 0.8000 0.7000 0.6000 0.6000 0.4000 0.3000 0.2000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
240. * 1.0000 0.8000 0.7000 0.6000 0.6000 0.5000 0.3000 0.1000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
250. * 1.1000 0.9000 0.7000 0.5000 0.6000 0.5000 0.3000 0.0000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
260. * 1.2000 0.9000 0.7000 0.4000 0.7000 0.5000 0.3000 0.0000 0.5000
0.3000 0.3000 0.3000 0.1000 0.0000 0.0000
270. * 1.2000 0.9000 0.7000 0.4000 0.8000 0.4000 0.3000 0.0000 0.6000
0.3000 0.3000 0.3000 0.1000 0.0000 0.0000
280. * 1.0000 0.7000 0.5000 0.4000 0.7000 0.3000 0.1000 0.0000 0.9000
0.5000 0.4000 0.3000 0.4000 0.1000 0.0000
290. * 0.7000 0.5000 0.4000 0.4000 0.3000 0.1000 0.0000 0.0000 1.2000
0.8000 0.7000 0.4000 0.7000 0.3000 0.2000
300. * 0.5000 0.4000 0.4000 0.4000 0.1000 0.0000 0.0000 0.0000 1.3000
1.0000 0.7000 0.5000 0.8000 0.5000 0.3000
310. * 0.5000 0.5000 0.5000 0.5000 0.2000 0.1000 0.1000 0.1000 1.2000
1.0000 0.9000 0.6000 0.7000 0.5000 0.3000
320. * 0.5000 0.5000 0.5000 0.5000 0.1000 0.1000 0.1000 0.1000 1.0000
1.0000 0.9000 0.7000 0.7000 0.6000 0.4000
330. * 0.5000 0.5000 0.5000 0.4000 0.3000 0.3000 0.3000 0.3000 1.0000
0.9000 0.8000 0.6000 0.9000 0.7000 0.5000
340. * 0.3000 0.3000 0.3000 0.2000 0.6000 0.6000 0.6000 0.5000 0.7000
0.6000 0.6000 0.2000 1.0000 0.8000 0.7000
350. * 0.1000 0.1000 0.1000 0.1000 0.6000 0.6000 0.6000 0.6000 0.5000
0.3000 0.3000 0.2000 1.0000 0.8000 0.9000
360. * 0.0000 0.0000 0.0000 0.0000 0.5000 0.5000 0.5000 0.5000 0.4000
0.2000 0.2000 0.1000 1.0000 0.9000 0.5000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.2000  0.9000  0.8000  0.7000  1.2000  1.2000  1.0000  0.7000  1.3000
1.0000  0.9000  0.7000  1.0000  0.9000  0.9000
 DEGR. *    260     160     170     170     130     140     140     140     300
320     320     320     340     360     350
```


JOB: I-495 & I-270 MLS RUN: 2040 Capital Beltway & MD193 IC.18

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28
------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.4000  0.4000
0.4000  0.8000  0.7000  0.5000
  20.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.4000  0.4000
0.4000  0.9000  0.7000  0.6000
  30.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.4000  0.4000
0.4000  0.7000  0.7000  0.6000
  40.  *  0.4000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.5000  0.5000
0.5000  0.7000  0.7000  0.6000
  50.  *  0.3000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.5000  0.5000
0.5000  0.9000  0.9000  0.7000
  60.  *  0.3000  0.1000  0.1000  0.1000  0.3000  0.2000  0.1000  0.5000  0.5000
0.5000  0.8000  0.7000  0.7000
  70.  *  0.3000  0.1000  0.1000  0.1000  0.3000  0.2000  0.1000  0.6000  0.6000
0.5000  1.0000  0.9000  0.7000
  80.  *  0.3000  0.3000  0.3000  0.3000  0.4000  0.3000  0.2000  0.5000  0.5000
0.4000  0.9000  0.9000  0.8000
  90.  *  0.3000  0.7000  0.6000  0.6000  0.7000  0.4000  0.3000  0.2000  0.2000
0.2000  0.7000  0.8000  1.0000
```

100. * 0.4000 0.8000 0.8000 0.6000 0.8000 0.7000 0.6000 0.1000 0.1000
0.1000 0.5000 0.6000 0.8000
110. * 0.4000 0.7000 0.7000 0.6000 0.9000 0.7000 0.7000 0.0000 0.0000
0.0000 0.3000 0.4000 0.3000
120. * 0.4000 0.6000 0.6000 0.6000 0.9000 0.9000 0.8000 0.0000 0.0000
0.0000 0.3000 0.3000 0.1000
130. * 0.5000 0.5000 0.5000 0.5000 0.9000 0.9000 0.7000 0.0000 0.0000
0.0000 0.2000 0.2000 0.1000
140. * 0.5000 0.5000 0.5000 0.5000 0.9000 0.8000 0.6000 0.0000 0.0000
0.0000 0.2000 0.2000 0.0000
150. * 0.4000 0.4000 0.4000 0.4000 0.8000 0.7000 0.6000 0.0000 0.0000
0.0000 0.2000 0.0000 0.0000
160. * 0.2000 0.6000 0.5000 0.4000 0.6000 0.6000 0.6000 0.1000 0.0000
0.0000 0.0000 0.0000 0.0000
170. * 0.1000 0.7000 0.6000 0.4000 0.5000 0.5000 0.5000 0.3000 0.1000
0.0000 0.0000 0.0000 0.0000
180. * 0.0000 0.7000 0.6000 0.4000 0.5000 0.5000 0.5000 0.3000 0.2000
0.0000 0.0000 0.0000 0.0000
190. * 0.0000 0.6000 0.6000 0.4000 0.5000 0.5000 0.5000 0.2000 0.2000
0.0000 0.0000 0.0000 0.0000
200. * 0.0000 0.6000 0.6000 0.4000 0.5000 0.5000 0.5000 0.2000 0.2000
0.0000 0.0000 0.0000 0.0000
210. * 0.0000 0.7000 0.7000 0.5000 0.5000 0.5000 0.5000 0.2000 0.2000
0.0000 0.0000 0.0000 0.0000
220. * 0.0000 0.8000 0.7000 0.5000 0.5000 0.5000 0.5000 0.2000 0.2000
0.0000 0.0000 0.0000 0.0000
230. * 0.0000 0.7000 0.7000 0.6000 0.6000 0.6000 0.6000 0.2000 0.2000
0.0000 0.0000 0.0000 0.0000
240. * 0.0000 0.9000 0.6000 0.7000 0.6000 0.6000 0.6000 0.2000 0.2000
0.0000 0.0000 0.0000 0.0000
250. * 0.0000 0.8000 0.9000 0.7000 0.6000 0.6000 0.6000 0.3000 0.3000
0.1000 0.0000 0.0000 0.0000
260. * 0.0000 0.9000 0.9000 0.8000 0.7000 0.7000 0.7000 0.4000 0.4000
0.2000 0.1000 0.1000 0.1000
270. * 0.0000 0.9000 0.9000 0.5000 0.8000 0.8000 0.6000 0.6000 0.5000
0.7000 0.1000 0.1000 0.1000
280. * 0.0000 0.7000 0.6000 0.2000 0.6000 0.6000 0.6000 0.9000 0.8000
0.8000 0.3000 0.3000 0.3000
290. * 0.0000 0.3000 0.3000 0.1000 0.3000 0.3000 0.3000 1.0000 0.9000
0.6000 0.7000 0.7000 0.6000
300. * 0.0000 0.2000 0.2000 0.0000 0.1000 0.1000 0.1000 1.0000 0.9000
0.5000 0.8000 0.8000 0.8000
310. * 0.2000 0.2000 0.2000 0.0000 0.1000 0.1000 0.1000 0.7000 0.8000
0.5000 0.7000 0.7000 0.7000
320. * 0.3000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.7000 0.6000
0.4000 0.6000 0.6000 0.6000
330. * 0.5000 0.2000 0.0000 0.0000 0.1000 0.0000 0.0000 0.6000 0.4000
0.4000 0.7000 0.6000 0.6000

```
 340.  *  0.5000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.4000  0.4000
0.4000  0.9000  0.7000  0.6000
 350.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.4000  0.4000
0.4000  0.8000  0.7000  0.5000
 360.  *  0.6000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.4000  0.4000
0.4000  0.8000  0.7000  0.5000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.6000  0.9000  0.9000  0.8000  0.9000  0.9000  0.8000  1.0000  0.9000
0.8000  1.0000  0.9000  1.0000
 DEGR. *    360     260     250     260     110     120     120     300     300
280      70      50      90

 THE HIGHEST CONCENTRATION OF   1.3000 PPM OCCURRED AT RECEPTOR     9.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
4,4,8,9,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,15,-15,7.5,7.5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',29.2,115.2,5.9
'N Leg, E Side - 25 m',10.5,184.7,5.9
'N Leg, E Side - 50 m',-10.7,264.0,5.9
'N Leg, E Side-Midblk',-123.5,685.1,5.9
'N Leg, W Side-Corner',-95.3,131.6,5.9
'N Leg, W Side - 25 m',-113.9,201.1,5.9
'N Leg, W Side - 50 m',-135.2,280.4,5.9
'N Leg, W Side-Midblk',-248.0,701.5,5.9
'S Leg, E Side-Corner',30.3,-110.9,5.9
'S Leg, E Side - 25 m',11.7,-180.5,5.9
'S Leg, E Side - 50 m',-9.5,-259.7,5.9
'S Leg, E Side-Midblk',-122.4,-680.8,5.9
'S Leg, W Side-Corner',-85.7,-95.6,5.9
'S Leg, W Side - 25 m',-104.3,-165.2,5.9
'S Leg, W Side - 50 m',-125.5,-244.4,5.9
'S Leg, W Side-Midblk',-238.4,-665.5,5.9
'E Leg, N Side - 25 m',100.6,105.8,5.9
'E Leg, N Side - 50 m',181.9,95.1,5.9
'E Leg, N Side-Midblk',614.1,38.2,5.9
'W Leg, N Side - 25 m',-166.7,141.0,5.9
'W Leg, N Side - 50 m',-248.0,151.7,5.9
'W Leg, N Side-Midblk',-680.3,208.6,5.9
'E Leg, S Side - 25 m',101.7,-120.3,5.9
'E Leg, S Side - 50 m',183.1,-131.0,5.9
'E Leg, S Side-Midblk',615.3,-187.9,5.9
'W Leg, S Side - 25 m',-157.1,-86.2,5.9
'W Leg, S Side - 50 m',-238.4,-75.5,5.9
'W Leg, S Side-Midblk',-670.6,-18.6,5.9
'2040 I495 & MD650 IC.17',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-25,0,-334,1153,8800,0.89,0.0,67.7
1
'N Leg Dep - FreeFlow','AG',25,0,-287,1165,8800,0.89,0.0,67.7
1
'S Leg App - FreeFlow','AG',25,0,-287,-1165,8800,0.89,0.0,67.7
1
'S Leg Dep - FreeFlow','AG',-25,0,-334,-1153,8800,0.89,0.0,67.7
1
'E Leg App - FreeFlow','AG',7,54,1197,-103,19800,1.21,0.0,127.7
1
'E Leg Dep - FreeFlow','AG',-6,-48,1183,-204,17600,0.61,0.0,115.7
1
```

```
'W Leg App - FreeFlow','AG',-6,-48,-1196,109,17600,1.21,0.0,115.7
1
'W Leg Dep - FreeFlow','AG',7,54,-1183,210,19800,0.61,0.0,127.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 I495 & MD650 IC.17

DATE : 5/ 2/19
TIME : 13:48: 1

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-25.0	0.0	-334.0	1153.0	*	1194.	345.	AG	8800.	0.9	0.0	67.7		
2. N Leg Dep - FreeFlow	*	25.0	0.0	-287.0	1165.0	*	1206.	345.	AG	8800.	0.9	0.0	67.7		
3. S Leg App - FreeFlow	*	25.0	0.0	-287.0	-1165.0	*	1206.	195.	AG	8800.	0.9	0.0	67.7		
4. S Leg Dep - FreeFlow	*	-25.0	0.0	-334.0	-1153.0	*	1194.	195.	AG	8800.	0.9	0.0	67.7		
5. E Leg App - FreeFlow	*	7.0	54.0	1197.0	-103.0	*	1200.	98.	AG	19800.	1.2	0.0	****		
6. E Leg Dep - FreeFlow	*	-6.0	-48.0	1183.0	-204.0	*	1199.	97.	AG	17600.	0.6	0.0	****		
7. W Leg App - FreeFlow	*	-6.0	-48.0	-1196.0	109.0	*	1200.	278.	AG	17600.	1.2	0.0	****		
8. W Leg Dep - FreeFlow	*	7.0	54.0	-1183.0	210.0	*	1200.	277.	AG	19800.	0.6	0.0	****		

MD650 IC.17

DATE : 5/ 2/19
TIME : 13:48: 1

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	29.2	115.2	5.9
2. N Leg, E Side - 25 m	10.5	184.7	5.9
3. N Leg, E Side - 50 m	-10.7	264.0	5.9
4. N Leg, E Side-Midblk	-123.5	685.1	5.9
5. N Leg, W Side-Corner	-95.3	131.6	5.9
6. N Leg, W Side - 25 m	-113.9	201.1	5.9
7. N Leg, W Side - 50 m	-135.2	280.4	5.9
8. N Leg, W Side-Midblk	-248.0	701.5	5.9
9. S Leg, E Side-Corner	30.3	-110.9	5.9
10. S Leg, E Side - 25 m	11.7	-180.5	5.9
11. S Leg, E Side - 50 m	-9.5	-259.7	5.9
12. S Leg, E Side-Midblk	-122.4	-680.8	5.9
13. S Leg, W Side-Corner	-85.7	-95.6	5.9
14. S Leg, W Side - 25 m	-104.3	-165.2	5.9
15. S Leg, W Side - 50 m	-125.5	-244.4	5.9
16. S Leg, W Side-Midblk	-238.4	-665.5	5.9
17. E Leg, N Side - 25 m	100.6	105.8	5.9
18. E Leg, N Side - 50 m	181.9	95.1	5.9
19. E Leg, N Side-Midblk	614.1	38.2	5.9
20. W Leg, N Side - 25 m	-166.7	141.0	5.9
21. W Leg, N Side - 50 m	-248.0	151.7	5.9
22. W Leg, N Side-Midblk	-680.3	208.6	5.9
23. E Leg, S Side - 25 m	101.7	-120.3	5.9
24. E Leg, S Side - 50 m	183.1	-131.0	5.9
25. E Leg, S Side-Midblk	615.3	-187.9	5.9
26. W Leg, S Side - 25 m	-157.1	-86.2	5.9

27. W Leg, S Side - 50 m	*	-238.4	-75.5	5.9 *
28. W Leg, S Side-Midblk	*	-670.6	-18.6	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.9000	0.7000	0.7000	0.7000	1.1000	0.8000	0.7000
20.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.7000	0.6000	0.5000	0.3000	1.1000	1.0000	0.9000
30.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.6000	0.5000	0.4000	0.2000	1.1000	1.0000	0.7000
40.	* 0.1000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.3000	0.6000	0.4000	0.3000	0.2000	1.3000	0.9000	0.8000
50.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.6000	0.5000	0.3000	0.2000	1.2000	0.8000	0.8000
60.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.7000	0.5000	0.3000	0.1000	1.2000	1.1000	0.8000
70.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.8000	0.5000	0.3000	0.0000	1.2000	0.8000	0.6000
80.	* 0.2000	0.0000	0.0000	0.0000	0.4000	0.3000	0.3000	0.3000	0.8000	0.4000	0.3000	0.0000	1.3000	0.8000	0.6000
90.	* 0.4000	0.1000	0.0000	0.0000	0.7000	0.4000	0.3000	0.3000	0.7000	0.2000	0.2000	0.0000	1.2000	0.6000	0.5000
100.	* 0.9000	0.2000	0.1000	0.0000	1.1000	0.6000	0.4000	0.3000	0.4000	0.1000	0.0000	0.0000	0.8000	0.4000	0.3000
110.	* 1.1000	0.5000	0.3000	0.0000	1.3000	0.8000	0.7000	0.4000	0.1000	0.0000	0.0000	0.0000	0.5000	0.3000	0.3000
120.	* 1.1000	0.6000	0.4000	0.1000	1.2000	1.0000	0.9000	0.6000	0.1000	0.0000	0.0000	0.0000	0.4000	0.3000	0.3000

130. * 0.9000 0.5000 0.4000 0.1000 1.0000 1.0000 0.9000 0.6000 0.0000
0.0000 0.0000 0.0000 0.3000 0.3000 0.3000
140. * 0.7000 0.5000 0.4000 0.1000 1.1000 0.8000 0.7000 0.6000 0.0000
0.0000 0.0000 0.0000 0.4000 0.4000 0.4000
150. * 0.8000 0.6000 0.4000 0.2000 1.1000 1.0000 0.8000 0.7000 0.0000
0.0000 0.0000 0.0000 0.5000 0.5000 0.5000
160. * 0.7000 0.6000 0.5000 0.3000 0.9000 0.8000 0.8000 0.6000 0.0000
0.0000 0.0000 0.0000 0.5000 0.5000 0.5000
170. * 0.9000 0.8000 0.7000 0.5000 0.8000 0.8000 0.6000 0.4000 0.0000
0.0000 0.0000 0.0000 0.5000 0.5000 0.5000
180. * 1.1000 1.0000 0.9000 0.8000 1.0000 0.7000 0.6000 0.3000 0.1000
0.1000 0.1000 0.1000 0.6000 0.6000 0.6000
190. * 1.4000 1.1000 0.8000 0.7000 0.8000 0.6000 0.4000 0.2000 0.4000
0.4000 0.4000 0.2000 0.5000 0.5000 0.5000
200. * 1.4000 1.0000 0.9000 0.7000 0.6000 0.4000 0.3000 0.2000 0.5000
0.5000 0.5000 0.5000 0.4000 0.4000 0.4000
210. * 1.2000 0.9000 0.8000 0.7000 0.6000 0.4000 0.3000 0.2000 0.6000
0.6000 0.6000 0.6000 0.1000 0.1000 0.1000
220. * 1.1000 0.8000 0.6000 0.6000 0.6000 0.4000 0.3000 0.2000 0.5000
0.5000 0.5000 0.5000 0.0000 0.0000 0.0000
230. * 0.9000 0.7000 0.6000 0.5000 0.6000 0.4000 0.3000 0.2000 0.5000
0.5000 0.5000 0.5000 0.1000 0.0000 0.0000
240. * 1.0000 0.7000 0.6000 0.4000 0.6000 0.4000 0.3000 0.0000 0.5000
0.5000 0.5000 0.5000 0.1000 0.0000 0.0000
250. * 1.0000 0.7000 0.7000 0.3000 0.7000 0.4000 0.4000 0.0000 0.4000
0.4000 0.4000 0.4000 0.1000 0.0000 0.0000
260. * 1.1000 0.7000 0.5000 0.3000 0.8000 0.4000 0.2000 0.0000 0.4000
0.3000 0.3000 0.3000 0.2000 0.0000 0.0000
270. * 1.0000 0.6000 0.5000 0.3000 0.7000 0.3000 0.1000 0.0000 0.6000
0.4000 0.3000 0.3000 0.4000 0.1000 0.0000
280. * 0.7000 0.4000 0.3000 0.3000 0.4000 0.1000 0.0000 0.0000 1.1000
0.5000 0.4000 0.3000 0.9000 0.2000 0.1000
290. * 0.5000 0.4000 0.4000 0.4000 0.1000 0.0000 0.0000 0.0000 1.3000
0.8000 0.6000 0.3000 1.1000 0.5000 0.3000
300. * 0.5000 0.5000 0.5000 0.5000 0.1000 0.0000 0.0000 0.0000 1.2000
0.8000 0.7000 0.3000 1.0000 0.5000 0.4000
310. * 0.5000 0.5000 0.5000 0.5000 0.0000 0.0000 0.0000 0.0000 1.1000
0.8000 0.7000 0.4000 0.9000 0.5000 0.4000
320. * 0.5000 0.5000 0.5000 0.5000 0.0000 0.0000 0.0000 0.0000 1.1000
0.8000 0.6000 0.5000 0.8000 0.5000 0.3000
330. * 0.6000 0.6000 0.6000 0.6000 0.1000 0.1000 0.1000 0.1000 1.3000
0.9000 0.8000 0.7000 0.8000 0.4000 0.3000
340. * 0.5000 0.5000 0.5000 0.5000 0.4000 0.4000 0.4000 0.2000 1.4000
1.0000 0.9000 0.7000 0.8000 0.4000 0.3000
350. * 0.4000 0.4000 0.4000 0.2000 0.5000 0.5000 0.5000 0.5000 1.2000
1.3000 0.9000 0.6000 0.9000 0.6000 0.4000
360. * 0.1000 0.1000 0.1000 0.1000 0.6000 0.6000 0.6000 0.5000 1.0000
0.9000 1.0000 0.7000 1.1000 0.7000 0.6000

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  1.4000  1.1000  0.9000  0.8000  1.3000  1.0000  0.9000  0.7000  1.4000
1.3000  1.0000  0.7000  1.3000  1.1000  0.9000
 DEGR. *    190     190     180     180     110     150     120     150     340
350     360      10      40      60      20
```


JOB: I-495 & I-270 MLS RUN: 2040 I495 & MD650 IC.17

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.3000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.6000  0.6000
0.6000  0.9000  0.9000  0.7000
  20.  *  0.7000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.5000  0.5000
0.5000  0.9000  0.9000  0.7000
  30.  *  0.7000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.5000  0.5000
0.5000  0.9000  0.9000  0.7000
  40.  *  0.6000  0.1000  0.1000  0.0000  0.2000  0.2000  0.0000  0.6000  0.6000
0.6000  0.9000  0.9000  0.7000
  50.  *  0.7000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.6000  0.6000
0.6000  1.0000  1.1000  0.8000
  60.  *  0.7000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.7000  0.7000
0.7000  1.1000  1.0000  0.8000
  70.  *  0.5000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.8000  0.8000
0.7000  1.1000  1.1000  0.9000
  80.  *  0.3000  0.2000  0.2000  0.1000  0.4000  0.3000  0.1000  0.8000  0.8000
0.7000  1.3000  1.1000  1.0000
  90.  *  0.3000  0.4000  0.4000  0.4000  0.5000  0.5000  0.3000  0.6000  0.6000
0.5000  1.2000  1.2000  1.2000
```

```
 100.  *  0.3000  0.9000  0.9000  0.7000  1.0000  0.9000  0.8000  0.4000  0.4000
0.3000  0.8000  0.7000  0.7000
 110.  *  0.3000  1.0000  1.0000  1.0000  1.1000  0.9000  0.8000  0.1000  0.1000
0.1000  0.4000  0.5000  0.2000
 120.  *  0.3000  1.0000  1.0000  0.9000  0.9000  0.9000  0.7000  0.1000  0.1000
0.1000  0.3000  0.3000  0.1000
 130.  *  0.3000  0.9000  0.9000  0.8000  0.7000  0.7000  0.7000  0.0000  0.0000
0.0000  0.3000  0.3000  0.1000
 140.  *  0.4000  0.7000  0.8000  0.8000  0.9000  0.7000  0.6000  0.0000  0.0000
0.0000  0.3000  0.3000  0.1000
 150.  *  0.5000  0.7000  0.7000  0.7000  0.7000  0.8000  0.6000  0.0000  0.0000
0.0000  0.3000  0.3000  0.1000
 160.  *  0.5000  0.6000  0.6000  0.6000  0.8000  0.8000  0.6000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 170.  *  0.5000  0.6000  0.6000  0.6000  0.8000  0.8000  0.6000  0.0000  0.0000
0.0000  0.3000  0.2000  0.0000
 180.  *  0.5000  0.7000  0.6000  0.6000  0.8000  0.7000  0.6000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 190.  *  0.5000  0.9000  0.7000  0.7000  0.7000  0.6000  0.6000  0.0000  0.0000
0.0000  0.2000  0.0000  0.0000
 200.  *  0.2000  0.9000  0.8000  0.6000  0.6000  0.6000  0.6000  0.2000  0.0000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.1000  1.2000  0.8000  0.6000  0.6000  0.6000  0.6000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  1.1000  0.9000  0.7000  0.6000  0.6000  0.6000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  1.1000  1.0000  0.7000  0.6000  0.6000  0.6000  0.2000  0.2000
0.0000  0.1000  0.1000  0.1000
 240.  *  0.0000  1.0000  1.1000  0.8000  0.6000  0.6000  0.6000  0.2000  0.2000
0.0000  0.1000  0.1000  0.1000
 250.  *  0.0000  1.1000  1.1000  0.9000  0.7000  0.7000  0.7000  0.2000  0.2000
0.0000  0.1000  0.1000  0.1000
 260.  *  0.0000  1.2000  1.2000  1.1000  0.8000  0.8000  0.6000  0.3000  0.3000
0.1000  0.2000  0.2000  0.1000
 270.  *  0.0000  1.0000  1.1000  1.2000  0.7000  0.6000  0.5000  0.6000  0.5000
0.3000  0.4000  0.4000  0.3000
 280.  *  0.0000  0.7000  0.8000  0.7000  0.4000  0.4000  0.2000  1.0000  0.9000
0.7000  0.9000  0.9000  0.6000
 290.  *  0.0000  0.4000  0.4000  0.2000  0.1000  0.1000  0.1000  1.1000  1.1000
0.8000  1.1000  1.1000  0.9000
 300.  *  0.0000  0.3000  0.3000  0.1000  0.1000  0.1000  0.1000  1.0000  0.9000
0.7000  1.0000  1.0000  0.9000
 310.  *  0.1000  0.2000  0.3000  0.1000  0.0000  0.0000  0.0000  0.9000  0.8000
0.7000  0.9000  0.9000  0.9000
 320.  *  0.1000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  0.9000  0.8000
0.6000  0.8000  0.8000  0.8000
 330.  *  0.2000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  1.1000  0.8000
0.6000  0.8000  0.8000  0.8000
```

```
 340.  *  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.7000  0.7000
0.6000  0.7000  0.7000  0.7000
 350.  *  0.1000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.7000  0.5000
0.5000  0.8000  0.7000  0.7000
 360.  *  0.2000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.6000  0.6000
0.6000  0.9000  0.9000  0.7000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.7000  1.2000  1.2000  1.2000  1.1000  0.9000  0.8000  1.1000  1.1000
0.8000  1.3000  1.2000  1.2000
 DEGR. *     20      210      260      270      110      100      100      290      290
290       80       90       90

 THE HIGHEST CONCENTRATION OF   1.4000 PPM OCCURRED AT RECEPTOR     9.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
10,10,9,8,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8
,1036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,12
00,0,0,1200,-1200,0,0,0,0,0,0,-15,-15,-5,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',103.6,115.5,5.9
'N Leg, E Side - 25 m',85.0,185.0,5.9
'N Leg, E Side - 50 m',63.8,264.3,5.9
'N Leg, E Side-Midblk',-49.1,685.4,5.9
'N Leg, W Side-Corner',-159.4,92.5,5.9
'N Leg, W Side - 25 m',-178.0,162.0,5.9
'N Leg, W Side - 50 m',-199.2,241.3,5.9
'N Leg, W Side-Midblk',-312.1,662.4,5.9
'S Leg, E Side-Corner',162.5,-104.2,5.9
'S Leg, E Side - 25 m',181.2,-173.8,5.9
'S Leg, E Side - 50 m',202.4,-253.0,5.9
'S Leg, E Side-Midblk',315.2,-674.1,5.9
'S Leg, W Side-Corner',-100.5,-127.2,5.9
'S Leg, W Side - 25 m',-81.9,-196.8,5.9
'S Leg, W Side - 50 m',-60.6,-276.0,5.9
'S Leg, W Side-Midblk',52.2,-697.1,5.9
'E Leg, N Side - 25 m',175.4,121.7,5.9
'E Leg, N Side - 50 m',257.1,128.9,5.9
'E Leg, N Side-Midblk',691.4,166.9,5.9
'W Leg, N Side - 25 m',-231.1,86.2,5.9
'W Leg, N Side - 50 m',-312.8,79.0,5.9
'W Leg, N Side-Midblk',-747.1,41.0,5.9
'E Leg, S Side - 25 m',234.3,-98.0,5.9
'E Leg, S Side - 50 m',316.0,-90.8,5.9
'E Leg, S Side-Midblk',750.3,-52.8,5.9
'W Leg, S Side - 25 m',-172.2,-133.5,5.9
'W Leg, S Side - 50 m',-253.9,-140.7,5.9
'W Leg, S Side-Midblk',-688.2,-178.7,5.9
'2040 Build I495 & US50 (IC.11)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-64,7,-369,1144,22000,1.21,0.0,139.7
1
'N Leg Dep - FreeFlow','AG',64,-7,-253,1175,22000,0.61,0.0,139.7
1
'S Leg App - FreeFlow','AG',64,-7,369,-1144,22000,0.61,0.0,139.7
1
'S Leg Dep - FreeFlow','AG',-64,7,253,-1175,22000,1.61,0.0,139.7
1
'E Leg App - FreeFlow','AG',0,48,1191,152,17600,0.61,0.0,115.7
1
'E Leg Dep - FreeFlow','AG',5,-54,1200,51,19800,1.61,0.0,127.7
1
```

```
'W Leg App - FreeFlow','AG',5,-54,-1191,-158,19800,1.49,0.0,127.7
1
'W Leg Dep - FreeFlow','AG',0,48,-1200,-57,17600,0.62,0.0,115.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 Build I495 & US50 (11.IC)

DATE : 1/16/19
TIME : 16: 3:13

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-64.0	7.0	-369.0	1144.0	*	1177.	345.	AG	22000.	1.2	0.0	****		
2. N Leg Dep - FreeFlow	*	64.0	-7.0	-253.0	1175.0	*	1224.	345.	AG	22000.	0.6	0.0	****		
3. S Leg App - FreeFlow	*	64.0	-7.0	369.0	-1144.0	*	1177.	165.	AG	22000.	0.6	0.0	****		
4. S Leg Dep - FreeFlow	*	-64.0	7.0	253.0	-1175.0	*	1224.	165.	AG	22000.	1.6	0.0	****		
5. E Leg App - FreeFlow	*	0.0	48.0	1191.0	152.0	*	1196.	85.	AG	17600.	0.6	0.0	****		
6. E Leg Dep - FreeFlow	*	5.0	-54.0	1200.0	51.0	*	1200.	85.	AG	19800.	1.6	0.0	****		
7. W Leg App - FreeFlow	*	5.0	-54.0	-1191.0	-158.0	*	1201.	265.	AG	19800.	1.5	0.0	****		
8. W Leg Dep - FreeFlow	*	0.0	48.0	-1200.0	-57.0	*	1205.	265.	AG	17600.	0.6	0.0	****		

DATE : 1/16/19
TIME : 16: 3:13

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	103.6	115.5	5.9
2. N Leg, E Side - 25 m	85.0	185.0	5.9
3. N Leg, E Side - 50 m	63.8	264.3	5.9
4. N Leg, E Side-Midblk	-49.1	685.4	5.9
5. N Leg, W Side-Corner	-159.4	92.5	5.9
6. N Leg, W Side - 25 m	-178.0	162.0	5.9
7. N Leg, W Side - 50 m	-199.2	241.3	5.9
8. N Leg, W Side-Midblk	-312.1	662.4	5.9
9. S Leg, E Side-Corner	162.5	-104.2	5.9
10. S Leg, E Side - 25 m	181.2	-173.8	5.9
11. S Leg, E Side - 50 m	202.4	-253.0	5.9
12. S Leg, E Side-Midblk	315.2	-674.1	5.9
13. S Leg, W Side-Corner	-100.5	-127.2	5.9
14. S Leg, W Side - 25 m	-81.9	-196.8	5.9
15. S Leg, W Side - 50 m	-60.6	-276.0	5.9
16. S Leg, W Side-Midblk	52.2	-697.1	5.9
17. E Leg, N Side - 25 m	175.4	121.7	5.9
18. E Leg, N Side - 50 m	257.1	128.9	5.9
19. E Leg, N Side-Midblk	691.4	166.9	5.9
20. W Leg, N Side - 25 m	-231.1	86.2	5.9
21. W Leg, N Side - 50 m	-312.8	79.0	5.9
22. W Leg, N Side-Midblk	-747.1	41.0	5.9
23. E Leg, S Side - 25 m	234.3	-98.0	5.9
24. E Leg, S Side - 50 m	316.0	-90.8	5.9
25. E Leg, S Side-Midblk	750.3	-52.8	5.9
26. W Leg, S Side - 25 m	-172.2	-133.5	5.9

27. W Leg, S Side - 50 m	*	-253.9	-140.7	5.9 *
28. W Leg, S Side-Midblk	*	-688.2	-178.7	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.0000	0.0000	0.0000	0.0000	1.1000	1.1000	1.1000	0.9000	0.8000	0.6000	0.4000	0.1000	1.9000	1.8000	1.7000
20.	*	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	1.0000	0.9000	0.8000	0.6000	0.4000	0.2000	1.9000	1.9000	1.6000
30.	*	0.0000	0.0000	0.0000	0.0000	0.9000	0.9000	0.9000	0.9000	0.9000	0.6000	0.4000	0.1000	2.1000	1.7000	1.6000
40.	*	0.0000	0.0000	0.0000	0.0000	0.8000	0.8000	0.8000	0.8000	0.9000	0.6000	0.5000	0.1000	2.0000	1.6000	1.4000
50.	*	0.0000	0.0000	0.0000	0.0000	0.8000	0.8000	0.8000	0.8000	1.1000	0.7000	0.5000	0.1000	2.0000	1.4000	1.4000
60.	*	0.0000	0.0000	0.0000	0.0000	0.8000	0.8000	0.8000	0.8000	1.3000	0.7000	0.5000	0.0000	2.2000	1.5000	1.4000
70.	*	0.1000	0.0000	0.0000	0.0000	0.9000	0.8000	0.8000	0.8000	1.3000	0.6000	0.3000	0.0000	2.4000	1.7000	1.4000
80.	*	0.4000	0.0000	0.0000	0.0000	1.1000	0.9000	0.8000	0.8000	1.3000	0.3000	0.1000	0.0000	2.3000	1.4000	1.2000
90.	*	0.7000	0.2000	0.2000	0.0000	1.5000	1.0000	0.9000	0.8000	0.7000	0.1000	0.0000	0.0000	1.7000	1.0000	0.9000
100.	*	0.9000	0.5000	0.3000	0.0000	1.6000	1.3000	1.1000	0.8000	0.3000	0.0000	0.0000	0.0000	1.1000	0.9000	0.9000
110.	*	0.9000	0.6000	0.4000	0.0000	1.8000	1.4000	1.2000	0.9000	0.1000	0.0000	0.0000	0.0000	1.1000	1.0000	1.0000
120.	*	0.8000	0.6000	0.4000	0.1000	1.8000	1.4000	1.3000	1.1000	0.1000	0.0000	0.0000	0.0000	1.2000	1.1000	1.1000

```
 130.  *  0.8000  0.6000  0.4000  0.2000  1.8000  1.7000  1.4000  1.2000  0.1000
0.0000  0.0000  0.0000  1.3000  1.2000  1.2000
 140.  *  0.7000  0.5000  0.4000  0.2000  1.9000  1.8000  1.5000  1.1000  0.1000
0.0000  0.0000  0.0000  1.4000  1.3000  1.3000
 150.  *  0.8000  0.6000  0.5000  0.3000  2.0000  1.9000  1.8000  1.3000  0.2000
0.1000  0.1000  0.1000  1.5000  1.5000  1.4000
 160.  *  1.0000  0.9000  0.8000  0.5000  1.8000  1.7000  1.5000  1.4000  0.4000
0.3000  0.3000  0.2000  1.3000  1.3000  1.3000
 170.  *  1.5000  1.3000  1.2000  0.9000  1.4000  1.2000  1.0000  0.8000  0.7000
0.6000  0.6000  0.5000  0.7000  0.7000  0.7000
 180.  *  1.7000  1.5000  1.3000  1.1000  1.0000  0.7000  0.5000  0.4000  0.9000
0.9000  0.9000  0.6000  0.3000  0.3000  0.3000
 190.  *  1.5000  1.4000  1.3000  0.9000  0.7000  0.6000  0.4000  0.2000  0.9000
0.9000  0.9000  0.7000  0.1000  0.1000  0.1000
 200.  *  1.4000  1.3000  1.2000  0.9000  0.7000  0.6000  0.4000  0.3000  1.0000
0.9000  0.9000  0.8000  0.1000  0.1000  0.1000
 210.  *  1.5000  1.2000  1.0000  0.8000  0.8000  0.6000  0.4000  0.3000  0.9000
0.8000  0.8000  0.7000  0.2000  0.1000  0.1000
 220.  *  1.4000  1.2000  1.1000  0.8000  0.8000  0.6000  0.5000  0.2000  0.8000
0.7000  0.7000  0.7000  0.2000  0.1000  0.1000
 230.  *  1.5000  1.2000  1.0000  0.7000  0.7000  0.5000  0.4000  0.1000  0.8000
0.7000  0.7000  0.7000  0.2000  0.1000  0.1000
 240.  *  1.6000  1.1000  1.0000  0.6000  0.9000  0.5000  0.3000  0.0000  0.8000
0.7000  0.7000  0.7000  0.1000  0.0000  0.0000
 250.  *  1.7000  1.1000  0.9000  0.6000  0.8000  0.5000  0.2000  0.0000  1.0000
0.7000  0.7000  0.7000  0.3000  0.0000  0.0000
 260.  *  1.4000  0.8000  0.8000  0.6000  0.6000  0.2000  0.0000  0.0000  1.4000
0.8000  0.7000  0.7000  0.6000  0.1000  0.0000
 270.  *  1.0000  0.6000  0.6000  0.6000  0.4000  0.0000  0.0000  0.0000  1.9000
1.2000  0.9000  0.7000  1.2000  0.3000  0.1000
 280.  *  0.7000  0.6000  0.6000  0.6000  0.1000  0.0000  0.0000  0.0000  2.1000
1.3000  1.1000  0.7000  1.3000  0.7000  0.5000
 290.  *  0.6000  0.6000  0.6000  0.6000  0.1000  0.1000  0.1000  0.1000  1.9000
1.3000  1.2000  0.8000  1.3000  0.7000  0.6000
 300.  *  0.6000  0.6000  0.6000  0.6000  0.1000  0.1000  0.1000  0.1000  1.9000
1.4000  1.2000  0.9000  1.2000  0.7000  0.6000
 310.  *  0.8000  0.8000  0.8000  0.7000  0.1000  0.1000  0.1000  0.1000  1.9000
1.5000  1.2000  1.0000  1.1000  0.7000  0.5000
 320.  *  0.8000  0.8000  0.8000  0.7000  0.1000  0.1000  0.1000  0.1000  1.6000
1.6000  1.3000  1.0000  0.9000  0.7000  0.5000
 330.  *  0.8000  0.8000  0.8000  0.6000  0.2000  0.2000  0.2000  0.2000  1.6000
1.4000  1.3000  1.2000  0.9000  0.9000  0.7000
 340.  *  0.7000  0.7000  0.5000  0.5000  0.5000  0.5000  0.5000  0.4000  1.5000
1.3000  1.1000  0.9000  1.4000  1.2000  1.1000
 350.  *  0.3000  0.3000  0.3000  0.2000  1.0000  1.0000  1.0000  0.7000  1.2000
1.0000  0.8000  0.5000  2.0000  1.7000  1.6000
 360.  *  0.1000  0.1000  0.1000  0.1000  1.2000  1.2000  1.1000  1.0000  1.0000
0.7000  0.5000  0.3000  2.2000  1.9000  1.8000
```

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  1.7000  1.5000  1.3000  1.1000  2.0000  1.9000  1.8000  1.4000  2.1000
1.6000  1.3000  1.2000  2.4000  1.9000  1.8000
 DEGR. *    250     180     180     180     150     150     150     160     280
320     320     330      70      20     360
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  1.4000  0.0000  0.0000  0.0000  0.6000  0.4000  0.0000  0.8000  0.8000
0.8000  1.2000  1.1000  0.8000
  20.  *  1.4000  0.0000  0.0000  0.0000  0.6000  0.4000  0.1000  0.8000  0.8000
0.8000  1.3000  1.1000  0.8000
  30.  *  1.3000  0.0000  0.0000  0.0000  0.5000  0.4000  0.1000  0.9000  0.9000
0.9000  1.4000  1.2000  1.0000
  40.  *  1.2000  0.0000  0.0000  0.0000  0.5000  0.4000  0.2000  0.9000  0.9000
0.9000  1.5000  1.3000  1.1000
  50.  *  1.0000  0.0000  0.0000  0.0000  0.5000  0.4000  0.2000  1.1000  1.1000
1.0000  1.7000  1.6000  1.3000
  60.  *  1.0000  0.0000  0.0000  0.0000  0.5000  0.4000  0.2000  1.3000  1.3000
1.1000  1.8000  1.8000  1.4000
  70.  *  1.0000  0.1000  0.1000  0.1000  0.6000  0.5000  0.3000  1.3000  1.3000
1.2000  2.1000  1.7000  1.6000
  80.  *  1.0000  0.3000  0.3000  0.2000  0.8000  0.8000  0.6000  1.2000  1.2000
0.9000  1.8000  1.8000  1.5000
  90.  *  0.9000  0.7000  0.6000  0.4000  1.2000  1.2000  1.1000  0.7000  0.7000
0.5000  1.3000  1.2000  1.0000
```

```
 100.  *  0.9000  0.8000  0.8000  0.7000  1.5000  1.3000  1.0000  0.3000  0.3000
0.2000  0.9000  0.8000  0.5000
 110.  *  1.0000  0.9000  0.9000  0.8000  1.6000  1.2000  1.2000  0.1000  0.1000
0.1000  0.8000  0.6000  0.4000
 120.  *  1.1000  0.8000  0.8000  0.8000  1.3000  1.2000  1.0000  0.1000  0.1000
0.1000  0.8000  0.6000  0.4000
 130.  *  1.2000  0.8000  0.8000  0.8000  1.3000  1.2000  1.0000  0.1000  0.1000
0.1000  0.8000  0.6000  0.2000
 140.  *  1.2000  0.7000  0.7000  0.7000  1.5000  1.2000  0.8000  0.1000  0.1000
0.1000  0.8000  0.6000  0.2000
 150.  *  1.2000  0.6000  0.6000  0.6000  1.3000  1.1000  0.6000  0.0000  0.0000
0.0000  0.7000  0.4000  0.0000
 160.  *  1.0000  0.7000  0.6000  0.6000  1.1000  0.8000  0.6000  0.0000  0.0000
0.0000  0.4000  0.2000  0.0000
 170.  *  0.6000  1.0000  0.9000  0.7000  0.9000  0.7000  0.7000  0.2000  0.1000
0.0000  0.1000  0.0000  0.0000
 180.  *  0.2000  1.2000  1.0000  0.7000  0.7000  0.7000  0.7000  0.5000  0.2000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  1.2000  1.1000  0.6000  0.6000  0.6000  0.6000  0.6000  0.5000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.1000  1.2000  1.1000  0.8000  0.6000  0.6000  0.6000  0.6000  0.5000
0.1000  0.0000  0.0000  0.0000
 210.  *  0.1000  1.4000  1.1000  0.9000  0.7000  0.7000  0.7000  0.7000  0.6000
0.3000  0.1000  0.1000  0.1000
 220.  *  0.1000  1.3000  1.2000  1.0000  0.7000  0.7000  0.7000  0.6000  0.5000
0.3000  0.1000  0.1000  0.1000
 230.  *  0.1000  1.4000  1.3000  1.0000  0.7000  0.7000  0.7000  0.6000  0.5000
0.4000  0.1000  0.1000  0.1000
 240.  *  0.0000  1.4000  1.3000  1.2000  0.9000  0.9000  0.8000  0.6000  0.5000
0.3000  0.1000  0.1000  0.1000
 250.  *  0.0000  1.4000  1.2000  1.1000  0.8000  0.8000  0.6000  0.8000  0.7000
0.5000  0.2000  0.2000  0.2000
 260.  *  0.0000  1.1000  1.1000  1.1000  0.6000  0.6000  0.4000  1.2000  1.2000
0.9000  0.6000  0.6000  0.5000
 270.  *  0.0000  0.8000  0.7000  0.6000  0.3000  0.3000  0.2000  1.8000  1.6000
1.6000  1.2000  1.1000  0.9000
 280.  *  0.1000  0.6000  0.4000  0.3000  0.1000  0.1000  0.1000  2.0000  1.7000
1.6000  1.2000  1.2000  1.1000
 290.  *  0.2000  0.4000  0.3000  0.2000  0.0000  0.0000  0.0000  1.8000  1.7000
1.5000  1.2000  1.2000  1.1000
 300.  *  0.2000  0.5000  0.4000  0.2000  0.0000  0.0000  0.0000  1.7000  1.3000
1.3000  1.1000  1.1000  1.0000
 310.  *  0.2000  0.5000  0.4000  0.2000  0.0000  0.0000  0.0000  1.5000  1.3000
1.1000  1.0000  1.0000  0.9000
 320.  *  0.2000  0.5000  0.4000  0.0000  0.0000  0.0000  0.0000  1.4000  1.3000
1.0000  0.8000  0.8000  0.8000
 330.  *  0.4000  0.4000  0.2000  0.0000  0.0000  0.0000  0.0000  1.2000  1.1000
0.8000  0.7000  0.7000  0.7000
```

```
                                  2040 I495 & US50
 340.  *  0.8000  0.2000  0.1000  0.0000  0.1000  0.0000  0.0000  1.1000  1.0000
0.8000  0.8000  0.7000  0.7000
 350.  *  1.5000  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.9000  0.8000
0.8000  1.2000  0.9000  0.8000
 360.  *  1.6000  0.0000  0.0000  0.0000  0.5000  0.3000  0.0000  0.8000  0.8000
0.8000  1.4000  1.2000  0.8000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  1.6000  1.4000  1.3000  1.2000  1.6000  1.3000  1.2000  2.0000  1.7000
1.6000  2.1000  1.8000  1.6000
 DEGR. *    360     210     230     240     110     100     110     280     290
270      70      60      70

 THE HIGHEST CONCENTRATION OF   2.4000 PPM OCCURRED AT RECEPTOR    13.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
5,4,1,3,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.75,2200,2200,1036.8,1036
.75,2200,2200,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1
200,-1200,0,0,0,0,0,0,-5,-5,-10,30,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',69.1,13.2,5.9
'N Leg, E Side - 25 m',62.8,85.0,5.9
'N Leg, E Side - 50 m',55.7,166.7,5.9
'N Leg, E Side-Midblk',17.7,601.0,5.9
'N Leg, W Side-Corner',-61.4,35.9,5.9
'N Leg, W Side - 25 m',-67.6,107.6,5.9
'N Leg, W Side - 50 m',-74.8,189.3,5.9
'N Leg, W Side-Midblk',-112.8,623.6,5.9
'S Leg, E Side-Corner',76.3,-69.5,5.9
'S Leg, E Side - 25 m',82.6,-141.2,5.9
'S Leg, E Side - 50 m',89.8,-222.9,5.9
'S Leg, E Side-Midblk',127.8,-657.2,5.9
'S Leg, W Side-Corner',-55.4,-32.1,5.9
'S Leg, W Side - 25 m',-49.1,-103.9,5.9
'S Leg, W Side - 50 m',-42.0,-185.6,5.9
'S Leg, W Side-Midblk',-4.0,-619.9,5.9
'E Leg, N Side - 25 m',131.5,-22.8,5.9
'E Leg, N Side - 50 m',202.5,-63.8,5.9
'E Leg, N Side-Midblk',580.1,-281.8,5.9
'W Leg, N Side - 25 m',-132.3,23.4,5.9
'W Leg, N Side - 50 m',-213.1,9.1,5.9
'W Leg, N Side-Midblk',-642.4,-66.6,5.9
'E Leg, S Side - 25 m',138.7,-105.5,5.9
'E Leg, S Side - 50 m',209.8,-146.5,5.9
'E Leg, S Side-Midblk',587.3,-364.5,5.9
'W Leg, S Side - 25 m',-126.3,-44.6,5.9
'W Leg, S Side - 50 m',-207.1,-58.9,5.9
'W Leg, S Side-Midblk',-636.4,-134.6,5.9
'2040 MD97 & Outer Loop Ramp (IS.29)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-24,-2,-128,1193,4147,0.72,0.0,67.7
2
'N Leg App - Queue','AG',-27,34,-128,1193,0.0,48.0,4
120,62,2,4147,0.90,1600,1,3
1
'N Leg Dep - FreeFlow','AG',30,3,-75,1198,5184,2.08,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,3,134,-1193,5184,2.08,0.0,79.7
2
'S Leg App - Queue','AG',31,-9,134,-1193,0.0,60.0,5
120,62,2,5184,0.90,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-24,-2,81,-1198,4147,0.72,0.0,67.7
1
'E Leg App - FreeFlow','AG',3,19,1048,-584,6600,1.28,0.0,55.7
2
'E Leg App - Queue','AG',61,-14,1048,-584,0.0,36.0,3
120,62,2,6600,0.80,1600,1,3
1
'E Leg Dep - FreeFlow','AG',-1,-6,1036,-605,2200,1.28,0.0,31.7
1
'W Leg App - FreeFlow','AG',-1,-6,-1181,-214,2200,0.86,0.0,31.7
1
'W Leg Dep - FreeFlow','AG',3,19,-1185,-191,6600,0.86,0.0,55.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

2040 MD97 & Outer Loop Ramp
*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface
CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 MD97 & Outer Loop Ramp (IS.29)

DATE : 2/28/19
TIME : 10:38:27

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-24.0	-2.0	-128.0	1193.0	*	1200.	355.	AG	4147.	0.7	0.0	67.7		
2. N Leg App - Queue	*	-27.0	34.0	-343.8	3669.5	*	3649.	355.	AG	5.	100.0	0.0	48.0	1.44	185.4
3. N Leg Dep - FreeFlow	*	30.0	3.0	-75.0	1198.0	*	1200.	355.	AG	5184.	2.1	0.0	79.7		
4. S Leg App - FreeFlow	*	30.0	3.0	134.0	-1193.0	*	1201.	175.	AG	5184.	2.1	0.0	79.7		
5. S Leg App - Queue	*	31.0	-9.0	347.3	-3644.5	*	3649.	175.	AG	6.	100.0	0.0	60.0	1.44	185.4
6. S Leg Dep - FreeFlow	*	-24.0	-2.0	81.0	-1198.0	*	1201.	175.	AG	4147.	0.7	0.0	67.7		
7. E Leg App - FreeFlow	*	3.0	19.0	1048.0	-584.0	*	1206.	120.	AG	6600.	1.3	0.0	55.7		
8. E Leg App - Queue	*	61.0	-14.0	13666.7	-7871.4	*	*****	120.	AG	3.	100.0	0.0	36.0	3.06	798.1
9. E Leg Dep - FreeFlow	*	-1.0	-6.0	1036.0	-605.0	*	1198.	120.	AG	2200.	1.3	0.0	31.7		
10. W Leg App - FreeFlow	*	-1.0	-6.0	-1181.0	-214.0	*	1198.								

260. AG 2200. 0.9 0.0 31.7
     11. W Leg Dep - FreeFlow* 3.0 19.0 -1185.0 -191.0 * 1206.
260. AG 6600. 0.9 0.0 55.7

JOB: I-495 & I-270 MLS RUN: 2040 MD97 & Outer Loop Ramp (IS.29)

DATE : 2/28/19
TIME : 10:38:27

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC	SIGNAL TYPE	ARRIVAL RATE (gm/hr)
2. N Leg App - Queue	*	120	62	2.0	4147	1600	0.90	1	3
5. S Leg App - Queue	*	120	62	2.0	5184	1600	0.90	1	3
8. E Leg App - Queue	*	120	62	2.0	6600	1600	0.80	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	69.1	13.2	5.9	*
2. N Leg, E Side - 25 m	*	62.8	85.0	5.9	*
3. N Leg, E Side - 50 m	*	55.7	166.7	5.9	*
4. N Leg, E Side-Midblk	*	17.7	601.0	5.9	*
5. N Leg, W Side-Corner	*	-61.4	35.9	5.9	*
6. N Leg, W Side - 25 m	*	-67.6	107.6	5.9	*
7. N Leg, W Side - 50 m	*	-74.8	189.3	5.9	*
8. N Leg, W Side-Midblk	*	-112.8	623.6	5.9	*
9. S Leg, E Side-Corner	*	76.3	-69.5	5.9	*
10. S Leg, E Side - 25 m	*	82.6	-141.2	5.9	*
11. S Leg, E Side - 50 m	*	89.8	-222.9	5.9	*
12. S Leg, E Side-Midblk	*	127.8	-657.2	5.9	*
13. S Leg, W Side-Corner	*	-55.4	-32.1	5.9	*
14. S Leg, W Side - 25 m	*	-49.1	-103.9	5.9	*

15. S Leg, W Side - 50 m *	-42.0	-185.6	5.9	*
16. S Leg, W Side-Midblk *	-4.0	-619.9	5.9	*
17. E Leg, N Side - 25 m *	131.5	-22.8	5.9	*
18. E Leg, N Side - 50 m *	202.5	-63.8	5.9	*
19. E Leg, N Side-Midblk *	580.1	-281.8	5.9	*
20. W Leg, N Side - 25 m *	-132.3	23.4	5.9	*
21. W Leg, N Side - 50 m *	-213.1	9.1	5.9	*
22. W Leg, N Side-Midblk *	-642.4	-66.6	5.9	*
23. E Leg, S Side - 25 m *	138.7	-105.5	5.9	*
24. E Leg, S Side - 50 m *	209.8	-146.5	5.9	*
25. E Leg, S Side-Midblk *	587.3	-364.5	5.9	*
26. W Leg, S Side - 25 m *	-126.3	-44.6	5.9	*
27. W Leg, S Side - 50 m *	-207.1	-58.9	5.9	*
28. W Leg, S Side-Midblk *	-636.4	-134.6	5.9	*

JOB: I-495 & I-270 MLS RUN: 2040 MD97 & Outer Loop Ramp (IS.29)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	0.1000	0.1000	0.1000	0.1000	0.5000	0.5000	0.4000	0.3000	0.5000	0.3000	0.2000	0.1000	0.6000	0.5000	0.4000
20.	0.1000	0.1000	0.1000	0.1000	0.3000	0.3000	0.3000	0.3000	0.3000	0.1000	0.1000	0.1000	0.5000	0.4000	0.4000
30.	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.1000	0.1000	0.0000	0.6000	0.4000	0.5000
40.	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.1000	0.1000	0.0000	0.6000	0.4000	0.4000
50.	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.1000	0.1000	0.0000	0.6000	0.4000	0.4000
60.	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.3000	0.1000	0.1000	0.0000	0.6000	0.4000	0.4000

```
  70.  *  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000  0.3000  0.3000  0.4000
0.1000  0.1000  0.0000  0.6000  0.4000  0.4000
  80.  *  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000  0.3000  0.3000  0.4000
0.1000  0.1000  0.0000  0.6000  0.4000  0.4000
  90.  *  0.0000  0.0000  0.0000  0.0000  0.5000  0.3000  0.3000  0.3000  0.4000
0.3000  0.1000  0.0000  0.6000  0.4000  0.4000
 100.  *  0.1000  0.0000  0.0000  0.0000  0.6000  0.3000  0.3000  0.3000  0.6000
0.3000  0.1000  0.0000  0.6000  0.4000  0.4000
 110.  *  0.2000  0.0000  0.0000  0.0000  0.9000  0.4000  0.3000  0.3000  0.6000
0.2000  0.1000  0.0000  0.6000  0.4000  0.4000
 120.  *  0.4000  0.1000  0.0000  0.0000  0.9000  0.5000  0.4000  0.3000  0.4000
0.1000  0.0000  0.0000  0.5000  0.4000  0.3000
 130.  *  0.6000  0.2000  0.1000  0.0000  0.8000  0.7000  0.4000  0.3000  0.2000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 140.  *  0.5000  0.2000  0.1000  0.0000  0.7000  0.6000  0.4000  0.3000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 150.  *  0.5000  0.2000  0.1000  0.1000  0.6000  0.6000  0.4000  0.3000  0.1000
0.1000  0.1000  0.1000  0.4000  0.3000  0.3000
 160.  *  0.5000  0.4000  0.3000  0.1000  0.6000  0.5000  0.4000  0.5000  0.1000
0.1000  0.1000  0.1000  0.5000  0.5000  0.4000
 170.  *  0.7000  0.4000  0.5000  0.4000  0.5000  0.5000  0.5000  0.3000  0.3000
0.3000  0.3000  0.3000  0.4000  0.4000  0.4000
 180.  *  0.9000  0.6000  0.6000  0.6000  0.4000  0.3000  0.3000  0.1000  0.5000
0.5000  0.5000  0.4000  0.2000  0.2000  0.2000
 190.  *  0.9000  0.7000  0.7000  0.6000  0.2000  0.1000  0.1000  0.0000  0.6000
0.6000  0.6000  0.6000  0.0000  0.0000  0.0000
 200.  *  0.9000  0.7000  0.5000  0.5000  0.2000  0.1000  0.1000  0.0000  0.6000
0.6000  0.5000  0.5000  0.0000  0.0000  0.0000
 210.  *  0.9000  0.5000  0.5000  0.5000  0.2000  0.1000  0.1000  0.0000  0.5000
0.5000  0.5000  0.5000  0.0000  0.0000  0.0000
 220.  *  0.9000  0.6000  0.4000  0.4000  0.2000  0.1000  0.1000  0.0000  0.4000
0.4000  0.4000  0.4000  0.0000  0.0000  0.0000
 230.  *  0.7000  0.4000  0.5000  0.4000  0.2000  0.1000  0.1000  0.0000  0.4000
0.4000  0.4000  0.4000  0.0000  0.0000  0.0000
 240.  *  0.6000  0.4000  0.5000  0.4000  0.4000  0.1000  0.1000  0.0000  0.4000
0.4000  0.4000  0.4000  0.0000  0.0000  0.0000
 250.  *  0.8000  0.5000  0.4000  0.4000  0.3000  0.1000  0.0000  0.0000  0.4000
0.4000  0.4000  0.4000  0.2000  0.0000  0.0000
 260.  *  0.9000  0.4000  0.3000  0.3000  0.3000  0.1000  0.0000  0.0000  0.4000
0.3000  0.3000  0.3000  0.3000  0.0000  0.0000
 270.  *  0.7000  0.3000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  0.4000
0.4000  0.3000  0.3000  0.3000  0.1000  0.0000
 280.  *  0.6000  0.4000  0.4000  0.4000  0.1000  0.0000  0.0000  0.0000  0.4000
0.4000  0.3000  0.4000  0.3000  0.1000  0.1000
 290.  *  0.7000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.5000
0.5000  0.5000  0.4000  0.3000  0.1000  0.1000
 300.  *  0.5000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.6000
0.5000  0.5000  0.4000  0.3000  0.1000  0.1000
```

```
 310.  *  0.5000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.7000
0.4000  0.4000  0.4000  0.3000  0.1000  0.1000
 320.  *  0.5000  0.5000  0.5000  0.5000  0.0000  0.0000  0.0000  0.0000  0.7000
0.5000  0.5000  0.5000  0.3000  0.1000  0.1000
 330.  *  0.6000  0.6000  0.6000  0.5000  0.0000  0.0000  0.0000  0.0000  0.9000
0.6000  0.4000  0.5000  0.2000  0.1000  0.1000
 340.  *  0.6000  0.6000  0.6000  0.6000  0.0000  0.0000  0.0000  0.0000  1.0000
0.7000  0.6000  0.6000  0.2000  0.1000  0.1000
 350.  *  0.5000  0.5000  0.5000  0.5000  0.2000  0.2000  0.2000  0.1000  0.8000
0.7000  0.6000  0.6000  0.5000  0.3000  0.3000
 360.  *  0.3000  0.3000  0.3000  0.3000  0.4000  0.4000  0.4000  0.2000  0.6000
0.5000  0.4000  0.4000  0.5000  0.5000  0.4000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  0.9000  0.7000  0.7000  0.6000  0.9000  0.7000  0.5000  0.5000  1.0000
0.7000  0.6000  0.6000  0.6000  0.5000  0.5000
 DEGR. *    180     190     190     180     110     130     170     160     340
340     190     190      10      10      30
```


JOB: I-495 & I-270 MLS RUN: 2040 MD97 & Outer Loop Ramp (IS.29)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.5000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.3000  0.3000
0.3000  0.4000  0.3000  0.2000
  20.  *  0.3000  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.3000  0.3000
0.3000  0.6000  0.4000  0.3000
  30.  *  0.3000  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.3000  0.3000
0.3000  0.6000  0.4000  0.3000
```

```
  40.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.3000  0.3000
0.3000  0.4000  0.4000  0.3000
  50.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.3000  0.3000
0.3000  0.4000  0.4000  0.3000
  60.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.3000  0.3000
0.3000  0.4000  0.4000  0.3000
  70.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.2000  0.1000  0.4000  0.4000
0.4000  0.5000  0.4000  0.3000
  80.  *  0.3000  0.0000  0.0000  0.0000  0.3000  0.3000  0.3000  0.4000  0.4000
0.4000  0.4000  0.4000  0.2000
  90.  *  0.3000  0.0000  0.0000  0.0000  0.4000  0.4000  0.3000  0.4000  0.4000
0.4000  0.2000  0.2000  0.2000
 100.  *  0.3000  0.1000  0.1000  0.1000  0.6000  0.5000  0.3000  0.6000  0.6000
0.5000  0.2000  0.2000  0.0000
 110.  *  0.3000  0.2000  0.2000  0.2000  0.6000  0.4000  0.2000  0.6000  0.5000
0.5000  0.2000  0.2000  0.0000
 120.  *  0.3000  0.4000  0.4000  0.4000  0.5000  0.4000  0.2000  0.4000  0.4000
0.4000  0.2000  0.1000  0.0000
 130.  *  0.3000  0.6000  0.6000  0.6000  0.3000  0.3000  0.2000  0.2000  0.2000
0.2000  0.2000  0.1000  0.0000
 140.  *  0.3000  0.5000  0.5000  0.5000  0.5000  0.3000  0.2000  0.0000  0.0000
0.0000  0.3000  0.1000  0.0000
 150.  *  0.3000  0.5000  0.5000  0.5000  0.5000  0.3000  0.2000  0.0000  0.0000
0.0000  0.3000  0.1000  0.0000
 160.  *  0.3000  0.4000  0.4000  0.4000  0.4000  0.3000  0.2000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 170.  *  0.2000  0.5000  0.4000  0.4000  0.3000  0.2000  0.2000  0.1000  0.0000
0.0000  0.1000  0.0000  0.0000
 180.  *  0.1000  0.6000  0.5000  0.4000  0.2000  0.2000  0.2000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  0.5000  0.4000  0.3000  0.2000  0.2000  0.2000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.6000  0.6000  0.4000  0.2000  0.2000  0.2000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.6000  0.5000  0.4000  0.2000  0.2000  0.2000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.6000  0.5000  0.5000  0.2000  0.2000  0.2000  0.2000  0.1000
0.1000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.5000  0.4000  0.4000  0.2000  0.2000  0.2000  0.2000  0.1000
0.1000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.6000  0.5000  0.5000  0.4000  0.4000  0.3000  0.2000  0.1000
0.1000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.6000  0.5000  0.5000  0.3000  0.3000  0.3000  0.2000  0.1000
0.1000  0.2000  0.2000  0.2000
 260.  *  0.0000  0.7000  0.5000  0.5000  0.3000  0.3000  0.2000  0.2000  0.1000
0.1000  0.3000  0.3000  0.2000
 270.  *  0.0000  0.6000  0.7000  0.6000  0.1000  0.1000  0.1000  0.3000  0.1000
0.1000  0.3000  0.3000  0.3000
```

```
 280.  *  0.0000  0.6000  0.7000  0.6000  0.1000  0.1000  0.1000  0.3000  0.2000
0.1000  0.3000  0.3000  0.3000
 290.  *  0.0000  0.6000  0.7000  0.6000  0.0000  0.0000  0.0000  0.4000  0.3000
0.3000  0.3000  0.3000  0.3000
 300.  *  0.0000  0.3000  0.4000  0.4000  0.0000  0.0000  0.0000  0.5000  0.3000
0.4000  0.3000  0.3000  0.3000
 310.  *  0.0000  0.3000  0.2000  0.3000  0.0000  0.0000  0.0000  0.6000  0.6000
0.5000  0.3000  0.3000  0.3000
 320.  *  0.0000  0.3000  0.2000  0.2000  0.0000  0.0000  0.0000  0.7000  0.6000
0.6000  0.3000  0.3000  0.3000
 330.  *  0.0000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.6000  0.5000
0.5000  0.2000  0.2000  0.2000
 340.  *  0.0000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.6000  0.5000
0.4000  0.2000  0.2000  0.2000
 350.  *  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.5000  0.4000
0.3000  0.3000  0.3000  0.3000
 360.  *  0.3000  0.1000  0.0000  0.0000  0.1000  0.0000  0.0000  0.4000  0.3000
0.3000  0.3000  0.2000  0.2000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.5000  0.7000  0.7000  0.6000  0.6000  0.5000  0.3000  0.7000  0.6000
0.6000  0.6000  0.4000  0.3000
 DEGR. *     10     260     270     130     100     100      80     320     100
320      20      20      20

 THE HIGHEST CONCENTRATION OF   1.0000 PPM OCCURRED AT RECEPTOR     9.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
4,4,9,9,2200,2200,2200,2200,2200,2200,2200,2200,1036.75,1036.75,2200,2200,1036.75,10
36.75,2200,2200,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0
,1200,-1200,0,0,0,0,0,0,-15,-15,0,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',28.4,118.0,5.9
'N Leg, E Side - 25 m',9.8,187.6,5.9
'N Leg, E Side - 50 m',-11.4,266.8,5.9
'N Leg, E Side-Midblk',-124.3,687.9,5.9
'N Leg, W Side-Corner',-91.7,118.0,5.9
'N Leg, W Side - 25 m',-110.3,187.6,5.9
'N Leg, W Side - 50 m',-131.5,266.8,5.9
'N Leg, W Side-Midblk',-244.4,687.9,5.9
'S Leg, E Side-Corner',91.7,-118.0,5.9
'S Leg, E Side - 25 m',110.3,-187.6,5.9
'S Leg, E Side - 50 m',131.5,-266.8,5.9
'S Leg, E Side-Midblk',244.4,-687.9,5.9
'S Leg, W Side-Corner',-28.4,-118.0,5.9
'S Leg, W Side - 25 m',-9.8,-187.6,5.9
'S Leg, W Side - 50 m',11.4,-266.8,5.9
'S Leg, W Side-Midblk',124.3,-687.9,5.9
'E Leg, N Side - 25 m',100.4,118.0,5.9
'E Leg, N Side - 50 m',182.5,118.0,5.9
'E Leg, N Side-Midblk',618.4,118.0,5.9
'W Leg, N Side - 25 m',-163.7,118.0,5.9
'W Leg, N Side - 50 m',-245.7,118.0,5.9
'W Leg, N Side-Midblk',-681.7,118.0,5.9
'E Leg, S Side - 25 m',163.7,-118.0,5.9
'E Leg, S Side - 50 m',245.7,-118.0,5.9
'E Leg, S Side-Midblk',681.7,-118.0,5.9
'W Leg, S Side - 25 m',-100.4,-118.0,5.9
'W Leg, S Side - 50 m',-182.5,-118.0,5.9
'W Leg, S Side-Midblk',-618.4,-118.0,5.9
'2040 Build MD 187 SPUI IS.36',12,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-23,-6,-334,1153,4147,0.67,0.0,67.7
2
'N Leg App - Queue','AG',-51,98,-334,1153,0.0,48.0,4
120,62,2,4147,0.90,1600,1,3
1
'N Leg Dep - FreeFlow','AG',23,6,-287,1165,4147,1.42,0.0,67.7
1
'S Leg App - FreeFlow','AG',23,6,334,-1153,4147,0.67,0.0,67.7
2
'S Leg App - Queue','AG',51,-98,334,-1153,0.0,48.0,4
120,62,2,4147,0.90,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-23,-6,287,-1165,4147,0.89,0.0,67.7
1
'E Leg App - FreeFlow','AG',0,54,1200,54,19800,2.54,0.0,127.7
2
'E Leg App - Queue','AG',48,54,1200,54,0.0,108.0,9
120,62,2,19800,0.80,1600,1,3
1
'E Leg Dep - FreeFlow','AG',0,-54,1200,-54,19800,0.61,0.0,127.7
1
'W Leg App - FreeFlow','AG',0,-54,-1200,-54,19800,2.54,0.0,127.7
2
'W Leg App - Queue','AG',-48,-54,-1200,-54,0.0,108.0,9
120,62,2,19800,0.80,1600,1,3
1
'W Leg Dep - FreeFlow','AG',0,54,-1200,54,19800,0.61,0.0,127.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

♠ CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 Build MD 187 SPUI IS.36

DATE : 5/ 1/19
TIME : 7:28:57

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-23.0	-6.0	-334.0	1153.0	*	1200.	345.	AG	4147.	0.7	0.0	67.7		
2. N Leg App - Queue	*	-51.0	98.0	-996.5	3622.7	*	3649.	345.	AG	5.	100.0	0.0	48.0	1.44	185.4
3. N Leg Dep - FreeFlow	*	23.0	6.0	-287.0	1165.0	*	1200.	345.	AG	4147.	1.4	0.0	67.7		
4. S Leg App - FreeFlow	*	23.0	6.0	334.0	-1153.0	*	1200.	165.	AG	4147.	0.7	0.0	67.7		
5. S Leg App - Queue	*	51.0	-98.0	996.5	-3622.7	*	3649.	165.	AG	5.	100.0	0.0	48.0	1.44	185.4
6. S Leg Dep - FreeFlow	*	-23.0	-6.0	287.0	-1165.0	*	1200.	165.	AG	4147.	0.9	0.0	67.7		
7. E Leg App - FreeFlow	*	0.0	54.0	1200.0	54.0	*	1200.	90.	AG	19800.	2.5	0.0	****		
8. E Leg App - Queue	*	48.0	54.0	15759.6	54.0	*	*****	90.	AG	10.	100.0	0.0	****	3.06	798.1
9. E Leg Dep - FreeFlow	*	0.0	-54.0	1200.0	-54.0	*	1200.	90.	AG	19800.	0.6	0.0	****		
10. W Leg App - FreeFlow	*	0.0	-54.0	-1200.0	-54.0	*	1200.								

```
270. AG  19800.   2.5   0.0 ****
     11. W Leg App - Queue   *    -48.0     -54.0  -15759.6     -54.0 *    *****
270. AG     10. 100.0   0.0 **** 3.06 798.1
     12. W Leg Dep - FreeFlow*      0.0      54.0   -1200.0      54.0 *    1200.
270. AG  19800.   0.6   0.0 ****
```


DATE : 5/ 1/19
TIME : 7:28:57

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. N Leg App - Queue	* 120	62	2.0	4147	1600	0.90	1	3
5. S Leg App - Queue	* 120	62	2.0	4147	1600	0.90	1	3
8. E Leg App - Queue	* 120	62	2.0	19800	1600	0.80	1	3
11. W Leg App - Queue	* 120	62	2.0	19800	1600	0.80	1	3

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z *
1. N Leg, E Side-Corner	* 28.4	118.0	5.9 *
2. N Leg, E Side - 25 m	* 9.8	187.6	5.9 *
3. N Leg, E Side - 50 m	* -11.4	266.8	5.9 *
4. N Leg, E Side-Midblk	* -124.3	687.9	5.9 *
5. N Leg, W Side-Corner	* -91.7	118.0	5.9 *
6. N Leg, W Side - 25 m	* -110.3	187.6	5.9 *
7. N Leg, W Side - 50 m	* -131.5	266.8	5.9 *
8. N Leg, W Side-Midblk	* -244.4	687.9	5.9 *
9. S Leg, E Side-Corner	* 91.7	-118.0	5.9 *
10. S Leg, E Side - 25 m	* 110.3	-187.6	5.9 *

11. S Leg, E Side - 50 m *	131.5	-266.8	5.9	*
12. S Leg, E Side-Midblk *	244.4	-687.9	5.9	*
13. S Leg, W Side-Corner *	-28.4	-118.0	5.9	*
14. S Leg, W Side - 25 m *	-9.8	-187.6	5.9	*
15. S Leg, W Side - 50 m *	11.4	-266.8	5.9	*
16. S Leg, W Side-Midblk *	124.3	-687.9	5.9	*
17. E Leg, N Side - 25 m *	100.4	118.0	5.9	*
18. E Leg, N Side - 50 m *	182.5	118.0	5.9	*
19. E Leg, N Side-Midblk *	618.4	118.0	5.9	*
20. W Leg, N Side - 25 m *	-163.7	118.0	5.9	*
21. W Leg, N Side - 50 m *	-245.7	118.0	5.9	*
22. W Leg, N Side-Midblk *	-681.7	118.0	5.9	*
23. E Leg, S Side - 25 m *	163.7	-118.0	5.9	*
24. E Leg, S Side - 50 m *	245.7	-118.0	5.9	*
25. E Leg, S Side-Midblk *	681.7	-118.0	5.9	*
26. W Leg, S Side - 25 m *	-100.4	-118.0	5.9	*
27. W Leg, S Side - 50 m *	-182.5	-118.0	5.9	*
28. W Leg, S Side-Midblk *	-618.4	-118.0	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	* 1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.9000
0.7000	0.5000	0.3000	1.7000	1.0000	0.7000				
20.	* 0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.9000
0.7000	0.5000	0.3000	1.5000	0.9000	0.7000				
30.	* 0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	1.0000
0.7000	0.5000	0.3000	1.5000	0.9000	0.7000				
40.	* 0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.9000
0.7000	0.5000	0.3000	1.5000	0.9000	0.7000				

```
  50.  *  0.1000  0.0000  0.0000  0.0000  0.2000  0.2000  0.2000  0.2000  1.0000
0.7000  0.5000  0.1000  1.6000  0.9000  0.7000
  60.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.2000  0.2000  0.2000  1.1000
0.8000  0.6000  0.1000  1.5000  0.9000  0.8000
  70.  *  0.3000  0.0000  0.0000  0.0000  0.3000  0.2000  0.2000  0.2000  1.1000
0.7000  0.4000  0.0000  1.7000  0.9000  0.7000
  80.  *  0.7000  0.1000  0.0000  0.0000  0.8000  0.3000  0.2000  0.2000  1.0000
0.5000  0.2000  0.0000  1.5000  0.7000  0.5000
  90.  *  1.7000  0.4000  0.1000  0.0000  1.5000  0.6000  0.4000  0.2000  0.6000
0.2000  0.0000  0.0000  0.9000  0.4000  0.2000
 100.  *  2.1000  0.9000  0.4000  0.0000  1.9000  1.1000  0.7000  0.2000  0.2000
0.0000  0.0000  0.0000  0.4000  0.2000  0.2000
 110.  *  2.0000  1.0000  0.7000  0.1000  1.7000  1.2000  0.9000  0.3000  0.1000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 120.  *  1.8000  1.0000  0.7000  0.2000  1.4000  1.1000  0.9000  0.4000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 130.  *  1.6000  1.0000  0.7000  0.4000  1.1000  1.0000  0.8000  0.6000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 140.  *  1.5000  0.9000  0.6000  0.3000  1.1000  0.9000  0.7000  0.5000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 150.  *  1.3000  1.0000  0.7000  0.4000  1.1000  0.8000  0.7000  0.4000  0.0000
0.0000  0.0000  0.0000  0.3000  0.3000  0.3000
 160.  *  1.5000  0.9000  0.7000  0.4000  1.1000  0.8000  0.6000  0.4000  0.1000
0.1000  0.1000  0.1000  0.2000  0.2000  0.2000
 170.  *  1.5000  1.2000  0.9000  0.5000  1.0000  0.8000  0.5000  0.3000  0.2000
0.2000  0.2000  0.1000  0.1000  0.1000  0.1000
 180.  *  1.8000  1.2000  0.8000  0.6000  0.9000  0.7000  0.5000  0.3000  0.2000
0.2000  0.2000  0.2000  0.1000  0.1000  0.0000
 190.  *  1.8000  1.0000  0.7000  0.7000  0.9000  0.7000  0.5000  0.3000  0.2000
0.2000  0.2000  0.2000  0.0000  0.0000  0.0000
 200.  *  1.5000  1.0000  0.8000  0.6000  0.9000  0.7000  0.5000  0.3000  0.2000
0.2000  0.2000  0.2000  0.1000  0.0000  0.0000
 210.  *  1.6000  1.0000  0.8000  0.6000  1.0000  0.7000  0.5000  0.3000  0.2000
0.2000  0.2000  0.2000  0.1000  0.0000  0.0000
 220.  *  1.6000  1.0000  0.8000  0.6000  0.9000  0.7000  0.5000  0.3000  0.2000
0.2000  0.2000  0.2000  0.1000  0.0000  0.0000
 230.  *  1.7000  1.0000  0.8000  0.6000  1.0000  0.7000  0.5000  0.1000  0.2000
0.2000  0.2000  0.2000  0.1000  0.0000  0.0000
 240.  *  1.6000  1.0000  0.9000  0.4000  1.1000  0.8000  0.6000  0.1000  0.2000
0.2000  0.2000  0.2000  0.2000  0.0000  0.0000
 250.  *  1.8000  1.0000  0.8000  0.3000  1.1000  0.7000  0.4000  0.0000  0.3000
0.2000  0.2000  0.2000  0.3000  0.0000  0.0000
 260.  *  1.6000  0.8000  0.6000  0.3000  1.0000  0.5000  0.2000  0.0000  0.8000
0.3000  0.2000  0.2000  0.7000  0.1000  0.0000
 270.  *  1.0000  0.5000  0.3000  0.3000  0.6000  0.2000  0.0000  0.0000  1.5000
0.6000  0.4000  0.2000  1.7000  0.4000  0.1000
 280.  *  0.5000  0.3000  0.3000  0.3000  0.2000  0.0000  0.0000  0.0000  1.9000
1.1000  0.7000  0.2000  2.1000  0.9000  0.4000
```

```
 290.  *  0.3000  0.3000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  1.7000
1.2000  0.9000  0.3000  2.0000  1.0000  0.7000
 300.  *  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  1.4000
1.1000  0.9000  0.4000  1.8000  1.0000  0.7000
 310.  *  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000  0.0000  0.0000  1.1000
1.0000  0.8000  0.6000  1.6000  1.0000  0.7000
 320.  *  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  1.1000
0.9000  0.7000  0.5000  1.5000  0.9000  0.6000
 330.  *  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  1.1000
0.8000  0.7000  0.4000  1.3000  0.9000  0.6000
 340.  *  0.3000  0.3000  0.3000  0.3000  0.1000  0.1000  0.1000  0.1000  1.1000
0.8000  0.6000  0.4000  1.5000  0.9000  0.7000
 350.  *  0.2000  0.2000  0.2000  0.2000  0.2000  0.2000  0.2000  0.2000  1.0000
0.8000  0.6000  0.3000  1.5000  1.1000  0.8000
 360.  *  0.1000  0.1000  0.1000  0.1000  0.2000  0.2000  0.2000  0.2000  0.9000
0.7000  0.5000  0.3000  1.7000  1.1000  0.8000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  2.1000  1.2000  0.9000  0.7000  1.9000  1.2000  0.9000  0.6000  1.9000
1.2000  0.9000  0.6000  2.1000  1.1000  0.8000
 DEGR. *    100     170     170     190     100     110     110     130     280
290     290     310     280     350     350
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.6000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.9000  0.9000
0.9000  1.4000  1.3000  1.2000
```

```
  20.  *  0.5000  0.1000  0.1000  0.1000  0.2000  0.1000  0.0000  0.9000  0.9000
0.9000  1.5000  1.3000  1.3000
  30.  *  0.5000  0.1000  0.1000  0.1000  0.1000  0.1000  0.0000  1.0000  1.0000
1.0000  1.6000  1.4000  1.3000
  40.  *  0.5000  0.1000  0.1000  0.1000  0.1000  0.1000  0.0000  0.9000  0.9000
0.9000  1.6000  1.6000  1.5000
  50.  *  0.5000  0.1000  0.1000  0.1000  0.1000  0.1000  0.0000  1.0000  1.0000
1.0000  1.8000  1.8000  1.6000
  60.  *  0.3000  0.2000  0.2000  0.2000  0.1000  0.1000  0.0000  1.1000  1.1000
1.1000  1.9000  2.0000  1.9000
  70.  *  0.2000  0.3000  0.3000  0.3000  0.2000  0.3000  0.1000  1.1000  1.1000
0.9000  2.0000  2.1000  2.0000
  80.  *  0.2000  0.7000  0.7000  0.6000  0.6000  0.5000  0.4000  1.0000  1.0000
0.6000  1.7000  1.8000  2.4000
  90.  *  0.2000  1.6000  1.5000  1.3000  1.3000  1.1000  0.8000  0.6000  0.6000
0.4000  1.3000  1.3000  1.7000
 100.  *  0.2000  2.1000  2.0000  1.8000  1.5000  1.2000  1.1000  0.2000  0.2000
0.1000  0.5000  0.6000  0.7000
 110.  *  0.2000  2.0000  2.0000  1.8000  1.3000  1.1000  1.1000  0.1000  0.1000
0.1000  0.3000  0.2000  0.3000
 120.  *  0.2000  1.8000  1.8000  1.8000  1.0000  0.9000  1.1000  0.0000  0.0000
0.0000  0.2000  0.1000  0.2000
 130.  *  0.2000  1.6000  1.6000  1.6000  0.9000  0.9000  1.0000  0.0000  0.0000
0.0000  0.2000  0.1000  0.1000
 140.  *  0.3000  1.5000  1.5000  1.5000  1.0000  0.9000  0.9000  0.0000  0.0000
0.0000  0.2000  0.1000  0.1000
 150.  *  0.3000  1.4000  1.3000  1.3000  1.0000  1.0000  1.0000  0.0000  0.0000
0.0000  0.2000  0.1000  0.1000
 160.  *  0.2000  1.3000  1.3000  1.3000  1.0000  0.9000  0.9000  0.0000  0.0000
0.0000  0.0000  0.1000  0.1000
 170.  *  0.1000  1.3000  1.2000  1.2000  0.9000  0.9000  0.9000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.0000  1.6000  1.4000  1.4000  0.9000  0.9000  0.9000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  1.4000  1.2000  1.2000  0.9000  0.9000  0.9000  0.2000  0.0000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  1.4000  1.2000  1.3000  0.9000  0.9000  0.9000  0.2000  0.0000
0.0000  0.1000  0.1000  0.1000
 210.  *  0.0000  1.5000  1.3000  1.3000  1.0000  1.0000  1.0000  0.0000  0.0000
0.0000  0.1000  0.1000  0.1000
 220.  *  0.0000  1.7000  1.5000  1.5000  0.9000  0.9000  0.9000  0.0000  0.0000
0.0000  0.1000  0.1000  0.1000
 230.  *  0.0000  1.8000  1.8000  1.6000  1.0000  1.0000  1.0000  0.0000  0.0000
0.0000  0.1000  0.1000  0.1000
 240.  *  0.0000  1.9000  2.0000  1.9000  1.1000  1.1000  1.1000  0.0000  0.0000
0.0000  0.2000  0.2000  0.2000
 250.  *  0.0000  2.0000  2.2000  2.0000  1.1000  1.1000  0.9000  0.1000  0.2000
0.1000  0.3000  0.3000  0.3000
```

```
 260.  *  0.0000  1.7000  1.9000  2.4000  1.0000  1.0000  0.6000  0.5000  0.4000
0.4000  0.7000  0.7000  0.6000
 270.  *  0.0000  1.3000  1.4000  1.7000  0.6000  0.6000  0.4000  1.2000  1.0000
0.8000  1.6000  1.5000  1.3000
 280.  *  0.0000  0.5000  0.7000  0.7000  0.2000  0.2000  0.1000  1.4000  1.2000
1.1000  2.1000  2.0000  1.8000
 290.  *  0.1000  0.3000  0.3000  0.3000  0.1000  0.1000  0.1000  1.2000  1.1000
1.1000  2.0000  2.0000  1.8000
 300.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  1.0000  0.9000
1.1000  1.8000  1.8000  1.8000
 310.  *  0.4000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.9000  1.0000
1.0000  1.6000  1.6000  1.6000
 320.  *  0.3000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  1.0000  1.0000
0.9000  1.5000  1.5000  1.5000
 330.  *  0.3000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  1.0000  1.1000
1.0000  1.4000  1.3000  1.3000
 340.  *  0.3000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  1.0000  0.9000
0.9000  1.3000  1.3000  1.3000
 350.  *  0.4000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.9000  0.9000
0.9000  1.4000  1.2000  1.2000
 360.  *  0.5000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.9000  0.9000
0.9000  1.6000  1.5000  1.4000

------*-------------------------------------------------------------------------
---------------------------
 MAX   *  0.6000  2.1000  2.2000  2.4000  1.5000  1.2000  1.1000  1.4000  1.2000
1.1000  2.1000  2.1000  2.4000
 DEGR. *     10     100     250     260     100     100     100     280     280
60     280      70      80

 THE HIGHEST CONCENTRATION OF   2.4000 PPM OCCURRED AT RECEPTOR    28.
```

```
Q,EPA,,F,,0,T,T,F,T,0.7,
4,1,5,2,2200,2200,2200,2200,2200,2200,2200,2200,1036.75,1037,1036.8,1037,1036.75,103
7,1036.8,1037,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1
200,-1200,0,0,0,0,0,0,15,-35,5,10,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 and I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',53.2,25.1,5.9
'N Leg, E Side - 25 m',11.9,84.1,5.9
'N Leg, E Side - 50 m',-35.2,151.3,5.9
'N Leg, E Side-Midblk',-285.2,508.4,5.9
'N Leg, W Side-Corner',-54.1,38.9,5.9
'N Leg, W Side - 25 m',-95.4,97.9,5.9
'N Leg, W Side - 50 m',-142.4,165.0,5.9
'N Leg, W Side-Midblk',-392.5,522.2,5.9
'S Leg, E Side-Corner',39.2,-78.0,5.9
'S Leg, E Side - 25 m',20.5,-147.6,5.9
'S Leg, E Side - 50 m',-0.7,-226.8,5.9
'S Leg, E Side-Midblk',-113.6,-647.9,5.9
'S Leg, W Side-Corner',-40.7,-66.7,5.9
'S Leg, W Side - 25 m',-59.3,-136.3,5.9
'S Leg, W Side - 50 m',-80.5,-215.5,5.9
'S Leg, W Side-Midblk',-193.4,-636.6,5.9
'E Leg, N Side - 25 m',124.1,12.6,5.9
'E Leg, N Side - 50 m',204.9,-1.6,5.9
'E Leg, N Side-Midblk',634.2,-77.3,5.9
'W Leg, N Side - 25 m',-125.8,45.1,5.9
'W Leg, N Side - 50 m',-207.5,52.3,5.9
'W Leg, N Side-Midblk',-641.8,90.3,5.9
'E Leg, S Side - 25 m',110.1,-90.5,5.9
'E Leg, S Side - 50 m',190.9,-104.7,5.9
'E Leg, S Side-Midblk',620.2,-180.4,5.9
'W Leg, S Side - 25 m',-112.4,-60.4,5.9
'W Leg, S Side - 50 m',-194.1,-53.3,5.9
'W Leg, S Side-Midblk',-628.4,-15.3,5.9
'2040 Build MD202 & Outer Loop Rmp IS.16',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-7,-1,-693,980,1037,0.88,0.0,31.7
1
'N Leg Dep - FreeFlow','AG',26,5,-669,997,4147,0.88,0.0,67.7
1
'S Leg App - FreeFlow','AG',26,5,-287,-1165,4147,1.61,0.0,67.7
2
'S Leg App - Queue','AG',8,-64,-287,-1165,0.0,48.0,4
120,62,2,4147,0.80,1600,1,3
1
'S Leg Dep - FreeFlow','AG',-7,-1,-316,-1158,1037,0.68,0.0,31.7
1
'E Leg App - FreeFlow','AG',2,12,1184,-197,2074,0.88,0.0,43.7
```

```
2
'E Leg App - Queue','AG',49,3,1184,-197,0.0,24.0,2
120,62,2,2074,0.91,1600,1,3
1
'E Leg Dep - FreeFlow','AG',-4,-30,1177,-238,5184,0.88,0.0,79.7
1
'W Leg App - FreeFlow','AG',-4,-30,-1198,75,5184,0.65,0.0,79.7
2
'W Leg App - Queue','AG',-15,-29,-1198,75,0.0,60.0,5
120,62,2,5184,0.91,1600,1,3
1
'W Leg Dep - FreeFlow','AG',2,12,-1194,117,2074,1.49,0.0,43.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface
CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 and I-270 MLS RUN: 2040 Build MD202 & Outer Loop Rmp IS.16

DATE : 5/ 1/19
TIME : 6:34:46

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-7.0	-1.0	-693.0	980.0	*	1197.	325.	AG	1037.	0.9	0.0	31.7		
2. N Leg Dep - FreeFlow	*	26.0	5.0	-669.0	997.0	*	1211.	325.	AG	4147.	0.9	0.0	67.7		
3. S Leg App - FreeFlow	*	26.0	5.0	-287.0	-1165.0	*	1211.	195.	AG	4147.	1.6	0.0	67.7		
4. S Leg App - Queue	*	8.0	-64.0	-936.5	-3588.9	*	3649.	195.	AG	4.	100.0	0.0	48.0	1.44	185.4
5. S Leg Dep - FreeFlow	*	-7.0	-1.0	-316.0	-1158.0	*	1198.	195.	AG	1037.	0.7	0.0	31.7		
6. E Leg App - FreeFlow	*	2.0	12.0	1184.0	-197.0	*	1200.	100.	AG	2074.	0.9	0.0	43.7		
7. E Leg App - Queue	*	49.0	3.0	3653.1	-632.1	*	3660.	100.	AG	3.	100.0	0.0	24.0	1.44	185.9
8. E Leg Dep - FreeFlow	*	-4.0	-30.0	1177.0	-238.0	*	1199.	100.	AG	5184.	0.9	0.0	79.7		
9. W Leg App - FreeFlow	*	-4.0	-30.0	-1198.0	75.0	*	1199.	275.	AG	5184.	0.6	0.0	79.7		
10. W Leg App - Queue	*	-15.0	-29.0	-3650.3	290.6	*	3649.								

275. AG 6. 100.0 0.0 60.0 1.44 185.4
11. W Leg Dep - FreeFlow* 2.0 12.0 -1194.0 117.0 * 1201.
275. AG 2074. 1.5 0.0 43.7

DATE : 5/ 1/19
TIME : 6:34:46

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC	SIGNAL TYPE	ARRIVAL RATE (gm/hr)
4. S Leg App - Queue	*	120	62	2.0	4147	1600	0.80	1	3
7. E Leg App - Queue	*	120	62	2.0	2074	1600	0.91	1	3
10. W Leg App - Queue	*	120	62	2.0	5184	1600	0.91	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	53.2	25.1	5.9	*
2. N Leg, E Side - 25 m	*	11.9	84.1	5.9	*
3. N Leg, E Side - 50 m	*	-35.2	151.3	5.9	*
4. N Leg, E Side-Midblk	*	-285.2	508.4	5.9	*
5. N Leg, W Side-Corner	*	-54.1	38.9	5.9	*
6. N Leg, W Side - 25 m	*	-95.4	97.9	5.9	*
7. N Leg, W Side - 50 m	*	-142.4	165.0	5.9	*
8. N Leg, W Side-Midblk	*	-392.5	522.2	5.9	*
9. S Leg, E Side-Corner	*	39.2	-78.0	5.9	*
10. S Leg, E Side - 25 m	*	20.5	-147.6	5.9	*
11. S Leg, E Side - 50 m	*	-0.7	-226.8	5.9	*
12. S Leg, E Side-Midblk	*	-113.6	-647.9	5.9	*
13. S Leg, W Side-Corner	*	-40.7	-66.7	5.9	*
14. S Leg, W Side - 25 m	*	-59.3	-136.3	5.9	*

15. S Leg, W Side - 50 m *	-80.5	-215.5	5.9	*
16. S Leg, W Side-Midblk *	-193.4	-636.6	5.9	*
17. E Leg, N Side - 25 m *	124.1	12.6	5.9	*
18. E Leg, N Side - 50 m *	204.9	-1.6	5.9	*
19. E Leg, N Side-Midblk *	634.2	-77.3	5.9	*
20. W Leg, N Side - 25 m *	-125.8	45.1	5.9	*
21. W Leg, N Side - 50 m *	-207.5	52.3	5.9	*
22. W Leg, N Side-Midblk *	-641.8	90.3	5.9	*
23. E Leg, S Side - 25 m *	110.1	-90.5	5.9	*
24. E Leg, S Side - 50 m *	190.9	-104.7	5.9	*
25. E Leg, S Side-Midblk *	620.2	-180.4	5.9	*
26. W Leg, S Side - 25 m *	-112.4	-60.4	5.9	*
27. W Leg, S Side - 50 m *	-194.1	-53.3	5.9	*
28. W Leg, S Side-Midblk *	-628.4	-15.3	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	* 1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.2000
0.3000	0.2000	0.3000	0.2000	0.0000	0.1000				
20.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.2000
0.2000	0.1000	0.2000	0.3000	0.1000	0.1000				
30.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000
0.2000	0.1000	0.1000	0.2000	0.2000	0.2000				
40.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000
0.1000	0.0000	0.0000	0.3000	0.3000	0.2000				
50.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000
0.1000	0.1000	0.0000	0.4000	0.3000	0.2000				
60.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.2000
0.1000	0.1000	0.0000	0.3000	0.3000	0.3000				

```
  70.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.2000
0.1000  0.1000  0.0000  0.3000  0.3000  0.3000
  80.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.2000
0.1000  0.1000  0.0000  0.4000  0.3000  0.3000
  90.  *  0.1000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.2000
0.1000  0.0000  0.0000  0.4000  0.3000  0.2000
 100.  *  0.2000  0.0000  0.0000  0.0000  0.4000  0.1000  0.1000  0.1000  0.2000
0.0000  0.0000  0.0000  0.4000  0.2000  0.2000
 110.  *  0.2000  0.1000  0.0000  0.0000  0.4000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.3000  0.2000  0.2000
 120.  *  0.2000  0.1000  0.1000  0.0000  0.4000  0.2000  0.2000  0.1000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 130.  *  0.2000  0.1000  0.1000  0.0000  0.3000  0.2000  0.3000  0.2000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 140.  *  0.2000  0.1000  0.2000  0.1000  0.3000  0.1000  0.1000  0.2000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 150.  *  0.2000  0.2000  0.2000  0.2000  0.3000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 160.  *  0.2000  0.3000  0.2000  0.2000  0.3000  0.2000  0.1000  0.0000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 170.  *  0.3000  0.3000  0.2000  0.2000  0.4000  0.2000  0.1000  0.0000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 180.  *  0.3000  0.3000  0.2000  0.1000  0.4000  0.2000  0.1000  0.0000  0.1000
0.1000  0.1000  0.1000  0.3000  0.3000  0.3000
 190.  *  0.5000  0.3000  0.2000  0.1000  0.3000  0.2000  0.0000  0.0000  0.2000
0.2000  0.2000  0.2000  0.2000  0.2000  0.2000
 200.  *  0.5000  0.3000  0.1000  0.1000  0.2000  0.2000  0.0000  0.0000  0.3000
0.3000  0.3000  0.3000  0.1000  0.1000  0.1000
 210.  *  0.5000  0.3000  0.1000  0.1000  0.2000  0.2000  0.0000  0.0000  0.4000
0.4000  0.3000  0.3000  0.0000  0.0000  0.0000
 220.  *  0.4000  0.3000  0.1000  0.1000  0.2000  0.2000  0.0000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 230.  *  0.4000  0.3000  0.1000  0.1000  0.2000  0.2000  0.0000  0.0000  0.3000
0.3000  0.3000  0.3000  0.0000  0.0000  0.0000
 240.  *  0.4000  0.3000  0.1000  0.1000  0.2000  0.2000  0.0000  0.0000  0.2000
0.2000  0.2000  0.2000  0.0000  0.0000  0.0000
 250.  *  0.5000  0.3000  0.1000  0.1000  0.3000  0.2000  0.0000  0.0000  0.2000
0.2000  0.2000  0.2000  0.0000  0.0000  0.0000
 260.  *  0.4000  0.3000  0.1000  0.1000  0.3000  0.2000  0.0000  0.0000  0.2000
0.2000  0.2000  0.2000  0.0000  0.0000  0.0000
 270.  *  0.3000  0.2000  0.1000  0.1000  0.3000  0.1000  0.0000  0.0000  0.3000
0.2000  0.2000  0.2000  0.1000  0.0000  0.0000
 280.  *  0.2000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.4000
0.2000  0.2000  0.2000  0.2000  0.0000  0.0000
 290.  *  0.1000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.5000
0.3000  0.2000  0.2000  0.3000  0.1000  0.0000
 300.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.5000
0.3000  0.2000  0.2000  0.2000  0.1000  0.0000
```

```
 310.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.5000
0.3000  0.2000  0.2000  0.2000  0.1000  0.0000
 320.  *  0.2000  0.2000  0.2000  0.2000  0.1000  0.1000  0.1000  0.1000  0.4000
0.3000  0.2000  0.2000  0.2000  0.1000  0.0000
 330.  *  0.1000  0.1000  0.1000  0.1000  0.2000  0.2000  0.2000  0.2000  0.4000
0.3000  0.2000  0.2000  0.3000  0.1000  0.0000
 340.  *  0.1000  0.1000  0.1000  0.0000  0.3000  0.3000  0.3000  0.2000  0.4000
0.3000  0.4000  0.3000  0.3000  0.2000  0.0000
 350.  *  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000  0.2000  0.1000  0.4000
0.3000  0.3000  0.3000  0.3000  0.2000  0.0000
 360.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.3000
0.3000  0.3000  0.3000  0.2000  0.2000  0.0000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.5000  0.3000  0.2000  0.2000  0.4000  0.3000  0.3000  0.2000  0.5000
0.4000  0.4000  0.3000  0.4000  0.3000  0.3000
 DEGR. *    190     160     140     150     100     340     130     130     290
210     340      10      50      40      60
```


JOB: I-495 and I-270 MLS RUN: 2040 Build MD202 & Outer Loop Rmp IS.16

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.1000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.1000  0.1000
0.1000  0.1000  0.1000  0.1000
  20.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.1000  0.1000
0.1000  0.1000  0.2000  0.2000
  30.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.1000  0.1000
0.1000  0.1000  0.1000  0.1000
```

```
  40.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.1000  0.1000
0.1000  0.1000  0.1000  0.2000
  50.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.1000  0.1000
0.1000  0.1000  0.2000  0.2000
  60.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.2000  0.2000
0.2000  0.1000  0.1000  0.2000
  70.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.2000  0.2000
0.2000  0.3000  0.1000  0.2000
  80.  *  0.2000  0.0000  0.0000  0.0000  0.1000  0.0000  0.1000  0.2000  0.2000
0.2000  0.3000  0.2000  0.3000
  90.  *  0.2000  0.1000  0.1000  0.0000  0.2000  0.1000  0.1000  0.2000  0.2000
0.2000  0.3000  0.3000  0.1000
 100.  *  0.2000  0.2000  0.2000  0.2000  0.2000  0.2000  0.3000  0.2000  0.2000
0.2000  0.2000  0.3000  0.1000
 110.  *  0.2000  0.2000  0.2000  0.2000  0.3000  0.4000  0.3000  0.1000  0.1000
0.1000  0.1000  0.1000  0.0000
 120.  *  0.2000  0.2000  0.2000  0.2000  0.4000  0.3000  0.3000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 130.  *  0.2000  0.2000  0.2000  0.2000  0.3000  0.3000  0.2000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 140.  *  0.2000  0.2000  0.2000  0.2000  0.3000  0.3000  0.2000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 150.  *  0.2000  0.2000  0.2000  0.2000  0.3000  0.3000  0.2000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 160.  *  0.2000  0.2000  0.2000  0.2000  0.3000  0.3000  0.2000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 170.  *  0.2000  0.2000  0.2000  0.2000  0.3000  0.3000  0.2000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 180.  *  0.3000  0.2000  0.2000  0.2000  0.3000  0.3000  0.2000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 190.  *  0.2000  0.2000  0.2000  0.2000  0.3000  0.2000  0.2000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 200.  *  0.1000  0.3000  0.2000  0.2000  0.2000  0.2000  0.2000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.3000  0.3000  0.2000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.3000  0.3000  0.2000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.3000  0.3000  0.2000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.3000  0.3000  0.2000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.3000  0.3000  0.2000  0.3000  0.3000  0.3000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.4000  0.3000  0.2000  0.3000  0.3000  0.3000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 270.  *  0.0000  0.3000  0.4000  0.2000  0.3000  0.3000  0.3000  0.2000  0.2000
0.1000  0.1000  0.1000  0.1000
```

```
 280.  *  0.0000  0.3000  0.2000  0.2000  0.1000  0.1000  0.1000  0.3000  0.3000
0.2000  0.2000  0.2000  0.1000
 290.  *  0.0000  0.1000  0.0000  0.0000  0.1000  0.1000  0.1000  0.4000  0.4000
0.2000  0.3000  0.3000  0.3000
 300.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000
0.2000  0.2000  0.2000  0.2000
 310.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.2000  0.2000  0.2000  0.2000
 320.  *  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.2000  0.2000  0.2000  0.2000
 330.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.2000  0.1000
0.1000  0.2000  0.2000  0.2000
 340.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.1000  0.1000
0.1000  0.2000  0.1000  0.1000
 350.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.1000  0.1000
0.1000  0.3000  0.2000  0.2000
 360.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.1000  0.1000
0.1000  0.2000  0.1000  0.1000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.3000  0.4000  0.4000  0.2000  0.4000  0.4000  0.3000  0.4000  0.4000
0.2000  0.3000  0.3000  0.3000
 DEGR. *     30     260     270     100     120     110     100     290     290
60      70      90      80

 THE HIGHEST CONCENTRATION OF   0.5000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
7,8,5,5,957,957,957,957,957,957,957,957,1036.8,1036.8,1036.8,1036.8,1036.8,1036.8,10
36.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,120
0,-1200,0,0,0,0,0,0,-20,-20,-15,-10,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',69.7,83.4,5.9
'N Leg, E Side - 25 m',45.1,151.0,5.9
'N Leg, E Side - 50 m',17.0,228.1,5.9
'N Leg, E Side-Midblk',-132.1,637.8,5.9
'N Leg, W Side-Corner',-126.8,38.5,5.9
'N Leg, W Side - 25 m',-151.4,106.2,5.9
'N Leg, W Side - 50 m',-179.5,183.2,5.9
'N Leg, W Side-Midblk',-328.6,592.9,5.9
'S Leg, E Side-Corner',118.3,-50.2,5.9
'S Leg, E Side - 25 m',142.9,-117.9,5.9
'S Leg, E Side - 50 m',171.0,-195.0,5.9
'S Leg, E Side-Midblk',320.1,-604.6,5.9
'S Leg, W Side-Corner',-78.7,-93.6,5.9
'S Leg, W Side - 25 m',-54.1,-161.2,5.9
'S Leg, W Side - 50 m',-26.1,-238.3,5.9
'S Leg, W Side-Midblk',123.0,-648.0,5.9
'E Leg, N Side - 25 m',140.6,95.9,5.9
'E Leg, N Side - 50 m',221.4,110.1,5.9
'E Leg, N Side-Midblk',650.7,185.8,5.9
'W Leg, N Side - 25 m',-196.4,19.8,5.9
'W Leg, N Side - 50 m',-275.6,-1.4,5.9
'W Leg, N Side-Midblk',-696.7,-114.2,5.9
'E Leg, S Side - 25 m',189.2,-37.7,5.9
'E Leg, S Side - 50 m',270.0,-23.5,5.9
'E Leg, S Side-Midblk',699.3,52.2,5.9
'W Leg, S Side - 25 m',-148.3,-112.2,5.9
'W Leg, S Side - 50 m',-227.5,-133.4,5.9
'W Leg, S Side-Midblk',-648.6,-246.3,5.9
'2040 NB I270 & I370 (IC.36)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-45,-16,-456,1111,7990,0.61,0.0,115.7
1
'N Leg Dep - FreeFlow','AG',39,14,-371,1142,11700,1.61,0.0,103.7
1
'S Leg App - FreeFlow','AG',39,14,450,-1113,11700,0.61,0.0,103.7
1
'S Leg Dep - FreeFlow','AG',-45,-16,365,-1144,7990,1.61,0.0,115.7
1
'E Leg App - FreeFlow','AG',-6,29,1177,238,4500,0.61,0.0,79.7
1
'E Leg Dep - FreeFlow','AG',6,-29,1187,179,2330,1.21,0.0,79.7
1
```

```
'W Leg App - FreeFlow','AG',6,-29,-1151,-340,2330,0.61,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',-6,29,-1167,-282,4500,1.61,0.0,79.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NB I270 & I370 (IC.36)

DATE : 5/16/19
TIME : 7:19:51

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-45.0	-16.0	-456.0	1111.0	*	1200.	340.	AG	7990.	0.6	0.0	****		
2. N Leg Dep - FreeFlow	*	39.0	14.0	-371.0	1142.0	*	1200.	340.	AG	11700.	1.6	0.0	****		
3. S Leg App - FreeFlow	*	39.0	14.0	450.0	-1113.0	*	1200.	160.	AG	11700.	0.6	0.0	****		
4. S Leg Dep - FreeFlow	*	-45.0	-16.0	365.0	-1144.0	*	1200.	160.	AG	7990.	1.6	0.0	****		
5. E Leg App - FreeFlow	*	-6.0	29.0	1177.0	238.0	*	1201.	80.	AG	4500.	0.6	0.0	79.7		
6. E Leg Dep - FreeFlow	*	6.0	-29.0	1187.0	179.0	*	1199.	80.	AG	2330.	1.2	0.0	79.7		
7. W Leg App - FreeFlow	*	6.0	-29.0	-1151.0	-340.0	*	1198.	255.	AG	2330.	0.6	0.0	79.7		
8. W Leg Dep - FreeFlow	*	-6.0	29.0	-1167.0	-282.0	*	1202.	255.	AG	4500.	1.6	0.0	79.7		

DATE : 5/16/19
TIME : 7:19:51

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	69.7	83.4	5.9
2. N Leg, E Side - 25 m	45.1	151.0	5.9
3. N Leg, E Side - 50 m	17.0	228.1	5.9
4. N Leg, E Side-Midblk	-132.1	637.8	5.9
5. N Leg, W Side-Corner	-126.8	38.5	5.9
6. N Leg, W Side - 25 m	-151.4	106.2	5.9
7. N Leg, W Side - 50 m	-179.5	183.2	5.9
8. N Leg, W Side-Midblk	-328.6	592.9	5.9
9. S Leg, E Side-Corner	118.3	-50.2	5.9
10. S Leg, E Side - 25 m	142.9	-117.9	5.9
11. S Leg, E Side - 50 m	171.0	-195.0	5.9
12. S Leg, E Side-Midblk	320.1	-604.6	5.9
13. S Leg, W Side-Corner	-78.7	-93.6	5.9
14. S Leg, W Side - 25 m	-54.1	-161.2	5.9
15. S Leg, W Side - 50 m	-26.1	-238.3	5.9
16. S Leg, W Side-Midblk	123.0	-648.0	5.9
17. E Leg, N Side - 25 m	140.6	95.9	5.9
18. E Leg, N Side - 50 m	221.4	110.1	5.9
19. E Leg, N Side-Midblk	650.7	185.8	5.9
20. W Leg, N Side - 25 m	-196.4	19.8	5.9
21. W Leg, N Side - 50 m	-275.6	-1.4	5.9
22. W Leg, N Side-Midblk	-696.7	-114.2	5.9
23. E Leg, S Side - 25 m	189.2	-37.7	5.9
24. E Leg, S Side - 50 m	270.0	-23.5	5.9
25. E Leg, S Side-Midblk	699.3	52.2	5.9
26. W Leg, S Side - 25 m	-148.3	-112.2	5.9

27. W Leg, S Side - 50 m	*	-227.5	-133.4	5.9 *
28. W Leg, S Side-Midblk	*	-648.6	-246.3	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.1000	0.1000	0.1000	0.1000	0.5000	0.5000	0.5000	0.5000	0.1000	0.0000	0.0000	0.0000	0.7000	0.7000	0.6000
20.	*	0.1000	0.1000	0.1000	0.1000	0.4000	0.4000	0.4000	0.4000	0.1000	0.0000	0.0000	0.0000	0.7000	0.5000	0.6000
30.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.1000	0.0000	0.0000	0.0000	0.5000	0.5000	0.4000
40.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.2000	0.0000	0.0000	0.0000	0.5000	0.4000	0.4000
50.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.2000	0.1000	0.0000	0.0000	0.5000	0.4000	0.4000
60.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.2000	0.1000	0.0000	0.0000	0.6000	0.5000	0.4000
70.	*	0.1000	0.0000	0.0000	0.0000	0.5000	0.4000	0.4000	0.4000	0.2000	0.0000	0.0000	0.0000	0.5000	0.4000	0.4000
80.	*	0.1000	0.0000	0.0000	0.0000	0.6000	0.3000	0.4000	0.4000	0.1000	0.0000	0.0000	0.0000	0.5000	0.4000	0.4000
90.	*	0.2000	0.0000	0.0000	0.0000	0.7000	0.5000	0.4000	0.4000	0.1000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000
100.	*	0.2000	0.1000	0.0000	0.0000	0.5000	0.4000	0.4000	0.4000	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000
110.	*	0.2000	0.1000	0.0000	0.0000	0.6000	0.3000	0.4000	0.4000	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000
120.	*	0.2000	0.1000	0.1000	0.1000	0.5000	0.4000	0.3000	0.4000	0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000

130. * 0.2000 0.1000 0.1000 0.1000 0.6000 0.5000 0.3000 0.5000 0.0000
0.0000 0.0000 0.0000 0.5000 0.5000 0.5000
140. * 0.1000 0.1000 0.1000 0.1000 0.7000 0.5000 0.5000 0.5000 0.0000
0.0000 0.0000 0.0000 0.6000 0.6000 0.6000
150. * 0.3000 0.2000 0.3000 0.3000 0.8000 0.6000 0.5000 0.5000 0.1000
0.1000 0.1000 0.1000 0.6000 0.6000 0.6000
160. * 0.6000 0.6000 0.6000 0.8000 0.6000 0.4000 0.4000 0.3000 0.3000
0.3000 0.3000 0.2000 0.4000 0.4000 0.4000
170. * 0.7000 0.8000 0.8000 0.9000 0.3000 0.2000 0.2000 0.1000 0.5000
0.5000 0.5000 0.4000 0.2000 0.2000 0.2000
180. * 0.7000 0.7000 0.9000 0.9000 0.2000 0.1000 0.1000 0.0000 0.5000
0.5000 0.5000 0.5000 0.1000 0.1000 0.1000
190. * 0.7000 0.8000 0.7000 0.7000 0.2000 0.1000 0.1000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
200. * 0.7000 0.6000 0.9000 0.7000 0.2000 0.1000 0.1000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
210. * 0.8000 0.7000 0.7000 0.6000 0.2000 0.1000 0.1000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
220. * 0.7000 0.7000 0.7000 0.6000 0.3000 0.1000 0.1000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
230. * 0.8000 0.6000 0.6000 0.5000 0.3000 0.1000 0.1000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
240. * 0.9000 0.7000 0.7000 0.6000 0.4000 0.1000 0.1000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
250. * 0.9000 0.7000 0.6000 0.6000 0.3000 0.1000 0.0000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
260. * 0.8000 0.6000 0.6000 0.6000 0.2000 0.0000 0.0000 0.0000 0.5000
0.5000 0.4000 0.4000 0.2000 0.0000 0.0000
270. * 0.7000 0.5000 0.5000 0.5000 0.1000 0.0000 0.0000 0.0000 0.5000
0.5000 0.5000 0.4000 0.3000 0.1000 0.1000
280. * 0.6000 0.6000 0.6000 0.6000 0.0000 0.0000 0.0000 0.0000 0.5000
0.5000 0.5000 0.4000 0.3000 0.1000 0.1000
290. * 0.6000 0.6000 0.6000 0.6000 0.0000 0.0000 0.0000 0.0000 0.6000
0.5000 0.5000 0.4000 0.2000 0.1000 0.1000
300. * 0.7000 0.7000 0.7000 0.7000 0.0000 0.0000 0.0000 0.0000 0.7000
0.4000 0.5000 0.4000 0.1000 0.1000 0.1000
310. * 0.7000 0.8000 0.8000 0.7000 0.0000 0.0000 0.0000 0.0000 0.6000
0.6000 0.5000 0.4000 0.1000 0.1000 0.1000
320. * 0.9000 0.9000 0.9000 0.8000 0.0000 0.0000 0.0000 0.0000 0.7000
0.6000 0.6000 0.5000 0.1000 0.1000 0.2000
330. * 0.9000 0.9000 0.9000 0.7000 0.1000 0.1000 0.1000 0.1000 0.9000
0.7000 0.6000 0.5000 0.3000 0.2000 0.2000
340. * 0.7000 0.7000 0.6000 0.6000 0.3000 0.3000 0.3000 0.1000 0.7000
0.5000 0.4000 0.3000 0.4000 0.5000 0.5000
350. * 0.3000 0.3000 0.3000 0.3000 0.4000 0.4000 0.4000 0.3000 0.3000
0.3000 0.2000 0.2000 0.7000 0.7000 0.8000
360. * 0.1000 0.1000 0.1000 0.1000 0.5000 0.5000 0.5000 0.4000 0.1000
0.0000 0.0000 0.0000 0.7000 0.8000 0.8000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.9000  0.9000  0.9000  0.9000  0.8000  0.6000  0.5000  0.5000  0.9000
0.7000  0.6000  0.5000  0.7000  0.8000  0.8000
 DEGR. *    240     320     200     170     150     150      10      10     330
330     320     180      10     360     350
```


JOB: I-495 & I-270 MLS RUN: 2040 NB I270 & I370 (IC.36)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.3000  0.0000  0.1000  0.1000
0.1000  0.4000  0.4000  0.1000
  20.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.3000  0.1000  0.1000  0.1000
0.1000  0.4000  0.4000  0.2000
  30.  *  0.4000  0.0000  0.0000  0.0000  0.3000  0.3000  0.1000  0.1000  0.1000
0.1000  0.4000  0.4000  0.2000
  40.  *  0.4000  0.0000  0.0000  0.0000  0.3000  0.3000  0.1000  0.2000  0.2000
0.2000  0.4000  0.3000  0.3000
  50.  *  0.4000  0.0000  0.0000  0.0000  0.3000  0.3000  0.1000  0.2000  0.2000
0.2000  0.4000  0.3000  0.3000
  60.  *  0.4000  0.0000  0.0000  0.0000  0.4000  0.4000  0.2000  0.2000  0.2000
0.1000  0.3000  0.4000  0.3000
  70.  *  0.4000  0.1000  0.1000  0.0000  0.4000  0.3000  0.3000  0.2000  0.1000
0.1000  0.4000  0.1000  0.2000
  80.  *  0.4000  0.1000  0.1000  0.1000  0.6000  0.3000  0.3000  0.1000  0.1000
0.1000  0.4000  0.2000  0.1000
  90.  *  0.4000  0.2000  0.2000  0.1000  0.5000  0.5000  0.3000  0.1000  0.1000
0.0000  0.3000  0.2000  0.1000
```

```
 100.  *  0.4000  0.2000  0.2000  0.2000  0.6000  0.4000  0.4000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
 110.  *  0.4000  0.2000  0.2000  0.2000  0.5000  0.5000  0.4000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
 120.  *  0.5000  0.2000  0.2000  0.2000  0.5000  0.4000  0.3000  0.0000  0.0000
0.0000  0.3000  0.3000  0.1000
 130.  *  0.5000  0.2000  0.2000  0.2000  0.5000  0.5000  0.2000  0.0000  0.0000
0.0000  0.3000  0.3000  0.0000
 140.  *  0.6000  0.1000  0.1000  0.1000  0.5000  0.5000  0.2000  0.0000  0.0000
0.0000  0.3000  0.3000  0.0000
 150.  *  0.5000  0.1000  0.1000  0.1000  0.5000  0.3000  0.2000  0.0000  0.0000
0.0000  0.3000  0.1000  0.0000
 160.  *  0.3000  0.2000  0.1000  0.1000  0.3000  0.2000  0.2000  0.1000  0.0000
0.0000  0.1000  0.0000  0.0000
 170.  *  0.2000  0.3000  0.3000  0.1000  0.2000  0.2000  0.2000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.1000  0.4000  0.3000  0.1000  0.2000  0.2000  0.2000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  0.4000  0.3000  0.1000  0.2000  0.2000  0.2000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.4000  0.3000  0.2000  0.2000  0.2000  0.2000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.3000  0.3000  0.2000  0.2000  0.2000  0.2000  0.2000  0.2000
0.1000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.4000  0.3000  0.3000  0.3000  0.3000  0.3000  0.2000  0.2000
0.1000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.4000  0.3000  0.3000  0.3000  0.3000  0.3000  0.2000  0.2000
0.1000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.5000  0.4000  0.2000  0.4000  0.4000  0.3000  0.2000  0.2000
0.1000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.6000  0.3000  0.1000  0.3000  0.3000  0.3000  0.2000  0.2000
0.2000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.5000  0.4000  0.2000  0.2000  0.2000  0.2000  0.4000  0.4000
0.1000  0.2000  0.2000  0.2000
 270.  *  0.0000  0.5000  0.2000  0.2000  0.1000  0.1000  0.1000  0.4000  0.4000
0.2000  0.3000  0.2000  0.2000
 280.  *  0.0000  0.4000  0.2000  0.1000  0.0000  0.0000  0.0000  0.5000  0.3000
0.3000  0.3000  0.3000  0.2000
 290.  *  0.0000  0.4000  0.2000  0.1000  0.0000  0.0000  0.0000  0.4000  0.3000
0.3000  0.2000  0.2000  0.2000
 300.  *  0.0000  0.4000  0.2000  0.1000  0.0000  0.0000  0.0000  0.4000  0.3000
0.3000  0.1000  0.1000  0.1000
 310.  *  0.0000  0.4000  0.2000  0.1000  0.0000  0.0000  0.0000  0.5000  0.3000
0.2000  0.1000  0.1000  0.1000
 320.  *  0.1000  0.5000  0.2000  0.0000  0.0000  0.0000  0.0000  0.6000  0.3000
0.1000  0.1000  0.1000  0.1000
 330.  *  0.2000  0.3000  0.2000  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000
0.1000  0.1000  0.1000  0.1000
```

```
 340.  *  0.5000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.3000  0.2000
0.1000  0.2000  0.1000  0.1000
 350.  *  0.7000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.1000  0.1000
0.1000  0.3000  0.2000  0.1000
 360.  *  0.7000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.1000  0.1000
0.1000  0.4000  0.3000  0.1000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.7000  0.6000  0.4000  0.3000  0.6000  0.5000  0.4000  0.6000  0.4000
0.3000  0.4000  0.4000  0.3000
 DEGR. *    350     250     240     220      80      90     100     320     260
280      10      10      40

 THE HIGHEST CONCENTRATION OF   0.9000 PPM OCCURRED AT RECEPTOR     3.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
9,9,5,5,1425,1425,1425,1425,1425,1425,1425,1425,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-40,-40,-40,-45,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',38.6,137.6,5.9
'N Leg, E Side - 25 m',-7.7,192.8,5.9
'N Leg, E Side - 50 m',-60.4,255.6,5.9
'N Leg, E Side-Midblk',-340.7,589.6,5.9
'N Leg, W Side-Corner',-135.4,-22.2,5.9
'N Leg, W Side - 25 m',-181.7,32.9,5.9
'N Leg, W Side - 50 m',-234.4,95.8,5.9
'N Leg, W Side-Midblk',-514.6,429.7,5.9
'S Leg, E Side-Corner',128.9,29.9,5.9
'S Leg, E Side - 25 m',175.2,-25.2,5.9
'S Leg, E Side - 50 m',227.9,-88.1,5.9
'S Leg, E Side-Midblk',508.2,-422.0,5.9
'S Leg, W Side-Corner',-45.4,-129.5,5.9
'S Leg, W Side - 25 m',0.9,-184.6,5.9
'S Leg, W Side - 50 m',53.6,-247.5,5.9
'S Leg, W Side-Midblk',333.8,-581.4,5.9
'E Leg, N Side - 25 m',89.5,188.5,5.9
'E Leg, N Side - 50 m',147.5,246.5,5.9
'E Leg, N Side-Midblk',455.8,554.8,5.9
'W Leg, N Side - 25 m',-190.6,-68.5,5.9
'W Leg, N Side - 50 m',-253.4,-121.2,5.9
'W Leg, N Side-Midblk',-587.4,-401.5,5.9
'E Leg, S Side - 25 m',179.9,80.9,5.9
'E Leg, S Side - 50 m',237.8,138.9,5.9
'E Leg, S Side-Midblk',546.1,447.1,5.9
'W Leg, S Side - 25 m',-100.6,-175.8,5.9
'W Leg, S Side - 50 m',-163.4,-228.5,5.9
'W Leg, S Side-Midblk',-497.4,-508.7,5.9
'2040 NB I270 & MD189 (IC.33)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-64,-8,-813,885,9260,0.88,0.0,127.7
1
'N Leg Dep - FreeFlow','AG',64,8,-730,954,12795,0.61,0.0,127.7
1
'S Leg App - FreeFlow','AG',64,8,813,-885,12795,0.88,0.0,127.7
1
'S Leg Dep - FreeFlow','AG',-64,-8,730,-954,9260,0.61,0.0,127.7
1
'E Leg App - FreeFlow','AG',-20,22,827,870,1310,1.67,0.0,79.7
1
'E Leg Dep - FreeFlow','AG',20,-22,870,827,1100,0.71,0.0,79.7
1
```

```
'W Leg App - FreeFlow','AG',20,-22,-900,-794,1100,0.89,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',-20,22,-939,-748,1310,0.71,0.0,79.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NB I270 & MD189 (IC.33)

DATE : 5/15/19
TIME : 14:49:42

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-64.0	-8.0	-813.0	885.0	*	1166.	320.	AG	9260.	0.9	0.0	****		
2. N Leg Dep - FreeFlow	*	64.0	8.0	-730.0	954.0	*	1235.	320.	AG	12795.	0.6	0.0	****		
3. S Leg App - FreeFlow	*	64.0	8.0	813.0	-885.0	*	1166.	140.	AG	12795.	0.9	0.0	****		
4. S Leg Dep - FreeFlow	*	-64.0	-8.0	730.0	-954.0	*	1235.	140.	AG	9260.	0.6	0.0	****		
5. E Leg App - FreeFlow	*	-20.0	22.0	827.0	870.0	*	1199.	45.	AG	1310.	1.7	0.0	79.7		
6. E Leg Dep - FreeFlow	*	20.0	-22.0	870.0	827.0	*	1201.	45.	AG	1100.	0.7	0.0	79.7		
7. W Leg App - FreeFlow	*	20.0	-22.0	-900.0	-794.0	*	1201.	230.	AG	1100.	0.9	0.0	79.7		
8. W Leg Dep - FreeFlow	*	-20.0	22.0	-939.0	-748.0	*	1199.	230.	AG	1310.	0.7	0.0	79.7		

DATE : 5/15/19
TIME : 14:49:42

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	38.6	137.6	5.9
2. N Leg, E Side - 25 m	-7.7	192.8	5.9
3. N Leg, E Side - 50 m	-60.4	255.6	5.9
4. N Leg, E Side-Midblk	-340.7	589.6	5.9
5. N Leg, W Side-Corner	-135.4	-22.2	5.9
6. N Leg, W Side - 25 m	-181.7	32.9	5.9
7. N Leg, W Side - 50 m	-234.4	95.8	5.9
8. N Leg, W Side-Midblk	-514.6	429.7	5.9
9. S Leg, E Side-Corner	128.9	29.9	5.9
10. S Leg, E Side - 25 m	175.2	-25.2	5.9
11. S Leg, E Side - 50 m	227.9	-88.1	5.9
12. S Leg, E Side-Midblk	508.2	-422.0	5.9
13. S Leg, W Side-Corner	-45.4	-129.5	5.9
14. S Leg, W Side - 25 m	0.9	-184.6	5.9
15. S Leg, W Side - 50 m	53.6	-247.5	5.9
16. S Leg, W Side-Midblk	333.8	-581.4	5.9
17. E Leg, N Side - 25 m	89.5	188.5	5.9
18. E Leg, N Side - 50 m	147.5	246.5	5.9
19. E Leg, N Side-Midblk	455.8	554.8	5.9
20. W Leg, N Side - 25 m	-190.6	-68.5	5.9
21. W Leg, N Side - 50 m	-253.4	-121.2	5.9
22. W Leg, N Side-Midblk	-587.4	-401.5	5.9
23. E Leg, S Side - 25 m	179.9	80.9	5.9
24. E Leg, S Side - 50 m	237.8	138.9	5.9
25. E Leg, S Side-Midblk	546.1	447.1	5.9
26. W Leg, S Side - 25 m	-100.6	-175.8	5.9

27. W Leg, S Side - 50 m * -163.4 -228.5 5.9 *
28. W Leg, S Side-Midblk * -497.4 -508.7 5.9 *

JOB: I-495 & I-270 MLS RUN: 2040 NB I270 & MD189 (IC.33)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.2000	0.3000	0.2000
20.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000
30.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000
40.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000
50.	* 0.1000	0.0000	0.0000	0.0000	0.4000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000
60.	* 0.1000	0.0000	0.0000	0.0000	0.4000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000
70.	* 0.1000	0.0000	0.0000	0.0000	0.2000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000
80.	* 0.1000	0.0000	0.0000	0.0000	0.4000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000
90.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000
100.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000
110.	* 0.1000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000
120.	* 0.1000	0.0000	0.0000	0.0000	0.5000	0.4000	0.4000	0.4000	0.1000	0.1000	0.1000	0.1000	0.4000	0.4000	0.4000

130. * 0.2000 0.2000 0.2000 0.1000 0.4000 0.3000 0.4000 0.5000 0.2000
0.2000 0.2000 0.1000 0.3000 0.3000 0.3000
140. * 0.4000 0.3000 0.3000 0.3000 0.3000 0.3000 0.3000 0.3000 0.3000
0.3000 0.3000 0.3000 0.2000 0.2000 0.2000
150. * 0.6000 0.5000 0.5000 0.5000 0.1000 0.1000 0.1000 0.1000 0.5000
0.5000 0.5000 0.4000 0.1000 0.1000 0.1000
160. * 0.5000 0.5000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.5000
0.5000 0.5000 0.5000 0.0000 0.0000 0.0000
170. * 0.5000 0.4000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.5000
0.5000 0.5000 0.4000 0.0000 0.0000 0.0000
180. * 0.5000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
190. * 0.4000 0.2000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
200. * 0.4000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
210. * 0.3000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
220. * 0.3000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.3000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
230. * 0.3000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
240. * 0.3000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.3000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
250. * 0.3000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.3000
0.4000 0.3000 0.3000 0.0000 0.0000 0.0000
260. * 0.3000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.3000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
270. * 0.3000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.3000
0.3000 0.4000 0.4000 0.0000 0.0000 0.0000
280. * 0.3000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
290. * 0.3000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.4000
0.4000 0.5000 0.5000 0.0000 0.0000 0.0000
300. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.5000
0.5000 0.5000 0.5000 0.0000 0.0000 0.0000
310. * 0.4000 0.4000 0.4000 0.3000 0.1000 0.1000 0.1000 0.1000 0.5000
0.5000 0.5000 0.6000 0.1000 0.1000 0.0000
320. * 0.2000 0.2000 0.2000 0.2000 0.3000 0.2000 0.2000 0.2000 0.2000
0.3000 0.3000 0.4000 0.3000 0.2000 0.2000
330. * 0.1000 0.1000 0.1000 0.1000 0.4000 0.4000 0.4000 0.3000 0.1000
0.2000 0.2000 0.1000 0.4000 0.4000 0.3000
340. * 0.0000 0.0000 0.0000 0.0000 0.4000 0.4000 0.4000 0.4000 0.0000
0.0000 0.0000 0.1000 0.4000 0.3000 0.4000
350. * 0.0000 0.0000 0.0000 0.0000 0.4000 0.4000 0.4000 0.4000 0.0000
0.0000 0.0000 0.0000 0.3000 0.3000 0.3000
360. * 0.0000 0.0000 0.0000 0.0000 0.3000 0.3000 0.3000 0.3000 0.0000
0.0000 0.0000 0.0000 0.3000 0.2000 0.4000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.6000  0.5000  0.5000  0.5000  0.5000  0.4000  0.4000  0.5000  0.5000
0.5000  0.5000  0.6000  0.4000  0.4000  0.4000
 DEGR. *    150     150     150     150     120     110     110     130     150
150     150     310     100     100     100
```



```
      JOB: I-495 & I-270 MLS                                    RUN: 2040 NB I270 &
MD189 (IC.33)

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:  10.-360.

 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
  20.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
  30.  *  0.2000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
  40.  *  0.2000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
  50.  *  0.2000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
  60.  *  0.2000  0.1000  0.1000  0.1000  0.2000  0.0000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
  70.  *  0.2000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
  80.  *  0.2000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
  90.  *  0.2000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
```

```
 100.  *  0.4000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 110.  *  0.3000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 120.  *  0.3000  0.1000  0.1000  0.1000  0.2000  0.2000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 130.  *  0.3000  0.1000  0.1000  0.1000  0.2000  0.0000  0.0000  0.0000  0.0000
0.0000  0.2000  0.0000  0.0000
 140.  *  0.1000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 150.  *  0.1000  0.3000  0.2000  0.1000  0.0000  0.0000  0.0000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 160.  *  0.0000  0.4000  0.2000  0.1000  0.0000  0.0000  0.0000  0.3000  0.1000
0.0000  0.0000  0.0000  0.0000
 170.  *  0.0000  0.4000  0.3000  0.1000  0.0000  0.0000  0.0000  0.3000  0.1000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.0000  0.4000  0.2000  0.2000  0.0000  0.0000  0.0000  0.3000  0.1000
0.1000  0.0000  0.0000  0.0000
 190.  *  0.0000  0.4000  0.2000  0.2000  0.0000  0.0000  0.0000  0.3000  0.1000
0.1000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.3000  0.1000
0.1000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.3000  0.1000
0.1000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 270.  *  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 280.  *  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 290.  *  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 300.  *  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 310.  *  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 320.  *  0.3000  0.1000  0.0000  0.0000  0.1000  0.0000  0.0000  0.1000  0.0000
0.0000  0.1000  0.0000  0.0000
 330.  *  0.4000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
```

```
 340.  *  0.3000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 350.  *  0.4000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000
 360.  *  0.4000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.0000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.4000  0.4000  0.3000  0.2000  0.3000  0.2000  0.0000  0.3000  0.2000
0.1000  0.2000  0.2000  0.0000
 DEGR. *    100     160     170     180     340      10      10     160     260
180      10      10      10

 THE HIGHEST CONCENTRATION OF   0.6000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,5,7,7,981,981,981,981,981,981,981,981,1036.8,1036.8,1036.8,1036.8,1036.8,1036.8,10
36.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,120
0,-1200,0,0,0,0,0,0,10,10,-10,-10,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',90.7,111.4,5.9
'N Leg, E Side - 25 m',103.2,182.4,5.9
'N Leg, E Side - 50 m',117.5,263.2,5.9
'N Leg, E Side-Midblk',193.2,692.5,5.9
'N Leg, W Side-Corner',-56.0,85.6,5.9
'N Leg, W Side - 25 m',-43.5,156.5,5.9
'N Leg, W Side - 50 m',-29.2,237.3,5.9
'N Leg, W Side-Midblk',46.5,666.6,5.9
'S Leg, E Side-Corner',56.0,-85.6,5.9
'S Leg, E Side - 25 m',43.5,-156.5,5.9
'S Leg, E Side - 50 m',29.2,-237.3,5.9
'S Leg, E Side-Midblk',-46.5,-666.6,5.9
'S Leg, W Side-Corner',-90.7,-111.4,5.9
'S Leg, W Side - 25 m',-103.2,-182.4,5.9
'S Leg, W Side - 50 m',-117.5,-263.2,5.9
'S Leg, W Side-Midblk',-193.2,-692.5,5.9
'E Leg, N Side - 25 m',161.7,124.0,5.9
'E Leg, N Side - 50 m',242.4,138.2,5.9
'E Leg, N Side-Midblk',671.8,213.9,5.9
'W Leg, N Side - 25 m',-126.9,73.1,5.9
'W Leg, N Side - 50 m',-207.7,58.8,5.9
'W Leg, N Side-Midblk',-637.0,-16.9,5.9
'E Leg, S Side - 25 m',126.9,-73.1,5.9
'E Leg, S Side - 50 m',207.7,-58.8,5.9
'E Leg, S Side-Midblk',637.0,16.9,5.9
'W Leg, S Side - 25 m',-161.7,-124.0,5.9
'W Leg, S Side - 50 m',-242.4,-138.2,5.9
'W Leg, S Side-Midblk',-671.8,-213.9,5.9
'2040 NB I495 & I95 (IC.16)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-30,5,179,1187,7715,0.61,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',30,-5,238,1177,7715,1.44,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,-5,-179,-1187,7715,0.61,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-30,5,-238,-1177,7715,0.61,0.0,79.7
1
'E Leg App - FreeFlow','AG',-7,41,1174,250,9145,1.21,0.0,103.7
1
'E Leg Dep - FreeFlow','AG',7,-41,1189,167,8800,0.61,0.0,103.7
1
```

```
'W Leg App - FreeFlow','AG',7,-41,-1174,-250,8800,0.61,0.0,103.7
1
'W Leg Dep - FreeFlow','AG',-7,41,-1189,-167,9145,1.61,0.0,103.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & I95 (IC.16)

DATE : 5/15/19
TIME : 10:10:21

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-30.0	5.0	179.0	1187.0	*	1200.	10.	AG	7715.	0.6	0.0	79.7		
2. N Leg Dep - FreeFlow	*	30.0	-5.0	238.0	1177.0	*	1200.	10.	AG	7715.	1.4	0.0	79.7		
3. S Leg App - FreeFlow	*	30.0	-5.0	-179.0	-1187.0	*	1200.	190.	AG	7715.	0.6	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-30.0	5.0	-238.0	-1177.0	*	1200.	190.	AG	7715.	0.6	0.0	79.7		
5. E Leg App - FreeFlow	*	-7.0	41.0	1174.0	250.0	*	1199.	80.	AG	9145.	1.2	0.0	****		
6. E Leg Dep - FreeFlow	*	7.0	-41.0	1189.0	167.0	*	1200.	80.	AG	8800.	0.6	0.0	****		
7. W Leg App - FreeFlow	*	7.0	-41.0	-1174.0	-250.0	*	1199.	260.	AG	8800.	0.6	0.0	****		
8. W Leg Dep - FreeFlow	*	-7.0	41.0	-1189.0	-167.0	*	1200.	260.	AG	9145.	1.6	0.0	****		

PAGE 2
JOB: I-495 & I-270 MLS RUN: 2040 NB I495 &

DATE : 5/15/19
TIME : 10:10:21

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	90.7	111.4	5.9
2. N Leg, E Side - 25 m	103.2	182.4	5.9
3. N Leg, E Side - 50 m	117.5	263.2	5.9
4. N Leg, E Side-Midblk	193.2	692.5	5.9
5. N Leg, W Side-Corner	-56.0	85.6	5.9
6. N Leg, W Side - 25 m	-43.5	156.5	5.9
7. N Leg, W Side - 50 m	-29.2	237.3	5.9
8. N Leg, W Side-Midblk	46.5	666.6	5.9
9. S Leg, E Side-Corner	56.0	-85.6	5.9
10. S Leg, E Side - 25 m	43.5	-156.5	5.9
11. S Leg, E Side - 50 m	29.2	-237.3	5.9
12. S Leg, E Side-Midblk	-46.5	-666.6	5.9
13. S Leg, W Side-Corner	-90.7	-111.4	5.9
14. S Leg, W Side - 25 m	-103.2	-182.4	5.9
15. S Leg, W Side - 50 m	-117.5	-263.2	5.9
16. S Leg, W Side-Midblk	-193.2	-692.5	5.9
17. E Leg, N Side - 25 m	161.7	124.0	5.9
18. E Leg, N Side - 50 m	242.4	138.2	5.9
19. E Leg, N Side-Midblk	671.8	213.9	5.9
20. W Leg, N Side - 25 m	-126.9	73.1	5.9
21. W Leg, N Side - 50 m	-207.7	58.8	5.9
22. W Leg, N Side-Midblk	-637.0	-16.9	5.9
23. E Leg, S Side - 25 m	126.9	-73.1	5.9
24. E Leg, S Side - 50 m	207.7	-58.8	5.9
25. E Leg, S Side-Midblk	637.0	16.9	5.9
26. W Leg, S Side - 25 m	-161.7	-124.0	5.9

27. W Leg, S Side - 50 m * -242.4 -138.2 5.9 *
28. W Leg, S Side-Midblk * -671.8 -213.9 5.9 *

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & I95 (IC.16)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.5000	0.5000	0.4000	0.4000	0.3000	0.3000	0.3000	0.3000	0.8000	0.6000	0.5000	0.3000	0.6000	0.5000	0.5000
20.	* 0.2000	0.2000	0.2000	0.2000	0.4000	0.4000	0.4000	0.3000	0.5000	0.4000	0.4000	0.1000	0.7000	0.7000	0.6000
30.	* 0.1000	0.1000	0.1000	0.1000	0.4000	0.4000	0.4000	0.4000	0.3000	0.2000	0.2000	0.1000	0.7000	0.7000	0.5000
40.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.4000	0.2000	0.2000	0.0000	0.7000	0.5000	0.4000
50.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.4000	0.2000	0.2000	0.0000	0.8000	0.5000	0.5000
60.	* 0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.4000	0.2000	0.2000	0.0000	0.6000	0.4000	0.4000
70.	* 0.2000	0.0000	0.0000	0.0000	0.4000	0.3000	0.3000	0.3000	0.4000	0.2000	0.1000	0.0000	0.6000	0.4000	0.4000
80.	* 0.4000	0.1000	0.0000	0.0000	0.7000	0.4000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.5000	0.2000	0.2000
90.	* 0.6000	0.2000	0.1000	0.0000	0.9000	0.5000	0.4000	0.3000	0.1000	0.0000	0.0000	0.0000	0.3000	0.2000	0.2000
100.	* 0.5000	0.3000	0.1000	0.0000	0.9000	0.6000	0.4000	0.3000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000
110.	* 0.5000	0.3000	0.2000	0.0000	0.9000	0.6000	0.5000	0.3000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000
120.	* 0.4000	0.3000	0.2000	0.0000	0.8000	0.6000	0.5000	0.4000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000

130. * 0.4000 0.3000 0.1000 0.1000 0.7000 0.6000 0.4000 0.4000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
140. * 0.4000 0.3000 0.1000 0.1000 0.7000 0.6000 0.4000 0.4000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
150. * 0.4000 0.3000 0.1000 0.1000 0.7000 0.5000 0.5000 0.5000 0.0000
0.0000 0.0000 0.0000 0.3000 0.3000 0.3000
160. * 0.4000 0.3000 0.1000 0.1000 0.8000 0.6000 0.5000 0.5000 0.0000
0.0000 0.0000 0.0000 0.3000 0.3000 0.3000
170. * 0.5000 0.4000 0.2000 0.2000 0.8000 0.6000 0.6000 0.4000 0.0000
0.0000 0.0000 0.0000 0.3000 0.3000 0.3000
180. * 0.6000 0.4000 0.3000 0.3000 0.9000 0.6000 0.5000 0.4000 0.1000
0.1000 0.1000 0.1000 0.3000 0.3000 0.3000
190. * 0.8000 0.8000 0.5000 0.4000 0.8000 0.6000 0.3000 0.3000 0.2000
0.2000 0.2000 0.2000 0.2000 0.2000 0.2000
200. * 0.9000 0.8000 0.7000 0.6000 0.6000 0.4000 0.3000 0.2000 0.3000
0.3000 0.3000 0.3000 0.1000 0.1000 0.1000
210. * 0.8000 0.7000 0.7000 0.7000 0.5000 0.3000 0.2000 0.1000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
220. * 1.0000 0.8000 0.6000 0.6000 0.5000 0.4000 0.3000 0.1000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
230. * 1.1000 0.9000 0.8000 0.6000 0.6000 0.4000 0.3000 0.1000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
240. * 1.0000 0.8000 0.6000 0.4000 0.7000 0.4000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
250. * 1.1000 0.7000 0.5000 0.4000 0.7000 0.2000 0.1000 0.0000 0.3000
0.2000 0.2000 0.2000 0.1000 0.0000 0.0000
260. * 0.8000 0.5000 0.5000 0.4000 0.5000 0.1000 0.0000 0.0000 0.5000
0.2000 0.2000 0.2000 0.3000 0.0000 0.0000
270. * 0.6000 0.4000 0.4000 0.4000 0.2000 0.0000 0.0000 0.0000 0.6000
0.4000 0.3000 0.2000 0.4000 0.2000 0.1000
280. * 0.4000 0.4000 0.4000 0.4000 0.1000 0.0000 0.0000 0.0000 0.8000
0.5000 0.4000 0.2000 0.5000 0.3000 0.2000
290. * 0.4000 0.4000 0.4000 0.4000 0.1000 0.0000 0.0000 0.0000 0.7000
0.5000 0.4000 0.2000 0.5000 0.3000 0.2000
300. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.6000
0.5000 0.4000 0.3000 0.4000 0.3000 0.2000
310. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.6000
0.5000 0.4000 0.3000 0.3000 0.3000 0.2000
320. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.5000
0.5000 0.4000 0.3000 0.3000 0.3000 0.2000
330. * 0.5000 0.5000 0.5000 0.5000 0.0000 0.0000 0.0000 0.0000 0.6000
0.5000 0.5000 0.4000 0.3000 0.3000 0.2000
340. * 0.5000 0.5000 0.5000 0.5000 0.0000 0.0000 0.0000 0.0000 0.7000
0.5000 0.5000 0.4000 0.3000 0.3000 0.2000
350. * 0.6000 0.6000 0.6000 0.6000 0.0000 0.0000 0.0000 0.0000 0.7000
0.8000 0.5000 0.4000 0.3000 0.3000 0.2000
360. * 0.7000 0.7000 0.7000 0.6000 0.1000 0.1000 0.1000 0.1000 0.9000
0.7000 0.6000 0.4000 0.4000 0.4000 0.3000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.1000  0.9000  0.8000  0.7000  0.9000  0.6000  0.6000  0.5000  0.9000
0.8000  0.6000  0.4000  0.8000  0.7000  0.6000
 DEGR. *    230     230     230     210      90     100     170     150     360
350     360     330      50      20      20
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000
0.3000  0.4000  0.3000  0.3000
  20.  *  0.4000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.3000  0.3000
0.3000  0.5000  0.4000  0.3000
  30.  *  0.3000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.3000  0.3000
0.3000  0.6000  0.5000  0.3000
  40.  *  0.4000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.4000  0.4000
0.4000  0.7000  0.6000  0.4000
  50.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.2000  0.2000  0.4000  0.4000
0.4000  0.6000  0.6000  0.5000
  60.  *  0.2000  0.1000  0.1000  0.1000  0.3000  0.3000  0.2000  0.4000  0.4000
0.4000  0.7000  0.5000  0.4000
  70.  *  0.2000  0.2000  0.2000  0.2000  0.4000  0.4000  0.2000  0.4000  0.3000
0.3000  0.5000  0.5000  0.5000
  80.  *  0.2000  0.4000  0.4000  0.3000  0.6000  0.7000  0.6000  0.3000  0.3000
0.2000  0.5000  0.4000  0.4000
  90.  *  0.2000  0.6000  0.6000  0.4000  0.9000  0.8000  0.8000  0.1000  0.1000
0.1000  0.2000  0.2000  0.1000
```

```
 100.  *  0.2000  0.5000  0.5000  0.5000  0.8000  0.7000  0.7000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 110.  *  0.2000  0.5000  0.5000  0.5000  0.8000  0.7000  0.6000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 120.  *  0.2000  0.4000  0.4000  0.4000  0.7000  0.5000  0.6000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 130.  *  0.2000  0.4000  0.4000  0.4000  0.4000  0.5000  0.5000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 140.  *  0.2000  0.4000  0.4000  0.4000  0.7000  0.6000  0.5000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 150.  *  0.3000  0.4000  0.4000  0.4000  0.6000  0.5000  0.4000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 160.  *  0.3000  0.4000  0.4000  0.4000  0.7000  0.6000  0.5000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 170.  *  0.3000  0.4000  0.4000  0.4000  0.7000  0.6000  0.5000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 180.  *  0.3000  0.4000  0.4000  0.4000  0.7000  0.5000  0.5000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 190.  *  0.2000  0.4000  0.4000  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.1000  0.6000  0.4000  0.4000  0.5000  0.5000  0.5000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.6000  0.5000  0.4000  0.5000  0.5000  0.5000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.7000  0.5000  0.4000  0.6000  0.6000  0.6000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.6000  0.5000  0.5000  0.6000  0.6000  0.6000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.8000  0.7000  0.5000  0.7000  0.7000  0.7000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.9000  0.7000  0.7000  0.7000  0.7000  0.6000  0.3000  0.1000
0.1000  0.1000  0.1000  0.1000
 260.  *  0.0000  0.8000  0.5000  0.5000  0.5000  0.5000  0.4000  0.5000  0.4000
0.3000  0.3000  0.3000  0.2000
 270.  *  0.0000  0.5000  0.3000  0.2000  0.2000  0.2000  0.2000  0.6000  0.4000
0.4000  0.4000  0.4000  0.3000
 280.  *  0.0000  0.3000  0.2000  0.2000  0.1000  0.1000  0.1000  0.6000  0.5000
0.5000  0.5000  0.5000  0.4000
 290.  *  0.0000  0.3000  0.1000  0.1000  0.1000  0.1000  0.1000  0.5000  0.6000
0.5000  0.5000  0.4000  0.4000
 300.  *  0.0000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.5000  0.5000
0.5000  0.4000  0.4000  0.4000
 310.  *  0.1000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.3000
 320.  *  0.1000  0.3000  0.1000  0.1000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.3000
 330.  *  0.1000  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000  0.5000  0.4000
0.4000  0.3000  0.3000  0.3000
```

```
 340.  *  0.1000  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000  0.6000  0.4000
0.3000  0.3000  0.3000  0.3000
 350.  *  0.1000  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000  0.6000  0.4000
0.3000  0.3000  0.3000  0.3000
 360.  *  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.0000  0.6000  0.4000
0.3000  0.3000  0.3000  0.3000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.4000  0.9000  0.7000  0.7000  0.9000  0.8000  0.8000  0.6000  0.6000
0.5000  0.7000  0.6000  0.5000
 DEGR. *     20     250     240     250      90      90      90     270     290
280      40      40      50

 THE HIGHEST CONCENTRATION OF   1.1000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
6,6,8,8,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-10,-5,-10,35,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,35,0.3048,1,0
'N Leg, E Side-Corner',75.6,76.4,5.9
'N Leg, E Side - 25 m',69.3,148.2,5.9
'N Leg, E Side - 50 m',62.2,229.9,5.9
'N Leg, E Side-Midblk',24.2,664.2,5.9
'S Leg, E Side-Corner',121.0,-214.1,5.9
'S Leg, E Side - 25 m',133.5,-285.1,5.9
'S Leg, E Side - 50 m',147.8,-365.8,5.9
'S Leg, E Side-Midblk',223.5,-795.2,5.9
'S Leg, W Side-Corner',-62.3,-118.6,5.9
'S Leg, W Side - 25 m',-49.8,-189.6,5.9
'S Leg, W Side - 50 m',-35.6,-270.3,5.9
'S Leg, W Side-Midblk',40.1,-699.7,5.9
'E Leg, N Side - 25 m',134.6,35.1,5.9
'E Leg, N Side - 50 m',201.8,-11.9,5.9
'E Leg, N Side-Midblk',558.9,-262.0,5.9
'E Leg, S Side - 25 m',180.0,-255.5,5.9
'E Leg, S Side - 50 m',247.2,-302.5,5.9
'E Leg, S Side-Midblk',604.3,-552.6,5.9
'W Leg, S Side - 25 m',-133.3,-131.1,5.9
'W Leg, S Side - 50 m',-214.0,-145.4,5.9
'W Leg, S Side-Midblk',-643.4,-221.1,5.9
'New1',-101.3,217.3,5.9
'New2',-107.6,289,5.9
'New3',-114.7,370.7,5.9
'New4',-152.7,805,5.9
'New5',-152.3,268.2,5.9
'New6',-210.2,326.2,5.9
'New7',-518.5,634.5,5.9
'New8',-190.1,74.1,5.9
'New9',-241,125,5.9
'New10',-299,183,5.9
'New11',-607.3,491.3,5.9
'New12',-261,61.6,5.9
'New13',-341.8,47.4,5.9
'New14',-771.1,-28.3,5.9
'2040 NB I495 & I270/MD355 (IC.22)',10,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-36,-5,-140,1192,2825,1.15,0.0,91.7
1
'N Leg Dep - FreeFlow','AG',36,5,-69,1199,2010,0.62,0.0,91.7
1
'S Leg App - FreeFlow','AG',36,5,244,-1176,2825,0.62,0.0,91.7
```

```
1
'S Leg Dep - FreeFlow','AG',-36,-5,173,-1188,2010,0.62,0.0,91.7
1
'E Leg App - FreeFlow','AG',11,51,1011,-649,8245,0.61,0.0,115.7
1
'E Leg Dep - FreeFlow','AG',-11,-51,955,-728,4395,0.88,0.0,115.7
1
'W Leg App - FreeFlow','AG',-11,-51,-1173,-256,4395,0.61,0.0,115.7
1
'W Leg Dep - FreeFlow','AG',11,51,-1190,-161,8245,2.04,0.0,115.7
1
'I-270 App - FreeFlow','AG',-23,-28,-874,823,4850,0.61,0.0,91.7
1
'I-270 App - FreeFlow','AG',23,28,-823,874,4850,2.04,0.0,91.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & I270/MD355 (IC.22)

DATE : 5/15/19
TIME : 14:32: 3

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-36.0	-5.0	-140.0	1192.0	*	1202.	355.	AG	2825.	1.1	0.0	91.7		
2. N Leg Dep - FreeFlow	*	36.0	5.0	-69.0	1199.0	*	1199.	355.	AG	2010.	0.6	0.0	91.7		
3. S Leg App - FreeFlow	*	36.0	5.0	244.0	-1176.0	*	1199.	170.	AG	2825.	0.6	0.0	91.7		
4. S Leg Dep - FreeFlow	*	-36.0	-5.0	173.0	-1188.0	*	1201.	170.	AG	2010.	0.6	0.0	91.7		
5. E Leg App - FreeFlow	*	11.0	51.0	1011.0	-649.0	*	1221.	125.	AG	8245.	0.6	0.0	****		
6. E Leg Dep - FreeFlow	*	-11.0	-51.0	955.0	-728.0	*	1180.	125.	AG	4395.	0.9	0.0	****		
7. W Leg App - FreeFlow	*	-11.0	-51.0	-1173.0	-256.0	*	1180.	260.	AG	4395.	0.6	0.0	****		
8. W Leg Dep - FreeFlow	*	11.0	51.0	-1190.0	-161.0	*	1220.	260.	AG	8245.	2.0	0.0	****		
9. I-270 App - FreeFlow	*	-23.0	-28.0	-874.0	823.0	*	1203.	315.	AG	4850.	0.6	0.0	91.7		
10. I-270 App - FreeFlow	*	23.0	28.0	-823.0	874.0	*	1196.								

315. AG   4850.   2.0   0.0 91.7
↟

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & I270/MD355 (IC.22)

DATE : 5/15/19
TIME : 14:32: 3

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	75.6	76.4	5.9
2. N Leg, E Side - 25 m	69.3	148.2	5.9
3. N Leg, E Side - 50 m	62.2	229.9	5.9
4. N Leg, E Side-Midblk	24.2	664.2	5.9
5. S Leg, E Side-Corner	121.0	-214.1	5.9
6. S Leg, E Side - 25 m	133.5	-285.1	5.9
7. S Leg, E Side - 50 m	147.8	-365.8	5.9
8. S Leg, E Side-Midblk	223.5	-795.2	5.9
9. S Leg, W Side-Corner	-62.3	-118.6	5.9
10. S Leg, W Side - 25 m	-49.8	-189.6	5.9
11. S Leg, W Side - 50 m	-35.6	-270.3	5.9
12. S Leg, W Side-Midblk	40.1	-699.7	5.9
13. E Leg, N Side - 25 m	134.6	35.1	5.9
14. E Leg, N Side - 50 m	201.8	-11.9	5.9
15. E Leg, N Side-Midblk	558.9	-262.0	5.9
16. E Leg, S Side - 25 m	180.0	-255.5	5.9
17. E Leg, S Side - 50 m	247.2	-302.5	5.9
18. E Leg, S Side-Midblk	604.3	-552.6	5.9
19. W Leg, S Side - 25 m	-133.3	-131.1	5.9
20. W Leg, S Side - 50 m	-214.0	-145.4	5.9
21. W Leg, S Side-Midblk	-643.4	-221.1	5.9
22. New1	-101.3	217.3	5.9

23. New2	*	-107.6	289.0	5.9	*
24. New3	*	-114.7	370.7	5.9	*
25. New4	*	-152.7	805.0	5.9	*
26. New5	*	-152.3	268.2	5.9	*
27. New6	*	-210.2	326.2	5.9	*
28. New7	*	-518.5	634.5	5.9	*
29. New8	*	-190.1	74.1	5.9	*
30. New9	*	-241.0	125.0	5.9	*
31. New10	*	-299.0	183.0	5.9	*
32. New11	*	-607.3	491.3	5.9	*
33. New12	*	-261.0	61.6	5.9	*
34. New13	*	-341.8	47.4	5.9	*
35. New14	*	-771.1	-28.3	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000	0.0000	0.5000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000
20.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.3000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
30.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
50.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
60.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000	0.0000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000
70.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.0000	0.0000	0.2000						

0.2000 0.0000 0.0000 0.0000 0.0000 0.0000
80. * 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000 0.1000 0.0000 0.2000
0.2000 0.0000 0.0000 0.0000 0.0000 0.0000
90. * 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000 0.2000 0.0000 0.2000
0.2000 0.0000 0.0000 0.0000 0.0000 0.0000
100. * 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000 0.1000 0.0000 0.2000
0.2000 0.1000 0.0000 0.0000 0.0000 0.0000
110. * 0.0000 0.0000 0.0000 0.0000 0.3000 0.1000 0.0000 0.0000 0.2000
0.1000 0.0000 0.0000 0.0000 0.0000 0.0000
120. * 0.1000 0.0000 0.0000 0.0000 0.1000 0.1000 0.0000 0.0000 0.1000
0.0000 0.0000 0.0000 0.1000 0.1000 0.1000
130. * 0.2000 0.1000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
140. * 0.3000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.3000 0.3000 0.2000
150. * 0.3000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000
0.1000 0.1000 0.1000 0.3000 0.3000 0.3000
160. * 0.3000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.1000
0.1000 0.1000 0.1000 0.3000 0.3000 0.3000
170. * 0.2000 0.1000 0.1000 0.0000 0.1000 0.1000 0.1000 0.1000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
180. * 0.3000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
190. * 0.2000 0.1000 0.2000 0.3000 0.1000 0.1000 0.1000 0.1000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
200. * 0.1000 0.3000 0.2000 0.3000 0.1000 0.1000 0.1000 0.1000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
210. * 0.1000 0.3000 0.3000 0.3000 0.1000 0.1000 0.1000 0.1000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
220. * 0.3000 0.3000 0.4000 0.3000 0.1000 0.1000 0.1000 0.1000 0.0000
0.0000 0.0000 0.0000 0.1000 0.2000 0.2000
230. * 0.4000 0.4000 0.4000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.1000 0.2000 0.2000
240. * 0.8000 0.7000 0.5000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
250. * 0.9000 0.6000 0.3000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.0000 0.4000 0.2000 0.2000
260. * 0.9000 0.5000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.2000
0.0000 0.0000 0.0000 0.6000 0.4000 0.2000
270. * 0.7000 0.3000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.3000
0.1000 0.1000 0.0000 0.6000 0.4000 0.4000
280. * 0.6000 0.2000 0.1000 0.0000 0.2000 0.1000 0.1000 0.0000 0.4000
0.2000 0.1000 0.0000 0.6000 0.5000 0.4000
290. * 0.5000 0.3000 0.2000 0.1000 0.2000 0.1000 0.1000 0.0000 0.4000
0.2000 0.2000 0.0000 0.4000 0.4000 0.3000
300. * 0.4000 0.3000 0.2000 0.1000 0.3000 0.2000 0.2000 0.2000 0.4000
0.2000 0.1000 0.1000 0.4000 0.4000 0.4000
310. * 0.3000 0.2000 0.2000 0.1000 0.5000 0.2000 0.2000 0.2000 0.3000

```
0.2000  0.1000  0.1000  0.2000  0.3000  0.2000
 320.  *  0.2000  0.1000  0.1000  0.1000  0.5000  0.3000  0.3000  0.2000  0.5000
0.3000  0.1000  0.1000  0.1000  0.1000  0.0000
 330.  *  0.1000  0.1000  0.1000  0.1000  0.4000  0.4000  0.3000  0.2000  0.5000
0.4000  0.2000  0.1000  0.0000  0.0000  0.0000
 340.  *  0.2000  0.2000  0.2000  0.1000  0.4000  0.4000  0.3000  0.1000  0.5000
0.4000  0.2000  0.2000  0.0000  0.0000  0.0000
 350.  *  0.1000  0.1000  0.1000  0.0000  0.2000  0.1000  0.1000  0.1000  0.6000
0.4000  0.2000  0.1000  0.0000  0.0000  0.0000
 360.  *  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.0000  0.6000
0.3000  0.3000  0.1000  0.0000  0.0000  0.0000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.9000  0.7000  0.5000  0.3000  0.5000  0.4000  0.3000  0.2000  0.6000
0.4000  0.3000  0.2000  0.6000  0.5000  0.4000
 DEGR. *    260     240     240     190     310     330     320     300     350
330     360     340     260     280     270
```


JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & I270/MD355 (IC.22)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
WIND  * CONCENTRATION
ANGLE *     (PPM)
(DEGR)*      16      17      18      19      20      21      22      23      24
25      26      27      28      29      30

------*-------------------------------------------------------------------------
----------------------------------------
  10.  *  0.2000  0.2000  0.2000  0.5000  0.4000  0.3000  0.1000  0.1000  0.1000
0.1000  0.1000  0.0000  0.0000  0.3000  0.3000
  20.  *  0.2000  0.2000  0.2000  0.5000  0.4000  0.3000  0.1000  0.1000  0.1000
0.1000  0.1000  0.1000  0.0000  0.4000  0.3000
  30.  *  0.2000  0.2000  0.2000  0.4000  0.4000  0.3000  0.1000  0.1000  0.1000
0.1000  0.1000  0.0000  0.0000  0.3000  0.3000
  40.  *  0.2000  0.2000  0.2000  0.3000  0.4000  0.3000  0.1000  0.1000  0.1000
```

```
0.1000  0.1000  0.0000  0.0000  0.3000  0.3000
  50.  *  0.2000  0.2000  0.2000  0.2000  0.2000  0.4000  0.1000  0.1000  0.1000
0.1000  0.1000  0.0000  0.0000  0.4000  0.3000
  60.  *  0.2000  0.2000  0.2000  0.1000  0.2000  0.3000  0.1000  0.1000  0.1000
0.1000  0.1000  0.0000  0.0000  0.3000  0.2000
  70.  *  0.2000  0.2000  0.2000  0.1000  0.1000  0.2000  0.1000  0.1000  0.1000
0.1000  0.1000  0.0000  0.0000  0.4000  0.3000
  80.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.1000  0.1000  0.1000  0.1000
0.1000  0.1000  0.0000  0.0000  0.6000  0.3000
  90.  *  0.2000  0.2000  0.2000  0.2000  0.0000  0.0000  0.1000  0.1000  0.1000
0.1000  0.1000  0.0000  0.0000  0.6000  0.4000
 100.  *  0.2000  0.2000  0.2000  0.2000  0.1000  0.0000  0.1000  0.1000  0.1000
0.1000  0.1000  0.0000  0.0000  0.8000  0.3000
 110.  *  0.3000  0.3000  0.1000  0.1000  0.0000  0.0000  0.1000  0.1000  0.1000
0.1000  0.1000  0.0000  0.0000  0.8000  0.5000
 120.  *  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.3000  0.1000  0.1000
0.1000  0.2000  0.1000  0.1000  0.8000  0.7000
 130.  *  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.4000  0.2000  0.1000
0.1000  0.4000  0.3000  0.3000  0.6000  0.5000
 140.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.7000  0.2000  0.2000
0.1000  0.6000  0.5000  0.4000  0.4000  0.4000
 150.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.6000  0.4000  0.1000
0.1000  0.6000  0.5000  0.5000  0.4000  0.3000
 160.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.6000  0.4000  0.3000
0.1000  0.5000  0.5000  0.6000  0.4000  0.3000
 170.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.6000  0.4000  0.3000
0.1000  0.5000  0.4000  0.5000  0.4000  0.3000
 180.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.6000  0.5000  0.3000
0.3000  0.5000  0.4000  0.5000  0.4000  0.3000
 190.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.5000  0.4000  0.2000
0.2000  0.5000  0.4000  0.4000  0.4000  0.3000
 200.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.2000
0.2000  0.4000  0.3000  0.3000  0.4000  0.3000
 210.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.2000
0.2000  0.4000  0.3000  0.3000  0.4000  0.3000
 220.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.5000  0.4000  0.2000
0.2000  0.5000  0.4000  0.3000  0.5000  0.3000
 230.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.5000  0.4000  0.2000
0.1000  0.5000  0.4000  0.3000  0.6000  0.3000
 240.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000  0.2000
0.1000  0.4000  0.3000  0.2000  0.7000  0.3000
 250.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000  0.1000
0.1000  0.3000  0.3000  0.2000  0.7000  0.3000
 260.  *  0.0000  0.0000  0.0000  0.2000  0.2000  0.1000  0.4000  0.2000  0.1000
0.1000  0.3000  0.3000  0.3000  0.5000  0.1000
 270.  *  0.1000  0.0000  0.0000  0.3000  0.3000  0.2000  0.4000  0.2000  0.1000
0.0000  0.4000  0.4000  0.3000  0.3000  0.0000
 280.  *  0.1000  0.1000  0.0000  0.4000  0.4000  0.3000  0.4000  0.2000  0.2000
```

```
0.0000  0.4000  0.4000  0.3000  0.1000  0.0000
 290.  *  0.1000  0.1000  0.1000  0.4000  0.4000  0.3000  0.5000  0.2000  0.2000
0.0000  0.5000  0.5000  0.4000  0.1000  0.0000
 300.  *  0.2000  0.2000  0.2000  0.4000  0.4000  0.3000  0.6000  0.2000  0.1000
0.0000  0.6000  0.4000  0.4000  0.0000  0.0000
 310.  *  0.3000  0.3000  0.3000  0.3000  0.3000  0.3000  0.4000  0.2000  0.1000
0.0000  0.4000  0.4000  0.3000  0.1000  0.1000
 320.  *  0.3000  0.3000  0.4000  0.3000  0.3000  0.3000  0.3000  0.1000  0.0000
0.0000  0.3000  0.3000  0.2000  0.2000  0.2000
 330.  *  0.3000  0.3000  0.2000  0.4000  0.4000  0.3000  0.1000  0.0000  0.0000
0.0000  0.1000  0.1000  0.1000  0.3000  0.3000
 340.  *  0.3000  0.2000  0.2000  0.4000  0.4000  0.3000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
 350.  *  0.2000  0.2000  0.2000  0.4000  0.4000  0.3000  0.1000  0.1000  0.1000
0.1000  0.0000  0.0000  0.0000  0.3000  0.3000
 360.  *  0.2000  0.2000  0.2000  0.4000  0.4000  0.3000  0.1000  0.1000  0.1000
0.1000  0.1000  0.0000  0.0000  0.3000  0.3000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.3000  0.3000  0.4000  0.5000  0.4000  0.4000  0.7000  0.5000  0.3000
0.3000  0.6000  0.5000  0.6000  0.8000  0.7000
 DEGR. *    110     110     320      10      10      50     140     180     160
180     140     140     160     100     120
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 31	32	33	34	35
10.	0.3000	0.3000	0.2000	0.1000	0.0000
20.	0.3000	0.3000	0.2000	0.1000	0.0000
30.	0.3000	0.3000	0.1000	0.1000	0.0000
40.	0.3000	0.3000	0.1000	0.1000	0.0000

50.	*	0.3000	0.3000	0.2000	0.2000	0.1000
60.	*	0.3000	0.3000	0.2000	0.2000	0.1000
70.	*	0.3000	0.3000	0.4000	0.3000	0.2000
80.	*	0.3000	0.3000	0.5000	0.5000	0.5000
90.	*	0.3000	0.3000	0.7000	0.6000	0.7000
100.	*	0.3000	0.3000	0.7000	0.7000	0.6000
110.	*	0.4000	0.3000	0.6000	0.6000	0.6000
120.	*	0.5000	0.3000	0.7000	0.5000	0.5000
130.	*	0.3000	0.3000	0.4000	0.4000	0.4000
140.	*	0.3000	0.2000	0.4000	0.4000	0.4000
150.	*	0.2000	0.1000	0.4000	0.4000	0.4000
160.	*	0.2000	0.1000	0.4000	0.4000	0.4000
170.	*	0.2000	0.1000	0.4000	0.4000	0.4000
180.	*	0.2000	0.1000	0.4000	0.4000	0.4000
190.	*	0.2000	0.1000	0.4000	0.4000	0.4000
200.	*	0.2000	0.1000	0.4000	0.4000	0.4000
210.	*	0.2000	0.1000	0.4000	0.4000	0.4000
220.	*	0.2000	0.1000	0.5000	0.5000	0.5000
230.	*	0.2000	0.0000	0.6000	0.6000	0.5000
240.	*	0.2000	0.0000	0.7000	0.7000	0.6000
250.	*	0.1000	0.0000	0.7000	0.7000	0.6000
260.	*	0.0000	0.0000	0.5000	0.5000	0.4000
270.	*	0.0000	0.0000	0.3000	0.2000	0.2000
280.	*	0.0000	0.0000	0.1000	0.1000	0.1000
290.	*	0.0000	0.0000	0.1000	0.1000	0.1000
300.	*	0.0000	0.0000	0.0000	0.0000	0.0000
310.	*	0.1000	0.1000	0.0000	0.0000	0.0000
320.	*	0.2000	0.1000	0.1000	0.0000	0.0000
330.	*	0.3000	0.2000	0.2000	0.1000	0.0000
340.	*	0.3000	0.3000	0.2000	0.1000	0.0000
350.	*	0.3000	0.3000	0.2000	0.1000	0.0000
360.	*	0.3000	0.3000	0.2000	0.1000	0.0000
------	*	----------	----------	----------	----------	----------
MAX	*	0.5000	0.3000	0.7000	0.7000	0.7000
DEGR.	*	120	10	90	100	90

THE HIGHEST CONCENTRATION OF 0.9000 PPM OCCURRED AT RECEPTOR 1.

```
Q,EPA,,F,,0,T,T,F,F,0.7,
3,3,6,6,1014,1014,1014,1014,1014,1014,1014,1014,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,0,0,15,-45,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,23,0.3048,1,0
'N Leg, E Side-Corner',69.6,82.0,5.9
'N Leg, E Side - 25 m',88.2,151.6,5.9
'N Leg, E Side - 50 m',109.5,230.8,5.9
'N Leg, E Side-Midblk',222.3,651.9,5.9
'N Leg, W Side-Corner',-22.6,93.4,5.9
'N Leg, W Side - 25 m',-4.0,162.9,5.9
'N Leg, W Side - 50 m',17.3,242.2,5.9
'N Leg, W Side-Midblk',130.1,663.3,5.9
'S Leg, E Side-Corner',46.0,-82.0,5.9
'S Leg, W Side-Corner',-46.0,-162.0,5.9
'E Leg, N Side - 25 m',141.6,82.0,5.9
'E Leg, N Side - 50 m',223.6,82.0,5.9
'E Leg, N Side-Midblk',659.6,82.0,5.9
'W Leg, N Side - 25 m',-73.5,42.4,5.9
'W Leg, N Side - 50 m',-131.5,-15.6,5.9
'W Leg, N Side-Midblk',-439.8,-323.8,5.9
'E Leg, S Side - 25 m',118.0,-82.0,5.9
'E Leg, S Side - 50 m',200.0,-82.0,5.9
'E Leg, S Side-Midblk',636.0,-82.0,5.9
'W Leg, S Side - 25 m',-96.9,-212.9,5.9
'W Leg, S Side - 50 m',-154.9,-270.9,5.9
'W Leg, S Side-Midblk',-463.2,-579.2,5.9
'S Side - Midblk',0,-122,5.9
'2040 NB I495 & I270 Spur (IC.24)',6,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-18,2,293,1164,6180,0.61,0.0,55.7
1
'N Leg Dep - FreeFlow','AG',18,-2,328,1154,6180,1.61,0.0,55.7
1
'E Leg App - FreeFlow','AG',-15,36,1200,36,4895,0.61,0.0,91.7
1
'E Leg Dep - FreeFlow','AG',15,-36,1200,-36,9690,2.54,0.0,91.7
1
'W Leg App - FreeFlow','AG',15,-36,-823,-874,9690,1.21,0.0,91.7
1
'W Leg Dep - FreeFlow','AG',-15,36,-874,-823,4895,0.61,0.0,91.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & I270 Spur (IC.24)

DATE : 5/16/19
TIME : 7:34: 8

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-18.0	2.0	293.0	1164.0	*	1203.	15.	AG	6180.	0.6	0.0	55.7		
2. N Leg Dep - FreeFlow	*	18.0	-2.0	328.0	1154.0	*	1197.	15.	AG	6180.	1.6	0.0	55.7		
3. E Leg App - FreeFlow	*	-15.0	36.0	1200.0	36.0	*	1215.	90.	AG	4895.	0.6	0.0	91.7		
4. E Leg Dep - FreeFlow	*	15.0	-36.0	1200.0	-36.0	*	1185.	90.	AG	9690.	2.5	0.0	91.7		
5. W Leg App - FreeFlow	*	15.0	-36.0	-823.0	-874.0	*	1185.	225.	AG	9690.	1.2	0.0	91.7		
6. W Leg Dep - FreeFlow	*	-15.0	36.0	-874.0	-823.0	*	1215.	225.	AG	4895.	0.6	0.0	91.7		

PAGE 2
JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & I270 Spur (IC.24)

DATE : 5/16/19
TIME : 7:34: 8

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	69.6	82.0	5.9
2. N Leg, E Side - 25 m	88.2	151.6	5.9
3. N Leg, E Side - 50 m	109.5	230.8	5.9
4. N Leg, E Side-Midblk	222.3	651.9	5.9
5. N Leg, W Side-Corner	-22.6	93.4	5.9
6. N Leg, W Side - 25 m	-4.0	162.9	5.9
7. N Leg, W Side - 50 m	17.3	242.2	5.9
8. N Leg, W Side-Midblk	130.1	663.3	5.9
9. S Leg, E Side-Corner	46.0	-82.0	5.9
10. S Leg, W Side-Corner	-46.0	-162.0	5.9
11. E Leg, N Side - 25 m	141.6	82.0	5.9
12. E Leg, N Side - 50 m	223.6	82.0	5.9
13. E Leg, N Side-Midblk	659.6	82.0	5.9
14. W Leg, N Side - 25 m	-73.5	42.4	5.9
15. W Leg, N Side - 50 m	-131.5	-15.6	5.9
16. W Leg, N Side-Midblk	-439.8	-323.8	5.9
17. E Leg, S Side - 25 m	118.0	-82.0	5.9
18. E Leg, S Side - 50 m	200.0	-82.0	5.9
19. E Leg, S Side-Midblk	636.0	-82.0	5.9
20. W Leg, S Side - 25 m	-96.9	-212.9	5.9
21. W Leg, S Side - 50 m	-154.9	-270.9	5.9
22. W Leg, S Side-Midblk	-463.2	-579.2	5.9
23. S Side - Midblk	0.0	-122.0	5.9

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND * CONCENTRATION
ANGLE * (PPM)
(DEGR)* 1 2 3 4 5 6 7 8 9
10 11 12 13 14 15

10.	*	0.7000	0.7000	0.6000	0.6000	0.2000	0.2000	0.2000	0.2000	1.0000	0.7000	0.1000	0.1000	0.0000	0.1000	0.0000
20.	*	0.4000	0.4000	0.4000	0.3000	0.4000	0.4000	0.4000	0.4000	0.8000	0.7000	0.1000	0.0000	0.0000	0.2000	0.2000
30.	*	0.2000	0.2000	0.2000	0.1000	0.5000	0.5000	0.5000	0.4000	0.7000	0.6000	0.0000	0.0000	0.0000	0.3000	0.2000
40.	*	0.1000	0.1000	0.1000	0.1000	0.5000	0.5000	0.5000	0.5000	0.7000	0.5000	0.0000	0.0000	0.0000	0.3000	0.2000
50.	*	0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.9000	0.6000	0.0000	0.0000	0.0000	0.3000	0.3000
60.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	1.0000	0.5000	0.0000	0.0000	0.0000	0.3000	0.3000
70.	*	0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	1.1000	0.5000	0.0000	0.0000	0.0000	0.3000	0.4000
80.	*	0.1000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	1.2000	0.4000	0.1000	0.1000	0.0000	0.5000	0.7000
90.	*	0.3000	0.1000	0.0000	0.0000	0.6000	0.4000	0.3000	0.3000	0.9000	0.2000	0.3000	0.3000	0.2000	0.7000	0.9000
100.	*	0.5000	0.2000	0.1000	0.0000	0.8000	0.5000	0.4000	0.3000	0.5000	0.0000	0.5000	0.5000	0.4000	1.0000	0.7000
110.	*	0.6000	0.4000	0.2000	0.0000	0.8000	0.7000	0.5000	0.3000	0.2000	0.0000	0.6000	0.6000	0.5000	1.0000	0.6000
120.	*	0.6000	0.4000	0.2000	0.0000	0.8000	0.7000	0.5000	0.3000	0.1000	0.0000	0.6000	0.6000	0.5000	0.7000	0.4000
130.	*	0.5000	0.4000	0.2000	0.1000	0.8000	0.6000	0.5000	0.4000	0.1000	0.0000	0.5000	0.5000	0.5000	0.5000	0.3000
140.	*	0.5000	0.3000	0.2000	0.1000	0.7000	0.6000	0.5000	0.4000	0.1000	0.0000	0.5000	0.5000	0.5000	0.3000	0.3000
150.	*	0.5000	0.3000	0.2000	0.1000	0.7000	0.6000	0.5000	0.4000	0.0000	0.0000	0.5000	0.5000	0.5000	0.4000	0.3000
160.	*	0.5000	0.3000	0.2000	0.1000	0.6000	0.5000	0.6000	0.5000	0.0000	0.0000	0.5000	0.5000	0.5000	0.3000	0.3000
170.	*	0.5000	0.4000	0.3000	0.2000	0.4000	0.7000	0.6000	0.6000	0.0000						

```
0.0000  0.5000  0.5000  0.5000  0.3000  0.3000
 180.  *  0.6000  0.4000  0.3000  0.2000  0.4000  0.5000  0.6000  0.6000  0.0000
0.0000  0.5000  0.5000  0.5000  0.3000  0.3000
 190.  *  0.7000  0.5000  0.5000  0.4000  0.4000  0.2000  0.4000  0.4000  0.0000
0.0000  0.5000  0.5000  0.5000  0.3000  0.3000
 200.  *  0.8000  0.7000  0.6000  0.7000  0.4000  0.4000  0.2000  0.3000  0.0000
0.1000  0.5000  0.5000  0.5000  0.3000  0.3000
 210.  *  0.8000  0.7000  0.8000  0.7000  0.3000  0.3000  0.2000  0.2000  0.1000
0.1000  0.6000  0.5000  0.5000  0.3000  0.3000
 220.  *  1.0000  0.8000  0.7000  0.6000  0.3000  0.2000  0.1000  0.0000  0.2000
0.3000  0.6000  0.6000  0.5000  0.2000  0.2000
 230.  *  0.9000  0.7000  0.6000  0.5000  0.2000  0.0000  0.0000  0.0000  0.4000
0.5000  0.8000  0.6000  0.5000  0.2000  0.2000
 240.  *  0.8000  0.5000  0.5000  0.5000  0.0000  0.0000  0.0000  0.0000  0.6000
0.6000  0.5000  0.6000  0.6000  0.0000  0.0000
 250.  *  0.5000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.5000
0.6000  0.2000  0.4000  0.6000  0.0000  0.0000
 260.  *  0.5000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.6000
0.5000  0.3000  0.2000  0.4000  0.0000  0.0000
 270.  *  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.5000
0.5000  0.3000  0.2000  0.2000  0.0000  0.0000
 280.  *  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.5000
0.3000  0.2000  0.1000  0.0000  0.0000  0.0000
 290.  *  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.5000
0.3000  0.2000  0.1000  0.0000  0.0000  0.0000
 300.  *  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.6000
0.3000  0.2000  0.1000  0.0000  0.0000  0.0000
 310.  *  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.5000
0.3000  0.2000  0.1000  0.0000  0.0000  0.0000
 320.  *  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000  0.0000  0.0000  0.6000
0.3000  0.2000  0.1000  0.0000  0.0000  0.0000
 330.  *  0.5000  0.5000  0.5000  0.5000  0.0000  0.0000  0.0000  0.0000  0.6000
0.3000  0.3000  0.1000  0.0000  0.0000  0.0000
 340.  *  0.5000  0.5000  0.5000  0.5000  0.0000  0.0000  0.0000  0.0000  0.8000
0.3000  0.3000  0.1000  0.0000  0.0000  0.0000
 350.  *  0.6000  0.6000  0.6000  0.6000  0.0000  0.0000  0.0000  0.0000  1.0000
0.3000  0.3000  0.1000  0.0000  0.0000  0.0000
 360.  *  0.7000  0.7000  0.7000  0.6000  0.1000  0.1000  0.1000  0.1000  1.1000
0.4000  0.3000  0.1000  0.0000  0.0000  0.0000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  1.0000  0.8000  0.8000  0.7000  0.8000  0.7000  0.6000  0.6000  1.2000
0.7000  0.8000  0.6000  0.6000  1.0000  0.9000
 DEGR. *    220     220     210     200     100     110     160     170      80
10     230     110     240     100      90
```

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & I270 Spur (IC.24)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 16	17	18	19	20	21	22	23
10.	0.0000	0.7000	0.7000	0.6000	0.6000	0.5000	0.5000	0.8000
20.	0.0000	0.6000	0.6000	0.6000	0.7000	0.6000	0.6000	0.8000
30.	0.1000	0.6000	0.6000	0.6000	0.6000	0.6000	0.6000	0.7000
40.	0.2000	0.7000	0.7000	0.7000	0.6000	0.7000	0.6000	0.6000
50.	0.3000	0.9000	0.9000	0.9000	0.5000	0.4000	0.4000	0.6000
60.	0.4000	1.0000	1.0000	1.0000	0.4000	0.4000	0.2000	0.6000
70.	0.5000	1.1000	1.1000	1.0000	0.3000	0.4000	0.2000	0.6000
80.	0.4000	1.2000	1.1000	1.0000	0.3000	0.2000	0.0000	0.6000
90.	0.3000	0.9000	0.9000	0.8000	0.1000	0.1000	0.0000	0.3000
100.	0.3000	0.5000	0.4000	0.4000	0.0000	0.0000	0.0000	0.1000
110.	0.3000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000
120.	0.3000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
130.	0.3000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
140.	0.3000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000
150.	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	0.3000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.0000
210.	0.3000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000
220.	0.2000	0.2000	0.1000	0.1000	0.3000	0.3000	0.3000	0.3000
230.	0.1000	0.3000	0.2000	0.1000	0.5000	0.5000	0.4000	0.5000
240.	0.0000	0.3000	0.3000	0.1000	0.6000	0.6000	0.5000	0.6000
250.	0.0000	0.3000	0.3000	0.3000	0.6000	0.6000	0.4000	0.5000
260.	0.0000	0.4000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
270.	0.0000	0.6000	0.6000	0.8000	0.5000	0.5000	0.5000	0.3000
280.	0.0000	0.7000	0.8000	1.1000	0.3000	0.3000	0.3000	0.3000
290.	0.0000	0.7000	0.8000	1.1000	0.3000	0.3000	0.3000	0.3000
300.	0.0000	0.7000	0.9000	1.0000	0.3000	0.3000	0.3000	0.3000

310.	*	0.0000	0.8000	0.9000	0.9000	0.3000	0.3000	0.3000	0.3000
320.	*	0.0000	0.8000	0.8000	0.7000	0.3000	0.3000	0.3000	0.3000
330.	*	0.0000	0.7000	0.7000	0.6000	0.3000	0.3000	0.3000	0.3000
340.	*	0.0000	0.8000	0.7000	0.6000	0.3000	0.3000	0.3000	0.3000
350.	*	0.0000	0.9000	0.7000	0.6000	0.3000	0.3000	0.3000	0.5000
360.	*	0.0000	0.9000	0.8000	0.7000	0.4000	0.4000	0.5000	0.7000
------	*	----------	----------	----------	----------	----------	----------	----------	----------
MAX	*	0.5000	1.2000	1.1000	1.1000	0.7000	0.7000	0.6000	0.8000
DEGR.	*	70	80	70	280	20	40	20	10

THE HIGHEST CONCENTRATION OF 1.2000 PPM OCCURRED AT RECEPTOR 9.

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,6,5,7,1032,1032,1032,1032,1032,1032,1032,1032,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-40,-40,5,5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',13.2,93.2,5.9
'N Leg, E Side - 25 m',-33.1,148.4,5.9
'N Leg, E Side - 50 m',-85.8,211.2,5.9
'N Leg, E Side-Midblk',-366.1,545.2,5.9
'N Leg, W Side-Corner',-201.0,111.9,5.9
'N Leg, W Side - 25 m',-247.3,167.1,5.9
'N Leg, W Side - 50 m',-300.0,229.9,5.9
'N Leg, W Side-Midblk',-580.2,563.9,5.9
'S Leg, E Side-Corner',162.3,-84.5,5.9
'S Leg, E Side - 25 m',208.5,-139.6,5.9
'S Leg, E Side - 50 m',261.3,-202.5,5.9
'S Leg, E Side-Midblk',541.5,-536.4,5.9
'S Leg, W Side-Corner',-51.9,-65.7,5.9
'S Leg, W Side - 25 m',-5.6,-120.9,5.9
'S Leg, W Side - 50 m',47.1,-183.7,5.9
'S Leg, W Side-Midblk',327.4,-517.7,5.9
'E Leg, N Side - 25 m',84.9,86.9,5.9
'E Leg, N Side - 50 m',166.6,79.8,5.9
'E Leg, N Side-Midblk',600.9,41.8,5.9
'W Leg, N Side - 25 m',-272.7,118.2,5.9
'W Leg, N Side - 50 m',-354.4,125.4,5.9
'W Leg, N Side-Midblk',-788.7,163.4,5.9
'E Leg, S Side - 25 m',234.0,-90.7,5.9
'E Leg, S Side - 50 m',315.7,-97.9,5.9
'E Leg, S Side-Midblk',750.0,-135.9,5.9
'W Leg, S Side - 25 m',-123.6,-59.5,5.9
'W Leg, S Side - 50 m',-205.3,-52.3,5.9
'W Leg, S Side-Midblk',-639.6,-14.3,5.9
'2040 NB I495 & MD5 (IC.3)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-28,-23,-799,896,3915,0.62,0.0,91.7
1
'N Leg Dep - FreeFlow','AG',23,19,-748,939,3795,1.20,0.0,79.7
1
'S Leg App - FreeFlow','AG',23,19,794,-900,3795,1.57,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-28,-23,744,-942,3916,0.62,0.0,91.7
1
'E Leg App - FreeFlow','AG',0,42,1199,-63,7355,2.05,0.0,103.7
1
'E Leg Dep - FreeFlow','AG',-3,-30,1193,-134,7290,0.61,0.0,79.7
1
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```
'W Leg App - FreeFlow','AG',-3,-30,-1198,75,7290,0.88,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',0,42,-1192,146,7355,0.61,0.0,103.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & MD5 (IC.3)

DATE : 5/15/19
TIME : 9:41:26

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-28.0	-23.0	-799.0	896.0	*	1200.	320.	AG	3915.	0.6	0.0	91.7		
2. N Leg Dep - FreeFlow	*	23.0	19.0	-748.0	939.0	*	1200.	320.	AG	3795.	1.2	0.0	79.7		
3. S Leg App - FreeFlow	*	23.0	19.0	794.0	-900.0	*	1200.	140.	AG	3795.	1.6	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-28.0	-23.0	744.0	-942.0	*	1200.	140.	AG	3916.	0.6	0.0	91.7		
5. E Leg App - FreeFlow	*	0.0	42.0	1199.0	-63.0	*	1204.	95.	AG	7355.	2.0	0.0	****		
6. E Leg Dep - FreeFlow	*	-3.0	-30.0	1193.0	-134.0	*	1201.	95.	AG	7290.	0.6	0.0	79.7		
7. W Leg App - FreeFlow	*	-3.0	-30.0	-1198.0	75.0	*	1200.	275.	AG	7290.	0.9	0.0	79.7		
8. W Leg Dep - FreeFlow	*	0.0	42.0	-1192.0	146.0	*	1197.	275.	AG	7355.	0.6	0.0	****		

DATE : 5/15/19
TIME : 9:41:26

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	13.2	93.2	5.9
2. N Leg, E Side - 25 m	-33.1	148.4	5.9
3. N Leg, E Side - 50 m	-85.8	211.2	5.9
4. N Leg, E Side-Midblk	-366.1	545.2	5.9
5. N Leg, W Side-Corner	-201.0	111.9	5.9
6. N Leg, W Side - 25 m	-247.3	167.1	5.9
7. N Leg, W Side - 50 m	-300.0	229.9	5.9
8. N Leg, W Side-Midblk	-580.2	563.9	5.9
9. S Leg, E Side-Corner	162.3	-84.5	5.9
10. S Leg, E Side - 25 m	208.5	-139.6	5.9
11. S Leg, E Side - 50 m	261.3	-202.5	5.9
12. S Leg, E Side-Midblk	541.5	-536.4	5.9
13. S Leg, W Side-Corner	-51.9	-65.7	5.9
14. S Leg, W Side - 25 m	-5.6	-120.9	5.9
15. S Leg, W Side - 50 m	47.1	-183.7	5.9
16. S Leg, W Side-Midblk	327.4	-517.7	5.9
17. E Leg, N Side - 25 m	84.9	86.9	5.9
18. E Leg, N Side - 50 m	166.6	79.8	5.9
19. E Leg, N Side-Midblk	600.9	41.8	5.9
20. W Leg, N Side - 25 m	-272.7	118.2	5.9
21. W Leg, N Side - 50 m	-354.4	125.4	5.9
22. W Leg, N Side-Midblk	-788.7	163.4	5.9
23. E Leg, S Side - 25 m	234.0	-90.7	5.9
24. E Leg, S Side - 50 m	315.7	-97.9	5.9
25. E Leg, S Side-Midblk	750.0	-135.9	5.9
26. W Leg, S Side - 25 m	-123.6	-59.5	5.9

27. W Leg, S Side - 50 m	*	-205.3	-52.3	5.9 *
28. W Leg, S Side-Midblk	*	-639.6	-14.3	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.3000	0.3000	0.3000	0.1000	0.5000	0.4000	0.4000
20.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.3000	0.3000	0.3000	0.1000	0.4000	0.5000	0.5000
30.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.4000	0.3000	0.3000	0.1000	0.5000	0.5000	0.5000
40.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.4000	0.3000	0.3000	0.1000	0.4000	0.5000	0.5000
50.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.4000	0.3000	0.3000	0.1000	0.6000	0.5000	0.5000
60.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.5000	0.3000	0.3000	0.0000	0.7000	0.5000	0.5000
70.	* 0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.5000	0.3000	0.3000	0.0000	0.7000	0.5000	0.5000
80.	* 0.2000	0.0000	0.0000	0.0000	0.3000	0.2000	0.2000	0.2000	0.5000	0.3000	0.2000	0.0000	0.8000	0.5000	0.4000
90.	* 0.4000	0.1000	0.0000	0.0000	0.5000	0.3000	0.2000	0.2000	0.4000	0.2000	0.0000	0.0000	0.7000	0.4000	0.3000
100.	* 0.7000	0.2000	0.1000	0.0000	0.7000	0.4000	0.3000	0.2000	0.2000	0.0000	0.0000	0.0000	0.5000	0.2000	0.2000
110.	* 0.8000	0.4000	0.2000	0.1000	0.6000	0.5000	0.4000	0.3000	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000
120.	* 0.7000	0.4000	0.2000	0.1000	0.5000	0.4000	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000

130. * 0.7000 0.5000 0.3000 0.2000 0.4000 0.3000 0.4000 0.3000 0.1000
0.1000 0.1000 0.1000 0.2000 0.2000 0.2000
140. * 0.8000 0.5000 0.4000 0.3000 0.4000 0.4000 0.3000 0.1000 0.2000
0.2000 0.2000 0.2000 0.2000 0.2000 0.1000
150. * 0.8000 0.4000 0.4000 0.2000 0.2000 0.2000 0.2000 0.0000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
160. * 0.8000 0.3000 0.4000 0.2000 0.2000 0.2000 0.2000 0.0000 0.4000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
170. * 0.6000 0.4000 0.3000 0.2000 0.2000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
180. * 0.5000 0.3000 0.4000 0.2000 0.2000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
190. * 0.4000 0.3000 0.3000 0.1000 0.2000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
200. * 0.4000 0.3000 0.3000 0.1000 0.2000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
210. * 0.4000 0.3000 0.3000 0.1000 0.2000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
220. * 0.4000 0.3000 0.3000 0.1000 0.2000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
230. * 0.4000 0.3000 0.3000 0.1000 0.2000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
240. * 0.4000 0.3000 0.3000 0.1000 0.2000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
250. * 0.5000 0.3000 0.3000 0.1000 0.3000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
260. * 0.4000 0.3000 0.3000 0.1000 0.3000 0.2000 0.1000 0.0000 0.2000
0.2000 0.2000 0.2000 0.1000 0.0000 0.0000
270. * 0.4000 0.2000 0.1000 0.1000 0.3000 0.1000 0.0000 0.0000 0.4000
0.2000 0.2000 0.2000 0.2000 0.0000 0.0000
280. * 0.3000 0.2000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.5000
0.3000 0.3000 0.2000 0.4000 0.1000 0.1000
290. * 0.2000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.5000
0.4000 0.3000 0.2000 0.4000 0.2000 0.1000
300. * 0.3000 0.3000 0.3000 0.2000 0.0000 0.0000 0.0000 0.0000 0.7000
0.6000 0.3000 0.3000 0.4000 0.2000 0.2000
310. * 0.2000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.7000
0.5000 0.4000 0.3000 0.3000 0.2000 0.2000
320. * 0.2000 0.2000 0.2000 0.2000 0.1000 0.1000 0.1000 0.1000 0.5000
0.6000 0.5000 0.3000 0.4000 0.3000 0.1000
330. * 0.1000 0.1000 0.1000 0.1000 0.2000 0.2000 0.2000 0.1000 0.5000
0.4000 0.3000 0.2000 0.5000 0.4000 0.4000
340. * 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000 0.2000 0.2000 0.3000
0.3000 0.3000 0.1000 0.5000 0.5000 0.2000
350. * 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000 0.2000 0.2000 0.3000
0.3000 0.3000 0.1000 0.5000 0.3000 0.2000
360. * 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000 0.2000 0.2000 0.3000
0.3000 0.3000 0.1000 0.5000 0.4000 0.4000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.8000  0.5000  0.4000  0.3000  0.7000  0.5000  0.4000  0.3000  0.7000
0.6000  0.5000  0.3000  0.8000  0.5000  0.5000
 DEGR. *    140     130     140     140     100     110     110     110     300
300     320     150      80      20      20
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28
------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.3000  0.3000
0.3000  0.4000  0.3000  0.3000
  20.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.3000  0.3000
0.3000  0.4000  0.3000  0.3000
  30.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.4000  0.4000
0.4000  0.4000  0.3000  0.3000
  40.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.4000  0.4000
0.4000  0.5000  0.3000  0.3000
  50.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.3000
  60.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.5000  0.5000
0.5000  0.4000  0.4000  0.3000
  70.  *  0.2000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.5000  0.5000
0.5000  0.6000  0.4000  0.4000
  80.  *  0.2000  0.2000  0.1000  0.1000  0.1000  0.0000  0.0000  0.5000  0.5000
0.4000  0.7000  0.6000  0.5000
  90.  *  0.2000  0.4000  0.4000  0.3000  0.4000  0.2000  0.2000  0.4000  0.4000
0.3000  0.5000  0.6000  0.4000
```

```
 100.  *  0.2000  0.6000  0.6000  0.5000  0.4000  0.3000  0.4000  0.2000  0.2000
0.1000  0.4000  0.4000  0.3000
 110.  *  0.2000  0.8000  0.8000  0.7000  0.4000  0.4000  0.3000  0.1000  0.1000
0.0000  0.2000  0.2000  0.1000
 120.  *  0.2000  0.7000  0.7000  0.7000  0.4000  0.4000  0.3000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 130.  *  0.2000  0.6000  0.6000  0.6000  0.3000  0.2000  0.2000  0.0000  0.0000
0.0000  0.2000  0.0000  0.0000
 140.  *  0.1000  0.6000  0.5000  0.5000  0.2000  0.2000  0.2000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 150.  *  0.0000  0.6000  0.6000  0.5000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 160.  *  0.0000  0.6000  0.6000  0.5000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 170.  *  0.0000  0.6000  0.6000  0.5000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.0000  0.6000  0.6000  0.5000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  0.6000  0.6000  0.5000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.6000  0.6000  0.5000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.5000  0.6000  0.5000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.5000  0.6000  0.5000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.6000  0.6000  0.5000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.6000  0.7000  0.6000  0.2000  0.2000  0.2000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.6000  0.5000  0.7000  0.3000  0.3000  0.3000  0.1000  0.1000
0.0000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.5000  0.6000  0.7000  0.3000  0.3000  0.3000  0.1000  0.1000
0.1000  0.1000  0.1000  0.1000
 270.  *  0.0000  0.5000  0.6000  0.5000  0.3000  0.3000  0.1000  0.3000  0.3000
0.2000  0.2000  0.2000  0.2000
 280.  *  0.0000  0.3000  0.4000  0.3000  0.1000  0.1000  0.1000  0.4000  0.6000
0.4000  0.4000  0.4000  0.3000
 290.  *  0.0000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.6000  0.6000
0.5000  0.4000  0.4000  0.4000
 300.  *  0.0000  0.1000  0.2000  0.1000  0.0000  0.0000  0.0000  0.6000  0.5000
0.5000  0.4000  0.4000  0.4000
 310.  *  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.5000  0.6000
0.5000  0.3000  0.3000  0.3000
 320.  *  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.5000  0.4000
0.4000  0.3000  0.3000  0.3000
 330.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.3000
```

```
 340.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.4000  0.4000
0.4000  0.5000  0.3000  0.3000
 350.  *  0.3000  0.0000  0.0000  0.0000  0.2000  0.0000  0.0000  0.3000  0.3000
0.3000  0.5000  0.4000  0.3000
 360.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.3000  0.3000
0.3000  0.4000  0.3000  0.3000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.3000  0.8000  0.8000  0.7000  0.4000  0.4000  0.4000  0.6000  0.6000
0.5000  0.7000  0.6000  0.5000
 DEGR. *     10     110     110     110      90     110     100     290     280
60      80      80      80

 THE HIGHEST CONCENTRATION OF   0.8000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,5,7,7,847,847,847,847,847,847,847,847,1036.8,1036.8,1036.8,1036.8,1036.8,1036.8,10
36.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,120
0,-1200,0,0,0,0,0,0,-10,-10,0,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',54.5,94.0,5.9
'N Leg, E Side - 25 m',42.0,164.9,5.9
'N Leg, E Side - 50 m',27.8,245.7,5.9
'N Leg, E Side-Midblk',-47.9,675.0,5.9
'N Leg, W Side-Corner',-87.7,94.0,5.9
'N Leg, W Side - 25 m',-100.2,164.9,5.9
'N Leg, W Side - 50 m',-114.4,245.7,5.9
'N Leg, W Side-Midblk',-190.1,675.0,5.9
'S Leg, E Side-Corner',87.7,-94.0,5.9
'S Leg, E Side - 25 m',100.2,-164.9,5.9
'S Leg, E Side - 50 m',114.4,-245.7,5.9
'S Leg, E Side-Midblk',190.1,-675.0,5.9
'S Leg, W Side-Corner',-54.5,-94.0,5.9
'S Leg, W Side - 25 m',-42.0,-164.9,5.9
'S Leg, W Side - 50 m',-27.8,-245.7,5.9
'S Leg, W Side-Midblk',47.9,-675.0,5.9
'E Leg, N Side - 25 m',126.5,94.0,5.9
'E Leg, N Side - 50 m',208.5,94.0,5.9
'E Leg, N Side-Midblk',644.5,94.0,5.9
'W Leg, N Side - 25 m',-159.7,94.0,5.9
'W Leg, N Side - 50 m',-241.7,94.0,5.9
'W Leg, N Side-Midblk',-677.7,94.0,5.9
'E Leg, S Side - 25 m',159.7,-94.0,5.9
'E Leg, S Side - 50 m',241.7,-94.0,5.9
'E Leg, S Side-Midblk',677.7,-94.0,5.9
'W Leg, S Side - 25 m',-126.5,-94.0,5.9
'W Leg, S Side - 50 m',-208.5,-94.0,5.9
'W Leg, S Side-Midblk',-644.5,-94.0,5.9
'2040 NB I495 & MD97 (IC.20)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-30,-5,-238,1177,3385,0.72,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',30,5,-179,1187,2710,1.36,0.0,79.7
1
'S Leg App - FreeFlow','AG',30,5,238,-1177,2710,0.72,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-30,-5,179,-1187,3385,1.36,0.0,79.7
1
'E Leg App - FreeFlow','AG',0,42,1200,42,8885,2.04,0.0,103.7
1
'E Leg Dep - FreeFlow','AG',0,-42,1200,-42,8205,0.61,0.0,103.7
1
```

```
'W Leg App - FreeFlow','AG',0,-42,-1200,-42,8205,1.21,0.0,103.7
1
'W Leg Dep - FreeFlow','AG',0,42,-1200,42,8885,0.61,0.0,103.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & MD97 (IC.20)

DATE : 5/15/19
TIME : 11:56:27

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-30.0	-5.0	-238.0	1177.0	*	1200.	350.	AG	3385.	0.7	0.0	79.7		
2. N Leg Dep - FreeFlow	*	30.0	5.0	-179.0	1187.0	*	1200.	350.	AG	2710.	1.4	0.0	79.7		
3. S Leg App - FreeFlow	*	30.0	5.0	238.0	-1177.0	*	1200.	170.	AG	2710.	0.7	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-30.0	-5.0	179.0	-1187.0	*	1200.	170.	AG	3385.	1.4	0.0	79.7		
5. E Leg App - FreeFlow	*	0.0	42.0	1200.0	42.0	*	1200.	90.	AG	8885.	2.0	0.0	****		
6. E Leg Dep - FreeFlow	*	0.0	-42.0	1200.0	-42.0	*	1200.	90.	AG	8205.	0.6	0.0	****		
7. W Leg App - FreeFlow	*	0.0	-42.0	-1200.0	-42.0	*	1200.	270.	AG	8205.	1.2	0.0	****		
8. W Leg Dep - FreeFlow	*	0.0	42.0	-1200.0	42.0	*	1200.	270.	AG	8885.	0.6	0.0	****		

PAGE 2
JOB: I-495 & I-270 MLS RUN: 2040 NB I495 &

DATE : 5/15/19
TIME : 11:56:27

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	54.5	94.0	5.9
2. N Leg, E Side - 25 m	42.0	164.9	5.9
3. N Leg, E Side - 50 m	27.8	245.7	5.9
4. N Leg, E Side-Midblk	-47.9	675.0	5.9
5. N Leg, W Side-Corner	-87.7	94.0	5.9
6. N Leg, W Side - 25 m	-100.2	164.9	5.9
7. N Leg, W Side - 50 m	-114.4	245.7	5.9
8. N Leg, W Side-Midblk	-190.1	675.0	5.9
9. S Leg, E Side-Corner	87.7	-94.0	5.9
10. S Leg, E Side - 25 m	100.2	-164.9	5.9
11. S Leg, E Side - 50 m	114.4	-245.7	5.9
12. S Leg, E Side-Midblk	190.1	-675.0	5.9
13. S Leg, W Side-Corner	-54.5	-94.0	5.9
14. S Leg, W Side - 25 m	-42.0	-164.9	5.9
15. S Leg, W Side - 50 m	-27.8	-245.7	5.9
16. S Leg, W Side-Midblk	47.9	-675.0	5.9
17. E Leg, N Side - 25 m	126.5	94.0	5.9
18. E Leg, N Side - 50 m	208.5	94.0	5.9
19. E Leg, N Side-Midblk	644.5	94.0	5.9
20. W Leg, N Side - 25 m	-159.7	94.0	5.9
21. W Leg, N Side - 50 m	-241.7	94.0	5.9
22. W Leg, N Side-Midblk	-677.7	94.0	5.9
23. E Leg, S Side - 25 m	159.7	-94.0	5.9
24. E Leg, S Side - 50 m	241.7	-94.0	5.9
25. E Leg, S Side-Midblk	677.7	-94.0	5.9
26. W Leg, S Side - 25 m	-126.5	-94.0	5.9

27. W Leg, S Side - 50 m	*	-208.5	-94.0	5.9 *
28. W Leg, S Side-Midblk	*	-644.5	-94.0	5.9 *

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.4000	0.3000	0.3000	0.1000	0.8000	0.5000	0.3000
20.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.4000	0.3000	0.2000	0.1000	0.5000	0.4000	0.3000
30.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.4000	0.3000	0.3000	0.1000	0.5000	0.5000	0.4000
40.	*	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.4000	0.3000	0.3000	0.1000	0.6000	0.4000	0.4000
50.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.5000	0.3000	0.3000	0.1000	0.7000	0.4000	0.4000
60.	*	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.5000	0.3000	0.3000	0.0000	0.7000	0.4000	0.4000
70.	*	0.1000	0.0000	0.0000	0.0000	0.3000	0.2000	0.2000	0.2000	0.5000	0.3000	0.2000	0.0000	0.6000	0.4000	0.4000
80.	*	0.3000	0.0000	0.0000	0.0000	0.4000	0.2000	0.2000	0.2000	0.5000	0.2000	0.1000	0.0000	0.7000	0.4000	0.2000
90.	*	0.6000	0.1000	0.1000	0.0000	0.7000	0.4000	0.3000	0.2000	0.3000	0.0000	0.0000	0.0000	0.4000	0.2000	0.1000
100.	*	0.9000	0.3000	0.1000	0.0000	0.9000	0.5000	0.4000	0.2000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000
110.	*	0.8000	0.4000	0.2000	0.0000	0.8000	0.6000	0.4000	0.2000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
120.	*	0.7000	0.4000	0.2000	0.1000	0.6000	0.6000	0.4000	0.3000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000

130. * 0.7000 0.4000 0.2000 0.1000 0.5000 0.5000 0.4000 0.3000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
140. * 0.6000 0.4000 0.2000 0.1000 0.4000 0.2000 0.4000 0.3000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
150. * 0.6000 0.4000 0.2000 0.1000 0.4000 0.4000 0.2000 0.3000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
160. * 0.5000 0.4000 0.2000 0.2000 0.4000 0.4000 0.2000 0.3000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
170. * 0.8000 0.6000 0.3000 0.2000 0.3000 0.4000 0.4000 0.1000 0.1000
0.1000 0.1000 0.1000 0.2000 0.2000 0.2000
180. * 0.9000 0.5000 0.3000 0.2000 0.3000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.1000 0.1000 0.1000
190. * 0.8000 0.4000 0.4000 0.2000 0.2000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
200. * 0.7000 0.4000 0.2000 0.1000 0.2000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
210. * 0.7000 0.4000 0.3000 0.1000 0.2000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
220. * 0.7000 0.3000 0.3000 0.1000 0.3000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
230. * 0.6000 0.3000 0.3000 0.1000 0.4000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
240. * 0.7000 0.3000 0.3000 0.1000 0.4000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
250. * 0.7000 0.3000 0.3000 0.1000 0.4000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.1000 0.0000 0.0000
260. * 0.6000 0.3000 0.1000 0.1000 0.3000 0.2000 0.0000 0.0000 0.3000
0.2000 0.2000 0.2000 0.2000 0.0000 0.0000
270. * 0.5000 0.1000 0.1000 0.1000 0.3000 0.0000 0.0000 0.0000 0.5000
0.3000 0.2000 0.2000 0.4000 0.1000 0.0000
280. * 0.3000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.7000
0.4000 0.3000 0.2000 0.5000 0.2000 0.1000
290. * 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.6000
0.5000 0.3000 0.2000 0.5000 0.3000 0.1000
300. * 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.5000
0.5000 0.4000 0.2000 0.4000 0.3000 0.2000
310. * 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.4000
0.4000 0.3000 0.2000 0.4000 0.3000 0.2000
320. * 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.3000
0.3000 0.3000 0.2000 0.4000 0.3000 0.1000
330. * 0.3000 0.3000 0.3000 0.2000 0.0000 0.0000 0.0000 0.0000 0.5000
0.3000 0.3000 0.2000 0.4000 0.3000 0.1000
340. * 0.2000 0.2000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.4000
0.4000 0.3000 0.2000 0.3000 0.4000 0.2000
350. * 0.2000 0.2000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.4000
0.4000 0.4000 0.2000 0.5000 0.4000 0.2000
360. * 0.1000 0.1000 0.1000 0.1000 0.2000 0.2000 0.2000 0.1000 0.4000
0.3000 0.2000 0.1000 0.7000 0.4000 0.4000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.9000  0.6000  0.4000  0.2000  0.9000  0.6000  0.4000  0.3000  0.7000
0.5000  0.4000  0.2000  0.8000  0.5000  0.4000
 DEGR. *    100     170     190     160     100     110     100     120     280
290     300     180      10      10      30
```


JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & MD97 (IC.20)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.3000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.4000  0.3000  0.3000
  20.  *  0.3000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.4000  0.4000
0.4000  0.4000  0.3000  0.3000
  30.  *  0.3000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.3000
  40.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.5000  0.4000  0.4000
  50.  *  0.2000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.5000  0.5000
0.5000  0.5000  0.5000  0.4000
  60.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.5000  0.5000
0.5000  0.7000  0.5000  0.4000
  70.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.5000  0.5000
0.4000  0.7000  0.7000  0.6000
  80.  *  0.1000  0.3000  0.3000  0.3000  0.2000  0.2000  0.2000  0.4000  0.4000
0.3000  0.7000  0.7000  0.6000
  90.  *  0.1000  0.6000  0.6000  0.5000  0.5000  0.4000  0.3000  0.3000  0.3000
0.1000  0.4000  0.4000  0.4000
```

```
 100.  *  0.1000  0.9000  0.9000  0.7000  0.6000  0.6000  0.4000  0.1000  0.1000
0.1000  0.2000  0.1000  0.1000
 110.  *  0.1000  0.8000  0.8000  0.8000  0.5000  0.6000  0.4000  0.0000  0.0000
0.0000  0.1000  0.0000  0.1000
 120.  *  0.1000  0.7000  0.7000  0.7000  0.4000  0.4000  0.4000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 130.  *  0.2000  0.7000  0.7000  0.7000  0.3000  0.3000  0.4000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 140.  *  0.2000  0.6000  0.6000  0.6000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 150.  *  0.2000  0.6000  0.6000  0.6000  0.3000  0.3000  0.2000  0.0000  0.0000
0.0000  0.1000  0.1000  0.0000
 160.  *  0.2000  0.5000  0.5000  0.5000  0.3000  0.2000  0.2000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 170.  *  0.2000  0.5000  0.5000  0.5000  0.2000  0.2000  0.2000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.1000  0.6000  0.6000  0.6000  0.2000  0.2000  0.2000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  0.6000  0.5000  0.5000  0.2000  0.2000  0.2000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.6000  0.5000  0.5000  0.2000  0.2000  0.2000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.6000  0.6000  0.6000  0.2000  0.2000  0.2000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.6000  0.6000  0.6000  0.3000  0.3000  0.3000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.6000  0.6000  0.7000  0.4000  0.4000  0.4000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.7000  0.7000  0.7000  0.4000  0.4000  0.4000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.8000  0.8000  0.8000  0.4000  0.4000  0.3000  0.1000  0.0000
0.0000  0.1000  0.1000  0.1000
 260.  *  0.0000  0.7000  0.7000  0.8000  0.3000  0.3000  0.3000  0.2000  0.2000
0.1000  0.2000  0.2000  0.1000
 270.  *  0.0000  0.6000  0.6000  0.7000  0.3000  0.3000  0.2000  0.4000  0.3000
0.4000  0.3000  0.3000  0.3000
 280.  *  0.0000  0.3000  0.2000  0.3000  0.1000  0.1000  0.1000  0.4000  0.4000
0.5000  0.5000  0.5000  0.4000
 290.  *  0.0000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.3000  0.5000
0.5000  0.5000  0.5000  0.5000
 300.  *  0.0000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.4000  0.4000
0.5000  0.4000  0.4000  0.4000
 310.  *  0.0000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.3000  0.4000
0.5000  0.4000  0.4000  0.4000
 320.  *  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.4000  0.4000  0.4000
 330.  *  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.5000  0.4000
0.4000  0.3000  0.3000  0.3000
```

```
 340.  *  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.5000  0.4000
0.4000  0.3000  0.3000  0.3000
 350.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.3000
 360.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.4000  0.4000  0.4000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.3000  0.9000  0.9000  0.8000  0.6000  0.6000  0.4000  0.5000  0.5000
0.5000  0.7000  0.7000  0.6000
 DEGR. *     10     100     100     110     100     100     100      50      50
50      60      70      70

 THE HIGHEST CONCENTRATION OF   0.9000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
5,5,7,6,885,885,885,885,885,885,885,885,1036.8,1036.8,1036.8,1036.8,1036.8,1036.8,10
36.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,120
0,-1200,0,0,0,0,0,0,-5,-25,5,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',37.3,85.6,5.9
'N Leg, E Side - 25 m',6.9,150.9,5.9
'N Leg, E Side - 50 m',-27.8,225.2,5.9
'N Leg, E Side-Midblk',-212.0,620.3,5.9
'N Leg, W Side-Corner',-120.5,92.9,5.9
'N Leg, W Side - 25 m',-151.0,158.1,5.9
'N Leg, W Side - 50 m',-185.6,232.5,5.9
'N Leg, W Side-Midblk',-369.9,627.6,5.9
'S Leg, E Side-Corner',77.9,-87.5,5.9
'S Leg, E Side - 25 m',84.2,-159.3,5.9
'S Leg, E Side - 50 m',91.4,-241.0,5.9
'S Leg, E Side-Midblk',129.3,-675.3,5.9
'S Leg, W Side-Corner',-62.5,-88.9,5.9
'S Leg, W Side - 25 m',-56.2,-160.6,5.9
'S Leg, W Side - 50 m',-49.1,-242.3,5.9
'S Leg, W Side-Midblk',-11.1,-676.6,5.9
'E Leg, N Side - 25 m',109.1,91.9,5.9
'E Leg, N Side - 50 m',190.8,99.0,5.9
'E Leg, N Side-Midblk',625.1,137.0,5.9
'W Leg, N Side - 25 m',-192.3,99.1,5.9
'W Leg, N Side - 50 m',-274.0,106.3,5.9
'W Leg, N Side-Midblk',-708.3,144.3,5.9
'E Leg, S Side - 25 m',149.7,-81.3,5.9
'E Leg, S Side - 50 m',231.4,-74.1,5.9
'E Leg, S Side-Midblk',665.7,-36.1,5.9
'W Leg, S Side - 25 m',-134.2,-82.6,5.9
'W Leg, S Side - 50 m',-215.9,-75.5,5.9
'W Leg, S Side-Midblk',-650.2,-37.5,5.9
'2040 NB I495 & MD185 (IC.21)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-29,-8,-534,1075,1540,1.36,0.0,79.7
1
'N Leg Dep - FreeFlow','AG',29,8,-480,1100,3965,0.72,0.0,79.7
1
'S Leg App - FreeFlow','AG',29,8,134,-1193,3965,0.72,0.0,79.7
1
'S Leg Dep - FreeFlow','AG',-29,-8,75,-1198,1540,1.68,0.0,79.7
1
'E Leg App - FreeFlow','AG',0,36,1192,140,8470,0.61,0.0,91.7
1
'E Leg Dep - FreeFlow','AG',0,-42,1199,63,7465,0.88,0.0,103.7
1
```

'W Leg App - FreeFlow','AG',0,-42,-1199,63,7465,0.61,0.0,103.7
1
'W Leg Dep - FreeFlow','AG',0,36,-1192,140,8470,0.88,0.0,91.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & MD185 (IC.21)

DATE : 5/15/19
TIME : 12:20:44

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-29.0	-8.0	-534.0	1075.0	*	1195.	335.	AG	1540.	1.4	0.0	79.7		
2. N Leg Dep - FreeFlow	*	29.0	8.0	-480.0	1100.0	*	1205.	335.	AG	3965.	0.7	0.0	79.7		
3. S Leg App - FreeFlow	*	29.0	8.0	134.0	-1193.0	*	1206.	175.	AG	3965.	0.7	0.0	79.7		
4. S Leg Dep - FreeFlow	*	-29.0	-8.0	75.0	-1198.0	*	1195.	175.	AG	1540.	1.7	0.0	79.7		
5. E Leg App - FreeFlow	*	0.0	36.0	1192.0	140.0	*	1197.	85.	AG	8470.	0.6	0.0	91.7		
6. E Leg Dep - FreeFlow	*	0.0	-42.0	1199.0	63.0	*	1204.	85.	AG	7465.	0.9	0.0	****		
7. W Leg App - FreeFlow	*	0.0	-42.0	-1199.0	63.0	*	1204.	275.	AG	7465.	0.6	0.0	****		
8. W Leg Dep - FreeFlow	*	0.0	36.0	-1192.0	140.0	*	1197.	275.	AG	8470.	0.9	0.0	91.7		

DATE : 5/15/19
TIME : 12:20:44

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	37.3	85.6	5.9
2. N Leg, E Side - 25 m	6.9	150.9	5.9
3. N Leg, E Side - 50 m	-27.8	225.2	5.9
4. N Leg, E Side-Midblk	-212.0	620.3	5.9
5. N Leg, W Side-Corner	-120.5	92.9	5.9
6. N Leg, W Side - 25 m	-151.0	158.1	5.9
7. N Leg, W Side - 50 m	-185.6	232.5	5.9
8. N Leg, W Side-Midblk	-369.9	627.6	5.9
9. S Leg, E Side-Corner	77.9	-87.5	5.9
10. S Leg, E Side - 25 m	84.2	-159.3	5.9
11. S Leg, E Side - 50 m	91.4	-241.0	5.9
12. S Leg, E Side-Midblk	129.3	-675.3	5.9
13. S Leg, W Side-Corner	-62.5	-88.9	5.9
14. S Leg, W Side - 25 m	-56.2	-160.6	5.9
15. S Leg, W Side - 50 m	-49.1	-242.3	5.9
16. S Leg, W Side-Midblk	-11.1	-676.6	5.9
17. E Leg, N Side - 25 m	109.1	91.9	5.9
18. E Leg, N Side - 50 m	190.8	99.0	5.9
19. E Leg, N Side-Midblk	625.1	137.0	5.9
20. W Leg, N Side - 25 m	-192.3	99.1	5.9
21. W Leg, N Side - 50 m	-274.0	106.3	5.9
22. W Leg, N Side-Midblk	-708.3	144.3	5.9
23. E Leg, S Side - 25 m	149.7	-81.3	5.9
24. E Leg, S Side - 50 m	231.4	-74.1	5.9
25. E Leg, S Side-Midblk	665.7	-36.1	5.9
26. W Leg, S Side - 25 m	-134.2	-82.6	5.9

27. W Leg, S Side - 50 m * -215.9 -75.5 5.9 *
28. W Leg, S Side-Midblk * -650.2 -37.5 5.9 *

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & MD185 (IC.21)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.3000	0.2000	0.1000	0.0000	0.3000	0.3000	0.1000
20.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.3000	0.2000	0.1000	0.0000	0.3000	0.1000	0.1000
30.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.3000	0.2000	0.1000	0.0000	0.2000	0.2000	0.2000
40.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.3000	0.2000	0.1000	0.0000	0.4000	0.3000	0.3000
50.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.3000	0.2000	0.1000	0.0000	0.4000	0.3000	0.2000
60.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.3000	0.2000	0.1000	0.0000	0.4000	0.3000	0.2000
70.	* 0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.4000	0.2000	0.1000	0.0000	0.5000	0.3000	0.2000
80.	* 0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.1000	0.4000	0.1000	0.0000	0.0000	0.5000	0.2000	0.1000
90.	* 0.3000	0.1000	0.0000	0.0000	0.4000	0.2000	0.1000	0.1000	0.2000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000
100.	* 0.3000	0.2000	0.1000	0.0000	0.4000	0.3000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000
110.	* 0.3000	0.2000	0.2000	0.0000	0.5000	0.3000	0.4000	0.2000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
120.	* 0.3000	0.2000	0.2000	0.0000	0.4000	0.3000	0.4000	0.2000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000

130. * 0.3000 0.2000 0.2000 0.0000 0.4000 0.3000 0.2000 0.2000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
140. * 0.2000 0.2000 0.2000 0.0000 0.3000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
150. * 0.2000 0.2000 0.3000 0.1000 0.3000 0.2000 0.2000 0.1000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
160. * 0.2000 0.3000 0.1000 0.1000 0.4000 0.1000 0.1000 0.1000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
170. * 0.4000 0.4000 0.2000 0.1000 0.3000 0.2000 0.1000 0.0000 0.1000
0.1000 0.1000 0.1000 0.1000 0.1000 0.1000
180. * 0.5000 0.3000 0.2000 0.1000 0.3000 0.2000 0.1000 0.0000 0.1000
0.1000 0.1000 0.1000 0.1000 0.1000 0.1000
190. * 0.5000 0.2000 0.2000 0.1000 0.3000 0.2000 0.1000 0.0000 0.2000
0.2000 0.2000 0.1000 0.0000 0.0000 0.0000
200. * 0.3000 0.2000 0.2000 0.1000 0.3000 0.2000 0.1000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
210. * 0.4000 0.3000 0.2000 0.1000 0.3000 0.2000 0.1000 0.0000 0.2000
0.2000 0.2000 0.1000 0.0000 0.0000 0.0000
220. * 0.4000 0.3000 0.2000 0.1000 0.3000 0.2000 0.1000 0.0000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
230. * 0.4000 0.3000 0.2000 0.1000 0.3000 0.2000 0.1000 0.0000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
240. * 0.5000 0.3000 0.2000 0.1000 0.4000 0.2000 0.1000 0.0000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
250. * 0.5000 0.3000 0.2000 0.1000 0.4000 0.3000 0.1000 0.0000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
260. * 0.6000 0.3000 0.2000 0.1000 0.4000 0.2000 0.1000 0.0000 0.2000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
270. * 0.5000 0.2000 0.1000 0.1000 0.4000 0.1000 0.0000 0.0000 0.3000
0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
280. * 0.2000 0.1000 0.1000 0.1000 0.2000 0.0000 0.0000 0.0000 0.4000
0.3000 0.1000 0.1000 0.3000 0.1000 0.0000
290. * 0.1000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.4000
0.3000 0.3000 0.1000 0.3000 0.2000 0.0000
300. * 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.4000
0.3000 0.3000 0.1000 0.3000 0.2000 0.2000
310. * 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.3000
0.3000 0.3000 0.1000 0.2000 0.2000 0.2000
320. * 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.5000
0.2000 0.2000 0.2000 0.2000 0.2000 0.2000
330. * 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.4000
0.4000 0.2000 0.2000 0.2000 0.2000 0.1000
340. * 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.5000
0.3000 0.1000 0.1000 0.3000 0.2000 0.1000
350. * 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000 0.2000 0.1000 0.4000
0.2000 0.2000 0.1000 0.4000 0.2000 0.1000
360. * 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000 0.2000 0.2000 0.3000
0.2000 0.2000 0.1000 0.4000 0.3000 0.1000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.6000  0.4000  0.3000  0.1000  0.5000  0.3000  0.4000  0.2000  0.5000
0.4000  0.3000  0.2000  0.5000  0.3000  0.3000
 DEGR. *    260     170     150     150     110     100     110      10     320
330     290     200      70      10      40
```



```
      JOB: I-495 & I-270 MLS                                   RUN: 2040 NB I495 &
MD185 (IC.21)

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:  10.-360.

 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.3000  0.2000  0.2000  0.2000
  20.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.3000  0.2000  0.2000  0.2000
  30.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.3000  0.2000  0.2000  0.2000
  40.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.3000  0.2000  0.2000  0.2000
  50.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.3000  0.3000  0.2000  0.2000
  60.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.3000  0.3000  0.2000  0.2000
  70.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.3000
  80.  *  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000  0.4000  0.4000
0.2000  0.4000  0.3000  0.3000
  90.  *  0.1000  0.3000  0.3000  0.2000  0.3000  0.3000  0.2000  0.2000  0.2000
0.1000  0.2000  0.2000  0.2000
```

```
 100.  *  0.1000  0.3000  0.3000  0.3000  0.4000  0.4000  0.3000  0.1000  0.1000
0.1000  0.2000  0.1000  0.1000
 110.  *  0.1000  0.3000  0.3000  0.3000  0.4000  0.4000  0.4000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 120.  *  0.1000  0.3000  0.3000  0.3000  0.4000  0.4000  0.4000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 130.  *  0.2000  0.3000  0.3000  0.3000  0.3000  0.4000  0.4000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 140.  *  0.2000  0.2000  0.2000  0.2000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 150.  *  0.2000  0.2000  0.2000  0.2000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 160.  *  0.1000  0.2000  0.2000  0.2000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 170.  *  0.1000  0.2000  0.2000  0.2000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.1000  0.3000  0.2000  0.2000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  0.3000  0.2000  0.2000  0.3000  0.3000  0.3000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.3000  0.2000  0.2000  0.3000  0.3000  0.3000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.2000  0.2000  0.2000  0.3000  0.3000  0.3000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.2000  0.3000  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.1000  0.3000  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.3000  0.2000  0.3000  0.4000  0.4000  0.4000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.3000  0.4000  0.3000  0.4000  0.4000  0.4000  0.0000  0.0000
0.1000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.4000  0.3000  0.3000  0.4000  0.4000  0.4000  0.1000  0.1000
0.1000  0.0000  0.0000  0.0000
 270.  *  0.0000  0.3000  0.2000  0.2000  0.4000  0.3000  0.3000  0.2000  0.4000
0.2000  0.1000  0.1000  0.1000
 280.  *  0.0000  0.1000  0.1000  0.1000  0.2000  0.2000  0.2000  0.4000  0.4000
0.4000  0.3000  0.3000  0.2000
 290.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.4000  0.3000
0.3000  0.3000  0.3000  0.3000
 300.  *  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.4000
0.3000  0.3000  0.3000  0.3000
 310.  *  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.3000  0.2000  0.2000  0.2000
 320.  *  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000
0.3000  0.2000  0.2000  0.2000
 330.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.3000
0.3000  0.2000  0.2000  0.2000
```

```
 340.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.3000  0.2000  0.2000  0.2000
 350.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.3000  0.2000  0.2000  0.2000
 360.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.3000  0.2000  0.2000  0.2000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.2000  0.4000  0.4000  0.3000  0.4000  0.4000  0.4000  0.4000  0.4000
0.4000  0.4000  0.3000  0.3000
 DEGR. *     10     260     250     100     100     100     110      70      70
70      80      70      70

 THE HIGHEST CONCENTRATION OF   0.6000 PPM OCCURRED AT RECEPTOR     1.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
7,7,4,3,1114,1114,1114,1114,1114,1114,1114,1114,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-10,-10,10,5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',88.7,38.4,5.9
'N Leg, E Side - 25 m',76.2,109.3,5.9
'N Leg, E Side - 50 m',61.9,190.1,5.9
'N Leg, E Side-Midblk',-13.8,619.5,5.9
'N Leg, W Side-Corner',-107.0,65.6,5.9
'N Leg, W Side - 25 m',-119.5,136.5,5.9
'N Leg, W Side - 50 m',-133.8,217.3,5.9
'N Leg, W Side-Midblk',-209.5,646.6,5.9
'S Leg, E Side-Corner',107.4,-67.6,5.9
'S Leg, E Side - 25 m',119.9,-138.5,5.9
'S Leg, E Side - 50 m',134.1,-219.3,5.9
'S Leg, E Side-Midblk',209.8,-648.7,5.9
'S Leg, W Side-Corner',-87.8,-43.4,5.9
'S Leg, W Side - 25 m',-75.3,-114.3,5.9
'S Leg, W Side - 50 m',-61.0,-195.1,5.9
'S Leg, W Side-Midblk',14.7,-624.5,5.9
'E Leg, N Side - 25 m',160.4,32.1,5.9
'E Leg, N Side - 50 m',242.1,25.0,5.9
'E Leg, N Side-Midblk',676.4,-13.0,5.9
'W Leg, N Side - 25 m',-177.9,78.1,5.9
'W Leg, N Side - 50 m',-258.7,92.3,5.9
'W Leg, N Side-Midblk',-688.1,168.0,5.9
'E Leg, S Side - 25 m',179.1,-73.9,5.9
'E Leg, S Side - 50 m',260.8,-81.0,5.9
'E Leg, S Side-Midblk',695.1,-119.0,5.9
'W Leg, S Side - 25 m',-158.7,-30.9,5.9
'W Leg, S Side - 50 m',-239.5,-16.7,5.9
'W Leg, S Side-Midblk',-668.8,59.0,5.9
'2040 NB I495 & MD 190 (IC.25)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-41,-7,-250,1174,11075,0.70,0.0,103.7
1
'N Leg Dep - FreeFlow','AG',41,7,-167,1189,9910,1.43,0.0,103.7
1
'S Leg App - FreeFlow','AG',41,7,250,-1174,9910,0.70,0.0,103.7
1
'S Leg Dep - FreeFlow','AG',-41,-7,167,-1189,11075,1.43,0.0,103.7
1
'E Leg App - FreeFlow','AG',2,18,1197,-87,1375,0.65,0.0,55.7
1
'E Leg Dep - FreeFlow','AG',-3,-24,1193,-128,1875,1.92,0.0,67.7
1
```

```
'W Leg App - FreeFlow','AG',-3,-24,-1186,185,1875,1.48,0.0,67.7
1
'W Leg Dep - FreeFlow','AG',2,18,-1179,226,1375,0.65,0.0,55.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & MD 190 (IC.25)

DATE : 5/16/19
TIME : 7:53:43

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-41.0	-7.0	-250.0	1174.0	*	1199.	350.	AG	11075.	0.7	0.0	****		
2. N Leg Dep - FreeFlow	*	41.0	7.0	-167.0	1189.0	*	1200.	350.	AG	9910.	1.4	0.0	****		
3. S Leg App - FreeFlow	*	41.0	7.0	250.0	-1174.0	*	1199.	170.	AG	9910.	0.7	0.0	****		
4. S Leg Dep - FreeFlow	*	-41.0	-7.0	167.0	-1189.0	*	1200.	170.	AG	11075.	1.4	0.0	****		
5. E Leg App - FreeFlow	*	2.0	18.0	1197.0	-87.0	*	1200.	95.	AG	1375.	0.6	0.0	55.7		
6. E Leg Dep - FreeFlow	*	-3.0	-24.0	1193.0	-128.0	*	1201.	95.	AG	1875.	1.9	0.0	67.7		
7. W Leg App - FreeFlow	*	-3.0	-24.0	-1186.0	185.0	*	1201.	280.	AG	1875.	1.5	0.0	67.7		
8. W Leg Dep - FreeFlow	*	2.0	18.0	-1179.0	226.0	*	1199.	280.	AG	1375.	0.6	0.0	55.7		

PAGE 2
JOB: I-495 & I-270 MLS RUN: 2040 NB I495 &

DATE : 5/16/19
TIME : 7:53:43

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	88.7	38.4	5.9
2. N Leg, E Side - 25 m	76.2	109.3	5.9
3. N Leg, E Side - 50 m	61.9	190.1	5.9
4. N Leg, E Side-Midblk	-13.8	619.5	5.9
5. N Leg, W Side-Corner	-107.0	65.6	5.9
6. N Leg, W Side - 25 m	-119.5	136.5	5.9
7. N Leg, W Side - 50 m	-133.8	217.3	5.9
8. N Leg, W Side-Midblk	-209.5	646.6	5.9
9. S Leg, E Side-Corner	107.4	-67.6	5.9
10. S Leg, E Side - 25 m	119.9	-138.5	5.9
11. S Leg, E Side - 50 m	134.1	-219.3	5.9
12. S Leg, E Side-Midblk	209.8	-648.7	5.9
13. S Leg, W Side-Corner	-87.8	-43.4	5.9
14. S Leg, W Side - 25 m	-75.3	-114.3	5.9
15. S Leg, W Side - 50 m	-61.0	-195.1	5.9
16. S Leg, W Side-Midblk	14.7	-624.5	5.9
17. E Leg, N Side - 25 m	160.4	32.1	5.9
18. E Leg, N Side - 50 m	242.1	25.0	5.9
19. E Leg, N Side-Midblk	676.4	-13.0	5.9
20. W Leg, N Side - 25 m	-177.9	78.1	5.9
21. W Leg, N Side - 50 m	-258.7	92.3	5.9
22. W Leg, N Side-Midblk	-688.1	168.0	5.9
23. E Leg, S Side - 25 m	179.1	-73.9	5.9
24. E Leg, S Side - 50 m	260.8	-81.0	5.9
25. E Leg, S Side-Midblk	695.1	-119.0	5.9
26. W Leg, S Side - 25 m	-158.7	-30.9	5.9

27. W Leg, S Side - 50 m * -239.5 -16.7 5.9 *
28. W Leg, S Side-Midblk * -668.8 59.0 5.9 *

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & MD 190 (IC.25)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.1000	0.1000	0.1000	0.1000	0.6000	0.5000	0.5000	0.5000	0.1000	0.1000	0.0000	0.0000	0.8000	0.8000	0.8000
20.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.1000	0.1000	0.0000	0.0000	0.6000	0.7000	0.7000
30.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.1000	0.1000	0.0000	0.0000	0.7000	0.7000	0.7000
40.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.1000	0.1000	0.0000	0.0000	0.6000	0.5000	0.5000
50.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.1000	0.1000	0.0000	0.0000	0.6000	0.6000	0.5000
60.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.1000	0.1000	0.0000	0.0000	0.6000	0.6000	0.5000
70.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.2000	0.1000	0.0000	0.0000	0.8000	0.6000	0.5000
80.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.2000	0.1000	0.0000	0.0000	0.7000	0.6000	0.5000
90.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.2000	0.0000	0.0000	0.0000	0.7000	0.6000	0.5000
100.	* 0.2000	0.0000	0.0000	0.0000	0.5000	0.4000	0.4000	0.4000	0.1000	0.0000	0.0000	0.0000	0.6000	0.5000	0.5000
110.	* 0.2000	0.1000	0.0000	0.0000	0.4000	0.5000	0.4000	0.4000	0.1000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000
120.	* 0.1000	0.1000	0.0000	0.0000	0.6000	0.5000	0.4000	0.4000	0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000

130. * 0.1000 0.1000 0.0000 0.0000 0.4000 0.4000 0.4000 0.4000 0.0000
0.0000 0.0000 0.0000 0.6000 0.6000 0.6000
140. * 0.1000 0.1000 0.0000 0.0000 0.6000 0.5000 0.4000 0.5000 0.0000
0.0000 0.0000 0.0000 0.6000 0.6000 0.6000
150. * 0.1000 0.1000 0.1000 0.1000 0.7000 0.5000 0.6000 0.5000 0.0000
0.0000 0.0000 0.0000 0.7000 0.7000 0.7000
160. * 0.2000 0.2000 0.2000 0.2000 0.8000 0.7000 0.6000 0.5000 0.1000
0.1000 0.1000 0.1000 0.8000 0.8000 0.8000
170. * 0.4000 0.5000 0.5000 0.6000 0.7000 0.5000 0.6000 0.4000 0.3000
0.3000 0.3000 0.2000 0.6000 0.6000 0.5000
180. * 0.7000 0.6000 0.6000 0.8000 0.3000 0.2000 0.2000 0.2000 0.5000
0.5000 0.5000 0.4000 0.3000 0.3000 0.3000
190. * 0.7000 0.7000 0.8000 0.8000 0.1000 0.0000 0.0000 0.0000 0.6000
0.6000 0.6000 0.5000 0.1000 0.1000 0.1000
200. * 0.7000 0.7000 0.6000 0.6000 0.1000 0.0000 0.0000 0.0000 0.5000
0.5000 0.5000 0.4000 0.1000 0.1000 0.1000
210. * 0.6000 0.6000 0.6000 0.5000 0.1000 0.0000 0.0000 0.0000 0.5000
0.5000 0.5000 0.5000 0.0000 0.0000 0.0000
220. * 0.5000 0.5000 0.5000 0.5000 0.1000 0.0000 0.0000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
230. * 0.6000 0.5000 0.5000 0.5000 0.1000 0.0000 0.0000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
240. * 0.5000 0.4000 0.4000 0.4000 0.1000 0.0000 0.0000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
250. * 0.6000 0.4000 0.4000 0.4000 0.1000 0.0000 0.0000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
260. * 0.7000 0.5000 0.5000 0.5000 0.1000 0.0000 0.0000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
270. * 0.5000 0.4000 0.4000 0.4000 0.2000 0.0000 0.0000 0.0000 0.5000
0.4000 0.4000 0.4000 0.1000 0.0000 0.0000
280. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.6000
0.4000 0.4000 0.4000 0.1000 0.0000 0.0000
290. * 0.5000 0.5000 0.5000 0.5000 0.0000 0.0000 0.0000 0.0000 0.5000
0.5000 0.4000 0.4000 0.2000 0.0000 0.0000
300. * 0.5000 0.5000 0.5000 0.5000 0.0000 0.0000 0.0000 0.0000 0.6000
0.5000 0.4000 0.4000 0.1000 0.1000 0.0000
310. * 0.5000 0.5000 0.5000 0.5000 0.0000 0.0000 0.0000 0.0000 0.5000
0.4000 0.4000 0.5000 0.1000 0.1000 0.0000
320. * 0.6000 0.6000 0.6000 0.6000 0.0000 0.0000 0.0000 0.0000 0.5000
0.5000 0.5000 0.5000 0.1000 0.0000 0.0000
330. * 0.7000 0.7000 0.7000 0.6000 0.0000 0.0000 0.0000 0.0000 0.6000
0.6000 0.5000 0.5000 0.1000 0.1000 0.1000
340. * 0.7000 0.7000 0.7000 0.7000 0.1000 0.1000 0.1000 0.1000 0.7000
0.7000 0.5000 0.7000 0.2000 0.2000 0.2000
350. * 0.6000 0.6000 0.5000 0.4000 0.4000 0.4000 0.4000 0.2000 0.6000
0.6000 0.4000 0.4000 0.5000 0.5000 0.5000
360. * 0.2000 0.2000 0.2000 0.2000 0.5000 0.5000 0.5000 0.4000 0.3000
0.3000 0.2000 0.1000 0.7000 0.7000 0.8000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.7000  0.7000  0.8000  0.8000  0.8000  0.7000  0.6000  0.5000  0.7000
0.7000  0.6000  0.7000  0.8000  0.8000  0.8000
 DEGR. *    180     190     190     180     160     160     150      10     340
340     190     340      10      10      10
```


JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & MD 190 (IC.25)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.8000  0.0000  0.0000  0.0000  0.4000  0.2000  0.0000  0.1000  0.1000
0.1000  0.5000  0.3000  0.1000
  20.  *  0.6000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.1000  0.1000
0.1000  0.4000  0.3000  0.1000
  30.  *  0.6000  0.0000  0.0000  0.0000  0.3000  0.2000  0.0000  0.1000  0.1000
0.1000  0.4000  0.3000  0.2000
  40.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.1000  0.1000
0.1000  0.4000  0.3000  0.2000
  50.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.1000  0.1000
0.1000  0.3000  0.3000  0.2000
  60.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.1000  0.1000
0.1000  0.3000  0.3000  0.2000
  70.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.2000  0.2000
0.2000  0.4000  0.3000  0.2000
  80.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.2000  0.1000  0.2000  0.2000
0.2000  0.5000  0.3000  0.2000
  90.  *  0.5000  0.0000  0.0000  0.0000  0.2000  0.2000  0.1000  0.2000  0.2000
0.2000  0.5000  0.3000  0.1000
```

```
 100.  *  0.5000  0.2000  0.1000  0.1000  0.3000  0.2000  0.0000  0.1000  0.1000
0.1000  0.5000  0.4000  0.1000
 110.  *  0.5000  0.2000  0.2000  0.1000  0.3000  0.2000  0.3000  0.0000  0.0000
0.0000  0.4000  0.3000  0.2000
 120.  *  0.5000  0.1000  0.1000  0.1000  0.3000  0.3000  0.2000  0.0000  0.0000
0.0000  0.4000  0.3000  0.1000
 130.  *  0.6000  0.1000  0.1000  0.1000  0.5000  0.4000  0.2000  0.0000  0.0000
0.0000  0.4000  0.3000  0.1000
 140.  *  0.6000  0.1000  0.1000  0.1000  0.4000  0.4000  0.2000  0.0000  0.0000
0.0000  0.4000  0.3000  0.1000
 150.  *  0.7000  0.1000  0.1000  0.1000  0.5000  0.4000  0.1000  0.0000  0.0000
0.0000  0.4000  0.3000  0.0000
 160.  *  0.7000  0.1000  0.1000  0.1000  0.5000  0.3000  0.1000  0.0000  0.0000
0.0000  0.4000  0.1000  0.0000
 170.  *  0.5000  0.2000  0.1000  0.1000  0.2000  0.2000  0.1000  0.1000  0.0000
0.0000  0.1000  0.1000  0.0000
 180.  *  0.2000  0.3000  0.3000  0.1000  0.1000  0.1000  0.1000  0.2000  0.2000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  0.4000  0.3000  0.1000  0.1000  0.1000  0.1000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.1000  0.4000  0.4000  0.1000  0.1000  0.1000  0.1000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.4000  0.3000  0.2000  0.1000  0.1000  0.1000  0.3000  0.2000
0.1000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.4000  0.3000  0.2000  0.1000  0.1000  0.1000  0.3000  0.2000
0.1000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.4000  0.3000  0.2000  0.1000  0.1000  0.1000  0.3000  0.2000
0.1000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.4000  0.3000  0.2000  0.1000  0.1000  0.1000  0.3000  0.2000
0.1000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.4000  0.3000  0.2000  0.1000  0.1000  0.1000  0.3000  0.2000
0.1000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.2000  0.3000  0.2000  0.1000  0.1000  0.1000  0.3000  0.2000
0.1000  0.0000  0.0000  0.0000
 270.  *  0.0000  0.4000  0.1000  0.1000  0.2000  0.2000  0.1000  0.4000  0.3000
0.2000  0.1000  0.1000  0.1000
 280.  *  0.0000  0.3000  0.2000  0.1000  0.0000  0.0000  0.0000  0.4000  0.3000
0.2000  0.1000  0.1000  0.1000
 290.  *  0.0000  0.3000  0.2000  0.1000  0.0000  0.0000  0.0000  0.3000  0.3000
0.3000  0.1000  0.1000  0.1000
 300.  *  0.0000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  0.4000  0.4000
0.3000  0.1000  0.1000  0.1000
 310.  *  0.0000  0.3000  0.3000  0.1000  0.0000  0.0000  0.0000  0.4000  0.4000
0.2000  0.1000  0.1000  0.1000
 320.  *  0.1000  0.4000  0.3000  0.1000  0.0000  0.0000  0.0000  0.4000  0.4000
0.2000  0.1000  0.1000  0.1000
 330.  *  0.1000  0.4000  0.3000  0.0000  0.0000  0.0000  0.0000  0.5000  0.4000
0.1000  0.1000  0.1000  0.1000
```

```
 340.  *  0.2000  0.3000  0.1000  0.0000  0.0000  0.0000  0.0000  0.4000  0.2000
0.1000  0.1000  0.1000  0.1000
 350.  *  0.7000  0.1000  0.0000  0.0000  0.1000  0.0000  0.0000  0.2000  0.2000
0.1000  0.2000  0.1000  0.1000
 360.  *  0.8000  0.0000  0.0000  0.0000  0.2000  0.2000  0.0000  0.1000  0.1000
0.1000  0.3000  0.3000  0.1000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.8000  0.4000  0.4000  0.2000  0.5000  0.4000  0.3000  0.5000  0.4000
0.3000  0.5000  0.4000  0.2000
 DEGR. *     10     190     200     210     130     130     110     330     300
290      10     100      30

 THE HIGHEST CONCENTRATION OF   0.8000 PPM OCCURRED AT RECEPTOR    13.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
4,4,5,5,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,-25,-25,15,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',30.0,72.9,5.9
'N Leg, E Side - 25 m',-0.4,138.2,5.9
'N Leg, E Side - 50 m',-35.1,212.5,5.9
'N Leg, E Side-Midblk',-219.3,607.6,5.9
'N Leg, W Side-Corner',-111.8,102.4,5.9
'N Leg, W Side - 25 m',-142.2,167.7,5.9
'N Leg, W Side - 50 m',-176.9,242.0,5.9
'N Leg, W Side-Midblk',-361.1,637.1,5.9
'S Leg, E Side-Corner',93.0,-62.1,5.9
'S Leg, E Side - 25 m',123.4,-127.4,5.9
'S Leg, E Side - 50 m',158.1,-201.7,5.9
'S Leg, E Side-Midblk',342.3,-596.9,5.9
'S Leg, W Side-Corner',-34.5,-63.2,5.9
'S Leg, W Side - 25 m',-4.1,-128.5,5.9
'S Leg, W Side - 50 m',30.6,-202.8,5.9
'S Leg, W Side-Midblk',214.8,-597.9,5.9
'E Leg, N Side - 25 m',101.8,79.2,5.9
'E Leg, N Side - 50 m',183.5,86.3,5.9
'E Leg, N Side-Midblk',617.8,124.3,5.9
'W Leg, N Side - 25 m',-181.3,121.1,5.9
'W Leg, N Side - 50 m',-260.5,142.3,5.9
'W Leg, N Side-Midblk',-681.6,255.1,5.9
'E Leg, S Side - 25 m',164.7,-55.9,5.9
'E Leg, S Side - 50 m',246.4,-48.7,5.9
'E Leg, S Side-Midblk',680.7,-10.7,5.9
'W Leg, S Side - 25 m',-104.1,-44.6,5.9
'W Leg, S Side - 50 m',-183.3,-23.4,5.9
'W Leg, S Side-Midblk',-604.4,89.5,5.9
'2040 NB Capital Beltway & MD193 IC.18',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-22,-10,-529,1077,1580,1.14,0.0,67.7
1
'N Leg Dep - FreeFlow','AG',22,10,-485,1098,2295,0.67,0.0,67.7
1
'S Leg App - FreeFlow','AG',22,10,529,-1077,2295,1.14,0.0,67.7
1
'S Leg Dep - FreeFlow','AG',-22,-10,485,-1098,1580,0.67,0.0,67.7
1
'E Leg App - FreeFlow','AG',3,30,1193,134,8015,0.61,0.0,79.7
1
'E Leg Dep - FreeFlow','AG',-3,-30,1198,75,7945,1.49,0.0,79.7
1
```

```
'W Leg App - FreeFlow','AG',-3,-30,-1167,282,7945,0.88,0.0,79.7
1
'W Leg Dep - FreeFlow','AG',3,30,-1151,340,8015,0.88,0.0,79.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NB Capital Beltway & MD193 IC.18

DATE : 5/17/19
TIME : 7:23:23

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-22.0	-10.0	-529.0	1077.0	*	1199.	335.	AG	1580.	1.1	0.0	67.7		
2. N Leg Dep - FreeFlow	*	22.0	10.0	-485.0	1098.0	*	1200.	335.	AG	2295.	0.7	0.0	67.7		
3. S Leg App - FreeFlow	*	22.0	10.0	529.0	-1077.0	*	1199.	155.	AG	2295.	1.1	0.0	67.7		
4. S Leg Dep - FreeFlow	*	-22.0	-10.0	485.0	-1098.0	*	1200.	155.	AG	1580.	0.7	0.0	67.7		
5. E Leg App - FreeFlow	*	3.0	30.0	1193.0	134.0	*	1195.	85.	AG	8015.	0.6	0.0	79.7		
6. E Leg Dep - FreeFlow	*	-3.0	-30.0	1198.0	75.0	*	1206.	85.	AG	7945.	1.5	0.0	79.7		
7. W Leg App - FreeFlow	*	-3.0	-30.0	-1167.0	282.0	*	1205.	285.	AG	7945.	0.9	0.0	79.7		
8. W Leg Dep - FreeFlow	*	3.0	30.0	-1151.0	340.0	*	1195.	285.	AG	8015.	0.9	0.0	79.7		

Beltway & MD193 IC.18

DATE : 5/17/19
TIME : 7:23:23

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	30.0	72.9	5.9
2. N Leg, E Side - 25 m	-0.4	138.2	5.9
3. N Leg, E Side - 50 m	-35.1	212.5	5.9
4. N Leg, E Side-Midblk	-219.3	607.6	5.9
5. N Leg, W Side-Corner	-111.8	102.4	5.9
6. N Leg, W Side - 25 m	-142.2	167.7	5.9
7. N Leg, W Side - 50 m	-176.9	242.0	5.9
8. N Leg, W Side-Midblk	-361.1	637.1	5.9
9. S Leg, E Side-Corner	93.0	-62.1	5.9
10. S Leg, E Side - 25 m	123.4	-127.4	5.9
11. S Leg, E Side - 50 m	158.1	-201.7	5.9
12. S Leg, E Side-Midblk	342.3	-596.9	5.9
13. S Leg, W Side-Corner	-34.5	-63.2	5.9
14. S Leg, W Side - 25 m	-4.1	-128.5	5.9
15. S Leg, W Side - 50 m	30.6	-202.8	5.9
16. S Leg, W Side-Midblk	214.8	-597.9	5.9
17. E Leg, N Side - 25 m	101.8	79.2	5.9
18. E Leg, N Side - 50 m	183.5	86.3	5.9
19. E Leg, N Side-Midblk	617.8	124.3	5.9
20. W Leg, N Side - 25 m	-181.3	121.1	5.9
21. W Leg, N Side - 50 m	-260.5	142.3	5.9
22. W Leg, N Side-Midblk	-681.6	255.1	5.9
23. E Leg, S Side - 25 m	164.7	-55.9	5.9
24. E Leg, S Side - 50 m	246.4	-48.7	5.9
25. E Leg, S Side-Midblk	680.7	-10.7	5.9
26. W Leg, S Side - 25 m	-104.1	-44.6	5.9

27. W Leg, S Side - 50 m * -183.3 -23.4 5.9 *
28. W Leg, S Side-Midblk * -604.4 89.5 5.9 *

JOB: I-495 & I-270 MLS RUN: 2040 NB Capital Beltway & MD193 IC.18

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.4000	0.3000	0.1000	0.1000	0.3000	0.1000	0.1000
20.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.4000	0.3000	0.1000	0.1000	0.4000	0.3000	0.2000
30.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.4000	0.3000	0.1000	0.1000	0.4000	0.3000	0.1000
40.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.5000	0.3000	0.1000	0.1000	0.4000	0.3000	0.1000
50.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5000	0.3000	0.1000	0.0000	0.5000	0.3000	0.3000
60.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.6000	0.3000	0.2000	0.0000	0.5000	0.4000	0.3000
70.	* 0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.7000	0.3000	0.1000	0.0000	0.7000	0.4000	0.1000
80.	* 0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.7000	0.2000	0.1000	0.0000	0.7000	0.2000	0.1000
90.	* 0.4000	0.2000	0.0000	0.0000	0.3000	0.2000	0.1000	0.1000	0.4000	0.1000	0.0000	0.0000	0.5000	0.1000	0.0000
100.	* 0.5000	0.3000	0.2000	0.0000	0.5000	0.3000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000
110.	* 0.4000	0.3000	0.2000	0.0000	0.6000	0.3000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.2000	0.1000	0.1000
120.	* 0.4000	0.3000	0.2000	0.1000	0.6000	0.3000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000

130. * 0.4000 0.3000 0.2000 0.1000 0.4000 0.3000 0.2000 0.2000 0.0000
0.0000 0.0000 0.0000 0.1000 0.1000 0.1000
140. * 0.3000 0.2000 0.2000 0.1000 0.6000 0.3000 0.3000 0.1000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
150. * 0.4000 0.2000 0.1000 0.0000 0.4000 0.3000 0.2000 0.1000 0.1000
0.1000 0.1000 0.1000 0.1000 0.1000 0.1000
160. * 0.4000 0.3000 0.3000 0.1000 0.3000 0.2000 0.2000 0.1000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
170. * 0.4000 0.4000 0.2000 0.1000 0.3000 0.2000 0.2000 0.0000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
180. * 0.4000 0.3000 0.2000 0.1000 0.3000 0.2000 0.2000 0.0000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
190. * 0.2000 0.3000 0.3000 0.1000 0.3000 0.2000 0.2000 0.0000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
200. * 0.3000 0.3000 0.3000 0.1000 0.3000 0.2000 0.2000 0.0000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
210. * 0.3000 0.2000 0.2000 0.0000 0.3000 0.2000 0.2000 0.0000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
220. * 0.3000 0.2000 0.2000 0.0000 0.3000 0.2000 0.2000 0.0000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
230. * 0.3000 0.2000 0.2000 0.0000 0.3000 0.2000 0.2000 0.0000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
240. * 0.4000 0.2000 0.2000 0.0000 0.3000 0.2000 0.2000 0.0000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
250. * 0.3000 0.2000 0.2000 0.0000 0.4000 0.2000 0.2000 0.0000 0.2000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
260. * 0.3000 0.2000 0.2000 0.0000 0.4000 0.3000 0.2000 0.0000 0.2000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
270. * 0.4000 0.2000 0.2000 0.0000 0.4000 0.3000 0.2000 0.0000 0.4000
0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
280. * 0.4000 0.2000 0.0000 0.0000 0.4000 0.2000 0.0000 0.0000 0.7000
0.2000 0.1000 0.1000 0.2000 0.0000 0.0000
290. * 0.2000 0.1000 0.1000 0.1000 0.2000 0.0000 0.0000 0.0000 0.8000
0.4000 0.3000 0.1000 0.4000 0.2000 0.1000
300. * 0.1000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.7000
0.4000 0.3000 0.1000 0.5000 0.3000 0.2000
310. * 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.6000
0.4000 0.3000 0.1000 0.4000 0.3000 0.2000
320. * 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.6000
0.4000 0.3000 0.1000 0.4000 0.2000 0.2000
330. * 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.5000
0.3000 0.2000 0.1000 0.3000 0.2000 0.2000
340. * 0.1000 0.1000 0.1000 0.0000 0.1000 0.1000 0.1000 0.1000 0.4000
0.4000 0.2000 0.1000 0.4000 0.2000 0.2000
350. * 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000 0.1000 0.1000 0.4000
0.3000 0.1000 0.1000 0.4000 0.2000 0.1000
360. * 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000 0.1000 0.1000 0.4000
0.3000 0.1000 0.1000 0.3000 0.3000 0.1000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.5000  0.4000  0.3000  0.1000  0.6000  0.3000  0.3000  0.2000  0.8000
0.4000  0.3000  0.1000  0.7000  0.4000  0.3000
 DEGR. *    100     170     160     120     110     100     110     130     290
290     290      10      70      60      50
```


JOB: I-495 & I-270 MLS RUN: 2040 NB Capital Beltway & MD193 IC.18

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.3000
  20.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.3000
  30.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.3000
  40.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.5000  0.5000
0.5000  0.3000  0.3000  0.3000
  50.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.5000  0.5000
0.5000  0.3000  0.3000  0.3000
  60.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.6000  0.6000
0.6000  0.5000  0.3000  0.3000
  70.  *  0.0000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.7000  0.7000
0.6000  0.5000  0.5000  0.4000
  80.  *  0.0000  0.2000  0.2000  0.1000  0.0000  0.0000  0.0000  0.7000  0.7000
0.5000  0.7000  0.6000  0.4000
  90.  *  0.0000  0.4000  0.4000  0.3000  0.3000  0.3000  0.1000  0.4000  0.3000
0.3000  0.6000  0.6000  0.5000
```

```
 100.  *  0.1000  0.4000  0.4000  0.4000  0.4000  0.3000  0.3000  0.1000  0.1000
0.1000  0.3000  0.4000  0.5000
 110.  *  0.1000  0.4000  0.4000  0.4000  0.5000  0.3000  0.5000  0.1000  0.1000
0.1000  0.2000  0.2000  0.2000
 120.  *  0.1000  0.4000  0.4000  0.4000  0.4000  0.5000  0.4000  0.0000  0.0000
0.0000  0.0000  0.1000  0.1000
 130.  *  0.1000  0.4000  0.4000  0.4000  0.5000  0.4000  0.4000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 140.  *  0.2000  0.3000  0.3000  0.3000  0.3000  0.4000  0.4000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 150.  *  0.0000  0.3000  0.3000  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 160.  *  0.0000  0.3000  0.3000  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 170.  *  0.0000  0.4000  0.3000  0.3000  0.3000  0.3000  0.3000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.0000  0.4000  0.3000  0.3000  0.3000  0.3000  0.3000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  0.3000  0.3000  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.3000  0.3000  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.3000  0.3000  0.3000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.2000  0.4000  0.4000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.3000  0.4000  0.4000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.3000  0.3000  0.4000  0.3000  0.3000  0.3000  0.0000  0.1000
0.1000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.3000  0.5000  0.4000  0.4000  0.4000  0.4000  0.1000  0.1000
0.1000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.3000  0.3000  0.3000  0.4000  0.4000  0.4000  0.2000  0.2000
0.3000  0.0000  0.0000  0.0000
 270.  *  0.0000  0.4000  0.3000  0.2000  0.4000  0.4000  0.4000  0.4000  0.5000
0.6000  0.1000  0.1000  0.1000
 280.  *  0.0000  0.3000  0.2000  0.1000  0.4000  0.4000  0.4000  0.7000  0.7000
0.7000  0.2000  0.2000  0.2000
 290.  *  0.0000  0.1000  0.0000  0.0000  0.2000  0.2000  0.2000  0.7000  0.7000
0.6000  0.4000  0.4000  0.4000
 300.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.7000  0.6000
0.5000  0.4000  0.4000  0.4000
 310.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.5000  0.5000
0.5000  0.4000  0.4000  0.4000
 320.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.4000  0.4000  0.4000
 330.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.3000
```

```
 340.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.3000
 350.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.3000
 360.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.3000  0.3000  0.3000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.2000  0.4000  0.5000  0.4000  0.5000  0.5000  0.5000  0.7000  0.7000
0.7000  0.7000  0.6000  0.5000
 DEGR. *     10      90     250     100     110     120     110      70      70
280      80      80      90

 THE HIGHEST CONCENTRATION OF   0.8000 PPM OCCURRED AT RECEPTOR     9.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
4,4,7,6,2200,2200,2200,2200,2200,2200,2200,2200,1036.8,1036.8,1036.8,1036.8,1036.8,1
036.8,1036.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200
,0,0,1200,-1200,0,0,0,0,0,0,15,-15,7.5,7.5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',39.3,77.5,5.9
'N Leg, E Side - 25 m',20.6,147.1,5.9
'N Leg, E Side - 50 m',-0.6,226.3,5.9
'N Leg, E Side-Midblk',-113.4,647.4,5.9
'N Leg, W Side-Corner',-85.2,93.9,5.9
'N Leg, W Side - 25 m',-103.9,163.5,5.9
'N Leg, W Side - 50 m',-125.1,242.7,5.9
'N Leg, W Side-Midblk',-237.9,663.8,5.9
'S Leg, E Side-Corner',33.5,-99.2,5.9
'S Leg, E Side - 25 m',14.8,-168.8,5.9
'S Leg, E Side - 50 m',-6.4,-248.0,5.9
'S Leg, E Side-Midblk',-119.2,-669.1,5.9
'S Leg, W Side-Corner',-82.5,-83.9,5.9
'S Leg, W Side - 25 m',-101.2,-153.5,5.9
'S Leg, W Side - 50 m',-122.4,-232.7,5.9
'S Leg, W Side-Midblk',-235.2,-653.8,5.9
'E Leg, N Side - 25 m',110.7,68.1,5.9
'E Leg, N Side - 50 m',192.0,57.4,5.9
'E Leg, N Side-Midblk',624.2,0.5,5.9
'W Leg, N Side - 25 m',-156.6,103.3,5.9
'W Leg, N Side - 50 m',-237.9,114.0,5.9
'W Leg, N Side-Midblk',-670.2,170.9,5.9
'E Leg, S Side - 25 m',104.9,-108.6,5.9
'E Leg, S Side - 50 m',186.2,-119.3,5.9
'E Leg, S Side-Midblk',618.4,-176.2,5.9
'W Leg, S Side - 25 m',-153.9,-74.5,5.9
'W Leg, S Side - 50 m',-235.3,-63.8,5.9
'W Leg, S Side-Midblk',-667.5,-6.9,5.9
'2040 NB I495 & MD650 IC.17',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-25,0,-334,1153,2825,0.89,0.0,67.7
1
'N Leg Dep - FreeFlow','AG',25,0,-287,1165,3065,0.89,0.0,67.7
1
'S Leg App - FreeFlow','AG',25,0,-287,-1165,3065,0.89,0.0,67.7
1
'S Leg Dep - FreeFlow','AG',-25,0,-334,-1153,2825,0.89,0.0,67.7
1
'E Leg App - FreeFlow','AG',5,36,1194,-121,8420,1.21,0.0,91.7
1
'E Leg Dep - FreeFlow','AG',-5,-42,1184,-198,8250,0.61,0.0,103.7
1
```

```
'W Leg App - FreeFlow','AG',-5,-42,-1195,115,8250,1.21,0.0,103.7
1
'W Leg Dep - FreeFlow','AG',5,36,-1185,192,8420,0.61,0.0,91.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & MD650 IC.17

DATE : 5/16/19
TIME : 8:34:38

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. N Leg App - FreeFlow	*	-25.0	0.0	-334.0	1153.0	*	1194.	345.	AG	2825.	0.9	0.0	67.7		
2. N Leg Dep - FreeFlow	*	25.0	0.0	-287.0	1165.0	*	1206.	345.	AG	3065.	0.9	0.0	67.7		
3. S Leg App - FreeFlow	*	25.0	0.0	-287.0	-1165.0	*	1206.	195.	AG	3065.	0.9	0.0	67.7		
4. S Leg Dep - FreeFlow	*	-25.0	0.0	-334.0	-1153.0	*	1194.	195.	AG	2825.	0.9	0.0	67.7		
5. E Leg App - FreeFlow	*	5.0	36.0	1194.0	-121.0	*	1199.	98.	AG	8420.	1.2	0.0	91.7		
6. E Leg Dep - FreeFlow	*	-5.0	-42.0	1184.0	-198.0	*	1199.	97.	AG	8250.	0.6	0.0	****		
7. W Leg App - FreeFlow	*	-5.0	-42.0	-1195.0	115.0	*	1200.	278.	AG	8250.	1.2	0.0	****		
8. W Leg Dep - FreeFlow	*	5.0	36.0	-1185.0	192.0	*	1200.	277.	AG	8420.	0.6	0.0	91.7		

PAGE 2

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 &

MD650 IC.17

DATE : 5/16/19
TIME : 8:34:38

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	39.3	77.5	5.9
2. N Leg, E Side - 25 m	20.6	147.1	5.9
3. N Leg, E Side - 50 m	-0.6	226.3	5.9
4. N Leg, E Side-Midblk	-113.4	647.4	5.9
5. N Leg, W Side-Corner	-85.2	93.9	5.9
6. N Leg, W Side - 25 m	-103.9	163.5	5.9
7. N Leg, W Side - 50 m	-125.1	242.7	5.9
8. N Leg, W Side-Midblk	-237.9	663.8	5.9
9. S Leg, E Side-Corner	33.5	-99.2	5.9
10. S Leg, E Side - 25 m	14.8	-168.8	5.9
11. S Leg, E Side - 50 m	-6.4	-248.0	5.9
12. S Leg, E Side-Midblk	-119.2	-669.1	5.9
13. S Leg, W Side-Corner	-82.5	-83.9	5.9
14. S Leg, W Side - 25 m	-101.2	-153.5	5.9
15. S Leg, W Side - 50 m	-122.4	-232.7	5.9
16. S Leg, W Side-Midblk	-235.2	-653.8	5.9
17. E Leg, N Side - 25 m	110.7	68.1	5.9
18. E Leg, N Side - 50 m	192.0	57.4	5.9
19. E Leg, N Side-Midblk	624.2	0.5	5.9
20. W Leg, N Side - 25 m	-156.6	103.3	5.9
21. W Leg, N Side - 50 m	-237.9	114.0	5.9
22. W Leg, N Side-Midblk	-670.2	170.9	5.9
23. E Leg, S Side - 25 m	104.9	-108.6	5.9
24. E Leg, S Side - 50 m	186.2	-119.3	5.9
25. E Leg, S Side-Midblk	618.4	-176.2	5.9
26. W Leg, S Side - 25 m	-153.9	-74.5	5.9

27. W Leg, S Side - 50 m * -235.3 -63.8 5.9 *
28. W Leg, S Side-Midblk * -667.5 -6.9 5.9 *

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & MD650 IC.17

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.3000	0.3000	0.2000	0.1000	0.5000	0.3000	0.2000
20.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.2000	0.3000	0.3000	0.1000	0.4000	0.2000	0.2000
30.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.3000	0.2000	0.2000	0.0000	0.4000	0.3000	0.3000
40.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.3000	0.2000	0.2000	0.0000	0.4000	0.3000	0.2000
50.	* 0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.3000	0.2000	0.2000	0.0000	0.4000	0.4000	0.4000
60.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.4000	0.2000	0.2000	0.0000	0.6000	0.4000	0.4000
70.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.4000	0.2000	0.2000	0.0000	0.6000	0.4000	0.4000
80.	* 0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.4000	0.2000	0.2000	0.0000	0.7000	0.4000	0.4000
90.	* 0.2000	0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.1000	0.3000	0.2000	0.0000	0.0000	0.5000	0.3000	0.1000
100.	* 0.5000	0.1000	0.1000	0.0000	0.7000	0.3000	0.3000	0.2000	0.3000	0.0000	0.0000	0.0000	0.4000	0.1000	0.1000
110.	* 0.6000	0.3000	0.1000	0.0000	0.7000	0.5000	0.3000	0.2000	0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000
120.	* 0.5000	0.3000	0.1000	0.0000	0.5000	0.5000	0.4000	0.2000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000

130. * 0.5000 0.3000 0.2000 0.0000 0.4000 0.3000 0.4000 0.3000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
140. * 0.4000 0.3000 0.1000 0.1000 0.4000 0.4000 0.2000 0.3000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
150. * 0.4000 0.3000 0.1000 0.0000 0.3000 0.2000 0.2000 0.2000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
160. * 0.4000 0.3000 0.2000 0.1000 0.3000 0.3000 0.2000 0.1000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
170. * 0.5000 0.3000 0.2000 0.1000 0.3000 0.2000 0.3000 0.1000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
180. * 0.6000 0.3000 0.2000 0.2000 0.3000 0.2000 0.2000 0.0000 0.0000
0.0000 0.0000 0.0000 0.2000 0.2000 0.2000
190. * 0.6000 0.5000 0.2000 0.2000 0.3000 0.2000 0.2000 0.0000 0.1000
0.1000 0.1000 0.1000 0.1000 0.1000 0.1000
200. * 0.6000 0.4000 0.3000 0.2000 0.2000 0.2000 0.2000 0.0000 0.1000
0.1000 0.1000 0.1000 0.1000 0.1000 0.1000
210. * 0.5000 0.3000 0.3000 0.2000 0.3000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.1000 0.0000 0.0000 0.0000
220. * 0.5000 0.3000 0.3000 0.1000 0.3000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
230. * 0.5000 0.3000 0.3000 0.1000 0.4000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
240. * 0.5000 0.3000 0.3000 0.1000 0.4000 0.2000 0.2000 0.0000 0.2000
0.2000 0.2000 0.2000 0.0000 0.0000 0.0000
250. * 0.5000 0.3000 0.3000 0.1000 0.4000 0.2000 0.2000 0.0000 0.1000
0.1000 0.1000 0.1000 0.0000 0.0000 0.0000
260. * 0.6000 0.3000 0.3000 0.1000 0.4000 0.2000 0.2000 0.0000 0.1000
0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
270. * 0.5000 0.3000 0.1000 0.1000 0.3000 0.2000 0.0000 0.0000 0.3000
0.1000 0.1000 0.1000 0.2000 0.0000 0.0000
280. * 0.5000 0.1000 0.1000 0.1000 0.3000 0.0000 0.0000 0.0000 0.4000
0.2000 0.1000 0.1000 0.4000 0.1000 0.0000
290. * 0.2000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.7000
0.4000 0.2000 0.1000 0.5000 0.2000 0.1000
300. * 0.2000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.6000
0.4000 0.2000 0.1000 0.5000 0.3000 0.1000
310. * 0.2000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.5000
0.4000 0.2000 0.1000 0.4000 0.3000 0.1000
320. * 0.2000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.5000
0.4000 0.2000 0.1000 0.4000 0.3000 0.1000
330. * 0.2000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.5000
0.3000 0.3000 0.2000 0.4000 0.3000 0.1000
340. * 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.6000
0.3000 0.2000 0.2000 0.3000 0.3000 0.1000
350. * 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.5000
0.4000 0.2000 0.2000 0.4000 0.3000 0.1000
360. * 0.0000 0.0000 0.0000 0.0000 0.2000 0.2000 0.2000 0.2000 0.4000
0.4000 0.2000 0.2000 0.5000 0.3000 0.1000

```
------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.6000  0.5000  0.3000  0.2000  0.7000  0.5000  0.4000  0.3000  0.7000
0.4000  0.3000  0.2000  0.7000  0.4000  0.4000
 DEGR. *    110     190     200     180     100     110     120     130     290
290      20     220      80      50      50
```



```
      JOB: I-495 & I-270 MLS                                    RUN: 2040 NB I495 &
MD650 IC.17

       MODEL RESULTS
       -------------

       REMARKS : In search of the angle corresponding to
                 the maximum concentration, only the first
                 angle, of the angles with same maximum
                 concentrations, is indicated as maximum.

 WIND ANGLE RANGE:  10.-360.

 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.1000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.2000  0.2000
0.2000  0.4000  0.4000  0.4000
  20.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000
0.2000  0.3000  0.3000  0.3000
  30.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000
0.2000  0.3000  0.3000  0.3000
  40.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.3000  0.4000  0.4000  0.4000
  50.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.3000  0.5000  0.4000  0.4000
  60.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.4000  0.4000  0.4000
  70.  *  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.4000  0.4000  0.5000
  80.  *  0.2000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.4000  0.4000
0.3000  0.5000  0.5000  0.5000
  90.  *  0.1000  0.2000  0.2000  0.2000  0.2000  0.2000  0.1000  0.3000  0.3000
0.3000  0.4000  0.5000  0.5000
```

```
 100.  *  0.1000  0.4000  0.4000  0.4000  0.4000  0.4000  0.4000  0.3000  0.2000
0.1000  0.3000  0.4000  0.3000
 110.  *  0.1000  0.6000  0.6000  0.5000  0.4000  0.4000  0.3000  0.1000  0.1000
0.1000  0.1000  0.1000  0.1000
 120.  *  0.1000  0.5000  0.5000  0.5000  0.4000  0.5000  0.4000  0.0000  0.0000
0.0000  0.0000  0.0000  0.1000
 130.  *  0.2000  0.5000  0.5000  0.5000  0.4000  0.3000  0.4000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 140.  *  0.2000  0.4000  0.4000  0.4000  0.3000  0.4000  0.4000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 150.  *  0.2000  0.4000  0.4000  0.4000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 160.  *  0.2000  0.4000  0.4000  0.4000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 170.  *  0.2000  0.4000  0.4000  0.4000  0.2000  0.2000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.2000  0.4000  0.4000  0.4000  0.2000  0.2000  0.2000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  0.4000  0.4000  0.4000  0.3000  0.3000  0.3000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.1000  0.5000  0.4000  0.4000  0.2000  0.2000  0.2000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.5000  0.4000  0.4000  0.3000  0.3000  0.3000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.5000  0.4000  0.4000  0.3000  0.3000  0.3000  0.1000  0.0000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.4000  0.4000  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.4000  0.5000  0.4000  0.4000  0.4000  0.4000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.6000  0.4000  0.5000  0.4000  0.4000  0.4000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.5000  0.6000  0.5000  0.4000  0.4000  0.3000  0.0000  0.0000
0.0000  0.1000  0.1000  0.1000
 270.  *  0.0000  0.4000  0.5000  0.5000  0.3000  0.3000  0.3000  0.1000  0.2000
0.1000  0.2000  0.2000  0.2000
 280.  *  0.0000  0.3000  0.4000  0.4000  0.3000  0.3000  0.1000  0.4000  0.4000
0.4000  0.4000  0.4000  0.3000
 290.  *  0.0000  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000  0.5000  0.4000
0.3000  0.5000  0.5000  0.5000
 300.  *  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.5000  0.5000  0.5000
 310.  *  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.4000  0.4000  0.4000  0.4000
 320.  *  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000
0.4000  0.4000  0.4000  0.4000
 330.  *  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.2000
0.3000  0.4000  0.4000  0.4000
```

```
 340.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.3000  0.3000
0.3000  0.3000  0.3000  0.3000
 350.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000
0.2000  0.3000  0.3000  0.3000
 360.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.2000  0.2000
0.2000  0.3000  0.3000  0.3000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.2000  0.6000  0.6000  0.5000  0.4000  0.5000  0.4000  0.5000  0.4000
0.4000  0.5000  0.5000  0.5000
 DEGR. *     30     110     110     110     100     120     100     290      60
60      50      80      70

 THE HIGHEST CONCENTRATION OF   0.7000 PPM OCCURRED AT RECEPTOR     5.
```

```
Q,EPA,,F,,0,T,T,F,F,0.7,
7,7,6,7,960,960,960,960,960,960,960,960,1036.8,1036.8,1036.8,1036.8,1036.8,1036.8,10
36.8,1036.8,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,120
0,-1200,0,0,0,0,0,0,-15,-15,-5,-5,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',70.4,100.5,5.9
'N Leg, E Side - 25 m',51.7,170.1,5.9
'N Leg, E Side - 50 m',30.5,249.3,5.9
'N Leg, E Side-Midblk',-82.3,670.4,5.9
'N Leg, W Side-Corner',-119.8,83.9,5.9
'N Leg, W Side - 25 m',-138.4,153.4,5.9
'N Leg, W Side - 50 m',-159.7,232.7,5.9
'N Leg, W Side-Midblk',-272.5,653.8,5.9
'S Leg, E Side-Corner',116.6,-72.1,5.9
'S Leg, E Side - 25 m',135.3,-141.7,5.9
'S Leg, E Side - 50 m',156.5,-220.9,5.9
'S Leg, E Side-Midblk',269.3,-642.0,5.9
'S Leg, W Side-Corner',-73.5,-88.7,5.9
'S Leg, W Side - 25 m',-54.9,-158.3,5.9
'S Leg, W Side - 50 m',-33.7,-237.5,5.9
'S Leg, W Side-Midblk',79.2,-658.6,5.9
'E Leg, N Side - 25 m',142.1,106.8,5.9
'E Leg, N Side - 50 m',223.8,113.9,5.9
'E Leg, N Side-Midblk',658.1,151.9,5.9
'W Leg, N Side - 25 m',-191.5,77.6,5.9
'W Leg, N Side - 50 m',-273.2,70.5,5.9
'W Leg, N Side-Midblk',-707.5,32.5,5.9
'E Leg, S Side - 25 m',188.4,-65.8,5.9
'E Leg, S Side - 50 m',270.1,-58.7,5.9
'E Leg, S Side-Midblk',704.4,-20.7,5.9
'W Leg, S Side - 25 m',-145.3,-95.0,5.9
'W Leg, S Side - 50 m',-227.0,-102.2,5.9
'W Leg, S Side-Midblk',-661.3,-140.2,5.9
'2040 NB I495 & US50 (11.IC)',8,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-41,-11,-351,1148,8690,1.21,0.0,103.7
1
'N Leg Dep - FreeFlow','AG',41,11,-270,1170,7815,0.61,0.0,103.7
1
'S Leg App - FreeFlow','AG',41,11,351,-1148,7815,0.61,0.0,103.7
1
'S Leg Dep - FreeFlow','AG',-41,-11,270,-1170,8690,1.61,0.0,103.7
1
'E Leg App - FreeFlow','AG',0,42,1192,146,4745,0.61,0.0,103.7
1
'E Leg Dep - FreeFlow','AG',3,-36,1199,69,6310,1.61,0.0,91.7
1
```

```
'W Leg App - FreeFlow','AG',3,-36,-1192,-140,6310,1.49,0.0,91.7
1
'W Leg Dep - FreeFlow','AG',0,42,-1199,-63,4745,0.62,0.0,103.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & US50 (11.IC)

DATE : 5/15/19
TIME : 9:13:35

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-41.0	-11.0	-351.0	1148.0	*	1200.	345.	AG	8690.	1.2	0.0	****		
2. N Leg Dep - FreeFlow	*	41.0	11.0	-270.0	1170.0	*	1200.	345.	AG	7815.	0.6	0.0	****		
3. S Leg App - FreeFlow	*	41.0	11.0	351.0	-1148.0	*	1200.	165.	AG	7815.	0.6	0.0	****		
4. S Leg Dep - FreeFlow	*	-41.0	-11.0	270.0	-1170.0	*	1200.	165.	AG	8690.	1.6	0.0	****		
5. E Leg App - FreeFlow	*	0.0	42.0	1192.0	146.0	*	1197.	85.	AG	4745.	0.6	0.0	****		
6. E Leg Dep - FreeFlow	*	3.0	-36.0	1199.0	69.0	*	1201.	85.	AG	6310.	1.6	0.0	91.7		
7. W Leg App - FreeFlow	*	3.0	-36.0	-1192.0	-140.0	*	1200.	265.	AG	6310.	1.5	0.0	91.7		
8. W Leg Dep - FreeFlow	*	0.0	42.0	-1199.0	-63.0	*	1204.	265.	AG	4745.	0.6	0.0	****		

DATE : 5/15/19
TIME : 9:13:35

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE

RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	70.4	100.5	5.9
2. N Leg, E Side - 25 m	51.7	170.1	5.9
3. N Leg, E Side - 50 m	30.5	249.3	5.9
4. N Leg, E Side-Midblk	-82.3	670.4	5.9
5. N Leg, W Side-Corner	-119.8	83.9	5.9
6. N Leg, W Side - 25 m	-138.4	153.4	5.9
7. N Leg, W Side - 50 m	-159.7	232.7	5.9
8. N Leg, W Side-Midblk	-272.5	653.8	5.9
9. S Leg, E Side-Corner	116.6	-72.1	5.9
10. S Leg, E Side - 25 m	135.3	-141.7	5.9
11. S Leg, E Side - 50 m	156.5	-220.9	5.9
12. S Leg, E Side-Midblk	269.3	-642.0	5.9
13. S Leg, W Side-Corner	-73.5	-88.7	5.9
14. S Leg, W Side - 25 m	-54.9	-158.3	5.9
15. S Leg, W Side - 50 m	-33.7	-237.5	5.9
16. S Leg, W Side-Midblk	79.2	-658.6	5.9
17. E Leg, N Side - 25 m	142.1	106.8	5.9
18. E Leg, N Side - 50 m	223.8	113.9	5.9
19. E Leg, N Side-Midblk	658.1	151.9	5.9
20. W Leg, N Side - 25 m	-191.5	77.6	5.9
21. W Leg, N Side - 50 m	-273.2	70.5	5.9
22. W Leg, N Side-Midblk	-707.5	32.5	5.9
23. E Leg, S Side - 25 m	188.4	-65.8	5.9
24. E Leg, S Side - 50 m	270.1	-58.7	5.9
25. E Leg, S Side-Midblk	704.4	-20.7	5.9
26. W Leg, S Side - 25 m	-145.3	-95.0	5.9

27. W Leg, S Side - 50 m * -227.0 -102.2 5.9 *
28. W Leg, S Side-Midblk * -661.3 -140.2 5.9 *

JOB: I-495 & I-270 MLS RUN: 2040 NB I495 & US50 (11.IC)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000	0.5000	0.3000	0.2000	0.1000	0.0000	0.7000	0.7000	0.9000
20.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.3000	0.2000	0.1000	0.0000	0.8000	0.8000	0.6000
30.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.3000	0.2000	0.1000	0.0000	0.7000	0.6000	0.6000
40.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.3000	0.2000	0.1000	0.0000	0.7000	0.6000	0.6000
50.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.5000	0.2000	0.1000	0.0000	0.6000	0.6000	0.5000
60.	* 0.0000	0.0000	0.0000	0.0000	0.3000	0.3000	0.3000	0.3000	0.5000	0.2000	0.1000	0.0000	0.9000	0.6000	0.5000
70.	* 0.0000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.6000	0.2000	0.1000	0.0000	1.1000	0.7000	0.6000
80.	* 0.1000	0.0000	0.0000	0.0000	0.4000	0.4000	0.4000	0.4000	0.5000	0.1000	0.1000	0.0000	0.9000	0.6000	0.6000
90.	* 0.2000	0.1000	0.0000	0.0000	0.5000	0.4000	0.3000	0.3000	0.3000	0.0000	0.0000	0.0000	0.7000	0.5000	0.4000
100.	* 0.3000	0.2000	0.1000	0.0000	0.8000	0.6000	0.5000	0.4000	0.1000	0.0000	0.0000	0.0000	0.5000	0.4000	0.4000
110.	* 0.3000	0.2000	0.1000	0.0000	0.6000	0.5000	0.5000	0.4000	0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000
120.	* 0.3000	0.2000	0.1000	0.0000	0.5000	0.5000	0.5000	0.4000	0.0000	0.0000	0.0000	0.0000	0.5000	0.5000	0.5000

130. * 0.3000 0.1000 0.1000 0.0000 0.8000 0.4000 0.5000 0.4000 0.0000
0.0000 0.0000 0.0000 0.6000 0.6000 0.6000
140. * 0.2000 0.1000 0.1000 0.0000 0.7000 0.6000 0.5000 0.5000 0.0000
0.0000 0.0000 0.0000 0.6000 0.6000 0.6000
150. * 0.3000 0.1000 0.1000 0.0000 0.8000 0.7000 0.6000 0.5000 0.0000
0.0000 0.0000 0.0000 0.7000 0.7000 0.7000
160. * 0.4000 0.4000 0.4000 0.1000 0.9000 0.7000 0.7000 0.5000 0.1000
0.1000 0.1000 0.1000 0.7000 0.6000 0.6000
170. * 0.6000 0.5000 0.5000 0.4000 0.5000 0.4000 0.5000 0.3000 0.3000
0.3000 0.3000 0.3000 0.4000 0.4000 0.4000
180. * 0.6000 0.5000 0.5000 0.4000 0.4000 0.3000 0.2000 0.1000 0.4000
0.4000 0.4000 0.3000 0.1000 0.1000 0.1000
190. * 0.6000 0.5000 0.4000 0.4000 0.2000 0.1000 0.1000 0.0000 0.4000
0.4000 0.4000 0.4000 0.1000 0.1000 0.1000
200. * 0.6000 0.5000 0.5000 0.4000 0.2000 0.1000 0.1000 0.0000 0.4000
0.4000 0.4000 0.4000 0.0000 0.0000 0.0000
210. * 0.6000 0.4000 0.3000 0.3000 0.2000 0.1000 0.1000 0.0000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
220. * 0.5000 0.3000 0.4000 0.3000 0.2000 0.1000 0.1000 0.0000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
230. * 0.5000 0.3000 0.4000 0.3000 0.3000 0.2000 0.1000 0.0000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
240. * 0.6000 0.4000 0.3000 0.3000 0.3000 0.2000 0.1000 0.0000 0.3000
0.3000 0.3000 0.3000 0.0000 0.0000 0.0000
250. * 0.5000 0.4000 0.3000 0.2000 0.3000 0.2000 0.1000 0.0000 0.5000
0.3000 0.3000 0.3000 0.1000 0.0000 0.0000
260. * 0.4000 0.3000 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.6000
0.3000 0.3000 0.3000 0.3000 0.0000 0.0000
270. * 0.4000 0.3000 0.3000 0.3000 0.1000 0.0000 0.0000 0.0000 0.8000
0.4000 0.4000 0.3000 0.4000 0.1000 0.1000
280. * 0.3000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.8000
0.5000 0.4000 0.3000 0.5000 0.2000 0.1000
290. * 0.3000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.8000
0.5000 0.4000 0.3000 0.5000 0.2000 0.1000
300. * 0.3000 0.3000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.7000
0.6000 0.4000 0.3000 0.4000 0.2000 0.1000
310. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.5000
0.5000 0.5000 0.4000 0.3000 0.2000 0.1000
320. * 0.4000 0.4000 0.4000 0.4000 0.0000 0.0000 0.0000 0.0000 0.7000
0.3000 0.6000 0.4000 0.3000 0.2000 0.2000
330. * 0.4000 0.4000 0.4000 0.3000 0.1000 0.1000 0.1000 0.1000 0.7000
0.6000 0.5000 0.5000 0.4000 0.3000 0.2000
340. * 0.3000 0.3000 0.3000 0.3000 0.3000 0.3000 0.3000 0.2000 0.6000
0.5000 0.4000 0.4000 0.5000 0.5000 0.4000
350. * 0.1000 0.1000 0.1000 0.1000 0.4000 0.4000 0.4000 0.4000 0.4000
0.4000 0.3000 0.1000 0.9000 0.8000 0.7000
360. * 0.0000 0.0000 0.0000 0.0000 0.6000 0.6000 0.6000 0.4000 0.3000
0.2000 0.1000 0.0000 0.9000 0.7000 0.8000

```
------*-------------------------------------------------------------------------
---------------------------------------
 MAX   *  0.6000  0.5000  0.5000  0.4000  0.9000  0.7000  0.7000  0.5000  0.8000
0.6000  0.6000  0.5000  1.1000  0.8000  0.9000
 DEGR. *    170     170     170     170     160     150     160      10     290
300     320     330      70      20      10
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
--------------------------
  10.  *  0.6000  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.3000  0.3000
0.3000  0.5000  0.3000  0.2000
  20.  *  0.6000  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.3000  0.3000
0.3000  0.5000  0.3000  0.2000
  30.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.3000  0.3000
0.3000  0.5000  0.4000  0.4000
  40.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.3000  0.3000
0.3000  0.5000  0.4000  0.4000
  50.  *  0.4000  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.5000  0.5000
0.3000  0.5000  0.4000  0.4000
  60.  *  0.4000  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.5000  0.5000
0.4000  0.6000  0.5000  0.5000
  70.  *  0.5000  0.0000  0.0000  0.0000  0.3000  0.1000  0.0000  0.6000  0.6000
0.4000  0.8000  0.5000  0.4000
  80.  *  0.5000  0.1000  0.1000  0.1000  0.2000  0.1000  0.1000  0.4000  0.4000
0.4000  0.6000  0.6000  0.5000
  90.  *  0.4000  0.2000  0.2000  0.2000  0.5000  0.3000  0.3000  0.3000  0.3000
0.2000  0.6000  0.4000  0.4000
```

```
 100.  *  0.4000  0.3000  0.3000  0.2000  0.5000  0.3000  0.2000  0.1000  0.1000
0.1000  0.4000  0.3000  0.2000
 110.  *  0.5000  0.3000  0.3000  0.3000  0.3000  0.5000  0.4000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
 120.  *  0.5000  0.3000  0.3000  0.3000  0.5000  0.3000  0.4000  0.0000  0.0000
0.0000  0.3000  0.2000  0.1000
 130.  *  0.6000  0.3000  0.3000  0.3000  0.6000  0.4000  0.3000  0.0000  0.0000
0.0000  0.4000  0.2000  0.1000
 140.  *  0.6000  0.2000  0.2000  0.2000  0.5000  0.4000  0.2000  0.0000  0.0000
0.0000  0.4000  0.2000  0.0000
 150.  *  0.7000  0.3000  0.3000  0.3000  0.6000  0.4000  0.2000  0.0000  0.0000
0.0000  0.3000  0.1000  0.0000
 160.  *  0.5000  0.2000  0.2000  0.2000  0.4000  0.3000  0.2000  0.0000  0.0000
0.0000  0.2000  0.1000  0.0000
 170.  *  0.3000  0.4000  0.2000  0.2000  0.3000  0.2000  0.2000  0.2000  0.0000
0.0000  0.1000  0.0000  0.0000
 180.  *  0.1000  0.5000  0.4000  0.2000  0.2000  0.2000  0.2000  0.2000  0.1000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.1000  0.5000  0.4000  0.2000  0.2000  0.2000  0.2000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.5000  0.5000  0.3000  0.2000  0.2000  0.2000  0.3000  0.2000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.5000  0.4000  0.4000  0.2000  0.2000  0.2000  0.3000  0.2000
0.1000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.4000  0.3000  0.4000  0.2000  0.2000  0.2000  0.2000  0.2000
0.1000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.4000  0.3000  0.4000  0.3000  0.3000  0.3000  0.2000  0.2000
0.1000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.5000  0.4000  0.4000  0.3000  0.3000  0.2000  0.2000  0.2000
0.1000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.6000  0.3000  0.2000  0.3000  0.2000  0.2000  0.3000  0.3000
0.2000  0.1000  0.1000  0.1000
 260.  *  0.0000  0.5000  0.4000  0.3000  0.2000  0.2000  0.1000  0.5000  0.5000
0.4000  0.3000  0.3000  0.2000
 270.  *  0.0000  0.2000  0.2000  0.1000  0.1000  0.1000  0.1000  0.7000  0.6000
0.5000  0.4000  0.4000  0.4000
 280.  *  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.8000  0.6000
0.5000  0.5000  0.5000  0.4000
 290.  *  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.7000  0.5000
0.5000  0.5000  0.5000  0.4000
 300.  *  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.4000  0.4000
0.4000  0.4000  0.4000  0.4000
 310.  *  0.0000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.5000  0.5000
0.3000  0.3000  0.3000  0.3000
 320.  *  0.1000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.5000  0.5000
0.3000  0.3000  0.3000  0.3000
 330.  *  0.1000  0.2000  0.2000  0.0000  0.0000  0.0000  0.0000  0.5000  0.5000
0.3000  0.2000  0.2000  0.2000
```

```
 340.  *  0.4000  0.2000  0.0000  0.0000  0.0000  0.0000  0.0000  0.5000  0.3000
0.3000  0.2000  0.2000  0.2000
 350.  *  0.6000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.3000  0.3000
0.3000  0.4000  0.4000  0.3000
 360.  *  0.7000  0.0000  0.0000  0.0000  0.2000  0.1000  0.0000  0.3000  0.3000
0.3000  0.6000  0.4000  0.3000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.7000  0.6000  0.5000  0.4000  0.6000  0.5000  0.4000  0.8000  0.6000
0.5000  0.8000  0.6000  0.5000
 DEGR. *    150     250     200     210     130     110     110     280      70
270      70      80      60

 THE HIGHEST CONCENTRATION OF   1.1000 PPM OCCURRED AT RECEPTOR    13.
```

```
Q,EPA,,F,,0,T,T,T,T,0.7,
1,1,3,3,2200,2200,2200,2200,2200,2200,2200,2200,1120,303,348.333333333333,347.333333
333333,1120,303,348.333333333333,347.333333333333,12,12,12,12,10,10,10,10,0,0,-1200,
1200,0,0,1200,-1200,-1200,1200,0,0,1200,-1200,0,0,0,0,0,0,5,0,0,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,23,0.3048,1,0
'N Leg, E Side-Corner',22.0,46.0,5.9
'N Leg, E Side - 0 m',0.0,46.0,5.9
'N Leg, W Side-Corner',-22.0,46.0,5.9
'S Leg, E Side-Corner',18.1,-46.0,5.9
'S Leg, E Side - 25 m',11.8,-117.7,5.9
'S Leg, E Side - 50 m',4.6,-199.5,5.9
'S Leg, E Side-Midblk',-33.4,-633.8,5.9
'S Leg, W Side-Corner',-26.1,-46.0,5.9
'S Leg, W Side - 25 m',-32.4,-117.7,5.9
'S Leg, W Side - 50 m',-39.5,-199.5,5.9
'S Leg, W Side-Midblk',-77.5,-633.8,5.9
'E Leg, N Side - 25 m',94.0,46.0,5.9
'E Leg, N Side - 50 m',176.0,46.0,5.9
'E Leg, N Side-Midblk',612.0,46.0,5.9
'W Leg, N Side - 25 m',-94.0,46.0,5.9
'W Leg, N Side - 50 m',-176.0,46.0,5.9
'W Leg, N Side-Midblk',-612.0,46.0,5.9
'E Leg, S Side - 25 m',90.1,-46.0,5.9
'E Leg, S Side - 50 m',172.1,-46.0,5.9
'E Leg, S Side-Midblk',608.1,-46.0,5.9
'W Leg, S Side - 25 m',-98.1,-46.0,5.9
'W Leg, S Side - 50 m',-180.2,-46.0,5.9
'W Leg, S Side-Midblk',-616.1,-46.0,5.9
'2040 NoBuild MD5 & Auth Rd (IS.7)',7,1,0,'CO'
1
'S Leg App - FreeFlow','AG',8,18,-99,-1196,695,0.73,0.0,31.7
2
'S Leg App - Queue','AG',3,-36,-99,-1196,0.0,12.0,1
120,62,2,695,0.99,1600,1,3
1
'S Leg Dep - FreeFlow','AG',-4,18,-111,-1195,695,1.14,0.0,31.7
1
'E Leg App - FreeFlow','AG',0,18,1200,18,4480,0.88,0.0,55.7
1
'E Leg Dep - FreeFlow','AG',0,-18,1200,-18,1820,0.62,0.0,55.7
1
'W Leg App - FreeFlow','AG',0,-18,-1200,-18,1820,1.57,0.0,55.7
1
'W Leg Dep - FreeFlow','AG',0,18,-1200,18,4480,0.62,0.0,55.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NoBuild MD5 & Auth Rd (IS.7)

DATE : 5/10/19
TIME : 8:57:13

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. S Leg App - FreeFlow	*	8.0	18.0	-99.0	-1196.0	*	1219.	185.	AG	695.	0.7	0.0	31.7		
2. S Leg App - Queue	*	3.0	-36.0	-25.3	-357.5	*	323.	185.	AG	1.	100.0	0.0	12.0	0.97	16.4
3. S Leg Dep - FreeFlow	*	-4.0	18.0	-111.0	-1195.0	*	1218.	185.	AG	695.	1.1	0.0	31.7		
4. E Leg App - FreeFlow	*	0.0	18.0	1200.0	18.0	*	1200.	90.	AG	4480.	0.9	0.0	55.7		
5. E Leg Dep - FreeFlow	*	0.0	-18.0	1200.0	-18.0	*	1200.	90.	AG	1820.	0.6	0.0	55.7		
6. W Leg App - FreeFlow	*	0.0	-18.0	-1200.0	-18.0	*	1200.	270.	AG	1820.	1.6	0.0	55.7		
7. W Leg Dep - FreeFlow	*	0.0	18.0	-1200.0	18.0	*	1200.	270.	AG	4480.	0.6	0.0	55.7		

DATE : 5/10/19
TIME : 8:57:13

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. S Leg App - Queue	120	62	2.0	695	1600	0.99	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	22.0	46.0	5.9
2. N Leg, E Side - 0 m	0.0	46.0	5.9
3. N Leg, W Side-Corner	-22.0	46.0	5.9
4. S Leg, E Side-Corner	18.1	-46.0	5.9
5. S Leg, E Side - 25 m	11.8	-117.7	5.9
6. S Leg, E Side - 50 m	4.6	-199.5	5.9
7. S Leg, E Side-Midblk	-33.4	-633.8	5.9
8. S Leg, W Side-Corner	-26.1	-46.0	5.9
9. S Leg, W Side - 25 m	-32.4	-117.7	5.9
10. S Leg, W Side - 50 m	-39.5	-199.5	5.9
11. S Leg, W Side-Midblk	-77.5	-633.8	5.9
12. E Leg, N Side - 25 m	94.0	46.0	5.9
13. E Leg, N Side - 50 m	176.0	46.0	5.9
14. E Leg, N Side-Midblk	612.0	46.0	5.9
15. W Leg, N Side - 25 m	-94.0	46.0	5.9
16. W Leg, N Side - 50 m	-176.0	46.0	5.9
17. W Leg, N Side-Midblk	-612.0	46.0	5.9
18. E Leg, S Side - 25 m	90.1	-46.0	5.9
19. E Leg, S Side - 50 m	172.1	-46.0	5.9
20. E Leg, S Side-Midblk	608.1	-46.0	5.9
21. W Leg, S Side - 25 m	-98.1	-46.0	5.9
22. W Leg, S Side - 50 m	-180.2	-46.0	5.9
23. W Leg, S Side-Midblk	-616.1	-46.0	5.9

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	*	CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000
20.	*	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000
30.	*	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40.	*	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50.	*	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
60.	*	0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
70.	*	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
80.	*	0.1000	0.1000	0.1000	0.2000	0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000
90.	*	0.2000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000
100.	*	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000
110.	*	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000
120.	*	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
130.	*	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
140.	*	0.1000	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000
150.	*	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000

0.0000 0.0000 0.1000 0.1000 0.1000 0.2000
 160. * 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.2000
 170. * 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.1000 0.1000 0.1000 0.1000 0.2000
 180. * 0.1000 0.1000 0.2000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.1000 0.1000 0.1000 0.1000 0.2000
 190. * 0.1000 0.1000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.2000
 200. * 0.1000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.2000
 210. * 0.1000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.2000
 220. * 0.3000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.2000
 230. * 0.3000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.2000 0.2000 0.2000
 240. * 0.3000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.2000 0.2000 0.2000
 250. * 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.3000 0.2000 0.2000 0.2000
 260. * 0.2000 0.3000 0.3000 0.1000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.3000 0.4000 0.2000 0.3000
 270. * 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
 280. * 0.1000 0.1000 0.1000 0.2000 0.0000 0.0000 0.0000 0.3000 0.0000
0.0000 0.0000 0.0000 0.1000 0.1000 0.1000
 290. * 0.0000 0.0000 0.0000 0.2000 0.1000 0.0000 0.0000 0.2000 0.1000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 300. * 0.0000 0.0000 0.0000 0.2000 0.1000 0.0000 0.0000 0.2000 0.1000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 310. * 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.2000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 320. * 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.2000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 330. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 340. * 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.2000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 350. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.2000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.2000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000

------*---

 MAX   * 0.3000 0.3000 0.3000 0.2000 0.1000 0.0000 0.0000 0.3000 0.1000
0.1000 0.1000 0.3000 0.4000 0.2000 0.3000

DEGR. * 220 260 260 70 40 10 10 280 40 170 10 250 260 90 260

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 16	17	18	19	20	21	22	23
10.	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
20.	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
30.	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
40.	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
50.	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.2000	0.2000
60.	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
70.	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.2000	0.2000
80.	0.0000	0.1000	0.2000	0.2000	0.2000	0.2000	0.2000	0.3000
90.	0.2000	0.1000	0.2000	0.2000	0.1000	0.2000	0.2000	0.1000
100.	0.2000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000
110.	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
120.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
130.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
140.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
190.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
260.	0.3000	0.3000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000

270.	*	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
280.	*	0.1000	0.1000	0.2000	0.2000	0.2000	0.3000	0.3000	0.3000
290.	*	0.0000	0.0000	0.2000	0.1000	0.2000	0.2000	0.2000	0.2000
300.	*	0.0000	0.0000	0.0000	0.1000	0.1000	0.2000	0.2000	0.2000
310.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
320.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
330.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
340.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
350.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
360.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
MAX	*	0.3000	0.3000	0.2000	0.2000	0.2000	0.3000	0.3000	0.3000
DEGR.	*	260	100	70	70	70	280	280	80

THE HIGHEST CONCENTRATION OF 0.4000 PPM OCCURRED AT RECEPTOR 13.

```
Q,EPA,,F,,0,T,T,F,T,0.7,
4,4,2,1,2200,2200,2200,2200,2200,2200,2200,2200,433,346,627.5,628,433,346,627.5,628,
12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1200,-1200,0,0,
0,0,0,0,-10,-10,5,-20,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',51.5,42.1,5.9
'N Leg, E Side - 25 m',39.0,113.1,5.9
'N Leg, E Side - 50 m',24.7,193.8,5.9
'N Leg, E Side-Midblk',-51.0,623.2,5.9
'N Leg, W Side-Corner',-63.8,27.7,5.9
'N Leg, W Side - 25 m',-76.3,98.6,5.9
'N Leg, W Side - 50 m',-90.5,179.4,5.9
'N Leg, W Side-Midblk',-166.2,608.7,5.9
'S Leg, E Side-Corner',61.3,-13.9,5.9
'S Leg, E Side - 25 m',73.8,-84.8,5.9
'S Leg, E Side - 50 m',88.1,-165.6,5.9
'S Leg, E Side-Midblk',163.8,-594.9,5.9
'S Leg, W Side-Corner',-53.7,-29.4,5.9
'S Leg, W Side - 25 m',-41.2,-100.4,5.9
'S Leg, W Side - 50 m',-27.0,-181.1,5.9
'S Leg, W Side-Midblk',48.7,-610.5,5.9
'E Leg, N Side - 25 m',119.1,66.8,5.9
'E Leg, N Side - 50 m',196.2,94.8,5.9
'E Leg, N Side-Midblk',605.9,243.9,5.9
'W Leg, N Side - 25 m',-135.5,33.9,5.9
'W Leg, N Side - 50 m',-217.2,41.1,5.9
'W Leg, N Side-Midblk',-651.5,79.1,5.9
'E Leg, S Side - 25 m',129.0,10.8,5.9
'E Leg, S Side - 50 m',206.1,38.8,5.9
'E Leg, S Side-Midblk',615.8,187.9,5.9
'W Leg, S Side - 25 m',-125.5,-23.2,5.9
'W Leg, S Side - 50 m',-207.2,-16.0,5.9
'W Leg, S Side-Midblk',-641.5,22.0,5.9
'2040 NoBuild MD97 & Inner Lp Rmp (IS.28)',12,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-24,-4,-232,1178,1730,1.13,0.0,67.7
2
'N Leg App - Queue','AG',-26,8,-232,1178,0.0,48.0,4
120,62,2,1730,0.90,1600,1,3
1
'N Leg Dep - FreeFlow','AG',24,4,-185,1186,2165,0.72,0.0,67.7
1
'S Leg App - FreeFlow','AG',24,4,232,-1178,2165,0.72,0.0,67.7
2
'S Leg App - Queue','AG',28,-19,232,-1178,0.0,48.0,4
120,62,2,2165,0.90,1600,1,3
1
```

'S Leg Dep - FreeFlow','AG',-24,-4,185,-1186,1730,1.68,0.0,67.7
1
'E Leg App - FreeFlow','AG',-1,6,1126,416,628,0.68,0.0,31.7
2
'E Leg App - Queue','AG',43,22,1126,416,0.0,12.0,1
120,62,2,628,0.80,1600,1,3
1
'E Leg Dep - FreeFlow','AG',2,-12,1132,399,1255,0.68,0.0,43.7
1
'W Leg App - FreeFlow','AG',2,-12,-1196,93,1255,0.80,0.0,43.7
2
'W Leg App - Queue','AG',-49,-8,-1196,93,0.0,24.0,2
120,62,2,1255,0.68,1600,1,3
1
'W Leg Dep - FreeFlow','AG',-1,6,-1195,111,628,0.68,0.0,31.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2025 NoBuild MD97 & Inner Lp Rmp (IS.28)

DATE : 5/10/19
TIME : 10:38:18

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-24.0	-4.0	-232.0	1178.0	*	1200.	350.	AG	1730.	1.1	0.0	67.7		
2. N Leg App - Queue	*	-26.0	8.0	-51.4	152.2	*	146.	350.	AG	5.	100.0	0.0	48.0	0.60	7.4
3. N Leg Dep - FreeFlow	*	24.0	4.0	-185.0	1186.0	*	1200.	350.	AG	2165.	0.7	0.0	67.7		
4. S Leg App - FreeFlow	*	24.0	4.0	232.0	-1178.0	*	1200.	170.	AG	2165.	0.7	0.0	67.7		
5. S Leg App - Queue	*	28.0	-19.0	59.8	-199.6	*	183.	170.	AG	5.	100.0	0.0	48.0	0.75	9.3
6. S Leg Dep - FreeFlow	*	-24.0	-4.0	185.0	-1186.0	*	1200.	170.	AG	1730.	1.7	0.0	67.7		
7. E Leg App - FreeFlow	*	-1.0	6.0	1126.0	416.0	*	1199.	70.	AG	628.	0.7	0.0	31.7		
8. E Leg App - Queue	*	43.0	22.0	265.1	102.8	*	236.	70.	AG	1.	100.0	0.0	12.0	0.87	12.0
9. E Leg Dep - FreeFlow	*	2.0	-12.0	1132.0	399.0	*	1202.	70.	AG	1255.	0.7	0.0	43.7		
10. W Leg App - FreeFlow	*	2.0	-12.0	-1196.0	93.0	*	1203.								

```
275. AG   1255.   0.8   0.0 43.7
     11. W Leg App - Queue    *    -49.0      -8.0    -283.5      12.7 *     235.
275. AG      2. 100.0   0.0 24.0 0.87  12.0
     12. W Leg Dep - FreeFlow*     -1.0       6.0   -1195.0     111.0 *    1199.
275. AG    628.   0.7   0.0 31.7
```


JOB: I-495 & I-270 MLS RUN: 2025 NoBuild MD97 & Inner Lp Rmp (IS.28)

DATE : 5/10/19
TIME : 10:38:18

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	* CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC	SIGNAL TYPE	ARRIVAL RATE (gm/hr)
2. N Leg App - Queue	120	62	2.0	1730	1600	0.90	1	3
5. S Leg App - Queue	120	62	2.0	2165	1600	0.90	1	3
8. E Leg App - Queue	120	62	2.0	628	1600	0.80	1	3
11. W Leg App - Queue	120	62	2.0	1255	1600	0.68	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	51.5	42.1	5.9
2. N Leg, E Side - 25 m	39.0	113.1	5.9
3. N Leg, E Side - 50 m	24.7	193.8	5.9
4. N Leg, E Side-Midblk	-51.0	623.2	5.9
5. N Leg, W Side-Corner	-63.8	27.7	5.9
6. N Leg, W Side - 25 m	-76.3	98.6	5.9
7. N Leg, W Side - 50 m	-90.5	179.4	5.9
8. N Leg, W Side-Midblk	-166.2	608.7	5.9
9. S Leg, E Side-Corner	61.3	-13.9	5.9
10. S Leg, E Side - 25 m	73.8	-84.8	5.9

11. S Leg, E Side - 50 m *	88.1	-165.6	5.9	*
12. S Leg, E Side-Midblk *	163.8	-594.9	5.9	*
13. S Leg, W Side-Corner *	-53.7	-29.4	5.9	*
14. S Leg, W Side - 25 m *	-41.2	-100.4	5.9	*
15. S Leg, W Side - 50 m *	-27.0	-181.1	5.9	*
16. S Leg, W Side-Midblk *	48.7	-610.5	5.9	*
17. E Leg, N Side - 25 m *	119.1	66.8	5.9	*
18. E Leg, N Side - 50 m *	196.2	94.8	5.9	*
19. E Leg, N Side-Midblk *	605.9	243.9	5.9	*
20. W Leg, N Side - 25 m *	-135.5	33.9	5.9	*
21. W Leg, N Side - 50 m *	-217.2	41.1	5.9	*
22. W Leg, N Side-Midblk *	-651.5	79.1	5.9	*
23. E Leg, S Side - 25 m *	129.0	10.8	5.9	*
24. E Leg, S Side - 50 m *	206.1	38.8	5.9	*
25. E Leg, S Side-Midblk *	615.8	187.9	5.9	*
26. W Leg, S Side - 25 m *	-125.5	-23.2	5.9	*
27. W Leg, S Side - 50 m *	-207.2	-16.0	5.9	*
28. W Leg, S Side-Midblk *	-641.5	22.0	5.9	*

JOB: I-495 & I-270 MLS RUN: 2025 NoBuild MD97 & Inner Lp Rmp (IS.28)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	* 1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.0000
0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000			
20.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.0000
0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000			
30.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000			
40.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.1000	0.1000			

```
  50.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
  60.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.1000
0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
  70.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
  80.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
  90.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
 100.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
 110.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
 120.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
 130.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
 140.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
 150.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.2000  0.1000  0.1000  0.0000
0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
 160.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.2000  0.2000  0.1000  0.0000
0.0000  0.0000  0.0000  0.2000  0.2000  0.2000
 170.  *  0.1000  0.0000  0.0000  0.1000  0.1000  0.1000  0.2000  0.1000  0.1000
0.1000  0.1000  0.1000  0.1000  0.1000  0.1000
 180.  *  0.2000  0.1000  0.2000  0.1000  0.1000  0.0000  0.0000  0.0000  0.2000
0.2000  0.2000  0.1000  0.1000  0.1000  0.1000
 190.  *  0.2000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000
0.2000  0.2000  0.2000  0.0000  0.0000  0.0000
 200.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000
0.2000  0.2000  0.2000  0.0000  0.0000  0.0000
 210.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000
0.2000  0.2000  0.2000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.2000
0.2000  0.2000  0.2000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 270.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 280.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.1000  0.1000  0.1000  0.1000  0.0000  0.0000
```

```
 290.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.1000  0.1000  0.1000  0.1000  0.0000  0.0000
 300.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.2000  0.2000  0.1000  0.0000  0.0000
 310.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000
0.1000  0.2000  0.2000  0.0000  0.0000  0.0000
 320.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000
0.1000  0.1000  0.2000  0.0000  0.0000  0.0000
 330.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.0000  0.1000  0.2000  0.0000  0.0000  0.0000
 340.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.0000  0.1000  0.2000  0.0000  0.0000  0.0000
 350.  *  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000
0.0000  0.0000  0.1000  0.1000  0.2000  0.1000
 360.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.1000  0.0000
0.0000  0.0000  0.0000  0.1000  0.2000  0.1000

------*-------------------------------------------------------------------------
----------------------------------------
 MAX   *  0.2000  0.1000  0.2000  0.1000  0.1000  0.2000  0.2000  0.1000  0.2000
0.2000  0.2000  0.2000  0.2000  0.2000  0.2000
 DEGR. *    180     180     180     170      10     150     160      10     180
180     180     190     160     160     160
```


MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
```

```
  20.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
  30.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
  40.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
  50.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
  60.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000
0.1000  0.0000  0.0000  0.0000
  70.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.1000
  80.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.1000  0.1000
  90.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.1000
 100.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 110.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 120.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 130.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 140.  *  0.1000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 150.  *  0.1000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 160.  *  0.1000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000
0.0000  0.1000  0.0000  0.0000
 170.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
```

```
 260.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.1000  0.0000  0.0000  0.0000
 270.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 280.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.1000  0.1000  0.1000
 290.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.1000  0.1000  0.1000
 300.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.1000  0.1000  0.1000
 310.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 320.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 330.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 340.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 350.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 360.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000

------*-------------------------------------------------------------------------
---------------------------
 MAX   *  0.1000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.1000  0.1000
0.1000  0.1000  0.1000  0.1000
 DEGR. *     10      10      10      10     140      10      10      60      60
60     130      80      70

 THE HIGHEST CONCENTRATION OF   0.2000 PPM OCCURRED AT RECEPTOR     6.
```

```
Q,EPA,,F,,0,T,T,T,T,0.7,
3,1,5,4,2200,2200,2200,2200,2200,2200,2200,2200,86.6666666666667,1,502,643.75,86.666
6666666667,1,502,643.75,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,
1200,0,0,1200,-1200,0,0,0,0,0,0,0,15,0,0,0,0,0,0,0,0,0,0,0
0,120,120,120,0,62,62,62,0,2,2,2,0,1600,1600,1600,0,1,1,1,0,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,23,0.3048,1,0
'N Leg, E Side-Corner',46.0,58.0,5.9
'N Leg, E Side - 0 m',0.0,58.0,5.9
'N Leg, W Side-Corner',-22.0,58.0,5.9
'S Leg, E Side-Corner',28.9,-70.0,5.9
'S Leg, E Side - 25 m',10.2,-139.6,5.9
'S Leg, E Side - 50 m',-11.0,-218.8,5.9
'S Leg, E Side-Midblk',-123.8,-639.9,5.9
'S Leg, W Side-Corner',-41.5,-70.0,5.9
'S Leg, W Side - 25 m',-60.2,-139.6,5.9
'S Leg, W Side - 50 m',-81.4,-218.8,5.9
'S Leg, W Side-Midblk',-194.2,-639.9,5.9
'E Leg, N Side - 25 m',118.0,58.0,5.9
'E Leg, N Side - 50 m',200.0,58.0,5.9
'E Leg, N Side-Midblk',636.0,58.0,5.9
'W Leg, N Side - 25 m',-94.0,58.0,5.9
'W Leg, N Side - 50 m',-176.0,58.0,5.9
'W Leg, N Side-Midblk',-612.0,58.0,5.9
'E Leg, S Side - 25 m',100.9,-70.0,5.9
'E Leg, S Side - 50 m',182.9,-70.0,5.9
'E Leg, S Side-Midblk',618.9,-70.0,5.9
'W Leg, S Side - 25 m',-113.6,-70.0,5.9
'W Leg, S Side - 50 m',-195.6,-70.0,5.9
'W Leg, S Side-Midblk',-631.5,-70.0,5.9
'2040 NB MD97 & Outer Loop Ramp (IS.29)',9,1,0,'CO'
1
'S Leg App - FreeFlow','AG',25,24,-293,-1164,260,0.80,0.0,55.7
2
'S Leg App - Queue','AG',2,-63,-293,-1164,0.0,36.0,3
120,62,2,260,0.80,1600,1,3
1
'S Leg Dep - FreeFlow','AG',0,24,-316,-1158,1,0.80,0.0,31.7
1
'E Leg App - FreeFlow','AG',0,24,1200,24,2575,0.72,0.0,67.7
2
'E Leg App - Queue','AG',36,24,1200,24,0.0,48.0,4
120,62,2,2575,0.90,1600,1,3
1
'E Leg Dep - FreeFlow','AG',0,-30,1200,-30,2510,2.08,0.0,79.7
1
'W Leg App - FreeFlow','AG',0,-30,-1200,-30,2510,0.90,0.0,79.7
2
'W Leg App - Queue','AG',-12,-30,-1200,-30,0.0,60.0,5
```

120,62,2,2510,0.90,1600,1,3
1
'W Leg Dep - FreeFlow','AG',0,24,-1200,24,2575,0.72,0.0,67.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NB MD97 & Outer Loop Ramp (IS.29)

DATE : 2/28/19
TIME : 11:10:43

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. S Leg App - FreeFlow	*	25.0	24.0	-293.0	-1164.0	*	1230.	195.	AG	260.	0.8	0.0	55.7		
2. S Leg App - Queue	*	2.0	-63.0	-5.5	-91.2	*	29.	195.	AG	3.	100.0	0.0	36.0	0.12	1.5
3. S Leg Dep - FreeFlow	*	0.0	24.0	-316.0	-1158.0	*	1224.	195.	AG	1.	0.8	0.0	31.7		
4. E Leg App - FreeFlow	*	0.0	24.0	1200.0	24.0	*	1200.	90.	AG	2575.	0.7	0.0	67.7		
5. E Leg App - Queue	*	36.0	24.0	287.0	24.0	*	251.	90.	AG	5.	100.0	0.0	48.0	0.89	12.8
6. E Leg Dep - FreeFlow	*	0.0	-30.0	1200.0	-30.0	*	1200.	90.	AG	2510.	2.1	0.0	79.7		
7. W Leg App - FreeFlow	*	0.0	-30.0	-1200.0	-30.0	*	1200.	270.	AG	2510.	0.9	0.0	79.7		
8. W Leg App - Queue	*	-12.0	-30.0	-182.2	-30.0	*	170.	270.	AG	6.	100.0	0.0	60.0	0.70	8.6
9. W Leg Dep - FreeFlow	*	0.0	24.0	-1200.0	24.0	*	1200.	270.	AG	2575.	0.7	0.0	67.7		

JOB: I-495 & I-270 MLS RUN: 2040 NB MD97 & Outer Loop Ramp (IS.29)

DATE : 2/28/19
TIME : 11:10:43

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. S Leg App - Queue	120	62	2.0	260	1600	0.80	1	3
5. E Leg App - Queue	120	62	2.0	2575	1600	0.90	1	3
8. W Leg App - Queue	120	62	2.0	2510	1600	0.90	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	46.0	58.0	5.9
2. N Leg, E Side - 0 m	0.0	58.0	5.9
3. N Leg, W Side-Corner	-22.0	58.0	5.9
4. S Leg, E Side-Corner	28.9	-70.0	5.9
5. S Leg, E Side - 25 m	10.2	-139.6	5.9
6. S Leg, E Side - 50 m	-11.0	-218.8	5.9
7. S Leg, E Side-Midblk	-123.8	-639.9	5.9
8. S Leg, W Side-Corner	-41.5	-70.0	5.9
9. S Leg, W Side - 25 m	-60.2	-139.6	5.9
10. S Leg, W Side - 50 m	-81.4	-218.8	5.9
11. S Leg, W Side-Midblk	-194.2	-639.9	5.9
12. E Leg, N Side - 25 m	118.0	58.0	5.9
13. E Leg, N Side - 50 m	200.0	58.0	5.9
14. E Leg, N Side-Midblk	636.0	58.0	5.9
15. W Leg, N Side - 25 m	-94.0	58.0	5.9
16. W Leg, N Side - 50 m	-176.0	58.0	5.9
17. W Leg, N Side-Midblk	-612.0	58.0	5.9
18. E Leg, S Side - 25 m	100.9	-70.0	5.9

19. E Leg, S Side - 50 m *	182.9	-70.0	5.9	*
20. E Leg, S Side-Midblk *	618.9	-70.0	5.9	*
21. W Leg, S Side - 25 m *	-113.6	-70.0	5.9	*
22. W Leg, S Side - 50 m *	-195.6	-70.0	5.9	*
23. W Leg, S Side-Midblk *	-631.5	-70.0	5.9	*

JOB: I-495 & I-270 MLS RUN: 2040 NB MD97 & Outer Loop Ramp (IS.29)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20.	* 0.0000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30.	* 0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40.	* 0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
50.	* 0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
60.	* 0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.0000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
70.	* 0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.0000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
80.	* 0.0000	0.0000	0.0000	0.3000	0.1000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
90.	* 0.2000	0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.2000	0.2000	0.1000	0.2000
100.	* 0.2000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000
110.	* 0.2000	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						

0.0000 0.0000 0.2000 0.2000 0.2000 0.2000
 120. * 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.2000
 130. * 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.2000
 140. * 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
 150. * 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
 160. * 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
 170. * 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
 180. * 0.2000 0.0000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
 190. * 0.2000 0.0000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
 200. * 0.2000 0.0000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
 210. * 0.1000 0.0000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
 220. * 0.0000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
 230. * 0.0000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
 240. * 0.0000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.2000 0.2000 0.2000
 250. * 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.2000 0.2000 0.2000
 260. * 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.2000 0.1000
 270. * 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.0000 0.1000 0.1000 0.1000
 280. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 290. * 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 300. * 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 310. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 320. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 330. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 340. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 350. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.1000 0.0000

0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.2000 0.1000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000

------*---

 MAX   * 0.2000 0.2000 0.2000 0.3000 0.1000 0.1000 0.0000 0.2000 0.1000
0.1000 0.0000 0.2000 0.2000 0.2000 0.2000
 DEGR. *   90   90   90   80   10   30   10   70   40
40   10   90   90   100   90

JOB: I-495 & I-270 MLS RUN: 2040 NB MD97 & Outer Loop Ramp (IS.29)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) 16	17	18	19	20	21	22	23
10.	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
20.	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
30.	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
40.	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
50.	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
60.	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
70.	0.0000	0.0000	0.2000	0.2000	0.2000	0.2000	0.1000	0.1000
80.	0.0000	0.0000	0.3000	0.3000	0.2000	0.2000	0.2000	0.1000
90.	0.1000	0.1000	0.2000	0.2000	0.2000	0.1000	0.2000	0.1000
100.	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000
110.	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
120.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
130.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
140.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

190.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	*	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
260.	*	0.1000	0.1000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000
270.	*	0.1000	0.1000	0.2000	0.1000	0.2000	0.1000	0.1000	0.1000
280.	*	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
290.	*	0.0000	0.0000	0.1000	0.2000	0.2000	0.1000	0.1000	0.1000
300.	*	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
310.	*	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
320.	*	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
330.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
340.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
350.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
360.	*	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
------	*								
MAX	*	0.2000	0.1000	0.3000	0.3000	0.2000	0.2000	0.2000	0.1000
DEGR.	*	100	90	80	80	40	70	80	10

THE HIGHEST CONCENTRATION OF 0.3000 PPM OCCURRED AT RECEPTOR 4.

```
Q,EPA,,F,,0,T,T,T,T,0.7,
2,1,4,4,2200,2200,2200,2200,2200,2200,2200,2200,322.5,323,803.75,382.5,322.5,323,803
.75,382.5,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1200,
-1200,0,0,0,0,0,0,0,15,0,0,0,0,0,0,0,0,0,0,0
0,120,120,120,0,62,62,62,0,2,2,2,0,1600,1600,1600,0,1,1,1,0,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,23,0.3048,1,0
'N Leg, E Side-Corner',34.0,58.0,5.9
'N Leg, E Side - 0 m',0.0,58.0,5.9
'N Leg, W Side-Corner',-22.0,58.0,5.9
'S Leg, E Side-Corner',19.7,-58.0,5.9
'S Leg, E Side - 25 m',1.0,-127.6,5.9
'S Leg, E Side - 50 m',-20.2,-206.8,5.9
'S Leg, E Side-Midblk',-133.0,-627.9,5.9
'S Leg, W Side-Corner',-38.3,-58.0,5.9
'S Leg, W Side - 25 m',-57.0,-127.6,5.9
'S Leg, W Side - 50 m',-78.2,-206.8,5.9
'S Leg, W Side-Midblk',-191.0,-627.9,5.9
'E Leg, N Side - 25 m',106.0,58.0,5.9
'E Leg, N Side - 50 m',188.0,58.0,5.9
'E Leg, N Side-Midblk',624.0,58.0,5.9
'W Leg, N Side - 25 m',-94.0,58.0,5.9
'W Leg, N Side - 50 m',-176.0,58.0,5.9
'W Leg, N Side-Midblk',-612.0,58.0,5.9
'E Leg, S Side - 25 m',91.7,-58.0,5.9
'E Leg, S Side - 50 m',173.7,-58.0,5.9
'E Leg, S Side-Midblk',609.7,-58.0,5.9
'W Leg, S Side - 25 m',-110.3,-58.0,5.9
'W Leg, S Side - 50 m',-192.4,-58.0,5.9
'W Leg, S Side-Midblk',-628.3,-58.0,5.9
'2040 NB MD97 & Outer Loop Ramp (IS.29)',9,1,0,'CO'
1
'S Leg App - FreeFlow','AG',19,24,-299,-1162,645,0.80,0.0,43.7
2
'S Leg App - Queue','AG',-1,-49,-299,-1162,0.0,24.0,2
120,62,2,645,0.80,1600,1,3
1
'S Leg Dep - FreeFlow','AG',0,24,-316,-1158,323,0.80,0.0,31.7
1
'E Leg App - FreeFlow','AG',0,24,1200,24,1530,0.72,0.0,67.7
2
'E Leg App - Queue','AG',24,24,1200,24,0.0,48.0,4
120,62,2,1530,0.90,1600,1,3
1
'E Leg Dep - FreeFlow','AG',0,-24,1200,-24,3215,2.08,0.0,67.7
1
'W Leg App - FreeFlow','AG',0,-24,-1200,-24,3215,0.90,0.0,67.7
2
'W Leg App - Queue','AG',-12,-24,-1200,-24,0.0,48.0,4
```

120,62,2,3215,0.90,1600,1,3
1
'W Leg Dep - FreeFlow','AG',0,24,-1200,24,1530,0.72,0.0,67.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NB MD97 & Outer Loop Ramp (IS.29)

DATE : 5/10/19
TIME : 11:44: 5

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)			(G/MI)	(FT)	(FT)		(VEH)
1. S Leg App - FreeFlow	*	19.0	24.0	-299.0	-1162.0	*	1228.	195.	AG	645.	0.8	0.0	43.7		
2. S Leg App - Queue	*	-1.0	-49.0	-29.2	-154.5	*	109.	195.	AG	2.	100.0	0.0	24.0	0.45	5.5
3. S Leg Dep - FreeFlow	*	0.0	24.0	-316.0	-1158.0	*	1224.	195.	AG	323.	0.8	0.0	31.7		
4. E Leg App - FreeFlow	*	0.0	24.0	1200.0	24.0	*	1200.	90.	AG	1530.	0.7	0.0	67.7		
5. E Leg App - Queue	*	24.0	24.0	153.5	24.0	*	130.	90.	AG	5.	100.0	0.0	48.0	0.53	6.6
6. E Leg Dep - FreeFlow	*	0.0	-24.0	1200.0	-24.0	*	1200.	90.	AG	3215.	2.1	0.0	67.7		
7. W Leg App - FreeFlow	*	0.0	-24.0	-1200.0	-24.0	*	1200.	270.	AG	3215.	0.9	0.0	67.7		
8. W Leg App - Queue	*	-12.0	-24.0	-1246.7	-24.0	*	1235.	270.	AG	5.	100.0	0.0	48.0	1.12	62.7
9. W Leg Dep - FreeFlow	*	0.0	24.0	-1200.0	24.0	*	1200.	270.	AG	1530.	0.7	0.0	67.7		

JOB: I-495 & I-270 MLS RUN: 2040 NB MD97 & Outer Loop Ramp (IS.29)

DATE : 5/10/19
TIME : 11:44: 5

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. S Leg App - Queue	120	62	2.0	645	1600	0.80	1	3
5. E Leg App - Queue	120	62	2.0	1530	1600	0.90	1	3
8. W Leg App - Queue	120	62	2.0	3215	1600	0.90	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	34.0	58.0	5.9
2. N Leg, E Side - 0 m	0.0	58.0	5.9
3. N Leg, W Side-Corner	-22.0	58.0	5.9
4. S Leg, E Side-Corner	19.7	-58.0	5.9
5. S Leg, E Side - 25 m	1.0	-127.6	5.9
6. S Leg, E Side - 50 m	-20.2	-206.8	5.9
7. S Leg, E Side-Midblk	-133.0	-627.9	5.9
8. S Leg, W Side-Corner	-38.3	-58.0	5.9
9. S Leg, W Side - 25 m	-57.0	-127.6	5.9
10. S Leg, W Side - 50 m	-78.2	-206.8	5.9
11. S Leg, W Side-Midblk	-191.0	-627.9	5.9
12. E Leg, N Side - 25 m	106.0	58.0	5.9
13. E Leg, N Side - 50 m	188.0	58.0	5.9
14. E Leg, N Side-Midblk	624.0	58.0	5.9
15. W Leg, N Side - 25 m	-94.0	58.0	5.9
16. W Leg, N Side - 50 m	-176.0	58.0	5.9
17. W Leg, N Side-Midblk	-612.0	58.0	5.9
18. E Leg, S Side - 25 m	91.7	-58.0	5.9

19. E Leg, S Side - 50 m *	173.7	-58.0	5.9	*
20. E Leg, S Side-Midblk *	609.7	-58.0	5.9	*
21. W Leg, S Side - 25 m *	-110.3	-58.0	5.9	*
22. W Leg, S Side - 50 m *	-192.4	-58.0	5.9	*
23. W Leg, S Side-Midblk *	-628.3	-58.0	5.9	*

JOB: I-495 & I-270 MLS RUN: 2040 NB MD97 & Outer Loop Ramp (IS.29)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	* 0.0000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20.	* 0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30.	* 0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40.	* 0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.0000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
50.	* 0.0000	0.0000	0.0000	0.2000	0.1000	0.1000	0.0000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
60.	* 0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.0000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
70.	* 0.0000	0.0000	0.0000	0.3000	0.1000	0.1000	0.0000	0.2000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
80.	* 0.0000	0.0000	0.0000	0.4000	0.1000	0.1000	0.0000	0.3000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000
90.	* 0.1000	0.2000	0.1000	0.3000	0.1000	0.0000	0.0000	0.2000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000
100.	* 0.2000	0.2000	0.3000	0.2000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000
110.	* 0.3000	0.3000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000						

0.0000 0.0000 0.3000 0.3000 0.2000 0.1000
 120. * 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.1000 0.1000 0.1000
 130. * 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
 140. * 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.0000
 150. * 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
 160. * 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
 170. * 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
 180. * 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
 190. * 0.1000 0.0000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
 200. * 0.1000 0.0000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
 210. * 0.0000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
 220. * 0.0000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
 230. * 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
 240. * 0.1000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
 250. * 0.1000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.2000 0.2000
 260. * 0.1000 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.1000 0.1000 0.2000 0.2000
 270. * 0.0000 0.1000 0.0000 0.1000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.0000 0.0000 0.1000 0.0000
 280. * 0.0000 0.0000 0.0000 0.1000 0.1000 0.0000 0.0000 0.2000 0.1000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 290. * 0.0000 0.0000 0.0000 0.2000 0.1000 0.0000 0.0000 0.1000 0.1000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 300. * 0.0000 0.0000 0.0000 0.2000 0.1000 0.0000 0.0000 0.1000 0.1000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 310. * 0.0000 0.0000 0.0000 0.2000 0.1000 0.0000 0.0000 0.1000 0.1000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 320. * 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 330. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 340. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 350. * 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.1000 0.0000

0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.2000 0.1000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000

------*---

 MAX   * 0.3000 0.3000 0.3000 0.4000 0.1000 0.1000 0.0000 0.3000 0.1000
0.1000 0.0000 0.3000 0.3000 0.2000 0.2000
 DEGR. *   110   110   100   80   10   20   10   60   30
40   10   110   110   100   250

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) 16	17	18	19	20	21	22	23
10.	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
20.	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
30.	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
40.	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
50.	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
60.	0.0000	0.0000	0.3000	0.3000	0.3000	0.2000	0.1000	0.1000
70.	0.0000	0.0000	0.3000	0.3000	0.3000	0.2000	0.2000	0.1000
80.	0.0000	0.0000	0.4000	0.4000	0.3000	0.3000	0.2000	0.1000
90.	0.1000	0.0000	0.3000	0.3000	0.3000	0.3000	0.2000	0.1000
100.	0.1000	0.2000	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000
110.	0.1000	0.2000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
120.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
130.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
140.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

190.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	*	0.2000	0.2000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000
260.	*	0.2000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
270.	*	0.0000	0.0000	0.2000	0.3000	0.3000	0.1000	0.1000	0.1000
280.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.2000	0.2000	0.1000
290.	*	0.0000	0.0000	0.3000	0.3000	0.3000	0.1000	0.1000	0.1000
300.	*	0.0000	0.0000	0.2000	0.3000	0.3000	0.1000	0.1000	0.1000
310.	*	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
320.	*	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
330.	*	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
340.	*	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
350.	*	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
360.	*	0.0000	0.0000	0.2000	0.2000	0.2000	0.1000	0.1000	0.1000
------	*								
MAX	*	0.2000	0.2000	0.4000	0.4000	0.3000	0.3000	0.2000	0.1000
DEGR.	*	250	100	80	80	60	80	70	10

THE HIGHEST CONCENTRATION OF 0.4000 PPM OCCURRED AT RECEPTOR 4.

```
Q,EPA,,F,,0,T,T,F,T,0.7,
6,5,2,2,2200,2200,2200,2200,2200,2200,2200,2200,440.833333333333,333,242.5,242.5,440
.833333333333,333,242.5,242.5,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,
-1200,1200,0,0,1200,-1200,0,0,0,0,0,0,-5,5,10,0,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 & I-270 MLS',60,108,0.0,0.0,28,0.3048,1,0
'N Leg, E Side-Corner',85.3,34.0,5.9
'N Leg, E Side - 25 m',91.6,105.7,5.9
'N Leg, E Side - 50 m',98.7,187.5,5.9
'N Leg, E Side-Midblk',136.7,621.8,5.9
'N Leg, W Side-Corner',-66.2,46.2,5.9
'N Leg, W Side - 25 m',-59.9,117.9,5.9
'N Leg, W Side - 50 m',-52.8,199.7,5.9
'N Leg, W Side-Midblk',-14.8,634.0,5.9
'S Leg, E Side-Corner',85.3,-34.0,5.9
'S Leg, E Side - 25 m',91.6,-105.7,5.9
'S Leg, E Side - 50 m',98.7,-187.5,5.9
'S Leg, E Side-Midblk',136.7,-621.8,5.9
'S Leg, W Side-Corner',-68.3,-22.5,5.9
'S Leg, W Side - 25 m',-62.0,-94.2,5.9
'S Leg, W Side - 50 m',-54.9,-175.9,5.9
'S Leg, W Side-Midblk',-16.9,-610.2,5.9
'E Leg, N Side - 25 m',157.3,34.0,5.9
'E Leg, N Side - 50 m',239.3,34.0,5.9
'E Leg, N Side-Midblk',675.3,34.0,5.9
'W Leg, N Side - 25 m',-137.2,58.7,5.9
'W Leg, N Side - 50 m',-217.9,73.0,5.9
'W Leg, N Side-Midblk',-647.3,148.7,5.9
'E Leg, S Side - 25 m',157.3,-34.0,5.9
'E Leg, S Side - 50 m',239.3,-34.0,5.9
'E Leg, S Side-Midblk',675.3,-34.0,5.9
'W Leg, S Side - 25 m',-139.2,-10.0,5.9
'W Leg, S Side - 50 m',-220.0,4.3,5.9
'W Leg, S Side-Midblk',-649.3,80.0,5.9
'2040 NoBuild MD187 & I270 SB Rmp (IS.46)',11,1,0,'CO'
1
'N Leg App - FreeFlow','AG',-30,0,75,1198,1665,0.67,0.0,79.7
2
'N Leg App - Queue','AG',-28,27,75,1198,0.0,60.0,5
120,62,2,1665,0.90,1600,1,3
1
'N Leg Dep - FreeFlow','AG',36,0,140,1192,2645,0.89,0.0,91.7
1
'S Leg App - FreeFlow','AG',36,0,140,-1192,2645,0.89,0.0,91.7
2
'S Leg App - Queue','AG',38,-21,140,-1192,0.0,72.0,6
120,62,2,2645,0.90,1600,1,3
1
```

```
'S Leg Dep - FreeFlow','AG',-30,0,75,-1198,1665,0.67,0.0,79.7
1
'E Leg App - FreeFlow','AG',1,12,1200,12,485,0.62,0.0,43.7
1
'E Leg Dep - FreeFlow','AG',-1,-12,1200,-12,485,0.62,0.0,43.7
1
'W Leg App - FreeFlow','AG',-1,-12,-1184,197,485,1.88,0.0,43.7
2
'W Leg App - Queue','AG',-61,-1,-1184,197,0.0,24.0,2
120,62,2,485,1.88,1600,1,3
1
'W Leg Dep - FreeFlow','AG',1,12,-1180,220,485,1.88,0.0,43.7
1.0,0,4,1000,0.0,'Y',10,1,36
```

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 & I-270 MLS RUN: 2040 NoBuild MD187 & I270 SB Rmp (IS.46)

DATE : 5/10/19
TIME : 13:10:16

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. N Leg App - FreeFlow	*	-30.0	0.0	75.0	1198.0	*	1203.	5.	AG	1665.	0.7	0.0	79.7		
2. N Leg App - Queue	*	-28.0	27.0	-18.1	139.5	*	113.	5.	AG	6.	100.0	0.0	60.0	0.46	5.7
3. N Leg Dep - FreeFlow	*	36.0	0.0	140.0	1192.0	*	1197.	5.	AG	2645.	0.9	0.0	91.7		
4. S Leg App - FreeFlow	*	36.0	0.0	140.0	-1192.0	*	1197.	175.	AG	2645.	0.9	0.0	91.7		
5. S Leg App - Queue	*	38.0	-21.0	50.9	-169.6	*	149.	175.	AG	7.	100.0	0.0	72.0	0.61	7.6
6. S Leg Dep - FreeFlow	*	-30.0	0.0	75.0	-1198.0	*	1203.	175.	AG	1665.	0.7	0.0	79.7		
7. E Leg App - FreeFlow	*	1.0	12.0	1200.0	12.0	*	1199.	90.	AG	485.	0.6	0.0	43.7		
8. E Leg Dep - FreeFlow	*	-1.0	-12.0	1200.0	-12.0	*	1201.	90.	AG	485.	0.6	0.0	43.7		
9. W Leg App - FreeFlow	*	-1.0	-12.0	-1184.0	197.0	*	1201.	280.	AG	485.	1.9	0.0	43.7		
10. W Leg App - Queue	*	-61.0	-1.0	-141.8	13.2	*	82.								

280. AG 5. 100.0 0.0 24.0 0.34 4.2
11. W Leg Dep - FreeFlow* 1.0 12.0 -1180.0 220.0 * 1199.
280. AG 485. 1.9 0.0 43.7

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	*	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC	SIGNAL TYPE	ARRIVAL RATE (gm/hr)
2. N Leg App - Queue	*	120	62	2.0	1665	1600	0.90	1	3
5. S Leg App - Queue	*	120	62	2.0	2645	1600	0.90	1	3
10. W Leg App - Queue	*	120	62	2.0	485	1600	1.88	1	3

RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (FT) X	Y	Z	*
1. N Leg, E Side-Corner	*	85.3	34.0	5.9	*
2. N Leg, E Side - 25 m	*	91.6	105.7	5.9	*
3. N Leg, E Side - 50 m	*	98.7	187.5	5.9	*
4. N Leg, E Side-Midblk	*	136.7	621.8	5.9	*
5. N Leg, W Side-Corner	*	-66.2	46.2	5.9	*
6. N Leg, W Side - 25 m	*	-59.9	117.9	5.9	*
7. N Leg, W Side - 50 m	*	-52.8	199.7	5.9	*
8. N Leg, W Side-Midblk	*	-14.8	634.0	5.9	*
9. S Leg, E Side-Corner	*	85.3	-34.0	5.9	*
10. S Leg, E Side - 25 m	*	91.6	-105.7	5.9	*
11. S Leg, E Side - 50 m	*	98.7	-187.5	5.9	*
12. S Leg, E Side-Midblk	*	136.7	-621.8	5.9	*
13. S Leg, W Side-Corner	*	-68.3	-22.5	5.9	*
14. S Leg, W Side - 25 m	*	-62.0	-94.2	5.9	*

15. S Leg, W Side - 50 m *	-54.9	-175.9	5.9	*
16. S Leg, W Side-Midblk *	-16.9	-610.2	5.9	*
17. E Leg, N Side - 25 m *	157.3	34.0	5.9	*
18. E Leg, N Side - 50 m *	239.3	34.0	5.9	*
19. E Leg, N Side-Midblk *	675.3	34.0	5.9	*
20. W Leg, N Side - 25 m *	-137.2	58.7	5.9	*
21. W Leg, N Side - 50 m *	-217.9	73.0	5.9	*
22. W Leg, N Side-Midblk *	-647.3	148.7	5.9	*
23. E Leg, S Side - 25 m *	157.3	-34.0	5.9	*
24. E Leg, S Side - 50 m *	239.3	-34.0	5.9	*
25. E Leg, S Side-Midblk *	675.3	-34.0	5.9	*
26. W Leg, S Side - 25 m *	-139.2	-10.0	5.9	*
27. W Leg, S Side - 50 m *	-220.0	4.3	5.9	*
28. W Leg, S Side-Midblk *	-649.3	80.0	5.9	*

JOB: I-495 & I-270 MLS RUN: 2040 NoBuild MD187 & I270 SB Rmp (IS.46)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM)								
	* 1	2	3	4	5	6	7	8	9
10	11	12	13	14	15				
10.	* 0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
20.	* 0.0000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.0000
0.0000	0.0000	0.0000	0.1000	0.1000	0.0000				
30.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.1000	0.0000	0.0000				
40.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
50.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
60.	* 0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				

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  70.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
  80.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
  90.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
 100.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
 110.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
 120.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
 130.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
 140.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
 150.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
 160.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.1000  0.1000  0.1000
 170.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000
0.1000  0.1000  0.1000  0.1000  0.1000  0.1000
 180.  *  0.1000  0.1000  0.0000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 190.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 200.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 210.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 250.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 260.  *  0.1000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 270.  *  0.1000  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 280.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 290.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.1000  0.0000  0.0000
 300.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000
0.1000  0.1000  0.1000  0.1000  0.0000  0.0000
```

```
 310.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 320.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 330.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 340.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 350.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.1000  0.1000  0.0000  0.0000  0.0000
 360.  *  0.1000  0.1000  0.1000  0.1000  0.0000  0.0000  0.0000  0.0000  0.1000
0.1000  0.0000  0.1000  0.0000  0.0000  0.0000

------*-------------------------------------------------------------------------
-----------------------------------------
 MAX   *  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000  0.1000
0.1000  0.1000  0.1000  0.1000  0.1000  0.1000
 DEGR. *     10      10      10      10      10      10      10      20     170
170     170     170      20      20     160
```


JOB: I-495 & I-270 MLS RUN: 2040 NoBuild MD187 & I270 SB Rmp (IS.46)

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

```
 WIND  * CONCENTRATION
 ANGLE *     (PPM)
 (DEGR)*      16      17      18      19      20      21      22      23      24
 25      26      27      28

------*-------------------------------------------------------------------------
---------------------------
  10.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
  20.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
  30.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
```

```
  40.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
  50.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
  60.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
  70.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
  80.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
  90.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.1000
 100.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 110.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.1000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 120.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 130.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 140.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 150.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 160.  *  0.1000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 170.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 180.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 190.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 200.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 210.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 220.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 230.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 240.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 250.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 260.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 270.  *  0.0000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
```

```
 280.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 290.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.1000  0.1000  0.1000
 300.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.1000  0.1000  0.1000
 310.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 320.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 330.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 340.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 350.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000
 360.  *  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000  0.0000
0.0000  0.0000  0.0000  0.0000

------*-------------------------------------------------------------------------
--------------------------
 MAX   *  0.1000  0.0000  0.0000  0.0000  0.1000  0.1000  0.1000  0.0000  0.0000
0.0000  0.1000  0.1000  0.1000
 DEGR. *     10      10      10      10     260     260     110      10      10
10     290     290      90

 THE HIGHEST CONCENTRATION OF   0.1000 PPM OCCURRED AT RECEPTOR     1.
```

Q,EPA,,F,,0,T,T,T,T,0.7,
3,1,3,2,2200,2200,2200,2200,2200,2200,2200,2200,1036.66666666667,1037,1036.66666666667,1037,1036.66666666667,1037,1036.66666666667,1037,12,12,12,12,10,10,10,10,0,0,-1200,1200,0,0,1200,-1200,-1200,1200,0,0,1200,-1200,0,0,0,0,0,0,15,0,5,10,0,0,0,0,0,0,0,0
120,120,120,120,62,62,62,62,2,2,2,2,1600,1600,1600,1600,1,1,1,1,3,3,3,3
'I-495 and I-270 MLS',60,108,0.0,0.0,23,0.3048,1,0
'N Leg, E Side-Corner',46.0,26.4,5.9
'N Leg, E Side - 0 m',0.0,34.5,5.9
'N Leg, W Side-Corner',-22.0,36.1,5.9
'S Leg, E Side-Corner',33.5,-52.6,5.9
'S Leg, E Side - 25 m',14.9,-122.2,5.9
'S Leg, E Side - 50 m',-6.3,-201.4,5.9
'S Leg, E Side-Midblk',-119.2,-622.5,5.9
'S Leg, W Side-Corner',-34.3,-43.2,5.9
'S Leg, W Side - 25 m',-53.0,-112.7,5.9
'S Leg, W Side - 50 m',-74.2,-192.0,5.9
'S Leg, W Side-Midblk',-187.0,-613.1,5.9
'E Leg, N Side - 25 m',116.9,13.9,5.9
'E Leg, N Side - 50 m',197.7,-0.3,5.9
'E Leg, N Side-Midblk',627.0,-76.0,5.9
'W Leg, N Side - 25 m',-93.7,42.3,5.9
'W Leg, N Side - 50 m',-175.5,49.5,5.9
'W Leg, N Side-Midblk',-609.8,87.5,5.9
'E Leg, S Side - 25 m',104.4,-65.1,5.9
'E Leg, S Side - 50 m',185.2,-79.4,5.9
'E Leg, S Side-Midblk',614.6,-155.1,5.9
'W Leg, S Side - 25 m',-106.1,-36.9,5.9
'W Leg, S Side - 50 m',-187.8,-29.7,5.9
'W Leg, S Side-Midblk',-622.1,8.3,5.9
'2040 NB MD202 & Outer Loop Rmp IS.16',9,1,0,'CO'
1
'S Leg App - FreeFlow','AG',21,8,-293,-1164,740,1.61,0.0,55.7
2
'S Leg App - Queue','AG',8,-39,-293,-1164,0.0,36.0,3
120,62,2,740,0.80,1600,1,3
1
'S Leg Dep - FreeFlow','AG',-3,12,-316,-1158,247,0.80,0.0,31.7
1
'E Leg App - FreeFlow','AG',2,12,1184,-197,1700,0.88,0.0,43.7
2
'E Leg App - Queue','AG',38,6,1184,-197,0.0,24.0,2
120,62,2,1700,0.91,1600,1,3
1
'E Leg Dep - FreeFlow','AG',-2,-18,1179,-226,2550,0.89,0.0,55.7
1
'W Leg App - FreeFlow','AG',-2,-18,-1197,87,2550,0.67,0.0,55.7
2

'W Leg App - Queue','AG',-14,-17,-1197,87,0.0,36.0,3
120,62,2,2550,0.91,1600,1,3
1
'W Leg Dep - FreeFlow','AG',2,12,-1194,117,1700,1.49,0.0,43.7
1.0,0,4,1000,0.0,'Y',10,1,36

*** EPA CAL3QHC Model Run implemented using the FHWA Resource Center CAL3i graphical user interface

CAL3QHC: LINE SOURCE DISPERSION MODEL - VERSION 2.0 Dated 13045 PAGE 1

JOB: I-495 and I-270 MLS RUN: 2040 NB MD202 & Outer Loop Rmp IS.16

DATE : 5/10/19
TIME : 10: 3:51

The MODE flag has been set for calculating concentrations for POLLUTANT: CO

SITE & METEOROLOGICAL VARIABLES

VS = 0.0 CM/S VD = 0.0 CM/S Z0 = 108. CM
U = 1.0 M/S CLAS = 4 (D) ATIM = 60. MINUTES MIXH = 1000. M AMB = 0.0 PPM

LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (FT)				*	LENGTH	BRG	TYPE	VPH	EF	H	W	V/C	QUEUE
	*	X1	Y1	X2	Y2	*	(FT)	(DEG)		(G/MI)	(FT)	(FT)		(VEH)	
1. S Leg App - FreeFlow	*	21.0	8.0	-293.0	-1164.0	*	1213.	195.	AG	740.	1.6	0.0	55.7		
2. S Leg App - Queue	*	8.0	-39.0	-13.6	-119.6	*	83.	195.	AG	3.	100.0	0.0	36.0	0.34	4.2
3. S Leg Dep - FreeFlow	*	-3.0	12.0	-316.0	-1158.0	*	1211.	195.	AG	247.	0.8	0.0	31.7		
4. E Leg App - FreeFlow	*	2.0	12.0	1184.0	-197.0	*	1200.	100.	AG	1700.	0.9	0.0	43.7		
5. E Leg App - Queue	*	38.0	6.0	1733.4	-294.3	*	1722.	100.	AG	3.	100.0	0.0	24.0	1.18	87.5
6. E Leg Dep - FreeFlow	*	-2.0	-18.0	1179.0	-226.0	*	1199.	100.	AG	2550.	0.9	0.0	55.7		
7. W Leg App - FreeFlow	*	-2.0	-18.0	-1197.0	87.0	*	1200.	275.	AG	2550.	0.7	0.0	55.7		
8. W Leg App - Queue	*	-14.0	-17.0	-1729.2	133.8	*	1722.	275.	AG	4.	100.0	0.0	36.0	1.18	87.5
9. W Leg Dep - FreeFlow	*	2.0	12.0	-1194.0	117.0	*	1201.	275.	AG	1700.	1.5	0.0	43.7		

JOB: I-495 and I-270 MLS RUN: 2040 NB MD202 & Outer Loop Rmp IS.16

DATE : 5/10/19
TIME : 10: 3:51

ADDITIONAL QUEUE LINK PARAMETERS

LINK DESCRIPTION	CYCLE LENGTH (SEC)	RED TIME (SEC)	CLEARANCE LOST TIME (SEC)	APPROACH VOL (VPH)	SATURATION FLOW RATE (VPH)	IDLE EM FAC (gm/hr)	SIGNAL TYPE	ARRIVAL RATE
2. S Leg App - Queue	120	62	2.0	740	1600	0.80	1	3
5. E Leg App - Queue	120	62	2.0	1700	1600	0.91	1	3
8. W Leg App - Queue	120	62	2.0	2550	1600	0.91	1	3

RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. N Leg, E Side-Corner	46.0	26.4	5.9
2. N Leg, E Side - 0 m	0.0	34.5	5.9
3. N Leg, W Side-Corner	-22.0	36.1	5.9
4. S Leg, E Side-Corner	33.5	-52.6	5.9
5. S Leg, E Side - 25 m	14.9	-122.2	5.9
6. S Leg, E Side - 50 m	-6.3	-201.4	5.9
7. S Leg, E Side-Midblk	-119.2	-622.5	5.9
8. S Leg, W Side-Corner	-34.3	-43.2	5.9
9. S Leg, W Side - 25 m	-53.0	-112.7	5.9
10. S Leg, W Side - 50 m	-74.2	-192.0	5.9
11. S Leg, W Side-Midblk	-187.0	-613.1	5.9
12. E Leg, N Side - 25 m	116.9	13.9	5.9
13. E Leg, N Side - 50 m	197.7	-0.3	5.9
14. E Leg, N Side-Midblk	627.0	-76.0	5.9
15. W Leg, N Side - 25 m	-93.7	42.3	5.9
16. W Leg, N Side - 50 m	-175.5	49.5	5.9
17. W Leg, N Side-Midblk	-609.8	87.5	5.9
18. E Leg, S Side - 25 m	104.4	-65.1	5.9

19. E Leg, S Side - 50 m *	185.2	-79.4	5.9	*
20. E Leg, S Side-Midblk *	614.6	-155.1	5.9	*
21. W Leg, S Side - 25 m *	-106.1	-36.9	5.9	*
22. W Leg, S Side - 50 m *	-187.8	-29.7	5.9	*
23. W Leg, S Side-Midblk *	-622.1	8.3	5.9	*

MODEL RESULTS

REMARKS : In search of the angle corresponding to the maximum concentration, only the first angle, of the angles with same maximum concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	* CONCENTRATION (PPM) *	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10.	*	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20.	*	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30.	*	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40.	*	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
50.	*	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
60.	*	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
70.	*	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
80.	*	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
90.	*	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1000
100.	*	0.1000	0.1000	0.2000	0.1000	0.0000	0.0000	0.0000	0.1000	0.0000	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000
110.	*	0.2000	0.2000	0.2000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000						

0.0000 0.0000 0.2000 0.2000 0.2000 0.2000
120. * 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
130. * 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
140. * 0.2000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
150. * 0.2000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
160. * 0.1000 0.0000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
170. * 0.1000 0.0000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
180. * 0.1000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.1000 0.1000
0.1000 0.0000 0.1000 0.1000 0.1000 0.1000
190. * 0.3000 0.2000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
200. * 0.2000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
210. * 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
220. * 0.0000 0.1000 0.1000 0.1000 0.1000 0.1000 0.1000 0.0000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
230. * 0.0000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
240. * 0.0000 0.1000 0.1000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.2000 0.2000 0.2000 0.1000
250. * 0.1000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.2000 0.2000 0.2000
260. * 0.2000 0.3000 0.3000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0.0000 0.0000 0.1000 0.2000 0.2000 0.3000
270. * 0.2000 0.2000 0.2000 0.0000 0.0000 0.0000 0.0000 0.1000 0.0000
0.0000 0.0000 0.2000 0.1000 0.2000 0.2000
280. * 0.1000 0.1000 0.1000 0.2000 0.0000 0.0000 0.0000 0.2000 0.0000
0.0000 0.0000 0.1000 0.1000 0.1000 0.1000
290. * 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.2000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
300. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.2000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
310. * 0.0000 0.0000 0.0000 0.2000 0.0000 0.0000 0.0000 0.2000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
320. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.2000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
330. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.2000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
340. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.0000 0.0000 0.2000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
350. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.1000 0.1000 0.2000 0.0000

0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
 360. * 0.0000 0.0000 0.0000 0.1000 0.0000 0.1000 0.1000 0.2000 0.0000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000

------*---

 MAX   * 0.3000 0.3000 0.3000 0.2000 0.1000 0.1000 0.1000 0.2000 0.1000
0.1000 0.0000 0.2000 0.2000 0.2000 0.3000
 DEGR. *   190   260   260   280   200   200   10   280   180
180   10   110   110   110   260

MODEL RESULTS

REMARKS : In search of the angle corresponding to
the maximum concentration, only the first
angle, of the angles with same maximum
concentrations, is indicated as maximum.

WIND ANGLE RANGE: 10.-360.

WIND ANGLE (DEGR)	CONCENTRATION (PPM) 16	17	18	19	20	21	22	23
10.	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
20.	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
30.	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
40.	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
50.	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.2000	0.2000
60.	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.2000	0.2000
70.	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.2000
80.	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.2000
90.	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
100.	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.0000	0.1000
110.	0.1000	0.3000	0.1000	0.1000	0.1000	0.0000	0.0000	0.0000
120.	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
130.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
140.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
170.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
180.	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

190.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
200.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
210.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
220.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
230.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240.	*	0.1000	0.1000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
250.	*	0.2000	0.2000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
260.	*	0.3000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
270.	*	0.2000	0.1000	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000
280.	*	0.1000	0.1000	0.1000	0.1000	0.1000	0.2000	0.2000	0.1000
290.	*	0.0000	0.0000	0.2000	0.1000	0.1000	0.2000	0.2000	0.2000
300.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
310.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
320.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
330.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
340.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
350.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
360.	*	0.0000	0.0000	0.1000	0.1000	0.1000	0.2000	0.2000	0.2000
MAX	*	0.3000	0.3000	0.2000	0.1000	0.1000	0.2000	0.2000	0.2000
DEGR.	*	260	110	290	10	10	10	10	10

THE HIGHEST CONCENTRATION OF 0.3000 PPM OCCURRED AT RECEPTOR 17.

APPENDIX F – MOVES RUNSPECS MSATS

2016 Existing MSAT Alternative 5 1
2016 Existing MSAT Alternative 8 12
2016 Existing MSAT Alternative 9 23
2016 Existing MSAT Alternative 10 34
2016 Existing MSAT Alternative 13B 45
2016 Existing MSAT Alternative 13C 56
2025 Build MSAT Alternative 5 67
2025 Build MSAT Alternative 8 78
2025 Build MSAT Alternative 9 89
2025 Build MSAT Alternative 10 100
2025 Build MSAT Alternative 13B 111
2025 Build MSAT Alternative 13C 122
2025 No-Build MSAT Alternative 5 133
2025 No-Build MSAT Alternative 8 144
2025 No-Build MSAT Alternative 9 155
2025 No-Build MSAT Alternative 10 166
2025 No-Build MSAT Alternative 13B 177
2025 No-Build MSAT Alternative 13C 188
2040 Build MSAT Alternative 5 199
2040 Build MSAT Alternative 8 209
2040 Build MSAT Alternative 9 220
2040 Build MSAT Alternative 10 231
2040 Build MSAT Alternative 13B 242
2040 Build MSAT Alternative 13C 253
2040 No-Build MSAT Alternative 5 264
2040 No-Build MSAT Alternative 8 275
2040 No-Build MSAT Alternative 9 286
2040 No-Build MSAT Alternative 10 297
2040 No-Build MSAT Alternative 13B 308
2040 No-Build MSAT Alternative 13C 319

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Alternative 5: EXISTING

Year: 2016

County: Montgomery]]></description>
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2016_Existing_MSAT_495270MLS_ALT5
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Alternative 8: EXISTING

Year: 2016

County: Montgomery]]></description>
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2016_Existing_MSAT_495270MLS_ALT8
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Alternative 9: EXISTING

Year: 2016

County: Montgomery]]></description>
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2016_Existing_MSAT_495270MLS_ALT9
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Alternative 10: EXISTING

Year: 2016

County: Montgomery]]></description>
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2016_Existing_MSAT_495270MLS_ALT10
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Alternative 13B: EXISTING

Year: 2016

County: Montgomery]]></description>
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2016_Existing_MSAT_495270MLS_ALT13B
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Alternative 13C: EXISTING

Year: 2016

County: Montgomery]]></description>
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2016_Existing_MSAT_495270MLS_ALT13C
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Alternative 5:8 GPLs + 1 ETL in each direction

Year: 2025

County: Montgomery]]></description>
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Alternative 8:
I-495: 8 GPLs + 2 ETLs in each direction
I-270: 10PGPLs + 1ETL in each direction, maintain reversible HOV lanes

Year: 2025

County: Montgomery]]></description>
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Alternative 9: 8 GPLS + 2 ETLs in each direction

Year: 2025

County: Montgomery]]></description>
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Alternative 10:
I-495: 8 GPLs + 2 ETLs in each direction
I-270: 10PGPLs + 2ETLs in each direction, maintain reversible HOV lanes

Year: 2025

County: Montgomery]]></description>
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Alternative 13B:
I-495: 8 GPLs + 2 ETLs in each direction
I-270: Reversible only

Year: 2025

County: Montgomery]]></description>
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Exhaust"/>
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Alternative 13C:
I-495: 8 GPLs + 2 ETLs in each direction
I-270: 10 GPLs + 2 REVERSIBLE ETLs in each direction and maintain reversible HOV
lanes

Year: 2025

County: Montgomery]]></description>
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Alternative 5: No Build

Year: 2025

County: Montgomery]]></description>
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Alternative 8: No Build

Year: 2025

County: Montgomery]]></description>
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Alternative 9: NO BUILD

Year: 2025

County: Montgomery]]></description>
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Alternative 10: No Build

Year: 2025

County: Montgomery]]></description>
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Alternative 13B: No Build

Year: 2025

County: Montgomery]]></description>
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Alternative 13C: No Build

Year: 2025

County: Montgomery]]></description>
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</runspec>
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Alternative 5: 8 GPLs + 1 ETL in each direction
Year: 2040

County: Montgomery]]></description>
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- Montgomery County"/>
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		<month id="7"/>
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sourcetypeid="62" sourcetypename="Combination Long-haul Truck"/>
		<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel"
sourcetypeid="61" sourcetypename="Combination Short-haul Truck"/>
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sourcetypeid="41" sourcetypename="Intercity Bus"/>
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sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
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sourcetypeid="54" sourcetypename="Motor Home"/>
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sourcetypeid="21" sourcetypename="Passenger Car"/>
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sourcetypeid="31" sourcetypename="Passenger Truck"/>
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sourcetypeid="51" sourcetypename="Refuse Truck"/>
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Permeation"/>
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Alternative 8:
I-495: 8 GPLs + 2 ETLs in each direction
I-270: 10PGPLs + 1ETL in each direction, maintain reversible HOV lanes

Year: 2040

County: Montgomery]]></description>
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- Montgomery County"/>
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2040_Build_MSAT_495270MLS_ALT8
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Alternative 9: 4 EXPRESS TOLL LANES

Year: 2040

County: Montgomery]]></description>
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2040_Build_MSAT_495270MLS_ALT9_4ETL
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Alternative 10:
I-495: 8 GPLs + 2 ETLs in each direction
I-270: 10PGPLs + 2ETL in each direction, maintain reversible HOV lanes

Year: 2040

County: Montgomery]]></description>
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Alternative 13B:
I-495: 8 GPLs + 2 ETLs in each direction
I-270: Reversible only

Year: 2040

County: Montgomery]]></description>
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Alternative 13C:
I-495: 8 GPLs + 2 ETLs in each direction
I-270: 10 GPLs + 2 REVERSIBLE ETLs in each direction and maintain reversible HOV
lanes

Year: 2040

County: Montgomery]]></description>
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- Montgomery County"/>
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Alternative 5: No Build

Year: 2040

County: Montgomery]]></description>
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2040_MSAT_495270MLS_NOBUILD_ALT5
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Alternative 8: No Build

Year: 2040

County: Montgomery]]></description>
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2040_MSAT_495270MLS_NOBUILD_ALT8
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Alternative 9: NO BUILD

Year: 2040

County: Montgomery]]></description>
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2040_MSAT_495270MLS_NOBUILD_ALT9
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Alternative 10: No Build

Year: 2040

County: Montgomery]]></description>
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2040_MSAT_495270MLS_NOBUILD_ALT10
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Alternative 13B: No Build

Year: 2040

County: Montgomery]]></description>
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2040_MSAT_495270MLS_NOBUILD_ALT13B
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Alternative 13C: No Build

Year: 2040

County: Montgomery]]></description>
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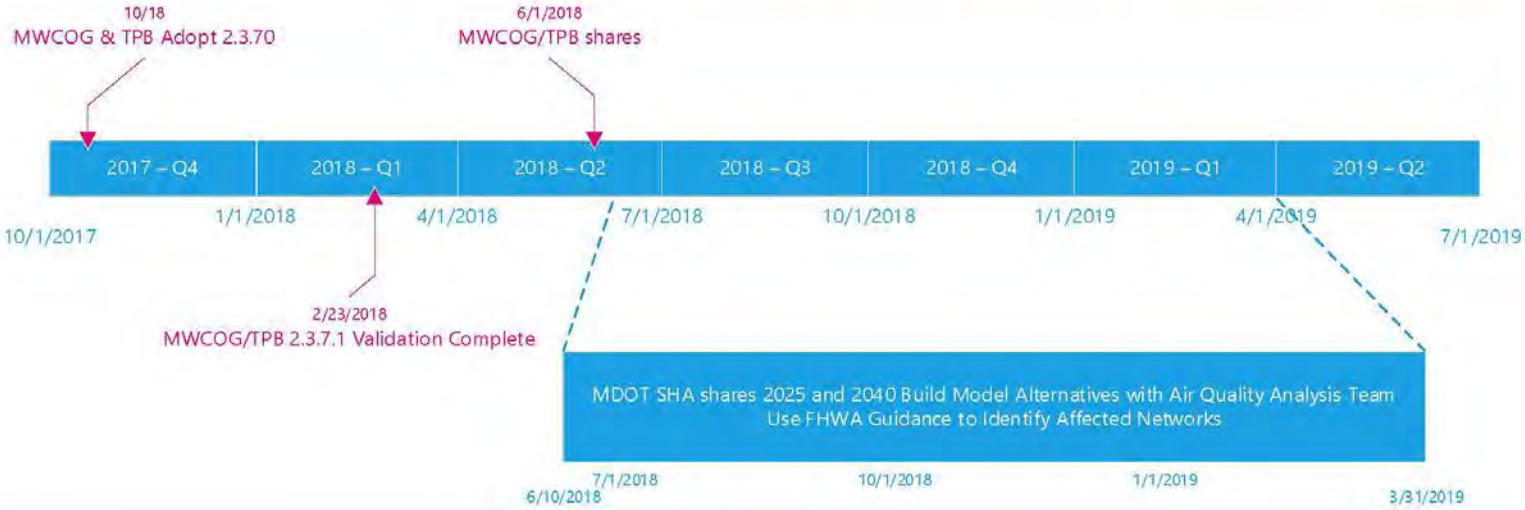
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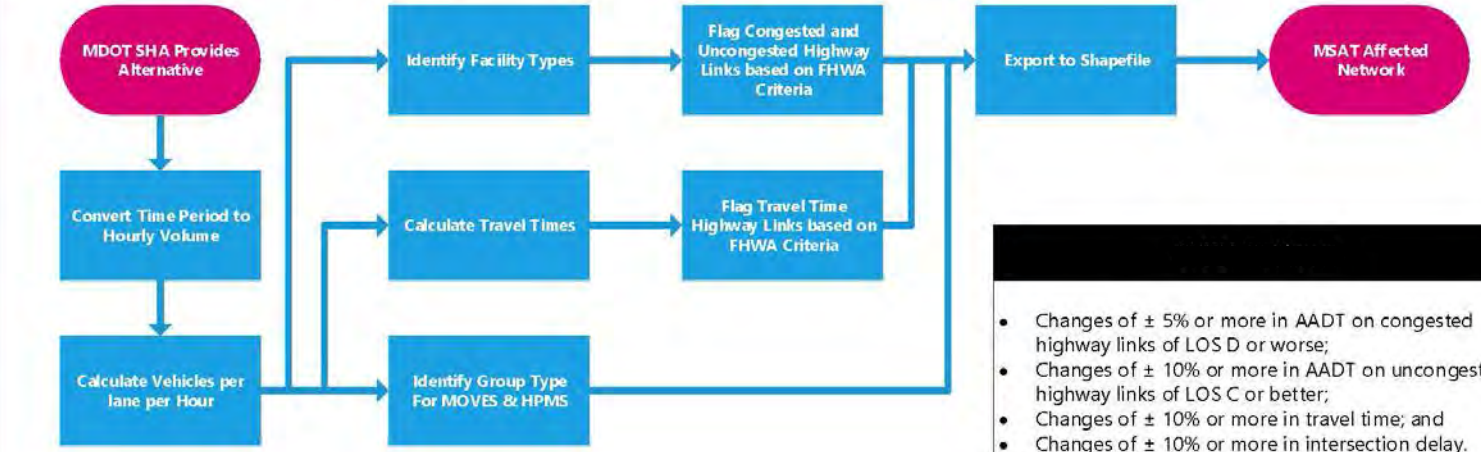
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2040_MSAT_495270MLS_NOBUILD_ALT13C
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MSAT Timeline and Air Quality Analysis Process



Air Quality Analysis Process to Identify Affected Networks



- Changes of ± 5% or more in AADT on congested highway links of LOS D or worse;
- Changes of ± 10% or more in AADT on uncongested highway links of LOS C or better;
- Changes of ± 10% or more in travel time; and
- Changes of ± 10% or more in intersection delay.

Segments Expecting Meaningful Changes in Emissions

2040 Alternative 5: One HOT Managed Lane Network

Criteria and Document Legend

1. Congested % Difference: Changes of ± 5% or more in AADT on congested highway links of LOS D or worse
2. Free Flow % Difference: Changes of ± 10% or more in AADT on uncongested highway links of LOS C or better;
3. Travel Time AM/PM: Changes of ± 10% or more in travel time; and
d. Not Presented: Changes of ± 10% or more in intersection delay.

Highlighted locations meet the criteria[1]

1. https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/moves_msat_faq.cfm

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
District of Columbia				
10th St SW				
61369	0%	22%	0%	0%
13th St NW				
7478	0%	0%	3%	13%
16064	1%	0%	12%	-3%
52075	12%	0%	2%	3%
77912	1%	0%	3%	13%
77913	0%	0%	2%	14%
77945	1%	0%	2%	14%
78708	0%	13%	0%	4%
14th St NW				
8416	2%	0%	3%	16%
44643	5%	0%	3%	1%
69332	0%	15%	0%	0%
74148	0%	22%	0%	0%
16th St NW				
17033	13%	0%	3%	1%
60423	6%	0%	6%	1%
17th St NW				
15543	6%	0%	4%	1%
58731	6%	0%	0%	1%
60147	6%	0%	0%	1%
18th St NW				
37607	6%	0%	3%	2%
78923	0%	12%	1%	0%
19th St NE				
79156	0%	41%	1%	0%
24th St NW				
298	5%	0%	0%	4%
34th St NW				
78762	0%	10%	0%	0%
40th St NE				
60683	0%	13%	0%	3%
60684	0%	17%	1%	0%
42nd St NW				
78789	0%	12%	0%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
44th St NW				
8163	6%	0%	0%	2%
78877	0%	18%	-1%	0%
78878	0%	12%	-2%	0%
78879	0%	30%	-2%	0%
4th St NW				
78059	0%	11%	0%	0%
53rd St SE				
79066	0%	16%	0%	1%
5th St NW				
77893	5%	0%	1%	2%
7th St NW				
74151	1%	0%	5%	12%
8th St NE				
60136	3%	0%	8%	11%
8th St SE				
16275	0%	181%	0%	0%
9th St NE				
58437	3%	0%	7%	11%
9th St NW				
58978	0%	25%	0%	0%
Alabama Ave SE				
58087	1%	0%	12%	4%
Alaska Ave NW				
78736	0%	10%	0%	0%
Arizona Ave NW				
41435	4%	0%	20%	14%
Arlington Memorial Brg				
30416	0%	12%	0%	0%
Canal Rd NW				
15550	0%	14%	0%	0%
23511	0%	14%	0%	0%
Capital Beltway				
19588	2%	0%	-5%	-13%
Central Ave SE				
79050	0%	12%	0%	-1%
Chestnut St NW				
23583	0%	200%	0%	0%
Clara Barton Pkwy NW				
15395	3%	0%	15%	11%
Columbia Rd NW				
10134	2%	0%	11%	3%
12475	2%	0%	10%	3%
Connecticut Ave NW				
46317	0%	12%	0%	0%
66347	1%	0%	13%	3%
DC Hwy 295				
4313	1%	0%	4%	14%
Division Ave NE				
61621	0%	10%	2%	6%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Drake Pl SE				
79063	0%	16%	0%	1%
Dupont Cir NW				
59589	1%	0%	10%	0%
E Capitol St SE				
18946	0%	11%	0%	3%
73984	0%	17%	2%	0%
E St NW				
18644	1%	0%	1%	15%
Eastern Ave NE				
1951	1%	0%	11%	7%
9580	2%	0%	14%	6%
15994	2%	0%	10%	15%
40365	1%	0%	12%	10%
63642	2%	0%	12%	9%
F St SE				
79062	0%	16%	0%	1%
Florida Ave NE				
29426	2%	0%	2%	10%
Florida Ave NW				
13037	3%	0%	0%	11%
Foxhall Rd NW				
57734	1%	0%	13%	0%
73797	2%	0%	12%	0%
78862	1%	0%	13%	0%
George Washington Memorial Pkwy				
33685	0%	0%	0%	17%
Georgia Ave NW				
40245	1%	0%	13%	3%
Girard St NW				
62441	1%	0%	2%	15%
Glenbrook Rd NW				
3261	0%	117%	0%	0%
3262	0%	62%	0%	0%
I- 495				
19589	1%	0%	-12%	-3%
25781	1%	0%	-14%	0%
Independence Ave SE				
29097	0%	199%	0%	0%
Indiana Ave NW				
78177	5%	0%	1%	3%
Kenilworth Ave NE				
17843	1%	0%	13%	9%
31339	6%	0%	6%	3%
63890	1%	0%	13%	9%
70336	0%	43%	0%	0%
Klingle Rd NW				
9933	6%	0%	0%	5%
18189	6%	0%	4%	0%
Livingston Rd SE				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
78539	0%	12%	0%	2%
M St NE				
79160	0%	41%	2%	0%
79161	0%	41%	2%	0%
Macarthur Blvd NW				
25539	3%	0%	12%	6%
31684	10%	0%	9%	5%
40367	7%	0%	1%	0%
40866	7%	0%	1%	1%
50146	8%	0%	1%	4%
58985	10%	0%	8%	5%
Massachusetts Ave NW				
78058	0%	11%	0%	1%
78469	0%	11%	0%	-1%
Massachusetts Ave SE				
9841	1%	0%	12%	4%
34801	7%	0%	4%	1%
69513	7%	0%	4%	1%
Mississippi Ave SE				
14565	0%	12%	1%	3%
Missouri Ave NW				
28512	6%	0%	8%	4%
Montana Ave NE				
43276	1%	0%	2%	12%
N Capitol St NE				
3253	7%	0%	0%	3%
N Capitol St NW				
78074	1%	0%	3%	10%
78075	1%	0%	3%	11%
Naylor Rd SE				
2844	1%	0%	0%	11%
16283	2%	0%	4%	12%
22008	1%	0%	7%	11%
32998	0%	0%	12%	-1%
51786	1%	0%	4%	15%
New York Ave NW				
9216	1%	0%	2%	11%
69611	0%	14%	0%	0%
74145	0%	16%	0%	0%
O St NE				
2756	1%	0%	2%	10%
O St NW				
78475	5%	0%	1%	2%
Ohio Dr SW				
49093	0%	14%	0%	0%
P St NW				
3199	6%	0%	1%	0%
Q St NW				
59287	0%	0%	0%	-18%
Reno Rd NW				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
31070	7%	0%	0%	1%
40369	7%	0%	0%	1%
Reservoir Rd NW				
8162	6%	0%	0%	0%
25246	6%	0%	0%	0%
60728	6%	0%	0%	2%
Rhode Island Ave NE				
30679	2%	0%	4%	12%
Rhode Island Ave NW				
1656	1%	0%	12%	3%
18417	1%	0%	3%	10%
74696	1%	0%	2%	11%
75121	1%	0%	2%	11%
Rock Creek Church Rd NW				
30092	5%	0%	4%	2%
Rock Creek Pkwy NW				
23728	5%	0%	0%	4%
Rock Crk and Potomac Pkwy NW				
59890	6%	0%	1%	0%
S Arlington Blvd				
43859	0%	0%	0%	17%
Sargent Rd NE				
30241	1%	0%	2%	10%
Southern Ave SE				
5934	2%	0%	1%	15%
Spring Rd NW				
46181	12%	0%	2%	2%
78720	0%	15%	0%	0%
78721	0%	13%	0%	0%
Stanton Rd SE				
70707	3%	0%	0%	10%
T St NW				
7046	0%	0%	2%	11%
14871	5%	0%	5%	0%
Texas Ave SE				
62578	0%	11%	1%	3%
University Pl NW				
77979	5%	0%	2%	2%
US Hwy 1 Alt				
29212	1%	0%	3%	12%
US Hwy 50				
23516	2%	0%	11%	1%
36930	1%	0%	3%	13%
Virginia Ave SE				
78258	0%	1%	-14%	0%
Warder St NW				
78701	0%	20%	0%	0%
Washington Blvd				
16446	0%	1%	3%	11%
Wisconsin Ave NW				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
8588	1%	0%	15%	4%
12826	5%	0%	0%	1%
13193	5%	0%	0%	0%
38275	8%	0%	1%	0%
53757	1%	0%	14%	4%
60178	2%	0%	10%	1%
78413	1%	0%	15%	4%
Wise Rd NW				
1555	2%	0%	16%	5%
Maryland				
23rd Ave				
59623	6%	0%	8%	9%
39th Ave				
80336	0%	27%	0%	1%
80338	0%	12%	1%	0%
80356	0%	12%	2%	3%
42nd Ave				
80278	5%	0%	8%	3%
80295	0%	16%	2%	0%
80296	0%	15%	0%	1%
80300	0%	11%	5%	3%
80307	6%	0%	1%	6%
80309	7%	0%	9%	2%
55th Ave				
80429	0%	15%	2%	0%
80431	0%	21%	0%	1%
80432	0%	10%	0%	2%
75th Ave				
12052	6%	0%	1%	12%
34932	7%	0%	5%	1%
79988	6%	0%	2%	8%
79990	0%	10%	4%	4%
94th Ave				
64133	0%	16%	3%	2%
96th Ave				
80560	0%	10%	1%	1%
Addison Rd S				
32810	0%	13%	1%	1%
49007	0%	17%	3%	0%
Adelphi Rd				
51496	2%	0%	8%	12%
Alcona St				
24801	0%	14%	1%	2%
79594	0%	200%	0%	0%
79596	0%	60%	0%	0%
Aldershot Dr				
16714	4%	0%	0%	11%
55065	6%	0%	9%	1%
Allentown Rd				
4873	0%	11%	0%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
5824	3%	0%	11%	5%
12586	3%	0%	6%	29%
25504	3%	0%	9%	11%
41879	1%	0%	18%	9%
61211	0%	10%	-5%	-1%
Ammendale Rd				
11126	0%	13%	-3%	-2%
11127	0%	12%	0%	-4%
11129	0%	13%	-3%	-2%
11130	0%	12%	-5%	-2%
11131	0%	13%	0%	-4%
62971	0%	13%	0%	-5%
Arbor St				
79995	0%	12%	2%	3%
79996	0%	15%	2%	2%
Aris T Allen Blvd				
13573	0%	0%	2%	12%
Baltimore Rd				
36592	0%	11%	3%	2%
Baltimore Washington Pkwy				
21293	0%	96%	0%	0%
40912	0%	200%	0%	0%
Barker Pl				
79595	0%	200%	0%	0%
79597	0%	93%	-2%	0%
Beach Dr				
18878	5%	0%	1%	10%
Beaver Dam Rd				
16009	10%	0%	5%	4%
24504	10%	0%	6%	5%
Bel Pre Rd				
73081	2%	0%	13%	1%
Belle Grove Rd				
5013	1%	0%	-12%	0%
29522	1%	0%	-11%	0%
Bradley Blvd				
624	7%	0%	5%	3%
19054	7%	0%	2%	16%
37196	0%	0%	14%	-3%
49712	1%	0%	7%	19%
53152	1%	0%	6%	10%
53163	2%	0%	15%	1%
79255	6%	0%	0%	1%
Brae Brooke Dr				
16307	0%	14%	8%	8%
Briggs Chaney Rd				
37537	5%	0%	11%	2%
51634	0%	14%	0%	0%
56332	0%	11%	6%	1%
Brightseat Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
10558	0%	15%	0%	1%
14700	5%	0%	20%	5%
21548	0%	20%	1%	2%
22780	0%	15%	0%	2%
22781	0%	36%	5%	3%
22792	0%	12%	2%	3%
24279	0%	17%	0%	1%
25648	5%	0%	3%	20%
28213	0%	46%	3%	2%
34593	0%	21%	2%	0%
59051	0%	36%	4%	2%
68771	0%	47%	4%	3%
77234	0%	14%	1%	3%
Broad Run Rd				
17147	0%	10%	0%	0%
Brown Rd				
48996	0%	28%	1%	5%
Brown Station Rd				
20742	0%	35%	5%	7%
20743	0%	41%	5%	7%
20744	0%	18%	3%	3%
20745	0%	20%	3%	3%
20764	0%	10%	0%	1%
65178	0%	20%	0%	1%
Brunett Ave				
25776	6%	0%	1%	2%
Burdette Rd				
6495	5%	0%	18%	1%
26063	11%	0%	3%	24%
51768	7%	0%	17%	1%
65132	11%	0%	2%	22%
Calverton Blvd				
42957	1%	0%	12%	0%
Campus Dr				
9761	1%	0%	14%	5%
Campus Way N				
77235	7%	0%	-1%	3%
77236	7%	0%	1%	7%
Campus Way S				
23127	0%	13%	3%	1%
49020	0%	18%	1%	5%
Capital Beltway				
2624	11%	0%	71%	96%
2625	1%	0%	16%	15%
6219	0%	238%	5%	1%
6524	11%	0%	100%	83%
6819	0%	3%	2%	11%
6820	1%	0%	26%	16%
6821	3%	0%	-1%	26%
6822	0%	3%	4%	13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
6824	2%	0%	5%	18%
6827	1%	0%	20%	8%
6830	2%	0%	17%	17%
6831	0%	9%	-21%	-24%
6832	11%	0%	-30%	-48%
7119	2%	0%	17%	17%
7120	0%	0%	13%	15%
7123	2%	0%	17%	5%
7773	8%	0%	53%	49%
8715	8%	0%	69%	60%
8718	0%	4%	31%	4%
8719	17%	0%	-30%	-13%
10252	3%	0%	-2%	-18%
10254	0%	200%	0%	0%
10257	0%	680%	-3%	-1%
10513	1%	0%	13%	25%
11033	0%	1%	14%	25%
14058	5%	0%	3%	29%
16672	0%	600%	-5%	-5%
17226	1%	0%	15%	13%
19276	0%	15%	0%	0%
19277	1%	0%	-22%	16%
25418	1%	0%	10%	5%
25419	0%	0%	21%	13%
25426	0%	14%	0%	0%
34319	9%	0%	66%	86%
35426	9%	0%	-43%	-39%
37141	2%	0%	18%	35%
37544	3%	0%	4%	34%
41598	0%	18%	0%	0%
43010	9%	0%	32%	57%
43317	1%	0%	-12%	-3%
43763	2%	0%	18%	35%
45001	0%	12%	1%	26%
46648	0%	3%	-5%	-23%
52567	8%	0%	52%	80%
52945	0%	0%	4%	-32%
53312	0%	11%	-14%	-33%
55255	2%	0%	33%	0%
55619	1%	0%	22%	17%
55626	0%	213%	-1%	-4%
58650	0%	0%	-3%	-11%
59353	0%	47%	0%	1%
59354	9%	0%	32%	57%
59356	0%	407%	49%	0%
59366	4%	0%	2%	30%
59644	1%	0%	-3%	17%
59654	18%	0%	-17%	-40%
68592	0%	200%	-12%	-22%
68593	0%	29600%	-6%	-5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
69021	8%	0%	53%	49%
70513	1%	0%	-22%	16%
Cedar Ln				
26478	2%	0%	1%	13%
52561	2%	0%	1%	13%
Cherry Hill Rd				
6299	4%	0%	-5%	-10%
33802	4%	0%	-5%	-11%
50719	3%	0%	-2%	-11%
53692	3%	0%	-2%	-11%
62078	3%	0%	-1%	-11%
Cherry Ln				
1326	0%	46%	-2%	0%
Cherry Tree Crossing Rd				
49515	0%	10%	-1%	0%
Cheverly Ave				
59776	0%	12%	3%	3%
Church Rd				
15956	0%	13%	3%	1%
16238	0%	13%	3%	1%
16239	0%	10%	3%	1%
16638	0%	15%	3%	5%
17739	0%	23%	7%	5%
20756	0%	19%	1%	3%
27106	0%	23%	3%	2%
33229	0%	19%	1%	3%
45305	0%	20%	7%	5%
53702	0%	17%	2%	5%
55147	0%	13%	6%	11%
55148	0%	13%	5%	11%
58009	0%	13%	5%	11%
59320	0%	13%	5%	11%
64150	0%	16%	1%	3%
65171	0%	16%	2%	4%
67960	0%	17%	1%	2%
Cindy Ln				
79811	0%	20%	3%	1%
Claggett Landing Rd				
73254	1%	0%	11%	3%
Clara Barton Pkwy				
52785	6%	0%	1%	-3%
59355	1%	0%	-25%	14%
60086	0%	0%	-15%	0%
College Pkwy				
75594	0%	20%	-2%	0%
Columbia Park Rd				
25355	4%	0%	10%	11%
Contee Rd				
1043	0%	29%	-3%	0%
County Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
54074	3%	0%	14%	11%
67060	2%	0%	8%	16%
Crain Hwy				
14759	1%	0%	15%	4%
14760	2%	0%	12%	7%
17046	4%	0%	6%	10%
19078	3%	0%	10%	5%
20364	2%	0%	11%	4%
25221	2%	0%	7%	13%
33216	2%	0%	9%	15%
54461	1%	0%	7%	13%
59046	3%	0%	15%	9%
61638	2%	0%	11%	5%
63879	2%	0%	4%	11%
71337	2%	0%	10%	17%
Crescent Rd				
22463	1%	0%	3%	13%
28807	3%	0%	17%	9%
Crest Ave				
80033	0%	57%	0%	1%
Dale Dr				
54293	0%	11%	2%	3%
Darcy Rd				
32636	0%	15%	10%	4%
33832	0%	11%	0%	4%
45686	0%	13%	4%	3%
Darnestown Rd				
57378	5%	0%	2%	1%
Dateleaf Ave				
79881	0%	34%	-1%	0%
79882	0%	69%	-1%	0%
Decatur St				
80271	0%	21%	3%	8%
80272	0%	30%	10%	3%
Democracy Blvd				
5967	10%	0%	12%	0%
6218	8%	0%	-1%	28%
18071	0%	50%	0%	1%
19271	0%	2%	0%	-20%
25424	20%	0%	0%	15%
26665	5%	0%	1%	13%
28454	0%	15%	-1%	2%
63217	2%	0%	34%	-3%
72716	10%	0%	-19%	-3%
Devon Rd				
53910	0%	11%	2%	3%
Dwight D Eisenhower Hwy				
37282	0%	11%	0%	0%
47337	17%	0%	-30%	-13%
66784	0%	73%	3%	71%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
67073	0%	57%	4%	73%
67077	0%	57%	4%	73%
67083	0%	57%	4%	73%
69882	17%	0%	-30%	-13%
E Jefferson St				
33917	0%	12%	-1%	-4%
E Patrick St				
75635	0%	100%	0%	0%
E Randolph Rd				
8397	0%	0%	12%	-3%
E West Hwy				
8494	3%	0%	9%	24%
14732	2%	0%	12%	8%
21767	6%	0%	4%	10%
32171	2%	0%	3%	12%
57826	2%	0%	10%	11%
59622	4%	0%	4%	11%
Earnshaw Dr				
57764	0%	14%	0%	1%
57765	0%	26%	0%	1%
Edwards Ferry Rd				
79478	0%	15%	0%	1%
Enterprise Rd				
19227	6%	0%	10%	8%
36043	6%	0%	14%	15%
56261	5%	0%	11%	3%
71017	7%	0%	10%	11%
74057	5%	0%	0%	23%
Fairland Rd				
8089	3%	0%	-1%	-11%
50730	3%	0%	14%	1%
Falls Rd				
5991	2%	0%	-1%	19%
32244	5%	0%	6%	9%
Fernwood Rd				
83	0%	22%	8%	2%
6474	0%	16%	4%	8%
26094	5%	0%	1%	-9%
62004	6%	0%	-4%	4%
64820	5%	0%	1%	-9%
64821	7%	0%	2%	-40%
65124	6%	0%	-4%	4%
Fish Hatchery Rd				
25264	0%	11%	0%	0%
Fletchertown Rd				
80583	0%	12%	0%	-2%
Forest Rd				
19286	0%	14%	2%	3%
60055	0%	10%	1%	1%
80002	0%	27%	0%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
80005	0%	21%	0%	1%
80034	0%	57%	0%	1%
Forestville Rd				
37749	4%	0%	1%	24%
65000	5%	0%	11%	11%
65833	6%	0%	24%	7%
69065	3%	0%	1%	16%
75577	2%	0%	10%	3%
75578	2%	0%	10%	-38%
75584	0%	9%	11%	3%
Fort Washington Rd				
24340	0%	12%	0%	0%
Frederick Rd				
15553	0%	0%	-10%	2%
Frolich Ln				
55295	0%	15%	2%	2%
Gallant Green Rd				
52022	6%	0%	-3%	0%
65570	5%	0%	-3%	0%
Garrett A Morgan Blvd				
24277	0%	13%	1%	2%
28205	0%	17%	1%	2%
28212	0%	14%	1%	2%
37554	0%	13%	1%	2%
Georgia Ave				
32047	0%	0%	13%	2%
72348	2%	0%	11%	-5%
Gladys Noon Spellman Pkwy				
8630	2%	0%	10%	17%
11444	0%	70%	0%	0%
13882	2%	0%	-13%	-3%
14135	1%	0%	7%	12%
16988	0%	11%	0%	-4%
18384	2%	0%	13%	14%
43798	0%	10%	0%	0%
44068	2%	0%	9%	16%
48270	2%	0%	8%	13%
48534	3%	0%	6%	10%
48609	0%	200%	0%	0%
53705	2%	0%	8%	13%
54848	0%	27%	0%	-1%
55216	3%	0%	11%	9%
58941	1%	0%	8%	10%
58944	2%	0%	10%	7%
58945	3%	0%	11%	9%
68234	0%	12%	4%	10%
Glenarden Pkwy				
13489	10%	0%	6%	17%
Glenn Dale Blvd				
48891	3%	0%	2%	13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Good Luck Rd				
14137	2%	0%	8%	13%
14371	3%	0%	11%	9%
21669	0%	21%	5%	6%
Greenbelt Rd				
12058	0%	22%	1%	0%
16934	0%	4%	-62%	-19%
30148	4%	0%	11%	2%
55223	0%	20%	-1%	0%
80545	0%	10%	1%	4%
Greencastle Rd				
1540	0%	20%	-2%	0%
72436	0%	29%	0%	-4%
Greentree Rd				
5873	8%	0%	12%	0%
9868	0%	14%	8%	5%
34982	7%	0%	-1%	16%
53653	9%	0%	5%	13%
66216	0%	15%	8%	11%
72625	3%	0%	11%	-1%
Hanover Pkwy				
19304	0%	11%	2%	1%
30531	0%	18%	0%	3%
30532	0%	11%	2%	1%
39976	0%	18%	0%	3%
Harbour Way				
75519	2%	0%	3%	16%
75520	2%	0%	14%	4%
Harry S Truman Dr				
21527	0%	10%	2%	1%
21528	0%	12%	1%	3%
23690	0%	13%	1%	3%
23971	0%	14%	1%	3%
49267	4%	0%	1%	10%
67883	4%	0%	1%	10%
Harry S Truman Dr N				
33912	6%	0%	10%	10%
71898	5%	0%	1%	21%
Hastings Dr				
24268	0%	15%	2%	0%
26629	0%	15%	2%	0%
Hessong Bridge Rd				
48698	0%	11%	0%	0%
Holly Springs Dr W				
58367	0%	10%	1%	1%
67056	0%	12%	1%	1%
Holter Rd				
18789	0%	15%	0%	0%
46547	0%	37%	0%	0%
I- 270				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
2990	0%	2%	-7%	-10%
5926	8%	0%	6%	0%
5927	9%	0%	8%	1%
11285	2%	0%	-11%	-13%
19193	0%	90%	-2%	2%
19669	0%	1%	30%	0%
22834	7%	0%	-8%	0%
25127	6%	0%	0%	9%
26790	0%	200%	0%	1%
27942	6%	0%	-83%	10%
28056	0%	94%	121%	-9%
28057	0%	55%	5%	27%
28061	0%	65%	104%	14%
29074	0%	77%	85%	3%
29076	0%	36%	15%	91%
29077	0%	199%	0%	0%
37540	7%	0%	5%	-4%
38287	0%	55%	14%	70%
41597	0%	13%	1%	4%
43474	9%	0%	3%	0%
43771	0%	28%	7%	2%
46645	0%	11%	7%	1%
58033	0%	92%	-20%	2%
58037	0%	71%	47%	14%
58038	0%	186%	0%	0%
63899	8%	0%	16%	0%
65625	0%	92%	31%	11%
65629	4%	0%	-16%	-7%
66587	0%	230%	16%	17%
66773	0%	30%	8%	8%
67374	0%	40%	5%	101%
67375	0%	108%	27%	-9%
67668	0%	55%	14%	70%
67671	0%	92%	31%	11%
67677	0%	59%	14%	42%
67679	0%	83%	91%	11%
67967	0%	65%	104%	14%
67968	0%	31%	15%	117%
67970	0%	65%	104%	14%
67972	0%	46%	15%	33%
67977	0%	46%	15%	33%
67978	0%	68%	80%	14%
67979	0%	46%	15%	33%
67981	0%	68%	80%	14%
68265	0%	35%	15%	99%
68266	0%	68%	80%	14%
68272	0%	51%	15%	14%
68274	0%	57%	138%	14%
68277	0%	44%	15%	25%
68559	0%	42%	15%	29%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
68560	0%	318%	0%	-7%
68562	0%	60%	54%	15%
68566	0%	2%	0%	-12%
68573	0%	2%	0%	-12%
68721	0%	51%	14%	94%
68725	0%	74%	44%	14%
68857	0%	2%	0%	-12%
70365	8%	0%	7%	0%
70367	6%	0%	-1%	7%
70368	7%	0%	-1%	25%
70369	8%	0%	11%	0%
70751	8%	0%	7%	0%
I- 370				
9353	0%	0%	15%	-19%
9355	0%	41%	0%	0%
41595	0%	56%	3%	5%
52380	5%	0%	12%	1%
I- 495				
1190	4%	0%	8%	17%
11587	4%	0%	18%	46%
11592	2%	0%	20%	21%
12346	1%	0%	-20%	-2%
12347	1%	0%	-20%	-2%
14126	3%	0%	3%	29%
14676	3%	0%	12%	22%
14677	0%	200%	0%	0%
14681	3%	0%	21%	33%
16745	0%	16%	1%	3%
16990	2%	0%	14%	27%
16991	2%	0%	14%	27%
17216	0%	5%	-47%	-30%
17685	5%	0%	23%	39%
17687	3%	0%	41%	-1%
17688	4%	0%	16%	0%
19074	4%	0%	22%	44%
19594	1%	0%	-10%	-2%
20076	4%	0%	26%	25%
20450	1%	0%	2%	16%
20850	5%	0%	74%	57%
27933	0%	9%	6%	32%
28574	0%	2%	9%	-11%
28802	0%	4%	0%	11%
29807	4%	0%	51%	1%
43514	3%	0%	30%	24%
47339	0%	3%	9%	12%
55221	2%	0%	34%	29%
56253	2%	0%	43%	19%
56564	0%	11%	-1%	0%
I- 595				
12094	3%	0%	-25%	-7%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
59578	3%	0%	-21%	-45%
I- 95				
3357	2%	0%	11%	21%
3358	0%	5%	9%	15%
3375	3%	0%	17%	11%
3376	0%	400%	0%	0%
12344	2%	0%	29%	36%
12349	3%	0%	-21%	-14%
12603	4%	0%	39%	58%
13349	3%	0%	-26%	-49%
13351	2%	0%	23%	28%
13352	3%	0%	-13%	-12%
14124	2%	0%	19%	31%
14125	2%	0%	18%	23%
14679	2%	0%	20%	36%
14682	0%	200%	0%	0%
14974	0%	43%	0%	0%
16744	0%	3%	-39%	-24%
17213	3%	0%	20%	47%
17219	0%	6%	9%	15%
17686	0%	5%	2%	26%
19330	0%	18%	0%	0%
20071	0%	25%	-1%	-11%
20077	0%	6%	9%	15%
21772	4%	0%	-44%	-26%
21773	0%	29%	3%	9%
28577	0%	6%	9%	15%
30064	0%	17%	5%	1%
30065	0%	1402%	30%	2%
40691	2%	0%	10%	22%
43515	4%	0%	8%	25%
44948	0%	36%	0%	0%
48348	0%	1800%	0%	0%
49018	0%	28%	4%	4%
51638	0%	83%	0%	0%
54078	2%	0%	4%	12%
54493	1%	0%	23%	25%
56263	5%	0%	31%	41%
58947	3%	0%	14%	24%
67392	2%	0%	-11%	-20%
70129	2%	0%	-5%	-25%
Jadeleaf Ave				
79858	0%	17%	1%	1%
79877	0%	34%	-1%	0%
Jefferson Pike				
3165	0%	12%	0%	0%
14909	0%	37%	0%	0%
45075	0%	33%	0%	0%
46875	0%	21%	0%	0%
69334	0%	15%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
73829	0%	21%	0%	0%
74634	0%	12%	0%	0%
Jefferson St				
80303	0%	10%	3%	3%
John Hanson Hwy				
13343	1%	0%	8%	11%
13344	1%	0%	18%	3%
13348	1%	0%	13%	1%
16984	1%	0%	8%	11%
48619	1%	0%	7%	-10%
Kenilworth Ave				
15030	2%	0%	12%	8%
15623	5%	0%	10%	19%
15702	3%	0%	8%	24%
15891	5%	0%	10%	1%
25727	4%	0%	5%	20%
40694	2%	0%	10%	15%
56371	3%	0%	19%	17%
63572	3%	0%	8%	10%
Kettering Dr				
15332	0%	20%	6%	12%
15333	16%	0%	8%	17%
24931	3%	0%	1%	13%
64714	5%	0%	7%	3%
Kipling Pkwy				
34157	0%	13%	2%	13%
72730	12%	0%	11%	11%
Knowles Ave				
69216	4%	0%	4%	15%
69217	3%	0%	1%	15%
69218	2%	0%	-4%	13%
Konterra Dr				
51884	6%	0%	-1%	-3%
60508	0%	11%	-2%	-1%
67062	8%	0%	-5%	-1%
71510	0%	39%	0%	0%
Lancelot Rd				
1529	0%	21%	0%	0%
Landover Rd				
10556	2%	0%	-1%	-12%
11871	0%	0%	-10%	1%
14118	0%	4%	-17%	-7%
32643	2%	0%	11%	2%
Lanham Severn Rd				
11295	2%	0%	2%	11%
Larchmont Ave				
29634	0%	12%	1%	0%
49174	0%	18%	0%	0%
Largo Rd				
15331	0%	17%	7%	12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
21532	7%	0%	6%	3%
21613	2%	0%	5%	17%
24933	6%	0%	1%	20%
33558	4%	0%	12%	2%
Layhill Rd				
10337	3%	0%	1%	11%
32604	2%	0%	-1%	11%
44263	2%	0%	18%	1%
51628	3%	0%	-1%	-14%
51629	0%	12%	0%	3%
Leeland Rd				
33217	0%	12%	1%	1%
48446	0%	11%	1%	1%
Lime Plant Rd				
44640	0%	15%	0%	0%
Longfellow St				
80345	0%	10%	4%	2%
80366	0%	10%	4%	2%
Lottsford Rd				
49051	7%	0%	10%	11%
63266	5%	0%	6%	12%
71896	8%	0%	1%	9%
Lottsford Vista Rd				
25103	0%	11%	3%	10%
52270	0%	11%	5%	8%
61445	0%	12%	12%	8%
63861	0%	13%	5%	11%
Loughran Rd				
2118	0%	21%	0%	0%
Lusbys Ln				
80173	0%	15%	0%	1%
80174	0%	14%	0%	1%
Macarthur Blvd				
26361	7%	0%	3%	8%
30010	8%	0%	1%	0%
34973	2%	0%	0%	-13%
55050	8%	0%	7%	2%
65346	1%	0%	-8%	-11%
71007	1%	0%	-1%	13%
71008	8%	0%	1%	-3%
Madaket Rd				
40475	8%	0%	1%	0%
Marlboro Pike				
25806	0%	15%	2%	0%
31043	0%	22%	0%	2%
Martin Luther King Jr Hwy				
14140	2%	0%	-15%	-21%
14517	2%	0%	4%	12%
23071	2%	0%	11%	8%
23230	4%	0%	4%	16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
23231	3%	0%	14%	4%
25098	4%	0%	-1%	-12%
25641	3%	0%	8%	11%
49277	4%	0%	4%	15%
49841	2%	0%	2%	11%
54372	0%	11%	2%	3%
59032	3%	0%	4%	12%
63782	2%	0%	8%	14%
66764	6%	0%	5%	9%
70831	4%	0%	21%	16%
72168	3%	0%	12%	3%
Maryland Ave				
54037	5%	0%	11%	7%
Massachusetts Ave				
57821	5%	0%	-1%	0%
64542	5%	0%	0%	-1%
Meadowridge Ln				
4742	0%	13%	3%	4%
58595	0%	16%	2%	5%
Merrimac Dr				
18831	0%	17%	0%	1%
33808	0%	14%	1%	0%
Missouri Ave				
60696	0%	13%	0%	1%
Mitchellville Rd				
55136	7%	0%	4%	4%
Montgomery Rd				
80218	5%	0%	-2%	-1%
Montrose Rd				
2989	0%	34%	1%	13%
8728	1%	0%	-2%	-12%
Moorland Ln				
65354	1%	0%	13%	-3%
65356	1%	0%	-9%	12%
Mount Oak Rd				
48714	5%	0%	2%	1%
Muirkirk Rd				
10820	7%	0%	-1%	-13%
44548	8%	0%	-8%	-7%
45692	6%	0%	0%	-9%
64334	9%	0%	-2%	-6%
N Englewood Dr				
79973	0%	37%	0%	0%
79974	0%	14%	0%	0%
79975	0%	26%	1%	0%
79976	0%	14%	1%	0%
N Stonestreet Ave				
1299	4%	0%	1%	11%
Needleleaf Ln				
14813	12%	0%	11%	5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
53625	0%	21%	1%	4%
54387	0%	18%	1%	3%
58880	14%	0%	1%	19%
Nelson St				
79402	0%	14%	0%	0%
79403	0%	20%	-2%	0%
79418	0%	12%	0%	1%
79424	0%	14%	0%	0%
79425	0%	12%	0%	1%
New Hampshire Ave				
3377	2%	0%	5%	14%
14392	3%	0%	9%	29%
14394	3%	0%	12%	20%
17448	2%	0%	16%	11%
Nicholson St				
80322	3%	0%	1%	11%
80325	0%	12%	6%	2%
80326	0%	10%	0%	6%
80375	0%	10%	0%	2%
80376	0%	13%	0%	2%
80377	0%	10%	2%	1%
80378	0%	13%	2%	1%
Northern Ave				
80546	0%	23%	1%	3%
80548	0%	25%	2%	1%
Northview Dr				
53612	0%	10%	2%	1%
67879	0%	12%	2%	1%
79568	0%	27%	0%	0%
Nottingham Rd				
40680	0%	23%	0%	0%
Oglethorpe St				
80308	6%	0%	1%	6%
80310	9%	0%	9%	2%
Old Alexandria Ferry Rd				
68084	3%	0%	4%	16%
68085	2%	0%	8%	10%
Old Baltimore Pike				
44259	6%	0%	-3%	-3%
Old Baltimore Rd				
173	5%	0%	0%	2%
Old Branch Ave				
2691	2%	0%	11%	-3%
Old Central Ave				
50632	1%	0%	12%	3%
Old Columbia Pike				
29714	1%	0%	11%	0%
52942	1%	0%	-1%	10%
Old Crain Hwy				
42839	7%	0%	7%	25%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
51991	5%	0%	14%	8%
66892	8%	0%	2%	26%
66893	9%	0%	20%	3%
66894	9%	0%	19%	5%
71335	1%	0%	-3%	17%
79545	0%	11%	2%	2%
79546	0%	11%	0%	0%
Old Georgetown Rd				
6494	13%	0%	-20%	-13%
6864	9%	0%	0%	-47%
10255	0%	274%	-1%	-4%
10256	0%	219%	0%	0%
11282	7%	0%	10%	-15%
11283	0%	14%	14%	1%
25423	0%	0%	1%	11%
37549	11%	0%	-36%	-10%
38235	11%	0%	-1%	-33%
40139	6%	0%	-15%	2%
45349	9%	0%	16%	5%
52032	13%	0%	-20%	-16%
61752	0%	0%	-12%	-1%
63833	5%	0%	2%	24%
69461	12%	0%	-3%	-51%
69462	12%	0%	-1%	-38%
69463	12%	0%	-33%	-13%
79315	0%	19%	1%	2%
Old Gunpowder Rd				
1032	7%	0%	-1%	-3%
1629	6%	0%	-2%	-5%
14972	5%	0%	-9%	-8%
16342	4%	0%	-6%	-16%
47280	5%	0%	-2%	-4%
72759	6%	0%	-2%	-4%
Old Marlboro Pike				
19543	0%	17%	0%	1%
19544	0%	16%	0%	1%
19554	0%	17%	0%	1%
19555	0%	12%	1%	0%
20762	0%	24%	0%	1%
23678	0%	24%	0%	1%
26332	0%	12%	0%	1%
64160	0%	12%	1%	0%
66045	0%	12%	2%	0%
74631	5%	0%	0%	21%
Olson St				
79780	0%	43%	0%	0%
79782	0%	26%	0%	0%
Owens Rd				
30863	0%	12%	0%	0%
Oxon Run Dr				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
81360	0%	12%	4%	1%
Parklawn Dr				
25124	5%	0%	0%	1%
74420	0%	13%	-1%	-1%
Pennsylvania Ave				
58364	2%	0%	0%	19%
66994	0%	0%	10%	0%
76987	0%	18%	0%	0%
Persimmon Tree Ln				
1236	4%	0%	0%	13%
63546	0%	23%	0%	5%
Philadelphia Ave				
53909	2%	0%	1%	10%
Pleasant Colony Dr				
33231	1%	0%	11%	3%
Plymouth Ct				
75913	0%	13%	1%	1%
75914	0%	19%	0%	3%
79560	0%	19%	0%	3%
79561	0%	13%	1%	1%
Pointer Ridge Dr				
75911	0%	13%	1%	1%
75912	0%	19%	0%	3%
Polk St				
80534	0%	13%	0%	1%
Powder Mill Rd				
6307	2%	0%	22%	1%
49722	7%	0%	7%	15%
60495	3%	0%	6%	13%
67296	8%	0%	28%	24%
80221	5%	0%	-3%	-2%
Princess Garden Pkwy				
25713	4%	0%	2%	11%
Quarry Ave				
32806	0%	11%	3%	0%
65403	0%	11%	3%	0%
Queens Chapel Rd				
14078	0%	14%	1%	0%
Raljon Rd				
21549	0%	12%	1%	2%
32118	0%	14%	3%	2%
46657	7%	0%	8%	32%
47006	11%	0%	3%	28%
51278	12%	0%	23%	10%
51279	0%	10%	9%	11%
Redskins Rd				
65823	0%	12%	3%	2%
Reece Rd				
77876	0%	96%	0%	0%
Rhode Island Ave				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
4366	0%	16%	0%	1%
11584	0%	11%	3%	5%
63299	0%	38%	3%	1%
Riggs Rd				
22854	1%	0%	5%	10%
Ritchie Marlboro Rd				
3546	0%	20%	1%	0%
14684	0%	400%	0%	0%
14685	7%	0%	-4%	-24%
15879	0%	27%	1%	1%
20338	0%	18%	1%	5%
33900	0%	7%	-14%	-1%
Ritchie Rd				
11875	0%	20%	6%	6%
12126	19%	0%	19%	6%
12127	0%	17%	2%	8%
21191	0%	25%	5%	5%
21906	5%	0%	16%	17%
25226	8%	0%	5%	36%
26015	14%	0%	2%	13%
27108	0%	26%	2%	4%
32128	9%	0%	4%	17%
32948	0%	19%	1%	11%
34151	11%	0%	2%	23%
34152	15%	0%	12%	12%
34158	16%	0%	10%	10%
34574	0%	15%	2%	12%
48262	0%	20%	2%	5%
58368	0%	11%	1%	10%
58370	16%	0%	13%	5%
72729	12%	0%	18%	19%
Ritz Way				
3541	12%	0%	-1%	-17%
64400	14%	0%	-10%	-7%
River Rd				
325	11%	0%	3%	24%
337	5%	0%	2%	-2%
1235	6%	0%	0%	16%
6523	0%	28%	-2%	-1%
12876	1%	0%	10%	-3%
19049	9%	0%	-1%	0%
24380	5%	0%	18%	1%
34977	6%	0%	5%	-6%
34978	5%	0%	2%	-2%
37137	0%	253%	0%	3%
37546	7%	0%	10%	-4%
40422	3%	0%	14%	2%
40426	3%	0%	16%	-2%
41599	5%	0%	-1%	-2%
46908	6%	0%	3%	-9%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
53732	7%	0%	2%	-1%
57944	0%	0%	-14%	-11%
60084	0%	0%	-11%	-4%
72359	2%	0%	-7%	15%
Rock Spring Dr				
82	0%	22%	8%	2%
84	0%	16%	4%	8%
20043	0%	28%	0%	0%
59057	0%	37%	0%	1%
Rockville Pike				
89	5%	0%	2%	3%
2632	0%	11%	0%	-1%
6857	4%	0%	-14%	-1%
21971	0%	0%	1%	13%
43764	5%	0%	-10%	-1%
59060	4%	0%	15%	7%
59061	2%	0%	1%	13%
69584	6%	0%	3%	1%
72153	5%	0%	-9%	-5%
Rollins Ave				
24569	0%	14%	1%	1%
34570	0%	11%	0%	1%
S Frederick Ave				
59948	0%	1%	12%	7%
S Keysville Rd				
55814	0%	17%	0%	0%
S Osborne Rd				
62594	1%	0%	-10%	0%
Sands Rd				
39919	0%	25%	0%	0%
Sansbury Rd				
20737	0%	13%	4%	3%
20738	0%	8%	11%	7%
Seat Pleasant Dr				
49542	0%	10%	2%	2%
Seminary Rd				
11025	0%	0%	0%	12%
Serpentine Way				
19665	2%	0%	11%	0%
Seven Locks Rd				
11106	1%	0%	11%	4%
21958	2%	0%	11%	3%
34821	11%	0%	-6%	-1%
53733	6%	0%	0%	16%
57932	3%	0%	14%	3%
59358	5%	0%	-2%	11%
59364	5%	0%	-2%	11%
Shady Grove Rd				
6775	3%	0%	6%	20%
Sheriff Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
23452	2%	0%	12%	1%
24265	3%	0%	0%	12%
Soil Conservation Rd				
9132	10%	0%	6%	4%
16010	10%	0%	6%	5%
24505	10%	0%	6%	5%
32202	10%	0%	5%	4%
40669	10%	0%	5%	4%
61442	10%	0%	5%	4%
South Dr				
19664	0%	14%	8%	5%
53158	0%	15%	8%	11%
Southlawn Ln				
6475	6%	0%	1%	8%
Springfield Rd				
52261	5%	0%	9%	13%
63854	5%	0%	8%	13%
St Barnabas Rd				
13616	4%	0%	12%	6%
14456	3%	0%	13%	0%
14457	3%	0%	13%	0%
18933	0%	0%	-1%	14%
24864	3%	0%	12%	0%
29629	2%	0%	15%	3%
30657	1%	0%	-19%	1%
34560	1%	0%	18%	-1%
39194	4%	0%	19%	8%
43154	3%	0%	13%	0%
71267	4%	0%	4%	14%
St Clair Dr				
79781	0%	43%	0%	0%
79783	0%	26%	0%	0%
Stardrift Dr				
3899	0%	199%	0%	0%
State Hwy 189				
5992	6%	0%	9%	9%
5995	2%	0%	1%	13%
5996	1%	0%	10%	0%
8007	3%	0%	-1%	17%
8008	2%	0%	1%	13%
11110	6%	0%	3%	4%
26096	1%	0%	4%	11%
32245	1%	0%	10%	0%
46979	0%	7%	20%	6%
State Hwy 190				
6004	5%	0%	1%	-1%
6569	3%	0%	13%	0%
31010	1%	0%	0%	12%
32236	0%	12%	0%	-1%
75273	2%	0%	0%	12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
State Hwy 193				
14146	2%	0%	-16%	-3%
18751	6%	0%	1%	29%
18752	4%	0%	15%	2%
24752	6%	0%	16%	19%
25725	0%	23%	-1%	-1%
29412	3%	0%	10%	10%
34862	1%	0%	-11%	0%
64154	6%	0%	0%	17%
64396	2%	0%	14%	4%
State Hwy 200				
10593	0%	200%	0%	0%
39012	0%	5%	16%	1%
52151	0%	11%	0%	0%
52152	0%	5%	18%	1%
52153	0%	5%	18%	1%
52398	0%	0%	12%	-8%
52406	0%	6%	1%	24%
52407	0%	6%	1%	24%
58233	0%	6%	1%	24%
66280	0%	5%	16%	1%
71511	0%	5%	16%	1%
State Hwy 201				
15622	3%	0%	8%	13%
15703	5%	0%	10%	12%
State Hwy 210				
3379	0%	2%	48%	12%
29808	0%	19%	0%	0%
30865	0%	2%	-10%	0%
35288	2%	0%	13%	3%
79718	2%	0%	11%	0%
State Hwy 212				
4869	3%	0%	2%	14%
10818	5%	0%	-9%	-8%
15115	3%	0%	2%	15%
17973	4%	0%	-6%	-16%
23280	3%	0%	10%	1%
28570	0%	35%	-4%	-1%
29632	12%	0%	-24%	-11%
71473	3%	0%	13%	1%
75521	13%	0%	-2%	-29%
75522	12%	0%	-7%	-28%
75526	0%	13%	-9%	-4%
75527	12%	0%	-11%	-19%
State Hwy 214				
24280	2%	0%	16%	2%
64988	2%	0%	18%	2%
State Hwy 223				
61975	0%	30%	-1%	0%
67203	0%	200%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
State Hwy 28				
7961	2%	0%	12%	1%
72810	1%	0%	0%	10%
79432	2%	0%	12%	1%
79434	1%	0%	0%	10%
State Hwy 295				
19985	0%	57%	0%	0%
State Hwy 301				
52744	0%	0%	11%	0%
60711	1%	0%	12%	1%
State Hwy 320				
1539	6%	0%	2%	17%
19446	6%	0%	18%	13%
43759	6%	0%	2%	17%
49380	6%	0%	18%	13%
53920	7%	0%	5%	4%
State Hwy 332				
33474	0%	13%	1%	1%
64995	3%	0%	20%	7%
72726	3%	0%	2%	24%
State Hwy 381				
62717	0%	11%	-1%	0%
State Hwy 382				
42109	0%	15%	0%	0%
60701	0%	17%	0%	-1%
State Hwy 4				
46381	1%	0%	0%	10%
State Hwy 410				
12114	3%	0%	11%	10%
18940	3%	0%	15%	14%
State Hwy 414				
5812	3%	0%	14%	0%
5813	3%	0%	0%	11%
5814	3%	0%	0%	17%
46200	5%	0%	9%	1%
58052	3%	0%	13%	0%
State Hwy 424				
32847	1%	0%	-1%	-13%
State Hwy 450				
231	1%	0%	-12%	0%
8863	3%	0%	-1%	-13%
19291	5%	0%	10%	1%
25803	1%	0%	-13%	1%
30974	2%	0%	-10%	0%
34551	2%	0%	-13%	0%
34644	4%	0%	3%	16%
67474	4%	0%	0%	10%
State Hwy 458				
13615	4%	0%	17%	12%
13827	3%	0%	13%	6%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
13829	3%	0%	2%	12%
30069	4%	0%	8%	21%
30070	0%	0%	14%	-2%
49842	0%	0%	-1%	10%
State Hwy 497				
55476	0%	36%	0%	0%
State Hwy 5				
12092	0%	0%	-1%	11%
14380	2%	0%	-1%	-12%
17221	0%	1%	56%	1%
50641	4%	0%	-16%	-1%
56257	5%	0%	-2%	-25%
64341	2%	0%	-5%	-14%
State Hwy 535				
17222	0%	11%	-7%	-5%
State Hwy 614				
53280	1%	0%	-8%	-11%
64811	1%	0%	-12%	-12%
64812	1%	0%	-13%	-6%
64814	1%	0%	-10%	-5%
State Hwy 650				
1102	2%	0%	-9%	-15%
14389	1%	0%	5%	12%
36833	2%	0%	-8%	-13%
40093	1%	0%	6%	13%
40788	2%	0%	-12%	-12%
44551	0%	133%	0%	0%
50205	2%	0%	-8%	-13%
66127	0%	2%	-1%	12%
State Hwy 725				
15050	1%	0%	16%	0%
21136	2%	0%	7%	13%
21913	3%	0%	-1%	15%
21914	3%	0%	0%	25%
23976	3%	0%	21%	3%
33218	2%	0%	7%	11%
65387	3%	0%	11%	0%
Stoneybrook Dr				
66447	1%	0%	0%	-10%
Suitland Pkwy				
11880	1%	0%	13%	2%
54077	1%	0%	0%	14%
Town Square Dr				
27403	0%	36%	0%	0%
Tuxedo Rd				
80029	0%	53%	0%	1%
Underwood St				
60199	2%	0%	8%	12%
University Blvd E				
11036	0%	2%	-12%	-12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
14391	3%	0%	14%	5%
16423	0%	10%	0%	4%
28808	2%	0%	2%	17%
US Hwy 1 Alt				
16225	6%	0%	5%	7%
72430	2%	0%	1%	11%
US Hwy 15				
17143	0%	0%	14%	3%
32501	0%	17%	0%	0%
45438	0%	0%	14%	3%
70525	0%	32%	0%	0%
US Hwy 29				
7766	6%	0%	-12%	-15%
16318	0%	0%	-6%	16%
25430	0%	200%	0%	0%
28256	5%	0%	1%	2%
37891	0%	202%	4%	-96%
74687	3%	0%	-10%	-20%
US Hwy 50				
11588	3%	0%	-7%	-34%
26125	0%	199%	0%	0%
28617	0%	3%	0%	12%
38255	1%	0%	0%	16%
43513	0%	12%	0%	0%
54835	1%	0%	-1%	-10%
68134	0%	24%	0%	0%
73586	3%	0%	-3%	-32%
73853	0%	24%	0%	0%
Valley Park Rd				
79843	0%	11%	1%	0%
79864	0%	11%	0%	1%
Virginia Manor Rd				
52208	0%	12%	0%	-8%
54537	0%	10%	-10%	-2%
W City Ave				
1213	2%	0%	-4%	-14%
4006	2%	0%	-11%	-12%
4008	2%	0%	-5%	-17%
4009	2%	0%	-4%	-15%
4450	2%	0%	8%	14%
8176	2%	0%	-11%	-8%
9461	3%	0%	9%	19%
13354	0%	13%	-7%	-22%
16179	2%	0%	3%	17%
16327	1%	0%	11%	5%
16746	0%	20%	3%	2%
16930	2%	0%	3%	-14%
20085	2%	0%	-4%	-18%
22244	2%	0%	-7%	-13%
32201	6%	0%	1%	5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
33812	1%	0%	4%	11%
34762	1%	0%	11%	5%
34763	1%	0%	10%	3%
40142	3%	0%	28%	10%
45356	2%	0%	-28%	-19%
54071	9%	0%	12%	52%
59042	0%	10%	-13%	-11%
60201	2%	0%	6%	13%
60756	2%	0%	11%	8%
64333	1%	0%	-4%	-10%
64671	1%	0%	6%	13%
80253	1%	0%	7%	12%
80255	2%	0%	12%	9%
W Diamond Ave				
68728	0%	2%	0%	-12%
W Montgomery Ave				
86	1%	0%	14%	4%
851	0%	212%	40%	39%
36249	2%	0%	4%	13%
46468	3%	0%	-16%	-12%
55237	3%	0%	-10%	-4%
67682	0%	93%	24%	11%
68723	0%	36%	15%	91%
70362	0%	213%	10%	9%
70363	0%	11%	-4%	-4%
71016	6%	0%	-1%	14%
75469	2%	0%	-14%	-23%
Walker Mill Rd				
11873	3%	0%	11%	17%
27103	3%	0%	11%	15%
Wasche Rd				
79479	0%	20%	0%	1%
Washington National Pike				
547	0%	7%	13%	-1%
6216	7%	0%	-1%	15%
19191	0%	84%	8%	7%
25427	10%	0%	7%	-52%
28054	0%	67%	1%	105%
44054	7%	0%	-22%	-30%
46981	0%	23%	1%	49%
48741	10%	0%	7%	-52%
49366	0%	30%	8%	8%
55627	10%	0%	-5%	-8%
58028	0%	297%	17%	16%
58029	0%	30%	8%	8%
61724	0%	30%	16%	17%
61725	18%	0%	-17%	-40%
65632	0%	2%	0%	-12%
66775	0%	97%	17%	16%
66778	0%	97%	8%	7%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
66780	0%	84%	8%	7%
66782	0%	97%	54%	0%
66786	0%	97%	54%	0%
67078	0%	87%	56%	3%
67371	0%	81%	1%	19%
69883	18%	0%	-17%	-40%
69886	7%	0%	-2%	16%
70364	6%	0%	-1%	14%
70604	3%	0%	-2%	-13%
70757	14%	0%	17%	-79%
Wells Pkwy E				
25858	2%	0%	7%	10%
Westlake Ter				
6860	0%	16%	-1%	0%
Westphalia Rd				
46203	7%	0%	1%	13%
White House Rd				
12614	0%	14%	1%	3%
58656	0%	13%	-1%	-2%
Whitfield Chapel Rd				
54373	0%	12%	2%	3%
Wilburn Dr				
22836	0%	17%	3%	0%
32811	0%	13%	1%	1%
William Beanes Rd				
66902	0%	14%	0%	0%
Willow Hill Dr				
75918	0%	11%	4%	0%
Woodstream Dr				
21280	0%	200%	0%	0%
Woodville Rd				
12899	6%	0%	-3%	0%
Woodyard Rd				
57849	4%	0%	14%	23%
62024	2%	0%	8%	11%
66528	4%	0%	14%	23%
68086	2%	0%	8%	11%
Wootton Pkwy				
26789	3%	0%	2%	13%
Yellowwood Ln				
4743	12%	0%	11%	6%
59325	14%	0%	1%	19%
Virginia				
10th St N				
62542	0%	0%	-1%	10%
14th St N				
13168	0%	14%	11%	0%
13169	0%	15%	0%	3%
16th St N				
17013	0%	16%	1%	10%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
29186	0%	18%	11%	4%
44772	0%	13%	0%	1%
17th St N				
80990	0%	42%	0%	0%
81003	0%	58%	0%	0%
18th St N				
81059	0%	17%	0%	0%
18th St S				
80861	0%	16%	0%	2%
80862	0%	16%	0%	2%
20th Pl N				
77366	0%	126%	0%	0%
20th St N				
77365	0%	120%	0%	0%
20th St S				
21051	0%	181%	0%	0%
28719	0%	17%	0%	0%
23rd Rd N				
77403	0%	51%	0%	0%
23rd St S				
59242	0%	18%	0%	0%
68250	0%	94%	0%	0%
24th St N				
77404	0%	61%	0%	0%
25th St N				
15872	0%	0%	-14%	6%
26th St N				
10089	0%	18%	0%	2%
20521	0%	14%	0%	1%
28967	0%	19%	0%	1%
51204	0%	24%	0%	1%
31st St S				
248	0%	13%	0%	8%
80807	0%	12%	0%	4%
5th St N				
80927	0%	11%	0%	1%
80928	0%	11%	0%	1%
6th St N				
81593	0%	11%	1%	0%
81594	0%	12%	0%	1%
8th St S				
80873	0%	16%	0%	3%
80874	0%	10%	0%	4%
Army Navy Dr				
36643	0%	32%	0%	0%
Baron Rd				
26847	0%	11%	-2%	0%
Bashford Ln				
49197	0%	14%	0%	0%
Birch Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
9261	7%	0%	15%	17%
31938	4%	0%	14%	15%
Brook Rd				
22075	0%	11%	0%	1%
71917	0%	12%	0%	1%
Capital Beltway				
977	0%	17%	-8%	-38%
1272	0%	24%	0%	1%
16670	0%	18%	-2%	-2%
16671	0%	200%	-12%	-22%
16674	2%	0%	15%	2%
17398	0%	50%	12%	19%
21180	0%	2%	2%	-11%
21561	0%	17%	-7%	-18%
22163	0%	9%	-8%	-17%
24084	9%	0%	66%	86%
29311	0%	21%	-3%	-14%
33646	0%	9%	87%	109%
33976	0%	824%	53%	4%
34950	0%	29%	0%	-1%
38710	0%	19%	0%	0%
39068	0%	12%	0%	0%
39073	0%	2%	26%	4%
39075	0%	1%	5%	-10%
39078	0%	1%	5%	-10%
39791	0%	10%	0%	-1%
39793	0%	10%	-4%	-12%
40119	3%	0%	-2%	-11%
41576	0%	20%	-4%	-3%
41577	0%	26%	-3%	0%
41779	12%	0%	52%	51%
43018	1%	0%	-12%	-3%
45944	0%	10%	-11%	-9%
51272	0%	18%	-2%	-2%
55463	6%	0%	-3%	-12%
56641	9%	0%	66%	86%
56645	9%	0%	66%	86%
57913	9%	0%	56%	65%
59785	0%	200%	-12%	-22%
60164	0%	1%	5%	-10%
65637	0%	22%	0%	0%
65844	1%	0%	-12%	-3%
65927	0%	23%	0%	0%
68293	3%	0%	-12%	-1%
68294	3%	0%	-12%	-1%
68295	2%	0%	-1%	-12%
68582	11%	0%	77%	87%
68583	0%	10%	-32%	-16%
68584	0%	200%	-15%	-51%
68585	0%	200%	-15%	-51%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
68586	0%	200%	-15%	-51%
68587	0%	200%	-12%	-22%
68588	0%	200%	-12%	-22%
68589	0%	200%	-15%	-51%
68590	0%	200%	-12%	-22%
68591	0%	200%	-4%	-3%
68883	0%	5%	30%	10%
68889	0%	70%	0%	0%
71091	1%	0%	-14%	0%
71095	1%	0%	-14%	0%
72070	0%	200%	-15%	-51%
72078	13%	0%	65%	91%
76052	0%	22%	-76%	-33%
76222	0%	74%	-1%	-9%
77185	0%	33%	0%	0%
Chain Bridge Rd				
5052	2%	0%	3%	22%
5053	2%	0%	16%	12%
5058	3%	0%	1%	11%
5059	3%	0%	11%	3%
16581	4%	0%	39%	41%
21941	0%	12%	0%	0%
33638	3%	0%	0%	-11%
33999	0%	0%	-2%	10%
35235	3%	0%	10%	3%
37921	3%	0%	1%	11%
55021	7%	0%	49%	62%
74851	3%	0%	6%	13%
Chesterbrook Rd				
9260	9%	0%	13%	11%
26530	11%	0%	11%	33%
Churchill Rd				
5148	2%	0%	10%	11%
5472	2%	0%	10%	10%
Co Rd 650				
12428	0%	0%	-12%	3%
35559	5%	0%	-2%	-16%
Co Rd 686				
33643	0%	11%	2%	6%
59709	0%	17%	4%	7%
Co Rd 703				
50953	11%	0%	8%	17%
68780	3%	0%	12%	1%
72283	5%	0%	-15%	-9%
Commonwealth Ave				
77281	0%	16%	0%	3%
Cotton Mill Dr				
81148	0%	19%	0%	0%
81150	0%	200%	0%	0%
Dolley Madison Blvd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
3988	3%	0%	7%	16%
3989	2%	0%	14%	6%
4343	2%	0%	15%	7%
4344	3%	0%	12%	27%
4713	2%	0%	5%	18%
4714	0%	0%	13%	14%
5149	1%	0%	7%	23%
8253	3%	0%	7%	19%
9478	2%	0%	21%	32%
21925	2%	0%	5%	18%
31130	2%	0%	0%	22%
32151	4%	0%	-1%	16%
33641	3%	0%	10%	23%
36527	5%	0%	19%	25%
37917	4%	0%	5%	12%
39807	2%	0%	33%	21%
40152	3%	0%	21%	34%
42078	4%	0%	12%	23%
44690	0%	125%	-1%	-3%
46571	0%	21%	2%	10%
46941	1%	0%	7%	17%
50436	2%	0%	8%	22%
58347	4%	0%	-1%	16%
59706	2%	0%	18%	29%
59713	0%	41%	15%	7%
59996	8%	0%	9%	4%
59997	2%	0%	23%	9%
60008	0%	11%	-2%	0%
67577	2%	0%	19%	16%
68881	0%	77%	2%	53%
69308	12%	0%	12%	17%
73576	1%	0%	3%	22%
73739	0%	0%	13%	14%
73743	2%	0%	17%	23%
77177	0%	26%	-4%	-4%
Dulles Access Rd				
63333	0%	13%	0%	0%
67825	0%	13%	0%	0%
Dulles Toll Rd				
34630	4%	0%	-1%	-16%
40854	0%	10%	0%	0%
41575	0%	44%	-1%	-2%
57167	0%	12%	12%	74%
57482	4%	0%	-1%	-11%
60237	4%	0%	-1%	-16%
76097	0%	12%	0%	0%
E Glebe Rd				
47673	0%	11%	1%	0%
Edwards Ferry Rd NE				
835	0%	200%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
34291	0%	17%	0%	0%
Fisher Dr				
79332	0%	15%	-4%	0%
Furnace Rd				
35623	0%	21%	0%	0%
George Washington Memorial Pkwy				
33634	0%	6%	-1%	-12%
33639	0%	10%	0%	0%
34318	10%	0%	52%	45%
38735	0%	9%	24%	75%
40850	0%	1%	0%	12%
55401	0%	16%	0%	2%
Georgetown Pike				
4348	32%	0%	38%	11%
4349	81%	0%	21%	9%
4350	17%	0%	2%	29%
4351	0%	46%	4%	15%
6378	19%	0%	3%	35%
6380	34%	0%	19%	13%
13744	0%	46%	4%	15%
57185	0%	94%	-2%	-1%
59710	81%	0%	21%	9%
68778	0%	39%	0%	-1%
Grande Ln				
72284	5%	0%	-15%	-9%
Greeley Blvd				
33467	0%	200%	0%	0%
60752	0%	200%	0%	0%
Griffith Rd				
79328	0%	15%	-4%	0%
Henry G Shirley Memorial Hwy				
18676	0%	98%	0%	0%
30289	0%	3%	0%	-26%
30488	0%	3%	0%	-26%
30490	0%	3%	0%	-14%
38158	0%	2%	0%	-18%
57903	0%	0%	-2%	-17%
64645	0%	2%	0%	-18%
67011	0%	2%	0%	-18%
73280	0%	2%	0%	-18%
Householder Rd				
77555	0%	17%	0%	0%
77557	0%	13%	0%	0%
Hume Ave				
77282	0%	16%	0%	3%
I- 395				
76	0%	13%	0%	-14%
16680	0%	4%	0%	-33%
25750	0%	2%	0%	-33%
26135	0%	2%	0%	-22%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
27337	0%	2%	0%	-33%
30282	0%	2%	0%	-33%
30288	0%	3%	0%	-26%
30496	0%	2%	0%	-18%
30502	0%	1%	0%	12%
55038	0%	1%	28%	0%
59872	1%	0%	0%	17%
64907	0%	2%	0%	-22%
65930	0%	0%	0%	11%
67012	0%	2%	0%	-22%
67246	0%	2%	0%	-33%
72075	0%	72%	0%	-1%
I- 395 Hov				
26133	0%	3%	0%	-26%
30275	0%	2%	0%	-33%
30276	0%	2%	0%	-33%
30278	0%	2%	0%	-33%
30286	0%	3%	0%	-26%
66368	0%	13%	0%	0%
73014	0%	2%	0%	-33%
73015	0%	3%	0%	-26%
I- 495 Express Lane				
24081	0%	16%	-1%	-1%
34324	0%	18%	-17%	-1%
39426	0%	1%	5%	-10%
40120	0%	21%	-1%	0%
55464	1%	0%	-1%	17%
68296	2%	0%	-1%	-12%
68297	2%	0%	-1%	-12%
68884	4%	0%	-11%	4%
I- 66				
5026	0%	11%	0%	1%
49097	0%	1%	61%	-26%
52133	0%	200%	0%	0%
70030	0%	0%	-6%	11%
I- 95				
26136	0%	1%	0%	12%
27039	0%	13%	0%	0%
27421	0%	0%	-10%	0%
28154	0%	28%	0%	0%
43013	2%	0%	-5%	-13%
43016	2%	0%	-5%	-13%
49369	2%	0%	-5%	-13%
62745	0%	23%	0%	0%
76810	0%	4%	0%	-14%
James Madison Hwy				
75673	0%	43%	0%	0%
Jones Branch Dr				
8520	0%	13%	-1%	0%
12236	6%	0%	11%	4%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
12238	13%	0%	1%	1%
17822	0%	13%	-2%	1%
17823	5%	0%	1%	4%
36480	6%	0%	11%	4%
38632	0%	12%	-2%	2%
68888	0%	13%	-1%	0%
Kirby Ct				
39813	7%	0%	10%	13%
Kirby Rd				
28119	0%	14%	10%	10%
72293	7%	0%	10%	3%
Lee Chapel Rd				
10075	0%	47%	0%	0%
41005	0%	51%	0%	0%
Leesburg Pike				
12229	1%	0%	-5%	-12%
57210	0%	13%	0%	0%
68877	2%	0%	5%	29%
Lewinsville Rd				
72069	0%	11%	-64%	-34%
76053	0%	21%	-35%	-12%
Lisle Ave				
79334	0%	15%	-4%	0%
Mill Rd				
71085	1%	0%	-21%	-2%
Mulberry Bottom Ln				
22325	0%	71%	0%	0%
N Beauregard St				
26452	2%	0%	1%	11%
51316	2%	0%	1%	11%
N Court House Rd				
48183	0%	0%	-5%	14%
N Fairfax St				
27480	0%	32%	0%	0%
36542	0%	31%	0%	1%
74330	0%	12%	0%	0%
N Fort Myer Dr				
17239	0%	0%	14%	0%
28732	1%	0%	15%	14%
N Glebe Rd				
22383	0%	13%	2%	1%
27473	3%	0%	0%	-11%
33997	0%	0%	-2%	10%
33998	4%	0%	20%	23%
35179	0%	16%	3%	2%
41418	3%	0%	9%	29%
N Harrison St				
7818	3%	0%	0%	13%
N Henry St				
70271	0%	14%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
N Jackson St				
80918	0%	11%	1%	0%
81005	0%	13%	0%	1%
81006	0%	11%	0%	1%
81007	0%	12%	2%	0%
81008	0%	11%	2%	0%
81017	0%	12%	2%	0%
81019	0%	14%	0%	1%
N Jefferson Davis Hwy				
36929	0%	38%	4%	0%
70264	0%	18%	0%	4%
N Kensington St				
11703	0%	14%	1%	2%
44770	0%	13%	1%	2%
50189	0%	12%	0%	3%
N Key Blvd				
14301	2%	0%	1%	11%
81060	0%	22%	0%	0%
N Lee Hwy				
4358	1%	0%	0%	10%
14003	2%	0%	2%	17%
16771	5%	0%	1%	9%
N Lexington St				
44771	0%	13%	1%	2%
N Little Falls Rd				
7824	0%	13%	0%	2%
34331	0%	16%	0%	-1%
42920	0%	54%	0%	1%
54639	0%	12%	0%	-1%
65368	0%	12%	0%	3%
N Patrick St				
51319	0%	13%	0%	1%
N Pitt St				
12212	0%	12%	0%	0%
N Rhodes St				
13167	1%	0%	7%	10%
73269	0%	0%	0%	11%
N Sycamore St				
2408	2%	0%	3%	-12%
15567	0%	11%	0%	0%
34673	0%	16%	1%	2%
50545	0%	17%	2%	2%
N Van Dorn St				
20910	1%	0%	0%	13%
N Washington Blvd				
68921	0%	38%	0%	1%
N West St				
52346	0%	0%	-3%	10%
N Williamsburg Blvd				
7986	0%	17%	2%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
8132	0%	11%	1%	2%
8133	0%	11%	1%	2%
17015	0%	13%	1%	2%
28953	0%	14%	1%	2%
35910	0%	16%	1%	2%
62616	0%	12%	1%	2%
65369	0%	12%	1%	2%
Norfolk Ln				
47674	0%	34%	0%	1%
Old Chesterbrook Rd				
5120	2%	0%	-10%	-1%
Old Colchester Rd				
59470	0%	11%	0%	-2%
Old Dominion Dr				
3984	2%	0%	2%	12%
4706	2%	0%	1%	12%
4712	2%	0%	3%	12%
4793	0%	84%	1%	0%
17391	0%	10%	0%	0%
28118	12%	0%	7%	18%
60003	7%	0%	5%	4%
68779	4%	0%	13%	1%
72563	0%	56%	0%	0%
76054	16%	0%	82%	93%
80116	0%	162%	0%	0%
80118	0%	190%	0%	0%
Old Ox Rd				
28916	0%	11%	0%	0%
Old Springhouse Rd				
77178	1%	0%	12%	7%
77179	7%	0%	16%	-1%
Park Run Dr				
18058	0%	11%	-1%	2%
42887	10%	0%	1%	0%
54876	0%	13%	-1%	-1%
Pendleton St				
41252	7%	0%	1%	0%
Potomac Ave				
76816	0%	11%	0%	2%
Potomac Greens Dr				
47676	0%	34%	0%	1%
Powhatan St				
51314	0%	14%	0%	0%
Queen St				
20907	0%	32%	0%	0%
40414	0%	31%	0%	1%
Random Hills Rd				
47228	0%	58%	0%	0%
Ridge Top Rd				
47226	0%	58%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Ring Rd				
42174	0%	8%	0%	-12%
73543	8%	0%	-5%	-7%
Rolling Rd				
44182	0%	71%	0%	0%
Running Brook Dr				
54182	0%	16%	0%	0%
S Arlington Ridge Rd				
7984	1%	0%	0%	10%
S Columbia Pike				
9801	1%	0%	1%	12%
9804	1%	0%	2%	12%
21492	4%	0%	11%	5%
21493	6%	0%	0%	12%
36600	4%	0%	11%	5%
43820	6%	0%	0%	12%
49630	5%	0%	0%	17%
S Eads St				
29859	0%	18%	0%	2%
36985	0%	11%	0%	4%
74054	1%	0%	18%	-1%
S Fort Scott Dr				
80808	0%	15%	0%	4%
S Glebe Rd				
74285	0%	17%	0%	1%
S Hayes St				
41671	0%	11%	0%	1%
41673	0%	16%	0%	2%
S Lynn St				
51580	4%	0%	0%	10%
S Patrick St				
19863	0%	14%	0%	-1%
52667	0%	200%	0%	0%
S Sterling Blvd				
69628	0%	32%	0%	0%
S Washington Blvd				
7991	0%	2%	6%	11%
17387	1%	0%	0%	31%
28854	1%	0%	0%	17%
33590	0%	2%	13%	0%
66132	0%	16%	0%	0%
73013	0%	2%	0%	-33%
74618	0%	2%	13%	0%
Senseny Rd				
81391	0%	11%	0%	1%
81397	0%	11%	0%	0%
Shirley Hwy				
18091	1%	0%	7%	20%
51571	1%	0%	7%	20%
62771	1%	0%	7%	20%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Spring Hill Rd				
17400	19%	0%	-1%	-2%
State Rte 123				
34322	0%	2%	1%	12%
State Rte 193				
6379	16%	0%	6%	46%
6381	27%	0%	22%	23%
27937	0%	13%	80%	104%
33644	19%	0%	8%	63%
33645	0%	36%	13%	16%
44442	4%	0%	-20%	-10%
State Rte 237				
59501	0%	1%	-2%	14%
State Rte 267				
27417	0%	4%	-38%	-1%
48466	0%	21%	-48%	-2%
58212	0%	15%	7%	1%
58213	0%	27%	0%	0%
63906	0%	19%	-2%	0%
77023	0%	56%	-2%	-1%
State Rte 286				
22322	0%	200%	0%	0%
State Rte 289				
40190	0%	13%	0%	0%
71657	0%	11%	0%	0%
State Rte 55				
60604	0%	20%	0%	0%
State Rte 682				
77580	0%	12%	0%	0%
State Rte 695				
72292	7%	0%	10%	3%
72567	0%	6%	0%	11%
State Rte 7 Bus				
64315	1%	0%	2%	11%
State Rte 731				
71363	0%	11%	0%	0%
71364	0%	11%	0%	0%
State Rte 775				
30988	0%	32%	0%	0%
Telegraph Rd				
47641	0%	200%	0%	0%
Toll House Rd				
52653	0%	27%	0%	0%
74774	0%	16%	0%	0%
Truslow Rd				
66969	0%	13%	0%	0%
US Hwy 29				
59243	0%	20%	0%	0%
77411	3%	0%	0%	13%
Utterback Store Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
19715	0%	13%	0%	0%
Van Buren Rd				
6674	0%	10%	0%	0%
W Chapman St				
26776	2%	0%	0%	11%
W Wakefield Dr				
38725	0%	200%	0%	0%
44175	0%	59%	0%	0%
Wakefield Dr E				
38726	0%	59%	0%	0%
44480	0%	200%	0%	0%
Westmoreland St				
28008	7%	0%	15%	15%
34915	0%	8%	0%	11%
Westpark Dr				
55771	0%	11%	0%	-2%
Willowfield Way				
8704	0%	200%	0%	0%
Woodside Dr				
71915	0%	11%	1%	1%

Segments Expecting Meaningful Changes in Emissions

2040 Alternative 8: Two ETL Managed Lanes Network on I-495 and one ETL and one HOV Lane Network on I-270

Criteria and Document Legend

1. Congested % Difference: Changes of ± 5% or more in AADT on congested highway links of LOS D or worse
2. Free Flow % Difference: Changes of ± 10% or more in AADT on uncongested highway links of LOS C or better;
3. Travel Time AM/PM: Changes of ± 10% or more in travel time; and
d. Not Presented: Changes of ± 10% or more in intersection delay.

Highlighted locations meet the criteria[1]

1. https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/moves_msat_faq.cfm

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
District of Columbia				
10th Pl SE				
15152	0%	12%	8%	5%
10th St SW				
61369	0%	18%	0%	0%
11th St SE				
8559	1%	0%	13%	6%
25672	1%	0%	12%	6%
45594	1%	0%	12%	6%
12th St NW				
73869	5%	0%	2%	12%
12th St SW				
34294	1%	0%	15%	7%
13th St NW				
2472	0%	0%	12%	8%
6440	1%	0%	10%	2%
7478	2%	0%	2%	17%
12174	7%	0%	1%	4%
16064	3%	0%	28%	0%
29098	1%	0%	3%	11%
40598	1%	0%	11%	2%
52075	18%	0%	3%	8%
73321	3%	0%	6%	13%
77912	2%	0%	2%	19%
77913	2%	0%	-1%	18%
77943	3%	0%	17%	5%
77944	2%	0%	4%	14%
77945	2%	0%	1%	20%
78708	0%	10%	0%	4%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
13th St SE				
78555	4%	0%	10%	3%
14th St NW				
2264	5%	0%	1%	5%
4293	2%	0%	10%	6%
8416	3%	0%	3%	20%
25474	5%	0%	1%	5%
27134	3%	0%	13%	1%
69332	0%	11%	1%	1%
14th St SW				
5983	6%	0%	4%	0%
12953	2%	0%	4%	13%
39030	2%	0%	2%	12%
39031	2%	0%	13%	6%
66562	5%	0%	12%	4%
15th St NW				
47189	5%	0%	5%	2%
77028	9%	0%	14%	1%
77035	1%	0%	4%	10%
77036	1%	0%	13%	8%
16th St NE				
65235	4%	0%	1%	10%
16th St NW				
3568	5%	0%	4%	8%
3684	2%	0%	3%	19%
8418	11%	0%	0%	8%
9315	5%	0%	2%	3%
17033	10%	0%	3%	1%
23592	2%	0%	6%	12%
37359	7%	0%	1%	9%
37364	2%	0%	3%	15%
49320	1%	0%	14%	5%
58981	1%	0%	12%	6%
60423	9%	0%	7%	3%
64887	6%	0%	16%	8%
69913	1%	0%	11%	7%
70870	5%	0%	2%	3%
78016	0%	0%	10%	2%
78018	1%	0%	2%	11%
16th St SE				
2249	3%	0%	0%	12%
17th St NE				
40729	2%	0%	1%	11%
17th St NW				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
8157	1%	0%	11%	7%
15543	6%	0%	1%	2%
53021	3%	0%	0%	15%
58731	6%	0%	-2%	3%
60147	6%	0%	-2%	3%
73607	7%	0%	1%	8%
74429	4%	0%	10%	11%
78348	3%	0%	0%	13%
17th St SE				
76178	1%	0%	3%	10%
17th St SW				
41095	5%	0%	0%	5%
78347	5%	0%	0%	5%
18th St NE				
11386	5%	0%	6%	6%
64895	4%	0%	0%	11%
78599	5%	0%	4%	3%
18th St NW				
2689	3%	0%	13%	4%
9049	6%	0%	3%	22%
9579	3%	0%	15%	4%
23718	5%	0%	6%	1%
27133	3%	0%	12%	6%
36033	3%	0%	14%	4%
40683	4%	0%	18%	6%
41089	5%	0%	10%	1%
78923	0%	12%	1%	0%
19th St NE				
2519	6%	0%	7%	0%
79156	0%	51%	1%	0%
1st St NW				
36675	6%	0%	1%	4%
1st St SE				
15532	5%	0%	3%	9%
18637	5%	0%	3%	9%
74987	5%	0%	4%	9%
21st St NW				
10680	8%	0%	3%	13%
78474	6%	0%	0%	5%
23rd St NW				
1655	0%	0%	10%	0%
2464	0%	0%	13%	0%
5375	4%	0%	2%	12%
7071	4%	0%	2%	10%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
56235	0%	0%	13%	0%
24th St NW				
298	6%	0%	0%	7%
30th Pl NW				
23586	1%	0%	13%	4%
38th St NW				
652	1%	0%	8%	13%
17955	1%	0%	13%	8%
3rd St NW				
26409	0%	12%	0%	0%
3rd St SW				
55114	0%	0%	12%	2%
40th St NE				
60683	0%	27%	0%	5%
60684	0%	29%	2%	0%
44th St NE				
31114	2%	0%	11%	1%
60996	7%	0%	5%	10%
79135	6%	0%	6%	10%
44th St NW				
78876	0%	14%	-1%	-1%
78877	0%	33%	-1%	-1%
78878	0%	13%	-2%	0%
78879	0%	31%	-2%	0%
49th St NE				
13513	0%	11%	3%	5%
55637	0%	10%	8%	3%
69253	0%	13%	3%	8%
79089	0%	11%	8%	3%
79091	0%	13%	3%	8%
4th St NE				
3250	8%	0%	3%	10%
4th St SE				
27750	0%	200%	0%	0%
4th St SW				
68900	0%	0%	12%	1%
69802	1%	0%	0%	11%
50th St SE				
46918	0%	15%	0%	-1%
69268	0%	11%	2%	4%
53rd St NE				
79086	0%	11%	5%	1%
79087	0%	13%	0%	8%
81566	0%	11%	5%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
81568	0%	13%	0%	8%
53rd St SE				
79066	0%	34%	0%	2%
79067	0%	11%	0%	2%
79068	0%	11%	1%	0%
5th St NW				
40965	6%	0%	4%	3%
78678	5%	0%	4%	3%
78679	6%	0%	4%	9%
6th St SE				
14362	8%	0%	2%	4%
14929	0%	11%	6%	1%
78212	6%	0%	2%	2%
78213	7%	0%	10%	1%
7th St NW				
13242	0%	0%	12%	3%
17199	1%	0%	13%	5%
70624	2%	0%	10%	2%
73602	2%	0%	2%	13%
73603	2%	0%	2%	13%
74149	1%	0%	-1%	11%
74151	0%	0%	1%	15%
77903	0%	0%	7%	10%
78171	2%	0%	10%	1%
7th St SW				
37484	2%	0%	12%	6%
78172	2%	0%	10%	1%
8th St NE				
44603	0%	0%	9%	12%
60136	3%	0%	13%	4%
8th St SE				
16275	0%	117%	0%	0%
9th St NE				
58437	3%	0%	11%	4%
9th St NW				
51532	2%	0%	0%	10%
58978	0%	31%	0%	0%
Alabama Ave SE				
1247	5%	0%	6%	4%
14339	2%	0%	0%	14%
34800	5%	0%	2%	13%
35112	5%	0%	3%	4%
58087	2%	0%	14%	8%
64890	1%	0%	4%	10%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
69986	3%	0%	1%	15%
69987	3%	0%	1%	15%
70228	4%	0%	6%	15%
Alaska Ave NW				
12171	7%	0%	1%	4%
12175	6%	0%	1%	6%
70323	2%	0%	4%	10%
78726	6%	0%	1%	4%
78727	7%	0%	1%	4%
Arizona Ave NW				
4412	1%	0%	2%	13%
41435	6%	0%	28%	32%
41437	0%	0%	2%	15%
50148	1%	0%	20%	2%
60330	5%	0%	23%	23%
60335	2%	0%	13%	12%
Arkansas Ave NW				
70994	7%	0%	0%	2%
Arlington Memorial Brg				
29110	0%	11%	0%	0%
30416	0%	13%	0%	0%
Aspen St NW				
15524	3%	0%	21%	6%
15683	1%	0%	3%	13%
24181	5%	0%	0%	2%
B St SE				
38570	2%	0%	11%	6%
Beach Dr NW				
9250	3%	0%	7%	10%
23594	6%	0%	6%	1%
42942	4%	0%	2%	11%
49578	3%	0%	7%	10%
Benning Rd SE				
55638	2%	0%	11%	10%
69264	2%	0%	8%	11%
79054	6%	0%	2%	9%
79056	7%	0%	9%	6%
Blagden Ave NW				
27435	6%	0%	10%	5%
46534	0%	12%	0%	0%
Blaine St NE				
79095	0%	11%	0%	6%
C St NE				
14097	2%	0%	2%	12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
62363	2%	0%	11%	0%
69652	2%	0%	11%	0%
C St NW				
13450	6%	0%	3%	14%
Calvert St NW				
41069	1%	0%	11%	4%
Camden St SE				
24773	7%	0%	2%	3%
Canal Rd NW				
649	0%	0%	17%	-2%
17262	2%	0%	-25%	0%
17487	1%	0%	0%	20%
40368	2%	0%	0%	-16%
Capital Beltway				
19588	2%	0%	0%	-12%
Central Ave SE				
79050	0%	27%	0%	-2%
79078	6%	0%	5%	3%
79079	8%	0%	2%	15%
Chain Bridge Rd NW				
78891	0%	13%	1%	2%
Chestnut St NW				
4072	0%	12%	0%	5%
10696	0%	10%	4%	1%
Chillum Pl NE				
11666	0%	0%	14%	8%
11668	1%	0%	3%	15%
Clara Barton Pkwy NW				
15395	5%	0%	32%	17%
65019	5%	0%	9%	16%
Columbia Rd NW				
6885	0%	0%	0%	13%
10134	2%	0%	15%	7%
12475	3%	0%	18%	7%
16794	0%	0%	2%	10%
60174	2%	0%	1%	11%
65009	0%	0%	10%	3%
78019	1%	0%	2%	11%
78027	2%	0%	2%	10%
Connecticut Ave NW				
6285	1%	0%	7%	14%
6286	1%	0%	0%	13%
6287	1%	0%	2%	20%
9625	2%	0%	12%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
14878	1%	0%	10%	2%
38190	1%	0%	3%	12%
66347	1%	0%	24%	3%
Constitution Ave NW				
8194	1%	0%	4%	11%
8684	0%	0%	10%	1%
27431	2%	0%	2%	14%
38277	1%	0%	3%	11%
Corcoran St NW				
12571	3%	0%	12%	6%
Dalecarlia Pkwy NW				
60644	0%	12%	5%	2%
DC Hwy 295				
4313	1%	0%	6%	21%
16142	1%	0%	2%	12%
16432	2%	0%	13%	12%
37791	1%	0%	2%	12%
46627	2%	0%	13%	12%
56840	2%	0%	13%	12%
Division Ave NE				
42888	0%	11%	8%	3%
61621	0%	15%	3%	8%
61623	0%	12%	6%	5%
79082	0%	11%	4%	6%
79084	0%	10%	5%	5%
Dix St NE				
61617	0%	11%	3%	5%
79088	0%	12%	4%	4%
79090	0%	13%	4%	5%
Drake Pl SE				
79063	0%	34%	0%	2%
79065	0%	11%	1%	0%
Dupont Cir NW				
8356	1%	0%	11%	3%
12572	0%	0%	11%	5%
36335	0%	0%	7%	11%
59281	0%	0%	1%	10%
59589	0%	0%	14%	1%
75128	5%	0%	1%	1%
E Capitol St NE				
13984	3%	0%	10%	14%
14095	2%	0%	5%	12%
15185	0%	1%	8%	13%
39036	3%	0%	5%	16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
E Capitol St SE				
18946	0%	26%	0%	5%
61955	7%	0%	1%	10%
62577	7%	0%	8%	2%
73984	0%	27%	3%	0%
81565	0%	10%	5%	1%
81567	0%	13%	0%	8%
E St Expy				
7734	2%	0%	3%	11%
E St NW				
12818	6%	0%	0%	1%
18644	2%	0%	3%	15%
73320	1%	0%	0%	10%
E St SE				
72464	2%	0%	10%	10%
72465	3%	0%	11%	14%
Eastern Ave NE				
1951	2%	0%	21%	11%
5133	4%	0%	10%	9%
9580	3%	0%	17%	14%
15695	4%	0%	9%	14%
15994	4%	0%	21%	25%
22832	2%	0%	13%	9%
28738	4%	0%	9%	14%
38916	0%	12%	0%	0%
40365	2%	0%	22%	13%
63642	3%	0%	14%	17%
81615	0%	13%	0%	3%
Eastern Ave NW				
6848	3%	0%	10%	9%
24473	2%	0%	2%	12%
79284	5%	0%	6%	2%
Euclid St NW				
77953	6%	0%	5%	2%
F St NW				
23725	7%	0%	3%	9%
F St SE				
79057	7%	0%	2%	6%
79062	0%	34%	0%	2%
79064	0%	11%	1%	0%
Fessenden St NW				
78974	5%	0%	5%	2%
78975	5%	0%	5%	2%
Florida Ave NE				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
2158	3%	0%	1%	19%
29426	2%	0%	5%	18%
45595	2%	0%	7%	11%
53002	1%	0%	3%	13%
62061	5%	0%	1%	5%
Florida Ave NW				
4037	2%	0%	4%	12%
8363	0%	15%	1%	0%
13037	9%	0%	0%	11%
Foxhall Rd NW				
57734	4%	0%	19%	2%
57735	8%	0%	3%	12%
57740	0%	16%	0%	2%
57742	0%	12%	3%	0%
73797	6%	0%	20%	2%
78862	4%	0%	19%	2%
G St NW				
28870	8%	0%	1%	4%
Gallatin St NW				
46525	7%	0%	0%	2%
George Washington Memorial Pkwy				
33685	0%	1%	0%	18%
34645	0%	1%	0%	21%
Georgia Ave NW				
4069	1%	0%	1%	16%
6284	1%	0%	3%	13%
14664	4%	0%	7%	10%
40243	1%	0%	1%	16%
40244	2%	0%	14%	4%
40245	2%	0%	20%	4%
56625	3%	0%	21%	6%
Girard St NW				
40246	3%	0%	14%	5%
62441	2%	0%	1%	21%
Glenbrook Rd NW				
3261	0%	92%	0%	0%
3262	0%	33%	0%	0%
Glover Rd NW				
23582	0%	11%	2%	2%
Good Hope Rd SE				
6242	1%	0%	1%	13%
13762	3%	0%	2%	11%
16436	3%	0%	0%	12%
51689	1%	0%	0%	10%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
H St NW				
78358	3%	0%	1%	14%
I- 295				
1480	0%	0%	0%	15%
I- 395				
49096	1%	0%	11%	9%
I- 495				
19589	0%	0%	-21%	0%
25781	1%	0%	-18%	3%
I- 66				
12777	5%	0%	15%	6%
14357	2%	0%	13%	16%
Independence Ave SE				
29097	0%	139%	0%	0%
Indiana Ave NW				
78179	6%	0%	2%	2%
Iowa Ave NW				
1715	5%	0%	0%	1%
Irving St NW				
40733	4%	0%	7%	10%
58671	0%	0%	2%	13%
62766	2%	0%	13%	4%
Jefferson St NW				
78671	0%	14%	2%	1%
K St NW				
4298	7%	0%	1%	4%
5672	7%	0%	1%	4%
5673	5%	0%	2%	4%
25744	5%	0%	3%	2%
48418	0%	31%	1%	1%
59587	3%	0%	3%	12%
78050	0%	14%	0%	1%
Kalmia Rd NW				
1114	1%	0%	11%	2%
5205	2%	0%	12%	13%
10356	2%	0%	12%	13%
40354	1%	0%	11%	2%
Kalorama Rd NW				
78498	0%	11%	2%	1%
Kansas Ave NW				
24770	2%	0%	1%	11%
28743	2%	0%	1%	10%
78636	6%	0%	0%	3%
Kenilworth Ave NE				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
5225	4%	0%	9%	12%
16150	2%	0%	9%	11%
16433	2%	0%	4%	12%
17843	2%	0%	18%	14%
23731	2%	0%	4%	12%
31339	7%	0%	10%	3%
63890	2%	0%	18%	14%
70336	0%	35%	0%	0%
Klingle Rd NW				
9933	6%	0%	0%	6%
Lee St NE				
72843	0%	15%	0%	2%
Livingston Rd SE				
78539	0%	22%	0%	3%
Logan Cir NW				
7191	2%	0%	3%	11%
15843	1%	0%	2%	16%
22012	2%	0%	11%	12%
39389	2%	0%	11%	12%
Loughboro Rd NW				
60340	5%	0%	7%	1%
60342	0%	12%	4%	1%
M L King Jr Ave SE				
4664	1%	0%	2%	11%
32417	0%	11%	0%	2%
M St NE				
60137	5%	0%	1%	5%
79160	0%	51%	2%	0%
79161	0%	51%	2%	0%
M St NW				
27308	1%	0%	-4%	13%
69809	2%	0%	12%	5%
M St SE				
9382	2%	0%	3%	12%
65908	0%	1%	1%	10%
81377	1%	0%	0%	11%
Macarthur Blvd NW				
7662	3%	0%	10%	11%
25539	2%	0%	14%	14%
31684	6%	0%	10%	15%
58985	7%	0%	9%	13%
Maine Ave SW				
69848	5%	0%	6%	6%
Malcolm X Ave SE				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
13596	0%	0%	0%	15%
Maryland Ave SW				
55119	1%	0%	0%	10%
Massachusetts Ave NW				
13472	1%	0%	1%	11%
78058	0%	13%	0%	2%
78468	14%	0%	1%	6%
Massachusetts Ave SE				
9841	2%	0%	13%	8%
34801	13%	0%	10%	2%
69511	5%	0%	2%	13%
69513	14%	0%	10%	2%
79774	5%	0%	4%	14%
Michigan Ave NE				
40334	1%	0%	1%	10%
75349	1%	0%	0%	10%
Military Rd NW				
12721	2%	0%	11%	1%
23874	6%	0%	3%	1%
Minnesota Ave NE				
11817	3%	0%	0%	11%
14574	8%	0%	5%	11%
67575	0%	11%	0%	2%
72844	0%	11%	0%	2%
Minnesota Ave SE				
13520	5%	0%	5%	2%
Mississippi Ave SE				
14565	0%	12%	1%	3%
Missouri Ave NW				
28512	6%	0%	8%	5%
Montana Ave NE				
6548	3%	0%	13%	6%
29209	2%	0%	2%	11%
43276	1%	0%	5%	17%
Mount Olivet Rd NE				
6545	4%	0%	1%	10%
N Capitol St NE				
3253	9%	0%	2%	6%
9310	1%	0%	15%	4%
18421	2%	0%	3%	16%
28513	1%	0%	-3%	12%
33107	2%	0%	3%	10%
43558	1%	0%	0%	14%
69665	2%	0%	14%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
N Capitol St NW				
37120	1%	0%	2%	17%
78074	1%	0%	1%	19%
78075	1%	0%	1%	20%
Naylor Rd SE				
2844	2%	0%	0%	18%
14958	1%	0%	0%	11%
16283	3%	0%	9%	22%
22008	2%	0%	9%	19%
32998	1%	0%	16%	-1%
45687	0%	0%	0%	12%
46669	2%	0%	3%	11%
51786	2%	0%	2%	20%
79042	1%	0%	0%	10%
Nebraska Ave NW				
29325	0%	17%	1%	0%
57104	0%	0%	-13%	1%
61373	1%	0%	9%	13%
70093	1%	0%	13%	7%
Nevada Ave NW				
9897	7%	0%	4%	2%
14964	2%	0%	13%	7%
New Hampshire Ave NW				
8366	1%	0%	13%	7%
8832	1%	0%	2%	18%
19527	1%	0%	3%	21%
36336	0%	0%	5%	11%
38188	0%	0%	5%	11%
46577	1%	0%	13%	7%
77999	3%	0%	12%	7%
New Jersey Ave SE				
74710	5%	0%	3%	4%
New York Ave NE				
2892	1%	0%	3%	13%
12729	2%	0%	0%	14%
16732	2%	0%	1%	10%
25193	2%	0%	13%	8%
28988	1%	0%	3%	13%
39744	2%	0%	0%	14%
New York Ave NW				
6767	7%	0%	3%	12%
9216	1%	0%	3%	15%
54895	6%	0%	1%	3%
73611	2%	0%	5%	10%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
74145	0%	12%	0%	0%
Newton St NE				
30893	6%	0%	7%	2%
Nicholson St NE				
3699	1%	0%	3%	14%
Northampton St NW				
7672	0%	10%	2%	2%
O St NE				
2756	1%	0%	2%	14%
Oglethorpe St NE				
11661	1%	0%	4%	13%
Ohio Dr SW				
19255	0%	14%	0%	0%
37944	3%	0%	3%	10%
49093	0%	20%	0%	1%
56841	1%	0%	11%	9%
70865	6%	0%	4%	1%
P St NW				
77902	0%	0%	6%	10%
78460	6%	0%	1%	0%
Park Pl NW				
40249	1%	0%	0%	12%
Pennsylvania Ave NW				
37955	7%	0%	2%	7%
46587	0%	0%	11%	1%
Pierce St NW				
36673	7%	0%	1%	3%
Q St NW				
78422	1%	0%	0%	11%
Queen St NE				
5135	3%	0%	7%	11%
11971	4%	0%	3%	14%
R St NE				
77635	10%	0%	3%	8%
Reno Rd NW				
60729	1%	0%	18%	2%
78952	6%	0%	2%	4%
Rhode Island Ave NE				
18423	1%	0%	3%	14%
23730	2%	0%	14%	7%
30679	3%	0%	6%	16%
60737	4%	0%	0%	11%
66850	5%	0%	8%	2%
66851	6%	0%	7%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Rhode Island Ave NW				
1656	1%	0%	19%	4%
8368	3%	0%	0%	11%
14875	2%	0%	6%	11%
18417	1%	0%	3%	13%
29099	1%	0%	5%	14%
74696	1%	0%	3%	16%
74698	0%	0%	2%	16%
75121	1%	0%	3%	16%
75126	0%	18%	0%	-3%
Riggs Rd NE				
3326	1%	0%	3%	14%
River Rd NW				
18025	3%	0%	11%	11%
18026	2%	0%	13%	7%
Rock Creek Church Rd NW				
30092	7%	0%	8%	2%
60732	0%	10%	0%	2%
Rock Creek Pkwy NW				
23728	6%	0%	0%	7%
S Arlington Blvd				
43859	0%	1%	0%	18%
S St NE				
6546	6%	0%	4%	2%
Sargent Rd NE				
30241	1%	0%	4%	13%
Scott Cir NW				
14578	0%	0%	13%	2%
60173	1%	0%	16%	2%
South Dakota Ave NE				
14571	1%	0%	0%	10%
29773	2%	0%	3%	13%
Southern Ave SE				
5934	3%	0%	0%	26%
19326	1%	0%	0%	12%
27574	2%	0%	10%	0%
32326	3%	0%	8%	12%
37848	2%	0%	12%	0%
52604	3%	0%	4%	13%
79016	6%	0%	11%	13%
79017	6%	0%	9%	10%
79018	3%	0%	6%	14%
79019	3%	0%	5%	14%
79130	2%	0%	7%	12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Southwest Fwy				
3950	1%	0%	15%	7%
30263	2%	0%	5%	11%
Spring Rd NW				
8171	8%	0%	1%	3%
46181	19%	0%	3%	6%
78720	0%	16%	0%	-1%
78721	0%	15%	0%	-1%
Stanley St SE				
79775	5%	0%	3%	12%
79777	5%	0%	11%	8%
Suitland Pkwy				
64897	0%	12%	0%	0%
Suitland Rd SE				
37175	7%	0%	2%	3%
T St NE				
77636	8%	0%	3%	10%
T St NW				
7046	2%	0%	0%	19%
14871	5%	0%	3%	1%
Taylor St NE				
27432	2%	0%	0%	11%
Tenley Cir NW				
45592	1%	0%	11%	5%
69808	1%	0%	14%	10%
Tennyson St NW				
13206	10%	0%	-1%	0%
Texas Ave SE				
32514	0%	15%	6%	1%
62578	0%	19%	1%	6%
Thomas Cir NW				
39394	1%	0%	21%	2%
39395	1%	0%	6%	15%
56236	0%	12%	-1%	0%
Tunlaw Rd NW				
78802	0%	11%	1%	1%
University Pl NW				
77979	5%	0%	3%	2%
Upshur St NW				
70992	5%	0%	0%	1%
US Hwy 1 Alt				
960	3%	0%	1%	11%
3554	3%	0%	8%	14%
7929	2%	0%	7%	12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
29212	1%	0%	5%	16%
29641	4%	0%	0%	12%
34920	4%	0%	10%	8%
34921	4%	0%	3%	10%
43277	2%	0%	7%	12%
45885	3%	0%	7%	14%
59880	3%	0%	2%	15%
77613	3%	0%	3%	16%
77616	4%	0%	3%	10%
US Hwy 50				
285	6%	0%	2%	3%
3920	2%	0%	22%	7%
5378	1%	0%	6%	17%
7985	3%	0%	18%	10%
13209	4%	0%	4%	14%
23516	0%	0%	17%	5%
36930	1%	0%	8%	21%
56258	2%	0%	0%	14%
Valley Ave SE				
78544	0%	12%	0%	1%
Van Buren St NW				
6283	6%	0%	8%	2%
24971	7%	0%	0%	11%
Van Ness St NW				
9585	1%	0%	2%	11%
Virginia Ave SE				
39713	6%	0%	2%	2%
78258	0%	1%	18%	0%
W St NW				
57741	0%	18%	0%	2%
57743	0%	13%	3%	0%
Warder St NW				
78701	0%	31%	0%	1%
Washington Ave SW				
37831	5%	0%	1%	3%
70144	6%	0%	7%	1%
West Virginia Ave NE				
13228	4%	0%	1%	11%
56622	4%	0%	1%	10%
Western Ave NW				
287	3%	0%	11%	13%
2020	3%	0%	9%	11%
7713	3%	0%	12%	7%
11207	3%	0%	15%	9%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
13476	5%	0%	9%	4%
18024	3%	0%	14%	20%
40049	2%	0%	11%	5%
41078	3%	0%	11%	8%
56474	2%	0%	13%	7%
56479	5%	0%	12%	3%
78926	5%	0%	13%	4%
79009	0%	10%	1%	0%
79011	0%	12%	0%	1%
Wisconsin Ave NW				
7371	1%	0%	-1%	14%
8588	0%	0%	21%	5%
10207	2%	0%	15%	10%
17022	1%	0%	-1%	14%
17958	2%	0%	7%	16%
35307	2%	0%	20%	7%
53757	0%	0%	20%	5%
60178	0%	0%	13%	1%
78413	0%	0%	21%	5%
Wise Rd NW				
1555	2%	0%	29%	6%
13727	1%	0%	5%	16%
Maryland				
1st Ave				
34076	0%	11%	1%	1%
1st St				
5718	2%	0%	15%	2%
5720	1%	0%	4%	11%
23rd Ave				
2557	6%	0%	7%	11%
59623	7%	0%	12%	11%
23rd Pkwy				
71553	4%	0%	11%	2%
2nd Ave				
5264	7%	0%	11%	7%
34074	6%	0%	12%	7%
38th Ave				
15936	7%	0%	10%	2%
60807	6%	0%	3%	4%
39th Ave				
80336	0%	27%	0%	1%
80338	0%	22%	2%	0%
80355	0%	14%	3%	4%
80356	0%	16%	3%	3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
40th Ave				
80329	0%	15%	4%	7%
80330	0%	12%	4%	8%
80331	0%	12%	6%	3%
80332	0%	10%	6%	4%
42nd Ave				
80276	7%	0%	6%	13%
80278	10%	0%	11%	8%
80288	0%	10%	1%	8%
80295	0%	18%	2%	0%
80296	0%	19%	0%	2%
80298	0%	12%	4%	3%
80300	0%	16%	6%	4%
80307	10%	0%	1%	10%
80309	11%	0%	13%	3%
80315	0%	10%	6%	6%
80317	0%	12%	3%	5%
80318	0%	11%	0%	5%
50th Ave				
46214	3%	0%	2%	17%
46215	4%	0%	17%	6%
55th Ave				
80429	0%	34%	4%	0%
80430	0%	15%	4%	0%
80431	0%	59%	0%	3%
80432	0%	20%	0%	4%
56th Ave				
39959	4%	0%	0%	11%
56th Pl				
80407	0%	13%	1%	3%
80418	0%	13%	1%	3%
80425	0%	11%	4%	0%
80427	0%	17%	0%	4%
75th Ave				
12052	13%	0%	1%	23%
34932	13%	0%	10%	2%
79988	10%	0%	4%	15%
79990	0%	18%	6%	7%
96th Ave				
80558	0%	14%	1%	1%
80560	0%	18%	1%	1%
Addison Rd				
55242	3%	0%	15%	3%
79930	6%	0%	2%	16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
79941	0%	15%	3%	5%
79943	0%	17%	3%	5%
Addison Rd S				
32810	0%	14%	1%	0%
49007	0%	29%	4%	0%
64993	7%	0%	1%	11%
Adelphi Rd				
2913	3%	0%	7%	14%
4870	2%	0%	3%	11%
51496	3%	0%	12%	17%
62036	3%	0%	10%	12%
Ager Rd				
8858	4%	0%	13%	5%
14998	4%	0%	2%	11%
72872	5%	0%	11%	5%
72873	0%	5%	11%	4%
Alcona St				
24801	0%	16%	2%	2%
79594	0%	200%	0%	0%
79596	0%	79%	0%	0%
Aldershot Dr				
16714	14%	0%	0%	22%
55065	14%	0%	19%	0%
Allentown Rd				
4873	0%	18%	0%	2%
5824	4%	0%	15%	5%
12586	3%	0%	7%	33%
12587	2%	0%	9%	11%
25504	3%	0%	11%	13%
41879	1%	0%	23%	14%
61211	0%	13%	-7%	-1%
Ammendale Rd				
11126	0%	17%	-6%	-2%
11127	0%	16%	-1%	-6%
11129	0%	18%	-6%	-2%
11130	0%	15%	-7%	-2%
11131	0%	17%	-1%	-6%
62971	0%	17%	-1%	-7%
Arbor St				
79995	0%	20%	4%	4%
79996	0%	25%	4%	4%
Arctic Ave				
79392	0%	11%	0%	6%
Ardwick Ardmore Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
33882	7%	0%	-5%	6%
54380	7%	0%	-5%	6%
Arena Dr				
22563	0%	17%	-3%	-2%
47212	5%	0%	-9%	-3%
47213	2%	0%	1%	-17%
Aris T Allen Blvd				
13573	0%	0%	-2%	16%
Auth Rd				
5823	0%	13%	-1%	-6%
44626	0%	13%	-1%	-6%
44632	0%	14%	-3%	-14%
71280	0%	14%	-3%	-14%
Aviation Blvd				
48882	0%	28%	0%	0%
Ballenger Creek Pike				
27536	1%	0%	0%	12%
Baltimore Ave				
10812	0%	10%	0%	0%
Baltimore Rd				
197	2%	0%	1%	10%
36593	2%	0%	4%	13%
44664	1%	0%	11%	7%
63835	3%	0%	13%	1%
Baltimore St				
53658	1%	0%	0%	14%
Baltimore Washington Pkwy				
21293	0%	130%	0%	0%
40912	0%	118%	0%	0%
Barker Pl				
79595	0%	16%	0%	0%
79597	0%	101%	-2%	0%
Barnesville Rd				
56739	7%	0%	-2%	-1%
Bauer Dr				
6261	2%	0%	12%	6%
7134	2%	0%	3%	10%
79389	0%	11%	0%	6%
Beach Dr				
5882	9%	0%	11%	8%
18878	10%	0%	13%	21%
22624	4%	0%	4%	12%
69213	3%	0%	4%	10%
69214	0%	20%	3%	4%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Beaver Dam Rd				
16009	14%	0%	7%	6%
24504	15%	0%	8%	7%
Bel Pre Rd				
73081	3%	0%	19%	1%
73083	3%	0%	1%	13%
Belcrest Rd				
14346	0%	11%	1%	1%
80268	5%	0%	2%	11%
Belle Grove Rd				
37333	6%	0%	0%	-1%
Beltsville Dr				
59020	2%	0%	19%	-2%
62973	0%	3%	12%	-1%
Beltsville Rd				
65743	0%	5%	13%	-1%
Bethesda Ave				
79304	5%	0%	9%	8%
Blue Star Memorial Hwy				
57447	0%	14%	0%	0%
Bradley Blvd				
624	10%	0%	7%	6%
2147	3%	0%	1%	12%
12374	7%	0%	1%	8%
12623	10%	0%	13%	2%
19054	8%	0%	4%	16%
22187	1%	0%	-2%	13%
32181	0%	0%	-15%	3%
34815	12%	0%	8%	1%
37196	2%	0%	27%	-3%
43183	3%	0%	20%	22%
49712	14%	0%	30%	35%
53152	2%	0%	14%	21%
53156	2%	0%	10%	1%
53163	12%	0%	29%	23%
56511	2%	0%	10%	1%
66219	3%	0%	1%	12%
79255	9%	0%	-1%	14%
Brae Brooke Dr				
16307	0%	17%	11%	9%
Brandywine Rd				
68976	3%	0%	0%	-12%
Briggs Chaney Rd				
1639	5%	0%	11%	4%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
1931	7%	0%	2%	12%
10318	0%	16%	1%	2%
22489	0%	14%	1%	2%
22490	0%	19%	3%	2%
28313	5%	0%	5%	2%
37537	11%	0%	14%	6%
49371	0%	12%	2%	2%
56332	0%	23%	7%	2%
74068	7%	0%	3%	30%
75875	0%	17%	3%	2%
75876	0%	12%	1%	2%
Brightseat Rd				
10557	0%	34%	0%	1%
10558	0%	22%	1%	1%
14700	8%	0%	28%	7%
21548	0%	30%	2%	1%
22780	0%	22%	1%	2%
22781	0%	43%	6%	3%
22790	0%	16%	1%	7%
22792	0%	24%	4%	6%
24279	0%	26%	1%	1%
25648	9%	0%	5%	30%
28213	0%	56%	4%	2%
34593	0%	40%	4%	0%
59051	0%	43%	5%	2%
68771	0%	57%	6%	3%
77232	0%	18%	1%	6%
77234	0%	28%	3%	5%
Brinkley Rd				
30141	0%	10%	2%	0%
Brooke Rd				
19015	0%	14%	0%	3%
25805	0%	10%	3%	0%
79893	0%	13%	3%	2%
Brooks Dr				
48260	0%	13%	0%	1%
Brown Rd				
48996	0%	26%	1%	4%
Brown Station Rd				
20742	0%	49%	8%	8%
20743	0%	54%	7%	8%
20744	0%	24%	4%	5%
20745	0%	26%	3%	4%
20764	0%	11%	0%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
33571	0%	16%	0%	0%
65178	0%	21%	0%	1%
Broxburn Dr				
37233	4%	0%	12%	2%
65138	6%	0%	0%	15%
Brunett Ave				
10849	5%	0%	-4%	-1%
Bucklodge Rd				
57700	7%	0%	3%	2%
Burdette Rd				
6495	13%	0%	28%	3%
26063	27%	0%	5%	44%
51768	16%	0%	26%	3%
65132	27%	0%	4%	37%
Burkittsville Rd				
81547	2%	0%	-12%	-1%
81549	3%	0%	-2%	-13%
Burnt Hill Rd				
28599	5%	0%	-1%	-1%
Cabin Branch Dr				
66765	0%	11%	2%	4%
Cabin John Pkwy				
10260	0%	1%	1%	-22%
18873	0%	12%	0%	5%
60085	0%	7%	15%	0%
71868	0%	3%	-20%	1%
Calverton Blvd				
42957	1%	0%	22%	-1%
49244	0%	4%	10%	0%
65742	0%	4%	10%	0%
Campus Dr				
3648	2%	0%	11%	9%
3649	6%	0%	10%	10%
3997	4%	0%	10%	5%
9761	1%	0%	17%	8%
10289	3%	0%	8%	11%
35070	3%	0%	12%	7%
35071	4%	0%	11%	9%
35072	4%	0%	13%	15%
49115	3%	0%	15%	13%
80262	5%	0%	15%	7%
80264	3%	0%	2%	16%
Campus Way N				
4745	0%	14%	0%	-5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
14529	0%	11%	0%	-5%
77235	11%	0%	-2%	4%
77236	15%	0%	2%	13%
Campus Way S				
15330	0%	14%	0%	1%
23127	0%	32%	6%	2%
49020	0%	32%	1%	8%
65390	0%	22%	1%	1%
Capital Beltway				
2624	9%	0%	52%	81%
2625	2%	0%	27%	20%
6219	0%	200%	0%	0%
6524	7%	0%	57%	56%
6525	1%	0%	13%	-6%
6528	1%	0%	13%	-6%
6529	0%	1%	-4%	-13%
6818	3%	0%	16%	7%
6820	1%	0%	36%	15%
6821	2%	0%	-3%	22%
6822	0%	4%	4%	13%
6823	2%	0%	16%	6%
6824	2%	0%	2%	26%
6827	2%	0%	9%	15%
6830	3%	0%	26%	16%
6831	0%	8%	20%	6%
6832	7%	0%	4%	24%
7119	3%	0%	26%	16%
7120	1%	0%	22%	22%
7123	2%	0%	20%	5%
7124	2%	0%	20%	22%
7773	8%	0%	52%	46%
8715	4%	0%	63%	51%
8718	0%	2%	35%	10%
8719	0%	0%	48%	20%
10252	7%	0%	82%	67%
10253	0%	8%	4%	10%
10254	0%	200%	0%	0%
10257	0%	600%	0%	0%
10513	2%	0%	23%	30%
10838	0%	19%	0%	0%
11031	0%	8%	-14%	-19%
11033	0%	3%	26%	3%
11035	0%	11%	-11%	-15%
14058	6%	0%	2%	41%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
16672	0%	600%	-12%	-23%
17226	3%	0%	28%	14%
19277	0%	0%	4%	39%
25418	2%	0%	23%	18%
25419	1%	0%	29%	20%
25426	0%	13%	0%	1%
34319	7%	0%	39%	74%
35426	8%	0%	20%	9%
37141	3%	0%	38%	45%
37542	0%	4%	-30%	-13%
37544	4%	0%	4%	48%
41598	0%	22%	0%	0%
43010	9%	0%	23%	68%
43212	0%	12%	-1%	0%
43317	0%	0%	-21%	0%
43763	3%	0%	38%	45%
43772	0%	11%	-14%	0%
45001	0%	14%	2%	87%
46647	3%	0%	3%	15%
46648	0%	3%	-8%	-19%
52567	5%	0%	34%	62%
52945	0%	5%	32%	14%
53312	0%	7%	3%	12%
55255	2%	0%	57%	26%
55619	2%	0%	38%	27%
55626	0%	200%	0%	0%
58650	1%	0%	2%	-11%
59353	0%	39%	0%	1%
59354	9%	0%	23%	68%
59356	0%	409%	50%	1%
59366	4%	0%	9%	42%
59644	2%	0%	8%	64%
59654	1%	0%	9%	52%
68592	0%	200%	-8%	-21%
68593	0%	29600%	-15%	-13%
69021	8%	0%	52%	46%
70513	0%	0%	4%	39%
Carrington Ave				
27903	3%	0%	11%	3%
28202	4%	0%	3%	13%
Catskill St				
71270	5%	0%	11%	0%
Cedar Ln				
1279	3%	0%	19%	3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
26478	3%	0%	1%	25%
33922	3%	0%	19%	3%
52561	3%	0%	1%	25%
Chapel Point Rd				
5443	0%	11%	1%	0%
48695	0%	11%	1%	0%
57138	0%	12%	1%	0%
Charles Armentrout Dr				
23705	3%	0%	1%	11%
Cherry Ln				
1326	0%	31%	-1%	0%
Chesapeake Rd				
80422	0%	12%	4%	3%
Chestnut Ave				
9447	0%	11%	2%	2%
31622	0%	11%	2%	2%
31623	0%	13%	2%	3%
31624	0%	12%	2%	3%
31625	0%	13%	2%	3%
41033	0%	10%	2%	2%
61769	6%	0%	2%	4%
65437	6%	0%	3%	4%
Cheverly Ave				
14819	0%	14%	6%	5%
59776	0%	19%	4%	5%
Church Rd				
12130	0%	14%	1%	2%
15956	0%	27%	5%	1%
16238	0%	27%	5%	1%
16239	0%	22%	5%	1%
16638	0%	30%	4%	10%
17739	0%	38%	10%	7%
20756	0%	37%	2%	5%
21611	0%	16%	5%	1%
27106	0%	38%	5%	3%
33229	0%	37%	2%	5%
36048	6%	0%	1%	2%
36053	0%	15%	1%	7%
38533	0%	18%	9%	10%
44256	0%	16%	0%	2%
45305	0%	33%	10%	8%
53702	0%	35%	4%	10%
55147	0%	22%	9%	16%
55148	0%	23%	8%	16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
55149	0%	18%	8%	12%
58009	0%	22%	8%	17%
58010	0%	19%	8%	11%
59319	0%	19%	8%	11%
59320	0%	23%	8%	16%
64150	0%	30%	2%	6%
64417	0%	14%	2%	8%
65171	0%	27%	2%	6%
65860	0%	11%	1%	11%
67960	0%	35%	2%	4%
Cindy Ln				
79811	0%	27%	4%	1%
79813	0%	17%	1%	2%
Claggett Landing Rd				
55218	2%	0%	9%	13%
73254	2%	0%	17%	4%
Clara Barton Pkwy				
32191	0%	12%	0%	0%
36917	0%	3%	0%	-43%
52785	2%	0%	1%	-18%
55616	0%	6%	2%	71%
59355	13%	0%	14%	47%
60086	0%	3%	-43%	0%
College Pkwy				
75594	0%	15%	1%	0%
Columbia Ave				
79290	5%	0%	4%	4%
79291	7%	0%	5%	4%
Columbia Park Rd				
10549	6%	0%	1%	14%
25355	7%	0%	21%	20%
31087	7%	0%	3%	21%
58070	6%	0%	1%	14%
58652	6%	0%	1%	14%
66760	6%	0%	6%	5%
66761	6%	0%	6%	5%
66762	6%	0%	6%	5%
Connecticut Ave				
1367	1%	0%	0%	11%
13666	2%	0%	0%	12%
24970	1%	0%	-1%	11%
44972	1%	0%	1%	15%
57588	0%	0%	-1%	14%
69701	2%	0%	5%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
69703	2%	0%	10%	8%
73084	1%	0%	14%	0%
Contee Rd				
1043	0%	19%	-2%	0%
Cool Spring Rd				
5106	6%	0%	6%	1%
County Rd				
54074	4%	0%	19%	16%
67060	3%	0%	9%	16%
Crabbs Branch Way				
3816	2%	0%	11%	0%
Crain Hwy				
3483	2%	0%	10%	11%
6771	0%	10%	-2%	0%
11329	3%	0%	10%	10%
14381	2%	0%	11%	7%
14759	2%	0%	21%	5%
14760	3%	0%	19%	13%
15060	2%	0%	10%	6%
17046	5%	0%	8%	12%
17746	2%	0%	12%	5%
19078	4%	0%	17%	7%
20364	3%	0%	18%	6%
21135	3%	0%	13%	4%
24920	2%	0%	10%	7%
25221	4%	0%	11%	18%
32950	2%	0%	7%	15%
33216	3%	0%	15%	28%
34255	2%	0%	11%	6%
35923	1%	0%	13%	5%
42483	4%	0%	16%	6%
42484	4%	0%	16%	6%
54461	3%	0%	16%	18%
59046	3%	0%	26%	14%
60691	4%	0%	7%	11%
61013	4%	0%	17%	6%
61014	5%	0%	7%	8%
61015	5%	0%	8%	8%
61638	3%	0%	17%	7%
61640	4%	0%	8%	13%
61957	3%	0%	14%	7%
61958	3%	0%	14%	8%
62275	3%	0%	14%	7%
63879	3%	0%	7%	14%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
71337	3%	0%	15%	27%
Crescent Rd				
22463	2%	0%	4%	18%
28807	3%	0%	22%	7%
Crest Ave				
80033	0%	85%	0%	1%
Crittenden St				
34130	3%	0%	3%	16%
64413	3%	0%	17%	9%
Croom Station Rd				
61963	0%	12%	0%	1%
61967	0%	11%	0%	1%
62274	3%	0%	15%	7%
79604	6%	0%	5%	4%
79605	6%	0%	5%	4%
Dale Dr				
637	6%	0%	5%	1%
35303	6%	0%	5%	1%
54293	0%	16%	2%	4%
Damascus Rd				
55983	5%	0%	0%	3%
Darcy Rd				
32636	0%	19%	11%	5%
33831	0%	10%	3%	0%
33833	0%	26%	0%	-5%
35898	0%	15%	4%	5%
45689	0%	11%	2%	8%
Darnestown Rd				
57378	8%	0%	2%	1%
57701	6%	0%	3%	1%
72717	7%	0%	3%	1%
74406	7%	0%	3%	1%
Dartmouth Ave				
33740	9%	0%	8%	5%
Dateleaf Ave				
79881	0%	38%	-1%	0%
79882	0%	75%	-1%	0%
Decatur St				
3115	5%	0%	3%	12%
16222	7%	0%	11%	16%
16224	6%	0%	4%	12%
39962	7%	0%	11%	16%
80271	0%	40%	4%	12%
80272	0%	47%	13%	5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Democracy Blvd				
5999	9%	0%	1%	20%
6000	6%	0%	0%	20%
6594	0%	4%	13%	0%
9394	0%	13%	2%	1%
19271	0%	11%	0%	17%
26665	7%	0%	2%	14%
51195	11%	0%	19%	1%
59655	0%	16%	4%	7%
68994	7%	0%	17%	0%
72716	7%	0%	9%	1%
Denley Rd				
13660	3%	0%	3%	13%
13662	3%	0%	14%	8%
Devon Rd				
53910	0%	16%	2%	4%
Diamond Back				
13823	1%	0%	2%	-16%
13825	1%	0%	-14%	-2%
Dickerson School Rd				
40868	6%	0%	-2%	-1%
Dorset Ave				
52903	2%	0%	3%	13%
79322	0%	14%	4%	9%
Dwight D Eisenhower Hwy				
25778	1%	0%	0%	-13%
37276	0%	1%	0%	-12%
37282	0%	16%	0%	0%
37284	0%	3%	0%	-11%
37634	0%	3%	0%	-11%
47337	0%	0%	48%	20%
66784	0%	243%	35%	103%
67073	0%	224%	26%	94%
67077	0%	224%	38%	104%
67083	0%	224%	4%	76%
69882	0%	0%	48%	20%
Dyson Rd				
57442	0%	17%	0%	0%
E Gude Dr				
1237	7%	0%	0%	11%
32529	5%	0%	11%	0%
E Jefferson St				
9665	7%	0%	0%	8%
11363	2%	0%	10%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
52568	2%	0%	1%	12%
E Patrick St				
75635	0%	34%	0%	0%
E Randolph Rd				
8397	5%	0%	17%	3%
10600	4%	0%	11%	19%
E Wayne Ave				
34408	9%	0%	4%	-1%
E West Hwy				
1699	2%	0%	10%	14%
1701	3%	0%	11%	1%
2644	9%	0%	4%	2%
2648	2%	0%	0%	14%
5595	2%	0%	17%	5%
7868	2%	0%	11%	6%
8494	4%	0%	14%	29%
8500	2%	0%	1%	17%
13831	3%	0%	12%	4%
14345	0%	11%	1%	1%
14732	3%	0%	18%	13%
15588	5%	0%	11%	4%
15596	2%	0%	13%	11%
16025	3%	0%	11%	1%
16229	3%	0%	11%	10%
16510	3%	0%	12%	9%
16513	2%	0%	13%	11%
16514	2%	0%	2%	15%
16515	3%	0%	1%	17%
17450	2%	0%	2%	10%
19040	2%	0%	14%	6%
19273	2%	0%	2%	15%
21767	7%	0%	4%	16%
21879	3%	0%	8%	11%
25350	3%	0%	14%	6%
26357	3%	0%	10%	13%
30826	5%	0%	15%	4%
32171	2%	0%	4%	17%
36414	7%	0%	14%	9%
37528	3%	0%	12%	0%
40143	2%	0%	1%	11%
40922	2%	0%	8%	12%
46310	2%	0%	17%	5%
47491	3%	0%	14%	0%
47492	2%	0%	1%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
53531	2%	0%	5%	13%
57826	2%	0%	18%	12%
59622	6%	0%	6%	15%
60809	2%	0%	0%	15%
60810	3%	0%	15%	11%
64096	2%	0%	1%	11%
71878	2%	0%	4%	15%
72314	2%	0%	7%	11%
Earnshaw Dr				
57764	0%	15%	0%	1%
57765	0%	28%	0%	1%
Elm Ave				
47777	6%	0%	2%	6%
Elm St				
79307	6%	0%	1%	6%
Elmer Derr Rd				
45642	3%	0%	0%	10%
Emory Ln				
24829	0%	11%	0%	2%
Enterprise Rd				
16544	0%	10%	1%	4%
19227	11%	0%	17%	12%
29411	8%	0%	9%	14%
36042	5%	0%	6%	20%
36043	11%	0%	22%	23%
56261	6%	0%	15%	2%
62084	6%	0%	4%	15%
71017	13%	0%	15%	18%
74057	12%	0%	4%	35%
Esworthy Rd				
19458	0%	13%	1%	5%
Fairfax Rd				
79316	2%	0%	7%	13%
79317	6%	0%	12%	9%
Fairland Rd				
1930	6%	0%	5%	3%
33495	5%	0%	7%	2%
50730	3%	0%	15%	1%
56279	7%	0%	3%	10%
Falls Rd				
5991	5%	0%	1%	23%
32244	17%	0%	16%	29%
Fenno Rd				
62406	0%	12%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Fenton St				
1537	5%	0%	7%	1%
2150	8%	0%	7%	7%
Fernwood Rd				
83	0%	17%	7%	1%
64821	1%	0%	11%	0%
Fields Rd				
45789	7%	0%	10%	1%
72379	4%	0%	11%	1%
Fingerboard Rd				
44793	0%	11%	0%	-1%
Fishers Ln				
69940	3%	0%	13%	1%
Fletchertown Rd				
80583	0%	14%	0%	-3%
Foote St				
81616	0%	12%	0%	3%
Forest Glen Rd				
9228	14%	0%	12%	6%
56380	0%	20%	3%	2%
Forest Rd				
19286	0%	23%	4%	4%
60055	0%	12%	1%	1%
80002	0%	40%	0%	1%
80005	0%	36%	0%	1%
80034	0%	85%	0%	1%
Forestville Rd				
17217	0%	13%	-1%	-8%
37749	4%	0%	1%	24%
65000	5%	0%	21%	11%
65833	7%	0%	34%	7%
69065	3%	0%	1%	14%
75577	1%	0%	12%	4%
75578	4%	0%	10%	-52%
75582	0%	13%	9%	2%
75583	0%	9%	0%	-19%
75584	0%	14%	16%	4%
75585	0%	12%	13%	4%
Fort Washington Rd				
24340	0%	13%	0%	0%
Frederick Rd				
71699	1%	0%	0%	10%
Frolich Ln				
55295	0%	18%	2%	3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Gallant Green Rd				
52022	6%	0%	-1%	-1%
65570	6%	0%	-1%	-1%
Gallatin St				
80357	0%	13%	3%	1%
80358	0%	17%	1%	4%
Garden Gate Rd				
22270	2%	0%	13%	-1%
Garrett A Morgan Blvd				
24277	0%	18%	1%	2%
28204	0%	13%	4%	3%
28205	0%	24%	1%	2%
28211	0%	13%	4%	3%
28212	0%	21%	1%	3%
37554	0%	21%	1%	3%
68770	0%	14%	4%	3%
72449	0%	15%	4%	2%
Georgia Ave				
22261	2%	0%	11%	-1%
32047	1%	0%	16%	-3%
72348	3%	0%	18%	2%
Gladys Noon Spellman Pkwy				
3385	0%	4%	0%	11%
8630	3%	0%	14%	32%
11444	0%	119%	0%	0%
12086	0%	6%	-5%	-12%
12090	3%	0%	13%	0%
13882	3%	0%	-17%	-6%
14135	2%	0%	12%	17%
16988	0%	17%	-1%	-4%
18384	3%	0%	18%	26%
33282	4%	0%	8%	15%
43798	0%	16%	0%	0%
44068	4%	0%	14%	25%
48270	2%	0%	12%	20%
48533	4%	0%	2%	10%
48534	4%	0%	8%	14%
48609	0%	200%	0%	0%
53705	2%	0%	12%	20%
54843	2%	0%	-14%	-9%
54848	0%	62%	0%	-2%
55216	4%	0%	14%	18%
58701	3%	0%	11%	13%
58941	2%	0%	12%	19%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
58944	3%	0%	13%	13%
58945	4%	0%	14%	18%
68234	0%	15%	6%	31%
Glen Mill Rd				
4161	2%	0%	2%	14%
5664	0%	10%	2%	2%
19843	13%	0%	12%	1%
22405	15%	0%	17%	3%
36812	6%	0%	0%	13%
46463	2%	0%	14%	6%
46639	0%	11%	1%	5%
47231	7%	0%	0%	16%
55063	6%	0%	9%	1%
Glen Rd				
1175	4%	0%	12%	0%
25327	6%	0%	0%	11%
26363	0%	17%	2%	2%
30400	0%	17%	2%	4%
40423	5%	0%	12%	0%
49713	6%	0%	0%	12%
55057	4%	0%	11%	0%
56920	5%	0%	0%	11%
75280	4%	0%	12%	0%
75281	5%	0%	0%	11%
Glenarden Pkwy				
13489	21%	0%	13%	30%
14694	0%	14%	5%	19%
Glenbrook Rd				
79325	0%	8%	11%	1%
Glenmont Cir				
57883	2%	0%	0%	18%
57886	1%	0%	13%	0%
Glenn Dale Blvd				
15279	0%	11%	1%	4%
22691	4%	0%	15%	7%
30839	7%	0%	3%	8%
48891	5%	0%	3%	21%
67360	0%	10%	2%	3%
Good Luck Rd				
14137	2%	0%	12%	20%
14371	4%	0%	14%	18%
21669	0%	26%	7%	7%
80559	0%	10%	2%	1%
Great Seneca Hwy				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
52598	3%	0%	0%	11%
Greenbelt Rd				
12058	0%	27%	1%	0%
16934	0%	6%	-69%	-50%
30148	5%	0%	18%	2%
30189	5%	0%	12%	2%
30325	4%	0%	1%	16%
55223	0%	33%	-1%	-1%
80540	3%	0%	4%	10%
80545	0%	19%	3%	6%
80547	0%	14%	3%	2%
80637	0%	10%	4%	3%
Greencastle Rd				
1540	0%	17%	-2%	0%
10589	0%	9%	0%	-10%
25130	0%	9%	0%	-10%
72436	0%	29%	0%	-4%
Greentree Rd				
5873	16%	0%	22%	4%
9868	0%	25%	15%	10%
34982	11%	0%	7%	26%
53653	15%	0%	8%	23%
66216	0%	24%	12%	17%
72625	6%	0%	17%	9%
H G Trueman Rd				
54089	0%	15%	0%	1%
69924	0%	15%	0%	1%
Hanover Pkwy				
19304	0%	17%	4%	1%
30531	0%	23%	1%	4%
30532	0%	17%	4%	1%
39976	0%	23%	1%	4%
52274	0%	14%	8%	7%
Harbour Way				
75519	4%	0%	5%	28%
75520	3%	0%	26%	6%
Harry S Truman Dr				
21133	0%	22%	4%	1%
21527	0%	24%	4%	1%
21528	0%	20%	1%	6%
23690	0%	23%	1%	5%
23971	0%	24%	1%	5%
71888	0%	19%	5%	2%
Harry S Truman Dr N				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
33912	11%	0%	23%	16%
71898	8%	0%	1%	42%
Hastings Dr				
24268	0%	24%	3%	0%
26629	0%	24%	3%	0%
79852	0%	11%	3%	0%
Hillmeade Rd				
16297	0%	11%	1%	1%
25711	0%	11%	1%	1%
Holly Springs Dr W				
1273	0%	19%	0%	3%
36484	0%	14%	3%	0%
58367	0%	19%	1%	1%
67056	0%	21%	1%	1%
I- 195				
54987	2%	0%	-1%	14%
I- 270				
5926	1%	0%	20%	1%
5927	1%	0%	21%	5%
9031	0%	16%	0%	1%
9033	1%	0%	-14%	-11%
9035	1%	0%	-9%	-19%
9977	1%	0%	-11%	-1%
15674	1%	0%	-9%	-19%
19193	0%	281%	-7%	1%
19585	1%	0%	-10%	-10%
19669	0%	3%	55%	1%
19986	1%	0%	-1%	-11%
21295	1%	0%	-1%	-11%
22834	2%	0%	26%	1%
25127	1%	0%	0%	15%
26790	0%	400%	-171%	-171%
28056	0%	286%	73%	-31%
28057	0%	243%	3%	1%
28059	0%	200%	0%	0%
28061	0%	252%	108%	14%
28366	0%	200%	0%	0%
29074	0%	268%	91%	2%
29075	0%	200%	0%	0%
29076	0%	220%	14%	96%
29077	0%	200%	0%	0%
32167	0%	200%	0%	0%
37288	0%	3%	0%	-11%
37540	3%	0%	30%	6%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
37941	0%	200%	0%	0%
38287	0%	243%	12%	46%
43769	0%	0%	6%	24%
46645	0%	3%	-11%	0%
53317	1%	0%	-14%	-10%
55623	0%	0%	-25%	-7%
58033	0%	283%	-25%	1%
58036	0%	200%	0%	0%
58037	0%	258%	53%	14%
58038	0%	199%	0%	0%
58039	1%	0%	-9%	-19%
58805	1%	0%	-1%	-11%
58807	1%	0%	-1%	-11%
59875	0%	200%	0%	0%
63899	1%	0%	13%	1%
65625	0%	283%	25%	9%
65627	0%	200%	0%	0%
65629	3%	0%	18%	2%
65630	1%	0%	-14%	-11%
66587	0%	477%	17%	18%
66773	0%	277%	28%	29%
67369	0%	200%	0%	0%
67373	0%	200%	0%	0%
67374	0%	223%	4%	103%
67375	0%	300%	-37%	-34%
67381	0%	200%	0%	0%
67668	0%	243%	12%	46%
67671	0%	283%	25%	9%
67675	0%	200%	0%	0%
67677	0%	247%	15%	19%
67679	0%	273%	87%	9%
67967	0%	252%	108%	14%
67968	0%	215%	14%	121%
67970	0%	252%	108%	14%
67972	0%	230%	14%	40%
67975	0%	200%	0%	0%
67977	0%	230%	14%	40%
67978	0%	255%	85%	14%
67979	0%	230%	14%	40%
67981	0%	255%	85%	14%
68265	0%	218%	14%	104%
68266	0%	255%	85%	14%
68270	0%	200%	0%	0%
68272	0%	235%	14%	20%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
68274	0%	244%	141%	14%
68275	0%	200%	0%	0%
68277	0%	224%	14%	31%
68434	0%	200%	0%	0%
68559	0%	220%	14%	33%
68560	0%	226%	0%	0%
68562	0%	238%	59%	15%
68566	0%	3%	0%	-20%
68573	0%	3%	0%	-20%
68721	0%	239%	9%	69%
68725	0%	262%	49%	14%
68729	1%	0%	-10%	-10%
68731	0%	1%	0%	-12%
68857	0%	3%	0%	-20%
70365	1%	0%	19%	3%
70367	0%	0%	0%	18%
70368	0%	0%	0%	20%
70369	1%	0%	18%	3%
70608	2%	0%	-1%	-17%
70751	2%	0%	26%	1%
I- 370				
9353	0%	4%	29%	8%
9355	0%	56%	0%	0%
32611	0%	19%	0%	0%
52380	5%	0%	-3%	2%
59195	0%	11%	5%	1%
I- 495				
1190	6%	0%	11%	20%
11587	4%	0%	17%	54%
11592	4%	0%	30%	32%
12346	0%	0%	-15%	-3%
12347	0%	0%	-15%	-3%
14126	3%	0%	1%	30%
14676	4%	0%	13%	29%
14677	0%	200%	0%	0%
14681	3%	0%	24%	38%
16745	0%	20%	1%	4%
16926	0%	8%	8%	12%
16990	3%	0%	12%	36%
16991	3%	0%	12%	34%
17216	0%	7%	-63%	-47%
17685	7%	0%	25%	44%
17687	4%	0%	48%	0%
17688	6%	0%	17%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
19074	4%	0%	22%	49%
20076	5%	0%	33%	34%
20450	2%	0%	1%	33%
20850	8%	0%	91%	77%
27933	0%	12%	8%	35%
28574	0%	1%	12%	-9%
29807	5%	0%	58%	3%
38259	0%	8%	8%	12%
40692	0%	14%	-1%	-3%
43508	0%	8%	8%	12%
43514	4%	0%	41%	36%
44067	0%	3%	2%	-25%
47339	0%	4%	11%	12%
55221	4%	0%	44%	43%
56253	4%	0%	70%	51%
56564	0%	18%	-1%	0%
I- 595				
12094	4%	0%	-35%	-17%
27732	0%	2%	0%	-11%
56682	0%	1%	0%	-12%
59578	4%	0%	-29%	-75%
73588	0%	2%	-10%	-5%
73592	0%	2%	-10%	-5%
73596	0%	2%	-10%	-5%
73862	0%	2%	0%	-11%
I- 95				
3357	2%	0%	22%	22%
3358	0%	7%	12%	17%
3375	5%	0%	26%	11%
3376	0%	400%	0%	0%
12344	2%	0%	37%	39%
12349	2%	0%	-21%	-13%
12603	6%	0%	48%	66%
13349	4%	0%	-32%	-53%
13351	3%	0%	39%	34%
13352	2%	0%	-13%	-13%
14124	3%	0%	35%	54%
14125	4%	0%	38%	24%
14679	4%	0%	39%	54%
14682	0%	217%	-3%	-24%
14974	0%	32%	0%	0%
14976	0%	11%	2%	3%
16744	0%	4%	-44%	-33%
17213	4%	0%	23%	53%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
17219	0%	8%	13%	18%
17686	0%	6%	1%	29%
19330	0%	22%	0%	0%
20071	0%	32%	-1%	-17%
20077	0%	8%	13%	18%
21772	4%	0%	-51%	-31%
21773	0%	39%	4%	9%
28577	0%	8%	13%	18%
28809	0%	12%	7%	6%
30064	0%	21%	5%	1%
30065	0%	1604%	35%	3%
30867	0%	14%	0%	-1%
40691	4%	0%	24%	43%
43515	5%	0%	10%	31%
44948	0%	103%	1%	0%
48261	5%	0%	11%	6%
48347	0%	2%	20%	1%
48348	0%	1800%	0%	0%
49018	0%	44%	4%	3%
51638	0%	99%	0%	0%
54078	3%	0%	8%	13%
54493	2%	0%	24%	59%
56263	8%	0%	36%	45%
58947	4%	0%	28%	28%
58950	0%	15%	0%	0%
67392	2%	0%	-12%	-19%
70129	2%	0%	-4%	-28%
Independence St				
34656	1%	0%	-1%	10%
Iverson St				
38484	0%	11%	0%	1%
Jadeleaf Ave				
79858	0%	19%	2%	1%
79877	0%	38%	-1%	0%
Jefferson Pike				
3165	0%	34%	0%	0%
74634	0%	34%	0%	0%
Jefferson St				
80301	0%	15%	4%	4%
80303	0%	15%	4%	3%
John Hanson Hwy				
13343	1%	0%	14%	19%
13344	2%	0%	23%	6%
13348	2%	0%	20%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
16984	1%	0%	14%	19%
48619	9%	0%	11%	42%
58942	0%	14%	1%	0%
Jones Bridge Rd				
19055	5%	0%	3%	16%
32185	4%	0%	18%	12%
35615	5%	0%	10%	16%
43176	8%	0%	19%	6%
Jones Ln				
79464	0%	29%	0%	1%
79465	0%	16%	0%	1%
79466	0%	10%	0%	0%
Kenilworth Ave				
15030	2%	0%	19%	12%
15623	6%	0%	15%	25%
15635	6%	0%	8%	8%
15702	3%	0%	11%	27%
15891	6%	0%	13%	2%
18174	5%	0%	1%	17%
25727	6%	0%	6%	26%
40694	4%	0%	18%	26%
56371	6%	0%	28%	25%
63572	5%	0%	13%	21%
Kentsdale Dr				
25122	7%	0%	1%	16%
32519	8%	0%	12%	1%
Kerby Hill Rd				
5520	0%	20%	0%	-1%
Kettering Dr				
15332	0%	29%	9%	16%
15333	24%	0%	12%	23%
15334	0%	12%	10%	4%
24931	4%	0%	2%	18%
64714	10%	0%	13%	6%
Kipling Pkwy				
34157	0%	14%	2%	14%
72730	19%	0%	17%	15%
Knowles Ave				
8714	4%	0%	15%	11%
52949	2%	0%	12%	12%
55235	2%	0%	9%	11%
69216	8%	0%	22%	26%
69217	7%	0%	23%	25%
69218	4%	0%	11%	22%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
69219	4%	0%	14%	19%
72972	3%	0%	13%	13%
Konterra Dr				
51884	7%	0%	-1%	-4%
67062	7%	0%	-4%	-1%
71510	0%	42%	0%	0%
L St				
79942	0%	11%	2%	4%
79944	0%	12%	2%	5%
Landover Rd				
3018	2%	0%	0%	13%
9465	2%	0%	12%	1%
10556	3%	0%	-1%	-14%
11451	1%	0%	11%	0%
11590	3%	0%	1%	15%
11871	0%	0%	-15%	2%
14118	0%	5%	-47%	-21%
21807	2%	0%	12%	1%
22788	7%	0%	4%	15%
32643	3%	0%	19%	3%
48617	1%	0%	0%	13%
50974	0%	12%	0%	8%
54495	1%	0%	0%	12%
63261	3%	0%	10%	11%
64680	2%	0%	15%	1%
71899	5%	0%	-3%	8%
79989	0%	11%	5%	3%
Larchmont Ave				
29634	0%	21%	1%	0%
47719	0%	7%	3%	10%
49174	0%	47%	0%	1%
79901	5%	0%	7%	9%
79903	8%	0%	6%	10%
Largo Center Dr				
22564	0%	13%	-2%	-1%
Largo Rd				
2424	0%	10%	8%	5%
15042	6%	0%	10%	12%
15045	7%	0%	11%	9%
15328	7%	0%	10%	9%
15331	0%	26%	10%	17%
21532	14%	0%	7%	4%
21613	4%	0%	9%	29%
24933	10%	0%	2%	35%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
33558	7%	0%	17%	4%
33566	8%	0%	10%	7%
34929	0%	16%	5%	4%
64432	8%	0%	5%	7%
64441	0%	16%	5%	4%
Laurel Bowie Rd				
1186	2%	0%	17%	14%
16759	3%	0%	4%	10%
35899	2%	0%	5%	14%
Layhill Rd				
1090	2%	0%	0%	13%
10337	6%	0%	2%	18%
10591	1%	0%	11%	2%
11104	1%	0%	10%	2%
15670	4%	0%	15%	1%
15673	2%	0%	0%	11%
22263	3%	0%	12%	3%
32604	3%	0%	-1%	20%
44263	3%	0%	17%	2%
44542	1%	0%	11%	2%
51629	0%	13%	0%	3%
53315	2%	0%	0%	11%
55259	2%	0%	0%	12%
Leeland Rd				
14761	0%	14%	1%	1%
33217	0%	23%	1%	2%
48446	0%	18%	1%	2%
63877	0%	11%	1%	1%
Leland St				
79276	0%	19%	0%	1%
79277	0%	13%	1%	0%
Little Falls Pkwy				
2346	7%	0%	3%	6%
32180	9%	0%	4%	4%
79323	0%	28%	2%	3%
Longfellow St				
80306	0%	11%	2%	2%
80343	0%	13%	1%	5%
80344	0%	13%	1%	5%
80345	0%	15%	6%	3%
80346	0%	15%	6%	2%
80364	0%	13%	1%	5%
80366	0%	15%	6%	3%
Lorain Ave				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
16314	0%	20%	2%	2%
Lottsford Rd				
22353	9%	0%	12%	15%
22572	0%	18%	9%	8%
25654	0%	14%	3%	10%
40406	8%	0%	9%	14%
49051	13%	0%	15%	18%
58881	3%	0%	12%	5%
63266	8%	0%	9%	20%
71895	0%	13%	6%	9%
71896	13%	0%	2%	16%
Lottsford Vista Rd				
25103	0%	20%	7%	14%
52270	0%	19%	9%	11%
61445	0%	18%	18%	10%
63861	0%	31%	12%	18%
Lusbys Ln				
80173	0%	15%	0%	1%
80174	0%	15%	0%	1%
Macarthur Blvd				
1477	4%	0%	12%	0%
6271	0%	0%	-15%	-5%
13642	0%	10%	0%	8%
16422	7%	0%	0%	25%
24379	9%	0%	-6%	-2%
26361	16%	0%	7%	26%
32178	5%	0%	-12%	0%
34972	1%	0%	5%	-20%
34973	5%	0%	0%	9%
37132	2%	0%	1%	11%
51772	4%	0%	13%	4%
55050	30%	0%	18%	6%
65137	6%	0%	2%	17%
65346	2%	0%	-23%	-11%
65348	0%	0%	-9%	-14%
71007	8%	0%	0%	16%
71008	3%	0%	1%	-17%
Maple Ave				
79265	6%	0%	8%	1%
Marianna Dr				
79388	0%	13%	0%	4%
Marlboro Pike				
25806	0%	26%	3%	0%
26951	5%	0%	7%	9%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
31043	0%	26%	0%	2%
64726	8%	0%	6%	10%
Marriottsville Rd				
48324	1%	0%	0%	-10%
Martin Luther King Jr Hwy				
4393	3%	0%	10%	23%
14140	3%	0%	-23%	-34%
14517	5%	0%	17%	22%
15194	5%	0%	11%	15%
15968	5%	0%	2%	10%
23071	3%	0%	15%	13%
23230	7%	0%	8%	28%
23231	5%	0%	21%	7%
25098	6%	0%	-1%	-21%
25641	5%	0%	13%	20%
25779	3%	0%	-1%	-16%
27902	3%	0%	11%	2%
30836	0%	8%	-3%	-19%
38179	3%	0%	10%	18%
48888	6%	0%	3%	12%
49277	6%	0%	8%	27%
49841	4%	0%	5%	19%
53699	3%	0%	-1%	-16%
54372	0%	14%	3%	4%
54919	4%	0%	3%	15%
59032	5%	0%	13%	22%
63782	4%	0%	11%	32%
63783	4%	0%	9%	12%
66764	11%	0%	11%	15%
68768	5%	0%	3%	14%
70831	7%	0%	38%	28%
72168	5%	0%	19%	7%
75390	5%	0%	6%	13%
Mattaponi Rd				
42107	0%	11%	0%	0%
Meadowridge Ln				
4742	0%	23%	5%	6%
58595	0%	39%	6%	9%
Melwood Rd				
25870	0%	14%	3%	1%
Merrimac Dr				
18831	0%	20%	0%	1%
33808	0%	20%	1%	0%
71471	4%	0%	2%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
71472	4%	0%	11%	2%
Missouri Ave				
60696	0%	14%	0%	1%
Mitchellville Rd				
15347	0%	18%	2%	8%
18888	9%	0%	2%	4%
20365	0%	11%	2%	2%
33221	0%	14%	3%	10%
55135	0%	11%	2%	4%
55136	11%	0%	5%	6%
59317	0%	14%	5%	6%
Montrose Rd				
2989	0%	12%	1%	10%
8728	3%	0%	-16%	-4%
10779	1%	0%	-3%	-13%
21959	3%	0%	-8%	-19%
63486	2%	0%	-15%	-12%
Moorland Ln				
65354	3%	0%	22%	13%
65356	4%	0%	13%	25%
Morgan Dr				
47820	3%	0%	11%	6%
47821	2%	0%	4%	15%
Mount Oak Rd				
2420	6%	0%	-2%	3%
2421	7%	0%	3%	0%
20366	7%	0%	3%	1%
21607	7%	0%	-2%	3%
48714	8%	0%	3%	1%
64147	7%	0%	-2%	3%
Muddy Branch Rd				
69033	2%	0%	0%	18%
Muirkirk Rd				
10820	6%	0%	1%	-12%
44548	6%	0%	-2%	-4%
45692	7%	0%	0%	-6%
60497	2%	0%	0%	-12%
64334	9%	0%	1%	-6%
N Englewood Dr				
79973	0%	65%	0%	1%
79974	0%	25%	0%	1%
79975	0%	49%	1%	0%
79976	0%	26%	1%	0%
N Washington St				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
1591	3%	0%	0%	10%
1593	2%	0%	15%	0%
79410	1%	0%	20%	0%
Nalley Rd				
27896	0%	12%	5%	0%
Nebel St				
58749	8%	0%	9%	1%
Needleleaf Ln				
14813	19%	0%	16%	7%
53625	0%	51%	3%	7%
54387	0%	33%	2%	4%
58880	29%	0%	3%	28%
Nelson St				
79403	0%	15%	1%	0%
New Hampshire Ave				
3377	2%	0%	8%	19%
14392	3%	0%	15%	27%
14394	3%	0%	20%	19%
17448	2%	0%	21%	14%
30623	1%	0%	1%	11%
33319	2%	0%	11%	3%
33537	2%	0%	11%	3%
52521	0%	0%	10%	-4%
52748	1%	0%	1%	11%
Nicholson Ln				
5626	7%	0%	2%	9%
74133	7%	0%	10%	7%
Nicholson St				
80322	5%	0%	2%	16%
80324	4%	0%	11%	4%
80325	0%	19%	8%	3%
80326	0%	15%	1%	8%
80375	0%	18%	0%	3%
80376	0%	24%	0%	3%
80377	0%	13%	3%	1%
80378	0%	17%	3%	1%
Norbeck Rd				
22636	2%	0%	10%	6%
Northern Ave				
80546	0%	46%	3%	4%
80548	0%	39%	2%	2%
Northview Dr				
53612	0%	19%	3%	3%
53613	0%	12%	2%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
53614	0%	14%	2%	1%
67879	0%	24%	3%	3%
79568	0%	34%	0%	0%
Northwest Dr				
50386	0%	0%	11%	0%
Norwood Rd				
8722	2%	0%	10%	0%
Nottingham Rd				
40680	0%	48%	0%	0%
Odell Rd				
5506	6%	0%	0%	6%
15421	3%	0%	0%	-12%
64382	6%	0%	4%	4%
Oglethorpe St				
80308	11%	0%	1%	11%
80310	12%	0%	13%	4%
Old Alexandria Ferry Rd				
68084	3%	0%	8%	17%
68085	3%	0%	10%	13%
Old Baltimore Pike				
5496	5%	0%	-2%	-1%
14603	6%	0%	1%	-1%
22460	0%	13%	1%	1%
80231	6%	0%	1%	1%
Old Branch Ave				
2691	2%	0%	12%	-5%
35175	1%	0%	-11%	6%
Old Central Ave				
50632	2%	0%	15%	4%
60579	2%	0%	12%	7%
Old Columbia Pike				
8081	2%	0%	11%	0%
10597	6%	0%	7%	9%
29714	2%	0%	12%	1%
Old Crain Hwy				
42833	0%	11%	0%	2%
42839	9%	0%	9%	33%
51991	7%	0%	20%	10%
61965	0%	10%	2%	2%
61966	0%	13%	3%	2%
66892	10%	0%	3%	33%
66893	11%	0%	25%	4%
66894	12%	0%	25%	6%
71335	1%	0%	-2%	14%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
79543	0%	11%	2%	3%
79545	0%	14%	3%	2%
79546	0%	11%	0%	0%
79547	0%	27%	0%	0%
Old Georgetown Rd				
6494	4%	0%	-4%	-11%
6506	6%	0%	10%	2%
6864	2%	0%	10%	-22%
9698	2%	0%	10%	2%
10255	0%	200%	0%	0%
10256	0%	211%	0%	0%
10258	1%	0%	0%	-11%
11339	0%	0%	11%	-7%
22412	6%	0%	-9%	-16%
26036	0%	0%	0%	11%
26379	7%	0%	1%	14%
38235	2%	0%	13%	-14%
40139	4%	0%	3%	20%
41240	2%	0%	16%	5%
42687	1%	0%	-11%	13%
45005	2%	0%	1%	12%
52032	5%	0%	-4%	-14%
53654	6%	0%	8%	2%
61749	0%	0%	0%	11%
61752	2%	0%	-19%	-2%
65353	3%	0%	23%	10%
65355	1%	0%	6%	18%
66225	7%	0%	1%	9%
69461	3%	0%	4%	-28%
69462	3%	0%	7%	-18%
69463	5%	0%	-5%	-12%
69469	1%	0%	-3%	11%
70828	2%	0%	16%	5%
79310	2%	0%	4%	15%
79315	0%	31%	1%	4%
Old Gunpowder Rd				
1032	7%	0%	-1%	-3%
1629	8%	0%	-2%	-8%
14972	6%	0%	-10%	-8%
47280	7%	0%	-3%	-8%
72759	8%	0%	-3%	-7%
Old Largo Rd				
33567	8%	0%	8%	9%
48995	8%	0%	5%	7%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Old Laurel Bowie Rd				
4874	0%	12%	1%	4%
23128	0%	13%	1%	4%
40665	0%	13%	1%	4%
40666	0%	13%	1%	4%
Old Marlboro Pike				
19543	0%	24%	0%	2%
19544	0%	22%	0%	2%
19545	0%	12%	1%	0%
19546	0%	11%	1%	0%
19552	0%	12%	1%	0%
19554	0%	24%	0%	2%
19555	0%	17%	1%	0%
20762	0%	34%	0%	2%
23678	0%	34%	0%	2%
26332	0%	13%	0%	1%
58075	0%	12%	0%	-1%
64160	0%	17%	1%	0%
66045	0%	19%	2%	0%
74631	7%	0%	0%	26%
Old Md 28				
44661	3%	0%	12%	1%
73092	2%	0%	1%	13%
Olson St				
79780	0%	71%	0%	0%
79782	0%	46%	0%	0%
Omega Dr				
43487	6%	0%	11%	1%
45786	6%	0%	0%	8%
Owens Rd				
30863	0%	21%	1%	0%
72742	0%	11%	0%	1%
Owens Way				
42475	0%	20%	0%	0%
Oxon Run Dr				
79742	0%	10%	3%	2%
81360	0%	14%	5%	1%
81362	0%	11%	1%	6%
Paint Branch Pkwy				
7458	3%	0%	3%	15%
18411	3%	0%	15%	6%
Parkland Dr				
79379	5%	0%	0%	10%
79380	8%	0%	6%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
79381	9%	0%	5%	1%
Parklawn Dr				
7772	3%	0%	0%	15%
9705	4%	0%	14%	1%
25124	7%	0%	3%	9%
72157	7%	0%	5%	8%
74420	0%	12%	-1%	-1%
Patuxent River Rd				
19430	0%	19%	6%	2%
69204	0%	16%	1%	5%
Paul Pitcher Memorial Hwy				
62198	1%	0%	11%	2%
Pennsy Dr				
59314	0%	13%	0%	7%
80535	6%	0%	0%	18%
Pennsylvania Ave				
17212	0%	14%	-15%	-1%
58364	3%	0%	0%	21%
66994	1%	0%	13%	0%
67353	2%	0%	-14%	0%
76987	0%	40%	0%	0%
Pepper Mill Dr				
79844	0%	10%	2%	0%
Persimmon Tree Ln				
1236	8%	0%	0%	22%
25335	0%	14%	5%	1%
62940	9%	0%	20%	1%
Persimmon Tree Rd				
335	9%	0%	0%	11%
8638	9%	0%	0%	11%
Philadelphia Ave				
13233	4%	0%	13%	5%
53909	4%	0%	2%	17%
Pickering Cir				
21127	0%	18%	1%	3%
Piney Meetinghouse Rd				
3800	10%	0%	2%	24%
5391	0%	11%	1%	4%
44573	14%	0%	2%	20%
44574	19%	0%	18%	3%
57557	14%	0%	21%	4%
Pleasant Colony Dr				
24930	2%	0%	9%	13%
33231	2%	0%	17%	4%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Pleasant Rd				
48702	2%	0%	0%	17%
Plymouth Ct				
75913	0%	23%	1%	1%
75914	0%	39%	0%	5%
79560	0%	39%	0%	5%
79561	0%	23%	1%	1%
Pointer Ridge Dr				
62031	0%	19%	0%	7%
75911	0%	23%	1%	1%
75912	0%	39%	0%	5%
Polk St				
80534	0%	28%	0%	2%
Poultry Rd				
22470	7%	0%	1%	-1%
Powder Mill Rd				
6307	3%	0%	21%	5%
6398	8%	0%	-5%	0%
23629	6%	0%	0%	5%
23630	6%	0%	0%	5%
24453	5%	0%	12%	10%
32642	6%	0%	13%	13%
43805	0%	10%	0%	0%
49722	10%	0%	9%	26%
60495	8%	0%	15%	18%
63303	8%	0%	-5%	0%
63304	3%	0%	1%	11%
64380	8%	0%	-5%	0%
67296	11%	0%	43%	33%
Prince Frederick Rd				
12897	1%	0%	-2%	11%
Princess Garden Pkwy				
25713	5%	0%	2%	14%
30333	9%	0%	15%	14%
Quarry Ave				
32806	0%	20%	4%	0%
65403	0%	20%	4%	0%
Queen Anne Bridge Rd				
19429	0%	19%	6%	2%
69203	0%	16%	1%	5%
Queens Chapel Rd				
2547	5%	0%	1%	13%
14078	0%	17%	1%	0%
14080	0%	14%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
14083	4%	0%	12%	3%
14085	5%	0%	1%	13%
60198	4%	0%	12%	3%
80363	0%	13%	1%	5%
80365	0%	15%	6%	3%
Quince Orchard Rd				
65310	2%	0%	0%	10%
68811	2%	0%	0%	14%
Quintana St				
2550	0%	11%	1%	0%
Raljon Rd				
21549	0%	21%	2%	3%
32118	0%	21%	4%	3%
46657	12%	0%	14%	51%
47006	16%	0%	3%	40%
51278	17%	0%	28%	14%
51279	0%	18%	15%	18%
Randolph Rd				
6021	3%	0%	3%	15%
10855	2%	0%	1%	11%
22266	2%	0%	12%	-1%
22271	2%	0%	12%	8%
22272	2%	0%	11%	7%
35857	3%	0%	13%	8%
39566	2%	0%	12%	-1%
53730	3%	0%	16%	11%
63227	3%	0%	7%	10%
70823	3%	0%	4%	15%
72708	3%	0%	18%	4%
74690	3%	0%	10%	4%
Redskins Rd				
32119	0%	18%	3%	4%
65823	0%	19%	4%	3%
Reece Rd				
77876	0%	130%	0%	0%
Rhode Island Ave				
4366	0%	24%	0%	1%
11584	0%	15%	4%	7%
63298	7%	0%	0%	6%
63299	0%	47%	3%	1%
Riggs Rd				
22854	2%	0%	8%	11%
51485	4%	0%	11%	2%
71476	4%	0%	2%	15%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Ritchie Marlboro Rd				
3546	0%	38%	2%	0%
12613	2%	0%	2%	12%
14684	0%	407%	1%	-15%
14685	12%	0%	-9%	-47%
15879	0%	46%	1%	3%
16802	0%	11%	-5%	-1%
16803	4%	0%	-13%	-9%
16804	7%	0%	-21%	-19%
17748	2%	0%	31%	0%
20338	0%	17%	1%	5%
33562	6%	0%	-4%	-1%
33900	0%	9%	-19%	-2%
Ritchie Rd				
11875	0%	25%	8%	6%
12124	0%	12%	10%	5%
12126	24%	0%	25%	6%
12127	0%	18%	2%	9%
21191	0%	33%	7%	6%
21906	9%	0%	34%	23%
25226	10%	0%	5%	47%
26015	14%	0%	1%	13%
27108	0%	31%	2%	5%
32128	11%	0%	4%	21%
32948	0%	24%	2%	13%
34151	11%	0%	2%	24%
34152	23%	0%	18%	15%
34158	25%	0%	15%	13%
34574	0%	16%	1%	12%
48262	0%	24%	2%	6%
58368	0%	14%	1%	13%
58370	24%	0%	18%	7%
72453	0%	12%	14%	11%
72729	18%	0%	28%	23%
Ritz Way				
3541	15%	0%	-1%	-19%
64400	14%	0%	-11%	-7%
River Rd				
325	23%	0%	4%	42%
337	2%	0%	-5%	-17%
1235	6%	0%	4%	28%
6220	7%	0%	6%	38%
6523	0%	20%	3%	0%
6554	3%	0%	-13%	-7%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
12874	0%	0%	1%	16%
12875	0%	0%	1%	23%
12876	0%	0%	23%	-2%
16022	3%	0%	-2%	-16%
16710	2%	0%	-2%	-12%
19047	3%	0%	-15%	-10%
24380	10%	0%	28%	1%
34817	0%	0%	17%	-1%
34977	2%	0%	-9%	-17%
34978	2%	0%	-5%	-17%
37137	0%	219%	0%	3%
37546	5%	0%	-11%	-41%
40422	9%	0%	28%	9%
40426	2%	0%	21%	2%
46908	4%	0%	-8%	-23%
52783	3%	0%	-15%	-10%
53732	2%	0%	-4%	-15%
57944	8%	0%	-44%	-36%
60084	5%	0%	-24%	-8%
72359	3%	0%	-25%	7%
Robert Crain Hwy				
29527	0%	0%	11%	0%
Rock Spring Dr				
82	0%	17%	7%	1%
Rockledge Dr				
59056	0%	20%	0%	0%
Rockville Pike				
91	1%	0%	10%	-1%
393	1%	0%	0%	13%
394	2%	0%	0%	13%
4513	5%	0%	0%	16%
10170	2%	0%	2%	11%
11362	1%	0%	11%	3%
16681	6%	0%	4%	6%
21971	1%	0%	2%	19%
30180	3%	0%	18%	3%
32528	0%	0%	13%	-2%
33206	1%	0%	10%	1%
49715	2%	0%	-1%	11%
52037	1%	0%	14%	0%
56518	1%	0%	16%	0%
59060	6%	0%	22%	13%
59061	3%	0%	1%	25%
66667	0%	0%	3%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
69471	0%	0%	4%	11%
Rocky Ridge Rd				
43359	0%	10%	0%	0%
Rollins Ave				
13828	0%	11%	0%	4%
24569	0%	24%	1%	1%
34570	0%	21%	1%	1%
S Frederick Ave				
330	1%	0%	0%	15%
11340	1%	0%	15%	1%
59948	0%	2%	33%	6%
64528	0%	10%	8%	1%
72424	1%	0%	15%	1%
73180	2%	0%	15%	0%
S Glen Rd				
26364	5%	0%	15%	1%
46642	6%	0%	1%	16%
S Keysville Rd				
5901	0%	13%	0%	1%
43644	0%	13%	0%	0%
55814	0%	26%	0%	1%
S Mountain Rd				
81548	2%	0%	-12%	-1%
81550	3%	0%	-2%	-12%
S Osborne Rd				
42837	2%	0%	0%	-10%
62287	4%	0%	-13%	0%
62593	4%	0%	-16%	0%
62594	4%	0%	-17%	0%
66900	3%	0%	-12%	0%
74347	0%	11%	0%	1%
Sands Rd				
5548	0%	18%	3%	1%
8921	0%	20%	4%	2%
13234	0%	20%	5%	2%
25764	0%	11%	0%	2%
26274	0%	14%	0%	3%
26591	0%	16%	0%	0%
39919	0%	37%	0%	0%
69437	0%	17%	1%	4%
Sansbury Rd				
20736	0%	9%	9%	13%
20738	0%	5%	11%	3%
65181	0%	15%	4%	5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Scott Dr				
59148	5%	0%	11%	0%
Seat Pleasant Dr				
26310	0%	11%	3%	1%
49542	0%	13%	2%	2%
Selkirk Dr				
336	2%	0%	-2%	11%
18664	2%	0%	10%	0%
Seneca Rd				
66625	0%	13%	2%	3%
66626	0%	13%	1%	4%
Serpentine Way				
19665	5%	0%	19%	7%
56055	2%	0%	8%	14%
Seven Locks Rd				
1584	3%	0%	23%	5%
11106	6%	0%	17%	43%
12872	10%	0%	-6%	-7%
18654	1%	0%	13%	-4%
21958	7%	0%	17%	44%
25334	2%	0%	2%	13%
27042	13%	0%	0%	15%
53733	7%	0%	6%	28%
54112	2%	0%	-3%	16%
57932	10%	0%	28%	12%
59358	6%	0%	19%	22%
59359	4%	0%	14%	18%
59364	7%	0%	23%	22%
69007	9%	0%	-6%	-2%
73491	2%	0%	-2%	10%
Shady Grove Rd				
2730	1%	0%	0%	10%
5714	2%	0%	17%	1%
7469	12%	0%	9%	3%
15500	11%	0%	0%	20%
33503	2%	0%	25%	1%
35415	2%	0%	17%	1%
39668	1%	0%	23%	8%
41187	2%	0%	0%	18%
45007	1%	0%	0%	12%
Shady Grove Rd Exd				
33947	0%	16%	0%	2%
Shepherds Crook Ct				
26672	18%	0%	14%	3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
47236	7%	0%	0%	12%
Sheriff Rd				
23452	4%	0%	18%	2%
24265	5%	0%	1%	19%
Soil Conservation Rd				
9132	14%	0%	8%	7%
16010	15%	0%	8%	7%
24505	15%	0%	8%	7%
32202	14%	0%	7%	6%
40669	14%	0%	7%	6%
61442	14%	0%	7%	6%
Solomons Island Rd N				
69695	0%	12%	0%	0%
South Dr				
19664	0%	25%	15%	10%
53158	0%	24%	12%	17%
Southlawn Ln				
6475	5%	0%	1%	6%
54038	6%	0%	9%	1%
74405	5%	0%	6%	0%
Spr Wheel Ln				
35299	2%	0%	0%	11%
55055	8%	0%	11%	5%
Springfield Rd				
6404	5%	0%	2%	5%
6405	6%	0%	4%	7%
21267	6%	0%	11%	15%
21664	0%	10%	1%	1%
23634	6%	0%	11%	15%
25712	0%	11%	1%	1%
52261	6%	0%	14%	20%
63854	6%	0%	14%	20%
St Barnabas Rd				
13616	6%	0%	17%	7%
14456	3%	0%	13%	0%
14457	3%	0%	13%	0%
18933	0%	0%	-2%	15%
20453	1%	0%	3%	-17%
24864	3%	0%	11%	0%
29629	2%	0%	17%	3%
30067	1%	0%	-5%	11%
30068	5%	0%	5%	13%
30657	1%	0%	-19%	-1%
34560	1%	0%	24%	-2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
39194	5%	0%	28%	9%
43154	3%	0%	13%	0%
71267	5%	0%	5%	20%
St Clair Dr				
79781	0%	71%	0%	0%
79783	0%	46%	0%	0%
St Marys Ave				
37299	0%	11%	-1%	0%
Stardrift Dr				
3899	0%	200%	0%	0%
9150	0%	38%	0%	0%
State Hwy 109				
274	5%	0%	-2%	-1%
State Hwy 115				
1844	2%	0%	14%	4%
74960	2%	0%	7%	12%
State Hwy 117				
13294	0%	2%	-10%	-19%
State Hwy 124				
2637	0%	3%	0%	-17%
State Hwy 185				
5276	2%	0%	1%	14%
5278	1%	0%	6%	14%
10338	4%	0%	11%	0%
19662	2%	0%	1%	19%
22192	2%	0%	4%	12%
34970	0%	0%	-1%	14%
41596	1%	0%	3%	12%
44970	2%	0%	0%	15%
45006	7%	0%	0%	16%
54823	1%	0%	10%	2%
State Hwy 189				
933	3%	0%	3%	18%
4153	7%	0%	0%	15%
5992	19%	0%	20%	24%
5995	7%	0%	3%	23%
5996	10%	0%	20%	11%
8007	6%	0%	1%	31%
8008	7%	0%	3%	23%
10839	1%	0%	11%	3%
11110	1%	0%	-1%	-12%
25331	1%	0%	-5%	12%
26096	7%	0%	15%	27%
30182	1%	0%	12%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
32245	10%	0%	20%	11%
32517	17%	0%	14%	4%
32602	1%	0%	-4%	10%
37768	6%	0%	1%	15%
43475	0%	4%	0%	32%
59430	1%	0%	-7%	12%
59433	1%	0%	0%	13%
59435	2%	0%	5%	11%
59439	5%	0%	9%	1%
59440	5%	0%	1%	28%
72658	4%	0%	18%	2%
75148	1%	0%	19%	-2%
State Hwy 190				
932	3%	0%	3%	22%
936	4%	0%	2%	18%
5390	0%	12%	1%	4%
5392	0%	13%	2%	1%
6003	0%	0%	1%	11%
6569	2%	0%	26%	3%
22404	1%	0%	19%	2%
24826	1%	0%	0%	11%
30170	9%	0%	4%	2%
31010	2%	0%	0%	10%
53734	1%	0%	2%	28%
55052	7%	0%	11%	7%
55056	0%	15%	-1%	5%
68996	0%	0%	1%	11%
72148	8%	0%	16%	12%
75273	3%	0%	0%	11%
75274	7%	0%	4%	3%
State Hwy 191				
34647	1%	0%	10%	11%
34648	1%	0%	11%	10%
40090	2%	0%	10%	13%
53535	2%	0%	7%	14%
State Hwy 192				
53659	1%	0%	11%	3%
State Hwy 193				
14146	3%	0%	-19%	-9%
16543	0%	6%	12%	2%
18156	5%	0%	1%	10%
18751	11%	0%	2%	49%
18752	7%	0%	22%	5%
24752	10%	0%	24%	30%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
25725	0%	39%	-2%	-4%
29412	6%	0%	13%	22%
34862	3%	0%	-17%	-5%
48991	0%	10%	3%	4%
54494	6%	0%	1%	12%
64154	13%	0%	3%	25%
64396	2%	0%	20%	1%
State Hwy 197				
3355	3%	0%	4%	11%
23918	1%	0%	8%	12%
23920	3%	0%	10%	17%
25859	3%	0%	3%	10%
73866	0%	2%	0%	-11%
State Hwy 200				
10593	0%	200%	0%	0%
20383	0%	11%	1%	2%
21693	0%	15%	10%	1%
23776	0%	10%	1%	13%
32507	0%	16%	0%	-1%
39012	0%	10%	33%	2%
51891	0%	11%	6%	2%
51892	0%	11%	6%	2%
51894	0%	11%	6%	2%
51896	0%	11%	6%	2%
51898	0%	14%	2%	1%
51899	0%	11%	3%	1%
52142	0%	11%	3%	1%
52145	0%	15%	2%	1%
52146	0%	15%	10%	1%
52147	0%	15%	10%	1%
52148	0%	16%	2%	1%
52150	0%	12%	4%	1%
52151	0%	14%	0%	0%
52152	0%	10%	23%	2%
52153	0%	10%	23%	2%
52398	2%	0%	25%	-7%
52399	0%	28%	0%	1%
52400	0%	11%	1%	2%
52401	0%	14%	1%	8%
52402	0%	14%	1%	8%
52403	0%	14%	1%	8%
52405	0%	14%	0%	3%
52406	0%	11%	1%	30%
52407	0%	11%	1%	30%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
58233	0%	11%	1%	30%
58512	0%	10%	1%	11%
59196	0%	15%	10%	1%
59198	0%	14%	1%	2%
59199	0%	10%	1%	13%
60800	0%	11%	6%	2%
66279	0%	11%	6%	2%
66280	0%	10%	33%	2%
71511	0%	10%	33%	2%
71515	0%	11%	1%	2%
71516	0%	14%	1%	8%
State Hwy 201				
8859	6%	0%	7%	15%
15622	5%	0%	10%	22%
15703	6%	0%	14%	16%
19673	2%	0%	1%	10%
26995	6%	0%	5%	9%
46030	2%	0%	1%	10%
State Hwy 210				
3379	0%	2%	48%	18%
29808	0%	24%	0%	-1%
30865	0%	3%	-11%	0%
35288	2%	0%	14%	3%
79718	2%	0%	15%	0%
State Hwy 212				
4869	5%	0%	2%	16%
10818	6%	0%	-10%	-8%
15115	5%	0%	2%	20%
21812	5%	0%	15%	6%
23280	6%	0%	15%	2%
28570	0%	40%	-7%	-1%
29632	13%	0%	-29%	-13%
60459	6%	0%	2%	8%
64374	9%	0%	3%	0%
71473	6%	0%	20%	3%
71475	5%	0%	9%	1%
75521	17%	0%	-3%	-35%
75522	15%	0%	-8%	-32%
75526	0%	14%	-11%	-5%
75527	11%	0%	-13%	-18%
75535	0%	12%	-8%	-3%
75536	0%	13%	-1%	-7%
State Hwy 214				
24280	2%	0%	15%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
64988	2%	0%	17%	3%
72179	2%	0%	0%	10%
79810	2%	0%	0%	10%
State Hwy 223				
61975	0%	37%	-1%	0%
67203	0%	120%	0%	0%
State Hwy 28				
768	3%	0%	12%	1%
5719	2%	0%	15%	0%
6945	2%	0%	0%	16%
6946	2%	0%	17%	2%
7961	3%	0%	18%	1%
35549	1%	0%	3%	14%
72810	2%	0%	0%	13%
73091	2%	0%	1%	13%
79432	3%	0%	18%	1%
79433	3%	0%	12%	1%
79434	2%	0%	-1%	13%
State Hwy 295				
19985	0%	52%	0%	0%
State Hwy 301				
35616	0%	0%	12%	-2%
52744	0%	0%	17%	0%
60711	1%	0%	15%	0%
76044	0%	0%	13%	-2%
77044	0%	0%	11%	-2%
State Hwy 32				
9530	0%	11%	0%	0%
State Hwy 320				
1539	2%	0%	1%	21%
5268	1%	0%	13%	2%
19446	6%	0%	28%	11%
34410	1%	0%	12%	4%
34419	2%	0%	17%	1%
40204	1%	0%	14%	3%
42319	5%	0%	17%	3%
43759	2%	0%	1%	21%
49380	6%	0%	28%	11%
50741	2%	0%	17%	2%
53920	9%	0%	9%	5%
State Hwy 332				
33474	0%	21%	1%	1%
64995	5%	0%	34%	15%
72723	0%	17%	1%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
72726	5%	0%	7%	29%
State Hwy 355				
25125	2%	0%	0%	15%
74141	0%	0%	11%	-1%
79409	2%	0%	0%	15%
79411	0%	0%	11%	-1%
State Hwy 381				
62717	0%	10%	-1%	0%
State Hwy 382				
12128	5%	0%	7%	12%
33275	4%	0%	15%	7%
42109	0%	31%	0%	0%
60701	0%	12%	0%	-1%
State Hwy 390				
5352	6%	0%	12%	7%
42318	7%	0%	11%	7%
State Hwy 4				
18768	0%	17%	1%	8%
46381	2%	0%	0%	10%
71793	0%	12%	0%	0%
State Hwy 410				
11291	2%	0%	1%	12%
12114	4%	0%	11%	24%
18940	5%	0%	32%	19%
23702	4%	0%	14%	16%
29393	0%	17%	1%	1%
50984	1%	0%	0%	12%
64676	2%	0%	13%	3%
80533	10%	0%	0%	17%
State Hwy 414				
5812	6%	0%	19%	0%
5813	4%	0%	-1%	13%
5814	4%	0%	0%	20%
29179	0%	11%	0%	-1%
46200	5%	0%	12%	2%
58052	3%	0%	13%	0%
State Hwy 424				
53451	0%	0%	2%	12%
State Hwy 450				
231	0%	0%	-16%	0%
8863	4%	0%	-1%	-22%
9463	2%	0%	12%	1%
12056	2%	0%	0%	17%
16478	1%	0%	10%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
18379	0%	11%	0%	0%
19071	4%	0%	-1%	-10%
19291	6%	0%	13%	2%
25803	2%	0%	-18%	1%
30634	2%	0%	2%	10%
32645	5%	0%	11%	3%
34551	1%	0%	-19%	0%
38892	6%	0%	0%	7%
45302	0%	11%	0%	2%
47338	0%	0%	11%	0%
51222	4%	0%	1%	13%
54497	4%	0%	-1%	-12%
55301	6%	0%	0%	8%
67173	4%	0%	11%	3%
67174	2%	0%	1%	13%
67179	4%	0%	11%	4%
67474	6%	0%	1%	20%
67475	4%	0%	0%	15%
80439	2%	0%	0%	16%
80440	1%	0%	0%	13%
State Hwy 458				
10310	6%	0%	3%	9%
13615	6%	0%	22%	16%
13827	3%	0%	15%	6%
13829	4%	0%	1%	18%
21545	6%	0%	7%	8%
24274	5%	0%	6%	11%
27576	5%	0%	7%	14%
30069	7%	0%	9%	31%
30070	0%	0%	16%	-3%
49842	0%	0%	-2%	10%
State Hwy 497				
55476	0%	75%	0%	0%
State Hwy 5				
12092	0%	0%	-2%	17%
14380	3%	0%	-1%	-17%
16811	2%	0%	-11%	-4%
17221	0%	7%	83%	1%
43743	1%	0%	11%	2%
43744	0%	0%	0%	11%
44340	0%	6%	-8%	-11%
50641	5%	0%	-22%	-2%
56257	6%	0%	-3%	-37%
61210	0%	12%	0%	-1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
64341	2%	0%	-7%	-20%
71271	1%	0%	11%	2%
73816	0%	0%	0%	11%
State Hwy 500				
18834	3%	0%	11%	2%
34135	4%	0%	11%	2%
80321	3%	0%	1%	10%
80323	3%	0%	11%	2%
State Hwy 535				
17222	0%	15%	-9%	-12%
State Hwy 586				
6173	2%	0%	11%	10%
13667	2%	0%	0%	10%
37131	2%	0%	2%	11%
46904	2%	0%	12%	7%
69702	2%	0%	5%	14%
79354	1%	0%	8%	11%
State Hwy 614				
47832	2%	0%	0%	10%
53280	2%	0%	-24%	-12%
64814	1%	0%	-1%	-11%
65347	0%	0%	-6%	-12%
65352	2%	0%	2%	11%
State Hwy 650				
11281	1%	0%	1%	11%
14389	2%	0%	11%	15%
32606	0%	10%	0%	1%
33921	2%	0%	-13%	-3%
34968	3%	0%	14%	7%
37157	2%	0%	9%	11%
43761	0%	14%	0%	-1%
44551	0%	135%	0%	0%
54296	2%	0%	11%	3%
60127	2%	0%	14%	6%
66127	0%	2%	-2%	19%
State Hwy 725				
15050	2%	0%	21%	0%
21134	3%	0%	13%	4%
21136	4%	0%	11%	18%
21913	4%	0%	0%	18%
21914	8%	0%	1%	55%
23976	5%	0%	33%	7%
33218	3%	0%	10%	18%
65387	4%	0%	15%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
State Hwy 787				
4514	9%	0%	4%	-1%
State Hwy 953				
30758	0%	11%	-2%	0%
State Hwy 97				
1238	0%	0%	-2%	12%
2045	2%	0%	0%	12%
4545	2%	0%	0%	19%
8547	2%	0%	2%	12%
13659	1%	0%	16%	1%
13912	1%	0%	11%	0%
16426	1%	0%	-1%	14%
21032	1%	0%	3%	14%
33204	2%	0%	15%	0%
34969	2%	0%	-2%	18%
36589	0%	0%	-1%	11%
44262	1%	0%	11%	-2%
56379	1%	0%	11%	1%
57876	2%	0%	0%	15%
57884	2%	0%	0%	17%
57885	1%	0%	13%	0%
59947	1%	0%	-2%	16%
63281	2%	0%	0%	11%
73505	3%	0%	13%	1%
74957	2%	0%	12%	1%
Suitland Pkwy				
11880	2%	0%	17%	4%
54077	2%	0%	0%	20%
Toledo Rd				
25160	0%	11%	0%	-1%
Town Square Dr				
27403	0%	75%	0%	0%
Travilah Rd				
44562	2%	0%	2%	10%
69036	5%	0%	8%	1%
73351	6%	0%	3%	0%
75271	5%	0%	8%	1%
Tuckerman Ln				
1577	8%	0%	17%	0%
2345	7%	0%	0%	21%
19840	10%	0%	29%	0%
59656	8%	0%	1%	10%
72150	6%	0%	7%	0%
Tuckerman St				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
60435	6%	0%	6%	5%
Turkey Branch Pkwy				
79353	1%	0%	14%	6%
79355	2%	0%	8%	11%
79372	3%	0%	0%	13%
79374	8%	0%	9%	2%
Turkey Foot Rd				
79460	0%	12%	0%	1%
Tuscarora Rd				
6968	4%	0%	1%	12%
27366	3%	0%	1%	12%
Tuxedo Rd				
80029	0%	71%	0%	1%
Twinbrook Pkwy				
69706	4%	0%	12%	1%
Underwood St				
60199	3%	0%	12%	16%
63293	3%	0%	6%	13%
University Blvd				
2763	4%	0%	12%	6%
3639	4%	0%	1%	13%
20848	1%	0%	0%	10%
25720	3%	0%	0%	12%
64057	1%	0%	10%	1%
University Blvd E				
1690	2%	0%	-10%	1%
9539	2%	0%	-10%	1%
11036	0%	6%	-12%	-13%
14391	3%	0%	22%	5%
27863	2%	0%	-7%	12%
28808	3%	0%	3%	19%
34422	4%	0%	2%	-12%
37155	2%	0%	-10%	1%
53919	2%	0%	-13%	3%
72913	0%	0%	-4%	11%
University Blvd W				
5277	1%	0%	0%	15%
8290	1%	0%	10%	0%
13913	2%	0%	0%	13%
33205	2%	0%	10%	12%
35298	3%	0%	3%	19%
36502	3%	0%	1%	15%
43767	2%	0%	0%	10%
Urbana Ln				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
65433	0%	12%	2%	9%
US Hwy 1 Alt				
8866	3%	0%	18%	4%
16225	8%	0%	10%	11%
16226	6%	0%	0%	14%
72430	4%	0%	1%	20%
US Hwy 15				
552	2%	0%	4%	19%
17143	3%	0%	22%	8%
24438	2%	0%	4%	19%
45438	3%	0%	22%	8%
46320	0%	19%	0%	0%
54995	1%	0%	11%	7%
70525	0%	20%	0%	0%
US Hwy 29				
7766	6%	0%	-23%	-5%
10603	7%	0%	-11%	-11%
16318	2%	0%	-14%	11%
25430	0%	200%	0%	0%
37891	0%	200%	-41%	-86%
40501	1%	0%	5%	10%
74687	2%	0%	-8%	-15%
US Hwy 301				
42183	2%	0%	0%	25%
US Hwy 50				
11588	6%	0%	-15%	-53%
11589	2%	0%	-1%	-15%
12862	2%	0%	0%	22%
13625	0%	12%	-1%	-5%
16983	0%	0%	0%	11%
18390	1%	0%	0%	11%
19472	0%	2%	-1%	-13%
20070	0%	0%	-1%	13%
26125	0%	200%	0%	0%
27731	1%	0%	-1%	-12%
28617	0%	4%	0%	18%
33283	1%	0%	-1%	-16%
37585	0%	3%	0%	-17%
38255	0%	0%	0%	14%
40690	0%	0%	0%	13%
43505	0%	0%	0%	15%
43513	0%	20%	0%	0%
47315	1%	0%	0%	25%
48338	0%	18%	0%	-2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
54835	1%	0%	-1%	-16%
56249	0%	0%	0%	13%
59861	0%	1%	0%	-12%
65196	1%	0%	-1%	-16%
68134	0%	39%	0%	0%
73586	5%	0%	-5%	-51%
73590	0%	3%	0%	-17%
73853	0%	17%	0%	0%
Valley Park Rd				
79843	0%	13%	1%	0%
79864	0%	11%	0%	1%
Veirs Dr				
36822	0%	11%	1%	5%
44952	0%	10%	2%	2%
Virginia Manor Rd				
52208	0%	14%	-1%	-10%
54537	0%	12%	-11%	-2%
W Cedar Ln				
627	0%	10%	2%	1%
61750	0%	16%	2%	2%
W City Ave				
3274	3%	0%	10%	8%
3278	3%	0%	7%	10%
4008	0%	0%	-5%	-14%
4009	0%	0%	-5%	-11%
4450	4%	0%	12%	20%
9461	4%	0%	12%	33%
10291	3%	0%	12%	5%
13354	0%	17%	-40%	-16%
15935	7%	0%	13%	2%
16179	3%	0%	5%	23%
16327	2%	0%	12%	6%
16519	2%	0%	5%	11%
16746	0%	28%	4%	2%
16930	2%	0%	4%	-16%
19813	4%	0%	7%	11%
20085	0%	0%	-5%	-14%
22587	4%	0%	10%	14%
29926	2%	0%	11%	5%
32201	8%	0%	2%	6%
33798	2%	0%	9%	12%
33812	3%	0%	4%	20%
34762	1%	0%	12%	9%
34763	1%	0%	11%	6%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
39261	4%	0%	3%	14%
40142	4%	0%	45%	18%
45356	0%	0%	-34%	-14%
54071	11%	0%	16%	59%
55249	5%	0%	6%	7%
59042	0%	13%	-28%	-14%
60201	3%	0%	10%	19%
60753	2%	0%	9%	11%
60756	3%	0%	22%	11%
63579	3%	0%	9%	11%
64097	4%	0%	13%	5%
64671	2%	0%	8%	15%
80253	2%	0%	9%	15%
80254	2%	0%	10%	11%
80255	2%	0%	13%	16%
80256	2%	0%	9%	15%
80282	2%	0%	4%	12%
W Diamond Ave				
2626	0%	2%	-12%	-31%
68728	0%	3%	0%	-20%
W Edmonston Dr				
9699	1%	0%	15%	0%
59940	1%	0%	0%	11%
W Jefferson St				
25212	2%	0%	5%	15%
74140	2%	0%	18%	10%
W Montgomery Ave				
85	2%	0%	18%	10%
86	1%	0%	18%	4%
87	2%	0%	5%	15%
851	0%	205%	52%	36%
46468	5%	0%	-9%	-28%
67682	0%	284%	18%	9%
68723	0%	220%	14%	96%
70134	2%	0%	-22%	-2%
70362	0%	207%	9%	13%
71016	0%	0%	0%	25%
75469	5%	0%	-14%	-35%
Walker Mill Rd				
11873	3%	0%	12%	16%
27103	4%	0%	14%	21%
Washington National Pike				
547	0%	15%	31%	0%
6216	1%	0%	1%	27%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
18073	0%	0%	0%	18%
18081	2%	0%	-1%	-20%
19191	0%	314%	13%	11%
25427	0%	0%	17%	0%
28054	0%	250%	-19%	76%
29079	1%	0%	-3%	-13%
37135	1%	0%	0%	28%
42330	2%	0%	1%	18%
46981	0%	4%	0%	15%
48741	0%	0%	17%	0%
49366	0%	277%	44%	45%
58028	0%	525%	16%	14%
58029	0%	277%	-20%	-19%
61724	0%	277%	1%	2%
61725	1%	0%	9%	52%
65632	0%	3%	0%	-20%
66775	0%	325%	17%	15%
66778	0%	325%	8%	6%
66779	0%	200%	0%	0%
66780	0%	314%	-1%	-3%
66782	0%	275%	24%	-25%
66786	0%	275%	60%	12%
67078	0%	265%	52%	4%
67371	0%	266%	-10%	-8%
69883	1%	0%	9%	52%
69886	0%	0%	1%	27%
70364	0%	0%	0%	19%
70604	3%	0%	1%	73%
72714	2%	0%	-8%	-10%
Watkins Park Dr				
12618	0%	11%	2%	3%
19148	0%	11%	2%	3%
19149	0%	12%	2%	4%
73256	0%	12%	2%	4%
Wayne Ave				
33739	7%	0%	8%	5%
34651	8%	0%	6%	3%
Wells Pkwy E				
25858	3%	0%	10%	15%
45351	3%	0%	8%	11%
Westbrook Dr				
81357	0%	12%	1%	1%
Westlake Ter				
6860	0%	23%	3%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
67075	0%	200%	0%	0%
69881	0%	24%	2%	4%
Westphalia Rd				
33839	6%	0%	-4%	-1%
46203	10%	0%	1%	16%
59503	0%	12%	1%	9%
67688	0%	10%	0%	1%
White House Rd				
12614	0%	25%	2%	5%
16805	0%	12%	4%	1%
21522	0%	16%	1%	12%
23692	0%	17%	1%	5%
49394	0%	22%	-7%	-3%
58656	0%	22%	-1%	-6%
71624	0%	18%	1%	2%
Whitfield Chapel Rd				
54373	0%	15%	3%	4%
63860	0%	13%	4%	3%
Wilburn Dr				
22836	0%	29%	4%	0%
32811	0%	14%	1%	0%
William Beanes Rd				
64428	0%	17%	0%	1%
66902	0%	25%	0%	1%
Willow Hill Dr				
75917	0%	12%	0%	3%
75918	0%	17%	6%	0%
Windom Rd				
46983	5%	0%	0%	12%
Winfields Ln				
44824	0%	11%	0%	0%
62195	0%	11%	1%	1%
Wisconsin Ave				
5661	1%	0%	1%	13%
9662	1%	0%	13%	3%
52787	0%	12%	0%	0%
70774	3%	0%	12%	3%
79293	2%	0%	11%	13%
79294	2%	0%	5%	10%
79295	3%	0%	15%	15%
Woodbine St				
79274	0%	13%	0%	1%
79275	0%	13%	1%	0%
Woodstream Dr				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
21279	3%	0%	0%	-12%
21280	0%	200%	0%	0%
Woodview Dr				
68469	0%	18%	1%	1%
Woodville Rd				
12899	6%	0%	-1%	-1%
Woodyard Rd				
57849	4%	0%	21%	26%
62024	3%	0%	10%	16%
66528	4%	0%	20%	26%
68086	3%	0%	10%	16%
Wootton Pkwy				
685	3%	0%	1%	11%
9700	1%	0%	14%	-5%
26676	2%	0%	21%	0%
38951	1%	0%	12%	-3%
46465	5%	0%	21%	0%
52939	2%	0%	1%	12%
59149	5%	0%	21%	0%
59429	1%	0%	19%	-1%
59431	0%	0%	-12%	12%
72649	1%	0%	10%	-1%
Yellowwood Ln				
4743	19%	0%	18%	8%
59325	31%	0%	5%	29%
Virginia				
14th St N				
13169	0%	12%	0%	3%
17th St N				
80990	0%	14%	0%	0%
81003	0%	18%	0%	0%
18th St N				
81059	0%	17%	0%	0%
18th St S				
80861	0%	11%	0%	1%
80862	0%	11%	0%	1%
20th Pl N				
77366	0%	15%	0%	0%
20th St N				
77365	0%	14%	0%	0%
20th St S				
21051	0%	65%	0%	0%
28719	0%	14%	0%	0%
22nd St N				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
77385	0%	19%	-1%	0%
23rd Rd N				
77403	0%	43%	0%	0%
23rd St S				
59242	0%	20%	0%	0%
68250	0%	102%	0%	0%
24th St N				
77404	0%	48%	0%	0%
25th St N				
15872	0%	1%	-18%	3%
15873	0%	1%	-12%	-9%
26th St N				
28967	0%	12%	0%	0%
51204	0%	14%	1%	1%
31st St S				
248	0%	11%	0%	7%
80807	0%	13%	0%	4%
6th St N				
81593	0%	13%	1%	0%
8th St S				
80873	0%	12%	0%	3%
Army Navy Dr				
36643	0%	34%	0%	0%
Backlick Rd				
56886	8%	0%	0%	0%
Baron Rd				
26847	0%	14%	-2%	-1%
Birch Rd				
9261	6%	0%	15%	13%
31938	3%	0%	5%	13%
Capital Beltway				
67	1%	0%	-20%	5%
69	0%	2%	-18%	-15%
75	0%	1%	-18%	0%
977	0%	19%	-7%	-1%
1270	0%	2%	-18%	-15%
1272	0%	22%	0%	1%
16670	0%	21%	-3%	-5%
16671	0%	200%	-8%	-21%
16674	3%	0%	17%	7%
17398	0%	30%	11%	16%
17401	5%	0%	-14%	-2%
18216	1%	0%	-20%	5%
21180	0%	2%	0%	-12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
21561	0%	18%	-3%	-17%
22163	0%	15%	-13%	-89%
24084	7%	0%	39%	74%
28377	0%	2%	5%	-18%
29311	0%	26%	-13%	-6%
33646	0%	5%	46%	97%
33976	0%	806%	54%	1%
34950	0%	33%	0%	5%
38710	0%	20%	0%	1%
39068	0%	10%	0%	0%
39073	0%	2%	28%	9%
39075	0%	1%	3%	-12%
39078	0%	1%	3%	-12%
40119	4%	0%	-3%	-16%
41576	0%	22%	-5%	-4%
41577	0%	27%	-2%	-1%
41779	12%	0%	47%	44%
43018	0%	0%	-21%	0%
45944	0%	12%	-21%	-18%
51272	0%	21%	-3%	-5%
55463	6%	0%	-4%	-5%
56641	7%	0%	39%	74%
56645	7%	0%	39%	74%
57913	8%	0%	37%	60%
59785	0%	200%	-8%	-21%
60164	0%	1%	3%	-12%
65637	0%	22%	-1%	1%
65844	0%	0%	-21%	0%
65927	0%	41%	0%	0%
68293	4%	0%	-15%	-1%
68294	4%	0%	-15%	-1%
68295	3%	0%	-1%	-16%
68582	10%	0%	63%	85%
68583	0%	11%	-46%	-20%
68584	0%	200%	-15%	-16%
68585	0%	200%	-15%	-16%
68586	0%	200%	-15%	-16%
68587	0%	200%	-8%	-21%
68588	0%	200%	-8%	-21%
68589	0%	200%	-15%	-16%
68590	0%	200%	-8%	-21%
68591	0%	200%	-6%	-5%
68883	0%	5%	28%	-6%
68889	0%	82%	-1%	-1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
71091	1%	0%	-18%	3%
71095	1%	0%	-18%	3%
72070	0%	200%	-15%	-16%
72078	11%	0%	62%	72%
76052	0%	25%	-85%	-70%
76222	0%	56%	-1%	-2%
77148	0%	16%	2%	-3%
77151	0%	18%	0%	0%
77184	0%	10%	-1%	0%
77185	0%	39%	0%	1%
Chain Bridge Rd				
5053	1%	0%	12%	2%
16581	2%	0%	18%	16%
21941	0%	33%	0%	0%
31277	5%	0%	10%	8%
46083	1%	0%	-12%	-7%
55021	3%	0%	11%	38%
69550	0%	2%	-22%	-1%
74851	5%	0%	14%	19%
Charles Town Pike				
42197	3%	0%	1%	10%
Chesterbrook Rd				
9260	5%	0%	10%	4%
26530	5%	0%	3%	21%
Co Rd 650				
12428	0%	0%	-20%	4%
Co Rd 686				
33643	0%	10%	2%	6%
59709	0%	14%	3%	6%
Co Rd 703				
50953	6%	0%	2%	15%
72024	2%	0%	-13%	-3%
72283	6%	0%	-13%	-11%
Co Rd 789				
43054	1%	0%	-10%	0%
Commonwealth Ave				
77281	0%	12%	0%	2%
Cotton Mill Dr				
81148	0%	35%	0%	0%
81150	0%	117%	0%	0%
Dolley Madison Blvd				
4344	1%	0%	3%	11%
5149	0%	0%	1%	10%
9478	0%	0%	-3%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
25782	5%	0%	-23%	-5%
31130	2%	0%	0%	12%
33641	2%	0%	6%	17%
36527	7%	0%	25%	30%
39807	1%	0%	17%	20%
40152	2%	0%	12%	24%
40859	0%	12%	0%	-1%
42078	6%	0%	16%	27%
44690	0%	132%	-1%	-11%
46571	0%	20%	1%	10%
46941	1%	0%	11%	5%
50436	0%	0%	-2%	10%
59706	1%	0%	11%	4%
59713	0%	26%	10%	6%
59997	1%	0%	10%	8%
60008	0%	14%	-2%	-1%
67577	0%	0%	14%	3%
68881	0%	74%	1%	54%
77176	7%	0%	-5%	-5%
77177	0%	28%	-6%	-15%
Dulles Access Rd				
41206	0%	3%	-1%	-12%
Dulles Toll Rd				
33649	0%	2%	-2%	-17%
34630	4%	0%	-1%	-15%
41207	0%	3%	-1%	-12%
41575	0%	62%	-1%	-8%
57167	0%	10%	12%	61%
58502	0%	7%	-1%	-42%
60237	4%	0%	-1%	-15%
76097	0%	31%	0%	0%
E Glebe Rd				
47673	0%	12%	1%	0%
52055	0%	11%	0%	0%
Edwards Ferry Rd NE				
835	0%	72%	0%	0%
34291	0%	24%	0%	0%
Fisher Dr				
79332	0%	20%	-6%	0%
Furnace Mountain Rd				
81348	8%	0%	3%	9%
81350	9%	0%	6%	7%
George Washington Memorial Pkwy				
33634	0%	6%	-1%	-11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
33635	0%	4%	-13%	-2%
34318	12%	0%	62%	48%
36935	0%	1%	0%	12%
38735	0%	8%	49%	101%
40850	0%	1%	0%	13%
60010	0%	6%	-33%	-3%
Georgetown Pike				
4348	24%	0%	29%	9%
4349	51%	0%	14%	8%
4350	14%	0%	2%	28%
4351	0%	35%	2%	14%
6378	16%	0%	3%	33%
6380	23%	0%	14%	11%
13744	0%	35%	2%	14%
57185	0%	39%	0%	0%
59710	51%	0%	14%	8%
68778	0%	55%	0%	-1%
Grande Ln				
42163	2%	0%	-16%	-3%
72284	6%	0%	-13%	-13%
Great Falls St				
14896	1%	0%	-11%	5%
Greeley Blvd				
33467	0%	60%	0%	0%
60752	0%	60%	0%	0%
Griffith Rd				
79328	0%	20%	-6%	0%
Henry G Shirley Memorial Hwy				
16669	0%	10%	0%	0%
18676	0%	89%	0%	0%
30289	0%	2%	0%	-13%
30488	0%	2%	0%	-13%
57903	0%	0%	-5%	-12%
Householder Rd				
77555	0%	16%	0%	0%
77557	0%	44%	0%	0%
Hume Ave				
77282	0%	12%	0%	2%
I- 395				
76	0%	12%	0%	-13%
25750	0%	1%	0%	-22%
26135	0%	2%	0%	-18%
27337	0%	1%	0%	-22%
30282	0%	1%	0%	-22%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
30288	0%	2%	0%	-13%
30502	0%	1%	0%	19%
55038	0%	1%	25%	0%
59872	1%	0%	0%	14%
64907	0%	2%	0%	-18%
65930	1%	0%	0%	13%
67012	0%	2%	0%	-18%
67246	0%	1%	0%	-22%
70266	0%	1%	13%	6%
72075	0%	66%	0%	-1%
I- 395 Hov				
26133	0%	2%	0%	-13%
30275	0%	1%	0%	-22%
30276	0%	1%	0%	-22%
30278	0%	1%	0%	-22%
30286	0%	2%	0%	-13%
66368	0%	15%	0%	0%
73014	0%	1%	0%	-22%
73015	0%	2%	0%	-13%
I- 495 Express Lane				
24081	0%	21%	0%	-2%
34324	0%	20%	-50%	-3%
38714	0%	11%	-2%	-5%
38717	0%	2%	5%	-18%
39426	0%	1%	3%	-12%
40120	0%	21%	-1%	0%
55464	3%	0%	0%	24%
68296	3%	0%	-1%	-16%
68297	3%	0%	-1%	-16%
68581	0%	11%	-4%	-3%
I- 66				
5026	0%	13%	0%	1%
49097	0%	0%	77%	-26%
52133	0%	200%	0%	0%
70030	1%	0%	3%	11%
I- 95				
26136	0%	1%	0%	19%
27421	0%	2%	25%	0%
43013	2%	0%	0%	-12%
43016	2%	0%	0%	-12%
49369	2%	0%	0%	-12%
James Madison Hwy				
75672	0%	22%	0%	0%
75673	0%	20%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Jones Branch Dr				
8520	0%	11%	-2%	1%
12236	6%	0%	16%	3%
12238	10%	0%	1%	0%
17822	0%	11%	-2%	3%
35879	6%	0%	12%	5%
36480	6%	0%	16%	3%
38632	0%	11%	-2%	3%
68888	0%	11%	-2%	1%
Key Brg				
7923	2%	0%	12%	8%
22667	1%	0%	9%	12%
Kidwell Dr				
46319	6%	0%	4%	3%
Kirby Ct				
39813	4%	0%	2%	10%
Kirby Rd				
72293	6%	0%	12%	1%
Lee Chapel Rd				
10075	0%	23%	0%	0%
41005	0%	18%	0%	0%
Leesburg Pike				
12229	1%	0%	-7%	-13%
14213	2%	0%	-12%	-9%
20828	2%	0%	-10%	0%
35567	2%	0%	-16%	-10%
36898	1%	0%	-11%	-8%
57210	0%	20%	-1%	0%
68877	2%	0%	-2%	30%
Lewinsville Rd				
72069	0%	13%	-79%	-62%
76053	0%	23%	-39%	-28%
Lisle Ave				
79334	0%	20%	-6%	0%
Lovettsville Rd				
67715	0%	11%	0%	1%
Loyalty Rd				
74290	7%	0%	3%	3%
81323	5%	0%	3%	4%
81324	5%	0%	3%	4%
Mill Rd				
59340	1%	0%	-5%	-10%
71085	1%	0%	-33%	-1%
Mulberry Bottom Ln				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
22325	0%	148%	0%	0%
N Chesterbrook Rd				
3619	8%	0%	0%	-15%
3620	6%	0%	-14%	-1%
8454	5%	0%	-14%	0%
8455	0%	8%	0%	-13%
11494	6%	0%	-14%	-1%
65371	8%	0%	0%	-15%
N Fairfax St				
35505	0%	15%	0%	0%
36542	0%	34%	0%	1%
74330	0%	17%	0%	0%
N Fort Myer Dr				
28732	0%	0%	13%	10%
N Glebe Rd				
22383	0%	13%	1%	2%
33998	2%	0%	21%	11%
35179	0%	14%	3%	1%
41418	1%	0%	3%	28%
N Jackson St				
81005	0%	12%	0%	1%
81006	0%	11%	0%	1%
81019	0%	12%	0%	1%
N Jefferson Davis Hwy				
36929	0%	30%	4%	0%
70264	0%	14%	0%	3%
N Kensington St				
44770	0%	10%	1%	1%
N Key Blvd				
81060	0%	22%	0%	0%
N Kirkwood Rd				
49081	0%	11%	0%	1%
50537	0%	12%	1%	2%
65801	0%	12%	0%	1%
N Lee Hwy				
14003	2%	0%	0%	14%
N Little Falls Rd				
34331	0%	19%	0%	-1%
42920	0%	57%	0%	1%
54639	0%	18%	-1%	0%
68920	3%	0%	-10%	-7%
N Lorcom Ln				
81094	0%	16%	0%	-2%
N Pitt St				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
12212	0%	17%	0%	0%
N Pollard St				
81102	0%	10%	0%	-1%
N Sycamore St				
50545	0%	12%	1%	1%
N Washington Blvd				
50287	2%	0%	-12%	-3%
68921	0%	40%	0%	1%
71775	3%	0%	-10%	-7%
N Washington St				
59299	5%	0%	0%	2%
N West St				
52346	1%	0%	0%	11%
N Williamsburg Blvd				
7986	0%	12%	1%	1%
17015	0%	10%	1%	1%
Norfolk Ln				
47674	0%	32%	0%	1%
Old Chesterbrook Rd				
5120	3%	0%	-14%	-8%
Old Colchester Rd				
59470	0%	14%	0%	2%
Old Dominion Dr				
3984	2%	0%	0%	13%
4706	1%	0%	0%	12%
4793	0%	78%	1%	0%
11488	2%	0%	-11%	-2%
28118	9%	0%	4%	16%
56346	2%	0%	-3%	-10%
60003	6%	0%	6%	4%
60269	1%	0%	-12%	-3%
68779	3%	0%	11%	1%
72563	0%	48%	0%	0%
76054	14%	0%	78%	80%
80116	0%	198%	0%	0%
80118	0%	62%	0%	0%
Old Ox Rd				
28916	0%	10%	0%	0%
Old Springhouse Rd				
77178	0%	0%	-3%	14%
77179	8%	0%	19%	-26%
Old Waterford Rd				
23520	6%	0%	3%	3%
Park Run Dr				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
12483	0%	17%	-1%	-1%
18058	0%	14%	-1%	3%
42887	8%	0%	1%	0%
Potomac Ave				
76816	0%	13%	0%	3%
Potomac Greens Dr				
47676	0%	32%	0%	1%
Queen St				
40414	0%	34%	0%	1%
Random Hills Rd				
47228	0%	66%	0%	0%
Ridge Top Rd				
47226	0%	66%	0%	0%
Ring Rd				
13954	0%	12%	0%	-12%
41163	5%	0%	6%	4%
42174	0%	8%	0%	-13%
62751	0%	15%	2%	-12%
73543	10%	0%	-8%	-9%
Rolling Rd				
44182	0%	148%	0%	0%
S Arlington Ridge Rd				
7984	1%	0%	0%	12%
S Berlin Pike				
77579	0%	12%	0%	0%
S Columbia Pike				
9801	1%	0%	1%	10%
26428	1%	0%	2%	12%
49630	3%	0%	0%	11%
S Eads St				
29859	0%	22%	0%	2%
36985	0%	12%	0%	5%
51047	0%	13%	1%	0%
74054	1%	0%	13%	0%
S Fort Scott Dr				
80808	0%	17%	0%	4%
S Glebe Rd				
40901	0%	12%	1%	0%
74285	0%	20%	0%	2%
S Hayes St				
41671	0%	10%	0%	1%
41673	0%	11%	0%	1%
S Joyce St				
16157	0%	12%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
S Lynn St				
67301	8%	0%	4%	0%
S Patrick St				
19863	0%	12%	0%	-1%
52667	0%	200%	0%	0%
S Washington Blvd				
17387	1%	0%	0%	26%
28854	1%	0%	0%	14%
33590	0%	1%	10%	0%
73013	0%	1%	0%	-22%
74618	0%	1%	10%	0%
Senseny Rd				
81397	0%	23%	1%	1%
Shirley Hwy				
18091	0%	0%	5%	19%
51571	0%	0%	5%	19%
62771	0%	0%	5%	19%
Spring Hill Rd				
17400	20%	0%	-1%	-10%
State Rte 123				
59113	4%	0%	1%	11%
State Rte 193				
6379	15%	0%	6%	46%
6381	20%	0%	18%	20%
13747	3%	0%	-10%	-10%
27937	0%	5%	70%	75%
33644	22%	0%	11%	68%
33645	0%	31%	11%	16%
44442	4%	0%	-11%	-15%
State Rte 237				
59501	0%	1%	5%	13%
State Rte 267				
2107	0%	2%	-11%	-1%
27417	0%	8%	-44%	-3%
44979	0%	2%	-11%	-1%
48466	0%	21%	-36%	-3%
58212	0%	10%	7%	0%
58213	0%	24%	0%	0%
63906	0%	22%	-2%	0%
77023	0%	47%	-2%	-1%
State Rte 286				
22322	0%	158%	0%	0%
State Rte 289				
40190	0%	16%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
State Rte 3 Bus				
25900	0%	0%	12%	0%
State Rte 55				
60604	0%	31%	0%	0%
State Rte 611				
61497	0%	10%	1%	1%
State Rte 619				
10895	0%	11%	1%	0%
State Rte 657				
62162	0%	11%	0%	-5%
State Rte 658				
51814	0%	23%	0%	0%
State Rte 662				
23850	4%	0%	1%	15%
45975	4%	0%	1%	16%
State Rte 681				
31834	5%	0%	0%	9%
31835	7%	0%	0%	8%
77575	7%	0%	0%	8%
State Rte 682				
77564	0%	25%	0%	0%
77580	0%	16%	0%	0%
State Rte 684				
73800	5%	0%	0%	-6%
State Rte 695				
72292	6%	0%	12%	1%
72567	0%	5%	-1%	10%
State Rte 698				
35353	5%	0%	0%	9%
State Rte 7 Bus				
7291	0%	14%	0%	0%
64315	1%	0%	1%	15%
State Rte 704				
34712	5%	0%	0%	5%
34713	5%	0%	5%	1%
State Rte 762				
15483	0%	13%	0%	0%
35250	0%	16%	0%	0%
State Rte 850				
77563	0%	19%	0%	0%
Taylorstown Rd				
81329	0%	12%	0%	2%
81330	0%	11%	0%	2%
Telegraph Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
47641	0%	117%	0%	0%
Toll House Rd				
52653	0%	20%	0%	0%
74774	0%	22%	0%	0%
Towers Crescent Dr				
60863	5%	0%	3%	4%
US Hwy 15				
70766	0%	12%	0%	0%
US Hwy 29				
59243	0%	17%	0%	0%
Van Buren Rd				
6674	0%	18%	1%	0%
W Broad Way				
75878	2%	0%	2%	11%
W Wakefield Dr				
38725	0%	115%	0%	0%
44175	0%	28%	0%	0%
Wakefield Dr E				
38726	0%	28%	0%	0%
44480	0%	115%	0%	0%
Westmoreland St				
5056	3%	0%	-14%	-5%
5057	3%	0%	-13%	-6%
28008	3%	0%	3%	12%
Westpark Dr				
39729	5%	0%	-1%	4%
45568	0%	12%	-1%	3%
Willowfield Way				
8704	0%	200%	0%	0%

Segments Expecting Meaningful Changes in Emissions

Alternative 9: Two HOT Managed Lanes Network

Criteria and Document Legend

1. Congested % Difference: Changes of ± 5% or more in AADT on congested highway links of LOS D or worse
2. Free Flow % Difference: Changes of ± 10% or more in AADT on uncongested highway links of LOS C or better;
3. Travel Time AM/PM: Changes of ± 10% or more in travel time; and

d. Not Presented: Changes of ± 10% or more in intersection delay.

Highlighted locations meet the criteria[1]

1. https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/moves_msat_faq.cfm

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
District of Columbia				
10th Pl SE				
15152	0%	11%	8%	5%
10th St SW				
61369	0%	26%	0%	0%
11th St NW				
8999	5%	0%	6%	4%
39387	2%	0%	0%	10%
11th St SE				
8559	1%	0%	13%	5%
25672	1%	0%	13%	6%
45594	1%	0%	13%	6%
12th St NW				
73869	3%	0%	2%	12%
12th St SW				
34294	1%	0%	16%	6%
13th St NW				
1714	7%	0%	6%	1%
2472	3%	0%	10%	8%
6440	1%	0%	11%	4%
7478	1%	0%	2%	18%
10690	1%	0%	1%	12%
14663	6%	0%	1%	6%
16064	2%	0%	29%	-1%
29098	4%	0%	3%	12%
40255	1%	0%	1%	11%
40598	1%	0%	11%	4%
52075	17%	0%	3%	7%
69608	1%	0%	1%	10%
73321	1%	0%	6%	11%
77912	1%	0%	2%	21%
77913	1%	0%	1%	19%
77943	2%	0%	16%	5%
77944	1%	0%	4%	13%
77945	1%	0%	2%	21%
78708	0%	12%	0%	5%
13th St SE				
78555	4%	0%	10%	3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
14th St NW				
8416	1%	0%	3%	21%
27134	0%	0%	12%	1%
69332	0%	24%	0%	2%
73325	1%	0%	3%	11%
73327	1%	0%	8%	12%
14th St SW				
12953	0%	0%	4%	13%
39030	1%	0%	2%	12%
39031	1%	0%	14%	6%
66562	4%	0%	12%	4%
15th St NW				
77028	1%	0%	12%	1%
16th St NW				
3568	2%	0%	4%	11%
3684	1%	0%	4%	22%
5343	0%	15%	-2%	0%
17033	10%	0%	3%	1%
23592	1%	0%	7%	14%
37364	1%	0%	4%	17%
49320	2%	0%	15%	6%
58981	1%	0%	12%	7%
64887	2%	0%	16%	9%
69913	1%	0%	11%	8%
78016	2%	0%	11%	4%
78018	1%	0%	3%	11%
16th St SE				
2249	2%	0%	0%	12%
17th St NE				
40729	2%	0%	1%	10%
17th St NW				
53021	3%	0%	0%	15%
74429	2%	0%	11%	8%
78348	3%	0%	0%	13%
17th St SE				
76178	1%	0%	4%	12%
18th St NE				
64895	3%	0%	0%	11%
77605	0%	10%	1%	-1%
18th St NW				
2689	2%	0%	14%	4%
9049	3%	0%	3%	22%
9579	2%	0%	12%	4%
23718	5%	0%	6%	1%
27133	2%	0%	11%	5%
36033	1%	0%	11%	0%
40683	2%	0%	16%	5%
41089	5%	0%	11%	1%
19th St NE				
2519	6%	0%	6%	0%
79156	0%	42%	1%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
1st St SE				
29092	6%	0%	7%	1%
74986	6%	0%	7%	1%
21st St NW				
10680	8%	0%	3%	11%
78474	5%	0%	1%	4%
23rd St NW				
1655	1%	0%	10%	0%
2464	0%	0%	12%	0%
5375	4%	0%	2%	15%
7071	4%	0%	2%	13%
56235	0%	0%	12%	0%
70635	5%	0%	3%	11%
24th St NW				
298	5%	0%	0%	6%
27th St NW				
78997	0%	13%	5%	1%
28th St SE				
39273	1%	0%	11%	2%
30th Pl NW				
23586	0%	0%	12%	6%
37th St NW				
62382	6%	0%	1%	1%
38th St NW				
652	1%	0%	7%	13%
17955	1%	0%	13%	9%
3rd St SW				
55114	0%	0%	12%	1%
40th St NE				
60683	0%	24%	0%	5%
60684	0%	29%	2%	0%
42nd St NW				
78789	0%	13%	0%	1%
44th St NE				
31114	2%	0%	11%	1%
60996	7%	0%	5%	10%
60997	7%	0%	5%	4%
79135	6%	0%	6%	11%
79137	7%	0%	10%	4%
44th St NW				
8163	5%	0%	0%	-5%
78867	5%	0%	1%	1%
78876	0%	14%	-1%	-1%
78877	0%	35%	-1%	0%
78878	0%	15%	-3%	0%
78879	0%	33%	-3%	0%
46th St NW				
24613	6%	0%	3%	6%
49th St NE				
13513	0%	13%	3%	6%
69253	0%	15%	3%	9%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
79091	0%	15%	3%	9%
4th St NE				
3250	8%	0%	3%	10%
4th St SE				
27750	0%	200%	0%	0%
4th St SW				
69802	1%	0%	-2%	11%
74574	5%	0%	1%	9%
50th St SE				
46918	0%	21%	0%	-1%
69268	0%	12%	2%	4%
53rd St NE				
79087	0%	14%	0%	9%
81568	0%	14%	0%	9%
53rd St SE				
79066	0%	29%	0%	1%
79067	0%	11%	0%	2%
79068	0%	13%	1%	0%
5th St NW				
13732	6%	0%	3%	2%
40965	5%	0%	5%	3%
78679	6%	0%	4%	10%
6th St SE				
14929	0%	10%	6%	1%
7th St NW				
13242	1%	0%	13%	2%
17199	2%	0%	15%	5%
61047	1%	0%	4%	11%
73602	3%	0%	1%	13%
73603	3%	0%	1%	13%
74149	2%	0%	-2%	14%
74151	3%	0%	-1%	14%
77903	1%	0%	5%	10%
78171	2%	0%	10%	1%
7th St SW				
37484	2%	0%	11%	3%
78172	2%	0%	10%	1%
8th St NE				
44603	1%	0%	4%	12%
60136	3%	0%	12%	6%
8th St SE				
16275	0%	34%	0%	0%
9th St NE				
12978	2%	0%	8%	10%
58437	3%	0%	10%	6%
9th St NW				
51532	2%	0%	0%	10%
58978	0%	46%	0%	0%
Alabama Ave SE				
14339	2%	0%	0%	16%
34800	5%	0%	2%	13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
35112	5%	0%	3%	4%
58087	2%	0%	14%	7%
64890	1%	0%	4%	12%
69986	4%	0%	1%	17%
69987	4%	0%	1%	16%
70228	4%	0%	6%	15%
Alaska Ave NW				
70323	2%	0%	5%	12%
78734	0%	18%	0%	0%
78736	0%	22%	0%	0%
Arizona Ave NW				
4412	1%	0%	3%	12%
41435	7%	0%	29%	32%
41437	1%	0%	2%	13%
50148	1%	0%	19%	0%
60330	5%	0%	20%	26%
60331	6%	0%	8%	1%
60335	2%	0%	11%	13%
Arkansas Ave NW				
78632	0%	0%	2%	10%
Arlington Memorial Brg				
29110	0%	24%	0%	0%
30416	0%	12%	0%	0%
Aspen St NW				
15524	1%	0%	23%	7%
15683	1%	0%	4%	13%
15686	6%	0%	2%	5%
Beach Dr NW				
1554	7%	0%	1%	13%
1556	3%	0%	12%	2%
9250	5%	0%	7%	13%
13729	6%	0%	4%	12%
23594	7%	0%	10%	1%
38067	3%	0%	11%	4%
38068	3%	0%	11%	5%
42942	6%	0%	3%	14%
43547	6%	0%	5%	10%
49578	5%	0%	7%	13%
Benning Rd SE				
55638	2%	0%	10%	10%
69264	2%	0%	8%	11%
79054	6%	0%	2%	10%
79056	8%	0%	9%	6%
Blagden Ave NW				
4400	0%	10%	0%	1%
23877	0%	10%	0%	1%
23878	4%	0%	0%	11%
27435	6%	0%	11%	7%
46533	0%	11%	0%	0%
46534	0%	13%	0%	0%
Blaine St NE				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
79095	0%	13%	0%	7%
Brentwood Rd NE				
2836	2%	0%	8%	10%
C St NE				
14097	3%	0%	3%	13%
62363	2%	0%	11%	0%
69652	2%	0%	11%	0%
C St NW				
13450	6%	0%	3%	12%
C St SE				
2261	1%	0%	10%	8%
Calvert St NW				
9373	5%	0%	5%	0%
41069	0%	0%	10%	4%
Camden St SE				
24773	7%	0%	2%	3%
Canal Rd NW				
649	0%	0%	15%	-1%
15550	0%	15%	0%	-2%
17262	3%	0%	-24%	0%
17487	1%	0%	1%	17%
23511	0%	15%	0%	-2%
40368	1%	0%	0%	-14%
Capital Beltway				
19588	3%	0%	-1%	-12%
Central Ave SE				
79050	0%	35%	0%	-4%
79078	6%	0%	5%	3%
79079	9%	0%	3%	17%
Chain Bridge Rd NW				
78891	0%	15%	1%	2%
Chestnut St NW				
4072	0%	17%	0%	7%
10696	0%	11%	4%	1%
40977	0%	13%	0%	9%
Chevy Chase Cir NW				
6290	1%	0%	3%	13%
Chillum Pl NE				
11666	0%	0%	15%	9%
11668	1%	0%	4%	17%
Clara Barton Pkwy NW				
15395	6%	0%	36%	19%
65019	5%	0%	11%	17%
Columbia Rd NW				
6885	0%	0%	0%	11%
10134	1%	0%	16%	5%
12475	1%	0%	19%	6%
78019	2%	0%	3%	12%
78027	3%	0%	3%	11%
Connecticut Ave NW				
6285	1%	0%	6%	14%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
6286	1%	0%	0%	14%
6287	1%	0%	3%	19%
9625	1%	0%	12%	11%
17961	1%	0%	10%	2%
38190	1%	0%	4%	13%
46317	0%	11%	0%	0%
66347	1%	0%	23%	3%
Constitution Ave NW				
8194	1%	0%	3%	10%
27431	2%	0%	2%	13%
38277	1%	0%	3%	11%
Corcoran St NW				
12571	2%	0%	11%	5%
Dalecarlia Pkwy NW				
60644	0%	12%	5%	2%
DC Hwy 295				
4313	2%	0%	6%	20%
16142	2%	0%	2%	13%
16432	2%	0%	13%	13%
37791	2%	0%	2%	13%
46627	2%	0%	13%	13%
56840	2%	0%	13%	13%
Division Ave NE				
42888	0%	12%	8%	4%
42889	0%	12%	2%	1%
61621	0%	15%	3%	8%
61622	0%	10%	4%	7%
61623	0%	13%	6%	6%
79082	0%	12%	4%	6%
79083	0%	12%	2%	1%
79084	0%	11%	5%	6%
Dix St NE				
61617	0%	12%	3%	6%
79090	0%	15%	4%	5%
Drake Pl SE				
79063	0%	29%	0%	1%
79065	0%	13%	1%	0%
Dupont Cir NW				
8356	1%	0%	11%	2%
12572	1%	0%	11%	5%
36335	1%	0%	8%	12%
59589	1%	0%	14%	1%
E Capitol St NE				
13984	3%	0%	10%	12%
15185	0%	1%	7%	13%
16146	0%	11%	0%	-1%
39036	3%	0%	5%	15%
81564	0%	11%	0%	1%
E Capitol St SE				
18946	0%	23%	0%	5%
61955	7%	0%	1%	9%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
62577	8%	0%	8%	2%
73984	0%	26%	3%	0%
81567	0%	14%	0%	9%
E St Expy				
7734	2%	0%	3%	11%
E St NW				
18644	4%	0%	4%	16%
28865	1%	0%	3%	11%
E St SE				
72464	2%	0%	10%	9%
72465	3%	0%	11%	15%
Eastern Ave NE				
1951	0%	0%	20%	11%
5133	4%	0%	10%	8%
9580	3%	0%	18%	13%
15695	3%	0%	9%	15%
15994	4%	0%	21%	25%
22832	3%	0%	13%	9%
28738	3%	0%	10%	15%
38916	0%	11%	0%	0%
40365	0%	0%	21%	13%
63642	3%	0%	15%	17%
81615	0%	14%	0%	3%
Eastern Ave NW				
6848	3%	0%	11%	9%
24473	3%	0%	2%	12%
Ely Pl SE				
73717	6%	0%	4%	1%
F St SE				
79057	7%	0%	2%	6%
79062	0%	29%	0%	1%
79064	0%	13%	1%	0%
Florida Ave NE				
2158	2%	0%	7%	20%
29426	2%	0%	3%	18%
45595	2%	0%	12%	12%
53002	1%	0%	3%	13%
62061	8%	0%	-1%	5%
Florida Ave NW				
4037	1%	0%	4%	12%
8363	0%	11%	0%	0%
13037	2%	0%	0%	10%
61376	2%	0%	4%	10%
Foxhall Rd NW				
57734	4%	0%	19%	2%
57735	8%	0%	4%	13%
57740	0%	14%	0%	2%
57742	0%	14%	4%	0%
73797	6%	0%	19%	2%
78862	4%	0%	19%	2%
Galloway St NE				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
78627	5%	0%	4%	1%
George Washington Memorial Pkwy				
33685	0%	1%	0%	19%
34645	0%	1%	0%	23%
49186	0%	1%	0%	10%
Georgia Ave NW				
4069	0%	0%	1%	16%
6284	1%	0%	4%	13%
14664	5%	0%	6%	10%
40243	0%	0%	1%	16%
40244	1%	0%	11%	4%
40245	1%	0%	18%	4%
56625	1%	0%	23%	7%
Girard St NW				
40246	1%	0%	13%	5%
62441	2%	0%	2%	22%
Glenbrook Rd NW				
3261	0%	65%	0%	0%
3262	0%	73%	0%	0%
Glover Rd NW				
23582	0%	13%	2%	2%
Good Hope Rd SE				
6242	1%	0%	0%	11%
13762	4%	0%	2%	13%
16436	2%	0%	0%	12%
69995	3%	0%	10%	4%
H St NW				
78358	2%	0%	1%	13%
I- 295				
1480	1%	0%	0%	14%
I- 395				
49096	1%	0%	11%	8%
I- 495				
19589	1%	0%	-21%	-1%
25781	1%	0%	-17%	2%
I- 66				
12777	4%	0%	15%	6%
14357	2%	0%	14%	16%
Independence Ave SE				
13073	5%	0%	0%	7%
29097	0%	195%	0%	0%
Indiana Ave NW				
12499	0%	10%	0%	1%
Irving St NW				
40733	5%	0%	6%	10%
58671	0%	0%	2%	13%
62766	1%	0%	13%	4%
Jefferson St NW				
78671	0%	12%	1%	1%
K St NW				
5673	5%	0%	2%	5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
48418	0%	25%	1%	1%
59587	2%	0%	4%	10%
Kalmia Rd NW				
1114	3%	0%	12%	3%
5205	4%	0%	11%	13%
10356	4%	0%	11%	13%
40354	3%	0%	12%	4%
Kalorama Rd NW				
78498	0%	12%	2%	1%
Kansas Ave NW				
24770	0%	0%	3%	12%
28743	0%	0%	3%	11%
Kenilworth Ave NE				
5225	4%	0%	9%	12%
16150	1%	0%	9%	11%
16433	2%	0%	4%	12%
16971	0%	12%	0%	0%
17843	2%	0%	17%	15%
23731	2%	0%	4%	12%
31339	9%	0%	10%	4%
63890	2%	0%	17%	15%
70336	0%	169%	0%	0%
Kenyon St NW				
38558	1%	0%	2%	10%
Klingle Rd NW				
9933	5%	0%	0%	6%
L St NW				
40053	0%	10%	0%	0%
Lee St NE				
72843	0%	15%	0%	2%
Livingston Rd SE				
78539	0%	16%	0%	2%
Logan Cir NW				
7191	1%	0%	3%	12%
15843	1%	0%	2%	18%
22012	2%	0%	10%	13%
39389	2%	0%	10%	13%
Loughboro Rd NW				
60342	0%	11%	4%	1%
M L King Jr Ave SE				
32417	0%	12%	0%	2%
M St NE				
60137	8%	0%	-1%	5%
79160	0%	42%	2%	0%
79161	0%	42%	2%	0%
M St NW				
27308	0%	0%	-3%	13%
69809	2%	0%	11%	7%
M St SE				
9382	1%	0%	3%	10%
81377	2%	0%	-1%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Macarthur Blvd NW				
7662	7%	0%	10%	12%
25539	6%	0%	14%	15%
31684	13%	0%	11%	16%
40367	6%	0%	1%	-2%
40866	6%	0%	1%	-2%
50146	8%	0%	1%	5%
58985	14%	0%	10%	14%
60332	0%	13%	6%	7%
Maine Ave SW				
69848	6%	0%	7%	7%
Malcolm X Ave SE				
13596	1%	0%	0%	14%
Maryland Ave SW				
55119	0%	0%	0%	10%
Massachusetts Ave NW				
1257	1%	0%	11%	5%
7788	0%	31%	0%	0%
13472	2%	0%	1%	11%
78058	0%	11%	-1%	2%
78468	9%	0%	0%	5%
78469	0%	11%	0%	-1%
Massachusetts Ave SE				
9841	2%	0%	14%	7%
34801	11%	0%	10%	2%
69511	5%	0%	2%	12%
69513	12%	0%	10%	2%
79774	4%	0%	4%	15%
Michigan Ave NE				
40334	1%	0%	1%	10%
75349	2%	0%	0%	11%
Military Rd NW				
12721	1%	0%	11%	2%
23874	7%	0%	4%	1%
Minnesota Ave NE				
11817	3%	0%	0%	11%
14574	9%	0%	5%	12%
67575	0%	11%	0%	2%
72844	0%	11%	0%	2%
Minnesota Ave SE				
13520	6%	0%	6%	2%
Mississippi Ave SE				
14565	0%	12%	1%	3%
Missouri Ave NW				
28512	8%	0%	5%	5%
Montana Ave NE				
6548	2%	0%	11%	4%
29209	2%	0%	2%	10%
43276	2%	0%	5%	17%
N Capitol St NE				
3253	9%	0%	2%	6%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
9310	1%	0%	15%	4%
18421	2%	0%	4%	15%
28513	0%	0%	-3%	11%
43558	2%	0%	0%	15%
69665	1%	0%	17%	1%
N Capitol St NW				
37120	2%	0%	2%	16%
78074	1%	0%	4%	18%
78075	1%	0%	4%	18%
N St NW				
78427	9%	0%	6%	5%
78432	10%	0%	8%	2%
78433	9%	0%	9%	4%
78444	0%	11%	0%	-2%
Nannie Helen Burroughs Ave NE				
61944	3%	0%	11%	1%
74251	3%	0%	1%	11%
Naylor Rd SE				
2844	2%	0%	0%	17%
14958	0%	0%	0%	11%
16283	3%	0%	9%	21%
22008	2%	0%	8%	18%
32998	0%	0%	14%	-1%
45687	1%	0%	0%	12%
46669	2%	0%	3%	10%
51786	2%	0%	4%	20%
79042	0%	0%	0%	11%
Nebraska Ave NW				
29325	0%	15%	1%	0%
57104	0%	0%	-13%	1%
61373	1%	0%	10%	13%
70093	1%	0%	14%	7%
Nevada Ave NW				
9897	9%	0%	4%	3%
14964	1%	0%	13%	8%
15179	0%	12%	0%	2%
New Hampshire Ave NE				
1108	1%	0%	3%	10%
9001	1%	0%	3%	11%
9309	1%	0%	3%	11%
New Hampshire Ave NW				
8366	3%	0%	13%	6%
8832	3%	0%	4%	12%
19527	3%	0%	4%	12%
25074	5%	0%	2%	2%
36336	1%	0%	5%	12%
38188	1%	0%	5%	12%
39867	6%	0%	3%	2%
40711	6%	0%	3%	2%
46577	3%	0%	13%	6%
77999	2%	0%	11%	6%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
New York Ave NE				
2892	1%	0%	3%	13%
12729	2%	0%	0%	14%
25193	2%	0%	12%	10%
28988	1%	0%	3%	13%
39744	2%	0%	0%	14%
New York Ave NW				
6767	4%	0%	2%	11%
9216	1%	0%	4%	15%
Newton St NE				
30893	5%	0%	6%	2%
Nicholson St NE				
3699	1%	0%	4%	16%
North Carolina Ave SE				
78203	0%	0%	0%	11%
Northampton St NW				
7672	0%	10%	2%	2%
O St NE				
2756	1%	0%	2%	14%
O St NW				
78475	5%	0%	1%	3%
Oglethorpe St NE				
11661	1%	0%	4%	15%
Ohio Dr SW				
12815	5%	0%	6%	7%
19255	0%	16%	0%	0%
37944	3%	0%	3%	10%
49093	0%	19%	0%	1%
56841	1%	0%	11%	8%
70865	7%	0%	4%	2%
P St NW				
3199	6%	0%	1%	0%
77902	1%	0%	5%	10%
Park Pl NW				
39268	0%	11%	3%	1%
40249	2%	0%	0%	12%
Park Rd NW				
45985	3%	0%	0%	10%
Pennsylvania Ave NW				
37955	6%	0%	2%	6%
46587	0%	0%	11%	1%
Pennsylvania Ave SE				
38317	1%	0%	0%	16%
Q St NW				
69853	5%	0%	-6%	1%
78422	1%	0%	0%	10%
Queen St NE				
5135	3%	0%	8%	10%
11971	4%	0%	3%	14%
R St NE				
77635	8%	0%	3%	9%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Reno Rd NW				
31070	7%	0%	1%	-1%
40369	7%	0%	1%	-1%
41700	6%	0%	1%	4%
60729	1%	0%	12%	2%
70094	1%	0%	-1%	11%
78950	7%	0%	9%	4%
Reservoir Rd NW				
8162	5%	0%	0%	-4%
25246	5%	0%	0%	-4%
60728	5%	0%	0%	-6%
Rhode Island Ave NE				
18423	2%	0%	3%	14%
23730	1%	0%	13%	5%
30679	3%	0%	6%	16%
66851	5%	0%	6%	2%
Rhode Island Ave NW				
1656	1%	0%	17%	4%
8368	5%	0%	1%	11%
14875	1%	0%	7%	10%
18417	1%	0%	4%	13%
29099	2%	0%	5%	13%
74696	1%	0%	3%	15%
74698	1%	0%	2%	15%
75121	1%	0%	3%	15%
75126	0%	19%	0%	-3%
Riggs Rd NE				
3326	1%	0%	4%	16%
River Rd NW				
18025	3%	0%	11%	14%
18026	3%	0%	13%	11%
Rock Creek Church Rd NW				
30089	0%	11%	3%	1%
30092	7%	0%	8%	2%
60732	0%	11%	0%	3%
Rock Creek Pkwy NW				
23728	5%	0%	0%	6%
Rock Crk and Potomac Pkwy NW				
59890	6%	0%	1%	0%
S Arlington Blvd				
43859	0%	1%	0%	19%
S Carolina Ave SE				
1565	0%	10%	1%	2%
S St NE				
6546	6%	0%	3%	3%
Sargent Rd NE				
30241	2%	0%	4%	15%
Scott Cir NW				
14578	0%	0%	11%	3%
60173	0%	0%	14%	2%
63622	1%	0%	2%	10%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
South Dakota Ave NE				
14571	1%	0%	1%	10%
29773	2%	0%	3%	13%
Southern Ave SE				
5934	3%	0%	1%	25%
37848	2%	0%	12%	0%
52604	4%	0%	4%	13%
79016	6%	0%	10%	13%
79017	6%	0%	9%	10%
79018	3%	0%	5%	13%
79019	3%	0%	5%	12%
Southwest Fwy				
3950	1%	0%	16%	6%
30263	1%	0%	5%	12%
Spring Rd NW				
8171	6%	0%	1%	4%
24953	7%	0%	5%	1%
46181	17%	0%	3%	5%
78718	0%	13%	-1%	1%
78719	0%	14%	-1%	1%
78720	0%	16%	0%	0%
78721	0%	15%	0%	0%
Stanley St SE				
79775	5%	0%	4%	13%
79777	4%	0%	12%	8%
Suitland Rd SE				
37175	7%	0%	2%	3%
T St NE				
77636	7%	0%	3%	10%
T St NW				
7046	1%	0%	1%	21%
Taylor St NE				
27432	2%	0%	0%	12%
Tenley Cir NW				
45592	1%	0%	14%	6%
69808	1%	0%	13%	11%
Texas Ave SE				
32514	0%	16%	6%	1%
62578	0%	19%	1%	5%
Thomas Cir NW				
39394	1%	0%	18%	2%
39395	1%	0%	5%	13%
Tunlaw Rd NW				
78802	0%	13%	1%	1%
Upton St NW				
78839	8%	0%	6%	1%
US Hwy 1 Alt				
960	4%	0%	1%	11%
3554	3%	0%	7%	13%
7929	1%	0%	7%	12%
29212	2%	0%	5%	16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
29641	5%	0%	0%	13%
34921	4%	0%	2%	11%
37003	1%	0%	4%	11%
43277	1%	0%	7%	12%
45885	3%	0%	7%	13%
59880	3%	0%	2%	15%
77613	3%	0%	4%	16%
77616	4%	0%	3%	11%
US Hwy 50				
285	5%	0%	2%	4%
3920	2%	0%	24%	7%
5378	2%	0%	6%	18%
7985	3%	0%	19%	10%
13209	4%	0%	4%	14%
23516	1%	0%	19%	3%
36930	2%	0%	8%	22%
56258	2%	0%	0%	14%
Valley Ave SE				
78542	0%	10%	1%	0%
78544	0%	12%	0%	1%
Van Buren St NW				
6283	6%	0%	9%	2%
24971	7%	0%	0%	13%
Van Ness St NW				
42936	2%	0%	11%	6%
Virginia Ave SE				
78258	0%	1%	13%	0%
W Beach Dr NW				
38064	5%	0%	0%	6%
38065	5%	0%	0%	6%
W St NE				
77606	0%	10%	1%	-1%
W St NW				
57741	0%	15%	0%	2%
57743	0%	15%	4%	0%
Warder St NW				
78701	0%	65%	0%	1%
West Virginia Ave NE				
13228	4%	0%	1%	10%
Western Ave NW				
287	3%	0%	10%	13%
2020	3%	0%	10%	16%
7713	2%	0%	11%	6%
11207	3%	0%	15%	14%
13476	5%	0%	9%	4%
18024	2%	0%	11%	20%
24939	0%	11%	0%	2%
31072	0%	11%	0%	5%
41078	3%	0%	12%	11%
41332	0%	14%	0%	2%
41333	0%	12%	1%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
56474	3%	0%	13%	12%
56478	6%	0%	2%	6%
56479	5%	0%	13%	3%
78926	5%	0%	14%	4%
78928	6%	0%	3%	9%
79009	0%	11%	1%	0%
79010	0%	13%	0%	2%
79011	0%	17%	0%	2%
Whitehaven Pkwy NW				
58990	7%	0%	0%	-7%
59599	0%	12%	2%	3%
Winfield Ln NW				
53354	6%	0%	1%	1%
Wisconsin Ave NW				
7371	1%	0%	-1%	15%
8097	1%	0%	4%	12%
8588	1%	0%	21%	3%
10207	2%	0%	12%	10%
13190	0%	17%	1%	0%
13193	8%	0%	2%	0%
17022	2%	0%	0%	12%
17718	1%	0%	5%	10%
17958	1%	0%	9%	19%
35307	1%	0%	19%	7%
38275	14%	0%	2%	0%
42938	1%	0%	5%	11%
53757	1%	0%	20%	3%
60178	2%	0%	13%	1%
78413	1%	0%	21%	3%
78838	8%	0%	5%	1%
Wise Rd NW				
1555	4%	0%	32%	9%
13727	4%	0%	6%	21%
Maryland				
1st St				
5718	3%	0%	17%	4%
5720	2%	0%	8%	11%
23rd Ave				
2557	7%	0%	8%	12%
59623	8%	0%	12%	12%
23rd Pkwy				
71553	4%	0%	11%	2%
2nd Ave				
5264	6%	0%	13%	10%
34074	6%	0%	12%	7%
38th Ave				
15936	7%	0%	9%	1%
60807	6%	0%	3%	4%
39th Ave				
80336	0%	29%	0%	1%
80338	0%	21%	2%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
80355	0%	15%	3%	4%
80356	0%	18%	4%	3%
40th Ave				
80329	0%	14%	4%	7%
80330	0%	11%	4%	7%
80331	0%	14%	6%	4%
80332	0%	11%	7%	4%
42nd Ave				
80276	8%	0%	6%	14%
80278	9%	0%	12%	7%
80295	0%	16%	2%	0%
80296	0%	19%	0%	2%
80298	0%	14%	4%	4%
80300	0%	15%	6%	4%
80307	10%	0%	1%	11%
80309	11%	0%	14%	3%
80315	0%	12%	6%	7%
80316	0%	12%	4%	5%
80317	0%	12%	3%	6%
80318	0%	11%	1%	5%
50th Ave				
46214	3%	0%	2%	17%
46215	4%	0%	17%	6%
55th Ave				
80429	0%	36%	4%	0%
80430	0%	15%	4%	0%
80431	0%	58%	0%	3%
80432	0%	20%	0%	4%
56th Ave				
39959	4%	0%	0%	11%
56th Pl				
80407	0%	13%	2%	3%
80418	0%	13%	2%	3%
80425	0%	12%	5%	0%
80427	0%	16%	0%	4%
75th Ave				
12052	13%	0%	1%	24%
34932	13%	0%	10%	2%
79988	10%	0%	4%	15%
79990	0%	17%	6%	7%
94th Ave				
64133	0%	13%	2%	2%
96th Ave				
80558	0%	15%	1%	1%
80560	0%	11%	1%	1%
Addison Rd				
55242	3%	0%	15%	3%
79930	5%	0%	3%	16%
79941	0%	15%	3%	5%
79943	0%	17%	3%	5%
Addison Rd S				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
32810	0%	15%	1%	0%
49007	0%	29%	4%	0%
64993	7%	0%	1%	11%
Adelphi Rd				
2913	3%	0%	6%	14%
4870	2%	0%	3%	11%
50122	2%	0%	12%	4%
51496	3%	0%	13%	17%
62036	4%	0%	10%	11%
64398	3%	0%	10%	7%
Ager Rd				
8858	5%	0%	12%	6%
14998	4%	0%	2%	11%
72870	5%	0%	2%	10%
72872	5%	0%	11%	5%
72873	0%	6%	10%	4%
Alcona St				
16014	0%	10%	1%	2%
24801	0%	16%	2%	2%
79594	0%	200%	0%	0%
79596	0%	172%	0%	0%
Aldershot Dr				
16714	13%	0%	0%	28%
55065	11%	0%	22%	0%
Allentown Rd				
4873	0%	16%	0%	2%
5824	5%	0%	14%	5%
12586	4%	0%	6%	34%
12587	4%	0%	9%	11%
25504	4%	0%	10%	13%
41879	2%	0%	22%	13%
61211	0%	14%	-7%	-1%
Ammendale Rd				
11126	0%	17%	-6%	-2%
11127	0%	15%	-1%	-6%
11129	0%	18%	-6%	-2%
11130	0%	15%	-7%	-3%
11131	0%	16%	-1%	-6%
62971	0%	16%	-1%	-7%
Arbor St				
79995	0%	20%	4%	5%
79996	0%	25%	4%	4%
Arcola Ave				
56061	1%	0%	11%	0%
Ardwick Ardmore Rd				
33882	7%	0%	-5%	6%
54380	7%	0%	-5%	6%
Arena Dr				
22563	0%	18%	-3%	-2%
26644	6%	0%	-8%	-2%
47212	6%	0%	-9%	-3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
47213	2%	0%	1%	-17%
Aris T Allen Blvd				
13573	0%	1%	2%	13%
Aspen Hill Rd				
35550	5%	0%	0%	4%
Auth Rd				
5823	0%	16%	-2%	-5%
44626	0%	16%	-2%	-5%
44632	0%	16%	-3%	-12%
71280	0%	16%	-3%	-12%
Baltimore Rd				
36592	0%	16%	4%	3%
36593	4%	0%	8%	12%
44664	4%	0%	10%	9%
63835	3%	0%	15%	1%
Baltimore St				
53658	2%	0%	0%	12%
Baltimore Washington Pkwy				
21293	0%	86%	0%	0%
40912	0%	200%	0%	0%
Barker Pl				
79595	0%	199%	0%	0%
79597	0%	101%	-2%	0%
Bauer Dr				
6261	2%	0%	10%	7%
7134	3%	0%	5%	10%
74685	3%	0%	11%	6%
Beach Dr				
5882	9%	0%	14%	7%
18878	11%	0%	12%	21%
22624	5%	0%	5%	16%
69214	0%	15%	3%	3%
Beaver Dam Rd				
16009	13%	0%	7%	6%
24504	14%	0%	8%	7%
Bel Pre Rd				
73081	3%	0%	20%	1%
73083	3%	0%	1%	14%
Belair Dr				
52858	0%	0%	1%	-12%
Belcrest Rd				
14346	0%	12%	1%	1%
80267	3%	0%	10%	1%
80268	4%	0%	2%	10%
Belle Grove Rd				
5013	8%	0%	-1%	0%
37333	5%	0%	0%	-3%
Beltsville Dr				
59020	1%	0%	17%	-1%
62973	0%	2%	11%	-1%
Beltsville Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
65743	0%	5%	11%	0%
Bradley Blvd				
624	12%	0%	7%	8%
2147	1%	0%	1%	17%
6505	6%	0%	-3%	-6%
9869	6%	0%	-6%	-9%
12622	1%	0%	0%	11%
12623	9%	0%	16%	2%
19054	12%	0%	5%	23%
22187	1%	0%	-2%	15%
32181	1%	0%	-14%	2%
34815	10%	0%	10%	1%
36810	0%	10%	0%	6%
37196	1%	0%	24%	-3%
43183	2%	0%	20%	26%
49712	8%	0%	29%	41%
53152	2%	0%	18%	26%
53156	2%	0%	13%	1%
53163	8%	0%	29%	24%
56511	2%	0%	13%	1%
66219	1%	0%	1%	17%
79255	12%	0%	-1%	14%
79257	7%	0%	4%	-5%
Brae Brooke Dr				
16307	0%	16%	10%	9%
Brandywine Rd				
68976	3%	0%	0%	-12%
Briggs Chaney Rd				
1639	5%	0%	10%	5%
1931	7%	0%	2%	11%
10318	0%	15%	1%	2%
22489	0%	13%	1%	2%
22490	0%	17%	3%	2%
28313	5%	0%	5%	2%
37537	10%	0%	13%	6%
49371	0%	12%	2%	2%
56332	0%	21%	7%	2%
74068	6%	0%	3%	28%
75875	0%	16%	3%	2%
75876	0%	11%	1%	2%
Brightseat Rd				
10557	0%	34%	0%	1%
10558	0%	24%	1%	1%
14700	8%	0%	29%	7%
21548	0%	33%	2%	2%
22780	0%	24%	1%	2%
22781	0%	42%	6%	3%
22790	0%	15%	1%	7%
22792	0%	25%	4%	6%
24279	0%	29%	1%	1%
25648	9%	0%	5%	31%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
28213	0%	55%	4%	2%
34593	0%	41%	4%	0%
59051	0%	42%	4%	2%
68771	0%	56%	6%	3%
77232	0%	18%	1%	6%
77234	0%	30%	3%	5%
Brinkley Rd				
17273	0%	11%	2%	0%
17274	0%	10%	2%	0%
30141	0%	11%	2%	0%
79653	0%	10%	3%	0%
Broad Run Rd				
17147	0%	17%	0%	0%
Brooke Rd				
19015	0%	13%	0%	3%
25805	0%	11%	3%	0%
79893	0%	13%	3%	2%
79894	0%	10%	2%	3%
Brooks Dr				
48260	0%	13%	0%	1%
Brown Rd				
48996	0%	27%	1%	4%
Brown Station Rd				
20742	0%	49%	8%	8%
20743	0%	55%	7%	8%
20744	0%	24%	4%	5%
20745	0%	27%	3%	4%
20764	0%	12%	0%	1%
33571	0%	13%	0%	0%
65178	0%	22%	0%	1%
Broxburn Dr				
37233	4%	0%	15%	3%
65138	7%	0%	1%	14%
Brunett Ave				
25776	5%	0%	0%	2%
Burdette Rd				
6495	15%	0%	32%	4%
26063	33%	0%	5%	53%
51768	19%	0%	30%	4%
65132	36%	0%	5%	45%
Burkittsville Rd				
81547	2%	0%	-10%	-1%
81549	2%	0%	-1%	-12%
Cabin Branch Dr				
66765	0%	11%	2%	4%
Cabin John Pkwy				
10260	0%	6%	2%	-14%
60085	0%	8%	17%	0%
71868	0%	6%	-13%	1%
Calverton Blvd				
42957	1%	0%	19%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Campus Dr				
3648	3%	0%	10%	9%
3649	6%	0%	10%	10%
3996	3%	0%	6%	11%
3997	5%	0%	11%	6%
9761	2%	0%	18%	8%
10289	2%	0%	7%	12%
35070	3%	0%	11%	7%
35071	4%	0%	11%	10%
35072	4%	0%	13%	14%
49115	3%	0%	15%	13%
80262	5%	0%	15%	8%
80264	3%	0%	2%	15%
Campus Way N				
4745	0%	14%	0%	-5%
14529	0%	11%	0%	-5%
77235	11%	0%	-2%	4%
77236	15%	0%	2%	13%
Campus Way S				
15330	0%	14%	0%	1%
23127	0%	33%	6%	2%
49020	0%	31%	1%	8%
65390	0%	23%	1%	1%
Capital Beltway				
2624	9%	0%	44%	77%
2625	2%	0%	28%	20%
6219	0%	235%	5%	0%
6524	7%	0%	44%	55%
6525	1%	0%	17%	-19%
6528	1%	0%	17%	-19%
6818	3%	0%	15%	6%
6820	2%	0%	41%	18%
6821	2%	0%	-3%	23%
6822	0%	3%	4%	13%
6823	2%	0%	16%	6%
6824	2%	0%	3%	28%
6827	1%	0%	9%	15%
6830	3%	0%	30%	28%
6831	0%	6%	-14%	-8%
6832	8%	0%	-13%	-20%
7119	3%	0%	30%	28%
7120	1%	0%	25%	25%
7123	3%	0%	22%	6%
7124	2%	0%	18%	20%
7773	9%	0%	53%	45%
8715	10%	0%	81%	85%
8718	0%	6%	36%	26%
8719	18%	0%	-12%	2%
10252	1%	0%	56%	41%
10254	0%	200%	0%	0%
10257	0%	685%	-4%	-2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
10513	2%	0%	25%	31%
10838	0%	11%	0%	0%
11031	0%	8%	-17%	-17%
11033	0%	2%	31%	-5%
11035	0%	9%	-16%	-3%
14058	6%	0%	2%	39%
16672	0%	600%	-11%	-21%
17226	2%	0%	28%	14%
19277	1%	0%	3%	43%
25418	2%	0%	22%	15%
25419	1%	0%	32%	21%
25426	0%	13%	0%	0%
34319	8%	0%	37%	75%
35426	6%	0%	-26%	-18%
37141	3%	0%	41%	46%
37542	0%	3%	-27%	-14%
37544	3%	0%	4%	47%
41598	0%	22%	0%	0%
43010	9%	0%	22%	70%
43317	1%	0%	-21%	-1%
43763	3%	0%	41%	46%
45001	0%	24%	2%	91%
46647	3%	0%	2%	12%
46648	0%	3%	-11%	-16%
52567	10%	0%	67%	96%
52945	0%	8%	37%	20%
53312	0%	8%	-10%	-13%
55255	5%	0%	61%	25%
55619	2%	0%	41%	33%
55626	0%	200%	0%	0%
58650	1%	0%	2%	-11%
59353	0%	43%	0%	1%
59354	9%	0%	22%	70%
59356	0%	417%	78%	1%
59366	7%	0%	16%	46%
59644	4%	0%	17%	69%
59654	19%	0%	-6%	-20%
68592	0%	200%	-8%	-19%
68593	0%	29600%	-13%	-12%
69021	9%	0%	53%	45%
70513	1%	0%	3%	43%
Carrington Ave				
27903	3%	0%	10%	3%
28202	4%	0%	3%	13%
Catskill St				
71270	5%	0%	11%	0%
Cedar Ln				
1279	4%	0%	19%	3%
26478	4%	0%	1%	31%
33922	4%	0%	19%	3%
52561	4%	0%	1%	31%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Chapel Point Rd				
5443	0%	13%	1%	0%
5743	0%	11%	0%	0%
6480	0%	11%	0%	0%
10731	0%	12%	0%	0%
48695	0%	13%	1%	0%
57138	0%	14%	1%	0%
Charles Armentrout Dr				
23705	3%	0%	1%	10%
Cherry Ln				
1326	0%	27%	-1%	0%
Cherry Tree Crossing Rd				
49515	0%	11%	-2%	0%
Chesapeake Rd				
80422	0%	12%	4%	3%
Chestnut Ave				
9447	0%	11%	2%	2%
31622	0%	11%	2%	2%
31623	0%	14%	2%	3%
31624	0%	12%	2%	3%
31625	0%	13%	2%	3%
61769	6%	0%	2%	4%
65437	6%	0%	2%	4%
Cheverly Ave				
14819	0%	14%	6%	5%
59776	0%	19%	4%	5%
Church Rd				
12130	0%	14%	1%	2%
15956	0%	27%	5%	1%
16238	0%	27%	5%	1%
16239	0%	22%	5%	1%
16638	0%	30%	4%	10%
17739	0%	38%	10%	7%
20756	0%	38%	2%	5%
21611	0%	16%	5%	1%
27106	0%	38%	5%	3%
33229	0%	38%	2%	5%
36048	6%	0%	3%	2%
36053	0%	14%	1%	6%
38533	0%	18%	9%	10%
44256	0%	14%	0%	2%
45305	0%	33%	10%	8%
53702	0%	36%	4%	10%
55147	0%	23%	9%	16%
55148	0%	24%	8%	16%
55149	0%	17%	8%	12%
58009	0%	23%	8%	17%
58010	0%	18%	8%	11%
59319	0%	18%	8%	11%
59320	0%	24%	8%	16%
64150	0%	31%	2%	6%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
64417	0%	12%	2%	7%
65171	0%	28%	2%	6%
65860	0%	10%	1%	10%
67960	0%	36%	2%	4%
Cindy Ln				
79811	0%	28%	5%	1%
79813	0%	17%	1%	2%
Claggett Landing Rd				
55218	2%	0%	9%	14%
73254	1%	0%	16%	4%
Clara Barton Pkwy				
32191	0%	13%	0%	0%
36917	0%	0%	0%	-43%
52785	5%	0%	1%	-16%
55616	0%	7%	4%	83%
59355	14%	0%	30%	48%
60086	0%	2%	-43%	0%
College Pkwy				
75594	0%	16%	1%	0%
Columbia Ave				
79290	8%	0%	4%	5%
79291	8%	0%	4%	6%
Columbia Park Rd				
10549	6%	0%	2%	14%
25355	7%	0%	22%	21%
31087	8%	0%	3%	21%
58070	6%	0%	2%	14%
58652	6%	0%	2%	14%
66760	6%	0%	6%	5%
66761	6%	0%	6%	5%
66762	6%	0%	6%	5%
Connecticut Ave				
1367	1%	0%	0%	10%
13666	1%	0%	-1%	11%
24970	3%	0%	-1%	11%
44972	1%	0%	0%	13%
57588	3%	0%	-1%	14%
69701	1%	0%	2%	11%
73084	2%	0%	12%	1%
74412	4%	0%	10%	-2%
Contee Rd				
1043	0%	16%	-2%	0%
Cool Spring Rd				
5106	5%	0%	6%	1%
County Rd				
54074	4%	0%	19%	16%
67060	3%	0%	9%	17%
Crabbs Branch Way				
3816	1%	0%	12%	0%
71694	2%	0%	0%	12%
Crain Hwy				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
3483	2%	0%	9%	11%
6771	0%	12%	-2%	0%
11329	3%	0%	10%	11%
14759	2%	0%	21%	6%
14760	3%	0%	18%	13%
17046	6%	0%	8%	13%
17746	1%	0%	11%	5%
19078	4%	0%	17%	7%
20364	3%	0%	18%	6%
21135	3%	0%	13%	4%
25221	4%	0%	11%	19%
32950	2%	0%	7%	16%
33216	3%	0%	15%	30%
34255	1%	0%	10%	6%
35923	1%	0%	12%	6%
42483	4%	0%	15%	7%
42484	4%	0%	15%	6%
54461	3%	0%	16%	20%
59046	4%	0%	25%	14%
60691	4%	0%	7%	11%
61009	5%	0%	9%	8%
61013	4%	0%	15%	7%
61014	5%	0%	7%	8%
61015	5%	0%	8%	7%
61638	3%	0%	18%	7%
61640	4%	0%	8%	13%
61957	3%	0%	14%	7%
61958	3%	0%	14%	8%
62275	3%	0%	14%	7%
63879	3%	0%	7%	15%
71337	3%	0%	15%	28%
Crescent Rd				
22463	2%	0%	4%	18%
28807	4%	0%	22%	8%
Crest Ave				
80033	0%	86%	0%	1%
Crittenden St				
34130	3%	0%	3%	17%
64413	3%	0%	18%	9%
Croom Station Rd				
61963	0%	10%	0%	1%
62274	3%	0%	14%	7%
79604	6%	0%	4%	4%
79605	6%	0%	4%	4%
Dale Dr				
637	9%	0%	5%	3%
35303	9%	0%	5%	3%
54293	0%	17%	3%	3%
Damascus Rd				
35101	5%	0%	0%	10%
Darcy Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
32636	0%	19%	11%	5%
33831	0%	10%	3%	0%
33833	0%	26%	0%	-5%
35898	0%	16%	4%	5%
45689	0%	12%	2%	8%
Darnestown Rd				
57378	6%	0%	1%	1%
72717	5%	0%	2%	2%
74406	5%	0%	2%	2%
Dartmouth Ave				
33740	9%	0%	8%	5%
Dateleaf Ave				
79881	0%	39%	-1%	0%
79882	0%	77%	-1%	0%
Decatur St				
3115	6%	0%	3%	12%
16222	8%	0%	11%	15%
16224	7%	0%	5%	12%
39962	8%	0%	11%	15%
80271	0%	36%	4%	12%
80272	0%	47%	13%	5%
Democracy Blvd				
5967	12%	0%	11%	1%
5999	5%	0%	0%	18%
6000	4%	0%	0%	20%
6218	8%	0%	-1%	22%
18071	0%	45%	0%	1%
19271	0%	6%	0%	11%
25424	20%	0%	0%	15%
26665	9%	0%	3%	22%
28454	0%	15%	-1%	2%
51195	8%	0%	15%	1%
63217	1%	0%	31%	-2%
68994	7%	0%	15%	1%
71010	0%	7%	10%	1%
72716	8%	0%	-10%	-2%
Denley Rd				
13660	4%	0%	4%	13%
13662	4%	0%	15%	9%
Devon Rd				
53910	0%	17%	3%	3%
Diamond Back				
13823	0%	0%	7%	-14%
13825	0%	0%	-13%	2%
Dorset Ave				
52903	2%	0%	5%	15%
79320	0%	10%	7%	4%
79322	0%	11%	4%	11%
Dorset Rd				
51944	0%	11%	0%	0%
Dwight D Eisenhower Hwy				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
25778	0%	0%	0%	-18%
37276	0%	1%	0%	-14%
37282	0%	18%	0%	0%
37284	0%	3%	0%	-12%
37634	0%	3%	0%	-12%
37637	0%	12%	0%	0%
37638	0%	0%	-1%	-12%
47337	18%	0%	-12%	2%
66784	0%	104%	5%	79%
67073	0%	94%	5%	81%
67077	0%	94%	5%	81%
67083	0%	94%	5%	81%
68866	0%	0%	0%	-11%
69882	18%	0%	-12%	2%
E Furnace Branch Rd				
53722	5%	0%	0%	7%
E Gude Dr				
1237	7%	0%	0%	11%
32529	5%	0%	11%	0%
E Jefferson St				
9665	5%	0%	0%	8%
9703	1%	0%	13%	7%
E Patrick St				
75635	0%	200%	0%	0%
E Randolph Rd				
8397	4%	0%	17%	4%
10600	4%	0%	11%	20%
E West Hwy				
1699	1%	0%	8%	14%
1701	4%	0%	12%	1%
2644	12%	0%	5%	2%
2648	2%	0%	1%	16%
5595	3%	0%	18%	2%
7868	2%	0%	11%	5%
8494	4%	0%	15%	29%
8500	2%	0%	0%	16%
13831	3%	0%	12%	4%
14345	0%	12%	1%	1%
14732	3%	0%	19%	13%
15588	4%	0%	11%	4%
15596	2%	0%	13%	11%
16025	4%	0%	12%	1%
16229	3%	0%	11%	10%
16510	3%	0%	12%	9%
16513	2%	0%	13%	11%
16514	2%	0%	3%	16%
16515	3%	0%	2%	18%
17450	2%	0%	3%	10%
19040	4%	0%	16%	8%
19273	2%	0%	3%	16%
21767	7%	0%	4%	16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
21879	3%	0%	10%	11%
25350	3%	0%	15%	8%
26357	4%	0%	13%	15%
30826	5%	0%	15%	4%
32171	2%	0%	4%	18%
35938	3%	0%	2%	11%
36414	7%	0%	14%	10%
37528	2%	0%	12%	-1%
40143	2%	0%	1%	11%
40922	3%	0%	11%	13%
46310	4%	0%	18%	7%
47491	2%	0%	15%	-1%
47492	2%	0%	1%	12%
53531	2%	0%	7%	15%
57826	2%	0%	18%	12%
59622	6%	0%	6%	15%
60809	2%	0%	0%	15%
60810	3%	0%	14%	10%
63820	2%	0%	6%	10%
64096	2%	0%	1%	11%
71878	3%	0%	5%	17%
72314	2%	0%	8%	12%
Earnshaw Dr				
57764	0%	16%	0%	1%
57765	0%	31%	0%	1%
Ellington Dr				
60610	6%	0%	-4%	-4%
Elm Ave				
47777	6%	0%	2%	6%
79287	5%	0%	3%	7%
79289	5%	0%	5%	3%
Elm St				
79306	5%	0%	4%	6%
Emory Ln				
24829	0%	13%	0%	2%
Enterprise Rd				
16544	0%	10%	0%	4%
19227	11%	0%	17%	12%
29411	7%	0%	10%	14%
36042	4%	0%	6%	19%
36043	10%	0%	21%	24%
56261	6%	0%	15%	2%
62084	5%	0%	4%	15%
71017	13%	0%	14%	18%
74057	12%	0%	3%	36%
Esworthy Rd				
19458	0%	11%	4%	5%
Fairfax Rd				
79316	4%	0%	7%	16%
79317	6%	0%	14%	12%
Fairland Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
1930	6%	0%	4%	4%
50730	3%	0%	16%	1%
56279	7%	0%	3%	9%
Falls Rd				
5991	1%	0%	1%	24%
32244	13%	0%	21%	28%
Fenno Rd				
62406	0%	15%	0%	0%
Fenton St				
1537	6%	0%	7%	1%
2150	8%	0%	7%	8%
26095	5%	0%	4%	3%
Fernwood Rd				
83	0%	19%	4%	2%
6474	0%	15%	4%	5%
62004	4%	0%	2%	11%
64821	5%	0%	9%	-34%
65124	4%	0%	2%	11%
Fields Rd				
34271	5%	0%	0%	8%
45789	7%	0%	10%	1%
72379	4%	0%	11%	1%
Fingerboard Rd				
44793	0%	14%	0%	-1%
Fish Hatchery Rd				
16906	0%	16%	-1%	0%
25264	0%	12%	0%	0%
Fisher Ave				
19855	0%	11%	0%	0%
Fishers Ln				
40826	4%	0%	0%	10%
69940	4%	0%	12%	2%
Fletchertown Rd				
80583	0%	14%	0%	-3%
Foote St				
81616	0%	13%	0%	3%
Forest Glen Rd				
9228	13%	0%	9%	7%
56380	0%	17%	2%	2%
Forest Rd				
19286	0%	22%	4%	4%
60055	0%	11%	1%	1%
80002	0%	41%	0%	1%
80005	0%	37%	0%	1%
80034	0%	86%	0%	1%
Forestville Rd				
17217	0%	11%	-1%	-8%
37749	4%	0%	1%	24%
65000	5%	0%	22%	11%
65833	7%	0%	36%	8%
69065	3%	0%	1%	14%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
75577	3%	0%	12%	4%
75578	3%	0%	10%	-53%
75582	0%	12%	9%	2%
75583	0%	9%	0%	-18%
75584	0%	13%	16%	4%
75585	0%	12%	14%	4%
Fort Washington Rd				
24340	0%	13%	0%	0%
Frederick Rd				
15553	7%	0%	-2%	0%
71698	0%	0%	10%	0%
71699	1%	0%	0%	10%
Frolich Ln				
55295	0%	19%	2%	3%
Gainsborough Rd				
6596	0%	13%	6%	1%
Gallatin St				
80357	0%	16%	3%	1%
80358	0%	17%	1%	4%
Garden Gate Rd				
22270	2%	0%	13%	0%
Garrett A Morgan Blvd				
24277	0%	18%	1%	2%
28204	0%	13%	4%	3%
28205	0%	23%	1%	2%
28211	0%	14%	4%	3%
28212	0%	21%	1%	3%
37554	0%	21%	1%	3%
68770	0%	14%	4%	3%
72449	0%	15%	4%	2%
Georgia Ave				
11026	2%	0%	10%	10%
22261	2%	0%	10%	0%
32047	0%	0%	18%	4%
50487	0%	0%	-1%	10%
72348	5%	0%	20%	3%
Gladys Noon Spellman Pkwy				
3385	0%	4%	0%	11%
8630	3%	0%	14%	31%
12086	0%	6%	-5%	-12%
12090	2%	0%	12%	-1%
13882	3%	0%	-16%	-6%
14135	2%	0%	12%	17%
16988	0%	15%	0%	-3%
18384	3%	0%	18%	25%
33282	4%	0%	8%	16%
43798	0%	13%	0%	0%
44068	4%	0%	14%	25%
48270	3%	0%	12%	19%
48533	4%	0%	2%	10%
48534	4%	0%	8%	15%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
48609	0%	200%	0%	0%
53705	3%	0%	12%	19%
54843	2%	0%	-13%	-9%
54848	0%	56%	0%	-2%
55216	4%	0%	13%	17%
58701	3%	0%	12%	13%
58941	2%	0%	12%	19%
58944	3%	0%	13%	13%
58945	4%	0%	13%	17%
68234	0%	16%	6%	29%
Glen Mill Rd				
4161	1%	0%	0%	15%
5664	0%	10%	2%	3%
19843	6%	0%	11%	1%
22405	9%	0%	16%	2%
36812	5%	0%	0%	13%
46463	1%	0%	11%	6%
46639	0%	10%	1%	5%
47231	7%	0%	0%	17%
55063	5%	0%	9%	1%
Glen Rd				
1175	4%	0%	11%	0%
25326	0%	11%	0%	2%
25327	7%	0%	0%	14%
26363	0%	13%	2%	1%
40423	4%	0%	11%	0%
49713	6%	0%	0%	13%
55057	5%	0%	12%	0%
56920	6%	0%	0%	13%
75280	4%	0%	11%	0%
75281	6%	0%	0%	14%
Glenarden Pkwy				
13489	21%	0%	14%	30%
14694	0%	14%	4%	19%
Glenbrook Rd				
79325	0%	9%	12%	2%
Glenmont Cir				
57883	0%	0%	-1%	18%
57886	0%	0%	14%	-2%
Glenn Dale Blvd				
22691	4%	0%	16%	7%
30839	7%	0%	3%	8%
48891	5%	0%	3%	21%
Glissans Mill Rd				
44331	0%	17%	0%	-1%
Good Luck Rd				
14137	3%	0%	12%	19%
14371	4%	0%	13%	17%
21669	0%	26%	7%	7%
25408	1%	0%	1%	-11%
25409	1%	0%	1%	-11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Green Valley Rd				
72882	0%	11%	0%	0%
Greenbelt Rd				
12058	0%	22%	1%	0%
16934	0%	7%	-70%	-56%
30148	5%	0%	18%	2%
30189	6%	0%	12%	2%
30325	4%	0%	1%	16%
55223	0%	33%	-1%	-1%
80545	0%	19%	3%	6%
80547	0%	15%	3%	2%
80637	0%	10%	4%	3%
Greencastle Rd				
72436	0%	26%	0%	-4%
Greentree Rd				
5873	15%	0%	20%	5%
9868	0%	29%	14%	15%
34982	0%	0%	6%	33%
53653	15%	0%	8%	24%
66216	0%	27%	14%	18%
72625	0%	0%	19%	8%
Grubb Rd				
47149	6%	0%	2%	10%
H G Trueman Rd				
43230	0%	10%	0%	0%
50132	0%	10%	0%	0%
54089	0%	19%	0%	1%
69924	0%	19%	0%	1%
Hanover Pkwy				
19304	0%	15%	4%	1%
30531	0%	22%	1%	4%
30532	0%	15%	4%	1%
39976	0%	22%	1%	4%
52274	0%	14%	8%	7%
Harbour Way				
75519	3%	0%	5%	29%
75520	2%	0%	26%	6%
Harry S Truman Dr				
21133	0%	23%	4%	1%
21527	0%	24%	4%	1%
21528	0%	20%	1%	6%
23690	0%	23%	1%	5%
23971	0%	24%	1%	5%
71888	0%	19%	5%	2%
Harry S Truman Dr N				
33912	11%	0%	24%	16%
71898	8%	0%	1%	43%
Hastings Dr				
24268	0%	25%	4%	0%
26629	0%	25%	4%	0%
79852	0%	11%	3%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Hessong Bridge Rd				
7398	0%	16%	-1%	0%
48698	0%	12%	0%	0%
High Bridge Rd				
31634	0%	10%	0%	2%
Hillmeade Rd				
16297	0%	11%	1%	1%
25711	0%	12%	1%	1%
Holly Springs Dr W				
1273	0%	20%	0%	3%
36484	0%	15%	3%	0%
58367	0%	20%	1%	1%
67056	0%	22%	1%	1%
Holter Rd				
18789	0%	13%	0%	0%
I- 195				
54987	1%	0%	0%	15%
I- 270				
5926	8%	0%	19%	0%
5927	10%	0%	27%	2%
9031	0%	10%	0%	1%
9033	0%	0%	-13%	-6%
9035	0%	0%	-9%	-12%
9977	0%	0%	-11%	0%
11284	0%	11%	0%	0%
11285	1%	0%	-15%	-9%
15674	0%	0%	-9%	-12%
19193	0%	126%	24%	4%
19585	0%	0%	-11%	-8%
19669	0%	2%	68%	1%
22834	8%	0%	11%	0%
25127	6%	0%	0%	14%
26790	0%	200%	0%	1%
27942	6%	0%	-83%	10%
28056	0%	126%	134%	-1%
28057	0%	99%	6%	45%
28061	0%	110%	105%	14%
29074	0%	118%	88%	4%
29076	0%	83%	15%	98%
29077	0%	127%	0%	0%
37288	0%	3%	0%	-12%
37540	9%	0%	33%	3%
38287	0%	99%	15%	86%
43474	9%	0%	8%	1%
43769	3%	0%	-10%	15%
43771	0%	37%	9%	3%
53317	0%	0%	-13%	-7%
55623	3%	0%	-10%	15%
58033	0%	128%	5%	4%
58037	0%	114%	52%	14%
58038	0%	90%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
58039	0%	0%	-9%	-12%
63899	9%	0%	35%	0%
65625	0%	128%	55%	12%
65629	7%	0%	15%	-1%
65630	0%	0%	-13%	-6%
66587	0%	301%	16%	17%
66773	0%	101%	7%	8%
67374	0%	86%	6%	100%
67375	0%	137%	49%	-1%
67668	0%	99%	15%	86%
67671	0%	128%	55%	12%
67677	0%	102%	15%	60%
67679	0%	121%	110%	12%
67967	0%	110%	105%	14%
67968	0%	78%	15%	123%
67970	0%	110%	105%	14%
67972	0%	91%	15%	43%
67977	0%	91%	15%	43%
67978	0%	113%	81%	14%
67979	0%	91%	15%	43%
67981	0%	113%	81%	14%
68265	0%	82%	15%	106%
68266	0%	113%	81%	14%
68272	0%	95%	15%	24%
68274	0%	104%	138%	14%
68277	0%	86%	15%	32%
68559	0%	83%	15%	34%
68560	0%	275%	0%	-2%
68562	0%	102%	58%	15%
68566	0%	3%	0%	-18%
68573	0%	3%	0%	-18%
68721	0%	96%	15%	107%
68725	0%	118%	45%	14%
68729	0%	0%	-11%	-8%
68731	0%	1%	0%	-14%
68857	0%	3%	0%	-18%
70365	8%	0%	18%	-1%
70367	5%	0%	-1%	13%
70368	6%	0%	-1%	32%
70369	8%	0%	23%	-1%
70608	0%	0%	0%	-17%
70751	9%	0%	26%	0%
I- 370				
9353	0%	2%	28%	-3%
9355	0%	79%	0%	0%
32611	0%	18%	0%	0%
41595	0%	43%	1%	5%
52380	8%	0%	-8%	3%
59195	0%	10%	4%	1%
I- 495				
1190	6%	0%	11%	20%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
11587	4%	0%	18%	53%
11592	3%	0%	30%	32%
12346	0%	0%	-14%	-3%
12347	0%	0%	-14%	-3%
14126	3%	0%	1%	30%
14676	4%	0%	13%	29%
14677	0%	200%	0%	0%
14681	3%	0%	24%	38%
16745	0%	20%	1%	3%
16926	0%	7%	8%	12%
16990	3%	0%	13%	36%
16991	3%	0%	13%	34%
17216	0%	5%	-63%	-51%
17685	6%	0%	25%	44%
17687	4%	0%	49%	0%
17688	6%	0%	18%	1%
19074	4%	0%	24%	48%
20076	5%	0%	33%	34%
20450	1%	0%	1%	33%
20850	7%	0%	89%	77%
27933	0%	12%	8%	34%
28574	0%	1%	12%	-9%
29807	6%	0%	58%	4%
38259	0%	7%	8%	12%
40692	0%	15%	-1%	-3%
43508	0%	7%	8%	12%
43514	4%	0%	41%	36%
44067	0%	3%	2%	-25%
47339	0%	4%	11%	12%
55221	4%	0%	44%	43%
56253	4%	0%	71%	51%
56564	0%	17%	-1%	0%
I- 595				
12094	4%	0%	-34%	-16%
27732	0%	1%	0%	-10%
59578	4%	0%	-30%	-75%
73588	0%	2%	-10%	-5%
73592	0%	2%	-10%	-5%
73596	0%	2%	-10%	-5%
73862	0%	1%	0%	-10%
I- 95				
3357	2%	0%	22%	24%
3358	0%	7%	13%	17%
3375	4%	0%	26%	11%
3376	0%	410%	-1%	-1%
12344	2%	0%	38%	40%
12349	2%	0%	-21%	-14%
12603	5%	0%	48%	66%
13349	3%	0%	-30%	-53%
13351	3%	0%	39%	35%
13352	3%	0%	-14%	-12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
14124	3%	0%	36%	55%
14125	4%	0%	37%	24%
14679	4%	0%	39%	54%
14682	0%	217%	-3%	-25%
14974	0%	31%	0%	0%
16744	0%	4%	-46%	-32%
17213	4%	0%	23%	53%
17219	0%	7%	13%	18%
17686	0%	6%	1%	29%
19330	0%	24%	0%	0%
20071	0%	31%	-1%	-17%
20077	0%	7%	13%	18%
21772	5%	0%	-51%	-30%
21773	0%	37%	4%	9%
28577	0%	7%	13%	18%
28809	0%	11%	7%	6%
30064	0%	14%	5%	0%
30065	0%	1604%	35%	3%
30867	0%	14%	0%	-1%
40691	4%	0%	24%	44%
43515	5%	0%	10%	31%
44948	0%	109%	1%	0%
48261	4%	0%	11%	6%
48347	0%	3%	19%	1%
48348	0%	1800%	0%	0%
49018	0%	46%	4%	3%
51638	0%	93%	0%	0%
54078	3%	0%	8%	13%
54493	2%	0%	25%	54%
56263	7%	0%	36%	45%
58947	4%	0%	28%	28%
58950	0%	14%	0%	0%
67392	2%	0%	-10%	-18%
70129	2%	0%	-4%	-26%
Independence St				
34656	3%	0%	-1%	12%
Iverson St				
38484	0%	13%	0%	1%
Jadeleaf Ave				
79856	0%	10%	1%	0%
79858	0%	19%	2%	1%
79877	0%	39%	-1%	0%
Jefferson Pike				
69334	0%	13%	0%	0%
Jefferson St				
80301	0%	14%	4%	4%
80303	0%	16%	5%	3%
John Hanson Hwy				
13343	1%	0%	14%	19%
13344	2%	0%	24%	6%
13348	2%	0%	21%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
16984	1%	0%	14%	19%
48619	8%	0%	11%	43%
58942	0%	15%	1%	0%
Jones Bridge Rd				
7424	2%	0%	11%	3%
19055	5%	0%	3%	18%
26048	4%	0%	7%	11%
32185	4%	0%	17%	17%
35615	5%	0%	11%	18%
43176	7%	0%	21%	6%
Jones Ln				
79464	0%	22%	0%	1%
79465	0%	12%	0%	1%
79466	0%	11%	0%	0%
Jones Mill Rd				
47159	3%	0%	6%	15%
71591	3%	0%	1%	13%
Kenilworth Ave				
15030	2%	0%	20%	13%
15623	6%	0%	15%	24%
15635	6%	0%	7%	8%
15702	3%	0%	12%	28%
15891	6%	0%	14%	1%
18174	4%	0%	1%	16%
25727	5%	0%	6%	26%
40694	4%	0%	18%	26%
56371	5%	0%	27%	25%
63572	5%	0%	13%	22%
Kentsdale Dr				
25122	7%	0%	1%	22%
32519	7%	0%	15%	1%
Kettering Dr				
15332	0%	29%	9%	16%
15333	24%	0%	12%	23%
15334	0%	12%	10%	4%
24931	4%	0%	2%	18%
64714	10%	0%	13%	6%
Kipling Pkwy				
34157	0%	14%	2%	14%
72730	19%	0%	17%	15%
Knowles Ave				
8714	4%	0%	15%	12%
52949	1%	0%	9%	10%
69216	8%	0%	22%	28%
69217	7%	0%	20%	27%
69218	4%	0%	11%	27%
69219	3%	0%	15%	16%
72972	3%	0%	13%	13%
Konterra Dr				
51884	6%	0%	-1%	-3%
67062	6%	0%	-3%	-1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
71510	0%	44%	0%	0%
L St				
79942	0%	10%	2%	4%
79944	0%	12%	2%	5%
Landover Rd				
3018	2%	0%	0%	13%
9465	3%	0%	11%	1%
10556	3%	0%	-1%	-12%
11451	1%	0%	12%	0%
11590	3%	0%	1%	15%
11871	0%	0%	-15%	2%
14118	0%	6%	-48%	-21%
18568	3%	0%	8%	11%
21807	3%	0%	12%	0%
22788	8%	0%	4%	16%
32643	4%	0%	18%	3%
48617	1%	0%	0%	14%
50974	0%	13%	0%	8%
54495	1%	0%	0%	13%
63261	3%	0%	10%	12%
64680	3%	0%	14%	1%
71899	5%	0%	-2%	8%
73247	2%	0%	-10%	-2%
Larchmont Ave				
29634	0%	24%	2%	0%
29635	6%	0%	10%	5%
47719	0%	7%	3%	11%
49174	0%	38%	0%	1%
79901	6%	0%	7%	9%
79903	8%	0%	5%	10%
Largo Center Dr				
22564	0%	14%	-2%	-1%
Largo Rd				
2424	0%	11%	8%	5%
15042	5%	0%	10%	12%
15045	5%	0%	11%	9%
15328	5%	0%	9%	9%
15331	0%	26%	10%	17%
21532	13%	0%	7%	4%
21613	3%	0%	9%	29%
24933	10%	0%	2%	35%
33558	7%	0%	17%	4%
33566	6%	0%	10%	7%
34929	0%	14%	5%	4%
49004	3%	0%	3%	10%
64432	6%	0%	5%	7%
64441	0%	14%	5%	4%
Laurel Bowie Rd				
1186	2%	0%	17%	13%
16759	3%	0%	4%	10%
35899	2%	0%	5%	12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Layhill Rd				
1090	1%	0%	0%	13%
10337	6%	0%	1%	18%
10591	1%	0%	12%	1%
11104	1%	0%	12%	1%
15670	3%	0%	15%	0%
15673	1%	0%	0%	11%
22263	2%	0%	12%	3%
32604	3%	0%	-1%	20%
44263	4%	0%	17%	2%
44542	0%	0%	12%	-1%
51629	0%	14%	0%	3%
53315	1%	0%	0%	12%
55259	1%	0%	0%	13%
Leeland Rd				
14761	0%	14%	1%	1%
33217	0%	23%	1%	2%
48446	0%	18%	1%	2%
63877	0%	11%	1%	1%
Leland St				
79276	0%	19%	0%	1%
79277	0%	15%	1%	0%
Little Falls Pkwy				
2346	5%	0%	3%	8%
32180	9%	0%	5%	5%
79321	0%	12%	0%	2%
79323	0%	15%	2%	3%
Longfellow St				
80306	0%	12%	2%	2%
80343	0%	14%	1%	5%
80344	0%	13%	1%	5%
80345	0%	16%	6%	3%
80346	0%	16%	6%	2%
80364	0%	14%	1%	5%
80366	0%	16%	6%	3%
Lorain Ave				
16314	0%	17%	1%	2%
Lottsford Rd				
22353	8%	0%	12%	15%
22572	0%	18%	9%	8%
25654	0%	14%	4%	10%
40406	7%	0%	10%	14%
49051	13%	0%	14%	18%
58881	3%	0%	12%	5%
63266	8%	0%	9%	21%
71895	0%	13%	6%	9%
71896	13%	0%	2%	17%
Lottsford Vista Rd				
25103	0%	20%	7%	14%
52270	0%	19%	10%	11%
61445	0%	19%	18%	10%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
63861	0%	31%	12%	18%
Lusbys Ln				
80173	0%	17%	0%	1%
80174	0%	16%	0%	1%
Macarthur Blvd				
1477	6%	0%	14%	1%
6271	1%	0%	-17%	-4%
16422	5%	0%	0%	26%
26361	16%	0%	9%	25%
30010	5%	0%	0%	-5%
32178	1%	0%	-13%	1%
34972	2%	0%	7%	-20%
34973	4%	0%	-1%	12%
37132	3%	0%	1%	11%
40087	1%	0%	11%	0%
51772	4%	0%	16%	5%
55050	23%	0%	23%	6%
65137	7%	0%	3%	14%
65346	2%	0%	-23%	-12%
65348	1%	0%	-5%	-20%
71007	8%	0%	0%	16%
71008	5%	0%	1%	-16%
Madaket Rd				
40475	6%	0%	1%	-9%
Marianna Dr				
79388	0%	11%	0%	3%
Marlboro Pike				
25806	0%	27%	3%	0%
26951	6%	0%	7%	9%
31043	0%	24%	0%	2%
64726	8%	0%	5%	10%
Marriottsville Rd				
48324	1%	0%	4%	-15%
Martin Luther King Jr Hwy				
4393	3%	0%	10%	24%
14140	3%	0%	-24%	-34%
14517	5%	0%	17%	22%
15194	4%	0%	11%	15%
15968	5%	0%	2%	10%
23071	3%	0%	15%	13%
23230	7%	0%	8%	29%
23231	5%	0%	22%	7%
25098	5%	0%	-1%	-21%
25641	5%	0%	13%	21%
25779	2%	0%	-1%	-15%
27902	3%	0%	11%	2%
30836	0%	7%	-3%	-19%
38179	3%	0%	10%	18%
48888	6%	0%	3%	12%
49277	6%	0%	8%	27%
49841	4%	0%	5%	19%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
53699	2%	0%	-1%	-15%
54372	0%	14%	3%	4%
54919	4%	0%	3%	16%
59032	5%	0%	13%	23%
63782	4%	0%	11%	32%
63783	4%	0%	8%	11%
66764	10%	0%	10%	15%
68768	5%	0%	3%	14%
70831	7%	0%	38%	28%
72168	5%	0%	20%	7%
75390	5%	0%	6%	12%
Maryland Ave				
90	6%	0%	5%	8%
54037	5%	0%	16%	2%
Mattaponi Rd				
42107	0%	14%	0%	0%
Meadowridge Ln				
4742	0%	23%	5%	6%
58595	0%	39%	6%	9%
Melwood Rd				
25870	0%	14%	3%	1%
Merrimac Dr				
18831	0%	21%	0%	1%
33808	0%	20%	2%	0%
71471	3%	0%	2%	11%
71472	3%	0%	12%	2%
Missouri Ave				
60696	0%	15%	0%	1%
Mitchellville Rd				
15347	0%	18%	2%	8%
18888	9%	0%	2%	4%
20365	0%	12%	2%	2%
33221	0%	14%	3%	10%
55135	0%	11%	2%	4%
55136	11%	0%	5%	7%
59317	0%	14%	5%	6%
Montpelier Dr				
6106	5%	0%	-3%	-4%
39619	7%	0%	-4%	-3%
Montrose Rd				
2989	0%	35%	1%	13%
8728	2%	0%	-15%	-7%
10779	1%	0%	-1%	-14%
21959	0%	0%	-4%	-12%
63486	1%	0%	-6%	-12%
Moorland Ln				
65354	2%	0%	19%	10%
65356	4%	0%	12%	25%
Morgan Dr				
47820	1%	0%	11%	8%
47821	2%	0%	5%	19%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Mount Oak Rd				
2420	7%	0%	-1%	3%
2421	6%	0%	3%	1%
20366	7%	0%	3%	1%
21607	8%	0%	-1%	3%
48714	8%	0%	3%	2%
64147	7%	0%	-1%	3%
Muddy Branch Rd				
69033	2%	0%	0%	19%
Muirkirk Rd				
10820	7%	0%	0%	-11%
44548	6%	0%	-3%	-4%
45692	6%	0%	0%	-6%
60497	2%	0%	0%	-16%
64334	10%	0%	1%	-6%
N Englewood Dr				
79973	0%	73%	0%	1%
79974	0%	27%	0%	1%
79975	0%	37%	1%	0%
79976	0%	20%	1%	0%
N Stonestreet Ave				
1299	4%	0%	1%	11%
N Washington St				
1591	3%	0%	0%	11%
1593	1%	0%	16%	-1%
79408	1%	0%	0%	12%
79410	0%	0%	23%	-1%
Nalley Rd				
27896	0%	12%	5%	0%
Needleleaf Ln				
14813	19%	0%	18%	7%
53625	0%	50%	3%	7%
54387	0%	33%	2%	4%
58880	29%	0%	3%	28%
Nelson St				
79402	0%	17%	-1%	1%
79403	0%	16%	1%	0%
79418	0%	15%	-1%	2%
79424	0%	16%	-1%	1%
79425	0%	15%	-1%	2%
New Hampshire Ave				
3377	3%	0%	8%	19%
5107	1%	0%	11%	3%
14392	3%	0%	15%	27%
14394	3%	0%	20%	18%
17448	3%	0%	21%	14%
30623	2%	0%	1%	11%
33319	2%	0%	12%	3%
33537	2%	0%	12%	3%
52521	0%	0%	10%	-4%
52748	2%	0%	1%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
71469	2%	0%	12%	4%
Nicholson Ln				
5626	8%	0%	1%	8%
46902	0%	11%	2%	4%
74133	6%	0%	10%	6%
Nicholson St				
80322	5%	0%	2%	17%
80324	4%	0%	11%	4%
80325	0%	18%	9%	3%
80326	0%	17%	1%	8%
80375	0%	22%	0%	4%
80376	0%	30%	0%	4%
80377	0%	15%	3%	1%
80378	0%	19%	3%	1%
Norfolk Ave				
66010	2%	0%	0%	11%
Northern Ave				
80546	0%	46%	3%	4%
80548	0%	40%	2%	2%
Northview Dr				
53612	0%	19%	3%	2%
53613	0%	13%	2%	2%
53614	0%	14%	2%	1%
67879	0%	23%	2%	3%
79568	0%	37%	0%	0%
Northwest Dr				
8400	0%	0%	-2%	10%
50386	0%	0%	13%	-1%
Nottingham Rd				
40680	0%	61%	0%	0%
Odell Rd				
5506	5%	0%	1%	4%
15421	3%	0%	0%	-15%
64382	7%	0%	4%	8%
Oglethorpe St				
80308	11%	0%	1%	11%
80310	12%	0%	13%	4%
Old Alexandria Ferry Rd				
68084	3%	0%	7%	17%
68085	3%	0%	11%	12%
Old Baltimore Pike				
22460	0%	12%	1%	0%
Old Baltimore Rd				
173	5%	0%	-3%	3%
Old Branch Ave				
2691	2%	0%	12%	-6%
35175	2%	0%	-12%	5%
Old Central Ave				
50632	1%	0%	15%	4%
60579	1%	0%	12%	6%
Old Columbia Pike				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
8081	2%	0%	10%	1%
10597	6%	0%	6%	9%
29714	2%	0%	12%	1%
52942	2%	0%	-1%	11%
Old Crain Hwy				
42839	9%	0%	9%	32%
51991	7%	0%	19%	10%
61965	0%	10%	2%	3%
61966	0%	13%	3%	2%
66892	10%	0%	3%	33%
66893	11%	0%	24%	4%
66894	12%	0%	24%	6%
71335	1%	0%	-2%	14%
79543	0%	12%	2%	3%
79545	0%	14%	3%	2%
79546	0%	10%	0%	0%
79547	0%	27%	0%	0%
Old Georgetown Rd				
2044	3%	0%	1%	-10%
6494	13%	0%	-20%	-5%
6506	7%	0%	11%	3%
6864	8%	0%	9%	-47%
10255	0%	275%	-6%	-2%
10256	0%	220%	0%	0%
10258	3%	0%	1%	-12%
11282	6%	0%	11%	-13%
11283	0%	15%	15%	1%
11339	0%	0%	15%	-3%
22412	4%	0%	-14%	-11%
25423	1%	0%	1%	13%
26036	1%	0%	3%	17%
26377	2%	0%	1%	13%
26379	4%	0%	1%	17%
37242	1%	0%	4%	11%
37549	10%	0%	-34%	-3%
38235	10%	0%	14%	-33%
40139	3%	0%	-7%	18%
41240	0%	0%	16%	9%
42687	3%	0%	-15%	17%
45349	9%	0%	16%	9%
52032	13%	0%	-22%	-7%
53654	7%	0%	8%	3%
61749	1%	0%	3%	17%
61752	0%	0%	-22%	2%
63833	6%	0%	5%	30%
65353	2%	0%	18%	13%
65355	1%	0%	5%	21%
66008	0%	0%	10%	4%
66225	4%	0%	1%	12%
69461	11%	0%	5%	-53%
69462	11%	0%	9%	-38%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
69463	13%	0%	-37%	-7%
69468	5%	0%	-4%	11%
69469	4%	0%	-6%	14%
70828	0%	0%	16%	9%
79310	2%	0%	3%	17%
79314	0%	11%	4%	1%
79315	0%	44%	1%	5%
Old Gunpowder Rd				
1032	7%	0%	-1%	-3%
1629	7%	0%	-2%	-7%
14972	6%	0%	-10%	-7%
47280	7%	0%	-2%	-8%
72759	7%	0%	-2%	-6%
Old Largo Rd				
33567	6%	0%	8%	9%
48995	7%	0%	5%	7%
Old Laurel Bowie Rd				
4874	0%	12%	1%	4%
23128	0%	13%	1%	4%
40665	0%	13%	1%	4%
40666	0%	13%	1%	4%
Old Marlboro Pike				
19543	0%	25%	0%	2%
19544	0%	24%	0%	2%
19545	0%	12%	1%	0%
19546	0%	11%	1%	0%
19552	0%	12%	1%	0%
19554	0%	25%	0%	2%
19555	0%	17%	1%	0%
20762	0%	36%	0%	2%
23678	0%	36%	0%	2%
26332	0%	11%	0%	1%
58075	0%	11%	0%	-1%
64160	0%	17%	1%	0%
66045	0%	18%	2%	0%
74631	7%	0%	0%	26%
Old Md 28				
44661	3%	0%	12%	1%
73092	4%	0%	3%	12%
Olson St				
79780	0%	70%	0%	0%
79782	0%	48%	0%	0%
Omega Dr				
43487	4%	0%	13%	1%
45786	5%	0%	0%	9%
Owens Rd				
30863	0%	22%	1%	0%
72742	0%	13%	0%	1%
Oxon Run Dr				
79742	0%	10%	3%	1%
81360	0%	14%	5%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
81362	0%	10%	1%	6%
Paint Branch Pkwy				
7458	3%	0%	3%	14%
18411	3%	0%	15%	6%
Parkland Dr				
79378	6%	0%	0%	6%
79379	7%	0%	0%	9%
79380	8%	0%	6%	1%
79381	8%	0%	5%	1%
Parklawn Dr				
7772	3%	0%	0%	14%
9705	3%	0%	15%	1%
25124	8%	0%	1%	8%
36911	0%	13%	0%	0%
72157	6%	0%	5%	6%
74420	0%	11%	0%	0%
Patuxent River Rd				
19430	0%	17%	6%	2%
69204	0%	17%	1%	4%
Pennsy Dr				
59314	0%	15%	0%	8%
80535	7%	0%	0%	20%
Pennsylvania Ave				
17212	0%	13%	-15%	-1%
58364	2%	0%	0%	22%
66994	1%	0%	13%	0%
67353	2%	0%	-14%	0%
76987	0%	29%	0%	0%
Persimmon Tree Ln				
1236	8%	0%	0%	26%
25335	0%	16%	8%	1%
62940	7%	0%	24%	0%
Persimmon Tree Rd				
335	7%	0%	0%	11%
8638	7%	0%	0%	11%
Philadelphia Ave				
13233	4%	0%	13%	7%
53909	4%	0%	1%	18%
Pickering Cir				
21127	0%	18%	1%	3%
Piney Meetinghouse Rd				
3800	5%	0%	0%	25%
44573	7%	0%	1%	21%
44574	11%	0%	18%	2%
57557	9%	0%	21%	3%
Pleasant Colony Dr				
24930	2%	0%	9%	14%
33231	1%	0%	16%	4%
Pleasant Rd				
48702	2%	0%	0%	17%
Plymouth Ct				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
75913	0%	25%	2%	1%
75914	0%	39%	0%	5%
79560	0%	39%	0%	5%
79561	0%	25%	2%	1%
Pointer Ridge Dr				
62031	0%	19%	0%	7%
75911	0%	25%	2%	1%
75912	0%	39%	0%	5%
Polk St				
80534	0%	26%	0%	2%
Powder Mill Rd				
6307	3%	0%	17%	5%
23629	5%	0%	0%	5%
23630	5%	0%	0%	5%
24453	5%	0%	12%	11%
32642	5%	0%	13%	15%
49722	9%	0%	9%	26%
60495	4%	0%	18%	19%
63304	3%	0%	4%	11%
67296	11%	0%	43%	34%
Prince Frederick Rd				
12897	1%	0%	-1%	12%
Princess Garden Pkwy				
25713	5%	0%	2%	14%
30333	9%	0%	15%	15%
Quarry Ave				
32806	0%	20%	4%	0%
65403	0%	20%	4%	0%
Queen Anne Bridge Rd				
19429	0%	17%	6%	2%
69203	0%	17%	1%	4%
Queens Chapel Rd				
2547	5%	0%	1%	13%
14078	0%	19%	1%	0%
14080	0%	18%	0%	1%
14083	4%	0%	12%	3%
14085	5%	0%	1%	13%
60198	4%	0%	12%	3%
80363	0%	14%	1%	5%
80365	0%	16%	6%	3%
Quince Orchard Rd				
65310	3%	0%	0%	11%
68747	2%	0%	0%	11%
68811	2%	0%	0%	16%
Quintana St				
2550	0%	13%	1%	0%
Raljon Rd				
21549	0%	21%	2%	3%
32118	0%	21%	4%	3%
46657	12%	0%	14%	51%
47006	15%	0%	3%	39%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
51278	17%	0%	29%	13%
51279	0%	18%	16%	18%
Randolph Rd				
5724	2%	0%	11%	2%
6021	4%	0%	4%	15%
22266	2%	0%	12%	0%
22271	3%	0%	13%	10%
22272	3%	0%	12%	7%
35857	4%	0%	14%	9%
39566	2%	0%	11%	0%
46641	2%	0%	9%	11%
53730	3%	0%	16%	10%
70823	3%	0%	4%	15%
72708	3%	0%	18%	3%
74690	3%	0%	10%	3%
Redskins Rd				
32119	0%	18%	3%	4%
65823	0%	19%	4%	3%
Reece Rd				
77876	0%	86%	0%	0%
Rhode Island Ave				
4366	0%	19%	0%	1%
11584	0%	13%	4%	6%
63298	6%	0%	0%	6%
63299	0%	45%	3%	1%
Riggs Rd				
22854	2%	0%	9%	11%
51485	3%	0%	12%	2%
71476	3%	0%	2%	16%
Ritchie Marlboro Rd				
3546	0%	38%	2%	0%
12613	1%	0%	2%	13%
14684	0%	408%	1%	-15%
14685	12%	0%	-8%	-47%
15879	0%	46%	1%	3%
16803	3%	0%	-13%	-9%
16804	6%	0%	-21%	-20%
17748	2%	0%	31%	0%
20338	0%	17%	1%	5%
33900	0%	9%	-19%	-2%
Ritchie Rd				
11875	0%	26%	8%	6%
12124	0%	12%	10%	5%
12126	25%	0%	26%	6%
12127	0%	18%	1%	9%
21191	0%	34%	7%	6%
21906	10%	0%	34%	23%
25226	10%	0%	5%	47%
26015	14%	0%	1%	14%
27108	0%	31%	2%	5%
32128	11%	0%	4%	21%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
32948	0%	25%	2%	13%
34151	11%	0%	2%	24%
34152	23%	0%	18%	15%
34158	25%	0%	15%	13%
34574	0%	16%	1%	12%
48262	0%	24%	2%	6%
58368	0%	14%	1%	13%
58370	25%	0%	18%	7%
72453	0%	12%	15%	11%
72729	18%	0%	28%	23%
Ritz Way				
3541	14%	0%	-1%	-18%
64400	14%	0%	-10%	-8%
River Rd				
325	26%	0%	5%	46%
337	3%	0%	-3%	-17%
1235	3%	0%	2%	32%
6220	1%	0%	3%	46%
6523	0%	22%	4%	0%
6554	0%	0%	-13%	-8%
12874	3%	0%	-2%	19%
12875	3%	0%	-2%	30%
12876	2%	0%	24%	-8%
16022	2%	0%	-1%	-15%
16710	3%	0%	-1%	-11%
19047	1%	0%	-14%	-10%
19049	10%	0%	-1%	-1%
24380	13%	0%	32%	3%
34817	2%	0%	18%	-7%
34977	4%	0%	-5%	-16%
34978	3%	0%	-3%	-17%
37137	0%	260%	0%	3%
37546	2%	0%	-5%	-37%
40422	3%	0%	29%	7%
40426	1%	0%	21%	1%
41599	4%	0%	-1%	17%
46908	3%	0%	-5%	-24%
52783	1%	0%	-14%	-10%
53732	5%	0%	-1%	-14%
57944	5%	0%	-41%	-37%
60084	2%	0%	-21%	-3%
72359	0%	0%	-24%	20%
Robert Crain Hwy				
29527	0%	0%	11%	0%
Rock Spring Dr				
82	0%	19%	4%	2%
84	0%	15%	4%	5%
20043	0%	32%	0%	0%
59057	0%	40%	0%	2%
Rockledge Dr				
52666	0%	13%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Rockville Pike				
89	6%	0%	10%	2%
91	1%	0%	11%	-2%
93	1%	0%	0%	12%
393	1%	0%	0%	15%
394	1%	0%	0%	14%
2632	0%	14%	-1%	-1%
4513	0%	0%	-2%	13%
5323	0%	0%	-1%	11%
8543	0%	0%	0%	11%
11118	0%	0%	11%	-1%
16681	6%	0%	5%	16%
21971	2%	0%	4%	27%
30180	4%	0%	18%	3%
32528	1%	0%	14%	-5%
33206	0%	0%	12%	-2%
33535	0%	0%	11%	-1%
36809	2%	0%	4%	12%
43764	5%	0%	-9%	6%
52037	0%	0%	16%	0%
56518	0%	0%	17%	-1%
59060	7%	0%	25%	13%
59061	4%	0%	1%	31%
60088	1%	0%	14%	0%
66435	1%	0%	14%	0%
66667	2%	0%	-4%	11%
69584	7%	0%	2%	3%
70776	1%	0%	1%	10%
72153	6%	0%	-16%	-6%
Rollins Ave				
24569	0%	26%	1%	1%
34570	0%	21%	1%	1%
S Frederick Ave				
330	0%	0%	0%	15%
11340	0%	0%	14%	1%
38501	1%	0%	10%	0%
59948	0%	2%	33%	5%
72424	0%	0%	14%	1%
73180	1%	0%	14%	1%
S Glen Rd				
26364	5%	0%	15%	1%
46642	3%	0%	1%	17%
S Keysville Rd				
55814	0%	16%	0%	0%
S Mountain Rd				
81550	2%	0%	-1%	-11%
S Osborne Rd				
42837	3%	0%	0%	-10%
62287	2%	0%	-12%	0%
62593	2%	0%	-15%	0%
62594	2%	0%	-17%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
66900	2%	0%	-13%	0%
74347	0%	11%	0%	1%
Sands Rd				
5548	0%	16%	3%	1%
8921	0%	19%	4%	2%
13234	0%	19%	5%	2%
25764	0%	10%	0%	2%
26274	0%	15%	0%	3%
26591	0%	15%	0%	0%
39919	0%	34%	0%	0%
69437	0%	17%	1%	4%
Sansbury Rd				
20736	0%	10%	9%	13%
20738	0%	5%	11%	3%
65181	0%	16%	4%	5%
Scaggsville Rd				
23964	5%	0%	0%	5%
Scott Dr				
59148	4%	0%	13%	1%
Seat Pleasant Dr				
26310	0%	11%	3%	1%
49542	0%	13%	2%	2%
Selkirk Dr				
336	5%	0%	0%	11%
18664	3%	0%	14%	0%
Seminary Rd				
11025	0%	0%	0%	12%
Serpentine Way				
19665	5%	0%	21%	7%
56055	3%	0%	6%	15%
Seven Locks Rd				
1581	0%	0%	10%	-1%
1584	1%	0%	16%	0%
11106	2%	0%	22%	29%
13647	3%	0%	13%	2%
18654	4%	0%	17%	0%
21958	2%	0%	22%	29%
25334	2%	0%	2%	15%
27042	8%	0%	0%	13%
34821	9%	0%	4%	-2%
53733	3%	0%	4%	32%
54112	1%	0%	-1%	18%
57932	4%	0%	29%	10%
59358	2%	0%	15%	28%
59359	1%	0%	1%	17%
59364	2%	0%	17%	28%
73491	4%	0%	6%	16%
Shady Grove Rd				
5714	1%	0%	13%	0%
6775	2%	0%	1%	21%
7469	8%	0%	9%	3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
15500	6%	0%	0%	22%
33503	1%	0%	18%	-1%
35415	1%	0%	14%	-1%
39668	0%	0%	21%	3%
41187	2%	0%	0%	18%
45007	2%	0%	0%	12%
Shady Grove Rd Exd				
33947	0%	12%	0%	1%
Shepherds Crook Ct				
26672	11%	0%	14%	2%
47236	6%	0%	0%	12%
Sheriff Rd				
23452	5%	0%	18%	2%
24265	5%	0%	1%	19%
Soil Conservation Rd				
9132	14%	0%	8%	7%
16010	14%	0%	8%	7%
24505	14%	0%	8%	7%
32202	13%	0%	7%	6%
40669	13%	0%	7%	6%
61442	13%	0%	7%	6%
South Dr				
19664	0%	29%	14%	15%
53158	0%	27%	14%	18%
Southlawn Ln				
6475	7%	0%	1%	8%
54038	7%	0%	8%	2%
74405	5%	0%	6%	0%
Spr Wheel Ln				
35299	1%	0%	0%	13%
55055	5%	0%	12%	5%
Springfield Rd				
6404	5%	0%	2%	5%
6405	6%	0%	4%	9%
21267	6%	0%	11%	16%
21664	0%	11%	1%	1%
23634	6%	0%	11%	16%
25712	0%	11%	1%	1%
52261	6%	0%	14%	20%
63854	6%	0%	14%	20%
St Barnabas Rd				
13616	6%	0%	17%	8%
14456	3%	0%	12%	0%
14457	3%	0%	12%	0%
18933	0%	0%	-2%	15%
20453	1%	0%	3%	-18%
24864	3%	0%	11%	0%
29629	2%	0%	17%	3%
30067	1%	0%	-5%	11%
30068	5%	0%	5%	13%
30657	1%	0%	-18%	-2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
34560	1%	0%	23%	-2%
39194	5%	0%	28%	9%
43154	3%	0%	12%	0%
71267	5%	0%	5%	19%
St Clair Dr				
79781	0%	70%	0%	0%
79783	0%	48%	0%	0%
Stardrift Dr				
3899	0%	200%	0%	0%
9150	0%	139%	0%	0%
State Hwy 115				
1844	1%	0%	12%	6%
74960	2%	0%	8%	10%
State Hwy 124				
2637	0%	0%	0%	-16%
State Hwy 185				
2645	2%	0%	5%	13%
5276	1%	0%	0%	11%
10338	4%	0%	11%	0%
19057	1%	0%	3%	12%
19662	1%	0%	1%	16%
22192	2%	0%	6%	17%
34970	3%	0%	-1%	14%
40872	1%	0%	5%	11%
41596	0%	0%	3%	19%
44970	1%	0%	0%	14%
45006	7%	0%	0%	17%
54823	1%	0%	10%	-3%
56365	4%	0%	10%	-2%
71877	1%	0%	4%	12%
74958	0%	0%	4%	15%
State Hwy 189				
933	1%	0%	0%	21%
4153	6%	0%	0%	16%
5992	15%	0%	24%	23%
5995	5%	0%	3%	29%
5996	6%	0%	21%	9%
8007	3%	0%	1%	32%
8008	5%	0%	3%	29%
8317	1%	0%	12%	1%
9030	1%	0%	0%	12%
10839	2%	0%	14%	5%
11110	6%	0%	2%	-1%
25331	0%	0%	-6%	13%
26096	4%	0%	17%	23%
29713	4%	0%	10%	3%
30182	2%	0%	16%	3%
32245	6%	0%	21%	9%
32517	9%	0%	13%	3%
32602	0%	0%	-5%	12%
37768	4%	0%	1%	16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
43475	0%	5%	0%	35%
46979	0%	6%	20%	4%
51446	1%	0%	12%	1%
59430	1%	0%	-6%	16%
59432	6%	0%	7%	1%
59433	2%	0%	0%	17%
59440	3%	0%	1%	29%
72658	4%	0%	18%	2%
75148	2%	0%	23%	2%
75149	2%	0%	1%	12%
State Hwy 190				
932	1%	0%	1%	22%
936	1%	0%	0%	20%
6003	3%	0%	-1%	13%
6004	5%	0%	9%	-2%
6569	2%	0%	28%	-1%
22404	2%	0%	21%	-3%
24826	1%	0%	0%	13%
30170	7%	0%	7%	2%
31010	0%	0%	0%	10%
53734	3%	0%	0%	33%
55052	5%	0%	12%	6%
55056	0%	14%	1%	5%
68996	3%	0%	-1%	12%
72148	5%	0%	17%	11%
75273	2%	0%	0%	11%
75274	5%	0%	5%	3%
State Hwy 191				
34647	3%	0%	9%	13%
34648	3%	0%	10%	10%
40090	2%	0%	12%	10%
53535	3%	0%	8%	18%
State Hwy 193				
2442	2%	0%	1%	10%
14146	2%	0%	-19%	-8%
16543	0%	6%	12%	2%
18156	5%	0%	1%	10%
18751	11%	0%	2%	49%
18752	6%	0%	22%	4%
24752	10%	0%	23%	30%
25725	0%	39%	-2%	-4%
29412	6%	0%	14%	22%
34862	2%	0%	-16%	-4%
48991	0%	10%	3%	4%
54494	5%	0%	1%	11%
64154	13%	0%	3%	26%
64396	2%	0%	21%	2%
State Hwy 197				
2821	2%	0%	12%	3%
3355	3%	0%	3%	11%
23918	2%	0%	9%	12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
23920	3%	0%	10%	18%
25859	4%	0%	2%	11%
73866	0%	1%	0%	-10%
State Hwy 200				
21693	0%	13%	9%	1%
23776	0%	10%	1%	13%
39012	0%	10%	30%	2%
51898	0%	12%	2%	1%
52145	0%	13%	1%	1%
52146	0%	13%	9%	1%
52147	0%	13%	9%	1%
52148	0%	15%	2%	1%
52150	0%	12%	4%	1%
52151	0%	14%	0%	0%
52152	0%	10%	22%	2%
52153	0%	10%	22%	2%
52398	1%	0%	25%	-5%
52399	0%	25%	0%	1%
52401	0%	13%	1%	8%
52402	0%	13%	1%	8%
52403	0%	13%	1%	8%
52405	0%	14%	0%	3%
52406	0%	11%	1%	30%
52407	0%	11%	1%	30%
58233	0%	11%	1%	30%
58512	0%	11%	1%	11%
59196	0%	13%	9%	1%
59198	0%	12%	1%	1%
59199	0%	10%	1%	13%
66280	0%	10%	30%	2%
66281	0%	10%	9%	2%
71511	0%	10%	30%	2%
71512	0%	10%	9%	2%
71516	0%	13%	1%	8%
State Hwy 201				
8859	5%	0%	7%	16%
15622	5%	0%	10%	21%
15703	6%	0%	14%	16%
19673	2%	0%	1%	11%
26995	6%	0%	4%	9%
46030	2%	0%	1%	11%
47316	0%	0%	0%	11%
50118	0%	0%	0%	11%
55734	5%	0%	5%	1%
State Hwy 210				
3379	0%	2%	47%	17%
29808	0%	24%	0%	-1%
30865	0%	2%	-12%	0%
35288	2%	0%	13%	4%
79718	2%	0%	13%	0%
State Hwy 212				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
4869	4%	0%	2%	17%
10818	6%	0%	-10%	-7%
15115	4%	0%	2%	20%
21812	5%	0%	16%	7%
23280	5%	0%	17%	2%
28570	0%	40%	-6%	-1%
29632	13%	0%	-28%	-13%
60459	6%	0%	2%	7%
71473	5%	0%	21%	3%
71475	4%	0%	11%	1%
72315	2%	0%	9%	11%
75521	16%	0%	-3%	-36%
75522	15%	0%	-8%	-33%
75526	0%	14%	-11%	-5%
75527	13%	0%	-13%	-21%
75535	0%	12%	-7%	-3%
75536	0%	13%	-1%	-7%
State Hwy 214				
24280	2%	0%	15%	2%
64988	3%	0%	17%	3%
72179	2%	0%	0%	10%
79810	2%	0%	0%	10%
State Hwy 223				
61975	0%	39%	-1%	0%
67203	0%	200%	0%	0%
State Hwy 231				
54818	1%	0%	-1%	11%
State Hwy 28				
768	3%	0%	12%	1%
5719	4%	0%	17%	4%
6945	1%	0%	-1%	14%
6946	1%	0%	18%	-1%
7961	3%	0%	18%	1%
35549	3%	0%	8%	15%
72810	2%	0%	0%	13%
73091	4%	0%	3%	12%
79432	3%	0%	18%	1%
79433	3%	0%	11%	1%
79434	2%	0%	0%	13%
State Hwy 301				
35616	0%	0%	12%	-2%
52744	0%	0%	17%	0%
60711	1%	0%	14%	1%
76044	1%	0%	12%	-2%
77044	0%	0%	11%	-2%
State Hwy 32				
9530	0%	10%	0%	0%
26728	0%	2%	11%	1%
42001	0%	2%	11%	1%
State Hwy 320				
1539	5%	0%	1%	22%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
5268	1%	0%	13%	2%
19446	6%	0%	28%	11%
34410	1%	0%	11%	4%
34419	1%	0%	16%	1%
40204	1%	0%	13%	2%
42319	5%	0%	17%	3%
43759	5%	0%	1%	22%
49380	6%	0%	28%	11%
50741	1%	0%	16%	2%
53920	9%	0%	8%	4%
State Hwy 332				
33474	0%	23%	1%	1%
64995	4%	0%	36%	15%
72723	0%	17%	1%	1%
72726	5%	0%	7%	28%
State Hwy 355				
25125	1%	0%	0%	14%
40916	0%	12%	-1%	-3%
74141	1%	0%	12%	-1%
79409	1%	0%	0%	14%
79411	1%	0%	12%	-1%
State Hwy 381				
62717	0%	12%	-1%	0%
State Hwy 382				
12128	6%	0%	7%	13%
33275	4%	0%	15%	7%
42109	0%	38%	0%	0%
60701	0%	14%	0%	-1%
State Hwy 384				
632	1%	0%	0%	11%
19042	1%	0%	0%	11%
State Hwy 390				
5352	6%	0%	12%	7%
42318	6%	0%	13%	10%
State Hwy 4				
71793	0%	12%	0%	0%
76990	0%	10%	0%	0%
State Hwy 410				
11291	2%	0%	1%	12%
12114	4%	0%	9%	24%
18940	5%	0%	31%	20%
19017	0%	11%	0%	0%
23702	4%	0%	14%	17%
29393	0%	16%	1%	1%
35900	0%	0%	10%	-1%
50984	2%	0%	0%	13%
64676	2%	0%	13%	3%
80533	10%	0%	0%	17%
State Hwy 414				
5812	6%	0%	20%	0%
5813	4%	0%	0%	13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
5814	4%	0%	0%	21%
29179	0%	12%	0%	-1%
31747	0%	10%	0%	5%
46200	7%	0%	14%	2%
58052	3%	0%	14%	0%
State Hwy 450				
231	1%	0%	-15%	0%
8863	3%	0%	-1%	-22%
9463	2%	0%	11%	1%
12056	2%	0%	0%	17%
18379	0%	11%	0%	0%
19291	6%	0%	14%	2%
25803	2%	0%	-18%	1%
30634	2%	0%	2%	11%
32645	5%	0%	12%	3%
34551	2%	0%	-18%	0%
34644	2%	0%	3%	11%
38892	6%	0%	0%	7%
45302	0%	11%	0%	2%
47338	0%	0%	11%	0%
51222	5%	0%	1%	14%
54497	3%	0%	-1%	-12%
55301	6%	0%	0%	8%
67173	4%	0%	13%	3%
67174	3%	0%	1%	13%
67179	4%	0%	11%	4%
67180	4%	0%	2%	11%
67474	6%	0%	1%	20%
67475	4%	0%	0%	15%
67650	1%	0%	-2%	11%
80439	2%	0%	0%	16%
80440	1%	0%	0%	13%
State Hwy 458				
10310	6%	0%	3%	8%
13615	6%	0%	23%	17%
13827	4%	0%	16%	6%
13829	4%	0%	1%	18%
21545	6%	0%	7%	8%
24274	6%	0%	6%	11%
27576	6%	0%	7%	14%
30069	6%	0%	9%	30%
30070	0%	0%	15%	-3%
49842	0%	0%	-2%	12%
State Hwy 497				
55476	0%	67%	0%	0%
State Hwy 5				
12092	0%	0%	-2%	18%
14380	4%	0%	-1%	-19%
16811	3%	0%	-11%	-4%
17221	0%	3%	83%	1%
43743	1%	0%	11%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
43744	1%	0%	0%	13%
44340	0%	6%	-8%	-12%
50641	7%	0%	-22%	-2%
56257	7%	0%	-4%	-37%
61210	0%	22%	0%	-2%
64341	3%	0%	-7%	-21%
71271	1%	0%	11%	2%
73816	1%	0%	0%	13%
State Hwy 500				
18834	3%	0%	10%	2%
34135	4%	0%	11%	2%
80321	3%	0%	1%	11%
80323	3%	0%	10%	2%
State Hwy 535				
17222	0%	15%	-9%	-12%
State Hwy 586				
37131	4%	0%	2%	10%
42955	1%	0%	-1%	11%
69702	1%	0%	1%	14%
79354	1%	0%	7%	13%
State Hwy 614				
47832	4%	0%	5%	11%
47834	1%	0%	12%	-1%
47835	1%	0%	12%	0%
53280	2%	0%	-23%	-12%
64812	0%	0%	-11%	-1%
64813	2%	0%	12%	-9%
64814	1%	0%	2%	-16%
65347	1%	0%	-3%	-19%
65351	3%	0%	2%	12%
65352	2%	0%	2%	13%
State Hwy 650				
11281	2%	0%	1%	11%
14389	1%	0%	10%	15%
33921	1%	0%	-11%	-1%
34968	2%	0%	13%	8%
37157	1%	0%	8%	11%
40093	1%	0%	6%	12%
43761	0%	13%	0%	-1%
44551	0%	129%	0%	0%
54296	2%	0%	12%	3%
60127	2%	0%	12%	7%
66127	0%	1%	-2%	21%
State Hwy 725				
15050	2%	0%	21%	0%
21134	3%	0%	13%	4%
21136	4%	0%	11%	18%
21913	4%	0%	0%	18%
21914	6%	0%	1%	54%
23976	5%	0%	32%	7%
33218	3%	0%	9%	19%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
65387	4%	0%	15%	1%
State Hwy 97				
1238	1%	0%	-4%	12%
2045	0%	0%	0%	14%
4545	1%	0%	0%	18%
8547	1%	0%	0%	12%
10325	1%	0%	5%	-11%
13659	0%	0%	17%	-1%
13912	0%	0%	11%	-2%
16426	1%	0%	-1%	13%
21032	1%	0%	5%	12%
21572	0%	0%	-2%	10%
22262	2%	0%	10%	3%
33204	1%	0%	12%	-1%
34969	1%	0%	-2%	18%
36589	1%	0%	-3%	11%
41150	0%	0%	11%	2%
44262	1%	0%	11%	-6%
56379	0%	0%	11%	-5%
57876	0%	0%	-1%	15%
57884	0%	0%	-1%	17%
57885	0%	0%	13%	-3%
59947	1%	0%	-2%	16%
63281	0%	0%	-1%	11%
74957	0%	0%	13%	0%
74959	1%	0%	10%	0%
Stoneybrook Dr				
5322	2%	0%	0%	12%
Suitland Pkwy				
11880	2%	0%	18%	4%
54077	2%	0%	0%	21%
Town Square Dr				
27403	0%	67%	0%	0%
Travilah Rd				
44562	3%	0%	2%	13%
52563	6%	0%	0%	5%
Tuckerman Ln				
1577	2%	0%	16%	-1%
2345	2%	0%	0%	25%
19840	7%	0%	22%	0%
59656	3%	0%	-1%	11%
Tuckerman St				
60435	6%	0%	6%	5%
Turkey Branch Pkwy				
79353	1%	0%	16%	6%
79355	2%	0%	8%	13%
79372	7%	0%	0%	13%
79374	8%	0%	9%	2%
Tuscarora Rd				
6968	3%	0%	1%	10%
27366	3%	0%	1%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Tuxedo Rd				
80029	0%	72%	0%	1%
Twinbrook Pkwy				
69706	3%	0%	12%	1%
69707	5%	0%	1%	10%
Underwood St				
60199	3%	0%	13%	16%
63293	3%	0%	5%	14%
University Blvd				
2763	4%	0%	11%	6%
3639	3%	0%	1%	14%
20848	1%	0%	0%	11%
25720	2%	0%	0%	12%
University Blvd E				
1690	1%	0%	-11%	5%
9539	1%	0%	-10%	5%
11036	0%	1%	-12%	-13%
14391	3%	0%	23%	6%
27863	2%	0%	-7%	11%
28173	2%	0%	6%	-10%
28808	2%	0%	3%	18%
40206	1%	0%	-10%	3%
53919	1%	0%	-13%	7%
72913	1%	0%	-4%	11%
University Blvd W				
5277	1%	0%	0%	13%
11108	1%	0%	10%	-1%
13913	0%	0%	-1%	12%
16023	0%	0%	-10%	11%
35298	1%	0%	3%	17%
36502	2%	0%	1%	12%
72707	0%	0%	12%	-8%
Urbana Ln				
65433	0%	11%	2%	8%
Urbana Pike				
32224	0%	10%	-1%	-4%
US Hwy 1 Alt				
8866	3%	0%	18%	4%
16225	9%	0%	10%	10%
16226	6%	0%	0%	13%
72430	3%	0%	1%	20%
US Hwy 15				
552	2%	0%	3%	18%
17143	2%	0%	20%	7%
24438	2%	0%	3%	18%
32501	0%	29%	-1%	0%
45438	2%	0%	20%	7%
46320	0%	17%	0%	0%
70525	0%	34%	0%	0%
US Hwy 29				
3593	0%	0%	11%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
7766	6%	0%	-25%	-2%
10603	7%	0%	-7%	-15%
16318	3%	0%	-16%	7%
25430	0%	200%	0%	0%
37891	0%	204%	-51%	-77%
40501	2%	0%	5%	10%
40876	0%	0%	-9%	10%
40877	0%	0%	-9%	10%
56050	0%	0%	11%	0%
56058	0%	0%	11%	-5%
56059	0%	0%	11%	-5%
66125	0%	0%	11%	8%
74687	1%	0%	-3%	-12%
US Hwy 50				
11588	6%	0%	-15%	-54%
11589	2%	0%	-1%	-10%
12862	2%	0%	0%	23%
13625	0%	12%	-1%	-5%
16983	1%	0%	0%	12%
18390	1%	0%	0%	11%
19472	0%	2%	-1%	-11%
20070	0%	0%	-1%	13%
26125	0%	200%	0%	0%
27731	2%	0%	-1%	-13%
28617	0%	5%	0%	18%
33283	2%	0%	-1%	-16%
37585	0%	0%	0%	-19%
38255	1%	0%	0%	17%
40690	0%	0%	0%	13%
43505	1%	0%	0%	16%
43513	0%	17%	0%	0%
47315	1%	0%	0%	26%
48338	0%	18%	0%	-2%
54835	2%	0%	-2%	-15%
56249	0%	0%	0%	13%
57010	2%	0%	1%	11%
65196	2%	0%	-1%	-16%
68134	0%	43%	0%	0%
73586	6%	0%	-5%	-51%
73590	0%	0%	0%	-19%
73853	0%	13%	0%	0%
Valley Park Rd				
79843	0%	12%	1%	0%
79864	0%	11%	0%	1%
Veirs Dr				
36822	0%	10%	1%	5%
44952	0%	10%	2%	3%
Virginia Manor Rd				
52208	0%	14%	-1%	-10%
54537	0%	12%	-11%	-2%
W Cedar Ln				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
627	0%	11%	2%	1%
53655	4%	0%	8%	10%
61750	0%	21%	2%	4%
W City Ave				
1213	1%	0%	-5%	-10%
3272	3%	0%	4%	11%
3274	3%	0%	12%	8%
3278	3%	0%	7%	10%
4006	2%	0%	-10%	-10%
4008	1%	0%	-5%	-14%
4009	1%	0%	-5%	-12%
4450	4%	0%	13%	20%
9461	4%	0%	12%	33%
10291	3%	0%	11%	4%
13354	0%	17%	-36%	-18%
15935	8%	0%	12%	1%
16179	2%	0%	6%	23%
16327	1%	0%	11%	6%
16519	2%	0%	5%	11%
16746	0%	27%	3%	2%
16930	2%	0%	4%	-16%
19813	4%	0%	7%	12%
20085	1%	0%	-5%	-15%
22587	4%	0%	10%	14%
29926	2%	0%	11%	5%
32201	8%	0%	2%	6%
33798	2%	0%	9%	12%
33812	2%	0%	4%	20%
34762	1%	0%	11%	10%
34763	1%	0%	10%	6%
39261	3%	0%	3%	15%
40142	4%	0%	45%	19%
45356	1%	0%	-35%	-15%
54071	11%	0%	17%	58%
55249	5%	0%	6%	7%
59042	0%	13%	-25%	-13%
60201	3%	0%	10%	19%
60753	2%	0%	9%	11%
60756	3%	0%	23%	10%
63579	3%	0%	11%	11%
64097	4%	0%	14%	5%
64671	2%	0%	8%	15%
80253	2%	0%	10%	15%
80254	2%	0%	11%	11%
80255	2%	0%	13%	16%
80256	2%	0%	8%	15%
80281	2%	0%	8%	10%
80282	2%	0%	4%	13%
80284	2%	0%	10%	6%
W Diamond Ave				
2626	0%	1%	-8%	-28%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
68728	0%	3%	0%	-18%
W Edmonston Dr				
9699	0%	0%	17%	-1%
59940	1%	0%	0%	13%
W Jefferson St				
25212	3%	0%	4%	19%
74140	2%	0%	22%	8%
W Montgomery Ave				
85	2%	0%	22%	8%
86	2%	0%	25%	2%
87	3%	0%	4%	19%
851	0%	216%	69%	45%
36249	3%	0%	6%	18%
46468	4%	0%	-8%	-26%
67682	0%	128%	48%	12%
68723	0%	83%	15%	98%
70134	1%	0%	-20%	-6%
70362	0%	220%	13%	18%
71016	5%	0%	-1%	24%
75469	4%	0%	-15%	-33%
Walker Mill Rd				
11873	3%	0%	12%	17%
27103	4%	0%	13%	22%
Washington National Pike				
547	0%	3%	33%	0%
6216	7%	0%	-2%	33%
18073	3%	0%	-10%	15%
18081	0%	0%	0%	-19%
19191	0%	133%	8%	7%
25427	10%	0%	17%	-59%
28054	0%	104%	3%	128%
29079	0%	0%	-1%	-13%
37135	6%	0%	0%	24%
44054	6%	0%	-23%	-35%
45291	0%	0%	-1%	-11%
46981	0%	25%	1%	50%
48741	10%	0%	17%	-59%
49366	0%	101%	7%	8%
55627	9%	0%	-7%	-11%
58028	0%	342%	17%	16%
58029	0%	101%	7%	8%
61724	0%	101%	16%	17%
61725	19%	0%	-6%	-20%
65632	0%	3%	0%	-18%
66775	0%	142%	17%	16%
66778	0%	142%	8%	7%
66780	0%	133%	8%	7%
66782	0%	124%	59%	4%
66786	0%	124%	59%	4%
67078	0%	117%	61%	5%
67371	0%	115%	3%	54%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
69883	19%	0%	-6%	-20%
69886	8%	0%	-2%	36%
70364	5%	0%	-1%	20%
70604	6%	0%	-1%	60%
70757	14%	0%	21%	-78%
Watkins Park Dr				
12618	0%	11%	2%	3%
19148	0%	11%	2%	3%
19149	0%	12%	2%	4%
73256	0%	12%	2%	4%
Wayne Ave				
33739	7%	0%	8%	5%
34651	9%	0%	7%	3%
Wellham Ave NW				
71862	5%	0%	-5%	3%
Wells Pkwy E				
25858	3%	0%	11%	15%
45351	2%	0%	8%	12%
Westbrook Dr				
81357	0%	12%	1%	1%
Westlake Ter				
6860	0%	23%	2%	1%
69881	0%	21%	1%	4%
Westphalia Rd				
46203	9%	0%	1%	16%
59503	0%	12%	1%	9%
67688	0%	10%	0%	1%
White House Rd				
12614	0%	25%	2%	5%
16805	0%	12%	4%	1%
21522	0%	16%	1%	12%
23692	0%	17%	1%	5%
49394	0%	20%	-7%	-3%
58656	0%	22%	-1%	-5%
71624	0%	18%	1%	2%
Whitfield Chapel Rd				
54373	0%	15%	3%	4%
63860	0%	12%	4%	3%
Wilburn Dr				
22836	0%	29%	4%	0%
32811	0%	15%	1%	0%
William Beanes Rd				
64428	0%	16%	0%	1%
66902	0%	24%	0%	1%
Willow Hill Dr				
75917	0%	12%	0%	3%
75918	0%	18%	6%	0%
Windom Rd				
46983	6%	0%	1%	12%
Winfields Ln				
74744	5%	0%	1%	13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Wisconsin Ave				
5661	2%	0%	5%	23%
9662	0%	0%	14%	4%
18248	2%	0%	6%	11%
52787	0%	11%	0%	0%
70774	4%	0%	14%	6%
79292	2%	0%	8%	12%
79293	2%	0%	14%	17%
79294	0%	0%	5%	15%
79295	2%	0%	16%	20%
Woodbine St				
4862	3%	0%	4%	13%
79274	0%	12%	0%	1%
79275	0%	23%	1%	1%
Woodmont Ave				
79303	3%	0%	5%	14%
79305	2%	0%	11%	9%
Woodstream Dr				
21279	2%	0%	0%	-11%
21280	0%	200%	0%	0%
39265	0%	26%	0%	0%
Woodview Dr				
68469	0%	17%	1%	1%
Woodyard Rd				
57849	4%	0%	19%	27%
62024	3%	0%	11%	15%
66528	4%	0%	19%	26%
68086	3%	0%	11%	15%
Wootton Pkwy				
685	3%	0%	3%	13%
1582	4%	0%	11%	4%
2350	2%	0%	3%	12%
9700	4%	0%	17%	-1%
26676	5%	0%	23%	2%
26789	4%	0%	4%	12%
38951	5%	0%	14%	-1%
46465	3%	0%	22%	1%
52939	3%	0%	7%	15%
59149	3%	0%	22%	1%
59429	2%	0%	23%	1%
59431	1%	0%	-11%	16%
Yellowwood Ln				
4743	19%	0%	20%	8%
59325	31%	0%	5%	29%
Virginia				
13th St N				
80998	0%	12%	1%	4%
14th St N				
13169	0%	12%	0%	3%
16th St N				
17013	0%	11%	-1%	9%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
17th St N				
80990	0%	16%	0%	0%
81003	0%	21%	0%	0%
18th St N				
81059	0%	19%	0%	0%
18th St S				
36982	0%	0%	-12%	4%
51052	0%	15%	0%	2%
80861	0%	13%	0%	1%
80862	0%	13%	0%	1%
20th Pl N				
77366	0%	15%	0%	0%
20th St N				
77363	0%	11%	0%	0%
77365	0%	14%	0%	0%
20th St S				
21051	0%	105%	0%	0%
28719	0%	17%	0%	0%
51053	0%	15%	0%	2%
22nd St N				
77385	0%	22%	-1%	0%
23rd St S				
59242	0%	17%	0%	0%
68250	0%	16%	0%	0%
25th St N				
15872	0%	1%	-16%	3%
15873	0%	1%	-14%	-13%
26th St N				
28967	0%	11%	0%	0%
51204	0%	12%	1%	0%
31st St S				
248	0%	11%	0%	7%
80807	0%	14%	0%	4%
6th St N				
81593	0%	13%	1%	0%
81594	0%	10%	0%	0%
8th St S				
80873	0%	11%	0%	2%
Army Navy Dr				
36643	0%	35%	0%	0%
Baron Rd				
26847	0%	13%	-2%	-1%
Bashford Ln				
49197	0%	33%	0%	0%
Birch Rd				
9261	5%	0%	14%	14%
31938	3%	0%	7%	13%
Brook Rd				
8842	0%	11%	0%	0%
71916	0%	12%	0%	0%
Capital Beltway				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
67	1%	0%	-19%	5%
69	0%	2%	-15%	-13%
75	0%	1%	-15%	0%
977	0%	21%	-6%	2%
1270	0%	2%	-15%	-13%
1272	0%	22%	0%	1%
16670	0%	21%	-3%	-5%
16671	0%	200%	-8%	-19%
16674	4%	0%	16%	6%
17398	0%	31%	11%	16%
17401	6%	0%	-12%	-2%
18216	1%	0%	-19%	5%
21180	0%	2%	0%	-12%
21561	0%	16%	-2%	-15%
22163	0%	15%	-13%	-93%
24084	8%	0%	37%	75%
28377	0%	2%	7%	-15%
29311	0%	28%	-13%	-5%
33646	0%	3%	21%	86%
33976	0%	807%	57%	1%
34950	0%	34%	0%	6%
38710	0%	21%	0%	1%
39073	0%	2%	28%	11%
39075	0%	1%	5%	-12%
39078	0%	1%	5%	-12%
40119	4%	0%	-3%	-16%
41576	0%	22%	-4%	-5%
41577	0%	26%	-2%	-1%
41779	12%	0%	46%	46%
43018	1%	0%	-21%	-1%
45944	0%	12%	-23%	-17%
51272	0%	21%	-3%	-5%
56641	8%	0%	37%	75%
56645	8%	0%	37%	75%
57913	8%	0%	40%	67%
59785	0%	200%	-8%	-19%
60164	0%	1%	5%	-12%
65637	0%	23%	-1%	1%
65844	1%	0%	-21%	-1%
65927	0%	41%	0%	0%
68293	4%	0%	-14%	-1%
68294	4%	0%	-14%	-1%
68295	3%	0%	-1%	-16%
68582	10%	0%	62%	85%
68583	0%	11%	-47%	-20%
68584	0%	200%	-14%	-13%
68585	0%	200%	-14%	-13%
68586	0%	200%	-14%	-13%
68587	0%	200%	-8%	-19%
68588	0%	200%	-8%	-19%
68589	0%	200%	-14%	-13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
68590	0%	200%	-8%	-19%
68591	0%	200%	-6%	-5%
68883	0%	11%	28%	-8%
68889	0%	80%	-1%	0%
71091	1%	0%	-17%	2%
71095	1%	0%	-17%	2%
72070	0%	200%	-14%	-13%
72078	12%	0%	66%	70%
76052	0%	25%	-84%	-74%
76222	0%	57%	-1%	-2%
77148	0%	20%	1%	-3%
77151	0%	21%	0%	0%
77184	0%	12%	-1%	0%
77185	0%	41%	0%	1%
Chain Bridge Rd				
5052	0%	0%	-4%	10%
5053	1%	0%	12%	2%
16581	1%	0%	18%	15%
21941	0%	34%	0%	0%
31277	5%	0%	12%	8%
33638	3%	0%	-10%	-6%
46083	1%	0%	-12%	-6%
55021	4%	0%	11%	38%
69550	0%	0%	-20%	0%
74851	6%	0%	15%	21%
Chesterbrook Rd				
26530	6%	0%	3%	21%
34916	0%	11%	-9%	-1%
Co Rd 650				
12428	0%	0%	-20%	4%
Co Rd 686				
33643	0%	11%	2%	6%
59709	0%	14%	3%	6%
Co Rd 703				
50953	7%	0%	3%	15%
72024	2%	0%	-13%	-2%
72283	6%	0%	-12%	-11%
Co Rd 789				
43054	1%	0%	-11%	0%
Commonwealth Ave				
77281	0%	13%	0%	3%
Cotton Mill Dr				
81148	0%	79%	0%	0%
81150	0%	200%	0%	0%
Dolley Madison Blvd				
4344	1%	0%	3%	11%
5149	1%	0%	1%	11%
9478	1%	0%	-2%	10%
25782	5%	0%	-23%	-5%
31130	2%	0%	1%	11%
33641	3%	0%	7%	17%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
36527	6%	0%	24%	31%
39807	1%	0%	19%	19%
40152	3%	0%	13%	24%
40859	0%	12%	0%	-1%
42078	6%	0%	17%	28%
44690	0%	132%	-1%	-12%
46571	0%	20%	1%	10%
46941	1%	0%	11%	5%
50436	1%	0%	-3%	10%
59706	1%	0%	11%	4%
59713	0%	26%	10%	5%
59997	1%	0%	12%	7%
60008	0%	13%	-2%	-1%
67577	0%	0%	14%	4%
68881	0%	73%	1%	54%
77176	7%	0%	-5%	-5%
77177	0%	28%	-6%	-18%
Dulles Access Rd				
41206	0%	3%	-1%	-11%
63333	0%	12%	0%	0%
67825	0%	12%	0%	0%
Dulles Toll Rd				
33649	0%	2%	-2%	-15%
34630	4%	0%	-1%	-15%
41207	0%	3%	-1%	-11%
41575	0%	63%	-1%	-8%
57167	0%	10%	12%	61%
58502	0%	6%	-1%	-41%
60237	4%	0%	-1%	-15%
76097	0%	35%	0%	0%
E Glebe Rd				
47673	0%	12%	1%	0%
52055	0%	12%	0%	0%
Edwards Ferry Rd NE				
835	0%	200%	0%	0%
Fisher Dr				
79332	0%	20%	-6%	0%
Furnace Mountain Rd				
81348	8%	0%	3%	9%
81350	8%	0%	5%	6%
George Washington Memorial Pkwy				
33634	0%	6%	0%	-11%
33635	0%	3%	-14%	-2%
33639	0%	11%	0%	0%
34318	10%	0%	68%	43%
36935	0%	0%	0%	12%
38735	0%	14%	46%	104%
40850	0%	0%	0%	14%
47965	0%	13%	0%	0%
49187	0%	1%	0%	10%
60010	0%	5%	-33%	-3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Georgetown Pike				
4348	23%	0%	31%	9%
4349	50%	0%	15%	8%
4350	14%	0%	2%	27%
4351	0%	35%	2%	14%
6378	18%	0%	3%	34%
6380	24%	0%	16%	11%
13744	0%	35%	2%	14%
57185	0%	35%	0%	0%
59710	50%	0%	15%	8%
68778	0%	56%	0%	-1%
Grande Ln				
42163	2%	0%	-16%	-2%
72284	6%	0%	-13%	-12%
Great Falls St				
14896	0%	0%	-11%	5%
Greeley Blvd				
33467	0%	200%	0%	0%
60752	0%	200%	0%	0%
Griffith Rd				
79328	0%	20%	-6%	0%
Henry G Shirley Memorial Hwy				
16669	0%	10%	0%	0%
18676	0%	80%	0%	0%
30289	0%	1%	0%	-12%
30488	0%	1%	0%	-12%
Hume Ave				
77282	0%	13%	0%	3%
I- 395				
76	0%	11%	0%	-12%
25750	0%	1%	0%	-20%
26135	0%	1%	0%	-16%
27337	0%	1%	0%	-20%
30282	0%	1%	0%	-20%
30288	0%	1%	0%	-12%
55038	0%	1%	22%	0%
59872	1%	0%	0%	15%
64907	0%	1%	0%	-16%
67012	0%	1%	0%	-16%
67246	0%	1%	0%	-20%
70266	0%	1%	13%	7%
72075	0%	63%	0%	-1%
I- 395 Hov				
26133	0%	1%	0%	-12%
30275	0%	1%	0%	-20%
30276	0%	1%	0%	-20%
30278	0%	1%	0%	-20%
30286	0%	1%	0%	-12%
66368	0%	13%	0%	0%
73014	0%	1%	0%	-20%
73015	0%	1%	0%	-12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
I- 495 Express Lane				
24081	0%	20%	0%	-2%
34324	0%	20%	-48%	-3%
38714	0%	11%	-2%	-5%
38717	0%	2%	7%	-15%
39426	0%	1%	5%	-12%
40120	0%	20%	-1%	0%
55464	3%	0%	0%	23%
68296	3%	0%	-1%	-16%
68297	3%	0%	-1%	-16%
68581	0%	11%	-4%	-3%
I- 66				
5026	0%	13%	0%	1%
49097	0%	0%	79%	-27%
52133	0%	200%	0%	0%
I- 95				
26473	0%	11%	0%	0%
27421	0%	2%	29%	0%
28154	0%	71%	0%	0%
43013	3%	0%	-1%	-12%
43016	3%	0%	-1%	-12%
49369	3%	0%	-1%	-12%
71235	0%	27%	0%	0%
James Madison Hwy				
75672	0%	73%	0%	0%
75673	0%	72%	0%	0%
Jones Branch Dr				
8520	0%	13%	-2%	1%
12236	6%	0%	15%	3%
12238	12%	0%	0%	0%
17822	0%	13%	-2%	2%
35879	5%	0%	11%	4%
36480	6%	0%	15%	3%
38632	0%	12%	-2%	3%
68888	0%	13%	-2%	1%
Key Brg				
7923	2%	0%	15%	8%
22667	2%	0%	9%	16%
Kidwell Dr				
46319	6%	0%	4%	4%
Kirby Rd				
72293	5%	0%	12%	1%
Lee Chapel Rd				
10075	0%	83%	0%	0%
41005	0%	28%	0%	0%
Leesburg Pike				
12229	1%	0%	-7%	-13%
14213	2%	0%	-12%	-7%
35567	2%	0%	-17%	-9%
36898	1%	0%	-11%	-8%
57210	0%	20%	-1%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
68877	2%	0%	-3%	31%
Lewinsville Rd				
72069	0%	13%	-81%	-64%
76053	0%	23%	-37%	-31%
Lisle Ave				
79334	0%	20%	-6%	0%
Little Falls St				
56032	7%	0%	-3%	-3%
Lovettsville Rd				
67715	0%	10%	0%	1%
Loyalty Rd				
74290	6%	0%	4%	3%
81323	5%	0%	4%	4%
81324	5%	0%	4%	4%
Mill Rd				
59340	1%	0%	-5%	-11%
71085	2%	0%	-34%	-2%
N Chesterbrook Rd				
3619	9%	0%	-1%	-16%
3620	7%	0%	-15%	-1%
8454	6%	0%	-15%	-1%
8455	0%	9%	-1%	-14%
11494	7%	0%	-15%	-1%
65371	9%	0%	-1%	-15%
N Fairfax St				
27480	0%	52%	0%	0%
35505	0%	18%	0%	0%
36542	0%	44%	0%	1%
N Fort Myer Dr				
28732	1%	0%	12%	11%
N Glebe Rd				
22383	0%	13%	1%	2%
27473	3%	0%	-10%	-6%
33998	2%	0%	22%	11%
35179	0%	14%	3%	1%
41418	2%	0%	4%	29%
N Henry St				
70271	0%	33%	0%	0%
N Jackson St				
81005	0%	13%	0%	1%
81006	0%	11%	0%	1%
81019	0%	12%	0%	1%
N Jefferson Davis Hwy				
36929	0%	30%	4%	0%
70264	0%	19%	0%	4%
N Key Blvd				
81049	0%	11%	1%	1%
81060	0%	24%	0%	0%
81062	0%	11%	0%	0%
N Kirkwood Rd				
49081	0%	15%	0%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
50537	0%	15%	0%	3%
65801	0%	15%	0%	1%
80997	0%	11%	2%	3%
N Lee Hwy				
14003	2%	0%	1%	13%
N Little Falls Rd				
34331	0%	20%	0%	-1%
42920	0%	85%	0%	1%
54639	0%	19%	-1%	-1%
68920	3%	0%	-11%	-6%
N Lorcom Ln				
81094	0%	18%	0%	-2%
N Pollard St				
81102	0%	11%	0%	-1%
N Sycamore St				
50545	0%	12%	1%	1%
N Washington Blvd				
50287	2%	0%	-11%	-2%
68921	0%	56%	0%	1%
71775	3%	0%	-11%	-6%
N West St				
52346	1%	0%	0%	11%
N Williamsburg Blvd				
7986	0%	12%	1%	1%
Norfolk Ln				
47674	0%	30%	0%	1%
Old Chesterbrook Rd				
5120	4%	0%	-13%	-9%
Old Dominion Dr				
3984	2%	0%	0%	13%
4706	2%	0%	0%	13%
4793	0%	79%	1%	0%
11488	2%	0%	-11%	-3%
17391	0%	15%	-1%	-1%
28118	9%	0%	5%	16%
56346	2%	0%	-3%	-11%
60003	6%	0%	5%	4%
60269	2%	0%	-13%	-4%
68779	4%	0%	11%	2%
72563	0%	48%	0%	0%
76054	14%	0%	80%	78%
80116	0%	197%	0%	0%
80118	0%	101%	0%	0%
Old Springhouse Rd				
77178	0%	0%	-3%	14%
77179	8%	0%	19%	-30%
Park Run Dr				
12483	0%	18%	-1%	-1%
18058	0%	12%	-1%	2%
42887	10%	0%	0%	0%
Potomac Ave				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
76816	0%	13%	0%	3%
76818	0%	11%	4%	0%
Potomac Greens Dr				
47676	0%	30%	0%	1%
52050	0%	16%	1%	1%
Powhatan St				
51314	0%	33%	0%	0%
Queen St				
20907	0%	52%	0%	0%
40414	0%	44%	0%	1%
Random Hills Rd				
47228	0%	31%	0%	0%
Ridge Top Rd				
47226	0%	31%	0%	0%
Ring Rd				
13954	0%	11%	-1%	-13%
41163	5%	0%	6%	4%
42174	0%	9%	0%	-12%
62751	0%	13%	2%	-11%
73543	10%	0%	-9%	-9%
S Arlington Ridge Rd				
7984	2%	0%	0%	13%
S Clark St				
55584	5%	0%	1%	5%
68247	5%	0%	1%	5%
S Columbia Pike				
9801	1%	0%	1%	11%
26428	1%	0%	3%	13%
49630	3%	0%	0%	12%
S Eads St				
29859	0%	23%	0%	2%
36985	0%	13%	0%	5%
51047	0%	13%	1%	0%
74054	1%	0%	12%	1%
S Fort Scott Dr				
80808	0%	18%	0%	4%
S Glebe Rd				
40901	0%	12%	1%	0%
74285	0%	22%	0%	2%
S Hayes St				
41671	0%	10%	0%	1%
41673	0%	13%	0%	1%
S Lynn St				
67301	6%	0%	4%	0%
S Patrick St				
19863	0%	10%	0%	0%
52667	0%	200%	0%	0%
S Washington Blvd				
7991	0%	1%	12%	2%
17387	1%	0%	1%	27%
28854	1%	0%	0%	15%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
66132	0%	10%	0%	0%
73013	0%	1%	0%	-20%
Senseny Rd				
81397	0%	19%	0%	1%
Shirley Hwy				
18091	1%	0%	5%	20%
51571	1%	0%	5%	20%
62771	1%	0%	5%	20%
Spring Hill Rd				
17400	20%	0%	-1%	-10%
State Rte 123				
59113	4%	0%	1%	11%
State Rte 193				
6379	16%	0%	7%	46%
6381	21%	0%	20%	20%
27937	0%	5%	80%	76%
33644	22%	0%	11%	68%
33645	0%	26%	10%	15%
44442	3%	0%	-10%	-12%
State Rte 237				
59501	0%	1%	4%	13%
State Rte 267				
27417	0%	7%	-43%	-3%
48466	0%	20%	-36%	-3%
58212	0%	11%	7%	0%
58213	0%	24%	0%	0%
63906	0%	21%	-2%	0%
77023	0%	45%	-2%	-1%
State Rte 286				
22322	0%	200%	0%	0%
State Rte 289				
40190	0%	17%	0%	0%
State Rte 294				
43860	0%	14%	0%	0%
State Rte 3 Bus				
25900	0%	0%	12%	0%
State Rte 55				
60604	0%	26%	0%	0%
State Rte 658				
51814	0%	15%	0%	0%
State Rte 662				
23850	3%	0%	1%	13%
45975	3%	0%	1%	12%
State Rte 684				
73800	5%	0%	0%	-6%
State Rte 695				
72292	5%	0%	12%	1%
State Rte 7 Bus				
4141	8%	0%	0%	-2%
7291	0%	14%	0%	0%
14542	6%	0%	-2%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
15204	7%	0%	2%	0%
64315	1%	0%	1%	16%
State Rte 704				
34713	5%	0%	4%	1%
State Rte 762				
15483	0%	13%	0%	0%
35250	0%	16%	0%	0%
Swinks Mill Rd				
38993	0%	11%	0%	0%
Taylorstown Rd				
36006	0%	10%	0%	3%
81329	0%	14%	0%	2%
81330	0%	12%	0%	3%
Telegraph Rd				
47641	0%	200%	0%	0%
Toll House Rd				
52653	0%	107%	0%	0%
Towers Crescent Dr				
60863	5%	0%	3%	4%
US Hwy 1				
59036	0%	12%	0%	0%
US Hwy 29				
59243	0%	17%	0%	0%
Van Buren Rd				
6674	0%	19%	1%	0%
W Broad Way				
75878	1%	0%	2%	11%
W Wakefield Dr				
38725	0%	200%	0%	0%
44175	0%	17%	0%	0%
Wakefield Dr E				
38726	0%	17%	0%	0%
44480	0%	200%	0%	0%
Westmoreland St				
5056	3%	0%	-13%	-6%
5057	3%	0%	-13%	-7%
28008	3%	0%	5%	12%
Westpark Dr				
78	0%	11%	0%	1%
45568	0%	11%	-1%	3%
Willowfield Way				
8704	0%	200%	0%	0%
Woodside Dr				
8906	0%	11%	0%	0%

Segments Expecting Meaningful Changes in Emissions

Alternative 10: Two ETL Managed Lanes Network on I-495 and I-270 and Retain one HOV Lane on I-270 only

Criteria and Document Legend

1. Congested % Difference: Changes of ± 5% or more in AADT on congested highway links of LOS D or worse
2. Free Flow % Difference: Changes of ± 10% or more in AADT on uncongested highway links of LOS C or better;
3. Travel Time AM/PM: Changes of ± 10% or more in travel time; and
d. Not Presented: Changes of ± 10% or more in intersection delay.

Highlighted locations meet the criteria[1]

1. https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/moves_msat_faq.cfm

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
District of Columbia				
10th Pl SE				
15152	0%	12%	8%	5%
10th St SW				
61369	0%	27%	-1%	0%
11th St SE				
8559	2%	0%	11%	7%
9082	1%	0%	3%	10%
25672	2%	0%	11%	6%
45594	2%	0%	11%	6%
12th St NW				
73869	2%	0%	2%	11%
12th St SW				
34294	2%	0%	16%	7%
13th St NW				
1714	5%	0%	5%	1%
2472	2%	0%	10%	10%
6440	0%	0%	10%	4%
7478	3%	0%	1%	17%
10690	2%	0%	1%	10%
16064	3%	0%	29%	-1%
29098	2%	0%	4%	11%
40598	0%	0%	11%	4%
42426	6%	0%	0%	6%
52075	7%	0%	3%	7%
69608	3%	0%	2%	11%
73321	2%	0%	6%	11%
77912	2%	0%	1%	20%
77913	3%	0%	0%	17%
77943	2%	0%	17%	4%
77944	1%	0%	2%	12%
77945	1%	0%	1%	21%
13th St SE				
78560	0%	11%	0%	5%
14th St NW				
4293	0%	0%	10%	5%
6574	5%	0%	5%	1%
8416	4%	0%	1%	20%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
15246	5%	0%	5%	1%
27134	3%	0%	12%	1%
44643	8%	0%	4%	2%
73325	1%	0%	2%	11%
73327	1%	0%	8%	13%
14th St SW				
5983	5%	0%	4%	0%
12953	2%	0%	5%	14%
39030	1%	0%	2%	12%
39031	1%	0%	14%	6%
66562	4%	0%	12%	4%
15th St NW				
47189	7%	0%	5%	3%
77028	5%	0%	11%	1%
77035	0%	0%	4%	10%
77036	0%	0%	10%	6%
16th St NW				
3684	1%	0%	3%	18%
17033	10%	0%	2%	1%
23592	2%	0%	6%	13%
37364	1%	0%	3%	15%
47201	6%	0%	0%	9%
49320	2%	0%	14%	5%
58981	1%	0%	12%	6%
64887	2%	0%	16%	7%
69913	1%	0%	10%	7%
78016	1%	0%	10%	1%
78018	0%	0%	2%	11%
16th St SE				
2249	3%	0%	0%	13%
17th St NE				
40729	2%	0%	1%	10%
17th St NW				
8157	1%	0%	11%	7%
53021	2%	0%	0%	14%
78348	2%	0%	0%	12%
17th St SE				
76178	1%	0%	3%	11%
18th St NE				
64895	3%	0%	0%	10%
78598	5%	0%	4%	3%
78599	5%	0%	4%	3%
18th St NW				
2689	4%	0%	14%	4%
9049	3%	0%	3%	23%
9579	3%	0%	14%	4%
27133	2%	0%	12%	5%
36033	2%	0%	13%	2%
40683	3%	0%	16%	4%
19th St NE				
2519	5%	0%	6%	0%
79156	0%	43%	1%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
1st St SE				
29092	5%	0%	7%	1%
74986	5%	0%	7%	1%
21st St NW				
10680	7%	0%	3%	14%
78474	5%	0%	0%	4%
23rd St NW				
2464	0%	0%	11%	0%
5375	5%	0%	2%	15%
7071	5%	0%	2%	12%
56235	0%	0%	11%	0%
24th St NW				
298	5%	0%	0%	6%
28th St SE				
39273	3%	0%	10%	2%
30th Pl NW				
23586	1%	0%	13%	4%
38th St NW				
652	2%	0%	8%	13%
17955	2%	0%	14%	9%
3rd St NW				
7730	0%	11%	1%	-1%
20708	0%	11%	0%	0%
26409	0%	18%	0%	0%
78185	5%	0%	3%	-1%
3rd St SW				
55114	1%	0%	14%	2%
78294	5%	0%	2%	0%
40th St NE				
60683	0%	22%	0%	5%
60684	0%	34%	2%	0%
42nd St NW				
78789	0%	12%	0%	1%
44th St NE				
1564	2%	0%	0%	-10%
31114	2%	0%	13%	1%
60996	6%	0%	4%	8%
60997	8%	0%	4%	4%
79135	6%	0%	5%	9%
79136	0%	10%	5%	4%
79137	9%	0%	10%	4%
44th St NW				
78876	0%	13%	-1%	-1%
78877	0%	28%	-1%	0%
78878	0%	12%	-2%	0%
78879	0%	27%	-2%	0%
46th St NW				
24613	6%	0%	2%	4%
49th St NE				
13513	0%	10%	3%	5%
69253	0%	12%	3%	8%
79091	0%	12%	3%	7%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
4th St NE				
3250	7%	0%	3%	9%
44605	6%	0%	1%	6%
50th St SE				
46918	0%	17%	0%	-1%
69268	0%	11%	2%	4%
53rd St NE				
79087	0%	12%	0%	7%
81568	0%	12%	0%	7%
53rd St SE				
79066	0%	33%	0%	1%
79067	0%	11%	0%	2%
5th St NW				
78662	5%	0%	2%	5%
78679	6%	0%	4%	8%
6th St SE				
14362	6%	0%	2%	4%
14929	0%	11%	6%	1%
78213	6%	0%	8%	1%
7th St NW				
13242	1%	0%	14%	2%
17199	2%	0%	16%	7%
36348	0%	0%	0%	11%
73602	3%	0%	2%	11%
73603	3%	0%	2%	11%
74149	1%	0%	-1%	12%
74151	0%	0%	3%	13%
7th St SE				
66118	0%	10%	0%	0%
7th St SW				
37484	1%	0%	11%	4%
8th St NE				
44603	3%	0%	6%	13%
60136	4%	0%	12%	10%
8th St SE				
13074	1%	0%	0%	12%
16275	0%	61%	0%	0%
9th St NE				
58437	4%	0%	11%	9%
9th St NW				
51532	2%	0%	0%	11%
58978	0%	60%	0%	0%
Alabama Ave SE				
14339	2%	0%	0%	15%
34800	5%	0%	2%	12%
35112	7%	0%	3%	4%
58087	2%	0%	13%	7%
64890	1%	0%	4%	10%
69986	3%	0%	1%	15%
69987	3%	0%	1%	15%
70228	4%	0%	6%	16%
Alaska Ave NW				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
70323	0%	0%	4%	10%
78734	0%	11%	0%	0%
78736	0%	13%	0%	0%
Arizona Ave NW				
4412	1%	0%	2%	14%
41435	7%	0%	28%	32%
41437	0%	0%	2%	17%
50148	2%	0%	20%	2%
60330	5%	0%	23%	21%
60335	3%	0%	13%	10%
Arkansas Ave NW				
70994	10%	0%	0%	2%
Arlington Memorial Brg				
30416	0%	13%	0%	0%
Aspen St NW				
15524	2%	0%	20%	6%
15683	1%	0%	3%	13%
B St SE				
27598	1%	0%	7%	10%
38570	2%	0%	12%	7%
Beach Dr NW				
9250	4%	0%	7%	10%
23594	6%	0%	7%	1%
42942	5%	0%	2%	11%
Benning Rd SE				
55638	2%	0%	10%	9%
69264	2%	0%	8%	10%
79054	5%	0%	2%	9%
79056	7%	0%	8%	6%
Blagden Ave NW				
23878	3%	0%	1%	11%
27435	5%	0%	11%	5%
46534	0%	12%	0%	0%
Blaine St NE				
79095	0%	11%	0%	6%
Brentwood Pkwy NE				
45888	0%	11%	0%	0%
C St NE				
14097	3%	0%	1%	13%
62363	2%	0%	11%	0%
69652	2%	0%	11%	0%
C St NW				
13450	6%	0%	3%	15%
C St SE				
16278	2%	0%	10%	10%
Calvert St NW				
41069	1%	0%	10%	4%
Camden St SE				
24773	9%	0%	2%	3%
Canal Rd NW				
649	0%	0%	17%	-2%
17254	0%	21%	-4%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
17256	0%	21%	-4%	0%
17262	3%	0%	-26%	0%
17487	0%	0%	0%	22%
40368	2%	0%	0%	-15%
Capital Beltway				
19588	1%	0%	0%	-12%
Carroll St NW				
28248	0%	10%	-1%	0%
Central Ave SE				
79050	0%	28%	0%	-3%
79078	6%	0%	5%	3%
79079	8%	0%	2%	15%
Chain Bridge Rd NW				
78891	0%	15%	1%	2%
Chestnut St NW				
4072	0%	12%	0%	5%
10696	0%	12%	4%	1%
Chillum Pl NE				
11666	1%	0%	15%	8%
11668	1%	0%	4%	14%
Clara Barton Pkwy NW				
15395	5%	0%	34%	16%
65019	4%	0%	9%	16%
Columbia Rd NW				
6885	1%	0%	0%	13%
10134	1%	0%	15%	5%
12475	2%	0%	17%	6%
16794	0%	0%	1%	11%
65009	1%	0%	10%	2%
78019	0%	0%	2%	11%
78027	2%	0%	2%	11%
Connecticut Ave NW				
6285	1%	0%	6%	15%
6286	1%	0%	0%	14%
6287	1%	0%	2%	20%
9625	2%	0%	12%	11%
14878	2%	0%	11%	2%
17961	1%	0%	10%	1%
38190	1%	0%	3%	14%
66347	1%	0%	25%	3%
Constitution Ave NW				
8684	0%	0%	10%	2%
27431	1%	0%	2%	14%
38277	0%	0%	3%	10%
Corcoran St NW				
12571	2%	0%	12%	5%
Dalecarlia Pkwy NW				
60644	0%	11%	5%	2%
DC Hwy 295				
4313	2%	0%	6%	21%
16142	2%	0%	2%	12%
16432	2%	0%	13%	12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
37791	2%	0%	2%	12%
46627	2%	0%	13%	12%
56840	2%	0%	13%	12%
Division Ave NE				
42889	0%	11%	2%	1%
61621	0%	13%	2%	8%
61623	0%	11%	6%	5%
79082	0%	10%	4%	5%
79083	0%	11%	2%	1%
Dix St NE				
61617	0%	10%	3%	5%
79090	0%	13%	4%	5%
Drake Pl SE				
79063	0%	33%	0%	1%
Dupont Cir NW				
8356	1%	0%	12%	2%
12572	1%	0%	13%	5%
36335	3%	0%	11%	11%
59281	0%	0%	1%	12%
59589	1%	0%	16%	1%
E Capitol St NE				
13984	3%	0%	8%	14%
15185	0%	0%	8%	12%
39036	3%	0%	5%	18%
E Capitol St SE				
18946	0%	22%	0%	5%
61955	8%	0%	1%	9%
62577	6%	0%	9%	2%
73984	0%	24%	3%	0%
81567	0%	12%	0%	7%
E St Expy				
7734	2%	0%	3%	12%
E St NW				
18644	4%	0%	4%	17%
28865	1%	0%	2%	11%
73320	1%	0%	-2%	11%
E St SE				
45564	0%	10%	1%	2%
72465	2%	0%	11%	13%
Eastern Ave NE				
1951	3%	0%	19%	10%
9580	3%	0%	17%	14%
15695	3%	0%	9%	12%
15994	4%	0%	21%	25%
22832	3%	0%	13%	9%
28738	3%	0%	9%	13%
38916	0%	12%	0%	0%
40365	3%	0%	20%	12%
63642	3%	0%	13%	18%
79922	3%	0%	0%	10%
81615	0%	14%	0%	3%
Eastern Ave NW				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
6848	2%	0%	10%	9%
24473	2%	0%	2%	12%
Ely Pl SE				
73717	6%	0%	3%	1%
F St NW				
23725	6%	0%	3%	7%
78186	6%	0%	3%	2%
F St SE				
79057	7%	0%	3%	6%
79062	0%	33%	0%	1%
Fessenden St NW				
78961	1%	0%	9%	10%
Florida Ave NE				
2158	1%	0%	1%	18%
29426	1%	0%	5%	18%
53002	2%	0%	3%	13%
62061	10%	0%	3%	5%
Florida Ave NW				
4037	1%	0%	2%	11%
13037	3%	0%	0%	10%
65515	0%	0%	5%	11%
Foxhall Rd NW				
57734	4%	0%	20%	2%
57735	6%	0%	2%	12%
57740	0%	11%	0%	1%
57742	0%	12%	3%	0%
73797	6%	0%	20%	1%
78862	4%	0%	20%	2%
Franklin St NE				
30665	0%	0%	10%	-2%
G St NW				
28870	6%	0%	3%	1%
Gallatin St NW				
46525	10%	0%	0%	2%
78643	8%	0%	6%	8%
Galloway St NE				
78627	5%	0%	5%	1%
George Washington Memorial Pkwy				
33685	0%	1%	0%	20%
34645	0%	1%	0%	20%
Georgia Ave NW				
4069	0%	0%	1%	16%
6284	1%	0%	3%	13%
14664	4%	0%	5%	10%
40243	0%	0%	1%	16%
40244	0%	0%	13%	3%
40245	0%	0%	19%	3%
56625	2%	0%	20%	6%
Girard St NW				
40246	1%	0%	14%	4%
62441	1%	0%	1%	22%
Glenbrook Rd NW				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
3261	0%	63%	0%	0%
3262	0%	54%	0%	0%
Glover Rd NW				
23582	0%	12%	2%	2%
Good Hope Rd SE				
6242	1%	0%	1%	13%
13762	3%	0%	1%	12%
16436	3%	0%	0%	13%
51688	1%	0%	0%	11%
51689	1%	0%	0%	11%
H St NW				
78358	2%	0%	1%	12%
I- 295				
1480	1%	0%	0%	14%
I- 395				
49096	1%	0%	11%	9%
I- 495				
19589	0%	0%	-20%	1%
25781	2%	0%	-19%	3%
I- 66				
12777	3%	0%	15%	6%
14357	2%	0%	12%	16%
I St NW				
22822	0%	0%	10%	4%
Independence Ave SE				
29097	0%	191%	0%	0%
Irving St NW				
40733	4%	0%	5%	10%
58671	2%	0%	1%	14%
62766	2%	0%	13%	3%
Jefferson St NW				
78671	0%	14%	2%	1%
K St NW				
25744	6%	0%	3%	1%
27205	1%	0%	11%	4%
48418	0%	26%	1%	1%
58128	5%	0%	5%	1%
59587	0%	0%	4%	12%
66960	5%	0%	1%	3%
78050	0%	11%	0%	1%
Kalmia Rd NW				
1114	3%	0%	11%	3%
5205	3%	0%	12%	13%
10356	3%	0%	12%	13%
40354	3%	0%	11%	3%
Kalorama Rd NW				
78498	0%	21%	2%	1%
78499	0%	16%	2%	1%
Kansas Ave NW				
24770	2%	0%	1%	11%
78636	5%	0%	0%	3%
Kenilworth Ave NE				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
5225	4%	0%	8%	12%
16150	2%	0%	9%	10%
16433	2%	0%	4%	11%
17843	2%	0%	17%	14%
23731	2%	0%	4%	11%
31339	8%	0%	10%	4%
63890	2%	0%	17%	14%
70336	0%	117%	0%	0%
Klingle Rd NW				
9933	6%	0%	0%	6%
18189	6%	0%	3%	0%
L St NW				
40053	0%	12%	0%	0%
Lee St NE				
72843	0%	12%	0%	2%
Livingston Rd SE				
78539	0%	24%	0%	3%
Logan Cir NW				
7191	2%	0%	2%	11%
15843	1%	0%	2%	19%
22012	2%	0%	11%	15%
39389	2%	0%	11%	15%
Loughboro Rd NW				
60340	5%	0%	6%	1%
60342	0%	11%	4%	1%
M L King Jr Ave SE				
32417	0%	11%	0%	2%
M St NE				
60137	10%	0%	3%	5%
79160	0%	43%	2%	0%
79161	0%	43%	2%	0%
M St NW				
27308	1%	0%	-5%	12%
69809	1%	0%	13%	4%
M St SE				
9382	2%	0%	3%	12%
81377	2%	0%	0%	12%
Macarthur Blvd NW				
7662	3%	0%	10%	11%
25539	3%	0%	14%	14%
31684	7%	0%	10%	15%
58985	7%	0%	9%	12%
Maine Ave SW				
69848	5%	0%	6%	5%
Malcolm X Ave SE				
13596	1%	0%	0%	14%
Maryland Ave SW				
55119	0%	0%	0%	11%
Massachusetts Ave NW				
7787	2%	0%	11%	6%
7788	0%	20%	-1%	0%
13472	0%	0%	0%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
78058	0%	12%	0%	2%
Massachusetts Ave SE				
9841	2%	0%	13%	7%
34801	13%	0%	9%	2%
69511	5%	0%	2%	12%
69513	13%	0%	9%	2%
79774	4%	0%	4%	13%
Military Rd NW				
12721	1%	0%	13%	1%
23874	6%	0%	3%	1%
Minnesota Ave NE				
11817	2%	0%	0%	11%
14574	7%	0%	6%	11%
Minnesota Ave SE				
13520	6%	0%	4%	2%
Mississippi Ave SE				
14565	0%	11%	0%	3%
Missouri Ave NW				
28512	5%	0%	9%	5%
Montana Ave NE				
6548	2%	0%	12%	3%
29209	3%	0%	4%	11%
43276	1%	0%	4%	17%
Mount Olivet Rd NE				
15981	3%	0%	11%	1%
N Capitol St NE				
3253	8%	0%	3%	6%
9310	0%	0%	15%	3%
18421	2%	0%	2%	17%
33107	0%	0%	2%	10%
43558	2%	0%	0%	14%
69665	2%	0%	12%	1%
N Capitol St NW				
37120	1%	0%	1%	17%
78074	1%	0%	4%	17%
78075	1%	0%	4%	17%
N St NW				
19923	0%	12%	0%	0%
78427	6%	0%	4%	2%
78432	8%	0%	5%	3%
78433	8%	0%	7%	5%
Naylor Rd SE				
2844	2%	0%	0%	21%
16283	3%	0%	10%	22%
22008	2%	0%	7%	20%
32998	1%	0%	14%	-1%
45687	0%	0%	0%	11%
46669	2%	0%	4%	11%
51786	2%	0%	4%	20%
Nebraska Ave NW				
29325	0%	18%	1%	0%
57104	0%	0%	-14%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
61373	2%	0%	10%	13%
70093	1%	0%	13%	8%
Nevada Ave NW				
9897	6%	0%	4%	1%
14964	2%	0%	12%	8%
New Hampshire Ave NW				
8366	3%	0%	13%	6%
8832	4%	0%	1%	15%
19527	3%	0%	1%	15%
36336	3%	0%	8%	11%
38188	3%	0%	8%	11%
46577	3%	0%	13%	6%
77999	2%	0%	12%	6%
New Jersey Ave SE				
9517	0%	16%	1%	1%
13508	0%	16%	1%	1%
New York Ave NE				
2892	2%	0%	3%	13%
12729	2%	0%	0%	13%
25193	1%	0%	10%	7%
28988	2%	0%	3%	13%
39744	2%	0%	0%	13%
New York Ave NW				
6767	3%	0%	2%	10%
9216	1%	0%	3%	15%
Newton St NE				
30893	5%	0%	6%	2%
Nicholson St NE				
3699	1%	0%	4%	13%
Northampton St NW				
7672	0%	11%	2%	2%
O St NE				
2756	1%	0%	1%	14%
Oglethorpe St NE				
11661	1%	0%	4%	12%
Ohio Dr SW				
19255	0%	15%	0%	0%
49093	0%	21%	0%	1%
56841	1%	0%	11%	9%
70865	6%	0%	4%	1%
Park Pl NW				
39268	0%	10%	2%	1%
40249	3%	0%	0%	12%
Pennsylvania Ave NW				
37955	6%	0%	1%	6%
46587	1%	0%	12%	2%
Q St NW				
78422	1%	0%	-1%	10%
Queen St NE				
11971	3%	0%	3%	13%
R St NE				
77635	7%	0%	1%	8%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
R St NW				
77910	0%	0%	0%	11%
Reno Rd NW				
60729	1%	0%	19%	2%
Rhode Island Ave NE				
18423	1%	0%	2%	14%
23730	1%	0%	15%	4%
30679	3%	0%	5%	17%
66851	5%	0%	6%	2%
Rhode Island Ave NW				
1656	1%	0%	18%	3%
8368	3%	0%	0%	11%
8735	4%	0%	1%	10%
14875	2%	0%	7%	11%
18417	2%	0%	3%	14%
29099	3%	0%	5%	14%
74696	2%	0%	3%	17%
74698	1%	0%	2%	15%
75121	2%	0%	3%	17%
75126	0%	18%	0%	-3%
Riggs Rd NE				
3326	1%	0%	4%	13%
River Rd NW				
18025	3%	0%	12%	10%
18026	3%	0%	13%	8%
Rock Creek Church Rd NW				
30089	0%	10%	2%	1%
30092	6%	0%	7%	2%
Rock Creek Pkwy NW				
23728	5%	0%	0%	6%
S Arlington Blvd				
43859	0%	1%	0%	20%
S Carolina Ave SE				
1565	0%	13%	1%	2%
S St NE				
6546	5%	0%	3%	3%
Sargent Rd NE				
30241	1%	0%	3%	12%
Scott Cir NW				
14578	1%	0%	15%	3%
60173	1%	0%	17%	2%
South Dakota Ave NE				
14571	2%	0%	1%	10%
29773	1%	0%	4%	12%
Southern Ave SE				
5934	3%	0%	1%	25%
19326	1%	0%	0%	14%
27574	2%	0%	11%	0%
32326	3%	0%	8%	14%
37848	2%	0%	12%	0%
52604	3%	0%	4%	13%
79016	5%	0%	11%	13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
79017	5%	0%	8%	10%
79018	3%	0%	5%	14%
79019	3%	0%	5%	14%
79130	2%	0%	5%	11%
Southwest Fwy				
3950	2%	0%	16%	7%
30263	1%	0%	5%	12%
Spring Rd NW				
24953	6%	0%	5%	1%
39722	7%	0%	4%	1%
46181	7%	0%	3%	6%
78720	0%	15%	0%	-1%
78721	0%	14%	0%	-1%
Stanley St SE				
79775	4%	0%	3%	12%
79777	4%	0%	11%	7%
Suitland Rd SE				
37175	9%	0%	2%	3%
T St NE				
77636	6%	0%	3%	9%
T St NW				
7046	2%	0%	0%	18%
Taylor St NE				
27432	2%	0%	0%	10%
Tenley Cir NW				
45592	1%	0%	13%	5%
69808	2%	0%	14%	10%
Texas Ave SE				
32514	0%	14%	6%	1%
62578	0%	19%	1%	5%
Thomas Cir NW				
39394	3%	0%	24%	1%
39395	3%	0%	7%	13%
Tunlaw Rd NW				
78802	0%	13%	1%	1%
Upton St NW				
78839	7%	0%	6%	3%
US Hwy 1 Alt				
959	5%	0%	1%	8%
960	5%	0%	1%	11%
3554	3%	0%	7%	13%
7929	1%	0%	7%	11%
15929	2%	0%	1%	10%
29212	1%	0%	4%	16%
43277	1%	0%	7%	11%
45885	2%	0%	7%	13%
59880	4%	0%	2%	15%
68646	4%	0%	2%	11%
77613	2%	0%	4%	16%
US Hwy 50				
3920	2%	0%	24%	7%
5378	2%	0%	6%	18%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
7985	2%	0%	19%	10%
13209	2%	0%	4%	15%
23516	3%	0%	17%	5%
36930	2%	0%	8%	22%
56258	2%	0%	0%	13%
Valley Ave SE				
78542	0%	11%	1%	0%
78544	0%	14%	0%	1%
Van Buren St NW				
6283	7%	0%	9%	2%
24971	8%	0%	0%	11%
Van Ness St NW				
9585	1%	0%	3%	12%
Vermont Ave NW				
7493	0%	16%	-2%	0%
Virginia Ave SE				
78258	0%	0%	14%	0%
W St NW				
57741	0%	12%	0%	1%
57743	0%	13%	3%	0%
Warder St NW				
78701	0%	47%	0%	1%
Washington Ave SW				
70144	5%	0%	5%	1%
Washington Blvd				
16446	0%	1%	4%	10%
Western Ave NW				
287	3%	0%	11%	14%
2020	3%	0%	11%	10%
7713	3%	0%	13%	7%
11207	3%	0%	15%	10%
13476	5%	0%	8%	4%
18024	3%	0%	13%	20%
40049	3%	0%	11%	6%
41078	3%	0%	13%	8%
41332	0%	10%	0%	2%
41333	0%	11%	1%	0%
56474	3%	0%	13%	8%
56479	5%	0%	12%	2%
78926	5%	0%	13%	3%
79009	0%	12%	1%	0%
79011	0%	12%	0%	1%
Wisconsin Ave NW				
7371	1%	0%	-2%	14%
8588	1%	0%	19%	3%
10207	2%	0%	15%	11%
13190	0%	15%	2%	0%
13193	8%	0%	4%	0%
17022	2%	0%	-2%	12%
17958	2%	0%	7%	17%
35307	2%	0%	20%	6%
38275	13%	0%	4%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
53757	1%	0%	17%	4%
60178	0%	0%	13%	1%
78413	1%	0%	19%	3%
78838	7%	0%	5%	2%
Wise Rd NW				
1555	3%	0%	30%	7%
13727	3%	0%	5%	16%
Maryland				
1st St				
5718	2%	0%	17%	1%
5720	1%	0%	4%	11%
23rd Ave				
2557	6%	0%	6%	11%
59623	7%	0%	12%	10%
23rd Pkwy				
71553	3%	0%	11%	1%
2nd Ave				
5264	5%	0%	10%	9%
34074	5%	0%	11%	6%
38th Ave				
15936	7%	0%	9%	2%
60807	5%	0%	3%	4%
39th Ave				
80336	0%	36%	0%	1%
80338	0%	22%	2%	0%
80355	0%	15%	3%	4%
80356	0%	17%	4%	3%
40th Ave				
80329	0%	14%	4%	6%
80330	0%	11%	4%	7%
80331	0%	13%	6%	4%
80332	0%	11%	7%	4%
42nd Ave				
80276	6%	0%	7%	13%
80278	10%	0%	11%	7%
80295	0%	17%	2%	0%
80296	0%	22%	0%	2%
80300	0%	16%	6%	4%
80307	10%	0%	1%	10%
80309	11%	0%	14%	3%
80317	0%	12%	3%	5%
80318	0%	13%	1%	5%
50th Ave				
46214	3%	0%	2%	17%
46215	4%	0%	18%	6%
55th Ave				
80429	0%	32%	3%	0%
80430	0%	14%	4%	0%
80431	0%	49%	0%	3%
80432	0%	18%	0%	4%
56th Ave				
39959	4%	0%	0%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
56th Pl				
80407	0%	12%	1%	3%
80418	0%	12%	1%	3%
80425	0%	11%	4%	0%
80427	0%	14%	0%	4%
75th Ave				
12052	12%	0%	1%	22%
34932	13%	0%	9%	2%
79988	10%	0%	4%	14%
79990	0%	18%	6%	8%
94th Ave				
64133	0%	15%	2%	2%
96th Ave				
80558	0%	14%	1%	1%
80560	0%	17%	1%	1%
Addison Rd				
55242	3%	0%	13%	3%
79930	5%	0%	2%	14%
79941	0%	15%	3%	5%
79943	0%	17%	3%	5%
Addison Rd S				
32810	0%	14%	1%	1%
49007	0%	28%	4%	0%
64993	7%	0%	1%	11%
Adelphi Rd				
2913	3%	0%	7%	14%
4870	2%	0%	3%	11%
50122	2%	0%	12%	4%
51496	3%	0%	12%	17%
62036	4%	0%	12%	11%
Ager Rd				
8858	5%	0%	13%	5%
14998	4%	0%	2%	11%
72870	5%	0%	2%	10%
72872	5%	0%	11%	5%
72873	0%	6%	11%	4%
Alcona St				
24801	0%	16%	2%	2%
79594	0%	200%	0%	0%
79596	0%	115%	0%	0%
Aldershot Dr				
16714	16%	0%	0%	25%
55065	14%	0%	21%	0%
Allentown Rd				
4873	0%	18%	0%	2%
5824	6%	0%	15%	6%
5825	6%	0%	4%	4%
12586	6%	0%	8%	34%
12587	5%	0%	9%	11%
25504	6%	0%	12%	13%
41879	3%	0%	23%	14%
61211	0%	13%	-7%	-1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Ammendale Rd				
11126	0%	17%	-5%	-2%
11127	0%	17%	-1%	-7%
11129	0%	18%	-5%	-2%
11130	0%	16%	-6%	-3%
11131	0%	18%	-1%	-7%
62971	0%	18%	-1%	-8%
Arbor St				
79995	0%	20%	4%	4%
79996	0%	25%	4%	4%
Arcola Ave				
56061	2%	0%	11%	0%
Arctic Ave				
79392	0%	10%	0%	6%
Ardwick Ardmore Rd				
33882	6%	0%	-6%	6%
54380	6%	0%	-6%	6%
Arena Dr				
22563	0%	15%	-4%	-1%
47213	2%	0%	1%	-17%
47214	1%	0%	1%	-11%
Aris T Allen Blvd				
13573	0%	0%	1%	13%
Auth Rd				
5823	0%	12%	-1%	-5%
44626	0%	12%	-1%	-5%
44632	0%	13%	-3%	-11%
71280	0%	13%	-3%	-11%
Avery Rd				
40430	6%	0%	7%	0%
Ballenger Creek Pike				
27536	1%	0%	0%	12%
Baltimore Ave				
10812	0%	11%	0%	0%
Baltimore Rd				
197	2%	0%	1%	10%
36593	2%	0%	3%	13%
44664	1%	0%	11%	6%
63835	3%	0%	15%	1%
Baltimore St				
53658	1%	0%	0%	17%
Baltimore Washington Pkwy				
21293	0%	86%	0%	0%
40912	0%	200%	0%	0%
Barker Pl				
79595	0%	199%	0%	0%
79597	0%	100%	-2%	0%
Barnesville Rd				
56739	6%	0%	-5%	-1%
Bauer Dr				
6261	2%	0%	11%	6%
7134	2%	0%	3%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
79389	0%	10%	0%	6%
Beach Dr				
929	0%	0%	1%	10%
5882	8%	0%	11%	7%
18878	10%	0%	13%	21%
22624	4%	0%	3%	13%
69213	3%	0%	1%	10%
69214	0%	18%	3%	3%
Beaver Dam Rd				
16009	14%	0%	7%	6%
24504	15%	0%	8%	8%
Bel Pre Rd				
73081	3%	0%	22%	1%
73083	4%	0%	1%	15%
Belair Dr				
52858	2%	0%	1%	-19%
Belcrest Rd				
80268	5%	0%	2%	11%
Beltsville Dr				
59020	1%	0%	17%	-2%
62973	0%	3%	11%	-1%
Beltsville Rd				
65743	0%	5%	12%	0%
Bethesda Ave				
79304	5%	0%	9%	8%
Bradley Blvd				
339	1%	0%	1%	-12%
624	10%	0%	6%	7%
2147	4%	0%	1%	15%
8637	0%	10%	0%	10%
12374	7%	0%	1%	11%
12623	9%	0%	13%	2%
19054	8%	0%	4%	17%
22187	1%	0%	-2%	11%
32181	0%	0%	-14%	2%
34815	11%	0%	8%	1%
37196	2%	0%	26%	-4%
43183	3%	0%	20%	21%
49712	14%	0%	31%	34%
53152	2%	0%	14%	23%
53156	3%	0%	12%	1%
53163	12%	0%	28%	23%
56511	3%	0%	12%	1%
66219	4%	0%	1%	15%
79255	11%	0%	-1%	15%
Brae Brooke Dr				
16307	0%	16%	10%	9%
Brandywine Rd				
68976	2%	0%	0%	-10%
Briggs Chaney Rd				
1639	6%	0%	10%	6%
1931	7%	0%	2%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
10318	0%	15%	1%	2%
22489	0%	14%	1%	2%
22490	0%	19%	3%	2%
28313	6%	0%	4%	3%
37537	11%	0%	13%	6%
39010	0%	11%	0%	1%
49371	0%	14%	2%	2%
56332	0%	22%	7%	2%
74068	6%	0%	2%	29%
75875	0%	17%	3%	2%
75876	0%	12%	1%	2%
Brightseat Rd				
10557	0%	33%	0%	1%
10558	0%	21%	1%	1%
14700	8%	0%	27%	6%
21548	0%	28%	2%	1%
22780	0%	21%	1%	2%
22781	0%	41%	6%	3%
22790	0%	16%	1%	7%
22792	0%	24%	4%	6%
24279	0%	25%	1%	1%
25648	9%	0%	4%	30%
28213	0%	53%	4%	2%
34593	0%	37%	3%	0%
59051	0%	41%	4%	2%
68771	0%	54%	5%	3%
77232	0%	18%	1%	6%
77234	0%	29%	3%	5%
Brinkley Rd				
30141	0%	11%	2%	0%
Broad Run Rd				
17147	0%	13%	0%	0%
Brooke Rd				
19015	0%	13%	0%	3%
79893	0%	13%	3%	2%
Brooks Dr				
48260	0%	13%	0%	1%
Brown Rd				
48996	0%	26%	1%	4%
Brown Station Rd				
20742	0%	49%	8%	8%
20743	0%	54%	7%	8%
20744	0%	23%	3%	5%
20745	0%	26%	3%	4%
20764	0%	12%	0%	1%
33571	0%	12%	0%	0%
65178	0%	22%	0%	1%
Broxburn Dr				
37233	4%	0%	12%	3%
65138	5%	0%	-1%	16%
Bucklodge Rd				
57700	6%	0%	1%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Buffalo Rd				
18163	10%	0%	0%	-2%
18164	5%	0%	-1%	-1%
28735	9%	0%	0%	-1%
43748	0%	11%	-1%	-1%
Burdette Rd				
6495	14%	0%	30%	3%
26063	28%	0%	5%	45%
51768	17%	0%	27%	3%
65132	29%	0%	4%	38%
Cabin Branch Dr				
66765	0%	10%	2%	4%
Cabin John Pkwy				
10260	0%	0%	1%	-31%
18873	0%	12%	0%	5%
60085	0%	7%	15%	0%
71868	0%	1%	-27%	1%
Calverton Blvd				
42957	1%	0%	22%	-1%
Campus Dr				
3648	2%	0%	10%	8%
3649	4%	0%	10%	9%
3997	4%	0%	11%	5%
9761	2%	0%	17%	7%
10289	3%	0%	8%	11%
35070	2%	0%	11%	6%
35071	4%	0%	11%	9%
35072	4%	0%	12%	14%
49115	3%	0%	15%	13%
80262	5%	0%	15%	7%
80263	5%	0%	7%	7%
80264	3%	0%	2%	15%
Campus Way N				
4745	0%	14%	0%	-5%
14529	0%	11%	0%	-5%
77235	11%	0%	-1%	4%
77236	14%	0%	2%	13%
Campus Way S				
15330	0%	13%	0%	1%
23127	0%	32%	6%	2%
49020	0%	31%	1%	8%
65390	0%	22%	1%	1%
Capital Beltway				
2624	9%	0%	50%	81%
2625	2%	0%	29%	19%
6219	0%	200%	0%	0%
6524	7%	0%	54%	55%
6529	0%	1%	-5%	-12%
6818	3%	0%	16%	7%
6820	1%	0%	40%	14%
6821	2%	0%	-3%	22%
6822	0%	3%	4%	13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
6823	2%	0%	18%	6%
6824	2%	0%	2%	28%
6827	1%	0%	8%	16%
6830	2%	0%	28%	16%
6831	0%	8%	19%	6%
6832	7%	0%	4%	24%
7119	2%	0%	28%	16%
7120	1%	0%	24%	22%
7123	2%	0%	22%	5%
7124	2%	0%	21%	21%
7773	8%	0%	51%	45%
8715	3%	0%	63%	50%
8718	0%	2%	35%	19%
8719	0%	0%	50%	20%
10252	7%	0%	81%	66%
10254	0%	200%	0%	0%
10257	0%	600%	0%	0%
10513	1%	0%	25%	30%
10838	0%	16%	0%	0%
11031	0%	8%	-13%	-21%
11033	0%	1%	28%	-1%
11035	0%	11%	-12%	-13%
14058	6%	0%	2%	40%
16672	0%	600%	-14%	-22%
17226	2%	0%	30%	14%
19277	0%	0%	3%	38%
25418	2%	0%	23%	16%
25419	1%	0%	30%	21%
25426	0%	13%	0%	1%
34319	7%	0%	37%	73%
35426	8%	0%	18%	9%
37141	3%	0%	39%	45%
37542	0%	3%	-27%	-12%
37544	4%	0%	4%	49%
41598	0%	22%	0%	0%
43010	8%	0%	22%	67%
43212	0%	12%	-1%	0%
43317	0%	0%	-20%	1%
43763	3%	0%	39%	45%
43772	0%	9%	-12%	0%
45001	0%	14%	2%	86%
46647	3%	0%	3%	15%
46648	0%	3%	-12%	-17%
52567	5%	0%	37%	62%
52945	0%	5%	33%	11%
53312	0%	7%	3%	11%
55255	2%	0%	55%	25%
55619	2%	0%	39%	29%
55626	0%	200%	0%	0%
59353	0%	38%	0%	1%
59354	8%	0%	22%	67%
59356	0%	408%	43%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
59366	4%	0%	11%	42%
59644	2%	0%	7%	62%
59654	1%	0%	9%	53%
68592	0%	200%	-9%	-21%
68593	0%	29600%	-14%	-16%
69021	8%	0%	51%	45%
70513	0%	0%	3%	38%
Carrington Ave				
28202	4%	0%	3%	13%
Catskill St				
71270	4%	0%	10%	0%
Cedar Ln				
1279	4%	0%	23%	3%
26478	3%	0%	1%	26%
33922	4%	0%	23%	3%
52561	3%	0%	1%	26%
Chapel Point Rd				
5443	0%	11%	1%	0%
5743	0%	12%	0%	0%
6480	0%	12%	0%	0%
10731	0%	14%	0%	0%
48695	0%	11%	1%	0%
57138	0%	12%	1%	0%
Charles Armentrout Dr				
23705	3%	0%	1%	11%
Cherry Ln				
1326	0%	31%	-1%	0%
Cherry Tree Crossing Rd				
49515	0%	11%	-2%	0%
Chesapeake Rd				
80422	0%	12%	5%	3%
Chestnut Ave				
9447	0%	12%	2%	2%
31622	0%	12%	2%	2%
31623	0%	13%	2%	3%
31624	0%	12%	2%	3%
31625	0%	13%	2%	3%
41033	0%	11%	2%	2%
61769	6%	0%	2%	4%
65437	6%	0%	3%	4%
Cheverly Ave				
14819	0%	14%	6%	5%
59776	0%	19%	4%	5%
Church Rd				
12130	0%	14%	1%	2%
15956	0%	26%	5%	1%
16238	0%	26%	5%	1%
16239	0%	21%	5%	1%
16638	0%	30%	4%	10%
17739	0%	39%	10%	7%
20756	0%	38%	2%	5%
21611	0%	15%	4%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
27106	0%	39%	4%	3%
33229	0%	38%	2%	5%
36048	6%	0%	2%	2%
36053	0%	16%	1%	7%
38533	0%	17%	8%	10%
44256	0%	17%	0%	2%
45305	0%	34%	10%	8%
53702	0%	35%	3%	10%
55147	0%	22%	9%	16%
55148	0%	23%	9%	16%
55149	0%	17%	8%	11%
58009	0%	22%	8%	17%
58010	0%	17%	8%	10%
59319	0%	17%	8%	10%
59320	0%	23%	9%	16%
64150	0%	31%	2%	6%
64417	0%	14%	2%	8%
65171	0%	28%	2%	6%
65860	0%	12%	1%	12%
67960	0%	35%	2%	4%
Cindy Ln				
79811	0%	28%	4%	2%
79813	0%	17%	1%	2%
Claggett Landing Rd				
55218	2%	0%	9%	15%
73254	1%	0%	17%	4%
Clara Barton Pkwy				
32191	0%	11%	0%	0%
36917	0%	2%	0%	-44%
52785	1%	0%	1%	-18%
55616	0%	6%	2%	68%
59355	13%	0%	13%	47%
60086	0%	4%	-48%	0%
College Pkwy				
75594	0%	16%	1%	0%
Columbia Ave				
79290	5%	0%	3%	3%
79291	8%	0%	5%	5%
Columbia Park Rd				
10549	6%	0%	2%	13%
25355	7%	0%	21%	20%
31087	7%	0%	3%	20%
58070	6%	0%	2%	14%
58652	6%	0%	2%	14%
66760	6%	0%	6%	5%
66761	6%	0%	6%	5%
66762	6%	0%	6%	5%
Connecticut Ave				
1367	1%	0%	0%	13%
13666	2%	0%	0%	13%
13672	1%	0%	12%	5%
24970	1%	0%	-1%	14%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
27056	2%	0%	12%	6%
36816	0%	0%	-1%	12%
44972	1%	0%	0%	16%
57588	0%	0%	-1%	16%
69701	2%	0%	5%	13%
69703	2%	0%	13%	8%
73084	1%	0%	13%	1%
74412	0%	0%	12%	-1%
Contee Rd				
1043	0%	19%	-2%	0%
Cool Spring Rd				
5106	6%	0%	6%	1%
County Rd				
54074	3%	0%	19%	15%
67060	3%	0%	9%	18%
Crabbs Branch Way				
3816	2%	0%	12%	0%
64394	2%	0%	10%	0%
71694	3%	0%	0%	12%
Crain Hwy				
6771	0%	13%	-2%	0%
11329	3%	0%	10%	10%
14381	2%	0%	11%	6%
14759	2%	0%	22%	6%
14760	2%	0%	19%	12%
15060	1%	0%	10%	6%
17046	5%	0%	8%	13%
17746	1%	0%	12%	4%
19078	5%	0%	18%	7%
20364	2%	0%	19%	6%
21135	2%	0%	14%	4%
24920	2%	0%	10%	6%
25221	3%	0%	11%	19%
32950	2%	0%	6%	16%
33216	3%	0%	15%	30%
34255	1%	0%	11%	6%
35923	1%	0%	14%	5%
42483	4%	0%	16%	7%
42484	4%	0%	16%	6%
54461	3%	0%	17%	21%
59046	4%	0%	25%	14%
60691	4%	0%	7%	13%
61009	5%	0%	9%	8%
61013	4%	0%	17%	7%
61014	5%	0%	7%	8%
61015	5%	0%	8%	8%
61638	4%	0%	20%	7%
61640	5%	0%	8%	13%
61957	3%	0%	14%	7%
61958	3%	0%	14%	8%
62275	3%	0%	14%	7%
63879	2%	0%	7%	15%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
67952	3%	0%	10%	8%
71337	3%	0%	15%	28%
Crescent Rd				
22463	2%	0%	4%	18%
28807	4%	0%	22%	7%
Crest Ave				
80033	0%	84%	0%	1%
Crittenden St				
34130	3%	0%	3%	17%
64413	3%	0%	18%	9%
Croom Station Rd				
61963	0%	11%	0%	1%
61967	0%	11%	0%	1%
62274	3%	0%	15%	7%
79604	6%	0%	4%	4%
79605	6%	0%	5%	4%
Dairy Farm Rd				
74746	3%	0%	2%	-19%
Dale Dr				
637	7%	0%	5%	-1%
35303	7%	0%	5%	-1%
54293	0%	19%	2%	4%
Damascus Rd				
14546	4%	0%	12%	1%
35101	5%	0%	0%	12%
55983	5%	0%	0%	8%
Darcy Rd				
32636	0%	19%	11%	5%
33831	0%	10%	3%	0%
33833	0%	26%	0%	-5%
35898	0%	15%	4%	5%
45689	0%	11%	2%	8%
Darnestown Rd				
44561	3%	0%	3%	11%
57378	8%	0%	0%	1%
57701	6%	0%	1%	2%
63832	5%	0%	-1%	2%
72717	7%	0%	1%	2%
74406	6%	0%	1%	2%
79474	6%	0%	-2%	2%
79475	6%	0%	-2%	2%
Dartmouth Ave				
33740	9%	0%	8%	4%
Dateleaf Ave				
79881	0%	45%	-1%	0%
79882	0%	86%	-1%	0%
Decatur St				
3115	6%	0%	3%	12%
16222	4%	0%	11%	16%
16224	6%	0%	4%	12%
39962	4%	0%	12%	16%
80271	0%	36%	4%	12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
80272	0%	45%	13%	5%
Democracy Blvd				
5999	10%	0%	0%	24%
6000	7%	0%	0%	26%
6594	0%	4%	12%	0%
9394	0%	15%	2%	3%
19271	0%	13%	0%	28%
26665	7%	0%	2%	12%
51195	11%	0%	22%	1%
59655	0%	16%	5%	6%
68994	8%	0%	22%	0%
72716	9%	0%	10%	2%
Denley Rd				
13660	3%	0%	3%	12%
13662	3%	0%	15%	8%
Devon Rd				
53910	0%	19%	2%	4%
Diamond Back				
13823	1%	0%	4%	-25%
13825	1%	0%	-26%	1%
39844	2%	0%	-10%	-2%
Dickerson School Rd				
40868	6%	0%	-4%	-1%
Dorset Ave				
52903	2%	0%	3%	13%
79322	0%	12%	4%	8%
Dwight D Eisenhower Hwy				
25778	1%	0%	0%	-15%
37276	0%	2%	0%	-18%
37282	0%	17%	0%	0%
37284	0%	3%	0%	-14%
37634	0%	3%	0%	-14%
37638	1%	0%	-1%	-13%
37991	1%	0%	-1%	-11%
38356	0%	2%	0%	-12%
47337	0%	0%	50%	20%
60159	1%	0%	-1%	-10%
66784	0%	261%	39%	112%
67073	0%	241%	29%	105%
67077	0%	241%	41%	114%
67083	0%	241%	7%	88%
68866	1%	0%	0%	-13%
69013	1%	0%	-1%	-10%
69882	0%	0%	50%	20%
E Gude Dr				
1237	8%	0%	0%	13%
32529	7%	0%	13%	0%
E Jefferson St				
9665	11%	0%	0%	12%
9703	1%	0%	10%	6%
11363	2%	0%	13%	-2%
52568	2%	0%	1%	13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
E Patrick St				
75635	0%	200%	0%	0%
E Randolph Rd				
8397	5%	0%	17%	4%
10600	4%	0%	11%	20%
E West Hwy				
1699	2%	0%	9%	14%
1701	3%	0%	11%	1%
2644	10%	0%	4%	2%
2648	2%	0%	0%	14%
5595	2%	0%	17%	5%
7868	2%	0%	11%	5%
8494	3%	0%	14%	29%
8500	2%	0%	0%	17%
13831	3%	0%	12%	4%
14732	2%	0%	19%	12%
15587	2%	0%	10%	4%
15588	4%	0%	11%	4%
15596	2%	0%	14%	11%
16025	3%	0%	11%	1%
16229	3%	0%	11%	10%
16510	3%	0%	11%	9%
16513	2%	0%	14%	11%
16514	2%	0%	3%	16%
16515	3%	0%	2%	18%
19040	3%	0%	15%	7%
19273	2%	0%	3%	16%
21767	7%	0%	4%	16%
21879	3%	0%	8%	11%
25350	3%	0%	15%	6%
26357	3%	0%	11%	13%
30826	5%	0%	15%	4%
32171	2%	0%	4%	18%
36414	7%	0%	14%	9%
37528	3%	0%	12%	1%
39260	2%	0%	10%	4%
40143	1%	0%	2%	11%
40922	2%	0%	9%	12%
46310	3%	0%	17%	6%
47491	3%	0%	15%	0%
47492	2%	0%	1%	11%
53531	2%	0%	5%	13%
57826	2%	0%	18%	12%
59622	6%	0%	5%	15%
60809	2%	0%	0%	15%
60810	3%	0%	15%	11%
64096	1%	0%	2%	11%
71878	2%	0%	4%	15%
72314	2%	0%	6%	11%
Earnshaw Dr				
57764	0%	14%	0%	1%
57765	0%	27%	0%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Edwards Ferry Rd				
79478	0%	16%	0%	1%
Elm Ave				
47777	5%	0%	2%	5%
Elmer Derr Rd				
45642	3%	0%	0%	11%
Emory Ln				
24829	0%	12%	0%	2%
Enterprise Rd				
19227	11%	0%	17%	12%
29411	7%	0%	9%	14%
36042	4%	0%	6%	19%
36043	10%	0%	21%	23%
56261	5%	0%	15%	2%
62084	5%	0%	3%	15%
71017	12%	0%	15%	18%
74057	12%	0%	4%	35%
Esworthy Rd				
19458	0%	13%	2%	5%
Fairfax Rd				
79316	2%	0%	8%	13%
79317	5%	0%	11%	9%
Fairland Rd				
1930	7%	0%	4%	4%
8089	5%	0%	0%	12%
50730	3%	0%	15%	1%
56279	7%	0%	3%	9%
Falls Rd				
5991	5%	0%	1%	22%
32244	17%	0%	16%	29%
Fenno Rd				
62406	0%	22%	0%	0%
Fenton St				
1537	5%	0%	7%	-2%
2150	7%	0%	7%	5%
Fernwood Rd				
83	0%	15%	2%	1%
62004	5%	0%	6%	12%
64821	2%	0%	16%	1%
65124	5%	0%	6%	12%
65125	2%	0%	6%	10%
Fields Rd				
34271	5%	0%	0%	10%
45788	0%	10%	0%	7%
45789	7%	0%	12%	0%
72379	4%	0%	13%	0%
Fingerboard Rd				
44793	0%	25%	0%	-2%
Fishers Ln				
40826	3%	0%	0%	12%
69940	3%	0%	12%	1%
Fletchertown Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
80583	0%	14%	0%	-3%
Foote St				
81616	0%	13%	0%	3%
Forest Glen Rd				
9228	12%	0%	11%	5%
56380	0%	18%	3%	2%
Forest Rd				
19286	0%	22%	4%	4%
60055	0%	12%	1%	1%
80002	0%	39%	0%	1%
80005	0%	36%	0%	1%
80034	0%	84%	0%	1%
Forestville Rd				
37749	4%	0%	1%	24%
65000	5%	0%	21%	11%
65833	7%	0%	34%	7%
69065	3%	0%	1%	14%
75577	4%	0%	12%	4%
75578	2%	0%	10%	-52%
75582	0%	13%	9%	2%
75583	0%	9%	0%	-18%
75584	0%	13%	16%	4%
75585	0%	12%	13%	4%
Fort Washington Rd				
24340	0%	12%	0%	0%
Frederick Rd				
2339	1%	0%	0%	10%
12107	1%	0%	-2%	-10%
64194	2%	0%	0%	-13%
71698	2%	0%	11%	1%
71699	2%	0%	0%	13%
Frolich Ln				
55295	0%	18%	2%	3%
Gallatin St				
80357	0%	14%	3%	1%
80358	0%	16%	1%	4%
Garden Gate Rd				
22270	2%	0%	14%	-1%
Garrett A Morgan Blvd				
24277	0%	18%	1%	2%
28204	0%	13%	4%	3%
28205	0%	24%	1%	2%
28211	0%	14%	4%	3%
28212	0%	21%	1%	3%
37554	0%	21%	1%	3%
68770	0%	14%	4%	3%
72449	0%	15%	4%	2%
Georgia Ave				
11026	3%	0%	13%	5%
22261	2%	0%	11%	-1%
32047	0%	0%	16%	-1%
72348	2%	0%	23%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Gladys Noon Spellman Pkwy				
3385	0%	4%	0%	10%
8630	3%	0%	14%	32%
11444	0%	17%	0%	0%
12086	0%	6%	-5%	-12%
12090	2%	0%	12%	-1%
13882	3%	0%	-17%	-6%
14135	3%	0%	11%	17%
16988	0%	16%	-1%	-6%
18384	4%	0%	17%	25%
21980	0%	10%	0%	0%
33282	4%	0%	8%	15%
43798	0%	16%	0%	0%
44068	4%	0%	14%	24%
48270	3%	0%	12%	20%
48534	4%	0%	8%	14%
48609	0%	200%	0%	0%
53705	3%	0%	12%	20%
54843	2%	0%	-11%	-10%
54848	0%	60%	0%	-2%
55216	4%	0%	13%	17%
58701	3%	0%	11%	13%
58941	2%	0%	11%	19%
58944	3%	0%	13%	13%
58945	4%	0%	13%	17%
68234	0%	14%	7%	18%
Glen Mill Rd				
4161	2%	0%	2%	17%
19843	14%	0%	13%	1%
22405	15%	0%	17%	3%
36812	7%	0%	0%	16%
42181	7%	0%	0%	9%
46463	2%	0%	16%	6%
46639	0%	12%	1%	5%
47231	9%	0%	0%	20%
55063	8%	0%	14%	1%
Glen Rd				
1175	5%	0%	13%	0%
25326	0%	11%	0%	2%
25327	7%	0%	0%	14%
26363	0%	17%	2%	1%
30400	0%	16%	2%	4%
40423	6%	0%	13%	0%
49713	8%	0%	0%	16%
55057	5%	0%	13%	0%
56920	6%	0%	0%	14%
75280	5%	0%	13%	0%
75281	6%	0%	0%	14%
Glenarden Pkwy				
13489	19%	0%	13%	30%
14694	0%	14%	4%	19%
Glenbrook Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
79325	0%	8%	11%	1%
Glenmont Cir				
57883	2%	0%	0%	21%
57886	1%	0%	15%	0%
Glenn Dale Blvd				
22691	4%	0%	16%	6%
30839	7%	0%	3%	8%
48891	5%	0%	3%	21%
Good Luck Rd				
14137	3%	0%	12%	20%
14371	4%	0%	13%	17%
21669	0%	25%	7%	7%
25408	1%	0%	1%	-10%
80559	0%	10%	1%	1%
Great Seneca Hwy				
13824	1%	0%	-10%	1%
52598	3%	0%	-1%	12%
Green Valley Rd				
72882	0%	10%	0%	0%
Greenbelt Rd				
12058	0%	27%	1%	0%
16934	0%	7%	-76%	-57%
30148	5%	0%	18%	2%
30189	6%	0%	12%	2%
30325	4%	0%	1%	16%
32782	1%	0%	10%	1%
55223	0%	33%	-1%	-1%
80540	3%	0%	4%	10%
80545	0%	18%	3%	5%
80547	0%	14%	3%	2%
80637	0%	11%	4%	3%
Greencastle Rd				
1540	0%	17%	-2%	0%
10589	0%	8%	0%	-10%
25130	0%	8%	0%	-10%
72436	0%	30%	0%	-4%
Greentree Rd				
5873	16%	0%	21%	5%
9868	0%	25%	14%	10%
34982	11%	0%	7%	28%
53653	14%	0%	9%	21%
66216	0%	22%	13%	15%
72625	6%	0%	18%	9%
Grenoble Dr				
73086	2%	0%	12%	6%
H G Trueman Rd				
43230	0%	33%	1%	0%
50132	0%	33%	1%	0%
54089	0%	26%	0%	1%
69924	0%	26%	0%	1%
Hanover Pkwy				
19304	0%	15%	4%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
30531	0%	26%	1%	4%
30532	0%	15%	4%	1%
39976	0%	26%	1%	4%
52274	0%	14%	8%	7%
Harbour Way				
75519	3%	0%	6%	29%
75520	2%	0%	26%	6%
Harry S Truman Dr				
21133	0%	22%	4%	1%
21527	0%	23%	4%	1%
21528	0%	20%	1%	6%
23690	0%	23%	1%	5%
23971	0%	24%	1%	5%
71888	0%	19%	5%	2%
Harry S Truman Dr N				
33912	11%	0%	24%	16%
71898	8%	0%	1%	42%
Hastings Dr				
24268	0%	22%	3%	0%
26629	0%	22%	3%	0%
Hillmeade Rd				
16297	0%	12%	1%	1%
25711	0%	13%	1%	1%
Holly Springs Dr W				
1273	0%	19%	0%	3%
36484	0%	15%	3%	0%
58367	0%	20%	1%	1%
67056	0%	21%	1%	1%
I- 195				
54987	2%	0%	-1%	11%
I- 270				
5926	1%	0%	21%	1%
5927	2%	0%	24%	5%
9031	0%	18%	0%	1%
9033	2%	0%	-19%	-10%
9035	1%	0%	-13%	-18%
9038	1%	0%	-13%	-1%
9977	1%	0%	-12%	-1%
15674	1%	0%	-13%	-18%
19193	0%	298%	93%	6%
19200	1%	0%	-13%	-1%
19585	1%	0%	-16%	-10%
19669	0%	3%	69%	1%
19986	1%	0%	-2%	-11%
21295	1%	0%	-2%	-11%
22834	2%	0%	28%	2%
25127	1%	0%	0%	16%
26790	0%	400%	-171%	-171%
28056	0%	299%	158%	7%
28057	0%	267%	6%	92%
28059	0%	200%	0%	0%
28061	0%	273%	115%	16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
28366	0%	200%	0%	0%
28368	0%	2%	0%	-14%
28372	1%	0%	-11%	-4%
29074	0%	286%	97%	6%
29075	0%	200%	0%	0%
29076	0%	245%	16%	108%
29077	0%	169%	0%	0%
32167	0%	200%	0%	0%
37288	0%	3%	0%	-14%
37540	3%	0%	31%	6%
37645	1%	0%	-11%	-4%
37941	0%	200%	0%	0%
38287	0%	267%	15%	125%
38353	0%	1%	-10%	-1%
43769	0%	0%	6%	33%
46645	0%	3%	-16%	0%
53317	2%	0%	-20%	-10%
55268	1%	0%	-11%	-4%
55623	0%	0%	-25%	3%
58033	0%	299%	78%	6%
58036	0%	200%	0%	0%
58037	0%	276%	59%	16%
58038	0%	24%	0%	0%
58039	1%	0%	-13%	-18%
58805	1%	0%	-2%	-11%
58807	1%	0%	-2%	-11%
59875	0%	200%	0%	0%
63899	1%	0%	13%	2%
65625	0%	299%	116%	15%
65627	0%	200%	0%	0%
65629	3%	0%	18%	2%
65630	2%	0%	-19%	-10%
66587	0%	494%	18%	19%
66773	0%	294%	28%	29%
67369	0%	200%	0%	0%
67373	0%	200%	0%	0%
67374	0%	249%	7%	109%
67375	0%	313%	92%	4%
67381	0%	200%	0%	0%
67668	0%	267%	15%	125%
67671	0%	299%	116%	15%
67675	0%	200%	0%	0%
67677	0%	271%	18%	106%
67679	0%	290%	153%	15%
67967	0%	273%	115%	16%
67968	0%	240%	16%	131%
67970	0%	273%	115%	16%
67972	0%	255%	16%	55%
67975	0%	200%	0%	0%
67977	0%	255%	16%	55%
67978	0%	276%	93%	16%
67979	0%	255%	16%	55%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
67981	0%	276%	93%	16%
68265	0%	244%	16%	115%
68266	0%	276%	93%	16%
68270	0%	200%	0%	0%
68272	0%	259%	16%	36%
68274	0%	265%	146%	16%
68275	0%	200%	0%	0%
68277	0%	240%	16%	38%
68434	0%	200%	0%	0%
68559	0%	232%	16%	39%
68560	0%	219%	0%	0%
68562	0%	248%	61%	16%
68566	0%	3%	0%	-19%
68573	0%	3%	0%	-19%
68721	0%	263%	12%	138%
68725	0%	282%	58%	16%
68729	1%	0%	-16%	-10%
68731	0%	2%	0%	-18%
68857	0%	3%	0%	-19%
70365	1%	0%	20%	3%
70367	0%	0%	0%	24%
70368	0%	0%	0%	27%
70369	1%	0%	19%	3%
70608	2%	0%	-1%	-23%
70751	2%	0%	28%	2%
I- 370				
9353	0%	3%	23%	-2%
9355	0%	84%	0%	0%
32611	0%	20%	0%	0%
52380	5%	0%	-22%	3%
I- 495				
1190	6%	0%	11%	20%
11587	4%	0%	18%	54%
11592	3%	0%	30%	32%
12346	0%	0%	-15%	-3%
12347	0%	0%	-15%	-3%
14126	3%	0%	1%	30%
14676	4%	0%	13%	29%
14677	0%	200%	0%	0%
14681	3%	0%	23%	37%
16745	0%	20%	1%	4%
16926	0%	7%	8%	12%
16990	3%	0%	13%	36%
16991	3%	0%	13%	34%
17216	0%	4%	-62%	-49%
17685	6%	0%	25%	44%
17687	4%	0%	49%	0%
17688	6%	0%	17%	1%
19074	4%	0%	23%	48%
20076	5%	0%	33%	34%
20450	1%	0%	1%	34%
20850	7%	0%	91%	77%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
27933	0%	12%	7%	35%
28574	0%	1%	11%	-9%
29807	5%	0%	59%	3%
38259	0%	7%	8%	12%
40692	0%	15%	-1%	-3%
43508	0%	7%	8%	12%
43514	4%	0%	42%	36%
44067	0%	3%	1%	-26%
47339	0%	4%	11%	12%
55221	4%	0%	44%	43%
56253	4%	0%	72%	51%
56564	0%	18%	-1%	0%
I- 595				
12094	4%	0%	-36%	-16%
14141	1%	0%	-10%	-4%
16562	0%	14%	0%	0%
59578	4%	0%	-28%	-75%
73588	0%	2%	-11%	-5%
73592	0%	2%	-11%	-5%
73596	0%	2%	-11%	-5%
I- 95				
3357	2%	0%	21%	23%
3358	0%	7%	13%	17%
3375	4%	0%	27%	11%
3376	0%	410%	-1%	-1%
12344	2%	0%	37%	39%
12349	2%	0%	-21%	-8%
12603	5%	0%	49%	65%
13349	4%	0%	-26%	-54%
13351	3%	0%	40%	34%
13352	3%	0%	-13%	-9%
14124	3%	0%	35%	53%
14125	3%	0%	40%	24%
14679	3%	0%	39%	54%
14682	0%	217%	-3%	-25%
14974	0%	51%	0%	0%
16744	0%	4%	-46%	-34%
17213	4%	0%	23%	53%
17219	0%	7%	13%	18%
17686	0%	5%	1%	28%
19330	0%	22%	0%	0%
20071	0%	30%	-1%	-13%
20077	0%	7%	13%	18%
21772	4%	0%	-51%	-27%
21773	0%	37%	4%	9%
28577	0%	7%	13%	18%
28809	0%	11%	7%	6%
30064	0%	16%	5%	0%
30065	0%	1604%	35%	3%
30867	0%	14%	0%	-1%
40691	4%	0%	23%	43%
42588	6%	0%	0%	-4%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
43515	5%	0%	10%	31%
44948	0%	98%	1%	0%
48261	4%	0%	11%	6%
48347	0%	3%	20%	1%
48348	0%	1800%	0%	0%
49018	0%	43%	4%	3%
51638	0%	93%	0%	0%
54072	1%	0%	-10%	-2%
54078	3%	0%	8%	13%
54493	2%	0%	25%	56%
56263	7%	0%	36%	45%
58947	4%	0%	28%	28%
58950	0%	14%	0%	0%
67392	2%	0%	-6%	-19%
70129	2%	0%	-2%	-27%
Independence St				
34656	1%	0%	-1%	12%
Iverson St				
38484	0%	12%	0%	1%
Jadeleaf Ave				
79858	0%	16%	1%	1%
79877	0%	45%	-1%	0%
Jefferson Pike				
3165	0%	28%	0%	0%
46875	0%	13%	0%	0%
73829	0%	13%	0%	0%
74634	0%	28%	0%	0%
Jefferson St				
80301	0%	13%	4%	4%
80303	0%	15%	4%	3%
John Hanson Hwy				
13343	1%	0%	13%	19%
13344	2%	0%	23%	6%
13348	2%	0%	20%	2%
16984	1%	0%	13%	19%
48619	9%	0%	11%	43%
58942	0%	14%	1%	0%
Jones Bridge Rd				
19055	5%	0%	3%	17%
26048	1%	0%	6%	11%
32185	4%	0%	18%	12%
35615	6%	0%	12%	15%
43176	8%	0%	21%	6%
Jones Ln				
79464	0%	29%	0%	1%
79465	0%	16%	0%	1%
Jones Mill Rd				
47159	1%	0%	5%	10%
Kenilworth Ave				
15030	2%	0%	19%	11%
15623	6%	0%	15%	25%
15635	5%	0%	8%	8%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
15702	3%	0%	11%	28%
15891	6%	0%	14%	2%
18174	5%	0%	1%	16%
25727	5%	0%	6%	25%
40694	4%	0%	17%	25%
56371	5%	0%	27%	23%
63572	5%	0%	13%	20%
64060	0%	10%	3%	2%
Kentsdale Dr				
25122	8%	0%	1%	18%
32519	8%	0%	13%	1%
Kettering Dr				
15332	0%	29%	9%	16%
15333	24%	0%	12%	23%
15334	0%	12%	10%	4%
24931	4%	0%	2%	18%
64714	9%	0%	12%	6%
Kipling Pkwy				
34157	0%	13%	2%	13%
72730	18%	0%	16%	15%
Knowles Ave				
8714	4%	0%	16%	11%
52949	2%	0%	12%	13%
55235	2%	0%	10%	11%
69216	7%	0%	19%	24%
69217	7%	0%	21%	23%
69218	3%	0%	11%	21%
69219	3%	0%	14%	18%
72972	3%	0%	13%	13%
Konterra Dr				
51884	6%	0%	-1%	-4%
67062	7%	0%	-4%	-1%
71510	0%	40%	0%	0%
L St				
79942	0%	10%	2%	4%
79944	0%	12%	2%	5%
Lancelot Rd				
1529	0%	46%	0%	0%
Landover Rd				
3018	1%	0%	0%	13%
9465	3%	0%	12%	1%
10556	3%	0%	-1%	-13%
11590	3%	0%	1%	15%
11871	0%	0%	-15%	2%
14118	0%	6%	-48%	-20%
14134	5%	0%	-4%	1%
21807	3%	0%	12%	1%
22788	7%	0%	4%	15%
32643	4%	0%	19%	3%
48617	1%	0%	0%	13%
50974	0%	12%	0%	8%
54495	1%	0%	0%	13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
63261	3%	0%	10%	11%
64680	3%	0%	15%	1%
73247	2%	0%	-10%	-2%
79989	0%	11%	4%	2%
Larchmont Ave				
29634	0%	19%	1%	0%
29635	5%	0%	9%	6%
47719	0%	6%	3%	10%
49174	0%	36%	0%	1%
79901	5%	0%	6%	8%
79903	8%	0%	5%	10%
Largo Center Dr				
22564	0%	11%	-2%	-1%
Largo Rd				
2424	0%	10%	8%	5%
15042	6%	0%	10%	11%
15045	6%	0%	11%	9%
15328	6%	0%	9%	9%
15331	0%	25%	10%	16%
21532	13%	0%	7%	4%
21613	4%	0%	9%	29%
24933	10%	0%	2%	34%
33558	7%	0%	16%	4%
33566	7%	0%	10%	6%
34929	0%	15%	5%	4%
64432	8%	0%	5%	6%
64441	0%	15%	5%	4%
Laurel Bowie Rd				
1186	2%	0%	18%	13%
16759	3%	0%	4%	11%
35899	2%	0%	5%	13%
Layhill Rd				
1090	3%	0%	0%	15%
10337	6%	0%	1%	19%
10591	2%	0%	15%	3%
11104	2%	0%	14%	3%
15670	4%	0%	15%	1%
15673	3%	0%	0%	13%
22263	3%	0%	14%	3%
32604	4%	0%	-1%	23%
33924	3%	0%	12%	3%
44263	4%	0%	20%	2%
44542	2%	0%	15%	3%
51629	0%	13%	0%	3%
53315	3%	0%	0%	15%
55259	3%	0%	0%	16%
Laytonsville Rd				
79517	0%	0%	12%	-2%
Leeland Rd				
14761	0%	14%	1%	1%
33217	0%	23%	1%	2%
48446	0%	18%	1%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
63877	0%	11%	1%	1%
Leland St				
79276	0%	11%	0%	1%
Lindera Ct				
56291	5%	0%	1%	1%
Little Falls Pkwy				
2346	7%	0%	3%	6%
32180	9%	0%	4%	4%
79323	0%	24%	2%	3%
Longfellow St				
80306	0%	11%	2%	1%
80343	0%	14%	1%	5%
80344	0%	14%	1%	5%
80345	0%	16%	6%	2%
80346	0%	15%	6%	2%
80364	0%	14%	1%	5%
80366	0%	16%	6%	2%
Lorain Ave				
16314	0%	18%	2%	1%
Lottsford Rd				
22353	9%	0%	12%	14%
22572	0%	18%	10%	8%
25654	0%	13%	3%	10%
40406	7%	0%	9%	14%
49051	12%	0%	15%	18%
58881	3%	0%	11%	5%
63266	8%	0%	9%	20%
71895	0%	13%	6%	9%
71896	13%	0%	2%	16%
Lottsford Vista Rd				
25103	0%	19%	6%	14%
52270	0%	19%	9%	11%
61445	0%	18%	18%	10%
63861	0%	30%	12%	18%
Loughran Rd				
2118	0%	46%	0%	0%
Lusbys Ln				
80173	0%	15%	0%	1%
80174	0%	15%	0%	1%
Macarthur Blvd				
6271	0%	0%	-11%	-6%
13642	0%	11%	0%	9%
16422	7%	0%	0%	26%
24379	10%	0%	-8%	-2%
26361	15%	0%	7%	26%
32178	5%	0%	-13%	0%
34972	1%	0%	8%	-20%
34973	5%	0%	0%	11%
51772	4%	0%	14%	6%
55050	28%	0%	18%	6%
65137	6%	0%	1%	18%
65346	2%	0%	-20%	-13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
65348	1%	0%	-9%	-15%
71007	8%	0%	0%	15%
71008	3%	0%	0%	-17%
Marianna Dr				
79388	0%	12%	0%	4%
Marlboro Pike				
25806	0%	26%	3%	0%
26951	5%	0%	6%	8%
31043	0%	26%	0%	2%
64726	8%	0%	5%	10%
Marriottsville Rd				
48324	1%	0%	-1%	-12%
Martin Luther King Jr Hwy				
4393	3%	0%	9%	24%
14140	3%	0%	-23%	-34%
14517	5%	0%	17%	22%
15194	4%	0%	10%	15%
15968	5%	0%	2%	11%
23071	3%	0%	15%	13%
23230	6%	0%	8%	27%
23231	5%	0%	21%	7%
25098	6%	0%	-1%	-21%
25641	4%	0%	13%	20%
25779	2%	0%	-1%	-15%
27902	3%	0%	10%	2%
30836	0%	7%	-3%	-19%
38179	3%	0%	9%	18%
48888	6%	0%	3%	11%
49277	6%	0%	8%	25%
49841	4%	0%	5%	18%
53699	2%	0%	-1%	-15%
54372	0%	14%	3%	4%
54919	4%	0%	3%	15%
59032	5%	0%	13%	22%
63782	4%	0%	10%	32%
63783	4%	0%	7%	12%
66764	10%	0%	10%	15%
68768	4%	0%	3%	14%
70831	7%	0%	38%	27%
72168	5%	0%	19%	7%
75390	5%	0%	6%	12%
Mattaponi Rd				
42107	0%	19%	0%	0%
Meadowridge Ln				
4742	0%	22%	5%	6%
58595	0%	38%	6%	9%
Melwood Rd				
25870	0%	13%	3%	1%
Merrimac Dr				
18831	0%	21%	0%	1%
33808	0%	21%	2%	0%
71471	3%	0%	2%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
71472	4%	0%	12%	2%
Mill Branch Rd				
13089	0%	11%	0%	2%
60452	0%	11%	0%	2%
Missouri Ave				
60696	0%	14%	0%	1%
Mitchellville Rd				
15347	0%	16%	2%	7%
18888	9%	0%	1%	4%
33221	0%	12%	3%	9%
55135	0%	10%	1%	4%
55136	11%	0%	5%	6%
59317	0%	13%	5%	5%
Montpelier Dr				
6098	0%	12%	0%	0%
39619	6%	0%	-5%	-2%
Montrose Rd				
2989	0%	13%	1%	10%
8728	4%	0%	-26%	-4%
10779	2%	0%	-7%	-21%
21959	4%	0%	-19%	-26%
63486	3%	0%	-19%	-21%
Moorland Ln				
65354	3%	0%	21%	12%
65356	3%	0%	12%	24%
Morgan Dr				
47820	3%	0%	11%	7%
47821	2%	0%	3%	15%
Mount Oak Rd				
2420	6%	0%	-2%	3%
2421	7%	0%	3%	1%
20366	7%	0%	3%	1%
21607	7%	0%	-2%	3%
48714	8%	0%	3%	2%
64147	7%	0%	-2%	3%
Muddy Branch Rd				
69033	2%	0%	0%	21%
Muirkirk Rd				
6412	6%	0%	-6%	-2%
10820	7%	0%	0%	-12%
44548	5%	0%	-1%	-3%
45692	5%	0%	0%	-4%
60497	2%	0%	0%	-15%
64334	10%	0%	-2%	-6%
N Englewood Dr				
79973	0%	61%	0%	1%
79974	0%	24%	0%	1%
79975	0%	33%	1%	0%
79976	0%	19%	1%	0%
N Frederick Ave				
52601	1%	0%	-12%	-3%
63398	1%	0%	-1%	-10%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
N Main St				
18162	10%	0%	0%	-2%
36803	5%	0%	-1%	-1%
73991	8%	0%	0%	-2%
N Stonestreet Ave				
1299	4%	0%	1%	11%
N Washington St				
1591	3%	0%	0%	13%
1593	3%	0%	16%	0%
79408	2%	0%	0%	14%
79410	2%	0%	24%	0%
Nalley Rd				
27896	0%	11%	5%	0%
Nebel St				
58749	6%	0%	9%	1%
Needleleaf Ln				
14813	18%	0%	16%	7%
53625	0%	49%	3%	7%
54387	0%	33%	2%	4%
58880	28%	0%	3%	28%
Nelson St				
79403	0%	16%	1%	0%
New Hampshire Ave				
3377	3%	0%	8%	18%
14392	3%	0%	15%	25%
14394	3%	0%	20%	17%
17448	3%	0%	22%	13%
33319	2%	0%	10%	3%
33537	2%	0%	10%	3%
71469	2%	0%	11%	3%
Nicholson Ln				
5626	7%	0%	2%	10%
46902	0%	11%	4%	4%
74133	8%	0%	12%	8%
Nicholson St				
80322	4%	0%	2%	16%
80324	4%	0%	10%	4%
80325	0%	19%	9%	3%
80326	0%	17%	1%	8%
80375	0%	20%	0%	4%
80376	0%	27%	0%	3%
80377	0%	13%	3%	1%
80378	0%	16%	3%	1%
Northern Ave				
80546	0%	42%	3%	4%
80548	0%	40%	2%	2%
Northview Dr				
53612	0%	18%	3%	2%
53613	0%	11%	2%	2%
53614	0%	12%	1%	1%
67879	0%	22%	3%	2%
79568	0%	33%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Northwest Dr				
8400	0%	0%	-2%	10%
50386	0%	0%	13%	0%
Notley Rd				
56056	0%	11%	2%	3%
Nottingham Rd				
40680	0%	95%	0%	0%
Odell Rd				
5506	6%	0%	1%	5%
15421	3%	0%	0%	-14%
64382	8%	0%	4%	8%
Oglethorpe St				
80308	11%	0%	1%	10%
80310	13%	0%	14%	4%
Old Alexandria Ferry Rd				
68084	3%	0%	9%	17%
68085	3%	0%	11%	13%
Old Baltimore Pike				
22460	0%	11%	1%	0%
44259	6%	0%	-3%	-1%
Old Branch Ave				
2691	2%	0%	12%	-5%
35175	1%	0%	-11%	6%
Old Central Ave				
50632	1%	0%	16%	3%
60579	1%	0%	12%	5%
Old Columbia Pike				
10597	6%	0%	7%	9%
29714	2%	0%	12%	1%
Old Crain Hwy				
42833	0%	11%	0%	2%
42839	10%	0%	9%	33%
51991	7%	0%	21%	10%
61965	0%	10%	2%	3%
61966	0%	13%	3%	2%
66892	10%	0%	3%	33%
66893	11%	0%	26%	4%
66894	12%	0%	27%	6%
71335	1%	0%	-2%	13%
79543	0%	11%	2%	3%
79545	0%	14%	3%	2%
79546	0%	10%	0%	0%
79547	0%	26%	0%	0%
Old Georgetown Rd				
6506	6%	0%	9%	2%
6864	1%	0%	13%	-20%
9698	2%	0%	13%	-2%
10255	0%	210%	-3%	0%
10256	0%	200%	0%	0%
10258	2%	0%	0%	-14%
11339	0%	0%	18%	-5%
22412	6%	0%	-12%	-16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
26036	1%	0%	0%	14%
26379	6%	0%	1%	12%
38235	2%	0%	19%	-13%
40139	4%	0%	3%	21%
41240	2%	0%	16%	6%
42687	0%	0%	-14%	20%
45005	2%	0%	1%	13%
52032	5%	0%	-4%	-10%
53654	6%	0%	7%	2%
61749	1%	0%	0%	14%
61752	1%	0%	-24%	0%
65353	3%	0%	23%	10%
65355	1%	0%	6%	18%
66225	7%	0%	1%	8%
69461	3%	0%	8%	-27%
69462	2%	0%	12%	-16%
69468	1%	0%	-3%	12%
69469	2%	0%	-4%	16%
70828	2%	0%	16%	6%
79310	2%	0%	3%	16%
79315	0%	31%	1%	3%
Old Gunpowder Rd				
1032	8%	0%	-1%	-3%
1629	8%	0%	-3%	-7%
1641	5%	0%	-4%	-2%
14972	6%	0%	-11%	-4%
47280	8%	0%	-3%	-7%
67871	5%	0%	-2%	-2%
72759	8%	0%	-3%	-6%
Old Largo Rd				
33567	7%	0%	8%	9%
48995	8%	0%	5%	7%
Old Laurel Bowie Rd				
4874	0%	13%	1%	5%
23128	0%	13%	1%	4%
40665	0%	13%	1%	4%
40666	0%	13%	1%	4%
Old Marlboro Pike				
19543	0%	24%	0%	2%
19544	0%	22%	0%	2%
19545	0%	12%	1%	0%
19546	0%	11%	1%	0%
19552	0%	12%	1%	0%
19554	0%	24%	0%	2%
19555	0%	18%	1%	0%
20762	0%	33%	0%	2%
23678	0%	33%	0%	2%
26332	0%	14%	0%	1%
58075	0%	10%	0%	-1%
64160	0%	18%	1%	0%
66045	0%	17%	2%	0%
74631	7%	0%	0%	26%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Old Md 28				
44661	2%	0%	12%	1%
73092	3%	0%	1%	13%
Olson St				
79780	0%	72%	0%	0%
79782	0%	48%	0%	0%
Omega Dr				
43487	6%	0%	14%	1%
45786	8%	0%	0%	10%
Owens Rd				
30863	0%	21%	1%	0%
72742	0%	13%	0%	1%
Oxon Run Dr				
81360	0%	14%	5%	1%
81362	0%	10%	1%	6%
Paint Branch Pkwy				
7458	3%	0%	3%	14%
18411	3%	0%	15%	6%
Parkland Dr				
79379	7%	0%	0%	10%
79380	7%	0%	6%	1%
79381	7%	0%	6%	1%
Parklawn Dr				
7772	3%	0%	0%	15%
9705	4%	0%	16%	1%
25124	7%	0%	3%	9%
72157	8%	0%	7%	8%
Patuxent River Rd				
19430	0%	17%	6%	2%
69204	0%	16%	0%	4%
Paul Pitcher Memorial Hwy				
44820	0%	14%	-1%	-1%
62198	0%	0%	11%	2%
Pennsy Dr				
59314	0%	13%	0%	7%
80535	6%	0%	0%	18%
Pennsylvania Ave				
17212	0%	14%	-15%	-1%
58364	2%	0%	0%	21%
66994	1%	0%	13%	0%
67353	2%	0%	-13%	0%
76987	0%	54%	0%	0%
Persimmon Tree Ln				
1236	9%	0%	0%	27%
25335	0%	13%	4%	1%
62940	10%	0%	24%	1%
Persimmon Tree Rd				
335	10%	0%	0%	12%
8638	10%	0%	0%	12%
Philadelphia Ave				
13233	3%	0%	13%	6%
53909	3%	0%	1%	17%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Pickering Cir				
21127	0%	18%	1%	2%
Piney Meetinghouse Rd				
3800	11%	0%	2%	28%
44573	15%	0%	2%	22%
44574	19%	0%	19%	3%
57557	15%	0%	23%	4%
Pleasant Colony Dr				
24930	2%	0%	9%	15%
33231	1%	0%	17%	4%
Pleasant Rd				
48702	2%	0%	0%	18%
Plymouth Ct				
75913	0%	23%	1%	1%
75914	0%	38%	0%	5%
79560	0%	38%	0%	5%
79561	0%	23%	1%	1%
Pointer Ridge Dr				
62031	0%	19%	0%	7%
75911	0%	23%	1%	1%
75912	0%	38%	0%	5%
Polk St				
80534	0%	23%	0%	2%
Powder Mill Rd				
6307	3%	0%	19%	6%
23629	6%	0%	0%	5%
23630	6%	0%	0%	5%
24453	5%	0%	11%	10%
32642	6%	0%	13%	15%
49722	10%	0%	9%	26%
60495	5%	0%	18%	22%
63304	3%	0%	2%	12%
67296	12%	0%	43%	34%
Prince Frederick Rd				
12897	1%	0%	-1%	12%
Princess Garden Pkwy				
25713	5%	0%	2%	14%
30333	9%	0%	14%	14%
Quarry Ave				
32806	0%	19%	4%	0%
65403	0%	20%	4%	0%
Queen Anne Bridge Rd				
19429	0%	17%	6%	2%
69203	0%	16%	0%	4%
Queens Chapel Rd				
2547	4%	0%	1%	12%
14078	0%	20%	1%	0%
14080	0%	11%	0%	0%
14083	4%	0%	11%	3%
14085	4%	0%	1%	12%
60198	4%	0%	11%	3%
80363	0%	14%	1%	5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
80365	0%	15%	6%	3%
Quince Orchard Rd				
65310	2%	0%	0%	10%
68747	2%	0%	0%	11%
68811	2%	0%	0%	14%
Quintana St				
2550	0%	14%	1%	0%
Raljon Rd				
21549	0%	21%	2%	3%
32118	0%	20%	4%	3%
46657	12%	0%	14%	50%
47006	15%	0%	3%	39%
51278	17%	0%	28%	14%
51279	0%	17%	15%	18%
Randolph Rd				
5724	2%	0%	10%	1%
6021	3%	0%	3%	15%
10855	3%	0%	1%	11%
22266	2%	0%	13%	-1%
22271	2%	0%	13%	8%
22272	2%	0%	11%	8%
35857	3%	0%	14%	7%
39566	2%	0%	12%	-1%
46641	3%	0%	11%	10%
53730	4%	0%	18%	11%
63227	4%	0%	7%	11%
70823	3%	0%	4%	15%
72708	3%	0%	19%	4%
74690	3%	0%	11%	4%
Redskins Rd				
32119	0%	17%	3%	4%
65823	0%	18%	4%	3%
Reece Rd				
77876	0%	86%	0%	0%
Rhode Island Ave				
4366	0%	22%	0%	1%
11584	0%	13%	4%	5%
56573	5%	0%	0%	1%
63298	6%	0%	0%	6%
63299	0%	42%	3%	1%
Ridge Rd				
7453	0%	14%	-1%	-1%
Riggs Rd				
22854	2%	0%	8%	10%
51485	3%	0%	11%	2%
71476	2%	0%	2%	15%
Ritchie Marlboro Rd				
3546	0%	37%	2%	0%
12613	1%	0%	2%	12%
14684	0%	408%	0%	-16%
14685	12%	0%	-9%	-47%
15879	0%	45%	1%	3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
16802	0%	11%	-4%	-1%
16803	4%	0%	-13%	-9%
16804	7%	0%	-21%	-19%
17748	3%	0%	30%	1%
20338	0%	17%	1%	5%
33562	6%	0%	-3%	-1%
33900	0%	9%	-18%	-2%
Ritchie Rd				
11875	0%	24%	8%	6%
12124	0%	12%	10%	5%
12126	23%	0%	25%	5%
12127	0%	18%	1%	9%
21191	0%	32%	7%	6%
21906	9%	0%	33%	23%
25226	10%	0%	5%	47%
26015	14%	0%	1%	13%
27108	0%	31%	2%	5%
32128	11%	0%	4%	20%
32948	0%	24%	2%	12%
34151	11%	0%	2%	24%
34152	22%	0%	17%	15%
34158	24%	0%	14%	13%
34574	0%	15%	1%	12%
48262	0%	24%	2%	6%
58368	0%	14%	1%	13%
58370	24%	0%	17%	7%
72453	0%	11%	14%	11%
72729	17%	0%	27%	23%
Ritz Way				
3541	15%	0%	-1%	-21%
64400	14%	0%	-8%	-8%
River Rd				
325	24%	0%	4%	42%
337	3%	0%	-5%	-18%
1226	7%	0%	0%	6%
1235	6%	0%	4%	29%
6220	7%	0%	6%	39%
6523	0%	21%	2%	0%
6554	3%	0%	-13%	-8%
12874	0%	0%	1%	20%
12875	1%	0%	1%	28%
12876	0%	0%	25%	-2%
16022	3%	0%	-2%	-17%
16710	2%	0%	-2%	-13%
19047	3%	0%	-15%	-10%
24380	11%	0%	30%	1%
34817	0%	0%	19%	-1%
34977	3%	0%	-9%	-19%
34978	3%	0%	-5%	-18%
37137	0%	217%	0%	3%
37546	5%	0%	-12%	-45%
40422	10%	0%	29%	9%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
40426	2%	0%	22%	3%
41599	0%	0%	1%	12%
46908	5%	0%	-9%	-26%
52783	3%	0%	-15%	-10%
52784	2%	0%	-7%	-10%
53732	2%	0%	-4%	-15%
57944	9%	0%	-47%	-38%
60084	5%	0%	-25%	-10%
72359	3%	0%	-27%	5%
Robert Crain Hwy				
29527	0%	0%	11%	0%
Rock Spring Dr				
82	0%	15%	2%	1%
Rockledge Dr				
59056	0%	23%	0%	1%
Rockville Pike				
91	1%	0%	11%	-1%
93	2%	0%	0%	14%
393	2%	0%	0%	16%
394	2%	0%	0%	16%
4513	5%	0%	0%	17%
5323	1%	0%	-1%	13%
8723	1%	0%	4%	12%
10170	1%	0%	2%	12%
11362	1%	0%	13%	3%
16681	6%	0%	4%	9%
21971	1%	0%	1%	20%
26687	1%	0%	10%	3%
30180	4%	0%	22%	3%
32528	1%	0%	14%	-1%
33206	1%	0%	11%	1%
43764	2%	0%	-1%	10%
49715	2%	0%	-1%	12%
52037	1%	0%	16%	0%
56518	2%	0%	19%	0%
59060	6%	0%	23%	13%
59061	3%	0%	1%	25%
66667	0%	0%	2%	13%
69471	0%	0%	4%	14%
Rollins Ave				
24569	0%	25%	1%	1%
34570	0%	22%	1%	1%
S Frederick Ave				
330	1%	0%	0%	16%
11340	2%	0%	14%	1%
35548	1%	0%	0%	10%
38501	1%	0%	11%	0%
41600	1%	0%	0%	-11%
59948	0%	2%	32%	10%
72424	2%	0%	14%	1%
73180	2%	0%	17%	0%
S Glen Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
26364	6%	0%	18%	1%
46642	7%	0%	1%	18%
S Keysville Rd				
5901	0%	10%	0%	1%
43644	0%	10%	0%	0%
55814	0%	20%	0%	0%
S Main St				
15766	6%	0%	0%	-2%
S Osborne Rd				
62287	3%	0%	-12%	0%
62593	2%	0%	-14%	0%
62594	2%	0%	-16%	0%
66900	2%	0%	-12%	0%
74347	0%	12%	0%	1%
Sands Rd				
5548	0%	16%	3%	2%
8921	0%	18%	3%	2%
13234	0%	19%	5%	2%
26274	0%	13%	0%	3%
26591	0%	12%	0%	0%
39919	0%	33%	0%	0%
69437	0%	16%	1%	4%
Sansbury Rd				
20736	0%	10%	9%	13%
20738	0%	5%	11%	3%
65181	0%	15%	4%	5%
Scott Dr				
59148	5%	0%	12%	0%
Seat Pleasant Dr				
49542	0%	12%	1%	2%
Selkirk Dr				
336	3%	0%	-3%	13%
18664	2%	0%	11%	1%
Seneca Rd				
66625	0%	12%	2%	3%
66626	0%	12%	1%	4%
Serpentine Way				
19665	4%	0%	21%	8%
56055	2%	0%	6%	15%
Seven Locks Rd				
1581	1%	0%	10%	-1%
1584	4%	0%	27%	5%
1871	1%	0%	-3%	-11%
2143	4%	0%	5%	11%
10837	0%	0%	17%	-2%
11106	7%	0%	19%	43%
12872	10%	0%	-8%	-6%
13647	2%	0%	12%	-2%
18654	1%	0%	15%	-4%
21958	7%	0%	19%	44%
25334	2%	0%	2%	15%
27042	14%	0%	0%	16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
52564	0%	0%	-1%	14%
53733	7%	0%	6%	29%
54112	3%	0%	-3%	24%
57932	11%	0%	29%	12%
59358	6%	0%	19%	23%
59359	5%	0%	12%	23%
59364	7%	0%	24%	23%
69007	10%	0%	-8%	-2%
73491	2%	0%	-4%	12%
Shady Grove Rd				
2730	1%	0%	0%	13%
5714	2%	0%	16%	1%
7469	12%	0%	7%	3%
9984	0%	11%	0%	5%
15500	12%	0%	0%	21%
33503	2%	0%	25%	1%
35415	2%	0%	16%	1%
39668	1%	0%	18%	8%
41187	2%	0%	0%	18%
45007	1%	0%	0%	13%
57941	1%	0%	-1%	-11%
Shady Grove Rd Exd				
33947	0%	12%	0%	1%
Shepherds Crook Ct				
26672	18%	0%	15%	3%
47236	9%	0%	0%	14%
Sheriff Rd				
23452	4%	0%	17%	2%
24265	4%	0%	1%	18%
Snowden River Pkwy				
42447	9%	0%	0%	0%
Soil Conservation Rd				
9132	15%	0%	8%	7%
16010	15%	0%	8%	8%
24505	15%	0%	8%	8%
32202	14%	0%	7%	6%
40669	14%	0%	7%	6%
61442	14%	0%	7%	6%
Solomons Island Rd N				
69695	0%	13%	0%	0%
South Dr				
19664	0%	25%	14%	10%
53158	0%	22%	13%	15%
Southlawn Ln				
6475	6%	0%	1%	8%
54038	6%	0%	7%	1%
74405	7%	0%	7%	0%
Spr Wheel Ln				
35299	3%	0%	0%	21%
55055	9%	0%	17%	6%
Springfield Rd				
6404	5%	0%	1%	5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
6405	7%	0%	4%	9%
21267	7%	0%	11%	16%
21664	0%	12%	1%	1%
23634	7%	0%	11%	16%
25712	0%	12%	1%	1%
52261	7%	0%	14%	21%
63854	7%	0%	14%	21%
St Barnabas Rd				
13616	6%	0%	16%	8%
14456	3%	0%	12%	0%
14457	3%	0%	12%	0%
18933	0%	0%	-2%	15%
20453	1%	0%	3%	-17%
24864	3%	0%	11%	0%
29629	2%	0%	18%	3%
30067	1%	0%	-5%	11%
30068	5%	0%	5%	13%
30657	2%	0%	-19%	-1%
34560	1%	0%	23%	-2%
39194	5%	0%	25%	9%
43154	3%	0%	12%	0%
71267	5%	0%	5%	20%
St Clair Dr				
79781	0%	72%	0%	0%
79783	0%	48%	0%	0%
Stardrift Dr				
3899	0%	200%	0%	0%
9150	0%	159%	0%	0%
State Hwy 115				
1844	2%	0%	14%	5%
74960	2%	0%	6%	12%
State Hwy 117				
13294	0%	3%	-17%	-20%
State Hwy 124				
2637	0%	3%	0%	-25%
State Hwy 185				
5276	2%	0%	1%	15%
5278	1%	0%	8%	14%
10338	4%	0%	12%	0%
19662	2%	0%	1%	20%
22192	2%	0%	5%	12%
34970	0%	0%	-1%	16%
41596	1%	0%	3%	13%
44970	2%	0%	0%	17%
45006	7%	0%	0%	17%
54823	1%	0%	12%	2%
56365	0%	0%	12%	-1%
State Hwy 189				
933	4%	0%	2%	23%
4153	8%	0%	0%	18%
5992	18%	0%	22%	24%
5995	7%	0%	3%	24%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
5996	10%	0%	21%	12%
8007	6%	0%	1%	30%
8008	7%	0%	3%	24%
8317	1%	0%	11%	-1%
9030	3%	0%	0%	18%
10839	2%	0%	14%	0%
11110	2%	0%	-1%	-12%
12367	1%	0%	-5%	12%
25331	1%	0%	-7%	16%
26096	7%	0%	17%	27%
30182	2%	0%	15%	-1%
32245	10%	0%	21%	11%
32517	18%	0%	16%	4%
32602	1%	0%	-5%	15%
37768	6%	0%	1%	16%
43475	0%	6%	0%	37%
46979	0%	3%	20%	-5%
51446	1%	0%	11%	-1%
59430	1%	0%	-7%	21%
59433	3%	0%	0%	18%
59439	5%	0%	11%	1%
59440	5%	0%	1%	30%
72658	5%	0%	23%	2%
75148	2%	0%	26%	-2%
State Hwy 190				
932	4%	0%	3%	27%
936	4%	0%	2%	22%
5390	0%	12%	1%	3%
5392	0%	12%	1%	1%
6003	1%	0%	1%	13%
6004	1%	0%	11%	0%
6569	2%	0%	29%	3%
22404	2%	0%	22%	2%
24826	2%	0%	0%	21%
26362	3%	0%	11%	0%
30170	11%	0%	13%	3%
31010	3%	0%	0%	19%
34811	1%	0%	11%	0%
53734	2%	0%	2%	33%
55052	8%	0%	17%	7%
55056	0%	18%	0%	5%
66616	6%	0%	0%	6%
66617	5%	0%	10%	0%
68996	1%	0%	1%	12%
69103	4%	0%	11%	0%
71003	6%	0%	0%	9%
72148	8%	0%	17%	12%
75273	4%	0%	0%	16%
75274	9%	0%	15%	3%
State Hwy 191				
34647	2%	0%	11%	11%
34648	2%	0%	12%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
40090	2%	0%	11%	13%
53535	2%	0%	7%	14%
State Hwy 192				
53659	0%	0%	11%	5%
State Hwy 193				
14146	3%	0%	-19%	-8%
16543	0%	6%	11%	2%
18156	5%	0%	1%	10%
18751	11%	0%	2%	49%
18752	6%	0%	21%	4%
24752	10%	0%	24%	30%
25725	0%	39%	-2%	-4%
29412	6%	0%	13%	21%
34862	2%	0%	-17%	-6%
54494	6%	0%	1%	12%
64154	13%	0%	3%	25%
64396	2%	0%	21%	1%
State Hwy 197				
3355	4%	0%	4%	11%
23918	2%	0%	8%	13%
23920	3%	0%	10%	18%
25859	4%	0%	3%	11%
State Hwy 200				
10593	0%	200%	0%	0%
21693	0%	14%	7%	1%
23776	0%	9%	1%	12%
39012	0%	9%	21%	2%
51898	0%	12%	1%	1%
52145	0%	13%	1%	1%
52146	0%	14%	7%	1%
52147	0%	14%	7%	1%
52148	0%	14%	1%	1%
52150	0%	11%	3%	1%
52151	0%	15%	0%	0%
52152	0%	9%	19%	2%
52153	0%	9%	19%	2%
52398	2%	0%	26%	-6%
52399	0%	22%	0%	0%
52401	0%	12%	1%	7%
52402	0%	12%	1%	7%
52403	0%	12%	1%	7%
52405	0%	12%	0%	2%
52406	0%	10%	1%	27%
52407	0%	10%	1%	27%
58233	0%	10%	1%	27%
59196	0%	14%	7%	1%
59198	0%	11%	1%	1%
59199	0%	9%	1%	12%
66280	0%	9%	21%	2%
71511	0%	9%	21%	2%
71516	0%	12%	1%	7%
State Hwy 201				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
8859	5%	0%	7%	16%
15622	5%	0%	10%	21%
15703	6%	0%	14%	16%
26995	6%	0%	4%	9%
State Hwy 210				
3379	0%	2%	47%	20%
29808	0%	24%	0%	-1%
30865	0%	3%	-13%	-1%
35288	1%	0%	13%	2%
79718	3%	0%	15%	0%
State Hwy 212				
4869	4%	0%	2%	16%
10818	6%	0%	-11%	-4%
15115	4%	0%	2%	19%
21812	4%	0%	15%	5%
23280	5%	0%	15%	2%
28570	0%	38%	-4%	-1%
29632	14%	0%	-25%	-13%
60459	6%	0%	2%	8%
71473	5%	0%	20%	3%
71475	5%	0%	10%	1%
72315	2%	0%	7%	10%
75521	17%	0%	-3%	-37%
75522	16%	0%	-8%	-34%
75526	0%	15%	-9%	-5%
75527	13%	0%	-11%	-20%
75535	0%	12%	-6%	-3%
75536	0%	14%	-1%	-9%
State Hwy 214				
24280	2%	0%	15%	2%
64988	2%	0%	17%	3%
State Hwy 223				
61975	0%	41%	-1%	0%
67203	0%	200%	0%	0%
State Hwy 231				
54818	1%	0%	-1%	11%
State Hwy 26				
43746	6%	0%	0%	-1%
66048	11%	0%	-1%	-1%
State Hwy 28				
768	2%	0%	12%	1%
5719	2%	0%	17%	-1%
6945	1%	0%	-2%	17%
6946	2%	0%	17%	-1%
7961	3%	0%	18%	1%
35549	2%	0%	3%	15%
72810	2%	0%	0%	13%
73091	3%	0%	1%	13%
79432	3%	0%	18%	1%
79433	3%	0%	12%	1%
79434	2%	0%	0%	13%
79435	2%	0%	0%	10%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
State Hwy 295				
19985	0%	22%	0%	0%
47420	0%	1%	-19%	-1%
State Hwy 301				
35616	1%	0%	11%	-3%
52744	0%	0%	18%	0%
60711	1%	0%	15%	1%
76044	1%	0%	12%	-2%
77044	1%	0%	10%	-2%
State Hwy 32				
9530	0%	10%	0%	0%
State Hwy 320				
1539	4%	0%	1%	21%
5268	0%	0%	13%	1%
19446	4%	0%	28%	11%
34410	1%	0%	12%	4%
34419	1%	0%	16%	1%
40204	0%	0%	13%	2%
42319	5%	0%	16%	3%
43759	4%	0%	1%	21%
49380	4%	0%	28%	11%
50741	1%	0%	17%	1%
53920	8%	0%	9%	4%
State Hwy 332				
33474	0%	22%	1%	1%
64995	4%	0%	35%	13%
72723	0%	18%	1%	1%
72726	5%	0%	7%	29%
State Hwy 355				
25125	2%	0%	0%	19%
40916	0%	12%	-1%	-3%
74141	1%	0%	13%	0%
79409	2%	0%	0%	19%
79411	1%	0%	13%	0%
State Hwy 381				
62717	0%	11%	-1%	0%
State Hwy 382				
12128	6%	0%	7%	13%
33275	4%	0%	15%	7%
42109	0%	56%	0%	0%
60701	0%	14%	0%	-1%
State Hwy 390				
5352	5%	0%	11%	6%
42318	5%	0%	10%	9%
State Hwy 4				
18768	0%	15%	1%	7%
46381	1%	0%	0%	11%
State Hwy 410				
11291	2%	0%	1%	12%
12114	3%	0%	9%	24%
18940	4%	0%	32%	18%
23702	4%	0%	13%	16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
29393	0%	16%	1%	1%
35900	0%	0%	11%	-1%
50984	2%	0%	0%	12%
64676	2%	0%	12%	3%
80533	9%	0%	0%	16%
State Hwy 414				
5812	6%	0%	19%	0%
5813	3%	0%	-1%	12%
5814	3%	0%	-1%	19%
29179	0%	12%	0%	-1%
46200	7%	0%	13%	2%
58052	3%	0%	14%	0%
State Hwy 450				
231	2%	0%	-15%	0%
8863	4%	0%	-1%	-22%
12056	1%	0%	0%	16%
19291	5%	0%	13%	2%
25803	2%	0%	-19%	1%
32645	4%	0%	11%	3%
34551	2%	0%	-17%	0%
38892	6%	0%	0%	6%
45302	0%	11%	0%	2%
47338	0%	0%	11%	0%
51222	4%	0%	1%	14%
54497	4%	0%	-1%	-11%
55301	6%	0%	0%	8%
67173	4%	0%	12%	3%
67174	2%	0%	0%	12%
67179	4%	0%	11%	4%
67180	3%	0%	2%	10%
67474	6%	0%	1%	18%
67475	4%	0%	0%	14%
80439	2%	0%	0%	16%
80440	1%	0%	0%	13%
State Hwy 458				
10310	6%	0%	3%	9%
13615	6%	0%	22%	17%
13827	4%	0%	16%	6%
13829	3%	0%	2%	17%
21545	6%	0%	7%	8%
24274	5%	0%	7%	11%
27576	5%	0%	7%	13%
30069	6%	0%	9%	31%
30070	0%	0%	17%	-3%
49842	0%	0%	-3%	11%
State Hwy 497				
55476	0%	66%	0%	0%
State Hwy 5				
12092	0%	0%	-2%	18%
14380	4%	0%	-1%	-18%
16811	2%	0%	-11%	-4%
17221	0%	3%	83%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
43743	1%	0%	11%	2%
43744	0%	0%	-1%	12%
44340	0%	6%	-8%	-12%
50641	6%	0%	-21%	-2%
56257	7%	0%	-3%	-37%
64341	2%	0%	-7%	-20%
71271	1%	0%	11%	2%
71276	2%	0%	-10%	-3%
73816	0%	0%	-1%	12%
State Hwy 500				
34135	3%	0%	10%	2%
State Hwy 535				
17222	0%	15%	-8%	-12%
State Hwy 586				
6173	2%	0%	13%	10%
13667	2%	0%	0%	12%
13668	2%	0%	10%	1%
36815	1%	0%	4%	10%
37131	3%	0%	2%	12%
46904	2%	0%	11%	7%
51276	3%	0%	11%	2%
59942	2%	0%	2%	10%
69702	2%	0%	5%	16%
79354	1%	0%	6%	13%
State Hwy 614				
47832	2%	0%	-1%	11%
53280	2%	0%	-21%	-14%
64814	0%	0%	0%	-12%
65347	1%	0%	-7%	-13%
State Hwy 650				
14389	2%	0%	10%	14%
32606	0%	11%	0%	1%
34968	3%	0%	13%	9%
37157	2%	0%	8%	11%
43761	0%	14%	-1%	-1%
44551	0%	97%	0%	0%
54296	2%	0%	10%	3%
55600	1%	0%	-1%	11%
60127	3%	0%	13%	8%
66127	0%	1%	-2%	23%
State Hwy 725				
15050	1%	0%	22%	1%
21134	2%	0%	14%	4%
21136	3%	0%	11%	19%
21913	4%	0%	0%	17%
21914	7%	0%	1%	51%
23976	4%	0%	33%	6%
33218	2%	0%	9%	19%
65387	4%	0%	15%	1%
State Hwy 97				
1238	0%	0%	-3%	14%
2045	2%	0%	0%	14%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
4545	2%	0%	0%	21%
8547	2%	0%	1%	13%
13659	1%	0%	18%	1%
13912	1%	0%	13%	0%
16426	1%	0%	-1%	15%
20249	2%	0%	10%	4%
21032	1%	0%	6%	13%
22262	3%	0%	12%	4%
22264	3%	0%	0%	12%
33204	2%	0%	13%	0%
34969	2%	0%	-2%	19%
36589	0%	0%	-2%	14%
41150	2%	0%	12%	4%
44262	1%	0%	14%	-4%
56379	1%	0%	12%	2%
57876	2%	0%	0%	17%
57884	2%	0%	0%	19%
57885	1%	0%	15%	0%
59947	2%	0%	-2%	18%
63281	2%	0%	0%	13%
73505	3%	0%	11%	1%
74957	2%	0%	14%	1%
74959	2%	0%	12%	1%
Suitland Pkwy				
11880	2%	0%	18%	3%
54077	2%	0%	0%	21%
Town Square Dr				
27403	0%	66%	0%	0%
Travilah Rd				
44562	3%	0%	2%	12%
55062	6%	0%	9%	1%
69036	6%	0%	9%	1%
73351	6%	0%	3%	0%
75196	3%	0%	11%	4%
75271	6%	0%	9%	1%
Tuckerman Ln				
1577	8%	0%	20%	0%
2141	6%	0%	1%	8%
2345	9%	0%	0%	29%
19840	11%	0%	31%	0%
59656	9%	0%	1%	16%
72150	6%	0%	8%	0%
Turkey Branch Pkwy				
79353	1%	0%	17%	7%
79355	2%	0%	9%	13%
79372	5%	0%	0%	14%
79374	6%	0%	11%	2%
Turkey Foot Rd				
79460	0%	12%	0%	1%
Tuscarora Rd				
6968	4%	0%	1%	15%
27366	4%	0%	1%	15%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Tuxedo Rd				
80029	0%	68%	0%	1%
Twinbrook Pkwy				
69706	4%	0%	11%	1%
69707	3%	0%	1%	11%
Underwood St				
60199	3%	0%	11%	16%
63293	3%	0%	6%	13%
University Blvd				
2763	4%	0%	11%	6%
3639	4%	0%	1%	13%
20848	1%	0%	0%	11%
25720	2%	0%	0%	11%
64057	1%	0%	10%	1%
University Blvd E				
1690	2%	0%	-12%	1%
1695	2%	0%	-12%	0%
5269	0%	0%	-11%	3%
9539	2%	0%	-12%	1%
9541	1%	0%	6%	-10%
11036	0%	6%	-12%	-13%
14391	3%	0%	22%	5%
27863	2%	0%	-9%	11%
28808	3%	0%	4%	17%
34422	2%	0%	2%	-12%
37155	2%	0%	-12%	1%
40206	0%	0%	-11%	2%
40207	1%	0%	5%	-11%
53919	2%	0%	-16%	3%
University Blvd W				
5277	1%	0%	0%	17%
5279	1%	0%	12%	1%
8290	1%	0%	12%	0%
11108	0%	0%	10%	-1%
13913	2%	0%	0%	15%
16023	0%	0%	-10%	11%
27299	2%	0%	10%	1%
33205	3%	0%	10%	13%
35298	3%	0%	4%	20%
36502	3%	0%	1%	16%
43767	2%	0%	0%	12%
72707	0%	0%	12%	-4%
Urbana Ln				
65433	0%	13%	2%	9%
Urbana Pike				
32224	0%	11%	0%	-4%
US Hwy 1 Alt				
8866	2%	0%	19%	4%
16225	5%	0%	10%	11%
16226	5%	0%	0%	14%
72430	3%	0%	1%	20%
US Hwy 15				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
552	2%	0%	3%	19%
17143	2%	0%	21%	8%
24438	2%	0%	3%	19%
32501	0%	13%	0%	0%
45438	2%	0%	21%	8%
54995	1%	0%	11%	9%
US Hwy 29				
7766	6%	0%	-25%	-3%
10603	7%	0%	-8%	-12%
16318	2%	0%	-15%	9%
25430	0%	200%	0%	0%
37891	0%	200%	-49%	-85%
40876	0%	0%	-9%	10%
40877	0%	0%	-9%	10%
56058	0%	0%	11%	-2%
56059	0%	0%	11%	-2%
66125	0%	3%	8%	11%
74687	2%	0%	-8%	-15%
US Hwy 301				
14142	0%	0%	15%	0%
42183	2%	0%	0%	29%
53827	0%	15%	0%	0%
US Hwy 50				
11588	6%	0%	-15%	-53%
11589	2%	0%	-1%	-12%
12862	2%	0%	0%	22%
13625	0%	12%	-1%	-5%
16983	1%	0%	0%	12%
18390	1%	0%	0%	11%
19472	0%	2%	-1%	-12%
20070	0%	0%	-1%	13%
26125	0%	200%	0%	0%
27731	2%	0%	-1%	-15%
28617	0%	5%	0%	17%
33283	1%	0%	-1%	-16%
37585	0%	3%	0%	-20%
38255	1%	0%	0%	15%
40690	0%	0%	0%	13%
43505	0%	0%	0%	16%
43513	0%	17%	0%	0%
47315	1%	0%	0%	24%
48338	0%	18%	0%	-2%
54835	1%	0%	-1%	-16%
56249	0%	0%	0%	13%
57010	1%	0%	1%	10%
65196	1%	0%	-1%	-16%
68134	0%	15%	0%	0%
73586	5%	0%	-5%	-50%
73590	0%	3%	0%	-20%
73853	0%	12%	0%	0%
Valley Park Rd				
79843	0%	12%	1%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
79864	0%	12%	0%	1%
Veirs Dr				
36822	0%	12%	1%	5%
Virginia Manor Rd				
52208	0%	15%	0%	-10%
54537	0%	12%	-10%	-2%
W Cedar Ln				
627	0%	11%	2%	1%
61750	0%	17%	2%	2%
W City Ave				
3274	3%	0%	10%	8%
3278	3%	0%	7%	10%
4006	2%	0%	-8%	-11%
4008	1%	0%	-5%	-13%
4009	1%	0%	-5%	-11%
4450	3%	0%	12%	20%
9461	4%	0%	11%	32%
10291	3%	0%	11%	4%
13354	0%	17%	-33%	-16%
15935	8%	0%	12%	2%
16179	2%	0%	5%	24%
16327	2%	0%	12%	5%
16519	2%	0%	5%	10%
16746	0%	26%	3%	2%
16930	2%	0%	4%	-16%
19813	4%	0%	7%	11%
20085	1%	0%	-5%	-13%
22587	4%	0%	10%	14%
32201	7%	0%	3%	5%
32869	5%	0%	0%	9%
33798	2%	0%	8%	12%
33812	2%	0%	4%	21%
34762	2%	0%	12%	9%
34763	1%	0%	11%	6%
39261	4%	0%	3%	14%
40142	4%	0%	46%	18%
45356	1%	0%	-35%	-14%
54071	11%	0%	16%	59%
55249	5%	0%	6%	7%
59042	0%	13%	-25%	-13%
60201	3%	0%	10%	19%
60753	2%	0%	8%	11%
60756	3%	0%	23%	10%
63579	3%	0%	9%	11%
64097	4%	0%	13%	5%
64671	2%	0%	6%	15%
80253	2%	0%	9%	15%
80254	2%	0%	10%	11%
80255	2%	0%	13%	15%
80256	2%	0%	9%	14%
80282	2%	0%	4%	11%
W Diamond Ave				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
2626	0%	3%	-14%	-37%
5923	2%	0%	0%	-13%
68728	0%	3%	0%	-19%
W Edmonston Dr				
9699	2%	0%	19%	0%
59940	2%	0%	0%	15%
W Furnace Branch Rd				
54691	6%	0%	1%	2%
W Gude Dr				
329	1%	0%	0%	12%
W Jefferson St				
25212	2%	0%	5%	19%
74140	2%	0%	26%	9%
W Montgomery Ave				
85	2%	0%	26%	9%
86	2%	0%	24%	3%
87	2%	0%	5%	19%
851	0%	206%	65%	37%
36249	2%	0%	7%	11%
46468	5%	0%	-11%	-32%
55237	5%	0%	-7%	-10%
67682	0%	300%	112%	15%
68723	0%	245%	16%	108%
70134	3%	0%	-26%	-6%
70362	0%	209%	10%	16%
71016	0%	0%	0%	35%
75469	5%	0%	-18%	-39%
W Old Baltimore Rd				
29729	5%	0%	0%	-7%
50418	5%	0%	0%	-7%
W Willard Rd				
27728	0%	10%	0%	1%
40507	7%	0%	0%	8%
43472	7%	0%	0%	7%
Walker Mill Rd				
11873	4%	0%	12%	18%
27103	4%	0%	14%	21%
Wasche Rd				
79479	0%	21%	0%	1%
Washington National Pike				
547	0%	17%	45%	1%
6216	1%	0%	1%	37%
18073	0%	0%	0%	28%
18081	2%	0%	-1%	-25%
19191	0%	321%	13%	12%
25427	1%	0%	25%	1%
28054	0%	269%	-4%	155%
29079	1%	0%	-2%	-16%
37135	2%	0%	0%	30%
38295	1%	0%	0%	-10%
42330	2%	0%	1%	17%
44054	2%	0%	-12%	-1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
45291	1%	0%	-2%	-15%
46981	0%	5%	0%	15%
48741	1%	0%	25%	1%
49015	2%	0%	0%	-13%
49366	0%	294%	44%	45%
53319	2%	0%	0%	-13%
58028	0%	532%	16%	15%
58029	0%	294%	-20%	-19%
61724	0%	294%	2%	3%
61725	1%	0%	9%	53%
65632	0%	3%	0%	-19%
66775	0%	332%	17%	16%
66778	0%	332%	8%	7%
66779	0%	200%	0%	0%
66780	0%	321%	0%	-2%
66782	0%	291%	38%	-22%
66786	0%	291%	72%	15%
67078	0%	281%	65%	7%
67371	0%	283%	5%	105%
68863	0%	2%	0%	-12%
69883	1%	0%	9%	53%
69886	1%	0%	1%	36%
70364	0%	0%	0%	24%
70604	4%	0%	1%	76%
72714	2%	0%	-12%	-9%
Waterloo Rd				
39718	0%	13%	0%	0%
Watkins Mill Rd				
9669	2%	0%	0%	-13%
Watkins Park Dr				
12618	0%	11%	2%	3%
19148	0%	11%	2%	3%
19149	0%	12%	2%	4%
73256	0%	12%	2%	4%
Wayne Ave				
33739	7%	0%	8%	4%
34651	8%	0%	6%	2%
Wells Pkwy E				
25858	3%	0%	10%	15%
45351	2%	0%	8%	12%
Westlake Ter				
6860	0%	22%	3%	0%
67075	0%	200%	0%	0%
69881	0%	27%	1%	5%
Westphalia Rd				
33839	6%	0%	-3%	-1%
46203	10%	0%	1%	16%
59503	0%	12%	1%	9%
67688	0%	10%	0%	1%
White House Rd				
12614	0%	25%	2%	5%
16805	0%	12%	3%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
21522	0%	15%	1%	12%
23692	0%	17%	1%	5%
49394	0%	22%	-7%	-3%
58656	0%	22%	-1%	-5%
71624	0%	18%	1%	2%
Whitfield Chapel Rd				
54373	0%	15%	3%	3%
63860	0%	12%	4%	3%
Wilburn Dr				
22836	0%	28%	4%	0%
32811	0%	14%	1%	1%
William Beanes Rd				
64428	0%	17%	0%	1%
66902	0%	25%	0%	1%
Willow Hill Dr				
75917	0%	11%	0%	3%
75918	0%	16%	6%	0%
Windom Rd				
46983	5%	0%	0%	12%
Winfields Ln				
44824	0%	13%	0%	0%
62195	0%	13%	1%	1%
74744	3%	0%	0%	13%
Wisconsin Ave				
5661	1%	0%	1%	14%
9662	1%	0%	12%	4%
52787	0%	12%	0%	0%
70774	3%	0%	12%	4%
79293	3%	0%	11%	13%
79294	2%	0%	5%	11%
79295	3%	0%	16%	14%
Woodbine St				
79275	0%	10%	1%	0%
Woodmont Ave				
79303	2%	0%	3%	11%
79305	4%	0%	11%	7%
Woodstream Dr				
21279	3%	0%	0%	-12%
21280	0%	200%	0%	0%
Woodview Dr				
68469	0%	16%	1%	1%
Woodyard Rd				
57849	4%	0%	22%	27%
62024	3%	0%	11%	16%
66528	4%	0%	22%	26%
68086	3%	0%	10%	16%
Wootton Pkwy				
685	3%	0%	1%	13%
2350	3%	0%	1%	11%
9700	1%	0%	15%	-6%
26676	2%	0%	23%	0%
37083	0%	0%	-6%	13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
38951	1%	0%	12%	-4%
46465	5%	0%	23%	0%
46466	0%	0%	-6%	13%
52939	3%	0%	1%	14%
59149	5%	0%	23%	0%
59429	2%	0%	26%	-1%
59431	0%	0%	-13%	21%
72649	1%	0%	12%	-1%
Yellowwood Ln				
4743	19%	0%	18%	8%
59325	31%	0%	5%	29%
Virginia				
14th St N				
13169	0%	12%	0%	3%
15th St S				
36650	0%	18%	0%	0%
16th St N				
17013	0%	11%	-1%	9%
17th St N				
80990	0%	27%	0%	0%
80992	0%	10%	0%	0%
81001	0%	13%	0%	0%
81003	0%	35%	0%	0%
18th St N				
81059	0%	18%	0%	0%
18th St S				
80861	0%	13%	0%	1%
80862	0%	13%	0%	1%
20th St N				
77363	0%	12%	0%	0%
20th St S				
21051	0%	124%	0%	0%
28719	0%	13%	0%	0%
22nd St N				
77385	0%	19%	-1%	0%
23rd Rd N				
77403	0%	62%	0%	0%
23rd St S				
59242	0%	21%	0%	0%
68250	0%	24%	0%	0%
24th St N				
77404	0%	55%	0%	0%
25th St N				
15872	0%	1%	-18%	3%
15873	0%	1%	-13%	-10%
26th St N				
28967	0%	11%	0%	0%
51204	0%	11%	1%	0%
31st St S				
248	0%	11%	0%	7%
80807	0%	13%	0%	4%
6th St N				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
81593	0%	13%	1%	0%
8th St S				
80873	0%	10%	0%	2%
Allder School Rd				
24105	0%	32%	0%	0%
American Legion Rd				
51792	2%	0%	-11%	0%
Army Navy Dr				
36643	0%	35%	0%	0%
Backlick Rd				
56886	5%	0%	0%	0%
Baron Rd				
26847	0%	15%	-2%	-1%
Birch Rd				
9261	6%	0%	15%	14%
31938	2%	0%	4%	13%
Capital Beltway				
67	1%	0%	-21%	4%
69	0%	2%	-19%	-13%
75	0%	1%	-19%	0%
977	0%	18%	-7%	-3%
1270	0%	2%	-19%	-13%
1271	0%	1%	-9%	-12%
1272	0%	23%	0%	1%
16670	0%	22%	-3%	-5%
16671	0%	200%	-9%	-21%
16674	3%	0%	17%	8%
17398	0%	30%	11%	16%
17401	6%	0%	-13%	-2%
18216	1%	0%	-21%	4%
21180	0%	2%	0%	-12%
21561	0%	19%	-4%	-17%
22163	0%	15%	-13%	-90%
24084	7%	0%	37%	73%
28377	0%	2%	6%	-19%
29311	0%	25%	-14%	-7%
29973	0%	1%	-9%	-12%
33646	0%	4%	34%	83%
33976	0%	806%	58%	1%
34950	0%	31%	0%	4%
38710	0%	19%	0%	1%
39068	0%	11%	0%	0%
39073	0%	3%	28%	11%
39075	0%	1%	4%	-12%
39078	0%	1%	4%	-12%
39793	0%	10%	-4%	-7%
40119	4%	0%	-3%	-16%
41576	0%	23%	-4%	-5%
41577	0%	28%	-2%	-1%
41779	12%	0%	44%	45%
43018	0%	0%	-20%	1%
45944	0%	12%	-22%	-17%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
51272	0%	22%	-3%	-5%
55463	5%	0%	-5%	-5%
56641	7%	0%	37%	73%
56645	7%	0%	37%	73%
57913	8%	0%	37%	67%
59785	0%	200%	-9%	-21%
60164	0%	1%	4%	-12%
65637	0%	21%	-1%	1%
65844	0%	0%	-20%	1%
65927	0%	37%	0%	0%
68293	4%	0%	-15%	-1%
68294	4%	0%	-15%	-1%
68295	3%	0%	-1%	-16%
68582	10%	0%	63%	84%
68583	0%	11%	-47%	-21%
68584	0%	200%	-16%	-17%
68585	0%	200%	-16%	-17%
68586	0%	200%	-16%	-17%
68587	0%	200%	-9%	-21%
68588	0%	200%	-9%	-21%
68589	0%	200%	-16%	-17%
68590	0%	200%	-9%	-21%
68591	0%	200%	-6%	-6%
68883	0%	5%	29%	-5%
68889	0%	84%	-1%	-1%
71091	2%	0%	-19%	3%
71095	2%	0%	-19%	3%
72070	0%	200%	-16%	-17%
72078	11%	0%	65%	68%
76052	0%	25%	-84%	-74%
76222	0%	57%	-1%	-2%
77148	0%	15%	2%	-3%
77151	0%	13%	0%	0%
77184	0%	11%	-1%	0%
77185	0%	38%	0%	1%
Chain Bridge Rd				
5053	1%	0%	14%	2%
16581	1%	0%	18%	17%
21941	0%	32%	0%	0%
46083	2%	0%	-14%	-7%
55021	3%	0%	12%	39%
69550	0%	1%	-18%	0%
74851	5%	0%	15%	18%
Chesterbrook Rd				
26530	5%	0%	3%	21%
Co Rd 650				
12428	0%	0%	-20%	4%
Co Rd 686				
33643	0%	10%	3%	6%
59709	0%	14%	3%	6%
Co Rd 703				
50953	6%	0%	2%	15%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
72024	2%	0%	-13%	-3%
72283	6%	0%	-13%	-11%
Commonwealth Ave				
77281	0%	10%	0%	2%
Cotton Mill Dr				
81148	0%	125%	0%	0%
81150	0%	200%	0%	0%
Dolley Madison Blvd				
3989	0%	0%	11%	1%
4343	1%	0%	11%	0%
4344	0%	0%	3%	12%
5149	0%	0%	2%	12%
9478	0%	0%	-2%	11%
25782	4%	0%	-24%	-5%
31130	2%	0%	1%	11%
33641	2%	0%	7%	18%
36527	7%	0%	25%	30%
39807	1%	0%	17%	21%
40152	2%	0%	13%	25%
40859	0%	13%	0%	-1%
42078	6%	0%	17%	27%
44690	0%	132%	-1%	-12%
46571	0%	20%	1%	10%
46941	1%	0%	12%	4%
50436	0%	0%	-3%	12%
59706	1%	0%	13%	3%
59713	0%	26%	9%	6%
59997	1%	0%	10%	8%
60008	0%	15%	-2%	-1%
67577	1%	0%	16%	2%
68881	0%	73%	0%	54%
73743	1%	0%	12%	4%
77177	0%	28%	-6%	-15%
Dulles Access Rd				
41206	0%	2%	-1%	-12%
Dulles Toll Rd				
33649	0%	2%	-2%	-17%
34630	4%	0%	-1%	-14%
41207	0%	2%	-1%	-12%
41575	0%	63%	-1%	-7%
57167	0%	10%	12%	61%
58502	0%	7%	-1%	-43%
60237	4%	0%	-1%	-14%
76097	0%	27%	0%	0%
E Glebe Rd				
47673	0%	10%	1%	0%
52055	0%	12%	0%	0%
Edwards Ferry Rd NE				
835	0%	200%	0%	0%
Fisher Dr				
79332	0%	20%	-6%	0%
Furnace Mountain Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
81348	9%	0%	3%	10%
81350	8%	0%	5%	6%
George Washington Memorial Pkwy				
33634	0%	6%	-1%	-11%
33635	0%	3%	-14%	-2%
33639	0%	10%	0%	0%
34318	12%	0%	66%	44%
36935	0%	1%	0%	11%
38735	0%	7%	46%	99%
40850	0%	1%	0%	13%
47965	0%	10%	0%	0%
60010	0%	5%	-33%	-3%
Georgetown Pike				
4348	23%	0%	28%	9%
4349	50%	0%	13%	8%
4350	14%	0%	2%	27%
4351	0%	35%	2%	14%
6378	17%	0%	3%	33%
6380	23%	0%	14%	11%
13744	0%	35%	2%	14%
57185	0%	38%	0%	-1%
59710	50%	0%	13%	8%
68778	0%	56%	0%	-1%
Grande Ln				
42163	2%	0%	-16%	-3%
72284	6%	0%	-14%	-13%
Great Falls St				
14896	1%	0%	-11%	5%
Greeley Blvd				
33467	0%	200%	0%	0%
60752	0%	200%	0%	0%
Griffith Rd				
79328	0%	20%	-6%	0%
Henry G Shirley Memorial Hwy				
18676	0%	66%	0%	0%
30289	0%	2%	0%	-13%
30488	0%	2%	0%	-13%
Hillsboro Rd				
19709	0%	45%	0%	0%
Hume Ave				
77282	0%	10%	0%	2%
I- 395				
76	0%	13%	0%	-15%
25750	0%	1%	0%	-22%
26135	0%	2%	0%	-18%
27337	0%	1%	0%	-22%
30282	0%	1%	0%	-22%
30288	0%	2%	0%	-13%
30502	0%	1%	0%	12%
55038	0%	1%	24%	0%
59872	1%	0%	0%	15%
64907	0%	2%	0%	-18%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
65930	1%	0%	0%	14%
67012	0%	2%	0%	-18%
67246	0%	1%	0%	-22%
70266	0%	1%	13%	9%
72075	0%	64%	0%	-1%
I- 395 Hov				
26133	0%	2%	0%	-13%
30275	0%	1%	0%	-22%
30276	0%	1%	0%	-22%
30278	0%	1%	0%	-22%
30286	0%	2%	0%	-13%
66368	0%	15%	0%	0%
73014	0%	1%	0%	-22%
73015	0%	2%	0%	-13%
I- 495 Express Lane				
24081	0%	20%	0%	-2%
34324	0%	19%	-48%	-3%
38714	0%	12%	-2%	-5%
38717	0%	2%	6%	-19%
39426	0%	1%	4%	-12%
40120	0%	23%	-1%	0%
55464	2%	0%	0%	23%
68296	3%	0%	-1%	-16%
68297	3%	0%	-1%	-16%
68581	0%	11%	-4%	-3%
I- 66				
5026	0%	13%	0%	1%
49097	0%	1%	79%	-30%
52133	0%	200%	0%	0%
I- 95				
26136	0%	1%	0%	12%
27039	0%	10%	0%	0%
27421	0%	2%	29%	0%
28154	0%	103%	0%	0%
43013	1%	0%	0%	-12%
43016	1%	0%	0%	-12%
49369	1%	0%	0%	-12%
71235	0%	27%	0%	0%
76278	0%	2%	10%	0%
James Madison Hwy				
75672	0%	91%	0%	0%
75673	0%	111%	0%	0%
James Monroe Hwy				
66823	4%	0%	0%	10%
Jones Branch Dr				
8520	0%	11%	-2%	1%
12236	6%	0%	16%	3%
12238	11%	0%	1%	0%
17822	0%	12%	-2%	3%
35879	5%	0%	12%	5%
36480	6%	0%	16%	3%
38632	0%	12%	-2%	3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
68888	0%	11%	-2%	1%
Key Brg				
7923	2%	0%	12%	7%
22667	2%	0%	9%	14%
Kidwell Dr				
46319	6%	0%	4%	3%
Kirby Rd				
72293	6%	0%	12%	2%
Lee Chapel Rd				
10075	0%	126%	0%	0%
41005	0%	85%	0%	0%
Leesburg Pike				
12229	2%	0%	-7%	-13%
14213	2%	0%	-12%	-7%
20828	2%	0%	-13%	-1%
35567	2%	0%	-17%	-9%
36898	1%	0%	-11%	-8%
57210	0%	21%	-1%	0%
68877	2%	0%	-2%	29%
Lewinsville Rd				
72069	0%	13%	-80%	-62%
76053	0%	23%	-38%	-30%
Lisle Ave				
79334	0%	20%	-6%	0%
Lovettsville Rd				
67715	0%	12%	0%	1%
74567	0%	10%	0%	1%
Loyalty Rd				
74290	6%	0%	4%	3%
81323	5%	0%	4%	4%
81324	5%	0%	4%	4%
Mill Rd				
59340	1%	0%	-4%	-11%
71085	2%	0%	-33%	-1%
Mulberry Bottom Ln				
22325	0%	176%	0%	0%
N Chesterbrook Rd				
3619	8%	0%	0%	-15%
3620	5%	0%	-14%	-1%
8454	5%	0%	-13%	0%
8455	0%	8%	0%	-14%
11494	6%	0%	-13%	-1%
65371	8%	0%	0%	-15%
N Fairfax St				
27480	0%	42%	0%	0%
35505	0%	23%	0%	0%
36542	0%	32%	0%	1%
N Fort Myer Dr				
28732	1%	0%	14%	9%
N Glebe Rd				
22383	0%	13%	1%	2%
33998	2%	0%	20%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
35179	0%	13%	3%	1%
41418	1%	0%	1%	27%
N Jackson St				
81005	0%	13%	0%	1%
81006	0%	11%	0%	1%
81019	0%	13%	0%	1%
N Jefferson Davis Hwy				
36929	0%	29%	4%	0%
70264	0%	23%	0%	5%
N Kensington St				
44770	0%	10%	1%	1%
N Key Blvd				
81060	0%	24%	0%	0%
N Kirkwood Rd				
49081	0%	10%	0%	1%
50537	0%	11%	0%	2%
65801	0%	11%	0%	1%
N Lee Hwy				
14003	2%	0%	0%	13%
N Little Falls Rd				
34331	0%	18%	0%	-1%
42920	0%	58%	0%	1%
54639	0%	20%	-1%	0%
68920	4%	0%	-11%	-8%
N Sycamore St				
50545	0%	12%	1%	1%
N Washington Blvd				
50287	2%	0%	-11%	-3%
68921	0%	40%	0%	1%
71775	4%	0%	-11%	-8%
N Williamsburg Blvd				
7986	0%	12%	1%	1%
17015	0%	10%	1%	1%
Norfolk Ln				
47674	0%	32%	0%	1%
Old Chesterbrook Rd				
5120	4%	0%	-15%	-8%
Old Colchester Rd				
59470	0%	10%	0%	1%
Old Dominion Dr				
3984	2%	0%	0%	12%
4706	2%	0%	0%	12%
4793	0%	77%	1%	0%
11488	2%	0%	-11%	-2%
17391	0%	11%	-1%	-1%
28118	8%	0%	4%	15%
56346	2%	0%	-3%	-11%
60003	6%	0%	7%	4%
60269	1%	0%	-12%	-4%
72563	0%	47%	0%	0%
76054	14%	0%	79%	78%
80116	0%	169%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
80118	0%	193%	0%	0%
Old Ox Rd				
28916	0%	13%	0%	0%
Old Springhouse Rd				
77178	1%	0%	-2%	13%
77179	8%	0%	19%	-25%
Park Run Dr				
12483	0%	16%	-1%	-1%
18058	0%	13%	-1%	3%
42887	9%	0%	1%	0%
Pendleton St				
41252	8%	0%	0%	-1%
Potomac Ave				
76816	0%	13%	0%	3%
Potomac Greens Dr				
47676	0%	32%	0%	1%
52050	0%	11%	0%	0%
Queen St				
20907	0%	42%	0%	0%
40414	0%	32%	0%	1%
Random Hills Rd				
47228	0%	69%	0%	0%
Ridge Top Rd				
47226	0%	69%	0%	0%
Ring Rd				
13954	0%	12%	-1%	-13%
41163	6%	0%	6%	4%
42174	0%	9%	0%	-13%
62751	0%	14%	2%	-13%
73543	9%	0%	-8%	-8%
Rolling Rd				
44182	0%	176%	0%	0%
S Arlington Ridge Rd				
7984	1%	0%	0%	12%
S Columbia Pike				
26428	1%	0%	2%	12%
49630	3%	0%	0%	11%
S Eads St				
29859	0%	22%	0%	2%
36985	0%	12%	0%	5%
51047	0%	13%	1%	0%
74054	1%	0%	12%	0%
S Fort Scott Dr				
80808	0%	17%	0%	4%
S Glebe Rd				
40901	0%	12%	1%	0%
74285	0%	20%	0%	2%
S Hayes St				
41673	0%	13%	0%	1%
S Patrick St				
19863	0%	11%	0%	0%
52667	0%	200%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
S Washington Blvd				
17387	1%	0%	0%	28%
28854	1%	0%	0%	15%
33590	0%	1%	10%	0%
73013	0%	1%	0%	-22%
74618	0%	1%	10%	0%
Senseny Rd				
81397	0%	16%	0%	1%
Shirley Hwy				
18091	1%	0%	5%	20%
51571	1%	0%	5%	20%
62771	1%	0%	5%	20%
Spring Hill Rd				
17400	19%	0%	-1%	-7%
State Rte 123				
59113	5%	0%	2%	12%
State Rte 193				
6379	15%	0%	7%	45%
6381	21%	0%	17%	21%
13747	2%	0%	-12%	-9%
27937	0%	5%	76%	68%
33644	23%	0%	11%	68%
33645	0%	28%	11%	15%
44442	4%	0%	-11%	-14%
State Rte 237				
59501	0%	1%	5%	15%
State Rte 267				
27417	0%	9%	-46%	-3%
48466	0%	20%	-36%	-3%
58212	0%	10%	7%	0%
58213	0%	22%	0%	0%
63906	0%	24%	-2%	-1%
77023	0%	44%	-2%	-1%
State Rte 286				
22322	0%	200%	0%	0%
State Rte 289				
40190	0%	17%	0%	0%
State Rte 3 Bus				
25900	0%	0%	13%	0%
State Rte 55				
60604	0%	34%	0%	0%
State Rte 658				
51814	0%	30%	0%	0%
State Rte 662				
23850	3%	0%	1%	15%
45975	3%	0%	1%	15%
State Rte 681				
31835	5%	0%	0%	7%
77575	5%	0%	0%	7%
State Rte 682				
77580	0%	11%	0%	0%
State Rte 684				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
73800	5%	0%	0%	-5%
State Rte 695				
72292	6%	0%	12%	2%
State Rte 7 Bus				
7291	0%	15%	0%	0%
64315	1%	0%	2%	15%
State Rte 762				
15483	0%	13%	0%	0%
35250	0%	16%	0%	0%
Stumptown Rd				
22178	0%	10%	0%	3%
Swinks Mill Rd				
38993	0%	12%	0%	0%
Taylorstown Rd				
36006	0%	11%	0%	3%
81329	0%	15%	0%	3%
81330	0%	14%	0%	3%
Telegraph Rd				
47641	0%	200%	0%	0%
Toll House Rd				
52653	0%	122%	0%	0%
Towers Crescent Dr				
60863	5%	0%	3%	4%
US Hwy 29				
59243	0%	18%	0%	0%
Van Buren Rd				
6674	0%	19%	1%	0%
W Wakefield Dr				
38725	0%	200%	0%	0%
44175	0%	86%	0%	0%
Wakefield Dr E				
38726	0%	86%	0%	0%
44480	0%	200%	0%	0%
Westmoreland St				
5056	3%	0%	-16%	-6%
5057	3%	0%	-15%	-6%
28008	3%	0%	2%	12%
Westpark Dr				
45568	0%	11%	-1%	3%
Willowfield Way				
8704	0%	200%	0%	0%
49920	0%	200%	0%	0%

Segments Expecting Meaningful Changes in Emissions

Alternative 13B: Two HOT Managed Lanes Network on I-495 and two Reversible HOT Managed Lanes Network on I-270

Criteria and Document Legend

1. Congested % Difference: Changes of ± 5% or more in AADT on congested highway links of LOS D or worse
2. Free Flow % Difference: Changes of ± 10% or more in AADT on uncongested highway links of LOS C or better;
3. Travel Time AM/PM: Changes of ± 10% or more in travel time; and

d. Not Presented: Changes of ± 10% or more in intersection delay.

Highlighted locations meet the criteria[1]

1. https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/moves_msat_faq.cfm

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
District of Columbia				
10th Pl SE				
15152	0%	11%	8%	5%
10th St NW				
78709	0%	11%	0%	5%
10th St SW				
61369	0%	46%	-1%	0%
11th St NW				
6277	4%	0%	11%	4%
8999	5%	0%	7%	5%
39387	2%	0%	0%	11%
11th St SE				
8559	2%	0%	13%	7%
25672	2%	0%	13%	7%
45594	2%	0%	13%	7%
12th St NW				
73869	2%	0%	0%	18%
12th St SW				
29114	0%	13%	0%	-1%
34294	1%	0%	14%	6%
13th St NW				
2472	2%	0%	10%	8%
6440	1%	0%	11%	6%
7478	2%	0%	4%	16%
10690	2%	0%	2%	11%
16064	1%	0%	29%	1%
40255	2%	0%	2%	11%
40598	1%	0%	11%	6%
52075	12%	0%	3%	10%
73321	2%	0%	6%	11%
77912	2%	0%	4%	19%
77913	1%	0%	3%	18%
77943	2%	0%	16%	5%
77944	1%	0%	5%	14%
77945	2%	0%	3%	22%
78708	0%	16%	0%	5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
13th St SE				
78555	5%	0%	10%	3%
14th St NW				
2264	6%	0%	1%	10%
8416	1%	0%	2%	21%
25474	6%	0%	1%	10%
27134	2%	0%	11%	1%
69332	0%	15%	0%	1%
73327	1%	0%	8%	10%
74148	0%	18%	0%	-1%
14th St SW				
12953	1%	0%	4%	13%
39030	1%	0%	2%	11%
39031	1%	0%	12%	6%
15th St NW				
47189	9%	0%	6%	1%
77028	6%	0%	12%	1%
16th St NE				
65235	4%	0%	1%	12%
16th St NW				
3568	1%	0%	4%	10%
3684	1%	0%	4%	20%
5343	0%	13%	-2%	0%
8418	3%	0%	0%	10%
17033	14%	0%	3%	1%
23592	1%	0%	8%	13%
37359	3%	0%	1%	11%
37364	1%	0%	4%	15%
49320	1%	0%	14%	7%
58981	1%	0%	12%	8%
60423	8%	0%	6%	3%
64887	2%	0%	16%	10%
69913	0%	0%	10%	9%
78016	1%	0%	11%	4%
78018	0%	0%	2%	10%
16th St SE				
2249	3%	0%	0%	12%
17th St NE				
40729	2%	0%	1%	10%
17th St NW				
8157	3%	0%	10%	7%
53021	2%	0%	0%	14%
74429	1%	0%	10%	6%
78348	2%	0%	0%	13%
17th St SE				
76178	1%	0%	4%	11%
18th St NE				
64895	3%	0%	0%	12%
18th St NW				
2689	1%	0%	14%	5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
9049	2%	0%	4%	20%
9579	1%	0%	13%	5%
17032	6%	0%	3%	10%
27133	1%	0%	11%	6%
36033	2%	0%	10%	4%
40683	2%	0%	15%	8%
41089	0%	0%	11%	-1%
78923	0%	12%	1%	0%
19th St NE				
2519	6%	0%	7%	0%
79156	0%	49%	1%	0%
1st St NW				
36675	6%	0%	1%	3%
1st St SE				
15532	6%	0%	3%	9%
18637	6%	0%	3%	9%
29092	7%	0%	7%	1%
74986	7%	0%	7%	1%
74987	6%	0%	4%	9%
20th St NW				
38643	7%	0%	1%	-4%
21st St NW				
10680	7%	0%	3%	11%
22nd St NW				
7786	0%	0%	2%	10%
7790	0%	0%	2%	11%
14107	6%	0%	0%	7%
23rd St NW				
2464	1%	0%	11%	0%
5375	5%	0%	3%	15%
7071	5%	0%	2%	12%
56235	1%	0%	11%	0%
24th St NW				
298	6%	0%	0%	8%
27th St NW				
78997	0%	13%	5%	0%
28th St SE				
39273	2%	0%	11%	2%
29th St NW				
7783	8%	0%	1%	2%
30th Pl NW				
23586	0%	0%	11%	5%
34th St NW				
78760	0%	13%	-1%	0%
78762	0%	11%	0%	1%
37th St NW				
62382	6%	0%	1%	2%
38th St NW				
652	1%	0%	6%	15%
17955	1%	0%	13%	8%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
3rd St SW				
55114	0%	0%	12%	1%
40th St NE				
60683	0%	24%	0%	5%
60684	0%	25%	1%	0%
42nd St NW				
78789	0%	17%	0%	1%
44th St NE				
31114	2%	0%	10%	1%
60996	7%	0%	6%	8%
60997	7%	0%	7%	4%
79135	6%	0%	6%	10%
79137	8%	0%	12%	4%
44th St NW				
8163	6%	0%	0%	-4%
78867	5%	0%	1%	-1%
78877	0%	19%	-1%	0%
78878	0%	13%	-2%	0%
78879	0%	39%	-3%	0%
49th St NE				
13513	0%	11%	3%	6%
69253	0%	13%	3%	8%
79091	0%	13%	3%	8%
4th St NE				
3250	7%	0%	3%	9%
4th St SE				
13	0%	11%	5%	2%
27750	0%	200%	0%	0%
4th St SW				
48414	1%	0%	1%	11%
50th St SE				
46918	0%	15%	0%	-1%
69268	0%	12%	2%	4%
53rd St NE				
79087	0%	14%	1%	9%
81568	0%	14%	1%	9%
53rd St SE				
79066	0%	38%	0%	2%
79067	0%	14%	0%	2%
79068	0%	15%	2%	0%
5th St NW				
37722	6%	0%	1%	9%
40965	7%	0%	5%	3%
78662	5%	0%	1%	5%
78678	6%	0%	3%	4%
78679	6%	0%	4%	10%
6th St SE				
14362	5%	0%	2%	2%
14929	0%	12%	6%	2%
78213	6%	0%	8%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
7th St NW				
46	6%	0%	2%	6%
13242	1%	0%	12%	3%
17199	3%	0%	15%	6%
73602	5%	0%	1%	12%
73603	5%	0%	1%	12%
74149	1%	0%	0%	16%
74151	3%	0%	3%	16%
7th St SW				
14644	0%	11%	0%	0%
37484	0%	0%	11%	3%
8th St NE				
44603	1%	0%	5%	10%
60136	4%	0%	13%	10%
8th St SE				
16275	0%	200%	0%	0%
9th St NE				
12978	2%	0%	8%	10%
58437	3%	0%	11%	9%
9th St NW				
51532	2%	0%	0%	11%
51537	6%	0%	0%	2%
Alabama Ave SE				
14339	2%	0%	0%	16%
34800	5%	0%	2%	14%
35112	5%	0%	3%	4%
58087	3%	0%	14%	8%
69986	3%	0%	1%	16%
69987	3%	0%	1%	16%
70228	4%	0%	6%	15%
Alaska Ave NW				
70323	2%	0%	5%	11%
78734	0%	17%	0%	0%
78736	0%	21%	1%	0%
Arizona Ave NW				
4412	2%	0%	2%	15%
41435	8%	0%	27%	37%
41437	2%	0%	1%	18%
50148	2%	0%	21%	-2%
60330	5%	0%	23%	20%
60331	6%	0%	7%	1%
60335	3%	0%	13%	9%
Arkansas Ave NW				
70994	7%	0%	0%	3%
78632	2%	0%	1%	12%
Arlington Memorial Brg				
29110	0%	17%	0%	0%
Aspen St NW				
15524	1%	0%	21%	8%
15683	1%	0%	4%	13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
15686	5%	0%	2%	4%
B St SE				
38570	2%	0%	11%	7%
Beach Dr NW				
1554	5%	0%	1%	13%
1556	3%	0%	12%	2%
9250	3%	0%	7%	13%
13729	6%	0%	8%	10%
23594	7%	0%	10%	1%
38067	4%	0%	11%	4%
38068	4%	0%	11%	4%
42942	4%	0%	2%	15%
49578	3%	0%	6%	13%
Benning Rd SE				
55638	2%	0%	11%	10%
69264	2%	0%	9%	11%
79054	6%	0%	2%	11%
79056	8%	0%	10%	6%
Blagden Ave NW				
4400	0%	10%	0%	0%
23877	0%	11%	0%	0%
23878	4%	0%	1%	12%
27435	6%	0%	12%	7%
46533	0%	11%	0%	0%
46534	0%	14%	0%	0%
Blaine St NE				
79095	0%	12%	0%	7%
Brentwood Pkwy NE				
45888	0%	12%	0%	1%
Brentwood Rd NE				
2836	2%	0%	8%	10%
C St NE				
14097	1%	0%	2%	13%
62363	2%	0%	12%	0%
69652	2%	0%	12%	0%
C St NW				
13450	5%	0%	3%	12%
C St SE				
16278	2%	0%	11%	11%
Camden St SE				
24773	8%	0%	2%	3%
Canal Rd NW				
649	1%	0%	17%	-1%
15550	0%	14%	0%	-2%
17262	2%	0%	-22%	0%
17487	1%	0%	1%	24%
23511	0%	14%	0%	-2%
Capital Beltway				
19588	2%	0%	-1%	-14%
Central Ave SE				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
79050	0%	26%	0%	-2%
79078	6%	0%	5%	3%
79079	8%	0%	3%	14%
Chain Bridge Rd NW				
78891	0%	14%	1%	2%
Chestnut St NW				
4072	0%	17%	0%	7%
10696	0%	13%	4%	1%
40977	0%	13%	0%	9%
Chillum Pl NE				
11666	1%	0%	15%	9%
11668	1%	0%	4%	18%
Clara Barton Pkwy NW				
15395	6%	0%	32%	17%
65019	4%	0%	10%	16%
Columbia Rd NW				
6885	0%	0%	1%	11%
10134	1%	0%	16%	6%
12475	0%	0%	15%	6%
16794	1%	0%	2%	10%
60174	5%	0%	1%	14%
78019	1%	0%	3%	11%
78027	2%	0%	3%	11%
Connecticut Ave NW				
6285	3%	0%	7%	14%
6286	0%	0%	1%	14%
6287	1%	0%	3%	19%
9051	0%	0%	3%	10%
9625	1%	0%	11%	10%
17961	1%	0%	11%	1%
38190	1%	0%	5%	13%
40333	0%	12%	0%	0%
66347	2%	0%	20%	4%
Constitution Ave NW				
27431	1%	0%	2%	12%
38277	1%	0%	3%	10%
Corcoran St NW				
12571	1%	0%	11%	6%
Dalecarlia Pkwy NW				
60644	0%	13%	5%	2%
DC Hwy 295				
4313	2%	0%	6%	20%
16142	2%	0%	2%	12%
16432	2%	0%	13%	14%
37791	2%	0%	2%	12%
46627	2%	0%	13%	14%
56840	2%	0%	13%	14%
Division Ave NE				
34795	5%	0%	6%	0%
42889	0%	11%	2%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
61621	0%	14%	2%	9%
61623	0%	12%	6%	5%
79082	0%	11%	4%	5%
79083	0%	11%	2%	1%
Dix St NE				
61617	0%	11%	3%	6%
79088	0%	10%	5%	4%
79090	0%	14%	5%	5%
Drake Pl SE				
79063	0%	38%	0%	2%
79065	0%	15%	2%	0%
Dupont Cir NW				
8356	1%	0%	11%	4%
36335	2%	0%	3%	10%
59589	1%	0%	14%	1%
E Capitol St NE				
13984	3%	0%	12%	14%
39036	3%	0%	5%	18%
81564	0%	11%	0%	1%
E Capitol St SE				
18946	0%	23%	0%	5%
61955	8%	0%	2%	10%
62577	8%	0%	9%	2%
73984	0%	32%	3%	0%
81567	0%	14%	1%	9%
E St Expy				
7734	2%	0%	2%	12%
E St NW				
12818	6%	0%	0%	2%
18644	2%	0%	3%	14%
E St SE				
72464	2%	0%	12%	11%
72465	3%	0%	10%	15%
Eastern Ave NE				
1951	2%	0%	16%	10%
9580	3%	0%	17%	14%
15695	2%	0%	9%	16%
15994	4%	0%	21%	25%
22832	2%	0%	13%	9%
28738	2%	0%	9%	17%
38916	0%	12%	0%	0%
40365	2%	0%	17%	12%
63642	3%	0%	14%	18%
81615	0%	14%	0%	3%
Eastern Ave NW				
24473	3%	0%	2%	13%
79282	6%	0%	1%	9%
Ely Pl SE				
73717	5%	0%	4%	1%
F St NE				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
10001	5%	0%	4%	0%
70564	5%	0%	4%	0%
F St NW				
23725	8%	0%	2%	10%
F St SE				
79057	7%	0%	2%	6%
79062	0%	38%	0%	2%
79064	0%	15%	2%	0%
Fessenden St NW				
78943	6%	0%	3%	-1%
78959	1%	0%	12%	4%
78961	0%	0%	6%	11%
78974	5%	0%	6%	2%
78975	5%	0%	6%	2%
Florida Ave NE				
2158	2%	0%	9%	18%
29426	3%	0%	3%	17%
45595	2%	0%	12%	9%
53002	1%	0%	4%	13%
Florida Ave NW				
4037	1%	0%	5%	12%
7485	6%	0%	0%	7%
8363	0%	14%	0%	0%
13037	2%	0%	0%	13%
65515	0%	0%	6%	10%
Foxhall Rd NW				
57734	4%	0%	17%	2%
57735	6%	0%	3%	11%
57740	0%	15%	0%	2%
57742	0%	14%	3%	0%
73797	5%	0%	17%	2%
78862	4%	0%	17%	2%
G St NW				
28870	5%	0%	2%	-1%
G St SE				
69746	2%	0%	3%	10%
Gallatin St NW				
46525	7%	0%	0%	3%
78637	5%	0%	3%	6%
78643	8%	0%	6%	9%
Galloway St NE				
15991	5%	0%	6%	0%
78627	6%	0%	5%	1%
George Washington Memorial Pkwy				
33685	0%	1%	0%	20%
34645	0%	1%	0%	23%
Georgia Ave NW				
4069	0%	0%	2%	14%
6284	1%	0%	4%	13%
14664	5%	0%	7%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
15842	0%	10%	1%	2%
40243	0%	0%	2%	14%
40244	1%	0%	12%	4%
40245	1%	0%	19%	4%
56625	1%	0%	21%	8%
78670	0%	13%	1%	1%
Girard St NW				
40246	2%	0%	13%	5%
62441	2%	0%	2%	22%
Glenbrook Rd NW				
3261	0%	50%	0%	0%
3262	0%	68%	0%	0%
Glover Rd NW				
23582	0%	10%	2%	2%
Good Hope Rd SE				
6242	1%	0%	1%	11%
13762	3%	0%	2%	11%
16436	3%	0%	0%	12%
69995	3%	0%	11%	3%
H St NW				
51536	7%	0%	0%	3%
78358	3%	0%	1%	10%
H St SE				
29979	2%	0%	8%	10%
I- 295				
1480	1%	0%	0%	16%
I- 495				
19589	1%	0%	-22%	0%
25781	1%	0%	-19%	2%
I- 66				
12777	4%	0%	15%	6%
14357	1%	0%	12%	14%
Independence Ave SE				
29097	0%	199%	0%	0%
Indiana Ave NW				
12499	0%	10%	1%	1%
78177	5%	0%	1%	4%
78179	8%	0%	6%	1%
Irving St NW				
40733	5%	0%	7%	11%
58671	0%	0%	2%	12%
62766	3%	0%	14%	5%
Jefferson St NW				
78671	0%	19%	1%	1%
K St NW				
48418	0%	26%	1%	1%
59587	2%	0%	5%	11%
78050	0%	16%	0%	2%
Kalmia Rd NW				
1114	3%	0%	11%	4%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
5205	2%	0%	11%	13%
10356	2%	0%	10%	13%
40354	3%	0%	11%	4%
Kalorama Rd NW				
78498	0%	19%	2%	1%
78499	0%	15%	2%	1%
Kansas Ave NE				
38070	2%	0%	4%	11%
Kansas Ave NW				
24770	2%	0%	2%	13%
28743	2%	0%	2%	11%
78636	6%	0%	2%	3%
Kenilworth Ave NE				
5225	4%	0%	9%	13%
16150	2%	0%	9%	11%
16433	2%	0%	4%	13%
16971	0%	10%	0%	0%
17843	2%	0%	17%	15%
23731	2%	0%	4%	13%
31339	8%	0%	10%	4%
63890	2%	0%	17%	15%
70336	0%	139%	0%	0%
Kenyon St NW				
38558	1%	0%	2%	10%
Klingle Rd NW				
9933	6%	0%	0%	7%
Lee St NE				
72843	0%	15%	0%	2%
Livingston Rd SE				
78539	0%	28%	0%	3%
Logan Cir NW				
15843	1%	0%	3%	16%
22012	1%	0%	11%	13%
39389	1%	0%	11%	13%
Loughboro Rd NW				
60340	5%	0%	5%	1%
60342	0%	11%	4%	1%
M L King Jr Ave SE				
32417	0%	11%	0%	2%
M St NE				
79160	0%	49%	2%	0%
79161	0%	49%	2%	0%
M St NW				
27308	1%	0%	-3%	16%
69809	2%	0%	11%	5%
M St SE				
65907	0%	2%	10%	2%
65908	0%	2%	1%	11%
81377	2%	0%	0%	12%
Macarthur Blvd NW				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
7662	10%	0%	11%	13%
25539	10%	0%	15%	16%
27929	0%	10%	1%	2%
31684	16%	0%	12%	15%
40367	9%	0%	1%	-1%
40866	9%	0%	2%	-1%
50146	10%	0%	2%	5%
58985	16%	0%	10%	13%
60327	6%	0%	8%	2%
60332	0%	15%	6%	7%
78894	5%	0%	3%	2%
78895	6%	0%	4%	1%
78896	0%	11%	1%	5%
78897	0%	11%	1%	4%
Malcolm X Ave SE				
13596	1%	0%	0%	16%
Massachusetts Ave NW				
1257	1%	0%	11%	6%
3612	6%	0%	0%	1%
7787	3%	0%	12%	6%
7788	0%	30%	0%	0%
13472	1%	0%	2%	12%
25245	1%	0%	10%	4%
47205	1%	0%	10%	4%
56779	6%	0%	1%	3%
57096	5%	0%	1%	0%
61367	5%	0%	1%	0%
78058	0%	11%	-1%	2%
78907	6%	0%	1%	0%
Massachusetts Ave SE				
9841	3%	0%	14%	8%
34801	9%	0%	10%	2%
69511	5%	0%	2%	14%
69513	9%	0%	10%	2%
79774	4%	0%	3%	15%
Michigan Ave NE				
9004	1%	0%	0%	11%
40334	1%	0%	0%	11%
75349	2%	0%	0%	11%
Military Rd NW				
12721	1%	0%	13%	1%
23874	7%	0%	4%	1%
Minnesota Ave NE				
11817	2%	0%	0%	10%
14574	8%	0%	6%	11%
31328	3%	0%	11%	1%
67575	0%	10%	0%	2%
72844	0%	11%	0%	2%
Minnesota Ave SE				
13520	5%	0%	5%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
13759	2%	0%	3%	10%
Mississippi Ave SE				
13764	0%	10%	3%	2%
14565	0%	11%	0%	3%
Missouri Ave NW				
28512	7%	0%	7%	5%
Monroe St NW				
45860	0%	0%	5%	11%
Montana Ave NE				
6548	2%	0%	12%	3%
43276	1%	0%	5%	16%
Mount Olivet Rd NE				
6545	4%	0%	1%	12%
14666	5%	0%	2%	2%
15981	4%	0%	12%	1%
39400	5%	0%	0%	8%
N Capitol St NE				
3253	6%	0%	2%	5%
9310	1%	0%	14%	4%
18421	2%	0%	4%	15%
28513	1%	0%	-7%	10%
33107	1%	0%	2%	10%
43558	1%	0%	0%	15%
57549	1%	0%	0%	11%
69665	1%	0%	13%	2%
N Capitol St NW				
37120	1%	0%	3%	17%
78074	1%	0%	3%	16%
78075	1%	0%	3%	16%
N St NW				
36491	5%	0%	3%	3%
78427	11%	0%	7%	6%
78432	13%	0%	10%	3%
78433	10%	0%	11%	3%
Nannie Helen Burroughs Ave NE				
61944	4%	0%	11%	1%
Naylor Rd SE				
2844	3%	0%	0%	20%
14958	1%	0%	0%	11%
16283	4%	0%	10%	23%
22008	2%	0%	9%	18%
32998	0%	0%	12%	-1%
45687	0%	0%	0%	13%
51786	2%	0%	7%	19%
79042	1%	0%	0%	10%
Nebraska Ave NW				
29325	0%	11%	0%	0%
57104	1%	0%	-10%	1%
61373	1%	0%	8%	14%
70093	1%	0%	15%	6%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Nevada Ave NW				
8106	0%	11%	2%	1%
9897	8%	0%	4%	3%
14964	1%	0%	11%	6%
15179	0%	12%	0%	2%
New Hampshire Ave NE				
9001	2%	0%	3%	11%
9309	2%	0%	3%	11%
New Hampshire Ave NW				
5636	5%	0%	7%	10%
8366	2%	0%	14%	8%
13464	5%	0%	7%	10%
36336	2%	0%	2%	11%
38188	2%	0%	2%	11%
46577	2%	0%	14%	8%
77999	2%	0%	11%	7%
New Jersey Ave SE				
9517	0%	23%	1%	1%
13508	0%	23%	1%	1%
New York Ave NE				
2892	1%	0%	4%	13%
12729	2%	0%	0%	14%
25193	2%	0%	11%	10%
28988	1%	0%	4%	13%
39744	2%	0%	0%	14%
New York Ave NW				
6767	3%	0%	1%	13%
9216	1%	0%	4%	14%
54895	6%	0%	1%	2%
Newton St NE				
30893	5%	0%	7%	2%
Nicholson St NE				
3699	1%	0%	4%	17%
North Carolina Ave SE				
60360	5%	0%	4%	0%
O St NE				
2756	1%	0%	1%	13%
Oglethorpe St NE				
11661	1%	0%	4%	16%
Ohio Dr SW				
19255	0%	12%	0%	0%
49093	0%	19%	0%	0%
P St NW				
3199	11%	0%	1%	1%
69425	6%	0%	1%	-5%
77902	1%	0%	6%	10%
78458	7%	0%	1%	-4%
78459	7%	0%	1%	-6%
Park Pl NW				
13332	0%	12%	0%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
39268	0%	12%	3%	1%
40249	2%	0%	1%	11%
Park Rd NW				
7922	4%	0%	10%	5%
22011	2%	0%	0%	10%
45985	3%	0%	1%	11%
70383	0%	0%	5%	11%
Pennsylvania Ave NW				
37955	7%	0%	1%	7%
46587	0%	0%	11%	1%
Pierce St NW				
36673	7%	0%	1%	2%
Q St NW				
59287	0%	0%	0%	-20%
78422	1%	0%	-1%	11%
Queen St NE				
5135	2%	0%	3%	10%
11971	4%	0%	3%	13%
R St NE				
77635	7%	0%	3%	8%
R St NW				
66346	1%	0%	8%	10%
Reno Rd NW				
31070	6%	0%	1%	0%
40369	6%	0%	1%	0%
60729	1%	0%	11%	2%
Reservoir Rd NW				
8162	6%	0%	0%	-2%
25246	6%	0%	0%	-2%
60728	6%	0%	0%	-5%
Rhode Island Ave NE				
18423	1%	0%	3%	13%
23730	1%	0%	13%	7%
30679	3%	0%	6%	16%
31694	3%	0%	0%	11%
60737	3%	0%	0%	11%
66851	5%	0%	7%	2%
Rhode Island Ave NW				
1656	1%	0%	18%	5%
8368	3%	0%	0%	11%
18417	1%	0%	3%	13%
29099	2%	0%	6%	12%
74696	1%	0%	3%	16%
74698	1%	0%	3%	16%
75121	1%	0%	3%	16%
75126	0%	18%	0%	-3%
Riggs Rd NE				
3326	1%	0%	4%	17%
River Rd NW				
18025	3%	0%	11%	12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
18026	3%	0%	12%	10%
50139	5%	0%	2%	-2%
56162	6%	0%	2%	-2%
69429	5%	0%	2%	-2%
78942	5%	0%	2%	-4%
Rock Creek Church Rd NW				
583	0%	11%	0%	2%
30089	0%	12%	3%	1%
30092	7%	0%	9%	2%
60732	0%	11%	0%	3%
Rock Creek Pkwy NW				
23728	6%	0%	0%	8%
Rock Crk and Potomac Pkwy NW				
47863	1%	0%	10%	2%
59890	11%	0%	1%	1%
S Arlington Blvd				
43859	0%	1%	0%	20%
S St NE				
6546	6%	0%	4%	3%
Sargent Rd NE				
30241	2%	0%	4%	15%
Scott Cir NW				
60173	1%	0%	15%	2%
South Dakota Ave NE				
14571	1%	0%	1%	11%
29773	1%	0%	4%	10%
30239	5%	0%	6%	0%
Southern Ave SE				
5934	2%	0%	1%	23%
19326	1%	0%	0%	12%
27574	2%	0%	11%	0%
32326	3%	0%	8%	12%
37848	2%	0%	12%	-1%
52604	3%	0%	3%	13%
79016	6%	0%	10%	13%
79017	6%	0%	8%	10%
79018	3%	0%	5%	13%
79019	3%	0%	5%	13%
79130	2%	0%	9%	12%
Southwest Fwy				
3950	1%	0%	14%	6%
30263	1%	0%	5%	11%
Spring Rd NW				
8171	7%	0%	1%	5%
46181	12%	0%	3%	6%
Stanley St SE				
79775	5%	0%	3%	13%
79777	4%	0%	12%	8%
Suitland Rd SE				
37175	8%	0%	2%	3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
T St NE				
77636	6%	0%	3%	9%
T St NW				
7046	1%	0%	3%	20%
Taylor St NE				
27432	2%	0%	0%	11%
Tenley Cir NW				
45592	1%	0%	15%	4%
69808	1%	0%	11%	15%
Texas Ave SE				
32514	0%	17%	7%	1%
62578	0%	20%	2%	6%
Thomas Cir NW				
39394	2%	0%	16%	1%
39395	2%	0%	5%	12%
Tunlaw Rd NW				
78802	0%	12%	1%	1%
U St NW				
2834	7%	0%	6%	9%
Upshur St NW				
30091	0%	10%	7%	2%
Upton St NW				
78837	5%	0%	-3%	7%
78839	9%	0%	8%	2%
US Hwy 1 Alt				
960	4%	0%	1%	14%
3554	3%	0%	7%	14%
7929	1%	0%	7%	11%
29212	1%	0%	5%	15%
29641	4%	0%	-2%	11%
34921	5%	0%	2%	11%
43277	1%	0%	7%	11%
45885	3%	0%	7%	14%
59880	4%	0%	2%	17%
77613	3%	0%	3%	16%
77616	5%	0%	3%	11%
US Hwy 50				
3920	2%	0%	23%	6%
5378	2%	0%	5%	18%
7985	2%	0%	18%	9%
13209	1%	0%	4%	14%
23516	4%	0%	18%	5%
36930	1%	0%	7%	22%
56258	2%	0%	0%	14%
Valley Ave SE				
78544	0%	14%	0%	1%
Van Buren St NW				
6283	8%	0%	13%	2%
24971	7%	0%	0%	13%
Van Ness St NW				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
9585	1%	0%	2%	12%
Virginia Ave SE				
78258	0%	4%	14%	0%
W St NW				
57741	0%	17%	0%	2%
57743	0%	15%	4%	0%
78781	0%	12%	1%	1%
Warder St NW				
78701	0%	40%	0%	1%
West Virginia Ave NE				
13228	4%	0%	1%	12%
56622	4%	0%	1%	12%
Western Ave NW				
287	3%	0%	9%	14%
2020	3%	0%	10%	12%
8105	0%	11%	3%	2%
11207	3%	0%	13%	13%
13476	6%	0%	8%	5%
18024	2%	0%	10%	14%
24939	0%	12%	0%	2%
31032	0%	11%	2%	1%
31072	0%	12%	0%	5%
40049	2%	0%	12%	3%
41078	2%	0%	11%	9%
41332	0%	15%	0%	2%
41333	0%	13%	2%	1%
56474	3%	0%	12%	11%
56478	7%	0%	2%	5%
56479	6%	0%	12%	3%
78926	6%	0%	13%	5%
78928	6%	0%	4%	8%
79008	0%	11%	2%	0%
79009	0%	13%	1%	0%
79010	0%	14%	0%	2%
79011	0%	17%	0%	2%
Westmoreland Cir NW				
40867	7%	0%	1%	2%
Whitehaven Pkwy NW				
58990	6%	0%	0%	-6%
59599	0%	13%	2%	3%
Winfield Ln NW				
53354	6%	0%	1%	2%
Wisconsin Ave NW				
7371	1%	0%	-1%	16%
8097	1%	0%	4%	10%
8588	1%	0%	21%	6%
10207	2%	0%	12%	11%
12826	5%	0%	0%	-3%
13190	0%	23%	2%	0%
13193	14%	0%	-1%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
17022	2%	0%	-1%	13%
17718	2%	0%	3%	11%
17958	2%	0%	9%	18%
17959	1%	0%	10%	2%
35307	1%	0%	14%	7%
38275	20%	0%	3%	0%
42938	1%	0%	6%	10%
53757	1%	0%	20%	6%
60178	2%	0%	12%	1%
76005	0%	0%	0%	10%
78413	1%	0%	21%	6%
78836	6%	0%	-3%	7%
78838	9%	0%	7%	1%
Wise Rd NW				
1555	3%	0%	29%	9%
13727	4%	0%	7%	17%
Maryland				
1st St				
5718	3%	0%	16%	11%
5720	3%	0%	15%	9%
23rd Ave				
2557	7%	0%	8%	12%
59623	8%	0%	12%	13%
23rd Pkwy				
71553	4%	0%	11%	1%
2nd Ave				
5264	6%	0%	15%	9%
34074	6%	0%	11%	8%
38th Ave				
15936	7%	0%	9%	1%
60807	5%	0%	4%	4%
39th Ave				
80336	0%	31%	0%	1%
80338	0%	19%	2%	0%
80355	0%	15%	3%	4%
80356	0%	17%	3%	3%
40th Ave				
80329	0%	15%	3%	8%
80330	0%	12%	4%	8%
80331	0%	13%	6%	3%
80332	0%	11%	6%	4%
42nd Ave				
80276	8%	0%	7%	14%
80278	8%	0%	12%	7%
80295	0%	17%	2%	0%
80296	0%	22%	0%	2%
80298	0%	13%	4%	4%
80300	0%	14%	6%	4%
80307	10%	0%	1%	11%
80309	11%	0%	14%	3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
80315	0%	11%	6%	7%
80316	0%	11%	4%	5%
80317	0%	11%	3%	6%
50th Ave				
46214	3%	0%	2%	16%
46215	4%	0%	17%	6%
55th Ave				
80429	0%	32%	4%	0%
80430	0%	14%	4%	0%
80431	0%	55%	0%	3%
80432	0%	19%	0%	4%
56th Ave				
39959	4%	0%	1%	10%
56th Pl				
80407	0%	13%	2%	3%
80418	0%	14%	2%	3%
80425	0%	11%	4%	0%
80427	0%	16%	0%	4%
75th Ave				
12052	12%	0%	1%	22%
34932	13%	0%	10%	2%
79988	10%	0%	4%	16%
79990	0%	18%	6%	7%
94th Ave				
64133	0%	14%	2%	2%
96th Ave				
80558	0%	19%	1%	1%
80560	0%	15%	1%	1%
Addison Rd				
55242	3%	0%	15%	3%
79930	5%	0%	2%	16%
79941	0%	16%	3%	5%
79943	0%	17%	3%	5%
Addison Rd S				
32810	0%	17%	1%	0%
49007	0%	29%	4%	0%
64993	7%	0%	1%	12%
Adelphi Rd				
2913	3%	0%	6%	15%
4870	2%	0%	3%	12%
50122	2%	0%	13%	4%
51496	3%	0%	13%	17%
62036	5%	0%	13%	12%
64398	4%	0%	10%	6%
Ager Rd				
8858	5%	0%	12%	6%
14998	5%	0%	2%	12%
72870	5%	0%	2%	11%
72872	5%	0%	11%	5%
72873	0%	6%	10%	5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Alcona St				
24801	0%	12%	2%	2%
79594	0%	200%	0%	0%
79596	0%	94%	0%	0%
Aldershot Dr				
16714	13%	0%	0%	30%
55065	1%	0%	25%	0%
Allentown Rd				
4873	0%	18%	0%	2%
5824	4%	0%	14%	6%
12586	3%	0%	6%	34%
12587	5%	0%	9%	11%
25504	3%	0%	11%	13%
41879	3%	0%	21%	13%
61211	0%	16%	-7%	-1%
Ammendale Rd				
11126	0%	18%	-6%	-3%
11127	0%	16%	-1%	-6%
11129	0%	19%	-6%	-3%
11130	0%	16%	-7%	-3%
11131	0%	17%	-1%	-6%
62971	0%	17%	-1%	-8%
Arbor St				
79994	0%	10%	1%	1%
79995	0%	20%	4%	5%
79996	0%	25%	4%	4%
Arcola Ave				
46640	2%	0%	0%	10%
Ardwick Ardmore Rd				
33882	6%	0%	-5%	6%
54380	6%	0%	-5%	6%
Arena Dr				
22563	0%	18%	-3%	-2%
26644	6%	0%	-7%	-2%
47212	6%	0%	-8%	-3%
47213	2%	0%	1%	-19%
47214	2%	0%	1%	-13%
Aris T Allen Blvd				
13573	0%	0%	0%	11%
Auth Rd				
5823	0%	15%	-2%	-5%
44626	0%	15%	-2%	-5%
44632	0%	15%	-3%	-12%
71280	0%	15%	-3%	-12%
Avery Rd				
40430	6%	0%	6%	0%
Aviation Blvd				
48882	0%	16%	0%	0%
Ballenger Creek Pike				
27536	1%	0%	0%	12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Baltimore Rd				
36592	0%	18%	4%	5%
36593	5%	0%	13%	13%
44664	3%	0%	9%	13%
63835	4%	0%	15%	5%
Baltimore St				
53658	2%	0%	-1%	11%
Baltimore Washington Pkwy				
40912	0%	200%	0%	0%
Barker Pl				
79595	0%	190%	0%	0%
79597	0%	99%	-2%	0%
Bauer Dr				
6261	3%	0%	8%	11%
25621	2%	0%	4%	10%
74685	3%	0%	16%	3%
Beach Dr				
5882	8%	0%	15%	7%
18878	8%	0%	10%	20%
22624	3%	0%	5%	13%
Beaver Dam Rd				
16009	11%	0%	7%	5%
24504	13%	0%	7%	8%
Bel Pre Rd				
73081	3%	0%	17%	1%
73083	4%	0%	1%	14%
Belair Dr				
52858	0%	0%	1%	-12%
Belcrest Rd				
14346	0%	11%	1%	1%
80267	3%	0%	10%	1%
80268	5%	0%	2%	12%
Belle Grove Rd				
37333	9%	0%	0%	0%
52216	0%	12%	0%	0%
Bells Mill Rd				
32247	0%	12%	4%	-1%
Beltsville Dr				
59020	1%	0%	16%	-1%
Beltsville Rd				
65743	0%	4%	11%	0%
Bethesda Ave				
79302	3%	0%	5%	10%
79304	4%	0%	7%	11%
Bradley Blvd				
339	4%	0%	0%	-10%
624	9%	0%	8%	7%
1767	0%	12%	1%	-1%
2147	6%	0%	-1%	13%
6505	7%	0%	-3%	-4%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
9869	7%	0%	-8%	-8%
12374	2%	0%	0%	10%
12622	1%	0%	-1%	11%
12623	1%	0%	16%	0%
19054	14%	0%	6%	26%
22187	1%	0%	-2%	17%
32181	2%	0%	-14%	6%
36810	0%	13%	0%	7%
37196	0%	0%	20%	-3%
43183	1%	0%	13%	26%
49712	6%	0%	21%	41%
53152	2%	0%	19%	23%
53163	5%	0%	28%	13%
66219	6%	0%	-1%	13%
79254	0%	11%	0%	8%
79255	12%	0%	0%	14%
Brae Brooke Dr				
16307	0%	16%	10%	9%
Brandywine Rd				
68976	2%	0%	0%	-11%
Briggs Chaney Rd				
1639	5%	0%	10%	5%
1931	7%	0%	3%	11%
10318	0%	12%	1%	2%
22489	0%	10%	1%	1%
22490	0%	18%	3%	2%
28313	5%	0%	5%	3%
37537	10%	0%	13%	6%
49371	0%	11%	2%	2%
51634	0%	14%	0%	0%
56332	0%	21%	7%	2%
74068	6%	0%	4%	27%
75875	0%	16%	3%	2%
Brightseat Rd				
10557	0%	34%	0%	1%
10558	0%	26%	1%	2%
14700	8%	0%	28%	6%
21548	0%	34%	2%	2%
22780	0%	26%	1%	2%
22781	0%	41%	6%	3%
22790	0%	15%	1%	7%
22792	0%	24%	4%	6%
24279	0%	31%	1%	1%
25648	9%	0%	4%	30%
28213	0%	54%	4%	2%
34593	0%	43%	4%	0%
59051	0%	41%	4%	2%
68771	0%	55%	5%	3%
77232	0%	18%	1%	6%
77234	0%	29%	3%	5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Brinkley Rd				
30141	0%	10%	2%	0%
Broad Run Rd				
17147	0%	34%	0%	0%
23545	0%	11%	0%	0%
71297	0%	12%	0%	0%
Brooke Rd				
19015	0%	10%	0%	3%
25805	0%	12%	3%	0%
33489	0%	10%	3%	1%
79893	0%	14%	4%	2%
Brooks Dr				
48260	0%	13%	0%	1%
Brookville Rd				
62055	0%	10%	1%	2%
Brown Rd				
48996	0%	27%	1%	4%
Brown Station Rd				
20742	0%	50%	8%	8%
20743	0%	55%	7%	8%
20744	0%	23%	3%	5%
20745	0%	26%	3%	4%
20764	0%	11%	0%	1%
33571	0%	12%	0%	0%
65178	0%	21%	0%	1%
Broxburn Dr				
65138	7%	0%	4%	15%
Brunett Ave				
25776	6%	0%	-1%	3%
Burdette Rd				
6495	10%	0%	33%	3%
26063	33%	0%	6%	52%
51768	15%	0%	31%	4%
65132	37%	0%	5%	45%
Burkittsville Rd				
81549	2%	0%	-1%	-12%
Bushy Park Rd				
42031	0%	14%	3%	0%
Cabin Branch Dr				
66765	0%	11%	2%	4%
Cabin John Pkwy				
10260	0%	6%	1%	-19%
60085	0%	4%	12%	0%
71868	0%	7%	-14%	1%
Calverton Blvd				
42957	1%	0%	21%	0%
Campus Dr				
3648	2%	0%	11%	9%
3649	5%	0%	10%	11%
3996	2%	0%	6%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
3997	5%	0%	12%	6%
9761	2%	0%	19%	8%
10289	3%	0%	7%	12%
35070	3%	0%	12%	6%
35071	4%	0%	11%	10%
35072	4%	0%	13%	15%
49115	3%	0%	15%	12%
80262	5%	0%	16%	7%
80263	5%	0%	7%	8%
80264	3%	0%	2%	16%
Campus Way N				
4745	0%	13%	0%	-5%
14529	0%	11%	0%	-5%
77235	11%	0%	-2%	4%
77236	15%	0%	2%	13%
Campus Way S				
15330	0%	14%	0%	1%
23127	0%	33%	7%	2%
49020	0%	31%	1%	8%
65390	0%	23%	1%	1%
Capital Beltway				
2624	9%	0%	59%	78%
2625	2%	0%	29%	21%
6219	0%	236%	6%	0%
6524	7%	0%	46%	56%
6525	1%	0%	-10%	-15%
6528	1%	0%	-10%	-15%
6529	0%	1%	11%	-11%
6818	3%	0%	15%	6%
6820	2%	0%	43%	19%
6821	3%	0%	-2%	26%
6822	0%	4%	4%	14%
6823	2%	0%	18%	6%
6824	2%	0%	3%	30%
6827	2%	0%	11%	16%
6830	3%	0%	31%	24%
6831	0%	5%	-14%	-8%
6832	9%	0%	-11%	-20%
7119	3%	0%	31%	24%
7120	1%	0%	21%	22%
7123	2%	0%	23%	7%
7124	2%	0%	18%	21%
7773	9%	0%	55%	45%
8715	9%	0%	72%	86%
8718	0%	5%	33%	27%
8719	18%	0%	-61%	5%
10252	2%	0%	58%	43%
10254	0%	219%	0%	0%
10257	0%	685%	-2%	-2%
10513	2%	0%	25%	33%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
11031	0%	8%	-16%	-15%
11033	0%	1%	26%	-7%
11035	0%	8%	-13%	0%
11842	3%	0%	-1%	12%
11843	5%	0%	-1%	-8%
14058	6%	0%	2%	39%
16672	0%	600%	-11%	-11%
17226	2%	0%	28%	15%
19277	0%	0%	4%	12%
25418	2%	0%	23%	15%
25419	1%	0%	34%	21%
25426	0%	31%	-1%	0%
34319	7%	0%	36%	74%
35426	5%	0%	-27%	-16%
37141	2%	0%	36%	31%
37542	0%	3%	-29%	-14%
37544	4%	0%	4%	48%
41598	0%	20%	0%	0%
43010	8%	0%	22%	63%
43317	1%	0%	-22%	0%
43763	2%	0%	36%	31%
45001	0%	20%	2%	90%
46647	3%	0%	3%	12%
46648	0%	3%	-11%	-12%
52567	8%	0%	67%	76%
52945	0%	5%	30%	17%
53312	0%	9%	-7%	-14%
55255	3%	0%	45%	25%
55619	1%	0%	40%	28%
55626	0%	200%	0%	0%
58650	2%	0%	2%	-12%
59353	0%	50%	0%	1%
59354	8%	0%	22%	63%
59356	0%	415%	80%	1%
59366	5%	0%	6%	39%
59644	3%	0%	18%	54%
59654	16%	0%	-5%	-78%
68592	0%	200%	-8%	-14%
68593	0%	29600%	-11%	-11%
69021	9%	0%	55%	45%
70513	0%	0%	4%	12%
Carrington Ave				
27903	3%	0%	12%	2%
28202	4%	0%	3%	13%
Carroll Ave				
62933	7%	0%	0%	3%
80628	6%	0%	2%	10%
Catskill St				
71270	5%	0%	12%	0%
81363	0%	11%	9%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Cedar Ln				
1279	4%	0%	20%	3%
26478	4%	0%	1%	32%
33922	4%	0%	20%	3%
52561	4%	0%	1%	32%
Charles Armentrout Dr				
23705	3%	0%	1%	10%
Cherry Ln				
1326	0%	30%	-1%	0%
Cherry Tree Crossing Rd				
49515	0%	13%	-2%	0%
Chesapeake Rd				
80422	0%	12%	4%	3%
Chestnut Ave				
31623	0%	13%	2%	3%
31624	0%	12%	1%	3%
31625	0%	13%	2%	3%
61769	6%	0%	1%	4%
65437	6%	0%	2%	4%
Cheverly Ave				
14819	0%	15%	6%	5%
59776	0%	19%	4%	5%
Church Rd				
12130	0%	14%	1%	2%
15956	0%	27%	5%	1%
16238	0%	27%	5%	1%
16239	0%	21%	5%	1%
16638	0%	30%	4%	10%
17739	0%	39%	10%	7%
20756	0%	37%	2%	5%
21611	0%	16%	5%	1%
27106	0%	39%	4%	3%
33229	0%	37%	2%	5%
36048	6%	0%	2%	2%
36053	0%	14%	1%	6%
38533	0%	18%	9%	10%
44256	0%	14%	0%	2%
45305	0%	34%	10%	8%
53702	0%	35%	4%	10%
55147	0%	22%	9%	16%
55148	0%	23%	8%	16%
55149	0%	17%	8%	11%
58009	0%	22%	8%	17%
58010	0%	18%	8%	10%
59319	0%	18%	8%	10%
59320	0%	23%	8%	16%
64150	0%	30%	2%	6%
64417	0%	13%	2%	7%
65171	0%	27%	2%	6%
65860	0%	10%	1%	10%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
67960	0%	35%	2%	4%
Cindy Ln				
79811	0%	27%	5%	1%
79813	0%	18%	1%	2%
Claggett Landing Rd				
55218	2%	0%	9%	13%
73254	2%	0%	16%	4%
Clara Barton Pkwy				
2149	7%	0%	1%	1%
36917	0%	1%	0%	-43%
52785	8%	0%	1%	-16%
55616	0%	7%	3%	83%
59355	11%	0%	28%	46%
60086	0%	1%	-41%	0%
College Pkwy				
75596	0%	11%	0%	0%
Columbia Ave				
79290	9%	0%	5%	6%
79291	8%	0%	4%	5%
Columbia Park Rd				
10549	6%	0%	2%	14%
25355	7%	0%	21%	22%
31087	8%	0%	3%	21%
58070	6%	0%	2%	14%
58652	6%	0%	2%	14%
66760	6%	0%	6%	5%
66761	6%	0%	6%	5%
66762	6%	0%	6%	5%
Connecticut Ave				
1367	3%	0%	-2%	12%
8287	3%	0%	8%	-16%
13666	3%	0%	-5%	11%
13672	3%	0%	9%	-15%
24970	5%	0%	-2%	12%
36816	3%	0%	-2%	10%
44972	2%	0%	-2%	15%
57588	4%	0%	-2%	15%
69701	1%	0%	-8%	11%
73084	1%	0%	13%	0%
74411	6%	0%	8%	-4%
74412	6%	0%	11%	-4%
Contee Rd				
1043	0%	18%	-2%	0%
Cool Spring Rd				
5106	5%	0%	6%	1%
County Rd				
54074	4%	0%	18%	17%
67060	3%	0%	10%	18%
Crabbs Branch Way				
3816	1%	0%	11%	-1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Crain Hwy				
3483	2%	0%	10%	8%
6771	0%	14%	-2%	0%
11329	3%	0%	10%	9%
14381	2%	0%	11%	5%
14759	2%	0%	21%	6%
14760	3%	0%	18%	12%
17046	5%	0%	8%	13%
17746	2%	0%	11%	4%
19078	5%	0%	16%	7%
20364	3%	0%	17%	5%
21135	3%	0%	13%	4%
24920	2%	0%	11%	5%
25221	4%	0%	11%	18%
32950	2%	0%	7%	15%
33216	3%	0%	15%	28%
34255	2%	0%	10%	7%
35923	1%	0%	12%	6%
42483	4%	0%	15%	6%
42484	4%	0%	15%	6%
54461	3%	0%	17%	19%
59046	4%	0%	26%	13%
60691	4%	0%	7%	11%
61009	5%	0%	9%	8%
61013	4%	0%	15%	7%
61014	5%	0%	7%	8%
61015	5%	0%	8%	7%
61638	4%	0%	17%	7%
61640	4%	0%	8%	12%
61957	4%	0%	14%	7%
61958	3%	0%	14%	8%
62275	4%	0%	14%	7%
63879	3%	0%	7%	15%
71337	3%	0%	15%	27%
Crescent Rd				
22463	2%	0%	4%	17%
28807	4%	0%	21%	8%
Crest Ave				
80033	0%	87%	0%	1%
Crittenden St				
34130	3%	0%	4%	17%
64413	3%	0%	18%	9%
Croom Station Rd				
61963	0%	11%	0%	1%
62274	4%	0%	14%	7%
79604	6%	0%	4%	4%
79605	6%	0%	4%	4%
Dairy Farm Rd				
48243	1%	0%	-20%	6%
Dale Dr				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
637	11%	0%	5%	4%
30621	0%	12%	0%	3%
35303	11%	0%	5%	4%
54293	0%	15%	4%	3%
Darcy Rd				
32636	0%	19%	11%	5%
33833	0%	25%	0%	-5%
35898	0%	15%	4%	5%
45689	0%	12%	2%	8%
Dartmouth Ave				
5262	5%	0%	9%	4%
33740	9%	0%	9%	4%
Dateleaf Ave				
79881	0%	38%	-1%	0%
79882	0%	75%	-1%	0%
Decatur St				
3115	5%	0%	4%	11%
16222	4%	0%	11%	15%
16224	6%	0%	4%	11%
39962	4%	0%	11%	15%
80271	0%	35%	3%	12%
80272	0%	47%	13%	5%
Democracy Blvd				
5967	20%	0%	14%	-1%
5999	4%	0%	0%	19%
6000	4%	0%	0%	23%
6218	10%	0%	-2%	35%
6594	0%	13%	9%	-1%
18071	0%	70%	0%	1%
19271	0%	11%	-1%	15%
25424	23%	0%	-1%	17%
26665	9%	0%	2%	22%
28454	0%	23%	-1%	4%
51195	1%	0%	16%	1%
63217	2%	0%	51%	-9%
68994	5%	0%	15%	1%
71010	0%	6%	11%	-2%
72716	20%	0%	-21%	-11%
Denley Rd				
13660	4%	0%	4%	12%
13662	4%	0%	15%	10%
Devon Rd				
43210	0%	12%	0%	3%
53910	0%	15%	4%	3%
Diamond Back				
13823	0%	0%	7%	-15%
13825	0%	0%	-15%	4%
Dorset Ave				
52903	2%	0%	6%	14%
79322	0%	9%	3%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Dwight D Eisenhower Hwy				
25778	0%	0%	0%	-13%
37276	0%	1%	0%	-12%
47337	18%	0%	-61%	5%
66784	0%	44%	8%	81%
67073	0%	39%	8%	82%
67077	0%	39%	8%	82%
67083	0%	39%	8%	82%
69882	18%	0%	-61%	5%
Dyson Rd				
57442	0%	26%	0%	0%
E Gude Dr				
1237	6%	0%	0%	9%
32529	6%	0%	10%	0%
E Jefferson St				
9703	2%	0%	18%	4%
11363	5%	0%	9%	-14%
33917	0%	23%	2%	-8%
52568	2%	0%	-6%	11%
58753	1%	0%	11%	-1%
59943	1%	0%	5%	12%
E Patrick St				
75635	0%	115%	0%	0%
E Randolph Rd				
8397	2%	0%	17%	1%
10600	3%	0%	11%	17%
E West Hwy				
1699	2%	0%	8%	14%
1701	4%	0%	11%	1%
2644	12%	0%	5%	2%
2648	3%	0%	1%	17%
5595	2%	0%	17%	3%
5897	3%	0%	3%	11%
7868	2%	0%	11%	5%
8494	3%	0%	15%	29%
8500	2%	0%	0%	17%
13831	3%	0%	12%	4%
14345	0%	11%	1%	1%
14732	3%	0%	18%	14%
15588	4%	0%	11%	4%
15596	2%	0%	13%	11%
16025	4%	0%	11%	1%
16229	3%	0%	11%	10%
16510	3%	0%	12%	9%
16513	2%	0%	13%	11%
16514	2%	0%	3%	16%
16515	3%	0%	2%	18%
17450	3%	0%	2%	11%
19040	3%	0%	16%	8%
19273	2%	0%	3%	16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
21767	7%	0%	4%	17%
21879	3%	0%	9%	11%
25350	3%	0%	15%	6%
26357	3%	0%	13%	14%
30826	5%	0%	15%	4%
32171	3%	0%	4%	20%
35938	3%	0%	2%	12%
36414	8%	0%	14%	11%
37528	2%	0%	12%	-1%
40143	2%	0%	1%	12%
40922	2%	0%	10%	12%
46310	4%	0%	18%	6%
47491	2%	0%	15%	-1%
47492	3%	0%	2%	12%
53531	2%	0%	11%	15%
57826	2%	0%	18%	12%
59622	6%	0%	6%	16%
60809	2%	0%	0%	15%
60810	3%	0%	14%	10%
63820	2%	0%	6%	11%
64096	2%	0%	1%	12%
71878	2%	0%	5%	16%
72314	2%	0%	8%	12%
Earnshaw Dr				
57764	0%	15%	0%	1%
57765	0%	28%	0%	1%
Ednor Rd				
22918	3%	0%	2%	-11%
Elm Ave				
39640	5%	0%	5%	2%
47777	6%	0%	2%	7%
79287	5%	0%	3%	7%
79289	6%	0%	5%	5%
Elm St				
79306	5%	0%	1%	5%
Elmer Derr Rd				
45642	2%	0%	0%	11%
Emory Ln				
24829	0%	15%	0%	2%
Enterprise Rd				
16544	0%	10%	0%	4%
19227	11%	0%	17%	12%
29411	7%	0%	9%	13%
36042	5%	0%	6%	18%
36043	11%	0%	21%	23%
56261	6%	0%	15%	1%
62084	5%	0%	3%	14%
71017	13%	0%	15%	18%
74057	12%	0%	4%	35%
Fairfax Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
79316	3%	0%	5%	16%
79317	6%	0%	15%	10%
Fairland Rd				
1930	6%	0%	4%	4%
50730	3%	0%	15%	1%
56279	7%	0%	4%	9%
Falls Rd				
5991	0%	0%	0%	25%
32244	3%	0%	24%	13%
Fenno Rd				
62406	0%	13%	0%	0%
Fenton St				
1537	6%	0%	8%	0%
2150	8%	0%	8%	8%
Fernwood Rd				
6474	0%	11%	5%	2%
26094	11%	0%	4%	-28%
62004	8%	0%	-17%	10%
64820	11%	0%	4%	-28%
64821	8%	0%	8%	-58%
65124	8%	0%	-17%	10%
65125	4%	0%	-24%	9%
Fields Rd				
34271	5%	0%	0%	8%
45789	6%	0%	10%	1%
72379	4%	0%	10%	1%
Fingerboard Rd				
44793	0%	14%	0%	-1%
Fish Hatchery Rd				
25264	0%	11%	0%	0%
Fisher Ave				
19855	0%	10%	0%	0%
Fishers Ln				
40826	5%	0%	1%	11%
69940	4%	0%	14%	2%
Fletchertown Rd				
80583	0%	13%	0%	-3%
Foote St				
81616	0%	13%	0%	3%
Forest Glen Rd				
9228	14%	0%	9%	8%
56380	0%	21%	2%	2%
Forest Rd				
19286	0%	23%	4%	5%
60055	0%	12%	1%	1%
80002	0%	41%	0%	1%
80005	0%	38%	0%	1%
80034	0%	87%	0%	1%
Forestville Rd				
17217	0%	13%	-1%	-8%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
37749	4%	0%	1%	24%
65000	6%	0%	21%	12%
65833	7%	0%	35%	8%
69065	3%	0%	1%	15%
75577	3%	0%	12%	4%
75578	2%	0%	10%	-54%
75582	0%	13%	9%	2%
75583	0%	9%	0%	-19%
75584	0%	14%	16%	4%
75585	0%	12%	13%	4%
Fort Washington Rd				
24340	0%	13%	0%	0%
Franklin Ave				
19443	0%	0%	-5%	11%
Frederick Rd				
15553	7%	0%	0%	-2%
64194	0%	0%	0%	-10%
71698	1%	0%	11%	0%
71699	2%	0%	0%	11%
Frolich Ln				
55295	0%	18%	2%	3%
Gainsborough Rd				
6596	0%	14%	7%	0%
6598	0%	12%	2%	7%
8009	0%	12%	4%	-1%
Gallatin St				
80357	0%	16%	3%	1%
80358	0%	17%	1%	4%
Gambrill Park Rd				
44734	0%	12%	0%	0%
Garden Gate Rd				
22270	2%	0%	12%	1%
Garrett A Morgan Blvd				
24277	0%	18%	1%	2%
28204	0%	13%	4%	3%
28205	0%	23%	1%	2%
28211	0%	14%	4%	3%
28212	0%	21%	1%	3%
37554	0%	20%	1%	3%
68770	0%	14%	4%	3%
72449	0%	15%	4%	2%
Georgia Ave				
11026	3%	0%	12%	11%
22261	2%	0%	10%	1%
32047	0%	0%	15%	5%
45639	3%	0%	1%	11%
72348	5%	0%	23%	4%
Gladys Noon Spellman Pkwy				
8630	3%	0%	14%	31%
11444	0%	93%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
12086	0%	5%	-5%	-12%
12090	2%	0%	12%	1%
13882	3%	0%	-16%	-6%
14135	2%	0%	12%	17%
16988	0%	13%	-1%	-4%
18384	3%	0%	18%	25%
33282	4%	0%	8%	17%
43798	0%	13%	0%	0%
44068	4%	0%	14%	26%
48270	3%	0%	12%	19%
48533	4%	0%	2%	10%
48534	4%	0%	8%	15%
48609	0%	200%	0%	0%
53705	3%	0%	12%	19%
54843	2%	0%	-13%	-10%
54848	0%	61%	0%	-2%
55216	4%	0%	13%	19%
58701	3%	0%	12%	13%
58941	2%	0%	12%	19%
58944	3%	0%	13%	14%
58945	4%	0%	13%	19%
68234	0%	13%	7%	14%
Glen Mill Rd				
4161	1%	0%	-2%	16%
19843	2%	0%	12%	-1%
22405	1%	0%	18%	-1%
36812	2%	0%	-2%	15%
46463	1%	0%	14%	4%
47231	7%	0%	0%	18%
55063	3%	0%	11%	0%
Glen Rd				
1175	1%	0%	14%	-1%
25327	7%	0%	0%	15%
26363	0%	14%	2%	0%
40423	0%	0%	14%	-1%
49713	7%	0%	0%	14%
55057	7%	0%	13%	0%
56920	6%	0%	0%	15%
75280	1%	0%	14%	-1%
75281	6%	0%	0%	15%
Glenarden Pkwy				
13489	20%	0%	14%	30%
14694	0%	14%	4%	19%
Glenbrook Rd				
79325	0%	8%	12%	2%
Glenmont Cir				
57883	0%	0%	-1%	18%
57886	1%	0%	14%	-7%
Glenn Dale Blvd				
15279	0%	13%	2%	4%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
22691	4%	0%	14%	7%
30839	7%	0%	3%	8%
48891	4%	0%	3%	19%
Good Luck Rd				
14137	3%	0%	12%	19%
14371	4%	0%	13%	19%
21669	0%	26%	7%	7%
25408	1%	0%	1%	-10%
Green Valley Rd				
72882	0%	10%	0%	0%
Greenbelt Rd				
12058	0%	23%	1%	0%
16934	0%	6%	-70%	-53%
30148	5%	0%	18%	2%
30189	5%	0%	11%	2%
30325	4%	0%	1%	17%
32782	1%	0%	10%	1%
55223	0%	33%	-1%	-1%
80545	0%	18%	3%	6%
80547	0%	14%	4%	2%
Greencastle Rd				
1540	0%	11%	-1%	0%
10589	0%	10%	0%	-11%
25130	0%	10%	0%	-11%
72436	0%	28%	0%	-4%
Greentree Rd				
5873	15%	0%	20%	3%
9868	0%	29%	14%	15%
34982	3%	0%	3%	33%
53653	14%	0%	8%	23%
66216	0%	28%	16%	19%
72625	5%	0%	16%	2%
Grubb Rd				
47149	5%	0%	2%	11%
H G Trueman Rd				
43230	0%	16%	0%	0%
50132	0%	16%	0%	0%
54089	0%	23%	0%	1%
69924	0%	23%	0%	1%
Hanover Pkwy				
19304	0%	16%	4%	1%
30531	0%	23%	1%	4%
30532	0%	16%	4%	1%
39976	0%	23%	1%	4%
52274	0%	14%	8%	7%
Harbour Way				
75519	3%	0%	6%	29%
75520	3%	0%	26%	5%
Harry S Truman Dr				
21133	0%	23%	4%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
21527	0%	24%	4%	1%
21528	0%	20%	1%	6%
23690	0%	22%	1%	5%
23971	0%	24%	1%	5%
71888	0%	20%	5%	2%
Harry S Truman Dr N				
33912	11%	0%	24%	16%
71898	8%	0%	1%	42%
Hastings Dr				
24268	0%	26%	4%	0%
26629	0%	26%	4%	0%
26630	0%	11%	0%	1%
26631	0%	11%	0%	1%
79852	0%	12%	3%	0%
Hatherleigh Dr				
27621	6%	0%	-2%	10%
Heathermore Blvd				
51378	0%	23%	0%	0%
79695	0%	23%	0%	0%
Hessong Bridge Rd				
48698	0%	11%	0%	0%
Hillcroft Dr				
185	6%	0%	0%	0%
Hillmeade Rd				
25711	0%	11%	1%	1%
Holly Springs Dr W				
1273	0%	18%	0%	3%
36484	0%	16%	3%	0%
58367	0%	21%	1%	1%
67056	0%	21%	1%	1%
I- 195				
54987	0%	0%	0%	11%
I- 270				
2990	0%	0%	-12%	-9%
5926	5%	0%	19%	-8%
5927	6%	0%	29%	-40%
9033	1%	0%	-13%	5%
9040	0%	0%	-11%	0%
9977	0%	0%	-10%	0%
11284	0%	16%	0%	0%
11285	1%	0%	-34%	-7%
19193	0%	64%	33%	8%
19585	0%	0%	-11%	1%
19669	0%	1%	50%	0%
22834	5%	0%	10%	-5%
25127	4%	0%	-1%	14%
26790	0%	200%	0%	1%
27942	5%	0%	-99%	12%
28056	0%	40%	142%	8%
28057	0%	61%	8%	50%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
28061	0%	50%	106%	17%
28368	0%	2%	0%	-12%
29074	0%	43%	90%	8%
29076	0%	50%	17%	100%
37540	5%	0%	33%	-14%
38287	0%	61%	17%	90%
43474	6%	0%	9%	-2%
43769	1%	0%	-42%	20%
43771	0%	22%	8%	3%
46645	0%	18%	10%	1%
53317	0%	0%	-13%	0%
55623	1%	0%	-42%	20%
58033	0%	66%	15%	8%
58037	0%	51%	53%	17%
58038	0%	20%	0%	0%
63899	6%	0%	34%	-5%
65625	0%	66%	64%	17%
65629	2%	0%	15%	-14%
65630	1%	0%	-13%	5%
66099	0%	2%	0%	-11%
66587	0%	240%	17%	17%
66773	0%	40%	8%	8%
67374	0%	42%	8%	102%
67375	0%	58%	63%	8%
67668	0%	61%	17%	90%
67671	0%	66%	64%	17%
67677	0%	65%	17%	64%
67679	0%	56%	117%	17%
67967	0%	50%	106%	17%
67968	0%	45%	17%	124%
67970	0%	50%	106%	17%
67972	0%	59%	17%	45%
67977	0%	59%	17%	45%
67978	0%	54%	82%	17%
67979	0%	59%	17%	45%
67981	0%	54%	82%	17%
68265	0%	48%	17%	107%
68266	0%	54%	82%	17%
68272	0%	64%	17%	25%
68274	0%	43%	139%	17%
68277	0%	52%	17%	32%
68559	0%	47%	17%	34%
68560	0%	275%	0%	-2%
68562	0%	28%	58%	17%
68566	0%	2%	0%	-17%
68573	0%	2%	0%	-17%
68721	0%	57%	17%	111%
68725	0%	60%	46%	17%
68729	0%	0%	-11%	1%
68731	0%	1%	0%	-12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
68857	0%	2%	0%	-17%
70365	5%	0%	19%	-12%
70367	3%	0%	-4%	14%
70368	4%	0%	-4%	33%
70369	5%	0%	24%	-12%
70608	1%	0%	0%	-17%
70751	5%	0%	25%	-5%
I- 370				
9353	0%	2%	23%	1%
9355	0%	94%	0%	-1%
32611	0%	15%	0%	0%
41595	0%	59%	2%	5%
52380	11%	0%	-13%	4%
59195	0%	11%	3%	1%
I- 495				
1190	6%	0%	11%	19%
11587	4%	0%	18%	53%
11592	3%	0%	30%	32%
12346	0%	0%	-14%	-3%
12347	0%	0%	-14%	-3%
14126	3%	0%	1%	31%
14676	4%	0%	13%	29%
14677	0%	200%	0%	0%
14681	3%	0%	24%	37%
16745	0%	21%	1%	4%
16926	0%	7%	8%	12%
16990	3%	0%	13%	36%
16991	3%	0%	13%	35%
17216	0%	4%	-60%	-51%
17685	6%	0%	25%	44%
17687	4%	0%	48%	0%
17688	6%	0%	18%	1%
19074	4%	0%	25%	48%
20076	5%	0%	33%	33%
20450	2%	0%	1%	35%
20850	7%	0%	92%	78%
27933	0%	12%	8%	35%
28574	0%	0%	12%	-8%
29807	5%	0%	58%	3%
38259	0%	7%	8%	12%
40692	0%	15%	-1%	-3%
43508	0%	7%	8%	12%
43514	4%	0%	42%	36%
44067	0%	3%	1%	-24%
47339	0%	4%	11%	12%
55221	4%	0%	45%	43%
56253	4%	0%	70%	51%
56564	0%	17%	-1%	0%
I- 595				
12094	5%	0%	-34%	-19%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
16562	0%	11%	0%	0%
59578	4%	0%	-29%	-78%
73588	0%	3%	-10%	-6%
73592	0%	3%	-10%	-6%
73596	0%	3%	-10%	-6%
I- 95				
3357	2%	0%	22%	24%
3358	0%	6%	12%	17%
3375	4%	0%	26%	11%
3376	0%	411%	-1%	-1%
12344	2%	0%	37%	40%
12349	3%	0%	-26%	-13%
12603	5%	0%	48%	66%
13349	4%	0%	-32%	-59%
13351	3%	0%	38%	35%
13352	3%	0%	-16%	-13%
14124	3%	0%	35%	56%
14125	4%	0%	38%	25%
14679	4%	0%	39%	55%
14682	0%	218%	-3%	-29%
14974	0%	44%	0%	0%
14976	0%	11%	1%	2%
16744	0%	4%	-46%	-32%
17213	4%	0%	23%	53%
17219	0%	8%	13%	18%
17686	0%	6%	1%	29%
19330	0%	24%	0%	0%
20071	0%	32%	-1%	-17%
20077	0%	8%	13%	18%
21772	5%	0%	-56%	-31%
21773	0%	37%	4%	9%
28577	0%	8%	13%	18%
28809	0%	11%	7%	6%
30064	0%	16%	5%	1%
30065	0%	1604%	35%	3%
30867	0%	15%	0%	-1%
40691	4%	0%	24%	45%
43515	5%	0%	10%	31%
44948	0%	88%	1%	0%
48261	4%	0%	11%	6%
48347	0%	0%	20%	1%
48348	0%	1800%	0%	0%
49018	0%	44%	4%	3%
51638	0%	94%	0%	0%
54078	3%	0%	8%	13%
54493	2%	0%	24%	56%
56263	8%	0%	36%	45%
58947	4%	0%	29%	28%
58950	0%	16%	0%	0%
67392	2%	0%	-12%	-24%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
70129	2%	0%	-4%	-31%
I- 97				
74654	2%	0%	-3%	-12%
Independence St				
34656	5%	0%	-2%	12%
56679	6%	0%	4%	-4%
Iverson St				
38484	0%	13%	0%	1%
Jadeleaf Ave				
79856	0%	11%	1%	1%
79858	0%	19%	2%	1%
79877	0%	38%	-1%	0%
Jefferson Pike				
3165	0%	40%	0%	0%
42929	0%	12%	0%	0%
45075	0%	25%	0%	0%
74634	0%	40%	0%	0%
Jefferson St				
80301	0%	15%	4%	5%
80303	0%	15%	4%	3%
John Hanson Hwy				
13343	1%	0%	14%	18%
13344	2%	0%	25%	6%
13348	2%	0%	20%	2%
16984	1%	0%	14%	18%
48619	8%	0%	11%	43%
58942	0%	15%	1%	0%
Jones Bridge Rd				
7424	2%	0%	13%	4%
19055	4%	0%	2%	19%
32185	3%	0%	13%	15%
35615	4%	0%	9%	15%
43176	7%	0%	21%	5%
Jones Ln				
79464	0%	25%	0%	1%
79465	0%	13%	0%	2%
Jones Mill Rd				
30007	3%	0%	0%	11%
47159	2%	0%	6%	12%
71591	3%	0%	1%	14%
Kenilworth Ave				
15030	2%	0%	18%	13%
15623	6%	0%	16%	24%
15635	6%	0%	7%	8%
15702	3%	0%	12%	27%
15891	6%	0%	14%	1%
18174	4%	0%	1%	16%
25727	6%	0%	6%	26%
40694	4%	0%	18%	27%
56371	5%	0%	27%	25%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
63572	5%	0%	13%	22%
Kentsdale Dr				
25122	7%	0%	0%	24%
32519	2%	0%	17%	0%
Kettering Dr				
15332	0%	30%	9%	16%
15333	24%	0%	12%	23%
15334	0%	12%	10%	4%
24931	4%	0%	2%	18%
64714	10%	0%	13%	6%
Kipling Pkwy				
34157	0%	14%	2%	13%
72730	19%	0%	17%	15%
Knowles Ave				
7421	4%	0%	0%	14%
8714	4%	0%	15%	10%
52949	0%	0%	1%	11%
69216	7%	0%	21%	22%
69217	5%	0%	13%	22%
69218	2%	0%	7%	26%
69219	0%	0%	10%	11%
72972	2%	0%	8%	13%
Konterra Dr				
51884	6%	0%	-1%	-3%
67062	7%	0%	-4%	-1%
71510	0%	44%	0%	0%
L St				
79942	0%	12%	3%	4%
79944	0%	12%	2%	5%
Lancelot Rd				
1529	0%	22%	0%	0%
Lancer Dr				
80390	0%	10%	1%	6%
Landover Rd				
3018	1%	0%	0%	13%
9465	2%	0%	11%	1%
10556	3%	0%	-1%	-13%
11451	1%	0%	11%	0%
11590	4%	0%	1%	16%
11871	0%	0%	-14%	2%
14118	0%	5%	-47%	-21%
21807	3%	0%	12%	0%
22788	8%	0%	4%	16%
32643	3%	0%	18%	3%
48617	1%	0%	0%	12%
50974	0%	11%	0%	7%
54495	1%	0%	0%	12%
63261	3%	0%	9%	11%
64680	2%	0%	14%	1%
79989	0%	11%	5%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Larchmont Ave				
29634	0%	26%	2%	0%
29635	6%	0%	11%	6%
47719	0%	7%	3%	11%
49174	0%	46%	0%	1%
79901	7%	0%	7%	9%
79903	9%	0%	6%	11%
Largo Center Dr				
22564	0%	14%	-2%	-1%
Largo Rd				
2424	0%	11%	8%	5%
15042	5%	0%	10%	12%
15045	6%	0%	11%	9%
15328	6%	0%	9%	9%
15331	0%	26%	10%	16%
21532	13%	0%	7%	4%
21613	4%	0%	9%	29%
24933	10%	0%	2%	35%
33558	7%	0%	17%	4%
33566	7%	0%	10%	7%
34929	0%	15%	5%	4%
49004	3%	0%	3%	11%
64432	7%	0%	5%	7%
64441	0%	15%	5%	4%
Laurel Bowie Rd				
1186	2%	0%	14%	11%
16759	3%	0%	4%	10%
35899	2%	0%	5%	11%
Layhill Rd				
1090	0%	0%	-1%	14%
10337	6%	0%	1%	19%
10591	1%	0%	13%	-2%
11104	1%	0%	12%	-2%
15670	2%	0%	15%	0%
15673	1%	0%	-1%	12%
22263	0%	0%	12%	1%
32604	2%	0%	-2%	22%
33924	0%	0%	10%	0%
44263	3%	0%	18%	2%
44542	2%	0%	13%	-8%
51629	0%	14%	0%	3%
53315	0%	0%	-1%	13%
55259	0%	0%	-1%	14%
Laytonsville Rd				
79507	0%	0%	0%	11%
79516	0%	0%	0%	11%
Leeland Rd				
14761	0%	14%	1%	1%
33217	0%	23%	1%	2%
48446	0%	18%	1%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
63877	0%	10%	1%	1%
Leland St				
79276	0%	19%	0%	1%
79277	0%	11%	1%	0%
Lime Plant Rd				
44640	0%	13%	0%	0%
Linden Ln				
42679	0%	10%	1%	2%
Little Falls Pkwy				
32180	6%	0%	5%	6%
52786	0%	11%	5%	5%
79323	0%	15%	1%	4%
Longfellow St				
80306	0%	12%	2%	2%
80343	0%	14%	1%	5%
80344	0%	14%	1%	5%
80345	0%	16%	6%	3%
80346	0%	15%	6%	2%
80364	0%	14%	1%	5%
80366	0%	16%	6%	3%
Lorain Ave				
16314	0%	21%	2%	2%
Lottsford Rd				
22353	8%	0%	12%	14%
22572	0%	18%	10%	8%
25654	0%	13%	4%	10%
40406	7%	0%	9%	13%
49051	13%	0%	15%	18%
58881	3%	0%	12%	5%
63266	8%	0%	9%	20%
71895	0%	13%	6%	9%
71896	13%	0%	2%	16%
Lottsford Vista Rd				
25103	0%	21%	6%	14%
52270	0%	19%	10%	11%
61445	0%	19%	18%	10%
63861	0%	31%	12%	18%
Loughran Rd				
2118	0%	22%	0%	0%
Lusbys Ln				
80173	0%	16%	0%	1%
80174	0%	15%	0%	1%
Macarthur Blvd				
1477	4%	0%	13%	1%
6271	2%	0%	-13%	1%
16422	5%	0%	0%	27%
26361	4%	0%	11%	9%
30010	9%	0%	1%	-5%
31225	2%	0%	12%	0%
32178	4%	0%	-13%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
34972	3%	0%	9%	-17%
34973	6%	0%	0%	16%
37132	1%	0%	0%	12%
40087	3%	0%	15%	0%
55050	4%	0%	25%	2%
65137	7%	0%	6%	16%
65346	1%	0%	-25%	-3%
65348	2%	0%	4%	-19%
71007	5%	0%	0%	17%
71008	8%	0%	1%	-14%
Madaket Rd				
40475	9%	0%	1%	-8%
Maple Ave				
79265	5%	0%	6%	1%
Marianna Dr				
79388	0%	11%	0%	3%
Marlboro Pike				
25806	0%	26%	3%	0%
26951	7%	0%	7%	9%
31043	0%	23%	0%	2%
64726	9%	0%	6%	11%
Marriottsville Rd				
48324	1%	0%	7%	-14%
Martin Luther King Jr Hwy				
4393	3%	0%	10%	23%
14140	3%	0%	-23%	-36%
14517	5%	0%	17%	22%
15194	4%	0%	10%	16%
15968	5%	0%	2%	11%
23071	3%	0%	17%	13%
23230	6%	0%	8%	29%
23231	5%	0%	22%	7%
25098	7%	0%	-2%	-22%
25641	4%	0%	13%	21%
25779	4%	0%	-1%	-16%
27902	3%	0%	12%	2%
30836	0%	8%	-3%	-20%
38179	3%	0%	10%	17%
48888	6%	0%	3%	12%
49277	6%	0%	8%	27%
49841	4%	0%	5%	19%
53699	4%	0%	-1%	-16%
54372	0%	12%	3%	4%
54919	4%	0%	3%	15%
59032	6%	0%	13%	23%
63782	4%	0%	11%	31%
63783	4%	0%	10%	12%
66764	10%	0%	11%	15%
68768	4%	0%	3%	14%
70831	7%	0%	38%	27%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
72168	5%	0%	20%	6%
75390	5%	0%	6%	13%
Maryland Ave				
90	6%	0%	5%	17%
54037	8%	0%	22%	1%
Massachusetts Ave				
34976	8%	0%	2%	1%
57821	7%	0%	0%	-5%
64542	7%	0%	0%	-6%
Mattaponi Rd				
42107	0%	12%	0%	0%
Meadowridge Ln				
4742	0%	23%	5%	6%
58595	0%	39%	6%	9%
Melwood Rd				
25870	0%	14%	3%	1%
Merrimac Dr				
18831	0%	22%	0%	1%
33808	0%	20%	1%	0%
71471	3%	0%	2%	12%
71472	4%	0%	12%	2%
Missouri Ave				
60696	0%	14%	0%	1%
Mitchellville Rd				
15347	0%	18%	2%	8%
18888	9%	0%	2%	4%
20365	0%	11%	2%	2%
33221	0%	14%	3%	10%
55135	0%	11%	2%	4%
55136	11%	0%	5%	6%
59317	0%	14%	5%	6%
Montgomery Rd				
80218	7%	0%	-2%	-2%
Montrose Rd				
2989	0%	23%	1%	11%
10469	1%	0%	17%	-2%
21959	6%	0%	6%	16%
55257	7%	0%	2%	11%
63486	1%	0%	19%	-12%
Monument St				
9702	5%	0%	11%	4%
Moorland Ln				
65354	2%	0%	22%	8%
65356	3%	0%	10%	25%
Morgan Dr				
47821	1%	0%	6%	16%
Mount Oak Rd				
2420	6%	0%	-1%	3%
2421	7%	0%	3%	0%
20366	7%	0%	3%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
21607	7%	0%	-1%	2%
48714	8%	0%	3%	1%
64147	7%	0%	-1%	3%
Muddy Branch Rd				
69033	1%	0%	0%	16%
Muirkirk Rd				
6412	5%	0%	-5%	-1%
10820	7%	0%	-1%	-13%
44548	8%	0%	-3%	-9%
45692	5%	0%	0%	-7%
60497	2%	0%	0%	-11%
64334	9%	0%	1%	-6%
N Englewood Dr				
79973	0%	63%	0%	1%
79974	0%	25%	0%	1%
79975	0%	49%	1%	0%
79976	0%	27%	1%	0%
N Farm Ln				
683	7%	0%	2%	11%
N Stonestreet Ave				
1299	4%	0%	1%	11%
1300	6%	0%	11%	3%
N Washington St				
1591	2%	0%	0%	12%
1593	1%	0%	17%	-3%
79408	1%	0%	0%	12%
79410	2%	0%	24%	-3%
Nalley Rd				
27896	0%	13%	5%	0%
Nebel St				
58749	6%	0%	10%	1%
Needleleaf Ln				
14813	19%	0%	17%	7%
53625	0%	51%	3%	7%
54387	0%	33%	2%	4%
58880	29%	0%	3%	29%
Nelson St				
79402	0%	18%	-1%	1%
79404	0%	10%	7%	0%
79405	0%	11%	0%	0%
79418	0%	18%	-1%	3%
79424	0%	20%	-1%	1%
79425	0%	18%	-1%	3%
New Hampshire Ave				
3377	3%	0%	7%	20%
14392	3%	0%	15%	26%
14394	3%	0%	21%	18%
17448	3%	0%	21%	15%
30623	2%	0%	1%	12%
33319	2%	0%	11%	3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
33537	2%	0%	11%	3%
52521	0%	0%	10%	-4%
52748	2%	0%	1%	12%
59907	2%	0%	3%	10%
71469	2%	0%	10%	3%
Nicholson Ln				
5626	6%	0%	0%	8%
Nicholson St				
80322	5%	0%	1%	17%
80324	4%	0%	12%	4%
80325	0%	18%	8%	3%
80326	0%	17%	1%	8%
80375	0%	22%	0%	4%
80376	0%	29%	0%	4%
80377	0%	13%	3%	1%
80378	0%	17%	3%	1%
Norbeck Rd				
22636	3%	0%	7%	13%
Norfolk Ave				
66010	1%	0%	0%	11%
Northern Ave				
80546	0%	42%	3%	4%
80548	0%	38%	2%	2%
Northview Dr				
53612	0%	18%	3%	2%
53613	0%	11%	2%	2%
53614	0%	13%	2%	1%
67879	0%	22%	3%	2%
79568	0%	38%	0%	0%
Northwest Dr				
8400	1%	0%	-2%	10%
50386	1%	0%	13%	-2%
Nottingham Rd				
40680	0%	51%	0%	0%
Odell Rd				
15421	3%	0%	0%	-11%
64382	6%	0%	3%	6%
Oglethorpe St				
80308	11%	0%	1%	11%
80310	13%	0%	14%	4%
Old Alexandria Ferry Rd				
68084	3%	0%	9%	17%
68085	3%	0%	10%	13%
Old Baltimore Pike				
22460	0%	10%	1%	0%
Old Baltimore Rd				
173	9%	0%	-3%	5%
65978	7%	0%	-4%	8%
65979	5%	0%	7%	-4%
72940	6%	0%	8%	-5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Old Branch Ave				
2691	2%	0%	12%	-5%
35175	2%	0%	-12%	5%
Old Central Ave				
50632	2%	0%	15%	4%
60579	1%	0%	13%	4%
Old Chapel Rd				
31850	5%	0%	-1%	-3%
Old Columbia Pike				
29714	1%	0%	11%	2%
Old Crain Hwy				
42833	0%	10%	0%	2%
42839	9%	0%	9%	33%
51991	7%	0%	18%	10%
61965	0%	10%	1%	3%
61966	0%	12%	2%	2%
66892	10%	0%	3%	33%
66893	11%	0%	23%	4%
66894	12%	0%	23%	6%
71335	2%	0%	-1%	15%
79543	0%	11%	2%	3%
79545	0%	13%	2%	2%
79546	0%	11%	0%	0%
79547	0%	29%	0%	0%
Old Georgetown Rd				
1231	3%	0%	-11%	4%
2044	4%	0%	1%	-13%
6494	19%	0%	-60%	-3%
6506	8%	0%	12%	3%
6864	14%	0%	11%	-85%
6868	2%	0%	2%	-10%
9698	5%	0%	9%	-14%
10171	0%	0%	6%	-12%
10255	0%	273%	-7%	-2%
10256	0%	217%	0%	0%
10258	3%	0%	2%	-16%
11282	6%	0%	13%	-15%
11283	0%	19%	16%	1%
11339	1%	0%	16%	-10%
22412	6%	0%	-13%	-27%
25423	1%	0%	2%	12%
26036	1%	0%	2%	17%
26377	1%	0%	1%	11%
26379	4%	0%	1%	16%
37242	0%	0%	6%	12%
37549	17%	0%	-87%	-4%
38235	16%	0%	15%	-77%
40139	9%	0%	-12%	20%
41240	1%	0%	18%	10%
42687	2%	0%	-24%	18%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
45005	2%	0%	-6%	11%
45349	11%	0%	18%	9%
52032	21%	0%	-67%	-4%
53654	8%	0%	9%	3%
60089	1%	0%	-11%	2%
61749	1%	0%	2%	17%
61752	1%	0%	-26%	5%
63833	3%	0%	5%	29%
65353	2%	0%	19%	13%
65355	1%	0%	6%	19%
66008	1%	0%	12%	4%
66225	4%	0%	1%	11%
69461	17%	0%	7%	-92%
69462	18%	0%	10%	-87%
69463	20%	0%	-91%	-5%
69468	4%	0%	-9%	13%
69469	4%	0%	-17%	15%
70828	1%	0%	18%	10%
79310	3%	0%	4%	25%
79311	2%	0%	1%	13%
79315	0%	44%	1%	5%
Old Gunpowder Rd				
1032	7%	0%	-1%	-2%
1629	7%	0%	-3%	-5%
1641	5%	0%	-6%	-2%
14972	6%	0%	-12%	-6%
16342	4%	0%	-2%	-14%
47280	7%	0%	-3%	-6%
67871	5%	0%	-3%	-2%
72759	7%	0%	-3%	-5%
Old Largo Rd				
33567	6%	0%	8%	9%
48995	7%	0%	5%	7%
Old Laurel Bowie Rd				
4874	0%	12%	1%	5%
23128	0%	12%	1%	4%
40665	0%	12%	1%	4%
40666	0%	12%	1%	4%
Old Marlboro Pike				
19543	0%	25%	0%	2%
19544	0%	23%	0%	2%
19545	0%	12%	1%	0%
19546	0%	11%	1%	0%
19552	0%	12%	1%	0%
19554	0%	25%	0%	2%
19555	0%	17%	1%	0%
20762	0%	36%	0%	2%
23678	0%	36%	0%	2%
26332	0%	14%	0%	1%
58075	0%	12%	0%	-1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
64160	0%	17%	1%	0%
66045	0%	18%	2%	0%
74631	7%	0%	0%	26%
Old Md 28				
44661	4%	0%	11%	3%
73092	5%	0%	4%	11%
Olson St				
79780	0%	69%	0%	0%
79782	0%	51%	0%	0%
Omega Dr				
43487	3%	0%	13%	1%
Owens Rd				
30863	0%	20%	1%	0%
72742	0%	13%	0%	1%
Oxon Run Dr				
81360	0%	15%	5%	1%
81362	0%	11%	1%	6%
Paint Branch Pkwy				
7458	3%	0%	3%	14%
18411	3%	0%	15%	6%
Parkland Dr				
79379	6%	0%	0%	9%
79380	8%	0%	6%	2%
79381	8%	0%	5%	1%
Parklawn Dr				
7772	3%	0%	0%	13%
9705	3%	0%	14%	1%
25124	5%	0%	-1%	8%
29923	4%	0%	11%	2%
74420	0%	21%	0%	-1%
Patuxent River Rd				
19430	0%	16%	6%	2%
69204	0%	14%	0%	4%
Pennsy Dr				
59314	0%	12%	0%	7%
80535	5%	0%	0%	17%
Pennsylvania Ave				
17212	0%	14%	-14%	-1%
58364	2%	0%	0%	22%
66994	0%	0%	13%	0%
67353	2%	0%	-14%	0%
76987	0%	35%	0%	0%
Persimmon Tree Ln				
1236	5%	0%	0%	27%
62940	2%	0%	24%	0%
Persimmon Tree Rd				
335	5%	0%	0%	11%
8638	5%	0%	0%	11%
Philadelphia Ave				
13233	4%	0%	13%	8%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
53909	3%	0%	2%	18%
Piccard Dr				
44663	0%	15%	2%	2%
Pickering Cir				
21127	0%	18%	1%	3%
Piney Meetinghouse Rd				
3800	1%	0%	-4%	26%
44573	3%	0%	-3%	22%
44574	6%	0%	20%	-1%
57557	4%	0%	23%	-1%
Pleasant Colony Dr				
24930	2%	0%	9%	13%
33231	2%	0%	16%	4%
Plymouth Ct				
75913	0%	25%	2%	1%
75914	0%	42%	0%	6%
79560	0%	42%	0%	6%
79561	0%	25%	2%	1%
Pointer Ridge Dr				
62031	0%	21%	0%	8%
75911	0%	25%	2%	1%
75912	0%	42%	0%	6%
Polk St				
80534	0%	27%	0%	2%
Powder Mill Rd				
6307	3%	0%	13%	6%
24453	3%	0%	11%	7%
32642	5%	0%	10%	13%
49722	8%	0%	9%	23%
60495	6%	0%	13%	18%
67296	10%	0%	41%	33%
80221	7%	0%	-3%	-3%
Prince Frederick Rd				
12897	1%	0%	-1%	11%
Princess Garden Pkwy				
25713	5%	0%	2%	13%
30333	9%	0%	15%	14%
Quarry Ave				
32806	0%	20%	4%	0%
65403	0%	20%	4%	0%
Queen Anne Bridge Rd				
19429	0%	16%	6%	2%
69203	0%	14%	0%	4%
Queens Chapel Rd				
2547	5%	0%	1%	14%
14078	0%	19%	1%	0%
14080	0%	21%	0%	1%
14083	4%	0%	13%	3%
14085	5%	0%	1%	14%
60198	4%	0%	13%	3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
80363	0%	14%	1%	5%
80365	0%	15%	6%	3%
Quince Orchard Rd				
65310	2%	0%	0%	11%
65311	1%	0%	11%	0%
68747	2%	0%	0%	13%
68811	2%	0%	0%	16%
Quintana St				
2550	0%	13%	1%	0%
Raljon Rd				
21549	0%	21%	2%	3%
32118	0%	20%	4%	2%
46657	13%	0%	14%	53%
47006	16%	0%	3%	40%
51278	17%	0%	30%	13%
51279	0%	18%	16%	18%
Randolph Rd				
6021	4%	0%	4%	15%
22266	2%	0%	11%	2%
22271	3%	0%	12%	11%
22272	2%	0%	12%	4%
35857	4%	0%	14%	10%
39566	2%	0%	11%	1%
46641	2%	0%	9%	12%
53730	3%	0%	15%	11%
70823	3%	0%	4%	14%
72708	3%	0%	18%	4%
74690	3%	0%	10%	4%
Redskins Rd				
32119	0%	17%	3%	4%
65823	0%	19%	4%	3%
Rhode Island Ave				
4366	0%	20%	0%	1%
11584	0%	13%	4%	7%
63298	7%	0%	0%	6%
63299	0%	44%	3%	1%
Riggs Rd				
22854	2%	0%	9%	11%
51485	3%	0%	11%	2%
71476	3%	0%	2%	17%
Ritchie Marlboro Rd				
3546	0%	39%	2%	0%
12613	1%	0%	2%	13%
14684	0%	407%	1%	-16%
14685	12%	0%	-8%	-46%
15879	0%	45%	1%	3%
16803	3%	0%	-13%	-10%
16804	7%	0%	-21%	-20%
17748	2%	0%	31%	0%
20338	0%	17%	1%	5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
33900	0%	9%	-19%	-2%
Ritchie Rd				
11875	0%	26%	8%	6%
12124	0%	12%	10%	5%
12126	24%	0%	25%	6%
12127	0%	18%	1%	9%
21191	0%	34%	7%	6%
21906	9%	0%	34%	23%
25226	10%	0%	5%	47%
26015	14%	0%	2%	13%
27108	0%	30%	2%	5%
32128	11%	0%	4%	20%
32948	0%	24%	2%	12%
34151	11%	0%	2%	24%
34152	23%	0%	18%	15%
34158	25%	0%	15%	13%
34574	0%	16%	1%	12%
48262	0%	24%	2%	6%
58368	0%	14%	1%	13%
58370	25%	0%	18%	7%
72453	0%	12%	14%	11%
72729	18%	0%	28%	23%
Ritz Way				
3541	15%	0%	-2%	-19%
64400	16%	0%	-10%	-9%
River Rd				
325	30%	0%	5%	51%
337	7%	0%	5%	-15%
1235	6%	0%	-3%	34%
6220	2%	0%	-1%	42%
6523	0%	20%	5%	0%
6554	3%	0%	-10%	1%
12874	4%	0%	-7%	18%
12875	4%	0%	-8%	28%
12876	3%	0%	25%	-25%
16022	5%	0%	2%	-14%
16710	7%	0%	3%	-13%
18244	3%	0%	4%	-12%
19047	3%	0%	-11%	0%
19049	10%	0%	0%	0%
24380	8%	0%	33%	2%
34817	3%	0%	18%	-22%
34977	8%	0%	8%	-14%
34978	7%	0%	5%	-15%
36915	7%	0%	5%	2%
37137	0%	260%	1%	3%
37546	6%	0%	15%	-39%
40422	5%	0%	30%	0%
40426	6%	0%	25%	-9%
41599	4%	0%	-5%	32%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
46908	8%	0%	5%	-23%
52783	3%	0%	-11%	0%
53732	10%	0%	4%	-12%
57944	1%	0%	-38%	-20%
60084	1%	0%	-21%	4%
72359	4%	0%	-26%	35%
Robert Crain Hwy				
29527	0%	0%	10%	0%
Rock Spring Dr				
84	0%	11%	5%	2%
20043	0%	32%	0%	0%
59057	0%	45%	0%	2%
Rockledge Dr				
52666	0%	12%	0%	0%
59056	0%	17%	-1%	1%
Rockville Pike				
89	7%	0%	10%	7%
91	2%	0%	13%	-4%
93	1%	0%	0%	13%
393	1%	0%	0%	17%
394	1%	0%	0%	15%
2632	0%	14%	-1%	-1%
4513	5%	0%	-5%	15%
5323	1%	0%	-2%	13%
5886	5%	0%	0%	-16%
6796	5%	0%	2%	-19%
6857	6%	0%	-5%	-22%
8543	0%	0%	0%	11%
8723	1%	0%	-17%	8%
10170	5%	0%	-8%	10%
16424	1%	0%	-11%	2%
21971	1%	0%	5%	21%
26687	3%	0%	7%	-22%
30180	4%	0%	19%	3%
32527	4%	0%	0%	-11%
32528	3%	0%	15%	-11%
33206	1%	0%	15%	-14%
34655	5%	0%	12%	17%
36809	2%	0%	1%	11%
43764	8%	0%	-22%	7%
49715	4%	0%	-8%	11%
52037	1%	0%	18%	-1%
56518	1%	0%	20%	-2%
56822	2%	0%	0%	11%
58232	7%	0%	13%	6%
59060	6%	0%	24%	11%
59061	4%	0%	0%	32%
60088	1%	0%	14%	-5%
61416	1%	0%	-11%	2%
66435	1%	0%	14%	-5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
66667	3%	0%	-14%	13%
66668	3%	0%	6%	-19%
69460	5%	0%	-9%	10%
69471	3%	0%	-18%	10%
69584	7%	0%	11%	3%
72153	7%	0%	-18%	-8%
Rocky Ridge Rd				
43359	0%	10%	0%	0%
Rollins Ave				
24569	0%	24%	1%	1%
34570	0%	23%	1%	1%
S Frederick Ave				
330	1%	0%	0%	13%
11340	1%	0%	13%	1%
38501	0%	0%	10%	0%
59948	0%	2%	34%	6%
72424	1%	0%	13%	1%
73180	0%	0%	12%	0%
S Glen Rd				
26364	3%	0%	15%	1%
46642	2%	0%	0%	18%
S Keysville Rd				
5901	0%	13%	0%	1%
43644	0%	13%	0%	0%
55814	0%	27%	0%	1%
S Mountain Rd				
81550	2%	0%	-1%	-10%
S Osborne Rd				
42837	2%	0%	0%	-12%
62287	3%	0%	-13%	0%
62593	3%	0%	-16%	0%
62594	3%	0%	-17%	0%
62595	3%	0%	0%	-11%
66899	2%	0%	0%	-10%
66900	2%	0%	-13%	0%
74347	0%	13%	0%	1%
Sands Rd				
5548	0%	14%	3%	1%
8921	0%	18%	3%	2%
13234	0%	18%	5%	2%
26274	0%	13%	0%	3%
26591	0%	15%	0%	0%
39919	0%	34%	0%	0%
69437	0%	15%	1%	3%
Sansbury Rd				
20736	0%	10%	9%	13%
20738	0%	6%	11%	4%
65181	0%	15%	4%	5%
Scott Dr				
59148	9%	0%	13%	-2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Seat Pleasant Dr				
26310	0%	11%	3%	1%
49542	0%	13%	2%	2%
Selkirk Dr				
336	6%	0%	4%	14%
Seminary Rd				
11025	0%	0%	0%	13%
Serpentine Way				
19665	3%	0%	20%	6%
56055	2%	0%	7%	13%
Seven Locks Rd				
1581	0%	0%	10%	-1%
1584	1%	0%	15%	-9%
2143	1%	0%	-1%	11%
11106	4%	0%	22%	-17%
13647	1%	0%	17%	-7%
18654	7%	0%	18%	8%
21958	4%	0%	22%	-17%
25334	3%	0%	-1%	15%
34821	16%	0%	0%	-1%
53733	5%	0%	-2%	34%
54112	0%	0%	1%	17%
57932	4%	0%	30%	3%
59358	4%	0%	-13%	30%
59359	3%	0%	-15%	21%
59364	4%	0%	-13%	30%
73491	2%	0%	-4%	20%
Shady Grove Rd				
5714	2%	0%	11%	-1%
6775	2%	0%	3%	22%
7469	5%	0%	10%	2%
15500	3%	0%	-2%	23%
33503	2%	0%	15%	-2%
39668	0%	0%	16%	4%
45007	2%	0%	0%	10%
Shepherds Crook Ct				
26672	1%	0%	15%	-1%
47236	3%	0%	-2%	13%
Sheriff Rd				
23452	5%	0%	18%	2%
24265	5%	0%	1%	20%
Soil Conservation Rd				
9132	13%	0%	8%	7%
16010	13%	0%	7%	8%
24505	13%	0%	7%	8%
32202	11%	0%	7%	5%
40669	11%	0%	7%	5%
61442	11%	0%	7%	5%
Solomons Island Rd N				
69695	0%	11%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
South Dr				
19664	0%	29%	14%	15%
53158	0%	28%	16%	19%
Southlawn Ln				
6475	8%	0%	1%	9%
7958	0%	10%	6%	1%
54038	9%	0%	9%	2%
74405	6%	0%	5%	0%
Spr Wheel Ln				
35299	3%	0%	0%	13%
55055	2%	0%	13%	0%
Springfield Rd				
6405	6%	0%	4%	8%
21267	4%	0%	11%	12%
21664	0%	10%	1%	1%
23634	4%	0%	11%	12%
52261	6%	0%	13%	20%
63854	6%	0%	13%	20%
St Barnabas Rd				
13616	6%	0%	16%	8%
14456	3%	0%	13%	0%
14457	3%	0%	13%	0%
18933	0%	0%	-2%	16%
20453	1%	0%	3%	-16%
24864	3%	0%	11%	0%
29629	2%	0%	17%	3%
30067	1%	0%	-5%	12%
30068	5%	0%	5%	13%
30657	1%	0%	-18%	-1%
34560	1%	0%	23%	-2%
39194	5%	0%	25%	9%
43154	3%	0%	13%	0%
71267	5%	0%	5%	21%
St Clair Dr				
79781	0%	69%	0%	0%
79783	0%	51%	0%	0%
Stardrift Dr				
3899	0%	200%	0%	0%
9150	0%	140%	0%	0%
State Hwy 108				
35212	3%	0%	11%	-5%
38130	4%	0%	-3%	11%
State Hwy 115				
1844	1%	0%	11%	8%
State Hwy 124				
2637	0%	1%	0%	-21%
State Hwy 144				
41818	0%	13%	0%	0%
53716	0%	10%	5%	0%
State Hwy 185				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
5276	2%	0%	-4%	12%
5278	2%	0%	5%	-13%
10338	4%	0%	12%	0%
19662	0%	0%	0%	16%
22192	1%	0%	7%	13%
34970	4%	0%	-2%	15%
40871	0%	0%	5%	10%
40872	0%	0%	3%	12%
41596	1%	0%	-2%	20%
44970	3%	0%	-2%	14%
45006	8%	0%	0%	18%
47162	1%	0%	2%	11%
54823	3%	0%	11%	-10%
56365	6%	0%	11%	-4%
71877	1%	0%	6%	10%
74958	1%	0%	4%	14%
State Hwy 189				
933	3%	0%	-5%	22%
1475	0%	0%	-3%	11%
4153	2%	0%	-1%	17%
4173	0%	0%	-1%	11%
5992	4%	0%	26%	11%
5995	3%	0%	0%	32%
5996	2%	0%	23%	0%
8007	1%	0%	0%	33%
8008	3%	0%	0%	32%
8317	2%	0%	13%	2%
9029	5%	0%	10%	6%
10839	2%	0%	17%	4%
11110	8%	0%	7%	1%
12364	0%	0%	-3%	11%
25331	0%	0%	-13%	16%
26096	2%	0%	18%	-8%
29713	6%	0%	14%	5%
30182	2%	0%	18%	3%
32245	2%	0%	23%	0%
32517	3%	0%	14%	-1%
32602	0%	0%	-9%	15%
37768	3%	0%	0%	17%
43475	0%	5%	0%	36%
51446	2%	0%	13%	2%
59430	1%	0%	-6%	16%
59432	9%	0%	10%	2%
59433	2%	0%	-1%	14%
59436	1%	0%	-13%	11%
59440	2%	0%	0%	31%
72658	2%	0%	18%	1%
75148	4%	0%	23%	-5%
State Hwy 190				
932	2%	0%	-3%	25%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
936	3%	0%	-2%	21%
6003	5%	0%	-2%	15%
6004	8%	0%	7%	-5%
6569	6%	0%	29%	-16%
22404	5%	0%	21%	-11%
24826	2%	0%	0%	13%
31010	0%	0%	0%	14%
32236	0%	11%	0%	0%
34811	8%	0%	7%	-6%
53734	5%	0%	-7%	33%
55052	3%	0%	13%	-1%
68996	5%	0%	-3%	14%
72148	1%	0%	18%	-4%
75273	1%	0%	0%	13%
State Hwy 191				
34647	2%	0%	9%	10%
40090	1%	0%	11%	11%
53535	2%	0%	7%	19%
State Hwy 192				
53659	3%	0%	11%	2%
State Hwy 193				
2442	2%	0%	1%	12%
14146	2%	0%	-20%	-9%
16543	0%	6%	12%	1%
18751	11%	0%	2%	50%
18752	6%	0%	22%	4%
24752	11%	0%	24%	30%
25725	0%	38%	-1%	-4%
29412	6%	0%	13%	20%
34862	2%	0%	-17%	-4%
48991	0%	11%	3%	4%
54494	5%	0%	1%	11%
64154	13%	0%	3%	25%
64396	2%	0%	22%	2%
State Hwy 197				
2821	1%	0%	10%	3%
3355	3%	0%	3%	11%
23920	3%	0%	8%	17%
25859	3%	0%	2%	11%
State Hwy 200				
21693	0%	13%	8%	1%
21695	0%	13%	0%	-1%
23776	0%	9%	1%	11%
39012	0%	10%	28%	2%
51891	0%	10%	2%	2%
51892	0%	10%	2%	2%
51894	0%	10%	2%	2%
51896	0%	10%	2%	2%
51898	0%	11%	1%	1%
52145	0%	12%	1%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
52146	0%	13%	8%	1%
52147	0%	13%	8%	1%
52148	0%	15%	2%	1%
52150	0%	13%	4%	1%
52151	0%	11%	0%	0%
52152	0%	10%	21%	2%
52153	0%	10%	21%	2%
52398	1%	0%	26%	-5%
52399	0%	13%	0%	0%
52405	0%	11%	0%	2%
52406	0%	9%	1%	26%
52407	0%	9%	1%	26%
58233	0%	9%	1%	26%
59196	0%	13%	8%	1%
59199	0%	9%	1%	11%
59226	0%	200%	0%	0%
60800	0%	10%	2%	2%
66279	0%	10%	2%	2%
66280	0%	10%	28%	2%
66281	0%	10%	9%	2%
71511	0%	10%	28%	2%
71512	0%	10%	9%	2%
State Hwy 201				
8859	5%	0%	7%	15%
15622	5%	0%	10%	21%
15703	6%	0%	14%	15%
19673	2%	0%	1%	11%
26995	6%	0%	3%	8%
46030	2%	0%	1%	12%
47316	0%	0%	0%	12%
50118	0%	0%	0%	12%
55734	5%	0%	6%	1%
State Hwy 210				
3379	0%	2%	46%	16%
29808	0%	25%	0%	-1%
30865	0%	2%	-11%	0%
35288	2%	0%	14%	4%
79718	2%	0%	14%	0%
State Hwy 212				
4869	4%	0%	2%	17%
10818	6%	0%	-12%	-6%
15115	5%	0%	2%	21%
17973	4%	0%	-2%	-14%
21812	5%	0%	16%	4%
23051	4%	0%	-11%	-2%
23280	5%	0%	16%	2%
28570	0%	43%	-7%	-1%
29632	14%	0%	-28%	-14%
60459	6%	0%	2%	8%
71473	5%	0%	20%	3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
72315	2%	0%	9%	10%
75521	17%	0%	-3%	-37%
75522	15%	0%	-8%	-34%
75526	0%	15%	-10%	-5%
75527	13%	0%	-12%	-22%
75535	0%	13%	-8%	-3%
75536	0%	13%	-1%	-8%
State Hwy 214				
24280	2%	0%	16%	2%
64988	3%	0%	18%	3%
72179	2%	0%	0%	11%
79810	2%	0%	0%	11%
State Hwy 223				
55930	1%	0%	0%	-10%
61975	0%	41%	-1%	0%
67203	0%	200%	0%	0%
State Hwy 231				
54818	1%	0%	-1%	11%
State Hwy 28				
768	4%	0%	11%	3%
5719	5%	0%	16%	13%
6945	1%	0%	-1%	13%
6946	1%	0%	20%	-2%
7961	3%	0%	18%	2%
35549	5%	0%	14%	19%
72810	1%	0%	0%	14%
73091	5%	0%	4%	11%
79432	3%	0%	18%	2%
79433	3%	0%	11%	1%
79434	1%	0%	-1%	14%
State Hwy 295				
19985	0%	13%	0%	0%
47420	0%	2%	-11%	-1%
State Hwy 301				
35616	1%	0%	12%	-3%
52744	0%	0%	17%	0%
60711	1%	0%	14%	1%
76044	1%	0%	13%	-2%
77044	1%	0%	11%	-2%
State Hwy 32				
9530	0%	12%	0%	0%
State Hwy 320				
1539	5%	0%	1%	23%
1694	0%	0%	-1%	11%
5268	1%	0%	13%	2%
19446	5%	0%	29%	11%
34419	2%	0%	16%	1%
34420	0%	0%	-1%	10%
40204	1%	0%	13%	3%
40205	1%	0%	-2%	10%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
42319	6%	0%	18%	4%
43759	5%	0%	1%	23%
49380	5%	0%	29%	11%
50741	2%	0%	16%	2%
53920	9%	0%	8%	5%
61731	1%	0%	4%	12%
State Hwy 332				
33474	0%	21%	1%	1%
64995	5%	0%	36%	15%
72723	0%	18%	1%	1%
72726	6%	0%	9%	33%
State Hwy 355				
25125	1%	0%	0%	13%
74141	2%	0%	13%	-3%
79409	1%	0%	0%	13%
79411	2%	0%	13%	-3%
State Hwy 381				
62717	0%	13%	-2%	0%
State Hwy 382				
12128	5%	0%	7%	13%
33275	4%	0%	14%	7%
42109	0%	32%	0%	0%
60701	0%	11%	0%	-1%
State Hwy 384				
632	1%	0%	1%	10%
19042	1%	0%	1%	10%
State Hwy 390				
5352	6%	0%	11%	8%
42318	6%	0%	15%	9%
State Hwy 4				
18768	0%	11%	1%	8%
46381	1%	0%	0%	10%
71793	0%	11%	0%	0%
State Hwy 410				
11291	2%	0%	1%	12%
12114	4%	0%	12%	25%
18940	4%	0%	31%	20%
23702	4%	0%	13%	16%
29393	0%	16%	1%	1%
35900	0%	0%	10%	-1%
50984	2%	0%	0%	13%
64676	2%	0%	13%	3%
80533	9%	0%	0%	16%
State Hwy 414				
5812	6%	0%	19%	0%
5813	5%	0%	0%	14%
5814	4%	0%	0%	21%
29179	0%	12%	0%	-1%
31747	0%	10%	0%	5%
46200	8%	0%	12%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
58052	3%	0%	14%	0%
State Hwy 424				
32847	1%	0%	-11%	-3%
State Hwy 450				
231	1%	0%	-15%	0%
8863	4%	0%	-1%	-23%
9463	2%	0%	11%	1%
12056	1%	0%	0%	16%
16478	1%	0%	10%	0%
18379	0%	10%	0%	0%
19071	4%	0%	-1%	-10%
19291	6%	0%	14%	2%
25803	2%	0%	-18%	1%
32645	4%	0%	12%	3%
34551	2%	0%	-18%	0%
34644	3%	0%	4%	10%
38892	6%	0%	0%	7%
45302	0%	11%	0%	2%
47338	0%	0%	10%	0%
51222	4%	0%	1%	13%
54497	5%	0%	-1%	-13%
55301	5%	0%	0%	8%
67173	4%	0%	12%	3%
67174	3%	0%	1%	13%
67179	4%	0%	11%	4%
67180	3%	0%	2%	10%
67474	5%	0%	1%	20%
67475	3%	0%	0%	15%
67650	1%	0%	-1%	11%
80439	1%	0%	0%	16%
80440	1%	0%	0%	13%
State Hwy 458				
10310	6%	0%	3%	8%
13615	6%	0%	22%	17%
13827	4%	0%	17%	6%
13829	4%	0%	1%	19%
21545	6%	0%	7%	8%
24274	6%	0%	7%	11%
27576	6%	0%	7%	13%
30069	7%	0%	9%	32%
30070	0%	0%	16%	-3%
49842	0%	0%	-3%	12%
State Hwy 497				
55476	0%	71%	0%	0%
State Hwy 5				
12092	0%	0%	-2%	18%
14380	4%	0%	-1%	-18%
16811	2%	0%	-11%	-4%
17221	0%	6%	83%	1%
43743	1%	0%	11%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
43744	0%	0%	-1%	11%
44340	0%	6%	-8%	-11%
50641	6%	0%	-22%	-2%
56257	7%	0%	-3%	-37%
61210	0%	15%	0%	-2%
64341	2%	0%	-7%	-20%
71271	1%	0%	11%	2%
71276	2%	0%	-11%	-4%
73816	0%	0%	-1%	11%
State Hwy 500				
18834	3%	0%	11%	2%
34134	3%	0%	1%	11%
34135	4%	0%	11%	2%
80321	3%	0%	1%	11%
80323	3%	0%	11%	2%
State Hwy 535				
17222	0%	15%	-9%	-13%
State Hwy 586				
6011	1%	0%	5%	10%
36815	0%	0%	0%	11%
40427	1%	0%	10%	-1%
42955	0%	0%	-3%	11%
56092	1%	0%	10%	-1%
59942	2%	0%	1%	12%
69702	1%	0%	-6%	13%
79354	1%	0%	5%	15%
State Hwy 614				
9863	3%	0%	11%	4%
47832	5%	0%	15%	17%
47833	5%	0%	7%	13%
47834	1%	0%	10%	7%
47835	1%	0%	11%	5%
51774	3%	0%	10%	4%
53280	1%	0%	-26%	-3%
64812	0%	0%	-11%	-1%
64813	2%	0%	10%	-11%
64814	1%	0%	0%	-18%
65347	2%	0%	4%	-17%
65352	2%	0%	1%	10%
State Hwy 650				
1102	3%	0%	-8%	-16%
11281	2%	0%	1%	12%
14389	2%	0%	10%	15%
20437	1%	0%	5%	-10%
22919	4%	0%	2%	-11%
34968	2%	0%	11%	9%
36833	2%	0%	-6%	-14%
37157	2%	0%	8%	11%
40093	1%	0%	6%	11%
40788	2%	0%	-9%	-13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
43761	0%	13%	0%	-1%
44551	0%	118%	0%	0%
50205	2%	0%	-6%	-14%
53444	2%	0%	-5%	-10%
54296	2%	0%	11%	3%
55600	0%	0%	-2%	11%
58751	2%	0%	-5%	-10%
66127	0%	4%	-3%	22%
State Hwy 725				
11452	5%	0%	-7%	0%
15050	2%	0%	21%	0%
21134	3%	0%	13%	4%
21136	4%	0%	11%	18%
21913	5%	0%	0%	18%
21914	7%	0%	1%	55%
23976	5%	0%	32%	7%
33218	3%	0%	9%	18%
65387	4%	0%	15%	1%
State Hwy 787				
5593	7%	0%	0%	3%
52520	7%	0%	0%	3%
State Hwy 97				
1238	3%	0%	-6%	11%
2045	0%	0%	-1%	14%
4545	0%	0%	-1%	19%
8547	0%	0%	-3%	12%
10325	2%	0%	5%	-18%
13659	1%	0%	17%	-5%
13912	1%	0%	10%	-8%
16426	2%	0%	-3%	12%
22262	0%	0%	10%	1%
33204	0%	0%	10%	-5%
34969	0%	0%	-3%	18%
36589	3%	0%	-6%	11%
41150	2%	0%	12%	-3%
44262	0%	0%	12%	-9%
51626	1%	0%	11%	6%
51917	0%	14%	3%	0%
56379	1%	0%	11%	-16%
57876	0%	0%	-2%	15%
57884	0%	0%	-1%	17%
57885	1%	0%	13%	-7%
59947	2%	0%	-1%	16%
63281	0%	0%	-1%	11%
74957	2%	0%	14%	-1%
74959	3%	0%	10%	-2%
Stoneybrook Dr				
5322	1%	0%	0%	12%
Strathmore Ave				
38599	3%	0%	-1%	14%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
66665	1%	0%	11%	-13%
Suitland Pkwy				
11880	2%	0%	20%	4%
54077	1%	0%	0%	19%
Tilden Rd				
80417	0%	10%	0%	7%
Tower Oaks Blvd				
684	0%	11%	2%	8%
10181	0%	12%	7%	0%
Town Square Dr				
27403	0%	71%	0%	0%
Travilah Rd				
44562	2%	0%	-1%	13%
55062	1%	0%	11%	0%
56614	0%	11%	0%	3%
Tuckerman Ln				
1577	4%	0%	17%	-4%
2141	6%	0%	-2%	5%
2345	1%	0%	0%	28%
19840	1%	0%	25%	0%
59656	3%	0%	-3%	15%
Turkey Branch Pkwy				
79353	1%	0%	18%	4%
79355	2%	0%	6%	15%
79372	5%	0%	1%	13%
79374	7%	0%	11%	3%
Tuscarora Rd				
6968	2%	0%	1%	12%
27366	2%	0%	1%	12%
Tuxedo Rd				
80029	0%	70%	0%	1%
Twinbrook Pkwy				
69706	2%	0%	13%	1%
69707	5%	0%	0%	13%
69941	5%	0%	1%	4%
Underwood St				
60199	4%	0%	13%	15%
63293	3%	0%	5%	14%
University Blvd				
2763	4%	0%	12%	6%
3639	3%	0%	1%	15%
20848	1%	0%	0%	11%
25720	2%	0%	0%	12%
64057	2%	0%	11%	1%
University Blvd E				
1695	1%	0%	-10%	1%
11036	0%	3%	-12%	-13%
14391	3%	0%	22%	5%
27863	2%	0%	-5%	11%
28173	3%	0%	6%	-15%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
28808	3%	0%	4%	19%
37155	1%	0%	-10%	2%
53919	1%	0%	-14%	9%
University Blvd W				
5277	3%	0%	-2%	15%
13913	0%	0%	-3%	13%
16023	1%	0%	-14%	11%
35298	1%	0%	3%	12%
36502	2%	0%	1%	11%
48974	3%	0%	6%	-12%
72707	1%	0%	12%	-19%
Urbana Ln				
65433	0%	11%	2%	8%
US Hwy 1 Alt				
8866	3%	0%	18%	4%
16225	5%	0%	11%	10%
16226	5%	0%	0%	12%
72430	3%	0%	1%	21%
US Hwy 15				
552	1%	0%	3%	12%
17143	1%	0%	16%	8%
24438	1%	0%	3%	12%
32501	0%	13%	0%	0%
45438	1%	0%	16%	8%
46320	0%	17%	0%	0%
70525	0%	31%	0%	0%
US Hwy 29				
3593	0%	0%	12%	-3%
7766	6%	0%	-29%	2%
10603	9%	0%	-1%	-21%
16318	3%	0%	-19%	11%
25430	0%	200%	0%	0%
37891	0%	202%	-64%	-32%
40501	2%	0%	5%	11%
40876	1%	0%	-12%	10%
40877	1%	0%	-12%	10%
52944	0%	0%	-11%	7%
56050	0%	0%	12%	-3%
56058	1%	0%	11%	-18%
56059	1%	0%	11%	-18%
66125	0%	3%	11%	3%
74687	2%	0%	-4%	-18%
US Hwy 301				
42183	1%	0%	-1%	20%
53827	0%	18%	0%	-1%
US Hwy 50				
11588	6%	0%	-17%	-53%
12862	2%	0%	0%	22%
13625	0%	13%	-1%	-5%
16983	1%	0%	0%	13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
18390	1%	0%	0%	11%
20070	0%	0%	-1%	14%
26125	0%	200%	0%	0%
27731	2%	0%	-1%	-14%
28617	0%	3%	0%	17%
33283	1%	0%	-1%	-17%
37585	0%	3%	0%	-18%
38255	1%	0%	0%	19%
40690	0%	0%	0%	14%
43505	0%	0%	0%	17%
43513	0%	24%	0%	0%
47315	1%	0%	0%	28%
48338	0%	18%	0%	-2%
54835	1%	0%	-1%	-15%
56249	0%	0%	0%	14%
57010	1%	0%	1%	12%
65196	1%	0%	-1%	-17%
73586	6%	0%	-5%	-51%
73590	0%	3%	0%	-18%
Valley Park Rd				
79843	0%	12%	1%	0%
79864	0%	10%	0%	1%
Virginia Manor Rd				
52208	0%	14%	-1%	-10%
54537	0%	13%	-11%	-3%
W Boss Arnold Rd				
68625	0%	14%	0%	0%
W Cedar Ln				
627	0%	11%	2%	1%
61750	0%	14%	2%	3%
W City Ave				
1213	1%	0%	-6%	-10%
3272	3%	0%	4%	11%
3274	3%	0%	12%	8%
3278	3%	0%	7%	11%
4006	2%	0%	-9%	-14%
4008	1%	0%	-7%	-14%
4009	1%	0%	-6%	-12%
4450	3%	0%	13%	19%
9461	4%	0%	11%	33%
10291	2%	0%	11%	3%
13354	0%	17%	-40%	-23%
15935	8%	0%	12%	1%
16179	2%	0%	6%	23%
16327	2%	0%	11%	6%
16519	2%	0%	5%	12%
16746	0%	27%	4%	2%
16930	2%	0%	2%	-16%
19813	5%	0%	7%	12%
20085	1%	0%	-6%	-15%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
22244	2%	0%	-6%	-14%
22587	4%	0%	10%	15%
29926	2%	0%	11%	5%
32201	7%	0%	3%	5%
32869	5%	0%	1%	10%
33798	2%	0%	9%	11%
33812	3%	0%	5%	20%
34762	2%	0%	11%	10%
34763	2%	0%	10%	7%
39261	4%	0%	3%	15%
40142	4%	0%	45%	19%
45356	1%	0%	-40%	-15%
54071	11%	0%	15%	58%
54116	5%	0%	2%	9%
59042	0%	13%	-28%	-14%
60201	3%	0%	10%	18%
60753	2%	0%	9%	10%
60756	3%	0%	23%	10%
63579	3%	0%	10%	11%
64097	4%	0%	14%	5%
64114	3%	0%	11%	3%
64671	2%	0%	8%	15%
80253	2%	0%	10%	14%
80254	2%	0%	11%	11%
80255	3%	0%	13%	17%
80256	2%	0%	8%	16%
80281	3%	0%	9%	10%
80282	3%	0%	4%	14%
80284	3%	0%	10%	6%
W Diamond Ave				
2626	0%	1%	2%	-26%
68728	0%	2%	0%	-17%
W Edmonston Dr				
9699	1%	0%	20%	-4%
59940	1%	0%	0%	17%
W Gude Dr				
27318	3%	0%	0%	16%
W Jefferson St				
25212	2%	0%	0%	18%
74140	1%	0%	19%	-1%
W Montgomery Ave				
85	1%	0%	19%	-1%
86	1%	0%	22%	-5%
87	2%	0%	0%	18%
851	0%	208%	69%	2%
36249	2%	0%	1%	21%
67682	0%	67%	57%	17%
68723	0%	50%	17%	100%
70362	0%	211%	1%	18%
71016	3%	0%	-3%	25%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
75469	1%	0%	-16%	0%
Walker Mill Rd				
11873	3%	0%	13%	18%
27103	4%	0%	13%	23%
Washington National Pike				
547	0%	28%	36%	-4%
6216	4%	0%	-9%	35%
18073	1%	0%	-42%	20%
18081	1%	0%	0%	-18%
19191	0%	38%	8%	8%
25427	8%	0%	21%	-93%
28054	0%	43%	8%	137%
29079	0%	0%	0%	-12%
37135	3%	0%	-2%	23%
44054	4%	0%	-22%	-53%
46981	0%	31%	1%	51%
48741	8%	0%	21%	-93%
49366	0%	40%	8%	8%
55627	6%	0%	-2%	-25%
58028	0%	254%	17%	17%
58029	0%	40%	8%	8%
61724	0%	40%	17%	17%
61725	16%	0%	-5%	-78%
65632	0%	2%	0%	-17%
66775	0%	54%	17%	17%
66778	0%	54%	8%	8%
66780	0%	38%	8%	8%
66782	0%	41%	60%	8%
66786	0%	41%	60%	8%
67078	0%	34%	62%	8%
67371	0%	59%	8%	67%
69883	16%	0%	-5%	-78%
69886	5%	0%	-11%	37%
70364	4%	0%	-4%	21%
70604	3%	0%	-4%	59%
70757	13%	0%	22%	-91%
Watkins Mill Rd				
9669	2%	0%	0%	-14%
Watkins Park Dr				
12618	0%	10%	2%	3%
19148	0%	10%	2%	3%
19149	0%	12%	2%	4%
73256	0%	12%	2%	4%
Wayne Ave				
33739	7%	0%	8%	4%
34651	9%	0%	7%	3%
Wells Pkwy E				
25858	3%	0%	11%	14%
45351	2%	0%	8%	13%
Westbrook Dr				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
81357	0%	11%	1%	1%
Westphalia Rd				
46203	10%	0%	1%	16%
59503	0%	12%	1%	9%
67688	0%	10%	0%	1%
White House Rd				
12614	0%	25%	2%	5%
16805	0%	12%	4%	1%
21522	0%	16%	1%	12%
23692	0%	17%	1%	5%
49394	0%	21%	-7%	-3%
58656	0%	23%	-1%	-5%
71624	0%	18%	1%	2%
Whitfield Chapel Rd				
54373	0%	13%	3%	3%
63860	0%	10%	4%	3%
Wilburn Dr				
22836	0%	29%	4%	0%
32811	0%	17%	1%	0%
William Beanes Rd				
64428	0%	20%	0%	1%
66902	0%	29%	0%	1%
Willow Hill Dr				
75917	0%	13%	0%	4%
75918	0%	18%	6%	0%
Windom Rd				
46983	5%	0%	1%	12%
Winfields Ln				
3725	0%	11%	0%	2%
65445	0%	11%	0%	0%
74744	6%	0%	1%	12%
Wisconsin Ave				
5661	1%	0%	5%	14%
52787	0%	12%	0%	0%
79292	2%	0%	10%	10%
79293	2%	0%	15%	14%
79294	0%	0%	3%	15%
79295	2%	0%	12%	20%
Woodbine St				
4862	3%	0%	4%	14%
79274	0%	13%	0%	1%
79275	0%	15%	1%	1%
Woodmont Ave				
79303	4%	0%	6%	13%
Woodstream Dr				
21280	0%	200%	0%	0%
39265	0%	13%	0%	0%
Woodview Dr				
68469	0%	17%	1%	1%
Woodyard Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
57849	5%	0%	22%	27%
62024	3%	0%	10%	16%
66528	5%	0%	22%	26%
68086	3%	0%	10%	16%
Wootton Pkwy				
685	6%	0%	6%	13%
1582	5%	0%	23%	3%
9700	6%	0%	17%	6%
26676	6%	0%	23%	5%
26789	6%	0%	4%	22%
38951	7%	0%	14%	4%
46465	8%	0%	22%	-2%
52939	5%	0%	11%	14%
59149	8%	0%	22%	-2%
59429	5%	0%	23%	-3%
59431	1%	0%	-11%	16%
72649	0%	0%	11%	-1%
Yellowwood Ln				
4743	19%	0%	19%	8%
59325	32%	0%	5%	29%
Virginia				
13th St N				
80998	0%	11%	1%	4%
14th St N				
13169	0%	13%	0%	3%
16th St N				
29186	0%	10%	3%	3%
17th St N				
80992	0%	15%	0%	0%
81001	0%	18%	0%	0%
18th St N				
81059	0%	20%	0%	0%
81061	0%	12%	0%	0%
18th St S				
51052	0%	10%	0%	2%
80861	0%	13%	0%	1%
80862	0%	13%	0%	1%
20th Pl N				
77366	0%	13%	0%	0%
20th St N				
77363	0%	15%	0%	0%
77365	0%	12%	0%	0%
20th St S				
21051	0%	36%	0%	0%
28719	0%	17%	0%	0%
51053	0%	10%	0%	2%
22nd St N				
77385	0%	18%	-1%	0%
23rd Rd N				
77403	0%	66%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
23rd St S				
59242	0%	16%	0%	0%
24th St N				
77404	0%	41%	0%	0%
25th St N				
15872	0%	1%	-18%	3%
15873	0%	1%	-13%	-8%
26th St N				
28967	0%	14%	1%	0%
51204	0%	16%	1%	0%
31st St S				
248	0%	11%	0%	7%
80807	0%	13%	0%	4%
5th St N				
81591	0%	11%	1%	0%
6th St N				
81593	0%	13%	1%	0%
8th St S				
80873	0%	10%	0%	2%
Army Navy Dr				
36643	0%	35%	0%	0%
Baron Rd				
26847	0%	14%	-2%	-1%
Birch Rd				
9261	5%	0%	14%	14%
31938	2%	0%	5%	12%
Capital Beltway				
67	1%	0%	-19%	5%
69	0%	2%	-15%	-13%
75	0%	1%	-15%	0%
977	0%	22%	-4%	1%
1270	0%	2%	-15%	-13%
1272	0%	22%	1%	1%
16670	0%	21%	-3%	-5%
16671	0%	200%	-8%	-14%
16674	3%	0%	15%	6%
17398	0%	31%	11%	16%
17401	6%	0%	-12%	-2%
18216	1%	0%	-19%	5%
21180	0%	2%	0%	-12%
21561	0%	12%	-2%	-10%
22163	0%	16%	-14%	-88%
24084	7%	0%	36%	74%
28377	0%	2%	8%	-17%
29311	0%	29%	-12%	-6%
33646	0%	5%	30%	92%
33976	0%	808%	51%	1%
34950	0%	35%	0%	5%
38710	0%	22%	0%	1%
39068	0%	12%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
39073	0%	2%	28%	11%
39075	0%	1%	5%	-13%
39078	0%	1%	5%	-13%
39791	0%	10%	0%	-1%
40119	4%	0%	-3%	-16%
41576	0%	22%	-4%	-5%
41577	0%	25%	-2%	-1%
41779	12%	0%	52%	45%
43018	1%	0%	-22%	0%
45944	0%	12%	-23%	-16%
51272	0%	21%	-3%	-5%
55463	6%	0%	-3%	-5%
56641	7%	0%	36%	74%
56645	7%	0%	36%	74%
57913	8%	0%	38%	63%
59785	0%	200%	-8%	-14%
60164	0%	1%	5%	-13%
65637	0%	24%	-1%	1%
65844	1%	0%	-22%	0%
65927	0%	48%	0%	0%
68293	4%	0%	-14%	-1%
68294	4%	0%	-14%	-1%
68295	3%	0%	-1%	-16%
68582	10%	0%	62%	84%
68583	0%	11%	-47%	-21%
68584	0%	200%	-12%	-13%
68585	0%	200%	-12%	-13%
68586	0%	200%	-12%	-13%
68587	0%	200%	-8%	-14%
68588	0%	200%	-8%	-14%
68589	0%	200%	-12%	-13%
68590	0%	200%	-8%	-14%
68591	0%	200%	-5%	-5%
68883	0%	9%	29%	-6%
68889	0%	76%	-1%	0%
71091	1%	0%	-19%	2%
71095	1%	0%	-19%	2%
72070	0%	200%	-12%	-13%
72078	12%	0%	64%	70%
76052	0%	24%	-83%	-70%
76222	0%	50%	-1%	-2%
77148	0%	19%	1%	-3%
77184	0%	11%	-1%	0%
77185	0%	40%	0%	1%
Chain Bridge Rd				
5053	1%	0%	12%	2%
16581	1%	0%	19%	16%
21941	0%	31%	0%	0%
31277	4%	0%	11%	8%
46083	1%	0%	-12%	-7%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
55021	3%	0%	10%	38%
69550	0%	1%	-21%	-1%
74851	6%	0%	14%	19%
Chesterbrook Rd				
9260	5%	0%	11%	6%
26530	5%	0%	2%	22%
Co Rd 650				
12428	0%	0%	-19%	3%
Co Rd 686				
33643	0%	11%	2%	6%
59709	0%	15%	3%	6%
Co Rd 703				
50953	6%	0%	2%	15%
72024	2%	0%	-13%	-3%
72283	6%	0%	-14%	-11%
Commonwealth Ave				
77281	0%	12%	0%	2%
Cotton Mill Dr				
81148	0%	111%	0%	0%
81150	0%	200%	0%	0%
Dolley Madison Blvd				
4344	0%	0%	3%	11%
5149	0%	0%	1%	11%
9478	0%	0%	-3%	11%
25782	5%	0%	-23%	-5%
31130	2%	0%	1%	11%
33641	2%	0%	6%	17%
36527	6%	0%	25%	30%
39807	1%	0%	17%	21%
40152	2%	0%	12%	24%
40859	0%	11%	0%	-1%
42078	6%	0%	17%	28%
44690	0%	131%	-1%	-11%
46571	0%	20%	1%	10%
46941	1%	0%	11%	5%
50436	0%	0%	-3%	11%
59706	1%	0%	11%	3%
59713	0%	27%	10%	6%
59997	1%	0%	11%	8%
60008	0%	14%	-2%	-1%
67577	1%	0%	15%	3%
68881	0%	75%	1%	54%
77176	7%	0%	-5%	-5%
77177	0%	29%	-6%	-16%
Dulles Access Rd				
41206	0%	2%	-1%	-11%
63333	0%	11%	0%	0%
67825	0%	11%	0%	0%
Dulles Toll Rd				
33649	0%	2%	-2%	-15%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
34630	3%	0%	-1%	-10%
41207	0%	2%	-1%	-11%
41575	0%	60%	-1%	-7%
57167	0%	9%	11%	59%
58502	0%	5%	-1%	-40%
60237	3%	0%	-1%	-10%
76097	0%	22%	0%	0%
E Glebe Rd				
47673	0%	14%	1%	0%
52055	0%	11%	0%	0%
Edwards Ferry Rd NE				
835	0%	200%	0%	0%
34291	0%	16%	0%	0%
Fisher Dr				
79332	0%	19%	-5%	0%
Furnace Mountain Rd				
81348	7%	0%	2%	7%
George Washington Memorial Pkwy				
33634	0%	4%	0%	-11%
33635	0%	2%	-14%	-1%
34318	11%	0%	57%	45%
36935	0%	0%	0%	12%
38735	0%	7%	47%	67%
40850	0%	0%	0%	14%
47965	0%	14%	0%	0%
60010	0%	4%	-33%	-2%
Georgetown Pike				
4348	25%	0%	30%	9%
4349	53%	0%	14%	8%
4350	14%	0%	2%	27%
4351	0%	34%	2%	14%
6378	17%	0%	3%	33%
6380	25%	0%	15%	11%
13744	0%	34%	2%	14%
57185	0%	37%	0%	0%
59710	53%	0%	14%	8%
68778	0%	56%	0%	-1%
Grande Ln				
42163	2%	0%	-16%	-3%
72284	6%	0%	-15%	-13%
Great Falls St				
14896	0%	0%	-12%	5%
Greeley Blvd				
33467	0%	200%	0%	0%
60752	0%	200%	0%	0%
Griffith Rd				
79328	0%	19%	-5%	0%
Henry G Shirley Memorial Hwy				
18676	0%	77%	0%	0%
30289	0%	1%	0%	-11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
30488	0%	1%	0%	-11%
57903	0%	0%	-5%	-10%
Hillsboro Rd				
66245	0%	11%	-1%	0%
Householder Rd				
77555	0%	16%	0%	0%
Hume Ave				
77282	0%	12%	0%	2%
I- 395				
76	0%	11%	0%	-12%
25750	0%	1%	0%	-20%
26135	0%	2%	0%	-17%
27337	0%	1%	0%	-20%
30282	0%	1%	0%	-20%
30288	0%	1%	0%	-11%
30502	0%	1%	0%	10%
55038	0%	0%	24%	0%
59872	1%	0%	0%	14%
64907	0%	2%	0%	-17%
65930	1%	0%	0%	12%
67012	0%	2%	0%	-17%
67246	0%	1%	0%	-20%
70266	0%	1%	13%	7%
72075	0%	66%	0%	-1%
I- 395 Hov				
26133	0%	1%	0%	-11%
30275	0%	1%	0%	-20%
30276	0%	1%	0%	-20%
30278	0%	1%	0%	-20%
30286	0%	1%	0%	-11%
66368	0%	13%	0%	0%
73014	0%	1%	0%	-20%
73015	0%	1%	0%	-11%
I- 495 Express Lane				
24081	0%	17%	0%	-1%
34324	0%	18%	-47%	-3%
38714	0%	10%	-2%	-3%
38717	0%	2%	8%	-17%
39426	0%	1%	5%	-13%
40120	0%	19%	-1%	0%
55464	2%	0%	0%	22%
68296	3%	0%	-1%	-16%
68297	3%	0%	-1%	-16%
68581	0%	11%	-4%	-3%
I- 66				
5026	0%	12%	0%	1%
49097	0%	0%	81%	-28%
52133	0%	200%	0%	0%
70030	0%	0%	1%	13%
I- 95				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
38	0%	0%	-4%	11%
26136	0%	1%	0%	10%
27421	0%	3%	31%	0%
28154	0%	33%	0%	0%
43013	2%	0%	-1%	-14%
43016	2%	0%	-1%	-14%
49369	2%	0%	-1%	-14%
76278	0%	2%	11%	0%
James Madison Hwy				
75672	0%	72%	0%	0%
75673	0%	91%	0%	0%
Jones Branch Dr				
8520	0%	11%	-2%	1%
12236	5%	0%	16%	3%
12238	10%	0%	1%	0%
17822	0%	11%	-2%	2%
35879	4%	0%	12%	5%
36480	5%	0%	16%	3%
38632	0%	11%	-2%	3%
68888	0%	11%	-2%	1%
71638	0%	2%	-10%	-1%
Key Brg				
7923	2%	0%	13%	7%
22667	1%	0%	8%	14%
Kidwell Dr				
46319	6%	0%	4%	3%
Kirby Rd				
72293	5%	0%	12%	1%
Lee Chapel Rd				
10075	0%	103%	0%	0%
41005	0%	60%	0%	0%
Leesburg Pike				
12229	1%	0%	-7%	-13%
14213	2%	0%	-11%	-7%
35567	1%	0%	-17%	-8%
36898	1%	0%	-10%	-8%
57210	0%	19%	-1%	0%
68877	2%	0%	-3%	30%
Lewinsville Rd				
72069	0%	13%	-81%	-61%
76053	0%	23%	-38%	-29%
Lisle Ave				
79334	0%	19%	-5%	0%
Little Falls St				
56032	5%	0%	-4%	-2%
Lovettsville Rd				
67715	0%	13%	0%	1%
74567	0%	12%	0%	1%
Mill Rd				
59340	1%	0%	-4%	-14%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
71085	2%	0%	-34%	-2%
Mulberry Bottom Ln				
22325	0%	150%	0%	0%
N Chesterbrook Rd				
3619	8%	0%	-1%	-14%
3620	5%	0%	-15%	-1%
8454	5%	0%	-15%	0%
8455	0%	8%	0%	-13%
11494	6%	0%	-15%	0%
65371	8%	0%	0%	-14%
N Fairfax St				
35505	0%	22%	0%	0%
36542	0%	12%	0%	0%
N Fort Myer Dr				
28732	1%	0%	8%	10%
N Glebe Rd				
22383	0%	12%	1%	2%
33998	2%	0%	23%	11%
35179	0%	13%	3%	1%
41418	1%	0%	4%	29%
N Henderson Rd				
14006	8%	0%	1%	2%
N Jackson St				
81005	0%	13%	0%	1%
81006	0%	11%	0%	1%
81019	0%	12%	0%	1%
N Jefferson Davis Hwy				
36929	0%	31%	4%	0%
70264	0%	21%	0%	4%
N Key Blvd				
81051	0%	10%	1%	1%
81060	0%	26%	0%	0%
81062	0%	13%	0%	0%
N Kirkwood Rd				
49081	0%	14%	0%	1%
50537	0%	15%	1%	3%
65801	0%	14%	0%	1%
80997	0%	11%	2%	3%
N Lee Hwy				
14003	2%	0%	2%	13%
N Little Falls Rd				
34331	0%	19%	0%	-1%
42920	0%	84%	0%	1%
54639	0%	18%	-1%	0%
68920	3%	0%	-10%	-8%
N Lorcom Ln				
81093	0%	11%	-3%	0%
81094	0%	12%	0%	-1%
N Sycamore St				
50545	0%	10%	1%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
N Washington Blvd				
50287	2%	0%	-13%	-2%
68921	0%	57%	0%	1%
71775	3%	0%	-10%	-8%
N Washington St				
40891	0%	11%	0%	0%
N West St				
52346	0%	0%	0%	10%
N Williamsburg Blvd				
7986	0%	10%	1%	1%
Norfolk Ln				
47674	0%	35%	0%	1%
Nutley St SW				
21949	0%	1%	-12%	0%
Old Chesterbrook Rd				
5120	3%	0%	-13%	-8%
Old Dominion Dr				
3984	2%	0%	0%	12%
4706	1%	0%	-1%	11%
4793	0%	79%	1%	0%
28118	8%	0%	4%	15%
56346	2%	0%	-2%	-10%
60003	6%	0%	5%	4%
60269	2%	0%	-13%	-3%
68779	3%	0%	11%	1%
72563	0%	48%	0%	0%
76054	14%	0%	79%	79%
80116	0%	155%	0%	0%
80118	0%	149%	0%	0%
Old Ox Rd				
28916	0%	12%	0%	0%
Old Springhouse Rd				
77178	0%	0%	-3%	13%
77179	8%	0%	18%	-26%
Park Run Dr				
12483	0%	15%	-1%	-1%
18058	0%	13%	-1%	3%
42887	8%	0%	0%	0%
Pendleton St				
41252	10%	0%	0%	2%
Potomac Ave				
76816	0%	14%	0%	3%
Potomac Greens Dr				
47676	0%	35%	0%	1%
52050	0%	11%	0%	1%
Queen St				
40414	0%	12%	0%	0%
Random Hills Rd				
47228	0%	39%	0%	0%
Ridge Top Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
47226	0%	39%	0%	0%
Ring Rd				
13954	0%	13%	-1%	-12%
41163	6%	0%	6%	4%
42174	0%	8%	0%	-12%
62751	0%	15%	3%	-11%
73543	9%	0%	-9%	-9%
Rolling Rd				
44182	0%	150%	0%	0%
Running Brook Dr				
54182	0%	10%	0%	0%
S Arlington Ridge Rd				
7984	1%	0%	0%	12%
S Berlin Pike				
77579	0%	13%	0%	0%
S Columbia Pike				
9801	1%	0%	1%	10%
26428	1%	0%	2%	12%
49630	3%	0%	0%	12%
S Eads St				
29859	0%	23%	0%	2%
36985	0%	12%	0%	5%
51047	0%	12%	1%	0%
74054	1%	0%	13%	0%
S Fort Scott Dr				
80808	0%	17%	0%	4%
S Glebe Rd				
40901	0%	11%	1%	0%
74285	0%	21%	0%	2%
S Hayes St				
41671	0%	11%	0%	1%
41673	0%	13%	0%	1%
S Joyce St				
70268	0%	2%	0%	11%
S Patrick St				
52667	0%	200%	0%	0%
S Washington Blvd				
17387	1%	0%	0%	26%
28854	1%	0%	0%	14%
33590	0%	1%	11%	0%
73013	0%	1%	0%	-20%
74618	0%	1%	11%	0%
Senseny Rd				
81397	0%	16%	0%	0%
Shirley Hwy				
18091	1%	0%	6%	19%
51571	1%	0%	6%	19%
62771	1%	0%	6%	19%
Spring Hill Rd				
17400	19%	0%	-1%	-9%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
State Rte 123				
59113	4%	0%	1%	11%
State Rte 193				
6379	16%	0%	7%	45%
6381	21%	0%	18%	21%
27937	0%	6%	80%	78%
33644	21%	0%	11%	67%
33645	0%	28%	10%	16%
44442	4%	0%	-11%	-15%
State Rte 237				
59501	0%	1%	4%	15%
State Rte 267				
2107	0%	2%	-10%	-1%
27417	0%	7%	-44%	-3%
44979	0%	2%	-10%	-1%
48466	0%	20%	-37%	-3%
58213	0%	24%	0%	0%
63906	0%	21%	-2%	0%
77023	0%	40%	-2%	0%
State Rte 286				
22322	0%	200%	0%	0%
State Rte 289				
40190	0%	17%	0%	0%
State Rte 3 Bus				
25900	1%	0%	12%	0%
State Rte 55				
60604	0%	16%	0%	0%
State Rte 658				
51814	0%	29%	0%	0%
State Rte 662				
23850	3%	0%	1%	15%
45975	3%	0%	1%	15%
State Rte 682				
77580	0%	17%	0%	0%
State Rte 695				
72292	5%	0%	12%	1%
State Rte 7 Bus				
7291	0%	13%	0%	0%
State Rte 762				
15483	0%	12%	0%	0%
35250	0%	15%	0%	0%
Swinks Mill Rd				
38993	0%	13%	0%	0%
Taylorstown Rd				
81329	0%	12%	0%	2%
81330	0%	11%	0%	3%
Telegraph Rd				
47641	0%	200%	0%	0%
Toll House Rd				
52653	0%	118%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
74774	0%	64%	0%	0%
Towers Crescent Dr				
60863	5%	0%	3%	4%
US Hwy 29				
27469	0%	13%	0%	0%
59243	0%	17%	0%	0%
Van Buren Rd				
6674	0%	15%	1%	0%
W Wakefield Dr				
38725	0%	200%	0%	0%
44175	0%	57%	0%	0%
Wakefield Dr E				
38726	0%	57%	0%	0%
44480	0%	200%	0%	0%
Westmoreland St				
5056	3%	0%	-13%	-6%
5057	3%	0%	-13%	-6%
28008	3%	0%	3%	12%
Westpark Dr				
39729	5%	0%	-1%	4%
45568	0%	11%	-1%	3%
Willowfield Way				
8704	0%	200%	0%	0%
Grand Total	**89.43466**	**704.23802**	**167.9608**	**204.95687**

Segments Expecting Meaningful Changes in Emissions

Alternative 13C: Two ETL Managed Lanes Network on I-495 and two Reversible ETL Managed Lanes Network on I-270, and retain one HOV Lane on I-270 only

Criteria and Document Legend

1. Congested % Difference: Changes of ± 5% or more in AADT on congested highway links of LOS D or worse
2. Free Flow % Difference: Changes of ± 10% or more in AADT on uncongested highway links of LOS C or better;
3. Travel Time AM/PM: Changes of ± 10% or more in travel time; and
d. Not Presented: Changes of ± 10% or more in intersection delay.

Highlighted locations meet the criteria[1]

1. https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/moves_msat_faq.cfm

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
District of Columbia				
10th Pl SE				
15152	0%	12%	8%	5%
10th St SW				
61369	0%	27%	0%	0%
11th St NW				
8999	7%	0%	6%	5%
11th St SE				
8559	2%	0%	14%	5%
25672	2%	0%	13%	6%
45594	2%	0%	13%	6%
12th St NW				
73869	2%	0%	2%	13%
12th St SW				
34294	2%	0%	16%	6%
13th St NW				
2472	2%	0%	11%	7%
7478	0%	0%	1%	18%
16064	1%	0%	28%	-2%
24179	6%	0%	3%	3%
24180	8%	0%	-1%	1%
24945	8%	0%	1%	1%
40598	1%	0%	10%	5%
42428	6%	0%	4%	3%
52075	12%	0%	3%	7%
77912	0%	0%	1%	21%
77913	0%	0%	0%	18%
77943	0%	0%	16%	4%
77944	1%	0%	4%	15%
77945	1%	0%	1%	20%
78708	0%	10%	0%	5%
13th St SE				
78555	5%	0%	10%	3%
14th St NW				
2264	5%	0%	1%	5%
8416	1%	0%	2%	20%
25474	5%	0%	1%	5%
27134	1%	0%	11%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
37489	1%	0%	1%	11%
69332	0%	12%	1%	1%
73327	1%	0%	8%	12%
74148	0%	22%	0%	-3%
14th St SW				
12953	1%	0%	4%	14%
39030	2%	0%	2%	11%
39031	2%	0%	15%	6%
66562	4%	0%	13%	3%
15th St NW				
77028	2%	0%	12%	1%
77035	0%	0%	2%	11%
77036	0%	0%	11%	10%
16th St NW				
3684	2%	0%	3%	18%
5343	0%	10%	-2%	0%
8418	8%	0%	0%	9%
8422	6%	0%	2%	3%
17033	13%	0%	2%	1%
23592	2%	0%	6%	11%
37359	2%	0%	1%	10%
37364	2%	0%	3%	14%
49320	2%	0%	14%	5%
58981	1%	0%	11%	6%
64887	2%	0%	16%	7%
78016	1%	0%	10%	3%
78018	2%	0%	2%	11%
78030	5%	0%	1%	3%
16th St SE				
2249	2%	0%	0%	11%
36078	5%	0%	6%	0%
17th St NE				
62446	1%	0%	2%	10%
17th St NW				
8157	1%	0%	10%	7%
53021	2%	0%	0%	13%
73607	5%	0%	1%	7%
78348	2%	0%	0%	12%
18th St NE				
78598	5%	0%	3%	3%
78599	5%	0%	3%	3%
18th St NW				
2689	3%	0%	13%	5%
9049	2%	0%	2%	21%
9579	3%	0%	13%	5%
17032	5%	0%	2%	10%
27133	1%	0%	11%	6%
36033	2%	0%	13%	4%
40683	2%	0%	16%	2%
75127	0%	13%	-1%	0%
19th St NE				
2519	6%	0%	6%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
79156	0%	28%	0%	0%
1st St SE				
29092	7%	0%	8%	1%
74986	7%	0%	8%	1%
21st St NW				
10680	7%	0%	3%	13%
78474	6%	0%	-2%	5%
22nd St NW				
7786	1%	0%	0%	15%
23rd St NW				
2464	1%	0%	10%	0%
5375	4%	0%	2%	14%
7071	4%	0%	2%	11%
56235	1%	0%	10%	0%
24th St NW				
298	5%	0%	0%	6%
29th St NW				
7783	6%	0%	-1%	1%
30th Pl NW				
23586	1%	0%	12%	4%
38th St NW				
652	1%	0%	7%	14%
17955	2%	0%	13%	8%
3rd St SW				
55114	0%	0%	13%	1%
40th St NE				
60683	0%	22%	0%	5%
60684	0%	24%	1%	0%
42nd St NW				
78789	0%	11%	0%	1%
44th St NE				
31114	1%	0%	14%	1%
60996	7%	0%	4%	11%
79135	6%	0%	5%	11%
44th St NW				
78876	0%	15%	-1%	-1%
78877	0%	36%	-1%	-1%
78878	0%	13%	-3%	0%
78879	0%	28%	-2%	0%
49th St NE				
13513	0%	11%	3%	5%
55637	0%	10%	7%	3%
69253	0%	12%	3%	7%
79089	0%	10%	7%	3%
79091	0%	12%	3%	7%
4th St NE				
3250	5%	0%	3%	10%
44605	7%	0%	2%	6%
4th St NW				
78051	0%	12%	0%	3%
4th St SE				
27750	0%	200%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
4th St SW				
68900	0%	0%	10%	-3%
50th St SE				
46918	0%	15%	0%	-1%
69268	0%	11%	2%	4%
53rd St NE				
79087	0%	12%	0%	7%
81568	0%	12%	0%	7%
53rd St SE				
79066	0%	33%	0%	1%
5th St NW				
13732	6%	0%	3%	2%
37722	5%	0%	1%	6%
6th St SE				
14362	6%	0%	2%	5%
14929	0%	11%	6%	1%
7th St NW				
13242	0%	0%	12%	3%
17199	1%	0%	14%	5%
73602	3%	0%	2%	11%
73603	3%	0%	2%	11%
74149	2%	0%	1%	17%
74151	0%	0%	1%	13%
7th St SW				
37484	3%	0%	11%	3%
8th St NE				
44603	1%	0%	6%	12%
60136	2%	0%	12%	8%
8th St SE				
16275	0%	200%	0%	0%
9th St NE				
58437	2%	0%	11%	7%
9th St NW				
58978	0%	33%	0%	0%
Alabama Ave SE				
14339	2%	0%	0%	15%
34800	4%	0%	2%	12%
35112	6%	0%	2%	4%
46926	4%	0%	10%	4%
58087	2%	0%	14%	6%
69986	3%	0%	1%	14%
69987	3%	0%	1%	14%
70228	4%	0%	6%	15%
Alaska Ave NW				
42940	1%	0%	2%	10%
70323	1%	0%	4%	10%
78734	0%	33%	0%	0%
78736	0%	14%	0%	0%
Arizona Ave NW				
4412	0%	0%	2%	13%
41435	5%	0%	28%	32%
41437	1%	0%	1%	16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
50148	2%	0%	20%	1%
60330	5%	0%	23%	22%
60335	3%	0%	12%	9%
Arkansas Ave NW				
10953	9%	0%	0%	2%
Arlington Memorial Brg				
30416	0%	13%	0%	0%
Aspen St NW				
15524	1%	0%	20%	6%
15683	0%	0%	4%	13%
B St SE				
38570	1%	0%	10%	6%
Beach Dr NW				
1554	4%	0%	1%	11%
23594	6%	0%	8%	1%
42942	3%	0%	2%	10%
Benning Rd SE				
55638	2%	0%	11%	9%
79054	6%	0%	2%	9%
79056	7%	0%	8%	6%
Blagden Ave NW				
27435	5%	0%	11%	4%
46533	0%	10%	0%	0%
46534	0%	11%	0%	0%
C St NE				
14097	2%	0%	2%	14%
62363	2%	0%	11%	0%
69652	2%	0%	11%	0%
C St NW				
13450	5%	0%	3%	13%
Calvert St NW				
41069	1%	0%	10%	1%
Camden St SE				
24773	8%	0%	1%	3%
Canal Rd NW				
649	1%	0%	17%	-2%
15550	0%	12%	0%	-3%
17262	2%	0%	-26%	0%
17487	1%	0%	0%	21%
23511	0%	12%	0%	-3%
40368	2%	0%	0%	-16%
Capital Beltway				
19588	2%	0%	-1%	-12%
Central Ave SE				
79050	0%	24%	0%	-2%
79078	6%	0%	6%	3%
79079	8%	0%	2%	14%
Chain Bridge Rd NW				
78891	0%	13%	1%	2%
Chestnut St NW				
4072	0%	12%	0%	5%
Chillum Pl NE				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
11666	1%	0%	16%	8%
11668	1%	0%	4%	14%
Clara Barton Pkwy NW				
15395	5%	0%	33%	16%
65019	4%	0%	9%	15%
Columbia Rd NW				
6885	0%	0%	0%	15%
10134	3%	0%	15%	6%
12475	2%	0%	14%	5%
16794	2%	0%	2%	11%
60174	3%	0%	1%	10%
78019	2%	0%	3%	11%
78027	2%	0%	2%	10%
Connecticut Ave NW				
43	0%	15%	0%	0%
6285	2%	0%	6%	15%
6286	0%	0%	0%	12%
6287	1%	0%	2%	19%
9625	2%	0%	12%	11%
17961	1%	0%	10%	1%
38190	1%	0%	3%	13%
46317	0%	11%	0%	0%
66347	2%	0%	21%	3%
Constitution Ave NW				
8684	0%	0%	11%	0%
27431	3%	0%	2%	13%
Corcoran St NW				
12571	1%	0%	11%	6%
D St SW				
58977	0%	10%	3%	1%
Dalecarlia Pkwy NW				
60644	0%	12%	5%	2%
DC Hwy 295				
4313	1%	0%	6%	20%
16142	2%	0%	2%	12%
16432	2%	0%	13%	13%
37791	2%	0%	2%	12%
46627	2%	0%	13%	13%
56840	2%	0%	13%	13%
Division Ave NE				
61621	0%	14%	2%	8%
61623	0%	10%	6%	5%
Dix St NE				
61617	0%	11%	3%	5%
79088	0%	12%	4%	4%
79090	0%	13%	4%	4%
Drake Pl SE				
79063	0%	33%	0%	1%
Dupont Cir NW				
8356	1%	0%	11%	1%
8357	1%	0%	11%	8%
12572	1%	0%	12%	4%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
36335	1%	0%	10%	12%
59281	1%	0%	1%	13%
59589	2%	0%	15%	0%
E Capitol St NE				
13984	3%	0%	10%	14%
15185	0%	1%	6%	12%
39036	3%	0%	6%	17%
81564	0%	13%	0%	2%
E Capitol St SE				
18946	0%	21%	0%	5%
61955	8%	0%	2%	9%
62577	7%	0%	9%	2%
73984	0%	23%	2%	0%
81567	0%	11%	0%	7%
E St Expy				
7734	2%	0%	3%	12%
E St NW				
12818	9%	0%	0%	2%
18644	2%	0%	3%	19%
E St SE				
72465	2%	0%	9%	13%
Eastern Ave NE				
1951	2%	0%	20%	12%
9580	3%	0%	18%	13%
15695	2%	0%	9%	16%
15994	4%	0%	22%	25%
22832	2%	0%	14%	9%
28738	2%	0%	10%	17%
38916	0%	11%	0%	0%
40365	2%	0%	21%	14%
63642	3%	0%	13%	18%
81615	0%	14%	0%	3%
Eastern Ave NW				
6848	2%	0%	11%	9%
24473	3%	0%	2%	12%
79282	6%	0%	1%	6%
Ely Pl SE				
73717	6%	0%	2%	1%
F St NE				
10001	6%	0%	2%	0%
70564	6%	0%	2%	0%
F St NW				
23725	9%	0%	3%	8%
F St SE				
79057	7%	0%	3%	6%
79062	0%	33%	0%	1%
Fessenden St NW				
78959	1%	0%	11%	4%
78961	1%	0%	8%	10%
Florida Ave NE				
2158	4%	0%	5%	22%
29426	1%	0%	4%	17%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
45595	2%	0%	11%	13%
53002	1%	0%	3%	13%
62061	9%	0%	2%	4%
Florida Ave NW				
4037	1%	0%	4%	14%
8363	0%	15%	1%	0%
13037	7%	0%	0%	11%
Foxhall Rd NW				
57734	4%	0%	18%	2%
57735	8%	0%	4%	11%
57740	0%	10%	0%	1%
57742	0%	11%	3%	0%
73797	5%	0%	18%	2%
78862	4%	0%	18%	2%
G St NW				
28870	7%	0%	1%	-1%
Gallatin St NW				
4054	9%	0%	0%	2%
78643	10%	0%	6%	9%
George Washington Memorial Pkwy				
33685	0%	1%	0%	19%
34645	0%	1%	0%	19%
Georgia Ave NW				
4069	0%	0%	1%	16%
6284	0%	0%	4%	13%
14664	7%	0%	6%	11%
40243	0%	0%	1%	16%
40244	0%	0%	11%	4%
40245	1%	0%	18%	4%
56625	1%	0%	20%	6%
78670	0%	11%	1%	1%
Girard St NW				
40246	0%	0%	13%	4%
62441	1%	0%	1%	20%
Glenbrook Rd NW				
3261	0%	86%	0%	0%
3262	0%	52%	0%	0%
Glover Rd NW				
23582	0%	11%	2%	2%
Good Hope Rd SE				
6242	1%	0%	1%	11%
13762	3%	0%	1%	10%
16436	2%	0%	0%	11%
32661	5%	0%	6%	0%
Grant St NE				
79143	7%	0%	6%	0%
H St NW				
78358	1%	0%	1%	12%
I- 295				
1480	0%	0%	0%	14%
I- 395				
49096	2%	0%	12%	8%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
I- 495				
19589	1%	0%	-21%	0%
25781	1%	0%	-18%	3%
I- 66				
12777	4%	0%	15%	5%
14357	1%	0%	12%	15%
Independence Ave SE				
29097	0%	193%	0%	0%
Indiana Ave NW				
12499	0%	11%	1%	1%
78177	9%	0%	3%	2%
78179	8%	0%	4%	3%
Irving St NW				
40733	7%	0%	6%	11%
58671	1%	0%	1%	11%
62766	0%	0%	13%	3%
Jefferson St NW				
78671	0%	16%	1%	1%
K St NW				
48418	0%	24%	1%	1%
59587	4%	0%	3%	11%
78050	0%	19%	0%	2%
Kalmia Rd NW				
5205	2%	0%	12%	13%
10356	2%	0%	12%	12%
Kalorama Rd NW				
78498	0%	12%	1%	1%
Kansas Ave NW				
24770	2%	0%	2%	12%
28743	2%	0%	2%	10%
Kenilworth Ave NE				
5225	4%	0%	8%	12%
16150	2%	0%	9%	11%
16433	2%	0%	4%	12%
16971	0%	11%	0%	0%
17843	2%	0%	17%	14%
23731	2%	0%	4%	12%
31339	7%	0%	9%	4%
63890	2%	0%	17%	14%
70336	0%	124%	0%	0%
Klingle Rd NW				
9933	6%	0%	0%	5%
Lee St NE				
72843	0%	13%	0%	2%
Livingston Rd SE				
78539	0%	20%	0%	3%
Logan Cir NW				
7191	0%	0%	3%	12%
15843	1%	0%	2%	17%
22012	2%	0%	11%	12%
39389	2%	0%	11%	12%
39393	6%	0%	1%	7%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Loughboro Rd NW				
50149	6%	0%	10%	1%
60340	6%	0%	7%	1%
60342	0%	11%	4%	1%
M L King Jr Ave SE				
32417	0%	11%	0%	2%
M St NE				
60137	9%	0%	2%	4%
79160	0%	28%	1%	0%
79161	0%	28%	1%	0%
M St NW				
27308	1%	0%	-4%	14%
69809	3%	0%	11%	2%
M St SE				
9382	1%	0%	3%	11%
65908	0%	1%	1%	10%
81377	2%	0%	0%	12%
Macarthur Blvd NW				
7662	1%	0%	9%	12%
25539	1%	0%	13%	14%
31684	7%	0%	11%	15%
58985	8%	0%	10%	12%
Maine Ave SW				
69848	5%	0%	6%	6%
Malcolm X Ave SE				
13596	0%	0%	0%	14%
Maryland Ave SW				
55119	0%	0%	0%	10%
Massachusetts Ave NW				
7787	3%	0%	11%	7%
7788	0%	29%	-1%	0%
13472	2%	0%	0%	10%
78469	0%	24%	-1%	-2%
Massachusetts Ave SE				
9841	2%	0%	13%	6%
34801	12%	0%	10%	2%
69511	4%	0%	2%	11%
69513	13%	0%	10%	2%
79774	4%	0%	4%	13%
Michigan Ave NE				
40334	2%	0%	0%	11%
75349	2%	0%	0%	11%
Military Rd NW				
12721	1%	0%	13%	1%
23874	6%	0%	3%	1%
Minnesota Ave NE				
14574	8%	0%	5%	11%
Minnesota Ave SE				
13520	6%	0%	4%	2%
Mississippi Ave SE				
14565	0%	12%	1%	3%
Missouri Ave NW				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
28512	7%	0%	4%	5%
Montana Ave NE				
6548	1%	0%	11%	1%
43276	1%	0%	4%	17%
N Capitol St NE				
9310	1%	0%	15%	4%
18421	2%	0%	3%	14%
43558	2%	0%	0%	14%
57549	2%	0%	0%	11%
69665	2%	0%	18%	1%
N Capitol St NW				
37120	0%	0%	1%	19%
78074	0%	0%	4%	16%
78075	0%	0%	4%	16%
N St NW				
19923	0%	12%	0%	0%
Naylor Rd SE				
2844	2%	0%	0%	15%
16283	3%	0%	10%	21%
22008	2%	0%	8%	18%
32998	1%	0%	12%	-1%
45687	0%	0%	0%	12%
51786	2%	0%	5%	21%
Nebraska Ave NW				
29325	0%	14%	1%	0%
57104	1%	0%	-12%	1%
61373	1%	0%	9%	13%
70093	1%	0%	12%	7%
Nevada Ave NW				
9897	7%	0%	4%	1%
14964	2%	0%	12%	7%
New Hampshire Ave NW				
8366	2%	0%	13%	6%
8832	2%	0%	0%	13%
19527	1%	0%	1%	14%
25074	6%	0%	2%	2%
36336	1%	0%	7%	12%
38188	1%	0%	7%	12%
39867	6%	0%	4%	2%
40711	6%	0%	4%	2%
46577	2%	0%	13%	6%
77999	2%	0%	11%	7%
New York Ave NE				
2892	1%	0%	3%	13%
12729	1%	0%	0%	13%
25193	2%	0%	12%	7%
28988	1%	0%	3%	13%
39744	1%	0%	0%	13%
New York Ave NW				
6767	3%	0%	2%	12%
9216	1%	0%	4%	14%
36672	0%	10%	0%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
74144	3%	0%	1%	11%
Newton St NE				
30893	5%	0%	5%	2%
Nicholson St NE				
3699	1%	0%	4%	14%
O St NE				
2756	1%	0%	2%	13%
Oglethorpe St NE				
11661	1%	0%	4%	13%
Ohio Dr SW				
19255	0%	16%	0%	0%
49093	0%	21%	0%	1%
56841	2%	0%	12%	8%
70865	6%	0%	3%	1%
P St NW				
12500	5%	0%	6%	4%
12783	5%	0%	6%	4%
Park Pl NW				
30086	6%	0%	2%	2%
30087	0%	11%	0%	2%
39268	0%	11%	3%	1%
40249	3%	0%	1%	12%
78693	5%	0%	2%	2%
Pennsylvania Ave NW				
37955	9%	0%	1%	6%
46587	0%	0%	11%	1%
Q St NW				
7372	7%	0%	-5%	0%
69853	6%	0%	-5%	1%
78420	2%	0%	1%	-12%
Queen St NE				
11971	3%	0%	3%	12%
R St NE				
77635	6%	0%	3%	8%
Reno Rd NW				
41701	8%	0%	3%	2%
60729	1%	0%	17%	0%
78950	6%	0%	-2%	3%
Rhode Island Ave NE				
18423	2%	0%	3%	13%
23730	1%	0%	14%	5%
30679	4%	0%	5%	16%
66850	5%	0%	5%	2%
66851	5%	0%	5%	2%
Rhode Island Ave NW				
1656	1%	0%	18%	3%
8368	4%	0%	0%	11%
18417	2%	0%	3%	14%
29099	1%	0%	4%	13%
74696	1%	0%	3%	17%
74698	1%	0%	2%	14%
75121	1%	0%	3%	17%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
75126	0%	19%	0%	-3%
Riggs Rd NE				
3326	1%	0%	4%	14%
River Rd NW				
18025	3%	0%	10%	11%
18026	2%	0%	11%	5%
Rock Creek Church Rd NW				
30089	0%	11%	3%	1%
30092	7%	0%	8%	2%
60732	0%	10%	0%	2%
Rock Creek Pkwy NW				
23728	5%	0%	0%	6%
S Arlington Blvd				
16445	0%	1%	4%	10%
43859	0%	1%	0%	19%
S Capitol St SE				
60353	5%	0%	4%	0%
S Carolina Ave SE				
1565	0%	10%	1%	2%
S St SE				
2252	5%	0%	0%	0%
Sargent Rd NE				
30241	2%	0%	4%	13%
Scott Cir NW				
14578	1%	0%	13%	3%
60173	1%	0%	15%	2%
South Dakota Ave NE				
957	1%	0%	10%	11%
Southern Ave SE				
5934	3%	0%	0%	26%
19326	2%	0%	0%	15%
32326	3%	0%	8%	13%
37848	2%	0%	12%	0%
52604	3%	0%	4%	12%
79016	6%	0%	11%	13%
79017	5%	0%	9%	10%
79018	3%	0%	6%	12%
79019	3%	0%	5%	13%
79130	2%	0%	7%	12%
Southwest Fwy				
3950	2%	0%	16%	6%
30263	1%	0%	5%	12%
Spring Rd NW				
8171	7%	0%	1%	4%
24953	5%	0%	5%	1%
46181	12%	0%	3%	5%
Stanley St SE				
79775	4%	0%	4%	11%
79777	4%	0%	11%	7%
Suitland Rd SE				
37175	8%	0%	1%	3%
T St NW				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
7046	0%	0%	1%	20%
Taylor St NE				
27432	2%	0%	0%	11%
Tenley Cir NW				
45592	2%	0%	13%	6%
69808	1%	0%	14%	13%
Texas Ave SE				
32514	0%	15%	7%	1%
62578	0%	20%	1%	5%
Thomas Cir NW				
39394	2%	0%	21%	2%
39395	3%	0%	5%	14%
Upton St NW				
78837	6%	0%	-1%	6%
78839	7%	0%	6%	1%
US Hwy 1 Alt				
2156	0%	12%	3%	4%
3554	3%	0%	7%	12%
7929	2%	0%	6%	11%
15929	3%	0%	1%	11%
29212	2%	0%	6%	17%
29641	5%	0%	0%	11%
43277	2%	0%	6%	11%
45885	3%	0%	7%	12%
68642	5%	0%	1%	8%
68645	5%	0%	1%	8%
68646	5%	0%	1%	13%
77613	4%	0%	3%	13%
US Hwy 50				
3920	2%	0%	24%	7%
5378	1%	0%	5%	18%
7985	3%	0%	19%	11%
13209	0%	0%	2%	15%
23516	3%	0%	19%	4%
36930	1%	0%	7%	22%
56258	1%	0%	0%	13%
Valley Ave SE				
78544	0%	13%	0%	1%
Van Buren St NW				
6283	6%	0%	10%	1%
24971	5%	0%	0%	10%
Van Ness St NW				
9585	1%	0%	3%	12%
42936	2%	0%	11%	3%
Virginia Ave SE				
78258	0%	1%	11%	0%
W St NW				
57741	0%	12%	0%	1%
57743	0%	12%	3%	0%
Warder St NW				
78701	0%	61%	1%	1%
Washington Blvd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
16446	0%	1%	3%	11%
Western Ave NW				
287	4%	0%	11%	16%
2020	3%	0%	9%	11%
7713	3%	0%	13%	8%
11207	2%	0%	13%	7%
13476	7%	0%	9%	4%
18024	2%	0%	13%	19%
40049	3%	0%	12%	6%
41078	3%	0%	11%	8%
41332	0%	10%	0%	1%
56474	2%	0%	12%	6%
56479	6%	0%	13%	3%
78926	6%	0%	14%	4%
79011	0%	12%	0%	1%
Whitehaven Pkwy NW				
58990	6%	0%	0%	-5%
Wisconsin Ave NW				
7371	1%	0%	-3%	15%
8588	1%	0%	20%	3%
10207	2%	0%	15%	12%
17022	1%	0%	-3%	13%
17958	2%	0%	7%	13%
17959	2%	0%	10%	5%
35307	2%	0%	18%	5%
53757	1%	0%	20%	3%
60178	0%	0%	14%	1%
78413	1%	0%	20%	3%
78836	6%	0%	0%	6%
78838	7%	0%	6%	2%
Wise Rd NW				
1555	2%	0%	27%	6%
13727	3%	0%	5%	12%
Woodley Rd NW				
75124	5%	0%	-1%	2%
Maryland				
1st St				
5718	2%	0%	16%	3%
23rd Ave				
2557	6%	0%	6%	11%
59623	7%	0%	12%	11%
23rd Pkwy				
71553	4%	0%	12%	2%
2nd Ave				
5264	5%	0%	11%	8%
34074	4%	0%	11%	6%
38th Ave				
15936	8%	0%	9%	3%
39th Ave				
80336	0%	27%	0%	1%
80338	0%	17%	2%	0%
80355	0%	15%	3%	4%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
80356	0%	19%	4%	3%
40th Ave				
80329	0%	13%	4%	6%
80330	0%	11%	4%	7%
80331	0%	12%	5%	3%
80332	0%	10%	6%	4%
42nd Ave				
80276	7%	0%	7%	13%
80278	9%	0%	10%	7%
80295	0%	17%	2%	0%
80296	0%	21%	0%	2%
80298	0%	11%	4%	3%
80300	0%	16%	6%	4%
80307	10%	0%	1%	10%
80309	12%	0%	14%	3%
80317	0%	12%	3%	5%
80318	0%	11%	0%	5%
50th Ave				
46214	3%	0%	2%	17%
46215	4%	0%	18%	6%
55th Ave				
80429	0%	35%	4%	0%
80430	0%	14%	4%	0%
80431	0%	43%	0%	3%
80432	0%	22%	0%	4%
56th Ave				
39959	4%	0%	0%	11%
56th Pl				
80407	0%	12%	1%	3%
80418	0%	12%	1%	3%
80425	0%	11%	4%	0%
80427	0%	13%	0%	4%
75th Ave				
12052	12%	0%	1%	22%
34932	13%	0%	10%	2%
79988	10%	0%	4%	14%
79990	0%	18%	6%	7%
94th Ave				
64133	0%	12%	2%	2%
96th Ave				
80558	0%	15%	1%	1%
80560	0%	14%	1%	1%
Addison Rd				
55242	3%	0%	12%	3%
79930	5%	0%	3%	15%
79941	0%	14%	3%	5%
79943	0%	18%	3%	5%
Addison Rd S				
32810	0%	14%	1%	1%
49007	0%	29%	4%	0%
64993	7%	0%	1%	11%
Adelphi Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
2913	3%	0%	7%	14%
4870	2%	0%	3%	11%
50122	2%	0%	12%	5%
51496	3%	0%	12%	17%
62036	5%	0%	12%	11%
Ager Rd				
8858	5%	0%	13%	5%
14998	4%	0%	2%	11%
72872	5%	0%	11%	5%
72873	0%	6%	11%	4%
Alcona St				
24801	0%	17%	2%	2%
79594	0%	200%	0%	0%
79596	0%	70%	0%	0%
Aldershot Dr				
16714	15%	0%	0%	27%
55065	13%	0%	22%	0%
Allentown Rd				
4873	0%	18%	0%	2%
5824	4%	0%	15%	6%
12586	3%	0%	6%	34%
12587	3%	0%	9%	11%
25504	3%	0%	11%	13%
41879	2%	0%	23%	13%
61211	0%	15%	-7%	-1%
Ammendale Rd				
11126	0%	17%	-5%	-2%
11127	0%	16%	-1%	-6%
11129	0%	17%	-5%	-2%
11130	0%	15%	-6%	-3%
11131	0%	17%	-1%	-6%
62971	0%	17%	-1%	-7%
Annapolis Rock Rd				
67521	6%	0%	0%	7%
Arbor St				
79995	0%	19%	4%	4%
79996	0%	24%	4%	3%
Arcola Ave				
56061	1%	0%	11%	-1%
Arctic Ave				
79392	0%	10%	0%	5%
Ardwick Ardmore Rd				
33882	6%	0%	-6%	6%
54380	6%	0%	-6%	6%
Arena Dr				
22563	0%	18%	-5%	-1%
26644	5%	0%	-7%	-1%
47212	5%	0%	-8%	-3%
47213	1%	0%	1%	-16%
Aris T Allen Blvd				
13573	0%	0%	-1%	16%
Auth Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
5823	0%	12%	-2%	-5%
44626	0%	12%	-2%	-5%
44632	0%	13%	-3%	-12%
71280	0%	13%	-3%	-12%
Avery Rd				
40430	6%	0%	7%	0%
Baltimore Rd				
36593	2%	0%	7%	13%
44664	3%	0%	10%	5%
63835	2%	0%	15%	1%
Baltimore St				
53658	0%	0%	0%	15%
Baltimore Washington Pkwy				
21293	0%	132%	0%	0%
40912	0%	200%	0%	0%
44488	0%	16%	0%	2%
Barker Pl				
79595	0%	200%	0%	0%
79597	0%	99%	-2%	0%
Bassford Rd				
36184	7%	0%	-1%	-1%
Bauer Dr				
6261	2%	0%	10%	5%
79389	0%	10%	0%	5%
Beach Dr				
929	1%	0%	0%	11%
5882	11%	0%	12%	9%
18878	10%	0%	13%	21%
69214	0%	26%	3%	4%
Beaver Dam Rd				
16009	11%	0%	7%	5%
24504	14%	0%	8%	7%
Bel Pre Rd				
73081	4%	0%	22%	1%
73083	4%	0%	1%	17%
Belcrest Rd				
14346	0%	11%	1%	1%
80268	5%	0%	2%	11%
Beltsville Dr				
59020	1%	0%	17%	-2%
62973	0%	2%	11%	-1%
Beltsville Rd				
65743	0%	4%	11%	-1%
Bradley Blvd				
339	0%	0%	1%	-12%
624	9%	0%	7%	6%
2147	4%	0%	1%	15%
12374	7%	0%	1%	11%
12622	3%	0%	0%	10%
12623	8%	0%	14%	2%
19054	8%	0%	4%	17%
22187	1%	0%	-3%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
32181	0%	0%	-16%	2%
34815	10%	0%	9%	1%
37196	2%	0%	25%	-4%
43183	3%	0%	17%	21%
49712	14%	0%	27%	36%
53152	2%	0%	16%	19%
53163	10%	0%	28%	17%
66219	4%	0%	1%	15%
79255	9%	0%	-1%	15%
79257	5%	0%	2%	-3%
Brae Brooke Dr				
16307	0%	16%	10%	9%
Brandywine Rd				
68976	2%	0%	0%	-11%
Briggs Chaney Rd				
1639	5%	0%	8%	5%
1931	7%	0%	2%	11%
10318	0%	14%	1%	2%
22489	0%	13%	1%	2%
22490	0%	18%	3%	2%
28313	5%	0%	4%	3%
37537	11%	0%	13%	6%
49371	0%	12%	2%	2%
56332	0%	22%	7%	2%
74068	6%	0%	3%	28%
75875	0%	17%	3%	2%
75876	0%	11%	1%	2%
Brightseat Rd				
10557	0%	34%	0%	1%
10558	0%	22%	1%	1%
14700	8%	0%	28%	6%
21548	0%	30%	2%	2%
22780	0%	22%	1%	2%
22781	0%	39%	5%	3%
22790	0%	15%	1%	7%
22792	0%	24%	4%	6%
24279	0%	26%	1%	1%
25648	8%	0%	4%	29%
28213	0%	51%	4%	2%
34593	0%	38%	3%	0%
59051	0%	39%	4%	2%
68771	0%	52%	5%	3%
77232	0%	18%	1%	6%
77234	0%	28%	3%	5%
Brinkley Rd				
30141	0%	11%	2%	0%
Broad Run Rd				
17147	0%	20%	0%	0%
23545	0%	20%	0%	0%
Brooke Rd				
19015	0%	12%	0%	3%
79893	0%	13%	3%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Brooks Dr				
48260	0%	12%	0%	1%
Brown Rd				
48996	0%	26%	1%	4%
Brown Station Rd				
20742	0%	48%	8%	8%
20743	0%	54%	7%	8%
20744	0%	23%	3%	5%
20745	0%	26%	3%	4%
20764	0%	12%	0%	1%
33571	0%	13%	0%	0%
65178	0%	22%	0%	1%
Broxburn Dr				
37233	4%	0%	13%	2%
65138	6%	0%	0%	15%
Brunett Ave				
25776	5%	0%	-1%	1%
Buffalo Rd				
17808	7%	0%	0%	0%
18164	7%	0%	0%	0%
Burdette Rd				
6495	13%	0%	30%	3%
26063	28%	0%	5%	45%
51768	16%	0%	28%	3%
65132	28%	0%	4%	38%
Burkittsville Rd				
81547	2%	0%	-12%	-1%
81549	3%	0%	-1%	-13%
Cabin Branch Dr				
66765	0%	10%	2%	4%
Cabin John Pkwy				
10260	0%	0%	1%	-26%
18873	0%	13%	0%	5%
60085	0%	6%	15%	0%
71868	0%	2%	-21%	1%
Calverton Blvd				
42957	1%	0%	19%	0%
Campus Dr				
3648	3%	0%	12%	9%
3649	6%	0%	10%	10%
3996	3%	0%	6%	11%
3997	5%	0%	11%	5%
9761	1%	0%	17%	7%
10289	2%	0%	7%	11%
35070	3%	0%	12%	7%
35071	4%	0%	12%	9%
35072	4%	0%	13%	14%
49115	3%	0%	14%	13%
80262	6%	0%	16%	8%
80264	3%	0%	2%	15%
Campus Way N				
4745	0%	14%	0%	-5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
14529	0%	12%	0%	-5%
77235	11%	0%	-2%	4%
77236	14%	0%	2%	12%
Campus Way S				
15330	0%	14%	0%	1%
23127	0%	32%	6%	2%
49020	0%	31%	1%	8%
65390	0%	24%	1%	2%
Capital Beltway				
2624	9%	0%	60%	79%
2625	2%	0%	31%	20%
6219	0%	200%	0%	0%
6521	0%	10%	9%	4%
6524	8%	0%	52%	56%
6525	1%	0%	-16%	-6%
6528	1%	0%	-16%	-6%
6529	0%	1%	-3%	-18%
6818	3%	0%	17%	7%
6820	2%	0%	42%	16%
6821	2%	0%	-3%	24%
6822	0%	4%	4%	14%
6823	2%	0%	19%	6%
6824	2%	0%	3%	29%
6825	0%	9%	10%	4%
6827	2%	0%	11%	16%
6830	2%	0%	29%	13%
6831	0%	8%	20%	6%
6832	8%	0%	5%	24%
7119	2%	0%	29%	13%
7120	1%	0%	20%	22%
7123	2%	0%	23%	6%
7124	2%	0%	22%	23%
7773	9%	0%	56%	45%
8715	3%	0%	36%	51%
8718	0%	1%	22%	9%
8719	1%	0%	-8%	19%
10252	8%	0%	82%	73%
10253	0%	8%	4%	10%
10254	0%	200%	0%	0%
10257	0%	612%	0%	0%
10513	2%	0%	24%	31%
11031	0%	9%	-15%	-18%
11033	0%	2%	30%	-4%
11035	0%	10%	-13%	-3%
14058	6%	0%	2%	40%
16672	0%	600%	-13%	-16%
17226	3%	0%	31%	15%
19280	0%	9%	10%	4%
25418	2%	0%	23%	16%
25419	1%	0%	31%	17%
34319	7%	0%	38%	73%
35426	8%	0%	19%	10%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
37141	3%	0%	31%	38%
37542	0%	3%	-25%	-13%
37544	4%	0%	4%	49%
41598	0%	21%	0%	0%
43010	8%	0%	22%	63%
43212	0%	10%	-1%	0%
43317	1%	0%	-21%	0%
43763	3%	0%	31%	38%
43772	0%	10%	-12%	-1%
45001	0%	13%	2%	87%
46647	3%	0%	3%	15%
46648	0%	3%	-11%	-13%
52567	4%	0%	38%	36%
52945	0%	5%	30%	15%
53312	0%	8%	3%	12%
55255	2%	0%	41%	26%
55619	1%	0%	39%	23%
55626	0%	200%	0%	0%
58650	2%	0%	2%	-11%
59353	0%	42%	0%	1%
59354	8%	0%	22%	63%
59356	0%	407%	52%	1%
59366	3%	0%	11%	28%
59644	1%	0%	8%	49%
68592	0%	200%	-8%	-18%
68593	0%	29600%	-15%	-14%
69021	9%	0%	56%	45%
Carrington Ave				
27903	3%	0%	10%	2%
28202	4%	0%	3%	12%
Carroll Ave				
62933	6%	0%	-1%	3%
80628	1%	0%	3%	10%
Catskill St				
71270	5%	0%	11%	0%
Cedar Ln				
1279	3%	0%	22%	3%
26478	4%	0%	1%	27%
33922	3%	0%	22%	3%
52561	4%	0%	1%	27%
Chapel Point Rd				
5443	0%	13%	1%	0%
5743	0%	11%	0%	0%
6480	0%	11%	0%	0%
10731	0%	13%	0%	0%
48695	0%	13%	1%	0%
57138	0%	14%	1%	0%
Charles Armentrout Dr				
23705	3%	0%	1%	12%
Cherry Ln				
1326	0%	24%	-1%	0%
Chesapeake Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
80422	0%	11%	4%	3%
Chestnut Ave				
9447	0%	11%	2%	2%
31622	0%	11%	2%	2%
31623	0%	13%	2%	3%
31624	0%	12%	1%	3%
31625	0%	13%	2%	3%
41033	0%	10%	2%	2%
61769	6%	0%	2%	4%
65437	6%	0%	2%	4%
Cheverly Ave				
14819	0%	13%	6%	5%
59776	0%	18%	4%	5%
Church Rd				
12130	0%	14%	1%	2%
15956	0%	27%	5%	1%
16238	0%	27%	5%	1%
16239	0%	22%	5%	1%
16638	0%	29%	4%	10%
17739	0%	40%	10%	7%
20756	0%	37%	2%	5%
21611	0%	16%	5%	1%
27106	0%	40%	4%	3%
33229	0%	37%	2%	5%
36048	6%	0%	2%	2%
36053	0%	16%	1%	7%
38533	0%	18%	9%	10%
44256	0%	16%	0%	2%
45305	0%	34%	10%	8%
53702	0%	35%	4%	9%
55147	0%	22%	9%	16%
55148	0%	23%	9%	16%
55149	0%	17%	8%	11%
58009	0%	22%	8%	17%
58010	0%	18%	9%	10%
59319	0%	18%	9%	10%
59320	0%	23%	9%	16%
64150	0%	30%	2%	6%
64417	0%	14%	2%	8%
65171	0%	28%	2%	6%
65860	0%	11%	1%	11%
67960	0%	35%	2%	4%
Cindy Ln				
79811	0%	27%	4%	1%
79813	0%	16%	1%	2%
Claggett Landing Rd				
55218	2%	0%	9%	15%
73254	1%	0%	17%	4%
Clara Barton Pkwy				
2149	5%	0%	-4%	0%
36917	0%	2%	0%	-45%
52785	2%	0%	1%	-21%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
55616	0%	6%	2%	73%
59355	12%	0%	17%	46%
60086	0%	4%	-47%	0%
Clarksburg Rd				
55612	5%	0%	0%	-5%
College Pkwy				
75594	0%	15%	1%	0%
Columbia Ave				
79290	7%	0%	3%	4%
79291	6%	0%	3%	5%
Columbia Park Rd				
10549	6%	0%	2%	14%
25355	7%	0%	22%	20%
31087	7%	0%	3%	20%
58070	6%	0%	2%	14%
58652	6%	0%	2%	14%
66760	6%	0%	6%	5%
66761	6%	0%	6%	5%
66762	6%	0%	6%	5%
Connecticut Ave				
1367	1%	0%	0%	12%
13666	1%	0%	-1%	14%
13672	0%	0%	12%	1%
24970	1%	0%	-1%	14%
36816	0%	0%	-1%	12%
44972	1%	0%	0%	16%
57588	0%	0%	-1%	16%
69701	2%	0%	3%	13%
69703	1%	0%	13%	5%
73084	1%	0%	14%	0%
74412	1%	0%	13%	-1%
Contee Rd				
1043	0%	14%	-1%	0%
Cool Spring Rd				
5106	6%	0%	6%	1%
County Rd				
54074	4%	0%	19%	16%
67060	3%	0%	9%	18%
Court House Dr				
63710	7%	0%	-1%	-1%
Crabbs Branch Way				
3816	2%	0%	12%	0%
71694	4%	0%	0%	11%
Crain Hwy				
3483	2%	0%	10%	10%
11329	3%	0%	10%	11%
14381	2%	0%	11%	7%
14759	2%	0%	22%	6%
14760	2%	0%	19%	12%
15060	1%	0%	10%	6%
17046	5%	0%	8%	13%
17746	1%	0%	12%	4%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
19078	5%	0%	17%	7%
20364	2%	0%	18%	6%
21135	2%	0%	13%	4%
24920	2%	0%	10%	7%
25221	4%	0%	11%	19%
32950	2%	0%	7%	16%
33216	3%	0%	15%	30%
34255	1%	0%	10%	6%
35923	1%	0%	12%	5%
42483	4%	0%	15%	7%
42484	5%	0%	15%	6%
54461	3%	0%	16%	20%
59046	4%	0%	23%	13%
60691	4%	0%	7%	11%
61013	4%	0%	16%	7%
61638	4%	0%	19%	7%
61640	4%	0%	8%	12%
61957	4%	0%	14%	7%
61958	4%	0%	14%	8%
62275	4%	0%	14%	7%
63879	2%	0%	7%	15%
71337	3%	0%	15%	28%
Crescent Rd				
22463	2%	0%	5%	18%
28807	4%	0%	22%	7%
Crest Ave				
80033	0%	83%	0%	1%
Crittenden St				
34130	3%	0%	3%	17%
64413	3%	0%	18%	10%
Croom Station Rd				
61963	0%	11%	0%	1%
62274	4%	0%	15%	7%
79604	6%	0%	4%	4%
79605	6%	0%	4%	4%
Dairy Farm Rd				
48243	3%	0%	-14%	12%
74746	2%	0%	2%	-13%
Dale Dr				
637	6%	0%	5%	0%
35303	6%	0%	5%	0%
54293	0%	14%	2%	4%
Damascus Rd				
35101	6%	0%	0%	11%
55983	7%	0%	0%	7%
Darcy Rd				
32636	0%	19%	11%	5%
33831	0%	10%	3%	0%
33833	0%	26%	0%	-5%
35898	0%	15%	4%	5%
45689	0%	12%	2%	8%
49825	0%	10%	3%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Darnestown Rd				
44282	1%	0%	10%	1%
44561	3%	0%	3%	10%
Dartmouth Ave				
5262	6%	0%	11%	3%
33740	9%	0%	9%	4%
Dateleaf Ave				
79881	0%	46%	-1%	0%
79882	0%	87%	-1%	0%
Decatur St				
3115	5%	0%	3%	12%
16222	8%	0%	12%	17%
16224	6%	0%	4%	12%
39962	8%	0%	12%	16%
80271	0%	40%	4%	12%
80272	0%	47%	14%	5%
Democracy Blvd				
5999	9%	0%	0%	24%
6000	6%	0%	0%	25%
6218	3%	0%	0%	16%
6594	0%	5%	13%	-1%
19271	0%	6%	0%	30%
26665	7%	0%	2%	13%
51195	10%	0%	21%	1%
63217	1%	0%	19%	0%
68994	7%	0%	20%	0%
Denley Rd				
13660	3%	0%	3%	12%
13662	3%	0%	14%	8%
Devon Rd				
53910	0%	14%	2%	4%
Diamond Back				
13823	1%	0%	4%	-24%
13825	1%	0%	-25%	0%
39843	3%	0%	-1%	-12%
57250	2%	0%	-2%	-10%
Dorset Ave				
52903	2%	0%	5%	11%
79322	0%	12%	4%	8%
Dwight D Eisenhower Hwy				
25778	1%	0%	0%	-16%
37276	0%	2%	0%	-18%
37284	0%	3%	0%	-12%
37634	0%	3%	0%	-12%
37638	1%	0%	-1%	-11%
47337	1%	0%	-8%	19%
60159	1%	0%	-1%	-12%
66784	0%	202%	40%	113%
67073	0%	208%	30%	106%
67077	0%	208%	42%	114%
67083	0%	208%	8%	89%
68866	1%	0%	0%	-13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
69013	1%	0%	-1%	-12%
69882	1%	0%	-8%	19%
Dyson Rd				
57442	0%	16%	0%	0%
E Furnace Branch Rd				
53722	5%	0%	0%	5%
E Gude Dr				
1237	7%	0%	0%	11%
32529	6%	0%	12%	0%
E Jefferson St				
9665	7%	0%	0%	9%
9703	1%	0%	14%	4%
11363	0%	0%	12%	-7%
52568	2%	0%	-2%	12%
59943	1%	0%	6%	11%
E Patrick St				
75635	0%	72%	0%	0%
E Randolph Rd				
8397	4%	0%	17%	2%
10600	4%	0%	11%	18%
E West Hwy				
1699	2%	0%	9%	14%
1701	4%	0%	11%	1%
2644	10%	0%	4%	2%
2648	2%	0%	1%	13%
5595	2%	0%	18%	4%
7868	2%	0%	11%	6%
8494	4%	0%	14%	29%
8500	2%	0%	1%	17%
13831	3%	0%	13%	4%
14345	0%	11%	1%	1%
14732	2%	0%	18%	12%
15588	5%	0%	11%	4%
15596	2%	0%	14%	11%
16025	4%	0%	11%	1%
16229	3%	0%	12%	10%
16510	3%	0%	12%	9%
16513	2%	0%	14%	11%
16514	2%	0%	3%	15%
16515	2%	0%	2%	17%
17450	2%	0%	2%	10%
19040	3%	0%	15%	8%
19273	2%	0%	3%	15%
21767	7%	0%	4%	16%
21879	3%	0%	9%	11%
25350	3%	0%	14%	7%
26357	3%	0%	10%	13%
30826	5%	0%	16%	4%
32171	3%	0%	4%	18%
36414	7%	0%	14%	9%
37528	3%	0%	12%	1%
40143	2%	0%	2%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
40922	2%	0%	9%	12%
46310	3%	0%	18%	6%
47491	3%	0%	14%	1%
53531	2%	0%	10%	12%
57826	2%	0%	18%	12%
59622	6%	0%	5%	15%
60809	2%	0%	0%	15%
60810	3%	0%	15%	11%
64096	2%	0%	2%	11%
71878	2%	0%	4%	15%
72314	2%	0%	7%	11%
Earnshaw Dr				
57764	0%	11%	0%	1%
57765	0%	21%	0%	1%
Edwards Ferry Rd				
79478	0%	15%	0%	1%
Ellington Dr				
60610	6%	0%	-3%	-4%
Elm Ave				
39640	5%	0%	6%	2%
47777	6%	0%	2%	6%
Elmer Derr Rd				
45642	2%	0%	0%	10%
Emory Ln				
24829	0%	11%	0%	2%
Enterprise Rd				
19227	11%	0%	17%	12%
29411	7%	0%	9%	14%
36042	4%	0%	5%	19%
36043	11%	0%	22%	24%
56261	6%	0%	14%	2%
62084	5%	0%	3%	15%
71017	13%	0%	15%	18%
74057	12%	0%	4%	35%
Fairfax Rd				
79316	2%	0%	6%	12%
79317	4%	0%	14%	9%
Fairland Rd				
1930	6%	0%	3%	4%
50730	3%	0%	16%	1%
56279	7%	0%	3%	9%
Falls Rd				
5991	4%	0%	1%	22%
32244	10%	0%	18%	18%
Fenno Rd				
62406	0%	22%	0%	0%
Fenton St				
2150	7%	0%	6%	5%
26095	7%	0%	3%	3%
Fernwood Rd				
62004	4%	0%	4%	11%
64821	1%	0%	14%	-8%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
65124	4%	0%	4%	11%
65125	2%	0%	2%	11%
Fields Rd				
45789	7%	0%	11%	1%
72379	4%	0%	12%	1%
Fingerboard Rd				
44793	0%	14%	0%	-1%
Fish Hatchery Rd				
25264	0%	16%	0%	0%
Fishers Ln				
40826	3%	0%	0%	11%
69940	4%	0%	12%	1%
Fletchertown Rd				
80583	0%	17%	0%	-3%
Foote St				
81616	0%	13%	0%	3%
Forest Glen Rd				
9228	14%	0%	12%	6%
56380	0%	20%	3%	2%
Forest Rd				
19286	0%	22%	4%	4%
60055	0%	12%	1%	1%
80002	0%	38%	0%	1%
80005	0%	34%	0%	1%
80034	0%	83%	0%	1%
Forestville Rd				
17217	0%	13%	-1%	-8%
37749	4%	0%	1%	22%
65000	5%	0%	22%	11%
65833	7%	0%	35%	7%
69065	3%	0%	1%	13%
75577	2%	0%	12%	4%
75578	3%	0%	11%	-52%
75582	0%	13%	8%	2%
75583	0%	9%	0%	-18%
75584	0%	13%	15%	4%
75585	0%	12%	13%	4%
Frederick Rd				
64194	3%	0%	0%	-12%
71698	1%	0%	11%	0%
71699	1%	0%	0%	13%
Frolich Ln				
55295	0%	18%	2%	3%
Gallant Green Rd				
52022	11%	0%	-1%	-1%
65570	10%	0%	-1%	-1%
Gallatin St				
80357	0%	16%	4%	1%
80358	0%	17%	1%	4%
Gambrills Rd				
101	6%	0%	1%	1%
Garden Gate Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
22270	2%	0%	13%	0%
Garrett A Morgan Blvd				
24277	0%	18%	1%	2%
28204	0%	13%	4%	3%
28205	0%	24%	1%	2%
28211	0%	14%	4%	3%
28212	0%	21%	1%	3%
37554	0%	21%	1%	3%
68770	0%	14%	4%	3%
72449	0%	15%	4%	2%
Georgia Ave				
11026	2%	0%	12%	5%
22261	2%	0%	11%	0%
32047	0%	0%	14%	-1%
72348	4%	0%	20%	0%
Gladys Noon Spellman Pkwy				
8630	3%	0%	14%	31%
11444	0%	29%	0%	0%
12086	0%	6%	-5%	-12%
12090	2%	0%	12%	-1%
13882	3%	0%	-17%	-6%
14135	2%	0%	11%	17%
16988	0%	11%	0%	-5%
18384	3%	0%	18%	25%
33282	4%	0%	8%	15%
43798	0%	15%	0%	0%
44068	4%	0%	14%	24%
48270	2%	0%	12%	20%
48534	4%	0%	8%	14%
48609	0%	200%	0%	0%
53705	2%	0%	12%	20%
54843	2%	0%	-13%	-10%
54848	0%	61%	0%	-2%
55216	4%	0%	13%	17%
58701	3%	0%	11%	13%
58941	2%	0%	11%	19%
58944	3%	0%	13%	13%
58945	4%	0%	13%	17%
68234	0%	13%	6%	17%
Glen Mill Rd				
4161	2%	0%	-2%	17%
19843	10%	0%	13%	0%
22405	11%	0%	16%	2%
36812	7%	0%	0%	17%
42181	8%	0%	0%	9%
46463	2%	0%	16%	6%
46639	0%	11%	1%	5%
47231	8%	0%	0%	20%
55063	7%	0%	14%	0%
Glen Rd				
1175	4%	0%	12%	0%
25326	0%	10%	0%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
25327	8%	0%	0%	15%
26363	0%	14%	2%	1%
30400	0%	11%	0%	3%
40423	5%	0%	12%	0%
49713	8%	0%	0%	16%
55057	5%	0%	12%	0%
56920	7%	0%	0%	15%
75280	4%	0%	12%	0%
75281	7%	0%	0%	15%
Glenarden Pkwy				
13489	20%	0%	14%	30%
14694	0%	15%	4%	19%
Glenbrook Rd				
79325	0%	7%	10%	1%
Glenmont Cir				
57883	2%	0%	-1%	20%
57886	1%	0%	16%	-2%
Glenn Dale Blvd				
15279	0%	14%	1%	4%
22691	3%	0%	15%	7%
30839	7%	0%	3%	9%
48891	4%	0%	3%	21%
67360	0%	11%	2%	3%
Glissans Mill Rd				
44331	0%	11%	0%	0%
Good Luck Rd				
14137	2%	0%	12%	20%
14371	4%	0%	13%	17%
21669	0%	25%	7%	7%
25408	1%	0%	1%	-10%
Great Seneca Hwy				
13824	1%	0%	-10%	0%
Greenbelt Rd				
12058	0%	23%	1%	0%
16934	0%	7%	-72%	-57%
30148	6%	0%	18%	2%
30189	6%	0%	12%	2%
30325	4%	0%	1%	18%
32782	1%	0%	11%	1%
55223	0%	33%	-1%	-1%
80545	0%	18%	3%	6%
80547	0%	15%	3%	2%
Greencastle Rd				
1540	0%	13%	-1%	0%
10589	0%	10%	0%	-10%
25130	0%	10%	0%	-10%
72436	0%	29%	0%	-4%
Greentree Rd				
5873	15%	0%	21%	3%
9868	0%	24%	14%	9%
34982	11%	0%	6%	28%
53653	14%	0%	9%	21%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
66216	0%	23%	12%	16%
72625	4%	0%	16%	4%
H G Trueman Rd				
54089	0%	22%	0%	1%
69924	0%	22%	0%	1%
Hanover Pkwy				
19304	0%	15%	4%	1%
30531	0%	24%	1%	4%
30532	0%	15%	4%	1%
39976	0%	24%	1%	4%
52274	0%	12%	8%	6%
Harbour Way				
75519	3%	0%	5%	27%
75520	3%	0%	26%	6%
Harry S Truman Dr				
21133	0%	22%	4%	1%
21527	0%	23%	4%	1%
21528	0%	20%	1%	6%
23690	0%	22%	1%	5%
23971	0%	24%	1%	5%
71888	0%	19%	5%	2%
Harry S Truman Dr N				
33912	11%	0%	24%	16%
71898	8%	0%	1%	42%
Hastings Dr				
24268	0%	22%	3%	0%
26629	0%	22%	3%	0%
79839	0%	11%	1%	0%
Heathermore Blvd				
29927	0%	12%	0%	0%
51378	0%	13%	0%	0%
79693	0%	12%	0%	0%
79695	0%	13%	0%	0%
Hessong Bridge Rd				
48698	0%	16%	0%	0%
Hillmeade Rd				
25711	0%	11%	1%	1%
Holly Springs Dr W				
1273	0%	19%	0%	3%
36484	0%	14%	3%	0%
58367	0%	19%	1%	1%
67056	0%	22%	1%	1%
Holter Rd				
18789	0%	16%	0%	0%
I- 195				
54987	1%	0%	-1%	14%
I- 270				
5926	1%	0%	22%	-2%
5927	1%	0%	26%	-13%
9031	0%	13%	0%	0%
9033	1%	0%	-19%	-5%
9035	1%	0%	-12%	-8%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
9038	1%	0%	-13%	0%
9040	1%	0%	-11%	0%
9977	1%	0%	-14%	0%
10771	0%	2%	3%	-16%
10773	0%	6%	-10%	0%
11285	6%	0%	-3%	4%
15674	1%	0%	-12%	-8%
19193	0%	234%	93%	8%
19200	1%	0%	-13%	0%
19585	1%	0%	-14%	-5%
19669	0%	3%	59%	0%
22834	1%	0%	29%	-1%
25127	0%	0%	0%	16%
26790	0%	400%	-171%	-171%
27942	3%	0%	-8%	10%
28056	0%	217%	158%	11%
28057	0%	229%	8%	94%
28059	0%	200%	0%	0%
28061	0%	212%	115%	17%
28366	0%	200%	0%	0%
28372	1%	0%	-11%	-3%
29074	0%	207%	97%	8%
29075	0%	200%	0%	0%
29076	0%	211%	17%	108%
29077	0%	28%	0%	0%
32167	0%	200%	0%	0%
37288	0%	3%	0%	-12%
37540	1%	0%	31%	1%
37645	1%	0%	-11%	-3%
37941	0%	200%	0%	0%
38287	0%	229%	17%	126%
43769	4%	0%	3%	34%
53317	1%	0%	-18%	-4%
55268	1%	0%	-11%	-3%
55623	4%	0%	-28%	4%
58033	0%	236%	78%	8%
58036	0%	200%	0%	0%
58037	0%	211%	60%	17%
58038	0%	169%	0%	0%
58039	1%	0%	-12%	-8%
59875	0%	200%	0%	0%
63899	1%	0%	13%	-1%
65625	0%	236%	117%	17%
65627	0%	200%	0%	0%
65629	0%	0%	18%	0%
65630	1%	0%	-19%	-5%
66587	0%	434%	18%	19%
66773	0%	234%	29%	29%
67369	0%	200%	0%	0%
67373	0%	200%	0%	0%
67374	0%	201%	8%	110%
67375	0%	236%	93%	8%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
67381	0%	200%	0%	0%
67668	0%	229%	17%	126%
67671	0%	236%	117%	17%
67675	0%	200%	0%	0%
67677	0%	233%	19%	108%
67679	0%	225%	153%	17%
67967	0%	212%	115%	17%
67968	0%	205%	17%	131%
67970	0%	212%	115%	17%
67972	0%	221%	17%	56%
67975	0%	200%	0%	0%
67977	0%	221%	17%	56%
67978	0%	216%	93%	17%
67979	0%	221%	17%	56%
67981	0%	216%	93%	17%
68265	0%	209%	17%	115%
68266	0%	216%	93%	17%
68270	0%	200%	0%	0%
68272	0%	226%	17%	37%
68274	0%	204%	146%	17%
68275	0%	200%	0%	0%
68277	0%	203%	17%	38%
68434	0%	200%	0%	0%
68559	0%	208%	17%	39%
68560	0%	219%	0%	0%
68562	0%	232%	61%	17%
68566	0%	4%	0%	-24%
68573	0%	4%	0%	-24%
68721	0%	225%	13%	140%
68725	0%	223%	59%	17%
68729	1%	0%	-14%	-5%
68731	0%	2%	0%	-18%
68857	0%	4%	0%	-24%
70365	1%	0%	21%	-3%
70367	1%	0%	-1%	25%
70368	1%	0%	-1%	27%
70369	1%	0%	20%	-3%
70608	2%	0%	0%	-22%
70751	1%	0%	28%	-1%
I- 370				
9355	0%	84%	0%	0%
32611	0%	16%	0%	0%
52380	6%	0%	-22%	3%
59195	0%	11%	1%	1%
I- 495				
1190	6%	0%	11%	19%
11587	4%	0%	17%	53%
11592	4%	0%	30%	32%
12346	0%	0%	-14%	-3%
12347	0%	0%	-14%	-3%
14126	3%	0%	1%	30%
14676	4%	0%	13%	29%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
14677	0%	200%	0%	0%
14681	3%	0%	24%	37%
16745	0%	22%	1%	4%
16926	0%	8%	8%	12%
16990	3%	0%	13%	36%
16991	3%	0%	13%	34%
17216	0%	6%	-61%	-51%
17685	7%	0%	25%	44%
17687	4%	0%	48%	0%
17688	6%	0%	17%	1%
19074	4%	0%	22%	47%
20076	5%	0%	33%	33%
20450	2%	0%	1%	35%
20850	7%	0%	91%	79%
27933	0%	12%	8%	35%
28574	0%	1%	12%	-8%
29807	6%	0%	59%	3%
38259	0%	8%	8%	12%
40692	0%	14%	-1%	-3%
43508	0%	8%	8%	12%
43514	4%	0%	43%	36%
44067	0%	3%	2%	-26%
47339	0%	4%	11%	12%
55221	4%	0%	43%	43%
56253	4%	0%	71%	51%
56564	0%	18%	-1%	0%
I- 595				
12094	5%	0%	-36%	-17%
27732	0%	2%	0%	-10%
59578	4%	0%	-29%	-76%
73588	0%	2%	-10%	-5%
73592	0%	2%	-10%	-5%
73596	0%	2%	-10%	-5%
73862	0%	2%	0%	-10%
I- 95				
3357	2%	0%	21%	23%
3358	0%	7%	13%	17%
3375	4%	0%	27%	11%
3376	0%	400%	0%	0%
12344	2%	0%	37%	39%
12349	2%	0%	-22%	-12%
12603	5%	0%	49%	66%
13349	4%	0%	-27%	-56%
13351	3%	0%	40%	34%
13352	2%	0%	-14%	-12%
14124	3%	0%	35%	53%
14125	4%	0%	38%	25%
14679	4%	0%	39%	54%
14682	0%	217%	-3%	-23%
14974	0%	42%	0%	0%
14976	0%	12%	0%	3%
16744	0%	4%	-43%	-34%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
17213	4%	0%	23%	53%
17219	0%	8%	13%	18%
17686	0%	6%	1%	28%
19330	0%	22%	0%	0%
20071	0%	32%	-1%	-17%
20077	0%	8%	13%	18%
21772	4%	0%	-52%	-30%
21773	0%	38%	4%	9%
28577	0%	8%	13%	18%
28809	0%	12%	7%	6%
30064	0%	15%	5%	1%
30065	0%	1603%	34%	3%
30867	0%	14%	0%	-1%
40691	4%	0%	24%	43%
43515	5%	0%	10%	31%
44948	0%	104%	1%	0%
48261	4%	0%	11%	6%
48347	0%	1%	19%	1%
48348	0%	1800%	0%	0%
49018	0%	40%	4%	3%
51638	0%	95%	0%	0%
54078	3%	0%	8%	13%
54493	2%	0%	24%	55%
56263	8%	0%	36%	45%
58947	4%	0%	29%	28%
58950	0%	14%	0%	0%
60889	2%	0%	-6%	-19%
67392	2%	0%	-7%	-22%
70129	2%	0%	-3%	-30%
Independence St				
34656	1%	0%	-1%	13%
Iverson St				
38484	0%	11%	0%	1%
Jadeleaf Ave				
79858	0%	16%	1%	1%
79877	0%	46%	-1%	0%
Jefferson Pike				
3165	0%	14%	0%	0%
45075	0%	29%	0%	0%
69334	0%	16%	0%	0%
74634	0%	14%	0%	0%
Jefferson St				
80301	0%	12%	4%	3%
80303	0%	15%	4%	3%
John Hanson Hwy				
13343	1%	0%	13%	19%
13344	2%	0%	23%	6%
13348	2%	0%	20%	2%
16984	1%	0%	13%	19%
48619	9%	0%	11%	43%
58942	0%	14%	1%	0%
Jones Bridge Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
19055	5%	0%	3%	17%
32185	3%	0%	18%	10%
35615	5%	0%	11%	14%
43176	9%	0%	23%	6%
Jones Ln				
79464	0%	32%	0%	1%
79465	0%	17%	0%	2%
Kenilworth Ave				
15030	2%	0%	18%	12%
15623	6%	0%	15%	25%
15635	5%	0%	8%	7%
15702	3%	0%	12%	27%
15891	6%	0%	14%	2%
18174	5%	0%	1%	16%
25727	5%	0%	6%	25%
40694	4%	0%	17%	26%
56371	5%	0%	27%	23%
63572	5%	0%	13%	21%
Kentsdale Dr				
25122	7%	0%	1%	20%
32519	8%	0%	14%	1%
Kettering Dr				
15332	0%	30%	9%	17%
15333	24%	0%	12%	23%
15334	0%	11%	10%	4%
24931	4%	0%	2%	18%
64714	9%	0%	12%	6%
Kipling Pkwy				
34157	0%	13%	2%	13%
72730	19%	0%	17%	15%
Knowles Ave				
8714	5%	0%	15%	11%
52949	2%	0%	9%	12%
55235	2%	0%	11%	9%
69216	7%	0%	17%	25%
69217	7%	0%	19%	25%
69218	3%	0%	13%	20%
69219	3%	0%	17%	15%
72972	3%	0%	11%	12%
Konterra Dr				
51884	6%	0%	-1%	-3%
67062	7%	0%	-3%	-1%
71510	0%	39%	0%	0%
L St				
79944	0%	12%	2%	5%
Lancelot Rd				
43481	0%	200%	0%	0%
Landover Rd				
3018	1%	0%	0%	13%
9465	2%	0%	11%	1%
10556	3%	0%	-1%	-13%
11451	1%	0%	10%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
11590	4%	0%	1%	16%
11871	0%	0%	-15%	2%
14118	0%	6%	-48%	-21%
18568	3%	0%	8%	11%
21807	2%	0%	12%	0%
22788	6%	0%	4%	13%
32643	3%	0%	19%	3%
48617	1%	0%	0%	13%
50974	0%	11%	0%	7%
54495	1%	0%	0%	13%
63261	3%	0%	9%	11%
64680	2%	0%	14%	1%
79989	0%	10%	4%	2%
Larchmont Ave				
29634	0%	20%	1%	0%
29635	5%	0%	9%	5%
49174	0%	44%	0%	1%
79901	5%	0%	6%	8%
79903	7%	0%	5%	9%
Largo Center Dr				
22564	0%	15%	-3%	-1%
Largo Rd				
2424	0%	10%	8%	4%
15042	6%	0%	10%	12%
15045	6%	0%	10%	10%
15328	6%	0%	9%	9%
15331	0%	26%	10%	17%
21532	13%	0%	7%	4%
21613	4%	0%	8%	30%
24933	10%	0%	2%	36%
33558	7%	0%	17%	4%
33566	7%	0%	10%	7%
34929	0%	15%	5%	4%
64432	8%	0%	5%	7%
64441	0%	15%	5%	4%
Laurel Bowie Rd				
1186	3%	0%	16%	16%
35899	2%	0%	5%	13%
Layhill Rd				
1090	2%	0%	0%	16%
10337	7%	0%	1%	20%
10591	0%	0%	15%	1%
11104	0%	0%	14%	1%
15670	4%	0%	17%	1%
15673	2%	0%	0%	14%
22263	2%	0%	14%	3%
32604	3%	0%	-1%	24%
33924	2%	0%	11%	2%
44263	3%	0%	25%	2%
44542	1%	0%	16%	1%
51629	0%	14%	0%	3%
53315	2%	0%	0%	16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
55259	2%	0%	0%	17%
Leeland Rd				
14761	0%	14%	1%	1%
33217	0%	22%	1%	2%
48446	0%	18%	1%	2%
63877	0%	11%	1%	1%
Leland St				
79276	0%	19%	0%	1%
79277	0%	16%	1%	0%
Little Falls Pkwy				
2346	6%	0%	3%	5%
32180	7%	0%	4%	4%
79323	0%	25%	2%	3%
Longfellow St				
80306	0%	11%	2%	2%
80343	0%	13%	1%	5%
80344	0%	13%	1%	5%
80345	0%	16%	6%	3%
80346	0%	16%	6%	2%
80364	0%	13%	1%	5%
80366	0%	16%	6%	3%
Lorain Ave				
16314	0%	20%	2%	2%
Lottsford Rd				
22353	8%	0%	12%	14%
22572	0%	17%	10%	8%
25654	0%	14%	4%	10%
40406	7%	0%	9%	14%
49051	13%	0%	15%	18%
58881	3%	0%	12%	5%
63266	8%	0%	9%	21%
71895	0%	13%	6%	9%
71896	13%	0%	2%	16%
Lottsford Vista Rd				
25103	0%	20%	6%	14%
52270	0%	19%	9%	11%
61445	0%	18%	18%	10%
63861	0%	30%	12%	18%
Loughran Rd				
2119	0%	200%	0%	0%
Lusbys Ln				
80173	0%	13%	0%	1%
80174	0%	13%	0%	1%
Macarthur Blvd				
1477	3%	0%	10%	0%
6211	5%	0%	-4%	1%
6271	1%	0%	-18%	-2%
13642	0%	11%	0%	9%
16422	7%	0%	0%	28%
24379	7%	0%	-7%	-1%
26361	9%	0%	9%	16%
32178	7%	0%	-14%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
34972	0%	0%	7%	-19%
34973	6%	0%	0%	14%
37132	2%	0%	0%	10%
51772	4%	0%	14%	4%
55050	17%	0%	20%	4%
65137	6%	0%	2%	17%
65346	1%	0%	-23%	-8%
65348	1%	0%	-6%	-15%
71007	8%	0%	0%	15%
71008	3%	0%	1%	-17%
Malcolm Rd				
29000	8%	0%	-1%	-1%
80169	9%	0%	-1%	-1%
Maple Ave				
79265	5%	0%	6%	1%
Marianna Dr				
79388	0%	11%	0%	3%
Marlboro Pike				
25806	0%	26%	3%	0%
26951	5%	0%	6%	8%
31043	0%	24%	0%	2%
64726	7%	0%	5%	9%
Marriottsville Rd				
48324	2%	0%	-1%	-12%
Martin Luther King Jr Hwy				
4393	3%	0%	11%	23%
14140	3%	0%	-24%	-36%
14517	5%	0%	17%	22%
15194	4%	0%	10%	14%
15968	6%	0%	2%	11%
23071	3%	0%	15%	13%
23230	6%	0%	7%	27%
23231	5%	0%	22%	7%
25098	7%	0%	-2%	-22%
25641	4%	0%	13%	20%
25779	4%	0%	-1%	-17%
27902	3%	0%	11%	2%
30836	0%	8%	-3%	-20%
38179	3%	0%	10%	17%
48888	6%	0%	3%	11%
49277	6%	0%	8%	25%
49841	4%	0%	5%	18%
53699	4%	0%	-1%	-17%
54372	0%	15%	3%	4%
54919	4%	0%	3%	15%
59032	5%	0%	13%	22%
63782	4%	0%	11%	31%
63783	4%	0%	8%	12%
66764	10%	0%	11%	15%
68768	4%	0%	3%	13%
70831	7%	0%	38%	27%
72168	5%	0%	20%	7%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
75390	5%	0%	6%	12%
Mattaponi Rd				
42107	0%	19%	0%	0%
Meadowridge Ln				
4742	0%	22%	5%	6%
58595	0%	38%	6%	9%
Melwood Rd				
25870	0%	13%	3%	1%
Merrimac Dr				
18831	0%	22%	0%	1%
33808	0%	21%	2%	0%
71471	3%	0%	2%	10%
71472	4%	0%	12%	2%
Missouri Ave				
60696	0%	12%	0%	1%
Mitchellville Rd				
15347	0%	19%	2%	8%
18888	9%	0%	2%	4%
20365	0%	13%	2%	2%
33221	0%	15%	3%	10%
55135	0%	11%	2%	4%
55136	12%	0%	5%	7%
59317	0%	14%	5%	6%
79567	0%	10%	3%	3%
Montgomery Rd				
80218	5%	0%	-1%	-1%
Montpelier Dr				
6106	6%	0%	-3%	-3%
39619	7%	0%	-3%	-3%
Montrose Rd				
8728	3%	0%	-10%	-10%
10779	1%	0%	-7%	-13%
21959	2%	0%	-15%	-17%
63486	2%	0%	-8%	-21%
Moorland Ln				
65354	3%	0%	21%	14%
65356	3%	0%	10%	23%
Morgan Dr				
47821	2%	0%	5%	12%
Mount Oak Rd				
2420	6%	0%	-1%	3%
2421	7%	0%	3%	1%
20366	8%	0%	3%	2%
21607	7%	0%	-1%	2%
48714	8%	0%	3%	2%
64147	6%	0%	-1%	3%
Muddy Branch Rd				
69033	2%	0%	0%	19%
Muirkirk Rd				
10820	6%	0%	0%	-11%
44548	6%	0%	-1%	-6%
45692	6%	0%	0%	-11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
49852	5%	0%	4%	-3%
60497	2%	0%	0%	-12%
64334	8%	0%	-2%	-6%
N Church St				
1394	3%	0%	11%	2%
32717	3%	0%	3%	11%
N Englewood Dr				
79973	0%	51%	0%	0%
79974	0%	21%	0%	1%
79975	0%	51%	1%	0%
79976	0%	29%	1%	0%
N Frederick Ave				
63398	1%	0%	0%	-11%
N Main St				
36803	7%	0%	0%	0%
N Stonestreet Ave				
1299	4%	0%	1%	10%
1300	4%	0%	10%	2%
N Washington St				
1591	3%	0%	0%	12%
1593	2%	0%	16%	0%
79408	2%	0%	0%	14%
79410	1%	0%	24%	-1%
Nalley Rd				
27896	0%	11%	4%	0%
Nebel St				
58749	7%	0%	9%	1%
Needleleaf Ln				
14813	18%	0%	16%	7%
53625	0%	50%	3%	7%
54387	0%	33%	2%	4%
58880	28%	0%	3%	28%
Nelson St				
79403	0%	15%	1%	0%
New Cut Rd				
49461	6%	0%	1%	1%
New Hampshire Ave				
3377	3%	0%	7%	20%
14392	3%	0%	16%	28%
14394	3%	0%	21%	19%
17448	3%	0%	21%	15%
30623	2%	0%	1%	10%
33319	2%	0%	11%	3%
33537	2%	0%	11%	3%
52521	0%	0%	11%	-4%
52748	2%	0%	1%	10%
Nicholson Ln				
5626	5%	0%	2%	10%
74133	6%	0%	12%	5%
Nicholson St				
80322	5%	0%	2%	16%
80324	4%	0%	11%	4%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
80325	0%	18%	9%	2%
80326	0%	16%	1%	8%
80375	0%	20%	0%	4%
80376	0%	27%	0%	3%
80377	0%	13%	3%	1%
80378	0%	18%	3%	1%
Northern Ave				
80546	0%	43%	3%	4%
80548	0%	40%	2%	2%
Northview Dr				
53612	0%	19%	3%	3%
53613	0%	12%	2%	2%
53614	0%	15%	2%	1%
67879	0%	24%	3%	3%
79568	0%	32%	0%	0%
Northwest Dr				
8400	0%	0%	-2%	11%
50386	0%	0%	13%	-1%
Norwood Rd				
8722	2%	0%	10%	0%
Nottingham Rd				
40680	0%	96%	0%	0%
Odell Rd				
15421	2%	0%	0%	-11%
64382	5%	0%	4%	4%
Oglethorpe St				
80308	10%	0%	1%	10%
80310	13%	0%	14%	4%
Old Alexandria Ferry Rd				
68084	3%	0%	8%	17%
68085	3%	0%	11%	13%
Old Baltimore Pike				
22460	0%	13%	1%	1%
49721	0%	12%	0%	1%
Old Baltimore Rd				
173	5%	0%	-4%	4%
Old Branch Ave				
2691	2%	0%	12%	-6%
35175	1%	0%	-11%	6%
Old Central Ave				
50632	1%	0%	15%	4%
60579	1%	0%	12%	6%
Old Columbia Pike				
10597	6%	0%	6%	9%
12546	5%	0%	-1%	1%
29714	2%	0%	11%	1%
63712	5%	0%	-1%	-1%
Old Crain Hwy				
42833	0%	10%	0%	2%
42839	9%	0%	8%	33%
51991	7%	0%	19%	9%
61965	0%	10%	1%	3%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
61966	0%	13%	3%	2%
66892	10%	0%	3%	33%
66893	11%	0%	25%	4%
66894	12%	0%	25%	7%
71335	1%	0%	-2%	13%
79543	0%	11%	2%	3%
79545	0%	14%	3%	2%
79546	0%	10%	0%	0%
79547	0%	29%	0%	0%
Old Georgetown Rd				
2044	0%	0%	1%	-11%
6494	8%	0%	-22%	-7%
6506	6%	0%	9%	3%
6864	6%	0%	13%	-62%
9698	0%	0%	12%	-7%
10171	1%	0%	10%	-9%
10255	0%	211%	-3%	0%
10256	0%	211%	0%	0%
10258	1%	0%	1%	-16%
11339	0%	0%	18%	-10%
22412	8%	0%	-12%	-38%
26036	0%	0%	-1%	11%
26379	7%	0%	1%	11%
37549	7%	0%	-37%	-5%
38235	7%	0%	18%	-54%
40139	3%	0%	2%	21%
41240	2%	0%	22%	5%
42317	1%	0%	-25%	3%
42687	1%	0%	-18%	19%
45005	2%	0%	-2%	12%
45349	1%	0%	-16%	8%
52032	9%	0%	-24%	-9%
53654	7%	0%	7%	3%
60089	2%	0%	-12%	2%
61749	0%	0%	-1%	11%
61752	0%	0%	-25%	5%
65353	3%	0%	25%	10%
65355	1%	0%	6%	20%
66225	7%	0%	1%	7%
69461	7%	0%	8%	-69%
69462	8%	0%	12%	-58%
69463	9%	0%	-39%	-9%
69468	0%	0%	-4%	12%
69469	1%	0%	-7%	17%
70828	2%	0%	22%	5%
79310	2%	0%	3%	22%
79311	1%	0%	-2%	11%
79315	0%	29%	1%	3%
Old Gunpowder Rd				
1032	6%	0%	-1%	-3%
1629	7%	0%	-2%	-6%
14972	6%	0%	-10%	-5%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
16342	3%	0%	-1%	-10%
47280	7%	0%	-2%	-7%
72759	7%	0%	-2%	-6%
Old Largo Rd				
33567	7%	0%	8%	9%
48995	8%	0%	5%	7%
Old Laurel Bowie Rd				
4874	0%	12%	1%	4%
23128	0%	12%	1%	4%
40665	0%	12%	1%	4%
40666	0%	12%	1%	4%
Old Marlboro Pike				
19543	0%	24%	0%	2%
19544	0%	22%	0%	2%
19545	0%	12%	1%	0%
19546	0%	11%	1%	0%
19552	0%	12%	1%	0%
19554	0%	24%	0%	2%
19555	0%	17%	1%	0%
20762	0%	34%	0%	2%
23678	0%	34%	0%	2%
26332	0%	13%	0%	1%
58075	0%	11%	0%	-1%
64160	0%	17%	1%	0%
66045	0%	20%	3%	0%
74631	7%	0%	0%	26%
Old Md 28				
44661	2%	0%	12%	0%
73092	3%	0%	2%	12%
Olson St				
79780	0%	72%	0%	0%
79782	0%	43%	0%	0%
Omega Dr				
43487	6%	0%	13%	1%
45786	7%	0%	0%	9%
Owens Rd				
30863	0%	19%	1%	0%
72742	0%	12%	0%	1%
Oxon Run Dr				
81360	0%	14%	5%	1%
Paint Branch Pkwy				
7458	3%	0%	3%	14%
18411	3%	0%	16%	6%
Parkland Dr				
79379	5%	0%	0%	9%
79380	7%	0%	6%	1%
79381	7%	0%	5%	1%
Parklawn Dr				
7772	2%	0%	0%	14%
9705	3%	0%	15%	1%
25124	5%	0%	2%	9%
36911	0%	12%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
72157	6%	0%	7%	5%
Pasture Brook Rd				
27090	6%	0%	1%	0%
Patuxent River Rd				
19430	0%	19%	6%	2%
69204	0%	15%	1%	4%
Paul Pitcher Memorial Hwy				
62198	1%	0%	10%	2%
Pennsy Dr				
59314	0%	12%	0%	7%
80535	6%	0%	0%	18%
Pennsylvania Ave				
17212	0%	15%	-15%	-1%
58364	2%	0%	0%	21%
66994	1%	0%	13%	0%
67353	2%	0%	-14%	0%
76987	0%	39%	0%	0%
Pepper Mill Dr				
79844	0%	12%	2%	0%
Persimmon Tree Ln				
1236	9%	0%	0%	28%
62940	6%	0%	20%	0%
Persimmon Tree Rd				
335	10%	0%	0%	12%
8638	10%	0%	0%	12%
Philadelphia Ave				
13233	3%	0%	13%	6%
53909	3%	0%	2%	16%
Pickering Cir				
21127	0%	18%	1%	2%
Picnic Woods Rd				
54031	0%	10%	0%	1%
Piney Meetinghouse Rd				
3800	9%	0%	0%	28%
44573	12%	0%	0%	22%
44574	14%	0%	18%	2%
57557	11%	0%	23%	2%
Pleasant Colony Dr				
24930	2%	0%	9%	15%
33231	1%	0%	17%	4%
Pleasant Rd				
48702	1%	0%	0%	14%
Plymouth Ct				
75913	0%	24%	1%	1%
75914	0%	41%	0%	6%
79560	0%	41%	0%	6%
79561	0%	24%	1%	1%
Pointer Ridge Dr				
62031	0%	20%	0%	7%
75911	0%	24%	1%	1%
75912	0%	41%	0%	6%
Polk St				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
80534	0%	22%	0%	2%
Poplar Ave				
79288	4%	0%	10%	2%
Poultry Rd				
22470	6%	0%	1%	1%
Powder Mill Rd				
6307	3%	0%	18%	6%
6398	6%	0%	-4%	0%
24453	4%	0%	12%	9%
32642	5%	0%	13%	13%
49722	7%	0%	9%	24%
60495	7%	0%	16%	20%
63303	6%	0%	-4%	0%
63304	4%	0%	1%	11%
64380	6%	0%	-4%	0%
67296	10%	0%	42%	34%
80221	5%	0%	-2%	-2%
Prince Frederick Rd				
12897	2%	0%	0%	12%
Princess Garden Pkwy				
25713	5%	0%	2%	14%
30333	8%	0%	14%	13%
Quarry Ave				
32806	0%	19%	4%	0%
63883	0%	10%	0%	1%
65403	0%	20%	4%	0%
Queen Anne Bridge Rd				
19429	0%	19%	6%	2%
69203	0%	15%	1%	4%
Queens Chapel Rd				
2547	5%	0%	1%	13%
14078	0%	17%	1%	0%
14080	0%	15%	0%	0%
14083	4%	0%	12%	3%
14085	5%	0%	1%	13%
60198	4%	0%	12%	3%
80363	0%	13%	1%	5%
80365	0%	15%	6%	3%
Quince Orchard Rd				
68747	2%	0%	0%	10%
68811	2%	0%	0%	14%
Quintana St				
2550	0%	11%	1%	0%
Raljon Rd				
21549	0%	20%	2%	3%
32118	0%	20%	4%	3%
46657	12%	0%	14%	51%
47006	15%	0%	3%	39%
51278	17%	0%	28%	14%
51279	0%	17%	15%	18%
Randolph Rd				
5724	1%	0%	11%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
6021	3%	0%	3%	15%
22266	2%	0%	12%	0%
22271	2%	0%	12%	10%
22272	2%	0%	11%	6%
35857	3%	0%	14%	7%
39566	2%	0%	11%	0%
46641	3%	0%	10%	10%
53730	3%	0%	16%	11%
70823	3%	0%	4%	15%
72708	3%	0%	19%	4%
74690	3%	0%	11%	4%
Redskins Rd				
32119	0%	17%	3%	4%
65823	0%	18%	4%	3%
Reece Rd				
77876	0%	132%	0%	0%
Rhode Island Ave				
4366	0%	24%	0%	1%
11584	0%	13%	4%	6%
56573	5%	0%	0%	0%
63298	7%	0%	0%	6%
63299	0%	43%	3%	1%
Riggs Rd				
22854	2%	0%	8%	11%
51485	4%	0%	12%	2%
71476	3%	0%	2%	15%
Ritchie Marlboro Rd				
3546	0%	37%	2%	0%
12613	1%	0%	2%	12%
14684	0%	407%	1%	-15%
14685	12%	0%	-9%	-47%
15879	0%	45%	1%	3%
16803	4%	0%	-13%	-9%
16804	7%	0%	-21%	-19%
17748	3%	0%	31%	1%
20338	0%	17%	1%	5%
33562	5%	0%	-3%	-1%
33900	0%	9%	-19%	-2%
Ritchie Rd				
11875	0%	25%	8%	6%
12124	0%	12%	10%	5%
12126	24%	0%	25%	6%
12127	0%	18%	1%	9%
17972	0%	10%	-3%	-3%
21191	0%	33%	7%	6%
21906	9%	0%	34%	23%
25226	10%	0%	5%	47%
26015	14%	0%	1%	13%
27108	0%	31%	2%	5%
32128	11%	0%	4%	20%
32948	0%	24%	2%	12%
34151	11%	0%	2%	24%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
34152	22%	0%	17%	15%
34158	24%	0%	15%	13%
34574	0%	15%	1%	12%
48262	0%	24%	2%	6%
58368	0%	14%	1%	13%
58370	24%	0%	18%	7%
72453	0%	12%	14%	11%
72729	18%	0%	27%	23%
Ritz Way				
3541	14%	0%	-1%	-20%
64400	14%	0%	-8%	-8%
River Rd				
325	25%	0%	4%	44%
337	2%	0%	-2%	-18%
1226	7%	0%	0%	7%
1235	5%	0%	2%	28%
6220	6%	0%	4%	38%
6523	0%	17%	2%	0%
6554	1%	0%	-13%	-3%
12874	0%	0%	-3%	21%
12875	0%	0%	-3%	30%
12876	1%	0%	26%	-7%
16022	2%	0%	0%	-16%
16710	2%	0%	0%	-15%
19047	2%	0%	-15%	-5%
19049	6%	0%	0%	-7%
24380	10%	0%	30%	0%
34817	1%	0%	20%	-6%
34977	2%	0%	-2%	-20%
34978	2%	0%	-2%	-18%
37137	0%	220%	0%	3%
37546	4%	0%	1%	-44%
40422	8%	0%	30%	7%
40426	1%	0%	26%	0%
41599	1%	0%	-1%	16%
46908	3%	0%	-3%	-25%
52783	2%	0%	-15%	-5%
53732	1%	0%	0%	-15%
57944	7%	0%	-47%	-30%
60084	3%	0%	-24%	-5%
72359	2%	0%	-27%	14%
Robert Crain Hwy				
29527	0%	0%	10%	0%
Rockville Pike				
91	1%	0%	12%	-1%
93	2%	0%	0%	15%
393	2%	0%	0%	17%
394	2%	0%	0%	16%
4513	3%	0%	-2%	14%
5323	1%	0%	0%	14%
8723	1%	0%	-4%	11%
10170	2%	0%	0%	12%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
11362	0%	0%	13%	-3%
21971	1%	0%	0%	13%
30180	3%	0%	21%	3%
32528	0%	0%	14%	-3%
33206	1%	0%	12%	-2%
49715	2%	0%	-2%	13%
52037	1%	0%	17%	0%
56518	1%	0%	20%	0%
59060	5%	0%	23%	10%
59061	4%	0%	0%	26%
60088	3%	0%	1%	-13%
66435	3%	0%	1%	-13%
66667	0%	0%	-1%	14%
69471	0%	0%	0%	14%
Rollins Ave				
13828	0%	10%	0%	4%
24569	0%	26%	1%	1%
34570	0%	21%	1%	1%
S Frederick Ave				
330	1%	0%	0%	15%
11340	2%	0%	14%	1%
35548	1%	0%	0%	10%
38501	1%	0%	11%	0%
59948	0%	2%	34%	7%
72424	2%	0%	14%	1%
73180	1%	0%	16%	0%
S Glen Rd				
26364	5%	0%	15%	1%
46642	7%	0%	1%	18%
S Keysville Rd				
5901	0%	11%	0%	1%
43644	0%	11%	0%	0%
55814	0%	21%	0%	0%
S Mountain Rd				
81548	2%	0%	-12%	-1%
81550	2%	0%	-2%	-12%
S Osborne Rd				
42837	2%	0%	0%	-10%
62287	2%	0%	-12%	0%
62593	2%	0%	-15%	0%
62594	2%	0%	-16%	0%
62595	2%	0%	0%	-10%
66900	2%	0%	-12%	0%
74347	0%	14%	0%	1%
S Summit Ave				
5242	1%	0%	-2%	-10%
Sands Rd				
5548	0%	18%	3%	1%
8921	0%	21%	4%	2%
13234	0%	21%	5%	2%
26274	0%	13%	0%	3%
26591	0%	17%	0%	0%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
39919	0%	37%	0%	0%
69437	0%	15%	1%	4%
Sansbury Rd				
20736	0%	10%	9%	13%
20738	0%	5%	11%	3%
65181	0%	15%	4%	5%
Scott Dr				
59148	0%	0%	12%	-2%
Seat Pleasant Dr				
26310	0%	11%	3%	1%
49542	0%	11%	1%	2%
Selkirk Dr				
336	3%	0%	-1%	13%
18664	2%	0%	12%	0%
Seneca Rd				
66621	0%	10%	0%	0%
Serpentine Way				
19665	4%	0%	21%	6%
56055	3%	0%	7%	14%
Seven Locks Rd				
1581	1%	0%	10%	-1%
1584	1%	0%	24%	-1%
2143	4%	0%	3%	11%
11106	5%	0%	20%	26%
12872	8%	0%	-7%	-4%
13647	0%	0%	10%	-3%
18654	1%	0%	14%	-2%
21958	5%	0%	20%	29%
25334	2%	0%	0%	14%
27042	12%	0%	0%	16%
52564	0%	0%	-1%	13%
53733	6%	0%	4%	28%
54112	2%	0%	-1%	21%
57932	8%	0%	30%	10%
59358	5%	0%	12%	23%
59359	3%	0%	1%	22%
59364	5%	0%	14%	23%
69007	7%	0%	-7%	-1%
73491	1%	0%	-10%	14%
Shady Grove Rd				
5714	2%	0%	15%	1%
7469	10%	0%	7%	2%
15500	11%	0%	0%	20%
33503	2%	0%	23%	1%
35415	2%	0%	14%	1%
39668	1%	0%	15%	9%
41187	1%	0%	0%	14%
45007	1%	0%	0%	13%
Shepherds Crook Ct				
26672	13%	0%	14%	2%
47236	8%	0%	0%	15%
Sheriff Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
23452	4%	0%	16%	2%
24265	4%	0%	1%	18%
Sligo Creek Pkwy				
36836	4%	0%	0%	10%
Soil Conservation Rd				
9132	13%	0%	8%	7%
16010	14%	0%	8%	7%
24505	14%	0%	8%	7%
32202	11%	0%	7%	5%
40669	11%	0%	7%	5%
61442	11%	0%	7%	5%
Solomons Island Rd N				
69695	0%	14%	0%	1%
South Dr				
19664	0%	24%	14%	9%
53158	0%	23%	12%	16%
Southlawn Ln				
6475	7%	0%	1%	8%
54038	7%	0%	9%	1%
74405	6%	0%	7%	0%
Spr Wheel Ln				
35299	2%	0%	0%	20%
55055	3%	0%	18%	1%
Springfield Rd				
6405	6%	0%	4%	8%
21267	5%	0%	11%	14%
21664	0%	10%	1%	1%
23634	5%	0%	11%	14%
52261	6%	0%	13%	21%
63854	6%	0%	13%	21%
St Barnabas Rd				
13616	6%	0%	17%	7%
14456	3%	0%	12%	0%
14457	3%	0%	12%	0%
18933	0%	0%	-2%	15%
20453	1%	0%	3%	-18%
24864	3%	0%	11%	0%
29629	3%	0%	18%	3%
30067	1%	0%	-5%	11%
30068	5%	0%	5%	14%
30657	1%	0%	-19%	-1%
34560	1%	0%	24%	-2%
39194	5%	0%	29%	9%
43154	3%	0%	12%	0%
71267	4%	0%	5%	19%
St Clair Dr				
79781	0%	72%	0%	0%
79783	0%	43%	0%	0%
Stardrift Dr				
3899	0%	199%	0%	0%
9150	0%	123%	0%	0%
State Hwy 108				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
35212	1%	0%	8%	-11%
State Hwy 115				
1844	2%	0%	13%	5%
State Hwy 117				
13294	0%	2%	-18%	-11%
74650	1%	0%	-2%	-11%
State Hwy 124				
2637	0%	2%	0%	-23%
3090	1%	0%	0%	-11%
State Hwy 185				
5276	1%	0%	0%	14%
10338	4%	0%	12%	0%
19662	2%	0%	1%	18%
34970	0%	0%	-1%	16%
41596	1%	0%	1%	12%
44970	1%	0%	0%	18%
45006	7%	0%	0%	17%
54823	0%	0%	11%	-1%
56365	1%	0%	13%	-1%
State Hwy 189				
933	3%	0%	-1%	24%
4153	7%	0%	0%	18%
4173	1%	0%	3%	11%
5992	12%	0%	23%	15%
5995	7%	0%	3%	24%
5996	8%	0%	21%	8%
8007	6%	0%	1%	31%
8008	7%	0%	3%	24%
8317	2%	0%	11%	-1%
9030	2%	0%	0%	17%
10839	2%	0%	15%	0%
11110	1%	0%	2%	-13%
25331	0%	0%	-9%	16%
26096	3%	0%	16%	4%
29713	0%	0%	11%	-6%
30182	2%	0%	15%	-1%
32245	8%	0%	21%	8%
32517	12%	0%	17%	2%
32602	0%	0%	-6%	15%
37768	7%	0%	1%	17%
43475	0%	6%	0%	37%
46979	0%	4%	15%	-25%
51446	2%	0%	11%	-1%
59430	1%	0%	-6%	21%
59433	1%	0%	-1%	13%
59436	1%	0%	-4%	11%
59440	5%	0%	1%	31%
72658	4%	0%	18%	2%
75148	0%	0%	26%	-8%
State Hwy 190				
932	3%	0%	1%	27%
936	3%	0%	0%	23%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
6003	0%	0%	-1%	15%
6569	0%	0%	30%	0%
22404	0%	0%	19%	-1%
24826	2%	0%	0%	20%
31010	3%	0%	0%	22%
53734	1%	0%	-1%	34%
55052	2%	0%	18%	1%
66616	6%	0%	0%	6%
66617	5%	0%	11%	0%
68996	0%	0%	-1%	14%
69103	4%	0%	11%	0%
71003	6%	0%	0%	9%
72148	3%	0%	17%	2%
75273	5%	0%	0%	19%
State Hwy 191				
34647	2%	0%	11%	10%
34648	2%	0%	12%	11%
40090	2%	0%	12%	13%
53535	2%	0%	8%	13%
State Hwy 192				
53659	2%	0%	12%	4%
State Hwy 193				
2442	2%	0%	1%	11%
14146	2%	0%	-19%	-8%
16543	0%	6%	11%	2%
18156	5%	0%	1%	10%
18751	11%	0%	2%	50%
18752	6%	0%	22%	5%
24752	11%	0%	25%	30%
25725	0%	39%	-2%	-4%
29412	6%	0%	12%	22%
34862	2%	0%	-18%	-5%
48991	0%	10%	3%	4%
54494	5%	0%	1%	12%
64154	13%	0%	3%	25%
64396	2%	0%	21%	2%
State Hwy 197				
3355	3%	0%	3%	11%
23918	1%	0%	9%	10%
23920	3%	0%	9%	18%
25859	3%	0%	2%	10%
73866	0%	2%	0%	-10%
State Hwy 200				
21693	0%	14%	7%	2%
23776	0%	10%	1%	12%
32507	0%	13%	0%	-1%
39012	0%	10%	22%	2%
51891	0%	10%	0%	2%
51892	0%	10%	0%	2%
51894	0%	10%	0%	2%
51896	0%	10%	0%	2%
51898	0%	13%	1%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
52145	0%	13%	1%	1%
52146	0%	14%	7%	2%
52147	0%	14%	7%	2%
52148	0%	15%	1%	1%
52150	0%	12%	3%	1%
52151	0%	13%	0%	0%
52152	0%	10%	20%	2%
52153	0%	10%	20%	2%
52398	3%	0%	26%	-6%
52399	0%	19%	0%	0%
52401	0%	11%	1%	7%
52402	0%	11%	1%	7%
52403	0%	11%	1%	7%
52405	0%	12%	0%	2%
52406	0%	10%	1%	27%
52407	0%	10%	1%	27%
58233	0%	10%	1%	27%
58512	0%	10%	1%	10%
59196	0%	14%	7%	2%
59198	0%	10%	1%	1%
59199	0%	10%	1%	12%
60800	0%	10%	0%	2%
66279	0%	10%	0%	2%
66280	0%	10%	22%	2%
71511	0%	10%	22%	2%
71516	0%	11%	1%	7%
State Hwy 201				
8859	5%	0%	7%	16%
15622	5%	0%	10%	21%
15703	6%	0%	14%	16%
26995	6%	0%	4%	9%
47316	0%	0%	0%	12%
50118	0%	0%	0%	12%
State Hwy 210				
3379	0%	2%	48%	17%
29808	0%	24%	0%	-1%
30865	0%	2%	-12%	0%
35288	2%	0%	14%	3%
79718	3%	0%	13%	0%
State Hwy 212				
4869	4%	0%	2%	16%
10818	6%	0%	-10%	-5%
15115	4%	0%	2%	20%
17973	3%	0%	-1%	-10%
21812	6%	0%	15%	6%
23280	6%	0%	16%	2%
28570	0%	38%	-4%	-1%
29632	13%	0%	-26%	-13%
60459	7%	0%	2%	9%
64374	7%	0%	3%	0%
71473	6%	0%	21%	3%
71475	5%	0%	11%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
72315	2%	0%	8%	10%
75521	17%	0%	-3%	-35%
75522	15%	0%	-8%	-32%
75526	0%	13%	-10%	-5%
75527	11%	0%	-11%	-19%
75535	0%	12%	-6%	-3%
75536	0%	13%	-1%	-7%
State Hwy 214				
24280	2%	0%	15%	2%
64988	2%	0%	17%	3%
72179	2%	0%	0%	10%
79810	2%	0%	0%	10%
State Hwy 223				
61975	0%	37%	-1%	0%
67203	0%	200%	0%	0%
State Hwy 231				
54818	2%	0%	0%	11%
State Hwy 26				
43746	8%	0%	0%	0%
State Hwy 28				
768	2%	0%	12%	0%
5719	1%	0%	16%	-1%
6945	1%	0%	-2%	16%
6946	2%	0%	16%	0%
7961	3%	0%	18%	1%
35549	2%	0%	6%	15%
72810	2%	0%	0%	14%
73091	3%	0%	2%	12%
79432	3%	0%	18%	1%
79433	3%	0%	12%	1%
79434	2%	0%	0%	14%
79435	2%	0%	0%	10%
State Hwy 295				
19985	0%	55%	0%	-1%
40911	9%	0%	0%	1%
47420	0%	3%	-10%	1%
State Hwy 301				
35616	1%	0%	11%	-4%
52744	0%	0%	18%	0%
60711	1%	0%	15%	1%
76044	1%	0%	12%	-3%
77044	1%	0%	10%	-3%
State Hwy 32				
26728	0%	2%	11%	1%
42001	0%	2%	11%	1%
73112	6%	0%	1%	1%
State Hwy 320				
1539	5%	0%	1%	24%
5268	1%	0%	15%	2%
19446	5%	0%	29%	12%
34410	1%	0%	12%	3%
34419	1%	0%	18%	1%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
40204	1%	0%	15%	3%
42319	5%	0%	17%	3%
43759	5%	0%	1%	24%
49380	5%	0%	29%	12%
50741	1%	0%	19%	2%
53920	8%	0%	9%	5%
61731	0%	0%	0%	10%
State Hwy 332				
33474	0%	22%	1%	1%
64995	5%	0%	34%	14%
72723	0%	16%	1%	1%
72726	5%	0%	7%	29%
State Hwy 355				
25125	2%	0%	0%	19%
74141	1%	0%	13%	-1%
79409	2%	0%	0%	19%
79411	1%	0%	13%	-1%
State Hwy 382				
12128	5%	0%	7%	13%
33275	5%	0%	15%	7%
42109	0%	57%	0%	0%
60701	0%	12%	0%	-1%
State Hwy 390				
5352	4%	0%	11%	6%
42318	5%	0%	11%	8%
State Hwy 4				
18768	0%	14%	1%	8%
State Hwy 410				
11291	2%	0%	1%	12%
12114	4%	0%	12%	25%
18940	5%	0%	33%	18%
19017	0%	11%	0%	0%
23702	4%	0%	13%	16%
29393	0%	15%	1%	1%
35900	0%	0%	11%	-1%
50984	1%	0%	0%	12%
64676	2%	0%	13%	3%
80533	9%	0%	0%	16%
State Hwy 414				
5812	6%	0%	20%	0%
5813	4%	0%	0%	13%
5814	4%	0%	0%	20%
29179	0%	13%	0%	-1%
46200	6%	0%	14%	2%
58052	3%	0%	14%	0%
State Hwy 450				
231	1%	0%	-16%	0%
8863	4%	0%	-1%	-23%
9463	2%	0%	11%	1%
12056	1%	0%	0%	15%
18379	0%	11%	0%	0%
19071	4%	0%	-1%	-10%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
19291	6%	0%	13%	2%
25803	2%	0%	-18%	1%
32645	4%	0%	11%	3%
34551	1%	0%	-18%	0%
38892	5%	0%	0%	6%
45302	0%	11%	0%	2%
47338	0%	0%	10%	0%
51222	3%	0%	1%	12%
54497	5%	0%	-1%	-13%
55301	5%	0%	0%	8%
67173	4%	0%	12%	3%
67174	2%	0%	0%	13%
67179	4%	0%	11%	4%
67474	5%	0%	1%	17%
67475	3%	0%	0%	13%
80439	1%	0%	0%	17%
80440	1%	0%	0%	13%
State Hwy 458				
10310	6%	0%	3%	9%
13615	6%	0%	23%	16%
13827	3%	0%	16%	6%
13829	4%	0%	1%	18%
21545	6%	0%	7%	8%
24274	6%	0%	7%	11%
27576	6%	0%	7%	14%
30069	6%	0%	9%	30%
30070	0%	0%	15%	-3%
49842	0%	0%	-2%	11%
State Hwy 497				
55476	0%	76%	0%	0%
State Hwy 5				
12092	0%	0%	-2%	17%
14380	3%	0%	-1%	-18%
16811	2%	0%	-11%	-4%
17221	0%	7%	83%	1%
43743	1%	0%	11%	2%
43744	1%	0%	0%	13%
44340	0%	6%	-8%	-12%
50641	5%	0%	-21%	-2%
56257	6%	0%	-3%	-37%
64341	2%	0%	-6%	-20%
71271	1%	0%	11%	2%
71276	2%	0%	-10%	-4%
73816	1%	0%	0%	13%
State Hwy 500				
18834	3%	0%	11%	2%
34135	4%	0%	11%	2%
80321	3%	0%	1%	10%
80323	3%	0%	10%	2%
State Hwy 535				
17222	0%	15%	-9%	-12%
State Hwy 586				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
6173	2%	0%	14%	5%
13667	2%	0%	0%	13%
36815	1%	0%	3%	10%
42955	1%	0%	0%	12%
59942	1%	0%	1%	11%
69702	2%	0%	2%	15%
79354	1%	0%	5%	12%
State Hwy 614				
47832	2%	0%	3%	11%
53280	1%	0%	-24%	-8%
64812	0%	0%	-11%	-2%
64813	1%	0%	7%	-12%
64814	0%	0%	-1%	-16%
65347	1%	0%	-4%	-14%
State Hwy 650				
1102	2%	0%	-7%	-11%
11281	2%	0%	1%	10%
14389	2%	0%	10%	15%
34968	3%	0%	12%	9%
37157	2%	0%	8%	11%
43761	0%	16%	0%	-1%
44551	0%	99%	0%	0%
54296	2%	0%	11%	3%
55600	1%	0%	-1%	11%
60127	2%	0%	11%	8%
66127	0%	0%	-2%	19%
State Hwy 725				
15050	1%	0%	22%	0%
21134	2%	0%	13%	4%
21136	4%	0%	11%	19%
21913	4%	0%	0%	16%
21914	7%	0%	1%	52%
23976	5%	0%	33%	6%
33218	2%	0%	9%	19%
53355	3%	0%	0%	-10%
65387	4%	0%	15%	1%
State Hwy 787				
5593	6%	0%	-1%	3%
52520	6%	0%	-1%	3%
State Hwy 953				
30758	0%	10%	-1%	0%
State Hwy 97				
1238	0%	0%	-4%	13%
2045	2%	0%	0%	14%
4545	2%	0%	0%	20%
8547	2%	0%	0%	13%
13659	1%	0%	19%	-1%
13912	1%	0%	14%	-1%
16426	1%	0%	-1%	15%
20249	1%	0%	10%	3%
22262	1%	0%	12%	3%
22264	1%	0%	0%	11%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
33204	2%	0%	15%	-1%
34969	1%	0%	-2%	19%
36589	0%	0%	-3%	12%
41150	1%	0%	13%	3%
44262	1%	0%	14%	-6%
56379	1%	0%	13%	-3%
57876	2%	0%	-1%	17%
57884	2%	0%	-1%	19%
57885	1%	0%	15%	-2%
59947	1%	0%	-2%	16%
63281	2%	0%	0%	13%
73505	2%	0%	13%	-1%
74957	2%	0%	14%	1%
74959	1%	0%	12%	1%
Suitland Pkwy				
11880	2%	0%	18%	4%
54077	2%	0%	0%	22%
Toledo Rd				
25160	0%	10%	0%	-1%
Tower Oaks Blvd				
10181	0%	10%	6%	0%
Town Square Dr				
27403	0%	76%	0%	0%
Travilah Rd				
44562	2%	0%	1%	12%
75196	3%	0%	11%	3%
Tuckerman Ln				
1577	2%	0%	22%	-1%
2345	7%	0%	0%	27%
19840	9%	0%	32%	0%
59656	2%	0%	0%	15%
Turkey Branch Pkwy				
79353	1%	0%	18%	5%
79355	2%	0%	8%	13%
79372	4%	0%	0%	14%
79374	7%	0%	10%	2%
Turkey Foot Rd				
63830	3%	0%	-14%	0%
79460	0%	12%	0%	1%
Tuscarora Rd				
6968	3%	0%	1%	15%
27366	3%	0%	1%	15%
Tuxedo Rd				
80029	0%	69%	0%	1%
Twinbrook Pkwy				
69706	4%	0%	12%	1%
69707	3%	0%	0%	11%
Underwood St				
60199	3%	0%	12%	15%
63293	3%	0%	6%	13%
University Blvd				
2763	4%	0%	12%	6%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
3639	3%	0%	1%	14%
20848	1%	0%	0%	11%
25720	2%	0%	0%	12%
64057	2%	0%	12%	1%
University Blvd E				
1690	2%	0%	-11%	3%
1695	2%	0%	-11%	1%
9539	2%	0%	-11%	3%
11036	0%	6%	-12%	-13%
14391	3%	0%	22%	5%
27863	2%	0%	-8%	12%
28173	2%	0%	4%	-13%
28808	2%	0%	3%	18%
30403	2%	0%	7%	-12%
34422	2%	0%	2%	-15%
37155	2%	0%	-11%	1%
40206	0%	0%	-11%	2%
50742	2%	0%	1%	-12%
53919	1%	0%	-15%	5%
72913	1%	0%	-5%	10%
University Blvd W				
5277	1%	0%	0%	16%
5279	0%	0%	12%	0%
8290	1%	0%	12%	-1%
11108	0%	0%	11%	-1%
13913	1%	0%	0%	14%
16023	0%	0%	-12%	11%
33205	3%	0%	11%	14%
35298	3%	0%	4%	18%
36502	3%	0%	1%	16%
43767	2%	0%	0%	13%
72707	1%	0%	12%	-12%
Urbana Ln				
65433	0%	12%	2%	9%
US Hwy 1 Alt				
8866	3%	0%	18%	4%
16225	9%	0%	10%	11%
16226	6%	0%	0%	14%
72430	4%	0%	1%	20%
US Hwy 15				
552	2%	0%	4%	16%
17143	3%	0%	19%	8%
24438	2%	0%	4%	16%
32501	0%	16%	0%	0%
45438	3%	0%	19%	8%
54995	2%	0%	11%	9%
70525	0%	37%	0%	0%
US Hwy 29				
3593	0%	0%	10%	-1%
7766	6%	0%	-27%	2%
10603	7%	0%	-4%	-16%
16318	3%	0%	-17%	13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
25430	0%	200%	0%	0%
37891	0%	204%	-53%	-51%
40876	0%	0%	-11%	11%
40877	0%	0%	-11%	11%
56050	0%	0%	10%	-1%
56058	0%	0%	11%	-10%
56059	0%	0%	11%	-10%
74687	2%	0%	-8%	-17%
US Hwy 301				
42183	5%	0%	0%	25%
US Hwy 40 Alt				
46782	1%	0%	-12%	0%
US Hwy 50				
11588	6%	0%	-16%	-53%
11589	2%	0%	-1%	-11%
12862	2%	0%	0%	22%
13625	0%	13%	-1%	-5%
16983	0%	0%	0%	12%
18390	1%	0%	0%	11%
19472	0%	2%	-1%	-12%
20070	0%	0%	-1%	13%
26125	0%	200%	0%	0%
27731	1%	0%	-1%	-13%
28617	0%	2%	0%	17%
33283	1%	0%	-1%	-16%
37585	0%	3%	0%	-20%
38255	1%	0%	0%	17%
40690	0%	0%	0%	13%
43505	0%	0%	0%	16%
43513	0%	17%	0%	0%
47315	1%	0%	0%	27%
48338	0%	18%	0%	-2%
54835	1%	0%	-1%	-15%
56249	0%	0%	0%	13%
57010	2%	0%	1%	10%
65196	1%	0%	-1%	-16%
68134	0%	31%	0%	0%
73586	5%	0%	-5%	-51%
73590	0%	3%	0%	-20%
73853	0%	10%	0%	0%
Valley Park Rd				
79843	0%	15%	1%	0%
79864	0%	12%	0%	1%
Veirs Dr				
36822	0%	11%	1%	5%
Virginia Manor Rd				
52208	0%	14%	-1%	-9%
54537	0%	11%	-9%	-2%
W Cedar Ln				
61750	0%	16%	2%	2%
W City Ave				
3274	3%	0%	11%	8%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
3278	3%	0%	7%	11%
4006	1%	0%	-7%	-12%
4008	0%	0%	-6%	-12%
4450	4%	0%	13%	20%
9461	4%	0%	11%	33%
10291	3%	0%	11%	3%
13354	0%	17%	-39%	-19%
15935	9%	0%	12%	2%
16179	3%	0%	5%	23%
16327	2%	0%	12%	5%
16519	2%	0%	5%	11%
16746	0%	28%	4%	2%
16930	3%	0%	3%	-14%
19813	4%	0%	7%	11%
20085	0%	0%	-5%	-13%
22244	1%	0%	-4%	-11%
22587	4%	0%	10%	14%
32201	6%	0%	2%	6%
33798	2%	0%	8%	12%
33812	3%	0%	4%	20%
34762	2%	0%	12%	9%
34763	2%	0%	11%	6%
39261	4%	0%	3%	15%
40142	4%	0%	45%	17%
45356	0%	0%	-36%	-13%
45615	5%	0%	2%	7%
54071	12%	0%	16%	60%
54116	5%	0%	2%	9%
59042	0%	13%	-29%	-15%
60201	3%	0%	10%	19%
60753	2%	0%	8%	10%
60756	3%	0%	23%	11%
63579	3%	0%	9%	11%
64097	4%	0%	13%	5%
64671	2%	0%	7%	15%
80253	2%	0%	9%	15%
80254	2%	0%	10%	11%
80255	2%	0%	13%	16%
80256	2%	0%	9%	15%
80282	2%	0%	4%	12%
W Diamond Ave				
2626	0%	2%	-8%	-35%
5923	2%	0%	0%	-13%
68728	0%	4%	0%	-24%
W Edmonston Dr				
9699	1%	0%	20%	-1%
59940	2%	0%	0%	15%
W Gude Dr				
329	1%	0%	0%	12%
W Jefferson St				
25212	2%	0%	2%	19%
74140	2%	0%	26%	2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
W Montgomery Ave				
85	2%	0%	26%	2%
86	1%	0%	27%	0%
87	2%	0%	2%	19%
851	0%	201%	65%	-10%
36249	2%	0%	1%	19%
46468	3%	0%	-10%	-8%
67682	0%	237%	112%	17%
68723	0%	211%	17%	108%
70134	2%	0%	-17%	-5%
70362	0%	203%	-4%	16%
71016	1%	0%	-1%	35%
75469	3%	0%	-17%	-7%
W Old Baltimore Rd				
29729	5%	0%	0%	-6%
50418	5%	0%	0%	-7%
W Willard Rd				
40507	7%	0%	0%	8%
43472	7%	0%	0%	8%
Walker Mill Rd				
11873	3%	0%	12%	18%
27103	4%	0%	13%	22%
Wasche Rd				
79479	0%	19%	0%	1%
Washington National Pike				
547	0%	3%	47%	0%
6216	1%	0%	-3%	37%
18073	4%	0%	-3%	29%
18081	2%	0%	0%	-25%
19191	0%	216%	13%	13%
25427	3%	0%	27%	-10%
28054	0%	209%	-1%	156%
29079	1%	0%	-2%	-17%
37135	0%	0%	-1%	29%
38295	2%	0%	0%	-10%
42330	2%	0%	1%	16%
44054	5%	0%	-11%	-3%
45291	1%	0%	-2%	-14%
46981	0%	3%	0%	15%
48741	3%	0%	27%	-10%
49015	2%	0%	0%	-13%
49366	0%	234%	45%	45%
53319	2%	0%	0%	-13%
58028	0%	433%	16%	16%
58029	0%	234%	-19%	-19%
61724	0%	234%	2%	3%
65632	0%	4%	0%	-24%
66775	0%	233%	17%	17%
66778	0%	233%	8%	8%
66779	0%	200%	0%	0%
66780	0%	216%	0%	-1%
66782	0%	218%	38%	-21%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
66786	0%	218%	72%	17%
67078	0%	213%	65%	8%
67371	0%	226%	8%	107%
69886	1%	0%	-3%	36%
70364	1%	0%	-1%	25%
70604	2%	0%	0%	75%
70757	2%	0%	8%	-17%
72714	2%	0%	-14%	-6%
Waterloo Rd				
45049	0%	0%	2%	11%
Watkins Mill Rd				
9669	2%	0%	0%	-11%
Watkins Park Dr				
12618	0%	11%	2%	3%
19148	0%	11%	2%	3%
19149	0%	12%	2%	4%
73256	0%	12%	2%	4%
Wayne Ave				
33739	7%	0%	8%	4%
34651	8%	0%	6%	2%
52513	5%	0%	10%	3%
54682	6%	0%	2%	4%
Wellham Ave NW				
71862	5%	0%	-5%	3%
Wells Pkwy E				
25858	3%	0%	10%	14%
45351	2%	0%	8%	12%
Westlake Ter				
67075	0%	200%	0%	0%
Westphalia Rd				
33839	5%	0%	-3%	-1%
46203	10%	0%	1%	16%
59503	0%	12%	1%	9%
67688	0%	11%	0%	1%
White House Rd				
12614	0%	25%	2%	5%
16805	0%	12%	4%	1%
21522	0%	15%	1%	12%
23692	0%	17%	1%	5%
49394	0%	21%	-7%	-3%
58656	0%	23%	-1%	-5%
71624	0%	18%	1%	2%
Whitfield Chapel Rd				
54373	0%	16%	3%	3%
63860	0%	13%	4%	3%
Wilburn Dr				
22836	0%	29%	4%	0%
32811	0%	14%	1%	1%
William Beanes Rd				
64428	0%	20%	0%	1%
66902	0%	31%	0%	1%
Willow Hill Dr				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
75917	0%	12%	0%	3%
75918	0%	16%	5%	0%
Windom Rd				
46983	5%	0%	0%	11%
Winfields Ln				
3725	0%	14%	0%	2%
65445	0%	14%	0%	0%
74744	6%	0%	1%	14%
Wisconsin Ave				
52787	0%	12%	0%	0%
79293	2%	0%	14%	10%
79294	2%	0%	3%	11%
79295	3%	0%	13%	15%
Woodbine St				
4862	3%	0%	3%	11%
79274	0%	13%	0%	1%
79275	0%	12%	1%	0%
Woodstream Dr				
21279	2%	0%	0%	-10%
21280	0%	200%	0%	0%
Woodview Dr				
68469	0%	18%	1%	1%
Woodville Rd				
12899	11%	0%	-1%	-1%
Woodyard Rd				
57849	4%	0%	21%	27%
62024	3%	0%	11%	17%
66528	4%	0%	21%	26%
68086	3%	0%	11%	17%
Wootton Pkwy				
685	3%	0%	2%	12%
1582	3%	0%	10%	2%
9700	0%	0%	14%	-4%
26676	1%	0%	22%	-1%
37083	0%	0%	-7%	14%
38951	0%	0%	11%	-3%
46465	1%	0%	23%	-3%
46466	0%	0%	-7%	14%
52939	2%	0%	5%	13%
59149	1%	0%	23%	-3%
59429	1%	0%	26%	-6%
59431	1%	0%	-13%	21%
72649	1%	0%	12%	0%
Yellowwood Ln				
4743	18%	0%	18%	8%
59325	31%	0%	5%	29%
Virginia				
14th St N				
13169	0%	11%	0%	3%
16th St N				
17013	0%	11%	-1%	9%
17th St N				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
80990	0%	11%	0%	0%
80992	0%	21%	0%	0%
81001	0%	26%	0%	0%
81003	0%	14%	0%	0%
18th St N				
81059	0%	18%	0%	0%
18th St S				
51052	0%	11%	0%	2%
80861	0%	14%	0%	1%
80862	0%	14%	0%	1%
20th Pl N				
77366	0%	12%	0%	0%
20th St N				
77363	0%	12%	0%	0%
77365	0%	12%	0%	0%
20th St S				
21051	0%	65%	0%	0%
28719	0%	13%	0%	0%
51053	0%	11%	0%	2%
22nd St N				
77385	0%	23%	-1%	0%
23rd Rd N				
77403	0%	22%	0%	0%
23rd St S				
59242	0%	17%	0%	0%
24th St N				
77404	0%	16%	0%	0%
25th St N				
15872	0%	1%	-18%	3%
15873	0%	1%	-14%	-10%
26th St N				
28967	0%	13%	1%	0%
51204	0%	16%	1%	1%
31st St S				
248	0%	12%	0%	7%
80807	0%	13%	0%	4%
6th St N				
81593	0%	10%	1%	0%
8th St S				
80873	0%	12%	0%	2%
Army Navy Dr				
36643	0%	35%	0%	0%
Baron Rd				
26847	0%	14%	-2%	-1%
Birch Rd				
9261	5%	0%	14%	13%
31938	2%	0%	5%	13%
Capital Beltway				
67	1%	0%	-20%	4%
69	0%	2%	-19%	-12%
75	0%	1%	-19%	0%
977	0%	19%	-5%	-2%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
1270	0%	2%	-19%	-12%
1272	0%	21%	0%	1%
16670	0%	22%	-3%	-5%
16671	0%	200%	-8%	-18%
16674	3%	0%	17%	6%
17398	0%	31%	11%	16%
17401	6%	0%	-12%	-2%
18216	1%	0%	-20%	4%
21180	0%	2%	0%	-15%
21561	0%	16%	-3%	-15%
22163	0%	14%	-12%	-88%
24084	7%	0%	38%	73%
28377	0%	2%	6%	-18%
29311	0%	27%	-13%	-6%
33646	0%	5%	50%	90%
33976	0%	800%	51%	1%
34950	0%	33%	0%	5%
38710	0%	21%	0%	1%
39068	0%	11%	0%	0%
39073	0%	2%	28%	9%
39075	0%	1%	4%	-16%
39078	0%	1%	4%	-16%
40119	4%	0%	-3%	-16%
41576	0%	23%	-4%	-5%
41577	0%	28%	-2%	-1%
41779	13%	0%	51%	45%
43018	1%	0%	-21%	0%
45944	0%	12%	-21%	-17%
51272	0%	22%	-3%	-5%
55463	5%	0%	-5%	-5%
56641	7%	0%	38%	73%
56645	7%	0%	38%	73%
57913	8%	0%	35%	63%
59785	0%	200%	-8%	-18%
60164	0%	1%	4%	-16%
65637	0%	23%	-1%	1%
65844	1%	0%	-21%	0%
65927	0%	41%	0%	0%
68293	4%	0%	-14%	-1%
68294	4%	0%	-14%	-1%
68295	3%	0%	-1%	-16%
68582	10%	0%	63%	85%
68583	0%	11%	-46%	-20%
68584	0%	200%	-13%	-16%
68585	0%	200%	-13%	-16%
68586	0%	200%	-13%	-16%
68587	0%	200%	-8%	-18%
68588	0%	200%	-8%	-18%
68589	0%	200%	-13%	-16%
68590	0%	200%	-8%	-18%
68591	0%	200%	-5%	-6%
68883	0%	8%	30%	-8%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
68889	0%	81%	-1%	0%
71091	1%	0%	-18%	3%
71095	1%	0%	-18%	3%
72070	0%	200%	-13%	-16%
72078	11%	0%	62%	69%
76052	0%	25%	-85%	-74%
76222	0%	52%	-1%	-2%
77148	0%	19%	2%	-3%
77151	0%	13%	0%	0%
77184	0%	10%	-1%	0%
77185	0%	40%	0%	1%
Chain Bridge Rd				
5052	0%	0%	-3%	11%
5053	0%	0%	13%	1%
16581	2%	0%	18%	17%
21941	0%	31%	0%	0%
46083	2%	0%	-13%	-7%
55021	3%	0%	10%	38%
69550	0%	1%	-21%	-1%
74851	5%	0%	15%	17%
Charles Town Pike				
42197	2%	0%	0%	10%
Chesterbrook Rd				
9260	5%	0%	11%	5%
26530	5%	0%	3%	22%
Co Rd 650				
12428	1%	0%	-20%	4%
Co Rd 686				
33643	0%	10%	2%	6%
59709	0%	14%	3%	6%
Co Rd 703				
50953	6%	0%	2%	15%
72024	2%	0%	-13%	-4%
72283	5%	0%	-13%	-11%
Commonwealth Ave				
77281	0%	12%	0%	2%
Cotton Mill Dr				
81148	0%	73%	0%	0%
81150	0%	200%	0%	0%
Dolley Madison Blvd				
4344	0%	0%	3%	12%
9478	0%	0%	-4%	12%
25782	5%	0%	-24%	-5%
31130	2%	0%	1%	10%
33641	2%	0%	6%	18%
36527	7%	0%	25%	31%
39807	1%	0%	15%	20%
40152	2%	0%	12%	25%
40859	0%	12%	0%	-1%
42078	6%	0%	17%	28%
44690	0%	132%	-1%	-12%
46571	0%	20%	1%	10%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
46941	1%	0%	11%	4%
59706	1%	0%	10%	2%
59713	0%	26%	9%	6%
60008	0%	14%	-2%	-1%
67577	1%	0%	14%	2%
68881	0%	74%	1%	54%
77177	0%	28%	-6%	-16%
Dulles Access Rd				
41206	0%	3%	-1%	-12%
Dulles Toll Rd				
33649	0%	2%	-2%	-17%
34630	3%	0%	-1%	-12%
40854	0%	11%	0%	0%
41207	0%	3%	-1%	-12%
41575	0%	63%	-1%	-7%
57167	0%	9%	12%	60%
58502	0%	7%	-1%	-46%
60237	3%	0%	-1%	-12%
76097	0%	24%	0%	0%
E Glebe Rd				
47673	0%	11%	1%	0%
52055	0%	11%	0%	0%
Edwards Ferry Rd NE				
835	0%	200%	0%	0%
Fisher Dr				
79332	0%	20%	-6%	0%
Furnace Mountain Rd				
81348	7%	0%	3%	9%
81350	8%	0%	6%	6%
George Washington Memorial Pkwy				
33634	0%	5%	0%	-11%
33635	0%	3%	-13%	-2%
34318	13%	0%	64%	44%
36935	0%	0%	0%	13%
38735	0%	5%	45%	75%
40850	0%	0%	0%	15%
55401	0%	14%	0%	0%
60010	0%	5%	-32%	-3%
Georgetown Pike				
4348	23%	0%	28%	9%
4349	50%	0%	14%	8%
4350	14%	0%	2%	27%
4351	0%	34%	2%	14%
6378	16%	0%	3%	33%
6380	23%	0%	14%	11%
12738	0%	11%	0%	0%
13744	0%	34%	2%	14%
57185	0%	40%	0%	0%
59710	50%	0%	14%	8%
68778	0%	55%	0%	-1%
Grande Ln				
42163	2%	0%	-16%	-4%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
72284	6%	0%	-13%	-12%
Great Falls St				
14896	0%	0%	-12%	5%
Greeley Blvd				
33467	0%	200%	0%	0%
60752	0%	200%	0%	0%
Griffith Rd				
79328	0%	20%	-6%	0%
Henry G Shirley Memorial Hwy				
16669	0%	11%	0%	0%
18676	0%	74%	0%	0%
30289	0%	2%	0%	-12%
30488	0%	2%	0%	-12%
57903	0%	0%	-5%	-11%
High St				
35163	4%	0%	0%	11%
Householder Rd				
77555	0%	12%	0%	0%
77557	0%	18%	0%	0%
Hume Ave				
77282	0%	12%	0%	2%
I- 395				
76	0%	12%	0%	-12%
16680	0%	3%	0%	-24%
25750	0%	1%	0%	-22%
26135	0%	1%	0%	-15%
27337	0%	1%	0%	-22%
30282	0%	1%	0%	-22%
30288	0%	2%	0%	-12%
30502	0%	1%	0%	14%
55038	0%	0%	23%	0%
59872	1%	0%	0%	16%
64907	0%	1%	0%	-15%
67012	0%	1%	0%	-15%
67246	0%	1%	0%	-22%
70266	0%	1%	13%	6%
72075	0%	62%	0%	-1%
I- 395 Hov				
26133	0%	2%	0%	-12%
30275	0%	1%	0%	-22%
30276	0%	1%	0%	-22%
30278	0%	1%	0%	-22%
30286	0%	2%	0%	-12%
66368	0%	14%	0%	0%
73014	0%	1%	0%	-22%
73015	0%	2%	0%	-12%
I- 495 Express Lane				
24081	0%	18%	0%	-2%
34324	0%	19%	-49%	-3%
38714	0%	11%	-2%	-4%
38717	0%	2%	6%	-18%
39426	0%	1%	4%	-16%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
40120	0%	22%	-1%	0%
55464	2%	0%	0%	23%
68296	3%	0%	-1%	-16%
68297	3%	0%	-1%	-16%
68581	0%	11%	-4%	-3%
I- 66				
5026	0%	12%	0%	1%
49097	0%	0%	79%	-25%
52133	0%	200%	0%	0%
70030	0%	0%	-1%	12%
I- 95				
26136	0%	1%	0%	14%
27421	0%	3%	31%	0%
28154	0%	68%	0%	0%
43013	2%	0%	-1%	-12%
43016	2%	0%	-1%	-12%
49369	2%	0%	-1%	-12%
57268	0%	12%	0%	0%
76278	0%	2%	11%	0%
James Madison Hwy				
75672	0%	55%	0%	0%
75673	0%	33%	0%	0%
Jones Branch Dr				
8520	0%	12%	-2%	1%
12236	6%	0%	16%	3%
12238	11%	0%	1%	0%
17822	0%	13%	-2%	3%
35879	6%	0%	11%	5%
36480	6%	0%	16%	3%
38632	0%	12%	-2%	3%
68888	0%	12%	-2%	1%
Key Brg				
7923	2%	0%	13%	7%
22667	2%	0%	8%	13%
Kidwell Dr				
46319	6%	0%	4%	3%
Kirby Rd				
72293	5%	0%	12%	1%
Lee Chapel Rd				
10075	0%	39%	0%	0%
41005	0%	15%	0%	0%
Leesburg Pike				
12229	1%	0%	-7%	-13%
14213	2%	0%	-12%	-7%
20828	2%	0%	-13%	-1%
35567	2%	0%	-17%	-9%
36898	1%	0%	-11%	-8%
57210	0%	20%	-1%	0%
68877	1%	0%	-3%	30%
Lewinsville Rd				
72069	0%	13%	-79%	-61%
76053	0%	23%	-39%	-30%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
Lisle Ave				
79334	0%	20%	-6%	0%
Lovettsville Rd				
67715	0%	12%	0%	1%
74567	0%	11%	0%	1%
Loyalty Rd				
74290	6%	0%	5%	3%
Mill Rd				
71085	2%	0%	-34%	-1%
Mulberry Bottom Ln				
22325	0%	152%	0%	0%
N Chesterbrook Rd				
3619	7%	0%	0%	-13%
3620	6%	0%	-15%	-1%
8454	5%	0%	-14%	0%
8455	0%	7%	0%	-12%
11494	6%	0%	-14%	-1%
65371	7%	0%	0%	-13%
N Fairfax St				
27480	0%	75%	0%	0%
35505	0%	34%	1%	0%
36542	0%	44%	0%	1%
74330	0%	35%	0%	-1%
N Fort Myer Dr				
28732	1%	0%	12%	11%
N Glebe Rd				
22383	0%	13%	1%	2%
33998	2%	0%	23%	9%
35179	0%	13%	3%	1%
41418	1%	0%	2%	27%
N Jackson St				
81005	0%	12%	0%	1%
81006	0%	11%	0%	1%
81019	0%	13%	0%	1%
N Jefferson Davis Hwy				
36929	0%	31%	4%	0%
70264	0%	15%	0%	3%
N Kensington St				
44770	0%	10%	1%	1%
N Key Blvd				
81060	0%	23%	0%	0%
81062	0%	10%	0%	0%
N Kirkwood Rd				
50537	0%	10%	0%	2%
65801	0%	10%	0%	1%
N Lee Hwy				
14003	2%	0%	1%	13%
N Little Falls Rd				
34331	0%	19%	0%	-1%
42920	0%	89%	0%	1%
54639	0%	21%	-1%	-1%
68920	4%	0%	-11%	-7%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
N Pitt St				
12212	0%	35%	0%	-1%
N Sycamore St				
50545	0%	12%	1%	1%
N Washington Blvd				
50287	1%	0%	-12%	-2%
68921	0%	60%	0%	1%
71775	4%	0%	-11%	-7%
N Williamsburg Blvd				
7986	0%	12%	1%	1%
17015	0%	10%	1%	1%
Norfolk Ln				
47674	0%	34%	0%	1%
Old Chesterbrook Rd				
5120	3%	0%	-14%	-8%
Old Dominion Dr				
3984	2%	0%	0%	12%
4706	1%	0%	0%	12%
4793	0%	77%	1%	0%
11488	2%	0%	-10%	-2%
22285	5%	0%	1%	1%
28118	8%	0%	4%	15%
60003	6%	0%	6%	4%
60269	2%	0%	-13%	-3%
68779	3%	0%	10%	1%
72563	0%	48%	0%	0%
76054	14%	0%	78%	79%
80116	0%	40%	0%	0%
80118	0%	146%	0%	0%
Old Ox Rd				
28916	0%	14%	0%	0%
Old Springhouse Rd				
77178	1%	0%	-2%	13%
77179	8%	0%	18%	-28%
Park Run Dr				
12483	0%	15%	-1%	-1%
18058	0%	11%	-1%	3%
42887	9%	0%	1%	0%
Pendleton St				
41252	7%	0%	0%	0%
Potomac Ave				
76816	0%	14%	0%	3%
Potomac Greens Dr				
47676	0%	34%	0%	1%
52050	0%	13%	0%	1%
Queen St				
20907	0%	75%	0%	0%
40414	0%	44%	0%	1%
Ring Rd				
13954	0%	13%	0%	-13%
42174	0%	9%	0%	-14%
62751	0%	16%	2%	-13%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
73543	10%	0%	-8%	-9%
Rolling Rd				
44182	0%	152%	0%	0%
Running Brook Dr				
54182	0%	20%	0%	0%
S Arlington Ridge Rd				
7984	1%	0%	0%	13%
S Berlin Pike				
77579	0%	12%	0%	0%
S Clark St				
55584	5%	0%	0%	5%
68247	5%	0%	0%	5%
S Columbia Pike				
9801	1%	0%	1%	11%
26428	1%	0%	2%	12%
49630	3%	0%	0%	12%
S Eads St				
29859	0%	22%	0%	2%
36985	0%	12%	0%	5%
51047	0%	13%	1%	0%
74054	1%	0%	15%	1%
S Fort Scott Dr				
80808	0%	17%	0%	4%
S Glebe Rd				
40901	0%	12%	1%	0%
74285	0%	20%	0%	2%
S Hayes St				
41671	0%	10%	0%	1%
41673	0%	14%	0%	1%
S Patrick St				
52667	0%	200%	0%	0%
S Washington Blvd				
17387	1%	0%	1%	31%
28854	1%	0%	0%	16%
33590	0%	1%	11%	0%
73013	0%	1%	0%	-22%
74618	0%	1%	10%	0%
Sands Rd				
6083	0%	12%	0%	0%
Senseny Rd				
81391	0%	11%	0%	1%
81397	0%	21%	1%	1%
Shirley Hwy				
18091	1%	0%	5%	21%
51571	1%	0%	5%	21%
62771	1%	0%	5%	21%
Spring Hill Rd				
17400	20%	0%	-1%	-10%
State Rte 123				
59113	4%	0%	2%	11%
State Rte 193				
6379	15%	0%	7%	45%

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
6381	21%	0%	18%	21%
13747	2%	0%	-12%	-12%
27937	0%	5%	76%	75%
33644	22%	0%	11%	68%
33645	0%	30%	11%	16%
44442	4%	0%	-11%	-15%
State Rte 237				
59501	0%	1%	5%	15%
State Rte 267				
2107	0%	2%	-10%	-1%
27417	0%	8%	-48%	-3%
44979	0%	2%	-10%	-1%
48466	0%	20%	-35%	-2%
58212	0%	10%	7%	0%
58213	0%	21%	0%	0%
63906	0%	23%	-2%	0%
77023	0%	47%	-2%	-1%
State Rte 286				
22322	0%	200%	0%	0%
State Rte 289				
40190	0%	14%	0%	0%
State Rte 3 Bus				
25900	0%	0%	13%	0%
State Rte 55				
60604	0%	14%	0%	0%
State Rte 658				
51814	0%	64%	0%	0%
State Rte 662				
23850	3%	0%	1%	15%
45975	2%	0%	1%	15%
State Rte 681				
31834	4%	0%	0%	10%
31835	6%	0%	0%	9%
77575	6%	0%	0%	9%
State Rte 682				
77580	0%	15%	0%	0%
State Rte 684				
21843	0%	11%	0%	0%
State Rte 695				
72292	5%	0%	12%	1%
State Rte 698				
35353	4%	0%	0%	10%
State Rte 7 Bus				
7291	0%	13%	0%	0%
12250	1%	0%	0%	-13%
64315	1%	0%	1%	13%
State Rte 762				
15483	0%	12%	0%	0%
35250	0%	15%	0%	0%
Sudley Rd				
43174	0%	0%	10%	-5%
Swinks Mill Rd				

Roadway | State | LinkID	Congested % Difference	Free Flow % Difference	Travel Time % Difference (AM)	Travel Time % Difference (PM)
21840	0%	12%	-1%	-1%
38993	0%	16%	0%	-1%
Taylorstown Rd				
36006	0%	11%	0%	3%
81329	0%	15%	0%	3%
81330	0%	13%	0%	3%
Telegraph Rd				
7687	2%	0%	-7%	-10%
47641	0%	200%	0%	0%
Toll House Rd				
52653	0%	44%	0%	0%
74774	0%	49%	0%	0%
US Hwy 29				
59243	0%	17%	0%	0%
Van Buren Rd				
6674	0%	11%	0%	0%
W Broad Way				
75878	2%	0%	3%	10%
W Chapman St				
26776	0%	0%	1%	11%
W Wakefield Dr				
38725	0%	200%	0%	0%
44175	0%	37%	0%	0%
Wakefield Dr E				
38726	0%	37%	0%	0%
44480	0%	200%	0%	0%
Westmoreland St				
5056	3%	0%	-14%	-5%
5057	3%	0%	-14%	-6%
28008	3%	0%	2%	12%
Westwood Rd				
81414	0%	11%	1%	1%
Willowfield Way				
8704	0%	200%	0%	0%