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TRANSPORTATION IMPACT STUDY Full Report with Appendices June 2020 This page intentionally left blank.

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1. EXECUTIVE SUMMARY

This Transportation Impact Study (TIS) evaluates the potential transportation impacts of the proposed relocation of the Bureau of Engraving and Printing (BEP) production facility to a permanent location within the U.S. Department of Agriculture (USDA) Beltsville Agricultural Research Center (BARC). The proposed relocation site is approximately 104 acres.

Through the scoping process and in coordination with the Maryland-National Capital Park and Planning Commission (M-NCPPC), the City of Greenbelt, Maryland State Highway Administration (Maryland SHA), U.S. Army Corps of Engineers (USACE) Baltimore District, National Capital Planning Commission (NCPC), and National Park Service (NPS), the approved vehicular study area for the TIS includes 15 intersections. The intersections are within an area generally bounded by MD 201 (Edmonston Road) on the west of the site, Capital Beltway to the south, Soil Conservation Road on the east, and Odell Road to the north. **Figure 1-1** presents a general map of the study area.

This TIS evaluates the vehicular operations of the study intersections under Existing Conditions and Future Conditions. Existing Conditions analyzes the vehicular operations of the study intersections. It also presents the pedestrian environment, the availability of bicycle facilities, and the availability and ridership of public transit services at present. Future Conditions are defined as roadway conditions in the year 2029 that will result if BEP relocates its production facility (Action Alternative) or if it does not relocate its production facility (No Action Alternative). This TIS also provides mitigation strategies to address vehicular operation inadequacies that result from the relocation of the BEP production facility and the anticipated costs to implement the recommended improvements.

The Project Team (A/E) assessed Existing Conditions and Future Conditions for vehicular operations during the weekday peak hours of the proposed BEP production facility (6:00-7:00 AM and 3:00-4:00 PM) at 15 study intersections, using three analysis methods. These included the following:

- Critical Lane Volume (CLV) a method required by M-NCPPC;
- The latest Highway Capacity Manual (HCM) method delay, a method required by Maryland SHA and Prince George's County; and
- Queuing, a method required by Maryland SHA.

To be considered passing, an intersection must have a CLV or HCM delay within the M-NCPPC and Maryland SHA standards, respectively. Queuing vehicles must also be able to stack in their allotted storage space without blocking an adjacent lane or an upstream intersection.

The **Future Conditions** section of the TIS, which is essential for determining which portions of the roadway network are most likely to experience significant deteriorations in traffic conditions, addresses issues pertaining to the vehicular operations of the study intersections in 2029. The TIS evaluates the comparison between the following two scenarios to assess the impact of BEP relocating its facility to Beltsville:

- The No Action Alternative assumes the addition of four planned background developments and a 1.2% per year regional growth rate to the roadways but does not include the relocation of the BEP production facility.
- The Action Alternative assumes the addition of planned background developments, regional growth to the roadways, and the relocation of the BEP production facility.

The Future Conditions section also discusses the impacts on the pedestrian, bicycle, and transit networks under the No Action Alternative and the Action Alternative.

Based on the transportation scoping form, vehicular forecasts for the **Action Alternative** assumed that 254 administrative staff and 884 production staff would add 944 AM peak period and 946 PM peak period trips (i.e., vehicle trips, single occupancy vehicles [SOVs], and carpooling; transit trips; and bike trips) to the transportation network. Approximately 10% of employees considered above (mostly administrative) would travel to and from the site by public transit or by bicycle. Production and administrative staff would add 850 AM peak hour and 851 PM peak hour vehicle trips to the adjacent street network, assuming all production staff and 24% of administrative staff would commute during the peak hours. Findings from a comparison between the No Action and Action reveal the following:

- Kenilworth Avenue/Edmonston Road (MD 201) between the Beltway and Cherrywood Lane operations would not degrade to failing operations under the Action Alternative. however, queuing in the AM peak hour would degrade from passing conditions under the No Action Alternative to failing operations under the Action Alternative, requiring mitigation between the I-95 northbound off-ramp (Intersection #2) and Cherrywood Lane (Intersection #5).
- Edmonston Road (MD 201) at Sunnyside Avenue (Intersection #6) operations and queueing would degrade from failing operations under the No Action to worse operations under the Action Alternative requiring mitigation.
- Edmonston Road (MD 201) at Powder Mill Road (Intersection #8) operations and queuing would degrade from passing operations under the No Action Alternative to failing operations under the Action Alternative requiring mitigation.
- Powder Mill Road at proposed BEP driveway entrance (Intersection #10) operations and queueing would degrade from failing operations under the No Action Alternative to worse operations under the Action Alternative requiring the BEP driveway intersection to be upgraded.
- Powder Mill Road at Springfield Road and the BW Parkway interchange ramps (Intersections #12, #13, and #14) would degrade from failing operations and queueing under the No Action Alternative to worse operations and queueing under the Action Alternative requiring mitigation.
- Powder Mill Road at Soil Conservation Road would not degrade to failing operations under the Action Alternative.
- Edmonston Road at Odell Road and Powder Mill Road at Research Road (Intersections #9 and #11) would not require mitigation because the minor street approaches would have less than 100 vehicles and this according to M-NMCPPC policy would not be considered a significant traffic impact.
- Edmonston Road at Beaver Dam Road (Intersection #7) would not require mitigation because the minor approach would have less the 100 vehicles; however, there was a safety issue observed where vehicles attempted to turn left from Edmonston Road to Beaver Dam Road and caused a traffic queue extending through the Powder Mill Road intersection.

Mitigation is required to minimize the impact of the proposed BEP site under future conditions. Generally, the goal of mitigation is to ensure that intersections that fail under the No Action Alternative and would continue to do so under the Action Alternative—would operate better than the No Action Alternative when mitigation strategies are applied for the Action Alternative. Additionally, intersections that are passing under the No Action Alternative, but failing under the Action Alternative, would also be targeted for mitigation. **Figure 1-1** presents a summary of the study intersections and indicates if each intersection would pass the CLV, HCM, and queue tests under the Action Alternative; notes if mitigation would be required as a result.

| ID | Intersection | CLV | НСМ | Queue | Mitigation Needed | Reason for No Mitigation |
|----|---|------|------|-------|----------------------|---|
| 1 | MD 201/ I-95 SB Off-Ramp | Pass | Pass | Pass | No | CLV and HCM pass |
| 2 | MD 201/I-95 NB Off-Ramp | Pass | Pass | Fail | | - |
| 3 | MD 201/ SHA District 3/Crescent Road | Pass | Pass | Fail | | - |
| 4 | MD 201/Ivy Lane | Pass | Pass | Fail | | - |
| 5 | MD 201/Edmonston Road)/Cherrywood Lane | Pass | Pass | Fail | | - |
| 6 | MD 201/Sunnyside Avenue | Fail | Fail | Fail | | - |
| 7 | MD 201/Beaver Dam Road | n/a | Fail | Fail | No | Fewer than 100 vehicles on Beaver Dam Road |
| 8 | MD 201/Powder Mill Road | Fail | Fail | Fail | \checkmark | - |
| 9 | MD 201/Odell Road | n/a | Fail | Pass | No | Fewer than 100 vehicles on Odell Road |
| 10 | Powder Mill Road/Poultry Road | n/a | Fail | Fail | No | This will be improved through site design |
| 11 | Powder Mill Road/Research Road | n/a | Fail | Pass | No | Fewer than 100 vehicles on Research Road |
| 12 | Powder Mill Road/Springfield Road | n/a | Fail | Pass | \checkmark | - |
| 13 | Powder Mill Road/MD 295 SB Ramps | n/a | Fail | Fail | \checkmark | - |
| 14 | Powder Mill Road/MD 295 NB Ramps | n/a | Fail | Fail | \checkmark | - |
| 15 | Powder Mill Road/Soil Conservation Road | Pass | Pass | Pass | No | CLV and HCM pass |

Figure 1-1. Study Intersection Mitigation Requirement Summary.

The intersections on Kenilworth Avenue/Edmonston Road (MD 201) between the Beltway and Cherrywood Lane (Intersections #2, #3, #4, and #5), while operating with failing queues under the Action Alternative, are substantially affected by a lane drop on MD 201 north of Cherrywood Lane. However, mitigation strategies for those intersections were not included as part of this TIS. To address the effect of the lane drop on queueing, geometric changes to MD 201 between Sunnyside Avenue and Cherrywood could remove the lane drop and improve queues; however, MD 201 crosses Beaverdam Creek, which is considered an area of critical concern as a Tier II stream. This presents a key environmental constraint. In the sensitivity analysis that was prepared as an addendum to this TIS in response to agency comments, additional queuing analyses indicated that queues would be accommodated as a result of the mitigation strategies presented in this TIS.

Based on the criteria for mitigation and the conditions of Kenilworth Avenue/Edmonston Road (MD 201) between the Beltway and Cherrywood Lane, the following intersections should be the focal point of improvement investments:

- MD 201 (Edmonston Road)/ Sunnyside Avenue (Intersection #6) mitigation
- MD 201 (Edmonston Road)/ Beaver Dam Road (Intersection #7) recommendation
- MD 201 (Edmonston Road)/ Powder Mill Road (Intersection #8) mitigation
- Powder Mill Road/ Poultry Road (BEP Driveway) (Intersection #10) recommendation
- Powder Mill Road/ Springfield Road (Intersection #12) mitigation
- Powder Mill Road/ BW Parkway Southbound Ramps (Intersection #13) mitigation
- Powder Mill Road/ BW Parkway Southbound Ramps (Intersection #14) mitigation

The mitigation strategies would improve the CLV and HCM operations of MD 201 (Edmonston Road)/ Sunnyside Avenue (Intersection #6) and MD 201 (Edmonston Road)/ Powder Mill Road (Intersection #8) to either acceptable operations or operations that are better than those under the No Action Alternative. Under the No Action Alternative, MD 201 (Edmonston Road)/ Sunnyside Avenue would operate at LOS F during both the AM and PM peak hours based on HCM and CLV methods. Under the Action Alternative with Mitigation, the intersection would operate at HCM LOS D during the AM and PM peak hours, a CLV LOS C during the AM peak hour, and a CLV LOS D during the PM peak hour. While the CLV operations would continue to fail in the PM peak hour, they would be improved from the No Action Alternative. With mitigation strategies, MD 201 (Edmonston Road)/ Powder Mill Road (Intersection #8) would operate with acceptable HCM and CLV operations.

The Rough Order of Magnitude (ROM) cost estimate for mitigation at these intersections is \$27.7M, based on a construction 24-month construction schedule beginning January 2022. **Figure 1-2** presents a map of the study area intersections, with those intersections encircled in red featuring the recommended opportunities for mitigation and improvements.



Figure 1-2. Transportation Study Area. Red circles indicate intersections with recommended improvements.

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2. INTRODUCTION

This TIS, prepared as part of the environmental impact statement (EIS), intends to identify potential transportation impacts resulting from the relocation of BEP's production facility to the USDA's BARC, as required under the provisions of the National Environmental Policy Act (NEPA) of 1969, as amended, and Section 106 of the National Historic Preservation Act. As such, this TIS has been prepared in accordance with NEPA; the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500–1508 [1986]); United States (U.S.) General Services Administration (GSA) Order ADM 1095.1F *Environmental Considerations of Decision Making* (1999), and GSA's *Public Buildings Service NEPA Desk Guide* (1999).

The analysis of environmental impacts for the proposed site is based on a conceptual site plan informed by both site planning principles and BEP program requirements that would avoid and preserve sensitive environmental resources and respond to concerns raised in public and agency scoping comments. These site plans are conceptual and represent a program-compliant layout that would yield a conservative estimate of the environmental impacts associated with this alternative.

This TIS revises the previously submitted study dated December 2019. Revisions to the original study are based on responses to comments provided by reviewing agencies. Those comments and the Project Team's point-by-point responses are provided in Appendix A.

A Project Background

This section describes the following: BEP's facility needs that have warranted this TIS; an overview of conditions at the BARC site; an outline of the NEPA requirements that initiated the evaluation of transportation impacts for the proposed site and the framework for evaluating the transportation impacts associated with this site; a summary of local land use plans in the study area. These plans establish a planning framework for the remainder of the report and provide context for the evaluation of the proposed site. *Any blank spaces in the subsequent sections are deliberate, awaiting material from the Environmental Impact Statement (EIS) to ensure alignment between the two reports.*

BEP Facility Needs

This TIS provides an evaluation of the potential transportation impacts from the relocation of the BEP facility from Washington D.C. to Beltsville, Maryland. The proposed development includes the relocation of the currency printing facilities along with production and administrative staffing needs to operate the facility. The facility needs include the following:

- Access roads to handle trucks that will haul the raw and finished materials
- A Building that will house the storage and production of the currency as well as office space to accommodate administrative staff and facilities to serve the production staff needs
- Security fencing to protect the facility and entry control facility to screen every employees and truck load entering the facility
- A visitor's center to process visitors wishing to enter the facility.

Conditions at BARC Site

This TIS provides an evaluation of the potential transportation impacts of the proposed BEP facility in Beltsville, Maryland. The proposed development includes an 850,000 to 1,000,000 square foot building, parking area, and security perimeter. The details of the current site are presented in the EIS.

National Environmental Policy Act Requirements

CEQ regulations require that agencies analyze the potential direct and indirect impacts of the proposed action on the natural and human environment for each alternative, including a No Action Alternative. The EIS evaluates two alternatives:

- **No Action Alternative**: BEP staff and operations would remain downtown. The proposed site would continue to operate as BARC; there would be no major changes from the existing condition.
- Action Alternative: BEP staff and operations would be relocated to the proposed site in Beltsville.

In accordance with CEQ regulations, direct, indirect, and cumulative impacts are assessed for each of the action alternatives evaluated in the Final EIS accompanying this TIS and for the No Action Alternative, which provides a baseline for evaluating the impacts of the action alternative. Direct impacts are defined as those that are caused by the action and occurring at the same time and place; indirect impacts are defined as those reasonably foreseeable impacts caused by the action but occurring later in time or farther removed in distance. Cumulative impacts are defined as the overall impacts caused by the action plus all reasonably foreseeable impacts.

This TIS analyzes the transportation conditions associated with the proposed site. To comprehensively evaluate transportation impacts for the proposed site, this TIS evaluates the following conditions:

- **Existing Condition**: existing transportation system conditions, current to 2019.
- **No Action Alternative**: future transportation system conditions assuming the BEP facility *is not* relocated to the proposed site for the build year of 2029.
- Action Alternative: future transportation system conditions assuming the BEP facility *is* relocated to the proposed site for the build year of 2029.
- Action Alternative with Mitigation Condition: future transportation system conditions assuming the BEP facility *is* relocated to the proposed site for the build year of 2029 and

including mitigation measures that would avoid or minimize adverse impacts on, or enhance the quality of, the natural and human environment.

Impacts associated with the alternatives are analyzed in the No Action and Action Alternatives comparison sections. Potential impacts are described in terms of:

- Type: the positive or negative effects of an action
 - beneficial, reducing congestion or barriers and/or improving travel patterns, safety, or travel time;
 - adverse, increasing congestion or barriers and/or degrading travel patterns, safety, or travel time.
- **Category**: the type of effects
 - o *direct effects* are caused by the action and occur at the same time and place;
 - *indirect effects* are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable.
- **Duration**: the length of time of the effects
 - o **short term**, lasting during construction or up to one year after;
 - o *long term*, lasting more than one year.
- **Intensity**: the thresholds for determining the intensity of effects on local pedestrian, bicycle, transit, parking, traffic networks, and truck access
 - Not Measurable a localized impact that is barely perceptible to most users;
 - o Beneficial or Adverse a localized impact that is measurable to most users;
 - **Adverse Major** a broad area impact that is highly noticeable and would substantially affect a large numbers of network users.

B Planning Context

Existing Land Use

The proposed BEP facility site is bordered by Powder Mill Road to the south, government service buildings to the east and west, and a wooded area and Odell Road to the north. Agricultural land use and government office and maintenance buildings are the major land uses on this site. Private development is not permitted on the site. Residential land use occurs approximately 1/2 mile from the site, which is situated in a well-populated suburb of Washington, DC.

Beltsville Agricultural Research Center

The 7,000-acre BARC is in Prince George's County, Maryland. USDA has owned and operated the area as a research park for soil, water, air, plant, and animal sciences since 1910. Current subjects of investigation include poultry research, soybean genetics, bee research, and dairy cattle health. According to the BARC map at the National Agricultural Library, Building 228 is located on the site (USDA 2019). The proposed siting of the actual BEP production facility is bounded by BARC Building 307c to the east, Poultry Road to the west, Powder Mill Road to the south, and forested land to the north. Adjacent to the Beltsville site is USDA-owned land and BARC service buildings to the north and west, the BARC National Visitor Center (Building 302) to the south, and the Baltimore-Washington Parkway (Maryland Route [MD]-295) to the east.

The area surrounding the Beltsville site was originally developed as agricultural land in the eighteenth and nineteenth centuries (M-NCPPC 2013). In the 1830s, the Washington line of the Baltimore and Ohio Railroad (now CSX) was built in the stream valley adjacent to the Beltsville site. Suburban residential development began in earnest in the area in the twentieth century, starting with the planned community of Greenbelt to the south, just outside what is now the Capital Beltway. The Capital Beltway was planned in the 1950s and opened in the early 1960s. Major roadway improvements during this period spurred suburban growth along their corridors, including the Springhill Lake apartment complex adjacent to the Beltway, now known as Franklin Park at Greenbelt Station (south of the site, adjacent to Cherrywood Lane). Springhill Lake was the largest garden apartment complex on the East Coast at the time it was constructed; when completed, it included nearly 2,900 apartment and townhouse units, social and retail services for its residents to help build a spirit of community, and later an elementary school and shopping center within walking distance and parking lots located at the perimeter of each section to maximize green space. By 1998, the parking infrastructure at the Greenbelt Metro Station had been completed, and the site and surrounding property have remained relatively unchanged since that time (GSA 2015). Ongoing projects and plans continue to shape the area surrounding the Beltsville site, including the BARC Master Plan, Plan Prince George's 2035, and the Subregion 1 Master Plan and Sectional Map Amendment. These plans highlight Beltsville's rich agricultural land and natural and public resources (M-NCPPC 2012).

Federal Elements of the Comprehensive Plan for the National Capital

The Federal Elements of the Comprehensive Plan for the National Capital address matters related to federal properties and interests in the National Capital Region (NCR), which includes the District of Columbia; Montgomery and Prince George's Counties in Maryland; Arlington, Fairfax, Loudoun, and Prince William Counties in Virginia; and all cities within the boundaries of those counties. The Federal Elements were prepared pursuant to Section 4(a) of the National Capital Planning Act of 1952. The eight Federal Elements presented in the Comprehensive Plan are (1) Urban Design, (2) Federal Workplace, (3) Foreign Missions & International Organizations, (4) Transportation, (5) Parks and Open Space, (6) Federal Environment, (7) Historic Preservation, and (8) Visitors & Commemoration. The National Capital Planning Commission (NCPC) develops and administers these Federal Elements, which were last updated in 2016, except for the Parks & Open Space element, which was updated in 2018, and the Federal Workplace and Transportation elements, which are in the process of being updated (NCPC 2016).

The Federal Elements of the Comprehensive Plan for the NCR provide criteria for the location of federal facilities and policies on federal employment in the NCR. The goals of the elements regarding land use include:

- Maintaining Washington, DC, as the seat of the national government by enhancing the federal workforce through efficiency, productivity, and economic well-being;
- Ensuring federal developments are compatible with adjacent neighborhood uses;
- Developing and maintaining a multi-modal regional transportation system that meets the travel needs of residents, workers, and visitors;
- Conserving and enhancing the park and open space system of the NCR;
- Promoting an appropriate balance between open space resources and the built environment;
- Preserving and enhancing the guiding principles of the L'Enfant and McMillan Plans.

The transportation policies included in the Federal Elements of the Comprehensive Plan are built upon the principles of transit-oriented development and sustainability (NCPC 2016). Overall, the goal of the transportation Federal Element is to develop and maintain a multi-modal regional transportation system that meets the travel needs of workers, residents, and visitors, while improving regional mobility, accessibility, air quality, and environmental quality through expanded transportation alternatives and transit-oriented development. The transportation element presents various policies to achieve this goal, including supporting the development and expansion of regional transit services, implementing parking guidelines that encourage a shift away from SOV commuting, developing transportation management plans to encourage more efficient employee commuting, encouraging active commuting and bicycling, and supporting smart investment priorities.

Plan Prince George's 2035

The Maryland-National Capital Park and Planning Commission (M-NCPPC) initiated *Plan Prince George's 2035* to examine recommendations for guiding future development in the county. The plan designates eight regional transit centers as the focus of the county's planned growth and mixed-use development with the capacity to become major economic generators (M-NCPPC 2014a). The plan contains recommended goals, policies, and strategies for a multitude of elements, including transportation and mobility.

Plan Prince George's 2035 policies are shaped by a desire to create a transportation network that provides convenient and equitable multimodal access to jobs and services. The Purple Line, an approved 16-mile, 21-station, east-west light rail transit line extending inside the Capital Beltway from New Carrollton to Bethesda in Montgomery County, is one of several planning efforts to realize a connected, equitable, and multimodal transportation system. The Purple Line would connect the major central business districts and activity centers of Takoma/Langley Park, College Park/University of Maryland (one stop from Greenbelt on the Green Line), New Carrolton, Bethesda, and Silver Spring. The new line would provide direct connections to Metrorail at New Carrolton, College Park, Silver Spring, and Bethesda, which would link the Orange, Green, and Red Lines.

A variety of policies and strategies in *Plan Prince George's 2035* intend to advance the vision of a strong transportation network. The County intends to integrate countywide transportation improvements and land use patterns with the 2035 vision through capital road improvements and streetscape enhancements, designated bicycle-pedestrian priority areas (BPPAs), bike and car sharing programs, physical connections between new and existing developments, and the conversion of existing arterial roadways to multi-way boulevards where feasible.

The plan also envisions expanded and improved transit that would invest in the existing bus service, as well as new bus and light rail service. In addition, the plan identifies new transitway corridors to support the 2035 guidelines and priorities, implements the recommendations for MetroBus priority Corridor Networks recommended in *Momentum – The Next Generation of Metro (Strategic Plan 2013–2025)* (Momentum Strategic Plan) (WMATA 2014a), uses "complete street" practices to design and operate the transportation network to improve travel conditions, improves overall safety levels within the country's transportation network, and ensures that minimum and maximum parking requirements for transit-accessible areas are appropriate to advance the overall goals of *Plan Prince George's 2035*. Complete street policies and designs call for streets to be planned, built, operated, and maintained to enable safe, convenient transportation options for all users, regardless of the mode of transportation or the age and abilities of the person.

Greenbelt Sector Plan and Sectional Map Amendment

The Prince George's County Planning Department initiated the *Greenbelt Sector Plan and Sectional Map Amendment* (SMA) in March 2013. SMA envisions the development of the Greenbelt Metro Metropolitan Center as an interconnected, vibrant, and diverse mixed-use, transit-oriented ecocommunity that builds on the historical commitment to sustainability of the City of Greenbelt and Town of Berwyn Heights (Prince George's County Planning Department 2013). The SMA designates goals and objectives for multiple components of planning for the City of Greenbelt, including land use and urban design, environmental infrastructure, transportation, economic development, and housing and neighborhood preservation. The approved land use plan for Greenbelt and the surrounding area, shown in **Figure 2-1**, indicates the desired mix of land uses that may occur on a given property. This study is adjacent to the proposed BEP facility site but would not directly affect the project.



Figure 2-1: Greenbelt Sector Plan and SMA Approved Land Uses

Source: M-NCPPC (2001)

The Greenbelt Sector Plan's goals and objectives for transportation, including safety, connectivity, mobility, and access, include:

- Facilitating alternative forms of transportation by providing a continuous network of sidewalks, bikeways, and trails;
- Implementing reconfigured road lanes, dedicated bicycle facilities, and wide sidewalks along MD 193 to maximize pedestrian friendliness;
- Constructing additional trail connections and facilities to connect neighborhoods with Greenbelt Metro Station, the Indian Creek stream valley, and regional trail networks;
- Considering a new alignment of the Greenbelt Station Parkway that minimizes impacts;
- Running the potential realignment of Narragansett Run while ensuring any additional temporary impacts on the waterway would accommodate the construction of the Greenbelt Station Parkway Bridge;
- Providing full interchange movements from Greenbelt Metro Station to and from the Capital Beltway (I-95/I-495);
- Redesigning the MD 193 Bridge over Kenilworth Avenue to eliminate dangerous left-hand turns, streamline traffic flow, and enhance pedestrian and cyclist safety;
- Implementing a comprehensive wayfinding system for orientation and to help direct people and traffic to major destinations and attractions;
- Recommending a comprehensive managed parking program;

• Exploring alternative means of addressing comprehensive transportation networks and traditional measurements of adequate public facilities for transportation.

City of Greenbelt Pedestrian and Bicyclist Master Plan

The *Pedestrian and Bicyclist Master Plan* initiated by the Greenbelt Planning Office in January 2014 provides a series of recommendations to improve the conditions for walking and cycling throughout the City of Greenbelt (City of Greenbelt 2014). Recommendations are divided into five sections: general, location-specific, location-specific concepts, pedestrian, and bicyclist recommendations.

The goals of the Master Plan include:

- Establishing a long-range vision that prioritizes pedestrian and bicycle travel and specific goals for improving conditions for bicycling and walking;
- Establishing a safe street environment for pedestrians, bicyclists, and drivers;
- Establishing a pedestrian and bicycle network accessible by all;
- Establishing an easy-to-use pedestrian and bicycle network with direct connections to destinations;
- Establishing a safe environment that feels comforting and inviting to pedestrians and bicyclists;
- Coordinating with the Prince George's County unit of M-NCPPC to amend the county zoning code and other development requirements to ensure safer, more comfortable, and more convenient bicycle and pedestrian access and accommodations for new and renovated commercial and retail establishments;
- Slowing vehicular speeds and improving visibility at locations where paths intersect streets;
- Improving bicyclist comfort and safety on the existing bicycling network and clarifying its location and extent by adding on-road bicycling facilities and improving paths designated for shared use;
- Taking steps to ensure an adequate supply of well-designed and conveniently located bicycle parking facilities at shopping centers, office buildings, community facilities, and multi-family residences.

Beltsville Agricultural Research Center Master Plan

BARC's existing Master Plan was developed in 1979 and updated in 1984 and 1996. The 1996 *Master Plan Update* initiated by the USDA Agricultural Research Service documented BARC's existing conditions and planned proposals. (USDA-ARS 1996). The most critical planning elements include retaining adequate land resources, consolidating land uses, retaining an internal circulation system between facilities, promoting perimeter buffer zones, and maintaining low-density development and agrarian uses.

Overall, the plan has the following goals:

- Preserving BARC's low-density character;
- Retaining adequate land resources for research;
- Improving BARC's visual environment;
- Protecting wildlife and birds;
- Providing a safe and environmentally friendly workplace;
- Renovating buildings to bring them into compliance with codes and regulations for building, laboratory, handicapped accessibility, and animal handling requirements;
- Upgrading and/or replacing infrastructure to comply with regulations and increasing capacity as required to support existing and proposed building functions;
- Increasing the number of parking spaces for the physically challenged to comply with regulations;
- Developing a more integrated means of recycling solid waste;
- Reducing energy consumption through increased energy efficiency, including greater reliance on natural gas and elimination of electric heaters;
- Integrating adjoining property owners into the planning process;
- Remediating environmental problems, including upgrading underground storage tanks in compliance with 1998 U.S. Environmental Protection Agency regulations, and conducting environmentally hazardous materials cleanup.

M-NCPPC Approved Subregion 1 Master Plan and Section Map Amendment 2010

The Subregion 1 Master Plan and Sectional Map Amendment establishes development policies, objectives, and strategies that are consistent with the recommendations of the 2002 Prince George's *County Approved General Plan*, now superseded by *Plan Prince George's 2035*. The master plan's overarching goal is to ensure that the subregion becomes an inviting place to live, work, and play, and that it provides a planning framework to guide the preservation, revitalization, and redevelopment of the subregion with specific recommendations for new development, while protecting existing communities and significant environmental, historical, and cultural resources (M-NCPPC 2010). Major goals of the master plan include:

- Enhancing the quality and character of existing communities;
- Encouraging quality economic development;
- Preserving and protecting environmentally sensitive and scenic land;
- Making efficient use of existing and proposed county infrastructure and investment;
- Providing a safe, affordable, and accessible multi-modal transportation system;
- Providing needed public facilities in locations that efficiently serve the subregion's population;

The master plan area consists of approximately 44 square miles in northeastern Prince George's County and includes large portions of BARC land. Subregion 1 has two distinct growth policy tiers, the Developing Tier and the Rural Tier. BARC is classified under the Rural Tier. The vision for the Rural Tier is the protection of large amounts of land for wooded wildlife habitat, recreation and agricultural pursuits, and preservation of the rural character and vistas that now exist. The properties in the Rural Tier are primarily publicly owned lands, including the Washington Suburban Sanitary Commission-owned Rocky Gorge Reservoir and the Patuxent Research Refuge, in addition to BARC (M-NCPPC 2010).

Priority Preservation Area Functional Master Plan

This plan provides goals, policies, and strategies necessary to plan for a continued vibrant and viable agricultural community in the Rural Tier, which is consistent with the Master Plan of Prince George's County (*Plan Prince George's 2035*) and *Subregion 1 Master Plan*. The plan reaffirms the definition for the Rural Tier which is "the protection of large amounts of land for woodland, wildlife habitat, recreation and agriculture pursuits, and preservation of the rural character and vistas that now exist." The Priority Preservation Area Plan addresses agricultural preservation in the Rural Tier of the county, where many of the agricultural preservation programs are focused. This plan summarizes the programs that are used to preserve land in Prince George's County and meets the new state planning requirement for a priority preservation plan. The goal of the plan is to preserve 80% of the remaining undeveloped land in the priority preservation area while maintaining and enhancing agricultural and forestry production on already protected farm and forest lands. (M-NCPPC 2012). Major policies of the master plan include:

- Seeking opportunities to increase the value of farm and forest land used for agricultural production, agritourism, and agricultural support services;
- Seeking available federal, state, local, and other sources of funding to achieve preservation of 80% of eligible lands;
- Minimizing development in areas of prime farm and forest acreage to preserve critical masses of the agricultural land base;
- Preserving farm and forest land as important natural resources for their environmental and economic value;
- Identifying valuable mineral resources, seeking methods to protect and manage access, and reclaiming these areas where possible for future farm or forest enterprises, or agricultural support services;
- Supporting profitable agricultural operations by encouraging new farm and forest enterprises that complement the existing agricultural industry.

Baltimore-Washington Parkway Traffic Safety Plan

The Baltimore-Washington Parkway Traffic Safety Plan provides an action plan for the implementation of improvements related to transportation safety on the Parkway, specifically engineering, education, enforcement, and emergency services, commonly referred to as the "4Es." Since the construction of the Parkway in 1954, no capacity improvements have been made to the Baltimore-Washington Parkway. However, regional development has continued in the vicinity of the corridor, with only limited mitigation to the road, mostly in the form of modest safety improvements that still preserve the historic character of the road. This approach has resulted in increased traffic congestion and crashes. The *Traffic Safety Plan* identifies key investment interests and strategies that conserve natural, historical,

and cultural resources while reducing crashes and enhancing driver mobility on the Parkway. The goal of the plan is to reduce fatalities and serious injuries. Major objectives of this plan include:

- Incorporating 4E considerations into transportation safety projects;
- Promoting transportation safety in projects and policies without threatening park resources and values;
- Collecting and analyzing crash data to make better investment decisions;
- Reducing transportation-related incidents and preparing for future emergencies;
- Continuing to engage stakeholders;
- Developing an action-oriented implementation plan.

BEP Future Workplace Recommendations Report

The Bureau of Engraving and Printing released its *Future Workplace Recommendations Report* in August 2017. This document states the BEP's intent, in partnership with the General Services Administration (GSA), in developing a Program of Requirements (POR) to acquire real property for the relocation of the manufacturing facilities, modeled after the existing Western Currency Facility in Fort Worth. The report provides a detailed assessment of space utilization by operation or administrative function, while offering extensive analyses of the requirements for integrated security. Lastly, it illustrates the anticipated printing workflow and its components. While this Recommendations Report only explores transportation considerations tangentially, with limited analysis on long-term traffic impacts, it does offer a general diagramming and the basic parameters for a concept design on a secured entrance to the proposed facility.

USACE Environmental Condition of Property Report: Poultry Road

The most recent and most extensive study is USACE-Baltimore District's draft of the *Environmental Condition of Property Report (ECP): 104-Acre Parcel of Land Surrounding Poultry Road*, released in August 2019. This document offers an in-depth exploration of the portion of BARC proposed to host the new BEP Production Facility: specifically, the former poultry research campus near the point where Poultry Road previously intersected Odell Road. This ECP Report provide extensive analysis of both environmental constraints to the campus, as well as key administrative and regulatory considerations that must take place at the site prior to any major earth-moving activity. The Report re-states key features from the 1996 BARC Master Plan regarding the road network, as well as other documents that pertain to the historic uses of the land, surveys, inventories, and inspections.

Regulatory Requirement and Transportation Assumption Agreement

Jurisdictional Agreement

Prior to initiating the transportation analysis, it was essential to determine what tools, data parameters, and assumptions would provide the basis of the analysis. In coordination with GSA, the Project Team met with representatives from Maryland SHA, M-NCPPC, Prince George's County, NPS, and the City of Greenbelt in 2019 to agree on the assumptions to follow for the site and study area.

M-NCPPC, through its scoping process (M-NCPPC 2012), requires that a scoping form be approved prior to analysis that outlines the agreed upon level of detail, the data parameters, and the type of analysis. These parameters and assumptions include a study area, trip generation, trip distribution, modal split, analysis years, analysis methods, and No Action transportation assumptions (background growth, planned developments, and planned roadway improvements). Appendix A Contains the Beltsville Site Transportation Agreement.

National Capital Planning Commission Guidance

This TIS considered a number of other assumptions determined by regulatory requirements and federal policy guidance. One such assumption is the parking ratio goals stated in the Transportation Element of NCPC's Comprehensive Plan for the National Capital (NCPC 2016). In response to regional congestion and air quality levels, NCPC recommends that parking be provided only for those federal employees who are unable to use other travel modes. To accomplish this goal, NCPC created parking ratio goals for federal facilities based on their location in relation to available transit services, walking distances, conditions in the surrounding area, and other criteria. Parking ratios are the number of parking spaces available per employee population. In accordance with NCPC parking policy for suburban areas beyond 2,000 feet of Metrorail and not near an existing freeway with a high occupancy vehicle lane, a parking ratio of one parking space for every one and a half employees is assumed in this TIS.

3. Employee Survey

To choose a site for the new production facility, BEP conducted a transportation study to determine the potential impacts to the local roadways if the new facility were to be located at the proposed BEP facility site. The intention of the survey was to understand what mode of transportation employees would use and the routes to access the facility. **Figure 3-1** shows the general distribution of employees based on a database showing zip primary residences as organized by zip code. At this point in time, while the BEP facilities remain located in central Washington DC, the largest concentration of employees come from southern Prince George's County, western Charles County, and northern Stafford County Virginia, with comparatively few employees claiming residence north of the proposed BEP facility site.

A Survey Results

A total of 689 employees responded to the survey, significantly greater than 50% of the total number of recipients. Nearly 85% of the respondents indicated that they worked the primary, daytime shift; the remaining 15% of responses were relatively evenly distributed between the evening and midnight shifts. Based on the survey results, the majority of employees would be driving in a Single-Occupancy Vehicle (SOV) with approximately 58% reporting that they would be driving alone to the new facility. 27% would be using transit (using the USDA shuttle to travel from the Greenbelt Metro Station to the production facility). 13% would be carpooling while 2% would be biking, using a motorcycle, or other mode, including walking, or being picked up or dropped off by another driver not employed at the facility. Regarding general attitudes toward mass transit, the features that the respondents valued the most were "Travel Time" and "Convenience", while "Reliability" and "Safety and Comfort" were rated as less important overall.



Figure 3-1: Primary Mode of Transportation Survey Results

Of the 13% that would be carpooling, approximately 98% of these responses indicated they would be carpooling with a coworker, versus using a carpooling service available in the transit study area such as Lyft or Via.

Employees were instructed to select which quadrant they originate from in order to determine trip distribution, using the Map in **Figure 3-2** as the standard. This survey placed the axes used to generate the quadrants at a location intended to distribute both population and travel paths as clearly and evenly as possible, with the proposed BEP facility site falling within Quadrant I. Based on the responses, the majority of employees would be traveling from Quadrants III and IV. The placement of the four quadrants in a matter that would distribute Approximately 35% of employees would be traveling from Quadrant III and 28% from Quadrant IV.

Of these two quadrants, specific routes were identified that were most likely to be used when traveling to the new production facility. **Figure 3-3** through **Figure 3-6** show the individual route options in each of the four quadrants. 30% of employees traveling from Quadrant III anticipated that they would travel from the Capital Beltway Outer Loop to Baltimore-Washington Parkway Northbound to Powder Mill Road and 30% would travel from the Capital Beltway Outer Loop to Kenilworth Avenue/Edmonston Road (MD 201) to Powder Mill Road. Within Quadrant IV, 48% of employees would travel from Capitol Beltway Inner Loop to US 1 to Sunnyside Avenue to Kenilworth Avenue/Edmonston Road (MD 201) to Powder Mill Road while 24% would travel from US 1 Northbound to Powder Mill Road.



Figure 3-2: Employee Survey Mapping Sections



Figure 3-3: Employee Survey Map Routes - Quadrant 1



Figure 3-4: Employee Survey Map Routes - Quadrant 2



Figure 3-5: Employee Survey Map Routes - Quadrant 3



Figure 3-6: Employee Survey Map Routes - Quadrant 4

B Implications on Future Traffic Conditions

The survey results provide insight on the expected or desired travel patterns of the employees but are limited by the fact that the BEP production has not yet relocated to the proposed site, and the primary residences of the labor force may shift if BEP relocates to the site at BARC, since some employees will seek new employment with a less lengthy and onerous commute. It is reasonable to anticipate that, if BEP relocates, a higher percentage of the labor force by year 2029 will come from areas north of the proposed site: Quadrants I and II, in northern Prince George's County or Howard County.

Additionally, actual travel behaviors may differ after the relocation. Experienced travel times, feasibility, costs, or conditions of the chosen modes of transportation all may affect travel behavior. Employees will also factor their shift times (e.g., the period from 6:30 AM to 3:00 PM) to reconcile their anticipated travel patterns (before the relocation) with their experienced travel patterns (after the relocation). Employees may initially choose a mode of transportation reflecting their survey responses, but ultimately change modes—if it is within their ability—if they believe it would improve their commute. For similar reasons, for those employees who drive, actual route selections would manifest based on the experience of the employees once BEP relocates its facility to the proposed site, in contrast to the survey results of route selection. Survey respondents indicating they intend a particular route may decide, either from experience or from GPS-based smart phone applications, that the route is not actually favorable and, for lack of an alternative mode of transportation available to them, may attempt to drive different route in the future to improve their commute. These alternative routes may involve greater mileage that the preferred route but take less time, due to superior traffic conditions. In summation, the shortest and most obvious route-typically the one the respondents would select on a survey such as this one-often does not prove to be the fastest or most efficient route, making the survey results a weak predictor of commuter behavior. Appendix B contains the employee survey full results.

4. Existing Conditions

A Site Analysis

Environmental Constraints: General

The proposed site for the new BEP currency production facility at the old poultry research campus is in the middle of BARC, surrounded on three sides by additional BARC properties used for other research purposes. Only to the north are private lands, specifically a residential development immediately opposite Odell Road. Though close to heavily developed and mature Washington D.C. suburbs, the BARC lands themselves assume a rural and sparsely developed character befitting the farming-related research. The proposed new BEP facility will sit within a 104-acre area at BARC, formerly involved in various facets of poultry and avian research. As indicated in the August 2019 USACE-Baltimore District's draft, *Environmental Condition of Property Report: 104-Acre Parcel of Land Surrounding Poultry Road*, the 23 buildings from the Poultry Research Area have been largely or completely vacant since the mid-1990s, and most are in an advanced state of disrepair. Only three buildings are occupied, and only one of the three (the Wildlife Office) regularly used by human personnel. Despite the abandoned and unused character of the proposed BEP facility site, this new construction would not constitute a greenfield development, since the area is already serviced with infrastructure and features considerable impervious surfaces.

The remainder of the site features cropland, forest, pasture, some wetlands, surface parking, and roads with varying degrees of paved quality. South of the site is an east-west arterial, Powder Mill Road. Poultry Road, which serviced this research campus and terminates at Powder Mill, extends northward toward the various structures, terminating again at Odell Road, where a gate permanently blocks ingress and egress from Odell Road, the east-west arterial that roughly delineates the northern boundary of the proposed facility site.

Floodplains

As indicated by **Figure 4-1**, the proposed Project Boundaries for the proposed BEP Facility are largely free of major hydrological constraints. The most recent data, from a Digital Flood Insurance Rate Map (DFIRM) of the Middle Potomac-Anacostia-Occoquan Watershed (last surveyed in September 2016), indicates that no floodplains or floodways exist on site. The closest flood-prone areas include Beaver Dam Creek, to the south of the proposed BEP Facility which largely parallel Beaver Dam Road, and Indian Creek to the west of the proposed site, with high concentrations of lands with 1% annual flood risk immediately to the west of Edmonston Road (MD 201).



Figure 4-1: Existing Conditions: Floodplains Source: FEMA Digital Flood Insurance Rate Maps (DFIRMs) (2016)
Wetlands

Wetlands data for the proposed BEP facility site comes from a variety of sources, because hydric soil conditions change over time. The largest and most comprehensive nationwide delineation comes from the National Wetlands Inventory (NWI), a mapping initiative provided by the United States Fish and Wildlife Service (FWS), which largely derives its classifications through a combination of high-altitude aerial photography and on-screen image analysis integrated into a digital data layer that helped generate GIS maps at varying scales. The NWI results (indicated in the map in **Figure 4-2**) offer considerable geographic breadth and multiple wetland tiers of classification: in this case, freshwater emergent/forested wetlands, freshwater ponds, and riverine. However, the scale of the NWI undertaking prevents it from being as detailed or accurate as an on-the-ground survey.

A USACE-initiated delineation of wetlands at the proposed BEP facility site in mid-year 2019 revealed considerable small-scale instances of hydric soils and intermittent wetlands, particularly to the east of Poultry Road, as is also visible in the inset map at **Figure 4-2**. The largest and highest quality of these, visible in the southern portion of the site (most clearly visible in the inset map in the lower-left corner), is largely groundwater-fed and derived from an intermittent channel. The Maryland Department of the Environment is the first agency responsible for regulating any development that might take place near these wetlands; both state and USACE permitting process would aggregate all impacts to wetlands and streams.

Topography

The proposed BEP facility site features comparatively little grade change, a landscape befitting for extensive agricultural research. As indicated from **Figure 4-3**, slopes are particularly modest on the western half of BARC, though they intensify to the west, with visible hillocks as Power Mill and Odell roads meander toward the Baltimore-Washington Parkway. The elevation range within the proposed BEP facility site is from approximately 135' above sea level to a high point of approximately 200' at the far west of the project boundary. Most grade changes are modest; however, the northeastern corner likely exceeds a 10% slope, though it does not surpass a 15% grade change. Landscape less than 15% is the common threshold for categorizing whether to add grading to the development costs. Steeper slopes would either place a development under differing construction conditions or, if sufficiently steep (often over 25%), would preclude development altogether. Both the proposed BEP facility and any new roads leading to the facility from Powder Mill (a potential re-routing of Poultry Road) would involve no more than typical remediation to manage any grade change.



Figure 4-2: Existing Conditions: Wetlands Sources: FWS National Wetlands Inventory (ongoing), USACE Wetlands Delineation (2019)



Figure 4-3: Existing Conditions: Topography (in feet) Sources: M-NCPPC, Prince George's County Contours (1993)

Legal Constraints: Zoning

The proposed BEP facility site, like BARC as a whole, benefits from a near complete unity of ownership and singularity of land use regulations. Guided by Prince George's County's zoning classifications (seen in **Figure 4-4**), virtually the entire BARC premises fall within the Reserved-Open-Space (R-O-S) classification, which intends to provide for the permanent maintenance of certain areas of land in an undeveloped state, promoting preservation of trees, scenic and environmentally sensitive areas, and very low-density residential development, as well as a limited range of public, recreational, and agricultural uses (Prince George's County Planning Department, 2019). Typically, in R-O-S, the minimum lot size is 20 acres and the maximum dwelling units per net acre is .05, or one dwelling unit per 20 acres. This classification covers the entirety of the proposed BEP facility site.

The other classifications within BARC are Open Space (O-S) and Rural-Residential (R-R), both also promoting a rural character with extremely low-density development. Despite the agrarian character that pervades, a much more intensive land use pattern exists just north of Odell Road, to the northeast of the proposed BEP facility site, where Townhomes (R-T) and 1-Family Detached Residential (R-80) pervade in the subdivision called Vansville. The proposed BEP facility will be out of compliance with the zoning regulations and not in keeping with the general character of BARC, which could give greater credence to an organized remonstration from the surrounding community. However, the previous land use at this exact location—an expansive poultry research campus—also did not align with the character; additionally, both it and the proposed BEP facility may find viable exception through the R-O-S classification's provision for "a limited range of public, recreational, and agricultural uses."

Legal Constraints: Rights of Way and Easements

Figure 4-5 maps the distribution of land holdings, rights of way, and easements at the proposed BEP facility site, the residual of BARC, and the surrounding more urbanized areas nearby, which include City of Greenbelt as well as the unincorporated areas of Beltsville to the west and Vansville to the north. A disproportionate amount of the land in the area is county and state exempt, in keeping with its status as federally owned property (US Department of Agriculture), as well as 100% of the project boundaries to the proposed BEP facility site.

Right of ways could inhibit the capacity to mitigate traffic concerns caused by the relocation to the proposed BEP facility site. Throughout BARC and adjacent communities, the parcels immediately abut the road, indicating that ROWs are typically constrained to the existing roadways themselves. Only two major exceptions exist. One is the Capital Beltway (I-495/I-95), with a considerably larger right of way, due mainly to the formidable width of the multi-lane limited access highway. The other is Baltimore-Washington Parkway, which, although primarily four lanes (two in each direction), involves a right of way of considerable width, averaging over 500 feet. As is typical of NPS-managed roadways, the extra right of way is not for future expansion purposes, but for preservation—to retain the park-like character by ensuring that no development can take place close to the parkway, thereby retaining a parklike character. Mitigation strategies must recognize that NPS is unlikely to compromise on viewsheds throughout the Baltimore-Washington Parkway; thereby, improvements must take place on the federally owned lands immediately adjacent to it.

Relatively few easements are likely to affect construction activity throughout the site. However, several parcels abutting Powder Mill Road feature restrictions: specifically, floodplain easements (a type of environmental easement) affect multiple parcels at the northwest corner of the Powder Mill/MD 201 (Edmonston Road) intersection. Other easements—water, sanitary sewer, and slope—could restrict

parcels through which a tributary of Indian Creek flows, also in this same area northwest of the Powder Mill/MD 201 intersection. Lastly, a transportation/circulation easement, specifically accommodating public utilities, affects a considerable segment of the northern shoulder of Powder Mill Road at this same location. Potential improvements to this intersection may face legal barriers imposed by these easements.

Legal Constraints: Environmental and Historic/Cultural

Specific protections at and around the proposed BEP facility site are infrequent; however, **Figure 4-6** indicates those that merit consideration. The linear path bisecting the proposed BEP facility site reflects the last major archaeological survey that took place in the area in 1994; according to the 1996 *Master Plan Update*, several sites of archaeological significance (mostly prehistoric Archaic) exist at BARC, but most are not eligible for listing on the National Register due to short occupations of the site or lack of information. The only potential exception is a site near Indian Creek, which is south of the proposed BEP facility site; thus, no potential development will affect it.

An extensive 1997 survey provided a preliminary national register eligibility assessment for the buildings that comprise the old poultry research campus. Of the 23 buildings surveyed, all but 6 met the standards of eligibility for contributing to a potential historic district, and all but 5 retained their integrity. A more recent eligibility review in 2017 reaffirms the character of the buildings and their capacity to contribute to a historic district; however, after more than two decades of abandonment, all buildings at the campus are in poor condition, posing great challenges to a case for further preservation.

The final consideration in **Figure 4-6** are the reforestation areas in the northernmost portion of the proposed BEP facility site. Much like BARC's significant expansion from 1933 to 1941, President Franklin D. Roosevelt's New Deal prompted many of the earliest conservation and reforestation projects through the Civilian Conservation Corps. USACE reiterated during a design charrette for this BEP relocation project that reforestation projects impose heavy mitigation projects on any nearby development, which is often cost prohibitive. Thus, it is advisable that the reforestation areas indicated on the map remain outside the scope of development. Furthermore, they serve as a buffer to the homes opposite Odell—a community that is likely to seek retention of any features that might mitigate the visual and audio impacts of a major new manufacturing operation such as the BEP's proposed facility.

Utilities

Figure 4-7 depicts the extant utilities lines that traverse through the proposed BEP facility site. BARC provides water and sanitary sewer to the property, while Baltimore Gas and Electric (BGE) and Potomac Electric Power Company (PEPCO) provide electric and natural gas. As indicated in the draft of the *Existing Conditions Report*, stormwater from pastures, buildings and paved surfaces flow to the nearest catch basing, which drain into the stream in the southeast portion of the property, abutting the wetlands that USACE recently delineated. Ages and conditions for all utility lines on the property are unknown. A fiber optic presence also remains on the site from its operational period.



Figure 4-4: Existing Conditions - Zoning Source: Prince George's County Parcels and Zoning



Figure 4-5: Existing Conditions - Right of Way and Easements Source: Prince George's County Parcels and Easements



Figure 4-6: Existing Conditions – Environmental and Historical Protections



Figure 4-7: Existing Conditions - Utilities

B Existing Transportation Conditions

This section describes the transportation study area for the proposed site in Prince George's County, Maryland, and summarizes the transportation conditions in the study area as of November 2019. This section covers the following modes of transportation: traffic (vehicular), pedestrian, bicycle, and public transit. Data were collected between August 2019 and November 2019 with traffic counts obtained as early as September 2019. The data, therefore, represent a snapshot in time, and aspects of the data included in this report may have changed since the data were originally collected (e.g., detailed bus schedules and ridership and pedestrian and bicycle improvements).

Study Area Description

The proposed site includes approximately 104 acres and is located adjacent to a populated suburb of Washington, DC, in Prince George's County, Maryland. It is bordered by a wooded area to the north adjacent to Odell Road, and BARC agricultural land and facilities to the east, west, and south. Development in proximity to the site includes residential neighborhoods, suburban office parks, a local park, a WMATA rail yard, an elementary school, and a federal court facility. The site itself is predominately used for agricultural land uses.

The traffic study area, as **shown in Figure 4-8**, is generally bounded by Edmonston Road/Kenilworth Avenue (MD 201) on the west, Capital Beltway on the south, Soil Conservation Road on the east, and Odell Road on the north. The vehicular transportation study area covers intersections between the proposed site and regional highway network or last major decision point before entering a freeway facility. Intersections included in the vehicular study area also include those along roadways that are reasonably anticipated to carry a substantial portion of employee vehicle traffic percent based on trip generation data. The study area only includes the selected intersections, but it does not have a clearly defined study boundary; it was established in consultation with M-NCPPC, the City of Greenbelt, Maryland SHA, USACE Baltimore District, BEP, NCPC, and NPS and includes 15 intersections for the Existing Condition analysis.

The transit study area consists of a quarter-mile radius from the project site to represent a typical walking distance between the project site and nearest bus stop, while the bicycle network study area consists of a one-mile radius from the project site to represent a typical distance that a visitor might be willing to use a bicycle to reach the project site.



Figure 4-7: Study Area (Circled in Red are Recommended for Mitigation)

Roadway Descriptions

The following section describes the roadways in the study area and includes the roadway classification (e.g., arterials, collectors, local roads) assigned by Maryland SHA in its 2018 roadway functional classification. These descriptions also feature number of lanes in each direction, the 2018 Annual Average Daily Traffic (AADT) volumes (12-months of traffic volumes averaged) available from Maryland SHA, any noteworthy characteristics such as the roadway's role within the transportation network, and the presence/absence of bike lanes. The Project Team (A/E) collected the information from Maryland SHA's 2013 Functional Class GIS data (Maryland SHA 2014a), observations in the field, aerial imagery, and Maryland SHA's AADTs of stations for 2007-2013 (Maryland SHA 2014b). The functional classification is the process of grouping public streets and highways into classes according to the character of service they are intended to provide. Interstates, freeways, and expressways provide the highest level of service at the greatest speed for the longest uninterrupted distance, followed by principal arterials, minor arterials, collector roads, and finally local roads. The primary interstate within the study area providing regional access is I-95. The study area includes several arterials: Edmonston Road or Kenilworth Avenue (MD 201) to the west, Greenbelt Road (MD 193) to the south, Powder Mill Road traversing through the study area, and the Baltimore-Washington Parkway (MD 295) to the east. Soil Conservation Road, Sunnyside Avenue, Cherrywood Lane, and Beaver Dam Road are classified as collector roadways that collect traffic from local roads and connect with arterials. Local roadways in the study area include Odell Road, Crescent Road, Research Road, Poultry Road, and Ivy Lane.

Baltimore-Washington Parkway (MD 295) is a southwest-northeast-oriented roadway that is classified by Maryland SHA as a principal arterial road (Maryland SHA 2018). It connects Prince George's County with downtown Baltimore. NPS maintains a portion of the parkway, and the State of Maryland maintains the remaining sections. The roadway ranges between four to six lanes in each of the northbound and southbound directions. Trucks and commercial vehicles are prohibited on the parkway south of MD 175. Within the study area, the parkway connects to Powder Mill Road (a minor arterial), and Greenbelt Road (MD 193, a principal arterial). The Baltimore-Washington Parkway speed limit is 55 miles per hour (MPH). In 2018, the AADT for the Baltimore-Washington Parkway at Powder Mill Road was 11,960 (Maryland SHA 2014b).

Capital Beltway, also known as I-95, travels southwest of the study area and forms a circle around Washington, DC. Maryland SHA classifies this two-way roadway as an Interstate (Maryland SHA 2018). The roadway is northwest-southeast-oriented near the location of the Beltsville site and connects Maryland to Virginia. The roadway ranges between four to eight lanes in each of the northbound and southbound directions. In the vicinity of the study area, the Capital Beltway connects to Baltimore Avenue/Route 1 (a principal arterial) and Kenilworth Avenue/MD 201 (a minor arterial road as it continues northward and changes name to Edmonston Road), which becomes Edmonston Road as it continues northward toward BARC. The Capital Beltway serves as a major regional and commuter route between Maryland, Virginia, and Washington, DC. The Capital Beltway speed limit is 55 MPH. In 2018, the AADT for the Capital Beltway when traversing through the study area was 212,070 vehicles (Maryland SHA 2014b).

Cherrywood Lane is a southwest-northeast-oriented roadway that Maryland SHA classifies as a major collector road (Maryland SHA 2018). The road travels over the Capital Beltway but does not connect to it. Cherrywood Lane travels from Greenbelt Road on the southwest side of the site northeast towards Edmonston Road (MD 201). In addition, this road connects to secondary residential roadways such as Breezewood Drive, Cherrywood Court, and Springhill Drive. The road varies between one lane in each direction near the Greenbelt Metro to two lanes in each direction near its ends points with Edmonston

Road and Greenbelt Road. The roadway has a shared center left-turn lane and striped median along most of its length in the study area, with periodic on-street parking on the eastern (northbound) side of the street. Cherrywood Lane has a speed limit of 30 MPH south of Springhill Drive and 35 MPH north of Springhill Drive. According to Maryland SHA, the AADT for Cherrywood Lane in 2018 was 8,801 vehicles (Maryland SHA 2014b). Cherrywood Lane also has bicycle lanes on either side of the street between Edmonston Road to the north and Breezewood Drive to the south.

Edmonston Road / Kenilworth Avenue (MD 201) travels southwest to northeast and connects to both the Capital Beltway and Greenbelt Road. The roadway contains two to four through lanes in each direction, but north of Sunnyside Avenue, the road eventually becomes one through lane in each direction. Maryland SHA classifies the roadway as a minor arterial road north of I-495 and a principal arterial road south of I-495 (Maryland SHA 2018). The roadway has a speed limit of 40 MPH within the study area. On Kenilworth Avenue from Greenbelt Road (MD 193) to I-95, the AADT was 54,290 vehicles in 2018; from I-95 to Sunnyside Avenue the 2018 AADT was 35,860 vehicles, from Sunnyside Avenue to Powder Mill Road (MD 212) the 2018 AADT was 23,490, and from Powder Mill Road (MD 212) to Old Baltimore Pike the 2018 AADT was 16,860 (Maryland SHA 2014b).

Greenbelt Road (MD 193) is east-west oriented and is classified by Maryland SHA as a principal arterial road (Maryland SHA 2018). The roadway is a section of MD 193 and contains both commercial and residential development. The roadway has three through lanes in each direction, additional left turn lanes periodically, and a protected median. Greenbelt Road connects to Kenilworth Avenue (MD 201) on the west side and Baltimore-Washington Parkway (MD 295) on the east side. Greenbelt Road has a speed limit of 40 mph through the study area. In 2018, the AADT on Greenbelt Road from Kenilworth Avenue to I-95 was 49,420 vehicles, whereas from I-95 to the Baltimore-Washington Parkway the 2018 AADT was 47,480 and from the Baltimore-Washington Parkway (MD 295) to Good Luck Road, the 2018 AADT was 55,323 (Maryland SHA 2014b).

Ivy Lane is classified by Maryland SHA as a local road (Maryland SHA 2018). This roadway has a curvilinear shape that connects Cherrywood Lane to Edmonston Road (MD 201). Ivy Lane primarily has one lane in each direction with a shared center left turn lane. The roadway has a speed limit of 30 mph. Ivy Lane also has bicycle lanes on both sides of the street.

Beaver Dam Road is classified by Maryland SHA as a local road (Maryland SHA 2018). The roadway has a curvilinear shape that connects Edmonston Road (MD 201) to Soil Conservation Road. Beaver Dam Road has one lane in each direction. The roadway as a speed limit of 30 mph.

Odell Road is classified by Maryland SHA as a local road. This roadway has a curvilinear shape that connects Edmonston Road (MD 201) to Muirkirk Road and Springfield Road. Odell Road has one lane in each direction. The roadway has a speed limit of 35 mph.

Soil Conservation Road is a north-south oriented road that is classified as a local roadway by Maryland SHA (Maryland SHA 2018). It connects Powder Mill Road to Greenbelt Road (MD 193). The roadway primarily has one lane in each direction with turn lanes into the NASA Goddard Space Flight Center. Soil Conservation Road has a speed limit of 40 mph.

Powder Mill Road (MD 212) is an east-west oriented road that is classified as a minor arterial roadway by Maryland SHA (Maryland SHA 2018). The road connects to Edmonston Road (MD 201) to the west, and the Baltimore-Washington Parkway and Soil Conservation Road to the east, and then extends further in either direction. The roadway has one lane in each direction, with intermediary left and right

turn lanes at intersections. The speed limit for Powder Mill Road is 35 mph as it crosses through the study area. In 2018, the AADT for Powder Mill Road, traversing through BARC, was 11,960 vehicles (Maryland SHA 2014b).

Sunnyside Avenue is an east-west oriented road that is classified as a major collector roadway by Maryland SHA (Maryland SHA 2018). The road connects Baltimore Avenue (U.S. Route 1) and Rhode Island Avenue to Edmonston Road. The roadway has two lanes in each direction for a majority of its length; however, on the east side of the road where it intersects Edmonston Road there is one lane in each direction. Where Sunnyside Avenue has two lanes in each direction on its western end, the road also has periodic left turn lanes and pedestrian sidewalks on both sides. The speed limit for Sunnyside Avenue is 30 mph. In 2018, the AADT for Sunnyside Avenue was 8,930 (Maryland SHA 2014b).

Research Road and Poultry Road are classified by Maryland SHA as local roads (Maryland SHA 2018). They primarily serve the BARC facility. These roadways are predominately unstriped with one lane in each direction.

The roadway functional classifications within the study area according to Maryland SHA are shown in **Figure 4-9**.

As part of the field data collected, the Project Team (A/E) conducted a detailed inventory of the lane geometry through field reconnaissance and a study of aerial imagery. Based on this information, the existing lane geometry and traffic control type (signalized or unsignalized) of intersections in the study area is shown in **Figure 4-10**.



Figure 4-9: Roadway Functional Classifications



Figure 4-10A: Existing Condition Lane Geometry – Map 1



Figure 4-10B: Existing Condition Lane Geometry - Map 2

Data Collection and Development of the Peak Hour

The Project Team (A/E) collected vehicle turning movement counts on Tuesday, September 17, 2019 during weekday AM and PM peak hours (6:00 AM–9:00 AM and 3:00 PM–7:00 PM), a non-holiday week in mid-September at the 15 study intersections. Traffic volumes were collected and tabulated at 15-minute intervals within the observational periods, then hourly volumes were summarized. The one-hour periods associated with the highest volume of traffic during the AM and PM peaks are generally referred to as the peak hours. The traffic counts collected were used in combination with signal timings from Maryland SHA and observations in the study area.

The proposed BEP production facility is unique in that the majority of employees will all be arriving and leaving within the same morning and evening hours during the shift changes. The AM shift change occurs between 6:00 AM and 7:00 PM and the PM shift change occurs between 3:00 PM and 4:00 PM. Because these time periods represent the highest volumes generated by the proposed BEP site, they serve as the basis for developing the existing condition AM and PM traffic volumes.

In addition to the vehicular turning movements, four Automatic Traffic Recorders (ATR) were placed within the study area. ATRs are black tubes placed along the roadway that record a vehicle each time two axles cross the tube. These locations include Sunnyside Avenue, Powder Mill Road, and the two Baltimore-Washington Parkway off-ramps at Powder Mill Road. The ATRs captured volumes for three consecutive weekdays during the week of September 17, 2019, recording the volumes. ATR data provide a daily log of traffic, highlighting the multiple peak periods and change in vehicle demand at all times during a typical weekday.

The Project Team (A/E) compared the ATRs to the turning movement counts as a way of balancing intersection volumes and establishing a baseline of existing conditions volumes that closely represent vehicle demand and typical turning movement patterns. In instances where the ATR was substantially higher than the total intersection volume approach downstream of the ATR, the turning moving counts for that approach were increased to match the ATR volume by applying the increase to the existing percent of vehicles turning left, right or continuing through the intersection. Intersection turning movement counts were also adjusted based on a review of previous ATR and intersection turning movement count data from Maryland SHA and previous count data collected by Louis Berger. Intersection turning movement volumes were adjusted to match ATR volume data because the ATR data are a more representative indication of vehicle demand than intersection turning movement counts. Intersection reported volumes are more affected by intersection capacity. The changes in traffic volume were then carried through the other relevant study area intersections to balance volume. This process affected all the study area intersections, except MD 201 at I-95 Southbound off-ramp and Edmonston Road at Odell Road.

Figure 4-11 shows the data collection plan and **Figure 4-12** shows the existing AM and PM weekday BEP peak hour turning movement volumes occurring in the study area extracted from all study area intersection approaches and ATR data. Appendix C contains the existing conditions vehicle turning movements and ATR data.



Figure 4-11: Study Area Data Collection



Figure 4-12A: AM and PM BEP Peak Hour Traffic Volumes - Map 1



Figure 4-12B: AM and PM BEP Peak Hour Traffic Volumes - Map 2

Observations

During the September 2019 observations of the study area, traffic generally flowed unobstructed for most of the AM and PM peak hour. Traffic congestion and delays were observed going southbound on Edmonston Road at Sunnyside Avenue during the AM peak hour. Also, Edmonston Road at Sunnyside Avenue experienced delays in both the northbound and southbound directions during the PM peak hour.

Traffic

This section explains the tools, concepts, and definitions for analyzing the traffic operations; the process used to analyze the study area intersections; and the traffic analysis results.

Analysis Tools

The study analyzed the study area intersections using Critical Lane Volume (CLV), Synchro[™] Traffic Signal Coordination Software Version 10.3 (Build 122, Revision 0), and SimTraffic[™] Version 10.3 (Build 122, Revision 0). Two analyses were performed for traffic, including an intersection capacity analysis and an intersection queueing analysis. The CLV method was used for signalized intersections only. The intersection capacity analysis used the Synchro[™] software tool and various input values as described in the following sections to determine the level of service (LOS) or driver perception of an intersection queuing analysis used the SimTraffic[™] software tool to determine the length that vehicles may back up at an intersection. SimTraffic was used in addition to the standard Synchro tool to analyze queueing, because it provides a more robust analysis of 95th percentile queuing than Synchro and it was agreed to in the Beltsville Site Transportation Agreement (Appendix A). This section both describes the intersection queuing analysis process in greater detail, then presents the traffic study area results of the queuing analysis.

Intersection Operations Analysis Method

LOS is the primary measure of traffic operations for both signalized and unsignalized intersections, as well as freeway facilities. LOS is a performance measure developed by the transportation profession to quantify driver perception for such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles. The LOS provides a scale that is intended to match the perception by motorists of the operation of the transportation facility and to provide a scale to compare different facilities. Detailed LOS descriptions are presented in **Figure 4-13**.

Level of Service

Traffic congestion is expressed by the term Level of Service (LOS), as defined by the Highway Capacity Manual. LOS is a letter code ranging from "A" for excellent conditions to "F" for failure conditions. The conditions defining the LOS for roadways are summarized as follows.



Represents the best operating condition, where traffic stream is considered free-flow.



absorbed.

may form.

free-flow conditions. The ability to maneuver is only slightly restricted. Effects of minor incidents are still easily

Represents speeds at or near free-low conditions. The freedom to maneuver is noticeably restricted. Queues

Represents traffic operations approaching unstable flow. Speeds decline slightly with increasing flows. Road density increases more quickly. The freedom to maneuver is more noticeably limited. Minor incidents cause queuing.

Represents operation that is near or at capacity. There are no usable gaps in the traffic stream. Operations are extremely volatile. Any disruption causes queuing.



-







LOSF

LOSE

Represents a breakdown in flow. Queues form behind breakdown points. The demand is greater than capacity.

Figure 4-13: Level of Service Diagram

Source: TRB (2000)

Signalized Intersection Level of Service

The LOS for signalized intersections in Maryland is guided by both the *Highway Capacity Manual* (HCM) 6th Edition method and the Critical Lane Volume (CLV) method.

The HCM 6th Edition method requires several inputs to determine an accurate LOS (TRB 2016). The primary inputs include:

- vehicular volumes
- pedestrian volumes
- traffic signal timings
- roadway geometry
- speed limits
- truck percentages
- peak hour factor (PHF) (measure of vehicle 15-minute flow rate)

The average vehicle control delay, measured in seconds per vehicle, is calculated using these parameters with the Synchro procedures. This represents the average extra delay in seconds per vehicle caused by the presence of a traffic control device or traffic signal and includes the time required to decelerate, stop, and accelerate. LOS can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay is used to characterize LOS for the entire intersection or an approach. Control delay and volume-to-capacity ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to a traffic signal control. It is also a surrogate measure for driver discomfort and fuel consumption (TRB 2010). Signalized intersections or approaches that exceed a delay of 55 seconds have LOS E, and 80 seconds have LOS F. **Figure 4-14** shows the average control delay and corresponding LOS for signalized intersections. Using the HCM 6th Edition method, LOS E and LOS F constitute failing operations within M-NCPPC's definition for the Rural Tier designation of the proposed Site.

To determine the LOS of an intersection, the Project Team (A/E) entered the critical input values into the analysis software (Synchro[™]), calculating the average vehicle delay (seconds per vehicle). Based on the average vehicle delay, the LOS was determined for all movements (left, through, and right), approaches, and the intersection as a whole. The 15 Existing Condition intersections analyzed consisted of eight signalized intersections and seven unsignalized intersections.

| LOS | Average Control Delay (seconds/vehicle) | Description |
|-----|--|---|
| А | Less than or equal to 10 | Stable conditions – Passing |
| В | >10–20 | Stable conditions – Passing |
| С | >20–35 | Stable conditions – Passing |
| D | >35–55 | Stable conditions- Passing |
| E | >55–80 | Unstable conditions – Failing |
| F | More than 80 | Above capacity and unstable conditions – Failing |

Figure 4-14: HCM-based Signalized Intersection Level of Service

Source: TRB, 2016

The CLV method, a M-NCPPC intersection analysis requirement, also requires several inputs to determine LOS; these inputs include vehicular volumes, signal phasing, and roadway geometry. Using these parameters, the CLV method measures the conflicted vehicle movements through an intersection (usually through volumes plus opposing left-turn volumes). The critical volume is determined by adding the highest vehicle conflicting movements along two perpendicular approaches (one east-west volume plus one north-south volume). Volumes are adjusted to reflect the number of lanes serving each vehicle move. **Figure 4-15** shows the CLV and corresponding LOS for signalized intersections. Based on Plan Prince George's 2035 and the Priority Preservation Area Functional Master Plan, a CLV greater than 1,300 constitutes (LOS D) failing operations for intersections within M-NCPPC's definition for the-Rural Tier designation of the proposed Site.

As noted above, acceptable operation of a signalized intersection for HCM 6th method is LOS D or better, while acceptable or passing operation of a signalized intersection for the CLV method is LOS C or better.

| LOS | Critical Lane Volume (vehicles) | Description |
|-----|------------------------------------|---|
| А | Less than or equal to 1,000 | Stable conditions – Passing |
| В | > 1,000 – 1,150 | Stable conditions – Passing |
| С | > 1,150 – 1,300 | Stable conditions – Passing |
| D | > 1,300 – 1,450 | Unstable for Rural Tier– Failing |
| E | > 1,450 – 1,600 | Unstable conditions – Failing |
| F | > 1,600 | Above capacity and unstable conditions – Failing |

Figure 4-15: CLV-based Signalized Intersection Level of Service

Source: M-NCPPC, 2012

Unsignalized Intersection Levels of Service

The LOS for unsignalized intersections (STOP-Controlled intersections or roundabouts) is based on the Highway Capacity Manual (HCM) 6th Edition method and requires several inputs to determine an accurate LOS, including:

- vehicular volumes
- pedestrian volumes
- roadway geometry
- speed limits
- truck percentages peak hour factor (PHF)

The average vehicle control delay, in seconds per vehicle, is calculated using these parameters with the HCM 6th Edition procedures (TRB 2016). This represents the average delay, caused by the presence of a stop sign or roundabout, and includes the time required to decelerate, stop, and accelerate.

LOS for a two-way STOP-Controlled (TWSC) intersection (i.e., unsignalized intersection) is determined for each minor-street movement (or shared movement) as well as the major-street left turns. LOS F is assigned to the movement if the Volume-to-Capacity (v/c) ratio for the movement exceeds 1.0 or if the movements control delay exceeds 50 seconds. The LOS for TWSC intersections is different from the criteria used for signalized intersections, primarily because user perceptions differ among transportation facility types. The expectation is that a signalized intersection. Unsignalized intersections are also associated with more uncertainty for users because delays are less predictable than at signals, which can reduce users delay tolerance. LOS is not defined for the TWSC intersection as a whole or for major-street approaches for three primary reasons: (a) major-street through-vehicles are assumed to experience zero delay; (b) the disproportionate number of major-street through-vehicles at a typical TWSC intersection skews the weighted average of all movements, resulting in a very low overall average delay for all vehicles; and (c) the resulting low delay can mask important LOS deficiencies for minor movements (TRB 2010).

The capacity of the controlled intersection legs is based primarily on three factors: the conflicting volume, the critical gap time (defined as the number of seconds between vehicles passing the same point along the major street approach), and the follow up time(defined as the number of seconds between the departure of the first and second vehicle in queue along the minor street approach). The HCM-based capacity analysis procedure assumes consistency for driver's critical gap time. Critical gap times are based on many factors including delay experienced by drivers on the approaches controlled by STOP signs. As delay increases, drivers become less patient and accept shorter gaps, which results in higher capacities for unsignalized intersections that are operating at LOS D or worse. The unsignalized intersection procedure uses fixed critical gap times. Unless the critical gap times are adjusted, the procedure tends to overestimate the delay at unsignalized intersections that are operating at LOS D or worse. Also, poor operations at an unsignalized intersection encourages some drivers to turn right and make a U-turn on the mainline or accept shorter critical gaps (safety issue) rather than attempt a turn left (TRB 2010).

Figure 4-16 shows the average control delay and corresponding LOS for unsignalized intersections. It should be noted that the worst LOS at one-way, STOP-controlled, and TWSC intersections represents the delay for the minor approach only. Using the HCM 6th Edition unsignalized intersection method, a 50-second delay or LOS F constitutes failing operations.

| Figure 4-16: HCM-based | Unsignalized | Intersection | Level of Service |
|------------------------|--------------|--------------|------------------|
| J | | | |

| LOS | Average Control Delay (seconds/vehicle) | Description |
|-----|--|---|
| А | Less than or equal to 10 | Stable conditions – Passing |
| В | >10–15 | Stable conditions –Passing |
| C | >15–25 | Stable conditions – Passing |
| D | >25–35 | Stable conditions – Passing |
| E | >35–50 | Unstable conditions – Failing |
| F | More than 50 | Above capacity and unstable conditions – Failing |

Source: TRB, 2016

Existing Condition Intersection Operations Analysis

The Project Team (A/E) used Synchro[™] to calculate the vehicle delay and LOS operation based on the HCM 6th Edition method for each study area intersection, with the exception of the MD 201 intersections with Ivy Lane and Sunnyside Avenue, where the team applied the HCM 2000 method. Within the Synchro[™] software, the algorithms following the HCM 6th Edition require traffic signal timings to follow the National Electrical Manufacturers Association (NEMA) requirements. Instead, the signal timings for these two intersections assigned by the Maryland SHA contain special pedestrian or hold phases, or the assignment of phases that do not meet NEMA standards. For example, NEMA requires no special phases for pedestrians and that the phases that serve the north approach must be assigned the phase number two and south approach be assigned the phase number six. The HCM 2000 method is not as restrictive and was therefore used to calculate the LOS. Custom designed Excel sheets were used to calculate the LOS operation based on the CLV method.

Based on the Synchro[™] and CLV Excel-based worksheet analysis, the majority of study intersections operate at acceptable overall conditions during the morning and afternoon peak hours. However, the following signalized intersections in the study area operate with overall unacceptable conditions (LOS E or LOS F) using the HCM 6th or HCM 2000 method (average control delay exceeds 35 seconds per vehicle) or LOS C using the CLV method (CLV greater than 1,300):

- MD 201 (Edmonston Road)/Sunnyside Avenue (Intersection #6) during the AM peak hour
- MD 201 (Edmonston Road)/Powder Mill Road (Intersection #8) during the PM peak hour
- Powder Mill Road/Soil Conservation Road (Intersection #15) during the PM peak hour

Using the HCM 6th method, a total of five unsignalized intersections have lane groups and/or approaches that operate under unacceptable conditions (LOS E or LOS F) during the morning or afternoon peak hours:

- MD 201 (Edmonston Road)/Beaver Dam Road (Intersection #7)
 - Westbound Beaver Dam Road during the AM and PM peak hours
- MD 201 (Edmonston Road)/Odell Road (Intersection #9)

- Eastbound Odell Road during the AM and PM peak hours
- Powder Mill Road/Springfield Road (Intersection #12)
 - Southbound Springfield Road during the PM peak hour
- Powder Mill Road/MD 295 (BW Parkway) Southbound Ramps (Intersection #13)
 - o Southbound BW Parkway off-ramp during the AM and PM peak hours
 - o Southbound left turn lane of BW Parkway off-ramp during the AM and PM peak hours
- Powder Mill Road/MD 295 (BW Parkway) Northbound Ramps (Intersection #14)
 - o Northbound BW Parkway off-ramp during the PM peak hour
 - Northbound left turn lane of BW Parkway off-ramp during the PM peak hour

Figure 4-17 depicts the CLV LOS grades for signalized intersections for AM and PM peak hours. The overall signalized intersection LOS grades and worst unsignalized lane group LOS grades are depicted in **Figure 4-18** for AM and PM peak hours using HCM analysis. **Figure 4-19** shows the results of the LOS capacity analysis (HCM) and the intersection vehicle delay for the existing conditions during the AM and PM peak hours. Appendix D contains the CLV worksheets. Appendix E contains the Synchro intersection operations results.



Figure 4-17: Existing Condition: Intersection Level of Service (CLV)



Figure 4-18: Existing Condition: Intersection Level of Service (HCM)

| | | | | AM | Peak Ho | ur | | | PM F | Peak Ho | our | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|-----|------------|--------------------|
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 1 | MD 201 (Kenilworth Avenue) and | I-95 SB Of | f-Ramp (S | Signalized | d) | | | | | | | | |
| | EB (I-95 SB Off-Ramp) | L | 0.57 | 50.2 | D | | | 0.62 | 50.2 | D | | | |
| | EB Overall (I-95 SB Off-Ramp) | | | 50.2 | D | | | | 50.2 | D | | | Pass |
| | NB (Kenilworth Avenue) | Т | 0.25 | 1.9 | Α | | | 0.40 | 2.5 | А | | | |
| | NB Overall (Kenilworth Avenue) | | | 1.9 | Α | | | | 2.5 | Α | | | Pass |
| | SB (Kenilworth Avenue) | Т | 0.32 | 2.2 | Α | | | 0.41 | 2.6 | Α | | | |
| | SB Overall (Kenilworth Avenue) | | | 2.2 | Α | | | | 2.6 | Α | | | Pass |
| | Overall | | - | 4.1 | Α | 468 | Α | | 4.3 | Α | 644 | Α | Pass |
| 2 | MD 201 (Kenilworth Avenue) and | I-95 NB Of | f-Ramp (S | Signalized | d) | | | | | | | | |
| | WB (I-95 NB Off-Ramp) | L | 0.45 | 24.7 | С | | | 0.65 | 33.6 | С | | | |
| | WB (I-95 NB Off-Ramp) | R | 0.88 | 37.2 | D | | | 0.82 | 38.7 | D | | | |
| | WB Overall (I-95 SB Off-Ramp) | | | 32.3 | С | | | | 36.2 | D | | | Pass |
| | NB (Kenilworth Avenue) | Т | 0.19 | 13.4 | В | | | 0.25 | 9.4 | А | | | |
| | NB Overall (Kenilworth Avenue) | | | 13.4 | В | | | | 9.4 | Α | | | Pass |
| | SB (Kenilworth Avenue) | Т | 0.44 | 16.1 | В | | | 0.42 | 10.8 | В | | | |
| | SB Overall (Kenilworth Avenue) | | | 16.1 | В | | | | 10.8 | В | | | Pass |
| | Overall | | | 23.5 | С | 714 | Α | | 19.4 | В | 739 | Α | Pass |

| | | | AM Peak Hour PM Peak Hour | | | | | | | | | | |
|----|-----------------------------------|---------------|---------------------------|-------------------------------|------------|----------|------------|--------------|-------------------------------|------------|-----|------------|--------------------|
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 3 | MD 201 (Kenilworth Avenue) and | Maryland | SHA Dist | rict 3/Cres | scent Ro | ad (Sign | alized) | | | | | | |
| | EB (Maryland SHA District 3) | LTR | 0.04 | 30.6 | С | | | 0.15 | 34.5 | С | | | |
| | EB Overall (Maryland SHA Distric | t 3) | | 30.6 | С | | | | 34.5 | С | | | Pass |
| | WB (Crescent Road) | LT | 0.72 | 51.6 | D | | | 0.86 | 74.8 | Е | | | |
| | WB (Crescent Road) | R | 0.21 | 30.7 | С | | | 0.29 | 35.2 | D | | | |
| | WB Overall (Crescent Road) | | | 44.0 | D | | | | 61.0 | E | | | Fail |
| | NB (Kenilworth Avenue) | L | 0.69 | 61.3 | E | | | 0.58 | 62.7 | Е | | | |
| | NB (Kenilworth Avenue) | Т | 0.46 | 13.5 | В | | | 0.41 | 12.8 | В | | | |
| | NB (Kenilworth Avenue) | R | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | Α | | | |
| | NB Overall (Kenilworth Avenue) | | | 15.0 | В | | | | 13.7 | В | | | Pass |
| | SB (Kenilworth Avenue) | L | 0.71 | 65.5 | E | | | 0.78 | 56.7 | Е | | | |
| | SB (Kenilworth Avenue) | TR | 0.46 | 28.9 | С | | | 0.40 | 24.7 | С | | | |
| | SB Overall (Kenilworth Avenue) | | | 29.5 | С | | | | 26.8 | С | | | Pass |
| | Overall | | | 23.7 | С | 539 | Α | | 24.6 | С | 632 | Α | Pass |

| | | | | AM | Peak Ho | ur | | | PM I | Peak Ho | ur | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|------------|-----------|------------|--------------|-------------------------------|------------|-----|------------|--------------------|
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 4 | MD 201 (Kenilworth Avenue) and | d Ivy Lane | (Signali | zed) ^a | | | | | | | | | |
| | EB (Ivy Lane) | R | 0.07 | 0.1 | Α | | | 0.14 | 0.2 | Α | | | |
| | EB Overall (Ivy Lane) | | | 0.1 | Α | | | | 0.2 | Α | | | Pass |
| | NB (Kenilworth Avenue) | L | 0.37 | 30.4 | С | | | 0.38 | 27.4 | С | | | |
| | NB (Kenilworth Avenue) | Т | 0.35 | 0.3 | Α | | | 0.32 | 0.3 | А | | | |
| | NB Overall (Kenilworth Avenue) | | | 2.8 | Α | | | | 2.8 | Α | | | Pass |
| | SB (Kenilworth Avenue) | Т | 0.44 | 2.5 | Α | | | 0.43 | 1.1 | А | | | |
| | SB (Kenilworth Avenue) | R | 0.01 | 1.4 | А | | | 0.01 | 0.1 | А | | | |
| | SB Overall (Kenilworth Avenue) | | | 2.5 | Α | | | | 1.1 | Α | | | Pass |
| | Overall | | | 2.6 | Α | 548 | Α | | 1.8 | Α | 654 | Α | Pass |
| 5 | MD 201 (Kenilworth Avenue/Edn | nonston R | Road) and | d Cherryw | vood Lar | ne (Signa | alized) | | | | | | |
| | EB (Cherrywood Lane) | L | 0.57 | 46.3 | D | | | 0.70 | 47.0 | D | | | |
| | EB (Cherrywood Lane) | R | 0.27 | 44.5 | D | | | 0.62 | 48.2 | D | | | |
| | EB Overall (Cherrywood Lane) | - | | 46.0 | D | | | | 47.3 | D | | | Pass |
| | NB (Kenilworth Avenue) | L | 0.45 | 6.8 | Α | | | 0.23 | 5.5 | А | | | |
| | NB (Kenilworth Avenue) | Т | 0.41 | 3.7 | Α | | | 0.40 | 4.0 | А | | | |
| | NB Overall (Kenilworth Avenue) | - | | 4.1 | Α | | | | 4.1 | Α | | | Pass |
| | SB (Edmonston Road) | Т | 0.50 | 8.1 | Α | | | 0.48 | 8.1 | А | | | |
| | SB (Edmonston Road) | R | 0.27 | 6.5 | Α | | | 0.14 | 5.8 | А | | | |
| | SB Overall (Edmonston Road) | | | 7.8 | Α | | | | 7.8 | Α | | | Pass |
| | Overall | | | 8.5 | Α | 681 | Α | | 10.7 | В | 761 | Α | Pass |

| | | | | AM | Peak Ho | ur | | | PM F | Peak Ho | ur | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|-------------------|------|------------|--------------|-------------------------------|------------|------|------------|--------------------|
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 6 | MD 201 (Edmonston Road) and S | Sunnyside | e Avenue | (Signaliz | zed) ^a | | | | | | | | |
| | EB (Sunnyside Avenue) | L | 0.70 | 104.2 | F | | | 0.72 | 71.4 | E | | | |
| | EB (Sunnyside Avenue) | R | 0.37 | 57.3 | Е | | | 0.57 | 34.8 | С | | | |
| | EB Overall (Sunnyside Avenue) | | | 71.8 | E | | | | 46.3 | D | | | Fail |
| | NB (Edmonston Road) | L | 0.95 | 94.1 | F | | | 0.71 | 47.7 | D | | | |
| | NB (Edmonston Road) | TR | 0.53 | 4.8 | Α | | | 0.00 | 0.0 | А | | | |
| | NB Overall (Edmonston Road) | | | 33.1 | С | | | | 21.1 | С | | | Pass |
| | SB (Edmonston Road) | Т | 1.08 | 87.8 | F | | | 1.03 | 76.3 | E | | | |
| | SB (Edmonston Road) | R | 0.10 | 7.9 | А | | | 0.10 | 10.5 | В | | | |
| | SB Overall (Edmonston Road) | | | 79.1 | E | | | | 66.4 | E | | | Fail |
| | Overall | | | 58.2 | E | 1298 | С | | 42.0 | D | 1250 | С | Fail |
| 7 | MD 201 (Edmonston Road) and I | Beaver Da | m Road | (TWSC) | | | | | | | | | |
| | WB (Beaver Dam Road) | LR | 0.57 | 133.7 | F | | | 0.52 | 121.4 | F | | | |
| | WB Overall (Beaver Dam Road) | | | 133.7 | F | | | | 121.4 | F | | | Fail |
| | SB (Edmonston Road) | LT | 0.04 | 10.8 | В | | | 0.06 | 11.8 | В | | | |
| | SB Overall (Edmonston Road) | | | 0.2 | | | | | 0.4 | Α | | | Pass |
| | Overall | | | 2.0 | | n/a | n/a | | 1.8 | | n/a | n/a | Pass |

| | | | | AM | Peak Ho | ur | | | PM | Peak Ho | ur | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|------|------------|--------------------|
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 8 | MD 201 (Edmonston Road) and | Powder I | Mill Road | l (Signali | zed) | | | | | | | | |
| | EB (Powder Mill Road) | L | 0.31 | 63.0 | E | | | 1.29 | 234.2 | F | | | |
| | EB (Powder Mill Road) | Т | 0.34 | 54.3 | D | | | 1.14 | 155.8 | F | | | |
| | EB (Powder Mill Road) | R | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | Α | | | |
| | EB Overall (Powder Mill Road) | | | 57.3 | E | | | | 186.9 | F | | | Fail |
| | WB (Powder Mill Road) | L | 0.30 | 47.8 | D | | | 0.24 | 56.8 | E | | | |
| | WB (Powder Mill Road) | Т | 0.24 | 34.1 | С | | | 0.24 | 33.1 | С | | | |
| | WB (Powder Mill Road) | R | 0.00 | 0.0 | А | | | 0.00 | 0.0 | Α | | | |
| | WB Overall (Powder Mill Road) | | | 40.3 | D | | | | 40.7 | D | | | Pass |
| | NB (Edmonston Road) | L | 0.83 | 41.3 | D | | | 0.78 | 37.4 | D | | | |
| | NB (Edmonston Road) | Т | 0.51 | 22.1 | С | | | 0.58 | 26.2 | С | | | |
| | NB (Edmonston Road) | R | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | Α | | | |
| | NB Overall (Edmonston Road) | | | 30.5 | С | | | | 30.8 | С | | | Pass |
| | SB (Edmonston Road) | L | 0.09 | 32.1 | С | | | 0.29 | 41.0 | D | | | |
| | SB (Edmonston Road) | TR | 0.60 | 43.6 | D | | | 0.47 | 41.6 | D | | | |
| | SB Overall (Edmonston Road) | | | 43.0 | D | | | | 41.4 | D | | | Pass |
| | Overall | | | 38.4 | D | 851 | Α | | 74.2 | E | 1010 | В | Fail |

| | | | | AM | Peak Ho | ur | | | PM | Peak Ho | ur | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|-----|------------|--------------------|
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 9 | MD 201 (Edmonston Road) and | Odell Ro | ad (TWS | C) | | | | | | | | | |
| | EB (Odell Road) | LTR | 0.16 | 37.7 | E | | | 0.19 | 35.4 | E | | | - |
| | EB Overall (Odell Road) | | | 37.7 | E | | | | 35.4 | E | | | Fail |
| | WB (Odell Road) | LT | 0.05 | 32.1 | D | | | 0.02 | 30.6 | D | | | |
| | WB (Odell Road) | R | 0.00 | 12.5 | В | | | 0.00 | 11.9 | В | | | |
| | WB Overall (Odell Road) | | | 29.3 | D | | | | 23.1 | С | | | Pass |
| | NB (Edmonston Road) | LT | 0.05 | 9.0 | A | | | 0.03 | 9.3 | Α | | | |
| | NB Overall (Edmonston Road) | | | 0.8 | | | | | 0.4 | | | | Pass |
| | SB (Edmonston Road) | LTR | - | 0.0 | А | | | 0.00 | 8.7 | Α | | | |
| | SB Overall (Edmonston Road) | | | 0.0 | | | | | 0.0 | | | | Pass |
| | Overall | | | 1.3 | | n/a | n/a | | 1.1 | | n/a | n/a | Pass |
| 10 | Powder Mill Road and Poultry F | Road (AW | SC) | | | | | | | | | | |
| | EB (Powder Mill Road) | LT | 0.21 | 8.4 | Α | | | 0.81 | 23.3 | С | | | |
| | EB Overall (Powder Mill Road) | | | 8.4 | Α | | | | 23.3 | С | | | Pass |
| | WB (Powder Mill Road) | LT | 0.37 | 9.5 | Α | | | 0.36 | 10.3 | В | | | |
| | WB Overall (Powder Mill Road) | | | 9.5 | Α | | | | 10.3 | В | | | Pass |
| | SB (Poultry Road) | LR | 0.00 | 8.0 | А | | | 0.02 | 9.2 | Α | | | |
| | SB Overall (Poultry Road) | | | 0.0 | - | | | | 9.2 | Α | | | Pass |
| | Overall | | | 9.1 | Α | n/a | n/a | | 19.4 | С | n/a | n/a | Pass |
| 11 | Powder Mill Road and Research | h Road (T | WSC) | | | | | | | | | | |
| | NB (Research Road) | L | 0.05 | 12.6 | В | | | 0.11 | 18.8 | С | | | |
| | NB Overall (Research Road) | | | 12.6 | В | | | | 18.8 | С | | | Pass |
| | Overall | | | 0.5 | | n/a | n/a | | 0.6 | | n/a | n/a | Pass |
Figure 4-19: Existing Conditions AM and PM Peak Hour Operations Analysis (continued)

| | | | | AM | Peak Ho | ur | | | PM I | Peak Ho | ur | | |
|----|--|---------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|-----|------------|--------------------|
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 12 | Powder Mill Road and Springfie | eld Road (| TWSC) | | | | | | | | | | |
| | EB (Powder Mill Road) | L | 0.01 | 8.6 | Α | | | 0.02 | 8.2 | А | | | |
| | EB Overall (Powder Mill Road) | | | 0.2 | | | | | 0.3 | | | | Pass |
| | SB (Springfield Road) | LR | 0.42 | 19.2 | С | | | 0.93 | 71.0 | F | | | |
| | SB Overall (Springfield Road) | | | 19.2 | С | | | | 71.0 | F | | | Fail |
| | Overall | | | 3.8 | | n/a | n/a | | 17.4 | | n/a | n/a | Pass |
| 13 | 13 Powder Mill Road and MD 295 SB Ramps (TWSC) | | | | | | | | | | | | |
| | WB (Powder Mill Road) | L | 0.08 | 8.3 | Α | | | 0.16 | 10.2 | В | | | |
| | WB Overall (Powder Mill Road) | | | 1.8 | | | | | 3.4 | | | | Pass |
| | SB (MD 295 SB Off-Ramp) | L | 0.98 | 83.9 | F | | | 1.73 | 405.2 | F | | | |
| | SB (MD 295 SB Off-Ramp) | TR | 0.27 | 12.2 | В | | | 0.17 | 10.6 | В | | | |
| | SB Overall (MD 295 SB Off-Ran | וp) | | 56.4 | F | | | | 277.2 | F | | | Fail |
| | Overall | | | 21.3 | | n/a | n/a | | 70.1 | | n/a | n/a | Fail |
| 14 | Powder Mill Road and MD 295 I | NB Ramps | s (TWSC) |) | | | | | | | | | |
| | EB (Powder Mill Road) | L | 0.12 | 9.6 | Α | | | 0.31 | 11.7 | В | | | |
| | EB Overall (Powder Mill Road) | | - | 1.9 | | | | | 3.0 | | | | Pass |
| | NB (MD 295 NB Off-Ramp) | L | 0.35 | 33.7 | D | | | 1.07 | 240.6 | F | | | |
| | NB (MD 295 NB Off-Ramp) | TR | 0.17 | 11.7 | В | | | 0.11 | 14.1 | В | | | |
| | NB Overall (MD 295 NB Off-Ramp) | | | 20.1 | С | | | | 146.6 | F | | | Fail |
| | Overall | | | 3.2 | | n/a | n/a | | 10.4 | | n/a | n/a | Pass |

Figure 4-19: Existing Conditions AM and PM Peak Hour Operations Analysis (continued)

| | | | AM Peak Hour | | | | PM Peak Hour | | | | | | |
|---|-----------------------------------|---------------|--------------|-------------------------------|------------|-----|--------------|--------------|-------------------------------|------------|-----|------------|--------------------|
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 15 Powder Mill Road and Soil Conservation Road (Signalized) | | | | | | | | | | | | | |
| | EB (Powder Mill Road) | Т | 0.29 | 20.5 | С | | | 0.50 | 24.0 | С | | | |
| | EB (Powder Mill Road) | R | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | |
| | EB Overall (Powder Mill Road) | | | 20.5 | С | | | | 24.0 | С | | | Pass |
| | WB (Powder Mill Road) | L | 0.22 | 34.1 | С | | | 0.12 | 32.7 | С | | | |
| | WB (Powder Mill Road) | Т | 0.33 | 9.7 | Α | | | 0.29 | 9.3 | А | | | |
| | WB Overall (Powder Mill Road) | | | 13.4 | В | | | | 11.7 | В | | | Pass |
| | NB (Soil Conservation Road) | L | 0.84 | 47.1 | D | | | 1.30 | 184.1 | F | | | |
| | NB (Soil Conservation Road) | R | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | А | | | |
| | NB (Soil Conservation Road) | | | 47.1 | D | | | - | 184.1 | F | | | Fail |
| | Overall | | | 27.9 | С | 567 | Α | | 96.0 | F | 888 | Α | Fail |

Notes:

EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound

LOS = Level of Service

V/C = Volume-to-Capacity ratio

LTR = left / through / right lanes

LTR/LTR = No-Build/Build with Mitigation

TWSC = Two-way STOP-Controlled unsignalized intersection (TWSC intersections do not have an overall LOS)

AWSC = All-way STOP-Controlled unsignalized intersection

Delay is Measured in Seconds Per Vehicle.

Red cells denote intersections or approaches operating at unacceptable conditions.

a Highway Capacity Manual 2000 results (Intersections #4 and #6)

Intersection Queuing Analysis Method

In addition to analyzing the vehicle delay, the Project Team (A/E) calculated the vehicle queue lengths for each approach. The 95th percentile queue length is the worst-case scenario, calculated as the queue that has a 5% probability of being exceeded. A failing queue length is determined by a queue length exceeding the intersection lane group storage capacity. As the available storage for each intersection lane group differs, these values reflect whether the existing storage provides enough space for vehicles waiting to pass through the intersection without blocking another lane or another intersection. Because failing queues might occur along the same approach as a failing LOS, these values are calculated independently and might result in one approach receiving a failing LOS score, while another lane group or approach has a failing queue length. The study used SimTraffic[™] to calculate 95th percentile queue lengths for the 15 study intersections.

SimTraffic provides a more robust analysis than Synchro and was agreed on by the parties in the Beltsville Site Transportation Agreement. The use of SimTraffic involved calibrating the model, ensuring the model runs for the appropriate amount of time, and determining the number of simulations runs to be statistically within a plus or minus 5% error at the 95% confidence interval. The model was calibrated by adjusting link speeds, turning speeds, and vehicle positioning decision points (distance prior to decision point when vehicles position themselves in the correct lane for upcoming moves). The goal was to adjust the model to resemble a simulation closely representing the Existing Condition. Running the model included a seeding time (time for vehicles to completely travel the network) plus four 15minute recording times (totaling 60 minutes). Based on the distance from the farthest points on the network, an 8-minute seed time was applied. The minimum number of simulation runs was calculated by running the simulation ten runs. Based on the results of the 10 runs, the standard deviation was calculated using the vehicle hours of travel (VHT) metric. VHT provides a good indication of vehicle delays by requiring more simulations given facility operation and queuing issues. Using the calculated standard deviation, the number of simulations required was calculated to be within plus or minus 5% at the 95th percentile confidence level. Because SimTraffic varies guite a bit between runs in terms of VHT, even for small networks, a plus or minus 5% error was established. The number of simulation runs to reduce the error to 4% would require dozens of runs for little gain in accuracy. In some cases where little congestion occurred, ten runs achieved better than a plus or minus 5% error at the 95% confidence interval. Appendix F contains the statistical Excel sheets used to determine the appropriate number of simulation runs. Appendix G documents the SimTraffic model validation and calibration process.

Existing Condition Intersection Queue Analysis

SimTraffic[™] was used to calculate the 95th percentile queue lengths. The SimTraffic[™] simulations have a statistical error of plus or minus 4.4% error at the 95% confidence interval for the AM peak hour and 5.0% error for the PM peak hour simulations.

Based on SimTraffic[™] analysis, the following intersection lane groups experience failing queue lengths.

- MD 201 (Edmonston Road)/Sunnyside Avenue (Intersection #6)
 - \circ $\,$ Northbound left of MD 201 (Edmonston Road) during the AM peak hour $\,$
 - o Southbound right of MD 201 (Edmonston Road) during the PM peak hour
- MD 201 (Edmonston Road)/Powder Mill Road (Intersection #8)
 - o Eastbound left of Powder Mill Road during the PM peak hour

- o Eastbound through of Powder Mill Road during the PM peak hour
- Eastbound right of Powder Mill Road during the PM peak hour
- Westbound right of Powder Mill Road during the AM and PM peak hours
- Powder Mill Road/MD 295 (BW Parkway Southbound Off-Ramp) (Intersection #13)
 - Southbound left of MD 295 (BW Parkway Southbound Off-Ramp) during the AM and PM peak hours
- Powder Mill Road/MD 295 (BW Parkway Northbound Off-Ramp) (Intersection #14)
 - Northbound left of MD 295 (BW Parkway Northbound Off-Ramp) during the AM and PM peak hours
- Powder Mill Road/Soil Conservation Road (Intersection #15)
 - Northbound right of Soil Conservation Road during the PM peak hour

The remaining intersections in the study area have acceptable queue lengths. **Figure 4-20** provides more details on the percentile values observed at each intersection. The percentile values are expressed in feet, and an average car plus space between the next vehicle requires roughly 25 feet of space. Appendix H contains the SimTraffic Queuing analysis results.

| ID | Intersection Name/Street Name | Direction | Lane Group | Turning Bay/Link Length (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | | | |
|----|--|--------------|---------------|---|--|--|--|--|--|
| 1 | MD 201 (Kenilworth Avenue) | and I-95 SB | Off-Ramp | (Signalized) | | | | | |
| | I-95 SB Off-Ramp | EB | L | 325 | 35 | 44 | | | |
| | I-95 SB Off-Ramp | EB | L | 1540 | 107 | 128 | | | |
| | I-95 SB Off-Ramp | EB | R | 1540 | | 109 | | | |
| | MD 201 (Kenilworth Avenue) | NB | Т | 4600 | 73 | 129 | | | |
| | MD 201 (Kenilworth Avenue) | SB | Т | 1400 | 91 | 131 | | | |
| 2 | MD 201 (Kenilworth Avenue) | and I-95 NB | Off-Ramp | Signalized) | | | | | |
| | I-95 NB Off-Ramp | WB | L | 400 | 172 | 225 | | | |
| | I-95 NB Off-Ramp | WB | L | 1580 | 221 | 266 | | | |
| | I-95 NB Off-Ramp | WB | R | 1580 | 276 | 230 | | | |
| | I-95 NB Off-Ramp | WB | R | 300 | 261 | 217 | | | |
| | MD 201 (Kenilworth Avenue) | NB | Т | 250 | 71 | 76 | | | |
| | MD 201 (Kenilworth Avenue) | NB | Т | 1400 | 93 | 114 | | | |
| | MD 201 (Kenilworth Avenue) | SB | Т | 680 | 156 | 120 | | | |
| 3 | MD 201 (Kenilworth Avenue) and SHA District 3/Crescent Road (Signalized) | | | | | | | | |
| | SHA District 3 | EB | LTR | 130 | 23 | 33 | | | |
| | Crescent Road | WB | LT | 1080 | 136 | 171 | | | |
| | Crescent Road | WB | R | 250 | 59 | 67 | | | |
| | MD 201 (Kenilworth Avenue) | NB | L | 250 | 69 | 56 | | | |
| | MD 201 (Kenilworth Avenue) | NB | Т | 680 | 164 | 193 | | | |
| | MD 201 (Kenilworth Avenue) | NB | R | 200 | 32 | 63 | | | |
| | MD 201 (Kenilworth Avenue) | SB | L | 300 | 68 | 124 | | | |
| | MD 201 (Kenilworth Avenue) | SB | TR | 740 | 79 | 102 | | | |
| 4 | MD 201 (Kenilworth Avenue) | and Ivy Lane | e Signaliz | ł | | | | | |
| | MD 201 (Kenilworth Avenue) | NB | L | 350 | 61 | 66 | | | |
| | MD 201 (Kenilworth Avenue) | NB | L | 740 | 96 | 101 | | | |
| | MD 201 (Kenilworth Avenue) | SB | Т | 1120 | 120 | 74 | | | |
| 5 | MD 201 (Kenilworth Avenue/ | Edmonston F | Road) and | Cherrywood | Lane (Signal | | | | |
| | Cherrywood Lane | EB | L | 250 | 83 | 108 | | | |
| | Cherrywood Lane | EB | L | 750 | 108 | 132 | | | |
| | Cherrywood Lane | EB | R | 750 | 56 | 114 | | | |
| | MD 201 (Kenilworth Avenue) | NB | L | 750 | 108 | 94 | | | |
| | MD 201 (Kenilworth Avenue) | NB | Т | 1120 | 179 | 102 | | | |
| | MD 201 (Edmonston Road) | SB | Т | 580 | | 174 | | | |
| | MD 201 (Edmonston Road) | SB | R | 580 | 220 | 53 | | | |

Figure 4-20: Existing Conditions AM and PM Peak Hour Queue Analysis

| ID | Intersection Name/Street Name | Direction | Lane Group | Turning Bay/Link Length (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
|----|----------------------------------|-------------|---------------|---|--|--|
| 6 | MD 201 (Edmonston Road) and | Sunnyside | Avenue (| Signalized) | • | • |
| | Sunnyside Avenue | EB | L | 1400 | 194 | 262 |
| | Sunnyside Avenue | EB | R | 350 | 233 | 313 |
| | MD 201 (Edmonston Road) | NB | L | 450 | 464 | 384 |
| | MD 201 (Edmonston Road) | NB | TR | 4160 | 401 | 452 |
| | MD 201 (Edmonston Road) | SB | Т | 1500 | 1114 | 1015 |
| | MD 201 (Edmonston Road) | SB | R | 250 | 239 | 316 |
| 7 | MD 201 (Edmonston Road) and | Beaver Dan | n Road (1 | TWSC) | | |
| | Beaver Dam Road | WB | LR | 1300 | 65 | 57 |
| | MD 201 (Edmonston Road) | NB | TR | 1500 | 5 | 11 |
| | MD 201 (Edmonston Road) | SB | LT | 1480 | 163 | 355 |
| 8 | MD 201 (Edmonston Road) and | Powder Mil | Road (S | ignalized) | | |
| | Powder Mill Road | EB | L | 250 | 122 | 322 |
| | Powder Mill Road | EB | Т | 1430 | 174 | 1780 |
| | Powder Mill Road | EB | R | 500 | 63 | 768 |
| | Powder Mill Road | WB | L | 250 | 147 | 111 |
| | Powder Mill Road | WB | Т | 1100 | 196 | 217 |
| | Powder Mill Road | WB | R | 40 | 57 | 62 |
| | MD 201 (Edmonston Road) | NB | L | 400 | 250 | 353 |
| | MD 201 (Edmonston Road) | NB | Т | 1480 | 298 | 444 |
| | MD 201 (Edmonston Road) | NB | R | 275 | 54 | 208 |
| | MD 201 (Edmonston Road) | SB | L | 275 | 46 | 126 |
| | MD 201 (Edmonston Road) | SB | TR | 780 | 253 | 252 |
| 9 | MD 201 (Edmonston Road) and | Odell Road | (TWSC) | | | |
| | Odell Road | EB | LTR | 740 | 71 | 54 |
| | Odell Road | WB | LT | 520 | 35 | 12 |
| | Odell Road | WB | R | 50 | 19 | 17 |
| | MD 201 (Edmonston Road) | NB | LT | 760 | 63 | 78 |
| | MD 201 (Edmonston Road) | SB | LTR | 1320 | 1 | 4 |
| 10 | Powder Mill Road and Poultry R | Road (AWSC | ;) | | | |
| | Powder Mill Road | EB | LT | 240 | 92 | 219 |
| | Powder Mill Road | WB | TR | 1280 | 93 | 96 |
| | Poultry Road | SB | LR | 420 | | 20 |
| 11 | Powder Mill Road and Research | n Road (TWS | SC) | | | |
| | Powder Mill Road | EB | TR | 1280 | | 21 |
| | Research Road | NB | L | 65 | 38 | 49 |

Figure 4-20: Existing Conditions AM and PM Peak Hour Queue Analysis (continued)

| ID | Intersection Name/Street Name | Direction | Lane Group | Turning Bay/Link Length (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | | | | |
|----|--|-------------|---------------|---|--|--|--|--|--|--|
| 12 | Powder Mill Road and Springfield Road (TWSC) | | | | | | | | | |
| | Powder Mill Road | EB | L | 50 | 11 | 24 | | | | |
| | Powder Mill Road | WB | TR | 140 | | 6 | | | | |
| | Springfield Road | SB | LR | 4110 | 69 | 144 | | | | |
| 13 | Powder Mill Road and MD 295 S | B Ramps(| TWSC) | | | | | | | |
| | Powder Mill Road | EB | TR | 140 | 3 | 15 | | | | |
| | Powder Mill Road | WB | L | 225 | 35 | 60 | | | | |
| | Powder Mill Road | WB | Т | 520 | 2 | 4 | | | | |
| | BW Parkway SB Ramp | SB | L | 25 | 58 | 56 | | | | |
| | BW Parkway SB Ramp | SB | TR | 1020 | 127 | 565 | | | | |
| 14 | Powder Mill Road and MD 295 N | B Ramps (1 | WSC) | | | | | | | |
| | Powder Mill Road | EB | L | 250 | 56 | 131 | | | | |
| | Powder Mill Road | WB | TR | 850 | 11 | 15 | | | | |
| | BW Parkway NB Ramp | NB | L | 50 | 52 | 70 | | | | |
| | BW Parkway NB Ramp | NB | TR | 880 | 53 | 79 | | | | |
| 15 | Powder Mill Road and Soil Cons | ervation Ro | ad (Sign | alized) | | | | | | |
| | Powder Mill Road | EB | Т | 850 | 122 | 194 | | | | |
| | Powder Mill Road | EB | R | 260 | 25 | 37 | | | | |
| | Powder Mill Road | WB | L | 300 | 75 | 61 | | | | |
| | Powder Mill Road | WB | Т | 780 | 126 | 131 | | | | |
| | Soil Conservation Road | NB | L | 6400 | 222 | 1101 | | | | |
| | Soil Conservation Road | NB | R | 475 | | 625 | | | | |

Figure 4-20: Existing Conditions AM and PM Peak Hour Queue Analysis (continued)

Notes:

1) EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound.

2) LTR = left / through / right lanes.

3) TWSC = Two-way STOP-Controlled unsignalized intersection.

4) AWSC = All-way STOP-Controlled unsignalized intersection.

5) Red cells denote lane groups whose queuing length exceeds capacity.

Existing Traffic Patterns

The Project Team (A/E) placed four ATRs (Sunnyside Avenue, Powder Mill Road, BW Parkway southbound off-ramp, and BW Parkway northbound off-ramp) in the study area to capture an hourly record of vehicles inside or surrounding the installation. The Sunnyside ATR was positioned far enough away from the Edmonston Road intersection to capture the traffic demand heading east. The Powder Mill Road ATR was positioned at the approximate location of the BEP site driveway under the Action Alternative. The BW Parkway off-ramp ATRs were positioned to capture the traffic demand exiting the parkway at Powder Mill Road before entering the queue to proceed past the stop-controlled intersection at Powder Mill Road.

ATR data were collected for three consecutive days (Tuesday through Thursday) during the week of September 17, 2019, a typical work week, with no holidays or major weather events that would prompt atypical traffic patterns. The Project Team organized vehicle counts by direction, allowing separate analysis of each direction's traffic volumes. All hourly weekday volumes collected have some slight variations between days.

Figures 4-21 through **4-24** show the weekday ATR summary data along Sunnyside Avenue, Powder Mill Road, and BW Parkway off-ramps at Powder Mill Road.







Figure 4-22: Powder Mill Road: Weekday Vehicles per Hour



Figure 4-23: BW Parkway Southbound Off-ramp at Powder Mill Road: Weekday Vehicles per Hour



Figure 4-24: BW Parkway Northbound Off-ramp at Powder Mill Road: Weekday Vehicles per Hour

Analysis of the ATR data for the average day reveals several trends for traffic volumes.

- The AM and PM peak hours are similar in intensity along Sunnyside Avenue and BW Parkway northbound off-ramp.
- Peak hours last over four hours along Sunnyside Avenue and BW Parkway southbound offramp.
- Powder Mill Road and Sunnyside Avenue flow predominately in the eastbound direction.
- BW Parkway southbound off-ramp maintains a high volume for 14 hours a day.
- BW Parkway northbound off-ramp has a much higher PM peak flow than AM peak flow.

Pedestrian Network

This section includes a description of where sidewalks are present; the origin and destination points of pedestrians and/or commonly used sidewalks in the study area; disruptions or obstacles in the pedestrian environment; and general Americans with Disabilities Act (ADA) compliance. The Project Team recorded sidewalk measurements and other observations in the field in September 2019 (Site Visit, September 17, 2019) and via imagery from Google Maps. Measurements were recorded from the edge of the sidewalk to the edge of the curb.

Overall Sidewalk Observations

Basic sidewalk accommodations do not exist along a majority of roads throughout the study area, due to the predominately agrarian and rural character. The internal circulation for BARC is vehicle oriented and makes nonmotorized transportation difficult. Sidewalks are provided along the residential streets in the neighborhoods to the north of the site. Sidewalks are also located along parts of Edmonston Road (MD 201) but primarily adjacent to residential neighborhoods. There are no pedestrian crossing locations due to the lack of connectivity in the study area. Existing sidewalks are not the recommended minimum width of 5.0 feet wide (FHWA 2006).

Accessibility Compliance

According to ADA, there is a minimum requirement of 3-foot clearances on street curb ramps, as well as minimal slopes and detectable warnings (i.e., dome-shaped bumps) (USDOJ 2007). Due to long blocks and generally consistent sidewalk widths along each block, ADA compliance focused on sidewalk widths and less on intersection ramp compliance.

The Federal Highway Administration (FHWA) guidelines recommend that sidewalks have a minimum width of 5.0 feet if setback from the curb or 6.0 feet if at the curb face (FHWA 2014). Any sidewalk width less than 5.0 feet must be 3.0 feet wide with 5–foot turn-around locations every 200 feet to meet the minimum requirements for people with disabilities (USDOJ 2010).

Based on the ADA guidelines, all intersections are not ADA compliant due to either a lack of sidewalks or sidewalks that are not the appropriate width and do not have tactile paving (i.e., dome-shaped bumps) (USDOJ 2007).

Bicycle Network

There are no multi-use paths and roadways with bicycle accommodations in the bicycle study area (**Figure 4-25**) (M-NCPPC 2009; PGC PD 2013; site visit in September 2019; Google Maps). Within the larger study area, Cherrywood Lane and Ivy Lane both have bicycle lanes, although they do not extend the full length of the roadways. Powder Mill Road does contain a three-foot to six-foot striped shoulder between Edmonston Road and the BW Parkway that provides space for bicyclists. According to the Federal Highway Administration, bicycle striped lanes should be five feet wide (FHWA, 2017).

Public Transit

Several modes of transit converge in the transit study area, including local buses, shuttles, and carsharing. The Greenbelt Metro Station is located in the vicinity but is not within the study area. Because the public transit system is dynamic in nature with possible service adjustments, ridership changes, and station access improvements, this information provides a snapshot in time to provide a baseline of data to develop the No-build and Build Conditions. Therefore, the transit information in this report records transit information as of the fall of 2019; some bus and transit schedules may have changed since the initial data were collected.



Figure 4-25: Prince George's County Master Plan of Transportation Bikeways and Trails

Bus: Local

The proposed site is served by two WMATA Metrobus lines. Most of the bus routes serve the cities of Laurel and Greenbelt and other surrounding areas of Prince George's County. Metrobus route 87 (Laurel Express) connects Greenbelt to the City of Laurel, and Metrobus route B30 (Greenbelt-BWI Thurgood Marshall Airport Express) connects Greenbelt with BWI Thurgood Marshall International Airport in Anne Arundel County, Maryland. **Figure 4-26** summarizes the major characteristics of bus routes serving the study area as well as the weekday headways and spans of service on routes that

serve the proposed site. Headways represent the time between buses in minutes. Most routes operate throughout the day with peak service during the morning and evening rush hours, which fall between 6:00 AM and 9:00 AM and 3:00 PM and 7:00 PM, respectively. Some routes have limited or reduced service during the midday period (from 9:00 AM to 3:00 PM), including Metrobus Route 87 which does not operate at all during this period. Metrobus Route 87 provides 30-minute peak headways. **Figure 4-27** illustrates bus routes serving the study area.

| Figure 4-26: Major Service | Characteristics of Bus | Routes Serving the Study Area |
|----------------------------|-------------------------------|-------------------------------|
|----------------------------|-------------------------------|-------------------------------|

| Route Name | Route Endpoints | Headway (during hours of operation) | Service Hours for Study Area | | | | | | |
|---------------|---|---|--|--|--|--|--|--|--|
| Major Route | | | | | | | | | |
| 87 | Operates between Greenbelt Metro Station and Laurel | 30 minutes weekdays | Weekdays: northbound 5:50 AM–7:47 PM Weekdays: southbound 4:46 AM–7:45 PM | | | | | | |
| B30* | Operates between Greenbelt Metro Station and BWI Business District | 30 minutes weekdays | Weekdays: northbound 6:00 AM–9:54 PM Weekdays: southbound 7:00 AM–10:45 PM | | | | | | |

Note*: Bus route traverses through study area but does not stop.

Source: WMATA (2019a)



Figure 4-27: Bus Routes Serving the Study Area

Source: WMATA (2014f); PGC DPWT (2014); Regional Transit Agency (2014)

Ridership

Figure 4-28 shows ridership by route for the two Metrobus routes in the area. Ridership during the AM Peak and PM Peak periods is fairly consistent by route in each direction, likely because the routes connect to multiple Metro stations on opposite ends of the route.

Maximum passenger loads represent the maximum number of passengers on a given route at one time. Maximum passenger loads on routes serving the study area indicate the potential for overcrowding on one of the routes. Route 87 does not experience overcrowding. Route B30 does not stop in the study area; therefore, ridership information was not provided.

Figure 4-28: Average Weekday Ridership by Bus Route Serving the Proposed Study Area

| Route Name | Route Endpoints | Time Period | Average Ridership (Persons) | Max Patrons per Bus (Persons) | Bus Capacity (Percent Full) | |
|---------------|----------------------------|-------------|-----------------------------------|--|--------------------------------------|--|
| 87 | Operates between Greenbelt | AM Peak | 320 | 24 | 60% | |
| | Station and Laurel | PM Peak | 396 | 29 | 72% | |

Bus: Intercity

There is currently no intercity bus service to the proposed site.

Bus: Commuter

There is currently no commuter bus service to the proposed site.

Shuttles

There is one shuttle that serves the study area for the U.S. Department of Agriculture (USDA, 2015). USDA provides a single shuttle between its facilities in Beltsville and the Greenbelt Metro Station. Passengers must present a USDA identification card. **Figure 4-29** provides details on shuttle service in the Greenbelt study area.

Figure 4-29: Shuttles Serving the Study Area

| Agency/ Group | Route Name | Locations Served | Headway (Minutes) | Span of Service |
|------------------|---------------|---|----------------------|------------------------------|
| USDA | Beltsville | Greenbelt Metro Station, USDA Offices, Beltsville Agricultural Center | 30-60 | 6:42 AM to 6:08 PM (Mon-Fri) |

Ridesharing (Slugging)

There are no slugging routes in the study area.

Carsharing

Carsharing is a mobility option that allows individuals to rent a vehicle for short periods (Minutes, hours, or days) and has become an increasingly popular way for people to travel around Washington, DC. Several carsharing companies currently serve the DC metro area including Zipcar and Turo. All services are provided by private companies that offer automobile access to registered users.

Parking

Parking near the proposed site is primarily limited to BARC service vehicles and employees. Several surface parking lots serve BARC office buildings and maintenance facilities, as shown in **Figure 4-30**. There is no on-street parking in the study area. Information about parking in the study area was gathered through the use of Google Maps that consisted of images from summer 2018, as well as onsite observations (Louis Berger Site Visit September 17, 2019).



Figure 4-30: Surface Parking Lots

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5. Future Conditions

This section describes the No Action Alternative or the baseline condition if BEP does not relocate to Beltsville and Action Alternative if BEP does relocate to Beltsville. Analysis of the No Action Alternative assumes background development and growth through 2029, the full implementation year of the associated Action Alternative.

A Development of No Action Alternative

Under the No Action Alternative, no changes are proposed in the project area. Therefore, this section only describes changes that are planned or reasonably foreseeable within the various modal study areas covered in the Existing Conditions section.

The following sections describe the No Action alternative improvements located within the study area including the planned developments and planned roadway improvements.

Planned Developments

Based on the M-NCPPC scoping form (Attachment A), the No Action Alternative includes 3 planned developments that are reasonably foreseeable to be completed by 2029. In addition, one other planned development was announced after the M-NCPPC scoping form was agreed, reflecting an increase of employees at the USDA facility located on Sunnyside Avenue. Collectively, these four planned developments create a conservative background vehicle trip forecast.

These developments range in size, scale, and function from a 354-unit multifamily residential building, to multiple-building, multiple-phased mixed-use projects with commercial and residential uses, and the relocation of 1,065 USDA employees. Most of the planned developments are located south and west of the project area near Cherrywood Lane and Sunnyside Avenue. The numbers beside each project description correspond to the location of the project on **Figure 5-1**. Planned developments include the following:

- 1) Greenbelt Town Center at Beltway Plaza is a phased redevelopment of the shopping center site in the northeastern quadrant of the MD 193 (Greenbelt Road) intersection with Cherrywood Lane that will result in a mixed-use project with neighborhood-oriented, pad site, and destination retail; multifamily housing and townhomes; and a new grid of internal street connections via MD 193 (Greenbelt Road), Cherrywood Lane, and Breezewood Drive. The site was the subject of a conceptual site plan (CSP) in 2006 (CSP-05007); the Prince George's County Planning Board approved an updated CSP (CSP-18010) in March 2019. Whereas the existing Beltway Plaza site has a total of 800,000 square feet (SF) of shopping center space, the approved redevelopment will consist of 700,000 SF of shopping center space, 250 townhouses, and 2,250 multifamily housing units (M-NCPPC n.d.a). The timeline for construction was not known at the time of this study.
- 2) Greenbelt Station North Core is a mixed-use development adjacent to the Greenbelt Metro Station that was the subject of CSP-01008 approved in 2006. The North Core development program includes 1,100,000 SF of retail space, 1,200,000 SF of office space, a 300-room hotel, and 1,267 multifamily residential dwelling units (M-NCPPC n.d.a). North Core's proximity and immediate access to the Green Line of Metrorail, Maryland Rail Commuter (MARC) commuter rail, and several local bus routes increase the likelihood of site trips that would be taken by transit as

opposed to by private automobile. The site plan includes a grid of internal street connections that will permit synergistic interactions between the various land uses and further limit the number of external vehicle trips to the public network. Access to the public roadway network will be provided from a new connector road that links MD 193 (Greenbelt Road) with I-95 (Capital Beltway). The current interchange at the Capital Beltway by the Greenbelt Metro Station will be reconfigured to improve vehicular circulation to and from the site. Access will also occur from Cherrywood Lane. The timeline for construction of North Core was not known at the time of this study.

- 3) Greenbelt Metro (6400 Cherrywood Lane) is a 354-unit multifamily residential apartment building to be developed on a triangular area of land composed of three parcels located on the north side of Cherrywood Lane. Access to the site is proposed from the north side of Cherrywood Lane opposite Ivy Lane. The project is the subject of a Preliminary Plan of Subdivision case #4-19010 that was approved by the Prince George's County Planning Board on October 10, 2019 (M-NCPPC n.d.a). The timeline for construction was not known at the time of this study.
- 4) U.S.D.A Consolidation (George Washington Carver Center) is an effort as part of the OneNeighborhood initiative for USDA in the NCR that includes the relocation of 1,065 employees to vacant office space that currently exists in the GWCC at 5601 Sunnyside Avenue (Censky 2019). This proposed relocation was not discussed in the scope of work with M-NCPPC, and it is not known if an EIS has been performed to assess the impact of this substantial increase in jobs on the local area. As such, the inclusion of this project, for the purpose of evaluating a No Action Alternative, should be considered conservative.



Figure 5-1: No Action Alternative Planned Developments

Planned Roadway Improvements

There are no new planned roadway improvements that would result in roadway capacity improvements. The only project in the study area is the ongoing work to reconstruct the bridge along Sunnyside Avenue.

No Action Alternative Trip Generation and Modal Split

Trip generation represents the magnitude of person trips generated by the various background planned developments, organized by time period. Office and residential land uses tend to generate the most trips during the AM and PM rush periods when employees commute between their homes and place of work. Retail land use tends to generate the most trips during the afternoon and evening rush and weekend afternoons, indicative of the times when most people frequent shopping centers, strip malls, wholesale centers, and regional malls.

The process to add trips generated by each development to the No Action Alternative followed the M-NCPPC/Prince George's County guidelines and used the County's prescribed trip generation formulas (M-NCPPC 2012c). Depending on the type of development and size, the trip generation either relied on the Prince George's County trip rates or Institute of Transportation Engineers (ITE) 9th Edition of the *Trip Generation Manual* trip rates. Prince George's County supplies trip rates for a number of typical land uses, such as office and residential. In a sensitivity analysis prepared in response to requests for further analysis from reviewing agencies (see Appendix I), the ITE 10th Edition *Trip Generation Manual* trip rates were used. In addition, the sensitivity analysis includes an alternate development program for the Greenbelt Town Center at Beltway Plaza where the residential component is assumed to comprise 2,500 multifamily housing units and no townhouses, compared with the 2,250 multifamily housing units and 250 townhouses assumed in this study.

After establishing the proper trip rates, the Project Team (A/E) followed the internal capture procedures outlined in National Cooperative Highway Research Program (NCHRP) 684 to account for existing trips where individuals would choose to walk, rather than drive, between nearby land uses (TRB 2011). The NCHRP process relies on capture rates between specific land uses. This procedure is endorsed as the preferred procedure for handling internal capture by the ITE's *Proposed Trip Generation Handbook*, Third Edition (ITE 2014). Two planned developments required this procedure to reflect the mixed use. The Project Team also followed the M-NCPPC/Prince George's County guidelines to account for pass-by trips (M-NCPPC 2012c), which represent existing trips that include a stop at a retail use along their route and continue on their way following the stop. For example, a person may stop at the dry cleaners or a take-out restaurant on his or her way home from work. According to the M-NCPPC/Prince George's County guidelines, the smaller the retail space, the higher the percentage of pass-by trips assigned. Two planned developments required this procedure.

M-NCPPC/Prince George's County procedures allow for a transit credit to be applied for developments near transit. This credit, with a permitted maximum of 20%, would be applied to the trip generation, thus reducing the forecasted vehicle trips and assigning them as transit trips. The North Core Greenbelt Station development is planned to be situated next to the Greenbelt Metro Station; therefore, a previous study's guidelines were followed (Renard Development Company 2014). Based on the study, Maryland SHA guidance forecast that the office would have a 25% transit share, retail would have a 25% transit share, residential would have a 30% transit share, and the hotel would have a 25% transit share. With the modernization of the GWCC as part of the USDA consolidation, it is anticipated that a USDA shuttle

for employees of the agency will transport riders between the Greenbelt Metro Station and the GWCC. An EIS for the USDA consolidation has not been completed, but for purposes of this analysis, a 10% transit share is assumed based on provision of a shuttle.

The four planned developments would add 3,770 trips during the AM peak hour of the adjacent street and 4,113 trips during the PM peak hour of the adjacent street. These trips were reduced from the peak hour of the adjacent street volume to match this study's peak hour of analysis, which differs from the regional roadway system peak hour, since the commuting patterns to the proposed BEP facility do not align with the regional peak hour standards. To calculate an appropriate diurnally adjustment or trip reduction, the ATR volumes were evaluated, and the AM peak trips were reduced by 25.1% and the PM peak trips were reduced by 12.9%. **Figure 5-2** contains the AM and PM study peak hour vehicle trips generated.

| PROJECT | UNITS/SIZE/ | AM | PEAK | HOUR S | PM PEAK HOUR TRIPS | | |
|---|--------------|----------|-------|-----------|-----------------------|-------|-------|
| | CREDITS | IN | OUT | TOTAL | IN | OUT | TOTAL |
| North Core (West side of Greenbelt Station | Parkway) | | | | | | |
| General Office (ITE – 710) ^a | 1,200,000 sf | 1,229 | 168 | 1,397 | 242 | 1,180 | 1,422 |
| Internal Capture Trips (following NCHRP 684 | | | | | | | |
| Tables) | | -97 | -47 | -144 | -42 | -135 | -177 |
| Net External Trips | | 1,132 | 121 | 1,253 | 200 | 1,045 | 1,245 |
| Transit Credit (following Maryland | | | | | | | ~ |
| Jurisdiction Guidance) | 25% credit | -283 | -30 | -313 | -50 | -261 | -311 |
| Net External Vehicle Trips | | 849 | 91 | 940 | 150 | 784 | 934 |
| | | -213 | -23 | -236 | -19 | -101 | -120 |
| Net External Diurnally-Adjusted Vehicle Trips | 4 400 000 | 636 | 68 | 704 | 131 | 683 | 814 |
| Snopping Center ($IIE - 820$) | 1,100,000 st | 417 | 256 | 673 | 1,434 | 1,553 | 2,987 |
| Internal Capture Trips (Ioliowing NCHRP 684 | | 61 | 50 | 110 | 244 | 074 | E1E |
| Not External Trino | | -01 | -52 | -115 | -241 | -274 | -010 |
| Transit Cradit (following Manyland | | 350 | 204 | 500 | 1,195 | 1,279 | 2,472 |
| | 25% credit | -80 | -51 | -140 | -298 | -320 | -618 |
| Net External Vehicle Trins | 2070 01001 | 267 | 153 | 420 | 895 | 959 | 1 854 |
| Pass-by Trips (reduction based on overall | | 201 | 100 | 720 | 000 | 000 | 1,004 |
| retail development) ^d | 20% pass-by | -42 | -42 | -84 | -186 | -185 | -371 |
| Net External Vehicle and Pass-by Trips | , | 225 | 111 | 336 | 709 | 774 | 1,483 |
| Diurnal Adjustment ^c | | -56 | -28 | -84 | -91 | -100 | -191 |
| Net External Diurnally-Adjusted Vehicle Trips | | 169 | 83 | 252 | 618 | 674 | 1,292 |
| Apartments (Prince George's County | | | | | | | |
| Guidance) | 1,267 units | 127 | 532 | 659 | 494 | 266 | 760 |
| Internal Capture Trips (following NCHRP 684 | | | | | | | |
| Tables) | | -3 | -16 | -19 | -247 | -130 | -377 |
| Net External Trips | | 124 | 516 | 640 | 247 | 136 | 383 |
| Transit Credit (following Maryland | 0.00/ | | 4.5.5 | 100 | - 4 | | |
| Jurisdiction Guidance) | 30% credit | -37 | -155 | -192 | -/4 | -41 | -115 |
| Net External Vehicle Trips | | 87 | 361 | 448 | 1/3 | 95 | 268 |
| Diurnal Adjustment [~] | | -22 | -91 | -113 | -22 | -12 | -34 |
| | 200 ****** | 05 | 270 | 335 | 151 | 83 | 234 |
| Hotel (ITE - 310) | 300 rooms | 94 | 60 | 159 | 92 | 88 | 180 |
| | | 0 | 16 | 46 | 24 | 11 | 20 |
| Net External Trips | | 0/ 0/ | -40 | -40 | -24 | -14 | -30 |
| Transit Credit (following Maryland | | 34 | 13 | 115 | 00 | 17 | 142 |
| Jurisdiction Guidance) ^b | 25% credit | -24 | -5 | -29 | -17 | -19 | -36 |
| Net External Vehicle Trips | 20% orodit | 70 | 14 | 84 | 51 | 55 | 106 |
| Diurnal Adiustment ^c | | -18 | -4 | -22 | -7 | -7 | -14 |
| Net External Diurnally-Adjusted Vehicle Trips | | 52 | 10 | 62 | 44 | 48 | 92 |
| TOTAL VEHICLE TRIPS | | 922 | 431 | 1,353 | 944 | 1,488 | 2,432 |

^a Per Prince George's County Guidance, ITE followed for developments exceeding 108,000 square feet

^b Maryland SHA, MNCPPC, Prince George's County, WMATA, and City of Greenbelt ^c Diurnal adjustment based on the total ATR volumes assembled for the 6:00-7:00 AM hour as a percentage of the total ATR volumes assembled for the 8:00-9:00 AM hour; and the 3:00-4:00 PM hour as a percentage of the total ATR volumes assembled for the 5:00-6:00 PM hour. Approximately a 25% reduction is applied to AM and a 13% reduction is applied to PM.

^d Per Prince George's County Guidance, a 20% pass-by trip reduction is applied for shopping centers exceeding 600,000 square feet

| PROJECT | UNITS/SIZE/ | AM PEAK HOUR TRIPS | | | PM PEAK HOUR TRIPS | | | |
|---|--|--------------------------|--------------------------|----------------------------------|----------------------------|------------------------------|--------------------------------|--|
| TROLOT | CREDITS | IN | OUT | TOTAL | IN | OUT | TOTAL | |
| Greenbelt Town Center at Beltway Plaza | | <u> </u> | • | | | | <u> </u> | |
| Existing Shopping Center (to be removed) (ITE – 820) | 800,000 sf | 343 | 211 | 554 | 1,158 | 1,255 | 2,413 | |
| Pass-by Trips ^d Net External and Pass-by Trips Diurnal Adjustment ^c Net External Diurnally-Adjusted Vehicle Trips | 20% pass- by | -56 287 -72 215 | -55 156 -39 117 | -111 443 -111 332 | -242 916 -118 798 | -241 1,014 -131 883 | -483 1,930 -249 1.681 | |
| Approved Shopping Center (to be added) (ITE – 820) | 700,000 sf | 317 | 194 | 511 | 1,059 | 1,148 | 2,207 | |
| Internal Capture Trips (following NCHRP 684 Tables) Net External Trips | 20% pass- | -11 306 | -5 189 | -16 495 | -106 953 | -299 849 | -405 1,802 | |
| Pass-by Trips ^d Net External and Pass-by Trips Diurnal Adjustment ^c Net External Diurnally-Adjusted Vehicle Trips | by | -50 256 -64 192 | -49 140 -35 105 | -99 396 -99 297 | -180 773 -100 673 | -180 669 -86 583 | -360 1,442 -186 1,256 | |
| Apartments (Prince George's County Guidance) Internal Capture Trips (following NCHRP 684 | 2,250 units | 225 | 945 | 1,170 | 878 | 473 | 1,351 | |
| Net External Trips Diurnal Adjustment ^o | | -4 221 -55 | -10 935 -235 | -14 1,156 -290 | -260 618 -80 | -92 381 -49 | -352 999 -129 | |
| Townhouses (Prince George's County Guidance) Internal Capture Trips (following NCHRP 684 | 250 units | 166 35 | 140 | 175 | 130 | 70 | 200 | |
| Tables) Net External Trips Diurnal Adjustment ^o Net External Diurnally-Adjusted Vehicle Trips | | -1 34 -9 25 | -1 139 -35 104 | -2 173 -44 129 | -39 91 -12 79 | -14 56 -7 49 | -53 147 -19 128 | |
| ^c Diurnal adjustment based on the total ATR volumes assembled for the 6:00-7:00 AM hour as a percentage of the total ATR volumes assembled for the 8:00-9:00 AM hour; and the 3:00-4:00 PM hour as a percentage of the total ATR volumes assembled for the 5:00-6:00 PM hour. Approximately a 25% reduction is applied to AM and a 13% reduction is applied to PM. | | | | | | | | |
| square feet | | | | | | | | |
| Apartments (Prince George's County Guidance) | 354 units | 35 | 149 | 184 | 138 | 74 | 212 | |
| Diurnal Adjustment ^c | 004 01113 | -9 26 | -37 | -46 | -18 | -10 | -28 | |
| | | 20 26 | 112 | 138 | 120 120 | 64 64 | 184 | |
| [°] Diurnal adjustment based on the total ATR volumes assembled for for the 8:00-9:00 AM hour; and the 3:00-4:00 PM hour as a percent Approximately a 25% reduction is applied to AM and a 13% reduction | or the 6:00-7:00 AM tage of the total ATF ton is applied to PM | hour as R volum | a percen es assem | tage of the to bled for the s | otal ATR v 5:00-6:00 | olumes as PM hour. | sembled | |

Figure 5-2: Planned Developments Trip Generation Summary (continued)

Figure 5-2: Planned Developments Trip Generation Summary (continued)

| DRO JECT | UNITS/SIZE/ | AM PE | AK HOUI | R TRIPS | PM PE | AK HOUF | R TRIPS |
|---|---------------------|--------------|-------------|---------------|--------------|------------|---------|
| PROJECT | CREDITS | IN | OUT | TOTAL | IN | OUT | TOTAL |
| USDA GWCC Modernization | | | | | | | |
| | 1,065 | | | | | | |
| Single-Tenant Office (ITE – 715) | employees | 490 | 61 | 551 | 75 | 428 | 503 |
| Transit Credit (USDA shuttle to Greenbelt | | | | | | | |
| Station) | 10% credit | -49 | -6 | -55 | -8 | -43 | -51 |
| External Vehicle Trips | | 441 | 55 | 496 | 67 | 385 | 452 |
| Diurnal Adjustment ^c | | -111 | -14 | -125 | -9 | -50 | -59 |
| Net External Diurnally-Adjusted Vehicle | | | | | | | |
| Trips | | 330 | 41 | 371 | 58 | 335 | 393 |
| | | | | | | | |
| TOTAL VEHICLE TRIPS 330 41 371 58 335 | | | | | 393 | | |
| ^c Diurnal adjustment based on the total ATR volumes assembled for the 6:00-7:00 AM hour as a percentage of the total ATR volumes assembled | | | | | | | |
| for the 8:00-9:00 AM hour; and the 3:00-4:00 PM hour as | a percentage of the | e total ATR | volumes ass | sembled for t | ne 5:00-6:00 |) PM hour. | |
| Approximately a 25% reduction is applied to Alvi and a 1. | 5% reduction is app | ned to Pivi. | | | | | |

No Action Alternative Trip Distribution

Trip distribution represents the origin-destination pattern by percentage for vehicle trips generated by each planned development to and from points beyond the study area boundary. In some cases, planned developments would be located just outside the study area; therefore, the only vehicle trips included were trips that would travel through the study area intersections. Given the location of the study area, the distribution includes the primary arterials of Edmonston Road/Kenilworth Avenue and Powder Mill Road with trips entering the study area from Cherrywood Lane and Sunnyside Avenue.

The Project Team (A/E) developed trip distributions by either following previous studies (in the case of the Greenbelt Station North Core development) or estimating future traffic patterns based on the existing traffic pattern for the other three planned developments. **Figure 5-3** contains a summary of the planned development trip distribution. The distributions for each planned development total less than 100% because only a portion of trips for each development would occur in the study area.

Figure 5-3: Planned Development Trip Distribution

| | North Core | | Graanhalt | | |
|---|------------------------|--------|----------------|--------------------|--------------|
| Origin-Destination | Residential and Office | Retail | Town Center | Greenbelt Metro | USDA GWCC |
| MD 201 north via Sunnyside Avenue | - | - | - | - | 25% |
| MD 201 south via Sunnyside Avenue | - | - | - | - | 25% |
| MD 201 north via Cherrywood Lane | 7.5% | 12.5% | 20% | 20% | - |
| MD 201 south via Cherrywood Lane | 7.5% | 12.5% | - | 70% | - |
| MD 201 south via I-95 (Capital Beltway) from the west | - | - | 20% | - | - |
| MD 201 south via I-95 (Capital Beltway) from the east | - | - | 20% | - | - |

No Action Alternative Background Growth

Six years of Maryland SHA traffic counts were compared to develop a background growth rate for the study area. Traffic volumes from MD 201 – south of Sunnyside Avenue, MD 201 – north of Sunnyside Avenue, and Powder Mill Road between MD 201 and Baltimore-Washington Parkway were compared. Based in the comparison, the average yearly growth rate was 1.2%. **Figure 5-4** presents six years of traffic volumes and **Figure 5-5** presents the yearly growth comparison.

| rigure 5-4. Six rears of frame volumes | Figure | 5-4: | Six | Years | of | Traffic | Volumes |
|--|--------|------|-----|-------|----|---------|---------|
|--|--------|------|-----|-------|----|---------|---------|

| Functional | Street | Traffic Volumes | | | | | | |
|----------------|--------------------------------|-----------------|--------|--------|--------|--------|--------|--|
| Class | Officer | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | |
| Minor Arterial | MD 201 – South of Sunnyside | 32,821 | 32,722 | 36,330 | 34,601 | 35,432 | 35,860 | |
| Minor Arterial | MD 201- North of Sunnyside | 24,331 | 24,262 | 26,643 | 25,374 | 25,985 | 23,490 | |
| Minor Arterial | Powder Mill Road | 10,861 | 10,832 | 11,893 | 11,324 | 11,605 | 11,960 | |

Source: Maryland SHA: 2018

Figure 5-5: Yearly Growth Comparison

| Functional Class | Street | Avg. 2013- 2014 | Avg. 2014- 2015 | Avg. 2015- 2016 | Avg. 2016- 2017 | Avg. 2017- 2018 | Avg. 2011- 2018 |
|-------------------------------|--------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Minor Arterial | MD 201 - South of Sunnyside | -0.3% | 11.0% | -4.8% | 2.4% | 1.2% | 1.9% |
| Minor Arterial | MD 201- North of Sunnyside | -0.3% | 9.8% | -4.8% | 2.4% | -9.6% | -0.5% |
| Minor Arterial | Powder Mill Road | -0.3% | 9.8% | -4.8% | 2.5% | 3.1% | 2.1% |
| Overall Yearly Growth Average | | | | | | | 1.2% |

No Action Alternative Forecasted Traffic Volumes

The vehicle trips from the M-NCPPC-approved planned developments, background growth, and existing conditions are combined to create the No Action Alternative turning movement volumes covering the study area intersections. The traffic signal timings along Edmonston Road/Kenilworth Avenue and Powder Mill Road were optimized. This would reflect that Maryland SHA and/or Prince George's County Department of Public Works and Transportation (DPW&T) would most likely perform these upgrades over the next ten years. Within the traffic model software, the traffic signal timing splits and offsets were optimized to most efficiently process the future No Action Alternative forecasted traffic volumes. Performing the optimization process would improve the operations at some of the intersections compared to existing conditions, such as Soil Conservation Road and Powder Mill Road (Intersection #15). **Figure 5-6** shows additional trips forecasted to be generated from regional growth, **Figure 5-7** shows the total planned development AM and PM turning movement volumes, and **Figure 5-8** shows the No Action Alternative AM and PM peak hour turning movement volumes.



Figure 5-6A: Regional Growth Turning Movements – Map 1



Figure 5-6B: Regional Growth Turning Movements – Map 2



Figure 5-7A: Planned Background Development Turning Movements – Map 1



Figure 5-7B: Planned Background Development Turning Movements – Map 2



Figure 5-8A: AM and PM BEP Peak Hour No Action Alternative Traffic Volumes – Map 1



Figure 5-8B: AM and PM BEP Peak Hour No Action Alternative Traffic Volumes – Map 2

B Development of Action Alternative

This section describes the Action Alternative. BEP would construct a new facility at Beltsville with its main driveway access from Powder Mill Road near the existing intersection with Poultry Road. The new facility would employ 1,427 workers who would move from the existing facility in Washington DC. The following sections describe the process to calculate the number of future vehicle trips that would be produced by the Action Alternative.

Action Alternative Trip Generation

The proposed site would employ 1,427 production and administrative staff. The production staff would be present during their shift hours. Administrative staff would be present during the daytime shift and are expected to arrive in a similar pattern as a typical government office. **Figure 5-9** contains a breakdown of number of employees by time of day.

| Shift | Total Employees | Production Staff | Administrative Staff | Shift Hours |
|----------|--------------------|------------------|-------------------------|------------------|
| Day | 1,138 | 884 | 254 | 6:30 AM–3:00 PM |
| Evening | 168 | 168 | | 2:30 PM-11:00 PM |
| Midnight | 166 | 166 | | 10:30 PM–7:00 AM |
| TOTAL | 1,472 | 1,218 | 254 | |

Figure 5-9: Total Trips Generated

The *ITE Trip Generation Manual* 9th Edition was referenced to provide guidance regarding the number of administration employees who would arrive during the shift peak hour and external roadway peak hour. The ITE Land Use Code 715 (Single Tenant Office Building) provided the best match to the proposed facility because it closely matches the proposed land use and has been studied more than 35 times by ITE (ITE 2012). The resultant trips calculated by the ITE manual were subtracted from the total administrative trips to estimate the number of administrative trips that would occur between 6:00 AM and 8:00 AM and 3:00 PM and 5:00 PM. These values were then divided by two to estimate the number of administrative trips and afternoon shift peak hour. Administrative trips were assumed to be all inbound during the BEP AM peak hour and all outbound during the BEP PM peak hour as a worst-case scenario. **Figure 5-10** presents the administrative trip pattern.

| Figure | 5-10: | Administrative | Arrival | Pattern |
|--------|-------|----------------|---------|-----------|
| iguic | 0 10. | Administrative | /u | / accorri |

| | Arrivals Outside of Shift Peak Hour (ITE Calculated) | | Arrivals During Shift Peak Hour (254 staff minus ITE calculated value/2) | | |
|---------------|---|-------|---|----|--|
| | AM | PM | AM | PM | |
| Daytime Staff | 135* | 130** | 60 | 62 | |

* ITE Land Use Code 715 (0.53 X 254 administrative staff)

** ITE Land Use Code 715 (0.51 X 254 administrative staff)

The trips of the production staff and administrative employees who would arrive during the same AM and PM peak hours were combined, resulting in 944 and 946 peak hour trips, respectively. The total administrative employee trips generated during the external roadway AM and PM peak hour would be 135 and 130, respectively. **Figure 5-11** presents the results.

| Figure | 5-11: | Total | Trips | Generated |
|--------|-------|---------------|-------|-----------|
| iguic | 0-11. | <i>i</i> otur | inp3 | Ocheratea |

| | Peak Arrival Time | AM | Peak Departure Time | РМ |
|--------------------------|-------------------|-----|---------------------|-----|
| Shift Peak Hour | 6:00 – 7:00 AM | 944 | 3:00 – 4:00 PM | 946 |
| Roadway System Peak Hour | 7:45 – 8:45 AM | 135 | 5:00 – 6:00 PM | 130 |

Based on the M-NCPPC scoping form, the study assumes the shift peak hour is the worst-case scenario in terms of trips generated and assess this impact for the study area intersections.

Action Alternative Parking and Modal Split

NCPC recommends that federal agencies located beyond 2,000 feet from a Metro station provide a parking ratio of one space per every two employees. Visitor and government vehicle parking spaces are exempt from the NCPC parking ratio. The new facility is expected to employ 1,138 daytime employees. The Project Team (A/E) recommends two parking ratios to cover BEP employees depending on the staff type as follows:

- All production staff would follow a 1:1 parking ratio
- All administrative staff would follow a 1:2 parking ratio

Figure 5-12 details how the 1,179 parking spaces, would be categorized.

Figure 5-12: Categorized Parking Spaces

| Employee | Number of Parking Spaces | Parking Ratio |
|------------------------------|--------------------------|---------------|
| Daytime Production Staff | 884 | 1:1 |
| Daytime Administrative Staff | 127 | 1:2 |
| Overlap of Other Shifts | 168 | 1:1 |

The recommended 1:1 parking ratio for production staff is based on several factors, including impact to the BEP mission, transit availability, and union agreements:

 <u>BEP MISSION</u>: As noted in the April 2018 Government Accountability Office report titled *Options* for and Costs of a Future Currency Production Facility, "The BEP is not an ordinary government agency requiring an ordinary government building. The BEP is a manufacturing facility – a printing plant – which produces an iconic commodity trusted worldwide." As such, BEP employees are not typical government employees who have wide latitude on work center arrival and departure times.
BEP production and production support employees must be at their respective work center at specific times or the BEP production process comes to a halt.

There is approximately a 30-minute overlap of production staff employees to ensure continuity of printing press operations. Production presses cannot be taken off-line in order to facilitate a shift change, because the resulting shut down/restart process will significantly increase product spoilage and production costs. As such, BEP requires enough parking spaces to accommodate both the out-going and in-coming production and production support workers.

BEP has agreements with a number of unions that represent the production workers. These agreements include the start and end of shift times.

2. <u>METRORAIL TRANSIT AVAILABILITY:</u> Access to BEP by Metrorail would require employees to ride the Metro Green or Yellow Line to Greenbelt Metro Station, transfer to a USDA shuttle bus that would drop them off at the pedestrian gate entrance, and then they would have a short walk to the BEP building entrance. For BEP production staff to arrive in time for the daytime shift, they must board a 6:00 AM USDA shuttle bus at the Greenbelt Station. Only the first Green Line or Yellow Line train on weekdays is scheduled to arrive before 6 AM (5:51 and 5:53 AM) at Greenbelt Station (WMATA 2019). The USDA shuttle bus will take 10-12 minute to drive to the BEP security gate. After departing the bus, an additional 15-20 minutes must be allocated to cover the time for employees to pass through site security and change into BEP provided uniforms before starting their shift.

For employees arriving for the 6:30 AM shift, the Metrorail schedule creates a single point of mission failure given that there is only one train arriving on each line that could meet the 6:00 AM USDA shuttlebus. It could endanger the mission to assume all employees will successfully catch one of these trains and that the trains will operate on time each weekday of the year.

While the current BEP staff modal split for public transportation is 44%, this is due to the proximity of BEP to the center of the Metrorail hub and spoke system and a station is located within a five-minute walk. The 44% represents the percentage of all BEP employees and may represent a majority of administrative workers who have the flexibility to arrive between 6:00 and 9:00 AM each weekday.

Figure 5-14 presents the distribution of employees' residences by zip code and reveals that a sizable number of employees live in southeastern Prince George's County, Charles County, and Stafford County (VA), well outside the limits of WMATA's Metrorail lines.

- 3. <u>METROBUS TRANSIT AVAILABILITY:</u> One Metrobus route serves the BEP facility (Route 87), but an employee would need to reside in Laurel, MD to access the bus (less than 20 current employees live in Laurel).
- MARC TRANSIT AVAILABILITY: The first MARC Train from Baltimore to Greenbelt Station could meet the USDA 6:00 AM shuttle departure, but shift staff ending their shift at 3:00 PM would have to wait 2 hours before they could board a train home (MDOT, 2019).

MARC Trains from Washington, DC, in the morning do not arrive until after the start of the daytime shift.

5. <u>CARPOOL OPTION</u>: Carpools could help to offer production staff another transportation option. The MWCOG 2016 State of the Commute indicated that 5.4% of commuters carpool on a daily basis and up 7% carpooled when traveling to work less than 5 days per week (MWCOG 2016). Based on a comparison of the federal facilities in the national capital region, the highest percent of commuters that traveled in a carpool did not exceed 12% These values are presented in **Figure 5-13**.

Figure 5-13: Comparison of Carpool Percentages among DC-area Federal Facilities

| Federal Facility | Percent that Carpooled |
|----------------------------|------------------------|
| 2013 NSA Bethesda TMP | 11.3% |
| 2014 JBAB TMP | 10.5% |
| 2015 NRL TMP | 5.5% |
| 2013 Carderock TMP | 10.7% |
| 2014 Naval Observatory TMP | 7.6% |
| 2013 NSF Arlington TMP | 9.0% |
| 2015 Navy Yard TMP | 10.2% |

Source: Transportation Management Plans prepared for NAVFAC by Louis Berger



Figure 5-14: Distribution of Employee Zip Codes

Based on this analysis, 1,179 parking spaces would be needed to accommodate daytime employees (1,011) and the maximum number of staff from the evening or overnight shifts (168).

Based on the M-NCPPC scoping form, about 10% of administrative employees (equivalent to 2% of all daytime employees) would carpool. Assuming a 3-person per vehicle occupancy for carpools, carpoolers would require 8 parking spaces, leaving 1,003 parking spaces for SOVs. This would result in SOVs representing 47% of administrative employees (equivalent to 88% of all daytime employees). The remaining 10% would represent those who would opt to take transit or use a bicycle to commute. Because of the site location, no employees are expected to commute by walking. **Figure 5-15** presents the proposed modal splits.

| Travel Mode | Percent | Persons | Vehicles |
|-------------|---------|---------|----------|
| SOV | 88% | 1,003 | 1,003 |
| Carpool | 2% | 23 | 8 |
| Transit | 9% | 100 | N/A |
| Bicycle | 1% | 11 | N/A |
| TOTAL | 100% | 1,138 | 1,011 |

Figure 5-15: Proposed BEP Modal Split

Alternative Trip Distribution

The TIS relied on two methods to develop trip distribution patterns for BEP employees. Zip codes for existing employees were used to develop a trip distribution. Based on the zip code database and time of day representing the employee peak hour, employee trips were assigned to the major freeways (e.g., the BW Parkway or Capital Beltway) to travel to the proposed site. The employee survey administered in September 2019 was also evaluated to develop a trip distribution. The survey indicated that many employees would travel on several alternative routes, including Sunnyside Avenue and Powder Mill Road, east of the BW Parkway.

The TIS relied on an average of both methods to capture a combination of freeway use and alternative route options. Because most of the employees live in Prince George's County and southern Maryland, the current residence of the employees is not expected to change as a result of a change in their job site location. Based on the zip codes, most of the employees would arrive from south and west of the proposed site. **Figure 5-16** contains the Action Alternative trip distribution, **Figure 5-17** contains the vehicle trips by route, and **Figure 5-18** illustrates the Action Alternative trip distribution.

Figure 5-16: Proposed BEP Trip Distribution

| Route | Zip Code | Survey Results | Average |
|---|----------|-------------------|---------|
| I-95 (Capital Beltway) from the West | 22.5% | 2.0% | 12% |
| I-95 (Capital Beltway) from the East | 31.5% | 17% | 24% |
| Baltimore-Washington Parkway from the South | 32.0% | 28% | 30% |
| Baltimore-Washington Parkway from the North | 9.5% | 6% | 8% |
| Powder Mill Road from the West | 0.5% | 15% | 8% |
| Powder Mill Road from the East | 0.5% | 9% | 5% |
| MD 201 (Edmonston Road) from the North | 1.5% | 7% | 4% |
| Sunnyside Avenue from the West | 0.0% | 14% | 7% |
| MD 201 from the south | 2.0% | 2% | 2% |
| TOTAL | 100% | 100% | 100% |

Figure 5-17: Proposed BEP Vehicle Trip Generation by Route

| Route | Trip Distribution | AM Trips | PM Trips |
|---|----------------------|----------|----------|
| I-95 (Capital Beltway) from the West | 12% | 102 | 102 |
| I-95 (Capital Beltway) from the East | 24% | 204 | 204 |
| Baltimore-Washington Parkway from the South | 30% | 255 | 255 |
| Baltimore-Washington Parkway from the North | 8% | 68 | 68 |
| Powder Mill Road from the West | 8% | 68 | 68 |
| Powder Mill Road from the East | 5% | 42 | 43 |
| MD 201 (Edmonston Road) from the North | 4% | 34 | 34 |
| Sunnyside Avenue from the West | 7% | 60 | 60 |
| MD 201 from the south | 2% | 17 | 17 |
| TOTAL (88% of total trip generation) | 100% | 850 | 851 |



Figure 5-18: Proposed BEP Trip Distribution Map

Action Alternative Forecasted Traffic Volumes

Vehicle trips generated from the Action Alternative and the No Action Alternative were combined to create the Action Alternative turning movement volumes covering the study area intersections. **Figure 5-19** shows the AM and PM peak hour Action Alternative vehicle trip generation. **Figure 5-20** shows the proposed BEP site AM and PM peak hour turning movement volumes, and **Figure 5-21** shows the Action Alternative AM and PM peak hour turning movement volumes.

Figure 5-19: BEP Vehicle Trip Generation Summary

| PROJECT | UNITS/SIZE/ | A | M PEAM TRIF | (HOUR PS | | PM PEA TR | k hour IPs |
|---|--------------------------------|-----|----------------|-------------|----|--------------|---------------|
| | CREDITS | IN | OUT | TOTAL | IN | OUT | TOTAL |
| Bureau of Engraving and Printing | | | | | | | |
| Single-Tenant Office (ITE – 715) | 254 administrative staff | 135 | 0 | 135 | 0 | 130 | 130 |
| Arrivals and Departures During Shift Peak Hour | | 60 | 0 | 60 | 0 | 62 | 62 |
| | 884 production staff | 884 | 0 | 884 | 0 | 884 | 884 |
| External Trips | | 944 | 0 | 944 | 0 | 946 | 946 |
| Transit/Bicycle Credit (includes USDA shuttle to Greenbelt Station) | 10% credit | -94 | 0 | -94 | 0 | -95 | -95 |
| External Vehicle Trips | | 850 | 0 | 850 | 0 | 851 | 851 |
| TOTAL VEHICLE TRIPS | | 850 | 0 | 850 | 0 | 851 | 851 |



Figure 5-20A: Proposed BEP Site Turning Movements – Map 1



Figure 5-20B: Proposed BEP Site Turning Movements – Map 2



Figure 5-21A: AM and PM BEP Peak Hour Action Alternative Traffic Volumes – Map 1



Figure 5-21B: AM and PM BEP Peak Hour Action Alternative Traffic Volumes – Map 2

C Traffic Analysis

Intersection Operations Comparison (CLV and HCM)

The Project Team (A/E) used Synchro[™] to calculate the vehicle delay and LOS operation based on the HCM 6th Edition method for each study area intersection, except for the MD 201 intersections with Ivy Lane and Sunnyside Avenue. The HCM 2000 method was applied for the MD 201 intersections with Ivy Lane and Sunnyside Avenue, because, as noted previously, the HCM 6th Edition method has limitations regarding special pedestrian or hold phases or the assignment of phases that do not follow the NEMA requirements.

Based on the Synchro[™] and CLV Excel-based worksheet analysis, most study intersections would operate at acceptable overall conditions during the AM and PM peak hours of the Action Alternative. However, the following signalized intersections in the study area would operate with overall unacceptable conditions (LOS E or LOS F) using the HCM 6th Edition or HCM 2000 method (average control delay exceeds 35 seconds per vehicle) or LOS C using the CLV method (CLV greater than 1,300):

- MD 201 (Edmonston Road)/Sunnyside Avenue (Intersection #6) during the AM and PM peak hours
- MD 201 (Edmonston Road)/Powder Mill Road (Intersection #8) during the PM peak hour

Compared with the No Action Alternative, the MD 201 (Edmonston Road)/Sunnyside Avenue would continue to experience an overall LOS F, but with greater delays during the AM and PM peak hours. At the MD 201 (Edmonston Road)/Powder Mill Road intersection, the PM peak hour shows a degradation from LOS D to LOS F.

Unsignalized intersection analysis requires a two-step test following the M-NCPPC Transportation Review Guidelines. If the minor approach, which is generally defined as the street of an intersection that has a lower volume relative to its cross street, has more than 100 vehicles per hour (Step 1), then proceed to Step 2 to model the intersection using CLV. If the CLV equals or exceeds 1,150, the intersection requires roadway improvements. Using the HCM 6th Edition method, all seven unsignalized intersections have lane groups and/or approaches that would operate under unacceptable conditions (LOS E or LOS F) during the morning or afternoon peak hours of the Action Alternative, including the following:

- MD 201 (Edmonston Road)/Beaver Dam Road (Intersection #7)
 - Westbound Beaver Dam Road during the AM and PM peak hours would operate at LOS F and experience worse delays in the Action Alternative than in the No Action Alternative.
 - However, the peak hour volumes for the minor approach are less than 100 vehicles, thus the intersection is deemed to be operating acceptably and no further analysis is required.
- MD 201 (Edmonston Road)/Odell Road (Intersection #9)
 - Eastbound Odell Road during the AM and PM peak hours would operate at LOS F and experience worse delays in the Action Alternative than in the No Action Alternative.

- Westbound Odell Road during the AM peak hour would operate at LOS E and experience worse delay under the Action Alternative than under the No Action Alternative.
- Westbound shared through-right lane of Odell Road during the AM peak hour.
- However, peak hour volumes for the minor approaches are less than 100 vehicles, thus the intersection is deemed to be operating acceptably and no further analysis is required.
- Powder Mill Road/Poultry Road (Intersection #10)
 - Eastbound Powder Mill Road during the AM and PM peak hours. The AM peak hour would degrade from LOS A during the No Action Alternative to LOS F under the Action Alternative. During the PM peak hour, the eastbound approach would experience LOS F, but with worse delays under the Action Alternative compared to the No Action Alternative.
 - Westbound Powder Mill Road during the AM peak hour, degrading from LOS B under the No Action Alternative to LOS F under the Action Alternative.
 - Southbound Poultry Road during the PM peak hour, degrading from LOS A under the No Action Alternative to LOS F under the Action Alternative.
 - The peak hour volumes for the minor approaches are greater than 100 vehicles, triggering a review of the intersection with the CLV method. The intersection has an AM peak hour CLV of 1,631 and a PM peak hour CLV of 1,611, exceeding the 1,150 CLV threshold that triggers further analysis. Since the intersection will operate as the site driveway, improvements to its operation will be part of the site design process and not as a mitigation measure.
- Powder Mill Road/Research Road (Intersection #11)
 - Northbound Research Road during the PM peak hour would degrade from LOS C under the No Action Alternative to LOS E under the Action Alternative.
 - However, the peak hour volumes for the minor approaches are less than 100 vehicles, thus the intersection is deemed to be operating acceptably and no further analysis is required.
- Powder Mill Road/Springfield Road (Intersection #12)
 - During the AM peak hour, the southbound approach would degrade from LOS D to LOS F.
 During the PM peak hour, the LOS F delays under the No Action Alternative would be longer than the delays under the Action Alternative.
 - The peak hour volumes for the minor approaches are greater than 100 vehicles, triggering a review of the intersection with the CLV method. The intersection has an AM peak hour CLV of 1,059 and a PM peak hour CLV of 1,270, exceeding the 1,150 CLV threshold that triggers further analysis.
 - The intersection is in a priority preservation area and within the jurisdiction of USDA and NPS. To limit the impact to forest conservation and natural visibility, the goal of mitigation will be to improve its overall LOS to an acceptable operation based on HCM method and not CLV.
- Powder Mill Road/MD 295 (BW Parkway) Southbound Ramps (Intersection #13)

- Southbound BW Parkway Southbound Off-Ramp during the AM and PM peak hours would operate at LOS F, but with longer delays under the Action Alternative than under the No Action Alternative.
- Southbound left turn lane of BW Parkway Southbound Off-Ramp during the AM and PM peak hours.
- The peak hour volumes for the minor approaches are greater than 100 vehicles, triggering a review of the intersection with the CLV method. The intersection has an AM peak hour CLV of 899 and a PM peak hour CLV of 1,564, exceeding the 1,150 CLV threshold that triggers further analysis.
- The intersection is in a priority preservation area and within the jurisdiction of NPS. To limit the impact to forest conservation and natural visibility, the goal of mitigation will be to improve its overall LOS to an acceptable operation based on HCM method, not the CLV method.
- Powder Mill Road/MD 295 (BW Parkway) Northbound Ramps (Intersection #14)
 - The BW Parkway northbound off-ramp during the AM and PM peak hours would degrade from LOS E under the No Action Alternative to LOS F under the Action Alternative during the AM peak hour; and would operate at LOS F during the PM peak hour under both the No Action Alternative and the Action Alternative, but with longer delays under the Action Alternative than under the No Action Alternative.
 - The northbound BW Parkway off-ramp left-turn lane would operate at LOS F during the AM and PM peak hours, but with longer delays under the Action Alternative compared with the No Action Alternative.
 - The peak hour volumes for the minor approaches are greater than 100 vehicles, triggering a review of the intersection with the CLV method. The intersection has an AM peak hour CLV of 874 and a PM peak hour CLV of 1,304, exceeding the 1,150 CLV threshold that triggers further analysis.
 - The intersection is in a priority preservation area and within the jurisdiction of NPS. To limit the impact to forest conservation and natural visibility, the goal of mitigation will be to improve its overall LOS to an acceptable operation based on HCM method and not CLV.

The CLV LOS grades for signalized intersections are depicted in **Figure 5-22** for AM and PM peak hours for the No Action Alternative. The overall signalized intersection LOS grades and worst unsignalized lane group LOS grades are depicted in **Figure 5-23** for AM and PM peak hours (HCM). **Figures 5-24** and **5-25** offer comparable depictions for the Action Alternative. **Figure 5-26** shows the results of the LOS capacity analysis and the intersection vehicle delay comparing the No Action Alternative and the Action Alternative during the AM and PM peak hours. Appendix D contains the CLV worksheets. Appendix E contains the Synchro intersection analysis results.



Figure 5-22: No Action Alternative Traffic Operations Summary – CLV Method



Figure 5-23: No Action Alternative Traffic Operations Summary – HCM Method



Figure 5-24: Action Alternative Traffic Operations Summary – CLV Method



Figure 5-25: Action Alternative Traffic Operations Summary – HCM Method

| | | | No Action Alternative Action Alternative AM Peak Hour PM Peak Hour AM Peak Hour | | | | | | | | | | | | | | n Altern | ative | | | | | | |
|----|-----------------------------------|---------------|---|-------------------------------|------------|----------|------------|--------------|-------------------------------|------------|-----|------------|--------------------|--------------|-------------------------------|------------|----------|------------|--------------|-------------------------------|------------|-------|------------|--------------------|
| | | | | AM F | Peak Ho | ur | | | PM | Peak Ho | our | | | | AM I | Peak Ho | ur | | | PM F | Peak Ho | ur | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 1 | MD 201 (Kenilworth Avenue) and | I-95 SB O | ff-Ramp | (Signaliz | ed) | | | | | | | | | | • | | | | | | | | | |
| | EB (I-95 SB Off-Ramp) | L | 0.68 | 49.7 | D | | | 0.69 | 49.7 | D | | | | 0.78 | 47.8 | D | | | 0.69 | 49.7 | D | | | |
| | EB Overall (I-95 SB Off-Ramp) | | | 49.7 | D | | | | 49.7 | D | | | Pass | | 47.8 | D | | | | 49.7 | D | | | Pass |
| | NB (Kenilworth Avenue) | Т | 0.36 | 2.6 | А | | | 0.50 | 3.3 | А | | | | 0.38 | 3.8 | А | | | 0.50 | 3.3 | А | | | |
| | NB Overall (Kenilworth Avenue) | | | 2.6 | Α | | | | 3.3 | Α | | | Pass | | 3.8 | Α | | | | 3.3 | Α | | | Pass |
| | SB (Kenilworth Avenue) | Т | 0.41 | 3.0 | А |] | | 0.57 | 4.0 | А | | | | 0.43 | 4.2 | А | | | 0.57 | 4.1 | А | | | |
| | SB Overall (Kenilworth Avenue) | | | 3.0 | Α | | | | 4.0 | Α | | | Pass | | 4.2 | Α | | | | 4.1 | Α | | | Pass |
| | Overall | | | 5.2 | Α | 606 | Α | | 5.5 | Α | 885 | Α | Pass | | 7.9 | Α | 667 | Α | | 5.5 | Α | 894 | Α | Pass |
| 2 | MD 201 (Kenilworth Avenue) and | I-95 NB O |)ff-Ramp | (Signaliz | ed) | | | | _ | | | | | | _ | | | | | | | | | |
| | WB (I-95 NB Off-Ramp) | L | 0.47 | 21.3 | С | | | 0.74 | 33.3 | С | | | | 0.42 | 18.3 | В | | | 0.74 | 33.3 | С | | | |
| | WB (I-95 NB Off-Ramp) | R | 0.89 | 34.6 | С |] | | 0.83 | 37.8 | D | | | | 1.00 | 52.7 | F | | | 0.83 | 37.8 | D | | | |
| | WB Overall (I-95 SB Off-Ramp) | | | 29.4 | С |] | | | 35.5 | D | | | Pass | | 40.9 | D | | | | 35.5 | D | | | Pass |
| | NB (Kenilworth Avenue) | Т | 0.31 | 17.8 | В |] | | 0.37 | 12.4 | В | | | | 0.41 | 21.6 | С | | | 0.37 | 12.4 | В | | | |
| | NB Overall (Kenilworth Avenue) | | | 17.8 | В |] | | | 12.4 | В | | | Pass | | 21.6 | С | | | | 12.4 | В | | | Pass |
| | SB (Kenilworth Avenue) | Т | 0.62 | 22.1 | С |] | | 0.59 | 15.1 | В | | | | 0.68 | 26.1 | С | | | 0.67 | 16.6 | В | | | |
| | SB Overall (Kenilworth Avenue) | | | 22.1 | С |] | | | 15.1 | В | | | Pass | | 26.1 | С | | | | 16.6 | В | | | Pass |
| | Overall | | | 24.7 | С | 860 | Α | | 21.3 | С | 969 | Α | Pass | | 32.2 | С | 973 | Α | | 21.7 | С | 1,051 | В | Pass |
| 3 | MD 201 (Kenilworth Avenue) and | SHA Dist | rict 3/Cre | escent Ro | oad (Sig | nalized) |) | | _ | | | | - | | _ | | | | | | | | | |
| | EB (SHA District 3) | LTR | 0.04 | 30.6 | С | | | 0.17 | 31.5 | С | | | | 0.04 | 30.6 | С | | | 0.17 | 31.5 | С | | | |
| | EB Overall (SHA District 3) | | | 30.6 | С | | | | 31.5 | С | | | Pass | | 30.6 | С | | | | 31.5 | С | | | Pass |
| | WB (Crescent Road) | LT | 0.81 | 62.7 | E | | | 0.87 | 72.7 | E | | | | 0.81 | 62.7 | E | | | 0.87 | 72.7 | E | | | |
| | WB (Crescent Road) | R | 0.27 | 31.2 | С | | | 0.26 | 31.2 | С | | | | 0.27 | 31.2 | С | | | 0.26 | 31.2 | С | | | |
| | WB Overall (Crescent Road) | | | 50.4 | D | | | | 58.0 | E | | | Fail | | 50.4 | D | | | | 58.0 | E | | | Fail |
| | NB (Kenilworth Avenue) | L | 0.73 | 62.9 | E | | | 0.60 | 62.4 | E | | | | 0.73 | 62.9 | E | | | 0.60 | 62.4 | E | | | |
| | NB (Kenilworth Avenue) | Т | 0.58 | 15.4 | В | | | 0.61 | 19.1 | В | | | | 0.73 | 18.2 | В | | | 0.61 | 19.1 | В | | | |
| | NB (Kenilworth Avenue) | R | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | А | | | | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | А | | | |
| | NB Overall (Kenilworth Avenue) | | | 16.7 | В | | | | 19.8 | В | | | Pass | | 19.1 | В | | | | 19.8 | В | | | Pass |
| | SB (Kenilworth Avenue) | L | 0.75 | 66.5 | Е | | | 0.80 | 56.0 | Е | | | | 0.75 | 66.5 | E | | | 0.80 | 54.7 | D | | | |
| | SB (Kenilworth Avenue) | TR | 0.58 | 32.5 | С | | | 0.59 | 32.0 | С | | | | 0.58 | 32.5 | С | | | 0.71 | 35.7 | D | | | |
| | SB Overall (Kenilworth Avenue) | | | 32.7 | С | | | | 33.1 | С | | | Pass | | 32.7 | С | | | | 36.0 | D | | | Pass |
| | Overall | | | 26.2 | С | 666 | Α | | 29.6 | С | 797 | Α | Pass | | 26.6 | С | 785 | Α | | 31.6 | С | 917 | Α | Pass |

| | | | | | | | No Act | ion Alte | rnative | | | | | | | | | Actio | n Alterr | native | | | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|-------------------|-----------|------------|--------------|-------------------------------|------------|-------|------------|--------------------|--------------|-------------------------------|------------|-------|------------|--------------|-------------------------------|------------|-------|------------|--------------------|
| | | | | AM I | Peak Ho | ur | | | PM | Peak Ho | our | | | | AM F | Peak Ho | ur | | | PM F | Peak Ho | ur | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 4 | MD 201 (Kenilworth Avenue) and | lvy Lane | (Signaliz | zed) ^a | | | | | | | | | | | | | | | | | | | | |
| | EB (Ivy Lane) | R | 0.14 | 0.2 | А | | | 0.18 | 0.3 | А | | | | 0.14 | 0.2 | А | | | 0.18 | 0.3 | А | | | |
| | EB Overall (Ivy Lane) | | | 0.2 | Α | | | | 0.3 | Α | | | Pass | | 0.2 | Α | | | | 0.3 | Α |] | | Pass |
| | NB (Kenilworth Avenue) | L | 0.45 | 27.4 | С | | | 0.56 | 23.4 | С | | | | 0.45 | 26.0 | С | | | 0.56 | 23.4 | С | | | |
| | NB (Kenilworth Avenue) | Т | 0.45 | 0.4 | А | | | 0.40 | 0.3 | А | | | | 0.56 | 0.5 | Α | | | 0.40 | 0.3 | А | | | |
| | NB Overall (Kenilworth Avenue) | | | 2.8 | Α | | | | 3.6 | Α | | | Pass | | 2.4 | Α | | | | 3.6 | Α | | | Pass |
| | SB (Kenilworth Avenue) | Т | 0.53 | 0.7 | А | | | 0.60 | 1.8 | Α | | | | 0.53 | 0.7 | Α | | | 0.73 | 3.4 | Α | | | |
| | SB (Kenilworth Avenue) | R | 0.01 | 0.0 | А | | | 0.01 | 0.3 | А | | | | 0.01 | 0.0 | А | | | 0.01 | 0.2 | А | | | |
| | SB Overall (Kenilworth Avenue) | | | 0.7 | Α | 1 | | | 1.8 | Α | 1 | | Pass | | 0.7 | Α | | | | 3.4 | Α | | | Pass |
| | Overall | | | 1.8 | Α | 652 | Α | | 2.4 | Α | 906 | Α | Pass | | 1.6 | Α | 652 | Α | | 3.2 | Α | 1,084 | В | Pass |
| 5 | MD 201 (Kenilworth Avenue/Edmo | onston R | oad) and | l Cherryw | ood Lar | ne (Signa | alized) | | | | | | | | <u>.</u> | | | | | | | | | |
| | EB (Cherrywood Lane) | L | 0.86 | 52.4 | D | | | 0.71 | 42.6 | D | | | | 0.86 | 52.4 | D | | | 0.71 | 42.6 | D | | | |
| | EB (Cherrywood Lane) | R | 0.34 | 38.1 | D | | | 0.92 | 73.7 | Е | | | | 0.34 | 38.1 | D | | | 0.92 | 73.7 | E | | | |
| | EB Overall (Cherrywood Lane) | | | 50.3 | D | | | | 54.1 | D | | | Pass | | 50.3 | D | | | | 54.1 | D | | | Pass |
| | NB (Kenilworth Avenue) | L | 0.88 | 33.4 | С | | | 0.77 | 24.4 | С | | | | 0.88 | 32.2 | С | | | 0.86 | 41.4 | D | | | |
| | NB (Kenilworth Avenue) | Т | 0.55 | 7.7 | А | | | 0.52 | 8.3 | А | | | | 0.71 | 10.0 | А | | | 0.52 | 8.3 | А | | | |
| | NB Overall (Kenilworth Avenue) | | | 12.1 | В | | | | 10.6 | В | | | Pass | | 13.0 | В | | | | 13.2 | В | | | Pass |
| | SB (Edmonston Road) | Т | 0.69 | 17.4 | В | | | 0.69 | 17.2 | В | | | | 0.69 | 17.4 | В | | | 0.89 | 25.9 | С | | | |
| | SB (Edmonston Road) | R | 0.54 | 16.1 | В | | | 0.48 | 14.6 | В | | | | 0.54 | 16.1 | В | | | 0.49 | 15.6 | В | | | |
| | SB Overall (Edmonston Road) | | | 17.0 | В | | | | 16.6 | В | | | Pass | | 17.0 | В | | | | 23.9 | С | | | Pass |
| | Overall | | | 19.5 | В | 980 | Α | | 21.2 | С | 1,100 | В | Pass | | 19.2 | В | 980 | Α | | 25.3 | С | 1,278 | С | Pass |
| 6 | MD 201 (Edmonston Road) and S | unnyside | Avenue | (Signaliz | zed) ^a | • | | | • | | • | | | <u> </u> | | • | | | | <u>.</u> | • | | | |
| | EB (Sunnyside Avenue) | L | 1.32 | 297.6 | F | | | 1.36 | 261.8 | F | | | | 2.05 | 605.5 | F | | | 1.36 | 261.8 | F | | | |
| | EB (Sunnyside Avenue) | R | 0.64 | 62.0 | Е | | | 1.12 | 127.0 | F | | | | 0.64 | 62.0 | E | | | 1.17 | 147.4 | F | | | |
| | EB Overall (Sunnyside Avenue) | | | 126.7 | F | | | | 168.8 | F | | | Fail | | 263.4 | F | | | | 182.8 | F | | | Fail |
| | NB (Edmonston Road) | L | 1.43 | 280.0 | F | | | 1.24 | 188.1 | F | | | | 1.43 | 280.0 | F | | | 1.24 | 188.1 | F | | | |
| | NB (Edmonston Road) | TR | 0.66 | 4.8 | А | | | 0.90 | 20.9 | С | | | | 0.90 | 15.3 | В | | | 0.90 | 20.9 | С | | | |
| | NB Overall (Edmonston Road) | | | 110.3 | F | | | | 67.3 | E | | | Fail | | 98.0 | F | | | | 67.3 | E | | | Fail |
| | SB (Edmonston Road) | Т | 1.36 | 212.8 | F | | | 1.17 | 126.6 | F | | | | 1.36 | 212.8 | F | | | 1.55 | 291.0 | F | | | |
| | SB (Edmonston Road) | R | 0.24 | 14.4 | В | | | 0.15 | 9.9 | А | | | | 0.24 | 14.4 | В | | | 0.21 | 10.4 | В | | | |
| | SB Overall (Edmonston Road) | | | 180.5 | F | | | | 109.4 | F | | | Fail | | 180.5 | F | | | | 249.2 | F | | | Fail |
| | Overall | | | 141.4 | F | 1,719 | F | | 106.1 | F | 1,702 | F | Fail | | 150.0 | F | 1,779 | F | | 164.0 | F | 2,025 | F | Fail |

| | | | | | | I | No Acti | on Alter | native | | | | | | | | | Actio | n Altern | ative | | | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|------------|-------|------------|--------------|-------------------------------|------------|-------|------------|--------------------|--------------|-------------------------------|------------|-------|------------|--------------|-------------------------------|------------|-------|------------|--------------------|
| | | | | AM F | Peak Ho | ur | | | РМ | Peak Ho | our | | | | AM F | Peak Ho | ur | | | PM F | Peak Ho | ur | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 7 | MD 201 (Edmonston Road) and B | eaver Da | m Road | (TWSC) | | | | | | | | | | | | | | | | | | | | |
| | WB (Beaver Dam Road) | LR | 3.38 | 1,753.5 | F | | | 1.69 | 739.6 | F | | | | 18.59 | Err | F | | | 0.23 | Err | F | | | |
| | WB Overall (Beaver Dam Road) | | | 1,753.5 | F | | | | 739.6 | F | | | Fail | | Err | F | | | | Err | F | | | Fail |
| | SB (Edmonston Road) | LT | 0.06 | 12.6 | В | | | 0.09 | 14.5 | В | | | | 0.09 | 17.3 | С | | | 0.09 | 14.5 | В | | | |
| | SB Overall (Edmonston Road) | | | 0.2 | | | | | 0.4 | | | | Pass | | 0.3 | | | | | 0.3 | | | | Pass |
| | Overall | | | 22.3 | | n/a | n/a | | 8.9 | | n/a | n/a | Pass | | 122.6 | | n/a | n/a | | 0.5 | | n/a | n/a | Fail |
| 8 | MD 201 (Edmonston Road) and P | owder Mi | ll Road (| Signalized | d) | | | | _ | | | | | | | | | | | | | | | |
| | EB (Powder Mill Road) | L | 0.29 | 58.4 | E | | | 0.69 | 57.3 | E | | | | 0.29 | 58.4 | E | | | 0.81 | 72.6 | E | | | |
| | EB (Powder Mill Road) | Т | 0.31 | 48.2 | D | | | 0.75 | 55.5 | E | | | | 0.50 | 52.9 | D | | | 0.75 | 55.5 | E | | | - |
| | EB (Powder Mill Road) | R | 0.00 | 0.0 | 0 | | | 0.00 | 0.0 | 0 | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | |
| | EB Overall (Powder Mill Road) | | | 51.7 | D | | | | 56.2 | E | | | Fail | | 54.2 | D | | | | 62.2 | E | | | Fail |
| | WB (Powder Mill Road) | L | 0.73 | 71.8 | E | | | 0.49 | 46.7 | D | | | | 0.91 | 101.3 | F | | | 2.52 | 755.5 | F | | | |
| | WB (Powder Mill Road) | Т | 0.32 | 40.6 | D | | | 0.27 | 32.7 | С | | | | 0.32 | 40.6 | D | | | 0.37 | 34.8 | С | | | |
| | WB (Powder Mill Road) | R | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | |
| | WB Overall (Powder Mill Road) | | | 58.0 | E | | | | 37.6 | D | | | Fail | | 74.4 | E | | | | 514.1 | F | | | Fail |
| | NB (Edmonston Road) | L | 0.92 | 61.5 | E | | | 0.93 | 65.0 | E | | | | 0.92 | 61.5 | E | | | 0.93 | 65.0 | Е | | | |
| | NB (Edmonston Road) | Т | 0.59 | 20.2 | С | | | 0.73 | 32.8 | С | | | | 0.59 | 20.2 | С | | | 0.73 | 32.8 | С | | | |
| | NB (Edmonston Road) | R | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | |
| | NB Overall (Edmonston Road) | | | 38.4 | D | | | - | 46.0 | D | | | Pass | | 38.4 | D | | | | 46.0 | D | | | Pass |
| | SB (Edmonston Road) | L | 0.13 | 39.3 | D | | | 0.49 | 60.5 | E | | | | 0.31 | 44.3 | D | | | 0.49 | 60.5 | E | | | - |
| | SB (Edmonston Road) | TR | 0.87 | 68.8 | E | | | 0.84 | 73.6 | E | | | | 0.87 | 68.8 | E | | | 0.84 | 73.6 | E | | | |
| | SB Overall (Edmonston Road) | | | 67.6 | E | | | | 71.6 | E | | | Fail | | 66.6 | E | | | | 71.6 | E | | | Fail |
| | Overall | | | 51.7 | D | 1,080 | В | | 54.7 | D | 1,225 | С | Pass | | 54.5 | D | 1,117 | В | | 164.5 | F | 1,608 | F | Fail |
| 9 | MD 201 (Edmonston Road) and O | dell Road | I (TWSC |) | | | | | | | | | | | | | | | | | | | | |
| | EB (Odell Road) | LTR | 0.29 | 66.3 | F | | | 0.35 | 63.0 | F | | | | 0.31 | 73.1 | F | | | 0.37 | 67.9 | F | | | |
| | EB Overall (Odell Road) | • | | 66.3 | F | | | | 63.0 | F | | | Fail | | 73.1 | F | | | | 67.9 | F | | | Fail |
| | WB (Odell Road) | LT | 0.08 | 48.0 | E | | | 0.03 | 46.0 | E | | | | 0.09 | 50.7 | F | | | 0.04 | 48.4 | E | | | |
| | WB (Odell Road) | R | 0.00 | 13.8 | В | | | 0.01 | 13.3 | В | | | | 0.00 | 13.8 | В | | | 0.01 | 13.7 | В | | | |
| | WB Overall (Odell Road) | 1 | | 43.7 | Е | | | | 32.9 | D | | | Fail | | 46.1 | E | | | | 34.5 | D | | | Fail |
| | NB (Edmonston Road) | LT | 0.06 | 9.5 | А | | | 0.04 | 9.9 | А | | | | 0.06 | 9.6 | А | | | 0.04 | 9.9 | А | | | |
| | NB Overall (Edmonston Road) | 1 | | 0.8 | | | | | 0.4 | | | | Pass | | 0.8 | | | | | 0.4 | | | | Pass |
| | SB (Edmonston Road) | LTR | - | 0.0 | А | | | 0.00 | 9.2 | А | | | | - | 0.0 | А | | | 0.00 | 9.3 | А | | | |
| | SB Overall (Edmonston Road) | | | 0.0 | | | | | 0.0 | | | | Pass | | 0.0 | | | | | 0.0 | | | | Pass |
| | Overall | | | 1.8 | | n/a | n/a | | 1.6 | | n/a | n/a | Pass | | 1.8 | | n/a | n/a | | 1.7 | | n/a | n/a | Pass |

| | | | | | | | No Act | ion Alte | rnative | | | | | | | | | Actio | on Alter | native | | | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|-----|------------|--------------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|-----|------------|--------------------|
| | | | | AM F | Peak Ho | ur | | | PM | Peak Ho | our | | | | AM F | Peak Ho | ur | | | PM P | eak Hou | ır | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 10 | Powder Mill Road and Poultry Roa | ad (AWSC | C) | | | | | | | | | | | | | | | | | | | | | |
| | EB (Powder Mill Road) | LT | 0.25 | 8.9 | А | | | 1.02 | 59.3 | F | | | | 1.06 | 72.8 | F | | | 1.92 | 283.6 | F | | | |
| | EB Overall (Powder Mill Road) | | | 8.9 | Α | | | | 59.3 | F | | | Fail | | 72.8 | F | | | | 283.6 | F | | | Fail |
| | WB (Powder Mill Road) | TR | 0.51 | 11.3 | В | | | 0.45 | 11.7 | В | | | | 1.09 | 76.1 | F | | | 0.89 | 29.3 | D | | | |
| | WB Overall (Powder Mill Road) | | | 11.3 | В | | | | 11.7 | В | | | Pass | | 76.1 | F | | | | 29.3 | D | | | Fail |
| | SB (Poultry Road) | LR | 0.00 | 8.3 | А | | | 0.02 | 9.7 | А | | | | 0.00 | 10.3 | А | | | 1.92 | 354.3 | F | | | |
| | SB Overall (Poultry Road) | | | 0.0 | - | | | | 9.7 | Α | | T | Pass | | 0.0 | - | | | | 354.3 | F | | | Fail |
| | Overall | | | 10.6 | В | n/a | n/a | | 45.6 | E | n/a | n/a | Fail | | 74.6 | F | n/a | n/a | | 276.8 | F | n/a | n/a | Fail |
| 11 | Powder Mill Road and Research R | load (TW | SC) | | | | | | | | | | | | | | | | | | | | | |
| | NB (Research Road) | L | 0.06 | 14.6 | В | | | 0.16 | 24.7 | С | | | | 0.11 | 25.1 | D | | | 0.30 | 48.2 | E | | | |
| | NB Overall (Research Road) | | | 14.6 | В | | | | 24.7 | С | | T | Pass | | 25.1 | D | | | | 48.2 | E | | | Fail |
| | Overall | | | 0.4 | | n/a | n/a | | 0.7 | | n/a | n/a | Pass | | 0.4 | | n/a | n/a | | 1.0 | | n/a | n/a | Pass |
| 12 | Powder Mill Road and Springfield | Road (T) | NSC) | | | | | | | | | | | | | | | | | | | | | |
| | EB (Powder Mill Road) | L | 0.01 | 9.2 | А | | | 0.02 | 8.3 | А | | | | 0.01 | 11.4 | В | | | 0.02 | 8.3 | Α | | | |
| | EB Overall (Powder Mill Road) | | | 0.3 | | | | | 0.3 | | | | Pass | | 0.3 | | | | | 0.2 | | | | Pass |
| | SB (Springfield Road) | LR | 0.61 | 31.1 | D | | | 1.37 | 229.8 | F | | | | 1.20 | 184.1 | F | | | 2.38 | 693.7 | F | | | |
| | SB Overall (Springfield Road) | | | 31.1 | D | | | | 229.8 | F | | T | Fail | | 184.1 | F | | | | 693.7 | F | | | Fail |
| | Overall | | | 5.6 | | n/a | n/a | | 52.9 | | n/a | n/a | Fail | | 23.1 | | n/a | n/a | | 125.2 | | n/a | n/a | Fail |
| 13 | Powder Mill Road and MD 295 SB | Ramps (| TWSC) | | | | | | | | | | | | | | | | | | | | | |
| | WB (Powder Mill Road) | L | 0.10 | 8.5 | А | | | 0.21 | 11.5 | В | | | | 0.10 | 8.5 | А | | | 0.30 | 15.2 | С | | | |
| | WB Overall (Powder Mill Road) | | | 1.7 | |] | | | 3.7 | | | | Pass | | 1.0 | | | | | 5.0 | | | | Pass |
| | SB (MD 295 SB Off-Ramp) | L | 1.35 | 223.1 | F | | | 2.87 | 929.9 | F | | | | 2.33 | 668.5 | F | | | 4.54 | 1,718.4 | F | | | |
| | SB (MD 295 SB Off-Ramp) | TR | 0.43 | 15.1 | С | | | 0.21 | 11.3 | В | | | | 0.96 | 70.8 | F | | | 0.21 | 11.3 | В | | | |
| | SB Overall (MD 295 SB Off-Ramp) | | | 129.6 | F | | | | 619.4 | F | | | Fail | | 357.1 | F | | | | 1,141.5 | F | | | Fail |
| | Overall | | | 50.5 | | n/a | n/a | | 151.7 | | n/a | n/a | Fail | | 121.3 | | n/a | n/a | | 231.3 | | n/a | n/a | Fail |

| | | | | | | | No Act | ion Alte | mative | | | | | | | | | Actio | n Alterr | ative | | | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|------|------------|--------------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|------|------------|--------------------|
| | | | | AM F | Peak Ho | ur | | | PM I | Peak Ho | our | | | | AM F | Peak Hou | ur | | | PM P | eak Hou | ur | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 14 | Powder Mill Road and MD 295 NB | Ramps (| TWSC) | | | | | | | | | | | | | | | | | | | | | |
| | EB (Powder Mill Road) | L | 0.15 | 10.2 | В | | | 0.46 | 14.4 | В | | | | 0.16 | 10.5 | В | | | 0.57 | 16.5 | С | | | |
| | EB Overall (Powder Mill Road) | | | 2.2 | | | | | 4.2 | | | | Pass | | 2.2 | | | | | 5.4 | | | | Pass |
| | NB (MD 295 NB Off-Ramp) | L | 0.66 | 67.9 | F | | | 2.59 | 991.1 | F | | | | 3.11 | 1020.3 | F | | | 4.22 | 1860.5 | F | | | |
| | NB (MD 295 NB Off-Ramp) | TR | 0.20 | 12.4 | В | | | 0.14 | 15.5 | С | | | | 0.20 | 12.4 | В | | | 0.14 | 16.3 | С | | | |
| | NB Overall (MD 295 NB Off-Ramp) |) | | 37.2 | E | | | | 599.3 | F | | | Fail | | 796.1 | F | | | | 1119.8 | F | | | Fail |
| | Overall | | | 5.8 | | n/a | n/a | | 38.3 | | n/a | n/a | Fail | | 217.2 | | n/a | n/a | | 67.0 | | n/a | n/a | Fail |
| 15 | Powder Mill Road and Soil Conse | rvation R | oad (Sig | nalized) | - | | | | | - | - | | | - | | | | | | | | | | |
| | EB (Powder Mill Road) | Т | 0.46 | 30.5 | С | | | 0.74 | 37.6 | D | | | | 0.46 | 30.5 | С | | | 0.83 | 43.5 | D | | | |
| | EB (Powder Mill Road) | R | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | Α | | | | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | А | | | |
| | EB Overall (Powder Mill Road) | | | 30.5 | С | | | | 37.6 | D | | | Pass | | 30.5 | С | | | | 43.5 | D | | | Pass |
| | WB (Powder Mill Road) | L | 0.36 | 42.2 | D | | | 0.41 | 53.1 | D | | | | 0.36 | 42.2 | D | | | 0.41 | 53.1 | D | | | |
| | WB (Powder Mill Road) | Т | 0.51 | 20.8 | С | | | 0.48 | 22.3 | С | | | | 0.58 | 22.3 | С | | | 0.48 | 22.3 | С | | | |
| | WB Overall (Powder Mill Road) | | | 24.0 | С | | | | 25.4 | С | | | Pass | | 24.9 | С | | | | 25.4 | С | | | Pass |
| | NB (Soil Conservation Road) | L | 0.58 | 22.5 | С | | | 0.84 | 30.9 | С | | | | 0.58 | 22.5 | С | | | 0.84 | 30.9 | С | | | |
| | NB (Soil Conservation Road) | R | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | |
| | NB (Soil Conservation Road) | | | 22.5 | С | | | | 30.9 | С | | | Pass | | 22.5 | С | | | | 30.9 | С | | | Pass |
| | Overall | | | 24.7 | С | 639 | А | | 31.2 | С | 1001 | В | Pass | | 25.1 | С | 681 | А | | 33.1 | С | 1044 | В | Pass |

Notes:

EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound

LOS = Level of Service

V/C = Volume-to-Capacity ratio

LTR = left / through / right lanes

LTR/LTR = No-Build/Build with Mitigation

TWSC = Two-way STOP-Controlled unsignalized intersection (TWSC intersections do not have an overall LOS)

AWSC = All-way STOP-Controlled unsignalized intersection

Delay is Measured in Seconds Per Vehicle.

Red cells denote intersections or approaches operating at unacceptable conditions.

^a Highway Capacity Manual 2000 results (Intersections #4 and #6)

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Intersection Queueing Comparison

SimTraffic[™] was used to calculate the 95th percentile queue lengths. For both the No Action Alternative and the Action Alternative, the SimTraffic[™] simulations have a statistical error of plus or minus 5 error at the 95% confidence interval for the AM peak hour and 5% error for the PM peak hour simulations.

Compared to the No Action Alternative, the Action Alternative would have four new intersections with failing queues during the AM peak hour and no change in the number of intersections with failing queues during the PM peak hour. Under the No Action Alternative, five intersections would have failing queues in the AM peak hour; under the Action Alternative, nine intersections would have failing queues in the AM peak hour. In the PM peak hour, the No Action Alternative would have five intersections with failing queues, compared with five intersection in the PM peak hour under the Action Alternative.

Based on the SimTraffic[™] analysis, the following intersection lane groups would experience failing queue lengths in the Action Alternative.

- MD 201 (Kenilworth Avenue)/I-95 NB Off-Ramp (Intersection #2)
 - Under the No Action Alternative, the I-95 northbound off-ramp westbound right-turning movement would have acceptable queue lengths during the AM peak hour but would have failing queue lengths under the Action Alternative. Mitigation would be required to improve the queues of this turning movement.
- MD 201 (Kenilworth Avenue)/SHA District 3 Driveway/Crescent Road (Intersection #3)
 - The MD 201 (Kenilworth Avenue) northbound right-turning movement would have a failing queue length during the AM peak hour, while this movement would have an acceptable queue length under the No Action Alternative. Mitigation would be required to improve the queues of this turning movement.
- MD 201 (Kenilworth Avenue)/Ivy Lane (Intersection #4)
 - The MD 201 (Kenilworth Avenue) northbound left-turning movement would have a failing queue length during the AM peak hour, while this movement would have an acceptable queue length under the No Action Alternative. Mitigation would be required to improve the queues of this turning movement.
 - The MD 201 (Kenilworth Avenue) northbound through movement would have a failing queue length during the AM peak hour, while this movement would have an acceptable queue length. Mitigation would be required to improve the queues of this turning movement.
- MD 201 (Kenilworth Avenue/Edmonston Road)/Cherrywood Lane (Intersection #5)
 - The Cherrywood Lane eastbound left-turning movement would have a failing queue during the AM peak hour under both the No Action Alternative and the Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, so no further analysis is required.
 - The MD 201 (Kenilworth Avenue/Edmonston Road) northbound left-turning movement would have a failing queue during the AM peak hour under the Action Alternative. Under

the No Action Alternative, this lane would have acceptable queue lengths. Mitigation would be required to improve the queues of this turning movement.

- The MD 201 (Kenilworth Avenue/Edmonston Road) northbound through movement would have a failing queue during the AM peak hour under the Action Alternative. Under the No Action Alternative, this lane would have acceptable queue lengths. Mitigation would be required to improve the queues of this turning movement.
- MD 201 (Edmonston Road)/Sunnyside Avenue (Intersection #6)
 - The Sunnyside Avenue eastbound right-turning movement would have failing queue lengths during the AM and PM peak hours under both the No Action Alternative and the Action Alternative; however, queueing would increase by less than 150 feet under the Action Alternative, so no further analysis is required.
 - The MD 201 (Edmonston Road) northbound left-turning movement would have failing queue lengths during the AM and PM peak hours under both the No Action Alternative and the Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, so no further analysis is required.
 - The MD 201 (Edmonston Road) southbound through movement would have failing queues during the AM and PM peak hours under both the No Action Alternative and the Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, so no further analysis is required.
 - The MD 201 (Edmonston Road)) southbound right-turning movement would have failing queues during the AM and PM peak hours under both the No Action Alternative and the Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, so no further analysis is required.
- MD 201 (Edmonston Road)/Powder Mill Road (Intersection #8)
 - The Powder Mill Road eastbound left-turning movement would have failing queues during the PM peak hour under both the No Action Alternative and the Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, so no further analysis is required.
 - The Powder Mill Road eastbound right-turning movement would have failing queues during the AM and PM peak hours. This lane would also have failing queues under the No Action Alternative during the AM peak hour, but queuing would not increase by more than 150 feet under the Action Alternative, so no further AM peak hour analysis required. The PM peak hour queue would have an acceptable length under the No Action Alternative, but the failure in the PM peak hour would be unique to the Action Alternative; therefore, PM peak hour mitigation would be required.
 - The Powder Mill Road westbound left-turning movement would have failing queues during the PM peak hour but would have acceptable queues under the No Action Alternative. Mitigation would be required to improve the queues of this turning movement.
 - The Powder Mill Road westbound right-turning movement would have failing queues during the AM and PM peak hours under both the No Action Alternative and the Action

Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, so no further analysis is required.

- The MD 201 (Edmonston Road) northbound left-turning movement would have a failing queue during the PM peak hour under both the No Action Alternative and the Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, so no further analysis is required.
- The MD 201 (Edmonston Road) northbound right-turning movement would have a failing queue during the PM peak hour under both the No Action Alternative and the Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, so no further analysis is required.
- The MD 201 (Edmonston Road) southbound left-turning movement would have failing queues during the AM and PM peak hours, whereas queues under the No Action Alternative would have acceptable lengths. Mitigation would be required to improve the queues of this turning movement.
- The MD 201 (Edmonston Road) southbound through right movement would have a failing queue during the AM peak hour under both the No Action Alternative and the Action Alternative; however, queuing would not increase by more than 150 feet under the Action Alternative, so no further analysis is required.
- Powder Mill Road/Poultry Road (Intersection #10)
 - The eastbound left-through movement queues would exceed the available storage during the AM and PM peak hours. The AM peak hour queue in this lane would operate within its storage under the No Action Alternative but would fail in the PM peak hour. The PM peak hour queue under the Action Alternative would increase by more than 150 feet from the No Action Alternative. The queues at this intersection would be improved as part of the design for site access.
 - The westbound through-right movement queue would fail during the AM peak hour.
 Queues in this lane would operate within their storage under the No Action Alternative.
 The queues at this intersection would be improved as part of the design for site access.
- Powder Mill Road/MD 295 (BW Parkway Southbound Off-Ramp) (Intersection #13)
 - The MD 295 (BW Parkway Southbound Off-Ramp) left-turning movement would have failing queues during the AM and PM peak hours under both the No Action Alternative and the Action Alternative, so no further analysis is required.
- Powder Mill Road/MD 295 (BW Parkway Northbound Off-Ramp) (Intersection #14)
 - The MD 295 (BW Parkway Northbound Off-Ramp) left-turning movement would have failing queues during the AM and PM peak hours under both the No Action Alternative and the Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, so no further analysis is required.

The remaining intersections in the study area would have acceptable queue lengths.

The results of the queuing analysis for both signalized and unsignalized intersections under the No Action and Action Alternatives are presented in **Figure 5-27**. The percentile values are expressed in feet, and an average car plus space between the next vehicle requires roughly 25 feet. Appendix H contains the SimTraffic Queuing analysis results.

| | | | | | No Action | Alternative | Action A | ternative |
|----|----------------------------------|-------------|---------------|---|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | Turning Bay/Link Length (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 1 | MD 201 (Kenilworth Avenue) | and I-95 SE | B Off-Ran | np (Signaliz | zed) | | | |
| | I-95 SB Off-Ramp | EB | L | 325 | 60 | 77 | 126 | 72 |
| | I-95 SB Off-Ramp | EB | L | 1540 | 138 | 309 | 208 | 259 |
| | I-95 SB Off-Ramp | EB | R | 1540 | 76 | 242 | - | 157 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 4600 | 114 | 158 | 139 | 157 |
| | MD 201 (Kenilworth Avenue) | SB | Т | 1400 | 80 | 132 | 95 | 117 |
| 2 | MD 201 (Kenilworth Avenue) | and I-95 NB | Off-Ram | np (Signaliz | ed) | | | |
| | I-95 NB Off-Ramp | WB | L | 400 | 188 | 271 | 201 | 262 |
| | I-95 NB Off-Ramp | WB | L | 1580 | 233 | 320 | 637 | 310 |
| | I-95 NB Off-Ramp | WB | R | 1580 | 301 | 254 | 2040 | 260 |
| | I-95 NB Off-Ramp | WB | R | 300 | 276 | 240 | 372 | 234 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 250 | 99 | 122 | 147 | 123 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 1400 | 122 | 162 | 165 | 153 |
| | MD 201 (Kenilworth Avenue) | SB | Т | 680 | 181 | 162 | 183 | 169 |
| 3 | MD 201 (Kenilworth Avenue) | and SHA Di | strict 3/C | Crescent Ro | oad (Signaliz | ed) | | |
| | SHA District 3 | EB | LTR | 130 | 31 | 37 | 29 | 35 |
| | Crescent Road | WB | LT | 1080 | 151 | 180 | 155 | 193 |
| | Crescent Road | WB | R | 250 | 68 | 80 | 93 | 84 |
| | MD 201 (Kenilworth Avenue) | NB | L | 250 | 74 | 58 | 174 | 62 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 680 | 165 | 220 | 567 | 219 |
| | MD 201 (Kenilworth Avenue) | NB | R | 200 | 40 | 91 | 257 | 94 |
| | MD 201 (Kenilworth Avenue) | SB | L | 300 | 64 | 139 | 61 | 123 |
| | MD 201 (Kenilworth Avenue) | SB | TR | 740 | 73 | 77 | 73 | 94 |
| 4 | MD 201 (Kenilworth Avenue) | and Ivy Lan | e (Signa | lized) | | | | |
| | MD 201 (Kenilworth Avenue) | NB | L | 350 | 77 | 114 | 76 | 113 |
| | MD 201 (Kenilworth Avenue) | NB | L | 740 | 287 | 144 | 1069 | 140 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 740 | 323 | - | 1122 | - |
| | MD 201 (Kenilworth Avenue) | SB | Т | 1120 | 62 | 127 | 62 | 134 |

Figure 5-27: Comparison of No Action Alternative and Action Alternative AM and PM Peak Hour Queuing

Figure 5-27: Comparison of No Action Alternative and Action Alternative AM and PM Peak Hour Queuing (Continued)

| | | | | | No Action | Alternative | Action A | Iternative |
|----|----------------------------------|------------|---------------|---|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | Turning Bay/Link Length (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 5 | MD 201 (Kenilworth Avenue | e/Edmonsto | on Road) | and Cherry | wood Lane (| Signalized) | | |
| | Cherrywood Lane | EB | L | 250 | 264 | 192 | 328 | 186 |
| | Cherrywood Lane | EB | L | 750 | 616 | 213 | 824 | 208 |
| | Cherrywood Lane | EB | R | 750 | 125 | 251 | 145 | 253 |
| | MD 201 (Kenilworth Avenue) | NB | L | 750 | 623 | 179 | 1098 | 174 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 1120 | 971 | 157 | 1603 | 153 |
| | MD 201 (Edmonston Road) | SB | Т | 580 | 251 | 235 | 247 | 260 |
| | MD 201 (Edmonston Road) | SB | R | 250 | 169 | 156 | 166 | 178 |
| 6 | MD 201 (Edmonston Road) | and Sunny | side Ave | nue (Signa | lized) | | | |
| | Sunnyside Avenue | EB | L | 1400 | 469 | 1167 | 1239 | 1193 |
| | Sunnyside Avenue | EB | R | 350 | 404 | 402 | 473 | 395 |
| | MD 201 (Edmonston Road) | NB | L | 450 | 513 | 535 | 534 | 524 |
| | MD 201 (Edmonston Road) | NB | TR | 4160 | 5641 | 1417 | 2329 | 1322 |
| | MD 201 (Edmonston Road) | SB | Т | 1500 | 1902 | 2024 | 1965 | 1994 |
| | MD 201 (Edmonston Road) | SB | R | 250 | 310 | 322 | 307 | 331 |
| 7 | MD 201 (Edmonston Road) | and Beave | r Dam Ro | ad (TWSC) | | 1 | | 1 |
| | Beaver Dam Road | WB | LR | 1300 | 675 | 584 | 659 | 652 |
| | MD 201 (Edmonston Road) | NB | TR | 1500 | 49 | 26 | 40 | 22 |
| | MD 201 (Edmonston Road) | SB | LT | 1480 | 1241 | 1159 | 1251 | 1188 |
| 8 | MD 201 (Edmonston Road) | and Powde | r Mill Ro | ad (Signaliz | zed) | | | |
| | Powder Mill Road | EB | L | 250 | 106 | 332 | 94 | 341 |
| | Powder Mill Road | EB | Т | 1430 | 1156 | 759 | 1222 | 1350 |
| | Powder Mill Road | EB | R | 500 | 704 | 477 | 717 | 705 |
| | Powder Mill Road | WB | L | 250 | 250 | 129 | 292 | 278 |
| | Powder Mill Road | WB | Т | 1100 | 266 | 215 | 238 | 651 |
| | Powder Mill Road | WB | R | 40 | 72 | 63 | 58 | 54 |
| | MD 201 (Edmonston Road) | NB | L | 400 | 361 | 479 | 282 | 471 |
| | MD 201 (Edmonston Road) | NB | Т | 1480 | 368 | 663 | 286 | 666 |
| | MD 201 (Edmonston Road) | NB | R | 275 | 96 | 329 | 90 | 335 |
| | MD 201 (Edmonston Road) | SB | L | 275 | 242 | 262 | 329 | 351 |
| | MD 201 (Edmonston Road) | SB | TR | 780 | 719 | 441 | 784 | 738 |

Figure 5-27: Comparison of No Action Alternative and Action Alternative AM and PM Peak Hour Queuing (Continued)

| | Intersection Name/Street Name | | | | No Action | Alternative | Action A | Iternative | |
|----|---|---|---------------|---|--|--|--|--|--|
| ID | | Direction | Lane Group | Turning Bay/Link Length (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | |
| 9 | MD 201 (Edmonston Road) and Odell Road (TWSC) | | | | | | | | |
| | Odell Road | EB | LTR | 740 | 78 | 94 | 92 | 79 | |
| | Odell Road | WB | LT | 520 | 40 | 14 | 49 | 16 | |
| | Odell Road | WB | R | 50 | 34 | 14 | 34 | 16 | |
| | MD 201 (Edmonston Road) | NB | LT | 760 | 121 | 125 | 118 | 132 | |
| | MD 201 (Edmonston Road) | SB | LTR | 1320 | 6 | 40 | 8 | 11 | |
| 10 | Powder Mill Road and Poultry Road (AWSC) | | | | | | | | |
| | Powder Mill Road | EB | LT | 240 | 94 | 340 | 420 | 697 | |
| | Powder Mill Road | WB | TR | 1280 | 108 | 106 | 1574 | 411 | |
| | Poultry Road | SB | LR | 420 | - | 23 | - | 410 | |
| 11 | Powder Mill Road and Research Road (TWSC) | | | | | | | | |
| | Powder Mill Road | EB | TR | 1280 | - | 34 | - | 43 | |
| | Powder Mill Road | WB | TR | 950 | - | - | 58 | - | |
| | Research Road | NB | L | 65 | 39 | 49 | 48 | 48 | |
| 12 | Powder Mill Road and Springfield Road (TWSC) | | | | | | | | |
| | Powder Mill Road | EB | L | 50 | 16 | 27 | 19 | 24 | |
| | Powder Mill Road | EB | Т | 1590 | - | 3 | - | 43 | |
| | Powder Mill Road | WB | TR | 140 | 6 | - | 7 | - | |
| | Springfield Road | SB | LR | 4110 | 83 | 229 | 123 | 542 | |
| 13 | Powder Mill Road and MD 2 | 95 SB Ram | ps (TWS | C) | | | | | |
| | Powder Mill Road | EB | TR | 140 | 6 | 23 | 2 | 66 | |
| | Powder Mill Road | WB | L | 225 | 39 | 79 | 38 | 116 | |
| | Powder Mill Road | WB | Т | 520 | - | - | 3 | - | |
| | BW Parkway SB Ramp | SB | L | 25 | 58 | 56 | 55 | 57 | |
| | BW Parkway SB Ramp | SB | TR | 1020 | 196 | 1086 | 1001 | 990 | |
| 14 | Powder Mill Road and MD 2 | Powder Mill Road and MD 295 NB Ramps (TWSC) | | | | | | | |
| | Powder Mill Road | EB | L | 250 | 61 | 234 | 52 | 246 | |
| | Powder Mill Road | EB | Т | 520 | - | 185 | - | 270 | |
| | Powder Mill Road | WB | TR | 850 | 13 | 37 | 8 | 35 | |
| | BW Parkway NB Ramp | NB | L | 50 | 60 | 90 | 82 | 89 | |
| | BW Parkway NB Ramp | NB | TR | 880 | 64 | 753 | 660 | 832 | |

Figure 5-27: Comparison of No Action Alternative and Action Alternative AM and PM Peak Hour Queuing (Continued)

| | Intersection Name/Street Name | | | | No Action | Alternative | Action Alternative | |
|----|----------------------------------|-----------|---------------|---|--|--|--|--|
| ID | | Direction | Lane Group | Turning Bay/Link Length (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 15 | Powder Mill Road and So | | | | | | | |
| | Powder Mill Road | EB | Т | 850 | 146 | 214 | 142 | 227 |
| | Powder Mill Road | EB | R | 260 | 32 | 41 | 25 | 46 |
| | Powder Mill Road | WB | L | 300 | 82 | 66 | 75 | 67 |
| | Powder Mill Road | WB | Т | 780 | 180 | 201 | 203 | 207 |
| | Soil Conservation Road | NB | L | 6400 | 194 | 363 | 194 | 353 |
| | Soil Conservation Road | NB | R | 475 | - | 0 | - | - |

Notes:

1) EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound.

2) LTR = left / through / right lanes.

3) TWSC = Two-way STOP-Controlled unsignalized intersection.

4) AWSC = All-way STOP-Controlled unsignalized intersection.

5) Red cells denote lane groups whose queuing length exceeds capacity.

Entry Control Facility

The BEP facility would include an Entry Control Facility (ECF) to service passenger vehicles and a separate ECF to service trucks. TransModeler[™] Traffic Simulation Software (TransModeler[™]) can model street and highway systems integrated with traffic signals and ECFs and with other common traffic designs found in the study area. Appendix G describes the traffic model preparation, validation procedures, and calibration procedures to ensure the traffic model closely matches the existing traffic conditions.

The ECF or gate is a security checkpoint for all vehicles to pass through to access the BEP facility. Each vehicle must stop at the ECF while BEP security personnel screen the vehicle and occupants before allowing it to proceed. Similar to a tollgate along a highway, the gate could cause a queue, which could spill beyond the existing driveway onto Powder Mill Road.

The gate has four elements: separate lanes for BEP security personnel to process each vehicle as it arrives, barriers separating each lane, a stop line where each vehicle is processed, and a merging area after the processing area. Each component was coded into TransModeler[™] to best represent the conditions each vehicle experiences as it would enter the proposed BEP facility.

Gate processing times are a critical component of the analysis because they determine the delay caused by the vetting process and potential queue spilling onto the external roadways. Processing times were surveyed on October 9, 2019, between 5:30 AM and 6:30 AM at a similar BEP facility in operation in Fort Worth, Texas. The morning hours surveyed represented the morning peak during a shift change. Based on the processing times obtained through the survey, a probability triangle was created to develop a range of vehicle processing times to code into the TransModeler[™] software. These probabilities range from 10% to 90%, fitting a triangular distribution (a continuous probability distribution shaped like a triangle defined by three values: the minimum or 10th percentile value, the maximum or 90th percentile value, and the median or 50th percentile value). All processing times were used to develop the probability distribution. **Figure 5-2**8 contains the triangular probability processing percentiles.

| | 10th Percentile | 15th Percentile | 50th Percentile | 85th Percentile | 90th Percentile |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|
| Percentage used in TransModeler™ | 10% | 15% | 50% | 15% | 10% |
| Passenger Vehicles Processing Times (seconds) | 4.1 | 5.0 | 11.5 | 24.6 | 26.5 |

Figure 5-28: BEP ECF Triangular Probability Processing Times

During the morning shift change between 6:30 AM and 7:00 AM, 850 passenger vehicles are forecasted to travel through the ECF. TransModeler[™] calculated the average and maximum queue lengths. The average queue represents the average queue that would occur during multiple simulations. The maximum queue represents the worst-case queue that would occur during multiple simulations and reflects a queue that would exceed the 99th percentile queue length, which would occur less than 1% of the time.

The Project Team (A/E) evaluated four scenarios and included two, three, four, and five lanes, each with a manned gate. Based on the TransModeler[™] results for average queue lengths, all four scenarios would generate a queue less than the length of the driveway. The results for the maximum queue lengths would generate a queue that exceeds the driveway length for the scenarios with two or three lanes. Four or five lanes under the maximum queue assessment would generate a queue less than the length of the driveway. Because it is best to plan for emergency situations, the study recommends five lanes in case one or more lanes must be shut down. **Figure 5-29** contains the AM peak hour gate operations summary based on the TransModeler[™] calibrated model results.

| Vehicle Type | Number of Lanes | Driveway Length (feet) | Average Queue (Feet/vehicles) | Maximum Queue (Feet/vehicles) | Vehicle Demand (vehicles) | Vehicles Processed (vehicles) |
|-----------------|--------------------|------------------------------|-------------------------------------|-------------------------------------|---------------------------------|-------------------------------------|
| | 2 Lanes | 1,800 | 1,221/84 | 4,366/218 | 850 | 632 |
| Passenger | 3 Lanes | | 671/47 | 3,007/166 | | 664 |
| Vehicles | 4 Lanes | | 525/52 | 1,360/52 | | 798 |
| | 5 Lanes | | 139/13 | 258/25 | | 825 |

Figure 5-29: BEP AM Peak Hour Entry Control Facility Results

D Other Travel Modes

Pedestrian Network

The BARC Master Plan does not prioritize pedestrian connectivity because of the predominately agrarian and rural characteristics of the study area. The plan focuses primarily on vehicle-oriented internal circulation. Basic sidewalk accommodations and pedestrian connections would not be present under this alternative.

Under the Action Alternative, no pedestrian improvements are proposed due to the agricultural land uses surrounding the study area.

Under the No Action Alternative, there would be no measurable impacts on the pedestrian network in the study area, given the limited pedestrian facilities along Edmonston Road and because no pedestrian improvements are proposed. Under the Action Alternative, there would be no measurable impacts on the pedestrian network in the study area given the proposed site driveway would only serve vehicles and possibly bicycles. During construction, there would be no measurable impacts on the immediate pedestrian network adjacent to the proposed site because there are no pedestrian facilities in the vicinity of the proposed site.

Bicycle Network

Under the No Action Alternative, the Prince George's County Bicycle Master Plan (included in the *Approved Countywide Master Plan of Transportation* [PGC PD 2009]) recommends many bicycle facilities within the bicycle study area, and GIS data from the Prince George's County Planning Department also documents additional proposed bicycle facilities (PGC PD 2013). These

recommendations include shared bicycle lanes and multiuse paths along Kenilworth Avenue, Sunnyside Avenue, and local residential streets. The Prince George's Bikeways and Trails map shows planned bicycle lanes along Odell Road, Powder Mill Road, and Beaver Dam Road. A shared roadway is planned for Poultry Road. Shared roadways, as noted in the figures, are roadways with signed bicycle route designations or shared lane arrow pavement markings (sharrows) but not actual marked bicycle lanes. M-NCPPC recommends shared roadways on many local or residential streets in the study area, as shown on **Figure 5-30**. No dated implementation plan is included in the Master Plan; therefore, it is not clear whether any of these recommendations would be implemented by 2029. These improvements are shown as "proposed" in **Figure 5-30**.



Figure 5-30: Prince George's County Master Plan of Transportation Bikeways and Trails

Under the Action Alternative, the bicycle facilities described above would be incorporated into the study area regardless of the new facility. No changes are planned to the bicycle network beyond the planned improvements by Prince George's County and beyond the proposed site. If the County and USDA agree to implement a bicycle facility along Powder Mill Road, it is assumed that BEP would connect the Powder Mill Road bicycle facility to the BEP site via bicycle lanes along the site driveway to encourage the use of bicycles to commute to the BEP facility.

Under the No Action Alternative, impacts on the bicycle network within the study area would be direct, long term, and beneficial if the county decides to implement the planned bicycle facilities along Powder Mill, Beaver Dam, Odell and Edmonston Roads to form an interconnected bicycle network through BARC. During the construction of the bicycle network, impacts on transit and general traffic could be direct, short term, and adverse because of lane closures. Under the Action Alternative, impacts to the bicycle network within the study area would also be direct, long term, and beneficial if the county decides to implement the planned bicycle facilities along Powder Mill Road, because a bicycle connection would be provided to the proposed site. During construction, impacts on the immediate bicycle network adjacent to the proposed site would be direct, short term, and adverse because of bicycle lane closures along Powder Mill Road while the proposed site driveway is under construction. If the county does not implement the planned bicycle facilities along Powder Mill Road, there would be no measurable impact on the bicycle network in the study area under either alternative.

Public Transit

Under the No Action Alternative, changes to local bus services are expected to be ongoing as a result of WMATA initiatives, including the Metrobus Priority Corridor Network, Service Evaluation Studies, and the *Momentum – The Next Generation of Metro (Strategic Plan 2013–2025)* (WMATA 2014). An example of an improvement is the Priority Corridor Network-recommended addition of running ways, signal priorities, and bus-only lanes or queue jumpers to facilitate more efficient bus service. Further, the Momentum Strategic Plan recommends offering more eight-car trains during peak periods, which would increase the system's ability to move more passengers. These types of changes would directly affect Metrobus and Metrorail routes that currently serve or are in the vicinity of the study area (DDOT 2010; WMATA n.d.).

The No Action Alternative includes development within the study area; therefore, a moderate increase in transit trips from the area is anticipated from annual background growth and the four planned developments. Office and residential developments would likely increase rail ridership to and from the Greenbelt Metro Station during morning peak periods, with the reverse effect during afternoon peak periods, and increase local bus ridership by 2029. The USDA-operated bus shuttles are anticipated to increase service between the Greenbelt Metro Station and the GWCC to accommodate the proposed addition of employees under the No Action Alternative. Carsharing options may change over time, depending on decisions made by the individual vendors.

Under the Action Alternative, the development would generate new transit trips from the Greenbelt Metro Station and Route 87 along Powder Mill Road. New WMATA bus stops are anticipated to be added to Route 87 near the proposed driveway along Powder Mill Road to serve the new BEP facility. In addition, the USDA shuttle is also expected to serve the BEP facility and offer frequent service between the facility and the Greenbelt Metro Station. There would be no other change in levels of service or operation hours regarding transit beyond those described under the No Action Alternative. Future users arriving at the BEP site by transit would arrive by Metrobus or USDA shuttle. Transit ridership would increase imperceptibly based on the trips dispersed among several transit routes. This
could result in minimal added delays to bus Route 87 from time lost from boarding and alighting; however, the operators will most likely adjust the Route 87 routes, scheduling, and stop locations periodically (e.g., WMATA's Better Bus Program).

Parking

Under the No Action Alternative, parking would be primarily limited to BARC service vehicles and employees. Several surface parking lots would continue to serve BARC office buildings and maintenance facilities. There would be no changes to on-street parking on Powder Mill Road.

Under the Action Alternative, two parking ratios are recommended to provide adequate parking for BEP employees depending on the staff type (i.e., administrative versus production). All production staff would follow a 1:1 parking ratio, while all administrative staff would follow a 1:2 parking ratio as recommended by NCPC. The 1:1 ratio is primarily based on the lack of transit availability for the production shift. To arrive in time for the daytime shift, the production shift workers must board a 6:00 AM USDA shuttle bus at the Greenbelt Metro Station. Only the first Green or Yellow Line train on weekdays is scheduled to arrive before 6 AM (5:51 and 5:53 AM) at the Greenbelt Metro Station. Additional time must also be allocated for employees to pass through security. This transit constraint justifies the 1:1 ratio for production workers only. A surface parking lot would be provided for BEP employees with additional parking spaces for visitors that are not included in the ratios. There would be no changes to on-street parking on Powder Mill Road.

Under the No Action Alternative, there would be no measurable impacts to parking in the study area, given that there is currently no parking along Powder Mill Road and because no parking is being proposed. Under the Action Alternative, there would be direct, long term, and beneficial effects if the facility builds a surface parking lot to accommodate BEP employees.

Truck Routes

The No Action Alternative, with the addition of four planned developments, is expected to generate truck routes pertinent to each of those developments. Specific truck types and routes for the planned developments for the No Action Alternative are not known but would be expected to follow existing truck restrictions such as those in effect for BW Parkway. Under the Action Alternative, trucks (e.g., delivery trucks and moving trucks) would enter and exit the site from Poultry Road via Powder Mill Road. To limit the impact of the trucks and prevent their travel on the BW Parkway, collector roads, or local roads trucks should be routed by way of Powder Mill Road, Edmonston Road/Kenilworth Avenue, and the Capital Beltway.

Construction Impacts

Each phase of construction at the site (e.g., demolition and site preparation, foundation, frame assembly, interior construction, and landscaping) is expected to generate temporary impacts for the duration of the activity leading to site build out and occupation. The adequate provision of temporary parking for construction workers would limit any off-site impacts from illegal parking. Another expected impact on the public network is the presence of construction-related trucks on Powder Mill Road.

Parking Impacts

Construction of the proposed BEP production facility site would require a temporary parking area for construction workers and trucks. Construction parking would be limited to sites within the BEP production facility construction site and laydown areas. Laydown areas would be purposed for the storage of construction equipment and materials and would be necessary for the demolition and new construction activities on the site. The laydown areas could also serve as a parking location for contractor field offices, contractor management staff, on-site government representatives, and visitors. Construction laydown areas would be located near or at the construction sites to eliminate the need for any additional traffic control treatments and may either be temporary or used during the entire construction duration, depending on construction needs. Construction workers may also be encouraged to travel to the construction site by means other than a private vehicle to minimize impacts on the public roadway network. Pursuing an arrangement for USDA shuttles to drop-off construction workers at the site or promoting carpooling and WMATA's Metrobus Route 87 should be explored to minimize vehicular impacts and provide a means of transportation for workers who do not drive.

The number of trips to the BEP production facility site may temporarily increase from construction worker trips during the construction period. Minimizing the impacts of these trips on the network may be achieved by establishing the hours of construction activity to occur outside peak periods of the adjacent street.

Construction Truck Impact

Short-term impacts on traffic from Poultry Road at Powder Mill Road would result from trucks (e.g. dump trucks, cement mixer trucks, and other delivery trucks) as they deliver construction equipment, materials, and refuse to and from the BEP site. Dump trucks would be used to remove debris from the construction site during the demolition of the houses that currently occupy the site and during new construction. Cement mixer trucks would deliver cement for foundation and support structures, and additional trucks would deliver building materials for framing the interior and exterior walls and for installing flooring.

Based on a study conducted by the U.S. Environmental Protection Agency to develop average buildingrelated construction and demolition debris estimates, demolition of a non-residential building would create 155 pounds of waste material per square foot of construction, and construction of a new nonresidential building would generate 4 pounds of waste per square foot of construction. Waste refers to the material produced from the packaging covering the construction materials and extra raw materials such as wood, drywall, flooring material, roofing material, nails, screws, and any other leftover construction material (U.S. Environmental Protection Agency 1998). To accommodate the waste material generated by the construction, it is assumed that an empty 14-ton dump truck would need to enter the construction site via Poultry Road at Powder Mill Road. Once the truck is filled with waste, it would exit the construction site via Poultry Road at Powder Mill Road. Trucks would be directed not to use Odell Road, which is a residential street.

Constructing a new non-residential building is assumed to generate 155 pounds of construction material per square foot of new construction, including the foundation, walls, floors, and garage. It is also assumed that construction material would require a full 16-ton truck to enter the construction site via Poultry Road at Powder Mill Road. Once the material is offloaded, the truck would exit the construction site via Poultry Road at Powder Mill Road. These trucks should also be directed not to use Odell Road, which is a residential street.

Construction projects generally have peak months when most construction work could occur, resulting in several months when the maximum daily truck trips would occur each weekday morning. To avoid blocking external roadways, the construction contractor would create a construction laydown area. Given the laydown area size, the construction contractor would establish a schedule for cement trucks that may result in truck arrivals several times a day rather than all at once during the AM peak hour. The same process may occur for trucks carrying other construction materials or dump trucks lined up to haul construction waste.

In lieu of a construction plan and to estimate the impact of the trucks, the following is a conservative analysis of a peak construction scenario. The scenario incorporates the U.S. Environmental Protection Agency-based construction truck estimates using the approximated size of the buildings to estimate the total number of construction trucks required to complete the project and to estimate the daily truck volume by assuming a 250-day total construction project. This analysis creates a conservative truck estimate that would require enough room to store the trucks in the laydown areas. **Figure 5-31** contains the construction truck generation summary.

Based on the average amount of material per square foot of construction and the proposed building gross square feet, an estimated 77,500 tons of material would be transported through Poultry Road, resulting in a total of 4,844 trucks during the construction period. In addition, 143 trucks would transport 9,208 tons of waste from the site. Total truck trips through Poultry Road would be 5,502 and would include empty 14-ton dump trucks and full 16-ton trucks.

| Building | Building SF | Average Amount of Material (pounds/SF) | Tons | Truck Size | Total Trucks |
|---|----------------|---|--------|-----------------------|--------------|
| New BEP Production Facility Material ^a | 1,000,000 | 155.00 | 77,500 | 16-ton heavy truck | 4,844 |
| New BEP Production Facility Debris (Wastage) ^b | 1,000,000 | 4.00 | 2,000 | 14-ton dump truck | 143 |
| Demolish Existing Buildings ^b | 93,000 | 155.00 | 7,208 | 14-ton dump truck | 515 |
| Total Per Dav | | | 86.708 | | 5.502 |

Figure 5-31: Construction Truck Generation Summary

^a Trucks would enter the site full of construction materials and exit the site empty.

^b Trucks would enter the site empty and exit the site full of waste material.

Driveway Locational Plan

The BEP site driveway would be relocated approximately 80 feet southwest of the existing Animal Husbandry Drive intersection with Powder Mill Road, which is southwest of the current Poultry Road intersection. This relocation is proposed because of the curvature of Powder Mill Road and the presence of a bridge 200-feet southwest of Poultry Road that crosses a tributary of Beaver Dam Creek. The section of Powder Mill Road near Animal Husbandry Drive is a more tangential roadway section, and its location is more accommodating of proposed turning lanes and merge areas. The position of the proposed driveway would also accommodate the ECF and the adequate storage of vehicles entering the site. As noted previously, because it is best to plan for emergency situations, the study recommends five lanes at the entry gate in case one or more lanes must be shut down.

6. Mitigation Strategies

A Identification of Mitigation Strategies

The Project Team (A/E) determined the impacts of the Action Alternative based on CLV and HCM metrics. As previously noted, acceptable operation of a signalized intersection based on the HCM 6th Edition method is LOS D or better, while acceptable or passing operation of a signalized intersection for the CLV method is LOS C or better. Instances where an intersection would fail the CLV or HCM standard under the No Action Alternative and whose condition would worsen under the Action Alternative were targeted for mitigation. Intersections targeted for mitigation also encompassed those that would operate acceptably under the No Action Alternative, but unacceptably during the Action Alternative, based on the LOS or delay criteria as applicable to signalized or unsignalized intersections. M-NCPPC requires mitigation for unsignalized intersections operating with at least one movement on the minor street exceeding 50 seconds of delay, having more than 100 vehicles on the minor street approaches during the peak hour, and whose CLV exceeds 1,150. Intersections with queues exceeding their available storage are considered failing, but mitigation for queuing is only targeted if those intersections also would fail based on either CLV or HCM metrics.

Intersections with queues exceeding their available storage are considered failing, but mitigation for queuing is only targeted if those intersections are also failing based on either CLV or HCM metrics.

Recommended Mitigation

Figure 6-1 presents a summary of the study intersections, indications of whether they would pass the CLV, HCM, and queue tests in the Action Alternative, and if mitigation would be required as a result. A map format depicting the locations of the intersections to be mitigated is shown as **Figure 6-2**.

The intersections on Kenilworth Avenue/Edmonston Road (MD 201) between the Beltway and Cherrywood Lane (Intersections #2, #3, #4, and #5), while operating with failing queues under the Action Alternative, are substantially affected by a lane drop on MD 201 north of Cherrywood Lane. However, mitigation strategies for those intersections were not included as part of this TIS. To address the effect of the lane drop on queueing, geometric changes to MD 201 between Sunnyside Avenue and Cherrywood could remove the lane drop and improve queues; however, MD 201 crosses Beaverdam Creek, which is considered an area of critical concern as a Tier II stream. This presents a key environmental constraint. In the sensitivity analysis that was prepared as an addendum to this TIS in response to agency comments, additional queuing analyses indicated that queues would be accommodated as a result of the mitigation strategies presented in this TIS. That sensitivity analysis is provided as Appendix I.

Therefore, the following study intersections were studied for mitigation strategies for the purpose of reducing the impact on the transportation system caused by the Action Alternative:

- MD 201 (Edmonston Road)/Sunnyside Avenue (Intersection #6)
- MD 201 (Edmonston Road)/Powder Mill Road (Intersection #8)
- Powder Mill Road/Springfield Road (Intersection #12)
- Powder Mill Road/MD 295 (BW Parkway) southbound ramps (Intersection #13)

• Powder Mill Road/MD 295 (BW Parkway) northbound ramps (Intersection #14)

Even though the intersections of MD 201 (Edmonston Road)/Beaver Dam Road (Intersection #7), MD 201 (Edmonston Road)/Odell Road (Intersection #9), and Powder Mill Road/Research Road (Intersection #11) would fail based on the HCM metric, each of these intersections would have minor approach peak hour volumes that are less than 100 vehicles. Therefore, mitigation is not required.

The intersection of MD 201 (Edmonston Road)/Beaver Dam Road (Intersection #7), while not requiring mitigation, was nonetheless considered for improvements based on potential gap acceptance issues for vehicles attempting southbound left turns from Edmonston Road onto eastbound Beaver Dam Road.

The intersection of Powder Mill Road/Poultry Road (Intersection #10) would operate as the site driveway, and although it would fail the HCM metric and would have more than 100 vehicles on its minor approach, its operations would improve as part of the site design process and not as a mitigation measure.

| ID | Intersection | CLV | НСМ | Queue | Mitigation Needed | Reason for No Mitigation |
|----|--|------|------|-------|----------------------|---|
| 1 | MD 201/ I-95 SB Off-Ramp | Pass | Pass | Pass | No | CLV and HCM pass |
| 2 | MD 201/I-95 NB Off-Ramp | Pass | Pass | Fail | \checkmark | |
| 3 | MD 201/ SHA District 3/Crescent Road | Pass | Pass | Fail | \checkmark | |
| 4 | MD 201/Ivy Lane | Pass | Pass | Fail | \checkmark | |
| 5 | MD 201/Edmonston Road)/Cherrywood Lane | Pass | Pass | Fail | ~ | |
| 6 | MD 201/Sunnyside Avenue | Fail | Fail | Fail | \checkmark | - |
| 7 | MD 201/Beaver Dam Road | n/a | Fail | Fail | No | Fewer than 100 vehicles on Beaver Dam Road |
| 8 | MD 201/Powder Mill Road | Fail | Fail | Fail | \checkmark | - |
| 9 | MD 201/Odell Road | n/a | Fail | Pass | No | Fewer than 100 vehicles on Odell Road |
| 10 | Powder Mill Road/Poultry Road | n/a | Fail | Fail | No | This will be improved through site design |
| 11 | Powder Mill Road/Research Road | n/a | Fail | Pass | No | Fewer than 100 vehicles on Research Road |
| 12 | Powder Mill Road/Springfield Road | n/a | Fail | Pass | \checkmark | - |
| 13 | Powder Mill Road/MD 295 SB Ramps | n/a | Fail | Fail | \checkmark | - |
| 14 | Powder Mill Road/MD 295 NB Ramps | n/a | Fail | Fail | \checkmark | - |
| 15 | Powder Mill Road/Soil Conservation Road | Pass | Pass | Pass | No | CLV and HCM pass |

Figure 6-1: Action Alternative Intersection Mitigation Requirement Summary



Figure 6-2: Action Alternative Intersection Mitigation Map

The mitigation recommendations for each intersection were selected through an iterative process of testing a range of improvement methods that were either rejected or incorporated into the recommendation, based on their ability to improve intersection operations and limit the impact on sensitive environments. Wetland buffer zones, covering a distance of 25 feet with respect to the wetlands surrounding Indian Creek south of Powder Mill Road and west of Edmonston Road, were reviewed to determine if geometric changes to roadways would encroach the buffers (M-NCPPC n.d.b). Examples of strategies that were tested included:

- Revisions to signal control types, timings, and phasings
- Signalizing or installing roundabouts to unsignalized intersections
- Revising existing lane geometry within the existing right of way
- Adding new turn lanes or through lanes or extending existing turning lane storage bays by assuming additional right of way

As listed below, the Project Team (A/E) selected the recommended mitigation strategies for each intersection as would improve traffic operations for those intersections, resulting in either a passing LOS (based on HCM and CLV) or, if failing, would improve operations to better than under the No Action Alternative. Intersections targeted for mitigation would also result in vehicle queues that are within their available storage capacity or, if beyond their storage capacity, would be no longer than 150 feet more than queues measured for the No Action Alternative. Acceptable increases in queueing are not explicitly cited in M-NCPPC'S Transportation Review Guidelines but were agreed to as part of the Transportation Scoping Agreement in Appendix A. The suggested 150-foot queue increase is based on District Department of Transportation Comprehensive Review Requirements.

- MD 201 (Edmonston Road)/Sunnyside Avenue (Intersection #6)
 - Add a second southbound approach through lane that extends approximately 1,500 feet to the upstream MD 201 (Edmonston Road)/Beaver Dam Road intersection.
 - Add a second southbound receiving lane that extends approximately 900 feet south of the intersection.
 - Add a second northbound approach through lane that extends approximately 900 feet south of the intersection.
 - Add a second northbound receiving lane that extends approximately 1,500 feet to the upstream MD 201 (Edmonston Road)/Beaver Dam Road intersection.
 - Widen pavement on Edmonston Road in an eastward direction to avoid impacts on existing residences. The existing pavement marking the southbound through lane would be considered the westernmost extent of the roadway as it extends to Beaver Dam Road, and the easement or right of way acquisition for the mitigation's resultant four-lane section would be toward the east within jurisdiction of USDA.
 - Change the traffic signal control type from semi-actuated uncoordinated to actuatedcoordinated with a 100-second cycle length (to match the cycle lengths along MD 201 between the Beltway and Cherrywood Lane) and optimized timing splits.

- Resurface and then restripe the roadway to permit the proposed lane geometry after the USDA property easements or right of way acquisition.
- Figure 6-3 presents a conceptual rendering of these improvements.
- MD 201 (Edmonston Road)/Beaver Dam Road (Intersection #7)
 - Prohibit southbound left-turn movements into Beaver Dam Road during peak periods with posted signs to prevent safety issues associated with drivers waiting for acceptable gaps in approaching northbound MD 201 traffic. In the traffic analysis of Section 6.B, vehicles inbound for Beaver Dam Road originating upstream from the intersection with Powder Mill Road would be rerouted to continue eastbound on Powder Mill Road and turn right via Research Road to reach Beaver Dam Road.
 - Add a second northbound approach through lane extending approximately 1,500 feet to the upstream MD 201 (Edmonston Road)/Sunnyside Road intersection.
 - Add a second northbound receiving lane that extends approximately 1,200 feet to the taper of the downstream northbound right-turn lane at the MD 201 (Edmonston Road)/Powder Mill Road intersection.
 - Add a second southbound approach lane that extends approximately 1,000 feet to the upstream merge point.
 - Add a second southbound receiving lane that extends approximately 1,500 feet to the downstream MD 201 (Edmonston Road)/Sunnyside Avenue intersection.
 - Widen pavement on Edmonston Road in an eastward direction to avoid impacts on existing residences. The existing pavement marking the southbound through lane would be considered the westernmost extent of the roadway as it extends to Powder Mill Road, and the right of way acquisition for the mitigation's resultant four-lane section would be towards the east within jurisdiction of USDA.
 - Resurface and then restripe the roadway to permit the proposed lane geometry after the USDA property easements or right of way acquisition.
 - **Figure 6-4** presents a conceptual rendering of these improvements.
- MD 201 (Edmonston Road)/Powder Mill Road (Intersection #8)
 - Add a second eastbound Powder Mill Road through lane extending approximately 600 feet. The existing pavement marking the eastbound right-turn lane of Powder Mill Road would be considered the southernmost extent of the roadway because of the proximity to the adjacent wetland buffer zone; and the right of way acquisition to permit a second eastbound through lane on Powder Mill Road would be towards the north. Approximately 0.04 acre of private property along the north side of Powder Mill Road would be required for acquisition. This improvement could be adjusted depending on future wetland delineation efforts during the design phase. Additionally, this improvement may need adjustment depending on restrictive easements on the northwest corner of the intersection, previously referenced in the Site Analysis and mapped through Figure 4-5.

- Add a second westbound left-turn lane from Powder Mill Road onto southbound Edmonston Road with both left-turn lanes providing approximately 500 feet of storage.
- Extend the northbound right-turn lane so that it is continuous until the MD 201 (Edmonston Road)/Beaver Dam Road intersection.
- Resurface and then restripe the roadway to permit the proposed lane geometry after the USDA and private property easements or right of way acquisition.
- o Convert eastbound left-turn and westbound left-turn phases to protected.
- Change the traffic signal control type from pretimed to actuated-uncoordinated with a 100-second cycle length (to match the cycle lengths along MD 201 between the Beltway and Cherrywood Lane) and optimized timing splits.
- Figure 6-5 presents a conceptual rendering of these improvements.
- Powder Mill Road/Springfield Road (Intersection #12)
 - Install a signal and set the control type to actuated-coordinated with a 100-second cycle length.
 - Figure 6-6 presents a conceptual rendering of these improvements.
- Powder Mill Road/MD 295 (BW Parkway) southbound ramps (Intersection #13)
 - Install a signal and set the control type to actuated-coordinated with a 100-second cycle length.
 - Convert the existing eastbound shared through-right lane on Powder Mill Road to an exclusive through lane.
 - Add new pavement by using NPS land along the south side of Powder Mill Road, add a separate eastbound right-turn lane that extends to the upstream Powder Mill Road/Springfield Road intersection.
 - Resurface and then restripe the roadway to permit the proposed lane geometry after the USDA and NPS property easements.
 - Extend the storage length of the southbound left-turn lane of the BW Parkway southbound ramp to 300 feet within the existing pavement right of way.
 - Figure 6-6 presents a conceptual rendering of these improvements.
- Powder Mill Road/MD 295 (BW Parkway) Northbound Ramps (Intersection #14)
 - Install a signal and set the control type to actuated-coordinated with a 100-second cycle length.
 - Convert the existing westbound shared through-right lane on Powder Mill Road to an exclusive through lane.

- Add new pavement by using NPS land along the north side of Powder Mill Road, add a separate westbound right-turn lane that extends approximately 100 feet.
- Resurface and then restripe the roadway to permit the proposed lane geometry after the USDA and NPS property easements.
- Extend the storage length of the northbound left-turn lane of the BW Parkway northbound ramp to 300 feet within the existing pavement right of way.
- **Figure 6-6** presents a conceptual rendering of these improvements.

With respect to the three intersections along Powder Mill Road that include Springfield Road (Intersection #12) and the BW Parkway ramps (Intersections #13 and #14), the mitigation analysis also tested the possibility of implementing roundabouts for each intersection; however, after review, roundabouts were rejected from final consideration. To achieve acceptable HCM standards for the BW Parkway ramp intersections with roundabouts, a four-lane section of Powder Mill Road was determined to be necessary. In contrast to the signal recommendation, a roundabout would require a comparatively larger right of way and the four-lane section would necessitate a reconstruction of the Powder Mill Road underpass and the BW Parkway bridge that crosses Powder Mill Road. Because the Powder Mill Road/Springfield Road intersection would also require mitigation, maintaining its condition as a TWSC intersection was not feasible. For the roundabouts at the BW Parkway ramps to be effective and to achieve mitigation for the Powder Mill Road/Springfield Road, the Powder Mill Road/Springfield Road intersection would also need to be designed as a roundabout. However, implementing a system of three consecutive roundabout intersections, while promoting the continuous flow of traffic exiting Springfield Road and the BW Parkway ramps, would slow the eastbound approach traffic from Powder Mill Road. This slowdown would result in eastbound queuing extending approximately one-half mile. When appraising the operational benefits of the roundabout system in terms of the amount of right of way dedication required, this analysis discarded roundabouts from consideration at those intersections. Therefore, to achieve acceptable HCM standards, the recommendation for a system of three signalized intersections would be the least disruptive in terms of right of way acquisition and overall operational impacts.



Figure 6-3: MD 201 (Edmonston Road)/Sunnyside Avenue (Intersection #6) Conceptual Rendering



Figure 6-4: MD 201 (Edmonston Road)/Beaver Dam Road (Intersection #7) Conceptual Rendering



Figure 6-5: MD 201 (Edmonston Road)/Powder Mill Road (Intersection #8) Conceptual Rendering



Figure 6-6: Powder Mill Road/MD 295 (BW Parkway)/Springfield Road (Intersections #12/13/14) Conceptual Rendering

BEP Driveway Improvements

In anticipation of capacity constraints at the proposed BEP site driveway location on Poultry Road at the Powder Mill Road intersection, assuming continuation of the all-way stop control (AWSC) under the Action Alternative, the driveway should be designed to accommodate future traffic resulting from the proposed site. The redesigned driveway should satisfy the M-NCPPC acceptability standards in terms of HCM and CLV. This section describes the recommended driveway design—which pertains to signalization of the intersection—and discusses why the considered alternative of implementing a roundabout was rejected from recommendation. Because of the curvature of Powder Mill Road at the current location of Poultry Road and in anticipation of proposed turning lanes as well as merge areas, the driveway would be relocated to the southwest to more tangential sections of Powder Mill Road. This relocation is also recommended because of an existing bridge on Powder Mill Road 200 feet southwest of the intersection with Poultry Road that crosses a tributary of Beaver Dam Creek. The total right of way requirements for the recommended driveway alternative are not expected to encroach that existing bridge. The recommended design for the signalization of the BEP Driveway would include

- Locating the intersection of the BEP driveway along Powder Mill Road approximately 80 feet southwest of the existing Animal Husbandry Drive intersection with Powder Mill Road.
- Designing the driveway to permit two southbound, outbound lanes (an exclusive right-turn lane and an exclusive left-turn lane) as well as two northbound, inbound lanes.
- Creating an exclusive eastbound left-turn lane on Powder Mill Road (extending approximately 200 feet) and an exclusive westbound left-turn lane on Powder Mill Road (extending approximately 200 feet) by using USDA land to create the additional pavement area.
- Installing a signal and setting the control type to actuated-uncoordinated with a 100-second cycle length.
- Setting the phasing of the eastbound left-turn lane to permitted-protected.
- Providing a pedestrian crossing phase for the southbound approach of the BEP driveway.
- Setting the traffic signal during hours outside BEP shift changes to operate with a flashing yellow light along Powder Mill Road and a flashing red light on the BEP driveway approach.

Signalization with actuated control would ensure that each approach receives an adequate duration of green time that is responsive to detectors tracking the traffic demand. The ability to provide a pedestrian crossing phase would also act as a tool so that pedestrians could safely cross the intersection. Signalization disadvantages approaches (especially minor streets) with less traffic demand and could result in delays and queuing for those same approaches.

In contrast to signalization, a yield-controlled roundabout alternative was also tested for the site driveway design. Advantages of roundabouts include their promotion of the continuous flow of traffic (especially for minor street approaches), vehicular safety, and traffic calming from their limitation of travel speeds. Roundabouts also reduce the number of vehicular conflict points and severity of crashes. However, this continuous flow of traffic is not safe for pedestrians who attempt to cross the roundabout. In addition, heavy vehicles such as buses require wider turn radii than passenger cars, and the continuous flow of minor street traffic can inadvertently result in queuing along major streets that carry platooning traffic. While the proposed driveway could be designed with either signalization or a roundabout that would result in an intersection that meets the acceptability standards based on HCM

and CLV metrics, signalization is the recommended design in this case. The key reasons for rejecting a roundabout and recommending a signal include the following:

- The location and design of a roundabout would require more USDA land than a signal would because of the need to provide areas for bypass lanes to merge with lanes exiting the roundabout and a bypass lane on eastbound Powder Mill Road. Bypass lanes on each approach were determined to be a necessary component of achieving acceptable HCM standards for the roundabout. The bypass lane would eliminate the yield-control for eastbound traffic that would contribute to delays.
- For a roundabout to be implemented so that all approaches and merge areas are on tangential sections, the roundabout would need to be approximately 500 feet west of the existing Sheep Road intersection with Powder Mill Road. The distance of the roundabout to the site would require more USDA land to extend the driveway to the ECF.
- The continuous flow of traffic, especially with respect to providing bypass lanes, would present a hazard to pedestrians attempting to cross Powder Mill Road at the roundabout.
- A signal could be timed to operate with flashing yellow and red lights outside shift changes to effectively resume the continuous flow of traffic on Powder Mill Road. The permanence of a roundabout would slow vehicles on Powder Mill Road during other peak times that do not overlap with those of the BEP site.

A signal, therefore, provides a design alternative that is tailored to the traffic demands throughout different hours and days of the week. The establishment of a pedestrian crossing phase further reduces the chance of a crash involving pedestrians. **Figure 6-7** approximates that amounted of impervious surface that would be added at each of the intersections to implement the necessary mitigation, while **Figure 6-8** presents a conceptual rendering of the BEP driveway improvements (Intersection #10). Lastly, **Figure 6-9** presents the lane geometry and intersection controls with the proposed mitigation and improvement measures for all affected study intersections.

| ID | Intersection | Aggregate Impervious Surface Created (estimated in square feet) |
|------------|--|--|
| 6 | MD 201 (Edmonston) and Sunnyside | 90,100 |
| 7 | MD 201 (Edmonston) and Beaver Dam | 65,200 |
| 8 | MD 201 (Edmonston) and Powder Mill | 97,100 |
| 10 | Powder Mill and Poultry (BEP Driveway) | 77,100 |
| 12, 13, 14 | Powder Mill/Springfield/BW Parkway Total | 11,700 |
| 12 | Powder Mill and Springfield | No new pavement |
| 13 | Powder Mill and BW Parkway Southbound | 5,400 |
| 14 | Powder Mill and BW Parkway Northbound | 6,300 |
| | Total Improvements | 341,200 |

Figure 6-7: Estimated Impervious Surface Created through Mitigation Strategies



Figure 6-8: Proposed BEP Driveway Conceptual Rendering (Intersection #10)



Figure 6-9A: Action Alternative with Mitigation Lane Geometry – Map 1



Figure 6-9B: Action Alternative with Mitigation Lane Geometry – Map 2

B Traffic Analysis

The forecasts generated for the Action Alternative were considered to assess the operations analysis of the Action Alternative with Mitigation Conditions. However, an adjustment to these forecasts was made to account for the proposed restriction of southbound left turns from Edmonston Road onto Beaver Dam Road during peak periods. Those vehicle trips were reassigned through the network by removing associated trips from the southbound left-turn movement of Edmonston Road at Beaver Dam Road. The 23 AM peak hour and 32 PM peak hour southbound left turns that were removed were then reassigned at the MD 201 (Edmonston Road)/Powder Mill Road) intersection, which is upstream from Beaver Dam Road. Based on the proportionality of existing turning movement counts between the eastbound right-turn lane of Powder Mill Road and the southbound through movement of Edmonston Road, 12 AM peak hour and 14 PM peak hour trips were removed from the eastbound right-turn movement of Powder Mill Road and reassigned to the eastbound through movement of Powder Mill Road; whereas 11 AM peak hour and 18 PM peak hour trips were removed from the southbound through movement of Edmonston Road and reassigned to the southbound left-turn movement of Edmonston Road. The 23 AM peak hour and 32 PM peak hour trips are assumed to continue eastbound Powder Mill Road and ultimately complete a right turn into Research Road. The resultant forecasts were applied in the Synchro[™] and CLV-based Excel worksheet analyses.

The CLV LOS grades for signalized intersections under the Action Alternative with Mitigation are depicted in **Figure 6-10** for AM and PM peak hours. The overall signalized intersection LOS grades and worst unsignalized lane group LOS grades are depicted in **Figure 6-11** for AM and PM peak hours. **Figure 6-12** shows the results of the LOS capacity analysis and the intersection vehicle delay for the Action Alternative with Mitigation during the AM and PM peak hours for the affected intersections.

SimTraffic[™] was used to calculate the 95th percentile queue lengths to further verify the effectiveness of the mitigation measures. The SimTraffic[™] simulations have a statistical error of plus or minus 5% at the 95% confidence interval for the AM peak hour and 5% error for the PM peak hour simulations.

The queuing results of the No Action Alternative compared to the Action Alternative with Mitigation Conditions for the mitigated intersections are presented in **Figure 6-13**. The 95th percentile values are expressed in feet; an average car plus space between the next vehicle requires roughly 25 feet.

The sections that follow **Figure 6-13** discuss the mitigation impacts based on HCM, CLV, and queuing for each affected intersection.



Figure 6-10: Action Alternative with Mitigation Traffic Operations Summary – CLV Method



Figure 6-11: Action Alternative with Mitigation Traffic Operations Summary – HCM Method

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Figure 6-12: Comparison of No Action Alternative with Action Alternative with Mitigation Intersection AM and PM Peak Hour Operations

| | | | | No Action Alternative | | | | | | | Action Alternative with Mitigation | | | | | | | | | | | | | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|---------------------|-------|------------|--------------|-------------------------------|------------|------------------------------------|------------|--------------------|--------------|-------------------------------|------------|-------|------------|--------------|-------------------------------|------------|-------|------------|--------------------|------------|
| | | | | AM F | Peak Ho | our | | | PM | Peak H | our | | | | AM | Peak Ho | our | | | PM I | Peak Ho | our | | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | Mitigated? |
| 6 | MD 201 (Edmonston Road) and S | Sunnysid | le Avenı | ue (Signa | lized) ^a | | | • | | | | | | • | | | | | | | | | | | |
| | EB (Sunnyside Avenue) | L | 1.32 | 297.6 | F | | | 1.36 | 261.8 | F | 1 | | | 1.17 | 167.1 | F | | | 1.26 | 189.2 | F | | | | |
| | EB (Sunnyside Avenue) | R | 0.64 | 62.0 | Е | | | 1.12 | 127.0 | F | | | | 0.51 | 20.0 | С | | | 1.03 | 72.6 | Е | | | | |
| | EB Overall (Sunnyside Avenue) | | | 126.7 | F | | | | 168.8 | F | | | Fail | | 74.5 | E | | | | 108.7 | F | | | Fail | |
| | NB (Edmonston Road) | L | 1.43 | 280.0 | F | | | 1.24 | 188.1 | F | | | | 1.14 | 93.2 | F | | | 1.09 | 86.6 | F | | | | |
| | NB (Edmonston Road) | TR | 0.66 | 4.8 | А | | | 0.90 | 20.9 | С | | | | 0.55 | 1.1 | А | | | 0.51 | 1.9 | Α | | | | |
| | NB Overall (Edmonston Road) | | | 110.3 | F | | | | 67.3 | Е | | | Fail | | 29.9 | С | | | | 25.4 | С | | | Pass | |
| | SB (Edmonston Road) | Т | 1.36 | 212.8 | F | | | 1.17 | 126.6 | F | | | | 1.04 | 67.3 | Е | | | 1.00 | 52.7 | D | | | | |
| | SB (Edmonston Road) | R | 0.24 | 14.4 | В | | | 0.15 | 9.9 | А | | | | 0.25 | 13.5 | В | | | 0.21 | 10.2 | В | | | | |
| | SB Overall (Edmonston Road) | | | 180.5 | F | | | | 109.4 | F | | | Fail | | 58.5 | E | | | | 46.4 | D | | | Fail | |
| | Overall | | | 141.4 | F | 1,719 | F | | 106.1 | F | 1,702 | F | Fail | | 46.2 | D | 1,299 | С | | 52.2 | D | 1,431 | D | Fail | Yes |
| 7 | MD 201 (Edmonston Road) and E | Beaver D | am Roa | d (TWSC) | | | | • | | | | | | • | | | | | | | | | | | |
| | WB (Beaver Dam Road) | LR | 3.38 | 1,753.5 | F | | | 1.69 | 739.6 | F | | | | 1.20 | 420.3 | F | | | 0.80 | 227.8 | F | | | | |
| | WB Overall (Beaver Dam Road) | | | 1,753.5 | F | | | | 739.6 | F | | | Fail | | 420.3 | F | | | | 227.8 | F | | | Fail | |
| | SB (Edmonston Road) | LT | 0.06 | 12.6 | В | | | 0.09 | 14.5 | В | | | | - | - | - | | | - | - | - | | | | |
| | SB Overall (Edmonston Road) | | | 0.2 | | | | | 0.4 | | | | Pass | | 0.0 | | | | | 0.0 | | | | Pass | |
| | Overall | | | 22.3 | | n/a | n/a | | 8.9 | | n/a | n/a | Pass | | 4.6 | | n/a | n/a | | 2.4 | | n/a | n/a | Pass | n/a |
| 8 | MD 201 (Edmonston Road) and P | owder N | Iill Road | l (Signaliz | zed) | | | | | | | | | | | | | | | | | | | | |
| | EB (Powder Mill Road) | L | 0.29 | 58.4 | E | | | 0.69 | 57.3 | E | | | | 0.78 | 52.3 | D | | | 0.92 | 71.5 | Е | | | | |
| | EB (Powder Mill Road) | Т | 0.31 | 48.2 | D | | | 0.75 | 55.5 | E | | | | 0.63 | 37.7 | D | | | 0.81 | 49.9 | D | | | | |
| | EB (Powder Mill Road) | R | 0.00 | 0.0 | 0 | | | 0.00 | 0.0 | 0 | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | | |
| | EB Overall (Powder Mill Road) | | | 51.7 | D | | | | 56.2 | E | | | Fail | | 41.0 | D | | | | 58.3 | E | | | Fail | |
| | WB (Powder Mill Road) | L | 0.73 | 71.8 | E | | | 0.49 | 46.7 | D | | | | 0.75 | 46.7 | D | | | 0.93 | 62.3 | Е | | | | |
| | WB (Powder Mill Road) | Т | 0.32 | 40.6 | D | | | 0.27 | 32.7 | С | | | | 0.68 | 37.5 | D | | | 0.97 | 88.9 | F | | | | |
| | WB (Powder Mill Road) | R | 0.00 | 0.0 | А | | | 0.00 | 0.0 | Α | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | Α | | | | |
| | WB Overall (Powder Mill Road) | | | 58.0 | E | | | | 37.6 | D | | | Fail | | 42.6 | D | | | | 71.2 | E | | | Fail | |
| | NB (Edmonston Road) | L | 0.92 | 61.5 | E | | | 0.93 | 65.0 | E | | | | 0.93 | 38.5 | D | | | 0.99 | 63.4 | E | | | | |
| | NB (Edmonston Road) | Т | 0.59 | 20.2 | С | | | 0.73 | 32.8 | С | | | | 0.59 | 11.6 | В | | | 0.77 | 25.8 | С | | | | |
| | NB (Edmonston Road) | R | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | | |
| | NB Overall (Edmonston Road) | | | 38.4 | D | | | | 46.0 | D | | | Pass | | 23.4 | С | | | | 41.3 | D | | | Pass | |
| | SB (Edmonston Road) | L | 0.13 | 39.3 | D | | | 0.49 | 60.5 | E | | | | 0.30 | 24.4 | С | | | 0.60 | 49.0 | D | | | | |
| | SB (Edmonston Road) | TR | 0.87 | 68.8 | E | | | 0.84 | 73.6 | Е | | | | 0.82 | 39.4 | D | | | 0.84 | 53.4 | D | | | | |
| | SB Overall (Edmonston Road) | | | 67.6 | E | | | | 71.6 | E | | | Fail | | 37.8 | D | | | | 52.4 | D | | | Pass | |
| | Overall | | | 51.7 | D | 1,080 | В | | 54.7 | D | 1,225 | С | Pass | | 32.8 | С | 987 | Α | | 54.3 | D | 1,248 | С | Pass | Yes |

Figure 6-12: Comparison of No Action Alternative with Action Alternative with Mitigation Intersection AM and PM Peak Hour Operations (Continued)

| | | | | No Action Alternative | | | | | | | | | | Actio | n Alter | native v | vith Mitio | gation | | | | | | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|------------|----------|------------|--------------|-------------------------------|------------|----------|------------|--------------------|--------------|-------------------------------|------------|------------|------------|--------------|-------------------------------|------------|-------|------------|--------------------|------------|
| | | | | AM F | Peak Ho | our | | | PM I | Peak H | our | | | | AM | Peak H | our | | | PM | Peak H | our | | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | Mitigated? |
| 10 | Powder Mill Road and Poultry Ro | oad (AWS | SC in No | Action A | Alternat | ive; Sig | gnalize | d in Act | ion Alte | rnative | with M | itigatio | n) | - | | - | - | | - | | | | | | |
| | EB (Powder Mill Road) | LT | 0.25 | 8.9 | А | ļ | | 1.02 | 59.3 | F | | | | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | |
| | EB (Powder Mill Road) | L | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.74 | 6.4 | Α | | | 0.02 | 14.0 | В | | | | |
| | EB (Powder Mill Road) | Т | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.15 | 0.6 | Α | | | 0.92 | 31.5 | С | | | | |
| | EB Overall (Powder Mill Road) | | | 8.9 | Α | | | | 59.3 | F | | | Fail | | 4.7 | Α | | | | 31.3 | С | | | Pass | |
| | WB (Powder Mill Road) | TR | 0.51 | 11.3 | В | | | 0.45 | 11.7 | В | | | | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | |
| | WB (Powder Mill Road) | Т | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.60 | 9.0 | Α | | | 0.43 | 20.1 | С | | | | |
| | WB (Powder Mill Road) | R | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.67 | 9.8 | А | | | 0.01 | 16.3 | В | | | | |
| | WB Overall (Powder Mill Road) | | | 11.3 | В | | | | 11.7 | В | | | Pass | | 9.4 | Α | | | | 20.0 | С | | | Pass | |
| | SB (Poultry Road) | LR | 0.00 | 8.3 | А | | | 0.02 | 9.7 | А | | | | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | |
| | SB (Poultry Road) | L | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.00 | 0.0 | А | | | 0.67 | 28.1 | С | | | | |
| | SB (Poultry Road) | R | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.00 | 0.0 | А | | | 0.98 | 62.1 | Е | | | | |
| | SB Overall (Poultry Road) | | | 0.0 | - | | | | 9.7 | Α | | | Pass | | 0.0 | - | | | | 47.3 | D | | | Pass | |
| | Overall | | | 10.6 | В | n/a | n/a | | 45.6 | E | n/a | n/a | Fail | | 7.2 | Α | 868 | Α | | 36.8 | D | 1,250 | С | Pass | Yes |
| 12 | Powder Mill Road and Springfiel | d Road (1 | FWSC in | No Actio | on Altei | rnative; | Signa | lized in | Action A | Alternat | tive wit | h Mitig | ation) | | | | | | - | | | | | | |
| | EB (Powder Mill Road) | L | 0.01 | 9.2 | А | | | 0.02 | 8.3 | А | | | | 0.02 | 4.3 | Α | | | 0.04 | 6.5 | А | | | | |
| | EB (Powder Mill Road) | Т | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.18 | 4.0 | Α | | | 0.81 | 16.5 | В | | | | |
| | EB Overall (Powder Mill Road) | | | 0.3 | | | | | 0.3 | | | | Pass | | 4.0 | Α | | | | 16.3 | В | | | Pass | |
| | WB (Powder Mill Road) | Т | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | | |
| | WB (Powder Mill Road) | R | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.98 | 16.3 | В | | | 0.43 | 5.4 | А | | | | |
| | WB Overall (Powder Mill Road) | | | n/a | n/a | | | | n/a | n/a | | | | | 16.3 | В | | | | 5.4 | Α | | | Pass | |
| | SB (Springfield Road) | LR | 0.61 | 31.1 | D | | | 1.37 | 229.8 | F | | | | 0.87 | 68.8 | Е | | | 1.00 | 89.3 | F | | | | |
| | SB Overall (Springfield Road) | | | 31.1 | D | | | | 229.8 | F | | | Fail | | 68.8 | E | | | | 89.3 | F | | | Fail | |
| | Overall | | | 5.6 | | n/a | n/a | | 52.9 | | n/a | n/a | Fail | | 21.1 | С | 1,059 | В | | 26.8 | С | 1,270 | С | Pass | Yes |

Figure 6-12: Comparison of No Action Alternative with Action Alternative with Mitigation Intersection AM and PM Peak Hour Operations (Continued)

| | No Action | | | | | | ion Alte | rnative | | | | | Action Alternative with Mitigation | | | | | | | | | | | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|------------|---------|------------|--------------|-------------------------------|------------|---------|------------|------------------------------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|-------|------------|--------------------|------------|
| | | | | AM F | Peak Ho | ur | | | PM F | Peak Ho | our | | | | AM | Peak Ho | our | | | PM | Peak H | our | | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | Mitigated? |
| 13 | Powder Mill Road and MD 295 SE | B Ramps | (TWSC | in No Ac | tion Alt | ernativ | e; Sign | alized i | n Action | Altern | ative w | ith Miti | gation) | | | | | | - | | - | | | _ | _ |
| | EB (Powder Mill Road) | Т | 0.00 | 0.0 | 0 | | | 0.00 | 0.0 | 0 | | | | 0.28 | 7.9 | А | | | 0.84 | 3.2 | А | | | | |
| | EB (Powder Mill Road) | R | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.16 | 7.3 | А | | | 0.48 | 0.7 | Α | | | | |
| | EB Overall (Powder Mill Road) | | | 0.0 | | | | | 0.0 | | | | Pass | | 7.7 | Α | | | | 2.4 | Α | | | Pass | |
| | WB (Powder Mill Road) | L | 0.10 | 8.5 | А | | | 0.21 | 11.5 | В | | | | 0.18 | 8.3 | А | | | 0.39 | 7.0 | А | | | | |
| | WB (Powder Mill Road) | Т | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.69 | 2.3 | А | | | 0.24 | 0.4 | А | | | | |
| | WB Overall (Powder Mill Road) | | | 1.7 | | | | | 3.7 | | | | Pass | | 3.0 | Α | | | | 2.6 | Α | | | Pass | |
| | SB (MD 295 SB Off-Ramp) | L | 1.35 | 223.1 | F | | | 2.87 | 929.9 | F | | | | 0.77 | 43.4 | D | | | 0.88 | 56.3 | Е | | | | |
| | SB (MD 295 SB Off-Ramp) | TR | 0.43 | 15.1 | С | | | 0.21 | 11.3 | В | | | | 0.94 | 67.4 | E | | | 0.50 | 37.3 | D | | | | |
| | SB Overall (MD 295 SB Off-Ramp |) | | 129.6 | F | | | | 619.4 | F | | | Fail | | 55.9 | E | | | | 49.9 | D | | | Fail | |
| | Overall | | | 50.5 | | n/a | n/a | | 151.7 | | n/a | n/a | Fail | | 21.8 | С | 899 | Α | | 12.0 | В | 1,150 | В | Pass | Yes |
| 14 | Powder Mill Road and MD 295 NB | B Ramps | (TWSC | in No Ac | tion Alt | ernativ | e; Sign | alized i | n Action | Altern | ative w | ith Miti | gation) | | | | | | | | | | | | |
| | EB (Powder Mill Road) | L | 0.15 | 10.2 | В | | | 0.46 | 14.4 | В | | | | 0.27 | 21.9 | С | | | 0.77 | 16.0 | В | | | | |
| | EB (Powder Mill Road) | Т | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.40 | 0.8 | А | | | 0.53 | 0.5 | А | | | | |
| | EB Overall (Powder Mill Road) | | | 2.2 | | | | | 4.2 | | | | Pass | | 5.3 | Α | | | | 5.5 | Α | | | Pass | |
| | WB (Powder Mill Road) | Т | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.63 | 27.3 | С | | | 0.28 | 4.7 | Α | | | | |
| | WB (Powder Mill Road) | R | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.59 | 26.8 | С | | | 0.51 | 7.0 | А | | | | |
| | WB Overall (Powder Mill Road) | | | n/a | n/a | | | | n/a | n/a | | | Pass | | 27.1 | С | | | | 6.1 | Α | | | Pass | |
| | NB (MD 295 NB Off-Ramp) | L | 0.66 | 67.9 | F | | | 2.59 | 991.1 | F | | | | 0.89 | 46.1 | D | | | 1.11 | 188.6 | F | | | | |
| | NB (MD 295 NB Off-Ramp) | TR | 0.20 | 12.4 | В | | | 0.14 | 15.5 | С | | | | 0.28 | 29.9 | С | | | 0.84 | 107.0 | F | | | | |
| | NB Overall (MD 295 NB Off-Ramp | o) | | 37.2 | E | | | | 599.3 | F | | | Fail | | 42.5 | D | | | | 155.7 | F | | | Pass | |
| | Overall | | | 5.8 | | n/a | n/a | | 38.3 | | n/a | n/a | Fail | | 24.8 | С | 572 | Α | | 14.4 | В | 956 | Α | Pass | Yes |

Notes:

EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound

LOS = Level of Service

V/C = Volume-to-Capacity ratio

LTR = left / through / right lanes

LTR/LTR = No-Build/Build with Mitigation

TWSC = Two-way STOP-Controlled unsignalized intersection (TWSC intersections do not have an overall LOS)

AWSC = All-way STOP-Controlled unsignalized intersection

Delay is Measured in Seconds Per Vehicle.

Red cells denote intersections or approaches operating at unacceptable conditions.

a Highway Capacity Manual 2000 results (Intersection #6)

Figure 6-13: Comparison of No Action Alternative with Action Alternative with Mitigation Intersection AM and PM Peak Hour Queuing

| | | | | Turning Bay/Link | No Action | Alternative | Action A | Iternative | Action Alternativ | ve with Mitigation |
|----|----------------------------------|-----------------|---------------|--|--|--|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | Length (feet) No Action and Action/ Mitigation | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 6 | MD 201 (Edmonston Road) and Sunr | nyside Avenue | (Signalize | d) | | | | | | |
| | Sunnyside Avenue | EB | L | 1400/1400 | 469 | 1167 | 1239 | 1193 | 288 | 1235 |
| | Sunnyside Avenue | EB | R | 350/350 | 404 | 402 | 473 | 395 | 222 | 456 |
| | MD 201 (Edmonston Road) | NB | L | 450/450 | 513 | 535 | 534 | 524 | 436 | 518 |
| | MD 201 (Edmonston Road) | NB | Т | -/900 | 0 | 0 | 0 | 0 | 281 | 549 |
| | MD 201 (Edmonston Road) | NB | TR | 4160/4160 | 5641 | 1417 | 2329 | 1322 | 886 | 415 |
| | MD 201 (Edmonston Road) | SB | Т | 1500/1500 | 1902 | 2024 | 1965 | 1994 | 728 | 1978 |
| | MD 201 (Edmonston Road) | SB | R | 250/250 | 310 | 322 | 307 | 331 | 347 | 376 |
| 7 | MD 201 (Edmonston Road) and Beav | ver Dam Road | (TWSC) | | | | | | | |
| | Beaver Dam Road | WB | LR | 1300/1300 | 675 | 584 | 659 | 652 | 64 | 283 |
| | MD 201 (Edmonston Road) | NB | TR | 1500/1500 | 49 | 26 | 40 | 22 | 6 | 2 |
| | MD 201 (Edmonston Road) | SB | LT/T | 1480/1480 | 1241 | 1159 | 1251 | 1188 | 0 | 802 |
| 8 | MD 201 (Edmonston Road) and Powe | der Mill Road (| Signalized) | | | | | | | |
| | Powder Mill Road | EB | L | 250/250 | 106 | 332 | 94 | 341 | 86 | 287 |
| | Powder Mill Road | EB | Т | 1430/1430 | 1156 | 759 | 1222 | 1350 | 147 | 279 |
| | Powder Mill Road | EB | Т | -/600 | 0 | 0 | 0 | 0 | 104 | 200 |
| | Powder Mill Road | EB | R | 500/500 | 704 | 477 | 717 | 705 | 82 | 109 |
| | Powder Mill Road | WB | L | 250/500 | 250 | 129 | 292 | 278 | 105 | 310 |
| | Powder Mill Road | WB | Т | 1100/1440 | 266 | 215 | 238 | 651 | 176 | 513 |
| | Powder Mill Road | WB | R | 40/40 | 72 | 63 | 58 | 54 | 58 | 84 |
| | MD 201 (Edmonston Road) | NB | L | 400/400 | 361 | 479 | 282 | 471 | 261 | 386 |
| | MD 201 (Edmonston Road) | NB | Т | 1480/1480 | 368 | 663 | 286 | 666 | 240 | 424 |
| | MD 201 (Edmonston Road) | NB | R | 275/1480 | 96 | 329 | 90 | 335 | 0 | 29 |
| | MD 201 (Edmonston Road) | SB | L | 275/275 | 242 | 262 | 329 | 351 | 133 | 223 |
| | MD 201 (Edmonston Road) | SB | TR | 780/780 | 719 | 441 | 784 | 738 | 0 | 287 |

Figure 6-13: Comparison of No Action Alternative with Action Alternative with Mitigation Intersection AM and PM Peak Hour Queuing (Continued)

| | | | | Turning Bay/Link | No Action | Alternative | Action A | Iternative | Action Alternativ | e with Mitigation |
|----|--------------------------------------|-------------------------|---------------|--|--|--|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | Length (feet) No Action and Action/ Mitigation | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 10 | Powder Mill Road and Poultry Road (A | WSC) ^a | | | | | | | | |
| | Powder Mill Road | EB | LT/L | -/200 | 0 | 0 | 0 | 0 | 136 | 29 |
| | Powder Mill Road | EB | Т | 240/3250 | 94 | 340 | 420 | 697 | 0 | 441 |
| | Powder Mill Road | WB | TR/T | 1280/1280 | 108 | 106 | 1574 | 411 | 144 | 178 |
| | Powder Mill Road | WB | R | -/200 | 0 | 0 | 0 | 0 | 115 | 17 |
| | Poultry Road | SB | LR/L | 420/600 | 0 | 23 | 0 | 410 | 0 | 252 |
| | Poultry Road | SB | -/R | -/600 | 0 | 0 | 0 | 0 | 0 | 156 |
| 12 | Powder Mill Road and Springfield Roa | d (TWSC) ^a | | | 1 | | | 1 | | |
| | Powder Mill Road | EB | L | 50/50 | 16 | 27 | 19 | 24 | 18 | 42 |
| | Powder Mill Road | EB | Т | 1590/1590 | 0 | 3 | 0 | 43 | 91 | 873 |
| | Powder Mill Road | WB | TR | 140/140 | 6 | 0 | 7 | 0 | 184 | 110 |
| | Springfield Road | SB | LR | 4110/4110 | 83 | 229 | 123 | 542 | 174 | 580 |
| 13 | Powder Mill Road and MD 295 SB Ram | ips (TWSC)ª | | | | | | | | |
| | Powder Mill Road | EB | TR/T | 140/140 | 6 | 23 | 2 | 66 | 154 | 175 |
| | Powder Mill Road | EB | -/R | -/140 | 0 | 0 | 0 | 0 | 74 | 96 |
| | Powder Mill Road | WB | L | 225/225 | 39 | 79 | 38 | 116 | 59 | 123 |
| | Powder Mill Road | WB | Т | 520/520 | 0 | 0 | 3 | 0 | 151 | 99 |
| | BW Parkway SB Ramp | SB | L | 25/300 | 58 | 56 | 55 | 57 | 236 | 274 |
| | BW Parkway SB Ramp | SB | TR | 1020/1020 | 196 | 1086 | 1001 | 990 | 169 | 104 |
| 14 | Powder Mill Road and MD 295 NB Ram | nps (TWSC) ^a | | | | | | | | |
| | Powder Mill Road | EB | L | 250/250 | 61 | 234 | 52 | 246 | 133 | 212 |
| | Powder Mill Road | EB | Т | 520/520 | 0 | 185 | 0 | 270 | 262 | 201 |
| | Powder Mill Road | WB | TR/T | 850/850 | 13 | 37 | 8 | 35 | 209 | 112 |
| | Powder Mill Road | WB | R | -/100 | 0 | 0 | 0 | 0 | 139 | 118 |
| | BW Parkway NB Ramp | NB | L | 50/300 | 60 | 90 | 82 | 89 | 292 | 130 |
| | BW Parkway NB Ramp | NB | TR | 880/880 | 64 | 753 | 660 | 832 | 127 | 51 |

Notes:

a This intersection would operate with a signal control with mitigation

1) EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound.

2) LTR = left / through / right lanes.

3) TWSC = Two-way STOP-Controlled unsignalized intersection.

4) AWSC = All-way STOP-Controlled unsignalized intersection.

5) Red cells denote lane groups whose queuing length exceeds capacity.

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MD 201 (Edmonston Road)/Sunnyside Avenue (Intersection #6)

Figure 6-14 presents the summary of the mitigation impact on the MD 201 (Edmonston Road)/Sunnyside Avenue intersection, according to HCM and CLV capacity metrics. Based on both HCM and CLV methods, operations would improve to better than under the No Action Alternative during the AM and PM peak hours. The intersection would operate at an overall acceptable LOS D according to HCM metrics and an acceptable CLV of 1,299 (LOS C) during the AM peak hour. While the PM peak hour would have a CLV of 1,431 (LOS D), which is considered failing according to CLV metrics, this would represent a substantial improvement compared with the No Action Alternative. The intersection would therefore be mitigated according to the HCM and CLV methods.

| | HCM Delay | y and LOS | CLV and | CLV LOS |
|------------------------------------|-----------------|-----------------|-----------------|-----------------|
| | AM Peak Hour | PM Peak Hour | AM Peak Hour | PM Peak Hour |
| No Action Alternative | 141.4/F | 106.1/F | 1,719/F | 1,702/F |
| Action Alternative | 150.0/F | 164.0/F | 1,779/F | 2,025/F |
| Action Alternative with Mitigation | 46.2/D | 52.2/D | 1,299/C | 1,431/D |

| Figure 6-14: MD 201 | (Edmonston | Road)/Sunnyside | Avenue HCM and | CLV Mitigation | Summary |
|---------------------|------------|-----------------|----------------|-----------------------|---------|
|---------------------|------------|-----------------|----------------|-----------------------|---------|

Notes: HCM delays are presented in units of seconds per vehicle

Under the Action Alternative, failing queues would occur for the eastbound right-turn lane of Sunnyside Avenue, the northbound left-turn lane of Edmonston Road, the southbound through movement of Edmonston Road, and the southbound right-turn lane of Edmonston Road. Successful mitigation of queuing is achieved when the queues are adequately stored or when the differential of a failing queue length is less than 150 feet compared to that under the No Action Alternative. Figure 6-15 compares the mitigation impact on the failing queues at the MD 201 (Edmonston Road)/Sunnyside Avenue intersection. The results show that mitigation would result in the adequate storage of the AM peak hour queues for the eastbound right-turn lane of Sunnyside Avenue, the northbound shared through-right lane of Edmonston Road, and the southbound through movement of Edmonston Road compared with the No Action Alternative. Where failing queues would continue with mitigation, queues under mitigation would improve relative to the No Action Alternative for the northbound left-turn of Edmonston Road during the AM and PM peak hours and the southbound through movement of Edmonston Road during the PM peak hour. Queues that would fail with mitigation, but otherwise increase by less than 150 feet relative to the No Action Alternative, include the eastbound right of Sunnyside Avenue during the PM peak hour and the southbound right-turn lane of Edmonston Road during the AM and PM peak hours. All other turning movements would have adequate accommodation for their queues. In conclusion, the recommended improvements would mitigate the 95th percentile queues.

Figure 6-15: MD 201 (Edmonston Road)/Sunnyside Avenue Queuing Mitigation Summary

| | | | | Turning Bay/Link Length | No Action | Alternative | Action A with Mi | Iternative tigation |
|----|----------------------------------|-------------|---------------|---|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | (feet) No Action and Action/ Mitigation | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 6 | MD 201 (Edmonston Ro | oad) and Su | nnyside | Avenue (Sign | alized) | | | |
| | Sunnyside Avenue | EB | L | 1400/1400 | 469 | 1167 | 288 | 1235 |
| | Sunnyside Avenue | EB | R | 350/350 | 404 | 402 | 222 | 456 |
| | MD 201 (Edmonston Road) | NB | L | 450/450 | 513 | 535 | 436 | 518 |
| | MD 201 (Edmonston Road) | NB | Т | -/900 | 0 | 0 | 281 | 549 |
| | MD 201 (Edmonston Road) | NB | TR | 4160/4160 | 5641 | 1417 | 886 | 415 |
| | MD 201 (Edmonston Road) | SB | Т | 1500/1500 | 1902 | 2024 | 728 | 1978 |
| | MD 201 (Edmonston Road) | SB | R | 250/250 | 310 | 322 | 347 | 376 |

Notes:

1) EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound.

2) LTR = left / through / right lanes.

3) TWSC = Two-way STOP-Controlled unsignalized intersection.

4) AWSC = All-way STOP-Controlled unsignalized intersection.

5) Red cells denote lane groups whose queuing length exceeds capacity.

MD 201 (Edmonston Road)/Beaver Dam Road (Intersection #7)

Figure 6-16 shows the improvement impact on the westbound approach of the MD 201 (Edmonston Road)/Beaver Dam Road intersection according to the HCM capacity metric. As previously mentioned, although this intersection is not required to undergo mitigation because it would operate acceptably under the Action Alternative, this study recommends prohibiting southbound left turns from Edmonston Road onto eastbound Beaver Dam Road because of potential gap acceptance issues with respect to northbound queuing. The restriction would reduce westbound delays on Beaver Dam Road compared with the No Action Alternative. **Figure 6-16** Westbound Beaver Dam Road at MD 201 (Edmonston Road) provides a summary of HCM-based mitigation efforts.

| | HCM Dela | y and LOS |
|------------------------------------|--------------|--------------|
| | AM Peak Hour | PM Peak Hour |
| No Action Alternative | 1,753.5/F | 739.6/F |
| Action Alternative | Err/F | Err/F |
| Action Alternative with Mitigation | 420.3/F | 227.8/F |

Figure 6-16: Westbound Beaver Dam Road at MD 201 (Edmonston Road) HCM Mitigation Summary

Notes: HCM delays are presented in units of seconds per vehicle

MD 201 (Edmonston Road)/Powder Mill Road (Intersection #8)

Figure 6-17 shows the mitigation impact on the MD 201 (Edmonston Road)/Powder Mill Road intersection according to HCM and CLV capacity metrics. Intersection operations would improve to better than under the No Action Alternative during the AM and PM peak hours based on the HCM method and would continue operating within acceptable CLV standards. According to HCM metrics, the intersection would operate at an overall acceptable LOS C during the AM peak hour and LOS D during the PM peak hour. Based on CLV methods, it would operate at an acceptable CLV of 987 (LOS A) during the AM peak hour and an acceptable CLV of 1,248 (LOS C) during the PM peak hour. The intersection would be therefore mitigated according to the HCM and CLV methods.

| | HCM Delay and LOS | | CLV and CLV LOS | |
|------------------------------------|-------------------|-----------------|-----------------|-----------------|
| | AM Peak Hour | PM Peak Hour | AM Peak Hour | PM Peak Hour |
| No Action Alternative | 51.7/D | 54.7/D | 1,080/B | 1,225/C |
| Action Alternative | 54.5/D | 164.5/F | 1,117/B | 1,608/F |
| Action Alternative with Mitigation | 32.8/C | 54.3/D | 987/A | 1,248/C |

Figure 6-17: MD 201 (Edmonston Road)/Powder Mill Road HCM and CLV Mitigation Summary

Notes: HCM delays are presented in units of seconds per vehicle

Under the Action Alternative, failing queues would occur for the eastbound left- and right-turn lanes of Powder Mill Road, the westbound left- and right-turn lanes of Powder Mill Road, the northbound leftand right-turn lanes of Edmonston Road, the southbound left-turn lane of Edmonston Road, and the southbound shared through-right lane of Edmonston Road. Successful mitigation of queuing is achieved when the queues are adequately stored or when the differential of a failing queue length is less than 150 feet compared to that the queue under the No Action Alternative. Figure 6-18 compares the mitigation impact on the failing queues at MD 201 (Edmonston Road)/Powder Mill Road intersection. The results show that mitigation would result in the adequate storage of the AM peak hour queues for each turning movement except for the westbound right-turn lane, where the queue length would be 58 feet with mitigation but would be 14 feet shorter compared to the queue under the No Action Alternative. In addition, storage would be adequate for all turning movements of the intersection during the PM peak hour, except for the eastbound left-turn lane and the westbound right-turn lane. However, the eastbound left-turn lane queue would be 287 feet, a reduction compared to the queue under the No Action Alternative. In addition, the westbound right-turn lane would have a queue of 84 feet, or only 21 feet longer than under the No Action Alternative. Whereas the westbound right-turn lane storage is only 40 feet, the proximity of the westbound right-turn lane to the BARC entrance sign on the north side of Powder Mill Road limits the ability to extend the turn lane farther. The increase in queue under the Action Alternative with mitigation measures would be less than 150 feet compared with the queue during the No Action Alternative. Thus, the intersection's queues would be mitigated.

| | Intersection Name/Street Name | Direction | Lane Group | Turning Bay/Link Length (feet) No Action and Action/ Mitigation | No Action Alternative | | Action Alternative with Mitigation | |
|----|---|-----------|---------------|--|--|--|--|--|
| ID | | | | | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 8 | MD 201 (Edmonston Road) and Powder Mill Road (Signalized) | | | | | | | |
| | Powder Mill Road | EB | L | 250/250 | 106 | 332 | 86 | 287 |
| | Powder Mill Road | EB | Т | 1430/1430 | 1156 | 759 | 147 | 279 |
| | Powder Mill Road | EB | Т | -/600 | 0 | 0 | 104 | 200 |
| | Powder Mill Road | EB | R | 500/500 | 704 | 477 | 82 | 109 |
| | Powder Mill Road | WB | L | 250/500 | 250 | 129 | 105 | 310 |
| | Powder Mill Road | WB | Т | 1100/1440 | 266 | 215 | 176 | 513 |
| | Powder Mill Road | WB | R | 40/40 | 72 | 63 | 58 | 84 |
| | MD 201 (Edmonston Road) | NB | L | 400/400 | 361 | 479 | 261 | 386 |
| | MD 201 (Edmonston Road) | NB | Т | 1480/1480 | 368 | 663 | 240 | 424 |
| | MD 201 (Edmonston Road) | NB | R | 275/1480 | 96 | 329 | 0 | 29 |
| | MD 201 (Edmonston Road) | SB | L | 275/275 | 242 | 262 | 133 | 223 |
| | MD 201 (Edmonston Road) | SB | TR | 780/780 | 719 | 441 | 0 | 287 |

Figure 6-18: MD 201 (Edmonston Road)/Powder Mill Road Queuing Mitigation Summary

Notes:

1) EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound.

2) LTR = left / through / right lanes.

3) TWSC = Two-way STOP-Controlled unsignalized intersection.

4) AWSC = All-way STOP-Controlled unsignalized intersection.

5) Red cells denote lane groups whose queuing length exceeds capacity.

Powder Mill Road/Poultry Road (BEP Driveway) (Intersection #10)

As discussed in Section 6-A, the recommended design of the BEP driveway intersection is for signalization of that intersection with actuated-uncoordinated control, a 100-second cycle length, an exclusive eastbound left turn lane, an exclusive westbound right turn lane, two outbound lanes from the driveway, and two inbound lanes into the driveway.

Figure 6-19 presents the summary of the design impact on this intersection according to HCM and CLV capacity metrics. The intersection is currently controlled by an all-way stop and, assuming no modifications to the site access, would operate at a failing LOS F under the Action Alternative. However, designing the driveway intersection as a signal, as previously discussed, would improve the intersection operations to better than the No Action Alternative during the AM and PM peak hours based on the HCM method. Specifically, under the mitigation scenario, the driveway would operate at an overall LOS A during the AM peak hour and LOS D During the PM peak hour based on HCM methods. The CLV method indicates that these design strategies would also result in the intersection operating with a CLV of 868 (LOS A) during the AM peak hour and 1,250 (LOS C) during the PM peak hour. Thus, the signal recommendation satisfies the standards of acceptability according to HCM and CLV methods.

| | HCM Delay and LOS | | CLV and CLV LOS | |
|------------------------------------|-------------------|-----------------|-----------------|-----------------|
| | AM Peak Hour | PM Peak Hour | AM Peak Hour | PM Peak Hour |
| No Action Alternative | 10.6/B | 45.6/E | n/a | n/a |
| Action Alternative | 74.6/F | 276.8/F | n/a | n/a |
| Action Alternative with Mitigation | 7.2/A | 36.8/D | 868/A | 1,250/C |

Figure 6-19: Powder Mill Road/Poultry Road (BEP Driveway) HCM and CLV Mitigation Summary

Notes: HCM delays are presented in units of seconds per vehicle

The impact of the recommended signalization of the BEP driveway on the turning movements is presented in **Figure 6-20**. Under the Action Alternative with Mitigation, 95th percentile queues are demonstrated to be within their available storages. Therefore, no further improvements to queueing are necessary.
| Figure 6-20: Powder Mill I | Road/Poultry Road | (BEP Driveway) | Queuing Mitigation Sul | mmary |
|----------------------------|-------------------|----------------|------------------------|-------|
| 3 | | 1 | J J J | |

| | Intersection Name/Street Name | Direction | | Turning Bay/Link | No Action Alternative | | Action Alternative with Mitigation | |
|----|----------------------------------|-----------|---------------|---|--|--|--|--|
| ID | | | Lane Group | Length (feet) No Action and Action/ Mitigation | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 10 | Powder Mill Road and | Poultry R | oad (BEF | P Driveway) (A | WSC) ^a | | | |
| | Powder Mill Road | EB | LT/L | -/200 | 0 | 0 | 136 | 29 |
| | Powder Mill Road | EB | Т | 240/3250 | 94 | 340 | 0 | 441 |
| | Powder Mill Road | WB | TR/T | 1280/1280 | 108 | 106 | 144 | 178 |
| | Powder Mill Road | WB | R | -/200 | 0 | 0 | 115 | 17 |
| | Poultry Road | SB | LR/L | 420/600 | 0 | 23 | 0 | 252 |
| | Poultry Road | SB | -/R | -/600 | 0 | 0 | 0 | 156 |

Notes:

a This intersection would operate with a signal control with mitigation

1) EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound.

2) LTR = left / through / right lanes.

3) TWSC = Two-way STOP-Controlled unsignalized intersection.

4) AWSC = All-way STOP-Controlled unsignalized intersection.

5) Red cells denote lane groups whose queuing length exceeds capacity.

Powder Mill Road/Springfield Road (Intersection #12)

The effects of mitigation for Powder Mill Road/Springfield Road are shown on **Figure 6-21** based on HCM and CLV capacity metrics. The table presents the mitigation impact on the southbound approach of Springfield Road, whose failure under the Action Alternative triggered the need for mitigation; the table also summarizes the overall intersection operations. Because the intersection is recommended for signalization, the benchmark for acceptable operations under the Action Alternative with Mitigation is based on the overall intersection function and not on the approach that originally failed. The intersection would operate within overall acceptable HCM and CLV standard; therefore, the intersection would be mitigated.

| | HCM Delay and LOS | | CLV and CLV LOS | | |
|------------------------------------|---------------------------|---------|-----------------|-----------------|--|
| | AM Peak PM Peak Hour Hour | | AM Peak Hour | PM Peak Hour | |
| Southbound Springfield Road | | | | | |
| No Action Alternative | 31.1/D | 229.8/F | n/a | n/a | |
| Action Alternative | 184.1/F | 693.7/F | n/a | n/a | |
| Action Alternative with Mitigation | 68.8/E | 89.3/F | n/a | n/a | |
| Overall Intersection | | | | | |
| No Action Alternative | 5.6 | 52.9 | n/a | n/a | |
| Action Alternative | 23.1 | 125.2 | n/a | n/a | |
| Action Alternative with Mitigation | 21.1/C | 26.8/C | 1,059/B | 1,270/C | |

| Figure 6-21: Powder Mill Road/Springfield Road HCM and CLV Mitigation Su | ımmary |
|--|--------|
|--|--------|

Notes: HCM delays are presented in units of seconds per vehicle

The 95th percentile queues of the Powder Mill Road/Springfield Road intersection are shown in Figure 6-22 and indicate that gueues would be in the available storages with under the No Action Alternative and the Action Alternative. Most turning movement queues would be within their available storage under the Action Alternative with Mitigation, however the westbound shared through-right lane of Powder Mill Road would have an AM Peak hour queue of 184 feet that exceeds the distance to the upstream intersection with the BW Parkway Southbound Ramps (Intersection #13). This is an expected impact of signalization, since Powder Mill Road would operate at free flow under the No Action Alternative and the Action Alternative, but signalization would inevitably result in gueuing on Powder Mill Road because signalization guarantees protected phasing for Springfield Road that stops eastbound and westbound traffic. Because of spacing constraints and sensitivity to preservation of the natural visibility within NPS right of way, no geometric improvements are identified or recommended to adequately mitigate the through-moving queues. For instance, restriping the westbound shared through-right lane to an exclusive through lane and building new pavement within NPS right of way to stripe a separate westbound right turn lane up to the BW Parkway Southbound Ramps intersection was evaluated for its potential to improve westbound through queues. However, through-moving queues would have continued to exceed their available storage and the additional pavement would not have been suitable in the interest of preserving forested area on the north side of Powder Mill Road. In conclusion, queuing that would be experienced at this intersection are mitigated to the extent reasonable given the physical constraints of this location.

Figure 6-22: Powder Mill Road/Springfield Road Queueing Mitigation Summary

| | | | | Turning Bay/Link | No Action | Alternative | Action A with Mi | Iternative tigation |
|----|-------------------------------------|-------------|---------------|---|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | (feet) No Action and Action/ Mitigation | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 12 | Powder Mill Road a | nd Springfi | eld Road | (TWSC) ^a | | | | |
| | Powder Mill Road | EB | L | 50/50 | 16 | 27 | 18 | 42 |
| | Powder Mill Road | EB | Т | 1590/1590 | 0 | 3 | 91 | 873 |
| | Powder Mill Road | WB | TR | 140/140 | 6 | 0 | 184 | 110 |
| | Springfield Road | SB | LR | 4110/4110 | 83 | 229 | 174 | 580 |

Notes:

a This intersection would operate with a signal control with mitigation

1) EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound.

2) LTR = left / through / right lanes.

3) TWSC = Two-way STOP-Controlled unsignalized intersection.

4) AWSC = All-way STOP-Controlled unsignalized intersection.

5) Red cells denote lane groups whose queuing length exceeds capacity.

Powder Mill Road/BW Parkway Southbound Ramps (Intersection #13)

The mitigation impact for the Powder Mill Road/BW Parkway southbound ramps is shown on **Figure 6-23** based on HCM and CLV capacity metrics. The table presents the mitigation impact on the southbound approach of the BW Parkway southbound ramp, whose failure under the Action Alternative triggered the need for mitigation; the table also summarizes the overall intersection operations. Because the signalization is recommended for the intersection, the benchmark for acceptable operations under the Action Alternative with Mitigation is based on the overall intersection function and not on the approach that originally failed. The intersection would operate within overall acceptable HCM and CLV standards; therefore, the intersection would be mitigated.

| | HCM Delay and LOS | | CLV and | CLV LOS | | | | | | | |
|------------------------------------|--|---------------------|-----------------|-----------------|--|--|--|--|--|--|--|
| | AM Peak Hour Hour | | AM Peak Hour | PM Peak Hour | | | | | | | |
| Southbound BW Parkway Southbou | Southbound BW Parkway Southbound Ramps | | | | | | | | | | |
| No Action Alternative | 129.6/F | 619.4/F | n/a | n/a | | | | | | | |
| Action Alternative | 357.1/F | 357.1/F 1,141.5/F n | | n/a | | | | | | | |
| Action Alternative with Mitigation | 55.9/E | 49.9/D | n/a | n/a | | | | | | | |
| Overall Intersection | | | | | | | | | | | |
| No Action Alternative | 50.5 | 151.7 | n/a | n/a | | | | | | | |
| Action Alternative | 121.3 | 231.3 | n/a | n/a | | | | | | | |
| Action Alternative with Mitigation | 21.8/C | 12.0/B | 899/A | 1,150/B | | | | | | | |

| Figure 6 22, Devider Mill Deed/DM/ Devin | ·· Couthbarred Domana UCM | and CIV Mitting tions Company |
|--|---------------------------|-------------------------------|
| FIGURE 6-7.5: POWDER WIII ROAD/BW PARKWA | v southdound ramps HUW a | and CLV Mitidation Summarv |
| ingulo o zol i olluoi mini itoudi zili i diltitu | | |

Notes:

HCM delays are presented in units of seconds per vehicle

The 95th percentile queues of the Powder Mill Road/BW Parkway southbound ramps intersection are shown in Figure 6-24. Queues would be in the available storage requirements under the No Action and Action Alternatives, except for the southbound left-turn lane of the BW Parkway southbound ramp. The recommendation for mitigation of the southbound left-turn lane includes extending the lane to 300 feet by restriping within the existing pavement right of way. This change would provide an adequate improvement. Except for the eastbound through movement of Powder Mill Road, queues under the Action Alternative with Mitigation would be within their available storage. Specifically, the eastbound through-moving queues would be 154 feet during the AM peak hour and 175 feet during the PM peak hour, or approximately the distance to the upstream intersection with Springfield Road (Intersection #12). This is an expected impact of signalization. Powder Mill Road would operate at free flow under the No Action and Action Alternatives, but signalization would inevitably result in queuing on Powder Mill Road because signalization guarantees protected phasing for the BW Parkway southbound ramp that stops eastbound and westbound traffic. Because of intersection spacing constraints and the limited right of way of the Powder Mill Road underpass of the BW Parkway, no geometric improvements have been identified to adequately mitigate the through-moving queues. In conclusion, queuing impacts at this intersection would be mitigated to the extent reasonable given the physical constraints of this location.

| Figure 6-24: | Powder Mill I | Road/BW Parkwa | v Southbound | Ramps | Queuing | Mitigation | Summary |
|------------------|---------------|----------------|--------------|-------|---------|------------|---------|
| J · · · · | | | | | | | |

| | Intersection Name/Street Name | | | Turning Bay/Link Length oup (feet) No Action and Action/ Mitigation | No Action Alternative | | Action Alternative with Mitigation | |
|----|----------------------------------|-----------|---------------|--|--|--|--|--|
| ID | | Direction | Lane Group | | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 13 | Powder Mill Road and | MD 295 SB | Ramps (1 | ſWSC)a | | | | |
| | Powder Mill Road | EB | TR/T | 140/140 | 6 | 23 | 154 | 175 |
| | Powder Mill Road | EB | -/R | -/140 | 0 | 0 | 74 | 96 |
| | Powder Mill Road | WB | L | 225/225 | 39 | 79 | 59 | 123 |
| | Powder Mill Road | WB | Т | 520/520 | 0 | 0 | 151 | 99 |
| | BW Parkway SB Ramp | SB | L | 25/300 | 58 | 56 | 236 | 274 |
| | BW Parkway SB Ramp | SB | TR | 1020/1020 | 196 | 1086 | 169 | 104 |

Notes:

a This intersection would operate with a signal control with mitigation

1) EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound.

2) LTR = left / through / right lanes.

3) TWSC = Two-way STOP-Controlled unsignalized intersection.

4) AWSC = All-way STOP-Controlled unsignalized intersection.

5) Red cells denote lane groups whose queuing length exceeds capacity.

Powder Mill Road/BW Parkway Northbound Ramps (Intersection #14)

The mitigation impact for Powder Mill Road/BW Parkway northbound ramps is shown on **Figure 6-25** based on HCM and CLV capacity metrics. The table presents the mitigation impact on the northbound approach of the BW Parkway northbound ramp, whose failure under the Action Alternative triggered the need for mitigation; the table also summarizes the overall intersection operations. Because the intersection is recommended for signalization, the benchmark for acceptable operations under the Action Alternative with Mitigation is based on the overall intersection function and not on the approach that originally failed. The intersection would operate within overall acceptable HCM and CLV standards; therefore, the intersection would be mitigated.

| | HCM Dela | y and LOS | CLV and CLV LOS | | | | | | | |
|--|---------------------------|-----------|-----------------|-----------------|--|--|--|--|--|--|
| | AM Peak PM Peak Hour Hour | | AM Peak Hour | PM Peak Hour | | | | | | |
| Northbound BW Parkway Northbound Ramps | | | | | | | | | | |
| No Action Alternative | 37.2/E | 599.3/F | n/a | n/a | | | | | | |
| Action Alternative | 796.1/F | 1,119.8/F | n/a | n/a | | | | | | |
| Action Alternative with Mitigation | 42.5/D | 155.7/F | n/a | n/a | | | | | | |
| Overall Intersection | | | | | | | | | | |
| No Action Alternative | 5.8 | 38.3 | n/a | n/a | | | | | | |
| Action Alternative | 217.2 | 67.0 | n/a | n/a | | | | | | |
| Action Alternative with Mitigation | 24.8/C | 14.4/B | 572/A | 956/A | | | | | | |

| Figure 6 25, Develor Will Deed/DM/ Develor | ave Marthharmod Damana | NOM and OLV Mitimatia | |
|--|------------------------|-------------------------|------------|
| FIGURE 0-25: POWGER WIIII ROAD/BW PARKWA | av Northdound Rambs | S MUM and ULV MITIDATIO | on Summarv |
| · · · · · · · · · · · · · · · · · · · | | | |

Notes: HCM delays are presented in units of seconds per vehicle

The 95th percentile queues of the Powder Mill Road/BW Parkway northbound ramps intersection are shown in **Figure 6-26**. Queues would be in the available storage requirements under the No Action and Action Alternatives, except for the northbound left-turn lane of the BW Parkway southbound ramp. The recommendation for mitigation of the northbound left-turn lane includes extending the lane to 300 feet by restriping within the existing pavement right of way, which would provide adequate improvement.

These 95th percentile queues also indicate that queues would be in the available storages under the No Action Alternative and the Action Alternative, except for the northbound left-turn lane of the BW Parkway Southbound Ramp. The recommendation for mitigation of the northbound left-turn lane includes extending the lane to 300 feet, by restriping within the existing pavement right of way, which is demonstrated to be an adequate improvement.

Except for the westbound right-turn movement of Powder Mill Road, queues under the Action Alternative with Mitigation would be within their available storage. The westbound right-turn lane would have a full-lane storage length of 100 feet. Whereas the AM peak hour queue length is estimated as 139 feet and the PM peak hour queue length is estimated at 118 feet—exceeding 100 feet—this intersection faces severe limitations, due to its proximity to the bridge between it and the Powder Mill Road/Soil Conservation Road intersection. This bridge between the two intersections spans a tributary of Beaverdam Creek, which constrains the ability to extend the turn lane beyond 100 feet. In addition, the queue of the westbound through lane would be 209 feet in the AM peak hour and 112 feet in the

PM peak hour, compared to a distance of 850 feet to the upstream intersection with Soil Conservation Road (Intersection #15), indicating that there is sufficient storage within the overall westbound approach to accommodate westbound vehicles of either turning movement.

| | | | | Turning Bay/Link | No Action / | Alternative | Action Alternative with Mitigation | |
|----|-------------------------------------|--------------|---------------|--|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | Length (feet) No Action and Action/ Mitigation | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 14 | Powder Mill Roa | ad and MD 29 | 95 NB Ram | ps (TWSC) ^a | | | | |
| | Powder Mill Road | EB | L | 250/250 | 61 | 234 | 133 | 212 |
| | Powder Mill Road | EB | Т | 520/520 | 0 | 185 | 262 | 201 |
| | Powder Mill Road | WB | TR/T | 850/850 | 13 | 37 | 209 | 112 |
| | Powder Mill Road | WB | R | -/100 | 0 | 0 | 139 | 118 |
| | BW Parkway NB Ramp | NB | L | 50/300 | 60 | 90 | 292 | 130 |
| | BW Parkway NB Ramp | NB | TR | 880/880 | 64 | 753 | 127 | 51 |

| Figure 6-26: | Powder Mill | Road/BW I | Parkwav | Northbound | Ramps | Queuina | Mitigation | Summarv |
|---------------|-------------|-----------|---------|----------------------|-------|---------|------------|----------|
| i iguic 0-20. | | | annuay | i i oi u i o o u i o | Numps | Queung | magaaon | Gainnary |

Notes:

a This intersection would operate with a signal control with mitigation

1) EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound.

2) LTR = left / through / right lanes.

3) TWSC = Two-way STOP-Controlled unsignalized intersection.

4) AWSC = All-way STOP-Controlled unsignalized intersection.

5) Red cells denote lane groups whose queuing length exceeds capacity.

Other Roadway Improvements for Consideration

The preceding sections describe intersection control and geometric improvements to the study intersections, which primarily focus on mitigating the operations of those intersections. Improvements that are not essential for the improvement of operations but may achieve other desirable goals, such as traffic calming, can also be considered.

Temporary reductions of speeds from the posted speed of 35 MPH to approximately 25 MPH where conflicts are more likely to occur (e.g., crosswalks and intersections) would significantly reduce the risk of serious crashes to either pedestrians, cyclists, or occupants of a vehicle. A specific consideration for improvement regarding potential speeding issues along Powder Mill Road relates to existing rumble strips that are positioned on Powder Mill Road near the intersections with Poultry Road and Research Road. Rumble strips generate abrasive sounds when passed over, may be regarded as discordant with preferred aesthetics, and are often uncomfortable for people on bicycles or motorcycles; however, other alternatives are available that also achieve speed reduction goals.

At either intersection, as recommended in the state of Pennsylvania for reference, speed tables may be positioned on Powder Mill Road approximately 150 feet east and west of the Research Road intersection or 250 feet east and west of the Poultry Road/BEP driveway intersection, assuming it is signalized as previously recommended (FHWA 2017). Considerations should be given to drainage for the design of speed tables. Because Powder Mill Road serves the express Metrobus Route B30, implementation of speed cushions in lieu of speed tables may be considered. While speed tables feature raised areas of the roadway that extend along the entire width of the traveled roadway, speed cushions are raised areas in the roadways that differ from speed tables in that the raised areas of each approach have gaps on either side. The gaps created by the speed cushion allow vehicles with wide tracks, such as emergency vehicles and buses, to pass through the gaps of the speed cushion and prevent speed reductions for those vehicles. In this way, speed cushions may be preferential to speed tables for the ease of emergency vehicles.

Approximately 650 feet east of the Research Road intersection, a marked crosswalk connects the north and south sides of Powder Mill Road to sidewalks that serve nearby USDA facilities. Two sets of rumble strips are positioned on Powder Mill Road approximately 100 feet east of the crosswalk. While pedestrians may be protected from speeding vehicles approaching from the east on Powder Mill Road, no apparent traffic calming measures are available immediately west of the crosswalk on Powder Mill Road. A potential improvement to this condition would be to replace the marked crosswalk with a raised crosswalk to slow vehicles and install streetlighting that could adequately improve the visibility of pedestrians using the crosswalk.

C Signal Warrant Analysis Summary

A signal warrant analysis is a quantitative assessment based on traffic volumes and established standards to determine if installing a traffic signal at a specific intersection is justified or warranted. A signal warrant analysis was conducted following the guidelines of the 2009 Manual on Uniform Traffic Control Devices (MUTCD) (FHWA 2012).

A peak hour warrant (Warrant 3) following the MUTCD requires two categorial tests (Warrants 3A and 3B). If either Warrants 3A or 3B pass, then the intersection meets the warrant for signalization. Warrant 3A includes three subtests: (1) a calculation of the stopped time delay of one minor street approach controlled by a stop sign, (2) exceeding the threshold for volume of the same minor street approach, and (3) exceeding the threshold for the total intersection volume. Warrant 3B is based on a plotted chart published in the MUTCD (Figure 4C-3; FHWA 2012). The plotted point in the chart indicates the highest minor street approach volume versus the total major street approach volume. If the plotted point is situated higher than the appropriate curve (based on the number of lanes for major and minor approaches), the peak hour warrant is met.

- As has been previously discussed, four unsignalized study intersections (including Intersection #10, where the site driveway is located) are recommended for signalization. This section presents a peak hour warrant analysis (based on Warrant 3) for each of those intersections, which include:
- Powder Mill Road/Poultry Road (BEP Driveway) (Intersection #10)
- Powder Mill Road/Springfield Road (Intersection #12)
- Powder Mill Road/MD 295 (BW Parkway) southbound ramps (Intersection #13)
- Powder Mill Road/MD 295 (BW Parkway) northbound ramps (Intersection #14)

Figure 6-27 summarizes the peak hour warrant (Warrant 3) analysis results for each of the four study intersections, and **Figures 6-28** through **6-31** present the MUTCD plotted graph (Warrant 3B) with the volumes of each intersection point plotted. Based on the peak hour warrant analysis, each of the intersections would meet the warrant for signalization.

| ID | Warrant and Intersection | Forecast | Forecasted Values | | | Morrout |
|----|--|-----------------------------------|-------------------|----------------------|-------------------|-------------------|
| | | AM Peak Hour | PM Peak Hour | Warrant Threshold | Category Check | Met or Not Met |
| 10 | Powder Mill Road/Poultry Road (BEP Drive | way) | | | | |
| | Warrant 3A.1 - Stopped Time Delay | 0 veh-hrs | 85 veh-hrs | 4 veh-hrs | Met | |
| | Warrant 3A.2 - Minor Street Volume | 0 | 862 | 150 | Met | |
| | Warrant 3A.3 - Total Intersection Volume | 1403 | 1895 | 650 | Met | |
| | Warrant 3B - Plotted Point on Curve | S | ee Figure 6-28 | | Met | Met |
| 12 | Powder Mill Road/Springfield Road | Powder Mill Road/Springfield Road | | | | |
| | Warrant 3A.1 - Stopped Time Delay | 8 veh-hrs | 60 veh-hrs | 4 veh-hrs | Met | |
| | Warrant 3A.2 - Minor Street Volume | 155 | 309 | 150 | Met | |
| | Warrant 3A.3 - Total Intersection Volume | 1237 | 1713 | 650 | Met | |
| | Warrant 3B - Plotted Point on Curve | S | ee Figure 6-29 | | Met | Met |
| 13 | Powder Mill Road/BW Parkway Southbound | d Ramps | | | | |
| | Warrant 3A.1 - Stopped Time Delay | 52 veh-hrs | 137 veh-hrs | 4 veh-hrs | Met | |
| | Warrant 3A.2 - Minor Street Volume | 524 | 432 | 150 | Met | |
| | Warrant 3A.3 - Total Intersection Volume | 1549 | 2141 | 650 | Met | |
| | Warrant 3B - Plotted Point on Curve | See Figure 6-30 | | | Met | Met |
| 14 | Powder Mill Road/BW Parkway Northbound Ramps | | | | | |
| | Warrant 3A.1 - Stopped Time Delay | 94 veh-hrs | 38 veh-hrs | 4 veh-hrs | Met | |
| | Warrant 3A.2 - Minor Street Volume | 427 | 122 | 150 | Met | |
| | Warrant 3A.3 - Total Intersection Volume | 1570 | 2165 | 650 | Met | |
| | Warrant 3B - Plotted Point on Curve | S | ee Figure 6-31 | | Met | Met |

Figure 6-27: Peak Hour Warrant Analysis Summary



Figure 6-28: MUTCD Warrant 3B – Peak Hour Warrant with Intersection Point Plotted for Powder Mill Road Road/Poultry Road (BEP Driveway)

Notes:

1) Triangular symbol indicates AM peak hour volumes; Circular symbol indicates PM peak hour volumes



approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 6-29: MUTCD Warrant 3B – Peak Hour Warrant with Intersection Point Plotted for Powder Mill Road Road/Springfield Road

Notes:

1) Triangular symbol indicates AM peak hour volumes; Circular symbol indicates PM peak hour volumes



Figure 6-30: MUTCD Warrant 3B – Peak Hour Warrant with Intersection Point Plotted for Powder Mill Road/BW Parkway Southbound Ramps

Notes:

1) Triangular symbol indicates AM peak hour volumes; Circular symbol indicates PM peak hour volumes



approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 6-31: MUTCD Warrant 3B – Peak Hour Warrant with Intersection Point Plotted for Powder Mill Road/BW Parkway Northbound Ramps

Notes:

1) Triangular symbol indicates AM peak hour volumes; Circular symbol indicates PM peak hour volumes

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7. ROM Costs

A Mitigation Design

Given the conceptual nature of the Mitigation Designs articulated in the previous chapter, the Rough Order of Magnitude (ROM) Costs derive primarily from the surface area consumed through the implementation of in these upgrades, measured in square footage. Thus, each final Construction ROM directly correlates to the expected square footage of newly installed surface necessary to achieve the outcome indicated in each of the five Design Concepts: Intersection #6, Intersection #7, Intersection #8, Intersections #12, #13, #14 (one single unified mitigation strategy), and the BEP Driveway (Intersection #10). **Figure 7-1** shows the ROM totals and the breakdowns of their component parts.

| ID | Intersection | Construction ROM | Construction Grading A ROM S | | Asphalt Surfacing | Misc. Improvements | |
|---------------|---|---------------------|---------------------------------|-------------|----------------------|-----------------------|--|
| 6 | MD 201 (Edmonston) and Sunnyside | \$5,940,000 | \$1,485,000 | \$1,782,000 | \$2,376,000 | \$297,000 | |
| 7 | MD 201 (Edmonston) and Beaver Dam | \$2,650,000 | \$662,500 | \$795,000 | \$1,060,000 | \$132,500 | |
| 8 | MD 201 (Edmonston) and Powder Mill | \$6,300,000 | \$1,575,000 | \$1,890,000 | \$2,520,000 | \$315,000 | |
| 10 | Powder Mill and Poultry (BEP Driveway) | \$2,220,000 | \$555,000 | \$666,000 | \$888,000 | \$111,000 | |
| 12 | Powder Mill and Springfield | \$700,000 | \$175,000 | \$210,000 | \$280,000 | \$35,000 | |
| 13 | Powder Mill and BW Parkway Southbound | \$1,600,000 | \$400,000 | \$480,000 | \$640,000 | \$80,000 | |
| 14 | Powder Mill and BW Parkway Northbound | \$1,900,000 | \$475,000 | \$570,000 | \$760,000 | \$95,000 | |
| 12, 13, 14 | Powder Mill, Springfield, and BW Parkway | \$4,200,000 | \$1,050,000 | \$1,260,000 | \$1,680,000 | \$210,000 | |
| | Total Improvements | \$21,310,000 | \$5,327,500 | \$6,393,000 | \$8,524,000 | \$1,275,500 | |

Figure 7-1: Construction ROM for Mitigation Strategies

The per-square-foot costs account for grading (approximately 25%), aggregate sub-base (approximately 30%), asphalt surfacing (approximately 40%), and miscellaneous items, such as striping, signage, and traffic signals (approximately 5%). These estimates assume a balanced site with no cause for soil remediation or water mitigation. The estimates also assume use the site designs validated during the Future Conditions report, and the results are subject to change based on adjustments to the mitigation designs that may take place in future iterations. They use a loaded rate and assume burdened labor. The margin of error for these estimates is -30% to +50% in accordance with ACCE International guidelines for a class 5 estimate. Inclusion of design-related costs would necessitate a 4% mark-up into the ROMs for total improvements.

Though subject to fluctuations induced by approvals from state, county, and federal agencies, the estimated duration given the scale of the construction is 24 months. Therefore, with an award date of June 2021 and a start of January 2022, the reasonable completion date would be January 2024.

B Land Acquisition

The metrics listed for Land Acquisition used a different methodology than the above Construction ROM, and any further analysis should perceive these numbers on their own terms, as an alternative estimate

that may apply to potential eminent domain proceedings, if they need to take place to expand rights of way necessary for the desired construction. For most of the listed mitigation strategies, land acquisition would not comprise any quantifiable cost, because most land is federally owned, and the requisite title transfer could take place through a Memorandum of Understanding or similar agreement between various federal agencies. As **Figure 4-5** indicated, the majority of parcels in the study area are exempt, largely due to public ownership.

Figure 7-2 shows land acquisition estimates, for the only two intersections where land acquisition might take place due to the presence of privately owned (non-federal) land: Intersection #7 and Intersection #8. Intersection #7 features four privately owned parcels (single-family detached homes) that could be affected through extensions of the right of way and resurfacing, while Intersection #8 features a parcel owned by a non-profit (tax-exempt but a private landowner), and three for-profit commercial entities.

| ID | Intersection | Land Acquisition |
|------------|---|---------------------------------------|
| 6 | MD 201 (Edmonston) and Sunnyside | Exempt: USDA |
| 7 | MD 201 (Edmonston) and Beaver Dam | \$19.99 per sq ft (also Exempt: USDA) |
| 8 | MD 201 (Edmonston) and Powder Mill | \$4.43 per sq ft |
| 10 | Powder Mill and Poultry (BEP Driveway) | Exempt: USDA |
| 12, 13, 14 | Powder Mill, Springfield, and BW Parkway | Exempt: USDA & Treasury |

Figure 7-2: Land Acquisition by Median Square Footage

The privately-owned residential lands (Intersection #7), seen in **Figure 7-3**, use a differing methodology from the commercial/non-profit lands (Intersection #8). All parcel square footage comes from Prince George's County Geospatial Data, but assessment data's tendency to under-estimate residential properties impelled the Project Team (A/E) to use fair market value for the homes as estimated by a widely recognized real estate search engine (Trulia.com), which offers the most up-to-date fair market value estimates, using a combination of public data (assessments), historic listings, and recent sales of those homes with similar characteristics (lot size, square footage, location, bedrooms and bathrooms, etc.). By combining these two variables—publicly recognized parcel size with fair market estimates--the median value of land per square foot was determined to be \$19.99 at this Intersection. It is essential to note that the current design conspicuously avoids any acquisition of these parcels should account for both the cost of acquisition estimated here, as well as the broader impact of a four-lane arterial in close proximity to homes, which may prompt the landowners to seek a complete taking via eminent domain.

| Trulia Market Value Estimation | Parcel Square Footage | Cost Per SF |
|--------------------------------|-----------------------|-------------|
| \$275,877 | 13,564 | \$ 20.34 |
| \$374,240 | 15,256 | \$ 24.53 |
| \$293,391 | 14,945 | \$ 19.63 |
| \$305,039 | 48,603 | \$ 6.28 |
| | MEDIAN | \$ 19.99 |

Figure 7-3: Disaggregated Basis for Median Value, Using Intersection #7 Parcels

For Intersection #8, seen in **Figure 7-4**, Trulia is not available; it only provides estimates for residential properties. Thus, the next best option is Prince George's County Geospatial Data, featuring the latest assessment records (last updated June 2019) and the same data source's measurement for parcel area. The median value of land per square foot was determined to be \$4.43 at this intersection. This figure is considerably lower, which does not logically follow from real estate convention, given that the intersection is more prominent (higher traffic flow on Powder Mill Road than on Beaver Dam) and the land uses are commercial. However, two of the parcels are zoned commercial but are vacant and unimproved, resulting in a lower assessed value; furthermore, county appraisals are usually valued lower than an independent appraising entity (such as Trulia). Lastly, the considerable presence of protective easements on several of these parcels—as previously referenced in the Site Analysis—places considerable restriction on development, thereby likely lowering anticipated fair market value of the land.

| Assessed Value (PG County GIS Data) | Parcel Square Footage | Cos | t Per SF |
|-------------------------------------|-----------------------|-----|----------|
| \$546,100 | 96,964 | \$ | 5.63 |
| \$443,700 | 535,499 | \$ | 0.83 |
| \$59,966 | 443,284 | \$ | 3.23 |
| \$1,683,500 | 211,489 | \$ | 7.96 |
| | MEDIAN | \$ | 4.43 |

Figure 7-4: Disaggregated Basis for Median Value, Using Intersection #8 Parcels

C Responsible Party

The primary agency responsible for any of the improvements indicated in the mitigation strategies depends on the ownership of the respective rights of way, as indicated in **Figure 7-5**. Any roads that pass through BARC fall under USDA's control, which in this instance refers to a considerable portion of Powder Mill Road.

| Intersection | Intersection | Responsible Agencies |
|--------------|---|--|
| 6 | MD 201 (Edmonston) and Sunnyside | Maryland SHA/Prince George's County DPW&T |
| 7 | MD 201 (Edmonston) and Beaver Dam | Maryland SHA/Prince George's County DPW&T |
| 8 | MD 201 (Edmonston) and Powder Mill | Maryland SHA/Prince George's County DPW&T |
| 10 | Powder Mill and Poultry (BEP Driveway) | USDA |
| 12, 13, 14 | Powder Mill, Springfield, and BW Parkway | USDA/NPS |

Figure 7-5: Responsible Parties for Improvements at Each Recommended Intersection for Mitigation.

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N&destination=GREENBELT+METRO+STATION&travelby-trip-planner=BCFKLRSTX123&arrdep-trip-planner=A&hour-leaving-trip-planner=6&minute-leaving-trip-planner=00&period-leaving-trip-planner=AM&month-leaving-trip-planner=10&day-leaving-trip-planner=29&route-trip-planner=T&walk-distance-trip-planner=.75#main-content.

9. APPENDIX A: SIGNED SCOPING AGREEMENT AND COMMENT RESPONSES

Traffic Impact Study Scoping Agreement

The Maryland-National Capital Park and Planning Commission

Prince George's County Planning Department Transportation Planning Section, Countywide Planning Commission

| Project Name: | nd Printing Transportation Study | | | |
|---|---|---|--|--|
| Policy Tier (Developed, Developing, or Rural): Please note if in center or corridor: | Proposed site located in "Rural" designated area; therefore, LOS C standard for Critical Lane Volume Analysis. | | | |
| Type of Application (see Table 3): | Transp Impact Bureau Greent Agricul provid | ortation Study to Statement asse of Engraving an pelt Maryland, us tural Research C e authority to tra | o accompany an Environmental ssing the impacts of relocating the id Printing from Washington D.C. to sing USDA property at the Beltsville Center (BARC). The 2018 Farm Bill will ansfer land to BEP | |
| Project Location: | USDA- | owned 104-acre | site at BARC adjacent to Poultry Road | |
| Traffic Consultant Name: Contact Number(s): | Allianc Mark B Eric Mo Harvey | e Consulting Gro Ierger, WSP – 20 Afee, Alliance C Johnson, USACE | up and WSP (formerly Louis Berger) 2-303-2787 onsulting Group – 202-617-8485 5 – 410-962-7961 | |
| Describe the Proposal Under Study: Residential—Number & Type of Units: Commercial—Amount & Type of Space: Other Uses and Quantity: | Propos Printin facility suppor | ed construction g Facility ranging would include a t staff needs. | of new Bureau of Engraving and from 850,000 SF to 1M SF. The printing facility and office space to | |
| Are pass-by trip rates in accordance with the guidelines? (circle one) | Not | Applicable | If No, please provide explanation on separate sheet. | |
| Are there diverted trips? (circle one) | Not | Applicable | If Yes, please provide explanation on separate sheet. | |
| Will a TOD credit be used? (Section 4 of the Guidelines) (circle one) | Not | Applicable | Note that all development in centers and corridors will be evaluated for TOD. | |
| Will a transit facilities credit be used? (Section 5 of the Guidelines) (circle one) | Yes | USDA Shuttle Bus to Greenbelt Metro Station | Need/nexus must be justified in study, and it must be supported by operating agency. | |
| Will a bike/ped facilities credit be used? (Section 6 of the Guidelines) (circle one) | No | | Need/nexus must be justified in study, and it must be supported by operating agency. | |
| Are additional trip reductions (internal trips, transit trips, etc.) proposed? (circle one) | Yes | Carpooling | If Yes, please provide explanation on separate sheet. | |

Attach a map (or maps) showing the study area network with included intersections and links, estimated site trip distribution, and growth factors for through traffic.

| SHA/DPW&T capital program improvements assumed: | None | | | |
|---|--|---|--|--|
| Other improvements assumed: | None | | | |
| Is Mitigation (Section 8 of the Guidelines) to be proffered? (circle one) | TBD | Note the locational criteria in Section 8, and please note the clarifications regarding mitigation included in Section 3, Subsection E. | | |
| Is a cooperative funding arrangement (such as a SCRP, PFFIP, or some other pro rata) to be used? (circle one) | TBD | If Yes, please provide explanation on separate sheet, and note limitations in Section3, Subsection E. | | |
| Will summer counts be used? (circle one) | Counts taken in September | The use of summer counts must have specific concurrence of TPS staff. | | |
| Have there been discussions with the permitting agency (DPW&T and/or SHA) regarding access to this site and the analysis requirements? (circle one) | No – discussion between USDA and BEP regarding access from Powder Mill Road and Poultry Road | Section 1, Subsection E, strongly advises that these discussions occur early in the development review process. Note that driveway access onto arterial facilities must be justified and approved by the Planning Board as a part of the subdivision process. | | |
| Has a listing of background development been developed? (circle one) | Beltway Plaza, North Core at Greenbelt Station, and Residential units at Cherrywood Lane | If Yes, please provide the list so that TPS staff may either concur with it or provide changes. | | |
| Have the costs and feasibility of potential off-site transportation improvements been evaluated? (circle one) | That is the purpose of the study. | If No, bear in mind that Section 3, Subsection D, requires that any recommended physical off- site improvements include an evaluation of feasibility. | | |

SIGNED:

JOHNSON.HARVEY.L.1229425958

Digitally signed by JOHNSON.HARVEY.L.1229425958 Date: 2019.10.20 12:10:15 -04'00'

Date Traffig Consultant 2019 TPS/Coordinator (or Supervisor) Date This form is not required for sites that do not require a TIS

APPROVED:

Trip Generation

The new site would contain 1,427 employees. The production staff would be present during their shift hours. Administrative staff would be present during the daytime shift and would be expected to arrive in a similar pattern as a typical government office. Figure 1 contains a breakdown of number of employees by time of day.

| | want sviles as me | 1 Mar 1 Mar 1 Mar 1 Mar 1 Mar | | |
|----------|--------------------|-------------------------------|-------------------------|--------------------|
| Shift | Total Employees | Production Staff | Administrative Staff | Shift Hours |
| DAY | 1,138 | 884 | 254 | 6:30 AM - 3:00 PM |
| Evening | 168 | 168 | | 2:30 PM - 11:00 PM |
| Midnight | 166 | 166 | | 10:30 PM - 7:00 AM |

Figure 1: Total Trips Generated

TOTAL 1,472

The Institute of Traffic Engineers (ITE) *Trip Generation Manual 9th Edition* was referenced to provide guidance regarding the number of administration employees that would arrive during the shift peak hour and external roadway peak hour. The ITE Land Use Code 715 (Single Tenant Office Building) provided the best match to the proposed facility because it closely matches the proposed land use and has been studied over 35 times by ITE. The resultant trips calculated by ITE manual were subtracted from the total administrative trips to estimate the number of administrative trips that would occur between 6:00 AM and 8:00 AM in the morning and 3:00 PM and 5:00 PM in the afternoon. These values were then divided by two to estimate the number of administrative trips that might occur during the morning and afternoon shift peak hour. Figure 2 presents the administrative trip pattern.

Figure 2: Administrative Arrival Pattern

| | Arrivals Out Peak Hour (IT | side of Shift E Calculated) | Arrivals Duri Hour (254 st | ng Shift Peak aff minus ITE |
|---------------|-------------------------------|--------------------------------|-------------------------------|--------------------------------|
| | AM | PM | calculated AM | I value/2) PM |
| Daytime Staff | 135* | 130** | 60 | 62 |

* ITE Land Use Code 715 (0.53 X 254 administrative staff)

** ITE Land Use Code 715 (0.51 X 254 administrative staff)

The production staff and administrative employees who would arrive during the same AM and PM peak hours were combined resulting in 944 and 946 peak hour trips, respectively. The total administrative employee trips generated during the external roadway AM and PM peak hour would be 135 and 130, respectively. Figure 3 presents the results.

Figure 3: Total Trips Generated

| | Peak Arrival Time | AM | Peak Departure Time | PM |
|--------------------------|-------------------|-----|---------------------|-----|
| Shift Peak Hour | 6:00 – 7:00 AM | 944 | 3:00 – 4:00 PM | 946 |
| Roadway System Peak Hour | 7:45 – 8:45 AM | 135 | 5:00 – 6:00 PM | 130 |

The study will assess the AM and PM production staff peak hours because they reflect the bigger traffic impact.

Parking Requirement

The National Capital Planning Commission (NCPC) recommends that Federal agencies located beyond 2,000 feet from a Metro station provide a parking ratio of 1 space per every 2.0 employees. A total of 1,138 daytime employees are expected to work at the new facility. Two parking ratios are recommended to cover BEP employees depending on the staff type as follows:

- All production staff would follow a 1:1 parking ratio
- All administrative staff would follow a 1:2 parking ratio

The number of employee parking spaces would be 1,179 spaces, composed of the following calculations:

- 1. Daytime Production Staff = 884 spaces (1:1 parking ratio)
- 2. Daytime administrative staff = 127 spaces (1:2 parking ratio)
- 3. Overlap of other shift = 168 spaces (1:1 parking ratio)

The recommended 1:1 parking ratio for production staff is based on a number of factors including impact to the BEP mission, transit availability, and union agreements:

 <u>BEP MISSION</u>: As noted in the April 2018 Government Accountability Office report titled Options for and Costs of a Future Currency Production Facility, "The BEP is not an ordinary government agency requiring an ordinary government building. The BEP is a manufacturing facility – a printing plant – which produces an iconic commodity trusted worldwide." As such, BEP employees are not typical government employees who have wide latitude on work center arrival and departure times. BEP production and production support employees must be at their respective work center at specific times or the BEP production process comes to a halt.

There is approximately a 30-minute overlap of production staff employees to ensure continuity of printing press operations. Production presses cannot be taken off-line in order to facilitate a shift change, because the resulting shut down/restart process will significantly increase product spoilage and production costs. As such, BEP requires enough parking spaces to accommodate both the outgoing and in-coming production and production support workers.

BEP has agreements with a number of unions that represent the production workers. These agreements include the start and end of shift times.

2. <u>METRORAIL TRANSIT AVAILABILITY</u>: Access to BEP by Metrorail would require employees to ride the Metro Green or Yellow Line to Greenbelt Metro Station, transfer to a USDA shuttle bus that would drop them off at the pedestrian gate entrance, and then they would have a short walk to the BEP building entrance. For BEP production staff to arrive in time for the daytime shift, they must board a 6:00 AM USDA shuttle bus at the Greenbelt Station. Only the first Green Line or Yellow Line train on weekdays is scheduled to arrive before 6 AM (5:51 and 5:53 AM) at Greenbelt Station. The USDA shuttle bus will take 10-12 minute to drive to the BEP security gate. After departing the bus, an additional 15-20 minutes must be allocated to cover the time for employees to pass through site security and change into BEP provided uniforms before starting their shift.

For employees arriving for the 6:30 AM shift, the Metrorail schedule creates a single point of mission failure given that there is only one train arriving on each line that could meet the 6:00 AM USDA shuttlebus. It could endanger the mission to assume all employees will successfully catch one of these trains and that the trains will operate on time each weekday of the year.

Page 5

While the current BEP staff modal split for public transportation is 44%, this is due to the proximity of BEP to the center of the Metrorail hub and spoke system and a station is located within a fiveminute walk. The 44 percent represents the percentage of all BEP employees and may represent a majority of administrative workers who have the flexibility to arrive between 6:00 and 9:00 AM each weekday.

Figure 5 on the next page reveals the distribution of employees' residences by zip code, reveal that a sizable number live in southeastern Prince George's County, Charles County, and Stafford County (VA), well outside the limits of WMATA's Metrorail lines.

- 3. <u>METROBUS TRANSIT AVAILABILITY</u>: One Metrobus route serves the BEP facility (Route 87), but an employee would need to reside in Laurel, MD to access the bus (less than 20 current employees live in Laurel).
- 4. <u>MARC TRANSIT AVAIABILITY</u>: The first MARC Train from Baltimore to Greenbelt Station could meet the USDA 6:00 AM shuttle departure, but shift staff ending their shift at 3:00 PM would have to wait 2 hours before they could board a train home.

MARC Trains from Washington DC in the morning do not arrive until after the start of the Daytime shift.

5. <u>CARPOOL OPTION</u>: Carpools could help to offer production staff another transportation option. The MWCOG 2016 State of the Commute indicated that 5.4 percent of commuters carpool on a daily basis and up 7 percent carpooled when traveling to work less than 5 days per week. Based on a comparison of the federal facilities in the national capital region, the highest percent of commuters that traveled in a carpool did not exceed 12 percent. These values are presented below in Figure 4:

| Federal Facility | Percent that Carpooled |
|----------------------------|------------------------|
| 2013 NSA Bethesda TMP | 11.3% |
| 2014 JBAB TMP | 10.5% |
| 2015 NRL TMP | 5.5% |
| 2013 Carderock TMP | 10.7% |
| 2014 Naval Observatory TMP | 7.6% |
| 2013 NSF Arlington TMP | 9.0% |
| 2015 Navy Yard TMP | 10.2% |

Figure 4: Comparison of Carpool Percentages among DC-area Federal Facilities



The total spaces would therefore be 1,011 spaces to accommodate daytime employees plus the maximum number of staff from the evening or overnight shifts or 168. *The total number of employee spaces required would be 1,179 spaces to accommodate employees.*

Visitor parking spaces may also be included, but are exempt from the NCPC parking ratio.

Modal Split

BEP is planning to conduct a commuter survey to ask existing employees if they would consider alternative transportation options. In lieu of the survey results and following other Federal facilities, an estimate of 10 percent of administrative employees (equivalent to 2 percent of all daytime employees) would carpool. Assuming a three person per vehicle occupancy for carpools, carpoolers would require 8 parking spaces, leaving 1,003 parking spaces for single occupant vehicles (SOV). This would result in SOVs representing 47 percent of administrative employees (equivalent to 88 percent of all daytime employees). The remaining 10 percent would represent those who would opt to take transit or use a bicycle to commute. Based on the site location, it is not assumed that employees would commute by walking. Figure 6 presents the proposed modal splits.

| | - 1 0 | | |
|-------------|--------------|---------|----------|
| Travel Mode | Percent | Persons | Vehicles |
| SOV | 88% | 1,003 | 1,003 |
| Carpool | 2% | 23 | 8 |
| Transit | 9% | 1.00 | N/A |
| Bicycle | 1% | 11 | N/A |
| TOTAL | 100% | 1,138 | 1,011 |

Figure 6: Proposed Modal Split

Figure 7: Proposed Trip Distribution

| Route | Percent |
|-----------------------------------|---------|
| Capital Beltway WB (I-95/I-495) | 22.5% |
| BW Parkway NB | 9.5% |
| BW Parkway SB/ Capital Beltway SB | 63.5% |
| MD 201 NB (Edmonston Rd) | 2.0% |
| MD 201 SB (Edmonston Rd) | 1.5% |
| Powder Mill Road EB | 0.5% |
| Powder Mill Road WB | 0.5% |
| TOTAL | 100% |

Trip Distribution/Study Area:

The zip codes for the existing employees was used to develop the trip distribution for the future site. The employee survey will also ask questions pertaining to route preferences to access the site and might be used to tweak the distributions. Based on the zip code database, the majority of employees would most likely use the Baltimore-Washington Parkway or Capital Beltway to access the site. The proposed study area would comprise of 15 intersections and include Powder Mill Road between the Baltimore-Washington Parkway and MD 201, MD 201 between I-95 and Powder Mill Road, Odell Road at MD 201, and Odell Road and Poultry Road. Figure 7 (above) presents the proposed trip distribution, and the map at Figure 8 illustrates the proposed trip distribution and proposed study area.



No Build Condition Regional Growth

Six years of traffic counts were compared to develop a background growth rate for the study area. Traffic volumes from MD 201 - south of Sunnyside Avenue, MD 201 - north of Sunnyside Avenue, and Powder Mill Road between MD 201 and Baltimore-Washington Parkway were compared. Based in the comparison, the average yearly growth rate was 1.2 percent. Figure 9 presents six years of traffic volumes and Figure 10 presents the yearly growth comparison.

| Functional | | | | Traffic | Volumes | | |
|----------------|-----------------------------|--------|--------|---------|---------|--------|--------|
| Class | SUPER TRANSPORT | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| Minor Arterial | MD 201 - South of Sunnyside | 32,821 | 32,722 | 36,330 | 34,601 | 35,432 | 35,860 |
| Minor Arterial | MD 201- North of Sunnyside | 24,331 | 24,262 | 26,643 | 25,374 | 25,985 | 23,490 |
| Minor Arterial | Powder Mill Road | 10,861 | 10,832 | 11,893 | 11,324 | 11,605 | 11,960 |

Figure 9: Six Years of Traffic Volumes

Figure 10: Yearly Growth Comparison

| Functional Class | Street | Avg. 2013- 2014 | Avg. 2014- 2015 | Avg. 2015- 2016 | Avg. 2016- 2017 | Avg. 2017- 2018 | Avg. 2011- 2018 | | | | | |
|-------------------------------|-----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--|--|--|--|--|
| Minor Arterial | MD 201 - South of Sunnyside | -0.3% | 11.0% | -4.8% | 2.4% | 1.2% | 1.9% | | | | | |
| Minor Arterial | MD 201- North of Sunnyside | -0.3% | 9.8% | -4,8% | 2.4% | -9.6% | -0.5% | | | | | |
| Minor Arterial | Powder Mill Road | -0.3% | 9.8% | -4.8% | 2.5% | 3.1% | 2.1% | | | | | |
| Overall Yearly Growth Average | | | | | | | | | | | | |

Traffic Analysis – Mitigation Thresholds

Establishment of traffic analysis thresholds will help to determine if mitigation is necessary, and if so, how much mitigation to recommend. The following presents the thresholds for the traffic operations and queueing:

- Critical Lane Volume (CLV) must be equal or lower than a 1,300 CLV (LOS C) to pass. If the No Build Condition is failing, then the Build Condition CLV will be improved to an equal or lower CLV than the failing value. The CLV will be reported using a custom Excel table.
- Highway Capacity Manual 6th Edition must be LOS D or better to pass. If the No Build Condition is LOS E or F, then the Build Condition LOS will be improved to equal or better LOS than under the No Build. Synchro will be used to assess the HCM 6th Edition LOS. If an intersection signal timing is not compliant with HCM 6th editions rules, such as special pedestrian or hold phases, then the HCM 2000 results will be reported within Synchro. If the No Build LOS is LOS E or F, the Build Condition will not increase the vehicle delay by more than 5 percent.
- 95th Percentile Queueing Analysis must not exceed the available storage capacity of the turning lanes or interfere with the previous upstream intersection. If the No Build 95th Percentile Queueing conditions already exceed the available storage, the Build Condition will not increase the queue length by more than 150-feet. SimTraffic will be used to assess the queueing.

Driveway Location Concept Plan

This concept plan identifies the major site constraints that would influence the placement of driveway entrances to the Bureau of Engraving and Printing's (BEP) Beltsville Agricultural Research Center (BARC) site from Powder Mill Road and Odell Road, as seen in Figure 11. Alternative site plans are feasible and will be

explored further with these constraints in mind. The plan was prepared based on preliminary information provided by the BEP and the Security Concept Site Planning and Area Development considerations in the BEP Future Workplace Recommendations Report (Final 17 August 2017). The site development program includes the following:

- 850,000-1,000,000 square foot building for manufacturing, storage, and office uses;
- 1,179 parking spaces using the ratio and designations agreed upon during the meeting with NCPC on 4 October 2019, and elaborated during the "Parking Requirement" section of this memo
- a visitor center and visitor parking;
- loading areas for truck deliveries;
- internal circulation; and
- stormwater management facilities.

Figure 11: Conceptual Plan for Driveway Location





Comment Submittal Sheet

Submitted By:Eric McAfeeDate and Time:18-Jun-20

Recipients:

Submittal Name & Type: Bureau of Engraving and Printing: Traffic Impact Study at BARC - Prefinal

| Comment # | Reviewer Name | e Agency / Unit | Chapter / Volume of Pag Report N | ge / Slide | Paragraph / Figure (if applicable) | Critical | nt ? Comment | DrChecks? | AE Responder | AE Response Status | AE Discussion | Potential Scope | Potential Cost | Potential Schedule | A/E Fulfilled Obligatio in the Comment? | 1 Final Resolution |
|--------------|--------------------------------|--|--|------------|--|----------|--|-----------|--------------|-------------------------|---|--------------------|-------------------|-----------------------|--|--|
| 1 | Fric | | General Concerns | | | | Representation of graphics is inconsistent: some use frames and some don't, and the inclusion of north | No | Alliance | Concur | The production team will ensure consistency in appearance among all maps. | No | No | No | Partial | Still awaiting Adaba Illustrator canacity to fix the Utility Man |
| 2 | | SHA: Traffic Forecasting | | 1 | Figure 4-10 | | The westbound lane configuration should be a shared through/right-turn lane and a dedicated left-turn | No | WSP | For Information | The production team rechecked the lane geometry for all intersections with westbound approaches that have a through movement (#3, #8, and #9) and could not find any errors in either | No | No | No | Yes | WSP defends its research and findings, unless there's some detail |
| 3 | Rafey Subhani Rafey Subhani | and Analysis SHA: Traffic Forecasting and Analysis | Current Conditions 48 Current Conditions 52 | 5 | Figure 4-13 | | lane. The eastbound right-turn volume of intersection #1 is low compared to the historical counts available through MDOT SHA's I-TMS database. While the report shows an AM (PM) volume of 73 (95), the most recent (2016) historical count shows a volume of 205 (360). | No | WSP | For Information Only | Figures 4-10 and 4-11 or in the Synchro analysis worksheets in the appendix. The turning movement volumes displayed in Figure 4-13 represents the expected peak hour for BEP between 6:00 a.m. and 7:00 a.m. The higher volume from 2016 represents the traffic flow during the Greenbelt/Beltsville area AM peak hour between 8:00 a.m. and 9:00 a.m. The BEP peak hour was used because that reflects the time when the daytime shift workers would travel through the study area each weekday morning. | No | No | No | Yes | that they are misinterpreting. This single peak hour analysis was agreed upon at the scoping meeting. |
| 4 | Rafey Subhani | SHA: Traffic Forecasting and Analysis | current Conditions Gene | eral | | | The analysis only considers the peak hour of the proposed development and not the peak hour of the surrounding road network. Both should be considered in the analysis to assess which volume combination would lead to the highest whicle volumes and to ensure that the study intersections will operate at an acceptable level during both sets of peaks. | No | WSP | For Information Only | As stated in the previous comment, the highest vehicle demand (850 vehicle trips) from the proposed BEP facility would occur between 6:00 a.m. and 7:00 a.m. The remainder of the morning commute would involve fewer than 125 vehicle trips by administrative workers arriving between 8:00 a.m. and 9:00 a.m. A similar condition would occur during the evening commute. This is based on the nature of the BEP site, which would have two daytime shift changes, each occurring during the study peak hours. Given that situation, all relevant agencies agreed the study should focus on the primary BEP-generated traffic peak hour and formalized that agreement in the scoping agreement. Maryland SHA was part of the scoping agreement discussions. | No | No | No | Yes | Again, these parameters were discussed and agreed upon at the scoping meeting. |
| 5 | Rafey Subhani | SHA: Traffic Forecasting and Analysis | Current Conditions Gene | eral | | | TFAD concurs with the 1.2% growth rate used in the analysis. TFAD concurs with the trip distribution. | No | WSP | Concur | We concur. | No | No | No | Yes | |
| 6 | Rafey Subhani | SHA: Traffic Forecasting and Analysis | g Current Conditions Gene | eral | | | The trip generation be performed using the latest ITE trip generation manual, the 10th edition, and not the 9th edition. While the trip rates of the proposed developments will not be affected by this update, the trip rates of the background development will change. | No | WSP | Check and Resolve | The ITE 9th Edition was proposed as the source for the action condition trip generation process in the scoping agreement. No present parties, including the Maryland SHA representative, disputed this assumption. The 9th Edition was then used for all background development projects to keep the process consistent. Based on this request in the comment, the 10th Edition was compared to the 9th Edition and the Beltway Plaza development was updated to the latest approved plan (See comment #22). Five vehicle trips would be removed and nine vehicle trips would be added to the study area network if the assessment followed the ITE 10th Edition. This would have a negligible effect on the analysis. A sensitivity analysis will be prepared as an appendix to the traffic study to incorporate the ITE 10th Edition. Based on the negligible change and scoping agreement, the report assessment will continue to follow the ITE 9th Edition. | No | No | Yes | Yes, through Sensitivit Analysis | We presented the ITE 9th Edition because all parties were in accordance with that edition during the scoping meeting. The analysis needs to retain one edition throughout the study or it loses consistency. We performed a parallel analysis with TE 10th Edition, which results in a loss of 5 trips in the morning and an increase of 9 rtrips in the afternoon. This is not statistically significant for traffic impact purposes. WSP proposes to produce a sensitivity analysis that runs the analysis through the ITE 10th Edition trip generation manual. It would not take considerably more hours and would not require a contract modification. USACE and BEP supports this potential edition. |
| 7 | Rafey Subhani | SHA: Traffic Forecasting and Analysis | Future Conditions 101 | | Figure 5-9 | Yes | The trip generation shown in Figure 5-9 does not separate entering and exiting trips. All AM trips are treated as entering trips, and all PM trips are treated as exiting trips. This does not follow the ITE trip generation methodology and should be corrected. | No | WSP | Check and Resolve | The total number of BEP peak hour vehicle trips forecasted using ITE trip generation was applied to inbound trips in the morning and outbound trips in the evening to follow the BEP schedule. Administrative trips would only arrive during the morning and would only leave during the evening. This ensured that the worst-case scenario was assessed by placing 100% of the ITE calculated trips in the direction of the commute. If vehicle trips were applied in the outbound direction in the AM and inbound direction in the PM, that would lessen the impact of the primary vehicle flows and not represent the worst-case scenario or actual commute pattern that would occur. | No | No | Yes | Yes | It's almost a 90/10 split with vehicles in one direction, and we attempted to capture the worst-case scenario through this. A sensitivity analysis could capture a more optimal situation, but that is not going to capture the full magnitude of potential impacts as effectively. However, we propose that the sensitivity analysis not evaluate a different trip generation assumption because it would require additional analysis and would not reflect a worst-case scenario. BEP's recommendation is to leave it as it is. |
| 8 | | SHA: Traffic Forecasting | Nikimine 8 Conton 143 | | | | No mitigation is proposed for intersection #2; however, the intersection is shown to back up onto I-95 NB during the AM peak hour of the Action Alternative. The intersection should be mitigated to prevent backups | No | WSP | Check and Resolve | According to Synchro, the intersection operations would operate at LOS C or better during the AM peak hour. The team explored more deeply into the northbound queuing issue along MD 201 through intersection #2. After further assessment, SimTraffic is showing that the lane drop north of the Cherrywood Lane intersection would cause a queue issue extended back to as far as intersection #2, but most of the time only as far back as Intersection #4. SimTraffic is not the best tool to assess lane drops scenarios and overestimates the potential queue extended from Sunnyside Avenue to Intersection #1 to help assess if the lane drop would create a queueing issue. Based on the results, the lane drop would not create a queue. The recommended sensitivity analysis will include an assessment of MD 201 northbound during the AM BEP peak hour using the TransModeler model to more accurately assess the queueing effects from the lane drop. | No | No | Yes | Yes | Intersections on MD 201 between the Beltway and Cherrywood Lane operate with acceptable LOS, but there is a lane drop on MD 201 north of Cherrywood Lane. The SimTraffic software is not the best tool for analyzing lane drops and produces results that are often too conservative by overestimating queue lengths. Even at the most extreme example, with 100% of people arriving in a 30- minute stretch instead of 60 minutes, the standards caused by the lane drop should still not create a queue when using the TransModeler software. Complete relief of queuing at the Access Control Point would require 6 or 7 lanes, which is a huge infrastructural investment for just 30 minutes of need, while it would remain vacant the remaining 23 hours. |
| 9 | Rafey Subhani | and Analysis SHA: Traffic Forecasting and Analysis | Mitigation & Cost 142 | | | | onto the Capital Beltway. Intersection #6 remains above the CLV threshold of 1,300 after the proposed mitigations. While the proposed mitigations would improve the operation of the intersection, further improvements are necessary to reduce the CLV below the acceptable threshold. If additional mitigations are not feasible, a discussion should be included in the report. | No | WSP | For Information Only | Following the scoping agreement and MNCPPC requirements, the intersection was mitigated to address the impacts caused by adding the vehicle trips generated by the proposed BEP project. The CLV was improved to a better CLV than under the No Action Alternative. Improving the intersection further than the BEP impacts was not explored, however the team is happy to share the data if Maryland SHA would like to explore more roadway improvements to achieve a CLV of 1 200 or lower. | No | No | No | Yes | The parameters set in the scoping agreement make the proposed mitigation reasonable. BEP is invested in mitigating any impacts it creates, but mitigating impacts beyond those generated through the BEP project is beyond the scope. |
| 10 | Pafay Subbagi | SHA: Traffic Forecasting | Annendices 396 | | | | Appendix G: Calibration Report - has highlighted text and placeholder section and figure numbers. (Also | No | Alliance | Concur | The production team will remove highlights and fill missing references with the correct pages and source material. | No | No | No | Yes | |
| 11 | | SHA: Traffic Development & | Current Convint | | | | The "Data Collection and Development of the Peak Hour" section states that nine ATR locations were placed | No | WSP | Concur | The production team will update the text to state the location of four, not nine, ATRs. | No | No | No | Yes | |
| 12 | Cameron Abedi | SHA: Traffic Development & Support | Current Conditions 50 | Fi | igure 4-13, 4 [.] 14 | - | The existing volumes displayed in Figures 4-13 and 4-14 do not match the count volumes found in the appendix. The discrepancies could be due to balancing or alterations due to the ATR counts. Please explain why the existing volumes were changed. | No | WSP | For Information Only | The volumes displayed in Figures 4-13 and 4-14 reflect the adjusted volumes based on the ATR values to ensure the turning movement volumes represent the vehicle demand and not the vehicle capacity at each intersection. Volume adjustments were also performed to improve the balance in the number of vehicles between intersections to improve the performance of the microsimulation models. Paragraph 4 on page 50 of the report explains the process followed to adjust the volumes. In general, existing peak hour volumes were adjusted to higher values compared the volumes reported in the appendix. | No | No | No | Yes | We believe we addressed this discrepancy through paragraph 4 on page 50 of the report. |
| 13 | Compress the " | SHA: Traffic Development & | Current Condition | val | | | The 10th edition of the ITF tele senses in a result is with bound in the 11 for | No | WSP | Check and Resolve | Please see the response to comment #6. | No | No | Yes | Yes, through Sensitivit Analysis | See response to comment #6 |
| 14 | Cameron Abedi | Support SHA: Traffic Development & Support | Future Conditions 96 | :1 d1 | | | Under the "No Action Alternative Forecasted Traffic Volumes" section, the TIS states that the signal timings were optimized. What was optimized? Was the cycle length changed? Please be more specific. | No | WSP | Concur | The signal splits and offsets were optimized. The cycle lengths were kept constant to follow the existing traffic signal cycle coordination. Text will be added to the report to indicate that the traffic signal splits and offsets were optimized. | No | No | No | Yes | |
| 15 | Cameron Abedi | SHA: Trattic Development & Support | Current Conditions | | | | Please provide a volume diagram with the background growth volumes only. We concur with the 1.2% growth rate used. | No | WSP | Concur | The production team will add a turning movement volume illustration that only shows the background growth volumes to the report. | No | No | No | Yes | |

Transportation Impact Study BEP Prefinal Comment Response Matrix_200618 , Comments

| Comment # | Reviewer Nam | e Agency / Unit | Chapter / Volume of Report | Page / Slide Number | Paragraph / Figure (if applicable) | Critical? Comment | DrChecks? | AE Responder | AE Response Status | AE Discussion | Potential Scope Impact | Potential Cost | Potential Schedule Impact | A/E Fulfilled Obligation in the Comment? | Final Resolution |
|--------------|----------------|--|--|------------------------|--|--|-----------|--------------|-------------------------|--|------------------------------|-------------------|---------------------------------|---|---|
| 16 | Cameron Abedi | SHA: Traffic Development & Support | Mitigation & Cost | General | | Mitigation should be provided for the intersection of MD 201 and Cherrywood Lane. The northbound through queue extends into the adjacent signalized intersection in the Action Alternative. | No | WSP | Check and Resolve | Please see the response to comment #8. | No | No | Yes | Yes, through Sensitivity Analysis | See response to comment #8 |
| 17 | Cameron Abedi | SHA: Traffic Development & Support | Mitigation & Cost | 149 | Figure 6-3 | The mitigation for MD 201 at Sunnyside Avenue proposes an additional northbound and southbound through lane that extends from Powder Mill Road to approximately 1,500 feet south of Sunnyside Avenue. We recommend that the additional through lanes extend to the intersection of MD 201 and Cherrywood Lane. | No | WSP | For Information Only | Widening MD 201 the entire extent between Cherrywood Lane and Sunnyside Avenue would benefit traffic flow and remove a lane drop, as related to comment #8. However, MD 201 crosses the Beaverdam Creek, which is listed as an area of critical concern. Widening the bridge and roadway through this area seems like it would create major environmental impacts. Specifically, Beaverdam Creek is a Tier II stream whereas Indian Creek is a cultural resource of archaeological importance. Nevertheless, the team is happy to share this data if Maryland SHA would like to explore the effect of this extension. | No | No | No | Yes | Such an extended lane would yield substantial environmental impacts at Beaverdam Creek, with wetlands of critical concern. Given these constraints, it is not likely to be worth the effort. The federal government isn't pursuing this level of intervention because the road's functionality is satisfactory at this level. Beaverdam is a Tier II water quality reference stream. Indian Creek also proposes cultural resource barriers. |
| 18 | Cameron Abedi | SHA: Traffic Development & Support | Mitigation & Cost | 150 | Figure 6-4 | The proposed mitigation for the MD 201/Beaver Dam Road intersection includes prohibiting the southbound left turn onto Beaver Dam Road. Were the traffic volumes reallocated in the Action Alternative to account for this? What alternative routes are available? | No | WSP | For Information Only | The assumption was for traffic to turn onto Powder Mill Road eastbound and turn right at the next road to access Beaver Dam Road. The production team will add text describing the alternative route modeled to access Beaver Dam Road from the north. The triggers for mitigation at this intersection were not met under the Action Alternative. The proposed left turn restriction was based on remedying potential safety issues that could arise from vehicles attempting to make the southbound left turn while waiting for acceptable gaps in opposing northbound traffic. | No | No | No | Yes | This is really just a morning thing during peak hour. Few cars make the southbound left turn, but when they try it creates huge back- ups. This is nota big enough problem to warrant a mitigation initiative; the prohibited left term is more of a safety issue as left- turning vehicles make decisions to turn based on the oncoming northbound traffic. BEP recommends adding these statements to demonstrate why further mitigation is unwarranted. May help to add a sentence clarifying the parameters of the scoping agreement and a reference to its place in the Appendices. |
| 19 | Cameron Abedi | SHA: Traffic Development & Support | Mitigation & Cost | 152 | Figure 6-6 | We defer comments to Prince George's County with regards to the proposed signalized intersections along Powder Mill Road and the Baltimore Washington Parkway Ramps. | No | WSP | Concur | Acknowledged. | No | No | No | Yes | |
| 20 | David Rodgers | SHA: Regional & Intermodal Planning | Ex Summ/Findings & Summary Report | 22, 24 | Figure 12 | These pages in the F&S indicate that the intersections of MD 201 at Powder Mill Road and Sunnyside Avenue are expected to fail and mitigation measures are recommended. However, the extent of which these mitigation measures would be effective was not discussed. The report should explicitly indicate the level of service (LOS) will result from the mitigation and whether or not that LOS meets Prince George's County's standards for the developed tier. MDOT SHA defers to the mitigation standards of Prince George's County. | e No | WSP | Concur | The Production team will add text from the main report to document these details in the summary section. | No | No | No | Yes | |
| 21 | Andre Futrell | SHA: District Engineer | General Concerns | | | Please submit a CD containing the traffic impact study, all supporting documentation, and a point-by-point response addressing the comments noted above to the Access Management Division. For electronic submissions create an account with our new online system https://mdotsha.force.com/accesspermit. Please reference the SHA tracking number on any future submissions. Please keep in mind that you can view the reviewer and project status via SHA Access Management Division web page at https://www.roads.maryland.gov/mdotsha/pages/amd.aspx. if you have any questions, or require additional information, please contact Mr. Kwesi Woodroffe at 301-513-7347, by using our toll free number in Maryland only at 1-800-876-4742 (x7347) or via email at kwoodroffe@mdot.maryland.gov or shaamdoermits@mdot.maryland.gov. | No | Alliance | Concur | Acknowledged. The AE Team will coordinate with USACE and BEP to convey the responses to the SHA in the manner they deem most suitable. | No | No | No | USACE Will Do This? | |
| 22 | Terri Hruby | City of Greenbelt | Future Conditions | 87, 93 | | Beltway Plaza has an approved PPS and while included as background traffic in the TIS the development is now proposed to have 2500 multi-family units. Townhouses are no longer being planned | No | WSP | Check and Resolve | In addition to comparing the ITE 9th and 10th Editions, this specific development was updated to match the latest approved plan. The results are described in Comment #6. A recommended sensitivity analysis will incorporate this change to the No Action Alternative trip generation. This change to the assumed development program would result in a reduced number of vehicle trips since multi-family units are a less intense trip generator, per unit, than townhouses. | No | No | Yes | Yes, through Sensitivity Analysis | We use whatever background information we receive from leadership. These changes would actually reduce the number of trips, but the sensitivity analysis will measure the impact with these new numbers. |
| 23 | Terri Hruby | City of Greenbelt | Future Conditions | 129 | 10th bullet | Staff does have a concern that t failing lanes would not require mitigation if they did not increase the queue more than 150 feet. For example: "Northbound left of MD 295 (BW Parkway Northbound Off-Ramp) during the AM and PM peak hours. This lane would also have failing queues under the No Action Alternative; queuing would increase by less than 150 feet under the Action Alternatives is is required" | No Is | WSP | For Information Only | The 150-foot rule was established as a reasonable threshold for requiring mitigation and was approved through the scoping agreement. Queueing assessments using microsimulation techniques will fluctuate with each microsimulation run. The 150-foot threshold (also used by DDOT) is a beneficial means of removing approaches with small queue increase (six cars or fewer) and focusing on the approaches with more substantial queue changes. This approach also has implications in terms of determining appropriate mitigation, since providing additional roadway capacity can have further implications for environmental impact. The Production team did revisit the ADD 201 corridor during the AM to further investigate the queuing issue and determined that the AM northbound flow would not result in any queueing issue (See response to comment #8). The example for the BW Parkway did have an operational issue and it was recommended to upgrade the entire interchange to address the issue. | No | No | No | Yes | The 150-foot rule is being used by DDOT and helps to focus on the more substantive issue; cars stacked behind one another, on average, take up 20-25 feet of space. Then it begs the question of how many extra cars of back-up is problematic enough to justify a huge investment for additional lane space, especially after factoring financial and environmental considerations. DDOT, in their transportation impact review guidelines, establishes that a 150-foot difference between a no action condition and an action condition warrants further review. Prince George's County guidelines do not current provide clear guidance on measuring or mitigating substantial queue impacts. In lieu of such guidance being available, the DDOT standards were applied, as part of the Scoping Arreement. |
| 24 | Terri Hruby | City of Greenbelt | Mitigation & Cost | 145 | 2nd full paragraph | The issue of the 150-foot threshold is further addressed in Mitigation Strategies, stating that this 150-foot queue increase was agreed to during the scoping agreement because M-NCPPC guidelines do not have acceptable increases in queuing | No | WSP | For Information Only | MNCPPC and Maryland SHA do not offer guidance to address queuing issues. In lieu of this guidance, metrics of measuring queue impact were based on DDOT standards. The scoping agreement added that element to ensure the Production team focused on the approaches with substantial queueing issues. | No | No | No | Yes | Echoing the comments in #23, there is limited guidance from either agency on measuring and mitigating queuing impacts. The DDOT standards were proposed and agreed-to as a metric for this study during the scoping process. |
| 25 | Diane Sullivan | NCPC | Ex Summ/Findings & Summary Report | 10 | | Pedestrian Network: This paragraph should describe that this is federal property, in a primarily rural/agrarian area with rural roads where sidewalks are not feasible. There is a residential area across Odell Road, which is north of this site, but it is not where any of the employees live. Since Powder Mill Road is a future location for bike lanes, staff would suggest creating new bike lanes be included as mitigation – connecting the site to the existing bike lanes on Edmonston Road. | II No | WSP | Concur | The Production team will add text from the main report pedestrian section to the section. Powder Mill Road has a wide shoulder and USDA recently removed the rumble strips to allow bicycles a better riding environment. Therefore, bicycle facilities already exist that connect the facility to Edmonston Road. | No | No | No | Yes | |
| 26 | Diane Sullivan | NCPC | Ex Summ/Findings & Summary Report | 10 | | Please include a description of the times public transit will operate. This will affect the ability for employees to utilize these on a daily basis for commuting. | No | WSP | Concur | Production team will update the summary with more of the public transit operational details described in the main report. | No | No | No | Yes | |
| 27 | | | | | Figure 14 | | No | WSP | For Information Only | The 340,000 SQ FT value represents the total new paved surface added to MD 201, Powder Mill Road, the BW Parkway interchange, and the BEP driveway up to the property boundary. This value does not include the BEP parking and circulation roadway system within the BEP property. | No | No | No | Yes | Concerns about MS4 permits regarding this impervious surface could largely be addressed through the EIS and conceptually will determine the roadwork that needs to be done. USACE will continue to work through this and will probably have to advance the designs to determine the best solution. It may require supplemental EIS work, potentially an EA or a FONSI. |
| 28 | Diane Sullivan | NCPC | Ex Summ/Findings & Summary Report Ex Summ/Findings & | 24-25 | Figure 15-18 | The proposed mitigation will add over 340,000 sq. ft. (or between 7 and 8 acres) of new pavement for roadways. Is this the maximum amount of paving being proposed? Staff understands the site plans identify wetlands adjacent to the roadways, however it's unclear if the wetlands may be impacted by the proposed roadway widening mitigation projects. Additional information is | s No | WSP | For Information | The assessment of wetland impacts from proposed roadway widening will be addressed in the BEP Environmental Impact Statement. This report serves as the transportation assessment of the | No | No | No | Yes | Regarding the original comment, the need is there to work with BEP and USDA to determine more precisely through the design what the impacts are, including stormwater management. |

| Comment # | Reviewer Nan | me Agency / Unit | Chapter / Volume of Report Page / Slid | le Paragraph / Figure (if applicable) | Critical? Comment | DrChecks? | AE Responder | AE Response Status | AE Discussion | Potential Scope Impact | Potential Cost Impact | Potential Schedule Impact | A/E Fulfilled Obligation in the Comment? | Final Resolution |
|--------------|----------------|------------------|---|---|---|---------------------|--------------|-------------------------|---|------------------------------|-----------------------------|---------------------------------|---|--|
| 29 | Diane Sullivan | NCPC | General Concerns | | Staff is unclear if the proposed mitigation balances environmental impacts with transportation network improvements. Please provide additional information describing if this is the least environmentally impactfu option and still meets the criteria for mitigating the impacts of the BEP development on the roadway network. | No | WSP | For Information Only | The roadway mitigation plan did balance environmental impacts with traffic benefits. Unless it is possible to assume a lower number of vehicle trips at the affected intersections, roadway geometric changes emerge as the essential tool for improving intersection operations based on CLV, since CLV is a calculation driven by volume and lane geometry inputs. This is from the perspective of improving traffic operations, even though additional roadway capacity through lane geometry requires a degree of new land use. With this in consideration, all proposed widening along MD 201 is to the east to avoid housing and wetland areas to the west, the BW parkway improvements included minimal added pavement, and MD 201 was not recommended to connect Cherrywood Lane to Sunnyside Avenue with a four-lane cross-section. This last point, regarding the section of MD 201 between Cherrywood Lane and Sunnyside Avenue, avoids widening a bridge and damaging a forested area that is considered an environmental area of critical concern. | No | No | No | Yes | The mitigation conceptual design strives to avoid the wetland and to minimize the addition of new pavement at the BW Parkway interchange. We can provide additional verbiage where it is needed. The goal is to avoid residences, avoid wetlands, and avoid property impacts. This is the level of detail discussed in the scoping agreement. We could overtly list some of the non-preferred alternatives that were rejected because of harm to the environment. |
| 30 | Diane Sullivan | NCPC | Ex Summ/Findings & Summary Report 9 | | Exec Summary in full TIS Report: The TIS describes that there will be 254 admin staff and 884 production staff commuting daily adding 944 morning peak trips and 946 evening peak trips to the existing network. The BEP estimates 10% employees will be using alternative commuting modes (transit, biking, carpool, etc.) The rest of the employees, 90%, would be commuting via SOV. In order to have a clearer understand about the daily commute, the TIS should include a summary describir why BEP employees may not be able to utilize transit (WMATA etc.) and how this effects the nearby roadwa network. If transit is not a feasible option, more employees will have to drive to the installation. This will impact the roadway network because these additional trips will add more traffic to the roadway network. Additional cars on these roadways will require mitigation to ensure the network functionality is not degraded. This important information is included in the Development of Action Alternative, p. 103, howeve it is very deep into the report and could be lost. | No Ig Iy r | WSP | Concur | The Production team will add the more detailed discussion of the daily commute from the main report into the summary report. As is correctly noted, page 103 of the report illustrates the limitations of transit accessibility given the BEP schedule. The morning shift change begins at 6:30 a.m. For employees to report on time for this shift utilizing transit, employees would be required to disembark the first trains that arrive at Greenbelt Metro station at 5:51 a.m. and 5:53 a.m., connect with a USDA shuttle that has a 10-12 minute ride to the BEP security gate, and allot an additional 15-20 minutes for the employees to then process through security and change into uniforms to begin their shift. This will be expanded upon in the summary report. | No | No | No | Yes | |
| 31 | Diane Sullivan | NCPC | Current Conditions 42 | Section B | This section does a good job identifying the roads and describing the existing uses on these roads. However there isn't any description of the environment in which these roads exist. We would suggest that a separate subsection be introduced that describes the roadways adjacent conditions including large forests, cropland maintained grass, or wetlands. This information is necessary since the proposed mitigation may impact these adjacent areas and little information is provided. | , No | Alliance | Concur | The team can explore the county-level GIS data to see if it offers any further insight along these roads. However, the more vigorous exploration of the ecological conditions around the roadways will undergo its more vigorous analysis during the upcoming NEPA process. | No | No | Yes | Yes | |
| 32 | Diano Sullivan | NCPC | General Concerns | | We look forward to continuing working with the U.S. Army Corps of Engineers and the Bureau of Engraving and Printing staff on this important relocation project. when it is submitted for review by NCPC in the future If you have any questions regarding our comments, policies, or our project submission requirements, please refer to our agency website at www.ncpc.gov. Mr. Carlton Hart continues to serve as the point of contact for the project at 201429-272 or carlton battements of the project submission requirements, please the project at 201429-272 or carlton battements. | e. No e vr | Alliance | Concur | Acknowledged. | No | No | No | Yes | |
| 33 | Jahid Russel | PG County, DPIE | Ex Summ/Findings & Summary Report 11 | | The study hours for this study are 6 AM – 7 AM to 3 PM - 4 PM (page 11 of findings and summary). The study hours for this study are 6 AM – 7 AM to 3 PM - 4 PM (page 11 of findings and summary). The site peak hours are different from commuter traffic peak hours. A comparison could have been performed for few locations to illustrate that peak hours are more critical than regular commuter peak hours. | n No | WSP | For Information Only | Please see the response to comment #4. | No | No | No | Yes | Please see the response to comment #4. |
| 34 | Jahid Russel | PG County, DPIE | Current Conditions | Figure 4-13 | When compared, there were a significant differences (more than 10%) between raw counts and existing volumes. In most cases the raw counts were significantly lower than the volumes shown ir the exhibit. It is possible that these were done as a part of the volume balancing. The report needed to explain it. | No | WSP | For Information Only | Differences between the raw count data and the existing volumes that were actually used in the analysis, as presented in Figure 4-13 of the report, result from efforts to balance the flow of traffic between study intersections as well as baselining an existing network that is representative of the actual vehicle demand per ATR data. In general, the raw counts are less than the volumes used in the analysis. | No | No | No | Yes | This was alluded to in the response to comment #12, but it is standard to compare raw data collection with other available data to determine if adjustments should be made. Traffic volumes are often balanced because raw data, such as because of the exact time a car passes through an intersection, usually does not perfectly track every vehicle as it moves between intersections. Balancing is done to assume that every vehicle can be traced through every study intersection. This becomes important when conducting simulations such as through SimTraffic, since large discrepancies in volume counts can be problematic for the software. We believe this was a reasonable approach given the data that is available. |
| 35 | Jahid Russel | PG County, DPIE | Current Conditions | | For the intersection of Powder Mill Rd and Edmonston Rd, the EB left, EB thru and SB right (PM Peak hour), the raw counts were higher than the existing volume figures. This could mean the impact shown in the study is less than what the actual impact is. Please explain. | No | WSP | For Information Only | As stated in the response to the previous comment, adjustments to existing turning movement counts reflect efforts to reasonably balance volumes between study intersections and establish a baseline of volumes that is more representative of typical vehicle demand. For the intersection of Powder Mill Road and Edmonston Road, as with any intersection, the collected count data is a snapshot in time on that particular count day that is not necessarily typical. Comparisons between the collected count data with previous data can indicate potential abnormalities. A comparison of the count data for this study with turning movement count (TMC) data previously collected by WSP as well as the TMC and ATR data published by SHA suggested that specific turning movements concerning the eastbound and southbound approaches were abnormal compared with previous count data. As a result, during the balancing of volumes, existing PM peak hour volumes were adjusted downward for the southbound right turn, the eastbound left turn, and the eastbound through movement; while volumes were adjusted upward for the eastbound right turn and the southbound through movement. | No | No | No | Yes | This expands on the response to comment #34. The raw data that was collected for this intersection was compared with other available data from 2014, 2015, and 2018 that was collected by WSP or SHA. It was determined that specific turning movements of this intersection were not in agreement with other recent data and was not entirely representative of a typical traffic pattern. The applied volumes in the study were adjusted to better reflect this other data. We believe this was a reasonable approach given the data that is available. |
| 36 | Jahid Russel | PG County, DPIE | Current Conditions | | The intersection of Springfield Road and Baltimore Washington Parkway the AM peak hour southbound right turn volumes for the action alternative condition should be 19, not 9. | No | WSP | For Information Only | The Production Team reviewed the Synchro analysis files and the appendix for this intersection and could not locate this discrepancy. Pages 359 and 382 of the report indicate that a volume of 19 was correctly used for the AM peak hour southbound right for the Action Alternative. | No | No | No | Yes | WSP defends its analysis results based on the comment provided. |
| 37 | Jahid Russel | PG County, DPIE | Future Conditions | Figure 5-8 | The trip generation is based on number of employees (production and administrative). The study does not assume any outbound trips in the morning or inbound trips in the afternoon. The study assumes all morning trips are in only and afternoon trips are out only. | No | WSP | For Information Only | As mentioned in response to comment #7, the total number of BEP peak hour vehicle trips forecasted using ITE trips generation were applied to inbound trips in the morning and outbound trips in the evening to follow the nature of the BEP schedule. | No | No | No | Yes | Please see the response to comment #7. |
| 38 | Jahid Russel | PG County, DPIE | Future Conditions | Figure 5-26 | In the queue comparison table, the queueing for no action and action alternative are compared. The reported queues are compared, but the numbers do not match up with the simtraffic results (95th queue) for AM peak hour condition for non-action alternative. Please clarify. | No | WSP | Concur | The appendix of the submitted study inadvertently included outdated SimTraffic results. The study appendix will be updated to include the correct SimTraffic results for the No Action Alternative AM peak hour condition as they are reflected in Figure 5-26. | No | No | No | Yes | |
| 39 | Jahid Russel | PG County, DPIE | Appendices | | In the appendix, the action alternative simtraffic queues were included two times, with different results. An the second sets for mitigation conditions? Please label correctly and tabulate in the main report also. | e No | WSP | Concur | The SimTraffic results in the appendix of the submitted study were not properly labeled for the Action Alternative with Mitigation conditions, however the tables in the report body correctly show the results. The appendix labels will be updated to their correct analysis scenarios. | No | No | No | Yes | |
| 40 | Jahid Russel | PG County, DPIE | Ex Summ/Findings & Summary Report | Figure 12 | This figure shows the tabular form of operating condition and mitigation requirement for the stud intersection. Many of the failing intersections are not included/selected for mitigation measures. The table/figure should identify the reason/explanations why mitigation is not needed. Among them Powder Mill Road and Poultry Road are included in the mitigation. | y No | WSP | Concur | The figure in the executive summary will be updated to include an additional column briefly explaining why mitigation is not required at pertinent intersections, similar to the format used in Figure 6-1 of the report. | No | No | No | Yes | |

| Comment # Reviewer Name | Agency / Unit | Chapter / Volume of Report | Page / Slide Number | e Paragraph / Figure (if applicable) | / Critical? Comment | DrChecks? | AE Responder | AE Response Status | AE Discussion | Potential Scope Impact | Potential Cost Impact | Potential Schedule Impact | A/E Fulfilled Obligation in the Comment? | Final Resolution |
|----------------------------|-----------------|-------------------------------|------------------------|--|--|-----------------------|--------------|-------------------------|--|------------------------------|-----------------------------|---------------------------------|---|---|
| 41 Jahid Russel | PG County, DPIE | Mitigation & Cost | 150 | Figure 6-4 | Please consider adding a southbound left turn bay at the intersection of Edmonston Rd and Bea Dam Road. A peak hour left turn restriction may not be easy to implement in a non-urban locati Also there is no location in the vicinity of the intersection to make a u-turn. | ver ion. No | WSP | For Information Only | The Beaver Dam Road intersection with Edmonston Road was not required to be mitgated. A suggestion of implementing a left turn restriction was included, not for the purpose of satisfying mitgation, but on the basis that such a change may have benefits to safety by preventing gap acceptance decisions regarding southbound left-turning vehicles conflicting with approaching northbound volumes on Edmonston Road. As described in the response to comment #18, with the left turn restriction, the assumption was that the traffic that previously made this left turn would instead continue eastbound on Powder Mill Road and turn right at the next road to access Reaver. | No | No | No | Yes | Addition of a turn bay at this intersection would result in additional environmental impacts, for which BEP is not responsible because this intersection does not require mitigation in the first place. |
| 42 Jahid Russel | PG County, DPIE | Mitigation & Cost | 142-143 | | For the intersection of Edmonston Road and Odell Road, a northbound left turn lane analysis is recommended. No site trip is going thru this movement, however, this can eliminate safety concern. | No | WSP | For Information Only | This intersection is not required for mitigation, because minor street volumes are less than 100 vehicles per hour under the Action Alternative. The impact of BEP to this intersection would be minimal and no site trips would utilize the northbound left turn movement. However, the team is happy to share the data if Prince George's County would like to explore this modification. | No | No | No | Yes | Improving this intersection as proposed in the comment would be beyond the scope of the study, since BEP is not responsible to implement mitigation at this location. |
| 43 Jahid Russel | PG County, DPIE | Mitigation & Cost | 142-143 | | Please provide northbound left turn analysis for the intersection of Edmonston Road and Odell Road. | No | WSP | For Information Only | Please see the response to comment #42. | No | No | No | Yes | Please note the response to comment #42. |
| 44 Jahid Russel | PG County, DPIE | General Concerns | | | For a regular public roadway intersection, peak hour warrant should not be used. Any proposed signal warrant analysis should be based on other warrants. | No | WSP | For Information Only | The peak hour warrant, in lieu of a higher-level signal warrant analysis that reviews other warrants, was selected for specific reasons. Because of the nature of the BEP site, with shift changes occurring within two hours that match the study peak hours, no warrants related to minimum vehicular volume or continuous flow of traffic under the eight-hour volume warrant or the four-hour volume warrant would be relevant to the site driveway intersection. Therefore, the peak hour warrant presents a worst-case condition for the overall intersection operations. In addition, a formal signal warrant analysis was not scoped for the purpose of the EIS, since a formal signal warrant analysis reviewing other warrants would require additional count data and forecast assumptions. The peak hour warrant is intended to present preliminary conclusions on the need for a signal at this location. | No | No | No | Yes | The purpose of evaluating a peak hour warrant was to determine at an early stage if a signal might be warranted at the site driveway location. A signal warrant analysis was not scoped for purposes of this EIS and the warrants that are being requested for evaluation would require substantial assumptions and data that are beyond the scope. A more detailed signal warrant study could be conducted at a later time such as if a traffic signal design is pursued, but not at this time. |

10. APPENDIX B: EMPLOYEE SURVEY FULL RESULTS
Q1 Please select the answer that best fits with what you think would be your most primary mode of transportation, once the facility is relocated to the Beltsville area.



| ANS | ANSWER CHOICES | | | | | | | | |
|-----|--|--------|-----|--|--|--|--|--|--|
| a. | Transit/WMATA Metro (using shuttle to get from Metro stop to BEP facility) | 27.00% | 186 | | | | | | |
| b. | Personal vehicle driving alone | 58.35% | 402 | | | | | | |
| C. | Carpool | 12.48% | 86 | | | | | | |
| d. | Bicycle | 0.44% | 3 | | | | | | |
| e. | Motorcycle | 0.15% | 1 | | | | | | |
| f. | Other (Includes Walking, Getting Picked Up/Dropped Off by another Driver) | 1.60% | 11 | | | | | | |
| TOT | TOTAL | | | | | | | | |

Q2 If carpooling to the new site, what type of carpool would you use? [Please check all that apply.]



| ANS | WER CHOICES | RESPONSES | ES 79 | | | | |
|------|--------------------------|-----------|-------|--|--|--|--|
| a. | Carpool with a co-worker | 97.53% | | | | | |
| b. | UberPool | 0.00% | 0 | | | | |
| C. | Lyft Shared | 0.00% | 0 | | | | |
| d. | Waze Carpool | 2.47% | 2 | | | | |
| e. | Via | 2.47% | 2 | | | | |
| Tota | I Respondents: 81 | | | | | | |

Q3 Regarding mass transit, please rate the items below from Most Important to Least Important. Using the drop-down option next to each topic, please rank accordingly.1 = Most important2 = Very important3 = Somewhat important4 = Not as important5 = Least important



| | 1 | 2 | 3 | 4 | 5 | TOTAL | SCORE |
|-----------------------|---------------|---------------|---------------|---------------|---------------|-------|-------|
| a. Cost | 26.15% 137 | 19.85% 104 | 16.60% 87 | 13.17% 69 | 24.24% 127 | 524 | 3.10 |
| b. Convenience | 26.47% 135 | 24.71% 126 | 22.94% 117 | 14.12% 72 | 11.76% 60 | 510 | 3.40 |
| c. Travel time | 30.39% 155 | 24.71% 126 | 20.00% 102 | 14.90% 76 | 10.00% 51 | 510 | 3.51 |
| d. Reliability | 11.91% 61 | 17.58% 90 | 27.54% 141 | 29.69% 152 | 13.28% 68 | 512 | 2.85 |
| e. Safety and comfort | 17.07% 98 | 16.55% 95 | 13.94% 80 | 20.21% 116 | 32.23% 185 | 574 | 2.66 |



| ANSWER CHOICES | RESPONSES | | | | | |
|----------------|------------|--|--|--|--|--|
| a. Daytime | 84.13% 546 | | | | | |
| b. Evening | 7.40% 48 | | | | | |
| c. Midnight | 8.47% 55 | | | | | |
| TOTAL | 649 | | | | | |

Q5 Using the map above, from which of the four quadrants will you be approaching the proposed site for the BEP replacement facility? The facility is represented the purple star on the map.



| ANS | WER CHOICES | RESPONSES | |
|-----|----------------------------------|-----------|-----|
| a. | Quadrant I (Q-I) | 13.56% | 85 |
| b. | Quadrant II (Q-II) | 15.79% | 99 |
| C. | Quadrant III (Q-III) | 34.45% 2 | 216 |
| d. | Quadrant IV (Q-IV) | 27.75% 1 | 74 |
| e. | I will be dependent upon transit | 8.45% | 53 |
| тот | AL | 6 | 27 |

Q6 If driving, what is the primary route you would take to access the new site when traveling to work, if you're originally coming from within Quadrant I?[NOTE: If this map doesn't represent your point of origin, please click the "PREV" button and go to one of the other quadrants.]



| ANSWER CHOICES | | | | | | | |
|--|---|----|--|--|--|--|--|
| 1. MD 200 to Konterra Dr, to Muirkirk Rd, to Old Baltimore P Orange on the Map) | ike/Edmonston Road to Powder Mill Rd (indicated with 47.62% | 40 | | | | | |
| 2. I-95 Southbound to MD 212 to Powder Mill Rd (indicated | with Green on the map) 40.48% | 34 | | | | | |
| 3. MD 200 to Konterra Dr, to Ritz Way, to Baltimore Ave, to | Powder Mill Rd (indicated with Pink on the Map) 11.90% | 10 | | | | | |
| TOTAL | | 84 | | | | | |

Q7 If driving, what is the primary route you would take to access the new site when traveling to work, if you're originally coming from within Quadrant II?[NOTE: If this map doesn't represent your point of origin, please click the "PREV" button and go to one of the other quadrants.]



| ANSWER CHOICES | | | | | | | |
|----------------|--|--------|----|--|--|--|--|
| 1. | Baltimore-Washington Pkwy Northbound to Powder Mill Rd (indicated with Orange on the Map) | 16.84% | 16 | | | | |
| 2. | Baltimore-Washington Pkwy Southbound to Powder Mill Rd (indicated with Green on the map) | 18.95% | 18 | | | | |
| 3. | MD 197 to Powder Mill Rd (indicated with Pink on the map) | 50.53% | 48 | | | | |
| 4. | MD 32 to Baltimore-Washington Pkwy Southbound to Powder Mill Rd (indicated with Blue on the map) | 13.68% | 13 | | | | |
| ΤΟΤΑ | NL | | 95 | | | | |

Q8 If driving, what is the primary route you would take to access the new site when traveling to work, if you're originally coming from within within Quadrant III?[NOTE: If this map doesn't represent your point of origin, please click the "PREV" button and go to one of the other quadrants.]



| ANS | WER CHOICES | RESPON | SES |
|--------------|---|--------|-----|
| 1. the M | Capital Beltway Outer loop to Baltimore-Washington Pkwy Northbound to Powder Mill Rd (indicated with Orange on lap) | 30.00% | 60 |
| 2. Gree | US 50 to the Capital Beltway Outer loop to Baltimore-Washington Pkwy Northbound to Powder Mill Rd (indicated with n on the map) | 9.00% | 18 |
| 3. | US 50 to the Capital Beltway Outer loop to MD 201 (indicated with Pink on the map) to Powder Mill Rd | 8.00% | 16 |
| 4. | Capital Beltway Outer loop to MD 201 to Powder Mill Rd (indicated with Blue on the map) | 30.00% | 60 |
| 5. with I | Baltimore-Washington Parkway Northbound, to Capital Beltway Outer Loop, to MD 201 to Powder Mill Rd (Indicated Brown on the map) | 5.00% | 10 |
| 6. | Baltimore-Washington Parkway Northbound, to Powder Mill Rd (Indicated with Red on the map) | 18.00% | 36 |
| TOT | AL | | 200 |

Q9 If driving, what is the primary route you would take to access the new site when traveling to work, if you're originally coming from within Quadrant IV?[NOTE: If this map doesn't represent your point of origin, please click the "PREV" button and go to one of the other quadrants.]



| ANSWER CHOICES | | | | | | | | | |
|----------------|--|--------|-----|--|--|--|--|--|--|
| 1. Map) | Capital Beltway Inner loop to US 1 to Sunnyside Avenue to MD 201 to Powder Mill Road (indicated with Orange on the | | | | | | | | |
| 2. | MD 201 from south of the Beltway, northward to Powder Mill Rd (indicated with Green on the map) | 6.76% | 10 | | | | | | |
| 3. | Capital Beltway Inner loop to MD 201 to Powder Mill Rd (indicated with Pink on the map) | 8.11% | 12 | | | | | | |
| 4. | Capital Beltway Inner loop to Baltimore-Washington Pkwy North to Powder Mill Rd (indicated with Blue on the map) | 13.51% | 20 | | | | | | |
| 5. | US 1 Northbound to Powder Mill Road (indicated with Brown on the map) | 23.65% | 35 | | | | | | |
| TOT | AL | | 148 | | | | | | |

Q10 On average, how many days per week do you telework?



| ANS | WER CHOICES | RESPONSES | |
|-----|---------------------------------|-----------|----|
| a. | 5 | 1.17% | 7 |
| b. | 4 | 0.67% | 4 |
| C. | 3 | 1.34% | 8 |
| d. | 2 | 11.89% | 71 |
| e. | 1 | 16.08% | 96 |
| f. | One day every other week | 10.39% | 32 |
| g. | I do not telework. | 27.47% 16 | 34 |
| h. | I am not eligible for telework. | 30.99% 18 | 35 |
| тот | AL | 59 | 97 |

11. APPENDIX C: TRAFFIC COUNT DATA

| LOCATION: H CITY/STATE: | Kenilw Greer | orth Av nbelt, N | ve I-49 //D | 95 EB | Ramps | 5 | | | | | | | | | QC DATE: | JOB # Tue, 1 | #: 1502 Sep 17 | 27001 2019 |
|--|--|---|---------------------------------------|--------------------------------------|------------------|--|---|---------------------------------|--|--------------------|--|--------------------------------------|------------------|------------------------------|---------------------------------------|---|---|--------------------------------------|
| 369 ← 73 _ 0 = 830 ← 757 = | 1132 369 7 369 7 0 1 0 8 1520 | 954 (G3 0 • • • • 87 • • • 87 • • 87 • • 887 • • 881 | 0 ← 0 0 0 → 0 | | | Pe Pea | ak-Hou k 15-M Qua DATA TH | r: 6:00 in: 6:4 | AM | - 7:00 / 7:00 | AM AM | | | 14.9 ← 8.2 0 9.4 → 9.5 | 102 14.9 8 14.9 8 0 8 8.8 | | • 0 • • 0 • 0 • | 0 |
| 0 | | → [→] | 0 | | _ | 8 | : ↓ ↓ | Ţ | | | ₽ | - | | 0 0 0 | | | ■ 0 ■ 0 ■ 0 | |
| و + NA + | | | A A A A A A A A A A A A A A A A A A A | | - | | * * * | | ţ | ↑ | ** | - | | NA | | | NA | |
| 15-Min Count Period | | Kenilwo (North | orth Ave bound) | | | Kenilwo (South | orth Ave bound) | | | I-495 El (Eastk | 3 Ramps bound) | | | I-495 EE (Westl | 8 Ramps bound) | | Total | Hourly |
| Beginning At | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | IOTAIS |
| 6:00 AM 6:15 AM 6:30 AM 7:00 AM 7:15 AM 7:30 AM 7:30 AM | 0 0 0 0 0 0 0 0 0 | 219 198 216 248 265 262 262 262 288 | | 0 0 0 0 0 0 0 0 | | 144 176 209 234 316 312 328 368 | 84 71 127 87 107 129 136 128 | 0 0 0 0 0 0 0 | 12 15 21 25 19 17 13 20 | | 143 194 194 226 222 193 202 253 | 0 0 0 0 0 0 0 0 | | | 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 0 0 | 602 654 767 820 929 913 941 1057 | 2843 3170 3429 3603 3840 |
| 8:00 AM 8:15 AM 8:30 AM 8:45 AM | 0 0 0 0 | 265 264 233 231 | 0 0 0 0 | 0 0 0 0 | 0 0 0 0 | 406 366 393 357 | 129 135 120 121 | 0 0 1 0 | 21 39 37 30 | 0 0 0 0 | 266 252 249 310 | 0 0 0 0 | 0 0 0 0 | 0 0 0 0 | 0 0 0 0 | 0 0 0 0 | 1087 1056 1033 1049 | 3998 4141 4233 4225 |
| Peak 15-Min | 1.4 | North | bound | | 1 | South | bound | | 1.5 | Eastb | ound | | 1.6 | West | ound | | Tot | tal |
| All Vehicles Heavy Trucks Pedestrians Bicycles Railroad Stopped Buses | Left 0 0 | Thru 992 84 0 0 | Right 0 0 | 0 | Left 0 0 | 936 72 0 0 | Right 348 60 0 | 0 | Left 100 0 | 0 0 0 0 | Right 904 92 0 | 0 | Left 0 0 | Thru 0 0 0 0 0 0 | Right 0 0 | 0 | 32 30 0 | 80 18 |

Report generated on 10/2/2019 7:36 AM

Comments:

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

LOCATION: Kenilworth Ave -- I-495 EB Ramps QC JOB #: 15027002 **CITY/STATE:** Greenbelt, MD DATE: Tue, Sep 17 2019 Peak-Hour: 3:00 PM -- 4:00 PM 1713 1551 47 8 Peak 15-Min: 3:30 PM -- 3:45 PM ŧ **↑** 2 644 1067 5.1 4.5 0 . . **t** 0 **+** 0 644 🔶 95 🌶 5.1 🗲 6.3 🌶 **a** 0 t 0 0 🌩 0 0.91 0 0 ٠ ÷ 7.2 \Rightarrow 7.3 🥆 1000 🜩 905 🥆 **€** 0 **→** 0 ŧ ŧ 0 1454 0 0 8.1 0 + ŧ ŧ Quality Counts 1972 1454 5.8 8.1 DATA THAT DRIVES COMMUNITIES 0 0 0 ٠ \$ 1 0 🖌 **t** 0 AD 0 0 0 **+** 0 07 **f** 0 C 1 ŧ 0 0 0 NΔ 4 t و t 🗲 NA NA NA NA \$ Ĩ 1 Τ Τ ... ъ ٤ ŧ NA NΔ **Kenilworth Ave Kenilworth Ave** I-495 EB Ramps I-495 EB Ramps 15-Min Count Period Beginning At Hourly Totals (Northbound) (Southbound) (Eastbound) (Westbound) Total Left Thru Right υ Left Thru Right U Left Thru Right υ Left Thru Right U 3:00 PM 0 330 0 0 0 0 257 162 0 25 0 219 0 0 0 0 0 993 3:15 PM 0 341 0 0 256 131 29 0 219 0 0 0 0 0 977

| 0 | 394 | 0 | 0 | 0 | 298 | 191 | 0 | 19 | 0 | 237 | 0 | 0 | 0 | 0 | 0 | 1139 | |
|------------|---|--|---|---|---|--|--|--|--|---|---|--|--|--|---|--|--|
| 0 | 389 | 0 | 0 | 0 | 256 | 160 | 1 | 22 | 0 | 230 | 0 | 0 | 0 | 0 | 0 | 1058 | 4167 |
| 0 | 419 | 0 | 0 | 0 | 276 | 164 | 0 | 15 | 0 | 201 | 0 | 0 | 0 | 0 | 0 | 1075 | 4249 |
| 0 | 442 | 0 | 0 | 0 | 276 | 179 | 0 | 24 | 0 | 236 | 0 | 0 | 0 | 0 | 0 | 1157 | 4429 |
| 0 | 393 | 0 | 0 | 0 | 268 | 175 | 0 | 20 | 0 | 217 | 0 | 0 | 0 | 0 | 0 | 1073 | 4363 |
| 0 | 463 | 0 | 0 | 0 | 259 | 176 | 0 | 17 | 0 | 213 | 0 | 0 | 0 | 0 | 0 | 1128 | 4433 |
| 0 | 452 | 0 | 0 | 0 | 272 | 174 | 0 | 14 | 0 | 230 | 0 | 0 | 0 | 0 | 0 | 1142 | 4500 |
| 0 | 477 | 0 | 0 | 0 | 280 | 167 | 0 | 18 | 0 | 277 | 0 | 0 | 0 | 0 | 0 | 1219 | 4562 |
| 0 | 475 | 0 | 0 | 0 | 288 | 137 | 0 | 15 | 0 | 243 | 0 | 0 | 0 | 0 | 0 | 1158 | 4647 |
| 0 | 440 | 0 | 0 | 0 | 315 | 181 | 0 | 16 | 0 | 264 | 0 | 0 | 0 | 0 | 0 | 1216 | 4735 |
| 0 | 405 | 0 | 0 | 0 | 275 | 172 | 0 | 19 | 0 | 240 | 0 | 0 | 0 | 0 | 0 | 1111 | 4704 |
| 0 | 391 | 0 | 0 | 0 | 318 | 141 | 0 | 28 | 0 | 247 | 0 | 0 | 0 | 0 | 0 | 1125 | 4610 |
| 0 | 351 | 0 | 0 | 0 | 273 | 121 | 0 | 22 | 0 | 144 | 0 | 0 | 0 | 0 | 0 | 911 | 4363 |
| 0 | 333 | 0 | 0 | 0 | 257 | 104 | 0 | 24 | 0 | 251 | 0 | 0 | 0 | 0 | 0 | 969 | 4116 |
| Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | T - 1 | - |
| Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | 101 | ai |
| 0 | 1576 | 0 | 0 | 0 | 1192 | 764 | 0 | 76 | 0 | 948 | 0 | 0 | 0 | 0 | 0 | 45 | 56 |
| 0 | 128 | 0 | | 0 | 48 | 36 | | 12 | 0 | 80 | | 0 | 0 | 0 | | 30 |)4 |
| | 0 | | | | 0 | | | | 0 | | | | 0 | | | C |) |
| 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | C |) |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 0 394 0 389 0 419 0 393 0 463 0 452 0 452 0 452 0 477 0 475 0 405 0 391 0 351 0 351 0 351 0 1576 0 128 0 0 0 0 | 0 394 0 0 389 0 0 419 0 0 412 0 0 393 0 0 463 0 0 452 0 0 452 0 0 477 0 0 475 0 0 405 0 0 351 0 0 351 0 0 353 0 Northburd Left Thru Right 0 128 0 0 0 0 | 0 394 0 0 0 389 0 0 0 419 0 0 0 442 0 0 0 442 0 0 0 442 0 0 0 442 0 0 0 453 0 0 0 452 0 0 0 475 0 0 0 475 0 0 0 475 0 0 0 391 0 0 0 351 0 0 0 353 0 0 0 128 0 0 0 128 0 0 0 0 0 0 0 | 0 394 0 0 0 0 389 0 0 0 0 419 0 0 0 0 442 0 0 0 0 393 0 0 0 0 463 0 0 0 0 452 0 0 0 0 457 0 0 0 0 477 0 0 0 0 475 0 0 0 0 391 0 0 0 0 351 0 0 0 0 351 0 0 0 0 128 0 0 0 0 128 0 0 0 0 0 0 0 0 | 0 394 0 0 0 298 0 389 0 0 0 256 0 419 0 0 0 256 0 419 0 0 0 276 0 442 0 0 0 276 0 393 0 0 0 268 0 463 0 0 0 259 0 452 0 0 0 272 0 477 0 0 0 280 0 475 0 0 0 288 0 405 0 0 275 0 391 0 0 0 273 0 351 0 0 0 273 0 1576 0 0 0 48 0 128 0 0 48 0 | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ |

Comments:

Report generated on 10/4/2019 9:05 AM

| LOCATION: E | Kenilw Greer | orth Av nbelt, N | ve I-4 //D | 95 WE | 3 Ramp | IS | | | | | | | | | QC DATE: | : JOB | ‡: 1502 Sep 17 | 27003 2019 |
|---|--|---|--|--------------------------------------|---------------------------------|--|--|---------------------------------|---------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--|--------------------------------------|--|--------------------------------------|--|--|
| $140 \leftarrow 0 \Rightarrow $ | 813 140 673 • • 0.8 0.8 0.8 1129 | 1100 3 0 4 1 3 0 4 1 3 + 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 | 717 ◆ 1173 0 456 ◆ 558 | 1 | | Pea Pea | ak-Hou k 15-M Qua DATA TH | r: 6:00 in: 6:4 | AM | - 7:00 / 7:00 unts | AM AM | | | 129 ← 0 0 0 → 0 | 14.1 12.9 14 12.9 1 | 5.5 1.4 0 1 14.9 12.1 | 42 ← 3 ■ 0 ■ 29 → 1 | .7 49 |
| 0 | | → [→ [| 0 | | - | * |]↓↓ | ŢŢ | | | | | | 0 0 0 | | | 0 0 7 0 | |
| و + NA + • ٦ | | | NA NA + | | - | 1 Koniku | | 1 | · † | ↑ (* [| | | | NA | | | ► NA | |
| 15-Min Count Period Beginning At | Left | Kenilwo (North Thru | orth Ave bound) Right | U | Left | Kenilwo (South Thru | brth Ave bound) Right | U | Left | Eastb (Eastb Thru | B Ramps oound) Right | U | Left | West (West | B Ramps bound) Right | U | Total | Hourly Totals |
| 6:00 AM 6:15 AM 6:30 AM 6:45 AM | 0 0 0 | 64 72 90 157 | 154 142 140 122 | 0 0 0 | 0 0 0 | 120 145 177 231 | 42 29 36 33 | 0 0 0 | 0 0 0 0 | 0 0 0 | 0 0 0 | 0 0 0 | 104 109 118 125 | 0 0 0 | 181 162 164 210 | 0 0 0 | 665 659 725 878 | 2927 |
| 7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:30 AM 8:45 AM | 0 0 0 0 0 0 0 | 135 146 124 158 141 172 157 160 | 138 152 132 170 129 143 108 104 | 0 1 0 0 0 0 0 0 | 0 0 0 0 0 0 0 | 218 257 286 296 316 313 296 275 | 35 30 47 35 37 32 30 33 | 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 0 | 175 175 187 203 240 193 217 201 | 0 0 0 0 0 0 0 0 | 205 196 189 177 198 205 225 180 | 0 0 0 0 0 0 0 0 | 906 957 965 1039 1061 1058 1033 953 | 3168 3466 3706 3867 4022 4123 4191 4105 |
| Peak 15-Min Flowrates | Left | North Thru | bound Right | U | Left | South Thru | bound Right | U | Left | Eastb Thru | ound Right | U | Left | West Thru | bound Right | U | То | al |
| All Vehicles Heavy Trucks Pedestrians Bicycles | 0 0 0 | 628 48 0 0 | 488 80 0 | 0 | 0 0 0 | 924 120 0 0 | 132 16 0 | 0 | 0 0 0 | 0 0 0 0 | 0 0 0 | 0 | 500 20 0 | 0 0 0 0 | 840 40 0 | 0 | 35 32 0 | 12 4 |

Railroad Stopped Buses Comments:

Report generated on 10/2/2019 7:36 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

LOCATION: Kenilworth Ave -- I-495 WB Ramps QC JOB #: 15027004 **CITY/STATE:** Greenbelt, MD DATE: Tue, Sep 17 2019 Peak-Hour: 3:00 PM -- 4:00 PM 1365 1156 43 13.4 Peak 15-Min: 3:30 PM -- 3:45 PM ŧ ŧ ↓↓< **↑** 0 4.7 2.2 ÷ . € 476 € 980 183 🛥 0 🛊 2.2 🗢 0 🌶 0 0 🌩 0.92 0 0 ÷ • ٠ 0 **•** 0 **•** € 504 → 869 0 + 0 7 ŧ ٦ ŧ r 0 • 4.6 4 680 869 9.4 7.8 ŧ ŧ **↑** 8.5 Quality Counts 1553 1690 DATA THAT DRIVES COMMUNITIES 0 0 0 . \$ Ŧ • • **t** 0 A 0 0 **+** 0 07 **f** 0 ŧ C 0 0 0 NA ÷ t . NA ← NA NA NA \$ * ſ ٦ c ŧ NA **Kenilworth Ave Kenilworth Ave** I-495 WB Ramps I-495 WB Ramps 15-Min Count Period Hourly Totals (Southbound) (Eastbound) (Northbound) (Westbound) Total Beginning At Left Thru Right υ Left Thru Right U Left Thru Right υ Left Thru Right υ

| 3:00 PM | 0 | 147 | 215 | 1 | 0 | 267 | 57 | 0 | 0 | 0 | 0 | 0 | 138 | 0 | 126 | 0 | 951 | |
|---------------|------|-------|-------|---|------|-------|-------|----|------|-------|-------|---|------|------|-------|----|------|------|
| 3:15 PM | 0 | 165 | 194 | 0 | 0 | 248 | 49 | 0 | 0 | 0 | 0 | 0 | 135 | 0 | 109 | 0 | 900 | |
| 3:30 PM | 0 | 177 | 233 | 1 | 0 | 362 | 38 | 0 | 0 | 0 | 0 | 0 | 119 | 0 | 133 | 0 | 1063 | |
| 3:45 PM | 0 | 191 | 227 | 2 | 0 | 305 | 39 | 0 | 0 | 0 | 0 | 0 | 112 | 0 | 108 | 0 | 984 | 3898 |
| 4:00 PM | 0 | 181 | 279 | 0 | 0 | 307 | 64 | 0 | 0 | 0 | 0 | 0 | 126 | 0 | 123 | 0 | 1080 | 4027 |
| 4:15 PM | 0 | 175 | 271 | 2 | 0 | 340 | 74 | 0 | 0 | 0 | 0 | 0 | 112 | 0 | 110 | 0 | 1084 | 4211 |
| 4:30 PM | 0 | 204 | 224 | 2 | 0 | 330 | 70 | 0 | 0 | 0 | 0 | 0 | 99 | 0 | 106 | 0 | 1035 | 4183 |
| 4:45 PM | 0 | 226 | 260 | 0 | 0 | 345 | 56 | 0 | 0 | 0 | 0 | 0 | 89 | 0 | 102 | 0 | 1078 | 4277 |
| 5:00 PM | 0 | 203 | 261 | 0 | 0 | 339 | 79 | 0 | 0 | 0 | 0 | 0 | 98 | 0 | 126 | 0 | 1106 | 4303 |
| 5:15 PM | 0 | 210 | 302 | 1 | 0 | 370 | 97 | 0 | 0 | 0 | 0 | 0 | 93 | 0 | 103 | 0 | 1176 | 4395 |
| 5:30 PM | 0 | 243 | 259 | 0 | 0 | 343 | 96 | 0 | 0 | 0 | 0 | 0 | 83 | 0 | 128 | 0 | 1152 | 4512 |
| 5:45 PM | 0 | 199 | 244 | 0 | 0 | 350 | 55 | 0 | 0 | 0 | 0 | 0 | 114 | 0 | 103 | 0 | 1065 | 4499 |
| 6:00 PM | 0 | 186 | 239 | 0 | 0 | 347 | 57 | 0 | 0 | 0 | 0 | 0 | 122 | 0 | 99 | 0 | 1050 | 4443 |
| 6:15 PM | 0 | 206 | 205 | 0 | 0 | 316 | 64 | 0 | 0 | 0 | 0 | 0 | 139 | 0 | 124 | 0 | 1054 | 4321 |
| 6:30 PM | 0 | 201 | 183 | 0 | 0 | 254 | 47 | 0 | 0 | 0 | 0 | 0 | 129 | 0 | 107 | 0 | 921 | 4090 |
| 6:45 PM | 0 | 195 | 156 | 0 | 0 | 243 | 33 | 0 | 0 | 0 | 0 | 0 | 126 | 0 | 115 | 0 | 868 | 3893 |
| Peak 15-Min | | North | bound | | | South | bound | | | Eastb | ound | | | West | oound | | | |
| Flowrates | Loft | Thru | Right | | Loft | Thru | Right | 11 | Loft | Thru | Right | | Loft | Thru | Right | 11 | To | tal |
| | Leit | mu | Night | 0 | Leit | mu | Night | 0 | Leit | 11110 | Night | U | Leit | THE | Night | 0 | | |
| All Vehicles | 0 | 708 | 932 | 4 | 0 | 1448 | 152 | 0 | 0 | 0 | 0 | 0 | 476 | 0 | 532 | 0 | 42 | 52 |
| Heavy Trucks | 0 | 68 | 80 | | 0 | 72 | 0 | | 0 | 0 | 0 | | 12 | 0 | 80 | | 31 | .2 |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 4 | | | 4 | |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | C |) |
| Railroad | | | | | | | | | | | | | | | | | | |
| Stopped Buses | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |

Comments:

Report generated on 10/4/2019 9:05 AM

| LOCATION: E | Kenilw Greer | orth Av nbelt, N | ve Cre ⁄ID | escent | Rd | | | | | | | | | | QC DATE: | J OB Tue, | ‡: 1502 Sep 17 | 27005 2019 |
|--|--|--|--|--|--|--|---|--|--|--|---|--|--|--|--|---|--|--|
| 33 ← 1 ≠ 0 ↔ 4 → 3 ◄ | 738 4 707 4 707 0.82 0.82 3 4 1010 829 | 1078 | 66 ← 180 1 113 → 63 | | | Pea Pea | ak-Hou k 15-M Qua DATA TH | r: 6:00 in: 6:4 | AM | - 7:00 / 7:00 | AM AM | | | 3 ★ 0 0 50 ★ 66.7 | 183 0 18 • 0 • 18 | 48 ↑ 4 18.5 ↓ 4 18.5 ↓ 5 | 6.1 ← 3 • 0 • 18 → 1 | 13 5.9 |
| o | | → [→ [| 0 | | - | * |]↓↓ | ļ | • | | ₽ •_ + | - | | 0 0 0 | | | 0 0 7 0 | |
| € | | | NA 🔸 | | - | -÷ | • | 1 1 | Î Î | ↑ (* | <u>\$</u> | - | | NA | | | ⊾ ► NA | |
| 15-Min Count Period | | Kenilwo (North | orth Ave bound) | | | Kenilwo (South | orth Ave bound) | | | Cresc (Eastl | ent Rd bound) | | | Cresc (West | ent Rd bound) | | Total | Hourly |
| Beginning At 6:00 AM 6:15 AM 6:30 AM 6:45 AM 7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM | Left 5 7 11 5 8 6 5 7 7 | Thru 215 220 257 318 326 295 292 307 325 | Right 11 7 4 15 9 25 17 21 16 42 | U 0 2 2 1 1 5 0 5 2 | Left 5 4 9 8 14 14 14 17 16 16 | Thru 139 172 203 193 201 266 251 276 264 202 | Right 0 0 2 4 2 4 5 2 2 | U 0 0 1 0 0 0 0 0 0 0 0 | Left 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Thru 0 | Right 0 0 0 1 0 1 0 | U 0 0 0 0 0 0 0 0 0 0 0 | Left 21 19 33 40 59 44 69 57 68 67 | Thru 1 0 | Right 12 17 20 14 31 28 32 26 27 | U 0 0 0 0 0 0 0 0 0 0 0 0 | 409 446 535 613 633 687 689 720 711 761 | 2003 2227 2468 2622 2729 2807 2001 |
| 8:30 AM 8:45 AM | 5 3 3 | 335 337 322 | 42 29 26 | 2 1 0 | 13 28 | 265 258 | 2 1 3 | 0 0 | 2 0 | 0 0 | 2 3 3 | 0 0 0 | 66 57 | 0 | 27 30 28 | 0 0 0 | 750 728 | 2962 2970 |
| Peak 15-Min Flowrates | Left | North Thru | bound Right | U | Left | South Thru | bound Right | U | Left | Eastb Thru | oound Right | U | Left | Westl Thru | bound Right | U | То | tal |
| All Vehicles Heavy Trucks Pedestrians Bicycles Railroad Stopped Buses | 44 0 0 | 1272 56 0 0 | 60 8 0 | 8 | 32 4 0 | 772 136 8 0 | 8 0 0 | 4 | 0 0 0 | 0 0 0 | 12 8 0 | 0 | 160 8 0 | 0 0 0 | 80 0 0 | 0 | 24 22 8 (| 52 :0 ; |

Report generated on 10/2/2019 7:36 AM



| | | | - | | | - | - | | | | - | | | | | | |
|---|-------------|----------------------|---------------|----|----------------|----------------------|-------------|---|-------------|------------------|--------------|---|---------------|------------------|---------------|---|-----------------------|
| Peak 15-Min | | North | bound | | | South | bound | | | Eastb | ound | | | West | bound | | Total |
| Flowrates | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Total |
| All Vehicles Heavy Trucks Pedestrians Bicycles Railroad | 4 0 0 | 988 148 0 0 | 176 8 0 | 16 | 120 12 0 | 1280 64 0 0 | 4 0 0 | 0 | 0 0 0 | 0 0 0 0 | 24 0 0 | 0 | 184 8 0 | 0 0 0 0 | 92 12 0 | 0 | 2888 252 0 0 |

Report generated on 10/4/2019 9:05 AM

LOCATION: Kenilworth Ave -- Ivy Ln OC JOB #: 15027007 **CITY/STATE:** Greenbelt, MD DATE: Tue, Sep 17 2019 Peak-Hour: 6:00 AM -- 7:00 AM 5.9 Peak 15-Min: 6:45 AM -- 7:00 AM ŧ ÷ ŧ ŧ 57.1 17 . . 82 🛥 0 🛊 • 0 0 + t 0.84 + 7.1 🔿 7.1 🤉 **€** 0 → 0 98 🔹 98 0 🔹 0 c ŧ 4.3 5.9 ŧ ŧ ÷ ŧ Quality Counts 15.7 5.8 DATA THAT DRIVES COMMUNITIES . \$ • • **t** 0 A ÷ **f** 0 ŧ NΔ t و t NA NA NA A NA Î Î ... ŧ C NA NA Kenilworth Ave **Kenilworth Ave** lvy Ln lvy Ln 15-Min Count Period Hourly Totals (Eastbound) (Westbound) (Northbound) (Southbound) Total **Beginning At** Left Thru Right υ Left Thru Right U Left Thru Right υ Left Thru Right υ 6:00 AM 6:15 AM 6:30 AM 6:45 AM 7:00 AM 7:15 AM 2 5 5 9 0 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:45 AM n n n Λ n Northbound Southbound Eastbound Westbound Peak 15-Min Flowrates Total Left Thru Right U Left Thru Right υ Left Thru Right υ Left Thru Right υ All Vehicles 4 120 12 0 0 0 4 Heavy Trucks Õ õ õ

Stopped Buses

Pedestrians

Bicycles

Railroad

Report generated on 10/2/2019 7:36 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

LOCATION: Kenilworth Ave -- Ivy Ln QC JOB #: 15027008 CITY/STATE: Greenbelt, MD DATE: Tue, Sep 17 2019 Peak-Hour: 3:00 PM -- 4:00 PM 1088 14.1 935 5.6 Peak 15-Min: 3:45 PM -- 4:00 PM ŧ ▲ 1078 1 ŧ 22.2 5.5 9 0 . 108 🛥 0 **t** 0 **+** 0 6.5 ፍ 0 🌶 0 . 0 0 🌩 0 0.94 0 Λ ÷ 2 + 2 7 203 🔹 203 🥆 **€** 0 **→** 0 ↑↑101 934 **n** 5 ŧ ۴ 0 14.1 0 **↓** 1283 ↓ 4.9 ٠ Quality Counts DATA THAT DRIVES COMMUNITIES **↑** 13.2 1035 0 0 0 L. \$ 1 0 **J t** 0 AD 0 1 0 🌩 **+** 0 0 7 **f** 0 ŧ C 0 0 0 NΔ t NA 🗲 NA NA NA Î \$ ŧ NA 15-Min Count **Kenilworth Ave Kenilworth Ave** lvy Ln lvy Ln

| Period | | (North | bound) | | | (South | bound) | | | (East | bound) | | | (West | oound) | | Total | Hourly |
|---------------|------|--------|--------|---|------|--------|--------|---|------|-------|--------|---|------|-------|--------|---|-------|--------|
| Beginning At | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | TOTAIS |
| 3:00 PM | 21 | 217 | 0 | 0 | 0 | 256 | 3 | 1 | 0 | 0 | 42 | 0 | 0 | 0 | 0 | 0 | 540 | |
| 3:15 PM | 25 | 232 | 0 | 0 | 0 | 239 | 2 | 0 | 0 | 0 | 52 | 0 | 0 | 0 | 0 | 0 | 550 | |
| 3:30 PM | 28 | 228 | 0 | 1 | 0 | 309 | 1 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 617 | |
| 3:45 PM | 25 | 257 | 0 | 1 | 0 | 274 | 3 | 0 | 0 | 0 | 59 | 0 | 0 | 0 | 0 | 0 | 619 | 2326 |
| 4:00 PM | 19 | 255 | 0 | 0 | 0 | 269 | 3 | 0 | 0 | 0 | 93 | 0 | 0 | 0 | 0 | 0 | 639 | 2425 |
| 4:15 PM | 34 | 214 | 0 | 0 | 0 | 298 | 3 | 0 | 0 | 0 | 99 | 0 | 0 | 0 | 0 | 0 | 648 | 2523 |
| 4:30 PM | 29 | 246 | 0 | 0 | 0 | 297 | 2 | 0 | 0 | 0 | 85 | 0 | 0 | 0 | 0 | 0 | 659 | 2565 |
| 4:45 PM | 31 | 250 | 0 | 2 | 0 | 294 | 1 | 0 | 0 | 0 | 121 | 0 | 0 | 0 | 0 | 0 | 699 | 2645 |
| 5:00 PM | 22 | 237 | 0 | 1 | 0 | 315 | 1 | 0 | 0 | 0 | 135 | 0 | 0 | 0 | 0 | 0 | 711 | 2717 |
| 5:15 PM | 37 | 266 | 0 | 0 | 0 | 291 | 3 | 0 | 0 | 0 | 115 | 0 | 0 | 0 | 0 | 0 | 712 | 2781 |
| 5:30 PM | 31 | 275 | 0 | 0 | 0 | 293 | 2 | 1 | 0 | 0 | 148 | 0 | 0 | 0 | 0 | 0 | 750 | 2872 |
| 5:45 PM | 29 | 220 | 0 | 0 | 0 | 299 | 6 | 0 | 0 | 0 | 96 | 0 | 0 | 0 | 0 | 0 | 650 | 2823 |
| 6:00 PM | 15 | 241 | 0 | 1 | 0 | 311 | 1 | 1 | 0 | 0 | 139 | 0 | 0 | 0 | 0 | 0 | /09 | 2821 |
| 6:15 PM | 24 | 267 | 0 | 0 | 0 | 263 | 4 | 0 | 0 | 0 | 96 | 0 | 0 | 0 | 0 | 0 | 654 | 2763 |
| 6:30 PM | 23 | 248 | 0 | 1 | 0 | 237 | 3 | 0 | 0 | 0 | 61 | 0 | 0 | 0 | 0 | 0 | 5/3 | 2586 |
| 6:45 PM | 19 | 261 | 0 | 2 | 0 | 1/8 | 4 | 0 | 0 | 0 | 55 | 0 | 0 | 0 | 0 | 0 | 519 | 2455 |
| Peak 15-Min | | North | bound | | | South | bound | | | Eastb | ound | | | West | ound | | То | tal |
| Flowrates | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | 10 | Lai |
| All Vehicles | 100 | 1028 | 0 | 4 | 0 | 1096 | 12 | 0 | 0 | 0 | 236 | 0 | 0 | 0 | 0 | 0 | 24 | 76 |
| Heavy Trucks | 4 | 124 | 0 | | 0 | 48 | 4 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 18 | 30 |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 0 | | | C |) |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | C |) |
| Railroad | | | | | | | | | | | | | | | | | | |
| Stopped Buses | | | | | | | | | | | | | | | | | | |
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Comments:

Report generated on 10/4/2019 9:05 AM

QC JOB #: 15027009

LOCATION: Kenilworth Ave/Edmonston Rd -- Cherrywood Ln **CITY/STATE:** Greenbelt, MD

| CITY/STATE: | Greer | nbelt, N | ИĎ | | | | | | | | | | | | DATE: | Tue, | Sep 17 | 2019 |
|---|--|---|-------------------------|-----------------------|------------------|---------------------------------|-------------------------------|--|----------------------------|------------------|----------------------------|------------------|------------------|---------------------------|-------------------|---|---------------------------------|--------------------------------------|
| 338 ← 115 0 140 → 25 | 830 ↓ 211 6: ↓ ↓ ↓ ↓ 127 & 644 | 979 19 0 60 60 61 991 | 0 ← 0 0 0 → 0 | | | Pe Pea | ak-Hou k 15-M DATA TH | IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII | | - 7:00 / 7:00 | AM AM | | | 18 ← 9.6 0 114 → 20 | 14.8 0.9 1 | 6.6 9.5 0 • • • • • 3.3 0 • 5.9 | • 0 + • 0 • 0 • | 0 |
| 0 | | → [→ [| 0 | | - | 1 | ₹↓↓ | Ļ | | | ₽ | _ | | 1 0 0 | | | • 0 • 0 • 0 | |
| و + NA + ج + | | | NA ► | | - | | * * * | | ٩ | † † | *** | _ | | NA | | | t ← NA F | |
| 15-Min Count Period Beginning At | Kenilv | worth Av F (North | ve/Edmo Rd bound) | onston | Kenilv | vorth Av F (South | ve/Edmo ld bound) | onston | | Cherry (Eastk | wood Ln bound) | | | Cherry (West | wood Ln bound) | | Total | Hourly Totals |
| 6.00 \\ | Left | 174 | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | 383 | |
| 6:15 AM 6:30 AM | 27 29 46 | 194 220 276 | 0 | 0 | 0 | 141 191 167 | 36 62 79 | 0 | 34 26 | 0 | 1 3 | 0 | 0 | 0 | 0 | 0 | 433 531 614 | 1961 |
| 7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM | 42 54 40 49 46 | 252 231 236 214 220 | 0 0 0 0 | 0 1 0 0 0 | 0 0 0 0 | 188 226 221 262 241 | 97 87 118 101 116 | 0 0 0 0 | 22 29 33 30 30 | 0 0 0 0 | 10 10 10 11 13 | 0 0 0 0 | 0 0 0 0 | 0 0 0 0 | 0 0 0 0 | 0 0 0 0 | 611 638 658 667 666 | 2189 2394 2521 2574 2629 |
| 8:15 AM 8:30 AM 8:45 AM | 55 38 45 | 202 221 203 | 0 0 0 | 0 1 0 | 0 0 0 | 250 235 250 | 124 104 88 | 1 0 0 | 32 27 20 | 0 0 0 | 7 5 13 | 0 0 0 | 0 0 0 | 0 0 0 | 0 0 0 | 0 0 0 | 671 631 619 | 2662 2635 2587 |
| Peak 15-Min | | North | bound | | | South | bound | | | Eastb | ound | | | West | bound | | Tot | tal |
| Flowrates | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| Heavy Trucks | 184 | 52 | 0 | 0 | 0 | 668 120 | 316 8 | U | 144 8 | 0 | 40 8 | 0 | 0 | 0 | 0 | U | 24 19 | 6 |
| Pedestrians Bicycles | 0 | 0 0 | 0 | | 0 | 0 0 | 0 | | 0 | 0 0 | 0 | | 0 | 0 0 | 0 | | C | |

Pedestrians Bicycles Railroad Stopped Buses

Comments:

Report generated on 10/2/2019 7:36 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

LOCATION: Kenilworth Ave/Edmonston Rd -- Cherrywood Ln QC JOB #: 15027010 **CITY/STATE:** Greenbelt, MD DATE: Tue, Sep 17 2019 Peak-Hour: 3:00 PM -- 4:00 PM 1180 1056 48 14.2 ↓
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 ↓ Peak 15-Min: 3:30 PM -- 3:45 PM ŧ 5.3 1.4 0 . 213 🗲 180 🌶 **a** 0 5.2 🗢 7.2 🌶 **t** 0 0 0 0 🌩 0 🔸 0.92 0 Λ + 7.8 🔶 9 🤉 **€** 0 → 0 258 🔶 78 🤻 ŧ ŧ 74 876 0 12.2 15.6 0 ŧ ♦ 5.5 ŧ ŧ Quality Counts 1119 15.4 950 DATA THAT DRIVES COMMUNITIES 0 1 0 \$ 1 **e** 0 **t** 0 AD 0 0 0 🔸 **+** 0 1 7 **f** 0 ŧ 0 0 0 t NA 🗲 NA ΝΛ NΛ 1 📱 1 T ŧ NA NΔ Kenilworth Ave/Edmonston Kenilworth Ave/Edmonston Cherrywood Ln Cherrywood Ln 15-Min Count I Rd Rd

| Period Beginning At | | ۳ North(| bound) | | | ٦ South(| bound) | | | (Eastb | ound) | | | (West | oound) | | Total | Hourly Totals |
|------------------------|-------|-------------|--------|---|------|-------------|----------|---|------|--------|-------|----------|------|-------|--------|---|------------|------------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 3:00 PM | 15 | 211 | 0 | 0 | 0 | 246 | 28 | 0 | 45 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 570 | |
| 3:15 PM | 13 | 204 | 0 | 0 | 0 | 231 | 29 | 0 | 40 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 540 | |
| 3:30 PM | 28 | 225 | 0 | 0 | 0 | 288 | 46 | 0 | 45 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 647 | |
| 3:45 PM | 17 | 236 | 0 | 1 | 0 | 275 | 37 | 0 | 50 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 631 | 2388 |
| 4:00 PM | 16 | 225 | 0 | 0 | 0 | 232 | 37 | 0 | 70 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 608 | 2426 |
| 4:15 PM | 25 | 215 | 0 | 0 | 0 | 267 | 48 | 0 | 60 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 646 | 2532 |
| 4:30 PM | 16 | 214 | 0 | 0 | 0 | 287 | 40 | 0 | 75 | 0 | 36 | 0 | 0 | 0 | 0 | 0 | 668 | 2553 |
| 4:45 PM | 20 | 233 | 0 | 1 | 0 | 251 | 38 | 0 | 77 | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 664 | 2586 |
| 5:00 PM | 25 | 224 | 0 | 0 | 0 | 269 | 52 | 0 | 89 | 0 | 46 | 0 | 0 | 0 | 0 | 0 | 705 | 2683 |
| 5:15 PIM | 24 | 223 | 0 | 0 | 0 | 255 | 50 | 0 | 88 | 0 | 49 | 0 | 0 | 0 | 0 | 0 | 689 | 2726 |
| 5:30 PIM | 33 | 242 | 0 | 2 | 0 | 233 | 54 | 0 | 79 | 0 | 3/ | 0 | 0 | 0 | 0 | 0 | 680 | 2738 |
| 5:45 PIVI | 22 | 219 | 0 | 1 | 0 | 280 | 49 | 0 | 104 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 6/8 700 | 2752 |
| 6.15 DM | 20 | 210 | 0 | 1 | 0 | 200 | 44 55 | 0 | 76 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 692 | 2730 |
| 6.30 PM | 29 | 242 | 0 | 3 | 0 | 204 | /1 | 0 | 64 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 581 | 2749 |
| 6:45 PM | 20 | 221 | 0 | 1 | 0 | 178 | 30 | 0 | 68 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 581 | 2553 |
| Deals 45 Min | 27 | North | bound | - | Ű | South | hound | Ū | 00 | Fasth | ound | <u> </u> | Ű | West | bound | Ŭ | 501 | 2000 |
| Flowrates | 1 oft | There | Diaht | | Laft | There | Diaht | | Loft | There | Diaht | | Loft | These | Diaht | | То | tal |
| Howfates | Leit | Inru | Right | U | Leit | Inru | Right | U | Leit | Thru | Right | U | Leit | Inru | Right | U | | |
| All Vehicles | 112 | 900 | 0 | 0 | 0 | 1152 | 184 | 0 | 180 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 25 | 88 |
| Heavy Trucks | 20 | 124 | 0 | | 0 | 44 | 4 | | 12 | 0 | 12 | | 0 | 0 | 0 | | 22 | L6 |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 0 | | | (|) |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 1 | | 0 | 0 | 0 | | 1 | - |
| Railroad | | | | | | | | | | | | | | | | | | |
| Stopped Buses | | | | | | | | | | | | | | | | | | |
| Comments: | | | | | | | | | | | | | | | | | | |

Report generated on 10/4/2019 9:05 AM

| LOCATION: E CITY/STATE: | Edmon Greer | ston Ro belt, N | d Sun ⁄ID | nyside | e Ave | | | | | | | | | | QC DATE: | : JOB | ‡: 1502 Sep 17 | 27011 2019 |
|--|--|--|--------------------------------------|---------------------------------|---------------------------------|--|--|---------------------------------|--|--------------------------------------|--|---------------------------------|---------------------------------|--------------------------------------|---|---|--|--|
| 417 ← 59 . 0 • 226 → 167 • | 828 110 71 - 0.8 - 0 | 723 8 0 • • • 5 • • 4 0 971 | 0 ← 0 0 ← 0 | | | Pea Pea | ak-Hou k 15-M Qua | r: 6:00 in: 6:4 | AM 5 AM 5 AM | 7:00 / - 7:00 | AM AM | | | 6.7 ← 10.3 0 10.6 → 10.3 | 16.3 10 1 10 1 2 4 55 7 16 | 7.6 7.3 0 7.3 0 7.4 0 6.8 | • 0 • • 0 • 0 • | 0 |
| • | | → [] → [| 0 | | - | * |]↓↓ | | | l | ₿ | | | 0 0 0 | | | 0 0 0 | |
| ← ♪ NA → → → | | | ► NA ► | | - | | | | | ך ך ן | 我 | | | NA | | | NA | |
| 15-Min Count | | Edmon | ston Rd | | | Edmon | ston Rd | | | Sunnys | ide Ave | | | Sunnys | ide Ave | | | Hourly |
| Period Beginning At | Left | Thru | Right | U | Left | Thru | Right | U | Left | (Eastb | Right | U | Left | (west Thru | Right | U | Iotal | Totals |
| 6:00 AM 6:15 AM 6:30 AM 6:45 AM | 73 66 82 <mark>86</mark> | 118 154 175 217 | 0 0 0 0 | 0 0 0 | 0 0 0 | 146 161 201 210 | 24 29 33 24 | 0 0 0 | 9 16 18 16 | 0 0 0 | 36 33 56 42 | 0 0 0 | 0 0 0 | 0 0 0 | 0 0 0 0 | 0 0 0 | 406 459 565 595 | 2025 |
| 7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:45 AM | 80 79 62 79 62 70 69 65 | 212 176 200 183 172 179 180 153 | 0 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 | 236 241 253 235 231 245 234 225 | 28 30 23 27 29 18 28 33 | 0 0 0 0 0 0 0 | 13 12 19 11 23 18 21 36 | 0 0 0 0 0 0 1 0 | 61 87 100 119 146 109 111 125 | 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 0 | 0 0 0 0 0 0 1 | 0 0 0 0 0 0 0 | 630 625 657 654 663 639 644 638 | 2249 2415 2507 2566 2599 2613 2600 2584 |
| Peak 15-Min | | North | bound | | | South | bound | | | Eastb | ound | | | West | oound | | Tot | tal |
| All Vehicles Heavy Trucks Pedestrians Bicycles Railroad Stopped Buses | Left 344 28 0 | Thru 868 40 0 | Right 0 0 0 | 0 | Left 0 0 | Thru 840 124 0 0 | Right 96 0 | 0 | Left 64 12 0 | Thru 0 0 0 0 0 0 | Right 168 12 0 | 0 | Left 0 0 | Thru 0 0 0 0 0 0 | Right 0 0 | 0 | 233 21 0 0 | 80 |

Report generated on 10/2/2019 7:36 AM



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|--------------|------|-------|-------|---|------|-------|-------|---|------|-------|-------|---|------|------|-------|---|-----|------|
| 5:30 PM | 58 | 262 | 0 | 0 | 0 | 208 | 34 | 0 | 42 | 0 | 104 | 0 | 0 | 0 | 0 | 0 | 708 | 2776 |
| 5:45 PM | 55 | 240 | 0 | 0 | 0 | 207 | 24 | 0 | 51 | 0 | 121 | 0 | 0 | 0 | 0 | 0 | 698 | 2800 |
| 6:00 PM | 84 | 274 | 0 | 0 | 0 | 215 | 27 | 0 | 41 | 0 | 103 | 0 | 0 | 0 | 0 | 0 | 744 | 2847 |
| 6:15 PM | 60 | 258 | 0 | 0 | 0 | 205 | 19 | 0 | 45 | 0 | 90 | 0 | 0 | 0 | 0 | 0 | 677 | 2827 |
| 6:30 PM | 58 | 237 | 0 | 0 | 0 | 176 | 28 | 0 | 33 | 0 | 76 | 0 | 0 | 0 | 0 | 0 | 608 | 2727 |
| 6:45 PM | 70 | 235 | 0 | 0 | 0 | 154 | 25 | 0 | 34 | 0 | 57 | 0 | 0 | 0 | 0 | 0 | 575 | 2604 |
| Peak 15-Min | | North | bound | | | South | bound | | | Eastb | ound | | | West | bound | | Та | hal |
| Flowrates | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | 10 | Ldi |
| All Vehicles | 276 | 944 | 0 | 0 | 0 | 816 | 120 | 0 | 148 | 0 | 388 | 0 | 0 | 0 | 0 | 0 | 26 | 92 |
| Heavy Trucks | 32 | 144 | 0 | | 0 | 24 | 8 | | 8 | 0 | 12 | | 0 | 0 | 0 | | 22 | 28 |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 0 | | | 0 |) |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 |) |
| Railroad | | | | | | | | | | | | | | | | | | |
| Ramouu | | | | | | | | | | | | | | | | | | |

Report generated on 10/4/2019 9:05 AM

| LOCATION: E CITY/STATE: | Edmon Beltsv | ston R ville, M | d Bea D | ver Da | am Rd | | | | | | | | | | QC DATE: | JOB ‡ Thu, : | ‡: 1502 Sep 19 | 27017 2019 |
|---|--|--|--------------------------------------|---------------------------------|----------------------------------|--|------------------------------------|----------------------------|---------------------------------|--|---------------------------------|---------------------------------|--------------------------------------|--|---|--------------------------------------|--|--|
| | 874 0 863 • 0.77 • 0.77 • 0.683 882 | 700 | 12 ★ 25 0 13 ★ 12 | | | Pea Pea | ak-Hou k 15-M Qua DATA TH | r: 6:00 in: 6:4 | AM 5 AM | - 7:00 / 7:00 | AM AM | | | 0 + 0 0 0 + 0 | 16.9 0 17 • • • • • • • 16.9 | 9.6 0 4 28.6 9.4 | 333 ← 2 0 7.7 → 10 | 10 |
| 0 | | • [| 0 | | - | | 4 | | | | 500 ₽ } | | | 0 0 0 | | | 0 0 0 | |
| و ب NA پ ک | | | ← NA ← | | - | 50 0 | | | | • | | | | NA | | | NA | |
| 15-Min Count Period Reginning At | | Edmon (North | ston Rd bound) | | | Edmon (South | ston Rd bound) | | | Beaver (Eastb | Dam Rd ound) | | | Beaver (Westl | Dam Rd bound) | | Total | Hourly Totals |
| 6:00 AM 6:15 AM 6:30 AM 6:45 AM | Left 0 0 0 | Thru 128 141 183 236 | Right 3 1 2 1 | 0 0 0 0 | Left 0 0 1 4 | Thru 178 190 235 266 | Right 0 0 0 0 | U 0 0 0 | Left 0 0 0 | Thru 0 0 0 0 0 0 | Right 0 0 0 0 | 0 0 0 0 | Left 1 3 6 3 | Thru 0 0 0 0 0 0 | Right 3 2 6 1 | 0 0 0 0 | 313 337 433 511 | 1594 |
| 7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:30 AM 8:45 AM | 0 0 0 0 0 0 0 | 180 206 176 195 200 152 181 156 | 0 5 4 2 7 8 9 5 | 0 0 0 0 0 0 1 | 2 5 2 5 3 2 10 | 302 277 255 299 270 259 261 242 | 0 0 0 0 0 0 0 | 0 0 0 0 0 0 | 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 | 3 4 3 7 5 8 5 2 | 0 0 0 0 0 0 0 | 5 4 9 8 5 10 7 | 0 0 0 0 0 0 0 0 | 492 501 444 514 495 435 468 423 | 1773 1937 1948 1951 1954 1888 1912 1821 |
| Peak 15-Min Flowrates | Left | North | bound Right | U | Left | South | bound Right | U | Left | Eastb Thru | ound Right | U | Left | Westh | ound Right | U | Tot | al |
| All Vehicles Heavy Trucks Pedestrians Bicycles Railroad Stopped Buses | 0 0 0 | 944 92 0 1 | 4 0 0 | 0 | 16 0 0 | 1064 156 0 0 | 0 0 0 | 0 | 0 | 0 0 0 0 | 0 0 0 | 0 | 12 0 0 | 0 0 0 0 | 4 0 0 | 0 | 204 24 0 1 | 44 -8 |

Report generated on 10/2/2019 7:36 AM

Comments:

| LOCATION: E CITY/STATE: | dmon Beltsv | ston R ille, M | d Bea D | ver Da | am Rd | | | | | | | | | | QC DATE: | Thu, | #: 1502 Sep 19 | 27018 2019 |
|--|---|-------------------------|----------------------------|---------|-------------|-------------------------|-----------------------------|----------------------|-----------------|--------------------------|---------------------------|-------|-------------|--------------------------|---|----------------------------------|---------------------------------------|------------------|
| | 859 0 831 • 0 0.88 0.88 0.88 • 0 0.88 • 0 102 • 849 | 1033 | , 9 ← 27 0 18 → 86 | ; | | Pe Pea | eak-Hou ak 15-M | ur: 3:00 lin: 3:3 | 0 PM - 30 PM | - 4:00 3:45 unts | PM 5 PM | | | 0 + 0 0 0 + 0 | 5.9 0 6. • • • • • 0 12 • • 6.1 | 12.9 1 0 3 5.2 12.6 | € 0 ↔ ← 0 € 5.6 → | 3.7 3.5 |
| o | | → [→ [| 0 | | - | | DATA T⊢ | IAT DRIV | ES COMI | MUNITIES | s ∰ \$— | _ | | 0 0 0 | | | € 0 ← 0 € 0 | |
| • • • NA • • • | | | • • • | | - | 500 | | | | † | | _ | | NA | | | € ← NA ₽ | |
| 15-Min Count Period Beginning At | Left | Edmon (North Thru | ston Rd bound) Right | U | Left | Edmon (South Thru | iston Rd bound) Right | U | Left | Beaver (Eastb Thru | Dam Rd pound) Right | U | Left | Beaver (Westl Thru | Dam Rđ bound) Right | U | Total | Hourly Totals |
| 3:00 PM 3:15 PM 3:30 PM | 0 0 0 | 218 254 283 | 12 10 <u>18</u> | 0 0 0 0 | 8 4 6 | 190 182 237 | 0 0 0 0 | 0 0 0 | 0 0 0 | 0 0 0 | 0 0 0 0 | 0 0 0 | 6 4 4 | 0 0 0 | 5 1 2 | 0 0 0 | 439 455 550 | 1068 |

| 3:30 PM | 0 | 283 | 18 | 0 | 6 | 237 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 550 | |
|---------------|------|-------|-------|---|------|-------|-------|---|------|-------|-------|---|------|------|-------|---|-----|------|
| 3:45 PM | 0 | 269 | 18 | 0 | 10 | 222 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 1 | 0 | 524 | 1968 |
| 4:00 PM | 0 | 257 | 15 | 0 | 5 | 218 | 0 | 1 | 0 | 0 | 0 | 0 | 7 | 0 | 6 | 0 | 509 | 2038 |
| 4:15 PM | 0 | 248 | 19 | 0 | 12 | 212 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 7 | 0 | 501 | 2084 |
| 4:30 PM | 0 | 257 | 24 | 0 | 8 | 221 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 520 | 2054 |
| 4:45 PM | 0 | 224 | 31 | 0 | 9 | 227 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 10 | 0 | 505 | 2035 |
| 5:00 PM | 0 | 225 | 33 | 0 | 5 | 203 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 12 | 0 | 480 | 2006 |
| 5:15 PM | 0 | 246 | 27 | 0 | 4 | 213 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 8 | 0 | 501 | 2006 |
| 5:30 PM | 0 | 268 | 32 | 0 | 8 | 231 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 12 | 0 | 554 | 2040 |
| 5:45 PM | 0 | 277 | 19 | 0 | 14 | 210 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 13 | 0 | 540 | 2075 |
| 6:00 PM | 0 | 272 | 12 | 0 | 11 | 227 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 15 | 0 | 544 | 2139 |
| 6:15 PM | 0 | 272 | 8 | 0 | 10 | 259 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 11 | 0 | 564 | 2202 |
| 6:30 PM | 0 | 229 | 12 | 0 | 11 | 218 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 476 | 2124 |
| 6:45 PM | 0 | 221 | 3 | 0 | 5 | 208 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 4 | 0 | 446 | 2030 |
| Peak 15-Min | | North | bound | | | South | bound | | | Eastb | oound | | | West | bound | | Та | 4-1 |
| Flowrates | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | 10 | tai |
| All Vehicles | 0 | 1132 | 72 | 0 | 24 | 948 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 8 | 0 | 22 | 00 |
| Heavy Trucks | 0 | 120 | 4 | | 0 | 56 | 0 | | 0 | 0 | 0 | | 4 | 0 | 0 | | 18 | 34 |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 0 | | | (|) |
| Bicycles | 0 | 0 | 0 | | 0 | 1 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 1 | L |
| Railroad | | | | | | | | | | | | | | | | | | |
| Stopped Buses | | | | | | | | | | | | | | | | | | |

Report generated on 10/4/2019 9:05 AM

Report generated on 10/2/2019 7:36 AM

Stopped Buses Comments:

LOCATION: Edmonston Rd -- Powder Mill Rd QC JOB #: 15027014 **CITY/STATE:** Greenbelt, MD DATE: Tue, Sep 17 2019 Peak-Hour: 3:00 PM -- 4:00 PM 712 840 49 16 Peak 15-Min: 3:45 PM -- 4:00 PM ÷ ŧ ŧ 4 387 239 86 0.4 11.6 6.2 . . 860 🗢 331 🌶 37 7.7 + 11.5 + **t** 8.1 **+** 3.6 **4** 249 £ 19.5 🜩 **+** 3.5 471 🜩 0.89 **+** 144 14.2 🔹 2.8 🥆 944 🔹 142 🍾 € 1.5 → 14.9 ٦ ŧ C 329 472 146 11.2 19.7 2.1 ↓ 1.3 ÷ ŧ **↑** 14 Quality Counts 947 DATA THAT DRIVES COMMUNITIES 0 0 0 L. . \$ ┥ 0 🖌 **t** 0 Ate 0 0 1 **+** 0 0 7 **r** 0 C 4 4 0 1 0 NA L. . t NA 🗢 NA NA NA ſ ₩. Ī 1 ٦ ç ŧ r 1 NA NΔ Edmonston Rd Edmonston Rd Powder Mill Rd Powder Mill Rd 15-Min Count Period Beginning At Hourly Totals (Northbound) (Southbound) (Eastbound) (Westbound) Total Left Thru Right υ Left Thru Right U Left Thru Right υ Left Thru Right υ 81 59 14 19 655 3:00 PM 112 34 0 18 42 86 0 81 112 34 0 31 10 0 3:15 PM 115 43 0 15 56 95 0 60 113 42 40 q

| 4:15 PM 4:30 PM | 97 72 | 140 | 46 46 | 0 | 28 39 | 91 106 | 17 14 | 0 | 15 | 92 97 | 96 93 | 0 | 10 19 | 32 51 | 6 9 | 0 | 670 690 | 2924 2888 |
|---|------------------------|---------------------------------------|---------------------------------|--------|-----------------------|-------------------------------------|----------------------------------|--------|--------------------------|---------------------------------------|--------------------------------|--------|------------------------|-------------------------------------|--|---------------|----------------------|----------------|
| 4:45 PM | 73 | 143 | 56 | 0 | 26 | 123 | 15 | 0 | 15 | 95 | 96 | 1 | 7 | 42 | 10 | 0 | 702 | 2785 |
| 5:00 PM | 95 82 | 133 | 53 | 0 | 32 | 126 | 18 13 | 0 | 15 20 | 78 118 | 99 99 | 0 | 14 | 38 47 | 11 | 0 | 712 | 2774 |
| 5:30 PM | 103 | 139 | 43 | 0 | 37 | 138 | 26 | 0 | 15 | 120 | 106 | 0 | 28 | 30 | 13 | 0 | 798 | 2998 |
| 5:45 PM | 93 | 154 | 28 | 0 | 28 | 105 | 24 | 0 | 12 | 78 | 117 | 0 | 29 | 32 | 6 | 0 | 706 | 3002 |
| 6:15 PM | 118 | 141 | 38 | 0 | 9 | 78 | 19 | 0 | 27 | 51 | 95 95 | 0 | 12 | 23 | 9 | 0 | 625 | 2995 |
| 6:30 PM | 92 | 151 | 45 | 0 | 9 | 109 | 18 | 0 | 15 | 54 | 90 | 0 | 16 | 22 | 6 | 0 | 627 | 2661 |
| 6:45 PM | 95 | 111 | 31 | 0 | 10 | 95 | 15 | 0 | 22 | 44 | 76 | 0 | 15 | 28 | 14 | 0 | 556 | 2511 |
| | | | | | | | | | | | | | | | | | Total | |
| Peak 15-Min | | North | bound | | | South | bound | | | Eastb | ound | | | Westk | bound | | To | tal |
| Peak 15-Min Flowrates | Left | North Thru | bound Right | U | Left | South Thru | bound Right | U | Left | Eastb Thru | ound Right | U | Left | Westk Thru | oound Right | U | Tot | tal |
| Peak 15-Min Flowrates | Left 404 40 | North Thru 504 108 | bound Right 132 4 | U 0 | Left 132 8 | South Thru 324 4 | bound Right 468 16 | U 0 | Left 408 40 | Eastb Thru 504 108 | ound Right 124 4 | U 0 | Left 68 0 | Westk Thru 104 4 | oound Right 48 8 | U 0 | Tot 32 34 | tal 20 4 |
| Peak 15-Min Flowrates All Vehicles Heavy Trucks Pedestrians | Left 404 40 | North Thru 504 108 0 | bound Right 132 4 | U 0 | Left 132 8 | South Thru 324 4 0 | bound Right 468 16 | U 0 | Left 408 40 | Eastb Thru 504 108 0 | ound Right 124 4 | U 0 | Left 68 0 | Westk Thru 104 4 0 | Argenter State Sta | U 0 | Tot 32 34 0 | tal 20 4 |
| Peak 15-Min Flowrates All Vehicles Heavy Trucks Pedestrians Bicycles Baikroad | Left 404 40 0 | North Thru 504 108 0 0 | bound Right 132 4 0 | U 0 | Left 132 8 0 | South Thru 324 4 0 0 | bound Right 468 16 0 | U 0 | Left 408 40 0 | Eastb Thru 504 108 0 0 | ound Right 124 4 0 | U 0 | Left 68 0 | Westb Thru 104 4 0 0 | Arrowski strangt stran | U 0 | 32. 34 0 0 | 20 4 |

Comments:

Report generated on 10/4/2019 9:05 AM

LOCATION: Edmonston Rd -- Odell Rd OC JOB #: 15027015 DATE: Tue, Sep 17 2019 **CITY/STATE:** Greenbelt, MD Peak-Hour: 6:00 AM -- 7:00 AM 11.2 Peak 15-Min: 6:45 AM -- 7:00 AM ÷ ŧ ŧ **↑** 0 7.7 . J, . 9.1 🗲 68.4 🌶 19 **t** 0 **•** 0 . ŧ 0.95 70 → 100 → € 0 → 66.7 ٦, c 2 🌩 ŧ ŧ r 11.1 8.7 66.7 ÷ ♦ 22.1 ŧ Quality Counts 9.3 DATA THAT DRIVES COMMUNITIES . ₼ • • **t** 0 A + **f** 0 ŧ C NA ÷ ÷ t و 🔶 NA NA ΝΛ NA • ... c ŧ r NA NA Edmonston Rd Edmonston Rd Odell Rd Odell Rd 15-Min Count Period Hourly Totals (Northbound) (Southbound) (Eastbound) (Westbound) Total **Beginning At** Left Thru Right υ Left Thru Right U Left Thru Right υ Left Thru Right υ 6:00 AM 6:15 AM 6:30 AM 6:45 AM 7:00 AM . 7 8 7:15 AM 0 7:30 AM 2 2 7:45 AM 5 2 8:00 AM 8:15 AM 8:30 AM 8:45 AM n n Δ Northbound Southbound Eastbound Westbound Peak 15-Min Flowrates Total Left Thru Right U Left Thru Right υ Left Thru Right υ Left Thru Right υ All Vehicles 68 0 0 8 0 0 Heavy Trucks Õ õ Ö Pedestrians Bicycles Railroad

Report generated on 10/2/2019 7:36 AM

Stopped Buses Comments:

LOCATION: Edmonston Rd -- Odell Rd OC JOB #: 15027016 DATE: Tue, Sep 17 2019 **CITY/STATE:** Greenbelt, MD Peak-Hour: 3:00 PM -- 4:00 PM Peak 15-Min: 3:45 PM -- 4:00 PM ŧ **↑ ↑** 0 55.6 7.3 . . 20 **1** 56.6 + 25 **t** 0 **a** 0 ŧ 0.96 + 22.2 + 20 -Ъ, 2 🌩 c ŧ ŧ C 57.7 14.9 33.3 ÷ + ŧ ŧ Quality Counts 7.4 16.9 DATA THAT DRIVES COMMUNITIES . ₼ • • **t** 0 A + **f** 0 ŧ C NA ÷ ÷ t t و 🔶 NA NA NA NA • ... c ŧ r NA NA Edmonston Rd Edmonston Rd Odell Rd Odell Rd 15-Min Count Period Hourly Totals (Northbound) (Southbound) (Eastbound) (Westbound) Total **Beginning At** Left Thru Right υ Left Thru Right U Left Thru Right υ Left Thru Right υ 3:00 PM 3:15 PM 3:30 PM 3:45 PM 4:00 PM 2 1 0 7 6 4:15 PM 3 2 4:30 PM 4:45 PM 0 5:00 PM 5:15 PM 3 2 4 5:30 PM 0 5 4 0 0 5:45 PM 0 0 2 2 0 6:00 PM

2 6:15 PM 7 0 6:30 PM 6:45 PM л n Northbound Westbound Southbound Eastbound Peak 15-Min Flowrates Total Left Thru υ Left υ Left υ Left U Right Thru Right Thru Right Thru Right All Vehicles Heavy Trucks Pedestrians Bicycles Railroad Stopped Buses

Comments:

Report generated on 10/4/2019 9:05 AM

Stopped Buses Comments:

Bicycles

Railroad

Report generated on 10/2/2019 7:36 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

LOCATION: Poultry Rd -- Powder Mill Rd OC JOB #: 15027020 **CITY/STATE:** Greenbelt, MD DATE: Thu, Sep 19 2019 Peak-Hour: 3:00 PM -- 4:00 PM Peak 15-Min: 3:45 PM -- 4:00 PM ÷ ŧ 0 ***** 231 📥 **a** 233 • 0 + t 0.87 1.9 🔺 3.1 + ÷ 1.8 → 0 → 0 🔶 598 c ŧ ŧ ÷ ŧ ŧ Quality Counts n DATA THAT DRIVES COMMUNITIES . ♠ 0 1 **t** 0 A ÷ **f** 0 ŧ NΔ ÷ t و t NA NA NA NA . STOP ... ъ ŧ C NA NA Poultry Rd Poultry Rd Powder Mill Rd Powder Mill Rd 15-Min Count Period Hourly Totals (Northbound) (Southbound) (Eastbound) (Westbound) Total **Beginning At** Left Thru Right υ Left Thru Right υ Left Thru Right υ Left Thru Right υ 3:00 PM 3:15 PM 3:30 PM 3:45 PM 4:00 PM 0 2 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM

5:30 PM 5:45 PM 0 0 0 0 0 6:00 PM 6:15 PM 0 6:30 PM 6:45 PM Λ n n Northbound Southbound Eastbound Westbound Peak 15-Min Flowrates Total Left Thru υ Left υ Left υ Left U Right Thru Right Thru Right Thru Right All Vehicles Heavy Trucks Pedestrians Bicycles Railroad Stopped Buses

Comments:

Report generated on 10/4/2019 9:05 AM

| LOCATION: F | Resear Green | ch Rd - belt. N | - Powd /ID | er Mil | Rd | | | | | | | | | | QC DATE: | JOB # Thu. : | #: 1502 Sep 19 | 27036 2019 |
|--|--|--|---|---------------------------------|--------------------------------------|--------------------------------------|---|---------------------------------|--|--|--|--------------------------------------|---------------------------------------|---|--------------------------------------|--------------------------------------|--|--|
| 261 ← 0 112 120 → 8 | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | 0 🔶 264 247 17 🔸 131 | | | Pe Pea | ak-Hou k 15-M Qua DATA TH | D AM - I5 AM | $ \begin{array}{c} 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 19 + 0 & 4 \\ 36 + 2 \\ 33 + 0 & 7 \\ 0 & 53 \\ 0 & 3 \\ \end{array} $ | | | | | | | | | |
| 0 | | → [→ 1 | 0 | | - | şın | Þ | | | | + | - | | 0 0 0 | | | • 0 • 0 • 0 | |
| | | | | | | | | | | | an ? | | N4 | | | € ◆ NA F | | |
| 15-Min Count Period | | Resea (North | rch Rd bound) | | | Resea (South | rch Rd bound) | | | Powder (Eastb | r Mill Rd bound) | | | Powder (West | [.] Mill Rd bound) | | Total | Hourly |
| 6:00 AM | Left 2 | Thru 0 | Right 3 | U 0 | Left 0 | Thru 0 | Right 0 | U 0 | Left 0 | Thru 25 | Right 1 | U 0 | Left 6 | Thru 52 | Right 0 | U 0 | 89 | Totals |
| 6:15 AM 6:30 AM 6:45 AM | 0 5 7 | 0 0 0 | 5 5 6 | 0 0 0 | 0 0 0 | 0 0 0 | 0 0 0 | 0 0 0 | 0 0 0 | 26 27 34 | 2 0 5 | 0 0 0 | 2 2 7 | 61 53 81 | 0 0 0 | 0 0 0 | 96 92 140 | 417 |
| 7:00 AM 7:15 AM 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:45 AM | 3 9 6 8 10 5 7 9 | 0 0 0 0 0 0 0 0 | 5 6 4 10 6 11 11 3 | 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 | 32 46 56 63 75 87 64 69 | 2 7 13 17 18 14 10 16 | 0 0 0 0 0 0 0 0 | 5 3 5 4 11 8 7 5 | 75 87 98 113 90 84 89 51 | 0 0 0 0 0 0 0 0 | 0 0 0 0 0 0 0 0 | 122 158 182 215 210 209 188 153 | 450 512 602 677 765 816 822 760 |
| Peak 15-Min Flowrates | l oft | North | bound Right | 11 | left | South | bound Right | 11 | left | Eastb | ound Right | 11 | left | West | ound Right | 11 | Tot | tal |
| All Vehicles Heavy Trucks Pedestrians Bicycles Railroad Stopped Buses | 28 0 0 | 0 0 0 0 | 24 0 0 | 0 | 0 0 0 | 0 0 0 0 | 0 0 0 | 0 | 0 0 0 | 136 8 0 0 | 20 0 0 | 0 | 28 0 0 | 324 4 0 0 | 0 0 0 | 0 | 56 11 0 0 | 60 2) |

Report generated on 10/2/2019 7:36 AM

Comments:



| Period | | (North | bound) | | | (South | bound) | | | (Eastk | ound) | | | (Westl | bound) | | Total | Totals |
|---------------|------------|--------|--------|---|------------|--------|--------|---|------|--------|-------|---|-----------|--------|--------|---|-------|--------|
| Beginning At | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | TOtals |
| 3:00 PM | 6 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 104 | 4 | 0 | 5 | 42 | 0 | 0 | 164 | |
| 3:15 PM | 3 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 118 | 17 | 0 | 4 | 50 | 0 | 0 | 199 | |
| 3:30 PM | 5 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 161 | 11 | 0 | 7 | 58 | 0 | 0 | 260 | |
| 3:45 PM | 13 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 163 | 12 | 1 | 9 | 53 | 0 | 0 | 263 | 886 |
| 4:00 PM | 6 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 147 | 18 | 0 | 16 | 52 | 0 | 0 | 255 | 977 |
| 4:15 PM | 4 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 185 | 20 | 0 | 8 | 57 | 0 | 0 | 293 | 1071 |
| 4:30 PM | 7 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 175 | 25 | 0 | 2 | 52 | 0 | 0 | 277 | 1088 |
| 4:45 PM | 7 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 157 | 26 | 0 | 3 | 42 | 0 | 0 | 261 | 1086 |
| 5:00 PM | 7 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 142 | 23 | 0 | 5 | 50 | 0 | 0 | 255 | 1086 |
| 5:15 PM | 11 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 169 | 29 | 0 | 10 | 51 | 0 | 0 | 289 | 1082 |
| 5:30 PM | 8 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 152 | 29 | 0 | 9 | 46 | 0 | 0 | 265 | 1070 |
| 5:45 PM | 11 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 155 | 20 | 0 | 14 | 48 | 0 | 0 | 261 | 1070 |
| 6:00 PM | 11 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 129 | 12 | 0 | 7 | 54 | 0 | 0 | 227 | 1042 |
| 6:15 PM | 8 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 101 | 22 | 0 | 5 | 50 | 0 | 0 | 192 | 945 |
| 6:30 PM | 7 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 75 | 11 | 0 | 3 | 42 | 0 | 0 | 141 | 821 |
| 6:45 PM | 9 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 70 | 9 | 0 | 2 | 46 | 0 | 0 | 138 | 698 |
| Peak 15-Min | Northbound | | | | Southbound | | | | | Eastb | ound | | Westbound | | | | - | |
| Flowrates | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | 10 | tai |
| All Vehicles | 52 | 0 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 652 | 48 | 4 | 36 | 212 | 0 | 0 | 10 | 52 |
| Heavy Trucks | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 4 | 0 | | 4 | 0 | 0 | | 8 | 3 |
| Pedestrians | | 0 | | | | 0 | | | | 0 | | | | 0 | | | (|) |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | (|) |
| Railroad | | | | | | | | | | | | | | | | | | |
| Stopped Buses | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |

Report generated on 10/4/2019 9:05 AM

| LOCATION: S CITY/STATE: | Springf Green | ield Ro Ibelt, N | l Pow /ID | der M | lill Rd | | | | | | | | | | QC DATE: | JOB # Tue, | ‡: 1502 Sep 17 | 27023 2019 | | |
|--|--|--|-------------------------------------|----------------------------|--|--|--------------------------------|----------------------------|----------------------------|--|-------------------------------------|----------------------------|--|--|---|----------------------------|--|--|--|--|
| $286 \leftarrow 4$ 122 $126 \rightarrow 0$ | 138 17 0 ↓ 0 ↓ 0 0 0 0 | 139 121 • • • • • 0 • 0 | 135 ← 404 269 0 → 243 | | Peak-Hour: 6:00 AM 7:00 AM Peak 15-Min: 6:45 AM 7:00 AM | | | | | | | | | $ \begin{array}{c} 14 & 29 \\ 0 & 0 & 17 \\ 28 + 25 & & & \\ 49 + & & & \\ 56 + 0 & & & \\ & & & & & \\ & & & & & \\ & & & & $ | | | | | | |
| 0 | | → [→ [| 0 | | - | şı | ▶ .↓ | | | | <u>.</u> | - | | 0 0 0 | | | € 0 ← 0 € 0 | | | |
| • € NA ≠ • ₹ | | - | | - → | | | | STOP | _ | | NA | | | € ← NA F | | | | | | |
| 15-Min Count Period | | Spring (North | field Rd bound) | | | Spring (South | field Rd bound) | | | Powder (Eastk | r Mill Rd oound) | | | Powder (West | r Mill Rd bound) | | Total | Hourly Totals | | |
| 6:00 AM 6:15 AM 6:30 AM 6:45 AM 7:00 AM 7:15 AM | Left 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Thru 0 0 0 0 0 0 0 0 0 | Right 0 0 0 0 0 0 | U 0 0 0 0 0 | Left 23 25 29 44 60 73 | Thru 0 0 0 0 0 0 0 0 0 | Right 4 2 7 1 2 | U 0 0 0 0 0 | Left 0 1 3 0 3 2 | Thru 20 32 29 41 42 53 | Right 0 0 0 0 0 0 | U 0 0 0 0 0 | Left 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Thru 53 66 69 81 67 89 | Right 34 27 24 50 43 62 | U 0 0 0 0 0 | 134 155 156 223 216 281 | 668 750 876 | | |
| 7:30 AM 7:45 AM 8:00 AM 8:15 AM 8:30 AM 8:45 AM | 0 0 0 0 0 | 0 0 0 0 0 | 0 0 0 0 0 0 | 0 0 0 0 0 | 98 96 96 94 100 94 | 0 0 0 0 0 | 3 2 0 5 5 | 0 0 0 0 0 | 1 2 5 5 2 2 | 65 59 70 60 76 86 | 0 0 0 0 0 0 | 0 0 0 0 0 | 0 0 0 0 0 | 109 98 109 108 91 58 | 64 54 39 57 49 40 | 0 0 0 0 0 | 340 312 321 324 323 285 | 1060 1149 1254 1297 1280 1253 | | |
| Peak 15-Min Flowrates | Left | North Thru | bound Right | U | Left | South Thru | bound Right | U | Left | Eastb Thru | ound Right | U | Left | Westl Thru | oound Right | U | То | tal | | |
| All Vehicles Heavy Trucks Pedestrians Bicycles Railroad Stopped Buses | 0 0 0 | 0 0 0 | 0 0 0 | 0 | 176 8 0 | 0 0 0 | 28 0 0 | 0 | 0 0 0 | 164 8 0 0 | 0 0 0 | 0 | 0 0 0 | 324 8 0 0 | 200 0 0 | 0 | 89 2 () () |)2 4) | | |

Report generated on 10/2/2019 7:36 AM

LOCATION: Springfield Rd -- Powder Mill Rd OC JOB #: 15027024 **CITY/STATE:** Greenbelt, MD DATE: Tue, Sep 17 2019 Peak-Hour: 3:00 PM -- 4:00 PM 3.3 Peak 15-Min: 3:30 PM -- 3:45 PM ÷ ŧ 1.9 ▲ 135 ← 352 225 🛥 18 🛊 49 - 56 + • 3 43 463 🔶 0.92 1.9 🔺 5.1 **e** 217 2.1 + 0 0 3 0 🔹 729 481 🔺 c ŧ ŧ ŧ ŧ ŧ Quality Counts n DATA THAT DRIVES COMMUNITIES . 0 1 **t** 0 A <u>م</u> **f** 0 ŧ NΔ t و t NA NA NA NA ... ъ ŧ C NA NA Springfield Rd Springfield Rd Powder Mill Rd Powder Mill Rd 15-Min Count Period Hourly Totals (Northbound) (Southbound) (Eastbound) (Westbound) Total **Beginning At** Left Thru Right υ Left Thru Right U Left Thru Right υ Left Thru Right υ 3:00 PM 3:15 PM 3:30 PM 3:45 PM 57 4:00 PM Ō 4:15 PM 4:30 PM Ō 4:45 PM 5:00 PM 5 5 5:15 PM Ō Ō 5:30 PM

5:45 PM 1 6:00 PM 6:15 PM 6:30 PM 6:45 PM n Λ Λ Northbound Southbound Eastbound Westbound Peak 15-Min Flowrates Total Left Thru υ Left Thru Right υ Left Thru Right U Left Thru υ Right Right All Vehicles Heavy Trucks 0 Pedestrians Bicycles Railroad Stopped Buses

Comments:

Report generated on 10/4/2019 9:05 AM

LOCATION: Baltimore-Washington Pkwy SB Ramps -- Powder Mill Rd OC JOB #: 15027025 **CITY/STATE:** Greenbelt, MD DATE: Tue, Sep 17 2019 Peak-Hour: 6:00 AM -- 7:00 AM Peak 15-Min: 6:45 AM -- 7:00 AM ŧ ŧ ŧ 1.5 . . 24 • 0 • 409 🛥 0 348 • 0 **a** 23 + ŧ 165 🜩 0.76 **e** 273 4.8 🔺 2.9 3.7 + 1.2 246 \Rightarrow 81 🍾 ŧ ÷ ŧ. ÷ ŧ Quality Counts 0.6 n DATA THAT DRIVES COMMUNITIES . 0 1 **t** 0 A ÷ **f** 0 ŧ NΔ t -**-**+ و t NA NA NA NA ... ъ c ŧ C NA NA **Baltimore-Washington Pkwy Baltimore-Washington Pkwy** Powder Mill Rd 15-Min Count Period Beginning At Powder Mill Rd SB Ramps SB Ramps Hourly (Eastbound) (Westbound) Total (Northbound) (Southbound) Totals Left υ Left Left Thru Right υ Left Thru υ Thru Right Thru Right υ Right 6:00 AM 6:15 AM 6:30 AM 6:45 AN 7:00 AM 7:15 AM Ō Ō 7:30 AM 7:45 AM 8:00 AM Ō Ō 8:15 AM 8:30 AM 8:45 AM Northbound Southbound Westbound Eastbound Peak 15-Min Total Flowrates Left Thru Right U Left Thru Right U Left Thru Right υ Left Thru Right υ All Vehicles Heavy Trucks Pedestrians 0 0 0 Õ õ Bicvcles Railroad Stopped Buses Comments:

Report generated on 10/2/2019 7:36 AM
Railroad Stopped Buses

Pedestrians

Bicvcles

Comments:

Report generated on 10/4/2019 9:05 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Comments: Report generated on 10/2/2019 7:36 AM

Stopped Buses

Northbound Southbound Eastbound Westbound Peak 15-Min Total Flowrates Left Thru Right υ Left Thru Right υ Left Thru Right υ Left Thru Right υ All Vehicles **Heavy Trucks** Pedestrians Bicvcles Railroad Stopped Buses

Comments:

Report generated on 10/4/2019 9:05 AM

Report generated on 10/2/2019 7:36 AM

Stopped Buses Comments:

LOCATION: Soil Conservation Rd -- Powder Mill Rd QC JOB #: 15027030 **CITY/STATE:** Greenbelt, MD DATE: Tue, Sep 17 2019 Peak-Hour: 3:00 PM -- 4:00 PM 0 0 1 0 Peak 15-Min: 3:45 PM -- 4:00 PM ŧ ŧ ŧ 4 0 1 0 0 0 0 . . 830 🛥 0 0 16 • 0 • **4** 311 € 0 € 3.2 + ŧ 304 0.88 **e** 280 2.6 🜩 **e** 2.5 + 2.6 \Rightarrow 2.5 🥆 659 **→** 355 **¬** € 9.7 → 2.4 ŧ 549 0 34 1.1 0 0 ♦ 3.1 ŧ ŧ. ŧ Quality Counts 386 583 DATA THAT DRIVES COMMUNITIES 0 0 0 . \$ \$ ♠ 0 🖌 **t** 0 AD 0 0 1 **+** 0 * 07 **f** 0 ŧ C 1 0 0 0 NA 4 t و t 🗲 NA NA NA NA \$ 1 ſ 蠢 ... ъ ٤ ŧ C NA NA Soil Conservation Rd Soil Conservation Rd Powder Mill Rd Powder Mill Rd 15-Min Count Period Hourly Totals (Southbound) (Westbound) (Northbound) (Eastbound) Total **Beginning At** Left Thru Right υ Left Thru Right υ Left Thru Right υ Left Thru Right U 341 357 71 97 0 0 0 0 3:00 PM 118 0 0 9 0 0 0 0 0 73 68 0 0 0 0 2 5 3:15 PM 119 6 0 0 0 0 0 67 63 0 3:30 PM 151 0 13 0 0 0 0 0 75 91 0 3 79 0 0 412

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| 4:00 PM | 169 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 1 | 98 | 105 | 0 | 11 | 50 | 0 | 0 | 442 | 1655 |
| 4:15 PM | 205 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 101 | 113 | 0 | 8 | 52 | 0 | 0 | 495 | 1793 |
| 4:30 PM | 156 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 111 | 123 | 0 | 11 | 68 | 0 | 0 | 483 | 1864 |
| 4:45 PM | 175 | 0 | 13 | 0 | 0 | 0 | 1 | 0 | 1 | 113 | 125 | 0 | 10 | 98 | 0 | 0 | 536 | 1956 |
| 5:00 PM | 205 | 0 | 16 | 0 | 0 | 0 | 6 | 0 | 7 | 106 | 126 | 0 | 8 | 64 | 0 | 0 | 538 | 2052 |
| 5:15 PM | 213 | 0 | 14 | 0 | 0 | 0 | 2 | 0 | 2 | 101 | 127 | 0 | 3 | 78 | 0 | 0 | 540 | 2097 |
| 5:30 PM | 201 | 0 | 16 | 0 | 0 | 0 | 1 | 0 | 1 | 131 | 102 | 0 | 7 | 71 | 0 | 0 | 530 | 2144 |
| 5:45 PM | 194 | 0 | 8 | 0 | 0 | 0 | 1 | 0 | 1 | 88 | 145 | 0 | 18 | 79 | 0 | 0 | 534 | 2142 |
| 6:00 PM | 183 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 68 | 129 | 0 | 10 | 57 | 0 | 0 | 465 | 2069 |
| 6:15 PM | 184 | 0 | 15 | 0 | 0 | 0 | 1 | 0 | 1 | 63 | 106 | 0 | 8 | 55 | 0 | 0 | 433 | 1962 |
| 6.30 PM | 130 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 64 | 103 | 0 | 7 | 45 | 0 | 0 | 357 | 1789 |
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| 6:45 PM | 126 | Ő | 7 | 0 | Ő | Õ | 1 | Ő | Ő | 53 | 87 | Ő | 7 | 48 | 1 | Ő | 330 | 1585 |
| 6:45 PM Peak 15-Min | 126 | 0 North | 7 bound | Ő | Ö | 0 South | 1 bound | Ő | Ő | 53 Eastb | 87 bound | 0 | 7 | 48 Westl | 1 Dound | Ő | 330 | 1585 |
| 6:45 PM Peak 15-Min Flowrates | 126 Left | 0 North Thru | 7 bound Right | 0 U | 0 Left | 0 South Thru | 1 bound Right | 0 U | 0 Left | 53 Eastb Thru | 87 bound Right | 0 U | 7 Left | 48 Westl Thru | 1 Dound Right | 0 U | 330 To | 1585 tal |
| 6:45 PM Peak 15-Min Flowrates All Vehicles | 126 126 Left | 0 North Thru 0 | 7 bound Right 24 | 0 U 0 | 0 Left | 0 South Thru 0 | 1 bound Right 4 | 0 U 0 | 0 Left | 53 Eastb Thru 356 | 87 bound Right 384 | 0 U 0 | 7 Left 84 | 48 Westl Thru 280 | 1 bound Right | 0 U 0 | 330 To | 1585 tal |
| 6:45 PM Peak 15-Min Flowrates | 126 126 Left 644 8 | 0 North Thru 0 0 | 7 bound Right 24 0 | 0 U 0 | 0 Left 0 0 | 0 South Thru 0 0 | 1 bound Right 4 0 | 0 U 0 | 0 Left | 53 Eastb Thru 356 8 | 87 bound Right 384 20 | 0 U 0 | 7 Left 84 4 | 48 Westl Thru 280 8 | 1 bound Right 0 0 | 0 U 0 | 330 To 17 4 | 1585 tal |
| 6:45 PM Peak 15-Min Flowrates All Vehicles Heavy Trucks Pedestrians | 130 126 Left 644 8 | 0 North Thru 0 0 0 | 7 bound Right 24 0 | 0 U 0 | 0 Left 0 0 | 0 South Thru 0 0 0 | 1 bound Right 4 0 | 0 U 0 | 0 Left 0 0 | 53 Eastb Thru 356 8 0 | 87 bound Right 384 20 | 0 U 0 | 7 Left 84 4 | 48 Westl Thru 280 8 0 | 1 cound Right 0 0 | 0 U 0 | 330 To | 1585 tal |
| 6:45 PM Peak 15-Min Flowrates All Vehicles Heavy Trucks Pedestrians Bicycles | 130 126 Left 644 8 0 | 0 North Thru 0 0 0 0 0 | 7 bound Right 24 0 0 | 0 U 0 | 0 Left 0 0 0 | 0 South Thru 0 0 0 0 0 | 1 bound Right 4 0 0 | 0 U 0 | 0 Left 0 0 0 | 53 Eastb Thru 356 8 0 0 | 87 00und Right 384 20 0 | 0 U 0 | 7 Left 84 4 0 | 48 Westl Thru 280 8 0 0 | 1 cound Right 0 0 | 0 U 0 | 330 To 17 4 (| 1585 tal |
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| 6:45 PM Peak 15-Min Flowrates All Vehicles Heavy Trucks Pedestrians Bicycles Railroad Stopped Buses | 130 126 Left 644 8 0 | 0 North Thru 0 0 0 | 7 bound Right 24 0 0 | 0 U 0 | 0 Left 0 0 | 0 South Thru 0 0 0 | 1 bound Right 4 0 0 | 0 U 0 | 0 Left 0 0 | 53 Easth Thru 356 8 0 0 | 87 5000nd Right 384 20 0 | 0 U 0 | 7 Left 84 4 0 | 48 Westl Thru 280 8 0 0 | 1 cound Right 0 0 0 | 0 U 0 | 330 To | 1585 tal |

Comments:

Report generated on 10/4/2019 9:05 AM

| Type of report | Tube Count - Vo | lume Data | | | | | | | |
|----------------------|-----------------|------------------------|-------------------------|--------------------------|-----|-----------------------------------|---------|--------------------------------|----------------------------------|
| LOCATION: 5 | Junnyside Ave b | twn Tucke | rr St and Tuck | ter St | | | | | QC JOB #: 15027031 |
| SPECIFIC LO | CATION: | | | | | | | | DIRECTION: WB |
| CITY/STATE: | Greenbelt, MD | | | | | | | DA | re: Sep 17 2019 - Sep 19 2019 |
| Start Time | Mon 1 | Tue 7 Sep 19 | Wed 18 Sep 19 | T hu 19 Sep 19 | Fri | Average Weekday Hourly Traffic | Sat Sun | Average Week Hourly Traffic | Average Week Profile |
| 12:00 AM | | 36 | 35 | 35 | | 35 | | 35 | |
| 01:00 AM | | 20 | 30 | 37 | | 29 | | 29 | |
| 02:00 AM | | 13 | 15 | 23 | | 17 | | 17 | |
| 03:00 AM | | 27 | 28 | 31 | | 29 | | 29 | |
| 04:00 AM | | 66 | 74 | 57 | | 66 | | 99 | |
| 05:00 AM | | 179 | 193 | 197 | | 190 | | 190 | |
| 06:00 AM | | 295 | 316 | 327 | | 313 | | 313 | |
| 07:00 AM | | 313 | 319 | 338 | | 323 | | 323 | |
| 08:00 AM | | 337 | 346 | 314 | | 332 | | 332 | |
| 00:00 AM | | 340 | 338 | 332 | | 337 | | 337 | |
| 10:00 AM | | 351 | 361 | 345 | | 352 | | 352 | |
| 11:00 AM | | 438 | 398 | 475 | | 437 | | 437 | |
| 12:00 PM | | 404 | 472 | 392 | | 423 | | 423 | |
| 01:00 PM | | 372 | 386 | 363 | | 374 | | 374 | |
| 02:00 PM | | 479 | 434 | 467 | | 460 | | 460 | |
| 03:00 PM | | 422 | 430 | 439 | | 430 | | 430 | |
| 04:00 PM | | 441 | 402 | 418 | | 420 | | 420 | |
| 05:00 PM | | 445 | 416 | 379 | | 413 | | 413 | |
| 06:00 PM | | 401 | 423 | 440 | | 421 | | 421 | |
| 07:00 PM | | 328 | 301 | 300 | | 310 | | 310 | |
| 08:00 PM | | 194 | 181 | 196 | | 190 | | 190 | |
| MG 00:00 | | 128 | 183 | 139 | | 150 | | 150 | |
| 10:00 PM | | 80 | 86 | 100 | | 93 | | 6 | |
| 11:00 PM | | 68 | 65 | 80 | | 71 | | 71 | |
| Day Total | | 6177 | 6244 | 6224 | | 6215 | | 6215 | |
| % Weekday Average | | 99.4% | 100.5% | 100.1% | | | | | |
| % Week | | 20 A% | 100 5% | 1001% | | 100% | | | |
| Average | | 0/1.00 | ACCOST | 0/T.00T | | 0/00T | | | |
| AM Peak | Ţ | :1:00 AM | 11:00 AM | 11:00 AM | | 11:00 AM | | 11:00 AM | |
| Volume | | 438 | 398 | 475 | | 437 | | 437 | |
| PM Peak | | 2:00 PM | 12:00 PM | 2:00 PM | | 2:00 PM | | 2:00 PM | |
| Volume | | 479 | 472 | 467 | | 460 | | 460 | |
| Comments: | | | | | | | | | |
| Report general | ed on 9/25/2016 | 3 6:31 AM | | | | | 5 | OURCE: Ouality Counts, LI | C (http://www.gualitycounts.net) |

| werearcher. Mon Ture State Tate State | Green been been been been been been been | N: Baltimore-V | t - voiurne иага Vashington Pkv | wy SB Off Ram | np to Powder M | ill Rd | | | | QC JOB #: 15027033 DIRECTION: SB |
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| 524 430 396 415 40 40 396 389 415 40 40 40 300 289 326 305 305 305 303 223 281 233 235 235 234 229 171 112 110 157 145 173 112 110 129 100 6552 673 6582 6402 6402 10 99.2% 98% 102.8% 100 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.0 40 600 6402 6402 6402 99.0 403 600 6402 6402 6402 90.0 800 800 800 900 | 24 430 396 450 450 450 450 450 396 389 415 400 400 400 400 303 223 223 231 235 235 235 234 173 173 123 235 235 235 145 173 112 110 113 110 110 102 117 112 110 110 110 110 99.2% 98% 102.8% 100% 96402 6402 6402 99.2% 98% 102.8% 100% 96402 6402 6402 99.2% 98% 102.8% 100% 96402 6402 6402 99.2% 98% 102.8% 100% 96402 96402 96402 99.2% 98% 102.8% 100% 650 AM 96402 96402 99.2% 108% 960 AM 650 AM 96402 96402 9650 AM 99.2% 403 600 AM 650 AM 650 AM | | 441 | 375 | 354 | | 390 | | 390 | |
| 36 389 415 400 400 400 300 289 326 305 335 335 203 229 231 235 235 235 234 229 171 157 157 157 145 117 112 110 157 110 6352 6273 6582 6402 6402 6402 99.2% 98% 102.8% 100 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.2% 98% 102.8% 100% 6402 6402 90.2% 98% 102.8% 100% 6402 6402 90.3 427 445 402 402 402 500 PM 500 PM 500 PM 500 PM 500 PM 500 PM | 396 389 415 400 40 40 300 289 326 305 305 305 234 229 155 171 127 135 145 112 112 110 157 110 532 6213 582 6402 6402 209 99.2% 98% 102.8% 6402 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.06 MM 6:00 AM 9:00 AM 6:00 AM 6:00 AM 6:00 AM 500 PM 6:00 AM 5:00 PM 5:00 PM 6:00 AM 6:00 AM 524 430 430 430 430 430 430 | | 524 | 430 | 396 | | 450 | | 450 | |
| 300 283 326 305 305 305 203 222 281 235 235 235 234 224 229 171 157 155 145 155 171 157 110 157 102 117 112 110 110 157 102 117 112 110 110 101 6352 6273 6582 6402 6402 6402 95.2% 98% 102.8% 100 6402 6402 6402 99.2% 98% 102.8% 100% 6602 6402 6402 99.2% 98% 102.8% 100% 6602 6402 6402 99.0 AM 6:00 AM 9:00 AM 6:00 AM 6:00 AM 6:00 AM 5:00 PM 5:00 PM 6:00 AM 6:00 AM 6:00 AM 6:00 AM 5:4 430 415 6402 6402 6402 6402 | 300 289 326 305 <td></td> <td>396</td> <td>389</td> <td>415</td> <td></td> <td>400</td> <td></td> <td>400</td> <td></td> | | 396 | 389 | 415 | | 400 | | 400 | |
| 203 222 281 235 234 224 229 145 155 171 102 117 112 102 117 112 102 173 6532 6352 6273 6582 6352 6273 6582 99.2% 98% 102.8% 99.2% 98% 102.8% 99.2% 98% 102.8% 99.2% 98% 102.8% 99.2% 98% 102.8% 99.2% 98% 102.8% 99.2% 98% 102.8% 99.2% 98% 102.8% 99.2% 98% 102.8% 99.2% 98% 102.8% 910 910 910 100 610% 910 100 610% 610% 524 430 610 524 430 610 524 430 610 | 203 222 281 235 281 235 281 235 <td></td> <td>300</td> <td>289</td> <td>326</td> <td></td> <td>305</td> <td></td> <td>305</td> <td></td> | | 300 | 289 | 326 | | 305 | | 305 | |
| 234 224 229 15 11 11 12 145 155 117 112 110 110 110 102 117 112 110 110 110 110 6352 6273 6582 6602 6402 6402 6402 6402 99.2% 98% 102.8% 100% 100% 100% 100% 100% 99.2% 98% 102.8% 100% 100% 100% 100% 100% 99.2% 98% 102.8% 100% 100% 100% 100% 100% 99.2% 43 43 6:00 AM 6:00 AM 6:00 AM 6:00 AM 500 PM 5:00 PM 5:00 PM 5:00 PM 5:00 PM 6:00 AM | 234 224 229 10 23 23 23 15 11 | | 203 | 222 | 281 | | 235 | | 235 | |
| 145 155 171 157 157 157 102 117 112 110 110 110 6352 6273 6582 6402 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.2% 98% 102.8% 100% 6402 6402 99.0 AM 6:00 AM 6:00 AM 6:00 AM 6:00 AM 5:00 PM 5:00 PM 5:00 PM 5:00 PM 6:00 AM 524 430 415 450 5:00 PM 5:00 PM | 145 155 171 157 157 15 102 117 112 110 110 110 6352 6273 6382 6402 6402 6402 99.2% 98% 102.8% 6402 6402 6402 99.2% 98% 102.8% 100% 9602 6402 99.2% 98% 102.8% 100% 9602 6402 99.2% 98% 102.8% 100% 9602 6402 99.2% 98% 102.8% 100% 9602 6402 910 AM 610 AM 6100 AM 610 AM 610 AM 610 AM 910 AM 610 AM 6100 AM 610 AM 610 AM 610 AM 510 PM 510 PM 610 AM 510 PM 610 AM 610 AM 524 430 415 450 510 PM 510 PM 510 PM | | 234 | 224 | 229 | | 229 | | 229 | |
| 102 117 112 110 110 110 6352 6273 6582 6402 6402 6402 10 99.2% 98% 102.8% 6402 6402 6402 6402 99.2% 98% 102.8% 100% 9 9 9 99.2% 98% 102.8% 100% 9 9 9 99.2% 98% 102.8% 100% 9 9 9 910 AM 5:00 AM 9:00 AM 6:00 AM 6:00 AM 9 9 500 PM 5:00 PM 6:00 AM 5:00 PM 5:00 PM 9 9 524 430 415 450 9 9 9 | 102 117 112 110 110 110 6352 6273 6582 6402 6402 6402 6402 99.2% 98% 102.8% 100% 9 6402 6402 6402 99.2% 98% 102.8% 100% 9 100% 9 6402 < | | 145 | 155 | 171 | | 157 | | 157 | |
| 6352 6273 6582 6402 6402 6402 6402 99.2% 98% 102.8% 100% 2000 | 6352 6273 6882 6402 6402 6402 99.2% 98% 102.8% 200.1% 200. | | 102 | 117 | 112 | | 110 | | 110 | |
| 99.2% 98% 102.8% 102.8% 102.8% 102.8% 102.8% 100% | 99.2% 98% 102.8% 101.6% 100 <th< td=""><td></td><td>6352</td><td>6273</td><td>6582</td><td></td><td>6402</td><td></td><td>6402</td><td></td></th<> | | 6352 | 6273 | 6582 | | 6402 | | 6402 | |
| 99.2% 98% 102.8% 100% 100% 6:00 AM 6:00 PM 5:00 PM 6:00 PM <td>99.2% 98% 102.8% 100% 100% 600 AM 610 AM</td> <td></td> <td>99.2%</td> <td>%86</td> <td>102.8%</td> <td></td> <td></td> <td></td> <td></td> <td></td> | 99.2% 98% 102.8% 100% 100% 600 AM 610 AM | | 99.2% | %86 | 102.8% | | | | | |
| 9:00 AM 6:00 AM 9:00 AM 6:00 AM 6:00 AM 6:00 AM 703 427 445 402 700 PM 6:00 PM 5:00 PM | 9:00 AM 6:00 AM 9:00 AM 6:00 AM 6:00 AM 6:00 AM 7 415 6:00 AM 702 7 415 402 7 402 402 402 402 402 402 402 402 402 402 | | 99.2% | 88% | 102.8% | | 100% | | | |
| 403 427 445 402 402 5:00 PM 5:00 PM 5:00 PM 5:00 PM 5:00 PM 524 430 415 450 450 | 403 427 445 402 402 402 5:00 PM 5:00 PM 5:00 PM 5:00 PM 5:00 PM 524 430 415 450 450 | | 9:00 AM | 6:00 AM | 9:00 AM | | 6:00 AM | | 6:00 AM | |
| 5:00 PM 5:00 PM 6:00 PM 5:00 PM 5:00 PM 5:00 PM 5:00 PM 724 430 415 450 450 | 5:00 PM 5:00 PM 6:00 PM 5:00 PM 5:00 PM 524 430 415 450 450 450 | | 403 | 427 | 445 | | 402 | | 402 | |
| 524 430 415 450 450 | 524 430 415 450 450 | | 5:00 PM | 5:00 PM | 6:00 PM | | 5:00 PM | | 5:00 PM | |
| | | | 524 | 430 | 415 | | 450 | | 450 | |

| Type of report: | Tube Count - Volu | ume Data | | | | | | | | |
|----------------------|-------------------|----------------------|-------------------------|-------------------------|-------|-----------------------------------|------------|------|--------------------------------|----------------------------------|
| LOCATION: B | altimore-Wasing | șton Pkwy | NB Off Ram | p to Powder Mi | ll Rd | | | | | QC JOB #: 15027034 |
| SPECIFIC LOC | ATION: | | | | | | | | | DIRECTION: NB |
| CITY/STATE: (| Greenbelt, MD | | | | | | | | DAT | E: Sep 17 2019 - Sep 19 2019 |
| Start Time | Mon 17 | Tue Sep 19 | Wed 18 Sep 19 | Thu 19 Sep 19 | Fri | Average Weekday Hourly Traffic | Sat S | un | Average Week Hourly Traffic | Average Week Profile |
| 12:00 AM | | 15 | 0 | 15 | | 10 | | | 10 | |
| 01:00 AM | | ъ | 0 | 15 | | 7 | | | 7 | |
| 02:00 AM | | 11 | 0 | 9 | | 9 | | | 9 | |
| 03:00 AM | | 9 | 0 | 13 | | 9 | | | 9 | |
| 04:00 AM | | 0 | 0 | 26 | | 6 | | | 6 | |
| 05:00 AM | | 0 | 0 | 85 | | 28 | | | 28 | |
| 06:00 AM | | 0 | 0 | 139 | | 46 | / | | 46 | |
| 07:00 AM | | 0 | 0 | 159 | | 53 | | | 53 | |
| 08:00 AM | | 0 | 0 | 132 | | 44 | | | 44 | |
| 00:00 AM | | 0 | 0 | 106 | | 35 | | | 35 | |
| 10:00 AM | | 0 | 0 | 96 | | 32 | | | 32 | |
| 11:00 AM | | 0 | 0 | 06 | | 30 | | | 30 | |
| 12:00 PM | | 0 | 0 | 97 | | 32 | | | 32 | |
| 01:00 PM | | 0 | 0 | 111 | | 37 | | | 37 | |
| 02:00 PM | | 0 | 52 | 114 | | 55 | | | 55 | |
| 03:00 PM | | 0 | 97 | 131 | | 76 | | | 76 | |
| 04:00 PM | | 0 | 117 | 141 | | 86 | | | 86 | |
| 05:00 PM | | 0 | 95 | 121 | | 72 | | 1 | 72 | |
| 06:00 PM | | 0 | 06 | 104 | | 65 | | C | 65 | |
| 07:00 PM | | 0 | 66 | 67 | | 55 | | | 55 | |
| 08:00 PM | | 0 | 51 | 75 | | 42 | | | 42 | |
| 09:00 PM | | 0 | 54 | 58 | | 37 | 1 10 10 10 | - | 37 | |
| 10:00 PM | | 0 | 33 | 43 | | 25 | INIMIN | | 25 | |
| 11:00 PM | | 0 | 36 | 37 | | 24 | | | 24 | |
| Day Total | | 37 | 724 | 1981 | | 912 | | | 912 | |
| % Weekday Average | | 4.1% | 79.4% | 217.2% | | | | | | |
| % Week | | 1 1% | 70 A% | 217 2% | | 100% | | T | | |
| Average | | 0/1.4 | 0/1-01 | 0/7.177 | | NOOT | | | | |
| AM Peak | 12 | :00 AM | 12:00 AM | 7:00 AM | | 7:00 AM | | | 7:00 AM | |
| Volume | | 15 | 0 | 159 | | 53 | | | 53 | |
| PM Peak | 12 | :00 PM | 4:00 PM | 4:00 PM | | 4:00 PM | | | 4:00 PM | |
| Volume | | 0 | 117 | 141 | | 86 | | | 86 | |
| Comments: | | | | | | | | | | |
| Report generat | ed on 9/25/2019 (| 6:31 AM | | | | | | SOUF | RCE: Quality Counts, LLC | C (http://www.qualitycounts.net) |

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| | | e Data | | | | | | |
|-----------------------------|---------------------|--------------------------|-------------------------|-----|-----------------------------------|----------------|--------------------------------|---------------------------------|
| LOCATION: F | owder Mill Rd East | of Poultry Rd | | | | | | QC JOB #: 15027038 |
| SPECIFIC LOC | ATION: | | | | | | | DIRECTION: EB |
| CITY/STATE: | Greenbelt, MD | | | | | | DAT | E: Sep 17 2019 - Sep 19 2019 |
| Start Time | Mon Tu 17 Sel | le Wed p 19 18 Sep 19 | Thu 19 Sep 19 | Fri | Average Weekday Hourly Traffic | Sat Sun | Average Week Hourly Traffic | Average Week Profile |
| 12:00 AM | 17 | 7 17 | 12 | | 15 | | 15 | |
| 01:00 AM | 9 | 13 | 14 | _ | 11 | | 11 | |
| 02:00 AM | 11 | 1 7 | 6 | _ | 6 | | 6 | |
| 03:00 AM | 4 | 9 | 80 | | 9 | | 9 | |
| 04:00 AM | 17 | 7 18 | 22 | _ | 19 | | 19 | |
| 05:00 AM | 50 | 0 49 | 50 | | 50 | | 50 | |
| 06:00 AM | 12 | 9 108 | 113 | | 117 | | 117 | |
| 07:00 AM | 25. | 9 230 | 233 | | 241 | | 241 | |
| 08:00 AM | 38 | 4 351 | 358 | | 364 | | 364 | |
| 00:00 AM | 26 | 6 231 | 238 | | 245 | | 245 | |
| 10:00 AM | 15 | 6 166 | 190 | | 171 | | 171 | |
| 11:00 AM | 16 | 8 195 | 162 | | 175 | | 175 | |
| 12:00 PM | 23 | 0 240 | 232 | | 234 | | 234 | |
| 01:00 PM | 19. | i3 269 | 261 | | 241 | | 241 | |
| 02:00 PM | 32. | 5 330 | 307 | 4 | 321 | | 321 | |
| 03:00 PM | 45. | 3 515 | 586 | | 518 | | 518 | |
| 04:00 PM | 66. | 9 613 | 741 | | 674 | | 674 | |
| 05:00 PM | 67, | 4 685 | 713 | 0 | 691 | | 691 | |
| 06:00 PM | 44. | 5 484 | 421 | | 450 | | 450 | |
| 07:00 PM | 21 | 6 219 | 247 | , | 227 | | 227 | |
| 08:00 PM | 12. | 5 132 | 163 | | 140 | | 140 | |
| M4 00:00 | 96 | S 89 | 93 | | 93 | TA AN AL IN IN | 93 | |
| 10:00 PM | 50 | 9 48 | 53 | | 50 | INININIC | 20 | |
| 11:00 PM | 35 | 5 35 | 38 | | 36 | | 36 | |
| Day Total | 497 | 78 5050 | 5264 | | 5098 | | 5098 | |
| % Weekday Average | 97.6 | 5% 99.1% | 103.3% | | | | | |
| % Week | 9.76 | 5% 99.1% | 103.3% | | 100% | | | |
| Average | | | | | | | | |
| AM Peak | 8:00 | AM 8:00 AM | 8:00 AM | | 8:00 AM | | 8:00 AM | |
| Volume | 38 | 351 | 358 | | 364 | | 364 | |
| PM Peak | 5:00 | PM 5:00 PM | 4:00 PM | | 5:00 PM | | 5:00 PM | |
| | 10 | 4 | /4T | | TEO | | TEO | |
| Comments: Renort generat | od on 0/25/2010 6-3 | 1 000 | | | | 5 | I BCE. Ouslity Counts 11 | (httm://www.culalitycounte.nat) |

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| Type of report: | : Tube Count - \ | /olume Data | - | | | | | | |
|----------------------|------------------|-------------------------|-------------------------|-------------------------|-----|-----------------------------------|---------|--------------------------------|----------------------------------|
| LOCATION: S | Sunnyside Ave | btwn Tucke | er St and Tuck | er St | | | | | QC JOB #: 15027031 |
| SPECIFIC LOC | CATION: | | | | | | | | DIRECTION: EB |
| CITY/STATE: | Greenbelt, Mi | Q | | | | | | DA | TE: Sep 17 2019 - Sep 19 2019 |
| Start Time | Mon | Tue 17 Sep 19 | Wed 18 Sep 19 | Thu 19 Sep 19 | Fri | Average Weekday Hourly Traffic | Sat Sun | Average Week Hourly Traffic | Average Week Profile |
| 12:00 AM | | 20 | 24 | 37 | | 27 | | 27 | |
| 01:00 AM | | 30 | 23 | 26 | | 26 | | 26 | |
| 02:00 AM | | 11 | 10 | 13 | | 11 | | 11 | |
| 03:00 AM | | 22 | 25 | 30 | | 26 | | 26 | |
| 04:00 AM | | 77 | 76 | 68 | | 74 | | 74 | |
| 05:00 AM | | 155 | 171 | 161 | | 162 | | 162 | |
| 06:00 AM | | 283 | 259 | 314 | | 285 | | 285 | |
| 07:00 AM | | 516 | 497 | 457 | | 490 | | 490 | |
| 08:00 AM | | 637 | 520 | 593 | | 583 | | 583 | |
| 00:00 AM | | 432 | 377 | 347 | | 385 | | 385 | |
| 10:00 AM | | 307 | 314 | 319 | | 313 | | 313 | |
| 11:00 AM | | 335 | 323 | 312 | | 323 | | 323 | |
| 12:00 PM | | 391 | 381 | 414 | | 395 | | 395 | |
| 01:00 PM | | 392 | 356 | 377 | | 375 | | 375 | |
| 02:00 PM | | 399 | 352 | 400 | | 384 | | 384 | |
| 03:00 PM | | 451 | 518 | 535 | | 501 | | 501 | |
| 04:00 PM | | 579 | 548 | 570 | | 566 | | 566 | |
| 05:00 PM | | 603 | 550 | 629 | | 594 | | 594 | |
| 06:00 PM | | 447 | 446 | 403 | | 432 | | 432 | |
| 07:00 PM | | 286 | 316 | 282 | | 295 | | 295 | |
| 08:00 PM | | 171 | 199 | 209 | | 193 | | 193 | |
| MG 00:60 | | 157 | 143 | 147 | | 149 | | 149 | |
| 10:00 PM | | 86 | 96 | 86 | | 89 | | 68 | |
| | | 16 | çç | 60 | | /c | | /ና | |
| Day Total | | 6844 | 6579 | 6789 | | 6735 | | 6735 | |
| % Weekday Average | | 101.6% | 97.7% | 100.8% | | | | | |
| % Week | | 101 6% | 97 7% | 100 8% | | 100% | | | |
| Average | | 0/0.101 | 0/1.10 | 0/0.00T | | 0/007 | | | |
| AM Peak | | 8:00 AM | 8:00 AM | 8:00 AM | | 8:00 AM | | 8:00 AM | |
| Volume | | 637 | 520 | 593 | | 583 | | 583 | |
| PM Peak | | 5:00 PM | 5:00 PM | 5:00 PM | | 5:00 PM | | 5:00 PM | |
| Volume | | 603 | 550 | 629 | | 594 | | 594 | |
| Comments: | | | | | | | | | |
| Renort generat | red on 9/25/20 | 196:31 AM | | | | | Ŭ | OURCE: Ouality Counts, 11 | C (http://www.gualitycounts.net) |

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| Type of report | : Tube Count - Volum | ie Data | | | | | | |
|----------------------|--------------------------------|--------------------------|----------------------------|-----|-----------------------------------|---------|--------------------------------|--------------------------------|
| LOCATION: F | ^o wder Mill Rd East | of Poultry Rd | | | | | | QC JOB #: 15027038 |
| SPECIFIC LO | CATION: | | | | | | | DIRECTION: WB |
| CITY/STATE: | Greenbelt, MD | | | | | | DAT | E: Sep 17 2019 - Sep 19 2019 |
| Start Time | Mon Tr 17 Se | ue Wed 3p 19 18 Sep 1 | Thu 19 19 Sep 15 | Fri | Average Weekday Hourly Traffic | Sat Sun | Average Week Hourly Traffic | Average Week Profile |
| 12:00 AM | 2 | 1 17 | 6 | | 16 | | 16 | |
| 01:00 AM | ., | 5 9 | 7 | | 7 | | 7 | |
| 02:00 AM | ., | 5 6 | £ | | 5 | | 5 | |
| 03:00 AM | 2 | 0 18 | 18 | | 19 | | 19 | |
| 04:00 AM | 5 | 5 54 | 50 | | 53 | | 53 | |
| 05:00 AM | 14 | 46 163 | 180 | | 163 | | 163 | |
| 06:00 AM | 2; | 73 246 | 267 | | 262 | | 262 | |
| 07:00 AM | 36 | 52 340 | 392 | | 365 | | 365 | |
| 08:00 AM | 35 | 34 344 | 338 | | 355 | | 355 | |
| 00:00 AM | 22 | 24 251 | 251 | | 242 | | 242 | |
| 10:00 AM | 15 | 87 202 | 208 | | 199 | | 199 | |
| 11:00 AM | 15 | 85 212 | 217 | | 205 | | 205 | |
| 12:00 PM | 2(| J9 192 | 206 | | 202 | | 202 | |
| 01:00 PM | 23 | 17 177 | 192 | | 195 | | 195 | |
| 02:00 PM | 57 | 45 216 | 221 | | 227 | | 227 | |
| 03:00 PM | 57 | 42 219 | 229 | | 230 | | 230 | |
| 04:00 PM | 25 | 36 211 | 215 | | 221 | | 221 | |
| 05:00 PM | 26 | 51 259 | 222 | | 247 | | 247 | |
| 06:00 PM | 15 | 87 197 | 222 | | 202 | | 202 | |
| 07:00 PM | 1 | 43 136 | 154 | | 144 | | 144 | |
| 08:00 PM | 8 | 14 99 | 81 | | 88 | | 88 | |
| MG 00:00 | 7 | 0 67 | 82 | | 73 | | 73 | |
| 10:00 PM | S | 55 54 | 51 | | 53 | | 53 | |
| 11:00 PM | 1 | 9 30 | 27 | | 25 | | 25 | |
| Day Total | 38 | 35 3719 | 3842 | | 3798 | | 3798 | |
| % Weekday Average | 10 | 1% 97.9% | 101.2% | | | | | |
| % Week | 10 | 1% 97.9% | 101.2% | | 100% | | | |
| Average | 0 | | | | 0 | | | |
| AM Peak | 8:00 | 1 AM 8:00 AN | M 7:00 AM | | 7:00 AM | | 7:00 AM | |
| Volume | 35 | 84 344 | 392 | | 365 | | 365 | |
| PM Peak | 5:00 | DPM 5:00 PN | A 3:00 PM | | 5:00 PM | | 5:00 PM | |
| volume | 71 | 662 10 | 677 | | 247 | | 247 | |
| Comments: | | | | | | | | |
| Report general | ted on 9/25/2019 6:3 | 32 AM | | | | SOL | URCE: Ouality Counts. LLC | (http://www.gualitycounts.net) |

12. APPENDIX D: CRITICAL LANE VOLUME (CLV) REPORTS





394

714

| SB | 1182 | 0.37 | 437 | 0 | 0.00 | 0 | |
|----|------|------|-----|---|---------|-----|-----|
| | 504 | 0.60 | 302 | | | | |
| | | | | | | | 30 |
| WB | 508 | 0.55 | 279 | 0 | 0.00 | 0 | |
| | | | | | CLV TOT | AL= | 739 |

0.55

394

0

0.00

CLV TOTAL=

0

456

717

WB



CLV TOTAL=









CLV TOTAL= 1,010

CLV TOTAL=

| | | CRI | TICAL | . LAN | IE VO | DLUI DCe G | ME (C | LV s C | /) N | /IETH | IODO | LOG | Y | | | |
|-----|--------------------|--------------------------|----------|-----------|------------|---------------|-------|-----------|-------------|---------|------------|---------|---------|------------|---------|-----|
| | | E/W R | oad: Po | wder Mil | Road | | ee.ge | D |)ate | of Cou | unt: 9/1 | 7/2019 | | | | |
| | | N/S R | oad: So | il Consei | vation Ro | bad | | I | Day | of Cou | unt: Tu | esday | | | | |
| | | Conditi | ions: Ex | tisting T | raffic | | | | | Anal | yst: WA | Ą | | | | |
| | Peak: 6 Peak: 3 | 3:00 - 7:0 3:00 - 4:0 | 0 0 | | | | | | | | | | | | | |
| | PC | OWDER | MILL ROA | ١D | | | | | | | | т | | т | 270 | 280 |
| | | | | | | | | | | | _ | L | | L | 47 | 31 |
| | | | | | | | | | | | | | | | AM | PM |
| ſ | PM | ΔМ | ٦ | | | | | | | | | | | | | |
| | 1 141 | | | | | | | | | | | | | | | |
| | 308 | 151 | т | | т — | | | | | | | | | | | |
| | 355 | 254 | R | | R — | | | | | I | Ι | | POV | NDER M | ILL ROA | D |
| | | | | | | | | | | L | R | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | AM | | 2 | L 07 | 15 | | | | | |
| | | | | | | | PM | | 2 5 | 49 | 34 | | | | | |
| Car | oacity | (Anal | veie | | | SO | | ERV | ATIO | IN ROAL |) | | | | | |
| Cal | bacity | | Morning | Peak Ho | ır | | | 1 | | | | Evening | Peak Ho | our | | |
| | | Thru Volu | mes | + (|)pposing L | efts | AM | 1 | | 1 | Thru Volum | nes | + (| Opposing I | Lefts | PM |
| Dir | VOL | x LUF | = Total | VOL | x LUF | = Total | CLV | | Dir | VOL | x LUF | = Total | VOL | x LUF | = Total | CLV |
| NB | 0 | 0.00 | 0 | 0 | 0.00 | 0 | | | NB | 3 | 1.00 | 3 | 0 | 0.00 | 0 | |
| | 007 | 1 00 | 007 | | 0.05 | • | 297 | | | F 40 | 4.00 | F 40 | _ | 0.00 | _ | 549 |
| | 297 | 1.00 | 297 | 0 | 0.00 | 0 | | | | 549 | 1.00 | 549 | 0 | 0.00 | 0 | |
| ĽΒ | 151 | 1.00 | 151 | 47 | 1.00 | 4/ | 270 | | ΕB | 308 | 1.00 | 308 | 31 | 1.00 | 31 | 339 |
| WB | 270 | 1.00 | 270 | 0 | 0.00 | 0 | | | WB | 280 | 1.00 | 280 | 0 | 0.00 | 0 | |

CLV TOTAL=





CLV TOTAL=



CLV TOTAL=









CLV TOTAL= 1,225

CLV TOTAL=

1,080

| | | CRI | ΓΙϹΑΙ | | IE V(| | | LV |) N | IETH | IODO | LOG | Y | | | |
|-----|--------------------|------------------------|---------|------------|------------|---------|----------|----------|---------------|-------------------|-------------------|---------|-----------|------------|---------|-----|
| | | F/W P | oad: Pr | wder Mill | Road | ille U | eorge | з С П | oui at≏ | of Cor | int: 9/1 | 17/2019 | | | | |
| | | N/S R | oad: So | oil Conser | vation R | oad | | ביכ |)av | of Col | unt: Tu | esdav | | | | |
| | (| Conditi | ons: No | o Action | | | | _ | | Anal | yst: W/ | 4 | | | | |
| | Peak: 6 Peak: 3 | :00 - 7:0 :00 - 4:0 | 0 | | | | | | | | | | | | | |
| | PC | WDER I | MILL RO | AD | | | | | | | | T | | т | 304 | 315 |
| | | | | | | | | | | | _ | L | | L | 53 | 35 |
| | | | | | | | | | | | | | | | AM | PM |
| | 347 400 | 170 286 | T R | | T — R — | | AM PM | | L 33 61 | _ 35 19 | R 17 38 | | POV | NDER M | ILL ROA | D |
| | | | | | | SO | L CONSI | ERVA | | N ROAD |) | | | | | |
| Cap | pacity | Anal | ysis | | | | | _ | | | | | | | | |
| | | | Mornin | g Peak Hou | ır | | |] [| | | | Evening | g Peak Ho | ur | | |
| | - | Thru Volur | nes | + (| Opposing | Lefts | AM | Ιſ | Ţ | Т | hru Volum | nes | + (| Opposing I | Lefts | PM |
|)ir | VOL | x LUF | = Total | VOL | x LUF | = Total | CLV | | Dir | VOL | x LUF | = Total | VOL | x LUF | = Total | CLV |
| NB | 0 | 0.00 | 0 | 0 | 0.00 | 0 | 335 | | NB | 3 | 1.00 | 3 | 0 | 0.00 | 0 | 619 |
| | 335 | 1.00 | 335 | 0 | 0.00 | 0 | | ┤┟ | | 619 | 1.00 | 619 | 0 | 0.00 | 0 | |
| EB | 170 | 1.00 | 170 | 53 | 1.00 | 53 | 304 | | EB | 347 | 1.00 | 347 | 35 | 1.00 | 35 | 382 |
| ٧٧B | 304 | 1.00 | 304 | U | 0.00 | U | | 1 1 | ٧٧B | 315 | 1.00 | 315 | U | 0.00 | U | |

CLV TOTAL= 1,001

CLV TOTAL=







CLV TOTAL=









CLV TOTAL= 1,608

CLV TOTAL=

1,117

| | | CRIT | FICAL | . LAN | IE VC |)LUI nce G | ME (C ieorge | LV) N s Cou | 1ETH nty | IODO | LOG | Y | | | |
|-----|--------------------|------------------------------|----------------------------------|------------------------------|-------------------|---------------|-----------------|----------------------|---------------------------|---------------------------------|----------------------|-----------|------------|---------|-------|
| | C | E/W Ro N/S Ro Conditio | oad: Pov oad: Soi ons: Act | wder Mill I Conser ion | Road vation Ro | bad | U | Date Day | of Cou of Cou Analy | unt: 9/1 unt: Tue yst: WA | 7/2019 esday A | | | | |
| | Peak: 6 Peak: 3 | :00 - 7:00 :00 - 4:00 |) | | | | | | | | | | | | |
| | PC | WDER N | IILL ROA | D | | | | | | | T | | т | 346 | 315 |
| | | | | | | | | | | | L | | L | 53 | 35 |
| | | | | | | | | | | | | | | AM | РМ |
| | 390 400 | 170 286 | T R | | T — R — | | | | L | R | | POV | VDER MI | LL ROA | AD |
| | | | | | | | | | - | R | | | | | |
| | | | | | | | AM PM | 3. 6 [.] | 55 19 | 38 | | | | | |
| Сар | pacity | Analy | /sis | | | SO | IL CONSI | ERVATIO | N ROAD |) | | | | | |
| | | - | Morning | Peak Hou | ır | | | | | | Evening | j Peak Ho | our | | |
| | 1 | Thru Volum | nes | + (| pposing L | efts | AM | | Т | hru Volum | ies | + (| Opposing L | efts | РМ |
| Dir | VOL | x LUF | = Total | VOL | x LUF | = Total | CLV | Dir | VOL | x LUF | = Total | VOL | x LUF | = Total | CLV |
| NB | 0 335 | 0.00 | 0 335 | 0 | 0.00 | 0 | 335 | NB | 3 619 | 1.00 | 3 619 | 0 | 0.00 | 0 | 619 |
| EB | 170 | 1.00 | 170 | 53 | 1.00 | 53 | | EB | 390 | 1.00 | 390 | 35 | 1.00 | 35 | |
| WB | 346 | 1.00 | 346 | 0 | 0.00 | 0 | 346 | WB | 315 | 1.00 | 315 | 0 | 0.00 | 0 | 425 |
| | | | | 1 | CLV TOT/ | AL= | 681 | ╽ | | | | ı | CLV TOTA | AL= | 1,044 |






CLV TOTAL= 1,250

CLV TOTAL=

868



Transportation Impact Study





13. APPENDIX E: SYNCHRO REPORTS

| | ≯ | \mathbf{r} | - | 1 | Ŧ | 1 | | |
|----------------------------------|---------|--------------|-------|-------|------------|----------------|----|----|
| Movement | FBI | FBR | NBI | NBT | SBT | SBR | | |
| Lane Configurations | | 1 | ** | ** | ** | 1 | | |
| Traffic Volume (vph) | 0 | 93 | 94 | 1015 | 894 | 7 | | |
| Future Volume (vph) | 0 | 93 | 94 | 1015 | 894 | 7 | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | |
| Total Lost time (s) | 1000 | 4 0 | 6.0 | 4.0 | 7.0 | 7.0 | | |
| Lane Util Factor | | 1 00 | 0.0 | 0.95 | 0.95 | 1.00 | | |
| Frt | | 0.86 | 1 00 | 1.00 | 1 00 | 0.85 | | |
| Elt Protected | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | |
| Satd Flow (prot) | | 1536 | 3303 | 3406 | 3085 | 1380 | | |
| Elt Permitted | | 1 00 | 0.95 | 1 00 | 1 00 | 1 00 | | |
| Satd Flow (perm) | | 1536 | 3303 | 3406 | 3085 | 1380 | | |
| Peak-hour factor PHF | 0.92 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | | |
| Adi Flow (vph) | 0.52 | 111 | 112 | 1208 | 1064 | 8 | | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 2 | | |
| Lane Group Flow (vph) | 0 | 111 | 112 | 1208 | 1064 | 6 | | |
| Heavy Vehicles (%) | 2% | 7% | 6% | 6% | 17% | 17% | | |
| Turn Type | _ /0 | Free | Prot | NΔ | ΝA | Perm | | |
| Protected Phases | | 1100 | 1 | Free | _2_ | | | |
| Permitted Phases | | Free | • | 1100 | 2 | 2 | | |
| Actuated Green G (s) | | 100.0 | 92 | 100 0 | 77 8 | 77.8 | | |
| Effective Green g (s) | | 100.0 | 9.2 | 100.0 | 77.8 | 77.8 | | |
| Actuated g/C Ratio | | 1 00 | 0.09 | 1 00 | 0.78 | 0.78 | | |
| Clearance Time (s) | | 1.00 | 6.0 | 1.00 | 7.0 | 7.0 | | |
| Vehicle Extension (s) | | | 3.0 | | 5.0 | 5.0 | | |
| Lane Grn Can (vnh) | | 1536 | 303 | 3406 | 2400 | 1073 | | |
| v/s Ratio Prot | | 1000 | 0.03 | 0.35 | c0.34 | 1070 | | |
| v/s Ratio Perm | | 0.07 | 0.00 | 0.00 | -00.0T | 0.00 | | |
| v/c Ratio | | 0.07 | 0.37 | 0.35 | 0 44 | 0.00 | | |
| Uniform Delay d1 | | 0.0 | 42 7 | 0.0 | 3.8 | 2.5 | | |
| Progression Factor | | 1.00 | 0.70 | 1.00 | 0.53 | 0.58 | | |
| Incremental Delay d2 | | 0.1 | 07 | 0.3 | 0.5 | 0.0 | | |
| Delay (s) | | 0.1 | 30.4 | 0.3 | 2.5 | 1.4 | | |
| Level of Service | | Α | C | Α | 2.0 A | A | | |
| Approach Delay (s) | 0.1 | ,, | Ű. | 2.8 | 2.5 | | | |
| Approach LOS | A | | | A | Α | | | |
| Intersection Summary | | | | | | | | |
| HCM 2000 Control Delav | | | 2.6 | H | CM 2000 | Level of Servi | | А |
| HCM 2000 Volume to Capacity | / ratio | | 0.46 | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | S | um of lost | t time (s) | 13 | .0 |
| Intersection Capacity Utilizatio | n | | 42.2% | IC | U Level | of Service | | A |
| Analysis Period (min) | | | 15 | | | | | |
| c Critical Lane Group | | | - | | | | | |

| | ٦ | → | $\mathbf{\hat{z}}$ | 4 | + | * | 1 | Ť | ۲ | 1 | ŧ | - |
|-------------------------------|-------------|------|--------------------|------|-------------|------------|---------|-------|------|------|-------|-------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | 5 | | 1 | | | | 5 | ĥ | | | • | 1 |
| Traffic Volume (vph) | 88 | 0 | 197 | 0 | 0 | 0 | 315 | 680 | 0 | 0 | 895 | 110 |
| Future Volume (vph) | 88 | 0 | 197 | 0 | 0 | 0 | 315 | 680 | 0 | 0 | 895 | 110 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 6.5 | | 6.5 | | | | 6.5 | 6.5 | | | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | | 0.85 | | | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | | 1.00 | | | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1626 | | 1478 | | | | 1687 | 1776 | | | 1529 | 1392 |
| Flt Permitted | 0.95 | | 1.00 | | | | 0.08 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1626 | | 1478 | | | | 150 | 1776 | | | 1529 | 1392 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 104 | 0 | 232 | 0 | 0 | 0 | 371 | 800 | 0 | 0 | 1053 | 129 |
| RTOR Reduction (vph) | 0 | 0 | 82 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 |
| Lane Group Flow (vph) | 104 | 0 | 150 | 0 | 0 | 0 | 371 | 800 | 0 | 0 | 1053 | 102 |
| Heavy Vehicles (%) | 11% | 11% | 2% | 0% | 0% | 0% | 7% | 7% | 7% | 16% | 16% | 16% |
| Turn Type | Prot | | pt+ov | | | | pm+pt | NA | | | NA | pm+ov |
| Protected Phases | 4 | | 14 | | | | 1 | 16 | | | 2 | 4 |
| Permitted Phases | | | 4 | | | | 16 | | | | | 2 |
| Actuated Green, G (s) | 18.5 | | 60.0 | | | | 171.6 | 171.6 | | | 130.1 | 148.6 |
| Effective Green, g (s) | 18.5 | | 60.0 | | | | 171.6 | 171.6 | | | 130.1 | 148.6 |
| Actuated g/C Ratio | 0.09 | | 0.30 | | | | 0.84 | 0.84 | | | 0.64 | 0.73 |
| Clearance Time (s) | 6.5 | | | | | | 6.5 | | | | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.5 | | | | | | 3.0 | | | | 6.0 | 3.5 |
| Lane Grp Cap (vph) | 148 | | 436 | | | | 391 | 1500 | | | 979 | 1063 |
| v/s Ratio Prot | c0.06 | | 0.10 | | | | c0.16 | 0.45 | | | c0.69 | 0.01 |
| v/s Ratio Perm | | | | | | | 0.64 | | | | | 0.06 |
| v/c Ratio | 0.70 | | 0.34 | | | | 0.95 | 0.53 | | | 1.08 | 0.10 |
| Uniform Delay, d1 | 89.6 | | 56.1 | | | | 61.9 | 4.4 | | | 36.5 | 7.9 |
| Progression Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 14.5 | | 0.5 | | | | 32.2 | 0.4 | | | 51.3 | 0.0 |
| Delay (s) | 104.2 | | 56.6 | | | | 94.1 | 4.8 | | | 87.8 | 7.9 |
| Level of Service | F | | E | | | | F | А | | | F | A |
| Approach Delay (s) | | 71.3 | | | 0.0 | | | 33.1 | | | 79.1 | |
| Approach LOS | | E | | | A | | | С | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 58.1 | Н | CM 2000 | Level of | Service | | E | | | |
| HCM 2000 Volume to Capa | icity ratio | | 1.01 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 203.1 | S | um of lost | t time (s) | | | 19.5 | | | |
| Intersection Capacity Utiliza | ation | | 83.6% | IC | CU Level of | of Service | 9 | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

| | ≯ | \mathbf{F} | 1 | 1 | Ŧ | - |
|------------------------------|-----------|--------------|------|----------|----------|------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ካካ | 1 | | ^ | ^ | |
| Traffic Volume (veh/h) | 73 | 757 | 0 | 881 | 770 | 0 |
| Future Volume (veh/h) | 73 | 757 | 0 | 881 | 770 | 0 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1767 | 1767 | 0 | 1767 | 1752 | 0 |
| Adj Flow Rate, veh/h | 84 | 0 | 0 | 1013 | 885 | 0 |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 9 | 9 | 0 | 9 | 10 | 0 |
| Cap, veh/h | 147 | | 0 | 4026 | 2779 | 0 |
| Arrive On Green | 0.05 | 0.00 | 0.00 | 0.83 | 0.83 | 0.00 |
| Sat Flow, veh/h | 3264 | 1497 | 0 | 5141 | 3504 | 0 |
| Grp Volume(v), veh/h | 84 | 0 | 0 | 1013 | 885 | 0 |
| Grp Sat Flow(s).veh/h/ln | 1632 | 1497 | 0 | 1608 | 1664 | 0 |
| Q Serve(g s), s | 2.5 | 0.0 | 0.0 | 4.4 | 6.0 | 0.0 |
| Cycle Q Clear(a c), s | 2.5 | 0.0 | 0.0 | 4.4 | 6.0 | 0.0 |
| Prop In Lane | 1.00 | 1.00 | 0.00 | | | 0.00 |
| Lane Grp Cap(c), veh/h | 147 | | 0 | 4026 | 2779 | 0 |
| V/C Ratio(X) | 0.57 | | 0.00 | 0.25 | 0.32 | 0.00 |
| Avail Cap(c a), veh/h | 881 | | 0 | 4026 | 2779 | 0 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 46.8 | 0.0 | 0.0 | 1.7 | 1.9 | 0.0 |
| Incr Delay (d2), s/veh | 3.4 | 0.0 | 0.0 | 0.2 | 0.3 | 0.0 |
| Initial Q Delav(d3).s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%).veh/In | 1.1 | 0.0 | 0.0 | 0.6 | 0.9 | 0.0 |
| Unsig. Movement Delay, s/ve | h | | | | | |
| LnGrp Delav(d).s/veh | 50.2 | 0.0 | 0.0 | 1.9 | 2.2 | 0.0 |
| LnGrp LOS | D | 0.0 | A | A | A | A |
| Approach Vol. veh/h | 84 | Α | | 1013 | 885 | |
| Approach Delay s/yeh | 50.2 | 73 | | 19 | 22 | |
| Approach LOS | 00.2 D | | | Α | Δ.2 | |
| | D | | | | | |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), s | | 89.5 | | 10.5 | | 89.5 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 61.0 | | 27.0 | | 61.0 |
| Max Q Clear Time (g_c+I1), s | ; | 8.0 | | 4.5 | | 6.4 |
| Green Ext Time (p_c), s | | 15.2 | | 0.2 | | 17.9 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delav | | | 4.1 | | | |
| HCM 6th LOS | | | A | | | |
| | | | П | | | |

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

| | € | * | 1 | 1 | 1 | Ŧ |
|---------------------------|---------------|------|-----------|------|------|------------|
| Movement V | NBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ኘካ | 11 | 441 | | | *** |
| Traffic Volume (veh/h) | 456 | 717 | 396 | 0 | 0 | 864 |
| Future Volume (veh/h) | 456 | 717 | 396 | 0 | 0 | 864 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A pbT) | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | No | | | No |
| Adj Sat Flow, veh/h/ln 1 | 841 | 1841 | 1781 | 0 | 0 | 1693 |
| Adj Flow Rate, veh/h | 549 | 864 | 477 | 0 | 0 | 1041 |
| Peak Hour Factor (| 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 |
| Percent Heavy Veh, % | 4 | 4 | 8 | 0 | 0 | 14 |
| Cap, veh/h 1 | 222 | 987 | 2483 | 0 | 0 | 2359 |
| Arrive On Green (| 0.36 | 0.36 | 0.51 | 0.00 | 0.00 | 0.51 |
| Sat Flow, veh/h 3 | 8401 | 2745 | 5184 | 0 | 0 | 4925 |
| Grp Volume(v), veh/h | 549 | 864 | 477 | 0 | 0 | 1041 |
| Grp Sat Flow(s).veh/h/ln1 | 700 | 1373 | 1621 | Ō | 0 | 1540 |
| Q Serve(q s), s | 12.3 | 29.4 | 5.3 | 0.0 | 0.0 | 14.2 |
| Cycle Q Clear(g_c), s | 12.3 | 29.4 | 5.3 | 0.0 | 0.0 | 14.2 |
| Prop In Lane | 1.00 | 1.00 | 2.0 | 0.00 | 0.00 | |
| Lane Grp Cap(c), veh/h 1 | 222 | 987 | 2483 | 0 | 0 | 2359 |
| V/C Ratio(X) | 0.45 | 0.88 | 0.19 | 0.00 | 0.00 | 0.44 |
| Avail Cap(c, a) veh/h 1 | 394 | 1126 | 2483 | 0.00 | 0.00 | 2359 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1 00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| Uniform Delay (d) s/veh | 24.5 | 29.9 | 13.3 | 0.0 | 0.0 | 15.5 |
| Incr Delay (d2) s/veh | 0.3 | 7.2 | 0.2 | 0.0 | 0.0 | 0.6 |
| Initial Q Delav(d3) s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfO(50%) veh/l | In4.8 | 10.1 | 1.0 | 0.0 | 0.0 | <u>4</u> 7 |
| Unsig Movement Delay | s/veh | 10.1 | 1.7 | 0.0 | 0.0 | / |
| InGrn Delav(d) s/veh | 24 7 | 37.2 | 13.4 | 0.0 | 0.0 | 16 1 |
| | с <u>т.</u> г | D | R | Δ | Δ | R |
| Approach Vol. voh/h 1 | /12 | U | /77 | ~ | ~ | 10/1 |
| Approach Dolay shich 3 | 413 | | 4// | | | 1041 |
| Approach LOS | 52.5 C | | 13.4 D | | | 10.1 D |
| Approach LOS | C | | В | | | В |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), | S | 57.1 | | 42.9 | | 57.1 |
| Change Period (Y+Rc), s | | 6.0 | | 7.0 | | 6.0 |
| Max Green Setting (Gma | x), s | 46.0 | | 41.0 | | 46.0 |
| Max Q Clear Time (g_c+l | l1), s | 16.2 | | 31.4 | | 7.3 |
| Green Ext Time (p_c), s | | 23.0 | | 4.5 | | 13.2 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delav | | | 23.5 | | | |
| HCM 6th LOS | | | С | | | |

۲ t ∢ Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR Lane Configurations 4 ٦ *** ۴ 朴朴ኈ đ ۴ ٦ Traffic Volume (veh/h) 113 66 1042 0 34 37 27 3 1 956 4 1 Future Volume (veh/h) 1 0 3 113 1 66 34 1042 37 27 956 4 Initial Q (Qb), veh 0 0 0 0 0 0 0 0 0 0 0 0 Ped-Bike Adj(A_pbT) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Parking Bus, Adj 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Work Zone On Approach No No No No 1826 Adj Sat Flow, veh/h/ln 907 907 1856 1856 1856 1826 1633 1633 1633 907 1826 Adj Flow Rate, veh/h 0 4 138 80 41 1271 0 33 1166 1 1 5 0.82 Peak Hour Factor 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 Percent Heavy Veh, % 67 67 67 3 3 3 5 5 5 18 18 18 47 Cap, veh/h 43 11 44 183 1 377 59 2791 2548 11 0.26 0.26 0.00 Arrive On Green 0.00 0.24 0.24 0.24 0.03 0.56 0.01 0.18 0.18 Sat Flow, veh/h 0 46 184 463 4 1572 1739 4985 1547 1555 4583 20 Grp Volume(v), veh/h 5 0 0 139 0 80 41 1271 0 33 756 415 Grp Sat Flow(s), veh/h/ln 231 467 1572 1739 1662 1547 1555 1486 1630 0 0 0 22.7 Q Serve(g_s), s 0.0 0.0 0.0 0.0 0.0 4.1 2.3 15.1 0.0 2.1 22.7 Cycle Q Clear(g_c), s 26.0 0.0 4.1 15.1 2.1 22.7 22.7 26.0 0.0 0.0 2.3 0.0 Prop In Lane 0.20 0.80 0.99 1.00 1.00 1.00 1.00 0.01 Lane Grp Cap(c), veh/h 103 47 906 0 0 193 0 377 59 2791 1653 V/C Ratio(X) 0.05 0.00 0.00 0.72 0.00 0.21 0.69 0.46 0.71 0.46 0.46 Avail Cap(c a), veh/h 0 174 156 906 103 0 0 193 377 2791 1653 HCM Platoon Ratio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.33 0.33 0.33 Upstream Filter(I) 1.00 0.00 0.00 1.00 0.00 1.00 1.00 1.00 0.00 0.92 0.92 0.92 Uniform Delay (d), s/veh 30.5 0.0 0.0 39.4 0.0 30.4 47.8 13.0 0.0 49.1 27.4 27.4 Incr Delay (d2), s/veh 0.0 0.0 12.2 0.0 0.3 13.6 0.5 0.0 16.4 0.8 1.5 0.2 Initial Q Delay(d3),s/veh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 %ile BackOfQ(50%),veh/lr0.1 0.0 0.0 4.0 0.0 1.2 5.2 0.0 1.0 10.2 1.6 9.1 Unsig. Movement Delay, s/veh LnGrp Delay(d),s/veh 0.0 0.0 51.6 0.0 30.7 61.3 13.5 0.0 65.5 28.2 28.9 30.7 LnGrp LOS С А D А С Е В Е С С А 5 219 1312 Α 1204 Approach Vol, veh/h Approach Delay, s/veh 30.7 44.0 15.0 29.5 Approach LOS С D В С Timer - Assigned Phs 2 5 6 8 4 Phs Duration (G+Y+Rc), s8.4 61.6 30.0 62.0 30.0 8.0 Change Period (Y+Rc), s 5.0 6.0 6.0 6.0 5.0 6.0 Max Green Setting (Gmatto. G 49.0 24.0 10.0 49.0 24.0 Max Q Clear Time (g_c+I14),3s 24.7 28.0 4.1 17.1 28.0 Green Ext Time (p_c), s 0.0 0.0 0.0 0.0 20.6 27.4 Intersection Summary 23.7 HCM 6th Ctrl Delay HCM 6th LOS С

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

| | ≯ | \mathbf{F} | ٩. | t. | Ŧ | ∢_ |
|---------------------------|-------------|--------------|------|----------|------|----------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ካካ | 1 | 5 | ** | ** | 1 |
| Traffic Volume (veh/h) | 115 | 25 | 130 | 885 | 876 | 211 |
| Future Volume (veh/h) | 115 | 25 | 130 | 885 | 876 | 211 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A pbT) | 1.00 | 1.00 | 1.00 | - | - | 1.00 |
| Parking Bus. Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approac | ch No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1737 | 1737 | 1811 | 1811 | 1678 | 1678 |
| Adj Flow Rate. veh/h | 144 | 31 | 162 | 1106 | 1095 | 264 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh. % | 11 | 11 | 6 | 6 | 15 | 15 |
| Cap. veh/h | 255 | 117 | 363 | 2721 | 2203 | 982 |
| Arrive On Green | 0.08 | 0.08 | 0.05 | 0.79 | 0.69 | 0.69 |
| Sat Flow, veh/h | 3209 | 1472 | 1725 | 3532 | 3272 | 1421 |
| Grn Volume(v) veh/h | 144 | 31 | 162 | 1106 | 1095 | 264 |
| Grn Sat Flow(s) veh/h/l | n1605 | 1472 | 1725 | 1721 | 150/ | 1421 |
| O Serve(a, s) s | / 2 | 20 | 25 | 0.0 | 16.2 | 70 |
| $(y_0) = (y_0), s$ | +.J ∕\ 2 | 2.0 | 2.5 | 0.0 | 16.2 | 7.0 |
| Prop In Lane | 1.0 | 2.0 | 1.0 | 9.9 | 10.2 | 1.0 |
| Lane Grn Can(a) yeb/b | 1.00 | 117 | 1.00 | 2721 | 2203 | 001 |
| V/C Patio(X) | 0.57 | 0.07 | 0 45 | 0.41 | 0 50 | 90Z |
| v/O Rall $O(A)$ | 0.07 | 101 | 0.40 | 0.41 | 0.00 | 0.27 |
| Avail Cap(C_a), veri/n | 417 | 191 | 1 00 | 1 00 | 2203 | 90Z |
| | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | | 1.00 | 0.94 | 0.94 | 1.00 | 1.00 |
| Uniform Delay (d), s/vel | 0.44.4 | 43.3 | 0.0 | 3.2 | 1.3 | 5.9 |
| Incr Delay (d2), s/veh | 2.0 | 1.2 | 0.8 | 0.4 | 0.8 | 0.7 |
| Initial Q Delay(d3),s/vel | n 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),vel | n/ini.8 | 0.8 | 0.7 | 2.2 | 4.6 | 1.9 |
| Unsig. Movement Delay | y, s/veh | | | <u> </u> | | <u> </u> |
| LnGrp Delay(d),s/veh | 46.3 | 44.5 | 6.8 | 3.7 | 8.1 | 6.5 |
| LnGrp LOS | D | D | A | A | A | A |
| Approach Vol, veh/h | 175 | | | 1268 | 1359 | |
| Approach Delay, s/veh | 46.0 | | | 4.1 | 7.8 | |
| Approach LOS | D | | | А | А | |
| Timer - Assigned Phs | 1 | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc |), s9.9 | 76.1 | | 13.9 | | 86.1 |
| Change Period (Y+Rc) | s 5 0 | 7 0 | | 6.0 | | 7 0 |
| Max Green Setting (Gr | 1.2200.00 | 49.0 | | 13.0 | | 74.0 |
| Max O Clear Time (o | +112.5 | 18.2 | | 6.3 | | 11 9 |
| Green Ext Time (n_c) | s 0.4 | 26.1 | | 0.3 | | 43.6 |
| Intersection Owners | т | 20.1 | | 0.0 | | 40.0 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 8.5 | | | |
| HCM 6th LOS | | | Α | | | |

Intersection

| Int Delay, s/veh | 2 | | | | | |
|------------------------|-------|------|------|------|------|------|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ۰¥ | | 4 | | | ्स |
| Traffic Vol, veh/h | 13 | 12 | 761 | 7 | 20 | 992 |
| Future Vol, veh/h | 13 | 12 | 761 | 7 | 20 | 992 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage | , # 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 78 | 78 | 78 | 78 | 78 | 78 |
| Heavy Vehicles, % | 20 | 20 | 9 | 9 | 17 | 17 |
| Mvmt Flow | 17 | 15 | 976 | 9 | 26 | 1272 |

| Major/Minor | Minor1 | Μ | lajor1 | N | lajor2 | | | |
|----------------------|--------|------|--------|-----|--------|---|--|--|
| Conflicting Flow All | 2305 | 981 | 0 | 0 | 985 | 0 | | |
| Stage 1 | 981 | - | - | - | - | - | | |
| Stage 2 | 1324 | - | - | - | - | - | | |
| Critical Hdwy | 6.6 | 6.4 | - | - | 4.27 | - | | |
| Critical Hdwy Stg 1 | 5.6 | - | - | - | - | - | | |
| Critical Hdwy Stg 2 | 5.6 | - | - | - | - | - | | |
| Follow-up Hdwy | 3.68 | 3.48 | - | - 1 | 2.353 | - | | |
| Pot Cap-1 Maneuver | 37 | 280 | - | - | 645 | - | | |
| Stage 1 | 337 | - | - | - | - | - | | |
| Stage 2 | 228 | - | - | - | - | - | | |
| Platoon blocked, % | | | - | - | | - | | |
| Mov Cap-1 Maneuver | r 32 | 280 | - | - | 645 | - | | |
| Mov Cap-2 Maneuver | r 32 | - | - | - | - | - | | |
| Stage 1 | 337 | - | - | - | - | - | | |
| Stage 2 | 197 | - | - | - | - | - | | |
| | | | | | | | | |

| Approach | WB | NB | SB |
|----------------------|-------|----|-----|
| HCM Control Delay, s | 133.7 | 0 | 0.2 |
| HCMLOS | F | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT | |
|-----------------------|-----|----------|------|-----|--|
| Capacity (veh/h) | - | - 56 | 645 | - | |
| HCM Lane V/C Ratio | - | - 0.572 | 0.04 | - | |
| HCM Control Delay (s) | - | - 133.7 | 10.8 | 0 | |
| HCM Lane LOS | - | - F | В | А | |
| HCM 95th %tile Q(veh) | - | - 2.3 | 0.1 | - | |

HCM 6th Signalized Intersection Summary 8: MD 201 & Powder Mill Road

| | ≯ | → | $\mathbf{\hat{v}}$ | 4 | + | • | 1 | Ť | 1 | 1 | ŧ | ~ |
|------------------------------|----------|------|--------------------|------|------|------|------|----------|------|------|-------------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ٦ | • | 1 | ľ | • | 1 | ľ | † | 1 | ۲ | ∱1 ≱ | |
| Traffic Volume (veh/h) | 51 | 98 | 462 | 107 | 132 | 36 | 315 | 411 | 47 | 23 | 443 | 69 |
| Future Volume (veh/h) | 51 | 98 | 462 | 107 | 132 | 36 | 315 | 411 | 47 | 23 | 443 | 69 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1544 | 1544 | 1544 | 1796 | 1796 | 1796 | 1856 | 1856 | 1856 | 1796 | 1796 | 1796 |
| Adj Flow Rate, veh/h | 64 | 122 | 0 | 134 | 165 | 0 | 394 | 514 | 0 | 29 | 554 | 86 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh, % | 24 | 24 | 24 | 7 | 7 | 7 | 3 | 3 | 3 | 7 | 7 | 7 |
| Cap, veh/h | 184 | 308 | | 417 | 656 | | 513 | 1042 | | 359 | 1082 | 168 |
| Arrive On Green | 0.20 | 0.20 | 0.00 | 0.13 | 0.37 | 0.00 | 0.17 | 0.56 | 0.00 | 0.37 | 0.37 | 0.37 |
| Sat Flow, veh/h | 1005 | 1544 | 1309 | 1711 | 1796 | 1522 | 1767 | 1856 | 1572 | 851 | 2962 | 458 |
| Grp Volume(v), veh/h | 64 | 122 | 0 | 134 | 165 | 0 | 394 | 514 | 0 | 29 | 318 | 322 |
| Grp Sat Flow(s),veh/h/ln | 1005 | 1544 | 1309 | 1711 | 1796 | 1522 | 1767 | 1856 | 1572 | 851 | 1706 | 1714 |
| Q Serve(g_s), s | 8.9 | 10.3 | 0.0 | 0.0 | 9.7 | 0.0 | 19.7 | 25.3 | 0.0 | 3.4 | 21.9 | 22.1 |
| Cycle Q Clear(g_c), s | 18.5 | 10.3 | 0.0 | 0.0 | 9.7 | 0.0 | 19.7 | 25.3 | 0.0 | 3.4 | 21.9 | 22.1 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.27 |
| Lane Grp Cap(c), veh/h | 184 | 308 | | 417 | 656 | | 513 | 1042 | | 359 | 624 | 626 |
| V/C Ratio(X) | 0.35 | 0.40 | | 0.32 | 0.25 | | 0.77 | 0.49 | | 0.08 | 0.51 | 0.51 |
| Avail Cap(c_a), veh/h | 184 | 308 | | 417 | 656 | | 513 | 1042 | | 359 | 624 | 626 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 60.1 | 52.4 | 0.0 | 47.6 | 33.4 | 0.0 | 23.9 | 20.0 | 0.0 | 31.4 | 37.3 | 37.3 |
| Incr Delay (d2), s/veh | 5.2 | 3.8 | 0.0 | 2.0 | 0.9 | 0.0 | 10.6 | 1.7 | 0.0 | 0.4 | 3.0 | 3.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.5 | 4.3 | 0.0 | 4.5 | 4.4 | 0.0 | 9.4 | 11.1 | 0.0 | 0.7 | 9.7 | 9.8 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 65.3 | 56.2 | 0.0 | 49.6 | 34.3 | 0.0 | 34.5 | 21.7 | 0.0 | 31.8 | 40.2 | 40.3 |
| LnGrp LOS | <u> </u> | E | | D | С | | С | С | | С | D | D |
| Approach Vol, veh/h | | 186 | А | | 299 | А | | 908 | А | | 669 | |
| Approach Delay, s/veh | | 59.3 | | | 41.1 | | | 27.3 | | | 39.9 | |
| Approach LOS | | E | | | D | | | С | | | D | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 29.5 | 61.0 | 25.0 | 35.0 | | 90.5 | | 60.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 6.0 | 5.0 | * 5 | | 6.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 25.0 | 55.0 | 20.0 | * 30 | | 84.5 | | 54.5 | | | | |
| Max Q Clear Time (g_c+I1), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 36.3 | | | | | | | | | |
| HCM 6th LOS | | | D | | | | | | | | | |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier. Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection

Int Delay, s/veh

| Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR Lane Configurations |
|--|
| Lane Configurations Image: Configuration in the image: Configuration |
| Traffic Vol, veh/h 19 0 1 2 4 1 45 441 3 0 515 39 Future Vol, veh/h 19 0 1 2 4 1 45 441 3 0 515 39 Conflicting Peds, #/hr 0 |
| Future Vol, veh/h 19 0 1 2 4 1 45 441 3 0 515 39 Conflicting Peds, #/hr 0 < |
| Conflicting Peds, #/hr 0 |
| Sign ControlStopStopStopStopStopStopFree |
| RT Channelized - - None - - None Storage Length - - - 50 - - - - - - - - None - None - None - - None - - None - - None - None - None - None - None - - None - </td |
| Storage Length |
| Veh in Median Storage. # - 0 0 0 0 - |
| |
| Grade, % - 0 0 0 0 - |
| Peak Hour Factor 95 95 95 95 95 95 95 95 95 95 95 95 95 |
| Heavy Vehicles, % 70 70 70 67 67 67 9 9 9 21 21 21 |
| Mvmt Flow 20 0 1 2 4 1 47 464 3 0 542 41 |

| Major/Minor | Minor2 | | I | Vinor1 | | | Major1 | | | Ν | lajor2 | | | |
|----------------------|--------|------|------|--------|-------|-------|--------|---|---|---|--------|---|---|--|
| Conflicting Flow All | 1125 | 1124 | 563 | 1121 | 1141 | 464 | 583 | 0 | (|) | 467 | 0 | 0 | |
| Stage 1 | 563 | 563 | - | 558 | 558 | - | - | - | | - | - | - | - | |
| Stage 2 | 562 | 561 | - | 563 | 583 | - | - | - | | - | - | - | - | |
| Critical Hdwy | 7.8 | 7.2 | 6.9 | 7.77 | 7.17 | 6.87 | 4.19 | - | | - | 4.31 | - | - | |
| Critical Hdwy Stg 1 | 6.8 | 6.2 | - | 6.77 | 6.17 | - | - | - | | - | - | - | - | |
| Critical Hdwy Stg 2 | 6.8 | 6.2 | - | 6.77 | 6.17 | - | - | - | | - | - | - | - | |
| Follow-up Hdwy | 4.13 | 4.63 | 3.93 | 4.103 | 4.603 | 3.903 | 2.281 | - | | - | 2.389 | - | - | |
| Pot Cap-1 Maneuver | 136 | 155 | 417 | 138 | 153 | 484 | 958 | - | | - | 1002 | - | - | |
| Stage 1 | 409 | 414 | - | 415 | 420 | - | - | - | | - | - | - | - | |
| Stage 2 | 409 | 415 | - | 412 | 408 | - | - | - | | - | - | - | - | |
| Platoon blocked, % | | | | | | | | - | | - | | - | - | |
| Mov Cap-1 Maneuver | 126 | 145 | 417 | 131 | 143 | 484 | 958 | - | | - | 1002 | - | - | |
| Mov Cap-2 Maneuver | 126 | 145 | - | 131 | 143 | - | - | - | | - | - | - | - | |
| Stage 1 | 382 | 414 | - | 388 | 392 | - | - | - | | - | - | - | - | |
| Stage 2 | 377 | 388 | - | 411 | 408 | - | - | - | | - | - | - | - | |
| | | | | | | | | | | | | | | |

| Approach | EB | WB | NB | SB | |
|----------------------|------|------|-----|----|--|
| HCM Control Delay, s | 37.7 | 29.3 | 0.8 | 0 | |
| HCM LOS | E | D | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1V | VBLn1V | VBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|--------|--------|-------|------|-----|-----|
| Capacity (veh/h) | 958 | - | - | 131 | 139 | 484 | 1002 | - | - |
| HCM Lane V/C Ratio | 0.049 | - | - | 0.161 | 0.045 | 0.002 | - | - | - |
| HCM Control Delay (s) | 9 | 0 | - | 37.7 | 32.1 | 12.5 | 0 | - | - |
| HCM Lane LOS | А | А | - | Е | D | В | А | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 0.6 | 0.1 | 0 | 0 | - | - |

| ntersection | |
|--------------------------|-----|
| ntersection Delay, s/veh | 9.1 |
| ntersection LOS | Α |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR | |
|----------------------------|------|------|------|------|------|------|--|
| Lane Configurations | | Ę | eî | | ¥ | | |
| Traffic Vol, veh/h | 2 | 144 | 280 | 0 | 0 | 0 | |
| Future Vol, veh/h | 2 | 144 | 280 | 0 | 0 | 0 | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | |
| Heavy Vehicles, % | 6 | 6 | 2 | 2 | 2 | 2 | |
| Mvmt Flow | 2 | 169 | 329 | 0 | 0 | 0 | |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | |
| Approach | EB | | WB | | SB | | |
| Opposing Approach | WB | | EB | | | | |
| Opposing Lanes | 1 | | 1 | | 0 | | |
| Conflicting Approach Left | SB | | | | WB | | |
| Conflicting Lanes Left | 1 | | 0 | | 1 | | |
| Conflicting Approach Right | | | SB | | EB | | |
| Conflicting Lanes Right | 0 | | 1 | | 1 | | |
| HCM Control Delay | 8.4 | | 9.5 | | 0 | | |
| HCM LOS | А | | А | | - | | |

| Lane | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, % | 1% | 0% | 0% |
| Vol Thru, % | 99% | 100% | 100% |
| Vol Right, % | 0% | 0% | 0% |
| Sign Control | Stop | Stop | Stop |
| Traffic Vol by Lane | 146 | 280 | 0 |
| LT Vol | 2 | 0 | 0 |
| Through Vol | 144 | 280 | 0 |
| RT Vol | 0 | 0 | 0 |
| Lane Flow Rate | 172 | 329 | 0 |
| Geometry Grp | 1 | 1 | 1 |
| Degree of Util (X) | 0.203 | 0.372 | 0 |
| Departure Headway (Hd) | 4.249 | 4.061 | 5.006 |
| Convergence, Y/N | Yes | Yes | Yes |
| Сар | 836 | 883 | 0 |
| Service Time | 2.315 | 2.103 | 3.006 |
| HCM Lane V/C Ratio | 0.206 | 0.373 | 0 |
| HCM Control Delay | 8.4 | 9.5 | 8 |
| HCM Lane LOS | А | А | Ν |
| HCM 95th-tile Q | 0.8 | 1.7 | 0 |

| 0.5 | | | | | |
|----------|---|---|---|---|--|
| | | | | | |
| NBL | NBR | SET | SER | NWL | NWT |
| <u>۲</u> | | 4 | | | ↑ |
| 17 | 0 | 136 | 8 | 0 | 266 |
| 17 | 0 | 136 | 8 | 0 | 266 |
| 0 | 0 | 0 | 0 | 0 | 0 |
| Stop | Stop | Free | Free | Free | Free |
| - | None | - | None | - | None |
| 0 | - | - | - | - | - |
| ,#0 | - | 0 | - | - | 0 |
| 0 | - | 0 | - | - | 0 |
| 74 | 74 | 74 | 74 | 74 | 74 |
| 2 | 2 | 4 | 4 | 2 | 2 |
| 23 | 0 | 184 | 11 | 0 | 359 |
| | 0.5 NBL 17 17 0 Stop - 0 ,# 0 0 74 2 23 | 0.5 NBL NBR 17 0 17 0 17 0 0 0 Stop Stop Stop Stop - None 0 - ,# 0 - 0 - 74 74 2 2 23 0 | 0.5 NBL NBR SET 17 0 136 17 0 136 17 0 136 0 0 0 Stop Stop Free None - 0 - ,# 0 - 0 - ,# 0 - 0 - 0 - ,# 0 - 0 - 0 - 10 0 - 0 - 0 - 10 0 - 0 - 10 0 - 10 0 - 10 136 0 - 136 0 - 14 0 - 14 14 14 14 14 14 14 14 14 14 | 0.5 NBL NBR SET SER 17 0 136 8 17 0 136 8 17 0 136 8 17 0 136 8 0 0 0 0 Stop Stop Free Free None - None - 0 - 0 - # 0 - 0 - # 0 - 0 - 74 74 74 74 2 2 4 4 23 0 184 11 | 0.5 NBL NBR SET SER NWL 17 0 136 8 0 17 0 136 8 0 17 0 136 8 0 17 0 136 8 0 17 0 136 8 0 0 0 0 0 0 0 Stop Stop Free Free Free None - None - - 0 - 0 - - - # 0 - 0 - - - # 0 - 0 - - - # 0 - 0 - - - # 0 - 0 - - - # 1 0 184 11 0 |

| Major/Minor | Minor1 | Maj | jor1 | Maj | or2 | |
|----------------------|--------|-----|------|-----|-----|---|
| Conflicting Flow All | 549 | - | 0 | 0 | - | - |
| Stage 1 | 190 | - | - | - | - | - |
| Stage 2 | 359 | - | - | - | - | - |
| Critical Hdwy | 6.42 | - | - | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | - | - | - | - | - |
| Pot Cap-1 Maneuver | 497 | 0 | - | - | 0 | - |
| Stage 1 | 842 | 0 | - | - | 0 | - |
| Stage 2 | 707 | 0 | - | - | 0 | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | r 497 | - | - | - | - | - |
| Mov Cap-2 Maneuver | r 497 | - | - | - | - | - |
| Stage 1 | 842 | - | - | - | - | - |
| Stage 2 | 707 | - | - | - | - | - |
| | | | | | | |

| Approach | NB | SE | NW |
|----------------------|------|----|----|
| HCM Control Delay, s | 12.6 | 0 | 0 |
| HCMLOS | В | | |

| Vinor Lane/Major Mvmt | NBLn1 | NWT | SET | SER |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 497 | - | - | - |
| HCM Lane V/C Ratio | 0.046 | - | - | - |
| HCM Control Delay (s) | 12.6 | - | - | - |
| HCM Lane LOS | В | - | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - |

| Intersection | | | | | | |
|------------------------|--------|------|--------|------|--------|------|
| Int Delay, s/veh | 3.8 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | 1 | • | el 👘 | | Y | |
| Traffic Vol, veh/h | 4 | 151 | 276 | 139 | 121 | 17 |
| Future Vol, veh/h | 4 | 151 | 276 | 139 | 121 | 17 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 50 | - | - | - | 0 | - |
| Veh in Median Storage | e, # - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 75 | 75 | 75 | 75 | 75 | 75 |
| Heavy Vehicles, % | 6 | 6 | 3 | 3 | 2 | 2 |
| Mvmt Flow | 5 | 201 | 368 | 185 | 161 | 23 |
| | | | | | | |
| Major/Minor | Maior1 | 1 | Maior2 | 1 | Minor2 | |

| Conflicting Flow All | 553 | 0 | - | 0 | 672 | 461 |
|--------------------------|-------|----------|------|-----|-------|----------|
| Stage 1 | - | - | - | - | 461 | - |
| Stage 2 | - | - | - | - | 211 | - |
| Critical Hdwy | 4.16 | - | - | - | 6.42 | 6.22 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - |
| Follow-up Hdwy | 2.254 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 997 | - | - | - | 421 | 600 |
| Stage 1 | - | - | - | - | 635 | - |
| Stage 2 | - | - | - | - | 824 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 997 | - | - | - | 419 | 600 |
| Mov Cap-2 Maneuver | · _ | - | - | - | 419 | - |
| Stage 1 | - | - | - | - | 632 | - |
| Stage 2 | - | - | - | - | 824 | - |
| | | | | | | |
| | | | 14/5 | | | |
| Approach | EB | | WB | | SB | |
| HCM Control Delay, s | 0.2 | | 0 | | 19.2 | |
| HCM LOS | | | | | С | |
| | | | | | | |
| Minor Lane/Major Myr | nt | FBI | FRT | WRT | WBR | SBI n1 |
| Capacity (vob/b) | in | 007 | | | | /35 |
| | | 997 | - | - | - | 400 |
| HCM Control Dolou (a | .) | 0.005 | - | - | - | 10.2 |
| HCM Long LOS |) | 0.0 A | - | - | - | 19.2 |
| HOM OF the Office Office | | A | - | - | - | 0 2.4 |
| | 1) | U | - | - | - | Z. I |

| Intersection | |
|------------------|------|
| Int Delay, s/veh | 21.3 |

| Int Delay, s/veh | |
|------------------|--|
|------------------|--|

| Movement | FBI | FBT | FBR | WBI | WBT | WBR | NBI | NBT | NBR | SBI | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|-------|------|----------|------|-------|
| Lane Configurations | | ¢ | LBIX | 3 | 1 | | 1102 | | | <u> </u> | 4 | 0.0.1 |
| Traffic Vol, veh/h | 0 | 182 | 90 | 75 | 277 | 0 | 0 | 0 | 0 | 223 | 1 | 138 |
| Future Vol, veh/h | 0 | 182 | 90 | 75 | 277 | 0 | 0 | 0 | 0 | 223 | 1 | 138 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 225 | - | - | - | - | - | 25 | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, % | 4 | 4 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 |
| Mvmt Flow | 0 | 239 | 118 | 99 | 364 | 0 | 0 | 0 | 0 | 293 | 1 | 182 |

| Major/Minor I | Major1 | | Ν | /lajor2 | | | | Minor2 | | | |
|-----------------------|--------|-----|-----|---------|-----|-------|-------|--------|-------|-------|--|
| Conflicting Flow All | - | 0 | 0 | 357 | 0 | 0 | | 860 | 919 | 364 | |
| Stage 1 | - | - | - | - | - | - | | 562 | 562 | - | |
| Stage 2 | - | - | - | - | - | - | | 298 | 357 | - | |
| Critical Hdwy | - | - | - | 4.12 | - | - | | 6.41 | 6.51 | 6.21 | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | | 5.41 | 5.51 | - | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | | 5.41 | 5.51 | - | |
| Follow-up Hdwy | - | - | - | 2.218 | - | - | | 3.509 | 4.009 | 3.309 | |
| Pot Cap-1 Maneuver | 0 | - | - | 1202 | - | 0 | | 328 | 272 | 683 | |
| Stage 1 | 0 | - | - | - | - | 0 | | 573 | 511 | - | |
| Stage 2 | 0 | - | - | - | - | 0 | | 755 | 630 | - | |
| Platoon blocked, % | | - | - | | - | | | | | | |
| Mov Cap-1 Maneuver | - | - | - | 1202 | - | - | | 301 | 0 | 683 | |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | | 301 | 0 | - | |
| Stage 1 | - | - | - | - | - | - | | 573 | 0 | - | |
| Stage 2 | - | - | - | - | - | - | | 693 | 0 | - | |
| | | | | | | | | | | | |
| Approach | EB | | | WB | | | | SE | | | |
| HCM Control Delay, s | 0 | | | 1.8 | | | | 56.4 | | | |
| HCM LOS | | | | | | | | F | : | | |
| | | | | | | | | | | | |
| Minor Lane/Major Mvm | nt | EBT | EBR | WBL | WBT | SBLn1 | SBLn2 | | | | |
| Capacity (veh/h) | | - | - | 1202 | - | 301 | 683 | | | | |
| HCM Lane V/C Ratio | | - | - | 0.082 | - | 0.975 | 0.268 | | | | |
| HCM Control Delay (s) | | _ | _ | 83 | _ | 83.9 | 12.2 | | | | |

| | HCM Control Delay (s) - | - | 8.3 | - | 83.9 | 12.2 |
|------------------------------------|-------------------------|---|-----|---|------|------|
| ICM Lane LOS A - F B | HCM Lane LOS - | - | А | - | F | В |
| ICM 95th %tile Q(veh) 0.3 - 10 1.1 | HCM 95th %tile Q(veh) - | - | 0.3 | - | 10 | 1.1 |

| Intersection | | | | | | | | | | | | |
|------------------------|-------|------|------|------|------|------|------|------|------|------|-------|------|
| Int Delay, s/veh | 3.2 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ٦ | 1 | | | ef 👘 | | ٦ | ef 👘 | | | | |
| Traffic Vol, veh/h | 82 | 323 | 0 | 0 | 299 | 268 | 53 | 3 | 82 | 0 | 0 | 0 |
| Future Vol, veh/h | 82 | 323 | 0 | 0 | 299 | 268 | 53 | 3 | 82 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 250 | - | - | - | - | - | 50 | - | - | - | - | - |
| Veh in Median Storage | , # - | 0 | - | - | 0 | - | - | 0 | - | - | 16965 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 2 | 2 | 2 |
| Mvmt Flow | 104 | 409 | 0 | 0 | 378 | 339 | 67 | 4 | 104 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | |
|-----------------------|--------|-------|-------|--------|-----|-----|--------|------|-----|--|
| Conflicting Flow All | 717 | 0 | - | - | - | 0 | 1165 | 1334 | 409 | |
| Stage 1 | - | - | - | - | - | - | 617 | 617 | - | |
| Stage 2 | - | - | - | - | - | - | 548 | 717 | - | |
| Critical Hdwy | 4.12 | - | - | - | - | - | 6.4 | 6.5 | 6.2 | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.4 | 5.5 | - | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.4 | 5.5 | - | |
| Follow-up Hdwy | 2.218 | - | - | - | - | - | 3.5 | 4 | 3.3 | |
| Pot Cap-1 Maneuver | 884 | - | 0 | 0 | - | - | 217 | 155 | 647 | |
| Stage 1 | - | - | 0 | 0 | - | - | 542 | 484 | - | |
| Stage 2 | - | - | 0 | 0 | - | - | 583 | 437 | - | |
| Platoon blocked, % | | - | | | - | - | | | | |
| Mov Cap-1 Maneuver | 884 | - | - | - | - | - | 191 | 0 | 647 | |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 191 | 0 | - | |
| Stage 1 | - | - | - | - | - | - | 478 | 0 | - | |
| Stage 2 | - | - | - | - | - | - | 583 | 0 | - | |
| | | | | | | | | | | |
| Approach | EB | | | WB | | | NB | | | |
| HCM Control Delay, s | 1.9 | | | 0 | | | 20.1 | | | |
| HCM LOS | | | | | | | С | | | |
| | | | | | | | | | | |
| Minor Lane/Major Mvn | nt | NBLn1 | NBLn2 | EBL | EBT | WBT | WBR | | | |
| Capacity (veh/h) | | 191 | 647 | 884 | - | - | - | | | |
| HCM Lane V/C Ratio | | 0.351 | 0.166 | 0.117 | - | - | - | | | |
| HCM Control Delay (s) |) | 33.7 | 11.7 | 9.6 | - | - | - | | | |
| HCM Lane LOS | | D | В | А | - | - | - | | | |
| HCM 95th %tile Q(veh |) | 1.5 | 0.6 | 0.4 | - | - | - | | | |

| | → | \mathbf{r} | 1 | - | 1 | 1 |
|--------------------------------|----------|--------------|------|----------|-------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | • | 1 | 5 | • | 5 | 1 |
| Traffic Volume (veh/h) | 151 | 254 | 47 | 270 | 297 | 15 |
| Future Volume (veh/h) | 151 | 254 | 47 | 270 | 297 | 15 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A pbT) | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1885 | 1885 | 1870 | 1870 | 1885 | 1885 |
| Adj Flow Rate, veh/h | 204 | 0 | 64 | 365 | 401 | 0 |
| Peak Hour Factor | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |
| Percent Heavy Veh, % | 1 | 1 | 2 | 2 | 1 | 1 |
| Cap, veh/h | 712 | | 297 | 1122 | 479 | |
| Arrive On Green | 0.38 | 0.00 | 0.17 | 0.60 | 0.27 | 0.00 |
| Sat Flow, veh/h | 1885 | 1598 | 1781 | 1870 | 1795 | 1598 |
| Grp Volume(v) veh/h | 204 | 0 | 64 | 365 | 401 | 0 |
| Grn Sat Flow(s) veh/h/ln | 1885 | 1598 | 1781 | 1870 | 1795 | 1598 |
| O Serve(a, s) s | 6.8 | 0.0 | 2.8 | 87 | 19.0 | 0.0 |
| Cvcle O Clear(a, c) s | 6.8 | 0.0 | 2.0 | 8.7 | 19.0 | 0.0 |
| Pron In Lane | 0.0 | 1 00 | 1 00 | 0.1 | 1 00 | 1 00 |
| Lane Grn Can(c) veh/h | 712 | 1.00 | 297 | 1122 | 479 | 1.00 |
| V/C Ratio(X) | 0.29 | | 0.22 | 0.33 | 0.84 | |
| Avail Cap(c, a) veh/h | 712 | | 297 | 1122 | 479 | |
| HCM Platoon Ratio | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 |
| Unstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d) s/yeb | 19.5 | 0.00 | 32.4 | 8.0 | 31.00 | 0.00 |
| Incr Delay (d2) s/veh | 10.0 | 0.0 | 1.7 | 0.5 | 15.9 | 0.0 |
| Initial \cap Delay(d3) eluph | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfO(50%) veh/lp | 3.0 | 0.0 | 1.3 | 3.4 | 0.0 | 0.0 |
| Unsig Movement Delay, shud | 5.0 h | 0.0 | 1.5 | 3.4 | 9.9 | 0.0 |
| InGro Delay(d) shuch | 20 5 | 0.0 | 3/1 | 0.7 | 171 | 0.0 |
| LINGIP Delay(u), 5/Vell | 20.5 | 0.0 | J4.1 | 9.1 A | 47.1 | 0.0 |
| | 004 | ٨ | U | A 400 | 404 | ٨ |
| Approach Vol, ven/n | 204 | A | | 429 | 401 | A |
| Approach Delay, s/veh | 20.5 | | | 13.4 | 47.1 | |
| Approach LOS | С | | | В | D | |
| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 |
| Phs Duration (G+Y+Rc), s | | 60.0 | | 30.0 | 20.0 | 40.0 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 5.0 | 6.0 |
| Max Green Setting (Gmax), s | | 54.0 | | 24.0 | 15.0 | 34.0 |
| Max Q Clear Time (g c+l1), s | | 10.7 | | 21.0 | 4.8 | 8.8 |
| Green Ext Time (p_c), s | | 6.4 | | 0.5 | 0.1 | 2.7 |
| Intersection Summarv | | | | | | |
| HCM 6th Ctrl Delay | | | 27.0 | | | |
| HCM 6th LOS | | | 21.3 | | | |
| | | | U | | | |

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

| | ≯ | \mathbf{F} | 1 | 1 | Ŧ | 1 | | | |
|--------------------------------|-----------|--------------|-------|-------|------------|------------------|----|------|--|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR | | | |
| Lane Configurations | | 1 | ካካ | ** | ** | 1 | | | |
| Traffic Volume (vph) | 0 | 203 | 101 | 971 | 1078 | 9 | | | |
| Future Volume (vph) | 0 | 203 | 101 | 971 | 1078 | 9 | | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | | |
| Total Lost time (s) | | 4.0 | 6.0 | 4.0 | 7.0 | 7.0 | | | |
| Lane Util. Factor | | 1.00 | 0.97 | 0.95 | 0.95 | 1.00 | | | |
| Frpb. ped/bikes | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Frt | | 0.86 | 1.00 | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd, Flow (prot) | | 1591 | 3099 | 3195 | 3406 | 1524 | | | |
| Flt Permitted | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd, Flow (perm) | | 1591 | 3099 | 3195 | 3406 | 1524 | | | |
| Peak-hour factor PHF | 0 94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | | | |
| Adi Flow (vph) | 0.04 | 216 | 107 | 1033 | 1147 | 10 | | | |
| RTOR Reduction (vnh) | 0 | 0 | 0 | 000 | 0 | 2 | | | |
| Lane Group Flow (vph) | 0 | 216 | 107 | 1033 | 1147 | 8 | | | |
| Confl Peds (#/hr) | U | 1 | 107 | 1000 | 1171 | U | | | |
| Heavy Vehicles (%) | 2% | 2% | 13% | 13% | 6% | 6% | | | |
| | 270 | Eroo | Drot | NIA | NIA | Borm | | | |
| Protected Phases | | TICC | 1 | Eroo | 2 | r enn | | | |
| Protected Phases | | Eroo | 1 | Fiee | 2 | 2 | | | |
| Actuated Groop G (c) | | 100.0 | 0.2 | 100.0 | 77.8 | 2 77 8 | | | |
| Effective Green, G (S) | | 100.0 | 9.2 | 100.0 | 77.9 | 77.8 | | | |
| Actuated a/C Patio | | 1 00.0 | 9.2 | 1.00 | 0.70 | 0.79 | | | |
| Clearance Time (a) | | 1.00 | 0.09 | 1.00 | 0.70 | 0.76 | | | |
| Vehicle Extension (s) | | | 3.0 | | 7.0 5.0 | 7.0 5.0 | | | |
| | | 1501 | 3.0 | 2405 | 0040 | 1105 | | | |
| Lane Grp Cap (vpn) | | 1591 | 200 | 3195 | 2049 | 1100 | | | |
| V/S Ratio Prot | | 0.44 | 0.03 | 0.32 | CU.34 | 0.04 | | | |
| v/s Ratio Perm | | 0.14 | 0.00 | 0.00 | 0.40 | 0.01 | | | |
| V/C Katio | | 0.14 | 0.38 | 0.32 | 0.43 | 0.01 | | | |
| Uniform Delay, d'I | | 0.0 | 42.7 | 0.0 | 3.7 | 2.5 | | | |
| Progression Factor | | 1.00 | 0.62 | 1.00 | 0.18 | 0.02 | | | |
| Incremental Delay, d2 | | 0.2 | 0.8 | 0.3 | 0.5 | 0.0 | | | |
| Delay (s) | | 0.2 | 27.4 | 0.3 | 1.1 | 0.1 | | | |
| Level of Service | 0.0 | A | C | A | A | A | | | |
| Approach Delay (s) | 0.2 | | | 2.8 | 1.1 | | | | |
| Approach LUS | A | | | A | A | | | | |
| Intersection Summary | | | | | | | | | |
| HCM 2000 Control Delay | | | 1.8 | Н | CM 2000 | Level of Service | ce | A | |
| HCM 2000 Volume to Capac | ity ratio | | 0.44 | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | S | um of lost | t time (s) | | 13.0 | |
| Intersection Capacity Utilizat | ion | | 53.5% | IC | U Level o | of Service | | А | |
| Analysis Period (min) | | | 15 | | | | | | |

c Critical Lane Group

| | ٭ | - | $\mathbf{\hat{z}}$ | 4 | + | * | 1 | Ť | ۲ | 1 | ŧ | - |
|--------------------------------|------------|------|--------------------|------|------------|------------|---------|----------|-----------|------|----------|-------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ľ | | 1 | | | | ľ | el el | | | † | 1 |
| Traffic Volume (vph) | 170 | 0 | 373 | 0 | 0 | 0 | 291 | 912 | 0 | 0 | 789 | 139 |
| Future Volume (vph) | 170 | 0 | 373 | 0 | 0 | 0 | 291 | 912 | 0 | 0 | 789 | 139 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 6.5 | | 6.5 | | | | 6.5 | 6.5 | | | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | | 0.85 | | | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | | 1.00 | | | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1752 | | 1463 | | | | 1583 | 1667 | | | 1673 | 1498 |
| Flt Permitted | 0.95 | | 1.00 | | | | 0.08 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1752 | | 1463 | | | | 140 | 1667 | | | 1673 | 1498 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 183 | 0 | 401 | 0 | 0 | 0 | 313 | 981 | 0 | 0 | 848 | 149 |
| RTOR Reduction (vph) | 0 | 0 | 53 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 |
| Lane Group Flow (vph) | 183 | 0 | 348 | 0 | 0 | 0 | 313 | 981 | 0 | 0 | 848 | 103 |
| Confl. Peds. (#/hr) | | | | | | | 1 | | | | | 1 |
| Confl. Bikes (#/hr) | | | | | | | | | | | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 0% | 0% | 0% | 14% | 14% | 14% | 6% | 6% | 6% |
| Turn Type | Prot | | pt+ov | | | | pm+pt | NA | | | NA | pm+ov |
| Protected Phases | 4 | | . 14 | | | | | 16 | | | 2 | . 4 |
| Permitted Phases | | | 4 | | | | 16 | | | | | 2 |
| Actuated Green, G (s) | 22.1 | | 63.7 | | | | 116.7 | 116.7 | | | 75.1 | 97.2 |
| Effective Green, g (s) | 22.1 | | 63.7 | | | | 116.7 | 116.7 | | | 75.1 | 97.2 |
| Actuated g/C Ratio | 0.15 | | 0.42 | | | | 0.77 | 0.77 | | | 0.49 | 0.64 |
| Clearance Time (s) | 6.5 | | | | | | 6.5 | | | | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.5 | | | | | | 3.0 | | | | 6.0 | 3.5 |
| Lane Grp Cap (vph) | 255 | | 613 | | | | 441 | 1281 | | | 827 | 1023 |
| v/s Ratio Prot | c0.10 | | 0.24 | | | | 0.16 | c0.59 | | | c0.51 | 0.01 |
| v/s Ratio Perm | | | | | | | 0.38 | | | | | 0.05 |
| v/c Ratio | 0.72 | | 0.57 | | | | 0.71 | 0.77 | | | 1.03 | 0.10 |
| Uniform Delay, d1 | 61.9 | | 33.5 | | | | 42.5 | 9.9 | | | 38.4 | 10.5 |
| Progression Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 9.6 | | 1.2 | | | | 5.2 | 2.8 | | | 37.9 | 0.1 |
| Delay (s) | 71.4 | | 34.8 | | | | 47.7 | 12.7 | | | 76.3 | 10.5 |
| Level of Service | E | | С | | | | D | В | | | E | В |
| Approach Delay (s) | | 46.3 | | | 0.0 | | | 21.1 | | | 66.4 | |
| Approach LOS | | D | | | А | | | С | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Dolay | | | 12.0 | | CM 2000 | Loval of | Sonvico | | | | | |
| HCM 2000 Volume to Conce | city ratio | | 42.0 | N | | Level OI | Genvice | | U | | | |
| Actuated Cycle Length (c) | | | 151.92 | C. | um of loci | t time (c) | | | 10.5 | | | |
| Intersection Canacity Litiliza | tion | | 81.2% | | | of Service | 2 | | 19.5 D | | | |
| Analysis Period (min) | | | 15 | iC. | | | , | | U | | | |
| | | | 10 | | | | | | | | | |

c Critical Lane Group

| | ≯ | \mathbf{F} | 1 | 1 | Ŧ | ~ |
|------------------------------|------|--------------|---------|------|------|---------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ካካ | 1 | | *** | 44 | |
| Traffic Volume (veh/h) | 95 | 905 | 0 | 1454 | 1067 | 0 |
| Future Volume (veh/h) | 95 | 905 | 0 | 1454 | 1067 | 0 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1796 | 1796 | 0 | 1781 | 1826 | 0 |
| Adj Flow Rate, veh/h | 104 | 0 | 0 | 1598 | 1173 | 0 |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Percent Heavy Veh, % | 7 | 7 | 0 | 8 | 5 | 0 |
| Cap, veh/h | 168 | | 0 | 4034 | 2878 | 0 |
| Arrive On Green | 0.05 | 0.00 | 0.00 | 0.83 | 0.83 | 0.00 |
| Sat Flow, veh/h | 3319 | 1522 | 0 | 5184 | 3652 | 0 |
| Grp Volume(v). veh/h | 104 | 0 | 0 | 1598 | 1173 | 0 |
| Grp Sat Flow(s).veh/h/ln | 1659 | 1522 | 0 | 1621 | 1735 | 0 |
| Q Serve(a s), s | 3.1 | 0.0 | 0.0 | 8.3 | 8.7 | 0.0 |
| Cycle Q Clear(a c), s | 3.1 | 0.0 | 0.0 | 8.3 | 8.7 | 0.0 |
| Prop In Lane | 1.00 | 1.00 | 0.00 | 5.5 | | 0.00 |
| Lane Grp Cap(c), veh/h | 168 | | 0 | 4034 | 2878 | 0 |
| V/C Ratio(X) | 0.62 | | 0.00 | 0.40 | 0.41 | 0.00 |
| Avail Cap(c_a), veh/h | 896 | | 0 | 4034 | 2878 | 0 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d) s/veh | 46.5 | 0.0 | 0.0 | 22 | 22 | 0.0 |
| Incr Delay (d2), s/veh | 37 | 0.0 | 0.0 | 0.3 | 0.4 | 0.0 |
| Initial O Delay(d3) s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfO(50%) veh/ln | 1.3 | 0.0 | 0.0 | 1.2 | 14 | 0.0 |
| Unsig Movement Delay s/ve | h | 0.0 | 0.0 | 1.2 | 1.4 | 0.0 |
| InGrn Delay(d) s/veh | 50.2 | 0.0 | 0.0 | 25 | 26 | 0.0 |
| | D | 0.0 | Δ | Δ | Δ | Δ |
| Approach Vol. veh/h | 10/ | ٨ | <u></u> | 1508 | 1173 | <u></u> |
| Approach Delay, s/yeh | 50.2 | Л | | 2.5 | 26 | |
| Approach LOS | JU.Z | | | 2.5 | 2.0 | |
| Apploach LOS | U | | | A | A | |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), s | | 88.9 | | 11.1 | | 88.9 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | ; | 61.0 | | 27.0 | | 61.0 |
| Max Q Clear Time (g_c+l1), s | 5 | 10.7 | | 5.1 | | 10.3 |
| Green Ext Time (p_c), s | | 22.4 | | 0.3 | | 32.2 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 4.3 | | | |
| HCM 6th LOS | | | Δ | | | |
| | | | А | | | |

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

| ¥ | | * | 1 | 1 | 1 | Ŧ |
|-----------------------------|----------|-----------|------|------|------|-----------|
| Movement WF | BL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | 5 | 11 | 441 | | | *** |
| Traffic Volume (veh/h) 50 | 04 | 508 | 680 | 0 | 0 | 1182 |
| Future Volume (veh/h) 50 | 04 | 508 | 680 | 0 | 0 | 1182 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A pbT) 1.0 | 00 | 1.00 | | 1.00 | 1.00 | |
| Parking Bus, Adj 1.0 | 00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach N | No | | No | | | No |
| Adj Sat Flow, veh/h/ln 172 | 22 | 1722 | 1767 | 0 | 0 | 1841 |
| Adj Flow Rate, veh/h 54 | 48 | 552 | 739 | 0 | 0 | 1285 |
| Peak Hour Factor 0.9 | 92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 12 | 12 | 9 | 0 | 0 | 4 |
| Cap, veh/h 83 | 39 | 677 | 2925 | 0 | 0 | 3047 |
| Arrive On Green 0.2 | 26 | 0.26 | 0.61 | 0.00 | 0.00 | 0.61 |
| Sat Flow, veh/h 318 | 82 | 2569 | 5141 | 0 | 0 | 5356 |
| Grp Volume(v), veh/h 54 | 48 | 552 | 739 | 0 | 0 | 1285 |
| Grp Sat Flow(s).veh/h/ln159 | 91 | 1284 | 1608 | Ō | 0 | 1675 |
| Q Serve(q s), s 15 | 5.3 | 20.2 | 7.1 | 0.0 | 0.0 | 13.5 |
| Cycle Q Clear(a c), s 15 | 5.3 | 20.2 | 7.1 | 0.0 | 0.0 | 13.5 |
| Prop In Lane 1.(| 00 | 1.00 | | 0.00 | 0.00 | |
| Lane Grp Cap(c), veh/h 83 | 39 | 677 | 2925 | 0 | 0 | 3047 |
| V/C Ratio(X) | 65 | 0.82 | 0.25 | 0.00 | 0.00 | 0.42 |
| Avail Cap(c, a) veh/h 114 | 45 | 925 | 2925 | 0.00 | 0.00 | 3047 |
| HCM Platoon Ratio 1 (| 00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) 1 (| 00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| Uniform Delay (d) s/veb 32 | 8 8 | 34.5 | 91 | 0.0 | 0.0 | 10.4 |
| Incr Delay (d2) s/veh | 9 | 4 1 | 0.2 | 0.0 | 0.0 | 0.4 |
| Initial Q Delay(d3) s/veh 0 | 0 (| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfO(50%) veh/lr5 | 5.8 | 6.4 | 2.3 | 0.0 | 0.0 | 4 5 |
| Unsig Movement Delay s/ | veh | J.7 | 2.0 | 0.0 | 0.0 | -1.0 |
| InGrn Delay(d) s/veh 33 | 36 | 38.7 | 94 | 0.0 | 0.0 | 10.8 |
| LinGrn LOS | С | оо.7 П | Δ | Δ | Δ | R |
| Approach Vol. voh/h 110 | 00 | U | 720 | ~ | ~ | 1295 |
| Approach Delay shot 26 | 2 | | 01 | | | 1200 |
| Approach LOS |).Z D | | 9.4 | | | 10.0 D |
| Approach LOS | U | | A | | | D |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), s | | 66.6 | | 33.4 | | 66.6 |
| Change Period (Y+Rc), s | | 6.0 | | 7.0 | | 6.0 |
| Max Green Setting (Gmax) | , S | 51.0 | | 36.0 | | 51.0 |
| Max Q Clear Time (g_c+I1) |), S | 15.5 | | 22.2 | | 9.1 |
| Green Ext Time (p_c), s | | 30.2 | | 4.2 | | 21.8 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 19.4 | | | |
| HCM 6th LOS | | | В | | | |

۲ t ∢ Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR Lane Configurations 4 ٦ *** 1 朴朴ኈ đ 1 ٦ Traffic Volume (veh/h) 143 0 177 16 999 1187 2 5 1 77 19 96 Future Volume (veh/h) 5 1 16 143 0 77 19 999 177 96 1187 2 Initial Q (Qb), veh 0 0 0 0 0 0 0 0 0 0 0 0 Ped-Bike Adj(A_pbT) 1.00 0.98 1.00 1.00 1.00 1.00 1.00 1.00 Parking Bus, Adj 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Work Zone On Approach No No No No 1707 Adj Sat Flow, veh/h/ln 1900 1826 1900 1900 1796 1796 1796 1707 1826 1826 1707 Adj Flow Rate, veh/h 5 17 154 0 83 20 1074 0 103 1276 1 2 0.93 Peak Hour Factor 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 Percent Heavy Veh, % 0 0 0 7 7 7 13 13 13 5 5 5 288 2628 132 3180 Cap, veh/h 44 26 74 169 0 35 5 Arrive On Green 0.21 0.00 0.19 0.19 0.21 0.00 0.19 0.02 0.56 0.03 0.20 0.20 Sat Flow, veh/h 0 137 388 513 0 1517 1626 4661 1447 1739 5140 8 Grp Volume(v), veh/h 23 0 0 154 0 83 20 1074 0 103 825 453 Grp Sat Flow(s), veh/h/ln 524 513 0 1517 1626 1554 1447 1739 1662 1824 0 0 0.0 4.7 13.1 5.9 Q Serve(g_s), s 0.0 0.0 0.0 0.0 1.2 0.0 21.5 21.5 Cycle Q Clear(g_c), s 21.0 0.0 4.7 13.1 21.5 21.5 21.0 0.0 0.0 1.2 0.0 5.9 Prop In Lane 0.22 0.74 1.00 1.00 1.00 1.00 1.00 0.00 Lane Grp Cap(c), veh/h 154 288 2628 132 1129 0 0 180 0 35 2056 V/C Ratio(X) 0.15 0.00 0.00 0.86 0.00 0.29 0.58 0.41 0.78 0.40 0.40 Avail Cap(c a), veh/h 154 0 288 325 2628 348 0 0 180 2056 1129 HCM Platoon Ratio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.33 0.33 0.33 Upstream Filter(I) 1.00 0.00 0.00 1.00 0.00 1.00 1.00 1.00 0.00 0.93 0.93 0.93 Uniform Delay (d), s/veh 34.0 43.4 47.9 0.0 0.0 0.0 34.7 48.5 12.4 0.0 23.7 23.7 Incr Delay (d2), s/veh 0.0 0.0 31.4 0.0 0.5 14.2 0.5 0.0 8.8 0.5 1.0 0.4 Initial Q Delay(d3),s/veh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 %ile BackOfQ(50%),veh/lr0.5 0.0 0.0 5.3 0.0 1.8 0.6 4.2 0.0 2.9 10.7 9.6 Unsig. Movement Delay, s/veh LnGrp Delay(d),s/veh 0.0 0.0 74.8 0.0 35.2 62.7 12.8 0.0 56.7 24.3 24.7 34.5 LnGrp LOS С А А Е А D Е В Е С С 23 237 1094 A 1381 Approach Vol, veh/h Approach Delay, s/veh 34.5 61.0 13.7 26.8 Approach LOS С Е В С Timer - Assigned Phs 2 4 5 6 8 Phs Duration (G+Y+Rc), s7.1 67.9 25.0 12.6 62.4 25.0 Change Period (Y+Rc), s 5.0 6.0 6.0 5.0 6.0 6.0 Max Green Setting (Gma20.6 44.0 19.0 20.0 44.0 19.0 Max Q Clear Time (g_c+I13,2s 23.5 23.0 7.9 15.1 23.0 Green Ext Time (p_c), s 0.0 0.0 0.2 0.0 18.3 22.9 Intersection Summary 24.6 HCM 6th Ctrl Delay HCM 6th LOS С

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

| - | ٠ | \mathbf{F} | ٩. | 1 | Ŧ | ~ |
|----------------------------|--------------------------|--------------|------------|-------|------|------|
| Movement E | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | 55 | 1 | 5 | ** | ** | 1 |
| Traffic Volume (veh/h) | 192 | 78 | 74 | 913 | 1040 | 140 |
| Future Volume (veh/h) | 192 | 78 | 74 | 913 | 1040 | 140 |
| Initial Q (Qb) veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A nhT) 1 | 1 00 | 1 00 | 1 00 | v | | 1 00 |
| Parking Bus Adi 1 | 1 00 | 1.00 | 1.00 | 1 00 | 1.00 | 1.00 |
| Work Zone On Annroach | No | 1.00 | 1.00 | No | No | 1.00 |
| Adi Sat Flow veh/h/ln 1 | 781 | 1781 | 1678 | 1678 | 1826 | 1826 |
| Adi Flow Rate veh/h | 209 | 85 | 80 | 992 | 1130 | 152 |
| Peak Hour Factor | 1 92 | 0.92 | 0 92 | 0.92 | 0.92 | 0 92 |
| Percent Heavy Veh % | λ.5Ζ Ω | 0.5Z Q | 15 | 15 | 0.5Z | 0.9Z |
| Can yeh/h | 300 | 129 | 340 | 2/122 | 2372 | 1050 |
| Arrivo On Croon | 300 | 130 | 0.049 | 240Z | 2010 | 0.60 |
| Arrive On Green 0 | J.09 | 0.09 | 0.04 | U./Ŏ | 0.00 | 0.00 |
| Sat Flow, veh/h 32 | 291 | 1510 | 1598 | 3272 | 3561 | 1547 |
| Grp Volume(v), veh/h | 209 | 85 | 80 | 992 | 1130 | 152 |
| Grp Sat Flow(s),veh/h/In16 | 646 | 1510 | 1598 | 1594 | 1735 | 1547 |
| Q Serve(g_s), s | 6.2 | 5.4 | 1.3 | 10.0 | 15.3 | 3.4 |
| Cycle Q Clear(g_c), s | 6.2 | 5.4 | 1.3 | 10.0 | 15.3 | 3.4 |
| Prop In Lane 1 | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | 300 | 138 | 349 | 2482 | 2373 | 1059 |
| V/C Ratio(X) | 0.70 | 0.62 | 0.23 | 0.40 | 0.48 | 0.14 |
| Avail Cap(c, a) veh/h | 823 | 377 | 469 | 2482 | 2373 | 1059 |
| HCM Platoon Ratio 1 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 |
| Linstream Filter(I) 1 | 1 00 | 1.00 | 0.96 | 0.96 | 1.00 | 1.00 |
| Uniform Delay (d) shuch (| 1/1 1 | 1.00 | 5.0 | 3 6 | 7 / | 5.5 |
| Inor Dolay (d2), s/vel14 | י יי .ו יי | 40.0 | 0.2 0.2 | 0.5 | 0.7 | 0.0 |
| Inci Delay (d2), s/ven | 2.9 | 4.4 | 0.3 | 0.0 | 0.7 | 0.3 |
| | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %IIE BackOtQ(50%), veh/li | 12.6 | 2.2 | 0.3 | 2.2 | 4.8 | 1.0 |
| Unsig. Movement Delay, s | s/veh | | | | | |
| LnGrp Delay(d),s/veh 4 | 17.0 | 48.2 | 5.5 | 4.0 | 8.1 | 5.8 |
| LnGrp LOS | D | D | Α | Α | Α | А |
| Approach Vol, veh/h | 294 | | | 1072 | 1282 | |
| Approach Delay, s/veh 4 | 17.3 | | | 4.1 | 7.8 | |
| Approach LOS | D | | | А | A | |
| | - | | | | | |
| Timer - Assigned Phs | 1 | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), s | s9.5 | 75.4 | | 15.1 | | 84.9 |
| Change Period (Y+Rc), s | 5.0 | 7.0 | | 6.0 | | 7.0 |
| Max Green Setting (Gma) | k2,.G | 45.0 | | 25.0 | | 62.0 |
| Max Q Clear Time (q c+l | 13,35 | 17.3 | | 8.2 | | 12.0 |
| Green Ext Time (p c) s | 0.1 | 23.7 | | 1.0 | | 33.8 |
| | | | | | | |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 10.7 | | | |
| HCM 6th LOS | | | В | | | |

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | | | 4 | | | f, | | | र्च | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 18 | 0 | 9 | 0 | 1024 | 58 | 28 | 855 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 18 | 0 | 9 | 0 | 1024 | 58 | 28 | 855 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 4 | 4 | 4 | 13 | 13 | 13 | 6 | 6 | 6 |
| Mvmt Flow | 0 | 0 | 0 | 20 | 0 | 10 | 0 | 1151 | 65 | 31 | 961 | 0 |

| Major/Minor | Mino | r1 | 1 | Major1 | | I | Major2 | | | |
|-----------------------|------------|-----------------------|-------|--------|---|---|--------|---|---|--|
| Conflicting Flow All | 22 | 07 2207 | 1184 | - | 0 | 0 | 1216 | 0 | 0 | |
| Stage 1 | 11 | 34 1184 | | - | - | - | - | - | - | |
| Stage 2 | 10 | 23 1023 | i – | - | - | - | - | - | - | |
| Critical Hdwy | 6. | 14 6.54 | 6.24 | - | - | - | 4.16 | - | - | |
| Critical Hdwy Stg 1 | 5. | 14 5.54 | | - | - | - | - | - | - | |
| Critical Hdwy Stg 2 | 5. | 14 5.54 | | - | - | - | - | - | - | |
| Follow-up Hdwy | 3.5 | 36 4.036 | 3.336 | - | - | - | 2.254 | - | - | |
| Pot Cap-1 Maneuver | | 48 44 | 228 | 0 | - | - | 560 | - | 0 | |
| Stage 1 | 2 | 38 261 | - | 0 | - | - | - | - | 0 | |
| Stage 2 | 3 | 14 311 | - | 0 | - | - | - | - | 0 | |
| Platoon blocked, % | | | | | - | - | | - | | |
| Mov Cap-1 Maneuver | | 42 0 | 228 | - | - | - | 560 | - | - | |
| Mov Cap-2 Maneuver | | 42 0 |) – | - | - | - | - | - | - | |
| Stage 1 | 2 | 38 C | - (| - | - | - | - | - | - | |
| Stage 2 | 3 |)3 (| - (| - | - | - | - | - | - | |
| | | | | | | | | | | |
| Approach | ۷ | /B | | NB | | | SB | | | |
| HCM Control Delay, s | 121 | .4 | | 0 | | | 0.4 | | | |
| HCM LOS | | F | | | | | | | | |
| | | | | | | | | | | |
| Minor Lane/Major Mvmt | NBT NBRWBL | n <mark>1 S</mark> BL | . SBT | | | | | | | |
| Capacity (veh/h) | | 58 560 |) – | | | | | | | |
| HCM Lane V/C Ratio | 0.5 | 23 0.056 | i – | | | | | | | |

| | - | - 0.523 | 0.000 | - | | |
|-----------------------|---|---------|-------|---|--|--|
| HCM Control Delay (s) | - | - 121.4 | 11.8 | 0 | | |
| HCM Lane LOS | - | - F | В | А | | |
| HCM 95th %tile Q(veh) | - | - 2.1 | 0.2 | - | | |

HCM 6th Signalized Intersection Summary 8: MD 201 & Powder Mill Road

| | ≯ | - | $\mathbf{\hat{z}}$ | 4 | + | • | 1 | Ť | 1 | 5 | Ļ | ~ |
|------------------------------|-------|-------|--------------------|----------|------|------|------|------|------|------|------|----------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | 7 | • | 1 | <u> </u> | • | 1 | 7 | • | 1 | ۲ | A12 | |
| Traffic Volume (veh/h) | 217 | 331 | 319 | 71 | 152 | 39 | 329 | 472 | 146 | 86 | 408 | 100 |
| Future Volume (veh/h) | 217 | 331 | 319 | 71 | 152 | 39 | 329 | 472 | 146 | 86 | 408 | 100 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1693 | 1693 | 1693 | 1841 | 1841 | 1841 | 1693 | 1693 | 1693 | 1826 | 1826 | 1826 |
| Adj Flow Rate, veh/h | 244 | 372 | 0 | 80 | 171 | 0 | 370 | 530 | 0 | 97 | 458 | 112 |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Percent Heavy Veh, % | 14 | 14 | 14 | 4 | 4 | 4 | 14 | 14 | 14 | 5 | 5 | 5 |
| Cap, veh/h | 189 | 327 | | 328 | 710 | | 476 | 920 | | 332 | 979 | 238 |
| Arrive On Green | 0.19 | 0.19 | 0.00 | 0.16 | 0.39 | 0.00 | 0.16 | 0.54 | 0.00 | 0.35 | 0.35 | 0.35 |
| Sat Flow, veh/h | 1099 | 1693 | 1434 | 1753 | 1841 | 1560 | 1612 | 1693 | 1434 | 853 | 2768 | 672 |
| Grp Volume(v), veh/h | 244 | 372 | 0 | 80 | 171 | 0 | 370 | 530 | 0 | 97 | 286 | 284 |
| Grp Sat Flow(s),veh/h/ln | 1099 | 1693 | 1434 | 1753 | 1841 | 1560 | 1612 | 1693 | 1434 | 853 | 1735 | 1705 |
| Q Serve(g_s), s | 20.2 | 30.0 | 0.0 | 1.9 | 9.8 | 0.0 | 21.9 | 32.4 | 0.0 | 13.3 | 19.8 | 20.1 |
| Cycle Q Clear(g_c), s | 30.0 | 30.0 | 0.0 | 1.9 | 9.8 | 0.0 | 21.9 | 32.4 | 0.0 | 16.1 | 19.8 | 20.1 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.39 |
| Lane Grp Cap(c), veh/h | 189 | 327 | | 328 | 710 | | 476 | 920 | | 332 | 614 | 603 |
| V/C Ratio(X) | 1.29 | 1.14 | | 0.24 | 0.24 | | 0.78 | 0.58 | | 0.29 | 0.47 | 0.47 |
| Avail Cap(c_a), veh/h | 189 | 327 | | 328 | 710 | | 476 | 920 | | 332 | 614 | 603 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 70.1 | 62.8 | 0.0 | 55.0 | 32.3 | 0.0 | 25.6 | 23.6 | 0.0 | 38.8 | 38.9 | 39.0 |
| Incr Delay (d2), s/veh | 164.1 | 93.0 | 0.0 | 1.8 | 0.8 | 0.0 | 11.8 | 2.6 | 0.0 | 2.2 | 2.5 | 2.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 16.2 | 21.3 | 0.0 | 2.9 | 4.7 | 0.0 | 9.7 | 13.3 | 0.0 | 3.0 | 8.9 | 8.9 |
| Unsig. Movement Delay, s/veh | 1 | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 234.2 | 155.8 | 0.0 | 56.8 | 33.1 | 0.0 | 37.4 | 26.2 | 0.0 | 41.0 | 41.4 | 41.6 |
| LnGrp LOS | F | F | | E | С | | D | С | | D | D | <u> </u> |
| Approach Vol, veh/h | | 616 | А | | 251 | А | | 900 | А | | 667 | |
| Approach Delay, s/veh | | 186.9 | | | 40.7 | | | 30.8 | | | 41.4 | |
| Approach LOS | | F | | | D | | | С | | | D | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 29.5 | 61.0 | 30.0 | 35.0 | | 90.5 | | 65.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 6.0 | 5.0 | * 5 | | 6.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 25.0 | 55.0 | 25.0 | * 30 | | 84.5 | | 59.5 | | | | |
| Max Q Clear Time (g_c+I1), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 74.2 | | | | | | | | | |
| HCM 6th LOS | | | Е | | | | | | | | | |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier. Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | 4 | | | र्भ | 1 | | र्च | 1 | | 4 | |
| Traffic Vol, veh/h | 20 | 2 | 5 | 2 | 1 | 2 | 26 | 551 | 3 | 1 | 600 | 27 |
| Future Vol, veh/h | 20 | 2 | 5 | 2 | 1 | 2 | 26 | 551 | 3 | 1 | 600 | 27 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None |
| Storage Length | - | - | - | - | - | 50 | - | - | 325 | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 22 | 22 | 22 | 0 | 0 | 0 | 17 | 17 | 17 | 9 | 9 | 9 |
| Mvmt Flow | 21 | 2 | 5 | 2 | 1 | 2 | 27 | 574 | 3 | 1 | 625 | 28 |

| Major/Minor | Minor2 | | Ν | Minor1 | | | Major1 | | | Μ | lajor2 | | | |
|----------------------|--------|-------|-------|--------|------|-----|--------|---|---|-----|--------|---|---|--|
| Conflicting Flow All | 1272 | 1272 | 639 | 1273 | 1283 | 574 | 653 | 0 | (|) | 577 | 0 | 0 | |
| Stage 1 | 641 | 641 | - | 628 | 628 | - | - | - | | - | - | - | - | |
| Stage 2 | 631 | 631 | - | 645 | 655 | - | - | - | | - | - | - | - | |
| Critical Hdwy | 7.32 | 6.72 | 6.42 | 7.1 | 6.5 | 6.2 | 4.27 | - | | - | 4.19 | - | - | |
| Critical Hdwy Stg 1 | 6.32 | 5.72 | - | 6.1 | 5.5 | - | - | - | | - | - | - | - | |
| Critical Hdwy Stg 2 | 6.32 | 5.72 | - | 6.1 | 5.5 | - | - | - | | - | - | - | - | |
| Follow-up Hdwy | 3.698 | 4.198 | 3.498 | 3.5 | 4 | 3.3 | 2.353 | - | | - 2 | 2.281 | - | - | |
| Pot Cap-1 Maneuver | 131 | 153 | 442 | 146 | 167 | 522 | 866 | - | | - | 963 | - | - | |
| Stage 1 | 431 | 440 | - | 474 | 479 | - | - | - | | - | - | - | - | |
| Stage 2 | 437 | 444 | - | 464 | 466 | - | - | - | | - | - | - | - | |
| Platoon blocked, % | | | | | | | | - | | - | | - | - | |
| Mov Cap-1 Maneuver | 125 | 146 | 442 | 138 | 159 | 522 | 866 | - | | - | 963 | - | - | |
| Mov Cap-2 Maneuver | 125 | 146 | - | 138 | 159 | - | - | - | | - | - | - | - | |
| Stage 1 | 411 | 439 | - | 452 | 457 | - | - | - | | - | - | - | - | |
| Stage 2 | 414 | 424 | - | 455 | 465 | - | - | - | | - | - | - | - | |
| | | | | | | | | | | | | | | |

| Approach | EB | WB | NB | SB | |
|----------------------|------|------|-----|----|--|
| HCM Control Delay, s | 35.4 | 23.1 | 0.4 | 0 | |
| HCM LOS | E | С | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR I | EBLn1V | VBLn1V | VBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-------|--------|--------|-------|-------|-----|-----|
| Capacity (veh/h) | 866 | - | - | 146 | 144 | 522 | 963 | - | - |
| HCM Lane V/C Ratio | 0.031 | - | - | 0.193 | 0.022 | 0.004 | 0.001 | - | - |
| HCM Control Delay (s) | 9.3 | 0 | - | 35.4 | 30.6 | 11.9 | 8.7 | 0 | - |
| HCM Lane LOS | А | А | - | Е | D | В | А | А | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.7 | 0.1 | 0 | 0 | - | - |

| 19.4 |
|----------|
| <u>^</u> |
| |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR | |
|----------------------------|------|------|------|------|------|------|--|
| Lane Configurations | | र्स | et | | ¥ | | |
| Traffic Vol, veh/h | 5 | 595 | 241 | 5 | 8 | 2 | |
| Future Vol, veh/h | 5 | 595 | 241 | 5 | 8 | 2 | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 0 | 0 | |
| Mvmt Flow | 6 | 684 | 277 | 6 | 9 | 2 | |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | |
| Approach | EB | | WB | | SB | | |
| Opposing Approach | WB | | EB | | | | |
| Opposing Lanes | 1 | | 1 | | 0 | | |
| Conflicting Approach Left | SB | | | | WB | | |
| Conflicting Lanes Left | 1 | | 0 | | 1 | | |
| Conflicting Approach Right | | | SB | | EB | | |
| Conflicting Lanes Right | 0 | | 1 | | 1 | | |
| HCM Control Delay | 23.3 | | 10.3 | | 9.2 | | |
| HCM LOS | С | | В | | А | | |

| Lane | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, % | 1% | 0% | 80% |
| Vol Thru, % | 99% | 98% | 0% |
| Vol Right, % | 0% | 2% | 20% |
| Sign Control | Stop | Stop | Stop |
| Traffic Vol by Lane | 600 | 246 | 10 |
| LT Vol | 5 | 0 | 8 |
| Through Vol | 595 | 241 | 0 |
| RT Vol | 0 | 5 | 2 |
| Lane Flow Rate | 690 | 283 | 11 |
| Geometry Grp | 1 | 1 | 1 |
| Degree of Util (X) | 0.817 | 0.365 | 0.019 |
| Departure Headway (Hd) | 4.266 | 4.645 | 5.993 |
| Convergence, Y/N | Yes | Yes | Yes |
| Сар | 848 | 778 | 596 |
| Service Time | 2.28 | 2.663 | 4.045 |
| HCM Lane V/C Ratio | 0.814 | 0.364 | 0.018 |
| HCM Control Delay | 23.3 | 10.3 | 9.2 |
| HCM Lane LOS | С | В | А |
| HCM 95th-tile Q | 9.1 | 1.7 | 0.1 |

| Intersection | | | | | | |
|--|----------------------|--------------------|-------------------|---------------------|--------------------|-------------------|
| Int Delay, s/veh | 0.6 | | | | | |
| | | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ef – | | | ↑ | - ሽ | |
| Traffic Vol, veh/h | 552 | 44 | 0 | 216 | 27 | 0 |
| Future Vol, veh/h | 552 | 44 | 0 | 216 | 27 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage | e, # 0 | - | - | 0 | 0 | - |
| Grade, % | , 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 84 | 84 | 84 | 84 | 84 | 84 |
| Heavy Vehicles. % | 2 | 2 | 3 | 3 | 2 | 2 |
| Mymt Flow | 657 | 52 | 0 | 257 | 32 | 0 |
| Grade, % Peak Hour Factor Heavy Vehicles, % Mvmt Flow | 84 84 2 657 | - 84 2 52 | - 84 3 0 | 0 84 3 257 | 0 84 2 32 | - 84 2 0 |

| Major/Minor | Major1 | Ма | ijor2 | Ν | /linor1 | | | |
|----------------------|--------|----|-------|---|---------|---|------|--|
| Conflicting Flow All | 0 | 0 | - | - | 940 | - | | |
| Stage 1 | - | - | - | - | 683 | - | | |
| Stage 2 | - | - | - | - | 257 | - | | |
| Critical Hdwy | - | - | - | - | 6.42 | - | | |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - | | |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - | | |
| Follow-up Hdwy | - | - | - | - | 3.518 | - | | |
| Pot Cap-1 Maneuver | - | - | 0 | - | 293 | 0 | | |
| Stage 1 | - | - | 0 | - | 502 | 0 | | |
| Stage 2 | - | - | 0 | - | 786 | 0 | | |
| Platoon blocked, % | - | - | | - | | | | |
| Mov Cap-1 Maneuver | r - | - | - | - | 293 | - | | |
| Mov Cap-2 Maneuver | r - | - | - | - | 293 | - | | |
| Stage 1 | - | - | - | - | 502 | - | | |
| Stage 2 | - | - | - | - | 786 | - | | |
| | | | | | | | | |
| Approach | EB | | WB | | NB | | | |
| HCM Control Delay, s | s 0 | | 0 | | 18.8 | | | |
| HCM LOS | | | | | С | | | |
| | | | | | | | | |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 293 | - | - | - |
| HCM Lane V/C Ratio | 0.11 | - | - | - |
| HCM Control Delay (s) | 18.8 | - | - | - |
| HCM Lane LOS | С | - | - | - |
| HCM 95th %tile Q(veh) | 0.4 | - | - | - |

Intersection

Int Delay, s/veh 17.4 EBL EBT WBT WBR SBL SBR Movement ¥ Lane Configurations ٦ ŧ Þ 469 230 266 Traffic Vol, veh/h 18 135 8 Future Vol, veh/h 18 469 230 135 266 8 0 Conflicting Peds, #/hr 0 0 0 0 0 Sign Control Free Free Free Free Stop Stop RT Channelized -None -None -None Storage Length 50 0 -_ --Veh in Median Storage, # -0 0 -0 -Grade, % 0 0 0 ---Peak Hour Factor 92 92 92 92 92 92 Heavy Vehicles, % 2 2 4 4 2 2 Mvmt Flow 20 510 250 147 289 9

| Major/Minor | Major1 | Ν | /lajor2 | | Minor2 | | |
|----------------------|--------|-------|---------|-----|--------|-------|--|
| Conflicting Flow All | 397 | 0 | - | 0 | 874 | 324 | |
| Stage 1 | - | - | - | - | 324 | - | |
| Stage 2 | - | - | - | - | 550 | - | |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 | |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - | |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - | |
| Follow-up Hdwy | 2.218 | - | - | - | 3.518 | 3.318 | |
| Pot Cap-1 Maneuver | 1162 | - | - | - | 320 | 717 | |
| Stage 1 | - | - | - | - | 733 | - | |
| Stage 2 | - | - | - | - | 578 | - | |
| Platoon blocked, % | | - | - | - | | | |
| Mov Cap-1 Maneuver | 1162 | - | - | - | 315 | 717 | |
| Mov Cap-2 Maneuver | · - | - | - | - | 315 | - | |
| Stage 1 | - | - | - | - | 721 | - | |
| Stage 2 | - | - | - | - | 578 | - | |
| | | | | | | | |
| Approach | FB | | WB | | SB | | |
| HCM Control Delay | 0.3 | | 0 | | 71 | | |
| HCM LOS | 0.0 | | U | | F | | |
| | | | | | | | |
| | | | | | | | |
| Minor Lane/Major Mvi | mt | EBL | EBT | WBI | WBR | SBLn1 | |
| Capacity (veh/h) | | 1162 | - | - | - | 320 | |
| HCM Lane V/C Ratio | | 0.017 | - | - | - | 0.931 | |
| HCM Control Delay (s | 5) | 8.2 | - | - | - | 71 | |
| HCM Lane LOS | | Α | - | - | - | F | |
| HCM 95th %tile Q(vel | n) | 0.1 | - | - | - | 9.3 | |

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | ef 👘 | | ۲ | 1 | | | | | ኘ | eî 👘 | |
| Traffic Vol, veh/h | 0 | 623 | 126 | 125 | 256 | 0 | 0 | 0 | 0 | 254 | 2 | 120 |
| Future Vol, veh/h | 0 | 623 | 126 | 125 | 256 | 0 | 0 | 0 | 0 | 254 | 2 | 120 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 225 | - | - | - | - | - | 25 | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 663 | 134 | 133 | 272 | 0 | 0 | 0 | 0 | 270 | 2 | 128 |

| Major/Minor | Major1 | | 1 | Major2 | | | Min | or2 | | | | |
|----------------------|---------|--------|---------|---------|------------|-----------|---------------|-------|-------|----------|-----------|--|
| Conflicting Flow All | - | 0 | 0 | 797 | 0 0 | | 12 | 268 | 1335 | 272 | | |
| Stage 1 | - | - | - | - | | | Ę | 538 | 538 | - | | |
| Stage 2 | - | - | - | - | | | 7 | 730 | 797 | - | | |
| Critical Hdwy | - | - | - | 4.13 | | | 6 | .42 | 6.52 | 6.22 | | |
| Critical Hdwy Stg 1 | - | - | - | - | | | 5 | .42 | 5.52 | - | | |
| Critical Hdwy Stg 2 | - | - | - | - | | | 5 | .42 | 5.52 | - | | |
| Follow-up Hdwy | - | - | - | 2.227 | | | 3.5 | 518 | 4.018 | 3.318 | | |
| Pot Cap-1 Maneuver | 0 | - | - | 821 | - 0 | | ~ 1 | 186 | 154 | 767 | | |
| Stage 1 | 0 | - | - | - | - 0 | | Ę | 585 | 522 | - | | |
| Stage 2 | 0 | - | - | - | - 0 | | 2 | 177 | 399 | - | | |
| Platoon blocked, % | | - | - | | - | | | | | | | |
| Mov Cap-1 Maneuver | - | - | - | 821 | | | ~ 1 | 156 | 0 | 767 | | |
| Mov Cap-2 Maneuver | - | - | - | - | | | ~ 1 | 156 | 0 | - | | |
| Stage 1 | - | - | - | - | | | Ę | 585 | 0 | - | | |
| Stage 2 | - | - | - | - | | | 2 | 100 | 0 | - | | |
| | | | | | | | | | | | | |
| Approach | EB | | | WB | | | | SB | | | | |
| HCM Control Delay, s | 0 | | | 3.4 | | | 27 | 7.2 | | | | |
| HCM LOS | | | | | | | | F | | | | |
| | | | | | | | | | | | | |
| Minor Lane/Major Mvr | nt | EBT | EBR | WBL | WBT SBLn1 | SBLn2 | | | | | | |
| Capacity (veh/h) | | - | - | 821 | - 156 | 767 | | | | | | |
| HCM Lane V/C Ratio | | - | - | 0.162 | - 1.732 | 0.169 | | | | | | |
| HCM Control Delay (s | ;) | - | - | 10.2 | -\$ 405.2 | 10.6 | | | | | | |
| HCM Lane LOS | , | - | - | В | - F | В | | | | | | |
| HCM 95th %tile Q(veh | ו) | - | - | 0.6 | - 19.5 | 0.6 | | | | | | |
| Notes | | | | | | | | | | | | |
| ~: Volume exceeds ca | apacity | \$: De | lay exc | eeds 30 | 00s +: Con | nputatior | Not Defined * | : All | major | /olume i | n platoon | |

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|----------|----------|------|------|------|------|----------|------|------|------|-------|------|
| Lane Configurations | <u>۲</u> | ↑ | | | 4 | | <u>۲</u> | 4 | | | | |
| Traffic Vol, veh/h | 217 | 629 | 0 | 0 | 309 | 484 | 62 | 3 | 41 | 0 | 0 | 0 |
| Future Vol, veh/h | 217 | 629 | 0 | 0 | 309 | 484 | 62 | 3 | 41 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 250 | - | - | - | - | - | 50 | - | - | - | - | - |
| Veh in Median Storage | , # - | 0 | - | - | 0 | - | - | 0 | - | - | 16965 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 238 | 691 | 0 | 0 | 340 | 532 | 68 | 3 | 45 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | |
|----------------------|--------|--------|----------|----------|-----|--------|---------|---------|--------|--------------------------------|
| Conflicting Flow All | 872 | 0 | - | - | - | 0 | 1773 | 2039 | 691 | |
| Stage 1 | - | - | - | - | - | - | 1167 | 1167 | - | |
| Stage 2 | - | - | - | - | - | - | 606 | 872 | - | |
| Critical Hdwy | 4.12 | - | - | - | - | - | 6.41 | 6.51 | 6.21 | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.41 | 5.51 | - | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.41 | 5.51 | - | |
| Follow-up Hdwy | 2.218 | - | - | - | - | - | 3.509 | 4.009 | 3.309 | |
| Pot Cap-1 Maneuver | 773 | - | 0 | 0 | - | - | 92 | 57 | 446 | |
| Stage 1 | - | - | 0 | 0 | - | - | 297 | 269 | - | |
| Stage 2 | - | - | 0 | 0 | - | - | 546 | 369 | - | |
| Platoon blocked, % | | - | | | - | - | | | | |
| Mov Cap-1 Maneuver | 773 | - | - | - | - | - | ~ 64 | 0 | 446 | |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 64 | 0 | - | |
| Stage 1 | - | - | - | - | - | - | 206 | 0 | - | |
| Stage 2 | - | - | - | - | - | - | 546 | 0 | - | |
| | | | | | | | | | | |
| Approach | EB | | | WB | | | NB | | | |
| HCM Control Delay, s | 3 | | | 0 | | | 146.6 | | | |
| HCM LOS | | | | | | | F | | | |
| | | | | | | | | | | |
| Minor Lane/Major Mvr | nt | NBLn1 | NBLn2 | EBL | EBT | WBT | WBR | | | |
| Capacity (veh/h) | | 64 | 446 | 773 | - | - | - | | | |
| HCM Lane V/C Ratio | | 1.065 | 0.108 | 0.308 | - | - | - | | | |
| HCM Control Delay (s |) | 240.6 | 14.1 | 11.7 | - | - | - | | | |
| HCM Lane LOS | • | F | В | В | - | - | - | | | |
| HCM 95th %tile Q(veh | ו) | 5.3 | 0.4 | 1.3 | - | - | - | | | |
| Notes | | | | | | | | | | |
| ~: Volume exceeds ca | pacity | \$: De | elay exc | ceeds 30 |)0s | +: Com | putatio | n Not D | efined | *: All major volume in platoon |
| | - | \mathbf{r} | 1 | - | 1 | 1 |
|------------------------------|------|--------------|------|------|-------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | • | 1 | 5 | • | ٦ | 1 |
| Traffic Volume (veh/h) | 308 | 355 | 31 | 280 | 549 | 34 |
| Future Volume (veh/h) | 308 | 355 | 31 | 280 | 549 | 34 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1885 | 1885 |
| Adj Flow Rate, veh/h | 350 | 0 | 35 | 318 | 624 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 1 | 1 |
| Cap, veh/h | 701 | | 295 | 1113 | 479 | |
| Arrive On Green | 0.38 | 0.00 | 0.17 | 0.60 | 0.27 | 0.00 |
| Sat Flow, veh/h | 1856 | 1572 | 1767 | 1856 | 1795 | 1598 |
| Grp Volume(v), veh/h | 350 | 0 | 35 | 318 | 624 | 0 |
| Grp Sat Flow(s).veh/h/ln | 1856 | 1572 | 1767 | 1856 | 1795 | 1598 |
| Q Serve(g s), s | 13.0 | 0.0 | 1.5 | 7.4 | 24.0 | 0.0 |
| Cycle Q Clear(q c), s | 13.0 | 0.0 | 1.5 | 7.4 | 24.0 | 0.0 |
| Prop In Lane | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Lane Grp Cap(c), veh/h | 701 | | 295 | 1113 | 479 | |
| V/C Ratio(X) | 0.50 | | 0.12 | 0.29 | 1.30 | |
| Avail Cap(c a), veh/h | 701 | | 295 | 1113 | 479 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 21.5 | 0.0 | 31.9 | 8.7 | 33.0 | 0.0 |
| Incr Delay (d2), s/veh | 2.5 | 0.0 | 0.8 | 0.6 | 151.1 | 0.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/In | 5.9 | 0.0 | 0.7 | 2.8 | 29.9 | 0.0 |
| Unsig. Movement Delay, s/veh | 1 | | | | | |
| LnGrp Delay(d),s/veh | 24.0 | 0.0 | 32.7 | 9.3 | 184.1 | 0.0 |
| LnGrp LOS | С | | С | А | F | |
| Approach Vol, veh/h | 350 | А | | 353 | 624 | А |
| Approach Delay, s/veh | 24.0 | | | 11.7 | 184.1 | |
| Approach LOS | С | | | В | F | |
| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 |
| Phs Duration (G+Y+Rc), s | | 60.0 | | 30.0 | 20.0 | 40.0 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 5.0 | 6.0 |
| Max Green Setting (Gmax), s | | 54.0 | | 24.0 | 15.0 | 34.0 |
| Max Q Clear Time (g_c+I1), s | | 9.4 | | 26.0 | 3.5 | 15.0 |
| Green Ext Time (p_c), s | | 5.4 | | 0.0 | 0.0 | 4.4 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 96.0 | | | |
| HCM 6th LOS | | | F | | | |

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

| | ۶ | \mathbf{r} | 1 | 1 | Ļ | < | | | |
|-----------------------------------|---------|--------------|-------|-------|------------|----------------|----|------|--|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR | | | |
| Lane Configurations | | 1 | ካካ | ** | ** | 1 | | | |
| Traffic Volume (vph) | 0 | 183 | 124 | 1292 | 1051 | 8 | | | |
| Future Volume (vph) | 0 | 183 | 124 | 1292 | 1051 | 8 | | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | | |
| Total Lost time (s) | | 4.0 | 6.0 | 4.0 | 7.0 | 7.0 | | | |
| Lane Util. Factor | | 1.00 | 0.97 | 0.95 | 0.95 | 1.00 | | | |
| Frt | | 0.86 | 1.00 | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | | 1536 | 3303 | 3406 | 3085 | 1380 | | | |
| Flt Permitted | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | | 1536 | 3303 | 3406 | 3085 | 1380 | | | |
| Peak-hour factor, PHF | 0.92 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | | | |
| Adj. Flow (vph) | 0 | 218 | 148 | 1538 | 1251 | 10 | | | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 2 | | | |
| Lane Group Flow (vph) | 0 | 218 | 148 | 1538 | 1251 | 8 | | | |
| Heavy Vehicles (%) | 2% | 7% | 6% | 6% | 17% | 17% | | | |
| Turn Type | | Free | Prot | NA | NA | Perm | | | |
| Protected Phases | | | 1 | Free | 2 | | | | |
| Permitted Phases | | Free | | | | 2 | | | |
| Actuated Green, G (s) | | 100.0 | 10.0 | 100.0 | 77.0 | 77.0 | | | |
| Effective Green, g (s) | | 100.0 | 10.0 | 100.0 | 77.0 | 77.0 | | | |
| Actuated g/C Ratio | | 1.00 | 0.10 | 1.00 | 0.77 | 0.77 | | | |
| Clearance Time (s) | | | 6.0 | | 7.0 | 7.0 | | | |
| Vehicle Extension (s) | | | 3.0 | | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | | 1536 | 330 | 3406 | 2375 | 1062 | | | |
| /s Ratio Prot | | | 0.04 | 0.45 | c0.41 | | | | |
| //s Ratio Perm | | 0.14 | | | | 0.01 | | | |
| v/c Ratio | | 0.14 | 0.45 | 0.45 | 0.53 | 0.01 | | | |
| Uniform Delay, d1 | | 0.0 | 42.4 | 0.0 | 4.4 | 2.7 | | | |
| Progression Factor | | 1.00 | 0.63 | 1.00 | 0.04 | 0.00 | | | |
| Incremental Delay, d2 | | 0.2 | 0.9 | 0.4 | 0.6 | 0.0 | | | |
| Delay (s) | | 0.2 | 27.4 | 0.4 | 0.7 | 0.0 | | | |
| Level of Service | | Α | С | Α | Α | А | | | |
| Approach Delay (s) | 0.2 | | | 2.8 | 0.7 | | | | |
| Approach LOS | Α | | | А | А | | | | |
| Intersection Summary | | | | | | | | | |
| HCM 2000 Control Delay | | | 1.8 | Н | CM 2000 | Level of Servi | се | A | |
| HCM 2000 Volume to Capacity | / ratio | | 0.55 | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | S | um of lost | t time (s) | | 13.0 | |
| Intersection Capacity Utilization | n | | 46.6% | IC | U Level o | of Service | | А | |
| Analysis Period (min) | | | 15 | | | | | | |
| c Critical Lane Group | | | | | | | | | |

| | ≯ | - | $\mathbf{\hat{z}}$ | 4 | + | * | 1 | t | ۲ | 1 | ŧ | - |
|-----------------------------------|-------------|-------|--------------------|------|-------------|------------|---------|-------|------|------|-------|-------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | 5 | | 1 | | | | 5 | 1. | | | * | 1 |
| Traffic Volume (vph) | 109 | 0 | 287 | 0 | 0 | 0 | 544 | 875 | 0 | 0 | 1066 | 207 |
| Future Volume (vph) | 109 | 0 | 287 | 0 | 0 | 0 | 544 | 875 | 0 | 0 | 1066 | 207 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 6.5 | | 6.5 | | | | 6.5 | 6.5 | | | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | | 0.85 | | | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | | 1.00 | | | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1626 | | 1358 | | | | 1687 | 1776 | | | 1529 | 1392 |
| Flt Permitted | 0.95 | | 1.00 | | | | 0.03 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1626 | | 1358 | | | | 54 | 1776 | | | 1529 | 1392 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 128 | 0 | 338 | 0 | 0 | 0 | 640 | 1029 | 0 | 0 | 1254 | 244 |
| RTOR Reduction (vph) | 0 | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| Lane Group Flow (vph) | 128 | 0 | 294 | 0 | 0 | 0 | 640 | 1029 | 0 | 0 | 1254 | 229 |
| Heavy Vehicles (%) | 11% | 11% | 11% | 0% | 0% | 0% | 7% | 7% | 7% | 16% | 16% | 16% |
| Turn Type | Prot | | pt+ov | | | | pm+pt | NA | | | NA | pm+ov |
| Protected Phases | 4 | | . 14 | | | | 1 | 16 | | | 2 | . 4 |
| Permitted Phases | | | 4 | | | | 16 | | | | | 2 |
| Actuated Green, G (s) | 12.5 | | 70.5 | | | | 184.0 | 184.0 | | | 126.0 | 138.5 |
| Effective Green, g (s) | 12.5 | | 70.5 | | | | 184.0 | 184.0 | | | 126.0 | 138.5 |
| Actuated g/C Ratio | 0.06 | | 0.34 | | | | 0.88 | 0.88 | | | 0.60 | 0.66 |
| Clearance Time (s) | 6.5 | | | | | | 6.5 | | | | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.5 | | | | | | 3.0 | | | | 6.0 | 3.5 |
| Lane Grp Cap (vph) | 97 | | 456 | | | | 448 | 1559 | | | 919 | 963 |
| v/s Ratio Prot | c0.08 | | 0.22 | | | | c0.35 | 0.58 | | | 0.82 | 0.01 |
| v/s Ratio Perm | | | | | | | c0.91 | | | | | 0.15 |
| v/c Ratio | 1.32 | | 0.64 | | | | 1.43 | 0.66 | | | 1.36 | 0.24 |
| Uniform Delay, d1 | 98.5 | | 58.9 | | | | 74.6 | 3.7 | | | 41.8 | 14.3 |
| Progression Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 199.1 | | 3.1 | | | | 205.4 | 1.1 | | | 171.1 | 0.2 |
| Delay (s) | 297.6 | | 62.0 | | | | 280.0 | 4.8 | | | 212.8 | 14.4 |
| Level of Service | F | | E | | | | F | А | | | F | В |
| Approach Delay (s) | | 126.7 | | | 0.0 | | | 110.3 | | | 180.5 | |
| Approach LOS | | F | | | А | | | F | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 141.4 | Н | CM 2000 | Level of | Service | | F | | | |
| HCM 2000 Volume to Capa | acity ratio | | 1.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 209.5 | S | um of lost | t time (s) | | | 19.5 | | | |
| Intersection Capacity Utilization | ation | | 106.4% | IC | CU Level of | of Service | 9 | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

| | ≯ | \mathbf{r} | 1 | 1 | Ŧ | ~ |
|------------------------------|------|--------------|------|-------|------|------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ሻሻ | 1 | | *** | 44 | |
| Traffic Volume (veh/h) | 120 | 887 | 0 | 1233 | 971 | 0 |
| Future Volume (veh/h) | 120 | 887 | 0 | 1233 | 971 | 0 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1767 | 1767 | 0 | 1767 | 1752 | 0 |
| Adj Flow Rate, veh/h | 138 | 0 | 0 | 1417 | 1116 | 0 |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 9 | 9 | 0 | 9 | 10 | 0 |
| Cap, veh/h | 204 | | 0 | 3942 | 2721 | 0 |
| Arrive On Green | 0.06 | 0.00 | 0.00 | 0.82 | 0.82 | 0.00 |
| Sat Flow, veh/h | 3264 | 1497 | 0 | 5141 | 3504 | 0 |
| Grp Volume(v). veh/h | 138 | 0 | 0 | 1417 | 1116 | 0 |
| Grp Sat Flow(s).veh/h/ln | 1632 | 1497 | 0 | 1608 | 1664 | 0 |
| Q Serve(a s), s | 4.1 | 0.0 | 0.0 | 7.6 | 9.2 | 0.0 |
| Cycle Q Clear(a c), s | 4.1 | 0.0 | 0.0 | 7.6 | 9.2 | 0.0 |
| Prop In Lane | 1.00 | 1.00 | 0.00 | | | 0.00 |
| Lane Grp Cap(c), veh/h | 204 | | 0 | 3942 | 2721 | 0 |
| V/C Ratio(X) | 0.68 | | 0.00 | 0.36 | 0.41 | 0.00 |
| Avail Cap(c_a), veh/h | 522 | | 0 | 3942 | 2721 | 0 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 45.9 | 0.0 | 0.0 | 2.4 | 2.5 | 0.0 |
| Incr Delay (d2), s/veh | 3.9 | 0.0 | 0.0 | 0.3 | 0.5 | 0.0 |
| Initial Q Delav(d3) s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.7 | 0.0 | 0.0 | 1.3 | 1.6 | 0.0 |
| Unsig. Movement Delay, s/ve | eh | | | • | | |
| InGro Delav(d) s/veh | 49 7 | 0.0 | 0.0 | 26 | 30 | 0.0 |
| | D | 0.0 | A | A | A | A |
| Approach Vol. veh/h | 138 | Δ | | 1417 | 1116 | |
| Approach Delay, s/yeb | /0.7 | Л | | 26 | 3.0 | |
| Approach LOS | | | | 2.0 | Δ | |
| | U | | | Л | Л | |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), s | | 87.7 | | 12.3 | | 87.7 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 3 | 72.0 | | 16.0 | | 72.0 |
| Max Q Clear Time (g_c+I1), s | S | 11.2 | | 6.1 | | 9.6 |
| Green Ext Time (p_c), s | | 22.4 | | 0.3 | | 30.8 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 5.2 | | | |
| HCM 6th LOS | | | Δ | | | |
| | | | Л | | | |

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

| | ≮ | * | Ť | 1 | 1 | Ŧ |
|------------------------------|----------|------|------|------|------|--------------------|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | 55 | 11 | 441 | | | *** |
| Traffic Volume (veh/h) | 548 | 846 | 566 | 0 | 0 | 1068 |
| Future Volume (veh/h) | 548 | 846 | 566 | 0 | 0 | 1068 |
| Initial Q (Qh) veh | 0 | 0 | 0 | 0 | Ő | 0 |
| Ped-Bike Adi(A nhT) | 1.00 | 1.00 | | 1.00 | 1.00 | v |
| Parking Bus Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Annroac | ch No | | No | | | No |
| Adi Sat Flow, veh/h/ln | 1841 | 1841 | 1781 | 0 | 0 | 1693 |
| Adi Flow Rate veh/h | 660 | 1019 | 682 | 0 | 0 | 1287 |
| Peak Hour Factor | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 |
| Percent Heavy Veh % | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1/ |
| Cap yoh/h | 1/10 | 11/6 | 2201 | 0 | 0 | 2002 |
| Arrive On Groop | 0 / 2 | 0 42 | 0 15 | 0 00 | 0 00 | 0 15 |
| Anive On Green | 0.42 | 0.42 | 0.45 | 0.00 | 0.00 | 0.45 |
| Sat Flow, ven/n | 3401 | 2745 | 5184 | 0 | 0 | 4925 |
| Grp Volume(v), veh/h | 660 | 1019 | 682 | 0 | 0 | 1287 |
| Grp Sat Flow(s),veh/h/li | n1700 | 1373 | 1621 | 0 | 0 | 1540 |
| Q Serve(g_s), s | 14.0 | 34.4 | 8.9 | 0.0 | 0.0 | 21.1 |
| Cycle Q Clear(g_c), s | 14.0 | 34.4 | 8.9 | 0.0 | 0.0 | 21.1 |
| Prop In Lane | 1.00 | 1.00 | | 0.00 | 0.00 | |
| Lane Grp Cap(c), veh/h | 1419 | 1146 | 2201 | 0 | 0 | 2092 |
| V/C Ratio(X) | 0.47 | 0.89 | 0.31 | 0.00 | 0.00 | 0.62 |
| Avail Cap(c_a), veh/h | 1564 | 1263 | 2201 | 0 | 0 | 2092 |
| HCM Platoon Ratio | 1 00 | 1.00 | 1 00 | 1 00 | 1 00 | 1 00 |
| LInstream Filter(I) | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| Uniform Delay (d) shual | h 21 1 | 27 0 | 17 4 | 0.00 | 0.00 | 20.8 |
| Incr Delay (d2) shuch | 0.2 | 76 | 0.4 | 0.0 | 0.0 | 20.0 1 / |
| Initial O Delay (uz), S/Vell | 0.2 | 1.0 | 0.4 | 0.0 | 0.0 | 0.0 |
| Mila Delay(03),S/Ver | I U.U | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %IIE BACKOTQ(50%),Vel | 1/110.3 | 11.6 | 3.2 | 0.0 | 0.0 | 1.3 |
| Unsig. Movement Delay | y, s/veh | | 4 - | | | 0C <i>t</i> |
| LnGrp Delay(d),s/veh | 21.3 | 34.6 | 17.8 | 0.0 | 0.0 | 22.1 |
| LnGrp LOS | С | С | В | A | A | С |
| Approach Vol, veh/h | 1679 | | 682 | | | 1287 |
| Approach Delay, s/veh | 29.4 | | 17.8 | | | 22.1 |
| Approach LOS | С | | В | | | С |
| | | • | | | | • |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc) |), S | 51.3 | | 48.7 | | 51.3 |
| Change Period (Y+Rc), | S | 6.0 | | 7.0 | | 6.0 |
| Max Green Setting (Gm | nax), s | 41.0 | | 46.0 | | 41.0 |
| Max Q Clear Time (g_c | +l1), s | 23.1 | | 36.4 | | 10.9 |
| Green Ext Time (p_c), s | S | 16.2 | | 5.3 | | 16.5 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 24.7 | | | |
| HCM 6th LOS | | | С. | | | |
| | | | U | | | |

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| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|---------------------------|------------------------|------|------|------|------|------|------|------------|------|------|------|------|--|
| Lane Configurations | | 4 | | | ्रभ | 1 | ሻ | *†† | 1 | ۳. | 44¢- | | |
| Traffic Volume (veh/h) | 1 | 0 | 3 | 127 | 1 | 82 | 38 | 1332 | 42 | 31 | 1198 | 5 | |
| Future Volume (veh/h) | 1 | 0 | 3 | 127 | 1 | 82 | 38 | 1332 | 42 | 31 | 1198 | 5 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Work Zone On Approach | ۱ | No | | | No | | | No | | | No | | |
| Adj Sat Flow, veh/h/ln ´ | 1159 | 1159 | 1159 | 1856 | 1856 | 1856 | 1826 | 1826 | 1826 | 1633 | 1633 | 1633 | |
| Adj Flow Rate, veh/h | 1 | 0 | 4 | 155 | 1 | 100 | 46 | 1624 | 0 | 38 | 1461 | 6 | |
| Peak Hour Factor | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | |
| Percent Heavy Veh, % | 50 | 50 | 50 | 3 | 3 | 3 | 5 | 5 | 5 | 18 | 18 | 18 | |
| Cap, veh/h | 43 | 14 | 57 | 183 | 1 | 376 | 63 | 2778 | | 51 | 2539 | 10 | |
| Arrive On Green | 0.26 | 0.00 | 0.24 | 0.26 | 0.24 | 0.24 | 0.04 | 0.56 | 0.00 | 0.01 | 0.18 | 0.18 | |
| Sat Flow, veh/h | 0 | 59 | 236 | 463 | 3 | 1569 | 1739 | 4985 | 1547 | 1555 | 4584 | 19 | |
| Grp Volume(v), veh/h | 5 | 0 | 0 | 156 | 0 | 100 | 46 | 1624 | 0 | 38 | 947 | 520 | |
| Grp Sat Flow(s),veh/h/In | 295 | 0 | 0 | 466 | 0 | 1569 | 1739 | 1662 | 1547 | 1555 | 1486 | 1630 | |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.2 | 2.6 | 21.4 | 0.0 | 2.4 | 29.1 | 29.1 | |
| Cycle Q Clear(g_c), s | 26.0 | 0.0 | 0.0 | 26.0 | 0.0 | 5.2 | 2.6 | 21.4 | 0.0 | 2.4 | 29.1 | 29.1 | |
| Prop In Lane | 0.20 | | 0.80 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.01 | |
| Lane Grp Cap(c), veh/h | 120 | 0 | 0 | 193 | 0 | 376 | 63 | 2778 | | 51 | 1647 | 903 | |
| V/C Ratio(X) | 0.04 | 0.00 | 0.00 | 0.81 | 0.00 | 0.27 | 0.73 | 0.58 | | 0.75 | 0.58 | 0.58 | |
| Avail Cap(c_a), veh/h | 120 | 0 | 0 | 193 | 0 | 376 | 122 | 2778 | | 124 | 1647 | 903 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.33 | 0.33 | 0.33 | |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.88 | 0.88 | 0.88 | |
| Uniform Delay (d), s/veh | 30.5 | 0.0 | 0.0 | 40.7 | 0.0 | 30.8 | 47.7 | 14.5 | 0.0 | 49.1 | 30.1 | 30.1 | |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.0 | 22.0 | 0.0 | 0.4 | 15.1 | 0.9 | 0.0 | 17.5 | 1.3 | 2.3 | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| %ile BackOfQ(50%),veh/ | /In0.1 | 0.0 | 0.0 | 5.0 | 0.0 | 2.0 | 1.4 | 7.4 | 0.0 | 1.2 | 11.8 | 13.2 | |
| Unsig. Movement Delay, | s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 30.6 | 0.0 | 0.0 | 62.7 | 0.0 | 31.2 | 62.9 | 15.4 | 0.0 | 66.5 | 31.4 | 32.5 | |
| LnGrp LOS | С | A | A | E | A | С | E | В | | E | С | С | |
| Approach Vol, veh/h | | 5 | | | 256 | | | 1670 | А | | 1505 | | |
| Approach Delay, s/veh | | 30.6 | | | 50.4 | | | 16.7 | | | 32.7 | | |
| Approach LOS | | С | | | D | | | В | | | С | | |
| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc), | s8.6 | 61.4 | | 30.0 | 8.3 | 61.7 | | 30.0 | | | | | |
| Change Period (Y+Rc), s | s 5.0 | 6.0 | | 6.0 | 5.0 | 6.0 | | 6.0 | | | | | |
| Max Green Setting (Gma | ax) , G | 52.0 | | 24.0 | 8.0 | 51.0 | | 24.0 | | | | | |
| Max Q Clear Time (g_c+ | l14),6s | 31.1 | | 28.0 | 4.4 | 23.4 | | 28.0 | | | | | |
| Green Ext Time (p_c), s | 0.0 | 19.6 | | 0.0 | 0.0 | 26.2 | | 0.0 | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 26.2 | | | | | | | | | | |
| HCM 6th LOS | | | С | | | | | | | | | | |

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

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|---------------------------|------------------|--------------|-----------|--------------|-------|-------------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ካካ | 1 | 5 | ** | ** | 1 |
| Traffic Volume (veh/h) | 354 | 63 | 220 | 1071 | 996 | 352 |
| Future Volume (veh/h) | 354 | 63 | 220 | 1071 | 996 | 352 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A pbT) | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Parking Bus, Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approac | ch No | | | No | No | |
| Adi Sat Flow, veh/b/ln | 1737 | 1737 | 1811 | 1811 | 1678 | 1678 |
| Adi Flow Rate veh/h | 442 | 79 | 275 | 1339 | 1245 | 440 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veb % | 11 | 11 | 00.0 A | 00.0 A | 15 | 15 |
| Can yeh/h | 51/ | 226 | 211 | 2442 | 1815 | 800 |
| Arrivo On Croon | 0.16 | 200 | 0.00 | 244J 0 71 | 0 57 | 009 |
| Anive On Green | 0.10 | 0.10 | 1705 | 0./1 | 0.57 | 1404 |
| Sat Flow, ven/n | 3209 | 1472 | 1725 | 3532 | 3272 | 1421 |
| Grp Volume(v), veh/h | 442 | 79 | 275 | 1339 | 1245 | 440 |
| Grp Sat Flow(s),veh/h/l | n1605 | 1472 | 1725 | 1721 | 1594 | 1421 |
| Q Serve(g_s), s | 13.4 | 4.8 | 6.6 | 18.5 | 27.6 | 19.3 |
| Cycle Q Clear(g_c), s | 13.4 | 4.8 | 6.6 | 18.5 | 27.6 | 19.3 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | n 514 | 236 | 311 | 2443 | 1815 | 809 |
| V/C Ratio(X) | 0.86 | 0.34 | 0.88 | 0.55 | 0.69 | 0.54 |
| Avail Cap(c, a) veh/h | 578 | 265 | 431 | 2443 | 1815 | 809 |
| HCM Platoon Ratio | 1 00 | 1 00 | 1.00 | 1 00 | 1 00 | 1 00 |
| Linstream Filter(I) | 1.00 | 1.00 | 0.90 | 0.00 | 1.00 | 1.00 |
| Uniform Delay (d) alua | h / 0 0 | 37.2 | 20.03 | 6.0 | 15.00 | 12 / |
| liner Dolou (d2), s/vel | 140.9 | 01.0 | 20.0 | 0.9 | 10.2 | 13.4 |
| incr Delay (d2), s/ven | 11.5 | 0.0 | 13.4 | 0.0 | 2.1 | 2.0 |
| Initial Q Delay(d3),s/vel | n U.U | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %Ile BackOfQ(50%),ve | n/1no.0 | 1.7 | 4.7 | 5.5 | 9.4 | 6.1 |
| Unsig. Movement Delay | y, s/veh | | | | | |
| LnGrp Delay(d),s/veh | 52.4 | 38.1 | 33.4 | 7.7 | 17.4 | 16.1 |
| LnGrp LOS | D | D | С | <u>A</u> | B | B |
| Approach Vol, veh/h | 521 | | | 1614 | 1685 | |
| Approach Delay, s/veh | 50.3 | | | 12.1 | 17.0 | |
| Approach LOS | D | | | B | B | |
| | | | | | | |
| Timer - Assigned Phs | 1 | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc) |), \$ 4.1 | 63.9 | | 22.0 | | 78.0 |
| Change Period (Y+Rc). | s 5.0 | 7.0 | | 6.0 | | 7.0 |
| Max Green Setting (Gr | na k6. G | 48.0 | | 18.0 | | 69.0 |
| Max Q Clear Time (q. c | +118 6 | 29.6 | | 15.4 | | 20.5 |
| Green Ext Time (n. c) | s 0.5 | 17 3 | | ۳.01 ۵ D | | <u>41</u> 7 |
| $(p_0), $ | 0.0 | 11.0 | | 0.0 | | 71.7 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delav | | | 19.5 | | | |
| HCM 6th LOS | | | В | | | |

Intersection

| Int Delay, s/veh | 22.3 | | | | | |
|------------------------|------|------|------|------|------|--------------|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ۰¥ | | 4 | | | ् |
| Traffic Vol, veh/h | 15 | 14 | 976 | 8 | 23 | 1259 |
| Future Vol, veh/h | 15 | 14 | 976 | 8 | 23 | 1259 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage | ,# 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 78 | 78 | 78 | 78 | 78 | 78 |
| Heavy Vehicles, % | 20 | 20 | 9 | 9 | 17 | 17 |
| Mvmt Flow | 19 | 18 | 1251 | 10 | 29 | 1614 |

| Major/Minor | Minor1 | Ν | /lajor1 | | Major2 | | |
|-----------------------|--------|------|--------------|-------|--------|-----|--|
| Conflicting Flow All | 2928 | 1256 | 0 | 0 | 1261 | 0 | |
| Stage 1 | 1256 | - | - | - | - | - | |
| Stage 2 | 1672 | - | - | - | - | - | |
| Critical Hdwy | 6.6 | 6.4 | - | - | 4.27 | - | |
| Critical Hdwy Stg 1 | 5.6 | - | - | - | - | - | |
| Critical Hdwy Stg 2 | 5.6 | - | - | - | - | - | |
| Follow-up Hdwy | 3.68 | 3.48 | - | - | 2.353 | - | |
| Pot Cap-1 Maneuver | ~ 14 | 192 | - | - | 503 | - | |
| Stage 1 | 246 | - | - | - | - | - | |
| Stage 2 | 151 | - | - | - | - | - | |
| Platoon blocked, % | | | - | - | | - | |
| Mov Cap-1 Maneuver | ~ 6 | 192 | - | - | 503 | - | |
| Mov Cap-2 Maneuver | ~ 6 | - | - | - | - | - | |
| Stage 1 | 246 | - | - | - | - | - | |
| Stage 2 | 67 | - | - | - | - | - | |
| | | | | | | | |
| Approach | WB | | NB | | SB | | |
| HCM Control Delay, \$ | 1753.5 | | 0 | | 0.2 | | |
| HCM LOS | F | | | | | | |
| | | | | | | | |
| Minor Lane/Major Mv | mt | NBT | NBRWI | BLn1 | SBL | SBT | |
| Capacity (veh/h) | | - | - | 11 | 503 | - | |
| HCM Lane V/C Ratio | | - | - | 3.38 | 0.059 | - | |
| HCM Control Delay (s | 3) | - | \$ 17 | 753.5 | 12.6 | 0 | |
| HCM Lane LOS | | - | - | F | В | А | |
| HCM 95th %tile Q(vel | h) | - | - | 5.7 | 0.2 | - | |
| Notes | | | | | | | |

~: Volume exceeds capacity

\$: Delay exceeds 300s +: Computation Not Defined

*: All major volume in platoon

HCM 6th Signalized Intersection Summary 8: MD 201 & Powder Mill Road

| | ۶ | - | $\mathbf{\hat{z}}$ | ∢ | ← | • | 1 | Ť | ۲ | 1 | Ļ | ~ |
|------------------------------|------|------|--------------------|----------|------|------|------|------|------|------|------|----------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | 7 | • | 1 | <u> </u> | • | 1 | ۲ | • | 1 | ۲ | A12≽ | |
| Traffic Volume (veh/h) | 57 | 110 | 550 | 187 | 149 | 41 | 409 | 520 | 61 | 26 | 545 | 78 |
| Future Volume (veh/h) | 57 | 110 | 550 | 187 | 149 | 41 | 409 | 520 | 61 | 26 | 545 | 78 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1796 | 1796 | 1796 | 1856 | 1856 | 1856 | 1796 | 1796 | 1796 | 1544 | 1544 | 1544 |
| Adj Flow Rate, veh/h | 71 | 138 | 0 | 234 | 186 | 0 | 511 | 650 | 0 | 32 | 681 | 98 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh, % | 7 | 7 | 7 | 3 | 3 | 3 | 7 | 7 | 7 | 24 | 24 | 24 |
| Cap, veh/h | 242 | 442 | | 322 | 586 | | 557 | 1098 | | 245 | 787 | 113 |
| Arrive On Green | 0.25 | 0.25 | 0.00 | 0.04 | 0.32 | 0.00 | 0.28 | 0.61 | 0.00 | 0.31 | 0.31 | 0.31 |
| Sat Flow, veh/h | 1147 | 1796 | 1522 | 1767 | 1856 | 1572 | 1711 | 1796 | 1522 | 645 | 2575 | 370 |
| Grp Volume(v), veh/h | 71 | 138 | 0 | 234 | 186 | 0 | 511 | 650 | 0 | 32 | 388 | 391 |
| Grp Sat Flow(s),veh/h/ln | 1147 | 1796 | 1522 | 1767 | 1856 | 1572 | 1711 | 1796 | 1522 | 645 | 1467 | 1478 |
| Q Serve(g_s), s | 8.2 | 9.4 | 0.0 | 0.0 | 11.5 | 0.0 | 35.8 | 33.2 | 0.0 | 5.5 | 37.5 | 37.6 |
| Cycle Q Clear(g_c), s | 19.7 | 9.4 | 0.0 | 0.0 | 11.5 | 0.0 | 35.8 | 33.2 | 0.0 | 5.5 | 37.5 | 37.6 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.25 |
| Lane Grp Cap(c), veh/h | 242 | 442 | | 322 | 586 | | 557 | 1098 | | 245 | 448 | 452 |
| V/C Ratio(X) | 0.29 | 0.31 | | 0.73 | 0.32 | | 0.92 | 0.59 | | 0.13 | 0.86 | 0.87 |
| Avail Cap(c_a), veh/h | 242 | 442 | | 322 | 586 | | 557 | 1098 | | 245 | 448 | 452 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 55.3 | 46.4 | 0.0 | 58.4 | 39.2 | 0.0 | 39.0 | 17.8 | 0.0 | 38.2 | 49.3 | 49.3 |
| Incr Delay (d2), s/veh | 3.0 | 1.8 | 0.0 | 13.4 | 1.4 | 0.0 | 22.5 | 2.3 | 0.0 | 1.1 | 19.4 | 19.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/In | 2.6 | 4.5 | 0.0 | 9.9 | 5.5 | 0.0 | 15.2 | 13.8 | 0.0 | 0.9 | 16.1 | 16.2 |
| Unsig. Movement Delay, s/veh | 50.4 | (0.0 | | 74.0 | 10.0 | • • | 04 5 | | | | | |
| LnGrp Delay(d),s/veh | 58.4 | 48.2 | 0.0 | 71.8 | 40.6 | 0.0 | 61.5 | 20.2 | 0.0 | 39.3 | 68.8 | 68.8 |
| LnGrp LOS | E | D | | E | D | | E | C | | D | E | <u> </u> |
| Approach Vol, veh/h | | 209 | A | | 420 | A | | 1161 | A | | 811 | |
| Approach Delay, s/veh | | 51./ | | | 58.0 | | | 38.4 | | | 67.6 | |
| Approach LOS | | D | | | E | | | D | | | E | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 46.0 | 52.0 | 10.5 | 42.0 | | 98.0 | | 52.5 | | | | |
| Change Period (Y+Rc), s | 4.5 | 6.0 | 5.0 | * 5 | | 6.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 41.5 | 46.0 | 5.5 | * 37 | | 92.0 | | 47.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 51.7 | | | | | | | | | |
| HCM 6th LOS | | | D | | | | | | | | | |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier. Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | 4 | | | र्च | 1 | | र्च | 1 | | 4 | |
| Traffic Vol, veh/h | 21 | 0 | 1 | 2 | 5 | 1 | 51 | 554 | 3 | 0 | 626 | 44 |
| Future Vol, veh/h | 21 | 0 | 1 | 2 | 5 | 1 | 51 | 554 | 3 | 0 | 626 | 44 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None |
| Storage Length | - | - | - | - | - | 50 | - | - | 325 | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 70 | 70 | 70 | 67 | 67 | 67 | 9 | 9 | 9 | 21 | 21 | 21 |
| Mvmt Flow | 22 | 0 | 1 | 2 | 5 | 1 | 54 | 583 | 3 | 0 | 659 | 46 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | Ν | /lajor2 | | | |
|----------------------|--------|------|------|--------|-------|-------|--------|---|---|---------|---|---|--|
| Conflicting Flow All | 1378 | 1376 | 682 | 1374 | 1396 | 583 | 705 | 0 | 0 | 586 | 0 | 0 | |
| Stage 1 | 682 | 682 | - | 691 | 691 | - | - | - | - | - | - | - | |
| Stage 2 | 696 | 694 | - | 683 | 705 | - | - | - | - | - | - | - | |
| Critical Hdwy | 7.8 | 7.2 | 6.9 | 7.77 | 7.17 | 6.87 | 4.19 | - | - | 4.31 | - | - | |
| Critical Hdwy Stg 1 | 6.8 | 6.2 | - | 6.77 | 6.17 | - | - | - | - | - | - | - | |
| Critical Hdwy Stg 2 | 6.8 | 6.2 | - | 6.77 | 6.17 | - | - | - | - | - | - | - | |
| Follow-up Hdwy | 4.13 | 4.63 | 3.93 | 4.103 | 4.603 | 3.903 | 2.281 | - | - | 2.389 | - | - | |
| Pot Cap-1 Maneuver | 88 | 106 | 351 | 90 | 104 | 409 | 861 | - | - | 902 | - | - | |
| Stage 1 | 347 | 361 | - | 346 | 360 | - | - | - | - | - | - | - | |
| Stage 2 | 340 | 356 | - | 350 | 355 | - | - | - | - | - | - | - | |
| Platoon blocked, % | | | | | | | | - | - | | - | - | |
| Mov Cap-1 Maneuver | 78 | 96 | 351 | 83 | 94 | 409 | 861 | - | - | 902 | - | - | |
| Mov Cap-2 Maneuver | 78 | 96 | - | 83 | 94 | - | - | - | - | - | - | - | |
| Stage 1 | 315 | 361 | - | 314 | 327 | - | - | - | - | - | - | - | |
| Stage 2 | 303 | 323 | - | 349 | 355 | - | - | - | - | - | - | - | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| Approach | EB | WB | NB | SB | |
|----------------------|------|------|-----|----|--|
| HCM Control Delay, s | 66.3 | 43.7 | 0.8 | 0 | |
| HCM LOS | F | E | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1V | VBLn1V | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|--------|--------|-------|-----|-----|-----|
| Capacity (veh/h) | 861 | - | - | 81 | 91 | 409 | 902 | - | - |
| HCM Lane V/C Ratio | 0.062 | - | - | 0.286 | 0.081 | 0.003 | - | - | - |
| HCM Control Delay (s) | 9.5 | 0 | - | 66.3 | 48 | 13.8 | 0 | - | - |
| HCM Lane LOS | А | А | - | F | Е | В | А | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 1 | 0.3 | 0 | 0 | - | - |

| 10.6 |
|------|
| В |
| |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR | |
|----------------------------|------|------|------|------|------|------|--|
| Lane Configurations | | र्स | eî 🗧 | | Y | | |
| Traffic Vol, veh/h | 2 | 170 | 381 | 0 | 0 | 0 | |
| Future Vol, veh/h | 2 | 170 | 381 | 0 | 0 | 0 | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | |
| Heavy Vehicles, % | 6 | 6 | 2 | 2 | 2 | 2 | |
| Mvmt Flow | 2 | 200 | 448 | 0 | 0 | 0 | |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | |
| Approach | EB | | WB | | SB | | |
| Opposing Approach | WB | | EB | | | | |
| Opposing Lanes | 1 | | 1 | | 0 | | |
| Conflicting Approach Left | SB | | | | WB | | |
| Conflicting Lanes Left | 1 | | 0 | | 1 | | |
| Conflicting Approach Right | | | SB | | EB | | |
| Conflicting Lanes Right | 0 | | 1 | | 1 | | |
| HCM Control Delay | 8.9 | | 11.3 | | 0 | | |
| HCM LOS | А | | В | | - | | |

| Lane | EBLn1 | WBLn1 | SBLn1 | 1 |
|------------------------|-------|-------|-------|--------|
| Vol Left, % | 1% | 0% | 0% | ó |
| Vol Thru, % | 99% | 100% | 100% | , 0 |
| Vol Right, % | 0% | 0% | 0% | ó |
| Sign Control | Stop | Stop | Stop |) |
| Traffic Vol by Lane | 172 | 381 | 0 |) |
| LT Vol | 2 | 0 | 0 |) |
| Through Vol | 170 | 381 | 0 |) |
| RT Vol | 0 | 0 | 0 |) |
| Lane Flow Rate | 202 | 448 | 0 |) |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.244 | 0.508 | 0 |) |
| Departure Headway (Hd) | 4.336 | 4.084 | 5.318 | 3 |
| Convergence, Y/N | Yes | Yes | Yes | S |
| Сар | 815 | 879 | 0 |) |
| Service Time | 2.428 | 2.137 | 3.318 | 3 |
| HCM Lane V/C Ratio | 0.248 | 0.51 | 0 |) |
| HCM Control Delay | 8.9 | 11.3 | 8.3 | 3 |
| HCM Lane LOS | А | В | Ν | ١ |
| HCM 95th-tile Q | 1 | 2.9 | 0 |) |

| 0.4 | | | | | |
|------|---|---|---|---|---|
| | | | | | |
| NBL | NBR | SET | SER | NWL | NWT |
| - ሽ | | - î> | | | ↑ |
| 16 | 0 | 161 | 9 | 0 | 366 |
| 16 | 0 | 161 | 9 | 0 | 366 |
| 0 | 0 | 0 | 0 | 0 | 0 |
| Stop | Stop | Free | Free | Free | Free |
| - | None | - | None | - | None |
| 0 | - | - | - | - | - |
| ,#0 | - | 0 | - | - | 0 |
| 0 | - | 0 | - | - | 0 |
| 74 | 74 | 74 | 74 | 74 | 74 |
| 2 | 2 | 4 | 4 | 2 | 2 |
| 22 | 0 | 218 | 12 | 0 | 495 |
| | 0.4 NBL 16 16 0 Stop - 0 ,# 0 0 74 2 22 | 0.4 NBL NBR 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 17 None 0 - 17 74 17 2 17 0 | 0.4 NBL NBR SET 16 0 161 16 0 161 16 0 161 16 0 0 Stop Stop Free None - 0 - ,# 0 - 0 - ,# 0 - 0 - 0 - ,# 0 - 0 - 0 - 0 - 0 - 0 - 10 - 0 - 0 - 10 - 0 - 0 - 10 - | 0.4 NBL NBR SET SER 16 0 161 9 16 0 161 9 16 0 161 9 16 0 161 9 0 0 0 0 Stop Stop Free Free None - None - 0 - 0 - # 0 - 0 - 74 74 74 74 4 2 2 4 4 22 0 218 12 | 0.4 NBL NBR SET SER NWL 16 0 161 9 0 16 0 161 9 0 16 0 161 9 0 16 0 161 9 0 16 0 161 9 0 0 0 0 0 0 0 Stop Stop Free Free Free 0 - 0 - - 0 - 0 - - 10 - 0 - - 74 74 74 74 74 2 2 4 4 2 22 0 218 12 0 |

| Major/Minor | Minor1 | Maj | jor1 | Maj | jor2 | |
|----------------------|--------|-----|------|-----|------|---|
| Conflicting Flow All | 719 | - | 0 | 0 | - | - |
| Stage 1 | 224 | - | - | - | - | - |
| Stage 2 | 495 | - | - | - | - | - |
| Critical Hdwy | 6.42 | - | - | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | - | - | - | - | - |
| Pot Cap-1 Maneuver | 395 | 0 | - | - | 0 | - |
| Stage 1 | 813 | 0 | - | - | 0 | - |
| Stage 2 | 613 | 0 | - | - | 0 | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | r 395 | - | - | - | - | - |
| Mov Cap-2 Maneuver | r 395 | - | - | - | - | - |
| Stage 1 | 813 | - | - | - | - | - |
| Stage 2 | 613 | - | - | - | - | - |
| | | | | | | |

| Approach | NB | SE | NW |
|----------------------|------|----|----|
| HCM Control Delay, s | 14.6 | 0 | 0 |
| HCM LOS | В | | |

| Vinor Lane/Major Mvmt | NBLn1 | NWT | SET | SER |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 395 | - | - | - |
| HCM Lane V/C Ratio | 0.055 | - | - | - |
| HCM Control Delay (s) | 14.6 | - | - | - |
| HCM Lane LOS | В | - | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - |

| Approach | EB | WB | SB | |
|----------------------|-----|----|------|--|
| HCM Control Delay, s | 0.3 | 0 | 31.1 | |
| HCM LOS | | | D | |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR SBLn1 |
|-----------------------|-------|-----|-----|-----------|
| Capacity (veh/h) | 869 | - | - | - 338 |
| HCM Lane V/C Ratio | 0.008 | - | - | - 0.611 |
| HCM Control Delay (s) | 9.2 | - | - | - 31.1 |
| HCM Lane LOS | А | - | - | - D |
| HCM 95th %tile Q(veh) | 0 | - | - | - 3.8 |

| Intersection | | | | | | | | | | | | | |
|------------------------|-------|------|------|------|------|------|------|-------|------|------|------|------|--|
| Int Delay, s/veh | 50.5 | | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | | 4 | | - ሽ | • | | | | | - ኘ | 4 | | |
| Traffic Vol, veh/h | 0 | 211 | 103 | 85 | 329 | 0 | 0 | 0 | 0 | 251 | 1 | 204 | |
| Future Vol, veh/h | 0 | 211 | 103 | 85 | 329 | 0 | 0 | 0 | 0 | 251 | 1 | 204 | |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop | |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None | |
| Storage Length | - | - | - | 225 | - | - | - | - | - | 25 | - | - | |
| Veh in Median Storage | , # - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - | |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - | |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | |
| Heavy Vehicles, % | 4 | 4 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | |
| Mvmt Flow | 0 | 278 | 136 | 112 | 433 | 0 | 0 | 0 | 0 | 330 | 1 | 268 | |

| Major1 | | Ν | /lajor2 | | | | | Minor2 | | | | | |
|--------|------------|--|---|--|---|--|---|---|---|---|--|--|--|
| - | 0 | 0 | 414 | 0 | 0 | | | 1003 | 1071 | 433 | | | |
| - | - | - | - | - | - | | | 657 | 657 | - | | | |
| - | - | - | - | - | - | | | 346 | 414 | - | | | |
| - | - | - | 4.12 | - | - | | | 6.41 | 6.51 | 6.21 | | | |
| - | - | - | - | - | - | | | 5.41 | 5.51 | - | | | |
| - | - | - | - | - | - | | | 5.41 | 5.51 | - | | | |
| - | - | - | 2.218 | - | - | | | 3.509 | 4.009 | 3.309 | | | |
| 0 | - | - | 1145 | - | 0 | | | ~ 270 | 222 | 625 | | | |
| 0 | - | - | - | - | 0 | | | 518 | 463 | - | | | |
| 0 | - | - | - | - | 0 | | | 719 | 595 | - | | | |
| | - | - | | - | | | | | | | | | |
| - | - | - | 1145 | - | - | | | ~ 244 | 0 | 625 | | | |
| - | - | - | - | - | - | | | ~ 244 | 0 | - | | | |
| - | - | - | - | - | - | | | 518 | 0 | - | | | |
| - | - | - | - | - | - | | | 649 | 0 | - | | | |
| | | | | | | | | | | | | | |
| EB | | | WB | | | | | SB | | | | | |
| 0 | | | 1.7 | | | | | 129.6 | | | | | |
| | | | | | | | | F | | | | | |
| | | | | | | | | | | | | | |
| nt | EBT | EBR | WBL | WBT | SBLn1 | SBLn2 | | | | | | | |
| - | - | - | 1145 | _ | 244 | 625 | | | | | | | |
| | - | - | 0.098 | - | 1.354 | 0.432 | | | | | | | |
|) | - | - | 8.5 | - | 223.1 | 15.1 | | | | | | | |
| / | - | - | A | - | F | С | | | | | | | |
| ı) | - | - | 0.3 | - | 17.8 | 2.2 | | | | | | | |
| | | | | | | | | | | | | | |
| pacity | \$: De | lav exc | eeds 30 |)0s | +: Com | putation N | Not Defined | *: All | maior | /olume i | n platoon | | |
| | Major1 | Major1 - - - - - - - - 0 - 0 - 0 - 0 - - 0 - | Major1 N - 0 0 - - - - - - - - - - - - - - - 0 - - 0 - - 0 - - 0 - - 0 - - - - - - - - 0 - - - - - 0 - - - - - 0 - - 0 - - 0 - - 0 - - 0 - - 0 - - 10 - - 10 - - 10 - - | Major1 Major2 - 0 0 414 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - 0 - - 1145 - - 0 - - - - - - - | Major1 Major2 - 0 0 414 0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - 0 - - 1145 - 0 - - 1145 - - - - - - - - - - - - - - - | Major1 Major2 - 0 0 414 0 0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - 2.218 - - - - 0 - - 1145 0 0 0 - - 0 0 - - 0 - - 0 - - 0 - - - 0 - - 0 - | Major1 Major2 - 0 0 414 0 0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - 0 - - 1145 - 0 0 - - - 0 - - - - - 1145 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - < | Major1 Major2 - 0 0 414 0 0 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - 0 - - 1145 - 0 0 - - - 0 - - - 1145 - - - - - - - - - - - - - - - - - - - - - 0 1.7 - - - - etb WBL WBT SBLn1 SBLn2 - - - - 1145 - 244 625 <t< td=""><td>Major1 Major2 Minor2 - 0 0 414 0 0 1003 - - - - - 657 - - - - - 641 - - - - 5.41 - - - - 5.41 - - 2.218 - 3.509 0 - 1145 0 ~270 0 - - 0 719 - - 0 719 - - 145 - ~244 - - - - 244 - - - - 649 EB WB WB SB 0 1.7 129.6 - - 1.45 - 244 625 - - 0.098 1.354 0.432) - - <t< td=""><td>Major1 Major2 Minor2 - 0 0 414 0 0 1003 1071 - - - - - 657 657 - - - - 346 414 - - - - 6.41 6.51 - - - - 5.41 5.51 - - - - 5.41 5.51 - - 2.218 - - 3.509 4.009 0 - 1145 - 0 ~270 222 0 - - - 0 719 595 - - - - - 244 0 - - - - - 244 0 - - - - - 518 0 - - - - - 54</td></t<><td>Major1 Major2 Minor2 - 0 0 414 0 0 1003 1071 433 - - - - - 657 657 - - - - - - 346 414 - - - - - 5.41 5.51 - - - - - 5.41 5.51 - - - 2.218 - - 3.509 4.009 3.309 0 - 1145 0 ~270 222 625 0 - - 0 518 463 - 0 - - 0 719 595 - - - - 0 719 595 - - - - - - 244 0 - - - - - - - 649 0 - ret - 1.354 0.432<td>Major1 Major2 Minor2 - 0 0 414 0 0 1003 1071 433 - - - - 657 657 - - - - - 346 414 - - - 4.12 - - 6.41 6.51 6.21 - - - - 5.41 5.51 - - - - 2.218 - 3.509 4.009 3.309 0 - 1145 0 ~270 222 625 0 - - 0 518 463 - 0 - - 0 719 595 - - - 1145 - ~244 0 - - - 1145 - ~244 0 - - - - - 649 0 - - - - - 625 - - 6</td><td>Major1 Major2 Minor2 - 0 0 1003 1071 433 - - - - 657 657 - - - - - 657 657 - - - - - 641 6.21 - - - - 5.41 5.51 - - - 2.218 - 3.509 4.009 3.309 0 - 1145 0 -270 222 625 0 - - 0 719 595 - - - 1145 - - 224 0 625 - - 1145 - - 244 0 - - - 1145 - - 244 0 - - - - - - 518 0 - - - - - - - 649 - -</td></td></td></t<> | Major1 Major2 Minor2 - 0 0 414 0 0 1003 - - - - - 657 - - - - - 641 - - - - 5.41 - - - - 5.41 - - 2.218 - 3.509 0 - 1145 0 ~270 0 - - 0 719 - - 0 719 - - 145 - ~244 - - - - 244 - - - - 649 EB WB WB SB 0 1.7 129.6 - - 1.45 - 244 625 - - 0.098 1.354 0.432) - - <t< td=""><td>Major1 Major2 Minor2 - 0 0 414 0 0 1003 1071 - - - - - 657 657 - - - - 346 414 - - - - 6.41 6.51 - - - - 5.41 5.51 - - - - 5.41 5.51 - - 2.218 - - 3.509 4.009 0 - 1145 - 0 ~270 222 0 - - - 0 719 595 - - - - - 244 0 - - - - - 244 0 - - - - - 518 0 - - - - - 54</td></t<> <td>Major1 Major2 Minor2 - 0 0 414 0 0 1003 1071 433 - - - - - 657 657 - - - - - - 346 414 - - - - - 5.41 5.51 - - - - - 5.41 5.51 - - - 2.218 - - 3.509 4.009 3.309 0 - 1145 0 ~270 222 625 0 - - 0 518 463 - 0 - - 0 719 595 - - - - 0 719 595 - - - - - - 244 0 - - - - - - - 649 0 - ret - 1.354 0.432<td>Major1 Major2 Minor2 - 0 0 414 0 0 1003 1071 433 - - - - 657 657 - - - - - 346 414 - - - 4.12 - - 6.41 6.51 6.21 - - - - 5.41 5.51 - - - - 2.218 - 3.509 4.009 3.309 0 - 1145 0 ~270 222 625 0 - - 0 518 463 - 0 - - 0 719 595 - - - 1145 - ~244 0 - - - 1145 - ~244 0 - - - - - 649 0 - - - - - 625 - - 6</td><td>Major1 Major2 Minor2 - 0 0 1003 1071 433 - - - - 657 657 - - - - - 657 657 - - - - - 641 6.21 - - - - 5.41 5.51 - - - 2.218 - 3.509 4.009 3.309 0 - 1145 0 -270 222 625 0 - - 0 719 595 - - - 1145 - - 224 0 625 - - 1145 - - 244 0 - - - 1145 - - 244 0 - - - - - - 518 0 - - - - - - - 649 - -</td></td> | Major1 Major2 Minor2 - 0 0 414 0 0 1003 1071 - - - - - 657 657 - - - - 346 414 - - - - 6.41 6.51 - - - - 5.41 5.51 - - - - 5.41 5.51 - - 2.218 - - 3.509 4.009 0 - 1145 - 0 ~270 222 0 - - - 0 719 595 - - - - - 244 0 - - - - - 244 0 - - - - - 518 0 - - - - - 54 | Major1 Major2 Minor2 - 0 0 414 0 0 1003 1071 433 - - - - - 657 657 - - - - - - 346 414 - - - - - 5.41 5.51 - - - - - 5.41 5.51 - - - 2.218 - - 3.509 4.009 3.309 0 - 1145 0 ~270 222 625 0 - - 0 518 463 - 0 - - 0 719 595 - - - - 0 719 595 - - - - - - 244 0 - - - - - - - 649 0 - ret - 1.354 0.432 <td>Major1 Major2 Minor2 - 0 0 414 0 0 1003 1071 433 - - - - 657 657 - - - - - 346 414 - - - 4.12 - - 6.41 6.51 6.21 - - - - 5.41 5.51 - - - - 2.218 - 3.509 4.009 3.309 0 - 1145 0 ~270 222 625 0 - - 0 518 463 - 0 - - 0 719 595 - - - 1145 - ~244 0 - - - 1145 - ~244 0 - - - - - 649 0 - - - - - 625 - - 6</td> <td>Major1 Major2 Minor2 - 0 0 1003 1071 433 - - - - 657 657 - - - - - 657 657 - - - - - 641 6.21 - - - - 5.41 5.51 - - - 2.218 - 3.509 4.009 3.309 0 - 1145 0 -270 222 625 0 - - 0 719 595 - - - 1145 - - 224 0 625 - - 1145 - - 244 0 - - - 1145 - - 244 0 - - - - - - 518 0 - - - - - - - 649 - -</td> | Major1 Major2 Minor2 - 0 0 414 0 0 1003 1071 433 - - - - 657 657 - - - - - 346 414 - - - 4.12 - - 6.41 6.51 6.21 - - - - 5.41 5.51 - - - - 2.218 - 3.509 4.009 3.309 0 - 1145 0 ~270 222 625 0 - - 0 518 463 - 0 - - 0 719 595 - - - 1145 - ~244 0 - - - 1145 - ~244 0 - - - - - 649 0 - - - - - 625 - - 6 | Major1 Major2 Minor2 - 0 0 1003 1071 433 - - - - 657 657 - - - - - 657 657 - - - - - 641 6.21 - - - - 5.41 5.51 - - - 2.218 - 3.509 4.009 3.309 0 - 1145 0 -270 222 625 0 - - 0 719 595 - - - 1145 - - 224 0 625 - - 1145 - - 244 0 - - - 1145 - - 244 0 - - - - - - 518 0 - - - - - - - 649 - - |

| Intersection | | | | | | | | | | | | |
|------------------------|------|------|------|------|------|------|------|------|------|------|-------|------|
| Int Delay, s/veh | 5.8 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ٦ | 1 | | | ef 👘 | | ٦ | ef 👘 | | | | |
| Traffic Vol, veh/h | 98 | 364 | 0 | 0 | 337 | 302 | 77 | 3 | 92 | 0 | 0 | 0 |
| Future Vol, veh/h | 98 | 364 | 0 | 0 | 337 | 302 | 77 | 3 | 92 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 250 | - | - | - | - | - | 50 | - | - | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 16965 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 2 | 2 | 2 |
| Mvmt Flow | 124 | 461 | 0 | 0 | 427 | 382 | 97 | 4 | 116 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | |
|-----------------------|--------|-------|-------|--------|-----|-----|--------|------|-----|--|
| Conflicting Flow All | 809 | 0 | - | - | - | 0 | 1327 | 1518 | 461 | |
| Stage 1 | - | · - | - | - | - | - | 709 | 709 | - | |
| Stage 2 | - | · - | - | - | - | - | 618 | 809 | - | |
| Critical Hdwy | 4.12 | - | - | - | - | - | 6.4 | 6.5 | 6.2 | |
| Critical Hdwy Stg 1 | - | | - | - | - | - | 5.4 | 5.5 | - | |
| Critical Hdwy Stg 2 | - | · - | - | - | - | - | 5.4 | 5.5 | - | |
| Follow-up Hdwy | 2.218 | - | - | - | - | - | 3.5 | 4 | 3.3 | |
| Pot Cap-1 Maneuver | 817 | - | 0 | 0 | - | - | 173 | 120 | 605 | |
| Stage 1 | - | | 0 | 0 | - | - | 491 | 440 | - | |
| Stage 2 | - | · - | 0 | 0 | - | - | 542 | 396 | - | |
| Platoon blocked, % | | - | | | - | - | | | | |
| Mov Cap-1 Maneuver | 817 | - | - | - | - | - | 147 | 0 | 605 | |
| Mov Cap-2 Maneuver | - | | - | - | - | - | 147 | 0 | - | |
| Stage 1 | - | · - | - | - | - | - | 416 | 0 | - | |
| Stage 2 | - | · - | - | - | - | - | 542 | 0 | - | |
| | | | | | | | | | | |
| Approach | EB | i i | | WB | | | NB | | | |
| HCM Control Delay, s | 2.2 | | | 0 | | | 37.2 | | | |
| HCM LOS | | | | | | | Е | | | |
| | | | | | | | | | | |
| Minor Lane/Major Mvn | nt | NBLn1 | NBLn2 | EBL | EBT | WBT | WBR | | | |
| Capacity (veh/h) | | 147 | 605 | 817 | - | - | - | | | |
| HCM Lane V/C Ratio | | 0.663 | 0.199 | 0.152 | - | - | - | | | |
| HCM Control Delay (s) |) | 67.9 | 12.4 | 10.2 | - | - | - | | | |
| HCM Lane LOS | | F | В | В | - | - | - | | | |
| HCM 95th %tile Q(veh |) | 3.7 | 0.7 | 0.5 | - | - | - | | | |

| | - | \mathbf{F} | 1 | - | 1 | 1 |
|------------------------------|------|----------------------------|------|------|------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | • | 1 | 5 | • | ሻ | 1 |
| Traffic Volume (veh/h) | 170 | 286 | 53 | 304 | 335 | 17 |
| Future Volume (veh/h) | 170 | 286 | 53 | 304 | 335 | 17 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1885 | 1885 | 1870 | 1870 | 1885 | 1885 |
| Adj Flow Rate, veh/h | 230 | 0 | 72 | 411 | 453 | 0 |
| Peak Hour Factor | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |
| Percent Heavy Veh, % | 1 | 1 | 2 | 2 | 1 | 1 |
| Cap, veh/h | 503 | | 198 | 810 | 778 | |
| Arrive On Green | 0.27 | 0.00 | 0.11 | 0.43 | 0.43 | 0.00 |
| Sat Flow, veh/h | 1885 | 1598 | 1781 | 1870 | 1795 | 1598 |
| Grp Volume(v). veh/h | 230 | 0 | 72 | 411 | 453 | 0 |
| Grp Sat Flow(s).veh/h/ln | 1885 | 1598 | 1781 | 1870 | 1795 | 1598 |
| Q Serve(q_s), s | 9.2 | 0.0 | 3.4 | 14.4 | 17.2 | 0.0 |
| Cycle Q Clear(a c). s | 9.2 | 0.0 | 3.4 | 14.4 | 17.2 | 0.0 |
| Prop In Lane | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Lane Grp Cap(c), veh/h | 503 | | 198 | 810 | 778 | |
| V/C Ratio(X) | 0.46 | | 0.36 | 0.51 | 0.58 | |
| Avail Cap(c a), veh/h | 503 | | 198 | 810 | 778 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 27.6 | 0.0 | 37.1 | 18.5 | 19.3 | 0.0 |
| Incr Delay (d2), s/veh | 3.0 | 0.0 | 5.1 | 2.3 | 3.2 | 0.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%).veh/ln | 4.4 | 0.0 | 1.7 | 6.3 | 7.2 | 0.0 |
| Unsig. Movement Delay, s/veh | 1 | | | | | |
| LnGrp Delay(d).s/veh | 30.5 | 0.0 | 42.2 | 20.8 | 22.5 | 0.0 |
| LnGrp LOS | С | | D | С | С | |
| Approach Vol. veh/h | 230 | А | _ | 483 | 453 | А |
| Approach Delay s/veh | 30.5 | <i>, , , , , , , , , ,</i> | | 24.0 | 22.5 | |
| Approach LOS | C | | | C | C | |
| | Ŭ | | | | - | |
| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 |
| Phs Duration (G+Y+Rc), s | | 45.0 | | 45.0 | 15.0 | 30.0 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 5.0 | 6.0 |
| Max Green Setting (Gmax), s | | 39.0 | | 39.0 | 10.0 | 24.0 |
| Max Q Clear Time (g_c+l1), s | | 16.4 | | 19.2 | 5.4 | 11.2 |
| Green Ext Time (p_c), s | | 5.9 | | 1.8 | 0.0 | 2.1 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 24.7 | | | |
| HCM 6th LOS | | | С | | | |

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

| | ≯ | \mathbf{i} | • | 1 | Ŧ | 1 | | | |
|-----------------------------------|-------|--------------|-------|-------------|------------|------------------|----|----|--|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR | | | |
| Lane Configurations | | 1 | ካካ | ** | ** | 1 | | | |
| Traffic Volume (vph) | 0 | 274 | 198 | 1205 | 1431 | 10 | | | |
| Future Volume (vph) | 0 | 274 | 198 | 1205 | 1431 | 10 | | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | | |
| Total Lost time (s) | | 4.0 | 6.0 | 4.0 | 7.0 | 7.0 | | | |
| Lane Util, Factor | | 1.00 | 0.97 | 0.95 | 0.95 | 1.00 | | | |
| Frpb. ped/bikes | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Frt | | 0.86 | 1.00 | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd, Flow (prot) | | 1591 | 3099 | 3195 | 3406 | 1524 | | | |
| Flt Permitted | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd, Flow (perm) | | 1591 | 3099 | 3195 | 3406 | 1524 | | | |
| Peak-hour factor PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | | | |
| Adi Flow (vph) | 0.54 | 291 | 211 | 1282 | 1522 | 11 | | | |
| RTOR Reduction (vph) | 0 | 231 | 211 | 1202 | 1022 | 3 | | | |
| Lane Group Flow (vph) | 0 | 291 | 211 | 1282 | 1522 | 8 | | | |
| Confl Peds (#/br) | U | 201 | 211 | 1202 | 1522 | 0 | | | |
| Heavy Vehicles (%) | 2% | 2% | 13% | 13% | 6% | 6% | | | |
| | 2 /0 | Z /0 | Drot | 1070 NIA | 070 NIA | Dorm | | | |
| Protected Disease | | Fiee | 1 | Eroo | 1NA 2 | Feilii | | | |
| Protected Phases | | Free | I | Fiee | 2 | 0 | | | |
| Actuated Crean C (a) | | 100.0 | 10.1 | 100.0 | 74.0 | Z 74.0 | | | |
| Effective Creen, g (s) | | 100.0 | 12.1 | 100.0 | 74.9 | 74.9 | | | |
| Actuated a/C Datia | | 100.0 | 12.1 | 100.0 | 74.9 | 74.9 | | | |
| | | 1.00 | 0.12 | 1.00 | 0.75 | 0.75 | | | |
| Vehicle Extension (s) | | | 0.0 | | 7.0 | 7.0 | | | |
| | | 4504 | 3.0 | 0405 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | | 1591 | 3/4 | 3195 | 2551 | 1141 | | | |
| v/s Ratio Prot | | 0.40 | 0.07 | 0.40 | c0.45 | 0.04 | | | |
| v/s Ratio Perm | | 0.18 | | | | 0.01 | | | |
| v/c Ratio | | 0.18 | 0.56 | 0.40 | 0.60 | 0.01 | | | |
| Uniform Delay, d1 | | 0.0 | 41.5 | 0.0 | 5.7 | 3.2 | | | |
| Progression Factor | | 1.00 | 0.53 | 1.00 | 0.18 | 0.11 | | | |
| Incremental Delay, d2 | | 0.3 | 1.6 | 0.3 | 0.7 | 0.0 | | | |
| Delay (s) | | 0.3 | 23.4 | 0.3 | 1.8 | 0.3 | | | |
| Level of Service | | A | С | A | A | A | | | |
| Approach Delay (s) | 0.3 | | | 3.6 | 1.8 | | | | |
| Approach LOS | Α | | | A | A | | | | |
| Intersection Summary | | | | | | | | | |
| HCM 2000 Control Delay | | | 2.4 | Н | CM 2000 | Level of Service |) | A | |
| HCM 2000 Volume to Capacity | ratio | | 0.60 | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | S | um of lost | t time (s) | 13 | .0 | |
| Intersection Capacity Utilization | n | | 64.1% | IC | U Level o | of Service | | С | |
| Analysis Period (min) | | | 15 | | | | | | |

c Critical Lane Group

| | ≯ | → | $\mathbf{\hat{z}}$ | 4 | + | * | • | Ť | 1 | 1 | Ŧ | ~ |
|--------------------------------|------------|------------|--------------------|------|------------|------------|------------|-----------|------|--|------------|-------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ሻ | | 1 | | | | 5 | ĥ | | | • | 1 |
| Traffic Volume (vph) | 276 | 0 | 615 | 0 | 0 | 0 | 428 | 1113 | 0 | 0 | 998 | 172 |
| Future Volume (vph) | 276 | 0 | 615 | 0 | 0 | 0 | 428 | 1113 | 0 | 0 | 998 | 172 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 6.5 | | 6.5 | | | | 6.5 | 6.5 | | | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | | 0.85 | | | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | | 1.00 | | | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1752 | | 1463 | | | | 1583 | 1667 | | | 1673 | 1497 |
| Flt Permitted | 0.95 | | 1.00 | | | | 0.04 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1752 | | 1463 | | | | 69 | 1667 | | | 1673 | 1497 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adi, Flow (vph) | 297 | 0 | 661 | 0 | 0 | 0 | 460 | 1197 | 0 | 0 | 1073 | 185 |
| RTOR Reduction (vph) | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| Lane Group Flow (vph) | 297 | 0 | 611 | 0 | 0 | 0 | 460 | 1197 | 0 | 0 | 1073 | 159 |
| Confl. Peds. (#/hr) | | • | ••• | • | • | • | 1 | | • | , The second sec | | 1 |
| Confl. Bikes (#/hr) | | | | | | | · | | | | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 0% | 0% | 0% | 14% | 14% | 14% | 6% | 6% | 6% |
| Turn Type | Prot | | nt+ov | | | | pm+pt | NA | | | NA | pm+ov |
| Protected Phases | 4 | | 14 | | | | 1 | 1.6 | | | 2 | 4 |
| Permitted Phases | • | | 4 | | | | 16 | | | | | 2 |
| Actuated Green G (s) | 20.5 | | 61.5 | | | | 131.0 | 131.0 | | | 90.0 | 110 5 |
| Effective Green g (s) | 20.5 | | 61.5 | | | | 131.0 | 131.0 | | | 90.0 | 110.5 |
| Actuated g/C Ratio | 0.12 | | 0.37 | | | | 0.80 | 0.80 | | | 0.55 | 0.67 |
| Clearance Time (s) | 6.5 | | 0.07 | | | | 6.5 | 0.00 | | | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.5 | | | | | | 3.0 | | | | 6.0 | 3.5 |
| Lane Grn Can (vnh) | 218 | | 546 | | | | 372 | 1327 | | | 915 | 1064 |
| v/s Ratio Prot | c0 17 | | c0 42 | | | | 0.26 | 0.72 | | | 0.64 | 0.02 |
| v/s Ratio Perm | 00.17 | | 00. 4 2 | | | | c0.72 | 0.72 | | | 0.04 | 0.02 |
| v/c Ratio | 1.36 | | 1 12 | | | | 1 24 | 0.90 | | | 1 17 | 0.00 |
| Uniform Delay, d1 | 72.0 | | 51.5 | | | | 60.5 | 12.1 | | | 37.2 | 9 9 |
| Progression Factor | 1 00 | | 1 00 | | | | 1 00 | 1 00 | | | 1 00 | 1 00 |
| Incremental Delay, d2 | 189.8 | | 75.5 | | | | 127.6 | 8.8 | | | 89.3 | 0.1 |
| Delay (s) | 261.8 | | 127.0 | | | | 188.1 | 20.9 | | | 126.6 | 9.1 |
| Level of Service | 201.0 F | | 127.0 F | | | | 100.1 F | 20.5 C | | | 120.0 F | Δ |
| Approach Delay (s) | | 168.8 | • | | 0.0 | | | 67.3 | | | 109.4 | Л |
| Approach LOS | | 100.0 F | | | Δ | | | 07.0 F | | | 105.4 F | |
| Approach 200 | | I | | | Л | | | L | | | I | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 106.1 | Н | CM 2000 | Level of | Service | | F | | | |
| HCM 2000 Volume to Capac | ity ratio | | 1.29 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 164.5 | S | um of lost | t time (s) | | | 19.5 | | | |
| Intersection Capacity Utilizat | ion | | 105.7% | IC | U Level o | of Service |) | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

| | ٠ | \mathbf{r} | 1 | 1 | Ŧ | - |
|------------------------------|-------|--------------|------|----------|------|------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ካካ | 1 | | *** | 44 | |
| Traffic Volume (veh/h) | 137 | 1118 | 0 | 1788 | 1460 | 0 |
| Future Volume (veh/h) | 137 | 1118 | 0 | 1788 | 1460 | 0 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1796 | 1796 | 0 | 1781 | 1826 | 0 |
| Adj Flow Rate, veh/h | 151 | 0 | 0 | 1965 | 1604 | 0 |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Percent Heavy Veh, % | 7 | 7 | 0 | 8 | 5 | 0 |
| Cap, veh/h | 217 | | 0 | 3961 | 2826 | 0 |
| Arrive On Green | 0.07 | 0.00 | 0.00 | 0.81 | 0.81 | 0.00 |
| Sat Flow, veh/h | 3319 | 1522 | 0 | 5184 | 3652 | 0 |
| Grp Volume(v). veh/h | 151 | 0 | 0 | 1965 | 1604 | 0 |
| Grp Sat Flow(s).veh/h/ln | 1659 | 1522 | 0 | 1621 | 1735 | Ū |
| Q Serve(a s), s | 4.5 | 0.0 | 0.0 | 12.6 | 16.0 | 0.0 |
| Cycle Q Clear(a, c), s | 4.5 | 0.0 | 0.0 | 12.6 | 16.0 | 0.0 |
| Prop In Lane | 1.00 | 1.00 | 0.00 | | | 0.00 |
| Lane Grp Cap(c), veh/h | 217 | | 0 | 3961 | 2826 | 0 |
| V/C Ratio(X) | 0.69 | | 0.00 | 0.50 | 0.57 | 0.00 |
| Avail Cap(c, a), veh/h | 398 | | 0 | 3961 | 2826 | 0 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 45.7 | 0.0 | 0.0 | 2.9 | 3.2 | 0.0 |
| Incr Delay (d2) s/veh | 4 0 | 0.0 | 0.0 | 0.4 | 0.8 | 0.0 |
| Initial Q Delay(d3) s/veh | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 |
| %ile BackOfQ(50%) veh/ln | 1.9 | 0.0 | 0.0 | 2.1 | 3.0 | 0.0 |
| Unsig Movement Delay s/ve | h | 0.0 | 0.0 | 2.1 | 0.0 | 0.0 |
| InGrn Delay(d) s/veh | 49.7 | 0.0 | 0.0 | 33 | 40 | 0.0 |
| LinGrn LOS | П | 0.0 | Δ | Δ | Δ | Δ |
| Approach Vol. yoh/h | 151 | ٨ | ~ | 1065 | 1604 | |
| Approach Delay, shich | /0.7 | A | | 1900 | 1004 | |
| Approach LOS | 49.7 | | | ۵.S ۸ | 4.0 | |
| Approach LOS | U | | | A | A | |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), s | | 87.5 | | 12.5 | | 87.5 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | ; | 76.0 | | 12.0 | | 76.0 |
| Max Q Clear Time (g_c+l1), s | 3 | 18.0 | | 6.5 | | 14.6 |
| Green Ext Time (p_c), s | | 37.5 | | 0.2 | | 46.6 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 5.5 | | | |
| HCM 6th LOS | | | Δ | | | |
| | | | А | | | |

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

| | € | * | t. | 1 | 1 | Ŧ |
|-------------------------------|----------|------|-----------|------|------|-------------|
| Movement N | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | 55 | 11 | 441 | | | *** |
| Traffic Volume (veh/h) | 666 | 602 | 930 | 0 | 0 | 1539 |
| Future Volume (veh/h) | 666 | 602 | 930 | 0 | 0 | 1539 |
| Initial Q (Qb) veh | 0 | 002 | 000 | 0 | 0 | 0 |
| Ped-Bike Adi(A nhT) | 1.00 | 1.00 | v | 1.00 | 1.00 | v |
| Parking Bus Adi | 1.00 | 1.00 | 1 00 | 1.00 | 1.00 | 1 00 |
| Work Zone On Annroach | No. | 1.00 | No | 1.00 | 1.00 | No |
| Adi Sat Flow veh/h/ln 1 | 1722 | 1722 | 1767 | 0 | 0 | 1841 |
| Adi Flow Rate veh/h | 724 | 654 | 1011 | 0 | 0 | 1673 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0 92 | 0 92 | 0 92 |
| Percent Heavy Veh % | 12 | 12 | 0.5Z Q | 0.52 | 0.52 | 0.5Z |
| Can veh/h | 972 | 785 | 3 2723 | 0 | 0 | 2837 |
| Arrive On Groop | 0.21 | 0.21 | 0.56 | 0 00 | 0.00 | 0.56 |
| Anive On Gleen | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| Sat Flow, ven/n 3 | 70102 | 2009 | 5141 | 0 | 0 | 0300 |
| Grp Volume(v), veh/h | 724 | 654 | 1011 | 0 | 0 | 1673 |
| Grp Sat Flow(s),veh/h/In1 | 1591 | 1284 | 1608 | 0 | 0 | 1675 |
| Q Serve(g_s), s | 20.5 | 23.7 | 11.5 | 0.0 | 0.0 | 21.7 |
| Cycle Q Clear(g_c), s | 20.5 | 23.7 | 11.5 | 0.0 | 0.0 | 21.7 |
| Prop In Lane | 1.00 | 1.00 | | 0.00 | 0.00 | |
| Lane Grp Cap(c), veh/h | 972 | 785 | 2723 | 0 | 0 | 2837 |
| V/C Ratio(X) | 0.74 | 0.83 | 0.37 | 0.00 | 0.00 | 0.59 |
| Avail Cap(c a), veh/h 1 | 1177 | 950 | 2723 | 0 | 0 | 2837 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| Uniform Delay (d) s/veh | 31.2 | 32.4 | 12.0 | 0.0 | 0.0 | 14.2 |
| Incr Delay (d2) s/veh | 2.1 | 5.5 | 0.1 | 0.0 | 0.0 | ΛQ |
| Initial O Delay (u2), sivel | 2.1 | 0.0 | 0.4 | 0.0 | 0.0 | 0.9 |
| | 0.0 | 7.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| Weige May and Date | ŏ. Yili | 0.1 | J.Ö | 0.0 | 0.0 | 1.5 |
| Unsig. Movement Delay, | s/veh | 07.0 | 40.4 | 0.0 | 0.0 | 45.4 |
| LnGrp Delay(d),s/veh | 33.3 | 37.8 | 12.4 | 0.0 | 0.0 | 15.1 |
| LnGrp LOS | С | D | В | A | A | В |
| Approach Vol, veh/h 1 | 1378 | | 1011 | | | 1673 |
| Approach Delay, s/veh | 35.5 | | 12.4 | | | 15.1 |
| Approach LOS | D | | В | | | В |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (C+V+Po) | \$ | 62.5 | | 37.5 | | 62.5 |
| Change Deried (V De) | 3 | 6.0 | | 57.5 | | 02.0 6 0 |
| Change Period (Y+KC), S |)) - | 0.0 | | 1.0 | | 0.0 |
| Max Green Setting (Gma | ax), s | 50.0 | | 37.0 | | 50.0 |
| Max Q Clear Time (g_c+ | I1), s | 23.7 | | 25.7 | | 13.5 |
| Green Ext Time (p_c), s | | 25.2 | | 4.8 | | 26.4 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 21.3 | | | |
| HCM 6th LOS | | | С | | | |

メッシュー イイ イントレイ

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|---------------------------|------------------------|------|------|------|------|------|----------|----------|------|----------|-------------|------|--|
| Lane Configurations | | 4 | | | ्र | 1 | <u>۲</u> | ^ | 1 | <u>۲</u> | ተተ ጮ | | |
| Traffic Volume (veh/h) | 6 | 1 | 18 | 161 | 0 | 88 | 21 | 1320 | 199 | 116 | 1590 | 2 | |
| Future Volume (veh/h) | 6 | 1 | 18 | 161 | 0 | 88 | 21 | 1320 | 199 | 116 | 1590 | 2 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Work Zone On Approach | า | No | | | No | | | No | | | No | | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1796 | 1796 | 1796 | 1707 | 1707 | 1707 | 1826 | 1826 | 1826 | |
| Adj Flow Rate, veh/h | 6 | 1 | 19 | 173 | 0 | 95 | 23 | 1419 | 0 | 125 | 1710 | 2 | |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | |
| Percent Heavy Veh, % | 0 | 0 | 0 | 7 | 7 | 7 | 13 | 13 | 13 | 5 | 5 | 5 | |
| Cap, veh/h | 44 | 27 | 72 | 189 | 0 | 364 | 38 | 2331 | | 156 | 2912 | 3 | |
| Arrive On Green | 0.26 | 0.24 | 0.24 | 0.26 | 0.00 | 0.24 | 0.02 | 0.50 | 0.00 | 0.03 | 0.19 | 0.19 | |
| Sat Flow, veh/h | 0 | 111 | 301 | 487 | 0 | 1518 | 1626 | 4661 | 1447 | 1739 | 5142 | 6 | |
| Grp Volume(v), veh/h | 26 | 0 | 0 | 173 | 0 | 95 | 23 | 1419 | 0 | 125 | 1105 | 607 | |
| Grp Sat Flow(s), veh/h/ln | 411 | 0 | 0 | 487 | 0 | 1518 | 1626 | 1554 | 1447 | 1739 | 1662 | 1825 | |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.1 | 1.4 | 21.9 | 0.0 | 7.1 | 30.4 | 30.4 | |
| Cycle Q Clear(g_c), s | 26.0 | 0.0 | 0.0 | 26.0 | 0.0 | 5.1 | 1.4 | 21.9 | 0.0 | 7.1 | 30.4 | 30.4 | |
| Prop In Lane | 0.23 | | 0.73 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.00 | |
| Lane Grp Cap(c), veh/h | 151 | 0 | 0 | 199 | 0 | 364 | 38 | 2331 | | 156 | 1882 | 1034 | |
| V/C Ratio(X) | 0.17 | 0.00 | 0.00 | 0.87 | 0.00 | 0.26 | 0.60 | 0.61 | | 0.80 | 0.59 | 0.59 | |
| Avail Cap(c_a), veh/h | 151 | 0 | 0 | 199 | 0 | 364 | 98 | 2331 | | 243 | 1882 | 1034 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.33 | 0.33 | 0.33 | |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.83 | 0.83 | 0.83 | |
| Uniform Delay (d), s/veh | 31.0 | 0.0 | 0.0 | 41.2 | 0.0 | 30.8 | 48.4 | 18.0 | 0.0 | 47.6 | 30.0 | 30.0 | |
| Incr Delay (d2), s/veh | 0.5 | 0.0 | 0.0 | 31.5 | 0.0 | 0.4 | 14.1 | 1.2 | 0.0 | 8.3 | 1.1 | 2.0 | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| %ile BackOfQ(50%),veh | /In0.5 | 0.0 | 0.0 | 5.9 | 0.0 | 1.9 | 0.7 | 7.4 | 0.0 | 3.5 | 13.6 | 15.2 | |
| Unsig. Movement Delay, | , s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 31.5 | 0.0 | 0.0 | 72.7 | 0.0 | 31.2 | 62.4 | 19.1 | 0.0 | 56.0 | 31.1 | 32.0 | |
| LnGrp LOS | С | A | Α | E | Α | С | E | В | | E | С | С | |
| Approach Vol, veh/h | | 26 | | | 268 | | | 1442 | А | | 1837 | | |
| Approach Delay, s/veh | | 31.5 | | | 58.0 | | | 19.8 | | | 33.1 | | |
| Approach LOS | | С | | | E | | | В | | | С | | |
| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc), | , s7.4 | 62.6 | | 30.0 | 14.0 | 56.0 | | 30.0 | | | | | |
| Change Period (Y+Rc), | s 5.0 | 6.0 | | 6.0 | 5.0 | 6.0 | | 6.0 | | | | | |
| Max Green Setting (Gma | ax 6 , G | 53.0 | | 24.0 | 14.0 | 45.0 | | 24.0 | | | | | |
| Max Q Clear Time (g_c+ | -113,45 | 32.4 | | 28.0 | 9.1 | 23.9 | | 28.0 | | | | | |
| Green Ext Time (p_c), s | 0.0 | 20.0 | | 0.0 | 0.1 | 19.6 | | 0.0 | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 29.6 | | | | | | | | | | |
| HCM 6th LOS | | | С | | | | | | | | | | |

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

| | ≯ | \mathbf{F} | ٠ | t | Ŧ | ~ |
|----------------------------|--------------------|--------------|------|------|------|------------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ካካ | 1 | 5 | ** | ** | 1 |
| Traffic Volume (veh/h) | 388 | 229 | 181 | 1042 | 1247 | 387 |
| Future Volume (veh/h) | 388 | 229 | 181 | 1042 | 1247 | 387 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A nhT) | 1.00 | 1.00 | 1.00 | v | Ũ | 1.00 |
| Parking Bus, Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approac | ch No | 1.00 | 1.00 | No | No | |
| Adi Sat Flow veh/h/ln | 1781 | 1781 | 1678 | 1678 | 1826 | 1826 |
| Adi Flow Rate veh/h | 422 | 249 | 197 | 1133 | 1355 | 421 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veb % | 8 | 8 | 15 | 15 | 5 | 5 |
| Can veh/h | 592 | 272 | 256 | 2100 | 1975 | 881 |
| Arrive On Green | 0.12 | 0.18 | 0.07 | 0.60 | 0.57 | 0.57 |
| Sat Flow, yoh/h | 3201 | 1510 | 1502 | 3070 | 3561 | 15/7 |
| | 3291 | 1010 | 1090 | 3212 | 4055 | 1047 |
| Grp Volume(v), veh/h | 422 | 249 | 197 | 1133 | 1355 | 421 |
| Grp Sat Flow(s),veh/h/l | n1646 | 1510 | 1598 | 1594 | 1735 | 1547 |
| Q Serve(g_s), s | 12.1 | 16.2 | 4.8 | 17.1 | 27.6 | 16.1 |
| Cycle Q Clear(g_c), s | 12.1 | 16.2 | 4.8 | 17.1 | 27.6 | 16.1 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | n 592 | 272 | 256 | 2199 | 1975 | 881 |
| V/C Ratio(X) | 0.71 | 0.92 | 0.77 | 0.52 | 0.69 | 0.48 |
| Avail Cap(c a), veh/h | 592 | 272 | 366 | 2199 | 1975 | 881 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.92 | 0.92 | 1.00 | 1.00 |
| Uniform Delay (d) s/ve | h 38 6 | 40.3 | 18 7 | 7.5 | 15.2 | 12 7 |
| Incr Delay (d2) s/veh | 4 0 | 33.4 | 57 | 0.8 | 2.0 | 19 |
| Initial () Delay(d3) e/val | μ.Ο η.Ο | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | h/la⊑ 1 | 0.0 Q / | 2.0 | 1.0 | 10.0 | 0.0 E / |
| Ville DaukOlQ(30%),Ve | 11/11 0 .1 | 0.4 | 3.0 | 4.9 | 10.1 | 5.4 |
| Unsig. Wovement Delay | y, s/ven | 70 7 | 04.4 | 0.0 | 47.0 | 14.0 |
| LnGrp Delay(d),s/veh | 42.6 | 73.7 | 24.4 | 8.3 | 17.2 | 14.6 |
| LnGrp LOS | D | E | С | A | В | В |
| Approach Vol, veh/h | 671 | | | 1330 | 1776 | |
| Approach Delay, s/veh | 54.1 | | | 10.6 | 16.6 | |
| Approach LOS | D | | | В | В | |
| Timer - Assigned Phs | 1 | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc |) \$21 | 63.9 | | 24.0 | | 76.0 |
| Change Period (V+Po) | ς 5 Π | 7.0 | | 6.0 | | 70 |
| Max Green Sotting (Cr | , 3 J.U ha1k∦ Թ | 50.0 | | 18.0 | | 0.0 |
| Max O Clear Time (c | 101.44,05 | 50.0 20.6 | | 10.0 | | 10.4 |
| iviax Q Clear Time (g_c | ;+110),85 | 29.0 | | 18.2 | | 19.1 |
| Green Ext Time (p_c), | s 0.3 | 19.5 | | 0.0 | | 38.0 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delav | | | 21.2 | | | |
| HCM 6th LOS | | | С | | | |

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|---------|------|------|------|------|
| Lane Configurations | | | | | \$ | | | et F | | | ŧ | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 20 | 0 | 10 | 0 | 1323 | 65 | 32 | 1087 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 20 | 0 | 10 | 0 | 1323 | 65 | 32 | 1087 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 4 | 4 | 4 | 13 | 13 | 13 | 6 | 6 | 6 |
| Mvmt Flow | 0 | 0 | 0 | 22 | 0 | 11 | 0 | 1487 | 73 | 36 | 1221 | 0 |

| Major/Minor | | Minor1 | | N | 1ajor1 | | Ν | Major2 | | | |
|----------------------------|--------|---------------|-------|---------|----------|-----------|----|----------|-----------|--------|---------|
| Conflicting Flow All | | 2817 | 2817 | 1524 | - | 0 | 0 | 1560 | 0 | 0 | |
| Stage 1 | | 1524 | 1524 | - | - | - | - | - | - | - | |
| Stage 2 | | 1293 | 1293 | - | - | - | - | - | - | - | |
| Critical Hdwy | | 6.44 | 6.54 | 6.24 | - | - | - | 4.16 | - | - | |
| Critical Hdwy Stg 1 | | 5.44 | 5.54 | - | - | - | - | - | - | - | |
| Critical Hdwy Stg 2 | | 5.44 | 5.54 | - | - | - | - | - | - | - | |
| Follow-up Hdwy | | 3.536 | 4.036 | 3.336 | - | - | - | 2.254 | - | - | |
| Pot Cap-1 Maneuver | | ~ 19 | 18 | 144 | 0 | - | - | 413 | - | 0 | |
| Stage 1 | | 196 | 178 | - | 0 | - | - | - | - | 0 | |
| Stage 2 | | 255 | 231 | - | 0 | - | - | - | - | 0 | |
| Platoon blocked, % | | | | | | - | - | | - | | |
| Mov Cap-1 Maneuver | | ~ 14 | 0 | 144 | - | - | - | 413 | - | - | |
| Mov Cap-2 Maneuver | | ~ 14 | 0 | - | - | - | - | - | - | - | |
| Stage 1 | | 196 | 0 | - | - | - | - | - | - | - | |
| Stage 2 | | 186 | 0 | - | - | - | - | - | - | - | |
| | | | | | | | | | | | |
| Approach | | WB | | | NB | | | SB | | | |
| HCM Control Delay, s | | \$ 739.6 | | | 0 | | | 0.4 | | | |
| HCM LOS | | F | | | | | | | | | |
| | | | | | | | | | | | |
| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT | | | | | | | |
| Capacity (veh/h) | - | - 20 | 413 | - | | | | | | | |
| HCM Lane V/C Ratio | - | - 1.685 | 0.087 | - | | | | | | | |
| HCM Control Delay (s) | - | -\$ 739.6 | 14.5 | 0 | | | | | | | |
| HCM Lane LOS | - | - F | В | А | | | | | | | |
| HCM 95th %tile Q(veh) | - | - 4.5 | 0.3 | - | | | | | | | |
| Notes | | | | | | | | | | | |
| ~: Volume exceeds capacity | \$: De | lay exceeds 3 | 00s | +: Comp | outation | Not Defin | ed | *: All r | najor vol | ume in | platoon |

HCM 6th Signalized Intersection Summary 8: MD 201 & Powder Mill Road

| | ۶ | → | $\mathbf{\hat{z}}$ | 4 | + | • | ٠ | Ť | ۲ | 5 | Ļ | ~ |
|------------------------------|------|------|--------------------|------|------|------|------|------|------|------|-------------|----------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ۲ | • | 1 | 5 | • | 1 | ٦ | • | 1 | ۲ | ∱1 } | |
| Traffic Volume (veh/h) | 244 | 373 | 413 | 92 | 171 | 44 | 413 | 592 | 231 | 97 | 518 | 113 |
| Future Volume (veh/h) | 244 | 373 | 413 | 92 | 171 | 44 | 413 | 592 | 231 | 97 | 518 | 113 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1693 | 1693 | 1693 | 1841 | 1841 | 1841 | 1693 | 1693 | 1693 | 1826 | 1826 | 1826 |
| Adj Flow Rate, veh/h | 274 | 419 | 0 | 103 | 192 | 0 | 464 | 665 | 0 | 109 | 582 | 127 |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Percent Heavy Veh, % | 14 | 14 | 14 | 4 | 4 | 4 | 14 | 14 | 14 | 5 | 5 | 5 |
| Cap, veh/h | 395 | 557 | | 212 | 724 | | 501 | 906 | | 223 | 695 | 151 |
| Arrive On Green | 0.33 | 0.33 | 0.00 | 0.04 | 0.39 | 0.00 | 0.26 | 0.54 | 0.00 | 0.25 | 0.25 | 0.25 |
| Sat Flow, veh/h | 1078 | 1693 | 1434 | 1753 | 1841 | 1560 | 1612 | 1693 | 1434 | 752 | 2833 | 617 |
| Grp Volume(v), veh/h | 274 | 419 | 0 | 103 | 192 | 0 | 464 | 665 | 0 | 109 | 356 | 353 |
| Grp Sat Flow(s),veh/h/ln | 1078 | 1693 | 1434 | 1753 | 1841 | 1560 | 1612 | 1693 | 1434 | 752 | 1735 | 1715 |
| Q Serve(g_s), s | 35.8 | 34.2 | 0.0 | 5.5 | 10.9 | 0.0 | 35.6 | 46.6 | 0.0 | 20.1 | 30.2 | 30.4 |
| Cycle Q Clear(g_c), s | 36.7 | 34.2 | 0.0 | 5.5 | 10.9 | 0.0 | 35.6 | 46.6 | 0.0 | 21.7 | 30.2 | 30.4 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.36 |
| Lane Grp Cap(c), veh/h | 395 | 557 | | 212 | 724 | | 501 | 906 | | 223 | 425 | 420 |
| V/C Ratio(X) | 0.69 | 0.75 | | 0.49 | 0.27 | | 0.93 | 0.73 | | 0.49 | 0.84 | 0.84 |
| Avail Cap(c_a), veh/h | 395 | 557 | | 212 | 724 | | 501 | 906 | | 223 | 425 | 420 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 47.6 | 46.4 | 0.0 | 38.9 | 31.8 | 0.0 | 39.3 | 27.5 | 0.0 | 53.1 | 55.6 | 55.6 |
| Incr Delay (d2), s/veh | 9.7 | 9.1 | 0.0 | 7.8 | 0.9 | 0.0 | 25.6 | 5.2 | 0.0 | 7.5 | 17.5 | 18.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 10.6 | 15.8 | 0.0 | 3.1 | 5.2 | 0.0 | 14.8 | 19.6 | 0.0 | 4.3 | 15.2 | 15.2 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 57.3 | 55.5 | 0.0 | 46.7 | 32.7 | 0.0 | 65.0 | 32.8 | 0.0 | 60.5 | 73.0 | 73.6 |
| LnGrp LOS | E | E | | D | С | | E | С | | E | E | <u> </u> |
| Approach Vol, veh/h | | 693 | А | | 295 | А | | 1129 | А | | 818 | |
| Approach Delay, s/veh | | 56.2 | | | 37.6 | | | 46.0 | | | 71.6 | |
| Approach LOS | | E | | | D | | | D | | | E | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 45.0 | 44.0 | 10.0 | 56.0 | | 89.0 | | 66.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 6.0 | 4.5 | 5.0 | | 6.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 40.5 | 38.0 | 5.5 | 51.0 | | 83.0 | | 61.0 | | | | |
| Max Q Clear Time (g_c+l1), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 54.7 | | | | | | | | | |
| HCM 6th LOS | | | D | | | | | | | | | |

Notes

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | 4 | | | - 4 | 1 | | ्र | 1 | | - 🗘 | |
| Traffic Vol, veh/h | 23 | 2 | 6 | 2 | 1 | 2 | 29 | 681 | 3 | 1 | 734 | 30 |
| Future Vol, veh/h | 23 | 2 | 6 | 2 | 1 | 2 | 29 | 681 | 3 | 1 | 734 | 30 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None |
| Storage Length | - | - | - | - | - | 50 | - | - | 325 | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 22 | 22 | 22 | 0 | 0 | 0 | 17 | 17 | 17 | 9 | 9 | 9 |
| Mvmt Flow | 24 | 2 | 6 | 2 | 1 | 2 | 30 | 709 | 3 | 1 | 765 | 31 |

| Major/Minor | Minor2 | | I | Minor1 | | | Major1 | | I | Major2 | | | |
|----------------------|--------|-------|-------|--------|------|-----|--------|---|---|--------|---|---|--|
| Conflicting Flow All | 1555 | 1555 | 781 | 1556 | 1567 | 709 | 796 | 0 | 0 | 712 | 0 | 0 | |
| Stage 1 | 783 | 783 | - | 769 | 769 | - | - | - | - | - | - | - | |
| Stage 2 | 772 | 772 | - | 787 | 798 | - | - | - | - | - | - | - | |
| Critical Hdwy | 7.32 | 6.72 | 6.42 | 7.1 | 6.5 | 6.2 | 4.27 | - | - | 4.19 | - | - | |
| Critical Hdwy Stg 1 | 6.32 | 5.72 | - | 6.1 | 5.5 | - | - | - | - | - | - | - | |
| Critical Hdwy Stg 2 | 6.32 | 5.72 | - | 6.1 | 5.5 | - | - | - | - | - | - | - | |
| Follow-up Hdwy | 3.698 | 4.198 | 3.498 | 3.5 | 4 | 3.3 | 2.353 | - | - | 2.281 | - | - | |
| Pot Cap-1 Maneuver | 83 | 102 | 365 | 93 | 112 | 438 | 763 | - | - | 856 | - | - | |
| Stage 1 | 358 | 377 | - | 397 | 413 | - | - | - | - | - | - | - | |
| Stage 2 | 364 | 381 | - | 388 | 401 | - | - | - | - | - | - | - | |
| Platoon blocked, % | | | | | | | | - | - | | - | - | |
| Mov Cap-1 Maneuver | 78 | 95 | 365 | 85 | 104 | 438 | 763 | - | - | 856 | - | - | |
| Mov Cap-2 Maneuver | 78 | 95 | - | 85 | 104 | - | - | - | - | - | - | - | |
| Stage 1 | 335 | 376 | - | 371 | 386 | - | - | - | - | - | - | - | |
| Stage 2 | 338 | 356 | - | 378 | 400 | - | - | - | - | - | - | - | |
| | | | | | | | | | | | | | |
| • | | | | | | | | | | 0.5 | | | |

| Approach | EB | WB | NB | SB | |
|----------------------|----|------|-----|----|--|
| HCM Control Delay, s | 63 | 32.9 | 0.4 | 0 | |
| HCM LOS | F | D | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR I | EBLn1V | VBLn1V | VBLn2 | SBL | SBT | SBR |
|-----------------------|------|-----|-------|--------|--------|-------|-------|-----|-----|
| Capacity (veh/h) | 763 | - | - | 93 | 91 | 438 | 856 | - | - |
| HCM Lane V/C Ratio | 0.04 | - | - | 0.347 | 0.034 | 0.005 | 0.001 | - | - |
| HCM Control Delay (s) | 9.9 | 0 | - | 63 | 46 | 13.3 | 9.2 | 0 | - |
| HCM Lane LOS | А | А | - | F | Е | В | А | А | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 1.4 | 0.1 | 0 | 0 | - | - |

| 45.6 |
|------|
| Е |
| |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR | |
|----------------------------|------|------|----------|------|------|------|--|
| Lane Configurations | | ÷ | el el | | ¥ | | |
| Traffic Vol, veh/h | 6 | 737 | 284 | 6 | 9 | 2 | |
| Future Vol, veh/h | 6 | 737 | 284 | 6 | 9 | 2 | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 0 | 0 | |
| Mvmt Flow | 7 | 847 | 326 | 7 | 10 | 2 | |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | |
| Approach | EB | | WB | | SB | | |
| Opposing Approach | WB | | EB | | | | |
| Opposing Lanes | 1 | | 1 | | 0 | | |
| Conflicting Approach Left | SB | | | | WB | | |
| Conflicting Lanes Left | 1 | | 0 | | 1 | | |
| Conflicting Approach Right | | | SB | | EB | | |
| Conflicting Lanes Right | 0 | | 1 | | 1 | | |
| HCM Control Delay | 59.3 | | 11.7 | | 9.7 | | |
| HCM LOS | F | | В | | А | | |

| Lane | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, % | 1% | 0% | 82% |
| Vol Thru, % | 99% | 98% | 0% |
| Vol Right, % | 0% | 2% | 18% |
| Sign Control | Stop | Stop | Stop |
| Traffic Vol by Lane | 743 | 290 | 11 |
| LT Vol | 6 | 0 | 9 |
| Through Vol | 737 | 284 | 0 |
| RT Vol | 0 | 6 | 2 |
| Lane Flow Rate | 854 | 333 | 13 |
| Geometry Grp | 1 | 1 | 1 |
| Degree of Util (X) | 1.029 | 0.446 | 0.023 |
| Departure Headway (Hd) | 4.336 | 4.82 | 6.446 |
| Convergence, Y/N | Yes | Yes | Yes |
| Сар | 837 | 747 | 552 |
| Service Time | 2.357 | 2.851 | 4.523 |
| HCM Lane V/C Ratio | 1.02 | 0.446 | 0.024 |
| HCM Control Delay | 59.3 | 11.7 | 9.7 |
| HCM Lane LOS | F | В | А |
| HCM 95th-tile Q | 19.4 | 2.3 | 0.1 |

| Intersection | | | | | | |
|------------------------|-------|------|------|----------|------|------|
| Int Delay, s/veh | 0.7 | | | | | |
| - | | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | 4 | | | ↑ | - ሽ | |
| Traffic Vol, veh/h | 689 | 50 | 0 | 255 | 30 | 0 |
| Future Vol, veh/h | 689 | 50 | 0 | 255 | 30 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage | , # 0 | - | - | 0 | 0 | - |
| Grade, % | . 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 84 | 84 | 84 | 84 | 84 | 84 |
| Heavy Vehicles. % | 2 | 2 | 3 | 3 | 2 | 2 |
| Mymt Flow | 820 | 60 | 0 | 304 | 36 | 0 |
| | 020 | 00 | v | 001 | 00 | v |

| Major/Minor | Major1 | Major2 | Minor1 | | |
|----------------------|--------|--------|---------|---|--|
| Conflicting Flow All | 0 | 0 - | - 1154 | - | |
| Stage 1 | - | | - 850 | - | |
| Stage 2 | - | | - 304 | - | |
| Critical Hdwy | - | | - 6.42 | - | |
| Critical Hdwy Stg 1 | - | | - 5.42 | - | |
| Critical Hdwy Stg 2 | - | | - 5.42 | - | |
| Follow-up Hdwy | - | | - 3.518 | - | |
| Pot Cap-1 Maneuver | - | - 0 | - 218 | 0 | |
| Stage 1 | - | - 0 | - 419 | 0 | |
| Stage 2 | - | - 0 | - 748 | 0 | |
| Platoon blocked, % | - | - | - | | |
| Mov Cap-1 Maneuver | · - | | - 218 | - | |
| Mov Cap-2 Maneuver | · - | | - 218 | - | |
| Stage 1 | - | | - 419 | - | |
| Stage 2 | - | | - 748 | - | |
| | | | | | |
| Approach | EB | WB | NB | | |
| HCM Control Dology | | 0 | 04.7 | | |

| HCM LOS C | HCM Control Delay, s | 0 | 0 | 24.7 | |
|-----------|----------------------|---|---|------|--|
| | HCM LOS | | | С | |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 218 | - | - | - |
| HCM Lane V/C Ratio | 0.164 | - | - | - |
| HCM Control Delay (s) | 24.7 | - | - | - |
| HCM Lane LOS | С | - | - | - |
| HCM 95th %tile Q(veh) | 0.6 | - | - | - |

| Intersection | | | | | | |
|------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 52.9 | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
| Lane Configurations | ۲. | • | el 👘 | | Y | |
| Traffic Vol, veh/h | 20 | 595 | 271 | 152 | 300 | 9 |
| Future Vol, veh/h | 20 | 595 | 271 | 152 | 300 | 9 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 50 | - | - | - | 0 | - |
| Veh in Median Storage, | # - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 2 | 2 | 4 | 4 | 2 | 2 |
| Mvmt Flow | 22 | 647 | 295 | 165 | 326 | 10 |

| Major/Minor | Major1 | Ν | lajor2 | Mi | nor2 | | | | |
|----------------------|--------|--------|--------|----------|-------|---------|----------------------|--------------------------------|--|
| Conflicting Flow All | 460 | 0 | - | 0 1 | 1069 | 378 | | | |
| Stage 1 | - | - | - | - | 378 | - | | | |
| Stage 2 | - | - | - | - | 691 | - | | | |
| Critical Hdwy | 4.12 | - | - | - | 6.42 | 6.22 | | | |
| Critical Hdwy Stg 1 | - | - | - | - | 5.42 | - | | | |
| Critical Hdwy Stg 2 | - | - | - | - | 5.42 | - | | | |
| Follow-up Hdwy | 2.218 | - | - | - 3 | 5.518 | 3.318 | | | |
| Pot Cap-1 Maneuver | 1101 | - | - | - ~ | · 245 | 669 | | | |
| Stage 1 | - | - | - | - | 693 | - | | | |
| Stage 2 | - | - | - | - | 497 | - | | | |
| Platoon blocked, % | | - | - | - | | | | | |
| Mov Cap-1 Maneuver | 1101 | - | - | - ~ | · 240 | 669 | | | |
| Mov Cap-2 Maneuver | - | - | - | - ~ | · 240 | - | | | |
| Stage 1 | - | - | - | - | 679 | - | | | |
| Stage 2 | - | - | - | - | 497 | - | | | |
| | | | | | | | | | |
| Approach | EB | | WB | | SB | | | | |
| HCM Control Delay, s | 0.3 | | 0 | 2 | 29.8 | | | | |
| HCM LOS | | | | | F | | | | |
| | | | | | | | | | |
| Minor Lane/Major Mvr | nt | EBL | EBT | WBT V | NBR S | SBLn1 | | | |
| Capacity (veh/h) | | 1101 | - | - | - | 245 | | | |
| HCM Lane V/C Ratio | | 0.02 | - | - | - | 1.371 | | | |
| HCM Control Delay (s |) | 8.3 | - | - | - | 229.8 | | | |
| HCM Lane LOS | , | А | - | - | - | F | | | |
| HCM 95th %tile Q(veh | ı) | 0.1 | - | - | - | 18.3 | | | |
| Notes | | | | | | | | | |
| ~: Volume exceeds ca | pacity | \$: De | ay exc | eeds 300 |)s - | +: Comp | outation Not Defined | *: All major volume in platoon | |

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|-------|------|------|---------|------|
| Lane Configurations | | et | | ľ | • | | | | | 1 | et F | |
| Traffic Vol, veh/h | 0 | 752 | 159 | 141 | 291 | 0 | 0 | 0 | 0 | 286 | 2 | 144 |
| Future Vol, veh/h | 0 | 752 | 159 | 141 | 291 | 0 | 0 | 0 | 0 | 286 | 2 | 144 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 225 | - | - | - | - | - | 25 | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 800 | 169 | 150 | 310 | 0 | 0 | 0 | 0 | 304 | 2 | 153 |

| Major/Minor | Major1 | | N | Major2 | | | Minor2 | | | | |
|----------------------|---------|-------|---------|--------|-----------|-----------|-------------------|---------|----------|-----------|--|
| Conflicting Flow All | - | 0 | 0 | 969 | 0 0 |) | 1495 | 1579 | 310 | | |
| Stage 1 | - | - | - | - | | | 610 | 610 | - | | |
| Stage 2 | - | - | - | - | | | 885 | 969 | - | | |
| Critical Hdwy | - | - | - | 4.13 | | | 6.42 | 6.52 | 6.22 | | |
| Critical Hdwy Stg 1 | - | - | - | - | | | 5.42 | 5.52 | - | | |
| Critical Hdwy Stg 2 | - | - | - | - | | | 5.42 | 5.52 | - | | |
| Follow-up Hdwy | - | - | - | 2.227 | | • | 3.518 | 4.018 | 3.318 | | |
| Pot Cap-1 Maneuver | 0 | - | - | 707 | - 0 | 1 | ~ 135 | 109 | 730 | | |
| Stage 1 | 0 | - | - | - | - 0 | | 542 | 485 | - | | |
| Stage 2 | 0 | - | - | - | - C | 1 | 403 | 332 | - | | |
| Platoon blocked, % | | - | - | | - | | | | | | |
| Mov Cap-1 Maneuver | · - | - | - | 707 | | | ~ 106 | 0 | 730 | | |
| Mov Cap-2 Maneuver | - | - | - | - | | | ~ 106 | 0 | - | | |
| Stage 1 | - | - | - | - | | | 542 | 0 | - | | |
| Stage 2 | - | - | - | - | | | 318 | 0 | - | | |
| | | | | | | | | | | | |
| Approach | EB | | | WB | | | SB | | | | |
| HCM Control Delay, s | 0 | | | 3.7 | | | \$ 619.4 | | | | |
| HCM LOS | | | | | | | F | | | | |
| | | | | | | | | | | | |
| Minor Lane/Maior Myr | nt | EBT | EBR | WBL | WBT SBLn1 | SBLn2 | | | | | |
| Capacity (veh/h) | - | - | - | 707 | - 106 | 730 | | | | | |
| HCM Lane V/C Ratio | | - | - | 0.212 | - 2.87 | 0.213 | | | | | |
| HCM Control Delay (s | ;) | _ | - | 11.5 | -\$ 929.9 | 11.3 | | | | | |
| HCM Lane LOS | ·) | - | - | В | - F | B | | | | | |
| HCM 95th %tile Q(veh | ר) | - | - | 0.8 | - 28.8 | 0.8 | | | | | |
| Notes | | | | | | | | | | | |
| ~: Volume exceeds ca | anacity | \$ De | lav exc | eeds 3 | 00s + Cor | nnutation | Not Defined *· Al | Imaiory | volume i | n nlatoon | |
| | puony | ψ. De | | 0003 0 | | nputation | Not Defined . Al | major | | n platoon | |

Intersection

Int Delay, s/veh

| | | | | | WDT | | | NDT | | 0.01 | 0.D.T | 000 |
|------------------------|----------|----------|------|------|--------------|------|------|--------------|------|------|-------|------|
| Movement | EBL | EBT | EBR | WBL | WBI | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | <u>۲</u> | ↑ | | | - 1 2 | | - ሽ | - 1 + | | | | |
| Traffic Vol, veh/h | 294 | 709 | 0 | 0 | 348 | 545 | 73 | 3 | 46 | 0 | 0 | 0 |
| Future Vol, veh/h | 294 | 709 | 0 | 0 | 348 | 545 | 73 | 3 | 46 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 250 | - | - | - | - | - | 50 | - | - | - | - | - |
| Veh in Median Storage | , # - | 0 | - | - | 0 | - | - | 0 | - | - | 16965 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 323 | 779 | 0 | 0 | 382 | 599 | 80 | 3 | 51 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | |
|----------------------|--------|---------|----------|----------|-----|--------|---------|---------|--------|--------------------------------|
| Conflicting Flow All | 981 | 0 | - | - | - | 0 | 2107 | 2406 | 779 | |
| Stage 1 | - | - | - | - | - | - | 1425 | 1425 | - | |
| Stage 2 | - | - | - | - | - | - | 682 | 981 | - | |
| Critical Hdwy | 4.12 | - | - | - | - | - | 6.41 | 6.51 | 6.21 | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.41 | 5.51 | - | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.41 | 5.51 | - | |
| Follow-up Hdwy | 2.218 | - | - | - | - | - | 3.509 | 4.009 | 3.309 | |
| Pot Cap-1 Maneuver | 704 | - | 0 | 0 | - | - | ~ 57 | 33 | 397 | |
| Stage 1 | - | - | 0 | 0 | - | - | 223 | 202 | - | |
| Stage 2 | - | - | 0 | 0 | - | - | 504 | 329 | - | |
| Platoon blocked, % | | - | | | - | - | | | | |
| Mov Cap-1 Maneuver | 704 | - | - | - | - | - | ~ 31 | 0 | 397 | |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 31 | 0 | - | |
| Stage 1 | - | - | - | - | - | - | 121 | 0 | - | |
| Stage 2 | - | - | - | - | - | - | 504 | 0 | - | |
| | | | | | | | | | | |
| Approach | EB | | | WB | | | NB | | | |
| HCM Control Delay, s | 4.2 | | | 0 | | ţ | 599.3 | | | |
| HCM LOS | | | | | | | F | | | |
| | | | | | | | | | | |
| Minor Lane/Major Mvn | nt | NBLn1 | NBLn2 | EBL | EBT | WBT | WBR | | | |
| Capacity (veh/h) | | 31 | 397 | 704 | - | - | - | | | |
| HCM Lane V/C Ratio | | 2.588 | 0.136 | 0.459 | - | - | - | | | |
| HCM Control Delay (s |) | 5 991.1 | 15.5 | 14.4 | - | - | - | | | |
| HCM Lane LOS | , | F | С | В | - | - | - | | | |
| HCM 95th %tile Q(veh | ı) | 9.4 | 0.5 | 2.4 | - | - | - | | | |
| Notes | | | | | | | | | | |
| ~: Volume exceeds ca | pacity | \$: De | elay exc | ceeds 30 |)0s | +: Com | putatio | n Not D | efined | *: All major volume in platoon |

| | → | \mathbf{F} | • | - | 1 | 1 |
|------------------------------|---------------|--------------|------|----------|------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | • | 1 | 5 | † | 5 | 7 |
| Traffic Volume (veh/h) | 347 | 400 | 35 | 315 | 619 | 38 |
| Future Volume (veh/h) | 347 | 400 | 35 | 315 | 619 | 38 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1885 | 1885 |
| Adj Flow Rate, veh/h | 394 | 0 | 40 | 358 | 703 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 1 | 1 |
| Cap, veh/h | 536 | | 98 | 742 | 838 | |
| Arrive On Green | 0.29 | 0.00 | 0.06 | 0.40 | 0.47 | 0.00 |
| Sat Flow, veh/h | 1856 | 1572 | 1767 | 1856 | 1795 | 1598 |
| Grp Volume(v), veh/h | 394 | 0 | 40 | 358 | 703 | 0 |
| Grp Sat Flow(s).veh/h/ln | 1856 | 1572 | 1767 | 1856 | 1795 | 1598 |
| Q Serve(a s), s | 17.3 | 0.0 | 2.0 | 12.9 | 30.9 | 0.0 |
| Cycle Q Clear(q_c), s | 17.3 | 0.0 | 2.0 | 12.9 | 30.9 | 0.0 |
| Prop In Lane | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Lane Gro Cap(c), veh/h | 536 | | 98 | 742 | 838 | |
| V/C Ratio(X) | 0.74 | | 0.41 | 0.48 | 0.84 | |
| Avail Cap(c, a), veh/h | 536 | | 98 | 742 | 838 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d) s/yeh | 28.9 | 0.0 | 41.1 | 20.1 | 21.0 | 0.0 |
| Incr Delay (d2) s/veh | 87 | 0.0 | 12.1 | 22 | 9.9 | 0.0 |
| Initial O Delay(d3) s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfO(50%) veh/ln | 8.6 | 0.0 | 12 | 5.7 | 13.8 | 0.0 |
| Unsig Movement Delay s/veh | 0.0 | 0.0 | 1.2 | 0.7 | 10.0 | 0.0 |
| InGrn Delay(d) s/veh | 37.6 | 0.0 | 53 1 | 22.3 | 30.9 | 0.0 |
| InGrp LOS | 07.0 D | 0.0 | D | C | С.00 | 0.0 |
| Approach Vol. veh/h | 30/ | ٨ | | 308 | 703 | ٨ |
| Approach Delay, s/yeb | 37.6 | ~ | | 25 / | 30.0 | ~ |
| Approach LOS | ס. <i>ז</i> ר | | | 23.4 | 50.9 | |
| | U | | | U | U | |
| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 |
| Phs Duration (G+Y+Rc), s | | 42.0 | | 48.0 | 10.0 | 32.0 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 5.0 | 6.0 |
| Max Green Setting (Gmax), s | | 36.0 | | 42.0 | 5.0 | 26.0 |
| Max Q Clear Time (g_c+I1), s | | 14.9 | | 32.9 | 4.0 | 19.3 |
| Green Ext Time (p_c), s | | 4.8 | | 2.3 | 0.0 | 2.5 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 31.2 | | | |
| HCM 6th LOS | | | C | | | |
| HCM 6th LOS | | | С | | | |

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

| | ≯ | \mathbf{r} | • | 1 | Ŧ | ∢ | | | |
|-----------------------------------|----------|--------------|-------|-------|------------|----------------|----|------|--|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR | | | |
| Lane Configurations | | 1 | ካካ | ** | ** | 1 | | | |
| Traffic Volume (vph) | 0 | 183 | 124 | 1615 | 1051 | 8 | | | |
| Future Volume (vph) | 0 | 183 | 124 | 1615 | 1051 | 8 | | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | | |
| Total Lost time (s) | | 4.0 | 6.0 | 4.0 | 7.0 | 7.0 | | | |
| Lane Util. Factor | | 1.00 | 0.97 | 0.95 | 0.95 | 1.00 | | | |
| Frt | | 0.86 | 1.00 | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | | 1536 | 3303 | 3406 | 3085 | 1380 | | | |
| Flt Permitted | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | | 1536 | 3303 | 3406 | 3085 | 1380 | | | |
| Peak-hour factor. PHF | 0.92 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | | | |
| Adj. Flow (vph) | 0 | 218 | 148 | 1923 | 1251 | 10 | | | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 2 | | | |
| Lane Group Flow (vph) | 0 | 218 | 148 | 1923 | 1251 | 8 | | | |
| Heavy Vehicles (%) | 2% | 7% | 6% | 6% | 17% | 17% | | | |
| Turn Type | | Free | Prot | NA | NA | Perm | | | |
| Protected Phases | | | 1 | Free | 2 | | | | |
| Permitted Phases | | Free | | | | 2 | | | |
| Actuated Green, G (s) | | 100.0 | 10.0 | 100.0 | 77.0 | 77.0 | | | |
| Effective Green, g (s) | | 100.0 | 10.0 | 100.0 | 77.0 | 77.0 | | | |
| Actuated g/C Ratio | | 1.00 | 0.10 | 1.00 | 0.77 | 0.77 | | | |
| Clearance Time (s) | | | 6.0 | | 7.0 | 7.0 | | | |
| Vehicle Extension (s) | | | 3.0 | | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | | 1536 | 330 | 3406 | 2375 | 1062 | | | |
| v/s Ratio Prot | | | 0.04 | 0.56 | 0.41 | | | | |
| v/s Ratio Perm | | 0.14 | | | | 0.01 | | | |
| v/c Ratio | | 0.14 | 0.45 | 0.56 | 0.53 | 0.01 | | | |
| Uniform Delay, d1 | | 0.0 | 42.4 | 0.0 | 4.4 | 2.7 | | | |
| Progression Factor | | 1.00 | 0.60 | 1.00 | 0.04 | 0.00 | | | |
| Incremental Delay, d2 | | 0.2 | 0.8 | 0.5 | 0.6 | 0.0 | | | |
| Delay (s) | | 0.2 | 26.0 | 0.5 | 0.7 | 0.0 | | | |
| Level of Service | | А | С | А | А | А | | | |
| Approach Delay (s) | 0.2 | | | 2.4 | 0.7 | | | | |
| Approach LOS | Α | | | А | Α | | | | |
| Intersection Summary | | | | | | | | | |
| HCM 2000 Control Delay | | | 1.6 | H | CM 2000 | Level of Servi | ce | A | |
| HCM 2000 Volume to Capacit | ty ratio | | 0.65 | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | Si | um of lost | t time (s) | | 13.0 | |
| Intersection Capacity Utilization | on | | 48.0% | IC | U Level o | of Service | | А | |
| Analysis Period (min) | | | 15 | | | | | | |
| c Critical Lane Group | | | | | | | | | |

| | ≯ | → | $\mathbf{\hat{z}}$ | 4 | + | * | • | t | ۲ | 1 | ŧ | - |
|-----------------------------------|-------------|-------|--------------------|------|-------------|------------|---------|-------|------|------|-------|-------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | 5 | | 1 | | | | 5 | ĥ | | | • | 1 |
| Traffic Volume (vph) | 169 | 0 | 287 | 0 | 0 | 0 | 544 | 1198 | 0 | 0 | 1066 | 207 |
| Future Volume (vph) | 169 | 0 | 287 | 0 | 0 | 0 | 544 | 1198 | 0 | 0 | 1066 | 207 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 6.5 | | 6.5 | | | | 6.5 | 6.5 | | | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | | 0.85 | | | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | | 1.00 | | | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1626 | | 1358 | | | | 1687 | 1776 | | | 1529 | 1392 |
| Flt Permitted | 0.95 | | 1.00 | | | | 0.03 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1626 | | 1358 | | | | 54 | 1776 | | | 1529 | 1392 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 199 | 0 | 338 | 0 | 0 | 0 | 640 | 1409 | 0 | 0 | 1254 | 244 |
| RTOR Reduction (vph) | 0 | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| Lane Group Flow (vph) | 199 | 0 | 294 | 0 | 0 | 0 | 640 | 1409 | 0 | 0 | 1254 | 229 |
| Heavy Vehicles (%) | 11% | 11% | 11% | 0% | 0% | 0% | 7% | 7% | 7% | 16% | 16% | 16% |
| Turn Type | Prot | | pt+ov | | | | pm+pt | NA | | | NA | pm+ov |
| Protected Phases | 4 | | 14 | | | | 1 | 16 | | | 2 | 4 |
| Permitted Phases | | | 4 | | | | 16 | | | | | 2 |
| Actuated Green, G (s) | 12.5 | | 70.5 | | | | 184.0 | 184.0 | | | 126.0 | 138.5 |
| Effective Green, g (s) | 12.5 | | 70.5 | | | | 184.0 | 184.0 | | | 126.0 | 138.5 |
| Actuated g/C Ratio | 0.06 | | 0.34 | | | | 0.88 | 0.88 | | | 0.60 | 0.66 |
| Clearance Time (s) | 6.5 | | | | | | 6.5 | | | | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.5 | | | | | | 3.0 | | | | 6.0 | 3.5 |
| Lane Grp Cap (vph) | 97 | | 456 | | | | 448 | 1559 | | | 919 | 963 |
| v/s Ratio Prot | c0.12 | | 0.22 | | | | c0.35 | 0.79 | | | 0.82 | 0.01 |
| v/s Ratio Perm | | | | | | | c0.91 | | | | | 0.15 |
| v/c Ratio | 2.05 | | 0.64 | | | | 1.43 | 0.90 | | | 1.36 | 0.24 |
| Uniform Delay, d1 | 98.5 | | 58.9 | | | | 74.6 | 7.5 | | | 41.8 | 14.3 |
| Progression Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 507.0 | | 3.1 | | | | 205.4 | 7.7 | | | 171.1 | 0.2 |
| Delay (s) | 605.5 | | 62.0 | | | | 280.0 | 15.3 | | | 212.8 | 14.4 |
| Level of Service | F | | E | | | | F | В | | | H | В |
| Approach Delay (s) | | 263.4 | | | 0.0 | | | 98.0 | | | 180.5 | |
| Approach LOS | | F | | | A | | | F | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 150.0 | H | CM 2000 | Level of | Service | | F | | | |
| HCM 2000 Volume to Capa | acity ratio | | 1.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 209.5 | S | um of lost | t time (s) | | | 19.5 | | | |
| Intersection Capacity Utilization | ation | | 109.8% | IC | CU Level of | of Service |) | | Н | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

| | ≯ | \mathbf{F} | 1 | 1 | Ŧ | - |
|-----------------------------|--------------------|--------------|---------|--------------|------|------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ሻሻ | 1 | | *** | 44 | |
| Traffic Volume (veh/h) | 222 | 887 | 0 | 1250 | 971 | 0 |
| Future Volume (veh/h) | 222 | 887 | 0 | 1250 | 971 | 0 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1767 | 1767 | 0 | 1767 | 1752 | 0 |
| Adj Flow Rate, veh/h | 255 | 0 | 0 | 1437 | 1116 | 0 |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 9 | 9 | 0 | 9 | 10 | 0 |
| Cap, veh/h | 328 | | 0 | 3759 | 2594 | 0 |
| Arrive On Green | 0.10 | 0.00 | 0.00 | 0.78 | 0.78 | 0.00 |
| Sat Flow, veh/h | 3264 | 1497 | 0 | 5141 | 3504 | 0 |
| Grp Volume(v), veh/h | 255 | 0 | 0 | 1437 | 1116 | 0 |
| Grp Sat Flow(s).veh/h/ln | 1632 | 1497 | 0 | 1608 | 1664 | 0 |
| Q Serve(q_s), s | 7.6 | 0.0 | 0.0 | 9.4 | 11.1 | 0.0 |
| Cycle Q Clear(q_c), s | 7.6 | 0.0 | 0.0 | 9.4 | 11.1 | 0.0 |
| Prop In Lane | 1.00 | 1.00 | 0.00 | J . I | | 0.00 |
| Lane Grp Cap(c), veh/h | 328 | | 0 | 3759 | 2594 | 0 |
| V/C Ratio(X) | 0.78 | | 0.00 | 0.38 | 0.43 | 0.00 |
| Avail Cap(c, a), veh/h | 522 | | 0.00 | 3759 | 2594 | 0.00 |
| HCM Platoon Ratio | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d) s/veh | 43.9 | 0.0 | 0.0 | 3.5 | 37 | 0.0 |
| Incr Delay (d2) s/yeh | 4.0 | 0.0 | 0.0 | 0.3 | 0.5 | 0.0 |
| Initial O Delay(d3) s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfO(50%) veh/ln | 3.2 | 0.0 | 0.0 | 2.0 | 2.5 | 0.0 |
| Unsig Movement Delay s/ve | ≥h | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| InGro Delay(d) s/veb | 47.8 | 0.0 | 0.0 | 3.8 | 42 | 0.0 |
| | ס. <i>ו</i> ד ח | 0.0 | Δ | Δ | 4.2 | Δ |
| | 255 | ۸ | <u></u> | 1/27 | 1116 | |
| Approach Vol, ven/m | 200 | A | | 20 | 1110 | |
| Approach LOS | 47.0 | | | J.0 A | 4.2 | |
| Approach LOS | U | | | A | A | |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), s | | 83.9 | | 16.1 | | 83.9 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 6 | 72.0 | | 16.0 | | 72.0 |
| Max Q Clear Time (q c+l1). | S | 13.1 | | 9.6 | | 11.4 |
| Green Ext Time (p c), s | | 22.2 | | 0.4 | | 31.0 |
| Intersection Summarv | | | | | | |
| HCM 6th Ctrl Delay | | | 79 | | | |
| HCM 6th LOS | | | 1.5 | | | |
| | | | А | | | |

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

| | ≮ | * | t | ۲ | 1 | Ŧ |
|------------------------------------|--------------|------|-----------|------|------|------|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ካካ | 11 | 441 | | | *** |
| Traffic Volume (veh/h) | 548 | 1050 | 685 | 0 | 0 | 1068 |
| Future Volume (veh/h) | 548 | 1050 | 685 | 0 | 0 | 1068 |
| Initial Q (Qb) veh | 0 | 0 | 0 | 0 | Õ | 0 |
| Ped-Bike Adi(A nhT) | 1 00 | 1 00 | | 1 00 | 1 00 | v |
| Parking Bus Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1 00 |
| Work Zone On Annroad | sh No | 1.00 | No | 1.00 | 1.00 | No |
| Adi Sat Flow, veh/h/ln | 18/11 | 1841 | 1781 | ٥ | 0 | 1693 |
| Adi Flow Rate veh/h | 660 | 1265 | 825 | 0 | 0 | 1095 |
| Poak Hour Easter | 000 | 0.93 | 020 | 0 83 | 0 83 | 0 83 |
| | 0.03 | 0.03 | 0.03 | 0.05 | 0.03 | 0.03 |
| Percent Heavy Ven, % | 4 | 4 | 0 4004 | 0 | U | 1004 |
| Cap, ven/n | 1564 | 1263 | 1994 | 0 | 0 | 1894 |
| Arrive On Green | 0.46 | 0.46 | 0.41 | 0.00 | 0.00 | 0.41 |
| Sat Flow, veh/h | 3401 | 2745 | 5184 | 0 | 0 | 4925 |
| Grp Volume(v), veh/h | 660 | 1265 | 825 | 0 | 0 | 1287 |
| Grp Sat Flow(s),veh/h/l | n1700 | 1373 | 1621 | 0 | 0 | 1540 |
| Q Serve(g_s), s | 13.0 | 46.0 | 12.1 | 0.0 | 0.0 | 22.8 |
| Cycle Q Clear(q c). s | 13.0 | 46.0 | 12.1 | 0.0 | 0.0 | 22.8 |
| Prop In Lane | 1.00 | 1.00 | | 0.00 | 0.00 | |
| Lane Grp Can(c) veh/h | 1564 | 1263 | 1994 | 0 | 0 | 1894 |
| V/C Ratio(X) | 0.42 | 1 00 | 0 / 1 | 0.00 | 0 00 | 0.68 |
| $\sqrt{C} \operatorname{Railo}(X)$ | 1561 | 1262 | 1004 | 0.00 | 0.00 | 100/ |
| HCM Distant Datio | 1.004 | 1203 | 1994 | 1.00 | 1 00 | 1 00 |
| | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/ve | n 18.1 | 27.0 | 21.0 | 0.0 | 0.0 | 24.1 |
| Incr Delay (d2), s/veh | 0.2 | 25.7 | 0.6 | 0.0 | 0.0 | 2.0 |
| Initial Q Delay(d3),s/vel | n 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),ve | h/ln4.8 | 18.1 | 4.4 | 0.0 | 0.0 | 8.1 |
| Unsig. Movement Delay | y, s/veh | | | | | |
| LnGrp Delay(d),s/veh | 18.3 | 52.7 | 21.6 | 0.0 | 0.0 | 26.1 |
| LnGrp LOS | В | F | С | А | А | С |
| Approach Vol. veh/h | 1925 | | 825 | | | 1287 |
| Annroach Delay s/yeh | <u>4</u> 0 0 | | 21.6 | | | 26.1 |
| Approach LOS | 40.9 D | | 21.0 | | | 20.1 |
| Approach 205 | U | | U | | | |
| Timer - Assigned Phs | \ | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc) |), S | 47.0 | | 53.0 | | 47.0 |
| Change Period (Y+Rc), | S | 6.0 | | 7.0 | | 6.0 |
| Max Green Setting (Gm | ıax), s | 41.0 | | 46.0 | | 41.0 |
| Max Q Clear Time (q c | +l1), s | 24.8 | | 48.0 | | 14.1 |
| Green Ext Time (p c), s | 5 | 14.8 | | 0.0 | | 17.9 |
| Intersection Summary | | | | | | |
| | | | 20.0 | | | |
| | | | 32.2 | | | |
| HCM 6th LOS | | | С | | | |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|---------------------------|----------------|------|------|------|------|------|------|------------|------|------|------|------|--|
| Lane Configurations | | 4 | | | ्रभ | 1 | ኘ | *†† | 1 | ٦ | 朴朴。 | | |
| Traffic Volume (veh/h) | 1 | 0 | 3 | 127 | 1 | 82 | 38 | 1655 | 42 | 31 | 1198 | 5 | |
| Future Volume (veh/h) | 1 | 0 | 3 | 127 | 1 | 82 | 38 | 1655 | 42 | 31 | 1198 | 5 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Work Zone On Approac | h | No | | | No | | | No | | | No | | |
| Adj Sat Flow, veh/h/ln | 1159 | 1159 | 1159 | 1856 | 1856 | 1856 | 1826 | 1826 | 1826 | 1633 | 1633 | 1633 | |
| Adj Flow Rate, veh/h | 1 | 0 | 4 | 155 | 1 | 100 | 46 | 2018 | 0 | 38 | 1461 | 6 | |
| Peak Hour Factor | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | |
| Percent Heavy Veh, % | 50 | 50 | 50 | 3 | 3 | 3 | 5 | 5 | 5 | 18 | 18 | 18 | |
| Cap, veh/h | 43 | 14 | 57 | 183 | 1 | 376 | 63 | 2778 | | 51 | 2539 | 10 | |
| Arrive On Green | 0.26 | 0.00 | 0.24 | 0.26 | 0.24 | 0.24 | 0.04 | 0.56 | 0.00 | 0.01 | 0.18 | 0.18 | |
| Sat Flow, veh/h | 0 | 59 | 236 | 463 | 3 | 1569 | 1739 | 4985 | 1547 | 1555 | 4584 | 19 | |
| Grp Volume(v), veh/h | 5 | 0 | 0 | 156 | 0 | 100 | 46 | 2018 | 0 | 38 | 947 | 520 | |
| Grp Sat Flow(s), veh/h/lr | n 295 | 0 | 0 | 466 | 0 | 1569 | 1739 | 1662 | 1547 | 1555 | 1486 | 1630 | |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.2 | 2.6 | 30.1 | 0.0 | 2.4 | 29.1 | 29.1 | |
| Cycle Q Clear(g_c), s | 26.0 | 0.0 | 0.0 | 26.0 | 0.0 | 5.2 | 2.6 | 30.1 | 0.0 | 2.4 | 29.1 | 29.1 | |
| Prop In Lane | 0.20 | | 0.80 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.01 | |
| Lane Grp Cap(c), veh/h | 120 | 0 | 0 | 193 | 0 | 376 | 63 | 2778 | | 51 | 1647 | 903 | |
| V/C Ratio(X) | 0.04 | 0.00 | 0.00 | 0.81 | 0.00 | 0.27 | 0.73 | 0.73 | | 0.75 | 0.58 | 0.58 | |
| Avail Cap(c_a), veh/h | 120 | 0 | 0 | 193 | 0 | 376 | 122 | 2778 | | 124 | 1647 | 903 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.33 | 0.33 | 0.33 | |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.88 | 0.88 | 0.88 | |
| Uniform Delay (d), s/veh | n 30.5 | 0.0 | 0.0 | 40.7 | 0.0 | 30.8 | 47.7 | 16.5 | 0.0 | 49.1 | 30.1 | 30.1 | |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.0 | 22.0 | 0.0 | 0.4 | 15.1 | 1.7 | 0.0 | 17.5 | 1.3 | 2.3 | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| %ile BackOfQ(50%),veh | n/In0.1 | 0.0 | 0.0 | 5.0 | 0.0 | 2.0 | 1.4 | 10.5 | 0.0 | 1.2 | 11.8 | 13.2 | |
| Unsig. Movement Delay | , s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 30.6 | 0.0 | 0.0 | 62.7 | 0.0 | 31.2 | 62.9 | 18.2 | 0.0 | 66.5 | 31.4 | 32.5 | |
| LnGrp LOS | С | A | A | E | A | С | E | В | | E | С | С | |
| Approach Vol, veh/h | | 5 | | | 256 | | | 2064 | А | | 1505 | | |
| Approach Delay, s/veh | | 30.6 | | | 50.4 | | | 19.1 | | | 32.7 | | |
| Approach LOS | | С | | | D | | | В | | | С | | |
| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc) | , s8.6 | 61.4 | | 30.0 | 8.3 | 61.7 | | 30.0 | | | | | |
| Change Period (Y+Rc), | s 5.0 | 6.0 | | 6.0 | 5.0 | 6.0 | | 6.0 | | | | | |
| Max Green Setting (Gm | ax) ,G | 52.0 | | 24.0 | 8.0 | 51.0 | | 24.0 | | | | | |
| Max Q Clear Time (g_c- | +114),6s | 31.1 | | 28.0 | 4.4 | 32.1 | | 28.0 | | | | | |
| Green Ext Time (p_c), s | 0.0 | 19.6 | | 0.0 | 0.0 | 18.7 | | 0.0 | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 26.6 | | | | | | | | | | |
| HCM 6th LOS | | | С | | | | | | | | | | |

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.
| | ≯ | \mathbf{F} | 1 | 1 | Ŧ | < |
|---------------------------|------------------|--------------|------|------|------|------------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | 55 | 1 | 5 | ** | ** | 1 |
| Traffic Volume (veh/h) | 354 | 63 | 220 | 1394 | 996 | 352 |
| Future Volume (veh/h) | 354 | 63 | 220 | 1394 | 996 | 352 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A pbT) | 1.00 | 1.00 | 1.00 | | - | 1.00 |
| Parking Bus. Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | h No | | | No | No | |
| Adi Sat Flow, veh/h/ln | 1737 | 1737 | 1811 | 1811 | 1678 | 1678 |
| Adi Flow Rate, veh/h | 442 | 79 | 275 | 1742 | 1245 | 440 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh % | 11 | 11 | 6 | 6 | 15 | 15 |
| Can veh/h | 514 | 236 | 311 | 2443 | 1815 | 809 |
| Arrive On Green | 0 16 | 0.16 | 0.00 | 0 71 | 0.57 | 0.57 |
| Sat Flow, yoh/h | 3200 | 1/170 | 1725 | 2522 | 3070 | 1/01 |
| | 3209 | 14/2 | 075 | 4740 | 3212 | 1421 |
| Grp Volume(v), veh/h | 442 | /9 | 2/5 | 1/42 | 1245 | 440 |
| Grp Sat Flow(s),veh/h/ln | 1605 | 1472 | 1725 | 1721 | 1594 | 1421 |
| Q Serve(g_s), s | 13.4 | 4.8 | 6.6 | 29.7 | 27.6 | 19.3 |
| Cycle Q Clear(g_c), s | 13.4 | 4.8 | 6.6 | 29.7 | 27.6 | 19.3 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | 514 | 236 | 311 | 2443 | 1815 | 809 |
| V/C Ratio(X) | 0.86 | 0.34 | 0.88 | 0.71 | 0.69 | 0.54 |
| Avail Cap(c_a), veh/h | 578 | 265 | 431 | 2443 | 1815 | 809 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.80 | 0.80 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 140.9 | 37.3 | 20.0 | 8.5 | 15.2 | 13.4 |
| Incr Delay (d2) s/veh | 11.5 | 0.8 | 12.2 | 1 4 | 21 | 2.6 |
| Initial O Delay(d3) e/veh | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | 1 0.0 | 17 | 0.0 | 0.0 | 0.0 | 0.0 6 1 |
| /one DackOlQ(00%),Ven | | 1.7 | 4.0 | 0.9 | 9.4 | 0.1 |
| Unsig. Wovement Delay | , s/veh | 20.4 | 20.0 | 40.0 | 474 | 10.4 |
| LnGrp Delay(d),s/veh | 52.4 | 38.1 | 32.2 | 10.0 | 1/.4 | 16.1 |
| LnGrp LOS | D | D | C | A | B | B |
| Approach Vol, veh/h | 521 | | | 2017 | 1685 | |
| Approach Delay, s/veh | 50.3 | | | 13.0 | 17.0 | |
| Approach LOS | D | | | В | В | |
| | 4 | 0 | | 4 | | <u>^</u> |
| Timer - Assigned Phs | 1 | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc) | , 1 54.1 | 63.9 | | 22.0 | | 78.0 |
| Change Period (Y+Rc), | s 5.0 | 7.0 | | 6.0 | | 7.0 |
| Max Green Setting (Gm | a 1 ¢6,.© | 48.0 | | 18.0 | | 69.0 |
| Max Q Clear Time (g_c+ | +118),6s | 29.6 | | 15.4 | | 31.7 |
| Green Ext Time (p_c), s | 0.5 | 17.3 | | 0.6 | | 36.0 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 19.2 | | | |
| HCM 6th LOS | | | R | | | |
| | | | U | | | |

Intersection

| Int Delay, s/veh | 122.6 | | | | | |
|------------------------|--------|------|------|------|------|--------------|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Y | | ef 👘 | | | ् |
| Traffic Vol, veh/h | 15 | 14 | 1359 | 8 | 23 | 1259 |
| Future Vol, veh/h | 15 | 14 | 1359 | 8 | 23 | 1259 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage | e, # 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 78 | 78 | 78 | 78 | 78 | 78 |
| Heavy Vehicles, % | 20 | 20 | 9 | 9 | 17 | 17 |
| Mvmt Flow | 19 | 18 | 1742 | 10 | 29 | 1614 |

| Major/Minor | Minor1 | Ν | Major1 | | Major2 | |
|----------------------|-------------|------|--------|-------|--------|-----|
| Conflicting Flow All | 3419 | 1747 | 0 | 0 | 1752 | 0 |
| Stage 1 | 1747 | - | - | - | - | - |
| Stage 2 | 1672 | - | - | - | - | - |
| Critical Hdwy | 6.6 | 6.4 | - | - | 4.27 | - |
| Critical Hdwy Stg 1 | 5.6 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.6 | - | - | - | - | - |
| Follow-up Hdwy | 3.68 | 3.48 | - | - | 2.353 | - |
| Pot Cap-1 Maneuver | ~ 7 | 96 | - | - | 322 | - |
| Stage 1 | 139 | - | - | - | - | - |
| Stage 2 | 151 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | · ~ 1 | 96 | - | - | 322 | - |
| Mov Cap-2 Maneuver | · ~1 | - | - | - | - | - |
| Stage 1 | 139 | - | - | - | - | - |
| Stage 2 | ~ 19 | - | - | - | - | - |
| | | | | | | |
| Annroach | W/R | | NR | | SB | |
| HCM Control Delay&d | 1305 3 | | 0 | | 03 | |
| HCM LOS | 1000.0 F | | U | | 0.5 | |
| | 1 | | | | | |
| | | | | | | |
| Minor Lane/Major Mv | mt | NBT | NBRWI | BLn1 | SBL | SBT |
| Capacity (veh/h) | | - | - | 2 | 322 | - |
| HCM Lane V/C Ratio | | - | - 1 | 18.59 | 0.092 | - |
| HCM Control Delay (s | 5) | - | \$ 113 | 305.3 | 17.3 | 0 |
| HCM Lane LOS | | - | - | F | С | А |

Notes

~: Volume exceeds capacity

HCM 95th %tile Q(veh)

\$: Delay exceeds 300s +: Computation Not Defined

-

6.5

0.3

*: All major volume in platoon

HCM 6th Signalized Intersection Summary 8: MD 201 & Powder Mill Road

| | ۶ | - | \mathbf{F} | ∢ | ← | • | 1 | Ť | ۲ | 1 | Ļ | ~ |
|------------------------------|------|------|--------------|----------|----------|------|----------|------|------|------|-------------|----------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ľ | • | 1 | ٢ | • | 1 | 1 | • | 1 | ľ | ↑ ĵ≽ | |
| Traffic Volume (veh/h) | 57 | 178 | 550 | 187 | 149 | 41 | 409 | 520 | 444 | 60 | 545 | 78 |
| Future Volume (veh/h) | 57 | 178 | 550 | 187 | 149 | 41 | 409 | 520 | 444 | 60 | 545 | 78 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1796 | 1796 | 1796 | 1856 | 1856 | 1856 | 1796 | 1796 | 1796 | 1544 | 1544 | 1544 |
| Adj Flow Rate, veh/h | 71 | 222 | 0 | 234 | 186 | 0 | 511 | 650 | 0 | 75 | 681 | 98 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh, % | 7 | 7 | 7 | 3 | 3 | 3 | 7 | 7 | 7 | 24 | 24 | 24 |
| Cap, veh/h | 242 | 442 | | 257 | 586 | | 557 | 1098 | | 245 | 787 | 113 |
| Arrive On Green | 0.25 | 0.25 | 0.00 | 0.04 | 0.32 | 0.00 | 0.28 | 0.61 | 0.00 | 0.31 | 0.31 | 0.31 |
| Sat Flow, veh/h | 1147 | 1796 | 1522 | 1767 | 1856 | 1572 | 1711 | 1796 | 1522 | 645 | 2575 | 370 |
| Grp Volume(v), veh/h | 71 | 222 | 0 | 234 | 186 | 0 | 511 | 650 | 0 | 75 | 388 | 391 |
| Grp Sat Flow(s),veh/h/ln | 1147 | 1796 | 1522 | 1767 | 1856 | 1572 | 1711 | 1796 | 1522 | 645 | 1467 | 1478 |
| Q Serve(g_s), s | 8.2 | 16.0 | 0.0 | 3.2 | 11.5 | 0.0 | 35.8 | 33.2 | 0.0 | 13.7 | 37.5 | 37.6 |
| Cycle Q Clear(g_c), s | 19.7 | 16.0 | 0.0 | 3.2 | 11.5 | 0.0 | 35.8 | 33.2 | 0.0 | 13.7 | 37.5 | 37.6 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.25 |
| Lane Grp Cap(c), veh/h | 242 | 442 | | 257 | 586 | | 557 | 1098 | | 245 | 448 | 452 |
| V/C Ratio(X) | 0.29 | 0.50 | | 0.91 | 0.32 | | 0.92 | 0.59 | | 0.31 | 0.86 | 0.87 |
| Avail Cap(c_a), veh/h | 242 | 442 | | 257 | 586 | | 557 | 1098 | | 245 | 448 | 452 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 55.3 | 48.8 | 0.0 | 64.2 | 39.2 | 0.0 | 39.0 | 17.8 | 0.0 | 41.1 | 49.3 | 49.3 |
| Incr Delay (d2), s/veh | 3.0 | 4.0 | 0.0 | 37.1 | 1.4 | 0.0 | 22.5 | 2.3 | 0.0 | 3.2 | 19.4 | 19.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/in | 2.6 | 1.1 | 0.0 | 11.4 | 5.5 | 0.0 | 15.2 | 13.8 | 0.0 | 2.4 | 16.1 | 16.2 |
| Unsig. Movement Delay, s/veh | 50.4 | 50.0 | 0.0 | 101.0 | 10.0 | | 04 5 | | | 44.0 | | |
| LnGrp Delay(d),s/veh | 58.4 | 52.9 | 0.0 | 101.3 | 40.6 | 0.0 | 61.5 | 20.2 | 0.0 | 44.3 | 68.8 | 68.8 |
| LnGrp LOS | E | D | | <u> </u> | <u>D</u> | | <u> </u> | C | | D | <u>E</u> | <u> </u> |
| Approach Vol, veh/h | | 293 | A | | 420 | A | | 1161 | A | | 854 | |
| Approach Delay, s/veh | | 54.2 | | | 74.4 | | | 38.4 | | | 66.6 | |
| Approach LOS | | D | | | E | | | D | | | E | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 46.0 | 52.0 | 10.5 | 42.0 | | 98.0 | | 52.5 | | | | |
| Change Period (Y+Rc), s | 4.5 | 6.0 | 5.0 | * 5 | | 6.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 41.5 | 46.0 | 5.5 | * 37 | | 92.0 | | 47.0 | | | | |
| Max Q Clear Time (g_c+l1), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 54.5 | | | | | | | | | |
| HCM 6th LOS | | | D | | | | | | | | | |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier. Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | 4 | | | र्च | 1 | | र्च | 1 | | 4 | |
| Traffic Vol, veh/h | 21 | 0 | 1 | 2 | 5 | 1 | 51 | 554 | 3 | 0 | 660 | 44 |
| Future Vol, veh/h | 21 | 0 | 1 | 2 | 5 | 1 | 51 | 554 | 3 | 0 | 660 | 44 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None |
| Storage Length | - | - | - | - | - | 50 | - | - | 325 | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 70 | 70 | 70 | 67 | 67 | 67 | 9 | 9 | 9 | 21 | 21 | 21 |
| Mvmt Flow | 22 | 0 | 1 | 2 | 5 | 1 | 54 | 583 | 3 | 0 | 695 | 46 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Ν | lajor2 | | | |
|----------------------|--------|------|------|--------|-------|-------|--------|---|---|---|--------|---|---|--|
| Conflicting Flow All | 1414 | 1412 | 718 | 1410 | 1432 | 583 | 741 | 0 | (| 0 | 586 | 0 | 0 | |
| Stage 1 | 718 | 718 | - | 691 | 691 | - | - | - | | - | - | - | - | |
| Stage 2 | 696 | 694 | - | 719 | 741 | - | - | - | | - | - | - | - | |
| Critical Hdwy | 7.8 | 7.2 | 6.9 | 7.77 | 7.17 | 6.87 | 4.19 | - | | - | 4.31 | - | - | |
| Critical Hdwy Stg 1 | 6.8 | 6.2 | - | 6.77 | 6.17 | - | - | - | | - | - | - | - | |
| Critical Hdwy Stg 2 | 6.8 | 6.2 | - | 6.77 | 6.17 | - | - | - | | - | - | - | - | |
| Follow-up Hdwy | 4.13 | 4.63 | 3.93 | 4.103 | 4.603 | 3.903 | 2.281 | - | | - | 2.389 | - | - | |
| Pot Cap-1 Maneuver | 82 | 100 | 334 | 84 | 98 | 409 | 835 | - | | - | 902 | - | - | |
| Stage 1 | 330 | 346 | - | 346 | 360 | - | - | - | | - | - | - | - | |
| Stage 2 | 340 | 356 | - | 333 | 340 | - | - | - | | - | - | - | - | |
| Platoon blocked, % | | | | | | | | - | | - | | - | - | |
| Mov Cap-1 Maneuver | 72 | 90 | 334 | 78 | 89 | 409 | 835 | - | | - | 902 | - | - | |
| Mov Cap-2 Maneuver | 72 | 90 | - | 78 | 89 | - | - | - | | - | - | - | - | |
| Stage 1 | 298 | 346 | - | 313 | 325 | - | - | - | | - | - | - | - | |
| Stage 2 | 302 | 322 | - | 332 | 340 | - | - | - | | - | - | - | - | |
| | | | | | | | | | | | | | | |

| Approach | EB | WB | NB | SB | |
|----------------------|------|------|-----|----|--|
| HCM Control Delay, s | 73.1 | 46.1 | 0.8 | 0 | |
| HCM LOS | F | E | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR I | EBLn1V | VBLn1V | VBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-------|--------|--------|-------|-----|-----|-----|
| Capacity (veh/h) | 835 | - | - | 75 | 86 | 409 | 902 | - | - |
| HCM Lane V/C Ratio | 0.064 | - | - | 0.309 | 0.086 | 0.003 | - | - | - |
| HCM Control Delay (s) | 9.6 | 0 | - | 73.1 | 50.7 | 13.8 | 0 | - | - |
| HCM Lane LOS | А | А | - | F | F | В | А | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 1.1 | 0.3 | 0 | 0 | - | - |

| Intersection | | |
|---------------------------|------|--|
| Intersection Delay, s/veh | 74.6 | |
| Intersection LOS | F | |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR | |
|----------------------------|------|------|----------|------|------|------|--|
| Lane Configurations | | ÷ | el el | | ¥ | | |
| Traffic Vol, veh/h | 487 | 170 | 381 | 365 | 0 | 0 | |
| Future Vol, veh/h | 487 | 170 | 381 | 365 | 0 | 0 | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | |
| Heavy Vehicles, % | 6 | 6 | 2 | 2 | 2 | 2 | |
| Mvmt Flow | 573 | 200 | 448 | 429 | 0 | 0 | |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | |
| Approach | EB | | WB | | SB | | |
| Opposing Approach | WB | | EB | | | | |
| Opposing Lanes | 1 | | 1 | | 0 | | |
| Conflicting Approach Left | SB | | | | WB | | |
| Conflicting Lanes Left | 1 | | 0 | | 1 | | |
| Conflicting Approach Right | | | SB | | EB | | |
| Conflicting Lanes Right | 0 | | 1 | | 1 | | |
| HCM Control Delay | 72.8 | | 76.1 | | 0 | | |
| HCM LOS | F | | F | | - | | |

| Lane | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, % | 74% | 0% | 0% |
| Vol Thru, % | 26% | 51% | 100% |
| Vol Right, % | 0% | 49% | 0% |
| Sign Control | Stop | Stop | Stop |
| Traffic Vol by Lane | 657 | 746 | 0 |
| LT Vol | 487 | 0 | 0 |
| Through Vol | 170 | 381 | 0 |
| RT Vol | 0 | 365 | 0 |
| Lane Flow Rate | 773 | 878 | 0 |
| Geometry Grp | 1 | 1 | 1 |
| Degree of Util (X) | 1.061 | 1.081 | 0 |
| Departure Headway (Hd) | 5.052 | 4.434 | 7.334 |
| Convergence, Y/N | Yes | Yes | Yes |
| Сар | 727 | 807 | 0 |
| Service Time | 3.052 | 2.521 | 5.334 |
| HCM Lane V/C Ratio | 1.063 | 1.088 | 0 |
| HCM Control Delay | 72.8 | 76.1 | 10.3 |
| HCM Lane LOS | F | F | Ν |
| HCM 95th-tile Q | 19.8 | 22.4 | 0 |

| 0.4 | | | | | |
|----------|---|--|--|--|--|
| | | | | | |
| NBL | NBR | SET | SER | NWL | NWI |
| <u>۲</u> | | ef 👘 | | | ↑ |
| 16 | 0 | 161 | 9 | 0 | 731 |
| 16 | 0 | 161 | 9 | 0 | 731 |
| 0 | 0 | 0 | 0 | 0 | 0 |
| Stop | Stop | Free | Free | Free | Free |
| - | None | - | None | - | None |
| 0 | - | - | - | - | - |
| ,#0 | - | 0 | - | - | 0 |
| 0 | - | 0 | - | - | 0 |
| 74 | 74 | 74 | 74 | 74 | 74 |
| 2 | 2 | 4 | 4 | 2 | 2 |
| 22 | 0 | 218 | 12 | 0 | 988 |
| | 0.4 NBL 16 16 0 Stop - 0 ,# 0 0 74 2 22 | 0.4 NBL NBR 16 0 16 0 16 0 0 0 Stop Stop - None 0 - ,# 0 - 0 - 74 74 2 2 22 0 | 0.4 NBL NBR SET 16 0 161 16 0 161 16 0 161 0 0 0 Stop Stop Free None - 0 - ,# 0 - 0 - ,# 0 - 0 - 0 - ,# 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - | 0.4 NBL NBR SET SER NBL 0 161 9 16 0 161 9 16 0 161 9 16 0 161 9 0 0 0 0 Stop Stop Free Free None - None 0 - 0 - # 0 - 0 - # 0 - 0 - 74 74 74 74 22 0 218 12 | 0.4 NBL NBR SET SER NWL 16 0 161 9 0 16 0 161 9 0 16 0 161 9 0 16 0 161 9 0 16 0 161 9 0 0 0 0 0 0 0 Stop Stop Free Free Free 0 - - - - 0 - 0 - - - 0 - 0 - - - 74 74 74 74 74 2 2 4 4 2 22 0 218 12 0 |

| Major/Minor | Minor1 | Maj | or1 | Maj | or2 | |
|----------------------|--------|-----|-----|-----|-----|---|
| Conflicting Flow All | 1212 | - | 0 | 0 | - | - |
| Stage 1 | 224 | - | - | - | - | - |
| Stage 2 | 988 | - | - | - | - | - |
| Critical Hdwy | 6.42 | - | - | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | - | - | - | - | - |
| Pot Cap-1 Maneuver | 201 | 0 | - | - | 0 | - |
| Stage 1 | 813 | 0 | - | - | 0 | - |
| Stage 2 | 361 | 0 | - | - | 0 | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | r 201 | - | - | - | - | - |
| Mov Cap-2 Maneuver | r 201 | - | - | - | - | - |
| Stage 1 | 813 | - | - | - | - | - |
| Stage 2 | 361 | - | - | - | - | - |
| | | | | | | |

| Approach | NB | SE | NW |
|----------------------|------|----|----|
| HCM Control Delay, s | 25.1 | 0 | 0 |
| HCM LOS | D | | |

| Vinor Lane/Major Mvmt | NBLn1 | NWT | SET | SER |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 201 | - | - | - |
| HCM Lane V/C Ratio | 0.108 | - | - | - |
| HCM Control Delay (s) | 25.1 | - | - | - |
| HCM Lane LOS | D | - | - | - |
| HCM 95th %tile Q(veh) | 0.4 | - | - | - |

| ntersection | | | | | | |
|------------------------|--------|----------|----------|---------|----------|---------|
| Int Delay, s/veh | 23.1 | | | | | |
| Movement | EDI | EDT | | | CDI | 000 |
| | EBL | EBI | WBI | WBR | SBL | SBK |
| Lane Configurations | j | T | 740 | 457 | 1 | 40 |
| Traπic Vol, ven/n | 5 | 1/8 | 742 | 157 | 130 | 19 |
| Future Vol, veh/h | 5 | 1/8 | /42 | 157 | 136 | 19 |
| Conflicting Peds, #/hr | - 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 50 | - | - | - | 0 | - |
| Veh in Median Storage | e, # - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 75 | 75 | 75 | 75 | 75 | 75 |
| Heavy Vehicles, % | 6 | 6 | 3 | 3 | 2 | 2 |
| Mymt Flow | 7 | 237 | 989 | 209 | 181 | 25 |
| | • | 201 | 000 | 200 | 101 | 20 |
| | | | | | | |
| Major/Minor | Major1 | Ν | Major2 | | Minor2 | |
| Conflicting Flow All | 1198 | 0 | - | 0 | 1345 | 1094 |
| Stage 1 | - | - | - | - | 1094 | - |
| Stage 2 | - | - | - | - | 251 | - |
| Critical Hdwy | 4 16 | - | - | - | 6.42 | 6 22 |
| Critical Hdwy Sta 1 | 4.10 | _ | _ | _ | 5.42 | 0.22 |
| Critical Hduny Stg 1 | - | - | - | - | 5.42 | - |
| | - | - | - | - | 0.4Z | - |
| Follow-up Hawy | 2.254 | - | - | - | 3.518 | 3.318 |
| Pot Cap-1 Maneuver | 569 | - | - | - | ~ 167 | 260 |
| Stage 1 | - | - | - | - | 321 | - |
| Stage 2 | - | - | - | - | 791 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 569 | - | - | - | ~ 165 | 260 |
| Mov Cap-2 Maneuver | - | - | - | - | ~ 165 | - |
| Stage 1 | _ | _ | _ | - | 317 | _ |
| Stage 2 | | | | | 701 | |
| Slage 2 | - | - | - | - | 131 | - |
| | | | | | | |
| Approach | EB | | WB | | SB | |
| HCM Control Delay s | 0.3 | | 0 | | 184 1 | |
| HCM LOS | 0.0 | | U | | F | |
| | | | | | - 1 | |
| | | | | | | |
| Minor Lane/Major Mvm | nt | EBL | EBT | WBT | WBR | SBLn1 |
| Capacity (veh/h) | | 569 | _ | - | - | 173 |
| HCM Lane V/C Ratio | | 0.012 | _ | | _ | 1 1 9 5 |
| HCM Control Dolay (c) | ١ | 11 / | | | | 1.155 |
| HCM Long LOC |) | П.4 | - | - | - | 104.1 |
| | 1 | В | - | - | - | |
| HOW 95th %tile Q(veh |) | U | - | - | - | 11.2 |
| Notes | | | | | | |
| ~: Volume exceeds ca | pacity | \$: De | elav exc | ceeds 3 | 00s | +: Com |

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | 4 | | ٦ | Ť | | | | | ۲ | 4 | |
| Traffic Vol, veh/h | 0 | 211 | 103 | 85 | 626 | 0 | 0 | 0 | 0 | 251 | 1 | 272 |
| Future Vol, veh/h | 0 | 211 | 103 | 85 | 626 | 0 | 0 | 0 | 0 | 251 | 1 | 272 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 225 | - | - | - | - | - | 25 | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, % | 4 | 4 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 |
| Mvmt Flow | 0 | 278 | 136 | 112 | 824 | 0 | 0 | 0 | 0 | 330 | 1 | 358 |

| Major/Minor | Major1 | | 1 | Major2 | | | | Minor2 | | | | |
|-----------------------|--------|--------|---------|---------|--------|-------|--------------|---------------|-------|----------|-----------|---|
| Conflicting Flow All | - | 0 | 0 | 414 | 0 | 0 | | 1394 | 1462 | 824 | | _ |
| Stage 1 | - | - | - | - | - | - | | 1048 | 1048 | - | | |
| Stage 2 | - | - | - | - | - | - | | 346 | 414 | - | | |
| Critical Hdwy | - | - | - | 4.12 | - | - | | 6.41 | 6.51 | 6.21 | | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | | 5.41 | 5.51 | - | | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | | 5.41 | 5.51 | - | | |
| Follow-up Hdwy | - | - | - | 2.218 | - | - | | 3.509 | 4.009 | 3.309 | | |
| Pot Cap-1 Maneuver | 0 | - | - | 1145 | - | 0 | | ~ 157 | 129 | 374 | | |
| Stage 1 | 0 | - | - | - | - | 0 | | 339 | 306 | - | | |
| Stage 2 | 0 | - | - | - | - | 0 | | 719 | 595 | - | | |
| Platoon blocked, % | | - | - | | - | | | | | | | |
| Mov Cap-1 Maneuver | - | - | - | 1145 | - | - | | ~ 142 | 0 | 374 | | |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | | ~ 142 | 0 | - | | |
| Stage 1 | - | - | - | - | - | - | | 339 | 0 | - | | |
| Stage 2 | - | - | - | - | - | - | | 649 | 0 | - | | |
| | | | | | | | | | | | | |
| Approach | EB | | | WB | | | | SB | | | | |
| HCM Control Delay, s | 0 | | | 1 | | | | \$ 357.1 | | | | |
| HCM LOS | | | | | | | | F | | | | |
| | | | | | | | | | | | | |
| Minor Lane/Major Mvn | nt | EBT | EBR | WBL | WBT SB | Ln1 S | BLn2 | | | | | |
| Capacity (veh/h) | | - | - | 1145 | - | 142 | 374 | | | | | |
| HCM Lane V/C Ratio | | - | - | 0.098 | - 2. | 326 | 0.96 | | | | | |
| HCM Control Delay (s) |) | - | - | 8.5 | -\$ 66 | 68.5 | 70.8 | | | | | |
| HCM Lane LOS | / | - | - | A | - | F | F | | | | | |
| HCM 95th %tile Q(veh | ı) | - | - | 0.3 | - | 28 | 10.7 | | | | | |
| Notes | | | | | | | | | | | | |
| ~: Volume exceeds ca | pacity | \$: De | lay exc | eeds 30 |)0s +: | Comp | outation Not | Defined *: Al | major | volume i | n platoon | |

Mvmt Flow

124 461

0

| Intersection | | | | | | | | | | | | |
|------------------------|--------|----------|------|------|------|------|------|------|------|------|-------|------|
| Int Delay, s/veh | 217.2 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ሻ | ↑ | | | 4 | | ٦ | 4 | | | | |
| Traffic Vol, veh/h | 98 | 364 | 0 | 0 | 379 | 302 | 332 | 3 | 92 | 0 | 0 | 0 |
| Future Vol, veh/h | 98 | 364 | 0 | 0 | 379 | 302 | 332 | 3 | 92 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 250 | - | - | - | - | - | 50 | - | - | - | - | - |
| Veh in Median Storage | e, # - | 0 | - | - | 0 | - | - | 0 | - | - | 16965 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 2 | 2 | 2 |

420

4 116

0

0

0

0 480 382

| Major/Minor | Major1 | | 1 | Major2 | | 1 | Minor1 | | | |
|----------------------|--------|--------|----------|---------|-----|--------|----------|----------|--------|--------------------------------|
| Conflicting Flow All | 862 | 0 | - | - | - | 0 | 1380 | 1571 | 461 | |
| Stage 1 | - | - | - | - | - | - | 709 | 709 | - | |
| Stage 2 | - | - | - | - | - | - | 671 | 862 | - | |
| Critical Hdwy | 4.12 | - | - | - | - | - | 6.4 | 6.5 | 6.2 | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.4 | 5.5 | - | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.4 | 5.5 | - | |
| Follow-up Hdwy | 2.218 | - | - | - | - | - | 3.5 | 4 | 3.3 | |
| Pot Cap-1 Maneuver | 780 | - | 0 | 0 | - | - | ~ 161 | 112 | 605 | |
| Stage 1 | - | - | 0 | 0 | - | - | 491 | 440 | - | |
| Stage 2 | - | - | 0 | 0 | - | - | 512 | 375 | - | |
| Platoon blocked, % | | - | | | - | - | | | | |
| Mov Cap-1 Maneuver | 780 | - | - | - | - | - | ~ 135 | 0 | 605 | |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 135 | 0 | - | |
| Stage 1 | - | - | - | - | - | - | ~ 413 | 0 | - | |
| Stage 2 | - | - | - | - | - | - | 512 | 0 | - | |
| | | | | | | | | | | |
| Approach | EB | | | WB | | | NB | | | |
| HCM Control Delay, s | 2.2 | | | 0 | | \$ | 796.1 | | | |
| HCM LOS | | | | | | | F | | | |
| | | | | | | | | | | |
| Minor Lane/Major Mvr | nt l | NBLn11 | NBLn2 | EBL | EBT | WBT | WBR | | | |
| Capacity (veh/h) | | 135 | 605 | 780 | - | - | - | | | |
| HCM Lane V/C Ratio | | 3.113 | 0.199 | 0.159 | - | - | - | | | |
| HCM Control Delay (s |) \$ | 1020.3 | 12.4 | 10.5 | - | - | - | | | |
| HCM Lane LOS | , . | F | В | В | - | - | - | | | |
| HCM 95th %tile Q(veh | ו) | 39.6 | 0.7 | 0.6 | - | - | - | | | |
| Notes | | | | | | | | | | |
| ~: Volume exceeds ca | pacity | \$: De | elay exc | eeds 30 |)0s | +: Com | putatior | n Not De | efined | *: All major volume in platoon |

| | - | \mathbf{F} | 1 | - | 1 | 1 |
|---|----------------------|--------------|-----------|-------------|-----------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | • | 1 | 5 | • | 5 | 1 |
| Traffic Volume (veh/h) | 170 | 286 | 53 | 346 | 335 | 17 |
| Future Volume (veh/h) | 170 | 286 | 53 | 346 | 335 | 17 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1885 | 1885 | 1870 | 1870 | 1885 | 1885 |
| Adj Flow Rate, veh/h | 230 | 0 | 72 | 468 | 453 | 0 |
| Peak Hour Factor | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |
| Percent Heavy Veh, % | 1 | 1 | 2 | 2 | 1 | 1 |
| Cap, veh/h | 503 | | 198 | 810 | 778 | |
| Arrive On Green | 0.27 | 0.00 | 0.11 | 0.43 | 0.43 | 0.00 |
| Sat Flow, veh/h | 1885 | 1598 | 1781 | 1870 | 1795 | 1598 |
| Grp Volume(v) veh/h | 230 | 0 | 72 | 468 | 453 | 0 |
| Grp Sat Flow(s) veh/h/ln | 1885 | 1598 | 1781 | 1870 | 1795 | 1598 |
| Q Serve(a, s) s | 9.2 | 0.0 | 34 | 17.0 | 17.2 | 0.0 |
| Cvcle Q Clear(q, c) s | 9.2 | 0.0 | 3.4 | 17.0 | 17.2 | 0.0 |
| Prop In Lane | 0.2 | 1 00 | 1 00 | 11.0 | 1 00 | 1 00 |
| Lane Grp Cap(c) veh/h | 503 | 1.00 | 198 | 810 | 778 | 1.00 |
| V/C Ratio(X) | 0.46 | | 0.36 | 0.58 | 0.58 | |
| Avail Cap(c, a) veh/h | 503 | | 198 | 810 | 778 | |
| HCM Platoon Batio | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 |
| Instream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d) s/yeb | 27.6 | 0.00 | 37.1 | 10.00 | 10.3 | 0.00 |
| Incr Delay (d2), s/veh | 3.0 | 0.0 | 5.1 | 3.0 | 3.0 | 0.0 |
| Initial O Delay(d3) s/yeb | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| % ile Back Ω f Ω (50%) veh/ln | 0.0 4 4 | 0.0 | 17 | 7.6 | 7.2 | 0.0 |
| Unsig Movement Delay, s/vel | т. т h | 0.0 | 1.7 | 1.0 | 1.2 | 0.0 |
| InGro Delay(d) s/veb | 30.5 | 0.0 | 122 | 22 3 | 22.5 | 0.0 |
| | 00.0 C | 0.0 | 42.2 D | 22.5 | 22.J C | 0.0 |
| Approach Val. uch/h | 220 | ٨ | U | E40 | 452 | ٨ |
| Approach Vol, Ven/n | 230 | A | | 540 | 453 | A |
| Approach Delay, s/ven | 30.5 | | | 24.9 | 22.5 | |
| Approach LOS | C | | | C | C | |
| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 |
| Phs Duration (G+Y+Rc), s | | 45.0 | | 45.0 | 15.0 | 30.0 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 5.0 | 6.0 |
| Max Green Setting (Gmax), s | | 39.0 | | 39.0 | 10.0 | 24.0 |
| Max Q Clear Time (g c+11), s | | 19.0 | | 19.2 | 5.4 | 11.2 |
| Green Ext Time (p_c), s | | 6.4 | | 1.8 | 0.0 | 2.1 |
| Intersection Summary | | | | | | |
| | | | 2E 1 | | | |
| | | | 25.1 | | | |
| HCIVI 6th LOS | | | C | | | |

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

| | ٦ | \mathbf{F} | 1 | 1 | Ŧ | 1 | | |
|--------------------------------|------------|--------------|-------|-------|------------|------------------|----|-----|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR | | |
| Lane Configurations | | 1 | ካካ | ** | ** | 1 | | |
| Traffic Volume (vph) | 0 | 274 | 198 | 1205 | 1754 | 10 | | |
| Future Volume (vph) | 0 | 274 | 198 | 1205 | 1754 | 10 | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | |
| Total Lost time (s) | | 4.0 | 6.0 | 4.0 | 7.0 | 7.0 | | |
| Lane Util, Factor | | 1.00 | 0.97 | 0.95 | 0.95 | 1.00 | | |
| Frpb. ped/bikes | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Frt | | 0.86 | 1.00 | 1.00 | 1.00 | 0.85 | | |
| Flt Protected | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | |
| Satd, Flow (prot) | | 1591 | 3099 | 3195 | 3406 | 1524 | | |
| Flt Permitted | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | |
| Satd. Flow (perm) | | 1591 | 3099 | 3195 | 3406 | 1524 | | |
| Peak-hour factor. PHF | 0.94 | 0.94 | 0.94 | 0,94 | 0.94 | 0.94 | | |
| Adi, Flow (vph) | 0 | 291 | 211 | 1282 | 1866 | 11 | | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 3 | | |
| Lane Group Flow (vph) | 0 | 291 | 211 | 1282 | 1866 | 8 | | |
| Confl. Peds. (#/hr) | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 13% | 13% | 6% | 6% | | |
| Turn Type | | Free | Prot | NA | NA | Perm | | |
| Protected Phases | | 1100 | 1 | Free | 2 | | | |
| Permitted Phases | | Free | | | _ | 2 | | |
| Actuated Green, G (s) | | 100.0 | 12.1 | 100.0 | 74.9 | 74.9 | | |
| Effective Green, g (s) | | 100.0 | 12.1 | 100.0 | 74.9 | 74.9 | | |
| Actuated g/C Ratio | | 1.00 | 0.12 | 1.00 | 0.75 | 0.75 | | |
| Clearance Time (s) | | | 6.0 | | 7.0 | 7.0 | | |
| Vehicle Extension (s) | | | 3.0 | | 5.0 | 5.0 | | |
| Lane Gro Cap (vph) | | 1591 | 374 | 3195 | 2551 | 1141 | | |
| v/s Ratio Prot | | | 0.07 | 0,40 | c0.55 | | | |
| v/s Ratio Perm | | 0,18 | | | | 0.01 | | |
| v/c Ratio | | 0.18 | 0.56 | 0.40 | 0.73 | 0.01 | | |
| Uniform Delay, d1 | | 0.0 | 41.5 | 0.0 | 7.0 | 3.2 | | |
| Progression Factor | | 1.00 | 0.53 | 1.00 | 0.37 | 0.05 | | |
| Incremental Delay, d2 | | 0.3 | 1.6 | 0.3 | 0.9 | 0.0 | | |
| Delay (s) | | 0.3 | 23.4 | 0.3 | 3.4 | 0.2 | | |
| Level of Service | | A | С | A | А | A | | |
| Approach Delay (s) | 0.3 | | | 3.6 | 3.4 | | | |
| Approach LOS | A | | | A | А | | | |
| laters etter O | | | | | | | | |
| | | | 0.0 | , . | 014 0000 | | | |
| HCM 2000 Control Delay | 14 P | | 3.2 | H | CM 2000 | Level of Service | e | A |
| HCM 2000 Volume to Capac | city ratio | | 0./1 | ~ | | | | 0 |
| Actuated Cycle Length (s) | | | 100.0 | SI | um of losi | t time (s) | 13 | 0 |
| Intersection Capacity Utilizat | ION | | 13.0% | IC | U Level (| OI SERVICE | | U I |
| Analysis Period (min) | | | 15 | | | | | |

c Critical Lane Group

| | ≯ | → | $\mathbf{\hat{z}}$ | • | + | * | 1 | t | ۲ | 1 | ŧ | - |
|-----------------------------------|----------|-------|--------------------|------|------------|------------|---------|-------|------|------|-------|-------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | <u>۲</u> | | 1 | | | | ٦ | ef 👘 | | | • | 1 |
| Traffic Volume (vph) | 276 | 0 | 615 | 0 | 0 | 0 | 428 | 1113 | 0 | 0 | 1321 | 232 |
| Future Volume (vph) | 276 | 0 | 615 | 0 | 0 | 0 | 428 | 1113 | 0 | 0 | 1321 | 232 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 6.5 | | 6.5 | | | | 6.5 | 6.5 | | | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | | 0.85 | | | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | | 1.00 | | | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1752 | | 1463 | | | | 1583 | 1667 | | | 1673 | 1497 |
| Flt Permitted | 0.95 | | 1.00 | | | | 0.04 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1752 | | 1463 | | | | 69 | 1667 | | | 1673 | 1497 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 297 | 0 | 661 | 0 | 0 | 0 | 460 | 1197 | 0 | 0 | 1420 | 249 |
| RTOR Reduction (vph) | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 |
| Lane Group Flow (vph) | 297 | 0 | 640 | 0 | 0 | 0 | 460 | 1197 | 0 | 0 | 1420 | 223 |
| Confl. Peds. (#/hr) | | | | | | | 1 | | | | | 1 |
| Confl. Bikes (#/hr) | | | | | | | | | | | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 0% | 0% | 0% | 14% | 14% | 14% | 6% | 6% | 6% |
| Turn Type | Prot | | pt+ov | | | | pm+pt | NA | | | NA | pm+ov |
| Protected Phases | 4 | | . 14 | | | | | 16 | | | 2 | . 4 |
| Permitted Phases | | | 4 | | | | 16 | | | | | 2 |
| Actuated Green, G (s) | 20.5 | | 61.5 | | | | 131.0 | 131.0 | | | 90.0 | 110.5 |
| Effective Green, g (s) | 20.5 | | 61.5 | | | | 131.0 | 131.0 | | | 90.0 | 110.5 |
| Actuated g/C Ratio | 0.12 | | 0.37 | | | | 0.80 | 0.80 | | | 0.55 | 0.67 |
| Clearance Time (s) | 6.5 | | | | | | 6.5 | | | | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.5 | | | | | | 3.0 | | | | 6.0 | 3.5 |
| Lane Grp Cap (vph) | 218 | | 546 | | | | 372 | 1327 | | | 915 | 1064 |
| v/s Ratio Prot | c0.17 | | c0.44 | | | | 0.26 | 0.72 | | | c0.85 | 0.03 |
| v/s Ratio Perm | | | | | | | 0.72 | | | | | 0.12 |
| v/c Ratio | 1.36 | | 1.17 | | | | 1.24 | 0.90 | | | 1.55 | 0.21 |
| Uniform Delay, d1 | 72.0 | | 51.5 | | | | 60.5 | 12.1 | | | 37.2 | 10.3 |
| Progression Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 189.8 | | 95.9 | | | | 127.6 | 8.8 | | | 253.8 | 0.1 |
| Delay (s) | 261.8 | | 147.4 | | | | 188.1 | 20.9 | | | 291.0 | 10.4 |
| Level of Service | F | | F | | | | F | С | | | F | В |
| Approach Delay (s) | | 182.8 | | | 0.0 | | | 67.3 | | | 249.2 | |
| Approach LOS | | F | | | А | | | Е | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delav | | | 164.0 | H | CM 2000 | Level of | Service | | F | | | |
| HCM 2000 Volume to Capacit | ty ratio | | 1.47 | | | | | | | | | |
| Actuated Cycle Length (s) | , | | 164.5 | S | um of lost | time (s) | | | 19.5 | | | |
| Intersection Capacity Utilization | on | | 122.7% | IC | U Level o | of Service |) | | Н | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

| | ≯ | \mathbf{F} | 1 | 1 | Ŧ | ~ |
|------------------------------|-----------|--------------|------|----------|------|----------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ሻሻ | 1 | | *** | 44 | |
| Traffic Volume (veh/h) | 137 | 1118 | 0 | 1788 | 1477 | 0 |
| Future Volume (veh/h) | 137 | 1118 | 0 | 1788 | 1477 | 0 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1796 | 1796 | 0 | 1781 | 1826 | 0 |
| Adj Flow Rate, veh/h | 151 | 0 | 0 | 1965 | 1623 | 0 |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Percent Heavy Veh, % | 7 | 7 | 0 | 8 | 5 | 0 |
| Cap, veh/h | 217 | | 0 | 3961 | 2826 | 0 |
| Arrive On Green | 0.07 | 0.00 | 0.00 | 0.81 | 0.81 | 0.00 |
| Sat Flow, veh/h | 3319 | 1522 | 0 | 5184 | 3652 | 0 |
| Grp Volume(v), veh/h | 151 | 0 | 0 | 1965 | 1623 | 0 |
| Grp Sat Flow(s).veh/h/ln | 1659 | 1522 | 0 | 1621 | 1735 | 0 |
| Q Serve(q s), s | 4.5 | 0.0 | 0.0 | 12.6 | 16.3 | 0.0 |
| Cycle Q Clear(a c), s | 4.5 | 0.0 | 0.0 | 12.6 | 16.3 | 0.0 |
| Prop In Lane | 1.00 | 1.00 | 0.00 | | | 0.00 |
| Lane Grp Cap(c), veh/h | 217 | | 0 | 3961 | 2826 | 0 |
| V/C Ratio(X) | 0.69 | | 0.00 | 0.50 | 0.57 | 0.00 |
| Avail Cap(c_a), veh/h | 398 | | 0 | 3961 | 2826 | 0 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 45.7 | 0.0 | 0.0 | 2.9 | 3.2 | 0.0 |
| Incr Delay (d2) s/veh | 4 0 | 0.0 | 0.0 | 0.4 | 0.9 | 0.0 |
| Initial Q Delay(d3) s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%) veh/ln | 1.9 | 0.0 | 0.0 | 21 | 31 | 0.0 |
| Unsig Movement Delay s/ve | h | 0.0 | 0.0 | | 0.1 | 0.0 |
| InGrn Delay(d) s/veh | 49 7 | 0.0 | 0.0 | 33 | 4 1 | 0.0 |
| | D | 0.0 | Δ | 0.0 A | Δ | 0.0 A |
| Approach Vol. veh/h | 151 | Δ | | 1965 | 1623 | |
| Approach Delay, s/yeb | /0.7 | Л | | 33 | / 1 | |
| Approach LOS | -3.7 D | | | Δ | 4.1 | |
| | U | | | Л | Л | |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), s | | 87.5 | | 12.5 | | 87.5 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | ; | 76.0 | | 12.0 | | 76.0 |
| Max Q Clear Time (g_c+I1), s | 3 | 18.3 | | 6.5 | | 14.6 |
| Green Ext Time (p_c), s | | 38.0 | | 0.2 | | 46.6 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 5.5 | | | |
| HCM 6th LOS | | | Δ | | | |
| | | | Л | | | |

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

| | € | * | t. | 1 | 1 | Ŧ |
|------------------------------|-------------|------|-----------|------|------|------|
| Movement V | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ሻሻ | 11 | 441 | | | *** |
| Traffic Volume (veh/h) | 666 | 602 | 930 | 0 | 0 | 1760 |
| Future Volume (veh/h) | 666 | 602 | 930 | 0 | 0 | 1760 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A pbT) | 1.00 | 1.00 | • | 1.00 | 1.00 | • |
| Parking Bus. Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | No | | | No |
| Adi Sat Flow, veh/h/ln 1 | 1722 | 1722 | 1767 | 0 | 0 | 1841 |
| Adi Flow Rate, veh/h | 724 | 654 | 1011 | 0 | 0 | 1913 |
| Peak Hour Factor (| 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh % | 12 | 12 | 0.02 Q | 0.02 | 0.52 | 0.5Z |
| Can veh/h | 972 | 785 | 3 2723 | 0 | 0 | 2837 |
| Arrive On Groon | 0.21 | 0.21 | 0.56 | 0 00 | 0.00 | 0.56 |
| Anive On Green | 0.31 | 0.31 | 0.00 | 0.00 | 0.00 | 0.00 |
| Sat Flow, ven/n 3 | 5182 | 2569 | 5141 | 0 | 0 | 5356 |
| Grp Volume(v), veh/h | 724 | 654 | 1011 | 0 | 0 | 1913 |
| Grp Sat Flow(s),veh/h/In1 | 1591 | 1284 | 1608 | 0 | 0 | 1675 |
| Q Serve(g_s), s | 20.5 | 23.7 | 11.5 | 0.0 | 0.0 | 26.8 |
| Cycle Q Clear(g_c), s | 20.5 | 23.7 | 11.5 | 0.0 | 0.0 | 26.8 |
| Prop In Lane | 1.00 | 1.00 | | 0.00 | 0.00 | |
| Lane Grp Cap(c), veh/h | 972 | 785 | 2723 | 0 | 0 | 2837 |
| V/C Ratio(X) | 0.74 | 0.83 | 0.37 | 0.00 | 0.00 | 0.67 |
| Avail Cap(c_a), veh/h 1 | 1177 | 950 | 2723 | 0 | 0 | 2837 |
| HCM Platoon Ratio | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 |
| Unstream Filter/I) | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| Uniform Delay (d) s/yeb | 31.2 | 32 / | 12.0 | 0.00 | 0.00 | 15 3 |
| Iner Delay (d2) shoch | 2.1 | 52.4 | 0.4 | 0.0 | 0.0 | 12.0 |
| Initial O Delay (uz), S/Vell | 2.1 | 0.0 | 0.4 | 0.0 | 0.0 | 1.0 |
| Initial Q Delay(03),S/Ven | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %IIE BackOfQ(50%),Veh/ | δ. η | 1.6 | 3.8 | 0.0 | 0.0 | 9.4 |
| Unsig. Movement Delay, | s/veh | 0- 0 | 40.4 | | | 10.0 |
| LnGrp Delay(d),s/veh | 33.3 | 37.8 | 12.4 | 0.0 | 0.0 | 16.6 |
| LnGrp LOS | С | D | В | Α | A | В |
| Approach Vol, veh/h 1 | 1378 | | 1011 | | | 1913 |
| Approach Delay, s/veh | 35.5 | | 12.4 | | | 16.6 |
| Approach LOS | D | | В | | | В |
| | | • | | | | • |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), | S | 62.5 | | 37.5 | | 62.5 |
| Change Period (Y+Rc), s | 3 | 6.0 | | 7.0 | | 6.0 |
| Max Green Setting (Gma | ax), s | 50.0 | | 37.0 | | 50.0 |
| Max Q Clear Time (g_c+l | l1), s | 28.8 | | 25.7 | | 13.5 |
| Green Ext Time (p_c), s | | 20.9 | | 4.8 | | 26.4 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 21.7 | | | |
| HCM 6th LOS | | | <u> </u> | | | |
| | | | U | | | |

* + + + + * * + * + + + + + +

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|---|--|--|-----------|---|--|-----------------------------------|------|---|------|----------|------|------|--|
| Lane Configurations | | 4 | | | ्र | 1 | ٦ | *†† | 1 | <u> </u> | 44Þ | | |
| Traffic Volume (veh/h) | 6 | 1 | 18 | 161 | 0 | 88 | 21 | 1320 | 199 | 116 | 1913 | 2 | |
| Future Volume (veh/h) | 6 | 1 | 18 | 161 | 0 | 88 | 21 | 1320 | 199 | 116 | 1913 | 2 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Work Zone On Approach | ۱ | No | | | No | | | No | | | No | | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1796 | 1796 | 1796 | 1707 | 1707 | 1707 | 1826 | 1826 | 1826 | |
| Adj Flow Rate, veh/h | 6 | 1 | 19 | 173 | 0 | 95 | 23 | 1419 | 0 | 125 | 2057 | 2 | |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | |
| Percent Heavy Veh, % | 0 | 0 | 0 | 7 | 7 | 7 | 13 | 13 | 13 | 5 | 5 | 5 | |
| Cap, veh/h | 44 | 27 | 72 | 189 | 0 | 364 | 38 | 2331 | | 156 | 2913 | 3 | |
| Arrive On Green | 0.26 | 0.24 | 0.24 | 0.26 | 0.00 | 0.24 | 0.02 | 0.50 | 0.00 | 0.03 | 0.19 | 0.19 | |
| Sat Flow, veh/h | 0 | 111 | 301 | 487 | 0 | 1518 | 1626 | 4661 | 1447 | 1739 | 5143 | 5 | |
| Grp Volume(v), veh/h | 26 | 0 | 0 | 173 | 0 | 95 | 23 | 1419 | 0 | 125 | 1329 | 730 | |
| Grp Sat Flow(s),veh/h/ln | 411 | 0 | 0 | 487 | 0 | 1518 | 1626 | 1554 | 1447 | 1739 | 1662 | 1825 | |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.1 | 1.4 | 21.9 | 0.0 | 7.1 | 37.5 | 37.5 | |
| Cycle Q Clear(g_c), s | 26.0 | 0.0 | 0.0 | 26.0 | 0.0 | 5.1 | 1.4 | 21.9 | 0.0 | 7.1 | 37.5 | 37.5 | |
| Prop In Lane | 0.23 | | 0.73 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.00 | |
| Lane Grp Cap(c), veh/h | 151 | 0 | 0 | 199 | 0 | 364 | 38 | 2331 | | 156 | 1882 | 1034 | |
| V/C Ratio(X) | 0.17 | 0.00 | 0.00 | 0.87 | 0.00 | 0.26 | 0.60 | 0.61 | | 0.80 | 0.71 | 0.71 | |
| Avail Cap(c_a), veh/h | 151 | 0 | 0 | 199 | 0 | 364 | 98 | 2331 | | 243 | 1882 | 1034 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.33 | 0.33 | 0.33 | |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.70 | 0.70 | 0.70 | |
| Uniform Delay (d), s/veh | 31.0 | 0.0 | 0.0 | 41.2 | 0.0 | 30.8 | 48.4 | 18.0 | 0.0 | 47.6 | 32.9 | 32.9 | |
| Incr Delay (d2), s/veh | 0.5 | 0.0 | 0.0 | 31.5 | 0.0 | 0.4 | 14.1 | 1.2 | 0.0 | 7.1 | 1.6 | 2.9 | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| %ile BackOfQ(50%),veh | /ln0.5 | 0.0 | 0.0 | 5.9 | 0.0 | 1.9 | 0.7 | 7.4 | 0.0 | 3.5 | 16.9 | 18.9 | |
| Unsig. Movement Delay, | s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 31.5 | 0.0 | 0.0 | 72.7 | 0.0 | 31.2 | 62.4 | 19.1 | 0.0 | 54.7 | 34.4 | 35.7 | |
| LnGrp LOS | С | A | A | E | A | С | E | В | | D | С | D | |
| Approach Vol, veh/h | | 26 | | | 268 | | | 1442 | А | | 2184 | | |
| Approach Delay, s/veh | | 31.5 | | | 58.0 | | | 19.8 | | | 36.0 | | |
| Approach LOS | | С | | | E | | | В | | | D | | |
| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc), | s7.4 | 62.6 | | 30.0 | 14.0 | 56.0 | | 30.0 | | | | | |
| Change Period (Y+Rc), s | s 5.0 | 6.0 | | 6.0 | 5.0 | 6.0 | | 6.0 | | | | | |
| Max Green Setting (Gma | ax6), G | 53.0 | | 24.0 | 14.0 | 45.0 | | 24.0 | | | | | |
| Max Q Clear Time (g_c+ | 113,45 | 39.5 | | 28.0 | 9.1 | 23.9 | | 28.0 | | | | | |
| Green Ext Time (p_c), s | 0.0 | 13.4 | | 0.0 | 0.1 | 19.6 | | 0.0 | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 31.6 | | | | | | | | | | |
| HCM 6th LOS | | | С | | | | | | | | | | |
| Timer - Assigned Phs Phs Duration (G+Y+Rc), Change Period (Y+Rc), s Max Green Setting (Gma Max Q Clear Time (g_c+ Green Ext Time (p_c), s Intersection Summary HCM 6th Ctrl Delay HCM 6th LOS | 1 s7.4 s 5.0 ax6, 8 l 13,4s 0.0 | 2 62.6 6.0 53.0 39.5 13.4 | 31.6 C | 4 30.0 6.0 24.0 28.0 0.0 | 5 14.0 5.0 14.0 9.1 0.1 | 6 56.0 45.0 23.9 19.6 | | 8 30.0 6.0 24.0 28.0 0.0 | | | | | |

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

| | ٭ | \mathbf{F} | 1 | 1 | Ŧ | ~ |
|---------------------------|------------------|--------------|------|------|------|-------------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ካካ | 1 | 5 | ** | ** | 1 |
| Traffic Volume (veh/h) | 388 | 229 | 181 | 1042 | 1570 | 387 |
| Future Volume (veh/h) | 388 | 229 | 181 | 1042 | 1570 | 387 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A pbT) | 1.00 | 1.00 | 1.00 | - | | 1.00 |
| Parking Bus. Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approac | h No | | | No | No | |
| Adi Sat Flow, veh/h/ln | 1781 | 1781 | 1678 | 1678 | 1826 | 1826 |
| Adi Flow Rate. veh/h | 422 | 249 | 197 | 1133 | 1707 | 421 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh % | 8 | 8 | 15 | 15 | 5 | 5 |
| Cap, veh/h | 592 | 272 | 228 | 2199 | 1927 | 859 |
| Arrive On Green | 0.18 | 0.18 | 0.08 | 0.69 | 0.56 | 0.56 |
| Sat Flow, veh/h | 3291 | 1510 | 1598 | 3272 | 3561 | 1547 |
| Grn Volume(v) veh/h | 100 | 240 | 1030 | 1100 | 1707 | 101 |
| Grp Sat Flow(a) yeh/h/h | 422 | 249 | 1500 | 150/ | 1725 | 421 1547 |
| | 1040 | 1010 | 1090 | 1094 | 1730 | 1047 |
| Q Serve(g_S), S | 12.1 | 10.2 | 0.2 | 17.1 | 43.1 | 10.0 |
| Cycle Q Clear(g_c), s | 12.1 | 16.2 | 6.2 | 17.1 | 43.1 | 10.0 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | 100- | 1.00 |
| Lane Grp Cap(c), veh/h | 592 | 272 | 228 | 2199 | 1927 | 859 |
| V/C Ratio(X) | 0.71 | 0.92 | 0.86 | 0.52 | 0.89 | 0.49 |
| Avail Cap(c_a), veh/h | 592 | 272 | 317 | 2199 | 1927 | 859 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.92 | 0.92 | 1.00 | 1.00 |
| Uniform Delay (d), s/vel | h 38.6 | 40.3 | 26.5 | 7.5 | 19.5 | 13.6 |
| Incr Delay (d2), s/veh | 4.0 | 33.4 | 14.9 | 0.8 | 6.4 | 2.0 |
| Initial Q Delay(d3),s/veh | n 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),vel | h/lr5.1 | 8.4 | 3.4 | 4.9 | 16.9 | 5.7 |
| Unsig. Movement Delay | , s/veh | 1 | | | | |
| LnGrp Delay(d),s/veh | 42.6 | 73.7 | 41.4 | 8.3 | 25.9 | 15.6 |
| LnGrp LOS | D | E | D | A | С | В |
| Approach Vol. veh/h | 671 | | _ | 1330 | 2128 | |
| Approach Delay s/veh | 54 1 | | | 13.2 | 23.9 | |
| Approach I OS | D | | | R | 20.0 | |
| | U | | | U | U | |
| Timer - Assigned Phs | 1 | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc) |), \$ 3.5 | 62.5 | | 24.0 | | 76.0 |
| Change Period (Y+Rc), | s 5.0 | 7.0 | | 6.0 | | 7.0 |
| Max Green Setting (Gm | na 1x4,.G | 50.0 | | 18.0 | | 69.0 |
| Max Q Clear Time (g c | +118.2s | 45.1 | | 18.2 | | 19.1 |
| Green Ext Time (p c). s | s 0.3 | 4.9 | | 0.0 | | 38.0 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Dolov | | | 25.2 | | | |
| | | | 20.0 | | | |
| | | | U | | | |

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | | | \$ | | | el 🕹 | | | ŧ | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 20 | 0 | 10 | 0 | 1323 | 65 | 32 | 1470 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 20 | 0 | 10 | 0 | 1323 | 65 | 32 | 1470 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 4 | 4 | 4 | 13 | 13 | 13 | 6 | 6 | 6 |
| Mvmt Flow | 0 | 0 | 0 | 22 | 0 | 11 | 0 | 1487 | 73 | 36 | 1652 | 0 |

| Major/Minor | | Minor1 | | Ν | 1ajor1 | | N | Major2 | | | |
|----------------------------|--------|---------------|-------|---------|----------|-----------|----|----------|-----------|--------|---------|
| Conflicting Flow All | | 3248 | 3248 | 1524 | - | 0 | 0 | 1560 | 0 | 0 | |
| Stage 1 | | 1524 | 1524 | - | - | - | - | - | - | - | |
| Stage 2 | | 1724 | 1724 | - | - | - | - | - | - | - | |
| Critical Hdwy | | 6.44 | 6.54 | 6.24 | - | - | - | 4.16 | - | - | |
| Critical Hdwy Stg 1 | | 5.44 | 5.54 | - | - | - | - | - | - | - | |
| Critical Hdwy Stg 2 | | 5.44 | 5.54 | - | - | - | - | - | - | - | |
| Follow-up Hdwy | | 3.536 | 4.036 | 3.336 | - | - | - | 2.254 | - | - | |
| Pot Cap-1 Maneuver | | ~ 10 | 9 | 144 | 0 | - | - | 413 | - | 0 | |
| Stage 1 | | 196 | 178 | - | 0 | - | - | - | - | 0 | |
| Stage 2 | | 156 | 142 | - | 0 | - | - | - | - | 0 | |
| Platoon blocked, % | | | | | | - | - | | - | | |
| Mov Cap-1 Maneuver | | 0 | 0 | 144 | - | - | - | 413 | - | - | |
| Mov Cap-2 Maneuver | | 0 | 0 | - | - | - | - | - | - | - | |
| Stage 1 | | 196 | 0 | - | - | - | - | - | - | - | |
| Stage 2 | | 0 | 0 | - | - | - | - | - | - | - | |
| | | | | | | | | | | | |
| Approach | | WB | | | NB | | | SB | | | |
| HCM Control Delay, s | | 37.5 | | | 0 | | | 0.3 | | | |
| HCM LOS | | E | | | | | | | | | |
| | | | | | | | | | | | |
| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT | | | | | | | |
| Capacity (veh/h) | - | - 144 | 413 | - | | | | | | | |
| HCM Lane V/C Ratio | - | - 0.234 | 0.087 | - | | | | | | | |
| HCM Control Delay (s) | - | - 37.5 | 14.5 | 0 | | | | | | | |
| HCM Lane LOS | - | - E | В | А | | | | | | | |
| HCM 95th %tile Q(veh) | - | - 0.9 | 0.3 | - | | | | | | | |
| Notes | | | | | | | | | | | |
| ~: Volume exceeds capacity | \$: De | lay exceeds 3 | 00s | +: Comp | outation | Not Defin | ed | *: All r | major vol | ume in | platoon |

HCM 6th Signalized Intersection Summary 8: MD 201 & Powder Mill Road

| | ۶ | → | $\mathbf{\hat{z}}$ | 4 | + | • | ٩. | Ť | ۲ | 5 | Ļ | ~ |
|------------------------------|------|----------|--------------------|-------|----------|------|------|----------|------|------|-------------|----------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ٦ | † | 1 | ۲ | † | 1 | ኘ | † | 1 | ٦ | ∱1 ≱ | |
| Traffic Volume (veh/h) | 244 | 373 | 413 | 475 | 239 | 78 | 413 | 592 | 231 | 97 | 518 | 113 |
| Future Volume (veh/h) | 244 | 373 | 413 | 475 | 239 | 78 | 413 | 592 | 231 | 97 | 518 | 113 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1693 | 1693 | 1693 | 1841 | 1841 | 1841 | 1693 | 1693 | 1693 | 1826 | 1826 | 1826 |
| Adj Flow Rate, veh/h | 274 | 419 | 0 | 534 | 269 | 0 | 464 | 665 | 0 | 109 | 582 | 127 |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Percent Heavy Veh, % | 14 | 14 | 14 | 4 | 4 | 4 | 14 | 14 | 14 | 5 | 5 | 5 |
| Cap, veh/h | 338 | 557 | | 212 | 724 | | 501 | 906 | | 223 | 695 | 151 |
| Arrive On Green | 0.33 | 0.33 | 0.00 | 0.04 | 0.39 | 0.00 | 0.26 | 0.54 | 0.00 | 0.25 | 0.25 | 0.25 |
| Sat Flow, veh/h | 1005 | 1693 | 1434 | 1753 | 1841 | 1560 | 1612 | 1693 | 1434 | 752 | 2833 | 617 |
| Grp Volume(v), veh/h | 274 | 419 | 0 | 534 | 269 | 0 | 464 | 665 | 0 | 109 | 356 | 353 |
| Grp Sat Flow(s),veh/h/ln | 1005 | 1693 | 1434 | 1753 | 1841 | 1560 | 1612 | 1693 | 1434 | 752 | 1735 | 1715 |
| Q Serve(g_s), s | 41.3 | 34.2 | 0.0 | 5.5 | 16.1 | 0.0 | 35.6 | 46.6 | 0.0 | 20.1 | 30.2 | 30.4 |
| Cycle Q Clear(g_c), s | 47.4 | 34.2 | 0.0 | 5.5 | 16.1 | 0.0 | 35.6 | 46.6 | 0.0 | 21.7 | 30.2 | 30.4 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.36 |
| Lane Grp Cap(c), veh/h | 338 | 557 | | 212 | 724 | | 501 | 906 | | 223 | 425 | 420 |
| V/C Ratio(X) | 0.81 | 0.75 | | 2.52 | 0.37 | | 0.93 | 0.73 | | 0.49 | 0.84 | 0.84 |
| Avail Cap(c_a), veh/h | 338 | 557 | | 212 | 724 | | 501 | 906 | | 223 | 425 | 420 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 53.8 | 46.4 | 0.0 | 57.0 | 33.4 | 0.0 | 39.3 | 27.5 | 0.0 | 53.1 | 55.6 | 55.6 |
| Incr Delay (d2), s/veh | 18.8 | 9.1 | 0.0 | 698.5 | 1.5 | 0.0 | 25.6 | 5.2 | 0.0 | 7.5 | 17.5 | 18.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/In | 12.1 | 15.8 | 0.0 | 47.0 | 7.7 | 0.0 | 14.8 | 19.6 | 0.0 | 4.3 | 15.2 | 15.2 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 72.6 | 55.5 | 0.0 | 755.5 | 34.8 | 0.0 | 65.0 | 32.8 | 0.0 | 60.5 | 73.0 | 73.6 |
| LnGrp LOS | E | <u> </u> | | F | C | | E | C | | E | <u> </u> | <u> </u> |
| Approach Vol, veh/h | | 693 | A | | 803 | A | | 1129 | A | | 818 | |
| Approach Delay, s/veh | | 62.2 | | | 514.1 | | | 46.0 | | | 71.6 | |
| Approach LOS | | E | | | F | | | D | | | E | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 45.0 | 44.0 | 10.0 | 56.0 | | 89.0 | | 66.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 6.0 | 4.5 | 5.0 | | 6.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 40.5 | 38.0 | 5.5 | 51.0 | | 83.0 | | 61.0 | | | | |
| Max Q Clear Time (g_c+l1), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 164.5 | | | | | | | | | |
| HCM 6th LOS | | | F | | | | | | | | | |

Notes

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | 4 | | | र्च | 1 | | र्भ | 1 | | 4 | |
| Traffic Vol, veh/h | 23 | 2 | 6 | 2 | 1 | 2 | 29 | 715 | 3 | 1 | 734 | 30 |
| Future Vol, veh/h | 23 | 2 | 6 | 2 | 1 | 2 | 29 | 715 | 3 | 1 | 734 | 30 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None |
| Storage Length | - | - | - | - | - | 50 | - | - | 325 | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 22 | 22 | 22 | 0 | 0 | 0 | 17 | 17 | 17 | 9 | 9 | 9 |
| Mvmt Flow | 24 | 2 | 6 | 2 | 1 | 2 | 30 | 745 | 3 | 1 | 765 | 31 |

| Major/Minor | Minor2 | | Ν | Minor1 | | | Major1 | | Ν | 1ajor2 | | | |
|----------------------|--------|-------|-------|--------|------|-----|--------|---|---|--------|---|---|--|
| Conflicting Flow All | 1591 | 1591 | 781 | 1592 | 1603 | 745 | 796 | 0 | 0 | 748 | 0 | 0 | |
| Stage 1 | 783 | 783 | - | 805 | 805 | - | - | - | - | - | - | - | |
| Stage 2 | 808 | 808 | - | 787 | 798 | - | - | - | - | - | - | - | |
| Critical Hdwy | 7.32 | 6.72 | 6.42 | 7.1 | 6.5 | 6.2 | 4.27 | - | - | 4.19 | - | - | |
| Critical Hdwy Stg 1 | 6.32 | 5.72 | - | 6.1 | 5.5 | - | - | - | - | - | - | - | |
| Critical Hdwy Stg 2 | 6.32 | 5.72 | - | 6.1 | 5.5 | - | - | - | - | - | - | - | |
| Follow-up Hdwy | 3.698 | 4.198 | 3.498 | 3.5 | 4 | 3.3 | 2.353 | - | - | 2.281 | - | - | |
| Pot Cap-1 Maneuver | 78 | 97 | 365 | 88 | 107 | 417 | 763 | - | - | 830 | - | - | |
| Stage 1 | 358 | 377 | - | 379 | 398 | - | - | - | - | - | - | - | |
| Stage 2 | 347 | 367 | - | 388 | 401 | - | - | - | - | - | - | - | |
| Platoon blocked, % | | | | | | | | - | - | | - | - | |
| Mov Cap-1 Maneuver | 73 | 90 | 365 | 81 | 100 | 417 | 763 | - | - | 830 | - | - | |
| Mov Cap-2 Maneuver | 73 | 90 | - | 81 | 100 | - | - | - | - | - | - | - | |
| Stage 1 | 334 | 376 | - | 354 | 371 | - | - | - | - | - | - | - | |
| Stage 2 | 321 | 342 | - | 378 | 400 | - | - | - | - | - | - | - | |
| | | | | | | | | | | | | | |

| Approach | EB | WB | NB | SB | |
|----------------------|------|------|-----|----|--|
| HCM Control Delay, s | 67.9 | 34.5 | 0.4 | 0 | |
| HCM LOS | F | D | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1V | VBLn1V | VBLn2 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|--------|--------|-------|-------|-----|-----|
| Capacity (veh/h) | 763 | - | - | 88 | 86 | 417 | 830 | - | - |
| HCM Lane V/C Ratio | 0.04 | - | - | 0.367 | 0.036 | 0.005 | 0.001 | - | - |
| HCM Control Delay (s) | 9.9 | 0 | - | 67.9 | 48.4 | 13.7 | 9.3 | 0 | - |
| HCM Lane LOS | А | А | - | F | E | В | А | А | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 1.4 | 0.1 | 0 | 0 | - | - |

| 276.8 |
|-------|
| F |
| |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR | |
|----------------------------|-------|------|------|------|-------|------|--|
| Lane Configurations | | र्स | et. | | ¥ | | |
| Traffic Vol, veh/h | 6 | 737 | 284 | 6 | 375 | 487 | |
| Future Vol, veh/h | 6 | 737 | 284 | 6 | 375 | 487 | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 0 | 0 | |
| Mvmt Flow | 7 | 847 | 326 | 7 | 431 | 560 | |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | |
| Approach | EB | | WB | | SB | | |
| Opposing Approach | WB | | EB | | | | |
| Opposing Lanes | 1 | | 1 | | 0 | | |
| Conflicting Approach Left | SB | | | | WB | | |
| Conflicting Lanes Left | 1 | | 0 | | 1 | | |
| Conflicting Approach Right | | | SB | | EB | | |
| Conflicting Lanes Right | 0 | | 1 | | 1 | | |
| HCM Control Delay | 283.6 | | 29.3 | | 354.3 | | |
| HCM LOS | F | | D | | F | | |

| Lane | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, % | 1% | 0% | 44% |
| Vol Thru, % | 99% | 98% | 0% |
| Vol Right, % | 0% | 2% | 56% |
| Sign Control | Stop | Stop | Stop |
| Traffic Vol by Lane | 743 | 290 | 862 |
| LT Vol | 6 | 0 | 375 |
| Through Vol | 737 | 284 | 0 |
| RT Vol | 0 | 6 | 487 |
| Lane Flow Rate | 854 | 333 | 991 |
| Geometry Grp | 1 | 1 | 1 |
| Degree of Util (X) | 1.557 | 0.651 | 1.728 |
| Departure Headway (Hd) | 8.368 | 9.794 | 7.259 |
| Convergence, Y/N | Yes | Yes | Yes |
| Сар | 444 | 373 | 515 |
| Service Time | 6.368 | 7.794 | 5.259 |
| HCM Lane V/C Ratio | 1.923 | 0.893 | 1.924 |
| HCM Control Delay | 283.6 | 29.3 | 354.3 |
| HCM Lane LOS | F | D | F |
| HCM 95th-tile Q | 36.8 | 4.4 | 51.4 |

Intersection

| Int Delay, s/veh | 1 | | | | | | |
|------------------------|--------|------|------|----------|----------|------|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR | |
| Lane Configurations | ef – | | | ↑ | <u>۲</u> | | |
| Traffic Vol, veh/h | 1055 | 50 | 0 | 255 | 30 | 0 |) |
| Future Vol, veh/h | 1055 | 50 | 0 | 255 | 30 | 0 |) |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |) |
| Sign Control | Free | Free | Free | Free | Stop | Stop |) |
| RT Channelized | - | None | - | None | - | None | ; |
| Storage Length | - | - | - | - | 0 | - | - |
| Veh in Median Storage | e, # 0 | - | - | 0 | 0 | - | - |
| Grade, % | 0 | - | - | 0 | 0 | - | - |
| Peak Hour Factor | 84 | 84 | 84 | 84 | 84 | 84 | ļ |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 2 | 2 |) |
| Mvmt Flow | 1256 | 60 | 0 | 304 | 36 | 0 |) |

| Major/Minor | Major1 | Major2 | Minor1 | | |
|----------------------|--------|--------|---------|---|--|
| Conflicting Flow All | 0 | 0 - | - 1590 | - | |
| Stage 1 | - | | - 1286 | - | |
| Stage 2 | - | | - 304 | - | |
| Critical Hdwy | - | | - 6.42 | - | |
| Critical Hdwy Stg 1 | - | | - 5.42 | - | |
| Critical Hdwy Stg 2 | - | | - 5.42 | - | |
| Follow-up Hdwy | - | | - 3.518 | - | |
| Pot Cap-1 Maneuver | - | - 0 | - 118 | 0 | |
| Stage 1 | - | - 0 | - 259 | 0 | |
| Stage 2 | - | - 0 | - 748 | 0 | |
| Platoon blocked, % | - | - | - | | |
| Mov Cap-1 Maneuver | - | | - 118 | - | |
| Mov Cap-2 Maneuver | - | | - 118 | - | |
| Stage 1 | - | | - 259 | - | |
| Stage 2 | - | | - 748 | - | |
| | | | | | |
| Annroach | FB | WR | NB | | |
| HCM Control Delay | 0 | 0 | 48.2 | | |
| HCM LOS | 0 | 0 | | | |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Canadity (yeh/h) | 110 | | | |
| Capacity (ven/n) | 118 | - | - | - |
| HCM Lane V/C Ratio | 0.303 | - | - | - |
| HCM Control Delay (s) | 48.2 | - | - | - |
| HCM Lane LOS | E | - | - | - |
| HCM 95th %tile Q(veh) | 1.2 | - | - | - |

Intersection

| Int Delay, s/veh | 125.2 | | | | | | |
|------------------------|---------------|----------|------|------|------|------|--|
| Movement | EBL | EBT | WBT | WBR | SBL | SBR | |
| Lane Configurations | - ሽ | ↑ | 4 | | - ¥ | | |
| Traffic Vol, veh/h | 20 | 961 | 271 | 152 | 300 | 9 | |
| Future Vol, veh/h | 20 | 961 | 271 | 152 | 300 | 9 | |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | |
| Sign Control | Free | Free | Free | Free | Stop | Stop | |
| RT Channelized | - | None | - | None | - | None | |
| Storage Length | 50 | - | - | - | 0 | - | |
| Veh in Median Storage | e, # - | 0 | 0 | - | 0 | - | |
| Grade, % | - | 0 | 0 | - | 0 | - | |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | |
| Heavy Vehicles, % | 2 | 2 | 4 | 4 | 2 | 2 | |
| Mvmt Flow | 22 | 1045 | 295 | 165 | 326 | 10 | |

| Major/Minor | Major1 | Ν | lajor2 | Minor2 | | | | |
|----------------------|---------|---------|--------|------------|---------|----------------------|--------------------------------|--|
| Conflicting Flow All | 460 | 0 | - | 0 1467 | 378 | | | |
| Stage 1 | - | - | - | - 378 | - | | | |
| Stage 2 | - | - | - | - 1089 | - | | | |
| Critical Hdwy | 4.12 | - | - | - 6.42 | 6.22 | | | |
| Critical Hdwy Stg 1 | - | - | - | - 5.42 | - | | | |
| Critical Hdwy Stg 2 | - | - | - | - 5.42 | - | | | |
| Follow-up Hdwy | 2.218 | - | - | - 3.518 | 3.318 | | | |
| Pot Cap-1 Maneuver | 1101 | - | - | - ~ 141 | 669 | | | |
| Stage 1 | - | - | - | - 693 | - | | | |
| Stage 2 | - | - | - | - ~ 323 | - | | | |
| Platoon blocked, % | | - | - | - | | | | |
| Mov Cap-1 Maneuver | 1101 | - | - | - ~ 138 | 669 | | | |
| Mov Cap-2 Maneuver | - | - | - | - ~ 138 | - | | | |
| Stage 1 | - | - | - | - 679 | - | | | |
| Stage 2 | - | - | - | - ~ 323 | - | | | |
| | | | | | | | | |
| Approach | EB | | WB | SB | | | | |
| HCM Control Delay, s | 0.2 | | 0 | \$ 693.7 | | | | |
| HCM LOS | • | | • | F | | | | |
| | | | | • | | | | |
| | 1 | | CDT | | 0014 | | | |
| Minor Lane/Major Mvr | nt | EBL | ERI | WRI WRK | SBLN1 | | | |
| Capacity (veh/h) | | 1101 | - | | 141 | | | |
| HCM Lane V/C Ratio | | 0.02 | - | | 2.382 | | | |
| HCM Control Delay (s | 5) | 8.3 | - | | 693.7 | | | |
| HCM Lane LOS | , | A | - | | + | | | |
| HCM 95th %tile Q(ver | ר) | 0.1 | - | | 28.7 | | | |
| Notes | | | | | | | | |
| ~: Volume exceeds ca | apacity | \$: Del | ay exc | ceeds 300s | +: Comp | outation Not Defined | *: All major volume in platoon | |

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|----------|------|------|------|------|------|-------|------|------|---------|------|
| Lane Configurations | | el el | | 5 | 1 | | | | | 1 | et F | |
| Traffic Vol, veh/h | 0 | 863 | 414 | 141 | 291 | 0 | 0 | 0 | 0 | 286 | 2 | 144 |
| Future Vol, veh/h | 0 | 863 | 414 | 141 | 291 | 0 | 0 | 0 | 0 | 286 | 2 | 144 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 225 | - | - | - | - | - | 25 | - | - |
| Veh in Median Storage | , # - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 918 | 440 | 150 | 310 | 0 | 0 | 0 | 0 | 304 | 2 | 153 |

| Major/Minor | Major1 | | Ν | /lajor2 | | | Minor2 | | | |
|----------------------|------------|--------|---------|---------|-----------------------|-----------|--------------------|-----------|----------|------------|
| Conflicting Flow All | - | 0 | 0 | 1358 | 0 |) | 1748 | 1968 | 310 | |
| Stage 1 | - | - | - | - | - | - | 610 | 610 | - | |
| Stage 2 | - | - | - | - | - | - | 1138 | 1358 | - | |
| Critical Hdwy | - | - | - | 4.13 | - | - | 6.42 | 6.52 | 6.22 | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.42 | 5.52 | - | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.42 | 5.52 | - | |
| Follow-up Hdwy | - | - | - | 2.227 | - | - | 3.518 | 4.018 | 3.318 | |
| Pot Cap-1 Maneuver | 0 | - | - | 503 | - |) | ~ 95 | 63 | 730 | |
| Stage 1 | 0 | - | - | - | - |) | 542 | 485 | - | |
| Stage 2 | 0 | - | - | - | - |) | 306 | 217 | - | |
| Platoon blocked, % | | - | - | | - | | | | | |
| Mov Cap-1 Maneuver | - | - | - | 503 | - | - | ~ 67 | 0 | 730 | |
| Mov Cap-2 Maneuver | · <u>-</u> | - | - | - | - | - | ~ 67 | 0 | - | |
| Stage 1 | - | - | - | - | - | - | 542 | 0 | - | |
| Stage 2 | - | - | - | - | - | - | ~ 215 | 0 | - | |
| | | | | | | | | | | |
| Approach | EB | | | WB | | | SB | | | |
| HCM Control Delay, s | 0 | | | 5 | | | \$ 1141.5 | | | |
| HCM LOS | | | | | | | F | | | |
| | | | | | | | | | | |
| Minor Lane/Major Mvr | nt | EBT | EBR | WBL | WBT SBLn | 1 SBLn2 | | | | |
| Capacity (veh/h) | | - | - | 503 | - 6 | 7 730 | | | | |
| HCM Lane V/C Ratio | | - | - | 0.298 | - 4.54 | 1 0.213 | | | | |
| HCM Control Delay (s | ;) | - | - | 15.2 | \$ 1718. ⁴ | 11.3 | | | | |
| HCM Lane LOS | | - | - | С | - | = B | | | | |
| HCM 95th %tile Q(veh | ר) | - | - | 1.2 | - 33. | 1 0.8 | | | | |
| Notes | | | | | | | | | | |
| ~: Volume exceeds ca | apacity | \$: De | lay exc | eeds 30 |)0s +: Co | mputatior | Not Defined *: All | l major v | volume i | in platoon |

67

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|----------|----------|------|------|------|------|----------|------|------|------|-------|------|
| Lane Configurations | <u>٦</u> | ↑ | | | 4 | | <u>۲</u> | 4 | | | | |
| Traffic Vol, veh/h | 362 | 752 | 0 | 0 | 348 | 545 | 73 | 3 | 46 | 0 | 0 | 0 |
| Future Vol, veh/h | 362 | 752 | 0 | 0 | 348 | 545 | 73 | 3 | 46 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 250 | - | - | - | - | - | 50 | - | - | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 16965 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 398 | 826 | 0 | 0 | 382 | 599 | 80 | 3 | 51 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | |
|--|--------|------------|--------|--------|-----|--------|---------|---------|--------|--------------------------------|
| Conflicting Flow All | 981 | 0 | - | - | - | 0 | 2304 | 2603 | 826 | |
| Stage 1 | - | - | - | - | - | - | 1622 | 1622 | - | |
| Stage 2 | - | - | - | - | - | - | 682 | 981 | - | |
| Critical Hdwy | 4.12 | - | - | - | - | - | 6.41 | 6.51 | 6.21 | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.41 | 5.51 | - | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.41 | 5.51 | - | |
| Follow-up Hdwy | 2.218 | - | - | - | - | - | 3.509 | 4.009 | 3.309 | |
| Pot Cap-1 Maneuver | 704 | - | 0 | 0 | - | - | ~ 43 | 25 | 373 | |
| Stage 1 | - | - | 0 | 0 | - | - | 178 | 162 | - | |
| Stage 2 | - | - | 0 | 0 | - | - | 504 | 329 | - | |
| Platoon blocked, % | | - | | | - | - | | | | |
| Mov Cap-1 Maneuver | 704 | - | - | - | - | - | ~ 19 | 0 | 373 | |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 19 | 0 | - | |
| Stage 1 | - | - | - | - | - | - | ~ 77 | 0 | - | |
| Stage 2 | - | - | - | - | - | - | 504 | 0 | - | |
| | | | | | | | | | | |
| Approach | EB | | | WB | | | NB | | | |
| HCM Control Delay, s | 5.4 | | | 0 | | \$ | 1119.8 | | | |
| HCM LOS | | | | | | | F | | | |
| | | | | | | | | | | |
| Minor Lane/Maior Myn | nt | NBI n1 | NBI n2 | FBI | FRT | WBT | WBR | | | |
| Canacity (veh/h) | | 19 | 373 | 704 | | | - | | | |
| HCM Lane V/C Ratio | | 4 222 | 0 144 | 0 565 | _ | - | _ | | | |
| HCM Control Delay (s) |) \$ | 1860.5 | 16.3 | 16.5 | - | - | - | | | |
| HCM Lane LOS |) Ψ | F | C.01 | C | - | - | - | | | |
| HCM 95th %tile Q(veh | 1) | 10.5 | 0.5 | 3.6 | - | - | - | | | |
| | ., | | | 0.0 | | | | | | |
| Notes | | A = | | | | | | | | |
| ~: Volume exceeds capacity \$: Delay exceeds 300 | | | | |)0s | +: Com | putatio | n Not D | efined | *: All major volume in platoon |

| | - | \mathbf{r} | 1 | - | 1 | 1 |
|--------------------------------|------|--------------|------|------|------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | • | 1 | ۲ | • | ۲ | 1 |
| Traffic Volume (veh/h) | 390 | 400 | 35 | 315 | 619 | 38 |
| Future Volume (veh/h) | 390 | 400 | 35 | 315 | 619 | 38 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1885 | 1885 |
| Adj Flow Rate, veh/h | 443 | 0 | 40 | 358 | 703 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 1 | 1 |
| Cap, veh/h | 536 | | 98 | 742 | 838 | |
| Arrive On Green | 0.29 | 0.00 | 0.06 | 0.40 | 0.47 | 0.00 |
| Sat Flow, veh/h | 1856 | 1572 | 1767 | 1856 | 1795 | 1598 |
| Grp Volume(v), veh/h | 443 | 0 | 40 | 358 | 703 | 0 |
| Grp Sat Flow(s),veh/h/ln | 1856 | 1572 | 1767 | 1856 | 1795 | 1598 |
| Q Serve(g s), s | 20.1 | 0.0 | 2.0 | 12.9 | 30.9 | 0.0 |
| Cycle Q Clear(a c). s | 20.1 | 0.0 | 2.0 | 12.9 | 30.9 | 0.0 |
| Prop In Lane | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Lane Grp Cap(c), veh/h | 536 | | 98 | 742 | 838 | |
| V/C Ratio(X) | 0.83 | | 0.41 | 0.48 | 0.84 | |
| Avail Cap(c a), veh/h | 536 | | 98 | 742 | 838 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 29.9 | 0.0 | 41.1 | 20.1 | 21.0 | 0.0 |
| Incr Delay (d2), s/veh | 13.6 | 0.0 | 12.1 | 2.2 | 9.9 | 0.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%).veh/In | 10.6 | 0.0 | 1.2 | 5.7 | 13.8 | 0.0 |
| Unsig. Movement Delay, s/vel | h | | | | | |
| LnGrp Delav(d).s/veh | 43.5 | 0.0 | 53.1 | 22.3 | 30.9 | 0.0 |
| LnGrp LOS | D | | D | C | С | |
| Approach Vol. veh/h | 443 | А | | 398 | 703 | А |
| Approach Delay s/yeh | 43.5 | 73 | | 25.4 | 30.9 | |
| Approach LOS | D | | | С | C | |
| Timer - Assianed Phs | | 2 | | 4 | 5 | 6 |
| Phs Duration (G+Y+Rc) s | | 42.0 | | 48.0 | 10.0 | 32.0 |
| Change Period (Y+Rc) s | | 6.0 | | | 5.0 | 6.0 |
| Max Green Setting (Gmax) s | | 36.0 | | 42.0 | 5.0 | 26.0 |
| Max O Clear Time $(q, c+l1)$ s | | 14.9 | | 32.9 | 4.0 | 20.0 |
| Green Ext Time (n_c) s | | 4.8 | | 23 | 0.0 | 1.8 |
| | | -1.0 | | 2.0 | 0.0 | 1.0 |
| Intersection Summary | | | 22.4 | | | |
| HCM 6th Ctrl Delay | | | 33.1 | | | |
| HCM 6th LOS | | | С | | | |

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

| | ≯ | → | $\mathbf{\hat{z}}$ | 4 | + | • | • | Ť | ۲ | 5 | Ŧ | ~ |
|-------------------------------|--------------------|------|--------------------|------|-------------|------------|---------|-------------|------|------|----------|-------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ۲. | | 1 | | | | ۲. | ∱1 ≽ | | | ^ | * |
| Traffic Volume (vph) | 169 | 0 | 287 | 0 | 0 | 0 | 544 | 1198 | 0 | 0 | 1066 | 207 |
| Future Volume (vph) | 169 | 0 | 287 | 0 | 0 | 0 | 544 | 1198 | 0 | 0 | 1066 | 207 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 6.5 | | 6.5 | | | | 6.5 | 6.5 | | | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | | 1.00 | | | | 1.00 | 0.95 | | | 0.95 | 1.00 |
| Frt | 1.00 | | 0.85 | | | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | | 1.00 | | | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1626 | | 1358 | | | | 1687 | 3374 | | | 2905 | 1392 |
| Flt Permitted | 0.95 | | 1.00 | | | | 0.10 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1626 | | 1358 | | | | 169 | 3374 | | | 2905 | 1392 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 199 | 0 | 338 | 0 | 0 | 0 | 640 | 1409 | 0 | 0 | 1254 | 244 |
| RTOR Reduction (vph) | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 |
| Lane Group Flow (vph) | 199 | 0 | 317 | 0 | 0 | 0 | 640 | 1409 | 0 | 0 | 1254 | 203 |
| Heavy Vehicles (%) | 11% | 11% | 11% | 0% | 0% | 0% | 7% | 7% | 7% | 16% | 16% | 16% |
| Turn Type | Prot | | pt+ov | | | | pm+pt | NA | | | NA | pm+ov |
| Protected Phases | 4 | | 14 | | | | 1 | 16 | | | 2 | 4 |
| Permitted Phases | | | 4 | | | | 16 | | | | | 2 |
| Actuated Green, G (s) | 10.5 | | 45.6 | | | | 76.5 | 76.5 | | | 41.4 | 51.9 |
| Effective Green, g (s) | 10.5 | | 45.6 | | | | 76.5 | 76.5 | | | 41.4 | 51.9 |
| Actuated g/C Ratio | 0.10 | | 0.46 | | | | 0.76 | 0.76 | | | 0.41 | 0.52 |
| Clearance Time (s) | 6.5 | | | | | | 6.5 | | | | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.5 | | | | | | 3.0 | | | | 6.0 | 3.5 |
| Lane Grp Cap (vph) | 170 | | 619 | | | | 563 | 2581 | | | 1202 | 812 |
| v/s Ratio Prot | c0.12 | | 0.23 | | | | c0.32 | 0.42 | | | 0.43 | 0.03 |
| v/s Ratio Perm | | | | | | | c0.54 | | | | | 0.12 |
| v/c Ratio | 1.17 | | 0.51 | | | | 1.14 | 0.55 | | | 1.04 | 0.25 |
| Uniform Delay, d1 | 44.8 | | 19.3 | | | | 26.4 | 4.7 | | | 29.3 | 13.3 |
| Progression Factor | 1.00 | | 1.00 | | | | 0.67 | 0.19 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 122.4 | | 0.7 | | | | 75.6 | 0.2 | | | 38.0 | 0.2 |
| Delay (s) | 167.1 | | 20.0 | | | | 93.2 | 1.1 | | | 67.3 | 13.5 |
| Level of Service | F | | С | | | | F | А | | | E | В |
| Approach Delay (s) | | 74.5 | | | 0.0 | | | 29.9 | | | 58.5 | |
| Approach LOS | | E | | | A | | | С | | | E | |
| Intersection Summary | tersection Summary | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 46.2 | Н | CM 2000 | Level of | Service | | D | | | |
| HCM 2000 Volume to Capa | acity ratio | | 1.20 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | S | um of lost | t time (s) | | | 19.5 | | | |
| Intersection Capacity Utiliza | ation | | 83.1% | IC | CU Level of | of Service |) | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

Intersection

| Int Delay, s/veh | 4.6 | | | | | | | |
|------------------------|--------|------|---------------|------|------|------|--|--|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT | | |
| Lane Configurations | - ¥ | | _ ≜ î≽ | | | - 11 | | |
| Traffic Vol, veh/h | 15 | 14 | 1359 | 8 | 0 | 1259 | | |
| Future Vol, veh/h | 15 | 14 | 1359 | 8 | 0 | 1259 | | |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | | |
| Sign Control | Stop | Stop | Free | Free | Free | Free | | |
| RT Channelized | - | None | - | None | - | None | | |
| Storage Length | 0 | - | - | - | - | - | | |
| Veh in Median Storage | e, # 0 | - | 0 | - | - | 0 | | |
| Grade, % | 0 | - | 0 | - | - | 0 | | |
| Peak Hour Factor | 78 | 78 | 78 | 78 | 78 | 78 | | |
| Heavy Vehicles, % | 20 | 20 | 9 | 9 | 17 | 17 | | |
| Mvmt Flow | 19 | 18 | 1742 | 10 | 0 | 1614 | | |

| Major/Minor | Minor1 | Μ | lajor1 | Ma | ijor2 | | | | | |
|----------------------|----------|-----|--------|----|-------|---|--|--|--|--|
| Conflicting Flow All | 2554 | 876 | 0 | 0 | - | - | | | | |
| Stage 1 | 1747 | - | - | - | - | - | | | | |
| Stage 2 | 807 | - | - | - | - | - | | | | |
| Critical Hdwy | 7.2 | 7.3 | - | - | - | - | | | | |
| Critical Hdwy Stg 1 | 6.2 | - | - | - | - | - | | | | |
| Critical Hdwy Stg 2 | 6.2 | - | - | - | - | - | | | | |
| Follow-up Hdwy | 3.7 | 3.5 | - | - | - | - | | | | |
| Pot Cap-1 Maneuver | ~ 17 | 259 | - | - | 0 | - | | | | |
| Stage 1 | 103 | - | - | - | 0 | - | | | | |
| Stage 2 | 357 | - | - | - | 0 | - | | | | |
| Platoon blocked, % | | | - | - | | - | | | | |
| Mov Cap-1 Maneuver | · ~ 17 | 259 | - | - | - | - | | | | |
| Mov Cap-2 Maneuver | ~ 17 | - | - | - | - | - | | | | |
| Stage 1 | 103 | - | - | - | - | - | | | | |
| Stage 2 | 357 | - | - | - | - | - | | | | |
| | | | | | | | | | | |
| Approach | WB | | NB | | SB | | | | | |
| HCM Control Delay | \$ 420.3 | | 0 | | 0 | | | | | |
| HCM LOS | F | | • | | | | | | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT | |
|-----------------------|-----|-----------|-----|--|
| Capacity (veh/h) | - | - 31 | - | |
| HCM Lane V/C Ratio | - | - 1.199 | - | |
| HCM Control Delay (s) | - | -\$ 420.3 | - | |
| HCM Lane LOS | - | - F | - | |
| HCM 95th %tile Q(veh) | - | - 4.1 | - | |
| Notes | | | | |
| 1000 | | | | |

~: Volume exceeds capacity

\$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

| | ۶ | - | \mathbf{F} | ∢ | - | • | 1 | 1 | 1 | 1 | ŧ | ~ |
|------------------------------|------|----------|--------------|------|----------|------|------|----------|------|------|-------------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ۳. | ^ | 1 | ሻሻ | ↑ | 1 | ሻ | ↑ | 1 | ۳. | ↑ 1≽ | |
| Traffic Volume (veh/h) | 57 | 190 | 538 | 187 | 149 | 41 | 409 | 520 | 444 | 71 | 534 | 78 |
| Future Volume (veh/h) | 57 | 190 | 538 | 187 | 149 | 41 | 409 | 520 | 444 | 71 | 534 | 78 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1796 | 1796 | 1796 | 1856 | 1856 | 1856 | 1796 | 1796 | 1796 | 1544 | 1544 | 1544 |
| Adj Flow Rate, veh/h | 71 | 238 | 0 | 234 | 186 | 0 | 511 | 650 | 0 | 89 | 668 | 98 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh, % | 7 | 7 | 7 | 3 | 3 | 3 | 7 | 7 | 7 | 24 | 24 | 24 |
| Cap, veh/h | 90 | 375 | | 310 | 274 | | 549 | 1099 | | 292 | 816 | 120 |
| Arrive On Green | 0.05 | 0.11 | 0.00 | 0.09 | 0.15 | 0.00 | 0.24 | 0.61 | 0.00 | 0.32 | 0.32 | 0.32 |
| Sat Flow, veh/h | 1711 | 3413 | 1522 | 3428 | 1856 | 1572 | 1711 | 1796 | 1522 | 645 | 2567 | 376 |
| Grp Volume(v), veh/h | 71 | 238 | 0 | 234 | 186 | 0 | 511 | 650 | 0 | 89 | 381 | 385 |
| Grp Sat Flow(s),veh/h/ln | 1711 | 1706 | 1522 | 1714 | 1856 | 1572 | 1711 | 1796 | 1522 | 645 | 1467 | 1477 |
| Q Serve(g_s), s | 3.4 | 5.5 | 0.0 | 5.5 | 7.8 | 0.0 | 17.1 | 18.2 | 0.0 | 9.0 | 19.8 | 19.8 |
| Cycle Q Clear(g_c), s | 3.4 | 5.5 | 0.0 | 5.5 | 7.8 | 0.0 | 17.1 | 18.2 | 0.0 | 9.0 | 19.8 | 19.8 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.25 |
| Lane Grp Cap(c), veh/h | 90 | 375 | | 310 | 274 | | 549 | 1099 | | 292 | 466 | 470 |
| V/C Ratio(X) | 0.78 | 0.63 | | 0.75 | 0.68 | | 0.93 | 0.59 | | 0.30 | 0.82 | 0.82 |
| Avail Cap(c_a), veh/h | 213 | 909 | | 311 | 431 | | 606 | 1197 | | 306 | 498 | 501 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 38.6 | 35.1 | 0.0 | 36.7 | 33.3 | 0.0 | 18.3 | 9.7 | 0.0 | 22.3 | 25.9 | 26.0 |
| Incr Delay (d2), s/veh | 13.7 | 2.5 | 0.0 | 10.0 | 4.2 | 0.0 | 20.2 | 1.9 | 0.0 | 2.1 | 13.4 | 13.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.7 | 2.3 | 0.0 | 2.7 | 3.7 | 0.0 | 8.8 | 6.2 | 0.0 | 1.5 | 8.2 | 8.3 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 52.3 | 37.7 | 0.0 | 46.7 | 37.5 | 0.0 | 38.5 | 11.6 | 0.0 | 24.4 | 39.3 | 39.4 |
| LnGrp LOS | D | D | | D | D | | D | В | | С | D | D |
| Approach Vol, veh/h | | 309 | А | | 420 | А | | 1161 | А | | 855 | |
| Approach Delay, s/veh | | 41.0 | | | 42.6 | | | 23.4 | | | 37.8 | |
| Approach LOS | | D | | | D | | | С | | | D | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 24.3 | 32.3 | 12.0 | 14.1 | | 56.5 | 8.9 | 17.2 | | | | |
| Change Period (Y+Rc), s | 4.5 | 6.0 | 4.5 | 5.0 | | 6.0 | 4.5 | 5.0 | | | | |
| Max Green Setting (Gmax), s | 22.5 | 28.0 | 7.5 | 22.0 | | 55.0 | 10.3 | 19.2 | | | | |
| Max Q Clear Time (g_c+I1), s | 19.1 | 21.8 | 7.5 | 7.5 | | 20.2 | 5.4 | 9.8 | | | | |
| Green Ext Time (p_c), s | 0.6 | 4.4 | 0.0 | 1.6 | | 12.4 | 0.0 | 0.8 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 32.8 | | | | | | | | | |
| HCM 6th LOS | | | С | | | | | | | | | |

Notes

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

| | ≯ | - | - | • | 1 | < | | | |
|------------------------------|------|------|------|------|------|------|------|------|---|
| Movement | EBL | EBT | WBT | WBR | SBL | SBR | | | |
| Lane Configurations | 5 | * | * | 1 | 5 | 1 | | | |
| Traffic Volume (veh/h) | 487 | 193 | 381 | 365 | 0 | 0 | | | |
| Future Volume (veh/h) | 487 | 193 | 381 | 365 | 0 | 0 | | | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| Ped-Bike Adj(A pbT) | 1.00 | | | 1.00 | 1.00 | 1.00 | | | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Work Zone On Approach | | No | No | | No | | | | |
| Adj Sat Flow, veh/h/ln | 1811 | 1811 | 1870 | 1870 | 1870 | 1870 | | | |
| Adj Flow Rate, veh/h | 573 | 227 | 448 | 429 | 0 | 0 | | | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | | | |
| Percent Heavy Veh, % | 6 | 6 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 776 | 1500 | 752 | 637 | 5 | 5 | | | |
| Arrive On Green | 0.25 | 0.83 | 0.40 | 0.40 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1725 | 1811 | 1870 | 1585 | 1781 | 1585 | | | |
| Grp Volume(v), veh/h | 573 | 227 | 448 | 429 | 0 | 0 | | | _ |
| Grp Sat Flow(s),veh/h/ln | 1725 | 1811 | 1870 | 1585 | 1781 | 1585 | | | |
| Q Serve(g_s), s | 5.0 | 0.9 | 6.6 | 7.8 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 5.0 | 0.9 | 6.6 | 7.8 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | | 1.00 | 1.00 | 1.00 | | | |
| Lane Grp Cap(c), veh/h | 776 | 1500 | 752 | 637 | 5 | 5 | | | |
| V/C Ratio(X) | 0.74 | 0.15 | 0.60 | 0.67 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 1964 | 3573 | 1604 | 1360 | 968 | 861 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 5.0 | 0.6 | 8.2 | 8.6 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 1.4 | 0.0 | 0.8 | 1.2 | 0.0 | 0.0 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/In | 0.3 | 0.0 | 1.8 | 1.8 | 0.0 | 0.0 | | | |
| Unsig. Movement Delay, s/veh | ו | | | | | | | | |
| LnGrp Delay(d),s/veh | 6.4 | 0.6 | 9.0 | 9.8 | 0.0 | 0.0 | | | |
| LnGrp LOS | A | A | A | A | A | A | | | |
| Approach Vol, veh/h | | 800 | 877 | | 0 | | | | |
| Approach Delay, s/veh | | 4.7 | 9.4 | | 0.0 | | | | |
| Approach LOS | | А | А | | | | | | |
| Timer - Assigned Phs | | | | 4 | | 6 | 7 | 8 | |
| Phs Duration (G+Y+Rc), s | | | | 35.0 | | 0.0 | 14.9 | 20.1 | |
| Change Period (Y+Rc), s | | | | 6.0 | | 6.0 | 6.0 | 6.0 | |
| Max Green Setting (Gmax), s | | | | 69.0 | | 19.0 | 33.0 | 30.0 | |
| Max Q Clear Time (g_c+l1), s | | | | 2.9 | | 0.0 | 7.0 | 9.8 | |
| Green Ext Time (p_c), s | | | | 1.4 | | 0.0 | 1.9 | 4.3 | |
| Intersection Summarv | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 72 | | | | | | |
| HCM 6th LOS | | | Α | | | | | | |

| | ≯ | - | + | • | 1 | 1 | |
|------------------------------|------|------|------|------|------|------|----------|
| Movement | EBL | EBT | WBT | WBR | SBL | SBR | |
| Lane Configurations | 5 | + | 1. | | ¥. | - | |
| Traffic Volume (veh/h) | 5 | 178 | 742 | 157 | 136 | 19 | |
| Future Volume (veh/h) | 5 | 178 | 742 | 157 | 136 | 19 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | |
| Ped-Bike Adj(A pbT) | 1.00 | | | 1.00 | 1.00 | 1.00 | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Work Zone On Approach | | No | No | | No | | |
| Adj Sat Flow, veh/h/ln | 1811 | 1811 | 1856 | 1856 | 1900 | 1900 | |
| Adj Flow Rate, veh/h | 7 | 237 | 989 | 209 | 181 | 25 | |
| Peak Hour Factor | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | |
| Percent Heavy Veh, % | 6 | 6 | 3 | 3 | 0 | 0 | |
| Cap, veh/h | 393 | 1348 | 1014 | 214 | 208 | 29 | |
| Arrive On Green | 0.01 | 0.74 | 1.00 | 1.00 | 0.14 | 0.14 | |
| Sat Flow, veh/h | 1725 | 1811 | 1485 | 314 | 1535 | 212 | |
| Grp Volume(v), veh/h | 7 | 237 | 0 | 1198 | 207 | 0 | |
| Grp Sat Flow(s).veh/h/ln | 1725 | 1811 | 0 | 1799 | 1755 | 0 | |
| Q Serve(q s), s | 0.1 | 3.8 | 0.0 | 0.0 | 11.6 | 0.0 | |
| Cvcle Q Clear(q c), s | 0.1 | 3.8 | 0.0 | 0.0 | 11.6 | 0.0 | |
| Prop In Lane | 1.00 | | | 0.17 | 0.87 | 0.12 | |
| Lane Grp Cap(c), veh/h | 393 | 1348 | 0 | 1228 | 238 | 0 | |
| V/C Ratio(X) | 0.02 | 0.18 | 0.00 | 0.98 | 0.87 | 0.00 | |
| Avail Cap(c a), veh/h | 458 | 1348 | 0 | 1228 | 246 | 0 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 | |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 0.69 | 1.00 | 0.00 | |
| Uniform Delay (d), s/veh | 4.3 | 3.8 | 0.0 | 0.0 | 42.4 | 0.0 | |
| Incr Delay (d2), s/veh | 0.0 | 0.3 | 0.0 | 16.3 | 26.4 | 0.0 | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| %ile BackOfQ(50%),veh/ln | 0.0 | 1.2 | 0.0 | 5.6 | 6.7 | 0.0 | |
| Unsig. Movement Delay, s/veh | | | | | | | |
| LnGrp Delay(d),s/veh | 4.3 | 4.0 | 0.0 | 16.3 | 68.8 | 0.0 | |
| LnGrp LOS | А | А | А | В | Е | А | |
| Approach Vol, veh/h | | 244 | 1198 | | 207 | | |
| Approach Delay, s/veh | | 4.0 | 16.3 | | 68.8 | | |
| Approach LOS | | A | В | | E | | |
| Timer - Assigned Phs | | | | 4 | | 6 | 7 8 |
| Phs Duration (G+Y+Rc), s | | | | 80.5 | | 19.5 | 6.2 74.3 |
| Change Period (Y+Rc), s | | | | 6.0 | | 6.0 | 5.5 6.0 |
| Max Green Setting (Gmax), s | | | | 74.0 | | 14.0 | 4.5 64.0 |
| Max Q Clear Time (q c+l1). s | | | | 5.8 | | 13.6 | 2.1 2.0 |
| Green Ext Time (p_c), s | | | | 1.5 | | 0.0 | 0.0 17.8 |
| Intersection Summary | | | | | | | |
| HCM 6th Ctrl Delay | | | 21.1 | | | | |
| HCM 6th LOS | | | С | | | | |

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|---------------------------|----------|----------|--------------|----------|----------|----------|-----|------|-----|-----------|-------------|-----------|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | | ↑ | 1 | 5 | ↑ | | | | | ۲ | 4Î | | |
| Traffic Volume (veh/h) | 0 | 211 | 103 | 85 | 626 | 0 | 0 | 0 | 0 | 251 | 1 | 272 | |
| Future Volume (veh/h) | 0 | 211 | 103 | 85 | 626 | 0 | 0 | 0 | 0 | 251 | 1 | 272 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | | | | 0 | 0 | 0 | |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | 1.00 | | 1.00 | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 | |
| Work Zone On Approach | h | No | | | No | | | | | | No | | |
| Adj Sat Flow, veh/h/ln | 0 | 1841 | 1841 | 1870 | 1870 | 0 | | | | 1885 | 1885 | 1885 | |
| Adj Flow Rate, veh/h | 0 | 278 | 136 | 112 | 824 | 0 | | | | 330 | 1 | 358 | |
| Peak Hour Factor | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | | | | 0.76 | 0.76 | 0.76 | |
| Percent Heavy Veh, % | 0 | 4 | 4 | 2 | 2 | 0 | | | | 1 | 1 | 1 | |
| Cap, veh/h | 0 | 993 | 841 | 626 | 1197 | 0 | | | | 431 | 1 | 383 | |
| Arrive On Green | 0.00 | 0.72 | 0.72 | 0.09 | 1.00 | 0.00 | | | | 0.24 | 0.24 | 0.24 | |
| Sat Flow, veh/h | 0 | 1841 | 1560 | 1781 | 1870 | 0 | | | | 1795 | 4 | 1594 | |
| Grp Volume(v), veh/h | 0 | 278 | 136 | 112 | 824 | 0 | | | | 330 | 0 | 359 | |
| Grp Sat Flow(s),veh/h/ln | 0 | 1841 | 1560 | 1781 | 1870 | 0 | | | | 1795 | 0 | 1598 | |
| Q Serve(g_s), s | 0.0 | 5.3 | 2.8 | 2.7 | 0.0 | 0.0 | | | | 17.1 | 0.0 | 22.0 | |
| Cycle Q Clear(g_c), s | 0.0 | 5.3 | 2.8 | 2.7 | 0.0 | 0.0 | | | | 17.1 | 0.0 | 22.0 | |
| Prop In Lane | 0.00 | | 1.00 | 1.00 | | 0.00 | | | | 1.00 | - | 1.00 | |
| Lane Grp Cap(c), veh/h | 0 | 993 | 841 | 626 | 1197 | 0 | | | | 431 | 0 | 384 | |
| V/C Ratio(X) | 0.00 | 0.28 | 0.16 | 0.18 | 0.69 | 0.00 | | | | 0.77 | 0.00 | 0.94 | |
| Avail Cap(c_a), veh/h | 0 | 993 | 841 | 696 | 1197 | 0 | | | | 431 | 0 | 384 | |
| HCM Platoon Ratio | 1.00 | 1.33 | 1.33 | 2.00 | 2.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 | |
| Upstream Filter(I) | 0.00 | 0.87 | 0.87 | 0.71 | 0.71 | 0.00 | | | | 1.00 | 0.00 | 1.00 | |
| Uniform Delay (d), s/ven | 0.0 | 1.3 | 6.9 | 8.2 | 0.0 | 0.0 | | | | 35.4 | 0.0 | 37.2 | |
| Incr Delay (d2), s/ven | 0.0 | 0.0 | 0.4 | 0.1 | 2.3 | 0.0 | | | | 8.0 | 0.0 | 30.1 | |
| Initial Q Delay(03),s/ven | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 | |
| Movement Delay | nu.u | 2.0 | 0.9 | 0.9 | 0.0 | 0.0 | | | | 0.3 | 0.0 | 11.0 | |
| InGro Delay(d) chuch | | 70 | 73 | 83 | 22 | 0.0 | | | | 131 | 0.0 | 67.4 | |
| | 0.0 A | 1.9 A | 7.5 A | 0.5 A | 2.3 ^ | 0.0 A | | | | 43.4 D | 0.0 A | 07.4 E | |
| Approach Vol. voh/h | A | A 11 | A | A | 920 | A | | | | U | 690 | E | |
| Approach Vol, ven/n | | 414 | | | 30 | | | | | | 009 55 0 | | |
| Approach LOS | | ۱.۱ | | | 3.U A | | | | | | 00.9 E | | |
| | | A | | | A | | | | | | E | | |
| Timer - Assigned Phs | | | 3 | 4 | | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc), | , S | | 10.1 | 59.9 | | 30.0 | | 70.0 | | | | | |
| Change Period (Y+Rc), | S | | 5.5 | 6.0 | | 6.0 | | 6.0 | | | | | |
| Max Green Setting (Gma | ax), s | | 8.5 | 50.0 | | 24.0 | | 64.0 | | | | | |
| Max Q Clear Time (g_c+ | -I1), s | | 4.7 | 7.3 | | 24.0 | | 2.0 | | | | | |
| Green Ext Time (p_c), s | | | 0.1 | 2.2 | | 0.0 | | 7.5 | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 21.8 | | | | | | | | | | |
| HCM 6th LOS | | | С | | | | | | | | | | |

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|----------------------------|--------------|----------|--------------|----------|-----------|-----------|--------------|-----------|-----------|-----|-----|-----|--|
| Movement E | BL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | ň | | | | | 1 | ۲. | 4Î | | | | | |
| Traffic Volume (veh/h) | 98 | 364 | 0 | 0 | 379 | 302 | 332 | 3 | 92 | 0 | 0 | 0 | |
| Future Volume (veh/h) | 98 | 364 | 0 | 0 | 379 | 302 | 332 | 3 | 92 | 0 | 0 | 0 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Ped-Bike Adj(A_pbT) 1. | .00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | |
| Parking Bus, Adj 1. | .00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Work Zone On Approach | | No | | | No | | | No | | | | | |
| Adj Sat Flow, veh/h/ln 18 | 870 | 1870 | 0 | 0 | 1870 | 1870 | 1900 | 1900 | 1900 | | | | |
| Adj Flow Rate, veh/h 1 | 124 | 461 | 0 | 0 | 480 | 382 | 420 | 4 | 116 | | | | |
| Peak Hour Factor 0. | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | | | | |
| Cap, veh/h 4 | 457 | 1158 | 0 | 0 | 767 | 650 | 472 | 14 | 408 | | | | |
| Arrive On Green 0. | 0.30 | 1.00 | 0.00 | 0.00 | 0.41 | 0.41 | 0.26 | 0.26 | 0.26 | | | | |
| Sat Flow, veh/h 17 | 781 | 1870 | 0 | 0 | 1870 | 1585 | 1810 | 54 | 1564 | | | | |
| Grp Volume(v), veh/h 1 | 124 | 461 | 0 | 0 | 480 | 382 | 420 | 0 | 120 | | | | |
| Grp Sat Flow(s),veh/h/ln17 | 781 | 1870 | 0 | 0 | 1870 | 1585 | 1810 | 0 | 1618 | | | | |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 20.4 | 18.7 | 22.3 | 0.0 | 5.9 | | | | |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 20.4 | 18.7 | 22.3 | 0.0 | 5.9 | | | | |
| Prop In Lane 1. | .00 | 4450 | 0.00 | 0.00 | -0- | 1.00 | 1.00 | • | 0.97 | | | | |
| Lane Grp Cap(c), veh/h 4 | 457 | 1158 | 0 | 0 | /6/ | 650 | 4/2 | 0 | 422 | | | | |
| V/C Ratio(X) 0. | 1.27 | 0.40 | 0.00 | 0.00 | 0.63 | 0.59 | 0.89 | 0.00 | 0.28 | | | | |
| Avail Cap(c_a), ven/n 4 | 457 | 1158 | 1 00 | 1 00 | /0/ | 650 | 6/0 | 1 00 | 599 | | | | |
| HUNI Platoon Ratio 2. | .00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Upstream Filter(I) 0. | 1.70 | 0.78 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | | | | |
| Uniform Delay (d), s/ven 2 | 0.2 | 0.0 | 0.0 | 0.0 | 20.4 | 22.9 | 30.0 10.5 | 0.0 | 29.0 | | | | |
| Inci Delay (uz), s/ven | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | | | | |
| %ile BackOfO(50%) veh/lr | 0.0 n1 0. | 0.0 | 0.0 | 0.0 | 0.0 | 7.4 | 11.0 | 0.0 | 23 | | | | |
| Unsig Movement Delay | aluoh | 0.5 | 0.0 | 0.0 | 3.4 | 1.4 | 11.0 | 0.0 | 2.0 | | | | |
| InGrn Delay(d) s/yeb 2 | 1 9 | 0.8 | 0.0 | 0.0 | 273 | 26.8 | 46 1 | 0.0 | 29.9 | | | | |
| LinGro LOS | . 1.3 С | 0.0 A | 0.0 A | 0.0 A | 27.5 C | 20.0 C | -0.1 D | 0.0 A | 20.0 C | | | | |
| Approach Vol. veh/h | <u> </u> | 585 | | | 862 | 0 | 0 | 5/0 | <u> </u> | | | | |
| Approach Delay, s/yeh | | 53 | | | 27.1 | | | 42 5 | | | | | |
| Approach LOS | | 0.0 A | | | 27.1 C | | | -2.5 D | | | | | |
| | | ~ | | | U | | | | | | | | |
| Timer - Assigned Phs | | 2 | | 4 | | | 7 | 8 | | | | | |
| Phs Duration (G+Y+Rc), s | 5 | 32.1 | | 67.9 | | | 20.9 | 47.0 | | | | | |
| Change Period (Y+Rc), s | , | 6.0 | | 6.0 | | | 6.0 | * 6 | | | | | |
| Max Green Setting (Gmax | (), S | 37.0 | | 51.0 | | | 4.5 | * 41 | | | | | |
| Max Q Clear Time (g_c+l1 | I), S | 24.3 | | 2.0 | | | 2.0 | 22.4 | | | | | |
| Green Ext Time (p_c), s | | 1./ | | 3.1 | | | 0.1 | 4.2 | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 24.8 | | | | | | | | | | |
| HCM 6th LOS | | | С | | | | | | | | | | |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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|--------------------------------|------------|-------|--------------|------|------------|------------|---------|-------------|------|------|------|-------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ň | | 1 | | | | ሻ | ≜t ≽ | | | 44 | 1 |
| Traffic Volume (vph) | 276 | 0 | 615 | 0 | 0 | 0 | 428 | 1113 | 0 | 0 | 1321 | 232 |
| Future Volume (vph) | 276 | 0 | 615 | 0 | 0 | 0 | 428 | 1113 | 0 | 0 | 1321 | 232 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 6.5 | | 6.5 | | | | 6.5 | 6.5 | | | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | | 1.00 | | | | 1.00 | 0.95 | | | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | | 0.85 | | | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | | 1.00 | | | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1752 | | 1463 | | | | 1583 | 3167 | | | 3179 | 1498 |
| Flt Permitted | 0.95 | | 1.00 | | | | 0.08 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1752 | | 1463 | | | | 131 | 3167 | | | 3179 | 1498 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 297 | 0 | 661 | 0 | 0 | 0 | 460 | 1197 | 0 | 0 | 1420 | 249 |
| RTOR Reduction (vph) | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 47 |
| Lane Group Flow (vph) | 297 | 0 | 639 | 0 | 0 | 0 | 460 | 1197 | 0 | 0 | 1420 | 202 |
| Confl. Peds. (#/hr) | | | | | | | 1 | | | | | 1 |
| Confl. Bikes (#/hr) | | | | | | | | | | | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 0% | 0% | 0% | 14% | 14% | 14% | 6% | 6% | 6% |
| Turn Type | Prot | | pt+ov | | | | pm+pt | NA | | | NA | pm+ov |
| Protected Phases | 4 | | 14 | | | | 1 | 16 | | | 2 | 4 |
| Permitted Phases | | | 4 | | | | 16 | | | | | 2 |
| Actuated Green, G (s) | 13.5 | | 42.5 | | | | 73.5 | 73.5 | | | 44.5 | 58.0 |
| Effective Green, g (s) | 13.5 | | 42.5 | | | | 73.5 | 73.5 | | | 44.5 | 58.0 |
| Actuated g/C Ratio | 0.14 | | 0.42 | | | | 0.74 | 0.74 | | | 0.44 | 0.58 |
| Clearance Time (s) | 6.5 | | | | | | 6.5 | | | | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.5 | | | | | | 3.0 | | | | 6.0 | 3.5 |
| Lane Grn Can (vnh) | 236 | | 621 | | | | 422 | 2327 | | | 1414 | 966 |
| v/s Ratio Prot | c0 17 | | c0 44 | | | | 0.24 | 0.38 | | | 0.45 | 0.03 |
| v/s Ratio Perm | 00.11 | | 00.11 | | | | c0.56 | 0.00 | | | 0.10 | 0.11 |
| v/c Ratio | 1.26 | | 1.03 | | | | 1.09 | 0.51 | | | 1.00 | 0.21 |
| Uniform Delay, d1 | 43.2 | | 28.8 | | | | 30.0 | 5.6 | | | 27.8 | 10.0 |
| Progression Factor | 1.00 | | 1.00 | | | | 0.65 | 0.30 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 145.9 | | 43.8 | | | | 67.2 | 0.2 | | | 25.0 | 0.1 |
| Delay (s) | 189.2 | | 72.6 | | | | 86.6 | 1.9 | | | 52.7 | 10.2 |
| Level of Service | F | | F | | | | F | A | | | D | B |
| Approach Delay (s) | • | 108.7 | - | | 0.0 | | • | 25.4 | | | 46.4 | - |
| Approach LOS | | F | | | A | | | C | | | D | |
| | | • | | | | | | • | | | 2 | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 52.2 | Н | CM 2000 | Level of | Service | | D | | | |
| HCM 2000 Volume to Capac | city ratio | | 1.20 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | S | um of lost | time (s) | | | 19.5 | | | |
| Intersection Capacity Utilizat | tion | | 89.7% | IC | U Level o | of Service | e | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|-------------|------|------|------|------|
| Lane Configurations | | | | | \$ | | | ∱î ≽ | | | 1 | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 20 | 0 | 10 | 0 | 1323 | 65 | 0 | 1470 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 20 | 0 | 10 | 0 | 1323 | 65 | 0 | 1470 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 4 | 4 | 4 | 13 | 13 | 13 | 6 | 6 | 6 |
| Mvmt Flow | 0 | 0 | 0 | 22 | 0 | 11 | 0 | 1487 | 73 | 0 | 1652 | 0 |

| Major/Minor | | Minor1 | | N | lajor1 | | Ма | ajor2 | | | |
|-----------------------|-----|----------|------|------|--------|---|----|-------|---|---|--|
| Conflicting Flow All | | 2350 | 3176 | 780 | - | 0 | 0 | - | - | 0 | |
| Stage 1 | | 1524 | 1524 | - | - | - | - | - | - | - | |
| Stage 2 | | 826 | 1652 | - | - | - | - | - | - | - | |
| Critical Hdwy | | 6.88 | 6.58 | 6.98 | - | - | - | - | - | - | |
| Critical Hdwy Stg 1 | | 5.88 | 5.58 | - | - | - | - | - | - | - | |
| Critical Hdwy Stg 2 | | 5.88 | 5.58 | - | - | - | - | - | - | - | |
| Follow-up Hdwy | | 3.54 | 4.04 | 3.34 | - | - | - | - | - | - | |
| Pot Cap-1 Maneuver | | 29 | 10 | 334 | 0 | - | - | 0 | - | 0 | |
| Stage 1 | | 163 | 175 | - | 0 | - | - | 0 | - | 0 | |
| Stage 2 | | 385 | 151 | - | 0 | - | - | 0 | - | 0 | |
| Platoon blocked, % | | | | | | - | - | | - | | |
| Mov Cap-1 Maneuver | | 29 | 0 | 334 | - | - | - | - | - | - | |
| Mov Cap-2 Maneuver | | 29 | 0 | - | - | - | - | - | - | - | |
| Stage 1 | | 163 | 0 | - | - | - | - | - | - | - | |
| Stage 2 | | 385 | 0 | - | - | - | - | - | - | - | |
| | | | | | | | | | | | |
| Approach | | WB | | | NB | | | SB | | | |
| HCM Control Delay, s | | 227.8 | | | 0 | | | 0 | | | |
| HCM LOS | | F | | | | | | | | | |
| | | | | | | | | | | | |
| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT | | | | | | | | |
| Capacity (veh/h) | - | - 42 | - | | | | | | | | |
| HCM Lane V/C Ratio | - | - 0.803 | - | | | | | | | | |
| HCM Control Delay (s) | - | - 227.8 | - | | | | | | | | |

F

3.1

-

-

-

-

-

_

HCM Lane LOS

HCM 95th %tile Q(veh)

| | ۶ | - | $\mathbf{\hat{z}}$ | 4 | + | • | 1 | 1 | 1 | 1 | ŧ | ~ |
|------------------------------|------|----------|--------------------|-----------|----------|------|-----------|----------|------|------|-------------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ۳. | ^ | 1 | ሻሻ | ↑ | 1 | ሻ | ↑ | 1 | ۳. | ↑ 1≽ | |
| Traffic Volume (veh/h) | 244 | 387 | 399 | 475 | 239 | 78 | 413 | 592 | 231 | 115 | 500 | 113 |
| Future Volume (veh/h) | 244 | 387 | 399 | 475 | 239 | 78 | 413 | 592 | 231 | 115 | 500 | 113 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1693 | 1693 | 1693 | 1841 | 1841 | 1841 | 1693 | 1693 | 1693 | 1826 | 1826 | 1826 |
| Adj Flow Rate, veh/h | 274 | 435 | 0 | 534 | 269 | 0 | 464 | 665 | 0 | 129 | 562 | 127 |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Percent Heavy Veh, % | 14 | 14 | 14 | 4 | 4 | 4 | 14 | 14 | 14 | 5 | 5 | 5 |
| Cap, veh/h | 299 | 535 | | 576 | 276 | | 468 | 862 | | 216 | 672 | 151 |
| Arrive On Green | 0.19 | 0.17 | 0.00 | 0.17 | 0.15 | 0.00 | 0.23 | 0.51 | 0.00 | 0.24 | 0.24 | 0.24 |
| Sat Flow, veh/h | 1612 | 3216 | 1434 | 3401 | 1841 | 1560 | 1612 | 1693 | 1434 | 752 | 2813 | 634 |
| Grp Volume(v), veh/h | 274 | 435 | 0 | 534 | 269 | 0 | 464 | 665 | 0 | 129 | 346 | 343 |
| Grp Sat Flow(s),veh/h/ln | 1612 | 1608 | 1434 | 1700 | 1841 | 1560 | 1612 | 1693 | 1434 | 752 | 1735 | 1712 |
| Q Serve(g_s), s | 16.7 | 13.0 | 0.0 | 15.5 | 14.5 | 0.0 | 22.1 | 31.7 | 0.0 | 16.7 | 18.9 | 19.1 |
| Cycle Q Clear(g_c), s | 16.7 | 13.0 | 0.0 | 15.5 | 14.5 | 0.0 | 22.1 | 31.7 | 0.0 | 21.4 | 18.9 | 19.1 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.37 |
| Lane Grp Cap(c), veh/h | 299 | 535 | | 576 | 276 | | 468 | 862 | | 216 | 414 | 409 |
| V/C Ratio(X) | 0.92 | 0.81 | | 0.93 | 0.97 | | 0.99 | 0.77 | | 0.60 | 0.83 | 0.84 |
| Avail Cap(c_a), veh/h | 299 | 535 | 4.00 | 5/6 | 2/6 | 4.00 | 468 | 864 | 4.00 | 217 | 41/ | 411 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 39.9 | 40.1 | 0.0 | 40.9 | 42.2 | 0.0 | 24.2 | 19.8 | 0.0 | 39.4 | 36.1 | 36.2 |
| Incr Delay (d2), s/veh | 31.6 | 9.8 | 0.0 | 21.5 | 46.6 | 0.0 | 39.2 | 6.0 | 0.0 | 9.6 | 16.6 | 17.2 |
| Initial Q Delay(d3),s/ven | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %IIe BackOfQ(50%),ven/In | 9.0 | 5.8 | 0.0 | 8.2 | 10.2 | 0.0 | 12.8 | 12.7 | 0.0 | 3.0 | 9.7 | 9.7 |
| Unsig. Movement Delay, s/ven | 74 5 | 40.0 | 0.0 | <u> </u> | 00.0 | 0.0 | CD 4 | 05.0 | 0.0 | 40.0 | F0 7 | FD 4 |
| LnGrp Delay(d),s/ven | /1.5 | 49.9 | 0.0 | 62.3 E | 88.9 | 0.0 | 63.4 F | 25.8 | 0.0 | 49.0 | 52.7 | 53.4 |
| | E | 700 | ۸ | E | F | ٨ | E | | ۸ | D | D 010 | D |
| Approach vol, ven/n | | 709 | A | | 803 | A | | 1129 | A | | 818 | |
| Approach Delay, s/ven | | 58.3 | | | 71.2 | | | 41.3 | | | 52.4 | |
| Approach LOS | | E | | | E | | | D | | | D | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 27.0 | 29.9 | 21.4 | 21.6 | | 56.9 | 23.0 | 20.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 6.0 | 4.5 | 5.0 | | 6.0 | 4.5 | 5.0 | | | | |
| Max Green Setting (Gmax), s | 22.5 | 24.0 | 16.9 | 16.6 | | 51.0 | 18.5 | 15.0 | | | | |
| Max Q Clear Time (g_c+l1), s | 24.1 | 23.4 | 17.5 | 15.0 | | 33.7 | 18.7 | 16.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.4 | 0.0 | 0.5 | | 6.6 | 0.0 | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 54.3 | | | | | | | | | |
| HCM 6th LOS | | | D | | | | | | | | | |

Notes

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | 4 | | | ्र | 1 | | ्र | 1 | | 4 | |
| Traffic Vol, veh/h | 23 | 2 | 6 | 2 | 1 | 2 | 29 | 715 | 3 | 1 | 734 | 30 |
| Future Vol, veh/h | 23 | 2 | 6 | 2 | 1 | 2 | 29 | 715 | 3 | 1 | 734 | 30 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None |
| Storage Length | - | - | - | - | - | 50 | - | - | 325 | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 22 | 22 | 22 | 0 | 0 | 0 | 17 | 17 | 17 | 9 | 9 | 9 |
| Mvmt Flow | 24 | 2 | 6 | 2 | 1 | 2 | 30 | 745 | 3 | 1 | 765 | 31 |

| Major/Minor | Minor2 | | N | Ainor1 | | | Major1 | | N | lajor2 | | | |
|----------------------|--------|-------|-------|--------|------|-----|--------|---|---|--------|---|---|--|
| Conflicting Flow All | 1591 | 1591 | 781 | 1592 | 1603 | 745 | 796 | 0 | 0 | 748 | 0 | 0 | |
| Stage 1 | 783 | 783 | - | 805 | 805 | - | - | - | - | - | - | - | |
| Stage 2 | 808 | 808 | - | 787 | 798 | - | - | - | - | - | - | - | |
| Critical Hdwy | 7.32 | 6.72 | 6.42 | 7.1 | 6.5 | 6.2 | 4.27 | - | - | 4.19 | - | - | |
| Critical Hdwy Stg 1 | 6.32 | 5.72 | - | 6.1 | 5.5 | - | - | - | - | - | - | - | |
| Critical Hdwy Stg 2 | 6.32 | 5.72 | - | 6.1 | 5.5 | - | - | - | - | - | - | - | |
| Follow-up Hdwy | 3.698 | 4.198 | 3.498 | 3.5 | 4 | 3.3 | 2.353 | - | - | 2.281 | - | - | |
| Pot Cap-1 Maneuver | 78 | 97 | 365 | 88 | 107 | 417 | 763 | - | - | 830 | - | - | |
| Stage 1 | 358 | 377 | - | 379 | 398 | - | - | - | - | - | - | - | |
| Stage 2 | 347 | 367 | - | 388 | 401 | - | - | - | - | - | - | - | |
| Platoon blocked, % | | | | | | | | - | - | | - | - | |
| Mov Cap-1 Maneuver | 73 | 90 | 365 | 81 | 100 | 417 | 763 | - | - | 830 | - | - | |
| Mov Cap-2 Maneuver | 73 | 90 | - | 81 | 100 | - | - | - | - | - | - | - | |
| Stage 1 | 334 | 376 | - | 354 | 371 | - | - | - | - | - | - | - | |
| Stage 2 | 321 | 342 | - | 378 | 400 | - | - | - | - | - | - | - | |
| | | | | | | | | | | | | | |

| Approach | EB | WB | NB | SB | |
|----------------------|------|------|-----|----|--|
| HCM Control Delay, s | 67.9 | 34.5 | 0.4 | 0 | |
| HCM LOS | F | D | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1V | VBLn1V | VBLn2 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|--------|--------|-------|-------|-----|-----|
| Capacity (veh/h) | 763 | - | - | 88 | 86 | 417 | 830 | - | - |
| HCM Lane V/C Ratio | 0.04 | - | - | 0.367 | 0.036 | 0.005 | 0.001 | - | - |
| HCM Control Delay (s) | 9.9 | 0 | - | 67.9 | 48.4 | 13.7 | 9.3 | 0 | - |
| HCM Lane LOS | А | А | - | F | Е | В | А | А | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 1.4 | 0.1 | 0 | 0 | - | - |
| | ≯ | - | - | • | 1 | ∢ | | |
|------------------------------|------|------|------|------|------|------|----------|--|
| Movement | EBL | EBT | WBT | WBR | SBL | SBR | | |
| Lane Configurations | 5 | + | ţ, | | ¥ | - | | |
| Traffic Volume (veh/h) | 20 | 961 | 271 | 152 | 300 | 9 | | |
| Future Volume (veh/h) | 20 | 961 | 271 | 152 | 300 | 9 | | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | | |
| Ped-Bike Adj(A pbT) | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Work Zone On Approach | | No | No | | No | | | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1841 | 1841 | 1900 | 1900 | | |
| Adj Flow Rate, veh/h | 22 | 1045 | 295 | 165 | 326 | 10 | | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | | |
| Percent Heavy Veh, % | 2 | 2 | 4 | 4 | 0 | 0 | | |
| Cap, veh/h | 610 | 1291 | 684 | 382 | 326 | 10 | | |
| Arrive On Green | 0.02 | 0.69 | 0.82 | 0.82 | 0.19 | 0.19 | | |
| Sat Flow, veh/h | 1781 | 1870 | 1109 | 620 | 1717 | 53 | | |
| Grp Volume(v), veh/h | 22 | 1045 | 0 | 460 | 337 | 0 | | |
| Grp Sat Flow(s).veh/h/ln | 1781 | 1870 | 0 | 1729 | 1775 | 0 | | |
| Q Serve(g s), s | 0.4 | 39.2 | 0.0 | 7.4 | 19.0 | 0.0 | | |
| Cvcle Q Clear(g c), s | 0.4 | 39.2 | 0.0 | 7.4 | 19.0 | 0.0 | | |
| Prop In Lane | 1.00 | | | 0.36 | 0.97 | 0.03 | | |
| Lane Grp Cap(c), veh/h | 610 | 1291 | 0 | 1066 | 337 | 0 | | |
| V/C Ratio(X) | 0.04 | 0.81 | 0.00 | 0.43 | 1.00 | 0.00 | | |
| Avail Cap(c a), veh/h | 658 | 1291 | 0 | 1066 | 337 | 0 | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.33 | 1.33 | 1.00 | 1.00 | | |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 0.98 | 1.00 | 0.00 | | |
| Uniform Delay (d), s/veh | 6.5 | 10.9 | 0.0 | 4.1 | 40.5 | 0.0 | | |
| Incr Delay (d2), s/veh | 0.0 | 5.6 | 0.0 | 1.2 | 48.8 | 0.0 | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | |
| %ile BackOfQ(50%),veh/ln | 0.1 | 15.0 | 0.0 | 2.2 | 12.7 | 0.0 | | |
| Unsig. Movement Delay, s/veh | | | | | | | | |
| LnGrp Delay(d).s/veh | 6.5 | 16.5 | 0.0 | 5.4 | 89.3 | 0.0 | | |
| LnGrp LOS | A | В | A | A | F | А | | |
| Approach Vol. veh/h | | 1067 | 460 | | 337 | | | |
| Approach Delay, s/veh | | 16.3 | 5.4 | | 89.3 | | | |
| Approach LOS | | B | A | | F | | | |
| Timer - Assigned Phs | | | | 4 | | 6 | 7 8 | |
| Phs Duration (G+Y+Rc), s | | | | 75.0 | | 25.0 | 7.3 67.7 | |
| Change Period (Y+Rc), s | | | | 6.0 | | 6.0 | 5.5 6.0 | |
| Max Green Setting (Gmax) s | | | | 69.0 | | 19.0 | 4.5 59.0 | |
| Max Q Clear Time (g c+11), s | | | | 41.2 | | 21.0 | 2.4 9.4 | |
| Green Ext Time (p_c), s | | | | 10.0 | | 0.0 | 0.0 3.3 | |
| Intersection Summary | | | | | | | | |
| HCM 6th Ctrl Delay | | | 26.8 | | | | | |
| HCM 6th LOS | | | С | | | | | |

| Movement EBL EBR WBR WBT WBR NBL NBR SBL SBL SBR Lane Configurations 1< |
|---|
| Lane Configurations Image: Configurations < |
| Traffic Volume (veh/h) 0 863 414 141 291 0 0 0 286 2 144 Future Volume (veh/h) 0 863 414 141 291 0 0 0 0 286 2 144 Initial Q (Db), veh 0 |
| Future Volume (veh/h) 0 863 414 141 291 0 0 0 286 2 144 Initial Q (Db), veh 0 < |
| Initial Q (Qb), veh 0 |
| Ped-Bike Adj(A_pbT) 1.00 0.98 1.00 </td |
| Parking Bus, Adj 1.00 1.01 |
| Work Zone On Approach No No No No Adj Sat Flow, veh/h/ln 0 1870 1870 1856 1856 0 1870 1870 1870 Adj Flow Rate, veh/h 0 918 440 150 310 0 304 2 153 Peak Hour Factor 0.94 |
| Adj Sat Flow, veh/h/ln 0 1870 1870 1856 1856 0 1870 1870 1870 Adj Flow Rate, veh/h 0 918 440 150 310 0 304 2 153 Peak Hour Factor 0.94 |
| Adj Flow Rate, veh/h 0 918 440 150 310 0 304 2 153 Peak Hour Factor 0.94 0.91 0.10 0.0 |
| Peak Hour Factor 0.94 0.1 0.1 0.1 |
| Percent Heavy Veh, % 0 2 2 3 3 0 2 2 2 Cap, veh/h 0 1096 910 385 1273 0 346 4 304 Arrive On Green 0.00 1.00 0.09 1.00 0.00 0.19 0.19 0.19 Sat Flow, veh/h 0 1870 1552 1767 1856 0 1781 20 1568 Grp Volume(v), veh/h 0 918 440 150 310 0 304 0 155 Grp Sat Flow(s), veh/h/ln 0 1870 1552 1767 1866 0 1781 0 1588 Q Serve(g_s), s 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Prop In Lane 0.00 1.00 1.00 0.00 1.00 0.00 365 1273 0 346 0 385 HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I)< |
| Cap, veh/h 0 1096 910 385 1273 0 346 4 304 Arrive On Green 0.00 1.00 1.00 0.09 1.00 0.00 0.19 0.155 Gr Volume(v), veh/h 0 155 0 0.10 1.0 |
| Arrive On Green 0.00 1.00 1.00 0.09 1.00 0.00 0.19 0.19 0.19 Sat Flow, veh/h 0 1870 1552 1767 1856 0 1781 20 1568 Grp Volume(v), veh/h 0 918 440 150 310 0 304 0 155 Grp Sat Flow(s), veh/h/ln 0 1870 1552 1767 1856 0 1781 0 1588 Q Serve(g_s), s 0.0 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Cycle Q Clear(g_c), s 0.0 0.0 0.4 0.0 0.0 1.00 0.00 1.00 0.00 1.00 0.99 Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.08 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 |
| Sat Flow, veh/h 0 1870 1552 1767 1856 0 1781 20 1568 Grp Volume(v), veh/h 0 918 440 150 310 0 304 0 155 Grp Sat Flow(s), veh/h/ln 0 1870 1552 1767 1856 0 1781 0 1558 Q Serve(g_s), s 0.0 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Cycle Q Clear(g_c), s 0.0 0.0 1.00 1.00 0.00 1.00 0.00 1.00 0.99 Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 8.4 0.39 0.24 0.00 0.88 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 |
| Grp Volume(v), veh/h 0 918 440 150 310 0 304 0 155 Grp Sat Flow(s), veh/h/ln 0 1870 1552 1767 1856 0 1781 0 1558 Q Serve(g_s), s 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Cycle Q Clear(g_c), s 0.0 1.00 1.00 0.00 16.6 0.0 8.7 Prop In Lane 0.00 1.00 1.00 0.00 1.00 0.99 Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.88 0.00 0.50 Avaii Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platcon Ratio 1.00 2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 |
| Grp Sat Flow(s),veh/h/ln 0 1870 1552 1767 1856 0 1781 0 1588 Q Serve(g_s), s 0.0 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Cycle Q Clear(g_c), s 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Prop In Lane 0.00 1.00 1.00 0.00 1.00 0.99 Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.88 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 1.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.91 0.91 0.00 1.00 1.00 1.00 Uniform Delay (d2), s/veh 0.0 3.2 0.7 |
| Q Serve(g_s), s 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Cycle Q Clear(g_c), s 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Prop In Lane 0.00 1.00 1.00 0.00 1.00 0.00 99 Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.88 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.91 0.91 0.00 1.00 1.00 1.00 Uniform Delay (d), s/veh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 |
| Cycle Q Clear(g_c), s 0.0 0.0 3.4 0.0 0.0 1.66 0.0 8.7 Prop In Lane 0.00 1.00 0.00 1.00 0.00 1.00 0.99 Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.88 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.91 0.91 0.90 1.00 1.00 1.00 Uniform Delay (d), s/veh 0.0 0.0 6.4 0.0 0.1 1.72 0.0 1.3 Initial Q Delay(d3), s/veh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 |
| Prop In Lane 0.00 1.00 1.00 0.00 1.00 0.99 Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.88 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.40 0.91 0.91 0.00 1.00 1.00 1.00 Uniform Delay (d), s/veh 0.0 0.0 6.4 0.0 0.0 39.2 0.0 36.0 Incr Delay (d2), s/veh 0.0 3.2 0.7 0.6 0.4 0.0 1.72 0.0 1.3 Initial Q Delay(d3),s/veh 0.0 3.2 0.7 7.0 0.4 0.0 56.3 0.0 37.3 Unsig: Movement Delay, s/veh 1.0 0.2 |
| Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.88 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.40 0.91 0.91 0.00 1.00 1.00 1.00 Uniform Delay (d), s/veh 0.0 0.0 6.4 0.0 0.0 39.2 0.0 36.0 Incr Delay (d2), s/veh 0.0 3.2 0.7 0.6 0.4 0.0 17.2 0.0 1.3 Initial Q Delay(d3),s/veh 0.0 |
| V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.88 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.91 0.91 0.00 1.00 1.00 1.00 Uniform Delay (d), s/veh 0.0 0.0 6.4 0.0 0.0 39.2 0.0 36.0 Incr Delay (d2), s/veh 0.0 3.2 0.7 0.6 0.4 0.0 17.2 0.0 1.3 Initial Q Delay(d3),s/veh 0.0 3.5 |
| Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.40 0.91 0.91 0.00 1.00 1.00 1.00 Uniform Delay (d), s/veh 0.0 0.0 6.4 0.0 0.0 39.2 0.0 36.0 Incr Delay (d2), s/veh 0.0 3.2 0.7 0.6 0.4 0.0 17.2 0.0 1.3 Initial Q Delay(d3),s/veh 0.0 |
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| Incr Delay (d2), s/veh 0.0 3.2 0.7 0.6 0.4 0.0 17.2 0.0 1.3 Initial Q Delay(d3),s/veh 0.0 < |
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| Unsig. Movement Delay, s/veh LnGrp Delay(d),s/veh 0.0 3.2 0.7 7.0 0.4 0.0 56.3 0.0 37.3 LnGrp LOS A A A A A A D Approach Vol, veh/h 1358 460 459 Approach Delay, s/veh 2.4 2.6 49.9 Approach LOS A A D Timer - Assigned Phs 3 4 6 8 |
| LnGrp Delay(d),s/veh 0.0 3.2 0.7 7.0 0.4 0.0 56.3 0.0 37.3 LnGrp LOS A A A A A A A D Approach Vol, veh/h 1358 460 459 Approach Delay, s/veh 2.4 2.6 49.9 Approach LOS A A A D Timer - Assigned Phs 3 4 6 8 |
| LnGrp LOS A B D A A A A A A A A A A A A A D D A |
| Approach Vol, veh/h 1358 460 459 Approach Delay, s/veh 2.4 2.6 49.9 Approach LOS A A D Timer - Assigned Phs 3 4 6 8 |
| Approach Delay, s/veh 2.4 2.6 49.9 Approach LOS A A D Timer - Assigned Phs 3 4 6 8 |
| Approach LOS A A D Timer - Assigned Phs 3 4 6 8 Phe Duration (C) V: Po) = 10.0 64.6 25.4 74.6 |
| Timer - Assigned Phs 3 4 6 8 Pho Duration (C) V(Po) and the second sec |
| |
| Pris Duration (G+Y+RC), S 10.0 04.0 25.4 74.0 |
| Change Period (Y+Rc), s 5.5 6.0 6.0 6.0 |
| Max Green Setting (Gmax), s 4.5 55.0 23.0 65.0 |
| Max Q Clear Time (g c+l1), s 5.4 2.0 18.6 2.0 |
| Green Ext Time (p c), s 0.0 11.9 0.8 2.0 |
| |
| UCM 6th Ctrl Dolov 12.0 |
| |

| | ۶ | - | \mathbf{F} | • | - | * | 1 | 1 | 1 | 1 | Ŧ | ∢ | |
|---------------------------------|---------|------|--------------|------|------|------|----------|-------|-------|-----|-----|-----|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | ۲. | | | | • | 1 | <u> </u> | ef - | | | | | |
| Traffic Volume (veh/h) | 362 | 752 | 0 | 0 | 348 | 545 | 73 | 3 | 46 | 0 | 0 | 0 | |
| Future Volume (veh/h) | 362 | 752 | 0 | 0 | 348 | 545 | 73 | 3 | 46 | 0 | 0 | 0 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Work Zone On Approach | h | No | | | No | | | No | | | | | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 0 | 0 | 1870 | 1870 | 1885 | 1885 | 1885 | | | | |
| Adj Flow Rate, veh/h | 398 | 826 | 0 | 0 | 382 | 599 | 80 | 3 | 51 | | | | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 1 | 1 | 1 | | | | |
| Cap, veh/h | 518 | 1571 | 0 | 0 | 1384 | 1173 | 72 | 4 | 61 | | | | |
| Arrive On Green | 0.08 | 1.00 | 0.00 | 0.00 | 0.74 | 0.74 | 0.04 | 0.04 | 0.04 | | | | |
| Sat Flow, veh/h | 1781 | 1870 | 0 | 0 | 1870 | 1585 | 1795 | 90 | 1522 | | | | |
| Grp Volume(v), veh/h | 398 | 826 | 0 | 0 | 382 | 599 | 80 | 0 | 54 | | | | |
| Grp Sat Flow(s),veh/h/In | 1781 | 1870 | 0 | 0 | 1870 | 1585 | 1795 | 0 | 1611 | | | | |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 6.7 | 15.8 | 4.0 | 0.0 | 3.3 | | | | |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 6.7 | 15.8 | 4.0 | 0.0 | 3.3 | | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 1.00 | | 0.94 | | | | |
| Lane Grp Cap(c), veh/h | 518 | 1571 | 0 | 0 | 1384 | 1173 | 72 | 0 | 64 | | | | |
| V/C Ratio(X) | 0.77 | 0.53 | 0.00 | 0.00 | 0.28 | 0.51 | 1.11 | 0.00 | 0.84 | | | | |
| Avail Cap(c_a), veh/h | 527 | 1571 | 0 | 0 | 1384 | 1173 | 72 | 0 | 64 | | | | |
| HCM Platoon Ratio | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Upstream Filter(I) | 0.37 | 0.37 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | | | | |
| Uniform Delay (d), s/veh | 13.5 | 0.0 | 0.0 | 0.0 | 4.2 | 5.4 | 48.0 | 0.0 | 47.7 | | | | |
| Incr Delay (d2), s/veh | 2.6 | 0.5 | 0.0 | 0.0 | 0.5 | 1.6 | 140.6 | 0.0 | 59.3 | | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | |
| %ile BackOfQ(50%),veh/ln6.5 0.2 | | | | 0.0 | 2.2 | 4.5 | 4.6 | 0.0 | 2.4 | | | | |
| Unsig. Movement Delay | , s/veh | 1 | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 16.0 | 0.5 | 0.0 | 0.0 | 4.7 | 7.0 | 188.6 | 0.0 | 107.0 | | | | |
| LnGrp LOS | В | A | A | A | A | A | F | A | F | | | | |
| Approach Vol, veh/h | | 1224 | | | 981 | | | 134 | | | | | |
| Approach Delay, s/veh | | 5.5 | | | 6.1 | | | 155.7 | | | | | |
| Approach LOS | | А | | | А | | | F | | | | | |
| Timer - Assigned Phs | | 2 | | 4 | | | 7 | 8 | | | | | |
| Phs Duration (G+Y+Rc) | , S | 10.0 | | 90.0 | | | 10.0 | 80.0 | | | | | |
| Change Period (Y+Rc), | S | 6.0 | | 6.0 | | | 6.0 | * 6 | | | | | |
| Max Green Setting (Gm | ax), s | 4.0 | | 84.0 | | | 4.5 | * 74 | | | | | |
| Max Q Clear Time (g_c+ | ⊦l1), s | 6.0 | | 2.0 | | | 2.0 | 17.8 | | | | | |
| Green Ext Time (p_c), s | | 0.0 | | 7.5 | | | 0.3 | 5.3 | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 14.4 | | | | | | | | | | |
| HCM 6th LOS | | | В | | | | | | | | | | |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Bureau of Engraving and Printing LBG

14. **APPENDIX F: SAMPLE SIZE**

Existing AM Peak Hour Simulations Required Sample Size Summary

| USE TO FIND REQUIRED SAMPLE SIZE | | | | |
|----------------------------------|---------|--|--|--|
| Desired Confidence Level 95% | | | | |
| Sample Standard Deviation | 8.80909 | | | |
| Number of Samples | 10 | | | |

| USE TO TEST C.I. OF SAMPLES | | | | |
|------------------------------|---------|--|--|--|
| Desired Confidence Level 95% | | | | |
| Sample Standard Deviation | 8.80909 | | | |
| Number of Samples | 10 | | | |

| 95% Confidence Interval | 14.9591 |
|-------------------------|---------|
| Percent Error | 4.4% |

| Mean | 339.6 |
|-------------------------|---------|
| 95% Confidence Interval | 14.9591 |

Existing PM Peak Hour Simulations Required Sample Size Summary

| USE TO FIND REQUIRED SAMPLE SIZE | | | |
|----------------------------------|--------|--|--|
| Desired Confidence Level | 95% | | |
| Sample Standard Deviation | 44.612 | | |
| Number of Samples | 48 | | |

| 95% Confidence Interval | 29.8198 |
|-------------------------|---------|
| Percent Error | 5.0% |

| USE TO TEST C.I. OF SAMPLES | | | | |
|-----------------------------|--------|--|--|--|
| Desired Confidence Level | 95% | | | |
| Sample Standard Deviation | 44.612 | | | |
| Number of Samples | 10 | | | |

| Mean | 600.3 |
|-------------------------|---------|
| 95% Confidence Interval | 75.7579 |

No Action Alternative AM Peak Hour Simulations Required Sample Size Summary

| USE TO FIND REQUIRED SAMPLE SIZE | | | | |
|----------------------------------|---------|--|--|--|
| Desired Confidence Level 95% | | | | |
| Sample Standard Deviation | 57.7312 | | | |
| Number of Samples | 50 | | | |

| 95% Confidence Interval | 37.7584 | |
|-------------------------|---------|--|
| Percent Error | 5.6% | |

| USE TO TEST C.I. OF SAMPLES | | |
|-----------------------------|---------|--|
| Desired Confidence Level | 95% | |
| Sample Standard Deviation | 57.7312 | |
| Number of Samples | 10 | |

| Mean | 671 |
|-------------------------|---------|
| 95% Confidence Interval | 98.0362 |

No Action Alternative AM Peak Hour Simulations Required Sample Size Summary

| USE TO FIND REQUIRED SAMPLE SIZE | | |
|----------------------------------|---------|--|
| Desired Confidence Level | 95% | |
| Sample Standard Deviation | 59.0312 | |
| Number of Samples | 36 | |

| USE TO TEST C.I. OF SAMPLES | | |
|-----------------------------|---------|--|
| Desired Confidence Level | 95% | |
| Sample Standard Deviation | 59.0312 | |
| Number of Samples | 10 | |

925.3

100.244

| 95% Confidence Interval | 46.0831 | Mean |
|-------------------------|---------|-------------------------|
| Percent Error | 5.0% | 95% Confidence Interval |

Action Alternative AM Peak Hour Simulations Required Sample Size Summary

| USE TO FIND REQUIRED SAMPLE SIZE | |
|----------------------------------|---------|
| Desired Confidence Level | 95% |
| Sample Standard Deviation | 41.9339 |
| Number of Samples | 18 |

| USE TO TEST C.I. OF SAMPLES | | |
|-----------------------------|---------|--|
| Desired Confidence Level | 95% | |
| Sample Standard Deviation | 41.9339 | |
| Number of Samples | 10 | |

| 95% Confidence Interval | 48.5904 |
|-------------------------|---------|
| Percent Error | 4.9% |

| Mean | 1001.7 |
|-------------------------|---------|
| 95% Confidence Interval | 71.2101 |

Action Alternative PM Peak Hour Simulations Required Sample Size Summary

| USE TO FIND REQUIRED SAMPLE SIZE | | |
|----------------------------------|---------|--|
| Desired Confidence Level 95% | | |
| Sample Standard Deviation | 61.1996 | |
| Number of Samples | 18 | |

| 95% Confidence Interval | 70.9142 |
|-------------------------|---------|
| Percent Error | 5.0% |

| USE TO TEST C.I. OF SAMPLES | | | |
|-----------------------------|---------|--|--|
| Desired Confidence Level | 95% | | |
| Sample Standard Deviation | 61.1996 | | |
| Number of Samples | 10 | | |

| Mean | 1424.5 |
|-------------------------|---------|
| 95% Confidence Interval | 103.926 |

Action Alternative with Mitigation AM Peak Hour Hour Simulations Required Sample Size Summary

| USE TO FIND REQUIRED SAMPLE SIZE | | | |
|----------------------------------|---------|--|--|
| Desired Confidence Level | 95% | | |
| Sample Standard Deviation | 31.7133 | | |
| Number of Samples | 26 | | |

| 95% Confidence Interval | 29.6621 |
|-------------------------|---------|
| Percent Error | 4.9% |

| USE TO TEST C.I. OF SAMPLES | | |
|-----------------------------|---------|--|
| Desired Confidence Level | 95% | |
| Sample Standard Deviation | 31.7133 | |
| Number of Samples | 10 | |
| | | |

| Mean | 605.8 | |
|-------------------------|---------|--|
| 95% Confidence Interval | 53.8539 | |

Action Alternative with Mitigation PM Peak Hour Simulations Required Sample Size Summary

| USE TO FIND REQUIRED SAMPLE SIZE | | |
|----------------------------------|---------|--|
| Desired Confidence Level | 95% | |
| Sample Standard Deviation | 47.0867 | |
| Number of Samples | 26 | |
| | | |

| USE TO TEST C.I. OF SAMPLES | | |
|-----------------------------|---------|--|
| Desired Confidence Level | 95% | |
| Sample Standard Deviation | 47.0867 | |
| Number of Samples | 10 | |

| 95% Confidence Interval | 44.0412 | Mear |
|-------------------------|---------|-------|
| Percent Error | 4.9% | 95% (|

| | •• | 000.0 |
|----------|-------------------------|---------|
| <u>'</u> | Mean | 890.6 |
| 6 | 95% Confidence Interval | 79.9602 |

15. APPENDIX G: CALIBRATION REPORT

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TransModeler[™] and SimTraffic[™] Validation and Calibration

A Introduction

This Traffic Impact Study (TIS) used TransModeler[™] Traffic Simulation Software (TransModeler[™]) to analyze results for the Entry Control Facility (ECF) (i.e., gate results) and SimTraffic[™] to provide queueing analysis. The project team (A/E) validated and calibrated both TransModeler[™] and SimTraffic[™] to model the existing conditions. The validation and calibration process involved creating a model of the existing roadway study area network, validating how well a simulation compared to the actual operation, and adjusting or calibrating the model until the simulation closely resembled the network.

This appendix provides the details for developing the existing network, validating the results, and calibrating the model.

B TransModeler[™] Model

The project team (A/E) coded the Bureau of Engraving and Printing (BEP) vehicle study area, focused on the Powder Mill corridor between Soil Conservation Road and Edmonston Road, into TransModeler™ to include the intersections and adjacent roadway segments along the following roadways: Edmonston Road, Sunnyside Avenue, Powder Mill Road, Poultry Road, Research Road, Springfield Road, the ramps connecting the Baltimore-Washington Parkway to Powder Mill Road, and Soil Conservation Road. The Kenilworth Avenue corridor (Capital Beltway to Cherrywood Lane) was not included because the intersections along Edmonston Road at Sunnyside Avenue and Powder Mill Road meter all traffic onto Powder Mill Road. Figure 1 shows the modeled study area.

TransModeler[™] is capable of modeling key roadway elements such as the number of lanes, lane width, speed, length of turning lanes, type of pavement striping (solid line, dashed line, barrier), channelized right-turn lanes matched to the actual curve radius, lane assignments through an intersection by lane, and traffic signal timings by lane group (left, through, or right). In addition, TransModeler[™] can model an ECF by lane and any other special roadway design to reflect the future condition as accurately as possible.

The TIS used two methods to model vehicle volumes: (1) hourly vehicle volumes obtained through the existing condition data collection counts, and (2) vehicle classification counts along Edmonston Road.

B1 Vehicle Volumes

The project team (A/E) entered existing condition hourly vehicle volume counts for each intersection in the model to provide a complete network of vehicle trips through the study area. Because vehicle trips occur from an origin to a destination, TransModeler[™] develops a specific origin and destination by vehicle to match the number of vehicle trips per hour coded into the model by lane group. Depending on the network complexity, converting lane group volumes to origin-destination pairs can result in modeled vehicle volumes that are different from the actual volumes and thus can require calibration or adjustments to correct the imbalance.

Figure 4-13 (intersection turning movement volumes) in Data Collection and Development of the Peak Hour section of the *Transportation Study for the Bureau of Engraving and Printing* (Transportation Study) show the hourly volumes entered into the model.

Figure 1: TransModeler™ Modeled Study Area



B2 Vehicle Classification

Included in the vehicle volumes are trucks, buses, passenger vehicles, small trucks, and motorcycles. Each of these vehicle types has a different length and thus covers a different amount of roadway space. A typical full-size tractor trailer is 53-feet long, while a typical passenger vehicle is less than 25-feet long. The vehicle mix can affect traffic operations, especially if the roadway contains a high volume of larger vehicles. Each vehicle type also has a different acceleration rate from a stopped position, and some take longer to reach the speed limit than others, which also affects the traffic operations.

The project team (A/E) used the vehicle classification counts to develop the appropriate split between cars, and pick-up trucks/SUVs, and trucks. TransModeler[™] allows the TIS to break out the passenger vehicles into three categories, high, middle, and low performance passenger cars, to better simulate acceleration and deceleration speeds. Based on the vehicle classification count, approximately 80 percent of vehicles traveling along Edmonston Road were passenger vehicles. Following the software's default split among the three passenger vehicle classes, the total passenger vehicle volumes were distributed among three categories: 14 percent of the passenger vehicle volume was assigned to high performance, 53 percent of the passenger vehicle volume was assigned to middle performance, and 13 percent of the passenger vehicle volume was assigned to low performance, for a total of 80 percent. The remaining 20 percent of volume was assigned to pick-up trucks/SUVs (15 percent) and small trucks (5 percent) based on the vehicle classification counts.

C TransModeler[™] Validation Process

Once the network was completed by entering or coding the hourly vehicle volumes using turning movement files, coding traffic signals timings to match the existing conditions, and coding lane geometry to match the existing conditions, the project team (A/E) performed the validation process. The validation process included visually observing the simulations and comparing the simulated vehicle-turning movement volumes to the actual coded vehicle-turning movement volumes.

C1 Simulation Observation

The project team (A/E) ran simulations to determine if the vehicle operations in the model seemed reasonable based on site visit observations. Any unusual operation issues were quickly determined and addressed by fixing coding errors such as lane assignments at intersections or traffic signal timings. The observations also provided the team with an opportunity to flag and correct other minor coding errors.

C2 Simulated Vehicle Volumes versus Actual Vehicle Volumes

Prior to conducting the volume tests, the project team (A/E) ran the simulation 10 times to develop the minimum number of runs to be statistically accurate within plus or minus 3 percent or better at the 95th percentile confidence interval. The AM peak hour relied on 10 total simulation runs for an accuracy of plus or minus 0.7 percent at the 95th percentile confidence interval. Following the simulation runs, the project team (A/E) extracted the simulated vehicle-turning movement volumes based on an average of the results from the total number of simulations. The project team (A/E) than compared the statistically accurate results to the actual turning movement volumes coded to perform each of the validation tests.

The next step in the validation process included comparing the simulated turning movement volumes by intersection approach and by intersection as a whole to actual vehicle volumes. Based on the Federal Highway Administration's (FHWA) *Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software*, the project team (A/E) performed three validation tests to determine the accuracy of the simulation results when compared to the Existing Condition (FHWA 2004). The first test compared the TransModeler™ simulation approach volumes at all intersections to the Existing Condition volumes for all approaches. If more than 85 percent of the approaches had less than a 15 percent difference, then the model passed the first validation test. The second test compared the TransModeler™ simulation volumes to the Existing Condition overall intersection volumes. If more than 85 percent of the approaches had less than a 15 percent difference in overall intersection volumes. If more than 85 percent of the intersection volumes to the Existing Condition overall intersection volumes. If more than 85 percent of the second validation test. The third test compared the sum of all TransModeler™ simulation approach intersection volumes to the sum of all Existing Condition approach intersection volumes. If the difference between volume sums was less than 5 percent, the model passed the third validation test.

According to the results of the validation tests, the Existing Condition model passed all three tests. The approach-based test scored 100 percent, meaning that 100 percent of intersection approaches in the study area had less than a 15 percent difference between the simulation and Existing Condition volumes. The intersection-based test scored 100 percent, meaning that 100 percent of the intersections had less than a 15 percent difference in overall intersection volume. The approach volume summation scored no higher than 1.1 percent, meaning that the overall difference between intersection volume sums was less than 1.1 percent. Figure 2 contains the validation test results for each intersection, and Figure 3 contains the validation test result summary.

| | | | AM Peak | Hour | |
|----|--------------------------------|--------------------------------|---------------------------------|------------|---------------------|
| # | Intersection | Existing Volume Vehicles | Simulated Volume Vehicles | Difference | Less than 15% |
| 6 | MD 201 (Edmonston Road) & Su | ınnyside Ave | nue (Signaliz | ed) | |
| | EB (Sunnyside Rd) | 285 | 282 | -1.1% | Pass |
| | NB (MD 201) | 995 | 985 | -1.0% | Pass |
| | SB (MD 201) | 1,005 | 980 | -2.5% | Pass |
| | Overall | 2,285 | 2,247 | -1.7% | Pass |
| 7 | MD 201 (Edmonston Road) & Be | eaver Dam Ro | oad (TWSC) | | |
| | WB (Beaver Dam Rd) | 25 | 25 | 0.0% | Pass |
| | NB (MD 201) | 768 | 761 | -0.9% | Pass |
| | SB (MD 201) | 1,012 | 1,001 | -1.1% | Pass |
| | Overall | 1,805 | 1,787 | -1.0% | Pass |
| 8 | MD 201 (Edmonston Road) & P | owder Mill R | oad (Signaliz | ed) | |
| | EB (Powder Mill Rd) | 611 | 609 | -0.3% | Pass |
| | WB (Powder Mill Rd) | 275 | 302 | 9.8% | Pass |
| | NB (MD 201) | 773 | 757 | -2.1% | Pass |
| | SB (MD 201) | 535 | 526 | -1.7% | Pass |
| | Overall | 2,194 | 2,194 | 0.0% | Pass |
| 10 | Powder Mill Road & Poultry Roa | d (AWSC) | - | | |
| | EB (Powder Mill Rd) | 146 | 142 | -2.7% | Pass |
| | WB (Powder Mill Rd) | 280 | 267 | -4.6% | Pass |
| | SB (Poultry Rd) | 0 | 0 | 0.0% | Pass |
| | Overall | 426 | 409 | -4.0% | Pass |
| 11 | Powder Mill Road & Research R | oad (TWSC) | - | | |
| | EB (Powder Mill Rd) | 144 | 143 | -0.7% | Pass |
| | WB (Powder Mill Rd) | 266 | 263 | -1.1% | Pass |
| | NB (Research Rd) | 17 | 17 | 0.0% | Pass |
| | Overall | 427 | 423 | -0.9% | Pass |
| 12 | Powder Mill Road & Springfield | Road (TWSC) | | | |
| | EB (Powder Mill Rd) | 155 | 151 | -2.6% | Pass |
| | WB (Powder Mill Rd) | 415 | 412 | -0.7% | Pass |
| | SB (Springfield Rd) | 138 | 137 | -0.7% | Pass |
| | Overall | 708 | 700 | -1.1% | Pass |
| 13 | Powder Mill Road & BW Parkwa | y SB Ramps | (TWSC) | | |
| | EB (Powder Mill Rd) | 272 | 268 | -1.5% | Pass |
| | WB (Powder Mill Rd) | 352 | 349 | -0.9% | Pass |
| | SB (BW Parkway Off-ramp) | 362 | 359 | -0.8% | Pass |
| | Overall | 986 | 976 | -1.0% | Pass |

Figure 2: TransModeler™ Approach-based Validation Test Results

| | | | AM Peak | Hour | |
|----|--------------------------------|--------------------|---------------------|------------|--------------|
| # | Intersection | Existing Volume | Simulated Volume | Difference | Less than |
| | | Vehicles | Vehicles | | 15% |
| 14 | Powder Mill Road & BW Parkwa | y NB Ramps | (TWSC) | | |
| | EB (Powder Mill Rd) | 405 | 402 | -0.7% | Pass |
| | WB (Powder Mill Rd) | 567 | 561 | -1.1% | Pass |
| | NB (BW Parkway Off-ramp) | 138 | 137 | -0.7% | Pass |
| | Overall | 1,110 | 1,100 | -0.9% | Pass |
| 15 | Powder Mill Road & Soil Conser | vation Road | (Signalized) | | |
| | EB (Powder Mill Rd) | 405 | 401 | -1.0% | Pass |
| | WB (Powder Mill Rd) | 317 | 313 | -1.3% | Pass |
| | NB (Soil Conservation Rd) | 312 | 311 | -0.3% | Pass |
| | Overall | 1,034 | 1,025 | -0.9% | Pass |

Figure 2: TransModeler™ Approach-based Validation Test Results (continued)

Notes:

AWSC = All-way STOP-Controlled intersection

EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound

TWSC = Two-way STOP-Controlled unsignalized intersection

Red cells denote intersections or approaches where simulated versus actual volumes were greater than a 15% difference.

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|---------|-----|---------------------|---------|--------------|------------------|-------|---------------------------|
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| | Facilities | Percent of Total | Check |
|---------------------------------|------------|---------------------|-------|
| | A | M Peak Hour | |
| Number of passing approaches | 28 | | |
| Number of approaches | 28 | 100% | Pass |
| Number of passing intersections | 9 | | |
| Number of intersections | 9 | 100% | Pass |
| Simulation approach volume sum | 10,975 | | |
| Actual approach volume sum | 10,861 | 1.0% | Pass |

C3 TransModeler[™] Calibration Process

The original results calculated in the validation process resulted in a few failing intersection validation checks where the actual volumes and simulated volumes differed by a wide margin (Figure 3 indicates the results after completing the calibration process); therefore, TransModeler™ required calibration to achieve the established goals from the FHWA report. Calibration consisted of adjusting the link speeds along Edmonston Road.

C4 Adjustment to Link Speeds

The initial link speeds for the AM model reflected a speed limit that was slower than the actual posted speed limit to reflect nighttime conditions during the early morning hours. The AM peak hour link speeds were increased to the posted speed limit. This change corrected the simulation to reflect that current users of the study area roadways are comfortable driving at the posted speed during nighttime conditions.

D SimTraffic[™] Model

The project team (A/E) coded the BEP vehicle study area into Synchro^M, the static traffic analysis software that feeds the traffic model into SimTraffic^M and contains the same intersections as the transportation study area. Figure 1 illustrates the modeled study area.

Synchro[™] is capable of modeling key roadway elements such as the number of lanes, lane width, speed, length of turning lanes, channelized right-turn lanes, lane assignments through an intersection, and traffic signal timings by lane group (left, through, or right). Each element was coded to reflect the existing condition as accurately as possible. SimTraffic[™] simulates the values coded in Synchro[™] to assess the queuing and corridor travel times.

D1 Vehicle Volumes

The project team (A/E) entered the Existing Condition hourly vehicle volume counts for each intersection in the model to provide a complete network of vehicle trips through the study area. SimTraffic[™] simulates the traffic conditions based on loading the model at each intersection. If the volume is balanced between each intersection, SimTraffic[™] simulates a consistent traffic flow between intersections. If there is an imbalance of volumes between intersections, SimTraffic[™] adds or removes vehicles to adjust for the imbalance. The vehicle volumes for this study were closely balanced between intersections to provide a consistent vehicle flow because driveways do not exist between intersections, thus most vehicles entering the road from the previous intersections should enter the next downstream intersection.

In addition to vehicle volumes, the project team (A/E) entered the pedestrian and bicycle flows and truck percentages by intersection approach. Figure 4-14 (intersection turning movement volumes) in Data Collection and Development of the Peak Hour section of the Transportation Study show the hourly volumes added to the model.

To provide 15-minute peak flows, the project team (A/E) entered peak hour factors, the primary time period for calculating the traffic operations, into the Synchro[™] model. Peak hour factors provide a ratio of 15-minute to hourly flows to compare the percentage of the actual hourly flow to four times the highest 15-minute flow. An intersection with a uniform flow for each 15-minute interval has a peak hour factor of 1.0; an intersection with a 15-minute flow that is much higher than the other 15-minute flows can result in a peak hour factor below 0.92, a typical peak hour factor. The study area intersections had peak hour factors between 0.93 and 0.97, representing similar volumes for each 15-minute period.

E SimTraffic[™] Validation Process

Once the network was completed, the next step was validation. The validation process included visually observing the simulations and comparing the simulated vehicle-turning movement volumes to the actual coded vehicle-turning movement volumes.

E1 Simulation Observation

The project team (A/E) ran simulations to determine if the vehicle operations in the model seemed reasonable based on site visit observations. Any unusual operation issues were quickly determined and addressed by fixing coding errors such as lane assignments at intersections or traffic signal timings. The observations also allowed the project team (A/E) the opportunity to flag and correct other minor coding errors.

E2 Simulated Vehicle Volumes versus Actual Vehicle Volumes

Prior to conducting the volume tests, the project team (A/E) ran the simulation 10 times to develop the minimum number of runs to be statistically accurate within plus or minus 5 percent or better at the 95th percentile confidence interval. The AM peak hour relied on 43 total simulation runs, and the PM peak hour relied on 47 total simulation runs for an accuracy of plus or minus 5 percent at the 95th percentile confidence interval. Following the simulation runs, the team extracted the simulated vehicle-turning movement volumes based on an average of the results from the total number of simulations. They then compared the statistically accurate results to the actual turning movement volumes coded to perform each of the validation tests.

According to the results of the validation tests, the Existing Condition model passed all three tests. The approach-based test scored higher than 97 percent, meaning that more than 97 percent of the intersection approaches in the study area had less than a 15 percent difference between the simulation and Existing Condition volumes. The intersection-based test scored 100 percent, meaning that 100 percent of the intersections had less than a 15 percent difference in overall intersection volume. Finally, the sum of the approach volume scored no higher than 1.2 percent, meaning that the overall difference between intersection volume sums was less than 1.2 percent. Figure 4 contains the validation test results for each intersection, and Figure 5 contains the validation test result summaries.

| # Intersection Existing Volume Simulated Volume Difference Difference Less than 15% Existing Volume Simulated Volume Difference Existing than 15% Simulated Volume Difference Existing than 15% Simulated Volume Difference Existing than 15% 1 MD 201 (Kenilworth Avenue) & I-95 SB Off-ramp (Signalizer) 0.06% Pass 1,000 995 -0.5% Pass 8 (I-95 Off-ramp) 830 835 0.6% Pass 1,454 1,432 -1.5% Pass NB (MD 201) 770 760 -1.3% Pass 3,521 3,471 -1.4% Pass 2 MD 201 (Kenilworth Avenue) & I-95 NB Off-ramp (Signalizer) -0.3% Pass 1,012 1,014 0.2% Pass 8 MD 201 (Kenilworth Avenue) & I-95 NB Off-ramp (Signalizer) -0.1% Pass 1,012 1,014 0.2% Pass NB (MD 201) 396 409 3.3% Pass 1,012 1,014 0.2% Pass NB (MD 201) 2,433 <t< th=""><th></th><th></th><th colspan="7">AM Peak Hour PM Peak Hour</th><th></th></t<> | | | AM Peak Hour PM Peak Hour | | | | | | | |
|---|---|------------------------------|---------------------------|---------------------|---------------|--------------|--------------------|---------------------|------------|--------------|
| Vehicles 15% Vehicles 159 1 MD 201 (Kenilworth Avenue) & I-95 SB Off-ramp (Signalized) EB (I-95 Off-ramp) 830 835 0.6% Pass 1,000 995 -0.5% Pass NB (MD 201) 881 879 -0.2% Pass 1,454 1,432 -1.5% Pass SB (MD 201) 770 760 -1.3% Pass 1,067 1,044 -2.2% Pass Overall 2,481 2,474 -0.3% Pass 3,521 3,471 -1.4% Pass WB (I-95 Off-ramp) 1,173 1,172 -0.1% Pass 1,012 1,014 0.2% Pass NB (MD 201) 396 409 3.3% Pass 680 678 -0.3% Pass SB (MD 201) 864 846 -2.1% Pass 1,182 1,159 -1.9% Pass SB (MD 201) 864 846 -2.1% Pass 2,874 2,851 -0.8% Pass | # | Intersection | Existing Volume | Simulated Volume | Difference | Less than | Existing Volume | Simulated Volume | Difference | Less than |
| MD 201 (Kenilworth Avenue) & I-95 SB Off-ramp (Signalized) EB (I-95 Off-ramp) 830 835 0.6% Pass 1,000 995 -0.5% Pass NB (MD 201) 881 879 -0.2% Pass 1,454 1,432 -1.5% Pass SB (MD 201) 770 760 -1.3% Pass 1,067 1,044 -2.2% Pass Overall 2,481 2,474 -0.3% Pass 3,521 3,471 -1.4% Pass MD 201 (Kenilworth Avenue) & I-95 NB Off-ramp (Signalized) Value -0.1% Pass 1,012 1,014 0.2% Pass MB (MD 201) 396 409 3.3% Pass 1,182 1,159 -1.9% Pass SB (MD 201) 864 846 -2.1% Pass 1,82 1,159 -1.9% Pass Overall 2,433 2,427 -0.2% Pass 2,874 2,851 -0.8% Pass MD 201 (Kenilworth Avenue) & Crescent Road/SHA Driveway | | | Veh | icles | | 15% | Veh | icles | | 15% |
| EB (I-95 Off-ramp) 830 835 0.6% Pass 1,000 995 -0.5% Pass NB (MD 201) 881 879 -0.2% Pass 1,454 1,432 -1.5% Pass SB (MD 201) 770 760 -1.3% Pass 1,067 1,044 -2.2% Pass Overall 2,481 2,474 -0.3% Pass 3,521 3,471 -1.4% Pass MD 201 (Kenilworth Avenue) & I-95 NB Off-ramp (Signalized) - - 9ass 1,012 1,014 0.2% Pass WB (I-95 Off-ramp) 1,173 1,172 -0.1% Pass 1,012 1,014 0.2% Pass NB (MD 201) 396 409 3.3% Pass 1,182 1,159 -1.9% Pass SB (MD 201) 864 846 -2.1% Pass 2,874 2,851 -0.8% Pass Joverall 2,433 2,427 -0.2% Pass 2,874 2,851 -0.8% < | 1 | MD 201 (Kenilworth Avenue) & | I-95 SB Off-I | amp (Signali | zed) | | | | | |
| NB (MD 201) 881 879 -0.2% Pass 1,454 1,432 -1.5% Pass SB (MD 201) 770 760 -1.3% Pass 1,067 1,044 -2.2% Pass Overall 2,481 2,474 -0.3% Pass 3,521 3,471 -1.4% Pass M D 201 (Kenilworth Avenue) & I-95 NB Off-ramp (Signalized) V Pass 1,012 1,014 0.2% Pass MB (I-95 Off-ramp) 1,173 1,172 -0.1% Pass 1,012 1,014 0.2% Pass NB (MD 201) 396 409 3.3% Pass 680 678 -0.3% Pass SB (MD 201) 864 846 -2.1% Pass 1,159 -1.9% Pass Overall 2,433 2,427 -0.2% Pass 2,874 2,851 -0.8% Pass MD 201 (Kenilworth Avenue) & Crescent Rod 178 -1.1% Pass 220 212 -3.6% Pass W | | EB (I-95 Off-ramp) | 830 | 835 | 0.6% | Pass | 1,000 | 995 | -0.5% | Pass |
| SB (MD 201) 770 760 -1.3% Pass 1,067 1,044 -2.2% Pass Overall 2,481 2,474 -0.3% Pass 3,521 3,471 -1.4% Pass MD 201 (Kenilworth Avenue) & I-95 NB Off-ramp (Signalized) Vertice Pass 1,012 1,014 0.2% Pass MB (I-95 Off-ramp) 1,173 1,172 -0.1% Pass 1,012 1,014 0.2% Pass NB (MD 201) 396 409 3.3% Pass 680 678 -0.3% Pass SB (MD 201) 864 846 -2.1% Pass 1,182 1,159 -1.9% Pass Overall 2,433 2,427 -0.2% Pass 2,874 2,851 -0.8% Pass MD 201 (Kenilworth Avenue) & Crescent Rod/SHA Driveway (Signalized) EB (SHA Driveway) 4 4 0.0% Pass 2,20 212 -3.6% Pass MB (Crescent Rd) 180 178 -1.1% Pass | | NB (MD 201) | 881 | 879 | -0.2% | Pass | 1,454 | 1,432 | -1.5% | Pass |
| Overall 2,481 2,474 -0.3% Pass 3,521 3,471 -1.4% Pass 2 MD 201 (Kenilworth Avenue) & I-95 NB Off-ramp (Signalized) WB (I-95 Off-ramp) 1,173 1,172 -0.1% Pass 1,012 1,014 0.2% Pass NB (MD 201) 396 409 3.3% Pass 680 678 -0.3% Pass SB (MD 201) 864 846 -2.1% Pass 1,182 1,159 -1.9% Pass Overall 2,433 2,427 -0.2% Pass 2,874 2,851 -0.8% Pass 3 MD 201 (Kenilworth Avenue) & Crescent Road/SHA Driveway (Signalized) 2 23 4.5% Pass 3 MD 201 (Kenilworth Avenue) & 180 178 -1.1% Pass 220 212 -3.6% Pass 4 0.0% Pass 1,195 1,200 0.4% Pass 5 (Grescent Rd) 180 178 -1.1% Pass 1,285 | | SB (MD 201) | 770 | 760 | -1.3% | Pass | 1,067 | 1,044 | -2.2% | Pass |
| 2 MD 201 (Kenilworth Avenue) & I-95 NB Off-ramp (Signalized) WB (I-95 Off-ramp) 1,173 1,172 -0.1% Pass 1,012 1,014 0.2% Pass NB (MD 201) 396 409 3.3% Pass 680 678 -0.3% Pass SB (MD 201) 864 846 -2.1% Pass 1,182 1,159 -1.9% Pass Overall 2,433 2,427 -0.2% Pass 2,874 2,851 -0.8% Pass MD 201 (Kenilworth Avenue) & Crescent Road/SHA Driveway (Signalized) -0.2% Pass 2,274 2,03 4.5% Pass B (SHA Driveway) 4 4 0.0% Pass 220 212 -3.6% Pass WB (Crescent Rd) 1,113 1,110 -0.3% Pass 1,285 1,200 0.4% Pass SB (MD 201) 987 983 -0.4% Pass 1,285 1,270 -1.2% Pass SB (MD 201) 987 983 | | Overall | 2,481 | 2,474 | -0.3% | Pass | 3,521 | 3,471 | -1.4% | Pass |
| WB (I-95 Off-ramp) 1,173 1,172 -0.1% Pass 1,012 1,014 0.2% Pass NB (MD 201) 396 409 3.3% Pass 680 678 -0.3% Pass SB (MD 201) 864 846 -2.1% Pass 1,182 1,159 -1.9% Pass Overall 2,433 2,427 -0.2% Pass 2,874 2,851 -0.8% Pass MD 201 (Kenilworth Avenue) & Crescent Road/SHA Driveway (Signalized) EB (SHA Driveway) 4 4 0.0% Pass 22 23 4.5% Pass WB (Crescent Rd) 180 178 -1.1% Pass 1,195 1,200 0.4% Pass SB (MD 201) 1,113 1,110 -0.3% Pass 1,285 1,200 0.4% Pass SB (MD 201) 987 983 -0.4% Pass 1,285 1,270 -1.2% Pass SB (MD 201) 987 983 -0.4% Pass 2,722 </td <td>2</td> <td>MD 201 (Kenilworth Avenue) &</td> <td>I-95 NB Off-</td> <td>ramp (Signali</td> <td>ized)</td> <td></td> <td></td> <td></td> <td></td> <td></td> | 2 | MD 201 (Kenilworth Avenue) & | I-95 NB Off- | ramp (Signali | ized) | | | | | |
| NB (MD 201) 396 409 3.3% Pass 680 678 -0.3% Pass SB (MD 201) 864 846 -2.1% Pass 1,182 1,159 -1.9% Pass Overall 2,433 2,427 -0.2% Pass 2,874 2,851 -0.8% Pass MD 201 (Kenilworth Avenue) & Crescent Road/SHA Driveway (Signalized) Edit State 22 23 4.5% Pass KB (MD 201) 180 178 -1.1% Pass 220 212 -3.6% Pass NB (MD 201) 1,113 1,110 -0.3% Pass 1,285 1,200 0.4% Pass SB (MD 201) 987 983 -0.4% Pass 1,285 1,270 -1.2% Pass SB (MD 201) 987 983 -0.4% Pass 2,722 2,705 -0.6% Pass Overall 2,284 2,275 -0.4% Pass 2,722 2,705 -0.6% Pass | | WB (I-95 Off-ramp) | 1,173 | 1,172 | -0.1% | Pass | 1,012 | 1,014 | 0.2% | Pass |
| SB (MD 201) 864 846 -2.1% Pass 1,182 1,159 -1.9% Pass Overall 2,433 2,427 -0.2% Pass 2,874 2,851 -0.8% Pass 3 MD 201 (Kenilworth Avenue) & Crescent Road/SHA Driveway (Signalized) EB (SHA Driveway) 4 4 0.0% Pass 22 23 4.5% Pass WB (Crescent Rd) 180 178 -1.1% Pass 220 212 -3.6% Pass NB (MD 201) 1,113 1,110 -0.3% Pass 1,285 1,200 0.4% Pass SB (MD 201) 987 983 -0.4% Pass 1,285 1,270 -1.2% Pass Overall 2,284 2,275 -0.4% Pass 2,722 2,705 -0.6% Pass | | NB (MD 201) | 396 | 409 | 3.3% | Pass | 680 | 678 | -0.3% | Pass |
| Overall 2,433 2,427 -0.2% Pass 2,874 2,851 -0.8% Pass 3 MD 201 (Kenilworth Avenue) & Crescent Road/SHA Driveway (Signalized) EB (SHA Driveway) 4 4 0.0% Pass 22 23 4.5% Pass WB (Crescent Rd) 180 178 -1.1% Pass 220 212 -3.6% Pass NB (MD 201) 1,113 1,110 -0.3% Pass 1,195 1,200 0.4% Pass SB (MD 201) 987 983 -0.4% Pass 1,285 1,270 -1.2% Pass Overall 2,284 2,275 -0.4% Pass 2,722 2,705 -0.6% Pass | | SB (MD 201) | 864 | 846 | -2.1% | Pass | 1,182 | 1,159 | -1.9% | Pass |
| 3 MD 201 (Kenilworth Avenue) & Crescent Road/SHA Driveway (Signalized) EB (SHA Driveway) 4 4 0.0% Pass 22 23 4.5% Pass WB (Crescent Rd) 180 178 -1.1% Pass 220 212 -3.6% Pass NB (MD 201) 1,113 1,110 -0.3% Pass 1,195 1,200 0.4% Pass SB (MD 201) 987 983 -0.4% Pass 1,285 1,270 -1.2% Pass Overall 2,284 2,275 -0.4% Pass 2,722 2,705 -0.6% Pass | | Overall | 2,433 | 2,427 | -0.2% | Pass | 2,874 | 2,851 | -0.8% | Pass |
| EB (SHA Driveway) 4 4 0.0% Pass 22 23 4.5% Pass WB (Crescent Rd) 180 178 -1.1% Pass 220 212 -3.6% Pass NB (MD 201) 1,113 1,110 -0.3% Pass 1,195 1,200 0.4% Pass SB (MD 201) 987 983 -0.4% Pass 1,285 1,270 -1.2% Pass Overall 2,284 2,275 -0.4% Pass 2,722 2,705 -0.6% Pass | 3 | MD 201 (Kenilworth Avenue) & | Crescent Ro | ad/SHA Driv | eway (Signali | zed) | | | | |
| WB (Crescent Rd) 180 178 -1.1% Pass 220 212 -3.6% Pass NB (MD 201) 1,113 1,110 -0.3% Pass 1,195 1,200 0.4% Pass SB (MD 201) 987 983 -0.4% Pass 1,285 1,270 -1.2% Pass Overall 2,284 2,275 -0.4% Pass 2,722 2,705 -0.6% Pass | | EB (SHA Driveway) | 4 | 4 | 0.0% | Pass | 22 | 23 | 4.5% | Pass |
| NB (MD 201) 1,113 1,110 -0.3% Pass 1,195 1,200 0.4% Pass SB (MD 201) 987 983 -0.4% Pass 1,285 1,270 -1.2% Pass Overall 2,284 2,275 -0.4% Pass 2,722 2,705 -0.6% Pass | | WB (Crescent Rd) | 180 | 178 | -1.1% | Pass | 220 | 212 | -3.6% | Pass |
| SB (MD 201) 987 983 -0.4% Pass 1,285 1,270 -1.2% Pass Overall 2,284 2,275 -0.4% Pass 2,722 2,705 -0.6% Pass | | NB (MD 201) | 1,113 | 1,110 | -0.3% | Pass | 1,195 | 1,200 | 0.4% | Pass |
| Overall 2,284 2,275 -0.4% Pass 2,722 2,705 -0.6% Pass | | SB (MD 201) | 987 | 983 | -0.4% | Pass | 1,285 | 1,270 | -1.2% | Pass |
| | | Overall | 2,284 | 2,275 | -0.4% | Pass | 2,722 | 2,705 | -0.6% | Pass |
| 4 MD 201 (Kenilworth Avenue) & Ivy Lane (Signalized) | 4 | MD 201 (Kenilworth Avenue) & | lvy Lane (Sig | nalized) | | | | | | |
| EB (Ivy Ln) 93 94 1.1% Pass 203 207 2.0% Pas | | EB (Ivy Ln) | 93 | 94 | 1.1% | Pass | 203 | 207 | 2.0% | Pass |
| NB (MD 201) 1,109 1,116 0.6% Pass 1,072 1,094 2.1% Pas | | NB (MD 201) | 1,109 | 1,116 | 0.6% | Pass | 1,072 | 1,094 | 2.1% | Pass |
| SB (MD 201) 901 905 0.4% Pass 1,087 1,101 1.3% Pas | | SB (MD 201) | 901 | 905 | 0.4% | Pass | 1,087 | 1,101 | 1.3% | Pass |
| Overall 2,103 2,115 0.6% Pass 2,362 2,402 1.7% Pas | | Overall | 2,103 | 2,115 | 0.6% | Pass | 2,362 | 2,402 | 1.7% | Pass |
| 5 MD 201 (Kenilworth Avenue/Edmonston Road) & Cherrywood Lane (Signalized) | 5 | MD 201 (Kenilworth Avenue/Ed | dmonston Ro | ad) & Cherry | wood Lane | Signaliz | ed) | | | |
| EB (Cherrywood Ln) 140 140 0.0% Pass 270 272 0.7% Pas | | EB (Cherrywood Ln) | 140 | 140 | 0.0% | Pass | 270 | 272 | 0.7% | Pass |
| NB (MD 201) 1,015 1,009 -0.6% Pass 987 1,004 1.7% Pas | | NB (MD 201) | 1,015 | 1,009 | -0.6% | Pass | 987 | 1,004 | 1.7% | Pass |
| SB (MD 201) 1,087 1,074 -1.2% Pass 1,180 1,182 0.2% Pas | | SB (MD 201) | 1,087 | 1,074 | -1.2% | Pass | 1,180 | 1,182 | 0.2% | Pass |
| Overall 2,242 2,223 -0.8% Pass 2,437 2,458 0.9% Pas | | Overall | 2,242 | 2,223 | -0.8% | Pass | 2,437 | 2,458 | 0.9% | Pass |
| 6 MD 201 (Edmonston Road) & Sunnyside Avenue (Signalized) | 6 | MD 201 (Edmonston Road) & Su | nnyside Ave | nue (Signaliz | ed) | | | | | |
| EB (Sunnyside Rd) 285 284 -0.4% Pass 543 535 -1.5% Pas | | EB (Sunnyside Rd) | 285 | 284 | -0.4% | Pass | 543 | 535 | -1.5% | Pass |
| NB (MD 201) 995 997 0.2% Pass 1,203 1,264 5.1% Pas | | NB (MD 201) | 995 | 997 | 0.2% | Pass | 1,203 | 1,264 | 5.1% | Pass |
| SB (MD 201) 1,005 998 -0.7% Pass 928 891 -4.0% Pass | | SB (MD 201) | 1,005 | 998 | -0.7% | Pass | 928 | 891 | -4.0% | Pass |
| Overall 2,285 2,279 -0.3% Pass 2,674 2,690 0.6% Pas | | Overall | 2,285 | 2,279 | -0.3% | Pass | 2,674 | 2,690 | 0.6% | Pass |
| 7 MD 201 (Edmonston Road) & Beaver Dam Road (TWSC) | 7 | MD 201 (Edmonston Road) & Be | eaver Dam R | oad (TWSC) | | | | | | |
| WB (Beaver Dam Rd) 25 24 -4.0% Pass 27 25 -7.4% Pass | | WB (Beaver Dam Rd) | 25 | 24 | -4.0% | Pass | 27 | 25 | -7.4% | Pass |
| NB (MD 201) 768 767 -0.1% Pass 1,082 1,096 1.3% Pas | | NB (MD 201) | 768 | 767 | -0.1% | Pass | 1,082 | 1,096 | 1.3% | Pass |
| SB (MD 201) 1,012 1,016 0.4% Pass 883 882 -0.1% Pass | | SB (MD 201) | 1,012 | 1,016 | 0.4% | Pass | 883 | 882 | -0.1% | Pass |
| Overall 1,805 1,807 0.1% Pass 1,992 2,003 0.6% Pas | | Overall | 1,805 | 1,807 | 0.1% | Pass | 1,992 | 2,003 | 0.6% | Pass |

Figure 4: SimTraffic[™] Approach-based Validation Test Results

| | | | AM Peak I | Hour | | | Hour | | |
|----|--------------------------------|--------------------|---------------------|------------|--------------|--------------------|---------------------|------------|--------------|
| # | Intersection | Existing Volume | Simulated Volume | Difference | Less than | Existing Volume | Simulated Volume | Difference | Less than |
| | | Veh | icles | | 15% | Veh | icles | | 15% |
| 8 | MD 201 (Edmonston Road) & P | owder Mill R | oad (Signaliz | ed) | | | 1 | | |
| | EB (Powder Mill Rd) | 611 | 612 | 0.2% | Pass | 867 | 751 | -13.4% | Pass |
| | WB (Powder Mill Rd) | 275 | 287 | 4.4% | Pass | 262 | 265 | 1.1% | Pass |
| | NB (MD 201) | 773 | 812 | 5.0% | Pass | 947 | 1,058 | 11.7% | Pass |
| | SB (MD 201) | 535 | 526 | -1.7% | Pass | 694 | 693 | -0.1% | Pass |
| | Overall | 2,194 | 2,237 | 2.0% | Pass | 2,770 | 2,767 | -0.1% | Pass |
| 9 | Edmonston Road & Odell Road | (TWSC) | | | | | | | _ |
| | EB (Odell Rd) | 20 | 19 | -5.0% | Pass | 27 | 26 | -3.7% | Pass |
| | WB (Odell Rd) | 7 | 6 | -14.3% | Pass | 5 | 4 | -20.0% | Fail |
| | NB (Edmonston Rd) | 489 | 484 | -1.0% | Pass | 580 | 590 | 1.7% | Pass |
| | SB (Edmonston Rd) | 554 | 563 | 1.6% | Pass | 628 | 643 | 2.4% | Pass |
| | Overall | 1,070 | 1,072 | 0.2% | Pass | 1,240 | 1,263 | 1.9% | Pass |
| 10 | Powder Mill Road & Poultry Roa | ad (AWSC) | | | | | | | |
| | EB (Powder Mill Rd) | 146 | 166 | 13.7% | Pass | 600 | 544 | -9.3% | Pass |
| | WB (Powder Mill Rd) | 280 | 278 | -0.7% | Pass | 246 | 246 | 0.0% | Pass |
| | SB (Poultry Rd) | 0 | 0 | - | Pass | 10 | 9 | -10.0% | Pass |
| | Overall | 426 | 444 | 4.2% | Pass | 856 | 799 | -6.7% | Pass |
| 11 | Powder Mill Road & Research R | oad (TWSC) | | | | | | | |
| | EB (Powder Mill Rd) | 144 | 146 | 1.4% | Pass | 596 | 540 | -9.4% | Pass |
| | WB (Powder Mill Rd) | 266 | 261 | -1.9% | Pass | 216 | 216 | 0.0% | Pass |
| | NB (Research Rd) | 14 | 16 | 14.3% | Pass | 27 | 27 | 0.0% | Pass |
| | Overall | 424 | 423 | -0.2% | Pass | 839 | 783 | -6.7% | Pass |
| 12 | Powder Mill Road & Springfield | Road (TWSC) | | | | | | | |
| | EB (Powder Mill Rd) | 155 | 156 | 0.6% | Pass | 487 | 439 | -9.9% | Pass |
| | WB (Powder Mill Rd) | 415 | 415 | 0.0% | Pass | 365 | 367 | 0.5% | Pass |
| | SB (Springfield Rd) | 138 | 139 | 0.7% | Pass | 274 | 270 | -1.5% | Pass |
| | Overall | 708 | 710 | 0.3% | Pass | 1,126 | 1,076 | -4.4% | Pass |
| 13 | Powder Mill Road & BW Parkwa | y SB Ramps | (TWSC) | | | | | | |
| | EB (Powder Mill Rd) | 272 | 267 | -1.8% | Pass | 749 | 695 | -7.2% | Pass |
| | WB (Powder Mill Rd) | 352 | 348 | -1.1% | Pass | 381 | 354 | -7.1% | Pass |
| | SB (BW Parkway Off-ramp) | 362 | 364 | 0.6% | Pass | 376 | 379 | 0.8% | Pass |
| | Overall | 986 | 979 | -0.7% | Pass | 1,506 | 1,428 | -5.2% | Pass |

Figure 4: SimTraffic[™] Approach-based Validation Test Results (continued)

| | | | AM Peak | Hour | | | PM Peak | Hour | |
|----|--------------------------------|--------------------|---------------------|------------|--------------|--------------------|---------------------|------------|--------------|
| # | Intersection | Existing Volume | Simulated Volume | Difference | Less than | Existing Volume | Simulated Volume | Difference | Less than |
| | | Veh | icles | | 15% | Veh | icles | | 15% |
| 14 | Powder Mill Road & BW Parkwa | ay NB Ramps | (TWSC) | | | | | | |
| | EB (Powder Mill Rd) | 405 | 401 | -1.0% | Pass | 846 | 826 | -2.4% | Pass |
| | WB (Powder Mill Rd) | 567 | 566 | -0.2% | Pass | 793 | 771 | -2.8% | Pass |
| | NB (BW Parkway Off-ramp) | 138 | 139 | 0.7% | Pass | 106 | 105 | -0.9% | Pass |
| | Overall | 1,110 | 1,106 | -0.4% | Pass | 1,745 | 1,702 | -2.5% | Pass |
| 15 | Powder Mill Road & Soil Conser | vation Road | (TWSC) | | | | | | |
| | EB (Powder Mill Rd) | 405 | 396 | -2.2% | Pass | 663 | 631 | -4.8% | Pass |
| | WB (Powder Mill Rd) | 317 | 325 | 2.5% | Pass | 311 | 308 | -1.0% | Pass |
| | NB (Soil Conservation Rd) | 312 | 306 | -1.9% | Pass | 583 | 541 | -7.2% | Pass |
| | Overall | 1,034 | 1,027 | -0.7% | Pass | 1,557 | 1,480 | -4.9% | Pass |

Figure 4: SimTraffic[™] Approach-based Validation Test Results (continued)

Notes:

AWSC = All-way STOP-Controlled intersection

EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound

TWSC = Two-way STOP-Controlled unsignalized intersection

Red cells denote intersections or approaches where simulated versus actual volumes were greater than a 15% difference.

Figure 5: SimTraffic[™] Validation Test Summary

| | Facilities | Percent of Total | Check | Facilities | Percent of Total | Check | | |
|---------------------------------|------------|---------------------|-------|--------------|---------------------|-------|--|--|
| | A | A Peak Hour | | PM Peak Hour | | | | |
| Number of passing approaches | 48 | 100% | | 47 | 07.0% | _ | | |
| Number of approaches | 48 | 100% | Pass | 48 | 97.9% | Pass | | |
| Number of passing intersections | 15 | 100% | | 9 | 100% | | | |
| Number of intersections | 15 | 100% | Pass | 9 | 100% | Pass | | |
| Simulation approach volume sum | 23,585 | 1.00/ | | 30,221 | 1 10/ | | | |
| Actual approach volume sum | 23,598 | 1.0% | Pass | 29,878 | 1.1% | Pass | | |

F SimTraffic[™] Calibration Process

The original results calculated in the validation process had one failing check and required calibration to achieve the established goals to accurately model queueing along Rockville Pike. The initial link speeds for the AM and PM models reflected actual posted speed limits. The PM peak hour link speeds were reduced by 15 miles per hour to reflect the actual speed the vehicles travel the corridor based on the congested conditions. This provided a more realistic queue pattern that matched observations.

G References

FHWA (Federal Highway Administration)

2004 Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software, U.S. Department of Transportation, Federal Highway Administration, Publication No. FHWA-HRT-04-040, McLean, Virginia.

Site Visits

Site Visit by Louis Berger on September 17, 2019.

16. APPENDIX H: SimTraffic REPORT

SimTraffic Simulation Summary Existing Conditions AM10/08/2019

Summary of All Intervals

| Run Number Start Time End Time Total Time (min) Time Recorded (min) # of Intervals | | 1 5:52 7:00 68 60 5 | 10 5:52 7:00 68 60 5 | 2 5:52 7:00 68 60 5 | 3 5:52 7:00 68 60 5 | 4 5:52 7:00 68 60 5 | 5 5:52 7:00 68 60 5 | 6 5:52 7:00 68 60 5 | 7 5:52 7:00 68 60 5 | 8 5:52 7:00 68 60 5 | 9 5:52 7:00 68 60 5 | Avg 5:52 7:00 68 60 5 | |
|---|--|---|---|--|---|--|---|--|--|--|--|--|---|
| # of Recorded Intervals # of Recorded Intervals Vehs Entered Vehs Exited Starting Vehs Ending Vehs Travel Distance (mi) Travel Time (hr) Total Delay (hr) Total Stops Fuel Used (gal) | S | 7430 7403 318 345 8542 340.8 102.2 8155 296.3 | 4 7411 7434 319 296 8489 334.5 99.0 7924 293.9 | 4 7484 7498 368 354 8656 346.7 105.6 8283 300.4 | 4 7337 7233 270 374 8357 325.3 92.4 7631 287.8 | 4 7300 7302 347 345 8447 336.0 101.0 7851 291.8 | 4 7355 7339 332 348 8333 326.4 94.4 7630 284.5 | 4 7465 7426 325 364 8586 345.8 106.8 8254 298.2 | 4 7442 7472 372 342 8744 349.7 106.2 8267 301.8 | 4 7576 7565 339 350 8705 346.0 103.7 8088 299.1 | 4 7435 7427 320 328 8612 344.2 104.5 8302 297.0 | 4 7423 7408 328 337 8547 339.6 101.6 8031 295.1 | 4 |
| Interval #0 Information Start Time End Time Total Time (min) No data recorded this | Seedir 5:52 6:00 8 interval. | ng | | | | | | | | | | | |
| Interval #1 Information Start Time End Time Total Time (min) | Record 6:00 6:15 15 | ding | | | | | | | | | | | |
| Run Number Vehs Entered Vehs Exited Starting Vehs Ending Vehs | | 1 1892 1847 318 363 | 10 1847 1861 319 305 | 2 1875 1869 368 374 | 3 1744 1696 270 318 | 4 1897 1875 347 369 | 5 1844 1827 332 349 | 6 1880 1864 325 341 | 7 1863 1892 372 343 | 8 1852 1869 339 322 | 9 1829 1806 320 343 | Avg 1846 1843 328 335 | |

| Travel Distance (mi) Travel Time (hr) Total Delay (hr) Total Stops Fuel Used (gal) | | 2166 86.2 26.1 2066 75.3 | 2084 82.5 24.7 2032 72.6 | 2201 88.9 27.7 2182 76.3 | 1933 74.3 20.3 1762 65.7 | 2160 89.8 29.3 2244 76.3 | 2070 81.1 23.5 1961 71.0 | 2134 86.5 27.1 2112 73.8 | 2178 85.6 25.0 2010 75.2 | 2082 80.2 22.1 1844 71.3 | 2129 84.4 25.3 2031 73.3 | 2114 84.0 25.1 2022 73.1 |
|---|------------------------------|---|--|---|---|---|---|---|---|---|---|---|
| Interval #2 Information Start Time End Time Total Time (min) | Recor 6:15 6:30 15 | ding | | | | | | | | | | |
| Run Number Vehs Entered Vehs Exited Starting Vehs Ending Vehs Travel Distance (mi) Travel Time (hr) Total Delay (hr) Total Stops Fuel Used (gal) | | 1 1869 1908 363 324 2259 92.4 29.3 2190 78.4 | 10 1850 1843 305 312 2154 83.2 23.6 1944 73.9 | 2 1909 1927 374 356 2196 88.1 26.9 2001 76.7 | 3 1863 1843 318 338 2096 81.0 22.6 1872 71.7 | 4 1804 1842 369 331 2157 85.9 26.2 1949 74.1 | 5 1825 1847 349 327 2135 83.4 23.9 1882 72.5 | 6 1865 1845 341 2133 85.7 26.3 2007 73.9 | 7 1806 1794 343 355 2168 85.8 25.5 1969 73.6 | 8 1898 1852 322 368 2196 86.3 25.1 2038 75.0 | 9 1930 1903 343 370 2171 88.6 28.2 2171 75.1 | Avg 1856 1859 335 337 2167 86.0 25.8 1999 74.5 |
| Interval #3 Information Start Time End Time Total Time (min) | Record 6:30 6:45 15 | ding | | | | | | | | | | |
| Run Number Vehs Entered Vehs Exited Starting Vehs Ending Vehs Travel Distance (mi) Travel Time (hr) Total Delay (hr) Total Stops Fuel Used (gal) | | 1 1841 1855 324 310 2033 79.9 22.9 1896 70.6 | 10 1886 1843 312 355 2161 85.6 25.5 2056 75.0 | 2 1851 1859 356 348 2138 83.9 24.2 2003 74.1 | 3 1835 1832 338 341 2134 83.2 24.0 1926 73.7 | 4 1771 1794 331 308 2023 75.6 19.4 1649 68.7 | 5 1801 1813 327 315 2059 79.5 22.1 1901 70.1 | 6 1828 1864 361 325 2184 87.6 26.9 2109 76.4 | 7 1919 1903 355 371 2263 92.8 29.6 2231 78.9 | 8 1936 1930 368 374 2229 90.6 28.7 2118 76.9 | 9 1809 1849 370 330 2132 84.8 25.5 2035 73.4 | Avg 1842 1851 337 332 2136 84.3 24.9 1991 73.8 |

| Interval #4 Information Start Time End Time Total Time (min) | Record 6:45 7:00 15 | ding | | | | | | | | | | |
|--|------------------------------|---|--|---|---|---|---|---|---|---|---|---|
| Run Number Vehs Entered Vehs Exited Starting Vehs Ending Vehs Travel Distance (mi) Travel Time (hr) Total Delay (hr) Total Stops | | 1 1828 1793 310 345 2083 82.3 23.9 2003 | 10 1828 1887 355 296 2090 83.3 25.1 1892 | 2 1849 1843 348 354 2120 85.8 26.8 2097 | 3 1895 1862 341 374 2193 86.9 25.5 2071 | 4 1828 1791 308 345 2106 84.8 26.1 2009 | 5 1885 1852 315 348 2070 82.4 24.8 1886 | 6 1892 1853 325 364 2135 86.0 26.5 2026 | 7 1854 1883 371 342 2135 85.4 26.1 2057 | 8 1890 1914 374 350 2198 89.0 27.8 2088 | 9 1867 1869 330 328 2180 86.4 25.5 2065 | Avg 1856 1855 332 337 2131 85.2 25.8 2017 |
| Fuel Used (gal) | | 72.0 | 72.3 | 73.3 | 76.7 | 72.7 | 71.0 | 74.1 | 74.1 | 76.0 | 75.2 | 73.7 |

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SimTraffic Performance Report Existing Conditions AM10/08/2019

1: MD 201 & I-95 SB off-Ramp Performance by movement

| Movement Vehicles Entered | EBL 73 | EBR 762 | NBT 879 | SBT 760 | All 2474 | | | | | | | |
|---|------------|------------|-------------|------------|-------------|-------------|-------------|-----------|-----------|------------|----------|------------|
| 2: MD 201 & I-95 NB Off Ram | p Perfo | rmance | by move | ement | | | | | | | | |
| Movement Vehicles Entered | WBL 457 | WBR 715 | NBT 409 | SBT 846 | All 2427 | | | | | | | |
| 3: MD 201 & SHA Dist. 3/Cres | scent Dr | ive Perf | ormanc | e by mo | vement | | | | | | | |
| Movement Vehicles Entered | EBL 0 | EBR 4 | WBL 110 | WBT 1 | WBR 67 | NBL 33 | NBT 1040 | NBR 37 | SBL 28 | SBT 950 | SBR 5 | All 227 |
| 4: MD 201 & Ivy Lane Perform | nance by | y mover | nent | | | | | | | | | |
| Movement Vehicles Entered | EBR 94 | NBL 92 | NBT 1024 | SBT 898 | SBR 7 | All 2115 | | | | | | |
| 5: MD 201 & Cherrywood Lan | e Perfor | mance | by move | ement | | | | | | | | |
| Movement Vehicles Entered | EBL 115 | EBR 25 | NBL 132 | NBT 877 | SBT 862 | SBR 212 | All 2223 | | | | | |
| 6: MD 201 & Sunnyside Aven | ue Perfo | ormance | e by mov | /ement | | | | | | | | |
| Movement Vehicles Entered | EBL 86 | EBR 198 | NBL 319 | NBT 678 | SBT 891 | SBR 107 | All 2279 | | | | | |
| 7: MD 201 & Beaver Dam Road Performance by movement | | | | | | | | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT | All | | | | | |

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8: MD 201 & Powder Mill Road Performance by movement

| Movement Vehicles Entered | EBL 53 | EBT 98 | EBR 461 | WBL 104 | WBT 150 | WBR 33 | NBL 313 | NBT 454 | NBR 45 | SBL 23 | SBT 431 | SBR 72 | All 2237 |
|--|------------|------------|------------|------------|------------|------------|------------|-------------|------------|-----------|-------------|-----------|-------------|
| 9: Edmonston Road & Odell R | load Pe | rforman | ce by m | ovemen | t | | | | | | | | |
| Movement Vehicles Entered | EBL 18 | EBR 1 | WBL 1 | WBT 4 | WBR 1 | NBL 46 | NBT 434 | NBR 4 | SBT 523 | SBR 40 | All 1072 | | |
| 10: Powder Mill Road & Poultr | y Road | Perform | nance by | / moven | nent | | | | | | | | |
| Movement Vehicles Entered | EBL 1 | EBT 165 | WBT 278 | All 444 | | | | | | | | | |
| 11: Powder Mill Road Perform | ance by | v mover | nent | | | | | | | | | | |
| Movement Vehicles Entered | NBL 16 | NBT 0 | SET 138 | SER 8 | NWT 261 | All 423 | | | | | | | |
| 12: Powder Mill Road Perform | ance by | v movem | nent | | | | | | | | | | |
| Movement Vehicles Entered | EBL 3 | EBT 153 | WBT 278 | WBR 137 | SBL 121 | SBR 18 | All 710 | | | | | | |
| 13: Powder Mill Road Perform | ance by | v mover | nent | | | | | | | | | | |
| Movement Vehicles Entered | EBT 178 | EBR 89 | WBL 77 | WBT 271 | SBL 222 | SBT 1 | SBR 141 | All 979 | | | | | |
| 14: Powder Mill Road Performance by movement | | | | | | | | | | | | | |
| Movement Vehicles Entered | EBL 85 | EBT 316 | WBT 294 | WBR 272 | NBL 54 | NBT 3 | NBR 82 | All 1106 | | | | | |
| 15: Powder Mill Road Perform | ance by | v mover | nent | | | | | | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR | All | | | | | | |

| Vehicles Entered | 152 | 244 | 49 | 276 | 290 | 16 | 1027 | | | |
|--|-------------|------------|-------------|-------------|-------------|------------|------|--|--|--|
| 16: Powder Mill Road Perform | nance by | / moven | nent | | | | | | | |
| Movement Vehicles Entered | EBT 2 | EBR 17 | SET 135 | NWL 17 | NWT 272 | All 443 | | | | |
| 17: Performance by movement | | | | | | | | | | |
| Movement Vehicles Entered | WBL 17 | NBT 15 | NBR 18 | SBT 8 | All 58 | | | | | |
| 21: MD 201 /MD 201 & I-95 NB On Ramp Performance by movement | | | | | | | | | | |
| Movement Vehicles Entered | NBT 396 | NBR 556 | SBT 1311 | All 2263 | | | | | | |
| 23: I-95 SB On Ramp & MD 201 Performance by movement | | | | | | | | | | |
| Movement Vehicles Entered | NBT 981 | SBT 761 | SBR 544 | All 2286 | | | | | | |
| 26: MD 201 & Lane Drop Perf | ormanc | e by mo | vement | | | | | | | |
| Movement Vehicles Entered | SET 1088 | NWT 998 | All 2086 | | | | | | | |
| 47: MD 201 Performance by r | noveme | nt | | | | | | | | |
| Movement Vehicles Entered | SBT 4 | SBR 997 | NEL 760 | NET 8 | All 1769 | | | | | |
| 61: MD 201 & Ramp to Northbound I-95 Performance by movement | | | | | | | | | | |
| Movement Vehicles Entered | NBT 1115 | SBT 875 | SBR 196 | All 2186 | | | | | | |
| | | | | | | | | | | |

Total Network Performance

Vehicles Entered 7423

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Queuing and Blocking Report Existing Conditions AM10/08/2019

Intersection: 1: MD 201 & I-95 SB off-Ramp

| Movement | EB | EB | NB | NB | NB | SB | SB |
|-----------------------|-----|-----|------|------|------|-----|-----|
| Directions Served | L | L | Т | Т | Т | Т | Т |
| Maximum Queue (ft) | 60 | 123 | 99 | 75 | 130 | 126 | 124 |
| Average Queue (ft) | 8 | 56 | 26 | 10 | 41 | 29 | 36 |
| 95th Queue (ft) | 35 | 107 | 72 | 45 | 101 | 85 | 97 |
| Link Distance (ft) | | 734 | 1249 | 1249 | 1249 | 542 | 542 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 325 | | | | | | |
| Storage Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |

Intersection: 2: MD 201 & I-95 NB Off Ramp

| Movement | WB | WB | WB | WB | NB | NB | NB | SB | SB | SB | |
|-----------------------|-----|------|------|-----|-----|-----|-----|-----|-----|-----|---|
| Directions Served | L | L | R | R | UT | Т | Т | Т | Т | Т | |
| Maximum Queue (ft) | 208 | 266 | 314 | 289 | 94 | 122 | 114 | 154 | 166 | 235 | |
| Average Queue (ft) | 89 | 144 | 194 | 172 | 30 | 46 | 45 | 70 | 73 | 102 | |
| 95th Queue (ft) | 172 | 221 | 276 | 261 | 71 | 96 | 89 | 132 | 140 | 196 | |
| Link Distance (ft) | | 1405 | 1405 | | | 282 | 282 | 215 | 215 | 215 | |
| Upstream Blk Time (%) | | | | | | | | | | 0 | 0 |
| Queuing Penalty (veh) | | | | | | | | | 0 | 1 | |
| Storage Bay Dist (ft) | 400 | | | 300 | 250 | | | | | | |
| Storage Blk Time (%) | | | 0 | 0 | | | | | | | |
| Queuing Penalty (veh) | | | 1 | 0 | | | | | | | |

Intersection: 3: MD 201 & SHA Dist. 3/Crescent Drive

| Movement | EB | WB | WB | NB | NB | NB | NB | NB | SB | SB | SB | SB |
|--------------------|-----|-----|----|----|-----|-----|-----|----|----|----|----|-----|
| Directions Served | LTR | LT | R | L | Т | Т | Т | R | L | Т | Т | TR |
| Maximum Queue (ft) | 43 | 153 | 68 | 83 | 147 | 218 | 235 | 45 | 88 | 92 | 94 | 157 |
| Average Queue (ft) | 4 | 78 | 30 | 31 | 33 | 84 | 88 | 2 | 25 | 17 | 22 | 41 |
| 95th Queue (ft) | 23 | 136 | 59 | 69 | 108 | 184 | 199 | 32 | 68 | 58 | 67 | 113 |

| Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 239 | 429 | 250 | 250 | 266 | 266 0 | 266 0 0 0 | 0 200 0 0 | 300 | 783 | 783 | 783 |
|--|----------------------------------|-------------------------------------|------------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|------------------------------------|-------------------------------------|-----------------------------|-----|-----|-----|
| Intersection: 4: MD 201 & Ivy | Lane | | | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | NB L 80 24 61 350 | NB L 113 55 96 783 | SB T 136 35 95 1193 | SB T 179 62 144 1193 | | | | | | | | |
| Intersection: 5: MD 201 & Che | errywood | d Lane | | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) | EB L 115 31 83 | EB L 134 58 108 1306 | EB R 72 19 56 1306 | NB L 133 59 108 | NB T 200 94 172 1193 | NB T 211 101 185 1193 | SB T 230 90 187 610 | SB T 303 127 253 610 | SB R 222 44 121 | | | |
| Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 250 | | | 750 | | | | 1 1 | 250 0 0 | | | |
| Intersection: 6: MD 201 & Sur | nyside / | Avenue | | | | | | | | | | |
| Movement | EB | EB | NB | NB | B35 | SB | SB | | | | | |

| Directions Served | L | R | L | TR | Т | Т | R |
|-----------------------|-----|-----|-----|------|------|------|-----|
| Maximum Queue (ft) | 248 | 265 | 469 | 619 | 3 | 1202 | 275 |
| Average Queue (ft) | 103 | 124 | 284 | 111 | 0 | 592 | 69 |
| 95th Queue (ft) | 194 | 233 | 464 | 397 | 4 | 1114 | 239 |
| Link Distance (ft) | 968 | | | 1368 | 2212 | 1542 | |
| Upstream Blk Time (%) | | | | | 0 | | 0 |
| Queuing Penalty (veh) | | | | 1 | | 1 | |
| Storage Bay Dist (ft) | | 350 | 450 | | | | 250 |
| Storage Blk Time (%) | 0 | | 2 | 0 | | 22 | 0 |
| Queuing Penalty (veh) | 0 | | 16 | 0 | | 24 | 0 |

Intersection: 7: MD 201 & Beaver Dam Road

| Movement | WB | NB | SB |
|-----------------------|-----|------|-----|
| Directions Served | LR | TR | LT |
| Maximum Queue (ft) | 88 | 6 | 253 |
| Average Queue (ft) | 24 | 0 | 34 |
| 95th Queue (ft) | 65 | 5 | 163 |
| Link Distance (ft) | 625 | 1542 | 843 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| | | | |

Intersection: 8: MD 201 & Powder Mill Road

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|
| Directions Served | L | Т | R | L | Т | R | L | Т | R | L | Т | TR |
| Maximum Queue (ft) | 158 | 228 | 124 | 183 | 255 | 66 | 283 | 367 | 89 | 60 | 290 | 264 |
| Average Queue (ft) | 53 | 88 | 6 | 73 | 91 | 15 | 145 | 167 | 3 | 17 | 185 | 150 |
| 95th Queue (ft) | 122 | 174 | 63 | 147 | 196 | 57 | 250 | 298 | 54 | 46 | 265 | 241 |
| Link Distance (ft) | | 920 | | | 512 | | | 617 | | | 813 | 813 |
| Upstream Blk Time (%) | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Storage Bay Dist (ft) | 250 | | 500 | 250 | | 40 | 400 | | 275 | 275 | | |
| Storage Blk Time (%) | | 0 | | 0 | 29 | 0 | | 2 | | | 1 | |
| Queuing Penalty (veh) | | 1 | | 0 | 41 | 1 | | 5 | | | 0 | |

Intersection: 9: Edmonston Road & Odell Road

| Movement | EB | WB | WB | NB | SB |
|-----------------------|-----|-----|----|-----|-----|
| Directions Served | LTR | LT | R | LT | LTR |
| Maximum Queue (ft) | 77 | 59 | 38 | 102 | 2 |
| Average Queue (ft) | 27 | 7 | 2 | 18 | 0 |
| 95th Queue (ft) | 71 | 35 | 19 | 63 | 1 |
| Link Distance (ft) | 509 | 488 | | 419 | 365 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | | | 50 | | |
| Storage Blk Time (%) | | 1 | 0 | | |
| Queuing Penalty (veh) | | 0 | 0 | | |

Intersection: 10: Powder Mill Road & Poultry Road

| Movement | EB | WB |
|-----------------------|-----|-----|
| Directions Served | LT | TR |
| Maximum Queue (ft) | 118 | 106 |
| Average Queue (ft) | 56 | 64 |
| 95th Queue (ft) | 92 | 93 |
| Link Distance (ft) | 97 | 858 |
| Upstream Blk Time (%) | | 0 |
| Queuing Penalty (veh) | 0 | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| | | |

Intersection: 11: Powder Mill Road

| Movement | NB |
|-----------------------|----|
| Directions Served | L |
| Maximum Queue (ft) | 38 |
| Average Queue (ft) | 13 |
| 95th Queue (ft) | 38 |
| Link Distance (ft) | 46 |
| Upstream Blk Time (%) | 0 |

Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 12: Powder Mill Road

| Movement | EB | SB |
|-----------------------|----|-----|
| Directions Served | L | LR |
| Maximum Queue (ft) | 18 | 92 |
| Average Queue (ft) | 1 | 40 |
| 95th Queue (ft) | 11 | 69 |
| Link Distance (ft) | | 467 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | 50 | |
| Storage Blk Time (%) | 0 | |
| Queuing Penalty (veh) | 0 | |

Intersection: 13: Powder Mill Road

| Movement | EB | WB | WB | SB | SB |
|-----------------------|-----|-----|-----|----|-----|
| Directions Served | TR | L | Т | L | TR |
| Maximum Queue (ft) | 5 | 47 | 2 | 56 | 169 |
| Average Queue (ft) | 0 | 12 | 0 | 44 | 66 |
| 95th Queue (ft) | 3 | 35 | 2 | 58 | 127 |
| Link Distance (ft) | 153 | | 550 | | 850 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | | 225 | | 25 | |
| Storage Blk Time (%) | | | | 34 | 14 |
| Queuing Penalty (veh) | | | | 48 | 31 |
| _ , | | | | | |

0

Intersection: 14: Powder Mill Road

| Movement | EB | WB | NB | NB |
|--------------------|----|----|----|----|
| Directions Served | L | TR | L | TR |
| Maximum Queue (ft) | 75 | 21 | 57 | 68 |

| Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) | 25 56 | 1 11 268 | 29 52 | 29 53 857 |
|--|--------------------------------------|-----------------------------------|-----------------------------------|------------------------------------|
| Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 250 | | 50 2 2 | 1 1 |
| Intersection: 15: Powder Mill F | Road | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (yeb) | EB T 140 67 122 546 | EB R 50 4 25 | WB L 84 34 75 | WB T 142 65 126 792 |
| Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | | 260 | 300 | |
| Intersection: 16: Powder Mill F | Road | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | EB R 26 11 31 14 0 | SE T 6 0 4 46 1 | NW LT 44 3 22 1635 | |

Intersection: 17:

| Movement | WB | NB |
|-----------------------|----|-----|
| Directions Served | L | TR |
| Maximum Queue (ft) | 3 | 22 |
| Average Queue (ft) | 0 | 1 |
| 95th Queue (ft) | 3 | 13 |
| Link Distance (ft) | 14 | 460 |
| Upstream Blk Time (%) | | 0 |
| Queuing Penalty (veh) | 0 | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| | | |

Intersection: 21: MD 201 /MD 201 & I-95 NB On Ramp

| Movement | SB | SB |
|-----------------------|----|----|
| Directions Served | Т | Т |
| Maximum Queue (ft) | 2 | 2 |
| Average Queue (ft) | 0 | 0 |
| 95th Queue (ft) | 2 | 2 |
| Link Distance (ft) | 39 | 39 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

Intersection: 23: I-95 SB On Ramp & MD 201

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 3 |
| Average Queue (ft) | 0 |
| 95th Queue (ft) | 3 |
| Link Distance (ft) | 115 |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | |
| | |

Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 26: MD 201 & Lane Drop

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | NW T 156 50 126 610 | NW T 166 58 141 610 |
|--|------------------------------------|-------------------------------------|
| Intersection: 47: MD 201 | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh) | SB R 223 97 183 617 | SB R 248 110 207 617 |
| Intersection: 61: MD 201 | & Ramp to N | orthbound I-95 |
| Movement | NB | NB |

| ND | |
|----|------------------|
| Т | Т |
| 2 | 25 |
| 0 | 1 |
| 2 | 26 |
| | T 2 0 2 |
Link Distance (ft) 215 215 Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Network Summary Network wide Queuing Penalty: 177

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SimTraffic Simulation Summary Existing Conditions PM10/16/2019

Summary of All Intervals

| Run Number Start Time End Time Total Time (min) Time Recorded (min) # of Intervals # of Recorded Intervals Vebs Entered | 1 2:52 4:00 68 60 5 | 10 2:52 4:00 68 60 5 4 10231 | 2 2:52 4:00 68 60 5 4 10252 | 3 2:52 4:00 68 60 5 4 10121 | 4 2:52 4:00 68 60 5 4 10176 | 5 2:52 4:00 68 60 5 4 10072 | 6 2:52 4:00 68 60 5 4 10054 | 7 2:52 4:00 68 60 5 4 10156 | 8 2:52 4:00 68 60 5 4 10154 | 9 2:52 4:00 68 60 5 4 10018 | Avg 2:52 4:00 68 60 5 4 10112 | 4 |
|---|---|--|--|--|--|---|--|--|--|--|--|---|
| Vehs Exited Starting Vehs Ending Vehs Travel Distance (mi) Travel Time (hr) Total Delay (hr) Total Stops Fuel Used (gal) | 9916 468 492 10637 564.2 258.9 10749 398.2 | 10206 465 490 10813 555.4 245.6 11201 401.1 | 10155 415 512 10937 592.1 278.0 11337 413.8 | 10050 447 518 10727 558.6 250.6 10940 401.0 | 10084 420 512 10818 573.3 262.0 11029 405.1 | 9992 412 492 10828 622.8 311.0 10944 414.6 | 10079 531 506 10543 691.5 388.4 10393 425.5 | 10085 416 487 10945 640.1 324.9 10803 423.6 | 10090 441 505 10968 574.6 259.8 11359 409.0 | 10015 475 478 10727 630.1 321.8 10698 418.0 | 10066 444 490 10794 600.3 290.1 10950 411.0 | |
| Interval #0 InformationSeedingStart Time2:52End Time3:00Total Time (min)8Volumes adjusted by GrowthNo data recorded this interval | ng Factors. | | | | | | | | | | | |
| Interval #1 InformationRecorStart Time3:00End Time3:15Total Time (min)15Volumes adjusted by Growth | ding Factors. | | | | | | | | | | | |
| Run Number Vehs Entered Vehs Exited | 1 2506 2445 | 10 2520 2510 | 2 2657 2486 | 3 2574 2470 | 4 2580 2495 | 5 2574 2450 | 6 2527 2550 | 7 2603 2479 | 8 2563 2496 | 9 2581 2526 | Avg 2567 2492 | |

| Starting Vehs | | 468 | 465 | 415 | 447 | 420 | 412 | 531 | 416 | 441 | 475 | 444 |
|--|--------------------------------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ending Vehs | | 529 | 475 | 586 | 551 | 505 | 536 | 508 | 540 | 508 | 530 | 515 |
| Travel Distance (mi) | | 2730 | 2700 | 2759 | 2681 | 2705 | 2720 | 2703 | 2848 | 2710 | 2776 | 2733 |
| Travel Time (hr) | | 128.5 | 120.4 | 124.8 | 123.7 | 121.9 | 123.5 | 138.0 | 124.6 | 121.0 | 128.2 | 125.5 |
| Total Delay (hr) | | 50.3 | 42.9 | 45.3 | 46.7 | 44.2 | 45.4 | 60.6 | 42.6 | 43.4 | 47.8 | 46.9 |
| Total Stops | | 2765 | 2818 | 2914 | 2799 | 2656 | 2677 | 2796 | 2839 | 2759 | 2956 | 2801 |
| Fuel Used (gal) | | 98.2 | 96.9 | 99.2 | 96.3 | 96.2 | 96.6 | 100.4 | 101.1 | 96.7 | 100.5 | 98.2 |
| Interval #2 Information Start Time End Time Total Time (min) Volumes adjusted by 0 | 3:15 3:30 15 Growth F | actors. | | | | | | | | | | |
| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
| Vehs Entered | | 2563 | 2581 | 2521 | 2515 | 2553 | 2556 | 2527 | 2504 | 2588 | 2577 | 2540 |
| Vehs Exited | | 2564 | 2524 | 2560 | 2578 | 2508 | 2535 | 2540 | 2527 | 2539 | 2570 | 2543 |
| Starting Vehs | | 529 | 475 | 586 | 551 | 505 | 536 | 508 | 540 | 508 | 530 | 515 |
| Ending Vehs | | 528 | 532 | 547 | 488 | 550 | 557 | 495 | 517 | 557 | 537 | 520 |
| Travel Distance (mi) | | 2788 | 2664 | 2666 | 2688 | 2675 | 2743 | 2663 | 2684 | 2758 | 2710 | 2704 |
| Travel Time (hr) | | 134.6 | 128.8 | 147.7 | 136.4 | 137.9 | 148.9 | 160.6 | 146.6 | 137.0 | 145.9 | 142.4 |
| Total Delay (hr) | | 54.0 | 52.6 | 70.9 | 59.0 | 61.2 | 70.2 | 84.2 | 69.5 | 57.7 | 68.2 | 64.7 |
| Total Stops | | 2967 | 2877 | 3018 | 2846 | 2785 | 2812 | 2565 | 2540 | 2999 | 2769 | 2808 |
| Fuel Used (gal) | | 101.3 | 96.8 | 101.8 | 99.8 | 99.3 | 102.9 | 105.2 | 101.1 | 101.7 | 103.6 | 101.4 |
| Interval #3 Information Start Time End Time Total Time (min) Volumes adjusted by 0 | 3:30 3:45 15 Growth F | actors. | | | | | | | | | | |
| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
| Vehs Entered | | 2440 | 2582 | 2547 | 2547 | 2509 | 2471 | 2473 | 2534 | 2512 | 2399 | 2503 |
| Vehs Exited | | 2471 | 2606 | 2563 | 2537 | 2540 | 2509 | 2453 | 2514 | 2551 | 2451 | 2518 |
| Starting Vehs | | 528 | 532 | 547 | 488 | 550 | 557 | 495 | 517 | 557 | 537 | 520 |
| Ending Vehs | | 497 | 508 | 531 | 498 | 519 | 519 | 515 | 537 | 518 | 485 | 503 |
| Travel Distance (mi) | | 2629 | 2704 | 2775 | 2748 | 2729 | 2678 | 2564 | 2708 | 2781 | 2548 | 2686 |
| Travel Time (hr) | | 142.5 | 146.4 | 153.1 | 146.5 | 154.4 | 166.2 | 183.7 | 173.9 | 152.1 | 164.4 | 158.3 |

| Total Delay (hr) | 67.0 | 68.8 | 73.9 | 68.0 | 75.4 | 88.9 | 109.6 | 95.9 | 72.3 | 91.6 | 81.1 |
|-------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Stops | 2666 | 2766 | 2706 | 2808 | 2864 | 2850 | 2517 | 2862 | 2894 | 2412 | 2726 |
| Fuel Used (gal) | 99.2 | 101.7 | 105.6 | 103.7 | 104.8 | 105.6 | 106.7 | 108.3 | 105.0 | 102.3 | 104.3 |
| Interval #4 Information | | | | | | | | | | | |

Start Time3:45End Time4:00Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 2431 | 2548 | 2527 | 2485 | 2534 | 2471 | 2527 | 2515 | 2491 | 2461 | 2492 |
| Vehs Exited | 2436 | 2566 | 2546 | 2465 | 2541 | 2498 | 2536 | 2565 | 2504 | 2468 | 2508 |
| Starting Vehs | 497 | 508 | 531 | 498 | 519 | 519 | 515 | 537 | 518 | 485 | 503 |
| Ending Vehs | 492 | 490 | 512 | 518 | 512 | 492 | 506 | 487 | 505 | 478 | 490 |
| Travel Distance (mi) | 2490 | 2745 | 2737 | 2611 | 2709 | 2687 | 2614 | 2706 | 2719 | 2693 | 2671 |
| Travel Time (hr) | 158.6 | 159.7 | 166.5 | 152.0 | 159.2 | 184.2 | 209.2 | 195.0 | 164.5 | 191.6 | 174.0 |
| Total Delay (hr) | 87.7 | 81.2 | 87.9 | 76.9 | 81.2 | 106.6 | 133.9 | 116.8 | 86.4 | 114.1 | 97.3 |
| Total Stops | 2351 | 2740 | 2699 | 2487 | 2724 | 2605 | 2515 | 2562 | 2707 | 2561 | 2593 |
| Fuel Used (gal) | 99.5 | 105.7 | 107.2 | 101.3 | 104.8 | 109.6 | 113.2 | 113.1 | 105.6 | 111.6 | 107.2 |

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SimTraffic Performance Report Existing Conditions PM10/16/2019

| 1: MD 201 & I-95 SB off-Ram | p Perfor | mance l | by appro | bach | | | | |
|--|----------|----------|----------|------|------|--|--|--|
| Approach | EB | NB | SB | All | | | | |
| Vehicles Entered | 1005 | 1457 | 1071 | 3533 | | | | |
| 2: MD 201 & I-95 NB Off Ram | o Perfor | mance l | oy appro | bach | | | | |
| Approach | WB | NB | SB | All | | | | |
| Vehicles Entered | 1011 | 680 | 1164 | 2855 | | | | |
| 3: MD 201 & SHA Dist. 3/Crescent Drive Performance by approach | | | | | | | | |
| Approach | EB | WB | NB | SB | All | | | |
| Vehicles Entered | 25 | 221 | 1189 | 1263 | 2698 | | | |
| 4: MD 201 & Ivy Lane Perform | ance by | , approa | ch | | | | | |
| Approach | EB | NB | SB | All | | | | |
| Vehicles Entered | 199 | 1074 | 1110 | 2383 | | | | |
| 5: MD 201 & Cherrywood Land | e Perfor | mance b | by appro | bach | | | | |
| Approach | EB | NB | SB | All | | | | |
| Vehicles Entered | 277 | 994 | 1185 | 2456 | | | | |
| 6: MD 201 & Sunnyside Avenue Performance by approach | | | | | | | | |
| Approach | EB | NB | SB | All | | | | |
| Vehicles Entered | 540 | 1264 | 873 | 2677 | | | | |

7: MD 201 & Beaver Dam Road Performance by approach

| Approach | WB | NB | SB | All |
|------------------|----|------|-----|------|
| Vehicles Entered | 25 | 1100 | 853 | 1978 |

8: MD 201 & Powder Mill Road Performance by approach

| Approach Vehicles Entered | EB 677 | WB 267 | NB 1056 | SB 585 | All 2585 | | | | | |
|-------------------------------|---|-----------|------------|-------------|------------------|--|--|--|--|--|
| 9: Edmonston Road & Odell R | load Pei | forman | ce by ap | proach | | | | | | |
| Approach Vehicles Entered | EB 28 | WB 6 | NB 575 | SB 638 | All 1247 | | | | | |
| 10: Powder Mill Road & Poultr | y Road | Perform | ance by | / approa | ich | | | | | |
| Approach Vehicles Entered | EB 527 | WB 244 | SB 9 | All 780 | | | | | | |
| 11: Powder Mill Road Perform | 11: Powder Mill Road Performance by approach | | | | | | | | | |
| Approach Vehicles Entered | EB 526 | WB 213 | NB 28 | All 767 | | | | | | |
| 12: Powder Mill Road & Spring | gfield Ro | ad Perf | ormanc | e by app | oroach | | | | | |
| Approach Vehicles Entered | EB 433 | WB 374 | SB 274 | All 1081 | | | | | | |
| 13: Powder Mill Road & B-W F | Parkway | SB Off | Ramp F | Performa | ance by approach | | | | | |
| Approach Vehicles Entered | EB 691 | WB 364 | SB 379 | All 1434 | | | | | | |
| 14: B-W Parkway NB Off-Ram | ıp & Pov | vder Mil | l Road F | Performa | ance by approach | | | | | |
| Approach Vehicles Entered | EB 823 | WB 781 | NB 106 | All 1710 | | | | | | |
| 15: Soil Conservation Road & | 15: Soil Conservation Road & Powder Mill Road Performance by approach | | | | | | | | | |
| Approach | EB | WB | NB | All | | | | | | |

| Vehicles Entered | 644 | 319 | 546 | 1509 | | | |
|--|------------|------------|-------------|------------|--|--|--|
| 16: Powder Mill Road Perform | ance by | approa | ch | | | | |
| Approach Vehicles Entered | EB 45 | WB 233 | SE 486 | All 764 | | | |
| 17: Performance by approach | I | | | | | | |
| Approach Vehicles Entered | WB 21 | NB 74 | SB 38 | All 133 | | | |
| 18: Powder Mill Road Perform | ance by | approa | ch | | | | |
| Approach Vehicles Entered | EB 530 | WB 228 | All 758 | | | | |
| 21: MD 201 /MD 201 & I-95 NB On Ramp Performance by approach | | | | | | | |
| Approach Vehicles Entered | NB 1565 | SB 1718 | All 3283 | | | | |
| 23: I-95 SB On Ramp & MD 20 | 01 Perf | ormance | e by app | oroach | | | |
| Approach Vehicles Entered | NB 1555 | SB 1689 | All 3244 | | | | |
| 26: MD 201 & Lane Drop Perfe | ormance | e by app | roach | | | | |
| Approach Vehicles Entered | SE 1179 | NW 1234 | All 2413 | | | | |
| 28: Powder Mill Road Perform | ance by | approa | ch | | | | |
| Approach Vehicles Entered | EB 531 | WB 228 | All 759 | | | | |
| 40: Powder Mill Road Performance by approach | | | | | | | |

| Approach | EB | WB | All | | | | |
|------------------------------------|---------|--------|------|--|--|--|--|
| Vehicles Entered | 548 | 262 | 810 | | | | |
| 43: Powder Mill Road Perform | ance by | approa | ch | | | | |
| Approach | EB | WB | All | | | | |
| Vehicles Entered | 529 | 228 | 757 | | | | |
| 44: Powder Mill Road Perform | ance by | approa | ch | | | | |
| Approach | NE | SW | All | | | | |
| Vehicles Entered | 528 | 227 | 755 | | | | |
| 45: Powder Mill Road Perform | ance by | approa | ch | | | | |
| Approach | NE | SW | All | | | | |
| Vehicles Entered | 529 | 227 | 756 | | | | |
| 47: MD 201 Performance by approach | | | | | | | |
| Approach | SB | NE | All | | | | |
| Vehicles Entered | 855 | 1072 | 1927 | | | | |
| 48: Powder Mill Road Perform | ance by | approa | ch | | | | |
| Approach | SE | NW | All | | | | |
| Vehicles Entered | 530 | 227 | 757 | | | | |
| 49: Powder Mill Road Perform | ance by | approa | ch | | | | |
| Approach | SE | NW | All | | | | |
| Vehicles Entered | 531 | 226 | 757 | | | | |
| 50: Powder Mill Road Perform | ance by | approa | ch | | | | |
| Approach | EB | WB | All | | | | |
| Vehicles Entered | 531 | 232 | 763 | | | | |

56: Powder Mill Road Performance by approach

| Approach | SE | NW | All |
|------------------|-----|-----|-----|
| Vehicles Entered | 532 | 244 | 776 |

57: Powder Mill Road Performance by approach

| Approach | EB | WB | All |
|------------------|-----|-----|-----|
| Vehicles Entered | 530 | 228 | 758 |

61: MD 201 & Ramp to Northbound I-95 Performance by approach

| Approach | NB | SB | All |
|------------------|------|------|------|
| Vehicles Entered | 1211 | 1341 | 2552 |

66: Powder Mill Road Performance by approach

| Approach | EB | WB | All |
|------------------|-----|-----|-----|
| Vehicles Entered | 488 | 241 | 729 |

72: Powder Mill Road Performance by approach

| Approach | EB | WB | All |
|------------------|-----|-----|-----|
| Vehicles Entered | 493 | 262 | 755 |

74: Powder Mill Road Performance by approach

| Approach | NE | SW | All |
|------------------|-----|-----|-----|
| Vehicles Entered | 486 | 243 | 729 |

Total Network Performance

Vehicles Entered 10112

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Queuing and Blocking Report Existing Conditions PM10/16/2019

Intersection: 1: MD 201 & I-95 SB off-Ramp

| Movement | EB | EB | EB | NB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|------|------|-----|-----|
| Directions Served | L | L | R | Т | Т | Т | Т | Т |
| Maximum Queue (ft) | 70 | 154 | 149 | 117 | 181 | 202 | 162 | 172 |
| Average Queue (ft) | 11 | 70 | 5 | 46 | 41 | 82 | 52 | 66 |
| 95th Queue (ft) | 44 | 128 | 109 | 99 | 119 | 169 | 122 | 140 |
| Link Distance (ft) | | 734 | 734 | 1249 | 1249 | 1249 | 542 | 542 |
| Upstream Blk Time (%) | | | | 0 | | | | |
| Queuing Penalty (veh) | | | 0 | | | | | |
| Storage Bay Dist (ft) | 325 | | | | | | | |
| Storage Blk Time (%) | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | |

Intersection: 2: MD 201 & I-95 NB Off Ramp

| Movement | WB | WB | WB | WB | NB | NB | NB | SB | SB | SB | |
|-----------------------|-----|------|------|-----|-----|-----|-----|-----|-----|-----|---|
| Directions Served | L | L | R | R | UT | Т | Т | Т | Т | Т | |
| Maximum Queue (ft) | 256 | 296 | 270 | 252 | 102 | 127 | 145 | 142 | 145 | 160 | |
| Average Queue (ft) | 129 | 180 | 154 | 142 | 34 | 56 | 65 | 59 | 61 | 62 | |
| 95th Queue (ft) | 225 | 266 | 230 | 217 | 76 | 107 | 120 | 115 | 118 | 127 | |
| Link Distance (ft) | | 1405 | 1405 | | | 282 | 282 | 215 | 215 | 215 | |
| Upstream Blk Time (%) | | | | | | | | | 0 | 0 | 0 |
| Queuing Penalty (veh) | | | | | | | | 0 | 0 | 0 | |
| Storage Bay Dist (ft) | 400 | | | 300 | 250 | | | | | | |
| Storage Blk Time (%) | | | 0 | 0 | | | | | | | |
| Queuing Penalty (veh) | | | 0 | 0 | | | | | | | |

Intersection: 3: MD 201 & SHA Dist. 3/Crescent Drive

| Movement | EB | WB | WB | NB | NB | NB | NB | NB | SB | SB | SB | SB |
|--------------------|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | LTR | LT | R | L | Т | Т | Т | R | L | Т | Т | TR |
| Maximum Queue (ft) | 39 | 210 | 87 | 77 | 187 | 238 | 244 | 133 | 152 | 117 | 140 | 161 |
| Average Queue (ft) | 12 | 101 | 34 | 21 | 60 | 123 | 121 | 6 | 61 | 27 | 41 | 44 |
| 95th Queue (ft) | 33 | 171 | 67 | 56 | 146 | 215 | 218 | 63 | 124 | 80 | 105 | 120 |

| Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 239 | 429 0 0 | 250 | 250 | 266 0 0 | 266 0 | 266 0 1 1 1 | 0 200 0 0 | 300 | 783 | 783 | 783 |
|--|----------------------------------|-------------------------------------|-------------------------------------|------------------------------------|-------------------------------------|-------------------------------------|------------------------------------|-------------------------------------|---------------------------|-----|-----|-----|
| Intersection: 4: MD 201 & Ivy | Lane | | | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | NB L 91 22 66 350 | NB L 118 59 101 783 | SB T 78 14 52 1193 | SB T 110 40 95 1193 | | | | | | | | |
| Intersection: 5: MD 201 & Che | errywood | d Lane | | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) | EB L 131 52 108 | EB L 154 80 132 1306 | EB R 152 53 114 1306 | NB L 129 45 94 | NB T 145 34 103 1193 | NB T 140 31 101 1193 | SB T 184 82 155 610 | SB T 221 107 192 610 | SB R 61 21 53 | | | |
| Storage Bay Dist (π) Storage Blk Time (%) Queuing Penalty (veh) | 250 | | | 750 | | | | 0 0 | 250 | | | |
| Intersection: 6: MD 201 & Sur | nyside / | Avenue | | | | | | | | | | |
| Movement | EB | EB | NB | NB | SB | SB | | | | | | |

| Directions Served | L | R | L | TR | Т | R |
|-----------------------|-----|-----|-----|------|------|-----|
| Maximum Queue (ft) | 332 | 340 | 455 | 556 | 1065 | 275 |
| Average Queue (ft) | 146 | 194 | 229 | 224 | 566 | 118 |
| 95th Queue (ft) | 262 | 313 | 384 | 452 | 1015 | 316 |
| Link Distance (ft) | 968 | | | 1368 | 1546 | |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | | 350 | 450 | | | 250 |
| Storage Blk Time (%) | 0 | 1 | 0 | 1 | 28 | 0 |
| Queuing Penalty (veh) | 0 | 1 | 1 | 2 | 39 | 0 |

Intersection: 7: MD 201 & Beaver Dam Road

| Movement | WB | NB | SB | |
|-----------------------|-----|------|-----|---|
| Directions Served | LTR | TR | LT | |
| Maximum Queue (ft) | 76 | 12 | 589 | |
| Average Queue (ft) | 23 | 1 | 91 | |
| 95th Queue (ft) | 57 | 11 | 355 | |
| Link Distance (ft) | 626 | 1546 | 837 | |
| Upstream Blk Time (%) | | | | 0 |
| Queuing Penalty (veh) | | | 1 | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Intersection: 8: MD 201 & Powder Mill Road

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|
| Directions Served | L | Т | R | L | Т | R | L | Т | R | L | Т | TR |
| Maximum Queue (ft) | 275 | 1495 | 525 | 148 | 257 | 66 | 415 | 565 | 299 | 165 | 292 | 271 |
| Average Queue (ft) | 259 | 1377 | 404 | 50 | 110 | 18 | 198 | 246 | 40 | 62 | 173 | 149 |
| 95th Queue (ft) | 322 | 1780 | 768 | 111 | 217 | 62 | 353 | 444 | 208 | 126 | 261 | 243 |
| Link Distance (ft) | | 1433 | | | 523 | | | 618 | | | 816 | 816 |
| Upstream Blk Time (%) | | | 59 | | | | | | 0 | | | |
| Queuing Penalty (veh) | | 0 | | | | | | 4 | | | | |
| Storage Bay Dist (ft) | 250 | | 500 | 250 | | 40 | 400 | | 275 | 275 | | |
| Storage Blk Time (%) | 50 | 40 | 0 | | 34 | 0 | 1 | 5 | 0 | 0 | 1 | |
| Queuing Penalty (veh) | 324 | 214 | 3 | | 37 | 1 | 4 | 25 | 0 | 0 | 0 | |

Intersection: 9: Edmonston Road & Odell Road

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | EB LTR 70 22 54 509 | WB LT 23 2 12 488 | WB R 26 3 17 50 | NB LT 152 16 78 419 | SB LTR 4 0 4 365 |
|--|---|--|------------------------------------|------------------------------------|---------------------------------|
| Intersection: 10: Powder Mill F | Road & F | Poultry F | Road | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | EB LT 175 118 178 97 65 | B69 T 73 8 41 325 12 | WB TR 112 65 96 866 | SB LR 22 5 20 391 | |
| Intersection: 11: Powder Mill F | Road | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) | EB TR 34 3 21 383 | NB L 52 21 49 48 | 1 | | |

Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 12: Powder Mill Road & Springfield Road

0

| Movement | EB | WB | SB |
|-----------------------|----|-----|-----|
| Directions Served | L | TR | LR |
| Maximum Queue (ft) | 36 | 9 | 178 |
| Average Queue (ft) | 5 | 0 | 80 |
| 95th Queue (ft) | 24 | 6 | 144 |
| Link Distance (ft) | | 153 | 467 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 50 | | |
| Storage Blk Time (%) | 0 | | |
| Queuing Penalty (veh) | 0 | | |

Intersection: 13: Powder Mill Road & B-W Parkway SB Off-Ramp

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) | EB TR 39 2 15 | WB L 74 33 60 | WB T 5 0 4 | SB L 63 49 56 | SB TR 544 257 565 | |
|--|---------------------------|---------------------------|------------------------|---------------------------|-------------------------------|---|
| Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) | 153 | | 550 | | 850 0 | 0 |
| Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | | 225 | | 25 82 100 | 13 34 | |

Intersection: 14: B-W Parkway NB Off-Ramp & Powder Mill Road

| Movement | EB | EB | WB | NB | NB |
|--------------------|-----|----|----|----|-----|
| Directions Served | L | Т | TR | L | TR |
| Maximum Queue (ft) | 157 | 4 | 54 | 72 | 123 |

| Average Queue (ft) | 71 | 0 | 7 | 38 | 31 |
|-----------------------|-----|-----|-----|----|-----|
| 95th Queue (ft) | 131 | 0 | 29 | 70 | 79 |
| Link Distance (ft) | | 550 | 268 | | 857 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 250 | | | 50 | |
| Storage Blk Time (%) | | | | 14 | 1 |
| Queuing Penalty (veh) | | | | 6 | 1 |

Intersection: 15: Soil Conservation Road & Powder Mill Road

| Movement | EB | EB | WB | WB | NB | NB |
|-----------------------|-----|-----|-----|-----|------|-----|
| Directions Served | Т | R | L | Т | L | R |
| Maximum Queue (ft) | 230 | 54 | 75 | 159 | 931 | 500 |
| Average Queue (ft) | 121 | 8 | 24 | 69 | 795 | 217 |
| 95th Queue (ft) | 194 | 37 | 61 | 131 | 1101 | 625 |
| Link Distance (ft) | 546 | | | 792 | 892 | |
| Upstream Blk Time (%) | | | | | | 55 |
| Queuing Penalty (veh) | | | | | 0 | |
| Storage Bay Dist (ft) | | 260 | 300 | | | 475 |
| Storage Blk Time (%) | 0 | | | | 70 | 0 |
| Queuing Penalty (veh) | 0 | | | | 24 | 0 |

Intersection: 16: Powder Mill Road

| Movement | EB | WB | SE | |
|-----------------------|----|-----|----|---|
| Directions Served | Т | TR | L | |
| Maximum Queue (ft) | 46 | 3 | 73 | |
| Average Queue (ft) | 20 | 0 | 10 | |
| 95th Queue (ft) | 41 | 3 | 45 | |
| Link Distance (ft) | 19 | 796 | 50 | |
| Upstream Blk Time (%) | | 6 | | 0 |
| Queuing Penalty (veh) | 2 | | 2 | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |

Queuing Penalty (veh)

Intersection: 17:

| Movement | WB | NB | SB |
|-----------------------|----|-----|----|
| Directions Served | L | TR | Т |
| Maximum Queue (ft) | 9 | 44 | 6 |
| Average Queue (ft) | 0 | 6 | 0 |
| 95th Queue (ft) | 5 | 28 | 3 |
| Link Distance (ft) | 19 | 462 | 48 |
| Upstream Blk Time (%) | | 0 | |
| Queuing Penalty (veh) | 0 | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Intersection: 18: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 21: MD 201 /MD 201 & I-95 NB On Ramp

| Movement | NB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|----|----|
| Directions Served | Т | Т | R | Т | Т |
| Maximum Queue (ft) | 5 | 5 | 15 | 4 | 2 |
| Average Queue (ft) | 0 | 0 | 1 | 0 | 0 |
| 95th Queue (ft) | 5 | 5 | 9 | 2 | 2 |
| Link Distance (ft) | 115 | 115 | 115 | 39 | 39 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | | | | | |

Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 23: I-95 SB On Ramp & MD 201

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 2 |
| Average Queue (ft) | 0 |
| 95th Queue (ft) | 2 |
| Link Distance (ft) | 115 |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Intersection: 26: MD 201 & Lane Drop

| NW | NW |
|-----|-----------------------------------|
| Т | Т |
| 136 | 135 |
| 26 | 30 |
| 87 | 95 |
| 610 | 610 |
| | |
| | |
| | |
| | |
| | |
| | NW T 136 26 87 610 |

Intersection: 28: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 40: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 43: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 44: Powder Mill Road

Movement

| Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | | |
|--|------------------------------------|------------------------------------|
| Intersection: 45: Powder | Mill Road | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | | |
| Intersection: 47: MD 201 | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | SB R 153 66 133 618 | SB R 160 67 139 618 |

Intersection: 48: Powder Mill Road

Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 49: Powder Mill Road Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 50: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%)

Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 56: Powder Mill Road Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 57: Powder Mill Road Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 61: MD 201 & Ramp to Northbound I-95 Movement NB Т

| Directions Served | Т |
|--------------------|---|
| Maximum Queue (ft) | 3 |

Average Queue (ft) 0 95th Queue (ft) 3 Link Distance (ft) 215 Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 66: Powder Mill Road Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 72: Powder Mill Road Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 74: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Network Summary Network wide Queuing Penalty: 895

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11/05/2019

Summary of All Intervals

| Run Number Start Time End Time Total Time (min) Time Recorded (min) | | 1 5:52 7:00 68 60 | 10 5:52 7:00 68 60 | 2 5:52 7:00 68 60 | 3 5:52 7:00 68 60 | 4 5:52 7:00 68 60 | 5 5:52 7:00 68 60 | 6 5:52 7:00 68 60 | 7 5:52 7:00 68 60 | 8 5:52 7:00 68 60 | 9 5:52 7:00 68 60 | Avg 5:52 7:00 68 60 | |
|---|--|---|---|---|---|---|---|---|---|---|---|---|---|
| # of Recorded Interval | e | 5 | 5 1 | Л |
| Vehs Entered Vehs Exited Starting Vehs Ending Vehs Travel Distance (mi) Travel Time (hr) Total Delay (hr) | 3 | 9215 8909 446 752 10359 624.7 335.1 | 9243 8736 445 952 10054 726.9 446.6 | 9325 8976 417 766 10434 629.7 338.5 | 9429 8964 382 847 10404 639.8 349.6 | 9099 8855 443 687 10193 608.2 324.3 | 9394 8891 442 945 10257 761.4 475.2 | 9328 8979 390 739 10300 642.8 354.6 | 9346 8896 460 910 10406 762.9 472.7 | 9289 8922 427 794 10126 643.3 360.8 | 9236 8931 453 758 10272 670.4 383.0 | 9289 8907 424 809 10280 671.0 384.0 | 4 |
| Total Stops | | 13992 | 15201 /13 3 | 14340 | 14657 | 14198 | 15956 | 14688 | 16087 | 14392 | 14853 100 3 | 14833 | |
| Interval #0 Information Start Time End Time Total Time (min) No data recorded this | Seedir 5:52 6:00 8 interval. | ng | | | | | | | | | | | |
| Interval #1 Information Start Time End Time Total Time (min) | Record 6:00 6:15 15 | ding | | | | | | | | | | | |
| Run Number Vehs Entered Vehs Exited Starting Vehs Ending Vehs | | 1 2346 2273 446 519 | 10 2348 2226 445 567 | 2 2331 2214 417 534 | 3 2404 2268 382 518 | 4 2250 2141 443 552 | 5 2356 2155 442 643 | 6 2416 2244 390 562 | 7 2410 2252 460 618 | 8 2402 2284 427 545 | 9 2318 2197 453 574 | Avg 2352 2225 424 558 | |

| Travel Distance (mi) | | 2627 | 2588 | 2628 | 2645 | 2531 | 2612 | 2607 | 2699 | 2599 | 2539 | 2607 |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Travel Time (hr) | | 121.1 | 122.4 | 120.3 | 116.4 | 122.7 | 139.8 | 121.1 | 142.1 | 124.2 | 128.0 | 125.8 |
| Total Delay (hr) | | 47.5 | 50.3 | 46.6 | 42.7 | 52.3 | 66.9 | 48.1 | 67.0 | 51.6 | 57.2 | 53.0 |
| Total Stops | | 3049 | 3136 | 3134 | 2948 | 3164 | 3668 | 3140 | 3687 | 3179 | 3447 | 3250 |
| Fuel Used (gal) | | 93.8 | 93.6 | 94.1 | 92.8 | 91.7 | 97.8 | 93.3 | 100.0 | 95.1 | 94.3 | 94.6 |
| Interval #2 Informatior Start Time End Time Total Time (min) | n Recor 6:15 6:30 15 | ding | | | | | | | | | | |
| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
| Vehs Entered | | 2296 | 2389 | 2375 | 2398 | 2357 | 2324 | 2387 | 2304 | 2328 | 2281 | 2340 |
| Vehs Exited | | 2214 | 2234 | 2298 | 2276 | 2272 | 2237 | 2328 | 2226 | 2258 | 2194 | 2252 |
| Starting Vehs | | 519 | 567 | 534 | 518 | 552 | 643 | 562 | 618 | 545 | 574 | 558 |
| Ending Vehs | | 601 | 722 | 611 | 640 | 637 | 730 | 621 | 696 | 615 | 661 | 644 |
| Travel Distance (mi) | | 2633 | 2560 | 2645 | 2676 | 2597 | 2541 | 2644 | 2619 | 2554 | 2487 | 2596 |
| Travel Time (hr) | | 138.0 | 167.2 | 141.3 | 146.4 | 149.0 | 175.4 | 147.1 | 168.4 | 147.0 | 157.1 | 153.7 |
| Total Delay (hr) | | 64.4 | 95.8 | 67.7 | 71.8 | 76.5 | 104.4 | 72.9 | 95.5 | 75.9 | 87.2 | 81.2 |
| Total Stops | | 3302 | 3946 | 3526 | 3721 | 3644 | 3942 | 3701 | 4002 | 3595 | 3761 | 3717 |
| Fuel Used (gal) | | 97.8 | 102.0 | 98.8 | 99.7 | 97.8 | 102.5 | 100.1 | 103.3 | 97.3 | 98.1 | 99.7 |
| Interval #3 Informatior Start Time End Time Total Time (min) | n Recor 6:30 6:45 15 | ding | | | | | | | | | | |
| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
| Vehs Entered | | 2252 | 2270 | 2346 | 2378 | 2244 | 2380 | 2297 | 2306 | 2315 | 2313 | 2309 |
| Vehs Exited | | 2179 | 2178 | 2295 | 2267 | 2283 | 2312 | 2196 | 2160 | 2229 | 2268 | 2233 |
| Starting Vehs | | 601 | 722 | 611 | 640 | 637 | 730 | 621 | 696 | 615 | 661 | 644 |
| Ending Vehs | | 674 | 814 | 662 | 751 | 598 | 798 | 722 | 842 | 701 | 706 | 727 |
| Travel Distance (mi) | | 2575 | 2495 | 2640 | 2645 | 2545 | 2585 | 2519 | 2445 | 2491 | 2602 | 2554 |
| Travel Time (hr) | | 163.9 | 201.8 | 170.7 | 171.3 | 158.5 | 204.5 | 174.0 | 204.2 | 164.2 | 179.9 | 179.3 |
| Total Delay (hr) | | 91.9 | 132.3 | 97.2 | 97.6 | 87.7 | 132.3 | 103.7 | 135.8 | 94.9 | 106.9 | 108.0 |
| Total Stops | | 3704 | 3980 | 3734 | 4169 | 3751 | 4087 | 3788 | 3874 | 3683 | 3792 | 3855 |
| Fuel Used (gal) | | 101.6 | 106.5 | 105.0 | 104.4 | 99.4 | 110.8 | 102.1 | 107.0 | 99.1 | 105.1 | 104.1 |

| Record 6:45 7:00 15 | ding | | | | | | | | | | |
|------------------------------|------------------------------|---|--|---|---|---|--|--|--|--|--|
| | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
| | 2321 | 2236 | 2273 | 2249 | 2248 | 2334 | 2228 | 2326 | 2244 | 2324 | 2275 |
| | 2243 | 2098 | 2169 | 2153 | 2159 | 2187 | 2211 | 2258 | 2151 | 2272 | 2189 |
| | 674 | 814 | 662 | 751 | 598 | 798 | 722 | 842 | 701 | 706 | 727 |
| | 752 | 952 | 766 | 847 | 687 | 945 | 739 | 910 | 794 | 758 | 809 |
| | 2525 | 2411 | 2521 | 2438 | 2519 | 2519 | 2529 | 2644 | 2482 | 2644 | 2523 |
| | 201.8 | 235.5 | 197.4 | 205.7 | 178.0 | 241.9 | 200.6 | 248.2 | 207.8 | 205.4 | 212.2 |
| | 131.2 | 168.2 | 126.9 | 137.6 | 107.8 | 171.6 | 130.0 | 174.4 | 138.4 | 131.7 | 141.8 |
| | 3937 | 4139 | 3946 | 3819 | 3639 | 4259 | 4059 | 4524 | 3935 | 3853 | 4006 |
| | 108.5 | 111.1 | 106.8 | 106.3 | 102.1 | 115.2 | 107.6 | 120.0 | 107.2 | 111.8 | 109.7 |
| | Record 6:45 7:00 15 | Recording 6:45 7:00 15 1 2321 2243 674 752 2525 201.8 131.2 3937 108.5 | Recording 6:45 7:00 15 15 11 15 11 10 2321 2236 2243 2098 674 814 752 952 2525 2411 201.8 235.5 131.2 168.2 3937 4139 108.5 111.1 | Recording 6:45 7:00 15 15 15 10 10 22321 2236 2273 2243 2098 2169 674 814 662 752 952 766 2525 2411 2521 201.8 235.5 197.4 131.2 168.2 126.9 3937 4139 3946 108.5 111.1 106.8 | Recording 6:45 7:00 15110 2211023232122362273224922432098216921536748146627517529527668472525241125212438201.8235.5197.4205.7131.2168.2126.9137.63937413939463819108.5111.1106.8106.3 | Recording 6:45 7:00 15 1 10 2 3 4 2321 2236 2273 2249 2248 2243 2098 2169 2153 2159 674 814 662 751 598 752 952 766 847 687 2525 2411 2521 2438 2519 201.8 235.5 197.4 205.7 178.0 131.2 168.2 126.9 137.6 107.8 3937 4139 3946 3819 3639 108.5 111.1 106.8 106.3 102.1 | Recording 6:45 7:00 151102345232122362273224922482334224320982169215321592187674814662751598798752952766847687945252524112521243825192519201.8235.5197.4205.7178.0241.9131.2168.2126.9137.6107.8171.6393741393946381936394259108.5111.1106.8106.3102.1115.2 | Recording6:457:001511023456232122362273224922482334222822432098216921532159218722116748146627515987987227529527668476879457392525241125212438251925192529201.8235.5197.4205.7178.0241.9200.6131.2168.2126.9137.6107.8171.6130.03937413939463819363942594059108.5111.1106.8106.3102.1115.2107.6 | Recording6:457:0015110234567232122362273224922482334222823262243209821692153215921872211225867481466275159879872284275295276684768794573991025252411252124382519251925292644201.8235.5197.4205.7178.0241.9200.6248.2131.2168.2126.9137.6107.8171.6130.0174.439374139394638193639425940594524108.5111.1106.8106.3102.1115.2107.6120.0 | Recording6:457:00151102345678232122362273224922482334222823262244224320982169215321592187221122582151674814662751598798722842701752952766847687945739910794252524112521243825192519252926442482201.8235.5197.4205.7178.0241.9200.6248.2207.8131.2168.2126.9137.6107.8171.6130.0174.4138.4393741393946381936394259405945243935108.5111.1106.8106.3102.1115.2107.6120.0107.2 | Recording 6:45 7:00 1511023456789232122362273224922482334222823262244232422432098216921532159218722112258215122726748146627515987987228427017067529527668476879457399107947582525241125212438251925192529264424822644201.8235.5197.4205.7178.0241.9200.6248.2207.8205.4131.2168.2126.9137.6107.8171.6130.0174.4138.4131.73937413939463819363942594059452439353853108.5111.1106.8106.3102.1115.2107.6120.0107.2111.8 |

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SimTraffic Performance Report No Action Conditions AM 11/05/2019

1: MD 201 & I-95 SB off-Ramp Performance by movement

| Movement | EBL | EBR | NBT | SBT | All |
|------------------|-----|-----|-----|-----|------|
| Travel Time (hr) | 2.1 | 4.2 | 8.8 | 4.0 | 19.1 |
| | | | | | |

2: MD 201 & I-95 NB Off Ramp Performance by movement

| Movement | WBL | WBR | NBT | SBT | All |
|------------------|-----|------|-----|-----|------|
| Travel Time (hr) | 7.4 | 12.9 | 2.9 | 4.7 | 27.9 |

3: MD 201 & SHA Dist. 3/Crescent Drive Performance by movement

| Movement | EBL | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | All |
|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Travel Time (hr) | 0.0 | 0.0 | 1.9 | 0.0 | 0.6 | 0.7 | 5.2 | 0.1 | 0.5 | 6.0 | 0.0 | 15.1 |

4: MD 201 & Ivy Lane Performance by movement

| Movement | EBR | NBL | NBT | SBT | SBR | All |
|------------------|-----|-----|-----|-----|-----|------|
| Travel Time (hr) | 0.6 | 1.8 | 9.5 | 7.0 | 0.0 | 19.0 |

5: MD 201 & Cherrywood Lane Performance by movement

| Movement | EBL | EBR | NBL | NBT | SBT | SBR | All |
|------------------|------|-----|-----|------|-----|-----|------|
| Travel Time (hr) | 11.9 | 1.2 | 3.0 | 25.2 | 5.8 | 1.6 | 48.8 |

6: MD 201 & Sunnyside Avenue Performance by movement

| Movement | EBL | EBR | NBL | NBT | SBT | SBR | All |
|------------------|-----|-----|------|------|------|-----|------|
| Travel Time (hr) | 6.5 | 6.8 | 23.0 | 19.0 | 36.3 | 6.9 | 98.4 |

7: MD 201 & Beaver Dam Road Performance by movement

| Movement | WBL | WBR | NBT | NBR | SBL | SBT | All |
|------------------|-----|-----|-----|-----|-----|------|------|
| Travel Time (hr) | 6.3 | 6.9 | 7.7 | 0.1 | 0.7 | 30.9 | 52.5 |

8: MD 201 & Powder Mill Road Performance by movement

| Movement Travel Time (hr) | EBL 2.6 | EBT 4.9 | EBR 23.8 | WBL 3.8 | WBT 2.1 | WBR 0.3 | NBL 4.7 | NBT 3.8 | NBR 0.2 | SBL 0.6 | SBT 18.0 | SBR 2.0 | All 66.8 |
|-------------------------------|------------|------------|-------------|------------|------------|------------|------------|------------|------------|------------|-------------|------------|-------------|
| 9: Edmonston Road & Odell R | load Pe | rforman | ce by m | ovemen | t | | | | | | | | |
| Movement Travel Time (hr) | EBL 0.3 | EBR 0.0 | WBL 0.0 | WBT 0.1 | WBR 0.0 | NBL 0.2 | NBT 1.6 | NBR 0.0 | SBT 1.5 | SBR 0.1 | All 3.8 | | |
| 10: Powder Mill Road & Poultr | y Road | Perform | nance by | / moven | nent | | | | | | | | |
| Movement Travel Time (hr) | EBL 0.0 | EBT 0.4 | WBT 3.0 | All 3.4 | | | | | | | | | |
| 11: Powder Mill Road Perform | ance by | v movem | nent | | | | | | | | | | |
| Movement Travel Time (hr) | NBL 0.0 | SET 0.4 | SER 0.0 | NWT 0.2 | All 0.7 | | | | | | | | |
| 12: Powder Mill Road Perform | ance by | v movem | nent | | | | | | | | | | |
| Movement Travel Time (hr) | EBL 0.0 | EBT 0.6 | WBT 0.6 | WBR 0.3 | SBL 0.9 | SBR 0.1 | All 2.7 | | | | | | |
| 13: Powder Mill Road Perform | ance by | v movem | nent | | | | | | | | | | |
| Movement Travel Time (hr) | EBT 0.4 | EBR 0.2 | WBL 0.4 | WBT 1.3 | SBL 2.8 | SBT 0.0 | SBR 1.9 | All 7.1 | | | | | |
| 14: Powder Mill Road Perform | ance by | v movem | nent | | | | | | | | | | |
| Movement Travel Time (hr) | EBL 0.6 | EBT 1.5 | WBT 0.8 | WBR 0.8 | NBL 0.9 | NBT 0.0 | NBR 0.8 | All 5.3 | | | | | |
| 15: Powder Mill Road Perform | ance by | v movem | nent | | | | | | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR | All | | | | | | |

| Travel Time (hr) | 1.7 | 0.8 | 0.9 | 2.8 | 3.3 | 0.1 | 9.5 |
|------------------|-----|-----|-----|-----|-----|-----|-----|
|------------------|-----|-----|-----|-----|-----|-----|-----|

16: Powder Mill Road Performance by movement

| Movement | EBT | EBR | SET | NWL | NWT | All |
|------------------|-----|-----|-----|-----|-----|-----|
| Travel Time (hr) | 0.0 | 0.0 | 0.1 | 0.2 | 4.3 | 4.6 |

17: Performance by movement

| Movement | WBL | NBT | NBR | SBT | All |
|------------------|-----|-----|-----|-----|-----|
| Travel Time (hr) | 0.0 | 0.1 | 0.1 | 0.0 | 0.2 |

21: MD 201 /MD 201 & I-95 NB On Ramp Performance by movement

| Movement | NBT | NBR | SBT | All |
|------------------|-----|-----|-----|-----|
| Travel Time (hr) | 1.0 | 1.8 | 0.8 | 3.5 |

23: I-95 SB On Ramp & MD 201 Performance by movement

| Movement | NBT | SBT | SBR | All |
|------------------|-----|-----|-----|-----|
| Travel Time (hr) | 4.7 | 1.4 | 1.3 | 7.4 |

26: MD 201 & Lane Drop Performance by movement

| Movement | SET | NWT | All |
|------------------|-----|------|------|
| Travel Time (hr) | 3.4 | 27.6 | 31.0 |

47: MD 201 Performance by movement

| Movement | SBT | SBR | NEL | NET | All |
|------------------|-----|------|-----|-----|------|
| Travel Time (hr) | 0.2 | 42.6 | 5.0 | 0.0 | 47.9 |

61: MD 201 & Ramp to Northbound I-95 Performance by movement

| Movement | NBT | SBT | SBR | All |
|------------------|-----|-----|-----|-----|
| Travel Time (hr) | 3.2 | 2.0 | 0.5 | 5.7 |

Total Network Performance

Travel Time (hr) 671.0

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Queuing and Blocking ReportNo Action Conditions AM11/05/2019

Intersection: 1: MD 201 & I-95 SB off-Ramp

| Movement | EB | EB | EB | NB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|------|------|-----|-----|
| Directions Served | L | L | R | Т | Т | Т | Т | Т |
| Maximum Queue (ft) | 100 | 162 | 75 | 118 | 117 | 201 | 91 | 116 |
| Average Queue (ft) | 16 | 80 | 3 | 47 | 28 | 79 | 30 | 33 |
| 95th Queue (ft) | 60 | 138 | 76 | 101 | 80 | 162 | 76 | 84 |
| Link Distance (ft) | | 734 | 734 | 1249 | 1249 | 1249 | 542 | 542 |
| Upstream Blk Time (%) | | | | 0 | | | | |
| Queuing Penalty (veh) | | | 0 | | | | | |
| Storage Bay Dist (ft) | 325 | | | | | | | |
| Storage Blk Time (%) | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | |

Intersection: 2: MD 201 & I-95 NB Off Ramp

| Movement | WB | WB | WB | WB | NB | NB | NB | SB | SB | SB | |
|-----------------------|-----|------|------|-----|-----|-----|-----|-----|-----|-----|---|
| Directions Served | L | L | R | R | UT | Т | Т | Т | Т | Т | |
| Maximum Queue (ft) | 215 | 258 | 372 | 315 | 125 | 137 | 146 | 198 | 192 | 248 | |
| Average Queue (ft) | 101 | 155 | 203 | 183 | 52 | 71 | 68 | 85 | 89 | 109 | |
| 95th Queue (ft) | 188 | 233 | 301 | 276 | 99 | 123 | 120 | 164 | 168 | 212 | |
| Link Distance (ft) | | 1405 | 1405 | | | 282 | 282 | 215 | 215 | 215 | |
| Upstream Blk Time (%) | | | | | | | | | 0 | 0 | 1 |
| Queuing Penalty (veh) | | | | | | | | 0 | 0 | 2 | |
| Storage Bay Dist (ft) | 400 | | | 300 | 250 | | | | | | |
| Storage Blk Time (%) | | | 1 | 0 | | | | | | | |
| Queuing Penalty (veh) | | | 3 | 0 | | | | | | | |

Intersection: 3: MD 201 & SHA Dist. 3/Crescent Drive

| Movement | EB | WB | WB | NB | NB | NB | NB | NB | SB | SB | SB | SB |
|--------------------|-----|-----|----|----|-----|-----|-----|----|----|----|-----|-----|
| Directions Served | LTR | LT | R | L | Т | Т | Т | R | L | Т | Т | TR |
| Maximum Queue (ft) | 61 | 182 | 83 | 88 | 176 | 240 | 255 | 45 | 84 | 77 | 101 | 160 |
| Average Queue (ft) | 5 | 87 | 35 | 34 | 31 | 71 | 65 | 2 | 23 | 13 | 21 | 35 |
| 95th Queue (ft) | 31 | 151 | 68 | 74 | 127 | 182 | 185 | 40 | 64 | 51 | 65 | 103 |

| Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 239 | 429 | 250 | 250 | 266 3 1 0 | 266 1 7 | 266 2 7 2 1 | 1 200 0 0 | 300 | 783 | 783 | 783 |
|--|-----------------------------------|---|--|--|--|---|--|-------------------------------------|-----------------------------|-----|-----|-----|
| Intersection: 4: MD 201 & Ivy | Lane | | | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | NB L 104 30 77 350 | NB L 318 84 287 783 4 | NB T 264 47 323 783 1 7 | NB T 268 48 322 783 1 3 | SB T 62 8 37 1193 1 | SB T 113 31 86 1193 | | | | | | |
| Intersection: 5: MD 201 & Che | errywood | d Lane | | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (yeb) | EB L 252 145 264 | EB L 656 236 616 1306 | EB R 184 44 125 1306 | NB L 539 194 623 | NB T 820 319 972 1193 20 | NB T 823 318 969 1193 3 22 | SB T 242 119 224 610 3 | SB T 315 160 277 610 | SB R 256 66 169 | | | |
| Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 250 5 8 | 14 25 | | 750 0 0 | 15 32 | 22 | | 1 3 | 250 0 0 | | | |
| Intersection: 6: MD 201 & Sur | nyside / | Avenue | | | | | | | | | | |
| Movement | EB | EB | NB | NB | B35 | B6006 | SB | SB | | | | |

| Directions Served | L | R | L | TR | Т | Т | Т | R |
|-----------------------|-----|-----|-----|------|------|-----|------|-----|
| Maximum Queue (ft) | 598 | 375 | 475 | 1481 | 2319 | 592 | 1660 | 275 |
| Average Queue (ft) | 230 | 252 | 461 | 1267 | 1449 | 241 | 1567 | 121 |
| 95th Queue (ft) | 469 | 404 | 513 | 1914 | 3039 | 688 | 1902 | 310 |
| Link Distance (ft) | 968 | | | 1368 | 2212 | 490 | 1542 | |
| Upstream Blk Time (%) | | | | | 29 | 23 | 19 | 34 |
| Queuing Penalty (veh) | | | | 407 | 326 | 272 | 438 | |
| Storage Bay Dist (ft) | | 350 | 450 | | | | | 250 |
| Storage Blk Time (%) | 5 | 4 | 37 | 0 | | | 34 | 0 |
| Queuing Penalty (veh) | 14 | 5 | 328 | 1 | | | 71 | 2 |

Intersection: 7: MD 201 & Beaver Dam Road

| Movement | WB | NB | SB | |
|-----------------------|-----|------|------|----|
| Directions Served | LR | TR | LT | |
| Maximum Queue (ft) | 577 | 114 | 938 | |
| Average Queue (ft) | 330 | 4 | 775 | |
| 95th Queue (ft) | 675 | 49 | 1241 | |
| Link Distance (ft) | 625 | 1542 | 843 | |
| Upstream Blk Time (%) | | 18 | | 31 |
| Queuing Penalty (veh) | 0 | | 401 | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Intersection: 8: MD 201 & Powder Mill Road

| Movement | EB | EB | EB | WB | WB | WB | B40 | NB | NB | NB | SB | SB | SB | |
|-----------------------|-----|------|-----|-----|-----|----|------|-----|-----|-----|-----|-----|-----|---|
| Directions Served | L | Т | R | L | Т | R | Т | L | Т | R | L | Т | TR | |
| Maximum Queue (ft) | 134 | 971 | 525 | 268 | 351 | 64 | 16 | 396 | 501 | 179 | 299 | 749 | 728 | |
| Average Queue (ft) | 45 | 461 | 311 | 144 | 117 | 18 | 1 | 197 | 173 | 10 | 66 | 428 | 391 | |
| 95th Queue (ft) | 106 | 1156 | 704 | 250 | 266 | 61 | 11 | 361 | 368 | 96 | 242 | 738 | 700 | |
| Link Distance (ft) | | 920 | | | 512 | | 1885 | | 617 | | | 813 | 813 | |
| Upstream Blk Time (%) | | | 32 | | | 1 | | | | 0 | | | 5 | 3 |
| Queuing Penalty (veh) | | 0 | | | 2 | | | | 1 | | | 0 | 0 | |
| Storage Bay Dist (ft) | 250 | | 500 | 250 | | 40 | | 400 | | 275 | 275 | | | |
| Storage Blk Time (%) | | 0 | 41 | 3 | 34 | 0 | | 1 | 2 | 0 | 0 | 41 | | |
| Queuing Penalty (veh) | | 0 | 69 | 6 | 79 | 2 | | 4 | 11 | 0 | 0 | 11 | | |

Transportation Impact Study

Intersection: 9: Edmonston Road & Odell Road

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) | EB LTR 97 28 78 509 | WB LT 56 9 40 488 | WB R 61 6 34 | NB LT 212 39 121 419 | SB LTR 12 0 6 365 |
|---|--|-------------------------------------|-------------------------------------|-------------------------------------|----------------------------------|
| Storage Bay Dist (ft) | | | 50 | | |
| Storage Blk Time (%) | | 2 | 0 | | |
| Queuling Fenalty (ven) | | 0 | 0 | | |
| Intersection: 10: Powder Mill I | Road & | Poultry | Road | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh) | EB LT 114 55 90 97 1 | B69 T 4 0 4 313 0 | WB TR 123 75 108 858 | | |
| Intersection: 11: Powder Mill I | Road | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) | NB L 33 13 39 46 | 0 | | | |

Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 12: Powder Mill Road

| EB | WB | SB |
|----|-------------------------------------|---|
| L | TR | LR |
| 34 | 8 | 103 |
| 2 | 0 | 47 |
| 16 | 6 | 83 |
| | 153 | 467 |
| | | |
| | | |
| 50 | | |
| 0 | | |
| 0 | | |
| | EB L 34 2 16 50 0 | EB WB L TR 34 8 2 0 16 6 153 50 0 0 |

0

Intersection: 13: Powder Mill Road

| Movement | EB | WB | SB | SB |
|-----------------------------|---------|-----|---------|-----|
| Directions Served | TR | L | L | TR |
| Maximum Queue (ft) | 8 | 49 | 60 | 261 |
| Average Queue (ft) | 0 | 14 | 47 | 97 |
| 95th Queue (ft) | 6 | 39 | 58 | 196 |
| Link Distance (ft) | 153 | | | 850 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | 225 | 25 | |
| Storage Blk Time (%) | | | 47 | 23 |
| Queuing Penalty (veh) | | | 97 | 57 |
| | | | | |
| Intersection: 14: Powder Mi | ll Road | | | |
| Movement | EB | | | |
| Directions Served | | | | |
| Maximum Quaua (ft) | L 00 | 26 | L 67 | |
| maximum Queue (II) | ōΖ | 20 | 07 | 97 |
| Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) | 30 61 | 2 13 268 | 35 60 | 33 64 857 |
|---|--------------------------------------|-----------------------------------|-----------------------------------|-------------------------------------|
| Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 250 | | 50 5 5 | 1 1 |
| Intersection: 15: Powder Mill F | Road | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) | EB T 174 85 146 546 | EB R 54 7 32 260 | WB L 106 38 82 300 | WB T 209 102 180 792 |
| Intersection: 16: Powder Mill F | Road | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh) | EB R 26 13 34 14 0 | NW LT 51 23 1635 2 | | |

Intersection: 17:

| Movement | WB | NB | SB |
|-----------------------|----|-----|----|
| Directions Served | L | TR | Т |
| Maximum Queue (ft) | 3 | 14 | 3 |
| Average Queue (ft) | 0 | 1 | 0 |
| 95th Queue (ft) | 4 | 9 | 3 |
| Link Distance (ft) | 14 | 460 | 46 |
| Upstream Blk Time (%) | | 0 | 0 |
| Queuing Penalty (veh) | 0 | | 0 |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Intersection: 21: MD 201 /MD 201 & I-95 NB On Ramp

| Movement | SB | |
|-----------------------|----|---|
| Directions Served | Т | |
| Maximum Queue (ft) | 4 | |
| Average Queue (ft) | 0 | |
| 95th Queue (ft) | 3 | |
| Link Distance (ft) | 39 | |
| Upstream Blk Time (%) | | 0 |
| Queuing Penalty (veh) | 0 | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

Intersection: 23: I-95 SB On Ramp & MD 201

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 6 |
| Average Queue (ft) | 0 |
| 95th Queue (ft) | 6 |
| Link Distance (ft) | 115 |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | |
| | |

Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 26: MD 201 & Lane Drop

| Movement | NW | NW | |
|------------------------------|--------|---------|--------|
| Directions Served | Т | Т | |
| Maximum Queue (ft) | 627 | 628 | |
| Average Queue (ft) | 366 | 375 | |
| 95th Queue (ft) | 723 | 726 | |
| Link Distance (ft) | 610 | 610 | |
| Upstream Blk Time (%) | | 5 | 6 |
| Queuing Penalty (veh) | 33 | 41 | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Intersection: 47: MD 201 | | | |
| Movement | SB | SB | NE |
| Directions Served | R | R | L |
| Maximum Queue (ft) | 654 | 790 | 8 |
| Average Queue (ft) | 530 | 634 | 0 |
| 95th Queue (ft) | 776 | 970 | 0 |
| Link Distance (ft) | 617 | 617 | 843 |
| Upstream Blk Time (%) | | 6 | 60 |
| Queuing Penalty (veh) | 40 | 387 | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Intersection: 61: MD 201 & R | amp to | Northbo | und I- |

1-95 ηþ

| Movement | NB | NB | NB |
|--------------------|----|----|----|
| Directions Served | Т | Т | Т |
| Maximum Queue (ft) | 30 | 45 | 49 |
| Average Queue (ft) | 1 | 1 | 1 |
| 95th Queue (ft) | 17 | 18 | 22 |

 Link Distance (ft)
 215
 215
 215

 Upstream Blk Time (%)
 0
 0
 0
 0

 Queuing Penalty (veh)
 0
 0
 0
 0

 Storage Bay Dist (ft)
 Storage Blk Time (%)
 Upueuing Penalty (veh)
 Upueuing Penalty (veh)

Network Summary Network wide Queuing Penalty: 3260

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SimTraffic Simulation Summary

No Action Conditions PM 12/16/2019

Summary of All Intervals

| Run Number Start Time End Time Total Time (min) Time Recorded (min) # of Intervals | | 1 2:52 4:00 68 60 5 | 10 2:52 4:00 68 60 5 | 2 2:52 4:00 68 60 5 | 3 2:52 4:00 68 60 5 | 4 2:52 4:00 68 60 5 | 5 2:52 4:00 68 60 5 | 6 2:52 4:00 68 60 5 | 7 2:52 4:00 68 60 5 | 8 2:52 4:00 68 60 5 | 9 2:52 4:00 68 60 5 | Avg 2:52 4:00 68 60 5 | |
|---|--|------------------------------------|-------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|--------------------------------------|---|
| # of Recorded Intervals | | 0 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Vehs Entered | | 12459 | 12792 | 12612 | 12655 | 12795 | 12761 | 12864 | 12393 | 12728 | 12741 | 12684 | • |
| Vehs Exited | | 12336 | 12538 | 12402 | 12442 | 12573 | 12501 | 12721 | 12225 | 12467 | 12547 | 12480 | |
| Starting Vehs | | 587 | 574 | 596 | 630 | 609 | 555 | 590 | 600 | 566 | 587 | 583 | |
| Ending Vehs | | 710 | 828 | 806 | 843 | 831 | 815 | 733 | 768 | 827 | 781 | 782 | |
| Travel Distance (mi) | | 13342 | 13496 | 13758 | 13500 | 13726 | 13697 | 13591 | 13488 | 13743 | 13587 | 13593 | |
| Travel Time (hr) | | 997.5 | 914.0 | 939.5 | 896.1 | 993.4 | 850.5 | 825.5 | 929.3 | 993.9 | 911.9 | 925.1 | |
| Total Delay (hr) | | 613.6 | 526.3 | 542.7 | 508.4 | 597.4 | 456.3 | 434.6 | 541.2 | 597.6 | 520.6 | 533.9 | |
| Total Stops | | 16312 | 16332 | 16909 | 16434 | 17844 | 15764 | 15719 | 16485 | 16702 | 16130 | 16458 | |
| Fuel Used (gal) | | 561.0 | 551.1 | 560.1 | 544.8 | 570.0 | 539.3 | 534.9 | 548.1 | 569.8 | 550.9 | 553.0 | |
| Interval #0 Information Start Time 2 End Time 3 Total Time (min) 8 Volumes adjusted by Gr No data recorded this in | Seedin 2:52 3:00 3 rowth F iterval. | eg Factors. | | | | | | | | | | | |
| Interval #1 Information | Record | ling | | | | | | | | | | | |
| Start Time | 3:00 3:15 | | | | | | | | | | | | |
| Total Time (min) | 15 | | | | | | | | | | | | |
| Volumes adjusted by Gr | rowth F | actors. | | | | | | | | | | | |
| | | | | - | - | | _ | - | _ | - | - | | |
| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 1 | 8 | 9 | Avg | |
| Vens Entered | | 3163 | 3272 | 3158 | 3166 | 32/6 | 3195 | 3266 | 3146 | 3238 | 3195 | 3201 | |
| vens Exited | | 3024 | 3117 | 3025 | 3090 | 3128 | 3108 | 3182 | 3008 | 3065 | 3099 | 3084 | |

| Starting Vehs | 587 | 574 | 596 | 630 | 609 | 555 | 590 | 600 | 566 | 587 | 583 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ending Vehs | 726 | 729 | 729 | 706 | 757 | 642 | 674 | 738 | 739 | 683 | 707 |
| Travel Distance (mi) | 3361 | 3378 | 3427 | 3333 | 3433 | 3380 | 3424 | 3401 | 3421 | 3359 | 3392 |
| Travel Time (hr) | 182.5 | 164.5 | 174.1 | 173.4 | 185.1 | 160.1 | 160.3 | 178.8 | 170.3 | 167.2 | 171.6 |
| Total Delay (hr) | 85.0 | 67.1 | 75.4 | 77.9 | 86.1 | 62.9 | 61.9 | 80.7 | 71.5 | 70.1 | 73.8 |
| Total Stops | 4055 | 3752 | 4017 | 3939 | 4189 | 3681 | 3637 | 3997 | 3905 | 3741 | 3885 |
| Fuel Used (gal) | 126.2 | 124.2 | 127.7 | 124.7 | 130.6 | 123.7 | 124.5 | 128.0 | 126.0 | 123.4 | 125.9 |
| Interval #2 InformationRecordingStart Time3:15End Time3:30Total Time (min)15Volumes adjusted by Growth Factors. | | | | | | | | | | | |
| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
| Vehs Entered | 3139 | 3133 | 3131 | 3122 | 3185 | 3229 | 3210 | 3093 | 3189 | 3228 | 3168 |
| Vehs Exited | 3108 | 3108 | 3108 | 3094 | 3145 | 3121 | 3164 | 3106 | 3085 | 3159 | 3121 |
| Starting Vehs | 726 | 729 | 729 | 706 | 757 | 642 | 674 | 738 | 739 | 683 | 707 |
| Ending Vehs | 757 | 754 | 752 | 734 | 797 | 750 | 720 | 725 | 843 | 752 | 757 |
| Travel Distance (mi) | 3309 | 3351 | 3430 | 3355 | 3423 | 3355 | 3440 | 3336 | 3377 | 3401 | 3378 |
| Travel Time (hr) | 231.9 | 214.7 | 212.3 | 205.9 | 241.4 | 193.3 | 190.9 | 216.4 | 225.7 | 211.7 | 214.4 |
| Total Delay (hr) | 136.9 | 118.8 | 113.1 | 109.6 | 142.8 | 96.7 | 92.1 | 120.4 | 128.6 | 113.6 | 117.3 |
| Total Stops | 4184 | 4161 | 4213 | 4093 | 4527 | 3937 | 4020 | 4130 | 4384 | 3980 | 4160 |
| Fuel Used (gal) | 135.3 | 134.3 | 134.5 | 131.9 | 140.9 | 128.7 | 131.8 | 132.7 | 136.1 | 134.5 | 134.1 |
| Interval #3 InformationRecordingStart Time3:30End Time3:45Total Time (min)15Volumes adjusted by Growth Factors. | | | | | | | | | | | |
| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
| Vehs Entered | 3151 | 3200 | 3187 | 3152 | 3151 | 3165 | 3139 | 3071 | 3110 | 3078 | 3133 |
| Vehs Exited | 3076 | 3156 | 3096 | 3107 | 3096 | 3097 | 3112 | 3032 | 3101 | 3057 | 3091 |
| Starting Vehs | 757 | 754 | 752 | 734 | 797 | 750 | 720 | 725 | 843 | 752 | 757 |
| Ending Vehs | 832 | 798 | 843 | 779 | 852 | 818 | 747 | 764 | 852 | 773 | 799 |
| Travel Distance (mi) | 3322 | 3402 | 3502 | 3367 | 3444 | 3460 | 3354 | 3428 | 3476 | 3361 | 3412 |
| Travel Time (hr) | 275.9 | 249.4 | 249.8 | 236.5 | 265.3 | 230.1 | 227.1 | 254.3 | 273.3 | 251.4 | 251.3 |

Total Delay (hr)180.6151.6148.9139.9166.1130.2130.5155.6173.0154.8153.1Total Stops42174323431441654633395940274265407040174198Fuel Used (gal)146.2143.3144.5139.1145.4139.2136.4142.0147.9141.5142.6

Interval #4 InformationRecordingStart Time3:45End Time4:00Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 3006 | 3187 | 3136 | 3215 | 3183 | 3172 | 3249 | 3083 | 3191 | 3240 | 3162 |
| Vehs Exited | 3128 | 3157 | 3173 | 3151 | 3204 | 3175 | 3263 | 3079 | 3216 | 3232 | 3177 |
| Starting Vehs | 832 | 798 | 843 | 779 | 852 | 818 | 747 | 764 | 852 | 773 | 799 |
| Ending Vehs | 710 | 828 | 806 | 843 | 831 | 815 | 733 | 768 | 827 | 781 | 782 |
| Travel Distance (mi) | 3350 | 3364 | 3400 | 3444 | 3426 | 3501 | 3373 | 3323 | 3469 | 3466 | 3412 |
| Travel Time (hr) | 307.2 | 285.4 | 303.3 | 280.3 | 301.5 | 267.0 | 247.1 | 279.8 | 324.5 | 281.7 | 287.8 |
| Total Delay (hr) | 211.1 | 188.9 | 205.3 | 181.0 | 202.5 | 166.6 | 150.1 | 184.5 | 224.4 | 182.0 | 189.6 |
| Total Stops | 3856 | 4096 | 4365 | 4237 | 4495 | 4187 | 4035 | 4093 | 4343 | 4392 | 4206 |
| Fuel Used (gal) | 153.3 | 149.3 | 153.4 | 149.1 | 153.0 | 147.7 | 142.2 | 145.3 | 159.8 | 151.5 | 150.4 |

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|--------|---------------------------|-------------------|
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Queuing and Blocking ReportNo Action Conditions PM12/16/2019

Intersection: 1: MD 201 & I-95 SB off-Ramp

| Movement | EB | EB | EB | NB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|------|------|-----|-----|
| Directions Served | L | L | R | Т | Т | Т | Т | Т |
| Maximum Queue (ft) | 134 | 512 | 451 | 149 | 225 | 241 | 161 | 163 |
| Average Queue (ft) | 24 | 107 | 24 | 65 | 59 | 109 | 60 | 69 |
| 95th Queue (ft) | 77 | 309 | 242 | 124 | 147 | 203 | 127 | 136 |
| Link Distance (ft) | | 734 | 734 | 1249 | 1249 | 1249 | 542 | 542 |
| Upstream Blk Time (%) | | | 0 | 0 | | | | |

Queuing Penalty (veh)00Storage Bay Dist (ft)325Storage Blk Time (%)Queuing Penalty (veh)

Intersection: 2: MD 201 & I-95 NB Off Ramp

| Movement | WB | WB | WB | WB | NB | NB | NB | SB | SB | SB | |
|-----------------------|-----|------|------|-----|-----|-----|-----|-----|-----|-----|---|
| Directions Served | L | L | R | R | UT | Т | Т | Т | Т | Т | |
| Maximum Queue (ft) | 332 | 373 | 287 | 280 | 155 | 186 | 193 | 168 | 188 | 212 | |
| Average Queue (ft) | 165 | 218 | 173 | 156 | 63 | 94 | 102 | 84 | 92 | 98 | |
| 95th Queue (ft) | 271 | 320 | 254 | 240 | 122 | 156 | 167 | 148 | 161 | 177 | |
| Link Distance (ft) | | 1405 | 1405 | | | 282 | 282 | 215 | 215 | 215 | |
| Upstream Blk Time (%) | | | | | | | | | 0 | 0 | 0 |
| Queuing Penalty (veh) | | | | | | | | 0 | 0 | 1 | |
| Storage Bay Dist (ft) | 400 | | | 300 | 250 | | | | | | |
| Storage Blk Time (%) | | 0 | 0 | 0 | | | | | | | |
| Queuing Penalty (veh) | | 0 | 0 | 0 | | | | | | | |

Intersection: 3: MD 201 & SHA Dist. 3/Crescent Drive

| Movement | EB | WB | WB | NB | NB | NB | NB | NB | SB | SB | SB | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | LTR | LT | R | L | Т | Т | Т | R | L | Т | Т | TR |
| Maximum Queue (ft) | 46 | 213 | 101 | 74 | 222 | 257 | 279 | 201 | 167 | 97 | 105 | 144 |
| Average Queue (ft) | 14 | 106 | 41 | 22 | 85 | 142 | 141 | 11 | 73 | 17 | 29 | 34 |
| 95th Queue (ft) | 37 | 180 | 80 | 58 | 179 | 238 | 242 | 91 | 139 | 59 | 76 | 96 |
| Link Distance (ft) | 239 | 429 | | | 266 | 266 | 266 | | | 783 | 783 | 783 |
| Upstream Blk Time (%) | | | | | | 0 | 0 | 0 | | | | |
| Queuing Penalty (veh) | | | | | 0 | 1 | 2 | | | | | |
| Storage Bay Dist (ft) | | | 250 | 250 | | | | 200 | 300 | | | |
| Storage Blk Time (%) | | 0 | | | 0 | | 1 | 0 | | | | |
| Queuing Penalty (veh) | | 0 | | | 0 | | 3 | 0 | | | | |

Intersection: 4: MD 201 & Ivy Lane

| Movement | NB | NB | SB | SB |
|--------------------|-----|-----|-----|-----|
| Directions Served | L | L | Т | Т |
| Maximum Queue (ft) | 138 | 173 | 126 | 153 |

| 58 | 90 | 51 | 91 |
|-----|------------------|---|---|
| 114 | 144 | 109 | 145 |
| | 783 | 1193 | 1193 |
| | | | |
| | | | |
| 350 | | | |
| | | | |
| | | | |
| | 58 114 350 | 58 90 114 144 783 350 | 58 90 51 114 144 109 783 1193 350 |

Intersection: 5: MD 201 & Cherrywood Lane

| Movement | EB | EB | EB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|------|-----|------|------|-----|-----|-----|
| Directions Served | L | L | R | L | Т | Т | Т | Т | R |
| Maximum Queue (ft) | 214 | 236 | 302 | 220 | 174 | 191 | 248 | 292 | 239 |
| Average Queue (ft) | 118 | 141 | 144 | 98 | 62 | 61 | 127 | 161 | 64 |
| 95th Queue (ft) | 192 | 213 | 251 | 179 | 154 | 159 | 215 | 254 | 156 |
| Link Distance (ft) | | 1306 | 1306 | | 1193 | 1193 | 610 | 610 | |
| Upstream Blk Time (%) | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | |
| Storage Bay Dist (ft) | 250 | | | 750 | | | | | 250 |
| Storage Blk Time (%) | 0 | 0 | | | | | | 1 | 0 |
| Queuing Penalty (veh) | 0 | 0 | | | | | | 2 | 0 |

Intersection: 6: MD 201 & Sunnyside Avenue

| Movement | EB | EB | NB | NB | B35 | SB | SB |
|-----------------------|------|-----|-----|------|------|------|-----|
| Directions Served | L | R | L | TR | Т | Т | R |
| Maximum Queue (ft) | 1022 | 375 | 475 | 1329 | 268 | 1652 | 275 |
| Average Queue (ft) | 949 | 372 | 418 | 573 | 20 | 1342 | 131 |
| 95th Queue (ft) | 1167 | 402 | 535 | 1168 | 249 | 2024 | 322 |
| Link Distance (ft) | 968 | | | 1368 | 2212 | 1546 | |
| Upstream Blk Time (%) | | 62 | | | 1 | | 24 |
| Queuing Penalty (veh) | 0 | | | 18 | | 267 | |
| Storage Bay Dist (ft) | | 350 | 450 | | | | 250 |
| Storage Blk Time (%) | 26 | 42 | 13 | 1 | | 39 | 0 |
| Queuing Penalty (veh) | 158 | 115 | 141 | 4 | | 68 | 1 |

Intersection: 7: MD 201 & Beaver Dam Road

| Movement | WB | NB | SB | |
|-----------------------|-----|------|------|----|
| Directions Served | LTR | TR | LT | |
| Maximum Queue (ft) | 568 | 50 | 915 | |
| Average Queue (ft) | 282 | 2 | 619 | |
| 95th Queue (ft) | 584 | 26 | 1159 | |
| Link Distance (ft) | 626 | 1546 | 837 | |
| Upstream Blk Time (%) | | 6 | | 26 |
| Queuing Penalty (veh) | 0 | | 288 | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Intersection: 8: MD 201 & Powder Mill Road

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB | SB | SB | SB | |
|-----------------------|-----|------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|---|
| Directions Served | L | Т | R | L | Т | R | L | Т | R | L | Т | TR | |
| Maximum Queue (ft) | 275 | 977 | 525 | 178 | 275 | 64 | 425 | 671 | 300 | 293 | 476 | 458 | |
| Average Queue (ft) | 220 | 395 | 124 | 60 | 108 | 20 | 300 | 373 | 98 | 117 | 287 | 263 | |
| 95th Queue (ft) | 332 | 759 | 477 | 129 | 215 | 63 | 479 | 663 | 329 | 262 | 453 | 429 | |
| Link Distance (ft) | | 1433 | | | 523 | | | 618 | | | 816 | 816 | |
| Upstream Blk Time (%) | | | | | | | | | 3 | | | 0 | 0 |
| Queuing Penalty (veh) | | | | | | | | 36 | | | 0 | 0 | |
| Storage Bay Dist (ft) | 250 | | 500 | 250 | | 40 | 400 | | 275 | 275 | | | |
| Storage Blk Time (%) | 7 | 17 | 1 | | 31 | 1 | 4 | 11 | 0 | 0 | 12 | | |
| Queuing Penalty (veh) | 51 | 109 | 3 | | 42 | 2 | 31 | 73 | 1 | 0 | 12 | | |

Intersection: 9: Edmonston Road & Odell Road

| Movement | EB | WB | WB | NB | SB |
|-----------------------|-----|-----|----|-----|-----|
| Directions Served | LTR | LT | R | LT | LTR |
| Maximum Queue (ft) | 118 | 30 | 26 | 210 | 33 |
| Average Queue (ft) | 34 | 2 | 2 | 32 | 2 |
| 95th Queue (ft) | 94 | 14 | 14 | 125 | 40 |
| Link Distance (ft) | 509 | 488 | | 419 | 365 |
| Upstream Blk Time (%) | | | | | 0 |
| Queuing Penalty (veh) | | | | 0 | |
| Storage Bay Dist (ft) | | | 50 | | |

| Storage Blk Time (%) | 0 | 0 |
|-----------------------|---|---|
| Queuing Penalty (veh) | 0 | 0 |

Intersection: 10: Powder Mill Road & Poultry Road

| Movement | EB | B69 | WB | SB |
|-----------------------|-----|-----|-----|-----|
| Directions Served | LT | Т | TR | LR |
| Maximum Queue (ft) | 197 | 178 | 127 | 25 |
| Average Queue (ft) | 153 | 47 | 68 | 6 |
| 95th Queue (ft) | 203 | 137 | 106 | 23 |
| Link Distance (ft) | 97 | 325 | 866 | 391 |
| Upstream Blk Time (%) | | 32 | | |
| Queuing Penalty (veh) | 227 | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Intersection: 11: Powder Mill Road

| Movement | EB | NB | |
|-----------------------|-----|----|---|
| Directions Served | TR | L | |
| Maximum Queue (ft) | 64 | 52 | |
| Average Queue (ft) | 6 | 21 | |
| 95th Queue (ft) | 34 | 49 | |
| Link Distance (ft) | 383 | 48 | |
| Upstream Blk Time (%) | | | 1 |
| Queuing Penalty (veh) | | 0 | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Intersection: 12: Powder Mill Road & Springfield Road

| Movement | EB | EB | SB |
|--------------------|----|----|-----|
| Directions Served | L | Т | LR |
| Maximum Queue (ft) | 34 | 3 | 284 |
| Average Queue (ft) | 6 | 0 | 121 |
| 95th Queue (ft) | 27 | 3 | 229 |

| Link Distance (ft) | | 609 | 467 |
|-----------------------|----|-----|-----|
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 50 | | |
| Storage Blk Time (%) | 0 | | |
| Queuing Penalty (veh) | 0 | | |

Intersection: 13: Powder Mill Road & B-W Parkway SB Off-Ramp

| Movement | EB | WB | SB | SB | |
|-----------------------|-----|-----|-----|------|----|
| Directions Served | TR | L | L | TR | |
| Maximum Queue (ft) | 40 | 99 | 62 | 898 | |
| Average Queue (ft) | 3 | 42 | 50 | 792 | |
| 95th Queue (ft) | 23 | 79 | 56 | 1086 | |
| Link Distance (ft) | 153 | | | 850 | |
| Upstream Blk Time (%) | | 0 | | | 78 |
| Queuing Penalty (veh) | 0 | | | 0 | |
| Storage Bay Dist (ft) | | 225 | 25 | | |
| Storage Blk Time (%) | | | 98 | 12 | |
| Queuing Penalty (veh) | | | 143 | 34 | |

Intersection: 14: B-W Parkway NB Off-Ramp & Powder Mill Road

| Movement | EB | EB | WB | NB | NB | |
|-----------------------|-----|-----|-----|----|-----|----|
| Directions Served | L | Т | TR | L | TR | |
| Maximum Queue (ft) | 258 | 224 | 48 | 75 | 597 | |
| Average Queue (ft) | 125 | 25 | 11 | 61 | 297 | |
| 95th Queue (ft) | 234 | 185 | 37 | 90 | 753 | |
| Link Distance (ft) | | 550 | 268 | | 857 | |
| Upstream Blk Time (%) | | | 0 | | | 11 |
| Queuing Penalty (veh) | | 0 | | | 0 | |
| Storage Bay Dist (ft) | 250 | | | 50 | | |
| Storage Blk Time (%) | 3 | 0 | | 77 | 6 | |
| Queuing Penalty (veh) | 21 | 0 | | 38 | 4 | |

Intersection: 15: Soil Conservation Road & Powder Mill Road

| Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) | T 235 139 214 546 | R 66 9 41 | L 76 29 66 | T 240 117 201 792 | L 417 230 363 892 | R 49 0 0 |
|--|--------------------------------------|---------------------------------------|--------------------------------------|-------------------------------|-------------------------------|-------------------|
| Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 0 0 | 260 | 300 | 0 0 | 0 0 | 475 0 0 |
| Intersection: 16: Powder Mill | Road | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | EB T 53 23 44 19 4 | WB TR 6 0 5 796 10 | SE L 80 16 56 50 6 | 1 | | |
| Intersection: 17: | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh) | WB L 3 0 4 19 0 | NB TR 59 8 37 462 0 | SB T 6 0 6 48 0 | 0 | | |

Intersection: 18: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 21: MD 201 /MD 201 & I-95 NB On Ramp

| Movement | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|----|----|----|
| Directions Served | Т | Т | R | Т | Т | Т |
| Maximum Queue (ft) | 2 | 4 | 23 | 14 | 2 | 8 |
| Average Queue (ft) | 0 | 0 | 1 | 1 | 0 | 0 |
| 95th Queue (ft) | 2 | 4 | 14 | 7 | 2 | 4 |
| Link Distance (ft) | 115 | 115 | 115 | 39 | 39 | 39 |
| Upstream Blk Time (%) | | | | | 0 | |
| Queuing Penalty (veh) | | | | 0 | | |
| Storage Bay Dist (ft) | | | | | | |
| Storage Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |

Intersection: 23: I-95 SB On Ramp & MD 201

| Movement | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|-----|-----|
| Directions Served | Т | Т | Т | Т | R |
| Maximum Queue (ft) | 49 | 59 | 2 | 12 | 34 |
| Average Queue (ft) | 2 | 2 | 0 | 0 | 1 |
| 95th Queue (ft) | 50 | 60 | 2 | 6 | 13 |
| Link Distance (ft) | 542 | 542 | 115 | 115 | 115 |
| Upstream Blk Time (%) | | | 0 | | |

Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 26: MD 201 & Lane Drop

| Movement | NW | NW | |
|-----------------------|-----|-----|---|
| Directions Served | Т | Т | |
| Maximum Queue (ft) | 392 | 404 | |
| Average Queue (ft) | 179 | 187 | |
| 95th Queue (ft) | 457 | 465 | |
| Link Distance (ft) | 610 | 610 | |
| Upstream Blk Time (%) | | 0 | 0 |
| Queuing Penalty (veh) | 1 | 1 | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Queuing Penalty (veh) | | | |

0

Intersection: 28: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 40: Powder Mill Road

Movement Directions Served Maximum Queue (ft)

Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 43: Powder Mill Road Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 44: Powder Mill Road Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 45: Powder Mill Road

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh) | |
|--|--|
| Intersection: 47: MD 201 | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | SB R 588 288 615 618 6 |
| Intersection: 48: Powder Mill F | Road |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) | |

SB

R

NE

L

Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 49: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 50: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 56: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 57: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 61: MD 201 & Ramp to Northbound I-95

| Movement | NB | NB | |
|-----------------------|-----|-----|---|
| Directions Served | Т | Т | |
| Maximum Queue (ft) | 4 | 21 | |
| Average Queue (ft) | 0 | 1 | |
| 95th Queue (ft) | 6 | 21 | |
| Link Distance (ft) | 215 | 215 | |
| Upstream Blk Time (%) | | | 0 |
| Queuing Penalty (veh) | | 0 | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Intersection: 66: Powder Mill Road

Movement

Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 72: Powder Mill Road Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 74: Powder Mill Road Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Network Summary Network wide Queuing Penalty: 1971

Bureau of Engraving and Printing SimTraffic Report LBG Page 0

SimTraffic Simulation Summary Action Alternative AM 11/05/2019

Summary of All Intervals

| Run Number Start Time End Time Total Time (min) Time Recorded (min) # of Intervals | | 1 5:52 7:00 68 60 5 | 10 5:52 7:00 68 60 5 | 2 5:52 7:00 68 60 5 | 3 5:52 7:00 68 60 5 | 4 5:52 7:00 68 60 5 | 5 5:52 7:00 68 60 5 | 6 5:52 7:00 68 60 5 | 7 5:52 7:00 68 60 5 | 8 5:52 7:00 68 60 5 | 9 5:52 7:00 68 60 5 | Avg 5:52 7:00 68 60 5 | |
|---|-----------------------------|------------------------------------|-------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|--------------------------------------|---|
| # of Recorded Interval | s | U | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Vehs Entered | | 9985 | 9948 | 9952 | 9696 | 9893 | 9783 | 10017 | 9854 | 10018 | 9924 | 9907 | |
| Vehs Exited | | 9432 | 9364 | 9279 | 9176 | 9316 | 9311 | 9441 | 9288 | 9392 | 9359 | 9337 | |
| Starting Vehs | | 536 | 539 | 539 | 507 | 529 | 554 | 504 | 522 | 537 | 509 | 524 | |
| Ending Vens | | 1089 | 1123 | 1212 | 1027 | 1106 | 1026 | 1080 | 1088 | 1163 | 1074 | 1093 | |
| Travel Time (hr) | | 1049.8 | 996 1 | 929 1 | 982.2 | 1027.8 | 997 7 | 990 7 | 1074 7 | 1005.9 | 962.2 | 1001 6 | |
| Total Delay (hr) | | 721.4 | 671.6 | 603.5 | 661.9 | 703.1 | 674.1 | 665.7 | 751.6 | 675.8 | 637.7 | 676.6 | |
| Total Stops | | 19292 | 19395 | 18555 | 18573 | 19519 | 19080 | 19266 | 19906 | 19029 | 18933 | 19150 | |
| Fuel Used (gal) | | 525.7 | 509.8 | 496.9 | 502.4 | 517.8 | 511.4 | 507.8 | 524.9 | 515.6 | 501.2 | 511.4 | |
| Interval #0 Information Start Time End Time Total Time (min) | Seedir 5:52 6:00 8 | ng | | | | | | | | | | | |
| No data recorded this | interval. | | | | | | | | | | | | |
| Interval #1 Information | Record | dina | | | | | | | | | | | |
| Start Time | 6:00 | anig | | | | | | | | | | | |
| End Time | 6:15 | | | | | | | | | | | | |
| Total Time (min) | 15 | | | | | | | | | | | | |
| Run Number Vehs Entered Vehs Exited Starting Vehs | | 1 2738 2501 536 772 | 10 2555 2331 539 762 | 2 2531 2369 539 701 | 3 2522 2231 507 708 | 4 2550 2376 529 702 | 5 2593 2395 554 752 | 6 2550 2317 504 727 | 7 2692 2450 522 764 | 8 2520 2323 537 724 | 9 2547 2385 509 671 | Avg 2576 2368 524 727 | |
| Linulity vens | | 113 | 103 | 101 | 190 | 103 | 152 | 131 | 104 | 104 | 011 | 151 | |

| Travel Distance (mi) | | 3045 | 2951 | 2989 | 2916 | 3033 | 2924 | 2868 | 3023 | 2943 | 3018 | 2971 |
|---|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Travel Time (hr) | | 170.8 | 162.7 | 154.8 | 165.4 | 161.4 | 164.9 | 158.7 | 174.6 | 166.1 | 151.7 | 163.1 |
| Total Delay (hr) | | 85.5 | 79.8 | 70.8 | 83.6 | 76.3 | 82.7 | 77.7 | 90.0 | 83.2 | 67.0 | 79.7 |
| Total Stops | | 4051 | 3847 | 3758 | 3992 | 3930 | 3921 | 3802 | 4168 | 3985 | 3796 | 3917 |
| Fuel Used (gal) | | 116.2 | 111.1 | 111.0 | 110.5 | 112.8 | 111.6 | 107.5 | 115.4 | 111.7 | 110.6 | 111.8 |
| Interval #2 Information Start Time End Time Total Time (min) | n Recor 6:15 6:30 15 | ding | | | | | | | | | | |
| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
| Vehs Entered | | 2565 | 2517 | 2497 | 2512 | 2571 | 2530 | 2594 | 2497 | 2557 | 2546 | 2542 |
| Vehs Exited | | 2389 | 2391 | 2353 | 2429 | 2303 | 2390 | 2412 | 2309 | 2365 | 2372 | 2369 |
| Starting Vehs | | 773 | 763 | 701 | 798 | 703 | 752 | 737 | 764 | 734 | 671 | 737 |
| Ending Vehs | | 949 | 889 | 845 | 881 | 971 | 892 | 919 | 952 | 926 | 845 | 903 |
| Travel Distance (mi) | | 3043 | 2868 | 2943 | 2859 | 2906 | 2989 | 2976 | 2932 | 2997 | 2892 | 2941 |
| Travel Time (hr) | | 232.4 | 217.6 | 202.6 | 224.8 | 215.7 | 213.4 | 221.7 | 230.0 | 220.3 | 197.4 | 217.6 |
| Total Delay (hr) | | 147.5 | 137.0 | 120.0 | 144.7 | 133.7 | 129.3 | 138.4 | 147.5 | 136.1 | 116.0 | 135.0 |
| Total Stops | | 4968 | 4861 | 4219 | 4736 | 4878 | 4724 | 4520 | 4798 | 4442 | 4310 | 4643 |
| Fuel Used (gal) | | 127.5 | 119.8 | 119.4 | 121.1 | 120.6 | 122.5 | 123.4 | 123.4 | 124.3 | 116.2 | 121.8 |
| Interval #3 Information Start Time End Time Total Time (min) | n Recor 6:30 6:45 15 | ding | | | | | | | | | | |
| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
| Vehs Entered | | 2376 | 2496 | 2524 | 2389 | 2486 | 2471 | 2436 | 2439 | 2535 | 2452 | 2455 |
| Vehs Exited | | 2316 | 2371 | 2308 | 2287 | 2351 | 2294 | 2347 | 2324 | 2357 | 2313 | 2326 |
| Starting Vehs | | 949 | 889 | 845 | 881 | 971 | 892 | 919 | 952 | 926 | 845 | 903 |
| Ending Vehs | | 1009 | 1014 | 1061 | 983 | 1106 | 1069 | 1008 | 1067 | 1104 | 984 | 1029 |
| Travel Distance (mi) | | 2818 | 2865 | 2837 | 2869 | 2850 | 2860 | 2901 | 2789 | 2889 | 2867 | 2855 |
| Travel Time (hr) | | 286.0 | 277.5 | 249.7 | 263.1 | 293.7 | 272.5 | 282.3 | 295.9 | 272.8 | 271.1 | 276.5 |
| Total Delay (hr) | | 206.8 | 196.9 | 169.7 | 182.7 | 213.9 | 192.6 | 201.1 | 217.6 | 191.5 | 190.7 | 196.3 |
| Total Stops | | 5135 | 5238 | 5006 | 4954 | 5620 | 5386 | 5163 | 5717 | 5206 | 5211 | 5262 |
| Fuel Used (gal) | | 133.1 | 132.1 | 125.0 | 129.3 | 136.4 | 132.1 | 134.1 | 134.5 | 130.7 | 130.5 | 131.8 |

| Interval #4 Information Start Time End Time | Record 6:45 7:00 | ding | | | | | | | | | | |
|---|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Time (min) | 15 | | | | | | | | | | | |
| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
| Vehs Entered | | 2306 | 2380 | 2400 | 2273 | 2286 | 2189 | 2437 | 2226 | 2406 | 2379 | 2325 |
| Vehs Exited | | 2226 | 2271 | 2249 | 2229 | 2286 | 2232 | 2365 | 2205 | 2347 | 2289 | 2269 |
| Starting Vehs | | 1009 | 1014 | 1061 | 983 | 1106 | 1069 | 1008 | 1067 | 1104 | 984 | 1029 |
| Ending Vehs | | 1089 | 1123 | 1212 | 1027 | 1106 | 1026 | 1080 | 1088 | 1163 | 1074 | 1093 |
| Travel Distance (mi) | | 2802 | 2866 | 2828 | 2781 | 2789 | 2767 | 2831 | 2787 | 2907 | 2791 | 2815 |
| Travel Time (hr) | | 360.5 | 338.3 | 322.1 | 328.8 | 357.0 | 346.9 | 328.0 | 374.3 | 346.7 | 342.0 | 344.5 |
| Total Delay (hr) | | 281.7 | 257.9 | 242.9 | 250.9 | 279.2 | 269.6 | 248.5 | 296.5 | 265.1 | 263.9 | 265.6 |
| Total Stops | | 5138 | 5449 | 5572 | 4891 | 5091 | 5049 | 5781 | 5223 | 5396 | 5616 | 5318 |
| Fuel Used (gal) | | 148.9 | 146.8 | 141.4 | 141.5 | 147.9 | 145.2 | 142.7 | 151.6 | 148.9 | 143.9 | 145.9 |

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SimTraffic Performance Report Action Alternative AM 11/05/2019

1: MD 201 & I-95 SB off-Ramp Performance by movement

| Movement | EBL | EBR | NBT | SBT | All |
|--------------------|------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 0.6 | 0.6 | 0.2 | 0.0 | 0.3 |
| Total Del/Veh (s) | 46.0 | 3.9 | 5.4 | 3.4 | 7.3 |

2: MD 201 & I-95 NB Off Ramp Performance by movement

| Movement | WBL | WBR | NBT | SBT | All |
|--------------------|------|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 22.6 | 99.7 | 18.1 | 12.3 | 42.4 |

3: MD 201 & SHA Dist. 3/Crescent Drive Performance by movement

| Movement | EBL | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | All |
|--------------------|------|-----|------|------|------|------|------|------|------|-----|-----|------|
| Denied Del/Veh (s) | 0.1 | 0.1 | 0.4 | 0.4 | 3.9 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 |
| Total Del/Veh (s) | 20.8 | 8.8 | 41.8 | 35.7 | 27.8 | 58.3 | 53.3 | 32.7 | 59.3 | 4.9 | 4.6 | 34.4 |

4: MD 201 & Ivy Lane Performance by movement

| Movement | EBR | NBL | NBT | SBT | SBR | All |
|--------------------|-----|------|------|-----|-----|------|
| Denied Del/Veh (s) | 0.2 | 0.0 | 3.8 | 0.0 | 0.0 | 2.2 |
| Total Del/Veh (s) | 1.6 | 46.8 | 91.2 | 5.1 | 3.3 | 54.7 |

5: MD 201 & Cherrywood Lane Performance by movement

| Movement | EBL | EBR | NBL | NBT | SBT | SBR | All |
|--------------------|-------|------|------|-------|------|-----|-------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 170.2 | 34.4 | 69.1 | 207.0 | 13.6 | 6.1 | 117.3 |

6: MD 201 & Sunnyside Avenue Performance by movement

| Movement | EBL | EBR | NBL | NBT | SBT | SBR | All |
|--------------------|-------|-------|-------|------|-------|-------|-------|
| Denied Del/Veh (s) | 318.0 | 330.9 | 0.0 | 0.0 | 1.2 | 0.9 | 49.7 |
| Total Del/Veh (s) | 532.0 | 268.2 | 100.7 | 30.0 | 112.4 | 102.7 | 113.0 |

7: MD 201 & Beaver Dam Road Performance by movement

| Movement | WBL | WBR | NBT | NBR | SBL | SBT | All |
|--------------------|--------|--------|-----|-----|------|------|------|
| Denied Del/Veh (s) | 66.3 | 82.8 | 0.1 | 0.0 | 13.4 | 24.5 | 13.1 |
| Total Del/Veh (s) | 1897.4 | 1690.7 | 5.2 | 4.6 | 64.2 | 57.0 | 49.3 |

8: MD 201 & Powder Mill Road Performance by movement

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | All |
|--------------------|-------|-------|-------|------|------|------|------|------|-----|------|-------|------|------|
| Denied Del/Veh (s) | 109.1 | 111.2 | 114.8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 7.6 | 4.8 | 3.6 | 32.1 |
| Total Del/Veh (s) | 95.0 | 88.0 | 96.4 | 63.6 | 39.4 | 11.7 | 29.6 | 15.1 | 3.2 | 81.7 | 108.5 | 77.4 | 59.7 |

9: Edmonston Road & Odell Road Performance by movement

| Movement | EBL | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBT | SBR | All |
|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Denied Del/Veh (s) | 0.1 | 0.1 | 0.1 | 0.1 | 5.0 | 0.5 | 0.5 | 2.9 | 0.7 | 0.6 | 0.6 |

Total Del/Veh (s) 53.0 21.5 48.3 31.8 13.5 7.7 2.4 0.9 1.2 0.3 2.9

10: Powder Mill Road & Poultry Road Performance by movement

| Movement | EBL | EBT | WBT | WBR | All |
|--------------------|------|------|-------|-------|------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 18.6 | 16.8 | 125.7 | 124.2 | 77.4 |

11: Powder Mill Road Performance by movement

| Movement | NBL | SET | SER | NWT | All |
|--------------------|------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 60.5 | 0.2 | 0.1 | 2.2 | 3.0 |

12: Powder Mill Road Performance by movement

| Movement | EBL | EBT | WBT | WBR | SBL | SBR | All |
|--------------------|-----|-----|-----|-----|------|------|-----|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.0 |
| Total Del/Veh (s) | 7.8 | 1.0 | 1.1 | 0.6 | 23.7 | 18.2 | 3.9 |

13: Powder Mill Road Performance by movement

| Movement | EBT | EBR | WBL | WBT | SBL | SBT | SBR | All |
|--------------------|-----|-----|-----|-----|-------|-------|-------|------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 | 29.2 | 42.7 | 28.1 | 10.0 |
| Total Del/Veh (s) | 1.4 | 0.9 | 4.7 | 2.2 | 145.6 | 123.1 | 131.5 | 49.3 |

14: Powder Mill Road Performance by movement

| Movement | EBL | EBT | WBT | WBR | NBL | NBT | NBR | All |
|--------------------|-----|-----|-----|-----|------|------|------|------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 | 4.3 | 2.7 | 2.0 | 1.1 |
| Total Del/Veh (s) | 8.4 | 1.6 | 2.3 | 1.0 | 88.9 | 67.1 | 66.4 | 25.2 |

15: Powder Mill Road Performance by movement

| Movement | EBT | EBR | WBL | WBT | NBL | NBR | All |
|--------------------|------|-----|------|------|------|-----|------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 3.5 | 0.4 | 0.3 | 3.7 | 0.4 |
| Total Del/Veh (s) | 25.7 | 1.0 | 35.8 | 17.5 | 17.8 | 1.2 | 15.5 |

16: Powder Mill Road Performance by movement

| Movement | EBT | EBR | SET | NWL | NWT | All |
|--------------------|-----|-----|-----|------|------|------|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 0.3 | 2.9 | 0.1 | 22.2 | 22.3 | 18.5 |

17: Performance by movement

| Movement | WBL | NBT | NBR | SBT | All |
|--------------------|-----|------|------|-----|------|
| Denied Del/Veh (s) | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 |
| Total Del/Veh (s) | 1.0 | 20.1 | 19.1 | 0.7 | 12.4 |

21: MD 201 /MD 201 & I-95 NB On Ramp Performance by movement

| Movement | NBT | NBR | SBT | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 0.3 | 1.2 | 0.2 | 0.5 |

23: I-95 SB On Ramp & MD 201 Performance by movement

| Movement | NBT | SBT | SBR | All |
|--------------------|-----|-----|-----|-----|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 2.0 | 0.3 | 1.2 | 1.3 |

26: MD 201 & Lane Drop Performance by movement

| Movement | SET | NWT | All |
|--------------------|-----|------|------|
| Denied Del/Veh (s) | 0.0 | 1.4 | 0.8 |
| Total Del/Veh (s) | 1.4 | 97.5 | 57.1 |

47: MD 201 Performance by movement

| Movement | SBT | SBR | NEL | NET | All |
|--------------------|------|-------|-----|-----|------|
| Denied Del/Veh (s) | 0.0 | 12.0 | 0.1 | 0.0 | 6.2 |
| Total Del/Veh (s) | 52.8 | 101.9 | 4.4 | 1.9 | 54.2 |

61: MD 201 & Ramp to Northbound I-95 Performance by movement

| Movement | NBT | SBT | SBR | All |
|--------------------|------|-----|-----|-----|
| Denied Del/Veh (s) | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Del/Veh (s) | 16.1 | 1.3 | 1.3 | 9.9 |

Total Network Performance

- Denied Del/Veh (s) 38.8 Total Del/Veh (s) 195.1
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Queuing and Blocking Report Action Alternative AM 11/05/2019

Intersection: 1: MD 201 & I-95 SB off-Ramp

| Movement | EB | EB | NB | NB | NB | SB | SB |
|-----------------------|-----|-----|------|------|------|-----|-----|
| Directions Served | L | L | Т | Т | Т | Т | Т |
| Maximum Queue (ft) | 170 | 247 | 152 | 156 | 210 | 108 | 128 |
| Average Queue (ft) | 43 | 131 | 71 | 44 | 97 | 40 | 46 |
| 95th Queue (ft) | 126 | 208 | 131 | 108 | 179 | 88 | 101 |
| Link Distance (ft) | | 734 | 1249 | 1249 | 1249 | 542 | 542 |
| Upstream Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |
| Storage Bay Dist (ft) | 325 | | | | | | |
| Storage Blk Time (%) | | | | | | | |
| Queuing Penalty (veh) | | | | | | | |

Intersection: 2: MD 201 & I-95 NB Off Ramp

| Movement | WB | WB | WB | WB | B6004 | NB | NB | NB | SB | SB | SB |
|--------------------|-----|-----|------|-----|-------|-----|-----|-----|-----|-----|-----|
| Directions Served | L | L | R | R | Т | UT | Т | Т | Т | Т | Т |
| Maximum Queue (ft) | 332 | 940 | 1505 | 325 | 508 | 164 | 196 | 197 | 204 | 213 | 244 |
| Average Queue (ft) | 88 | 247 | 647 | 263 | 124 | 79 | 101 | 94 | 89 | 92 | 114 |

| 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 3: MD 201 & SH | 201 400 0 0 A Dist. 3 | 637 1405 1 3 3/Cresce | 1567 1405 0 28 145 ent Drive | 372 19 300 16 84 | 473 465 0 | 147 15 250 | 167 282 0 0 0 | 163 282 0 0 | 166 215 0 0 | 174 215 0 1 | 208 215 0 2 | 0 |
|--|-----------------------------------|--|--|---|--|--|--|--|----------------------------------|----------------------------------|----------------------------------|------------------------------------|
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | EB LTR 52 5 29 239 | WB LT 186 89 155 429 0 | WB R 122 47 93 250 | NB L 265 51 174 0 250 0 0 | NB T 461 215 498 266 0 113 20 8 | NB T 496 290 600 266 20 281 | NB T 492 294 603 266 49 286 51 21 | NB R 225 79 257 49 200 0 0 | SB L 82 22 61 300 | SB T 82 15 56 783 | SB T 94 24 69 783 | SB TR 138 34 94 783 |
| Intersection: 4: MD 201 & Ivy | Lane | | | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | NB L 95 30 76 350 | NB L 832 484 1069 783 36 0 0 | NB T 831 523 1123 783 6 104 | NB T 833 523 1120 783 18 87 | SB T 70 8 40 1193 15 | SB T 114 28 83 1193 | | | | | | |

Intersection: 5: MD 201 & Cherrywood Lane

| Movement | EB | EB | EB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|------|------|------|------|-----|-----|-----|
| Directions Served | L | L | R | L | Т | Т | Т | Т | R |
| Maximum Queue (ft) | 274 | 747 | 202 | 775 | 1230 | 1232 | 241 | 317 | 262 |
| Average Queue (ft) | 209 | 383 | 46 | 616 | 1012 | 1011 | 115 | 156 | 66 |
| 95th Queue (ft) | 328 | 824 | 145 | 1098 | 1604 | 1601 | 216 | 278 | 166 |
| Link Distance (ft) | | 1306 | 1306 | | 1193 | 1193 | 610 | 610 | |
| Upstream Blk Time (%) | | | | | | 17 | 19 | | |
| Queuing Penalty (veh) | | | | | 136 | 153 | | | |
| Storage Bay Dist (ft) | 250 | | | 750 | | | | | 250 |
| Storage Blk Time (%) | 12 | 38 | | 0 | 70 | | | 1 | 0 |
| Queuing Penalty (veh) | 22 | 66 | | 1 | 153 | | | 3 | 0 |

Intersection: 6: MD 201 & Sunnyside Avenue

| Movement | EB | EB | NB | NB | B35 | SB | SB |
|-----------------------|------|-----|-----|------|------|------|-----|
| Directions Served | L | R | L | TR | Т | Т | R |
| Maximum Queue (ft) | 1022 | 375 | 475 | 1380 | 780 | 1662 | 275 |
| Average Queue (ft) | 866 | 325 | 424 | 638 | 152 | 1531 | 120 |
| 95th Queue (ft) | 1239 | 473 | 534 | 1532 | 797 | 1965 | 307 |
| Link Distance (ft) | 968 | | | 1368 | 2212 | 1542 | |
| Upstream Blk Time (%) | | 62 | | | 6 | | 32 |
| Queuing Penalty (veh) | 0 | | | 97 | | 404 | |
| Storage Bay Dist (ft) | | 350 | 450 | | | | 250 |
| Storage Blk Time (%) | 69 | 10 | 17 | 0 | | 34 | 0 |
| Queuing Penalty (veh) | 199 | 18 | 205 | 0 | | 71 | 1 |

Intersection: 7: MD 201 & Beaver Dam Road

| Movement | WB | NB | SB | |
|-----------------------|-----|------|------|----|
| Directions Served | LR | TR | LT | |
| Maximum Queue (ft) | 573 | 66 | 938 | |
| Average Queue (ft) | 309 | 4 | 753 | |
| 95th Queue (ft) | 659 | 40 | 1251 | |
| Link Distance (ft) | 625 | 1542 | 843 | |
| Upstream Blk Time (%) | | 13 | | 30 |
| Queuing Penalty (veh) | 0 | | 379 | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |

Queuing Penalty (veh)

Intersection: 8: MD 201 & Powder Mill Road

| Movement | EB | EB | EB | WB | WB | WB | B40 | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|-----|-----|-----|----|------|-----|-----|-----|-----|-----|-----|
| Directions Served | L | Т | R | L | Т | R | Т | L | Т | R | L | Т | TR |
| Maximum Queue (ft) | 136 | 975 | 525 | 241 | 243 | 65 | 41 | 324 | 364 | 268 | 300 | 778 | 749 |
| Average Queue (ft) | 39 | 549 | 312 | 131 | 103 | 16 | 5 | 162 | 148 | 8 | 123 | 458 | 415 |
| 95th Queue (ft) | 94 | 1222 | 717 | 222 | 238 | 58 | 70 | 282 | 286 | 90 | 329 | 799 | 768 |
| Link Distance (ft) | | 920 | | | 512 | | 1885 | | 617 | | | 813 | 813 |
| Upstream Blk Time (%) | | | 40 | | | 2 | | | | 0 | | | 6 |
| Queuing Penalty (veh) | | 0 | | | 6 | | | | 1 | | | 0 | 0 |
| Storage Bay Dist (ft) | 250 | | 500 | 250 | | 40 | | 400 | | 275 | 275 | | |
| Storage Blk Time (%) | | 1 | 47 | 2 | 36 | 0 | | 0 | 1 | 0 | 0 | 44 | |
| Queuing Penalty (veh) | | 6 | 110 | 4 | 83 | 1 | | 0 | 5 | 0 | 0 | 27 | |

Intersection: 9: Edmonston Road & Odell Road

| Movement | EB | WB | WB | NB | SB |
|-----------------------|-----|-----|----|-----|-----|
| Directions Served | LTR | LT | R | LT | LTR |
| Maximum Queue (ft) | 115 | 76 | 66 | 187 | 16 |
| Average Queue (ft) | 36 | 12 | 5 | 37 | 1 |
| 95th Queue (ft) | 92 | 49 | 34 | 118 | 8 |
| Link Distance (ft) | 509 | 488 | | 419 | 365 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | | | 50 | | |
| Storage Blk Time (%) | | 2 | 0 | | |
| Queuing Penalty (veh) | | 0 | 0 | | |

Intersection: 10: Powder Mill Road & Poultry Road

| Movement | EB | B69 | B74 | WB | B56 |
|--------------------|-----|-----|------|------|-----|
| Directions Served | LT | Т | Т | TR | Т |
| Maximum Queue (ft) | 206 | 254 | 9 | 914 | 281 |
| Average Queue (ft) | 159 | 67 | 0 | 694 | 136 |
| 95th Queue (ft) | 216 | 197 | 7 | 1161 | 413 |
| Link Distance (ft) | 97 | 313 | 1099 | 858 | 371 |

| Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 302 | 44 4 | 1 | 326 | 44 20 | |
|--|--------------------------------------|---|-------------------------------------|---------|----------|--|
| Intersection: 11: Powder Mill | Road | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | NB L 47 18 48 46 2 | NW T 44 16 58 46 10 39 | 5 | | | |
| Intersection: 12: Powder Mill | Road | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh) | EB L 31 4 19 50 0 | WB TR 10 0 7 153 | SB LR 161 65 123 467 | | | |
| Intersection: 13: Powder Mill | Road | | | | | |
| Movement Directions Served | EB TR | WB L | WB T | SB L | SB TR | |

| Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) | 2 0 2 153 | 48 14 38 | 6 0 3 550 | 59 50 55 | 832 566 1001 850 | 24 |
|---|------------------------------------|---------------------------------|---------------------------|--------------------------------------|-------------------------------------|----|
| Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | | 225 | | 25 84 230 | 0 48 121 | |
| Intersection: 14: Powder Mill | Road | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) | EB L 64 25 52 | WB TR 13 1 8 268 | NB L 75 73 82 | NB TR 653 313 660 857 | 3 | |
| Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 250 | | 50 84 80 | 0 2 7 | | |
| Intersection: 15: Powder Mill | Road | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) | EB T 161 84 142 546 | EB R 46 4 25 | WB L 95 36 75 | WB T 234 119 203 792 | NB L 218 118 194 892 | |
| Storage Blk Time (%) Queuing Penalty (ven) | | 260 | 300 | | | |

Intersection: 16: Powder Mill Road

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | EB R 34 13 36 14 0 | SE T 3 0 46 2 | NW LT 543 122 573 1635 |
|--|--------------------------------------|---------------------------------------|---------------------------------------|
| Intersection: 17: | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | WB L 3 0 3 14 0 | NB TR 62 8 55 460 0 | SB T 3 0 3 46 0 |

Intersection: 21: MD 201 /MD 201 & I-95 NB On Ramp

| Movement | SB | SB |
|-----------------------|----|----|
| Directions Served | Т | Т |
| Maximum Queue (ft) | 8 | 6 |
| Average Queue (ft) | 0 | 0 |
| 95th Queue (ft) | 4 | 4 |
| Link Distance (ft) | 39 | 39 |
| Upstream Blk Time (%) | | 0 |
| Queuing Penalty (veh) | 0 | |

Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 23: I-95 SB On Ramp & MD 201

| Movement | SB |
|-----------------------|-----|
| Directions Served | R |
| Maximum Queue (ft) | 8 |
| Average Queue (ft) | 0 |
| 95th Queue (ft) | 0 |
| Link Distance (ft) | 115 |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |

Intersection: 26: MD 201 & Lane Drop

| NW | NW | |
|-----|--|---|
| Т | Т | |
| 640 | 646 | |
| 604 | 611 | |
| 657 | 662 | |
| 610 | 610 | |
| | 3 | 8 |
| 26 | 67 | |
| | | |
| | | |
| | | |
| | | |
| SB | SB | NE |
| R | R | L |
| 650 | 790 | 5 |
| 514 | 615 | 0 |
| | NW T 640 604 657 610 26 SB R 650 514 | NW NW T T 640 646 604 611 657 662 610 610 3 26 67 8 SB SB R R 650 790 514 615 |

| 788 | 988 | 5 |
|-----|------------------|-----------------------------------|
| 617 | 617 | 843 |
| | 5 | 59 |
| 35 | 380 | |
| | | |
| | | |
| | | |
| | 788 617 35 | 788 988 617 617 5 35 380 |

Intersection: 61: MD 201 & Ramp to Northbound I-95

| NB | NB | NB | |
|-----|--|--|---|
| Т | Т | Т | |
| 241 | 289 | 267 | |
| 95 | 114 | 112 | |
| 269 | 314 | 306 | |
| 215 | 215 | 215 | |
| | 2 | 11 | 14 |
| 10 | 61 | 82 | |
| | | | |
| | | | |
| | | | |
| | NB T 241 95 269 215 10 | NB NB T T 241 289 95 114 269 314 215 215 10 61 | NB NB NB T T T 241 289 267 95 114 112 269 314 306 215 215 215 2 11 10 61 82 |

Network Summary Network wide Queuing Penalty: 5114

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SimTraffic Simulation Summary Action Alternative PM 12/16/2019

Summary of All Intervals

| Run Number Start Time End Time Total Time (min) Time Recorded (min) | 1 2:52 4:00 68 60 5 | 10 2:52 4:00 68 60 5 | 2 2:52 4:00 68 60 5 | 3 2:52 4:00 68 60 5 | 4 2:52 4:00 68 60 5 | 5 2:52 4:00 68 60 5 | 6 2:52 4:00 68 60 5 | 7 2:52 4:00 68 60 5 | 8 2:52 4:00 68 60 5 | 9 2:52 4:00 68 60 5 | Avg 2:52 4:00 68 60 5 | |
|--|---|---|--|---|--|--|--|---|---|--|---|---|
| # of Recorded Intervals | 5 | 4 | ۵ ۵ | 4 | J 4 | J 4 | 4 | ۵ ۵ | 4 | 4 | 4 | Δ |
| Vehs Entered Vehs Exited Starting Vehs Ending Vehs Travel Distance (mi) Travel Time (hr) Total Delay (hr) Total Stops | 12991 12555 721 1157 14188 1492.7 1080.6 17997 | 13065 12659 722 1128 14017 1515.6 1108.2 17627 | 13006 12631 685 1060 14103 1339.3 929.0 17432 | 12844 12405 655 1094 14077 1433.8 1025.3 17378 | 13180 12673 664 1171 14211 1366.6 953.4 17472 | 13113 12640 693 1166 13873 1385.4 983.0 18067 | 13121 12630 654 1145 14120 1397.6 988.7 17667 | 12979 12544 740 1175 14069 1491.1 1082.0 17408 | 12870 12457 724 1137 13916 1449.1 1043.6 17171 | 13129 12635 648 1142 14200 1372.7 959.9 17370 | 13030 12585 682 1136 14077 1424.4 1015.4 17558 | |
| Fuel Used (gal) | 685.6 | 689.9 | 653.2 | 673.0 | 659.3 | 654.5 | 664.8 | 684.9 | 671.7 | 666.6 | 670.3 | |
| Interval #0 InformationSeedinStart Time2:52End Time3:00Total Time (min)8Volumes adjusted by Growth INo data recorded this interval. | ng Factors. | | | | | | | | | | | |
| Interval #1 InformationRecordStart Time3:00End Time3:15Total Time (min)15Volumes adjusted by Growth I | ding Factors. | | | | | | | | | | | |
| Run Number Vehs Entered Vehs Exited | 1 3366 3107 | 10 3380 3164 | 2 3335 3142 | 3 3286 3073 | 4 3341 3108 | 5 3425 3148 | 6 3353 3153 | 7 3373 3147 | 8 3243 3058 | 9 3359 3110 | Avg 3346 3122 | |

| Starting Vehs | 721 | 722 | 685 | 655 | 664 | 693 | 654 | 740 | 724 | 648 | 682 |
|--|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ending Vehs | 980 | 938 | 878 | 868 | 897 | 970 | 854 | 966 | 909 | 897 | 909 |
| Travel Distance (mi) | 3620 | 3596 | 3573 | 3535 | 3635 | 3615 | 3516 | 3638 | 3456 | 3629 | 3581 |
| Travel Time (hr) | 232.4 | 245.8 | 219.9 | 226.4 | 216.7 | 221.8 | 216.0 | 245.4 | 235.5 | 206.8 | 226.7 |
| Total Delay (hr) | 127.1 | 141.1 | 115.9 | 123.6 | 110.5 | 117.2 | 113.7 | 139.5 | 134.3 | 101.1 | 122.4 |
| Total Stops | 4506 | 4615 | 4593 | 4331 | 4299 | 4684 | 4384 | 4614 | 4218 | 3986 | 4418 |
| Fuel Used (gal) | 143.4 | 146.9 | 139.5 | 140.3 | 140.1 | 139.9 | 137.5 | 147.8 | 140.0 | 139.5 | 141.5 |
| Interval #2 InformationRStart Time3:End Time3:Total Time (min)15Volumes adjusted by Gro | ecording 15 30 5 wth Factors. | | | | | | | | | | |
| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
| Vehs Entered | 3170 | 3263 | 3206 | 3225 | 3304 | 3235 | 3329 | 3179 | 3214 | 3329 | 3244 |
| Vehs Exited | 3106 | 3112 | 3118 | 3074 | 3147 | 3177 | 3211 | 3109 | 3085 | 3161 | 3131 |
| Starting Vehs | 980 | 938 | 878 | 868 | 897 | 970 | 854 | 966 | 909 | 897 | 909 |
| Ending Vehs | 1044 | 1089 | 966 | 1019 | 1054 | 1028 | 972 | 1036 | 1038 | 1065 | 1024 |
| Travel Distance (mi) | 3494 | 3514 | 3529 | 3488 | 3548 | 3453 | 3610 | 3505 | 3487 | 3482 | 3511 |
| Travel Time (hr) | 329.1 | 340.4 | 299.9 | 309.7 | 303.7 | 299.0 | 297.8 | 334.3 | 313.4 | 299.6 | 312.7 |
| Total Delay (hr) | 227.7 | 238.1 | 197.2 | 208.1 | 200.4 | 198.2 | 193.2 | 232.2 | 212.0 | 198.3 | 210.5 |
| Total Stops | 4486 | 4573 | 4244 | 4282 | 4339 | 4721 | 4420 | 4382 | 4073 | 4370 | 4384 |
| Fuel Used (gal) | 160.4 | 164.4 | 155.4 | 156.4 | 156.2 | 152.0 | 157.1 | 161.9 | 157.6 | 155.9 | 157.7 |
| Interval #3 InformationRStart Time3:3End Time3:4Total Time (min)15Volumes adjusted by Grow | ecording 30 45 5 wth Factors. | | | | | | | | | | |
| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
| Vehs Entered | 3246 | 3269 | 3277 | 3156 | 3342 | 3380 | 3312 | 3196 | 3195 | 3194 | 3253 |
| Vehs Exited | 3138 | 3224 | 3202 | 3097 | 3218 | 3206 | 3108 | 3109 | 3151 | 3122 | 3159 |
| Starting Vehs | 1044 | 1089 | 966 | 1019 | 1054 | 1028 | 972 | 1036 | 1038 | 1065 | 1024 |
| Ending Vehs | 1152 | 1134 | 1041 | 1078 | 1178 | 1202 | 1176 | 1123 | 1082 | 1137 | 1127 |
| Travel Distance (mi) | 3535 | 3459 | 3538 | 3513 | 3575 | 3537 | 3557 | 3403 | 3522 | 3503 | 3514 |
| Travel Time (hr) | 420.3 | 424.3 | 366.8 | 401.7 | 381.9 | 374.8 | 394.6 | 413.6 | 412.5 | 389.2 | 398.0 |

Total Delay (hr)317.6323.5263.8300.1278.6272.0291.7314.5310.1287.1295.9Total Stops44774239441243004530450245004058431943664369Fuel Used (gal)181.4180.7170.3177.1174.2171.6175.9176.5179.5174.8176.2

Interval #4 InformationRecordingStart Time3:45End Time4:00Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 3209 | 3153 | 3188 | 3177 | 3193 | 3073 | 3127 | 3231 | 3218 | 3247 | 3179 |
| Vehs Exited | 3204 | 3159 | 3169 | 3161 | 3200 | 3109 | 3158 | 3179 | 3163 | 3242 | 3174 |
| Starting Vehs | 1152 | 1134 | 1041 | 1078 | 1178 | 1202 | 1176 | 1123 | 1082 | 1137 | 1127 |
| Ending Vehs | 1157 | 1128 | 1060 | 1094 | 1171 | 1166 | 1145 | 1175 | 1137 | 1142 | 1136 |
| Travel Distance (mi) | 3539 | 3449 | 3463 | 3541 | 3453 | 3268 | 3438 | 3522 | 3451 | 3586 | 3471 |
| Travel Time (hr) | 511.0 | 505.1 | 452.7 | 496.0 | 464.3 | 489.9 | 489.2 | 497.9 | 487.7 | 477.1 | 487.1 |
| Total Delay (hr) | 408.3 | 405.5 | 352.1 | 393.6 | 363.8 | 395.6 | 390.0 | 395.8 | 387.2 | 373.3 | 386.5 |
| Total Stops | 4528 | 4200 | 4183 | 4465 | 4304 | 4160 | 4363 | 4354 | 4561 | 4648 | 4378 |
| Fuel Used (gal) | 200.4 | 197.8 | 188.0 | 199.2 | 188.8 | 191.0 | 194.3 | 198.6 | 194.5 | 196.4 | 194.9 |

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|--------|---------------------------|-------------------|
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Queuing and Blocking Report Action Alternative PM 12/16/2019

Intersection: 1: MD 201 & I-95 SB off-Ramp

| Movement | EB | EB | EB | NB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|------|------|-----|-----|
| Directions Served | L | L | R | Т | Т | Т | Т | Т |
| Maximum Queue (ft) | 122 | 466 | 302 | 147 | 200 | 233 | 134 | 141 |
| Average Queue (ft) | 23 | 103 | 11 | 66 | 62 | 110 | 54 | 69 |
| 95th Queue (ft) | 72 | 259 | 157 | 124 | 145 | 202 | 110 | 124 |
| Link Distance (ft) | | 734 | 734 | 1249 | 1249 | 1249 | 542 | 542 |
| Upstream Blk Time (%) | | | 0 | 0 | | | | |
| Queuing Penalty (veh) | | 0 | 0 | | | | | |
| Storage Bay Dist (ft) | 325 | | | | | | | |
| Storage Blk Time (%) | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | |

Intersection: 2: MD 201 & I-95 NB Off Ramp

| Movement | WB | WB | WB | WB | NB | NB | NB | SB | SB | SB | |
|-----------------------|-----|------|------|-----|-----|-----|-----|-----|-----|-----|---|
| Directions Served | L | L | R | R | UT | Т | Т | Т | Т | Т | |
| Maximum Queue (ft) | 296 | 348 | 303 | 266 | 148 | 165 | 178 | 170 | 190 | 232 | |
| Average Queue (ft) | 161 | 215 | 170 | 152 | 67 | 90 | 98 | 81 | 87 | 117 | |
| 95th Queue (ft) | 262 | 310 | 260 | 234 | 123 | 147 | 159 | 143 | 155 | 208 | |
| Link Distance (ft) | | 1405 | 1405 | | | 282 | 282 | 215 | 215 | 215 | |
| Upstream Blk Time (%) | | | | | | | | | 0 | 0 | 0 |
| Queuing Penalty (veh) | | | | | | | | 0 | 0 | 3 | |
| Storage Bay Dist (ft) | 400 | | | 300 | 250 | | | | | | |
| Storage Blk Time (%) | | 0 | 0 | 0 | | | | | | | |
| Queuing Penalty (veh) | | 0 | 1 | 0 | | | | | | | |

Intersection: 3: MD 201 & SHA Dist. 3/Crescent Drive

| Movement | EB | WB | WB | NB | NB | NB | NB | NB | SB | SB | SB | SB |
|--------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | LTR | LT | R | L | Т | Т | Т | R | L | Т | Т | TR |
| Maximum Queue (ft) | 46 | 230 | 118 | 87 | 214 | 262 | 266 | 178 | 153 | 114 | 131 | 179 |
| Average Queue (ft) | 12 | 108 | 41 | 21 | 82 | 137 | 133 | 12 | 65 | 19 | 32 | 48 |
| 95th Queue (ft) | 35 | 193 | 84 | 62 | 182 | 240 | 236 | 94 | 123 | 68 | 87 | 126 |

| Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 239 | 429 0 0 | 250 0 0 | 250 | 266 0 0 0 | 266 0 1 | 266 0 1 1 2 | 0 200 0 0 | 300 | 783 | 783 | 783 |
|--|------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------------------|-----|-----|-----|
| Intersection: 4: MD 201 & Ivy | Lane | | | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | NB L 142 56 113 350 | NB L 164 89 140 783 | SB T 137 51 112 1193 | SB T 171 95 156 1193 | | | | | | | | |
| Intersection: 5: MD 201 & Che | errywood | d Lane | | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (yeb) | EB L 215 116 186 | EB L 254 139 208 1306 | EB R 281 148 253 1306 | NB L 213 98 174 | NB T 199 66 152 1193 | NB T 205 62 154 1193 | SB T 280 143 237 610 | SB T 325 182 282 610 | SB R 275 66 178 | | | |
| Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 250 0 0 | 0 0 | | 750 | | | | 1 5 | 250 0 0 | | | |
| Intersection: 6: MD 201 & Sun | inyside / | Avenue | | | | | | | | | | |
| Movement | EB | EB | NB | NB | B35 | SB | SB | | | | | |

| Directions Served | L | R | L | TR | Т | Т | R |
|-----------------------|------|-----|-----|------|------|------|-----|
| Maximum Queue (ft) | 1026 | 375 | 475 | 1352 | 167 | 1654 | 275 |
| Average Queue (ft) | 935 | 372 | 425 | 596 | 9 | 1455 | 135 |
| 95th Queue (ft) | 1193 | 395 | 524 | 1209 | 113 | 1994 | 331 |
| Link Distance (ft) | 968 | | | 1368 | 2212 | 1546 | |
| Upstream Blk Time (%) | | 58 | | | 1 | | 31 |
| Queuing Penalty (veh) | 0 | | | 16 | | 459 | |
| Storage Bay Dist (ft) | | 350 | 450 | | | | 250 |
| Storage Blk Time (%) | 28 | 40 | 14 | 2 | | 40 | 0 |
| Queuing Penalty (veh) | 175 | 111 | 150 | 7 | | 94 | 1 |

Intersection: 7: MD 201 & Beaver Dam Road

| Movement | WB | NB | SB | |
|-----------------------|-----|------|------|----|
| Directions Served | LTR | TR | LT | |
| Maximum Queue (ft) | 594 | 39 | 922 | |
| Average Queue (ft) | 345 | 1 | 795 | |
| 95th Queue (ft) | 652 | 22 | 1188 | |
| Link Distance (ft) | 626 | 1546 | 837 | |
| Upstream Blk Time (%) | | 14 | | 43 |
| Queuing Penalty (veh) | 0 | | 643 | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Intersection: 8: MD 201 & Powder Mill Road

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB | SB | SB | SB | |
|-----------------------|-----|------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|---|
| Directions Served | L | Т | R | L | Т | R | L | Т | R | L | Т | TR | |
| Maximum Queue (ft) | 275 | 1402 | 525 | 275 | 616 | 64 | 424 | 672 | 300 | 300 | 752 | 707 | |
| Average Queue (ft) | 218 | 664 | 311 | 274 | 574 | 14 | 311 | 389 | 101 | 162 | 418 | 390 | |
| 95th Queue (ft) | 341 | 1350 | 705 | 278 | 651 | 54 | 471 | 666 | 335 | 351 | 756 | 719 | |
| Link Distance (ft) | | 1433 | | | 523 | | | 618 | | | 816 | 816 | |
| Upstream Blk Time (%) | | | 5 | | | 90 | | | 3 | | | 6 | 4 |
| Queuing Penalty (veh) | | 0 | | | 712 | | | 32 | | | 0 | 0 | |
| Storage Bay Dist (ft) | 250 | | 500 | 250 | | 40 | 400 | | 275 | 275 | | | |
| Storage Blk Time (%) | 7 | 23 | 11 | 94 | 30 | 2 | 2 | 13 | 0 | 0 | 37 | | |
| Queuing Penalty (veh) | 52 | 149 | 70 | 297 | 165 | 11 | 18 | 84 | 1 | 0 | 36 | | |

Intersection: 9: Edmonston Road & Odell Road

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) | EB LTR 100 32 79 509 | WB LT 30 3 16 488 | WB R 26 3 16 | NB LT 230 32 132 419 | SB LTR 15 1 11 365 |
|--|--|---|---|---|-----------------------------------|
| Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | | 0 0 | 50 | 0 0 | |
| Intersection: 10: Powder Mill R | load & F | Poultry F | Road | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | EB LT 206 173 204 97 613 | B69 T 403 268 493 325 87 285 | WB TR 558 138 411 866 41 5 | SB LR 406 410 391 2 0 | 99 |
| Intersection: 11: Powder Mill R | load | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) | EB TR 77 9 43 383 | NB L 49 21 48 48 | 1 | | |

Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 12: Powder Mill Road & Springfield Road

0

| Movement | EB | EB | SB | |
|-----------------------|----|-----|-----|----|
| Directions Served | L | Т | LR | |
| Maximum Queue (ft) | 32 | 40 | 464 | |
| Average Queue (ft) | 5 | 3 | 299 | |
| 95th Queue (ft) | 24 | 43 | 542 | |
| Link Distance (ft) | | 609 | 467 | |
| Upstream Blk Time (%) | | | | 23 |
| Queuing Penalty (veh) | | | 0 | |
| Storage Bay Dist (ft) | 50 | | | |
| Storage Blk Time (%) | 0 | 0 | | |
| Queuing Penalty (veh) | 0 | 0 | | |

Intersection: 13: Powder Mill Road & B-W Parkway SB Off-Ramp

| Movement | EB | WB | WB | SB | SB | |
|-----------------------|-----|-----|-----|-----|-----|----|
| Directions Served | TR | L | Т | L | TR | |
| Maximum Queue (ft) | 68 | 148 | 2 | 58 | 885 | |
| Average Queue (ft) | 15 | 60 | 0 | 48 | 845 | |
| 95th Queue (ft) | 66 | 116 | 2 | 57 | 990 | |
| Link Distance (ft) | 153 | | 550 | | 850 | |
| Upstream Blk Time (%) | | 0 | | | | 91 |
| Queuing Penalty (veh) | 3 | | | | 0 | |
| Storage Bay Dist (ft) | | 225 | | 25 | | |
| Storage Blk Time (%) | | | | 99 | 8 | |
| Queuing Penalty (veh) | | | | 145 | 24 | |

Intersection: 14: B-W Parkway NB Off-Ramp & Powder Mill Road

| Movement | EB | EB | WB | NB | NB |
|--------------------|-----|-----|----|----|-----|
| Directions Served | L | Т | TR | L | TR |
| Maximum Queue (ft) | 257 | 230 | 48 | 75 | 709 |

| Average Queue (ft) | 131 | 45 | 11 | 64 | 362 | |
|-----------------------|-----|-----|-----|----|-----|----|
| 95th Queue (ft) | 246 | 270 | 35 | 89 | 832 | |
| Link Distance (ft) | | 550 | 268 | | 857 | |
| Upstream Blk Time (%) | | | 1 | | | 11 |
| Queuing Penalty (veh) | | 11 | | | 0 | |
| Storage Bay Dist (ft) | 250 | | | 50 | | |
| Storage Blk Time (%) | 5 | 0 | | 84 | 8 | |
| Queuing Penalty (veh) | 38 | 0 | | 41 | 6 | |

Intersection: 15: Soil Conservation Road & Powder Mill Road

| Movement | EB | EB | WB | WB | NB |
|-----------------------|-----|-----|-----|-----|-----|
| Directions Served | Т | R | L | Т | L |
| Maximum Queue (ft) | 258 | 79 | 82 | 241 | 384 |
| Average Queue (ft) | 140 | 8 | 29 | 120 | 225 |
| 95th Queue (ft) | 227 | 46 | 67 | 207 | 353 |
| Link Distance (ft) | 546 | | | 792 | 892 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | | 260 | 300 | | |
| Storage Blk Time (%) | 0 | | | 0 | |
| Queuing Penalty (veh) | 1 | | | 0 | |

Intersection: 16: Powder Mill Road

| Movement | EB | WB | SE |
|-----------------------|----|-----|----|
| Directions Served | Т | TR | L |
| Maximum Queue (ft) | 48 | 12 | 78 |
| Average Queue (ft) | 21 | 1 | 19 |
| 95th Queue (ft) | 40 | 7 | 63 |
| Link Distance (ft) | 19 | 796 | 50 |
| Upstream Blk Time (%) | | 13 | |
| Queuing Penalty (veh) | 6 | | 11 |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

1

Intersection: 17:

| Movement | WB | NB | SB |
|-----------------------|----|-----|----|
| Directions Served | L | TR | Т |
| Maximum Queue (ft) | 17 | 61 | 9 |
| Average Queue (ft) | 1 | 9 | 0 |
| 95th Queue (ft) | 9 | 38 | 5 |
| Link Distance (ft) | 19 | 462 | 48 |
| Upstream Blk Time (%) | | 0 | |
| Queuing Penalty (veh) | 0 | | 0 |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

0

0

Intersection: 18: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 21: MD 201 /MD 201 & I-95 NB On Ramp

| Movement | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|----|----|----|
| Directions Served | Т | R | Т | Т | Т |
| Maximum Queue (ft) | 2 | 35 | 12 | 2 | 9 |
| Average Queue (ft) | 0 | 2 | 0 | 0 | 1 |
| 95th Queue (ft) | 2 | 19 | 5 | 2 | 6 |
| Link Distance (ft) | 115 | 115 | 39 | 39 | 39 |
| Upstream Blk Time (%) | | | | 0 | |
| Queuing Penalty (veh) | | | 0 | | 0 |
| Storage Bay Dist (ft) | | | | | |

Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 23: I-95 SB On Ramp & MD 201

| Movement | NB | SB | SB | SB | |
|-----------------------|-----|-----|-----|-----|---|
| Directions Served | Т | Т | Т | R | |
| Maximum Queue (ft) | 57 | 2 | 7 | 49 | |
| Average Queue (ft) | 2 | 0 | 0 | 3 | |
| 95th Queue (ft) | 58 | 2 | 6 | 24 | |
| Link Distance (ft) | 542 | 115 | 115 | 115 | |
| Upstream Blk Time (%) | | 0 | | | 0 |
| Queuing Penalty (veh) | 0 | | | 0 | |
| Storage Bay Dist (ft) | | | | | |
| Storage Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |

Intersection: 26: MD 201 & Lane Drop

| NW | NW | |
|-----|--|---|
| Т | Т | |
| 434 | 430 | |
| 186 | 195 | |
| 420 | 432 | |
| 610 | 610 | |
| | 0 | 0 |
| 1 | 0 | |
| | | |
| | | |
| | | |
| | NW T 434 186 420 610 1 | NW NW T T 434 430 186 195 420 432 610 610 0 1 |

Intersection: 28: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 40: Powder Mill Road

| Movement | WB | |
|-----------------------|------|----|
| Directions Served | Т | |
| Maximum Queue (ft) | 1990 | |
| Average Queue (ft) | 1640 | |
| 95th Queue (ft) | 2607 | |
| Link Distance (ft) | 1906 | |
| Upstream Blk Time (%) | | 70 |
| Queuing Penalty (veh) | 554 | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

Intersection: 43: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 44: Powder Mill Road

Movement

| Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | | | |
|--|---|---|---|
| Intersection: 45: Powder I | Mill Road | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh) | | | |
| Intersection: 47: MD 201 | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | SB R 647 491 793 618 47 | SB R 790 596 991 618 7 359 | NE L 269 22 181 837 51 1 |

0

Intersection: 48: Powder Mill Road

Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 49: Powder Mill Road Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 50: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 56: Powder Mill Road

| Movement | NW |
|---------------------------------|------|
| Directions Served | Т |
| Maximum Queue (ft) | 32 |
| Average Queue (ft) | 2 |
| 95th Queue (ft) | 29 |
| Link Distance (ft) | 383 |
| Upstream Blk Time (%) | |
| Queuing Penalty (veh) | |
| Storage Bay Dist (ft) | |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |
| Intersection: 57: Powder Mill R | load |

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 61: MD 201 & Ramp to Northbound I-95

| Movement | NB | NB | NB |
|--------------------|----|----|----|
| Directions Served | Т | Т | Т |
| Maximum Queue (ft) | 4 | 10 | 3 |

| Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 0 4 215 | 0 8 215 | 0 3 215 |
|--|---|--|---------------|
| Intersection: 66: Powder Mi | ll Road | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 72: Powder Mil | WB T 1193 508 1415 1121 269 | 35 | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh) | WB T 414 260 547 306 487 | B53 T 959 533 1259 876 63 389 | 50 |

Intersection: 74: Powder Mill Road

| Movement | NE | SW | B69 | |
|-----------------------|------|-----|-----|----|
| Directions Served | Т | Т | Т | |
| Maximum Queue (ft) | 426 | 417 | 130 | |
| Average Queue (ft) | 145 | 129 | 30 | |
| 95th Queue (ft) | 470 | 428 | 111 | |
| Link Distance (ft) | 1121 | 325 | 97 | |
| Upstream Blk Time (%) | | | 28 | 14 |
| Queuing Penalty (veh) | | 214 | 105 | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| | | | | |

Network Summary Network wide Queuing Penalty: 6913

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SimTraffic Simulation Summary Action Alternative AM with Mitigation 12/09/2019

Summary of All Intervals

| Run Number Start Time End Time Total Time (min) Time Recorded (min) 60 # of Intervals | 0 | 1 5:52 7:00 68 60 5 | 10 5:52 7:00 68 60 5 | 2 5:52 7:00 68 60 5 | 3 5:52 7:00 68 60 5 | 4 5:52 7:00 68 60 5 | 5 5:52 7:00 68 60 5 | 6 5:52 7:00 68 60 5 | 7 5:52 7:00 68 60 5 | 8 5:52 7:00 68 60 5 | 9 5:52 7:00 68 60 5 | Avg 5:52 7:00 68 |
|--|-------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|------------------------------|
| # of Recorded Intervals | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Vehs Entered Vehs Exited Starting Vehs Ending Vehs Travel Distance (mi) 1 | 2057 | 10221 10194 518 545 13267 | 10713 10499 493 707 13166 | 10409 10343 534 600 13196 | 10522 10390 507 639 13154 | 10459 10294 537 702 13155 | 10521 10257 473 737 13139 | 10418 10341 485 562 13275 | 10613 10390 497 720 13188 | 10365 10211 517 671 13002 | 10423 10270 480 633 13150 | 10457 10320 501 648 |
| Travel Time (hr) | 2001 | 549.7 | 632.2 | 591.1 | 622.9 | 604.0 | 622.0 | 582.1 | 662.5 | 610.2 | 580.6 | 605.7 |
| Total Delay (hr) Total Stops Fuel Used (gal) | | 189.1 14080 462.8 | 262.2 17094 491.7 | 224.7 16469 479.1 | 255.7 17211 486.8 | 237.9 16350 480.4 | 255.1 16442 483.6 | 216.8 15976 476.5 | 292.6 18308 495.6 | 243.8 16673 480.0 | 218.4 15675 471.2 | 239.6 16424 480.8 |
| Interval #0 Information S | Seedin | a | | | | | | | | | | |
| Start Time 5: End Time 6: Total Time (min) 8 | :52 :00 | 9 | | | | | | | | | | |
| Volumes adjusted by Gro No data recorded this inte | owth F erval. | actors. | | | | | | | | | | |
| Interval #1 InformationFStart Time6:End Time6:Total Time (min)1:Volumes adjusted by Gro | Record :00 :15 5 owth F | ling actors. | | | | | | | | | | |
| Run Number Vehs Entered Vehs Exited | | 1 2507 2540 | 10 2724 2639 | 2 2612 2576 | 3 2687 2576 | 4 2534 2529 | 5 2636 2514 | 6 2569 2502 | 7 2686 2523 | 8 2561 2511 | 9 2600 2550 | Avg 2612 2547 |

| Starting Vehs Ending Vehs Travel Distance (mi) Travel Time (hr) Total Delay (hr) Total Stops Fuel Used (gal) | 3188 | 518 485 3339 127.7 39.1 2825 111.1 | 493 578 3279 142.4 49.5 3699 120.2 | 534 570 3293 142.5 51.5 4050 118.3 | 507 618 3222 147.7 56.0 3899 120.9 | 537 542 3206 140.2 50.9 3940 116.0 | 473 595 3215 136.6 47.0 3486 115.1 | 485 552 3342 139.4 50.3 3810 116.3 | 497 660 3220 151.7 58.6 4253 122.7 | 517 567 3248 136.4 47.4 3721 114.9 | 480 530 3255 136.7 46.1 3449 117.1 | 501 563 140.1 49.6 3708 117.3 |
|---|---|---|--|---|---|---|---|---|---|---|---|---|
| Interval #2 Information Start Time End Time Total Time (min) Volumes adjusted by | n Recor 6:15 6:30 15 Growth | ding Factors. | | | | | | | | | | |
| Run Number Vehs Entered Vehs Exited Starting Vehs Ending Vehs Travel Distance (mi) Travel Time (hr) Total Delay (hr) Total Stops Fuel Used (gal) | 3267 | 1 2644 2567 485 562 3286 136.0 45.1 3382 115.9 | 10 2651 2639 578 590 3374 144.2 52.6 3945 119.6 | 2 2669 2642 570 597 3211 151.1 57.4 4349 122.9 | 3 2518 2521 618 615 3280 149.2 59.7 4153 117.6 | 4 2565 2532 542 575 3399 138.7 47.6 3601 116.9 | 5 2663 2651 595 607 3236 157.6 63.1 4342 124.4 | 6 2577 2519 552 610 3334 149.1 59.0 4181 118.5 | 7 2617 2637 660 640 3359 168.5 75.9 4623 123.9 | 8 2637 2544 567 660 3141 151.4 57.9 4290 121.7 | 9 2567 2577 530 520 3289 139.2 51.2 3907 113.0 | Avg 2604 2583 563 589 148.5 57.0 4074 119.5 |
| SimTraffic Simulation Action Alternative AM | Summa with Mit | ry igation | 12/09/2 | 2019 | | | | | | | | |
| Interval #3 Information Start Time End Time Total Time (min) Volumes adjusted by 9 | n Recor 6:30 6:45 15 Growth | ding Factors. | | | | | | | | | | |
| Run Number Vehs Entered Vehs Exited | | 1 2520 2535 | 10 2666 2585 | 2 2524 2548 | 3 2649 2607 | 4 2641 2563 | 5 2591 2563 | 6 2622 2641 | 7 2634 2597 | 8 2541 2621 | 9 2611 2559 | Avg 2595 2581 |

| Starting Vehs | | 562 | 590 | 597 | 615 | 575 | 607 | 610 | 640 | 660 | 520 | 589 |
|----------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ending Vehs | | 547 | 671 | 573 | 657 | 653 | 635 | 591 | 677 | 580 | 572 | 609 |
| Travel Distance (mi) | 3250 | 3291 | 3231 | 3324 | 3281 | 3196 | 3340 | 3250 | 3335 | 3291 | 3279 | |
| Travel Time (hr) | | 142.0 | 167.6 | 143.3 | 163.8 | 153.2 | 154.9 | 147.5 | 164.2 | 161.1 | 145.3 | 154.3 |
| Total Delay (hr) | | 51.4 | 75.6 | 53.4 | 71.2 | 61.4 | 66.0 | 54.6 | 73.6 | 68.0 | 53.8 | 62.9 |
| Total Stops | | 3903 | 4469 | 3934 | 4659 | 4201 | 3954 | 4007 | 4542 | 4342 | 3968 | 4194 |
| Fuel Used (gal) | | 117.7 | 125.1 | 116.9 | 122.9 | 120.5 | 118.5 | 121.6 | 122.0 | 122.3 | 118.8 | 120.6 |

Interval #4 InformationRecordingStart Time6:45End Time7:00Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | | 2550 | 2672 | 2604 | 2668 | 2719 | 2631 | 2650 | 2676 | 2626 | 2645 | 2647 |
| Vehs Exited | | 2552 | 2636 | 2577 | 2686 | 2670 | 2529 | 2679 | 2633 | 2535 | 2584 | 2610 |
| Starting Vehs | | 547 | 671 | 573 | 657 | 653 | 635 | 591 | 677 | 580 | 572 | 609 |
| Ending Vehs | | 545 | 707 | 600 | 639 | 702 | 737 | 562 | 720 | 671 | 633 | 648 |
| Travel Distance (mi) | 3251 | 3352 | 3281 | 3368 | 3371 | 3355 | 3348 | 3349 | 3273 | 3321 | 3327 | |
| Travel Time (hr) | | 144.0 | 178.1 | 154.3 | 162.2 | 171.9 | 172.8 | 146.1 | 178.0 | 161.4 | 159.4 | 162.8 |
| Total Delay (hr) | | 53.5 | 84.4 | 62.4 | 68.8 | 78.0 | 79.0 | 52.9 | 84.5 | 70.4 | 67.3 | 70.1 |
| Total Stops | | 3970 | 4981 | 4136 | 4500 | 4608 | 4660 | 3978 | 4890 | 4320 | 4351 | 4434 |
| Fuel Used (gal) | | 118.1 | 126.8 | 121.0 | 125.4 | 127.0 | 125.7 | 120.1 | 126.9 | 121.0 | 122.3 | 123.4 |

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Queuing and Blocking Report Action Alternative AM with Mitigation 12/09/2019

Intersection: 1: MD 201 & I-95 SB off-Ramp

| Movement | | EB | EB | EB | NB | NB | NB | SB | SB |
|-----------------------|--------|-----|-----|-----|------|------|------|-----|-----|
| Directions Served | L | L | R | Т | Т | Т | Т | Т | |
| Maximum Queue (ft) | 216 | 278 | 74 | 143 | 144 | 190 | 112 | 132 | |
| Average Queue (ft) | 51 | 137 | 3 | 69 | 45 | 91 | 44 | 49 | |
| 95th Queue (ft) | | 153 | 233 | 76 | 125 | 107 | 165 | 95 | 111 |
| Link Distance (ft) | | | 734 | 734 | 1249 | 1249 | 1249 | 542 | 542 |
| Upstream Blk Time (% |)) | | | | 0 | | | | |
| Queuing Penalty (veh) | | | | 0 | | | | | |
| Storage Bay Dist (ft) | 325 | | | | | | | | |
| Storage Blk Time (%) | | 0 | | | | | | | |
| Queuing Penalty (veh) |) | 0 | | | | | | | |

Intersection: 2: MD 201 & I-95 NB Off Ramp

| Movement | | WB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|------|------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | L | L | R | R | UT | Т | Т | Т | Т | Т | |
| Maximum Queue (ft) | 181 | 240 | 358 | 320 | 142 | 166 | 159 | 207 | 244 | 282 | |
| Average Queue (ft) | 83 | 136 | 233 | 218 | 68 | 93 | 86 | 104 | 113 | 128 | |
| 95th Queue (ft) | | 155 | 205 | 319 | 308 | 122 | 150 | 142 | 179 | 205 | 234 |
| Link Distance (ft) | | | 1405 | 1405 | | | 282 | 282 | 215 | 215 | 215 |
| Upstream Blk Time (% |) | | | | | | | | 0 | 0 | 1 |
| Queuing Penalty (veh) | | | | | | | | 0 | 1 | 3 | |
| Storage Bay Dist (ft) | 400 | | | 300 | 250 | | | | | | |
| Storage Blk Time (%) | | | 1 | 0 | | | | | | | |
| Queuing Penalty (veh) | | | 4 | 1 | | | | | | | |

Intersection: 3: MD 201 & SHA Dist. 3/Crescent Drive

| Movement | | EB | WB | WB | NB | NB | NB | NB | NB | SB | SB | SB | SB |
|--------------------|-----|-----|-----|----|-----|-----|-----|-----|----|-----|-----|-----|----|
| Directions Served | LTR | LT | R | L | Т | Т | Т | R | L | Т | Т | TR | |
| Maximum Queue (ft) | 48 | 172 | 113 | 97 | 193 | 242 | 267 | 22 | 95 | 105 | 105 | 146 | |
| Average Queue (ft) | 4 | 84 | 40 | 35 | 38 | 90 | 92 | 1 | 27 | 16 | 25 | 36 | |
| 95th Queue (ft) | | 25 | 142 | 77 | 76 | 120 | 187 | 203 | 23 | 70 | 62 | 69 | 99 |

| Link Distance (ft) Upstream Blk Time (% Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) |) | 239 0 0 | 429 250 | 250 | 0 0 | 266 0 | 266 0 0 1 0 | 266 0 1 200 | 0 300 | | 783 | 783 | 783 |
|---|-----------------|-----------------------|----------------------|-----------------------|------------------------|------------------------|-------------------------|-----------------------|----------------------|-----|-----|-----|-----|
| Intersection: 4: MD 207 | 1 & Ivy I | _ane | | | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) | L 120 30 | NB L 207 64 | NB T 361 60 | NB T 300 53 | NB T 68 8 | SB T 117 31 | SB | | | | | | |
| 95th Queue (ft) Link Distance (ft) Upstream Blk Time (% Queuing Penalty (veh) |) | 84 | 140 783 | 319 783 | 296 783 | 40 1193 | 86 1193 | | | | | | |
| Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 350 | 0 0 | | | | | | | | | | | |
| Intersection: 5: MD 207 | 1 & Che | rrywood | l Lane | | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) | L 261 171 | EB L 376 176 | EB R 139 40 | EB L 668 296 | NB T 1094 609 | NB T 1087 570 | NB T 268 150 | SB T 351 193 | SB R 275 94 | SB | | | |
| 95th Queue (ft) Link Distance (ft) Upstream Blk Time (% Queuing Penalty (veh) |) | 277 | 366 1306 | 104 1306 | 820 | 1234 1193 26 | 1219 1193 3 15 | 243 610 2 | 302 610 | 222 | | | |
| Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 250 6 11 | 7 12 | | 750 0 0 | 23 51 | | | 2 7 | 250 0 0 | | | | |

Queuing and Blocking Report Action Alternative AM with Mitigation 12/09/2019 Intersection: 6: MD 201 & Sunnyside Avenue

| Movement | | EB | EB | NB | NB | NB | B6006 | B6006 | SB | SB | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|-------|-------|------|------|-----|
| Directions Served | L | R | L | Т | TR | Т | | Т | Т | R | |
| Maximum Queue (ft) | 317 | 281 | 437 | 300 | 213 | 594 | 551 | 775 | 727 | 275 | |
| Average Queue (ft) | 164 | 113 | 293 | 97 | 77 | 517 | 256 | 486 | 439 | 164 | |
| 95th Queue (ft) | | 288 | 222 | 436 | 281 | 158 | 773 | 682 | 748 | 707 | 347 |
| Link Distance (ft) | | 414 | | | 939 | 939 | 492 | 492 | 1541 | 1541 | |
| Upstream Blk Time (% |) | | 0 | | | | | 19 | 2 | | |
| Queuing Penalty (veh) | | 0 | | | | | 166 | 20 | | | |
| Storage Bay Dist (ft) | | 350 | 450 | | | | | | | 250 | |
| Storage Blk Time (%) | 0 | 0 | 2 | 0 | | | | | 19 | 0 | |
| Queuing Penalty (veh) | 1 | 0 | 12 | 0 | | | | | 39 | 1 | |

Intersection: 7: MD 201 & Beaver Dam Road

| Movement | | WB | NB |
|-----------------------|----|-----|------|
| Directions Served | LR | Т | |
| Maximum Queue (ft) | 85 | 9 | |
| Average Queue (ft) | 27 | 0 | |
| 95th Queue (ft) | | 64 | 6 |
| Link Distance (ft) | | 614 | 1541 |
| Upstream Blk Time (% | 6) | | |
| Queuing Penalty (veh |) | | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh |) | | |
| | | | |

Intersection: 8: MD 201 & Powder Mill Road

| Movement | | EB | EB | EB | EB | WB | WB | WB | WB | NB | NB | SB | SB | SB |
|-----------------------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | L | Т | Т | R | L | L | Т | R | L | Т | L | Т | TR | |
| Maximum Queue (ft) | 120 | 181 | 146 | 145 | 121 | 130 | 208 | 64 | 309 | 282 | 211 | 347 | 340 | |
| Average Queue (ft) | 39 | 84 | 33 | 8 | 60 | 57 | 94 | 16 | 161 | 137 | 57 | 190 | 170 | |
| 95th Queue (ft) | | 86 | 147 | 104 | 82 | 105 | 105 | 176 | 58 | 261 | 240 | 133 | 298 | 288 |
| Link Distance (ft) | | | 587 | 587 | | | | 578 | | | 599 | | 809 | 809 |
| Upstream Blk Time (% |)) | | | | | | | | | | | | | |
| Queuing Penalty (veh) |) | | | | | | | | | | | | | |

| Storage Bay Dist (ft) | 250 | 500 | 500 | 500 | | 40 | 400 | 275 | |
|-----------------------|-----|-----|-----|-----|----|----|-----|-----|---|
| Storage Blk Time (%) | | | | | 32 | 0 | 0 | 0 | 2 |
| Queuing Penalty (veh) | | | | | 73 | 1 | 0 | 0 | 1 |

Intersection: 9: Edmonston Road & Odell Road

| Movement | | EB | WB | WB | NB | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|
| Directions Served | LTR | LT | R | LT | LTR | |
| Maximum Queue (ft) | 132 | 57 | 47 | 211 | 5 | |
| Average Queue (ft) | 37 | 7 | 4 | 43 | 0 | |
| 95th Queue (ft) | | 100 | 33 | 28 | 134 | 2 |
| Link Distance (ft) | | 509 | 488 | | 419 | 365 |
| Upstream Blk Time (% |) | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | | | 50 | | | |
| Storage Blk Time (%) | | 1 | 0 | 0 | | |
| Queuing Penalty (veh) | | 0 | 0 | 0 | | |

Intersection: 10: Powder Mill Road & Poultry Road

| Movement | | EB | B40 | WB | WB |
|-----------------------|-----|-----|-----|------|-----|
| Directions Served | L | Т | Т | R | |
| Maximum Queue (ft) | 168 | 98 | 177 | 147 | |
| Average Queue (ft) | 72 | 5 | 79 | 64 | |
| 95th Queue (ft) | | 136 | 87 | 144 | 115 |
| Link Distance (ft) | | | 578 | 1365 | |
| Upstream Blk Time (% |) | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | 200 | | | 200 | |
| Storage Blk Time (%) | 0 | | 0 | 0 | |
| Queuing Penalty (veh) | 0 | | 0 | 0 | |
| | | | | | |

Queuing and Blocking Report Action Alternative AM with Mitigation 12/09/2019

Intersection: 11: Powder Mill Road

Movement NB SE

| Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (% Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | L 42 12) | TR 7 0 38 46 0 | 7 371 0 | | | |
|---|--------------------|-------------------------------|------------------------|------------------------|------------|-----------|
| Intersection: 12: Powd | er Mill R | load | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) | L 32 3 | EB T 118 34 | EB TR 171 105 | WB LR 203 103 | SB | |
| 95th Queue (ft) | - | 18 | 91 3475 | 184 | 174 467 | |
| Upstream Blk Time (% |) | | 5475 | 101 | 2 | |
| Storage Bay Dist (ft) | 50 | | | 19 | | |
| Storage Blk Time (%) Queuing Penalty (veh) | 0 0 | 4 0 | | | | |
| Intersection: 13: Powd | er Mill R | load | | | | |
| Movement | т | EB | EB | WB T | WB | SB |
| Maximum Queue (ft) | 1 158 | 87 | L 77 | 184 | L 264 | 222 |
| Average Queue (ft) | 89 | 37 154 | 24 74 | 75 59 | 151 151 | 89 236 |
| Link Distance (ft) | ` | 151 | 151 1 | 00 | 550 | 200 |
| Queuing Penalty (veh) |) | 2 | I | | | |
| Storage Bay Dist (ft) Storage Blk Time (%) | | | 225 | 0 | 300 0 | 0 |
| Queuing Penalty (veh) | | | | 0 | 0 | 0 |

SB

169 850

Intersection: 14: Powder Mill Road

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) | L 212 47 | EB T 296 168 | EB T 259 97 | WB R 148 58 | WB T 18 1 | B51 L 302 195 | NB TR 187 40 | NB |
|--|--------------------|-----------------------|----------------------|-----------------------|-----------------------|------------------------|-----------------------|------------|
| 95th Queue (ft) Link Distance (ft) Upstream Blk Time (% |)) | 133 | 262 550 | 194 264 2 | 124 0 | 15 546 | 292 | 127 857 |
| Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | , 250) | 1 1 | 6 17 | 100 0 0 | | 300 1 1 | 0 0 | |
| Intersection: 15: Powd | ler Mill F | Road | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) | T 194 94 | EB R 55 8 | EB L 94 37 | WB T 221 114 | WB L 225 119 | NB | | |
| 95th Queue (ft) Link Distance (ft) Upstream Blk Time (% Queuing Penalty (yeh) | o) | 167 546 | 37 | 78 | 193 792 | 193 892 | | |
| Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | , 0) 0 | 260 | 300 | | | | | |
| Queuing and Blocking Action Alternative AM | Report with Mit | igation | 12/09/ | 2019 | | | | |
| Intersection: 16: Powd | ler Mill F | Road | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) | R 26 13 | EB T 2 0 | SE LT 66 4 | NW | | | | |

| 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) 0 Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 33 14 2 | 0 46 | 31 1635 |
|---|---------------|---------|------------|
| Intersection: 17: | | | |
| Movement Directions Served T | NB R | | |
| Maximum Queue (ft) 9 Average Queue (ft) 0 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 6 460 | | |
| Intersection: 18: Sunnysi | de Avenue | ; | |
| Movement Directions Served Maximum Queue (ft) 12 Average Queue (ft) 0 | EB T 2 | | |
| 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 12 531 | | |

Intersection: 21: MD 201 /MD 201 & I-95 NB On Ramp

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (% Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh) | R 13 1 | NB T 2 0 9 115 | SB T 2 0 2 39 | SB 2 39 | |
|--|--------------------|-------------------------------|------------------------------|-----------------------|-----------------|
| Intersection: 23: I-95 S | B On R | amp & I | MD 201 | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) | T 40 1 | NB R 3 0 | SB | | |
| 95th Queue (ft) Link Distance (ft) Upstream Blk Time (% Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) |) | 41 542 | 0 115 | | |
| Queuing and Blocking Action Alternative AM | Report with Mit | igation | 12/09/2 | 2019 | |
| Intersection: 26: MD 2 | 01 & La | ne Drop | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) | T 930 324 | B35 776 93 | B35 T 662 568 | NW T 665 559 | NW |
| 95th Queue (ft) Link Distance (ft) Upstream Blk Time (% |)) | 950 939 0 | 489 939 0 | 803 610 9 | 822 610 6 |

Queuing Penalty (veh) 1 79 48 0 Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 47: MD 201 Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 61: MD 201 & Ramp to Northbound I-95

| Movement | т | NB T | NB T | SB TD | SB |
|-----------------------|---------|---------|---------|----------|-----|
| Directions Served | - | 1 | - | | |
| Maximum Queue (ft) | 5 | 3 | 1 | 41 | |
| Average Queue (ft) | 0 | 0 | 0 | 1 | |
| 95th Queue (ft) | | 5 | 3 | 8 | 24 |
| Link Distance (ft) | | 215 | 215 | 266 | 266 |
| Upstream Blk Time (% |) | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | | | | | |
| Storage Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Network Summary | | | | | |
| Network wide Queuing | Penalty | /: 619 | | | |
| | | | | | |

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Transportation Impact Study

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SimTraffic Simulation Summary Action Conditions PM with Mitigation 12/09/2019

Summary of All Intervals

| Run Number Start Time End Time Total Time (min) Time Recorded (min) 60 # of Intervals | 1 2:52 4:00 68 60 5 | 10 2:52 4:00 68 60 5 | 2 2:52 4:00 68 60 5 | 3 2:52 4:00 68 60 5 | 4 2:52 4:00 68 60 5 | 5 2:52 4:00 68 60 5 | 6 2:52 4:00 68 60 5 | 7 2:52 4:00 68 60 5 | 8 2:52 4:00 68 60 5 | 9 2:52 4:00 68 60 5 | Avg 2:52 4:00 68 5 |
|---|---|--|--|--|--|---|--|--|--|--|-----------------------------------|
| # of Recorded Intervals Vehs Entered Vehs Exited Starting Vehs Ending Vehs Travel Distance (mi) 155 | 4 13706 13558 692 840 91 15304 | 4 13775 13549 696 922 15246 | 4 13634 13385 663 912 15297 | 4 13714 13505 698 907 15151 | 4 13643 13450 641 834 15688 | 4 13887 13559 691 1019 15387 | 4 13763 13415 646 994 15505 | 4 13953 13708 660 905 15431 | 4 13760 13515 659 904 15437 | 4 13797 13521 625 901 15404 | 4 13765 13518 667 910 |
| Travel Time (hr) Total Delay (hr) Total Stops Fuel Used (gal) | 943.3 485.0 19904 620.9 | 884.1 435.1 19112 598.7 | 920.8 473.1 19100 607.6 | 872.2 425.4 18791 598.4 | 801.8 359.2 18878 579.2 | 938.2 477.0 20432 620.6 | 923.4 473.1 18983 606.1 | 822.6 367.9 19285 593.3 | 900.5 447.6 19583 608.4 | 898.5 446.2 19512 607.1 | 890.5 439.0 19354 604.0 |
| Interval #0 InformationSeeStart Time2:52End Time3:00Total Time (min)8Volumes adjusted by GrowNo data recorded this interval | eding 2) th Factors. /al. | | | | | | | | | | |
| Interval #1 InformationRefStart Time3:00End Time3:15Total Time (min)15Volumes adjusted by Grow | cording) 5 th Factors. | | | | | | | | | | |
| Run Number Vehs Entered Vehs Exited | 1 3426 3350 | 10 3452 3368 | 2 3472 3306 | 3 3477 3429 | 4 3370 3239 | 5 3463 3368 | 6 3436 3296 | 7 3504 3411 | 8 3450 3363 | 9 3387 3230 | Avg 3444 3337 |

| Starting Vehs | | 692 | 696 | 663 | 698 | 641 | 691 | 646 | 660 | 659 | 625 | 667 |
|----------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ending Vehs | | 768 | 780 | 829 | 746 | 772 | 786 | 786 | 753 | 746 | 782 | 775 |
| Travel Distance (mi) | 3946 | 3787 | 3785 | 3918 | 3698 | 3888 | 3917 | 3896 | 3779 | 3743 | 3836 | |
| Travel Time (hr) | | 196.2 | 186.5 | 184.2 | 189.7 | 175.3 | 183.4 | 193.7 | 182.3 | 183.7 | 180.3 | 185.5 |
| Total Delay (hr) | | 80.2 | 75.4 | 72.7 | 75.5 | 67.5 | 69.4 | 79.1 | 68.3 | 72.8 | 70.8 | 73.2 |
| Total Stops | | 4891 | 4653 | 4721 | 4672 | 4498 | 4808 | 4768 | 4474 | 4768 | 4537 | 4671 |
| Fuel Used (gal) | | 147.9 | 141.0 | 141.8 | 146.3 | 136.6 | 144.1 | 145.6 | 143.7 | 141.6 | 139.2 | 142.8 |

Interval #2 InformationRecordingStart Time3:15End Time3:30Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | | 3542 | 3413 | 3389 | 3355 | 3339 | 3620 | 3420 | 3466 | 3426 | 3533 | 3449 |
| Vehs Exited | | 3411 | 3372 | 3334 | 3347 | 3349 | 3474 | 3315 | 3442 | 3357 | 3451 | 3385 |
| Starting Vehs | | 768 | 780 | 829 | 746 | 772 | 786 | 786 | 753 | 746 | 782 | 775 |
| Ending Vehs | | 899 | 821 | 884 | 754 | 762 | 932 | 891 | 777 | 815 | 864 | 832 |
| Travel Distance (mi) | 3956 | 3841 | 3879 | 3717 | 3806 | 4049 | 3797 | 3883 | 3851 | 3916 | 3869 | |
| Travel Time (hr) | | 225.6 | 204.3 | 215.4 | 195.3 | 193.5 | 225.6 | 214.6 | 198.4 | 202.2 | 212.9 | 208.8 |
| Total Delay (hr) | | 109.3 | 91.0 | 101.0 | 86.3 | 82.4 | 106.3 | 103.3 | 84.1 | 88.9 | 98.0 | 95.1 |
| Total Stops | | 5267 | 4746 | 4744 | 4640 | 4623 | 5414 | 4600 | 4969 | 4991 | 5127 | 4908 |
| Fuel Used (gal) | | 154.3 | 146.4 | 150.2 | 141.7 | 142.8 | 157.3 | 147.4 | 146.6 | 147.0 | 151.7 | 148.5 |

SimTraffic Simulation Summary Action Conditions PM with Mitigation 12/09/2019 Interval #3 InformationRecordingStart Time3:30End Time3:45Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | | 3398 | 3502 | 3411 | 3452 | 3497 | 3387 | 3423 | 3498 | 3453 | 3451 | 3446 |
| Vehs Exited | | 3455 | 3413 | 3409 | 3320 | 3443 | 3320 | 3363 | 3481 | 3362 | 3421 | 3403 |
| Starting Vehs | | 899 | 821 | 884 | 754 | 762 | 932 | 891 | 777 | 815 | 864 | 832 |
| Ending Vehs | | 842 | 910 | 886 | 886 | 816 | 999 | 951 | 794 | 906 | 894 | 886 |
| Travel Distance (mi) | 3988 | 3887 | 3860 | 3721 | 3812 | 3851 | 3829 | 3882 | 3860 | 3911 | 3860 | |
| Travel Time (hr) | | 255.9 | 231.2 | 247.3 | 222.6 | 210.0 | 251.5 | 244.7 | 212.8 | 236.7 | 242.6 | 235.5 |
| Total Delay (hr) | | 138.8 | 116.9 | 134.6 | 114.3 | 98.7 | 138.4 | 133.1 | 99.1 | 123.5 | 128.0 | 122.5 |
| Total Stops | | 5098 | 4788 | 5089 | 4662 | 4970 | 5200 | 4772 | 4847 | 4961 | 4987 | 4931 |
| Fuel Used (gal) | | 162.6 | 153.8 | 156.9 | 148.1 | 147.8 | 157.2 | 153.3 | 150.2 | 154.8 | 156.6 | 154.1 |

Interval #4 InformationRecordingStart Time3:45End Time4:00Total Time (min)15

Volumes adjusted by Growth Factors.

| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | | 3340 | 3408 | 3362 | 3430 | 3437 | 3417 | 3484 | 3485 | 3431 | 3426 | 3412 |
| Vehs Exited | | 3342 | 3396 | 3336 | 3409 | 3419 | 3397 | 3441 | 3374 | 3433 | 3419 | 3394 |
| Starting Vehs | | 842 | 910 | 886 | 886 | 816 | 999 | 951 | 794 | 906 | 894 | 886 |
| Ending Vehs | | 840 | 922 | 912 | 907 | 834 | 1019 | 994 | 905 | 904 | 901 | 910 |
| Travel Distance (mi) | 3700 | 3788 | 3722 | 3940 | 3836 | 3901 | 3844 | 3844 | 3941 | 3868 | 3838 | |
| Travel Time (hr) | | 265.5 | 262.1 | 273.9 | 264.5 | 223.1 | 277.7 | 270.4 | 229.0 | 278.0 | 262.7 | 260.7 |
| Total Delay (hr) | | 156.8 | 151.7 | 164.9 | 149.4 | 110.6 | 163.0 | 157.5 | 116.4 | 162.3 | 149.4 | 148.2 |
| Total Stops | | 4648 | 4925 | 4546 | 4817 | 4787 | 5010 | 4843 | 4995 | 4863 | 4861 | 4825 |
| Fuel Used (gal) | | 156.2 | 157.5 | 158.7 | 162.2 | 152.1 | 162.0 | 159.8 | 152.8 | 165.0 | 159.6 | 158.6 |

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Queuing and Blocking Report Action Conditions PM with Mitigation 12/09/2019

Intersection: 1: MD 201 & I-95 SB off-Ramp

| Movement | | EB | EB | EB | NB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|-----|------|------|------|-----|-----|
| Directions Served | L | L | R | Т | Т | Т | Т | Т | |
| Maximum Queue (ft) | 109 | 404 | 441 | 162 | 188 | 221 | 160 | 171 | |
| Average Queue (ft) | 20 | 94 | 21 | 67 | 52 | 107 | 71 | 83 | |
| 95th Queue (ft) | | 65 | 238 | 226 | 130 | 127 | 194 | 138 | 148 |
| Link Distance (ft) | | | 734 | 734 | 1249 | 1249 | 1249 | 542 | 542 |
| Upstream Blk Time (% |) | | 0 | 0 | | | | | |
| Queuing Penalty (veh) | | 0 | 0 | | | | | | |
| Storage Bay Dist (ft) | 325 | | | | | | | | |
| Storage Blk Time (%) | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | |

Intersection: 2: MD 201 & I-95 NB Off Ramp

| Movement | | WB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|------|------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | L | L | R | R | UT | Т | Т | Т | Т | Т | |
| Maximum Queue (ft) | 305 | 361 | 304 | 280 | 167 | 196 | 181 | 192 | 244 | 289 | |
| Average Queue (ft) | 157 | 214 | 174 | 152 | 70 | 98 | 104 | 92 | 104 | 146 | |
| 95th Queue (ft) | | 262 | 316 | 270 | 238 | 131 | 163 | 166 | 164 | 189 | 247 |
| Link Distance (ft) | | | 1405 | 1405 | | | 282 | 282 | 215 | 215 | 215 |
| Upstream Blk Time (% |) | | | | | | | | 0 | 0 | 2 |
| Queuing Penalty (veh) | | | | | | | | 0 | 2 | 10 | |
| Storage Bay Dist (ft) | 400 | | | 300 | 250 | | | | | | |
| Storage Blk Time (%) | | 0 | 0 | 0 | | | | | | | |
| Queuing Penalty (veh) | | 0 | 0 | 0 | | | | | | | |

Intersection: 3: MD 201 & SHA Dist. 3/Crescent Drive

| Movement | | EB | WB | WB | NB | NB | NB | NB | NB | SB | SB | SB | SB |
|--------------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | LTR | LT | R | L | Т | Т | Т | R | L | Т | Т | TR | |
| Maximum Queue (ft) | 52 | 224 | 120 | 82 | 230 | 266 | 306 | 224 | 157 | 109 | 136 | 206 | |
| Average Queue (ft) | 15 | 108 | 41 | 21 | 87 | 144 | 139 | 15 | 71 | 20 | 35 | 62 | |
| 95th Queue (ft) | | 42 | 180 | 87 | 60 | 184 | 244 | 245 | 105 | 130 | 68 | 92 | 152 |

| Link Distance (ft) Upstream Blk Time (% Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) |) | 239 0 0 | 429 250 0 0 | 250 | 0 0 0 | 266 0 1 | 266 0 2 2 3 | 266 0 200 0 0 | 300 | | 783 | 783 | 783 |
|---|----------------------------|------------------------------|---------------------------------------|--|--------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|-----------|-----|-----|-----|
| Intersection: 4: MD 201 | 1 & Ivy I | _ane | | | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (% Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | L 127 54) 350 | NB L 152 87 108 | NB T 77 3 137 783 0 | NB T 159 60 79 783 0 | SB T 197 108 125 1193 | SB 168 1193 | | | | | | | |
| Intersection: 5: MD 207 | 1 & Che | rrywood | l Lane | | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (% Queuing Penalty (veh) | L 221 134) | EB L 221 123 211 | EB R 306 157 199 1306 | EB L 213 107 283 1306 | NB T 195 69 186 | NB T 180 49 158 1193 | NB T 336 185 135 1193 | SB T 393 230 284 610 | SB R 275 109 342 610 | SB 275 | | | |
| Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 250 0 0 | 0 0 | | 750 | | | | 4 17 | 250 0 1 | | | | |

Queuing and Blocking Report Action Conditions PM with Mitigation 12/09/2019 Intersection: 6: MD 201 & Sunnyside Avenue

| Movement | | EB | EB | NB | NB | NB | B6006 | SB | SB | SB |
|-----------------------|------|------|-----|-----|-----|-----|-------|------|------|-----|
| Directions Served | L | R | L | Т | TR | Т | Т | Т | R | |
| Maximum Queue (ft) | 1003 | 375 | 471 | 555 | 420 | 159 | 1652 | 1648 | 275 | |
| Average Queue (ft) | 694 | 335 | 330 | 205 | 126 | 6 | 1246 | 1231 | 229 | |
| 95th Queue (ft) | | 1235 | 456 | 518 | 549 | 319 | 96 | 1973 | 1983 | 376 |
| Link Distance (ft) | | 958 | | | 941 | 941 | 501 | 1544 | 1544 | |
| Upstream Blk Time (% |) | 33 | | | | | 0 | 41 | 39 | |
| Queuing Penalty (veh) | 0 | | | | | 0 | 308 | 293 | | |
| Storage Bay Dist (ft) | | 350 | 450 | | | | | | 250 | |
| Storage Blk Time (%) | 32 | 13 | 11 | 0 | | | | 51 | 0 | |
| Queuing Penalty (veh) | 196 | 35 | 60 | 0 | | | | 118 | 2 | |

Intersection: 7: MD 201 & Beaver Dam Road

| | WB | NB | SB | SB |
|-----|------------------|---|--|---|
| LTR | Т | Т | Т | |
| 299 | 2 | 725 | 750 | |
| 97 | 0 | 244 | 248 | |
| | 283 | 2 | 795 | 809 |
| | 615 | 1544 | 838 | 838 |
| 5) | | | 9 | 10 |
|) | | 69 | 75 | |
| | | | | |
| | | | | |
|) | | | | |
| | LTR 299 97 | WB LTR T 299 2 97 0 283 615) | WB NB LTR T T 299 2 725 97 0 244 283 2 615 1544 5) 69 | WB NB SB LTR T T T 299 2 725 750 97 0 244 248 283 2 795 615 1544 838 5) 9 69 75 |

Intersection: 8: MD 201 & Powder Mill Road

| Movement | | EB | EB | EB | EB | WB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | L | Т | Т | R | L | L | Т | R | L | Т | R | L | Т | TR | |
| Maximum Queue (ft) | 273 | 323 | 233 | 153 | 266 | 392 | 478 | 68 | 413 | 466 | 28 | 234 | 308 | 315 | |
| Average Queue (ft) | 183 | 164 | 121 | 13 | 151 | 191 | 278 | 39 | 234 | 253 | 1 | 110 | 185 | 175 | |
| 95th Queue (ft) | | 287 | 279 | 200 | 109 | 239 | 380 | 513 | 84 | 386 | 424 | 29 | 223 | 291 | 282 |
| Link Distance (ft) | | | | | | | | 589 | | | 598 | 598 | | 808 | 808 |
| Upstream Blk Time (% |) | | | | | | | 3 | | | 0 | | | | |
| Queuing Penalty (veh) | 1 | | | | | | 25 | | | 0 | | | | | |
| Storage Bay Dist (ft) | 250 | | 500 | 500 | 500 | | 40 | 400 | | 275 | |
|-----------------------|-----|---|-----|-----|-----|-----|----|-----|---|-----|---|
| Storage Blk Time (%) | 6 | 0 | | | 0 | 70 | 2 | 1 | 1 | 2 | 1 |
| Queuing Penalty (veh) | 12 | 1 | | | 0 | 384 | 16 | 5 | 2 | 5 | 1 |

Intersection: 9: Edmonston Road & Odell Road

| Movement | | EB | WB | WB | NB | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|
| Directions Served | LTR | LT | R | LT | LTR | |
| Maximum Queue (ft) | 121 | 23 | 26 | 281 | 58 | |
| Average Queue (ft) | 32 | 2 | 3 | 32 | 2 | |
| 95th Queue (ft) | | 86 | 13 | 16 | 147 | 30 |
| Link Distance (ft) | | 509 | 488 | | 419 | 365 |
| Upstream Blk Time (% |) | | | | 0 | |
| Queuing Penalty (veh) | | | | 0 | | |
| Storage Bay Dist (ft) | | | 50 | | | |
| Storage Blk Time (%) | | | | 0 | | |
| Queuing Penalty (veh) | | | | 0 | | |

Intersection: 10: Powder Mill Road & Poultry Road

| Movement | | EB | EB | B69 | WB | WB | SB | SB |
|-----------------------|-----|-----|-----|-----|------|-----|-----|-----|
| Directions Served | L | Т | Т | Т | R | L | R | |
| Maximum Queue (ft) | 46 | 426 | 53 | 228 | 28 | 302 | 212 | |
| Average Queue (ft) | 3 | 254 | 3 | 92 | 3 | 142 | 83 | |
| 95th Queue (ft) | | 29 | 418 | 23 | 178 | 17 | 252 | 156 |
| Link Distance (ft) | | | 354 | 691 | 1386 | | 347 | 347 |
| Upstream Blk Time (%) |) | | 3 | | | | 0 | |
| Queuing Penalty (veh) | | 21 | | | | 0 | | |
| Storage Bay Dist (ft) | 200 | | | | 200 | | | |
| Storage Blk Time (%) | | 13 | | 1 | | | | |
| Queuing Penalty (veh) | | 1 | | 0 | | | | |

Queuing and Blocking Report Action Conditions PM with Mitigation 12/09/2019

Intersection: 11: Powder Mill Road

Movement EB NB

| TR | L | | |
|-----|----------------------|---|---|
| 209 | 57 | | |
| 32 | 23 | | |
| | 124 | 4 | 53 |
| | 38 | 3 | 48 |
|) | | | 4 |
| | 1 | | |
| | | | |
| | | | |
| | | | |
| | TR 209 32) | TR L 209 57 32 23 12 38) 1 | TR L 209 57 32 23 124 383) 1 |

Intersection: 12: Powder Mill Road & Springfield Road

| Movement | | EB | EB | WB | SB |
|-----------------------|----|-----|------|-----|-----|
| Directions Served | L | Т | TR | LR | |
| Maximum Queue (ft) | 68 | 922 | 138 | 510 | |
| Average Queue (ft) | 11 | 447 | 52 | 460 | |
| 95th Queue (ft) | | 42 | 873 | 110 | 580 |
| Link Distance (ft) | | | 3486 | 151 | 467 |
| Upstream Blk Time (% |) | | | 0 | 79 |
| Queuing Penalty (veh) | | | 1 | 0 | |
| Storage Bay Dist (ft) | 50 | | | | |
| Storage Blk Time (%) | 0 | 35 | | | |
| Queuing Penalty (veh) | 1 | 7 | | | |

Intersection: 13: Powder Mill Road & B-W Parkway SB Off-Ramp

| Movement | | EB | EB | WB | WB | SB | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | Т | R | L | Т | L | TR | |
| Maximum Queue (ft) | 164 | 122 | 146 | 123 | 295 | 174 | |
| Average Queue (ft) | 156 | 54 | 70 | 44 | 181 | 41 | |
| 95th Queue (ft) | | 175 | 96 | 123 | 99 | 274 | 104 |
| Link Distance (ft) | | 151 | 151 | | 550 | | 850 |
| Upstream Blk Time (% |) | 19 | 0 | | | | |
| Queuing Penalty (veh) | 120 | 0 | | | | | |
| Storage Bay Dist (ft) | | | 225 | | 300 | | |
| Storage Blk Time (%) | | | | 0 | 1 | | |
| Queuing Penalty (veh) | | | | 0 | 1 | | |

Intersection: 14: B-W Parkway NB Off-Ramp & Powder Mill Road

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) | L 233 120 | EB T 214 104 | EB T 153 46 | WB R 143 61 | WB L 151 69 | NB TR 63 23 | NB |
|---|-----------------|-----------------------|----------------------|----------------------|----------------------|----------------------|----|
| 95th Queue (ft) Link Distance (ft) | 、 | 212 550 | 201 264 | 112 | 118 | 130 857 | 51 |
| Queuing Penalty (veh) |) | | | | | | |
| Storage Bay Dist (ft) Storage Blk Time (%) | 250 1 | | 1 | 100 1 | 300 | | |
| Queuing Penalty (veh) | 4 | | 4 | 3 | | | |

Intersection: 15: Soil Conservation Road & Powder Mill Road

| Movement Directions Served | т | EB R | EB L | WB T | WB L | NB |
|--|-----------|----------|---------|---------|---------|-----|
| Maximum Queue (ft) | 369 | 218 | 71 | 237 | 410 | |
| Average Queue (ft) | 185 | 21 | 28 | 113 | 221 | |
| 95th Queue (ft) | | 299 | 114 | 63 | 200 | 350 |
| Link Distance (ft) | | 546 | | | 792 | 892 |
| Upstream Blk Time (% |) | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | | 260 | 300 | | | |
| Storage Blk Time (%) | 2 | 0 | | 0 | 0 | |
| Queuing Penalty (veh) | 8 | 0 | | 0 | 0 | |
| Queuing and Blocking Action Conditions PM | gation | 12/09/2 | 2019 | | | |
| Intersection: 16: Powde | er Mill R | load | | | | |
| Movement Directions Served | т | EB TR | WB L | SE | | |

| Maximum Queue (ft) | 52 | 24 | 98 |
|--------------------|----|----|----|
| Average Queue (ft) | 22 | 1 | 26 |

| 95th Queue (ft) Link Distance (ft) Upstream Blk Time (% Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) |) 10 | 42 19 21 | 13 796 18 | 76 50 2 |
|---|------------------------|---------------------------------------|--------------------------------------|--------------------|
| Intersection: 17: Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh) | L 18 1) 0 | WB TR 89 16 10 19 0 | NB T 15 1 61 462 0 | SB 8 48 0 |
| Intersection: 18: Powde Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (% Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh) | er Mill R | oad | | |

Intersection: 21: MD 201 /MD 201 & I-95 NB On Ramp

| Movement | | NB | NB | NB | SB | SB | SB |
|-----------------------|------------|-----|-----|-----|----|----|----|
| Directions Served | Т | Т | R | Т | Т | Т | |
| Maximum Queue (ft) | 16 | 2 | 27 | 7 | 6 | 9 | |
| Average Queue (ft) | 1 | 0 | 1 | 0 | 0 | 0 | |
| 95th Queue (ft) | | 8 | 2 | 13 | 4 | 3 | 5 |
| Link Distance (ft) | | 115 | 115 | 115 | 39 | 39 | 39 |
| Upstream Blk Time (% | b) | | | | | | 0 |
| Queuing Penalty (veh |) | | | | | 0 | |
| Storage Bay Dist (ft) | | | | | | | |
| Storage Blk Time (%) | | | | | | | |
| Queuing Penalty (veh |) | | | | | | |

Intersection: 23: I-95 SB On Ramp & MD 201

| Movement | _ | SB | SB | SB |
|-----------------------|---|-----|-----|-----|
| Directions Served | Т | Т | R | |
| Maximum Queue (ft) | 7 | 3 | 36 | |
| Average Queue (ft) | 0 | 0 | 2 | |
| 95th Queue (ft) | | 5 | 3 | 20 |
| Link Distance (ft) | | 115 | 115 | 115 |
| Upstream Blk Time (% |) | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Queuing and Blocking Report Action Conditions PM with Mitigation 12/09/2019

Intersection: 26: MD 201 & Lane Drop

| Movement | | B35 | B35 | NW | NW |
|----------------------|-----|------|------|-----|-----|
| Directions Served | Т | | Т | Т | |
| Maximum Queue (ft) | 977 | 994 | 213 | 66 | |
| Average Queue (ft) | 848 | 676 | 10 | 2 | |
| 95th Queue (ft) | | 1209 | 1315 | 109 | 47 |
| Link Distance (ft) | | 941 | 941 | 610 | 610 |
| Upstream Blk Time (% |) | 4 | 2 | 0 | |

Queuing Penalty (veh) 39 21 0 Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 28: Powder Mill Road Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 40: Powder Mill Road EΒ EΒ Movement Т **Directions Served** Т Т Maximum Queue (ft) 64 112 66 Average Queue (ft) 20 10 8 95th Queue (ft) 37 41 Link Distance (ft) 589 589 Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 43: Powder Mill Road Movement

WB

170

1838

Directions Served Maximum Queue (ft)

Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 44: Powder Mill Road Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Queuing and Blocking Report Action Conditions PM with Mitigation 12/09/2019 Intersection: 45: Powder Mill Road Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%)

Queuing Penalty (veh)

Intersection: 47: MD 201

| Movement | | SB | SB |
|-----------------------|-----|-----|-----|
| Directions Served | Т | Т | |
| Maximum Queue (ft) | 194 | 244 | |
| Average Queue (ft) | 39 | 49 | |
| 95th Queue (ft) | | 259 | 321 |
| Link Distance (ft) | | 598 | 598 |
| Upstream Blk Time (% | 6) | 0 | 4 |
| Queuing Penalty (veh |) 1 | 26 | |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh |) | | |
| | | | |

Intersection: 56: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 57: Powder Mill Road

Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh)

Intersection: 61: MD 201 & Ramp to Northbound I-95

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) | T 12 0 | NB TR 20 1 | SB |
|---|--------------------|---------------------|------------|
| 95th Queue (ft) Link Distance (ft) Upstream Blk Time (% Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) |) | 9 215 | 14 266 |
| Queuing and Blocking Action Conditions PM | Report with Mit | igation | 12/09/2019 |
| Intersection: 66: Powd | er Mill F | Road | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (% Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) |)) ' | | |

Intersection: 72: Powder Mill Road

Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 74: Powder Mill Road Movement **Directions Served** Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) Network Summary Network wide Queuing Penalty: 1934 Bureau of Engraving and Printing SimTraffic Report LBG Page 0

16. APPENDIX I: SENSITIVITY ANALYSIS

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1 INTRODUCTION

This sensitivity analysis is an addendum to the Transportation Impact Study (TIS) prepared for the Bureau of Engraving and Printing (BEP), which evaluated the potential transportation impacts of the proposed permanent relocation of the BEP production facility to a site within the U.S. Department of Agriculture (USDA) Beltsville Agriculture Research Center (BARC). The Project Team conducted this sensitivity analysis in response to requests for further analysis by agencies that reviewed the TIS, including the Maryland-National Capital Park and Planning Commission (M-NCPPC), the City of Greenbelt, the Maryland State Highway Administration (Maryland SHA), the National Capital Planning Commission (NCPC), and the National Park Service (NPS). Specifically, this document further evaluates the future conditions of vehicular traffic, which pertain to the No Action Alternative, the Action Alternative, and recommended mitigation strategies for the Action Alternative.

Most of the assumptions used for the TIS were maintained for this sensitivity analysis, including (1) existing traffic conditions; (2) existing and future roadway lane use and geometry coded into the Synchro[™] and SimTraffic[™] traffic model software; and (3) future condition traffic forecasts about regional background traffic growth, the number of trips forecasted to be generated by the BEP facility, and the trip distributions of planned development and BEP site-generated traffic.

The sensitivity analysis modifies the future condition traffic forecasts for the No Action Alternative and the Action Alternative based on the following changes requested by reviewing agencies:

- 1. The trip generation for the planned developments included in the TIS were based on the Institute of Transportation Engineers (ITE) 10th Edition of the *Trip Generation Manual* trip rates rather than the 9th Edition.
- 2. The size of the residential uses within the planned Greenbelt Town Center for the Beltway Plaza planned development were updated to more recent approved residential units.

The following sections provide in-depth information regarding the modified forecasts and an evaluation of the vehicular operational and queueing impacts in future conditions. **Figure 1-1** depicts the existing AM and PM weekday peak hour turning movement volumes, as a reference to the baseline volumes used to develop future conditions forecasts. The cream-colored polygon along Poultry Road displayed in all turning movement figures represents the proposed BEP production facility.



Figure 1-1A AM and PM BEP Peak Hour Traffic Volumes – Map 1



Figure 1-1B AM and PM BEP Peak Hour Traffic Volumes – Map 2

2 FUTURE CONDITIONS

This section summarizes development of the future traffic volumes under the No Action Alternative and the Action Alternative using the revised sources. The operational and queueing results of the No Action and Action Alternative conditions from the sensitivity analysis are compared with the results from the TIS.

Development of the No Action Alternative

In this sensitivity analysis, forecasts of future traffic under the No Action Alternative differ from the forecasts included in the TIS with respect to the planned developments in two ways. First, in the TIS, trips generated by each of the four planned developments were based on either the Prince George's County trip rates published in the M-NCPPC's *Transportation Review Guidelines* (M-NCPPC 2012) or the ITE 9th Edition of the *Trip Generation Manual* trip rates. This sensitivity analysis replaces the ITE 9th Edition trip rates with trip rates from the ITE 10th Edition (ITE 2020). The trip rates based on the M-NCPPC's Transportation Review Guidelines context and the same. Second, the residential uses of the development program for the planned development known as Greenbelt Town Center at Beltway Plaza were modified to match the latest approved development plan. Whereas this development was assumed to include 2,250 multifamily housing units and 250 townhouses in the TIS, the sensitivity analysis assumes 2,500 multifamily housing units and no townhouses.

After modifying the trip generation assumptions accordingly, the four planned developments that were also included in the submitted TIS would add 2,785 trips during the AM peak hour and 3,577 trips during the PM peak hour. Like the TIS, the sensitivity study applied the same modal splits and internal capture procedures following the National Cooperative Highway Research Program (NCHRP) Report 684 (TRB 2011) to account for non-vehicle trips generated at mixed use planned developments. The sensitivity study also applied the diurnal adjustment to match the planned development vehicle trip rates to the proposed BEP commute peak hours. **Figure 2-1** contains the AM and PM study peak hour vehicle trips generated. Based on Prince George's County trip generation rates, 250 townhouses would create 45 AM peak hour and 51 PM peak hour more trips than apartments, respectively. The change in land use would lower the number of forecasted trips at the Greenbelt Town Center at Beltway Plaza.

| BBO JECT | | AM PE | AK HO | JR TRIPS | PM PE | EAK HOU | IR TRIPS |
|--|-----------------------|-------|-------|----------|-------|---------|----------|
| PROJECT | UNITS/SIZE/ CREDITS | IN | OUT | TOTAL | IN | OUT | TOTAL |
| North Core (West side of Greenbelt Station Parkway) | | - | _ | | - | | |
| General Office (ITE - 710) ^a | 1,200,000 square feet | 1,197 | 195 | 1,392 | 221 | 1,159 | 1,380 |
| Internal Capture Trips (following NCHRP 684 Tables) | | -95 | -55 | -150 | -44 | -143 | -187 |
| Net External Trips | | 1,102 | 140 | 1,242 | 177 | 1,016 | 1,193 |
| Transit Credit (following Maryland Jurisdiction Guidance) | | | | | | | |
| b | 25% credit | -276 | -35 | -311 | -44 | -254 | -298 |
| Net External Vehicle Trips | | 826 | 105 | 931 | 133 | 762 | 895 |
| Diurnal Adjustment ^c | | -207 | -26 | -233 | -17 | -98 | -115 |
| Net External Diurnally Adjusted Vehicle Trips | | 619 | 79 | 698 | 116 | 664 | 780 |
| Shopping Center (ITE - 820) | 1,100,000 square feet | 435 | 267 | 702 | 1,538 | 1,666 | 3,204 |
| Internal Capture Trips (following NCHRP 684 Tables) | | -68 | -50 | -118 | -250 | -278 | -528 |
| Net External Trips | | 367 | 217 | 584 | 1,288 | 1,388 | 2,676 |
| I ransit Credit (following Maryland Jurisdiction Guidance) | OE% and it | 00 | E A | 140 | 200 | 247 | 660 |
| Not External Vahiala Trina | 25% credit | -92 | -54 | -140 | -322 | -347 | -009 |
| Net External vehicle rips | 000/ | 275 | 103 | 436 | 900 | 1,041 | 2,007 |
| Pass-by Trips (based on overall retail development) ^a | 20% pass-by | -44 | -44 | -88 | -201 | -200 | -401 |
| Net External Venicle and Pass-by Trips | | 231 | 119 | 350 | 765 | 841 | 1,606 |
| Diurnal Adjustment ^c | | -58 | -30 | -88 | -99 | -108 | -207 |
| Net External Diurnally Adjusted Vehicle Trips | | 173 | 89 | 262 | 666 | 733 | 1,399 |
| Apartments (Prince George's County Guidance) | 1,267 units | 127 | 532 | 659 | 494 | 266 | 760 |
| Internal Capture Trips (following NCHRP 684 Tables) | | -3 | -16 | -19 | -247 | -130 | -377 |
| Net External Trips | | 124 | 516 | 640 | 247 | 136 | 383 |
| I ransit Credit (following Maryland Jurisdiction Guidance) | 20% aradit | 27 | 155 | 100 | 74 | 44 | 115 |
| Not External Vahiala Trina | 30% credit | -37 | -100 | -192 | -/4 | -41 | -115 |
| Net External Venicle Trips | | 07 | 301 | 448 | 173 | 95 | 208 |
| | | -22 | -91 | -113 | -22 | -12 | -34 |
| Net External Diurnally Adjusted Vehicle Trips | | 65 | 270 | 335 | 151 | 83 | 234 |

Figure 2-1 Planned Development Trips Generation Summary

| PROJECT | | AM PE | EAK HOU | R TRIPS | PM P | PEAK HOU | IR TRIPS |
|---|---------------------|-------|---------|---------|------|----------|----------|
| PROJECT | UNITS/SIZE/ CREDITS | IN | OUT | TOTAL | IN | OUT | TOTAL |
| Hotel (ITE - 310) | 300 rooms | 85 | 60 | 145 | 101 | 98 | 199 |
| Internal Capture Trips (following NCHRP 684 Tables) | | 0 | -44 | -44 | -24 | -14 | -38 |
| Net External Trips | | 85 | 16 | 101 | 77 | 84 | 161 |
| Transit Credit (following Maryland Jurisdiction | | | | | | | |
| Guidance) ^b | 25% credit | -21 | -4 | -25 | -19 | -21 | -40 |
| Net External Vehicle Trips | | 64 | 12 | 76 | 58 | 63 | 121 |
| Diurnal Adjustment ^c | | -16 | -3 | -19 | -7 | -8 | -15 |
| Net External Diurnally Adjusted Vehicle Trips | | 48 | 9 | 57 | 51 | 55 | 106 |
| TOTAL VEHICLE TRIPS | | 905 | 447 | 1,352 | 984 | 1,535 | 2,519 |

Figure 2-1 Planned Development Trips Generation Summary (continued)

^a Per Prince George's County Guidance, ITE trip rates were followed for developments exceeding 108,000 square feet.

^b Maryland SHA, M-NCPPC, Prince George's County, Washington Metropolitan Area Transportation Authority, and the City of Greenbelt

^c Diurnal adjustment based on the total Automatic Traffic Recorder (ATR) volumes assembled for the 6:00–7:00 AM hour as a percentage of the total ATR volumes assembled for the 8:00–9:00 AM hour; and the 3:00–4:00 PM hour as a percentage of the total ATR volumes assembled for the 5:00–6:00 PM hour. Approximately a 25% reduction is applied to the AM hour, and a 13% reduction is applied to the PM hour.

^d Per Prince George's County Guidance, a 20% pass-by trip reduction is applied for shopping centers exceeding 600,000 square feet.

| BBO JECT | UNITS/SIZE/ | AM F | PEAK HO | JR TRIPS | PM PE | EAK HOU | IR TRIPS |
|--|---------------------|------|---------|----------|-------|---------|----------|
| PROJECT | CREDITS | IN | OUT | TOTAL | IN | OUT | TOTAL |
| Greenbelt Town Center at Beltway Plaza | | | | | | | |
| Existing Shopping Center (to be removed) (ITE - 820) | 800,000 square feet | 342 | 210 | 552 | 1,215 | 1,317 | 2,532 |
| Pass-by Trips ^d | 20% pass-by | -55 | -55 | -110 | -253 | -253 | -506 |
| Net External and Pass-by Trips | | 287 | 155 | 442 | 962 | 1,064 | 2,026 |
| Diurnal Adjustment ^c | | -72 | -39 | -111 | -124 | -137 | -261 |
| Net External Diurnally Adjusted Vehicle Trips | | 215 | 116 | 331 | 838 | 927 | 1,765 |
| Approved Shopping Center (to be added) (ITE - 820) | 700,000 square feet | 311 | 191 | 502 | 1,101 | 1,192 | 2,293 |
| Internal Capture Trips (following NCHRP 684 Tables) | | -11 | -5 | -16 | -110 | -310 | -420 |
| Net External Trips | | 300 | 186 | 486 | 991 | 882 | 1,873 |
| Pass-by Trips ^d | 20% pass-by | -49 | -48 | -97 | -188 | -187 | -375 |
| Net External and Pass-by Trips | | 251 | 138 | 389 | 803 | 695 | 1,498 |
| Diurnal Adjustment ^c | | -63 | -35 | -98 | -103 | -90 | -193 |
| Net External Diurnally Adjusted Vehicle Trips | | 188 | 103 | 291 | 700 | 605 | 1,305 |
| Apartments (Prince George's County Guidance) | 2,500 units | 250 | 1,050 | 1,300 | 975 | 525 | 1,500 |
| Internal Capture Trips (following NCHRP 684 Tables) | | -5 | -11 | -16 | -310 | -110 | -420 |
| Net External Trips | | 245 | 1,039 | 1,284 | 665 | 415 | 1,080 |
| Diurnal Adjustment ^c | | -61 | -261 | -322 | -86 | -53 | -139 |
| Net External Diurnally Adjusted Vehicle Trips | | 184 | 778 | 962 | 579 | 362 | 941 |
| TOTAL NET-NEW VEHICLE TRIPS | | 157 | 765 | 922 | 441 | 40 | 481 |

Figure 2-1 Planned Development Trips Generation Summary (continued)

^c Diurnal adjustment based on the total ATR volumes assembled for the 6:00–7:00 AM hour as a percentage of the total ATR volumes assembled for the 8:00– 9:00 AM hour; and the 3:00–4:00 PM hour as a percentage of the total ATR volumes assembled for the 5:00–6:00 PM hour. Approximately a 25% reduction is applied to AM and a 13% reduction is applied to PM.

^d Per Prince George's County Guidance, a 20% pass-by trip reduction is applied for shopping centers exceeding 600,000 square feet.

| DRO JECT | | AM P | EAK HO | | PM F | PEAK HO | OUR TRIPS |
|--|---------------------|------|--------|-------|------|---------|-----------|
| PROJECT | UNITS/SIZE/ CREDITS | IN | OUT | TOTAL | IN | OUT | TOTAL |
| Greenbelt Metro (North of Ivy Lane) | | | - | | | | |
| Apartments (Prince George's County Guidance) | 354 units | 35 | 149 | 184 | 138 | 74 | 212 |
| Diurnal Adjustment ^c | | -9 | -37 | -46 | -18 | -10 | -28 |
| Net External Diurnally Adjusted Vehicle Trips | | 26 | 112 | 138 | 120 | 64 | 184 |
| TOTAL VEHICLE TRIPS | | 26 | 112 | 138 | 120 | 64 | 184 |
| USDA George Washington Carver Center Modernizat | ion | | | | | | |
| Single-Tenant Office (ITE - 715) | 1,065 employees | 492 | 61 | 553 | 75 | 428 | 503 |
| Transit Credit (USDA shuttle to Greenbelt Station) | 10% credit | -49 | -6 | -55 | -8 | -43 | -51 |
| External Vehicle Trips | | 443 | 55 | 498 | 67 | 385 | 452 |
| Diurnal Adjustment ^c | | -111 | -14 | -125 | -9 | -50 | -59 |
| Net External Diurnally Adjusted Vehicle Trips | | 332 | 41 | 373 | 58 | 335 | 393 |
| | | | | | | | |
| TOTAL VEHICLE TRIPS | | 332 | 41 | 373 | 58 | 335 | 393 |

Figure 2-1 Planned Development Trips Generation Summary (continued)

^c Diurnal adjustment based on the total ATR volumes assembled for the 6:00–7:00 AM hour as a percentage of the total ATR volumes assembled for the 8:00– 9:00 AM hour; and the 3:00–4:00 PM hour as a percentage of the total ATR volumes assembled for the 5:00–6:00 PM hour. Approximately a 25% reduction is applied to AM and a 13% reduction is applied to PM. Consistent with the assumptions of the TIS, trip distributions for each planned development and the applied yearly background growth rate of 1.2% remain the same. A summary of the planned development trip distributions is shown as **Figure 2-2**.

| | North C | ore | Greenholt | | |
|---|------------------------|--------|----------------|--------------------|--------------|
| Origin-Destination | Residential and Office | Retail | Town Center | Greenbelt Metro | USDA GWCC |
| MD 201 north via Sunnyside Avenue | - | - | - | - | 25% |
| MD 201 south via Sunnyside Avenue | - | - | - | - | 25% |
| MD 201 north via Cherrywood Lane | 7.5% | 12.5% | 20% | 20% | - |
| MD 201 south via Cherrywood Lane | 7.5% | 12.5% | - | 70% | - |
| MD 201 south via I-95 (Capital Beltway) from the west | - | - | 20% | - | - |
| MD 201 south via I-95 (Capital Beltway) from the east | - | - | 20% | - | - |

|--|

Vehicle trips from the planned developments, background growth, and existing turning movement counts were combined to create the No Action Alternative turning movement volumes for the study area intersections. Consistent with the TIS, traffic signal timing splits and offsets along Edmonston Road/Kenilworth Avenue and Powder Mill Road were optimized to reflect that Maryland SHA and/or Prince George's County Department of Public Works and Transportation would most likely perform these upgrades over the next ten years. Within the traffic model software, the traffic signal timing splits and offsets were optimized to most efficiently process the future No Action Alternative forecasted traffic volumes. **Figure 2-3** shows the turning movement volumes resulting from background regional growth. **Figure 2-4** presents the assigned turning movement volumes of the planned developments, and **Figure 2-5** shows the total No Action Alternative AM and PM peak hour turning movement volumes.



Figure 2-3A Regional Growth Turning Movement Volumes – Map 1



Figure 2-3B Regional Growth Turning Movement Volumes – Map 2



Figure 2-4A Planned Background Development Turning Movement Volumes – Map 1



Figure 2-4B Planned Background Development Turning Movement Volumes – Map 2



Figure 2-5A AM and PM BEP Peak Hour No Action Alternative Turning Movement Volumes – Map 1



Figure 2-5B AM and PM BEP Peak Hour No Action Alternative Turning Movement Volumes – Map 2

Development of Action Alternative

Forecasts for future traffic under the Action Alternative combine the No Action Alternative volumes, as depicted in Figure 2-1, and the vehicle trips generated by the BEP facility. The forecast assumptions for the BEP facility in this sensitivity analysis remain the same as they were in the TIS. As demonstrated in Figure 2-6, 254 administrative staff and 884 production staff would travel to and from the BEP facility during the peak hours corresponding to shift changes and would generate 850 AM peak hour vehicle trips and 851 PM peak hour vehicle trips. All trips would travel inbound during the AM peak hour and outbound during the PM peak hour. Reverse direction trips would occur one hour after the BEP AM peak hour once the shift change was complete and one hour before the BEP PM peak hour prior to the shift change occurring. Like the TIS, the sensitivity analysis calculated the administrative trips using the ITE Trip Generation Manual to forecast the adjacent roadway peak hour trips, subtracted the total administrative employees from the ITE forecast and divided the remainder by 50% to estimate the number of vehicle trips that would occur during the BEP peak hour (254 minus 135 = 119; 119 divided by 2 = 60). Following the TIS and agreed M-NCPPC scoping form (TIS, Appendix A), the sensitivity analysis applied a 10% transit/bicycle credit covering administrative staff trips, who are not required to arrive and depart during shift changes. Trip distributions with the associated number of vehicle trips by each route are depicted in Figure 2-7.

| PROJECT | UNITS/SIZE/ CREDITS | AM PEAK HOUR TRIPS | | | PM PEAK HOUR TRIPS | | | |
|--|--------------------------------|-----------------------|-----|-------|--------------------|-----|-------|--|
| | | IN | Ουτ | TOTAL | IN | Ουτ | TOTAL | |
| Bureau of Engraving and Printing | | | | | | | | |
| Single-Tenant Office (ITE - 715) (Trips produced during the adjacent street peak hour) | 254 administrative staff | 135 | 0 | 135 | 0 | 130 | 130 | |
| Arrivals and Departures During Shift Peak Hour (50% of remaining trips after removing trips produced during the adjacent street peak hour) | | 60 | 0 | 60 | 0 | 62 | 62 | |
| | 884 production staff | 884 | 0 | 884 | 0 | 884 | 884 | |
| Total External Trips | | 944 | 0 | 944 | 0 | 946 | 946 | |
| Transit/Bicycle Credit (includes USDA shuttle to Greenbelt Station) | 10% credit | -94 | 0 | -94 | 0 | -95 | -95 | |
| Total External Vehicle Trips | | 850 | 0 | 850 | 0 | 851 | 851 | |
| TOTAL VEHICLE TRIPS | | 850 | 0 | 850 | 0 | 851 | 851 | |

| Fiaure 2-6 | BEP Trip Generation | Summarv |
|--------------|----------------------------|---------|
| i igui c 🖬 v | | Gammary |

| Route | Trip Distribution | AM Trips | PM Trips |
|--------------------------------------|----------------------|----------|----------|
| I-95 (Capital Beltway) from the west | 12% | 102 | 102 |
| I-95 (Capital Beltway) from the east | 24% | 204 | 204 |
| BW Parkway from the south | 30% | 255 | 255 |
| BW Parkway from the north | 8% | 68 | 68 |
| Powder Mill Road from the west | 8% | 68 | 68 |
| Powder Mill Road from the east | 5% | 42 | 43 |
| Edmonston Road from the north | 4% | 34 | 34 |
| Sunnyside Avenue from the west | 7% | 60 | 60 |
| MD 201 from the south | 2% | 17 | 17 |
| TOTAL (88% of total trip generation) | 100% | 850 | 851 |

Figure 2-7 Proposed BEP Vehicle Trip Generation by Route

Vehicle trips generated from the No Action Alternative and the Action Alternative were combined to create the Action Alternative turning movement volumes. **Figure 2-8** shows the proposed BEP facility-generated AM and PM peak hour turning movement volumes, and **Figure 2-9** shows the total Action Alternative AM and PM peak hour turning movement volumes.



Figure 2-8A Proposed BEP Facility Generated Turning Movement Volumes – Map 1



Figure 2-8B Proposed BEP Facility-Generated Turning Movement Volumes – Map 2



Figure 2-9A AM and PM BEP Peak Hour Action Alternative Turning Movement Volumes – Map 1



Figure 2-9B AM and PM BEP Peak Hour Action Alternative Turning Movement Volumes – Map 2

Traffic Analysis

Intersection Operations Comparison (Critical Lane Volume and Highway Capacity Manual)

The Project Team (A/E) evaluated the vehicle delay, level of service (LOS), and critical lane volume (CLV) operation of each study intersection based on the turning movement volumes depicted in Figure 2-5 for the No Action Alternative and Figure 2-9 for the Action Alternative. The sensitivity analysis follows the methods that were used in the TIS: i.e., Synchro™ software was used to calculate the vehicle delay and LOS operation based on the Highway Capacity Manual (HCM) 6th Edition method for each study area intersection for all intersections, except for the MD 201 intersections with Ivy Lane and Sunnyside Avenue. Within the Synchro™ software, the algorithms following the HCM 6th Edition are not able to calculate the LOS for those two intersections based on the Maryland SHA assigned traffic signal timings. the HCM 2000 method is not as restrictive and was therefore used to calculate the LOS. The CLV method was applied to signalized intersections of the study area. The following pages present a summary of the sensitivity analysis results, followed by a summary comparison of the sensitivity analysis results with the results of the TIS. (The TIS contains descriptions of the two analysis methods in the section titled "Intersection Operations Analysis Method.") Figure 2-10 depicts the CLV LOS grades for the signalized intersections for the AM and PM peak hours for the No Action Alternative. The overall signalized intersection LOS grades and worst unsignalized lane group LOS grades are depicted in Figure 2-11 for the AM and PM peak hours (HCM). Figures 2-12 and 2-13 offer comparable depictions for the Action Alternative. Figure 2-14 shows the results of the LOS capacity analysis and the intersection vehicle delay comparing the No Action Alternative and the Action Alternative during the AM and PM peak hours. Attachment A provides CLV analysis worksheets, and Attachment B provides Synchro™ analysis reports.


Figure 2-10 No Action Alternative Traffic Operations Summary – CLV Method



Figure 2-11 No Action Alternative Traffic Operations Summary – HCM Method



Figure 2-12 Action Alternative Traffic Operations Summary – CLV Method



Figure 2-13 Action Alternative Traffic Operations Summary – HCM Method

| | | | | | | | No Ac | tion Alte | ernative | | | | | | | | | Acti | on Alter | native | | | | |
|----|--|---------------|--------------|-------------------------------|------------|---------|------------|--------------|-------------------------------|------------|-----|------------|--------------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|------|------------|--------------------|
| | | | | AM F | Peak Ho | our | | | PM I | Peak Ho | our | | | | AM F | Peak Ho | our | | | PM I | Peak Ho | our | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 1 | MD 201 (Kenilworth Avenu | ie) and I | -95 SB (| Off-Ram | p (Signa | alized) | | - | - | - | - | | | - | | - | | | - | | - | - | | |
| | EB (I-95 SB Off-Ramp) | L | 0.68 | 49.7 | D | | | 0.69 | 49.7 | D | | | | 0.78 | 47.8 | D | | | 0.69 | 49.7 | D | | | |
| | EB Overall (I-95 SB Off-Ra | mp) | | 49.7 | D | | | | 49.7 | D | | | Pass | | 47.8 | D | | | | 49.7 | D | | | Pass |
| | NB (Kenilworth Avenue) | Т | 0.36 | 2.6 | Α | | | 0.50 | 3.3 | А | | | | 0.38 | 3.8 | Α | | | 0.50 | 3.3 | Α | | | |
| | NB Overall (Kenilworth Av | enue) | | 2.6 | Α | | | | 3.3 | Α | | | Pass | | 3.8 | Α | | | | 3.3 | Α | | | Pass |
| | SB (Kenilworth Avenue) | Т | 0.41 | 3.0 | Α | | | 0.57 | 4.0 | А | | | - | 0.43 | 4.2 | А | | | 0.57 | 4.1 | Α | | | |
| | SB Overall (Kenilworth Av | enue) | | 3.0 | Α | | | | 4.0 | Α | | | Pass | | 4.2 | Α | | | | 4.1 | Α | | | Pass |
| | Overall | | | 5.2 | Α | 606 | Α | | 5.5 | Α | 883 | Α | Pass | | 7.9 | Α | 667 | Α | | 5.5 | Α | 893 | Α | Pass |
| 2 | MD 201 (Kenilworth Avenu (Signalized) | ie) and I- | -95 NB (| Off-Ram | р | | | | | | | | | | | | | | | _ | | | | _ |
| | WB (I-95 NB Off-Ramp) | L | 0.46 | 21.3 | С | | | 0.73 | 33.0 | С | | | - | 0.42 | 18.3 | В | | | 0.73 | 33.0 | С | | | |
| | WB (I-95 NB Off-Ramp) | R | 0.89 | 34.6 | С | | | 0.83 | 37.9 | D | | | - | 1.00 | 52.7 | F | | | 0.83 | 37.9 | D | | | |
| | WB Overall (I-95 SB Off-Ra | amp) | | 29.4 | С | | | | 35.4 | D | | | Pass | | 40.9 | D | | | | 35.4 | D | | | Pass |
| | NB (Kenilworth Avenue) | Т | 0.31 | 17.8 | В | | | 0.37 | 12.4 | В | | | - | 0.41 | 21.6 | С | | | 0.37 | 12.4 | В | | | |
| | NB Overall (Kenilworth Av | enue) | | 17.8 | В | | | | 12.4 | В | | | Pass | | 21.6 | С | | | | 12.4 | В | | | Pass |
| | SB (Kenilworth Avenue) | Т | 0.62 | 22.1 | С | | | 0.59 | 15.1 | В | | | | 0.68 | 26.1 | С | | | 0.68 | 16.6 | В | | | |
| | SB Overall (Kenilworth Av | enue) | | 22.1 | С | | | | 15.1 | В | | | Pass | | 26.1 | С | | | | 16.6 | В | | | Pass |
| | Overall | | | 24.7 | С | 861 | Α | | 21.3 | С | 966 | Α | Pass | | 32.3 | С | 974 | Α | | 21.6 | С | 1048 | В | Pass |
| 3 | MD 201 (Kenilworth Avenu | ie) and S | HA Dis | trict 3/C | rescent | Road | (Signa | lized) | | | | | | | | | | | - | | | | | • |
| | EB (SHA District 3) | LTR | 0.04 | 30.6 | С | | | 0.17 | 32.1 | С | | | | 0.04 | 30.6 | С | | | 0.17 | 32.1 | С | | | |
| | EB Overall (SHA District 3 |) | | 30.6 | С | | | | 32.1 | C | | | Pass | | 30.6 | С | | | | 32.1 | С | | | Pass |
| | WB (Crescent Road) | LT | 0.81 | 62.7 | E | | | 0.89 | 76.6 | E | | | | 0.81 | 62.7 | E | | | 0.89 | 76.6 | E | | | |
| | WB (Crescent Road) | R | 0.27 | 31.2 | С | | | 0.27 | 32.0 | С | | | | 0.27 | 31.2 | С | | | 0.27 | 32.0 | С | | | |
| | WB Overall (Crescent Roa | d) | | 50.3 | D | | | | 60.8 | Е | | | Fail | | 50.3 | D | | | | 60.8 | E | | | Fail |
| | NB (Kenilworth Avenue) | L | 0.73 | 62.9 | E | | | 0.60 | 62.4 | E | | | | 0.73 | 62.9 | E | | | 0.60 | 62.4 | E | | | |
| | NB (Kenilworth Avenue) | Т | 0.58 | 15.4 | В | | | 0.60 | 18.4 | В | | | | 0.73 | 18.1 | В | | | 0.60 | 18.4 | В | | | |
| | NB (Kenilworth Avenue) | R | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | Α | | | | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | Α | | | |
| | NB Overall (Kenilworth Av | enue) | | 16.7 | В | | | | 19.1 | В | | | Pass | | 19.1 | В | | | | 19.1 | В | | | Pass |
| | SB (Kenilworth Avenue) | L | 0.75 | 66.5 | Е | | | 0.80 | 56.0 | E | | | | 0.75 | 66.5 | Е | | | 0.80 | 54.7 | D | | | |
| | SB (Kenilworth Avenue) | TR | 0.58 | 32.5 | С | | | 0.58 | 31.4 | С | | | | 0.58 | 32.5 | С | | | 0.70 | 35.0 | D | | | |
| | SB Overall (Kenilworth Av | enue) | | 32.7 | С | | | | 32.5 | С | | | Pass | | 32.7 | С | | | | 35.4 | D | | | Pass |
| | Overall | | | 26.3 | С | 665 | Α | | 29.2 | С | 800 | Α | Pass | | 26.6 | С | 785 | Α | | 31.1 | С | 919 | Α | Pass |

Figure 2-14 Comparison of No Action Alternative and Action Alternative Intersection AM and PM Peak Hour Operations

| l igu | | n Alterna | | | nemativ | <u>e inters</u> | No Ac | tion Alte | ernative | | erations | s (contin | lucuj | | | | | Actio | on Alter | native | | | | |
|-------|-----------------------------------|---------------|--------------|-------------------------------|------------|-----------------|------------|--------------|-------------------------------|------------|----------|------------|--------------------|--------------|-------------------------------|------------|------|------------|--------------|-------------------------------|------------|------|------------|--------------------|
| | | | | AM | Peak Ho | our | | | PM I | Peak Ho | our | | | | AMI | Peak Ho | our | | | PM F | Peak Ho | our | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 4 | MD 201 (Kenilworth Avenue) an | d Ivy La | ne (Sigr | nalized) ^a | | - | | - | - | - | - | | | | | - | | | | _ | | - | | |
| | EB (Ivy Lane) | R | 0.14 | 0.2 | А | | | 0.18 | 0.3 | А | | | | 0.14 | 0.2 | А | | | 0.18 | 0.3 | А | | | |
| | EB Overall (Ivy Lane) | | | 0.2 | Α | | | | 0.3 | Α | | | Pass | | 0.2 | Α | | | | 0.3 | Α | | | Pass |
| | NB (Kenilworth Avenue) | L | 0.45 | 26.8 | С | | | 0.57 | 24.0 | С | | | | 0.45 | 26.7 | С | | | 0.57 | 24.0 | С | | | |
| | NB (Kenilworth Avenue) | Т | 0.45 | 0.4 | Α | | | 0.40 | 0.3 | Α | | | | 0.56 | 0.5 | А | | | 0.40 | 0.3 | А | | | |
| | NB Overall (Kenilworth Avenue) |) | | 2.7 | Α | | | | 3.7 | Α | | | Pass | | 2.4 | Α | | | | 3.7 | Α | | | Pass |
| | SB (Kenilworth Avenue) | Т | 0.53 | 0.8 | А | | | 0.60 | 1.8 | Α | | | | 0.53 | 0.8 | А | | | 0.73 | 3.4 | А | | | |
| | SB (Kenilworth Avenue) | R | 0.01 | 0.0 | Α | | | 0.01 | 0.3 | Α | | | | 0.01 | 0.0 | А | | | 0.01 | 0.2 | А | | | |
| | SB Overall (Kenilworth Avenue) | | | 0.8 | Α | | | | 1.8 | Α | | | Pass | | 0.8 | Α | | | | 3.4 | Α | | | Pass |
| | Overall | | | 1.8 | Α | 653 | Α | | 2.5 | Α | 910 | Α | Pass | | 1.7 | Α | 653 | Α | | 3.2 | Α | 1088 | В | Pass |
| 5 | MD 201 (Kenilworth Avenue/Edu | monston | Road) | and Che | errywoo | d Lane | (Signa | alized) | | | | | | | | | | | | | - | | | |
| | EB (Cherrywood Lane) | L | 0.86 | 52.2 | D | | | 0.71 | 42.5 | D | | | | 0.86 | 52.2 | D | | | 0.71 | 42.5 | D | | | |
| | EB (Cherrywood Lane) | R | 0.35 | 38.3 | D | | | 0.95 | 80.5 | F | | | | 0.35 | 38.3 | D | | | 0.95 | 80.5 | F | | | |
| | EB Overall (Cherrywood Lane) | | | 50.0 | D | | | | 56.9 | Е | | | Fail | | 50.0 | D | | | | 56.9 | Е | | | Fail |
| | NB (Kenilworth Avenue) | L | 0.88 | 33.0 | С | | | 0.78 | 25.3 | С | | | | 0.88 | 31.9 | С | | | 0.87 | 42.8 | D | | | |
| | NB (Kenilworth Avenue) | Т | 0.55 | 7.6 | Α | | | 0.52 | 8.3 | Α | | | | 0.71 | 9.9 | Α | | | 0.52 | 8.3 | А | | | |
| | NB Overall (Kenilworth Avenue) |) | | 11.9 | В | | | | 10.8 | В | | | Pass | | 12.9 | В | | | | 13.5 | В | | | Pass |
| | SB (Edmonston Road) | Т | 0.68 | 17.2 | В | | | 0.69 | 17.3 | В | | | | 0.68 | 17.2 | В | | | 0.89 | 26.6 | С | | | |
| | SB (Edmonston Road) | R | 0.54 | 15.8 | В | | | 0.47 | 14.6 | В | | | | 0.54 | 15.8 | В | | | 0.49 | 15.7 | В | | | |
| | SB Overall (Edmonston Road) | | | 16.8 | В | | | | 16.7 | В | | | Pass | | 16.8 | В | | | | 24.5 | С | | | Pass |
| | Overall | | | 19.3 | В | 977 | Α | | 21.8 | С | 1104 | В | Pass | | 19.0 | В | 977 | Α | | 26.2 | С | 1282 | С | Pass |
| 6 | MD 201 (Edmonston Road) and | Sunnysi | ide Aveı | nue (Sig | nalized |) ^a | | | _ | | | | - | | | | | | | | | | | |
| | EB (Sunnyside Avenue) | L | 1.32 | 297.6 | F | | | 1.36 | 261.8 | F | | | - | 2.05 | 605.5 | F | | | 1.36 | 261.8 | F | | | |
| | EB (Sunnyside Avenue) | R | 0.64 | 61.7 | E | | | 1.11 | 125.0 | F | | | | 0.64 | 61.7 | E | | | 1.17 | 145.2 | F | | | |
| | EB Overall (Sunnyside Avenue) | | | 126.8 | F | | | | 167.5 | F | | | Fail | | 264.0 | F | | | | 181.5 | F | | | Fail |
| | NB (Edmonston Road) | L | 1.43 | 280.0 | F | | | 1.23 | 187.0 | F | | | - | 1.43 | 280.0 | F | | | 1.23 | 187.0 | F | | | |
| | NB (Edmonston Road) | TR | 0.66 | 4.7 | А | | | 0.90 | 20.9 | С | | | | 0.90 | 15.1 | В | | | 0.90 | 20.9 | С | | | |
| | NB Overall (Edmonston Road) | | | 110.5 | F | | | | 66.9 | E | | | Fail | | 97.9 | F | | | | 66.9 | Е | | | Fail |
| | SB (Edmonston Road) | Т | 1.36 | 212.3 | F | | | 1.17 | 125.7 | F | | | | 1.36 | 212.3 | F | | | 1.55 | 290.1 | F | | | |
| | SB (Edmonston Road) | R | 0.24 | 14.4 | В | | | 0.15 | 9.9 | Α | | | | 0.24 | 14.4 | В | | | 0.21 | 10.4 | В | | | |
| | SB Overall (Edmonston Road) | | | 180.1 | F | | | | 108.6 | F | | | Fail | | 180.1 | F | | | | 248.3 | F | | | Fail |
| | Overall | | | 141.3 | F | 1718 | F | | 105.3 | F | 1699 | F | Fail | | 149.9 | F | 1778 | F | | 163.2 | F | 2022 | F | Fail |

Figure 2-14 Comparison of No Action Alternative and Action Alternative Intersection AM and PM Peak Hour Operations (continued)

| l Igui | | | ve unu r | Action A | incinati | ive inte | No Act | ion Alte | rnative | <u>n mour</u> (| <i>operatio</i> | | inacay | | | | | Actio | on Alter | native | | | | |
|--------|---|--------------|-----------------|-------------------------------|------------|----------|------------|--------------|-------------------------------|-----------------|-----------------|------------|--------------------|--------------|-------------------------------|------------|------|------------|--------------|-------------------------------|------------|------|------------|--------------------|
| | | | | AM Pe | ak Ho | ur | | | PM F | Peak Ho | our | | | | AM F | Peak Ho | our | | | PM F | Peak Ho | our | | |
| ID | Intersection Land Name and Approach Grou | p V Ra | /C D ntio (: | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 7 | MD 201 (Edmonston Road) and Be | aver D | am Roa | ad (TWS | SC) | | | | | - | | | | - | | | | | | | | | | |
| | WB (Beaver Dam Road) LR | 3. | 38 17 | 753.5 | F | | | 1.61 | 689.9 | F | | | | 18.59 | Err | F | | | 0.23 | Err | F | | | |
| | WB Overall (Beaver Dam Road) | - | 17 | 753.5 | F | | | | 689.9 | F | | | Fail | | Err | F | | | | Err | F | | | Fail |
| | SB (Edmonston Road) LT | 0. | 06 1 | 12.6 | В | | | 0.09 | 14.5 | В | | | | 0.09 | 17.3 | С | | | 0.09 | 14.5 | В | | | |
| | SB Overall (Edmonston Road) | - | - | 0.2 | | | | | 0.4 | | | | Pass | | 0.3 | | | | | 0.3 | | | | Pass |
| | Overall | | 2 | 22.3 | | n/a | n/a | | 8.3 | | n/a | n/a | Pass | | 122.8 | | n/a | n/a | | 0.5 | | n/a | n/a | Fail |
| 8 | MD 201 (Edmonston Road) and Po | vder N | Aill Roa | ad (Sign | nalized |) | | | | | | | | - | | | | | - | | | | | |
| | EB (Powder Mill Road) L | 0.2 | 29 5 | 58.4 | Е | | | 0.74 | 63.1 | E | | | | 0.29 | 58.4 | E | | | 0.87 | 83.7 | F | | | |
| | EB (Powder Mill Road) T | 0.3 | 31 4 | 48.2 | D | | | 0.80 | 61.2 | E | | | | 0.50 | 52.9 | D | | | 0.80 | 61.2 | Е | | | |
| | EB (Powder Mill Road) R | 0. | 00 | 0.0 | 0 | | | 0.00 | 0.0 | 0 | | | | 0.00 | 0.0 | A | | | 0.00 | 0.0 | А | | | |
| | EB Overall (Powder Mill Road) | - | { | 51.7 | D | | | | 61.9 | Е | | | Fail | | 54.2 | D | | | | 70.1 | E | | | Fail |
| | WB (Powder Mill Road) L | 0. | 73 7 | 71.8 | Е | | | 0.55 | 53.2 | D | | | | 0.91 | 101.3 | F | | | 2.85 | 905.0 | F | | | |
| | WB (Powder Mill Road) T | 0.3 | 32 4 | 40.6 | D | | | 0.28 | 34.9 | С | | | | 0.32 | 40.6 | D | | | 0.39 | 37.2 | D | | | |
| | WB (Powder Mill Road) R | 0. | 00 | 0.0 | А | | | 0.00 | 0.0 | Α | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | |
| | WB Overall (Powder Mill Road) | - | | 58.0 | E | | | | 41.3 | D | | | Fail | | 74.4 | E | | | | 614.3 | F | | | Fail |
| | NB (Edmonston Road) | 0.9 | 92 6 | 61.4 | Е | | | 0.88 | 55.5 | Е | | | | 0.92 | 61.4 | E | | | 0.88 | 55.5 | Е | | | |
| | NB (Edmonston Road) T | 0. | 59 2 | 20.1 | С | | | 0.71 | 29.7 | С | | | | 0.59 | 20.1 | С | | | 0.71 | 29.7 | С | | | |
| | NB (Edmonston Road) R | 0. | 00 | 0.0 | А | | | 0.00 | 0.0 | Α | | | | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | А | | | |
| | NB Overall (Edmonston Road) | - | 3 | 38.3 | D | | | | 40.3 | D | | | Pass | | 38.3 | D | | | | 40.3 | D | | | Pass |
| | SB (Edmonston Road) | 0. | 13 3 | 39.3 | D | | | 0.46 | 57.1 | Е | | | | 0.31 | 44.2 | D | | | 0.46 | 57.1 | Е | | | |
| | SB (Edmonston Road) TR | 0.8 | 87 6 | 68.7 | Е | | | 0.82 | 70.3 | Е | | | | 0.87 | 68.7 | E | | | 0.82 | 70.3 | Е | | | |
| | SB Overall (Edmonston Road) | - | 6 | 67.5 | Е | | | | 68.4 | Е | | | Fail | | 66.5 | Е | | | | 68.4 | Е | | | Fail |
| | Overall | | 5 | 51.7 | D | 1079 | В | | 53.3 | D | 1226 | С | Pass | | 54.4 | D | 1116 | В | | 186.9 | F | 1609 | F | Fail |
| 9 | MD 201 (Edmonston Road) and Od | ell Roa | ad (TW | ISC) | | | | | | | | | | | | | | | | | | | | |
| | EB (Odell Road) LTR | 0.2 | 29 6 | 66.3 | F | | | 0.35 | 63.0 | F | | | | 0.31 | 71.9 | F | | | 0.37 | 67.9 | F | | | |
| | EB Overall (Odell Road) | - | 6 | 66.3 | F | | | | 63.0 | F | | | Fail | | 71.9 | F | | | | 67.9 | F | | | Fail |
| | WB (Odell Road) LT | 0. | 08 4 | 48.0 | Е | | | 0.03 | 46.0 | E | | | | 0.09 | 50.7 | F | | | 0.04 | 48.4 | Е | | | |
| | WB (Odell Road) R | 0. | 00 1 | 13.8 | В | | | 0.01 | 13.3 | В | | | | 0.00 | 13.8 | В | | | 0.01 | 13.7 | В | | | |
| | WB Overall (Odell Road) | - | 4 | 43.7 | E | | | | 32.9 | D | | | Fail | | 46.1 | Е | | | | 34.5 | D | | | Fail |
| | NB (Edmonston Road) LT | 0. | 06 | 9.5 | А | | | 0.04 | 9.9 | Α | | | | 0.06 | 9.6 | Α | | | 0.04 | 9.9 | А | | | |
| | NB Overall (Edmonston Road) | - | | 0.8 | | | | | 0.4 | | | | Pass | | 0.8 | | | | | 0.4 | | | | Pass |
| | SB (Edmonston Road) LTR | - | - | 0.0 | Α | | | 0.00 | 9.2 | Α | | | | | 0.0 | А | | | 0.00 | 9.3 | А | | | |
| | SB Overall (Edmonston Road) | - | | 0.0 | | | | | 0.0 | | | | Pass | | 0.0 | | | | | 0.0 | | | | Pass |
| | Overall | | | 1.8 | | n/a | n/a | | 1.6 | | n/a | n/a | Pass | | 1.8 | | n/a | n/a | | 1.7 | | n/a | n/a | Pass |

| Figure 2-14 Comparison of NO Action Alternative and Action Alternative Intersection AM and PM Peak Hour Operations (contin | Figure 2-14 |
|--|-------------|
|--|-------------|

| | | | | | | | No Ac | tion Alte | ernative | | | | | | | | | Acti | on Alter | native | | | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|-----|------------|--------------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|-----|------------|--------------------|
| | | | | AM F | Peak Ho | our | | | PM F | Peak Ho | our | | | | AM I | Peak Ho | our | | | PM P | eak Ho | ur | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 10 | Powder Mill Road and Poultry R | oad (AW | /SC) | _ | - | - | | - | _ | - | - | | | _ | | | - | | - | | | | | |
| | EB (Powder Mill Road) | LT | 0.25 | 8.9 | Α | | | 1.02 | 59.3 | F | | | | 1.06 | 72.8 | F | | | 1.92 | 283.6 | F | | | |
| | EB Overall (Powder Mill Road) | | | 8.9 | Α | | | | 59.3 | F | | | Fail | | 72.8 | F | | | | 283.6 | F | | | Fail |
| | WB (Powder Mill Road) | TR | 0.51 | 11.3 | В | | | 0.45 | 11.7 | В | | | | 1.09 | 76.1 | F | | | 0.89 | 29.3 | D | | | |
| | WB Overall (Powder Mill Road) | | | 11.3 | В | | | | 11.7 | В | | | Pass | | 76.1 | F | | | | 29.3 | D | | | Fail |
| | SB (Poultry Road) | LR | 0.00 | 8.3 | Α | | | 0.02 | 9.7 | Α | | | | 0.00 | 10.3 | В | | | 1.92 | 354.3 | F | | | |
| | SB Overall (Poultry Road) | | | 0.0 | - | | - | | 9.7 | Α | | r | Pass | | 0.0 | - | | 1 | | 354.3 | F | | | Fail |
| | Overall | | | 10.6 | В | n/a | n/a | | 45.6 | E | n/a | n/a | Fail | | 74.6 | F | n/a | n/a | | 276.8 | F | n/a | n/a | Fail |
| 11 | Powder Mill Road and Research | Road (1 | WSC) | | | | | | | | - | | | | | | | | | | | | | |
| | NB (Research Road) | L | 0.06 | 14.6 | В | | | 0.16 | 24.7 | С | 1 | | | 0.11 | 25.1 | D | | | 0.30 | 48.2 | Е | | | |
| | NB Overall (Research Road) | | | 14.6 | В | | | | 24.7 | C | | | Pass | | 25.1 | D | | | | 48.2 | E | | | Fail |
| | Overall | | | 0.4 | | n/a | n/a | | 0.7 | | n/a | n/a | Pass | | 0.4 | | n/a | n/a | | 1.0 | | n/a | n/a | Pass |
| 12 | Powder Mill Road and Springfie | ld Road | (TWSC) | | | | | | | | | | | | | | | | | | | | | |
| | EB (Powder Mill Road) | L | 0.01 | 9.2 | A | _ | | 0.02 | 8.3 | A | - | | | 0.01 | 11.4 | В | - | | 0.02 | 8.3 | А | | | |
| | EB Overall (Powder Mill Road) | | | 0.3 | | | | | 0.3 | | _ | | Pass | | 0.3 | | | | | 0.2 | | | | Pass |
| | SB (Springfield Road) | LR | 0.61 | 31.1 | D | _ | | 1.37 | 229.8 | F | | | | 1.20 | 184.1 | F | | | 2.38 | 693.7 | F | | | |
| | SB Overall (Springfield Road) | | | 31.1 | D | | 1 | | 229.8 | F | | r | Fail | | 184.1 | F | | 1 | | 693.7 | F | | | Fail |
| | Overall | | | 5.6 | | n/a | n/a | | 52.9 | | n/a | n/a | Fail | | 23.1 | | n/a | n/a | | 125.2 | | n/a | n/a | Fail |
| 13 | Powder Mill Road and MD 295 S | B Ramp | s (TWS | C) | | | | | | | - | | | | | | | | | | | | | |
| | WB (Powder Mill Road) | L | 0.10 | 8.5 | A | | | 0.21 | 11.5 | В | ļ | | | 0.10 | 8.5 | A | - | | 0.30 | 15.2 | С | | | |
| | WB Overall (Powder Mill Road) | | | 1.7 | | _ | | | 3.7 | | _ | | Pass | | 1.0 | | - | | | 5.0 | | • | | Pass |
| | SB (MD 295 SB Off-Ramp) | L | 1.35 | 223.1 | F | - | | 2.87 | 929.9 | F | - | | | 2.33 | 668.5 | F | - | | 4.54 | 1718.4 | F | | | |
| | SB (MD 295 SB Off-Ramp) | TR | 0.43 | 15.1 | С | | | 0.21 | 11.3 | В | | | | 0.96 | 70.8 | F | | | 0.21 | 11.3 | В | | | |
| | SB Overall (MD 295 SB Off-Ram | p) | | 129.6 | F | | | | 619.4 | F | | | Fail | | 357.1 | F | | | | 1141.5 | F | | | Fail |
| | Overall | | | 50.5 | | n/a | n/a | | 151.7 | | n/a | n/a | Fail | | 121.3 | | n/a | n/a | | 231.3 | | n/a | n/a | Fail |

Figure 2-14 Comparison of No Action Alternative and Action Alternative Intersection AM and PM Peak Hour Operations (continued)

| | | | | | | | No Ac | tion Alt | ernative | | | • | , | | | | | Acti | on Alter | native | | | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|------|------------|--------------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|------|------------|--------------------|
| | | | | AM F | Peak Ho | our | | | PM I | Peak He | our | | | | AM F | Peak Ho | ur | | | PM F | Peak Ho | our | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 14 | Powder Mill Road and MD 295 N | B Ramp | s (TWS | C) | - | | | | - | - | - | | | _ | _ | | _ | | _ | - | | | | |
| | EB (Powder Mill Road) | L | 0.15 | 10.2 | В | | | 0.46 | 14.4 | В | | | | 0.16 | 10.5 | В | | | 0.57 | 16.5 | С | | | |
| | EB Overall (Powder Mill Road) | | | 2.2 | | | | | 4.2 | | | | Pass | | 2.2 | | | | | 5.4 | | | | Pass |
| | NB (MD 295 NB Off-Ramp) | L | 0.66 | 67.9 | F | | | 2.59 | 991.1 | F | | | | 3.11 | 1020.3 | F | | | 4.22 | 1860.5 | F | | | |
| | NB (MD 295 NB Off-Ramp) | TR | 0.20 | 12.4 | В | | | 0.14 | 15.5 | С | | | | 0.20 | 12.4 | В | | | 0.14 | 16.3 | С | | | |
| | NB Overall (MD 295 NB Off-Ran | ו p) | | 37.2 | Е | | | | 599.3 | F | | | Fail | | 796.1 | F | | | | 1119.8 | F | | | Fail |
| | Overall | | | 5.8 | | n/a | n/a | | 38.3 | | n/a | n/a | Fail | | 217.2 | | n/a | n/a | | 67.0 | | n/a | n/a | Fail |
| 15 | Powder Mill Road and Soil Con | servatior | n Road (| (Signaliz | ed) | _ | | | - | _ | _ | | | | | | | | | | | | | |
| | EB (Powder Mill Road) | Т | 0.46 | 30.5 | С | | | 0.74 | 37.6 | D | | | | 0.46 | 30.5 | С | | | 0.83 | 43.5 | D | | | |
| | EB (Powder Mill Road) | R | 0.00 | 0.0 | А | | | 0.00 | 0.0 | Α | | | | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | Α | | | |
| | EB Overall (Powder Mill Road) | | | 30.5 | С | | | | 37.6 | D | | | Pass | | 30.5 | C | | | | 43.5 | D | | | Pass |
| | WB (Powder Mill Road) | L | 0.36 | 42.2 | D | | | 0.41 | 53.1 | D | | | | 0.36 | 42.2 | D | | | 0.41 | 53.1 | D | | | |
| | WB (Powder Mill Road) | Т | 0.51 | 20.8 | С | | | 0.48 | 22.3 | С | | | | 0.58 | 22.3 | С | | | 0.48 | 22.3 | С | | | |
| | WB Overall (Powder Mill Road) | | | 24.0 | С | | | | 25.4 | С | | | Pass | | 24.9 | С | | | | 25.4 | С | | | Pass |
| | NB (Soil Conservation Road) | L | 0.58 | 22.5 | С | | | 0.84 | 30.9 | С | | | | 0.58 | 22.5 | С | | | 0.84 | 30.9 | С | | | |
| | NB (Soil Conservation Road) | R | 0.00 | 0.0 | A | | | 0.00 | 0.0 | Α | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | Α | | | |
| | NB (Soil Conservation Road) | | | 22.5 | С | | | | 30.9 | С | | | Pass | | 22.5 | С | | | | 30.9 | С | | | Pass |
| | Overall | | | 24.7 | С | 639 | Α | | 31.2 | С | 1001 | В | Pass | | 25.1 | С | 681 | Α | | 33.1 | С | 1044 | В | Pass |

Figure 2-14 Comparison of No Action Alternative and Action Alternative Intersection AM and PM Peak Hour Operations (continued)

Notes:

^a Highway Capacity Manual 2000 results (Intersections #4 and #6)

EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound

LOS = Level of Service

V/C = Volume-to-Capacity ratio

LTR = left / through / right lanes

TWSC = Two-way STOP-controlled unsignalized intersection (TWSC intersections do not have an overall LOS)

AWSC = All-way STOP-controlled unsignalized intersection

Delay is measured in seconds per vehicle

Red cells denote intersections or approaches operating at unacceptable conditions.

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As shown in **Figure 2-14**, most study intersections would operate at acceptable overall conditions during the AM and PM peak hours under the Action Alternative. However, the following signalized intersections in the study area would operate with overall unacceptable conditions (LOS E or LOS F) using the HCM 6th Edition or HCM 2000 method (where the average control delay exceeds 55 seconds per vehicle) or LOS C using the CLV method (with a CLV greater than 1,300):

- MD 201 (Edmonston Road)/Sunnyside Avenue (Intersection #6) during the AM and PM peak hours
- MD 201 (Edmonston Road)/Powder Mill Road (Intersection #8) during the PM peak hour

Compared with the No Action Alternative, the MD 201 (Edmonston Road)/Sunnyside Avenue (Intersection #6) would continue to experience an overall LOS F but with greater delays during the AM and PM peak hours. At the MD 201 (Edmonston Road)/Powder Mill Road intersection, the LOS for PM peak hour would degrade from LOS D to LOS F based on the HCM method and from LOS C to LOS F based on the CLV method.

The results indicate an imperceptible difference between the sensitivity analysis and the TIS because the LOS grades for MD 201 (Edmonston Road)/Sunnyside Avenue (Intersection #6) and MD 201 (Edmonston Road)/Powder Mill Road (Intersection #8) would be the same for the same study peak hours in both the sensitivity analysis and TIS. However, minor differences would occur in overall intersection vehicle delays or CLVs. All other signalized study intersections would operate with acceptable conditions, with imperceptible changes in overall intersection vehicle delays or CLVs. **Figure 2-15** compares the overall operations of the signalized and all-way stop-controlled intersections and the worst-approach operations of the two-way stop-controlled intersections under the No Action Alternative between the TIS and the sensitivity analysis. **Figure 2-16** provides a similar comparison for the Action Alternative.

| Einen 0 45 | Or man a start of Nie Artista Alternative Or | | | |
|-------------|--|-------------------------------|--------------------------------------|-------------------|
| Figure 2-15 | Comparison of No Action Alternative Sel | ensitivity Analysis and Trans | sportation impact Assessment interse | ection Operations |

| | | | No Action Alternative | | | | | | | | | | | | | | | | |
|--------|--|---------------------------|---------------------------|------------|---------|------------|-------------------------------|------------|------|------------|-------------------------------|------------|------|------------|-------------------------------|------------|------|------------|-------------------|
| | | | | | Traffic | Impact | Assessme | nt | | | | | S | ensitivit | ty Analysis | | | | |
| | | | A | AM Peak | Hour | | P | M Peak | Hour | | Α | M Peak | Hour | | F | PM Peak | Hour | | |
| ID | Intersection | Control Type ^a | HCM Delay (sec/veh) | HCM LOS | CLV | CLV LOS | HCM Delay (sec/veh) | HCM LOS | CLV | CLV LOS | HCM Delay (sec/veh) | HCM LOS | CLV | CLV LOS | HCM Delay (sec/veh) | HCM LOS | CLV | CLV LOS | Changes in LOS |
| 1 | MD 201 (Kenilworth Avenue) and I-95 SB Off-Ramp | Signalized | 5.2 | A | 606 | А | 5.5 | A | 885 | А | 5.2 | A | 606 | А | 5.5 | A | 883 | А | None |
| 2 | MD 201 (Kenilworth Avenue) and I-95 NB Off-Ramp | Signalized | 24.7 | С | 860 | A | 21.3 | с | 969 | A | 24.7 | с | 861 | A | 21.3 | С | 966 | A | None |
| 3 | MD 201 (Kenilworth Avenue) and SHA District 3/Crescent Road | Signalized | 26.2 | С | 666 | A | 29.6 | с | 797 | A | 26.3 | с | 665 | A | 29.2 | С | 800 | A | None |
| 4 | MD 201 (Kenilworth Avenue) and Ivy Lane ^b | Signalized | 1.8 | А | 652 | Α | 2.4 | Α | 906 | Α | 1.8 | Α | 653 | А | 2.5 | А | 910 | А | None |
| 5 | MD 201 (Kenilworth Avenue/Edmonston Road) and Cherrywood Lane | Signalized | 19.5 | В | 980 | А | 21.2 | С | 1100 | В | 19.3 | В | 977 | А | 21.8 | С | 1104 | В | None |
| 6 | MD 201 (Edmonston Road) and Sunnyside Avenue ^b | Signalized | 141.4 | F | 1719 | F | 106.1 | F | 1702 | F | 141.3 | F | 1718 | F | 105.3 | F | 1699 | F | None |
| 7 | MD 201 (Edmonston Road) and Beaver Dam Road | Two-Way Stop Control | 1753.5 | F | n/a | n/a | 739.6 | F | n/a | n/a | 1753.5 | F | n/a | n/a | 689.9 | F | n/a | n/a | None |
| 8 | MD 201 (Edmonston Road) and Powder Mill Road | Signalized | 51.7 | D | 1080 | В | 54.7 | D | 1225 | с | 51.7 | D | 1079 | В | 53.3 | D | 1226 | С | None |
| 9 | MD 201 (Edmonston Road) and Odell Road | Two-Way Stop Control | 66.3 | F | n/a | n/a | 63.0 | F | n/a | n/a | 66.3 | F | n/a | n/a | 63.0 | F | n/a | n/a | None |
| 1 | Powder Mill Road and Poultry Road | All-Way Stop Control | 10.6 | В | n/a | n/a | 45.6 | Е | n/a | n/a | 10.6 | В | n/a | n/a | 45.6 | Е | n/a | n/a | None |
| 1 | Powder Mill Road and Research Road | Two-Way Stop Control | 14.6 | В | n/a | n/a | 24.7 | С | n/a | n/a | 14.6 | В | n/a | n/a | 24.7 | С | n/a | n/a | None |
| 1 | Powder Mill Road and Springfield Road | Two-Way Stop Control | 31.1 | D | n/a | n/a | 229.8 | F | n/a | n/a | 31.1 | D | n/a | n/a | 229.8 | F | n/a | n/a | None |
| 1 | Powder Mill Road and MD 295 SB Ramps | Two-Way Stop Control | 129.6 | F | n/a | n/a | 619.4 | F | n/a | n/a | 129.6 | F | n/a | n/a | 619.4 | F | n/a | n/a | None |
| 1 4 | Powder Mill Road and MD 295 NB Ramps | Two-Way Stop Control | 37.2 | Е | n/a | n/a | 599.3 | F | n/a | n/a | 37.2 | Е | n/a | n/a | 599.3 | F | n/a | n/a | None |
| 1 5 | Powder Mill Road and Soil Conservation Road | Signalized | 24.7 | С | 639 | A | 31.2 | с | 1001 | В | 24.7 | С | 639 | А | 31.2 | С | 1001 | В | None |

Notes: Delay is measured in seconds per vehicle. ^a The HCM vehicle delays and LOS grades are based on the overall intersection for signalized and all-way stop controlled intersection, and the worst approach of two-way stop-controlled intersections. ^b Highway Capacity Manual 2000 results (Intersections #4 and #6)

| Figure 2-16 | Comparison of Action Alternativ | o Sonsitivity Analys | sis and Transportatio | n Imnact Assassment Ir | tersection Operations |
|-------------|---------------------------------|----------------------|-----------------------|------------------------------|------------------------|
| Figure Z-10 | Comparison of Action Alternativ | e Sensitivity Analys | SIS anu mansportatio | 11 IIIIpaci Assessilleili II | itersection Operations |

| | | | | | | | | | A | ction A | Iternative | | | | | | | | |
|------------|--|---------------------------|-------------------------------|----------------|----------|----------------|-------------------------------|----------------|----------|----------------|-------------------------------|----------------|----------|----------------|-------------------------------|----------------|----------|----------------|----------------|
| | | | | | Traffic | Impac | t Assessme | ent | | | | | Sei | nsitivit | y Analysis | | | | |
| | | | A | A Peak | Hour | | PI | M Peak | Hour | | A | / Peak | Hour | | PN | / Peak | Hour | | |
| ID | Intersection | Control Type ^a | HCM Delay (sec/veh) | HC M LOS | CLV | CLV LO S | Changes in LOS |
| 1 | MD 201 (Kenilworth Avenue) and I-95 SB Off- Ramp | Signalized | 7.9 | А | 667 | А | 5.5 | A | 894 | А | 7.9 | А | 667 | А | 5.5 | А | 893 | А | None |
| 2 | MD 201 (Kenilworth Avenue) and I-95 NB Off- Ramp | Signalized | 32.2 | с | 973 | A | 21.7 | с | 105 1 | В | 32.3 | с | 974 | А | 21.6 | с | 104 8 | в | None |
| 3 | MD 201 (Kenilworth Avenue) and SHA District 3/Crescent Road | Signalized | 26.6 | С | 785 | A | 31.6 | С | 917 | A | 26.6 | С | 785 | A | 31.1 | с | 919 | A | None |
| 4 | MD 201 (Kenilworth Avenue) and Ivy Lane ^b | Signalized | 1.6 | А | 652 | А | 3.2 | А | 108 4 | В | 1.7 | А | 653 | А | 3.2 | A | 108 8 | В | None |
| 5 | MD 201 (Kenilworth Avenue/Edmonston Road) and Cherrywood Lane | Signalized | 19.2 | В | 980 | А | 25.3 | с | 127 8 | с | 19.0 | В | 977 | А | 26.2 | с | 128 2 | с | None |
| 6 | MD 201 (Edmonston Road) and Sunnyside Avenue ^b | Signalized | 150.0 | F | 177 9 | F | 164.0 | F | 202 5 | F | 149.9 | F | 177 8 | F | 163.2 | F | 202 2 | F | None |
| 7 | MD 201 (Edmonston Road) and Beaver Dam Road | Two-Way Stop Control | Err | F | n/a | n/a | None |
| 8 | MD 201 (Edmonston Road) and Powder Mill Road | Signalized | 54.5 | D | 111 7 | В | 164.5 | F | 160 8 | F | 54.4 | D | 111 6 | В | 186.9 | F | 160 9 | F | None |
| 9 | MD 201 (Edmonston Road) and Odell Road | Two-Way Stop Control | 73.1 | F | n/a | n/a | 67.9 | F | n/a | n/a | 71.9 | F | n/a | n/a | 67.9 | F | n/a | n/a | None |
| 10 | Powder Mill Road and Poultry Road | All-Way Stop Control | 74.6 | F | n/a | n/a | 276.8 | F | n/a | n/a | 74.6 | F | n/a | n/a | 276.8 | F | n/a | n/a | None |
| 11 | Powder Mill Road and Research Road | Two-Way Stop Control | 25.1 | D | n/a | n/a | 48.2 | Е | n/a | n/a | 25.1 | D | n/a | n/a | 48.2 | Е | n/a | n/a | None |
| 12 | Powder Mill Road and Springfield Road | Two-Way Stop Control | 184.1 | F | n/a | n/a | 693.7 | F | n/a | n/a | 184.1 | F | n/a | n/a | 693.7 | F | n/a | n/a | None |
| 13 | Powder Mill Road and MD 295 SB Ramps | Two-Way Stop Control | 357.1 | F | n/a | n/a | 1141.5 | F | n/a | n/a | 357.1 | F | n/a | n/a | 1141.5 | F | n/a | n/a | None |
| 14 | Powder Mill Road and MD 295 NB Ramps | Two-Way Stop Control | 796.1 | F | n/a | n/a | 1119.8 | F | n/a | n/a | 796.1 | F | n/a | n/a | 1119.8 | F | n/a | n/a | None |
| 15 Note | Powder Mill Road and Soil Conservation Road | Signalized | 25.1 | с | 681 | А | 33.1 | с | 104 4 | В | 25.1 | с | 681 | А | 33.1 | С | 104 4 | В | None |

Delay is measured in seconds per vehicle.

^a The HCM vehicle delays and LOS grades are based on the overall intersection for signalized and all-way stop controlled intersection, and the worst approach of two-way stop-controlled intersections.

^b Highway Capacity Manual 2000 results (Intersections #4 and #6)

Using the HCM 6th Edition method, all seven unsignalized intersections have lane groups and/or approaches that would operate under unacceptable conditions (LOS E or LOS F) during the AM and PM peak hours under the Action Alternative, including the following:

- MD 201 (Edmonston Road)/Beaver Dam Road (Intersection #7)
 - Westbound Beaver Dam Road would operate at LOS F during the AM peak hour, with worse delays under the Action Alternative compared to those under the No Action Alternative. During the PM peak hour, this approach would operate at LOS E under the Action Alternative compared to LOS F under the No Action Alternative.
 - The sensitivity analysis shows no detrimental change from the TIS in the LOS grades at this intersection for the study peak hours.
- MD 201 (Edmonston Road)/Odell Road (Intersection #9)
 - Eastbound Odell Road would operate at LOS F during the AM and PM peak hours, with worse delays under the Action Alternative compared to those under the No Action Alternative.
 - Westbound Odell Road would operate at LOS E during the AM peak hour, with a worse delay under the Action Alternative than under the No Action Alternative.
 - The westbound shared through-right lane of Odell Road would operate at LOS F during the AM peak hour, with a worse delay under the Action Alternative than under the No Action Alternative.
 - The sensitivity analysis shows no change from the TIS in the LOS grades at this intersection for the study peak hours.
- Powder Mill Road/Poultry Road (Intersection #10)
 - Eastbound Powder Mill Road would operate at LOS F during the AM and PM peak hours. The AM peak hour would degrade from LOS A under the No Action Alternative to LOS F under the Action Alternative. During the PM peak hour, the eastbound approach would experience LOS F, but with worse delays under the Action Alternative than under the No Action Alternative.
 - Westbound Powder Mill Road would operate at LOS F during the AM peak hour, degrading from LOS B under the No Action Alternative.
 - Southbound Poultry Road would operate at LOS F during the PM peak hour, degrading from LOS A under the No Action Alternative.
 - The intersection would operate at an overall LOS F during the AM peak hour, degrading from LOS B under the No Action Alternative. During the PM peak hour, it would operate at an overall LOS F, degrading from LOS E under the No Action Alternative.
 - The sensitivity analysis shows no change from the TIS in the LOS grades at this intersection for the study peak hours.
- Powder Mill Road/Research Road (Intersection #11)
 - Northbound Research Road would operate at LOS E during the PM peak hour, degrading from LOS C under the No Action Alternative.

- The sensitivity analysis shows no change from the TIS in the LOS grades at this intersection for the study peak hours.
- Powder Mill Road/Springfield Road (Intersection #12)
 - During the AM peak hour, the southbound approach would degrade from LOS D to LOS
 F. During the PM peak hour, the LOS F delays under the No Action Alternative would be longer than the delays under the Action Alternative.
 - The sensitivity analysis shows no change from the TIS in the LOS grades at this intersection for the study peak hours.
- Powder Mill Road/MD 295 (BW Parkway) Southbound Ramps (Intersection #13)
 - Southbound BW Parkway southbound off-ramp during the AM and PM peak hours would remain LOS F but with longer delays under the Action Alternative than under the No Action Alternative.
 - The sensitivity analysis shows no change from the TIS in the LOS grades at this intersection for the study peak hours.
- Powder Mill Road/MD 295 (BW Parkway) Northbound Ramps (Intersection #14)
 - The northbound approach of the BW Parkway off-ramp would degrade from LOS E under the No Action alternative to LOS F under the Action Alternative during the AM peak hour. During the PM peak hour, the northbound approach would operate at LOS F but with longer delays under the Action Alternative than under the No Action Alternative.
 - The sensitivity analysis shows no change from the TIS in the LOS grades at this intersection for the study peak hours.

These results indicate that there would be imperceptible differences in operational conditions for the No Action and Action Alternatives between the sensitivity analysis and the TIS. As a corollary, the same study intersections that would trigger mitigation based on the operational analysis under the TIS would require the same mitigation according to the sensitivity analysis. No new intersections would require mitigation according to the operational analysis results of this sensitivity analysis.

Intersection Queuing Comparison

The Project Team (A/E) used SimTraffic[™] to calculate the 95th percentile queue lengths. Following the TIS methods for the sensitivity analysis, the simulation model included a seeding time (the time for vehicles to completely travel the network) plus four 15-minute recording times (totaling 60 minutes). Based on the distance from the farthest points on the network, an 8-minute seed time was applied. Ten simulation runs were conducted for each peak hour condition under the No Action Alternative and the Action Alternative.

Based on the SimTraffic[™] analysis, the following intersection lane groups would experience failing queue lengths under the Action Alternative:

- MD 201 (Kenilworth Avenue)/I-95 northbound off-ramp (Intersection #2)
 - Under the Action Alternative, the I-95 northbound off-ramp westbound right-turning movement would have failing queue lengths compared to the acceptable queue lengths

under the No Action Alternative. This queue failure is consistent with the results of the TIS.

- Compared with the TIS, the sensitivity analysis shows no additional turning movements would have failing queues under the Action Alternative.
- MD 201 (Kenilworth Avenue)/SHA District 3 Driveway/Crescent Road (Intersection #3)
 - The MD 201 (Kenilworth Avenue) northbound right-turning movement would have a failing queue length during the AM peak hour, while this movement would have an acceptable queue length under the No Action Alternative. This queue failure is consistent with the results of the TIS.
 - Compared with the TIS, the sensitivity analysis shows no additional turning movements would have failing queues under the Action Alternative.
- MD 201 (Kenilworth Avenue)/Ivy Lane (Intersection #4)
 - The MD 201 (Kenilworth Avenue) northbound left-turning movement would have a failing queue length during the AM peak hour, while this movement would have an acceptable queue length under the No Action Alternative. This queue failure is consistent with the results of the TIS.
 - The MD 201 (Kenilworth Avenue) northbound through movement would have a failing queue length during the AM peak hour, while this movement would have an acceptable queue length under the No Action Alternative. This queue failure is consistent with the results of the TIS.
 - Compared with the TIS, the sensitivity analysis shows no additional turning movements would have failing queues under the Action Alternative.
- MD 201 (Kenilworth Avenue/Edmonston Road)/Cherrywood Lane (Intersection #5)
 - The Cherrywood Lane eastbound left-turning movement would have a failing queue during the AM peak hour under both the No Action Alternative and the Action Alternative. This lane would have failing queues under the No Action Alternative, but queuing would increase by less than 150 feet under the Action Alternative, consistent with the results of the TIS.
 - The MD 201 (Kenilworth Avenue/Edmonston Road) northbound left-turning movement would have a failing queue during the AM peak hour under the Action Alternative. Under the No Action Alternative, this lane would have acceptable queue lengths. This queue failure is consistent with the results of the TIS.
 - The MD 201 (Kenilworth Avenue/Edmonston Road) northbound through movement would have a failing queue during the AM peak hour under the Action Alternative. Under the No Action Alternative, this lane group would have acceptable queue lengths. This queue failure is consistent with the results of the TIS.
 - Compared with the TIS, the sensitivity analysis shows no additional turning movements would have failing queues under the Action Alternative.
- MD 201 (Edmonston Road)/Sunnyside Avenue (Intersection #6)

- The Sunnyside Avenue eastbound right-turning movement would have failing queue lengths during the AM and PM peak hours. This lane would also have failing queues under the No Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, consistent with the results of the TIS.
- The MD 201 (Edmonston Road) northbound left-turning movement would have failing queue lengths during the AM and PM peak hours. This lane would also have failing queues under the No Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, consistent with the results of the TIS.
- The MD 201 (Edmonston Road) southbound through movement would have failing queues during the AM and PM peak hours. This lane group would also have failing queues under the No Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, consistent with the results of the TIS.
- The MD 201 (Edmonston Road) southbound right-turning movement would have failing queues during the AM and PM peak hours. This lane would also have failing queues under the No Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, consistent with the results of the TIS.
- Compared with the TIS, the sensitivity analysis shows no additional turning movements would have failing queues under the Action Alternative.
- MD 201 (Edmonston Road)/Powder Mill Road (Intersection #8)
 - The Powder Mill Road eastbound left-turning movement would have failing queues during the PM peak hour. This lane would also have failing queues under the No Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, consistent with the results of the TIS.
 - The Powder Mill Road eastbound through movement would have failing queues during the PM peak hour of the Action Alternative but not under the No Action Alternative. This queue failure is unique to the sensitivity analysis and did not occur in the analysis in the TIS.
 - The Powder Mill Road eastbound right-turning movement would have failing queues during the AM and PM peak hours. This lane would also have failing queues under the No Action Alternative during the AM peak hour, but queuing would not increase by more than 150 feet under the Action Alternative, consistent with the results of the TIS. The PM peak hour queue would have an acceptable length under the No Action Alternative; the failure in the PM peak hour is unique to the Action Alternative. This PM peak hour queue failure is consistent with the results of the TIS.
 - The Powder Mill Road westbound left-turning movement would have failing queues during the PM peak hour but would have acceptable queues under the No Action Alternative. This queue failure is consistent with the results of the TIS.
 - The Powder Mill Road westbound right-turning movement would have failing queues during the AM and PM peak hours. This lane would also have failing queues under the No Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, consistent with the results of the TIS.
 - The MD 201 (Edmonston Road) northbound left-turning movement would have a failing queue during the PM peak hour. This lane would also have a failing queue under the No

Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, consistent with the results of the TIS.

- The MD 201 (Edmonston Road) northbound right-turning movement would have a failing queue during the PM peak hour. This lane would also have a failing queue under the No Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, consistent with the results of the TIS.
- The MD 201 (Edmonston Road) southbound left-turning movement would have failing queues during the AM and PM peak hours, whereas queues under the No Action Alternative would have acceptable lengths. This queue failure is consistent with the results of the TIS.
- The MD 201 (Edmonston Road) southbound through-right movement would have a failing queue during the AM peak hour. This lane would also have a failing AM peak hour queue under the No Action Alternative; however, queuing would not increase by more than 150 feet under the Action Alternative, consistent with the results of the TIS.
- Compared with the TIS, the sensitivity analysis shows no additional turning movements would have failing queues under the Action Alternative, except for the case of the eastbound through movement noted above.
- Powder Mill Road/Poultry Road (Intersection #10)
 - The eastbound left-through movement queues would exceed the available storage during the AM and PM peak hours. The AM peak hour queue in this lane would operate within its storage under the No Action Alternative but would fail in the PM peak hour. The PM peak hour queue failure under the No Action Alternative would increase by more than 150 feet under the Action Alternative, consistent with the results of the TIS.
 - The westbound through-right movement queue would fail during the AM peak hour.
 Queues in this lane would operate within their storage under the No Action Alternative.
 This queue failure is consistent with the results of the TIS.
 - Compared with the TIS, the sensitivity analysis shows no additional turning movements would have failing queues under the Action Alternative.
- Powder Mill Road/MD 295 (BW Parkway Southbound Off-Ramp) (Intersection #13)
 - The MD 295 (BW Parkway Southbound Off-Ramp) southbound left-turning movement would have failing queues during the AM and PM peak hours. This lane would also have failing queues under the No Action Alternative, but queuing would increase by less than 150 feet under the Action Alternative, consistent with the results of the TIS.
 - The MD 295 (BW Parkway Southbound Off-Ramp) southbound through-right movements would have failing queues during the AM and PM peak hours. These queue failures are unique to the sensitivity analysis and did not occur for the Action Alternative results of the TIS. The PM peak hour queue would also fail for the No Action Alternative; however, the queue would not increase by more than 150 feet under the Action Alternative.
 - Powder Mill Road/MD 295 (BW Parkway Northbound Off-Ramp) (Intersection #14)
 - The MD 295 (BW Parkway Northbound Off-Ramp) northbound left-turning movement would have failing queues during the AM and PM peak hours. This lane would also have

failing queues under the No Action Alternative; however, queuing would increase by less than 150 feet under the Action Alternative, consistent with the results of the TIS.

The sensitivity analysis results indicate that overall, the queues are consistent with the results from the TIS. Two exceptions occur with the sensitivity analysis that indicate that mitigation would be needed to improve those queues:

- At MD 201 (Edmonston Road)/Powder Mill Road (Intersection #8), the Powder Mill Road eastbound through movement would have failing queues during the PM peak hour of the Action Alternative but not under the No Action Alternative.
- At Powder Mill Road/MD 295 (BW Parkway Southbound Off-Ramp) (Intersection #13), the MD 295 (BW Parkway Southbound Off-Ramp) southbound through-right movements would have failing queues during the AM peak hour of the Action Alternative but not under the No Action Alternative.

However, Section 3 will demonstrate that the mitigation strategies proposed in the TIS would adequately improve the two additional queue issues reported through the sensitivity analysis. The remaining intersections in the study area would have acceptable queue lengths according to the SimTraffic[™] method. The results of the queuing analysis for both signalized and unsignalized intersections under the No Action and Action Alternatives are presented in **Figure 2-17**. The percentile values are expressed in feet, and an average car plus space between the next vehicle requires roughly 25 feet. The red cells denote lane groups whose queuing length exceed capacity. Attachment C provides SimTraffic[™] simulation reports.

| | | | | Turning | No Action | Alternative | Action A | Iternative |
|----|----------------------------------|-------------|---------------|------------------------------|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | Bay/Link Length (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 1 | MD 201 (Kenilworth Avenue) a | and I-95 SB | Off-Ramp |) (Signalized |) | | | |
| | I-95 SB Off-Ramp | EB | L | 325 | 65 | 64 | 129 | 67 |
| | I-95 SB Off-Ramp | EB | L | 1540 | 152 | 257 | 216 | 228 |
| | I-95 SB Off-Ramp | EB | R | 1540 | 107 | 211 | 74 | 228 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 4600 | 117 | 152 | 127 | 153 |
| | MD 201 (Kenilworth Avenue) | SB | Т | 1400 | 90 | 132 | 100 | 115 |
| 2 | MD 201 (Kenilworth Avenue) a | and I-95 NB | Off-Ramp | o (Signalized |) | | | |
| | I-95 NB Off-Ramp | WB | L | 400 | 181 | 247 | 183 | 253 |
| | I-95 NB Off-Ramp | WB | L | 1580 | 235 | 295 | 654 | 303 |
| | I-95 NB Off-Ramp | WB | R | 1580 | 295 | 250 | 1832 | 266 |
| | I-95 NB Off-Ramp | WB | R | 300 | 281 | 231 | 362 | 248 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 250 | 114 | 128 | 145 | 132 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 1400 | 130 | 167 | 165 | 160 |
| | MD 201 (Kenilworth Avenue) | SB | Т | 680 | 180 | 156 | 176 | 169 |
| 3 | MD 201 (Kenilworth Avenue) a | and SHA Dis | strict 3/Cr | escent Road | l (Signalized) | | | |
| | SHA District 3 | EB | LTR | 130 | 29 | 39 | 27 | 36 |
| | Crescent Road | WB | LT | 1080 | 156 | 193 | 149 | 187 |
| | Crescent Road | WB | R | 250 | 78 | 78 | 88 | 89 |
| | MD 201 (Kenilworth Avenue) | NB | L | 250 | 75 | 53 | 200 | 59 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 680 | 134 | 230 | 543 | 219 |
| | MD 201 (Kenilworth Avenue) | NB | R | 200 | 22 | 110 | 250 | 94 |
| | MD 201 (Kenilworth Avenue) | SB | L | 300 | 63 | 122 | 63 | 120 |
| | MD 201 (Kenilworth Avenue) | SB | TR | 740 | 93 | 83 | 82 | 96 |

Figure 2-17 Comparison of No Action Alternative and Action Alternative AM and PM Peak Hour Queuing

| | | | | | No Action | Alternative | Action A | Iternative |
|----|----------------------------------|--------------|---------------|---|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | Turning Bay/Link Length (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 4 | MD 201 (Kenilworth Avenue) | and Ivy Lane | e (Signali | zed) | | | | |
| | MD 201 (Kenilworth Avenue) | NB | L | 350 | 78 | 118 | 86 | 109 |
| | MD 201 (Kenilworth Avenue) | NB | L | 740 | 127 | 141 | 1026 | 136 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 740 | 184 | - | 1097 | 117 |
| | MD 201 (Kenilworth Avenue) | SB | Т | 1120 | 65 | 135 | 64 | 135 |
| 5 | MD 201 (Kenilworth Avenue/E | dmonston F | Road) and | d Cherrywoo | d Lane (Signali | ized) | | |
| | Cherrywood Lane | EB | L | 250 | 286 | 185 | 325 | 191 |
| | Cherrywood Lane | EB | L | 750 | 679 | 207 | 701 | 217 |
| | Cherrywood Lane | EB | R | 750 | 104 | 277 | 106 | 261 |
| | MD 201 (Kenilworth Avenue) | NB | L | 750 | 624 | 187 | 1098 | 181 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 1120 | 927 | 141 | 1570 | 148 |
| | MD 201 (Edmonston Road) | SB | Т | 580 | 248 | 241 | 257 | 269 |
| | MD 201 (Edmonston Road) | SB | R | 250 | 178 | 145 | 180 | 183 |
| 6 | MD 201 (Edmonston Road) an | d Sunnysid | e Avenue | e (Signalized |) | | | |
| | Sunnyside Avenue | EB | L | 1400 | 723 | 1181 | 1243 | 1203 |
| | Sunnyside Avenue | EB | R | 350 | 404 | 425 | 475 | 393 |
| | MD 201 (Edmonston Road) | NB | L | 450 | 513 | 546 | 533 | 545 |
| | MD 201 (Edmonston Road) | NB | TR | 4160 | 5566 | 1456 | 2553 | 1599 |
| | MD 201 (Edmonston Road) | SB | Т | 1500 | 1928 | 2041 | 1968 | 1889 |
| | MD 201 (Edmonston Road) | SB | R | 250 | 306 | 341 | 290 | 344 |

 Figure 2-17
 Comparison of No Action Alternative and Action Alternative AM and PM Peak Hour Queuing (continued)

| | | | | | No Action | Alternative | Action A | Iternative |
|----|----------------------------------|-------------|---------------|---|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | Turning Bay/Link Length (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 7 | MD 201 (Edmonston Road) | and Beaver | Dam Roa | ad (TWSC) | | | | |
| | Beaver Dam Road | WB | LR | 1300 | 642 | 618 | 682 | 678 |
| | MD 201 (Edmonston Road) | NB | TR | 1500 | 45 | 10 | 25 | 18 |
| | MD 201 (Edmonston Road) | SB | LT | 1480 | 1266 | 1192 | 1254 | 1143 |
| 8 | MD 201 (Edmonston Road) | and Powde | r Mill Roa | d (Signalize | d) | | | |
| | Powder Mill Road | EB | L | 250 | 97 | 321 | 110 | 337 |
| | Powder Mill Road | EB | Т | 1430 | 1276 | 699 | 1126 | 1440 |
| | Powder Mill Road | EB | R | 500 | 726 | 440 | 677 | 687 |
| | Powder Mill Road | WB | L | 250 | 246 | 141 | 222 | 282 |
| | Powder Mill Road | WB | Т | 1100 | 266 | 216 | 160 | 622 |
| | Powder Mill Road | WB | R | 40 | 62 | 64 | 55 | 50 |
| | MD 201 (Edmonston Road) | NB | L | 400 | 368 | 451 | 288 | 457 |
| | MD 201 (Edmonston Road) | NB | Т | 1480 | 356 | 596 | 295 | 650 |
| | MD 201 (Edmonston Road) | NB | R | 275 | 107 | 290 | 131 | 313 |
| | MD 201 (Edmonston Road) | SB | L | 275 | 266 | 258 | 305 | 339 |
| | MD 201 (Edmonston Road) | SB | TR | 780 | 891 | 428 | 782 | 603 |
| 9 | MD 201 (Edmonston Road) | and Odell R | load (TW | SC) | | | | |
| | Odell Road | EB | LTR | 740 | 83 | 68 | 91 | 68 |
| | Odell Road | WB | LT | 520 | 41 | 12 | 37 | 14 |
| | Odell Road | WB | R | 50 | 23 | 13 | 27 | 16 |
| | MD 201 (Edmonston Road) | NB | LT | 760 | 110 | 118 | 131 | 137 |
| | MD 201 (Edmonston Road) | SB | LTR | 1320 | 7 | 16 | 6 | 4 |

 Figure 2-17
 Comparison of No Action Alternative and Action Alternative AM and PM Peak Hour Queuing (continued)

| | | | | | No Action | Alternative | Action A | Iternative | | |
|----|--------------------------------------|--------------|------------------|---|--|--|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | Turning Bay/Link Length (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | | |
| 10 | Powder Mill Road and Poul | try Road (A | WSC) | | | | | | | |
| | Powder Mill Road | EB | LT | 240 | 90 | 333 | 622 | 667 | | |
| | Powder Mill Road | WB | TR | 1280 | 110 | 98 | 1653 | 646 | | |
| | Poultry Road | SB | LR | 420 | - | 24 | - | 409 | | |
| 11 | Powder Mill Road and Rese | earch Road (| (TWSC) | | | | | | | |
| | Powder Mill Road | EB | TR | 1280 | - | 36 | - | 47 | | |
| | Powder Mill Road | WB | TR | 950 | - | - | 67 | - | | |
| | Research Road | NB | L | 65 | 38 | 47 | 41 | 49 | | |
| 12 | Powder Mill Road and Sprin (TWSC) | ngfield Road | 1 | | | | | | | |
| | Powder Mill Road | EB | L | 50 | 12 | 27 | 18 | 25 | | |
| | Powder Mill Road | EB | Т | 1590 | - | - | - | 49 | | |
| | Powder Mill Road | WB | TR | 140 | 4 | - | 7 | - | | |
| | Springfield Road | SB | LR | 4110 | 83 | 257 | 138 | 574 | | |
| 13 | Powder Mill Road and MD 2 | 295 SB Ram | ps (TWSC | C) | | | | | | |
| | Powder Mill Road | EB | TR | 140 | - | 15 | 2 | 45 | | |
| | Powder Mill Road | WB | L | 225 | 37 | 83 | 38 | 119 | | |
| | Powder Mill Road | WB | Т | 520 | - | - | 2 | - | | |
| | BW Parkway SB Ramp | SB | L | 25 | 58 | 54 | 51 | 58 | | |
| | BW Parkway SB Ramp | SB | TR 1020 187 1112 | | | | 1083 | 1072 | | |

Figure 2-17 Comparison of No Action Alternative and Action Alternative AM and PM Peak Hour Queuing Analysis (continued)

| | | | | | No Action | Alternative | Action A | Iternative |
|----|---|-------------|---------------|---|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | Turning Bay/Link Length (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 14 | Powder Mill Road and MD 2 | 295 NB Ram | ps (TWS0 | C) | | | | |
| | Powder Mill Road | EB | L | 250 | 59 | 204 | 55 | 241 |
| | Powder Mill Road | EB | Т | 520 | - | 29 | - | 203 |
| | Powder Mill Road | WB | TR | 850 | 8 | 33 | 6 | 43 |
| | BW Parkway NB Ramp | NB | L | 50 | 58 | 87 | 81 | 88 |
| | BW Parkway NB Ramp | NB | TR | 880 | 59 | 678 | 789 | 698 |
| 15 | Powder Mill Road and Soil (Signalized) | Conservatio | on Road | | | | | |
| | Powder Mill Road | EB | Т | 850 | 157 | 225 | 138 | 215 |
| | Powder Mill Road | EB | R | 260 | 31 | 44 | 31 | 33 |
| | Powder Mill Road | WB | L | 300 | 80 | 66 | 84 | 64 |
| | Powder Mill Road | WB | Т | 780 | 183 | 202 | 209 | 200 |
| | Soil Conservation Road | NB | L | 6400 | 203 | 375 | 204 | 352 |
| | Soil Conservation Road | NB | R | 475 | - | - | - | - |

Figure 2-17 Comparison of No Action Alternative and Action Alternative AM and PM Peak Hour Queuing Analysis (continued)

Notes:

1) EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound

2) LTR = left / through / right lanes

3) TWSC = Two-way STOP-Controlled unsignalized intersection

4) AWSC = All-way STOP-Controlled unsignalized intersection

5) Red cells denote lane groups whose queuing length exceeds capacity.

3 ACTION ALTERNATIVE WITH MITIGATION

Identification of Mitigation Strategies

In the TIS, the Project Team (A/E) developed recommended mitigation strategies to adequately improve intersection operations and queuing based on several criteria. To reiterate the criteria outlined in the TIS, the acceptable operation of a signalized intersection based on the HCM 6th Edition method is LOS D or better, while the acceptable or passing operation of a signalized intersection for the CLV method is LOS C or better. Instances where an intersection would fail the CLV or HCM standard under the No Action Alternative and whose condition would worsen under the Action Alternative are targeted for mitigation. Intersections targeted for mitigation also encompass those that would operate acceptably under the No Action Alternative but unacceptably under the Action Alternative, based on the LOS or delay criteria as applicable to signalized or unsignalized intersections. In addition, lane group queues that would exceed the available storage under the No Action Alternative and that would increase by more than 150 feet from the No Action Alternative to the Action Alternative require mitigation. Mitigation is also targeted for intersection lane groups that would be adequately stored under the No Action Alternative but would exceed the available storage under the Action Alternative. M-NCPPC requires mitigation for unsignalized intersections operating with at least one movement on the minor street exceeding 50 seconds of delay, having more than 100 vehicles on the minor street approaches during the peak hour, and whose CLV exceeds 1,150.

Figure 3-1 presents a summary of the study intersections; indicates if they would pass the CLV, HCM, and queue tests under the Action Alternative; and notes if mitigation would be required as a result. Therefore, the following study intersections were studied for mitigation strategies for the purpose of reducing the impact on the transportation system caused by the Action Alternative:

- MD 201 (Kenilworth Avenue)/I-295 NB Off-Ramp (Intersection #2)
- MD 201 (Kenilworth Avenue)/SHA District 3 Driveway/Crescent Road (Intersection #3)
- MD 201 (Kenilworth Avenue)/Ivy Lane (Intersection #4)
- MD 201 (Kenilworth Avenue/Edmonston Road)/Cherrywood Lane (Intersection #5)
- MD 201 (Edmonston Road)/Sunnyside Avenue (Intersection #6)
- MD 201 (Edmonston Road)/Powder Mill Road (Intersection #8)
- Powder Mill Road/Springfield Road (Intersection #12)
- Powder Mill Road/MD 295 (BW Parkway) southbound ramps (Intersection #13)
- Powder Mill Road/MD 295 (BW Parkway) northbound ramps (Intersection #14)

| ID | Intersection | CLV | НСМ | Queue | Mitigation Needed | Reason for No Mitigation |
|----|--|------|------|-------|----------------------|---|
| 1 | MD 201/ I-95 SB Off-Ramp | Pass | Pass | Pass | No | CLV and HCM pass |
| 2 | MD 201/I-95 NB Off-Ramp | Pass | Pass | Fail | \checkmark | - |
| 3 | MD 201/ SHA District 3/Crescent Road | Pass | Pass | Fail | \checkmark | - |
| 4 | MD 201/Ivy Lane | Pass | Pass | Fail | \checkmark | - |
| 5 | MD 201/Edmonston Road)/Cherrywood Lane | Pass | Pass | Fail | \checkmark | - |
| 6 | MD 201/Sunnyside Avenue | Fail | Fail | Fail | \checkmark | - |
| 7 | MD 201/Beaver Dam Road | n/a | Fail | Fail | No | Fewer than 100 vehicles on Beaver Dam Road |
| 8 | MD 201/Powder Mill Road | Fail | Fail | Fail | \checkmark | - |
| 9 | MD 201/Odell Road | n/a | Fail | Pass | No | Fewer than 100 vehicles on Odell Road |
| 10 | Powder Mill Road/Poultry Road | n/a | Fail | Fail | No | The intersection will be improved through site design |
| 11 | Powder Mill Road/Research Road | n/a | Fail | Pass | No | Fewer than 100 vehicles on Research Road |
| 12 | Powder Mill Road/Springfield Road | n/a | Fail | Pass | \checkmark | - |
| 13 | Powder Mill Road/MD 295 SB Ramps | n/a | Fail | Fail | \checkmark | - |
| 14 | Powder Mill Road/MD 295 NB Ramps | n/a | Fail | Fail | \checkmark | - |
| 15 | Powder Mill Road/Soil Conservation Road | Pass | Pass | Pass | No | CLV and HCM pass |

Figure 3-1 Action Alternative Intersection Mitigation Requirement Summary

While the list above presents the intersections identified for mitigation, some mitigation strategies for specific intersections can result in systemic improvements that obviate the need to modify an adjacent intersection. For instance, two adjacent intersections with failing queues may be mitigated by modifying only one of the intersections (e.g., through the provision of additional turning lanes or by modifying traffic signal timings). Therefore, operations can be improved for intersections requiring mitigation by affecting other inadequate intersections without modifying the intersection in need of mitigation. This, in effect, can limit the amount of change to a transportation system to achieve acceptable outcomes.

This sensitivity analysis also reinforces the mitigation strategies that the Project Team (A/E) proposed in the TIS. In general, the mitigation strategies included the following approaches:

- Revising signal control types, timings, and phasings
- Proposing traffic signals at currently unsignalized intersections
- Revising existing lane geometry within the existing right-of-way
- Adding new turn lanes or through lanes or extending existing turning lane storage bays by assuming additional right-of-way

Traffic Analysis

The operational and queuing analysis for the Action Alternative with Mitigation was principally based on forecasts of turning movement volumes shown in Figure 2-9. The TIS included a modification to the forecasts based on a mitigation strategy for the intersection of MD 201 (Edmonston Road)/Beaver Dam Road (Intersection #7) that was also assumed for this sensitivity analysis. This adjustment was based on the proposed restriction of southbound left turns from Edmonston Road onto Beaver Dam Road during peak periods. Those vehicle trips were reassigned through the network by removing associated trips from the southbound left-turn movement of Edmonston Road at Beaver Dam Road. The 23 AM peak hour and 32 PM peak hour southbound left turns that were removed were then reassigned at the MD 201 (Edmonston Road)/Powder Mill Road) intersection (Intersection #8), which is upstream from Beaver Dam Road. Based on the proportionality of existing turning movement counts between the eastbound right-turn lane of Powder Mill Road and the southbound through movement of Edmonston Road, trips were removed from the eastbound right-turn movement of Powder Mill Road and reassigned to the eastbound through movement of Powder Mill Road; whereas trips were removed from the southbound through movement of Edmonston Road and reassigned to the southbound left-turn movement of Edmonston Road. The 23 AM peak hour and 32 PM peak hour trips are assumed to continue eastbound on Powder Mill Road and ultimately complete a right turn into Research Road. The resultant forecasts were applied in the Synchro™ and CLV-based Excel worksheet analyses.

The CLV LOS grades for signalized intersections under the Action Alternative with Mitigation are depicted in **Figure 3-2** for AM and PM peak hours. The overall signalized intersection LOS grades and worst unsignalized lane group LOS grades are depicted in **Figure 3-3** for AM and PM peak hours (HCM). **Figure 3-4** shows the results of the LOS capacity analysis and the intersection vehicle delay for the Action Alternative with Mitigation during the AM and PM peak hours for the affected intersections compared to the results from the No Action Alternative. The table shows that the intersections targeted for mitigation would improve to CLVs that are either less than 1,300 or less than those of the No Action Alternative. The table also shows that the LOS grades based on HCM methodology would improve to LOS D or better or otherwise operate better than the No Action Alternative. Attachment A provides CLV analysis worksheets, and Attachment B provides Synchro[™] analysis reports.



Figure 3-2 Action Alternative with Mitigation Traffic Operations Summary – CLV Method



Figure 3-3 Action Alternative with Mitigation Traffic Operations Summary – HCM Method

| No Action Alternative AM Peak Hour PM Peak Hour | | | | | | | | | | | | | | | | | Actio | n Alter | native w | vith Mitig | gation | | | |
|---|--|---------------|--------------|-------------------------------|------------|---------|------------|--------------|-------------------------------|------------|-----|------------|--------------------|--------------|-------------------------------|------------|-------|------------|--------------|-------------------------------|------------|------|------------|--------------------|
| | | | | AM F | Peak Ho | our | | | PM F | Peak Ho | our | | | | AM I | Peak Ho | our | | | PM I | Peak Ho | our | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 1 | MD 201 (Kenilworth Avenu | ie) and l | -95 SB (| Off-Ram | p (Sign | alized) | | | | | | | | | | | | | | | | | | |
| | EB (I-95 SB Off-Ramp) | L | 0.68 | 49.7 | D | | | 0.69 | 49.7 | D | | | | 0.78 | 47.8 | D | | | 0.69 | 49.7 | D | | | - |
| | EB Overall (I-95 SB Off-Ra | mp) | | 49.7 | D | | | | 49.7 | D | | | Pass | | 47.8 | D | | | | 49.7 | D | | | Pass |
| | NB (Kenilworth Avenue) | Т | 0.36 | 2.6 | Α | | | 0.50 | 3.3 | Α | | | | 0.38 | 3.8 | Α | | | 0.50 | 3.3 | Α | | | |
| | NB Overall (Kenilworth Av | enue) | | 2.6 | Α | | | | 3.3 | Α | | | Pass | | 3.8 | Α | | | | 3.3 | Α | | | Pass |
| | SB (Kenilworth Avenue) | Т | 0.41 | 3.0 | Α | | | 0.57 | 4.0 | Α | | | | 0.43 | 4.2 | Α | | | 0.57 | 4.1 | Α | | | |
| | SB Overall (Kenilworth Av | enue) | | 3.0 | Α | | | | 4.0 | Α | | | Pass | | 4.2 | Α | | | | 4.1 | Α | | | Pass |
| | Overall | | | 5.2 | Α | 606 | Α | | 5.5 | Α | 883 | Α | Pass | | 7.9 | Α | 667 | Α | | 5.5 | Α | 893 | Α | Pass |
| 2 | MD 201 (Kenilworth Avenu (Signalized) | ie) and l | -95 NB (| Off-Ram | р | | | | | | | | | | | | | | | | | | | |
| | WB (I-95 NB Off-Ramp) | L | 0.46 | 21.3 | С | | | 0.73 | 33.0 | С | | | | 0.42 | 18.3 | В | | | 0.73 | 33.0 | С | | | |
| | WB (I-95 NB Off-Ramp) | R | 0.89 | 34.6 | С | | | 0.83 | 37.9 | D | | | | 1.00 | 52.7 | F | | | 0.83 | 37.9 | D | | | |
| | WB Overall (I-95 SB Off-Ramp) | | | 29.4 | С | | | | 35.4 | D | | | Pass | | 40.9 | D | | | | 35.4 | D | | | Pass |
| | NB (Kenilworth Avenue) | Т | 0.31 | 17.8 | В | | | 0.37 | 12.4 | В | | | | 0.41 | 21.6 | С | | | 0.37 | 12.4 | В | | | |
| | NB Overall (Kenilworth Av | enue) | | 17.8 | В | | | | 12.4 | В | | | Pass | | 21.6 | С | | | | 12.4 | В | | | Pass |
| | SB (Kenilworth Avenue) | Т | 0.62 | 22.1 | С | | | 0.59 | 15.1 | В | | | | 0.68 | 26.1 | С | | | 0.68 | 16.6 | В | | | |
| | SB Overall (Kenilworth Av | enue) | | 22.1 | С | | | | 15.1 | В | | | Pass | | 26.1 | С | | | | 16.6 | В | | | Pass |
| | Overall | | | 24.7 | С | 861 | Α | | 21.3 | С | 966 | Α | Pass | | 32.3 | С | 974 | Α | | 21.6 | С | 1048 | В | Pass |
| 3 | MD 201 (Kenilworth Avenu | ie) and S | HA Dis | trict 3/C | rescent | t Road | (Signa | lized) | _ | | | | | | | | | | | | | | | |
| | EB (SHA District 3) | LTR | 0.04 | 30.6 | С | | | 0.17 | 32.1 | С | | | | 0.04 | 30.6 | С | | | 0.17 | 31.5 | С | | | |
| | EB Overall (SHA District 3 |) | | 30.6 | С | | | | 32.1 | С | | | Pass | | 30.6 | С | | | | 31.5 | С | | | Pass |
| | WB (Crescent Road) | LT | 0.81 | 62.7 | E | | | 0.89 | 76.6 | E | | | | 0.81 | 62.7 | E | | | 0.87 | 72.7 | Е | | | |
| | WB (Crescent Road) | R | 0.27 | 31.2 | С | | | 0.27 | 32.0 | С | | | | 0.27 | 31.2 | С | | | 0.26 | 31.2 | С | | | |
| | WB Overall (Crescent Roa | d) | | 50.3 | D | | | | 60.8 | Е | | | Fail | | 50.3 | D | | | | 58.0 | Е | | | Fail |
| | NB (Kenilworth Avenue) | L | 0.73 | 62.9 | E | | | 0.60 | 62.4 | E | | | | 0.73 | 62.9 | E | | | 0.60 | 62.4 | E | | | |
| | NB (Kenilworth Avenue) | Т | 0.58 | 15.4 | В | | | 0.60 | 18.4 | В | | | | 0.73 | 18.1 | В | | | 0.61 | 19.2 | В | | | |
| | NB (Kenilworth Avenue) R | | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | Α | | | | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | Α | | | |
| | NB Overall (Kenilworth Avenue) | | | 16.7 | В | | | | 19.1 | В | | | Pass | | 19.1 | В | | | | 19.9 | В | | | Pass |
| | SB (Kenilworth Avenue) | L | 0.75 | 66.5 | E | | | 0.80 | 56.0 | E | | | | 0.75 | 66.5 | E | | | 0.80 | 54.7 | D | | | |
| | SB (Kenilworth Avenue) | TR | 0.58 | 32.5 | С | | | 0.58 | 31.4 | С | | | | 0.58 | 32.5 | С | | | 0.71 | 35.8 | D | | | |
| | SB Overall (Kenilworth Av | enue) | | 32.7 | С | | | | 32.5 | С | | | Pass | | 32.7 | С | | | | 36.1 | D | | | Pass |
| | Overall | | | 26.3 | С | 665 | Α | | 29.2 | С | 800 | Α | Pass | | 26.6 | С | 785 | Α | | 31.6 | С | 919 | Α | Pass |

Figure 3-4 Comparison of No Action Alternative to Action Alternative with Mitigation Intersection AM and PM Peak Hour Operations

| liga | | II Alterna | | | | with wh | No Ac | tion Alte | ernative | | r cun ric | | | | <u>/</u> | | Actio | n Alter | native w | vith Mitig | ation | | | |
|------|-----------------------------------|---------------|--------------|-------------------------------|------------|----------------|------------|--------------|-------------------------------|------------|-----------|------------|--------------------|--------------|-------------------------------|------------|-------|------------|--------------|-------------------------------|------------|-------|------------|--------------------|
| | | | | AM | Peak Ho | our | | | PM | Peak H | our | | | | AM | Peak H | our | | | PM | Peak He | our | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 4 | MD 201 (Kenilworth Avenue) an | d Ivy La | ne (Sign | alized) ^a | | | | | | | | | | | | | | | | • | | | | |
| | EB (Ivy Lane) | R | 0.14 | 0.2 | Α | | | 0.18 | 0.3 | Α | | | | 0.14 | 0.2 | А | | | 0.18 | 0.3 | А | | | |
| | EB Overall (Ivy Lane) | | | 0.2 | Α | | | | 0.3 | Α | | | Pass | | 0.2 | Α | | | | 0.3 | Α | | | Pass |
| | NB (Kenilworth Avenue) | L | 0.45 | 26.8 | С | | | 0.57 | 24.0 | С | | | | 0.45 | 26.0 | С | | | 0.56 | 23.4 | С | | | |
| | NB (Kenilworth Avenue) | Т | 0.45 | 0.4 | А | | | 0.40 | 0.3 | Α | | | | 0.56 | 0.5 | Α | | | 0.40 | 0.3 | А | | | |
| | NB Overall (Kenilworth Avenue) |) | | 2.7 | Α | | | | 3.7 | Α | | | Pass | | 2.3 | Α | | | | 3.6 | Α | | | Pass |
| | SB (Kenilworth Avenue) | Т | 0.53 | 0.8 | Α | | | 0.60 | 1.8 | Α | | | | 0.53 | 0.7 | Α | | | 0.73 | 3.4 | А | | | |
| | SB (Kenilworth Avenue) | R | 0.01 | 0.0 | Α | | | 0.01 | 0.3 | Α | | | | 0.01 | 0.0 | Α | | | 0.01 | 0.2 | А | | | |
| | SB Overall (Kenilworth Avenue) | | | 0.8 | Α | | | | 1.8 | Α | | | Pass | | 0.7 | Α | | | | 3.4 | Α | | | Pass |
| | Overall | | | 1.8 | Α | 653 | Α | | 2.5 | Α | 910 | Α | Pass | | 1.6 | Α | 653 | Α | | 3.2 | Α | 1,088 | В | Pass |
| 5 | MD 201 (Kenilworth Avenue/Ed | monston | Road) | and Che | rrywoo | d Lane | (Signa | lized) | | | | | _ | | _ | | | | | _ | | | | - |
| | EB (Cherrywood Lane) | L | 0.86 | 52.2 | D | | | 0.71 | 42.5 | D | | | | 0.86 | 52.2 | D | | | 0.71 | 42.5 | D | | | |
| | EB (Cherrywood Lane) | R | 0.35 | 38.3 | D | | | 0.95 | 80.5 | F | | | | 0.35 | 38.3 | D | | | 0.95 | 80.5 | F | | | |
| | EB Overall (Cherrywood Lane) | | | 50.0 | D | | | | 56.9 | E | | | Fail | | 50.0 | D | | | | 56.9 | Е | | | Fail |
| | NB (Kenilworth Avenue) | L | 0.88 | 33.0 | С | | | 0.78 | 25.3 | С | | | | 0.88 | 31.9 | С | | | 0.87 | 42.8 | D | | | |
| | NB (Kenilworth Avenue) | Т | 0.55 | 7.6 | А | | | 0.52 | 8.3 | А | | | | 0.71 | 9.9 | А | | | 0.52 | 8.3 | А | | | |
| | NB Overall (Kenilworth Avenue) |) | | 11.9 | В | | | | 10.8 | В | | | Pass | | 12.9 | В | | | | 13.5 | В | | | Pass |
| | SB (Edmonston Road) | Т | 0.68 | 17.2 | В | | | 0.69 | 17.3 | В | | | | 0.68 | 17.2 | В | | | 0.89 | 26.6 | С | | | |
| | SB (Edmonston Road) | R | 0.54 | 15.8 | В | | | 0.47 | 14.6 | В | | | | 0.54 | 15.8 | В | | | 0.49 | 15.7 | В | | | |
| | SB Overall (Edmonston Road) | | | 16.8 | В | | | | 16.7 | В | | | Pass | | 16.8 | В | | | | 24.5 | С | | | Pass |
| | Overall | | | 19.3 | В | 977 | Α | | 21.8 | С | 1104 | В | Pass | | 19.0 | В | 977 | Α | | 26.2 | С | 1,282 | С | Pass |
| 6 | MD 201 (Edmonston Road) and | Sunnysi | ide Aver | nue (Sig | nalized |) ^a | | | | | • | | | • | | | | | | | | | | |
| | EB (Sunnyside Avenue) | L | 1.32 | 297.6 | F | | | 1.36 | 261.8 | F | _ | | | 1.17 | 167.1 | F | | | 1.26 | 189.2 | F | | | |
| | EB (Sunnyside Avenue) | R | 0.64 | 61.7 | Е | | | 1.11 | 125.0 | F | | | | 0.51 | 19.9 | В | | | 1.02 | 71.2 | Е | | | |
| | EB Overall (Sunnyside Avenue) | | | 126.8 | F | | | | 167.5 | F | | | Fail | | 74.7 | E | | | | 107.9 | F | | | Fail |
| | NB (Edmonston Road) | L | 1.43 | 280.0 | F | | | 1.23 | 187.0 | F | _ | | | 1.14 | 93.2 | F | | | 1.09 | 85.8 | F | | | |
| | NB (Edmonston Road) | TR | 0.66 | 4.7 | А | | | 0.90 | 20.9 | С | | | | 0.54 | 1.1 | А | | | 0.51 | 1.9 | А | | | |
| | NB Overall (Edmonston Road) | | | 110.5 | F | | | | 66.9 | E | | | Fail | | 29.9 | С | | | | 25.1 | С | | | Pass |
| | SB (Edmonston Road) | Т | 1.36 | 212.3 | F | | | 1.17 | 125.7 | F | | | | 1.04 | 67.0 | E | | | 1.00 | 52.4 | D | | | |
| | SB (Edmonston Road) | R | 0.24 | 14.4 | В | | | 0.15 | 9.9 | A | | | | 0.25 | 13.5 | В | | | 0.21 | 10.2 | В | | | |
| | SB Overall (Edmonston Road) | | | 180.1 | F | | | | 108.6 | F | | | Fail | | 58.3 | E | | | | 46.1 | D | | | Fail |
| | Overall | | | 141.3 | F | 1718 | F | | 105.3 | F | 1699 | F | Fail | | 46.2 | D | 1,299 | С | | 51.8 | D | 1,428 | D | Fail |

Figure 3-4 Comparison of No Action Alternative to Action Alternative with Mitigation Intersection AM and PM Peak Hour Operations (continued)

| Figu | Figure 3-4 Comparison of No Action Alternative to Action Alternative with Mitigation Intersection AM and PM Peak Hour Operatio No Action Alternative No Action Alternative | | | | | | | | | | | | | ns (continued) Action Alternative with Mitigation | | | | | | | | | | |
|------|--|------------|--------------|-------------------------------|------------|------|------------|--------------|-------------------------------|------------|------|------------|--------------------|---|-------------------------------|------------|-------|------------|--------------|-------------------------------|------------|-------|------------|--------------------|
| | | - | | | <u> </u> | | No Act | ion Alte | rnative | | | | | | | <u> </u> | Actio | n Alter | native v | vith Miti | gation | | | |
| | | _ | r | | eak Ho | our | <u> </u> | | PM F | Peak Ho | our | | | | | eak Ho | our | | | PM | Peak Ho | our | | |
| ID | Intersection La Name and Approach Gro | ane oup | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 7 | MD 201 (Edmonston Road) and B | eave | r Dam F | load (TW | SC) | | | | | | | | | | | | | | | | | | | |
| | WB (Beaver Dam Road) L | .R | 3.38 | 1753.5 | F | | | 1.61 | 689.9 | F | | | | 1.20 | 420.3 | F | | | 0.80 | 227.8 | F | | | |
| | WB Overall (Beaver Dam Road) | | | 1753.5 | F | | | | 689.9 | F | | - | Fail | | 420.3 | F | | | | 227.8 | F | | ļ | Fail |
| | SB (Edmonston Road) | .T | 0.06 | 12.6 | В | | | 0.09 | 14.5 | В | | | | - | - | - | | | - | - | - | | | |
| | SB Overall (Edmonston Road) | _ | | 0.2 | | | [| | 0.4 | | | | Pass | | 0.0 | | | | | 0.0 | | | | Pass |
| | Overall | | | 22.3 | | n/a | n/a | | 8.3 | | n/a | n/a | Pass | | 4.6 | | n/a | n/a | | 2.4 | | n/a | n/a | Pass |
| 8 | MD 201 (Edmonston Road) and P | owde | er Mill R | oad (Sig | nalized |) | | | | | | | | | | | | | | | | | | |
| | EB (Powder Mill Road) | L | 0.29 | 58.4 | E | | | 0.74 | 63.1 | E | | | | 0.78 | 52.3 | D | | | 0.92 | 71.4 | E | | | |
| | EB (Powder Mill Road) | Т | 0.31 | 48.2 | D | | | 0.80 | 61.2 | Е | | _ | | 0.63 | 37.6 | D | | | 0.81 | 49.9 | D | | | |
| | EB (Powder Mill Road) | R | 0.00 | 0.0 | 0 | | | 0.00 | 0.0 | 0 | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | |
| | EB Overall (Powder Mill Road) | | | 51.7 | D | | | | 61.9 | E | | _ | Fail | | 41.0 | D | | | | 58.2 | E | | | Fail |
| | WB (Powder Mill Road) | L | 0.73 | 71.8 | Е | | | 0.55 | 53.2 | D | | | | 0.75 | 46.6 | D | | | 0.93 | 62.3 | Е | | | |
| | WB (Powder Mill Road) | Т | 0.32 | 40.6 | D | | | 0.28 | 34.9 | С | | | | 0.68 | 37.5 | D | | | 0.97 | 88.8 | F | | | |
| | WB (Powder Mill Road) | R | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | |
| | WB Overall (Powder Mill Road) | | | 58.0 | Е | | | | 41.3 | D | | | Fail | | 42.5 | D | | | | 71.1 | Е | | | Fail |
| | NB (Edmonston Road) | L | 0.92 | 61.4 | Е | | | 0.88 | 55.5 | Е | | | | 0.93 | 38.3 | D | | | 0.99 | 63.9 | Е | | | |
| | NB (Edmonston Road) | Т | 0.59 | 20.1 | С | | | 0.71 | 29.7 | С | | | | 0.59 | 11.6 | В | | | 0.77 | 25.8 | С | | | |
| | NB (Edmonston Road) | R | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | |
| | NB Overall (Edmonston Road) | | | 38.3 | D | | | | 40.3 | D | | | Pass | - | 23.4 | С | | | | 41.5 | D | | | Pass |
| | SB (Edmonston Road) | L | 0.13 | 39.3 | D | | | 0.46 | 57.1 | Е | | | | 0.30 | 24.3 | С | | | 0.59 | 48.8 | D | | | |
| | SB (Edmonston Road) T | R | 0.87 | 68.7 | Е | | | 0.82 | 70.3 | Е | | | | 0.82 | 39.2 | D | | | 0.84 | 53.3 | D | | | |
| | SB Overall (Edmonston Road) | | | 67.5 | Е | | | | 68.4 | ш | | | Fail | - | 37.6 | D | | | | 52.4 | D | | | Pass |
| | Overall | | | 51.7 | D | 1079 | В | | 53.3 | D | 1226 | С | Pass | | 32.7 | С | 986 | Α | | 54.4 | D | 1,249 | С | Pass |
| 9 | MD 201 (Edmonston Road) and O | dell F | Road (T | WSC) | | | | | | | | | | | | | | | | | | | | |
| | EB (Odell Road) | TR | 0.29 | 66.3 | F | | | 0.35 | 63.0 | F | | | | 0.31 | 71.9 | F | | | 0.37 | 67.9 | F | | | |
| | EB Overall (Odell Road) | | | 66.3 | F | | | | 63.0 | F | | | Fail | | 71.9 | F | | | | 67.9 | F | | | Fail |
| | WB (Odell Road) | T | 0.08 | 48.0 | Е | | | 0.03 | 46.0 | Е | | | | 0.09 | 50.7 | F | | | 0.04 | 48.4 | Е | | | |
| | WB (Odell Road) | R | 0.00 | 13.8 | В | | | 0.01 | 13.3 | В | | | | 0.00 | 13.8 | В | | | 0.01 | 13.7 | В | | | |
| | WB Overall (Odell Road) | | | 43.7 | Е | | | | 32.9 | D | | | Fail | | 46.1 | Е | | | | 34.5 | D | | | Fail |
| | NB (Edmonston Road) | T | 0.06 | 9.5 | А | | | 0.04 | 9.9 | А | | | | 0.06 | 9.6 | А | | | 0.04 | 9.9 | А | | | |
| | NB Overall (Edmonston Road) | | | 0.8 | | | | | 0.4 | | | | Pass | | 0.8 | | | | | 0.4 | | | | Pass |
| | SB (Edmonston Road) | TR | | 0.0 | А | | | 0.00 | 9.2 | А | | | | | 0.0 | А | | | 0.00 | 9.3 | А | | | |
| | SB Overall (Edmonston Road) | | | 0.0 | | | | | 0.0 | | | | Pass | | 0.0 | | | | | 0.0 | | | | Pass |
| | Overall | | | 1.8 | | n/a | n/a | | 1.6 | | n/a | n/a | Pass | | 1.8 | | n/a | n/a | | 1.7 | | n/a | n/a | Pass |

| Figure 3-4 | Comparison of No Action | Alternative to Action A | Iternative with Mitigation | n Intersection AM and P | M Peak Hour Operation | s (continued |
|------------|-------------------------|-------------------------|----------------------------|-------------------------|-----------------------|--------------|
|------------|-------------------------|-------------------------|----------------------------|-------------------------|-----------------------|--------------|

| | | | | No Action Alternative | | | | | | | | | | | Action Alternative with Mitigation | | | | | | | | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|------------|---------|------------|--------------|-------------------------------|------------|----------|------------|--------------------|--------------|------------------------------------|------------|-------|------------|--------------|-------------------------------|------------|-------|------------|--------------------|
| | | | | AM F | Peak Ho | our | | | PM F | Peak Ho | our | | | | AM | Peak H | our | | | PM | Peak H | our | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 10 | Powder Mill Road and Poultry R | Road (AV | NSC in I | No Actic | on Alter | native; | Signa | lized in | Action / | Alternat | tive wit | th Mitig | ation) | | | | | | | | | | | |
| | EB (Powder Mill Road) | LT | 0.25 | 8.9 | Α | | | 1.02 | 59.3 | F | | | | n/a | n/a | n/a | | | n/a | n/a | n/a | | | |
| | EB (Powder Mill Road) | L | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.74 | 6.4 | Α | | | 0.02 | 14.0 | В | 1 | | |
| | EB (Powder Mill Road) | Т | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.15 | 0.6 | Α | | | 0.92 | 31.5 | С | | | |
| | EB Overall (Powder Mill Road) | | | 8.9 | Α | | | | 59.3 | F | | | Fail | | 4.7 | Α | | | | 31.3 | С | | | Pass |
| | WB (Powder Mill Road) | TR | 0.51 | 11.3 | В | | | 0.45 | 11.7 | В | | | | n/a | n/a | n/a | | | n/a | n/a | n/a | | | |
| | WB (Powder Mill Road) | Т | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.60 | 9.0 | Α | | | 0.43 | 20.1 | С | | | |
| | WB (Powder Mill Road) | R | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.67 | 9.8 | Α | | | 0.01 | 16.3 | В | | | |
| | WB Overall (Powder Mill Road) | | | 11.3 | В | | | | 11.7 | В | | | Pass | | 9.4 | Α | | | | 20.0 | С | | | Pass |
| | SB (Poultry Road) | LR | 0.00 | 8.3 | Α | | | 0.02 | 9.7 | Α | | | | n/a | n/a | n/a | | | n/a | n/a | n/a | | | |
| | SB (Poultry Road) | L | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.00 | 0.0 | Α | | | 0.67 | 28.1 | С | | | |
| | SB (Poultry Road) | R | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.00 | 0.0 | Α | | | 0.98 | 62.1 | Е | | | |
| | SB Overall (Poultry Road) | | | 0.0 | - | | | | 9.7 | Α | | | Pass | | 0.0 | - | | | | 47.3 | D | | | Pass |
| | Overall | | | 10.6 | В | n/a | n/a | | 45.6 | Е | n/a | n/a | Fail | | 7.2 | Α | 868 | Α | | 36.8 | D | 1,250 | С | Pass |
| 11 | Powder Mill Road and Research | n Road (| TWSC) | | | | | | | | | | | | | | | | | | | | | |
| | NB (Research Road) | L | 0.06 | 14.6 | В | | | 0.16 | 24.7 | С | | | | 0.11 | 25.5 | D | | | 0.31 | 49.8 | Е | | | |
| | NB Overall (Research Road) | | | 14.6 | В | | | | 24.7 | С | | | Pass | | 25.5 | D | | | | 49. 8 | Е | | | Fail |
| | Overall | | | 0.4 | | n/a | n/a | | 0.7 | | n/a | n/a | Pass | | 0.4 | | n/a | n/a | | 1.1 | | n/a | n/a | Pass |
| 12 | Powder Mill Road and Springfie | ld Road | I (TWSC | in No A | ction A | lternat | ive; Si | gnalized | l in Acti | on Alte | rnative | with N | litigation | ı) | | | | | | | | | | |
| | EB (Powder Mill Road) | L | 0.01 | 9.2 | А | | | 0.02 | 8.3 | А | | | | 0.02 | 4.3 | Α | | | 0.04 | 6.5 | А | | | |
| | EB (Powder Mill Road) | Т | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.18 | 4.0 | А | | | 0.81 | 16.5 | В | | | |
| | EB Overall (Powder Mill Road) | | | 0.3 | | | | | 0.3 | | | | Pass | | 4.0 | Α | | | | 16.3 | В | | | Pass |
| | WB (Powder Mill Road) | Т | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | |
| | WB (Powder Mill Road) | R | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.98 | 16.3 | В | | | 0.43 | 5.4 | А | | | |
| | WB Overall (Powder Mill Road) | | | n/a | n/a | | | | n/a | n/a | | | | | 16.3 | В | | | | 5.4 | Α | | | Pass |
| | SB (Springfield Road) | LR | 0.61 | 31.1 | D | | | 1.37 | 229.8 | F | | | | 0.87 | 68.8 | E | | | 1.00 | 89.3 | F | | | |
| | SB Overall (Springfield Road) | | | 31.1 | D | | | | 229.8 | F | | | Fail | | 68.8 | Е | | | | 89.3 | F | | | Fail |
| | Overall | | | 5.6 | | n/a | n/a | | 52.9 | | n/a | n/a | Fail | | 21.1 | С | 1,059 | В | | 26.8 | С | 1,270 | С | Pass |

Figure 3-4 Comparison of No Action Alternative to Action Alternative with Mitigation Intersection AM and PM Peak Hour Operations (continued)
| | | | | | | | No Ac | tion Alte | ernative | | | | | | <u></u> | | Actio | on Alter | native v | with Miti | gation | | | |
|----|-----------------------------------|---------------|--------------|-------------------------------|------------|--------|------------|--------------|-------------------------------|------------|---------|------------|--------------------|--------------|-------------------------------|------------|-------|------------|--------------|-------------------------------|------------|-------|------------|--------------------|
| | | | | AM I | Peak Ho | our | | | PM F | Peak Ho | our | | | | AM F | Peak Ho | our | | | PM | Peak H | our | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 13 | Powder Mill Road and MD 295 | SB Ramp | os (TWS | C in No | Action | Altern | ative; S | Signalize | d in Ac | tion Alt | ernativ | e with | Mitigatio | on) | | | | | | | | | | |
| | EB (Powder Mill Road) | Т | 0.00 | 0.0 | 0 | | | 0.00 | 0.0 | 0 | | | | 0.28 | 7.9 | Α | | | 0.84 | 3.2 | А | | | |
| | EB (Powder Mill Road) | R | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.16 | 7.3 | Α | | | 0.48 | 0.7 | А | | | |
| | EB Overall (Powder Mill Road) | | | 0.0 | | | | | 0.0 | | | | Pass | | 7.7 | Α | | | | 2.4 | Α | | | Pass |
| | WB (Powder Mill Road) | L | 0.10 | 8.5 | Α | | | 0.21 | 11.5 | В | | | | 0.18 | 8.3 | Α | | | 0.39 | 7.0 | А | | | |
| | WB (Powder Mill Road) | Т | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.69 | 2.3 | Α | | | 0.24 | 0.4 | А | | | |
| | WB Overall (Powder Mill Road) | | | 1.7 | | | | | 3.7 | | | | Pass | | 3.0 | Α | | | | 2.6 | Α | | | Pass |
| | SB (MD 295 SB Off-Ramp) | L | 1.35 | 223.1 | F | | | 2.87 | 929.9 | F | | | | 0.77 | 43.4 | D | | | 0.88 | 56.3 | Е | | | |
| | SB (MD 295 SB Off-Ramp) | TR | 0.43 | 15.1 | С | | | 0.21 | 11.3 | В | | | | 0.94 | 67.4 | E | | | 0.50 | 37.3 | D | | | |
| | SB Overall (MD 295 SB Off-Ran | np) | | 129.6 | F | | | | 619.4 | F | | | Fail | | 55.9 | Е | | | | 49.9 | D | | | Fail |
| | Overall | | | 50.5 | | n/a | n/a | | 151.7 | | n/a | n/a | Fail | | 21.8 | С | 899 | Α | | 12.0 | В | 1,150 | В | Pass |
| 14 | Powder Mill Road and MD 295 | NB Ramp | os (TWS | C in No | Action | Altern | ative; S | Signalize | ed in Ac | tion Alt | ernativ | ve with | Mitigatio | on) | | | | | - | | | | | |
| | EB (Powder Mill Road) | L | 0.15 | 10.2 | В | | | 0.46 | 14.4 | В | | | | 0.27 | 21.9 | С | | | 0.77 | 16.0 | В | | | |
| | EB (Powder Mill Road) | Т | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.40 | 0.8 | А | | | 0.53 | 0.5 | А | | | |
| | EB Overall (Powder Mill Road) | | | 2.2 | | | | | 4.2 | | | | Pass | | 5.3 | Α | | | | 5.5 | Α | | | Pass |
| | WB (Powder Mill Road) | Т | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.63 | 27.3 | С | | | 0.28 | 4.7 | А | | | |
| | WB (Powder Mill Road) | R | n/a | n/a | n/a | | | n/a | n/a | n/a | | | | 0.59 | 26.8 | С | | | 0.51 | 7.0 | А | | | |
| | WB Overall (Powder Mill Road) | | | 0.0 | | | | | 0.0 | | | | Pass | | 27.1 | С | | | | 6.1 | Α | | | Pass |
| | NB (MD 295 NB Off-Ramp) | L | 0.66 | 67.9 | F | | | 2.59 | 991.1 | F | | | | 0.89 | 46.1 | D | | | 1.11 | 188.6 | F | | | |
| | NB (MD 295 NB Off-Ramp) | TR | 0.20 | 12.4 | В | | | 0.14 | 15.5 | С | | | | 0.28 | 29.9 | С | | | 0.84 | 107.0 | F | | | |
| | NB Overall (MD 295 NB Off-Rar | np) | | 37.2 | Е | | | | 599.3 | F | | | Fail | | 42.5 | D | | | | 155.7 | F | | | Fail |
| | Overall | | | 5.8 | | n/a | n/a | | 38.3 | | n/a | n/a | Fail | | 24.8 | С | 572 | Α | | 14.4 | В | 956 | Α | Pass |

Figure 3-4 Comparison of No Action Alternative to Action Alternative with Mitigation Intersection AM and PM Peak Hour Operations (continued)

| | • | | | | | | No Ac | tion Alt | ernative |) | | | | | , í | | Actio | n Alter | native v | vith Miti | gation | | | |
|----|--|---------------|--------------|-------------------------------|------------|-----|------------|--------------|-------------------------------|------------|------|------------|--------------------|--------------|-------------------------------|------------|-------|------------|--------------|-------------------------------|------------|-------|------------|--------------------|
| | | | | AM F | Peak Ho | our | | | PM | Peak Ho | our | | | | AM F | Peak Ho | our | | | РМ | Peak He | our | | |
| ID | Intersection Name and Approach | Lane Group | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | V/C Ratio | HCM Delay (sec/ veh) | HCM LOS | CLV | CLV LOS | Check AM/ PM |
| 15 | Powder Mill Road and Soi (Signalized) | il Conser | vation F | Road | | | | | | | | | | | | | | | | | | | | |
| | EB (Powder Mill Road) | Т | 0.46 | 30.5 | С | | | 0.74 | 37.6 | D | | | | 0.46 | 30.5 | С | | | 0.83 | 43.5 | D | | | |
| | EB (Powder Mill Road) | R | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | Α | | | | 0.00 | 0.0 | Α | | | 0.00 | 0.0 | А | | | |
| | EB Overall (Powder Mill R | oad) | | 30.5 | С | | | | 37.6 | D | | | Pass | | 30.5 | С | | | | 43.5 | D | | | Pass |
| | WB (Powder Mill Road) | L | 0.36 | 42.2 | D | | | 0.41 | 53.1 | D | | | | 0.36 | 42.2 | D | | | 0.41 | 53.1 | D | | | |
| | WB (Powder Mill Road) | Т | 0.51 | 20.8 | С | | | 0.48 | 22.3 | С | | | | 0.58 | 22.3 | С | | | 0.48 | 22.3 | С | | | |
| | WB Overall (Powder Mill F | Road) | | 24.0 | С | | | | 25.4 | С | | | Pass | | 24.9 | С | | | | 25.4 | С | | | Pass |
| | NB (Soil Conservation Road) | L | 0.58 | 22.5 | С | | | 0.84 | 30.9 | С | | | | 0.58 | 22.5 | С | | | 0.84 | 30.9 | С | | | |
| | NB (Soil Conservation Road) | R | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | | 0.00 | 0.0 | А | | | 0.00 | 0.0 | А | | | |
| | NB (Soil Conservation Ro | ad) | | 22.5 | С | | | | 30.9 | С | | | Pass | | 22.5 | С | | | | 30.9 | С | | | Pass |
| | Overall | | | 24.7 | С | 639 | Α | | 31.2 | С | 1001 | В | Pass | | 25.1 | С | 681 | Α | | 33.1 | С | 1,044 | В | Pass |

Comparison of No Action Alternative to Action Alternative with Mitigation Intersection AM and PM Peak Hour Operations (continued) Fiaure 3-4

Notes:

^a Highway Capacity Manual 2000 results (Intersections #4 and #6)

EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound

LOS = Level of Service

V/C = Volume-to-Capacity ratio

LTR = left / through / right lanes

For lane groups with two values separated by a forward slash (e.g., LT/T), the left value pertains to the LTR/LTR = No Action Alternative and the right value pertains to the Action Alternative-Build/Build with Mitigation. TWSC = Two-way STOP-controlled unsignalized intersection (TWSC intersections do not have an overall LOS)

AWSC = All-way STOP-controlled unsignalized intersection

Delay is measured in seconds per vehicle.

Red cells denote intersections or approaches operating at unacceptable conditions.

SimTraffic[™] was used to calculate the 95th percentile queue lengths to further verify the effectiveness of the mitigation measures. The queuing results of the No Action Alternative compared to the Action Alternative and the Action Alternative with Mitigation based on SimTraffic[™] are presented in **Figure 3-5**. The 95th percentile values are expressed in feet; an average car plus space between the next vehicle requires roughly 25 feet. Attachment C provides SimTraffic[™] simulation reports.

A lane drop on MD 201 north of Cherrywood Lane (or north of Intersection #5) reduces the number of northbound travel lanes from two to one. As a result, SimTraffic™ is limited in precisely reflecting the impact of the lane drop. Therefore, TransModeler™ was used to evaluate the AM peak hour queuing on northbound MD 201 (Kenilworth Avenue) for intersections extending southward from Cherrywood Lane (Intersection #5) to the Interstate 95 northbound off-ramp (Intersection #2). The 95th percentile queue under the Action Alternative with Mitigation was evaluated based on two sensitivity analysis scenarios: a scenario in which all BEP production facility trips were assumed to arrive within a 60minute interval and a more conservative scenario in which all BEP production facility trips were assumed to arrive within a 30-minute interval. Whereas a total of 1,745 AM peak hour vehicle trips are forecast to travel northbound through this lane drop, both TransModeler™ analysis scenarios simulated more vehicles per hour than the forecast, with 1,759 vehicles per hour traveling northbound in the 60-minute scenario and 1,820 vehicles per hour traveling northbound in the 30-minute scenario. Ten simulation runs were performed for each scenario, and the 95th percentile queue results are presented in Figure 3-6. The table shows that queues on northbound MD 201 south of the lane drop would be manageable in either scenario. The TransModeler™ simulation reports are provided as Attachment D.

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| | | | | Turning Bav/Link | No Action | Alternative | Action A | Iternative | Action Alte Mitig | rnative with ation |
|----|----------------------------------|-------------|---------------|---|--|--|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | Length (feet) No Action and Action/ Mitigation | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 1 | MD 201 (Kenilworth Avenue) | and I-95 SB | Off-Ram | np (Signalized) | | | | | | |
| | I-95 SB Off-Ramp | EB | L | 325/325 | 65 | 64 | 129 | 67 | 125 | 79 |
| | I-95 SB Off-Ramp | EB | L | 1540/1540 | 152 | 257 | 216 | 228 | 207 | 256 |
| | I-95 SB Off-Ramp | EB | R | 1540/1540 | 107 | 211 | 74 | 228 | - | 226 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 4600/4600 | 117 | 152 | 127 | 153 | 131 | 152 |
| | MD 201 (Kenilworth Avenue) | SB | Т | 1400/1400 | 90 | 132 | 100 | 115 | 108 | 135 |
| 2 | MD 201 (Kenilworth Avenue) | and I-95 NB | Off-Ram | p (Signalized) | | | | | | |
| | I-95 NB Off-Ramp | WB | L | 400/400 | 181 | 247 | 183 | 253 | 160 | 258 |
| | I-95 NB Off-Ramp | WB | L | 1580/1580 | 235 | 295 | 654 | 303 | 206 | 309 |
| | I-95 NB Off-Ramp | WB | R | 1580/1580 | 295 | 250 | 1832 | 266 | 314 | 271 |
| | I-95 NB Off-Ramp | WB | R | 300/300 | 281 | 231 | 362 | 248 | 298 | 245 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 250/250 | 114 | 128 | 145 | 132 | 132 | 124 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 1400/1400 | 130 | 167 | 165 | 160 | 148 | 158 |
| | MD 201 (Kenilworth Avenue) | SB | Т | 680/680 | 180 | 156 | 176 | 169 | 208 | 185 |
| 3 | MD 201 (Kenilworth Avenue) | and SHA Di | strict 3/C | Crescent Road (S | ignalized) | | | | | |
| | SHA District 3 | EB | LTR | 130/130 | 29 | 39 | 27 | 36 | 25 | 36 |
| | Crescent Road | WB | LT | 1080/1080 | 156 | 193 | 149 | 187 | 155 | 184 |
| | Crescent Road | WB | R | 250/250 | 78 | 78 | 88 | 89 | 81 | 79 |
| | MD 201 (Kenilworth Avenue) | NB | L | 250/250 | 75 | 53 | 200 | 59 | 77 | 58 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 680/680 | 134 | 230 | 543 | 219 | 178 | 220 |
| | MD 201 (Kenilworth Avenue) | NB | R | 200/200 | 22 | 110 | 250 | 94 | 58 | 107 |
| | MD 201 (Kenilworth Avenue) | SB | L | 300/300 | 63 | 122 | 63 | 120 | 78 | 133 |
| | MD 201 (Kenilworth Avenue) | SB | TR | 740/740 | 93 | 83 | 82 | 96 | 74 | 100 |
| 4 | MD 201 (Kenilworth Avenue) | and Ivy Lan | e (Signa | lized) | | | | | | |
| | MD 201 (Kenilworth Avenue) | NB | L | 350/350 | 78 | 118 | 86 | 109 | 70 | 110 |
| | MD 201 (Kenilworth Avenue) | NB | L | 740/740 | 127 | 141 | 1026 | 136 | 212 | 135 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 740/740 | 184 | - | 1097 | 117 | 291 | 97 |
| | MD 201 (Kenilworth Avenue) | SB | Т | 1120/1120 | 65 | 135 | 64 | 135 | 56 | 152 |

Figure 3-5 Comparison of No Action Alternative to Action Alternative with Mitigation Intersection AM and PM Peak Hour SimTraffic Queuing

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| | | | | Turning Bay/Link | No Action | Alternative | Action A | Iternative | Action Alte Mitig | rnative with ation |
|----|---|-------------|---------------|---|--|--|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | Length (feet) No Action and Action/ Mitigation | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 5 | MD 201 (Kenilworth Avenue/I (Signalized) | Edmonston | Road) an | nd Cherrywood La | ane | | | | | |
| | Cherrywood Lane | EB | L | 250/250 | 286 | 185 | 325 | 191 | 247 | 204 |
| | Cherrywood Lane | EB | L | 750/750 | 679 | 207 | 701 | 217 | 335 | 202 |
| | Cherrywood Lane | EB | R | 750/750 | 104 | 277 | 106 | 261 | 85 | 250 |
| | MD 201 (Kenilworth Avenue) | NB | L | 750/750 | 624 | 187 | 1098 | 181 | 666 | 211 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 1120/1120 | 927 | 141 | 1570 | 148 | 1028 | 149 |
| | MD 201 (Edmonston Road) | SB | Т | 580/580 | 248 | 241 | 257 | 269 | 274 | 323 |
| | MD 201 (Edmonston Road) | SB | R | 250/250 | 178 | 145 | 180 | 183 | 215 | 250 |
| 6 | MD 201 (Edmonston Road) a | nd Sunnysie | de Avenu | e (Signalized) | | | | | | |
| | Sunnyside Avenue | EB | L | 1400/1400 | 723 | 1181 | 1243 | 1203 | 309 | 1243 |
| | Sunnyside Avenue | EB | R | 350/350 | 404 | 425 | 475 | 393 | 236 | 449 |
| | MD 201 (Edmonston Road) | NB | L | 450/450 | 513 | 546 | 533 | 545 | 476 | 515 |
| | MD 201 (Edmonston Road) | NB | Т | -/900 | - | - | - | - | 358 | 586 |
| | MD 201 (Edmonston Road) | NB | TR | 4160/4160 | 5566 | 1456 | 2553 | 1599 | 882 | 466 |
| | MD 201 (Edmonston Road) | SB | Т | 1500/1500 | 1928 | 2041 | 1968 | 1889 | 805 | 2019 |
| | MD 201 (Edmonston Road) | SB | R | 250/250 | 306 | 341 | 290 | 344 | 328 | 373 |
| 7 | MD 201 (Edmonston Road) a | nd Beaver D | am Road | d (TWSC) | | | | | | |
| | Beaver Dam Road | WB | LR | 1300/1300 | 642 | 618 | 682 | 678 | 60 | 367 |
| | MD 201 (Edmonston Road) | NB | TR | 1500/1500 | 45 | 10 | 25 | 18 | - | 2 |
| | MD 201 (Edmonston Road) | SB | LT/T | 1480/1480 | 1266 | 1192 | 1254 | 1143 | 4 | 843 |
| 8 | MD 201 (Edmonston Road) a | nd Powder I | Mill Road | (Signalized) | | | | | | |
| | Powder Mill Road | EB | L | 250/250 | 97 | 321 | 110 | 337 | 88 | 297 |
| | Powder Mill Road | EB | Т | 1430/1430 | 1276 | 699 | 1126 | 1440 | 146 | 347 |
| | Powder Mill Road | EB | Т | -/600 | - | - | - | - | 105 | 241 |
| | Powder Mill Road | EB | R | 500/500 | 726 | 440 | 677 | 687 | 79 | 61 |
| | Powder Mill Road | WB | L | 250/500 | 246 | 141 | 222 | 282 | 103 | 271 |
| | Powder Mill Road | WB | Т | 1100/1440 | 266 | 216 | 160 | 622 | 177 | 442 |
| | Powder Mill Road | WB | R | 40/40 | 62 | 64 | 55 | 50 | 58 | 84 |
| | MD 201 (Edmonston Road) | NB | L | 400/400 | 368 | 451 | 288 | 457 | 263 | 383 |
| | MD 201 (Edmonston Road) | NB | Т | 1480/1480 | 356 | 596 | 295 | 650 | 229 | 408 |
| | MD 201 (Edmonston Road) | NB | R | 275/1480 | 107 | 290 | 131 | 313 | - | - |
| | MD 201 (Edmonston Road) | SB | L | 275/275 | 266 | 258 | 305 | 339 | 126 | 208 |
| | MD 201 (Edmonston Road) | SB | TR | 780/780 | 891 | 428 | 782 | 603 | 281 | 275 |

Figure 3-5 Comparison of No Action Alternative to Action Alternative with Mitigation Intersection AM and PM Peak Hour SimTraffic Queuing (continued)

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| | | | | Turning Bav/Link | No Action | Alternative | Action A | ternative | Action Alte Mitig | rnative with ation |
|----|--|---------------|---------------|---|--|--|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | Length (feet) No Action and Action/ Mitigation | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 9 | MD 201 (Edmonston Roa | d) and Odel | l Road (T | WSC) | | - | | | | - |
| | Odell Road | EB | LTR | 740/740 | 83 | 68 | 91 | 68 | 73 | 83 |
| | Odell Road | WB | LT | 520/520 | 41 | 12 | 37 | 14 | 43 | 15 |
| | Odell Road | WB | R | 50/50 | 23 | 13 | 27 | 16 | 30 | 14 |
| | MD 201 (Edmonston Road) | NB | LT | 760/760 | 110 | 118 | 131 | 137 | 117 | 129 |
| | MD 201 (Edmonston Road) | SB | LTR | 1320/1320 | 7 | 16 | 6 | 4 | 5 | 9 |
| 10 | Powder Mill Road and Po (AWSC) ^a | ultry Road | (BEP Driv | veway) | | | | | | |
| | Powder Mill Road | EB | LT/L | -/200 | - | - | - | - | 139 | 52 |
| | Powder Mill Road | EB | Т | 240/3250 | 90 | 333 | 622 | 667 | 35 | 442 |
| | Powder Mill Road | WB | TR/T | 1280/1280 | 110 | 98 | 1653 | 646 | 149 | 189 |
| | Powder Mill Road | WB | R | -/200 | - | - | - | - | 114 | 29 |
| | Poultry Road | SB | LR/L | 420/600 | - | 24 | - | 409 | - | 251 |
| | Poultry Road | SB | -/R | -/600 | - | - | - | - | - | 165 |
| 11 | Powder Mill Road and Re (TWSC) | esearch Roa | d | | | | | | | |
| | Powder Mill Road | EB | TR | 1280/1280 | - | 36 | - | 47 | - | 144 |
| | Powder Mill Road | WB | TR | 950/950 | - | - | 67 | - | - | 54 |
| | Research Road | NB | L | 65/65 | 38 | 47 | 41 | 49 | 38 | 0 |
| 12 | Powder Mill Road and Sp (TWSC) ^a | oringfield Ro | bad | | | | | | | |
| | Powder Mill Road | EB | L | 50/50 | 12 | 27 | 18 | 25 | 20 | 42 |
| | Powder Mill Road | EB | Т | 1590/1590 | - | - | - | 49 | 91 | 806 |
| | Powder Mill Road | WB | TR | 140/140 | 4 | - | 7 | - | 187 | 98 |
| | Springfield Road | SB | LR | 4110/4110 | 83 | 257 | 138 | 574 | 177 | 597 |
| 13 | Powder Mill Road and MI (TWSC) ^a | 0 295 SB Ra | imps | | | | | | | |
| | Powder Mill Road | EB | TR/T | 140/140 | - | 15 | 2 | 45 | 155 | 178 |
| | Powder Mill Road | EB | -/R | -/140 | - | - | - | - | 74 | 104 |
| | Powder Mill Road | WB | L | 225/225 | 37 | 83 | 38 | 119 | 53 | 128 |
| | Powder Mill Road | WB | Т | 520/520 | - | - | 2 | - | 160 | 107 |
| | BW Parkway SB Ramp | SB | L | 25/300 | 58 | 54 | 51 | 58 | 243 | 297 |
| | BW Parkway SB Ramp | SB | TR | 1020/1020 | 187 | 1112 | 1083 | 1072 | 193 | 196 |

Figure 3-5 Comparison of No Action Alternative to Action Alternative with Mitigation Intersection AM and PM Peak Hour SimTraffic Queuing (continued)

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| | | | | Turning Bay/Link | No Action | Alternative | Action A | Iternative | Action Alte Mitig | rnative with ation |
|----|--|-------------|---------------|---|--|--|--|--|--|--|
| ID | Intersection Name/Street Name | Direction | Lane Group | Length (feet) No Action and Action/ Mitigation | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) | AM Peak Hour 95th Percentile (feet) | PM Peak Hour 95th Percentile (feet) |
| 14 | Powder Mill Road and MI (TWSC) ^a |) 295 NB Ra | imps | | | | | | | |
| | Powder Mill Road | EB | L | 250/250 | 59 | 204 | 55 | 241 | 129 | 207 |
| | Powder Mill Road | EB | Т | 520/520 | - | 29 | - | 203 | 268 | 196 |
| | Powder Mill Road | WB | TR/T | 850/850 | 8 | 33 | 6 | 43 | 187 | 108 |
| | Powder Mill Road | WB | R | -/100 | - | - | - | - | 121 | 124 |
| | BW Parkway NB Ramp | NB | L | 50/300 | 58 | 87 | 81 | 88 | 293 | 123 |
| | BW Parkway NB Ramp | NB | TR | 880/880 | 59 | 678 | 789 | 698 | 114 | 55 |
| 15 | Powder Mill Road and So | il Conserva | tion Roa | d (Signalized) | | | | | | |
| | Powder Mill Road | EB | Т | 850/850 | 157 | 225 | 138 | 215 | 178 | 312 |
| | Powder Mill Road | EB | R | 260/260 | 31 | 44 | 31 | 33 | 36 | 137 |
| | Powder Mill Road | WB | L | 300/300 | 80 | 66 | 84 | 64 | 89 | 64 |
| | Powder Mill Road | WB | Т | 780/780 | 183 | 202 | 209 | 200 | 211 | 217 |
| | Soil Conservation Road | NB | L | 6400/6400 | 203 | 375 | 204 | 352 | 197 | 352 |
| | Soil Conservation Road | NB | R | 475/475 | - | - | - | - | - | - |

Figure 3-5 Comparison of No Action Alternative to Action Alternative with Mitigation Intersection AM and PM Peak Hour SimTraffic Queuing (continued)

Notes:

^a This intersection would operate with a signal control with mitigation.

1) EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound

2) LTR = left / through / right lanes

3) For lane groups with two values separated by a forward slash (e.g., LT/T), the left value pertains to the No Action Alternative and the right value pertains to the Action Alternative with Mitigation.

4) TWSC = Two-way STOP-controlled unsignalized intersection

5) AWSC = All-way STOP-controlled unsignalized intersection

6) Red cells denote lane groups whose queuing length exceeds capacity.

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| | | | _ | Turning Bay/Link | Action Alte Mitigation (A | rnative with M Peak Hour) |
|----|----------------------------------|---------------|-------------------|---|--|--|
| ID | Intersection Name/Street Name | Directio n | Lane Grou p | Length (feet) No Action and Action/ Mitigation | 30-Minute Scenario 95th Percentile (feet) | 60-Minute Scenario 95th Percentile (feet) |
| 2 | MD 201 (Kenilworth Avenue) a | nd I-95 NB (| Off-Ramp | (Signalized) | | |
| | I-95 NB Off-Ramp | WB | L | 400 | 74 | 77 |
| | I-95 NB Off-Ramp | WB | L | 1580 | 105 | 103 |
| | I-95 NB Off-Ramp | WB | R | 1580 | 222 | 192 |
| | I-95 NB Off-Ramp | WB | R | 300 | 251 | 180 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 250 | 49 | 51 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 1400 | 61 | 63 |
| | MD 201 (Kenilworth Avenue) | SB | Т | 680 | 64 | 62 |
| 3 | MD 201 (Kenilworth Avenue) a | nd SHA Dis | trict 3/Cr | escent Road (Sig | nalized) | |
| | SHA District 3 | EB | LTR | 130 | 2 | 0 |
| | Crescent Road | WB | LT | 1080 | 29 | 28 |
| | Crescent Road | WB | R | 250 | 19 | 18 |
| | MD 201 (Kenilworth Avenue) | NB | L | 250 | 43 | 43 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 680 | 50 | 35 |
| | MD 201 (Kenilworth Avenue) | NB | R | 200 | 0 | 0 |
| | MD 201 (Kenilworth Avenue) | SB | L | 300 | 41 | 39 |
| | MD 201 (Kenilworth Avenue) | SB | TR | 740 | 12 | 9 |
| 4 | MD 201 (Kenilworth Avenue) a | nd Ivy Lane | (Signaliz | zed) | | |
| | MD 201 (Kenilworth Avenue) | NB | L | 350 | 0 | 0 |
| | MD 201 (Kenilworth Avenue) | NB | L | 740 | 0 | 0 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 740 | 0 | 0 |
| | MD 201 (Kenilworth Avenue) | SB | Т | 1120 | 0 | 0 |
| 5 | MD 201 (Kenilworth Avenue/Eo | dmonston R | load) and | Cherrywood Lar | ne (Signalized) | |
| | Cherrywood Lane | EB | L | 250 | 103 | 97 |
| | Cherrywood Lane | EB | L | 750 | 98 | 95 |
| | Cherrywood Lane | EB | R | 750 | 0 | 0 |
| | MD 201 (Kenilworth Avenue) | NB | L | 750 | 155 | 142 |
| | MD 201 (Kenilworth Avenue) | NB | Т | 1120 | 360 | 22 |
| | MD 201 (Edmonston Road) | SB | Т | 580 | 191 | 187 |
| | MD 201 (Edmonston Road) | SB | R | 250 | 51 | 50 |

Figure 3-6 Action Alternative with Mitigation Intersection AM and PM Peak Hour TransModeler Queuing Analysis

Notes:

1) EB = Eastbound, WB = Westbound, NB= Northbound, SB = Southbound

2) LTR = left / through / right lanes

3) Red cells denote lane groups whose queuing length exceeds capacity.

4 SUMMARY

This sensitivity analysis evaluated the traffic impact of relocating the BEP production facility site to the BARC using forecast assumptions that were requested by the agencies that reviewed the TIS. The analysis methodologies used for the sensitivity analysis were generally the same as those used in the TIS; however, the forecasts of the No Action Alternative and Action Alternative conditions were modified to reflect updated development program information for the planned Greenbelt Town Center at Beltway Plaza development and using trip generation assumptions from the ITE 10th Edition of the *Trip Generation Manual*.

The key finding of this sensitivity analysis is that there would be an imperceptible difference in the intersection operational and 95th percentile queuing analysis results between the forecast assumptions of the TIS and those of this analysis. This sensitivity analysis also reinforces the mitigation strategies applied in the TIS, which would improve CLV, LOS, and queuing metrics under the Action Alternative to either acceptable conditions or to conditions better than the No Action Alternative. The Action Alternative with Mitigation queuing analysis also assessed queuing on northbound MD 201 for the intersections between the Interstate 95 northbound off-ramp and Cherrywood Lane using the TransModeler[™] software. The TransModeler[™] analysis demonstrated that queuing on northbound MD 201 under the Action Alternative with Mitigation would be adequately stored between the pertinent intersections.

5 REFERENCES

- ITE. 2020. Trip Generation Manual, Tenth Edition, Institute of Transportation Engineers, Washington, D.C., September 2020.
- M-NCPPC. 2012. Transportation Review Guidelines. Accessed September 2019. Available at: <u>http://www.pgparks.com/1743/Transportation-Review-Guidelines</u>.
- TRB. 2011. National Cooperative Highway Research Program Report 684, Enhancing Internal Trip Capture Estimation for Mixed-Use Developments, Transportation Research Board for the National Academies of Science, Washington. D.C.

6 ATTACHMENT A (CRITICAL LANE VOLUME (CLV) REPORTS)





| 861 | | | | | | CLV TOT | AL= |
|-----|----|------|------|-----|---|---------|-----|
| 465 | WB | 602 | 0.55 | 331 | 0 | 0.00 | |
| | | 656 | 0.60 | 394 | | | |
| | SB | 1546 | 0.37 | 572 | 0 | 0.00 | |
| 000 | | | | | | | |

0.55

465

0

0.00

CLV TOTAL=

0

WB

846

394

966



CLV TOTAL= 800

CLV TOTAL=









CLV TOTAL= 1,226

CLV TOTAL=

1,079

| | | CRI | FICAL | . LAN fo | IE VC or Prir | DLUI nce G | ME (C George | LV) s Co | M | ETH nty | ODO | LOG` | ſ | | | |
|-----|--------------------|----------------------------|---------------------------------|----------------------------------|-------------------|---------------|-----------------|-------------|-----------------|---------------------------|---------------------------------|-----------------|----------|---------|--------------|-------|
| | (| E/W R N/S R Conditio | oad: Pov oad: Soi ons: No | wder Mill il Conser Action | Road vation Ro | bad | | Dat Da | te o ay o | of Cou of Cou Analy | int: 9/1 int: Tue vst: WA | 7/2019 esday | | | | |
| | Peak: 6 Peak: 3 | :00 - 7:00 :00 - 4:00 |) | | | | | | | | | | | | | |
| | PC | WDER N | /ILL ROA | ١D | | | | | | | | | | | 204 | 245 |
| | | | | | | | | | | | _ | ı L | | | 304 53 | 315 |
| | | | | | | | | | | | | | | | AM | PM |
| | 347 400 | 170 286 | T R | | T — R — | | AM PM | | L 334 619 | L 5 9 | R R 17 38 | | PO | NDER MI | ILL RO | AD |
| Сар | oacity | y Analy | ysis | | | SO | IL CONS | ERVAT | ION | I ROAD | | | | | | |
| | | | Morning | J Peak Hoι | ır | | | [| | | | Evening | Peak Ho | our | | |
| | | | | + C | pposing L | efts | AM | | | T | hru Volum | es | + (| | efts | PM |
| NR | 0 | x LUF | - i otal 0 | 0 | | - i otai 0 | GLV | DI N | ir B | 3 VOL | 1.00 | - 10(a) 3 | VOL 0 | | - 10tal 0 | ULV |
| | 335 | 1.00 | 335 | | 0.00 | J | 335 | | | 619 | 1.00 | 619 | 0 | 0.00 | 0 | 619 |
| EB | 170 | 1.00 | 170 | 53 | 1.00 | 53 | 304 | E | В | 347 | 1.00 | 347 | 35 | 1.00 | 35 | 382 |
| WB | 304 | 1.00 | 304 | 0 | 0.00 | 0 | 004 | w | /B | 315 | 1.00 | 315 | 0 | 0.00 | 0 | |
| L | | | | 1 | CLV TOT/ | AL= | 639 | ╡┕ | | | | | 1 | CLV TOT | AL= | 1,001 |

CLV TOTAL= 1,001





578

974

WB

0.55

578

0

0.00

CLV TOTAL=

0

WB



CLV TOTAL= 919

CLV TOTAL=









CLV TOTAL= 1,609

CLV TOTAL=

1,116

| | | CRIT | FICAL | LAN | NE VO | DLUI nce G | ME (C | LV) N s Coul | IETH ntv | IODO | LOG | Y | | | |
|------|--------------------|------------------------------|-------------------------------|-------------------------------|------------|---------------|----------|-----------------|---------------------------|---------------------------------|-----------------------|-----------|------------|-----------------|-----------------|
| | C | E/W Ro N/S Ro Conditio | oad: Po oad: So ons: Ac | wder Mil il Consei tion | I Road | bad | ee ge | Date Day | of Cou of Cou Analy | unt: 9/1 unt: Tuo yst: WA | 17/2019 esday A | | | | |
| | Peak: 6 Peak: 3 | :00 - 7:00 :00 - 4:00 |) | | | | | | | | | | | | |
| | РО | WDER N | IILL ROA | ۸D | | | | | | | T | | т | 346 | 315 |
| | | | | | | | | | | _ | L | | L | 53 AM | 35 PM |
| | 390 400 | 170 286 | T R | | T — R — | | | | | R | | PO | WDER MI | ILL ROA | <u>AD</u> |
| | | | | | | | AM PM | 33 61 | 35 19 | 17 38 | | | | | |
| Cai | pacitv | | /sis | | | SO | IL CONSE | ERVATIO | n Roai |) | | | | | |
| | | | Morning | g Peak Ho | ur | | | | | | Evening | g Peak Ho | our | | |
| Dir | | hru Volum | nes | + (| Dpposing L | _efts | AM | Dir | T | hru Volum | ies - Totol | + (| Dpposing L | _efts | PM |
| NB | 0 | 0.00 | - rotai 0 | 0 | 0.00 | - 10tai 0 | 335 | NB | 3 | 1.00 | - 10(a) 3 | 0 | 0.00 | - 10tai 0 | 619 |
| | 335 | 1.00 | 335 | | | | | | 619 | 1.00 | 619 | 0 | 0.00 | 0 | |
| EB | 170 | 1.00 | 170 | 53 | 1.00 | 53 | | EB | 390 | 1.00 | 390 | 35 | 1.00 | 35 | |
| ٦/٧/ | 246 | 1.00 | 246 | 0 | 0.00 | 0 | 346 | | 215 | 1 00 | 215 | 0 | 0.00 | 0 | 425 |

CLV TOTAL= 1,044







CLV TOTAL= 1,250

CLV TOTAL=







7 ATTACHMENT B (SYNCHRO[™] REPORTS)
| | ≯ | \mathbf{F} | 1 | 1 | Ŧ | ~ |
|------------------------------|------|--------------|------|------|---|------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ካካ | 1 | | *** | ^ | |
| Traffic Volume (veh/h) | 120 | 884 | 0 | 1227 | 970 | 0 |
| Future Volume (veh/h) | 120 | 884 | 0 | 1227 | 970 | 0 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1767 | 1767 | 0 | 1767 | 1752 | 0 |
| Adj Flow Rate, veh/h | 138 | 0 | 0 | 1410 | 1115 | 0 |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 9 | 9 | 0 | 9 | 10 | 0 |
| Cap, veh/h | 204 | | 0 | 3942 | 2721 | 0 |
| Arrive On Green | 0.06 | 0.00 | 0.00 | 0.82 | 0.82 | 0.00 |
| Sat Flow, veh/h | 3264 | 1497 | 0 | 5141 | 3504 | 0 |
| Grp Volume(v), veh/h | 138 | 0 | 0 | 1410 | 1115 | 0 |
| Grp Sat Flow(s).veh/h/ln | 1632 | 1497 | 0 | 1608 | 1664 | 0 |
| Q Serve(g s), s | 4.1 | 0.0 | 0.0 | 7.5 | 9.2 | 0.0 |
| Cycle Q Clear(a c), s | 4.1 | 0.0 | 0.0 | 7.5 | 9.2 | 0.0 |
| Prop In Lane | 1.00 | 1.00 | 0.00 | | | 0.00 |
| Lane Grp Cap(c), veh/h | 204 | | 0 | 3942 | 2721 | 0 |
| V/C Ratio(X) | 0.68 | | 0.00 | 0.36 | 0.41 | 0.00 |
| Avail Cap(c a), veh/h | 522 | | 0 | 3942 | 2721 | 0 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 45.9 | 0.0 | 0.0 | 2.4 | 2.5 | 0.0 |
| Incr Delay (d2), s/veh | 3.9 | 0.0 | 0.0 | 0.3 | 0.5 | 0.0 |
| Initial Q Delav(d3).s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%).veh/ln | 1.7 | 0.0 | 0.0 | 1.3 | 1.6 | 0.0 |
| Unsig. Movement Delay, s/ve | h | | | | | |
| LnGrp Delav(d).s/veh | 49.7 | 0.0 | 0.0 | 2.6 | 3.0 | 0.0 |
| LnGrp LOS | D | 0.0 | A | A | A | A |
| Approach Vol. veh/h | 138 | Α | | 1410 | 1115 | |
| Approach Delay s/yeh | 49.7 | 7. | | 2.6 | 3.0 | |
| Approach LOS | D | | | Δ.0 | 0.0 A | |
| | | • | | | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | 0 |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), s | | 87.7 | | 12.3 | | 87.7 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | ; | 72.0 | | 16.0 | | 72.0 |
| Max Q Clear Time (g_c+I1), s | 6 | 11.2 | | 6.1 | | 9.5 |
| Green Ext Time (p_c), s | | 22.4 | | 0.3 | | 30.6 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delav | | | 5.2 | | | |
| HCM 6th LOS | | | A | | | |
| | | | Л | | | |

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

| 4 | • | 4 | 1 | 1 | 1 | Ŧ |
|------------------------------|--------------|-----------|-----------|------|------|------|
| Movement WB | L WBR | WBL | NBT | NBR | SBL | SBT |
| Lane Configurations | 5 77 | 55 | 441 | | | *** |
| Traffic Volume (veh/h) 54 | 5 846 | 545 | 565 | 0 | 0 | 1070 |
| Future Volume (veh/h) 54 | 5 846 | 545 | 565 | 0 | 0 | 1070 |
| Initial $O(Oh)$ veh | 0 0 | 0,0,0 | 000 | 0 | 0 | 0 |
| Ped-Bike Adi(A nhT) 10 | 0 1 00 | 1 00 | 0 | 1 00 | 1 00 | Ū |
| Parking Rus Adi 10 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1 00 |
| Work Zone On Annroach N | טט. ר | ach No | No | 1.00 | 1.00 | No |
| Adi Sat Flow yeh/h/ln 18/ | J 1 18/11 | 18/11 | 1781 | 0 | 0 | 1603 |
| Adi Flow Rate veh/h | 7 1010 | 657 | 681 | 0 | 0 | 1280 |
| Peak Hour Easter 0.9 | 2 0 83 | 0.07 | 0.83 | 0 83 | 0 83 | 0 83 |
| | J U.03 | 0.03 | 0.03 | 0.05 | 0.03 | 0.00 |
| Con yoh/h | + 4 | 1/10 | ð 2000 | 0 | 0 | 14 |
| Cap, ven/n 141 | | 1419 | 2202 | 0 | 0 00 | 2092 |
| Arrive On Green 0.4 | 2 0.42 | 0.42 | 0.45 | 0.00 | 0.00 | 0.45 |
| Sat Flow, veh/h 340 | 1 2745 | 3401 | 5184 | 0 | 0 | 4925 |
| Grp Volume(v), veh/h 65 | 7 1019 | 657 | 681 | 0 | 0 | 1289 |
| Grp Sat Flow(s),veh/h/In170 | 0 1373 | /In1700 | 1621 | 0 | 0 | 1540 |
| Q Serve(g_s), s 14. | 34.4 | 14.0 | 8.9 | 0.0 | 0.0 | 21.2 |
| Cycle Q Clear(g_c), s 14. | 34.4 | 14.0 | 8.9 | 0.0 | 0.0 | 21.2 |
| Prop In Lane 1.0 | 0 1.00 | 1.00 | | 0.00 | 0.00 | |
| Lane Grp Cap(c), veh/h 141 | 9 1146 | h 1419 | 2202 | 0 | 0 | 2092 |
| V/C Ratio(X) 0.4 | 6 0.89 | 0.46 | 0.31 | 0.00 | 0.00 | 0.62 |
| Avail Cap(c, a) veh/h 156 | 1 1263 | 1564 | 2202 | 0.00 | 0.00 | 2092 |
| HCM Platoon Ratio 1.0 | 1 1 00 | 1 004 | 1 00 | 1 00 | 1 00 | 1 00 |
| Linetream Filter/I) 1.0 | 1 1 00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| Uniform Doloy (d) olyob 21 | | n.00 | 17 / | 0.00 | 0.00 | 20 0 |
| Uniform Delay (d), s/ven 21. | J ZI.U | | 17.4 | 0.0 | 0.0 | 2U.Ö |
| incr Delay (d2), s/veh 0. | 2 7.6 | 0.2 | 0.4 | 0.0 | 0.0 | 1.4 |
| Initial Q Delay(d3),s/veh 0. | J 0.0 | en 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOtQ(50%),veh/lr5. | 3 11.6 | eh/In5.3 | 3.2 | 0.0 | 0.0 | 7.3 |
| Unsig. Movement Delay, s/v | eh | ay, s/vel | | | | |
| LnGrp Delay(d),s/veh 21. | 3 34.6 | 21.3 | 17.8 | 0.0 | 0.0 | 22.1 |
| LnGrp LOS | C C | С | В | А | А | С |
| Approach Vol. veh/h 167 | 6 | 1676 | 681 | | | 1289 |
| Approach Delay, s/veh 29. | 4 | 29.4 | 17.8 | | | 22.1 |
| Approach LOS | | С. | B | | | C |
| | | 0 | | | | U |
| Timer - Assigned Phs | 2 | | | 4 | | 6 |
| Phs Duration (G+Y+Rc), s | 51.3 | c), s | | 48.7 | | 51.3 |
| Change Period (Y+Rc), s | 6.0 |), s | | 7.0 | | 6.0 |
| Max Green Setting (Gmax), | s 41.0 | max), s | | 46.0 | | 41.0 |
| Max Q Clear Time (g c+l1). | s 23.2 | c+l1), s | | 36.4 | | 10.9 |
| Green Ext Time (p_c), s | 16.2 | S | | 5.3 | | 16.4 |
| Intersection Summary | | | | | | |
| | | | 047 | | | |
| | | | 24.7 | | | |
| HCM 6th LOS | | | С | | | |

メッシュナ ベナ イントナイ

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|---------------------------|----------------|------|------|------|------|------|----------|------------|------|----------|-------------|------|--|
| Lane Configurations | | 4 | | | ्रभ | 1 | <u>۲</u> | *†† | 1 | <u>۲</u> | ተተ ጮ | | |
| Traffic Volume (veh/h) | 1 | 0 | 3 | 127 | 1 | 83 | 38 | 1331 | 42 | 31 | 1200 | 5 | |
| Future Volume (veh/h) | 1 | 0 | 3 | 127 | 1 | 83 | 38 | 1331 | 42 | 31 | 1200 | 5 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Work Zone On Approach | h | No | | | No | | | No | | | No | | |
| Adj Sat Flow, veh/h/ln | 1159 | 1159 | 1159 | 1856 | 1856 | 1856 | 1826 | 1826 | 1826 | 1633 | 1633 | 1633 | |
| Adj Flow Rate, veh/h | 1 | 0 | 4 | 155 | 1 | 101 | 46 | 1623 | 0 | 38 | 1463 | 6 | |
| Peak Hour Factor | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | |
| Percent Heavy Veh, % | 50 | 50 | 50 | 3 | 3 | 3 | 5 | 5 | 5 | 18 | 18 | 18 | |
| Cap, veh/h | 43 | 14 | 57 | 183 | 1 | 376 | 63 | 2778 | | 51 | 2539 | 10 | |
| Arrive On Green | 0.26 | 0.00 | 0.24 | 0.26 | 0.24 | 0.24 | 0.04 | 0.56 | 0.00 | 0.01 | 0.18 | 0.18 | |
| Sat Flow, veh/h | 0 | 59 | 236 | 463 | 3 | 1569 | 1739 | 4985 | 1547 | 1555 | 4584 | 19 | |
| Grp Volume(v), veh/h | 5 | 0 | 0 | 156 | 0 | 101 | 46 | 1623 | 0 | 38 | 949 | 520 | |
| Grp Sat Flow(s), veh/h/In | n 295 | 0 | 0 | 466 | 0 | 1569 | 1739 | 1662 | 1547 | 1555 | 1486 | 1630 | |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.2 | 2.6 | 21.4 | 0.0 | 2.4 | 29.2 | 29.2 | |
| Cycle Q Clear(g_c), s | 26.0 | 0.0 | 0.0 | 26.0 | 0.0 | 5.2 | 2.6 | 21.4 | 0.0 | 2.4 | 29.2 | 29.2 | |
| Prop In Lane | 0.20 | | 0.80 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.01 | |
| Lane Grp Cap(c), veh/h | 120 | 0 | 0 | 193 | 0 | 376 | 63 | 2778 | | 51 | 1647 | 903 | |
| V/C Ratio(X) | 0.04 | 0.00 | 0.00 | 0.81 | 0.00 | 0.27 | 0.73 | 0.58 | | 0.75 | 0.58 | 0.58 | |
| Avail Cap(c_a), veh/h | 120 | 0 | 0 | 193 | 0 | 376 | 122 | 2778 | | 124 | 1647 | 903 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.33 | 0.33 | 0.33 | |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.88 | 0.88 | 0.88 | |
| Uniform Delay (d), s/veh | n 30.5 | 0.0 | 0.0 | 40.7 | 0.0 | 30.9 | 47.7 | 14.5 | 0.0 | 49.1 | 30.1 | 30.1 | |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.0 | 22.0 | 0.0 | 0.4 | 15.1 | 0.9 | 0.0 | 17.5 | 1.3 | 2.4 | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| %ile BackOfQ(50%),veh | n/In0.1 | 0.0 | 0.0 | 5.0 | 0.0 | 2.0 | 1.4 | 7.4 | 0.0 | 1.2 | 11.8 | 13.2 | |
| Unsig. Movement Delay | , s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 30.6 | 0.0 | 0.0 | 62.7 | 0.0 | 31.2 | 62.9 | 15.4 | 0.0 | 66.5 | 31.4 | 32.5 | |
| LnGrp LOS | С | Α | Α | E | Α | С | E | В | | E | С | С | |
| Approach Vol, veh/h | | 5 | | | 257 | | | 1669 | А | | 1507 | | |
| Approach Delay, s/veh | | 30.6 | | | 50.3 | | | 16.7 | | | 32.7 | | |
| Approach LOS | | С | | | D | | | В | | | С | | |
| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc) | , s8.6 | 61.4 | | 30.0 | 8.3 | 61.7 | | 30.0 | | | | | |
| Change Period (Y+Rc), | s 5.0 | 6.0 | | 6.0 | 5.0 | 6.0 | | 6.0 | | | | | |
| Max Green Setting (Gm | ax) ,G | 52.0 | | 24.0 | 8.0 | 51.0 | | 24.0 | | | | | |
| Max Q Clear Time (g_c+ | +114),6s | 31.2 | | 28.0 | 4.4 | 23.4 | | 28.0 | | | | | |
| Green Ext Time (p_c), s | 0.0 | 19.5 | | 0.0 | 0.0 | 26.2 | | 0.0 | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 26.3 | | | | | | | | | | |
| HCM 6th LOS | | | С | | | | | | | | | | |

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

| | ≯ | \mathbf{F} | ٩. | Ť | Ŧ | ∢_ |
|---------------------------|-------------|--------------|-----------|-----------|-----------|--------------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ካካ | 1 | 5 | ** | ** | 1 |
| Traffic Volume (veh/h) | 350 | 65 | 219 | 1072 | 996 | 350 |
| Future Volume (veh/h) | 350 | 65 | 219 | 1072 | 996 | 350 |
| Initial Q (Qb) veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A nhT) | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Parking Bus Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Annroac | ch No | 1.00 | 1.00 | No | No | 1.00 |
| Adi Sat Flow veh/h/ln | 1737 | 1737 | 1811 | 1811 | 1678 | 1678 |
| Adi Flow Rate veh/h | 438 | 81 | 274 | 1340 | 1245 | 438 |
| Peak Hour Factor | -30 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | -30 0.80 |
| Percent Heavy Vah % | 0.00 | 0.00 | 0.00 A | 00.0 A | 15 | 15 |
| Con yoh/h | F10 | 11 | 210 | 2446 | 1000 | 010 |
| Cap, ven/n | 0.40 | 234 | 310 | 2440 | 0.57 | 012 |
| Arrive On Green | 0.16 | 0.16 | 0.09 | 0.71 | 0.57 | 0.57 |
| Sat Flow, veh/h | 3209 | 1472 | 1725 | 3532 | 3272 | 1421 |
| Grp Volume(v), veh/h | 438 | 81 | 274 | 1340 | 1245 | 438 |
| Grp Sat Flow(s),veh/h/l | n1605 | 1472 | 1725 | 1721 | 1594 | 1421 |
| Q Serve(g_s), s | 13.3 | 4.9 | 6.4 | 18.4 | 27.5 | 19.1 |
| Cycle Q Clear(g_c), s | 13.3 | 4.9 | 6.4 | 18.4 | 27.5 | 19.1 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | n 510 | 234 | 310 | 2446 | 1822 | 812 |
| V/C Ratio(X) | 0.86 | 0.35 | 0.88 | 0.55 | 0.68 | 0.54 |
| Avail Can(c. a) voh/h | 578 | 265 | /122 | 2446 | 1822 | 812 |
| HCM Platoon Patio | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1.00 |
| Lingtroom Filter(I) | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 |
| Upstream Palace (1) | 1.00 | 1.00 | 0.09 | 0.09 | 1.00 | 1.00 |
| Uniform Delay (d), s/vel | n 40.9 | 31.4 | 19.8 | 0.ð | 15.1 | 13.3 |
| incr Delay (d2), s/veh | 11.3 | 0.9 | 13.2 | 0.8 | 2.1 | 2.6 |
| Initial Q Delay(d3),s/vel | h 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),ve | h/lr5.9 | 1.8 | 4.7 | 5.4 | 9.3 | 6.0 |
| Unsig. Movement Delay | y, s/veh | | | | | |
| LnGrp Delay(d),s/veh | 52.2 | 38.3 | 33.0 | 7.6 | 17.2 | 15.8 |
| LnGrp LOS | D | D | С | А | В | В |
| Approach Vol. veh/h | 519 | | | 1614 | 1683 | |
| Annroach Delay s/veh | 50.0 | | | 11 0 | 16.8 | |
| Approach I OS | о П | | | 11.0 R | 10.0 R | |
| | U | | | D | D | |
| Timer - Assigned Phs | 1 | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc) |), \$3.9 | 64.2 | | 21.9 | | 78.1 |
| Change Period (Y+Rc) | s 5 0 | 7 0 | | 6.0 | | 7 0 |
| Max Green Setting (Gr | na1k6 @ | 48.0 | | 18.0 | | 69.0 |
| Max O Clear Time (g. c | +119./r | 20.5 | | 15.3 | | 20.4 |
| Groop Ext Time (9_0 | 0.5 | 23.0 | | 10.0 | | 20.4 11 7 |
| Green Ext Time (p_C), s | 5 0.0 | U.3 | | 0.0 | | 41.7 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 19.3 | | | |
| HCM 6th LOS | | | В | | | |

Intersection

| Int Delay, s/veh | 22.3 | | | | | |
|------------------------|------|------|------|------|------|--------------|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ۰¥ | | 4 | | | ् |
| Traffic Vol, veh/h | 15 | 14 | 973 | 8 | 23 | 1258 |
| Future Vol, veh/h | 15 | 14 | 973 | 8 | 23 | 1258 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage | ,# 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 78 | 78 | 78 | 78 | 78 | 78 |
| Heavy Vehicles, % | 20 | 20 | 9 | 9 | 17 | 17 |
| Mvmt Flow | 19 | 18 | 1247 | 10 | 29 | 1613 |

| Major/Minor | Minor1 | Ν | /lajor1 | ſ | Major2 | |
|----------------------|-----------|------|---------|-----|--------|-----|
| Conflicting Flow All | 2923 | 1252 | 0 | 0 | 1257 | 0 |
| Stage 1 | 1252 | - | - | - | - | - |
| Stage 2 | 1671 | - | - | - | - | - |
| Critical Hdwy | 6.6 | 6.4 | - | - | 4.27 | - |
| Critical Hdwy Stg 1 | 5.6 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.6 | - | - | - | - | - |
| Follow-up Hdwy | 3.68 | 3.48 | - | - | 2.353 | - |
| Pot Cap-1 Maneuver | ~ 14 | 193 | - | - | 505 | - |
| Stage 1 | 247 | - | - | - | - | - |
| Stage 2 | 152 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuve | r~6 | 193 | - | - | 505 | - |
| Mov Cap-2 Maneuve | r~6 | - | - | - | - | - |
| Stage 1 | 247 | - | - | - | - | - |
| Stage 2 | 68 | - | - | - | - | - |
| | | | | | | |
| Approach | WB | | NB | | SB | |
| HCM Control Delay. | \$ 1753.5 | | 0 | | 0.2 | |
| HCM LOS | F | | - | | • | |
| | | | | | | |
| NA' | | NDT | | . 4 | | ODT |
| Minor Lane/Major MV | mt | NRI | NRKMR | .n1 | SBL | SBT |
| Capacity (veh/h) | | - | - | 11 | 505 | - |
| HCM Lane V/C Ratio | | - | - 3 | .38 | 0.058 | - |
| HCM Control Delay (| s) | - | \$ 175 | 3.5 | 12.6 | 0 |
| HCM Lane LOS | | - | - | F | B | A |
| HCM 95th %tile Q(ve | h) | - | - | 5.7 | 0.2 | - |

Notes

~: Volume exceeds capacity

\$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 6th Signalized Intersection Summary 8: MD 201 & Powder Mill Road

| | ۶ | - | $\mathbf{\hat{z}}$ | 4 | + | • | • | Ť | ۲ | 1 | Ļ | ~ |
|------------------------------|------|------|--------------------|----------|------|------|------|------|------|------|------|----------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | 7 | • | 1 | <u> </u> | • | 1 | ۲ | • | 1 | ۲ | A12 | |
| Traffic Volume (veh/h) | 57 | 110 | 550 | 187 | 149 | 41 | 409 | 517 | 61 | 26 | 544 | 78 |
| Future Volume (veh/h) | 57 | 110 | 550 | 187 | 149 | 41 | 409 | 517 | 61 | 26 | 544 | 78 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1796 | 1796 | 1796 | 1856 | 1856 | 1856 | 1796 | 1796 | 1796 | 1544 | 1544 | 1544 |
| Adj Flow Rate, veh/h | 71 | 138 | 0 | 234 | 186 | 0 | 511 | 646 | 0 | 32 | 680 | 98 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh, % | 7 | 7 | 7 | 3 | 3 | 3 | 7 | 7 | 7 | 24 | 24 | 24 |
| Cap, veh/h | 242 | 442 | | 322 | 586 | | 557 | 1098 | | 246 | 787 | 113 |
| Arrive On Green | 0.25 | 0.25 | 0.00 | 0.04 | 0.32 | 0.00 | 0.28 | 0.61 | 0.00 | 0.31 | 0.31 | 0.31 |
| Sat Flow, veh/h | 1147 | 1796 | 1522 | 1767 | 1856 | 1572 | 1711 | 1796 | 1522 | 648 | 2574 | 371 |
| Grp Volume(v), veh/h | 71 | 138 | 0 | 234 | 186 | 0 | 511 | 646 | 0 | 32 | 387 | 391 |
| Grp Sat Flow(s),veh/h/ln | 1147 | 1796 | 1522 | 1767 | 1856 | 1572 | 1711 | 1796 | 1522 | 648 | 1467 | 1478 |
| Q Serve(g_s), s | 8.2 | 9.4 | 0.0 | 0.0 | 11.5 | 0.0 | 35.7 | 32.9 | 0.0 | 5.4 | 37.5 | 37.6 |
| Cycle Q Clear(g_c), s | 19.7 | 9.4 | 0.0 | 0.0 | 11.5 | 0.0 | 35.7 | 32.9 | 0.0 | 5.4 | 37.5 | 37.6 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.25 |
| Lane Grp Cap(c), veh/h | 242 | 442 | | 322 | 586 | | 557 | 1098 | | 246 | 448 | 452 |
| V/C Ratio(X) | 0.29 | 0.31 | | 0.73 | 0.32 | | 0.92 | 0.59 | | 0.13 | 0.86 | 0.87 |
| Avail Cap(c_a), veh/h | 242 | 442 | | 322 | 586 | | 557 | 1098 | | 246 | 448 | 452 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 55.3 | 46.4 | 0.0 | 58.4 | 39.2 | 0.0 | 39.0 | 17.8 | 0.0 | 38.2 | 49.3 | 49.3 |
| Incr Delay (d2), s/veh | 3.0 | 1.8 | 0.0 | 13.4 | 1.4 | 0.0 | 22.4 | 2.3 | 0.0 | 1.1 | 19.3 | 19.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/In | 2.6 | 4.5 | 0.0 | 9.9 | 5.5 | 0.0 | 15.2 | 13.7 | 0.0 | 0.9 | 16.0 | 16.2 |
| Unsig. Movement Delay, s/veh | 50.4 | 10.0 | | 74.0 | 10.0 | • • | | 00.4 | | | | ~~ ~ |
| LnGrp Delay(d),s/veh | 58.4 | 48.2 | 0.0 | 71.8 | 40.6 | 0.0 | 61.4 | 20.1 | 0.0 | 39.3 | 68.6 | 68.7 |
| LnGrp LOS | E | D | | E | D | | E | C | | D | E | <u> </u> |
| Approach Vol, veh/h | | 209 | A | | 420 | A | | 1157 | A | | 810 | |
| Approach Delay, s/veh | | 51.7 | | | 58.0 | | | 38.3 | | | 67.5 | |
| Approach LOS | | D | | | E | | | D | | | E | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 46.0 | 52.0 | 10.5 | 42.0 | | 98.0 | | 52.5 | | | | |
| Change Period (Y+Rc), s | 4.5 | 6.0 | 5.0 | * 5 | | 6.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 41.5 | 46.0 | 5.5 | * 37 | | 92.0 | | 47.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 51.7 | | | | | | | | | |
| HCM 6th LOS | | | D | | | | | | | | | |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier. Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | 4 | | | र्स | 1 | | र्भ | 1 | | 4 | |
| Traffic Vol, veh/h | 21 | 0 | 1 | 2 | 5 | 1 | 51 | 551 | 3 | 0 | 625 | 44 |
| Future Vol, veh/h | 21 | 0 | 1 | 2 | 5 | 1 | 51 | 551 | 3 | 0 | 625 | 44 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 50 | - | - | 325 | - | - | - |
| Veh in Median Storage, # | 4 - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 70 | 70 | 70 | 67 | 67 | 67 | 9 | 9 | 9 | 21 | 21 | 21 |
| Mvmt Flow | 22 | 0 | 1 | 2 | 5 | 1 | 54 | 580 | 3 | 0 | 658 | 46 |

| Major/Minor | Minor2 | | | Vinor1 | | | Major1 | | Ν | lajor2 | | | |
|----------------------|--------|------|------|--------|-------|-------|--------|---|---|--------|---|---|--|
| Conflicting Flow All | 1374 | 1372 | 681 | 1370 | 1392 | 580 | 704 | 0 | 0 | 583 | 0 | 0 | |
| Stage 1 | 681 | 681 | - | 688 | 688 | - | - | - | - | - | - | - | |
| Stage 2 | 693 | 691 | - | 682 | 704 | - | - | - | - | - | - | - | |
| Critical Hdwy | 7.8 | 7.2 | 6.9 | 7.77 | 7.17 | 6.87 | 4.19 | - | - | 4.31 | - | - | |
| Critical Hdwy Stg 1 | 6.8 | 6.2 | - | 6.77 | 6.17 | - | - | - | - | - | - | - | |
| Critical Hdwy Stg 2 | 6.8 | 6.2 | - | 6.77 | 6.17 | - | - | - | - | - | - | - | |
| Follow-up Hdwy | 4.13 | 4.63 | 3.93 | 4.103 | 4.603 | 3.903 | 2.281 | - | - | 2.389 | - | - | |
| Pot Cap-1 Maneuver | 88 | 106 | 352 | 90 | 105 | 411 | 862 | - | - | 904 | - | - | |
| Stage 1 | 347 | 361 | - | 347 | 362 | - | - | - | - | - | - | - | |
| Stage 2 | 341 | 357 | - | 350 | 355 | - | - | - | - | - | - | - | |
| Platoon blocked, % | | | | | | | | - | - | | - | - | |
| Mov Cap-1 Maneuver | · 78 | 96 | 352 | 83 | 95 | 411 | 862 | - | - | 904 | - | - | |
| Mov Cap-2 Maneuver | · 78 | 96 | - | 83 | 95 | - | - | - | - | - | - | - | |
| Stage 1 | 315 | 361 | - | 315 | 328 | - | - | - | - | - | - | - | |
| Stage 2 | 304 | 324 | - | 349 | 355 | - | - | - | - | - | - | - | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| Approach | EB | WB | NB | SB | |
|----------------------|------|------|-----|----|--|
| HCM Control Delay, s | 66.3 | 43.7 | 0.8 | 0 | |
| HCM LOS | F | E | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1V | VBLn1V | WBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|--------|--------|-------|-----|-----|-----|
| Capacity (veh/h) | 862 | - | - | 81 | 91 | 411 | 904 | - | - |
| HCM Lane V/C Ratio | 0.062 | - | - | 0.286 | 0.081 | 0.003 | - | - | - |
| HCM Control Delay (s) | 9.5 | 0 | - | 66.3 | 48 | 13.8 | 0 | - | - |
| HCM Lane LOS | А | А | - | F | Е | В | А | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 1 | 0.3 | 0 | 0 | - | - |

| 10.6 |
|------|
| В |
| |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR | |
|----------------------------|------|------|------|------|------|------|--|
| Lane Configurations | | र्स | eî 🗧 | | Y | | |
| Traffic Vol, veh/h | 2 | 170 | 381 | 0 | 0 | 0 | |
| Future Vol, veh/h | 2 | 170 | 381 | 0 | 0 | 0 | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | |
| Heavy Vehicles, % | 6 | 6 | 2 | 2 | 2 | 2 | |
| Mvmt Flow | 2 | 200 | 448 | 0 | 0 | 0 | |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | |
| Approach | EB | | WB | | SB | | |
| Opposing Approach | WB | | EB | | | | |
| Opposing Lanes | 1 | | 1 | | 0 | | |
| Conflicting Approach Left | SB | | | | WB | | |
| Conflicting Lanes Left | 1 | | 0 | | 1 | | |
| Conflicting Approach Right | | | SB | | EB | | |
| Conflicting Lanes Right | 0 | | 1 | | 1 | | |
| HCM Control Delay | 8.9 | | 11.3 | | 0 | | |
| HCM LOS | А | | В | | - | | |

| Lane | EBLn1 | WBLn1 | SBLn1 | 1 |
|------------------------|-------|-------|-------|--------|
| Vol Left, % | 1% | 0% | 0% | ó |
| Vol Thru, % | 99% | 100% | 100% | , 0 |
| Vol Right, % | 0% | 0% | 0% | ó |
| Sign Control | Stop | Stop | Stop |) |
| Traffic Vol by Lane | 172 | 381 | 0 |) |
| LT Vol | 2 | 0 | 0 |) |
| Through Vol | 170 | 381 | 0 |) |
| RT Vol | 0 | 0 | 0 |) |
| Lane Flow Rate | 202 | 448 | 0 |) |
| Geometry Grp | 1 | 1 | 1 | 1 |
| Degree of Util (X) | 0.244 | 0.508 | 0 |) |
| Departure Headway (Hd) | 4.336 | 4.084 | 5.318 | 3 |
| Convergence, Y/N | Yes | Yes | Yes | S |
| Сар | 815 | 879 | 0 |) |
| Service Time | 2.428 | 2.137 | 3.318 | 3 |
| HCM Lane V/C Ratio | 0.248 | 0.51 | 0 |) |
| HCM Control Delay | 8.9 | 11.3 | 8.3 | 3 |
| HCM Lane LOS | А | В | Ν | ١ |
| HCM 95th-tile Q | 1 | 2.9 | 0 |) |

| 0.4 | | | | | |
|------|---|---|--|---|--|
| | | | | | |
| NBL | NBR | SET | SER | NWL | NWT |
| - ሽ | | - î> | | | ↑ |
| 16 | 0 | 161 | 9 | 0 | 366 |
| 16 | 0 | 161 | 9 | 0 | 366 |
| 0 | 0 | 0 | 0 | 0 | 0 |
| Stop | Stop | Free | Free | Free | Free |
| - | None | - | None | - | None |
| 0 | - | - | - | - | - |
| ,#0 | - | 0 | - | - | 0 |
| 0 | - | 0 | - | - | 0 |
| 74 | 74 | 74 | 74 | 74 | 74 |
| 2 | 2 | 4 | 4 | 2 | 2 |
| 22 | 0 | 218 | 12 | 0 | 495 |
| | 0.4 NBL 16 16 0 Stop - 0 ,# 0 0 74 2 22 | 0.4 NBL NBR 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 16 0 17 None 0 - 17 74 17 2 17 0 | 0.4 NBL NBR SET 16 0 161 16 0 161 16 0 161 16 0 0 Stop Stop Free None - 0 - ,# 0 - 0 - ,# 0 - 0 - 0 - ,# 0 - 0 - 0 - 0 - 0 - 0 - 10 - 0 - 0 - 10 - 0 - 0 - 10 - 0 - 10 - | 0.4 NBL NBR SET SER 16 0 161 9 16 0 161 9 16 0 161 9 16 0 161 9 0 0 0 0 Stop Stop Free Free None - None - 0 - 0 - # 0 - 0 - 74 74 74 74 4 2 2 4 4 22 0 218 12 | 0.4 NBL NBR SET SER NWL 16 0 161 9 0 16 0 161 9 0 16 0 161 9 0 0 0 0 0 0 0 0 Free Free Free None - None - 0 - 0 - - # 0 - 0 - - 74 74 74 74 74 2 2 4 4 2 22 0 218 12 0 |

| Major/Minor | Minor1 | Maj | jor1 | Maj | jor2 | |
|----------------------|--------|-----|------|-----|------|---|
| Conflicting Flow All | 719 | - | 0 | 0 | - | - |
| Stage 1 | 224 | - | - | - | - | - |
| Stage 2 | 495 | - | - | - | - | - |
| Critical Hdwy | 6.42 | - | - | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | - | - | - | - | - |
| Pot Cap-1 Maneuver | 395 | 0 | - | - | 0 | - |
| Stage 1 | 813 | 0 | - | - | 0 | - |
| Stage 2 | 613 | 0 | - | - | 0 | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | r 395 | - | - | - | - | - |
| Mov Cap-2 Maneuver | r 395 | - | - | - | - | - |
| Stage 1 | 813 | - | - | - | - | - |
| Stage 2 | 613 | - | - | - | - | - |
| | | | | | | |

| Approach | NB | SE | NW |
|----------------------|------|----|----|
| HCM Control Delay, s | 14.6 | 0 | 0 |
| HCM LOS | В | | |

| Vinor Lane/Major Mvmt | NBLn1 | NWT | SET | SER |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 395 | - | - | - |
| HCM Lane V/C Ratio | 0.055 | - | - | - |
| HCM Control Delay (s) | 14.6 | - | - | - |
| HCM Lane LOS | В | - | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | - | - |

| Intersection | | | | | | |
|---|--|--------------------------------------|---|--------------------------------------|---|---|
| Int Delay, s/veh | 5.6 | | | | | |
| Movement | EBI | EBT | WBT | WBR | SBI | SBR |
| Lane Configurations | 3 | • | 1 | | V | 0011 |
| Traffic Vol. veh/h | 5 | 178 | 377 | 157 | 136 | 19 |
| Future Vol. veh/h | 5 | 178 | 377 | 157 | 136 | 10 |
| Conflicting Peds #/hr | 0 | 0 | 011 | 107 | 100 | 0 |
| Sign Control | Eroo | Eroo | Eroo | Eroo | Stop | Stop |
| DT Channelized | TIEE | Nono | TICC | Nono | Stop | Nono |
| Storogo Longth | - | NULLE | - | NULLE | - | NULLE |
| Storage Length | 50 | - | - | - | 0 | - |
| Ven in Median Storage | 9,# - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | /5 | /5 | /5 | /5 | /5 | /5 |
| Heavy Vehicles, % | 6 | 6 | 3 | 3 | 2 | 2 |
| Mvmt Flow | 7 | 237 | 503 | 209 | 181 | 25 |
| | | | | | | |
| Maior/Minor | Maior1 | Ν | Aaior2 | | Minor2 | |
| Occafications Elever All | | | | | | |
| CONTRICTING FLOW All | 712 | 0 | - | 0 | 859 | 608 |
| Stage 1 | 712 | 0 | - | 0 | 859 608 | 608 |
| Stage 2 | 712 | 0 | - | 0 | 859 608 251 | 608 |
| Stage 1 Stage 2 | 712 | 0 - - | - | 0 - - | 859 608 251 | 608 - - 6 22 |
| Connicting Flow All Stage 1 Stage 2 Critical Hdwy | 712 - - 4.16 | 0 - - | - | 0 - - - | 859 608 251 6.42 | 608 - - 6.22 |
| Connicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 | 712 - 4.16 - | 0 - - - | - | 0 - - - | 859 608 251 6.42 5.42 | 608 - - 6.22 - |
| Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 | 712 | 0 | - | 0 - - - - | 859 608 251 6.42 5.42 5.42 | 608 - - 6.22 - - 2.219 |
| Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy | 712 - 4.16 - 2.254 | 0 | - | 0 - - - - - | 859 608 251 6.42 5.42 5.42 3.518 | 608 - - 6.22 - 3.318 |
| Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver | 712 - 4.16 - 2.254 869 | 0 - - - - - - - | | 0 - - - - - - - | 859 608 251 6.42 5.42 5.42 3.518 327 | 608 - 6.22 - 3.318 496 |
| Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1 | 712 - 4.16 - 2.254 869 | 0 | | 0 | 859 608 251 6.42 5.42 5.42 3.518 327 543 | 608 - - 6.22 - 3.318 496 |
| Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1 Stage 2 | 712 - 4.16 - 2.254 869 - | 0 | - - - - - - - - - - - - - - - - - - - | 0 | 859 608 251 6.42 5.42 3.518 327 543 791 | 608 - 6.22 - 3.318 496 - |
| Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1 Stage 2 Platoon blocked, % | 712 - 4.16 - 2.254 869 - | 0 | - - - - - - - - - - - - - - - - - - - | 0 | 859 608 251 6.42 5.42 5.42 3.518 327 543 791 | 608 - - 6.22 - - 3.318 496 - |
| Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1 Stage 2 Platoon blocked, % Mov Cap-1 Maneuver | 712 - 4.16 - 2.254 869 - - 869 | 0 | - - - - - - - - - - - - - - - - - - - | 0 | 859 608 251 6.42 5.42 5.42 3.518 327 543 791 324 | 608 - - 6.22 - - 3.318 496 - - - |
| Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1 Stage 2 Platoon blocked, % Mov Cap-1 Maneuver Mov Cap-2 Maneuver | 712 - 4.16 - 2.254 869 - - 869 | 0 | | 0 | 859 608 251 6.42 5.42 5.42 3.518 327 543 791 324 324 324 | 608 - - 6.22 - - 3.318 496 - - - 496 |
| Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1 Stage 2 Platoon blocked, % Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1 | 712 - 4.16 - 2.254 869 - - 869 - - | 0 | | 0 | 859 608 251 6.42 5.42 5.42 3.518 327 543 791 324 324 324 539 | 608 - - 6.22 - - 3.318 496 - - - 496 - - |
| Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1 Stage 2 Platoon blocked, % Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1 Stage 2 | 712 - 4.16 - 2.254 869 - - - 869 - - | 0 | | 0 | 859 608 251 6.42 5.42 3.518 327 543 791 324 324 324 539 791 | 608 - - 6.22 - 3.318 496 - - - 496 - - |
| Conflicting Flow All Stage 1 Stage 2 Critical Hdwy Critical Hdwy Stg 1 Critical Hdwy Stg 2 Follow-up Hdwy Pot Cap-1 Maneuver Stage 1 Stage 2 Platoon blocked, % Mov Cap-1 Maneuver Mov Cap-2 Maneuver Stage 1 Stage 2 | 712 - 4.16 - 2.254 869 - - - 869 - - - | 0 | | 0 | 859 608 251 6.42 5.42 3.518 327 543 791 324 324 539 791 | 608 - 6.22 - 3.318 496 - - - - - - - |

| Approach | EB | WB | SB | |
|----------------------|-----|----|------|--|
| HCM Control Delay, s | 0.3 | 0 | 31.1 | |
| HCM LOS | | | D | |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR SBLn1 |
|-----------------------|-------|-----|-----|-----------|
| Capacity (veh/h) | 869 | - | - | - 338 |
| HCM Lane V/C Ratio | 0.008 | - | - | - 0.611 |
| HCM Control Delay (s) | 9.2 | - | - | - 31.1 |
| HCM Lane LOS | А | - | - | - D |
| HCM 95th %tile Q(veh) | 0 | - | - | - 3.8 |

| Intersection | | | | | | | | | | | | | |
|------------------------|-------|------|------|------|------|------|------|-------|------|------|------|------|--|
| Int Delay, s/veh | 50.5 | | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | | 4 | | - ሽ | • | | | | | - ኘ | 4 | | |
| Traffic Vol, veh/h | 0 | 211 | 103 | 85 | 329 | 0 | 0 | 0 | 0 | 251 | 1 | 204 | |
| Future Vol, veh/h | 0 | 211 | 103 | 85 | 329 | 0 | 0 | 0 | 0 | 251 | 1 | 204 | |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop | |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None | |
| Storage Length | - | - | - | 225 | - | - | - | - | - | 25 | - | - | |
| Veh in Median Storage | , # - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - | |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - | |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | |
| Heavy Vehicles, % | 4 | 4 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | |
| Mvmt Flow | 0 | 278 | 136 | 112 | 433 | 0 | 0 | 0 | 0 | 330 | 1 | 268 | |

| Major/Minor N | Major1 | | N | Major2 | | | | Minor2 | | | | |
|------------------------|--------|--------|---------|--------|-----|--------|--------------------|------------|-------|----------|------------|--|
| Conflicting Flow All | - | 0 | 0 | 414 | 0 | 0 | | 1003 | 1071 | 433 | | |
| Stage 1 | - | - | - | - | - | - | | 657 | 657 | - | | |
| Stage 2 | - | - | - | - | - | - | | 346 | 414 | - | | |
| Critical Hdwy | - | - | - | 4.12 | - | - | | 6.41 | 6.51 | 6.21 | | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | | 5.41 | 5.51 | - | | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | | 5.41 | 5.51 | - | | |
| Follow-up Hdwy | - | - | - | 2.218 | - | - | | 3.509 | 4.009 | 3.309 | | |
| Pot Cap-1 Maneuver | 0 | - | - | 1145 | - | 0 | | ~ 270 | 222 | 625 | | |
| Stage 1 | 0 | - | - | - | - | 0 | | 518 | 463 | - | | |
| Stage 2 | 0 | - | - | - | - | 0 | | 719 | 595 | - | | |
| Platoon blocked, % | | - | - | | - | | | | | | | |
| Mov Cap-1 Maneuver | - | - | - | 1145 | - | - | | ~ 244 | 0 | 625 | | |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | | ~ 244 | 0 | - | | |
| Stage 1 | - | - | - | - | - | - | | 518 | 0 | - | | |
| Stage 2 | - | - | - | - | - | - | | 649 | 0 | - | | |
| | | | | | | | | | | | | |
| Approach | EB | | | WB | | | | SB | | | | |
| HCM Control Delay, s | 0 | | | 1.7 | | | | 129.6 | | | | |
| HCM LOS | - | | | | | | | F | | | | |
| | | | | | | | | | | | | |
| Minor Long/Major Mum | .4 | ГОТ | | | | | | | | | | |
| | IL | EDI | EDK | VVDL | VDI | | SBLIIZ | | | | | |
| Capacity (veh/h) | | - | - | 1145 | - | 244 | 625 | | | | | |
| HCM Lane V/C Ratio | | - | - | 0.098 | - | 1.354 | 0.432 | | | | | |
| HCM Control Delay (s) | | - | - | 8.5 | - | 223.1 | 15.1 | | | | | |
| HCM Lane LOS | | - | - | A | - | | C | | | | | |
| HCIM 95th %tile Q(veh) | | - | - | 0.3 | - | 17.8 | 2.2 | | | | | |
| Notes | | | | | | | | | | | | |
| ~: Volume exceeds cap | pacity | \$: De | lay exc | eeds 3 | 00s | +: Com | putation Not Defin | ned *: All | major | volume i | in platoon | |

| Intersection | | | | | | | | | | | | |
|------------------------|-------|------|------|------|----------|------|------|----------|------|------|-------|------|
| Int Delay, s/veh | 5.8 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ľ | 1 | | | el el | | ľ | el el | | | | |
| Traffic Vol, veh/h | 98 | 364 | 0 | 0 | 337 | 302 | 77 | 3 | 92 | 0 | 0 | 0 |
| Future Vol, veh/h | 98 | 364 | 0 | 0 | 337 | 302 | 77 | 3 | 92 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 250 | - | - | - | - | - | 50 | - | - | - | - | - |
| Veh in Median Storage | , # - | 0 | - | - | 0 | - | - | 0 | - | - | 16965 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 2 | 2 | 2 |
| Mvmt Flow | 124 | 461 | 0 | 0 | 427 | 382 | 97 | 4 | 116 | 0 | 0 | 0 |
| | | | | | | | | | | | | |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | |
|----------------------|--------|-------|-------|--------|-----|-----|--------|------|-----|--|
| Conflicting Flow All | 809 | 0 | - | - | - | 0 | 1327 | 1518 | 461 | |
| Stage 1 | - | · - | - | - | - | - | 709 | 709 | - | |
| Stage 2 | - | · - | - | - | - | - | 618 | 809 | - | |
| Critical Hdwy | 4.12 | - | - | - | - | - | 6.4 | 6.5 | 6.2 | |
| Critical Hdwy Stg 1 | - | | - | - | - | - | 5.4 | 5.5 | - | |
| Critical Hdwy Stg 2 | - | · - | - | - | - | - | 5.4 | 5.5 | - | |
| Follow-up Hdwy | 2.218 | - | - | - | - | - | 3.5 | 4 | 3.3 | |
| Pot Cap-1 Maneuver | 817 | - | 0 | 0 | - | - | 173 | 120 | 605 | |
| Stage 1 | - | | 0 | 0 | - | - | 491 | 440 | - | |
| Stage 2 | - | · - | 0 | 0 | - | - | 542 | 396 | - | |
| Platoon blocked, % | | - | | | - | - | | | | |
| Mov Cap-1 Maneuver | 817 | - | - | - | - | - | 147 | 0 | 605 | |
| Mov Cap-2 Maneuver | - | | - | - | - | - | 147 | 0 | - | |
| Stage 1 | - | · - | - | - | - | - | 416 | 0 | - | |
| Stage 2 | - | · - | - | - | - | - | 542 | 0 | - | |
| | | | | | | | | | | |
| Approach | EB | | | WB | | | NB | | | |
| HCM Control Delay, s | 2.2 | | | 0 | | | 37.2 | | | |
| HCM LOS | | | | | | | E | | | |
| | | | | | | | | | | |
| Minor Lane/Major Mvn | nt | NBLn1 | NBLn2 | EBL | EBT | WBT | WBR | | | |
| Capacity (veh/h) | | 147 | 605 | 817 | - | - | - | | | |
| HCM Lane V/C Ratio | | 0.663 | 0.199 | 0.152 | - | - | - | | | |
| HCM Control Delay (s |) | 67.9 | 12.4 | 10.2 | - | - | - | | | |
| HCM Lane LOS | | F | В | В | - | - | - | | | |
| HCM 95th %tile Q(veh | ı) | 3.7 | 0.7 | 0.5 | - | - | - | | | |

| | - | \mathbf{F} | 4 | - | 1 | 1 |
|------------------------------|------|--|------|------|------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | • | 1 | 5 | • | ሻ | 1 |
| Traffic Volume (veh/h) | 170 | 286 | 53 | 304 | 335 | 17 |
| Future Volume (veh/h) | 170 | 286 | 53 | 304 | 335 | 17 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1885 | 1885 | 1870 | 1870 | 1885 | 1885 |
| Adj Flow Rate, veh/h | 230 | 0 | 72 | 411 | 453 | 0 |
| Peak Hour Factor | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |
| Percent Heavy Veh, % | 1 | 1 | 2 | 2 | 1 | 1 |
| Cap, veh/h | 503 | | 198 | 810 | 778 | |
| Arrive On Green | 0.27 | 0.00 | 0.11 | 0.43 | 0.43 | 0.00 |
| Sat Flow, veh/h | 1885 | 1598 | 1781 | 1870 | 1795 | 1598 |
| Grp Volume(v). veh/h | 230 | 0 | 72 | 411 | 453 | 0 |
| Grp Sat Flow(s).veh/h/ln | 1885 | 1598 | 1781 | 1870 | 1795 | 1598 |
| Q Serve(g s), s | 9.2 | 0.0 | 3.4 | 14.4 | 17.2 | 0.0 |
| Cycle Q Clear(a c). s | 9.2 | 0.0 | 3.4 | 14.4 | 17.2 | 0.0 |
| Prop In Lane | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Lane Grp Cap(c), veh/h | 503 | | 198 | 810 | 778 | |
| V/C Ratio(X) | 0.46 | | 0.36 | 0.51 | 0.58 | |
| Avail Cap(c a), veh/h | 503 | | 198 | 810 | 778 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 27.6 | 0.0 | 37.1 | 18.5 | 19.3 | 0.0 |
| Incr Delay (d2), s/veh | 3.0 | 0.0 | 5.1 | 2.3 | 3.2 | 0.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%).veh/ln | 4.4 | 0.0 | 1.7 | 6.3 | 7.2 | 0.0 |
| Unsig. Movement Delay, s/veh | 1 | | | | | |
| LnGrp Delay(d).s/veh | 30.5 | 0.0 | 42.2 | 20.8 | 22.5 | 0.0 |
| LnGrp LOS | С | | D | С | С | |
| Approach Vol. veh/h | 230 | А | _ | 483 | 453 | А |
| Approach Delay s/veh | 30.5 | <i>,</i> , , , , , , , , , , , , , , , , , , | | 24.0 | 22.5 | |
| Approach LOS | C | | | C | C | |
| | Ŭ | | | | - | |
| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 |
| Phs Duration (G+Y+Rc), s | | 45.0 | | 45.0 | 15.0 | 30.0 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 5.0 | 6.0 |
| Max Green Setting (Gmax), s | | 39.0 | | 39.0 | 10.0 | 24.0 |
| Max Q Clear Time (g_c+l1), s | | 16.4 | | 19.2 | 5.4 | 11.2 |
| Green Ext Time (p_c), s | | 5.9 | | 1.8 | 0.0 | 2.1 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 24.7 | | | |
| HCM 6th LOS | | | С | | | |

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

| | ۶ | \mathbf{r} | 1 | 1 | Ŧ | < | | | |
|----------------------------------|---------|--------------|-------|-------|-----------|----------------|----|------|--|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR | | | |
| Lane Configurations | | 1 | ሻሻ | ** | ** | 1 | | | |
| Traffic Volume (vph) | 0 | 183 | 124 | 1292 | 1053 | 8 | | | |
| Future Volume (vph) | 0 | 183 | 124 | 1292 | 1053 | 8 | | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | | |
| Total Lost time (s) | | 4.0 | 6.0 | 4.0 | 7.0 | 7.0 | | | |
| Lane Util. Factor | | 1.00 | 0.97 | 0.95 | 0.95 | 1.00 | | | |
| Frt | | 0.86 | 1.00 | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | | 1536 | 3303 | 3406 | 3085 | 1380 | | | |
| Flt Permitted | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | | 1536 | 3303 | 3406 | 3085 | 1380 | | | |
| Peak-hour factor, PHF | 0.92 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | | | |
| Adj. Flow (vph) | 0 | 218 | 148 | 1538 | 1254 | 10 | | | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 2 | | | |
| Lane Group Flow (vph) | 0 | 218 | 148 | 1538 | 1254 | 8 | | | |
| Heavy Vehicles (%) | 2% | 7% | 6% | 6% | 17% | 17% | | | |
| Turn Type | | Free | Prot | NA | NA | Perm | | | |
| Protected Phases | | | 1 | Free | 2 | | | | |
| Permitted Phases | | Free | | | | 2 | | | |
| Actuated Green, G (s) | | 100.0 | 10.0 | 100.0 | 77.0 | 77.0 | | | |
| Effective Green, g (s) | | 100.0 | 10.0 | 100.0 | 77.0 | 77.0 | | | |
| Actuated g/C Ratio | | 1.00 | 0.10 | 1.00 | 0.77 | 0.77 | | | |
| Clearance Time (s) | | | 6.0 | | 7.0 | 7.0 | | | |
| Vehicle Extension (s) | | | 3.0 | | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | | 1536 | 330 | 3406 | 2375 | 1062 | | | |
| v/s Ratio Prot | | | 0.04 | 0.45 | c0.41 | | | | |
| v/s Ratio Perm | | 0.14 | | | | 0.01 | | | |
| v/c Ratio | | 0.14 | 0.45 | 0.45 | 0.53 | 0.01 | | | |
| Uniform Delay, d1 | | 0.0 | 42.4 | 0.0 | 4.5 | 2.7 | | | |
| Progression Factor | | 1.00 | 0.61 | 1.00 | 0.06 | 0.01 | | | |
| Incremental Delay, d2 | | 0.2 | 0.9 | 0.4 | 0.6 | 0.0 | | | |
| Delay (s) | | 0.2 | 26.8 | 0.4 | 0.8 | 0.0 | | | |
| Level of Service | | Α | С | Α | Α | А | | | |
| Approach Delay (s) | 0.2 | | | 2.7 | 0.8 | | | | |
| Approach LOS | А | | | А | А | | | | |
| Intersection Summary | | | | | | | | | |
| HCM 2000 Control Delay | | | 1.8 | H | CM 2000 | Level of Servi | се | A | |
| HCM 2000 Volume to Capacity | y ratio | | 0.55 | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | S | um of los | t time (s) | | 13.0 | |
| Intersection Capacity Utilizatio | n | | 46.6% | IC | U Level | of Service | | А | |
| Analysis Period (min) | | | 15 | | | | | | |
| c Critical Lane Group | | | | | | | | | |

| | ٦ | - | $\mathbf{\hat{z}}$ | 4 | + | * | 1 | 1 | ۲ | 1 | ŧ | - |
|-----------------------------------|-------------|-------|--------------------|------|------------|------------|---------|-------|------|------|-------|-------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | 5 | | 1 | | | | 5 | ĥ | | | • | 1 |
| Traffic Volume (vph) | 109 | 0 | 286 | 0 | 0 | 0 | 544 | 872 | 0 | 0 | 1065 | 207 |
| Future Volume (vph) | 109 | 0 | 286 | 0 | 0 | 0 | 544 | 872 | 0 | 0 | 1065 | 207 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 6.5 | | 6.5 | | | | 6.5 | 6.5 | | | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | | 0.85 | | | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | | 1.00 | | | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1626 | | 1358 | | | | 1687 | 1776 | | | 1529 | 1392 |
| Flt Permitted | 0.95 | | 1.00 | | | | 0.03 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1626 | | 1358 | | | | 54 | 1776 | | | 1529 | 1392 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 128 | 0 | 336 | 0 | 0 | 0 | 640 | 1026 | 0 | 0 | 1253 | 244 |
| RTOR Reduction (vph) | 0 | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| Lane Group Flow (vph) | 128 | 0 | 292 | 0 | 0 | 0 | 640 | 1026 | 0 | 0 | 1253 | 229 |
| Heavy Vehicles (%) | 11% | 11% | 11% | 0% | 0% | 0% | 7% | 7% | 7% | 16% | 16% | 16% |
| Turn Type | Prot | | pt+ov | | | | pm+pt | NA | | | NA | pm+ov |
| Protected Phases | 4 | | 14 | | | | 1 | 16 | | | 2 | 4 |
| Permitted Phases | | | 4 | | | | 16 | | | | | 2 |
| Actuated Green, G (s) | 12.5 | | 70.5 | | | | 184.0 | 184.0 | | | 126.0 | 138.5 |
| Effective Green, g (s) | 12.5 | | 70.5 | | | | 184.0 | 184.0 | | | 126.0 | 138.5 |
| Actuated g/C Ratio | 0.06 | | 0.34 | | | | 0.88 | 0.88 | | | 0.60 | 0.66 |
| Clearance Time (s) | 6.5 | | | | | | 6.5 | | | | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.5 | | | | | | 3.0 | | | | 6.0 | 3.5 |
| Lane Grp Cap (vph) | 97 | | 456 | | | | 448 | 1559 | | | 919 | 963 |
| v/s Ratio Prot | c0.08 | | 0.21 | | | | c0.35 | 0.58 | | | 0.82 | 0.01 |
| v/s Ratio Perm | | | | | | | c0.91 | | | | | 0.15 |
| v/c Ratio | 1.32 | | 0.64 | | | | 1.43 | 0.66 | | | 1.36 | 0.24 |
| Uniform Delay, d1 | 98.5 | | 58.8 | | | | 74.6 | 3.7 | | | 41.8 | 14.3 |
| Progression Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 199.1 | | 2.9 | | | | 205.4 | 1.0 | | | 170.6 | 0.2 |
| Delay (s) | 297.6 | | 61.7 | | | | 280.0 | 4.7 | | | 212.3 | 14.4 |
| Level of Service | F | | E | | | | F | А | | | F | В |
| Approach Delay (s) | | 126.8 | | | 0.0 | | | 110.5 | | | 180.1 | |
| Approach LOS | | F | | | А | | | F | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 141.3 | Н | CM 2000 | Level of | Service | | F | | | |
| HCM 2000 Volume to Capa | acity ratio | | 1.45 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 209.5 | S | um of lost | time (s) | | | 19.5 | | | |
| Intersection Capacity Utilization | ation | | 106.4% | IC | CU Level o | of Service | 9 | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

| | ≯ | \mathbf{F} | 1 | 1 | Ŧ | - |
|------------------------------|-----------|--------------|----------|----------|----------|----------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ካካ | 1 | | *** | ** | |
| Traffic Volume (veh/h) | 137 | 1108 | 0 | 1785 | 1457 | 0 |
| Future Volume (veh/h) | 137 | 1108 | 0 | 1785 | 1457 | 0 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1796 | 1796 | 0 | 1781 | 1826 | 0 |
| Adj Flow Rate, veh/h | 151 | 0 | 0 | 1962 | 1601 | 0 |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Percent Heavy Veh, % | 7 | 7 | 0 | 8 | 5 | 0 |
| Cap, veh/h | 217 | | 0 | 3961 | 2826 | 0 |
| Arrive On Green | 0.07 | 0.00 | 0.00 | 0.81 | 0.81 | 0.00 |
| Sat Flow, veh/h | 3319 | 1522 | 0 | 5184 | 3652 | 0 |
| Grp Volume(v), veh/h | 151 | 0 | 0 | 1962 | 1601 | 0 |
| Grp Sat Flow(s).veh/h/ln | 1659 | 1522 | 0 | 1621 | 1735 | 0 |
| Q Serve(q s), s | 4.5 | 0.0 | 0.0 | 12.5 | 15.9 | 0.0 |
| Cycle Q Clear(a c), s | 4.5 | 0.0 | 0.0 | 12.5 | 15.9 | 0.0 |
| Prop In Lane | 1.00 | 1.00 | 0.00 | | | 0.00 |
| Lane Grp Cap(c), veh/h | 217 | | 0 | 3961 | 2826 | 0 |
| V/C Ratio(X) | 0.69 | | 0.00 | 0.50 | 0.57 | 0.00 |
| Avail Cap(c, a), veh/h | 398 | | 0 | 3961 | 2826 | 0 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 45.7 | 0.0 | 0.0 | 2.9 | 3.2 | 0.0 |
| Incr Delay (d2) s/veh | 4 0 | 0.0 | 0.0 | 0.4 | 0.8 | 0.0 |
| Initial Q Delav(d3).s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%) veh/ln | 1.9 | 0.0 | 0.0 | 22 | 3.0 | 0.0 |
| Unsig Movement Delay s/ve | h | 0.0 | 0.0 | | 0.0 | 0.0 |
| InGrn Delay(d) s/veh | 49 7 | 0.0 | 0.0 | 33 | 40 | 0.0 |
| | D | 0.0 | 0.0 A | 0.0 A | Α | 0.0 A |
| Approach Vol. veh/h | 151 | Δ | | 1962 | 1601 | |
| Approach Delay, s/yeb | /0.7 | Л | | 3.3 | 4.0 | |
| Approach LOS | 49.7 D | | | Δ | 4.0 Δ | |
| | U | | | A | A | |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), s | | 87.5 | | 12.5 | | 87.5 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 76.0 | | 12.0 | | 76.0 |
| Max Q Clear Time (g_c+I1), s | ; | 17.9 | | 6.5 | | 14.5 |
| Green Ext Time (p_c), s | | 37.5 | | 0.2 | | 46.5 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 5.5 | | | |
| HCM 6th LOS | | | Δ | | | |
| | | | ~ | | | |

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

| | ≮ | * | Ť | 1 | 1 | Ŧ |
|---------------------------|----------|------|-----------|------|------|-----------|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ካካ | 11 | 441 | | | *** |
| Traffic Volume (veh/h) | 656 | 602 | 935 | 0 | 0 | 1546 |
| Future Volume (veh/h) | 656 | 602 | 935 | 0 | 0 | 1546 |
| Initial Q (Qb), veh | 0 | 0 | 0 | Ō | 0 | 0 |
| Ped-Bike Adi(A pbT) | 1.00 | 1.00 | • | 1.00 | 1.00 | v |
| Parking Bus Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Annroac | ch No | | No | | | No |
| Adi Sat Flow, veh/h/ln | 1722 | 1722 | 1767 | 0 | 0 | 1841 |
| Adi Flow Rate veh/h | 713 | 654 | 1016 | 0 | 0 | 1680 |
| Peak Hour Factor | 0 92 | 0.92 | 0 92 | 0 92 | 0 92 | 0 92 |
| Percent Heavy Veh % | 12 | 12 | 0.52 | 0.52 | 0.52 | 0.5Z |
| Cap yoh/h | 071 | 70/ | 9 2724 | 0 | 0 | 4 ၁၀၁၀ |
| Cap, ven/n | 9/1 | 104 | 2124 | 0.00 | 0 00 | 2030 |
| Arrive On Green | 0.31 | 0.31 | 0.50 | 0.00 | 0.00 | 0.56 |
| Sat Flow, veh/h | 3182 | 2569 | 5141 | 0 | 0 | 5356 |
| Grp Volume(v), veh/h | 713 | 654 | 1016 | 0 | 0 | 1680 |
| Grp Sat Flow(s),veh/h/li | n1591 | 1284 | 1608 | 0 | 0 | 1675 |
| Q Serve(g_s), s | 20.1 | 23.7 | 11.6 | 0.0 | 0.0 | 21.9 |
| Cycle Q Clear(g_c), s | 20.1 | 23.7 | 11.6 | 0.0 | 0.0 | 21.9 |
| Prop In Lane | 1.00 | 1.00 | | 0.00 | 0.00 | |
| Lane Grp Cap(c), veh/h | 971 | 784 | 2724 | 0 | 0 | 2838 |
| V/C Ratio(X) | 0.73 | 0.83 | 0.37 | 0.00 | 0.00 | 0.59 |
| Avail Cap(c, a) veh/h | 1177 | 950 | 2724 | 0 | 0 | 2838 |
| HCM Platoon Ratio | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 |
| Linstream Filter(I) | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| Uniform Delay (d) shud | h 31 1 | 32 / | 12.0 | 0.00 | 0.00 | 1/1 2 |
| Inor Doloy (d2) aluch | 10 | 52.4 | 0.4 | 0.0 | 0.0 | 0.0 |
| Incl Delay (uz), s/ven | 1.9 | 0.0 | 0.4 | 0.0 | 0.0 | 0.9 |
| Initial Q Delay(d3),s/ver | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %IIe BackOfQ(50%),vel | n/In/.6 | 1.6 | 3.9 | 0.0 | 0.0 | 1.6 |
| Unsig. Movement Delay | y, s/veh | 1 | | | | |
| LnGrp Delay(d),s/veh | 33.0 | 37.9 | 12.4 | 0.0 | 0.0 | 15.1 |
| LnGrp LOS | С | D | B | A | A | B |
| Approach Vol, veh/h | 1367 | | 1016 | | | 1680 |
| Approach Delay, s/veh | 35.4 | | 12.4 | | | 15.1 |
| Approach LOS | D | | В | | | В |
| | _ | | | | | - |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc) |), s | 62.5 | | 37.5 | | 62.5 |
| Change Period (Y+Rc), | S | 6.0 | | 7.0 | | 6.0 |
| Max Green Setting (Gm | nax), s | 50.0 | | 37.0 | | 50.0 |
| Max Q Clear Time (q c | +l1), s | 23.9 | | 25.7 | | 13.6 |
| Green Ext Time (p c), s | S | 25.1 | | 4.8 | | 26.5 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Dolov | | | 21.2 | | | |
| | | | 21.3 | | | |
| HUM 6th LUS | | | C | | | |

メッシュー イイ イントレイ

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|---------------------------|----------|------|------|------|------|------|------|------------|------|------|------|------|--|
| Lane Configurations | | 4 | | | ्रभ | 1 | ሻ | *†† | 1 | - ሽ | 朴朴。 | | |
| Traffic Volume (veh/h) | 6 | 1 | 18 | 161 | 0 | 88 | 21 | 1325 | 199 | 116 | 1597 | 2 | |
| Future Volume (veh/h) | 6 | 1 | 18 | 161 | 0 | 88 | 21 | 1325 | 199 | 116 | 1597 | 2 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Ped-Bike Adj(A_pbT) | 1.00 | | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Work Zone On Approac | h | No | | | No | | | No | | | No | | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1796 | 1796 | 1796 | 1707 | 1707 | 1707 | 1826 | 1826 | 1826 | |
| Adj Flow Rate, veh/h | 6 | 1 | 19 | 173 | 0 | 95 | 23 | 1425 | 0 | 125 | 1717 | 2 | |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | |
| Percent Heavy Veh, % | 0 | 0 | 0 | 7 | 7 | 7 | 13 | 13 | 13 | 5 | 5 | 5 | |
| Cap, veh/h | 44 | 26 | 72 | 186 | 0 | 349 | 38 | 2378 | | 156 | 2964 | 3 | |
| Arrive On Green | 0.25 | 0.23 | 0.23 | 0.25 | 0.00 | 0.23 | 0.02 | 0.51 | 0.00 | 0.03 | 0.19 | 0.19 | |
| Sat Flow, veh/h | 0 | 115 | 311 | 494 | 0 | 1518 | 1626 | 4661 | 1447 | 1739 | 5142 | 6 | |
| Grp Volume(v), veh/h | 26 | 0 | 0 | 173 | 0 | 95 | 23 | 1425 | 0 | 125 | 1110 | 609 | |
| Grp Sat Flow(s),veh/h/lr | n 426 | 0 | 0 | 494 | 0 | 1518 | 1626 | 1554 | 1447 | 1739 | 1662 | 1825 | |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.1 | 1.4 | 21.6 | 0.0 | 7.1 | 30.4 | 30.4 | |
| Cycle Q Clear(g_c), s | 25.0 | 0.0 | 0.0 | 25.0 | 0.0 | 5.1 | 1.4 | 21.6 | 0.0 | 7.1 | 30.4 | 30.4 | |
| Prop In Lane | 0.23 | | 0.73 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.00 | |
| Lane Grp Cap(c), veh/h | 151 | 0 | 0 | 195 | 0 | 349 | 38 | 2378 | | 156 | 1915 | 1052 | |
| V/C Ratio(X) | 0.17 | 0.00 | 0.00 | 0.89 | 0.00 | 0.27 | 0.60 | 0.60 | | 0.80 | 0.58 | 0.58 | |
| Avail Cap(c_a), veh/h | 151 | 0 | 0 | 195 | 0 | 349 | 98 | 2378 | | 243 | 1915 | 1052 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.33 | 0.33 | 0.33 | |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.83 | 0.83 | 0.83 | |
| Uniform Delay (d), s/veh | n 31.6 | 0.0 | 0.0 | 41.8 | 0.0 | 31.6 | 48.4 | 17.3 | 0.0 | 47.6 | 29.5 | 29.5 | |
| Incr Delay (d2), s/veh | 0.5 | 0.0 | 0.0 | 34.8 | 0.0 | 0.4 | 14.1 | 1.1 | 0.0 | 8.3 | 1.1 | 1.9 | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| %ile BackOfQ(50%),veh | n/In0.5 | 0.0 | 0.0 | 6.1 | 0.0 | 1.9 | 0.7 | 7.3 | 0.0 | 3.5 | 13.6 | 15.2 | |
| Unsig. Movement Delay | , s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 32.1 | 0.0 | 0.0 | 76.6 | 0.0 | 32.0 | 62.4 | 18.4 | 0.0 | 56.0 | 30.5 | 31.4 | |
| LnGrp LOS | С | Α | Α | E | A | С | E | В | | E | С | С | |
| Approach Vol, veh/h | | 26 | | | 268 | | | 1448 | А | | 1844 | | |
| Approach Delay, s/veh | | 32.1 | | | 60.8 | | | 19.1 | | | 32.5 | | |
| Approach LOS | | С | | | E | | | В | | | С | | |
| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc) | , s7.4 | 63.6 | | 29.0 | 14.0 | 57.0 | | 29.0 | | | | | |
| Change Period (Y+Rc), | s 5.0 | 6.0 | | 6.0 | 5.0 | 6.0 | | 6.0 | | | | | |
| Max Green Setting (Gm | ax\$,.\$ | 54.0 | | 23.0 | 14.0 | 46.0 | | 23.0 | | | | | |
| Max Q Clear Time (g_c- | +113),45 | 32.4 | | 27.0 | 9.1 | 23.6 | | 27.0 | | | | | |
| Green Ext Time (p_c), s | 0.0 | 20.9 | | 0.0 | 0.1 | 20.8 | | 0.0 | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 29.2 | | | | | | | | | | |
| HCM 6th LOS | | | С | | | | | | | | | | |

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

| | ≯ | \mathbf{F} | ٩. | Ť | Ŧ | ∢_ |
|---------------------------|------------------|--------------|-------------|------|------|-------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ሻሻ | 1 | 5 | ** | ** | 1 |
| Traffic Volume (veh/h) | 387 | 236 | 186 | 1042 | 1247 | 382 |
| Future Volume (veh/h) | 387 | 236 | 186 | 1042 | 1247 | 382 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A pbT) | 1.00 | 1.00 | 1.00 | • | • | 1.00 |
| Parking Bus, Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approac | ch No | | | No | No | |
| Adi Sat Flow, veh/h/ln | 1781 | 1781 | 1678 | 1678 | 1826 | 1826 |
| Adi Flow Rate veh/h | 421 | 257 | 202 | 1133 | 1355 | 415 |
| Peak Hour Factor | 0 92 | 0.92 | 0 92 | 0.92 | 0.92 | 0 92 |
| Percent Heavy Veb % | 0.5Z | 0.5Z Q | 15 | 15 | 5 | 5 |
| Can yeh/h | 502 | 272 | 259 | 2100 | 1070 | 979 |
| Arrivo On Groon | 0.10 | 0 10 | 200 | 7122 | 0.57 | 0/0 |
| Anive On Green | U. 10 | U. 10 | 1500 | 0.09 | 0.57 | U.J/ |
| Sat Flow, ven/n | 3291 | 1510 | 1598 | 3212 | 3561 | 1547 |
| Grp Volume(v), veh/h | 421 | 257 | 202 | 1133 | 1355 | 415 |
| Grp Sat Flow(s),veh/h/l | n1646 | 1510 | 1598 | 1594 | 1735 | 1547 |
| Q Serve(g_s), s | 12.0 | 16.8 | 4.9 | 17.1 | 27.7 | 15.8 |
| Cycle Q Clear(g_c), s | 12.0 | 16.8 | 4.9 | 17.1 | 27.7 | 15.8 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | 1 592 | 272 | 258 | 2199 | 1970 | 878 |
| V/C Ratio(X) | 0.71 | 0.95 | 0.78 | 0.52 | 0.69 | 0.47 |
| Avail Cap(c, a) veh/h | 592 | 272 | 366 | 2199 | 1970 | 878 |
| HCM Platoon Ratio | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 |
| I Instream Filter/I) | 1.00 | 1.00 | 0.02 | 0.02 | 1.00 | 1.00 |
| Uniform Delay (d) alua | 1.00 h 38 G | 1.00 | 18.9 | 7 5 | 15.2 | 12.00 |
| Inor Doloy (d2) of the | 0.0011 | 40.0 | 10.0 6 E | C.1 | 10.0 | 12.0 |
| Incr Delay (d2), s/veh | 4.0 | 40.0 | 0.5 | 0.8 | 2.0 | 1.8 |
| Initial Q Delay(d3),s/vel | n 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),ve | n/In5.1 | 9.1 | 3.1 | 4.9 | 10.2 | 5.4 |
| Unsig. Movement Delay | y, s/veh | 1 | | | | |
| LnGrp Delay(d),s/veh | 42.5 | 80.5 | 25.3 | 8.3 | 17.3 | 14.6 |
| LnGrp LOS | D | F | С | Α | В | В |
| Approach Vol, veh/h | 678 | | | 1335 | 1770 | |
| Approach Delay. s/veh | 56.9 | | | 10.8 | 16.7 | |
| Approach LOS | F | | | B | В | |
| | - | | | | | |
| Timer - Assigned Phs | 1 | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc |), \$ 2.2 | 63.8 | | 24.0 | | 76.0 |
| Change Period (Y+Rc), | s 5.0 | 7.0 | | 6.0 | | 7.0 |
| Max Green Setting (Gr | na 1:4. 6 | 50.0 | | 18.0 | | 69.0 |
| Max Q Clear Time (g. c | +16.9 | 29.7 | | 18.8 | | 19.1 |
| Green Ext Time (n_c) | s 0.3 | 19.4 | | 0.0 | | 38.0 |
| | 0.0 | | | 0.0 | | 00.0 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 21.8 | | | |
| HCM 6th LOS | | | С | | | |

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | | | 4 | | | ef 👘 | | | र्च | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 20 | 0 | 10 | 0 | 1323 | 65 | 32 | 1085 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 20 | 0 | 10 | 0 | 1323 | 65 | 32 | 1085 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 4 | 4 | 4 | 13 | 13 | 13 | 6 | 6 | 6 |
| Mvmt Flow | 0 | 0 | 0 | 22 | 0 | 11 | 0 | 1487 | 73 | 36 | 1219 | 0 |

| Major/Minor | | Minor1 | | Ν | /lajor1 | | Ν | Major2 | | | |
|----------------------------|--------|---------------|-------|---------|----------|-----------|----|----------|-----------|--------|---------|
| Conflicting Flow All | | 2815 | 2815 | 1524 | - | 0 | 0 | 1560 | 0 | 0 | |
| Stage 1 | | 1524 | 1524 | - | - | - | - | - | - | - | |
| Stage 2 | | 1291 | 1291 | - | - | - | - | - | - | - | |
| Critical Hdwy | | 6.44 | 6.54 | 6.24 | - | - | - | 4.16 | - | - | |
| Critical Hdwy Stg 1 | | 5.44 | 5.54 | - | - | - | - | - | - | - | |
| Critical Hdwy Stg 2 | | 5.44 | 5.54 | - | - | - | - | - | - | - | |
| Follow-up Hdwy | | 3.536 | 4.036 | 3.336 | - | - | - | 2.254 | - | - | |
| Pot Cap-1 Maneuver | | ~ 20 | 18 | 144 | 0 | - | - | 413 | - | 0 | |
| Stage 1 | | 196 | 178 | - | 0 | - | - | - | - | 0 | |
| Stage 2 | | 255 | 232 | - | 0 | - | - | - | - | 0 | |
| Platoon blocked, % | | | | | | - | - | | - | | |
| Mov Cap-1 Maneuver | | ~ 15 | 0 | 144 | - | - | - | 413 | - | - | |
| Mov Cap-2 Maneuver | | ~ 15 | 0 | - | - | - | - | - | - | - | |
| Stage 1 | | 196 | 0 | - | - | - | - | - | - | - | |
| Stage 2 | | 186 | 0 | - | - | - | - | - | - | - | |
| | | | | | | | | | | | |
| Approach | | WB | | | NB | | | SB | | | |
| HCM Control Delay, s | | \$ 689.9 | | | 0 | | | 0.4 | | | |
| HCM LOS | | F | | | | | | | | | |
| | | | | | | | | | | | |
| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT | | | | | | | |
| Capacity (veh/h) | - | - 21 | 413 | - | | | | | | | |
| HCM Lane V/C Ratio | - | - 1.605 | 0.087 | - | | | | | | | |
| HCM Control Delay (s) | - | -\$ 689.9 | 14.5 | 0 | | | | | | | |
| HCM Lane LOS | - | - F | В | А | | | | | | | |
| HCM 95th %tile Q(veh) | - | - 4.4 | 0.3 | - | | | | | | | |
| Notes | | | | | | | | | | | |
| ~: Volume exceeds capacity | \$: De | lay exceeds 3 | 00s | +: Comp | outation | Not Defin | ed | *: All r | najor vol | ume in | platoon |

HCM 6th Signalized Intersection Summary 8: MD 201 & Powder Mill Road

| | ۶ | - | $\mathbf{\hat{z}}$ | 4 | + | • | ٠ | Ť | ۲ | 5 | Ļ | ~ |
|------------------------------|------|------|--------------------|------|------|------|------|------|------|------|-------------|----------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ۲. | • | 1 | 7 | • | 1 | ٦ | • | 1 | ٦ | ∱1 } | |
| Traffic Volume (veh/h) | 244 | 373 | 412 | 92 | 171 | 44 | 414 | 591 | 231 | 97 | 517 | 113 |
| Future Volume (veh/h) | 244 | 373 | 412 | 92 | 171 | 44 | 414 | 591 | 231 | 97 | 517 | 113 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1693 | 1693 | 1693 | 1841 | 1841 | 1841 | 1693 | 1693 | 1693 | 1826 | 1826 | 1826 |
| Adj Flow Rate, veh/h | 274 | 419 | 0 | 103 | 192 | 0 | 465 | 664 | 0 | 109 | 581 | 127 |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Percent Heavy Veh, % | 14 | 14 | 14 | 4 | 4 | 4 | 14 | 14 | 14 | 5 | 5 | 5 |
| Cap, veh/h | 371 | 524 | | 187 | 689 | | 527 | 939 | | 236 | 713 | 155 |
| Arrive On Green | 0.31 | 0.31 | 0.00 | 0.04 | 0.37 | 0.00 | 0.27 | 0.55 | 0.00 | 0.25 | 0.25 | 0.25 |
| Sat Flow, veh/h | 1078 | 1693 | 1434 | 1753 | 1841 | 1560 | 1612 | 1693 | 1434 | 753 | 2832 | 617 |
| Grp Volume(v), veh/h | 274 | 419 | 0 | 103 | 192 | 0 | 465 | 664 | 0 | 109 | 355 | 353 |
| Grp Sat Flow(s),veh/h/ln | 1078 | 1693 | 1434 | 1753 | 1841 | 1560 | 1612 | 1693 | 1434 | 753 | 1735 | 1715 |
| Q Serve(g_s), s | 36.9 | 35.2 | 0.0 | 5.5 | 11.3 | 0.0 | 34.1 | 44.5 | 0.0 | 19.6 | 29.9 | 30.0 |
| Cycle Q Clear(g_c), s | 38.2 | 35.2 | 0.0 | 5.5 | 11.3 | 0.0 | 34.1 | 44.5 | 0.0 | 19.6 | 29.9 | 30.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.36 |
| Lane Grp Cap(c), veh/h | 371 | 524 | | 187 | 689 | | 527 | 939 | | 236 | 436 | 431 |
| V/C Ratio(X) | 0.74 | 0.80 | | 0.55 | 0.28 | | 0.88 | 0.71 | | 0.46 | 0.81 | 0.82 |
| Avail Cap(c_a), veh/h | 371 | 524 | | 187 | 689 | | 527 | 939 | | 236 | 436 | 431 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 50.7 | 49.1 | 0.0 | 42.0 | 33.9 | 0.0 | 36.6 | 25.3 | 0.0 | 50.8 | 54.6 | 54.6 |
| Incr Delay (d2), s/veh | 12.4 | 12.1 | 0.0 | 11.1 | 1.0 | 0.0 | 18.8 | 4.5 | 0.0 | 6.4 | 15.3 | 15.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/In | 11.2 | 16.6 | 0.0 | 1.8 | 5.4 | 0.0 | 13.5 | 18.4 | 0.0 | 4.1 | 14.8 | 14.8 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 63.1 | 61.2 | 0.0 | 53.2 | 34.9 | 0.0 | 55.5 | 29.7 | 0.0 | 57.1 | 69.8 | 70.3 |
| LnGrp LOS | E | E | | D | С | | E | С | | E | E | <u> </u> |
| Approach Vol, veh/h | | 693 | А | | 295 | А | | 1129 | А | | 817 | |
| Approach Delay, s/veh | | 61.9 | | | 41.3 | | | 40.3 | | | 68.4 | |
| Approach LOS | | Е | | | D | | | D | | | Е | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 47.0 | 45.0 | 10.0 | 53.0 | | 92.0 | | 63.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 6.0 | 4.5 | 5.0 | | 6.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 42.5 | 39.0 | 5.5 | 48.0 | | 86.0 | | 58.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 53.3 | | | | | | | | | |
| HCM 6th LOS | | | D | | | | | | | | | |

Notes

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection

Int Delay, s/veh

| | EDI | EDT | | | MOT | | NIDI | NDT | NDD | 0.01 | ODT | 000 |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Movement | EBL | FRI | EBK | WBL | WBI | WBR | NBL | NBT | NBK | SBL | SBI | SBR |
| Lane Configurations | | - 44 | | | ्रस् | 1 | | - सी | 1 | | - 44 | |
| Traffic Vol, veh/h | 23 | 2 | 6 | 2 | 1 | 2 | 29 | 680 | 3 | 1 | 733 | 30 |
| Future Vol, veh/h | 23 | 2 | 6 | 2 | 1 | 2 | 29 | 680 | 3 | 1 | 733 | 30 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None |
| Storage Length | - | - | - | - | - | 50 | - | - | 325 | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 22 | 22 | 22 | 0 | 0 | 0 | 17 | 17 | 17 | 9 | 9 | 9 |
| Mvmt Flow | 24 | 2 | 6 | 2 | 1 | 2 | 30 | 708 | 3 | 1 | 764 | 31 |

| Major/Minor | Minor2 | | Ν | Minor1 | | | Major1 | | Ν | lajor2 | | | |
|----------------------|--------|-------|-------|--------|------|-----|--------|---|---|--------|---|---|--|
| Conflicting Flow All | 1553 | 1553 | 780 | 1554 | 1565 | 708 | 795 | 0 | 0 | 711 | 0 | 0 | |
| Stage 1 | 782 | 782 | - | 768 | 768 | - | - | - | - | - | - | - | |
| Stage 2 | 771 | 771 | - | 786 | 797 | - | - | - | - | - | - | - | |
| Critical Hdwy | 7.32 | 6.72 | 6.42 | 7.1 | 6.5 | 6.2 | 4.27 | - | - | 4.19 | - | - | |
| Critical Hdwy Stg 1 | 6.32 | 5.72 | - | 6.1 | 5.5 | - | - | - | - | - | - | - | |
| Critical Hdwy Stg 2 | 6.32 | 5.72 | - | 6.1 | 5.5 | - | - | - | - | - | - | - | |
| Follow-up Hdwy | 3.698 | 4.198 | 3.498 | 3.5 | 4 | 3.3 | 2.353 | - | - | 2.281 | - | - | |
| Pot Cap-1 Maneuver | 83 | 102 | 365 | 93 | 113 | 438 | 764 | - | - | 857 | - | - | |
| Stage 1 | 359 | 377 | - | 397 | 414 | - | - | - | - | - | - | - | |
| Stage 2 | 364 | 382 | - | 388 | 401 | - | - | - | - | - | - | - | |
| Platoon blocked, % | | | | | | | | - | - | | - | - | |
| Mov Cap-1 Maneuver | 78 | 95 | 365 | 85 | 105 | 438 | 764 | - | - | 857 | - | - | |
| Mov Cap-2 Maneuver | 78 | 95 | - | 85 | 105 | - | - | - | - | - | - | - | |
| Stage 1 | 336 | 376 | - | 371 | 387 | - | - | - | - | - | - | - | |
| Stage 2 | 338 | 357 | - | 378 | 400 | - | - | - | - | - | - | - | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| Approach | EB | WB | NB | SB | |
|----------------------|----|------|-----|----|--|
| HCM Control Delay, s | 63 | 32.9 | 0.4 | 0 | |
| HCM LOS | F | D | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR I | EBLn1V | VBLn1V | VBLn2 | SBL | SBT | SBR |
|-----------------------|------|-----|-------|--------|--------|-------|-------|-----|-----|
| Capacity (veh/h) | 764 | - | - | 93 | 91 | 438 | 857 | - | - |
| HCM Lane V/C Ratio | 0.04 | - | - | 0.347 | 0.034 | 0.005 | 0.001 | - | - |
| HCM Control Delay (s) | 9.9 | 0 | - | 63 | 46 | 13.3 | 9.2 | 0 | - |
| HCM Lane LOS | Α | А | - | F | Е | В | Α | А | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 1.4 | 0.1 | 0 | 0 | - | - |

| 45.6 |
|------|
| Е |
| |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR | |
|----------------------------|------|------|----------|------|------|------|--|
| Lane Configurations | | र्च | el el | | ¥ | | |
| Traffic Vol, veh/h | 6 | 737 | 284 | 6 | 9 | 2 | |
| Future Vol, veh/h | 6 | 737 | 284 | 6 | 9 | 2 | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 0 | 0 | |
| Mvmt Flow | 7 | 847 | 326 | 7 | 10 | 2 | |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | |
| Approach | EB | | WB | | SB | | |
| Opposing Approach | WB | | EB | | | | |
| Opposing Lanes | 1 | | 1 | | 0 | | |
| Conflicting Approach Left | SB | | | | WB | | |
| Conflicting Lanes Left | 1 | | 0 | | 1 | | |
| Conflicting Approach Right | | | SB | | EB | | |
| Conflicting Lanes Right | 0 | | 1 | | 1 | | |
| HCM Control Delay | 59.3 | | 11.7 | | 9.7 | | |
| HCM LOS | F | | В | | А | | |

| Lane | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, % | 1% | 0% | 82% |
| Vol Thru, % | 99% | 98% | 0% |
| Vol Right, % | 0% | 2% | 18% |
| Sign Control | Stop | Stop | Stop |
| Traffic Vol by Lane | 743 | 290 | 11 |
| LT Vol | 6 | 0 | 9 |
| Through Vol | 737 | 284 | 0 |
| RT Vol | 0 | 6 | 2 |
| Lane Flow Rate | 854 | 333 | 13 |
| Geometry Grp | 1 | 1 | 1 |
| Degree of Util (X) | 1.029 | 0.446 | 0.023 |
| Departure Headway (Hd) | 4.336 | 4.82 | 6.446 |
| Convergence, Y/N | Yes | Yes | Yes |
| Сар | 837 | 747 | 552 |
| Service Time | 2.357 | 2.851 | 4.523 |
| HCM Lane V/C Ratio | 1.02 | 0.446 | 0.024 |
| HCM Control Delay | 59.3 | 11.7 | 9.7 |
| HCM Lane LOS | F | В | А |
| HCM 95th-tile Q | 19.4 | 2.3 | 0.1 |

| Intersection | | | | | | |
|------------------------|-------|------|------|----------|------|------|
| Int Delay, s/veh | 0.7 | | | | | |
| - | | | | | | |
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | 4 | | | ↑ | - ሽ | |
| Traffic Vol, veh/h | 689 | 50 | 0 | 255 | 30 | 0 |
| Future Vol, veh/h | 689 | 50 | 0 | 255 | 30 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage | , # 0 | - | - | 0 | 0 | - |
| Grade, % | . 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 84 | 84 | 84 | 84 | 84 | 84 |
| Heavy Vehicles. % | 2 | 2 | 3 | 3 | 2 | 2 |
| Mymt Flow | 820 | 60 | 0 | 304 | 36 | 0 |
| | 020 | 00 | v | 001 | 00 | v |

| Major/Minor | Major1 | Major2 | Minor1 | | |
|----------------------|--------|--------|---------|---|--|
| Conflicting Flow All | 0 | 0 - | - 1154 | - | |
| Stage 1 | - | | - 850 | - | |
| Stage 2 | - | | - 304 | - | |
| Critical Hdwy | - | | - 6.42 | - | |
| Critical Hdwy Stg 1 | - | | - 5.42 | - | |
| Critical Hdwy Stg 2 | - | | - 5.42 | - | |
| Follow-up Hdwy | - | | - 3.518 | - | |
| Pot Cap-1 Maneuver | - | - 0 | - 218 | 0 | |
| Stage 1 | - | - 0 | - 419 | 0 | |
| Stage 2 | - | - 0 | - 748 | 0 | |
| Platoon blocked, % | - | - | - | | |
| Mov Cap-1 Maneuver | r - | | - 218 | - | |
| Mov Cap-2 Maneuver | r - | | - 218 | - | |
| Stage 1 | - | | - 419 | - | |
| Stage 2 | - | | - 748 | - | |
| | | | | | |
| Approach | EB | WB | NB | | |
| | | | 04.7 | | |

| HCM LOS C | HCM Control Delay, s | 0 | 0 | 24.7 | |
|-----------|----------------------|---|---|------|--|
| | HCM LOS | | | С | |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 218 | - | - | - |
| HCM Lane V/C Ratio | 0.164 | - | - | - |
| HCM Control Delay (s) | 24.7 | - | - | - |
| HCM Lane LOS | С | - | - | - |
| HCM 95th %tile Q(veh) | 0.6 | - | - | - |

| Intersection | | | | | | | |
|------------------------|------|------|------|------|------|------|---|
| Int Delay, s/veh | 52.9 | | | | | | |
| Movement | EBL | EBT | WBT | WBR | SBL | SBR | |
| Lane Configurations | ľ | • | el 👘 | | Y | | |
| Traffic Vol, veh/h | 20 | 595 | 271 | 152 | 300 | 9 | |
| Future Vol, veh/h | 20 | 595 | 271 | 152 | 300 | 9 | |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | |
| Sign Control | Free | Free | Free | Free | Stop | Stop | |
| RT Channelized | - | None | - | None | - | None | 1 |
| Storage Length | 50 | - | - | - | 0 | - | |
| Veh in Median Storage, | # - | 0 | 0 | - | 0 | - | |
| Grade, % | - | 0 | 0 | - | 0 | - | |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | |
| Heavy Vehicles, % | 2 | 2 | 4 | 4 | 2 | 2 | |
| Mvmt Flow | 22 | 647 | 295 | 165 | 326 | 10 | |

| Major/Minor | Major1 | Ν | lajor2 | Mino | or2 | | | |
|----------------------|---------|--------|---------|------------|-----------|----------------------|--------------------------------|--|
| Conflicting Flow All | 460 | 0 | - | 0 10 | 69 378 | | | |
| Stage 1 | - | - | - | - 3 | - 578 | | | |
| Stage 2 | - | - | - | - 6 | 691 - | | | |
| Critical Hdwy | 4.12 | - | - | - 6. | .42 6.22 | | | |
| Critical Hdwy Stg 1 | - | - | - | - 5. | .42 - | | | |
| Critical Hdwy Stg 2 | - | - | - | - 5. | .42 - | | | |
| Follow-up Hdwy | 2.218 | - | - | - 3.5 | 518 3.318 | | | |
| Pot Cap-1 Maneuver | 1101 | - | - | - ~2 | 45 669 | | | |
| Stage 1 | - | - | - | - 6 | - 693 | | | |
| Stage 2 | - | - | - | - 4 | 97 - | | | |
| Platoon blocked, % | | - | - | - | | | | |
| Mov Cap-1 Maneuver | 1101 | - | - | - ~2 | 40 669 | | | |
| Mov Cap-2 Maneuver | - | - | - | - ~2 | - 40 | | | |
| Stage 1 | - | - | - | - 6 | 579 - | | | |
| Stage 2 | - | - | - | - 4 | 97 - | | | |
| | | | | | | | | |
| Approach | EB | | WB | ; | SB | | | |
| HCM Control Delay, s | 0.3 | | 0 | 229 | 9.8 | | | |
| HCM LOS | | | | | F | | | |
| | | | | | | | | |
| Minor Lane/Maior Myr | nt | FBI | FBT | WBT W | BR SBI n1 | | | |
| Canacity (veh/h) | | 1101 | | | - 245 | | | |
| HCM Lane V/C Ratio | | 0.02 | _ | - | - 1371 | | | |
| HCM Control Delay (s | :) | 8.3 | _ | _ | - 229.8 | | | |
| HCM Lane LOS | ') | Δ | _ | - | - F | | | |
| HCM 95th %tile Q(vel | ר) | 0.1 | - | - | - 18.3 | | | |
| | ., | ••• | | | | | | |
| Notes | | | | | | | | |
| ~: Volume exceeds ca | apacity | \$: De | lay exc | ceeds 300s | +: Com | putation Not Defined | *: All major volume in platoon | |

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|-------|------|------|---------|------|
| Lane Configurations | | et | | ľ | • | | | | | 1 | et F | |
| Traffic Vol, veh/h | 0 | 752 | 159 | 141 | 291 | 0 | 0 | 0 | 0 | 286 | 2 | 144 |
| Future Vol, veh/h | 0 | 752 | 159 | 141 | 291 | 0 | 0 | 0 | 0 | 286 | 2 | 144 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 225 | - | - | - | - | - | 25 | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 800 | 169 | 150 | 310 | 0 | 0 | 0 | 0 | 304 | 2 | 153 |

| Major/Minor | Major1 | | 1 | Major2 | | | Minor2 | | | | |
|----------------------|--------|--------|---------|--------|------------|----------------------|----------|-------|-----------|-----------|--|
| Conflicting Flow All | - | 0 | 0 | 969 | 0 0 | | 1495 | 1579 | 310 | | |
| Stage 1 | - | - | - | - | | | 610 | 610 | - | | |
| Stage 2 | - | - | - | - | | | 885 | 969 | - | | |
| Critical Hdwy | - | - | - | 4.13 | | | 6.42 | 6.52 | 6.22 | | |
| Critical Hdwy Stg 1 | - | - | - | - | | | 5.42 | 5.52 | - | | |
| Critical Hdwy Stg 2 | - | - | - | - | | | 5.42 | 5.52 | - | | |
| Follow-up Hdwy | - | - | - | 2.227 | | | 3.518 | 4.018 | 3.318 | | |
| Pot Cap-1 Maneuver | 0 | - | - | 707 | - 0 | | ~ 135 | 109 | 730 | | |
| Stage 1 | 0 | - | - | - | - 0 | | 542 | 485 | - | | |
| Stage 2 | 0 | - | - | - | - 0 | | 403 | 332 | - | | |
| Platoon blocked, % | | - | - | | - | | | | | | |
| Mov Cap-1 Maneuver | - | - | - | 707 | | | ~ 106 | 0 | 730 | | |
| Mov Cap-2 Maneuver | - | - | - | - | | | ~ 106 | 0 | - | | |
| Stage 1 | - | - | - | - | | | 542 | 0 | - | | |
| Stage 2 | - | - | - | - | | | 318 | 0 | - | | |
| | | | | | | | | | | | |
| Approach | EB | | | WB | | | SB | | | | |
| HCM Control Delay, s | 0 | | | 3.7 | | | \$ 619.4 | | | | |
| HCM LOS | | | | | | | F | | | | |
| | | | | | | | | | | | |
| Minor Lane/Major Mvr | nt | EBT | EBR | WBL | WBT SBLn1 | SBLn2 | | | | | |
| Capacity (veh/h) | | - | - | 707 | - 106 | 730 | | | | | |
| HCM Lane V/C Ratio | | - | - | 0.212 | - 2.87 | 0.213 | | | | | |
| HCM Control Delay (s |) | - | - | 11.5 | -\$ 929.9 | 11.3 | | | | | |
| HCM Lane LOS | , | - | - | В | - F | В | | | | | |
| HCM 95th %tile Q(veh | ı) | - | - | 0.8 | - 28.8 | 0.8 | | | | | |
| Notes | | | | | | | | | | | |
| ~: Volume exceeds ca | pacity | \$: De | lay exc | eeds 3 | 00s +: Com | putation Not Defined | a *: All | major | volume ii | n platoon | |

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|----------|------|------|------|------|------|------|------|------|------|-------|------|
| Lane Configurations | <u>٦</u> | 1 | | | 12 | | ٦. | 4 | | | | |
| Traffic Vol, veh/h | 294 | 709 | 0 | 0 | 348 | 545 | 73 | 3 | 46 | 0 | 0 | 0 |
| Future Vol, veh/h | 294 | 709 | 0 | 0 | 348 | 545 | 73 | 3 | 46 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 250 | - | - | - | - | - | 50 | - | - | - | - | - |
| Veh in Median Storage | , # - | 0 | - | - | 0 | - | - | 0 | - | - | 16965 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 323 | 779 | 0 | 0 | 382 | 599 | 80 | 3 | 51 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | |
|----------------------|--------|---------|----------|----------|-----|--------|----------|---------|--------|--------------------------------|
| Conflicting Flow All | 981 | 0 | - | - | - | 0 | 2107 | 2406 | 779 | |
| Stage 1 | - | - | - | - | - | - | 1425 | 1425 | - | |
| Stage 2 | - | - | - | - | - | - | 682 | 981 | - | |
| Critical Hdwy | 4.12 | - | - | - | - | - | 6.41 | 6.51 | 6.21 | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.41 | 5.51 | - | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.41 | 5.51 | - | |
| Follow-up Hdwy | 2.218 | - | - | - | - | - | 3.509 | 4.009 | 3.309 | |
| Pot Cap-1 Maneuver | 704 | - | 0 | 0 | - | - | ~ 57 | 33 | 397 | |
| Stage 1 | - | - | 0 | 0 | - | - | 223 | 202 | - | |
| Stage 2 | - | - | 0 | 0 | - | - | 504 | 329 | - | |
| Platoon blocked, % | | - | | | - | - | | | | |
| Mov Cap-1 Maneuver | 704 | - | - | - | - | - | ~ 31 | 0 | 397 | |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 31 | 0 | - | |
| Stage 1 | - | - | - | - | - | - | 121 | 0 | - | |
| Stage 2 | - | - | - | - | - | - | 504 | 0 | - | |
| | | | | | | | | | | |
| Approach | EB | | | WB | | | NB | | | |
| HCM Control Delay, s | 4.2 | | | 0 | | ţ | 599.3 | | | |
| HCM LOS | | | | | | | F | | | |
| | | | | | | | | | | |
| Minor Lane/Major Mvn | nt | NBLn1 | NBLn2 | EBL | EBT | WBT | WBR | | | |
| Capacity (veh/h) | | 31 | 397 | 704 | - | - | - | | | |
| HCM Lane V/C Ratio | | 2.588 | 0.136 | 0.459 | - | - | - | | | |
| HCM Control Delay (s |) | 5 991.1 | 15.5 | 14.4 | - | - | - | | | |
| HCM Lane LOS | , | F | С | В | - | - | - | | | |
| HCM 95th %tile Q(veh | ı) | 9.4 | 0.5 | 2.4 | - | - | - | | | |
| Notes | | | | | | | | | | |
| ~: Volume exceeds ca | pacity | \$: De | elay exc | ceeds 30 |)0s | +: Com | putation | n Not D | efined | *: All major volume in platoon |

| | → | \mathbf{F} | • | - | 1 | 1 |
|------------------------------|---------------|--------------|------|----------|------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | • | 1 | 5 | † | 5 | 7 |
| Traffic Volume (veh/h) | 347 | 400 | 35 | 315 | 619 | 38 |
| Future Volume (veh/h) | 347 | 400 | 35 | 315 | 619 | 38 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1856 | 1856 | 1856 | 1856 | 1885 | 1885 |
| Adj Flow Rate, veh/h | 394 | 0 | 40 | 358 | 703 | 0 |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 1 | 1 |
| Cap, veh/h | 536 | | 98 | 742 | 838 | |
| Arrive On Green | 0.29 | 0.00 | 0.06 | 0.40 | 0.47 | 0.00 |
| Sat Flow, veh/h | 1856 | 1572 | 1767 | 1856 | 1795 | 1598 |
| Grp Volume(v), veh/h | 394 | 0 | 40 | 358 | 703 | 0 |
| Grp Sat Flow(s).veh/h/ln | 1856 | 1572 | 1767 | 1856 | 1795 | 1598 |
| Q Serve(a s), s | 17.3 | 0.0 | 2.0 | 12.9 | 30.9 | 0.0 |
| Cycle Q Clear(q_c), s | 17.3 | 0.0 | 2.0 | 12.9 | 30.9 | 0.0 |
| Prop In Lane | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Lane Gro Cap(c), veh/h | 536 | | 98 | 742 | 838 | |
| V/C Ratio(X) | 0.74 | | 0.41 | 0.48 | 0.84 | |
| Avail Cap(c, a), veh/h | 536 | | 98 | 742 | 838 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d) s/yeh | 28.9 | 0.0 | 41.1 | 20.1 | 21.0 | 0.0 |
| Incr Delay (d2) s/veh | 87 | 0.0 | 12.1 | 22 | 9.9 | 0.0 |
| Initial O Delay(d3) s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfO(50%) veh/ln | 8.6 | 0.0 | 12 | 5.7 | 13.8 | 0.0 |
| Unsig Movement Delay s/veh | 0.0 | 0.0 | 1.2 | 0.7 | 10.0 | 0.0 |
| InGrn Delay(d) s/veh | 37.6 | 0.0 | 53 1 | 22.3 | 30.9 | 0.0 |
| InGrp LOS | 07.0 D | 0.0 | D | C | С.00 | 0.0 |
| Approach Vol. veh/h | 30/ | ٨ | | 308 | 703 | ٨ |
| Approach Delay, s/yeb | 37.6 | ~ | | 25 / | 30.0 | ~ |
| Approach LOS | ס. <i>ז</i> ר | | | 23.4 | 50.9 | |
| | U | | | U | U | |
| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 |
| Phs Duration (G+Y+Rc), s | | 42.0 | | 48.0 | 10.0 | 32.0 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 5.0 | 6.0 |
| Max Green Setting (Gmax), s | | 36.0 | | 42.0 | 5.0 | 26.0 |
| Max Q Clear Time (g_c+I1), s | | 14.9 | | 32.9 | 4.0 | 19.3 |
| Green Ext Time (p_c), s | | 4.8 | | 2.3 | 0.0 | 2.5 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 31.2 | | | |
| HCM 6th LOS | | | C | | | |
| HCM 6th LOS | | | С | | | |

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

| | ≯ | \mathbf{r} | • | 1 | ۰. | 4 | | | |
|----------------------------------|---------|--------------|----------|-------------|-----------|------------------|-----|---|--|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR | | | |
| Lane Configurations | | 1 | ካካ | ** | ** | 1 | | | |
| Traffic Volume (vph) | 0 | 274 | 198 | 1210 | 1438 | 10 | | | |
| Future Volume (vph) | 0 | 274 | 198 | 1210 | 1438 | 10 | | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | | |
| Total Lost time (s) | | 4.0 | 6.0 | 4.0 | 7.0 | 7.0 | | | |
| Lane Util, Factor | | 1.00 | 0.97 | 0.95 | 0.95 | 1.00 | | | |
| Frpb. ped/bikes | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Frt | | 0.86 | 1 00 | 1 00 | 1 00 | 0.85 | | | |
| Elt Protected | | 1 00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd Flow (prot) | | 1591 | 3099 | 3195 | 3406 | 1524 | | | |
| Flt Permitted | | 1 00 | 0.95 | 1 00 | 1 00 | 1.00 | | | |
| Satd Flow (perm) | | 1591 | 3099 | 3195 | 3406 | 1524 | | | |
| Peak-hour factor PHF | 0 9/ | 0.01 | 0.01 | 0.01 | 0.01 | 0.94 | | | |
| Adi Flow (vph) | 0.34 | 201 | 211 | 1287 | 1530 | 11 | | | |
| PTOP Reduction (uph) | 0 | 231 | 211 | 1207 | 1550 | 3 | | | |
| Lane Group Flow (vph) | 0 | 201 | 211 | 1287 | 1530 | 8 | | | |
| Confl Bods (#/br) | 0 | 201 | 211 | 1207 | 1550 | 0 | | | |
| Honyy Vohiolog (%) | 20/ | ا 20/ | 130/ | 130/ | 6% | 6% | | | |
| | Ζ/0 | Z /0 | Drot | 1370 NIA | 0 /0 | 0 /0 | | | |
| Turn Type | | Free | Prot | INA Free | INA 2 | Perm | | | |
| Protected Phases | | Free | I | Fiee | Z | 0 | | | |
| Actuated Crean C (a) | | 100.0 | 12.0 | 100.0 | 75.0 | Z 75.0 | | | |
| Effective Green, G (S) | | 100.0 | 12.0 | 100.0 | 75.0 | 75.0 | | | |
| Effective Green, g (s) | | 100.0 | 12.0 | 100.0 | 75.0 | 75.0 | | | |
| | | 1.00 | 0.12 | 1.00 | 0.75 | 0.75 | | | |
| Vehicle Extension (c) | | | 0.0 | | 7.0 | 7.0 | | | |
| Venicle Extension (s) | | 4504 | 3.0 | 0.405 | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | | 1591 | 3/1 | 3195 | 2554 | 1143 | | | |
| v/s Ratio Prot | | 0.40 | 0.07 | 0.40 | c0.45 | 0.04 | | | |
| v/s Ratio Perm | | 0.18 | <u> </u> | | | 0.01 | | | |
| v/c Ratio | | 0.18 | 0.57 | 0.40 | 0.60 | 0.01 | | | |
| Uniform Delay, d1 | | 0.0 | 41.6 | 0.0 | 5.7 | 3.1 | | | |
| Progression Factor | | 1.00 | 0.54 | 1.00 | 0.19 | 0.10 | | | |
| Incremental Delay, d2 | | 0.3 | 1.7 | 0.3 | 0.7 | 0.0 | | | |
| Delay (s) | | 0.3 | 24.0 | 0.3 | 1.8 | 0.3 | | | |
| Level of Service | | A | С | A | A | A | | | |
| Approach Delay (s) | 0.3 | | | 3.7 | 1.8 | | | | |
| Approach LOS | A | | | A | A | | | | |
| Intersection Summary | | | | | | | | | |
| HCM 2000 Control Delay | | | 2.5 | Н | CM 2000 | Level of Service |) | A | |
| HCM 2000 Volume to Capacity | y ratio | | 0.60 | | | | | | |
| Actuated Cycle Length (s) | - | | 100.0 | S | um of los | t time (s) | 13. | 0 | |
| Intersection Capacity Utilizatio | n | | 64.2% | IC | U Level | of Service | (| 2 | |
| Analysis Period (min) | | | 15 | | | | | | |

c Critical Lane Group

| | ≯ | → | $\mathbf{\hat{z}}$ | 4 | + | * | • | Ť | ۲ | 1 | Ļ | ~ |
|--------------------------------|------------|-------|--------------------|------|------------|------------|---------|-------|------|------|-------|-------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ۲ | | 1 | | | | 5 | ţ, | | | • | 7 |
| Traffic Volume (vph) | 276 | 0 | 612 | 0 | 0 | 0 | 427 | 1113 | 0 | 0 | 996 | 172 |
| Future Volume (vph) | 276 | 0 | 612 | 0 | 0 | 0 | 427 | 1113 | 0 | 0 | 996 | 172 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 6.5 | | 6.5 | | | | 6.5 | 6.5 | | | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | | 0.85 | | | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | | 1.00 | | | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1752 | | 1463 | | | | 1583 | 1667 | | | 1673 | 1497 |
| Flt Permitted | 0.95 | | 1.00 | | | | 0.04 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1752 | | 1463 | | | | 69 | 1667 | | | 1673 | 1497 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 297 | 0 | 658 | 0 | 0 | 0 | 459 | 1197 | 0 | 0 | 1071 | 185 |
| RTOR Reduction (vph) | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 |
| Lane Group Flow (vph) | 297 | 0 | 608 | 0 | 0 | 0 | 459 | 1197 | 0 | 0 | 1071 | 158 |
| Confl. Peds. (#/hr) | | | | | | | 1 | | | | | 1 |
| Confl. Bikes (#/hr) | | | | | | | | | | | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 0% | 0% | 0% | 14% | 14% | 14% | 6% | 6% | 6% |
| Turn Type | Prot | | pt+ov | | | | pm+pt | NA | | | NA | pm+ov |
| Protected Phases | 4 | | 14 | | | | 1 | 16 | | | 2 | 4 |
| Permitted Phases | | | 4 | | | | 16 | | | | | 2 |
| Actuated Green, G (s) | 20.5 | | 61.5 | | | | 131.0 | 131.0 | | | 90.0 | 110.5 |
| Effective Green, g (s) | 20.5 | | 61.5 | | | | 131.0 | 131.0 | | | 90.0 | 110.5 |
| Actuated g/C Ratio | 0.12 | | 0.37 | | | | 0.80 | 0.80 | | | 0.55 | 0.67 |
| Clearance Time (s) | 6.5 | | | | | | 6.5 | | | | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.5 | | | | | | 3.0 | | | | 6.0 | 3.5 |
| Lane Grp Cap (vph) | 218 | | 546 | | | | 372 | 1327 | | | 915 | 1064 |
| v/s Ratio Prot | c0.17 | | c0.42 | | | | 0.26 | 0.72 | | | 0.64 | 0.02 |
| v/s Ratio Perm | | | | | | | c0.72 | | | | | 0.09 |
| v/c Ratio | 1.36 | | 1.11 | | | | 1.23 | 0.90 | | | 1.17 | 0.15 |
| Uniform Delay, d1 | 72.0 | | 51.5 | | | | 60.5 | 12.1 | | | 37.2 | 9.8 |
| Progression Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 189.8 | | 73.5 | | | | 126.5 | 8.8 | | | 88.4 | 0.1 |
| Delay (s) | 261.8 | | 125.0 | | | | 187.0 | 20.9 | | | 125.7 | 9.9 |
| Level of Service | F | | F | | | | F | С | | | F | А |
| Approach Delay (s) | | 167.5 | | | 0.0 | | | 66.9 | | | 108.6 | |
| Approach LOS | | F | | | А | | | E | | | F | |
| | | | | | | | | | | | | _ |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 105.3 | Н | CM 2000 | Level of | Service | | F | | | |
| HCM 2000 Volume to Capac | city ratio | | 1.29 | _ | | | | | | | | |
| Actuated Cycle Length (s) | | | 164.5 | S | um of lost | t time (s) | | | 19.5 | | | |
| Intersection Capacity Utilizat | ion | | 105.5% | IC | U Level o | of Service | 9 | | G | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

| | € | * | 1 | 1 | 1 | Ŧ |
|-------------------------------------|--------|------|-------|------|------|--------------|
| Movement N | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ሻሻ | 11 | 441 | | | *** |
| Traffic Volume (veh/h) | 545 | 1050 | 684 | 0 | 0 | 1070 |
| Future Volume (veh/h) | 545 | 1050 | 684 | 0 | 0 | 1070 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A pbT) | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | No | | | No |
| Adj Sat Flow, veh/h/ln 1 | 1841 | 1841 | 1781 | 0 | 0 | 1693 |
| Adj Flow Rate, veh/h | 657 | 1265 | 824 | 0 | 0 | 1289 |
| Peak Hour Factor | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 |
| Percent Heavy Veh. % | 4 | 4 | 8 | 0 | 0 | 14 |
| Cap. veh/h 1 | 1564 | 1263 | 1994 | 0 | 0 | 1894 |
| Arrive On Green | 0.46 | 0.46 | 0.41 | 0.00 | 0.00 | 0.41 |
| Sat Flow, veh/h | 3401 | 2745 | 5184 | 0 | 0 | 4925 |
| Grn Volume(v) veh/h | 657 | 1265 | 824 | 0 | 0 | 1289 |
| Grn Sat Flow(s) yeh/h/ln1 | 1700 | 1373 | 1621 | 0 | 0 | 15/0 |
| O Serve(a, s) s | 12 0 | 1913 | 12.0 | 0.0 | 0.0 | 22 R |
| $(y \circ (y \circ (y \circ)), s)$ | 12.9 | 40.0 | 12.0 | 0.0 | 0.0 | 22.0 22.8 |
| Dron In Lanc | 12.9 | 1 00 | 12.0 | 0.0 | 0.0 | 22.0 |
| FIUP III Lalle | 1564 | 100 | 100/ | 0.00 | 0.00 | 100/ |
| Lane Gip Gap(c), ven/n I | 0.40 | 1203 | 0 44 | 0 00 | 0.00 | 0.60 |
| v/C Kall $O(\Lambda)$ | 0.42 | 1000 | U.4 I | 0.00 | 0.00 | U.00 |
| Avail Cap(c_a), ven/n 1 | 1 004 | 1203 | 1994 | 1 00 | 1.00 | 1094 |
| | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 18.1 | 27.0 | 21.0 | 0.0 | 0.0 | 24.1 |
| Incr Delay (d2), s/veh | 0.2 | 25.7 | 0.6 | 0.0 | 0.0 | 2.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ | /In4.8 | 18.1 | 4.4 | 0.0 | 0.0 | 8.1 |
| Unsig. Movement Delay, | s/veh | 1 | | | | |
| LnGrp Delay(d),s/veh | 18.3 | 52.7 | 21.6 | 0.0 | 0.0 | 26.1 |
| LnGrp LOS | В | F | С | Α | Α | С |
| Approach Vol, veh/h 1 | 1922 | | 824 | | | 1289 |
| Approach Delay, s/veh | 40.9 | | 21.6 | | | 26.1 |
| Approach LOS | D | | С | | | С |
| Timer - Assigned Pho | | 2 | | 1 | | 6 |
| The Duration (C+V+Da) | 0 | 47.0 | | 52.0 | | 47.0 |
| Change Derived (V) Do | 8 | 47.0 | | 53.0 | | 47.0 |
| Unange Period (Y+Rc), s | 5 | 6.0 | | 1.0 | | 6.0 |
| Max Green Setting (Gma | ax), s | 41.0 | | 46.0 | | 41.0 |
| Max Q Clear Time (g_c+ | 11), s | 24.8 | | 48.0 | | 14.0 |
| Green Ext Time (p_c), s | | 14.8 | | 0.0 | | 17.9 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 32.3 | | | |
| HCM 6th LOS | | | С | | | |

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| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|---------------------------|---------|------|-----------|------|------|------|------|------------|------|------|------|------|--|
| Lane Configurations | | 4 | | | ्रभ | 1 | ٦ | *†† | 1 | - ኘ | 朴朴序 | | |
| Traffic Volume (veh/h) | 1 | 0 | 3 | 127 | 1 | 83 | 38 | 1654 | 42 | 31 | 1200 | 5 | |
| Future Volume (veh/h) | 1 | 0 | 3 | 127 | 1 | 83 | 38 | 1654 | 42 | 31 | 1200 | 5 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Work Zone On Approach | h | No | | | No | | | No | | | No | | |
| Adj Sat Flow, veh/h/ln | 1159 | 1159 | 1159 | 1856 | 1856 | 1856 | 1826 | 1826 | 1826 | 1633 | 1633 | 1633 | |
| Adj Flow Rate, veh/h | 1 | 0 | 4 | 155 | 1 | 101 | 46 | 2017 | 0 | 38 | 1463 | 6 | |
| Peak Hour Factor | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | |
| Percent Heavy Veh, % | 50 | 50 | 50 | 3 | 3 | 3 | 5 | 5 | 5 | 18 | 18 | 18 | |
| Cap, veh/h | 43 | 14 | 57 | 183 | 1 | 376 | 63 | 2778 | | 51 | 2539 | 10 | |
| Arrive On Green | 0.26 | 0.00 | 0.24 | 0.26 | 0.24 | 0.24 | 0.04 | 0.56 | 0.00 | 0.01 | 0.18 | 0.18 | |
| Sat Flow, veh/h | 0 | 59 | 236 | 463 | 3 | 1569 | 1739 | 4985 | 1547 | 1555 | 4584 | 19 | |
| Grp Volume(v), veh/h | 5 | 0 | 0 | 156 | 0 | 101 | 46 | 2017 | 0 | 38 | 949 | 520 | |
| Grp Sat Flow(s),veh/h/ln | 295 | 0 | 0 | 466 | 0 | 1569 | 1739 | 1662 | 1547 | 1555 | 1486 | 1630 | |
| Q Serve(g s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.2 | 2.6 | 30.1 | 0.0 | 2.4 | 29.2 | 29.2 | |
| Cycle Q Clear(g_c), s | 26.0 | 0.0 | 0.0 | 26.0 | 0.0 | 5.2 | 2.6 | 30.1 | 0.0 | 2.4 | 29.2 | 29.2 | |
| Prop In Lane | 0.20 | | 0.80 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.01 | |
| Lane Grp Cap(c), veh/h | 120 | 0 | 0 | 193 | 0 | 376 | 63 | 2778 | | 51 | 1647 | 903 | |
| V/C Ratio(X) | 0.04 | 0.00 | 0.00 | 0.81 | 0.00 | 0.27 | 0.73 | 0.73 | | 0.75 | 0.58 | 0.58 | |
| Avail Cap(c_a), veh/h | 120 | 0 | 0 | 193 | 0 | 376 | 122 | 2778 | | 124 | 1647 | 903 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.33 | 0.33 | 0.33 | |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.88 | 0.88 | 0.88 | |
| Uniform Delay (d), s/veh | 30.5 | 0.0 | 0.0 | 40.7 | 0.0 | 30.9 | 47.7 | 16.5 | 0.0 | 49.1 | 30.1 | 30.1 | |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.0 | 22.0 | 0.0 | 0.4 | 15.1 | 1.7 | 0.0 | 17.5 | 1.3 | 2.4 | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| %ile BackOfQ(50%),veh | /Ir0.1 | 0.0 | 0.0 | 5.0 | 0.0 | 2.0 | 1.4 | 10.6 | 0.0 | 1.2 | 11.8 | 13.2 | |
| Unsig. Movement Delay | , s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 30.6 | 0.0 | 0.0 | 62.7 | 0.0 | 31.2 | 62.9 | 18.1 | 0.0 | 66.5 | 31.4 | 32.5 | |
| LnGrp LOS | С | А | А | Е | А | С | Е | В | | Е | С | С | |
| Approach Vol, veh/h | | 5 | | | 257 | | | 2063 | А | | 1507 | | |
| Approach Delay, s/veh | | 30.6 | | | 50.3 | | | 19.1 | | | 32.7 | | |
| Approach LOS | | С | | | D | | | В | | | С | | |
| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc). | . s8.6 | 61.4 | | 30.0 | 8.3 | 61.7 | | 30.0 | | | | | |
| Change Period (Y+Rc). | s 5.0 | 6.0 | | 6.0 | 5.0 | 6.0 | | 6.0 | | | | | |
| Max Green Setting (Gma | ax7.G | 52.0 | | 24.0 | 8.0 | 51.0 | | 24.0 | | | | | |
| Max Q Clear Time (g. c+ | 14.6 | 31.2 | | 28.0 | 4.4 | 32.1 | | 28.0 | | | | | |
| Green Ext Time (p_c), s | 0.0 | 19.5 | | 0.0 | 0.0 | 18.7 | | 0.0 | | | | | |
| Intersection Summarv | | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 26.6 | | | | | | | | | | |
| HCM 6th LOS | | | <u>с.</u> | | | | | | | | | | |
| HCM 6th LOS | | | С | | | | | | | | | | |

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

| | ۶ | \mathbf{F} | ٩. | 1 | Ŧ | < |
|----------------------------|-------------------------|--------------|-------------|-------------|-------|-------------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ሻሻ | 1 | 5 | ** | ** | 1 |
| Traffic Volume (veh/h) | 350 | 65 | 219 | 1395 | 996 | 350 |
| Future Volume (veh/h) | 350 | 65 | 219 | 1395 | 996 | 350 |
| Initial O (Ob) veh | 000 | 0 | 0 | 0 | 0.00 | 000 |
| Ped-Bike Adi(A nhT) | 1 00 | 1 00 | 1 00 | Ū | | 1 00 |
| Parking Bus Adi | 1.00 | 1.00 | 1.00 | 1 00 | 1 00 | 1.00 |
| Work Zone On Annroach | | 1.00 | 1.00 | No | No | 1.00 |
| Adi Sat Flow, yeh/h/lp | 1737 | 1737 | 1811 | 1811 | 1678 | 1678 |
| Adi Flow Rate veh/h | 131 | R1 | 27/ | 17// | 12/15 | 1070 |
| Peak Hour Factor | 1 20 | 0 9 0 | 214 0.90 | 0.80 | 0.90 | 430 0.90 |
| Porcont Hoovy Vah % | 11 | 0.00 | 0.00 G | 0.00 G | 0.00 | 0.00 |
| Con yoh/h | [] 510 | 11 | 240 | 0 | 1000 | CI 040 |
| Cap, ven/n | 510 | 234 | 310 | 2440 | 1022 | 012 |
| Arrive On Green | 0.16 | 0.16 | 0.09 | 0./1 | 0.57 | 0.57 |
| Sat Flow, veh/h | 3209 | 1472 | 1725 | 3532 | 3272 | 1421 |
| Grp Volume(v), veh/h | 438 | 81 | 274 | 1744 | 1245 | 438 |
| Grp Sat Flow(s), veh/h/ln | 1605 | 1472 | 1725 | 1721 | 1594 | 1421 |
| Q Serve(g_s), s | 13.3 | 4.9 | 6.4 | 29.7 | 27.5 | 19.1 |
| Cycle Q Clear(g_c), s | 13.3 | 4.9 | 6.4 | 29.7 | 27.5 | 19.1 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | 510 | 234 | 310 | 2446 | 1822 | 812 |
| V/C Ratio(X) | 0.86 | 0.35 | 0.88 | 0.71 | 0.68 | 0.54 |
| Avail Can(c, a) veh/h | 578 | 265 | 432 | 2446 | 1822 | 812 |
| HCM Platoon Ratio | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 |
| Linstream Filter/I) | 1.00 | 1.00 | 0.80 | 0.80 | 1.00 | 1.00 |
| Uniform Doloy (d) alugh | 1.00 | 27 / | 10.00 | 0.00 Q E | 1.00 | 12.00 |
| Unitoriti Delay (d), s/ven | 40.9 | J/.4 | 19.0 | 0.0 4 4 | 10.1 | 13.3 |
| incr Delay (d2), s/veh | 11.3 | 0.9 | 12.1 | 1.4 | 2.1 | 2.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %Ile BackOfQ(50%),veh/ | /115.9 | 1.8 | 4.6 | 8.8 | 9.3 | 6.0 |
| Unsig. Movement Delay, | s/veh | | | | | |
| LnGrp Delay(d),s/veh | 52.2 | 38.3 | 31.9 | 9.9 | 17.2 | 15.8 |
| LnGrp LOS | D | D | С | А | В | В |
| Approach Vol. veh/h | 519 | | | 2018 | 1683 | |
| Approach Delay, s/veh | 50.0 | | | 12.9 | 16.8 | |
| Approach LOS | D | | | B | B | |
| | 0 | | | | | |
| Timer - Assigned Phs | 1 | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), | \$ 3.9 | 64.2 | | 21.9 | | 78.1 |
| Change Period (Y+Rc), s | s 5.0 | 7.0 | | 6.0 | | 7.0 |
| Max Green Setting (Gma | a 1(6 , G | 48.0 | | 18.0 | | 69.0 |
| Max Q Clear Time (g c+ | 18.45 | 29.5 | | 15.3 | | 31.7 |
| Green Ext Time (n_c) s | 0.5 | 17.5 | | 0.6 | | 36.1 |
| | 0.0 | | | 0.0 | | |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 19.0 | | | |
| HCM 6th LOS | | | В | | | |

Intersection

| Int Delay, s/veh | 122.8 | | | | | |
|------------------------|--------|------|------|------|------|------|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Y | | ef 👘 | | | र्भ |
| Traffic Vol, veh/h | 15 | 14 | 1356 | 8 | 23 | 1258 |
| Future Vol, veh/h | 15 | 14 | 1356 | 8 | 23 | 1258 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage | e, # 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 78 | 78 | 78 | 78 | 78 | 78 |
| Heavy Vehicles, % | 20 | 20 | 9 | 9 | 17 | 17 |
| Mvmt Flow | 19 | 18 | 1738 | 10 | 29 | 1613 |

| Major/Minor | Minor1 | Minor1 Ma | | ajor1 N | | |
|-------------------------|--------|-----------|--------------------|----------|------------|-----|
| Conflicting Flow All | 3414 | 1743 | 0 | 0 | 1748 | 0 |
| Stage 1 | 1743 | - | - | - | - | - |
| Stage 2 | 1671 | - | - | - | - | - |
| Critical Hdwy | 6.6 | 6.4 | - | - | 4.27 | - |
| Critical Hdwy Stg 1 | 5.6 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.6 | - | - | - | - | - |
| Follow-up Hdwy | 3.68 | 3.48 | - | - | 2.353 | - |
| Pot Cap-1 Maneuver | ~ 7 | 97 | - | - | 323 | - |
| Stage 1 | 139 | - | - | - | - | - |
| Stage 2 | 152 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | ~ 1 | 97 | - | - | 323 | - |
| Mov Cap-2 Maneuver | · ~1 | - | - | - | - | - |
| Stage 1 | 139 | - | - | - | - | - |
| Stage 2 | 21 | - | - | - | - | - |
| | | | | | | |
| Approach | WB | | NB | | SB | |
| HCM Control Delav\$s | 1305.3 | | 0 | | 0.3 | |
| HCM LOS | F | | | | | |
| | | | | | | |
| Minor Lane/Major My | mt | NRT | | RI n 1 | SBI | SBT |
| | m | IND (| NDRW | | 3DL 202 | SDI |
| Capacity (veh/h) | | - | - | 2 | 323 | - |
| HCM Lane V/C Ratio | | - | · | 10.59 | 17.0 | - |
| HCM Control Delay (s) | | - | \$ 1 1. | 505.3 | 17.3 | 0 |
| HOW Lane LUS | L) | - | - | F C F | | A |
| HCIVI 95th %tile Q(ven) | | - | - | 0.5 | 0.3 | - |

Notes

~: Volume exceeds capacity

\$: Delay exceeds 300s +: Computation Not Defined

*: All major volume in platoon

HCM 6th Signalized Intersection Summary 8: MD 201 & Powder Mill Road

| | ≯ | - | \mathbf{F} | ¥ | ← | • | ٠ | Ť | ۲ | 5 | Ļ | ~ |
|------------------------------|------|------|--------------|-------|------|------|------|------|------|------|-------------|----------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ۲ | • | 1 | ۲ | • | 1 | ሻ | • | 1 | ۲ | 4 12 | |
| Traffic Volume (veh/h) | 57 | 178 | 550 | 187 | 149 | 41 | 409 | 517 | 444 | 60 | 544 | 78 |
| Future Volume (veh/h) | 57 | 178 | 550 | 187 | 149 | 41 | 409 | 517 | 444 | 60 | 544 | 78 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1796 | 1796 | 1796 | 1856 | 1856 | 1856 | 1796 | 1796 | 1796 | 1544 | 1544 | 1544 |
| Adj Flow Rate, veh/h | 71 | 222 | 0 | 234 | 186 | 0 | 511 | 646 | 0 | 75 | 680 | 98 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh, % | 7 | 7 | 7 | 3 | 3 | 3 | 7 | 7 | 7 | 24 | 24 | 24 |
| Cap, veh/h | 242 | 442 | | 257 | 586 | | 557 | 1098 | | 246 | 787 | 113 |
| Arrive On Green | 0.25 | 0.25 | 0.00 | 0.04 | 0.32 | 0.00 | 0.28 | 0.61 | 0.00 | 0.31 | 0.31 | 0.31 |
| Sat Flow, veh/h | 1147 | 1796 | 1522 | 1767 | 1856 | 1572 | 1711 | 1796 | 1522 | 648 | 2574 | 371 |
| Grp Volume(v), veh/h | 71 | 222 | 0 | 234 | 186 | 0 | 511 | 646 | 0 | 75 | 387 | 391 |
| Grp Sat Flow(s),veh/h/ln | 1147 | 1796 | 1522 | 1767 | 1856 | 1572 | 1711 | 1796 | 1522 | 648 | 1467 | 1478 |
| Q Serve(g_s), s | 8.2 | 16.0 | 0.0 | 3.2 | 11.5 | 0.0 | 35.7 | 32.9 | 0.0 | 13.7 | 37.5 | 37.6 |
| Cycle Q Clear(g_c), s | 19.7 | 16.0 | 0.0 | 3.2 | 11.5 | 0.0 | 35.7 | 32.9 | 0.0 | 13.7 | 37.5 | 37.6 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.25 |
| Lane Grp Cap(c), veh/h | 242 | 442 | | 257 | 586 | | 557 | 1098 | | 246 | 448 | 452 |
| V/C Ratio(X) | 0.29 | 0.50 | | 0.91 | 0.32 | | 0.92 | 0.59 | | 0.31 | 0.86 | 0.87 |
| Avail Cap(c_a), veh/h | 242 | 442 | | 257 | 586 | | 557 | 1098 | | 246 | 448 | 452 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 55.3 | 48.8 | 0.0 | 64.2 | 39.2 | 0.0 | 39.0 | 17.8 | 0.0 | 41.0 | 49.3 | 49.3 |
| Incr Delay (d2), s/veh | 3.0 | 4.0 | 0.0 | 37.1 | 1.4 | 0.0 | 22.4 | 2.3 | 0.0 | 3.2 | 19.3 | 19.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/In | 2.6 | 7.7 | 0.0 | 11.4 | 5.5 | 0.0 | 15.2 | 13.7 | 0.0 | 2.4 | 16.0 | 16.2 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 58.4 | 52.9 | 0.0 | 101.3 | 40.6 | 0.0 | 61.4 | 20.1 | 0.0 | 44.2 | 68.6 | 68.7 |
| LnGrp LOS | E | D | | F | D | | E | С | | D | E | <u> </u> |
| Approach Vol, veh/h | | 293 | А | | 420 | А | | 1157 | А | | 853 | |
| Approach Delay, s/veh | | 54.2 | | | 74.4 | | | 38.3 | | | 66.5 | |
| Approach LOS | | D | | | E | | | D | | | E | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 46.0 | 52.0 | 10.5 | 42.0 | | 98.0 | | 52.5 | | | | |
| Change Period (Y+Rc), s | 4.5 | 6.0 | 5.0 | * 5 | | 6.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 41.5 | 46.0 | 5.5 | * 37 | | 92.0 | | 47.0 | | | | |
| Max Q Clear Time (g c+l1), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 54.4 | | | | | | | | | |
| HCM 6th LOS | | | D | | | | | | | | | |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier. Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.
Intersection

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | 4 | | | र्च | 1 | | र्च | 1 | | 4 | |
| Traffic Vol, veh/h | 21 | 0 | 1 | 2 | 5 | 1 | 51 | 551 | 3 | 0 | 659 | 44 |
| Future Vol, veh/h | 21 | 0 | 1 | 2 | 5 | 1 | 51 | 551 | 3 | 0 | 659 | 44 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None |
| Storage Length | - | - | - | - | - | 50 | - | - | 325 | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 70 | 70 | 70 | 67 | 67 | 67 | 9 | 9 | 9 | 21 | 21 | 21 |
| Mvmt Flow | 22 | 0 | 1 | 2 | 5 | 1 | 54 | 580 | 3 | 0 | 694 | 46 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major | 2 | | |
|----------------------|--------|------|------|--------|-------|-------|--------|---|---|-------|-----|---|--|
| Conflicting Flow All | 1410 | 1408 | 717 | 1406 | 1428 | 580 | 740 | 0 | 0 | 58 | 30 | 0 | |
| Stage 1 | 717 | 717 | - | 688 | 688 | - | - | - | - | | | - | |
| Stage 2 | 693 | 691 | - | 718 | 740 | - | - | - | - | | | - | |
| Critical Hdwy | 7.8 | 7.2 | 6.9 | 7.77 | 7.17 | 6.87 | 4.19 | - | - | 4.3 | 1 - | - | |
| Critical Hdwy Stg 1 | 6.8 | 6.2 | - | 6.77 | 6.17 | - | - | - | - | | | - | |
| Critical Hdwy Stg 2 | 6.8 | 6.2 | - | 6.77 | 6.17 | - | - | - | - | | | - | |
| Follow-up Hdwy | 4.13 | 4.63 | 3.93 | 4.103 | 4.603 | 3.903 | 2.281 | - | - | 2.38 | 9 - | - | |
| Pot Cap-1 Maneuver | 83 | 101 | 334 | 85 | 99 | 411 | 836 | - | - | 90 | 4 - | - | |
| Stage 1 | 330 | 346 | - | 347 | 362 | - | - | - | - | | | - | |
| Stage 2 | 341 | 357 | - | 333 | 340 | - | - | - | - | | | - | |
| Platoon blocked, % | | | | | | | | - | - | | - | - | |
| Mov Cap-1 Maneuver | 73 | 91 | 334 | 79 | 89 | 411 | 836 | - | - | 90 | 4 - | - | |
| Mov Cap-2 Maneuver | 73 | 91 | - | 79 | 89 | - | - | - | - | | | - | |
| Stage 1 | 298 | 346 | - | 314 | 327 | - | - | - | - | | | - | |
| Stage 2 | 303 | 323 | - | 332 | 340 | - | - | - | - | | | - | |
| | | | | | | | | | | | | | |

| Approach | EB | WB | NB | SB | |
|----------------------|------|------|-----|----|--|
| HCM Control Delay, s | 71.9 | 46.1 | 0.8 | 0 | |
| HCM LOS | F | E | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1V | VBLn1V | VBLn2 | SBL | SBT | SBR | |
|-----------------------|-------|-----|-----|--------|--------|-------|-----|-----|-----|--|
| Capacity (veh/h) | 836 | - | - | 76 | 86 | 411 | 904 | - | - | |
| HCM Lane V/C Ratio | 0.064 | - | - | 0.305 | 0.086 | 0.003 | - | - | - | |
| HCM Control Delay (s) | 9.6 | 0 | - | 71.9 | 50.7 | 13.8 | 0 | - | - | |
| HCM Lane LOS | А | А | - | F | F | В | А | - | - | |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 1.1 | 0.3 | 0 | 0 | - | - | |

| Intersection | | |
|---------------------------|------|--|
| Intersection Delay, s/veh | 74.6 | |
| Intersection LOS | F | |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR | |
|----------------------------|------|------|------|------|------|------|--|
| Lane Configurations | | ÷ | eî 🗧 | | ¥ | | |
| Traffic Vol, veh/h | 487 | 170 | 381 | 365 | 0 | 0 | |
| Future Vol, veh/h | 487 | 170 | 381 | 365 | 0 | 0 | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | |
| Heavy Vehicles, % | 6 | 6 | 2 | 2 | 2 | 2 | |
| Mvmt Flow | 573 | 200 | 448 | 429 | 0 | 0 | |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | |
| Approach | EB | | WB | | SB | | |
| Opposing Approach | WB | | EB | | | | |
| Opposing Lanes | 1 | | 1 | | 0 | | |
| Conflicting Approach Left | SB | | | | WB | | |
| Conflicting Lanes Left | 1 | | 0 | | 1 | | |
| Conflicting Approach Right | | | SB | | EB | | |
| Conflicting Lanes Right | 0 | | 1 | | 1 | | |
| HCM Control Delay | 72.8 | | 76.1 | | 0 | | |
| HCM LOS | F | | F | | - | | |

| Lane | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, % | 74% | 0% | 0% |
| Vol Thru, % | 26% | 51% | 100% |
| Vol Right, % | 0% | 49% | 0% |
| Sign Control | Stop | Stop | Stop |
| Traffic Vol by Lane | 657 | 746 | 0 |
| LT Vol | 487 | 0 | 0 |
| Through Vol | 170 | 381 | 0 |
| RT Vol | 0 | 365 | 0 |
| Lane Flow Rate | 773 | 878 | 0 |
| Geometry Grp | 1 | 1 | 1 |
| Degree of Util (X) | 1.061 | 1.081 | 0 |
| Departure Headway (Hd) | 5.052 | 4.434 | 7.334 |
| Convergence, Y/N | Yes | Yes | Yes |
| Сар | 727 | 807 | 0 |
| Service Time | 3.052 | 2.521 | 5.334 |
| HCM Lane V/C Ratio | 1.063 | 1.088 | 0 |
| HCM Control Delay | 72.8 | 76.1 | 10.3 |
| HCM Lane LOS | F | F | Ν |
| HCM 95th-tile Q | 19.8 | 22.4 | 0 |

| Intersection | | | | | | |
|------------------------|------|------|------|------|------|------|
| Int Delay, s/veh | 0.4 | | | | | |
| | | | ~ | | | |
| Movement | NBL | NBR | SET | SER | NWL | NWI |
| Lane Configurations | - ሽ | | 4 | | | ↑ |
| Traffic Vol, veh/h | 16 | 0 | 161 | 9 | 0 | 731 |
| Future Vol, veh/h | 16 | 0 | 161 | 9 | 0 | 731 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage | ,# 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 74 | 74 | 74 | 74 | 74 | 74 |
| Heavy Vehicles, % | 2 | 2 | 4 | 4 | 2 | 2 |
| Mvmt Flow | 22 | 0 | 218 | 12 | 0 | 988 |

| Major/Minor | Minor1 | Maj | or1 | Maj | or2 | |
|----------------------|--------|-----|-----|-----|-----|---|
| Conflicting Flow All | 1212 | - | 0 | 0 | - | - |
| Stage 1 | 224 | - | - | - | - | - |
| Stage 2 | 988 | - | - | - | - | - |
| Critical Hdwy | 6.42 | - | - | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | - | - | - | - | - |
| Pot Cap-1 Maneuver | 201 | 0 | - | - | 0 | - |
| Stage 1 | 813 | 0 | - | - | 0 | - |
| Stage 2 | 361 | 0 | - | - | 0 | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | r 201 | - | - | - | - | - |
| Mov Cap-2 Maneuver | r 201 | - | - | - | - | - |
| Stage 1 | 813 | - | - | - | - | - |
| Stage 2 | 361 | - | - | - | - | - |
| | | | | | | |

| Approach | NB | SE | NW |
|----------------------|------|----|----|
| HCM Control Delay, s | 25.1 | 0 | 0 |
| HCM LOS | D | | |

| Vinor Lane/Major Mvmt | NBLn1 | NWT | SET | SER |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 201 | - | - | - |
| HCM Lane V/C Ratio | 0.108 | - | - | - |
| HCM Control Delay (s) | 25.1 | - | - | - |
| HCM Lane LOS | D | - | - | - |
| HCM 95th %tile Q(veh) | 0.4 | - | - | - |

| ntersection | | | | | | |
|-----------------------|----------|--------|----------|---------|---------|---------|
| Int Delay, s/veh | 23.1 | | | | | |
| Movement | FBI | FRT | WRT | WRR | SBI | SBR |
| Lane Configurations | <u> </u> | | | | M | |
| Traffic Vol. veh/h | 5 | 178 | 742 | 157 | 136 | 19 |
| Future Vol. veh/h | 5 | 178 | 742 | 157 | 136 | 19 |
| Conflicting Peds #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Ston | Stop |
| RT Channelized | - | None | - | None | 0.00 | None |
| Storage Length | 50 | - | _ | - | 0 | - |
| Veh in Median Storage | <u> </u> | 0 | 0 | _ | 0 | _ |
| Crade % | 5, # - | 0 | 0 | - | 0 | _ |
| Brade, 70 | - 75 | 75 | 75 | - 75 | 75 | - |
| | 15 | 15 | 10 | 10 | 15 | 75 |
| neavy venicies, % | 0 | 0 | 000 | 000 | 2 | 2 |
| IVIVITITE FIOW | 1 | 237 | 969 | 209 | 101 | 25 |
| | | | | | | |
| Major/Minor | Major1 | ſ | Major2 | l | Minor2 | |
| Conflicting Flow All | 1198 | 0 | - | 0 | 1345 | 1094 |
| Stage 1 | - | - | - | - | 1094 | - |
| Stage 2 | - | - | - | - | 251 | - |
| Critical Hdwy | 4 16 | _ | - | - | 6.42 | 6 22 |
| Critical Hdwy Stg 1 | 4.10 | | | | 5.42 | 0.22 |
| Critical Hdwy Stg 7 | | | - | - | 5.42 | - |
| | 2 254 | _ | - | - | 2 5 1 0 | 2 2 1 0 |
| Pollow-up nuwy | 2.204 | - | - | - | 3.310 | 3.310 |
| Pot Cap-1 Maneuver | 209 | - | - | - | ~ 107 | 260 |
| Stage 1 | - | - | - | - | 321 | - |
| Stage 2 | - | - | - | - | 791 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 569 | - | - | - | ~ 165 | 260 |
| Mov Cap-2 Maneuver | - | - | - | - | ~ 165 | - |
| Stage 1 | - | - | - | - | 317 | - |
| Stage 2 | - | - | - | - | 791 | - |
| | | | | | | |
| Approach | ED | | \\/D | | CD | |
| | | | | | | |
| HCM Control Delay, s | 0.3 | | 0 | | 184.1 | |
| HCM LOS | | | | | F | |
| | | | | | | |
| Minor Lane/Major Myn | nt | FBI | FBT | WRT | WBR | SBI n1 |
| Capacity (yoh/h) | | 560 | | 1101 | | 173 |
| | | 0.010 | - | - | - | 1 1 0 5 |
| HCM Cantral Dalay (a) | | 0.012 | - | - | - | 1.195 |
| HCM Control Delay (s) |) | 11.4 | - | - | - | 104.1 |
| HOM Lane LUS | 、 | В | - | - | - | F |
| HCIM 95th %tile Q(ven |) | 0 | - | - | - | 11.2 |
| Notes | | | | | | |
| ~: Volume exceeds ca | pacity | \$: De | elay exc | ceeds 3 | 00s | +: Com |

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | 4 | | ٦ | Ť | | | | | ۲ | 4 | |
| Traffic Vol, veh/h | 0 | 211 | 103 | 85 | 626 | 0 | 0 | 0 | 0 | 251 | 1 | 272 |
| Future Vol, veh/h | 0 | 211 | 103 | 85 | 626 | 0 | 0 | 0 | 0 | 251 | 1 | 272 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 225 | - | - | - | - | - | 25 | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, % | 4 | 4 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 |
| Mvmt Flow | 0 | 278 | 136 | 112 | 824 | 0 | 0 | 0 | 0 | 330 | 1 | 358 |

| Major/Minor | Major1 | | 1 | Major2 | | | | Minor2 | | | | |
|-----------------------|--------|--------|---------|----------|---------|--------|---------------------|----------|---------|-----------|-----------|--|
| Conflicting Flow All | - | 0 | 0 | 414 | 0 | 0 | | 1394 | 1462 | 824 | | |
| Stage 1 | - | - | - | - | - | - | | 1048 | 1048 | - | | |
| Stage 2 | - | - | - | - | - | - | | 346 | 414 | - | | |
| Critical Hdwy | - | - | - | 4.12 | - | - | | 6.41 | 6.51 | 6.21 | | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | | 5.41 | 5.51 | - | | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | | 5.41 | 5.51 | - | | |
| Follow-up Hdwy | - | - | - | 2.218 | - | - | | 3.509 | 4.009 | 3.309 | | |
| Pot Cap-1 Maneuver | 0 | - | - | 1145 | - | 0 | | ~ 157 | 129 | 374 | | |
| Stage 1 | 0 | - | - | - | - | 0 | | 339 | 306 | - | | |
| Stage 2 | 0 | - | - | - | - | 0 | | 719 | 595 | - | | |
| Platoon blocked, % | | - | - | | - | | | | | | | |
| Mov Cap-1 Maneuver | - | - | - | 1145 | - | - | | ~ 142 | 0 | 374 | | |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | | ~ 142 | 0 | - | | |
| Stage 1 | - | - | - | - | - | - | | 339 | 0 | - | | |
| Stage 2 | - | - | - | - | - | - | | 649 | 0 | - | | |
| | | | | | | | | | | | | |
| Approach | EB | | | WB | | | | SB | | | | |
| HCM Control Delay, s | 0 | | | 1 | | | | \$ 357.1 | | | | |
| HCM LOS | | | | | | | | F | | | | |
| | | | | | | | | | | | | |
| Minor Lane/Major Mvn | nt | EBT | EBR | WBL | WBT SBI | Ln1 SE | BLn2 | | | | | |
| Capacity (veh/h) | | - | - | 1145 | - ' | 142 | 374 | | | | | |
| HCM Lane V/C Ratio | | - | - | 0.098 | - 2.3 | 326 | 0.96 | | | | | |
| HCM Control Delay (s) |) | - | - | 8.5 | -\$ 66 | 8.5 | 70.8 | | | | | |
| HCM Lane LOS | | - | - | А | - | F | F | | | | | |
| HCM 95th %tile Q(veh | I) | - | - | 0.3 | - | 28 | 10.7 | | | | | |
| Notes | | | | | | | | | | | | |
| ~: Volume exceeds ca | pacity | \$: De | lay exc | ceeds 30 | 00s +:(| Compu | itation Not Defined | *: All | major \ | /olume ii | n platoon | |

| Intersection | | | | | | | | | | | | |
|------------------------|-------|------|------|------|------|------|------|---------|------|------|-------|------|
| Int Delay, s/veh | 217.2 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | 1 | • | | | el 👘 | | 1 | et F | | | | |
| Traffic Vol, veh/h | 98 | 364 | 0 | 0 | 379 | 302 | 332 | 3 | 92 | 0 | 0 | 0 |
| Future Vol, veh/h | 98 | 364 | 0 | 0 | 379 | 302 | 332 | 3 | 92 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 250 | - | - | - | - | - | 50 | - | - | - | - | - |
| Veh in Median Storage | , # - | 0 | - | - | 0 | - | - | 0 | - | - | 16965 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 | 79 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 | 2 | 2 | 2 |
| Mvmt Flow | 124 | 461 | 0 | 0 | 480 | 382 | 420 | 4 | 116 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | ľ | Minor1 | | | |
|----------------------|--------|--------|----------|----------|-----|--------|----------|----------|--------|--------------------------------|
| Conflicting Flow All | 862 | 0 | - | - | - | 0 | 1380 | 1571 | 461 | |
| Stage 1 | - | - | - | - | - | - | 709 | 709 | - | |
| Stage 2 | - | - | - | - | - | - | 671 | 862 | - | |
| Critical Hdwy | 4.12 | - | - | - | - | - | 6.4 | 6.5 | 6.2 | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.4 | 5.5 | - | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.4 | 5.5 | - | |
| Follow-up Hdwy | 2.218 | - | - | - | - | - | 3.5 | 4 | 3.3 | |
| Pot Cap-1 Maneuver | 780 | - | 0 | 0 | - | - | ~ 161 | 112 | 605 | |
| Stage 1 | - | - | 0 | 0 | - | - | 491 | 440 | - | |
| Stage 2 | - | - | 0 | 0 | - | - | 512 | 375 | - | |
| Platoon blocked, % | | - | | | - | - | | | | |
| Mov Cap-1 Maneuver | 780 | - | - | - | - | - | ~ 135 | 0 | 605 | |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 135 | 0 | - | |
| Stage 1 | - | - | - | - | - | - | ~ 413 | 0 | - | |
| Stage 2 | - | - | - | - | - | - | 512 | 0 | - | |
| | | | | | | | | | | |
| Approach | EB | | | WB | | | NB | | | |
| HCM Control Delay, s | 2.2 | | | 0 | | \$ | 796.1 | | | |
| HCM LOS | | | | | | | F | | | |
| | | | | | | | | | | |
| Minor Lane/Major Mvr | nt | NBLn1 | VBLn2 | EBL | EBT | WBT | WBR | | | |
| Capacity (veh/h) | | 135 | 605 | 780 | - | - | - | | | |
| HCM Lane V/C Ratio | | 3.113 | 0.199 | 0.159 | - | - | - | | | |
| HCM Control Delay (s |) \$ | 1020.3 | 12.4 | 10.5 | - | - | - | | | |
| HCM Lane LOS | | F | В | В | - | - | - | | | |
| HCM 95th %tile Q(veh | ı) | 39.6 | 0.7 | 0.6 | - | - | - | | | |
| Notes | | | | | | | | | | |
| ~: Volume exceeds ca | pacity | \$: De | elay exc | ceeds 30 |)0s | +: Com | putatior | n Not De | efined | *: All major volume in platoon |

| | - | \mathbf{F} | 1 | - | 1 | 1 |
|---|----------------------|--------------|-----------|-------------|-----------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | • | 1 | 5 | • | 5 | 1 |
| Traffic Volume (veh/h) | 170 | 286 | 53 | 346 | 335 | 17 |
| Future Volume (veh/h) | 170 | 286 | 53 | 346 | 335 | 17 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1885 | 1885 | 1870 | 1870 | 1885 | 1885 |
| Adj Flow Rate, veh/h | 230 | 0 | 72 | 468 | 453 | 0 |
| Peak Hour Factor | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 | 0.74 |
| Percent Heavy Veh, % | 1 | 1 | 2 | 2 | 1 | 1 |
| Cap, veh/h | 503 | | 198 | 810 | 778 | |
| Arrive On Green | 0.27 | 0.00 | 0.11 | 0.43 | 0.43 | 0.00 |
| Sat Flow, veh/h | 1885 | 1598 | 1781 | 1870 | 1795 | 1598 |
| Grp Volume(v) veh/h | 230 | 0 | 72 | 468 | 453 | 0 |
| Grp Sat Flow(s) veh/h/ln | 1885 | 1598 | 1781 | 1870 | 1795 | 1598 |
| Q Serve(a, s) s | 9.2 | 0.0 | 34 | 17.0 | 17.2 | 0.0 |
| Cvcle Q Clear(q, c) s | 9.2 | 0.0 | 3.4 | 17.0 | 17.2 | 0.0 |
| Prop In Lane | 0.2 | 1 00 | 1 00 | 11.0 | 1 00 | 1 00 |
| Lane Grp Cap(c) veh/h | 503 | 1.00 | 198 | 810 | 778 | 1.00 |
| V/C Ratio(X) | 0.46 | | 0.36 | 0.58 | 0.58 | |
| Avail Cap(c, a) veh/h | 503 | | 198 | 810 | 778 | |
| HCM Platoon Batio | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 |
| Instream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d) s/yeb | 27.6 | 0.00 | 37.1 | 10.00 | 10.3 | 0.00 |
| Incr Delay (d2), s/veh | 3.0 | 0.0 | 5.1 | 3.0 | 3.0 | 0.0 |
| Initial O Delay(d3) s/yeb | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| % ile Back Ω f Ω (50%) veh/ln | 0.0 4 4 | 0.0 | 17 | 7.6 | 7.2 | 0.0 |
| Unsig Movement Delay, s/vel | т. т h | 0.0 | 1.7 | 1.0 | 1.2 | 0.0 |
| InGro Delay(d) s/veb | 30.5 | 0.0 | 122 | 22 3 | 22.5 | 0.0 |
| | 00.0 C | 0.0 | 42.2 D | 22.5 | 22.J C | 0.0 |
| | 220 | ٨ | U | E40 | 452 | ٨ |
| Approach Vol, Ven/n | 230 | A | | 540 | 453 | A |
| Approach Delay, s/ven | 30.5 | | | 24.9 | 22.5 | |
| Approach LOS | C | | | C | C | |
| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 |
| Phs Duration (G+Y+Rc), s | | 45.0 | | 45.0 | 15.0 | 30.0 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 5.0 | 6.0 |
| Max Green Setting (Gmax), s | | 39.0 | | 39.0 | 10.0 | 24.0 |
| Max Q Clear Time (g c+11), s | | 19.0 | | 19.2 | 5.4 | 11.2 |
| Green Ext Time (p. c), s | | 6.4 | | 1.8 | 0.0 | 2.1 |
| Intersection Summary | | | | | | |
| | | | 2E 1 | | | |
| HOW OTH UTH Delay | | | 25.1 | | | |
| HCIVI 6th LOS | | | C | | | |

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

| | ۶ | \mathbf{r} | 1 | 1 | Ŧ | < | | | |
|-----------------------------------|---------|--------------|-------|-------|------------|----------------|----|------|--|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR | | | |
| Lane Configurations | | 1 | ካካ | ** | ** | 1 | | | |
| Traffic Volume (vph) | 0 | 183 | 124 | 1615 | 1053 | 8 | | | |
| Future Volume (vph) | 0 | 183 | 124 | 1615 | 1053 | 8 | | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | | |
| Total Lost time (s) | | 4.0 | 6.0 | 4.0 | 7.0 | 7.0 | | | |
| Lane Util. Factor | | 1.00 | 0.97 | 0.95 | 0.95 | 1.00 | | | |
| Frt | | 0.86 | 1.00 | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | | 1536 | 3303 | 3406 | 3085 | 1380 | | | |
| Flt Permitted | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | | 1536 | 3303 | 3406 | 3085 | 1380 | | | |
| Peak-hour factor, PHF | 0.92 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | | | |
| Adj. Flow (vph) | 0 | 218 | 148 | 1923 | 1254 | 10 | | | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 2 | | | |
| Lane Group Flow (vph) | 0 | 218 | 148 | 1923 | 1254 | 8 | | | |
| Heavy Vehicles (%) | 2% | 7% | 6% | 6% | 17% | 17% | | | |
| Turn Type | | Free | Prot | NA | NA | Perm | | | |
| Protected Phases | | | 1 | Free | 2 | | | | |
| Permitted Phases | | Free | | | | 2 | | | |
| Actuated Green, G (s) | | 100.0 | 10.0 | 100.0 | 77.0 | 77.0 | | | |
| Effective Green, g (s) | | 100.0 | 10.0 | 100.0 | 77.0 | 77.0 | | | |
| Actuated g/C Ratio | | 1.00 | 0.10 | 1.00 | 0.77 | 0.77 | | | |
| Clearance Time (s) | | | 6.0 | | 7.0 | 7.0 | | | |
| Vehicle Extension (s) | | | 3.0 | | 5.0 | 5.0 | | | |
| Lane Grp Cap (vph) | | 1536 | 330 | 3406 | 2375 | 1062 | | | |
| v/s Ratio Prot | | | 0.04 | 0.56 | 0.41 | | | | |
| v/s Ratio Perm | | 0.14 | | | | 0.01 | | | |
| v/c Ratio | | 0.14 | 0.45 | 0.56 | 0.53 | 0.01 | | | |
| Uniform Delay, d1 | | 0.0 | 42.4 | 0.0 | 4.5 | 2.7 | | | |
| Progression Factor | | 1.00 | 0.61 | 1.00 | 0.06 | 0.01 | | | |
| Incremental Delay, d2 | | 0.2 | 0.8 | 0.5 | 0.6 | 0.0 | | | |
| Delay (s) | | 0.2 | 26.7 | 0.5 | 0.8 | 0.0 | | | |
| Level of Service | | Α | С | Α | Α | А | | | |
| Approach Delay (s) | 0.2 | | | 2.4 | 0.8 | | | | |
| Approach LOS | Α | | | А | А | | | | |
| Intersection Summary | | | | | | | | | |
| HCM 2000 Control Delay | | | 1.7 | H | CM 2000 | Level of Servi | се | A | |
| HCM 2000 Volume to Capacity | / ratio | | 0.65 | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | Si | um of lost | t time (s) | | 13.0 | |
| Intersection Capacity Utilization | n | | 48.0% | IC | U Level o | of Service | | А | |
| Analysis Period (min) | | | 15 | | | | | | |
| c Critical Lane Group | | | | | | | | | |

| | ٦ | → | $\mathbf{\hat{z}}$ | 4 | + | * | 1 | t | ۲ | 1 | ŧ | - |
|-----------------------------------|-------------|-------|--------------------|------|-------------|------------|---------|-------|------|------|-------|-------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | 5 | | 1 | | | | 5 | ĥ | | | • | 1 |
| Traffic Volume (vph) | 169 | 0 | 286 | 0 | 0 | 0 | 544 | 1195 | 0 | 0 | 1065 | 207 |
| Future Volume (vph) | 169 | 0 | 286 | 0 | 0 | 0 | 544 | 1195 | 0 | 0 | 1065 | 207 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 6.5 | | 6.5 | | | | 6.5 | 6.5 | | | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | | 0.85 | | | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | | 1.00 | | | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1626 | | 1358 | | | | 1687 | 1776 | | | 1529 | 1392 |
| Flt Permitted | 0.95 | | 1.00 | | | | 0.03 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1626 | | 1358 | | | | 54 | 1776 | | | 1529 | 1392 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 199 | 0 | 336 | 0 | 0 | 0 | 640 | 1406 | 0 | 0 | 1253 | 244 |
| RTOR Reduction (vph) | 0 | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 |
| Lane Group Flow (vph) | 199 | 0 | 292 | 0 | 0 | 0 | 640 | 1406 | 0 | 0 | 1253 | 229 |
| Heavy Vehicles (%) | 11% | 11% | 11% | 0% | 0% | 0% | 7% | 7% | 7% | 16% | 16% | 16% |
| Turn Type | Prot | | pt+ov | | | | pm+pt | NA | | | NA | pm+ov |
| Protected Phases | 4 | | 14 | | | | 1 | 16 | | | 2 | 4 |
| Permitted Phases | | | 4 | | | | 16 | | | | | 2 |
| Actuated Green, G (s) | 12.5 | | 70.5 | | | | 184.0 | 184.0 | | | 126.0 | 138.5 |
| Effective Green, g (s) | 12.5 | | 70.5 | | | | 184.0 | 184.0 | | | 126.0 | 138.5 |
| Actuated g/C Ratio | 0.06 | | 0.34 | | | | 0.88 | 0.88 | | | 0.60 | 0.66 |
| Clearance Time (s) | 6.5 | | | | | | 6.5 | | | | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.5 | | | | | | 3.0 | | | | 6.0 | 3.5 |
| Lane Grp Cap (vph) | 97 | | 456 | | | | 448 | 1559 | | | 919 | 963 |
| v/s Ratio Prot | c0.12 | | 0.21 | | | | c0.35 | 0.79 | | | 0.82 | 0.01 |
| v/s Ratio Perm | | | | | | | c0.91 | | | | | 0.15 |
| v/c Ratio | 2.05 | | 0.64 | | | | 1.43 | 0.90 | | | 1.36 | 0.24 |
| Uniform Delay, d1 | 98.5 | | 58.8 | | | | 74.6 | 7.5 | | | 41.8 | 14.3 |
| Progression Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 507.0 | | 2.9 | | | | 205.4 | 7.6 | | | 170.6 | 0.2 |
| Delay (s) | 605.5 | | 61.7 | | | | 280.0 | 15.1 | | | 212.3 | 14.4 |
| Level of Service | F | | E | | | | F | В | | | F | В |
| Approach Delay (s) | | 264.0 | | | 0.0 | | | 97.9 | | | 180.1 | |
| Approach LOS | | F | | | А | | | F | | | F | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 149.9 | Н | CM 2000 | Level of | Service | | F | | | |
| HCM 2000 Volume to Capa | acity ratio | | 1.50 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 209.5 | S | um of lost | t time (s) | | | 19.5 | | | |
| Intersection Capacity Utilization | ation | | 109.7% | IC | CU Level of | of Service | 9 | | Н | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

| | ≯ | \mathbf{F} | 1 | 1 | Ŧ | ~ |
|------------------------------|-----------|--------------|----------|----------|------|----------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ካካ | 1 | | *** | 44 | |
| Traffic Volume (veh/h) | 137 | 1108 | 0 | 1785 | 1474 | 0 |
| Future Volume (veh/h) | 137 | 1108 | 0 | 1785 | 1474 | 0 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A pbT) | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1796 | 1796 | 0 | 1781 | 1826 | 0 |
| Adj Flow Rate, veh/h | 151 | 0 | 0 | 1962 | 1620 | 0 |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Percent Heavy Veh, % | 7 | 7 | 0 | 8 | 5 | 0 |
| Cap, veh/h | 217 | | 0 | 3961 | 2826 | 0 |
| Arrive On Green | 0.07 | 0.00 | 0.00 | 0.81 | 0.81 | 0.00 |
| Sat Flow, veh/h | 3319 | 1522 | 0 | 5184 | 3652 | 0 |
| Grp Volume(v). veh/h | 151 | 0 | 0 | 1962 | 1620 | 0 |
| Grp Sat Flow(s).veh/h/ln | 1659 | 1522 | 0 | 1621 | 1735 | Ū |
| Q Serve(g s), s | 4.5 | 0.0 | 0.0 | 12.5 | 16.2 | 0.0 |
| Cycle Q Clear(a c), s | 4.5 | 0.0 | 0.0 | 12.5 | 16.2 | 0.0 |
| Prop In Lane | 1.00 | 1.00 | 0.00 | | | 0.00 |
| Lane Grp Cap(c), veh/h | 217 | | 0 | 3961 | 2826 | 0 |
| V/C Ratio(X) | 0.69 | | 0.00 | 0.50 | 0.57 | 0.00 |
| Avail Cap(c_a), veh/h | 398 | | 0 | 3961 | 2826 | 0 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 45.7 | 0.0 | 0.0 | 2.9 | 3.2 | 0.0 |
| Incr Delay (d2), s/veh | 4.0 | 0.0 | 0.0 | 0.4 | 0.9 | 0.0 |
| Initial Q Delav(d3).s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%) veh/ln | 19 | 0.0 | 0.0 | 22 | 31 | 0.0 |
| Unsig Movement Delay s/ve | h | 0.0 | 0.0 | | 0.1 | 0.0 |
| InGrn Delay(d) s/veh | 49 7 | 0.0 | 0.0 | 33 | 4 1 | 0.0 |
| | D | 0.0 | 0.0 A | 0.0 A | Δ | 0.0 A |
| Approach Vol. veh/h | 151 | Δ | | 1962 | 1620 | |
| Approach Delay, s/yeb | /0.7 | Л | | 3.3 | / 1 | |
| Approach LOS | -3.7 D | | | Δ | 4.1 | |
| Approach 200 | U | | | ~ | ~ | |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), s | | 87.5 | | 12.5 | | 87.5 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 76.0 | | 12.0 | | 76.0 |
| Max Q Clear Time (g_c+I1), s | ; | 18.2 | | 6.5 | | 14.5 |
| Green Ext Time (p_c), s | | 37.9 | | 0.2 | | 46.5 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 5.5 | | | |
| HCM 6th LOS | | | A | | | |
| | | | Л | | | |

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

| | € | * | 1 | 1 | 1 | Ŧ |
|---------------------------|--------|------|-----------|------|------|------|
| Movement V | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ሻሻ | 11 | 441 | | | *** |
| Traffic Volume (veh/h) | 656 | 602 | 935 | 0 | 0 | 1767 |
| Future Volume (veh/h) | 656 | 602 | 935 | 0 | 0 | 1767 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A pbT) | 1.00 | 1.00 | • | 1.00 | 1.00 | - |
| Parking Bus, Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | No | | | No |
| Adi Sat Flow veh/h/ln 1 | 1722 | 1722 | 1767 | 0 | 0 | 1841 |
| Adi Flow Rate veh/h | 713 | 654 | 1016 | 0 | 0 | 1921 |
| Peak Hour Factor | 0.92 | 0 92 | 0.92 | 0 92 | 0.92 | 0 92 |
| Percent Heavy Veh % | 12 | 12 | 0.5Z Q | 0.52 | 0.52 | 0.5Z |
| Can veh/h | 971 | 78/ | 2724 | 0 | 0 | 2838 |
| Arrive On Groon | 0.31 | 0 21 | 0.56 | 0.00 | 0.00 | 0.56 |
| Anive On Green | 0.01 | 0.31 | 0.00 | 0.00 | 0.00 | 0.00 |
| Sat Flow, ven/n 3 | 5182 | 2569 | 5141 | 0 | 0 | 5356 |
| Grp Volume(v), veh/h | 713 | 654 | 1016 | 0 | 0 | 1921 |
| Grp Sat Flow(s),veh/h/In1 | 1591 | 1284 | 1608 | 0 | 0 | 1675 |
| Q Serve(g_s), s | 20.1 | 23.7 | 11.6 | 0.0 | 0.0 | 26.9 |
| Cycle Q Clear(g_c), s | 20.1 | 23.7 | 11.6 | 0.0 | 0.0 | 26.9 |
| Prop In Lane | 1.00 | 1.00 | | 0.00 | 0.00 | |
| Lane Grp Cap(c), veh/h | 971 | 784 | 2724 | 0 | 0 | 2838 |
| V/C Ratio(X) | 0.73 | 0.83 | 0.37 | 0.00 | 0.00 | 0.68 |
| Avail Cap(c_a), veh/h 1 | 1177 | 950 | 2724 | 0 | 0 | 2838 |
| HCM Platoon Ratio | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 |
| I Instream Filter/I) | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| Uniform Delay (d) alugh | 21.00 | 32.4 | 12.00 | 0.00 | 0.00 | 15.2 |
| Inor Doloy (d2) - chick | 1.0 | JZ.4 | 0.4 | 0.0 | 0.0 | 10.0 |
| Incr Delay (d2), s/ven | 1.9 | 0.0 | 0.4 | 0.0 | 0.0 | 1.3 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ | /In/.6 | 7.6 | 3.9 | 0.0 | 0.0 | 9.4 |
| Unsig. Movement Delay, | s/veh | | | | | |
| LnGrp Delay(d),s/veh | 33.0 | 37.9 | 12.4 | 0.0 | 0.0 | 16.6 |
| LnGrp LOS | С | D | В | A | Α | В |
| Approach Vol, veh/h 1 | 1367 | | 1016 | | | 1921 |
| Approach Delay, s/veh | 35.4 | | 12.4 | | | 16.6 |
| Approach LOS | D | | В | | | B |
| | | | | | | U |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), | S | 62.5 | | 37.5 | | 62.5 |
| Change Period (Y+Rc), s | 5 | 6.0 | | 7.0 | | 6.0 |
| Max Green Setting (Gma | ax), s | 50.0 | | 37.0 | | 50.0 |
| Max Q Clear Time (g c+l | l1). s | 28.9 | | 25.7 | | 13.6 |
| Green Ext Time (p c), s | ,, - | 20.7 | | 4.8 | | 26.5 |
| Intersection Summary | | | | | | |
| | | | 04.0 | | | _ |
| HUM 6th Utri Delay | | | 21.6 | | | |
| HCM 6th LOS | | | С | | | |

* + + + + * * + * + + + + + +

| Movement E | BL E | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|-----------------------------|----------------|------|------|------|------|------|------|------------|------|------|----------|------|--|
| Lane Configurations | | 4 | | | - 4 | 1 | ሻ | *†† | 1 | ٦ | <u>₩</u> | | |
| Traffic Volume (veh/h) | 6 | 1 | 18 | 161 | 0 | 88 | 21 | 1325 | 199 | 116 | 1920 | 2 | |
| Future Volume (veh/h) | 6 | 1 | 18 | 161 | 0 | 88 | 21 | 1325 | 199 | 116 | 1920 | 2 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Ped-Bike Adj(A_pbT) 1. | .00 | | 0.98 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | |
| Parking Bus, Adj 1. | .00 ´ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Work Zone On Approach | | No | | | No | | | No | | | No | | |
| Adj Sat Flow, veh/h/ln 19 | 00 1 | 900 | 1900 | 1796 | 1796 | 1796 | 1707 | 1707 | 1707 | 1826 | 1826 | 1826 | |
| Adj Flow Rate, veh/h | 6 | 1 | 19 | 173 | 0 | 95 | 23 | 1425 | 0 | 125 | 2065 | 2 | |
| Peak Hour Factor 0. | .93 (| 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | |
| Percent Heavy Veh, % | 0 | 0 | 0 | 7 | 7 | 7 | 13 | 13 | 13 | 5 | 5 | 5 | |
| Cap, veh/h | 44 | 26 | 72 | 186 | 0 | 349 | 38 | 2378 | | 156 | 2964 | 3 | |
| Arrive On Green 0. | .25 (| 0.23 | 0.23 | 0.25 | 0.00 | 0.23 | 0.02 | 0.51 | 0.00 | 0.03 | 0.19 | 0.19 | |
| Sat Flow, veh/h | 0 | 115 | 311 | 494 | 0 | 1518 | 1626 | 4661 | 1447 | 1739 | 5143 | 5 | |
| Grp Volume(v), veh/h | 26 | 0 | 0 | 173 | 0 | 95 | 23 | 1425 | 0 | 125 | 1334 | 733 | |
| Grp Sat Flow(s),veh/h/ln 4 | 26 | 0 | 0 | 494 | 0 | 1518 | 1626 | 1554 | 1447 | 1739 | 1662 | 1825 | |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.1 | 1.4 | 21.6 | 0.0 | 7.1 | 37.5 | 37.5 | |
| Cycle Q Clear(g_c), s 25 | 5.0 | 0.0 | 0.0 | 25.0 | 0.0 | 5.1 | 1.4 | 21.6 | 0.0 | 7.1 | 37.5 | 37.5 | |
| Prop In Lane 0. | .23 | | 0.73 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.00 | |
| Lane Grp Cap(c), veh/h 1 | 51 | 0 | 0 | 195 | 0 | 349 | 38 | 2378 | | 156 | 1915 | 1052 | |
| V/C Ratio(X) 0. | .17 (| 0.00 | 0.00 | 0.89 | 0.00 | 0.27 | 0.60 | 0.60 | | 0.80 | 0.70 | 0.70 | |
| Avail Cap(c_a), veh/h 1 | 51 | 0 | 0 | 195 | 0 | 349 | 98 | 2378 | | 243 | 1915 | 1052 | |
| HCM Platoon Ratio 1. | .00 ´ | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.33 | 0.33 | 0.33 | |
| Upstream Filter(I) 1. | .00 (| 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.70 | 0.70 | 0.70 | |
| Uniform Delay (d), s/veh 32 | 1.6 | 0.0 | 0.0 | 41.8 | 0.0 | 31.6 | 48.4 | 17.3 | 0.0 | 47.6 | 32.3 | 32.3 | |
| Incr Delay (d2), s/veh (| 0.5 | 0.0 | 0.0 | 34.8 | 0.0 | 0.4 | 14.1 | 1.1 | 0.0 | 7.1 | 1.5 | 2.7 | |
| Initial Q Delay(d3),s/veh (| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| %ile BackOfQ(50%),veh/ln | D.5 | 0.0 | 0.0 | 6.1 | 0.0 | 1.9 | 0.7 | 7.3 | 0.0 | 3.5 | 16.9 | 18.9 | |
| Unsig. Movement Delay, s | /veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh 32 | 2.1 | 0.0 | 0.0 | 76.6 | 0.0 | 32.0 | 62.4 | 18.4 | 0.0 | 54.7 | 33.8 | 35.0 | |
| LnGrp LOS | С | Α | Α | E | A | С | E | В | | D | С | D | |
| Approach Vol, veh/h | | 26 | | | 268 | | | 1448 | А | | 2192 | | |
| Approach Delay, s/veh | 3 | 32.1 | | | 60.8 | | | 19.1 | | | 35.4 | | |
| Approach LOS | | С | | | E | | | В | | | D | | |
| Timer - Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc), s7 | 7.4 6 | 63.6 | | 29.0 | 14.0 | 57.0 | | 29.0 | | | | | |
| Change Period (Y+Rc), s 5 | 5.0 | 6.0 | | 6.0 | 5.0 | 6.0 | | 6.0 | | | | | |
| Max Green Setting (Gmax | \$, G { | 54.0 | | 23.0 | 14.0 | 46.0 | | 23.0 | | | | | |
| Max Q Clear Time (g_c+l1 | 3,46 3 | 39.5 | | 27.0 | 9.1 | 23.6 | | 27.0 | | | | | |
| Green Ext Time (p_c), s (| 0.0 | 14.4 | | 0.0 | 0.1 | 20.8 | | 0.0 | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 31.1 | | | | | | | | | | |
| HCM 6th LOS | | | С | | | | | | | | | | |

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

| | ۶ | \mathbf{F} | 1 | 1 | Ŧ | ~ |
|---------------------------|-------------------|--------------------|-----------|---------------|-----------|------------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ካካ | 1 | 5 | ** | ** | 1 |
| Traffic Volume (veh/h) | 387 | 236 | 186 | 1042 | 1570 | 382 |
| Future Volume (veh/h) | 387 | 236 | 186 | 1042 | 1570 | 382 |
| Initial $O(Ob)$ yeb | 007 | 200 | 0 | 0,72 | 0 | 002 |
| Ped-Bike Adi(A nhT) | 1 00 | 1 00 | 1 00 | U | U | 1 00 |
| Parking Rus Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1 00 | 1.00 |
| Work Zone On Annroac | h No | 1.00 | 1.00 | No | No | 1.00 |
| Adi Sat Flow, veh/h/ln | 1781 | 1781 | 1678 | 1678 | 1826 | 1826 |
| Adi Flow Rate veh/h | <u>1</u> 21 | 257 | 202 | 1122 | 1707 | 415 |
| Peak Hour Factor | 0 0 2 | 0 02 | 0 02 | 0 02 | 0 02 | 0 02 |
| Porcont Hoovy Vah % | 0.9Z | 0.9Z | 0.92 | 15 | 0.9Z | 0.92 |
| Con yoh/h | 0 500 | 0 070 | 10 | 10 2100 | 0 1014 | C 0 = 0 |
| Arrivo On Croon | 0 10 | 0.40 | 200 | C 199 | 0 55 | 004 |
| Arrive On Green | 0.10 | 0.10 | 0.09 | 0.09 | 0.55 | 0.55 |
| Sat Flow, ven/n | 3291 | 1510 | 1598 | 3212 | 3561 | 1547 |
| Grp Volume(v), veh/h | 421 | 257 | 202 | 1133 | 1707 | 415 |
| Grp Sat Flow(s),veh/h/l | n1646 | 1510 | 1598 | 1594 | 1735 | 1547 |
| Q Serve(g_s), s | 12.0 | 16.8 | 6.6 | 17.1 | 43.4 | 16.4 |
| Cycle Q Clear(g_c), s | 12.0 | 16.8 | 6.6 | 17.1 | 43.4 | 16.4 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | n 592 | 272 | 233 | 2199 | 1914 | 854 |
| V/C Ratio(X) | 0.71 | 0.95 | 0.87 | 0.52 | 0.89 | 0.49 |
| Avail Cap(c_a), veh/h | 592 | 272 | 316 | 2199 | 1914 | 854 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.92 | 0.92 | 1.00 | 1.00 |
| Uniform Delay (d), s/vel | h 38.6 | 40.5 | 27.0 | 7.5 | 19.8 | 13.7 |
| Incr Delay (d2) s/veh | 4 0 | 40.0 | 15.8 | 0.8 | 6.8 | 2.0 |
| Initial Q Delav(d3) s/vel | h 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfO(50%) ve | h/lm5 1 | 9.0 | 3.6 | <u>4</u> 9 | 17.1 | 5.6 |
| Unsig Movement Delay | y s/voh | 0.1 | 0.0 | - T .J | 17.1 | 0.0 |
| InGrn Delay(d) aluch | y, 5/VEII 12 5 | 80 F | 12 0 | 63 | 26.6 | 15.7 |
| | 42.0 D | 00.5 E | 42.0 D | 0.J ^ | 20.0 | 13.7 D |
| | 070 | Г | U | A 1005 | 0400 | В |
| Approach Vol, ven/h | 6/8 | | | 1335 | 2122 | |
| Approach Delay, s/veh | 56.9 | | | 13.5 | 24.5 | |
| Approach LOS | E | | | В | С | |
| Timer - Assigned Phs | 1 | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc |), \$ 3.8 | 62.2 | | 24.0 | | 76.0 |
| Change Period (Y+Rc) | s 5.0 | 7.0 | | 6.0 | | 7.0 |
| Max Green Setting (Gr | na1k4 @ | 50.0 | | 18.0 | | 69.0 |
| Max O Clear Time (o. c | +118 6 | <u>45</u> <u>4</u> | | 18.8 | | 19.1 |
| Green Ext Time (n. o) | - 0.2 | -J.4 / 5 | | 0.0 | | 38.0 |
| $(p_c), s$ | 5 0.5 | 4.5 | | 0.0 | | 0.0 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 26.2 | | | |
| HCM 6th LOS | | | С | | | |

Intersection

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|---------|------|------|------|------|
| Lane Configurations | | | | | \$ | | | et F | | | ÷ | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 20 | 0 | 10 | 0 | 1323 | 65 | 32 | 1468 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 20 | 0 | 10 | 0 | 1323 | 65 | 32 | 1468 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 4 | 4 | 4 | 13 | 13 | 13 | 6 | 6 | 6 |
| Mvmt Flow | 0 | 0 | 0 | 22 | 0 | 11 | 0 | 1487 | 73 | 36 | 1649 | 0 |

| Major/Minor | | Minor1 | | Ν | 1ajor1 | | Ν | Major2 | | | |
|----------------------------|--------|---------------|-------|---------|----------|-----------|----|----------|-----------|--------|---------|
| Conflicting Flow All | | 3245 | 3245 | 1524 | - | 0 | 0 | 1560 | 0 | 0 | |
| Stage 1 | | 1524 | 1524 | - | - | - | - | - | - | - | |
| Stage 2 | | 1721 | 1721 | - | - | - | - | - | - | - | |
| Critical Hdwy | | 6.44 | 6.54 | 6.24 | - | - | - | 4.16 | - | - | |
| Critical Hdwy Stg 1 | | 5.44 | 5.54 | - | - | - | - | - | - | - | |
| Critical Hdwy Stg 2 | | 5.44 | 5.54 | - | - | - | - | - | - | - | |
| Follow-up Hdwy | | 3.536 | 4.036 | 3.336 | - | - | - | 2.254 | - | - | |
| Pot Cap-1 Maneuver | | ~ 10 | 9 | 144 | 0 | - | - | 413 | - | 0 | |
| Stage 1 | | 196 | 178 | - | 0 | - | - | - | - | 0 | |
| Stage 2 | | 157 | 142 | - | 0 | - | - | - | - | 0 | |
| Platoon blocked, % | | | | | | - | - | | - | | |
| Mov Cap-1 Maneuver | | 0 | 0 | 144 | - | - | - | 413 | - | - | |
| Mov Cap-2 Maneuver | | 0 | 0 | - | - | - | - | - | - | - | |
| Stage 1 | | 196 | 0 | - | - | - | - | - | - | - | |
| Stage 2 | | 0 | 0 | - | - | - | - | - | - | - | |
| | | | | | | | | | | | |
| Approach | | WB | | | NB | | | SB | | | |
| HCM Control Delay, s | | 37.5 | | | 0 | | | 0.3 | | | |
| HCM LOS | | E | | | | | | | | | |
| | | | | | | | | | | | |
| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBL | SBT | | | | | | | |
| Capacity (veh/h) | - | - 144 | 413 | - | | | | | | | |
| HCM Lane V/C Ratio | - | - 0.234 | 0.087 | - | | | | | | | |
| HCM Control Delay (s) | - | - 37.5 | 14.5 | 0 | | | | | | | |
| HCM Lane LOS | - | - E | В | А | | | | | | | |
| HCM 95th %tile Q(veh) | - | - 0.9 | 0.3 | - | | | | | | | |
| Notes | | | | | | | _ | | | | |
| ~: Volume exceeds capacity | \$: De | lay exceeds 3 | 00s | +: Comp | outation | Not Defin | ed | *: All r | najor vol | ume in | platoon |

HCM 6th Signalized Intersection Summary 8: MD 201 & Powder Mill Road

| | ۶ | → | $\mathbf{\hat{z}}$ | ∢ | + | • | ٠ | Ť | ۲ | 5 | Ļ | ~ |
|------------------------------|------|------|--------------------|-------|-------|------|------|------|------|------|------|----------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | 7 | • | 1 | 1 | • | 1 | ٦ | • | 1 | ۲ | A12 | |
| Traffic Volume (veh/h) | 244 | 373 | 412 | 475 | 239 | 78 | 414 | 591 | 231 | 97 | 517 | 113 |
| Future Volume (veh/h) | 244 | 373 | 412 | 475 | 239 | 78 | 414 | 591 | 231 | 97 | 517 | 113 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1693 | 1693 | 1693 | 1841 | 1841 | 1841 | 1693 | 1693 | 1693 | 1826 | 1826 | 1826 |
| Adj Flow Rate, veh/h | 274 | 419 | 0 | 534 | 269 | 0 | 465 | 664 | 0 | 109 | 581 | 127 |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Percent Heavy Veh, % | 14 | 14 | 14 | 4 | 4 | 4 | 14 | 14 | 14 | 5 | 5 | 5 |
| Cap, veh/h | 315 | 524 | | 187 | 689 | | 527 | 939 | | 236 | 713 | 155 |
| Arrive On Green | 0.31 | 0.31 | 0.00 | 0.04 | 0.37 | 0.00 | 0.27 | 0.55 | 0.00 | 0.25 | 0.25 | 0.25 |
| Sat Flow, veh/h | 1005 | 1693 | 1434 | 1753 | 1841 | 1560 | 1612 | 1693 | 1434 | 753 | 2832 | 617 |
| Grp Volume(v), veh/h | 274 | 419 | 0 | 534 | 269 | 0 | 465 | 664 | 0 | 109 | 355 | 353 |
| Grp Sat Flow(s),veh/h/ln | 1005 | 1693 | 1434 | 1753 | 1841 | 1560 | 1612 | 1693 | 1434 | 753 | 1735 | 1715 |
| Q Serve(g_s), s | 41.4 | 35.2 | 0.0 | 5.5 | 16.6 | 0.0 | 34.1 | 44.5 | 0.0 | 19.6 | 29.9 | 30.0 |
| Cycle Q Clear(g_c), s | 48.0 | 35.2 | 0.0 | 5.5 | 16.6 | 0.0 | 34.1 | 44.5 | 0.0 | 19.6 | 29.9 | 30.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.36 |
| Lane Grp Cap(c), veh/h | 315 | 524 | | 187 | 689 | | 527 | 939 | | 236 | 436 | 431 |
| V/C Ratio(X) | 0.87 | 0.80 | | 2.85 | 0.39 | | 0.88 | 0.71 | | 0.46 | 0.81 | 0.82 |
| Avail Cap(c_a), veh/h | 315 | 524 | | 187 | 689 | | 527 | 939 | | 236 | 436 | 431 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 57.2 | 49.1 | 0.0 | 57.3 | 35.5 | 0.0 | 36.6 | 25.3 | 0.0 | 50.8 | 54.6 | 54.6 |
| Incr Delay (d2), s/veh | 26.4 | 12.1 | 0.0 | 847.7 | 1.7 | 0.0 | 18.8 | 4.5 | 0.0 | 6.4 | 15.3 | 15.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/In | 13.0 | 16.6 | 0.0 | 49.0 | 8.0 | 0.0 | 13.5 | 18.4 | 0.0 | 4.1 | 14.8 | 14.8 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | / | | |
| LnGrp Delay(d),s/veh | 83.7 | 61.2 | 0.0 | 905.0 | 37.2 | 0.0 | 55.5 | 29.7 | 0.0 | 57.1 | 69.8 | 70.3 |
| LnGrp LOS | F | E | | F | D | | E | C | | E | E | <u> </u> |
| Approach Vol, veh/h | | 693 | A | | 803 | A | | 1129 | A | | 817 | |
| Approach Delay, s/veh | | 70.1 | | | 614.3 | | | 40.3 | | | 68.4 | |
| Approach LOS | | E | | | F | | | D | | | E | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 47.0 | 45.0 | 10.0 | 53.0 | | 92.0 | | 63.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 6.0 | 4.5 | 5.0 | | 6.0 | | 5.0 | | | | |
| Max Green Setting (Gmax), s | 42.5 | 39.0 | 5.5 | 48.0 | | 86.0 | | 58.0 | | | | |
| Max Q Clear Time (g_c+I1), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 186.9 | | | | | | | | | |
| HCM 6th LOS | | | F | | | | | | | | | |

Notes

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | 4 | | | र्च | 1 | | र्च | 1 | | 4 | |
| Traffic Vol, veh/h | 23 | 2 | 6 | 2 | 1 | 2 | 29 | 714 | 3 | 1 | 733 | 30 |
| Future Vol, veh/h | 23 | 2 | 6 | 2 | 1 | 2 | 29 | 714 | 3 | 1 | 733 | 30 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None |
| Storage Length | - | - | - | - | - | 50 | - | - | 325 | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 22 | 22 | 22 | 0 | 0 | 0 | 17 | 17 | 17 | 9 | 9 | 9 |
| Mvmt Flow | 24 | 2 | 6 | 2 | 1 | 2 | 30 | 744 | 3 | 1 | 764 | 31 |

| Major/Minor | Minor2 | | Ν | Minor1 | | | Major1 | | | N | lajor2 | | | |
|----------------------|--------|-------|-------|--------|------|-----|--------|---|---|-----|--------|---|---|--|
| Conflicting Flow All | 1589 | 1589 | 780 | 1590 | 1601 | 744 | 795 | 0 | (| 0 | 747 | 0 | 0 | |
| Stage 1 | 782 | 782 | - | 804 | 804 | - | - | - | | - | - | - | - | |
| Stage 2 | 807 | 807 | - | 786 | 797 | - | - | - | | - | - | - | - | |
| Critical Hdwy | 7.32 | 6.72 | 6.42 | 7.1 | 6.5 | 6.2 | 4.27 | - | | - | 4.19 | - | - | |
| Critical Hdwy Stg 1 | 6.32 | 5.72 | - | 6.1 | 5.5 | - | - | - | | - | - | - | - | |
| Critical Hdwy Stg 2 | 6.32 | 5.72 | - | 6.1 | 5.5 | - | - | - | | - | - | - | - | |
| Follow-up Hdwy | 3.698 | 4.198 | 3.498 | 3.5 | 4 | 3.3 | 2.353 | - | | - 1 | 2.281 | - | - | |
| Pot Cap-1 Maneuver | 78 | 97 | 365 | 88 | 107 | 418 | 764 | - | | - | 830 | - | - | |
| Stage 1 | 359 | 377 | - | 380 | 398 | - | - | - | | - | - | - | - | |
| Stage 2 | 347 | 367 | - | 388 | 401 | - | - | - | | - | - | - | - | |
| Platoon blocked, % | | | | | | | | - | | - | | - | - | |
| Mov Cap-1 Maneuver | 73 | 90 | 365 | 81 | 100 | 418 | 764 | - | | - | 830 | - | - | |
| Mov Cap-2 Maneuver | 73 | 90 | - | 81 | 100 | - | - | - | | - | - | - | - | |
| Stage 1 | 335 | 376 | - | 355 | 371 | - | - | - | | - | - | - | - | |
| Stage 2 | 321 | 342 | - | 378 | 400 | - | - | - | | - | - | - | - | |
| | | | | | | | | | | | | | | |

| Approach | EB | WB | NB | SB | |
|----------------------|------|------|-----|----|--|
| HCM Control Delay, s | 67.9 | 34.5 | 0.4 | 0 | |
| HCM LOS | F | D | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1V | VBLn1V | VBLn2 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|--------|--------|-------|-------|-----|-----|
| Capacity (veh/h) | 764 | - | - | 88 | 86 | 418 | 830 | - | - |
| HCM Lane V/C Ratio | 0.04 | - | - | 0.367 | 0.036 | 0.005 | 0.001 | - | - |
| HCM Control Delay (s) | 9.9 | 0 | - | 67.9 | 48.4 | 13.7 | 9.3 | 0 | - |
| HCM Lane LOS | А | А | - | F | Е | В | А | А | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 1.4 | 0.1 | 0 | 0 | - | - |

| 276.8 |
|-------|
| F |
| |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR | |
|----------------------------|-------|------|----------|------|-------|------|--|
| Lane Configurations | | ÷ | el el | | ¥ | | |
| Traffic Vol, veh/h | 6 | 737 | 284 | 6 | 375 | 487 | |
| Future Vol, veh/h | 6 | 737 | 284 | 6 | 375 | 487 | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 0 | 0 | |
| Mvmt Flow | 7 | 847 | 326 | 7 | 431 | 560 | |
| Number of Lanes | 0 | 1 | 1 | 0 | 1 | 0 | |
| Approach | EB | | WB | | SB | | |
| Opposing Approach | WB | | EB | | | | |
| Opposing Lanes | 1 | | 1 | | 0 | | |
| Conflicting Approach Left | SB | | | | WB | | |
| Conflicting Lanes Left | 1 | | 0 | | 1 | | |
| Conflicting Approach Right | | | SB | | EB | | |
| Conflicting Lanes Right | 0 | | 1 | | 1 | | |
| HCM Control Delay | 283.6 | | 29.3 | | 354.3 | | |
| HCM LOS | F | | D | | F | | |

| Lane | EBLn1 | WBLn1 | SBLn1 |
|------------------------|-------|-------|-------|
| Vol Left, % | 1% | 0% | 44% |
| Vol Thru, % | 99% | 98% | 0% |
| Vol Right, % | 0% | 2% | 56% |
| Sign Control | Stop | Stop | Stop |
| Traffic Vol by Lane | 743 | 290 | 862 |
| LT Vol | 6 | 0 | 375 |
| Through Vol | 737 | 284 | 0 |
| RT Vol | 0 | 6 | 487 |
| Lane Flow Rate | 854 | 333 | 991 |
| Geometry Grp | 1 | 1 | 1 |
| Degree of Util (X) | 1.557 | 0.651 | 1.728 |
| Departure Headway (Hd) | 8.368 | 9.794 | 7.259 |
| Convergence, Y/N | Yes | Yes | Yes |
| Сар | 444 | 373 | 515 |
| Service Time | 6.368 | 7.794 | 5.259 |
| HCM Lane V/C Ratio | 1.923 | 0.893 | 1.924 |
| HCM Control Delay | 283.6 | 29.3 | 354.3 |
| HCM Lane LOS | F | D | F |
| HCM 95th-tile Q | 36.8 | 4.4 | 51.4 |

Intersection

| Int Delay, s/veh | 1 | | | | | | |
|------------------------|--------|------|------|----------|----------|------|---|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR | |
| Lane Configurations | ef – | | | ↑ | <u>۲</u> | | |
| Traffic Vol, veh/h | 1055 | 50 | 0 | 255 | 30 | 0 |) |
| Future Vol, veh/h | 1055 | 50 | 0 | 255 | 30 | 0 |) |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |) |
| Sign Control | Free | Free | Free | Free | Stop | Stop |) |
| RT Channelized | - | None | - | None | - | None | ; |
| Storage Length | - | - | - | - | 0 | - | - |
| Veh in Median Storage | e, # 0 | - | - | 0 | 0 | - | - |
| Grade, % | 0 | - | - | 0 | 0 | - | - |
| Peak Hour Factor | 84 | 84 | 84 | 84 | 84 | 84 | ļ |
| Heavy Vehicles, % | 2 | 2 | 3 | 3 | 2 | 2 |) |
| Mvmt Flow | 1256 | 60 | 0 | 304 | 36 | 0 |) |

| Major/Minor | Major1 | Major2 | Minor1 | | |
|----------------------|--------|--------|---------|---|--|
| Conflicting Flow All | 0 | 0 - | - 1590 | - | |
| Stage 1 | - | | - 1286 | - | |
| Stage 2 | - | | - 304 | - | |
| Critical Hdwy | - | | - 6.42 | - | |
| Critical Hdwy Stg 1 | - | | - 5.42 | - | |
| Critical Hdwy Stg 2 | - | | - 5.42 | - | |
| Follow-up Hdwy | - | | - 3.518 | - | |
| Pot Cap-1 Maneuver | - | - 0 | - 118 | 0 | |
| Stage 1 | - | - 0 | - 259 | 0 | |
| Stage 2 | - | - 0 | - 748 | 0 | |
| Platoon blocked, % | - | - | - | | |
| Mov Cap-1 Maneuver | - | | - 118 | - | |
| Mov Cap-2 Maneuver | - | | - 118 | - | |
| Stage 1 | - | | - 259 | - | |
| Stage 2 | - | | - 748 | - | |
| | | | | | |
| Annroach | FB | WR | NB | | |
| HCM Control Delay | 0 | 0 | 48.2 | | |
| HCM LOS | 0 | 0 | | | |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 118 | - | - | - |
| HCM Lane V/C Ratio | 0.303 | - | - | - |
| HCM Control Delay (s) | 48.2 | - | - | - |
| HCM Lane LOS | E | - | - | - |
| HCM 95th %tile Q(veh) | 1.2 | - | - | - |

Intersection

| Int Delay, s/veh | 125.2 | | | | | | | |
|------------------------|--------|------|------|------|------|------|--|--|
| Movement | EBL | EBT | WBT | WBR | SBL | SBR | | |
| Lane Configurations | ٦ | 1 | 4 | | Y | | | |
| Traffic Vol, veh/h | 20 | 961 | 271 | 152 | 300 | 9 | | |
| Future Vol, veh/h | 20 | 961 | 271 | 152 | 300 | 9 | | |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | | |
| Sign Control | Free | Free | Free | Free | Stop | Stop | | |
| RT Channelized | - | None | - | None | - | None | | |
| Storage Length | 50 | - | - | - | 0 | - | | |
| Veh in Median Storage | e, # - | 0 | 0 | - | 0 | - | | |
| Grade, % | - | 0 | 0 | - | 0 | - | | |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | | |
| Heavy Vehicles, % | 2 | 2 | 4 | 4 | 2 | 2 | | |
| Mvmt Flow | 22 | 1045 | 295 | 165 | 326 | 10 | | |

| Major/Minor | Major1 | Ν | 1ajor2 | Minor2 | | | | |
|------------------------|---------|--------|---------|-----------|------------|----------------------|--------------------------------|--|
| Conflicting Flow All | 460 | 0 | - | 0 1467 | 378 | | | |
| Stage 1 | - | - | - | - 378 | - | | | |
| Stage 2 | - | - | - | - 1089 | - | | | |
| Critical Hdwy | 4.12 | - | - | - 6.42 | 6.22 | | | |
| Critical Hdwy Stg 1 | - | - | - | - 5.42 | - | | | |
| Critical Hdwy Stg 2 | - | - | - | - 5.42 | - | | | |
| Follow-up Hdwy | 2.218 | - | - | - 3.518 | 3.318 | | | |
| Pot Cap-1 Maneuver | 1101 | - | - | - ~ 141 | 669 | | | |
| Stage 1 | - | - | - | - 693 | - | | | |
| Stage 2 | - | - | - | - ~ 323 | - | | | |
| Platoon blocked, % | | - | - | - | | | | |
| Mov Cap-1 Maneuver | 1101 | - | - | - ~ 138 | 669 | | | |
| Mov Cap-2 Maneuver | - | - | - | - ~ 138 | - | | | |
| Stage 1 | - | - | - | - 679 | - | | | |
| Stage 2 | - | - | - | - ~ 323 | - | | | |
| | | | | | | | | |
| Approach | EB | | WB | SB | | | | |
| HCM Control Delay, s | 0.2 | | 0 | \$ 693.7 | | | | |
| HCM LOS | | | - | F | | | | |
| | | | | | | | | |
| Minor Long/Major Mur | mt. | EDI | EDT | | | | | |
| | m | | EDI | VUDI VUDA | | | | |
| Capacity (ven/n) | | 1101 | - | | 141 | | | |
| HCIVI Lane V/C Ratio | 1 | 0.02 | - | | 2.382 | | | |
| HCIVI Control Delay (s | 5) | 8.3 | - | 1 | 693.7 E | | | |
| HOW Lane LUS | -) | A | - | | | | | |
| HUM 95th %tile Q(Ver | 1) | 0.1 | - | | 28.7 | | | |
| Notes | | | | | | | | |
| ~: Volume exceeds ca | apacity | \$: De | lay exc | eeds 300s | +: Comp | outation Not Defined | *: All major volume in platoon | |

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | et | | ۲. | • | | | | | 1 | et 👘 | |
| Traffic Vol, veh/h | 0 | 863 | 414 | 141 | 291 | 0 | 0 | 0 | 0 | 286 | 2 | 144 |
| Future Vol, veh/h | 0 | 863 | 414 | 141 | 291 | 0 | 0 | 0 | 0 | 286 | 2 | 144 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | 225 | - | - | - | - | - | 25 | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 16974 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 | 94 |
| Heavy Vehicles, % | 2 | 2 | 2 | 3 | 3 | 3 | 0 | 0 | 0 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 918 | 440 | 150 | 310 | 0 | 0 | 0 | 0 | 304 | 2 | 153 |

| Major/Minor | Major1 | | N | Major2 | | | Minor2 | | | |
|----------------------|--------|--------|---------|---------|-----------|-----------|--------------------|---------|----------|-----------|
| Conflicting Flow All | - | 0 | 0 | 1358 | 0 | 0 | 1748 | 1968 | 310 | |
| Stage 1 | - | - | - | - | - | - | 610 | 610 | - | |
| Stage 2 | - | - | - | - | - | - | 1138 | 1358 | - | |
| Critical Hdwy | - | - | - | 4.13 | - | - | 6.42 | 6.52 | 6.22 | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.42 | 5.52 | - | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.42 | 5.52 | - | |
| Follow-up Hdwy | - | - | - | 2.227 | - | - | 3.518 | 4.018 | 3.318 | |
| Pot Cap-1 Maneuver | 0 | - | - | 503 | - | 0 | ~ 95 | 63 | 730 | |
| Stage 1 | 0 | - | - | - | - | 0 | 542 | 485 | - | |
| Stage 2 | 0 | - | - | - | - | 0 | 306 | 217 | - | |
| Platoon blocked, % | | - | - | | - | | | | | |
| Mov Cap-1 Maneuver | - | - | - | 503 | - | - | ~ 67 | 0 | 730 | |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 67 | 0 | - | |
| Stage 1 | - | - | - | - | - | - | 542 | 0 | - | |
| Stage 2 | - | - | - | - | - | - | ~ 215 | 0 | - | |
| | | | | | | | | | | |
| Annroach | FR | | | W/R | | | SB | | | |
| HCM Control Dolay | | | | 5 | | | ¢ 11/1 5 | | | |
| HCM LOS | U | | | 5 | | | φ 1141.5 Ε | | | |
| | | | | | | | 1 | | | |
| | | | | | | | | | | |
| Minor Lane/Major Mvn | nt | EBT | EBR | WBL | WBT SBLn | 1 SBLn2 | | | | |
| Capacity (veh/h) | | - | - | 503 | - 6 | 7 730 | | | | |
| HCM Lane V/C Ratio | | - | - | 0.298 | - 4.54 | 1 0.213 | | | | |
| HCM Control Delay (s |) | - | - | 15.2 | \$ 1718. | 4 11.3 | | | | |
| HCM Lane LOS | | - | - | С | - | F B | | | | |
| HCM 95th %tile Q(veh | ו) | - | - | 1.2 | - 33. | 1 0.8 | | | | |
| Notes | | | | | | | | | | |
| ~: Volume exceeds ca | pacity | \$: De | lay exc | eeds 30 |)0s +: Co | mputatior | Not Defined *: All | I major | volume i | n platoon |

67

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|------|------|------|------|------|------|-------|------|
| Lane Configurations | ٦ | ↑ | | | 4 | | ٦ | 4 | | | | |
| Traffic Vol, veh/h | 362 | 752 | 0 | 0 | 348 | 545 | 73 | 3 | 46 | 0 | 0 | 0 |
| Future Vol, veh/h | 362 | 752 | 0 | 0 | 348 | 545 | 73 | 3 | 46 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Free | Free | Stop | Stop | Stop | Stop | Stop | Stop |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | 250 | - | - | - | - | - | 50 | - | - | - | - | - |
| Veh in Median Storage | , # - | 0 | - | - | 0 | - | - | 0 | - | - | 16965 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 398 | 826 | 0 | 0 | 382 | 599 | 80 | 3 | 51 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | |
|-----------------------|--------|------------|----------|----------|-----|--------|---------|---------|--------|--------------------------------|
| Conflicting Flow All | 981 | 0 | - | - | - | 0 | 2304 | 2603 | 826 | |
| Stage 1 | - | - | - | - | - | - | 1622 | 1622 | - | |
| Stage 2 | - | - | - | - | - | - | 682 | 981 | - | |
| Critical Hdwy | 4.12 | - | - | - | - | - | 6.41 | 6.51 | 6.21 | |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 5.41 | 5.51 | - | |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 5.41 | 5.51 | - | |
| Follow-up Hdwy | 2.218 | - | - | - | - | - | 3.509 | 4.009 | 3.309 | |
| Pot Cap-1 Maneuver | 704 | - | 0 | 0 | - | - | ~ 43 | 25 | 373 | |
| Stage 1 | - | - | 0 | 0 | - | - | 178 | 162 | - | |
| Stage 2 | - | - | 0 | 0 | - | - | 504 | 329 | - | |
| Platoon blocked, % | | - | | | - | - | | | | |
| Mov Cap-1 Maneuver | 704 | - | - | - | - | - | ~ 19 | 0 | 373 | |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | ~ 19 | 0 | - | |
| Stage 1 | - | - | - | - | - | - | ~ 77 | 0 | - | |
| Stage 2 | - | - | - | - | - | - | 504 | 0 | - | |
| | | | | | | | | | | |
| Approach | EB | | | WB | | | NB | | | |
| HCM Control Delay, s | 5.4 | | | 0 | | \$ | 1119.8 | | | |
| HCM LOS | | | | | | | F | | | |
| | | | | | | | | | | |
| Minor Lane/Maior Myn | nt | NBI n1 | NBI n2 | FBI | FRT | WBT | WBR | | | |
| Canacity (veh/h) | | 19 | 373 | 704 | | | - | | | |
| HCM Lane V/C Ratio | | 4 222 | 0 144 | 0 565 | _ | - | _ | | | |
| HCM Control Delay (s) |) \$ | 1860.5 | 16.3 | 16.5 | - | - | - | | | |
| HCM Lane LOS |) Ψ | F | C.01 | C | - | - | - | | | |
| HCM 95th %tile Q(veh | 1) | 10.5 | 0.5 | 3.6 | - | - | - | | | |
| | ., | | | 0.0 | | | | | | |
| Notes | | A = | | | | | | | | |
| ~: Volume exceeds ca | pacity | \$: De | elay exo | ceeds 30 |)0s | +: Com | putatio | n Not D | efined | *: All major volume in platoon |

| - | \mathbf{r} | - | - | 1 | 1 |
|-----------|---|---|--|---|---|
| EBT | EBR | WBL | WBT | NBL | NBR |
| • | 1 | ۲ | • | 5 | 1 |
| 390 | 400 | 35 | 315 | 619 | 38 |
| 390 | 400 | 35 | 315 | 619 | 38 |
| 0 | 0 | 0 | 0 | 0 | 0 |
| | 1.00 | 1.00 | | 1.00 | 1.00 |
| 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| No | | | No | No | |
| 1856 | 1856 | 1856 | 1856 | 1885 | 1885 |
| 443 | 0 | 40 | 358 | 703 | 0 |
| 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| 3 | 3 | 3 | 3 | 1 | 1 |
| 536 | | 98 | 742 | 838 | |
| 0.29 | 0.00 | 0.06 | 0.40 | 0.47 | 0.00 |
| 1856 | 1572 | 1767 | 1856 | 1795 | 1598 |
| 443 | 0 | 40 | 358 | 703 | 0 |
| 1856 | 1572 | 1767 | 1856 | 1795 | 1598 |
| 20.1 | 0.0 | 2.0 | 12.9 | 30.9 | 0.0 |
| 20.1 | 0.0 | 2.0 | 12.9 | 30.9 | 0.0 |
| _*•• | 1.00 | 1.00 | | 1.00 | 1.00 |
| 536 | | 98 | 742 | 838 | |
| 0.83 | | 0.41 | 0.48 | 0.84 | |
| 536 | | 98 | 742 | 838 | |
| 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| 29.9 | 0.0 | 41.1 | 20.1 | 21.0 | 0.0 |
| 13.6 | 0.0 | 12.1 | 2.2 | 9.9 | 0.0 |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10.6 | 0.0 | 1.2 | 5.7 | 13.8 | 0.0 |
| h | | | | | 2.0 |
| 43.5 | 0.0 | 53.1 | 22.3 | 30.9 | 0.0 |
| D | 0.0 | D | C | C | 5.0 |
| 443 | Δ | | 398 | 703 | Δ |
| 43.5 | | | 25.4 | 30.9 | |
| -5.5 D | | | 20.4 | 00.0 C | |
| U | | | U | U | |
| | 2 | | 4 | 5 | 6 |
| | 42.0 | | 48.0 | 10.0 | 32.0 |
| | 6.0 | | 6.0 | 5.0 | 6.0 |
| | 36.0 | | 42.0 | 5.0 | 26.0 |
| | 14.9 | | 32.9 | 4.0 | 22.1 |
| | 4.8 | | 2.3 | 0.0 | 1.8 |
| | | | | | |
| | | 33.1 | | | |
| | | С | | | |
| | EBT 390 390 0 1.00 No 1856 443 0.88 3 536 0.29 1856 443 1856 20.1 20.1 20.1 536 0.29 1856 443 1856 20.1 20.1 20.1 536 0.83 536 1.00 1.00 29.9 13.6 0.0 10.0 29.9 13.6 0.0 10.0 29.9 13.6 0.0 10.0 10.0 29.9 13.6 0.0 10.0 10.0 29.9 13.6 0.0 10.0 10.0 29.9 13.6 0.0 10.0 10.0 29.9 13.6 0.0 10.0 10.0 29.9 13.6 0.0 10.0 10.0 29.9 13.6 0.0 10.0 10.0 10.0 29.9 13.6 0.0 10. | → ↓ EBT EBR ↑ ℓ 390 400 390 400 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 No 1856 1856 1856 443 0 0.88 0.88 3 3 536 0.00 1856 1572 443 0 1856 1572 20.1 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 29.9 0.0 13.6 0.0 0 0.0 10.6 0.0 h 43.5 D 2 443 A 43.5 0.0 0 36.0 4.8 | → × × EBT EBR WBL ↑ ↑ ↑ 390 400 35 390 400 35 390 400 35 390 400 35 390 400 35 0 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 No 0 1856 1856 1856 443 0 40 0.88 0.88 0.88 3 3 3 536 98 0.29 0.29 0.00 0.06 1856 1572 1767 20.1 0.0 2.0 20.1 0.0 2.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.0 1.00 1.00 0.0 1.0 | EBT EBR WBL WBT \bullet \bullet \bullet \bullet 390 400 35 315 390 400 35 315 390 400 35 315 0 0 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 No No No 1856 1856 1856 1856 443 0 40 358 0.88 0.88 0.88 0.88 3 3 3 3 536 98 742 0.29 0.00 0.06 0.40 1856 1572 1767 1856 20.1 0.0 2.0 12.9 20.1 0.0 2.0 12.9 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 | EBT EBR WBL WBT NBL 390 400 35 315 619 390 400 35 315 619 0 0 0 0 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.856 1856 1856 1858 3 3 3 3 1 536 98 742 838 0.29 0.00 0.66 0.40 0.47 1856 1572 1767 1856 1795 20.1 0.0 2.0 12.9 30.9 20.1 0.0 2.0 12.9 30.9 20.1 0.0 1.00 |

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

| | ≯ | \mathbf{i} | 1 | 1 | Ŧ | 1 | | |
|---------------------------------|-----------|--------------|----------|-------|------------|------------------|----|----|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR | | |
| Lane Configurations | | 1 | ካካ | ** | ** | 1 | | |
| Traffic Volume (vph) | 0 | 274 | 198 | 1210 | 1761 | 10 | | |
| Future Volume (vph) | 0 | 274 | 198 | 1210 | 1761 | 10 | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | |
| Total Lost time (s) | | 4.0 | 6.0 | 4.0 | 7.0 | 7.0 | | |
| Lane Util. Factor | | 1.00 | 0.97 | 0.95 | 0.95 | 1.00 | | |
| Frpb. ped/bikes | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Frt | | 0.86 | 1.00 | 1.00 | 1.00 | 0.85 | | |
| Flt Protected | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | |
| Satd. Flow (prot) | | 1591 | 3099 | 3195 | 3406 | 1524 | | |
| Flt Permitted | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | |
| Satd. Flow (perm) | | 1591 | 3099 | 3195 | 3406 | 1524 | | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | | |
| Adi, Flow (vph) | 0 | 291 | 211 | 1287 | 1873 | 11 | | |
| RTOR Reduction (vph) | 0 | 0 | | 0 | 0 | 3 | | |
| Lane Group Flow (vph) | 0 | 291 | 211 | 1287 | 1873 | 8 | | |
| Confl. Peds. (#/hr) | - | 1 | <u> </u> | | | - | | |
| Heavy Vehicles (%) | 2% | 2% | 13% | 13% | 6% | 6% | | |
| Turn Type | _,, | Free | Prot | NA | NA | Perm | | |
| Protected Phases | | | 1 | Free | 2 | | | |
| Permitted Phases | | Free | | | - | 2 | | |
| Actuated Green, G (s) | | 100.0 | 12.0 | 100.0 | 75.0 | 75.0 | | |
| Effective Green, g (s) | | 100.0 | 12.0 | 100.0 | 75.0 | 75.0 | | |
| Actuated g/C Ratio | | 1.00 | 0.12 | 1.00 | 0.75 | 0.75 | | |
| Clearance Time (s) | | | 6.0 | | 7.0 | 7.0 | | |
| Vehicle Extension (s) | | | 3.0 | | 5.0 | 5.0 | | |
| Lane Grp Cap (vph) | | 1591 | 371 | 3195 | 2554 | 1143 | | |
| v/s Ratio Prot | | 1001 | 0.07 | 0.40 | c0 55 | | | |
| v/s Ratio Perm | | 0.18 | 0.07 | 0.70 | 00.00 | 0.01 | | |
| v/c Ratio | | 0.10 | 0.57 | 0 40 | 0.73 | 0.01 | | |
| Uniform Delay d1 | | 0.10 | 41.6 | 0.40 | 6.9 | 31 | | |
| Progression Factor | | 1.00 | 0.54 | 1.00 | 0.36 | 0.06 | | |
| Incremental Delay d2 | | 0.3 | 17 | 0.3 | 0.9 | 0.0 | | |
| Delay (s) | | 0.3 | 24.0 | 0.3 | 3.4 | 0.2 | | |
| Level of Service | | Α | C | Α | Α | A | | |
| Approach Delay (s) | 0.3 | | Ŭ | 3.7 | 3.4 | | | |
| Approach LOS | A | | | Α | A | | | |
| | | | | ~ | ~ | | | |
| Intersection Summary | | | | | | | | |
| HCM 2000 Control Delay | | | 3.2 | Н | CM 2000 | Level of Service | 9 | A |
| HCM 2000 Volume to Capaci | ity ratio | | 0.72 | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | S | um of lost | t time (s) | 13 | .0 |
| Intersection Capacity Utilizati | ion | | 73.2% | IC | CU Level o | of Service | | D |
| Analysis Period (min) | | | 15 | | | | | |

c Critical Lane Group

| Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBL SBT SBR Lane Configurations 76 0 612 0 0 427 1113 0 0 1319 232 Future Volume (vph) 276 0 612 0 0 427 1113 0 0 1319 232 Ideal Flow (vphp) 1900 100 1.00 1.00 1.00 1.00 1.00 1.00 | | ٠ | → | $\mathbf{\hat{z}}$ | • | + | * | 1 | t | ۲ | 1 | ŧ | - |
|--|-----------------------------------|-----------|-------|--------------------|------|------------|------------|---------|-------|--------|------|----------|-------|
| Lane Configurations 1 | Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Traffic Volume (vph) 276 0 612 0 0 427 1113 0 0 1319 232 Future Volume (vph) 276 0 612 0 0 427 1113 0 0 1319 232 Ideal Flow (vphpl) 1900 1100 100 100 100 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1. | Lane Configurations | ሻ | | 1 | | | | ሻ | 4 | | | ↑ | 7 |
| Future Volume (vph) 276 0 612 0 0 427 1113 0 0 1390 1900 100 100 100< | Traffic Volume (vph) | 276 | 0 | 612 | 0 | 0 | 0 | 427 | 1113 | 0 | 0 | 1319 | 232 |
| Ideal Flow (vphpl) 1900 <td>Future Volume (vph)</td> <td>276</td> <td>0</td> <td>612</td> <td>0</td> <td>0</td> <td>0</td> <td>427</td> <td>1113</td> <td>0</td> <td>0</td> <td>1319</td> <td>232</td> | Future Volume (vph) | 276 | 0 | 612 | 0 | 0 | 0 | 427 | 1113 | 0 | 0 | 1319 | 232 |
| Lane Width 12 12 10 12 12 12 12 12 12 12 12 10 10 12 Total Lost time (s) 6.5 | Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) 6.5 | Lane Width | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 Fpb, ped/bikes 1.00 1.00 1.00 1.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 1.00 0.00 1.00 1.00 0.00 1 | Total Lost time (s) | 6.5 | | 6.5 | | | | 6.5 | 6.5 | | | 6.5 | 6.5 |
| Frpb, ped/bikes 1.00 1.00 1.00 1.00 1.00 1.00 9.88 Flpb, ped/bikes 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.95 Flt Protected 0.95 1.00 0.95 1.00 1.00 1.00 1.00 1.00 Satd. Flow (pert) 1752 1463 1583 1667 1673 1497 Peak-hour factor, PHF 0.93 | Lane Util. Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Flpb, ped/bikes 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.85 1.00 0.05 1.00 | Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 0.98 |
| Frt 1.00 0.85 1.00 1.00 1.00 0.85 FIP Protected 0.95 1.00 0.95 1.00 | Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Fit Protected 0.95 1.00 0.95 1.00 1.00 1.00 1.00 Satd. Flow (pert) 1752 1463 0.95 1.00 1.00 1.00 1.00 1.00 Satd. Flow (pert) 1752 1463 69 1667 1673 1497 Peak-hour factor, PHF 0.93 <td>Frt</td> <td>1.00</td> <td></td> <td>0.85</td> <td></td> <td></td> <td></td> <td>1.00</td> <td>1.00</td> <td></td> <td></td> <td>1.00</td> <td>0.85</td> | Frt | 1.00 | | 0.85 | | | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Satd. Flow (prot) 1752 1463 1583 1667 1673 1497 FI Permitted 0.95 1.00 0.04 1.00 1.00 1.00 Satd. Flow (perm) 1752 1463 69 1667 1673 1497 Peak-hour factor, PHF 0.93 0.9 | Flt Protected | 0.95 | | 1.00 | | | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Fit Permitted 0.95 1.00 0.04 1.00 </td <td>Satd. Flow (prot)</td> <td>1752</td> <td></td> <td>1463</td> <td></td> <td></td> <td></td> <td>1583</td> <td>1667</td> <td></td> <td></td> <td>1673</td> <td>1497</td> | Satd. Flow (prot) | 1752 | | 1463 | | | | 1583 | 1667 | | | 1673 | 1497 |
| Satd. Flow (perm) 1752 1463 69 1667 1673 1497 Peak-hour factor, PHF 0.93 | Flt Permitted | 0.95 | | 1.00 | | | | 0.04 | 1.00 | | | 1.00 | 1.00 |
| Peak-hour factor, PHF 0.93 | Satd. Flow (perm) | 1752 | | 1463 | | | | 69 | 1667 | | | 1673 | 1497 |
| Adj. Flow (vph) 297 0 658 0 0 459 1197 0 0 1418 249 RTOR Reduction (vph) 0 0 21 0 0 0 0 0 0 0 0 0 0 0 0 0 0 27 Lane Group Flow (vph) 297 0 637 0 0 0 459 1197 0 0 1418 222 Confl. Peds. (#/hr) 1 1 1 1 1 1 1 14% 14% 14% 14% 14% 14% 14% 1 1 6 6 6% 6% 6% 6% 1100 1 16 2 4 1 1 16 2 4 1 1 16 2 4 1 16 100 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10. | Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| RTOR Reduction (vph) 0 0 21 0 0 0 0 0 0 0 0 0 27 Lane Group Flow (vph) 297 0 637 0 0 0 459 1197 0 0 1418 222 Confl. Peds. (#/hr) 1 | Adj. Flow (vph) | 297 | 0 | 658 | 0 | 0 | 0 | 459 | 1197 | 0 | 0 | 1418 | 249 |
| Lane Group Flow (vph) 297 0 637 0 0 459 1197 0 0 1418 222 Confl. Peds. (#/hr) 1 | RTOR Reduction (vph) | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 |
| Confl. Peds. (#/hr) 1 1 1 Confl. Bikes (#/hr) 1 1 1 Heavy Vehicles (%) 3% 3% 0% 0% 0% 14% 14% 6% 6% Turn Type Prot pt+ov pm+pt NA NA pm+ov Protected Phases 4 14 1 16 2 4 Permitted Phases 4 16 2 4 Actuated Green, G (s) 20.5 61.5 131.0 131.0 90.0 110.5 Effective Green, g (s) 20.5 61.5 131.0 131.0 90.0 110.5 Clearance Time (s) 6.5 6.5 6.5 6.5 6.6 6.5 Clearance Time (s) 6.5 3.5 3.0 6.0 3.5 Lane Grp Cap (vph) 218 546 372 1327 915 1064 V/s Ratio Perm 0.72 0.12 0.03 0.55 0.03 0.5 0.12 V/c Ratio 1.36 1.17 1.23 0.90 1.55 | Lane Group Flow (vph) | 297 | 0 | 637 | 0 | 0 | 0 | 459 | 1197 | 0 | 0 | 1418 | 222 |
| Confl. Bikes (#/hr) 1 Heavy Vehicles (%) 3% 3% 0% 0% 0% 14% 14% 6% 6% 6% Turn Type Prot pt+ov pm+pt NA NA pm+ov Protected Phases 4 1 1 6 2 4 Permitted Phases 4 1 1 6 2 4 Actuated Green, G (s) 20.5 61.5 131.0 131.0 90.0 110.5 Effective Green, g (s) 20.5 61.5 131.0 131.0 90.0 110.5 Actuated g/C Ratio 0.12 0.37 0.80 0.80 0.55 0.67 Clearance Time (s) 6.5 6.5 6.5 6.5 6.5 0.65 0.60 3.5 Lane Grp Cap (vph) 218 546 372 1327 915 1064 v/s Ratio Perm 0.72 c0.85 0.03 0.12 0.12 0.12 0.12 0.12 | Confl. Peds. (#/hr) | | | | | | | 1 | | | | | 1 |
| Heavy Vehicles (%) 3% 3% 3% 0% 0% 0% 14% 14% 14% 6% 1105 131.0 131.0 131.0 131.0 131.0 131.0 131.0 131.0 131.0 131.0 131.0 131.0 131.0 130.0 100.0 110.5 6.5 6.5 0.65 0.65 0.65 0.65 0.65 1.5 0 | Confl. Bikes (#/hr) | | | | | | | | | | | | 1 |
| Turn TypeProtpt+ovpm+ptNANApm+ovProtected Phases41411624Permitted Phases41622Actuated Green, G (s)20.561.5131.0131.090.0110.5Effective Green, g (s)20.561.5131.0131.090.0110.5Actuated g/C Ratio0.120.370.800.800.550.67Clearance Time (s)6.56.56.56.56.5Vehicle Extension (s)3.53.06.03.5Lane Grp Cap (vph)21854637213279151064v/s Ratio Protc0.17c0.440.260.72c0.850.03v/s Ratio Perm0.720.120.120.120.120.12Uniform Delay, d172.051.560.512.137.210.3Progression Factor1.001.001.001.001.001.001.00Incremental Delay, d2189.893.7126.58.8252.80.1Delay (s)261.8145.2187.020.9290.110.4 | Heavy Vehicles (%) | 3% | 3% | 3% | 0% | 0% | 0% | 14% | 14% | 14% | 6% | 6% | 6% |
| Protected Phases 4 1 4 1 1 6 2 4 Permitted Phases 4 1 6 2 Actuated Green, G (s) 20.5 61.5 131.0 131.0 90.0 110.5 Effective Green, g (s) 20.5 61.5 131.0 131.0 90.0 110.5 Actuated g/C Ratio 0.12 0.37 0.80 0.80 0.55 0.67 Clearance Time (s) 6.5 6.5 6.5 6.5 6.5 6.5 0.60 3.5 Lane Grp Cap (vph) 218 546 372 1327 915 1064 v/s Ratio Prot c0.17 c0.44 0.26 0.72 c0.85 0.03 v/s Ratio Perm 0.72 0.12 0.12 0.12 0.12 0.12 V/c Ratio 1.36 1.17 1.23 0.90 1.55 0.21 Uniform Delay, d1 72.0 51.5 60.5 12.1 37.2 10.3 Progression Factor 1.00 1. | Turn Type | Prot | | pt+ov | | | | pm+pt | NA | | | NA | pm+ov |
| Permitted Phases 4 1 6 2 Actuated Green, G (s) 20.5 61.5 131.0 131.0 90.0 110.5 Effective Green, g (s) 20.5 61.5 131.0 131.0 90.0 110.5 Actuated g/C Ratio 0.12 0.37 0.80 0.80 0.55 0.67 Clearance Time (s) 6.5 6.5 6.5 6.5 6.5 0.67 Vehicle Extension (s) 3.5 3.0 6.0 3.5 0.00 3.5 Lane Grp Cap (vph) 218 546 372 1327 915 1064 v/s Ratio Prot c0.17 c0.44 0.26 0.72 c0.85 0.03 v/s Ratio Perm 0.72 0.12 < | Protected Phases | 4 | | . 14 | | | | | 16 | | | 2 | . 4 |
| Actuated Green, G (s) 20.5 61.5 131.0 131.0 90.0 110.5 Effective Green, g (s) 20.5 61.5 131.0 131.0 90.0 110.5 Actuated g/C Ratio 0.12 0.37 0.80 0.80 0.55 0.67 Clearance Time (s) 6.5 6.5 6.5 6.5 6.5 6.5 Vehicle Extension (s) 3.5 3.0 6.0 3.5 3.0 6.0 3.5 Lane Grp Cap (vph) 218 546 372 1327 915 1064 v/s Ratio Prot c0.17 c0.44 0.26 0.72 c0.85 0.03 v/s Ratio Perm 0.72 0.12 | Permitted Phases | | | 4 | | | | 16 | | | | | 2 |
| Effective Green, g (s)20.561.5131.0131.090.0110.5Actuated g/C Ratio0.120.370.800.800.550.67Clearance Time (s)6.56.56.56.56.5Vehicle Extension (s)3.53.06.03.5Lane Grp Cap (vph)21854637213279151064v/s Ratio Protc0.17c0.440.260.72c0.850.03v/s Ratio Perm0.720.120.120.120.12v/c Ratio1.361.171.230.901.550.21Uniform Delay, d172.051.560.512.137.210.3Progression Factor1.001.001.001.001.001.00Incremental Delay, d2189.893.7126.58.8252.80.1Delay (s)261.8145.2187.020.9290.110.4 | Actuated Green, G (s) | 20.5 | | 61.5 | | | | 131.0 | 131.0 | | | 90.0 | 110.5 |
| Actuated g/C Ratio 0.12 0.37 0.80 0.80 0.55 0.67 Clearance Time (s) 6.5 1.5 1064 V/s Ratio Prot c0.85 0.03 0.72 c0.85 0.03 0.72 0.12 V/s Ratio Perm 0.72 0.12 0.12 0.12 0.90 1.55 0.21 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.10 1.00 <t< td=""><td>Effective Green, g (s)</td><td>20.5</td><td></td><td>61.5</td><td></td><td></td><td></td><td>131.0</td><td>131.0</td><td></td><td></td><td>90.0</td><td>110.5</td></t<> | Effective Green, g (s) | 20.5 | | 61.5 | | | | 131.0 | 131.0 | | | 90.0 | 110.5 |
| Clearance Time (s) 6.5 6.5 6.5 6.5 6.5 Vehicle Extension (s) 3.5 3.0 6.0 3.5 Lane Grp Cap (vph) 218 546 372 1327 915 1064 v/s Ratio Prot c0.17 c0.44 0.26 0.72 c0.85 0.03 v/s Ratio Perm 0.72 0.12 v/s 0.12 0.10 | Actuated g/C Ratio | 0.12 | | 0.37 | | | | 0.80 | 0.80 | | | 0.55 | 0.67 |
| Vehicle Extension (s) 3.5 3.0 6.0 3.5 Lane Grp Cap (vph) 218 546 372 1327 915 1064 v/s Ratio Prot c0.17 c0.44 0.26 0.72 c0.85 0.03 v/s Ratio Perm 0.72 0.12 0.12 0.12 0.12 0.12 v/c Ratio 1.36 1.17 1.23 0.90 1.55 0.21 Uniform Delay, d1 72.0 51.5 60.5 12.1 37.2 10.3 Progression Factor 1.00 1.00 1.00 1.00 1.00 1.00 Incremental Delay, d2 189.8 93.7 126.5 8.8 252.8 0.1 Delay (s) 261.8 145.2 187.0 20.9 290.1 10.4 | Clearance Time (s) | 6.5 | | | | | | 6.5 | | | | 6.5 | 6.5 |
| Lane Grp Cap (vph)21854637213279151064v/s Ratio Protc0.17c0.440.260.72c0.850.03v/s Ratio Perm0.720.120.120.12v/c Ratio1.361.171.230.901.550.21Uniform Delay, d172.051.560.512.137.210.3Progression Factor1.001.001.001.001.001.00Incremental Delay, d2189.893.7126.58.8252.80.1Delay (s)261.8145.2187.020.9290.110.4 | Vehicle Extension (s) | 3.5 | | | | | | 3.0 | | | | 6.0 | 3.5 |
| v/s Ratio Prot c0.17 c0.44 0.26 0.72 c0.85 0.03 v/s Ratio Perm 0.72 0.12 0.12 0.12 0.12 v/c Ratio 1.36 1.17 1.23 0.90 1.55 0.21 Uniform Delay, d1 72.0 51.5 60.5 12.1 37.2 10.3 Progression Factor 1.00 1.00 1.00 1.00 1.00 1.00 Incremental Delay, d2 189.8 93.7 126.5 8.8 252.8 0.1 Delay (s) 261.8 145.2 187.0 20.9 290.1 10.4 | Lane Grp Cap (vph) | 218 | | 546 | | | | 372 | 1327 | | | 915 | 1064 |
| v/s Ratio Perm 0.72 0.12 v/c Ratio 1.36 1.17 1.23 0.90 1.55 0.21 Uniform Delay, d1 72.0 51.5 60.5 12.1 37.2 10.3 Progression Factor 1.00 1.00 1.00 1.00 1.00 1.00 Incremental Delay, d2 189.8 93.7 126.5 8.8 252.8 0.1 Delay (s) 261.8 145.2 187.0 20.9 290.1 10.4 | v/s Ratio Prot | c0.17 | | c0.44 | | | | 0.26 | 0.72 | | | c0.85 | 0.03 |
| v/c Ratio1.361.171.230.901.550.21Uniform Delay, d172.051.560.512.137.210.3Progression Factor1.001.001.001.001.001.00Incremental Delay, d2189.893.7126.58.8252.80.1Delay (s)261.8145.2187.020.9290.110.4 | v/s Ratio Perm | | | | | | | 0.72 | | | | | 0.12 |
| Uniform Delay, d172.051.560.512.137.210.3Progression Factor1.001.001.001.001.001.00Incremental Delay, d2189.893.7126.58.8252.80.1Delay (s)261.8145.2187.020.9290.110.4 | v/c Ratio | 1.36 | | 1.17 | | | | 1.23 | 0.90 | | | 1.55 | 0.21 |
| Progression Factor 1.00 1.01 1.01 <td>Uniform Delay, d1</td> <td>72.0</td> <td></td> <td>51.5</td> <td></td> <td></td> <td></td> <td>60.5</td> <td>12.1</td> <td></td> <td></td> <td>37.2</td> <td>10.3</td> | Uniform Delay, d1 | 72.0 | | 51.5 | | | | 60.5 | 12.1 | | | 37.2 | 10.3 |
| Incremental Delay, d2189.893.7126.58.8252.80.1Delay (s)261.8145.2187.020.9290.110.4 | Progression Factor | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Delay (s) 261.8 145.2 187.0 20.9 290.1 10.4 | Incremental Delay, d2 | 189.8 | | 93.7 | | | | 126.5 | 8.8 | | | 252.8 | 0.1 |
| | Delay (s) | 261.8 | | 145.2 | | | | 187.0 | 20.9 | | | 290.1 | 10.4 |
| Level of Service F F F F F B | Level of Service | F | | F | | | | F | С | | | F | В |
| Approach Delay (s) 181.5 0.0 66.9 248.3 | Approach Delay (s) | | 181.5 | | | 0.0 | | | 66.9 | | | 248.3 | |
| Approach LOS F A E F | Approach LOS | | F | | | А | | | E | | | F | |
| Intersection Summary | Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay 163.2 HCM 2000 Level of Service F | HCM 2000 Control Delay | | | 163.2 | H | CM 2000 | Level of | Service | | F | | | |
| HCM 2000 Volume to Capacity ratio 146 | HCM 2000 Volume to Canaci | ity ratio | | 1 46 | 11 | 2000 | 2010101 | | | | | | |
| Actuated Cycle Length (s) 164.5 Sum of lost time (s) 19.5 | Actuated Cycle Length (s) | | | 164.5 | S | um of lost | time (s) | | | 19.5 | | | |
| Intersection Capacity Utilization 122.5% ICU evel of Service H | Intersection Canacity Utilization | on | | 122 5% | | | of Service | 2 | | н Н | | | |
| Analysis Period (min) 15 | Analysis Period (min) | | | 15 | | 5 10.010 | | - | | | | | |

c Critical Lane Group

| | ۶ | $\mathbf{\hat{z}}$ | 1 | t | Ŧ | ∢_ |
|-----------------------------|--------------------|--------------------|------|----------|---------------|------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ካካ | 1 | | *** | * * | |
| Traffic Volume (veh/h) | 222 | 884 | 0 | 1244 | 970 | 0 |
| Future Volume (veh/h) | 222 | 884 | 0 | 1244 | 970 | 0 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A pbT) | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Parking Bus, Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1767 | 1767 | 0 | 1767 | 1752 | 0 |
| Adj Flow Rate, veh/h | 255 | 0 | 0 | 1430 | 1115 | 0 |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Percent Heavy Veh, % | 9 | 9 | 0 | 9 | 10 | 0 |
| Cap, veh/h | 328 | - | 0 | 3759 | 2594 | 0 |
| Arrive On Green | 0.10 | 0.00 | 0.00 | 0.78 | 0.78 | 0.00 |
| Sat Flow, veh/h | 3264 | 1497 | 0 | 5141 | 3504 | 0 |
| Grp Volume(v) veh/h | 255 | 0 | 0 | 1430 | 1115 | 0 |
| Grp Sat Flow(s) veh/h/ln | 1632 | 1497 | 0 | 1608 | 1664 | 0 |
| Q Serve(q , s) s | 7.6 | 0.0 | 0.0 | 93 | 11 1 | 0.0 |
| Cvcle Q Clear(q, c) s | 7.6 | 0.0 | 0.0 | 93 | 11.1 | 0.0 |
| Prop In Lane | 1 00 | 1.00 | 0.00 | 0.0 | | 0.00 |
| Lane Grp Cap(c) veh/h | 328 | 1.00 | 0.00 | 3759 | 2594 | 0.00 |
| V/C Ratio(X) | 0 78 | | 0.00 | 0.38 | 0.43 | 0.00 |
| Avail Cap(c, a) veh/h | 522 | | 0.00 | 3759 | 2594 | 0.00 |
| HCM Platoon Ratio | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d) s/veb | 43.9 | 0.0 | 0.0 | 3.5 | 37 | 0.00 |
| Incr Delay (d2) s/veh | 40.5 | 0.0 | 0.0 | 0.3 | 0.5 | 0.0 |
| Initial O Delay(d3) s/veh | 0 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfO(50%) veh/ln | 3.0 | 0.0 | 0.0 | 2.0 | 2.5 | 0.0 |
| Unsig Movement Delay s/ve | eh | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| InGrn Delav(d) s/veh | 47.8 | 0.0 | 0.0 | 38 | 42 | 0.0 |
| LinGrn LOS | ס. <i>ו</i> ד ח | 0.0 | Δ | Δ | Δ | Δ |
| Approach Vol. voh/h | 255 | ٨ | | 1/20 | 1115 | |
| Approach Vol, Vell/II | | A | | 1430 | CI II 0 1/ | |
| Approach LOS | 47.0 | | | ۵.o ۸ | 4.2 | |
| Approach LOS | U | | | A | A | |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), s | | 83.9 | | 16.1 | | 83.9 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 8 | 72.0 | | 16.0 | | 72.0 |
| Max Q Clear Time (g_c+I1), | S | 13.1 | | 9.6 | | 11.3 |
| Green Ext Time (p_c), s | | 22.1 | | 0.4 | | 30.8 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 79 | | | |
| HCM 6th LOS | | | Δ | | | |
| | | | A | | | |

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

| | 4 | • | 1 | 1 | \$ | Ŧ |
|---------------------------|-----------|------|-----------|------|------|----------|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ካካ | 11 | 440 | | | *** |
| Traffic Volume (veh/h) | 545 | 1050 | 684 | 0 | 0 | 1070 |
| Future Volume (veh/h) | 545 | 1050 | 684 | 0 | 0 | 1070 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A pbT) | 1 00 | 1 00 | • | 1 00 | 1 00 | • |
| Parking Bus, Adi | 1.00 | 1.00 | 1 00 | 1.00 | 1.00 | 1 00 |
| Work Zone On Approac | ch No | | No | 1.00 | | No |
| Adi Sat Flow veh/h/ln | 1841 | 1841 | 1781 | 0 | 0 | 1693 |
| Adi Flow Rate veh/h | 657 | 1265 | 824 | 0 | 0 | 1289 |
| Peak Hour Factor | 0.83 | 0 83 | 024 | 0 83 | 0.83 | 0 83 |
| Percent Heavy Vah % | 0.05 | 0.05 | 0.00 Q | 0.05 | 0.05 | 1/ |
| Con yoh/h | 4 | 4 | 0 1004 | 0 | 0 | 1004 |
| Cap, ven/n | 1004 | 1203 | 1994 | 0 00 | 0 00 | 1094 |
| Arrive On Green | 0.46 | 0.46 | 0.41 | 0.00 | 0.00 | 0.41 |
| Sat Flow, veh/h | 3401 | 2745 | 5184 | 0 | 0 | 4925 |
| Grp Volume(v), veh/h | 657 | 1265 | 824 | 0 | 0 | 1289 |
| Grp Sat Flow(s), veh/h/l | n1700 | 1373 | 1621 | 0 | 0 | 1540 |
| Q Serve(g_s), s | 12.9 | 46.0 | 12.0 | 0.0 | 0.0 | 22.8 |
| Cycle Q Clear(g_c), s | 12.9 | 46.0 | 12.0 | 0.0 | 0.0 | 22.8 |
| Prop In Lane | 1.00 | 1.00 | | 0.00 | 0.00 | |
| Lane Gro Cap(c), veh/h | 1564 | 1263 | 1994 | 0 | 0 | 1894 |
| V/C Ratio(X) | 0.42 | 1.00 | 0.41 | 0.00 | 0.00 | 0.68 |
| Avail $Can(c, a)$ veh/h | 156/ | 1263 | 100/ | 0.00 | 0.00 | 180/ |
| HCM Distoon Datio | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 |
| | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/ve | n 18.1 | 27.0 | 21.0 | 0.0 | 0.0 | 24.1 |
| Incr Delay (d2), s/veh | 0.2 | 25.7 | 0.6 | 0.0 | 0.0 | 2.0 |
| Initial Q Delay(d3),s/vel | n 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),ve | h/lr4.8 | 18.1 | 4.4 | 0.0 | 0.0 | 8.1 |
| Unsig. Movement Delay | y, s/veh | 1 | | | | |
| LnGrp Delay(d),s/veh | 18.3 | 52.7 | 21.6 | 0.0 | 0.0 | 26.1 |
| LnGrp LOS | В | F | С | А | Α | С |
| Approach Vol. veh/h | 1922 | | 824 | | | 1289 |
| Approach Delay s/veh | 40.9 | | 21.6 | | | 26.1 |
| Approach LOS | .э.э П | | 21.0 C | | | <u> </u> |
| | U | | U | | | U |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc |), s | 47.0 | | 53.0 | | 47.0 |
| Change Period (Y+Rc). | S | 6.0 | | 7.0 | | 6.0 |
| Max Green Setting (Gr | ıax). s | 41.0 | | 46.0 | | 41.0 |
| Max Q Clear Time (q. c | +11), s | 24.8 | | 48.0 | | 14.0 |
| Green Ext Time (n. c) | s,, 5 | 14.8 | | 0.0 | | 17.9 |
| | - | 11.0 | | 0.0 | | |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 32.3 | | | |
| HCM 6th LOS | | | С | | | |

∢ t WBT Movement EBL EBT EBR WBL WBR NBL NBT NBR SBL SBT SBR Lane Configurations 4 ٦ *** 1 朴朴ኈ đ ۴ ٦ Traffic Volume (veh/h) 127 83 1654 42 0 3 38 31 1200 1 5 1 Future Volume (veh/h) 1 0 3 127 1 83 38 1654 42 31 1200 5 Initial Q (Qb), veh 0 0 0 0 0 0 0 0 0 0 0 0 Ped-Bike Adj(A_pbT) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Parking Bus, Adj 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Work Zone On Approach No No No No Adj Sat Flow, veh/h/ln 1159 1826 1159 1856 1856 1856 1826 1633 1633 1633 1159 1826 Adj Flow Rate, veh/h 0 4 155 1 101 46 2017 0 38 1463 6 1 0.82 0.82 Peak Hour Factor 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 Percent Heavy Veh, % 50 50 50 3 3 3 5 5 5 18 18 18 376 63 51 2539 Cap, veh/h 43 14 57 183 1 2778 10 Arrive On Green 0.26 0.26 0.24 0.00 0.00 0.24 0.24 0.04 0.56 0.01 0.18 0.18 Sat Flow, veh/h 0 59 236 463 3 1569 1739 4985 1547 1555 4584 19 Grp Volume(v), veh/h 5 0 0 156 0 101 46 2017 0 38 949 520 Grp Sat Flow(s),veh/h/ln 295 1569 0 466 0 1739 1662 1547 1555 1486 1630 0 Q Serve(g_s), s 0.0 0.0 5.2 30.1 2.4 29.2 29.2 0.0 0.0 0.0 2.6 0.0 Cycle Q Clear(g_c), s 26.0 0.0 5.2 30.1 0.0 2.4 29.2 29.2 26.0 0.0 0.0 2.6 Prop In Lane 0.20 0.80 0.99 1.00 1.00 1.00 1.00 0.01 Lane Grp Cap(c), veh/h 120 376 1647 903 0 0 193 0 63 2778 51 V/C Ratio(X) 0.04 0.00 0.00 0.81 0.00 0.27 0.73 0.73 0.75 0.58 0.58 Avail Cap(c a), veh/h 120 0 122 124 903 0 0 193 376 2778 1647 HCM Platoon Ratio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.33 0.33 0.33 Upstream Filter(I) 1.00 0.00 0.00 1.00 0.00 1.00 1.00 1.00 0.00 0.88 0.88 0.88 Uniform Delay (d), s/veh 30.5 0.0 0.0 40.7 0.0 30.9 47.7 16.5 0.0 49.1 30.1 30.1 Incr Delay (d2), s/veh 0.0 0.0 22.0 0.0 0.4 15.1 1.7 0.0 17.5 1.3 2.4 0.1 Initial Q Delay(d3),s/veh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 %ile BackOfQ(50%),veh/lr0.1 0.0 0.0 5.0 0.0 2.0 1.4 10.6 0.0 1.2 13.2 11.8 Unsig. Movement Delay, s/veh LnGrp Delay(d),s/veh 0.0 0.0 62.7 0.0 31.2 62.9 18.1 0.0 66.5 31.4 32.5 30.6 LnGrp LOS С А А Е А С Е В Е С С 5 257 2063 Α 1507 Approach Vol, veh/h Approach Delay, s/veh 30.6 50.3 19.1 32.7 Approach LOS В С D С Timer - Assigned Phs 2 4 5 6 8 Phs Duration (G+Y+Rc), s8.6 61.4 30.0 61.7 30.0 8.3 Change Period (Y+Rc), s 5.0 6.0 6.0 6.0 5.0 6.0 Max Green Setting (Gmax7.6 52.0 24.0 8.0 51.0 24.0 Max Q Clear Time (g_c+I14),6s 31.2 28.0 4.4 32.1 28.0 Green Ext Time (p_c), s 0.0 0.0 0.0 0.0 19.5 18.7 Intersection Summary HCM 6th Ctrl Delay 26.6 HCM 6th LOS С

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

| | ۶ | $\mathbf{\hat{z}}$ | 1 | Ť | Ļ | ∢ |
|-----------------------------|-----------------|--------------------|-----------|--------------|------|------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | 55 | 1 | 5 | ** | ** | 1 |
| Traffic Volume (veh/h) | 350 | 65 | 219 | 1395 | 996 | 350 |
| Future Volume (veh/h) | 350 | 65 | 219 | 1395 | 996 | 350 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A pbT) | 1.00 | 1.00 | 1.00 | v | v | 1.00 |
| Parking Bus Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approac | h No | | | No | No | |
| Adi Sat Flow veh/h/ln | 1737 | 1737 | 1811 | 1811 | 1678 | 1678 |
| Adi Flow Rate veh/h | 438 | 81 | 274 | 1744 | 1245 | 438 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh % | 11 | 11 | 00.0 A | 00.0 A | 15 | 15 |
| Can yeh/h | 510 | 234 | 310 | 2446 | 1800 | Q10 |
| Arrivo On Groop | 0.16 | 204 | 0.00 | 2440 0 71 | 0.57 | 012 |
| Anive On Green | 0.10 | 0.10 | 1705 | 0./1 | 0.07 | 1404 |
| Sat Flow, ven/n | 3209 | 1472 | 1725 | 3532 | 3212 | 1421 |
| Grp Volume(v), veh/h | 438 | 81 | 274 | 1744 | 1245 | 438 |
| Grp Sat Flow(s),veh/h/li | า1605 | 1472 | 1725 | 1721 | 1594 | 1421 |
| Q Serve(g_s), s | 13.3 | 4.9 | 6.4 | 29.7 | 27.5 | 19.1 |
| Cycle Q Clear(g_c), s | 13.3 | 4.9 | 6.4 | 29.7 | 27.5 | 19.1 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | 510 | 234 | 310 | 2446 | 1822 | 812 |
| V/C Ratio(X) | 0.86 | 0.35 | 0.88 | 0.71 | 0.68 | 0.54 |
| Avail Cap(c a), veh/h | 578 | 265 | 432 | 2446 | 1822 | 812 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Unstream Filter(I) | 1.00 | 1.00 | 0.80 | 0.80 | 1.00 | 1.00 |
| Uniform Delay (d) s/vel | 140.9 | 37.4 | 19.8 | 85 | 15.1 | 13.3 |
| Incr Delay (d2) shuch | 11 2 | 00 | 12.0 | 1 / | 2.1 | 2.6 |
| Initial O Delay (uz), sivel | 0.0 | 0.9 | 0.0 | 0.0 | 2.1 | 2.0 |
| | | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Wile BackOTQ(50%),Vel | 1/110.9 | l.ŏ | 4.0 | Ŏ.Ŏ | 9.3 | 0.0 |
| Unsig. Movement Delay | , s/veh | 00.0 | 04.0 | ^ | 47.0 | 45.0 |
| LnGrp Delay(d),s/veh | 52.2 | 38.3 | 31.9 | 9.9 | 17.2 | 15.8 |
| LnGrp LOS | D | D | С | A | В | В |
| Approach Vol, veh/h | 519 | | | 2018 | 1683 | |
| Approach Delay, s/veh | 50.0 | | | 12.9 | 16.8 | |
| Approach LOS | D | | | В | В | |
| Timer - Assianed Phs | 1 | 2 | | 4 | | 6 |
| Phs Duration (G+V+Rc) | 130 | 64.2 | | 21 9 | | 78.1 |
| Change Deried (V De) | , 5J.9 0 E 0 | 7.0 | | 21.J 60 | | 70.1 |
| Max Groop Cotting (1+RC), | 5 0.0 | 1.0 | | 0.0 | | 0.1 |
| wax Green Setting (Gm | 121X0,.US | 48.0 | | 10.0 | | 09.0 |
| Max Q Clear Time (g_c | +110),46 | 29.5 | | 15.3 | | 31.7 |
| Green Ext Time (p_c), s | 0.5 | 17.5 | | 0.6 | | 36.1 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 19.0 | | | |
| HCM 6th LOS | | | В | | | |

Intersection

| Int Delay, s/veh | 4.6 | | | | | |
|------------------------|--------|------|---------------|------|------|----------|
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Y | | _ ≜ î≽ | | | ^ |
| Traffic Vol, veh/h | 15 | 14 | 1356 | 8 | 0 | 1258 |
| Future Vol, veh/h | 15 | 14 | 1356 | 8 | 0 | 1258 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage | e, # 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 78 | 78 | 78 | 78 | 78 | 78 |
| Heavy Vehicles, % | 20 | 20 | 9 | 9 | 17 | 17 |
| Mvmt Flow | 19 | 18 | 1738 | 10 | 0 | 1613 |

| Major/Minor | Minor1 | М | ajor1 | Ма | ajor2 | | |
|----------------------|----------|-----|-------|----|-------|---|--|
| Conflicting Flow All | 2550 | 874 | 0 | 0 | - | - | |
| Stage 1 | 1743 | - | - | - | - | - | |
| Stage 2 | 807 | - | - | - | - | - | |
| Critical Hdwy | 7.2 | 7.3 | - | - | - | - | |
| Critical Hdwy Stg 1 | 6.2 | - | - | - | - | - | |
| Critical Hdwy Stg 2 | 6.2 | - | - | - | - | - | |
| Follow-up Hdwy | 3.7 | 3.5 | - | - | - | - | |
| Pot Cap-1 Maneuver | ~ 17 | 259 | - | - | 0 | - | |
| Stage 1 | 104 | - | - | - | 0 | - | |
| Stage 2 | 357 | - | - | - | 0 | - | |
| Platoon blocked, % | | | - | - | | - | |
| Mov Cap-1 Maneuver | · ~ 17 | 259 | - | - | - | - | |
| Mov Cap-2 Maneuver | · ~ 17 | - | - | - | - | - | |
| Stage 1 | 104 | - | - | - | - | - | |
| Stage 2 | 357 | - | - | - | - | - | |
| | | | | | | | |
| Approach | WB | | NB | | SB | | |
| HCM Control Delay, s | \$ 420.3 | | 0 | | 0 | | |
| HCM LOS | F | | | | | | |
| | | | | | | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT | |
|-----------------------|-----|-----------|-----|--|
| Capacity (veh/h) | - | - 31 | - | |
| HCM Lane V/C Ratio | - | - 1.199 | - | |
| HCM Control Delay (s) | - | -\$ 420.3 | - | |
| HCM Lane LOS | - | - F | - | |
| HCM 95th %tile Q(veh) | - | - 4.1 | - | |
| Notos | | | | |
| NOLES | | | | |

~: Volume exceeds capacity

\$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

| | ۶ | - | \mathbf{F} | ∢ | - | • | 1 | 1 | 1 | 1 | ŧ | ~ |
|------------------------------|------|----------|--------------|------|----------|------|------|----------|------|------|-------------|------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ۳. | ^ | 1 | ሻሻ | ↑ | 1 | ሻ | ↑ | 1 | ۳. | ↑ 1≽ | |
| Traffic Volume (veh/h) | 57 | 190 | 538 | 187 | 149 | 41 | 409 | 517 | 444 | 71 | 533 | 78 |
| Future Volume (veh/h) | 57 | 190 | 538 | 187 | 149 | 41 | 409 | 517 | 444 | 71 | 533 | 78 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1796 | 1796 | 1796 | 1856 | 1856 | 1856 | 1796 | 1796 | 1796 | 1544 | 1544 | 1544 |
| Adj Flow Rate, veh/h | 71 | 238 | 0 | 234 | 186 | 0 | 511 | 646 | 0 | 89 | 666 | 98 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Percent Heavy Veh, % | 7 | 7 | 7 | 3 | 3 | 3 | 7 | 7 | 7 | 24 | 24 | 24 |
| Cap, veh/h | 90 | 376 | | 310 | 274 | | 549 | 1098 | | 293 | 816 | 120 |
| Arrive On Green | 0.05 | 0.11 | 0.00 | 0.09 | 0.15 | 0.00 | 0.24 | 0.61 | 0.00 | 0.32 | 0.32 | 0.32 |
| Sat Flow, veh/h | 1711 | 3413 | 1522 | 3428 | 1856 | 1572 | 1711 | 1796 | 1522 | 648 | 2566 | 377 |
| Grp Volume(v), veh/h | 71 | 238 | 0 | 234 | 186 | 0 | 511 | 646 | 0 | 89 | 380 | 384 |
| Grp Sat Flow(s),veh/h/ln | 1711 | 1706 | 1522 | 1714 | 1856 | 1572 | 1711 | 1796 | 1522 | 648 | 1467 | 1476 |
| Q Serve(g_s), s | 3.4 | 5.5 | 0.0 | 5.5 | 7.8 | 0.0 | 17.1 | 18.0 | 0.0 | 9.0 | 19.7 | 19.7 |
| Cycle Q Clear(g_c), s | 3.4 | 5.5 | 0.0 | 5.5 | 7.8 | 0.0 | 17.1 | 18.0 | 0.0 | 9.0 | 19.7 | 19.7 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.26 |
| Lane Grp Cap(c), veh/h | 90 | 376 | | 310 | 274 | | 549 | 1098 | | 293 | 466 | 469 |
| V/C Ratio(X) | 0.78 | 0.63 | | 0.75 | 0.68 | | 0.93 | 0.59 | | 0.30 | 0.82 | 0.82 |
| Avail Cap(c_a), veh/h | 214 | 911 | | 312 | 432 | | 607 | 1198 | | 307 | 498 | 501 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 38.6 | 35.1 | 0.0 | 36.6 | 33.3 | 0.0 | 18.2 | 9.7 | 0.0 | 22.2 | 25.9 | 25.9 |
| Incr Delay (d2), s/veh | 13.7 | 2.5 | 0.0 | 10.0 | 4.2 | 0.0 | 20.1 | 1.9 | 0.0 | 2.1 | 13.2 | 13.3 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/In | 1.7 | 2.3 | 0.0 | 2.7 | 3.7 | 0.0 | 8.7 | 6.2 | 0.0 | 1.5 | 8.1 | 8.2 |
| Unsig. Movement Delay, s/veh | | | • • | | | | | | | | | |
| LnGrp Delay(d),s/veh | 52.3 | 37.6 | 0.0 | 46.6 | 37.5 | 0.0 | 38.3 | 11.6 | 0.0 | 24.3 | 39.1 | 39.2 |
| LnGrp LOS | D | D | | D | D | | D | B | | C | D | D |
| Approach Vol, veh/h | | 309 | A | | 420 | A | | 1157 | A | | 853 | |
| Approach Delay, s/veh | | 41.0 | | | 42.5 | | | 23.4 | | | 37.6 | |
| Approach LOS | | D | | | D | | | С | | | D | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 24.2 | 32.2 | 12.0 | 14.1 | | 56.4 | 8.9 | 17.2 | | | | |
| Change Period (Y+Rc), s | 4.5 | 6.0 | 4.5 | 5.0 | | 6.0 | 4.5 | 5.0 | | | | |
| Max Green Setting (Gmax), s | 22.5 | 28.0 | 7.5 | 22.0 | | 55.0 | 10.3 | 19.2 | | | | |
| Max Q Clear Time (g_c+I1), s | 19.1 | 21.7 | 7.5 | 7.5 | | 20.0 | 5.4 | 9.8 | | | | |
| Green Ext Time (p_c), s | 0.6 | 4.5 | 0.0 | 1.6 | | 12.3 | 0.0 | 0.8 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 32.7 | | | | | | | | | |
| HCM 6th LOS | | | С | | | | | | | | | |

Notes

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Intersection

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | - 🗘 | | | - सी | 1 | | - सी | 1 | | - 44 | |
| Traffic Vol, veh/h | 21 | 0 | 1 | 2 | 5 | 1 | 51 | 551 | 3 | 0 | 659 | 44 |
| Future Vol, veh/h | 21 | 0 | 1 | 2 | 5 | 1 | 51 | 551 | 3 | 0 | 659 | 44 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | 50 | - | - | 325 | - | - | - |
| Veh in Median Storage | , # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 | 95 |
| Heavy Vehicles, % | 70 | 70 | 70 | 67 | 67 | 67 | 9 | 9 | 9 | 21 | 21 | 21 |
| Mvmt Flow | 22 | 0 | 1 | 2 | 5 | 1 | 54 | 580 | 3 | 0 | 694 | 46 |

| Major/Minor | Minor2 | | I | Vinor1 | | | Major1 | | | Major2 | | | |
|----------------------|--------|------|------|--------|-------|-------|--------|---|---|--------|---|---|--|
| Conflicting Flow All | 1410 | 1408 | 717 | 1406 | 1428 | 580 | 740 | 0 | 0 | 583 | 0 | 0 | |
| Stage 1 | 717 | 717 | - | 688 | 688 | - | - | - | - | - | - | - | |
| Stage 2 | 693 | 691 | - | 718 | 740 | - | - | - | - | - | - | - | |
| Critical Hdwy | 7.8 | 7.2 | 6.9 | 7.77 | 7.17 | 6.87 | 4.19 | - | - | 4.31 | - | - | |
| Critical Hdwy Stg 1 | 6.8 | 6.2 | - | 6.77 | 6.17 | - | - | - | - | - | - | - | |
| Critical Hdwy Stg 2 | 6.8 | 6.2 | - | 6.77 | 6.17 | - | - | - | - | - | - | - | |
| Follow-up Hdwy | 4.13 | 4.63 | 3.93 | 4.103 | 4.603 | 3.903 | 2.281 | - | - | 2.389 | - | - | |
| Pot Cap-1 Maneuver | 83 | 101 | 334 | 85 | 99 | 411 | 836 | - | - | 904 | - | - | |
| Stage 1 | 330 | 346 | - | 347 | 362 | - | - | - | - | - | - | - | |
| Stage 2 | 341 | 357 | - | 333 | 340 | - | - | - | - | - | - | - | |
| Platoon blocked, % | | | | | | | | - | - | | - | - | |
| Mov Cap-1 Maneuver | 73 | 91 | 334 | 79 | 89 | 411 | 836 | - | - | 904 | - | - | |
| Mov Cap-2 Maneuver | 73 | 91 | - | 79 | 89 | - | - | - | - | - | - | - | |
| Stage 1 | 298 | 346 | - | 314 | 327 | - | - | - | - | - | - | - | |
| Stage 2 | 303 | 323 | - | 332 | 340 | - | - | - | - | - | - | - | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| Approach | EB | WB | NB | SB | |
|----------------------|------|------|-----|----|--|
| HCM Control Delay, s | 71.9 | 46.1 | 0.8 | 0 | |
| HCM LOS | F | Е | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1V | VBLn1V | VBLn2 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|--------|--------|-------|-----|-----|-----|
| Capacity (veh/h) | 836 | - | - | 76 | 86 | 411 | 904 | - | - |
| HCM Lane V/C Ratio | 0.064 | - | - | 0.305 | 0.086 | 0.003 | - | - | - |
| HCM Control Delay (s) | 9.6 | 0 | - | 71.9 | 50.7 | 13.8 | 0 | - | - |
| HCM Lane LOS | А | А | - | F | F | В | А | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 1.1 | 0.3 | 0 | 0 | - | - |

| | ≯ | - | + | • | 1 | ~ | | |
|------------------------------|------|------|------|------|------|------|------|------|
| Movement | EBL | EBT | WBT | WBR | SBL | SBR | | |
| Lane Configurations | ٦ | + | • | 1 | 5 | 1 | | |
| Traffic Volume (veh/h) | 487 | 193 | 381 | 365 | 0 | 0 | | |
| Future Volume (veh/h) | 487 | 193 | 381 | 365 | 0 | 0 | | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | | |
| Ped-Bike Adj(A pbT) | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Work Zone On Approach | | No | No | | No | | | |
| Adj Sat Flow, veh/h/ln | 1811 | 1811 | 1870 | 1870 | 1870 | 1870 | | |
| Adj Flow Rate, veh/h | 573 | 227 | 448 | 429 | 0 | 0 | | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | | |
| Percent Heavy Veh, % | 6 | 6 | 2 | 2 | 2 | 2 | | |
| Cap, veh/h | 776 | 1500 | 752 | 637 | 5 | 5 | | |
| Arrive On Green | 0.25 | 0.83 | 0.40 | 0.40 | 0.00 | 0.00 | | |
| Sat Flow, veh/h | 1725 | 1811 | 1870 | 1585 | 1781 | 1585 | | |
| Grp Volume(v), veh/h | 573 | 227 | 448 | 429 | 0 | 0 | | |
| Grp Sat Flow(s),veh/h/ln | 1725 | 1811 | 1870 | 1585 | 1781 | 1585 | | |
| Q Serve(g_s), s | 5.0 | 0.9 | 6.6 | 7.8 | 0.0 | 0.0 | | |
| Cycle Q Clear(g_c), s | 5.0 | 0.9 | 6.6 | 7.8 | 0.0 | 0.0 | | |
| Prop In Lane | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| Lane Grp Cap(c), veh/h | 776 | 1500 | 752 | 637 | 5 | 5 | | |
| V/C Ratio(X) | 0.74 | 0.15 | 0.60 | 0.67 | 0.00 | 0.00 | | |
| Avail Cap(c_a), veh/h | 1964 | 3573 | 1604 | 1360 | 968 | 861 | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | | |
| Uniform Delay (d), s/veh | 5.0 | 0.6 | 8.2 | 8.6 | 0.0 | 0.0 | | |
| Incr Delay (d2), s/veh | 1.4 | 0.0 | 0.8 | 1.2 | 0.0 | 0.0 | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | |
| %ile BackOfQ(50%),veh/In | 0.3 | 0.0 | 1.8 | 1.8 | 0.0 | 0.0 | | |
| Unsig. Movement Delay, s/veł | ı | | | | | | | |
| LnGrp Delay(d),s/veh | 6.4 | 0.6 | 9.0 | 9.8 | 0.0 | 0.0 | | |
| LnGrp LOS | A | A | Α | A | Α | Α | | |
| Approach Vol, veh/h | | 800 | 877 | | 0 | | | |
| Approach Delay, s/veh | | 4.7 | 9.4 | | 0.0 | | | |
| Approach LOS | | А | А | | | | | |
| Timer - Assigned Phs | | | | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | | | 35.0 | | 0.0 | 14.9 | 20.1 |
| Change Period (Y+Rc), s | | | | 6.0 | | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | | | | 69.0 | | 19.0 | 33.0 | 30.0 |
| Max Q Clear Time (q c+l1), s | | | | 2.9 | | 0.0 | 7.0 | 9.8 |
| Green Ext Time (p_c), s | | | | 1.4 | | 0.0 | 1.9 | 4.3 |
| Intersection Summary | | | | | | | | |
| HCM 6th Ctrl Dolay | | | 7 0 | | | | | |
| HCM 6th LOS | | | Δ | | | | | |

| Intersection | | | | | | |
|------------------------|----------|------|------|------|------|------|
| Int Delay, s/veh | 0.4 | | | | | |
| •• | | | ~ | | | |
| Movement | NBL | NBR | SET | SER | NWL | NWI |
| Lane Configurations | <u>۲</u> | | 4 | | | ↑ |
| Traffic Vol, veh/h | 16 | 0 | 161 | 32 | 0 | 731 |
| Future Vol, veh/h | 16 | 0 | 161 | 32 | 0 | 731 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage | ,# 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 74 | 74 | 74 | 74 | 74 | 74 |
| Heavy Vehicles, % | 2 | 2 | 4 | 4 | 2 | 2 |
| Mvmt Flow | 22 | 0 | 218 | 43 | 0 | 988 |
| | | | | | | |

| Major/Minor | Minor1 | Maj | jor1 | Maj | or2 | |
|----------------------|--------|-----|------|-----|-----|---|
| Conflicting Flow All | 1228 | - | 0 | 0 | - | - |
| Stage 1 | 240 | - | - | - | - | - |
| Stage 2 | 988 | - | - | - | - | - |
| Critical Hdwy | 6.42 | - | - | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | - | - | - | - | - |
| Pot Cap-1 Maneuver | 197 | 0 | - | - | 0 | - |
| Stage 1 | 800 | 0 | - | - | 0 | - |
| Stage 2 | 361 | 0 | - | - | 0 | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | · 197 | - | - | - | - | - |
| Mov Cap-2 Maneuver | · 197 | - | - | - | - | - |
| Stage 1 | 800 | - | - | - | - | - |
| Stage 2 | 361 | - | - | - | - | - |
| | | | | | | |

| Approach | NB | SE | NW |
|----------------------|------|----|----|
| HCM Control Delay, s | 25.5 | 0 | 0 |
| HCMLOS | D | | |

| Vinor Lane/Major Mvmt | NBLn1 | NWT | SET | SER |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 197 | - | - | - |
| HCM Lane V/C Ratio | 0.11 | - | - | - |
| HCM Control Delay (s) | 25.5 | - | - | - |
| HCM Lane LOS | D | - | - | - |
| HCM 95th %tile Q(veh) | 0.4 | - | - | - |

| | ≯ | - | + | • | 1 | < | |
|------------------------------|------|------|------|------|------|------|----------|
| Movement | EBL | EBT | WBT | WBR | SBL | SBR | |
| Lane Configurations | 5 | + | 1. | | ¥. | - | |
| Traffic Volume (veh/h) | 5 | 178 | 742 | 157 | 136 | 19 | |
| Future Volume (veh/h) | 5 | 178 | 742 | 157 | 136 | 19 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | |
| Ped-Bike Adj(A pbT) | 1.00 | | | 1.00 | 1.00 | 1.00 | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Work Zone On Approach | | No | No | | No | | |
| Adj Sat Flow, veh/h/ln | 1811 | 1811 | 1856 | 1856 | 1900 | 1900 | |
| Adj Flow Rate, veh/h | 7 | 237 | 989 | 209 | 181 | 25 | |
| Peak Hour Factor | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | |
| Percent Heavy Veh, % | 6 | 6 | 3 | 3 | 0 | 0 | |
| Cap, veh/h | 393 | 1348 | 1014 | 214 | 208 | 29 | |
| Arrive On Green | 0.01 | 0.74 | 1.00 | 1.00 | 0.14 | 0.14 | |
| Sat Flow, veh/h | 1725 | 1811 | 1485 | 314 | 1535 | 212 | |
| Grp Volume(v), veh/h | 7 | 237 | 0 | 1198 | 207 | 0 | |
| Grp Sat Flow(s).veh/h/ln | 1725 | 1811 | 0 | 1799 | 1755 | 0 | |
| Q Serve(q s), s | 0.1 | 3.8 | 0.0 | 0.0 | 11.6 | 0.0 | |
| Cvcle Q Clear(g_c), s | 0.1 | 3.8 | 0.0 | 0.0 | 11.6 | 0.0 | |
| Prop In Lane | 1.00 | | | 0.17 | 0.87 | 0.12 | |
| Lane Grp Cap(c), veh/h | 393 | 1348 | 0 | 1228 | 238 | 0 | |
| V/C Ratio(X) | 0.02 | 0.18 | 0.00 | 0.98 | 0.87 | 0.00 | |
| Avail Cap(c a), veh/h | 458 | 1348 | 0 | 1228 | 246 | 0 | |
| HCM Platoon Ratio | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 | |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 0.69 | 1.00 | 0.00 | |
| Uniform Delay (d), s/veh | 4.3 | 3.8 | 0.0 | 0.0 | 42.4 | 0.0 | |
| Incr Delay (d2), s/veh | 0.0 | 0.3 | 0.0 | 16.3 | 26.4 | 0.0 | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| %ile BackOfQ(50%),veh/In | 0.0 | 1.2 | 0.0 | 5.6 | 6.7 | 0.0 | |
| Unsig. Movement Delay, s/veh | | | | | | | |
| LnGrp Delay(d),s/veh | 4.3 | 4.0 | 0.0 | 16.3 | 68.8 | 0.0 | |
| LnGrp LOS | А | А | А | В | Е | А | |
| Approach Vol, veh/h | | 244 | 1198 | | 207 | | |
| Approach Delay, s/veh | | 4.0 | 16.3 | | 68.8 | | |
| Approach LOS | | A | В | | E | | |
| Timer - Assigned Phs | | | | 4 | | 6 | 7 8 |
| Phs Duration (G+Y+Rc), s | | | | 80.5 | | 19.5 | 6.2 74.3 |
| Change Period (Y+Rc), s | | | | 6.0 | | 6.0 | 5.5 6.0 |
| Max Green Setting (Gmax), s | | | | 74.0 | | 14.0 | 4.5 64.0 |
| Max Q Clear Time (q c+l1). s | | | | 5.8 | | 13.6 | 2.1 2.0 |
| Green Ext Time (p_c), s | | | | 1.5 | | 0.0 | 0.0 17.8 |
| Intersection Summary | | | | | | | |
| HCM 6th Ctrl Delay | | | 21.1 | | | | |
| HCM 6th LOS | | | С | | | | |

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|---------------------------|---------|----------|--------------|------|----------|------|-----|------|-----|------|------|------|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | | ↑ | 1 | ሻ | ↑ | | | | | ሻ | Þ | | |
| Traffic Volume (veh/h) | 0 | 211 | 103 | 85 | 626 | 0 | 0 | 0 | 0 | 251 | 1 | 272 | |
| Future Volume (veh/h) | 0 | 211 | 103 | 85 | 626 | 0 | 0 | 0 | 0 | 251 | 1 | 272 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | | | | 0 | 0 | 0 | |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | 1.00 | | 1.00 | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 | |
| Work Zone On Approach | h | No | | | No | | | | | | No | | |
| Adj Sat Flow, veh/h/ln | 0 | 1841 | 1841 | 1870 | 1870 | 0 | | | | 1885 | 1885 | 1885 | |
| Adj Flow Rate, veh/h | 0 | 278 | 136 | 112 | 824 | 0 | | | | 330 | 1 | 358 | |
| Peak Hour Factor | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | | | | 0.76 | 0.76 | 0.76 | |
| Percent Heavy Veh, % | 0 | 4 | 4 | 2 | 2 | 0 | | | | 1 | 1 | 1 | |
| Cap, veh/h | 0 | 993 | 841 | 626 | 1197 | 0 | | | | 431 | 1 | 383 | |
| Arrive On Green | 0.00 | 0.72 | 0.72 | 0.09 | 1.00 | 0.00 | | | | 0.24 | 0.24 | 0.24 | |
| Sat Flow, veh/h | 0 | 1841 | 1560 | 1781 | 1870 | 0 | | | | 1795 | 4 | 1594 | |
| Grp Volume(v), veh/h | 0 | 278 | 136 | 112 | 824 | 0 | | | | 330 | 0 | 359 | |
| Grp Sat Flow(s), veh/h/In | n 0 | 1841 | 1560 | 1781 | 1870 | 0 | | | | 1795 | 0 | 1598 | |
| Q Serve(g_s), s | 0.0 | 5.3 | 2.8 | 2.7 | 0.0 | 0.0 | | | | 17.1 | 0.0 | 22.0 | |
| Cycle Q Clear(g_c), s | 0.0 | 5.3 | 2.8 | 2.7 | 0.0 | 0.0 | | | | 17.1 | 0.0 | 22.0 | |
| Prop In Lane | 0.00 | | 1.00 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 | |
| Lane Grp Cap(c), veh/h | 0 | 993 | 841 | 626 | 1197 | 0 | | | | 431 | 0 | 384 | |
| V/C Ratio(X) | 0.00 | 0.28 | 0.16 | 0.18 | 0.69 | 0.00 | | | | 0.77 | 0.00 | 0.94 | |
| Avail Cap(c_a), veh/h | 0 | 993 | 841 | 696 | 1197 | 0 | | | | 431 | 0 | 384 | |
| HCM Platoon Ratio | 1.00 | 1.33 | 1.33 | 2.00 | 2.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 | |
| Upstream Filter(I) | 0.00 | 0.87 | 0.87 | 0.71 | 0.71 | 0.00 | | | | 1.00 | 0.00 | 1.00 | |
| Uniform Delay (d), s/veh | n 0.0 | 7.3 | 6.9 | 8.2 | 0.0 | 0.0 | | | | 35.4 | 0.0 | 37.2 | |
| Incr Delay (d2), s/veh | 0.0 | 0.6 | 0.4 | 0.1 | 2.3 | 0.0 | | | | 8.0 | 0.0 | 30.1 | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 | |
| %IIe BackOfQ(50%),veh | n/In0.0 | 2.0 | 0.9 | 0.9 | 0.8 | 0.0 | | | | 8.3 | 0.0 | 11.6 | |
| Unsig. Movement Delay | , s/veh | 7.0 | 7 0 | 0.0 | 0.0 | 0.0 | | | | 10.4 | 0.0 | 67 4 | |
| LIGTP Delay(d),S/Veh | 0.0 | 7.9 | 1.3 | ٥.J | 2.3 | 0.0 | | | | 43.4 | 0.0 | b/.4 | |
| | А | A | А | А | A | А | | | | U | A | E | |
| Approach Vol, ven/h | | 414 | | | 936 | | | | | | 689 | | |
| Approach Delay, s/veh | | 1.1 | | | 3.0 | | | | | | 55.9 | | |
| Approach LUS | | A | | | A | | | | | | E | | |
| Timer - Assigned Phs | | | 3 | 4 | | 6 | | 8 | | | | | |
| Phs Duration (G+Y+Rc) | , S | | 10.1 | 59.9 | | 30.0 | | 70.0 | | | | | |
| Change Period (Y+Rc), | S | | 5.5 | 6.0 | | 6.0 | | 6.0 | | | | | |
| Max Green Setting (Gm | ax), s | | 8.5 | 50.0 | | 24.0 | | 64.0 | | | | | |
| Max Q Clear Time (g_c+ | +I1), s | | 4.7 | 7.3 | | 24.0 | | 2.0 | | | | | |
| Green Ext Time (p_c), s | | | 0.1 | 2.2 | | 0.0 | | 7.5 | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 21.8 | | | | | | | | | | |
| HCM 6th LOS | | | С | | | | | | | | | | |

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|---------------------------|--------------|------|--------------|------|-------------|-----------|------|------|-----------|-----|-----|-----|--|
| Movement E | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | ٦ | | | | | 1 | 1 | 4Î | | | | | |
| Traffic Volume (veh/h) | 98 | 364 | 0 | 0 | 379 | 302 | 332 | 3 | 92 | 0 | 0 | 0 | |
| Future Volume (veh/h) | 98 | 364 | 0 | 0 | 379 | 302 | 332 | 3 | 92 | 0 | 0 | 0 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Ped-Bike Adj(A_pbT) 1 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | |
| Parking Bus, Adj 1 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Work Zone On Approach | | No | | | No | | | No | | | | | |
| Adj Sat Flow, veh/h/ln 18 | 870 | 1870 | 0 | 0 | 1870 | 1870 | 1900 | 1900 | 1900 | | | | |
| Adj Flow Rate, veh/h | 124 | 461 | 0 | 0 | 480 | 382 | 420 | 4 | 116 | | | | |
| Peak Hour Factor 0 |).79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | 0.79 | | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | | | | |
| Cap, veh/h | 457 | 1158 | 0 | 0 | 767 | 650 | 472 | 14 | 408 | | | | |
| Arrive On Green 0 |).30 | 1.00 | 0.00 | 0.00 | 0.41 | 0.41 | 0.26 | 0.26 | 0.26 | | | | |
| Sat Flow, veh/h 1 | 781 | 1870 | 0 | 0 | 1870 | 1585 | 1810 | 54 | 1564 | | | | |
| Grp Volume(v), veh/h | 124 | 461 | 0 | 0 | 480 | 382 | 420 | 0 | 120 | | | | |
| Grp Sat Flow(s),veh/h/ln1 | 781 | 1870 | 0 | 0 | 1870 | 1585 | 1810 | 0 | 1618 | | | | |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 20.4 | 18.7 | 22.3 | 0.0 | 5.9 | | | | |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 20.4 | 18.7 | 22.3 | 0.0 | 5.9 | | | | |
| Prop In Lane 1 | 1.00 | 4450 | 0.00 | 0.00 | -0- | 1.00 | 1.00 | • | 0.97 | | | | |
| Lane Grp Cap(c), veh/h | 457 | 1158 | 0 | 0 | /6/ | 650 | 4/2 | 0 | 422 | | | | |
| |).27 | 0.40 | 0.00 | 0.00 | 0.63 | 0.59 | 0.89 | 0.00 | 0.28 | | | | |
| Avail Cap(c_a), ven/n | 457 | 1158 | 1 00 | 1 00 | 107 | 050 | 0/0 | 1 00 | 599 | | | | |
| HOW Platoon Ratio 2 | 2.00 | 2.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | | | | |
| Uniform Doloy (d) shiph 2 | J.70 01 7 | 0.70 | 0.00 | 0.00 | 1.00 | 22.0 | 35.6 | 0.00 | 20.5 | | | | |
| Incr Delay (d2) s/veh | 0.2 | 0.0 | 0.0 | 0.0 | 20.4 | 22.9 | 10.5 | 0.0 | 29.5 | | | | |
| Initial O Delay(d3) s/veh | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | | | | |
| %ile BackOfO(50%) veh/l | n1 9 | 0.3 | 0.0 | 0.0 | 9.0 | 7.4 | 11.0 | 0.0 | 2.3 | | | | |
| Unsig Movement Delay | s/veh | 0.0 | 0.0 | 0.0 | V .T | 1.7 | 11.0 | 0.0 | 2.0 | | | | |
| InGrp Delay(d) s/veh 2 | 21.9 | 0.8 | 0.0 | 0.0 | 27.3 | 26.8 | 46 1 | 0.0 | 29.9 | | | | |
| LnGrp LOS | C | A | A | A | C | 20.0 C | D | A | 20.0 C | | | | |
| Approach Vol. veh/h | | 585 | | | 862 | | | 540 | | | | | |
| Approach Delay, s/veh | | 5.3 | | | 27.1 | | | 42.5 | | | | | |
| Approach LOS | | A | | | С | | | D | | | | | |
| Timer - Assigned Phs | | 2 | | 4 | | | 7 | 8 | | | | | |
| Phs Duration (G+Y+Rc), s | s | 32.1 | | 67.9 | | | 20.9 | 47.0 | | | | | |
| Change Period (Y+Rc). s | | 6.0 | | 6.0 | | | 6.0 | * 6 | | | | | |
| Max Green Setting (Gmax | x), s | 37.0 | | 51.0 | | | 4.5 | * 41 | | | | | |
| Max Q Clear Time (g c+l | 1), s | 24.3 | | 2.0 | | | 2.0 | 22.4 | | | | | |
| Green Ext Time (p_c), s | | 1.7 | | 3.1 | | | 0.1 | 4.2 | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 24.8 | | | | | | | | | | |
| HCM 6th LOS | | | С | | | | | | | | | | |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
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|---------------------------|-------------|--------------|----------|---------|----------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | ≜ | 1 | 5 | | 5 | 1 |
| Traffic Volume (veh/h) | 170 | 286 | 53 | 346 | 335 | 17 |
| Future Volume (veh/h) | 170 | 286 | 53 | 346 | 335 | 17 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A pbT) | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Parking Bus. Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approac | h No | | | No | No | |
| Adi Sat Flow, veh/h/ln | 1885 | 1885 | 1870 | 1870 | 1885 | 1885 |
| Adi Flow Rate veh/h | 230 | 0 | 72 | 468 | 453 | 0 |
| Peak Hour Factor | 0 74 | 0.74 | 0.74 | 0.74 | 0.74 | 0 74 |
| Percent Heavy Veh % | 1 | 1 | 0.74 | 0.74 | 1 | 1 |
| Cap yoh/h | 502 | I | ے 100 | ے 10 | ا 770 | I |
| | 0.07 | 0.00 | 190 | 010 | 110 | 0.00 |
| Arrive On Green | 0.27 | 0.00 | 0.11 | 0.43 | 0.43 | 0.00 |
| Sat Flow, veh/h | 1885 | 1598 | 1781 | 1870 | 1795 | 1598 |
| Grp Volume(v), veh/h | 230 | 0 | 72 | 468 | 453 | 0 |
| Grp Sat Flow(s),veh/h/lr | า1885 | 1598 | 1781 | 1870 | 1795 | 1598 |
| Q Serve(g_s), s | 9.2 | 0.0 | 3.4 | 17.0 | 17.2 | 0.0 |
| Cycle Q Clear(g_c), s | 9.2 | 0.0 | 3.4 | 17.0 | 17.2 | 0.0 |
| Prop In Lane | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Lane Grp Cap(c), veh/h | 503 | | 198 | 810 | 778 | |
| V/C Ratio(X) | 0.46 | | 0.36 | 0.58 | 0.58 | |
| Avail Cap(c, a) veh/h | 503 | | 198 | 810 | 778 | |
| HCM Platoon Ratio | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 |
| Instream Filter/I) | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d) abush | 1.00 | 0.00 | 27.1 | 10.2 | 10.2 | 0.00 |
| Iner Deley (d), s/ver | 121.0 | 0.0 | 51.1 | 19.0 | 19.0 | 0.0 |
| Incr Delay (d2), s/veh | 3.0 | 0.0 | 0.1 | 3.0 | 3.Z | 0.0 |
| Initial Q Delay(d3),s/veh | 1 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %IIe BackOfQ(50%),veh | n/In4.4 | 0.0 | 1./ | 1.6 | 7.2 | 0.0 |
| Unsig. Movement Delay | /, s/veh | | | | • (| |
| LnGrp Delay(d),s/veh | 30.5 | 0.0 | 42.2 | 22.3 | 22.5 | 0.0 |
| LnGrp LOS | <u>C</u> | | D | C | С | |
| Approach Vol, veh/h | 230 | Α | | 540 | 453 | Α |
| Approach Delay, s/veh | 30.5 | | | 24.9 | 22.5 | |
| Approach LOS | C | | | C | C | |
| | | | | | | |
| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 |
| Phs Duration (G+Y+Rc) | , S | 45.0 | | 45.0 | 15.0 | 30.0 |
| Change Period (Y+Rc), | S | 6.0 | | 6.0 | 5.0 | 6.0 |
| Max Green Setting (Gm | iax), s | 39.0 | | 39.0 | 10.0 | 24.0 |
| Max Q Clear Time (a c- | +l1), s | 19.0 | | 19.2 | 5.4 | 11.2 |
| Green Ext Time (p, c) s | ,, , | 6.4 | | 1.8 | 0.0 | 2.1 |
| Intersection Summary | | | | | | |
| | | | 2E 1 | | | |
| | | | 20.1 | | | |
| HCM 6th LOS | | | C | | | |

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

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|-----------------------------------|----------|--------------|-------|----------|-----------|----------------|----|------|--|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR | | | |
| Lane Configurations | | 1 | ሻሻ | ^ | ^ | 1 | | | |
| Traffic Volume (vph) | 0 | 183 | 124 | 1615 | 1053 | 8 | | | |
| Future Volume (vph) | 0 | 183 | 124 | 1615 | 1053 | 8 | | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | | |
| Total Lost time (s) | | 4.0 | 6.0 | 4.0 | 7.0 | 7.0 | | | |
| Lane Util. Factor | | 1.00 | 0.97 | 0.95 | 0.95 | 1.00 | | | |
| Frt | | 0.86 | 1.00 | 1.00 | 1.00 | 0.85 | | | |
| Flt Protected | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd. Flow (prot) | | 1536 | 3303 | 3406 | 3085 | 1380 | | | |
| Flt Permitted | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | | |
| Satd. Flow (perm) | | 1536 | 3303 | 3406 | 3085 | 1380 | | | |
| Peak-hour factor, PHF | 0.92 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | | | |
| Adj. Flow (vph) | 0 | 218 | 148 | 1923 | 1254 | 10 | | | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 2 | | | |
| Lane Group Flow (vph) | 0 | 218 | 148 | 1923 | 1254 | 8 | | | |
| Heavy Vehicles (%) | 2% | 7% | 6% | 6% | 17% | 17% | | | |
| Turn Type | _,, | Free | Prot | NA | NA | Perm | | | |
| Protected Phases | | 1100 | 1 | Free | 2 | | | | |
| Permitted Phases | | Free | • | 1100 | - | 2 | | | |
| Actuated Green G (s) | | 100.0 | 10.0 | 100 0 | 77 0 | 77 0 | | | |
| Effective Green g (s) | | 100.0 | 10.0 | 100.0 | 77.0 | 77.0 | | | |
| Actuated g/C Ratio | | 1 00 | 0.10 | 1 00 | 0 77 | 0.77 | | | |
| Clearance Time (s) | | 1.00 | 6.0 | 1.00 | 7.0 | 7.0 | | | |
| Vehicle Extension (s) | | | 3.0 | | 5.0 | 5.0 | | | |
| Lane Grn Can (vnh) | | 1536 | 330 | 3406 | 2375 | 1062 | | | |
| v/s Ratio Prot | | 1000 | 0.04 | 0.56 | 0.41 | 1002 | | | |
| v/s Ratio Perm | | 0 14 | 0.04 | 0.00 | 0.41 | 0.01 | | | |
| v/c Ratio | | 0.14 | 0.45 | 0.56 | 0 53 | 0.01 | | | |
| Uniform Delay, d1 | | 0.14 | 42.4 | 0.00 | 4 5 | 27 | | | |
| Progression Factor | | 1.00 | 0.59 | 1.00 | 0.04 | 0.00 | | | |
| Incremental Delay, d2 | | 0.2 | 0.00 | 0.5 | 0.04 | 0.00 | | | |
| Delay (s) | | 0.2 | 26.0 | 0.5 | 0.0 | 0.0 | | | |
| Level of Service | | 0.2 | 20.0 | 0.5 | 0.7 | Δ | | | |
| Approach Delay (s) | 0.2 | Л | 0 | 23 | 0.7 | ~ | | | |
| Approach LOS | 0.2 A | | | 2.5 A | A | | | | |
| Intersection Summary | | | | | | | | | |
| HCM 2000 Control Delay | | | 1.6 | H | CM 2000 | Level of Servi | се | A | |
| HCM 2000 Volume to Capacity | ratio | | 0.65 | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | Si | um of los | t time (s) | | 13.0 | |
| Intersection Capacity Utilization | 1 | | 48.0% | IC | U Level | of Service | | A | |
| Analysis Period (min) | | | 15 | | | | | | |
| c Critical Lane Group | | | • • | | | | | | |

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|-------------------------------|-------------|------|--------------------|------|-------------|------------|---------|-------------|------|------|----------|-------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ۲. | | 1 | | | | ۲. | ∱1 ≽ | | | ^ | 7 |
| Traffic Volume (vph) | 169 | 0 | 286 | 0 | 0 | 0 | 544 | 1195 | 0 | 0 | 1065 | 207 |
| Future Volume (vph) | 169 | 0 | 286 | 0 | 0 | 0 | 544 | 1195 | 0 | 0 | 1065 | 207 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 6.5 | | 6.5 | | | | 6.5 | 6.5 | | | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | | 1.00 | | | | 1.00 | 0.95 | | | 0.95 | 1.00 |
| Frt | 1.00 | | 0.85 | | | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | | 1.00 | | | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1626 | | 1358 | | | | 1687 | 3374 | | | 2905 | 1392 |
| Flt Permitted | 0.95 | | 1.00 | | | | 0.10 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1626 | | 1358 | | | | 169 | 3374 | | | 2905 | 1392 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 199 | 0 | 336 | 0 | 0 | 0 | 640 | 1406 | 0 | 0 | 1253 | 244 |
| RTOR Reduction (vph) | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 41 |
| Lane Group Flow (vph) | 199 | 0 | 315 | 0 | 0 | 0 | 640 | 1406 | 0 | 0 | 1253 | 203 |
| Heavy Vehicles (%) | 11% | 11% | 11% | 0% | 0% | 0% | 7% | 7% | 7% | 16% | 16% | 16% |
| Turn Type | Prot | | pt+ov | | | | pm+pt | NA | | | NA | pm+ov |
| Protected Phases | 4 | | 14 | | | | 1 | 16 | | | 2 | 4 |
| Permitted Phases | | | 4 | | | | 16 | | | | | 2 |
| Actuated Green, G (s) | 10.5 | | 45.6 | | | | 76.5 | 76.5 | | | 41.4 | 51.9 |
| Effective Green, g (s) | 10.5 | | 45.6 | | | | 76.5 | 76.5 | | | 41.4 | 51.9 |
| Actuated g/C Ratio | 0.10 | | 0.46 | | | | 0.76 | 0.76 | | | 0.41 | 0.52 |
| Clearance Time (s) | 6.5 | | | | | | 6.5 | | | | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.5 | | | | | | 3.0 | | | | 6.0 | 3.5 |
| Lane Grp Cap (vph) | 170 | | 619 | | | | 563 | 2581 | | | 1202 | 812 |
| v/s Ratio Prot | c0.12 | | 0.23 | | | | c0.32 | 0.42 | | | 0.43 | 0.03 |
| v/s Ratio Perm | | | | | | | c0.54 | | | | | 0.12 |
| v/c Ratio | 1.17 | | 0.51 | | | | 1.14 | 0.54 | | | 1.04 | 0.25 |
| Uniform Delay, d1 | 44.8 | | 19.3 | | | | 26.4 | 4.7 | | | 29.3 | 13.3 |
| Progression Factor | 1.00 | | 1.00 | | | | 0.67 | 0.20 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 122.4 | | 0.7 | | | | /5./ | 0.2 | | | 37.7 | 0.2 |
| Delay (s) | 167.1 | | 19.9 | | | | 93.2 | 1.1 | | | 67.0 | 13.5 |
| Level of Service | F | 747 | В | | 0.0 | | F | A | | | E | В |
| Approach Delay (s) | | /4./ | | | 0.0 | | | 29.9 | | | 58.3 | |
| Approach LOS | | E | | | A | | | U | | | E | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 46.2 | Н | CM 2000 | Level of | Service | | D | | | |
| HCM 2000 Volume to Capa | acity ratio | | 1.20 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 100.0 | S | um of lost | t time (s) | | | 19.5 | | | |
| Intersection Capacity Utiliza | ation | | 83.1% | IC | CU Level of | of Service |) | | E | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

c Critical Lane Group

| | ۶ | $\mathbf{\hat{v}}$ | 1 | Ť | ŧ | ~ |
|--|------|--------------------|------|------|----------|-------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | ሻሻ | 1 | | *** | ^ | |
| Traffic Volume (veh/h) | 137 | 1108 | 0 | 1785 | 1474 | 0 |
| Future Volume (veh/h) | 137 | 1108 | 0 | 1785 | 1474 | 0 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | No | | | No | No | |
| Adj Sat Flow, veh/h/ln | 1796 | 1796 | 0 | 1781 | 1826 | 0 |
| Adj Flow Rate, veh/h | 151 | 0 | 0 | 1962 | 1620 | 0 |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Percent Heavy Veh. % | 7 | 7 | 0 | 8 | 5 | 0 |
| Cap, veh/h | 217 | | 0 | 3961 | 2826 | 0 |
| Arrive On Green | 0.07 | 0.00 | 0.00 | 0.81 | 0.81 | 0.00 |
| Sat Flow, veh/h | 3319 | 1522 | 0 | 5184 | 3652 | 0 |
| Grn Volume(v) veh/h | 151 | 0 | 0 | 1962 | 1620 | 0 |
| Grn Sat Flow(s) veh/h/ln | 1659 | 1522 | 0 | 1621 | 1735 | 0 |
| O Serve(a, s) s | 4 5 | 0.0 | 0.0 | 12.5 | 16.2 | 0.0 |
| Q Or $VC(\underline{y}_{3})$, s Cycle O Clear(q , c) s | 4.5 | 0.0 | 0.0 | 12.5 | 16.2 | 0.0 |
| $\frac{1}{2} \sum_{i=1}^{n} \frac{1}{2} \sum_{i=1}^{n} \frac{1}$ | 1.0 | 1 00 | 0.0 | 12.5 | 10.2 | 0.0 |
| Lang Gra Can(a) yoh/h | 217 | 1.00 | 0.00 | 2061 | 2826 | 0.00 |
| | 217 | | 0.00 | 0.50 | 2020 | 0 00 |
| V/C Rallo(Λ) | 0.09 | | 0.00 | 0.50 | 0.07 | 0.00 |
| Avail Cap(C_a), ven/n | 390 | 1.00 | 1 00 | 1 00 | 2020 | 1.00 |
| | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/ven | 45.7 | 0.0 | 0.0 | 2.9 | 3.2 | 0.0 |
| Incr Delay (d2), s/veh | 4.0 | 0.0 | 0.0 | 0.4 | 0.9 | 0.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/In | 1.9 | 0.0 | 0.0 | 2.2 | 3.1 | 0.0 |
| Unsig. Movement Delay, s/veh | | | | | | |
| LnGrp Delay(d),s/veh | 49.7 | 0.0 | 0.0 | 3.3 | 4.1 | 0.0 |
| LnGrp LOS | D | | A | A | A | A |
| Approach Vol, veh/h | 151 | А | | 1962 | 1620 | |
| Approach Delay, s/veh | 49.7 | | | 3.3 | 4.1 | |
| Approach LOS | D | | | А | А | |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc), s | | 87.5 | | 12.5 | | 87.5 |
| Change Period (Y+Rc) s | | 6.0 | | 6.0 | | 6.0 |
| Max Green Setting (Gmax) s | | 76.0 | | 12.0 | | 76.0 |
| Max O Clear Time $(q, c+11)$ s | | 18.2 | | 6.5 | | 1/1.5 |
| Green Ext Time (p, c) | | 37.0 | | 0.0 | | 14.5 |
| | | 57.5 | | 0.2 | | 40.5 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 5.5 | | | |
| HCM 6th LOS | | | А | | | |

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

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|--|---------|--------------|------|-------------|------|-----------------|
| Movement | WBI | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | ** | 11 | 441 | | 000 | *** |
| | 656 | 602 | 035 | ٥ | ٥ | 1767 |
| Future Volume (veh/h) | 656 | 602 | 035 | 0 | 0 | 1767 |
| $\frac{1}{2} = \frac{1}{2} = \frac{1}$ | 000 | 002 | 900 | 0 | 0 | 0 |
| | 1 00 | 1 00 | U | 1.00 | 1.00 | U |
| Perking Puc Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Mark Zana Or America | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| VVORK Zone On Approach | 1 INO | 4700 | INO | • | • | INO |
| Adj Sat Flow, veh/h/ln | 1/22 | 1/22 | 1/6/ | 0 | 0 | 1841 |
| Adj Flow Rate, veh/h | 713 | 654 | 1016 | 0 | 0 | 1921 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, % | 12 | 12 | 9 | 0 | 0 | 4 |
| Cap, veh/h | 971 | 784 | 2724 | 0 | 0 | 2838 |
| Arrive On Green | 0.31 | 0.31 | 0.56 | 0.00 | 0.00 | 0.56 |
| Sat Flow, veh/h | 3182 | 2569 | 5141 | 0 | 0 | 5356 |
| Grp Volume(v) veh/h | 713 | 654 | 1016 | 0 | 0 | 1921 |
| Grn Sat Flow(s) veh/h/ln | 1591 | 1284 | 1608 | 0 | 0 | 1675 |
| \cap Serve(a, s) s | 20.1 | 204 | 11.6 | 0.0 | 0.0 | 26.0 |
| $(y_0) = (y_0), s$ | 20.1 | 20.1 00 7 | 11.0 | 0.0 | 0.0 | 20.3 |
| Dren in Len- | 20.1 | 23.7 | 11.0 | 0.0 | 0.0 | 20.9 |
| Prop in Lane | 1.00 | 1.00 | 0704 | 0.00 | 0.00 | 0000 |
| Lane Grp Cap(c), veh/h | 9/1 | 784 | 2724 | 0 | 0 | 2838 |
| V/C Ratio(X) | 0.73 | 0.83 | 0.37 | 0.00 | 0.00 | 0.68 |
| Avail Cap(c_a), veh/h | 1177 | 950 | 2724 | 0 | 0 | 2838 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 31.1 | 32.4 | 12.0 | 0.0 | 0.0 | 15.3 |
| Incr Delay (d2), s/veh | 1.9 | 5.5 | 0.4 | 0.0 | 0.0 | 1.3 |
| Initial Q Delav(d3) s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfO(50%) veh | //m7_6 | 7.6 | 3.0 | 0.0 | 0.0 | 9.0 9.4 |
| Unsig Movement Delay | shin.u | 1.0 | 0.9 | 0.0 | 0.0 | J. 4 |
| unsig. wovernent Delay, | , 5/VEN | 270 | 10.4 | 0.0 | 0.0 | 16.6 |
| Lingip Delay(d),s/veh | 33.0 | 37.9 | 12.4 | 0.0 | 0.0 | 10.0 |
| LINGIP LUS | U | D | В | A | A | В |
| Approach Vol, veh/h | 1367 | | 1016 | | | 1921 |
| Approach Delay, s/veh | 35.4 | | 12.4 | | | 16.6 |
| Approach LOS | D | | В | | | В |
| Timer - Assigned Phs | | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc) | S | 62.5 | | 37.5 | | 62.5 |
| Change Period $(V + P_0)$ | , U | 6.0 | | 7 0 | | 6.0 |
| Max Groop Sotting (Cmr | | 50.0 | | 7.0 37.0 | | 50.0 |
| Max O Clear Time (GMa | ax), S | 20.0 | | 37.0 | | 00.0 12.0 |
| | -11), S | 20.9 | | 20.7 | | 13.0 |
| Green Ext Time (p_c), s | | 20.7 | | 4.8 | | 20.5 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 21.6 | | | |
| HCM 6th LOS | | | С | | | |

∢ t Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR Lane Configurations 4 đ ٦ *** 7 ٦ 朴朴ኈ 1 Traffic Volume (veh/h) 161 0 88 1325 18 21 199 1920 2 6 1 116 Future Volume (veh/h) 6 1 18 161 0 88 21 1325 199 116 1920 2 Initial Q (Qb), veh 0 0 0 0 0 0 0 0 0 0 0 0 Ped-Bike Adj(A_pbT) 1.00 0.98 1.00 1.00 1.00 1.00 1.00 1.00 Parking Bus, Adj 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Work Zone On Approach No No No No 1707 Adj Sat Flow, veh/h/ln 1900 1826 1900 1900 1796 1796 1796 1707 1826 1826 1707 Adj Flow Rate, veh/h 6 19 173 0 95 23 1425 0 125 2065 1 2 0.93 0.93 Peak Hour Factor 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 0.93 Percent Heavy Veh, % 0 0 0 7 7 7 13 13 13 5 5 5 364 38 2331 156 2913 Cap, veh/h 44 27 72 189 0 3 Arrive On Green 0.26 0.24 0.26 0.00 0.24 0.00 0.24 0.02 0.50 0.03 0.19 0.19 Sat Flow, veh/h 0 111 301 487 0 1518 1626 4661 1447 1739 5143 5 Grp Volume(v), veh/h 26 0 0 173 0 95 23 1425 0 125 1334 733 Grp Sat Flow(s), veh/h/ln 411 0 487 1518 1626 1554 1447 1739 1662 1825 0 0 0.0 22.0 37.6 37.6 Q Serve(g_s), s 0.0 0.0 0.0 0.0 5.1 1.4 0.0 7.1 Cycle Q Clear(g_c), s 26.0 0.0 22.0 7.1 37.6 37.6 26.0 0.0 0.0 5.1 1.4 0.0 Prop In Lane 0.23 0.73 1.00 1.00 1.00 1.00 1.00 0.00 Lane Grp Cap(c), veh/h 151 364 2331 156 1882 1034 0 0 199 0 38 V/C Ratio(X) 0.17 0.00 0.00 0.87 0.00 0.26 0.60 0.61 0.80 0.71 0.71 Avail Cap(c a), veh/h 0 364 98 2331 243 1034 151 0 0 199 1882 HCM Platoon Ratio 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.33 0.33 0.33 Upstream Filter(I) 1.00 0.00 0.00 1.00 0.00 1.00 1.00 1.00 0.00 0.70 0.70 0.70 Uniform Delay (d), s/veh 31.0 41.2 32.9 0.0 0.0 0.0 30.8 48.4 18.0 0.0 47.6 32.9 Incr Delay (d2), s/veh 0.0 0.0 31.5 0.0 0.4 14.1 1.2 0.0 7.1 1.6 2.9 0.5 Initial Q Delay(d3),s/veh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 %ile BackOfQ(50%),veh/lr0.5 0.0 0.0 5.9 0.0 1.9 0.7 7.5 0.0 3.5 17.0 19.0 Unsig. Movement Delay, s/veh LnGrp Delay(d),s/veh 0.0 0.0 72.7 0.0 31.2 62.4 19.2 0.0 54.7 34.5 35.8 31.5 LnGrp LOS С А А Е А С Е В D С D 26 268 1448 Α 2192 Approach Vol, veh/h Approach Delay, s/veh 31.5 58.0 19.9 36.1 Approach LOS Е В С D Timer - Assigned Phs 2 4 5 6 8 Phs Duration (G+Y+Rc), s7.4 62.6 30.0 14.0 56.0 30.0 Change Period (Y+Rc), s 5.0 6.0 6.0 6.0 5.0 6.0 Max Green Setting (Gmax6.6 53.0 24.0 14.0 45.0 24.0 Max Q Clear Time (g_c+I13,4s 39.6 28.0 9.1 24.0 28.0 Green Ext Time (p_c), s 0.0 0.0 0.1 0.0 13.3 19.5 Intersection Summary 31.6 HCM 6th Ctrl Delay HCM 6th LOS С

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

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|---------------------------|------------------|--------------|------|------------|-----------|--------------|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
| Lane Configurations | 55 | 1 | 5 | ** | ** | 1 |
| Traffic Volume (veh/h) | 387 | 236 | 186 | 1042 | 1570 | 382 |
| Future Volume (veh/h) | 387 | 236 | 186 | 1042 | 1570 | 382 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A nhT) | 1.00 | 1.00 | 1.00 | v | v | 1.00 |
| Parking Bus Adi | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Annroad | ch No | 1.00 | 1.00 | No | No | 1.00 |
| Adi Sat Flow, veh/h/ln | 1781 | 1781 | 1678 | 1678 | 1826 | 1826 |
| Adj Elow Rate veh/h | /21 | 257 | 202 | 1133 | 1707 | /15 |
| Peak Hour Factor | 0 0 2 | 0 02 | 0 02 | 0 02 | 0 02 | 0 0 2 |
| Percent Heavy Vah % | 0.9Z | 0.9Z | 15 | 15 | 0.52 | 0.92 |
| Con yoh/h | 0 500 | 0 070 | 10 | 10 2100 | 0 1014 | 0 <i>E 1</i> |
| Cap, ven/n | 0.40 | 212 | 233 | 2199 | 1914 | 054 |
| Arrive On Green | 0.18 | 0.18 | 0.09 | 0.69 | 0.55 | 0.55 |
| Sat Flow, veh/h | 3291 | 1510 | 1598 | 3272 | 3561 | 1547 |
| Grp Volume(v), veh/h | 421 | 257 | 202 | 1133 | 1707 | 415 |
| Grp Sat Flow(s), veh/h/l | n1646 | 1510 | 1598 | 1594 | 1735 | 1547 |
| Q Serve(g_s), s | 12.0 | 16.8 | 6.6 | 17.1 | 43.4 | 16.4 |
| Cycle Q Clear(g_c), s | 12.0 | 16.8 | 6.6 | 17.1 | 43.4 | 16.4 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | 592 | 272 | 233 | 2199 | 1914 | 854 |
| V/C Ratio(X) | 0.71 | 0.95 | 0.87 | 0.52 | 0.89 | 0.49 |
| Avail Cap(c, a) veh/h | 592 | 272 | 316 | 2199 | 1914 | 854 |
| HCM Platoon Ratio | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 | 1 00 |
| Linstream Filter(I) | 1.00 | 1.00 | 0.02 | 0.02 | 1.00 | 1.00 |
| Uniform Delay (d) alua | h 38 6 | 1.00 | 27.0 | 7.5 | 10.0 | 12 7 |
| log Doloy (d2) of the | 0.001 | 40.0 | 21.0 | 1.5 | 19.0 | 13.7 |
| incr Delay (dz), s/ven | 4.0 | 40.0 | 10.0 | 0.0 | 0.0 | 2.0 |
| Initial Q Delay(d3),s/vel | 1 U.U | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %Ile BackOfQ(50%),ve | n/In5.1 | 9.1 | 3.6 | 4.9 | 17.1 | 5.6 |
| Unsig. Movement Delay | y, s/veh | 1 | | | | |
| LnGrp Delay(d),s/veh | 42.5 | 80.5 | 42.8 | 8.3 | 26.6 | 15.7 |
| LnGrp LOS | D | F | D | A | С | B |
| Approach Vol, veh/h | 678 | | | 1335 | 2122 | |
| Approach Delay, s/veh | 56.9 | | | 13.5 | 24.5 | |
| Approach LOS | E | | | В | C | |
| | | • | | | | • |
| Timer - Assigned Phs | 1 | 2 | | 4 | | 6 |
| Phs Duration (G+Y+Rc |), \$ 3.8 | 62.2 | | 24.0 | | 76.0 |
| Change Period (Y+Rc), | s 5.0 | 7.0 | | 6.0 | | 7.0 |
| Max Green Setting (Gr | na 1x4,.G | 50.0 | | 18.0 | | 69.0 |
| Max Q Clear Time (q c | +118,6s | 45.4 | | 18.8 | | 19.1 |
| Green Ext Time (p c). | s 0.3 | 4.5 | | 0.0 | | 38.0 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Dolov | | | 26.2 | | | |
| | | | 20.2 | | | |
| HCM 6th LOS | | | C | | | |

2.4

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|-------------|------|------|----------|------|
| Lane Configurations | | | | | \$ | | | ∱î ≽ | | | ^ | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 20 | 0 | 10 | 0 | 1323 | 65 | 0 | 1468 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 20 | 0 | 10 | 0 | 1323 | 65 | 0 | 1468 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, % | 2 | 2 | 2 | 4 | 4 | 4 | 13 | 13 | 13 | 6 | 6 | 6 |
| Mvmt Flow | 0 | 0 | 0 | 22 | 0 | 11 | 0 | 1487 | 73 | 0 | 1649 | 0 |

| Major/Minor | | Minor1 | | N | lajor1 | | Ma | ajor2 | | | |
|-----------------------|-----|----------|------|------|--------|---|----|-------|---|---|--|
| Conflicting Flow All | | 2349 | 3173 | 780 | - | 0 | 0 | - | - | 0 | |
| Stage 1 | | 1524 | 1524 | - | - | - | - | - | - | - | |
| Stage 2 | | 825 | 1649 | - | - | - | - | - | - | - | |
| Critical Hdwy | | 6.88 | 6.58 | 6.98 | - | - | - | - | - | - | |
| Critical Hdwy Stg 1 | | 5.88 | 5.58 | - | - | - | - | - | - | - | |
| Critical Hdwy Stg 2 | | 5.88 | 5.58 | - | - | - | - | - | - | - | |
| Follow-up Hdwy | | 3.54 | 4.04 | 3.34 | - | - | - | - | - | - | |
| Pot Cap-1 Maneuver | | 29 | 10 | 334 | 0 | - | - | 0 | - | 0 | |
| Stage 1 | | 163 | 175 | - | 0 | - | - | 0 | - | 0 | |
| Stage 2 | | 386 | 152 | - | 0 | - | - | 0 | - | 0 | |
| Platoon blocked, % | | | | | | - | - | | - | | |
| Mov Cap-1 Maneuver | | 29 | 0 | 334 | - | - | - | - | - | - | |
| Mov Cap-2 Maneuver | | 29 | 0 | - | - | - | - | - | - | - | |
| Stage 1 | | 163 | 0 | - | - | - | - | - | - | - | |
| Stage 2 | | 386 | 0 | - | - | - | - | - | - | - | |
| | | | | | | | | | | | |
| Approach | | WB | | | NB | | | SB | | | |
| HCM Control Delay, s | | 227.8 | | | 0 | | | 0 | | | |
| HCM LOS | | F | | | | | | | | | |
| | | | | | | | | | | | |
| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT | | | | | | | | |
| Capacity (veh/h) | - | - 42 | - | | | | | | | | |
| HCM Lane V/C Ratio | - | - 0.803 | - | | | | | | | | |
| HCM Control Delay (s) | - | - 227.8 | - | | | | | | | | |

F

3.1

-

-

-

-

-

_

HCM Lane LOS

HCM 95th %tile Q(veh)

| | ≯ | - | \mathbf{F} | ∢ | - | • | 1 | 1 | 1 | 1 | ŧ | ~ |
|------------------------------|------|---------|--------------|----------|----------|------|----------|----------|------|------|-------------|-------------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ۳. | <u></u> | 1 | ሻሻ | ↑ | 1 | ሻ | ↑ | 1 | ۳. | ↑ 1≽ | |
| Traffic Volume (veh/h) | 244 | 387 | 398 | 475 | 239 | 78 | 414 | 591 | 231 | 115 | 499 | 113 |
| Future Volume (veh/h) | 244 | 387 | 398 | 475 | 239 | 78 | 414 | 591 | 231 | 115 | 499 | 113 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1693 | 1693 | 1693 | 1841 | 1841 | 1841 | 1693 | 1693 | 1693 | 1826 | 1826 | 1826 |
| Adj Flow Rate, veh/h | 274 | 435 | 0 | 534 | 269 | 0 | 465 | 664 | 0 | 129 | 561 | 127 |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Percent Heavy Veh, % | 14 | 14 | 14 | 4 | 4 | 4 | 14 | 14 | 14 | 5 | 5 | 5 |
| Cap, veh/h | 299 | 535 | | 576 | 277 | | 468 | 862 | | 217 | 671 | 151 |
| Arrive On Green | 0.19 | 0.17 | 0.00 | 0.17 | 0.15 | 0.00 | 0.23 | 0.51 | 0.00 | 0.24 | 0.24 | 0.24 |
| Sat Flow, veh/h | 1612 | 3216 | 1434 | 3401 | 1841 | 1560 | 1612 | 1693 | 1434 | 753 | 2812 | 634 |
| Grp Volume(v), veh/h | 274 | 435 | 0 | 534 | 269 | 0 | 465 | 664 | 0 | 129 | 345 | 343 |
| Grp Sat Flow(s),veh/h/ln | 1612 | 1608 | 1434 | 1700 | 1841 | 1560 | 1612 | 1693 | 1434 | 753 | 1735 | 1712 |
| Q Serve(g_s), s | 16.7 | 13.0 | 0.0 | 15.4 | 14.5 | 0.0 | 22.2 | 31.6 | 0.0 | 16.7 | 18.9 | 19.0 |
| Cycle Q Clear(g_c), s | 16.7 | 13.0 | 0.0 | 15.4 | 14.5 | 0.0 | 22.2 | 31.6 | 0.0 | 21.3 | 18.9 | 19.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.37 |
| Lane Grp Cap(c), veh/h | 299 | 535 | | 576 | 277 | | 468 | 862 | | 217 | 414 | 409 |
| V/C Ratio(X) | 0.92 | 0.81 | | 0.93 | 0.97 | | 0.99 | 0.77 | | 0.59 | 0.83 | 0.84 |
| Avail Cap(c_a), veh/h | 299 | 535 | 4.00 | 576 | 277 | 4.00 | 468 | 865 | 4.00 | 218 | 417 | 411 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 39.9 | 40.1 | 0.0 | 40.9 | 42.2 | 0.0 | 24.2 | 19.8 | 0.0 | 39.3 | 36.1 | 36.2 |
| Incr Delay (d2), s/veh | 31.5 | 9.8 | 0.0 | 21.4 | 46.6 | 0.0 | 39.6 | 6.0 | 0.0 | 9.5 | 16.6 | 17.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %IIe BackOfQ(50%),Ven/In | 9.0 | 5.8 | 0.0 | 8.2 | 10.2 | 0.0 | 12.9 | 12.6 | 0.0 | 3.6 | 9.7 | 9.7 |
| Unsig. Movement Delay, s/ven | 74 4 | 40.0 | • • | <u> </u> | 00.0 | • • | <u> </u> | 05.0 | 0.0 | 40.0 | F0 7 | 50 0 |
| LnGrp Delay(d),s/ven | 71.4 | 49.9 | 0.0 | 62.3 | 88.8 | 0.0 | 63.9 | 25.8 | 0.0 | 48.8 | 52.7 | 53.3 |
| LINGRP LOS | E | U | ٨ | E | F | ٨ | E | 1400 | ٨ | D | D | D |
| Approach Vol, veh/h | | 709 | A | | 803 | A | | 1129 | A | | 817 | |
| Approach Delay, s/ven | | 58.2 | | | 71.1 | | | 41.5 | | | 52.4 | |
| Approach LOS | | E | | | E | | | D | | | D | |
| Timer - Assigned Phs | 1 | 2 | 3 | 4 | | 6 | 7 | 8 | | | | |
| Phs Duration (G+Y+Rc), s | 27.0 | 29.8 | 21.4 | 21.6 | | 56.8 | 23.0 | 20.0 | | | | |
| Change Period (Y+Rc), s | 4.5 | 6.0 | 4.5 | 5.0 | | 6.0 | 4.5 | 5.0 | | | | |
| Max Green Setting (Gmax), s | 22.5 | 24.0 | 16.9 | 16.6 | | 51.0 | 18.5 | 15.0 | | | | |
| Max Q Clear Time (g_c+l1), s | 24.2 | 23.3 | 17.4 | 15.0 | | 33.6 | 18.7 | 16.5 | | | | |
| Green Ext Time (p_c), s | 0.0 | 0.5 | 0.0 | 0.5 | | 6.6 | 0.0 | 0.0 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 54.4 | | | | | | | | | |
| HCM 6th LOS | | | D | | | | | | | | | |

Notes

Unsignalized Delay for [NBR, EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

1.7

Intersection

Int Delay, s/veh

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | 4 | | | ्स | 1 | | ्स | 1 | | 4 | |
| Traffic Vol, veh/h | 23 | 2 | 6 | 2 | 1 | 2 | 29 | 714 | 3 | 1 | 733 | 30 |
| Future Vol, veh/h | 23 | 2 | 6 | 2 | 1 | 2 | 29 | 714 | 3 | 1 | 733 | 30 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None |
| Storage Length | - | - | - | - | - | 50 | - | - | 325 | - | - | - |
| Veh in Median Storage, | # - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 | 96 |
| Heavy Vehicles, % | 22 | 22 | 22 | 0 | 0 | 0 | 17 | 17 | 17 | 9 | 9 | 9 |
| Mvmt Flow | 24 | 2 | 6 | 2 | 1 | 2 | 30 | 744 | 3 | 1 | 764 | 31 |

| Major/Minor | Minor2 | | ľ | Minor1 | | | Major1 | | | Μ | lajor2 | | | |
|----------------------|--------|-------|-------|--------|------|-----|--------|---|---|-----|--------|---|---|--|
| Conflicting Flow All | 1589 | 1589 | 780 | 1590 | 1601 | 744 | 795 | 0 | C |) | 747 | 0 | 0 | |
| Stage 1 | 782 | 782 | - | 804 | 804 | - | - | - | | - | - | - | - | |
| Stage 2 | 807 | 807 | - | 786 | 797 | - | - | - | | - | - | - | - | |
| Critical Hdwy | 7.32 | 6.72 | 6.42 | 7.1 | 6.5 | 6.2 | 4.27 | - | | - | 4.19 | - | - | |
| Critical Hdwy Stg 1 | 6.32 | 5.72 | - | 6.1 | 5.5 | - | - | - | | - | - | - | - | |
| Critical Hdwy Stg 2 | 6.32 | 5.72 | - | 6.1 | 5.5 | - | - | - | | - | - | - | - | |
| Follow-up Hdwy | 3.698 | 4.198 | 3.498 | 3.5 | 4 | 3.3 | 2.353 | - | | - 2 | 2.281 | - | - | |
| Pot Cap-1 Maneuver | 78 | 97 | 365 | 88 | 107 | 418 | 764 | - | | - | 830 | - | - | |
| Stage 1 | 359 | 377 | - | 380 | 398 | - | - | - | | - | - | - | - | |
| Stage 2 | 347 | 367 | - | 388 | 401 | - | - | - | | - | - | - | - | |
| Platoon blocked, % | | | | | | | | - | | - | | - | - | |
| Mov Cap-1 Maneuver | 73 | 90 | 365 | 81 | 100 | 418 | 764 | - | | - | 830 | - | - | |
| Mov Cap-2 Maneuver | 73 | 90 | - | 81 | 100 | - | - | - | | - | - | - | - | |
| Stage 1 | 335 | 376 | - | 355 | 371 | - | - | - | | - | - | - | - | |
| Stage 2 | 321 | 342 | - | 378 | 400 | - | - | - | - | - | - | - | - | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

| Approach | EB | WB | NB | SB | |
|----------------------|------|------|-----|----|--|
| HCM Control Delay, s | 67.9 | 34.5 | 0.4 | 0 | |
| HCM LOS | F | D | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1V | VBLn1V | VBLn2 | SBL | SBT | SBR |
|-----------------------|------|-----|-----|--------|--------|-------|-------|-----|-----|
| Capacity (veh/h) | 764 | - | - | 88 | 86 | 418 | 830 | - | - |
| HCM Lane V/C Ratio | 0.04 | - | - | 0.367 | 0.036 | 0.005 | 0.001 | - | - |
| HCM Control Delay (s) | 9.9 | 0 | - | 67.9 | 48.4 | 13.7 | 9.3 | 0 | - |
| HCM Lane LOS | А | А | - | F | E | В | А | А | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 1.4 | 0.1 | 0 | 0 | - | - |

| | ≯ | - | + | • | 1 | ~ | | |
|------------------------------|------|------|------|------|------|------|------|------|
| Movement | EBL | EBT | WBT | WBR | SBL | SBR | | |
| Lane Configurations | 5 | + | + | 1 | 5 | 1 | | |
| Traffic Volume (veh/h) | 6 | 769 | 284 | 6 | 375 | 487 | | |
| Future Volume (veh/h) | 6 | 769 | 284 | 6 | 375 | 487 | | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | | |
| Ped-Bike Adj(A pbT) | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Work Zone On Approach | | No | No | | No | | | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1856 | 1856 | 1900 | 1900 | | |
| Adj Flow Rate, veh/h | 7 | 884 | 326 | 7 | 431 | 560 | | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | | |
| Percent Heavy Veh, % | 2 | 2 | 3 | 3 | 0 | 0 | | |
| Cap, veh/h | 450 | 965 | 758 | 642 | 642 | 571 | | |
| Arrive On Green | 0.04 | 0.52 | 0.41 | 0.41 | 0.35 | 0.35 | | |
| Sat Flow, veh/h | 1781 | 1870 | 1856 | 1572 | 1810 | 1610 | | |
| Grp Volume(v), veh/h | 7 | 884 | 326 | 7 | 431 | 560 | | |
| Grp Sat Flow(s),veh/h/ln | 1781 | 1870 | 1856 | 1572 | 1810 | 1610 | | |
| Q Serve(g_s), s | 0.2 | 40.3 | 11.7 | 0.2 | 18.8 | 32.0 | | |
| Cycle Q Clear(g_c), s | 0.2 | 40.3 | 11.7 | 0.2 | 18.8 | 32.0 | | |
| Prop In Lane | 1.00 | | | 1.00 | 1.00 | 1.00 | | |
| Lane Grp Cap(c), veh/h | 450 | 965 | 758 | 642 | 642 | 571 | | |
| V/C Ratio(X) | 0.02 | 0.92 | 0.43 | 0.01 | 0.67 | 0.98 | | |
| Avail Cap(c_a), veh/h | 450 | 1106 | 898 | 761 | 642 | 571 | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Uniform Delay (d), s/veh | 14.0 | 20.6 | 19.7 | 16.3 | 25.4 | 29.7 | | |
| Incr Delay (d2), s/veh | 0.0 | 10.8 | 0.4 | 0.0 | 2.7 | 32.4 | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | |
| %ile BackOfQ(50%),veh/In | 0.1 | 19.4 | 5.1 | 0.1 | 8.3 | 28.9 | | |
| Unsig. Movement Delay, s/veh | ו | | | | | | | |
| LnGrp Delay(d),s/veh | 14.0 | 31.5 | 20.1 | 16.3 | 28.1 | 62.1 | | |
| LnGrp LOS | В | С | С | В | С | E | | |
| Approach Vol, veh/h | | 891 | 333 | | 991 | | | |
| Approach Delay, s/veh | | 31.3 | 20.0 | | 47.3 | | | |
| Approach LOS | | С | С | | D | | | |
| Timer - Assigned Phs | | | | 4 | | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | | | 54.0 | | 39.0 | 10.0 | 44.0 |
| Change Period (Y+Rc), s | | | | 6.0 | | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | | | | 55.0 | | 33.0 | 4.0 | 45.0 |
| Max Q Clear Time (g_c+l1), s | | | | 42.3 | | 34.0 | 2.2 | 13.7 |
| Green Ext Time (p_c), s | | | | 5.6 | | 0.0 | 0.0 | 2.2 |
| Intersection Summarv | | | | | | | | |
| HCM 6th Ctrl Delay | | | 36.8 | | | | | |
| HCM 6th LOS | | | D | | | | | |

| Major/Minor | Major1 | Majo | r2 | Minor1 | | |
|----------------------|----------|------|----|---------|---|--|
| Conflicting Flow All | 0 | 0 | - | - 1609 | - | |
| Stage 1 | - | - | - | - 1305 | - | |
| Stage 2 | - | - | - | - 304 | - | |
| Critical Hdwy | - | - | - | - 6.42 | - | |
| Critical Hdwy Stg 1 | - | - | - | - 5.42 | - | |
| Critical Hdwy Stg 2 | - | - | - | - 5.42 | - | |
| Follow-up Hdwy | - | - | - | - 3.518 | - | |
| Pot Cap-1 Maneuver | - | - | 0 | - 115 | 0 | |
| Stage 1 | - | - | 0 | - 254 | 0 | |
| Stage 2 | - | - | 0 | - 748 | 0 | |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | · - | - | - | - 115 | - | |
| Mov Cap-2 Maneuver | · - | - | - | - 115 | - | |
| Stage 1 | - | - | - | - 254 | - | |
| Stage 2 | - | - | - | - 748 | - | |
| | | | | | | |
| Approach | EB | V | /B | NB | | |
| HCM Control Delay, s | <u> </u> | | 0 | 49.8 | | |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBT |
|-----------------------|-------|-----|-----|-----|
| Capacity (veh/h) | 115 | - | - | - |
| HCM Lane V/C Ratio | 0.311 | - | - | - |
| HCM Control Delay (s) | 49.8 | - | - | - |
| HCM Lane LOS | E | - | - | - |
| HCM 95th %tile Q(veh) | 1.2 | - | - | - |

Е

HCM LOS

| | ≯ | - | - | • | 1 | - | | | |
|------------------------------|------|------|-----------|------|------|------|--------|----|--|
| Movement | EBL | EBT | WBT | WBR | SBL | SBR | | | |
| Lane Configurations | 5 | + | 1. | | ¥. | - | | | |
| Traffic Volume (veh/h) | 20 | 961 | 271 | 152 | 300 | 9 | | | |
| Future Volume (veh/h) | 20 | 961 | 271 | 152 | 300 | 9 | | | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| Ped-Bike Adj(A pbT) | 1.00 | | | 1.00 | 1.00 | 1.00 | | | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Work Zone On Approach | | No | No | | No | | | | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 1841 | 1841 | 1900 | 1900 | | | |
| Adj Flow Rate, veh/h | 22 | 1045 | 295 | 165 | 326 | 10 | | | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | | | |
| Percent Heavy Veh, % | 2 | 2 | 4 | 4 | 0 | 0 | | | |
| Cap, veh/h | 610 | 1291 | 684 | 382 | 326 | 10 | | | |
| Arrive On Green | 0.02 | 0.69 | 0.82 | 0.82 | 0.19 | 0.19 | | | |
| Sat Flow, veh/h | 1781 | 1870 | 1109 | 620 | 1717 | 53 | | | |
| Grp Volume(v), veh/h | 22 | 1045 | 0 | 460 | 337 | 0 | | | |
| Grp Sat Flow(s),veh/h/ln | 1781 | 1870 | 0 | 1729 | 1775 | 0 | | | |
| Q Serve(q s), s | 0.4 | 39.2 | 0.0 | 7.4 | 19.0 | 0.0 | | | |
| Cycle Q Clear(q c), s | 0.4 | 39.2 | 0.0 | 7.4 | 19.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | | 0.36 | 0.97 | 0.03 | | | |
| Lane Grp Cap(c), veh/h | 610 | 1291 | 0 | 1066 | 337 | 0 | | | |
| V/C Ratio(X) | 0.04 | 0.81 | 0.00 | 0.43 | 1.00 | 0.00 | | | |
| Avail Cap(c a), veh/h | 658 | 1291 | 0 | 1066 | 337 | 0 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.33 | 1.33 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 1.00 | 1.00 | 0.00 | 0.98 | 1.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 6.5 | 10.9 | 0.0 | 4.1 | 40.5 | 0.0 | | | |
| Incr Delay (d2), s/veh | 0.0 | 5.6 | 0.0 | 1.2 | 48.8 | 0.0 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 0.1 | 15.0 | 0.0 | 2.2 | 12.7 | 0.0 | | | |
| Unsig. Movement Delay, s/veh | 1 | | | | | | | | |
| LnGrp Delay(d),s/veh | 6.5 | 16.5 | 0.0 | 5.4 | 89.3 | 0.0 | | | |
| LnGrp LOS | А | В | А | А | F | А | | | |
| Approach Vol, veh/h | | 1067 | 460 | | 337 | | | | |
| Approach Delay, s/veh | | 16.3 | 5.4 | | 89.3 | | | | |
| Approach LOS | | В | Α | | F | | | | |
| Timer - Assigned Phs | | | | 4 | | 6 | 7 | 8 | |
| Phs Duration (G+Y+Rc) s | | | | 75.0 | | 25.0 | 7.3 67 | 7 | |
| Change Period (Y+Rc) s | | | | 6.0 | | 6.0 | 5.5 6 | 0 | |
| Max Green Setting (Gmax) s | | | | 69.0 | | 19.0 | 4.5 59 | 0 | |
| Max Q Clear Time (q. c+11) s | | | | 41.2 | | 21.0 | 24 9 | 4 | |
| Green Ext Time (p_c), s | | | | 10.0 | | 0.0 | 0.0 3 | .3 | |
| Intersection Summarv | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 26.8 | | | | | | |
| HCM 6th LOS | | | 20.0 C | | | | | | |

| Movement EBL EBR WBR WBT WBR NBL NBR SBL SBL SBR Lane Configurations 1< |
|---|
| Lane Configurations Image: Configurations < |
| Traffic Volume (veh/h) 0 863 414 141 291 0 0 0 286 2 144 Future Volume (veh/h) 0 863 414 141 291 0 0 0 0 286 2 144 Initial Q (Db), veh 0 |
| Future Volume (veh/h) 0 863 414 141 291 0 0 0 286 2 144 Initial Q (Db), veh 0 < |
| Initial Q (Qb), veh 0 |
| Ped-Bike Adj(A_pbT) 1.00 0.98 1.00 </td |
| Parking Bus, Adj 1.00 1.01 |
| Work Zone On Approach No No No No Adj Sat Flow, veh/h/ln 0 1870 1870 1856 1856 0 1870 1870 1870 Adj Flow Rate, veh/h 0 918 440 150 310 0 304 2 153 Peak Hour Factor 0.94 |
| Adj Sat Flow, veh/h/ln 0 1870 1870 1856 1856 0 1870 1870 1870 Adj Flow Rate, veh/h 0 918 440 150 310 0 304 2 153 Peak Hour Factor 0.94 |
| Adj Flow Rate, veh/h 0 918 440 150 310 0 304 2 153 Peak Hour Factor 0.94 0.91 0.10 0.0 |
| Peak Hour Factor 0.94 0.1 0.1 0.1 |
| Percent Heavy Veh, % 0 2 2 3 3 0 2 2 2 Cap, veh/h 0 1096 910 385 1273 0 346 4 304 Arrive On Green 0.00 1.00 0.09 1.00 0.00 0.19 0.19 0.19 Sat Flow, veh/h 0 1870 1552 1767 1856 0 1781 20 1568 Grp Volume(v), veh/h 0 918 440 150 310 0 304 0 155 Grp Sat Flow(s), veh/h/ln 0 1870 1552 1767 1866 0 1781 0 1588 Q Serve(g_s), s 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Prop In Lane 0.00 1.00 1.00 0.00 1.00 0.00 365 1273 0 346 0 385 HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I)< |
| Cap, veh/h 0 1096 910 385 1273 0 346 4 304 Arrive On Green 0.00 1.00 1.00 0.09 1.00 0.00 0.19 0.15 0 0.0 1.55 Gr Volume(v), veh/h 0 1552 1767 1856 0 1781 0 1588 Q serve(g_s), s 0.00 0.0 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1 |
| Arrive On Green 0.00 1.00 1.00 0.09 1.00 0.00 0.19 0.19 0.19 Sat Flow, veh/h 0 1870 1552 1767 1856 0 1781 20 1568 Grp Volume(v), veh/h 0 918 440 150 310 0 304 0 155 Grp Sat Flow(s), veh/h/ln 0 1870 1552 1767 1856 0 1781 0 1588 Q Serve(g_s), s 0.0 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Cycle Q Clear(g_c), s 0.0 0.0 0.0 3.4 0.0 0.0 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 1.00 0.00 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 |
| Sat Flow, veh/h 0 1870 1552 1767 1856 0 1781 20 1568 Grp Volume(v), veh/h 0 918 440 150 310 0 304 0 155 Grp Sat Flow(s), veh/h/ln 0 1870 1552 1767 1856 0 1781 0 1558 Q Serve(g_s), s 0.0 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Cycle Q Clear(g_c), s 0.0 0.0 1.00 1.00 0.00 1.00 0.00 1.00 0.99 Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 8.4 0.39 0.24 0.00 0.88 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 |
| Grp Volume(v), veh/h 0 918 440 150 310 0 304 0 155 Grp Sat Flow(s), veh/h/ln 0 1870 1552 1767 1856 0 1781 0 1558 Q Serve(g_s), s 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Cycle Q Clear(g_c), s 0.0 1.00 1.00 0.00 16.6 0.0 8.7 Prop In Lane 0.00 1.00 1.00 0.00 1.00 0.99 Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.88 0.00 0.50 Avaii Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platcon Ratio 1.00 2.00 2.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 |
| Grp Sat Flow(s),veh/h/ln 0 1870 1552 1767 1856 0 1781 0 1588 Q Serve(g_s), s 0.0 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Cycle Q Clear(g_c), s 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Prop In Lane 0.00 1.00 1.00 0.00 1.00 0.99 Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.88 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 1.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.91 0.91 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 |
| Q Serve(g_s), s 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Cycle Q Clear(g_c), s 0.0 0.0 3.4 0.0 0.0 16.6 0.0 8.7 Prop In Lane 0.00 1.00 1.00 0.00 1.00 0.00 99 Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.88 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.91 0.91 0.00 1.00 1.00 1.00 Uniform Delay (d), s/veh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 |
| Cycle Q Clear(g_c), s 0.0 0.0 3.4 0.0 0.0 1.66 0.0 8.7 Prop In Lane 0.00 1.00 0.00 1.00 0.00 1.00 0.99 Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.88 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.91 0.91 0.90 1.00 1.00 1.00 Uniform Delay (d), s/veh 0.0 0.0 6.4 0.0 0.1 1.72 0.0 1.3 Initial Q Delay(d3), s/veh 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 |
| Prop In Lane 0.00 1.00 1.00 0.00 1.00 0.99 Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.88 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.40 0.91 0.91 0.00 1.00 1.00 1.00 Uniform Delay (d), s/veh 0.0 0.0 6.4 0.0 0.0 39.2 0.0 36.0 Incr Delay (d2), s/veh 0.0 3.2 0.7 0.6 0.4 0.0 1.72 0.0 1.3 Initial Q Delay(d3),s/veh 0.0 3.2 0.7 7.0 0.4 0.0 56.3 0.0 37.3 Unsig: Movement Delay, s/veh 1.0 0.2 |
| Lane Grp Cap(c), veh/h 0 1096 910 385 1273 0 346 0 308 V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.88 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.40 0.91 0.91 0.00 1.00 1.00 1.00 Uniform Delay (d), s/veh 0.0 0.0 6.4 0.0 0.0 39.2 0.0 36.0 Incr Delay (d2), s/veh 0.0 3.2 0.7 0.6 0.4 0.0 17.2 0.0 1.3 Initial Q Delay(d3),s/veh 0.0 |
| V/C Ratio(X) 0.00 0.84 0.48 0.39 0.24 0.00 0.88 0.00 0.50 Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.91 0.91 0.00 1.00 1.00 1.00 Uniform Delay (d), s/veh 0.0 0.0 6.4 0.0 0.0 39.2 0.0 36.0 Incr Delay (d2), s/veh 0.0 3.2 0.7 0.6 0.4 0.0 17.2 0.0 1.3 Initial Q Delay(d3),s/veh 0.0 3.5 |
| Avail Cap(c_a), veh/h 0 1096 910 385 1273 0 410 0 365 HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.40 0.91 0.91 0.00 1.00 1.00 1.00 Uniform Delay (d), s/veh 0.0 0.0 6.4 0.0 0.0 39.2 0.0 36.0 Incr Delay (d2), s/veh 0.0 3.2 0.7 0.6 0.4 0.0 17.2 0.0 1.3 Initial Q Delay(d3),s/veh 0.0 |
| HCM Platoon Ratio 1.00 2.00 2.00 2.00 1.00 1.00 1.00 1.00 Upstream Filter(I) 0.00 0.40 0.91 0.91 0.00 1.00 1.00 1.00 Uniform Delay (d), s/veh 0.0 0.0 6.4 0.0 0.0 39.2 0.0 36.0 Incr Delay (d2), s/veh 0.0 3.2 0.7 0.6 0.4 0.0 17.2 0.0 1.3 Initial Q Delay(d3),s/veh 0.0 </td |
| Upstream Filter(I) 0.00 0.40 0.40 0.91 0.91 0.00 1.00 0.00 1.00 Uniform Delay (d), s/veh 0.0 0.0 6.4 0.0 0.0 39.2 0.0 36.0 Incr Delay (d2), s/veh 0.0 3.2 0.7 0.6 0.4 0.0 17.2 0.0 1.3 Initial Q Delay(d3),s/veh 0.0 |
| Uniform Delay (d), s/veh 0.0 0.0 6.4 0.0 0.0 39.2 0.0 36.0 Incr Delay (d2), s/veh 0.0 3.2 0.7 0.6 0.4 0.0 17.2 0.0 1.3 Initial Q Delay(d3),s/veh 0.0 |
| Incr Delay (d2), s/veh 0.0 3.2 0.7 0.6 0.4 0.0 17.2 0.0 1.3 Initial Q Delay(d3),s/veh 0.0 < |
| Initial Q Delay(d3),s/veh 0.0 <t< td=""></t<> |
| %ile BackOfQ(50%),veh/In0.0 1.0 0.2 1.1 0.1 0.0 8.8 0.0 3.5 Unsig. Movement Delay, s/veh |
| Unsig. Movement Delay, s/veh LnGrp Delay(d),s/veh 0.0 3.2 0.7 7.0 0.4 0.0 56.3 0.0 37.3 LnGrp LOS A A A A A A D Approach Vol, veh/h 1358 460 459 Approach Delay, s/veh 2.4 2.6 49.9 Approach LOS A A D Timer - Assigned Phs 3 4 6 8 |
| LnGrp Delay(d),s/veh 0.0 3.2 0.7 7.0 0.4 0.0 56.3 0.0 37.3 LnGrp LOS A A A A A A A D Approach Vol, veh/h 1358 460 459 Approach Delay, s/veh 2.4 2.6 49.9 Approach LOS A A A D Timer - Assigned Phs 3 4 6 8 |
| LnGrp LOS A B |
| Approach Vol, veh/h 1358 460 459 Approach Delay, s/veh 2.4 2.6 49.9 Approach LOS A A D Timer - Assigned Phs 3 4 6 8 |
| Approach Delay, s/veh 2.4 2.6 49.9 Approach LOS A A D Timer - Assigned Phs 3 4 6 8 |
| Approach LOS A A D Timer - Assigned Phs 3 4 6 8 Phe Duration (C) V: Po) = 10.0 64.6 25.4 74.6 |
| Timer - Assigned Phs 3 4 6 8 Pho Duration (C) V(Po) and the second sec |
| |
| Pris Duration (G+Y+RC), S 10.0 04.0 25.4 74.0 |
| Change Period (Y+Rc), s 5.5 6.0 6.0 6.0 |
| Max Green Setting (Gmax), s 4.5 55.0 23.0 65.0 |
| Max Q Clear Time (g c+l1), s 5.4 2.0 18.6 2.0 |
| Green Ext Time (p c), s 0.0 11.9 0.8 2.0 |
| |
| UCM 6th Ctrl Dolov 12.0 |
| |

| | ۶ | - | \mathbf{F} | • | - | * | ۸ | Ť | ۲ | 1 | Ŧ | ∢ | |
|---------------------------|---------|------|--------------|------|------|------|----------|-------|-------|-----|-----|-----|--|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
| Lane Configurations | ۲. | | | | • | 1 | <u> </u> | ef - | | | | | |
| Traffic Volume (veh/h) | 362 | 752 | 0 | 0 | 348 | 545 | 73 | 3 | 46 | 0 | 0 | 0 | |
| Future Volume (veh/h) | 362 | 752 | 0 | 0 | 348 | 545 | 73 | 3 | 46 | 0 | 0 | 0 | |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| Ped-Bike Adj(A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Work Zone On Approac | h | No | | | No | | | No | | | | | |
| Adj Sat Flow, veh/h/ln | 1870 | 1870 | 0 | 0 | 1870 | 1870 | 1885 | 1885 | 1885 | | | | |
| Adj Flow Rate, veh/h | 398 | 826 | 0 | 0 | 382 | 599 | 80 | 3 | 51 | | | | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 1 | 1 | 1 | | | | |
| Cap, veh/h | 518 | 1571 | 0 | 0 | 1384 | 1173 | 72 | 4 | 61 | | | | |
| Arrive On Green | 0.08 | 1.00 | 0.00 | 0.00 | 0.74 | 0.74 | 0.04 | 0.04 | 0.04 | | | | |
| Sat Flow, veh/h | 1781 | 1870 | 0 | 0 | 1870 | 1585 | 1795 | 90 | 1522 | | | | |
| Grp Volume(v), veh/h | 398 | 826 | 0 | 0 | 382 | 599 | 80 | 0 | 54 | | | | |
| Grp Sat Flow(s),veh/h/lr | 1781 | 1870 | 0 | 0 | 1870 | 1585 | 1795 | 0 | 1611 | | | | |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 6.7 | 15.8 | 4.0 | 0.0 | 3.3 | | | | |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 6.7 | 15.8 | 4.0 | 0.0 | 3.3 | | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 1.00 | | 0.94 | | | | |
| Lane Grp Cap(c), veh/h | 518 | 1571 | 0 | 0 | 1384 | 1173 | 72 | 0 | 64 | | | | |
| V/C Ratio(X) | 0.77 | 0.53 | 0.00 | 0.00 | 0.28 | 0.51 | 1.11 | 0.00 | 0.84 | | | | |
| Avail Cap(c_a), veh/h | 527 | 1571 | 0 | 0 | 1384 | 1173 | 72 | 0 | 64 | | | | |
| HCM Platoon Ratio | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | |
| Upstream Filter(I) | 0.37 | 0.37 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | | | | |
| Uniform Delay (d), s/veh | n 13.5 | 0.0 | 0.0 | 0.0 | 4.2 | 5.4 | 48.0 | 0.0 | 47.7 | | | | |
| Incr Delay (d2), s/veh | 2.6 | 0.5 | 0.0 | 0.0 | 0.5 | 1.6 | 140.6 | 0.0 | 59.3 | | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | |
| %ile BackOfQ(50%),veh | n/In6.5 | 0.2 | 0.0 | 0.0 | 2.2 | 4.5 | 4.6 | 0.0 | 2.4 | | | | |
| Unsig. Movement Delay | , s/veh | 1 | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 16.0 | 0.5 | 0.0 | 0.0 | 4.7 | 7.0 | 188.6 | 0.0 | 107.0 | | | | |
| LnGrp LOS | B | A | A | A | A | A | F | A | F | | | | |
| Approach Vol, veh/h | | 1224 | | | 981 | | | 134 | | | | | |
| Approach Delay, s/veh | | 5.5 | | | 6.1 | | | 155.7 | | | | | |
| Approach LOS | | А | | | А | | | F | | | | | |
| Timer - Assigned Phs | | 2 | | 4 | | | 7 | 8 | | | | | |
| Phs Duration (G+Y+Rc) | , S | 10.0 | | 90.0 | | | 10.0 | 80.0 | | | | | |
| Change Period (Y+Rc), | S | 6.0 | | 6.0 | | | 6.0 | * 6 | | | | | |
| Max Green Setting (Gm | ax), s | 4.0 | | 84.0 | | | 4.5 | * 74 | | | | | |
| Max Q Clear Time (g_c- | +I1), s | 6.0 | | 2.0 | | | 2.0 | 17.8 | | | | | |
| Green Ext Time (p_c), s | ; | 0.0 | | 7.5 | | | 0.3 | 5.3 | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 14.4 | | | | | | | | | | |
| HCM 6th LOS | | | В | | | | | | | | | | |

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

| | - | $\mathbf{\hat{z}}$ | 1 | + | 1 | 1 |
|---------------------------|----------|--------------------|------------|------|------|------|
| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
| Lane Configurations | • | 1 | 5 | • | 5 | 1 |
| Traffic Volume (veh/h) | 390 | 400 | 35 | 315 | 619 | 38 |
| Future Volume (veh/h) | 390 | 400 | 35 | 315 | 619 | 38 |
| Initial Q (Qb) veh | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adi(A_nhT) | v | 1 00 | 1 00 | Ū | 1 00 | 1 00 |
| Parking Rus Adi | 1 00 | 1.00 | 1.00 | 1 00 | 1.00 | 1.00 |
| Work Zone On Approac | h No | 1.00 | 1.00 | No | No | 1.00 |
| Adi Sat Flow, yeb/b/lp | 1856 | 1856 | 1856 | 1856 | 1885 | 1885 |
| Adj Sat How, ven/n/m | 1000 | 1000 | 1030 | 358 | 703 | 1005 |
| Auj Flow Rale, veli/li | 443 | 0 | 40 | 0.00 | 703 | 0 00 |
| Peak Hour Factor | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Percent Heavy Veh, % | 3 | 3 | 3 | 3 | 1 | 1 |
| Cap, veh/h | 536 | | 98 | 742 | 838 | |
| Arrive On Green | 0.29 | 0.00 | 0.06 | 0.40 | 0.47 | 0.00 |
| Sat Flow, veh/h | 1856 | 1572 | 1767 | 1856 | 1795 | 1598 |
| Grp Volume(v), veh/h | 443 | 0 | 40 | 358 | 703 | 0 |
| Grp Sat Flow(s),veh/h/li | n1856 | 1572 | 1767 | 1856 | 1795 | 1598 |
| Q Serve(g_s), s | 20.1 | 0.0 | 2.0 | 12.9 | 30.9 | 0.0 |
| Cycle Q Clear(g c), s | 20.1 | 0.0 | 2.0 | 12.9 | 30.9 | 0.0 |
| Prop In Lane | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Lane Grn Can(c) veh/h | 536 | 1.00 | 98 | 742 | 838 | 1.00 |
| V/C Ratio(X) | 0.83 | | 0.41 | 0.48 | 0.84 | |
| Avail Can(c, a) veh/h | 536 | | 0.41 QQ | 7/2 | 0.04 | |
| HCM Plateen Patie | 1.00 | 1.00 | 1 00 | 1 00 | 1.00 | 1 00 |
| Lingtroom Filter/I) | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/vel | 129.9 | 0.0 | 41.1 | 20.1 | 21.0 | 0.0 |
| Incr Delay (d2), s/veh | 13.6 | 0.0 | 12.1 | 2.2 | 9.9 | 0.0 |
| Initial Q Delay(d3),s/vel | n 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),vel | h/11n0.6 | 0.0 | 1.2 | 5.7 | 13.8 | 0.0 |
| Unsig. Movement Delay | /, s/veh | | | | | |
| LnGrp Delay(d),s/veh | 43.5 | 0.0 | 53.1 | 22.3 | 30.9 | 0.0 |
| LnGrp LOS | D | | D | С | С | |
| Approach Vol. veh/h | 443 | А | | 398 | 703 | А |
| Approach Delay, s/veh | 43.5 | | | 25.4 | 30.9 | |
| Approach LOS | D | | | C | C | |
| | U | | | U | J | |
| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 |
| Phs Duration (G+Y+Rc) |), S | 42.0 | | 48.0 | 10.0 | 32.0 |
| Change Period (Y+Rc). | S | 6.0 | | 6.0 | 5.0 | 6.0 |
| Max Green Setting (Gm | nax). s | 36.0 | | 42.0 | 5.0 | 26.0 |
| Max Q Clear Time (g c | + 1). s | 14.9 | | 32.9 | 4.0 | 22.1 |
| Green Ext Time (n_c) | · · /, J | 4.8 | | 2.3 | 0.0 | 1.8 |
| | | | | 2.0 | 0.0 | 1.0 |
| Intersection Summary | | | | | | |
| HCM 6th Ctrl Delay | | | 33.1 | | | |
| HCM 6th LOS | | | С | | | |
| | | | | | | |

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

| | ≯ | \mathbf{i} | 1 | Ť | ţ | ∢ | | |
|----------------------------------|---------|--------------|-------|----------|------------|------------------|---|--|
| Movement | EBL | EBR | NBL | NBT | SBT | SBR | | |
| Lane Configurations | | 1 | ካካ | ^ | ^ | 1 | | |
| Traffic Volume (vph) | 0 | 274 | 198 | 1210 | 1761 | 10 | | |
| Future Volume (vph) | 0 | 274 | 198 | 1210 | 1761 | 10 | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | |
| Total Lost time (s) | | 4.0 | 6.0 | 4.0 | 7.0 | 7.0 | | |
| Lane Util. Factor | | 1.00 | 0.97 | 0.95 | 0.95 | 1.00 | | |
| Frpb, ped/bikes | | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Flpb, ped/bikes | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Frt | | 0.86 | 1.00 | 1.00 | 1.00 | 0.85 | | |
| Flt Protected | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | |
| Satd. Flow (prot) | | 1591 | 3099 | 3195 | 3406 | 1524 | | |
| Flt Permitted | | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | | |
| Satd. Flow (perm) | | 1591 | 3099 | 3195 | 3406 | 1524 | | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | | |
| Adj. Flow (vph) | 0 | 291 | 211 | 1287 | 1873 | 11 | | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 3 | | |
| Lane Group Flow (vph) | 0 | 291 | 211 | 1287 | 1873 | 8 | | |
| Confl. Peds. (#/hr) | | 1 | | | | | | |
| Heavy Vehicles (%) | 2% | 2% | 13% | 13% | 6% | 6% | | |
| Turn Type | | Free | Prot | NA | NA | Perm | | |
| Protected Phases | | | 1 | Free | 2 | | | |
| Permitted Phases | | Free | | | | 2 | | |
| Actuated Green, G (s) | | 100.0 | 12.1 | 100.0 | 74.9 | 74.9 | | |
| Effective Green, g (s) | | 100.0 | 12.1 | 100.0 | 74.9 | 74.9 | | |
| Actuated g/C Ratio | | 1.00 | 0.12 | 1.00 | 0.75 | 0.75 | | |
| Clearance Time (s) | | | 6.0 | | 7.0 | 7.0 | | |
| Vehicle Extension (s) | | | 3.0 | | 5.0 | 5.0 | | |
| Lane Grp Cap (vph) | | 1591 | 374 | 3195 | 2551 | 1141 | | |
| v/s Ratio Prot | | | 0.07 | 0.40 | c0.55 | | | |
| v/s Ratio Perm | | 0.18 | | | | 0.01 | | |
| v/c Ratio | | 0.18 | 0.56 | 0.40 | 0.73 | 0.01 | | |
| Uniform Delay, d1 | | 0.0 | 41.5 | 0.0 | 7.0 | 3.2 | | |
| Progression Factor | | 1.00 | 0.52 | 1.00 | 0.36 | 0.07 | | |
| Incremental Delay, d2 | | 0.3 | 1.6 | 0.3 | 0.9 | 0.0 | | |
| Delay (s) | | 0.3 | 23.4 | 0.3 | 3.4 | 0.2 | | |
| Level of Service | | А | С | A | A | A | | |
| Approach Delay (s) | 0.3 | | | 3.6 | 3.4 | | | |
| Approach LOS | Α | | | А | А | | | |
| Intersection Summarv | | | | | | | | |
| HCM 2000 Control Delay | | | 32 | H | CM 2000 | Level of Service | 2 | |
| HCM 2000 Volume to Canacity | v ratio | | 0.72 | | 2000 | 20101 01 001 100 | | |
| Actuated Cycle Length (s) | , 1000 | | 100.0 | Si | um of lost | time (s) | | |
| Intersection Capacity Utilizatio | n | | 73.2% | | U Level o | of Service | | |
| Analysis Period (min) | | | 15 | 10 | 2 201010 | | | |

c Critical Lane Group

| | ≯ | → | $\mathbf{\hat{z}}$ | 4 | + | * | • | Ť | 1 | 1 | Ŧ | ~ |
|--------------------------------------|-------|-------|--------------------|------------|---------|----------|-----------|------|------|------|------|-------|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | ۲ | | 1 | | | | ۲ | ≜t≽ | | | 44 | 1 |
| Traffic Volume (vph) | 276 | 0 | 612 | 0 | 0 | 0 | 427 | 1113 | 0 | 0 | 1319 | 232 |
| Future Volume (vph) | 276 | 0 | 612 | 0 | 0 | 0 | 427 | 1113 | 0 | 0 | 1319 | 232 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 10 | 12 |
| Total Lost time (s) | 6.5 | | 6.5 | | | | 6.5 | 6.5 | | | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | | 1.00 | | | | 1.00 | 0.95 | | | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 0.98 |
| Flpb, ped/bikes | 1.00 | | 1.00 | | | | 1.00 | 1.00 | | | 1.00 | 1.00 |
| Frt | 1.00 | | 0.85 | | | | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | | 1.00 | | | | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1752 | | 1463 | | | | 1583 | 3167 | | | 3179 | 1498 |
| Flt Permitted | 0.95 | | 1.00 | | | | 0.08 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1752 | | 1463 | | | | 131 | 3167 | | | 3179 | 1498 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 297 | 0 | 658 | 0 | 0 | 0 | 459 | 1197 | 0 | 0 | 1418 | 249 |
| RTOR Reduction (vph) | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 47 |
| Lane Group Flow (vph) | 297 | 0 | 636 | 0 | 0 | 0 | 459 | 1197 | 0 | 0 | 1418 | 202 |
| Confl. Peds. (#/hr) | | | | | | | 1 | | | | | 1 |
| Confl. Bikes (#/hr) | | | | | | | | | | | | 1 |
| Heavy Vehicles (%) | 3% | 3% | 3% | 0% | 0% | 0% | 14% | 14% | 14% | 6% | 6% | 6% |
| Turn Type | Prot | | pt+ov | | | | pm+pt | NA | | | NA | pm+ov |
| Protected Phases | 4 | | . 14 | | | | 1 | 16 | | | 2 | . 4 |
| Permitted Phases | | | 4 | | | | 16 | | | | | 2 |
| Actuated Green, G (s) | 13.5 | | 42.5 | | | | 73.5 | 73.5 | | | 44.5 | 58.0 |
| Effective Green, g (s) | 13.5 | | 42.5 | | | | 73.5 | 73.5 | | | 44.5 | 58.0 |
| Actuated g/C Ratio | 0.14 | | 0.42 | | | | 0.74 | 0.74 | | | 0.44 | 0.58 |
| Clearance Time (s) | 6.5 | | | | | | 6.5 | | | | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.5 | | | | | | 3.0 | | | | 6.0 | 3.5 |
| Lane Grp Cap (vph) | 236 | | 621 | | | | 422 | 2327 | | | 1414 | 966 |
| v/s Ratio Prot | c0.17 | | c0.43 | | | | 0.24 | 0.38 | | | 0.45 | 0.03 |
| v/s Ratio Perm | | | | | | | c0.55 | | | | | 0.11 |
| v/c Ratio | 1.26 | | 1.02 | | | | 1.09 | 0.51 | | | 1.00 | 0.21 |
| Uniform Delay, d1 | 43.2 | | 28.8 | | | | 30.0 | 5.6 | | | 27.8 | 10.0 |
| Progression Factor | 1.00 | | 1.00 | | | | 0.65 | 0.30 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | 145.9 | | 42.5 | | | | 66.4 | 0.2 | | | 24.6 | 0.1 |
| Delay (s) | 189.2 | | 71.2 | | | | 85.8 | 1.9 | | | 52.4 | 10.2 |
| Level of Service | F | | E | | | | F | А | | | D | В |
| Approach Delay (s) | | 107.9 | | | 0.0 | | | 25.1 | | | 46.1 | |
| Approach LOS | | F | | | А | | | С | | | D | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 51.8 | | CM 2000 | Level of | Sonvico | | | | | |
| HCM 2000 Volume to Canacity ratio 51 | | | | | | Level OI | Gervice | | U | | | |
| | | | | C | | time (s) | | | 10.5 | | | |
| Intersection Canacity Litilize | 89.6% | | | of Service | 2 | | 19.5 E | | | | | |
| Analysis Period (min) | | | 15 | IC. | | | 5 | | L | | | |
| | | | 10 | | | | | | | | | |

c Critical Lane Group

8 ATTACHMENT C (SIMTRAFFIC[™] REPORTS)

SimTraffic Simulation Summary No Action Conditions AM 04/30/2020

Summary of All Intervals

| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-----------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Start Time | | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 |
| End Time | | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 |
| Total Time (min) | | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Time Recorded (min |) | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| # of Intervals | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| # of Recorded Interv | /als | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Vehs Entered | | 9382 | 9197 | 9328 | 9320 | 9349 | 9314 | 9345 | 9337 | 9313 | 9069 | 9289 |
| Vehs Exited | | 8940 | 8781 | 8840 | 8873 | 8879 | 8981 | 8939 | 8919 | 8962 | 8778 | 8889 |
| Starting Vehs | | 432 | 433 | 440 | 439 | 428 | 430 | 481 | 421 | 447 | 455 | 434 |
| Ending Vehs | | 874 | 849 | 928 | 886 | 898 | 763 | 887 | 839 | 798 | 746 | 841 |
| Travel Distance (mi) | | 10403 | 10379 | 10185 | 10224 | 10412 | 10517 | 10140 | 10272 | 10339 | 10144 | 10302 |
| Travel Time (hr) | | 667.0 | 668.3 | 734.1 | 749.4 | 747.1 | 703.7 | 775.5 | 672.4 | 723.4 | 668.3 | 710.9 |
| Total Delay (hr) | | 377.1 | 378.3 | 450.0 | 464.4 | 455.7 | 410.5 | 492.2 | 385.5 | 434.1 | 384.7 | 423.2 |
| Total Stops | | 14682 | 14389 | 15728 | 15582 | 15294 | 15283 | 14979 | 15148 | 14852 | 14546 | 15049 |
| Fuel Used (gal) | | 410.8 | 410.3 | 419.3 | 422.3 | 426.0 | 419.2 | 424.5 | 406.9 | 420.7 | 406.0 | 416.6 |
| Interval #0 Informat | ion See | ding | | | | | | | | | | |
| Start Time | 5:52 | | | | | | | | | | | |
| End Time | 6:00 | | | | | | | | | | | |
| Total Time (min) | 8 | | | | | | | | | | | |
| Volumes adjusted b | y Growtł | n Factors. | | | | | | | | | | |
| No data recorded th | is interv | al. | | | | | | | | | | |
| Interval #1 Informat | ion Reco | ording | | | | | | | | | | |

 Interval #1 Information Recording

 Start Time
 6:00

 End Time
 6:15

 Total Time (min)
 15

 Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 2315 | 2279 | 2295 | 2290 | 2427 | 2447 | 2378 | 2399 | 2337 | 2266 | 2334 |
| Vehs Exited | 2234 | 2209 | 2147 | 2149 | 2265 | 2291 | 2257 | 2242 | 2188 | 2222 | 2219 |
| Starting Vehs | 432 | 433 | 440 | 439 | 428 | 430 | 481 | 421 | 447 | 455 | 434 |
| Ending Vehs | 513 | 503 | 588 | 580 | 590 | 586 | 602 | 578 | 596 | 499 | 560 |
| Travel Distance (mi) | 2655 | 2634 | 2498 | 2513 | 2726 | 2641 | 2645 | 2566 | 2595 | 2559 | 2603 |
| Travel Time (hr) | 120.2 | 116.3 | 125.3 | 126.8 | 124.1 | 129.6 | 134.3 | 121.0 | 125.9 | 128.3 | 125.2 |
| Total Delay (hr) | 45.9 | 42.6 | 55.5 | 56.8 | 47.6 | 56.0 | 60.4 | 48.9 | 53.1 | 56.8 | 52.4 |
| Total Stops | 3088 | 2913 | 3384 | 3383 | 3206 | 3294 | 3296 | 3105 | 3187 | 3363 | 3215 |
| Fuel Used (gal) | 94.4 | 94.0 | 92.0 | 92.5 | 96.2 | 95.9 | 96.7 | 92.7 | 94.4 | 94.4 | 94.3 |

Interval #2 Information Recording

Start Time6:15End Time6:30

Total Time (min) 15

Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 2416 | 2324 | 2323 | 2356 | 2309 | 2308 | 2339 | 2274 | 2385 | 2359 | 2335 |
| Vehs Exited | 2320 | 2206 | 2253 | 2215 | 2200 | 2216 | 2275 | 2204 | 2312 | 2258 | 2245 |
| Starting Vehs | 513 | 503 | 588 | 580 | 590 | 586 | 602 | 578 | 596 | 499 | 560 |
| Ending Vehs | 609 | 621 | 658 | 721 | 699 | 678 | 666 | 648 | 669 | 600 | 642 |
| Travel Distance (mi) | 2677 | 2608 | 2601 | 2508 | 2594 | 2640 | 2559 | 2509 | 2654 | 2554 | 2590 |
| Travel Time (hr) | 152.3 | 144.5 | 158.7 | 165.9 | 161.5 | 160.7 | 168.6 | 155.7 | 163.5 | 144.7 | 157.6 |
| Total Delay (hr) | 77.9 | 71.8 | 86.0 | 95.8 | 89.2 | 87.1 | 97.3 | 85.6 | 89.0 | 73.2 | 85.3 |
| Total Stops | 3724 | 3639 | 3873 | 4011 | 3871 | 3903 | 3787 | 3795 | 3969 | 3630 | 3818 |
| Fuel Used (gal) | 101.6 | 98.3 | 101.0 | 99.5 | 100.5 | 101.8 | 101.5 | 97.5 | 103.1 | 97.7 | 100.2 |

SimTraffic Simulation Summary No Action Conditions AM 04/30/2020

Interval #3 Information RecordingStart Time6:30End Time6:45Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 2310 | 2324 | 2360 | 2298 | 2322 | 2268 | 2291 | 2290 | 2357 | 2281 | 2301 |
| Vehs Exited | 2156 | 2184 | 2210 | 2203 | 2206 | 2198 | 2213 | 2209 | 2307 | 2169 | 2207 |
| Starting Vehs | 609 | 621 | 658 | 721 | 699 | 678 | 666 | 648 | 669 | 600 | 642 |
| Ending Vehs | 763 | 761 | 808 | 816 | 815 | 748 | 744 | 729 | 719 | 712 | 754 |
| Travel Distance (mi) | 2496 | 2552 | 2548 | 2526 | 2521 | 2565 | 2504 | 2595 | 2558 | 2508 | 2537 |
| Travel Time (hr) | 178.1 | 179.6 | 199.6 | 205.2 | 207.6 | 187.9 | 210.0 | 182.4 | 199.2 | 180.7 | 193.0 |
| Total Delay (hr) | 108.5 | 108.6 | 128.7 | 135.0 | 136.9 | 116.4 | 139.9 | 110.2 | 127.9 | 110.5 | 122.3 |
| Total Stops | 3915 | 3777 | 4167 | 3863 | 4032 | 4034 | 3862 | 4098 | 3889 | 3791 | 3934 |
| Fuel Used (gal) | 102.0 | 103.4 | 108.0 | 108.7 | 109.4 | 105.5 | 108.0 | 105.3 | 109.2 | 104.0 | 106.4 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Interval #4 Information RecordingStart Time6:45End Time7:00Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 2341 | 2270 | 2350 | 2376 | 2291 | 2291 | 2337 | 2374 | 2234 | 2163 | 2300 |
| Vehs Exited | 2230 | 2182 | 2230 | 2306 | 2208 | 2276 | 2194 | 2264 | 2155 | 2129 | 2214 |
| Starting Vehs | 763 | 761 | 808 | 816 | 815 | 748 | 744 | 729 | 719 | 712 | 754 |
| Ending Vehs | 874 | 849 | 928 | 886 | 898 | 763 | 887 | 839 | 798 | 746 | 841 |
| Travel Distance (mi) | 2575 | 2585 | 2539 | 2677 | 2571 | 2671 | 2433 | 2602 | 2531 | 2522 | 2571 |
| Travel Time (hr) | 216.5 | 227.9 | 250.5 | 251.5 | 253.9 | 225.5 | 262.6 | 213.3 | 234.7 | 214.6 | 235.1 |
| Total Delay (hr) | 144.7 | 155.4 | 179.7 | 176.8 | 181.9 | 151.0 | 194.5 | 140.8 | 164.1 | 144.3 | 163.3 |
| Total Stops | 3955 | 4060 | 4304 | 4325 | 4185 | 4052 | 4034 | 4150 | 3807 | 3762 | 4057 |
| Fuel Used (gal) | 112.7 | 114.6 | 118.4 | 121.7 | 119.9 | 116.0 | 118.3 | 111.5 | 114.1 | 109.9 | 115.7 |

SimTraffic Report

Bureau of Engraving and Printing LBG Page 0

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Queuing and Blocking Report No Action Conditions AM 04/30/2020

Intersection: 1: MD 201 & I-95 SB off-Ramp

| Movement | FB | FB | FR | NR | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|------|------|-----|-----|
| wovernent | LD | LD | LD | ND | ND | ND | 30 | 50 |
| Directions Served | L | L | R | Т | Т | Т | Т | Т |
| Maximum Queue (ft) | 112 | 174 | 74 | 135 | 133 | 195 | 112 | 123 |
| Average Queue (ft) | 18 | 87 | 5 | 51 | 30 | 78 | 30 | 38 |
| 95th Queue (ft) | 65 | 152 | 107 | 108 | 87 | 155 | 82 | 97 |
| Link Distance (ft) | | 734 | 734 | 1249 | 1249 | 1249 | 542 | 542 |
| Upstream Blk Time (%) | | | | 0 | | | | |
| Queuing Penalty (veh) | | | | 0 | | | | |
| Storage Bay Dist (ft) | 325 | | | | | | | |
| Storage Blk Time (%) | | | | | | | | |

Queuing Penalty (veh)

Intersection: 2: MD 201 & I-95 NB Off Ramp

| Movement | WB | WB | WB | WB | NB | NB | NB | SB | SB | SB | | |
|---------------------------|-----------|------------|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | L | L | R | R | UT | Т | Т | Т | Т | Т | | |
| Maximum Queue (ft) | 209 | 260 | 355 | 318 | 134 | 153 | 136 | 205 | 215 | 252 | | |
| Average Queue (ft) | 99 | 155 | 204 | 183 | 56 | 77 | 71 | 83 | 89 | 113 | | |
| 95th Queue (ft) | 181 | 235 | 295 | 281 | 114 | 136 | 123 | 161 | 172 | 208 | | |
| Link Distance (ft) | | 1405 | 1405 | | | 282 | 282 | 215 | 215 | 215 | | |
| Upstream Blk Time (%) | | | | | | | | 0 | 0 | 0 | | |
| Queuing Penalty (veh) | | | | | | | | 0 | 1 | 2 | | |
| Storage Bay Dist (ft) | 400 | | | 300 | 250 | | | | | | | |
| Storage Blk Time (%) | | | | 0 | 0 | | | | | | | |
| Queuing Penalty (veh) | | | | 1 | 1 | | | | | | | |
| Intersection: 3: MD 201 & | SHA Dist. | 3/Crescent | t Drive | | | | | | | | | |
| Movement | EB | WB | WB | NB | NB | NB | NB | NB | SB | SB | SB | SB |
| Directions Served | LTR | LT | R | L | Т | Т | Т | R | L | Т | Т | TR |
| Maximum Queue (ft) | 51 | 184 | 99 | 91 | 153 | 210 | 212 | 21 | 87 | 85 | 167 | 191 |
| Average Queue (ft) | 5 | 88 | 38 | 35 | 25 | 69 | 62 | 1 | 23 | 14 | 28 | 34 |
| 95th Queue (ft) | 29 | 156 | 78 | 75 | 89 | 154 | 158 | 22 | 63 | 53 | 105 | 120 |
| Link Distance (ft) | 239 | 429 | | | 266 | 266 | 266 | | | 783 | 783 | 783 |
| Upstream Blk Time (%) | | | | | | | 0 | 0 | | | | |
| Queuing Penalty (veh) | | | | | | | 0 | 0 | | | | |
| Storage Bay Dist (ft) | | | 250 | 250 | | | | 200 | 300 | | | |
| Storage Blk Time (%) | | | 0 | 0 | | | | 0 | | | | |
| Queuing Penalty (veh) | | | 0 | 0 | | | | 0 | | | | |
| | | | | | | | | | | | | |

Intersection: 4: MD 201 & Ivy Lane

| Movement | NB | NB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|-----|------|------|
| Directions Served | L | L | Т | Т | Т | Т |
| Maximum Queue (ft) | 89 | 163 | 194 | 203 | 70 | 110 |
| Average Queue (ft) | 33 | 67 | 21 | 22 | 8 | 35 |
| 95th Queue (ft) | 78 | 127 | 181 | 187 | 39 | 90 |
| Link Distance (ft) | | 783 | 783 | 783 | 1193 | 1193 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 350 | | | | | |
| Storage Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |

Intersection: 5: MD 201 & Cherrywood Lane

| Movement | EB | EB | EB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|------|-----|------|------|-----|-----|-----|
| Directions Served | L | L | R | L | Т | Т | Т | Т | R |
| Maximum Queue (ft) | 274 | 818 | 145 | 603 | 1007 | 1013 | 250 | 318 | 247 |
| Average Queue (ft) | 156 | 263 | 40 | 200 | 331 | 331 | 119 | 162 | 70 |
| 95th Queue (ft) | 286 | 679 | 104 | 624 | 926 | 928 | 215 | 280 | 178 |
| Link Distance (ft) | | 1306 | 1306 | | 1193 | 1193 | 610 | 610 | |
| Upstream Blk Time (%) | | | 0 | | | 1 | 2 | | |
| Queuing Penalty (veh) | | | 0 | | | 9 | 12 | | |
| Storage Bay Dist (ft) | 250 | | | 750 | | | | | 250 |
| Storage Blk Time (%) | 8 | 19 | | 0 | 13 | | | 1 | 0 |
| Queuing Penalty (veh) | 13 | 34 | | 0 | 29 | | | 3 | 0 |

Queuing and Blocking Report No Action Conditions AM 04/30/2020

Intersection: 6: MD 201 & Sunnyside Avenue

| Movement | EB | EB | NB | NB | B35 | B6006 | SB | SB |
|-----------------------|-----|-----|-----|------|------|-------|------|-----|
| Directions Served | L | R | L | TR | Т | Т | Т | R |
| Maximum Queue (ft) | 655 | 375 | 475 | 1479 | 2326 | 597 | 1664 | 275 |
| Average Queue (ft) | 289 | 253 | 463 | 1303 | 1503 | 239 | 1553 | 120 |
| 95th Queue (ft) | 723 | 404 | 513 | 1838 | 3045 | 683 | 1928 | 306 |
| Link Distance (ft) | 968 | | | 1368 | 2212 | 490 | 1542 | |
| Upstream Blk Time (%) | | 6 | | | 29 | 22 | 19 | 33 |
| Queuing Penalty (veh) | | 0 | | | 409 | 320 | 268 | 415 |
| Storage Bay Dist (ft) | | 350 | 450 | | | | | 250 |
| Storage Blk Time (%) | 8 | 5 | 37 | 0 | | | 34 | 0 |
| Queuing Penalty (veh) | 24 | 6 | 324 | 2 | | | 71 | 1 |

Intersection: 7: MD 201 & Beaver Dam Road

| Movement | WB | NB | SB | |
|------------------------|-----|------|------|----|
| Directions Served | | LR | TR | LT |
| Maximum Queue (ft) 590 | 104 | 938 | | |
| Average Queue (ft) | 296 | 5 | 748 | |
| 95th Queue (ft) | 642 | 45 | 1266 | |
| Link Distance (ft) | 625 | 1542 | 843 | |
| Upstream Blk Time (%) | 13 | | 29 | |
| Queuing Penalty (veh) | 0 | | 370 | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Intersection: 8: MD 201 & Powder Mill Road

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|
| Directions Served | L | Т | R | L | Т | R | L | Т | R | L | Т | TR |
| Maximum Queue (ft) | 111 | 978 | 525 | 269 | 361 | 65 | 421 | 489 | 208 | 300 | 848 | 835 |
| Average Queue (ft) | 42 | 565 | 349 | 140 | 125 | 18 | 201 | 169 | 12 | 75 | 521 | 486 |
| 95th Queue (ft) | 97 | 1276 | 726 | 246 | 266 | 62 | 368 | 356 | 107 | 266 | 903 | 878 |
| Link Distance (ft) | | 920 | | | 512 | | | 617 | | | 813 | 813 |
| Upstream Blk Time (%) | | 48 | | | 0 | | | 0 | | | 15 | 14 |
| Queuing Penalty (veh) | | 0 | | | 0 | | | 1 | | | 0 | 0 |
| Storage Bay Dist (ft) | 250 | | 500 | 250 | | 40 | 400 | | 275 | 275 | | |
| Storage Blk Time (%) | | | 0 | 53 | 2 | 38 | 0 | 1 | 2 | 0 | 0 | 54 |
| Queuing Penalty (veh) | | | 1 | 88 | 4 | 86 | 1 | 4 | 11 | 0 | 0 | 14 |

Intersection: 9: Edmonston Road & Odell Road

| Movement | EB | WB | WB | NB | SB |
|-----------------------|-----|-----|----|-----|-----|
| Directions Served | LTR | LT | R | LT | LTR |
| Maximum Queue (ft) | 106 | 68 | 41 | 161 | 9 |
| Average Queue (ft) | 30 | 9 | 3 | 35 | 0 |
| 95th Queue (ft) | 83 | 41 | 23 | 110 | 7 |
| Link Distance (ft) | 509 | 488 | | 419 | 365 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | | | 50 | | |
| Storage Blk Time (%) | | | 1 | 0 | |
| Queuing Penalty (veh) | | | 0 | 0 | |
| | | | | | |

Intersection: 10: Powder Mill Road & Poultry Road

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) | EB LT 106 55 90 97 | WB TR 127 76 110 858 0 0 |
|--|-----------------------------------|---|
| Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | | 0 |

Intersection: 11: Powder Mill Road

| Movement | NB |
|-----------------------|----|
| Directions Served | L |
| Maximum Queue (ft) | 38 |
| Average Queue (ft) | 13 |
| 95th Queue (ft) | 38 |
| Link Distance (ft) | 46 |
| Upstream Blk Time (%) | 0 |
| Queuing Penalty (veh) | 0 |
| Storage Bay Dist (ft) | |
| Storage Blk Time (%) | |
| Queuing Penalty (veh) | |
| | |

Intersection: 12: Powder Mill Road

| Movement | EB | WB | SB |
|-----------------------|----|-----|-----|
| Directions Served | L | TR | LR |
| Maximum Queue (ft) | 24 | 5 | 102 |
| Average Queue (ft) | 1 | 0 | 47 |
| 95th Queue (ft) | 12 | 4 | 83 |
| Link Distance (ft) | | 153 | 467 |
| Upstream Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |
| Storage Bay Dist (ft) | 50 | | |
| Storage Blk Time (%) | | 0 | |
| Queuing Penalty (veh) | | 0 | |
| | | | |

Intersection: 13: Powder Mill Road

| Movement | WB | WB | SB | SB |
|-------------------------------|------|-----|-----|-----|
| Directions Served | L | Т | L | TR |
| Maximum Queue (ft) | 49 | 2 | 58 | 237 |
| Average Queue (ft) | 13 | 0 | 47 | 92 |
| 95th Queue (ft) | 37 | 2 | 58 | 187 |
| Link Distance (ft) | | 550 | | 850 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | 225 | | 25 | |
| Storage Blk Time (%) | | | 47 | 22 |
| Queuing Penalty (veh) | | | 95 | 55 |
| Intersection: 14: Powder Mill | Road | | | |
| Movement | EB | WB | NB | NB |
| Directions Served | L | TR | L | TR |
| Maximum Queue (ft) | 80 | 11 | 67 | 87 |
| Average Queue (ft) | 26 | 1 | 35 | 31 |
| 95th Queue (ft) | 59 | 8 | 58 | 59 |
| Link Distance (ft) | | 268 | | 857 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | 250 | | 50 | |
| Storage Blk Time (%) | | | 5 | 1 |
| Queuing Penalty (veh) | | | 5 | 1 |
| Intersection: 15: Powder Mill | Road | | | |
| Movement | EB | EB | WB | WB |
| Directions Served | Т | R | L | Т |
| Maximum Queue (ft) | 193 | 53 | 98 | 215 |
| Average Queue (ft) | 92 | 6 | 38 | 107 |
| 95th Queue (ft) | 157 | 31 | 80 | 183 |
| Link Distance (ft) | 546 | | | 792 |
| Upstream Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| Storage Bay Dist (ft) | | 260 | 300 | |
| Storage Blk Time (%) | | 0 | | |
| Queuing Penalty (veh) | | 0 | | |

SimTraffic Simulation Summary No Action Conditions PM 05/01/2020

Summary of All Intervals

| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Start Time | | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 |
| End Time | | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 |
| Total Time (min) | | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Time Recorded (mir | ר) | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| # of Intervals | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| # of Recorded Inter | vals | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Vehs Entered | | 12725 | 12715 | 12624 | 12551 | 12747 | 12640 | 12583 | 12544 | 12792 | 12681 | 12663 |
| Vehs Exited | | 12510 | 12480 | 12449 | 12398 | 12573 | 12428 | 12390 | 12385 | 12666 | 12459 | 12471 |
| Starting Vehs | | 563 | 602 | 629 | 611 | 601 | 573 | 621 | 641 | 590 | 597 | 598 |
| Ending Vehs | | 778 | 837 | 804 | 764 | 775 | 785 | 814 | 800 | 716 | 819 | 783 |
| Travel Distance (mi) | 1 | 13559 | 13646 | 13569 | 13531 | 13553 | 13488 | 13557 | 13340 | 13553 | 13548 | 13534 |
| Travel Time (hr) | | 914.4 | 933.4 | 898.4 | 854.0 | 908.0 | 929.6 | 965.4 | 985.6 | 857.7 | 957.4 | 920.4 |
| Total Delay (hr) | | 524.4 | 540.5 | 507.0 | 464.2 | 517.6 | 542.5 | 577.0 | 602.4 | 467.4 | 567.6 | 531.1 |
| Total Stops | | 16113 | 16846 | 17110 | 16060 | 15847 | 16586 | 17225 | 16104 | 15917 | 16695 | 16449 |
| Fuel Used (gal) | | 548.2 | 552.9 | 542.5 | 535.9 | 547.3 | 550.5 | 557.9 | 557.4 | 541.5 | 557.0 | 549.1 |
| Interval #0 Informa | tion Seed | ling | | | | | | | | | | |
| Start Time | 2:52 | | | | | | | | | | | |
| End Time | 3:00 | | | | | | | | | | | |
| Total Time (min) | 8 | | | | | | | | | | | |
| Volumes adjusted b | y Growth | Factors. | | | | | | | | | | |
| No data recorded th | nis interva | al. | | | | | | | | | | |

Interval #1 Information RecordingStart Time3:00End Time3:15Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 3155 | 3258 | 3283 | 3177 | 3226 | 3110 | 3225 | 3114 | 3310 | 3192 | 3200 |
| Vehs Exited | 3077 | 3125 | 3215 | 3119 | 3104 | 2987 | 3062 | 3073 | 3164 | 3105 | 3101 |
| Starting Vehs | 563 | 602 | 629 | 611 | 601 | 573 | 621 | 641 | 590 | 597 | 598 |
| Ending Vehs | 641 | 735 | 697 | 669 | 723 | 696 | 784 | 682 | 736 | 684 | 703 |
| Travel Distance (mi) | 3263 | 3355 | 3493 | 3388 | 3400 | 3209 | 3346 | 3339 | 3431 | 3396 | 3362 |
| Travel Time (hr) | 163.7 | 175.2 | 171.9 | 170.4 | 175.0 | 169.8 | 180.4 | 183.5 | 164.1 | 175.6 | 173.0 |
| Total Delay (hr) | 70.1 | 78.4 | 71.2 | 73.0 | 77.2 | 77.5 | 84.7 | 88.0 | 65.5 | 78.0 | 76.3 |
| Total Stops | 3665 | 3708 | 3970 | 4037 | 4073 | 3785 | 4227 | 3952 | 3645 | 4048 | 3908 |
| Fuel Used (gal) | 120.4 | 125.3 | 127.5 | 124.5 | 125.9 | 120.3 | 125.9 | 126.4 | 125.9 | 126.4 | 124.8 |

Interval #2 Information Recording

Start Time3:15End Time3:30

Total Time (min) 15

Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 3251 | 3166 | 3088 | 3147 | 3152 | 3212 | 3108 | 3135 | 3285 | 3194 | 3171 |
| Vehs Exited | 3119 | 3049 | 3075 | 3104 | 3184 | 3160 | 3107 | 3102 | 3277 | 3094 | 3125 |
| Starting Vehs | 641 | 735 | 697 | 669 | 723 | 696 | 784 | 682 | 736 | 684 | 703 |
| Ending Vehs | 773 | 852 | 710 | 712 | 691 | 748 | 785 | 715 | 744 | 784 | 748 |
| Travel Distance (mi) | 3381 | 3401 | 3329 | 3388 | 3336 | 3419 | 3425 | 3289 | 3450 | 3432 | 3385 |
| Travel Time (hr) | 215.4 | 219.2 | 190.0 | 193.3 | 212.7 | 216.4 | 224.5 | 233.6 | 201.5 | 219.7 | 212.6 |
| Total Delay (hr) | 118.2 | 121.4 | 93.9 | 95.6 | 116.1 | 118.9 | 126.1 | 139.1 | 102.0 | 120.8 | 115.2 |
| Total Stops | 4145 | 4189 | 4140 | 3943 | 3781 | 4138 | 4185 | 4024 | 4055 | 4150 | 4066 |
| Fuel Used (gal) | 133.4 | 135.8 | 127.1 | 129.5 | 132.2 | 136.1 | 136.6 | 136.0 | 134.6 | 136.4 | 133.8 |

SimTraffic Simulation Summary No Action Conditions PM 05/01/2020

Interval #3 Information RecordingStart Time3:30End Time3:45Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 3160 | 3185 | 3158 | 3072 | 3224 | 3128 | 3107 | 3117 | 3127 | 3111 | 3142 |
| Vehs Exited | 3137 | 3190 | 3062 | 3004 | 3133 | 3107 | 3075 | 3065 | 3062 | 3082 | 3091 |
| Starting Vehs | 773 | 852 | 710 | 712 | 691 | 748 | 785 | 715 | 744 | 784 | 748 |
| Ending Vehs | 796 | 847 | 806 | 780 | 782 | 769 | 817 | 767 | 809 | 813 | 795 |
| Travel Distance (mi) | 3478 | 3426 | 3405 | 3342 | 3406 | 3402 | 3371 | 3304 | 3295 | 3311 | 3374 |
| Travel Time (hr) | 248.1 | 248.9 | 249.1 | 221.3 | 244.8 | 253.7 | 260.4 | 268.6 | 224.7 | 258.8 | 247.8 |
| Total Delay (hr) | 147.9 | 150.7 | 150.8 | 125.0 | 146.6 | 156.1 | 163.5 | 173.6 | 129.5 | 163.5 | 150.7 |
| Total Stops | 4129 | 4473 | 4389 | 3935 | 3929 | 4401 | 4465 | 3990 | 4067 | 4150 | 4190 |
| Fuel Used (gal) | 142.4 | 141.6 | 141.5 | 134.1 | 141.5 | 142.9 | 142.3 | 142.1 | 134.7 | 140.7 | 140.4 |
| Interval #4 Information Re | ecording | | | | | | | | | | |

Start Time3:45End Time4:00Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 3159 | 3106 | 3095 | 3155 | 3145 | 3190 | 3143 | 3178 | 3070 | 3184 | 3141 |
| Vehs Exited | 3177 | 3116 | 3097 | 3171 | 3152 | 3174 | 3146 | 3145 | 3163 | 3178 | 3152 |
| Starting Vehs | 796 | 847 | 806 | 780 | 782 | 769 | 817 | 767 | 809 | 813 | 795 |
| Ending Vehs | 778 | 837 | 804 | 764 | 775 | 785 | 814 | 800 | 716 | 819 | 783 |
| Travel Distance (mi) | 3438 | 3463 | 3342 | 3414 | 3412 | 3457 | 3415 | 3408 | 3377 | 3409 | 3413 |
| Travel Time (hr) | 287.2 | 290.1 | 287.3 | 269.1 | 275.5 | 289.7 | 300.1 | 299.8 | 267.4 | 303.4 | 287.0 |
| Total Delay (hr) | 188.2 | 190.1 | 191.1 | 170.6 | 177.7 | 190.0 | 202.7 | 201.7 | 170.4 | 205.3 | 188.8 |
| Total Stops | 4174 | 4476 | 4611 | 4145 | 4064 | 4262 | 4348 | 4138 | 4150 | 4347 | 4271 |
| Fuel Used (gal) | 151.9 | 150.1 | 146.4 | 147.8 | 147.7 | 151.1 | 152.9 | 153.0 | 146.3 | 153.6 | 150.1 |

SimTraffic Report

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Queuing and Blocking Report No Action Conditions PM 05/01/2020

Intersection: 1: MD 201 & I-95 SB off-Ramp

| Movement | EB | EB | EB | NB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|------|------|-----|-----|
| Directions Served | L | L | R | т | Т | Т | т | Т |
| Maximum Queue (ft) | 98 | 463 | 450 | 156 | 194 | 215 | 149 | 173 |
| Average Queue (ft) | 21 | 100 | 19 | 68 | 58 | 103 | 61 | 72 |
| 95th Queue (ft) | 64 | 257 | 211 | 128 | 140 | 188 | 124 | 139 |
| Link Distance (ft) | | 734 | 734 | 1249 | 1249 | 1249 | 542 | 542 |
| Upstream Blk Time (%) | | | 0 | 0 | | | | |
| Queuing Penalty (veh) | | | 0 | 0 | | | | |
| Storage Bay Dist (ft) | 325 | | | | | | | |
| Storage Blk Time (%) | | | | | | | | |

Queuing Penalty (veh)

Intersection: 2: MD 201 & I-95 NB Off Ramp

| Movement | WB | WB | WB | WB | NB | NB | NB | B6001 | SB | SB | SB | |
|---------------------------|-----------|------------|-------|-----|-----|-----|-----|-------|-----|-----|-----|-----|
| Directions Served | L | L | R | R | UT | Т | Т | Т | Т | Т | Т | |
| Maximum Queue (ft) | 273 | 332 | 283 | 268 | 148 | 180 | 219 | 8 | 172 | 180 | 203 | |
| Average Queue (ft) | 154 | 206 | 170 | 152 | 70 | 94 | 103 | 0 | 84 | 90 | 90 | |
| 95th Queue (ft) | 247 | 295 | 250 | 231 | 128 | 159 | 175 | 8 | 144 | 155 | 170 | |
| Link Distance (ft) | | 1405 | 1405 | | | 282 | 282 | 39 | 215 | 215 | 215 | |
| Upstream Blk Time (%) | | | | | | | 0 | 0 | 0 | 0 | 0 | |
| Queuing Penalty (veh) | | | | | | | 0 | 0 | 0 | 0 | 1 | |
| Storage Bay Dist (ft) | 400 | | | 300 | 250 | | | | | | | |
| Storage Blk Time (%) | | | | 0 | 0 | | | | | | | |
| Queuing Penalty (veh) | | | | 0 | 0 | | | | | | | |
| Intersection: 3: MD 201 & | SHA Dist. | 3/Crescent | Drive | | | | | | | | | |
| Movement | EB | WB | WB | NB | NB | NB | NB | NB | SB | SB | SB | SB |
| Directions Served | LTR | LT | R | L | Т | Т | Т | R | L | Т | Т | TR |
| Maximum Queue (ft) | 55 | 233 | 91 | 68 | 223 | 281 | 314 | 202 | 149 | 102 | 128 | 146 |
| Average Queue (ft) | 14 | 111 | 41 | 19 | 85 | 147 | 145 | 16 | 67 | 18 | 31 | 36 |
| 95th Queue (ft) | 39 | 193 | 78 | 53 | 185 | 248 | 258 | 110 | 122 | 62 | 85 | 101 |
| Link Distance (ft) | 239 | 429 | | | 266 | 266 | 266 | | | 783 | 783 | 783 |
| Upstream Blk Time (%) | | | | | | 0 | 0 | 0 | | | | |
| Queuing Penalty (veh) | | | | | | 0 | 1 | 2 | | | | |
| Storage Bay Dist (ft) | | | 250 | 250 | | | | 200 | 300 | | | |
| Storage Blk Time (%) | | | 0 | | | 0 | | 2 | 0 | | | |
| Queuing Penalty (veh) | | | 0 | | | 0 | | 3 | 0 | | | |

Intersection: 4: MD 201 & Ivy Lane

| NB | NB | SB | SB |
|-----|------------------------------------|---|--|
| L | L | Т | Т |
| 152 | 172 | 141 | 171 |
| 59 | 89 | 58 | 96 |
| 118 | 141 | 116 | 153 |
| | 783 | 1193 | 1193 |
| | | | |
| | | | |
| 350 | | | |
| | | | |
| | | | |
| | NB L 152 59 118 350 | NB NB L L 152 172 59 89 118 141 783 350 | NB NB SB L L T 152 172 141 59 89 58 118 141 116 783 1193 350 |

Intersection: 5: MD 201 & Cherrywood Lane

| Movement | EB | EB | EB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|------|-----|------|------|-----|-----|-----|
| Directions Served | L | L | R | L | Т | Т | Т | Т | R |
| Maximum Queue (ft) | 213 | 230 | 308 | 207 | 186 | 191 | 269 | 276 | 237 |
| Average Queue (ft) | 113 | 139 | 166 | 104 | 56 | 51 | 131 | 156 | 60 |
| 95th Queue (ft) | 185 | 207 | 277 | 187 | 144 | 137 | 228 | 254 | 145 |
| Link Distance (ft) | | 1306 | 1306 | | 1193 | 1193 | 610 | 610 | |
| Upstream Blk Time (%) | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | |
| Storage Bay Dist (ft) | 250 | | | 750 | | | | | 250 |
| Storage Blk Time (%) | 0 | 0 | | | | | | 1 | 0 |
| Queuing Penalty (veh) | 0 | 0 | | | | | | 3 | 0 |

Queuing and Blocking Report No Action Conditions PM 05/01/2020

Intersection: 6: MD 201 & Sunnyside Avenue

| Movement | EB | EB | NB | NB | B35 | SB | SB |
|-----------------------|------|-----|-----|------|------|------|-----|
| Directions Served | L | R | L | TR | Т | Т | R |
| Maximum Queue (ft) | 1019 | 375 | 475 | 1363 | 316 | 1648 | 275 |
| Average Queue (ft) | 950 | 367 | 417 | 620 | 18 | 1368 | 144 |
| 95th Queue (ft) | 1181 | 425 | 546 | 1278 | 178 | 2041 | 341 |
| Link Distance (ft) | 968 | | | 1368 | 2212 | 1546 | |
| Upstream Blk Time (%) | | 64 | | | 2 | | 25 |
| Queuing Penalty (veh) | | 0 | | | 32 | | 272 |
| Storage Bay Dist (ft) | | 350 | 450 | | | | 250 |
| Storage Blk Time (%) | 30 | 38 | 13 | 1 | | 39 | 0 |
| Queuing Penalty (veh) | 186 | 106 | 147 | 5 | | 67 | 1 |

Intersection: 7: MD 201 & Beaver Dam Road

| WB | NB | SB |
|-----|---|---|
| LTR | TR | LT |
| 560 | 11 | 919 |
| 300 | 1 | 655 |
| 618 | 10 | 1192 |
| 626 | 1546 | 837 |
| 8 | | 28 |
| 0 | | 316 |
| | | |
| | | |
| | | |
| | WB LTR 560 300 618 626 8 0 | WB NB LTR TR 560 11 300 1 618 10 626 1546 8 0 |

Intersection: 8: MD 201 & Powder Mill Road

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|
| Directions Served | L | Т | R | L | Т | R | L | Т | R | L | Т | TR |
| Maximum Queue (ft) | 275 | 894 | 524 | 205 | 277 | 65 | 425 | 659 | 300 | 299 | 461 | 417 |
| Average Queue (ft) | 211 | 366 | 109 | 68 | 107 | 20 | 272 | 329 | 76 | 113 | 280 | 254 |
| 95th Queue (ft) | 321 | 699 | 440 | 141 | 216 | 64 | 451 | 596 | 290 | 258 | 443 | 413 |
| Link Distance (ft) | | 1433 | | | 523 | | | 618 | | | 816 | 816 |
| Upstream Blk Time (%) | | | 0 | | | | | | 1 | | | |
| Queuing Penalty (veh) | | | 0 | | | | | | 16 | | | |
| Storage Bay Dist (ft) | 250 | | 500 | 250 | | 40 | 400 | | 275 | 275 | | |
| Storage Blk Time (%) | | 6 | 16 | 1 | | 33 | 1 | 2 | 9 | 0 | 0 | 12 |
| Queuing Penalty (veh) | | 47 | 103 | 4 | | 45 | 2 | 13 | 61 | 1 | 0 | 11 |

Intersection: 9: Edmonston Road & Odell Road

| Movement | EB | WB | WB | NB | SB |
|-----------------------|-----|-----|----|-----|-----|
| Directions Served | LTR | LT | R | LT | LTR |
| Maximum Queue (ft) | 84 | 25 | 23 | 200 | 16 |
| Average Queue (ft) | 28 | 2 | 2 | 31 | 1 |
| 95th Queue (ft) | 68 | 12 | 13 | 118 | 16 |
| Link Distance (ft) | 509 | 488 | | 419 | 365 |
| Upstream Blk Time (%) | | | | | 0 |
| Queuing Penalty (veh) | | | | | 0 |
| Storage Bay Dist (ft) | | | 50 | | |
| Storage Blk Time (%) | | | 0 | | 0 |
| Queuing Penalty (veh) | | | 0 | | 0 |

Intersection: 10: Powder Mill Road & Poultry Road

| Movement | EB | B69 | WB | SB |
|-----------------------|-----|-----|-----|-----|
| Directions Served | LT | Т | TR | LR |
| Maximum Queue (ft) | 192 | 176 | 114 | 22 |
| Average Queue (ft) | 149 | 44 | 67 | 7 |
| 95th Queue (ft) | 200 | 133 | 98 | 24 |
| Link Distance (ft) | 97 | 325 | 866 | 391 |
| Upstream Blk Time (%) | | 31 | | |
| Queuing Penalty (veh) | | 218 | | |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |
| | | | | |

Queuing and Blocking Report No Action Conditions PM 05/01/2020

Intersection: 11: Powder Mill Road

| EB | NB |
|-----|----------------------------------|
| TR | L |
| 65 | 54 |
| 7 | 19 |
| 36 | 47 |
| 383 | 48 |
| | 1 |
| | 0 |
| | |
| | |
| | |
| | EB TR 65 7 36 383 |

Intersection: 12: Powder Mill Road & Springfield Road

| Movement | EB | SB |
|-----------------------|----|-----|
| Directions Served | L | LR |
| Maximum Queue (ft) | 33 | 305 |
| Average Queue (ft) | 6 | 128 |
| 95th Queue (ft) | 27 | 257 |
| Link Distance (ft) | | 467 |
| Upstream Blk Time (%) | | 0 |
| Queuing Penalty (veh) | | 0 |
| Storage Bay Dist (ft) | 50 | |
| Storage Blk Time (%) | | 0 |
| Queuing Penalty (veh) | | 0 |
| | | |

Intersection: 13: Powder Mill Road & B-W Parkway SB Off-Ramp

| EB | WB | SB | SB |
|-----|----------------------------------|--|---|
| TR | L | L | TR |
| 27 | 111 | 58 | 899 |
| 2 | 44 | 49 | 767 |
| 15 | 83 | 54 | 1112 |
| 153 | | | 850 |
| | | | 74 |
| | | | 0 |
| | 225 | 25 | |
| | | 98 | 12 |
| | | 143 | 34 |
| | EB TR 27 2 15 153 | EB WB TR L 27 111 2 44 15 83 153 225 | EB WB SB TR L L 27 111 58 2 44 49 15 83 54 153 225 25 98 143 |

Intersection: 14: B-W Parkway NB Off-Ramp & Powder Mill Road

| Movement | EB | EB | WB | NB | NB |
|-----------------------|-----|-----|-----|----|-----|
| Directions Served | L | Т | TR | L | TR |
| Maximum Queue (ft) | 234 | 33 | 47 | 75 | 618 |
| Average Queue (ft) | 116 | 1 | 10 | 63 | 278 |
| 95th Queue (ft) | 204 | 29 | 33 | 87 | 678 |
| Link Distance (ft) | | 550 | 268 | | 857 |
| Upstream Blk Time (%) | | | | | 1 |
| Queuing Penalty (veh) | | | | | 0 |
| Storage Bay Dist (ft) | 250 | | | 50 | |
| Storage Blk Time (%) | 0 | 0 | | 82 | 5 |
| Queuing Penalty (veh) | 2 | 0 | | 40 | 4 |

Intersection: 15: Soil Conservation Road & Powder Mill Road

| Movement | EB | EB | WB | WB | NB |
|-----------------------|-----|-----|-----|-----|-----|
| Directions Served | Т | R | L | Т | L |
| Maximum Queue (ft) | 257 | 75 | 79 | 231 | 439 |
| Average Queue (ft) | 144 | 7 | 28 | 119 | 232 |
| 95th Queue (ft) | 225 | 44 | 66 | 202 | 375 |
| Link Distance (ft) | 546 | | | 792 | 892 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | | 260 | 300 | | |
| Storage Blk Time (%) | 0 | 0 | | 0 | 0 |
| Queuing Penalty (veh) | 1 | 0 | | 0 | 0 |
| | | | | | |

SimTraffic Simulation Summary Action Conditions AM 05/04/2020

Summary of All Intervals

| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg | |
|--------------------|------------|------------|-------|-------|--------|-------|--------|-------|-------|--------|-------|-------|---|
| Start Time | | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | |
| End Time | | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | |
| Total Time (min) | | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | |
| Time Recorded (m | in) | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | |
| # of Intervals | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| # of Recorded Inte | ervals | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Vehs Entered | | 10110 | 10080 | 10012 | 9873 | 9882 | 9857 | 9987 | 9864 | 9928 | 9919 | 9954 | |
| Vehs Exited | | 9481 | 9504 | 9376 | 9288 | 9268 | 9242 | 9417 | 9334 | 9259 | 9296 | 9345 | |
| Starting Vehs | | 519 | 537 | 543 | 530 | 533 | 570 | 517 | 523 | 507 | 505 | 525 | |
| Ending Vehs | | 1148 | 1113 | 1179 | 1115 | 1147 | 1185 | 1087 | 1053 | 1176 | 1128 | 1127 | |
| Travel Distance (m | ni) | 11803 | 11757 | 11745 | 11577 | 11337 | 11606 | 11509 | 11597 | 11563 | 11659 | 11615 | |
| Travel Time (hr) | | 971.2 | 895.0 | 985.4 | 1008.8 | 993.0 | 1176.8 | 957.8 | 969.9 | 1037.5 | 930.6 | 992.6 | |
| Total Delay (hr) | | 639.9 | 564.8 | 655.5 | 683.6 | 673.6 | 850.8 | 634.9 | 643.8 | 712.3 | 603.4 | 666.3 | |
| Total Stops | | 20136 | 18417 | 19732 | 18594 | 19091 | 19904 | 17265 | 18466 | 19886 | 18464 | 18991 | |
| Fuel Used (gal) | | 508.1 | 491.9 | 511.2 | 512.1 | 505.5 | 548.9 | 502.3 | 502.1 | 515.7 | 495.4 | 509.3 | |
| Interval #0 Inform | ation See | eding | | | | | | | | | | | |
| Start Time | 5:52 | | | | | | | | | | | | |
| End Time | 6:00 | | | | | | | | | | | | |
| Total Time (min) | 8 | | | | | | | | | | | | |
| Volumes adjusted | by Growt | h Factors. | | | | | | | | | | | |
| No data recorded | this inter | val. | | | | | | | | | | | |
| Interval #1 Inform | ation Red | cording | | | | | | | | | | | |
| Start Time | 6:00 | Ū | | | | | | | | | | | |
| End Time | 6:15 | | | | | | | | | | | | |
| Total Time (min) | 15 | | | | | | | | | | | | |

Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 2599 | 2534 | 2511 | 2544 | 2556 | 2606 | 2510 | 2596 | 2580 | 2451 | 2543 |
| Vehs Exited | 2389 | 2430 | 2303 | 2371 | 2367 | 2344 | 2333 | 2405 | 2359 | 2247 | 2353 |
| Starting Vehs | 519 | 537 | 543 | 530 | 533 | 570 | 517 | 523 | 507 | 505 | 525 |
| Ending Vehs | 729 | 641 | 751 | 703 | 722 | 832 | 694 | 714 | 728 | 709 | 713 |
| Travel Distance (mi) | 3004 | 2964 | 3021 | 2955 | 2919 | 2989 | 2900 | 2940 | 2979 | 2915 | 2959 |
| Travel Time (hr) | 159.2 | 152.9 | 164.7 | 155.5 | 157.7 | 181.8 | 154.7 | 152.9 | 165.8 | 159.7 | 160.5 |
| Total Delay (hr) | 74.9 | 69.7 | 80.0 | 72.7 | 75.6 | 97.7 | 73.0 | 70.3 | 82.1 | 77.6 | 77.4 |
| Total Stops | 4022 | 3558 | 3929 | 3920 | 3808 | 4004 | 3801 | 3768 | 4039 | 3728 | 3854 |
| Fuel Used (gal) | 111.4 | 109.2 | 113.3 | 110.8 | 109.8 | 116.1 | 107.7 | 108.5 | 111.9 | 109.3 | 110.8 |

Interval #2 Information Recording

Start Time6:15End Time6:30

Total Time (min) 15

Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 2609 | 2582 | 2533 | 2514 | 2578 | 2458 | 2459 | 2568 | 2518 | 2479 | 2528 |
| Vehs Exited | 2419 | 2392 | 2396 | 2333 | 2383 | 2312 | 2350 | 2377 | 2317 | 2398 | 2367 |
| Starting Vehs | 729 | 641 | 751 | 703 | 722 | 832 | 694 | 714 | 728 | 709 | 713 |
| Ending Vehs | 919 | 831 | 888 | 884 | 917 | 978 | 803 | 905 | 929 | 790 | 882 |
| Travel Distance (mi) | 3011 | 2986 | 2887 | 2912 | 2869 | 2901 | 2847 | 2946 | 2896 | 2915 | 2917 |
| Travel Time (hr) | 211.3 | 188.3 | 215.1 | 218.7 | 207.6 | 254.1 | 213.2 | 209.8 | 216.5 | 196.6 | 213.1 |
| Total Delay (hr) | 126.8 | 104.3 | 134.1 | 136.8 | 126.4 | 172.3 | 133.5 | 126.8 | 135.0 | 114.7 | 131.1 |
| Total Stops | 4895 | 4251 | 4588 | 4514 | 4757 | 4707 | 3913 | 4512 | 4690 | 4187 | 4498 |
| Fuel Used (gal) | 121.5 | 117.4 | 120.3 | 120.7 | 118.3 | 128.2 | 119.2 | 119.1 | 119.8 | 116.4 | 120.1 |

SimTraffic Simulation Summary Action Conditions AM 05/04/2020

Interval #3 InformationRecordingStart Time6:30End Time6:45Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avø |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 2482 | 2534 | 2505 | 2532 | 2492 | 2469 | 2590 | 2437 | 2513 | 2549 | 2508 |
| Vehs Exited | 2322 | 2365 | 2312 | 2332 | 2291 | 2301 | 2409 | 2279 | 2347 | 2321 | 2329 |
| Starting Vehs | 919 | 831 | 888 | 884 | 917 | 978 | 803 | 905 | 929 | 790 | 882 |
| Ending Vehs | 1079 | 1000 | 1081 | 1084 | 1118 | 1146 | 984 | 1063 | 1095 | 1018 | 1055 |
| Travel Distance (mi) | 2852 | 2850 | 2878 | 2872 | 2785 | 2880 | 2892 | 2892 | 2843 | 2930 | 2867 |
| Travel Time (hr) | 268.8 | 253.3 | 271.3 | 274.4 | 278.1 | 333.4 | 261.2 | 272.3 | 291.0 | 254.0 | 275.8 |
| Total Delay (hr) | 188.7 | 173.2 | 190.5 | 193.7 | 199.5 | 252.8 | 180.2 | 190.9 | 211.0 | 171.9 | 195.3 |
| Total Stops | 5556 | 4810 | 5287 | 4987 | 5384 | 5638 | 4504 | 5050 | 5482 | 5189 | 5186 |
| Fuel Used (gal) | 129.6 | 125.9 | 130.9 | 131.7 | 130.8 | 144.5 | 130.8 | 131.0 | 134.5 | 128.6 | 131.8 |

Interval #4 Information RecordingStart Time6:45End Time7:00Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 2420 | 2430 | 2463 | 2283 | 2256 | 2324 | 2428 | 2263 | 2317 | 2440 | 2357 |
| Vehs Exited | 2351 | 2317 | 2365 | 2252 | 2227 | 2285 | 2325 | 2273 | 2236 | 2330 | 2292 |
| Starting Vehs | 1079 | 1000 | 1081 | 1084 | 1118 | 1146 | 984 | 1063 | 1095 | 1018 | 1055 |
| Ending Vehs | 1148 | 1113 | 1179 | 1115 | 1147 | 1185 | 1087 | 1053 | 1176 | 1128 | 1127 |
| Travel Distance (mi) | 2936 | 2958 | 2959 | 2839 | 2764 | 2836 | 2870 | 2819 | 2844 | 2899 | 2872 |
| Travel Time (hr) | 331.9 | 300.6 | 334.3 | 360.1 | 349.7 | 407.5 | 328.6 | 334.9 | 364.2 | 320.3 | 343.2 |
| Total Delay (hr) | 249.4 | 217.5 | 251.0 | 280.4 | 272.1 | 328.0 | 248.2 | 255.8 | 284.2 | 239.2 | 262.6 |
| Total Stops | 5663 | 5798 | 5928 | 5173 | 5142 | 5555 | 5047 | 5136 | 5675 | 5360 | 5450 |
| Fuel Used (gal) | 145.6 | 139.4 | 146.7 | 148.9 | 146.5 | 160.1 | 144.6 | 143.5 | 149.5 | 141.1 | 146.6 |

SimTraffic Report

Bureau of Engraving and Printing LBG Page 0

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Queuing and Blocking Report Action Conditions AM 05/04/2020

Intersection: 1: MD 201 & I-95 SB off-Ramp

| Movement | EB | EB | EB | NB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|------|------|-----|-----|
| Directions Served | L | L | R | Т | Т | Т | Т | т |
| Maximum Queue (ft) | 182 | 257 | 148 | 135 | 130 | 175 | 118 | 138 |
| Average Queue (ft) | 42 | 130 | 3 | 64 | 37 | 91 | 41 | 48 |
| 95th Queue (ft) | 129 | 216 | 74 | 120 | 94 | 166 | 93 | 107 |
| Link Distance (ft) | | 734 | 734 | 1249 | 1249 | 1249 | 542 | 542 |
| Upstream Blk Time (%) | | | | 0 | | | | |
| Queuing Penalty (veh) | | | | 0 | | | | |
| Storage Bay Dist (ft) | 325 | | | | | | | |
| Storage Blk Time (%) | | | 0 | | | | | |
| Queuing Penalty (veh) | | | 0 | | | | | |

Intersection: 2: MD 201 & I-95 NB Off Ramp

| Movement | WB | WB | WB | WB | B6004 | NB | NB | NB | SB | SB | SB | |
|---------------------------|-----------|------------|-------|------|-------|------|-----|-----|-----|------|-----|-----|
| Directions Served | L | L | R | R | Т | UT | Т | Т | Т | Т | Т | |
| Maximum Queue (ft) | 270 | 1019 | 1492 | 325 | 475 | 175 | 194 | 183 | 201 | 216 | 241 | |
| Average Queue (ft) | 86 | 243 | 573 | 254 | 92 | 79 | 101 | 95 | 90 | 92 | 103 | |
| 95th Queue (ft) | 183 | 654 | 1427 | 362 | 405 | 145 | 170 | 160 | 166 | 171 | 192 | |
| Link Distance (ft) | | 1405 | 1405 | | 465 | | 282 | 282 | 215 | 215 | 215 | |
| Upstream Blk Time (%) | | | 13 | | 11 | | 0 | 0 | 0 | 0 | 0 | |
| Oueuing Penalty (veh) | | | 0 | | 0 | | 0 | 0 | 0 | 0 | 1 | |
| Storage Bay Dist (ft) | 400 | | | 300 | | 250 | | | | | | |
| Storage Blk Time (%) | | | 1 | 23 | 13 | | | 0 | | | | |
| Queuing Penalty (veh) | | | 3 | 119 | 69 | | | 0 | | | | |
| Intersection: 3: MD 201 & | SHA Dist. | 3/Crescent | Drive | | | | | | | | | |
| Movement | EB | WB | WB | NB | NB | NB | NB | NB | SB | SB | SB | SB |
| Directions Served | LTR | LT | R | L | т | т | т | R | L | т | т | TR |
| Maximum Queue (ft) | 52 | 192 | 109 | 266 | 471 | 494 | 495 | 225 | 89 | 98 | 118 | 165 |
| Average Queue (ft) | 5 | 83 | 46 | 63 | 186 | 263 | 267 | 75 | 23 | 16 | 23 | 38 |
| 95th Queue (ft) | 27 | 149 | 88 | 200 | 463 | 578 | 587 | 250 | 63 | 62 | 73 | 112 |
| Link Distance (ft) | 239 | 429 | | | 266 | 266 | 266 | | | 783 | 783 | 783 |
| Upstream Blk Time (%) | 200 | .20 | | | 0 | 17 | 42 | 44 | | , 66 | , | , |
| Queuing Penalty (veh) | | | | | 0 | 96 | 245 | 251 | | | | |
| Storage Bay Dist (ft) | | | 250 | 250 | U | 50 | 245 | 200 | 300 | | | |
| Storage Blk Time (%) | | | 0 | 250 | 0 | 18 | | 45 | 0 | | | |
| Queuing Penalty (veh) | | | 0 | | 0 | 7 | | 19 | 0 | | | |
| Intersection: 4: MD 201 & | lvy Lane | | | | | | | | | | | |
| Movement | NB | NB | NB | NB | SB | SB | | | | | | |
| Directions Served | L | L | Т | Т | Т | Т | | | | | | |
| Maximum Queue (ft) | 118 | 831 | 834 | 840 | 69 | 116 | | | | | | |
| Average Queue (ft) | 29 | 430 | 489 | 490 | 9 | 33 | | | | | | |
| 95th Queue (ft) | 86 | 1026 | 1096 | 1097 | 40 | 88 | | | | | | |
| Link Distance (ft) | | 783 | 783 | 783 | 1193 | 1193 | | | | | | |
| Upstream Blk Time (%) | | | 6 | 16 | 14 | | | | | | | |
| Oueuing Penalty (veh) | | | 35 | 93 | 80 | | | | | | | |
| Storage Bay Dist (ft) | 350 | | 00 | 50 | | | | | | | | |
| Storage Blk Time (%) | 000 | | 0 | | | | | | | | | |
| Queuing Penalty (veh) | | | 0 | | | | | | | | | |
| Intersection: 5: MD 201 & | Cherrywo | od Lane | | | | | | | | | | |
| Movement | EB | EB | EB | NB | NB | NB | SB | SB | SB | | | |
| Directions Served | L | L | R | L | Т | Т | Т | Т | R | | | |
| Maximum Queue (ft) | 275 | 714 | 149 | 775 | 1237 | 1230 | 246 | 334 | 274 | | | |
| Average Queue (ft) | 214 | 343 | 42 | 615 | 1021 | 1020 | 118 | 160 | 68 | | | |
| 95th Queue (ft) | 325 | 701 | 106 | 1098 | 1573 | 1566 | 223 | 290 | 180 | | | |
| Link Distance (ft) | | 1306 | 1306 | | 1193 | 1193 | 610 | 610 | | | | |
| Upstream Blk Time (%) | | | | | | 16 | 18 | | | | | |

Queuing Penalty (veh)

Storage Bay Dist (ft)

Storage Blk Time (%)

Queuing Penalty (veh)

Queuing and Blocking Report Action Conditions AM 05/04/2020

Intersection: 6: MD 201 & Sunnyside Avenue

| Movement | EB | EB | NB | NB | B35 | B6006 | SB | SB |
|-----------------------|------|-----|-----|------|------|-------|------|-----|
| Directions Served | L | R | L | TR | Т | Т | Т | R |
| Maximum Queue (ft) | 1027 | 375 | 475 | 1438 | 824 | 59 | 1662 | 275 |
| Average Queue (ft) | 895 | 324 | 435 | 718 | 178 | 11 | 1489 | 110 |
| 95th Queue (ft) | 1243 | 475 | 533 | 1598 | 955 | 134 | 1968 | 290 |
| Link Distance (ft) | 968 | | | 1368 | 2212 | 490 | 1542 | |
| Upstream Blk Time (%) | | 67 | | | 6 | 1 | 1 | 29 |
| Queuing Penalty (veh) | | 0 | | | 107 | 17 | 10 | 364 |
| Storage Bay Dist (ft) | | 350 | 450 | | | | | 250 |
| Storage Blk Time (%) | 71 | 11 | 20 | 0 | | | 34 | 0 |
| Queuing Penalty (veh) | 203 | 19 | 234 | 0 | | | 71 | 1 |

Intersection: 7: MD 201 & Beaver Dam Road

| WB | NB | SB |
|-----|---|---|
| LR | TR | LT |
| 626 | 58 | 940 |
| 309 | 2 | 709 |
| 682 | 25 | 1254 |
| 625 | 1542 | 843 |
| 14 | | 28 |
| 0 | | 354 |
| | | |
| | | |
| | | |
| | WB LR 626 309 682 625 14 0 | WB NB LR TR 626 58 309 2 682 25 625 1542 14 0 |

Intersection: 8: MD 201 & Powder Mill Road

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|
| Directions Served | L | Т | R | L | Т | R | L | Т | R | L | Т | TR |
| Maximum Queue (ft) | 177 | 975 | 525 | 238 | 190 | 64 | 362 | 404 | 300 | 300 | 752 | 709 |
| Average Queue (ft) | 44 | 474 | 268 | 130 | 90 | 14 | 160 | 152 | 17 | 116 | 436 | 401 |
| 95th Queue (ft) | 110 | 1126 | 677 | 222 | 160 | 55 | 288 | 295 | 131 | 305 | 796 | 767 |
| Link Distance (ft) | | 920 | | | 512 | | | 617 | | | 813 | 813 |
| Upstream Blk Time (%) | | 29 | | | | | | | | | 8 | 6 |
| Queuing Penalty (veh) | | 0 | | | | | | | | | 0 | 0 |
| Storage Bay Dist (ft) | 250 | | 500 | 250 | | 40 | 400 | | 275 | 275 | | |
| Storage Blk Time (%) | | | 2 | 38 | 0 | 36 | 0 | | 1 | 0 | 0 | 38 |
| Queuing Penalty (veh) | | | 10 | 89 | 1 | 81 | 1 | | 9 | 0 | 0 | 23 |

Intersection: 9: Edmonston Road & Odell Road

| Movement | EB | WB | WB | NB | SB |
|-----------------------|-----|-----|----|-----|-----|
| Directions Served | LTR | LT | R | LT | LTR |
| Maximum Queue (ft) | 118 | 60 | 50 | 189 | 11 |
| Average Queue (ft) | 34 | 8 | 4 | 43 | 0 |
| 95th Queue (ft) | 91 | 37 | 27 | 131 | 6 |
| Link Distance (ft) | 509 | 488 | | 419 | 365 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | | | 50 | | |
| Storage Blk Time (%) | | | 1 | 0 | |
| Queuing Penalty (veh) | | | 0 | 0 | |

Intersection: 10: Powder Mill Road & Poultry Road

| Movement | ED | DC0 | D7/ | \A/D | DEC |
|-----------------------|-----|-----|------|------|-----|
| WOVEITIETIL | ED | D09 | D/4 | VVD | D20 |
| Directions Served | LT | Т | Т | TR | Т |
| Maximum Queue (ft) | 208 | 368 | 119 | 965 | 355 |
| Average Queue (ft) | 165 | 113 | 11 | 713 | 174 |
| 95th Queue (ft) | 219 | 316 | 87 | 1192 | 461 |
| Link Distance (ft) | 97 | 313 | 1099 | 858 | 371 |
| Upstream Blk Time (%) | 53 | 6 | | 54 | 4 |
| Queuing Penalty (veh) | 363 | 40 | | 406 | 32 |
| Storage Bay Dist (ft) | | | | | |
| Storage Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |

Intersection: 11: Powder Mill Road

| Movement | NB | NW |
|-----------------------|----|----|
| Directions Served | L | Т |
| Maximum Queue (ft) | 46 | 61 |
| Average Queue (ft) | 14 | 22 |
| 95th Queue (ft) | 41 | 67 |
| Link Distance (ft) | 46 | 46 |
| Upstream Blk Time (%) | 6 | 8 |
| Queuing Penalty (veh) | 1 | 56 |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

Intersection: 12: Powder Mill Road

| SB |
|-----|
| LR |
| 170 |
| 71 |
| 138 |
| 467 |
| |
| |
| |
| |
| |
| |

Intersection: 13: Powder Mill Road

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (yeh) | EB TR 4 0 2 153 | WB L 46 14 38 | WB T 2 0 2 550 | SB L 51 50 51 | SB TR 886 625 1083 850 38 |
|--|--------------------------------|---------------------------|-------------------------------|---------------------------|---|
| Storage Bay Dist (ft) | | 225 | | 25 | U U |
| Storage Blk Time (%) | | | | 82 | 52 |
| Queuing Penalty (veh) | | | | 225 | 130 |
| Intersection: 14: Powder Mill | Road | | | | |
| Movement | EB | WB | NB | NB | |
| Directions Served | L | TR | L | TR | |
| Maximum Queue (ft) | 71 | 10 | 75 | 683 | |
| Average Queue (ft) | 26 | 1 | 73 | 358 | |
| 95th Queue (ft) | 55 | 6 | 81 | 789 | |
| Link Distance (ft) | | 268 | | 857 | |
| Upstream Blk Time (%) | | | | 11 | |
| Queuing Penalty (veh) | | | | 0 | |
| Storage Bay Dist (ft) | 250 | | 50 | | |
| Storage Blk Time (%) | | | 84 | 2 | |
| Queuing Penalty (veh) | | | 80 | 7 | |
| Intersection: 15: Powder Mill | Road | | | | |
| Movement | EB | EB | WB | WB | NB |
| Directions Served | Т | R | L | Т | L |
| Maximum Queue (ft) | 167 | 50 | 104 | 243 | 224 |
| Average Queue (ft) | 82 | 6 | 40 | 123 | 127 |
| 95th Queue (ft) | 138 | 31 | 84 | 209 | 204 |
| Link Distance (ft) | 546 | | | 792 | 892 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | | 260 | 300 | | |
| Storage Blk Time (%) | | | | | 0 |
| Queuing Penalty (veh) | | | | | 0 |

Summary of All Intervals

| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg | |
|-------------------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|
| Start Time | | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | |
| End Time | | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | |
| Total Time (min) | | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | |
| Time Recorded (| (min) | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | |
| # of Intervals | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| # of Recorded In | ntervals | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Vehs Entered | | 13105 | 13201 | 13044 | 13056 | 12975 | 12974 | 13038 | 13099 | 13150 | 13072 | 13070 | |
| Vehs Exited | | 12648 | 12693 | 12575 | 12664 | 12439 | 12507 | 12588 | 12674 | 12706 | 12571 | 12609 | |
| Starting Vehs | | 729 | 715 | 666 | 707 | 637 | 689 | 679 | 710 | 694 | 680 | 680 | |
| Ending Vehs | | 1186 | 1223 | 1135 | 1099 | 1173 | 1156 | 1129 | 1135 | 1138 | 1181 | 1154 | |
| Travel Distance (| (mi) | 14258 | 14181 | 13859 | 14150 | 14017 | 14123 | 14137 | 14038 | 14180 | 14102 | 14105 | |
| Travel Time (hr) | | 1447.2 | 1489.2 | 1274.6 | 1381.8 | 1501.2 | 1497.5 | 1413.2 | 1392.7 | 1344.6 | 1527.7 | 1427.0 | |
| Total Delay (hr) | | 1033.4 | 1077.9 | 872.9 | 971.1 | 1094.5 | 1088.2 | 1003.3 | 985.1 | 932.1 | 1117.5 | 1017.6 | |
| Total Stops | | 19001 | 17902 | 16269 | 17621 | 17227 | 17973 | 17472 | 17725 | 17240 | 16986 | 17537 | |
| Fuel Used (gal) | | 677.8 | 684.7 | 633.0 | 664.1 | 685.9 | 682.3 | 670.6 | 663.7 | 655.7 | 697.7 | 671.6 | |
| Interval #0 Infor | mation See | eding | | | | | | | | | | | |
| Start Time | 2:52 | | | | | | | | | | | | |
| Field Time a | 2.00 | | | | | | | | | | | | |

End Time 3:00 Total Time (min) 8 Volumes adjusted by Growth Factors. No data recorded this interval.

Interval #1 InformationRecordingStart Time3:00End Time3:15Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 3348 | 3473 | 3349 | 3323 | 3382 | 3299 | 3450 | 3321 | 3429 | 3388 | 3373 |
| Vehs Exited | 3148 | 3237 | 3195 | 3147 | 3102 | 3091 | 3203 | 3091 | 3220 | 3118 | 3158 |
| Starting Vehs | 729 | 715 | 666 | 707 | 637 | 689 | 679 | 710 | 694 | 680 | 680 |
| Ending Vehs | 929 | 951 | 820 | 883 | 917 | 897 | 926 | 940 | 903 | 950 | 902 |
| Travel Distance (mi) | 3682 | 3605 | 3594 | 3558 | 3514 | 3501 | 3636 | 3594 | 3627 | 3565 | 3588 |
| Travel Time (hr) | 227.4 | 224.2 | 205.5 | 215.8 | 209.8 | 230.3 | 215.3 | 230.3 | 229.4 | 238.3 | 222.6 |
| Total Delay (hr) | 120.5 | 119.2 | 101.0 | 112.1 | 107.5 | 128.5 | 109.8 | 125.5 | 123.9 | 134.1 | 118.2 |
| Total Stops | 4689 | 4248 | 4141 | 4298 | 4069 | 4631 | 4334 | 4403 | 4471 | 4290 | 4355 |
| Fuel Used (gal) | 143.8 | 141.9 | 137.0 | 139.2 | 136.3 | 139.9 | 140.5 | 141.7 | 143.6 | 144.2 | 140.8 |

Interval #2 Information Recording

Start Time3:15End Time3:30

Total Time (min) 15 Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 3295 | 3351 | 3319 | 3317 | 3321 | 3272 | 3318 | 3256 | 3302 | 3334 | 3304 |
| Vehs Exited | 3131 | 3189 | 3143 | 3186 | 3155 | 3152 | 3168 | 3125 | 3199 | 3158 | 3161 |
| Starting Vehs | 929 | 951 | 820 | 883 | 917 | 897 | 926 | 940 | 903 | 950 | 902 |
| Ending Vehs | 1093 | 1113 | 996 | 1014 | 1083 | 1017 | 1076 | 1071 | 1006 | 1126 | 1053 |
| Travel Distance (mi) | 3561 | 3609 | 3486 | 3550 | 3558 | 3595 | 3628 | 3504 | 3560 | 3538 | 3559 |
| Travel Time (hr) | 303.9 | 331.6 | 270.9 | 299.3 | 326.9 | 333.6 | 306.2 | 313.7 | 295.5 | 333.9 | 311.5 |
| Total Delay (hr) | 200.3 | 226.9 | 170.2 | 196.2 | 223.6 | 229.4 | 200.7 | 212.0 | 191.7 | 230.8 | 208.2 |
| Total Stops | 4451 | 4750 | 3897 | 4462 | 4578 | 4360 | 4448 | 4544 | 4318 | 4351 | 4415 |
| Fuel Used (gal) | 156.4 | 163.5 | 148.3 | 156.5 | 161.8 | 163.1 | 159.2 | 158.1 | 155.5 | 164.0 | 158.6 |
SimTraffic Simulation Summary Action Conditions PM 05/04/2020

Interval #3 Information RecordingStart Time3:30End Time3:45Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 3232 | 3162 | 3271 | 3259 | 3110 | 3259 | 3135 | 3294 | 3245 | 3220 | 3211 |
| Vehs Exited | 3091 | 3126 | 3179 | 3142 | 3050 | 3142 | 3082 | 3255 | 3153 | 3218 | 3144 |
| Starting Vehs | 1093 | 1113 | 996 | 1014 | 1083 | 1017 | 1076 | 1071 | 1006 | 1126 | 1053 |
| Ending Vehs | 1234 | 1149 | 1088 | 1131 | 1143 | 1134 | 1129 | 1110 | 1098 | 1128 | 1133 |
| Travel Distance (mi) | 3461 | 3458 | 3469 | 3537 | 3488 | 3541 | 3449 | 3536 | 3530 | 3565 | 3503 |
| Travel Time (hr) | 407.1 | 419.5 | 356.9 | 383.1 | 435.5 | 420.3 | 402.4 | 383.4 | 368.0 | 434.3 | 401.1 |
| Total Delay (hr) | 306.4 | 319.5 | 256.1 | 280.6 | 334.3 | 317.7 | 302.4 | 280.7 | 265.2 | 330.7 | 299.4 |
| Total Stops | 4810 | 4279 | 4420 | 4368 | 4467 | 4652 | 4437 | 4573 | 4306 | 4357 | 4463 |
| Fuel Used (gal) | 176.7 | 178.7 | 166.4 | 173.5 | 184.0 | 179.9 | 176.1 | 174.2 | 169.9 | 187.3 | 176.7 |

Interval #4 InformationRecordingStart Time3:45End Time4:00Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 3230 | 3215 | 3105 | 3157 | 3162 | 3144 | 3135 | 3228 | 3174 | 3130 | 3163 |
| Vehs Exited | 3278 | 3141 | 3058 | 3189 | 3132 | 3122 | 3135 | 3203 | 3134 | 3077 | 3148 |
| Starting Vehs | 1234 | 1149 | 1088 | 1131 | 1143 | 1134 | 1129 | 1110 | 1098 | 1128 | 1133 |
| Ending Vehs | 1186 | 1223 | 1135 | 1099 | 1173 | 1156 | 1129 | 1135 | 1138 | 1181 | 1154 |
| Travel Distance (mi) | 3553 | 3510 | 3310 | 3506 | 3457 | 3486 | 3425 | 3405 | 3462 | 3433 | 3455 |
| Travel Time (hr) | 508.8 | 514.0 | 441.3 | 483.5 | 529.0 | 513.3 | 489.4 | 465.3 | 451.6 | 521.3 | 491.7 |
| Total Delay (hr) | 406.2 | 412.3 | 345.7 | 382.2 | 429.1 | 412.5 | 390.3 | 366.8 | 351.3 | 421.9 | 391.8 |
| Total Stops | 5051 | 4625 | 3811 | 4493 | 4113 | 4330 | 4253 | 4205 | 4145 | 3988 | 4294 |
| Fuel Used (gal) | 200.9 | 200.7 | 181.3 | 194.9 | 203.8 | 199.5 | 194.9 | 189.8 | 186.8 | 202.3 | 195.5 |

SimTraffic Report

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Queuing and Blocking Report 05/04/2020 Action Conditions PM

Intersection: 1: MD 201 & I-95 SB off-Ramp

| Movement | EB | EB | EB | NB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|------|------|-----|-----|
| Directions Served | L | L | R | Т | Т | Т | т | т |
| Maximum Queue (ft) | 112 | 356 | 378 | 161 | 202 | 229 | 133 | 140 |
| Average Queue (ft) | 21 | 94 | 21 | 65 | 56 | 102 | 52 | 67 |
| 95th Queue (ft) | 67 | 228 | 228 | 130 | 134 | 194 | 107 | 122 |
| Link Distance (ft) | | 734 | 734 | 1249 | 1249 | 1249 | 542 | 542 |
| Upstream Blk Time (%) | | | 0 | 0 | | | | |
| Queuing Penalty (veh) | | | 0 | 0 | | | | |
| Storage Bay Dist (ft) | 325 | | | | | | | |
| Storage Blk Time (%) | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | |

Intersection: 2: MD 201 & I-95 NB Off Ramp

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) | WB L 290 154 253 | WB L 334 209 303 1405 | WB R 302 178 266 1405 | WB R 291 160 248 | NB UT 160 70 132 | NB T 182 95 157 282 | NB T 186 98 162 282 | SB T 165 80 143 215 | SB T 188 89 158 215 0 | SB T 246 117 206 215 0 | | |
|---|------------------------------------|--------------------------------------|---|---|-------------------------------------|--|---|---|--|--|-----------------------------------|-------------------------------------|
| Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 400 | | 0 0 | 300 0 0 | 250 0 0 | 0 0 | 0 0 | | 0 | 3 | | |
| Intersection: 3: MD 201 & SH | IA Dist. 3/ | Crescent D | Drive | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Blk Time (%) Queuing Penalty (veh) Intersection: 4: MD 201 & Ix | EB LTR 48 14 36 239 | WB LT 230 110 187 429 | WB R 121 39 89 250 0 0 | NB L 22 59 250 | NB T 217 82 181 266 | NB T 270 139 237 266 0 | NB T 280 139 239 266 0 1 | NB R 178 12 94 0 1 200 1 3 | SB L 139 61 120 300 0 0 | SB T 113 20 71 783 | SB T 129 32 88 783 | SB TR 184 46 129 783 |
| Movement | NB | NB | NB | SB | SB | | | | | | | |
| Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | L 135 53 109 350 | L 154 87 136 783 | T 160 6 117 783 | T 140 53 114 1193 0 0 | T 178 95 155 1193 | | | | | | | |
| Intersection: 5: MD 201 & Ch | nerrywood | l Lane | | | | | | | | | | |
| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) | EB L 228 115 191 | EB L 248 143 217 1306 | EB R 285 151 261 1306 | NB L 216 101 181 | NB T 189 63 148 1193 | NB T 185 58 147 1193 | SB T 278 146 243 610 | SB T 329 188 294 610 | SB R 274 68 183 | | | |
| Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) | 250 0 | 0 | | 750 | | | | 2 | 250 0 | | | |

7

0

Queuing Penalty (veh)

0

0

Queuing and Blocking Report Action Conditions PM 05/04/2020

Intersection: 6: MD 201 & Sunnyside Avenue

| Movement | EB | EB | NB | NB | B35 | SB | SB |
|-----------------------|------|-----|-----|------|------|------|-----|
| Directions Served | L | R | L | TR | Т | Т | R |
| Maximum Queue (ft) | 1023 | 375 | 475 | 1289 | 322 | 1653 | 275 |
| Average Queue (ft) | 922 | 373 | 421 | 590 | 45 | 1530 | 148 |
| 95th Queue (ft) | 1203 | 393 | 545 | 1245 | 354 | 1889 | 344 |
| Link Distance (ft) | 968 | | | 1368 | 2212 | 1546 | |
| Upstream Blk Time (%) | | 55 | | | 3 | | 36 |
| Queuing Penalty (veh) | | 0 | | | 36 | | 536 |
| Storage Bay Dist (ft) | | 350 | 450 | | | | 250 |
| Storage Blk Time (%) | 22 | 42 | 13 | 2 | | 41 | 0 |
| Queuing Penalty (veh) | 137 | 115 | 140 | 7 | | 95 | 1 |

Intersection: 7: MD 201 & Beaver Dam Road

| Movement | WB | NB | SB |
|-----------------------|-----|------|------|
| Directions Served | LTR | TR | LT |
| Maximum Queue (ft) | 597 | 32 | 924 |
| Average Queue (ft) | 361 | 1 | 823 |
| 95th Queue (ft) | 678 | 18 | 1143 |
| Link Distance (ft) | 626 | 1546 | 837 |
| Upstream Blk Time (%) | 19 | | 44 |
| Queuing Penalty (veh) | 0 | | 654 |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Intersection: 8: MD 201 & Powder Mill Road

| Movement | EB | EB | EB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | L | Т | R | L | Т | R | L | Т | R | L | Т | TR |
| Maximum Queue (ft) | 275 | 1355 | 525 | 275 | 612 | 62 | 424 | 664 | 300 | 300 | 686 | 649 |
| Average Queue (ft) | 219 | 680 | 294 | 274 | 578 | 12 | 293 | 361 | 88 | 157 | 369 | 337 |
| 95th Queue (ft) | 337 | 1440 | 687 | 282 | 622 | 50 | 457 | 650 | 313 | 339 | 623 | 583 |
| Link Distance (ft) | | 1433 | | | 523 | | | 618 | | | 816 | 816 |
| Upstream Blk Time (%) | | 10 | | | 93 | | | 2 | | | 0 | 0 |
| Queuing Penalty (veh) | | 0 | | | 734 | | | 32 | | | 0 | 0 |
| Storage Bay Dist (ft) | 250 | | 500 | 250 | | 40 | 400 | | 275 | 275 | | |
| Storage Blk Time (%) | | 6 | 23 | 13 | 95 | 25 | 1 | 2 | 10 | 0 | 0 | 29 |
| Queuing Penalty (veh) | | 46 | 149 | 79 | 300 | 140 | 9 | 17 | 65 | 1 | 0 | 28 |

Intersection: 9: Edmonston Road & Odell Road

| Movement | EB | WB | WB | NB | SB |
|-----------------------|-----|-----|----|-----|-----|
| Directions Served | LTR | LT | R | LT | LTR |
| Maximum Queue (ft) | 88 | 28 | 29 | 293 | 5 |
| Average Queue (ft) | 27 | 2 | 2 | 31 | 0 |
| 95th Queue (ft) | 68 | 14 | 16 | 137 | 4 |
| Link Distance (ft) | 509 | 488 | | 419 | 365 |
| Upstream Blk Time (%) | | | | | 0 |
| Queuing Penalty (veh) | | | | | 0 |
| Storage Bay Dist (ft) | | | 50 | | |
| Storage Blk Time (%) | | | 0 | | 0 |
| Queuing Penalty (veh) | | | 0 | | 0 |

Intersection: 10: Powder Mill Road & Poultry Road

| Movement | EB | B69 | WB | SB |
|-----------------------|-----|-----|-----|-----|
| Directions Served | LT | Т | TR | LR |
| Maximum Queue (ft) | 211 | 397 | 759 | 406 |
| Average Queue (ft) | 171 | 244 | 222 | 406 |
| 95th Queue (ft) | 199 | 468 | 646 | 409 |
| Link Distance (ft) | 97 | 325 | 866 | 391 |
| Upstream Blk Time (%) | 84 | 33 | 4 | 99 |
| Queuing Penalty (veh) | 590 | 230 | 12 | 0 |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

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Intersection: 11: Powder Mill Road

| Movement | EB | WB | NB |
|-----------------------|-----|----|----|
| Directions Served | TR | Т | L |
| Maximum Queue (ft) | 88 | 11 | 53 |
| Average Queue (ft) | 10 | 1 | 20 |
| 95th Queue (ft) | 47 | 13 | 49 |
| Link Distance (ft) | 383 | 50 | 48 |
| Upstream Blk Time (%) | | 1 | 1 |
| Queuing Penalty (veh) | | 3 | 0 |
| Storage Bay Dist (ft) | | | |
| Storage Blk Time (%) | | | |
| Queuing Penalty (veh) | | | |

Intersection: 12: Powder Mill Road & Springfield Road

| Movement | EB | EB | WB | SB |
|-----------------------|----|-----|-----|-----|
| Directions Served | L | Т | TR | LR |
| Maximum Queue (ft) | 31 | 40 | 6 | 446 |
| Average Queue (ft) | 6 | 2 | 0 | 308 |
| 95th Queue (ft) | 25 | 49 | 4 | 574 |
| Link Distance (ft) | | 609 | 153 | 467 |
| Upstream Blk Time (%) | | | | 35 |
| Queuing Penalty (veh) | | | | 0 |
| Storage Bay Dist (ft) | 50 | | | |
| Storage Blk Time (%) | | 0 | 0 | |
| Queuing Penalty (veh) | | 0 | 0 | |

Intersection: 13: Powder Mill Road & B-W Parkway SB Off-Ramp

| Movement | EB | WB | WB | SB | SB |
|-----------------------|-----|-----|-----|-----|------|
| Directions Served | TR | L | Т | L | TR |
| Maximum Queue (ft) | 73 | 144 | 33 | 61 | 891 |
| Average Queue (ft) | 10 | 60 | 2 | 48 | 812 |
| 95th Queue (ft) | 45 | 119 | 43 | 58 | 1072 |
| Link Distance (ft) | 153 | | 550 | | 850 |
| Upstream Blk Time (%) | 0 | | | | 85 |
| Queuing Penalty (veh) | 3 | | | | 0 |
| Storage Bay Dist (ft) | | 225 | | 25 | |
| Storage Blk Time (%) | | 0 | 0 | 99 | 10 |
| Queuing Penalty (veh) | | 1 | 0 | 144 | 28 |

Intersection: 14: B-W Parkway NB Off-Ramp & Powder Mill Road

| Movement | EB | EB | WB | NB | NB |
|-----------------------|-----|-----|-----|----|-----|
| Directions Served | L | Т | TR | L | TR |
| Maximum Queue (ft) | 251 | 262 | 71 | 75 | 641 |
| Average Queue (ft) | 133 | 27 | 11 | 62 | 284 |
| 95th Queue (ft) | 241 | 203 | 43 | 88 | 698 |
| Link Distance (ft) | | 550 | 268 | | 857 |
| Upstream Blk Time (%) | | 0 | | | 8 |
| Queuing Penalty (veh) | | 5 | | | 0 |
| Storage Bay Dist (ft) | 250 | | | 50 | |
| Storage Blk Time (%) | 4 | 0 | | 81 | 5 |
| Queuing Penalty (veh) | 27 | 0 | | 40 | 4 |
| | | | | | |

Intersection: 15: Soil Conservation Road & Powder Mill Road

| Movement | EB | EB | WB | WB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|
| Directions Served | Т | R | L | Т | L | R |
| Maximum Queue (ft) | 235 | 54 | 79 | 239 | 404 | 49 |
| Average Queue (ft) | 136 | 6 | 27 | 115 | 226 | 2 |
| 95th Queue (ft) | 215 | 33 | 64 | 200 | 352 | 50 |
| Link Distance (ft) | 546 | | | 792 | 892 | |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | | 260 | 300 | | | 475 |
| Storage Blk Time (%) | | 0 | | | 0 | 0 |
| Queuing Penalty (veh) | | 1 | | | 0 | 0 |

SimTraffic Simulation Summary Action Alternative AM with Mitigation 05/07/2020

Summary of All Intervals

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Start Time | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 | 5:52 |
| End Time | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 | 7:00 |
| Total Time (min) | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Time Recorded (min) | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| # of Intervals | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| # of Recorded Intervals | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Vehs Entered | 10376 | 10653 | 10513 | 10204 | 10314 | 10153 | 10493 | 10457 | 10430 | 10394 | 10397 |
| Vehs Exited | 10226 | 10461 | 10429 | 10140 | 10266 | 10152 | 10344 | 10225 | 10323 | 10220 | 10279 |
| Starting Vehs | 461 | 503 | 502 | 529 | 520 | 506 | 510 | 476 | 520 | 473 | 495 |
| Ending Vehs | 611 | 695 | 586 | 593 | 568 | 507 | 659 | 708 | 627 | 647 | 618 |
| Travel Distance (mi) | 12965 | 13225 | 13232 | 12910 | 13029 | 12641 | 13173 | 13198 | 13253 | 12815 | 13044 |
| Travel Time (hr) | 598.6 | 633.8 | 591.5 | 541.1 | 551.0 | 575.9 | 588.0 | 648.0 | 590.6 | 571.5 | 589.0 |
| Total Delay (hr) | 236.5 | 265.6 | 223.3 | 181.6 | 187.5 | 224.9 | 221.7 | 280.0 | 221.6 | 215.3 | 225.8 |
| Total Stops | 15857 | 16822 | 16272 | 13177 | 13084 | 15853 | 15468 | 17549 | 15856 | 15352 | 15525 |
| Fuel Used (gal) | 475.4 | 490.4 | 482.6 | 459.4 | 467.3 | 461.4 | 479.3 | 491.5 | 480.6 | 464.9 | 475.3 |
| | | | | | | | | | | | |

Interval #0 InformationSeedingStart Time5:52End Time6:00Total Time (min)8Volumes adjusted by Growth Factors.No data recorded this interval.

Interval #1 InformationRecordingStart Time6:00End Time6:15Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 2569 | 2712 | 2630 | 2530 | 2487 | 2508 | 2601 | 2630 | 2561 | 2556 | 2577 |
| Vehs Exited | 2473 | 2621 | 2596 | 2556 | 2507 | 2444 | 2565 | 2533 | 2509 | 2544 | 2534 |
| Starting Vehs | 461 | 503 | 502 | 529 | 520 | 506 | 510 | 476 | 520 | 473 | 495 |
| Ending Vehs | 557 | 594 | 536 | 503 | 500 | 570 | 546 | 573 | 572 | 485 | 537 |
| Travel Distance (mi) | 3196 | 3247 | 3256 | 3238 | 3140 | 3169 | 3285 | 3177 | 3271 | 3117 | 3210 |
| Travel Time (hr) | 139.4 | 139.9 | 138.7 | 132.9 | 127.4 | 135.9 | 135.5 | 138.4 | 138.6 | 132.1 | 135.9 |
| Total Delay (hr) | 49.7 | 49.4 | 47.9 | 42.5 | 39.6 | 47.6 | 44.3 | 49.7 | 47.2 | 45.6 | 46.3 |
| Total Stops | 3414 | 3125 | 3494 | 3124 | 2945 | 3610 | 3230 | 3785 | 3611 | 3516 | 3382 |
| Fuel Used (gal) | 114.7 | 117.4 | 116.9 | 114.6 | 110.6 | 113.0 | 117.2 | 114.7 | 117.2 | 112.5 | 114.9 |

Interval #2 Information Recording

Start Time6:15End Time6:30

Total Time (min) 15

Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 2634 | 2639 | 2667 | 2534 | 2624 | 2531 | 2672 | 2654 | 2603 | 2570 | 2609 |
| Vehs Exited | 2609 | 2638 | 2583 | 2517 | 2581 | 2576 | 2632 | 2560 | 2604 | 2526 | 2581 |
| Starting Vehs | 557 | 594 | 536 | 503 | 500 | 570 | 546 | 573 | 572 | 485 | 537 |
| Ending Vehs | 582 | 595 | 620 | 520 | 543 | 525 | 586 | 667 | 571 | 529 | 572 |
| Travel Distance (mi) | 3294 | 3386 | 3317 | 3175 | 3263 | 3132 | 3362 | 3316 | 3348 | 3146 | 3274 |
| Travel Time (hr) | 147.2 | 153.0 | 148.0 | 132.9 | 134.5 | 142.6 | 147.1 | 154.4 | 145.3 | 132.2 | 143.7 |
| Total Delay (hr) | 55.8 | 58.7 | 55.8 | 44.3 | 43.8 | 55.7 | 53.6 | 62.2 | 52.5 | 44.5 | 52.7 |
| Total Stops | 3937 | 4156 | 4082 | 3072 | 3074 | 3864 | 3959 | 4264 | 3878 | 3363 | 3764 |
| Fuel Used (gal) | 120.0 | 124.0 | 121.3 | 112.8 | 115.4 | 114.1 | 121.5 | 121.9 | 120.5 | 111.1 | 118.3 |

SimTraffic Simulation Summary Action Alternative AM with Mitigation 05/07/2020

Interval #3 Information RecordingStart Time6:30End Time6:45Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|---------------------|-----------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | | 2602 | 2662 | 2591 | 2581 | 2566 | 2616 | 2626 | 2615 | 2610 | 2677 | 2614 |
| Vehs Exited | | 2608 | 2570 | 2621 | 2565 | 2551 | 2521 | 2617 | 2556 | 2609 | 2589 | 2578 |
| Starting Vehs | | 582 | 595 | 620 | 520 | 543 | 525 | 586 | 667 | 571 | 529 | 572 |
| Ending Vehs | | 576 | 687 | 590 | 536 | 558 | 620 | 595 | 726 | 572 | 617 | 606 |
| Travel Distance (mi |) | 3272 | 3293 | 3324 | 3217 | 3257 | 3160 | 3305 | 3366 | 3280 | 3289 | 3276 |
| Travel Time (hr) | | 155.9 | 165.6 | 153.2 | 130.5 | 137.5 | 149.2 | 150.8 | 178.3 | 141.3 | 146.4 | 150.9 |
| Total Delay (hr) | | 64.7 | 74.0 | 60.8 | 40.8 | 46.9 | 61.4 | 58.9 | 84.5 | 50.1 | 55.1 | 59.7 |
| Total Stops | | 4277 | 4598 | 4420 | 2886 | 2996 | 4111 | 4071 | 4645 | 3854 | 4105 | 3993 |
| Fuel Used (gal) | | 121.0 | 123.5 | 122.6 | 113.4 | 118.0 | 116.8 | 121.7 | 128.2 | 118.0 | 119.5 | 120.3 |
| Interval #4 Informa | tion Reco | ording | | | | | | | | | | |
| Start Time | 6:45 | | | | | | | | | | | |
| End Time | 7:00 | | | | | | | | | | | |

Total Time (min) 15

Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 2571 | 2640 | 2625 | 2559 | 2637 | 2498 | 2594 | 2558 | 2656 | 2591 | 2587 |
| Vehs Exited | 2536 | 2632 | 2629 | 2502 | 2627 | 2611 | 2530 | 2576 | 2601 | 2561 | 2581 |
| Starting Vehs | 576 | 687 | 590 | 536 | 558 | 620 | 595 | 726 | 572 | 617 | 606 |
| Ending Vehs | 611 | 695 | 586 | 593 | 568 | 507 | 659 | 708 | 627 | 647 | 618 |
| Travel Distance (mi) | 3204 | 3300 | 3335 | 3280 | 3369 | 3180 | 3221 | 3339 | 3353 | 3263 | 3284 |
| Travel Time (hr) | 156.1 | 175.3 | 151.5 | 144.8 | 151.7 | 148.2 | 154.5 | 176.9 | 165.4 | 160.9 | 158.5 |
| Total Delay (hr) | 66.3 | 83.4 | 58.7 | 54.0 | 57.3 | 60.2 | 65.0 | 83.6 | 71.8 | 70.1 | 67.0 |
| Total Stops | 4229 | 4943 | 4276 | 4095 | 4069 | 4268 | 4208 | 4855 | 4513 | 4368 | 4375 |
| Fuel Used (gal) | 119.6 | 125.5 | 121.9 | 118.6 | 123.3 | 117.5 | 118.9 | 126.7 | 125.0 | 121.8 | 121.9 |

SimTraffic Report

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Queuing and Blocking Report Action Alternative AM with Mitigation 05/07/2020

Intersection: 1: MD 201 & I-95 SB off-Ramp

| Movement | ED | ED | NR | NR | | S D | C P | | | | | |
|-------------------------------|-------------|-------------|------------|-----------|-------------|-------------|------------|------------|-----------|-----|-----|-----|
| Directions Served | | | | ND T | | зь т | зь т | | | | | |
| Maximum Queue (ft) | 180 | 230 | 141 | 130 | 194 | 131 | 158 | | | | | |
| Average Queue (ft) | 42 | 127 | 70 | 130 41 | 92 | 42 | 50 | | | | | |
| 95th Queue (ft) | 125 | 207 | 124 | 97 | 171 | 97 | 119 | | | | | |
| Link Distance (ft) | 125 | 734 | 124 | 1249 | 1749 | 542 | 542 | | | | | |
| Upstream Blk Time (%) | | /31 | 1215 | 1215 | 12 15 | 512 | 512 | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Storage Bay Dist (ft) | 325 | | | | | | | | | | | |
| Storage Blk Time (%) | | | 0 | | | | | | | | | |
| Queuing Penalty (veh) | | | 0 | | | | | | | | | |
| | | | | | | | | | | | | |
| Intersection: 2: MD 201 & I-9 | 95 NB Off F | Ramp | | | | | | | | | | |
| Movement | WB | WB | WB | WB | NB | NB | NB | SB | SB | SB | | |
| Directions Served | L | L | R | R | UT | Т | Т | Т | Т | Т | | |
| Maximum Queue (ft) | 199 | 231 | 369 | 319 | 167 | 179 | 169 | 217 | 218 | 280 | | |
| Average Queue (ft) | 87 | 139 | 231 | 216 | 69 | 93 | 86 | 109 | 114 | 133 | | |
| 95th Queue (ft) | 160 | 206 | 314 | 298 | 132 | 151 | 144 | 192 | 197 | 236 | | |
| Link Distance (ft) | | 1405 | 1405 | | | 282 | 282 | 215 | 215 | 215 | | |
| Upstream Blk Time (%) | | | | | | | | 0 | 0 | 1 | | |
| Queuing Penalty (veh) | | | | | | | | 1 | 1 | 3 | | |
| Storage Bay Dist (ft) | 400 | | | 300 | 250 | | | | | | | |
| Storage Blk Time (%) | | | | 1 | 0 | | | | | | | |
| Queuing Penalty (veh) | | | | 3 | 1 | | | | | | | |
| Intersection: 3: MD 201 & SH | IA Dist. 3/ | Crescent [| Drive | | | | | | | | | |
| Movement | FB | WB | WB | NB | NB | NB | NB | NB | SB | SB | SB | SB |
| Directions Served | LTR | LT | R | L | Т | Т | T | R | L | T | T | TR |
| Maximum Queue (ft) | 51 | 183 | 98 | 96 | 186 | 250 | 290 | 90 | 100 | 94 | 93 | 157 |
| Average Queue (ft) | 4 | 89 | 41 | 33 | 40 | 89 | 92 | 5 | 31 | 16 | 21 | 34 |
| 95th Queue (ft) | 25 | 155 | 81 | 77 | 125 | 193 | 215 | 58 | 78 | 58 | 62 | 101 |
| Link Distance (ft) | 239 | 429 | | | 266 | 266 | 266 | | | 783 | 783 | 783 |
| Upstream Blk Time (%) | | | | | | 0 | 0 | 0 | | | | |
| Queuing Penalty (veh) | | | | | | 0 | 1 | 2 | | | | |
| Storage Bay Dist (ft) | | | 250 | 250 | | | | 200 | 300 | | | |
| Storage Blk Time (%) | | | | | | 0 | | 1 | 0 | | | |
| Queuing Penalty (veh) | | | | | | 0 | | 0 | 0 | | | |
| Intersection: 4: MD 201 & Iv | y Lane | | | | | | | | | | | |
| Mariana | ND | | ND | ND | C D | CD. | | | | | | |
| Directions Served | IN D | IN D | IND T | IND T | зв т | зв т | | | | | | |
| Maximum Quouo (ft) | L 9/1 | L 100 | ו 202 | 1 212 | 50 | 104 | | | | | | |
| | 04 20 | 100 | 202 11 | 212 | 59 | 104 27 | | | | | | |
| 95th Oueue (ft) | 30 70 | 73 212 | 303 | 278 | 32 | 27 79 | | | | | | |
| Link Distance (ft) | /0 | 783 | 783 | 783 | 1193 | 1193 | | | | | | |
| Unstream Blk Time (%) | | 700 | 0 | 0 | 0 | 1100 | | | | | | |
| Queuing Penalty (veh) | | | 0 | 2 | 2 | | | | | | | |
| Storage Bay Dist (ft) | 350 | | U U | - | - | | | | | | | |
| Storage Blk Time (%) | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | |
| Intersection: 5: MD 201 & Ch | ierrywood | l Lane | | | | | | | | | | |
| Mayamant | FD | FD | FD | ND | ND | ND | CD. | C D | C D | | | |
| iviovement | EB I | EB I | EB D | INR | IN B | IN B | т 28 | т 28 | 2R 2R | | | |
| Maximum Qualla (#) | L 246 | L 220 | к 101 | L 605 | | 1 020 | ו 272 | 1 | к 275 | | | |
| | 240 150 | 329 170 | 27 | 217 | 922 | 929 402 | 272 | 300 100 | 215 | | | |
| Average Queue (IL) | 247 | 225 | 57 95 | 217 | 440 1041 | 402 1015 | 140 241 | 207 | 92 215 | | | |
| Link Distance (ft) | 241 | 333 1306 | 00 1306 | 000 | 1102 | 1102 | 241 610 | 507 610 | 212 | | | |
| Link Distance (IL) | | 1300 | 1300 | | 1132 | 7 7722 | 1 | 010 | | | | |
| Queuing Penalty (veh) | | | | | | ے 14 | 10 | | | | | |
| Storage Bay Dist (ft) | 250 | | | 750 | | ±. | 10 | | 250 | | | |
| Storage Blk Time (%) | 4 | 3 | | 0 | 13 | | | 2 | 0 | | | |
| Queuing Penalty (veh) | 6 | 6 | | 0 | 28 | | | 7 | 0 | | | |

Queuing and Blocking Report Action Alternative AM with Mitigation 05/07/2020

Intersection: 6: MD 201 & Sunnyside Avenue

| Movement | EB | EB | NB | NB | NB | B6006 | B6006 | SB | SB | SB |
|-----------------------|-----|-----|-----|-----|-----|-------|-------|------|------|-----|
| Directions Served | L | R | L | Т | TR | Т | | Т | Т | R |
| Maximum Queue (ft) | 326 | 283 | 458 | 430 | 230 | 591 | 549 | 840 | 812 | 275 |
| Average Queue (ft) | 165 | 113 | 320 | 116 | 74 | 467 | 188 | 494 | 448 | 151 |
| 95th Queue (ft) | 309 | 236 | 476 | 358 | 175 | 814 | 599 | 820 | 789 | 328 |
| Link Distance (ft) | 414 | | | 939 | 939 | 492 | 492 | 1541 | 1541 | |
| Upstream Blk Time (%) | | 1 | | | | | 16 | 2 | | |
| Queuing Penalty (veh) | | 6 | | | | | 140 | 15 | | |
| Storage Bay Dist (ft) | | 350 | 450 | | | | | | | 250 |
| Storage Blk Time (%) | 2 | 0 | 3 | 0 | | | | | 20 | 0 |
| Queuing Penalty (veh) | 7 | 0 | 21 | 0 | | | | | 41 | 2 |
| | | | | | | | | | | |

Intersection: 7: MD 201 & Beaver Dam Road

| Movement | WB | SB |
|-----------------------|-----|-----|
| Directions Served | LR | Т |
| Maximum Queue (ft) | 77 | 4 |
| Average Queue (ft) | 25 | 0 |
| 95th Queue (ft) | 60 | 4 |
| Link Distance (ft) | 614 | 844 |
| Upstream Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |
| | | |

Intersection: 8: MD 201 & Powder Mill Road

| Movement | EB | EB | EB | EB | WB | WB | WB | WB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|
| Directions Served | L | Т | Т | R | L | L | Т | R | L | Т | L | Т | TR |
| Maximum Queue (ft) | 99 | 183 | 152 | 117 | 118 | 115 | 219 | 65 | 287 | 248 | 181 | 324 | 300 |
| Average Queue (ft) | 42 | 82 | 34 | 8 | 61 | 57 | 92 | 16 | 163 | 135 | 56 | 183 | 166 |
| 95th Queue (ft) | 88 | 146 | 105 | 79 | 108 | 98 | 177 | 58 | 263 | 229 | 126 | 290 | 272 |
| Link Distance (ft) | | 587 | 587 | | | | 578 | | | 599 | | 809 | 809 |
| Upstream Blk Time (%) | | | | | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | | | | | |
| Storage Bay Dist (ft) | 250 | | | 500 | 500 | 500 | | 40 | 400 | | 275 | | |
| Storage Blk Time (%) | | | | | | | | 32 | 0 | | | 0 | 1 |
| Queuing Penalty (veh) | | | | | | | | 73 | 1 | | | 0 | 1 |

Intersection: 9: Edmonston Road & Odell Road

| Movement | EB | WB | WB | NB | SB |
|-----------------------|-----|-----|----|-----|-----|
| Directions Served | LTR | LT | R | LT | LTR |
| Maximum Queue (ft) | 90 | 69 | 56 | 161 | 11 |
| Average Queue (ft) | 27 | 10 | 4 | 34 | 0 |
| 95th Queue (ft) | 73 | 43 | 30 | 117 | 5 |
| Link Distance (ft) | 509 | 488 | | 419 | 365 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | | | 50 | | |
| Storage Blk Time (%) | | | 2 | 0 | |
| Queuing Penalty (veh) | | | 0 | 0 | |
| | | | | | |

Intersection: 10: Powder Mill Road & Poultry Road

| Movement | EB | EB | WB | WB |
|-----------------------|-----|-----|------|-----|
| Directions Served | L | Т | Т | R |
| Maximum Queue (ft) | 180 | 34 | 175 | 154 |
| Average Queue (ft) | 76 | 1 | 83 | 61 |
| 95th Queue (ft) | 139 | 35 | 149 | 114 |
| Link Distance (ft) | | 351 | 1365 | |
| Upstream Blk Time (%) | | | 0 | |
| Queuing Penalty (veh) | | | 0 | |
| Storage Bay Dist (ft) | 200 | | | 200 |
| Storage Blk Time (%) | 0 | 0 | 0 | 0 |
| Queuing Penalty (veh) | 0 | 0 | 0 | 0 |
| | | | | |

Queuing and Blocking Report Action Alternative AM with Mitigation 05/07/2020

Intersection: 11: Powder Mill Road

| Movement | NB | SE |
|-----------------------|----|-----|
| Directions Served | L | TR |
| Maximum Queue (ft) | 39 | 10 |
| Average Queue (ft) | 13 | 1 |
| 95th Queue (ft) | 38 | 9 |
| Link Distance (ft) | 46 | 371 |
| Upstream Blk Time (%) | | 0 |
| Queuing Penalty (veh) | | 0 |
| Storage Bay Dist (ft) | | |
| Storage Blk Time (%) | | |
| Queuing Penalty (veh) | | |

Intersection: 12: Powder Mill Road

| Movement | EB | EB | WB | SB |
|-----------------------|----|------|-----|-----|
| Directions Served | L | Т | TR | LR |
| Maximum Queue (ft) | 34 | 130 | 172 | 206 |
| Average Queue (ft) | 3 | 30 | 103 | 98 |
| 95th Queue (ft) | 20 | 91 | 187 | 177 |
| Link Distance (ft) | | 3475 | 151 | 467 |
| Upstream Blk Time (%) | | | | 2 |
| Queuing Penalty (veh) | | | | 21 |
| Storage Bay Dist (ft) | 50 | | | |
| Storage Blk Time (%) | | 0 | 2 | |
| Queuing Penalty (veh) | | 0 | 0 | |
| | | | | |

Intersection: 13: Powder Mill Road

| Movement | EB | EB | WB | WB | SB | SB |
|------------------------------|--------|-----|-----|-----|-----|-----|
| Directions Served | Т | R | L | Т | L | TR |
| Maximum Queue (ft) | 158 | 89 | 64 | 205 | 273 | 244 |
| Average Queue (ft) | 87 | 37 | 23 | 78 | 152 | 93 |
| 95th Queue (ft) | 155 | 74 | 53 | 160 | 243 | 193 |
| Link Distance (ft) | 151 | 151 | | 550 | | 850 |
| Upstream Blk Time (%) | | 1 | | | | |
| Queuing Penalty (veh) | | 2 | | | | |
| Storage Bay Dist (ft) | | | 225 | | 300 | |
| Storage Blk Time (%) | | | | 0 | 0 | 0 |
| Queuing Penalty (veh) | | | | 0 | 0 | 1 |
| Intersection: 14: Powder Mil | l Road | | | | | |

| Movement | EB | EB | WB | WB | B51 | NB | NB |
|--------------------------------|------|-----|-----|-----|-----|-----|-----|
| Directions Served | L | Т | Т | R | Т | L | TR |
| Maximum Queue (ft) | 211 | 296 | 255 | 137 | 2 | 311 | 172 |
| Average Queue (ft) | 47 | 173 | 93 | 55 | 0 | 196 | 36 |
| 95th Queue (ft) | 129 | 268 | 187 | 121 | 2 | 293 | 114 |
| Link Distance (ft) | | 550 | 264 | | 546 | | 857 |
| Upstream Blk Time (%) | | | | 0 | | | |
| Queuing Penalty (veh) | | | | 1 | | | |
| Storage Bay Dist (ft) | 250 | | | 100 | | 300 | |
| Storage Blk Time (%) | | | 1 | 5 | 0 | | 1 |
| Queuing Penalty (veh) | | | 1 | 15 | 0 | | 1 |
| Interrection, 15, Dourdor Mill | Dood | | | | | | |

Intersection: 15: Powder Mill Road

| Movement | EB | EB | WB | WB | NB |
|-----------------------|-----|-----|-----|-----|-----|
| Directions Served | Т | R | L | Т | L |
| Maximum Queue (ft) | 202 | 54 | 124 | 255 | 226 |
| Average Queue (ft) | 95 | 8 | 41 | 120 | 119 |
| 95th Queue (ft) | 178 | 36 | 89 | 211 | 197 |
| Link Distance (ft) | 546 | | | 792 | 892 |
| Upstream Blk Time (%) | | | | | |
| Queuing Penalty (veh) | | | | | |
| Storage Bay Dist (ft) | | 260 | 300 | | |
| Storage Blk Time (%) | | 0 | | | 0 |
| Queuing Penalty (veh) | | 0 | | | 0 |

SimTraffic Simulation Summary Action Alternative PM with Mitigation 05/07/2020

Summary of All Intervals

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Start Time | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 | 2:52 |
| End Time | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 | 4:00 |
| Total Time (min) | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Time Recorded (min) | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| # of Intervals | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| # of Recorded Intervals | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Vehs Entered | 13851 | 14074 | 14000 | 13825 | 13878 | 14064 | 14118 | 13949 | 14038 | 13849 | 13957 |
| Vehs Exited | 13605 | 13793 | 13724 | 13646 | 13695 | 13767 | 13851 | 13679 | 13648 | 13569 | 13698 |
| Starting Vehs | 692 | 625 | 655 | 651 | 683 | 696 | 657 | 663 | 641 | 670 | 651 |
| Ending Vehs | 938 | 906 | 931 | 830 | 866 | 993 | 924 | 933 | 1031 | 950 | 928 |
| Travel Distance (mi) | 15370 | 15685 | 15776 | 15509 | 15483 | 15973 | 15709 | 15743 | 15676 | 15566 | 15649 |
| Travel Time (hr) | 950.1 | 858.4 | 892.9 | 787.6 | 958.9 | 962.8 | 877.1 | 925.0 | 917.5 | 961.8 | 909.2 |
| Total Delay (hr) | 499.2 | 398.6 | 430.7 | 334.1 | 505.2 | 493.7 | 417.4 | 463.8 | 458.1 | 505.0 | 450.6 |
| Total Stops | 18735 | 19322 | 19522 | 18548 | 19365 | 20030 | 18965 | 19312 | 18904 | 19210 | 19189 |
| Fuel Used (gal) | 614.4 | 604.8 | 614.3 | 583.4 | 617.9 | 634.9 | 608.3 | 620.2 | 614.2 | 620.5 | 613.3 |
| | | | | | | | | | | | |

 Interval #0 Information Seeding

 Start Time
 2:52

 End Time
 3:00

 Total Time (min)
 8

 Volumes adjusted by Growth Factors.

 No data recorded this interval.

Interval #1 InformationRecordingStart Time3:00End Time3:15Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 3452 | 3579 | 3586 | 3539 | 3482 | 3494 | 3516 | 3484 | 3508 | 3444 | 3504 |
| Vehs Exited | 3369 | 3404 | 3469 | 3421 | 3404 | 3396 | 3402 | 3376 | 3404 | 3296 | 3396 |
| Starting Vehs | 692 | 625 | 655 | 651 | 683 | 696 | 657 | 663 | 641 | 670 | 651 |
| Ending Vehs | 775 | 800 | 772 | 769 | 761 | 794 | 771 | 771 | 745 | 818 | 777 |
| Travel Distance (mi) | 3880 | 3901 | 3985 | 3888 | 3842 | 3973 | 3907 | 3911 | 3880 | 3846 | 3901 |
| Travel Time (hr) | 190.5 | 182.3 | 187.1 | 181.6 | 184.9 | 190.8 | 181.3 | 190.2 | 182.5 | 185.1 | 185.6 |
| Total Delay (hr) | 76.6 | 68.2 | 70.6 | 67.7 | 72.4 | 74.5 | 66.8 | 75.4 | 68.8 | 71.9 | 71.3 |
| Total Stops | 4702 | 4696 | 4782 | 4525 | 4656 | 4754 | 4379 | 4793 | 4428 | 4471 | 4613 |
| Fuel Used (gal) | 145.0 | 143.5 | 147.5 | 142.1 | 142.1 | 147.0 | 143.4 | 145.6 | 142.6 | 141.5 | 144.0 |

Interval #2 Information Recording

Start Time3:15End Time3:30

Total Time (min) 15

Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 3358 | 3538 | 3489 | 3490 | 3530 | 3496 | 3579 | 3474 | 3452 | 3491 | 3485 |
| Vehs Exited | 3296 | 3506 | 3473 | 3486 | 3379 | 3467 | 3563 | 3358 | 3364 | 3448 | 3437 |
| Starting Vehs | 775 | 800 | 772 | 769 | 761 | 794 | 771 | 771 | 745 | 818 | 777 |
| Ending Vehs | 837 | 832 | 788 | 773 | 912 | 823 | 787 | 887 | 833 | 861 | 830 |
| Travel Distance (mi) | 3765 | 4050 | 3998 | 3832 | 3899 | 4009 | 3949 | 3965 | 3842 | 3881 | 3919 |
| Travel Time (hr) | 218.8 | 207.3 | 212.2 | 188.5 | 226.4 | 222.5 | 204.9 | 214.9 | 210.1 | 224.9 | 213.1 |
| Total Delay (hr) | 108.4 | 88.4 | 95.5 | 76.8 | 112.2 | 105.1 | 89.6 | 98.9 | 97.3 | 111.4 | 98.3 |
| Total Stops | 4430 | 5112 | 5115 | 4598 | 4896 | 5081 | 4918 | 4757 | 4709 | 4915 | 4853 |
| Fuel Used (gal) | 147.6 | 152.9 | 153.1 | 143.2 | 151.3 | 155.7 | 150.1 | 151.3 | 147.1 | 152.9 | 150.5 |

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Interval #3 Information RecordingStart Time3:30End Time3:45Total Time (min)15Volumes adjusted by Growth Factors.

| Run Number | 1 | 10 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Avg |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Vehs Entered | 3617 | 3479 | 3512 | 3327 | 3500 | 3491 | 3485 | 3484 | 3543 | 3450 | 3482 |
| Vehs Exited | 3565 | 3439 | 3419 | 3305 | 3470 | 3404 | 3419 | 3508 | 3461 | 3377 | 3437 |
| Starting Vehs | 837 | 832 | 788 | 773 | 912 | 823 | 787 | 887 | 833 | 861 | 830 |
| Ending Vehs | 889 | 872 | 881 | 795 | 942 | 910 | 853 | 863 | 915 | 934 | 883 |
| Travel Distance (mi) | 3907 | 3896 | 3977 | 3847 | 3928 | 3910 | 3915 | 3910 | 3983 | 3903 | 3917 |
| Travel Time (hr) | 260.4 | 222.8 | 235.7 | 198.6 | 265.5 | 252.3 | 232.9 | 248.0 | 245.8 | 261.2 | 242.3 |
| Total Delay (hr) | 145.7 | 108.3 | 118.7 | 86.0 | 150.6 | 137.1 | 118.4 | 133.7 | 128.8 | 147.0 | 127.4 |
| Total Stops | 4983 | 4782 | 4997 | 4597 | 5058 | 4833 | 4802 | 4891 | 4711 | 4991 | 4863 |
| Fuel Used (gal) | 160.0 | 153.0 | 157.0 | 144.6 | 162.5 | 158.3 | 154.6 | 159.0 | 158.5 | 159.7 | 156.7 |
| | | | | | | | | | | | |

Interval #4 Information RecordingStart Time3:45End Time4:00Total Time (min)15Volumes adjusted by Growth Factors.

| Pup Number | 1 | 10 | 2 | 2 | 1 | 5 | 6 | 7 | 0 | ٥ | Δυσ |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Kull Nullibel | T | 10 | Z | 5 | 4 | 5 | 0 | / | 0 | 9 | Avg |
| Vehs Entered | 3424 | 3478 | 3413 | 3469 | 3366 | 3583 | 3538 | 3507 | 3535 | 3464 | 3473 |
| Vehs Exited | 3375 | 3444 | 3363 | 3434 | 3442 | 3500 | 3467 | 3437 | 3419 | 3448 | 3433 |
| Starting Vehs | 889 | 872 | 881 | 795 | 942 | 910 | 853 | 863 | 915 | 934 | 883 |
| Ending Vehs | 938 | 906 | 931 | 830 | 866 | 993 | 924 | 933 | 1031 | 950 | 928 |
| Travel Distance (mi) | 3818 | 3837 | 3816 | 3942 | 3815 | 4081 | 3937 | 3957 | 3970 | 3936 | 3911 |
| Travel Time (hr) | 280.4 | 246.1 | 257.9 | 219.0 | 282.0 | 297.2 | 257.9 | 271.9 | 279.0 | 290.5 | 268.2 |
| Total Delay (hr) | 168.5 | 133.7 | 146.0 | 103.7 | 170.0 | 176.9 | 142.6 | 155.8 | 163.1 | 174.6 | 153.5 |
| Total Stops | 4620 | 4732 | 4628 | 4828 | 4755 | 5362 | 4866 | 4871 | 5056 | 4833 | 4857 |
| Fuel Used (gal) | 161.8 | 155.3 | 156.7 | 153.5 | 162.1 | 173.9 | 160.3 | 164.4 | 166.0 | 166.4 | 162.0 |

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Queuing and Blocking Report Action Alternative PM with Mitigation 05/07/2020

Intersection: 1: MD 201 & I-95 SB off-Ramp

| Movement | EB | EB | EB | NB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|------|------|------|-----|-----|
| Directions Served | L | L | R | Т | Т | Т | Т | т |
| Maximum Queue (ft) | 130 | 463 | 447 | 144 | 179 | 231 | 161 | 172 |
| Average Queue (ft) | 24 | 98 | 21 | 64 | 55 | 107 | 65 | 79 |
| 95th Queue (ft) | 79 | 256 | 226 | 126 | 133 | 196 | 127 | 142 |
| Link Distance (ft) | | 734 | 734 | 1249 | 1249 | 1249 | 542 | 542 |
| Upstream Blk Time (%) | | | 0 | 0 | | | | |
| Queuing Penalty (veh) | | | 0 | 0 | | | | |
| Storage Bay Dist (ft) | 325 | | | | | | | |
| Storage Blk Time (%) | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | |

Intersection: 2: MD 201 & I-95 NB Off Ramp

| Movement | WB | WB | WB | WB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|------|-----|-----|-----|-----|-----|-----|-----|
| Directions Served | L | L | R | R | UT | Т | Т | Т | Т | Т |
| Maximum Queue (ft) | 287 | 332 | 314 | 297 | 138 | 180 | 186 | 181 | 204 | 275 |
| Average Queue (ft) | 160 | 214 | 178 | 156 | 66 | 94 | 96 | 87 | 98 | 138 |
| 95th Queue (ft) | 258 | 309 | 271 | 245 | 124 | 155 | 161 | 150 | 171 | 235 |
| Link Distance (ft) | | 1405 | 1405 | | | 282 | 282 | 215 | 215 | 215 |
| Upstream Blk Time (%) | | | | | | | | 0 | 0 | 1 |
| Queuing Penalty (veh) | | | | | | | | 0 | 1 | 6 |
| Storage Bay Dist (ft) | 400 | | | 300 | 250 | | | | | |
| Storage Blk Time (%) | | | | 0 | 0 | | | | | |
| Queuing Penalty (veh) | | | | 1 | 0 | | | | | |

Movement EB WB WB NB NB NB NB NB SB SB SB SB **Directions Served** LTR TR LT Т R L Т т R L Т Т Maximum Queue (ft) 45 208 101 76 212 275 274 202 162 99 136 184 Average Queue (ft) 13 108 40 21 83 146 146 15 72 21 38 58 95th Queue (ft) 184 79 58 177 240 243 107 96 135 36 133 70 Link Distance (ft) 239 429 266 266 266 783 783 783 Upstream Blk Time (%) 0 0 Queuing Penalty (veh) 1 1 Storage Bay Dist (ft) 250 250 200 300 Storage Blk Time (%) 0 0 2 0 Queuing Penalty (veh) 0 0 3 0

Intersection: 4: MD 201 & Ivy Lane

| Movement | NB | NB | NB | NB | SB | SB |
|-----------------------|-----|-----|-----|-----|------|------|
| Directions Served | L | L | Т | Т | Т | Т |
| Maximum Queue (ft) | 127 | 157 | 194 | 75 | 158 | 198 |
| Average Queue (ft) | 55 | 86 | 7 | 3 | 58 | 103 |
| 95th Queue (ft) | 110 | 135 | 118 | 76 | 129 | 174 |
| Link Distance (ft) | | 783 | 783 | 783 | 1193 | 1193 |
| Upstream Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |
| Storage Bay Dist (ft) | 350 | | | | | |
| Storage Blk Time (%) | | | | | | |
| Queuing Penalty (veh) | | | | | | |

Intersection: 5: MD 201 & Cherrywood Lane

| Movement | FB | FB | FB | NB | NB | NB | SB | SB | SB |
|-----------------------|-----|------|------|-----|------|------|-----|-----|-----|
| Directions Served | L | L | R | L | Т | Т | T | T | R |
| Maximum Queue (ft) | 227 | 225 | 276 | 256 | 203 | 178 | 332 | 394 | 275 |
| Average Queue (ft) | 130 | 122 | 150 | 123 | 73 | 44 | 188 | 232 | 98 |
| 95th Queue (ft) | 204 | 202 | 250 | 211 | 168 | 130 | 293 | 352 | 250 |
| Link Distance (ft) | | 1306 | 1306 | | 1193 | 1193 | 610 | 610 | |
| Upstream Blk Time (%) | | | | | | | | | |
| Queuing Penalty (veh) | | | | | | | | | |
| Storage Bay Dist (ft) | 250 | | | 750 | | | | | 250 |
| Storage Blk Time (%) | 0 | 0 | | | | | | 5 | 0 |
| Queuing Penalty (veh) | 0 | 0 | | | | | | 19 | 1 |

Queuing and Blocking Report Action Alternative PM with Mitigation 05/07/2020

Intersection: 6: MD 201 & Sunnyside Avenue

| Movement | EB | EB | NB | NB | NB | B6006 | SB | SB | SB |
|-----------------------|------|-----|-----|-----|-----|-------|------|------|-----|
| Directions Served | L | R | L | Т | TR | Т | Т | Т | R |
| Maximum Queue (ft) | 1000 | 375 | 465 | 626 | 454 | 166 | 1664 | 1658 | 275 |
| Average Queue (ft) | 702 | 345 | 326 | 217 | 132 | 8 | 1271 | 1254 | 237 |
| 95th Queue (ft) | 1243 | 449 | 515 | 586 | 350 | 116 | 2014 | 2023 | 373 |
| Link Distance (ft) | 958 | | | 941 | 941 | 501 | 1544 | 1544 | |
| Upstream Blk Time (%) | | 36 | | | | | 0 | 48 | 45 |
| Queuing Penalty (veh) | | 0 | | | | | 1 | 354 | 338 |
| Storage Bay Dist (ft) | | 350 | 450 | | | | | | 250 |
| Storage Blk Time (%) | 33 | 15 | 11 | 0 | | | | 52 | 0 |
| Queuing Penalty (veh) | 204 | 42 | 63 | 1 | | | | 121 | 2 |
| | | | | | | | | | |

Intersection: 7: MD 201 & Beaver Dam Road

| Movement | WB | NB | SB | SB |
|-----------------------|-----|------|-----|-----|
| Directions Served | LTR | Т | T | Т |
| Maximum Queue (ft) | 354 | 2 | 826 | 825 |
| Average Queue (ft) | 123 | 0 | 273 | 276 |
| 95th Queue (ft) | 367 | 2 | 836 | 849 |
| Link Distance (ft) | 615 | 1544 | 838 | 838 |
| Upstream Blk Time (%) | 0 | | 7 | 8 |
| Queuing Penalty (veh) | 0 | | 53 | 61 |
| Storage Bay Dist (ft) | | | | |
| Storage Blk Time (%) | | | | |
| Queuing Penalty (veh) | | | | |

Intersection: 8: MD 201 & Powder Mill Road

| Movement | EB | EB | EB | EB | WB | WB | WB | WB | NB | NB | SB | SB | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|
| Directions Served | L | Т | Т | R | L | L | Т | R | L | Т | L | Т | TR |
| Maximum Queue (ft) | 274 | 411 | 302 | 132 | 272 | 375 | 491 | 68 | 419 | 472 | 246 | 316 | 309 |
| Average Queue (ft) | 186 | 173 | 128 | 5 | 146 | 165 | 243 | 41 | 229 | 240 | 100 | 180 | 175 |
| 95th Queue (ft) | 297 | 347 | 241 | 61 | 235 | 306 | 442 | 84 | 383 | 408 | 208 | 277 | 273 |
| Link Distance (ft) | | 598 | 598 | | | | 589 | | | 598 | | 808 | 808 |
| Upstream Blk Time (%) | | | | | | | | 1 | | | 0 | | |
| Queuing Penalty (veh) | | | | | | | | 6 | | | 1 | | |
| Storage Bay Dist (ft) | 250 | | | 500 | 500 | 500 | | 40 | 400 | | 275 | | |
| Storage Blk Time (%) | 9 | 1 | | | | | 68 | 2 | 1 | 1 | 1 | 0 | |
| Queuing Penalty (veh) | 18 | 1 | | | | | 375 | 14 | 5 | 2 | 3 | 0 | |

Intersection: 9: Edmonston Road & Odell Road

| Movement | EB | WB | WB | NB | SB |
|-----------------------|-----|-----|----|-----|-----|
| Directions Served | LTR | LT | R | LT | LTR |
| Maximum Queue (ft) | 99 | 28 | 26 | 226 | 10 |
| Average Queue (ft) | 31 | 2 | 2 | 32 | 0 |
| 95th Queue (ft) | 83 | 15 | 14 | 129 | 9 |
| Link Distance (ft) | 509 | 488 | | 419 | 365 |
| Upstream Blk Time (%) | | | | | 0 |
| Queuing Penalty (veh) | | | | | 0 |
| Storage Bay Dist (ft) | | | 50 | | |
| Storage Blk Time (%) | | | 0 | | 0 |
| Queuing Penalty (veh) | | | 0 | | 0 |

Intersection: 10: Powder Mill Road & Poultry Road

| Movement Directions Served Maximum Queue (ft) Average Queue (ft) 95th Queue (ft) Link Distance (ft) Upstream Blk Time (%) | EB L 108 6 52 | EB T 416 250 411 354 | B69 T 54 4 31 691 2 | WB T 229 96 189 1386 | WB R 50 3 29 | SB L 296 142 251 347 | SB R 220 87 165 347 0 |
|---|---------------------------|-------------------------------------|---------------------------------------|-------------------------------------|--------------------------|-------------------------------------|---|
| Queuing Penalty (veh) Storage Bay Dist (ft) Storage Blk Time (%) Queuing Penalty (veh) | 200 | | 18 12 1 | | 200 1 0 | | 0 |

Queuing and Blocking Report Action Alternative PM with Mitigation 05/07/2020

Intersection: 11: Powder Mill Road

| EB | NB |
|-----|-------------------------------------|
| TR | L |
| 214 | 54 |
| 42 | 24 |
| 144 | 54 |
| 383 | 48 |
| | 5 |
| | 1 |
| | |
| | |
| | |
| | EB TR 214 42 144 383 |

Intersection: 12: Powder Mill Road & Springfield Road

| EB | EB | WB | SB |
|----|---------------------------------|---|--|
| L | Т | TR | LR |
| 59 | 886 | 128 | 512 |
| 11 | 449 | 45 | 440 |
| 42 | 806 | 98 | 597 |
| | 3486 | 151 | 467 |
| | | 0 | 74 |
| | | 0 | 0 |
| 50 | | | |
| | 0 | 37 | |
| | 0 | 7 | |
| | EB L 59 11 42 50 | EB EB L T 59 886 11 449 42 806 3486 50 0 0 | EB EB WB L T TR 59 886 128 11 449 45 42 806 98 3486 151 0 0 50 0 50 37 0 7 |

Intersection: 13: Powder Mill Road & B-W Parkway SB Off-Ramp

| Movement | EB | EB | WB | WB | SB | SB |
|-----------------------|-----|-----|-----|-----|-----|-----|
| Directions Served | Т | R | L | Т | L | TR |
| Maximum Queue (ft) | 164 | 122 | 143 | 149 | 314 | 235 |
| Average Queue (ft) | 156 | 56 | 71 | 44 | 194 | 55 |
| 95th Queue (ft) | 178 | 104 | 128 | 107 | 297 | 196 |
| Link Distance (ft) | 151 | 151 | | 550 | | 850 |
| Upstream Blk Time (%) | | 20 | 0 | | | |
| Queuing Penalty (veh) | | 124 | 0 | | | |
| Storage Bay Dist (ft) | | | 225 | | 300 | |
| Storage Blk Time (%) | | | | 0 | 0 | 2 |
| Queuing Penalty (veh) | | | | 0 | 0 | 4 |

Intersection: 14: B-W Parkway NB Off-Ramp & Powder Mill Road

| Movement | EB | EB | WB | WB | NB | NB |
|-----------------------|-----|-----|-----|-----|-----|-----|
| Directions Served | L | Т | Т | R | L | TR |
| Maximum Queue (ft) | 239 | 219 | 153 | 140 | 145 | 72 |
| Average Queue (ft) | 118 | 101 | 41 | 64 | 62 | 25 |
| 95th Queue (ft) | 207 | 196 | 108 | 124 | 123 | 55 |
| Link Distance (ft) | | 550 | 264 | | | 857 |
| Upstream Blk Time (%) | | | 0 | 0 | | |
| Queuing Penalty (veh) | | | 0 | 0 | | |
| Storage Bay Dist (ft) | 250 | | | 100 | 300 | |
| Storage Blk Time (%) | | 0 | | 0 | 1 | |
| Queuing Penalty (veh) | | 2 | | 3 | 5 | |

Intersection: 15: Soil Conservation Road & Powder Mill Road

| Movement | EB | EB | WB | WB | NB |
|-----------------------|-----|-----|----|-----|-----|
| Directions Served | Т | R | L | Т | L |
| Maximum Queue (ft) | 370 | 218 | 78 | 248 | 406 |
| Average Queue (ft) | 187 | 29 | 27 | 122 | 226 |
| 95th Queue (ft) | 312 | 137 | 64 | 217 | 352 |
| Link Distance (ft) | 546 | | | 792 | 892 |
| Upstream Blk Time (%) | | 0 | | | |
| Queuing Penalty (veh) | | 0 | | | |
| Storage Bay Dist (ft) | 260 | 300 | | | |
| Storage Blk Time (%) | 2 | 0 | | 0 | 0 |
| Queuing Penalty (veh) | 7 | 0 | | 0 | 0 |
| | | | | | |

9 ATTACHMENT D (TRANSMODELER™ REPORTS)

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Lane Queue by Intersection -Overview

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | NODE: 5 |
|------------|----------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
| EB L on Po | owder Mill Road - La | ane ID 24 | | | | |
| 1 | 120.0 | 13.1 | 0.6 | 58.1 | 3.0 | 0.0% |
| 2 | 120.0 | 12.3 | 0.6 | 50.9 | 2.0 | 0.0% |
| 3 | 120.0 | 14.3 | 0.7 | 68.0 | 3.0 | 0.0% |
| 4 | 120.0 | 11.8 | 0.6 | 43.8 | 2.0 | 0.0% |
| 5 | 120.0 | 13.9 | 0.7 | 64.0 | 3.0 | 0.0% |
| 6 | 120.0 | 12.0 | 0.6 | 50.0 | 2.0 | 0.0% |
| 7 | 120.0 | 13.3 | 0.7 | 61.6 | 3.0 | 0.0% |
| 8 | 120.0 | 16.3 | 0.8 | 61.9 | 3.0 | 0.0% |
| 9 | 120.0 | 12.1 | 0.6 | 51.5 | 2.0 | 0.0% |
| 10 | 120.0 | 10.8 | 0.6 | 45.7 | 2.0 | 0.0% |
| Average: | 120.0 | 13.0 | 0.7 | 55.6 | 2.5 | 0.0% |
| EB T on Po | owder Mill Road - L | ane ID 25 | | | | |
| 1 | 120.0 | 15.1 | 0.6 | 103.7 | 4.0 | 0.0% |
| 2 | 120.0 | 16.7 | 0.7 | 112.2 | 5.0 | 0.0% |
| 3 | 120.0 | 15.2 | 0.7 | 121.5 | 5.0 | 0.0% |
| 4 | 120.0 | 15.4 | 0.6 | 111.2 | 5.0 | 0.0% |
| 5 | 120.0 | 14.9 | 0.7 | 112.1 | 5.0 | 0.0% |
| 6 | 120.0 | 15.4 | 0.7 | 104.0 | 4.0 | 0.0% |
| 7 | 120.0 | 17.6 | 0.7 | 108.0 | 5.0 | 0.0% |
| 8 | 120.0 | 18.1 | 0.8 | 121.9 | 5.0 | 0.0% |
| 9 | 120.0 | 13.8 | 0.6 | 119.0 | 5.0 | 0.0% |
| 10 | 120.0 | 19.5 | 0.9 | 111.1 | 5.0 | 0.0% |
| Average: | 120.0 | 16.2 | 0.7 | 112.5 | 4.8 | 0.0% |
| NB L on B | W Parkway NB Off- | Ramp - Lane ID 36 | | | | |
| 1 | 120.0 | 50.4 | 2.3 | 208.3 | 9.0 | 0.0% |
| 2 | 120.0 | 47.3 | 2.1 | 201.2 | 8.0 | 0.0% |
| 3 | 120.0 | 43.1 | 1.9 | 174.4 | 8.0 | 0.0% |
| 4 | 120.0 | 44.8 | 2.0 | 205.8 | 9.0 | 0.0% |
| 5 | 120.0 | 47.0 | 2.1 | 199.3 | 8.0 | 0.0% |
| 6 | 120.0 | 47.3 | 2.1 | 197.0 | 8.0 | 0.0% |
| 7 | 120.0 | 52.2 | 2.3 | 233.8 | 10.0 | 0.0% |
| 8 | 120.0 | 97.9 | 4.1 | 394.2 | 17.0 | 0.0% |
| 9 | 120.0 | 49.3 | 2.2 | 199.5 | 9.0 | 0.0% |
| 10 | 120.0 | 46.8 | 2.1 | 214.5 | 9.0 | 0.0% |
| Average: | 120.0 | 52.6 | 2.3 | 222.8 | 9.5 | 0.0% |

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | |
|------|--|

| ROAD | | | | | | NODE: 5 |
|-----------|--------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
| NB TR on | BW Parkway NB Of | f-Ramp - Lane ID 3 | 7 | | | |
| 1 | 120.0 | 2.4 | 0.1 | 17.5 | 1.0 | 0.0% |
| 2 | 120.0 | 0.9 | 0.1 | 0.8 | 0.0 | 0.0% |
| 3 | 120.0 | 3.7 | 0.2 | 24.7 | 1.0 | 0.0% |
| 4 | 120.0 | 2.3 | 0.1 | 17.1 | 1.0 | 0.0% |
| 5 | 120.0 | 2.5 | 0.1 | 18.8 | 1.0 | 0.0% |
| 6 | 120.0 | 1.7 | 0.1 | 15.8 | 1.0 | 0.0% |
| 7 | 120.0 | 1.6 | 0.1 | 15.8 | 1.0 | 0.0% |
| 8 | 120.0 | 4.8 | 0.2 | 40.4 | 2.0 | 0.0% |
| 9 | 120.0 | 2.6 | 0.1 | 16.9 | 1.0 | 0.0% |
| 10 | 120.0 | 2.2 | 0.1 | 17.3 | 1.0 | 0.0% |
| Average: | 120.0 | 2.5 | 0.1 | 18.5 | 1.0 | 0.0% |
| WB R on | Powder Mill Road - | Lane ID 207 | | | | |
| 1 | 120.0 | 2.5 | 0.1 | 19.9 | 1.0 | 0.0% |
| 2 | 120.0 | 1.7 | 0.1 | 15.6 | 1.0 | 0.0% |
| 3 | 120.0 | 0.9 | 0.1 | 0.7 | 0.0 | 0.0% |
| 4 | 120.0 | 2.7 | 0.1 | 18.6 | 1.0 | 0.0% |
| 5 | 120.0 | 1.5 | 0.1 | 16.2 | 1.0 | 0.0% |
| 6 | 120.0 | 1.0 | 0.1 | 0.0 | 0.0 | 0.0% |
| 7 | 120.0 | 2.1 | 0.1 | 21.3 | 1.0 | 0.0% |
| 8 | 120.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 2.5 | 0.1 | 20.5 | 1.0 | 0.0% |
| 10 | 120.0 | 1.4 | 0.1 | 16.0 | 1.0 | 0.0% |
| Average: | 120.0 | 1.7 | 0.1 | 12.9 | 0.7 | 0.0% |
| WB T on I | Powder Mill Road - | Lane ID 5 | | | | |
| 1 | 120.0 | 22.9 | 1.0 | 139.2 | 6.0 | 0.0% |
| 2 | 120.0 | 29.2 | 1.3 | 116.8 | 5.0 | 0.0% |
| 3 | 120.0 | 27.0 | 1.2 | 159.6 | 7.0 | 0.0% |
| 4 | 120.0 | 19.8 | 0.9 | 127.9 | 5.0 | 0.0% |
| 5 | 120.0 | 26.2 | 1.1 | 135.3 | 6.0 | 0.0% |
| 6 | 120.0 | 24.5 | 1.0 | 123.7 | 5.0 | 0.0% |
| 7 | 120.0 | 29.2 | 1.2 | 149.1 | 6.0 | 0.0% |
| 8 | 120.0 | 28.2 | 1.2 | 142.4 | 6.0 | 0.0% |
| 9 | 120.0 | 23.8 | 1.0 | 150.3 | 6.0 | 0.0% |
| 10 | 120.0 | 24.5 | 1.0 | 136.2 | 6.0 | 0.0% |
| Average: | 120.0 | 25.5 | 1.1 | 138.1 | 5.8 | 0.0% |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | NODE: 8 |
|------------|--------------------|----------------------|--------------|-----------------|-----------------|-----------|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) |
| EB R on Po | wder Mill Road - I | ane ID 206 | | | | |
| 1 | 120.0 | 1.7 | 0.1 | 15.0 | 1.0 | 0.0% |
| 2 | 120.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 1.8 | 0.1 | 19.2 | 1.0 | 0.0% |
| 4 | 120.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0% |
| 5 | 120.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0% |
| 6 | 120.0 | 1.1 | 0.1 | 15.9 | 1.0 | 0.0% |
| 7 | 120.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0% |
| 8 | 120.0 | 0.9 | 0.1 | 0.7 | 0.0 | 0.0% |
| 9 | 120.0 | 2.2 | 0.1 | 18.8 | 1.0 | 0.0% |
| 10 | 120.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0% |
| Average: | 120.0 | 1.1 | 0.1 | 7.0 | 0.4 | 0.0% |
| | | | | | | |
| EB T on Po | wder Mill Road - L | ane ID 31 | | | | |
| 1 | 120.0 | 20.9 | 0.9 | 104.7 | 4.0 | 10.0% |
| 2 | 120.0 | 21.7 | 1.0 | 111.0 | 5.0 | 9.2% |
| 3 | 120.0 | 17.9 | 0.8 | 88.8 | 4.0 | 5.0% |
| 4 | 120.0 | 18.1 | 0.8 | 94.6 | 4.0 | 5.8% |
| 5 | 120.0 | 15.4 | 0.7 | 92.5 | 4.0 | 4.2% |
| 6 | 120.0 | 24.0 | 1.1 | 110.6 | 5.0 | 8.3% |
| 7 | 120.0 | 22.3 | 0.9 | 112.1 | 5.0 | 8.3% |
| 8 | 120.0 | 16.7 | 0.7 | 109.2 | 5.0 | 7.5% |
| 9 | 120.0 | 15.9 | 0.7 | 109.4 | 5.0 | 5.8% |
| 10 | 120.0 | 18.5 | 0.8 | 96.7 | 4.0 | 6.7% |
| Average: | 120.0 | 19.1 | 0.8 | 103.0 | 4.5 | 7.1% |
| | | | | | | |
| SWB L on | BW Parkway SB Of | ff-Ramp - Lane ID 27 | 7 | | | |
| 1 | 120.0 | 54.7 | 2.4 | 192.3 | 7.0 | 0.0% |
| 2 | 120.0 | 52.6 | 2.3 | 149.1 | 6.0 | 0.0% |
| 3 | 120.0 | 59.2 | 2.6 | 146.2 | 6.0 | 0.0% |
| 4 | 120.0 | 67.2 | 2.8 | 217.1 | 9.0 | 0.0% |
| 5 | 120.0 | 58.0 | 2.5 | 168.0 | 8.0 | 0.0% |
| 6 | 120.0 | 67.2 | 2.8 | 299.2 | 12.0 | 0.0% |
| 7 | 120.0 | 52.0 | 2.3 | 164.0 | 6.0 | 0.0% |
| 8 | 120.0 | 59.4 | 2.6 | 179.5 | 8.0 | 0.0% |
| 9 | 120.0 | 92.9 | 3.8 | 505.0 | 19.1 | 0.0% |
| 10 | 120.0 | 56.3 | 2.5 | 138.2 | 6.0 | 0.0% |
| Average: | 120.0 | 62.0 | 2.7 | 215.9 | 8.7 | 0.0% |
| | | | | | | |
| SWB TR or | n BW Parkway SB (| Off-Ramp - Lane ID | 28 | | | |
| 1 | 120.0 | 249.3 | 10.0 | 1,240.1 | 49.0 | 3.3% |
| 2 | 120.0 | 194.7 | 7.9 | 787.6 | 32.0 | 0.0% |
| 3 | 120.0 | 225.7 | 8.9 | 1,062.4 | 40.1 | 0.8% |
| 4 | 120.0 | 262.4 | 10.6 | 1,021.9 | 42.0 | 2.5% |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| _ | _ | _ | _ | |
|----|---|---|----------|--|
| R | n | Δ | n | |
| •• | S | ~ | – | |

| ROAD | | | | | | NODE: 8 |
|-----------|---------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
| SWB TR or | n BW Parkway SB C | Off-Ramp - Lane ID | 28 | | | |
| 5 | 120.0 | 280.6 | 11.3 | 1,026.1 | 40.1 | 0.8% |
| 6 | 120.0 | 294.1 | 11.8 | 1,178.2 | 47.0 | 1.7% |
| 7 | 120.0 | 204.8 | 8.3 | 821.6 | 33.1 | 0.8% |
| 8 | 120.0 | 167.8 | 6.9 | 589.1 | 23.1 | 0.0% |
| 9 | 120.0 | 255.9 | 10.3 | 1,226.0 | 50.1 | 4.2% |
| 10 | 120.0 | 192.6 | 7.8 | 805.3 | 32.0 | 0.8% |
| Average: | 120.0 | 232.8 | 9.4 | 975.8 | 38.9 | 1.5% |
| WB L on P | owder Mill Road - I | Lane ID 26 | | | | |
| 1 | 120.0 | 2.5 | 0.1 | 17.8 | 1.0 | 0.0% |
| 2 | 120.0 | 2.3 | 0.1 | 18.1 | 1.0 | 0.0% |
| 3 | 120.0 | 3.3 | 0.2 | 17.9 | 1.0 | 0.0% |
| 4 | 120.0 | 3.9 | 0.2 | 19.5 | 1.0 | 0.0% |
| 5 | 120.0 | 2.3 | 0.1 | 17.6 | 1.0 | 0.0% |
| 6 | 120.0 | 1.7 | 0.1 | 15.7 | 1.0 | 0.0% |
| 7 | 120.0 | 2.0 | 0.1 | 17.9 | 1.0 | 0.0% |
| 8 | 120.0 | 2.2 | 0.1 | 16.3 | 1.0 | 0.0% |
| 9 | 120.0 | 3.4 | 0.2 | 20.7 | 1.0 | 0.0% |
| 10 | 120.0 | 2.6 | 0.1 | 17.0 | 1.0 | 0.0% |
| Average: | 120.0 | 2.6 | 0.1 | 17.9 | 1.0 | 0.0% |
| WB T on P | owder Mill Road - | Lane ID 8 | | | | |
| 1 | 120.0 | 7.6 | 0.4 | 46.7 | 2.0 | 0.0% |
| 2 | 120.0 | 5.2 | 0.2 | 44.7 | 2.0 | 0.0% |
| 3 | 120.0 | 8.4 | 0.4 | 68.3 | 3.0 | 0.0% |
| 4 | 120.0 | 11.7 | 0.5 | 59.4 | 3.0 | 0.0% |
| 5 | 120.0 | 7.3 | 0.3 | 46.7 | 2.0 | 0.0% |
| 6 | 120.0 | 9.6 | 0.5 | 50.3 | 2.0 | 0.0% |
| 7 | 120.0 | 10.7 | 0.4 | 47.3 | 2.0 | 0.0% |
| 8 | 120.0 | 14.5 | 0.6 | 77.9 | 3.0 | 0.0% |
| 9 | 120.0 | 7.5 | 0.4 | 39.5 | 2.0 | 0.0% |
| 10 | 120.0 | 5.4 | 0.3 | 34.9 | 1.0 | 0.0% |
| Average: | 120.0 | 8.8 | 0.4 | 51.6 | 2.2 | 0.0% |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | |
|--|--------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|
| EB L on Sunnyside Avenue - Lane ID 117 | | | | | | | |
| 1 | 120.0 | 143.2 | 6.0 | 350.3 | 15.0 | 0.0% | |
| 2 | 120.0 | 58.2 | 2.5 | 162.8 | 6.0 | 0.0% | |
| 3 | 120.0 | 61.4 | 2.7 | 184.6 | 8.0 | 0.0% | |
| 4 | 120.0 | 56.4 | 2.5 | 169.4 | 7.0 | 0.0% | |
| 5 | 120.0 | 117.4 | 4.9 | 326.4 | 13.0 | 0.0% | |

EDMONISTON BOAD & SUNNVSIDE AVENUE

| EDMONSTON ROAD & SUNNYSIDE AVENUE NODE: 32 | | | | | | | |
|--|--------------------|-------------|--------------|-----------------|-----------------|-----------|--|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback | |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) | |
| EB L on Su | nnyside Avenue - I | Lane ID 117 | | | | | |
| 6 | 120.0 | 48.1 | 2.2 | 140.1 | 6.0 | 0.0% | |
| 7 | 120.0 | 50.5 | 2.3 | 132.1 | 6.0 | 0.0% | |
| 8 | 120.0 | 59.0 | 2.6 | 175.3 | 7.0 | 0.0% | |
| 9 | 120.0 | 60.6 | 2.6 | 194.7 | 8.0 | 0.0% | |
| 10 | 120.0 | 41.4 | 1.9 | 105.8 | 5.0 | 0.0% | |
| Average: | 120.0 | 69.6 | 3.0 | 194.2 | 8.1 | 0.0% | |
| 50 D | | | | | | | |
| EB R on Su | innyside Avenue - | Lane ID 118 | 0.0 | 01 0 | 4.0 | 0.0% | |
| 1 | 120.0 | 19.1 | 0.9 | 04.5 | 4.0 | 0.0% | |
| 2 | 120.0 | 10.1 | 0.7 | 75.7 | 4.0 | 0.0% | |
| 3 | 120.0 | 18.1 | 0.8 | 78.3 | 3.0 | 0.0% | |
| 4 | 120.0 | 14.9 | 0.7 | 52.1 | 3.0 | 0.0% | |
| 5 | 120.0 | 16.1 | 0.7 | 70.8 | 3.0 | 0.0% | |
| 5 | 120.0 | 19.2 | 0.9 | /1.1 | 3.0 | 0.0% | |
| / | 120.0 | 17.6 | 0.8 | 64.3 | 3.0 | 0.0% | |
| 8 | 120.0 | 16.9 | 0.8 | 75.4 | 3.0 | 0.0% | |
| 9 | 120.0 | 13.0 | 0.6 | 69.4 | 3.0 | 0.0% | |
| 10 | 120.0 | 18.1 | 0.8 | 81.5 | 3.0 | 0.0% | |
| Average: | 120.0 | 16.8 | 0.8 | 73.3 | 3.2 | 0.0% | |
| NB L on Ec | monston Road - La | ane ID 114 | | | | | |
| 1 | 120.0 | 100.9 | 4.2 | 347.8 | 13.1 | 0.0% | |
| 2 | 120.0 | 88.0 | 3.6 | 247.7 | 10.0 | 0.0% | |
| 3 | 120.0 | 82.5 | 3.4 | 306.0 | 13.0 | 0.0% | |
| 4 | 120.0 | 86.9 | 3.5 | 273.2 | 11.0 | 0.0% | |
| 5 | 120.0 | 63.7 | 2.7 | 238.3 | 10.0 | 0.0% | |
| 6 | 120.0 | 92.2 | 3.9 | 278.8 | 12.0 | 0.0% | |
| 7 | 120.0 | 63.9 | 2.7 | 210.5 | 9.0 | 0.0% | |
| 8 | 120.0 | 85.1 | 3.6 | 246.3 | 10.0 | 0.0% | |
| 9 | 120.0 | 72.3 | 3.0 | 251.2 | 10.0 | 0.0% | |
| 10 | 120.0 | 94.4 | 3.9 | 360.4 | 14.0 | 0.0% | |
| Average: | 120.0 | 83.0 | 3.5 | 276.0 | 11.2 | 0.0% | |
| NB T on Ec | dmonston Road - L | ane ID 126 | | | | | |
| 1 | 120.0 | 5.6 | 0.3 | 45.6 | 2.0 | 0.0% | |
| 2 | 120.0 | 4.4 | 0.2 | 41.1 | 2.0 | 0.0% | |
| 3 | 120.0 | 8.6 | 0.4 | 62.9 | 3.0 | 0.0% | |
| 4 | 120.0 | 3.5 | 0.2 | 22.5 | 1.0 | 0.0% | |
| 5 | 120.0 | 7.1 | 0.3 | 62.0 | 3.0 | 0.0% | |
| 6 | 120.0 | 7.5 | 0.3 | 66.5 | 3.0 | 0.0% | |
| 7 | 120.0 | 6.1 | 0.3 | 46.8 | 2.0 | 0.0% | |
| 8 | 120.0 | 7.9 | 0.4 | 56.3 | 3.0 | 0.0% | |
| 9 | 120.0 | 5.5 | 0.2 | 43.0 | 2.0 | 0.0% | |
| 10 | 120.0 | 5.2 | 0.2 | 39.7 | 2.0 | 0.0% | |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | | | |
|-------------|--------------------------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|--|--|
| NB T on Edn | nonston Road - La | ane ID 126 | | | | | | | | |
| Average: | 120.0 | 6.1 | 0.3 | 48.6 | 2.3 | 0.0% | | | | |
| NB T on Edn | NB T on Edmonston Road - Lane ID 167 | | | | | | | | | |
| 1 | 120.0 | 5.5 | 0.2 | 47.9 | 2.0 | 0.0% | | | | |
| 2 | 120.0 | 3.9 | 0.2 | 22.6 | 1.0 | 0.0% | | | | |
| 3 | 120.0 | 4.7 | 0.2 | 39.4 | 2.0 | 0.0% | | | | |
| 4 | 120.0 | 4.5 | 0.2 | 38.8 | 2.0 | 0.0% | | | | |
| 5 | 120.0 | 7.5 | 0.3 | 51.4 | 2.0 | 0.0% | | | | |
| 6 | 120.0 | 5.8 | 0.3 | 47.8 | 2.0 | 0.0% | | | | |
| 7 | 120.0 | 2.0 | 0.1 | 18.7 | 1.0 | 0.0% | | | | |
| 8 | 120.0 | 5.8 | 0.3 | 49.9 | 2.0 | 0.0% | | | | |
| 9 | 120.0 | 5.4 | 0.2 | 46.8 | 2.0 | 0.0% | | | | |
| 10 | 120.0 | 6.4 | 0.3 | 53.6 | 2.0 | 0.0% | | | | |
| Average: | 120.0 | 5.2 | 0.2 | 41.7 | 1.8 | 0.0% | | | | |
| SP P on Edm | onston Road La | no ID 171 | | | | | | | | |
| 1 | 120.0 | 7.0 | 0.3 | 44.9 | 2.0 | 0.0% | | | | |
| 2 | 120.0 | 5.8 | 0.3 | 43.9 | 2.0 | 0.0% | | | | |
| 3 | 120.0 | 5.2 | 0.3 | 30.5 | 2.0 | 0.0% | | | | |
| 4 | 120.0 | 5.3 | 0.3 | 27.9 | 1.0 | 0.0% | | | | |
| 5 | 120.0 | 7.6 | 0.4 | 44.0 | 2.0 | 0.0% | | | | |
| 6 | 120.0 | 6.6 | 0.3 | 53.3 | 2.0 | 0.0% | | | | |
| 7 | 120.0 | 10.4 | 0.5 | 55.6 | 2.0 | 0.0% | | | | |
| 8 | 120.0 | 5.6 | 0.3 | 38.4 | 2.0 | 0.0% | | | | |
| 9 | 120.0 | 7.9 | 0.4 | 52.5 | 2.0 | 0.0% | | | | |
| 10 | 120.0 | 5.7 | 0.3 | 45.9 | 2.0 | 0.0% | | | | |
| Average: | 120.0 | 6.7 | 0.3 | 43.7 | 1.9 | 0.0% | | | | |
| | onstan Dood Ja | D 130 | | | | | | | | |
| | 120.0 | 41 5 | 1.8 | 193.8 | 8.0 | 0.0% | | | | |
| 2 | 120.0 | 35.7 | 1.5 | 154.8 | 7.0 | 0.0% | | | | |
| 3 | 120.0 | 50.9 | 2.1 | 188 1 | 8.0 | 0.0% | | | | |
| 4 | 120.0 | 42.3 | 1.9 | 175.7 | 7.0 | 0.0% | | | | |
| 5 | 120.0 | 54.0 | 2.3 | 207.2 | 8.0 | 0.0% | | | | |
| 6 | 120.0 | 40.8 | 1.7 | 169.1 | 7.0 | 0.0% | | | | |
| 7 | 120.0 | 42.5 | 1.8 | 184.5 | 7.0 | 0.0% | | | | |
| 8 | 120.0 | 40.8 | 1.7 | 163.4 | 7.0 | 0.0% | | | | |
| 9 | 120.0 | 40.3 | 1.7 | 172.5 | 8.0 | 0.0% | | | | |
| 10 | 120.0 | 39.8 | 1.7 | 185.2 | 8.0 | 0.0% | | | | |
| Average: | 120.0 | 42.9 | 1.8 | 179.4 | 7.5 | 0.0% | | | | |
| 5 | | | | | | | | | | |
| SB T on Edm | onston Road - La | ane ID 121 | | | | | | | | |
| 1 | 120.0 | 56.6 | 2.4 | 224.8 | 10.0 | 0.0% | | | | |
| 2 | 120.0 | 48.2 | 2.1 | 188.5 | 7.0 | 0.0% | | | | |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
|------------|--------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|
| SB T on Ec | dmonston Road - La | ne ID 121 | | | | |
| 3 | 120.0 | 59.8 | 2.6 | 215.2 | 9.0 | 0.0% |
| 4 | 120.0 | 55.4 | 2.4 | 216.7 | 9.0 | 0.0% |
| 5 | 120.0 | 67.1 | 2.8 | 218.6 | 9.0 | 0.0% |
| 6 | 120.0 | 51.9 | 2.2 | 184.8 | 8.0 | 0.0% |
| 7 | 120.0 | 51.6 | 2.2 | 208.5 | 9.0 | 0.0% |
| 8 | 120.0 | 52.5 | 2.3 | 207.3 | 8.0 | 0.0% |
| 9 | 120.0 | 52.4 | 2.2 | 190.5 | 8.0 | 0.0% |
| 10 | 120.0 | 51.4 | 2.1 | 199.2 | 9.0 | 0.0% |
| Average: | 120.0 | 54.7 | 2.3 | 205.4 | 8.6 | 0.0% |

I-95/495 NB OFF-RAMP & MD 201

Avg Vehicles 95th Percentile 95th Percentile Spillback Avg Queue Run **Observations** Length (ft) Queued Length (ft) Num Queued Rate (%) NEB T on MD 201 - Lane ID 318 0.0% 1 120.0 10.7 0.5 47.8 2.0 2 120.0 11.5 0.5 50.2 2.0 0.0% 120.0 3 8.4 0.4 45.4 2.0 0.0% 4 120.0 12.6 0.6 65.8 3.0 0.0% 5 120.0 8.2 0.4 42.1 2.0 0.0% 6 120.0 10.3 0.5 47.0 2.0 0.0% 7 120.0 11.6 0.6 46.0 2.0 0.0% 8 120.0 8.5 0.4 43.8 2.0 0.0% 9 120.0 10.3 0.5 51.9 2.0 0.0% 10 120.0 45.8 0.0% 11.0 0.5 2.0 120.0 10.3 0.5 48.6 2.1 0.0% Average: NEB T on MD 201 - Lane ID 319 120.0 0.6 0.0% 1 12.7 48.0 2.0 2 120.0 13.2 0.6 55.4 3.0 0.0% 3 120.0 14.2 0.6 57.4 2.0 0.0% 4 120.0 12.9 0.6 56.6 2.0 0.0% 5 120.0 9.8 0.5 45.7 2.0 0.0% 6 120.0 10.6 0.5 47.3 2.0 0.0% 7 0.0% 120.0 13.3 0.6 58.3 2.0 8 120.0 10.3 0.5 44.5 2.0 0.0% 9 0.0% 120.0 12.7 0.6 55.8 2.0 10 120.0 12.5 0.6 50.9 2.0 0.0% 120.0 12.2 0.6 2.1 0.0% Average: 52.0 NEB T on MD 201 - Lane ID 320 120.0 16.7 0.8 67.6 3.0 0.0% 1 2 120.0 15.6 0.8 71.2 3.0 0.0% 120.0 0.7 64.1 0.0% 3 16.1 3.0 4 120.0 0.8 69.2 3.0 0.0% 16.7

NODF: 32

I OF /AOF NIR OFE PANAD 8. MAD 201

| I-95/495 NB OFF-RAMP & MD 201 NODE: 57 | | | | | | | |
|--|----------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | |
| NEB T on M | VID 201 - Lane ID 32 | 20 | | | | | |
| 5 | 120.0 | 16.0 | 0.7 | 68.1 | 3.0 | 0.0% | |
| 6 | 120.0 | 15.6 | 0.8 | 75.3 | 3.0 | 0.0% | |
| 7 | 120.0 | 16.1 | 0.7 | 67.6 | 3.0 | 0.0% | |
| 8 | 120.0 | 14.8 | 0.7 | 67.6 | 3.0 | 0.0% | |
| 9 | 120.0 | 16.6 | 0.8 | 75.0 | 3.0 | 0.0% | |
| 10 | 120.0 | 15.2 | 0.7 | 66.9 | 3.0 | 0.0% | |
| Average: | 120.0 | 15.9 | 0.8 | 69.3 | 3.0 | 0.0% | |
| NWB L on | I-95/495 NB off-rai | mp - Lane ID 321 | | | | | |
| 1 | 120.0 | 15.4 | 0.7 | 68.6 | 3.0 | 0.0% | |
| 2 | 120.0 | 17.4 | 0.8 | 72.5 | 3.0 | 0.0% | |
| 3 | 120.0 | 19.8 | 0.9 | 97.2 | 4.0 | 0.0% | |
| 4 | 120.0 | 19.1 | 0.9 | 76.8 | 4.0 | 0.0% | |
| 5 | 120.0 | 14.9 | 0.7 | 65.8 | 3.0 | 0.0% | |
| 6 | 120.0 | 15.9 | 0.7 | 72.4 | 3.0 | 0.0% | |
| 7 | 120.0 | 17.5 | 0.8 | 74.4 | 3.0 | 0.0% | |
| 8 | 120.0 | 14.5 | 0.7 | 67.6 | 3.0 | 0.0% | |
| 9 | 120.0 | 18.3 | 0.8 | 66.9 | 3.0 | 0.0% | |
| 10 | 120.0 | 18.5 | 0.8 | 77.8 | 3.0 | 0.0% | |
| Average: | 120.0 | 17.1 | 0.8 | 74.0 | 3.2 | 0.0% | |
| NWB L on | I-95/495 NB off-rai | mp - Lane ID 322 | | | | | |
| 1 | 120.0 | 27.7 | 1.2 | 109.1 | 5.0 | 0.0% | |
| 2 | 120.0 | 25.9 | 1.2 | 90.0 | 4.0 | 0.0% | |
| 3 | 120.0 | 28.2 | 1.2 | 105.5 | 4.0 | 0.0% | |
| 4 | 120.0 | 36.6 | 1.6 | 112.9 | 5.0 | 0.0% | |
| 5 | 120.0 | 28.6 | 1.3 | 109.6 | 5.0 | 0.0% | |
| 6 | 120.0 | 28.3 | 1.2 | 110.1 | 5.0 | 0.0% | |
| 7 | 120.0 | 27.7 | 1.2 | 115.4 | 5.0 | 0.0% | |
| 8 | 120.0 | 27.1 | 1.2 | 93.5 | 4.0 | 0.0% | |
| 9 | 120.0 | 28.0 | 1.3 | 102.9 | 4.0 | 0.0% | |
| 10 | 120.0 | 31.8 | 1.4 | 104.2 | 5.0 | 0.0% | |
| Average: | 120.0 | 29.0 | 1.3 | 105.3 | 4.6 | 0.0% | |
| NWB R on | I-95/495 NB off-ra | mp - Lane ID 323 | | | | | |
| 1 | 120.0 | 51.7 | 2.2 | 211.6 | 9.0 | 0.0% | |
| 2 | 120.0 | 53.6 | 2.3 | 175.5 | 7.0 | 0.0% | |
| 3 | 120.0 | 76.7 | 3.2 | 308.6 | 12.1 | 2.5% | |
| 4 | 120.0 | 61.1 | 2.6 | 194.1 | 8.0 | 0.0% | |
| 5 | 120.0 | 53.5 | 2.2 | 195.5 | 8.0 | 0.8% | |
| 6 | 120.0 | 48.9 | 2.1 | 194.6 | 8.0 | 0.0% | |
| 7 | 120.0 | 51.0 | 2.2 | 197.9 | 9.0 | 0.0% | |
| 8 | 120.0 | 73.9 | 3.1 | 256.2 | 11.0 | 3.3% | |
| 9 | 120.0 | 72.3 | 3.0 | 275.9 | 11.1 | 0.8% | |

I OF /AOF NIR OFE PANAD 8. MAD 201

| I-95/495 NB OFF-RAMP & MD 201 NODE: 57 | | | | | | | | |
|--|--------------------|------------------|--------------|-----------------|-----------------|-----------|--|--|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback | | |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) | | |
| NWB R on | I-95/495 NB off-ra | mp - Lane ID 323 | | | | | | |
| 10 | 120.0 | 60.4 | 2.6 | 211.1 | 9.0 | 0.0% | | |
| Average: | 120.0 | 60.3 | 2.6 | 222.1 | 9.2 | 0.7% | | |
| NWB R on | I-95/495 NB off-ra | mp - Lane ID 324 | | | | | | |
| 1 | 120.0 | 50.8 | 2.1 | 203.7 | 8.0 | 0.0% | | |
| 2 | 120.0 | 50.2 | 2.2 | 169.1 | 7.0 | 0.0% | | |
| 3 | 120.0 | 79.5 | 3.2 | 464.3 | 17.0 | 5.0% | | |
| 4 | 120.0 | 58.6 | 2.5 | 224.3 | 9.0 | 0.0% | | |
| 5 | 120.0 | 49.9 | 2.1 | 179.6 | 7.0 | 0.0% | | |
| 6 | 120.0 | 49.8 | 2.1 | 191.4 | 8.0 | 0.0% | | |
| 7 | 120.0 | 50.2 | 2.1 | 185.1 | 8.0 | 0.0% | | |
| 8 | 120.0 | 75.1 | 3.1 | 372.4 | 13.0 | 2.5% | | |
| 9 | 120.0 | 78.1 | 3.2 | 292.5 | 12.0 | 2.5% | | |
| 10 | 120.0 | 63.3 | 2.7 | 226.4 | 9.0 | 0.0% | | |
| Average: | 120.0 | 60.6 | 2.5 | 250.9 | 9.8 | 1.0% | | |
| SWB T on | MD 201 - Lane ID 3 | 326 | | | | | | |
| 1 | 120.0 | 15.7 | 0.8 | 61.7 | 3.0 | 0.0% | | |
| 2 | 120.0 | 16.2 | 0.7 | 67.4 | 3.0 | 0.0% | | |
| 3 | 120.0 | 13.5 | 0.7 | 50.1 | 2.0 | 0.0% | | |
| 4 | 120.0 | 14.7 | 0.7 | 62.5 | 3.0 | 0.0% | | |
| 5 | 120.0 | 14.1 | 0.7 | 56.4 | 2.0 | 0.0% | | |
| 6 | 120.0 | 15.5 | 0.8 | 58.0 | 3.0 | 0.0% | | |
| 7 | 120.0 | 15.9 | 0.7 | 73.0 | 3.0 | 0.0% | | |
| 8 | 120.0 | 14.6 | 0.7 | 65.4 | 3.0 | 0.0% | | |
| 9 | 120.0 | 15.3 | 0.7 | 59.2 | 3.0 | 0.0% | | |
| 10 | 120.0 | 14.4 | 0.7 | 57.1 | 3.0 | 0.0% | | |
| Average: | 120.0 | 15.0 | 0.7 | 61.1 | 2.8 | 0.0% | | |
| SWB T on | MD 201 - Lane ID 3 | 27 | | | | | | |
| 1 | 120.0 | 11.2 | 0.6 | 43.5 | 2.0 | 0.0% | | |
| 2 | 120.0 | 13.1 | 0.6 | 63.1 | 3.0 | 0.0% | | |
| 3 | 120.0 | 12.4 | 0.6 | 63.1 | 3.0 | 0.0% | | |
| 4 | 120.0 | 11.8 | 0.6 | 55.5 | 2.0 | 0.0% | | |
| 5 | 120.0 | 10.7 | 0.5 | 63.9 | 3.0 | 0.0% | | |
| 6 | 120.0 | 9.5 | 0.4 | 46.3 | 2.0 | 0.0% | | |
| 7 | 120.0 | 13.1 | 0.6 | 64.2 | 3.0 | 0.0% | | |
| 8 | 120.0 | 10.2 | 0.5 | 45.7 | 2.0 | 0.0% | | |
| 9 | 120.0 | 11.2 | 0.5 | 49.5 | 2.0 | 0.0% | | |
| 10 | 120.0 | 12.6 | 0.6 | 58.3 | 3.0 | 0.0% | | |
| Average: | 120.0 | 11.6 | 0.6 | 55.3 | 2.5 | 0.0% | | |
| SWB T on | MD 201 - Lane ID 3 | 328 | | | | | | |
| 1 | 120.0 | 20.4 | 1.0 | 87.9 | 4.0 | 0.0% | | |

I-95/495 NB OFF-RAMP & MD 201

| I-95/495 NB OFF-RAMP & MD 201 NODE: 57 | | | | | | | | |
|--|--------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | |
| SWB T on MD 201 - Lane ID 328 | | | | | | | | |
| 2 | 120.0 | 17.2 | 0.8 | 72.6 | 3.0 | 0.0% | | |
| 3 | 120.0 | 16.2 | 0.8 | 71.8 | 3.0 | 0.0% | | |
| 4 | 120.0 | 17.0 | 0.8 | 76.9 | 3.0 | 0.0% | | |
| 5 | 120.0 | 17.9 | 0.8 | 78.2 | 3.0 | 0.0% | | |
| 6 | 120.0 | 16.7 | 0.8 | 68.6 | 3.0 | 0.0% | | |
| 7 | 120.0 | 21.1 | 1.0 | 96.8 | 4.0 | 0.0% | | |
| 8 | 120.0 | 12.9 | 0.6 | 62.0 | 3.0 | 0.0% | | |
| 9 | 120.0 | 17.8 | 0.9 | 71.6 | 3.0 | 0.0% | | |
| 10 | 120.0 | 18.8 | 0.9 | 76.1 | 3.0 | 0.0% | | |
| Average: | 120.0 | 17.6 | 0.8 | 76.3 | 3.2 | 0.0% | | |

I-95/495 SB OFF-RAMP & MD 201

Avg Queue Avg Vehicles 95th Percentile 95th Percentile Spillback Queued Rate (%) Run **Observations** Length (ft) Length (ft) Num Queued NEB T on MD 201 - Lane ID 374 120.0 2.0 0.1 17.9 1.0 0.0% 1 120.0 2.8 0.1 0.0% 2 18.6 1.0 3 120.0 3.3 0.2 20.5 1.0 0.0% 4 120.0 2.3 0.1 17.7 1.0 0.0% 5 120.0 3.5 0.2 38.6 2.0 0.0% 0.0% 6 120.0 3.6 0.2 19.7 1.0 7 120.0 2.6 0.1 17.9 1.0 0.0% 120.0 0.1 0.0% 8 2.2 16.7 1.0 9 120.0 2.3 0.1 17.9 1.0 0.0% 10 120.0 3.4 0.2 25.3 1.0 0.0% Average: 120.0 2.8 0.1 21.1 1.1 0.0% NEB T on MD 201 - Lane ID 375 1 120.0 4.4 0.2 23.7 1.0 0.0% 19.7 0.0% 120.0 2 3.1 0.1 1.0 3 120.0 3.0 0.1 18.0 1.0 0.0% 4 120.0 3.2 0.1 21.0 1.0 0.0% 5 120.0 3.4 0.2 20.1 1.0 0.0% 0.0% 6 120.0 4.2 0.2 27.2 1.0 7 120.0 3.5 0.1 28.5 1.0 0.0% 8 120.0 1.8 0.1 15.8 1.0 0.0% 9 120.0 2.2 0.1 18.5 1.0 0.0% 120.0 0.2 2.0 0.0% 10 5.4 43.8 Average: 120.0 3.4 0.1 23.6 1.1 0.0%

| NEB T on | MD 201 - Lane ID 37 | 76 | | | | |
|----------|---------------------|-----|-----|------|-----|------|
| 1 | 120.0 | 5.5 | 0.3 | 40.0 | 2.0 | 0.0% |
| 2 | 120.0 | 5.1 | 0.2 | 45.5 | 2.0 | 0.0% |
| 3 | 120.0 | 6.6 | 0.3 | 46.4 | 2.0 | 0.0% |

TransModeler Transportation Impact Study

1-95/495 SB OFF-RAMP & MD 201

| I-95/495 SB OFF-RAMP & MD 201 NODE: 67 | | | | | | | | |
|--|---------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | |
| NEB T on M | VD 201 - Lane ID 37 | 6 | | | | | | |
| 4 | 120.0 | 6.3 | 0.3 | 44.4 | 2.0 | 0.0% | | |
| 5 | 120.0 | 4.9 | 0.2 | 40.0 | 2.0 | 0.0% | | |
| 6 | 120.0 | 6.8 | 0.3 | 57.7 | 3.0 | 0.0% | | |
| 7 | 120.0 | 5.5 | 0.2 | 45.3 | 2.0 | 0.0% | | |
| 8 | 120.0 | 6.1 | 0.3 | 44.8 | 2.0 | 0.0% | | |
| 9 | 120.0 | 7.0 | 0.3 | 62.9 | 3.0 | 0.0% | | |
| 10 | 120.0 | 6.8 | 0.3 | 58.9 | 2.0 | 0.0% | | |
| Average: | 120.0 | 6.1 | 0.3 | 48.6 | 2.2 | 0.0% | | |
| SEB L on [l | Unnamed Street] - L | ane ID 392 | | | | | | |
| 1 | 120.0 | 16.2 | 0.8 | 69.2 | 3.0 | 0.0% | | |
| 2 | 120.0 | 16.6 | 0.8 | 69.0 | 3.0 | 0.0% | | |
| 3 | 120.0 | 15.6 | 0.7 | 69.9 | 3.0 | 0.0% | | |
| 4 | 120.0 | 17.9 | 0.9 | 69.3 | 3.0 | 0.0% | | |
| 5 | 120.0 | 22.6 | 1.1 | 80.0 | 4.0 | 0.0% | | |
| 6 | 120.0 | 16.2 | 0.8 | 68.9 | 3.0 | 0.0% | | |
| 7 | 120.0 | 19.3 | 0.9 | 71.8 | 3.0 | 0.0% | | |
| 8 | 120.0 | 19.6 | 1.0 | 72.5 | 3.0 | 0.0% | | |
| 9 | 120.0 | 16.7 | 0.8 | 60.0 | 3.0 | 0.0% | | |
| 10 | 120.0 | 15.9 | 0.8 | 68.9 | 3.0 | 0.0% | | |
| Average: | 120.0 | 17.7 | 0.9 | 70.0 | 3.1 | 0.0% | | |
| SEB L on [l | Unnamed Street] - L | ane ID 393 | | | | | | |
| 1 | 120.0 | 32.2 | 1.5 | 108.3 | 5.0 | 0.0% | | |
| 2 | 120.0 | 31.5 | 1.5 | 83.1 | 4.0 | 0.0% | | |
| 3 | 120.0 | 32.6 | 1.5 | 90.7 | 4.0 | 0.0% | | |
| 4 | 120.0 | 30.8 | 1.4 | 96.2 | 4.0 | 0.0% | | |
| 5 | 120.0 | 32.6 | 1.5 | 104.9 | 5.0 | 0.0% | | |
| 6 | 120.0 | 30.7 | 1.5 | 93.8 | 4.0 | 0.0% | | |
| 7 | 120.0 | 31.1 | 1.5 | 100.0 | 4.0 | 0.0% | | |
| 8 | 120.0 | 31.1 | 1.4 | 94.2 | 4.0 | 0.0% | | |
| 9 | 120.0 | 30.5 | 1.4 | 100.3 | 4.0 | 0.0% | | |
| 10 | 120.0 | 28.3 | 1.4 | 86.4 | 4.0 | 0.0% | | |
| Average: | 120.0 | 31.1 | 1.5 | 95.8 | 4.2 | 0.0% | | |
| SWB T on | MD 201 - Lane ID 38 | 81 | | | | | | |
| 1 | 120.0 | 1.9 | 0.1 | 17.4 | 1.0 | 0.0% | | |
| 2 | 120.0 | 2.0 | 0.1 | 17.3 | 1.0 | 0.0% | | |
| 3 | 120.0 | 6.0 | 0.3 | 43.3 | 2.0 | 0.0% | | |
| 4 | 120.0 | 3.4 | 0.2 | 36.0 | 2.0 | 0.0% | | |
| 5 | 120.0 | 2.2 | 0.1 | 16.1 | 1.0 | 0.0% | | |
| 6 | 120.0 | 2.3 | 0.1 | 18.5 | 1.0 | 0.0% | | |
| 7 | 120.0 | 1.4 | 0.1 | 0.8 | 0.0 | 0.0% | | |
| 8 | 120.0 | 2.4 | 0.1 | 16.0 | 1.0 | 0.0% | | |

I-95/495 SB OFF-RAMP & MD 201

| 1-95/495 | -95/495 SB OFF-RAMP & MD 201 NODE: 67 | | | | | | | | |
|----------|---------------------------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | | |
| SWB T on | MD 201 - Lane ID 3 | 81 | | | | | | | |
| 9 | 120.0 | 1.4 | 0.1 | 17.6 | 1.0 | 0.0% | | | |
| 10 | 120.0 | 3.8 | 0.2 | 39.0 | 2.0 | 0.0% | | | |
| Average: | 120.0 | 2.7 | 0.1 | 22.2 | 1.2 | 0.0% | | | |
| SWB T on | MD 201 - Lane ID 3 | 82 | | | | | | | |
| 1 | 120.0 | 2.9 | 0.1 | 16.1 | 1.0 | 0.0% | | | |
| 2 | 120.0 | 3.6 | 0.2 | 18.3 | 1.0 | 0.0% | | | |
| 3 | 120.0 | 3.2 | 0.2 | 18.9 | 1.0 | 0.0% | | | |
| 4 | 120.0 | 3.0 | 0.1 | 18.7 | 1.0 | 0.0% | | | |
| 5 | 120.0 | 2.5 | 0.1 | 15.6 | 1.0 | 0.0% | | | |
| 6 | 120.0 | 2.9 | 0.1 | 19.8 | 1.0 | 0.0% | | | |
| 7 | 120.0 | 2.3 | 0.1 | 19.1 | 1.0 | 0.0% | | | |
| 8 | 120.0 | 3.3 | 0.2 | 36.7 | 2.0 | 0.0% | | | |
| 9 | 120.0 | 2.4 | 0.1 | 17.5 | 1.0 | 0.0% | | | |
| 10 | 120.0 | 4.3 | 0.2 | 42.1 | 2.0 | 0.0% | | | |
| Average: | 120.0 | 3.0 | 0.1 | 22.3 | 1.2 | 0.0% | | | |

MD 201 & CHERRYWOOD LANE

| Run | Observations | Avg Queue Length (ft <u>)</u> | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | |
|--|-------------------|----------------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|
| NEB L on Cherrywood Lane - Lane ID 237 | | | | | | | | |
| 1 | 120.0 | 41.8 | 1.8 | 108.1 | 5.0 | 0.0% | | |
| 2 | 120.0 | 40.5 | 1.9 | 96.9 | 5.0 | 0.0% | | |
| 3 | 120.0 | 40.6 | 1.8 | 104.6 | 4.0 | 0.0% | | |
| 4 | 120.0 | 38.7 | 1.8 | 103.1 | 4.0 | 0.0% | | |
| 5 | 120.0 | 39.8 | 1.7 | 107.2 | 4.0 | 0.0% | | |
| 6 | 120.0 | 37.5 | 1.7 | 101.4 | 4.0 | 0.0% | | |
| 7 | 120.0 | 44.0 | 2.0 | 114.9 | 5.0 | 0.0% | | |
| 8 | 120.0 | 35.8 | 1.6 | 91.6 | 4.0 | 0.0% | | |
| 9 | 120.0 | 38.7 | 1.8 | 93.8 | 4.0 | 0.0% | | |
| 10 | 120.0 | 43.0 | 2.0 | 105.2 | 5.0 | 0.0% | | |
| Average: | 120.0 | 40.0 | 1.8 | 102.7 | 4.4 | 0.0% | | |
| NEB L on (| Cherrywood Lane - | Lane ID 238 | | | | | | |
| 1 | 120.0 | 37.1 | 1.7 | 95.0 | 4.0 | 0.0% | | |
| 2 | 120.0 | 36.7 | 1.7 | 97.4 | 4.0 | 0.0% | | |
| 3 | 120.0 | 41.1 | 1.9 | 110.1 | 5.0 | 0.0% | | |
| 4 | 120.0 | 35.8 | 1.6 | 97.6 | 4.0 | 0.0% | | |
| 5 | 120.0 | 40.1 | 1.9 | 101.1 | 4.0 | 0.0% | | |
| 6 | 120.0 | 37.7 | 1.7 | 96.5 | 4.0 | 0.0% | | |
| 7 | 120.0 | 37.1 | 1.7 | 95.2 | 4.0 | 0.0% | | |
| 8 | 120.0 | 36.5 | 1.7 | 95.2 | 4.0 | 0.0% | | |

120.0

120.0

33.4

40.0

9

10

91.0

98.5

1.6

1.8

0.0%

0.0%

4.0

4.0

MD 201 & CHERRYWOOD LANE

| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | | |
|--|--------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|--|
| NEB L on Cherrywood Lane - Lane ID 238 | | | | | | | | | |
| Average: | 120.0 | 37.6 | 1.7 | 97.8 | 4.1 | 0.0% | | | |
| | | | | | | | | | |
| NEB R on C | herrywood Lane - | Lane ID 239 | 0.0 | 0.0 | 0.0 | 0.0% | | | |
| 1 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% | | | |
| 2 | 120.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0% | | | |
| 5 | 120.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0% | | | |
| 4 | 120.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0% | | | |
| 5 | 120.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0% | | | |
| 0 | 120.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0% | | | |
| / | 120.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0% | | | |
| 8 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% | | | |
| 9 | 120.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0% | | | |
| 10 | 120.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0% | | | |
| Average: | 120.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0% | | | |
| NWB L on I | MD 201 - Lane ID 3 | 230 | | | | | | | |
| 1 | 120.0 | 59.2 | 2.6 | 139.8 | 6.0 | 0.0% | | | |
| 2 | 120.0 | 60.0 | 2.6 | 147.1 | 6.0 | 0.0% | | | |
| 3 | 120.0 | 54.9 | 2.5 | 141.0 | 6.0 | 0.0% | | | |
| 4 | 120.0 | 64.9 | 2.8 | 161.2 | 7.0 | 0.0% | | | |
| 5 | 120.0 | 49.8 | 2.2 | 128.4 | 5.0 | 0.0% | | | |
| 6 | 120.0 | 69.9 | 3.1 | 199.7 | 9.0 | 0.0% | | | |
| 7 | 120.0 | 56.4 | 2.5 | 136.1 | 6.0 | 0.0% | | | |
| 8 | 120.0 | 54.0 | 2.4 | 127.4 | 5.0 | 0.0% | | | |
| 9 | 120.0 | 62.7 | 2.7 | 193.8 | 8.0 | 0.0% | | | |
| 10 | 120.0 | 71.9 | 3.1 | 172.3 | 7.0 | 0.0% | | | |
| Average: | 120.0 | 60.4 | 2.7 | 154.7 | 6.5 | 0.0% | | | |
| | | | | | | | | | |
| NWB T on I | MD 201 - Lane ID | 231 | | | | | | | |
| 1 | 120.0 | 20.4 | 0.9 | 121.8 | 5.2 | 0.0% | | | |
| 2 | 120.0 | 72.6 | 2.8 | 524.3 | 19.0 | 0.0% | | | |
| 3 | 120.0 | 46.7 | 1.8 | 382.6 | 15.0 | 0.0% | | | |
| 4 | 120.0 | 48.0 | 1.9 | 443.0 | 16.0 | 0.0% | | | |
| 5 | 120.0 | 53.3 | 2.1 | 433.9 | 17.0 | 0.0% | | | |
| 6 | 120.0 | 66.3 | 2.6 | 444.9 | 17.1 | 0.0% | | | |
| 7 | 120.0 | 39.6 | 1.6 | 348.7 | 13.0 | 0.0% | | | |
| 8 | 120.0 | 28.8 | 1.1 | 251.5 | 9.1 | 0.0% | | | |
| 9 | 120.0 | 39.2 | 1.5 | 369.1 | 14.1 | 0.0% | | | |
| 10 | 120.0 | 35.9 | 1.5 | 254.3 | 11.1 | 0.0% | | | |
| Average: | 120.0 | 45.1 | 1.8 | 357.4 | 13.7 | 0.0% | | | |
| | | | | | | | | | |
| NWB T on I | MD 201 - Lane ID | 232 | 1.2 | 204.0 | 0.4 | 0.0% | | | |
| 1 | 120.0 | 29.0 | 1.2 | 204.0 | δ.1 21.0 | 0.0% | | | |
| 2 | 120.0 | 10.9 | 5.0 | 200.0 | ZT.0 | 0.070 | | | |

MD 201 & CHERRYWOOD LANE

| MD 201 & CHERRYWOOD LANE NODE: 4 | | | | | | | |
|----------------------------------|----------------------|-------------|--------------|-----------------|-----------------|-----------|--|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback | |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) | |
| NWB T on | MD 201 - Lane ID 2 | 232 | | | | | |
| 3 | 120.0 | 35.0 | 1.5 | 259.0 | 11.0 | 0.0% | |
| 4 | 120.0 | 52.6 | 2.1 | 454.2 | 16.1 | 0.0% | |
| 5 | 120.0 | 48.4 | 1.9 | 438.8 | 17.0 | 0.0% | |
| 6 | 120.0 | 66.4 | 2.5 | 424.8 | 16.0 | 0.8% | |
| 7 | 120.0 | 44.3 | 1.8 | 416.5 | 16.0 | 0.0% | |
| 8 | 120.0 | 26.0 | 1.0 | 110.9 | 5.3 | 0.0% | |
| 9 | 120.0 | 44.1 | 1.8 | 368.4 | 14.0 | 0.0% | |
| 10 | 120.0 | 55.1 | 2.1 | 354.3 | 14.1 | 0.0% | |
| Average: | 120.0 | 47.8 | 1.9 | 362.0 | 13.9 | 0.1% | |
| | | | | | | | |
| SEB R on N | /ID 201 - Lane ID 25 | 50 | | | | | |
| 1 | 120.0 | 7.7 | 0.4 | 50.6 | 2.0 | 0.0% | |
| 2 | 120.0 | 8.1 | 0.4 | 45.9 | 2.0 | 0.0% | |
| 3 | 120.0 | 5.4 | 0.3 | 42.6 | 2.0 | 0.0% | |
| 4 | 120.0 | 9.5 | 0.5 | 68.2 | 3.0 | 0.0% | |
| 5 | 120.0 | 12.0 | 0.5 | 78.0 | 3.0 | 0.0% | |
| 6 | 120.0 | 6.2 | 0.3 | 41.9 | 2.0 | 0.0% | |
| 7 | 120.0 | 4.5 | 0.2 | 24.4 | 1.0 | 0.0% | |
| 8 | 120.0 | 8.4 | 0.4 | 57.4 | 3.0 | 0.0% | |
| 9 | 120.0 | 8.6 | 0.4 | 56.5 | 2.0 | 0.0% | |
| 10 | 120.0 | 6.0 | 0.3 | 46.9 | 2.0 | 0.0% | |
| Average: | 120.0 | 7.6 | 0.4 | 51.2 | 2.2 | 0.0% | |
| | | | | | | | |
| SEB T on N | 1D 201 - Lane ID 23 | 85 | | | | | |
| 1 | 120.0 | 41.5 | 1.7 | 183.9 | 8.0 | 0.0% | |
| 2 | 120.0 | 47.2 | 2.0 | 215.8 | 8.0 | 0.0% | |
| 3 | 120.0 | 37.8 | 1.6 | 181.7 | 7.0 | 0.0% | |
| 4 | 120.0 | 45.7 | 2.0 | 183.3 | 8.0 | 0.0% | |
| 5 | 120.0 | 41.2 | 1.7 | 214.0 | 8.0 | 0.0% | |
| 6 | 120.0 | 36.6 | 1.5 | 180.3 | 7.0 | 0.0% | |
| 7 | 120.0 | 35.6 | 1.5 | 177.1 | 7.0 | 0.0% | |
| 8 | 120.0 | 39.0 | 1.6 | 179.2 | 7.0 | 0.0% | |
| 9 | 120.0 | 54.8 | 2.3 | 231.2 | 9.0 | 0.0% | |
| 10 | 120.0 | 37.7 | 1.6 | 181.0 | 7.0 | 0.0% | |
| Average: | 120.0 | 41.7 | 1.8 | 192.8 | 7.6 | 0.0% | |
| | | | | | | | |
| SEB T on N | 1D 201 - Lane ID 23 | 86 | | | | | |
| 1 | 120.0 | 39.8 | 1.7 | 172.4 | 7.0 | 0.0% | |
| 2 | 120.0 | 46.2 | 1.9 | 183.3 | 7.0 | 0.0% | |
| 3 | 120.0 | 41.2 | 1.7 | 190.2 | 8.0 | 0.0% | |
| 4 | 120.0 | 50.6 | 2.1 | 193.2 | 8.0 | 0.0% | |
| 5 | 120.0 | 44.4 | 1.8 | 184.2 | 7.0 | 0.0% | |
| 6 | 120.0 | 36.1 | 1.5 | 172.1 | 6.1 | 0.0% | |
| 7 | 120.0 | 37.8 | 1.6 | 188.6 | 8.0 | 0.0% | |

MD 201 & CHERRYWOOD LANE

| MD 201 & CHERRYWOOD LANE NODE: 45 | | | | | | | |
|-----------------------------------|----------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | |
| SEB T on N | /ID 201 - Lane ID 23 | 86 | | | | | |
| 8 | 120.0 | 48.6 | 2.0 | 225.1 | 9.0 | 0.0% | |
| 9 | 120.0 | 48.5 | 2.1 | 213.0 | 8.0 | 0.0% | |
| 10 | 120.0 | 38.4 | 1.6 | 168.8 | 7.0 | 0.0% | |
| Average: | 120.0 | 43.2 | 1.8 | 189.1 | 7.5 | 0.0% | |

MD 201 & IVY LANE

| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft <u>)</u> | 95th Percentile Num Queued | Spillback Rate (%) |
|-----------|---------------------|--------------------------|------------------------|--|-------------------------------|-----------------------|
| SB T on M | D 201 - Lane ID 251 | | | | | |
| 1 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 2 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0% |
| 4 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 5 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 6 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 7 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 8 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0% |
| 10 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| Average: | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| SB T on M | D 201 - Lane ID 252 | | | | | |
| 1 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 2 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0% |
| 4 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% |
| 5 | 120.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0% |
| 6 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% |
| 7 | 120.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0% |
| 8 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0% |
| 10 | 120.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0% |
| Average: | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% |

MD 201. MARYLAND SHA DRIVEWAY & CRESCENT STREET

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | | | |
|---|--------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | |
| NEB L on MD 201 - Lane ID 311 | | | | | | | | |
| 1 | 120.0 | 12.8 | 0.6 | 45.7 | 2.0 | 0.0% | | |
| 2 | 120.0 | 10.9 | 0.5 | 42.3 | 2.0 | 0.0% | | |
| 3 | 120.0 | 12.1 | 0.6 | 51.6 | 3.0 | 0.0% | | |
| 4 | 120.0 | 11.2 | 0.6 | 41.8 | 2.0 | 0.0% | | |
| 5 | 120.0 | 12.9 | 0.6 | 40.5 | 2.0 | 0.0% | | |
| 6 | 120.0 | 12.3 | 0.7 | 49.7 | 2.0 | 0.0% | | |

MD 201. MARYLAND SHA DRIVEWAY & CRESCENT STREET

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | NODE: 52 | |
|---|---------------------|-------------|--------------|-----------------|-----------------|-----------|--|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback | |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) | |
| NEB L on I | MD 201 - Lane ID 31 | .1 | | | | | |
| 7 | 120.0 | 12.0 | 0.6 | 42.0 | 2.0 | 0.0% | |
| 8 | 120.0 | 10.5 | 0.5 | 38.3 | 2.0 | 0.0% | |
| 9 | 120.0 | 12.4 | 0.6 | 43.6 | 2.0 | 0.0% | |
| 10 | 120.0 | 11.2 | 0.6 | 37.6 | 2.0 | 0.0% | |
| Average: | 120.0 | 11.8 | 0.6 | 43.3 | 2.1 | 0.0% | |
| NFB R on | MD 201 - Lane ID 33 | 22 | | | | | |
| 1 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 2 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 3 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 4 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 5 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 6 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 7 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 8 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 9 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 10 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| Average: | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| Average. | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.070 | |
| | MD 201 Jana ID 20 | 7 | | | | | |
| | 120.0 | 10 | 0 1 | 0.8 | 0.0 | 0.0% | |
| 2 | 120.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 2 | 120.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 3 | 120.0 | 1.2 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 4 | 120.0 | 1.5 | 0.1 | 17.1 | 1.0 | 0.0% | |
| 5 | 120.0 | 2.3 | 0.1 | 17.1 | 1.0 | 0.0% | |
| 7 | 120.0 | 1.0 | 0.1 | 0.0 | 0.0 | 0.0% | |
| 7 | 120.0 | 1.5 | 0.1 | 17.1 | 1.0 | 0.0% | |
| 0 | 120.0 | 1.0 | 0.1 | 17.6 | 1.0 | 0.0% | |
| 9 | 120.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 10 | 120.0 | 1.3 | 0.1 | 12.2 | 1.0 | 0.0% | |
| Average: | 120.0 | 1.3 | 0.1 | 6.6 | 0.4 | 0.0% | |
| | | - | | | | | |
| NEB T on | MD 201 - Lane ID 29 | 10.6 | 0.5 | | 2.0 | 0.00/ | |
| 1 | 120.0 | 10.6 | 0.5 | 44.3 | 2.0 | 0.0% | |
| 2 | 120.0 | 12.4 | 0.6 | 50.9 | 2.1 | 0.0% | |
| 3 | 120.0 | 12.5 | 0.6 | 82.6 | 3.0 | 0.0% | |
| 4 | 120.0 | 12.8 | 0.5 | 95.5 | 4.0 | 0.0% | |
| 5 | 120.0 | 11.4 | 0.5 | 51.2 | 2.0 | 0.0% | |
| 6 | 120.0 | 11.3 | 0.5 | 60.6 | 3.0 | 0.0% | |
| 7 | 120.0 | 7.0 | 0.3 | 47.0 | 2.0 | 0.0% | |
| 8 | 120.0 | 14.2 | 0.6 | 97.8 | 4.0 | 0.0% | |
| 9 | 120.0 | 8.7 | 0.4 | 63.5 | 2.0 | 0.0% | |
| 10 | 120.0 | 12.2 | 0.5 | 92.3 | 4.0 | 0.0% | |
| Average: | 120.0 | 11.3 | 0.5 | 68.6 | 2.8 | 0.0% | |

MD 201. MARYLAND SHA DRIVEWAY & CRESCENT STREET

| MD 201 | MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | |
|-----------|---|---------------------|--------------|-----------------|-----------------|-----------|--|
| Dura | Ohaamatiana | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback | |
| Kun | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) | |
| NED I UN | IVID 201 - Lane ID 25 | 70 | | | | | |
| NEB T on | MD 201 - Lane ID 29 | 99 | | | | | |
| 1 | 120.0 | 13.5 | 0.6 | 123.8 | 5.0 | 0.0% | |
| 2 | 120.0 | 10.0 | 0.5 | 56.6 | 2.0 | 0.0% | |
| 3 | 120.0 | 9.9 | 0.5 | 59.0 | 3.0 | 0.0% | |
| 4 | 120.0 | 10.8 | 0.4 | 94.0 | 4.0 | 0.0% | |
| 5 | 120.0 | 13.2 | 0.6 | 83.2 | 4.0 | 0.0% | |
| 6 | 120.0 | 11.7 | 0.5 | 77.6 | 3.0 | 0.0% | |
| 7 | 120.0 | 7.0 | 0.3 | 47.6 | 2.0 | 0.0% | |
| 8 | 120.0 | 10.7 | 0.5 | 46.1 | 2.1 | 0.0% | |
| 9 | 120.0 | 9.1 | 0.4 | 61.8 | 3.0 | 0.0% | |
| 10 | 120.0 | 14.5 | 0.6 | 98.7 | 4.0 | 0.0% | |
| Average: | 120.0 | 11.0 | 0.5 | 74.8 | 3.2 | 0.0% | |
| NWB LT o | n Crescent Street - I | Lane ID 283 | | | | | |
| 1 | 120.0 | 10.4 | 0.6 | 20.9 | 1.0 | 57.5% | |
| 2 | 120.0 | 12.1 | 0.6 | 30.7 | 1.0 | 62.5% | |
| 3 | 120.0 | 12.9 | 0.7 | 33.9 | 2.0 | 64.2% | |
| 4 | 120.0 | 12.9 | 0.7 | 28.1 | 1.0 | 67.5% | |
| 5 | 120.0 | 12.1 | 0.7 | 29.1 | 1.0 | 63.3% | |
| 6 | 120.0 | 10.2 | 0.6 | 23.2 | 1.0 | 55.0% | |
| 7 | 120.0 | 12.3 | 0.7 | 34.1 | 1.0 | 60.8% | |
| 8 | 120.0 | 12.9 | 0.7 | 32.7 | 1.0 | 63.3% | |
| 9 | 120.0 | 11.2 | 0.6 | 27.0 | 1.0 | 59.2% | |
| 10 | 120.0 | 12.0 | 0.7 | 33.2 | 2.0 | 60.8% | |
| Average: | 120.0 | 11.9 | 0.7 | 29.3 | 1.2 | 61.4% | |
| | | | | | | | |
| NWB R or | n Crescent Street - L | ane ID 284 | | 10.0 | | | |
| 1 | 120.0 | 3.3 | 0.2 | 18.0 | 1.0 | 18.3% | |
| 2 | 120.0 | 3.2 | 0.2 | 18.2 | 1.0 | 16.7% | |
| 3 | 120.0 | 3.7 | 0.2 | 19.1 | 1.0 | 20.0% | |
| 4 | 120.0 | 4.0 | 0.2 | 19.2 | 1.0 | 22.5% | |
| 5 | 120.0 | 3.7 | 0.2 | 19.6 | 1.0 | 20.0% | |
| 6 | 120.0 | 3.3 | 0.2 | 25.3 | 1.0 | 15.0% | |
| 7 | 120.0 | 3.6 | 0.2 | 18.4 | 1.0 | 20.0% | |
| 8 | 120.0 | 3.6 | 0.2 | 18.2 | 1.0 | 20.8% | |
| 9 | 120.0 | 3.7 | 0.2 | 19.3 | 1.0 | 19.2% | |
| 10 | 120.0 | 3.2 | 0.2 | 17.2 | 1.0 | 18.3% | |
| Average: | 120.0 | 3.5 | 0.2 | 19.3 | 1.0 | 19.1% | |
| SEB LTR o | n Marvland SHA Dri | iveway - Lane ID 29 | 31 | | | | |
| 1 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 2 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 3 | 120.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 4 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% | |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET NODE: | | | | | | |
|---|--------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
| SEB LTR or | Maryland SHA Dr | iveway - Lane ID 28 | 1 | | | |
| 5 | 120.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0% |
| 6 | 120.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0% |
| 7 | 120.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0% |
| 8 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% |
| 10 | 120.0 | 1.1 | 0.1 | 16.2 | 1.0 | 0.0% |
| Average: | 120.0 | 0.3 | 0.0 | 1.6 | 0.1 | 0.0% |
| SWB L on I | MD 201 - Lane ID 3 | 42 | | | | |
| 1 | 120.0 | 8.4 | 0.4 | 40.6 | 2.0 | 0.0% |
| 2 | 120.0 | 9.5 | 0.5 | 39.0 | 2.0 | 0.0% |
| 3 | 120.0 | 8.0 | 0.4 | 38.9 | 2.0 | 0.0% |
| 4 | 120.0 | 8.1 | 0.4 | 35.9 | 2.0 | 0.0% |
| 5 | 120.0 | 8.1 | 0.4 | 41.2 | 2.0 | 0.0% |
| 6 | 120.0 | 9.9 | 0.5 | 41.3 | 2.0 | 0.0% |
| 7 | 120.0 | 7.5 | 0.4 | 38.9 | 2.0 | 0.0% |
| 8 | 120.0 | 8.9 | 0.5 | 42.8 | 2.0 | 0.0% |
| 9 | 120.0 | 8.7 | 0.5 | 39.4 | 2.0 | 0.0% |
| 10 | 120.0 | 9.8 | 0.5 | 49.1 | 2.0 | 0.0% |
| Average: | 120.0 | 8.7 | 0.5 | 40.7 | 2.0 | 0.0% |
| SWB T on I | MD 201 - Lane ID 3 | 43 | | | | |
| 1 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% |
| 2 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 4 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 5 | 120.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0% |
| 6 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% |
| 7 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% |
| 8 | 120.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0% |
| 10 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| Average: | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% |
| SW/B T on I | MD 201 - Lane ID 3 | 200 | | | | |
| 1 | 120.0 | 1.1 | 0.1 | 15.7 | 1.0 | 0.0% |
| 2 | 120.0 | 1.5 | 0.1 | 17.9 | 1.0 | 0.0% |
| 3 | 120.0 | 0.9 | 0.1 | 0.9 | 0.0 | 0.0% |
| 4 | 120.0 | 1.9 | 0.1 | 18.1 | 1.0 | 0.0% |
| 5 | 120.0 | 1.4 | 0.1 | 16.3 | 1.0 | 0.0% |
| 6 | 120.0 | 1.1 | 0.1 | 0.8 | 0.0 | 0.0% |
| 7 | 120.0 | 1.6 | 0.1 | 16.6 | 1.0 | 0.0% |
| 8 | 120.0 | 2.4 | 0.1 | 17.9 | 1.0 | 0.0% |
| 9 | 120.0 | 1.6 | 0.1 | 13.4 | 1.0 | 0.0% |
| | | | | | | |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | |
|---|--------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
| SWB T on | MD 201 - Lane ID 3 | 44 | | | | |
| 10 | 120.0 | 2.0 | 0.1 | 16.8 | 1.0 | 0.0% |
| Average: | 120.0 | 1.6 | 0.1 | 13.4 | 0.8 | 0.0% |
| SWB TR o | n MD 201 - Lane ID | 345 | | | | |
| 1 | 120.0 | 2.4 | 0.1 | 18.5 | 1.0 | 0.0% |
| 2 | 120.0 | 3.4 | 0.2 | 20.3 | 1.0 | 0.0% |
| 3 | 120.0 | 4.2 | 0.2 | 24.3 | 1.0 | 0.0% |
| 4 | 120.0 | 4.0 | 0.2 | 22.0 | 1.0 | 0.0% |
| 5 | 120.0 | 5.0 | 0.2 | 34.5 | 1.0 | 0.0% |
| 6 | 120.0 | 3.7 | 0.2 | 35.5 | 2.0 | 0.0% |
| 7 | 120.0 | 3.9 | 0.2 | 22.6 | 1.0 | 0.0% |
| 8 | 120.0 | 4.3 | 0.2 | 23.9 | 1.0 | 0.0% |
| 9 | 120.0 | 3.1 | 0.1 | 18.7 | 1.0 | 0.0% |
| 10 | 120.0 | 3.0 | 0.2 | 18.1 | 1.0 | 0.0% |
| Average: | 120.0 | 3.7 | 0.2 | 23.8 | 1.1 | 0.0% |

POULTRY ROAD

| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
|------------|-----------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|
| SB T on Po | oultry Road - Lane II | D 109 | | | | |
| 1 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 2 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 4 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 5 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 6 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 7 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 8 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 10 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| Average: | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 1 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 2 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 4 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 5 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 6 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 7 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 8 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 10 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |

120.0

0.0

Average:

0.0

0.0

0.0

0.0%

| POULTRY ROAD NODE: | | | | | | | | |
|------------------------------------|--------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | |
| SB T on Poultry Road - Lane ID 131 | | | | | | | | |
| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | | |
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | |
| NB T on Po | oultry Road - Lane | ID 158 | | | | | | |
| 1 | 120.0 | 211.0 | 7.4 | 545.7 | 19.2 | 0.0% | | |
| 2 | 120.0 | 211.7 | 7.6 | 411.2 | 14.1 | 0.0% | | |
| 3 | 120.0 | 186.6 | 6.7 | 379.2 | 13.0 | 0.0% | | |
| 4 | 120.0 | 201.9 | 7.2 | 355.9 | 13.0 | 0.0% | | |
| 5 | 120.0 | 181.4 | 6.4 | 377.4 | 13.0 | 0.0% | | |
| 6 | 120.0 | 211.1 | 7.5 | 486.1 | 17.0 | 0.0% | | |
| 7 | 120.0 | 179.7 | 6.6 | 348.7 | 13.0 | 0.0% | | |
| 8 | 120.0 | 194.6 | 7.0 | 362.7 | 13.0 | 0.0% | | |
| 9 | 120.0 | 204.9 | 7.2 | 714.3 | 25.1 | 0.0% | | |
| 10 | 120.0 | 186.4 | 6.7 | 356.7 | 13.0 | 0.0% | | |
| Average: | 120.0 | 196.9 | 7.0 | 433.8 | 15.3 | 0.0% | | |
| NB T on Po | oultry Road - Lane | ID 159 | | | | | | |
| 1 | 120.0 | 217.8 | 7.8 | 394.0 | 14.1 | 0.0% | | |
| 2 | 120.0 | 214.4 | 7.6 | 371.4 | 13.0 | 0.0% | | |
| 3 | 120.0 | 204.9 | 7.3 | 377.6 | 14.0 | 0.0% | | |
| 4 | 120.0 | 214.0 | 7.6 | 385.8 | 14.0 | 0.0% | | |
| 5 | 120.0 | 210.1 | 7.5 | 387.3 | 15.0 | 0.0% | | |
| 6 | 120.0 | 260.8 | 9.4 | 645.2 | 22.2 | 0.0% | | |
| 7 | 120.0 | 182.9 | 6.5 | 372.6 | 14.0 | 0.0% | | |
| 8 | 120.0 | 208.1 | 7.5 | 383.1 | 14.0 | 0.0% | | |
| 9 | 120.0 | 200.4 | 7.0 | 434.8 | 15.1 | 0.0% | | |
| 10 | 120.0 | 221.8 | 7.9 | 462.6 | 15.2 | 0.0% | | |
| Average: | 120.0 | 213.5 | 7.6 | 421.4 | 15.1 | 0.0% | | |
| NB T on Po | oultry Road - Lane | ID 212 | | | | | | |
| 1 | 120.0 | 237.8 | 8.6 | 560.1 | 20.0 | 0.0% | | |
| 2 | 120.0 | 236.9 | 8.4 | 693.4 | 23.4 | 0.0% | | |
| 3 | 120.0 | 219.7 | 7.9 | 381.3 | 14.0 | 0.0% | | |
| 4 | 120.0 | 237.1 | 8.3 | 399.8 | 14.7 | 0.0% | | |
| 5 | 120.0 | 217.9 | 7.9 | 483.2 | 17.2 | 0.0% | | |
| 6 | 120.0 | 247.8 | 9.0 | 654.6 | 23.1 | 0.0% | | |
| 7 | 120.0 | 203.5 | 7.3 | 380.9 | 14.0 | 0.0% | | |
| 8 | 120.0 | 222.3 | 7.9 | 482.6 | 18.0 | 0.0% | | |
| 9 | 120.0 | 204.6 | 7.2 | 396.3 | 15.3 | 0.0% | | |
| 10 | 120.0 | 226.5 | 8.0 | 499.4 | 18.2 | 0.0% | | |
| Average: | 120.0 | 225.4 | 8.1 | 493.2 | 17.8 | 0.0% | | |
| NB T on Po | oultry Road - Lane | ID 218 | | | | | | |
| 1 | 120.0 | 194.9 | 7.0 | 368.7 | 13.0 | 0.0% | | |
| | | | | | | | | |
DOWNDED MILL DOAD & EDMONISTON DOAD

| POWDER MILL ROAD & EDMONSTON ROAD NODE: 19 | | | | | | | |
|--|--------------------|-------------|--------------|-----------------|-----------------|-----------|--|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback | |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) | |
| NB T on P | oultry Road - Lane | ID 218 | 7.4 | 270 7 | 12.0 | 0.0% | |
| 2 | 120.0 | 209.0 | 7.4 | 3/8./ | 13.0 | 0.0% | |
| 3 | 120.0 | 190.4 | 6.6 | 3/3.5 | 13.0 | 0.0% | |
| 4 | 120.0 | 193.9 | 6.9 | 374.6 | 13.0 | 0.0% | |
| 5 | 120.0 | 196.4 | 7.1 | 379.1 | 14.0 | 0.0% | |
| 6 | 120.0 | 207.1 | 7.4 | 367.3 | 13.0 | 0.0% | |
| 7 | 120.0 | 171.5 | 6.1 | 365.6 | 13.0 | 0.0% | |
| 8 | 120.0 | 187.8 | 6.8 | 366.6 | 14.0 | 0.0% | |
| 9 | 120.0 | 192.8 | 6.8 | 362.9 | 13.0 | 0.0% | |
| 10 | 120.0 | 189.3 | 6.7 | 366.9 | 13.0 | 0.0% | |
| Average: | 120.0 | 193.3 | 6.9 | 370.4 | 13.2 | 0.0% | |
| NB T on P | oultry Road - Lane | ID 350 | | | | | |
| 1 | 120.0 | 181.8 | 6.4 | 378.1 | 13.0 | 0.0% | |
| 2 | 120.0 | 199.5 | 7.2 | 367.0 | 13.0 | 0.0% | |
| 3 | 120.0 | 191.7 | 6.9 | 355.8 | 13.0 | 0.0% | |
| 4 | 120.0 | 184.5 | 6.6 | 352.1 | 12.0 | 0.0% | |
| 5 | 120.0 | 190.9 | 6.8 | 351.0 | 12.0 | 0.0% | |
| 6 | 120.0 | 203.8 | 7.3 | 362.4 | 13.0 | 0.0% | |
| 7 | 120.0 | 177.7 | 6.4 | 359.1 | 13.0 | 0.0% | |
| 8 | 120.0 | 190.7 | 6.7 | 363.7 | 13.0 | 0.0% | |
| 9 | 120.0 | 159.4 | 5.7 | 357.4 | 13.0 | 0.0% | |
| 10 | 120.0 | 175.7 | 6.4 | 363.9 | 14.0 | 0.0% | |
| Average: | 120.0 | 185.6 | 6.6 | 361.1 | 12.9 | 0.0% | |
| NB T on P | oultry Road - Lane | ID 355 | | | | | |
| 1 | 120.0 | 177.6 | 6.1 | 372.4 | 13.0 | 0.0% | |
| 2 | 120.0 | 192.3 | 6.9 | 367.3 | 13.0 | 0.0% | |
| 3 | 120.0 | 179.5 | 6.4 | 352.0 | 13.0 | 0.0% | |
| 4 | 120.0 | 165.2 | 5.9 | 356.5 | 12.0 | 0.0% | |
| 5 | 120.0 | 180.1 | 6.3 | 340.5 | 12.0 | 0.0% | |
| 6 | 120.0 | 196.9 | 7.1 | 376.0 | 14.0 | 0.0% | |
| 7 | 120.0 | 177.9 | 6.4 | 364.7 | 13.0 | 0.0% | |
| 8 | 120.0 | 177.7 | 6.4 | 365.0 | 13.0 | 0.0% | |
| 9 | 120.0 | 168.5 | 5.9 | 351.7 | 12.0 | 0.0% | |
| 10 | 120.0 | 179.0 | 6.3 | 344.0 | 12.0 | 0.0% | |
| Average: | 120.0 | 179.5 | 6.4 | 359.0 | 12.7 | 0.0% | |
| NB T on P | oultry Road - Lane | ID 406 | | | | | |
| 1 | 120.0 | 161.5 | 5.8 | 339.1 | 13.0 | 0.0% | |
| 2 | 120.0 | 175.3 | 6.1 | 343.7 | 12.0 | 0.0% | |
| 3 | 120.0 | 169.2 | 5.9 | 353.5 | 12.0 | 0.0% | |
| 4 | 120.0 | 160.1 | 5.7 | 329.9 | 12.0 | 0.0% | |
| 5 | 120.0 | 160.2 | 5.6 | 334.6 | 12.0 | 0.0% | |
| 6 | 120.0 | 179.0 | 6.4 | 332.1 | 12.0 | 0.0% | |

DOWNDED MILL DOAD & EDMONISTON DOAD

| POWDER MILL ROAD & EDMONSTON ROAD NODE: 19 | | | | | | | |
|--|--------------------|--------------|--------------|-----------------|-----------------|-----------|--|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback | |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) | |
| NB T on Po | oultry Road - Lane | ID 406 | | | | | |
| 7 | 120.0 | 151.0 | 5.3 | 327.6 | 12.0 | 0.0% | |
| 8 | 120.0 | 146.5 | 5.3 | 320.5 | 12.0 | 0.0% | |
| 9 | 120.0 | 157.9 | 5.7 | 330.8 | 12.0 | 0.0% | |
| 10 | 120.0 | 166.0 | 5.8 | 324.8 | 12.0 | 0.0% | |
| Average: | 120.0 | 162.7 | 5.8 | 333.7 | 12.1 | 0.0% | |
| NEB L on [| Unnamed Street] - | Lane ID 49 | | | | | |
| 1 | 120.0 | 25.6 | 1.1 | 79.6 | 3.0 | 34.2% | |
| 2 | 120.0 | 23.2 | 1.1 | 76.7 | 3.0 | 31.7% | |
| 3 | 120.0 | 22.7 | 1.1 | 75.4 | 3.0 | 30.8% | |
| 4 | 120.0 | 27.1 | 1.2 | 83.8 | 4.0 | 36.7% | |
| 5 | 120.0 | 32.4 | 1.4 | 83.9 | 3.0 | 43.3% | |
| 6 | 120.0 | 27.0 | 1.2 | 83.6 | 4.0 | 35.8% | |
| 7 | 120.0 | 26.5 | 1.2 | 83.5 | 4.0 | 34.2% | |
| 8 | 120.0 | 30.2 | 1.4 | 86.1 | 4.0 | 41.7% | |
| 9 | 120.0 | 23.5 | 1.1 | 81.1 | 4.0 | 30.8% | |
| 10 | 120.0 | 26.6 | 1.3 | 81.0 | 4.0 | 39.2% | |
| Average: | 120.0 | 26.5 | 1.2 | 81.5 | 3.6 | 35.8% | |
| NFR T on [| [Unnamed Street] | - Lane ID 83 | | | | | |
| 1 | 120.0 | 10.9 | 0.5 | 75.7 | 3.0 | 15.0% | |
| 2 | 120.0 | 11.2 | 0.5 | 70.3 | 3.0 | 14.2% | |
| 3 | 120.0 | 12.3 | 0.6 | 70.1 | 3.0 | 17.5% | |
| 4 | 120.0 | 12.6 | 0.5 | 70.7 | 3.0 | 16.7% | |
| 5 | 120.0 | 14.6 | 0.6 | 74.2 | 3.0 | 20.8% | |
| 6 | 120.0 | 15.6 | 0.7 | 80.4 | 3.0 | 22.5% | |
| 7 | 120.0 | 12.4 | 0.6 | 74.0 | 3.0 | 18.3% | |
| 8 | 120.0 | 15.0 | 0.7 | 82.6 | 3.0 | 19.2% | |
| 9 | 120.0 | 10.1 | 0.5 | 62.6 | 3.0 | 11.7% | |
| 10 | 120.0 | 16.3 | 0.7 | 75.0 | 3.0 | 23.3% | |
| Average: | 120.0 | 13.1 | 0.6 | 73.6 | 3.0 | 17.9% | |
| SEB L on P | owder Mill Road - | Lane ID 64 | | | | | |
| 1 | 120.0 | 9.9 | 0.5 | 23.1 | 1.0 | 0.0% | |
| 2 | 120.0 | 10.9 | 0.6 | 45.3 | 2.0 | 0.0% | |
| 3 | 120.0 | 10.3 | 0.6 | 37.9 | 2.0 | 0.0% | |
| 4 | 120.0 | 11.7 | 0.6 | 38.2 | 2.0 | 0.0% | |
| 5 | 120.0 | 9.9 | 0.6 | 34.7 | 2.0 | 0.0% | |
| 6 | 120.0 | 13.4 | 0.7 | 41.5 | 2.0 | 0.0% | |
| 7 | 120.0 | 11.6 | 0.6 | 43.0 | 2.0 | 0.0% | |
| 8 | 120.0 | 12.2 | 0.6 | 40.6 | 2.0 | 0.0% | |
| 9 | 120.0 | 12.8 | 0.7 | 47.2 | 2.0 | 0.0% | |
| 10 | 120.0 | 10.4 | 0.6 | 23.0 | 1.0 | 0.0% | |
| Average: | 120.0 | 11.3 | 0.6 | 37.5 | 1.8 | 0.0% | |

POWDER MILL ROAD & EDMONSTON ROAD

| POWDER MILL ROAD & EDMONSTON ROAD NODE: 19 | | | | | | | |
|--|--------------------|-------------|--------------|-----------------|-----------------|-----------|--|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback | |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) | |
| SEB L on F | Powder Mill Road - | Lane ID 64 | | | | | |
| SEB T on F | Powder Mill Road - | Lane ID 184 | | | | | |
| 1 | 120.0 | 13.6 | 0.7 | 48.9 | 2.0 | 0.0% | |
| 2 | 120.0 | 15.6 | 0.8 | 63.8 | 3.0 | 0.0% | |
| 3 | 120.0 | 13.6 | 0.7 | 59.9 | 2.0 | 0.0% | |
| 4 | 120.0 | 11.9 | 0.6 | 44.9 | 2.0 | 0.0% | |
| 5 | 120.0 | 15.8 | 0.8 | 51.2 | 2.0 | 0.0% | |
| 6 | 120.0 | 12.7 | 0.7 | 46.6 | 2.0 | 0.0% | |
| 7 | 120.0 | 10.7 | 0.5 | 42.7 | 2.0 | 0.0% | |
| 8 | 120.0 | 12.1 | 0.6 | 50.2 | 2.0 | 0.0% | |
| 9 | 120.0 | 14.8 | 0.7 | 64.7 | 3.0 | 0.0% | |
| 10 | 120.0 | 15.1 | 0.7 | 50.9 | 2.0 | 0.0% | |
| Average: | 120.0 | 13.6 | 0.7 | 52.4 | 2.2 | 0.0% | |
| | | | | | | | |
| SEB T on F | Powder Mill Road - | Lane ID 65 | | | | | |
| 1 | 120.0 | 15.9 | 0.8 | 63.2 | 3.0 | 0.0% | |
| 2 | 120.0 | 12.9 | 0.7 | 45.8 | 2.0 | 0.0% | |
| 3 | 120.0 | 14.6 | 0.7 | 47.2 | 2.0 | 0.0% | |
| 4 | 120.0 | 14.3 | 0.7 | 46.8 | 2.0 | 0.0% | |
| 5 | 120.0 | 13.8 | 0.7 | 50.1 | 2.0 | 0.0% | |
| 6 | 120.0 | 14.5 | 0.7 | 64.6 | 3.0 | 0.0% | |
| / | 120.0 | 11.8 | 0.6 | 48.1 | 2.0 | 0.0% | |
| 8 | 120.0 | 12.9 | 0.6 | 44.2 | 2.0 | 0.0% | |
| 9 | 120.0 | 14.4 | 0.7 | 57.2 | 2.0 | 0.0% | |
| 10 | 120.0 | 13.4 | 0.7 | 45.6 | 2.0 | 0.0% | |
| Average: | 120.0 | 13.9 | 0.7 | 51.3 | 2.2 | 0.0% | |
| | Education Dood | Lana ID 109 | | | | | |
| 1 | 120.0 | 6.4 | 03 | 28.1 | 10 | 29.2% | |
| 2 | 120.0 | 6.4 | 0.3 | 35.4 | 2.0 | 27.5% | |
| 3 | 120.0 | 6.0 | 0.3 | 19.8 | 1.0 | 34.2% | |
| 4 | 120.0 | 5.7 | 0.3 | 19.5 | 1.0 | 29.2% | |
| 5 | 120.0 | 5.6 | 0.3 | 19.3 | 1.0 | 30.0% | |
| 6 | 120.0 | 4.8 | 0.3 | 18.8 | 1.0 | 26.7% | |
| 7 | 120.0 | 6.7 | 0.4 | 22.5 | 1.0 | 33.3% | |
| 8 | 120.0 | 7.1 | 0.4 | 29.6 | 1.0 | 32.5% | |
| 9 | 120.0 | 4.5 | 0.2 | 22.1 | 1.0 | 21.7% | |
| 10 | 120.0 | 5.2 | 0.3 | 19.0 | 1.0 | 27.5% | |
| Average: | 120.0 | 5.8 | 0.3 | 23.4 | 1.1 | 29.2% | |
| č | | | | | | | |
| SWB T on | Edmonston Road - | Lane ID 199 | | | | | |
| 1 | 120.0 | 9.5 | 0.5 | 33.9 | 2.0 | 45.0% | |
| 2 | 120.0 | 10.5 | 0.6 | 35.5 | 2.0 | 48.3% | |
| 3 | 120.0 | 10.7 | 0.6 | 36.7 | 2.0 | 48.3% | |
| 4 | 120.0 | 11.5 | 0.6 | 35.9 | 2.0 | 50.0% | |

DOWNER MILL ROAD & EDMONSTON ROAD

| POWDER MILL ROAD & EDMONSTON ROAD NODE: 19 | | | | | | | |
|--|--------------------|---------------|--------------|-----------------|-----------------|-----------|--|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback | |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) | |
| SWB T on | Edmonston Road - | Lane ID 199 | | | | | |
| 5 | 120.0 | 11.3 | 0.6 | 36.3 | 2.0 | 50.0% | |
| 6 | 120.0 | 9.2 | 0.5 | 34.7 | 2.0 | 43.3% | |
| 7 | 120.0 | 10.3 | 0.6 | 35.6 | 2.0 | 49.2% | |
| 8 | 120.0 | 9.7 | 0.5 | 31.3 | 1.0 | 47.5% | |
| 9 | 120.0 | 10.4 | 0.6 | 36.7 | 2.0 | 46.7% | |
| 10 | 120.0 | 11.1 | 0.6 | 35.6 | 2.0 | 49.2% | |
| Average: | 120.0 | 10.4 | 0.6 | 35.2 | 1.9 | 47.8% | |
| SWB TR or | n Edmonston Road | - Lane ID 200 | | | | | |
| 1 | 120.0 | 11.1 | 0.6 | 36.0 | 2.0 | 49.2% | |
| 2 | 120.0 | 10.7 | 0.6 | 37.4 | 2.0 | 49.2% | |
| 3 | 120.0 | 11.5 | 0.6 | 37.4 | 2.0 | 49.2% | |
| 4 | 120.0 | 11.6 | 0.6 | 37.3 | 2.0 | 53.3% | |
| 5 | 120.0 | 10.6 | 0.6 | 35.4 | 2.0 | 47.5% | |
| 6 | 120.0 | 8.5 | 0.5 | 26.1 | 1.0 | 44.2% | |
| 7 | 120.0 | 11.0 | 0.6 | 38.7 | 2.0 | 48.3% | |
| 8 | 120.0 | 9.1 | 0.5 | 32.4 | 2.0 | 42.5% | |
| 9 | 120.0 | 11.0 | 0.6 | 36.6 | 2.0 | 49.2% | |
| 10 | 120.0 | 11.2 | 0.6 | 38.1 | 2.0 | 48.3% | |
| Average: | 120.0 | 10.6 | 0.6 | 35.5 | 1.9 | 48.1% | |
| WRLopD | oultry Bood Jono | | | | | | |
| 1 | 120.0 | 21.1 | 0.9 | 96 5 | 4.0 | 0.0% | |
| 2 | 120.0 | 16.7 | 0.8 | 65.7 | 3.0 | 0.0% | |
| 3 | 120.0 | 15.4 | 0.7 | 68.2 | 3.0 | 0.0% | |
| 4 | 120.0 | 18.6 | 0.9 | 68.7 | 3.0 | 0.0% | |
| 5 | 120.0 | 15.9 | 0.8 | 68.9 | 3.0 | 0.0% | |
| 6 | 120.0 | 19.4 | 0.9 | 69.6 | 3.0 | 0.0% | |
| 7 | 120.0 | 15.2 | 0.7 | 63.7 | 3.0 | 0.0% | |
| 8 | 120.0 | 22.4 | 1.0 | 70.9 | 3.0 | 0.0% | |
| 9 | 120.0 | 18.4 | 0.9 | 71.3 | 3.0 | 0.0% | |
| 10 | 120.0 | 13.7 | 0.6 | 62.6 | 3.0 | 0.0% | |
| Average: | 120.0 | 17.7 | 0.8 | 70.6 | 3.1 | 0.0% | |
| | | | | | | | |
| WB L on P | oultry Road - Lane | ID 82 | | -1.0 | | 0.00/ | |
| 1 | 120.0 | 24.3 | 1.1 | /1.0 | 3.0 | 0.0% | |
| 2 | 120.0 | 25.1 | 1.1 | 98.9 | 3.0 | 0.0% | |
| 3 | 120.0 | 21.4 | 1.0 | 63.8 | 3.0 | 0.0% | |
| 4 | 120.0 | 24.3 | 1.1 | 95.7 | 4.0 | 0.0% | |
| 5 | 120.0 | 23.6 | 1.0 | 88.7 | 3.0 | 0.0% | |
| 6 | 120.0 | 24.6 | 1.2 | 79.9 | 4.0 | 0.0% | |
| 7 | 120.0 | 18.2 | 0.8 | 66.7 | 3.0 | 0.0% | |
| 8 | 120.0 | 24.7 | 1.2 | 79.6 | 3.0 | 0.0% | |
| 9 | 120.0 | 16.7 | 0.8 | 56.8 | 3.0 | 0.0% | |

POWDER MILL ROAD & EDMONSTON ROAD

| POWDER | POWDER MILL ROAD & EDMONSTON ROADNODE: 19 | | | | | | | | |
|------------|---|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | | |
| WB L on Po | oultry Road - Lane | ID 82 | | | | | | | |
| 10 | 120.0 | 21.8 | 1.0 | 92.1 | 3.0 | 0.0% | | | |
| Average: | 120.0 | 22.5 | 1.0 | 79.3 | 3.2 | 0.0% | | | |
| WB T on P | WB T on Poultry Road - Lane ID 196 | | | | | | | | |
| 1 | 120.0 | 24.7 | 1.1 | 103.3 | 5.0 | 0.0% | | | |
| 2 | 120.0 | 25.7 | 1.2 | 98.7 | 4.0 | 0.0% | | | |
| 3 | 120.0 | 26.0 | 1.1 | 107.9 | 4.0 | 0.0% | | | |
| 4 | 120.0 | 21.8 | 1.0 | 114.2 | 4.0 | 0.0% | | | |
| 5 | 120.0 | 29.3 | 1.3 | 133.7 | 5.0 | 0.0% | | | |
| 6 | 120.0 | 18.4 | 0.9 | 61.8 | 3.0 | 0.0% | | | |
| 7 | 120.0 | 23.3 | 1.0 | 112.1 | 5.0 | 0.0% | | | |
| 8 | 120.0 | 26.1 | 1.2 | 115.3 | 5.0 | 0.0% | | | |
| 9 | 120.0 | 22.1 | 1.0 | 110.9 | 5.0 | 0.0% | | | |
| 10 | 120.0 | 27.0 | 1.2 | 98.9 | 4.0 | 0.0% | | | |
| Average: | 120.0 | 24.4 | 1.1 | 105.7 | 4.4 | 0.0% | | | |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Run | Observations | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile Num Queued | Spillback Bate (%) |
|------------|---------------------|-----------------|--------------|-----------------|-------------------------------|-----------------------|
| EB T on Po | wder Mill Road - L | ane ID 17 | Queueu | Length (re) | Hum Quedeu | |
| 1 | 120.0 | 23.2 | 1.0 | 99.5 | 4.0 | 2.5% |
| 2 | 120.0 | 19.7 | 0.9 | 88.1 | 4.0 | 1.7% |
| 3 | 120.0 | 21.0 | 1.0 | 94.4 | 4.0 | 0.0% |
| 4 | 120.0 | 20.4 | 0.9 | 96.5 | 4.0 | 0.8% |
| 5 | 120.0 | 22.1 | 1.0 | 97.5 | 4.0 | 1.7% |
| 6 | 120.0 | 18.7 | 0.9 | 98.4 | 4.0 | 2.5% |
| 7 | 120.0 | 21.8 | 1.0 | 86.2 | 4.0 | 3.3% |
| 8 | 120.0 | 25.3 | 1.1 | 100.8 | 5.0 | 4.2% |
| 9 | 120.0 | 20.9 | 0.9 | 90.8 | 4.0 | 1.7% |
| 10 | 120.0 | 22.8 | 1.0 | 120.8 | 5.0 | 6.7% |
| Average: | 120.0 | 21.6 | 1.0 | 97.3 | 4.2 | 2.5% |
| NB L on Sc | bil Conservation Ro | ad - Lane ID 13 | 12 | 120.4 | 5.0 | 0.0% |
| 1 | 120.0 | 25.7 | 1.2 | 130.4 | 5.0 | 0.0% |
| 2 | 120.0 | 26.7 | 1.2 | 119.6 | 5.0 | 0.0% |
| 3 | 120.0 | 20.9 | 0.9 | 94.4 | 4.0 | 0.0% |
| 4 | 120.0 | 25.4 | 1.1 | 114.2 | 4.0 | 0.0% |
| 5 | 120.0 | 28.9 | 1.3 | 114.0 | 4.0 | 0.0% |
| 6 | 120.0 | 28.4 | 1.3 | 108.7 | 5.0 | 0.0% |
| 7 | 120.0 | 26.5 | 1.2 | 120.8 | 5.0 | 1.7% |
| 8 | 120.0 | 25.8 | 1.1 | 114.3 | 5.0 | 0.8% |
| 9 | 120.0 | 31.0 | 1.4 | 114.7 | 5.0 | 0.0% |
| 10 | 120.0 | 28.3 | 1.3 | 125.2 | 5.0 | 0.8% |
| Average: | 120.0 | 26.8 | 1.2 | 115.6 | 4.7 | 0.3% |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| SOIL CONSERVATION ROAD & POWDER MILL ROAD NODE: 2 | | | | | | | | |
|---|----------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | |
| NB L on S | oil Conservation Ro | ad - Lane ID 13 | | | | | | |
| WB L on F | Powder Mill Road - I | Lane ID 11 | | | | | | |
| 1 | 120.0 | 8.7 | 0.5 | 30.7 | 1.0 | 0.0% | | |
| 2 | 120.0 | 9.0 | 0.5 | 20.7 | 1.0 | 0.0% | | |
| 3 | 120.0 | 10.5 | 0.6 | 31.7 | 2.0 | 0.0% | | |
| 4 | 120.0 | 8.8 | 0.5 | 35.1 | 2.0 | 0.0% | | |
| 5 | 120.0 | 7.8 | 0.4 | 20.6 | 1.0 | 0.0% | | |
| 6 | 120.0 | 7.3 | 0.4 | 25.4 | 1.0 | 0.0% | | |
| 7 | 120.0 | 8.7 | 0.5 | 24.2 | 1.0 | 0.0% | | |
| 8 | 120.0 | 8.6 | 0.5 | 27.6 | 1.0 | 0.0% | | |
| 9 | 120.0 | 8.1 | 0.4 | 30.0 | 1.0 | 0.0% | | |
| 10 | 120.0 | 9.9 | 0.5 | 42.1 | 2.0 | 0.0% | | |
| Average: | 120.0 | 8.7 | 0.5 | 28.8 | 1.3 | 0.0% | | |
| WB T on I | Powder Mill Road - | Lane ID 42 | | | | | | |
| 1 | 120.0 | 24.6 | 1.1 | 105.2 | 4.0 | 1.7% | | |
| 2 | 120.0 | 28.5 | 1.3 | 114.5 | 5.0 | 1.7% | | |
| 3 | 120.0 | 27.5 | 1.2 | 116.4 | 5.0 | 0.8% | | |
| 4 | 120.0 | 30.3 | 1.3 | 117.6 | 5.0 | 0.0% | | |
| 5 | 120.0 | 25.2 | 1.1 | 100.1 | 4.0 | 0.0% | | |
| 6 | 120.0 | 22.9 | 1.0 | 106.8 | 4.0 | 0.0% | | |
| 7 | 120.0 | 26.2 | 1.1 | 116.4 | 5.0 | 0.8% | | |
| 8 | 120.0 | 26.9 | 1.2 | 108.0 | 5.0 | 0.0% | | |
| 9 | 120.0 | 23.0 | 1.0 | 106.6 | 4.0 | 0.0% | | |
| 10 | 120.0 | 20.6 | 0.9 | 72.6 | 3.0 | 0.8% | | |
| Average: | 120.0 | 25.6 | 1.1 | 106.4 | 4.4 | 0.6% | | |

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Lane Queue by Intersection - Avg Queue

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NB L | 36 | BW Parkway NB Off-Ramp | 52.6 | 16.1 | 43.1 | 97.9 | 10 |
| NB TR | 37 | BW Parkway NB Off-Ramp | 2.5 | 1.1 | 0.9 | 4.8 | 10 |

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 5 | Powder Mill Road | 25.5 | 3.0 | 19.8 | 29.2 | 10 |
| EB L | 24 | Powder Mill Road | 13.0 | 1.6 | 10.8 | 16.3 | 10 |
| EB T | 25 | Powder Mill Road | 16.2 | 1.8 | 13.8 | 19.5 | 10 |
| WB R | 207 | Powder Mill Road | 1.7 | 0.7 | 0.7 | 2.7 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | NODE: 8 | |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 27 | BW Parkway SB Off-Ramp | 62.0 | 12.1 | 52.0 | 92.9 | 10 |
| SWB TR | 28 | BW Parkway SB Off-Ramp | 232.8 | 42.0 | 167.8 | 294.1 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 8 | Powder Mill Road | 8.8 | 2.9 | 5.2 | 14.5 | 10 |
| WB L | 26 | Powder Mill Road | 2.6 | 0.7 | 1.7 | 3.9 | 10 |
| EB T | 31 | Powder Mill Road | 19.1 | 2.9 | 15.4 | 24.0 | 10 |
| EB R | 206 | Powder Mill Road | 1.1 | 0.6 | 0.5 | 2.2 | 10 |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| EDMONST | EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | | | |
|-----------|-----------------------------------|----------------|---------|---------------|---------|---------|-----------|--|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | | |
| NB L | 114 | Edmonston Road | 83.0 | 12.6 | 63.7 | 100.9 | 10 | | |
| SB T | 120 | Edmonston Road | 42.9 | 5.4 | 35.7 | 54.0 | 10 | | |
| SB T | 121 | Edmonston Road | 54.7 | 5.4 | 48.2 | 67.1 | 10 | | |
| NB T | 126 | Edmonston Road | 6.1 | 1.6 | 3.5 | 8.6 | 10 | | |
| NB T | 167 | Edmonston Road | 5.2 | 1.5 | 2.0 | 7.5 | 10 | | |
| SB R | 171 | Edmonston Road | 6.7 | 1.6 | 5.2 | 10.4 | 10 | | |

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | | NODE: 32 |
|-----------------------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| EB L | 117 | Sunnyside Avenue | 69.6 | 33.1 | 41.4 | 143.2 | 10 |
| EB R | 118 | Sunnyside Avenue | 16.8 | 2.0 | 13.0 | 19.2 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|----------------------|---------|---------------|---------|---------|-----------|
| NWB L | 321 | I-95/495 NB off-ramp | 17.1 | 1.9 | 14.5 | 19.8 | 10 |
| NWB L | 322 | I-95/495 NB off-ramp | 29.0 | 3.1 | 25.9 | 36.6 | 10 |
| NWB R | 323 | I-95/495 NB off-ramp | 60.3 | 10.4 | 48.9 | 76.7 | 10 |
| NWB R | 324 | I-95/495 NB off-ramp | 60.6 | 12.6 | 49.8 | 79.5 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 318 | MD 201 | 10.3 | 1.5 | 8.2 | 12.6 | 10 |
| NEB T | 319 | MD 201 | 12.2 | 1.5 | 9.8 | 14.2 | 10 |
| NEB T | 320 | MD 201 | 15.9 | 0.6 | 14.8 | 16.7 | 10 |
| SWB T | 326 | MD 201 | 15.0 | 0.9 | 13.5 | 16.2 | 10 |
| SWB T | 327 | MD 201 | 11.6 | 1.2 | 9.5 | 13.1 | 10 |
| SWB T | 328 | MD 201 | 17.6 | 2.3 | 12.9 | 21.1 | 10 |

I-95/495 SB OFF-RAMP & MD 201 **NODE: 67** Movements Lane ID Street Name Average **Std Deviation** Minimum Maximum # Samples SEB L 392 17.7 2.2 15.6 22.6 10 [Unnamed Street]

31.1

I-95/495 SB OFF-RAMP & MD 201

[Unnamed Street]

393

SEB L

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 374 | MD 201 | 2.8 | 0.6 | 2.0 | 3.6 | 10 |
| NEB T | 375 | MD 201 | 3.4 | 1.1 | 1.8 | 5.4 | 10 |
| NEB T | 376 | MD 201 | 6.1 | 0.8 | 4.9 | 7.0 | 10 |
| SWB T | 381 | MD 201 | 2.7 | 1.4 | 1.4 | 6.0 | 10 |
| SWB T | 382 | MD 201 | 3.0 | 0.6 | 2.3 | 4.3 | 10 |

1.3

28.3

32.6

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------|---------|---------------|---------|---------|-----------|
| NEB L | 237 | Cherrywood Lane | 40.0 | 2.5 | 35.8 | 44.0 | 10 |
| NEB L | 238 | Cherrywood Lane | 37.6 | 2.3 | 33.4 | 41.1 | 10 |
| NEB R | 239 | Cherrywood Lane | 0.6 | 0.2 | 0.2 | 0.8 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NWB L | 230 | MD 201 | 60.4 | 7.1 | 49.8 | 71.9 | 10 |
| NWB T | 231 | MD 201 | 45.1 | 16.0 | 20.4 | 72.6 | 10 |
| NWB T | 232 | MD 201 | 47.8 | 15.9 | 26.0 | 76.9 | 10 |
| SEB T | 235 | MD 201 | 41.7 | 6.0 | 35.6 | 54.8 | 10 |

NODE: 57

NODE: 32

NODE: 57

NODE: 67

10

NODE: 45

NODE: 45

TransModeler Traffic Simulation Software

Transportation Impact Study

| MD 201 & | MD 201 & CHERRYWOOD LANE | | | | | | | |
|-----------|--------------------------|-------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| SEB T | 236 | MD 201 | 43.2 | 5.2 | 36.1 | 50.6 | 10 | |
| SEB R | 250 | MD 201 | 7.6 | 2.2 | 4.5 | 12.0 | 10 | |

| MD 201 & | MD 201 & IVY LANE | | | | | | |
|-----------|-------------------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 251 | MD 201 | 0.0 | 0.0 | 0.0 | 0.1 | 10 |
| SB T | 252 | MD 201 | 0.3 | 0.2 | 0.0 | 0.7 | 10 |

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | | |
|---|---------|-----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NWB LT | 283 | Crescent Street | 11.9 | 1.0 | 10.2 | 12.9 | 10 |
| NWB R | 284 | Crescent Street | 3.5 | 0.3 | 3.2 | 4.0 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------------|---------|---------------|---------|---------|-----------|
| SEB LTR | 281 | Maryland SHA Driveway | 0.3 | 0.3 | 0.0 | 1.1 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 297 | MD 201 | 1.3 | 0.5 | 0.6 | 2.3 | 10 |
| NEB T | 298 | MD 201 | 11.3 | 2.1 | 7.0 | 14.2 | 10 |
| NEB T | 299 | MD 201 | 11.0 | 2.3 | 7.0 | 14.5 | 10 |
| NEB L | 311 | MD 201 | 11.8 | 0.8 | 10.5 | 12.9 | 10 |
| NEB R | 332 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB L | 342 | MD 201 | 8.7 | 0.8 | 7.5 | 9.9 | 10 |
| SWB T | 343 | MD 201 | 0.3 | 0.2 | 0.0 | 0.7 | 10 |
| SWB T | 344 | MD 201 | 1.6 | 0.5 | 0.9 | 2.4 | 10 |
| SWB TR | 345 | MD 201 | 3.7 | 0.7 | 2.4 | 5.0 | 10 |

| POULTRY ROAD | | | | | | | |
|--------------|---------|--------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 109 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 131 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | NODE: 19 |
|-----------------------------------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NEB L | 49 | [Unnamed Street] | 26.5 | 3.1 | 22.7 | 32.4 | 10 |
| NEB T | 83 | [Unnamed Street] | 13.1 | 2.1 | 10.1 | 16.3 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | NODE: 19 |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 198 | Edmonston Road | 5.8 | 0.8 | 4.5 | 7.1 | 10 |
| SWB T | 199 | Edmonston Road | 10.4 | 0.8 | 9.2 | 11.5 | 10 |
| SWB TR | 200 | Edmonston Road | 10.6 | 1.0 | 8.5 | 11.6 | 10 |

NODE: 52

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | | |
|-----------------------------------|---------|--------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | | |
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| WB L | 51 | Poultry Road | 17.7 | 2.8 | 13.7 | 22.4 | 10 | |
| WB L | 82 | Poultry Road | 22.5 | 2.9 | 16.7 | 25.1 | 10 | |
| NB T | 158 | Poultry Road | 196.9 | 12.8 | 179.7 | 211.7 | 10 | |
| NB T | 159 | Poultry Road | 213.5 | 19.9 | 182.9 | 260.8 | 10 | |
| WB T | 196 | Poultry Road | 24.4 | 3.1 | 18.4 | 29.3 | 10 | |
| NB T | 212 | Poultry Road | 225.4 | 14.7 | 203.5 | 247.8 | 10 | |
| NB T | 218 | Poultry Road | 193.3 | 10.4 | 171.5 | 209.0 | 10 | |
| NB T | 350 | Poultry Road | 185.6 | 12.8 | 159.4 | 203.8 | 10 | |
| NB T | 355 | Poultry Road | 179.5 | 9.4 | 165.2 | 196.9 | 10 | |
| NB T | 406 | Poultry Road | 162.7 | 10.1 | 146.5 | 179.0 | 10 | |

POWDER MILL ROAD & EDMONSTON ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| SEB L | 64 | Powder Mill Road | 11.3 | 1.2 | 9.9 | 13.4 | 10 |
| SEB T | 65 | Powder Mill Road | 13.9 | 1.2 | 11.8 | 15.9 | 10 |
| SEB T | 184 | Powder Mill Road | 13.6 | 1.7 | 10.7 | 15.8 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| WB L | 11 | Powder Mill Road | 8.7 | 0.9 | 7.3 | 10.5 | 10 |
| EB T | 17 | Powder Mill Road | 21.6 | 1.9 | 18.7 | 25.3 | 10 |
| WB T | 42 | Powder Mill Road | 25.6 | 2.9 | 20.6 | 30.3 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| NB L | 13 | Soil Conservation Road | 26.8 | 2.7 | 20.9 | 31.0 | 10 |

NODE: 2

NODE: 19

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Lane Queue by Intersection - Avg Num Queued

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 | |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| NB L | 36 | BW Parkway NB Off-Ramp | 2.3 | 0.6 | 1.9 | 4.1 | 10 | |
| NB TR | 37 | BW Parkway NB Off-Ramp | 0.1 | 0.0 | 0.1 | 0.2 | 10 | |

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 | |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| WB T | 5 | Powder Mill Road | 1.1 | 0.1 | 0.9 | 1.3 | 10 | |
| EB L | 24 | Powder Mill Road | 0.7 | 0.1 | 0.6 | 0.8 | 10 | |
| EB T | 25 | Powder Mill Road | 0.7 | 0.1 | 0.6 | 0.9 | 10 | |
| WB R | 207 | Powder Mill Road | 0.1 | 0.0 | 0.0 | 0.1 | 10 | |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | NODE: 8 | NODE: 8 | | | |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| SWB L | 27 | BW Parkway SB Off-Ramp | 2.7 | 0.4 | 2.3 | 3.8 | 10 | |
| SWB TR | 28 | BW Parkway SB Off-Ramp | 9.4 | 1.6 | 6.9 | 11.8 | 10 | |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 8 | Powder Mill Road | 0.4 | 0.1 | 0.2 | 0.6 | 10 |
| WB L | 26 | Powder Mill Road | 0.1 | 0.0 | 0.1 | 0.2 | 10 |
| EB T | 31 | Powder Mill Road | 0.8 | 0.1 | 0.7 | 1.1 | 10 |
| EB R | 206 | Powder Mill Road | 0.1 | 0.1 | 0.0 | 0.1 | 10 |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|----------------|---------|---------------|---------|---------|-----------|
| NB L | 114 | Edmonston Road | 3.5 | 0.5 | 2.7 | 4.2 | 10 |
| SB T | 120 | Edmonston Road | 1.8 | 0.2 | 1.5 | 2.3 | 10 |
| SB T | 121 | Edmonston Road | 2.3 | 0.2 | 2.1 | 2.8 | 10 |
| NB T | 126 | Edmonston Road | 0.3 | 0.1 | 0.2 | 0.4 | 10 |
| NB T | 167 | Edmonston Road | 0.2 | 0.1 | 0.1 | 0.3 | 10 |
| SB R | 171 | Edmonston Road | 0.3 | 0.1 | 0.3 | 0.5 | 10 |

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | NODE: 32 | |
|-----------------------------------|---------|-------------|---------|---------------|---------|----------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| EB L | 117 | Sunnyside Avenue | 3.0 | 1.3 | 1.9 | 6.0 | 10 |
| EB R | 118 | Sunnyside Avenue | 0.8 | 0.1 | 0.6 | 0.9 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|----------------------|---------|---------------|---------|---------|-----------|
| NWB L | 321 | I-95/495 NB off-ramp | 0.8 | 0.1 | 0.7 | 0.9 | 10 |
| NWB L | 322 | I-95/495 NB off-ramp | 1.3 | 0.1 | 1.2 | 1.6 | 10 |
| NWB R | 323 | I-95/495 NB off-ramp | 2.6 | 0.4 | 2.1 | 3.2 | 10 |
| NWB R | 324 | I-95/495 NB off-ramp | 2.5 | 0.5 | 2.1 | 3.2 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 318 | MD 201 | 0.5 | 0.1 | 0.4 | 0.6 | 10 |
| NEB T | 319 | MD 201 | 0.6 | 0.0 | 0.5 | 0.6 | 10 |
| NEB T | 320 | MD 201 | 0.8 | 0.1 | 0.7 | 0.8 | 10 |
| SWB T | 326 | MD 201 | 0.7 | 0.0 | 0.7 | 0.8 | 10 |
| SWB T | 327 | MD 201 | 0.6 | 0.1 | 0.4 | 0.6 | 10 |
| SWB T | 328 | MD 201 | 0.8 | 0.1 | 0.6 | 1.0 | 10 |

I-95/495 SB OFF-RAMP & MD 201 **NODE: 67** Movements Lane ID Street Name Average **Std Deviation** Minimum Maximum # Samples SEB L 392 0.9 0.1 0.7 1.1 10 [Unnamed Street] 1.5 SEB L 393 1.5 0.1 1.4 10 [Unnamed Street]

I-95/495 SB OFF-RAMP & MD 201

| | - | | | | | | |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NEB T | 374 | MD 201 | 0.1 | 0.1 | 0.1 | 0.2 | 10 |
| NEB T | 375 | MD 201 | 0.1 | 0.1 | 0.1 | 0.2 | 10 |
| NEB T | 376 | MD 201 | 0.3 | 0.0 | 0.2 | 0.3 | 10 |
| SWB T | 381 | MD 201 | 0.1 | 0.1 | 0.1 | 0.3 | 10 |
| SWB T | 382 | MD 201 | 0.1 | 0.1 | 0.1 | 0.2 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------|---------|---------------|---------|---------|-----------|
| NEB L | 237 | Cherrywood Lane | 1.8 | 0.1 | 1.6 | 2.0 | 10 |
| NEB L | 238 | Cherrywood Lane | 1.7 | 0.1 | 1.6 | 1.9 | 10 |
| NEB R | 239 | Cherrywood Lane | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NWB L | 230 | MD 201 | 2.7 | 0.3 | 2.2 | 3.1 | 10 |
| NWB T | 231 | MD 201 | 1.8 | 0.6 | 0.9 | 2.8 | 10 |
| NWB T | 232 | MD 201 | 1.9 | 0.6 | 1.0 | 3.0 | 10 |
| SEB T | 235 | MD 201 | 1.8 | 0.3 | 1.5 | 2.3 | 10 |

NODE: 67

NODE: 45

NODE: 45

TransModeler

Simulation Software Transportation Impact Study

NODE: 32

NODE: 57

| MD 201 & CHERRYWOOD LANE | | | | | | | |
|--------------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SEB T | 236 | MD 201 | 1.8 | 0.2 | 1.5 | 2.1 | 10 |
| SEB R | 250 | MD 201 | 0.4 | 0.1 | 0.2 | 0.5 | 10 |

| MD 201 & IVY LANE | | | | | | | NODE: 50 |
|-------------------|---------|-------------|---------|---------------|---------|---------|-----------------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 251 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 252 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | | | |
|---|-----|-----------------|-----|-----|-----|-----|----|--|
| Movements Lane ID Street Name Average Std Deviation Minimum Maximum # | | | | | | | | |
| NWB LT | 283 | Crescent Street | 0.7 | 0.1 | 0.6 | 0.7 | 10 | |
| NWB R | 284 | Crescent Street | 0.2 | 0.0 | 0.2 | 0.2 | 10 | |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------------|---------|---------------|---------|---------|-----------|
| SEB LTR | 281 | Maryland SHA Driveway | 0.0 | 0.0 | 0.0 | 0.1 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 297 | MD 201 | 0.1 | 0.0 | 0.0 | 0.1 | 10 |
| NEB T | 298 | MD 201 | 0.5 | 0.1 | 0.3 | 0.6 | 10 |
| NEB T | 299 | MD 201 | 0.5 | 0.1 | 0.3 | 0.6 | 10 |
| NEB L | 311 | MD 201 | 0.6 | 0.1 | 0.5 | 0.7 | 10 |
| NEB R | 332 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB L | 342 | MD 201 | 0.5 | 0.1 | 0.4 | 0.5 | 10 |
| SWB T | 343 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 344 | MD 201 | 0.1 | 0.0 | 0.1 | 0.1 | 10 |
| SWB TR | 345 | MD 201 | 0.2 | 0.0 | 0.1 | 0.2 | 10 |

| POULTRY ROAD | | | | | | | |
|--------------|---------|--------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 109 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 131 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | |
|-----------------------------------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NEB L | 49 | [Unnamed Street] | 1.2 | 0.1 | 1.1 | 1.4 | 10 |
| NEB T | 83 | [Unnamed Street] | 0.6 | 0.1 | 0.5 | 0.7 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 198 | Edmonston Road | 0.3 | 0.1 | 0.2 | 0.4 | 10 |
| SWB T | 199 | Edmonston Road | 0.6 | 0.0 | 0.5 | 0.6 | 10 |
| SWB TR | 200 | Edmonston Road | 0.6 | 0.0 | 0.5 | 0.6 | 10 |

NODE: 52

| POWDER | MILL RO | AD & EDMONST | ON ROAD | | | | NODE: 19 |
|-----------|---------|--------------|---------|---------------|---------|---------|-----------------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| POWDER | MILL RO | AD & EDMONST | ON ROAD | | | | NODE: 19 |
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB L | 51 | Poultry Road | 0.8 | 0.1 | 0.6 | 1.0 | 10 |
| WB L | 82 | Poultry Road | 1.0 | 0.1 | 0.8 | 1.2 | 10 |
| NB T | 158 | Poultry Road | 7.0 | 0.4 | 6.4 | 7.6 | 10 |
| NB T | 159 | Poultry Road | 7.6 | 0.7 | 6.5 | 9.4 | 10 |
| WB T | 196 | Poultry Road | 1.1 | 0.1 | 0.9 | 1.3 | 10 |
| NB T | 212 | Poultry Road | 8.1 | 0.6 | 7.2 | 9.0 | 10 |
| NB T | 218 | Poultry Road | 6.9 | 0.4 | 6.1 | 7.4 | 10 |
| NB T | 350 | Poultry Road | 6.6 | 0.5 | 5.7 | 7.3 | 10 |
| NB T | 355 | Poultry Road | 6.4 | 0.4 | 5.9 | 7.1 | 10 |
| NB T | 406 | Poultry Road | 5.8 | 0.3 | 5.3 | 6.4 | 10 |

POWDER MILL ROAD & EDMONSTON ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| SEB L | 64 | Powder Mill Road | 0.6 | 0.1 | 0.5 | 0.7 | 10 |
| SEB T | 65 | Powder Mill Road | 0.7 | 0.1 | 0.6 | 0.8 | 10 |
| SEB T | 184 | Powder Mill Road | 0.7 | 0.1 | 0.5 | 0.8 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| WB L | 11 | Powder Mill Road | 0.5 | 0.1 | 0.4 | 0.6 | 10 |
| EB T | 17 | Powder Mill Road | 1.0 | 0.1 | 0.9 | 1.1 | 10 |
| WB T | 42 | Powder Mill Road | 1.1 | 0.1 | 0.9 | 1.3 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| NB L | 13 | Soil Conservation Road | 1.2 | 0.1 | 0.9 | 1.4 | 10 |

NODE: 2

NODE: 2

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Lane Queue by Intersection -**Percentile Queue**

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NB L | 36 | BW Parkway NB Off-Ramp | 222.8 | 62.0 | 174.4 | 394.2 | 10 |
| NB TR | 37 | BW Parkway NB Off-Ramp | 18.5 | 9.7 | 0.8 | 40.4 | 10 |

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 5 | Powder Mill Road | 138.1 | 13.0 | 116.8 | 159.6 | 10 |
| EB L | 24 | Powder Mill Road | 55.6 | 8.3 | 43.8 | 68.0 | 10 |
| EB T | 25 | Powder Mill Road | 112.5 | 6.5 | 103.7 | 121.9 | 10 |
| WB R | 207 | Powder Mill Road | 12.9 | 8.9 | 0.0 | 21.3 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 27 | BW Parkway SB Off-Ramp | 215.9 | 111.9 | 138.2 | 505.0 | 10 |
| SWB TR | 28 | BW Parkway SB Off-Ramp | 975.8 | 216.9 | 589.1 | 1,240.1 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 8 | Powder Mill Road | 51.6 | 13.2 | 34.9 | 77.9 | 10 |
| WB L | 26 | Powder Mill Road | 17.9 | 1.4 | 15.7 | 20.7 | 10 |
| EB T | 31 | Powder Mill Road | 103.0 | 8.9 | 88.8 | 112.1 | 10 |
| EB R | 206 | Powder Mill Road | 7.0 | 8.9 | 0.0 | 19.2 | 10 |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | | |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NB L | 114 | Edmonston Road | 276.0 | 48.5 | 210.5 | 360.4 | 10 |
| SB T | 120 | Edmonston Road | 179.4 | 15.4 | 154.8 | 207.2 | 10 |
| SB T | 121 | Edmonston Road | 205.4 | 14.0 | 184.8 | 224.8 | 10 |
| NB T | 126 | Edmonston Road | 48.6 | 13.4 | 22.5 | 66.5 | 10 |
| NB T | 167 | Edmonston Road | 41.7 | 12.1 | 18.7 | 53.6 | 10 |
| SB R | 171 | Edmonston Road | 43.7 | 9.2 | 27.9 | 55.6 | 10 |

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | | NODE: 32 |
|-----------------------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| EB L | 117 | Sunnyside Avenue | 194.2 | 80.6 | 105.8 | 350.3 | 10 |
| EB R | 118 | Sunnyside Avenue | 73.3 | 7.1 | 62.1 | 84.3 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|----------------------|---------|---------------|---------|---------|-----------|
| NWB L | 321 | I-95/495 NB off-ramp | 74.0 | 9.1 | 65.8 | 97.2 | 10 |
| NWB L | 322 | I-95/495 NB off-ramp | 105.3 | 8.1 | 90.0 | 115.4 | 10 |
| NWB R | 323 | I-95/495 NB off-ramp | 222.1 | 43.2 | 175.5 | 308.6 | 10 |
| NWB R | 324 | I-95/495 NB off-ramp | 250.9 | 97.3 | 169.1 | 464.3 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 318 | MD 201 | 48.6 | 6.7 | 42.1 | 65.8 | 10 |
| NEB T | 319 | MD 201 | 52.0 | 5.3 | 44.5 | 58.3 | 10 |
| NEB T | 320 | MD 201 | 69.3 | 3.6 | 64.1 | 75.3 | 10 |
| SWB T | 326 | MD 201 | 61.1 | 6.4 | 50.1 | 73.0 | 10 |
| SWB T | 327 | MD 201 | 55.3 | 8.4 | 43.5 | 64.2 | 10 |
| SWB T | 328 | MD 201 | 76.3 | 9.9 | 62.0 | 96.8 | 10 |

I-95/495 SB OFF-RAMP & MD 201 **NODE: 67** Movements Lane ID Street Name Average **Std Deviation** Minimum Maximum # Samples SEB L 392 70.0 4.9 60.0 80.0 10 [Unnamed Street] SEB L 393 95.8 7.9 83.1 108.3 10 [Unnamed Street]

I-95/495 SB OFF-RAMP & MD 201

| | - | | | | | | |
|----------------|-------------------|----------------------------|----------------------|--------------------|---------------------|--------------|----------------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NEB T | 374 | MD 201 | 21.1 | 6.6 | 16.7 | 38.6 | 10 |
| NEB T | 375 | MD 201 | 23.6 | 8.1 | 15.8 | 43.8 | 10 |
| NEB T | 376 | MD 201 | 48.6 | 8.2 | 40.0 | 62.9 | 10 |
| SWB T | 381 | MD 201 | 22.2 | 13.1 | 0.8 | 43.3 | 10 |
| SWB T | 382 | MD 201 | 22.3 | 9.2 | 15.6 | 42.1 | 10 |
| SWB T SWB T | 376 381 382 | MD 201 MD 201 MD 201 | 48.6 22.2 22.3 | 8.2 13.1 9.2 | 40.0 0.8 15.6 | 43.3 42.1 | 10 10 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------|---------|---------------|---------|---------|-----------|
| NEB L | 237 | Cherrywood Lane | 102.7 | 7.0 | 91.6 | 114.9 | 10 |
| NEB L | 238 | Cherrywood Lane | 97.8 | 5.1 | 91.0 | 110.1 | 10 |
| NEB R | 239 | Cherrywood Lane | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NWB L | 230 | MD 201 | 154.7 | 26.2 | 127.4 | 199.7 | 10 |
| NWB T | 231 | MD 201 | 357.4 | 118.7 | 121.8 | 524.3 | 10 |
| NWB T | 232 | MD 201 | 362.0 | 138.0 | 110.9 | 588.8 | 10 |
| SEB T | 235 | MD 201 | 192.8 | 19.6 | 177.1 | 231.2 | 10 |

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NODE: 32

NODE: 57

NODE: 57

NODE: 67

NODE: 45

| MD 201 & CHERRYWOOD LANE | | | | | | | |
|--------------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SEB T | 236 | MD 201 | 189.1 | 18.0 | 168.8 | 225.1 | 10 |
| SEB R | 250 | MD 201 | 51.2 | 14.9 | 24.4 | 78.0 | 10 |

| MD 201 & IVY LANE | | | | | | | |
|-------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 251 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 252 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | | NODE: 52 |
|---|---------|-----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NWB LT | 283 | Crescent Street | 29.3 | 4.6 | 20.9 | 34.1 | 10 |
| NWB R | 284 | Crescent Street | 19.3 | 2.2 | 17.2 | 25.3 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------------|---------|---------------|---------|---------|-----------|
| SEB LTR | 281 | Maryland SHA Driveway | 1.6 | 5.1 | 0.0 | 16.2 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 297 | MD 201 | 6.6 | 8.2 | 0.0 | 17.6 | 10 |
| NEB T | 298 | MD 201 | 68.6 | 21.3 | 44.3 | 97.8 | 10 |
| NEB T | 299 | MD 201 | 74.8 | 25.2 | 46.1 | 123.8 | 10 |
| NEB L | 311 | MD 201 | 43.3 | 4.5 | 37.6 | 51.6 | 10 |
| NEB R | 332 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB L | 342 | MD 201 | 40.7 | 3.5 | 35.9 | 49.1 | 10 |
| SWB T | 343 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 344 | MD 201 | 13.4 | 6.8 | 0.8 | 18.1 | 10 |
| SWB TR | 345 | MD 201 | 23.8 | 6.3 | 18.1 | 35.5 | 10 |

| POULTRY ROAD | | | | | | | NODE: 40 |
|--------------|---------|--------------|---------|---------------|---------|---------|-----------------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 109 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 131 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | NODE: 19 |
|-----------------------------------|---------|------------------|---------|---------------|---------|---------|-----------------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NEB L | 49 | [Unnamed Street] | 81.5 | 3.4 | 75.4 | 86.1 | 10 |
| NEB T | 83 | [Unnamed Street] | 73.6 | 5.6 | 62.6 | 82.6 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | NODE: 19 |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 198 | Edmonston Road | 23.4 | 5.7 | 18.8 | 35.4 | 10 |
| SWB T | 199 | Edmonston Road | 35.2 | 1.6 | 31.3 | 36.7 | 10 |
| SWB TR | 200 | Edmonston Road | 35.5 | 3.8 | 26.1 | 38.7 | 10 |

NODE: 52

| POWDER | POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | | | |
|-----------|-----------------------------------|--------------|---------|---------------|---------|---------|-----------|--|--|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | | | |
| POWDER | POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | | | |
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | | | |
| WB L | 51 | Poultry Road | 70.6 | 9.5 | 62.6 | 96.5 | 10 | | | |
| WB L | 82 | Poultry Road | 79.3 | 14.5 | 56.8 | 98.9 | 10 | | | |
| NB T | 158 | Poultry Road | 433.8 | 117.8 | 348.7 | 714.3 | 10 | | | |
| NB T | 159 | Poultry Road | 421.4 | 83.9 | 371.4 | 645.2 | 10 | | | |
| WB T | 196 | Poultry Road | 105.7 | 18.4 | 61.8 | 133.7 | 10 | | | |
| NB T | 212 | Poultry Road | 493.2 | 112.6 | 380.9 | 693.4 | 10 | | | |
| NB T | 218 | Poultry Road | 370.4 | 5.7 | 362.9 | 379.1 | 10 | | | |
| NB T | 350 | Poultry Road | 361.1 | 8.0 | 351.0 | 378.1 | 10 | | | |
| NB T | 355 | Poultry Road | 359.0 | 11.9 | 340.5 | 376.0 | 10 | | | |
| NB T | 406 | Poultry Road | 333.7 | 9.6 | 320.5 | 353.5 | 10 | | | |

POWDER MILL ROAD & EDMONSTON ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| SEB L | 64 | Powder Mill Road | 37.5 | 8.4 | 23.0 | 47.2 | 10 |
| SEB T | 65 | Powder Mill Road | 51.3 | 7.6 | 44.2 | 64.6 | 10 |
| SEB T | 184 | Powder Mill Road | 52.4 | 7.8 | 42.7 | 64.7 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| WB L | 11 | Powder Mill Road | 28.8 | 6.6 | 20.6 | 42.1 | 10 |
| EB T | 17 | Powder Mill Road | 97.3 | 9.6 | 86.2 | 120.8 | 10 |
| WB T | 42 | Powder Mill Road | 106.4 | 13.2 | 72.6 | 117.6 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| NB L | 13 | Soil Conservation Road | 115.6 | 9.8 | 94.4 | 130.4 | 10 |

TransModeler Traffic Simulation Software Transportation Impact Study

NODE: 19

NODE: 2

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Lane Queue by Intersection -**Percentile Num Queued**

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NB L | 36 | BW Parkway NB Off-Ramp | 9.5 | 2.7 | 8.0 | 17.0 | 10 |
| NB TR | 37 | BW Parkway NB Off-Ramp | 1.0 | 0.5 | 0.0 | 2.0 | 10 |

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 5 | Powder Mill Road | 5.8 | 0.6 | 5.0 | 7.0 | 10 |
| EB L | 24 | Powder Mill Road | 2.5 | 0.5 | 2.0 | 3.0 | 10 |
| EB T | 25 | Powder Mill Road | 4.8 | 0.4 | 4.0 | 5.0 | 10 |
| WB R | 207 | Powder Mill Road | 0.7 | 0.5 | 0.0 | 1.0 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 | |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| SWB L | 27 | BW Parkway SB Off-Ramp | 8.7 | 4.1 | 6.0 | 19.1 | 10 | |
| SWB TR | 28 | BW Parkway SB Off-Ramp | 38.9 | 8.7 | 23.1 | 50.1 | 10 | |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 8 | Powder Mill Road | 2.2 | 0.6 | 1.0 | 3.0 | 10 |
| WB L | 26 | Powder Mill Road | 1.0 | 0.0 | 1.0 | 1.0 | 10 |
| EB T | 31 | Powder Mill Road | 4.5 | 0.5 | 4.0 | 5.0 | 10 |
| EB R | 206 | Powder Mill Road | 0.4 | 0.5 | 0.0 | 1.0 | 10 |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| EDMONST | EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | | | |
|-----------|-----------------------------------|----------------|---------|---------------|---------|---------|-----------|--|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | | |
| NB L | 114 | Edmonston Road | 11.2 | 1.7 | 9.0 | 14.0 | 10 | | |
| SB T | 120 | Edmonston Road | 7.5 | 0.5 | 7.0 | 8.0 | 10 | | |
| SB T | 121 | Edmonston Road | 8.6 | 0.8 | 7.0 | 10.0 | 10 | | |
| NB T | 126 | Edmonston Road | 2.3 | 0.7 | 1.0 | 3.0 | 10 | | |
| NB T | 167 | Edmonston Road | 1.8 | 0.4 | 1.0 | 2.0 | 10 | | |
| SB R | 171 | Edmonston Road | 1.9 | 0.3 | 1.0 | 2.0 | 10 | | |

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | NODE: 32 | |
|-----------------------------------|---------|-------------|---------|---------------|---------|----------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| EB L | 117 | Sunnyside Avenue | 8.1 | 3.3 | 5.0 | 15.0 | 10 |
| EB R | 118 | Sunnyside Avenue | 3.2 | 0.4 | 3.0 | 4.0 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|----------------------|---------|---------------|---------|---------|-----------|
| NWB L | 321 | I-95/495 NB off-ramp | 3.2 | 0.4 | 3.0 | 4.0 | 10 |
| NWB L | 322 | I-95/495 NB off-ramp | 4.6 | 0.5 | 4.0 | 5.0 | 10 |
| NWB R | 323 | I-95/495 NB off-ramp | 9.2 | 1.7 | 7.0 | 12.1 | 10 |
| NWB R | 324 | I-95/495 NB off-ramp | 9.8 | 3.2 | 7.0 | 17.0 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 318 | MD 201 | 2.1 | 0.3 | 2.0 | 3.0 | 10 |
| NEB T | 319 | MD 201 | 2.1 | 0.3 | 2.0 | 3.0 | 10 |
| NEB T | 320 | MD 201 | 3.0 | 0.0 | 3.0 | 3.0 | 10 |
| SWB T | 326 | MD 201 | 2.8 | 0.4 | 2.0 | 3.0 | 10 |
| SWB T | 327 | MD 201 | 2.5 | 0.5 | 2.0 | 3.0 | 10 |
| SWB T | 328 | MD 201 | 3.2 | 0.4 | 3.0 | 4.0 | 10 |

I-95/495 SB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| SEB L | 392 | [Unnamed Street] | 3.1 | 0.3 | 3.0 | 4.0 | 10 |
| SEB L | 393 | [Unnamed Street] | 4.2 | 0.4 | 4.0 | 5.0 | 10 |

I-95/495 SB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 374 | MD 201 | 1.1 | 0.3 | 1.0 | 2.0 | 10 |
| NEB T | 375 | MD 201 | 1.1 | 0.3 | 1.0 | 2.0 | 10 |
| NEB T | 376 | MD 201 | 2.2 | 0.4 | 2.0 | 3.0 | 10 |
| SWB T | 381 | MD 201 | 1.2 | 0.6 | 0.0 | 2.0 | 10 |
| SWB T | 382 | MD 201 | 1.2 | 0.4 | 1.0 | 2.0 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------|---------|---------------|---------|---------|-----------|
| NEB L | 237 | Cherrywood Lane | 4.4 | 0.5 | 4.0 | 5.0 | 10 |
| NEB L | 238 | Cherrywood Lane | 4.1 | 0.3 | 4.0 | 5.0 | 10 |
| NEB R | 239 | Cherrywood Lane | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NWB L | 230 | MD 201 | 6.5 | 1.3 | 5.0 | 9.0 | 10 |
| NWB T | 231 | MD 201 | 13.7 | 4.2 | 5.2 | 19.0 | 10 |
| NWB T | 232 | MD 201 | 13.9 | 4.6 | 5.3 | 21.0 | 10 |
| SEB T | 235 | MD 201 | 7.6 | 0.7 | 7.0 | 9.0 | 10 |

TransModeler

Transportation Impact Study

NODE: 45

NODE: 45

NODE: 57

NODE: 57

NODE: 32

NODE: 67

| MD 201 & CHERRYWOOD LANE | | | | | | | |
|--------------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SEB T | 236 | MD 201 | 7.5 | 0.8 | 6.1 | 9.0 | 10 |
| SEB R | 250 | MD 201 | 2.2 | 0.6 | 1.0 | 3.0 | 10 |

| MD 201 & IVY LANE | | | | | | | |
|-------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 251 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 252 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | | |
|---|---------|-----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NWB LT | 283 | Crescent Street | 1.2 | 0.4 | 1.0 | 2.0 | 10 |
| NWB R | 284 | Crescent Street | 1.0 | 0.0 | 1.0 | 1.0 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------------|---------|---------------|---------|---------|-----------|
| SEB LTR | 281 | Maryland SHA Driveway | 0.1 | 0.3 | 0.0 | 1.0 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 297 | MD 201 | 0.4 | 0.5 | 0.0 | 1.0 | 10 |
| NEB T | 298 | MD 201 | 2.8 | 0.9 | 2.0 | 4.0 | 10 |
| NEB T | 299 | MD 201 | 3.2 | 1.0 | 2.0 | 5.0 | 10 |
| NEB L | 311 | MD 201 | 2.1 | 0.3 | 2.0 | 3.0 | 10 |
| NEB R | 332 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB L | 342 | MD 201 | 2.0 | 0.0 | 2.0 | 2.0 | 10 |
| SWB T | 343 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 344 | MD 201 | 0.8 | 0.4 | 0.0 | 1.0 | 10 |
| SWB TR | 345 | MD 201 | 1.1 | 0.3 | 1.0 | 2.0 | 10 |

| POULTRY ROAD | | | | | | | |
|--------------|---------|--------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 109 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 131 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | |
|-----------------------------------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NEB L | 49 | [Unnamed Street] | 3.6 | 0.5 | 3.0 | 4.0 | 10 |
| NEB T | 83 | [Unnamed Street] | 3.0 | 0.0 | 3.0 | 3.0 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 198 | Edmonston Road | 1.1 | 0.3 | 1.0 | 2.0 | 10 |
| SWB T | 199 | Edmonston Road | 1.9 | 0.3 | 1.0 | 2.0 | 10 |
| SWB TR | 200 | Edmonston Road | 1.9 | 0.3 | 1.0 | 2.0 | 10 |

NODE: 52

| POWDER | POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | | |
|-----------|-----------------------------------|--------------|----------|---------------|---------|---------|-----------|--|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | | |
| POWDER | MILL RO | AD & EDMONS | TON ROAD | | | | NODE: 19 | | |
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | | |
| WB L | 51 | Poultry Road | 3.1 | 0.3 | 3.0 | 4.0 | 10 | | |
| WB L | 82 | Poultry Road | 3.2 | 0.4 | 3.0 | 4.0 | 10 | | |
| NB T | 158 | Poultry Road | 15.3 | 4.0 | 13.0 | 25.1 | 10 | | |
| NB T | 159 | Poultry Road | 15.1 | 2.6 | 13.0 | 22.2 | 10 | | |
| WB T | 196 | Poultry Road | 4.4 | 0.7 | 3.0 | 5.0 | 10 | | |
| NB T | 212 | Poultry Road | 17.8 | 3.5 | 14.0 | 23.4 | 10 | | |
| NB T | 218 | Poultry Road | 13.2 | 0.4 | 13.0 | 14.0 | 10 | | |
| NB T | 350 | Poultry Road | 12.9 | 0.6 | 12.0 | 14.0 | 10 | | |
| NB T | 355 | Poultry Road | 12.7 | 0.7 | 12.0 | 14.0 | 10 | | |
| NB T | 406 | Poultry Road | 12.1 | 0.3 | 12.0 | 13.0 | 10 | | |

POWDER MILL ROAD & EDMONSTON ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| SEB L | 64 | Powder Mill Road | 1.8 | 0.4 | 1.0 | 2.0 | 10 |
| SEB T | 65 | Powder Mill Road | 2.2 | 0.4 | 2.0 | 3.0 | 10 |
| SEB T | 184 | Powder Mill Road | 2.2 | 0.4 | 2.0 | 3.0 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| WB L | 11 | Powder Mill Road | 1.3 | 0.5 | 1.0 | 2.0 | 10 |
| EB T | 17 | Powder Mill Road | 4.2 | 0.4 | 4.0 | 5.0 | 10 |
| WB T | 42 | Powder Mill Road | 4.4 | 0.7 | 3.0 | 5.0 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| NB L | 13 | Soil Conservation Road | 4.7 | 0.5 | 4.0 | 5.0 | 10 |

NODE: 19

NODE: 2

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Lane Queue by Intersection -Spillback Rate

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NB L | 36 | BW Parkway NB Off-Ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NB TR | 37 | BW Parkway NB Off-Ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 5 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| EB L | 24 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| EB T | 25 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| WB R | 207 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 27 | BW Parkway SB Off-Ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB TR | 28 | BW Parkway SB Off-Ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 8 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| WB L | 26 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| EB T | 31 | Powder Mill Road | 0.1 | 0.0 | 0.0 | 0.1 | 10 |
| EB R | 206 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|----------------|---------|---------------|---------|---------|-----------|
| NB L | 114 | Edmonston Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 120 | Edmonston Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 121 | Edmonston Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NB T | 126 | Edmonston Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NB T | 167 | Edmonston Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB R | 171 | Edmonston Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | NODE: 32 | | |
|-----------------------------------|---------|-------------|---------|---------------|----------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| EB L | 117 | Sunnyside Avenue | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| EB R | 118 | Sunnyside Avenue | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|----------------------|---------|---------------|---------|---------|-----------|
| NWB L | 321 | I-95/495 NB off-ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NWB L | 322 | I-95/495 NB off-ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NWB R | 323 | I-95/495 NB off-ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NWB R | 324 | I-95/495 NB off-ramp | 0.0 | 0.0 | 0.0 | 0.1 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 318 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB T | 319 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB T | 320 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 326 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 327 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 328 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

I-95/495 SB OFF-RAMP & MD 201 **NODE: 67** Movements Lane ID Average **Std Deviation** Minimum Maximum **# Samples** Street Name SEB L 392 0.0 0.0 0.0 0.0 10 [Unnamed Street] SEB L 393 0.0 0.0 0.0 0.0 10 [Unnamed Street]

I-95/495 SB OFF-RAMP & MD 201 **NODE: 67** # Samples Movements Lane ID **Std Deviation** Minimum Maximum Street Name Average NEB T 374 MD 201 0.0 0.0 0.0 0.0 10 NEB T 375 0.0 0.0 0.0 0.0 MD 201 10 NEB T 376 MD 201 0.0 0.0 0.0 0.0 10 SWB T 381 MD 201 0.0 0.0 0.0 0.0 10 SWB T 382 MD 201 0.0 0.0 0.0 0.0 10

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------|---------|---------------|---------|---------|-----------|
| NEB L | 237 | Cherrywood Lane | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB L | 238 | Cherrywood Lane | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB R | 239 | Cherrywood Lane | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NWB L | 230 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NWB T | 231 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NWB T | 232 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SEB T | 235 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

TransModeler

Transportation Impact Study

NODE: 45

NODE: 45

NODE: 57

NODE: 57

| MD 201 & CHERRYWOOD LANE | | | | | | | |
|--------------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SEB T | 236 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SEB R | 250 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| MD 201 & | MD 201 & IVY LANE | | | | | | |
|-----------|-------------------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 251 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 252 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| MD 201, N | MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | | |
|-----------|---|-----------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| NWB LT | 283 | Crescent Street | 0.6 | 0.0 | 0.6 | 0.7 | 10 | |
| NWB R | 284 | Crescent Street | 0.2 | 0.0 | 0.2 | 0.2 | 10 | |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------------|---------|---------------|---------|---------|-----------|
| SEB LTR | 281 | Maryland SHA Driveway | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 297 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB T | 298 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB T | 299 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB L | 311 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB R | 332 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB L | 342 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 343 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 344 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB TR | 345 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| POULTRY ROAD | | | | | | | |
|--------------|---------|--------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 109 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 131 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| POWDER | POWDER MILL ROAD & EDMONSTON ROAD | | | | | | |
|-----------|-----------------------------------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NEB L | 49 | [Unnamed Street] | 0.4 | 0.0 | 0.3 | 0.4 | 10 |
| NEB T | 83 | [Unnamed Street] | 0.2 | 0.0 | 0.1 | 0.2 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | | |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| SWB L | 198 | Edmonston Road | 0.3 | 0.0 | 0.2 | 0.3 | 10 | |
| SWB T | 199 | Edmonston Road | 0.5 | 0.0 | 0.4 | 0.5 | 10 | |
| SWB TR | 200 | Edmonston Road | 0.5 | 0.0 | 0.4 | 0.5 | 10 | |

NODE: 52

| POWDER | POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | | |
|-----------|-----------------------------------|---------------|---------|---------------|---------|---------|-----------|--|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | | |
| POWDER | MILL RO | AD & EDMONSTO | N ROAD | | | | NODE: 19 | | |
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | | |
| WB L | 51 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | | |
| WB L | 82 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | | |
| NB T | 158 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | | |
| NB T | 159 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | | |
| WB T | 196 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | | |
| NB T | 212 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | | |
| NB T | 218 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | | |
| NB T | 350 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | | |
| NB T | 355 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | | |
| NB T | 406 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | | |

POWDER MILL ROAD & EDMONSTON ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| SEB L | 64 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SEB T | 65 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SEB T | 184 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| WB L | 11 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| EB T | 17 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.1 | 10 |
| WB T | 42 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| NB L | 13 | Soil Conservation Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

NODE: 19

NODE: 2

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Lane Queue by Intersection -Overview

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | NODE: 5 |
|------------|---------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
| EB L on Po | wder Mill Road - La | ane ID 24 | | 0 () | | |
| 1 | 120.0 | 14.8 | 0.7 | 58.5 | 3.0 | 0.0% |
| 2 | 120.0 | 11.6 | 0.6 | 45.4 | 2.0 | 0.0% |
| 3 | 120.0 | 13.8 | 0.7 | 49.1 | 2.0 | 0.0% |
| 4 | 120.0 | 14.3 | 0.7 | 45.5 | 2.0 | 0.0% |
| 5 | 120.0 | 12.7 | 0.6 | 46.6 | 2.0 | 0.0% |
| 6 | 120.0 | 12.8 | 0.6 | 54.0 | 2.0 | 0.0% |
| 7 | 120.0 | 11.5 | 0.6 | 46.6 | 2.0 | 0.0% |
| 8 | 120.0 | 14.5 | 0.7 | 62.5 | 2.0 | 0.0% |
| 9 | 120.0 | 16.0 | 0.7 | 63.2 | 2.0 | 0.0% |
| 10 | 120.0 | 12.1 | 0.6 | 45.7 | 2.0 | 0.0% |
| Average: | 120.0 | 13.4 | 0.7 | 51.7 | 2.1 | 0.0% |
| EB T on Po | owder Mill Road - L | ane ID 25 | | | | |
| 1 | 120.0 | 24.3 | 1.0 | 120.6 | 5.0 | 0.0% |
| 2 | 120.0 | 23.9 | 1.0 | 135.9 | 6.0 | 0.0% |
| 3 | 120.0 | 18.7 | 0.8 | 116.8 | 5.0 | 0.0% |
| 4 | 120.0 | 23.6 | 1.0 | 133.2 | 6.0 | 0.0% |
| 5 | 120.0 | 16.4 | 0.7 | 130.3 | 5.0 | 0.0% |
| 6 | 120.0 | 24.0 | 1.0 | 128.0 | 5.0 | 0.0% |
| 7 | 120.0 | 16.9 | 0.7 | 109.0 | 4.0 | 0.0% |
| 8 | 120.0 | 19.1 | 0.8 | 125.0 | 5.0 | 0.0% |
| 9 | 120.0 | 25.4 | 1.1 | 141.2 | 6.0 | 0.0% |
| 10 | 120.0 | 16.7 | 0.7 | 102.8 | 5.0 | 0.0% |
| Average: | 120.0 | 20.9 | 0.9 | 124.3 | 5.2 | 0.0% |
| NB L on B | W Parkway NB Off- | Ramp - Lane ID 36 | | | | |
| 1 | 120.0 | 53.1 | 2.4 | 164.1 | 7.0 | 0.0% |
| 2 | 120.0 | 64.0 | 2.8 | 177.9 | 8.0 | 0.0% |
| 3 | 120.0 | 61.6 | 2.7 | 152.7 | 7.0 | 0.0% |
| 4 | 120.0 | 56.8 | 2.5 | 161.2 | 7.0 | 0.0% |
| 5 | 120.0 | 57.9 | 2.6 | 156.8 | 7.0 | 0.0% |
| 6 | 120.0 | 61.5 | 2.7 | 166.7 | 7.0 | 0.0% |
| 7 | 120.0 | 51.7 | 2.4 | 154.5 | 7.0 | 0.0% |
| 8 | 120.0 | 58.1 | 2.6 | 148.4 | 6.0 | 0.0% |
| 9 | 120.0 | 50.3 | 2.2 | 159.8 | 7.0 | 0.0% |
| 10 | 120.0 | 50.9 | 2.3 | 144.7 | 6.0 | 0.0% |
| Average: | 120.0 | 56.6 | 2.5 | 158.7 | 6.9 | 0.0% |

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | |
|------|--|

| ROAD | | | | | | NODE: 5 |
|----------|--------------------|---------------------|--------------|-----------------|-----------------|-----------------------|
| Run | Observations | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback Bate (%) |
| NB TR on | BW Parkway NB Of | ff-Ramp - Lane ID 3 | 7 | | Ham Queuca | |
| 1 | 120.0 | 1.9 | 0.1 | 18.7 | 1.0 | 0.0% |
| 2 | 120.0 | 3.0 | 0.1 | 21.3 | 1.0 | 0.0% |
| 3 | 120.0 | 2.0 | 0.1 | 18.0 | 1.0 | 0.0% |
| 4 | 120.0 | 2.4 | 0.1 | 17.3 | 1.0 | 0.0% |
| 5 | 120.0 | 4.1 | 0.2 | 26.2 | 1.0 | 0.0% |
| 6 | 120.0 | 2.2 | 0.1 | 17.6 | 1.0 | 0.0% |
| 7 | 120.0 | 1.4 | 0.1 | 14.6 | 1.0 | 0.0% |
| 8 | 120.0 | 2.5 | 0.1 | 17.9 | 1.0 | 0.0% |
| 9 | 120.0 | 2.2 | 0.1 | 17.1 | 1.0 | 0.0% |
| 10 | 120.0 | 2.3 | 0.1 | 17.4 | 1.0 | 0.0% |
| Average: | 120.0 | 2.4 | 0.1 | 18.6 | 1.0 | 0.0% |
| WB R on | Powder Mill Road - | Lane ID 207 | | | | |
| 1 | 120.0 | 1.7 | 0.1 | 15.4 | 1.0 | 0.0% |
| 2 | 120.0 | 1.2 | 0.1 | 12.9 | 1.0 | 0.0% |
| 3 | 120.0 | 2.0 | 0.1 | 16.4 | 1.0 | 0.0% |
| 4 | 120.0 | 2.3 | 0.1 | 17.7 | 1.0 | 0.0% |
| 5 | 120.0 | 2.3 | 0.1 | 20.6 | 1.0 | 0.0% |
| 6 | 120.0 | 1.5 | 0.1 | 18.4 | 1.0 | 0.0% |
| 7 | 120.0 | 2.7 | 0.1 | 20.7 | 1.0 | 0.0% |
| 8 | 120.0 | 1.1 | 0.1 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 2.9 | 0.1 | 24.7 | 1.0 | 0.0% |
| 10 | 120.0 | 1.4 | 0.1 | 15.4 | 1.0 | 0.0% |
| Average: | 120.0 | 1.9 | 0.1 | 16.2 | 0.9 | 0.0% |
| WB T on | Powder Mill Road - | Lane ID 5 | | | | |
| 1 | 120.0 | 26.4 | 1.2 | 119.1 | 5.0 | 0.0% |
| 2 | 120.0 | 23.7 | 1.1 | 97.7 | 4.0 | 0.0% |
| 3 | 120.0 | 21.3 | 0.9 | 111.9 | 4.0 | 0.0% |
| 4 | 120.0 | 24.5 | 1.1 | 128.8 | 5.0 | 0.0% |
| 5 | 120.0 | 19.7 | 0.9 | 119.7 | 5.0 | 0.0% |
| 6 | 120.0 | 24.3 | 1.1 | 115.7 | 5.0 | 0.0% |
| 7 | 120.0 | 21.1 | 0.9 | 99.4 | 4.0 | 0.0% |
| 8 | 120.0 | 22.4 | 1.0 | 106.1 | 5.0 | 0.0% |
| 9 | 120.0 | 24.8 | 1.1 | 126.0 | 5.0 | 0.0% |
| 10 | 120.0 | 20.8 | 0.9 | 97.6 | 4.0 | 0.0% |
| Average: | 120.0 | 22.9 | 1.0 | 112.2 | 4.6 | 0.0% |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | NODE: 8 |
|------------|----------------------|---------------------|--------------|-----------------|-----------------|-----------|
| Dun | Observations | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback |
| EB B on Br | observations | ano ID 206 | Queueu | Length (It) | Nulli Queueu | |
| 1 | 120.0 | 1.2 | 0.1 | 12.7 | 1.0 | 0.0% |
| 2 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0% |
| 4 | 120.0 | 1.2 | 0.1 | 13.7 | 1.0 | 0.0% |
| 5 | 120.0 | 1.6 | 0.1 | 17.6 | 1.0 | 0.0% |
| 6 | 120.0 | 1.3 | 0.1 | 11.1 | 1.0 | 0.0% |
| 7 | 120.0 | 1.4 | 0.1 | 15.9 | 1.0 | 0.0% |
| 8 | 120.0 | 1.2 | 0.1 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0% |
| 10 | 120.0 | 1.0 | 0.1 | 0.6 | 0.0 | 0.0% |
| Average: | 120.0 | 1.0 | 0.1 | 7.2 | 0.5 | 0.0% |
| EB T on Po | owder Mill Road - La | ane ID 31 | | | | |
| 1 | 120.0 | 22.1 | 1.0 | 101.8 | 4.0 | 4.2% |
| 2 | 120.0 | 16.6 | 0.7 | 95.5 | 4.0 | 6.7% |
| 3 | 120.0 | 16.2 | 0.7 | 99.5 | 4.0 | 7.5% |
| 4 | 120.0 | 18.7 | 0.8 | 94.8 | 4.0 | 7.5% |
| 5 | 120.0 | 10.9 | 0.5 | 64.8 | 3.0 | 0.8% |
| 6 | 120.0 | 19.5 | 0.9 | 89.9 | 4.0 | 4.2% |
| 7 | 120.0 | 19.8 | 0.9 | 98.4 | 4.0 | 7.5% |
| 8 | 120.0 | 14.1 | 0.6 | 92.8 | 4.0 | 5.0% |
| 9 | 120.0 | 17.5 | 0.8 | 81.1 | 4.0 | 4.2% |
| 10 | 120.0 | 18.8 | 0.8 | 106.4 | 4.0 | 6.7% |
| Average: | 120.0 | 17.4 | 0.8 | 92.5 | 3.9 | 5.4% |
| SWB L on | BW Parkway SB Of | f-Ramp - Lane ID 27 | 7 | | | |
| 1 | 120.0 | 42.3 | 1.9 | 129.8 | 5.0 | 0.0% |
| 2 | 120.0 | 56.6 | 2.5 | 132.3 | 6.0 | 0.0% |
| 3 | 120.0 | 57.2 | 2.5 | 148.0 | 6.0 | 0.0% |
| 4 | 120.0 | 51.8 | 2.3 | 137.1 | 6.0 | 0.0% |
| 5 | 120.0 | 45.0 | 2.0 | 131.1 | 6.0 | 0.0% |
| 6 | 120.0 | 42.4 | 1.9 | 125.1 | 5.0 | 0.0% |
| 7 | 120.0 | 42.3 | 1.9 | 121.5 | 5.0 | 0.0% |
| 8 | 120.0 | 50.7 | 2.3 | 135.7 | 6.0 | 0.0% |
| 9 | 120.0 | 52.7 | 2.3 | 143.3 | 6.0 | 0.0% |
| 10 | 120.0 | 47.7 | 2.2 | 130.3 | 6.0 | 0.0% |
| Average: | 120.0 | 48.9 | 2.2 | 133.4 | 5.7 | 0.0% |
| SWB TR o | n BW Parkway SB C | Off-Ramp - Lane ID | 28 | | | |
| 1 | 120.0 | 19.1 | 0.9 | 88.3 | 4.0 | 0.0% |
| 2 | 120.0 | 20.1 | 1.0 | 86.6 | 4.0 | 0.0% |
| 3 | 120.0 | 22.8 | 1.0 | 87.9 | 4.0 | 0.0% |
| 4 | 120.0 | 21.3 | 1.0 | 85.3 | 4.0 | 0.0% |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| BUVU | |
|-------------|--|
| NUAD | |

| ROAD | | | | | | NODE: 8 |
|-----------|---------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
| SWB TR or | n BW Parkway SB C | Off-Ramp - Lane ID | 28 | | | |
| 5 | 120.0 | 17.8 | 0.8 | 88.6 | 4.0 | 0.0% |
| 6 | 120.0 | 20.4 | 0.9 | 89.8 | 4.0 | 0.0% |
| 7 | 120.0 | 23.4 | 1.1 | 87.9 | 4.0 | 0.0% |
| 8 | 120.0 | 26.8 | 1.2 | 102.6 | 4.0 | 0.0% |
| 9 | 120.0 | 15.0 | 0.7 | 62.1 | 3.0 | 0.0% |
| 10 | 120.0 | 24.1 | 1.1 | 96.5 | 4.0 | 0.0% |
| Average: | 120.0 | 21.1 | 1.0 | 87.6 | 3.9 | 0.0% |
| WB L on P | owder Mill Road - I | Lane ID 26 | | | | |
| 1 | 120.0 | 1.2 | 0.1 | 16.0 | 1.0 | 0.0% |
| 2 | 120.0 | 2.2 | 0.1 | 16.0 | 1.0 | 0.0% |
| 3 | 120.0 | 1.7 | 0.1 | 16.5 | 1.0 | 0.0% |
| 4 | 120.0 | 1.6 | 0.1 | 16.8 | 1.0 | 0.0% |
| 5 | 120.0 | 2.5 | 0.1 | 17.3 | 1.0 | 0.0% |
| 6 | 120.0 | 2.2 | 0.1 | 17.1 | 1.0 | 0.0% |
| 7 | 120.0 | 2.2 | 0.1 | 17.7 | 1.0 | 0.0% |
| 8 | 120.0 | 2.0 | 0.1 | 16.7 | 1.0 | 0.0% |
| 9 | 120.0 | 1.2 | 0.1 | 15.5 | 1.0 | 0.0% |
| 10 | 120.0 | 2.7 | 0.1 | 18.4 | 1.0 | 0.0% |
| Average: | 120.0 | 2.0 | 0.1 | 16.8 | 1.0 | 0.0% |
| WB T on P | owder Mill Road - I | Lane ID 8 | | | | |
| 1 | 120.0 | 6.6 | 0.3 | 63.5 | 2.0 | 0.0% |
| 2 | 120.0 | 5.6 | 0.3 | 46.1 | 2.0 | 0.0% |
| 3 | 120.0 | 4.5 | 0.2 | 27.0 | 1.0 | 0.0% |
| 4 | 120.0 | 4.6 | 0.2 | 43.1 | 2.0 | 0.0% |
| 5 | 120.0 | 6.1 | 0.3 | 47.7 | 2.0 | 0.0% |
| 6 | 120.0 | 6.8 | 0.3 | 44.0 | 2.0 | 0.0% |
| 7 | 120.0 | 6.0 | 0.3 | 39.7 | 2.0 | 0.0% |
| 8 | 120.0 | 4.0 | 0.2 | 21.8 | 1.0 | 0.0% |
| 9 | 120.0 | 4.5 | 0.2 | 35.8 | 2.0 | 0.0% |
| 10 | 120.0 | 6.9 | 0.3 | 61.6 | 2.0 | 0.0% |
| Average: | 120.0 | 5.6 | 0.3 | 43.0 | 1.8 | 0.0% |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | |
|------------|--|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|
| EB L on Su | EB L on Sunnyside Avenue - Lane ID 117 | | | | | | | |
| 1 | 120.0 | 42.3 | 2.0 | 98.9 | 4.0 | 0.0% | | |
| 2 | 120.0 | 44.1 | 2.0 | 119.4 | 5.0 | 0.0% | | |
| 3 | 120.0 | 39.7 | 1.8 | 111.7 | 5.0 | 0.0% | | |
| 4 | 120.0 | 37.2 | 1.7 | 97.1 | 4.0 | 0.0% | | |
| 5 | 120.0 | 39.4 | 1.8 | 100.5 | 5.0 | 0.0% | | |

EDMONISTON BOAD & SUNNVSIDE AVENUE

| EDMONS | EDMONSTON ROAD & SUNNYSIDE AVENUE NODE: 32 | | | | | | |
|------------|--|-------------|--------------|-----------------|-----------------|-----------|--|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback | |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) | |
| EB L on Su | nnyside Avenue - I | Lane ID 117 | | | | | |
| 6 | 120.0 | 35.2 | 1.6 | 100.0 | 4.0 | 0.0% | |
| 7 | 120.0 | 49.0 | 2.1 | 129.6 | 5.0 | 0.0% | |
| 8 | 120.0 | 38.7 | 1.8 | 102.7 | 5.0 | 0.0% | |
| 9 | 120.0 | 35.8 | 1.6 | 94.3 | 4.0 | 0.0% | |
| 10 | 120.0 | 41.3 | 1.9 | 103.5 | 4.0 | 0.0% | |
| Average: | 120.0 | 40.3 | 1.8 | 105.8 | 4.5 | 0.0% | |
| FB R on Su | innyside Avenue - | lane ID 118 | | | | | |
| 1 | 120.0 | 16.8 | 0.8 | 85.6 | 3.0 | 0.0% | |
| 2 | 120.0 | 14.2 | 0.7 | 63.0 | 3.0 | 0.0% | |
| 3 | 120.0 | 18.4 | 0.8 | 93.8 | 4.0 | 0.0% | |
| 4 | 120.0 | 14.6 | 0.6 | 87.3 | 3.0 | 0.0% | |
| 5 | 120.0 | 14.6 | 0.6 | 84.5 | 3.0 | 0.0% | |
| 6 | 120.0 | 22.7 | 1.0 | 79.7 | 3.0 | 0.0% | |
| 7 | 120.0 | 15.7 | 0.7 | 72.7 | 3.0 | 0.0% | |
| 8 | 120.0 | 16.0 | 0.7 | 78.7 | 3.0 | 0.0% | |
| 9 | 120.0 | 21.2 | 0.9 | 79.2 | 3.0 | 0.0% | |
| 10 | 120.0 | 17.8 | 0.8 | 81.7 | 3.0 | 0.0% | |
| Average: | 120.0 | 17.2 | 0.8 | 80.6 | 3.1 | 0.0% | |
| NB L on Ed | monston Road - L | ane ID 114 | | | | | |
| 1 | 120.0 | 75.0 | 3.1 | 238.8 | 9.0 | 0.0% | |
| 2 | 120.0 | 61.3 | 2.6 | 188.1 | 8.0 | 0.0% | |
| 3 | 120.0 | 68.2 | 2.8 | 238.3 | 10.0 | 0.0% | |
| 4 | 120.0 | 67.2 | 2.7 | 247.8 | 10.0 | 0.0% | |
| 5 | 120.0 | 67.4 | 2.9 | 203.0 | 8.0 | 0.0% | |
| 6 | 120.0 | 75.7 | 3.2 | 216.9 | 8.0 | 0.0% | |
| 7 | 120.0 | 74.0 | 3.1 | 204.0 | 8.0 | 0.0% | |
| 8 | 120.0 | 70.7 | 3.0 | 275.8 | 11.0 | 0.0% | |
| 9 | 120.0 | 85.4 | 3.6 | 253.3 | 10.0 | 0.0% | |
| 10 | 120.0 | 77.6 | 3.3 | 220.9 | 9.0 | 0.0% | |
| Average: | 120.0 | 72.3 | 3.0 | 228.7 | 9.1 | 0.0% | |
| NB T on Ec | dmonston Road - L | ane ID 126 | | | | | |
| 1 | 120.0 | 8.1 | 0.3 | 75.6 | 3.0 | 0.0% | |
| 2 | 120.0 | 7.1 | 0.3 | 65.1 | 3.0 | 0.0% | |
| 3 | 120.0 | 10.5 | 0.4 | 84.0 | 3.0 | 0.0% | |
| 4 | 120.0 | 8.7 | 0.4 | 67.0 | 3.0 | 0.0% | |
| 5 | 120.0 | 6.3 | 0.3 | 45.8 | 2.0 | 0.0% | |
| 6 | 120.0 | 5.8 | 0.3 | 48.0 | 2.0 | 0.0% | |
| 7 | 120.0 | 4.6 | 0.2 | 42.3 | 2.0 | 0.0% | |
| 8 | 120.0 | 8.2 | 0.4 | 60.5 | 3.0 | 0.0% | |
| 9 | 120.0 | 8.2 | 0.4 | 57.7 | 3.0 | 0.0% | |
| 10 | 120.0 | 6.9 | 0.3 | 78.9 | 3.0 | 0.0% | |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback | | |
|--------------------------------------|-------------------|-------------|--------------|-----------------|-----------------|-----------|--|--|
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) | | |
| NB T on Edmonston Road - Lane ID 126 | | | | | | | | |
| Average: | 120.0 | 7.4 | 0.3 | 62.5 | 2.7 | 0.0% | | |
| | | | | | | | | |
| NB T on Edn | nonston Road - La | ane ID 167 | 0.2 | 64.4 | 2.0 | 0.0% | | |
| 1 | 120.0 | 7.6 | 0.3 | 64.4 | 3.0 | 0.0% | | |
| 2 | 120.0 | 4.1 | 0.2 | 20.6 | 1.0 | 0.0% | | |
| 3 | 120.0 | 7.5 | 0.3 | 49.9 | 2.0 | 0.0% | | |
| 4 | 120.0 | 6.4 | 0.3 | 50.0 | 2.0 | 0.0% | | |
| 5 | 120.0 | 6.2 | 0.3 | 52.7 | 2.0 | 0.0% | | |
| 0 | 120.0 | 5.9 | 0.3 | 42.0 | 2.0 | 0.0% | | |
| / | 120.0 | 4.0 | 0.2 | 35.1 | 2.0 | 0.0% | | |
| 0 | 120.0 | 9.1 | 0.4 | 73.0 | 3.0 | 0.0% | | |
| 9 | 120.0 | 8.0 | 0.4 | 70.9 | 3.0 | 0.0% | | |
| 10 | 120.0 | 6.2 | 0.5 | 50.0 F1 0 | 3.0 | 0.0% | | |
| Average: | 120.0 | 0.5 | 0.3 | 51.9 | 2.3 | 0.0% | | |
| | | | | | | | | |
| | 120.0 | 5 2 | 0.2 | 24.4 | 1.0 | 0.0% | | |
| 2 | 120.0 | 5.8 | 0.3 | 34.4 | 2.0 | 0.0% | | |
| 2 | 120.0 | 5.8 | 0.3 | 34.2 | 2.0 | 0.0% | | |
| 3 | 120.0 | 0.9 | 0.3 | 23.6 | 2.0 | 0.0% | | |
| 5 | 120.0 | 4.0 6.1 | 0.2 | 12 3 | 2.0 | 0.0% | | |
| 5 | 120.0 | 5.9 | 0.3 | 42.3 | 1.0 | 0.0% | | |
| 7 | 120.0 | 7.9 | 0.4 | 46.2 | 2.0 | 0.0% | | |
| 8 | 120.0 | 5.7 | 0.3 | 25.8 | 1.0 | 0.0% | | |
| 9 | 120.0 | 5.9 | 0.3 | 34.7 | 1.0 | 0.0% | | |
| 10 | 120.0 | 6.9 | 0.3 | 40.7 | 2.0 | 0.0% | | |
| Average: | 120.0 | 6.0 | 0.3 | 35.7 | 1.5 | 0.0% | | |
| Average. | 120.0 | 0.0 | 0.5 | 55.7 | 1.9 | 0.070 | | |
| SB T on Edm | onston Road - La | ne ID 120 | | | | | | |
| 1 | 120.0 | 41.2 | 1.8 | 175.6 | 7.0 | 0.0% | | |
| 2 | 120.0 | 45.5 | 2.0 | 189.1 | 8.0 | 0.0% | | |
| 3 | 120.0 | 44.6 | 1.8 | 182.8 | 7.0 | 0.0% | | |
| 4 | 120.0 | 48.3 | 2.1 | 185.5 | 8.0 | 0.0% | | |
| 5 | 120.0 | 42.0 | 1.8 | 183.2 | 8.0 | 0.0% | | |
| 6 | 120.0 | 38.5 | 1.6 | 168.3 | 7.0 | 0.0% | | |
| 7 | 120.0 | 41.3 | 1.8 | 185.4 | 7.0 | 0.0% | | |
| 8 | 120.0 | 47.2 | 2.0 | 191.2 | 8.0 | 0.0% | | |
| 9 | 120.0 | 42.0 | 1.8 | 176.1 | 7.0 | 0.0% | | |
| 10 | 120.0 | 41.1 | 1.7 | 190.0 | 8.0 | 0.0% | | |
| Average: | 120.0 | 43.2 | 1.8 | 182.7 | 7.5 | 0.0% | | |
| 5 | | | | | | | | |
| SB T on Fdm | onston Road - La | ine ID 121 | | | | | | |
| 1 | 120.0 | 53.7 | 2.3 | 196.4 | 8.0 | 0.0% | | |
| 2 | 120.0 | 56.8 | 2.4 | 227.0 | 9.0 | 0.0% | | |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | NODE: 32 | | |
|--------------------------------------|--------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | |
| SB T on Edmonston Road - Lane ID 121 | | | | | | | | |
| 3 | 120.0 | 54.2 | 2.3 | 210.3 | 9.0 | 0.0% | | |
| 4 | 120.0 | 60.0 | 2.5 | 214.1 | 9.0 | 0.0% | | |
| 5 | 120.0 | 54.0 | 2.3 | 216.3 | 9.0 | 0.0% | | |
| 6 | 120.0 | 49.0 | 2.1 | 185.1 | 8.0 | 0.0% | | |
| 7 | 120.0 | 50.7 | 2.1 | 195.6 | 8.0 | 0.0% | | |
| 8 | 120.0 | 60.2 | 2.5 | 236.8 | 10.0 | 0.0% | | |
| 9 | 120.0 | 49.4 | 2.1 | 210.2 | 9.0 | 0.0% | | |
| 10 | 120.0 | 55.9 | 2.4 | 215.6 | 9.0 | 0.0% | | |
| Average: | 120.0 | 54.4 | 2.3 | 210.7 | 8.8 | 0.0% | | |

I-95/495 NB OFF-RAMP & MD 201

| Run | Observations | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile Num Queued | Spillback Bate (%) |
|-------------------------------|----------------------|------------|--------------|-----------------|-------------------------------|-----------------------|
| NEB T on I | VD 201 - Lane ID 318 | Lengen (ny | Queucu | | Nulli Queucu | |
| 1 | 120.0 | 10.2 | 0.5 | 61.3 | 3.0 | 0.0% |
| 2 | 120.0 | 9.5 | 0.5 | 44.5 | 2.0 | 0.0% |
| 3 | 120.0 | 9.4 | 0.5 | 42.9 | 2.0 | 0.0% |
| 4 | 120.0 | 7.6 | 0.4 | 41.8 | 2.0 | 0.0% |
| 5 | 120.0 | 17.7 | 0.8 | 70.6 | 3.0 | 0.0% |
| 6 | 120.0 | 9.8 | 0.5 | 44.6 | 2.0 | 0.0% |
| 7 | 120.0 | 7.7 | 0.4 | 44.8 | 2.0 | 0.0% |
| 8 | 120.0 | 13.9 | 0.7 | 54.9 | 2.0 | 0.0% |
| 9 | 120.0 | 11.4 | 0.5 | 57.1 | 2.0 | 0.0% |
| 10 | 120.0 | 9.6 | 0.5 | 50.7 | 2.0 | 0.0% |
| Average: | 120.0 | 10.7 | 0.5 | 51.3 | 2.2 | 0.0% |
| | | | | | | |
| NEB T on I | MD 201 - Lane ID 319 | | | | | |
| 1 | 120.0 | 12.4 | 0.6 | 43.6 | 2.0 | 0.0% |
| 2 | 120.0 | 12.6 | 0.6 | 50.0 | 2.0 | 0.0% |
| 3 | 120.0 | 11.8 | 0.6 | 47.3 | 2.0 | 0.0% |
| 4 | 120.0 | 11.0 | 0.5 | 46.4 | 2.0 | 0.0% |
| 5 | 120.0 | 18.3 | 0.8 | 70.3 | 3.0 | 0.0% |
| 6 | 120.0 | 12.2 | 0.6 | 50.8 | 2.0 | 0.0% |
| 7 | 120.0 | 11.8 | 0.6 | 56.4 | 2.0 | 0.0% |
| 8 | 120.0 | 15.5 | 0.7 | 58.0 | 3.0 | 0.0% |
| 9 | 120.0 | 14.7 | 0.7 | 71.2 | 3.0 | 0.0% |
| 10 | 120.0 | 13.5 | 0.6 | 63.4 | 3.0 | 0.0% |
| Average: | 120.0 | 13.4 | 0.6 | 55.7 | 2.4 | 0.0% |
| | | | | | | |
| NEB T on MD 201 - Lane ID 320 | | | | | | |
| 1 | 120.0 | 15.2 | 0.7 | 66.4 | 3.0 | 0.0% |
| 2 | 120.0 | 19.8 | 0.9 | 70.8 | 3.0 | 0.0% |
| 3 | 120.0 | 16.9 | 0.8 | 73.8 | 3.0 | 0.0% |
| 4 | 120.0 | 13.0 | 0.6 | 63.4 | 3.0 | 0.0% |

I OF /AOF NIR OFE PANAD 8. MAD 201

| I-95/495 NB OFF-RAMP & MD 201 NODE: 57 | | | | | | | | |
|--|---------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | |
| NEB T on MD 201 - Lane ID 320 | | | | | | | | |
| 5 | 120.0 | 20.2 | 0.9 | 82.6 | 4.0 | 0.0% | | |
| 6 | 120.0 | 16.8 | 0.8 | 70.1 | 3.0 | 0.0% | | |
| 7 | 120.0 | 14.2 | 0.7 | 61.2 | 3.0 | 0.0% | | |
| 8 | 120.0 | 20.5 | 0.9 | 73.7 | 3.0 | 0.0% | | |
| 9 | 120.0 | 16.6 | 0.8 | 67.3 | 3.0 | 0.0% | | |
| 10 | 120.0 | 17.6 | 0.8 | 74.6 | 3.0 | 0.0% | | |
| Average: | 120.0 | 17.1 | 0.8 | 70.4 | 3.1 | 0.0% | | |
| NWB L on | I-95/495 NB off-rar | mp - Lane ID 321 | | | | | | |
| 1 | 120.0 | 18.9 | 0.8 | 86.3 | 3.0 | 0.0% | | |
| 2 | 120.0 | 15.0 | 0.7 | 73.6 | 3.0 | 0.0% | | |
| 3 | 120.0 | 16.9 | 0.8 | 75.6 | 3.0 | 0.0% | | |
| 4 | 120.0 | 17.8 | 0.8 | 74.5 | 3.0 | 0.0% | | |
| 5 | 120.0 | 16.4 | 0.7 | 78.7 | 3.0 | 0.0% | | |
| 6 | 120.0 | 16.2 | 0.7 | 72.7 | 3.0 | 0.0% | | |
| 7 | 120.0 | 17.9 | 0.8 | 75.4 | 3.0 | 0.0% | | |
| 8 | 120.0 | 13.1 | 0.6 | 69.6 | 3.0 | 0.0% | | |
| 9 | 120.0 | 21.7 | 1.0 | 80.3 | 4.0 | 0.0% | | |
| 10 | 120.0 | 19.7 | 0.9 | 83.5 | 4.0 | 0.0% | | |
| Average: | 120.0 | 17.4 | 0.8 | 77.0 | 3.2 | 0.0% | | |
| NWB L on | I-95/495 NB off-rar | mp - Lane ID 322 | | | | | | |
| 1 | 120.0 | 34.7 | 1.5 | 108.2 | 4.0 | 0.0% | | |
| 2 | 120.0 | 28.1 | 1.3 | 97.1 | 4.0 | 0.0% | | |
| 3 | 120.0 | 30.5 | 1.3 | 100.6 | 4.0 | 0.0% | | |
| 4 | 120.0 | 34.3 | 1.5 | 116.2 | 5.0 | 0.0% | | |
| 5 | 120.0 | 23.8 | 1.1 | 96.8 | 4.0 | 0.0% | | |
| 6 | 120.0 | 27.3 | 1.3 | 91.7 | 4.0 | 0.0% | | |
| 7 | 120.0 | 31.5 | 1.4 | 95.1 | 4.0 | 0.0% | | |
| 8 | 120.0 | 27.0 | 1.2 | 104.9 | 4.0 | 0.0% | | |
| 9 | 120.0 | 34.6 | 1.5 | 114.8 | 5.0 | 0.0% | | |
| 10 | 120.0 | 34.3 | 1.5 | 107.3 | 5.0 | 0.0% | | |
| Average: | 120.0 | 30.6 | 1.4 | 103.3 | 4.3 | 0.0% | | |
| NWB R on | I-95/495 NB off-ra | mp - Lane ID 323 | | | | | | |
| 1 | 120.0 | 53.2 | 2.2 | 193.8 | 7.0 | 0.0% | | |
| 2 | 120.0 | 46.5 | 2.0 | 174.8 | 8.0 | 0.0% | | |
| 3 | 120.0 | 50.1 | 2.1 | 194.6 | 8.0 | 0.0% | | |
| 4 | 120.0 | 59.5 | 2.5 | 201.9 | 8.0 | 0.0% | | |
| 5 | 120.0 | 41.8 | 1.8 | 197.6 | 8.0 | 0.0% | | |
| 6 | 120.0 | 49.5 | 2.1 | 182.6 | 8.0 | 0.0% | | |
| 7 | 120.0 | 50.5 | 2.1 | 187.1 | 8.0 | 0.0% | | |
| 8 | 120.0 | 52.2 | 2.2 | 195.2 | 8.0 | 0.0% | | |
| 9 | 120.0 | 57.5 | 2.5 | 206.2 | 9.0 | 0.0% | | |

1-95/495 NB OFF-RAMP & MD 201

| I-95/495 NB OFF-RAMP & MD 201 NODE: 57 | | | | | | | |
|--|--------------------|------------------|--------------|-----------------|-----------------|-----------|--|
| Due | Observations | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback | |
| | UDSErvations | | Queueu | Length (It) | Nulli Queuea | Rate (%) | |
| 10 | 120 0 | 56 7 | 24 | 187 4 | 8.0 | 0.0% | |
| Average: | 120.0 | 51.8 | 2.4 | 197.4 | 8.0 | 0.0% | |
| Average. | 120.0 | 51.0 | 2.2 | 192.1 | 0.0 | 0.070 | |
| NW/B R on | 1-95//95 NB off-ra | mn - Lane ID 324 | | | | | |
| 1 | 120.0 | 58.0 | 2.4 | 182.8 | 8.0 | 0.0% | |
| 2 | 120.0 | 44.8 | 1.9 | 165.9 | 7.0 | 0.0% | |
| 3 | 120.0 | 49.8 | 2.1 | 185.2 | 7.0 | 0.0% | |
| 4 | 120.0 | 55.3 | 2.3 | 202.4 | 9.0 | 0.0% | |
| 5 | 120.0 | 41.6 | 1.8 | 175.5 | 7.0 | 0.0% | |
| 6 | 120.0 | 43.7 | 1.9 | 164.0 | 7.0 | 0.0% | |
| 7 | 120.0 | 59.8 | 2.5 | 191.8 | 8.0 | 0.0% | |
| 8 | 120.0 | 41.4 | 1.8 | 156.3 | 7.0 | 0.0% | |
| 9 | 120.0 | 59.2 | 2.5 | 184.4 | 8.0 | 0.0% | |
| 10 | 120.0 | 58.5 | 2.5 | 186.9 | 8.0 | 0.0% | |
| Average: | 120.0 | 51.2 | 2.2 | 179.5 | 7.6 | 0.0% | |
| Ū. | | | | | | | |
| SWB T on | MD 201 - Lane ID 3 | 26 | | | | | |
| 1 | 120.0 | 13.5 | 0.7 | 47.8 | 2.0 | 0.0% | |
| 2 | 120.0 | 14.3 | 0.7 | 52.8 | 2.0 | 0.0% | |
| 3 | 120.0 | 15.8 | 0.7 | 62.7 | 3.0 | 0.0% | |
| 4 | 120.0 | 13.7 | 0.7 | 64.1 | 3.0 | 0.0% | |
| 5 | 120.0 | 21.1 | 1.0 | 67.9 | 3.0 | 0.0% | |
| 6 | 120.0 | 12.7 | 0.6 | 62.1 | 3.0 | 0.0% | |
| 7 | 120.0 | 15.6 | 0.7 | 65.6 | 3.0 | 0.0% | |
| 8 | 120.0 | 15.9 | 0.7 | 58.7 | 3.0 | 0.0% | |
| 9 | 120.0 | 15.6 | 0.8 | 52.0 | 3.0 | 0.0% | |
| 10 | 120.0 | 13.9 | 0.7 | 60.5 | 3.0 | 0.0% | |
| Average: | 120.0 | 15.2 | 0.7 | 59.4 | 2.8 | 0.0% | |
| | | | | | | | |
| SWB T on | MD 201 - Lane ID 3 | 327 | | | | | |
| 1 | 120.0 | 10.6 | 0.5 | 51.8 | 2.0 | 0.0% | |
| 2 | 120.0 | 6.5 | 0.3 | 40.4 | 2.0 | 0.0% | |
| 3 | 120.0 | 12.7 | 0.6 | 53.8 | 2.0 | 0.0% | |
| 4 | 120.0 | 8.2 | 0.4 | 44.4 | 2.0 | 0.0% | |
| 5 | 120.0 | 12.3 | 0.6 | 63.1 | 3.0 | 0.0% | |
| 6 | 120.0 | 13.4 | 0.6 | 62.8 | 3.0 | 0.0% | |
| 7 | 120.0 | 8.2 | 0.4 | 43.7 | 2.0 | 0.0% | |
| 8 | 120.0 | 12.6 | 0.6 | 48.0 | 2.0 | 0.0% | |
| 9 | 120.0 | 10.8 | 0.5 | 62.1 | 2.0 | 0.0% | |
| 10 | 120.0 | 11.6 | 0.6 | 64.3 | 3.0 | 0.0% | |
| Average: | 120.0 | 10.7 | 0.5 | 53.4 | 2.3 | 0.0% | |
| | | | | | | | |
| SWB T on | MD 201 - Lane ID 3 | 28 | | | | | |
| 1 | 120.0 | 14.7 | 0.7 | 68.9 | 3.0 | 0.0% | |

I-95/495 NB OFF-RAMP & MD 201

| I-95/495 NB OFF-RAMP & MD 201 NODE: 57 | | | | | | | |
|--|--------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | |
| SWB T on MD 201 - Lane ID 328 | | | | | | | |
| 2 | 120.0 | 14.5 | 0.7 | 64.4 | 3.0 | 0.0% | |
| 3 | 120.0 | 15.2 | 0.7 | 68.8 | 3.0 | 0.0% | |
| 4 | 120.0 | 12.3 | 0.6 | 61.8 | 3.0 | 0.0% | |
| 5 | 120.0 | 23.4 | 1.0 | 85.2 | 4.0 | 0.0% | |
| 6 | 120.0 | 15.2 | 0.7 | 70.3 | 3.0 | 0.0% | |
| 7 | 120.0 | 15.2 | 0.7 | 76.6 | 3.0 | 0.0% | |
| 8 | 120.0 | 17.8 | 0.9 | 68.2 | 3.0 | 0.0% | |
| 9 | 120.0 | 20.7 | 0.9 | 94.5 | 4.0 | 0.0% | |
| 10 | 120.0 | 15.8 | 0.7 | 70.4 | 3.0 | 0.0% | |
| Average: | 120.0 | 16.5 | 0.8 | 72.9 | 3.2 | 0.0% | |

I-95/495 SB OFF-RAMP & MD 201

Avg Queue Avg Vehicles 95th Percentile 95th Percentile Spillback Rate (%) Queued Run Observations Length (ft) Length (ft) Num Queued NEB T on MD 201 - Lane ID 374 120.0 2.8 0.1 20.8 1.0 0.0% 1 120.0 0.2 20.2 0.0% 2 3.6 1.0 3 120.0 4.3 0.2 22.8 1.0 0.0% 4 120.0 2.4 0.1 18.7 1.0 0.0% 5 120.0 3.0 0.1 17.7 1.0 0.0% 6 120.0 1.9 0.1 16.6 1.0 0.0% 7 120.0 1.9 0.1 17.6 1.0 0.0% 8 120.0 0.2 0.0% 3.2 23.5 1.0 9 120.0 1.8 0.1 1.0 0.0% 16.4 10 120.0 2.6 0.1 1.0 0.0% 18.3 Average: 120.0 2.8 0.1 19.3 1.0 0.0% NEB T on MD 201 - Lane ID 375 120.0 2.4 0.1 19.5 1.0 0.0% 1 120.0 0.0% 2 3.2 0.1 21.2 1.0 3 120.0 4.2 0.2 21.3 1.0 0.0% 4 120.0 2.6 0.1 20.4 1.0 0.0% 5 120.0 2.2 0.1 16.1 1.0 0.0% 0.0% 6 120.0 1.9 0.1 17.2 1.0 7 120.0 3.3 0.1 17.9 1.0 0.0% 8 120.0 4.6 0.2 43.2 2.0 0.0% 9 120.0 2.7 0.1 18.4 1.0 0.0% 120.0 0.1 0.9 0.0 0.0% 10 2.5 Average: 120.0 3.0 0.1 19.6 1.0 0.0% MD 201 1..... 10 270

| NEB I ON MID 201 - Lane ID 376 | | | | | | | | | | |
|--------------------------------|--|-------|------|-----|------|-----|------|--|--|--|
| 1 | | 120.0 | 6.2 | 0.3 | 62.1 | 3.0 | 0.0% | | | |
| 2 | | 120.0 | 9.9 | 0.4 | 71.3 | 3.0 | 0.0% | | | |
| 3 | | 120.0 | 10.4 | 0.4 | 80.0 | 3.0 | 0.0% | | | |
1-95/495 SB OFF-RAMP & MD 201

| 1-95/495 | SB OFF-RAMP & | & MD 201 | | | | NODE: 67 |
|------------|---------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
| NEB T on I | MD 201 - Lane ID 37 | 6 | | | | |
| 4 | 120.0 | 5.7 | 0.3 | 42.2 | 2.0 | 0.0% |
| 5 | 120.0 | 4.4 | 0.2 | 39.4 | 2.0 | 0.0% |
| 6 | 120.0 | 6.1 | 0.3 | 46.0 | 2.0 | 0.0% |
| 7 | 120.0 | 4.5 | 0.2 | 40.0 | 2.0 | 0.0% |
| 8 | 120.0 | 11.0 | 0.4 | 73.5 | 3.0 | 0.0% |
| 9 | 120.0 | 8.6 | 0.4 | 66.6 | 3.0 | 0.0% |
| 10 | 120.0 | 5.7 | 0.2 | 48.8 | 2.0 | 0.0% |
| Average: | 120.0 | 7.3 | 0.3 | 57.0 | 2.5 | 0.0% |
| SEB L on [| Unnamed Street] - I | Lane ID 392 | | | | |
| 1 | 120.0 | 15.8 | 0.8 | 55.9 | 3.0 | 0.0% |
| 2 | 120.0 | 15.4 | 0.8 | 47.6 | 2.0 | 0.0% |
| 3 | 120.0 | 16.1 | 0.8 | 50.4 | 2.0 | 0.0% |
| 4 | 120.0 | 17.5 | 0.9 | 63.7 | 3.0 | 0.0% |
| 5 | 120.0 | 17.7 | 0.9 | 69.1 | 3.0 | 0.0% |
| 6 | 120.0 | 14.3 | 0.7 | 56.5 | 3.0 | 0.0% |
| 7 | 120.0 | 18.6 | 0.9 | 60.8 | 3.0 | 0.0% |
| 8 | 120.0 | 18.3 | 0.9 | 60.0 | 3.0 | 0.0% |
| 9 | 120.0 | 13.5 | 0.7 | 45.6 | 2.0 | 0.0% |
| 10 | 120.0 | 19.6 | 1.0 | 68.9 | 3.0 | 0.0% |
| Average: | 120.0 | 16.7 | 0.8 | 57.9 | 2.7 | 0.0% |
| SEB L on [| Unnamed Street] - I | Lane ID 393 | | | | |
| 1 | 120.0 | 28.4 | 1.3 | 86.7 | 4.0 | 0.0% |
| 2 | 120.0 | 27.8 | 1.3 | 88.6 | 4.0 | 0.0% |
| 3 | 120.0 | 27.4 | 1.3 | 84.0 | 4.0 | 0.0% |
| 4 | 120.0 | 31.0 | 1.4 | 93.7 | 4.0 | 0.0% |
| 5 | 120.0 | 32.8 | 1.5 | 96.1 | 4.0 | 0.0% |
| 6 | 120.0 | 31.8 | 1.5 | 77.4 | 3.0 | 0.0% |
| 7 | 120.0 | 30.2 | 1.5 | 89.6 | 4.0 | 0.0% |
| 8 | 120.0 | 32.6 | 1.4 | 91.2 | 4.0 | 0.0% |
| 9 | 120.0 | 28.3 | 1.3 | 81.3 | 3.0 | 0.0% |
| 10 | 120.0 | 27.2 | 1.3 | 70.0 | 3.0 | 0.0% |
| Average: | 120.0 | 29.8 | 1.4 | 85.9 | 3.7 | 0.0% |
| SWB T on | MD 201 - Lane ID 3 | 81 | | | | |
| 1 | 120.0 | 2.2 | 0.1 | 13.4 | 1.0 | 0.0% |
| 2 | 120.0 | 2.3 | 0.1 | 16.3 | 1.0 | 0.0% |
| 3 | 120.0 | 5.0 | 0.2 | 44.7 | 2.0 | 0.0% |
| 4 | 120.0 | 4.8 | 0.2 | 45.0 | 2.0 | 0.0% |
| 5 | 120.0 | 2.6 | 0.1 | 16.1 | 1.0 | 0.0% |
| 6 | 120.0 | 2.3 | 0.1 | 0.0 | 0.0 | 0.0% |
| 7 | 120.0 | 1.4 | 0.1 | 0.0 | 0.0 | 0.0% |
| 8 | 120.0 | 4.1 | 0.2 | 31.1 | 1.0 | 0.0% |

I-95/495 SB OFF-RAMP & MD 201

| I-95/495 | 05/495 SB OFF-RAMP & MD 201 NODE: 67 | | | | | | | | |
|----------|--------------------------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | | |
| SWB T on | MD 201 - Lane ID 3 | 81 | | | | | | | |
| 9 | 120.0 | 2.1 | 0.1 | 16.1 | 1.0 | 0.0% | | | |
| 10 | 120.0 | 1.6 | 0.1 | 16.4 | 1.0 | 0.0% | | | |
| Average: | 120.0 | 2.8 | 0.1 | 19.9 | 1.0 | 0.0% | | | |
| SWB T on | MD 201 - Lane ID 3 | 82 | | | | | | | |
| 1 | 120.0 | 1.8 | 0.1 | 0.8 | 0.0 | 0.0% | | | |
| 2 | 120.0 | 3.0 | 0.1 | 19.6 | 1.0 | 0.0% | | | |
| 3 | 120.0 | 4.5 | 0.2 | 41.4 | 2.0 | 0.0% | | | |
| 4 | 120.0 | 3.1 | 0.1 | 17.7 | 1.0 | 0.0% | | | |
| 5 | 120.0 | 1.7 | 0.1 | 17.5 | 1.0 | 0.0% | | | |
| 6 | 120.0 | 2.9 | 0.1 | 19.9 | 1.0 | 0.0% | | | |
| 7 | 120.0 | 2.4 | 0.1 | 18.3 | 1.0 | 0.0% | | | |
| 8 | 120.0 | 3.4 | 0.2 | 24.8 | 1.0 | 0.0% | | | |
| 9 | 120.0 | 2.1 | 0.1 | 17.2 | 1.0 | 0.0% | | | |
| 10 | 120.0 | 2.0 | 0.1 | 14.6 | 1.0 | 0.0% | | | |
| Average: | 120.0 | 2.7 | 0.1 | 19.2 | 1.0 | 0.0% | | | |

MD 201 & CHERRYWOOD LANE

| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | | | |
|------------|--|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|--|--|
| NEB L on (| NEB L on Cherrywood Lane - Lane ID 237 | | | | | | | | | |
| 1 | 120.0 | 35.7 | 1.6 | 96.3 | 4.0 | 0.0% | | | | |
| 2 | 120.0 | 35.3 | 1.6 | 86.7 | 4.0 | 0.0% | | | | |
| 3 | 120.0 | 36.9 | 1.7 | 95.8 | 4.0 | 0.0% | | | | |
| 4 | 120.0 | 36.0 | 1.6 | 95.6 | 4.0 | 0.0% | | | | |
| 5 | 120.0 | 42.8 | 1.9 | 103.9 | 4.0 | 0.0% | | | | |
| 6 | 120.0 | 39.3 | 1.7 | 106.8 | 4.0 | 0.0% | | | | |
| 7 | 120.0 | 37.0 | 1.6 | 97.3 | 4.0 | 0.0% | | | | |
| 8 | 120.0 | 43.0 | 1.9 | 107.2 | 5.0 | 0.0% | | | | |
| 9 | 120.0 | 36.0 | 1.7 | 93.8 | 4.0 | 0.0% | | | | |
| 10 | 120.0 | 31.0 | 1.5 | 86.2 | 4.0 | 0.0% | | | | |
| Average: | 120.0 | 37.3 | 1.7 | 97.0 | 4.1 | 0.0% | | | | |
| NEB L on (| Cherrywood Lane - | Lane ID 238 | | | | | | | | |
| 1 | 120.0 | 31.5 | 1.4 | 87.6 | 4.0 | 0.0% | | | | |
| 2 | 120.0 | 35.5 | 1.6 | 92.6 | 4.0 | 0.0% | | | | |
| 3 | 120.0 | 36.2 | 1.6 | 90.7 | 4.0 | 0.0% | | | | |
| 4 | 120.0 | 33.3 | 1.5 | 92.4 | 4.0 | 0.0% | | | | |
| 5 | 120.0 | 38.1 | 1.8 | 99.2 | 4.0 | 0.0% | | | | |
| 6 | 120.0 | 37.4 | 1.7 | 96.2 | 4.0 | 0.0% | | | | |
| 7 | 120.0 | 33.7 | 1.5 | 92.3 | 4.0 | 0.0% | | | | |

120.0

120.0

120.0

40.9

35.2

32.4

8

9

10

106.2

95.7

97.8

4.0

4.0

4.0

1.8

1.5

1.5

0.0%

0.0%

0.0%

MD 201 & CHERRYWOOD LANE

| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
|------------|---------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|
| NEB L on C | nerrywood Lane - | Lane ID 238 | | | | |
| Average: | 120.0 | 35.4 | 1.6 | 95.1 | 4.0 | 0.0% |
| NEB R on C | herrvwood Lane - | Lane ID 239 | | | | |
| 1 | 120.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0% |
| 2 | 120.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0% |
| 4 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% |
| 5 | 120.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0% |
| 6 | 120.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0% |
| 7 | 120.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0% |
| 8 | 120.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0% |
| 10 | 120.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0% |
| Average: | 120.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0% |
| | | | | | | |
| NWB L on I | VID 201 - Lane ID 2 | 230 | | | | |
| 1 | 120.0 | 50.1 | 2.3 | 132.5 | 6.0 | 0.0% |
| 2 | 120.0 | 56.2 | 2.5 | 132.8 | 5.0 | 0.0% |
| 3 | 120.0 | 56.3 | 2.5 | 151.9 | 6.0 | 0.0% |
| 4 | 120.0 | 74.0 | 3.2 | 174.4 | 7.0 | 0.0% |
| 5 | 120.0 | 60.2 | 2.6 | 143.6 | 6.0 | 0.0% |
| 6 | 120.0 | 66.8 | 2.9 | 144.0 | 6.0 | 0.0% |
| 7 | 120.0 | 55.0 | 2.4 | 148.1 | 5.0 | 0.0% |
| 8 | 120.0 | 63.7 | 2.8 | 138.5 | 6.0 | 0.0% |
| 9 | 120.0 | 53.6 | 2.4 | 134.6 | 5.0 | 0.0% |
| 10 | 120.0 | 47.8 | 2.2 | 121.3 | 5.0 | 0.0% |
| Average: | 120.0 | 58.4 | 2.6 | 142.2 | 5.7 | 0.0% |
| | | | | | | |
| NWB T on I | MD 201 - Lane ID 2 | 231 | 0.2 | 20.0 | 1.0 | 0.0% |
| 1 | 120.0 | 5.6 | 0.2 | 20.6 | 1.0 | 0.0% |
| 2 | 120.0 | 3.8 | 0.2 | 44.0 | 2.0 | 0.0% |
| 3 | 120.0 | 4.1 | 0.2 | 18.9 | 1.0 | 0.0% |
| 4 | 120.0 | 3.9 | 0.2 | 23.7 | 1.0 | 0.0% |
| 5 | 120.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0% |
| 0 | 120.0 | 2.0 | 0.1 | 10.4 | 1.0 | 0.0% |
| 0 | 120.0 | 2.1 | 0.1 | 0.8 | 0.0 | 0.0% |
| ō | 120.0 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 3.0 | 0.2 | 39.U 16.6 | 1.0 | 0.0% |
| 10 | 120.0 | 2.0 | 0.1 | 10.0 | 1.0 | 0.0% |
| Average: | 120.0 | 2.9 | 0.1 | 19.0 | U.ð | 0.0% |
| NWB T on I | MD 201 - Lane ID 2 | 232 | | | | |
| 1 | 120.0 | 3.9 | 0.2 | 18.0 | 1.0 | 0.0% |
| 2 | 120.0 | 3.3 | 0.1 | 15.5 | 1.0 | 0.0% |

MD 201 & CHERRYWOOD LANE

| MD 201 | MD 201 & CHERRYWOOD LANENODE: 45 | | | | | | | | |
|------------|----------------------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | | |
| NWB T on | MD 201 - Lane ID 2 | 232 | | | | | | | |
| 3 | 120.0 | 5.4 | 0.2 | 15.2 | 1.0 | 0.0% | | | |
| 4 | 120.0 | 6.1 | 0.2 | 19.1 | 1.0 | 0.0% | | | |
| 5 | 120.0 | 5.3 | 0.2 | 21.9 | 1.0 | 0.0% | | | |
| 6 | 120.0 | 5.4 | 0.2 | 22.6 | 1.1 | 0.0% | | | |
| 7 | 120.0 | 3.9 | 0.2 | 39.8 | 2.0 | 0.0% | | | |
| 8 | 120.0 | 1.6 | 0.1 | 9.5 | 1.0 | 0.0% | | | |
| 9 | 120.0 | 5.6 | 0.2 | 40.5 | 2.0 | 0.0% | | | |
| 10 | 120.0 | 6.3 | 0.3 | 48.9 | 2.0 | 0.0% | | | |
| Average: | 120.0 | 4.7 | 0.2 | 25.1 | 1.3 | 0.0% | | | |
| SEB R on I | MD 201 - Lane ID 25 | 50 | | | | | | | |
| 1 | 120.0 | 8.3 | 0.4 | 62.7 | 2.0 | 0.0% | | | |
| 2 | 120.0 | 5.0 | 0.2 | 42.6 | 2.0 | 0.0% | | | |
| 3 | 120.0 | 9.0 | 0.4 | 51.3 | 2.0 | 0.0% | | | |
| 4 | 120.0 | 8.1 | 0.4 | 47.5 | 2.0 | 0.0% | | | |
| 5 | 120.0 | 7.3 | 0.4 | 45.1 | 2.0 | 0.0% | | | |
| 6 | 120.0 | 8.9 | 0.4 | 68.0 | 3.0 | 0.0% | | | |
| 7 | 120.0 | 9.7 | 0.4 | 58.3 | 3.0 | 0.0% | | | |
| 8 | 120.0 | 7.3 | 0.3 | 43.0 | 2.0 | 0.0% | | | |
| 9 | 120.0 | 4.6 | 0.2 | 41.4 | 2.0 | 0.0% | | | |
| 10 | 120.0 | 6.1 | 0.3 | 43.4 | 2.0 | 0.0% | | | |
| Average: | 120.0 | 7.4 | 0.3 | 50.3 | 2.2 | 0.0% | | | |
| 1 | 120.0 | 38.5 | 1.6 | 162.4 | 7.0 | 0.0% | | | |
| 2 | 120.0 | 40.7 | 1.8 | 192.7 | 8.0 | 0.0% | | | |
| 3 | 120.0 | 42.7 | 1.8 | 193.9 | 8.0 | 0.0% | | | |
| 4 | 120.0 | 43.5 | 1.8 | 194.5 | 8.0 | 0.0% | | | |
| 5 | 120.0 | 39.7 | 1.6 | 214.0 | 8.0 | 0.0% | | | |
| 6 | 120.0 | 34.5 | 1.4 | 168.7 | 6.0 | 0.0% | | | |
| 7 | 120.0 | 36.9 | 1.5 | 174.3 | 7.0 | 0.0% | | | |
| 8 | 120.0 | 40.9 | 1.7 | 169.8 | 7.0 | 0.0% | | | |
| 9 | 120.0 | 48.4 | 2.0 | 214.7 | 8.0 | 0.0% | | | |
| 10 | 120.0 | 41.6 | 1.7 | 169.8 | 7.0 | 0.0% | | | |
| Average: | 120.0 | 40.7 | 1.7 | 185.5 | 7.4 | 0.0% | | | |
| SEB T on M | MD 201 - Lane ID 23 | 86 | | | | | | | |
| 1 | 120.0 | 43.4 | 1.8 | 176.0 | 7.0 | 0.0% | | | |
| 2 | 120.0 | 41.4 | 1.7 | 181.3 | 8.0 | 0.0% | | | |
| 3 | 120.0 | 40.2 | 1.7 | 172.0 | 7.0 | 0.0% | | | |
| 4 | 120.0 | 48.9 | 2.0 | 225.9 | 9.0 | 0.0% | | | |
| 5 | 120.0 | 39.7 | 1.6 | 196.1 | 8.0 | 0.0% | | | |
| 6 | 120.0 | 39.2 | 1.6 | 184.1 | 7.0 | 0.0% | | | |
| 7 | 120.0 | 43.0 | 1.8 | 201.6 | 8.0 | 0.0% | | | |

MD 201 & CHERRYWOOD LANE

| MD 201 | MD 201 & CHERRYWOOD LANE NODE: 45 | | | | | | | |
|-------------------------------|-----------------------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | |
| SEB T on MD 201 - Lane ID 236 | | | | | | | | |
| 8 | 120.0 | 36.3 | 1.6 | 165.3 | 7.0 | 0.0% | | |
| 9 | 120.0 | 46.7 | 2.0 | 190.2 | 8.0 | 0.0% | | |
| 10 | 120.0 | 42.6 | 1.8 | 173.5 | 7.0 | 0.0% | | |
| Average: | 120.0 | 42.1 | 1.8 | 186.6 | 7.6 | 0.0% | | |

MD 201 & IVY LANE

| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
|-----------|---------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|
| SB T on M | D 201 - Lane ID 251 | | | <u> </u> | | |
| 1 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 2 | 120.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 4 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 5 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 6 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 7 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 8 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 10 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| Average: | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| SB T on M | D 201 - Lane ID 252 | | | | | |
| 1 | 120.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0% |
| 2 | 120.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% |
| 4 | 120.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0% |
| 5 | 120.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0% |
| 6 | 120.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0% |
| 7 | 120.0 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0% |
| 8 | 120.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0% |
| 10 | 120.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0% |
| Average: | 120.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0% |

MD 201. MARYLAND SHA DRIVEWAY & CRESCENT STREET

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | | NODE: 52 |
|---|---------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|-----------------|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | |
| NEB L on | MD 201 - Lane ID 31 | 1 | | | | | |
| 1 | 120.0 | 13.0 | 0.6 | 48.3 | 2.0 | 0.0% | |
| 2 | 120.0 | 10.0 | 0.5 | 41.5 | 2.0 | 0.0% | |
| 3 | 120.0 | 11.2 | 0.6 | 42.2 | 2.0 | 0.0% | |
| 4 | 120.0 | 12.8 | 0.6 | 45.8 | 2.0 | 0.0% | |
| 5 | 120.0 | 11.4 | 0.6 | 40.2 | 2.0 | 0.0% | |
| 6 | 120.0 | 11.9 | 0.6 | 45.9 | 2.0 | 0.0% | |

MD 201. MARYLAND SHA DRIVEWAY & CRESCENT STREET

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | |
|---|---------------------|-------------|--------------|-----------------|-----------------|-----------|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) |
| NEB L on I | MD 201 - Lane ID 31 | .1 | | | | |
| 7 | 120.0 | 11.9 | 0.6 | 44.5 | 2.0 | 0.0% |
| 8 | 120.0 | 12.0 | 0.6 | 43.0 | 2.0 | 0.0% |
| 9 | 120.0 | 11.5 | 0.6 | 42.1 | 2.0 | 0.0% |
| 10 | 120.0 | 10.9 | 0.6 | 39.3 | 2.0 | 0.0% |
| Average: | 120.0 | 11.7 | 0.6 | 43.3 | 2.0 | 0.0% |
| NFB R on | MD 201 - Lane ID 33 | 22 | | | | |
| 1 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 2 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 4 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 5 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 6 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 7 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 8 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 10 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| Average: | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| Average. | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.070 |
| | MD 201 Lana ID 20 | 7 | | | | |
| | 120.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0% |
| 2 | 120.0 | 1.6 | 0.1 | 17.3 | 1.0 | 0.0% |
| 2 | 120.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 1.7 | 0.0 | 17.0 | 1.0 | 0.0% |
| 4 | 120.0 | 1.7 | 0.1 | 17.0 | 1.0 | 0.0% |
| 5 | 120.0 | 1.1 | 0.1 | 0.8 | 0.0 | 0.0% |
| 7 | 120.0 | 1.5 | 0.1 | 15.2 | 0.0 | 0.0% |
| 7 | 120.0 | 1.5 | 0.1 | 19.2 | 1.0 | 0.0% |
| 0 | 120.0 | 2.4 | 0.1 | 16.9 | 1.0 | 0.0% |
| 9 | 120.0 | 1.7 | 0.1 | 10.8 | 1.0 | 0.0% |
| 10 | 120.0 | 1.0 | 0.1 | 0.0 | 0.0 | 0.0% |
| Average: | 120.0 | 1.4 | 0.1 | 8.7 | 0.5 | 0.0% |
| | | - | | | | |
| NEB T on | MD 201 - Lane ID 29 | 98 | 0.0 | 20.0 | 1.0 | 0.00/ |
| 1 | 120.0 | 3.6 | 0.2 | 20.0 | 1.0 | 0.0% |
| 2 | 120.0 | 5.4 | 0.3 | 41.2 | 2.0 | 0.0% |
| 3 | 120.0 | 8.3 | 0.4 | 57.0 | 2.0 | 0.0% |
| 4 | 120.0 | 7.4 | 0.4 | 41.7 | 2.0 | 0.0% |
| 5 | 120.0 | 7.8 | 0.3 | 52.9 | 2.0 | 0.0% |
| 6 | 120.0 | 6.3 | 0.3 | 46.3 | 2.0 | 0.0% |
| 7 | 120.0 | 7.2 | 0.3 | 47.0 | 2.0 | 0.0% |
| 8 | 120.0 | 14.9 | 0.6 | 90.5 | 4.0 | 0.0% |
| 9 | 120.0 | 9.8 | 0.4 | 73.8 | 3.0 | 0.0% |
| 10 | 120.0 | 5.9 | 0.3 | 44.3 | 2.0 | 0.0% |
| Average: | 120.0 | 7.7 | 0.4 | 51.5 | 2.2 | 0.0% |

MD 201. MARYLAND SHA DRIVEWAY & CRESCENT STREET

| MD 201 | , MARYLAND SHA | A DRIVEWAY & | CRESCENT STRE | ET | | NODE: 52 |
|-----------|------------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
| NEB T on | MD 201 - Lane ID 29 | 8 | | | | |
| NFR T on | MD 201 - Lane ID 29 | ٥ | | | | |
| 1 | 120.0 | 5.5 | 0.3 | 38.1 | 2.0 | 0.0% |
| 2 | 120.0 | 5.7 | 0.3 | 39.8 | 2.0 | 0.0% |
| 3 | 120.0 | 8.9 | 0.4 | 48.7 | 2.0 | 0.0% |
| 4 | 120.0 | 7.5 | 0.3 | 34.9 | 2.0 | 0.0% |
| 5 | 120.0 | 6.0 | 0.3 | 29.4 | 1.0 | 0.0% |
| 6 | 120.0 | 5.2 | 0.2 | 36.8 | 2.0 | 0.0% |
| 7 | 120.0 | 9.6 | 0.4 | 50.0 | 2.0 | 0.0% |
| 8 | 120.0 | 12.2 | 0.5 | 66.1 | 3.0 | 0.0% |
| 9 | 120.0 | 10.0 | 0.4 | 48.5 | 2.0 | 0.0% |
| 10 | 120.0 | 6.0 | 0.3 | 49.0 | 2.0 | 0.0% |
| Average: | 120.0 | 7.7 | 0.3 | 44.1 | 2.0 | 0.0% |
| NWB LT o | on Crescent Street - L | ane ID 283 | | | | |
| 1 | 120.0 | 12.2 | 0.7 | 21.9 | 1.0 | 64.2% |
| 2 | 120.0 | 11.8 | 0.6 | 30.8 | 1.0 | 60.8% |
| 3 | 120.0 | 13.2 | 0.7 | 21.6 | 1.0 | 70.0% |
| 4 | 120.0 | 13.1 | 0.7 | 34.7 | 2.0 | 62.5% |
| 5 | 120.0 | 13.2 | 0.8 | 32.9 | 2.0 | 66.7% |
| 6 | 120.0 | 12.3 | 0.7 | 20.7 | 1.0 | 65.8% |
| 7 | 120.0 | 11.5 | 0.6 | 26.0 | 1.0 | 60.8% |
| 8 | 120.0 | 11.7 | 0.6 | 33.3 | 1.0 | 60.0% |
| 9 | 120.0 | 11.7 | 0.6 | 22.6 | 1.0 | 61.7% |
| 10 | 120.0 | 12.4 | 0.7 | 31.6 | 1.0 | 65.0% |
| Average: | 120.0 | 12.3 | 0.7 | 27.6 | 1.2 | 63.8% |
| NWB R or | n Crescent Street - La | ine ID 284 | | | | |
| 1 | 120.0 | 3.6 | 0.2 | 19.0 | 1.0 | 20.0% |
| 2 | 120.0 | 2.3 | 0.1 | 16.3 | 1.0 | 14.2% |
| 3 | 120.0 | 4.1 | 0.2 | 18.6 | 1.0 | 20.8% |
| 4 | 120.0 | 1.4 | 0.1 | 15.2 | 1.0 | 7.5% |
| 5 | 120.0 | 3.1 | 0.2 | 18.3 | 1.0 | 17.5% |
| 6 | 120.0 | 3.3 | 0.2 | 18.9 | 1.0 | 17.5% |
| 7 | 120.0 | 2.4 | 0.1 | 19.0 | 1.0 | 12.5% |
| 8 | 120.0 | 2.4 | 0.1 | 17.2 | 1.0 | 14.2% |
| 9 | 120.0 | 2.8 | 0.2 | 17.9 | 1.0 | 15.8% |
| 10 | 120.0 | 2.7 | 0.1 | 18.8 | 1.0 | 13.3% |
| Average: | 120.0 | 2.8 | 0.2 | 17.9 | 1.0 | 15.3% |
| SEB LTR o | on Maryland SHA Driv | veway - Lane ID 28 | 31 | | | |
| 1 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 2 | 120.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0% |
| 4 | 120.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0% |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET NODE: 5 | | | | | | | |
|---|--------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | |
| SEB LTR on | Maryland SHA Dr | iveway - Lane ID 28 | 1 | | | | |
| 5 | 120.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 6 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 7 | 120.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 8 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 9 | 120.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 10 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% | |
| Average: | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% | |
| SWB L on I | MD 201 - Lane ID 3 | 42 | | | | | |
| 1 | 120.0 | 9.5 | 0.5 | 46.5 | 2.0 | 0.0% | |
| 2 | 120.0 | 7.3 | 0.4 | 40.2 | 2.0 | 0.0% | |
| 3 | 120.0 | 7.4 | 0.4 | 42.2 | 2.0 | 0.0% | |
| 4 | 120.0 | 6.9 | 0.4 | 25.6 | 1.0 | 0.0% | |
| 5 | 120.0 | 9.1 | 0.5 | 42.7 | 2.0 | 0.0% | |
| 6 | 120.0 | 6.1 | 0.3 | 19.1 | 1.0 | 0.0% | |
| 7 | 120.0 | 10.5 | 0.5 | 40.2 | 2.0 | 0.0% | |
| 8 | 120.0 | 7.6 | 0.4 | 40.2 | 2.0 | 0.0% | |
| 9 | 120.0 | 11.0 | 0.5 | 52.6 | 2.0 | 0.0% | |
| 10 | 120.0 | 8.0 | 0.4 | 40.7 | 2.0 | 0.0% | |
| Average: | 120.0 | 8.3 | 0.4 | 39.0 | 1.8 | 0.0% | |
| SWB T on I | MD 201 - Lane ID 3 | 43 | | | | | |
| 1 | 120.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 2 | 120.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 3 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 4 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 5 | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 6 | 120.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 7 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 8 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 9 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 10 | 120.0 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0% | |
| Average: | 120.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0% | |
| SWB T on I | MD 201 - Lane ID 3 | 44 | | | | | |
| 1 | 120.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 2 | 120.0 | 0.9 | 0.1 | 0.9 | 0.0 | 0.0% | |
| 3 | 120.0 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 4 | 120.0 | 1.2 | 0.1 | 0.8 | 0.0 | 0.0% | |
| 5 | 120.0 | 2.3 | 0.1 | 18.4 | 1.0 | 0.0% | |
| 6 | 120.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0% | |
| 7 | 120.0 | 1.7 | 0.1 | 16.9 | 1.0 | 0.0% | |
| 8 | 120.0 | 1.3 | 0.1 | 16.3 | 1.0 | 0.0% | |
| 9 | 120.0 | 1.3 | 0.1 | 17.1 | 1.0 | 0.0% | |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | | |
|---|--------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | |
| SWB T on | MD 201 - Lane ID 3 | 44 | | | | | |
| 10 | 120.0 | 1.9 | 0.1 | 17.2 | 1.0 | 0.0% | |
| Average: | 120.0 | 1.3 | 0.1 | 8.8 | 0.5 | 0.0% | |
| SWB TR oi | n MD 201 - Lane ID | 345 | | | | | |
| 1 | 120.0 | 1.2 | 0.1 | 0.0 | 0.0 | 0.0% | |
| 2 | 120.0 | 2.9 | 0.2 | 19.2 | 1.0 | 0.0% | |
| 3 | 120.0 | 1.9 | 0.1 | 17.0 | 1.0 | 0.0% | |
| 4 | 120.0 | 2.4 | 0.1 | 16.7 | 1.0 | 0.0% | |
| 5 | 120.0 | 5.3 | 0.3 | 41.4 | 2.0 | 0.0% | |
| 6 | 120.0 | 3.4 | 0.2 | 22.6 | 1.0 | 0.0% | |
| 7 | 120.0 | 4.4 | 0.2 | 19.8 | 1.0 | 0.0% | |
| 8 | 120.0 | 2.2 | 0.1 | 16.8 | 1.0 | 0.0% | |
| 9 | 120.0 | 2.6 | 0.1 | 17.5 | 1.0 | 0.0% | |
| 10 | 120.0 | 3.1 | 0.2 | 18.7 | 1.0 | 0.0% | |
| Average: | 120.0 | 2.9 | 0.2 | 19.0 | 1.0 | 0.0% | |

POULTRY ROAD

| Run | Observations | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile Num Queued | Spillback Rate (%) |
|------------------------------------|-----------------------|-----------|--------------|-----------------|-------------------------------|-----------------------|
| SB T on Po | oultry Road - Lane II | D 109 | queueu | | tuni queucu | |
| 1 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 2 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 4 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 5 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 6 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 7 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 8 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 10 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| Average: | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| SB T on Poultry Road - Lane ID 131 | | | | | | |
| 1 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 2 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 3 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 4 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 5 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 6 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 7 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 8 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 9 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| 10 | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |
| Average: | 120.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0% |

| POULTRY | Y ROAD | | | | | NODE: 40 |
|------------|---------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
| SB T on Po | ultry Road - Lane I | D 131 | | | | |
| POWDER | R MILL ROAD & | EDMONSTON R | OAD | | | NODE: 19 |
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) |
| NB T on Po | oultry Road - Lane | ID 158 | | | | |
| 1 | 120.0 | 36.0 | 1.1 | 90.7 | 3.0 | 0.0% |
| 2 | 120.0 | 35.6 | 1.1 | 104.9 | 3.0 | 0.0% |
| 3 | 120.0 | 43.8 | 1.3 | 97.4 | 3.0 | 0.0% |
| 4 | 120.0 | 39.1 | 1.2 | 95.7 | 3.0 | 0.0% |
| 5 | 120.0 | 31.3 | 0.9 | 92.1 | 3.0 | 0.0% |
| 6 | 120.0 | 38.3 | 1.2 | 87.3 | 3.0 | 0.0% |
| 7 | 120.0 | 33.4 | 1.0 | 88.5 | 3.0 | 0.0% |
| 8 | 120.0 | 34.0 | 1.0 | 90.0 | 3.0 | 0.0% |
| 9 | 120.0 | 40.8 | 1.2 | 91.9 | 3.0 | 0.0% |
| 10 | 120.0 | 38.5 | 1.2 | 91.2 | 3.0 | 0.0% |
| Average: | 120.0 | 37.1 | 1.1 | 93.0 | 3.0 | 0.0% |
| NB T on Po | oultry Road - Lane | ID 159 | | | | |
| 1 | 120.0 | 40.9 | 1.3 | 96.6 | 3.0 | 0.0% |
| 2 | 120.0 | 36.1 | 1.1 | 84.9 | 3.0 | 0.0% |
| 3 | 120.0 | 40.9 | 1.3 | 109.6 | 4.0 | 0.0% |
| 4 | 120.0 | 38.2 | 1.2 | 94.8 | 3.0 | 0.0% |
| 5 | 120.0 | 41.6 | 1.3 | 94.5 | 3.0 | 0.0% |
| 6 | 120.0 | 37.4 | 1.2 | 106.0 | 4.0 | 0.0% |
| 7 | 120.0 | 36.7 | 1.1 | 97.4 | 3.0 | 0.0% |
| 8 | 120.0 | 37.7 | 1.2 | 92.9 | 3.0 | 0.0% |
| 9 | 120.0 | 34.3 | 1.1 | 91.8 | 3.0 | 0.0% |
| 10 | 120.0 | 45.7 | 1.5 | 116.7 | 4.0 | 0.0% |
| Average: | 120.0 | 39.0 | 1.2 | 98.5 | 3.3 | 0.0% |
| NB T on Po | oultry Road - Lane | ID 212 | | | | |
| 1 | 120.0 | 35.1 | 1.1 | 97.2 | 3.0 | 0.0% |
| 2 | 120.0 | 42.1 | 1.3 | 107.4 | 4.0 | 0.0% |
| 3 | 120.0 | 33.8 | 1.0 | 86.0 | 3.0 | 0.0% |
| 4 | 120.0 | 34.8 | 1.1 | 89.1 | 3.0 | 0.0% |
| 5 | 120.0 | 36.2 | 1.1 | 93.4 | 3.0 | 0.0% |
| 6 | 120.0 | 31.5 | 1.0 | 85.6 | 3.0 | 0.0% |
| 7 | 120.0 | 40.5 | 1.2 | 116.2 | 4.0 | 0.0% |
| 8 | 120.0 | 35.1 | 1.1 | 100.0 | 3.0 | 0.0% |
| 9 | 120.0 | 32.6 | 1.0 | 84.6 | 3.0 | 0.0% |
| 10 | 120.0 | 31.1 | 0.9 | 90.4 | 3.0 | 0.0% |
| Average: | 120.0 | 35.3 | 1.1 | 95.0 | 3.2 | 0.0% |
| NB T on Po | oultry Road - Lane | ID 218 | | | | |
| 1 | 120.0 | 24.3 | 0.7 | 73.0 | 2.0 | 0.0% |

DOWNDED MILL DOAD & EDMONISTON DOAD

| POWDE | R MILL ROAD & | EDMONSTON R | OAD | | | NODE: 19 |
|------------|--------------------|-------------|--------------|-----------------|-----------------|-----------|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) |
| NB T on Po | oultry Road - Lane | ID 218 | | | | |
| 2 | 120.0 | 28.2 | 0.8 | 83.3 | 3.0 | 0.0% |
| 3 | 120.0 | 30.8 | 0.9 | 85.4 | 3.0 | 0.0% |
| 4 | 120.0 | 24.3 | 0.7 | 71.7 | 2.0 | 0.0% |
| 5 | 120.0 | 25.1 | 0.7 | 72.6 | 2.0 | 0.0% |
| 6 | 120.0 | 24.6 | 0.8 | 78.7 | 3.0 | 0.0% |
| 7 | 120.0 | 35.3 | 1.0 | 94.1 | 3.0 | 0.0% |
| 8 | 120.0 | 27.8 | 0.8 | 83.7 | 3.0 | 0.0% |
| 9 | 120.0 | 29.0 | 0.9 | 83.9 | 3.0 | 0.0% |
| 10 | 120.0 | 25.1 | 0.8 | 69.9 | 2.0 | 0.0% |
| Average: | 120.0 | 27.5 | 0.8 | 79.6 | 2.6 | 0.0% |
| | | | | | | |
| NB T on Po | oultry Road - Lane | ID 350 | | | | |
| 1 | 120.0 | 25.3 | 0.8 | 76.4 | 2.0 | 0.0% |
| 2 | 120.0 | 28.4 | 0.8 | 79.4 | 3.0 | 0.0% |
| 3 | 120.0 | 25.0 | 0.7 | 81.4 | 3.0 | 0.0% |
| 4 | 120.0 | 26.5 | 0.8 | 70.0 | 2.0 | 0.0% |
| 5 | 120.0 | 28.3 | 0.8 | 85.5 | 3.0 | 0.0% |
| 6 | 120.0 | 20.8 | 0.6 | 66.1 | 2.0 | 0.0% |
| 7 | 120.0 | 25.8 | 0.8 | 77.7 | 2.0 | 0.0% |
| 8 | 120.0 | 31.1 | 0.9 | 89.2 | 3.0 | 0.0% |
| 9 | 120.0 | 26.9 | 0.8 | 79.9 | 3.0 | 0.0% |
| 10 | 120.0 | 27.4 | 0.8 | 87.0 | 3.0 | 0.0% |
| Average: | 120.0 | 26.6 | 0.8 | 79.3 | 2.6 | 0.0% |
| | | | | | | |
| NB T on Po | oultry Road - Lane | ID 355 | | | | |
| 1 | 120.0 | 31.6 | 0.9 | 86.5 | 3.0 | 0.0% |
| 2 | 120.0 | 23.9 | 0.7 | 68.1 | 2.0 | 0.0% |
| 3 | 120.0 | 26.0 | 0.8 | 87.3 | 3.0 | 0.0% |
| 4 | 120.0 | 26.0 | 0.8 | 73.6 | 2.0 | 0.0% |
| 5 | 120.0 | 26.6 | 0.8 | 79.8 | 3.0 | 0.0% |
| 6 | 120.0 | 31.8 | 1.0 | 94.0 | 3.0 | 0.0% |
| 7 | 120.0 | 25.6 | 0.8 | 78.6 | 2.0 | 0.0% |
| 8 | 120.0 | 24.0 | 0.7 | 72.7 | 2.0 | 0.0% |
| 9 | 120.0 | 22.9 | 0.7 | 72.5 | 2.0 | 0.0% |
| 10 | 120.0 | 33.2 | 1.0 | 87.9 | 3.0 | 0.0% |
| Average: | 120.0 | 27.2 | 0.8 | 80.1 | 2.5 | 0.0% |
| | | | | | | |
| NB T on Po | oultry Road - Lane | ID 406 | | | | |
| 1 | 120.0 | 23.0 | 0.7 | 65.0 | 2.0 | 0.0% |
| 2 | 120.0 | 27.7 | 0.8 | 89.4 | 3.0 | 0.0% |
| 3 | 120.0 | 28.2 | 0.8 | 80.4 | 3.0 | 0.0% |
| 4 | 120.0 | 27.8 | 0.8 | 85.3 | 3.0 | 0.0% |
| 5 | 120.0 | 23.0 | 0.7 | 68.8 | 2.0 | 0.0% |
| 6 | 120.0 | 23.8 | 0.7 | 85.4 | 3.0 | 0.0% |

DOWNER MILL ROAD & EDMONISTON ROAD

| POWDE | R MILL ROAD & | EDMONSTON R | OAD | | | NODE: 19 |
|------------|--------------------|-------------|--------------|-----------------|-----------------|-----------------|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) |
| NB T on Pe | oultry Road - Lane | ID 406 | | | | |
| 7 | 120.0 | 28.5 | 0.9 | 85.2 | 3.0 | 0.0% |
| 8 | 120.0 | 22.6 | 0.7 | 68.6 | 2.0 | 0.0% |
| 9 | 120.0 | 23.3 | 0.7 | 66.1 | 2.0 | 0.0% |
| 10 | 120.0 | 27.7 | 0.8 | 86.1 | 3.0 | 0.0% |
| Average: | 120.0 | 25.6 | 0.8 | 78.0 | 2.6 | 0.0% |
| NEB L on [| Unnamed Street] - | Lane ID 49 | | | | |
| 1 | 120.0 | 30.6 | 1.4 | 84.4 | 4.0 | 42.5% |
| 2 | 120.0 | 24.7 | 1.1 | 76.6 | 3.0 | 35.8% |
| 3 | 120.0 | 27.0 | 1.2 | 83.8 | 4.0 | 39.2% |
| 4 | 120.0 | 27.8 | 1.3 | 81.5 | 4.0 | 38.3% |
| 5 | 120.0 | 30.5 | 1.3 | 85.6 | 4.0 | 40.8% |
| 6 | 120.0 | 33.8 | 1.5 | 83.5 | 4.0 | 47.5% |
| 7 | 120.0 | 27.6 | 1.2 | 83.4 | 4.0 | 37.5% |
| 8 | 120.0 | 27.7 | 1.3 | 81.8 | 3.0 | 37.5% |
| 9 | 120.0 | 29.4 | 1.3 | 78.3 | 4.0 | 43.3% |
| 10 | 120.0 | 28.0 | 1.3 | 81.9 | 3.0 | 40.0% |
| Average: | 120.0 | 28.7 | 1.3 | 82.1 | 3.7 | 40.2% |
| NEB T on | Unnamed Street] | Lane ID 83 | | | | |
| 1 | 120.0 | 12.3 | 0.5 | 75.8 | 3.0 | 15.0% |
| 2 | 120.0 | 9.2 | 0.4 | 67.4 | 3.0 | 10.8% |
| 3 | 120.0 | 12.6 | 0.6 | 70.3 | 3.0 | 17.5% |
| 4 | 120.0 | 15.1 | 0.7 | 74.2 | 3.0 | 21.7% |
| 5 | 120.0 | 13.2 | 0.6 | 79.4 | 3.0 | 16.7% |
| 6 | 120.0 | 17.6 | 0.8 | 78.4 | 3.0 | 24.2% |
| 7 | 120.0 | 12.8 | 0.6 | 74.4 | 3.0 | 15.8% |
| 8 | 120.0 | 13.1 | 0.6 | 71.4 | 3.0 | 16.7% |
| 9 | 120.0 | 10.3 | 0.5 | 68.3 | 3.0 | 15.0% |
| 10 | 120.0 | 10.9 | 0.5 | 69.7 | 3.0 | 15.0% |
| Average: | 120.0 | 12.7 | 0.6 | 72.9 | 3.0 | 16.8% |
| SEB L on P | owder Mill Road - | Lane ID 64 | | | | |
| 1 | 120.0 | 12.9 | 0.7 | 39.8 | 2.0 | 0.0% |
| 2 | 120.0 | 11.0 | 0.6 | 38.9 | 2.0 | 0.0% |
| 3 | 120.0 | 11.5 | 0.6 | 42.1 | 2.0 | 0.0% |
| 4 | 120.0 | 11.3 | 0.6 | 38.4 | 2.0 | 0.0% |
| 5 | 120.0 | 13.5 | 0.7 | 46.9 | 2.0 | 0.0% |
| 6 | 120.0 | 10.2 | 0.6 | 37.5 | 2.0 | 0.0% |
| 7 | 120.0 | 9.3 | 0.5 | 39.1 | 2.0 | 0.0% |
| 8 | 120.0 | 11.7 | 0.6 | 37.4 | 2.0 | 0.0% |
| 9 | 120.0 | 10.8 | 0.6 | 38.6 | 2.0 | 0.0% |
| 10 | 120.0 | 12.0 | 0.6 | 42.8 | 2.0 | 0.0% |
| Average: | 120.0 | 11.4 | 0.6 | 40.2 | 2.0 | 0.0% |

POWDER MILL ROAD & EDMONSTON ROAD

| POWDER MILL ROAD & EDMONSTON ROAD NODE: 19 | | | | | | | |
|--|--------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Oueued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | |
| SEB L on F | Powder Mill Road - | Lane ID 64 | Queucu | | | | |
| | | Lana ID 194 | | | | | |
| 1 | 120.0 | 14 9 | 0.7 | 46.9 | 2.0 | 0.0% | |
| 2 | 120.0 | 14.0 | 0.7 | 47.4 | 2.0 | 0.0% | |
| 3 | 120.0 | 14.9 | 0.7 | 61.2 | 3.0 | 0.0% | |
| 4 | 120.0 | 12.3 | 0.6 | 43.9 | 2.0 | 0.0% | |
| 5 | 120.0 | 13.0 | 0.6 | 45.0 | 2.0 | 0.0% | |
| 6 | 120.0 | 12.6 | 0.6 | 45.3 | 2.0 | 0.0% | |
| 7 | 120.0 | 15.0 | 0.7 | 52.7 | 2.0 | 0.0% | |
| 8 | 120.0 | 11.6 | 0.6 | 49.1 | 2.0 | 0.0% | |
| 9 | 120.0 | 12.6 | 0.6 | 51.6 | 2.0 | 0.0% | |
| 10 | 120.0 | 16.7 | 0.8 | 51.5 | 2.0 | 0.0% | |
| Average: | 120.0 | 13.8 | 0.7 | 49.5 | 2.1 | 0.0% | |
| SEB T on F | Powder Mill Road - | Lane ID 65 | | | | | |
| 1 | 120.0 | 14.3 | 0.7 | 49.8 | 2.0 | 0.0% | |
| 2 | 120.0 | 17.3 | 0.9 | 61.2 | 3.0 | 0.0% | |
| 3 | 120.0 | 12.8 | 0.6 | 51.8 | 2.0 | 0.0% | |
| 4 | 120.0 | 13.2 | 0.6 | 55.7 | 2.0 | 0.0% | |
| 5 | 120.0 | 14.4 | 0.7 | 48.3 | 2.0 | 0.0% | |
| 6 | 120.0 | 10.2 | 0.5 | 42.0 | 2.0 | 0.0% | |
| 7 | 120.0 | 15.8 | 0.7 | 59.7 | 3.0 | 0.0% | |
| 8 | 120.0 | 10.9 | 0.6 | 41.5 | 2.0 | 0.0% | |
| 9 | 120.0 | 16.3 | 0.8 | 63.4 | 3.0 | 0.0% | |
| 10 | 120.0 | 13.9 | 0.7 | 48.6 | 2.0 | 0.0% | |
| Average: | 120.0 | 13.9 | 0.7 | 52.2 | 2.3 | 0.0% | |
| SWB L on | Edmonston Road - | Lane ID 198 | | | | | |
| 1 | 120.0 | 7.2 | 0.4 | 19.1 | 1.0 | 39.2% | |
| 2 | 120.0 | 5.1 | 0.3 | 18.9 | 1.0 | 28.3% | |
| 3 | 120.0 | 6.7 | 0.4 | 20.6 | 1.0 | 31.7% | |
| 4 | 120.0 | 7.7 | 0.4 | 23.2 | 1.0 | 39.2% | |
| 5 | 120.0 | 5.6 | 0.3 | 18.8 | 1.0 | 30.8% | |
| 6 | 120.0 | 6.7 | 0.4 | 21.3 | 1.0 | 35.8% | |
| 7 | 120.0 | 6.2 | 0.3 | 19.3 | 1.0 | 32.5% | |
| 8 | 120.0 | 7.6 | 0.4 | 26.1 | 1.0 | 39.2% | |
| 9 | 120.0 | 6.0 | 0.3 | 19.4 | 1.0 | 31.7% | |
| 10 | 120.0 | 6.0 | 0.4 | 18.5 | 1.0 | 33.3% | |
| Average: | 120.0 | 6.5 | 0.4 | 20.5 | 1.0 | 34.2% | |
| SWB T on | Edmonston Road - | Lane ID 199 | | | | | |
| 1 | 120.0 | 11.2 | 0.6 | 35.4 | 2.0 | 50.0% | |
| 2 | 120.0 | 8.3 | 0.5 | 32.1 | 2.0 | 40.8% | |
| 3 | 120.0 | 11.5 | 0.6 | 38.1 | 2.0 | 49.2% | |
| 4 | 120.0 | 10.0 | 0.6 | 37.9 | 2.0 | 45.8% | |

DOWDED MILL DOAD & EDMONSTON DOAD

| POWDEF | R MILL ROAD & | EDMONSTON R | OAD | | | NODE: 19 |
|-----------|--------------------|---------------|--------------|-----------------|-----------------|-----------|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) |
| SWB T on | Edmonston Road - | Lane ID 199 | | | | |
| 5 | 120.0 | 10.9 | 0.6 | 36.8 | 2.0 | 50.8% |
| 6 | 120.0 | 10.7 | 0.6 | 36.5 | 2.0 | 50.0% |
| 7 | 120.0 | 11.7 | 0.7 | 37.0 | 2.0 | 58.3% |
| 8 | 120.0 | 9.9 | 0.6 | 35.6 | 2.0 | 47.5% |
| 9 | 120.0 | 10.9 | 0.6 | 37.3 | 2.0 | 48.3% |
| 10 | 120.0 | 9.9 | 0.5 | 32.2 | 1.0 | 45.0% |
| Average: | 120.0 | 10.5 | 0.6 | 35.9 | 1.9 | 48.6% |
| SWB TR or | n Edmonston Road | - Lane ID 200 | | | | |
| 1 | 120.0 | 10.9 | 0.6 | 35.9 | 2.0 | 49.2% |
| 2 | 120.0 | 10.2 | 0.5 | 38.7 | 2.0 | 40.0% |
| 3 | 120.0 | 10.5 | 0.6 | 35.6 | 2.0 | 50.8% |
| 4 | 120.0 | 10.0 | 0.5 | 37.9 | 2.0 | 43.3% |
| 5 | 120.0 | 10.4 | 0.6 | 37.0 | 2.0 | 45.0% |
| 6 | 120.0 | 11.5 | 0.6 | 37.8 | 2.0 | 50.0% |
| 7 | 120.0 | 12.6 | 0.7 | 36.2 | 2.0 | 58.3% |
| 8 | 120.0 | 12.1 | 0.6 | 36.9 | 2.0 | 50.8% |
| 9 | 120.0 | 11.3 | 0.6 | 36.3 | 2.0 | 49.2% |
| 10 | 120.0 | 9.4 | 0.5 | 37.7 | 2.0 | 39.2% |
| Average: | 120.0 | 10.9 | 0.6 | 37.0 | 2.0 | 47.6% |
| WB L on P | oultry Road - Lane | ID 51 | | | | |
| 1 | 120.0 | 15.6 | 0.7 | 63.8 | 3.0 | 0.0% |
| 2 | 120.0 | 19.2 | 0.9 | 67.9 | 3.0 | 0.0% |
| 3 | 120.0 | 13.3 | 0.6 | 52.0 | 2.0 | 0.0% |
| 4 | 120.0 | 19.2 | 0.9 | 70.0 | 3.0 | 0.0% |
| 5 | 120.0 | 16.4 | 0.7 | 65.7 | 3.0 | 0.0% |
| 6 | 120.0 | 19.4 | 0.9 | 69.9 | 3.0 | 0.0% |
| 7 | 120.0 | 16.5 | 0.8 | 67.0 | 3.0 | 0.0% |
| 8 | 120.0 | 16.2 | 0.7 | 65.3 | 2.0 | 0.0% |
| 9 | 120.0 | 18.1 | 0.8 | 78.0 | 3.0 | 0.0% |
| 10 | 120.0 | 22.0 | 1.0 | 96.1 | 4.0 | 0.0% |
| Average: | 120.0 | 17.6 | 0.8 | 69.6 | 2.9 | 0.0% |
| WB L on P | oultry Road - Lane | ID 82 | | | | |
| 1 | 120.0 | 17.5 | 0.9 | 68.5 | 3.0 | 0.0% |
| 2 | 120.0 | 23.4 | 1.1 | 83.8 | 3.0 | 0.0% |
| 3 | 120.0 | 16.4 | 0.8 | 69.5 | 3.0 | 0.0% |
| 4 | 120.0 | 19.0 | 0.9 | 68.9 | 3.0 | 0.0% |
| 5 | 120.0 | 18.6 | 0.9 | 61.9 | 3.0 | 0.0% |
| 6 | 120.0 | 23.8 | 1.0 | 93.7 | 4.0 | 0.0% |
| 7 | 120.0 | 21.0 | 1.0 | 76.0 | 3.0 | 0.0% |
| 8 | 120.0 | 18.8 | 0.9 | 60.7 | 3.0 | 0.0% |
| 9 | 120.0 | 19.4 | 0.9 | 69.0 | 3.0 | 0.0% |

POWDER MILL ROAD & EDMONSTON ROAD

| POWDER | POWDER MILL ROAD & EDMONSTON ROAD NODE: 19 | | | | | | | |
|------------|--|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|--|
| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | | |
| WB L on Pe | oultry Road - Lane | ID 82 | | | | | | |
| 10 | 120.0 | 20.9 | 1.0 | 69.6 | 3.0 | 0.0% | | |
| Average: | 120.0 | 19.9 | 0.9 | 72.2 | 3.1 | 0.0% | | |
| WB T on P | oultry Road - Lane | ID 196 | | | | | | |
| 1 | 120.0 | 21.9 | 1.0 | 101.6 | 4.0 | 0.0% | | |
| 2 | 120.0 | 29.6 | 1.3 | 99.7 | 4.0 | 0.0% | | |
| 3 | 120.0 | 25.0 | 1.1 | 94.3 | 4.0 | 0.0% | | |
| 4 | 120.0 | 22.7 | 1.0 | 86.6 | 3.0 | 0.0% | | |
| 5 | 120.0 | 22.2 | 1.0 | 81.0 | 3.0 | 0.0% | | |
| 6 | 120.0 | 28.8 | 1.2 | 130.3 | 5.0 | 0.0% | | |
| 7 | 120.0 | 21.5 | 0.9 | 101.5 | 3.0 | 0.0% | | |
| 8 | 120.0 | 27.1 | 1.2 | 100.9 | 4.0 | 0.0% | | |
| 9 | 120.0 | 26.7 | 1.2 | 115.2 | 5.0 | 0.0% | | |
| 10 | 120.0 | 26.4 | 1.2 | 99.1 | 4.0 | 0.0% | | |
| Average: | 120.0 | 25.2 | 1.1 | 101.0 | 3.9 | 0.0% | | |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Run | Observations | Avg Queue Length (ft) | Avg Vehicles Queued | 95th Percentile Length (ft) | 95th Percentile Num Queued | Spillback Rate (%) | |
|---|---------------------|--------------------------|------------------------|--------------------------------|-------------------------------|-----------------------|--|
| EB T on Powder Mill Road - Lane ID 17 | | | | | | | |
| 1 | 120.0 | 18.6 | 0.9 | 89.5 | 4.0 | 0.8% | |
| 2 | 120.0 | 22.8 | 1.1 | 89.7 | 4.0 | 2.5% | |
| 3 | 120.0 | 25.9 | 1.2 | 96.8 | 4.0 | 3.3% | |
| 4 | 120.0 | 19.7 | 0.9 | 85.0 | 4.0 | 2.5% | |
| 5 | 120.0 | 17.7 | 0.8 | 77.4 | 3.0 | 0.8% | |
| 6 | 120.0 | 21.4 | 1.0 | 87.6 | 3.0 | 1.7% | |
| 7 | 120.0 | 19.9 | 0.9 | 93.4 | 4.0 | 2.5% | |
| 8 | 120.0 | 20.0 | 0.9 | 90.9 | 4.0 | 0.0% | |
| 9 | 120.0 | 17.0 | 0.7 | 90.1 | 4.0 | 1.7% | |
| 10 | 120.0 | 17.8 | 0.8 | 91.6 | 4.0 | 1.7% | |
| Average: | 120.0 | 20.1 | 0.9 | 89.2 | 3.8 | 1.8% | |
| NB L on Soil Conservation Road - Lane ID 13 | | | | | | | |
| 1 | 120.0 | 26.7 | 1.2 | 117.1 | 5.0 | 0.8% | |
| 2 | 120.0 | 24.5 | 1.1 | 101.4 | 4.0 | 0.0% | |
| 3 | 120.0 | 22.8 | 1.0 | 93.7 | 4.0 | 0.0% | |
| 4 | 120.0 | 26.4 | 1.2 | 107.5 | 5.0 | 0.0% | |
| 5 | 120.0 | 25.9 | 1.1 | 118.6 | 5.0 | 0.0% | |
| 6 | 120.0 | 31.4 | 1.4 | 111.7 | 5.0 | 0.8% | |
| 7 | 120.0 | 21.9 | 1.0 | 108.5 | 4.0 | 0.0% | |
| 8 | 120.0 | 28.6 | 1.3 | 113.2 | 5.0 | 1.7% | |
| 9 | 120.0 | 22.7 | 1.0 | 101.7 | 4.0 | 0.0% | |
| 10 | 120.0 | 26.3 | 1.2 | 107.7 | 5.0 | 0.0% | |
| Average: | 120.0 | 25.7 | 1.2 | 108.1 | 4.6 | 0.3% | |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| SOIL CONSERVATION ROAD & POWDER MILL ROAD | | | | | | |
|---|---------------------|-----------------|--------------|-----------------|-----------------|-----------|
| | | Avg Queue | Avg Vehicles | 95th Percentile | 95th Percentile | Spillback |
| Run | Observations | Length (ft) | Queued | Length (ft) | Num Queued | Rate (%) |
| NB L on Se | oil Conservation Ro | ad - Lane ID 13 | | | | |
| WB L on P | owder Mill Road - | Lane ID 11 | | | | |
| 1 | 120.0 | 9.5 | 0.5 | 41.4 | 2.0 | 0.0% |
| 2 | 120.0 | 9.0 | 0.4 | 42.9 | 2.0 | 0.0% |
| 3 | 120.0 | 7.3 | 0.4 | 34.7 | 1.0 | 0.0% |
| 4 | 120.0 | 8.5 | 0.5 | 36.5 | 2.0 | 0.0% |
| 5 | 120.0 | 8.1 | 0.4 | 32.9 | 1.0 | 0.0% |
| 6 | 120.0 | 9.4 | 0.5 | 41.2 | 2.0 | 0.0% |
| 7 | 120.0 | 9.6 | 0.5 | 40.5 | 2.0 | 0.0% |
| 8 | 120.0 | 8.0 | 0.4 | 20.6 | 1.0 | 0.0% |
| 9 | 120.0 | 9.2 | 0.5 | 22.6 | 1.0 | 0.0% |
| 10 | 120.0 | 8.8 | 0.5 | 32.1 | 1.0 | 0.0% |
| Average: | 120.0 | 8.7 | 0.5 | 34.5 | 1.5 | 0.0% |
| | | | | | | |
| WB T on F | Powder Mill Road - | Lane ID 42 | | | | |
| 1 | 120.0 | 23.9 | 1.1 | 87.3 | 4.0 | 0.0% |
| 2 | 120.0 | 24.1 | 1.1 | 108.9 | 5.0 | 0.0% |
| 3 | 120.0 | 27.6 | 1.2 | 103.6 | 4.0 | 3.3% |
| 4 | 120.0 | 26.5 | 1.2 | 113.3 | 5.0 | 1.7% |
| 5 | 120.0 | 25.4 | 1.1 | 115.6 | 5.0 | 0.0% |
| 6 | 120.0 | 23.0 | 1.1 | 100.1 | 4.0 | 0.0% |
| 7 | 120.0 | 23.3 | 1.1 | 110.3 | 5.0 | 0.0% |
| 8 | 120.0 | 23.7 | 1.0 | 104.3 | 4.0 | 0.0% |
| 9 | 120.0 | 23.7 | 1.1 | 90.1 | 4.0 | 0.8% |
| 10 | 120.0 | 25.4 | 1.1 | 119.3 | 5.0 | 0.0% |
| Average: | 120.0 | 24.7 | 1.1 | 105.3 | 4.5 | 0.6% |

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Lane Queue by Intersection - Avg Queue

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NB L | 36 | BW Parkway NB Off-Ramp | 56.6 | 4.9 | 50.3 | 64.0 | 10 |
| NB TR | 37 | BW Parkway NB Off-Ramp | 2.4 | 0.7 | 1.4 | 4.1 | 10 |

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 5 | Powder Mill Road | 22.9 | 2.2 | 19.7 | 26.4 | 10 |
| EB L | 24 | Powder Mill Road | 13.4 | 1.5 | 11.5 | 16.0 | 10 |
| EB T | 25 | Powder Mill Road | 20.9 | 3.6 | 16.4 | 25.4 | 10 |
| WB R | 207 | Powder Mill Road | 1.9 | 0.6 | 1.1 | 2.9 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 | _ |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|---|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| SWB L | 27 | BW Parkway SB Off-Ramp | 48.9 | 5.8 | 42.3 | 57.2 | 10 | |
| SWB TR | 28 | BW Parkway SB Off-Ramp | 21.1 | 3.4 | 15.0 | 26.8 | 10 | |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 8 | Powder Mill Road | 5.6 | 1.1 | 4.0 | 6.9 | 10 |
| WB L | 26 | Powder Mill Road | 2.0 | 0.5 | 1.2 | 2.7 | 10 |
| EB T | 31 | Powder Mill Road | 17.4 | 3.2 | 10.9 | 22.1 | 10 |
| EB R | 206 | Powder Mill Road | 1.0 | 0.5 | 0.0 | 1.6 | 10 |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | | |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NB L | 114 | Edmonston Road | 72.3 | 6.8 | 61.3 | 85.4 | 10 |
| SB T | 120 | Edmonston Road | 43.2 | 3.1 | 38.5 | 48.3 | 10 |
| SB T | 121 | Edmonston Road | 54.4 | 4.0 | 49.0 | 60.2 | 10 |
| NB T | 126 | Edmonston Road | 7.4 | 1.7 | 4.6 | 10.5 | 10 |
| NB T | 167 | Edmonston Road | 6.5 | 1.6 | 4.0 | 9.1 | 10 |
| SB R | 171 | Edmonston Road | 6.0 | 1.0 | 4.0 | 7.9 | 10 |

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | NODE: 32 | |
|-----------------------------------|---------|-------------|---------|---------------|---------|----------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| EB L | 117 | Sunnyside Avenue | 40.3 | 4.1 | 35.2 | 49.0 | 10 |
| EB R | 118 | Sunnyside Avenue | 17.2 | 2.9 | 14.2 | 22.7 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|----------------------|---------|---------------|---------|---------|-----------|
| NWB L | 321 | I-95/495 NB off-ramp | 17.4 | 2.4 | 13.1 | 21.7 | 10 |
| NWB L | 322 | I-95/495 NB off-ramp | 30.6 | 3.9 | 23.8 | 34.7 | 10 |
| NWB R | 323 | I-95/495 NB off-ramp | 51.8 | 5.3 | 41.8 | 59.5 | 10 |
| NWB R | 324 | I-95/495 NB off-ramp | 51.2 | 7.8 | 41.4 | 59.8 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 318 | MD 201 | 10.7 | 3.1 | 7.6 | 17.7 | 10 |
| NEB T | 319 | MD 201 | 13.4 | 2.2 | 11.0 | 18.3 | 10 |
| NEB T | 320 | MD 201 | 17.1 | 2.5 | 13.0 | 20.5 | 10 |
| SWB T | 326 | MD 201 | 15.2 | 2.4 | 12.7 | 21.1 | 10 |
| SWB T | 327 | MD 201 | 10.7 | 2.3 | 6.5 | 13.4 | 10 |
| SWB T | 328 | MD 201 | 16.5 | 3.3 | 12.3 | 23.4 | 10 |

I-95/495 SB OFF-RAMP & MD 201 **NODE: 67** Movements Lane ID Street Name Average **Std Deviation** Minimum Maximum # Samples SEB L 392 16.7 2.0 13.5 19.6 10 [Unnamed Street] SEB L 393 29.8 2.2 27.2 32.8 10 [Unnamed Street]

I-95/495 SB OFF-RAMP & MD 201

| | - | | | | | | |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NEB T | 374 | MD 201 | 2.8 | 0.8 | 1.8 | 4.3 | 10 |
| NEB T | 375 | MD 201 | 3.0 | 0.9 | 1.9 | 4.6 | 10 |
| NEB T | 376 | MD 201 | 7.3 | 2.5 | 4.4 | 11.0 | 10 |
| SWB T | 381 | MD 201 | 2.8 | 1.3 | 1.4 | 5.0 | 10 |
| SWB T | 382 | MD 201 | 2.7 | 0.9 | 1.7 | 4.5 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------|---------|---------------|---------|---------|-----------|
| NEB L | 237 | Cherrywood Lane | 37.3 | 3.6 | 31.0 | 43.0 | 10 |
| NEB L | 238 | Cherrywood Lane | 35.4 | 2.9 | 31.5 | 40.9 | 10 |
| NEB R | 239 | Cherrywood Lane | 0.5 | 0.2 | 0.2 | 0.8 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NWB L | 230 | MD 201 | 58.4 | 8.0 | 47.8 | 74.0 | 10 |
| NWB T | 231 | MD 201 | 2.9 | 1.6 | 0.2 | 5.6 | 10 |
| NWB T | 232 | MD 201 | 4.7 | 1.5 | 1.6 | 6.3 | 10 |
| SEB T | 235 | MD 201 | 40.7 | 3.8 | 34.5 | 48.4 | 10 |

NODE: 67

NODE: 45

NODE: 45

NODE: 32

NODE: 57

| MD 201 & CHERRYWOOD LANE | | | | | | | |
|--------------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SEB T | 236 | MD 201 | 42.1 | 3.7 | 36.3 | 48.9 | 10 |
| SEB R | 250 | MD 201 | 7.4 | 1.7 | 4.6 | 9.7 | 10 |

| MD 201 & IVY LANE | | | | | | | |
|-------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 251 | MD 201 | 0.0 | 0.1 | 0.0 | 0.2 | 10 |
| SB T | 252 | MD 201 | 0.4 | 0.2 | 0.1 | 0.6 | 10 |

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | | NODE: 52 |
|---|---------|-----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NWB LT | 283 | Crescent Street | 12.3 | 0.7 | 11.5 | 13.2 | 10 |
| NWB R | 284 | Crescent Street | 2.8 | 0.8 | 1.4 | 4.1 | 10 |

| MD 201, MARYLAND SHA DRIVEWAY | / & CRESCENT STREET |
|--------------------------------------|--------------------------------|
|--------------------------------------|--------------------------------|

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------------|---------|---------------|---------|---------|-----------|
| SEB LTR | 281 | Maryland SHA Driveway | 0.3 | 0.2 | 0.0 | 0.7 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 297 | MD 201 | 1.4 | 0.6 | 0.4 | 2.4 | 10 |
| NEB T | 298 | MD 201 | 7.7 | 3.1 | 3.6 | 14.9 | 10 |
| NEB T | 299 | MD 201 | 7.7 | 2.4 | 5.2 | 12.2 | 10 |
| NEB L | 311 | MD 201 | 11.7 | 0.9 | 10.0 | 13.0 | 10 |
| NEB R | 332 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB L | 342 | MD 201 | 8.3 | 1.6 | 6.1 | 11.0 | 10 |
| SWB T | 343 | MD 201 | 0.3 | 0.4 | 0.0 | 0.9 | 10 |
| SWB T | 344 | MD 201 | 1.3 | 0.6 | 0.5 | 2.3 | 10 |
| SWB TR | 345 | MD 201 | 2.9 | 1.2 | 1.2 | 5.3 | 10 |

| POULTRY ROAD | | | | | | | NODE: 40 |
|--------------|---------|--------------|---------|---------------|---------|---------|-----------------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 109 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 131 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | NODE: 19 |
|-----------------------------------|---------|------------------|---------|---------------|---------|---------|-----------------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NEB L | 49 | [Unnamed Street] | 28.7 | 2.5 | 24.7 | 33.8 | 10 |
| NEB T | 83 | [Unnamed Street] | 12.7 | 2.4 | 9.2 | 17.6 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | NODE: 19 |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 198 | Edmonston Road | 6.5 | 0.9 | 5.1 | 7.7 | 10 |
| SWB T | 199 | Edmonston Road | 10.5 | 1.0 | 8.3 | 11.7 | 10 |
| SWB TR | 200 | Edmonston Road | 10.9 | 1.0 | 9.4 | 12.6 | 10 |

NODE: 52

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | NODE: 19 |
|-----------------------------------|---------|--------------|---------|---------------|---------|---------|-----------------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | |
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB L | 51 | Poultry Road | 17.6 | 2.5 | 13.3 | 22.0 | 10 |
| WB L | 82 | Poultry Road | 19.9 | 2.4 | 16.4 | 23.8 | 10 |
| NB T | 158 | Poultry Road | 37.1 | 3.7 | 31.3 | 43.8 | 10 |
| NB T | 159 | Poultry Road | 39.0 | 3.3 | 34.3 | 45.7 | 10 |
| WB T | 196 | Poultry Road | 25.2 | 3.0 | 21.5 | 29.6 | 10 |
| NB T | 212 | Poultry Road | 35.3 | 3.6 | 31.1 | 42.1 | 10 |
| NB T | 218 | Poultry Road | 27.5 | 3.6 | 24.3 | 35.3 | 10 |
| NB T | 350 | Poultry Road | 26.6 | 2.7 | 20.8 | 31.1 | 10 |
| NB T | 355 | Poultry Road | 27.2 | 3.7 | 22.9 | 33.2 | 10 |
| NB T | 406 | Poultry Road | 25.6 | 2.6 | 22.6 | 28.5 | 10 |

POWDER MILL ROAD & EDMONSTON ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| SEB L | 64 | Powder Mill Road | 11.4 | 1.2 | 9.3 | 13.5 | 10 |
| SEB T | 65 | Powder Mill Road | 13.9 | 2.3 | 10.2 | 17.3 | 10 |
| SEB T | 184 | Powder Mill Road | 13.8 | 1.6 | 11.6 | 16.7 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| WB L | 11 | Powder Mill Road | 8.7 | 0.8 | 7.3 | 9.6 | 10 |
| EB T | 17 | Powder Mill Road | 20.1 | 2.7 | 17.0 | 25.9 | 10 |
| WB T | 42 | Powder Mill Road | 24.7 | 1.5 | 23.0 | 27.6 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| NB L | 13 | Soil Conservation Road | 25.7 | 2.9 | 21.9 | 31.4 | 10 |

NODE: 2

NODE: 2

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Lane Queue by Intersection - Avg **Num Queued**

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NB L | 36 | BW Parkway NB Off-Ramp | 2.5 | 0.2 | 2.2 | 2.8 | 10 |
| NB TR | 37 | BW Parkway NB Off-Ramp | 0.1 | 0.0 | 0.1 | 0.2 | 10 |

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 5 | Powder Mill Road | 1.0 | 0.1 | 0.9 | 1.2 | 10 |
| EB L | 24 | Powder Mill Road | 0.7 | 0.1 | 0.6 | 0.7 | 10 |
| EB T | 25 | Powder Mill Road | 0.9 | 0.2 | 0.7 | 1.1 | 10 |
| WB R | 207 | Powder Mill Road | 0.1 | 0.0 | 0.1 | 0.1 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 27 | BW Parkway SB Off-Ramp | 2.2 | 0.2 | 1.9 | 2.5 | 10 |
| SWB TR | 28 | BW Parkway SB Off-Ramp | 1.0 | 0.1 | 0.7 | 1.2 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 8 | Powder Mill Road | 0.3 | 0.1 | 0.2 | 0.3 | 10 |
| WB L | 26 | Powder Mill Road | 0.1 | 0.0 | 0.1 | 0.1 | 10 |
| EB T | 31 | Powder Mill Road | 0.8 | 0.1 | 0.5 | 1.0 | 10 |
| EB R | 206 | Powder Mill Road | 0.1 | 0.0 | 0.0 | 0.1 | 10 |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | | | |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| NB L | 114 | Edmonston Road | 3.0 | 0.3 | 2.6 | 3.6 | 10 | |
| SB T | 120 | Edmonston Road | 1.8 | 0.2 | 1.6 | 2.1 | 10 | |
| SB T | 121 | Edmonston Road | 2.3 | 0.2 | 2.1 | 2.5 | 10 | |
| NB T | 126 | Edmonston Road | 0.3 | 0.1 | 0.2 | 0.4 | 10 | |
| NB T | 167 | Edmonston Road | 0.3 | 0.1 | 0.2 | 0.4 | 10 | |
| SB R | 171 | Edmonston Road | 0.3 | 0.0 | 0.2 | 0.4 | 10 | |

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | NODE: 32 | |
|-----------------------------------|---------|-------------|---------|---------------|---------|----------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| EB L | 117 | Sunnyside Avenue | 1.8 | 0.2 | 1.6 | 2.1 | 10 |
| EB R | 118 | Sunnyside Avenue | 0.8 | 0.1 | 0.6 | 1.0 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|----------------------|---------|---------------|---------|---------|-----------|
| NWB L | 321 | I-95/495 NB off-ramp | 0.8 | 0.1 | 0.6 | 1.0 | 10 |
| NWB L | 322 | I-95/495 NB off-ramp | 1.4 | 0.1 | 1.1 | 1.5 | 10 |
| NWB R | 323 | I-95/495 NB off-ramp | 2.2 | 0.2 | 1.8 | 2.5 | 10 |
| NWB R | 324 | I-95/495 NB off-ramp | 2.2 | 0.3 | 1.8 | 2.5 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 318 | MD 201 | 0.5 | 0.1 | 0.4 | 0.8 | 10 |
| NEB T | 319 | MD 201 | 0.6 | 0.1 | 0.5 | 0.8 | 10 |
| NEB T | 320 | MD 201 | 0.8 | 0.1 | 0.6 | 0.9 | 10 |
| SWB T | 326 | MD 201 | 0.7 | 0.1 | 0.6 | 1.0 | 10 |
| SWB T | 327 | MD 201 | 0.5 | 0.1 | 0.3 | 0.6 | 10 |
| SWB T | 328 | MD 201 | 0.8 | 0.1 | 0.6 | 1.0 | 10 |

I-95/495 SB OFF-RAMP & MD 201 **NODE: 67** Movements Lane ID Street Name Average **Std Deviation** Minimum Maximum # Samples SEB L 392 0.8 0.1 0.7 1.0 10 [Unnamed Street] SEB L 393 1.4 0.1 1.3 1.5 10 [Unnamed Street]

I-95/495 SB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 374 | MD 201 | 0.1 | 0.0 | 0.1 | 0.2 | 10 |
| NEB T | 375 | MD 201 | 0.1 | 0.0 | 0.1 | 0.2 | 10 |
| NEB T | 376 | MD 201 | 0.3 | 0.1 | 0.2 | 0.4 | 10 |
| SWB T | 381 | MD 201 | 0.1 | 0.0 | 0.1 | 0.2 | 10 |
| SWB T | 382 | MD 201 | 0.1 | 0.0 | 0.1 | 0.2 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------|---------|---------------|---------|---------|-----------|
| NEB L | 237 | Cherrywood Lane | 1.7 | 0.1 | 1.5 | 1.9 | 10 |
| NEB L | 238 | Cherrywood Lane | 1.6 | 0.1 | 1.4 | 1.8 | 10 |
| NEB R | 239 | Cherrywood Lane | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NWB L | 230 | MD 201 | 2.6 | 0.3 | 2.2 | 3.2 | 10 |
| NWB T | 231 | MD 201 | 0.1 | 0.1 | 0.0 | 0.2 | 10 |
| NWB T | 232 | MD 201 | 0.2 | 0.1 | 0.1 | 0.3 | 10 |
| SEB T | 235 | MD 201 | 1.7 | 0.2 | 1.4 | 2.0 | 10 |

NODE: 32

NODE: 57

NODE: 57

NODE: 45

NODE: 45

| MD 201 & | MD 201 & CHERRYWOOD LANE | | | | | | | |
|-----------|--------------------------|-------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| SEB T | 236 | MD 201 | 1.8 | 0.2 | 1.6 | 2.0 | 10 | |
| SEB R | 250 | MD 201 | 0.3 | 0.1 | 0.2 | 0.4 | 10 | |

| MD 201 & IVY LANE | | | | | | | |
|-------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 251 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 252 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | | |
|---|---------|-----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NWB LT | 283 | Crescent Street | 0.7 | 0.1 | 0.6 | 0.8 | 10 |
| NWB R | 284 | Crescent Street | 0.2 | 0.1 | 0.1 | 0.2 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------------|---------|---------------|---------|---------|-----------|
| SEB LTR | 281 | Maryland SHA Driveway | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 297 | MD 201 | 0.1 | 0.0 | 0.0 | 0.1 | 10 |
| NEB T | 298 | MD 201 | 0.4 | 0.1 | 0.2 | 0.6 | 10 |
| NEB T | 299 | MD 201 | 0.3 | 0.1 | 0.2 | 0.5 | 10 |
| NEB L | 311 | MD 201 | 0.6 | 0.0 | 0.5 | 0.6 | 10 |
| NEB R | 332 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB L | 342 | MD 201 | 0.4 | 0.1 | 0.3 | 0.5 | 10 |
| SWB T | 343 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 344 | MD 201 | 0.1 | 0.0 | 0.0 | 0.1 | 10 |
| SWB TR | 345 | MD 201 | 0.2 | 0.1 | 0.1 | 0.3 | 10 |

| POULTRY ROAD | | | | | | | | |
|--------------|---------|--------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| SB T | 109 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | |
| SB T | 131 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | |

| POWDER MILL ROAD & EDMONSTON ROAD NO | | | | | | | |
|--------------------------------------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NEB L | 49 | [Unnamed Street] | 1.3 | 0.1 | 1.1 | 1.5 | 10 |
| NEB T | 83 | [Unnamed Street] | 0.6 | 0.1 | 0.4 | 0.8 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 198 | Edmonston Road | 0.4 | 0.1 | 0.3 | 0.4 | 10 |
| SWB T | 199 | Edmonston Road | 0.6 | 0.1 | 0.5 | 0.7 | 10 |
| SWB TR | 200 | Edmonston Road | 0.6 | 0.1 | 0.5 | 0.7 | 10 |

NODE: 52

| POWDER | OWDER MILL ROAD & EDMONSTON ROAD | | | | | | | | |
|-----------|----------------------------------|--------------|---------|---------------|---------|---------|-----------|--|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | | |
| POWDER | MILL RO | AD & EDMONST | ON ROAD | | | | NODE: 19 | | |
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | | |
| WB L | 51 | Poultry Road | 0.8 | 0.1 | 0.6 | 1.0 | 10 | | |
| WB L | 82 | Poultry Road | 0.9 | 0.1 | 0.8 | 1.1 | 10 | | |
| NB T | 158 | Poultry Road | 1.1 | 0.1 | 0.9 | 1.3 | 10 | | |
| NB T | 159 | Poultry Road | 1.2 | 0.1 | 1.1 | 1.5 | 10 | | |
| WB T | 196 | Poultry Road | 1.1 | 0.1 | 0.9 | 1.3 | 10 | | |
| NB T | 212 | Poultry Road | 1.1 | 0.1 | 0.9 | 1.3 | 10 | | |
| NB T | 218 | Poultry Road | 0.8 | 0.1 | 0.7 | 1.0 | 10 | | |
| NB T | 350 | Poultry Road | 0.8 | 0.1 | 0.6 | 0.9 | 10 | | |
| NB T | 355 | Poultry Road | 0.8 | 0.1 | 0.7 | 1.0 | 10 | | |
| NB T | 406 | Poultry Road | 0.8 | 0.1 | 0.7 | 0.9 | 10 | | |

POWDER MILL ROAD & EDMONSTON ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| SEB L | 64 | Powder Mill Road | 0.6 | 0.1 | 0.5 | 0.7 | 10 |
| SEB T | 65 | Powder Mill Road | 0.7 | 0.1 | 0.5 | 0.9 | 10 |
| SEB T | 184 | Powder Mill Road | 0.7 | 0.1 | 0.6 | 0.8 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| WB L | 11 | Powder Mill Road | 0.5 | 0.1 | 0.4 | 0.5 | 10 |
| EB T | 17 | Powder Mill Road | 0.9 | 0.1 | 0.7 | 1.2 | 10 |
| WB T | 42 | Powder Mill Road | 1.1 | 0.1 | 1.0 | 1.2 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| NB L | 13 | Soil Conservation Road | 1.2 | 0.1 | 1.0 | 1.4 | 10 |

NODE: 2

NODE: 2

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Lane Queue by Intersection -**Percentile Queue**

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NB L | 36 | BW Parkway NB Off-Ramp | 158.7 | 9.6 | 144.7 | 177.9 | 10 |
| NB TR | 37 | BW Parkway NB Off-Ramp | 18.6 | 3.1 | 14.6 | 26.2 | 10 |

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD NO | | | | | | | | |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| WB T | 5 | Powder Mill Road | 112.2 | 11.6 | 97.6 | 128.8 | 10 | |
| EB L | 24 | Powder Mill Road | 51.7 | 7.3 | 45.4 | 63.2 | 10 | |
| EB T | 25 | Powder Mill Road | 124.3 | 12.1 | 102.8 | 141.2 | 10 | |
| WB R | 207 | Powder Mill Road | 16.2 | 6.6 | 0.0 | 24.7 | 10 | |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 27 | BW Parkway SB Off-Ramp | 133.4 | 8.0 | 121.5 | 148.0 | 10 |
| SWB TR | 28 | BW Parkway SB Off-Ramp | 87.6 | 10.4 | 62.1 | 102.6 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 8 | Powder Mill Road | 43.0 | 13.2 | 21.8 | 63.5 | 10 |
| WB L | 26 | Powder Mill Road | 16.8 | 0.9 | 15.5 | 18.4 | 10 |
| EB T | 31 | Powder Mill Road | 92.5 | 11.9 | 64.8 | 106.4 | 10 |
| EB R | 206 | Powder Mill Road | 7.2 | 7.6 | 0.0 | 17.6 | 10 |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | | |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NB L | 114 | Edmonston Road | 228.7 | 26.9 | 188.1 | 275.8 | 10 |
| SB T | 120 | Edmonston Road | 182.7 | 7.3 | 168.3 | 191.2 | 10 |
| SB T | 121 | Edmonston Road | 210.7 | 15.3 | 185.1 | 236.8 | 10 |
| NB T | 126 | Edmonston Road | 62.5 | 14.4 | 42.3 | 84.0 | 10 |
| NB T | 167 | Edmonston Road | 51.9 | 16.3 | 20.6 | 73.0 | 10 |
| SB R | 171 | Edmonston Road | 35.7 | 7.1 | 23.6 | 46.2 | 10 |

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | NODE: 32 | |
|-----------------------------------|---------|-------------|---------|---------------|---------|----------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| EB L | 117 | Sunnyside Avenue | 105.8 | 11.1 | 94.3 | 129.6 | 10 |
| EB R | 118 | Sunnyside Avenue | 80.6 | 8.4 | 63.0 | 93.8 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|----------------------|---------|---------------|---------|---------|-----------|
| NWB L | 321 | I-95/495 NB off-ramp | 77.0 | 5.1 | 69.6 | 86.3 | 10 |
| NWB L | 322 | I-95/495 NB off-ramp | 103.3 | 8.4 | 91.7 | 116.2 | 10 |
| NWB R | 323 | I-95/495 NB off-ramp | 192.1 | 9.3 | 174.8 | 206.2 | 10 |
| NWB R | 324 | I-95/495 NB off-ramp | 179.5 | 14.1 | 156.3 | 202.4 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 318 | MD 201 | 51.3 | 9.5 | 41.8 | 70.6 | 10 |
| NEB T | 319 | MD 201 | 55.7 | 9.9 | 43.6 | 71.2 | 10 |
| NEB T | 320 | MD 201 | 70.4 | 6.2 | 61.2 | 82.6 | 10 |
| SWB T | 326 | MD 201 | 59.4 | 6.5 | 47.8 | 67.9 | 10 |
| SWB T | 327 | MD 201 | 53.4 | 9.1 | 40.4 | 64.3 | 10 |
| SWB T | 328 | MD 201 | 72.9 | 10.0 | 61.8 | 94.5 | 10 |

I-95/495 SB OFF-RAMP & MD 201 **NODE: 67** Movements Lane ID Street Name Average **Std Deviation** Minimum Maximum # Samples SEB L 392 57.9 8.2 45.6 69.1 10 [Unnamed Street] 70.0 SEB L 393 85.9 7.9 96.1 10 [Unnamed Street]

I-95/495 SB OFF-RAMP & MD 201

| | - | | | | | | |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NEB T | 374 | MD 201 | 19.3 | 2.5 | 16.4 | 23.5 | 10 |
| NEB T | 375 | MD 201 | 19.6 | 10.2 | 0.9 | 43.2 | 10 |
| NEB T | 376 | MD 201 | 57.0 | 15.4 | 39.4 | 80.0 | 10 |
| SWB T | 381 | MD 201 | 19.9 | 15.8 | 0.0 | 45.0 | 10 |
| SWB T | 382 | MD 201 | 19.2 | 10.0 | 0.8 | 41.4 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------|---------|---------------|---------|---------|-----------|
| NEB L | 237 | Cherrywood Lane | 97.0 | 7.3 | 86.2 | 107.2 | 10 |
| NEB L | 238 | Cherrywood Lane | 95.1 | 5.2 | 87.6 | 106.2 | 10 |
| NEB R | 239 | Cherrywood Lane | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NWB L | 230 | MD 201 | 142.2 | 14.4 | 121.3 | 174.4 | 10 |
| NWB T | 231 | MD 201 | 18.0 | 15.3 | 0.0 | 44.0 | 10 |
| NWB T | 232 | MD 201 | 25.1 | 13.1 | 9.5 | 48.9 | 10 |
| SEB T | 235 | MD 201 | 185.5 | 19.2 | 162.4 | 214.7 | 10 |

TransModeler Traffic Simulation Software

Transportation Impact Study

NODE: 45

NODE: 45

NODE: 67

NODE: 32

NODE: 57

| MD 201 & CHERRYWOOD LANE | | | | | | | |
|--------------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SEB T | 236 | MD 201 | 186.6 | 17.8 | 165.3 | 225.9 | 10 |
| SEB R | 250 | MD 201 | 50.3 | 9.5 | 41.4 | 68.0 | 10 |

| MD 201 & IVY LANE | | | | | | | NODE: 50 |
|-------------------|---------|-------------|---------|---------------|---------|---------|-----------------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 251 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 252 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | | |
|---|---------|-----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NWB LT | 283 | Crescent Street | 27.6 | 5.6 | 20.7 | 34.7 | 10 |
| NWB R | 284 | Crescent Street | 17.9 | 1.3 | 15.2 | 19.0 | 10 |

| MD 201, MARYLAND SH | A DRIVEWAY & | CRESCENT STREET |
|---------------------|--------------|------------------------|
|---------------------|--------------|------------------------|

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------------|---------|---------------|---------|---------|-----------|
| SEB LTR | 281 | Maryland SHA Driveway | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 297 | MD 201 | 8.7 | 8.8 | 0.0 | 18.7 | 10 |
| NEB T | 298 | MD 201 | 51.5 | 19.3 | 20.0 | 90.5 | 10 |
| NEB T | 299 | MD 201 | 44.1 | 10.5 | 29.4 | 66.1 | 10 |
| NEB L | 311 | MD 201 | 43.3 | 2.8 | 39.3 | 48.3 | 10 |
| NEB R | 332 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB L | 342 | MD 201 | 39.0 | 9.7 | 19.1 | 52.6 | 10 |
| SWB T | 343 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 344 | MD 201 | 8.8 | 8.9 | 0.0 | 18.4 | 10 |
| SWB TR | 345 | MD 201 | 19.0 | 10.0 | 0.0 | 41.4 | 10 |

| POULTRY ROAD | | | | | | | |
|--------------|---------|--------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 109 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 131 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | |
|-----------------------------------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NEB L | 49 | [Unnamed Street] | 82.1 | 2.8 | 76.6 | 85.6 | 10 |
| NEB T | 83 | [Unnamed Street] | 72.9 | 4.2 | 67.4 | 79.4 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 198 | Edmonston Road | 20.5 | 2.4 | 18.5 | 26.1 | 10 |
| SWB T | 199 | Edmonston Road | 35.9 | 2.2 | 32.1 | 38.1 | 10 |
| SWB TR | 200 | Edmonston Road | 37.0 | 1.0 | 35.6 | 38.7 | 10 |

NODE: 52

| POWDER | POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | | |
|-----------------------------------|-----------------------------------|--------------|---------|---------------|---------|---------|-----------|--|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | | |
| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | | | |
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | | |
| WB L | 51 | Poultry Road | 69.6 | 11.4 | 52.0 | 96.1 | 10 | | |
| WB L | 82 | Poultry Road | 72.2 | 10.0 | 60.7 | 93.7 | 10 | | |
| NB T | 158 | Poultry Road | 93.0 | 5.2 | 87.3 | 104.9 | 10 | | |
| NB T | 159 | Poultry Road | 98.5 | 9.5 | 84.9 | 116.7 | 10 | | |
| WB T | 196 | Poultry Road | 101.0 | 13.8 | 81.0 | 130.3 | 10 | | |
| NB T | 212 | Poultry Road | 95.0 | 10.4 | 84.6 | 116.2 | 10 | | |
| NB T | 218 | Poultry Road | 79.6 | 7.8 | 69.9 | 94.1 | 10 | | |
| NB T | 350 | Poultry Road | 79.3 | 7.2 | 66.1 | 89.2 | 10 | | |
| NB T | 355 | Poultry Road | 80.1 | 8.5 | 68.1 | 94.0 | 10 | | |
| NB T | 406 | Poultry Road | 78.0 | 9.7 | 65.0 | 89.4 | 10 | | |

POWDER MILL ROAD & EDMONSTON ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| SEB L | 64 | Powder Mill Road | 40.2 | 3.0 | 37.4 | 46.9 | 10 |
| SEB T | 65 | Powder Mill Road | 52.2 | 7.7 | 41.5 | 63.4 | 10 |
| SEB T | 184 | Powder Mill Road | 49.5 | 5.1 | 43.9 | 61.2 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| WB L | 11 | Powder Mill Road | 34.5 | 7.8 | 20.6 | 42.9 | 10 |
| EB T | 17 | Powder Mill Road | 89.2 | 5.2 | 77.4 | 96.8 | 10 |
| WB T | 42 | Powder Mill Road | 105.3 | 10.5 | 87.3 | 119.3 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| NB L | 13 | Soil Conservation Road | 108.1 | 7.6 | 93.7 | 118.6 | 10 |

NODE: 19

NODE: 2

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Lane Queue by Intersection -**Percentile Num Queued**

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NB L | 36 | BW Parkway NB Off-Ramp | 6.9 | 0.6 | 6.0 | 8.0 | 10 |
| NB TR | 37 | BW Parkway NB Off-Ramp | 1.0 | 0.0 | 1.0 | 1.0 | 10 |

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 5 | Powder Mill Road | 4.6 | 0.5 | 4.0 | 5.0 | 10 |
| EB L | 24 | Powder Mill Road | 2.1 | 0.3 | 2.0 | 3.0 | 10 |
| EB T | 25 | Powder Mill Road | 5.2 | 0.6 | 4.0 | 6.0 | 10 |
| WB R | 207 | Powder Mill Road | 0.9 | 0.3 | 0.0 | 1.0 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | NODE: 8 | |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 27 | BW Parkway SB Off-Ramp | 5.7 | 0.5 | 5.0 | 6.0 | 10 |
| SWB TR | 28 | BW Parkway SB Off-Ramp | 3.9 | 0.3 | 3.0 | 4.0 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 8 | Powder Mill Road | 1.8 | 0.4 | 1.0 | 2.0 | 10 |
| WB L | 26 | Powder Mill Road | 1.0 | 0.0 | 1.0 | 1.0 | 10 |
| EB T | 31 | Powder Mill Road | 3.9 | 0.3 | 3.0 | 4.0 | 10 |
| EB R | 206 | Powder Mill Road | 0.5 | 0.5 | 0.0 | 1.0 | 10 |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | | |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NB L | 114 | Edmonston Road | 9.1 | 1.1 | 8.0 | 11.0 | 10 |
| SB T | 120 | Edmonston Road | 7.5 | 0.5 | 7.0 | 8.0 | 10 |
| SB T | 121 | Edmonston Road | 8.8 | 0.6 | 8.0 | 10.0 | 10 |
| NB T | 126 | Edmonston Road | 2.7 | 0.5 | 2.0 | 3.0 | 10 |
| NB T | 167 | Edmonston Road | 2.3 | 0.7 | 1.0 | 3.0 | 10 |
| SB R | 171 | Edmonston Road | 1.5 | 0.5 | 1.0 | 2.0 | 10 |

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | NODE: 32 | |
|-----------------------------------|---------|-------------|---------|---------------|---------|----------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| EB L | 117 | Sunnyside Avenue | 4.5 | 0.5 | 4.0 | 5.0 | 10 |
| EB R | 118 | Sunnyside Avenue | 3.1 | 0.3 | 3.0 | 4.0 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|----------------------|---------|---------------|---------|---------|-----------|
| NWB L | 321 | I-95/495 NB off-ramp | 3.2 | 0.4 | 3.0 | 4.0 | 10 |
| NWB L | 322 | I-95/495 NB off-ramp | 4.3 | 0.5 | 4.0 | 5.0 | 10 |
| NWB R | 323 | I-95/495 NB off-ramp | 8.0 | 0.5 | 7.0 | 9.0 | 10 |
| NWB R | 324 | I-95/495 NB off-ramp | 7.6 | 0.7 | 7.0 | 9.0 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 318 | MD 201 | 2.2 | 0.4 | 2.0 | 3.0 | 10 |
| NEB T | 319 | MD 201 | 2.4 | 0.5 | 2.0 | 3.0 | 10 |
| NEB T | 320 | MD 201 | 3.1 | 0.3 | 3.0 | 4.0 | 10 |
| SWB T | 326 | MD 201 | 2.8 | 0.4 | 2.0 | 3.0 | 10 |
| SWB T | 327 | MD 201 | 2.3 | 0.5 | 2.0 | 3.0 | 10 |
| SWB T | 328 | MD 201 | 3.2 | 0.4 | 3.0 | 4.0 | 10 |

I-95/495 SB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| SEB L | 392 | [Unnamed Street] | 2.7 | 0.5 | 2.0 | 3.0 | 10 |
| SEB L | 393 | [Unnamed Street] | 3.7 | 0.5 | 3.0 | 4.0 | 10 |

I-95/495 SB OFF-RAMP & MD 201

| I-95/495 SB OFF-RAMP & MD 201 NO | | | | | | | | |
|----------------------------------|---------|-------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| NEB T | 374 | MD 201 | 1.0 | 0.0 | 1.0 | 1.0 | 10 | |
| NEB T | 375 | MD 201 | 1.0 | 0.5 | 0.0 | 2.0 | 10 | |
| NEB T | 376 | MD 201 | 2.5 | 0.5 | 2.0 | 3.0 | 10 | |
| SWB T | 381 | MD 201 | 1.0 | 0.7 | 0.0 | 2.0 | 10 | |
| SWB T | 382 | MD 201 | 1.0 | 0.5 | 0.0 | 2.0 | 10 | |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------|---------|---------------|---------|---------|-----------|
| NEB L | 237 | Cherrywood Lane | 4.1 | 0.3 | 4.0 | 5.0 | 10 |
| NEB L | 238 | Cherrywood Lane | 4.0 | 0.0 | 4.0 | 4.0 | 10 |
| NEB R | 239 | Cherrywood Lane | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NWB L | 230 | MD 201 | 5.7 | 0.7 | 5.0 | 7.0 | 10 |
| NWB T | 231 | MD 201 | 0.8 | 0.6 | 0.0 | 2.0 | 10 |
| NWB T | 232 | MD 201 | 1.3 | 0.5 | 1.0 | 2.0 | 10 |
| SEB T | 235 | MD 201 | 7.4 | 0.7 | 6.0 | 8.0 | 10 |

TransModeler

Transportation Impact Study

NODE: 45

NODE: 45

NODE: 32

NODE: 57

NODE: 57

| MD 201 & CHERRYWOOD LANE | | | | | | | |
|--------------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SEB T | 236 | MD 201 | 7.6 | 0.7 | 7.0 | 9.0 | 10 |
| SEB R | 250 | MD 201 | 2.2 | 0.4 | 2.0 | 3.0 | 10 |

| MD 201 & IVY LANE | | | | | | | NODE: 50 |
|-------------------|---------|-------------|---------|---------------|---------|---------|-----------------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 251 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 252 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | | |
|---|---------|-----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NWB LT | 283 | Crescent Street | 1.2 | 0.4 | 1.0 | 2.0 | 10 |
| NWB R | 284 | Crescent Street | 1.0 | 0.0 | 1.0 | 1.0 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------------|---------|---------------|---------|---------|-----------|
| SEB LTR | 281 | Maryland SHA Driveway | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 297 | MD 201 | 0.5 | 0.5 | 0.0 | 1.0 | 10 |
| NEB T | 298 | MD 201 | 2.2 | 0.8 | 1.0 | 4.0 | 10 |
| NEB T | 299 | MD 201 | 2.0 | 0.5 | 1.0 | 3.0 | 10 |
| NEB L | 311 | MD 201 | 2.0 | 0.0 | 2.0 | 2.0 | 10 |
| NEB R | 332 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB L | 342 | MD 201 | 1.8 | 0.4 | 1.0 | 2.0 | 10 |
| SWB T | 343 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 344 | MD 201 | 0.5 | 0.5 | 0.0 | 1.0 | 10 |
| SWB TR | 345 | MD 201 | 1.0 | 0.5 | 0.0 | 2.0 | 10 |

| POULTRY ROAD | | | | | | | |
|--------------|---------|--------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 109 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 131 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| POWDER | POWDER MILL ROAD & EDMONSTON ROAD | | | | | | |
|-----------|-----------------------------------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NEB L | 49 | [Unnamed Street] | 3.7 | 0.5 | 3.0 | 4.0 | 10 |
| NEB T | 83 | [Unnamed Street] | 3.0 | 0.0 | 3.0 | 3.0 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 198 | Edmonston Road | 1.0 | 0.0 | 1.0 | 1.0 | 10 |
| SWB T | 199 | Edmonston Road | 1.9 | 0.3 | 1.0 | 2.0 | 10 |
| SWB TR | 200 | Edmonston Road | 2.0 | 0.0 | 2.0 | 2.0 | 10 |

NODE: 52

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | | | | |
|-----------------------------------|---------|--------------|---------|---------------|---------|---------|-----------|--|--|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | | | |
| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | | | | |
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | | | |
| WB L | 51 | Poultry Road | 2.9 | 0.6 | 2.0 | 4.0 | 10 | | | |
| WB L | 82 | Poultry Road | 3.1 | 0.3 | 3.0 | 4.0 | 10 | | | |
| NB T | 158 | Poultry Road | 3.0 | 0.0 | 3.0 | 3.0 | 10 | | | |
| NB T | 159 | Poultry Road | 3.3 | 0.5 | 3.0 | 4.0 | 10 | | | |
| WB T | 196 | Poultry Road | 3.9 | 0.7 | 3.0 | 5.0 | 10 | | | |
| NB T | 212 | Poultry Road | 3.2 | 0.4 | 3.0 | 4.0 | 10 | | | |
| NB T | 218 | Poultry Road | 2.6 | 0.5 | 2.0 | 3.0 | 10 | | | |
| NB T | 350 | Poultry Road | 2.6 | 0.5 | 2.0 | 3.0 | 10 | | | |
| NB T | 355 | Poultry Road | 2.5 | 0.5 | 2.0 | 3.0 | 10 | | | |
| NB T | 406 | Poultry Road | 2.6 | 0.5 | 2.0 | 3.0 | 10 | | | |

POWDER MILL ROAD & EDMONSTON ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| SEB L | 64 | Powder Mill Road | 2.0 | 0.0 | 2.0 | 2.0 | 10 |
| SEB T | 65 | Powder Mill Road | 2.3 | 0.5 | 2.0 | 3.0 | 10 |
| SEB T | 184 | Powder Mill Road | 2.1 | 0.3 | 2.0 | 3.0 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| WB L | 11 | Powder Mill Road | 1.5 | 0.5 | 1.0 | 2.0 | 10 |
| EB T | 17 | Powder Mill Road | 3.8 | 0.4 | 3.0 | 4.0 | 10 |
| WB T | 42 | Powder Mill Road | 4.5 | 0.5 | 4.0 | 5.0 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| NB L | 13 | Soil Conservation Road | 4.6 | 0.5 | 4.0 | 5.0 | 10 |

NODE: 19

NODE: 2

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Lane Queue by Intersection -**Spillback Rate**

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NB L | 36 | BW Parkway NB Off-Ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NB TR | 37 | BW Parkway NB Off-Ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

BW PARKWAY NB OFF-RAMP, BW PARKWAY NB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 5 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 5 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| EB L | 24 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| EB T | 25 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| WB R | 207 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SWB L | 27 | BW Parkway SB Off-Ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB TR | 28 | BW Parkway SB Off-Ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

BW PARKWAY SB OFF-RAMP, BW PARKWAY SB ON-RAMP & POWDER MILL

| ROAD | | | | | | | NODE: 8 |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB T | 8 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| WB L | 26 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| EB T | 31 | Powder Mill Road | 0.1 | 0.0 | 0.0 | 0.1 | 10 |
| EB R | 206 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | | | |
|-----------------------------------|---------|----------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| NB L | 114 | Edmonston Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | |
| SB T | 120 | Edmonston Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | |
| SB T | 121 | Edmonston Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | |
| NB T | 126 | Edmonston Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | |
| NB T | 167 | Edmonston Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | |
| SB R | 171 | Edmonston Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 | |

| EDMONSTON ROAD & SUNNYSIDE AVENUE | | | | | | | NODE: 32 |
|-----------------------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |

EDMONSTON ROAD & SUNNYSIDE AVENUE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| EB L | 117 | Sunnyside Avenue | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| EB R | 118 | Sunnyside Avenue | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|----------------------|---------|---------------|---------|---------|-----------|
| NWB L | 321 | I-95/495 NB off-ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NWB L | 322 | I-95/495 NB off-ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NWB R | 323 | I-95/495 NB off-ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NWB R | 324 | I-95/495 NB off-ramp | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

I-95/495 NB OFF-RAMP & MD 201

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 318 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB T | 319 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB T | 320 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 326 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 327 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 328 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

I-95/495 SB OFF-RAMP & MD 201 **NODE: 67** Movements Lane ID Average **Std Deviation** Minimum Maximum **#** Samples Street Name SEB L 392 0.0 0.0 0.0 0.0 10 [Unnamed Street] SEB L 393 0.0 0.0 0.0 0.0 10 [Unnamed Street]

I-95/495 SB OFF-RAMP & MD 201 **NODE: 67** Movements Lane ID **Std Deviation** Minimum Maximum # Samples Street Name Average NEB T 374 MD 201 0.0 0.0 0.0 0.0 10 NEB T 375 0.0 0.0 0.0 0.0 MD 201 10 NEB T MD 201 0.0 0.0 0.0 0.0 10 376 SWB T 381 MD 201 0.0 0.0 0.0 0.0 10 SWB T 382 MD 201 0.0 0.0 0.0 0.0 10

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------|---------|---------------|---------|---------|-----------|
| NEB L | 237 | Cherrywood Lane | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB L | 238 | Cherrywood Lane | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB R | 239 | Cherrywood Lane | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

MD 201 & CHERRYWOOD LANE

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NWB L | 230 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NWB T | 231 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NWB T | 232 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SEB T | 235 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

NODE: 32

NODE: 57

NODE: 57

NODE: 45

| MD 201 & CHERRYWOOD LANE | | | | | | | |
|--------------------------|---------|-------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SEB T | 236 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SEB R | 250 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| MD 201 & | MD 201 & IVY LANE | | | | | | | |
|-----------|-------------------|-------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| SB T | 251 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 | |
| SB T | 252 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 | |

| MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET | | | | | | | | | |
|---|-----|-----------------|-----|-----|-----|-----|----|--|--|
| Movements Lane ID Street Name Average Std Deviation Minimum Maximum | | | | | | | | | |
| NWB LT | 283 | Crescent Street | 0.6 | 0.0 | 0.6 | 0.7 | 10 | | |
| NWB R | 284 | Crescent Street | 0.2 | 0.0 | 0.1 | 0.2 | 10 | | |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-----------------------|---------|---------------|---------|---------|-----------|
| SEB LTR | 281 | Maryland SHA Driveway | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

MD 201, MARYLAND SHA DRIVEWAY & CRESCENT STREET

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|-------------|---------|---------------|---------|---------|-----------|
| NEB T | 297 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB T | 298 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB T | 299 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB L | 311 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NEB R | 332 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB L | 342 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 343 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB T | 344 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SWB TR | 345 | MD 201 | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| POULTRY ROAD | | | | | | | |
|--------------|---------|--------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| SB T | 109 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SB T | 131 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | |
|-----------------------------------|---------|------------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| NEB L | 49 | [Unnamed Street] | 0.4 | 0.0 | 0.4 | 0.5 | 10 |
| NEB T | 83 | [Unnamed Street] | 0.2 | 0.0 | 0.1 | 0.2 | 10 |

| POWDER | POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | |
|-----------|-----------------------------------|----------------|---------|---------------|---------|---------|-----------|--|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples | |
| SWB L | 198 | Edmonston Road | 0.3 | 0.0 | 0.3 | 0.4 | 10 | |
| SWB T | 199 | Edmonston Road | 0.5 | 0.0 | 0.4 | 0.6 | 10 | |
| SWB TR | 200 | Edmonston Road | 0.5 | 0.1 | 0.4 | 0.6 | 10 | |

NODE: 52

| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | |
|-----------------------------------|---------|--------------|---------|---------------|---------|---------|-----------|
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| POWDER MILL ROAD & EDMONSTON ROAD | | | | | | | |
| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
| WB L | 51 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| WB L | 82 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NB T | 158 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NB T | 159 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| WB T | 196 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NB T | 212 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NB T | 218 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NB T | 350 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NB T | 355 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| NB T | 406 | Poultry Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

POWDER MILL ROAD & EDMONSTON ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| SEB L | 64 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SEB T | 65 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| SEB T | 184 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------|---------|---------------|---------|---------|-----------|
| WB L | 11 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| EB T | 17 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |
| WB T | 42 | Powder Mill Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

SOIL CONSERVATION ROAD & POWDER MILL ROAD

| Movements | Lane ID | Street Name | Average | Std Deviation | Minimum | Maximum | # Samples |
|-----------|---------|------------------------|---------|---------------|---------|---------|-----------|
| NB L | 13 | Soil Conservation Road | 0.0 | 0.0 | 0.0 | 0.0 | 10 |

10

NODE: 19

NODE: 2
| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Point Sensor Data Report -Overview

| Run | Number of Vehicles | Average Flow (vphpl) | Average Vehicle Occupancy (%) | Average Speed (mph) | Average Headway (sec) |
|---------------|-----------------------|-------------------------|----------------------------------|------------------------|--------------------------|
| Sensor 50 (La | ane 1) | | | | |
| 1 | 1,818.0 | 1,774.7 | 84.8% | 16.9 | 2.0 |
| 2 | 1,834.0 | 1,788.1 | 87.8% | 16.0 | 2.0 |
| 3 | 1,813.0 | 1,778.7 | 86.4% | 16.5 | 2.0 |
| 4 | 1,829.0 | 1,781.5 | 86.7% | 16.4 | 2.0 |
| 5 | 1,819.0 | 1,776.7 | 87.7% | 16.0 | 2.0 |
| 6 | 1,836.0 | 1,782.8 | 89.4% | 15.5 | 2.0 |
| 7 | 1,797.0 | 1,781.8 | 84.7% | 17.0 | 2.0 |
| 8 | 1,809.0 | 1,779.8 | 86.4% | 16.4 | 2.0 |
| 9 | 1,819.0 | 1,782.8 | 86.5% | 16.5 | 2.0 |
| 10 | 1,832.0 | 1,781.3 | 86.1% | 16.5 | 2.0 |
| Average: | 1,820.6 | 1,780.8 | 86.7% | 16.4 | 2.0 |

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Point Sensor Data Report - Avg Flow

| Concern ID | Position (1 = left- | | Standard | | | Number of |
|------------|---------------------|---------|-----------|---------|-----------|-----------|
| Sensor ID | most lane) | Average | Deviation | winimum | iviaximum | Samples |
| 50 | Lane 1 | 1,780.8 | 3.7 | 1,774.7 | 1,788.1 | 10 |

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Point Sensor Data Report - Avg Occupancy

| Position (1 = left- | | | Standard | | | Number of |
|---------------------|------------|---------|-----------|---------|---------|-----------|
| Sensor ID | most lane) | Average | Deviation | Minimum | Maximum | Samples |
| 50 | Lane 1 | 0.9 | 0.0 | 0.8 | 0.9 | 10 |

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Point Sensor Data Report - Avg Speed

| Position (1 = left- | | | Standard | | | Number of |
|---------------------|------------|---------|-----------|---------|---------|-----------|
| Sensor ID | most lane) | Average | Deviation | Minimum | Maximum | Samples |
| 50 | Lane 1 | 16.4 | 0.4 | 15.5 | 17.0 | 10 |

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Point Sensor Data Report - Avg Headway

| Position (1 = left- | | | Standard | | | Number of |
|---------------------|------------|---------|-----------|---------|---------|-----------|
| Sensor ID | most lane) | Average | Deviation | Minimum | Maximum | Samples |
| 50 | Lane 1 | 2.0 | 0.0 | 2.0 | 2.0 | 10 |

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Point Sensor Data Report -Overview

| Run | Number of Vehicles | Average Flow (vphpl) | Average Vehicle Occupancy (%) | Average Speed (mph) | Average Headway (sec) |
|---------------|-----------------------|-------------------------|----------------------------------|------------------------|--------------------------|
| Sensor 50 (La | ne 1) | | | | |
| 1 | 1,749.0 | 1,741.7 | 70.4% | 22.8 | 2.1 |
| 2 | 1,779.0 | 1,740.7 | 68.4% | 23.6 | 2.1 |
| 3 | 1,751.0 | 1,741.2 | 70.4% | 22.8 | 2.1 |
| 4 | 1,769.0 | 1,740.6 | 68.9% | 23.4 | 2.1 |
| 5 | 1,743.0 | 1,735.5 | 67.8% | 23.9 | 2.1 |
| 6 | 1,750.0 | 1,750.0 | 69.4% | 23.3 | 2.1 |
| 7 | 1,775.0 | 1,735.8 | 68.8% | 23.3 | 2.1 |
| 8 | 1,771.0 | 1,740.0 | 71.9% | 22.2 | 2.1 |
| 9 | 1,747.0 | 1,735.5 | 68.9% | 23.3 | 2.1 |
| 10 | 1,755.0 | 1,750.0 | 70.0% | 23.2 | 2.1 |
| Average: | 1,758.9 | 1,741.1 | 69.5% | 23.2 | 2.1 |

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Point Sensor Data Report - Avg Flow

| Position (1 = left- | | Standard | | Number of | | |
|---------------------|------------|----------|-----------|-----------|---------|---------|
| Sensor ID | most lane) | Average | Deviation | Minimum | Maximum | Samples |
| 50 | Lane 1 | 1,741.1 | 5.3 | 1,735.5 | 1,750.0 | 10 |

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Point Sensor Data Report - Avg Occupancy

| Position (1 = left- | | | Standard | | | Number of |
|---------------------|------------|---------|-----------|---------|---------|-----------|
| Sensor ID | most lane) | Average | Deviation | Minimum | Maximum | Samples |
| 50 | Lane 1 | 0.7 | 0.0 | 0.7 | 0.7 | 10 |

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Point Sensor Data Report - Avg Speed

| Position (1 = left- | | Standard | | | Number of | |
|---------------------|------------|----------|-----------|---------|-----------|---------|
| Sensor ID | most lane) | Average | Deviation | Minimum | Maximum | Samples |
| 50 | Lane 1 | 23.2 | 0.5 | 22.2 | 23.9 | 10 |

| Project: | GatesACSignal |
|------------|---------------------|
| Scenario: | Simulation Project |
| Run(s): | Batch (10 runs) |
| Simulated: | Various |
| Time: | 06:00:00 - 07:00:00 |
| Interval: | Summary |
| Selection: | |

Point Sensor Data Report - Avg Headway

| Position (1 = left- | | | Standard | | | Number of |
|---------------------|------------|---------|-----------|---------|---------|-----------|
| Sensor ID | most lane) | Average | Deviation | Minimum | Maximum | Samples |
| 50 | Lane 1 | 2.1 | 0.0 | 2.1 | 2.1 | 10 |

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