# Appendices

February 2018

# Novak Drive Connector Study




Prepared for:

Hagerstown/Eastern Panhandle MPO and

West Virginia Department of Transportation

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# APPENDIX A

## Existing Studies

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# BTR CAPITAL BUSINESS PARK DR.
# TRAFFIC IMPACT STUDY

## TABLER STATION MIXED-USE SITE PLAN

BUSINESS PARK DR. @ TABLER STATION RD.

BERKELEY COUNTY, WV.


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BTRC1501

March 25, 2016

# 1. Executive Summary

Pennoni has prepared this document to summarize the trip generation and traffic operations associated with the proposed BTR Capital Commercial Development to be located north of the Business Park Drive (Route 81/8) and Tabler Station Road (Route 32) intersection, east of I-81 and south of Martinsburg, in Berkeley County, West Virginia.

As shown on the concept plan, **Figure A,** the proposed project consists of developing the 5.1 acre site with a convenience store with gas station, a hotel, two fast food restaurants with drive-thru service, and a non-fast food restaurant. The proposed development is to be built in stages, with the convenience store with gas station being built first and the remaining uses coming on-line as market absorption occurs. For the purposes of this study, the convenience store with gas station was assumed to be in operation by 2017 and the remaining uses by 2025. Site access is proposed via a new north leg of the Business Park Drive (Route 81/8)/Tabler Station Road (Route 32) intersection.

To verify the impacts of the proposed development, Pennoni analyzed traffic operations at the following five intersections along the Business Park Drive/Tabler Station Road corridor, as shown on **Figure 1**: the northbound and southbound I-81 ramps on Tabler Station Road, the Business Park Drive/Tabler Station Road intersection, Business Park Drive at Development Drive, and Business Park Drive at US Route 11 (Winchester Avenue). Overall, the proposed commercial uses can be accommodated with the existing roadway network. The following improvements are recommended for implementation by WVDOH (West Virginia Division of Highways) and the Developer:

Previous study for Business Park Drive performed for P&G site in 2015;

Update forecasts for change of use at subject site and accelerated phasing;

Site trip generation comparable to previous studies;

Signal at site entrance needed for gas station uses;

Updated I-81 ramp impacts with site.

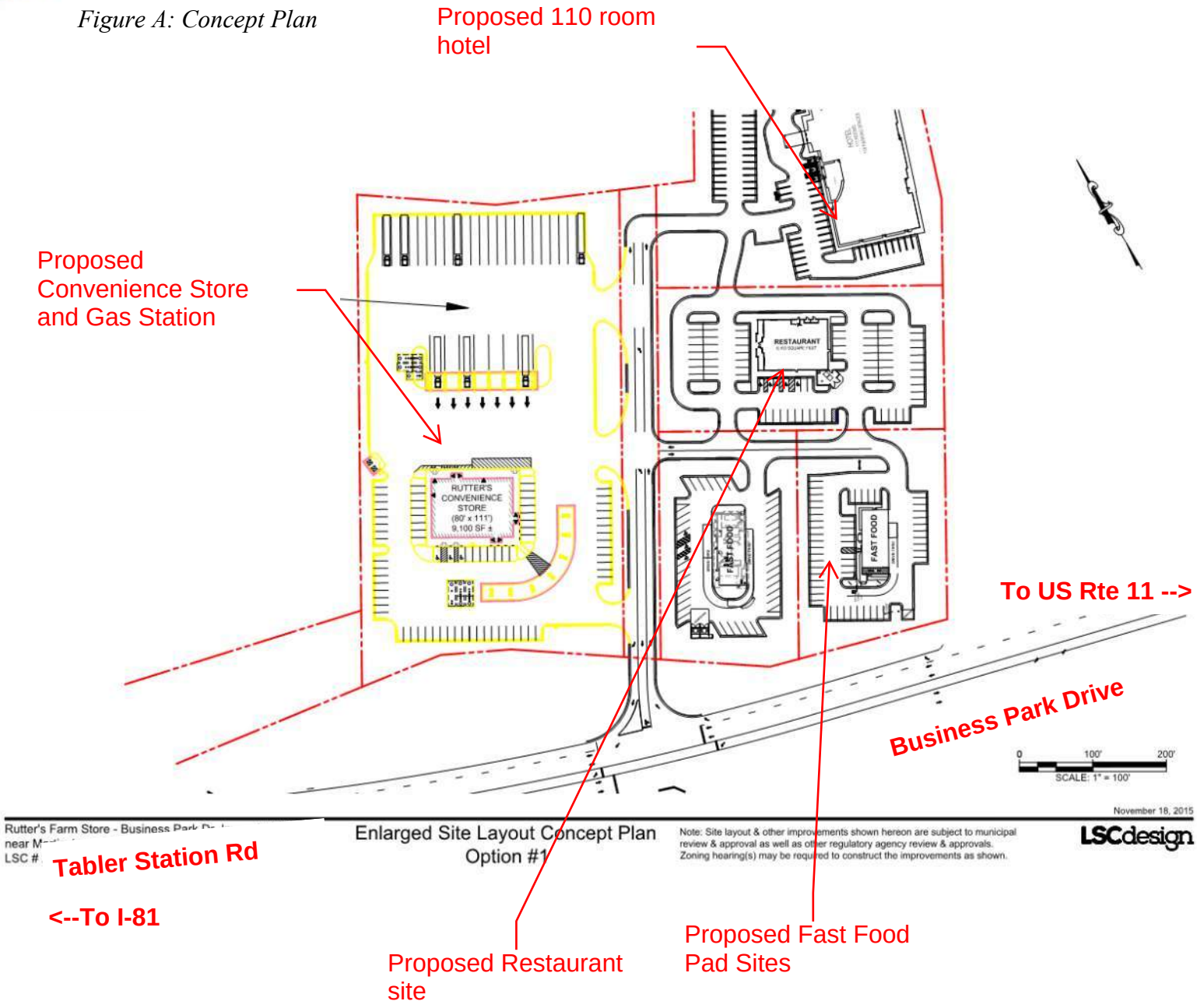
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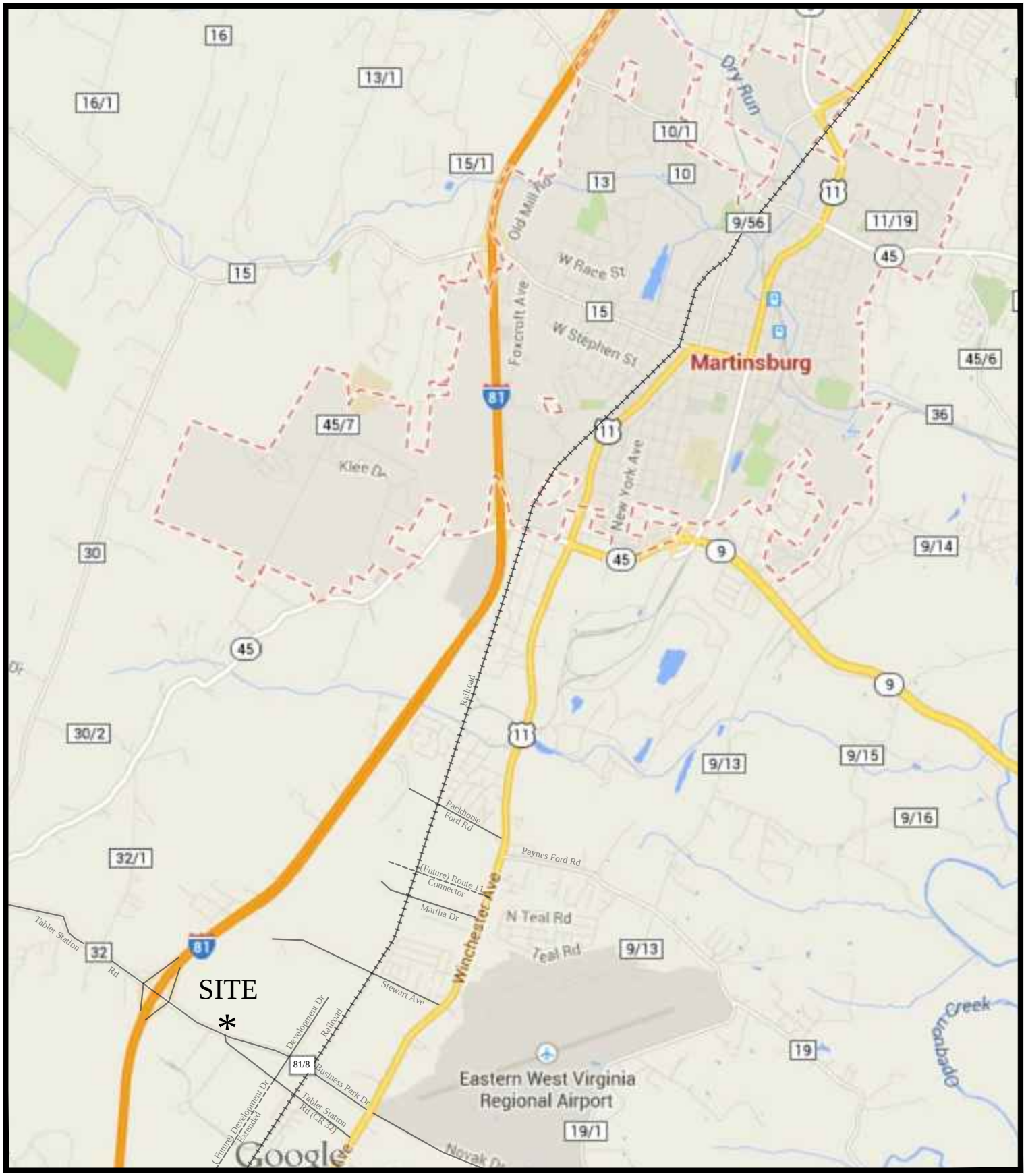
1. Install traffic signal and provide an inbound left turn lane at the Site Entrance & Business Park Drive/Tabler Station Road intersection with site development.
2. Adjust signal timing at the SB I-81 ramp intersection with Tabler Station Road to shorten projected southbound queuing to manageable lengths.

Long-Term Access, for the study area:

1. Coordinate with WVDOH to construct a 200 ft additional southbound left turn lane at the I-81 SB off-ramp.
2. Coordinate with WVDOH to provide a 175 ft northbound right turn lane at the I-81 NB off-ramp.
3. Coordinate signals along corridor for the PM peak hour, except at Route 11.
4. Consider improvements at Business Park Drive/Novak Drive/Route 11 signal to provide a dual lane roundabout (inside diameter of 160 feet) to accommodate long-term growth in the corridor. Added turn lanes may be possible but does not improve all individual movements for the long-term. The need for added capacity is not a function of the site traffic.

*Figure A: Concept Plan*






| | | | |
|---|---|---|---|
| Pennoni | □TR C□PIT□□ □□□INE□□<br>P□R□ DRI□E<br>TRAFFIC IMPACT STUDY<br>BERKELEY COUNTY, WV | *SITE LOCATION* | *FIGURE 1*<br>*Project # BTRC1501*<br>*March 2016* |

The study includes the following analyses:

- Existing Conditions,
- Review of approved but unbuilt developments in the site vicinity for short-term and long-term conditions,
- Forecast of 2017 and 2025 Background Conditions with the unbuilt developments and general regional growth estimates,
- AM peak hour, PM peak hour, and Daily trip generation,
- Trip Assignments,
- Peak hour traffic conditions using Synchro 9.0, following the methodology prescribed in the Highway Capacity Manual (2010) for existing and future conditions.

Overall, the proposed commercial uses summarized in **Table E1** can be accommodated with the existing and planned infrastructure. The following sections of the Executive Summary identify trip generation (**part a** and **Table E2**), background growth (**part b**), and summarizes suggested improvements (**part c,** and **Table E3**).

***TABLE E1: PROPOSED SITE DENSITIES***

| Land Use | Densities |
|---|---|
| Convenience Station with Gas | 9,100 gsf<br>(21 pumps) (1) |
| Fast Food with Drive Through | 7,000 gsf<br>( 2 pad sites) |
| High Turnover Restaurant | 7,000 gsf |
| Hotel | 111 rooms (2) |

(1) Assumed use for Phase 1 access. Trip generation shown as worst case between pumps or square footage. Pumps include diesel areas.
(2) Room variable used for traffic study.

## a) Trip Generation

In the short-term with the convenience store with gas station use, the proposed development uses are projected to generate 372 AM peak hour trips, 463 PM peak hour trips, and 11,395 daily trips. In the long-term with the hotel and restaurant uses, the proposed development is projected to generate 444 AM peak hour trips, 364 PM peak hour trips, and 5,163 daily trips.

Pass-by trips already using the Business Park Drive/Tabler Station Road corridor are projected to be approximately 30 percent of the total trips and pass-by trips attracted from I-81 are projected to comprise another 30 percent of the total trips. Taking the pass-by trips and a minor internal trip component into account, the proposed uses are projected to generate, as new trips; 138 AM peak hour

trips, 159 PM peak hour trips, and 4,217 daily trips in the short-term; and an additional 274 AM peak hour trips, 228 PM peak hour trips, and 3,024 daily trips in the long-term; for a total of 412 AM peak hour trips, 387 peak hour trips, and 7,241 daily trips.

*TABLE E2: PROPOSED TRIP GENERATION SUMMARY*

| | AM Peak Hour Trips | PM Peak Hour Trips | Daily Trips |
|---|---|---|---|
| ***SHORT-TERM**<br>*Pass-by Trips*<br>**Short-Term New Trips** | 372<br>*-234*<br>**138** | 463<br>*-304*<br>**159** | 11,395<br>*-7,178*<br>**4,217** |
| **LONG-TERM**<br>*Pass-by Trips*<br>*Internal Trips*<br>**Long-Term New Trips** | 444<br>*-166*<br>*-4*<br>**274** | 364<br>*-132*<br>*-4*<br>**228** | 5,163<br>*-2,049*<br>*-90*<br>**3,024** |
| **Total New Trips** | **412** | **387** | **7,241** |

## b) Background Growth

General annual growth rates of 1.8 % for the short-term (2017) and 1.72% for the long-term (2025) were used in the analysis per the scoping agreement. In addition, other developments in the vicinity and their trip generating potentials were appropriately considered and added to the analysis volumes. Those other developments are as follows:

- For 2017,
  - 28 acres of the Tabler Station Business Park (industrial uses) east of the railroad and
  - Build-out of the P&G site.
- For 2025,
  - Short-term site development of the Phase 1 uses as a convenience store with gas station;

- Build-out of the Tabler Station Business Park east of the railroad (for a total of 56 acres of industrial);
- An industrial parcel north of the site (approx. 61 acres of industrial);
- BCDA Tract II (approx. 37 acres of industrial); and
- Allowance for future expansion of the P&G uses (+25% of build-out trips).

These uses are located in Figure 6A. The inclusion of other employment uses for the future conditions will increase ambient traffic volumes.

## c) Improvement Summary

Table E3 outlines the general access improvements. The recommendations are provided for short-term and long-term impacts. As outlined on page 3, the improvements for the short-term address improvement needs related to the subject site. Long-term improvements are shown for regional planning and capacity needs. Improvements related to potential WVDOH projects are shown in italic. Note that WVDOH will determine the extension of the design improvements and priorities.

*TABLE E3: PROPOSED ACCESS RECOMMENDATIONS*

| Improvement Type | Improvement Description | Timing |
|---|---|---|
| Pedestrian | Provide sidewalk linkages as shown on Concept Plan | As site develops, link commercial Uses for internal circulation. |
| Parking | Provide on-site spaces. Sidewalk linkages as shown on Concept Plan | As site Develops, for each lot. Prohibit parking on site access road |
| Access | Signalize Business Park Drive intersection at Tabler Station Road | With gas station use. |
| Access | Add new entrance north of Business Park Drive intersection at Tabler Station Road | With initial Development, including SB right turn lane to WB Tabler Station Road. |
| Turn Lanes | Restripe Center turn lane into site with 250 ft. left turn bay (and taper). | With initial Development, supports short term and long-term stacking into site with signal. |
| Inter-Parcel Access | Provide interparcel stub connection north | Prior to Final Development. |

| | | |
|---|---|---|
| Off-Site Turn Lanes | Additional turn lanes are recommended at the I-81 /Tabler Station Road interchange signals with timing changes and added turns to accommodate long-term growth including I-81 Ramp turn lanes and signal coordination. | With short-term development, signal timing modifications; With long-term development, additional 200 ft southbound ramp left turn lane and 175 ft northbound ramp right turn lane and signal coordination. |
| Regional Off-Site Turn Lanes | Additional capacity is recommended at the Route 11 Business Park Drive signal. Not associated with site traffic. | *For long-term scenario, WVDOH should review for possible roundabout option at Route 11.* |

## d) Summary Assessment

With the two I-81 ramp signals as operating, the additional volumes at the ramps can be accommodated with changes in signal timing in the short-term. Under short-term Build conditions, southbound ramp left turn back of queues are projected to be near right-turn storage lane length. However, the relatively long taper can accommodate queues that may be slightly longer than the full-lane-width right-turn storage.

As part of the long-term analyses, signal timing changes and ramp widening are suggested to reduce queues exiting the interstate ramps. Alternative impacts as dual lane roundabout operations are included to test the impacts to the interchange; The LOS (Level of Service) is similar and queues are less but conversion of the existing ramps to a roundabout has phasing implementation impacts may reduce the benefit of converting to a roundabout, so signalization is recommended to be maintained.

A signal is warranted at the Business Park Drive and Tabler Station Road site entrance with the opening of the Phase 1 site development with a convenience store and gas station uses. The short-term traffic conditions satisfy Daily and 4 hour warrants based on ITE and MUTCD criteria, including a reduction of 75 percent for right turn exiting volumes for the side street. Therefore, signalization is suggested with initial development.

The site peak hour uses would only add approximately a 10-12 percent increase in traffic in the short-term conditions and 13 to 20 percent of the I-81 ramp junction turns with commercial uses at site build-out at 2025. However, site impacts long-term at the Route 11 signal are at 4 to 6 percent of the future traffic volumes, so site-related improvements are not recommended.

Transportation Impact Analysis

# Berkeley Business Park

Berkeley County, West Virginia

**June 2016**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

# EXECUTIVE SUMMARY

Shockey Properties proposes to develop the Berkeley Business Park, located off of Interstate 81 and US-11 in Berkeley County, West Virginia.

A traffic operations analysis has been conducted to confirm that the transportation system can adequately support the proposed Berkeley Business Park, in fulfillment of West Virginia Division of Highways (WVDOH) requirements. The scope of the project analysis was developed through collaboration with WVDOH staff in accordance with WVDOH's Traffic Engineering Directive (TED) 106-2.

Specifically, this analysis includes:

- Year 2015 existing land use and transportation system conditions within the site vicinity;
- Planned development improvements in the study area;
- Forecast year 2025 background traffic conditions during the Friday a.m. and Friday p.m. peak periods, including regional growth;
- Trip generation and distribution estimates for the proposed development;
- Forecast year 2025 total traffic conditions with full build-out of the site during the Friday a.m. and Friday p.m. peak periods;
- Conclusions and recommendations.

## TRANSPORTATION IMPACT ANALYSIS FINDINGS

The results of the traffic impact analysis indicate that the proposed development can be constructed while not impacting operations on the surrounding transportation system assuming provision of mitigations specified in this report. The findings of this analysis and our recommendations are discussed below.

### Existing Conditions

- All of the study intersections operate at acceptable levels of service during the Friday a.m. and Friday p.m. peak hours with the following exception.
    - US 11/Nadenbousch Lane: The stop-controlled westbound left-turning movement at the US-11/Nadenbousch Lane intersection operates at LOS "E" during the Friday p.m. peak hour, with the westbound left-turn movement experiencing an average per-vehicle delay of 76.2 seconds due to the northbound and southbound through-movements on US-11. The westbound left-turning lane operates under capacity with a volume-to-capacity (v/c) ratio of 0.71.

### Year 2025 Background Traffic Conditions

- A 1.72 percent growth rate (compounded annually) was used to account for regional growth in development of year 2025 background traffic volumes.
- In-process traffic from the Tabler Station Business Park, Tabler Station Mixed-Use Development, North Industrial Parcel, BCDA Tract II, Project Independence, and BPG Martinsburg developments were also added to background traffic to project year 2025 background traffic volumes.

- All of the study intersections are forecast to operate at acceptable levels of service during the Friday a.m. and Friday p.m. peak hours with the following exceptions:
    - US-11 (Winchester Avenue)/Corning Way: The eastbound movement at the US-11/Corning Way intersection would operate at LOS "F" during the Friday p.m. peak hour with a v/c ratio of 1.03. Delay for the eastbound movement would occur because there would be few gaps in northbound and southbound traffic on US-11. During the Friday a.m. peak hour, the eastbound movement would operate at LOS "C", with a v/c ratio of 0.11 and an average per-vehicle delay of 20.5 seconds.
        - The increase in delay at this intersection is directly related to the approved background developments and forecast background growth in traffic.
        - To help mitigate the delays experienced during the Friday p.m. peak hour, the intersection could be signalized. By providing some green time to the eastbound movement, delays can be substantially reduced on the approach without substantial impacts to vehicles on US-11.
- Queues for westbound left-turns at the I-81 SB Ramps/Tabler Station Road intersection would be expected to exceed the available storage capacity during the Friday p.m. peak hour.
    - With a v/c ratio of 0.16 during the Friday p.m. peak hour, the two-lane, westbound through-movement would have more capacity than would be required to serve the movement. To help mitigate queueing of the westbound left-turn movement, the inside westbound through lane could be converted to an exclusive left-turn lane. A second receiving lane would be required on the downstream I-81 southbound ramp to accommodate the dual left-turn lanes.

## Proposed Development Plan

- The Berkeley Business Park is anticipated to be fully built-out in year 2025.
- The current development plan consists of the following uses:
    - 300,000 square-foot manufacturing building
    - 200,000 square-foot manufacturing building
- The development is estimated to generate approximately 1,910 net new weekday daily trips, 365 net new Friday a.m. trips (285 in, 80 out), and 365 net new Friday p.m. trips (132 in, 233 out). These estimates are based on data available from the *Trip Generation Manual, 9th Edition*, the proposed square footage of the site, and a manufacturing land use (ITE Code 140).
- Site access points
    - The primary access point to the site would be created by constructing the fourth leg of the intersection at US-11/Route 34 (Nadenbousch Lane).
        - A northbound left-turn lane into the new site driveway would be developed in association with the new eastbound approach.
    - Vehicles would be able to access to via the existing site driveway at US-11/Site Access (North).
    - The existing driveway at the intersection of US-11/Site Access (South) is proposed to be closed.

- The new site-generated trips were assigned to the driveways at the intersections of US-11/Route 34 (Nadenbousch Lane) and US-11/Site Access (North).

## Year 2025 Total Traffic Conditions

- All of the study intersections are forecast to operate at acceptable levels of service during the Friday a.m. and Friday p.m. peak hours with the following exceptions:
    - US-11 (Winchester Avenue)/Corning Way: The eastbound movement at the US-11/Corning Way intersection is anticipated to operate at LOS "E" during the Friday a.m. peak hour and LOS "F" during the Friday p.m. peak hour with v/c ratios of 0.25 and 1.71, respectively. The eastbound approach is anticipated to operate with a v/c ratio of 1.03 and at LOS "F" during the Friday p.m. peak under year 2025 background conditions; while the proposed Berkeley Business Park project would increase per-vehicle delay and the v/c ratio, the intersection already would operate over-capacity and at LOS "F" during background conditions.
        - The anticipated performance of this intersection could be improved to acceptable levels by signalizing the intersection, which was recommended as a mitigation strategy under year 2025 background conditions. If this improvement is implemented, both the average per-vehicle delay and LOS experienced on the eastbound approach would improve.
    - US-11 (Winchester Avenue)/North Site Driveway: Similar to the adjacent Corning Way intersection, the eastbound lane group of US-11/North Site Driveway intersection is anticipated to operate at LOS "F" during the Friday p.m. peak hour. The eastbound driveway is anticipated to operate with a v/c ratio of 0.08 and 1.17 during Friday a.m. and Friday p.m. peak hours, respectively. Under year 2025 background conditions, the intersection is expected to operate at LOS "E" with an average per-vehicle delay of 48.7 seconds and a v/c ratio of 0.29 during the Friday p.m. peak hour.
        - Analysis of year 2025 background conditions shows that signalizing the adjacent US-11/Corning Way intersection would reduce the increased per-vehicle delay to the minor street movements resulting from background developments and the anticipated regional growth. Signalizing the adjacent US-11/Corning Way intersection to the north would serve as to create gaps by platooning vehicles. Additional more gaps in traffic would likely reduce delays to the critical eastbound movement at the US-11/North Site Driveway intersection, and would bring operations at this location to acceptable levels under both year 2025 background and year 2025 total traffic conditions.
- Increases to queueing are typically less than the assumed length of one vehicle and are not anticipated to adversely impact operations beyond conditions already noted under year 2025 background conditions. The largest disparity in queuing between year 2025 background and year 2025 total conditions would occur at US-11/Nadenbousch Lane. However, these increases are accommodated by the storage provided on the US-11. Constructing a traffic signal at the US-11/Corning Way intersection, as recommended under 2025 background conditions, would help reduce queues by metering the flow of southbound vehicles.
    - Queues for westbound left-turns at the I-81 SB Ramps/Tabler Station Road are expected to exceed the available storage capacity under both 2025 background and 2025 total traffic conditions. Under 2025 background conditions, this queue is anticipated to exceed storage capacity by approximately 250 feet. With the addition of site traffic, this queue would not be expected to increase.

# RECOMMENDATIONS

No improvements to the roadway network are recommended due to the Berkeley Business Park development. The increased traffic volumes under year 2025 total traffic conditions generated by the Berkeley Business Park development have only minor/incremental impact to traffic conditions beyond the anticipated year 2025 background traffic conditions.

Transportation Impact Analysis

# BPG Martinsburg

Berkeley County, West Virginia

**June 2016**

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

# EXECUTIVE SUMMARY

Martinsburg Investors, LLC proposes to develop the BPG Martinsburg project, located off of Interstate 81 and US-11 in Berkeley County, West Virginia.

A traffic operations analysis has been conducted to confirm that the transportation system can adequately support the proposed BPG Martinsburg, in fulfillment of West Virginia Division of Highways (WVDOH) requirements. The scope of the project analysis was developed through collaboration with WVDOH staff in accordance with WVDOH's Traffic Engineering Directive (TED) 106-2.

Specifically, this analysis includes:

- Year 2015 existing land use and transportation system conditions within the site vicinity;
- Planned development improvements in the study area;
- Forecast year 2025 background traffic conditions during the Friday a.m. and Friday p.m. peak periods, including regional growth;
- Trip generation and distribution estimates for the proposed development;
- Forecast year 2025 total traffic conditions with full build-out of the site during the Friday a.m. and Friday p.m. peak periods;
- Conclusions and recommendations.

## TRANSPORTATION IMPACT ANALYSIS FINDINGS

The results of the traffic impact analysis indicate that the proposed development can be constructed while not impacting operations on the surrounding transportation system assuming provision of mitigations specified in this report. The findings of this analysis and our recommendations are discussed below.

### Existing Conditions

- All of the study intersections operate at acceptable levels of service during the Friday a.m. and Friday p.m. peak hours with the following exception:
    - US 11/Nadenbousch Lane: The stop-controlled westbound left-turning movement at the US-11/Nadenbousch Lane intersection operates at LOS "E" during the Friday p.m. peak hour, with the westbound left-turn movement experiencing an average per-vehicle delay of 76.4 seconds due to the northbound and southbound through-movements on US-11. The westbound left-turning lane operates under capacity with a volume-to-capacity (v/c) ratio of 0.71.

### Year 2025 Background Traffic Conditions

- A 1.72 percent growth rate (compounded annually) was used to account for regional growth in development of year 2025 background traffic volumes.
- In-process traffic from the Tabler Station Business Park, Tabler Station Mixed-Use Development, North Industrial Parcel, BCDA Tract II, Project Independence, and the Berkeley Business Park developments were added to background traffic to project year 2025 background traffic volumes.

- All of the study intersections are forecast to operate at acceptable levels of service during the Friday a.m. and Friday p.m. peak hours with the following exceptions:
    - US-11 (Winchester Avenue)/Corning Way: The critical eastbound movement at the US-11/Corning Way intersection would operate at LOS "F" during the Friday p.m. peak hour with a v/c ratio of 1.57. Delay for the eastbound movement would occur because there would be few gaps in northbound and southbound traffic on US-11. During the Friday a.m. peak hour, the eastbound movement would operate at LOS "D", with a v/c ratio of 0.12 and an average per-vehicle delay of 33.5 seconds.
        - The increase in delay at this intersection is directly related to the approved background developments and forecast background growth in traffic.
        - To help mitigate the delays experienced during the Friday p.m. peak hour, the intersection could be signalized. By providing some green time to the eastbound movement, delays could be substantially reduced on the approach without substantial impacts to vehicles traveling on US-11. The responsibility for signalizing the intersection should be borne by the approved background developments.
    - US-11 (Winchester Avenue)/North Site Driveway: Similar to the adjacent Corning Way intersection, the eastbound lane group of US-11/North Site Driveway intersection would operate at LOS "F" during the Friday p.m. peak hour with a per-vehicle delay of 281.2 seconds. The eastbound driveway would operate above capacity with a v/c ratio of 1.09. During the Friday a.m. peak hour, the eastbound movement would operate at LOS "D", with a v/c ratio of 0.08 and an average per-vehicle delay of 33.3 seconds.
        - By signalizing the adjacent US-11/Corning Way intersection, as previously suggested, the operations at this intersection could be improved to acceptable levels. Creating gaps in the southbound through volumes by means of an upstream signal could substantially reduce the anticipated delay for eastbound vehicles.
- Queues for westbound left-turns at the I-81 SB Ramps/Tabler Station Road intersection are expected to exceed the available storage capacity during the Friday p.m. peak hour.
    - With a v/c ratio of 0.17 during the Friday p.m. peak hour, the two-lane, westbound through-movement would have more capacity than would be required to serve the movement. To help mitigate queueing of the westbound left-turn movement, the inside westbound through lane could be converted to an exclusive left-turn lane. A second receiving lane would be required on the downstream I-81 southbound ramp to accommodate the dual left-turn lanes.

## Proposed Development Plan

- The BPG Martinsburg is anticipated to be fully built-out in year 2025.
- The current development plan consists of two warehouses. One building would be 1,054,000 square feet, and the second building would be 600,600 square feet.
- The development is estimated to generate approximately 2,780 net new weekday daily trips, 182 net new Friday a.m. trips (126 in; 56 out), and 198 net new Friday p.m. trips (61 in; 137 out). These estimates are based on data available from the *Trip Generation Manual, 9th Edition*, the proposed square footage of the site, and a warehousing/distribution land use (ITE Code 152).
- Site access points

- Three new, unsignalized, full-access driveways on the western side of the Development Drive extension
- Two new, unsignalized, full-access driveways on the eastern side of the Development Drive extension

## Year 2025 Total Traffic Conditions

- All of the study intersections are forecast to operate at acceptable levels of service during the Friday a.m. and Friday p.m. peak hours with the following exceptions:
  - US-11 (Winchester Avenue)/Corning Way: The eastbound movement at the US-11/Corning Way intersection is anticipated to operate at LOS "E" during the Friday a.m. peak hour and LOS "F" during the Friday p.m. peak hour with v/c ratios of 0.25 and 1.71, respectively. The eastbound approach is anticipated to operate with a v/c ratio of 1.57 and at LOS "F" during the Friday p.m. peak under year 2025 background conditions; the proposed BPG Martinsburg project would have only minor/incremental impacts on the operation of this intersection as compared to background conditions.
    - The increase in delay at this intersection is directly related to the approved background developments and forecast background growth in traffic.
    - The anticipated performance of this intersection could be improved to acceptable levels by signalizing the intersection, which was recommended as a mitigation strategy under year 2025 background conditions. The responsibility for signalizing the intersection should be borne by the approved background developments. If this improvement is implemented, both the average per-vehicle delay and level-of-service for the eastbound approach would improve.
  - US-11 (Winchester Avenue)/North Site Driveway: Similar to the adjacent Corning Way intersection, the eastbound lane group of US-11/North Site Driveway intersection is anticipated to operate at LOS "F" during the Friday p.m. peak hour. The eastbound driveway is anticipated to operate with a v/c ratio of 0.08 and 1.17 during Friday a.m. and Friday p.m. peak hours, respectively. These values are similar to the v/c ratios under year 2025 background conditions; the proposed BPG Martinsburg project would have only minor/incremental impacts on the operation of this intersection as compared to background conditions.
    - By signalizing the adjacent US-11/Corning Way intersection under year 2025 background conditions, the performance of this intersection could be improved to acceptable levels. The responsibility for signalizing that intersection should be borne by the approved background developments.
- Increases to queueing is typically less than the assumed length of one vehicle and is anticipated to have only minor impacts operations beyond conditions already noted under year 2025 background conditions. The largest disparity in queuing between year 2025 background and year 2025 total conditions would occur at Business Park Drive/Development Drive; this increase is accommodated by the existing storage.
  - Queues for westbound left-turns at the I-81 SB Ramps/Tabler Station Road are expected to exceed the available storage capacity under both 2025 background and 2025 total conditions. With the addition of site traffic, this queue is expected to extend an additional 50 feet, which is approximately the length of two vehicles. However, trips related to the site

only represent approximately eight percent of the total left-turning volume during the Friday p.m. peak hour and nine percent of the trips added to the network between the year 2015 existing conditions and year 2025 total conditions during the same time period. The queues could be accommodated by implementing the mitigation strategy suggested under background conditions for this intersection.

## RECOMMENDATIONS

No improvements to the roadway network are recommended due to the BPG Martinsburg development. The increased traffic volumes under year 2025 total traffic conditions generated by the BPG Martinsburg development have only minor/incremental impact to traffic conditions beyond the anticipated year 2025 background traffic conditions.

# STATION SQUARE TECHNOLOGY DR
# TRAFFIC IMPACT STUDY

## TABLER STATION SQUARE SITE PLAN

BUSINESS PARK DR. @ TECHNOLOGY DR.

BERKELEY COUNTY, WV.

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BCOD1502

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# 1. Executive Summary

Pennoni has prepared this document to summarize the trip generation and traffic operations associated with the proposed mixed use employment and commercial use for the Technology Drive Business Park, located north of the Business Park Drive (Route 81/8) and west of Winchester Avenue (U.S. Route 11). The property is controlled by the Berkeley County Development Authority and has the initial road infrastructure of two legs of Technology Drive (CR 11/61) construction from Route 11 and Business Park Drive. The EDA proposes to rebrand the existing lots as Station Square and develop a two phased mixed use layout, with a new street parallel to Business Park Drive between Enterprise Way (west of the Sheetz station) and east of the existing Winchester and Western railroad crossing. The EDA proposes to develop the site with individual parcels with either employment, industrial or retail uses. The site is located east of the Tabler Station Road interchange at I-81, and south of Martinsburg, in Berkeley County, West Virginia.

As shown on the concept plan, Exhibit A, the proposed project consists of developing the 28.52 acre site with a mix of uses on 15 lots, to be sold to individual users. For the traffic analysis, the study assumes a range of uses based on business and commercial activities that may be located on the site, with access to Technology Drive. West Virginia DOH requested the updated analysis since the previous analyses for the vicinity had assumed general employment uses on Technology Drive. With the existing Sheetz and First United Bank adjacent to Enterprise Way and the Route 11/Business Park Drive/Novak Drive signal, the opportunity to include commercial uses on the future pad sites was evaluated. WVDOH also requested this analysis to verify the traffic operations required with the public street connections to Business Park Drive and Route 11. The new roadway shown in Exhibit A has a Phase 1 west link west of Technology Drive and a Phase 2 East link between Technology Drive and Enterprise Way. No new access to Business Park Drive and Route 11 are proposed with the Station Square development.

Based on the potential of earlier PM peak times and no new counts at Technology Drive, WVDOH requested updated traffic counts, since the corridor analysis had not had new counts in the last 2 years. For the purpose of this study, the assumptions have been updated with new counts, and the forecast years extended.

The proposed development is to be built in stages, with approximately 85 percent of the uses assumed as employment activities (business park or light industrial) uses, and 15 percent of the proposed building square footage as retail or fast food pad sites. The potential development equates to approximately 328,000 gsf of uses with an approximate 0.26 FAR. For the purposes of this study, the initial commercial uses are oriented to Route 11 (lot 1) and Technology Drive (lot 12), with the remainder of employment uses totaling 173,500 square feet on approximately 15 acres. Short-term conditions, subject to market absorption, are programmed for 2019. The remainder

Previous study for Business Park Drive performed for P&G and BTRC sites in 2015 and 2016;

Update forecasts for change of use at Station Square with mixed employment and Commercial uses;

New traffic counts and extended growth exacerbate Business Park Drive corridor;

Site improvements require signalization at both Technology Drive access locations;

Updated I-81 ramp impacts with site, need auxiliary turn lanes.

of the site activities, as well as potential hi-cube distribution center uses on EDA properties north of Technology Drive was included by 2030.

To verify the impacts of the proposed development, Pennoni analyzed traffic operations at the following 10 intersections along the Business Park Drive/Tabler Station Road corridor, as shown on **Figure 1**:

Off-site:

- the northbound and southbound I-81 ramps on Tabler Station Road (2 signals),
- the Business Park Drive/Tabler Station Road intersection, Business Park Drive access to the Proctor and Gamble facility truck entrance, and Business Park Drive at Development Drive (3 locations),
- The Business Park Drive and the Winchester and Western RR short-line at-grade crossing east of Development Drive, and
- Business Park Drive at US Route 11 (Winchester Avenue).

On-site:

- Technology Drive at the Business Park Drive and Winchester Avenue termini (2 locations), and
- Enterprise Way at Business Park Drive.

Overall, the proposed employment and commercial uses can be accommodated with the existing roadway network, for the short-term with improvements at I-81, to address increases in turns, added commercial traffic and localized growth horizons. For the long-term, the projected growth in the Route 11 corridor will exceed capacity without improvements. Improvements at Route 11/Business Park Drive have been outlined in previous analyses but others in the immediate vicinity of the site are highlighted here in this study, as the future mix of commercial uses in the corridor would require additional incremental improvements at the site entrances.

The following improvements are recommended for implementation by WVDOH (West Virginia Division of Highways) in coordination with the Berkley County Development Authority as future redevelopment of the Station Square activities is realized:

Initial Access (2019):

1. Coordinate with WVDOH to add a 175 ft. effective length second stacking lane at the SB I-81 ramp intersection with Tabler Station Road to shorten projected southbound queuing to manageable lengths, with short-term growth.
2. Coordinate with WVDOH to stripe the eastbound approach on Tabler Station Road interchange with the I-81 NB ramp to one lane, to allow right turns on the ramp to operate as free flow right to eastbound Tabler Station Road. The operations are unusual, but address the mitigation of Station Square site traffic, prior to long-term traffic forecasts.

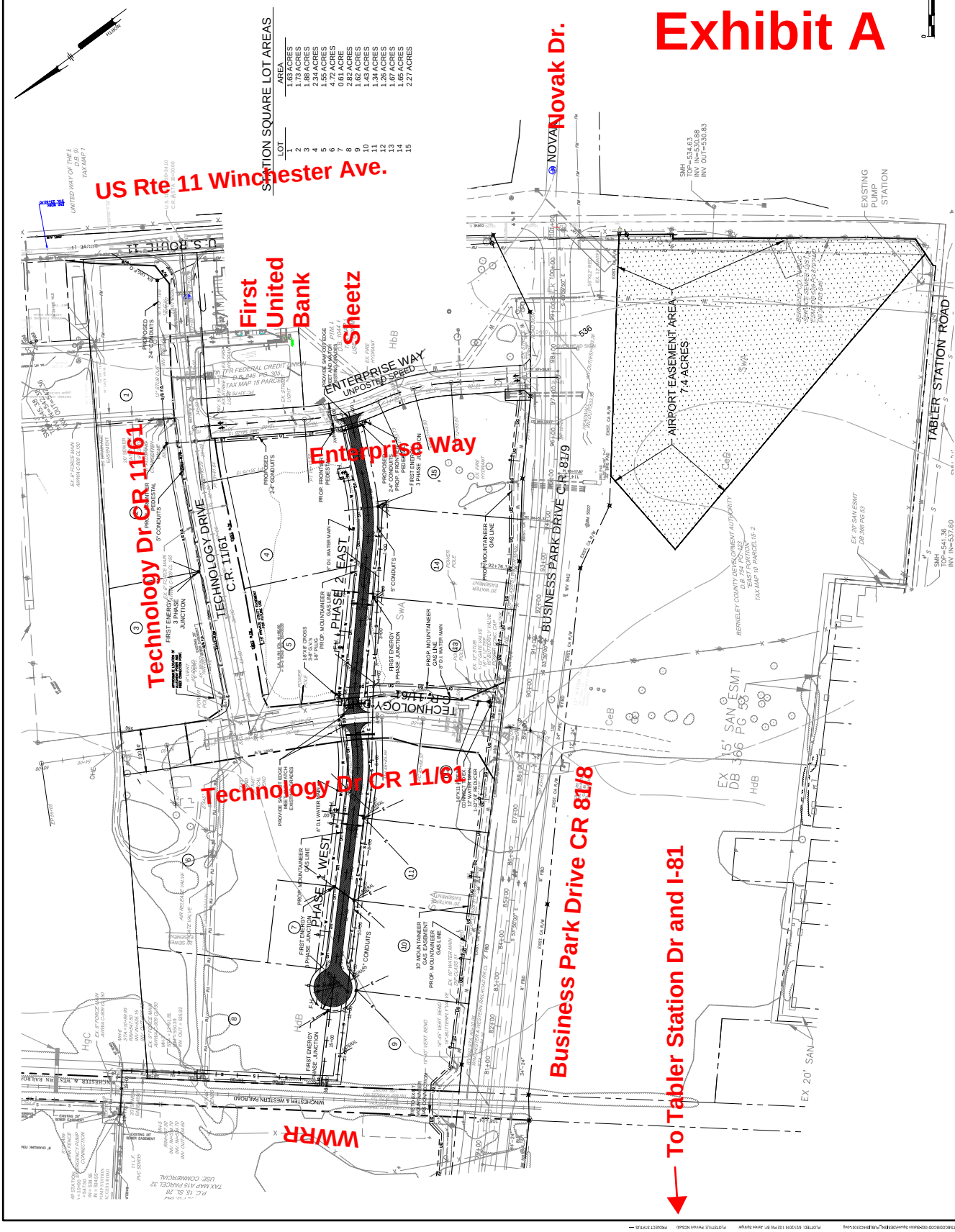
Improvement #1 is required with the projected growth without the subject site.

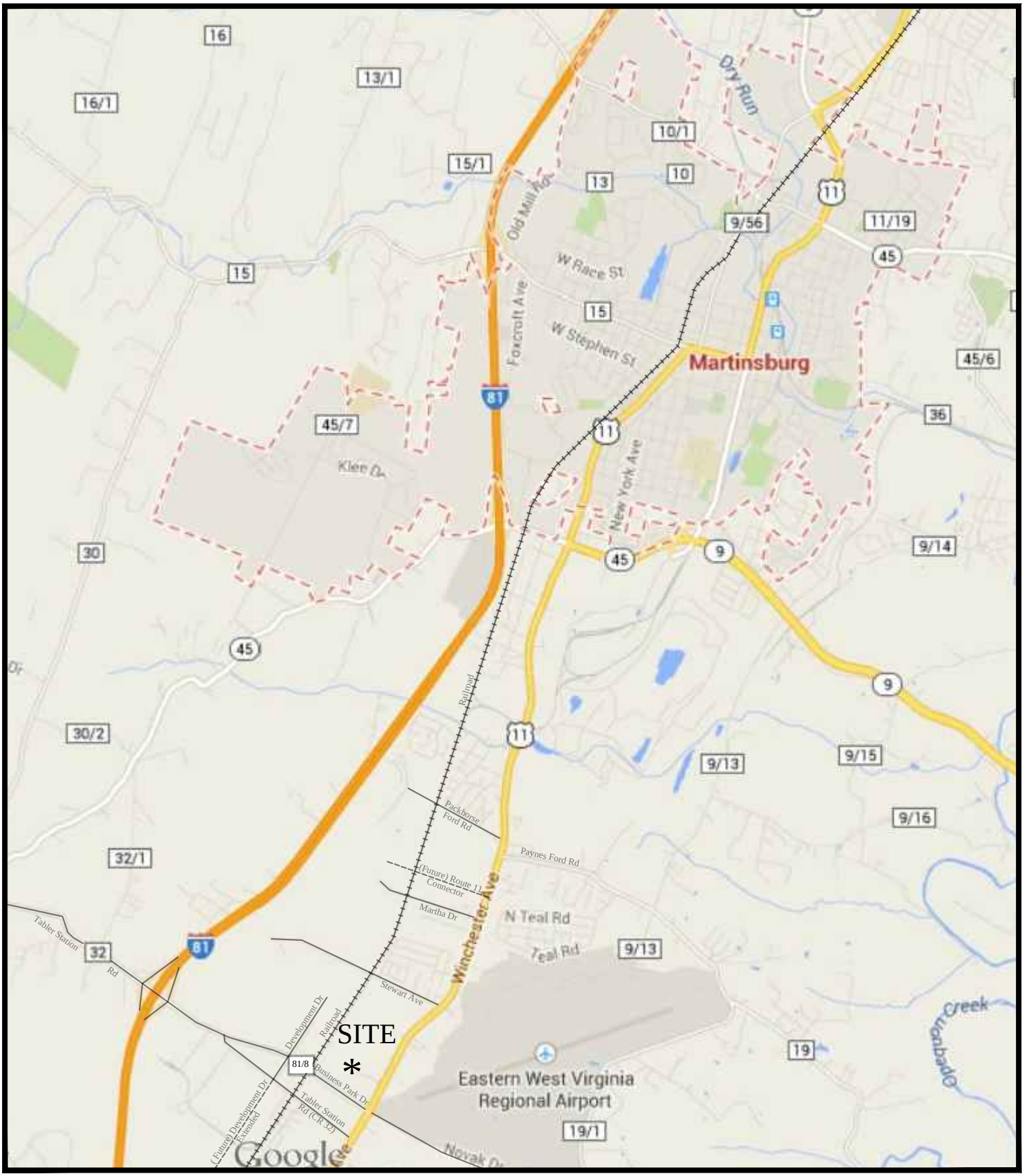
Long-Term Access, for the study area:

1. Coordinate with WVDOH to lengthen I-81 southbound left turn lane at the SB off-ramp to 300 ft. effective length.
2. Consider widening the I-81 SB on ramp to accommodate dual left turns from westbound Tabler Station Road to southbound ramp. No change in bridge width, as restriping to one through lane westbound on Route 32 is possible.
3. Coordinate with WVDOH to provide an additional northbound right turn lane with 325 ft. effective length at the NB off-ramp.
4. Add a double right turn lane on westbound Route 32 (Tabler Station Road) at the interchange and widen on ramp to two lanes. Westbound right-turn traffic is over capacity. Review of a roundabout configuration was also tested but would require widening the ramp to I-81 NB.
5. Add signs for railroad signal at adjacent signals.
6. Coordinate signals along corridor for both peak hours with half-cycles at I-81 ramps and Technology Drive, except at Route 11.
7. Consider improvements at Business Park Drive/Novak Drive/Route 11 signal to provide a dual lane roundabout (inside diameter of 160 feet) to accommodate long-term growth in the corridor. The need for added capacity is not a function of the site traffic.
8. Add traffic signal control on Route 11 at Technology Drive.
9. Convert the southbound right turn at Technology Drive and Route 11 intersection to a shared through right lane and widen Route 11 to add one lane southbound to the right turn at Business Park Drive. This impacts the frontage of the bank and gas station sites, but improves operations in relation to pre-development conditions without a signal.
10. Add a traffic signal on Business Park Drive with the extension of Technology Drive to the north for the potential hi-cube distribution center uses on 100 acres, with the support commercial uses at Station Square lots 13-15.
11. Restrict turns at the Enterprise Way intersection to right turn out on the SB approach at Business Park Drive, so as to avoid left turns out unsignalized. Traffic can be accommodated at the Technology Drive intersections.

Long-term improvements #1, #2, #4-#9, and #11 are required for the background 2030 conditions without the Phase 2 Station Square site traffic. Turn lane length at the northbound off ramp (#3) requires an increase of 100 ft. from background conditions. Without the signal at Technology Drive (#8) and the turn restriction at Enterprise Way (#11), these intersections also do not operate at acceptable conditions in the background 2030 conditions without the site. Therefore, mitigation needs are not just a function of site traffic except for the signal at Business Park Drive & Technology Drive (#10).

# Exhibit A


US Rte 11 Winchester Ave.
Technology Dr CR 11/61
First United Bank
Sheetz
Enterprise Way
Technology Dr CR 11/61
Business Park Drive CR 81/8
To Tabler Station Dr and I-81
Novak Dr.
AIRPORT EASEMENT AREA
7.4 ACRES
TABLER STATION ROAD
EXISTING PUMP STATION
ENTERPRISE WAY
BUSINESS PARK DRIVE CR 81/9
TECHNOLOGY DRIVE
C.R. 11/61
PHASE 2 EAST
PHASE 1 WEST
WWRR
STATION SQUARE LOT AREAS
LOT AREA
1 1.63 ACRES
2 1.73 ACRES
3 1.88 ACRES
4 2.34 ACRES
5 1.55 ACRES
6 4.72 ACRES
7 0.61 ACRE
8 2.82 ACRES
9 1.62 ACRES
10 1.43 ACRES
11 1.36 ACRES
12 1.67 ACRES
13 1.65 ACRES
14 2.27 ACRES
15






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|---|---|---|---|
| Pennoni | □T□TION □□□□RE<br>TRAFFIC IMPACT STUDY<br>BERKELEY COUNTY, WV | SITE LOCATION | FIGURE 1<br>Project # BCOD1502<br>December 2016 |

The study includes the following analyses:

- Existing Conditions,
- Review of approved but unbuilt developments in the site vicinity for short-term and long-term conditions,
- Forecast of 2019 and 2030 Background Conditions with the unbuilt developments and general regional growth estimates,
- AM peak hour, PM peak hour, and Daily trip generation,
- Trip Assignments,
- Peak hour traffic conditions using Synchro 9.0, following the methodology prescribed in the Highway Capacity Manual (2010) for existing and future conditions.

Overall, the proposed commercial uses summarized in **Table E1** can be accommodated with the existing and planned infrastructure. The following sections of the Executive Summary identify trip generation (**part a** and **Table E2**), background growth (**part b**), and summarizes suggested improvements (**part c,** and **Table E3**).

*TABLE E1: PROPOSED SITE DENSITIES*

| Land Use | Densities |
|---|---|
| Fast Food with Drive Through | 3,500 gsf (1) |
| Business Park | 56,000 gsf (1) |
| General Light Industrial | 43,000 gsf (1) |
| Retail | 8,500 gsf (1) |
| High Turnover Restaurant | 7,500 gsf (1) |
| Fast Food with Drive Through | 3,500 gsf |
| Business Park | 86,000 gsf |
| General Light Industrial | 94,000 gsf |
| Retail | 26,000 gsf |
| Total Station Square Employment (2) | 279,000 gsf |
| Total Station Square Commercial (2) | 49,000 gsf |
| Total Station Square 28.52 acres | 328,000 gsf |
| High-Cube Warehouse/Distribution Center (3) | 875,000 gsf |

(1) Assumed use for Phase 1 access. Initial development of lots 1 (Rte. 11) and lots 7-12 (west of Technology Drive, Phase 1 new road)
(2) Densities are based on site acreage with subdivision at 28.52 acres in 15 lots. Building sizes shown with a range of building ratios and mix for trip generation comparisons. Final density will vary subject to market sales. Densities shown for traffic study to sixe roadways
(3) Potential development on Technology Dive extended north of Station Square on approximately 100 acres. Use shown for long-term conditions to verify traffic operations at Rte. 11 and Business Park Drive entrances on Technology Drive.

## a) Trip Generation

In the short-term, the proposed development uses are projected to generate 377 AM peak hour trips, 379 PM peak hour trips, and 4,469 daily trips. In the long-term without the High-Cube Warehouse/Distribution Center uses, the proposed development is projected to generate 800 AM peak hour trips, 899 PM peak hour trips, and 10,322 daily trips. The High-Cube Warehouse/Distribution Center uses north of Station Square would add an additional 96 AM peak hour trips, 105 PM peak hour trips, and 1,470 daily trips.

Pass-by trips already using the Business Park Drive/Tabler Station Road and Route 11 corridors are projected to be approximately 20 to 25 percent of the total trips. Taking the pass-by trips into account, the proposed uses are projected to generate, as new trips; 281 AM peak hour trips, 275 PM peak hour trips, and 3,680 daily trips in the short-term; and an additional 341 AM peak hour trips, 394 PM peak hour trips, and 3,024 daily trips in the long-term without the High-Cube Warehouse/Distribution Center uses; for a total of 622 AM peak hour trips, 669 peak hour trips, and 5,741 daily trips.

*TABLE E2: PROPOSED TRIP GENERATION SUMMARY*

| | AM Peak Hour Trips | PM Peak Hour Trips | Daily Trips |
|---|---|---|---|
| *SHORT-TERM<br>*Pass-by Trips*<br>Short-Term New Trips | 377<br>*-96*<br>281 | 379<br>*-104*<br>275 | 4,469<br>*-789*<br>3,680 |
| LONG-TERM<br>*Pass-by Trips*<br>Long-Term New Trips<br>*(w/o High-Cube Warehouse/Distribution Center)* | 423<br>*-82*<br>341 | 520<br>*-126*<br>394 | 5,853<br>*-792*<br>5,061 |
| Total New Trips<br>*(w/o High-Cube Warehouse/Distribution Center)* | 622 | 669 | 8,741 |
| High-Cube Warehouse/Distribution Center *(Long-Term)* | 96 | 105 | 1,470 |

## b) Background Growth

General annual growth rates of 1.8 % for the short-term (2019) and 1.72% for the long-term (2030) were used in the analysis per the scoping agreement. In addition, other developments in the vicinity and their trip generating potentials were appropriately considered and added to the analysis volumes. Those other developments are as follows:

- For 2019,
  - Tabler Station Mixed Use Site Plan Phase 1 (9,100 gsf convenience store with gas) and
  - Build-out of the P&G site.
- For 2030,
  - Tabler Station Mixed Use Site Plan Build-out (Phase 1 plus hotel, restaurant, and two fast food restaurants with drive-throughs);
  - An industrial parcel north of the site (approx. 61 acres of industrial);
  - BCDA Tract II (approx. 37 acres of industrial);
  - BPG Martinsburg (approx.. 1,650 ksf of high-cube warehouse/distribution center);
  - Berkeley Business Park (500 ksf of manufacturing); and
  - Allowance for future expansion of the P&G uses (+25% of build-out trips).

These uses are located in Figure 6A.

## c) Improvement Summary

Table E3 outlines the general access improvements. The recommendations are provided for short-term and long-term impacts. As outlined on page 3, the improvements for the short-term address improvement needs related to the subject site. Long-term improvements are shown for regional planning and capacity needs. Most improvements related to potential WVDOH projects. Improvements for site access are shown in italic. Note that WVDOH will determine the extension of the design improvements and priorities.

*TABLE E3: PROPOSED ACCESS RECOMMENDATIONS*

| Improvement Type | Improvement Description | Timing |
|---|---|---|
| SB I-81 Ramp widening | Add a second left-turn stacking lane on the SB I-81 ramp at Tabler Station Road | In the short-term, with or without subject development |
| Off-Site Striping | Stripe eastbound approach on Tabler Station Road at the NB I-81 ramp to one lane, to allow free-flow right-turns from off-ramp | In the short-term with subject development |

| | | |
|---|---|---|
| SB I-81 Ramp widening | Lengthen southbound left-turn storage at the SB I-81 ramp/Tabler Station Road | Long-Term, with or without subject development |
| SB I-81 Ramp widening, striping, and signal mod | Widen SB I-81 on-ramp at Tabler Station Road to accommodate dual westbound lefts from Tabler Station Road (stripe one westbound through to a left) | Long-Term, with or without subject development |
| NB I-81 Ramp widening | Add a second right-turn stacking lane on the NB I-81 ramp at Tabler Station Road | Long-Term, 325 ft. with and 225 ft. without subject development |
| NB I-81 Ramp widening and turn Lanes | Widen NB I-81 on-ramp at Tabler Station Road for double westbound right turns | Long-Term, with or without subject development |
| Signs | Add signs for railroad signal at adjacent signals | Long-Term, with or without subject development |
| Signal Coordination | Coordinate signals along the Tabler Station Road/Business Park Drive corridor | Long-Term, with or without subject development |
| Regional Off-Site Turn Lanes | Additional capacity is recommended at the Route 11 Business Park Drive signal. Not associated with site traffic. | For long-term scenario, WVDOH should review for possible roundabout option at Route 11. |
| Signal and road widening | Add traffic signal on Route 11 at Technology Drive and widen Route 11 to add one lane southbound to the right-turn at Business Park Drive | Long-Term, with or without subject development |
| *Site Access* | *Add traffic signal on Business Park Drive at Technology Drive* | *Long-Term with subject development* |
| Traffic Control | Restrict left-turns out from Enterprise Way onto Business Park Drive | Long-Term, with or without subject development |

## d) Summary Assessment

Under short-term (2019) volume forecast conditions, the road network can accommodate 95th percentile queues and maintain acceptable performance with an additional 175 ft. left-turn lane at the I-81 SB ramp and striping changes at the I-81 NB ramp at the Tabler Station Road interchange. The additional 175 ft. I-81 SB ramp left-turn lane is required with or without the site. Traffic signals are not warranted at the Technology Drive site entrances on Business Park Drive and Route 11 with Phase 1 build-out of Station Square.

In the long term (2030), additional widening and turn-lanes at the I-81 ramps, signal coordination on the Tabler Station Road/Business Park Drive corridor, signals at the two Technology Drive site entrances, lengthening the Route 11 southbound right-turn lane north of Business Park Drive through Technology Drive, and a roundabout at the Route 11/Business Park Drive/Novak Drive intersection are suggested to maintain acceptable LOS and accommodate 95th percentile queues. These improvements are suggested, with or without the site, with the exception of the signal at the Business Park Drive/Technology Drive intersection and a 100 ft. longer turn-lane at the I-81 NB ramp.

Site peak hour trips are projected to be approximately 7-11 percent of traffic at the I-81/Tabler Station Road interchange in the short term and 11-14 percent in the long-term. At the Route 11/Business Park Drive/Novak Drive intersection, site peak hour trips are projected to be approximately 4 to 5 percent of traffic in the long-term.

Pennoni

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# TRAFFIC IMPACT STUDY

# PROJECT INDEPENDENCE

## BERKELEY COUNTY, WEST VIRGINIA




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**Revised January 22, 2015**

# 1. EXECUTIVE SUMMARY

Pennoni Associates Inc. has prepared this report to present the Traffic Impact Study (TIS) associated with the proposed development of "Project Independence" in Berkeley County, WV. As shown in **Figure 1** (page 3)**,** the subject site is approximately 450 acres and is located in the Tabler Station Business Park northeast of the I-81/Tabler Station Road interchange along Business Park Drive (CR 81/8). The use is a manufacturing facility with proposed access envisioned to Development Drive and truck access to Business Park Drive. The site is south of Martinsburg and west of the Route 11 Corridor. The analysis was based on the State traffic study guidelines from West Virginia Department of Highways (WVDOH) TED- 106-2 requirements. A scoping agreement is included in **Appendix A**. The study is updated to incorporate WVDOH comments received in December which is included in **Appendix A1**.

Due to the land transaction confidentiality, the proposed owner of the site is not directly referenced. The traffic analysis is prepared for the client's engineering representative – Fluor Engineering, on behalf of the Berkeley County Economic Development Authority (BCDA), the current land owner. The proposed use is anticipated as a manufacturing facility with up to 1100 employees and typical truck activity of 260 vehicles per day. The analysis investigates the short-term and long-term impacts (assumed as 2017 and 2025 in this report) of the proposed employment uses on the existing roadway network to verify infrastructure improvements. Additionally, as a test for the sensitivity of the proposed site impacts, Pennoni reviewed a traffic scenario with site traffic only added to the Route 11 corridor, to verify if the long-term traffic recommendations are a function of the proposed site activities or long-term growth in the Route 32 and Route 11 corridors.

Additionally, a new truck access is proposed to Business Park Drive (CR 81/8) east of the Business Park Drive/Tabler Station Drive intersection to allow more direct access to the I-81 corridor for truck efficiency. Employee access is shown via Development Drive, north of Business Park Drive. The long-term traffic scenario recognizes that the roadway network south of Business Park Drive will be upgraded. Additionally, the BCDA properties west of US Route 11 may develop with a new public street access connection. This new connection to Route 11, referenced as the "Route 11 connector" in this report, would provide an upgraded at-grade crossing of the Winchester & Western Railroad north of existing Martha Drive to serve as a long-term secondary employee access, as well as access for the currently undeveloped properties north of the subject site. The Route 11 Connector is included in the long-term scenario to verify ultimate roadway design requirements with new development north of the site. The new connection would provide access to the subject property, the existing homestead site, and replace the two existing substandard RR crossings at Martha Drive and Stewart Avenue. This improvement is suggested in the initial development to remove the two existing substandard railroad crossing adjacent to the site, as well as provide an emergency site access. However, the connection is not intended to be a through street from Route 11 to Development Drive, but will provide for short-term construction access. The analysis does test the sensitivity of this road connection with growth with the Project Independence uses, to verify if turn lanes or signal control are required at Route 11 with the subject uses.

The analysis contained in this report provides a comprehensive assessment of the local intersection performance to determine if any public sector improvements may be required to the existing roads to support the new development.

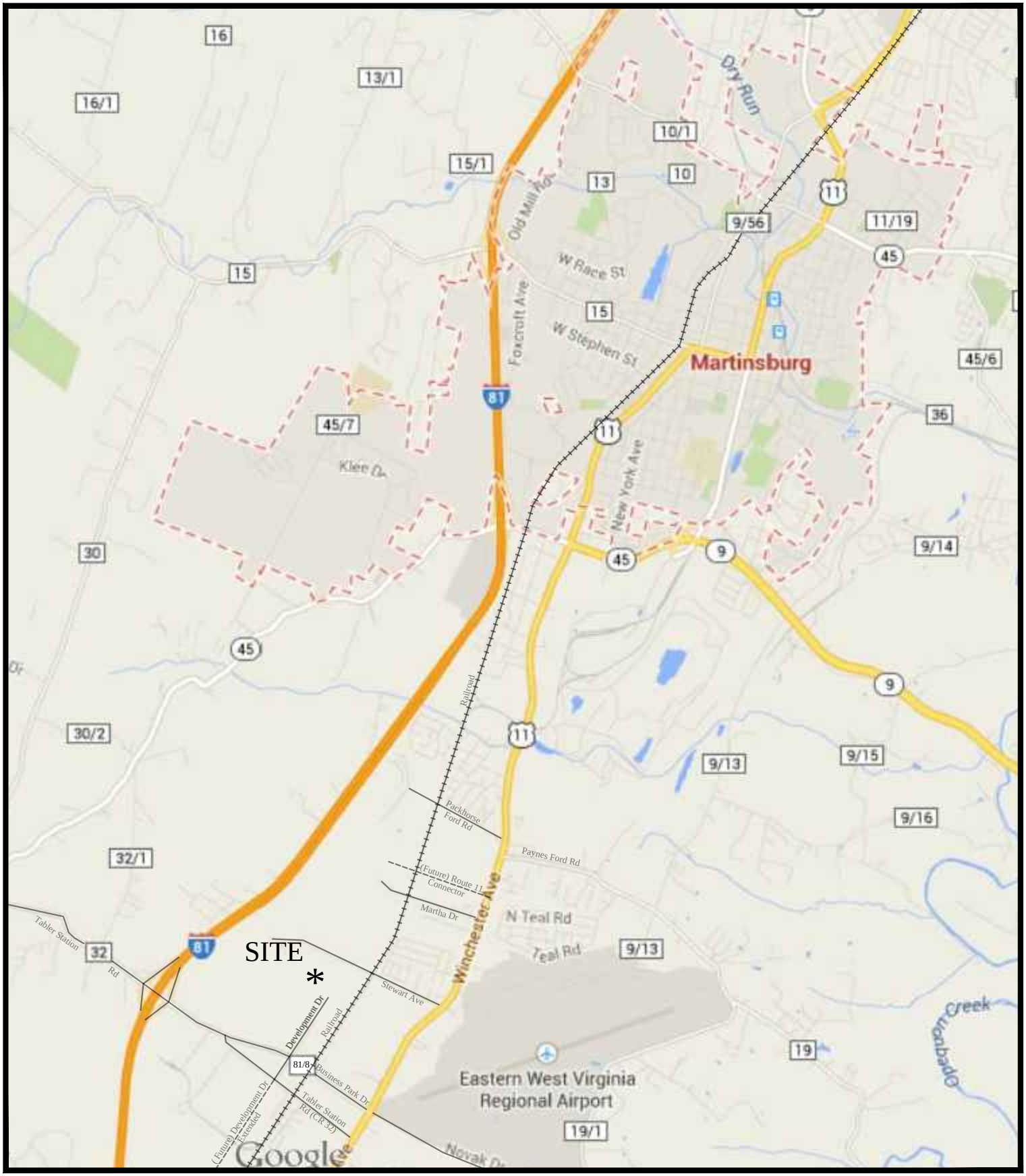
Overall, the proposed employment uses can be accommodated with the existing roadway network. The following improvements are recommended for implementation by WVDOH on the public street system:

Initial Access:

1. Widen Development Drive from Business Park Drive for additional turn lanes on the SB approach. Transition to NB approach across intersection to allow for separate left turn lane. Length, subject to the access scenario proposed.
2. Extend Development Dr north of the current terminus to the proposed employee access.
3. Install traffic signal at Business Park Drive/Development Drive with site development for employee access, with coordination to the existing Business Park Drive RR signal.
4. If the new truck access is approved by WVDOH, construct two lane commercial access at new location to Business Park Drive,
5. Construction of the Route 11 Connector from Route 11 to provide secondary site access. The road is proposed as a two lane industrial road
6. Modify signal timing at I-81 SB off-ramp to decrease queues with existing timing.

Long-Term Access, for the study area:

1. Add storage lanes on both I-81 exit ramps to allow dual turn lanes and reduce ramp queues, and coordinate signals. Adjust signal timing to reduce delays on I-81 ramps.
2. Add a westbound right turn lane with channelization (yield condition) on Business Park Drive to turn to I-81 north ramp.
3. Provide signalization and turn lanes, when warranted, at the proposed Tabler Station mixed-use development.
4. Coordinate new signals with the addition of the Tabler Station Mixed-Use Development signal.
5. Improve Development Drive south of Business Park Drive for improved access to Corning Way with signal at Business Park Drive.
6. Consider improvements at Business Park Drive/Novak Drive/Route 11 signal to provide a dual lane roundabout (inside diameter of 160 feet) to accommodate long-term growth in the corridor. Added turn lanes may be possible but does not improve all individual movements for the long-term.
7. Add separate right and left turns lanes on Route 11 at the new connector road, with signalization, when warranted, to accommodate industrial uses west of Route 11.
8. Consider a future northbound right turn lane at Route 11/Paynes Ford Road.




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| Pennoni | **PROJECT INDEPENDENCE**<br>TRAFFIC IMPACT STUDY<br>BERKELEY COUNTY, WV | *SITE LOCATION* | *FIGURE 1*<br>*Project # FLUR1401*<br>*January 2015* |

Since the Business Park Dive corridor was improved to the 4-lane divided section by the State, the corridor does have a controlled access designation, which limits curb cuts. As the proposed secondary trucks-only access to Business Park Drive is not approved, the Traffic Impact Study (TIS) shows two scenarios (to be referred to as Options A and B in this report):

- **Option A:** With separate truck access to Business Park Drive and employee access to Development Drive (assuming the limited access break is approved by WVDOH), and
- **Option B:** Without new access to Business Park Drive. Access proposed with two entrances on Development Drive, one for trucks only and the other for employees and other traffic.

The TIS addresses vehicle-related impacts and access. The site also will have rail service via a proposed spur to the existing Winchester & Western Railroad Co. east of the property. Capacity impacts to the rail corridor are not included, except for review of the existing Business Park Drive crossing for vehicular traffic. As part of the study, locations with new signals or signal modifications (I-81 Ramps, Development Dr, Rte 11/Novak, and Rte 11 Connector) were tested with roundabout as an alternative scenario.

Overall, the proposed employment uses can be accommodated with the existing and planned infrastructure. The following sections of the Executive Summary identify trip generation (**part a** and **Table 1A** below) and summarizes suggested improvements (page 5, **part b,** and **Table 1B** (page 6)).

### a) Trip Generation

The proposed development uses will generate 449 weekday AM peak hour, 449 weekday PM peak hour, and 2,992 weekday trips based on the proposed densities provided by the owner. Note that the trips are consistent with the projections for similar manufacturing uses, based on national average rates from the Institute of Transportation Engineers' (ITE) *Trip Generation, 9th Edition* for manufacturing uses. Traffic was calculated based on employee and truck activities to provide a better assessment of traffic, as opposed to building size.

**TABLE 1A: PROPOSED TRIP GENERATION SUMMARY**

| Proposed Use & Density | AM Peak | PM Peak | Daily |
|---|---|---|---|
| **Manufacturing Facility** | | | |
| Total Trips | 449 | 449 | 2,992 vpd |

The long-term forecasts also include a 25% growth in employee activities, with possible access to the Route 11 connector. These long-term forecasts are not part of the trip generation in Table 1A, and are provided in case the user expands operations north of the existing site plan building. The sensitivity of adding site density is provided to determine the capacity of the suggested access road to Route 11 and the densities are not anticipated to be processed with the subject site plan. The 1,100 employee count used in this analysis for trip generation estimates also is 10 percent higher, to allow for shift changes and growth. The subject development plan estimates 550 employees for the day shift with 225 employees on two other shifts for an estimated employee count of 1,000 employees.

**b) Background Growth**

General annual growth rates of 1.8 % for the short-term (2017) and 1.72% for the long-term (2025) were used in the analysis. In addition, other developments in the vicinity and their trip generating potentials were appropriately considered and added to the analysis volumes. Those other developments are as follows:

- For 2017, 28 acres of the Tabler Station Business Park (industrial uses) east of the railroad and
- For 2025,
    - Build-out of the Tabler Station Business Park east of the railroad (56 acres of industrial);
    - Tabler Station Mixed-Use Development;
    - An industrial parcel north of the site (approx. 61 acres of industrial); and
    - BCDA Tract II (approx. 37 acres of industrial).

These uses are located in **Figure 7A**. The Mixed- use development at the intersection of Tabler Station Drive and Business Park Drive was not included in the short-term traffic scenario, since the traffic study for he mixed use activities estimated a 2020 build-out, without any phasing. The inclusion of other employment uses for the future conditions will increase ambient traffic volumes.

**c) Improvement Summary**

**Table 1B** outlines the general access improvements. Note that WVDOH will determine the extension of the design improvements and priorities. The recommendations are provided for short-term and long-term impacts. As outlined on page 2, the improvements for the short-term address needs related to the subject site. Long-term improvements are shown for regional planning and capacity needs.

Improvements related to potential WVDOH projects are shown in italic, with bold for short-term needs.

**TABLE 1B: PROPOSED ACCESS RECOMMENDATIONS**

| Improvement Type | Improvement Description | Suggested Timing |
|---|---|---|
| Pedestrian | Provide sidewalk connection from site to Development Drive. No programmed improvements are proposed for the shoulders of Business Park Drive. | With Initial Use |
| Parking | Provide to support maximum employees for shift work. | With Use |
| Access | ***Proposed access at 2 locations with new access to Business Park Drive approximately 700 ft. west of Development Drive for truck access. Employee access via entrance on Development Drive.*** | ***With Initial Use*** |
| Alternative Access | ***If the limited access break is not approved, provide 2 access locations on Development Dr, one for trucks and the other for employees.*** | ***With Initial Use*** |
| Turn Lanes | ***Additional turn lanes are recommended for Development Drive at Business Park Drive and at the site truck driveways.*** | ***With Initial Use*** |
| Secondary Access | ***Provide emergency access connection to the Route 11 Connector Road with an improved railroad crossing, to replace existing Martha Drive and Stewart Avenue railroad crossings into the subject property.*** | ***With Initial Use*** |
| Off-Site Turn Lanes | *Additional turn lanes are recommended at the I-81 /Tabler Station Road interchange signals with timing changes initially and added turns to accommodate long-term growth, including WB right turn deceleration lane and signal coordination.* | By Others |

***Table continued on next page…***

| | | |
|---|---|---|
| Phasing | None Proposed | N/A |
| On-Site Signals | ***Recommended for the Business Park Drive & Development Drive intersection. The signal plan should coordinate with the existing railroad crossing. (approx. 650 ft to the east).*** | ***With Build-out*** |
| Off-Site Roads (Business Park Drive) | *Coordinate with WVDOH for widening of Development Drive south of Business Park Drive to allow separate left-turn lanes and traffic control if warranted, for the long-term with added traffic from Corning Way diversions.* | Coordinate with WVDOH improvements |
| Off-Site Roads (Tabler Station Drive) | Install signalization when warranted with new mixed-use development and add turn lanes. Coordinate timing with existing signals. | By Others |
| Off-Site Roads (Route 11) | • *Coordinate with WVDOH for added turn lanes at Route 11 connector to service industrial/employment parcels west of Route 11. With ultimate development, this connection will require signalization on Route 11 and separate left- and right-turn lanes on approaches.*<br>• Close Martha Drive and Stewart Avenue RR crossings.<br>• ***New at-grade RR crossing with cul-de-sac turn around onsite, not designed for cut through traffic to Development Drive.***<br>• Install signal, as programmed at Paynes Ford Road to support existing and long-term growth.<br>• Consider added right turn lane on Rte 11 NB at Paynes Ford Rd signal<br>• Review the need for added lanes at the Route 11 & Business Park Drive/Novak Drive signal. Option studied for dual lane roundabout for long range growth, since improved performance vs. signal with turn lanes | Coordinate with WVDOH improvements |

**d) Summary Assessment**

Development Drive should be upgraded to accommodate separate turns at Business Park Drive and a break in the limited-access line along Business Park Drive is suggested to allow site truck trips separate access to the Tabler Station Road (Route 32) and Business Park Drive (Route 81/8) corridors.

With the two I-81 ramp signals as operating, the additional volumes at the ramps can be accommodated with changes in signal timing in the short-term. To accommodate back of queues to less than 200 feet for the 2017 Build conditions in the PM peak, maintaining the cycle length but increasing the max times for the SB ramp exit improves operations while not upgrading the ramp geometry. For the I-81 west ramp (SB off ramp) the AM peak green time is increased to 46 seconds (out of 90 total), while in the PM peak, 50 seconds of green time is suggested. For the PM peak, this would be a shift of 30 seconds of green time out of 90seconds. The overall LOS is slightly better, and the Route 32 LOS and queues are comparable to existing timing, including LOS for the lefts on the WB approach. The timing changes should be monitored after the project initiation to verify queues.

As part of the long-term analyses, signal timing changes and ramp widening are suggested to reduce queues exiting the interstate ramps. Alternative impacts as dual lane roundabout operations are included to test the impacts to the interchange; The LOS is similar and queues are less but implementation at the existing ramps and costs may reduce the effectiveness, so signalization is recommended to be maintained.

A signal is warranted at the Business Park Drive & Development Drive intersection. The analysis also tested a dual lane roundabout, but the overall operations were not significantly improved versus a signal. In the long-term, the West Virginia Division of Highways may consider corridor improvements to Development Drive south of Business Park Drive. These improvements to increase link capacity south of Business Park Drive would increase side street traffic and require signal control even if Project Independence was not developed. Adding a northbound left turn lane south of Business Park Drive with initial construction helps in transitions with the north side improvements, and allows the signal to be installed with Project Independence build-out, without having to relocate signal poles with widening to the south.

The Route 11/Business Park Drive/Novak Drive signal will operate at acceptable LOS with the existing lane conditions through the site build-out of Project Independence. However long-term growth will require capacity improvements. The previous study examines additional through lanes on Route 11 to improve overall LOS. However, in order to mitigate long-term growth, the future conditions

include a capacity analysis as a dual lane roundabout with auxiliary approach lanes. These improvements are not required for construction, but may be evaluated for long-term corridor improvements. Pennoni reviewed the site impacts and changes to the existing signal if site traffic was added to existing conditions. The Project Independence peak hour uses would only add approximately a 10-16 percent increase in traffic in 2025 with long-term Project Independence growth. The Site Plan impacts with up to 1100 employees change existing traffic by 7-12 percent.

With the long-term growth potential of the remaining BCDA lands west of Route 11, the proposed Route 11 connector should be constructed to accommodate turn lanes and signal control, when warranted. The new connection is proposed to provide a safer at-grade railroad crossing and terminate the existing crossings at Martha Drive and Stewart Avenue. However, the turn lanes and signal control are not a function of site traffic, as the projected site activities impacts to the new connector road are estimated conservatively at less than 700 vehicles per day. The turn lanes and traffic control on Route 11 are best evaluated as part of the development activities and usage on the BCDA industrial properties. Signalization is suggested at this location in the long-term, but a single lane roundabout was also reviewed. The operations with one through lane on Route 11 exceed the capacity of the roundabout, even with separate turn lanes at the Route 11 Connector, so implementation as a roundabout is not anticipated to be improved in relation to operations under signal control. Turn lanes at Route 11 will be required with future industrial development, not associated with the Project Independence uses.

August
2015




**Final Report**
**Volume I**

# WV 45 in Martinsburg, WV Traffic Operations and Safety Study

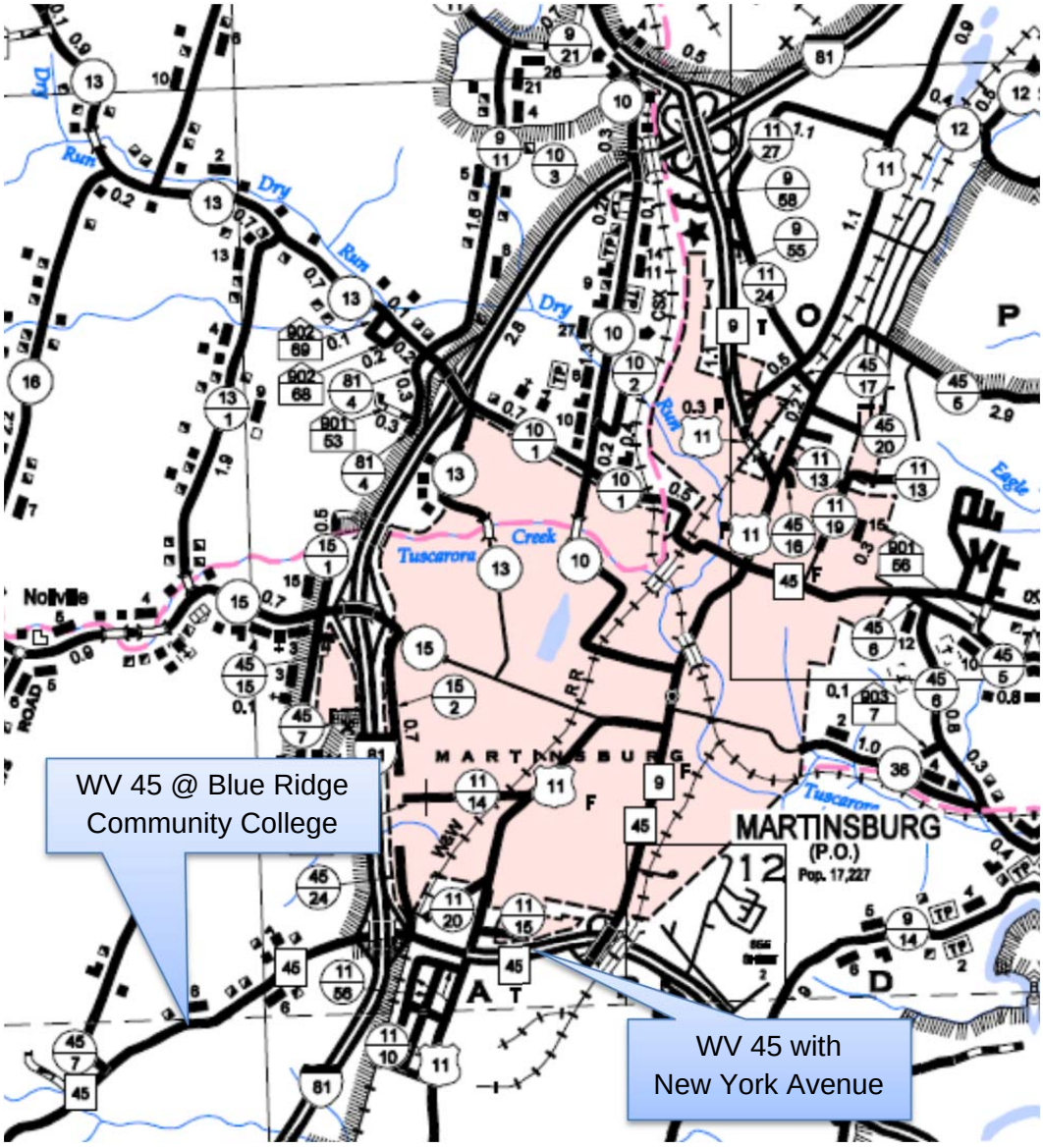
State Project: S202-45-14.30
Federal Project: OCRO-0045(060)

# 1 Introduction

## 1.1. Study Purpose

The purpose of this traffic operations and safety study is to evaluate current and future traffic conditions, identify potential deficiencies, and develop alternative improvements to enhance traffic flow and improve safety within the 1.46 mile study area along WV 45 (Apple Harvest Drive). The study limits extend from the Blue Ridge Community College driveway (MP 13.61) to New York Avenue (MP 15.07) in Martinsburg, Berkeley County. A location map of the study area is provided below.

**WV 45 Study Area Location Map**



## 1.2. Corridor Description

Within the study area, the WV 45 corridor varies from a two to four-lane roadway with a two-way left-turn lane (TWLTL) for part of its length. On the eastern side of the corridor, WV 45 is a heavily-traveled arterial through a major commercial district. On the western side of the I-81 Interchange, it becomes a two-lane, rural roadway outside of the city. Near I/S# 1 and 2, the travel lanes narrow to 10 feet in width. At the major intersections, the TWLTL becomes an exclusive left-turn lane. The corridor includes both signalized and unsignalized intersections and several driveways. Most signalized intersections in the corridor, which are closely spaced near the interchange and mall areas, are coordinated to provide a progressive movement for thru traffic along WV 45. The only exceptions are at Retail Commons Parkway and I-81 SB Ramps, which function more efficiently as actuated but uncoordinated. There is also a "Priority Control System" (PCS) in place for the local fire department. Highway lighting is provided along the entire corridor within the study area. The posted speed limit along the corridor is 45 mph from the western terminus to Retail Commons Parkway and 35 mph from Retail Commons Parkway to the eastern terminus at New York Avenue.

The WV 45 corridor is rural in nature for the three intersections to the west of the Retail Commons intersection. From that point eastward, the corridor is highly developed with retail and commercial developments. The highest density of development is centered around the I-81 Interchange; however, space is available for further development. This is particularly true to the west of the interchange, as indicated by the potential Cornerstone Development proposed at I/S #3 and the Weiss Study, on the north side of WV 45, with two proposed driveways near I/S #4. There is also potential for development at locations just outside of the study area. Despite the development and potential for future development, there are no sidewalks or pedestrian facilities anywhere within the corridor.

Within the study limits, there are 34 intersections with city streets and major / minor driveways. Nine of the major intersections within the corridor are included as part of this study. These intersections are described in additional detail and photos of each intersection are provided in Appendix A. Figure 1-1 (Sheets 1 through 3) provides an overview of the study intersections.

I/S #1: WV45 with Blue Ridge Community College




Located at the western terminus of the study area, this "T" intersection provides access to the Blue Ridge Community College. The intersection is currently unsignalized, with stop-control for the College driveway only. There are no existing turn lanes on WV 45. Directly across from the College driveway are widely-spaced residential parcels.

I/S #2: WV 45 with Klee Drive




The WV 45 with Klee Drive intersection provides access to a residential neighborhood. WV 45 moves freely, while Klee Drive is stop-controlled. There is vacant land on both sides of Klee Drive, with large, residential parcels situated on the other side of WV 45.

I/S #3: WV 45 with Cornerstone Development (Proposed)



Although not constructed yet, the Cornerstone Development intersection is proposed to be just west of the Retail Commons Development. Similar to I/S #1 and #2, the side road is proposed to be stop-controlled. There currently are no turn lanes in place for the proposed development, but approved documents indicate that intersection improvements including widening and a WV 45 WB left-turn lane will be forthcoming.

I/S #4: WV 45 with Retail Commons Parkway (Target)



The WV 45 with Retail Commons Parkway intersection is signalized and serves as the only access to the Retail Commons commercial development. This center includes Best Buy, Target, Dicks Sporting Goods and several other retail outlets. The WV 45 WB approach has dual left-turn lanes along with two thru lanes. There is a protected-permitted phase for the WV 45 WB left-turn movement with a right-turn overlap from Retail Commons. The signal operates uncoordinated with the adjacent signals to the east. WV 45 EB has a right-turn lane into the development along with two thru lanes. Retail Commons Parkway has dual left-turn lanes and a right-turn lane. There are no crosswalks, pedestrian push buttons, or pedestrian signals at this intersection. WV 45 WB tapers down to a two-lane road approximately 250 feet west of this intersection. Because of this, the rightmost WV 45 WB thru lane is utilized less than the adjacent thru lane. Another factor contributing to this is that the upstream WV45 WB thru lane lines up with the inside thru lane at this intersection.

The Weiss Study proposes a commercial development on the north side of WV 45 in the vicinity of this intersection. The study proposes two driveways, one at I/S #4 and a second access approximately 600 feet west of this intersection. A second WV 45 WB thru lane would be extended from I/S #4 to the westernmost driveway and drop as a right-turn lane into the development.

I/S #5: WV 45 with Interstate 81 Southbound Ramps



As part of the diamond Interchange with I-81, this intersection serves as access to and from I-81 SB. The off-ramp has two left-turn lanes and one right-turn lane at the junction with WV 45. Exclusive right and left-turn lanes provide storage to the on-ramp from WV 45 EB and WB, respectively. The WV 45

WB left-turn movement has a protected-permitted signal phase. This signal operates uncoordinated with I/S #4 and the adjacent signals to the east. There are no crosswalks, pedestrian push buttons, or pedestrian signals at this intersection.

I/S #6: WV 45 with Interstate 81 Northbound Ramps



This intersection serves as access to and from I-81 NB. WV 45 maintains two thru lanes in each direction and has a channelized WV 45 WB right-turn lane, and a left-turn lane on WV 45 EB. The I-81 NB off-ramp has a left-turn and right-turn lane. The signal operates as coordinated with the signal system to the east, and operates as three phases: NB, EB left-turn and EB/WB thru. There are no crosswalks, pedestrian push buttons, or pedestrian signals at this intersection.

I/S #7: WV 45 with Foxcroft Avenue (Mall)



The intersection of WV 45 with Foxcroft Avenue is a signalized "plus" intersection. Foxcroft Avenue serves as one of three entrances to the Martinsburg Mall and several restaurants, gas stations and hotels. The southern leg of the intersection is a McDonald's driveway. Foxcroft Avenue widens for about 100 feet at the intersection to allow for three lanes: right-turn only, left-thru lane and a left-turn only. WV 45 maintains its two thru lanes in each direction, plus exclusive left and right-turn lanes in each direction. A single railroad track crosses WV 45 within the intersection, located just east of Foxcroft Avenue. The northbound and southbound movements have dedicated signal phases, and the EB and WB mainline movements have leading left-turn phases with right-turn overlaps from the SB and NB approaches. There are no crosswalks, pedestrian push buttons, or pedestrian signals at this intersection.

Although train counts were not collected, it has been reported that the frequency and lengths of trains are increasing due to activity along the rail spur to the Essroc cement plant located southeast of the study area. As an example of train activity, the train pre-emption records for several days in November and December 2014 were reviewed. There was an average of 6 railroad pre-emption calls during the weekdays with no particular schedule observed. There was no train traffic observed during the weekend. With the increased train traffic, additional delays occur at this intersection and impact the rest of the corridor as this railroad bisects the study area.

I/S #LS: WV 45 with Lowes/Sheetz Driveways



The WV 45 with Lowes Plaza/Sheetz intersection (I/S #LS) provides access to these establishments. Sheetz is located on the southern side of WV 45 and the driveway has a left-thru lane and right-turn lane. Lowes Plaza is located on the northern side of WV 45 and its driveway has a similar lane configuration as Sheetz. WV 45 maintains two thru lanes and an exclusive left-turn lane in both directions, along with a short right-turn lane on WV 45 WB for access into Lowes. The intersection is signalized and has a protected-permitted phase for left-turn phases of WV 45. There are no crosswalks, pedestrian push buttons, or pedestrian signals at this intersection.

I/S #8: WV 45 with US 11 (Winchester Avenue)



US 11 connects this area to downtown Martinsburg and Inwood. This “plus” signalized intersection serves residential neighborhoods on either side of WV 45 and is in close proximity to driveways for a shopping plaza located within the southeastern quadrant of the intersection. This plaza includes Food Lion, K-Mart and other smaller retailers. This intersection has two thru lanes on WV 45 with left and right-turn lanes in each

direction. US 11 (Winchester Avenue) has three lanes in each direction providing left-turn, thru and right-turn lanes. This signal operates with four phases, including concurrent, protected-permitted left-turn phases for all approaches with right-turn overlaps from the side roads. There are no crosswalks, pedestrian push buttons, or pedestrian signals at this intersection.

I/S #9: WV 45 with New York Avenue



The WV 45 with New York Avenue intersection is a signalized, plus intersection and is very similar in configuration to I/S #8: WV 45 with Winchester Avenue. The only difference is that the minor approaches have two lanes at the intersection (shared left-thru lane and right-turn lane). The shopping plaza mentioned in I/S #8 is located in the southwestern quadrant of the intersection. The signal phasing is similar to I/S #8 except that the minor approaches do not have a protected left-turn phase. There are no crosswalks, pedestrian push buttons, or pedestrian signals at this intersection.

## 1.3. Available Traffic Data

The following data were received from the West Virginia Department of Transportation (WVDOT), Traffic Engineering Division (Traffic Division):

- Growth rate for the corridor.
- Existing signal plans.

## 1.4. Previous Studies

No previous studies have been conducted for the WV 45 study area. However, the Hagerstown/Eastern Panhandle MPO (HEPMPO) has programed funds for railroad signal upgrades near I/S #7 as part of their Transportation Improvement Plan (TIP).

The Novak Drive Connector was considered in the past, but a study was not available. In addition, this concept is located outside of the study area to the south. It is discussed further in Section 5.6.

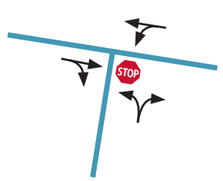
**Figure 1-1:** Existing Corridor, Geometry, and Peak Hour Volumes (Sheet 1 of 3)

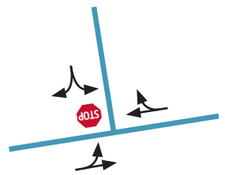



## Intersection ID# & Distance Between Intersections



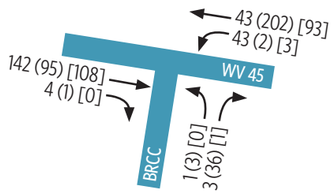

## Existing Intersection Geometry




## Existing Peak Hour Volumes

**Peak Hour Factor:**
0.92 (0.91) [0.85]




**Peak Hour Factor:**
0.88 (0.95) [0.95]

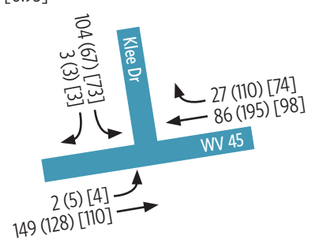


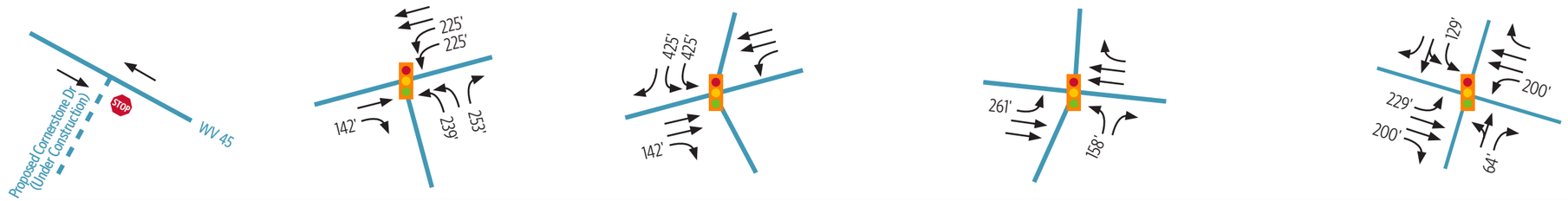
**Figure 1-1:** Existing Corridor, Geometry, and Peak Hour Volumes (Sheet 2 of 3)




## Intersection ID# & Distance Between Intersections




## Existing Intersection Geometry




## Existing Peak Hour Volumes

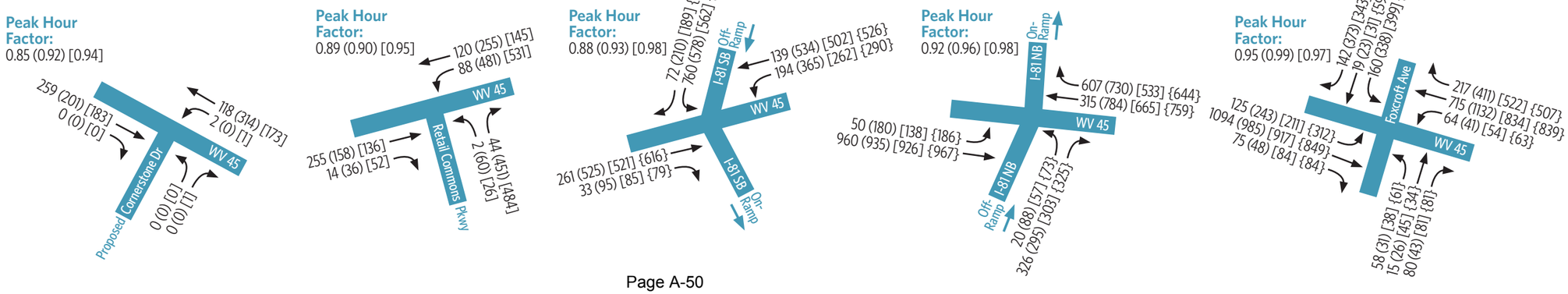
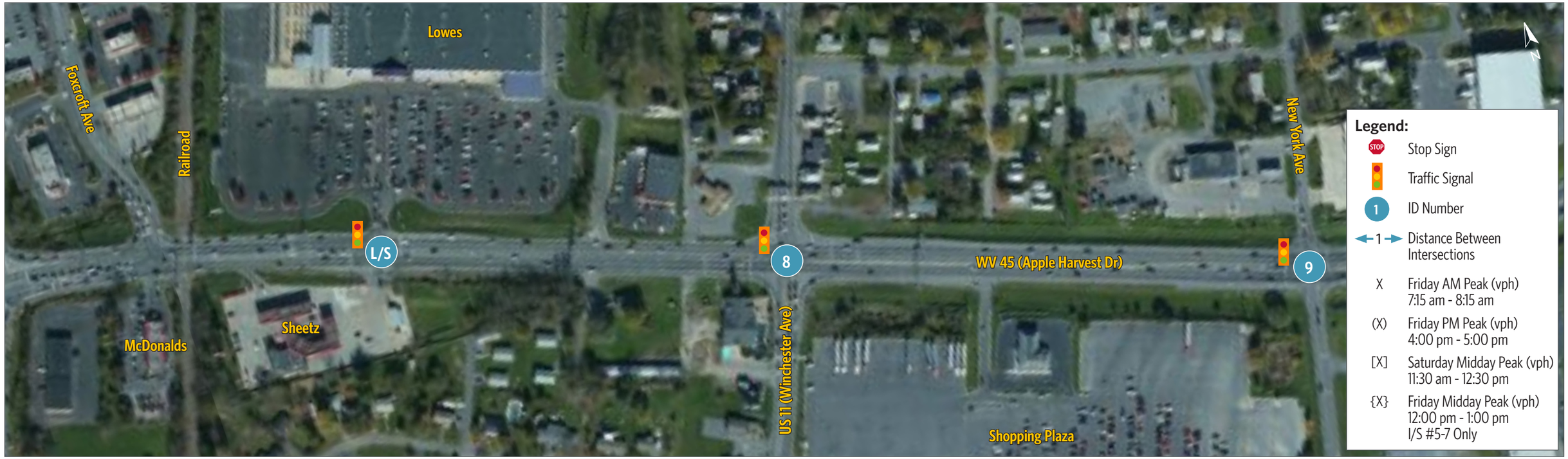


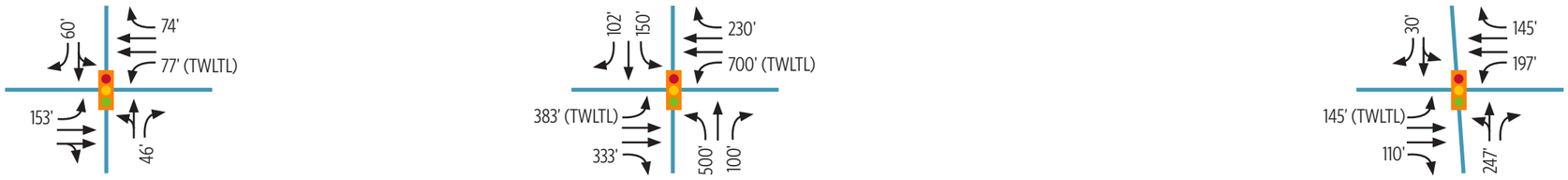
**Figure 1-1:** Existing Corridor, Geometry, and Peak Hour Volumes (Sheet 3 of 3)



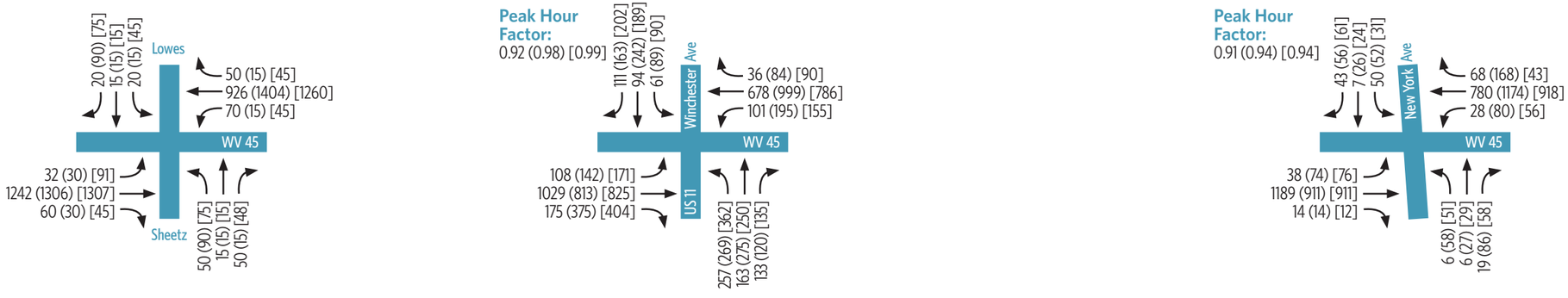

## Intersection ID# & Distance Between Intersections




## Existing Intersection Geometry




## Existing Peak Hour Volumes



# 6 Conclusions and Recommendations

The purpose of this traffic study was to evaluate current and future traffic conditions, identify potential deficiencies, and develop alternatives to enhance traffic flow and safety along WV 45 (Apple Harvest Drive) in Martinsburg, West Virginia. The traffic study limits extended from Blue Ridge Community College to New York Avenue.

Recommendations were made to address safety and capacity concerns throughout the corridor and were included with each of the four alternatives. In addition corridor-wide improvements were recommended to address access management and pedestrian/bicycle accessibility. The four alternatives to address the safety and operations are listed below:

- Alternative 1 – Intersection Improvements
- Alternative 2 – Additional Thru Capacity
- Alternative 3 – Trip Diversion
- Alternative 4 – Ultimate Build (combination of Alternatives 2 and 3)

Based on the alternative evaluation matrix, the alternatives scored very similarly; however, Alternative 4 provides the best option for the area in terms of congestion management, safety and community cohesion, despite the higher costs and property impacts. In addition, improvements could be staged to address immediate deficiencies within the corridor. This alternative included the following elements:

Corridor Level

- Optimize signal timings and offsets.
- All signals are coordinated, including I/S #4 and I/S #5.
- Install sidewalks, crosswalks, and pedestrian signal modifications from I/S #1 to I/S #7 on the south side of WV 45.
- Install sidewalks, crosswalks, and pedestrian signal modifications from I/S #7 to I/S #9 on the both sides of WV 45.

I/S #1: WV 45 with Blue Ridge Community College

- Add a 150 foot right-turn lane for WV 45 EB traffic into the College.
- Add a 150 foot left-turn lane for WV 45 WB traffic into the College.

I/S #3: WV 45 with Cornerstone Development

- Extend both WV 45 WB lanes from I/S #4, with a left-turn lane drop into the development.
- Add a 150 foot right-turn lane for WV 45 EB traffic into the development.
- Model the development exit as two lanes: exclusive left and right-turn lanes.

I/S #4: WV 45 with Retail Commons Parkway

- Extend the existing WV 45 EB right-turn lane back to I/S #3 and designate it as a thru-right lane.

I/S #5: WV 45 with I-81 Southbound Ramps

- Extend the existing WV 45 EB right-turn lane back to I/S #4.

I/S #6: WV 45 with I-81 Northbound Ramps

- Convert existing off-ramp to a left-turn only.
- Extend an additional WV 45 EB thru-right lane from I/S #6 to the Queen Street ramp

I/S #7: WV 45 with Foxcroft Avenue (Mall)

- Construct a new I-81 NB Off-ramp for thru-right movements connecting to this intersection.
- Extend an additional WV 45 WB thru-right lane from I/S #9 to I/S #7. This lane would drop as a right-turn movement onto Foxcroft Avenue.

I/S #9: WV 45 with Winchester Ave.

- Add a second northbound left-turn lane for 200 feet, using the existing, opposing left-turning lane into the K-Mart plaza. This existing lane would be reduced to 150 feet in length.

New Diversion

- Construct a new backage road connecting US 11 to Foxcroft Avenue with an additional access to Lowes. Both ends of the Connector Road would be signalized.

# APPENDIX B

## Level of Service Summary, Mitigation Measures, Traffic Volume Data and Synchro Reports

# Level of Service Summary and Mitigation Measures

## Level of Service Summary and Mitigation

| Intersection | 2015 | 2040 No Build | 2040 Build | 2040 No Build Mitigated | 2040 Build Mitigated | Mitigations (For both No Build and Build, unless otherwise noted) |
|---|---|---|---|---|---|---|
| **1. WV 45 & Blue Ridge CC Driveway** | | | | | | |
| EB | - | - | - | - | - | |
| WB | A (A)* | A (A)* | A (A)* | A (A)* | A (A)* | |
| NB | A (A) | B (B) | B (B) | B (B) | B (B) | |
| SB | - | - | - | - | - | |
| ***Overall*** | **-** | **-** | **-** | **-** | **-** | |
| | | | | | | |
| **2. WV 45 & Klee Drive** | | | | | | |
| EB | A (A)* | A (A)* | A (A)* | A (A)* | A (A)* | |
| WB | - | - | - | - | - | |
| NB | - | - | - | - | - | |
| SB | B (B) | B (C) | B (C) | B (C) | B (C) | |
| ***Overall*** | **-** | **-** | **-** | **-** | **-** | |
| | | | | | | |
| **3. WV 45 & Retail Commons Parkway** | | | | | | |
| EB | A (B) | A (D) | B (D) | A (D) | B (C) | |
| WB | A (B) | D (C) | A (C) | D (C) | A (B) | |
| NB | B (B) | D (C) | B (D) | D (C) | B (D) | |
| SB | - | - | - | - | - | |
| ***Overall*** | ***A (B)*** | ***C (C)*** | ***B (D)*** | ***C (C)*** | ***B (C)*** | Timing changes result in change in LOS. |
| | | | | | | |
| **4. I-81 Southbound Ramp & WV 45** | | | | | | |
| EB | F (C) | C (A) | C (C) | C (A) | C (B) | |
| WB | A (A) | C (C) | D (B) | C (C) | D (B) | |
| NB | - | - | - | - | - | |
| SB | C (D) | C (E-77.2) | C (E-76.2) | C (E-77.2) | C (E-76.2) | |
| ***Overall*** | ***D (C)*** | ***C (D)*** | ***C (D)*** | ***C (D)*** | ***C (C)*** | Timing changes result in change in LOS. |

## Level of Service Summary and Mitigation

| Intersection | 2015 | 2040 No Build | 2040 Build | 2040 No Build Mitigated | 2040 Build Mitigated | Mitigations (For both No Build and Build, unless otherwise noted) |
|---|---|---|---|---|---|---|
| | | | | | | |
| **5. I-81 Northbound Ramp & WV 45[+]** | | | | | | |
| EB | B (A) | A (C) | A (B) | A (C) | A (B) | |
| WB | B (A) | E-78.1 (B) | F-86.5 (C) | E-63.9 (B) | E-55.2 (C) | |
| NB | E (D) | E-65.1 (F-135.2) | E-65.4 (E-61.0) | E-65.1 (F-135.2) | E-65.4 (E-61.0) | |
| SB | - | - | - | - | - | |
| ***Overall*** | ***C (A)*** | ***D (B)*** | ***D (C)*** | ***C (B)*** | ***C (C)*** | Timing changes result in change in LOS. |
| | | | | | | |
| **6. WV 45 & Foxcroft Avenue** | | | | | | |
| EB | A (C) | E-57.9 (F-102.8) | E-57.0 (F-108.0) | D (C) | D (C) | |
| WB | B (F) | E-56.6 (F-151.7) | D (F-123.4) | C (E-57.7) | A (E-60.1) | |
| NB | D (D) | E-59.4 (F-140.3) | E-64.0 (F-132.4) | D (E-57.9) | D (E-57.8) | Add 150ft right turn lane to provide dual right turns. The resulting approach configuration is a shared left-through lane and dual right turn lanes. |
| SB | D (F) | E-58.1 (F-148.0) | E-63.0 (F-134.8) | D (D) | E-57.1 (E-62.4) | Add 150ft right turn lane to provide dual right turns. The resulting approach configuration is a single left turn lane, a shared left-through lane, and dual right turn lanes. |
| ***Overall*** | ***B (E)*** | ***E-57.7 (F-137.1)*** | ***D (F-122.4)*** | ***D (D)*** | ***C (D)*** | |
| | | | | | | |
| **7. WV 45 & Lowes / Sheetz Driveway** | | | | | | |
| EB | A (A) | A (A) | A (A) | A (A) | A (A) | |
| WB | A (A) | A (A) | A (A) | A (A) | A (A) | |
| NB | E (F) | E-62.4 (E-57.5) | D (E-57.7) | E-62.4 (E-57.5) | D (E-57.7) | |
| SB | E (D) | E-60.9 (E-58.6) | E-60.9 (E-58.0) | E-60.9 (E-58.6) | E-60.9 (E-58.0) | |
| ***Overall*** | ***A (C)*** | ***A (A)*** | ***A (A)*** | ***A (A)*** | ***A (A)*** | |

## Level of Service Summary and Mitigation

| Intersection | 2015 | 2040 No Build | 2040 Build | 2040 No Build Mitigated | 2040 Build Mitigated | Mitigations (For both No Build and Build, unless otherwise noted) |
|---|---|---|---|---|---|---|
| | | | | | | |
| **8. US 11 & WV 45** | | | | | | |
| EB | B (B) | D (F-77.2) | D (E-76.3) | D (E-58.1) | A (C) | Convert the through-right lane to a through lane. Add a 250ft channelized right turn lane. The resulting approach configuration is a single left turn lane, three through lanes, and a channelized right turn lane. |
| WB | B (B) | B (E-73.0) | D (E-75.7) | B (E-56.2) | B (E-55.4) | Convert the through-right to a through lane. Add a 250ft right turn lane. The resulting approach configuration is a single left turn lane, three through lanes, and a right turn lane. |
| NB | D (D) | D (E-75.6) | D (E-73.1) | D (D) | D (D) | Add a through lane. The resulting approach configuration is dual left turn lanes, two through lanes, and a right turn lane. |
| SB | D (D) | D (E-65.8) | D (E-75.8) | D (D) | D (D) | |
| ***Overall*** | ***C (C)*** | ***D (E-74.1)*** | ***D (E-75.2)*** | ***D (D)*** | ***C (D)*** | |
| | | | | | | |
| **9. WV 45 & New York Avenue** | | | | | | |
| EB | A (A) | A (C) | A (C) | A (C) | A (C) | |
| WB | B (B) | C (D) | A (B) | C (D) | A (B) | |
| NB | D (F) | D (D) | E-58.6 (E-61.3) | D (D) | E-58.6 (E-61.3) | |
| SB | D (F) | D (D) | E-63.2 (E-61.7) | D (D) | E-63.2 (E-61.7) | |
| ***Overall*** | ***A (E)*** | ***B (C)*** | ***A (C)*** | ***B (C)*** | ***A (C)*** | |
| | | | | | | |
| **10. WV 9 Northbound Ramp & Short Road** | | | | | | |
| EB | A (A)* | A (A)* | A (A)* | A (A)* | A (A)* | |
| WB | - | - | - | - | - | |
| NB | B (A) | B (B) | E-43.9 (D) | B (B) | C (C) | *Build: Convert combined lane through-right lane. Add 150ft left turn lane.* |
| SB | - | - | - | - | - | |
| ***Overall*** | - | - | - | - | - | |

## Level of Service Summary and Mitigation

| Intersection | 2015 | 2040 No Build | 2040 Build | 2040 No Build Mitigated | 2040 Build Mitigated | Mitigations (For both No Build and Build, unless otherwise noted) |
|---|---|---|---|---|---|---|
| | | | | | | |
| **11. WV 9 Southbound Ramp & Short Road** | | | | | | |
| EB | - | - | - | - | - | *Build: No lanes in the current configuration. Add a through lane connecting back to Int 36 and a 250ft right turn lane. The resulting approach configuration is a single through lane and a single right turn lane.* |
| WB | - | - | A (A)* | - | A (A)* | *Build: Convert left turn only to through lane. Add a 150ft left turn lane. The resulting approach configuration is a single left turn lane and a single through lane.* |
| NB | - | - | - | - | - | |
| SB | - | - | C (C) | - | C (C) | *Build: Convert left turn lane to a through-right lane. Add a 150ft left turn lane. The resulting approach configuration is a single left turn lane and a shared through-right turn lane.* |
| ***Overall*** | - | - | - | - | - | |
| | | | | | | |
| **12. Novak Drive & Airport Road** | | | | | | |
| EB | A (A) | B (B) | A (B) | B (B) | A (A) | *Build: Convert the left turn lane to a through lane. Connect right turn lane back to Int 4 to make a two lane approach. Add a 50ft left turn lane. The resulting approach configuration is a single left turn lane, a single through lane, and a single right turn lane.* |
| WB | - | - | A (B) | - | A (B) | *Build: No lanes in the existing configuration. Add a through-right lane and a 150ft left turn lane. The resulting approach configuration is a left turn lane and shared through-right lane.* |
| NB | A (A)* | A (A)* | B (B) | A (A)* | B (B) | *Build: Convert through lane to through-right lane. The resulting approach configuration is a left turn lane and a shared through-right lane.* |
| SB | - | - | A (B) | - | A (B) | *Build: Add 50ft left turn lane. The resulting approach configuration is a single left turn lane and a shared through-right lane.* |
| ***Overall*** | - | - | ***A (B)*** | - | ***A (B)*** | *Build: Signalize Intersection* |

## Level of Service Summary and Mitigation

| Intersection | 2015 | 2040 No Build | 2040 Build | 2040 No Build Mitigated | 2040 Build Mitigated | Mitigations (For both No Build and Build, unless otherwise noted) |
|---|---|---|---|---|---|---|
| **13. US 11 & Paynes Ford Road** | | | | | | |
| EB | - | - | - | - | - | |
| WB | B (C) | E-68.7 (F-156.1) | D (F-129.6) | C (C) | C (D) | |
| NB | A (A) | E-58.5 (F-110.7) | E -65.1 (F-93.8) | B (D) | C (D) | Convert the through-right lane to a through lane. Add a 150ft right turn lane. The resulting approach configuration is a single through lane and a single right turn lane. |
| SB | A (A) | B (D) | B (C) | B (C) | B (C) | |
| ***Overall*** | ***A (A)*** | ***D (F-91.7)*** | ***D (E-74.4)*** | ***B (C)*** | ***C (C)*** | |
| | | | | | | |
| **14. US 11 & Martha Drive** | | | | | | |
| EB | B (D) | F-638.3 (F-5233.1) | F-790.6 (F-5091.4) | C (D) | B (D) | Convert the shared left-right turn to a left turn only lane. Add a 150ft right turn lane. The resulting approach configuration is a single left turn lane and single right turn lane. |
| WB | - | - | - | - | - | |
| NB | A (A)* | B (B)* | B (B)* | A (C) | B (C) | Convert the left-through lane to a through lane. Add a 150ft left turn lane. The resulting approach configuration is a single left turn lane and a single through lane. |
| SB | - | - | - | A (B) | B (C) | Convert the through-right to a through lane. Add 150ft right turn lane. The resulting approach configuration is a single through lane and a single right turn lane. |
| ***Overall*** | **-** | **-** | **-** | ***A (C)*** | ***B (C)*** | Signalize Intersection |
| | | | | | | |
| **15. US 11 & Technology Drive** | | | | | | |
| EB | B (E) | D (F-2007.2) | F-60.7 (F-1607.6) | B (C) | C (D) | |
| WB | - | - | - | - | - | |
| NB | A (A)* | A (B)* | A (B)* | B (B) | B (B) | Connect left turn lane back to Int 16. |
| SB | - | - | - | A (C) | A (D) | |
| ***Overall*** | **-** | **-** | **-** | ***B (C)*** | ***B (D)*** | Signalize Intersection |

## Level of Service Summary and Mitigation

| Intersection | 2015 | 2040 No Build | 2040 Build | 2040 No Build Mitigated | 2040 Build Mitigated | Mitigations (For both No Build and Build, unless otherwise noted) |
|---|---|---|---|---|---|---|
| | | | | | | |
| **16. US 11 & Business Park Drive/Novak Drive** | | | | | | |
| EB | B (B) | F-85.5 (F-94.6) | F-179.8 (F-86.5) | E-55.3 (C) | E-57.3 (D) | Add a 230ft left turn lane. The resulting approach configuration is dual left turn lanes, a single through lane, and a channelized right turn lane. *Build: Add a 2nd through lane.* |
| WB | D (C) | F-103.4 (F-163.3) | F-201.4 (F-262.1) | D (D) | D (D) | Convert combined lane to a through only lane. Add a 100ft left turn lane and a 150ft right turn lane. The resulting approach configuration is single left turn lane, a single through lane, and a single right turn lane. *Build: Add a 2nd through lane connecting to Int 12.* |
| NB | B (C) | F-111.2 (F-95.0) | F-200.6 (F-268.5) | D (D) | E-59.1 (D) | Add a 200ft left turn lane and a through lane. The resulting approach configuration is dual left turn lanes, two through lanes, and a single channelized right turn lane. |
| SB | B (D) | F-106.6 (F-162.2) | F-146.2 (F-234.4) | D (D) | C (D) | Increase right turn storage length from 50ft to 250ft. Add a 2nd through lane going back to Int 15. The resulting approach configuration is a single left turn lane, two through lanes, and a single channelized right turn lane. |
| ***Overall*** | ***B (C)*** | ***F-103.4 (F-120.9)*** | ***F-189.0 (F-214.3)*** | ***D (D )*** | ***D (D)*** | |
| | | | | | | |
| **17. Business Park Drive & Enterprise Way** | | | | | | |
| EB | A (A)* | B (B)* | C (C)* | B (B)* | A (A) | |
| WB | - | - | - | - | C (C) | |
| NB | - | - | - | - | - | |
| SB | B (B) | D (F-330.7) | F-70.5 (F-1000.7) | C (F-57.5) | B (D) | Convert shared left-right lane to a left only lane. Add a 250ft right turn lane. The resulting approach configuration is a single left turn lane and a single right turn lane. |
| ***Overall*** | **-** | **-** | **-** | **-** | ***B (B)*** | *Build: Signalize Intersection* |
| | | | | | | |

## Level of Service Summary and Mitigation

| Intersection | 2015 | 2040 No Build | 2040 Build | 2040 No Build Mitigated | 2040 Build Mitigated | Mitigations (For both No Build and Build, unless otherwise noted) |
|---|---|---|---|---|---|---|
| **18. Business Park Drive & Technology Drive** | | | | | | |
| EB | A (A)* | B (C)* | C (C)* | B (C)* | C (C)* | |
| WB | - | - | - | - | - | |
| NB | - | - | - | - | - | |
| SB | A (B) | B (F-166.7) | C (F-302.1) | B (F-166.7) | C (F-302.1) | |
| ***Overall*** | **-** | **-** | **-** | **-** | **-** | |
| | | | | | | |
| **19. Development Drive & Business Park Drive** | | | | | | |
| EB | A (A)* | F-149.4 (F-224.4) | F-135.4 (F-176.3) | C (C) | D (C) | Add a 250ft left turn lane. The resulting approach configuration is dual left turn lanes, a single through lane, and a shared through-right turn lane. |
| WB | A (A)* | F-276.7 (F-518.1) | F-283.3 (F-575.0) | D (E-61.9) | D (D) | Convert through-right lane to through lane and add a 200ft right turn lane. The resulting approach configuration is a single left turn lane, two through lanes, and a shared through-right turn lane. *Build: Add a 3rd through lane and continue to Int 21.* |
| NB | B (B) | E-71.2 (E-68.9) | E-71.2 (E-68.9) | C (E-59.1) | C (D) | |
| SB | A (C) | F-186.9 (F-547.3) | F-185.3 (F-567.4) | D (E-62.4) | D (D) | Convert combined lane to left-through lane. Add a 200ft left turn lane and a channelized right turn lane. The resulting approach configuration is a single left turn lane, a shared left-through lane, and a channelized right turn lane. |
| ***Overall*** | **-** | ***F-189.0 (F-445.2)*** | ***F-186.7 (F-465.0)*** | ***C (D)*** | ***D (D)*** | |
| | | | | | | |

## Level of Service Summary and Mitigation

| Intersection | 2015 | 2040 No Build | 2040 Build | 2040 No Build Mitigated | 2040 Build Mitigated | Mitigations (For both No Build and Build, unless otherwise noted) |
|---|---|---|---|---|---|---|
| **20. Tabler Station Road & Business Park Drive** | | | | | | |
| EB | - | B (C) | B (C) | A (B) | A (B) | |
| WB | A (A)* | B (F-118.3) | B (F-110.3) | B (D) | B (D) | *No Build: Add a 3rd through lane connecting to intersection 21 Build: Add a 3rd through lane (See intersection 19 mitigation)* |
| NB | B (B) | D (F-108.6) | D (F-108.6) | E-62.7 (E-59.7) | E-62.8 (E-60.4) | |
| SB | - | D (F-86.2) | D (F-86.2) | E-62.3 (E-59.2) | E-62.8 (E-62.7) | |
| ***Overall*** | ***-*** | ***C (F-92.0)*** | ***C (F-87.1)*** | ***B (C)*** | ***B (C)*** | |
| | | | | | | |
| **21. I-81 Northbound ramp & Tabler Station Road** | | | | | | |
| EB | A (A) | B (A) | E-70.5 (C) | B (A) | C (C) | |
| WB | B (B) | E-60.7 (F-91.5) | E-57.7 (F-266.9) | B (B) | C (C) | Convert the through-right lane to a through lane and add a free flow channelized right turn. The resulting approach configuration is two through lanes and a single right turn lane. *Build: The right turn is developed from the third through lane carried from Int 19.* |
| NB | C (C) | E-59.1 (F-90.4) | E-71.2 (F-259.6) | C (C) | C (C) | Convert the left-through lane to a through-right lane and add a 300ft left turn lane. The resulting approach configuration is a single left turn lane, a shared through-right lane, and a single right turn lane. |
| SB | - | - | - | - | - | |
| ***Overall*** | ***B (B)*** | ***D (E-77.6)*** | ***E-67.3 (F-224.9)*** | ***B (B)*** | ***C (C)*** | |
| | | | | | | |

## Level of Service Summary and Mitigation

| Intersection | 2015 | 2040 No Build | 2040 Build | 2040 No Build Mitigated | 2040 Build Mitigated | Mitigations (For both No Build and Build, unless otherwise noted) |
|---|---|---|---|---|---|---|
| **22. I-81 Southbound ramp & Tabler Station Road** | | | | | | |
| EB | B (B) | E-61.8 (C) | F-176.1 (D) | C (C) | D (C) | |
| WB | A (A) | F-86.3 (B) | F-114.1 (D) | C (B) | D (D) | |
| NB | - | - | - | - | - | |
| SB | D (C) | F-113.6 (D) | F-186.9 (D) | C (C) | D (C) | Add a 200ft left turn lane. The resulting approach configuration is a single left turn lane, a single shared left-through lane, and a single right turn lane. |
| ***Overall*** | ***B (B)*** | ***F-91.9 (B)*** | ***F-165.4 (D)*** | ***C (B)*** | ***D (C)*** | |
| | | | | | | |
| **23. Corning Way and Driveway** | | | | | | |
| EB | A (A)* | A (A)* | A (A)* | A (A)* | A (A)* | |
| WB | - | - | - | - | - | |
| NB | - | - | - | - | - | |
| SB | A (A) | B (B) | B (B) | B (B) | B (B) | |
| ***Overall*** | **-** | **-** | **-** | **-** | **-** | |
| | | | | | | |
| **24. US 11 & Corning Way** | | | | | | |
| EB | B (C) | F-281.8 (F-3155.3) | F-421.4 (F-2396.8) | B (E-65.4) | C (D) | *Build: Add a 100ft right turn lane. The resulting approach configuration is single left turn lane and a single right turn lane.* |
| WB | - | - | - | - | - | |
| NB | A (A)* | B (B)* | B (B)* | B (C) | B (B) | |
| SB | - | - | - | A (E-65.2) | B (C) | Convert the left-through lane to a through lane. Add a right turn lane that connects back to Int 4. The resulting approach configuration is a single through lane and a single right turn lane. |
| ***Overall*** | - | - | - | B (D) | B (C) | Signalize Intersection |
| | | | | | | |

## Level of Service Summary and Mitigation

| Intersection | 2015 | 2040 No Build | 2040 Build | 2040 No Build Mitigated | 2040 Build Mitigated | Mitigations (For both No Build and Build, unless otherwise noted) |
|---|---|---|---|---|---|---|
| **25. US 11 & North Driveway** | | | | | | |
| EB | B (C) | C (F-90.5) | C (F-113.1) | C (F-90.5) | C (F-113.1) | |
| WB | - | - | - | - | - | |
| NB | A (A)* | A (B)* | A (B)* | A (B)* | A (B)* | |
| SB | - | - | - | - | - | |
| ***Overall*** | - | - | - | - | - | |
| | | | | | | |
| **26. US 11 & South Driveway** | | | | | | |
| EB | B (B) | C (B) | D (B) | C (B) | D (B) | |
| WB | - | - | - | - | - | |
| NB | A (A)* | A (B)* | A (B)* | A (B)* | A (B)* | |
| SB | - | - | - | - | - | |
| ***Overall*** | - | - | - | - | - | |
| | | | | | | |
| **27. US 11 & Nadenbousch Lane** | | | | | | |
| EB | - | - | - | - | - | |
| WB | C (F) | F-80.2 (F-99.4) | F-92.4 (F-94.0) | D (C) | D (D) | |
| NB | - | E-58.6 (E-74.4) | E-64.9 (F-97.4) | A (A) | D (D) | Convert through-right to through lane and add a 150ft right turn lane. The resulting approach configuration is a single through lane and a single right turn lane. |
| SB | A (A)* | C (C) | C (C) | B (C) | C (C) | |
| ***Overall*** | - | ***E-55.9 (E-58.6)*** | ***E-59.2 (E-68.7)*** | ***B (C)*** | ***C (D)*** | |
| | | | | | | |

## Level of Service Summary and Mitigation

| Intersection | 2015 | 2040 No Build | 2040 Build | 2040 No Build Mitigated | 2040 Build Mitigated | Mitigations (For both No Build and Build, unless otherwise noted) |
|---|---|---|---|---|---|---|
| **28. US 11 & WV 51** | | | | | | |
| EB | D (F) | F-690.4 (F-392.2) | F-229.4 (F-436.7) | C (D) | C (D) | Convert the shared through-right turn lane to a through lane and add two 250ft right turn lanes. The resulting approach configuration is a single left turn lane, a single through lane, and dual right turn lanes. |
| WB | D (D) | D (D) | D (D) | C (D) | D (D) | |
| NB | B (E) | E-73.8 (F-394.5) | F-235.1 (F-422.6) | B (D) | B (D) | Convert the shared through-right turn lane to a through lane. Increase left turn storage length from 70ft to 250ft. Add a left turn lane connecting back to Int 29. Add a 50ft right turn lane. The resulting approach configuration is dual left turn lanes, a single through lane, and a single right turn lane. |
| SB | D (F) | F-129.7 (F-397.4) | F-231.0 (F-370.6) | C (D) | D (E-75.1) | Convert the through-right turn lane to a through lane and add a150ft right turn lane. The resulting approach configuration is a single left turn lane, a single through lane, and a single right turn lane. |
| ***Overall*** | ***C (F)*** | ***F-261.8 (F-390.9)*** | ***F-231.6 (F-409.0)*** | ***C (D)*** | ***C (D)*** | |
| | | | | | | |

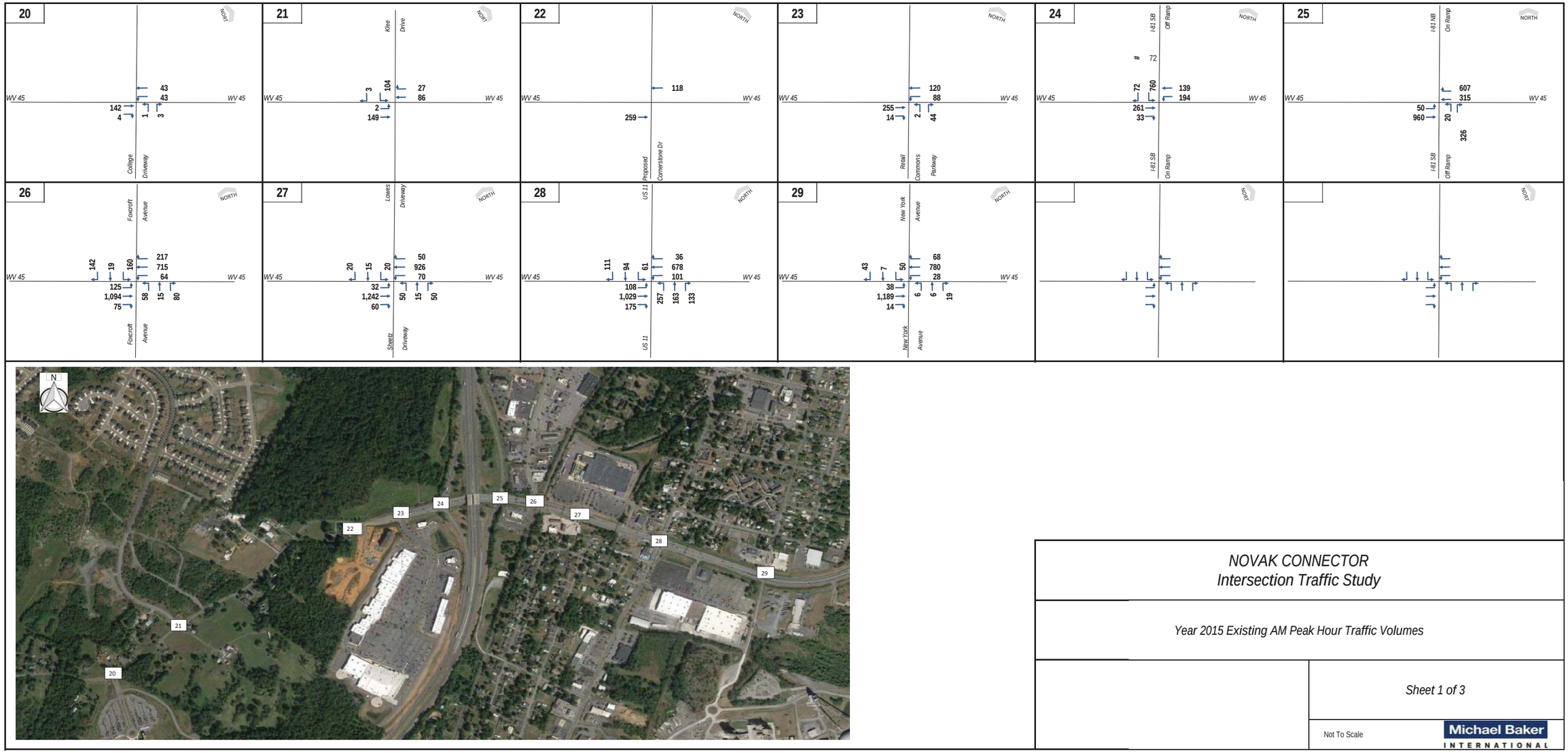
## Level of Service Summary and Mitigation

| Intersection | 2015 | 2040 No Build | 2040 Build | 2040 No Build Mitigated | 2040 Build Mitigated | Mitigations (For both No Build and Build, unless otherwise noted) |
|---|---|---|---|---|---|---|
| **29. US 11 & True Apple Way/WV 51** | | | | | | |
| EB | D (D) | D (F-150.6) | D (F-182.7) | D (E-64.4) | E-59.1 (E-59.0) | Convert the combined lane to a through lane. Add a 50ft left lane and a 150ft right turn lane. The resulting approach configuration is a single left turn lane, single through lane, and single right turn lane. |
| WB | C (C) | F-300.2 (F-202.5) | F-203.9 (F-226.5) | D (D) | D (D) | Convert the left-through lane to a through lane. Add a 150ft left turn lane and a 300ft channelized right turn lane. The resulting approach configuration is a single left turn lane, a single through lane, and a channelized right turn lane. |
| NB | B (E) | F-103.3 (F-208.2) | F-224.0 (F-195.5) | C (D) | D (D) | Add a through lane. The resulting approach configuration is a single left turn lane, two through lanes, and a single right turn lane. |
| SB | A (C) | F-84.5 (F-143.6) | F-145.8 (F-159.9) | D (D) | B (C) | Convert the through-right lane to a through lane. Add a 100ft right turn lane. Add a left turn lane connecting back to Int 28. Modify the existing left turn storage length from 130ft to 250ft. The resulting approach configuration is dual left turn lanes, a single through lane, and a single right turn lane. |
| ***Overall*** | ***C (D)*** | ***F-155.8 (F-178.6)*** | ***F-186.0 (F-189.6)*** | ***D (D)*** | ***C (C)*** | |
| | | | | | | |
| **30. I-81 Northbound Ramp & WV 51** | | | | | | |
| EB | A (B) | A (B) | A (B) | A (B) | A (B) | |
| WB | A (B) | B (D) | B (C) | B (A) | B (C) | Connect right turn lane back to Int 28. |
| NB | C (D) | D (D) | D (D) | D (D) | D (D) | |
| SB | - | - | - | - | - | |
| ***Overall*** | ***A (B)*** | ***B (C)*** | ***B (C)*** | ***B (B)*** | ***B (C)*** | |
| | | | | | | |

## Level of Service Summary and Mitigation

| Intersection | 2015 | 2040 No Build | 2040 Build | 2040 No Build Mitigated | 2040 Build Mitigated | Mitigations (For both No Build and Build, unless otherwise noted) |
|---|---|---|---|---|---|---|
| **31. I-81 Southbound Ramp & WV 51** | | | | | | |
| EB | B (D) | C (D) | D (D) | C (D) | D (D) | |
| WB | A (B) | C (C) | D (B) | C (C) | D (B) | |
| NB | - | - | - | - | - | |
| SB | C (D) | D (E-64.4) | D (D) | D (E-64.4) | D (D) | |
| ***Overall*** | ***B (D)*** | ***D (D)*** | ***D (D)*** | ***D (D)*** | ***D (D)*** | |
| | | | | | | |
| | | | | | | |
| * Value shown is for mainline left turn at TWSC intersections | | | | | | |
| + HCM2000 for 2040 models | | | | | | |

# Existing (2015) Peak Hour Traffic Volumes




*NOVAK CONNECTOR*
*Intersection Traffic Study*

*Year 2015 Existing AM Peak Hour Traffic Volumes*

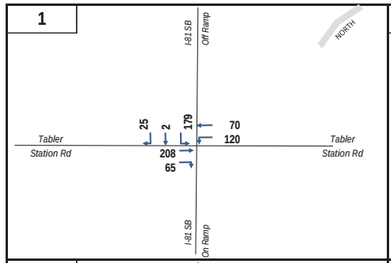
*Sheet 1 of 3*

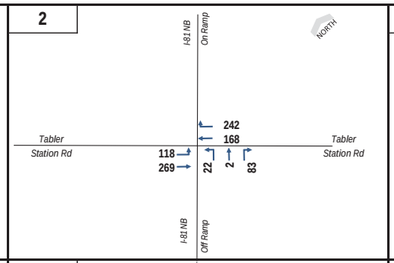
Not To Scale

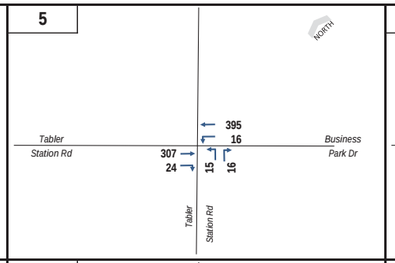
Michael Baker INTERNATIONAL



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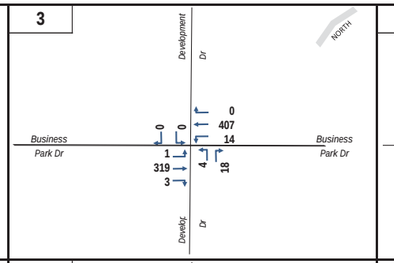


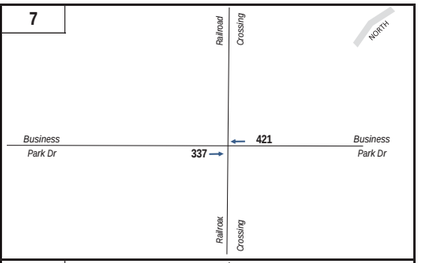



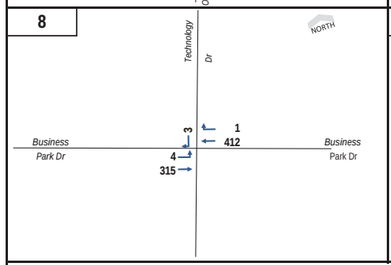



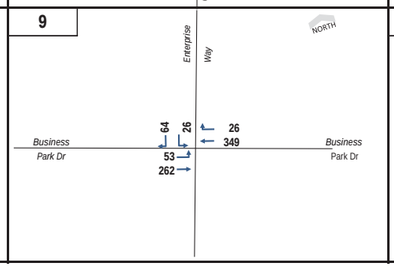


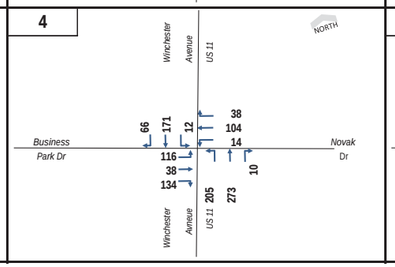


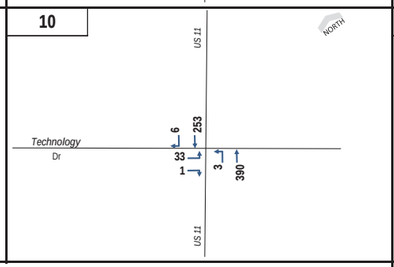


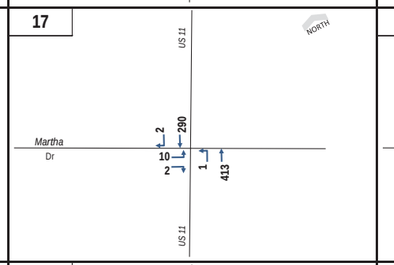



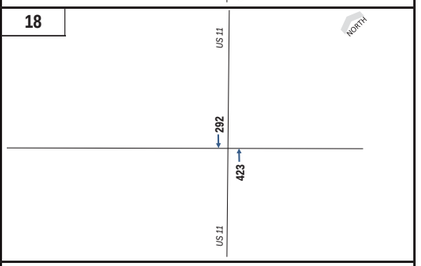



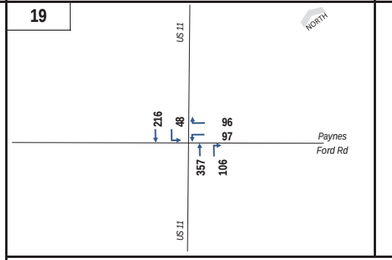










*NOVAK CONNECTOR*
*Intersection Traffic Study*

*Year 2015 Existing AM Peak Hour Traffic Volumes*

*Sheet 2 of 3*

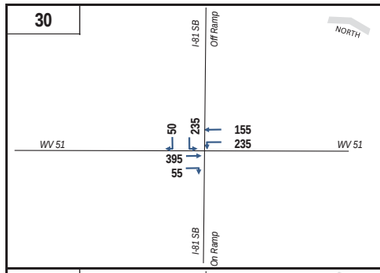
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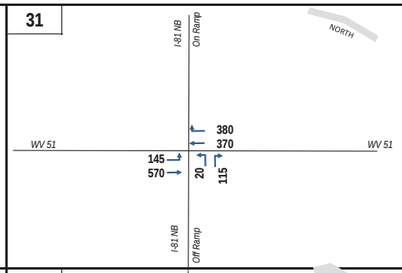


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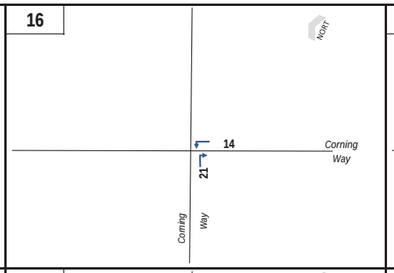
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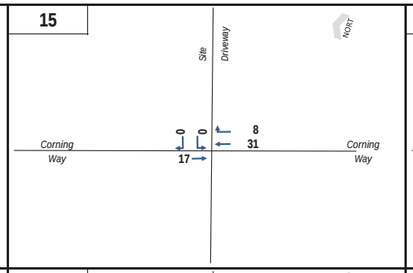

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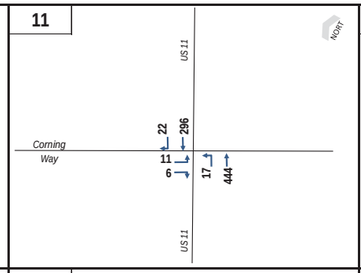

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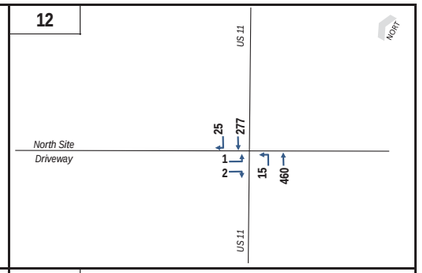

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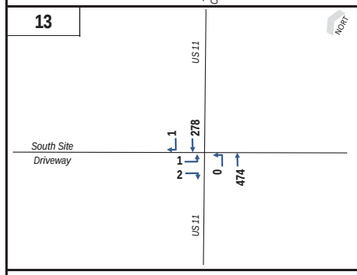

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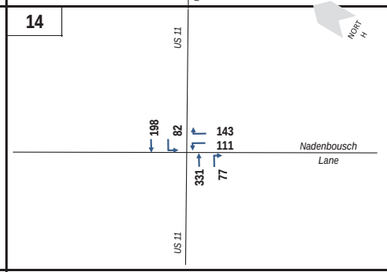

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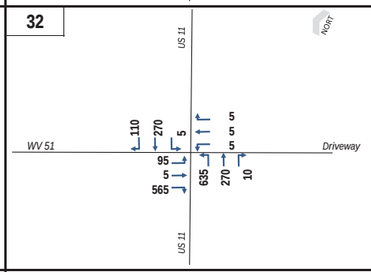

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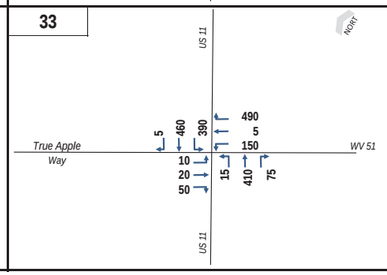

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**32**




**33**







*NOVAK CONNECTOR*
*Intersection Traffic Study*

*Year 2015 Existing AM Peak Hour Traffic Volumes*

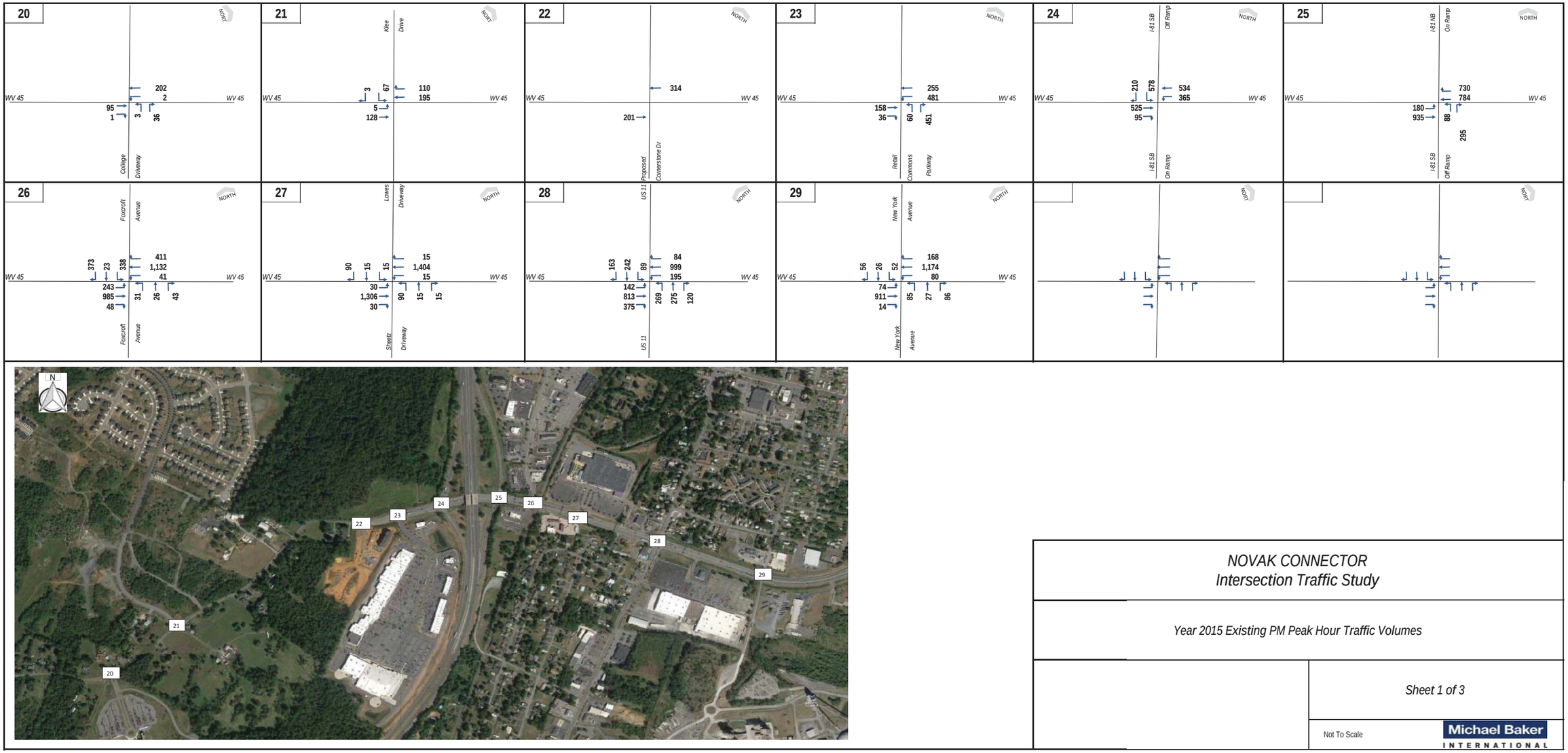
*Sheet 3 of 3*

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*NOVAK CONNECTOR*
*Intersection Traffic Study*

*Year 2015 Existing PM Peak Hour Traffic Volumes*

*Sheet 1 of 3*

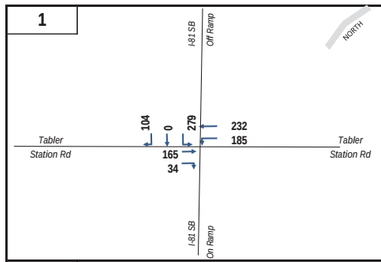
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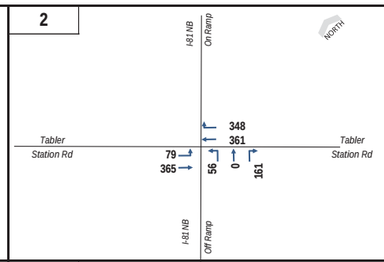


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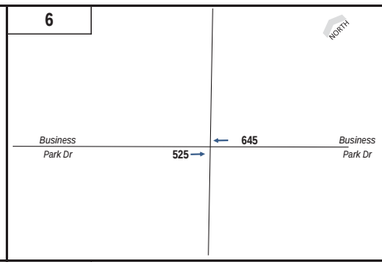

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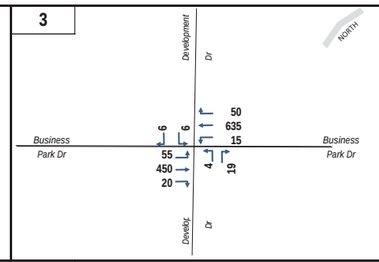

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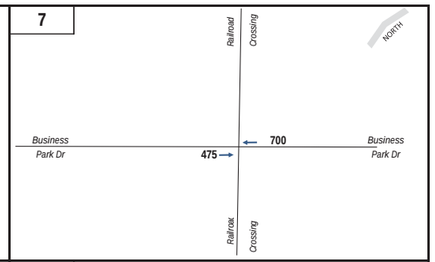

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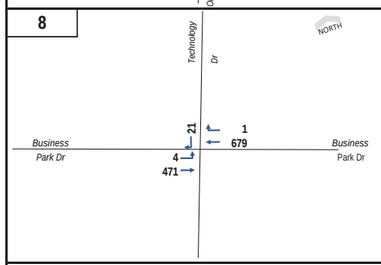

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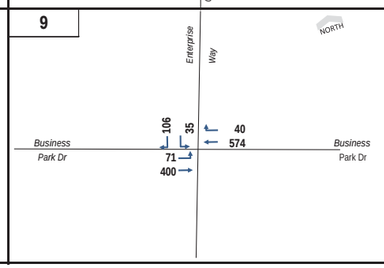

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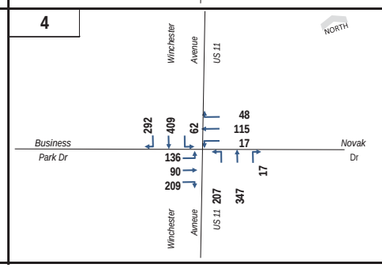

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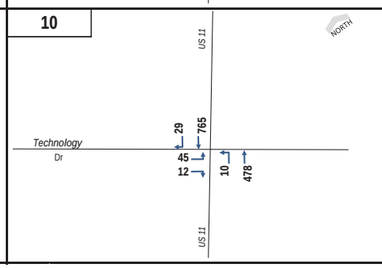

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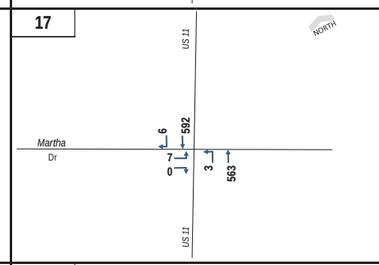

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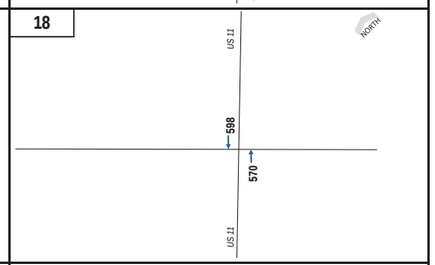

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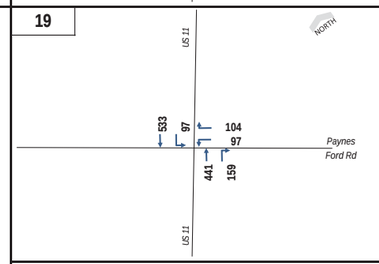

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**19**




*NOVAK CONNECTOR*
*Intersection Traffic Study*

*Year 2015 Existing PM Peak Hour Traffic Volumes*

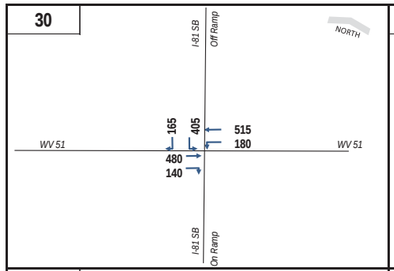
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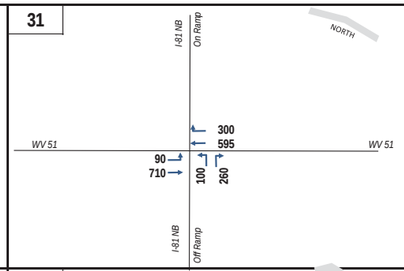
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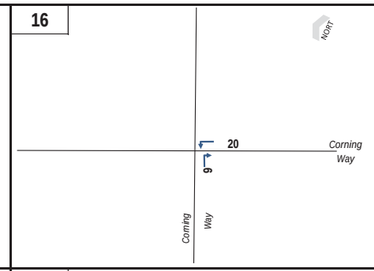
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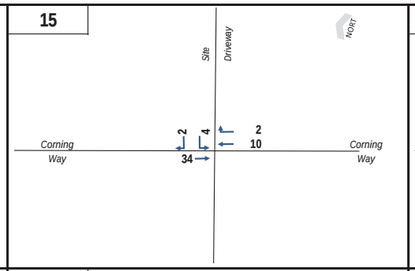


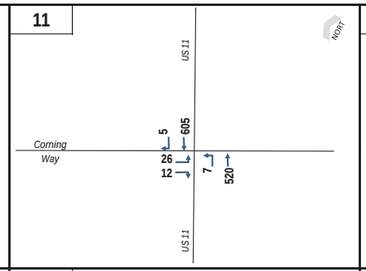
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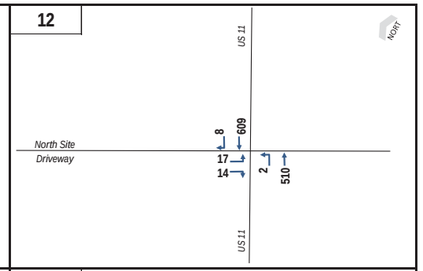


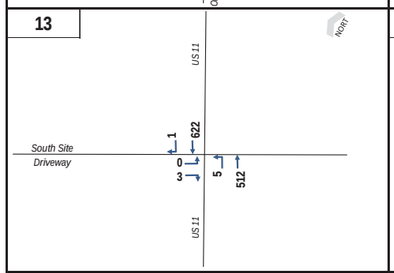



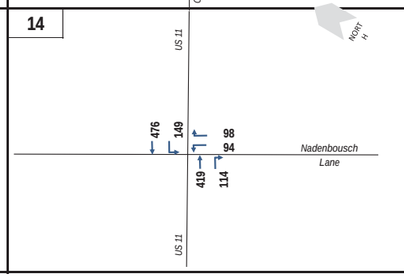



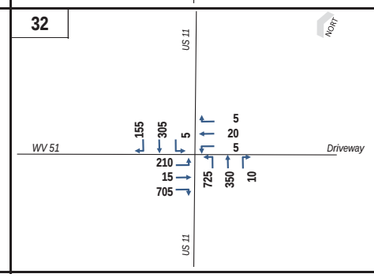



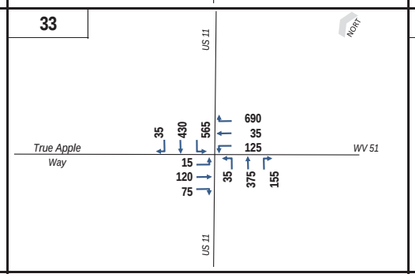







*NOVAK CONNECTOR*
*Intersection Traffic Study*

*Year 2015 Existing PM Peak Hour Traffic Volumes*

*Sheet 3 of 3*

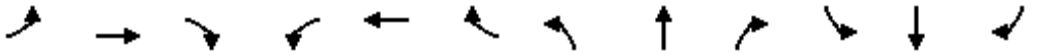
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# Existing (2015) Synchro Reports



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 165 | 34 | 185 | 232 | 0 | 0 | 0 | 0 | 279 | 0 | 104 |
| Future Volume (veh/h) | 0 | 165 | 34 | 185 | 232 | 0 | 0 | 0 | 0 | 279 | 0 | 104 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1900 | 1863 | 1863 | 0 | | | | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 0 | 183 | 0 | 206 | 258 | 0 | | | | 310 | 0 | 116 |
| Adj No. of Lanes | 0 | 2 | 0 | 1 | 2 | 0 | | | | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 2 | 2 |
| Cap, veh/h | 0 | 1153 | 0 | 643 | 1851 | 0 | | | | 519 | 0 | 463 |
| Arrive On Green | 0.00 | 0.33 | 0.00 | 0.11 | 0.52 | 0.00 | | | | 0.29 | 0.00 | 0.29 |
| Sat Flow, veh/h | 0 | 3725 | 0 | 1774 | 3632 | 0 | | | | 1774 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 183 | 0 | 206 | 258 | 0 | | | | 310 | 0 | 116 |
| Grp Sat Flow(s),veh/h/ln | 0 | 1770 | 0 | 1774 | 1770 | 0 | | | | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 2.4 | 0.0 | 4.6 | 2.4 | 0.0 | | | | 9.7 | 0.0 | 3.6 |
| Cycle Q Clear(g_c), s | 0.0 | 2.4 | 0.0 | 4.6 | 2.4 | 0.0 | | | | 9.7 | 0.0 | 3.6 |
| Prop In Lane | 0.00 | | 0.00 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 1153 | 0 | 643 | 1851 | 0 | | | | 519 | 0 | 463 |
| V/C Ratio(X) | 0.00 | 0.16 | 0.00 | 0.32 | 0.14 | 0.00 | | | | 0.60 | 0.00 | 0.25 |
| Avail Cap(c_a), veh/h | 0 | 1153 | 0 | 675 | 1851 | 0 | | | | 519 | 0 | 463 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 15.6 | 0.0 | 10.8 | 8.0 | 0.0 | | | | 19.7 | 0.0 | 17.6 |
| Incr Delay (d2), s/veh | 0.0 | 0.1 | 0.0 | 0.3 | 0.2 | 0.0 | | | | 5.0 | 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 |
| %ile BackOfQ(50%),veh/ln | 0.0 | 1.2 | 0.0 | 2.2 | 1.2 | 0.0 | | | | 5.5 | 0.0 | 1.7 |
| LnGrp Delay(d),s/veh | 0.0 | 15.6 | 0.0 | 11.1 | 8.1 | 0.0 | | | | 24.7 | 0.0 | 18.9 |
| LnGrp LOS | | B | | B | A | | | | | C | | B |
| Approach Vol, veh/h | | 183 | | | 464 | | | | | | 426 | |
| Approach Delay, s/veh | | 15.6 | | | 9.5 | | | | | | 23.1 | |
| Approach LOS | | B | | | A | | | | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 12.8 | 27.2 | | 25.0 | | 40.0 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 8.0 | 20.0 | | 19.0 | | 34.0 | | |
| Max Q Clear Time (g_c+I1), s | 6.6 | 4.4 | | 11.7 | | 4.4 | | |
| Green Ext Time (p_c), s | 0.1 | 2.2 | | 1.3 | | 2.7 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 15.9 |
| HCM 2010 LOS | B |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 79 | 365 | 0 | 0 | 361 | 348 | 56 | 0 | 161 | 0 | 0 | 0 |
| Future Volume (veh/h) | 79 | 365 | 0 | 0 | 361 | 348 | 56 | 0 | 161 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1900 | 1900 | 1863 | 1863 | | | |
| Adj Flow Rate, veh/h | 88 | 406 | 0 | 0 | 401 | 387 | 62 | 0 | 179 | | | |
| Adj No. of Lanes | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 368 | 1906 | 0 | 0 | 638 | 571 | 491 | 0 | 438 | | | |
| Arrive On Green | 0.09 | 0.54 | 0.00 | 0.00 | 0.36 | 0.36 | 0.28 | 0.00 | 0.28 | | | |
| Sat Flow, veh/h | 1774 | 3632 | 0 | 0 | 1863 | 1583 | 1774 | 0 | 1583 | | | |
| Grp Volume(v), veh/h | 88 | 406 | 0 | 0 | 401 | 387 | 62 | 0 | 179 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 0 | 0 | 1770 | 1583 | 1774 | 0 | 1583 | | | |
| Q Serve(g_s), s | 1.8 | 3.9 | 0.0 | 0.0 | 12.2 | 13.4 | 1.7 | 0.0 | 6.0 | | | |
| Cycle Q Clear(g_c), s | 1.8 | 3.9 | 0.0 | 0.0 | 12.2 | 13.4 | 1.7 | 0.0 | 6.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 1.00 | | 1.00 | | | |
| Lane Grp Cap(c), veh/h | 368 | 1906 | 0 | 0 | 638 | 571 | 491 | 0 | 438 | | | |
| V/C Ratio(X) | 0.24 | 0.21 | 0.00 | 0.00 | 0.63 | 0.68 | 0.13 | 0.00 | 0.41 | | | |
| Avail Cap(c_a), veh/h | 407 | 1906 | 0 | 0 | 638 | 571 | 491 | 0 | 438 | | | |
| HCM Platoon Ratio | 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 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | | | |
| Uniform Delay (d), s/veh | 11.5 | 7.8 | 0.0 | 0.0 | 17.2 | 17.6 | 17.6 | 0.0 | 19.2 | | | |
| Incr Delay (d2), s/veh | 0.3 | 0.3 | 0.0 | 0.0 | 2.0 | 3.2 | 0.5 | 0.0 | 2.8 | | | |
| 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/ln | 0.9 | 1.9 | 0.0 | 0.0 | 6.3 | 6.3 | 0.9 | 0.0 | 2.9 | | | |
| LnGrp Delay(d),s/veh | 11.8 | 8.1 | 0.0 | 0.0 | 19.2 | 20.8 | 18.1 | 0.0 | 22.0 | | | |
| LnGrp LOS | B | A | | | B | C | B | | C | | | |
| Approach Vol, veh/h | | 494 | | | 788 | | | 241 | | | | |
| Approach Delay, s/veh | | 8.7 | | | 20.0 | | | 21.0 | | | | |
| Approach LOS | | A | | | B | | | C | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 41.0 | | | 11.6 | 29.4 | | 24.0 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 35.0 | | | 7.0 | 22.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | | 5.9 | | | 3.8 | 15.4 | | 8.0 |
| Green Ext Time (p_c), s | | 8.3 | | | 0.0 | 3.6 | | 0.6 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 16.5 |
| HCM 2010 LOS | B |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 55 | 450 | 20 | 15 | 635 | 50 | 4 | 0 | 19 | 6 | 0 | 6 |
| Future Vol, veh/h | 55 | 450 | 20 | 15 | 635 | 50 | 4 | 0 | 19 | 6 | 0 | 6 |
| 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 | 50 | - | - | 50 | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 61 | 500 | 22 | 17 | 706 | 56 | 4 | 0 | 21 | 7 | 0 | 7 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 761 | 0 | 0 | 522 | 0 | 0 | 1019 | 1427 | 261 | 1139 | 1411 | 381 |
| Stage 1 | - | - | - | - | - | - | 633 | 633 | - | 767 | 767 | - |
| Stage 2 | - | - | - | - | - | - | 386 | 794 | - | 372 | 644 | - |
| Critical Hdwy | 4.14 | - | - | 4.14 | - | - | 7.54 | 6.54 | 6.94 | 7.54 | 6.54 | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | - | - | 6.54 | 5.54 | - | 6.54 | 5.54 | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - | 6.54 | 5.54 | - | 6.54 | 5.54 | - |
| Follow-up Hdwy | 2.22 | - | - | 2.22 | - | - | 3.52 | 4.02 | 3.32 | 3.52 | 4.02 | 3.32 |
| Pot Cap-1 Maneuver | 847 | - | - | 1041 | - | - | 191 | 134 | 738 | 156 | 137 | 617 |
| Stage 1 | - | - | - | - | - | - | 434 | 472 | - | 361 | 410 | - |
| Stage 2 | - | - | - | - | - | - | 609 | 398 | - | 621 | 466 | - |
| Platoon blocked, % | | - | - | | - | - | | | | | | |
| Mov Cap-1 Maneuver | 847 | - | - | 1041 | - | - | 176 | 122 | 738 | 141 | 125 | 617 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 176 | 122 | - | 141 | 125 | - |
| Stage 1 | - | - | - | - | - | - | 403 | 438 | - | 335 | 403 | - |
| Stage 2 | - | - | - | - | - | - | 593 | 392 | - | 560 | 432 | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 1 | 0.2 | 13 | 21.6 |
| HCM LOS | | | B | C |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | EBR | WBL | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 474 | 847 | - | - | 1041 | - | - | 230 |
| HCM Lane V/C Ratio | 0.054 | 0.072 | - | - | 0.016 | - | - | 0.058 |
| HCM Control Delay (s) | 13 | 9.6 | - | - | 8.5 | - | - | 21.6 |
| HCM Lane LOS | B | A | - | - | A | - | - | C |
| HCM 95th %tile Q(veh) | 0.2 | 0.2 | - | - | 0 | - | - | 0.2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 136 | 90 | 209 | 17 | 115 | 48 | 207 | 347 | 17 | 62 | 409 | 292 |
| Future Volume (veh/h) | 136 | 90 | 209 | 17 | 115 | 48 | 207 | 347 | 17 | 62 | 409 | 292 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1900 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 151 | 100 | 0 | 19 | 128 | 53 | 230 | 386 | 0 | 69 | 454 | 0 |
| Adj No. of Lanes | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 444 | 636 | 541 | 73 | 183 | 71 | 344 | 584 | 496 | 375 | 530 | 450 |
| Arrive On Green | 0.10 | 0.34 | 0.00 | 0.15 | 0.15 | 0.15 | 0.10 | 0.31 | 0.00 | 0.08 | 0.28 | 0.00 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 90 | 1190 | 461 | 1774 | 1863 | 1583 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 151 | 100 | 0 | 200 | 0 | 0 | 230 | 386 | 0 | 69 | 454 | 0 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1741 | 0 | 0 | 1774 | 1863 | 1583 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 4.5 | 2.5 | 0.0 | 2.7 | 0.0 | 0.0 | 6.1 | 12.0 | 0.0 | 1.7 | 15.4 | 0.0 |
| Cycle Q Clear(g_c), s | 4.5 | 2.5 | 0.0 | 7.3 | 0.0 | 0.0 | 6.1 | 12.0 | 0.0 | 1.7 | 15.4 | 0.0 |
| Prop In Lane | 1.00 | | 1.00 | 0.09 | | 0.26 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 444 | 636 | 541 | 326 | 0 | 0 | 344 | 584 | 496 | 375 | 530 | 450 |
| V/C Ratio(X) | 0.34 | 0.16 | 0.00 | 0.61 | 0.00 | 0.00 | 0.67 | 0.66 | 0.00 | 0.18 | 0.86 | 0.00 |
| Avail Cap(c_a), veh/h | 455 | 864 | 734 | 524 | 0 | 0 | 344 | 584 | 496 | 427 | 530 | 450 |
| 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 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 18.8 | 15.3 | 0.0 | 27.0 | 0.0 | 0.0 | 16.6 | 19.9 | 0.0 | 15.1 | 22.6 | 0.0 |
| Incr Delay (d2), s/veh | 0.5 | 0.1 | 0.0 | 1.9 | 0.0 | 0.0 | 4.9 | 5.8 | 0.0 | 0.2 | 16.3 | 0.0 |
| 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 | 2.2 | 1.3 | 0.0 | 3.7 | 0.0 | 0.0 | 3.3 | 7.1 | 0.0 | 0.8 | 10.3 | 0.0 |
| LnGrp Delay(d),s/veh | 19.3 | 15.4 | 0.0 | 28.9 | 0.0 | 0.0 | 21.6 | 25.7 | 0.0 | 15.3 | 38.9 | 0.0 |
| LnGrp LOS | B | B | | C | | | C | C | | B | D | |
| Approach Vol, veh/h | | 251 | | | 200 | | | 616 | | | 523 | |
| Approach Delay, s/veh | | 17.7 | | | 28.9 | | | 24.2 | | | 35.8 | |
| Approach LOS | | B | | | C | | | C | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 11.1 | 26.9 | | 28.8 | 13.0 | 25.0 | 12.6 | 16.3 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 19.0 | | 31.0 | 7.0 | 19.0 | 7.0 | 18.0 |
| Max Q Clear Time (g_c+I1), s | 3.7 | 14.0 | | 4.5 | 8.1 | 17.4 | 6.5 | 9.3 |
| Green Ext Time (p_c), s | 0.0 | 2.2 | | 1.7 | 0.0 | 0.8 | 0.0 | 1.0 |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | | 27.6 |
| HCM 2010 LOS | | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 509 | 10 | 13 | 632 | 26 | 16 |
| Future Vol, veh/h | 509 | 10 | 13 | 632 | 26 | 16 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 566 | 11 | 14 | 702 | 29 | 18 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 577 | 0 | 951 | 288 |
| Stage 1 | - | - | - | - | 571 | - |
| Stage 2 | - | - | - | - | 380 | - |
| Critical Hdwy | - | - | 4.14 | - | 6.84 | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.84 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.84 | - |
| Follow-up Hdwy | - | - | 2.22 | - | 3.52 | 3.32 |
| Pot Cap-1 Maneuver | - | - | 993 | - | 258 | 709 |
| Stage 1 | - | - | - | - | 529 | - |
| Stage 2 | - | - | - | - | 661 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 993 | - | 254 | 709 |
| Mov Cap-2 Maneuver | - | - | - | - | 380 | - |
| Stage 1 | - | - | - | - | 529 | - |
| Stage 2 | - | - | - | - | 652 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.2 | 13.7 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 462 | - | - | 993 | - |
| HCM Lane V/C Ratio | 0.101 | - | - | 0.015 | - |
| HCM Control Delay (s) | 13.7 | - | - | 8.7 | - |
| HCM Lane LOS | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 4 | 471 | 679 | 1 | 0 | 21 |
| Future Vol, veh/h | 4 | 471 | 679 | 1 | 0 | 21 |
| 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 | 200 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 4 | 523 | 754 | 1 | 0 | 23 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 756 | 0 | - | 0 | 1026 | 378 |
| Stage 1 | - | - | - | - | 755 | - |
| Stage 2 | - | - | - | - | 271 | - |
| Critical Hdwy | 4.14 | - | - | - | 6.84 | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.84 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.84 | - |
| Follow-up Hdwy | 2.22 | - | - | - | 3.52 | 3.32 |
| Pot Cap-1 Maneuver | 851 | - | - | - | 231 | 620 |
| Stage 1 | - | - | - | - | 425 | - |
| Stage 2 | - | - | - | - | 750 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 851 | - | - | - | 230 | 620 |
| Mov Cap-2 Maneuver | - | - | - | - | 339 | - |
| Stage 1 | - | - | - | - | 425 | - |
| Stage 2 | - | - | - | - | 746 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 11 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 851 | - | - | - | - | 620 |
| HCM Lane V/C Ratio | 0.005 | - | - | - | - | 0.038 |
| HCM Control Delay (s) | 9.3 | - | - | - | 0 | 11 |
| HCM Lane LOS | A | - | - | - | A | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.2 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 71 | 400 | 574 | 40 | 35 | 106 |
| Future Vol, veh/h | 71 | 400 | 574 | 40 | 35 | 106 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 79 | 444 | 638 | 44 | 39 | 118 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 682 | 0 | - | 0 | 1040 | 341 |
| Stage 1 | - | - | - | - | 660 | - |
| Stage 2 | - | - | - | - | 380 | - |
| Critical Hdwy | 4.14 | - | - | - | 6.84 | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.84 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.84 | - |
| Follow-up Hdwy | 2.22 | - | - | - | 3.52 | 3.32 |
| Pot Cap-1 Maneuver | 907 | - | - | - | 226 | 655 |
| Stage 1 | - | - | - | - | 476 | - |
| Stage 2 | - | - | - | - | 661 | - |
| Platoon blocked, % | | | - | - | - | |
| Mov Cap-1 Maneuver | 907 | - | - | - | 206 | 655 |
| Mov Cap-2 Maneuver | - | - | - | - | 335 | - |
| Stage 1 | - | - | - | - | 476 | - |
| Stage 2 | - | - | - | - | 603 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.4 | 0 | 14.6 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 907 | - | - | - | 529 |
| HCM Lane V/C Ratio | 0.087 | - | - | - | 0.296 |
| HCM Control Delay (s) | 9.3 | - | - | - | 14.6 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0.3 | - | - | - | 1.2 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 45 | 12 | 10 | 478 | 765 | 29 |
| Future Vol, veh/h | 45 | 12 | 10 | 478 | 765 | 29 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | Stop | - | None | - | None |
| Storage Length | 180 | 0 | 200 | - | - | 200 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 50 | 13 | 11 | 531 | 850 | 32 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1403 | 850 | 850 | 0 | - | 0 |
| Stage 1 | 850 | - | - | - | - | - |
| Stage 2 | 553 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 154 | 360 | 788 | - | - | - |
| Stage 1 | 419 | - | - | - | - | - |
| Stage 2 | 576 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 152 | 360 | 788 | - | - | - |
| Mov Cap-2 Maneuver | 152 | - | - | - | - | - |
| Stage 1 | 419 | - | - | - | - | - |
| Stage 2 | 568 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 34.7 | 0.2 | 0 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 788 | - | 152 | 360 | - | - |
| HCM Lane V/C Ratio | 0.014 | - | 0.329 | 0.037 | - | - |
| HCM Control Delay (s) | 9.6 | - | 39.9 | 15.4 | - | - |
| HCM Lane LOS | A | - | E | C | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 1.3 | 0.1 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.8 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 26 | 12 | 7 | 520 | 605 | 5 |
| Future Vol, veh/h | 26 | 12 | 7 | 520 | 605 | 5 |
| 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 | - | 0 | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 29 | 13 | 8 | 578 | 672 | 6 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1268 | 675 | 678 | 0 | - | 0 |
| Stage 1 | 675 | - | - | - | - | - |
| Stage 2 | 593 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 186 | 454 | 914 | - | - | - |
| Stage 1 | 506 | - | - | - | - | - |
| Stage 2 | 552 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 184 | 454 | 914 | - | - | - |
| Mov Cap-2 Maneuver | 184 | - | - | - | - | - |
| Stage 1 | 506 | - | - | - | - | - |
| Stage 2 | 547 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 24.4 | 0.1 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 914 | - | 227 | - | - |
| HCM Lane V/C Ratio | 0.009 | - | 0.186 | - | - |
| HCM Control Delay (s) | 9 | - | 24.4 | - | - |
| HCM Lane LOS | A | - | C | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.7 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 17 | 14 | 2 | 510 | 609 | 8 |
| Future Vol, veh/h | 17 | 14 | 2 | 510 | 609 | 8 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 19 | 16 | 2 | 567 | 677 | 9 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 969 | 681 | 686 | 0 | - | 0 |
| Stage 1 | 681 | - | - | - | - | - |
| Stage 2 | 288 | - | - | - | - | - |
| Critical Hdwy | 6.63 | 6.23 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.43 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.83 | - | - | - | - | - |
| Follow-up Hdwy | 3.519 | 3.319 | 2.219 | - | - | - |
| Pot Cap-1 Maneuver | 266 | 449 | 906 | - | - | - |
| Stage 1 | 502 | - | - | - | - | - |
| Stage 2 | 736 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 265 | 449 | 906 | - | - | - |
| Mov Cap-2 Maneuver | 265 | - | - | - | - | - |
| Stage 1 | 502 | - | - | - | - | - |
| Stage 2 | 734 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 17.4 | 0 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 906 | - | 325 | - | - |
| HCM Lane V/C Ratio | 0.002 | - | 0.106 | - | - |
| HCM Control Delay (s) | 9 | 0 | 17.4 | - | - |
| HCM Lane LOS | A | A | C | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.4 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 3 | 5 | 512 | 622 | 1 |
| Future Vol, veh/h | 0 | 3 | 5 | 512 | 622 | 1 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 3 | 6 | 569 | 691 | 1 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1272 | 346 | 692 | 0 | - | 0 |
| Stage 1 | 692 | - | - | - | - | - |
| Stage 2 | 580 | - | - | - | - | - |
| Critical Hdwy | 6.63 | 6.93 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.83 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - | - | - | - |
| Follow-up Hdwy | 3.519 | 3.319 | 2.219 | - | - | - |
| Pot Cap-1 Maneuver | 172 | 651 | 901 | - | - | - |
| Stage 1 | 459 | - | - | - | - | - |
| Stage 2 | 559 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 170 | 651 | 901 | - | - | - |
| Mov Cap-2 Maneuver | 170 | - | - | - | - | - |
| Stage 1 | 459 | - | - | - | - | - |
| Stage 2 | 553 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 10.6 | 0.1 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 901 | - | 651 | - | - |
| HCM Lane V/C Ratio | 0.006 | - | 0.005 | - | - |
| HCM Control Delay (s) | 9 | 0 | 10.6 | - | - |
| HCM Lane LOS | A | A | B | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 8.7 |

| Movement | NBT | NBR | SBL | SBT | NWL | NWR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 419 | 114 | 149 | 476 | 94 | 98 |
| Future Vol, veh/h | 419 | 114 | 149 | 476 | 94 | 98 |
| 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 | - | 0 | 170 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 466 | 127 | 166 | 529 | 104 | 109 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 592 | 0 | 1389 | 529 |
| Stage 1 | - | - | - | - | 529 | - |
| Stage 2 | - | - | - | - | 860 | - |
| 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 | - | - | 984 | - | 157 | 550 |
| Stage 1 | - | - | - | - | 591 | - |
| Stage 2 | - | - | - | - | 414 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 984 | - | 131 | 550 |
| Mov Cap-2 Maneuver | - | - | - | - | 131 | - |
| Stage 1 | - | - | - | - | 591 | - |
| Stage 2 | - | - | - | - | 344 | - |

| Approach | NB | SB | NW |
|---|---|---|---|
| HCM Control Delay, s | 0 | 2.2 | 53.8 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | NBT | NBR | NWLn1 | NWLn2 | SBL | SBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 131 | 550 | 984 | - |
| HCM Lane V/C Ratio | - | - | 0.797 | 0.198 | 0.168 | - |
| HCM Control Delay (s) | - | - | 96.1 | 13.2 | 9.4 | - |
| HCM Lane LOS | - | - | F | B | A | - |
| HCM 95th %tile Q(veh) | - | - | 4.8 | 0.7 | 0.6 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 34 | 10 | 2 | 4 | 2 |
| Future Vol, veh/h | 0 | 34 | 10 | 2 | 4 | 2 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 38 | 11 | 2 | 4 | 2 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 13 | 0 | - | 0 | 50 | 12 |
| Stage 1 | - | - | - | - | 12 | - |
| Stage 2 | - | - | - | - | 38 | - |
| 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 | 1606 | - | - | - | 959 | 1069 |
| Stage 1 | - | - | - | - | 1011 | - |
| Stage 2 | - | - | - | - | 984 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1606 | - | - | - | 959 | 1069 |
| Mov Cap-2 Maneuver | - | - | - | - | 959 | - |
| Stage 1 | - | - | - | - | 1011 | - |
| Stage 2 | - | - | - | - | 984 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 8.7 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1606 | - | - | - | 993 |
| HCM Lane V/C Ratio | - | - | - | - | 0.007 |
| HCM Control Delay (s) | 0 | - | - | - | 8.7 |
| HCM Lane LOS | A | - | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.2 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 0 | 3 | 563 | 592 | 6 |
| Future Vol, veh/h | 7 | 0 | 3 | 563 | 592 | 6 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 0 | 3 | 626 | 658 | 7 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1293 | 661 | 664 | 0 | - | 0 |
| Stage 1 | 661 | - | - | - | - | - |
| Stage 2 | 632 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 180 | 462 | 925 | - | - | - |
| Stage 1 | 514 | - | - | - | - | - |
| Stage 2 | 530 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 179 | 462 | 925 | - | - | - |
| Mov Cap-2 Maneuver | 179 | - | - | - | - | - |
| Stage 1 | 514 | - | - | - | - | - |
| Stage 2 | 527 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 26 | 0 | 0 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 925 | - | 179 | - | - |
| HCM Lane V/C Ratio | 0.004 | - | 0.043 | - | - |
| HCM Control Delay (s) | 8.9 | 0 | 26 | - | - |
| HCM Lane LOS | A | A | D | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 0.1 | - | - |

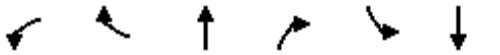
| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 570 | 598 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 570 | 598 | 0 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 633 | 664 | 0 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1297 | 664 | 664 | 0 | - | 0 |
| Stage 1 | 664 | - | - | - | - | - |
| Stage 2 | 633 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 179 | 461 | 925 | - | - | - |
| Stage 1 | 512 | - | - | - | - | - |
| Stage 2 | 529 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 179 | 461 | 925 | - | - | - |
| Mov Cap-2 Maneuver | 179 | - | - | - | - | - |
| Stage 1 | 512 | - | - | - | - | - |
| Stage 2 | 529 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 925 | - | - | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - |
| HCM Control Delay (s) | 0 | - | 0 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - |



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 97 | 104 | 441 | 159 | 97 | 533 |
| Future Volume (veh/h) | 97 | 104 | 441 | 159 | 97 | 533 |
| Number | 3 | 18 | 2 | 12 | 1 | 6 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 108 | 116 | 490 | 177 | 108 | 592 |
| Adj No. of Lanes | 1 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 243 | 217 | 805 | 291 | 444 | 1147 |
| Arrive On Green | 0.14 | 0.14 | 0.62 | 0.62 | 0.62 | 0.62 |
| Sat Flow, veh/h | 1774 | 1583 | 1307 | 472 | 766 | 1863 |
| Grp Volume(v), veh/h | 108 | 116 | 0 | 667 | 108 | 592 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1583 | 0 | 1779 | 766 | 1863 |
| Q Serve(g_s), s | 2.7 | 3.3 | 0.0 | 11.2 | 4.9 | 8.7 |
| Cycle Q Clear(g_c), s | 2.7 | 3.3 | 0.0 | 11.2 | 16.1 | 8.7 |
| Prop In Lane | 1.00 | 1.00 | | 0.27 | 1.00 | |
| Lane Grp Cap(c), veh/h | 243 | 217 | 0 | 1096 | 444 | 1147 |
| V/C Ratio(X) | 0.44 | 0.53 | 0.00 | 0.61 | 0.24 | 0.52 |
| Avail Cap(c_a), veh/h | 731 | 652 | 0 | 2125 | 887 | 2225 |
| HCM Platoon Ratio | 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 | 1.00 |
| Uniform Delay (d), s/veh | 19.3 | 19.5 | 0.0 | 5.7 | 10.7 | 5.3 |
| Incr Delay (d2), s/veh | 1.3 | 2.0 | 0.0 | 0.6 | 0.3 | 0.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.4 | 1.6 | 0.0 | 5.5 | 1.1 | 4.4 |
| LnGrp Delay(d),s/veh | 20.5 | 21.5 | 0.0 | 6.3 | 11.0 | 5.6 |
| LnGrp LOS | C | C | | A | B | A |
| Approach Vol, veh/h | 224 | | 667 | | | 700 |
| Approach Delay, s/veh | 21.1 | | 6.3 | | | 6.4 |
| Approach LOS | C | | A | | | A |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 35.9 | | | | 35.9 | | 12.7 |
| Change Period (Y+Rc), s | | 6.0 | | | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 58.0 | | | | 58.0 | | 20.0 |
| Max Q Clear Time (g_c+I1), s | | 13.2 | | | | 18.1 | | 5.3 |
| Green Ext Time (p_c), s | | 12.1 | | | | 11.8 | | 0.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 8.4 |
| HCM 2010 LOS | A |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 95 | 1 | 2 | 202 | 3 | 36 |
| Future Vol, veh/h | 95 | 1 | 2 | 202 | 3 | 36 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 106 | 1 | 2 | 224 | 3 | 40 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 107 | 0 | 335 | 106 |
| Stage 1 | - | - | - | - | 106 | - |
| Stage 2 | - | - | - | - | 229 | - |
| 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 | - | - | 1484 | - | 660 | 948 |
| Stage 1 | - | - | - | - | 918 | - |
| Stage 2 | - | - | - | - | 809 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1484 | - | 659 | 948 |
| Mov Cap-2 Maneuver | - | - | - | - | 659 | - |
| Stage 1 | - | - | - | - | 918 | - |
| Stage 2 | - | - | - | - | 807 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 9.1 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 917 | - | - | 1484 | - |
| HCM Lane V/C Ratio | 0.047 | - | - | 0.001 | - |
| HCM Control Delay (s) | 9.1 | - | - | 7.4 | 0 |
| HCM Lane LOS | A | - | - | A | A |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.7 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 5 | 128 | 195 | 110 | 67 | 3 |
| Future Vol, veh/h | 5 | 128 | 195 | 110 | 67 | 3 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 6 | 142 | 217 | 122 | 74 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 339 | 0 | - | 0 | 431 | 278 |
| Stage 1 | - | - | - | - | 278 | - |
| Stage 2 | - | - | - | - | 153 | - |
| 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 | 1220 | - | - | - | 581 | 761 |
| Stage 1 | - | - | - | - | 769 | - |
| Stage 2 | - | - | - | - | 875 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1220 | - | - | - | 578 | 761 |
| Mov Cap-2 Maneuver | - | - | - | - | 578 | - |
| Stage 1 | - | - | - | - | 769 | - |
| Stage 2 | - | - | - | - | 871 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0 | 12.1 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1220 | - | - | - | 584 |
| HCM Lane V/C Ratio | 0.005 | - | - | - | 0.133 |
| HCM Control Delay (s) | 8 | 0 | - | - | 12.1 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.5 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 201 | 0 | 0 | 314 | 0 | 0 |
| Future Vol, veh/h | 201 | 0 | 0 | 314 | 0 | 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 223 | 0 | 0 | 349 | 0 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 223 | 0 | 572 | 223 |
| Stage 1 | - | - | - | - | 223 | - |
| Stage 2 | - | - | - | - | 349 | - |
| 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 | - | - | 1346 | - | 482 | 817 |
| Stage 1 | - | - | - | - | 814 | - |
| Stage 2 | - | - | - | - | 714 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1346 | - | 482 | 817 |
| Mov Cap-2 Maneuver | - | - | - | - | 482 | - |
| Stage 1 | - | - | - | - | 814 | - |
| Stage 2 | - | - | - | - | 714 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | 1346 | - |
| HCM Lane V/C Ratio | - | - | - | - | - |
| HCM Control Delay (s) | 0 | - | - | 0 | - |
| HCM Lane LOS | A | - | - | A | - |
| HCM 95th %tile Q(veh) | - | - | - | 0 | - |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 158 | 36 | 481 | 255 | 60 | 451 |
| Future Volume (veh/h) | 158 | 36 | 481 | 255 | 60 | 451 |
| Number | 2 | 12 | 1 | 6 | 3 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 176 | 40 | 534 | 283 | 67 | 501 |
| Adj No. of Lanes | 2 | 1 | 2 | 2 | 2 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 980 | 438 | 1165 | 2505 | 371 | 706 |
| Arrive On Green | 0.28 | 0.28 | 0.34 | 0.71 | 0.11 | 0.11 |
| Sat Flow, veh/h | 3632 | 1583 | 3442 | 3632 | 3442 | 1583 |
| Grp Volume(v), veh/h | 176 | 40 | 534 | 283 | 67 | 501 |
| Grp Sat Flow(s),veh/h/ln | 1770 | 1583 | 1721 | 1770 | 1721 | 1583 |
| Q Serve(g_s), s | 2.5 | 0.7 | 7.9 | 1.7 | 1.2 | 0.0 |
| Cycle Q Clear(g_c), s | 2.5 | 0.7 | 7.9 | 1.7 | 1.2 | 0.0 |
| Prop In Lane | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Lane Grp Cap(c), veh/h | 980 | 438 | 1165 | 2505 | 371 | 706 |
| V/C Ratio(X) | 0.18 | 0.09 | 0.46 | 0.11 | 0.18 | 0.71 |
| Avail Cap(c_a), veh/h | 980 | 438 | 1165 | 2505 | 953 | 974 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.88 | 0.88 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 17.9 | 6.2 | 16.8 | 3.0 | 26.4 | 14.6 |
| Incr Delay (d2), s/veh | 0.4 | 0.4 | 0.2 | 0.1 | 0.2 | 1.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.3 | 0.4 | 3.7 | 0.8 | 0.6 | 7.5 |
| LnGrp Delay(d),s/veh | 18.3 | 6.6 | 17.1 | 3.1 | 26.6 | 16.0 |
| LnGrp LOS | B | A | B | A | C | B |
| Approach Vol, veh/h | 216 | | | 817 | 568 | |
| Approach Delay, s/veh | 16.1 | | | 12.2 | 17.3 | |
| Approach LOS | B | | | B | B | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 28.0 | 24.0 | | | | 52.0 | | 13.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 11.0 | 18.0 | | | | 35.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 9.9 | 4.5 | | | | 3.7 | | 3.2 |
| Green Ext Time (p_c), s | 0.5 | 0.8 | | | | 4.0 | | 2.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 14.6 |
| HCM 2010 LOS | B |

Notes

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 525 | 95 | 365 | 534 | 0 | 0 | 0 | 0 | 578 | 0 | 210 |
| Future Volume (veh/h) | 0 | 525 | 95 | 365 | 534 | 0 | 0 | 0 | 0 | 578 | 0 | 210 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1863 | 1863 | 1863 | 0 | | | | 1863 | 0 | 1863 |
| Adj Flow Rate, veh/h | 0 | 583 | 106 | 406 | 593 | 0 | | | | 642 | 0 | 233 |
| Adj No. of Lanes | 0 | 2 | 1 | 1 | 1 | 0 | | | | 2 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 0 | 2 |
| Cap, veh/h | 0 | 1007 | 451 | 683 | 1146 | 0 | | | | 1006 | 0 | 463 |
| Arrive On Green | 0.00 | 0.57 | 0.57 | 0.57 | 1.00 | 0.00 | | | | 0.29 | 0.00 | 0.29 |
| Sat Flow, veh/h | 0 | 3632 | 1583 | 1774 | 1863 | 0 | | | | 3442 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 583 | 106 | 406 | 593 | 0 | | | | 642 | 0 | 233 |
| Grp Sat Flow(s),veh/h/ln | 0 | 1770 | 1583 | 1774 | 1863 | 0 | | | | 1721 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 13.8 | 4.3 | 0.0 | 0.0 | 0.0 | | | | 21.1 | 0.0 | 15.9 |
| Cycle Q Clear(g_c), s | 0.0 | 13.8 | 4.3 | 0.0 | 0.0 | 0.0 | | | | 21.1 | 0.0 | 15.9 |
| Prop In Lane | 0.00 | | 1.00 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 1007 | 451 | 683 | 1146 | 0 | | | | 1006 | 0 | 463 |
| V/C Ratio(X) | 0.00 | 0.58 | 0.24 | 0.59 | 0.52 | 0.00 | | | | 0.64 | 0.00 | 0.50 |
| Avail Cap(c_a), veh/h | 0 | 1007 | 451 | 683 | 1146 | 0 | | | | 1006 | 0 | 463 |
| HCM Platoon Ratio | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 0.90 | 0.90 | 0.91 | 0.91 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 23.0 | 21.0 | 16.8 | 0.0 | 0.0 | | | | 40.0 | 0.0 | 38.2 |
| Incr Delay (d2), s/veh | 0.0 | 2.2 | 1.1 | 1.3 | 1.5 | 0.0 | | | | 3.1 | 0.0 | 3.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.0 | 6.9 | 2.0 | 6.6 | 0.5 | 0.0 | | | | 10.4 | 0.0 | 7.4 |
| LnGrp Delay(d),s/veh | 0.0 | 25.2 | 22.1 | 18.1 | 1.5 | 0.0 | | | | 43.1 | 0.0 | 42.0 |
| LnGrp LOS | | C | C | B | A | | | | | D | | D |
| Approach Vol, veh/h | | 689 | | | 999 | | | | | | 875 | |
| Approach Delay, s/veh | | 24.7 | | | 8.3 | | | | | | 42.8 | |
| Approach LOS | | C | | | A | | | | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 43.0 | 43.0 | | 44.0 | | 86.0 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 37.0 | 37.0 | | 38.0 | | 80.0 | | |
| Max Q Clear Time (g_c+I1), s | 2.0 | 15.8 | | 23.1 | | 2.0 | | |
| Green Ext Time (p_c), s | 5.8 | 3.9 | | 2.9 | | 5.9 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 24.5 |
| HCM 2010 LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 180 | 935 | 0 | 0 | 784 | 730 | 88 | 0 | 295 | 0 | 0 | 0 |
| Future Volume (veh/h) | 180 | 935 | 0 | 0 | 784 | 730 | 88 | 0 | 295 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1863 | 1863 | 1863 | 1900 | | | |
| Adj Flow Rate, veh/h | 200 | 1039 | 0 | 0 | 871 | 0 | 98 | 0 | 328 | | | |
| Adj No. of Lanes | 1 | 2 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 528 | 2384 | 0 | 0 | 1989 | 890 | 415 | 0 | 370 | | | |
| Arrive On Green | 0.13 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.23 | 0.00 | 0.23 | | | |
| Sat Flow, veh/h | 1774 | 3632 | 0 | 0 | 3632 | 1583 | 1774 | 0 | 1583 | | | |
| Grp Volume(v), veh/h | 200 | 1039 | 0 | 0 | 871 | 0 | 98 | 0 | 328 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 0 | 0 | 1770 | 1583 | 1774 | 0 | 1583 | | | |
| Q Serve(g_s), s | 6.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.8 | 0.0 | 26.0 | | | |
| Cycle Q Clear(g_c), s | 6.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.8 | 0.0 | 26.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 1.00 | | 1.00 | | | |
| Lane Grp Cap(c), veh/h | 528 | 2384 | 0 | 0 | 1989 | 890 | 415 | 0 | 370 | | | |
| V/C Ratio(X) | 0.38 | 0.44 | 0.00 | 0.00 | 0.44 | 0.00 | 0.24 | 0.00 | 0.89 | | | |
| Avail Cap(c_a), veh/h | 602 | 2384 | 0 | 0 | 1989 | 890 | 696 | 0 | 621 | | | |
| HCM Platoon Ratio | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 0.76 | 0.76 | 0.00 | 0.00 | 0.11 | 0.00 | 1.00 | 0.00 | 1.00 | | | |
| Uniform Delay (d), s/veh | 8.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 40.4 | 0.0 | 48.1 | | | |
| Incr Delay (d2), s/veh | 0.3 | 0.4 | 0.0 | 0.0 | 0.1 | 0.0 | 0.3 | 0.0 | 8.4 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 3.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 2.9 | 0.0 | 12.3 | | | |
| LnGrp Delay(d),s/veh | 9.1 | 0.4 | 0.0 | 0.0 | 0.1 | 0.0 | 40.7 | 0.0 | 56.5 | | | |
| LnGrp LOS | A | A | | | A | | D | | E | | | |
| Approach Vol, veh/h | | 1239 | | | 871 | | | 426 | | | | |
| Approach Delay, s/veh | | 1.8 | | | 0.1 | | | 52.9 | | | | |
| Approach LOS | | A | | | A | | | D | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 93.6 | | | 14.5 | 79.1 | | 36.4 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 67.0 | | | 14.0 | 47.0 | | 51.0 |
| Max Q Clear Time (g_c+I1), s | | 2.0 | | | 8.3 | 2.0 | | 28.0 |
| Green Ext Time (p_c), s | | 22.4 | | | 0.2 | 19.9 | | 2.4 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 9.8 |
| HCM 2010 LOS | A |

Notes

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 243 | 985 | 84 | 41 | 1132 | 411 | 31 | 26 | 43 | 338 | 23 | 373 |
| Future Volume (veh/h) | 243 | 985 | 84 | 41 | 1132 | 411 | 31 | 26 | 43 | 338 | 23 | 373 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 270 | 1094 | 93 | 46 | 1258 | 457 | 34 | 29 | 48 | 395 | 0 | 414 |
| Adj No. of Lanes | 1 | 2 | 1 | 1 | 2 | 1 | 0 | 1 | 1 | 2 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 290 | 1452 | 869 | 257 | 1139 | 863 | 136 | 116 | 219 | 791 | 0 | 353 |
| Arrive On Green | 0.26 | 0.82 | 0.82 | 0.01 | 0.11 | 0.11 | 0.14 | 0.14 | 0.14 | 0.22 | 0.00 | 0.22 |
| Sat Flow, veh/h | 1774 | 3539 | 1583 | 1774 | 3539 | 1583 | 979 | 835 | 1583 | 3548 | 0 | 1583 |
| Grp Volume(v), veh/h | 270 | 1094 | 93 | 46 | 1258 | 457 | 63 | 0 | 48 | 395 | 0 | 414 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 1583 | 1774 | 1770 | 1583 | 1814 | 0 | 1583 | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 15.1 | 18.9 | 1.2 | 2.2 | 41.8 | 24.9 | 4.0 | 0.0 | 3.5 | 12.7 | 0.0 | 29.0 |
| Cycle Q Clear(g_c), s | 15.1 | 18.9 | 1.2 | 2.2 | 41.8 | 24.9 | 4.0 | 0.0 | 3.5 | 12.7 | 0.0 | 29.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.54 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 290 | 1452 | 869 | 257 | 1139 | 863 | 251 | 0 | 219 | 791 | 0 | 353 |
| V/C Ratio(X) | 0.93 | 0.75 | 0.11 | 0.18 | 1.10 | 0.53 | 0.25 | 0.00 | 0.22 | 0.50 | 0.00 | 1.17 |
| Avail Cap(c_a), veh/h | 301 | 1452 | 869 | 275 | 1139 | 863 | 251 | 0 | 219 | 791 | 0 | 353 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 0.33 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.91 | 0.91 | 0.91 | 0.77 | 0.77 | 0.77 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 31.4 | 8.6 | 4.1 | 27.9 | 58.1 | 25.2 | 50.0 | 0.0 | 49.8 | 44.1 | 0.0 | 50.5 |
| Incr Delay (d2), s/veh | 31.8 | 3.3 | 0.2 | 0.3 | 57.7 | 1.8 | 2.4 | 0.0 | 2.3 | 2.2 | 0.0 | 103.4 |
| 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 | 11.9 | 9.2 | 0.7 | 1.1 | 29.6 | 16.7 | 2.2 | 0.0 | 1.7 | 6.4 | 0.0 | 22.8 |
| LnGrp Delay(d),s/veh | 63.2 | 11.9 | 4.3 | 28.2 | 115.7 | 27.0 | 52.4 | 0.0 | 52.0 | 46.4 | 0.0 | 153.9 |
| LnGrp LOS | E | B | A | C | F | C | D | | D | D | | F |
| Approach Vol, veh/h | | 1457 | | | 1761 | | | 111 | | | 809 | |
| Approach Delay, s/veh | | 20.9 | | | 90.4 | | | 52.2 | | | 101.4 | |
| Approach LOS | | C | | | F | | | D | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 11.7 | 59.3 | | 35.0 | 23.2 | 47.8 | | 24.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 52.0 | | 29.0 | 18.0 | 41.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 4.2 | 20.9 | | 31.0 | 17.1 | 43.8 | | 6.0 |
| Green Ext Time (p_c), s | 0.0 | 24.0 | | 0.0 | 0.1 | 0.0 | | 0.3 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 67.1 |
| HCM 2010 LOS | E |

Notes

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 30 | 1306 | 30 | 15 | 1404 | 15 | 90 | 15 | 15 | 15 | 15 | 90 |
| Future Volume (veh/h) | 30 | 1306 | 30 | 15 | 1404 | 15 | 90 | 15 | 15 | 15 | 15 | 90 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 33 | 1451 | 33 | 17 | 1560 | 17 | 100 | 17 | 17 | 17 | 17 | 100 |
| Adj No. of Lanes | 1 | 2 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 316 | 2171 | 49 | 312 | 2127 | 952 | 51 | 5 | 353 | 42 | 29 | 353 |
| Arrive On Green | 0.07 | 1.00 | 1.00 | 0.05 | 1.00 | 1.00 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| Sat Flow, veh/h | 1774 | 3538 | 80 | 1774 | 3539 | 1583 | 0 | 22 | 1583 | 0 | 128 | 1583 |
| Grp Volume(v), veh/h | 33 | 725 | 759 | 17 | 1560 | 17 | 117 | 0 | 17 | 34 | 0 | 100 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 1849 | 1774 | 1770 | 1583 | 22 | 0 | 1583 | 128 | 0 | 1583 |
| Q Serve(g_s), s | 0.9 | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 0.0 | 0.0 | 6.8 |
| Cycle Q Clear(g_c), s | 0.9 | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 | 29.0 | 0.0 | 1.1 | 29.0 | 0.0 | 6.8 |
| Prop In Lane | 1.00 | | 0.04 | 1.00 | | 1.00 | 0.85 | | 1.00 | 0.50 | | 1.00 |
| Lane Grp Cap(c), veh/h | 316 | 1086 | 1135 | 312 | 2127 | 952 | 56 | 0 | 353 | 70 | 0 | 353 |
| V/C Ratio(X) | 0.10 | 0.67 | 0.67 | 0.05 | 0.73 | 0.02 | 2.08 | 0.00 | 0.05 | 0.48 | 0.00 | 0.28 |
| Avail Cap(c_a), veh/h | 345 | 1086 | 1135 | 364 | 2127 | 952 | 56 | 0 | 353 | 70 | 0 | 353 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.67 | 0.67 | 0.67 | 0.59 | 0.59 | 0.59 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 8.3 | 0.0 | 0.0 | 9.0 | 0.0 | 0.0 | 62.5 | 0.0 | 39.7 | 42.8 | 0.0 | 41.9 |
| Incr Delay (d2), s/veh | 0.1 | 2.2 | 2.1 | 0.0 | 1.4 | 0.0 | 541.6 | 0.0 | 0.1 | 5.1 | 0.0 | 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/ln | 0.4 | 0.7 | 0.7 | 0.2 | 0.4 | 0.0 | 10.5 | 0.0 | 0.5 | 1.1 | 0.0 | 3.0 |
| LnGrp Delay(d),s/veh | 8.4 | 2.2 | 2.1 | 9.0 | 1.4 | 0.0 | 604.1 | 0.0 | 39.7 | 47.9 | 0.0 | 42.3 |
| LnGrp LOS | A | A | A | A | A | A | F | | D | D | | D |
| Approach Vol, veh/h | | 1517 | | | 1594 | | | 134 | | | 134 | |
| Approach Delay, s/veh | | 2.3 | | | 1.4 | | | 532.5 | | | 43.7 | |
| Approach LOS | | A | | | A | | | F | | | D | |

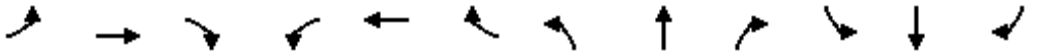
| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 9.2 | 85.8 | | 35.0 | 10.9 | 84.1 | | 35.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 76.0 | | 29.0 | 7.0 | 76.0 | | 29.0 |
| Max Q Clear Time (g_c+I1), s | 2.5 | 2.0 | | 31.0 | 2.9 | 2.0 | | 31.0 |
| Green Ext Time (p_c), s | 0.0 | 53.7 | | 0.0 | 0.0 | 53.7 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 24.6 |
| HCM 2010 LOS | C |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 142 | 813 | 375 | 195 | 999 | 84 | 269 | 275 | 120 | 89 | 242 | 163 |
| Future Volume (veh/h) | 142 | 813 | 375 | 195 | 999 | 84 | 269 | 275 | 120 | 89 | 242 | 163 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 158 | 903 | 417 | 217 | 1110 | 93 | 299 | 306 | 133 | 99 | 269 | 181 |
| Adj No. of Lanes | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 328 | 1280 | 572 | 382 | 1361 | 609 | 350 | 497 | 633 | 267 | 317 | 270 |
| Arrive On Green | 0.22 | 0.72 | 0.72 | 0.27 | 0.77 | 0.77 | 0.15 | 0.27 | 0.27 | 0.05 | 0.17 | 0.17 |
| Sat Flow, veh/h | 1774 | 3539 | 1583 | 1774 | 3539 | 1583 | 1774 | 1863 | 1583 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 158 | 903 | 417 | 217 | 1110 | 93 | 299 | 306 | 133 | 99 | 269 | 181 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 1583 | 1774 | 1770 | 1583 | 1774 | 1863 | 1583 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 0.0 | 18.8 | 12.4 | 1.3 | 25.2 | 1.5 | 17.5 | 18.7 | 1.2 | 6.0 | 18.2 | 10.5 |
| Cycle Q Clear(g_c), s | 0.0 | 18.8 | 12.4 | 1.3 | 25.2 | 1.5 | 17.5 | 18.7 | 1.2 | 6.0 | 18.2 | 10.5 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 328 | 1280 | 572 | 382 | 1361 | 609 | 350 | 497 | 633 | 267 | 317 | 270 |
| V/C Ratio(X) | 0.48 | 0.71 | 0.73 | 0.57 | 0.82 | 0.15 | 0.85 | 0.62 | 0.21 | 0.37 | 0.85 | 0.67 |
| Avail Cap(c_a), veh/h | 328 | 1280 | 572 | 382 | 1361 | 609 | 357 | 544 | 674 | 267 | 358 | 304 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.81 | 0.81 | 0.81 | 0.74 | 0.74 | 0.74 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 39.8 | 14.1 | 5.5 | 35.5 | 12.1 | 5.5 | 36.5 | 41.8 | 12.5 | 41.6 | 52.3 | 28.9 |
| Incr Delay (d2), s/veh | 0.9 | 2.7 | 6.5 | 1.5 | 4.1 | 0.4 | 17.6 | 1.8 | 0.2 | 0.9 | 15.7 | 4.8 |
| 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 | 4.5 | 9.3 | 6.2 | 5.9 | 12.5 | 0.7 | 10.2 | 9.9 | 2.1 | 3.0 | 10.7 | 5.0 |
| LnGrp Delay(d),s/veh | 40.6 | 16.8 | 11.9 | 37.0 | 16.3 | 5.9 | 54.1 | 43.6 | 12.7 | 42.5 | 68.0 | 33.7 |
| LnGrp LOS | D | B | B | D | B | A | D | D | B | D | E | C |
| Approach Vol, veh/h | | 1478 | | | 1420 | | | 738 | | | 549 | |
| Approach Delay, s/veh | | 18.0 | | | 18.8 | | | 42.3 | | | 52.1 | |
| Approach LOS | | B | | | B | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 23.3 | 53.0 | 25.5 | 28.1 | 20.3 | 56.0 | 13.0 | 40.7 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 14.0 | 47.0 | 20.0 | 25.0 | 11.0 | 50.0 | 7.0 | 38.0 |
| Max Q Clear Time (g_c+I1), s | 3.3 | 20.8 | 19.5 | 20.2 | 2.0 | 27.2 | 8.0 | 20.7 |
| Green Ext Time (p_c), s | 0.8 | 8.8 | 0.1 | 1.9 | 0.8 | 8.8 | 0.0 | 4.0 |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | | 27.0 |
| HCM 2010 LOS | | C |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 74 | 911 | 14 | 80 | 1174 | 168 | 85 | 67 | 86 | 52 | 26 | 56 |
| Future Volume (veh/h) | 74 | 911 | 14 | 80 | 1174 | 168 | 85 | 67 | 86 | 52 | 26 | 56 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 82 | 1012 | 16 | 89 | 1304 | 187 | 94 | 74 | 96 | 58 | 29 | 62 |
| Adj No. of Lanes | 1 | 2 | 1 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 285 | 2077 | 929 | 405 | 2015 | 901 | 43 | 21 | 353 | 46 | 14 | 353 |
| Arrive On Green | 0.14 | 1.00 | 1.00 | 0.05 | 0.57 | 0.57 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| Sat Flow, veh/h | 1774 | 3539 | 1583 | 1774 | 3539 | 1583 | 0 | 95 | 1583 | 0 | 64 | 1583 |
| Grp Volume(v), veh/h | 82 | 1012 | 16 | 89 | 1304 | 187 | 168 | 0 | 96 | 87 | 0 | 62 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 1583 | 1774 | 1770 | 1583 | 95 | 0 | 1583 | 64 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 3.2 | 32.7 | 7.5 | 0.0 | 0.0 | 6.5 | 0.0 | 0.0 | 4.1 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 0.0 | 3.2 | 32.7 | 7.5 | 29.0 | 0.0 | 6.5 | 29.0 | 0.0 | 4.1 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.56 | | 1.00 | 0.67 | | 1.00 |
| Lane Grp Cap(c), veh/h | 285 | 2077 | 929 | 405 | 2015 | 901 | 64 | 0 | 353 | 60 | 0 | 353 |
| V/C Ratio(X) | 0.29 | 0.49 | 0.02 | 0.22 | 0.65 | 0.21 | 2.61 | 0.00 | 0.27 | 1.44 | 0.00 | 0.18 |
| Avail Cap(c_a), veh/h | 285 | 2077 | 929 | 436 | 2015 | 901 | 64 | 0 | 353 | 60 | 0 | 353 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.79 | 0.79 | 0.79 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 30.3 | 0.0 | 0.0 | 14.6 | 19.1 | 13.7 | 55.7 | 0.0 | 41.8 | 58.2 | 0.0 | 40.8 |
| Incr Delay (d2), s/veh | 0.4 | 0.7 | 0.0 | 0.3 | 1.6 | 0.5 | 765.2 | 0.0 | 1.9 | 268.9 | 0.0 | 1.1 |
| 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/ln | 2.2 | 0.2 | 0.0 | 1.6 | 16.4 | 3.4 | 16.0 | 0.0 | 3.0 | 6.7 | 0.0 | 1.9 |
| LnGrp Delay(d),s/veh | 30.7 | 0.7 | 0.0 | 14.9 | 20.7 | 14.2 | 820.9 | 0.0 | 43.7 | 327.2 | 0.0 | 41.9 |
| LnGrp LOS | C | A | A | B | C | B | F | | D | F | | D |
| Approach Vol, veh/h | | 1110 | | | 1580 | | | 264 | | | 149 | |
| Approach Delay, s/veh | | 2.9 | | | 19.6 | | | 538.2 | | | 208.5 | |
| Approach LOS | | A | | | B | | | F | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 12.7 | 82.3 | | 35.0 | 15.0 | 80.0 | | 35.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 9.0 | 74.0 | | 29.0 | 9.0 | 74.0 | | 29.0 |
| Max Q Clear Time (g_c+I1), s | 5.2 | 2.0 | | 31.0 | 2.0 | 34.7 | | 31.0 |
| Green Ext Time (p_c), s | 0.1 | 9.7 | | 0.0 | 3.9 | 13.9 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 66.8 |
| HCM 2010 LOS | E |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 480 | 140 | 180 | 515 | 0 | 0 | 0 | 0 | 405 | 0 | 165 |
| Future Volume (veh/h) | 0 | 480 | 140 | 180 | 515 | 0 | 0 | 0 | 0 | 405 | 0 | 165 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1900 | 1863 | 1863 | 0 | | | | 1863 | 0 | 1863 |
| Adj Flow Rate, veh/h | 0 | 533 | 156 | 200 | 572 | 0 | | | | 450 | 0 | 183 |
| Adj No. of Lanes | 0 | 1 | 0 | 1 | 1 | 0 | | | | 1 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 0 | 2 |
| Cap, veh/h | 0 | 554 | 162 | 266 | 1070 | 0 | | | | 489 | 0 | 436 |
| Arrive On Green | 0.00 | 0.40 | 0.40 | 0.10 | 0.57 | 0.00 | | | | 0.28 | 0.00 | 0.28 |
| Sat Flow, veh/h | 0 | 1386 | 406 | 1774 | 1863 | 0 | | | | 1774 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 0 | 689 | 200 | 572 | 0 | | | | 450 | 0 | 183 |
| Grp Sat Flow(s),veh/h/ln | 0 | 0 | 1791 | 1774 | 1863 | 0 | | | | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 0.0 | 30.0 | 4.6 | 15.1 | 0.0 | | | | 19.7 | 0.0 | 7.6 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 30.0 | 4.6 | 15.1 | 0.0 | | | | 19.7 | 0.0 | 7.6 |
| Prop In Lane | 0.00 | | 0.23 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 0 | 716 | 266 | 1070 | 0 | | | | 489 | 0 | 436 |
| V/C Ratio(X) | 0.00 | 0.00 | 0.96 | 0.75 | 0.53 | 0.00 | | | | 0.92 | 0.00 | 0.42 |
| Avail Cap(c_a), veh/h | 0 | 0 | 716 | 266 | 1070 | 0 | | | | 510 | 0 | 455 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 0.00 | 1.00 | 0.66 | 0.66 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 23.4 | 33.5 | 10.5 | 0.0 | | | | 28.1 | 0.0 | 23.7 |
| Incr Delay (d2), s/veh | 0.0 | 0.0 | 25.5 | 7.7 | 1.3 | 0.0 | | | | 21.6 | 0.0 | 0.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.0 | 0.0 | 19.8 | 4.8 | 8.0 | 0.0 | | | | 12.6 | 0.0 | 3.4 |
| LnGrp Delay(d),s/veh | 0.0 | 0.0 | 48.9 | 41.2 | 11.7 | 0.0 | | | | 49.8 | 0.0 | 24.4 |
| LnGrp LOS | | | D | D | B | | | | | D | | C |
| Approach Vol, veh/h | | 689 | | | 772 | | | | | | 633 | |
| Approach Delay, s/veh | | 48.9 | | | 19.4 | | | | | | 42.4 | |
| Approach LOS | | D | | | B | | | | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 14.0 | 38.0 | | 28.0 | | 52.0 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 7.0 | 32.0 | | 23.0 | | 45.0 | | |
| Max Q Clear Time (g_c+I1), s | 6.6 | 32.0 | | 21.7 | | 17.1 | | |
| Green Ext Time (p_c), s | 0.2 | 0.0 | | 0.4 | | 4.2 | | |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | | 36.0 |
| HCM 2010 LOS | | D |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 90 | 710 | 0 | 0 | 595 | 300 | 100 | 0 | 260 | 0 | 0 | 0 |
| Future Volume (veh/h) | 90 | 710 | 0 | 0 | 595 | 300 | 100 | 0 | 260 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1863 | 1900 | 1863 | 1863 | | | |
| Adj Flow Rate, veh/h | 100 | 789 | 0 | 0 | 661 | 333 | 111 | 0 | 289 | | | |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 333 | 1147 | 0 | 0 | 828 | 704 | 377 | 0 | 337 | | | |
| Arrive On Green | 0.09 | 0.62 | 0.00 | 0.00 | 0.44 | 0.44 | 0.21 | 0.00 | 0.21 | | | |
| Sat Flow, veh/h | 1774 | 1863 | 0 | 0 | 1863 | 1583 | 1774 | 0 | 1583 | | | |
| Grp Volume(v), veh/h | 100 | 789 | 0 | 0 | 661 | 333 | 111 | 0 | 289 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 0 | 0 | 1863 | 1583 | 1774 | 0 | 1583 | | | |
| Q Serve(g_s), s | 1.8 | 19.8 | 0.0 | 0.0 | 21.4 | 10.4 | 3.7 | 0.0 | 12.3 | | | |
| Cycle Q Clear(g_c), s | 1.8 | 19.8 | 0.0 | 0.0 | 21.4 | 10.4 | 3.7 | 0.0 | 12.3 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 1.00 | | 1.00 | | | |
| Lane Grp Cap(c), veh/h | 333 | 1147 | 0 | 0 | 828 | 704 | 377 | 0 | 337 | | | |
| V/C Ratio(X) | 0.30 | 0.69 | 0.00 | 0.00 | 0.80 | 0.47 | 0.29 | 0.00 | 0.86 | | | |
| Avail Cap(c_a), veh/h | 359 | 1147 | 0 | 0 | 828 | 704 | 456 | 0 | 407 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 0.28 | 0.28 | 0.00 | 0.00 | 0.09 | 0.09 | 1.00 | 0.00 | 1.00 | | | |
| Uniform Delay (d), s/veh | 12.0 | 9.0 | 0.0 | 0.0 | 16.7 | 13.7 | 23.1 | 0.0 | 26.5 | | | |
| Incr Delay (d2), s/veh | 0.1 | 1.0 | 0.0 | 0.0 | 0.8 | 0.2 | 0.4 | 0.0 | 14.4 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 0.9 | 10.2 | 0.0 | 0.0 | 11.0 | 4.5 | 1.8 | 0.0 | 6.7 | | | |
| LnGrp Delay(d),s/veh | 12.1 | 9.9 | 0.0 | 0.0 | 17.5 | 13.9 | 23.6 | 0.0 | 40.9 | | | |
| LnGrp LOS | B | A | | | B | B | C | | D | | | |
| Approach Vol, veh/h | | 889 | | | 994 | | | 400 | | | | |
| Approach Delay, s/veh | | 10.2 | | | 16.3 | | | 36.1 | | | | |
| Approach LOS | | B | | | B | | | D | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 49.1 | | | 12.0 | 37.1 | | 20.9 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 40.0 | | | 7.0 | 27.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | | 21.8 | | | 3.8 | 23.4 | | 14.3 |
| Green Ext Time (p_c), s | | 10.5 | | | 0.1 | 2.9 | | 0.6 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 17.4 |
| HCM 2010 LOS | B |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 210 | 15 | 705 | 5 | 20 | 5 | 725 | 350 | 10 | 5 | 305 | 155 |
| Future Volume (veh/h) | 210 | 15 | 705 | 5 | 20 | 5 | 725 | 350 | 10 | 5 | 305 | 155 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 233 | 17 | 783 | 6 | 22 | 6 | 806 | 389 | 11 | 6 | 339 | 172 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 319 | 7 | 322 | 51 | 292 | 80 | 748 | 1275 | 36 | 318 | 317 | 161 |
| Arrive On Green | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.39 | 0.71 | 0.71 | 0.27 | 0.27 | 0.27 |
| Sat Flow, veh/h | 1377 | 34 | 1555 | 677 | 1410 | 385 | 1774 | 1803 | 51 | 981 | 1166 | 592 |
| Grp Volume(v), veh/h | 233 | 0 | 800 | 6 | 0 | 28 | 806 | 0 | 400 | 6 | 0 | 511 |
| Grp Sat Flow(s),veh/h/ln | 1377 | 0 | 1588 | 677 | 0 | 1795 | 1774 | 0 | 1854 | 981 | 0 | 1758 |
| Q Serve(g_s), s | 23.0 | 0.0 | 29.0 | 0.0 | 0.0 | 1.8 | 55.0 | 0.0 | 11.3 | 0.6 | 0.0 | 38.0 |
| Cycle Q Clear(g_c), s | 24.7 | 0.0 | 29.0 | 29.0 | 0.0 | 1.8 | 55.0 | 0.0 | 11.3 | 0.6 | 0.0 | 38.0 |
| Prop In Lane | 1.00 | | 0.98 | 1.00 | | 0.21 | 1.00 | | 0.03 | 1.00 | | 0.34 |
| Lane Grp Cap(c), veh/h | 319 | 0 | 329 | 51 | 0 | 372 | 748 | 0 | 1311 | 318 | 0 | 477 |
| V/C Ratio(X) | 0.73 | 0.00 | 2.43 | 0.12 | 0.00 | 0.08 | 1.08 | 0.00 | 0.31 | 0.02 | 0.00 | 1.07 |
| Avail Cap(c_a), veh/h | 319 | 0 | 329 | 51 | 0 | 372 | 748 | 0 | 1311 | 318 | 0 | 477 |
| 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) | 0.71 | 0.00 | 0.71 | 1.00 | 0.00 | 1.00 | 0.48 | 0.00 | 0.48 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 54.7 | 0.0 | 55.5 | 70.0 | 0.0 | 44.7 | 37.5 | 0.0 | 7.7 | 37.4 | 0.0 | 51.0 |
| Incr Delay (d2), s/veh | 5.9 | 0.0 | 650.6 | 1.0 | 0.0 | 0.1 | 46.7 | 0.0 | 0.3 | 0.1 | 0.0 | 61.4 |
| 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 | 9.3 | 0.0 | 72.2 | 0.2 | 0.0 | 0.9 | 38.6 | 0.0 | 5.9 | 0.2 | 0.0 | 26.6 |
| LnGrp Delay(d),s/veh | 60.6 | 0.0 | 706.1 | 71.0 | 0.0 | 44.8 | 84.2 | 0.0 | 7.9 | 37.5 | 0.0 | 112.4 |
| LnGrp LOS | E | | F | E | | D | F | | A | D | | F |
| Approach Vol, veh/h | | 1033 | | | 34 | | | 1206 | | | 517 | |
| Approach Delay, s/veh | | 560.5 | | | 49.4 | | | 58.9 | | | 111.5 | |
| Approach LOS | | F | | | D | | | E | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 105.0 | | 35.0 | 61.0 | 44.0 | | 35.0 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 99.0 | | 29.0 | 55.0 | 38.0 | | 29.0 |
| Max Q Clear Time (g_c+I1), s | | 13.3 | | 31.0 | 57.0 | 40.0 | | 31.0 |
| Green Ext Time (p_c), s | | 6.8 | | 0.0 | 0.0 | 0.0 | | 0.0 |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | | 254.3 |
| HCM 2010 LOS | | F |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 15 | 120 | 75 | 125 | 35 | 690 | 35 | 375 | 155 | 565 | 430 | 35 |
| Future Volume (veh/h) | 15 | 120 | 75 | 125 | 35 | 690 | 35 | 375 | 155 | 565 | 430 | 35 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 17 | 133 | 83 | 139 | 39 | 767 | 39 | 417 | 172 | 628 | 478 | 39 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 43 | 157 | 87 | 158 | 36 | 915 | 362 | 414 | 352 | 632 | 824 | 67 |
| Arrive On Green | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.05 | 0.22 | 0.22 | 0.31 | 0.48 | 0.48 |
| Sat Flow, veh/h | 0 | 589 | 326 | 324 | 134 | 1583 | 1774 | 1863 | 1583 | 1774 | 1700 | 139 |
| Grp Volume(v), veh/h | 233 | 0 | 0 | 178 | 0 | 767 | 39 | 417 | 172 | 628 | 0 | 517 |
| Grp Sat Flow(s),veh/h/ln | 915 | 0 | 0 | 458 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1838 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 24.0 | 1.5 | 20.0 | 8.5 | 27.7 | 0.0 | 18.1 |
| Cycle Q Clear(g_c), s | 24.0 | 0.0 | 0.0 | 24.0 | 0.0 | 24.0 | 1.5 | 20.0 | 8.5 | 27.7 | 0.0 | 18.1 |
| Prop In Lane | 0.07 | | 0.36 | 0.78 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.08 |
| Lane Grp Cap(c), veh/h | 287 | 0 | 0 | 193 | 0 | 915 | 362 | 414 | 352 | 632 | 0 | 891 |
| V/C Ratio(X) | 0.81 | 0.00 | 0.00 | 0.92 | 0.00 | 0.84 | 0.11 | 1.01 | 0.49 | 0.99 | 0.00 | 0.58 |
| Avail Cap(c_a), veh/h | 287 | 0 | 0 | 193 | 0 | 915 | 414 | 414 | 352 | 632 | 0 | 891 |
| 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 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.09 | 0.00 | 0.09 |
| Uniform Delay (d), s/veh | 28.6 | 0.0 | 0.0 | 36.2 | 0.0 | 15.6 | 24.5 | 35.0 | 30.5 | 24.0 | 0.0 | 16.6 |
| Incr Delay (d2), s/veh | 16.1 | 0.0 | 0.0 | 42.8 | 0.0 | 7.0 | 0.1 | 46.1 | 4.8 | 9.3 | 0.0 | 0.3 |
| 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/ln | 6.1 | 0.0 | 0.0 | 6.7 | 0.0 | 17.1 | 0.7 | 15.5 | 4.2 | 17.2 | 0.0 | 9.3 |
| LnGrp Delay(d),s/veh | 44.7 | 0.0 | 0.0 | 79.0 | 0.0 | 22.5 | 24.6 | 81.1 | 35.3 | 33.4 | 0.0 | 16.9 |
| LnGrp LOS | D | | | E | | C | C | F | D | C | | B |
| Approach Vol, veh/h | | 233 | | | 945 | | | 628 | | | 1145 | |
| Approach Delay, s/veh | | 44.7 | | | 33.2 | | | 65.1 | | | 25.9 | |
| Approach LOS | | D | | | C | | | E | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 34.0 | 26.0 | | 30.0 | 10.4 | 49.6 | | 30.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 28.0 | 20.0 | | 24.0 | 7.0 | 41.0 | | 24.0 |
| Max Q Clear Time (g_c+I1), s | 29.7 | 22.0 | | 26.0 | 3.5 | 20.1 | | 26.0 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | 0.0 | 6.3 | | 0.0 |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | | 38.1 |
| HCM 2010 LOS | | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 202 | 0 | 0 | 0 | 78 | 0 |
| Future Vol, veh/h | 202 | 0 | 0 | 0 | 78 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Stop | Stop | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 224 | 0 | 0 | 0 | 87 | 0 |

| Major/Minor | Major2 | | | Minor2 | |
|---|---|---|---|---|---|
| Conflicting Flow All | 0 | - | | 0 | - |
| Stage 1 | - | - | | 0 | - |
| Stage 2 | - | - | | 0 | - |
| Critical Hdwy | - | - | | - | - |
| Critical Hdwy Stg 1 | - | - | | - | - |
| Critical Hdwy Stg 2 | - | - | | - | - |
| Follow-up Hdwy | - | - | | - | - |
| Pot Cap-1 Maneuver | - | 0 | | - | 0 |
| Stage 1 | - | 0 | | - | 0 |
| Stage 2 | - | 0 | | - | 0 |
| Platoon blocked, % | | | | | |
| Mov Cap-1 Maneuver | - | - | | - | 0 |
| Mov Cap-2 Maneuver | - | - | | - | 0 |
| Stage 1 | - | - | | - | 0 |
| Stage 2 | - | - | | - | 0 |

| Approach | WB | SB |
|---|---|---|
| HCM Control Delay, s | | |
| HCM LOS | | - |

| Minor Lane/Major Mvmt | WBL | SBLn1 |
|---|---|---|
| Capacity (veh/h) | - | - |
| HCM Lane V/C Ratio | - | - |
| HCM Control Delay (s) | - | - |
| HCM Lane LOS | - | - |
| HCM 95th %tile Q(veh) | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 78 | 0 | 0 | 202 | 185 | 0 | 0 | 155 | 0 | 0 | 0 |
| Future Vol, veh/h | 0 | 78 | 0 | 0 | 202 | 185 | 0 | 0 | 155 | 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 | 160 | - | - | - | - | 330 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | - | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 87 | 0 | 0 | 224 | 206 | 0 | 0 | 172 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 224 | 0 | - | - | - | 0 | 311 | 311 | 87 |
| Stage 1 | - | - | - | - | - | - | 87 | 87 | - |
| Stage 2 | - | - | - | - | - | - | 224 | 224 | - |
| Critical Hdwy | 4.12 | - | - | - | - | - | 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 | 2.218 | - | - | - | - | - | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1345 | - | 0 | 0 | - | - | 681 | 604 | 971 |
| Stage 1 | - | - | 0 | 0 | - | - | 936 | 823 | - |
| Stage 2 | - | - | 0 | 0 | - | - | 813 | 718 | - |
| Platoon blocked, % | | - | | | - | - | | | |
| Mov Cap-1 Maneuver | 1345 | - | - | - | - | - | 681 | 0 | 971 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 681 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 936 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 813 | 0 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 9.5 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | WBT | WBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 971 | 1345 | - | - | - |
| HCM Lane V/C Ratio | 0.177 | - | - | - | - |
| HCM Control Delay (s) | 9.5 | 0 | - | - | - |
| HCM Lane LOS | A | A | - | - | - |
| HCM 95th %tile Q(veh) | 0.6 | 0 | - | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 5.3 |

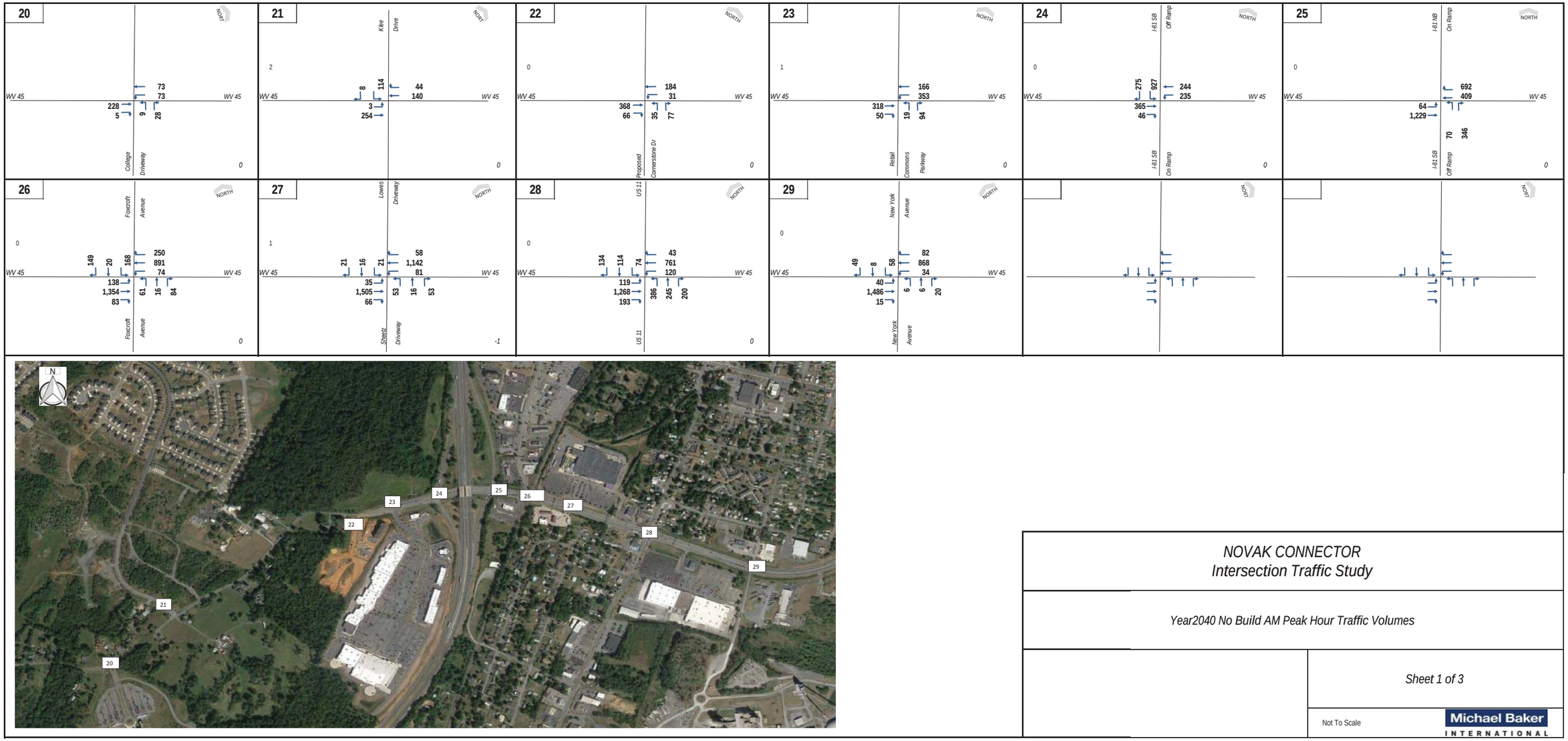
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 37 | 121 | 67 | 37 | 84 | 42 |
| Future Vol, veh/h | 37 | 121 | 67 | 37 | 84 | 42 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 50 | 140 | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 41 | 134 | 74 | 41 | 93 | 47 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 307 | 117 | 140 | 0 | - | 0 |
| Stage 1 | 117 | - | - | - | - | - |
| Stage 2 | 190 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 685 | 935 | 1443 | - | - | - |
| Stage 1 | 908 | - | - | - | - | - |
| Stage 2 | 842 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 650 | 935 | 1443 | - | - | - |
| Mov Cap-2 Maneuver | 650 | - | - | - | - | - |
| Stage 1 | 908 | - | - | - | - | - |
| Stage 2 | 799 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 9.8 | 4.9 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1443 | - | 650 | 935 | - | - |
| HCM Lane V/C Ratio | 0.052 | - | 0.063 | 0.144 | - | - |
| HCM Control Delay (s) | 7.6 | - | 10.9 | 9.5 | - | - |
| HCM Lane LOS | A | - | B | A | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | 0.2 | 0.5 | - | - |

# Future (2040) No-Build Peak Hour Traffic Volumes



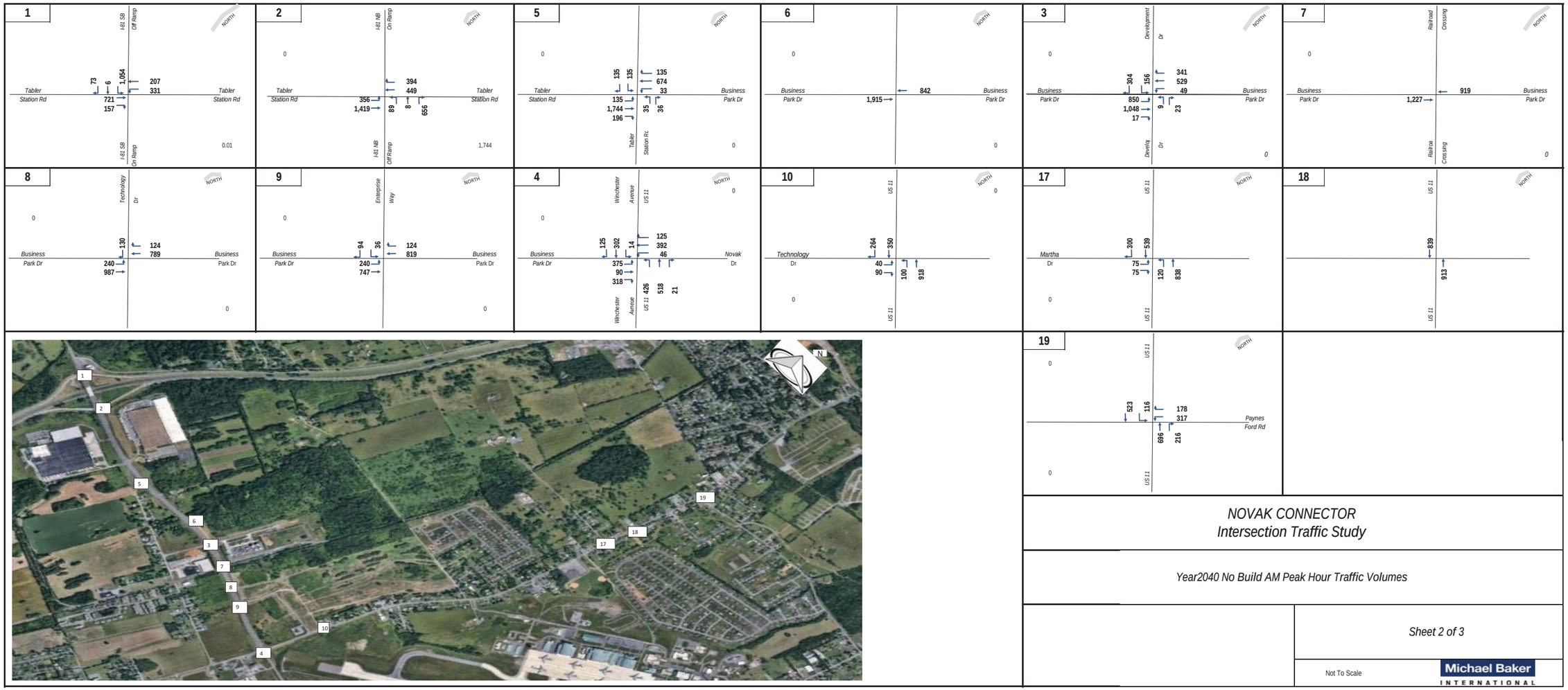

*NOVAK CONNECTOR*
*Intersection Traffic Study*

*Year2040 No Build AM Peak Hour Traffic Volumes*

*Sheet 1 of 3*

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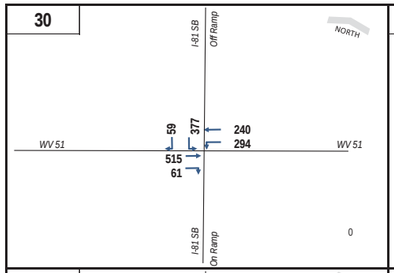

*NOVAK CONNECTOR*
*Intersection Traffic Study*

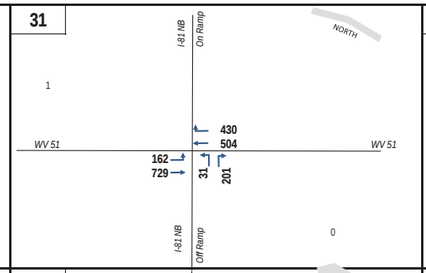
*Year2040 No Build AM Peak Hour Traffic Volumes*

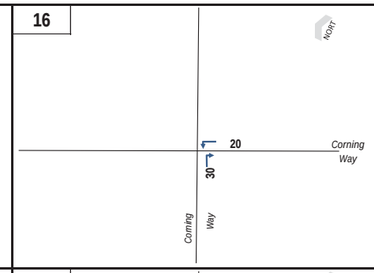
*Sheet 2 of 3*

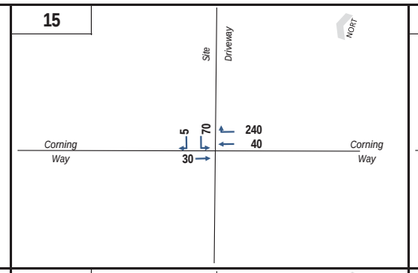
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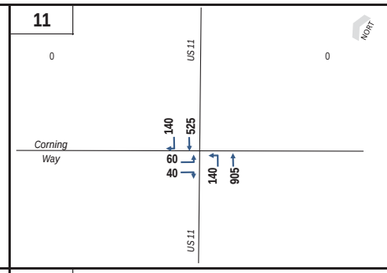
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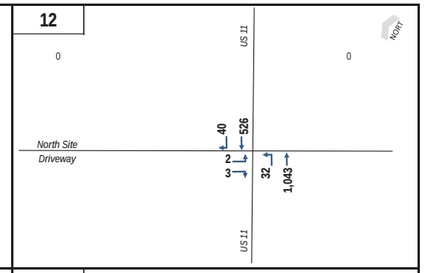


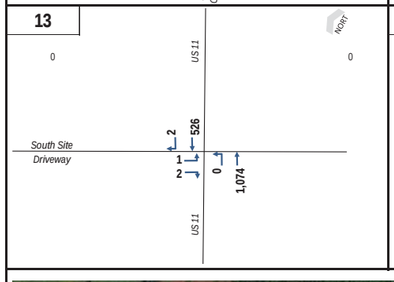



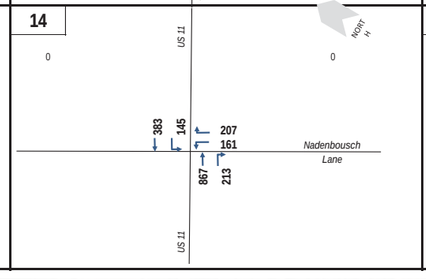



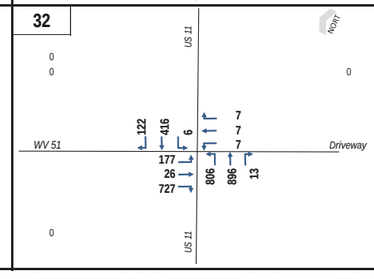



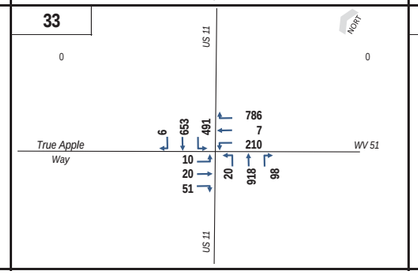







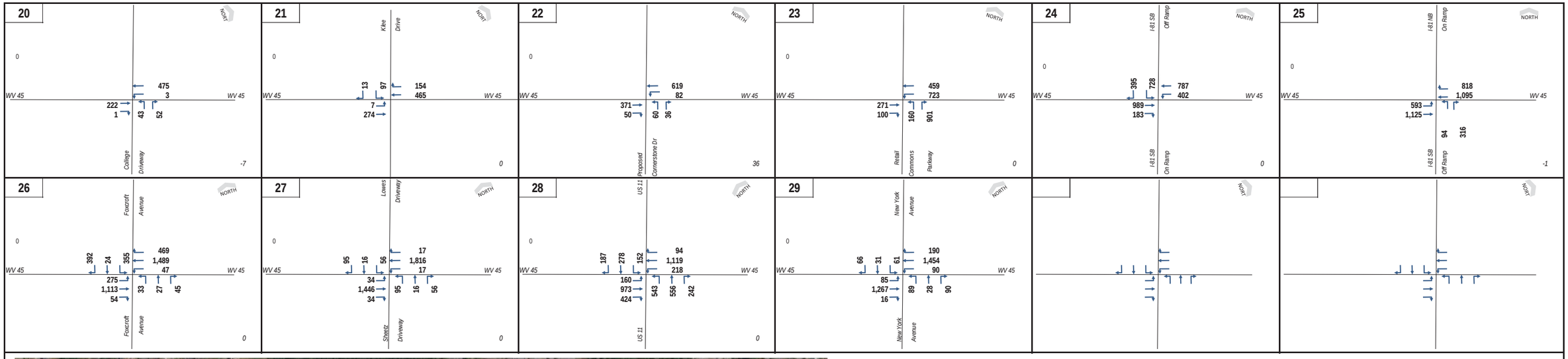
*NOVAK CONNECTOR*
*Intersection Traffic Study*

*Year2040 No Build AM Peak Hour Traffic Volumes*

*Sheet 3 of 3*

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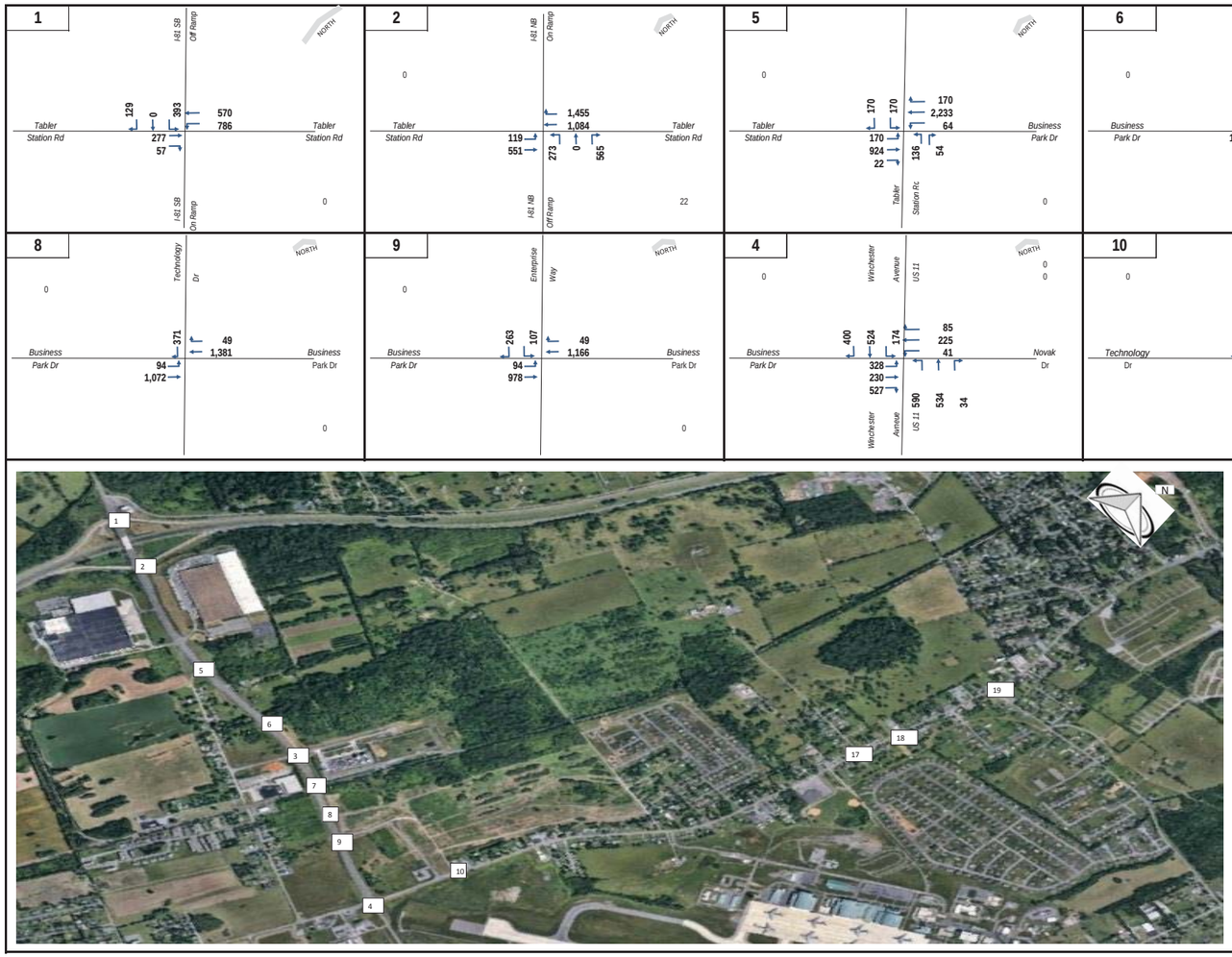
*NOVAK CONNECTOR*
*Intersection Traffic Study*

*Year2040 No Build PM Peak Hour Traffic Volumes*

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**1**



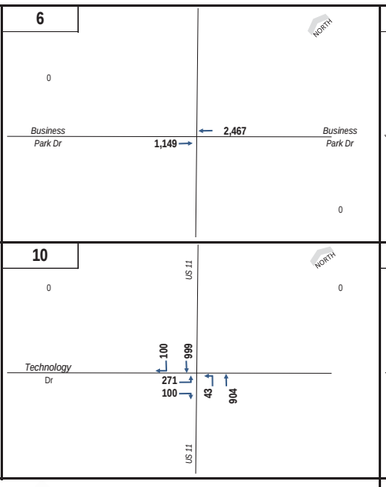

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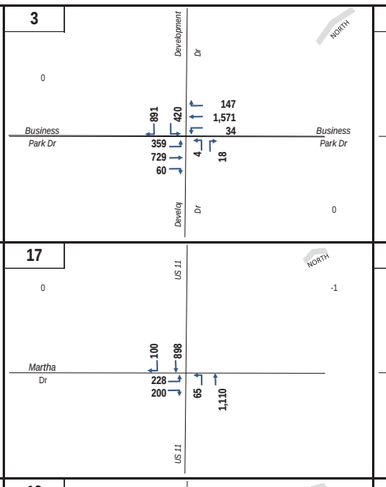

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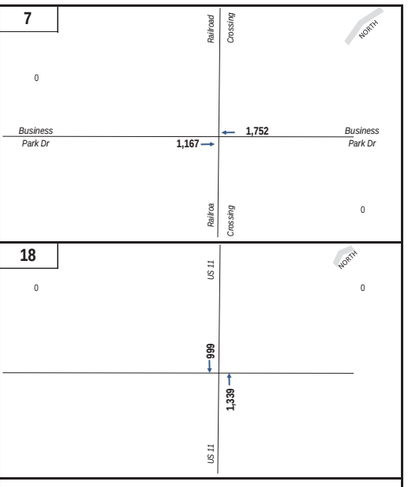

**6**




**3**




**7**




**8**




**9**




**4**




**10**



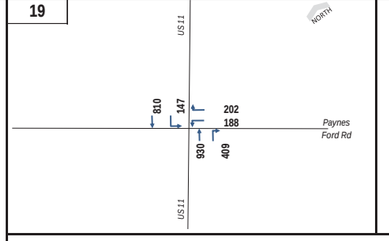

**17**




**18**




**19**



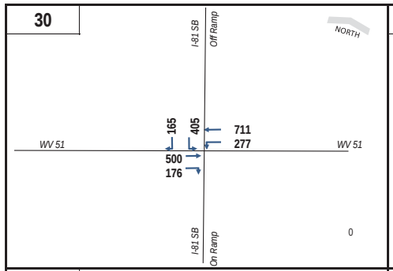

*NOVAK CONNECTOR*
*Intersection Traffic Study*

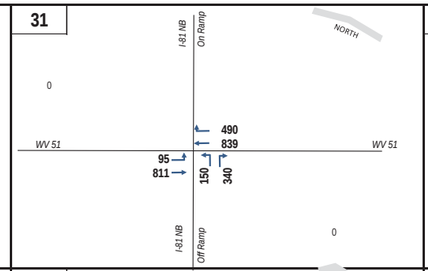
*Year2040 No Build PM Peak Hour Traffic Volumes*

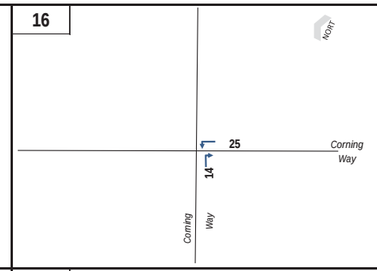
*Sheet 2 of 3*

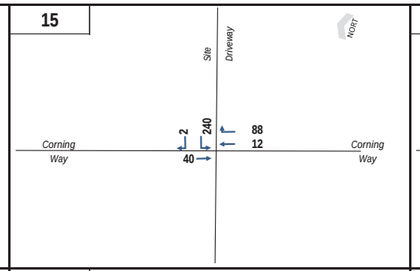
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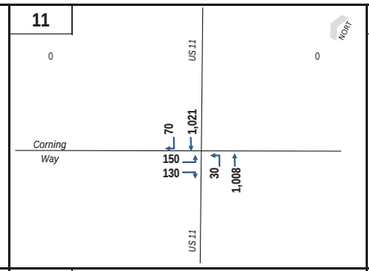
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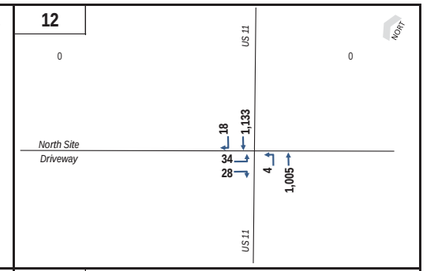


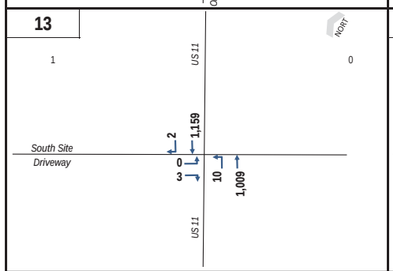



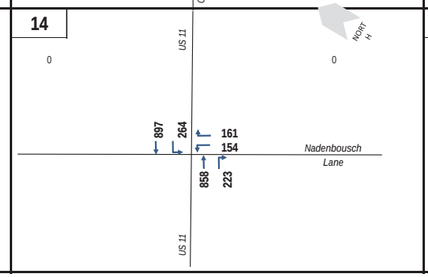



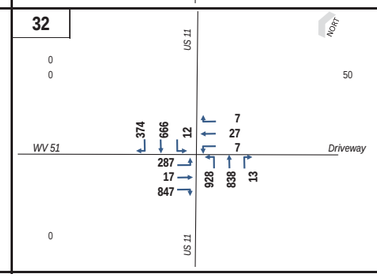



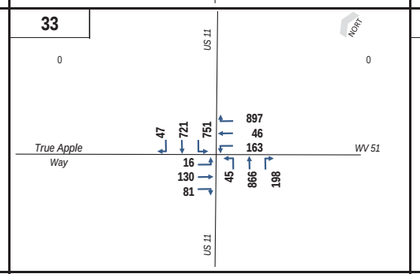







*NOVAK CONNECTOR*
*Intersection Traffic Study*

*Year2040 No Build PM Peak Hour Traffic Volumes*

*Sheet 3 of 3*

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# Future (2040) No-Build Synchro Reports

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 277 | 57 | 786 | 570 | 0 | 0 | 0 | 0 | 393 | 0 | 129 |
| Future Volume (veh/h) | 0 | 277 | 57 | 786 | 570 | 0 | 0 | 0 | 0 | 393 | 0 | 129 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1900 | 1863 | 1863 | 0 | | | | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 0 | 308 | 0 | 873 | 633 | 0 | | | | 437 | 0 | 143 |
| Adj No. of Lanes | 0 | 2 | 0 | 2 | 2 | 0 | | | | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 2 | 2 |
| Cap, veh/h | 0 | 953 | 0 | 1323 | 1981 | 0 | | | | 477 | 0 | 426 |
| Arrive On Green | 0.00 | 0.27 | 0.00 | 0.20 | 0.56 | 0.00 | | | | 0.27 | 0.00 | 0.27 |
| Sat Flow, veh/h | 0 | 3725 | 0 | 3442 | 3632 | 0 | | | | 1774 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 308 | 0 | 873 | 633 | 0 | | | | 437 | 0 | 143 |
| Grp Sat Flow(s),veh/h/ln | 0 | 1770 | 0 | 1721 | 1770 | 0 | | | | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 4.9 | 0.0 | 11.8 | 6.7 | 0.0 | | | | 16.7 | 0.0 | 5.1 |
| Cycle Q Clear(g_c), s | 0.0 | 4.9 | 0.0 | 11.8 | 6.7 | 0.0 | | | | 16.7 | 0.0 | 5.1 |
| Prop In Lane | 0.00 | | 0.00 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 953 | 0 | 1323 | 1981 | 0 | | | | 477 | 0 | 426 |
| V/C Ratio(X) | 0.00 | 0.32 | 0.00 | 0.66 | 0.32 | 0.00 | | | | 0.92 | 0.00 | 0.34 |
| Avail Cap(c_a), veh/h | 0 | 953 | 0 | 1357 | 1981 | 0 | | | | 482 | 0 | 430 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 1.00 | 0.00 | 0.59 | 0.59 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 20.5 | 0.0 | 12.2 | 8.3 | 0.0 | | | | 24.8 | 0.0 | 20.6 |
| Incr Delay (d2), s/veh | 0.0 | 0.9 | 0.0 | 0.7 | 0.3 | 0.0 | | | | 22.2 | 0.0 | 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 |
| %ile BackOfQ(50%),veh/ln | 0.0 | 2.5 | 0.0 | 5.7 | 3.3 | 0.0 | | | | 11.1 | 0.0 | 2.3 |
| LnGrp Delay(d),s/veh | 0.0 | 21.4 | 0.0 | 12.9 | 8.5 | 0.0 | | | | 47.0 | 0.0 | 21.0 |
| LnGrp LOS | | C | | B | A | | | | | D | | C |
| Approach Vol, veh/h | | 308 | | | 1506 | | | | | | 580 | |
| Approach Delay, s/veh | | 21.4 | | | 11.0 | | | | | | 40.6 | |
| Approach LOS | | C | | | B | | | | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 20.3 | 24.9 | | 24.8 | | 45.2 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 15.0 | 18.0 | | 19.0 | | 39.0 | | |
| Max Q Clear Time (g_c+I1), s | 13.8 | 6.9 | | 18.7 | | 8.7 | | |
| Green Ext Time (p_c), s | 0.5 | 4.3 | | 0.1 | | 6.5 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 19.5 |
| HCM 2010 LOS | B |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 119 | 551 | 0 | 0 | 1084 | 1455 | 273 | 0 | 565 | 0 | 0 | 0 |
| Future Volume (veh/h) | 119 | 551 | 0 | 0 | 1084 | 1455 | 273 | 0 | 565 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1863 | 1900 | 1863 | 1863 | | | |
| Adj Flow Rate, veh/h | 132 | 612 | 0 | 0 | 1204 | 1617 | 303 | 0 | 628 | | | |
| Adj No. of Lanes | 1 | 2 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 166 | 1972 | 0 | 0 | 1633 | 1285 | 634 | 0 | 565 | | | |
| Arrive On Green | 0.11 | 1.00 | 0.00 | 0.00 | 0.61 | 0.61 | 0.36 | 0.00 | 0.36 | | | |
| Sat Flow, veh/h | 1774 | 3632 | 0 | 0 | 3632 | 2787 | 1774 | 0 | 1583 | | | |
| Grp Volume(v), veh/h | 132 | 612 | 0 | 0 | 1204 | 1617 | 303 | 0 | 628 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 0 | 0 | 1770 | 1393 | 1774 | 0 | 1583 | | | |
| Q Serve(g_s), s | 5.4 | 0.0 | 0.0 | 0.0 | 33.6 | 64.6 | 18.5 | 0.0 | 50.0 | | | |
| Cycle Q Clear(g_c), s | 5.4 | 0.0 | 0.0 | 0.0 | 33.6 | 64.6 | 18.5 | 0.0 | 50.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 1.00 | | 1.00 | | | |
| Lane Grp Cap(c), veh/h | 166 | 1972 | 0 | 0 | 1633 | 1285 | 634 | 0 | 565 | | | |
| V/C Ratio(X) | 0.79 | 0.31 | 0.00 | 0.00 | 0.74 | 1.26 | 0.48 | 0.00 | 1.11 | | | |
| Avail Cap(c_a), veh/h | 174 | 1972 | 0 | 0 | 1633 | 1285 | 634 | 0 | 565 | | | |
| HCM Platoon Ratio | 2.00 | 2.00 | 1.00 | 1.00 | 1.33 | 1.33 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 0.92 | 0.92 | 0.00 | 0.00 | 0.09 | 0.09 | 1.00 | 0.00 | 1.00 | | | |
| Uniform Delay (d), s/veh | 28.4 | 0.0 | 0.0 | 0.0 | 21.1 | 27.1 | 34.9 | 0.0 | 45.0 | | | |
| Incr Delay (d2), s/veh | 19.7 | 0.4 | 0.0 | 0.0 | 0.3 | 116.7 | 0.6 | 0.0 | 71.9 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 3.5 | 0.1 | 0.0 | 0.0 | 16.3 | 45.3 | 9.2 | 0.0 | 33.1 | | | |
| LnGrp Delay(d),s/veh | 48.1 | 0.4 | 0.0 | 0.0 | 21.3 | 143.7 | 35.4 | 0.0 | 116.9 | | | |
| LnGrp LOS | D | A | | | C | F | D | | F | | | |
| Approach Vol, veh/h | | 744 | | | 2821 | | | 931 | | | | |
| Approach Delay, s/veh | | 8.9 | | | 91.5 | | | 90.4 | | | | |
| Approach LOS | | A | | | F | | | F | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 84.0 | | | 13.4 | 70.6 | | 56.0 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 78.0 | | | 8.0 | 64.0 | | 50.0 |
| Max Q Clear Time (g_c+I1), s | | 2.0 | | | 7.4 | 66.6 | | 52.0 |
| Green Ext Time (p_c), s | | 49.9 | | | 0.0 | 0.0 | | 0.0 |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | | 77.6 |
| HCM 2010 LOS | | E |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 359 | 729 | 60 | 34 | 1571 | 147 | 4 | 0 | 18 | 420 | 0 | 891 |
| Future Volume (veh/h) | 359 | 729 | 60 | 34 | 1571 | 147 | 4 | 0 | 18 | 420 | 0 | 891 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1900 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 399 | 810 | 67 | 38 | 1746 | 163 | 4 | 0 | 20 | 467 | 0 | 990 |
| Adj No. of Lanes | 1 | 2 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 140 | 1007 | 83 | 170 | 960 | 88 | 13 | 0 | 67 | 229 | 0 | 485 |
| Arrive On Green | 0.05 | 0.30 | 0.30 | 0.04 | 0.29 | 0.29 | 0.05 | 0.00 | 0.05 | 0.44 | 0.00 | 0.44 |
| Sat Flow, veh/h | 1774 | 3310 | 274 | 1774 | 3278 | 302 | 269 | 0 | 1344 | 526 | 0 | 1114 |
| Grp Volume(v), veh/h | 399 | 433 | 444 | 38 | 931 | 978 | 24 | 0 | 0 | 1457 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 1814 | 1774 | 1770 | 1810 | 1612 | 0 | 0 | 1640 | 0 | 0 |
| Q Serve(g_s), s | 7.0 | 31.6 | 31.6 | 2.0 | 41.0 | 41.0 | 2.0 | 0.0 | 0.0 | 61.0 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 7.0 | 31.6 | 31.6 | 2.0 | 41.0 | 41.0 | 2.0 | 0.0 | 0.0 | 61.0 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.15 | 1.00 | | 0.17 | 0.17 | | 0.83 | 0.32 | | 0.68 |
| Lane Grp Cap(c), veh/h | 140 | 538 | 552 | 170 | 518 | 530 | 81 | 0 | 0 | 714 | 0 | 0 |
| V/C Ratio(X) | 2.85 | 0.80 | 0.80 | 0.22 | 1.80 | 1.85 | 0.30 | 0.00 | 0.00 | 2.04 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 140 | 538 | 552 | 190 | 518 | 530 | 81 | 0 | 0 | 714 | 0 | 0 |
| 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 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 41.8 | 44.9 | 44.9 | 35.4 | 49.5 | 49.5 | 64.1 | 0.0 | 0.0 | 39.5 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 850.7 | 12.1 | 11.8 | 0.7 | 366.1 | 387.7 | 2.0 | 0.0 | 0.0 | 472.5 | 0.0 | 0.0 |
| 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 | 38.9 | 17.2 | 17.6 | 1.0 | 72.7 | 77.5 | 0.9 | 0.0 | 0.0 | 121.4 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 892.5 | 56.9 | 56.7 | 36.0 | 415.6 | 437.2 | 66.2 | 0.0 | 0.0 | 512.0 | 0.0 | 0.0 |
| LnGrp LOS | F | E | E | D | F | F | E | | | F | | |
| Approach Vol, veh/h | | 1276 | | | 1947 | | | 24 | | | 1457 | |
| Approach Delay, s/veh | | 318.1 | | | 419.1 | | | 66.2 | | | 512.0 | |
| Approach LOS | | F | | | F | | | E | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 11.4 | 48.6 | | 13.0 | 13.0 | 47.0 | | 67.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 41.0 | | 7.0 | 7.0 | 41.0 | | 61.0 |
| Max Q Clear Time (g_c+I1), s | 4.0 | 33.6 | | 4.0 | 9.0 | 43.0 | | 63.0 |
| Green Ext Time (p_c), s | 0.0 | 6.9 | | 0.0 | 0.0 | 0.0 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 418.7 |
| HCM 2010 LOS | F |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 328 | 230 | 527 | 41 | 225 | 85 | 590 | 534 | 34 | 174 | 524 | 400 |
| Future Volume (veh/h) | 328 | 230 | 527 | 41 | 225 | 85 | 590 | 534 | 34 | 174 | 524 | 400 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1900 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 364 | 256 | 0 | 46 | 250 | 94 | 656 | 593 | 0 | 193 | 582 | 0 |
| Adj No. of Lanes | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 328 | 679 | 577 | 60 | 234 | 84 | 495 | 798 | 679 | 324 | 479 | 407 |
| Arrive On Green | 0.11 | 0.36 | 0.00 | 0.21 | 0.21 | 0.21 | 0.25 | 0.43 | 0.00 | 0.08 | 0.26 | 0.00 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 153 | 1129 | 407 | 1774 | 1863 | 1583 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 364 | 256 | 0 | 390 | 0 | 0 | 656 | 593 | 0 | 193 | 582 | 0 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1689 | 0 | 0 | 1774 | 1863 | 1583 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 16.0 | 14.2 | 0.0 | 22.6 | 0.0 | 0.0 | 35.0 | 37.4 | 0.0 | 11.0 | 36.0 | 0.0 |
| Cycle Q Clear(g_c), s | 16.0 | 14.2 | 0.0 | 29.0 | 0.0 | 0.0 | 35.0 | 37.4 | 0.0 | 11.0 | 36.0 | 0.0 |
| Prop In Lane | 1.00 | | 1.00 | 0.12 | | 0.24 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 328 | 679 | 577 | 379 | 0 | 0 | 495 | 798 | 679 | 324 | 479 | 407 |
| V/C Ratio(X) | 1.11 | 0.38 | 0.00 | 1.03 | 0.00 | 0.00 | 1.33 | 0.74 | 0.00 | 0.60 | 1.22 | 0.00 |
| Avail Cap(c_a), veh/h | 328 | 679 | 577 | 379 | 0 | 0 | 495 | 798 | 679 | 324 | 479 | 407 |
| 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 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 42.4 | 32.8 | 0.0 | 56.4 | 0.0 | 0.0 | 43.7 | 33.5 | 0.0 | 35.9 | 52.0 | 0.0 |
| Incr Delay (d2), s/veh | 82.8 | 1.6 | 0.0 | 54.1 | 0.0 | 0.0 | 160.0 | 3.8 | 0.0 | 3.0 | 114.7 | 0.0 |
| 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 | 7.5 | 7.6 | 0.0 | 20.3 | 0.0 | 0.0 | 41.1 | 19.9 | 0.0 | 1.4 | 33.8 | 0.0 |
| LnGrp Delay(d),s/veh | 125.2 | 34.4 | 0.0 | 110.6 | 0.0 | 0.0 | 203.7 | 37.3 | 0.0 | 38.8 | 166.7 | 0.0 |
| LnGrp LOS | F | C | | F | | | F | D | | D | F | |
| Approach Vol, veh/h | | 620 | | | 390 | | | 1249 | | | 775 | |
| Approach Delay, s/veh | | 87.7 | | | 110.6 | | | 124.7 | | | 134.8 | |
| Approach LOS | | F | | | F | | | F | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 57.0 | 17.0 | 66.0 | 22.0 | 35.0 | 41.0 | 42.0 |
| Change Period (Y+Rc), s | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | | 51.0 | 11.0 | 60.0 | 16.0 | 29.0 | 35.0 | 36.0 |
| Max Q Clear Time (g_c+I1), s | | 16.2 | 13.0 | 39.4 | 18.0 | 31.0 | 37.0 | 38.0 |
| Green Ext Time (p_c), s | | 4.2 | 0.0 | 7.6 | 0.0 | 0.0 | 0.0 | 0.0 |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | | 117.9 |
| HCM 2010 LOS | | F |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 170 | 924 | 22 | 64 | 2233 | 170 | 136 | 1 | 54 | 170 | 1 | 170 |
| Future Volume (veh/h) | 170 | 924 | 22 | 64 | 2233 | 170 | 136 | 1 | 54 | 170 | 1 | 170 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 189 | 1027 | 24 | 71 | 2481 | 189 | 151 | 1 | 60 | 189 | 1 | 189 |
| Adj No. of Lanes | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 178 | 2135 | 1034 | 370 | 2048 | 995 | 152 | 3 | 201 | 265 | 1 | 203 |
| Arrive On Green | 0.07 | 0.60 | 0.60 | 0.05 | 0.58 | 0.58 | 0.05 | 0.13 | 0.13 | 0.05 | 0.13 | 0.13 |
| Sat Flow, veh/h | 1774 | 3539 | 1583 | 1774 | 3539 | 1583 | 1774 | 26 | 1561 | 1774 | 8 | 1576 |
| Grp Volume(v), veh/h | 189 | 1027 | 24 | 71 | 2481 | 189 | 151 | 0 | 61 | 189 | 0 | 190 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 1583 | 1774 | 1770 | 1583 | 1774 | 0 | 1587 | 1774 | 0 | 1585 |
| Q Serve(g_s), s | 10.0 | 22.7 | 0.7 | 2.2 | 81.0 | 7.0 | 7.0 | 0.0 | 4.9 | 7.0 | 0.0 | 16.6 |
| Cycle Q Clear(g_c), s | 10.0 | 22.7 | 0.7 | 2.2 | 81.0 | 7.0 | 7.0 | 0.0 | 4.9 | 7.0 | 0.0 | 16.6 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.99 |
| Lane Grp Cap(c), veh/h | 178 | 2135 | 1034 | 370 | 2048 | 995 | 152 | 0 | 204 | 265 | 0 | 204 |
| V/C Ratio(X) | 1.06 | 0.48 | 0.02 | 0.19 | 1.21 | 0.19 | 0.99 | 0.00 | 0.30 | 0.71 | 0.00 | 0.93 |
| Avail Cap(c_a), veh/h | 178 | 2135 | 1034 | 376 | 2048 | 995 | 152 | 0 | 204 | 265 | 0 | 204 |
| 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) | 0.78 | 0.78 | 0.78 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 49.4 | 15.5 | 8.6 | 11.8 | 29.5 | 11.0 | 57.3 | 0.0 | 55.3 | 55.8 | 0.0 | 60.4 |
| Incr Delay (d2), s/veh | 76.6 | 0.6 | 0.0 | 0.2 | 100.0 | 0.4 | 71.3 | 0.0 | 3.7 | 8.6 | 0.0 | 47.6 |
| 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 | 10.7 | 11.2 | 0.3 | 1.1 | 67.7 | 3.2 | 5.4 | 0.0 | 2.3 | 4.3 | 0.0 | 10.0 |
| LnGrp Delay(d),s/veh | 126.0 | 16.1 | 8.6 | 12.0 | 129.5 | 11.4 | 128.6 | 0.0 | 59.0 | 64.4 | 0.0 | 108.0 |
| LnGrp LOS | F | B | A | B | F | B | F | | E | E | | F |
| Approach Vol, veh/h | | 1240 | | | 2741 | | | 212 | | | 379 | |
| Approach Delay, s/veh | | 32.7 | | | 118.3 | | | 108.6 | | | 86.2 | |
| Approach LOS | | C | | | F | | | F | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 12.6 | 90.4 | 13.0 | 24.0 | 16.0 | 87.0 | 13.0 | 24.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 84.0 | 7.0 | 18.0 | 10.0 | 81.0 | 7.0 | 18.0 |
| Max Q Clear Time (g_c+I1), s | 14.2 | 24.7 | 9.0 | 6.9 | 12.0 | 83.0 | 9.0 | 18.6 |
| Green Ext Time (p_c), s | 0.0 | 53.4 | 0.0 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 92.0 |
| HCM 2010 LOS | F |

Notes

| Intersection | |
|---|---|
| Int Delay, s/veh | 21.4 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 94 | 1072 | 1381 | 49 | 0 | 371 |
| Future Vol, veh/h | 94 | 1072 | 1381 | 49 | 0 | 371 |
| 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 | 200 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 104 | 1191 | 1534 | 54 | 0 | 412 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1589 | 0 | - | 0 | 2366 | 794 |
| Stage 1 | - | - | - | - | 1562 | - |
| Stage 2 | - | - | - | - | 804 | - |
| Critical Hdwy | 4.14 | - | - | - | 6.84 | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.84 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.84 | - |
| Follow-up Hdwy | 2.22 | - | - | - | 3.52 | 3.32 |
| Pot Cap-1 Maneuver | 409 | - | - | - | 29 | ~ 331 |
| Stage 1 | - | - | - | - | 158 | - |
| Stage 2 | - | - | - | - | 401 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 409 | - | - | - | 22 | ~ 331 |
| Mov Cap-2 Maneuver | - | - | - | - | 103 | - |
| Stage 1 | - | - | - | - | 158 | - |
| Stage 2 | - | - | - | - | 299 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.4 | 0 | 166.7 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 409 | - | - | - | - | 331 |
| HCM Lane V/C Ratio | 0.255 | - | - | - | - | 1.245 |
| HCM Control Delay (s) | 16.8 | - | - | - | 0 | 166.7 |
| HCM Lane LOS | C | - | - | - | A | F |
| HCM 95th %tile Q(veh) | 1 | - | - | - | - | 18.5 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 46.5 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 94 | 978 | 1166 | 49 | 107 | 263 |
| Future Vol, veh/h | 94 | 978 | 1166 | 49 | 107 | 263 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 104 | 1087 | 1296 | 54 | 119 | 292 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1350 | 0 | - | 0 | 2075 | 675 |
| Stage 1 | - | - | - | - | 1323 | - |
| Stage 2 | - | - | - | - | 752 | - |
| Critical Hdwy | 4.14 | - | - | - | 6.84 | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.84 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.84 | - |
| Follow-up Hdwy | 2.22 | - | - | - | 3.52 | 3.32 |
| Pot Cap-1 Maneuver | 506 | - | - | - | ~ 46 | 396 |
| Stage 1 | - | - | - | - | 213 | - |
| Stage 2 | - | - | - | - | 426 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 506 | - | - | - | ~ 37 | 396 |
| Mov Cap-2 Maneuver | - | - | - | - | 135 | - |
| Stage 1 | - | - | - | - | 213 | - |
| Stage 2 | - | - | - | - | 338 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.2 | 0 | $ 330.7 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 506 | - | - | - | 254 |
| HCM Lane V/C Ratio | 0.206 | - | - | - | 1.619 |
| HCM Control Delay (s) | 14 | - | - | - | $ 330.7 |
| HCM Lane LOS | B | - | - | - | F |
| HCM 95th %tile Q(veh) | 0.8 | - | - | - | 25.6 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 308.3 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 271 | 100 | 43 | 904 | 999 | 100 |
| Future Vol, veh/h | 271 | 100 | 43 | 904 | 999 | 100 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | Stop | - | None | - | None |
| Storage Length | 180 | 0 | 200 | - | - | 200 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 301 | 111 | 48 | 1004 | 1110 | 111 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2210 | 1110 | 1110 | 0 | - | 0 |
| Stage 1 | 1110 | - | - | - | - | - |
| Stage 2 | 1100 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | ~ 49 | 255 | 629 | - | - | - |
| Stage 1 | 315 | - | - | - | - | - |
| Stage 2 | 319 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 45 | 255 | 629 | - | - | - |
| Mov Cap-2 Maneuver | ~ 45 | - | - | - | - | - |
| Stage 1 | 315 | - | - | - | - | - |
| Stage 2 | ~ 295 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, $ | 2007.2 | 0.5 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 629 | - | 45 | 255 | - | - |
| HCM Lane V/C Ratio | 0.076 | - | 6.691 | 0.436 | - | - |
| HCM Control Delay (s) | 11.2 | - | $ 2736.9 | 29.6 | - | - |
| HCM Lane LOS | B | - | F | D | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | 35.2 | 2.1 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 230.2 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 150 | 130 | 30 | 1008 | 1021 | 70 |
| Future Vol, veh/h | 150 | 130 | 30 | 1008 | 1021 | 70 |
| 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 | - | 0 | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 167 | 144 | 33 | 1120 | 1134 | 78 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2360 | 1173 | 1212 | 0 | - | 0 |
| Stage 1 | 1173 | - | - | - | - | - |
| Stage 2 | 1187 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | ~ 39 | 234 | 576 | - | - | - |
| Stage 1 | 294 | - | - | - | - | - |
| Stage 2 | 290 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 37 | 234 | 576 | - | - | - |
| Mov Cap-2 Maneuver | ~ 37 | - | - | - | - | - |
| Stage 1 | 294 | - | - | - | - | - |
| Stage 2 | 273 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, $ | 1979.8 | 0.3 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 576 | - | 61 | - | - |
| HCM Lane V/C Ratio | 0.058 | - | 5.1 | - | - |
| HCM Control Delay (s) | 11.6 | - | $ 1979.8 | - | - |
| HCM Lane LOS | B | - | F | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | 34.6 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.6 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 34 | 28 | 4 | 1005 | 1133 | 18 |
| Future Vol, veh/h | 34 | 28 | 4 | 1005 | 1133 | 18 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 38 | 31 | 4 | 1117 | 1259 | 20 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1836 | 1269 | 1279 | 0 | - | 0 |
| Stage 1 | 1269 | - | - | - | - | - |
| Stage 2 | 567 | - | - | - | - | - |
| Critical Hdwy | 6.63 | 6.23 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.43 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.83 | - | - | - | - | - |
| Follow-up Hdwy | 3.519 | 3.319 | 2.219 | - | - | - |
| Pot Cap-1 Maneuver | 75 | 205 | 541 | - | - | - |
| Stage 1 | 263 | - | - | - | - | - |
| Stage 2 | 532 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 74 | 205 | 541 | - | - | - |
| Mov Cap-2 Maneuver | 74 | - | - | - | - | - |
| Stage 1 | 263 | - | - | - | - | - |
| Stage 2 | 522 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 90.5 | 0.1 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 541 | - | 104 | - | - |
| HCM Lane V/C Ratio | 0.008 | - | 0.662 | - | - |
| HCM Control Delay (s) | 11.7 | 0.1 | 90.5 | - | - |
| HCM Lane LOS | B | A | F | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 3.3 | - | - |

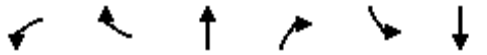
| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 3 | 10 | 1009 | 1159 | 2 |
| Future Vol, veh/h | 0 | 3 | 10 | 1009 | 1159 | 2 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 3 | 11 | 1121 | 1288 | 2 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2432 | 645 | 1290 | 0 | - | 0 |
| Stage 1 | 1289 | - | - | - | - | - |
| Stage 2 | 1143 | - | - | - | - | - |
| Critical Hdwy | 6.63 | 6.93 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.83 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - | - | - | - |
| Follow-up Hdwy | 3.519 | 3.319 | 2.219 | - | - | - |
| Pot Cap-1 Maneuver | 30 | 416 | 535 | - | - | - |
| Stage 1 | 223 | - | - | - | - | - |
| Stage 2 | 303 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 28 | 416 | 535 | - | - | - |
| Mov Cap-2 Maneuver | 28 | - | - | - | - | - |
| Stage 1 | 223 | - | - | - | - | - |
| Stage 2 | 286 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.7 | 0.1 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 535 | - | 416 | - | - |
| HCM Lane V/C Ratio | 0.021 | - | 0.008 | - | - |
| HCM Control Delay (s) | 11.9 | 0 | 13.7 | - | - |
| HCM Lane LOS | B | A | B | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 0 | - | - |



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 154 | 161 | 858 | 223 | 264 | 897 |
| Future Volume (veh/h) | 154 | 161 | 858 | 223 | 264 | 897 |
| Number | 3 | 18 | 2 | 12 | 1 | 6 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 171 | 179 | 953 | 248 | 293 | 997 |
| Adj No. of Lanes | 1 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 213 | 190 | 894 | 233 | 285 | 1490 |
| Arrive On Green | 0.12 | 0.12 | 0.63 | 0.63 | 0.13 | 0.80 |
| Sat Flow, veh/h | 1774 | 1583 | 1426 | 371 | 1774 | 1863 |
| Grp Volume(v), veh/h | 171 | 179 | 0 | 1201 | 293 | 997 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1583 | 0 | 1797 | 1774 | 1863 |
| Q Serve(g_s), s | 14.1 | 16.8 | 0.0 | 94.0 | 20.0 | 34.5 |
| Cycle Q Clear(g_c), s | 14.1 | 16.8 | 0.0 | 94.0 | 20.0 | 34.5 |
| Prop In Lane | 1.00 | 1.00 | | 0.21 | 1.00 | |
| Lane Grp Cap(c), veh/h | 213 | 190 | 0 | 1126 | 285 | 1490 |
| V/C Ratio(X) | 0.80 | 0.94 | 0.00 | 1.07 | 1.03 | 0.67 |
| Avail Cap(c_a), veh/h | 213 | 190 | 0 | 1126 | 285 | 1490 |
| HCM Platoon Ratio | 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 | 1.00 |
| Uniform Delay (d), s/veh | 64.3 | 65.5 | 0.0 | 28.0 | 57.6 | 6.5 |
| Incr Delay (d2), s/veh | 19.6 | 48.8 | 0.0 | 46.4 | 61.2 | 1.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 8.0 | 9.9 | 0.0 | 60.8 | 16.6 | 17.9 |
| LnGrp Delay(d),s/veh | 83.8 | 114.3 | 0.0 | 74.4 | 118.8 | 7.6 |
| LnGrp LOS | F | F | | F | F | A |
| Approach Vol, veh/h | 350 | | 1201 | | | 1290 |
| Approach Delay, s/veh | 99.4 | | 74.4 | | | 32.9 |
| Approach LOS | F | | E | | | C |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 26.0 | 100.0 | | | | 126.0 | | 24.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 20.0 | 94.0 | | | | 120.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 22.0 | 96.0 | | | | 36.5 | | 18.8 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | | | 45.3 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 58.6 |
| HCM 2010 LOS | E |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.8 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 40 | 12 | 88 | 240 | 2 |
| Future Vol, veh/h | 0 | 40 | 12 | 88 | 240 | 2 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 44 | 13 | 98 | 267 | 2 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 111 | 0 | - | 0 | 106 | 62 |
| Stage 1 | - | - | - | - | 62 | - |
| Stage 2 | - | - | - | - | 44 | - |
| 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 | 1479 | - | - | - | 892 | 1003 |
| Stage 1 | - | - | - | - | 961 | - |
| Stage 2 | - | - | - | - | 978 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1479 | - | - | - | 892 | 1003 |
| Mov Cap-2 Maneuver | - | - | - | - | 892 | - |
| Stage 1 | - | - | - | - | 961 | - |
| Stage 2 | - | - | - | - | 978 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 10.8 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1479 | - | - | - | 893 |
| HCM Lane V/C Ratio | - | - | - | - | 0.301 |
| HCM Control Delay (s) | 0 | - | - | - | 10.8 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1.3 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 861.4 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 228 | 200 | 65 | 1110 | 898 | 100 |
| Future Vol, veh/h | 228 | 200 | 65 | 1110 | 898 | 100 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 253 | 222 | 72 | 1233 | 998 | 111 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2431 | 1053 | 1109 | 0 | - | 0 |
| Stage 1 | 1053 | - | - | - | - | - |
| Stage 2 | 1378 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | ~ 35 | 275 | 630 | - | - | - |
| Stage 1 | 336 | - | - | - | - | - |
| Stage 2 | ~ 234 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 22 | 275 | 630 | - | - | - |
| Mov Cap-2 Maneuver | ~ 22 | - | - | - | - | - |
| Stage 1 | 336 | - | - | - | - | - |
| Stage 2 | ~ 149 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, $ | 5233.1 | 0.6 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 630 | - | 39 | - | - |
| HCM Lane V/C Ratio | 0.115 | - | 12.194 | - | - |
| HCM Control Delay (s) | 11.5 | $ | 5233.1 | - | - |
| HCM Lane LOS | B | A | F | - | - |
| HCM 95th %tile Q(veh) | 0.4 | - | 57.7 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

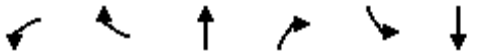
| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 1339 | 999 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 1339 | 999 | 0 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 1488 | 1110 | 0 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2598 | 1110 | 1110 | 0 | - | 0 |
| Stage 1 | 1110 | - | - | - | - | - |
| Stage 2 | 1488 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 27 | 255 | 629 | - | - | - |
| Stage 1 | 315 | - | - | - | - | - |
| Stage 2 | 207 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 27 | 255 | 629 | - | - | - |
| Mov Cap-2 Maneuver | 27 | - | - | - | - | - |
| Stage 1 | 315 | - | - | - | - | - |
| Stage 2 | 207 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 629 | - | - | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - |
| HCM Control Delay (s) | 0 | - | 0 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - |



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 188 | 202 | 930 | 409 | 147 | 810 |
| Future Volume (veh/h) | 188 | 202 | 930 | 409 | 147 | 810 |
| Number | 3 | 18 | 2 | 12 | 1 | 6 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 209 | 224 | 1033 | 454 | 163 | 900 |
| Adj No. of Lanes | 1 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 213 | 190 | 876 | 385 | 131 | 1490 |
| Arrive On Green | 0.12 | 0.12 | 0.71 | 0.71 | 0.05 | 0.80 |
| Sat Flow, veh/h | 1774 | 1583 | 1228 | 540 | 1774 | 1863 |
| Grp Volume(v), veh/h | 209 | 224 | 0 | 1487 | 163 | 900 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1583 | 0 | 1768 | 1774 | 1863 |
| Q Serve(g_s), s | 17.6 | 18.0 | 0.0 | 107.0 | 7.0 | 28.0 |
| Cycle Q Clear(g_c), s | 17.6 | 18.0 | 0.0 | 107.0 | 7.0 | 28.0 |
| Prop In Lane | 1.00 | 1.00 | | 0.31 | 1.00 | |
| Lane Grp Cap(c), veh/h | 213 | 190 | 0 | 1261 | 131 | 1490 |
| V/C Ratio(X) | 0.98 | 1.18 | 0.00 | 1.18 | 1.25 | 0.60 |
| Avail Cap(c_a), veh/h | 213 | 190 | 0 | 1261 | 131 | 1490 |
| HCM Platoon Ratio | 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 | 1.00 |
| Uniform Delay (d), s/veh | 65.8 | 66.0 | 0.0 | 21.5 | 57.7 | 5.8 |
| Incr Delay (d2), s/veh | 56.3 | 121.8 | 0.0 | 89.2 | 159.3 | 0.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 12.0 | 14.3 | 0.0 | 82.7 | 11.2 | 14.5 |
| LnGrp Delay(d),s/veh | 122.1 | 187.8 | 0.0 | 110.7 | 217.0 | 6.5 |
| LnGrp LOS | F | F | | F | F | A |
| Approach Vol, veh/h | 433 | | 1487 | | | 1063 |
| Approach Delay, s/veh | 156.1 | | 110.7 | | | 38.8 |
| Approach LOS | F | | F | | | D |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 13.0 | 113.0 | | | | 126.0 | | 24.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 107.0 | | | | 120.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 9.0 | 109.0 | | | | 30.0 | | 20.0 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | | | 62.8 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 91.7 |
| HCM 2010 LOS | F |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 222 | 1 | 3 | 475 | 43 | 52 |
| Future Vol, veh/h | 222 | 1 | 3 | 475 | 43 | 52 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 150 | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 247 | 1 | 3 | 528 | 48 | 58 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 247 | 0 | 781 | 247 |
| Stage 1 | - | - | - | - | 247 | - |
| Stage 2 | - | - | - | - | 534 | - |
| 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 | - | - | 1319 | - | 363 | 792 |
| Stage 1 | - | - | - | - | 794 | - |
| Stage 2 | - | - | - | - | 588 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1319 | - | 362 | 792 |
| Mov Cap-2 Maneuver | - | - | - | - | 362 | - |
| Stage 1 | - | - | - | - | 794 | - |
| Stage 2 | - | - | - | - | 587 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 13.8 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 515 | - | - | 1319 | - |
| HCM Lane V/C Ratio | 0.205 | - | - | 0.003 | - |
| HCM Control Delay (s) | 13.8 | - | - | 7.7 | - |
| HCM Lane LOS | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.8 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.6 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 274 | 465 | 154 | 97 | 13 |
| Future Vol, veh/h | 7 | 274 | 465 | 154 | 97 | 13 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 304 | 517 | 171 | 108 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 688 | 0 | - | 0 | 922 | 602 |
| Stage 1 | - | - | - | - | 602 | - |
| Stage 2 | - | - | - | - | 320 | - |
| 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 | 906 | - | - | - | 300 | 500 |
| Stage 1 | - | - | - | - | 547 | - |
| Stage 2 | - | - | - | - | 736 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 906 | - | - | - | 297 | 500 |
| Mov Cap-2 Maneuver | - | - | - | - | 297 | - |
| Stage 1 | - | - | - | - | 547 | - |
| Stage 2 | - | - | - | - | 728 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.2 | 0 | 23.8 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 906 | - | - | - | 312 |
| HCM Lane V/C Ratio | 0.009 | - | - | - | 0.392 |
| HCM Control Delay (s) | 9 | 0 | - | - | 23.8 |
| HCM Lane LOS | A | A | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1.8 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 371 | 0 | 0 | 619 | 0 | 0 |
| Future Vol, veh/h | 371 | 0 | 0 | 619 | 0 | 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 | - | 150 | 0 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 412 | 0 | 0 | 688 | 0 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 412 | 0 | 1100 | 412 |
| Stage 1 | - | - | - | - | 412 | - |
| Stage 2 | - | - | - | - | 688 | - |
| 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 | - | - | 1147 | - | 235 | 640 |
| Stage 1 | - | - | - | - | 669 | - |
| Stage 2 | - | - | - | - | 499 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1147 | - | 235 | 640 |
| Mov Cap-2 Maneuver | - | - | - | - | 235 | - |
| Stage 1 | - | - | - | - | 669 | - |
| Stage 2 | - | - | - | - | 499 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | 1147 | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - |
| HCM Control Delay (s) | 0 | 0 | - | - | 0 | - |
| HCM Lane LOS | A | A | - | - | A | - |
| HCM 95th %tile Q(veh) | - | - | - | - | 0 | - |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 271 | 100 | 723 | 459 | 160 | 901 |
| Future Volume (veh/h) | 271 | 100 | 723 | 459 | 160 | 901 |
| Number | 2 | 12 | 1 | 6 | 3 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 301 | 111 | 803 | 510 | 178 | 1001 |
| Adj No. of Lanes | 3 | 0 | 2 | 2 | 2 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 645 | 224 | 861 | 1661 | 1509 | 1090 |
| Arrive On Green | 0.17 | 0.17 | 0.42 | 0.78 | 0.44 | 0.44 |
| Sat Flow, veh/h | 3896 | 1296 | 3442 | 3632 | 3442 | 1583 |
| Grp Volume(v), veh/h | 272 | 140 | 803 | 510 | 178 | 1001 |
| Grp Sat Flow(s),veh/h/ln | 1695 | 1634 | 1721 | 1770 | 1721 | 1583 |
| Q Serve(g_s), s | 9.4 | 10.1 | 28.9 | 5.3 | 4.0 | 57.0 |
| Cycle Q Clear(g_c), s | 9.4 | 10.1 | 28.9 | 5.3 | 4.0 | 57.0 |
| Prop In Lane | | 0.79 | 1.00 | | 1.00 | 1.00 |
| Lane Grp Cap(c), veh/h | 587 | 283 | 861 | 1661 | 1509 | 1090 |
| V/C Ratio(X) | 0.46 | 0.50 | 0.93 | 0.31 | 0.12 | 0.92 |
| Avail Cap(c_a), veh/h | 587 | 283 | 953 | 1661 | 1509 | 1090 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.67 | 1.67 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.58 | 0.58 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 48.3 | 48.6 | 36.8 | 8.0 | 21.6 | 17.1 |
| Incr Delay (d2), s/veh | 2.6 | 6.1 | 9.6 | 0.3 | 0.0 | 12.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 4.6 | 5.0 | 14.7 | 2.6 | 1.9 | 33.6 |
| LnGrp Delay(d),s/veh | 51.0 | 54.7 | 46.5 | 8.3 | 21.6 | 29.3 |
| LnGrp LOS | D | D | D | A | C | C |
| Approach Vol, veh/h | 412 | | | 1313 | 1179 | |
| Approach Delay, s/veh | 52.2 | | | 31.6 | 28.1 | |
| Approach LOS | D | | | C | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 38.5 | 28.5 | | | | 67.0 | | 63.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 36.0 | 19.0 | | | | 61.0 | | 57.0 |
| Max Q Clear Time (g_c+I1), s | 30.9 | 12.1 | | | | 7.3 | | 59.0 |
| Green Ext Time (p_c), s | 1.6 | 3.1 | | | | 6.9 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 33.1 |
| HCM 2010 LOS | C |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 989 | 183 | 402 | 787 | 0 | 0 | 0 | 0 | 728 | 0 | 395 |
| Future Volume (veh/h) | 0 | 989 | 183 | 402 | 787 | 0 | 0 | 0 | 0 | 728 | 0 | 395 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1863 | 1863 | 1863 | 0 | | | | 1863 | 0 | 1863 |
| Adj Flow Rate, veh/h | 0 | 1099 | 203 | 447 | 874 | 0 | | | | 809 | 0 | 439 |
| Adj No. of Lanes | 0 | 2 | 1 | 1 | 1 | 0 | | | | 2 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 0 | 2 |
| Cap, veh/h | 0 | 1557 | 696 | 483 | 1204 | 0 | | | | 900 | 0 | 414 |
| Arrive On Green | 0.00 | 0.88 | 0.88 | 0.11 | 0.43 | 0.00 | | | | 0.26 | 0.00 | 0.26 |
| Sat Flow, veh/h | 0 | 3632 | 1583 | 1774 | 1863 | 0 | | | | 3442 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 1099 | 203 | 447 | 874 | 0 | | | | 809 | 0 | 439 |
| Grp Sat Flow(s),veh/h/ln | 0 | 1770 | 1583 | 1774 | 1863 | 0 | | | | 1721 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 12.8 | 2.7 | 17.6 | 50.4 | 0.0 | | | | 29.5 | 0.0 | 34.0 |
| Cycle Q Clear(g_c), s | 0.0 | 12.8 | 2.7 | 17.6 | 50.4 | 0.0 | | | | 29.5 | 0.0 | 34.0 |
| Prop In Lane | 0.00 | | 1.00 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 1557 | 696 | 483 | 1204 | 0 | | | | 900 | 0 | 414 |
| V/C Ratio(X) | 0.00 | 0.71 | 0.29 | 0.93 | 0.73 | 0.00 | | | | 0.90 | 0.00 | 1.06 |
| Avail Cap(c_a), veh/h | 0 | 1557 | 696 | 636 | 1204 | 0 | | | | 900 | 0 | 414 |
| HCM Platoon Ratio | 1.00 | 2.00 | 2.00 | 0.67 | 0.67 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 0.60 | 0.60 | 0.61 | 0.61 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 5.2 | 4.5 | 23.3 | 27.3 | 0.0 | | | | 46.3 | 0.0 | 48.0 |
| Incr Delay (d2), s/veh | 0.0 | 1.6 | 0.6 | 11.2 | 2.4 | 0.0 | | | | 13.7 | 0.0 | 61.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.0 | 6.1 | 1.2 | 17.3 | 26.7 | 0.0 | | | | 15.8 | 0.0 | 21.9 |
| LnGrp Delay(d),s/veh | 0.0 | 6.8 | 5.2 | 34.5 | 29.7 | 0.0 | | | | 60.0 | 0.0 | 109.0 |
| LnGrp LOS | | A | A | C | C | | | | | E | | F |
| Approach Vol, veh/h | | 1302 | | | 1321 | | | | | | 1248 | |
| Approach Delay, s/veh | | 6.5 | | | 31.4 | | | | | | 77.2 | |
| Approach LOS | | A | | | C | | | | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 26.8 | 63.2 | | 40.0 | | 90.0 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 32.8 | 46.0 | | 34.0 | | 84.0 | | |
| Max Q Clear Time (g_c+I1), s | 19.6 | 14.8 | | 36.0 | | 52.4 | | |
| Green Ext Time (p_c), s | 1.2 | 19.2 | | 0.0 | | 19.3 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 37.8 |
| HCM 2010 LOS | D |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 593 | 1125 | 0 | 0 | 1095 | 818 | 94 | 0 | 0 | 0 | 0 | 0 |
| Future Volume (veh/h) | 593 | 1125 | 0 | 0 | 1095 | 818 | 94 | 0 | 0 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1863 | 1863 | 0 | 0 | | | |
| Adj Flow Rate, veh/h | 659 | 1250 | 0 | 0 | 1217 | 0 | 104 | 0 | 0 | | | |
| Adj No. of Lanes | 1 | 2 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 0 | 0 | | | |
| Cap, veh/h | 674 | 3376 | 0 | 0 | 2665 | 1192 | 0 | 0 | 0 | | | |
| Arrive On Green | 0.31 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1774 | 3632 | 0 | 0 | 3632 | 1583 | 0 | 0 | 0 | | | |
| Grp Volume(v), veh/h | 659 | 1250 | 0 | 0 | 1217 | 0 | 0 | 0 | 0 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 0 | 0 | 1770 | 1583 | 0 | 0 | 0 | | | |
| Q Serve(g_s), s | 15.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 15.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 0.00 | | 0.00 | | | |
| Lane Grp Cap(c), veh/h | 674 | 3376 | 0 | 0 | 2665 | 1192 | 0 | 0 | 0 | | | |
| V/C Ratio(X) | 0.98 | 0.37 | 0.00 | 0.00 | 0.46 | 0.00 | 0.00 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 959 | 3376 | 0 | 0 | 2665 | 1192 | 0 | 0 | 0 | | | |
| HCM Platoon Ratio | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 0.37 | 0.37 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 7.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 10.7 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 8.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| LnGrp Delay(d),s/veh | 17.8 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| LnGrp LOS | B | A | | | A | | | | | | | |
| Approach Vol, veh/h | | 1909 | | | 1217 | | | 0 | | | | |
| Approach Delay, s/veh | | 6.2 | | | 0.1 | | | 0.0 | | | | |
| Approach LOS | | A | | | A | | | | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 130.0 | | | 26.1 | 103.9 | | 0.0 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 110.0 | | | 41.0 | 63.0 | | 8.0 |
| Max Q Clear Time (g_c+I1), s | | 2.0 | | | 17.9 | 2.0 | | 0.0 |
| Green Ext Time (p_c), s | | 43.8 | | | 2.2 | 34.5 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 3.8 |
| HCM 2010 LOS | A |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 275 | 797 | 54 | 47 | 1489 | 469 | 33 | 27 | 361 | 355 | 24 | 392 |
| Future Volume (veh/h) | 275 | 797 | 54 | 47 | 1489 | 469 | 33 | 27 | 361 | 355 | 24 | 392 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 306 | 886 | 60 | 52 | 1654 | 521 | 37 | 30 | 401 | 413 | 0 | 436 |
| Adj No. of Lanes | 2 | 3 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 2 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 185 | 1725 | 116 | 81 | 1225 | 865 | 216 | 175 | 341 | 710 | 0 | 317 |
| Arrive On Green | 0.11 | 0.71 | 0.71 | 0.06 | 0.46 | 0.46 | 0.22 | 0.22 | 0.22 | 0.20 | 0.00 | 0.20 |
| Sat Flow, veh/h | 3442 | 4866 | 329 | 1774 | 3539 | 1583 | 1001 | 812 | 1583 | 3548 | 0 | 1583 |
| Grp Volume(v), veh/h | 306 | 617 | 329 | 52 | 1654 | 521 | 67 | 0 | 401 | 413 | 0 | 436 |
| Grp Sat Flow(s),veh/h/ln | 1721 | 1695 | 1805 | 1774 | 1770 | 1583 | 1813 | 0 | 1583 | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 7.0 | 10.8 | 10.9 | 3.7 | 45.0 | 28.5 | 3.9 | 0.0 | 28.0 | 13.7 | 0.0 | 26.0 |
| Cycle Q Clear(g_c), s | 7.0 | 10.8 | 10.9 | 3.7 | 45.0 | 28.5 | 3.9 | 0.0 | 28.0 | 13.7 | 0.0 | 26.0 |
| Prop In Lane | 1.00 | | 0.18 | 1.00 | | 1.00 | 0.55 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 185 | 1201 | 640 | 81 | 1225 | 865 | 390 | 0 | 341 | 710 | 0 | 317 |
| V/C Ratio(X) | 1.65 | 0.51 | 0.52 | 0.64 | 1.35 | 0.60 | 0.17 | 0.00 | 1.18 | 0.58 | 0.00 | 1.38 |
| Avail Cap(c_a), veh/h | 185 | 1201 | 640 | 96 | 1225 | 865 | 390 | 0 | 341 | 710 | 0 | 317 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 1.33 | 1.33 | 1.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.91 | 0.91 | 0.91 | 0.66 | 0.66 | 0.66 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 58.0 | 13.8 | 13.8 | 60.0 | 35.1 | 16.4 | 41.6 | 0.0 | 51.0 | 47.1 | 0.0 | 52.0 |
| Incr Delay (d2), s/veh | 314.0 | 1.4 | 2.7 | 7.2 | 161.2 | 2.1 | 1.0 | 0.0 | 105.6 | 3.5 | 0.0 | 188.3 |
| 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/ln | 11.4 | 5.2 | 5.8 | 2.0 | 49.3 | 18.3 | 2.1 | 0.0 | 22.2 | 7.1 | 0.0 | 27.9 |
| LnGrp Delay(d),s/veh | 372.0 | 15.2 | 16.5 | 67.2 | 196.3 | 18.4 | 42.5 | 0.0 | 156.6 | 50.5 | 0.0 | 240.3 |
| LnGrp LOS | F | B | B | E | F | B | D | | F | D | | F |
| Approach Vol, veh/h | | 1252 | | | 2227 | | | 468 | | | 849 | |
| Approach Delay, s/veh | | 102.8 | | | 151.7 | | | 140.3 | | | 148.0 | |
| Approach LOS | | F | | | F | | | F | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 11.9 | 52.1 | | 32.0 | 13.0 | 51.0 | | 34.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 45.0 | | 26.0 | 7.0 | 45.0 | | 28.0 |
| Max Q Clear Time (g_c+I1), s | 5.7 | 12.9 | | 28.0 | 9.0 | 47.0 | | 30.0 |
| Green Ext Time (p_c), s | 0.0 | 26.5 | | 0.0 | 0.0 | 0.0 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 137.1 |
| HCM 2010 LOS | F |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 34 | 1446 | 34 | 17 | 1816 | 17 | 95 | 16 | 56 | 56 | 16 | 90 |
| Future Volume (veh/h) | 34 | 1446 | 34 | 17 | 1816 | 17 | 95 | 16 | 56 | 56 | 16 | 90 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 38 | 1607 | 38 | 19 | 2018 | 19 | 106 | 18 | 62 | 62 | 18 | 100 |
| Adj No. of Lanes | 1 | 3 | 0 | 1 | 3 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 209 | 2477 | 59 | 466 | 3170 | 30 | 133 | 23 | 400 | 108 | 31 | 187 |
| Arrive On Green | 0.08 | 0.97 | 0.97 | 0.33 | 1.00 | 1.00 | 0.09 | 0.09 | 0.09 | 0.08 | 0.08 | 0.08 |
| Sat Flow, veh/h | 1774 | 5111 | 121 | 1774 | 5195 | 49 | 1527 | 259 | 1583 | 1390 | 403 | 1583 |
| Grp Volume(v), veh/h | 38 | 1066 | 579 | 19 | 1316 | 721 | 124 | 0 | 62 | 80 | 0 | 100 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1695 | 1841 | 1774 | 1695 | 1854 | 1786 | 0 | 1583 | 1793 | 0 | 1583 |
| Q Serve(g_s), s | 1.5 | 3.4 | 3.4 | 0.0 | 0.0 | 0.0 | 8.9 | 0.0 | 0.0 | 5.6 | 0.0 | 7.7 |
| Cycle Q Clear(g_c), s | 1.5 | 3.4 | 3.4 | 0.0 | 0.0 | 0.0 | 8.9 | 0.0 | 0.0 | 5.6 | 0.0 | 7.7 |
| Prop In Lane | 1.00 | | 0.07 | 1.00 | | 0.03 | 0.85 | | 1.00 | 0.77 | | 1.00 |
| Lane Grp Cap(c), veh/h | 209 | 1643 | 892 | 466 | 2069 | 1131 | 155 | 0 | 400 | 140 | 0 | 187 |
| V/C Ratio(X) | 0.18 | 0.65 | 0.65 | 0.04 | 0.64 | 0.64 | 0.80 | 0.00 | 0.15 | 0.57 | 0.00 | 0.53 |
| Avail Cap(c_a), veh/h | 233 | 1643 | 892 | 466 | 2069 | 1131 | 247 | 0 | 482 | 248 | 0 | 283 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.74 | 0.74 | 0.74 | 0.43 | 0.43 | 0.43 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 19.0 | 1.1 | 1.1 | 11.2 | 0.0 | 0.0 | 58.2 | 0.0 | 37.8 | 57.8 | 0.0 | 53.9 |
| Incr Delay (d2), s/veh | 0.3 | 1.5 | 2.7 | 0.0 | 0.7 | 1.2 | 9.1 | 0.0 | 0.2 | 3.6 | 0.0 | 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/ln | 0.8 | 1.2 | 1.6 | 0.3 | 0.2 | 0.4 | 4.8 | 0.0 | 1.7 | 2.9 | 0.0 | 3.5 |
| LnGrp Delay(d),s/veh | 19.3 | 2.6 | 3.8 | 11.2 | 0.7 | 1.2 | 67.3 | 0.0 | 38.0 | 61.5 | 0.0 | 56.3 |
| LnGrp LOS | B | A | A | B | A | A | E | | D | E | | E |
| Approach Vol, veh/h | | 1683 | | | 2056 | | | 186 | | | 180 | |
| Approach Delay, s/veh | | 3.4 | | | 0.9 | | | 57.5 | | | 58.6 | |
| Approach LOS | | A | | | A | | | E | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 27.6 | 69.0 | | 16.1 | 11.2 | 85.3 | | 17.3 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 7.6 | 63.0 | | 18.0 | 7.0 | 63.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 2.5 | 5.4 | | 9.7 | 3.5 | 2.0 | | 10.9 |
| Green Ext Time (p_c), s | 4.3 | 17.9 | | 0.4 | 0.0 | 27.1 | | 0.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 7.0 |
| HCM 2010 LOS | A |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 160 | 973 | 424 | 218 | 1119 | 94 | 543 | 556 | 242 | 152 | 278 | 187 |
| Future Volume (veh/h) | 160 | 973 | 424 | 218 | 1119 | 94 | 543 | 556 | 242 | 152 | 278 | 187 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 178 | 1081 | 471 | 242 | 1243 | 104 | 603 | 618 | 269 | 169 | 309 | 208 |
| Adj No. of Lanes | 1 | 3 | 0 | 1 | 3 | 0 | 2 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 204 | 1095 | 477 | 205 | 1509 | 126 | 635 | 587 | 682 | 178 | 373 | 499 |
| Arrive On Green | 0.08 | 0.21 | 0.21 | 0.04 | 0.10 | 0.10 | 0.18 | 0.32 | 0.32 | 0.07 | 0.20 | 0.20 |
| Sat Flow, veh/h | 1774 | 3473 | 1513 | 1774 | 4782 | 400 | 3442 | 1863 | 1583 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 178 | 1055 | 497 | 242 | 881 | 466 | 603 | 618 | 269 | 169 | 309 | 208 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1695 | 1596 | 1774 | 1695 | 1792 | 1721 | 1863 | 1583 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 12.9 | 40.3 | 40.3 | 15.0 | 33.1 | 33.1 | 22.5 | 41.0 | 15.1 | 9.0 | 20.7 | 13.5 |
| Cycle Q Clear(g_c), s | 12.9 | 40.3 | 40.3 | 15.0 | 33.1 | 33.1 | 22.5 | 41.0 | 15.1 | 9.0 | 20.7 | 13.5 |
| Prop In Lane | 1.00 | | 0.95 | 1.00 | | 0.22 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 204 | 1069 | 503 | 205 | 1070 | 566 | 635 | 587 | 682 | 178 | 373 | 499 |
| V/C Ratio(X) | 0.87 | 0.99 | 0.99 | 1.18 | 0.82 | 0.82 | 0.95 | 1.05 | 0.39 | 0.95 | 0.83 | 0.42 |
| Avail Cap(c_a), veh/h | 232 | 1069 | 503 | 205 | 1070 | 566 | 635 | 587 | 682 | 178 | 373 | 499 |
| HCM Platoon Ratio | 0.67 | 0.67 | 0.67 | 0.33 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.83 | 0.83 | 0.83 | 0.29 | 0.29 | 0.29 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 59.0 | 51.0 | 51.0 | 62.5 | 54.7 | 54.7 | 52.4 | 44.5 | 25.4 | 42.8 | 49.9 | 35.1 |
| Incr Delay (d2), s/veh | 22.5 | 22.0 | 33.5 | 96.2 | 2.2 | 4.1 | 23.8 | 51.5 | 1.7 | 52.4 | 18.9 | 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 | 7.6 | 22.2 | 22.5 | 12.8 | 15.9 | 17.1 | 12.8 | 29.5 | 6.9 | 4.3 | 12.6 | 6.2 |
| LnGrp Delay(d),s/veh | 81.5 | 73.0 | 84.5 | 158.8 | 56.9 | 58.8 | 76.2 | 96.0 | 27.1 | 95.2 | 68.7 | 37.6 |
| LnGrp LOS | F | E | F | F | E | E | E | F | C | F | E | D |
| Approach Vol, veh/h | | 1730 | | | 1589 | | | 1490 | | | 686 | |
| Approach Delay, s/veh | | 77.2 | | | 73.0 | | | 75.6 | | | 65.8 | |
| Approach LOS | | E | | | E | | | E | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 21.0 | 47.0 | 15.0 | 47.0 | 21.0 | 47.0 | 30.0 | 32.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 15.0 | 41.0 | 9.0 | 41.0 | 17.0 | 39.0 | 24.0 | 26.0 |
| Max Q Clear Time (g_c+I1), s | 17.0 | 42.3 | 11.0 | 43.0 | 14.9 | 35.1 | 24.5 | 22.7 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 3.7 | 0.0 | 2.2 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 74.1 |
| HCM 2010 LOS | E |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 85 | 1267 | 16 | 90 | 1454 | 190 | 89 | 28 | 90 | 61 | 31 | 66 |
| Future Volume (veh/h) | 85 | 1267 | 16 | 90 | 1454 | 190 | 89 | 28 | 90 | 61 | 31 | 66 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 94 | 1408 | 18 | 100 | 1616 | 211 | 99 | 31 | 100 | 68 | 34 | 73 |
| Adj No. of Lanes | 1 | 3 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 162 | 2515 | 32 | 258 | 1722 | 989 | 189 | 59 | 302 | 166 | 83 | 302 |
| Arrive On Green | 0.05 | 0.49 | 0.49 | 0.05 | 0.49 | 0.49 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| Sat Flow, veh/h | 1774 | 5175 | 66 | 1774 | 3539 | 1583 | 1367 | 428 | 1583 | 1202 | 601 | 1583 |
| Grp Volume(v), veh/h | 94 | 922 | 504 | 100 | 1616 | 211 | 130 | 0 | 100 | 102 | 0 | 73 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1695 | 1851 | 1774 | 1770 | 1583 | 1794 | 0 | 1583 | 1803 | 0 | 1583 |
| Q Serve(g_s), s | 3.4 | 25.0 | 25.0 | 3.6 | 56.1 | 7.5 | 8.7 | 0.0 | 7.1 | 6.7 | 0.0 | 5.1 |
| Cycle Q Clear(g_c), s | 3.4 | 25.0 | 25.0 | 3.6 | 56.1 | 7.5 | 8.7 | 0.0 | 7.1 | 6.7 | 0.0 | 5.1 |
| Prop In Lane | 1.00 | | 0.04 | 1.00 | | 1.00 | 0.76 | | 1.00 | 0.67 | | 1.00 |
| Lane Grp Cap(c), veh/h | 162 | 1648 | 900 | 258 | 1722 | 989 | 248 | 0 | 302 | 250 | 0 | 302 |
| V/C Ratio(X) | 0.58 | 0.56 | 0.56 | 0.39 | 0.94 | 0.21 | 0.52 | 0.00 | 0.33 | 0.41 | 0.00 | 0.24 |
| Avail Cap(c_a), veh/h | 165 | 1648 | 900 | 302 | 1722 | 989 | 248 | 0 | 302 | 250 | 0 | 302 |
| 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) | 0.34 | 0.34 | 0.34 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 29.5 | 23.6 | 23.6 | 17.9 | 31.6 | 10.6 | 52.0 | 0.0 | 45.4 | 51.1 | 0.0 | 44.7 |
| Incr Delay (d2), s/veh | 1.7 | 0.5 | 0.9 | 0.9 | 11.3 | 0.5 | 7.7 | 0.0 | 2.9 | 4.9 | 0.0 | 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/ln | 1.7 | 11.8 | 12.9 | 1.8 | 30.1 | 4.6 | 4.9 | 0.0 | 3.4 | 3.7 | 0.0 | 2.4 |
| LnGrp Delay(d),s/veh | 31.2 | 24.1 | 24.4 | 18.9 | 42.9 | 11.0 | 59.7 | 0.0 | 48.3 | 56.0 | 0.0 | 46.5 |
| LnGrp LOS | C | C | C | B | D | B | E | | D | E | | D |
| Approach Vol, veh/h | | 1520 | | | 1927 | | | 230 | | | 175 | |
| Approach Delay, s/veh | | 24.6 | | | 38.2 | | | 54.8 | | | 52.1 | |
| Approach LOS | | C | | | D | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 12.8 | 69.2 | | 24.0 | 12.8 | 69.2 | | 24.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 10.8 | 60.0 | | 18.0 | 7.0 | 63.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 5.6 | 27.0 | | 8.7 | 5.4 | 58.1 | | 10.7 |
| Green Ext Time (p_c), s | 0.1 | 28.7 | | 0.5 | 0.0 | 4.7 | | 0.6 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 34.4 |
| HCM 2010 LOS | C |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 500 | 176 | 277 | 711 | 0 | 0 | 0 | 0 | 405 | 0 | 165 |
| Future Volume (veh/h) | 0 | 500 | 176 | 277 | 711 | 0 | 0 | 0 | 0 | 405 | 0 | 165 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1900 | 1863 | 1863 | 0 | | | | 1863 | 0 | 1863 |
| Adj Flow Rate, veh/h | 0 | 556 | 196 | 308 | 790 | 0 | | | | 450 | 0 | 183 |
| Adj No. of Lanes | 0 | 1 | 0 | 1 | 1 | 0 | | | | 1 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 0 | 2 |
| Cap, veh/h | 0 | 648 | 229 | 311 | 1192 | 0 | | | | 475 | 0 | 424 |
| Arrive On Green | 0.00 | 0.49 | 0.49 | 0.20 | 1.00 | 0.00 | | | | 0.27 | 0.00 | 0.27 |
| Sat Flow, veh/h | 0 | 1317 | 464 | 1774 | 1863 | 0 | | | | 1774 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 0 | 752 | 308 | 790 | 0 | | | | 450 | 0 | 183 |
| Grp Sat Flow(s),veh/h/ln | 0 | 0 | 1781 | 1774 | 1863 | 0 | | | | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 0.0 | 48.2 | 12.9 | 0.0 | 0.0 | | | | 32.4 | 0.0 | 12.4 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 48.2 | 12.9 | 0.0 | 0.0 | | | | 32.4 | 0.0 | 12.4 |
| Prop In Lane | 0.00 | | 0.26 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 0 | 877 | 311 | 1192 | 0 | | | | 475 | 0 | 424 |
| V/C Ratio(X) | 0.00 | 0.00 | 0.86 | 0.99 | 0.66 | 0.00 | | | | 0.95 | 0.00 | 0.43 |
| Avail Cap(c_a), veh/h | 0 | 0 | 877 | 311 | 1192 | 0 | | | | 491 | 0 | 438 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 0.00 | 1.00 | 0.37 | 0.37 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 29.0 | 47.3 | 0.0 | 0.0 | | | | 46.7 | 0.0 | 39.4 |
| Incr Delay (d2), s/veh | 0.0 | 0.0 | 10.6 | 28.8 | 1.1 | 0.0 | | | | 27.5 | 0.0 | 0.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.0 | 0.0 | 26.2 | 13.4 | 0.4 | 0.0 | | | | 19.5 | 0.0 | 5.5 |
| LnGrp Delay(d),s/veh | 0.0 | 0.0 | 39.6 | 76.1 | 1.1 | 0.0 | | | | 74.2 | 0.0 | 40.1 |
| LnGrp LOS | | | D | E | A | | | | | E | | D |
| Approach Vol, veh/h | | 752 | | | 1098 | | | | | | 633 | |
| Approach Delay, s/veh | | 39.6 | | | 22.1 | | | | | | 64.4 | |
| Approach LOS | | D | | | C | | | | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 19.2 | 70.0 | | 40.8 | | 89.2 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 12.6 | 64.0 | | 36.0 | | 82.0 | | |
| Max Q Clear Time (g_c+I1), s | 14.9 | 50.2 | | 34.4 | | 2.0 | | |
| Green Ext Time (p_c), s | 0.0 | 4.2 | | 0.4 | | 7.4 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 38.2 |
| HCM 2010 LOS | D |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 95 | 811 | 0 | 0 | 839 | 490 | 150 | 0 | 340 | 0 | 0 | 0 |
| Future Volume (veh/h) | 95 | 811 | 0 | 0 | 839 | 490 | 150 | 0 | 340 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1863 | 1900 | 1863 | 1863 | | | |
| Adj Flow Rate, veh/h | 106 | 901 | 0 | 0 | 932 | 544 | 167 | 0 | 378 | | | |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 174 | 1202 | 0 | 0 | 1018 | 865 | 465 | 0 | 415 | | | |
| Arrive On Green | 0.05 | 0.65 | 0.00 | 0.00 | 0.37 | 0.37 | 0.26 | 0.00 | 0.26 | | | |
| Sat Flow, veh/h | 1774 | 1863 | 0 | 0 | 1863 | 1583 | 1774 | 0 | 1583 | | | |
| Grp Volume(v), veh/h | 106 | 901 | 0 | 0 | 932 | 544 | 167 | 0 | 378 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 0 | 0 | 1863 | 1583 | 1774 | 0 | 1583 | | | |
| Q Serve(g_s), s | 3.2 | 43.2 | 0.0 | 0.0 | 62.0 | 36.8 | 10.0 | 0.0 | 30.1 | | | |
| Cycle Q Clear(g_c), s | 3.2 | 43.2 | 0.0 | 0.0 | 62.0 | 36.8 | 10.0 | 0.0 | 30.1 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 1.00 | | 1.00 | | | |
| Lane Grp Cap(c), veh/h | 174 | 1202 | 0 | 0 | 1018 | 865 | 465 | 0 | 415 | | | |
| V/C Ratio(X) | 0.61 | 0.75 | 0.00 | 0.00 | 0.92 | 0.63 | 0.36 | 0.00 | 0.91 | | | |
| Avail Cap(c_a), veh/h | 872 | 1202 | 0 | 0 | 1018 | 865 | 641 | 0 | 572 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 0.67 | 0.67 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 0.37 | 0.37 | 0.00 | 0.00 | 0.09 | 0.09 | 1.00 | 0.00 | 1.00 | | | |
| Uniform Delay (d), s/veh | 29.7 | 15.8 | 0.0 | 0.0 | 38.3 | 30.3 | 39.0 | 0.0 | 46.5 | | | |
| Incr Delay (d2), s/veh | 1.3 | 1.6 | 0.0 | 0.0 | 1.7 | 0.3 | 0.5 | 0.0 | 15.0 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 2.2 | 22.6 | 0.0 | 0.0 | 32.4 | 16.2 | 4.9 | 0.0 | 14.9 | | | |
| LnGrp Delay(d),s/veh | 31.0 | 17.5 | 0.0 | 0.0 | 40.0 | 30.7 | 39.5 | 0.0 | 61.4 | | | |
| LnGrp LOS | C | B | | | D | C | D | | E | | | |
| Approach Vol, veh/h | | 1007 | | | 1476 | | | 545 | | | | |
| Approach Delay, s/veh | | 18.9 | | | 36.5 | | | 54.7 | | | | |
| Approach LOS | | B | | | D | | | D | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 89.9 | | | 12.8 | 77.0 | | 40.1 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 71.0 | | | 58.0 | 7.0 | | 47.0 |
| Max Q Clear Time (g_c+I1), s | | 45.2 | | | 5.2 | 64.0 | | 32.1 |
| Green Ext Time (p_c), s | | 18.2 | | | 0.3 | 0.0 | | 2.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 33.9 |
| HCM 2010 LOS | C |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 287 | 17 | 847 | 7 | 27 | 7 | 928 | 838 | 13 | 12 | 666 | 374 |
| Future Volume (veh/h) | 287 | 17 | 847 | 7 | 27 | 7 | 928 | 838 | 13 | 12 | 666 | 374 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 319 | 19 | 941 | 8 | 30 | 8 | 1031 | 931 | 14 | 13 | 740 | 416 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 444 | 9 | 467 | 55 | 425 | 113 | 397 | 1112 | 17 | 274 | 414 | 233 |
| Arrive On Green | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.32 | 1.00 | 1.00 | 0.37 | 0.37 | 0.37 |
| Sat Flow, veh/h | 1364 | 31 | 1557 | 583 | 1418 | 378 | 1774 | 1830 | 28 | 591 | 1121 | 630 |
| Grp Volume(v), veh/h | 319 | 0 | 960 | 8 | 0 | 38 | 1031 | 0 | 945 | 13 | 0 | 1156 |
| Grp Sat Flow(s),veh/h/ln | 1364 | 0 | 1588 | 583 | 0 | 1796 | 1774 | 0 | 1858 | 591 | 0 | 1752 |
| Q Serve(g_s), s | 28.4 | 0.0 | 39.0 | 0.0 | 0.0 | 2.0 | 25.0 | 0.0 | 0.0 | 1.8 | 0.0 | 48.0 |
| Cycle Q Clear(g_c), s | 30.3 | 0.0 | 39.0 | 39.0 | 0.0 | 2.0 | 25.0 | 0.0 | 0.0 | 1.8 | 0.0 | 48.0 |
| Prop In Lane | 1.00 | | 0.98 | 1.00 | | 0.21 | 1.00 | | 0.01 | 1.00 | | 0.36 |
| Lane Grp Cap(c), veh/h | 444 | 0 | 476 | 55 | 0 | 539 | 397 | 0 | 1129 | 274 | 0 | 647 |
| V/C Ratio(X) | 0.72 | 0.00 | 2.02 | 0.14 | 0.00 | 0.07 | 2.60 | 0.00 | 0.84 | 0.05 | 0.00 | 1.79 |
| Avail Cap(c_a), veh/h | 444 | 0 | 476 | 55 | 0 | 539 | 397 | 0 | 1129 | 274 | 0 | 647 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.67 | 1.67 | 1.67 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.58 | 0.00 | 0.58 | 1.00 | 0.00 | 1.00 | 0.09 | 0.00 | 0.09 | 0.66 | 0.00 | 0.66 |
| Uniform Delay (d), s/veh | 43.4 | 0.0 | 45.5 | 65.0 | 0.0 | 32.5 | 34.7 | 0.0 | 0.0 | 26.4 | 0.0 | 41.0 |
| Incr Delay (d2), s/veh | 3.3 | 0.0 | 461.1 | 1.2 | 0.0 | 0.1 | 720.6 | 0.0 | 0.7 | 0.2 | 0.0 | 358.5 |
| 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/ln | 1.1 | 0.0 | 78.1 | 0.3 | 0.0 | 1.0 | 93.5 | 0.0 | 0.2 | 0.3 | 0.0 | 87.6 |
| LnGrp Delay(d),s/veh | 46.7 | 0.0 | 506.6 | 66.2 | 0.0 | 32.6 | 755.3 | 0.0 | 0.7 | 26.7 | 0.0 | 399.5 |
| LnGrp LOS | D | | F | E | | C | F | | A | C | | F |
| Approach Vol, veh/h | | 1279 | | | 46 | | | 1976 | | | 1169 | |
| Approach Delay, s/veh | | 391.9 | | | 38.4 | | | 394.5 | | | 395.4 | |
| Approach LOS | | F | | | D | | | F | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 85.0 | | 45.0 | 31.0 | 54.0 | | 45.0 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 79.0 | | 39.0 | 25.0 | 48.0 | | 39.0 |
| Max Q Clear Time (g_c+I1), s | | 2.0 | | 41.0 | 27.0 | 50.0 | | 41.0 |
| Green Ext Time (p_c), s | | 38.1 | | 0.0 | 0.0 | 0.0 | | 0.0 |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | | 390.3 |
| HCM 2010 LOS | | F |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 16 | 130 | 81 | 163 | 46 | 897 | 45 | 866 | 198 | 751 | 721 | 47 |
| Future Volume (veh/h) | 16 | 130 | 81 | 163 | 46 | 897 | 45 | 866 | 198 | 751 | 721 | 47 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 18 | 144 | 90 | 181 | 51 | 997 | 50 | 962 | 220 | 834 | 801 | 52 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 30 | 122 | 68 | 114 | 18 | 804 | 365 | 659 | 560 | 533 | 892 | 58 |
| Arrive On Green | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.11 | 0.35 | 0.35 | 0.45 | 0.86 | 0.86 |
| Sat Flow, veh/h | 0 | 512 | 284 | 271 | 76 | 1583 | 1774 | 1863 | 1583 | 1774 | 1731 | 112 |
| Grp Volume(v), veh/h | 252 | 0 | 0 | 232 | 0 | 997 | 50 | 962 | 220 | 834 | 0 | 853 |
| Grp Sat Flow(s),veh/h/ln | 796 | 0 | 0 | 347 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1843 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 31.0 | 0.0 | 46.0 | 13.6 | 35.0 | 0.0 | 36.9 |
| Cycle Q Clear(g_c), s | 31.0 | 0.0 | 0.0 | 31.0 | 0.0 | 31.0 | 0.0 | 46.0 | 13.6 | 35.0 | 0.0 | 36.9 |
| Prop In Lane | 0.07 | | 0.36 | 0.78 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.06 |
| Lane Grp Cap(c), veh/h | 220 | 0 | 0 | 132 | 0 | 804 | 365 | 659 | 560 | 533 | 0 | 950 |
| V/C Ratio(X) | 1.15 | 0.00 | 0.00 | 1.76 | 0.00 | 1.24 | 0.14 | 1.46 | 0.39 | 1.56 | 0.00 | 0.90 |
| Avail Cap(c_a), veh/h | 220 | 0 | 0 | 132 | 0 | 804 | 365 | 659 | 560 | 533 | 0 | 950 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.67 | 1.67 | 1.67 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.09 | 0.00 | 0.09 |
| Uniform Delay (d), s/veh | 44.3 | 0.0 | 0.0 | 55.3 | 0.0 | 32.0 | 35.3 | 42.0 | 31.5 | 27.0 | 0.0 | 7.0 |
| Incr Delay (d2), s/veh | 106.3 | 0.0 | 0.0 | 370.2 | 0.0 | 118.7 | 0.2 | 215.1 | 2.1 | 255.0 | 0.0 | 1.5 |
| 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/ln | 14.4 | 0.0 | 0.0 | 18.3 | 0.0 | 55.1 | 1.4 | 63.0 | 6.2 | 56.5 | 0.0 | 17.7 |
| LnGrp Delay(d),s/veh | 150.6 | 0.0 | 0.0 | 425.5 | 0.0 | 150.7 | 35.5 | 257.1 | 33.6 | 281.9 | 0.0 | 8.4 |
| LnGrp LOS | F | | | F | | F | D | F | C | F | | A |
| Approach Vol, veh/h | | 252 | | | 1229 | | | 1232 | | | 1687 | |
| Approach Delay, s/veh | | 150.6 | | | 202.5 | | | 208.2 | | | 143.6 | |
| Approach LOS | | F | | | F | | | F | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 41.0 | 52.0 | | 37.0 | 20.0 | 73.0 | | 37.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 35.0 | 46.0 | | 31.0 | 14.0 | 67.0 | | 31.0 |
| Max Q Clear Time (g_c+I1), s | 37.0 | 48.0 | | 33.0 | 2.0 | 38.9 | | 33.0 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | 6.1 | 6.8 | | 0.0 |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | 178.6 | |
| HCM 2010 LOS | F | |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 269 | 0 | 0 | 0 | 108 | 0 |
| Future Vol, veh/h | 269 | 0 | 0 | 0 | 108 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Stop | Stop | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 299 | 0 | 0 | 0 | 120 | 0 |

| Major/Minor | Major2 | | | Minor2 | |
|---|---|---|---|---|---|
| Conflicting Flow All | 0 | - | | 0 | - |
| Stage 1 | - | - | | 0 | - |
| Stage 2 | - | - | | 0 | - |
| Critical Hdwy | - | - | | - | - |
| Critical Hdwy Stg 1 | - | - | | - | - |
| Critical Hdwy Stg 2 | - | - | | - | - |
| Follow-up Hdwy | - | - | | - | - |
| Pot Cap-1 Maneuver | - | 0 | | - | 0 |
| Stage 1 | - | 0 | | - | 0 |
| Stage 2 | - | 0 | | - | 0 |
| Platoon blocked, % | | | | | |
| Mov Cap-1 Maneuver | - | - | | - | 0 |
| Mov Cap-2 Maneuver | - | - | | - | 0 |
| Stage 1 | - | - | | - | 0 |
| Stage 2 | - | - | | - | 0 |

| Approach | WB | SB |
|---|---|---|
| HCM Control Delay, s | | |
| HCM LOS | | - |

| Minor Lane/Major Mvmt | WBL | SBLn1 |
|---|---|---|
| Capacity (veh/h) | - | - |
| HCM Lane V/C Ratio | - | - |
| HCM Control Delay (s) | - | - |
| HCM Lane LOS | - | - |
| HCM 95th %tile Q(veh) | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 108 | 0 | 0 | 269 | 246 | 0 | 0 | 191 | 0 | 0 | 0 |
| Future Vol, veh/h | 1 | 108 | 0 | 0 | 269 | 246 | 0 | 0 | 191 | 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 | 160 | - | - | - | - | 330 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | - | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 120 | 0 | 0 | 299 | 273 | 0 | 0 | 212 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 299 | 0 | - | - | - | 0 | 421 | 421 | 120 |
| Stage 1 | - | - | - | - | - | - | 122 | 122 | - |
| Stage 2 | - | - | - | - | - | - | 299 | 299 | - |
| Critical Hdwy | 4.12 | - | - | - | - | - | 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 | 2.218 | - | - | - | - | - | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1262 | - | 0 | 0 | - | - | 589 | 524 | 931 |
| Stage 1 | - | - | 0 | 0 | - | - | 903 | 795 | - |
| Stage 2 | - | - | 0 | 0 | - | - | 752 | 666 | - |
| Platoon blocked, % | | - | | | - | - | | | |
| Mov Cap-1 Maneuver | 1262 | - | - | - | - | - | 589 | 0 | 931 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 589 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 902 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 752 | 0 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 10 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | WBT | WBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 931 | 1262 | - | - | - |
| HCM Lane V/C Ratio | 0.228 | 0.001 | - | - | - |
| HCM Control Delay (s) | 10 | 7.9 | - | - | - |
| HCM Lane LOS | B | A | - | - | - |
| HCM 95th %tile Q(veh) | 0.9 | 0 | - | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 9.2 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 121 | 397 | 115 | 63 | 152 | 76 |
| Future Vol, veh/h | 121 | 397 | 115 | 63 | 152 | 76 |
| 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 | 50 | 140 | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 134 | 441 | 128 | 70 | 169 | 84 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 537 | 211 | 253 | 0 | - | 0 |
| Stage 1 | 211 | - | - | - | - | - |
| Stage 2 | 326 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 505 | 829 | 1312 | - | - | - |
| Stage 1 | 824 | - | - | - | - | - |
| Stage 2 | 731 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 456 | 829 | 1312 | - | - | - |
| Mov Cap-2 Maneuver | 456 | - | - | - | - | - |
| Stage 1 | 824 | - | - | - | - | - |
| Stage 2 | 660 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 14.7 | 5.2 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1312 | - | 456 | 829 | - | - |
| HCM Lane V/C Ratio | 0.097 | - | 0.295 | 0.532 | - | - |
| HCM Control Delay (s) | 8 | - | 16.2 | 14.2 | - | - |
| HCM Lane LOS | A | - | C | B | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | 1.2 | 3.2 | - | - |

# Future (2040) No-Build Mitigated Synchro Reports

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 277 | 57 | 786 | 570 | 0 | 0 | 0 | 0 | 393 | 0 | 129 |
| Future Volume (veh/h) | 0 | 277 | 57 | 786 | 570 | 0 | 0 | 0 | 0 | 393 | 0 | 129 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1900 | 1863 | 1863 | 0 | | | | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 0 | 308 | 0 | 873 | 633 | 0 | | | | 437 | 0 | 143 |
| Adj No. of Lanes | 0 | 2 | 0 | 2 | 2 | 0 | | | | 2 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 2 | 2 |
| Cap, veh/h | 0 | 1017 | 0 | 998 | 2347 | 0 | | | | 587 | 0 | 262 |
| Arrive On Green | 0.00 | 0.29 | 0.00 | 0.48 | 1.00 | 0.00 | | | | 0.17 | 0.00 | 0.17 |
| Sat Flow, veh/h | 0 | 3725 | 0 | 3442 | 3632 | 0 | | | | 3548 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 308 | 0 | 873 | 633 | 0 | | | | 437 | 0 | 143 |
| Grp Sat Flow(s),veh/h/ln | 0 | 1770 | 0 | 1721 | 1770 | 0 | | | | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 4.8 | 0.0 | 15.9 | 0.0 | 0.0 | | | | 8.2 | 0.0 | 5.8 |
| Cycle Q Clear(g_c), s | 0.0 | 4.8 | 0.0 | 15.9 | 0.0 | 0.0 | | | | 8.2 | 0.0 | 5.8 |
| Prop In Lane | 0.00 | | 0.00 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 1017 | 0 | 998 | 2347 | 0 | | | | 587 | 0 | 262 |
| V/C Ratio(X) | 0.00 | 0.30 | 0.00 | 0.87 | 0.27 | 0.00 | | | | 0.74 | 0.00 | 0.55 |
| Avail Cap(c_a), veh/h | 0 | 1017 | 0 | 1327 | 2347 | 0 | | | | 912 | 0 | 407 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.67 | 1.67 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 1.00 | 0.00 | 0.50 | 0.50 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 19.5 | 0.0 | 16.9 | 0.0 | 0.0 | | | | 27.8 | 0.0 | 26.8 |
| Incr Delay (d2), s/veh | 0.0 | 0.8 | 0.0 | 2.8 | 0.1 | 0.0 | | | | 1.9 | 0.0 | 1.8 |
| 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/ln | 0.0 | 2.4 | 0.0 | 7.6 | 0.0 | 0.0 | | | | 4.2 | 0.0 | 2.7 |
| LnGrp Delay(d),s/veh | 0.0 | 20.2 | 0.0 | 19.7 | 0.1 | 0.0 | | | | 29.7 | 0.0 | 28.6 |
| LnGrp LOS | | C | | B | A | | | | | C | | C |
| Approach Vol, veh/h | | 308 | | | 1506 | | | | | | 580 | |
| Approach Delay, s/veh | | 20.2 | | | 11.5 | | | | | | 29.4 | |
| Approach LOS | | C | | | B | | | | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 26.3 | 26.1 | | 17.6 | | 52.4 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 27.0 | 7.0 | | 18.0 | | 40.0 | | |
| Max Q Clear Time (g_c+I1), s | 17.9 | 6.8 | | 10.2 | | 2.0 | | |
| Green Ext Time (p_c), s | 2.4 | 0.1 | | 1.4 | | 6.7 | | |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | | 17.0 |
| HCM 2010 LOS | | B |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 119 | 551 | 0 | 0 | 1084 | 1455 | 273 | 0 | 565 | 0 | 0 | 0 |
| Future Volume (veh/h) | 119 | 551 | 0 | 0 | 1084 | 1455 | 273 | 0 | 565 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1863 | 1863 | 1863 | 1863 | | | |
| Adj Flow Rate, veh/h | 132 | 612 | 0 | 0 | 1204 | 0 | 303 | 0 | 628 | | | |
| Adj No. of Lanes | 1 | 2 | 0 | 0 | 2 | 2 | 1 | 0 | 2 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 312 | 2023 | 0 | 0 | 1393 | 1097 | 456 | 0 | 814 | | | |
| Arrive On Green | 0.18 | 1.00 | 0.00 | 0.00 | 0.52 | 0.00 | 0.26 | 0.00 | 0.26 | | | |
| Sat Flow, veh/h | 1774 | 3632 | 0 | 0 | 3632 | 2787 | 1774 | 0 | 3167 | | | |
| Grp Volume(v), veh/h | 132 | 612 | 0 | 0 | 1204 | 0 | 303 | 0 | 628 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 0 | 0 | 1770 | 1393 | 1774 | 0 | 1583 | | | |
| Q Serve(g_s), s | 2.7 | 0.0 | 0.0 | 0.0 | 20.7 | 0.0 | 10.7 | 0.0 | 12.9 | | | |
| Cycle Q Clear(g_c), s | 2.7 | 0.0 | 0.0 | 0.0 | 20.7 | 0.0 | 10.7 | 0.0 | 12.9 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 1.00 | | 1.00 | | | |
| Lane Grp Cap(c), veh/h | 312 | 2023 | 0 | 0 | 1393 | 1097 | 456 | 0 | 814 | | | |
| V/C Ratio(X) | 0.42 | 0.30 | 0.00 | 0.00 | 0.86 | 0.00 | 0.66 | 0.00 | 0.77 | | | |
| Avail Cap(c_a), veh/h | 325 | 2023 | 0 | 0 | 1393 | 1097 | 710 | 0 | 1267 | | | |
| HCM Platoon Ratio | 2.00 | 2.00 | 1.00 | 1.00 | 1.33 | 1.33 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 0.76 | 0.76 | 0.00 | 0.00 | 0.29 | 0.00 | 1.00 | 0.00 | 1.00 | | | |
| Uniform Delay (d), s/veh | 12.4 | 0.0 | 0.0 | 0.0 | 15.1 | 0.0 | 23.3 | 0.0 | 24.1 | | | |
| Incr Delay (d2), s/veh | 0.7 | 0.3 | 0.0 | 0.0 | 2.3 | 0.0 | 1.7 | 0.0 | 1.6 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 1.3 | 0.1 | 0.0 | 0.0 | 10.4 | 0.0 | 5.4 | 0.0 | 5.8 | | | |
| LnGrp Delay(d),s/veh | 13.1 | 0.3 | 0.0 | 0.0 | 17.4 | 0.0 | 25.0 | 0.0 | 25.7 | | | |
| LnGrp LOS | B | A | | | B | | C | | C | | | |
| Approach Vol, veh/h | | 744 | | | 1204 | | | 931 | | | | |
| Approach Delay, s/veh | | 2.6 | | | 17.4 | | | 25.5 | | | | |
| Approach LOS | | A | | | B | | | C | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 46.0 | | | 12.5 | 33.6 | | 24.0 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 30.0 | | | 7.0 | 17.0 | | 28.0 |
| Max Q Clear Time (g_c+I1), s | | 2.0 | | | 4.7 | 22.7 | | 14.9 |
| Green Ext Time (p_c), s | | 14.6 | | | 0.1 | 0.0 | | 3.1 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 16.2 |
| HCM 2010 LOS | B |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 359 | 729 | 60 | 34 | 1571 | 147 | 4 | 0 | 18 | 420 | 0 | 891 |
| Future Volume (veh/h) | 359 | 729 | 60 | 34 | 1571 | 147 | 4 | 0 | 18 | 420 | 0 | 891 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 399 | 810 | 67 | 38 | 1746 | 163 | 4 | 0 | 20 | 467 | 0 | 0 |
| Adj No. of Lanes | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 2 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 457 | 2139 | 957 | 427 | 1806 | 1054 | 107 | 0 | 48 | 551 | 0 | 283 |
| Arrive On Green | 0.13 | 0.60 | 0.60 | 0.04 | 0.51 | 0.51 | 0.01 | 0.00 | 0.03 | 0.16 | 0.00 | 0.00 |
| Sat Flow, veh/h | 3442 | 3539 | 1583 | 1774 | 3539 | 1583 | 1774 | 0 | 1583 | 3548 | 0 | 1583 |
| Grp Volume(v), veh/h | 399 | 810 | 67 | 38 | 1746 | 163 | 4 | 0 | 20 | 467 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 1721 | 1770 | 1583 | 1774 | 1770 | 1583 | 1774 | 0 | 1583 | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 15.9 | 16.4 | 2.4 | 1.4 | 66.8 | 5.4 | 0.3 | 0.0 | 1.7 | 17.9 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 15.9 | 16.4 | 2.4 | 1.4 | 66.8 | 5.4 | 0.3 | 0.0 | 1.7 | 17.9 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 457 | 2139 | 957 | 427 | 1806 | 1054 | 107 | 0 | 48 | 551 | 0 | 283 |
| V/C Ratio(X) | 0.87 | 0.38 | 0.07 | 0.09 | 0.97 | 0.15 | 0.04 | 0.00 | 0.42 | 0.85 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 565 | 2139 | 957 | 447 | 1806 | 1054 | 183 | 0 | 79 | 1571 | 0 | 701 |
| 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 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 59.6 | 14.2 | 11.4 | 14.6 | 33.1 | 8.7 | 65.0 | 0.0 | 66.7 | 57.5 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 12.1 | 0.5 | 0.1 | 0.1 | 14.7 | 0.3 | 0.1 | 0.0 | 5.7 | 3.7 | 0.0 | 0.0 |
| 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 | 8.4 | 8.1 | 1.1 | 0.7 | 36.2 | 2.4 | 0.2 | 0.0 | 0.8 | 9.1 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 71.6 | 14.7 | 11.6 | 14.7 | 47.8 | 9.0 | 65.1 | 0.0 | 72.3 | 61.2 | 0.0 | 0.0 |
| LnGrp LOS | E | B | B | B | D | A | E | | E | E | | |
| Approach Vol, veh/h | | 1276 | | | 1947 | | | 24 | | | 467 | |
| Approach Delay, s/veh | | 32.4 | | | 43.9 | | | 71.1 | | | 61.2 | |
| Approach LOS | | C | | | D | | | E | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 11.4 | 90.6 | 7.0 | 31.0 | 24.6 | 77.4 | 27.7 | 10.2 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 40.0 | 7.0 | 62.0 | 23.0 | 24.0 | 62.0 | 7.0 |
| Max Q Clear Time (g_c+I1), s | 3.4 | 18.4 | 2.3 | 0.0 | 17.9 | 68.8 | 19.9 | 3.7 |
| Green Ext Time (p_c), s | 0.0 | 17.9 | 0.0 | 0.0 | 0.7 | 0.0 | 1.8 | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 42.3 |
| HCM 2010 LOS | D |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 328 | 230 | 527 | 41 | 225 | 85 | 590 | 534 | 34 | 174 | 524 | 400 |
| Future Volume (veh/h) | 328 | 230 | 527 | 41 | 225 | 85 | 590 | 534 | 34 | 174 | 524 | 400 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 364 | 256 | 0 | 46 | 250 | 94 | 656 | 593 | 0 | 193 | 582 | 0 |
| Adj No. of Lanes | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 427 | 658 | 560 | 406 | 505 | 584 | 726 | 1188 | 532 | 391 | 788 | 352 |
| Arrive On Green | 0.12 | 0.35 | 0.00 | 0.04 | 0.27 | 0.27 | 0.21 | 0.34 | 0.00 | 0.10 | 0.22 | 0.00 |
| Sat Flow, veh/h | 3442 | 1863 | 1583 | 1774 | 1863 | 1583 | 3442 | 3539 | 1583 | 1774 | 3539 | 1583 |
| Grp Volume(v), veh/h | 364 | 256 | 0 | 46 | 250 | 94 | 656 | 593 | 0 | 193 | 582 | 0 |
| Grp Sat Flow(s),veh/h/ln | 1721 | 1863 | 1583 | 1774 | 1863 | 1583 | 1721 | 1770 | 1583 | 1774 | 1770 | 1583 |
| Q Serve(g_s), s | 14.5 | 14.4 | 0.0 | 2.6 | 15.8 | 5.6 | 26.0 | 18.7 | 0.0 | 11.6 | 21.4 | 0.0 |
| Cycle Q Clear(g_c), s | 14.5 | 14.4 | 0.0 | 2.6 | 15.8 | 5.6 | 26.0 | 18.7 | 0.0 | 11.6 | 21.4 | 0.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 427 | 658 | 560 | 406 | 505 | 584 | 726 | 1188 | 532 | 391 | 788 | 352 |
| V/C Ratio(X) | 0.85 | 0.39 | 0.00 | 0.11 | 0.50 | 0.16 | 0.90 | 0.50 | 0.00 | 0.49 | 0.74 | 0.00 |
| Avail Cap(c_a), veh/h | 639 | 658 | 560 | 458 | 505 | 584 | 860 | 1188 | 532 | 407 | 788 | 352 |
| 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 | 1.00 | 0.34 | 0.34 | 0.00 | 0.19 | 0.19 | 0.00 |
| Uniform Delay (d), s/veh | 60.1 | 33.9 | 0.0 | 34.0 | 43.0 | 29.7 | 53.8 | 37.1 | 0.0 | 36.3 | 50.6 | 0.0 |
| Incr Delay (d2), s/veh | 7.1 | 1.7 | 0.0 | 0.1 | 0.8 | 0.1 | 4.6 | 0.5 | 0.0 | 0.2 | 1.2 | 0.0 |
| 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 | 7.3 | 7.7 | 0.0 | 1.3 | 8.2 | 2.5 | 12.9 | 9.2 | 0.0 | 5.6 | 10.6 | 0.0 |
| LnGrp Delay(d),s/veh | 67.2 | 35.6 | 0.0 | 34.1 | 43.7 | 29.8 | 58.4 | 37.6 | 0.0 | 36.5 | 51.9 | 0.0 |
| LnGrp LOS | E | D | | C | D | C | E | D | | D | D | |
| Approach Vol, veh/h | | 620 | | | 390 | | | 1249 | | | 775 | |
| Approach Delay, s/veh | | 54.2 | | | 39.2 | | | 48.5 | | | 48.1 | |
| Approach LOS | | D | | | D | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 19.7 | 53.0 | 11.8 | 55.5 | 35.5 | 37.2 | 23.4 | 43.9 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 15.0 | 47.0 | 10.0 | 44.0 | 35.0 | 27.0 | 26.0 | 28.0 |
| Max Q Clear Time (g_c+I1), s | 13.6 | 20.7 | 4.6 | 16.4 | 28.0 | 23.4 | 16.5 | 17.8 |
| Green Ext Time (p_c), s | 0.1 | 8.4 | 0.0 | 3.2 | 1.5 | 2.3 | 0.9 | 2.3 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 48.4 |
| HCM 2010 LOS | D |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 170 | 924 | 22 | 64 | 2233 | 170 | 136 | 1 | 54 | 170 | 1 | 170 |
| Future Volume (veh/h) | 170 | 924 | 22 | 64 | 2233 | 170 | 136 | 1 | 54 | 170 | 1 | 170 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 189 | 1027 | 24 | 71 | 2481 | 189 | 151 | 1 | 60 | 189 | 1 | 189 |
| Adj No. of Lanes | 1 | 2 | 1 | 1 | 3 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 210 | 1992 | 1016 | 415 | 2669 | 1004 | 218 | 3 | 171 | 344 | 1 | 221 |
| Arrive On Green | 0.17 | 1.00 | 1.00 | 0.05 | 0.52 | 0.52 | 0.08 | 0.11 | 0.11 | 0.11 | 0.14 | 0.14 |
| Sat Flow, veh/h | 1774 | 3539 | 1583 | 1774 | 5085 | 1583 | 1774 | 26 | 1561 | 1774 | 8 | 1576 |
| Grp Volume(v), veh/h | 189 | 1027 | 24 | 71 | 2481 | 189 | 151 | 0 | 61 | 189 | 0 | 190 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 1583 | 1774 | 1695 | 1583 | 1774 | 0 | 1587 | 1774 | 0 | 1585 |
| Q Serve(g_s), s | 9.8 | 0.0 | 0.0 | 2.5 | 63.4 | 6.9 | 10.6 | 0.0 | 5.0 | 13.0 | 0.0 | 16.4 |
| Cycle Q Clear(g_c), s | 9.8 | 0.0 | 0.0 | 2.5 | 63.4 | 6.9 | 10.6 | 0.0 | 5.0 | 13.0 | 0.0 | 16.4 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.99 |
| Lane Grp Cap(c), veh/h | 210 | 1992 | 1016 | 415 | 2669 | 1004 | 218 | 0 | 174 | 344 | 0 | 222 |
| V/C Ratio(X) | 0.90 | 0.52 | 0.02 | 0.17 | 0.93 | 0.19 | 0.69 | 0.00 | 0.35 | 0.55 | 0.00 | 0.86 |
| Avail Cap(c_a), veh/h | 237 | 1992 | 1016 | 421 | 2669 | 1004 | 218 | 0 | 215 | 454 | 0 | 362 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.92 | 0.92 | 0.92 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 38.7 | 0.0 | 0.0 | 13.4 | 30.8 | 10.6 | 51.1 | 0.0 | 57.7 | 47.6 | 0.0 | 58.8 |
| Incr Delay (d2), s/veh | 29.3 | 0.9 | 0.0 | 0.2 | 7.2 | 0.4 | 9.0 | 0.0 | 1.2 | 1.4 | 0.0 | 10.5 |
| 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/ln | 8.7 | 0.2 | 0.0 | 1.2 | 31.4 | 3.1 | 5.7 | 0.0 | 2.2 | 6.5 | 0.0 | 7.8 |
| LnGrp Delay(d),s/veh | 68.1 | 0.9 | 0.0 | 13.6 | 38.1 | 11.0 | 60.0 | 0.0 | 59.0 | 49.0 | 0.0 | 69.3 |
| LnGrp LOS | E | A | A | B | D | B | E | | E | D | | E |
| Approach Vol, veh/h | | 1240 | | | 2741 | | | 212 | | | 379 | |
| Approach Delay, s/veh | | 11.1 | | | 35.6 | | | 59.7 | | | 59.2 | |
| Approach LOS | | B | | | D | | | E | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 12.6 | 84.8 | 21.3 | 21.3 | 17.9 | 79.5 | 17.0 | 25.6 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 7.6 | 66.0 | 24.0 | 19.0 | 14.0 | 59.0 | 11.0 | 32.0 |
| Max Q Clear Time (g_c+I1), s | 4.5 | 2.0 | 15.0 | 7.0 | 11.8 | 65.4 | 12.6 | 18.4 |
| Green Ext Time (p_c), s | 0.0 | 55.2 | 0.3 | 1.2 | 0.1 | 0.0 | 0.0 | 1.2 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 32.0 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 21.4 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 94 | 1072 | 1381 | 49 | 0 | 371 |
| Future Vol, veh/h | 94 | 1072 | 1381 | 49 | 0 | 371 |
| 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 | 200 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 104 | 1191 | 1534 | 54 | 0 | 412 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1589 | 0 | - | 0 | 2366 | 794 |
| Stage 1 | - | - | - | - | 1562 | - |
| Stage 2 | - | - | - | - | 804 | - |
| Critical Hdwy | 4.14 | - | - | - | 6.84 | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.84 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.84 | - |
| Follow-up Hdwy | 2.22 | - | - | - | 3.52 | 3.32 |
| Pot Cap-1 Maneuver | 409 | - | - | - | 29 | ~ 331 |
| Stage 1 | - | - | - | - | 158 | - |
| Stage 2 | - | - | - | - | 401 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 409 | - | - | - | 22 | ~ 331 |
| Mov Cap-2 Maneuver | - | - | - | - | 103 | - |
| Stage 1 | - | - | - | - | 158 | - |
| Stage 2 | - | - | - | - | 299 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.4 | 0 | 166.7 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 409 | - | - | - | - | 331 |
| HCM Lane V/C Ratio | 0.255 | - | - | - | - | 1.245 |
| HCM Control Delay (s) | 16.8 | - | - | - | 0 | 166.7 |
| HCM Lane LOS | C | - | - | - | A | F |
| HCM 95th %tile Q(veh) | 1 | - | - | - | - | 18.5 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 8.5 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 94 | 978 | 1166 | 49 | 107 | 263 |
| Future Vol, veh/h | 94 | 978 | 1166 | 49 | 107 | 263 |
| 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 | 150 |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 104 | 1087 | 1296 | 54 | 119 | 292 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1350 | 0 | - | 0 | 2075 | 675 |
| Stage 1 | - | - | - | - | 1323 | - |
| Stage 2 | - | - | - | - | 752 | - |
| Critical Hdwy | 4.14 | - | - | - | 6.84 | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.84 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.84 | - |
| Follow-up Hdwy | 2.22 | - | - | - | 3.52 | 3.32 |
| Pot Cap-1 Maneuver | 506 | - | - | - | ~ 46 | 396 |
| Stage 1 | - | - | - | - | 213 | - |
| Stage 2 | - | - | - | - | 426 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 506 | - | - | - | ~ 37 | 396 |
| Mov Cap-2 Maneuver | - | - | - | - | 135 | - |
| Stage 1 | - | - | - | - | 213 | - |
| Stage 2 | - | - | - | - | 338 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.2 | 0 | 57.5 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 506 | - | - | - | 135 | 396 |
| HCM Lane V/C Ratio | 0.206 | - | - | - | 0.881 | 0.738 |
| HCM Control Delay (s) | 14 | - | - | - | 111.1 | 35.7 |
| HCM Lane LOS | B | - | - | - | F | E |
| HCM 95th %tile Q(veh) | 0.8 | - | - | - | 5.7 | 5.8 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 271 | 100 | 43 | 904 | 999 | 100 |
| Future Volume (veh/h) | 271 | 100 | 43 | 904 | 999 | 100 |
| Number | 7 | 14 | 5 | 2 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 301 | 0 | 48 | 1004 | 1110 | 111 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 363 | 324 | 128 | 1140 | 1140 | 1293 |
| Arrive On Green | 0.20 | 0.00 | 0.61 | 0.61 | 0.61 | 0.61 |
| Sat Flow, veh/h | 1774 | 1583 | 455 | 1863 | 1863 | 1583 |
| Grp Volume(v), veh/h | 301 | 0 | 48 | 1004 | 1110 | 111 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1583 | 455 | 1863 | 1863 | 1583 |
| Q Serve(g_s), s | 10.6 | 0.0 | 2.6 | 29.7 | 37.4 | 0.9 |
| Cycle Q Clear(g_c), s | 10.6 | 0.0 | 40.0 | 29.7 | 37.4 | 0.9 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | 363 | 324 | 128 | 1140 | 1140 | 1293 |
| V/C Ratio(X) | 0.83 | 0.00 | 0.37 | 0.88 | 0.97 | 0.09 |
| Avail Cap(c_a), veh/h | 760 | 678 | 128 | 1140 | 1140 | 1293 |
| 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 | 1.00 |
| Uniform Delay (d), s/veh | 24.9 | 0.0 | 32.2 | 10.7 | 12.2 | 1.2 |
| Incr Delay (d2), s/veh | 4.9 | 0.0 | 1.8 | 8.2 | 20.6 | 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 | 5.7 | 0.0 | 0.9 | 17.4 | 25.3 | 0.8 |
| LnGrp Delay(d),s/veh | 29.8 | 0.0 | 34.0 | 18.9 | 32.8 | 1.2 |
| LnGrp LOS | C | | C | B | C | A |
| Approach Vol, veh/h | 301 | | | 1052 | 1221 | |
| Approach Delay, s/veh | 29.8 | | | 19.6 | 29.9 | |
| Approach LOS | C | | | B | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | | 46.0 | | 19.4 | | 46.0 | | |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | | 40.0 | | 28.0 | | 40.0 | | |
| Max Q Clear Time (g_c+I1), s | | 42.0 | | 12.6 | | 39.4 | | |
| Green Ext Time (p_c), s | | 0.0 | | 0.8 | | 0.5 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 25.7 |
| HCM 2010 LOS | C |



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 150 | 130 | 30 | 1008 | 1021 | 70 |
| Future Volume (veh/h) | 150 | 130 | 30 | 1008 | 1021 | 70 |
| Number | 7 | 14 | 5 | 2 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 167 | 144 | 33 | 1120 | 1134 | 78 |
| Adj No. of Lanes | 0 | 0 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 0 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 182 | 157 | 150 | 1254 | 1059 | 900 |
| Arrive On Green | 0.20 | 0.20 | 0.04 | 0.67 | 0.57 | 0.57 |
| Sat Flow, veh/h | 900 | 776 | 1774 | 1863 | 1863 | 1583 |
| Grp Volume(v), veh/h | 312 | 0 | 33 | 1120 | 1134 | 78 |
| Grp Sat Flow(s),veh/h/ln | 1681 | 0 | 1774 | 1863 | 1863 | 1583 |
| Q Serve(g_s), s | 17.6 | 0.0 | 0.7 | 47.7 | 55.0 | 2.2 |
| Cycle Q Clear(g_c), s | 17.6 | 0.0 | 0.7 | 47.7 | 55.0 | 2.2 |
| Prop In Lane | 0.54 | 0.46 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | 341 | 0 | 150 | 1254 | 1059 | 900 |
| V/C Ratio(X) | 0.92 | 0.00 | 0.22 | 0.89 | 1.07 | 0.09 |
| Avail Cap(c_a), veh/h | 348 | 0 | 203 | 1309 | 1059 | 900 |
| 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 | 1.00 |
| Uniform Delay (d), s/veh | 37.7 | 0.0 | 23.5 | 13.0 | 20.9 | 9.5 |
| Incr Delay (d2), s/veh | 27.7 | 0.0 | 0.7 | 8.0 | 48.7 | 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 | 10.8 | 0.0 | 0.6 | 26.7 | 42.3 | 0.9 |
| LnGrp Delay(d),s/veh | 65.4 | 0.0 | 24.2 | 20.9 | 69.5 | 9.5 |
| LnGrp LOS | E | | C | C | F | A |
| Approach Vol, veh/h | 312 | | | 1153 | 1212 | |
| Approach Delay, s/veh | 65.4 | | | 21.0 | 65.7 | |
| Approach LOS | E | | | C | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | 4 | 5 | 6 | | |
| Phs Duration (G+Y+Rc), s | | 71.1 | | 25.6 | 10.1 | 61.0 | | |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 6.0 | 6.0 | | |
| Max Green Setting (Gmax), s | | 68.0 | | 20.0 | 7.0 | 55.0 | | |
| Max Q Clear Time (g_c+I1), s | | 49.7 | | 19.6 | 2.7 | 57.0 | | |
| Green Ext Time (p_c), s | | 15.4 | | 0.1 | 0.0 | 0.0 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 46.4 |
| HCM 2010 LOS | D |

Notes

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.6 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 34 | 28 | 4 | 1005 | 1133 | 18 |
| Future Vol, veh/h | 34 | 28 | 4 | 1005 | 1133 | 18 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 38 | 31 | 4 | 1117 | 1259 | 20 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1836 | 1269 | 1279 | 0 | - | 0 |
| Stage 1 | 1269 | - | - | - | - | - |
| Stage 2 | 567 | - | - | - | - | - |
| Critical Hdwy | 6.63 | 6.23 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.43 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.83 | - | - | - | - | - |
| Follow-up Hdwy | 3.519 | 3.319 | 2.219 | - | - | - |
| Pot Cap-1 Maneuver | 75 | 205 | 541 | - | - | - |
| Stage 1 | 263 | - | - | - | - | - |
| Stage 2 | 532 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 74 | 205 | 541 | - | - | - |
| Mov Cap-2 Maneuver | 74 | - | - | - | - | - |
| Stage 1 | 263 | - | - | - | - | - |
| Stage 2 | 522 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 90.5 | 0.1 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 541 | - | 104 | - | - |
| HCM Lane V/C Ratio | 0.008 | - | 0.662 | - | - |
| HCM Control Delay (s) | 11.7 | 0.1 | 90.5 | - | - |
| HCM Lane LOS | B | A | F | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 3.3 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 3 | 10 | 1009 | 1159 | 2 |
| Future Vol, veh/h | 0 | 3 | 10 | 1009 | 1159 | 2 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 3 | 11 | 1121 | 1288 | 2 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2432 | 645 | 1290 | 0 | - | 0 |
| Stage 1 | 1289 | - | - | - | - | - |
| Stage 2 | 1143 | - | - | - | - | - |
| Critical Hdwy | 6.63 | 6.93 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.83 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - | - | - | - |
| Follow-up Hdwy | 3.519 | 3.319 | 2.219 | - | - | - |
| Pot Cap-1 Maneuver | 30 | 416 | 535 | - | - | - |
| Stage 1 | 223 | - | - | - | - | - |
| Stage 2 | 303 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 28 | 416 | 535 | - | - | - |
| Mov Cap-2 Maneuver | 28 | - | - | - | - | - |
| Stage 1 | 223 | - | - | - | - | - |
| Stage 2 | 286 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 13.7 | 0.1 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 535 | - | 416 | - | - |
| HCM Lane V/C Ratio | 0.021 | - | 0.008 | - | - |
| HCM Control Delay (s) | 11.9 | 0 | 13.7 | - | - |
| HCM Lane LOS | B | A | B | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 0 | - | - |

| Movement | NBT | NBR | SBL | SBT | NWL | NWR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 858 | 223 | 264 | 897 | 154 | 161 |
| Future Volume (veh/h) | 858 | 223 | 264 | 897 | 154 | 161 |
| Number | 2 | 12 | 1 | 6 | 3 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 953 | 248 | 293 | 997 | 171 | 179 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 1292 | 1098 | 267 | 1292 | 265 | 236 |
| Arrive On Green | 0.69 | 0.69 | 0.69 | 0.69 | 0.15 | 0.15 |
| Sat Flow, veh/h | 1863 | 1583 | 464 | 1863 | 1774 | 1583 |
| Grp Volume(v), veh/h | 953 | 248 | 293 | 997 | 171 | 179 |
| Grp Sat Flow(s),veh/h/ln | 1863 | 1583 | 464 | 1863 | 1774 | 1583 |
| Q Serve(g_s), s | 24.5 | 4.3 | 28.5 | 27.0 | 6.9 | 8.3 |
| Cycle Q Clear(g_c), s | 24.5 | 4.3 | 53.0 | 27.0 | 6.9 | 8.3 |
| Prop In Lane | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Lane Grp Cap(c), veh/h | 1292 | 1098 | 267 | 1292 | 265 | 236 |
| V/C Ratio(X) | 0.74 | 0.23 | 1.10 | 0.77 | 0.65 | 0.76 |
| Avail Cap(c_a), veh/h | 1292 | 1098 | 267 | 1292 | 1045 | 933 |
| 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 | 7.3 | 4.3 | 29.0 | 7.7 | 30.6 | 31.2 |
| Incr Delay (d2), s/veh | 2.3 | 0.1 | 83.4 | 2.9 | 2.6 | 4.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 13.3 | 1.9 | 11.8 | 14.6 | 3.6 | 4.0 |
| LnGrp Delay(d),s/veh | 9.6 | 4.4 | 112.4 | 10.6 | 33.2 | 36.1 |
| LnGrp LOS | A | A | F | B | C | D |
| Approach Vol, veh/h | 1201 | | | 1290 | 350 | |
| Approach Delay, s/veh | 8.5 | | | 33.8 | 34.7 | |
| Approach LOS | A | | | C | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 59.0 | | | | 59.0 | | 17.4 |
| Change Period (Y+Rc), s | | 6.0 | | | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 53.0 | | | | 53.0 | | 45.0 |
| Max Q Clear Time (g_c+I1), s | | 26.5 | | | | 55.0 | | 10.3 |
| Green Ext Time (p_c), s | | 22.0 | | | | 0.0 | | 1.1 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 23.2 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.8 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 40 | 12 | 88 | 240 | 2 |
| Future Vol, veh/h | 0 | 40 | 12 | 88 | 240 | 2 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 44 | 13 | 98 | 267 | 2 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 111 | 0 | - | 0 | 106 | 62 |
| Stage 1 | - | - | - | - | 62 | - |
| Stage 2 | - | - | - | - | 44 | - |
| 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 | 1479 | - | - | - | 892 | 1003 |
| Stage 1 | - | - | - | - | 961 | - |
| Stage 2 | - | - | - | - | 978 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1479 | - | - | - | 892 | 1003 |
| Mov Cap-2 Maneuver | - | - | - | - | 892 | - |
| Stage 1 | - | - | - | - | 961 | - |
| Stage 2 | - | - | - | - | 978 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 10.8 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1479 | - | - | - | 893 |
| HCM Lane V/C Ratio | - | - | - | - | 0.301 |
| HCM Control Delay (s) | 0 | - | - | - | 10.8 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1.3 |



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 228 | 200 | 65 | 1110 | 898 | 100 |
| Future Volume (veh/h) | 228 | 200 | 65 | 1110 | 898 | 100 |
| Number | 7 | 14 | 5 | 2 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 253 | 222 | 72 | 1233 | 998 | 111 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 316 | 282 | 237 | 1248 | 1248 | 1061 |
| Arrive On Green | 0.18 | 0.18 | 0.67 | 0.67 | 0.67 | 0.67 |
| Sat Flow, veh/h | 1774 | 1583 | 506 | 1863 | 1863 | 1583 |
| Grp Volume(v), veh/h | 253 | 222 | 72 | 1233 | 998 | 111 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1583 | 506 | 1863 | 1863 | 1583 |
| Q Serve(g_s), s | 10.8 | 10.6 | 9.3 | 51.1 | 30.1 | 2.0 |
| Cycle Q Clear(g_c), s | 10.8 | 10.6 | 39.5 | 51.1 | 30.1 | 2.0 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | 316 | 282 | 237 | 1248 | 1248 | 1061 |
| V/C Ratio(X) | 0.80 | 0.79 | 0.30 | 0.99 | 0.80 | 0.10 |
| Avail Cap(c_a), veh/h | 561 | 500 | 237 | 1248 | 1248 | 1061 |
| 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 | 31.1 | 31.1 | 23.3 | 12.7 | 9.3 | 4.6 |
| Incr Delay (d2), s/veh | 4.7 | 4.8 | 0.7 | 22.5 | 3.8 | 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 | 5.7 | 5.0 | 1.3 | 33.5 | 16.6 | 0.9 |
| LnGrp Delay(d),s/veh | 35.8 | 35.9 | 24.0 | 35.3 | 13.1 | 4.7 |
| LnGrp LOS | D | D | C | D | B | A |
| Approach Vol, veh/h | 475 | | | 1305 | 1109 | |
| Approach Delay, s/veh | 35.8 | | | 34.7 | 12.2 | |
| Approach LOS | D | | | C | B | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | | 59.0 | | 20.1 | | 59.0 | | |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | | 53.0 | | 25.0 | | 53.0 | | |
| Max Q Clear Time (g_c+I1), s | | 53.1 | | 12.8 | | 32.1 | | |
| Green Ext Time (p_c), s | | 0.0 | | 1.3 | | 17.7 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 26.2 |
| HCM 2010 LOS | C |

Notes

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 1339 | 999 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 1339 | 999 | 0 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 1488 | 1110 | 0 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2598 | 1110 | 1110 | 0 | - | 0 |
| Stage 1 | 1110 | - | - | - | - | - |
| Stage 2 | 1488 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 27 | 255 | 629 | - | - | - |
| Stage 1 | 315 | - | - | - | - | - |
| Stage 2 | 207 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 27 | 255 | 629 | - | - | - |
| Mov Cap-2 Maneuver | 27 | - | - | - | - | - |
| Stage 1 | 315 | - | - | - | - | - |
| Stage 2 | 207 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 629 | - | - | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - |
| HCM Control Delay (s) | 0 | - | 0 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - |



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 188 | 202 | 930 | 409 | 147 | 810 |
| Future Volume (veh/h) | 188 | 202 | 930 | 409 | 147 | 810 |
| Number | 3 | 18 | 2 | 12 | 1 | 6 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 209 | 224 | 1033 | 454 | 163 | 900 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 276 | 395 | 1005 | 854 | 166 | 1311 |
| Arrive On Green | 0.16 | 0.16 | 0.54 | 0.54 | 0.09 | 0.70 |
| Sat Flow, veh/h | 1774 | 1583 | 1863 | 1583 | 1774 | 1863 |
| Grp Volume(v), veh/h | 209 | 224 | 1033 | 454 | 163 | 900 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1583 | 1863 | 1583 | 1774 | 1863 |
| Q Serve(g_s), s | 9.6 | 10.5 | 46.0 | 15.8 | 7.8 | 23.6 |
| Cycle Q Clear(g_c), s | 9.6 | 10.5 | 46.0 | 15.8 | 7.8 | 23.6 |
| Prop In Lane | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Lane Grp Cap(c), veh/h | 276 | 395 | 1005 | 854 | 166 | 1311 |
| V/C Ratio(X) | 0.76 | 0.57 | 1.03 | 0.53 | 0.98 | 0.69 |
| Avail Cap(c_a), veh/h | 375 | 483 | 1005 | 854 | 166 | 1311 |
| 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 | 34.5 | 28.0 | 19.6 | 12.7 | 38.5 | 7.2 |
| Incr Delay (d2), s/veh | 5.9 | 1.3 | 35.7 | 0.6 | 63.4 | 1.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 5.2 | 4.7 | 33.4 | 7.0 | 6.7 | 12.6 |
| LnGrp Delay(d),s/veh | 40.4 | 29.3 | 55.4 | 13.3 | 101.9 | 8.8 |
| LnGrp LOS | D | C | F | B | F | A |
| Approach Vol, veh/h | 433 | | 1487 | | | 1063 |
| Approach Delay, s/veh | 34.6 | | 42.5 | | | 23.0 |
| Approach LOS | C | | D | | | C |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 14.0 | 52.0 | | | | 66.0 | | 19.3 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 8.0 | 46.0 | | | | 60.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 9.8 | 48.0 | | | | 25.6 | | 12.5 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | | | 22.9 | | 0.7 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 34.4 |
| HCM 2010 LOS | C |

Notes

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.6 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 222 | 1 | 3 | 475 | 43 | 52 |
| Future Vol, veh/h | 222 | 1 | 3 | 475 | 43 | 52 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 150 | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 247 | 1 | 3 | 528 | 48 | 58 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 247 | 0 | 781 | 247 |
| Stage 1 | - | - | - | - | 247 | - |
| Stage 2 | - | - | - | - | 534 | - |
| 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 | - | - | 1319 | - | 363 | 792 |
| Stage 1 | - | - | - | - | 794 | - |
| Stage 2 | - | - | - | - | 588 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1319 | - | 362 | 792 |
| Mov Cap-2 Maneuver | - | - | - | - | 362 | - |
| Stage 1 | - | - | - | - | 794 | - |
| Stage 2 | - | - | - | - | 587 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 13.8 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 515 | - | - | 1319 | - |
| HCM Lane V/C Ratio | 0.205 | - | - | 0.003 | - |
| HCM Control Delay (s) | 13.8 | - | - | 7.7 | - |
| HCM Lane LOS | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.8 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.6 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 274 | 465 | 154 | 97 | 13 |
| Future Vol, veh/h | 7 | 274 | 465 | 154 | 97 | 13 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 304 | 517 | 171 | 108 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 688 | 0 | - | 0 | 922 | 602 |
| Stage 1 | - | - | - | - | 602 | - |
| Stage 2 | - | - | - | - | 320 | - |
| 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 | 906 | - | - | - | 300 | 500 |
| Stage 1 | - | - | - | - | 547 | - |
| Stage 2 | - | - | - | - | 736 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 906 | - | - | - | 297 | 500 |
| Mov Cap-2 Maneuver | - | - | - | - | 297 | - |
| Stage 1 | - | - | - | - | 547 | - |
| Stage 2 | - | - | - | - | 728 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.2 | 0 | 23.8 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 906 | - | - | - | 312 |
| HCM Lane V/C Ratio | 0.009 | - | - | - | 0.392 |
| HCM Control Delay (s) | 9 | 0 | - | - | 23.8 |
| HCM Lane LOS | A | A | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1.8 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 371 | 0 | 0 | 619 | 0 | 0 |
| Future Vol, veh/h | 371 | 0 | 0 | 619 | 0 | 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 | - | 150 | 0 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 412 | 0 | 0 | 688 | 0 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 412 | 0 | 1100 | 412 |
| Stage 1 | - | - | - | - | 412 | - |
| Stage 2 | - | - | - | - | 688 | - |
| 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 | - | - | 1147 | - | 235 | 640 |
| Stage 1 | - | - | - | - | 669 | - |
| Stage 2 | - | - | - | - | 499 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1147 | - | 235 | 640 |
| Mov Cap-2 Maneuver | - | - | - | - | 235 | - |
| Stage 1 | - | - | - | - | 669 | - |
| Stage 2 | - | - | - | - | 499 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | 1147 | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - |
| HCM Control Delay (s) | 0 | 0 | - | - | 0 | - |
| HCM Lane LOS | A | A | - | - | A | - |
| HCM 95th %tile Q(veh) | - | - | - | - | 0 | - |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 271 | 100 | 723 | 459 | 160 | 901 |
| Future Volume (veh/h) | 271 | 100 | 723 | 459 | 160 | 901 |
| Number | 2 | 12 | 1 | 6 | 3 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 301 | 111 | 803 | 510 | 178 | 1001 |
| Adj No. of Lanes | 3 | 0 | 2 | 2 | 2 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 645 | 224 | 861 | 1661 | 1509 | 1090 |
| Arrive On Green | 0.17 | 0.17 | 0.42 | 0.78 | 0.44 | 0.44 |
| Sat Flow, veh/h | 3896 | 1296 | 3442 | 3632 | 3442 | 1583 |
| Grp Volume(v), veh/h | 272 | 140 | 803 | 510 | 178 | 1001 |
| Grp Sat Flow(s),veh/h/ln | 1695 | 1634 | 1721 | 1770 | 1721 | 1583 |
| Q Serve(g_s), s | 9.4 | 10.1 | 28.9 | 5.3 | 4.0 | 57.0 |
| Cycle Q Clear(g_c), s | 9.4 | 10.1 | 28.9 | 5.3 | 4.0 | 57.0 |
| Prop In Lane | | 0.79 | 1.00 | | 1.00 | 1.00 |
| Lane Grp Cap(c), veh/h | 587 | 283 | 861 | 1661 | 1509 | 1090 |
| V/C Ratio(X) | 0.46 | 0.50 | 0.93 | 0.31 | 0.12 | 0.92 |
| Avail Cap(c_a), veh/h | 587 | 283 | 953 | 1661 | 1509 | 1090 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.67 | 1.67 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.58 | 0.58 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 48.3 | 48.6 | 36.8 | 8.0 | 21.6 | 17.1 |
| Incr Delay (d2), s/veh | 2.6 | 6.1 | 9.6 | 0.3 | 0.0 | 12.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 4.6 | 5.0 | 14.7 | 2.6 | 1.9 | 33.6 |
| LnGrp Delay(d),s/veh | 51.0 | 54.7 | 46.5 | 8.3 | 21.6 | 29.3 |
| LnGrp LOS | D | D | D | A | C | C |
| Approach Vol, veh/h | 412 | | | 1313 | 1179 | |
| Approach Delay, s/veh | 52.2 | | | 31.6 | 28.1 | |
| Approach LOS | D | | | C | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 38.5 | 28.5 | | | | 67.0 | | 63.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 36.0 | 19.0 | | | | 61.0 | | 57.0 |
| Max Q Clear Time (g_c+I1), s | 30.9 | 12.1 | | | | 7.3 | | 59.0 |
| Green Ext Time (p_c), s | 1.6 | 3.1 | | | | 6.9 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 33.1 |
| HCM 2010 LOS | C |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 989 | 183 | 402 | 787 | 0 | 0 | 0 | 0 | 728 | 0 | 395 |
| Future Volume (veh/h) | 0 | 989 | 183 | 402 | 787 | 0 | 0 | 0 | 0 | 728 | 0 | 395 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1863 | 1863 | 1863 | 0 | | | | 1863 | 0 | 1863 |
| Adj Flow Rate, veh/h | 0 | 1099 | 203 | 447 | 874 | 0 | | | | 809 | 0 | 439 |
| Adj No. of Lanes | 0 | 2 | 1 | 1 | 1 | 0 | | | | 2 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 0 | 2 |
| Cap, veh/h | 0 | 1557 | 696 | 483 | 1204 | 0 | | | | 900 | 0 | 414 |
| Arrive On Green | 0.00 | 0.88 | 0.88 | 0.11 | 0.43 | 0.00 | | | | 0.26 | 0.00 | 0.26 |
| Sat Flow, veh/h | 0 | 3632 | 1583 | 1774 | 1863 | 0 | | | | 3442 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 1099 | 203 | 447 | 874 | 0 | | | | 809 | 0 | 439 |
| Grp Sat Flow(s),veh/h/ln | 0 | 1770 | 1583 | 1774 | 1863 | 0 | | | | 1721 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 12.8 | 2.7 | 17.6 | 50.4 | 0.0 | | | | 29.5 | 0.0 | 34.0 |
| Cycle Q Clear(g_c), s | 0.0 | 12.8 | 2.7 | 17.6 | 50.4 | 0.0 | | | | 29.5 | 0.0 | 34.0 |
| Prop In Lane | 0.00 | | 1.00 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 1557 | 696 | 483 | 1204 | 0 | | | | 900 | 0 | 414 |
| V/C Ratio(X) | 0.00 | 0.71 | 0.29 | 0.93 | 0.73 | 0.00 | | | | 0.90 | 0.00 | 1.06 |
| Avail Cap(c_a), veh/h | 0 | 1557 | 696 | 636 | 1204 | 0 | | | | 900 | 0 | 414 |
| HCM Platoon Ratio | 1.00 | 2.00 | 2.00 | 0.67 | 0.67 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 0.60 | 0.60 | 0.61 | 0.61 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 5.2 | 4.5 | 23.3 | 27.3 | 0.0 | | | | 46.3 | 0.0 | 48.0 |
| Incr Delay (d2), s/veh | 0.0 | 1.6 | 0.6 | 11.2 | 2.4 | 0.0 | | | | 13.7 | 0.0 | 61.0 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.0 | 6.1 | 1.2 | 17.3 | 26.7 | 0.0 | | | | 15.8 | 0.0 | 21.9 |
| LnGrp Delay(d),s/veh | 0.0 | 6.8 | 5.2 | 34.5 | 29.7 | 0.0 | | | | 60.0 | 0.0 | 109.0 |
| LnGrp LOS | | A | A | C | C | | | | | E | | F |
| Approach Vol, veh/h | | 1302 | | | 1321 | | | | | | 1248 | |
| Approach Delay, s/veh | | 6.5 | | | 31.4 | | | | | | 77.2 | |
| Approach LOS | | A | | | C | | | | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 26.8 | 63.2 | | 40.0 | | 90.0 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 32.8 | 46.0 | | 34.0 | | 84.0 | | |
| Max Q Clear Time (g_c+I1), s | 19.6 | 14.8 | | 36.0 | | 52.4 | | |
| Green Ext Time (p_c), s | 1.2 | 19.2 | | 0.0 | | 19.3 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 37.8 |
| HCM 2010 LOS | D |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 593 | 1125 | 0 | 0 | 1095 | 818 | 94 | 0 | 0 | 0 | 0 | 0 |
| Future Volume (veh/h) | 593 | 1125 | 0 | 0 | 1095 | 818 | 94 | 0 | 0 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1863 | 1863 | 0 | 0 | | | |
| Adj Flow Rate, veh/h | 659 | 1250 | 0 | 0 | 1217 | 0 | 104 | 0 | 0 | | | |
| Adj No. of Lanes | 1 | 2 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 0 | 0 | | | |
| Cap, veh/h | 674 | 3376 | 0 | 0 | 2665 | 1192 | 0 | 0 | 0 | | | |
| Arrive On Green | 0.31 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1774 | 3632 | 0 | 0 | 3632 | 1583 | 0 | 0 | 0 | | | |
| Grp Volume(v), veh/h | 659 | 1250 | 0 | 0 | 1217 | 0 | 0 | 0 | 0 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 0 | 0 | 1770 | 1583 | 0 | 0 | 0 | | | |
| Q Serve(g_s), s | 15.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 15.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 0.00 | | 0.00 | | | |
| Lane Grp Cap(c), veh/h | 674 | 3376 | 0 | 0 | 2665 | 1192 | 0 | 0 | 0 | | | |
| V/C Ratio(X) | 0.98 | 0.37 | 0.00 | 0.00 | 0.46 | 0.00 | 0.00 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 959 | 3376 | 0 | 0 | 2665 | 1192 | 0 | 0 | 0 | | | |
| HCM Platoon Ratio | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 0.37 | 0.37 | 0.00 | 0.00 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 7.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 10.7 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 8.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| LnGrp Delay(d),s/veh | 17.8 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| LnGrp LOS | B | A | | | A | | | | | | | |
| Approach Vol, veh/h | | 1909 | | | 1217 | | | 0 | | | | |
| Approach Delay, s/veh | | 6.2 | | | 0.1 | | | 0.0 | | | | |
| Approach LOS | | A | | | A | | | | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 130.0 | | | 26.1 | 103.9 | | 0.0 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 110.0 | | | 41.0 | 63.0 | | 8.0 |
| Max Q Clear Time (g_c+I1), s | | 2.0 | | | 17.9 | 2.0 | | 0.0 |
| Green Ext Time (p_c), s | | 43.8 | | | 2.2 | 34.5 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 3.8 |
| HCM 2010 LOS | A |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 275 | 797 | 54 | 47 | 1489 | 469 | 33 | 27 | 361 | 355 | 24 | 392 |
| Future Volume (veh/h) | 275 | 797 | 54 | 47 | 1489 | 469 | 33 | 27 | 361 | 355 | 24 | 392 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 306 | 886 | 60 | 52 | 1654 | 521 | 37 | 30 | 401 | 413 | 0 | 436 |
| Adj No. of Lanes | 2 | 3 | 0 | 1 | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 2 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 318 | 2249 | 152 | 81 | 1470 | 913 | 146 | 119 | 534 | 573 | 0 | 804 |
| Arrive On Green | 0.18 | 0.92 | 0.92 | 0.09 | 0.83 | 0.83 | 0.15 | 0.15 | 0.15 | 0.16 | 0.00 | 0.16 |
| Sat Flow, veh/h | 3442 | 4866 | 329 | 1774 | 3539 | 1583 | 1001 | 812 | 2787 | 3548 | 0 | 3167 |
| Grp Volume(v), veh/h | 306 | 617 | 329 | 52 | 1654 | 521 | 67 | 0 | 401 | 413 | 0 | 436 |
| Grp Sat Flow(s),veh/h/ln | 1721 | 1695 | 1805 | 1774 | 1770 | 1583 | 1813 | 0 | 1393 | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 11.5 | 2.8 | 2.8 | 3.7 | 54.0 | 15.3 | 4.3 | 0.0 | 17.7 | 14.4 | 0.0 | 15.5 |
| Cycle Q Clear(g_c), s | 11.5 | 2.8 | 2.8 | 3.7 | 54.0 | 15.3 | 4.3 | 0.0 | 17.7 | 14.4 | 0.0 | 15.5 |
| Prop In Lane | 1.00 | | 0.18 | 1.00 | | 1.00 | 0.55 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 318 | 1567 | 834 | 81 | 1470 | 913 | 265 | 0 | 534 | 573 | 0 | 804 |
| V/C Ratio(X) | 0.96 | 0.39 | 0.40 | 0.64 | 1.13 | 0.57 | 0.25 | 0.00 | 0.75 | 0.72 | 0.00 | 0.54 |
| Avail Cap(c_a), veh/h | 318 | 1567 | 834 | 123 | 1470 | 913 | 265 | 0 | 534 | 573 | 0 | 804 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.91 | 0.91 | 0.91 | 0.66 | 0.66 | 0.66 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 52.8 | 2.8 | 2.8 | 58.0 | 11.0 | 4.3 | 49.2 | 0.0 | 49.6 | 51.7 | 0.0 | 42.0 |
| Incr Delay (d2), s/veh | 38.4 | 0.7 | 1.3 | 5.5 | 62.8 | 1.7 | 2.3 | 0.0 | 9.3 | 7.6 | 0.0 | 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 | 7.1 | 1.3 | 1.6 | 1.9 | 37.3 | 9.1 | 2.3 | 0.0 | 7.5 | 7.7 | 0.0 | 7.1 |
| LnGrp Delay(d),s/veh | 91.2 | 3.4 | 4.0 | 63.6 | 73.8 | 6.0 | 51.5 | 0.0 | 58.9 | 59.4 | 0.0 | 44.6 |
| LnGrp LOS | F | A | A | E | F | A | D | | E | E | | D |
| Approach Vol, veh/h | | 1252 | | | 2227 | | | 468 | | | 849 | |
| Approach Delay, s/veh | | 25.0 | | | 57.7 | | | 57.9 | | | 51.8 | |
| Approach LOS | | C | | | E | | | E | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 11.9 | 66.1 | | 27.0 | 18.0 | 60.0 | | 25.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 5.9 | 57.0 | | 21.0 | 12.0 | 54.0 | | 19.0 |
| Max Q Clear Time (g_c+I1), s | 15.7 | 4.8 | | 17.5 | 13.5 | 56.0 | | 19.7 |
| Green Ext Time (p_c), s | 0.0 | 38.8 | | 1.3 | 0.0 | 0.0 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 48.1 |
| HCM 2010 LOS | D |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 34 | 1446 | 34 | 17 | 1816 | 17 | 95 | 16 | 56 | 56 | 16 | 90 |
| Future Volume (veh/h) | 34 | 1446 | 34 | 17 | 1816 | 17 | 95 | 16 | 56 | 56 | 16 | 90 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 38 | 1607 | 38 | 19 | 2018 | 19 | 106 | 18 | 62 | 62 | 18 | 100 |
| Adj No. of Lanes | 1 | 3 | 0 | 1 | 3 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 209 | 2477 | 59 | 466 | 3170 | 30 | 133 | 23 | 400 | 108 | 31 | 187 |
| Arrive On Green | 0.08 | 0.97 | 0.97 | 0.33 | 1.00 | 1.00 | 0.09 | 0.09 | 0.09 | 0.08 | 0.08 | 0.08 |
| Sat Flow, veh/h | 1774 | 5111 | 121 | 1774 | 5195 | 49 | 1527 | 259 | 1583 | 1390 | 403 | 1583 |
| Grp Volume(v), veh/h | 38 | 1066 | 579 | 19 | 1316 | 721 | 124 | 0 | 62 | 80 | 0 | 100 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1695 | 1841 | 1774 | 1695 | 1854 | 1786 | 0 | 1583 | 1793 | 0 | 1583 |
| Q Serve(g_s), s | 1.5 | 3.4 | 3.4 | 0.0 | 0.0 | 0.0 | 8.9 | 0.0 | 0.0 | 5.6 | 0.0 | 7.7 |
| Cycle Q Clear(g_c), s | 1.5 | 3.4 | 3.4 | 0.0 | 0.0 | 0.0 | 8.9 | 0.0 | 0.0 | 5.6 | 0.0 | 7.7 |
| Prop In Lane | 1.00 | | 0.07 | 1.00 | | 0.03 | 0.85 | | 1.00 | 0.77 | | 1.00 |
| Lane Grp Cap(c), veh/h | 209 | 1643 | 892 | 466 | 2069 | 1131 | 155 | 0 | 400 | 140 | 0 | 187 |
| V/C Ratio(X) | 0.18 | 0.65 | 0.65 | 0.04 | 0.64 | 0.64 | 0.80 | 0.00 | 0.15 | 0.57 | 0.00 | 0.53 |
| Avail Cap(c_a), veh/h | 233 | 1643 | 892 | 466 | 2069 | 1131 | 247 | 0 | 482 | 248 | 0 | 283 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.87 | 0.87 | 0.87 | 0.50 | 0.50 | 0.50 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 19.0 | 1.1 | 1.1 | 11.2 | 0.0 | 0.0 | 58.2 | 0.0 | 37.8 | 57.8 | 0.0 | 53.9 |
| Incr Delay (d2), s/veh | 0.4 | 1.7 | 3.2 | 0.0 | 0.8 | 1.4 | 9.1 | 0.0 | 0.2 | 3.6 | 0.0 | 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/ln | 0.8 | 1.3 | 1.7 | 0.3 | 0.2 | 0.4 | 4.8 | 0.0 | 1.7 | 2.9 | 0.0 | 3.5 |
| LnGrp Delay(d),s/veh | 19.4 | 2.8 | 4.2 | 11.2 | 0.8 | 1.4 | 67.3 | 0.0 | 38.0 | 61.5 | 0.0 | 56.3 |
| LnGrp LOS | B | A | A | B | A | A | E | | D | E | | E |
| Approach Vol, veh/h | | 1683 | | | 2056 | | | 186 | | | 180 | |
| Approach Delay, s/veh | | 3.7 | | | 1.1 | | | 57.5 | | | 58.6 | |
| Approach LOS | | A | | | A | | | E | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 27.6 | 69.0 | | 16.1 | 11.2 | 85.3 | | 17.3 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 7.6 | 63.0 | | 18.0 | 7.0 | 63.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 12.3 | 5.4 | | 9.7 | 3.5 | 2.0 | | 10.9 |
| Green Ext Time (p_c), s | 4.3 | 17.9 | | 0.4 | 0.0 | 27.1 | | 0.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 7.2 |
| HCM 2010 LOS | A |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 160 | 973 | 424 | 218 | 1119 | 94 | 543 | 556 | 242 | 152 | 278 | 187 |
| Future Volume (veh/h) | 160 | 973 | 424 | 218 | 1119 | 94 | 543 | 556 | 242 | 152 | 278 | 187 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 178 | 1081 | 0 | 242 | 1243 | 104 | 603 | 618 | 269 | 169 | 309 | 208 |
| Adj No. of Lanes | 1 | 3 | 1 | 1 | 3 | 1 | 2 | 2 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 204 | 1352 | 421 | 270 | 1541 | 621 | 657 | 1089 | 728 | 315 | 384 | 509 |
| Arrive On Green | 0.08 | 0.18 | 0.00 | 0.05 | 0.10 | 0.10 | 0.19 | 0.31 | 0.31 | 0.09 | 0.21 | 0.21 |
| Sat Flow, veh/h | 1774 | 5085 | 1583 | 1774 | 5085 | 1583 | 3442 | 3539 | 1583 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 178 | 1081 | 0 | 242 | 1243 | 104 | 603 | 618 | 269 | 169 | 309 | 208 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1695 | 1583 | 1774 | 1695 | 1583 | 1721 | 1770 | 1583 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 12.9 | 26.5 | 0.0 | 17.6 | 31.1 | 6.8 | 22.3 | 19.0 | 14.4 | 9.6 | 20.5 | 13.3 |
| Cycle Q Clear(g_c), s | 12.9 | 26.5 | 0.0 | 17.6 | 31.1 | 6.8 | 22.3 | 19.0 | 14.4 | 9.6 | 20.5 | 13.3 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 204 | 1352 | 421 | 270 | 1541 | 621 | 657 | 1089 | 728 | 315 | 384 | 509 |
| V/C Ratio(X) | 0.87 | 0.80 | 0.00 | 0.90 | 0.81 | 0.17 | 0.92 | 0.57 | 0.37 | 0.54 | 0.80 | 0.41 |
| Avail Cap(c_a), veh/h | 232 | 1352 | 421 | 300 | 1541 | 621 | 688 | 1089 | 728 | 320 | 384 | 509 |
| HCM Platoon Ratio | 0.67 | 0.67 | 0.67 | 0.33 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.83 | 0.83 | 0.00 | 0.29 | 0.29 | 0.29 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 59.0 | 50.1 | 0.0 | 60.7 | 54.8 | 33.7 | 51.6 | 37.7 | 22.8 | 35.8 | 49.1 | 34.4 |
| Incr Delay (d2), s/veh | 22.5 | 4.2 | 0.0 | 9.7 | 1.4 | 0.2 | 17.0 | 2.1 | 1.4 | 1.7 | 16.2 | 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/ln | 7.6 | 12.9 | 0.0 | 9.4 | 14.8 | 3.0 | 12.2 | 9.6 | 6.6 | 4.8 | 12.3 | 6.2 |
| LnGrp Delay(d),s/veh | 81.5 | 54.3 | 0.0 | 70.4 | 56.2 | 33.8 | 68.6 | 39.9 | 24.3 | 37.5 | 65.3 | 36.9 |
| LnGrp LOS | F | D | | E | E | C | E | D | C | D | E | D |
| Approach Vol, veh/h | | 1259 | | | 1589 | | | 1490 | | | 686 | |
| Approach Delay, s/veh | | 58.1 | | | 56.9 | | | 48.7 | | | 49.8 | |
| Approach LOS | | E | | | E | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 25.8 | 40.6 | 17.6 | 46.0 | 21.0 | 45.4 | 30.8 | 32.8 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 22.8 | 32.0 | 12.0 | 40.0 | 17.0 | 37.0 | 26.0 | 26.0 |
| Max Q Clear Time (g_c+I1), s | 19.6 | 28.5 | 11.6 | 21.0 | 14.9 | 33.1 | 24.3 | 22.5 |
| Green Ext Time (p_c), s | 0.2 | 3.2 | 0.0 | 7.9 | 0.1 | 3.6 | 0.5 | 2.3 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 53.8 |
| HCM 2010 LOS | D |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 85 | 1267 | 16 | 90 | 1454 | 190 | 89 | 28 | 90 | 61 | 31 | 66 |
| Future Volume (veh/h) | 85 | 1267 | 16 | 90 | 1454 | 190 | 89 | 28 | 90 | 61 | 31 | 66 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 94 | 1408 | 18 | 100 | 1616 | 211 | 99 | 31 | 100 | 68 | 34 | 73 |
| Adj No. of Lanes | 1 | 3 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 162 | 2515 | 32 | 258 | 1722 | 989 | 189 | 59 | 302 | 166 | 83 | 302 |
| Arrive On Green | 0.05 | 0.49 | 0.49 | 0.05 | 0.49 | 0.49 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| Sat Flow, veh/h | 1774 | 5175 | 66 | 1774 | 3539 | 1583 | 1367 | 428 | 1583 | 1202 | 601 | 1583 |
| Grp Volume(v), veh/h | 94 | 922 | 504 | 100 | 1616 | 211 | 130 | 0 | 100 | 102 | 0 | 73 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1695 | 1851 | 1774 | 1770 | 1583 | 1794 | 0 | 1583 | 1803 | 0 | 1583 |
| Q Serve(g_s), s | 3.4 | 25.0 | 25.0 | 3.6 | 56.1 | 7.5 | 8.7 | 0.0 | 7.1 | 6.7 | 0.0 | 5.1 |
| Cycle Q Clear(g_c), s | 3.4 | 25.0 | 25.0 | 3.6 | 56.1 | 7.5 | 8.7 | 0.0 | 7.1 | 6.7 | 0.0 | 5.1 |
| Prop In Lane | 1.00 | | 0.04 | 1.00 | | 1.00 | 0.76 | | 1.00 | 0.67 | | 1.00 |
| Lane Grp Cap(c), veh/h | 162 | 1648 | 900 | 258 | 1722 | 989 | 248 | 0 | 302 | 250 | 0 | 302 |
| V/C Ratio(X) | 0.58 | 0.56 | 0.56 | 0.39 | 0.94 | 0.21 | 0.52 | 0.00 | 0.33 | 0.41 | 0.00 | 0.24 |
| Avail Cap(c_a), veh/h | 165 | 1648 | 900 | 302 | 1722 | 989 | 248 | 0 | 302 | 250 | 0 | 302 |
| 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) | 0.64 | 0.64 | 0.64 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 29.5 | 23.6 | 23.6 | 17.9 | 31.6 | 10.6 | 52.0 | 0.0 | 45.4 | 51.1 | 0.0 | 44.7 |
| Incr Delay (d2), s/veh | 3.2 | 0.9 | 1.6 | 0.9 | 11.3 | 0.5 | 7.7 | 0.0 | 2.9 | 4.9 | 0.0 | 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/ln | 1.8 | 11.9 | 13.1 | 1.8 | 30.1 | 4.6 | 4.9 | 0.0 | 3.4 | 3.7 | 0.0 | 2.4 |
| LnGrp Delay(d),s/veh | 32.7 | 24.5 | 25.2 | 18.9 | 42.9 | 11.0 | 59.7 | 0.0 | 48.3 | 56.0 | 0.0 | 46.5 |
| LnGrp LOS | C | C | C | B | D | B | E | | D | E | | D |
| Approach Vol, veh/h | | 1520 | | | 1927 | | | 230 | | | 175 | |
| Approach Delay, s/veh | | 25.2 | | | 38.2 | | | 54.8 | | | 52.1 | |
| Approach LOS | | C | | | D | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 12.8 | 69.2 | | 24.0 | 12.8 | 69.2 | | 24.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 10.8 | 60.0 | | 18.0 | 7.0 | 63.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 5.6 | 27.0 | | 8.7 | 5.4 | 58.1 | | 10.7 |
| Green Ext Time (p_c), s | 0.1 | 28.7 | | 0.5 | 0.0 | 4.7 | | 0.6 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 34.7 |
| HCM 2010 LOS | C |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 500 | 176 | 277 | 711 | 0 | 0 | 0 | 0 | 405 | 0 | 165 |
| Future Volume (veh/h) | 0 | 500 | 176 | 277 | 711 | 0 | 0 | 0 | 0 | 405 | 0 | 165 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1900 | 1863 | 1863 | 0 | | | | 1863 | 0 | 1863 |
| Adj Flow Rate, veh/h | 0 | 556 | 196 | 308 | 790 | 0 | | | | 450 | 0 | 183 |
| Adj No. of Lanes | 0 | 1 | 0 | 1 | 1 | 0 | | | | 1 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 0 | 2 |
| Cap, veh/h | 0 | 648 | 229 | 311 | 1192 | 0 | | | | 475 | 0 | 424 |
| Arrive On Green | 0.00 | 0.49 | 0.49 | 0.20 | 1.00 | 0.00 | | | | 0.27 | 0.00 | 0.27 |
| Sat Flow, veh/h | 0 | 1317 | 464 | 1774 | 1863 | 0 | | | | 1774 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 0 | 752 | 308 | 790 | 0 | | | | 450 | 0 | 183 |
| Grp Sat Flow(s),veh/h/ln | 0 | 0 | 1781 | 1774 | 1863 | 0 | | | | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 0.0 | 48.2 | 12.9 | 0.0 | 0.0 | | | | 32.4 | 0.0 | 12.4 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 48.2 | 12.9 | 0.0 | 0.0 | | | | 32.4 | 0.0 | 12.4 |
| Prop In Lane | 0.00 | | 0.26 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 0 | 877 | 311 | 1192 | 0 | | | | 475 | 0 | 424 |
| V/C Ratio(X) | 0.00 | 0.00 | 0.86 | 0.99 | 0.66 | 0.00 | | | | 0.95 | 0.00 | 0.43 |
| Avail Cap(c_a), veh/h | 0 | 0 | 877 | 311 | 1192 | 0 | | | | 491 | 0 | 438 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 0.00 | 1.00 | 0.37 | 0.37 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 29.0 | 47.3 | 0.0 | 0.0 | | | | 46.7 | 0.0 | 39.4 |
| Incr Delay (d2), s/veh | 0.0 | 0.0 | 10.6 | 28.8 | 1.1 | 0.0 | | | | 27.5 | 0.0 | 0.7 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.0 | 0.0 | 26.2 | 13.4 | 0.4 | 0.0 | | | | 19.5 | 0.0 | 5.5 |
| LnGrp Delay(d),s/veh | 0.0 | 0.0 | 39.6 | 76.1 | 1.1 | 0.0 | | | | 74.2 | 0.0 | 40.1 |
| LnGrp LOS | | | D | E | A | | | | | E | | D |
| Approach Vol, veh/h | | 752 | | | 1098 | | | | | | 633 | |
| Approach Delay, s/veh | | 39.6 | | | 22.1 | | | | | | 64.4 | |
| Approach LOS | | D | | | C | | | | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 89.2 | 70.0 | | 40.8 | | 89.2 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 82.6 | 64.0 | | 36.0 | | 82.0 | | |
| Max Q Clear Time (g_c+I1), s | 14.9 | 50.2 | | 34.4 | | 2.0 | | |
| Green Ext Time (p_c), s | 0.0 | 4.2 | | 0.4 | | 7.4 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 38.2 |
| HCM 2010 LOS | D |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 95 | 811 | 0 | 0 | 839 | 490 | 150 | 0 | 340 | 0 | 0 | 0 |
| Future Volume (veh/h) | 95 | 811 | 0 | 0 | 839 | 490 | 150 | 0 | 340 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1863 | 1900 | 1863 | 1863 | | | |
| Adj Flow Rate, veh/h | 106 | 901 | 0 | 0 | 932 | 544 | 167 | 0 | 378 | | | |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 344 | 1202 | 0 | 0 | 1018 | 865 | 465 | 0 | 415 | | | |
| Arrive On Green | 0.05 | 0.65 | 0.00 | 0.00 | 1.00 | 1.00 | 0.26 | 0.00 | 0.26 | | | |
| Sat Flow, veh/h | 1774 | 1863 | 0 | 0 | 1863 | 1583 | 1774 | 0 | 1583 | | | |
| Grp Volume(v), veh/h | 106 | 901 | 0 | 0 | 932 | 544 | 167 | 0 | 378 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 0 | 0 | 1863 | 1583 | 1774 | 0 | 1583 | | | |
| Q Serve(g_s), s | 3.2 | 43.2 | 0.0 | 0.0 | 0.0 | 0.0 | 10.0 | 0.0 | 30.1 | | | |
| Cycle Q Clear(g_c), s | 3.2 | 43.2 | 0.0 | 0.0 | 0.0 | 0.0 | 10.0 | 0.0 | 30.1 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 1.00 | | 1.00 | | | |
| Lane Grp Cap(c), veh/h | 344 | 1202 | 0 | 0 | 1018 | 865 | 465 | 0 | 415 | | | |
| V/C Ratio(X) | 0.31 | 0.75 | 0.00 | 0.00 | 0.92 | 0.63 | 0.36 | 0.00 | 0.91 | | | |
| Avail Cap(c_a), veh/h | 1042 | 1202 | 0 | 0 | 1018 | 865 | 641 | 0 | 572 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 0.37 | 0.37 | 0.00 | 0.00 | 0.24 | 0.24 | 1.00 | 0.00 | 1.00 | | | |
| Uniform Delay (d), s/veh | 10.3 | 15.8 | 0.0 | 0.0 | 0.0 | 0.0 | 39.0 | 0.0 | 46.5 | | | |
| Incr Delay (d2), s/veh | 0.2 | 1.6 | 0.0 | 0.0 | 4.2 | 0.8 | 0.5 | 0.0 | 15.0 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 1.5 | 22.6 | 0.0 | 0.0 | 1.2 | 0.2 | 4.9 | 0.0 | 14.9 | | | |
| LnGrp Delay(d),s/veh | 10.5 | 17.5 | 0.0 | 0.0 | 4.2 | 0.8 | 39.5 | 0.0 | 61.4 | | | |
| LnGrp LOS | B | B | | | A | A | D | | E | | | |
| Approach Vol, veh/h | | 1007 | | | 1476 | | | 545 | | | | |
| Approach Delay, s/veh | | 16.7 | | | 2.9 | | | 54.7 | | | | |
| Approach LOS | | B | | | A | | | D | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 89.9 | | | 12.8 | 77.0 | | 40.1 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 71.0 | | | 58.0 | 7.0 | | 47.0 |
| Max Q Clear Time (g_c+I1), s | | 45.2 | | | 5.2 | 2.0 | | 32.1 |
| Green Ext Time (p_c), s | | 18.2 | | | 0.3 | 4.5 | | 2.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 16.8 |
| HCM 2010 LOS | B |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 287 | 17 | 847 | 7 | 27 | 7 | 928 | 838 | 13 | 12 | 666 | 374 |
| Future Volume (veh/h) | 287 | 17 | 847 | 7 | 27 | 7 | 928 | 838 | 13 | 12 | 666 | 374 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 319 | 19 | 941 | 8 | 30 | 8 | 1031 | 931 | 14 | 13 | 740 | 416 |
| Adj No. of Lanes | 1 | 1 | 2 | 1 | 1 | 0 | 2 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 294 | 358 | 1286 | 163 | 273 | 73 | 927 | 1333 | 1133 | 292 | 745 | 633 |
| Arrive On Green | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.19 | 0.45 | 1.00 | 1.00 | 0.40 | 0.40 | 0.40 |
| Sat Flow, veh/h | 1364 | 1863 | 2787 | 583 | 1418 | 378 | 3442 | 1863 | 1583 | 591 | 1863 | 1583 |
| Grp Volume(v), veh/h | 319 | 19 | 941 | 8 | 0 | 38 | 1031 | 931 | 14 | 13 | 740 | 416 |
| Grp Sat Flow(s),veh/h/ln | 1364 | 1863 | 1393 | 583 | 0 | 1796 | 1721 | 1863 | 1583 | 591 | 1863 | 1583 |
| Q Serve(g_s), s | 22.7 | 1.1 | 25.0 | 1.5 | 0.0 | 2.3 | 35.0 | 0.0 | 0.0 | 1.8 | 51.4 | 27.8 |
| Cycle Q Clear(g_c), s | 25.0 | 1.1 | 25.0 | 2.6 | 0.0 | 2.3 | 35.0 | 0.0 | 0.0 | 1.8 | 51.4 | 27.8 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.21 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 294 | 358 | 1286 | 163 | 0 | 345 | 927 | 1333 | 1133 | 292 | 745 | 633 |
| V/C Ratio(X) | 1.09 | 0.05 | 0.73 | 0.05 | 0.00 | 0.11 | 1.11 | 0.70 | 0.01 | 0.04 | 0.99 | 0.66 |
| Avail Cap(c_a), veh/h | 294 | 358 | 1286 | 163 | 0 | 345 | 927 | 1333 | 1133 | 292 | 745 | 633 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.67 | 1.67 | 1.67 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.58 | 0.58 | 0.58 | 1.00 | 0.00 | 1.00 | 0.60 | 0.60 | 0.60 | 0.57 | 0.57 | 0.57 |
| Uniform Delay (d), s/veh | 55.8 | 42.8 | 28.5 | 43.9 | 0.0 | 43.3 | 35.8 | 0.0 | 0.0 | 23.9 | 38.8 | 31.7 |
| Incr Delay (d2), s/veh | 65.2 | 0.0 | 1.3 | 0.1 | 0.0 | 0.1 | 60.4 | 1.9 | 0.0 | 0.2 | 23.3 | 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 | 5.9 | 0.6 | 14.0 | 0.2 | 0.0 | 1.1 | 24.3 | 0.7 | 0.0 | 0.3 | 31.1 | 12.7 |
| LnGrp Delay(d),s/veh | 121.0 | 42.9 | 29.7 | 44.0 | 0.0 | 43.5 | 96.1 | 1.9 | 0.0 | 24.1 | 62.2 | 34.8 |
| LnGrp LOS | F | D | C | D | | D | F | A | A | C | E | C |
| Approach Vol, veh/h | | 1279 | | | 46 | | | 1976 | | | 1169 | |
| Approach Delay, s/veh | | 52.7 | | | 43.6 | | | 51.0 | | | 52.0 | |
| Approach LOS | | D | | | D | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 99.0 | | 31.0 | 41.0 | 58.0 | | 31.0 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 93.0 | | 25.0 | 35.0 | 52.0 | | 25.0 |
| Max Q Clear Time (g_c+I1), s | | 2.0 | | 27.0 | 37.0 | 53.4 | | 4.6 |
| Green Ext Time (p_c), s | | 26.5 | | 0.0 | 0.0 | 0.0 | | 5.8 |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | | 51.7 |
| HCM 2010 LOS | | D |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 16 | 130 | 81 | 163 | 46 | 897 | 45 | 866 | 198 | 751 | 721 | 47 |
| Future Volume (veh/h) | 16 | 130 | 81 | 163 | 46 | 897 | 45 | 866 | 198 | 751 | 721 | 47 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 18 | 144 | 90 | 181 | 51 | 0 | 50 | 962 | 220 | 834 | 801 | 52 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 280 | 178 | 151 | 266 | 275 | 234 | 261 | 1275 | 570 | 874 | 1060 | 901 |
| Arrive On Green | 0.05 | 0.10 | 0.10 | 0.11 | 0.15 | 0.00 | 0.04 | 0.36 | 0.36 | 0.17 | 0.38 | 0.38 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 1863 | 1583 | 1774 | 3539 | 1583 | 3442 | 1863 | 1583 |
| Grp Volume(v), veh/h | 18 | 144 | 90 | 181 | 51 | 0 | 50 | 962 | 220 | 834 | 801 | 52 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 1863 | 1583 | 1774 | 1770 | 1583 | 1721 | 1863 | 1583 |
| Q Serve(g_s), s | 1.1 | 9.9 | 7.1 | 11.6 | 3.1 | 0.0 | 2.2 | 31.0 | 13.4 | 31.2 | 48.6 | 2.7 |
| Cycle Q Clear(g_c), s | 1.1 | 9.9 | 7.1 | 11.6 | 3.1 | 0.0 | 2.2 | 31.0 | 13.4 | 31.2 | 48.6 | 2.7 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 280 | 178 | 151 | 266 | 275 | 234 | 261 | 1275 | 570 | 874 | 1060 | 901 |
| V/C Ratio(X) | 0.06 | 0.81 | 0.59 | 0.68 | 0.19 | 0.00 | 0.19 | 0.75 | 0.39 | 0.95 | 0.76 | 0.06 |
| Avail Cap(c_a), veh/h | 430 | 258 | 219 | 324 | 275 | 234 | 277 | 1275 | 570 | 874 | 1060 | 901 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.67 | 0.67 | 0.67 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.52 | 0.52 | 0.52 |
| Uniform Delay (d), s/veh | 47.5 | 57.6 | 56.4 | 45.1 | 48.6 | 0.0 | 25.6 | 36.5 | 30.9 | 53.2 | 32.4 | 18.2 |
| Incr Delay (d2), s/veh | 0.1 | 11.6 | 3.7 | 4.3 | 0.3 | 0.0 | 0.4 | 4.2 | 2.0 | 12.9 | 2.7 | 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/ln | 0.6 | 5.7 | 3.3 | 6.0 | 1.6 | 0.0 | 1.1 | 15.8 | 6.2 | 16.5 | 25.9 | 1.2 |
| LnGrp Delay(d),s/veh | 47.6 | 69.2 | 60.1 | 49.4 | 48.9 | 0.0 | 25.9 | 40.7 | 32.9 | 66.1 | 35.0 | 18.2 |
| LnGrp LOS | D | E | E | D | D | | C | D | C | E | D | B |
| Approach Vol, veh/h | | 252 | | | 232 | | | 1232 | | | 1687 | |
| Approach Delay, s/veh | | 64.4 | | | 49.3 | | | 38.7 | | | 49.9 | |
| Approach LOS | | E | | | D | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 39.0 | 52.8 | 19.8 | 18.4 | 11.8 | 80.0 | 13.0 | 25.2 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 33.0 | 37.0 | 18.0 | 18.0 | 7.0 | 63.0 | 18.0 | 18.0 |
| Max Q Clear Time (g_c+I1), s | 33.2 | 33.0 | 13.6 | 11.9 | 4.2 | 50.6 | 3.1 | 5.1 |
| Green Ext Time (p_c), s | 0.0 | 3.3 | 0.2 | 0.6 | 0.0 | 9.1 | 0.0 | 1.1 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 46.9 |
| HCM 2010 LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 269 | 0 | 0 | 0 | 108 | 0 |
| Future Vol, veh/h | 269 | 0 | 0 | 0 | 108 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Stop | Stop | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 299 | 0 | 0 | 0 | 120 | 0 |

| Major/Minor | Major2 | | | Minor2 | |
|---|---|---|---|---|---|
| Conflicting Flow All | 0 | - | | 0 | - |
| Stage 1 | - | - | | 0 | - |
| Stage 2 | - | - | | 0 | - |
| Critical Hdwy | - | - | | - | - |
| Critical Hdwy Stg 1 | - | - | | - | - |
| Critical Hdwy Stg 2 | - | - | | - | - |
| Follow-up Hdwy | - | - | | - | - |
| Pot Cap-1 Maneuver | - | 0 | | - | 0 |
| Stage 1 | - | 0 | | - | 0 |
| Stage 2 | - | 0 | | - | 0 |
| Platoon blocked, % | | | | | |
| Mov Cap-1 Maneuver | - | - | | - | 0 |
| Mov Cap-2 Maneuver | - | - | | - | 0 |
| Stage 1 | - | - | | - | 0 |
| Stage 2 | - | - | | - | 0 |

| Approach | WB | SB |
|---|---|---|
| HCM Control Delay, s | | |
| HCM LOS | | - |

| Minor Lane/Major Mvmt | WBL | SBLn1 |
|---|---|---|
| Capacity (veh/h) | - | - |
| HCM Lane V/C Ratio | - | - |
| HCM Control Delay (s) | - | - |
| HCM Lane LOS | - | - |
| HCM 95th %tile Q(veh) | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.4 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 1 | 108 | 0 | 0 | 269 | 246 | 0 | 0 | 191 | 0 | 0 | 0 |
| Future Vol, veh/h | 1 | 108 | 0 | 0 | 269 | 246 | 0 | 0 | 191 | 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 | 160 | - | - | - | - | 330 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | - | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 1 | 120 | 0 | 0 | 299 | 273 | 0 | 0 | 212 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 299 | 0 | - | - | - | 0 | 421 | 421 | 120 |
| Stage 1 | - | - | - | - | - | - | 122 | 122 | - |
| Stage 2 | - | - | - | - | - | - | 299 | 299 | - |
| Critical Hdwy | 4.12 | - | - | - | - | - | 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 | 2.218 | - | - | - | - | - | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1262 | - | 0 | 0 | - | - | 589 | 524 | 931 |
| Stage 1 | - | - | 0 | 0 | - | - | 903 | 795 | - |
| Stage 2 | - | - | 0 | 0 | - | - | 752 | 666 | - |
| Platoon blocked, % | | - | | | - | - | | | |
| Mov Cap-1 Maneuver | 1262 | - | - | - | - | - | 589 | 0 | 931 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 589 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 902 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 752 | 0 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 10 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | WBT | WBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 931 | 1262 | - | - | - |
| HCM Lane V/C Ratio | 0.228 | 0.001 | - | - | - |
| HCM Control Delay (s) | 10 | 7.9 | - | - | - |
| HCM Lane LOS | B | A | - | - | - |
| HCM 95th %tile Q(veh) | 0.9 | 0 | - | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 9.2 |

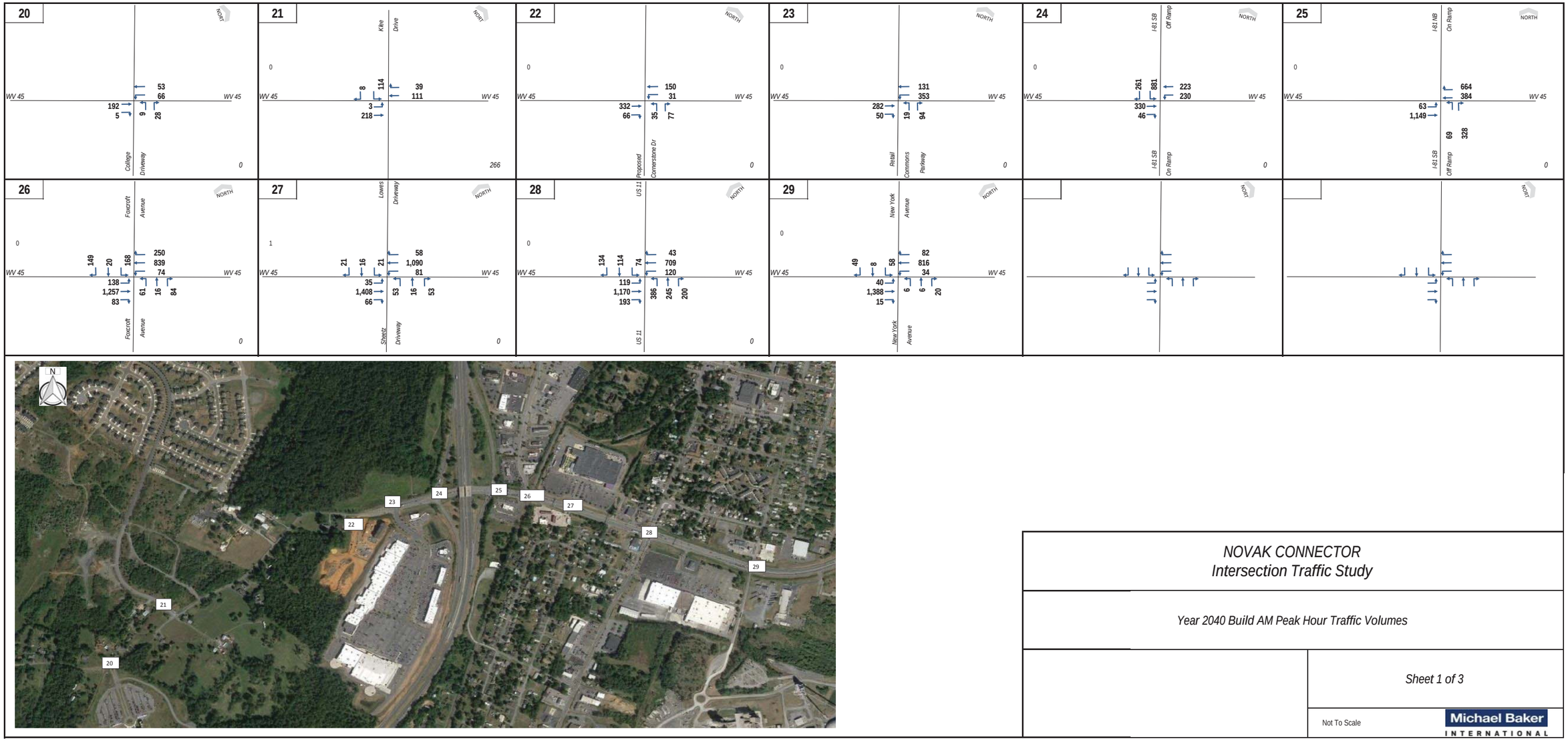
| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 121 | 397 | 115 | 63 | 152 | 76 |
| Future Vol, veh/h | 121 | 397 | 115 | 63 | 152 | 76 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | 50 | 140 | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 134 | 441 | 128 | 70 | 169 | 84 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 537 | 211 | 253 | 0 | - | 0 |
| Stage 1 | 211 | - | - | - | - | - |
| Stage 2 | 326 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 505 | 829 | 1312 | - | - | - |
| Stage 1 | 824 | - | - | - | - | - |
| Stage 2 | 731 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 456 | 829 | 1312 | - | - | - |
| Mov Cap-2 Maneuver | 456 | - | - | - | - | - |
| Stage 1 | 824 | - | - | - | - | - |
| Stage 2 | 660 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 14.7 | 5.2 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1312 | - | 456 | 829 | - | - |
| HCM Lane V/C Ratio | 0.097 | - | 0.295 | 0.532 | - | - |
| HCM Control Delay (s) | 8 | - | 16.2 | 14.2 | - | - |
| HCM Lane LOS | A | - | C | B | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | 1.2 | 3.2 | - | - |

# Future (2040) Build Peak Hour Traffic Volumes



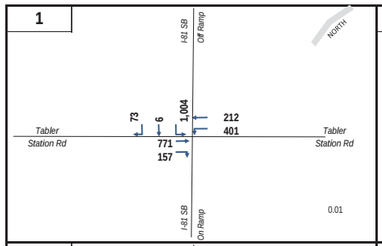

*NOVAK CONNECTOR*
*Intersection Traffic Study*

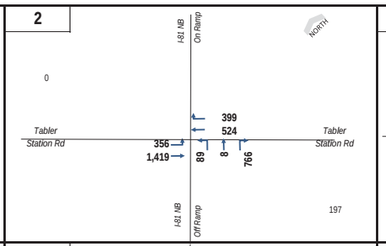
*Year 2040 Build AM Peak Hour Traffic Volumes*

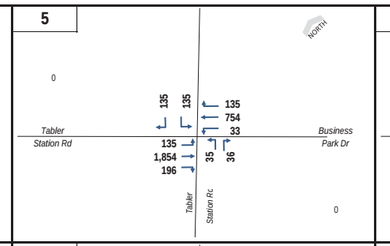
*Sheet 1 of 3*

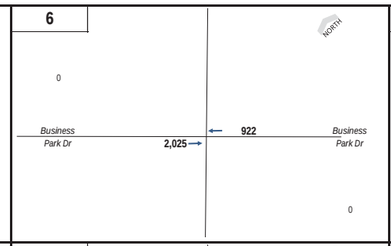
Not To Scale

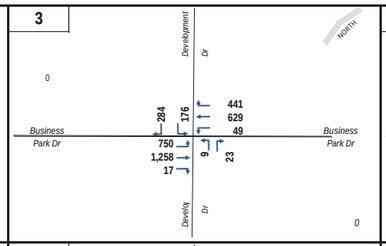
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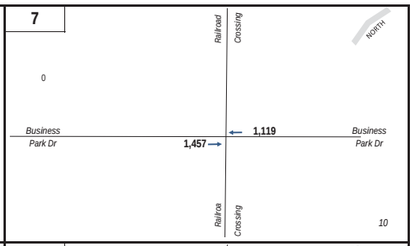


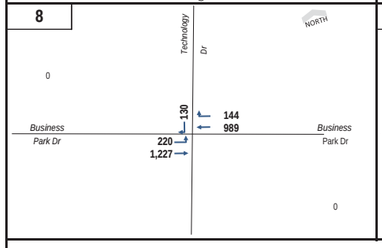



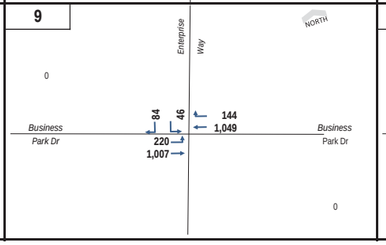



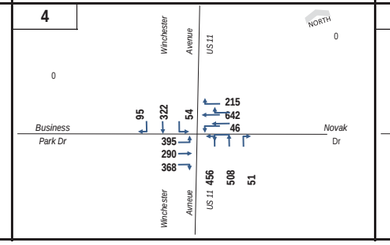



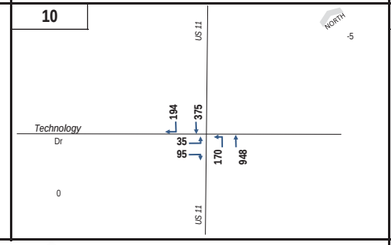



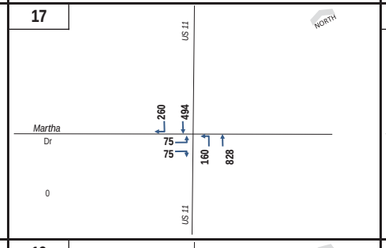



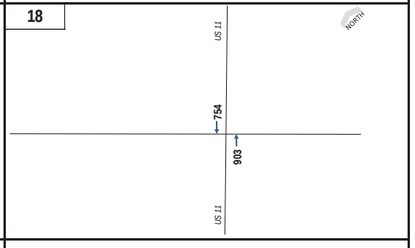



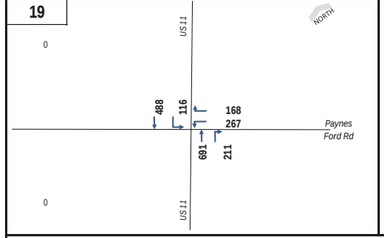









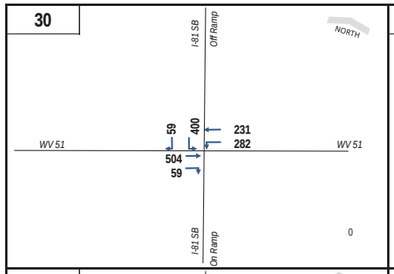

*NOVAK CONNECTOR*
*Intersection Traffic Study*

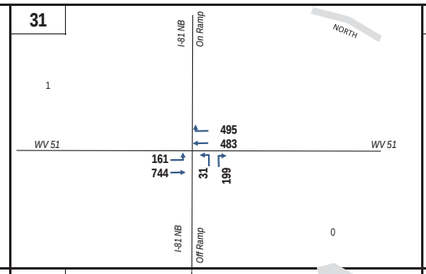
*Year 2040 Build AM Peak Hour Traffic Volumes*

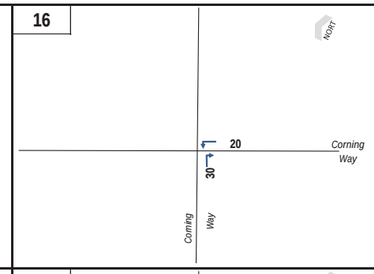
*Sheet 2 of 3*

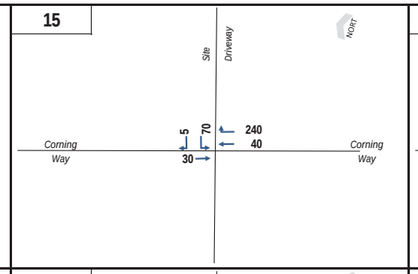
Not To Scale

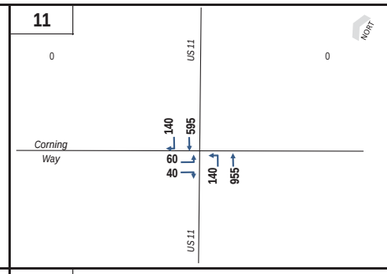
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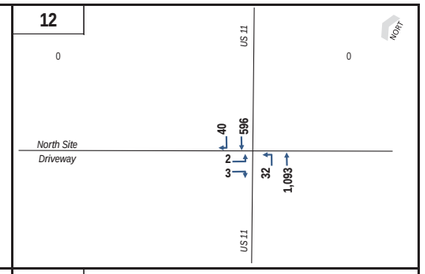


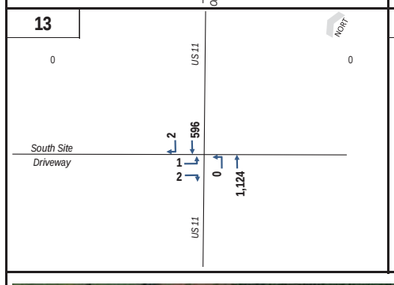



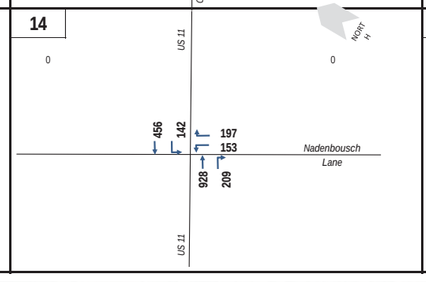



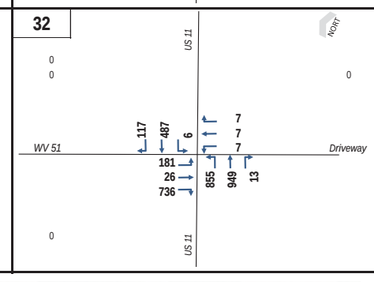



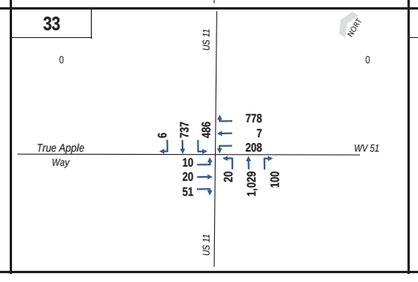



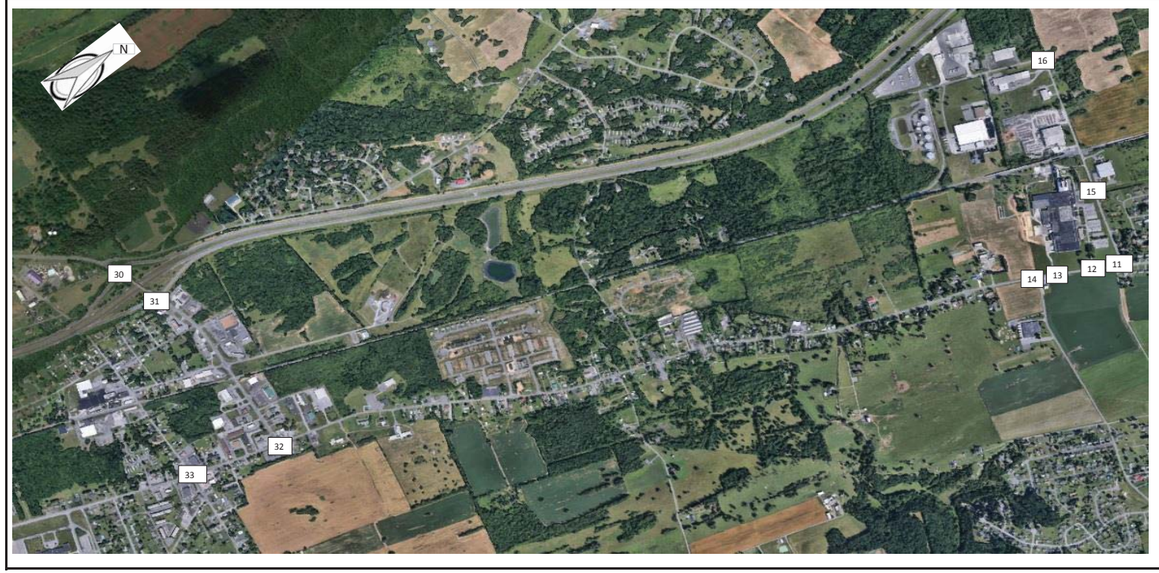



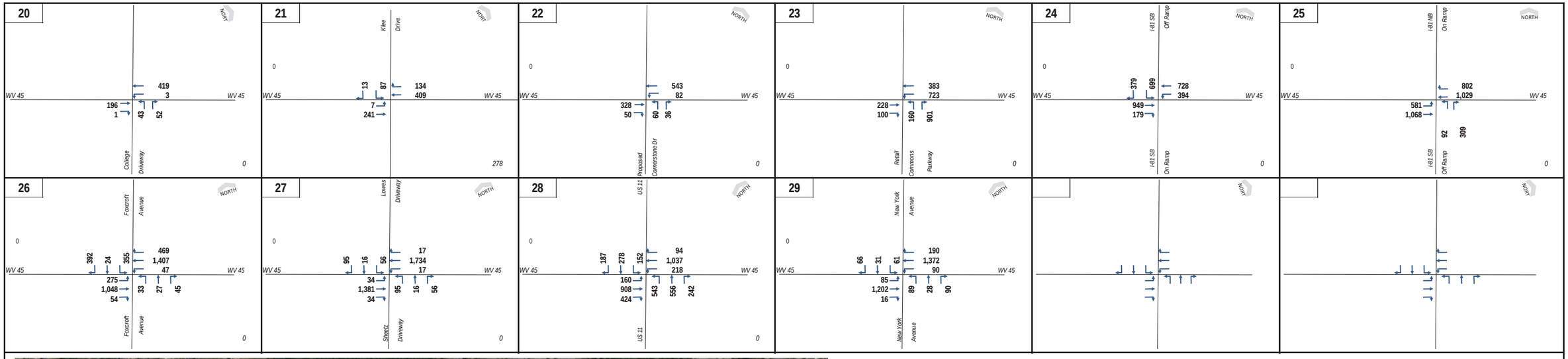

*NOVAK CONNECTOR*
*Intersection Traffic Study*

*Year 2040 Build AM Peak Hour Traffic Volumes*

*Sheet 3 of 3*

Not To Scale

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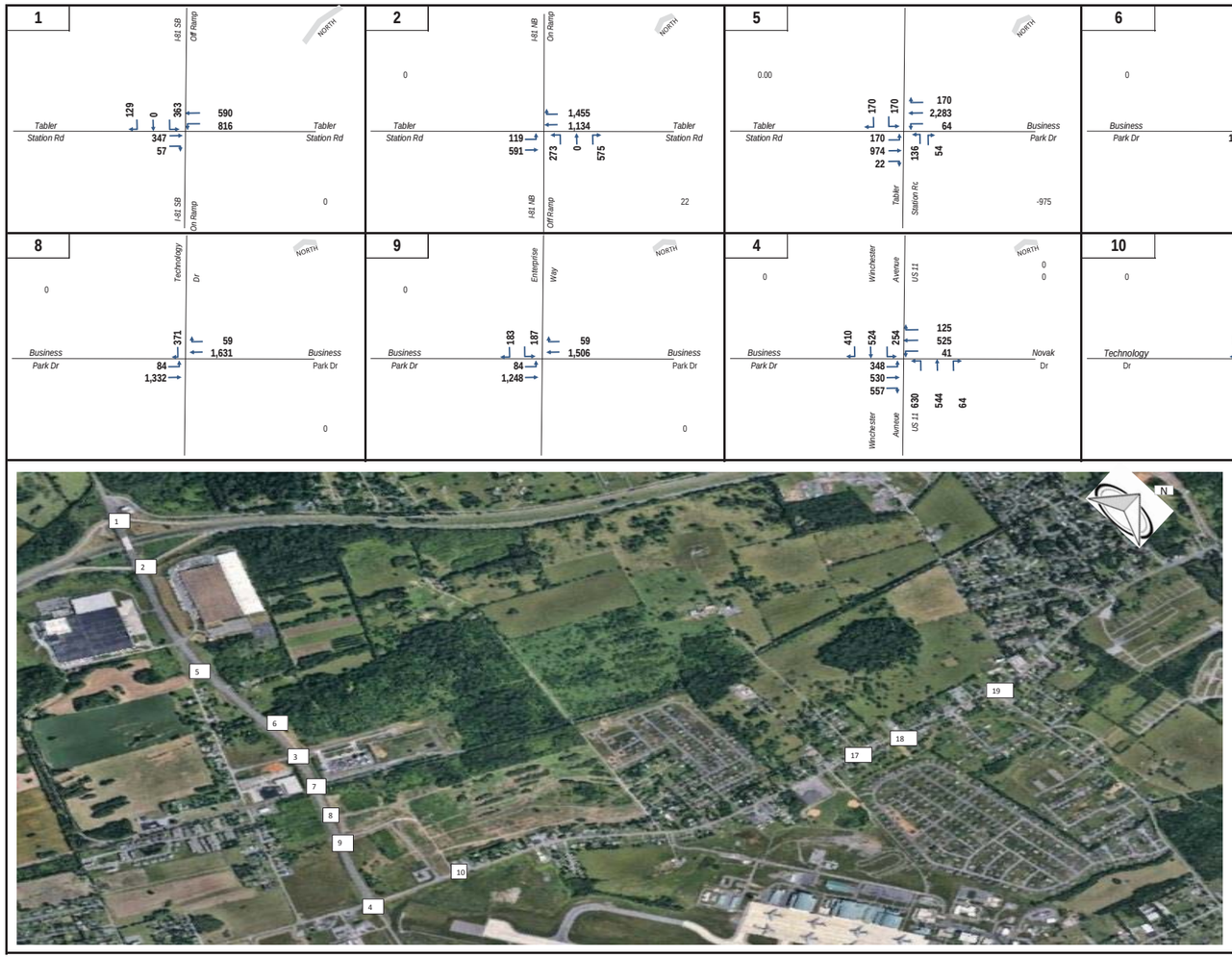
*NOVAK CONNECTOR*
*Intersection Traffic Study*

*Year 2040 Build PM Peak Hour Traffic Volumes*

*Sheet 1 of 3*

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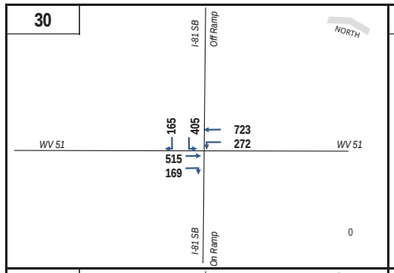

*NOVAK CONNECTOR*
*Intersection Traffic Study*

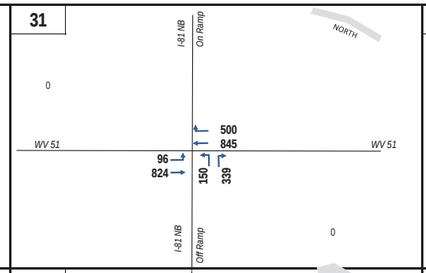
*Year 2040 Build PM Peak Hour Traffic Volumes*

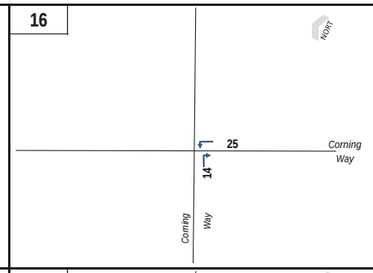
*Sheet 2 of 3*

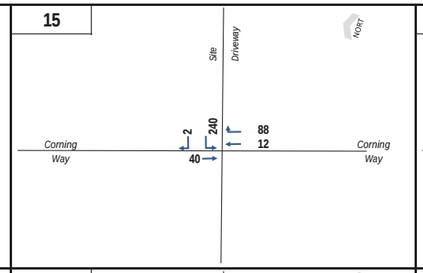
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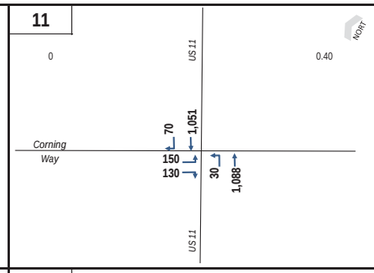
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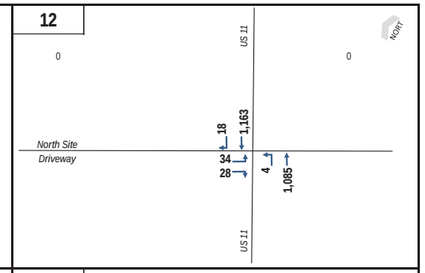


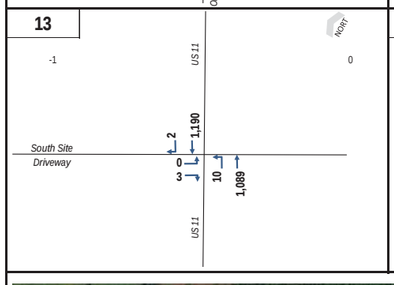



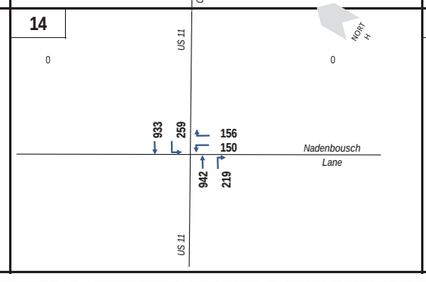



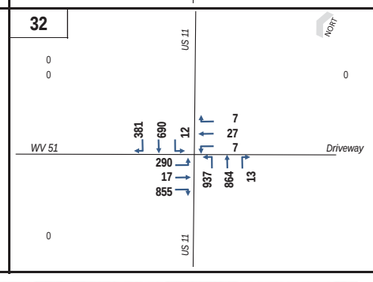



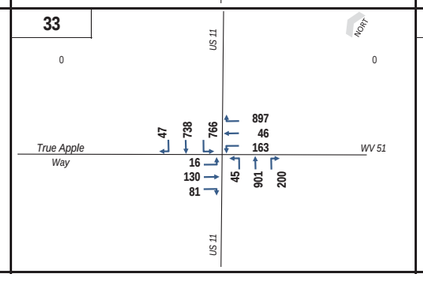



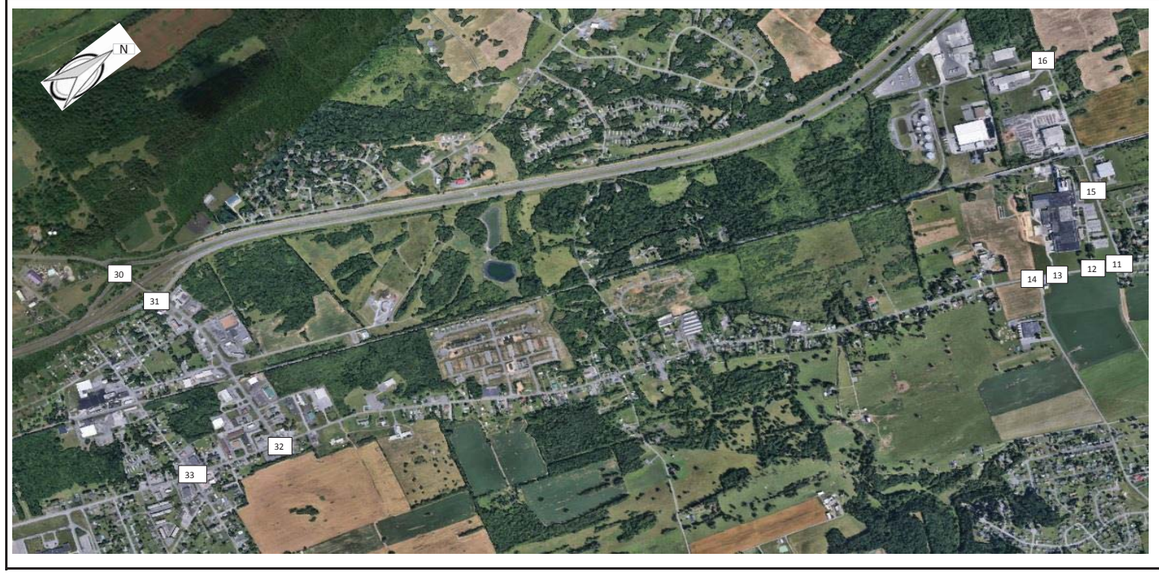




*NOVAK CONNECTOR*
*Intersection Traffic Study*

*Year 2040 Build PM Peak Hour Traffic Volumes*

*Sheet 3 of 3*

Not To Scale

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# Future (2040) Build
# Synchro Reports

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 347 | 57 | 816 | 590 | 0 | 0 | 0 | 0 | 363 | 0 | 129 |
| Future Volume (veh/h) | 0 | 347 | 57 | 816 | 590 | 0 | 0 | 0 | 0 | 363 | 0 | 129 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1900 | 1863 | 1863 | 0 | | | | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 0 | 386 | 0 | 907 | 656 | 0 | | | | 403 | 0 | 143 |
| Adj No. of Lanes | 0 | 2 | 0 | 2 | 2 | 0 | | | | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 2 | 2 |
| Cap, veh/h | 0 | 1815 | 0 | 1547 | 2553 | 0 | | | | 342 | 0 | 305 |
| Arrive On Green | 0.00 | 0.51 | 0.00 | 0.28 | 1.00 | 0.00 | | | | 0.19 | 0.00 | 0.19 |
| Sat Flow, veh/h | 0 | 3725 | 0 | 3442 | 3632 | 0 | | | | 1774 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 386 | 0 | 907 | 656 | 0 | | | | 403 | 0 | 143 |
| Grp Sat Flow(s),veh/h/ln | 0 | 1770 | 0 | 1721 | 1770 | 0 | | | | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 8.3 | 0.0 | 17.5 | 0.0 | 0.0 | | | | 27.0 | 0.0 | 11.2 |
| Cycle Q Clear(g_c), s | 0.0 | 8.3 | 0.0 | 17.5 | 0.0 | 0.0 | | | | 27.0 | 0.0 | 11.2 |
| Prop In Lane | 0.00 | | 0.00 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 1815 | 0 | 1547 | 2553 | 0 | | | | 342 | 0 | 305 |
| V/C Ratio(X) | 0.00 | 0.21 | 0.00 | 0.59 | 0.26 | 0.00 | | | | 1.18 | 0.00 | 0.47 |
| Avail Cap(c_a), veh/h | 0 | 1815 | 0 | 2353 | 2553 | 0 | | | | 342 | 0 | 305 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.67 | 1.67 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 1.00 | 0.00 | 0.37 | 0.37 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 18.6 | 0.0 | 8.6 | 0.0 | 0.0 | | | | 56.5 | 0.0 | 50.1 |
| Incr Delay (d2), s/veh | 0.0 | 0.3 | 0.0 | 0.1 | 0.1 | 0.0 | | | | 106.3 | 0.0 | 5.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.0 | 4.1 | 0.0 | 8.1 | 0.0 | 0.0 | | | | 23.3 | 0.0 | 5.4 |
| LnGrp Delay(d),s/veh | 0.0 | 18.9 | 0.0 | 8.8 | 0.1 | 0.0 | | | | 162.8 | 0.0 | 55.2 |
| LnGrp LOS | | B | | A | A | | | | | F | | E |
| Approach Vol, veh/h | | 386 | | | 1563 | | | | | | 546 | |
| Approach Delay, s/veh | | 18.9 | | | 5.1 | | | | | | 134.6 | |
| Approach LOS | | B | | | A | | | | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 29.2 | 77.8 | | 33.0 | | 107.0 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 56.0 | 39.0 | | 27.0 | | 101.0 | | |
| Max Q Clear Time (g_c+I1), s | 19.5 | 10.3 | | 29.0 | | 2.0 | | |
| Green Ext Time (p_c), s | 3.6 | 7.2 | | 0.0 | | 8.0 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 35.6 |
| HCM 2010 LOS | D |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 119 | 591 | 0 | 0 | 1134 | 1455 | 273 | 0 | 575 | 0 | 0 | 0 |
| Future Volume (veh/h) | 119 | 591 | 0 | 0 | 1134 | 1455 | 273 | 0 | 575 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1863 | 1900 | 1863 | 1863 | | | |
| Adj Flow Rate, veh/h | 132 | 657 | 0 | 0 | 1260 | 1617 | 303 | 0 | 639 | | | |
| Adj No. of Lanes | 1 | 2 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 270 | 1972 | 0 | 0 | 1342 | 1056 | 482 | 0 | 430 | | | |
| Arrive On Green | 0.18 | 1.00 | 0.00 | 0.00 | 0.38 | 0.38 | 0.27 | 0.00 | 0.27 | | | |
| Sat Flow, veh/h | 1774 | 3632 | 0 | 0 | 3632 | 2787 | 1774 | 0 | 1583 | | | |
| Grp Volume(v), veh/h | 132 | 657 | 0 | 0 | 1260 | 1617 | 303 | 0 | 639 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 0 | 0 | 1770 | 1393 | 1774 | 0 | 1583 | | | |
| Q Serve(g_s), s | 2.7 | 0.0 | 0.0 | 0.0 | 24.0 | 26.5 | 10.5 | 0.0 | 19.0 | | | |
| Cycle Q Clear(g_c), s | 2.7 | 0.0 | 0.0 | 0.0 | 24.0 | 26.5 | 10.5 | 0.0 | 19.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 1.00 | | 1.00 | | | |
| Lane Grp Cap(c), veh/h | 270 | 1972 | 0 | 0 | 1342 | 1056 | 482 | 0 | 430 | | | |
| V/C Ratio(X) | 0.49 | 0.33 | 0.00 | 0.00 | 0.94 | 1.53 | 0.63 | 0.00 | 1.49 | | | |
| Avail Cap(c_a), veh/h | 283 | 1972 | 0 | 0 | 1342 | 1056 | 482 | 0 | 430 | | | |
| HCM Platoon Ratio | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 0.98 | 0.98 | 0.00 | 0.00 | 0.09 | 0.09 | 1.00 | 0.00 | 1.00 | | | |
| Uniform Delay (d), s/veh | 13.7 | 0.0 | 0.0 | 0.0 | 21.0 | 21.7 | 22.4 | 0.0 | 25.5 | | | |
| Incr Delay (d2), s/veh | 1.3 | 0.4 | 0.0 | 0.0 | 1.7 | 239.2 | 6.1 | 0.0 | 231.2 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 1.4 | 0.1 | 0.0 | 0.0 | 11.9 | 45.2 | 6.0 | 0.0 | 35.8 | | | |
| LnGrp Delay(d),s/veh | 15.0 | 0.4 | 0.0 | 0.0 | 22.7 | 260.9 | 28.5 | 0.0 | 256.7 | | | |
| LnGrp LOS | B | A | | | C | F | C | | F | | | |
| Approach Vol, veh/h | | 789 | | | 2877 | | | 942 | | | | |
| Approach Delay, s/veh | | 2.9 | | | 156.6 | | | 183.3 | | | | |
| Approach LOS | | A | | | F | | | F | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 45.0 | | | 12.5 | 32.5 | | 25.0 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 39.0 | | | 7.0 | 26.0 | | 19.0 |
| Max Q Clear Time (g_c+I1), s | | 2.0 | | | 4.7 | 28.5 | | 21.0 |
| Green Ext Time (p_c), s | | 30.4 | | | 0.1 | 0.0 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 135.7 |
| HCM 2010 LOS | F |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 309 | 829 | 60 | 34 | 1771 | 197 | 4 | 0 | 18 | 570 | 0 | 741 |
| Future Volume (veh/h) | 309 | 829 | 60 | 34 | 1771 | 197 | 4 | 0 | 18 | 570 | 0 | 741 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1900 | 1863 | 1900 | 1900 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 343 | 921 | 67 | 38 | 1968 | 219 | 4 | 0 | 20 | 633 | 0 | 823 |
| Adj No. of Lanes | 1 | 2 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 89 | 1042 | 76 | 68 | 966 | 105 | 13 | 0 | 67 | 309 | 0 | 402 |
| Arrive On Green | 0.05 | 0.31 | 0.31 | 0.04 | 0.30 | 0.30 | 0.05 | 0.00 | 0.05 | 0.43 | 0.00 | 0.43 |
| Sat Flow, veh/h | 1774 | 3346 | 243 | 1774 | 3219 | 352 | 269 | 0 | 1344 | 722 | 0 | 939 |
| Grp Volume(v), veh/h | 343 | 487 | 501 | 38 | 1065 | 1122 | 24 | 0 | 0 | 1456 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 1820 | 1774 | 1770 | 1801 | 1612 | 0 | 0 | 1661 | 0 | 0 |
| Q Serve(g_s), s | 7.0 | 36.6 | 36.6 | 2.9 | 42.0 | 42.0 | 2.0 | 0.0 | 0.0 | 60.0 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 7.0 | 36.6 | 36.6 | 2.9 | 42.0 | 42.0 | 2.0 | 0.0 | 0.0 | 60.0 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.13 | 1.00 | | 0.20 | 0.17 | | 0.83 | 0.43 | | 0.57 |
| Lane Grp Cap(c), veh/h | 89 | 551 | 567 | 68 | 531 | 540 | 81 | 0 | 0 | 712 | 0 | 0 |
| V/C Ratio(X) | 3.87 | 0.88 | 0.88 | 0.56 | 2.01 | 2.08 | 0.30 | 0.00 | 0.00 | 2.05 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 89 | 551 | 567 | 89 | 531 | 540 | 138 | 0 | 0 | 712 | 0 | 0 |
| 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 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 66.5 | 45.8 | 45.8 | 66.1 | 49.0 | 49.0 | 64.1 | 0.0 | 0.0 | 40.0 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 1316.9 | 18.4 | 18.0 | 6.9 | 459.8 | 490.6 | 2.0 | 0.0 | 0.0 | 475.3 | 0.0 | 0.0 |
| 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 | 55.9 | 20.7 | 21.2 | 1.6 | 88.3 | 94.5 | 0.9 | 0.0 | 0.0 | 121.5 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 1383.4 | 64.2 | 63.8 | 73.0 | 508.8 | 539.6 | 66.2 | 0.0 | 0.0 | 515.3 | 0.0 | 0.0 |
| LnGrp LOS | F | E | E | E | F | F | E | | | F | | |
| Approach Vol, veh/h | | 1331 | | | 2225 | | | 24 | | | 1456 | |
| Approach Delay, s/veh | | 404.0 | | | 516.9 | | | 66.2 | | | 515.3 | |
| Approach LOS | | F | | | F | | | E | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 11.4 | 49.6 | | 13.0 | 13.0 | 48.0 | | 66.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 37.0 | | 12.0 | 7.0 | 37.0 | | 60.0 |
| Max Q Clear Time (g_c+I1), s | 14.3 | 38.6 | | 4.0 | 9.0 | 44.0 | | 62.0 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 484.4 |
| HCM 2010 LOS | F |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 348 | 530 | 557 | 41 | 525 | 125 | 630 | 544 | 64 | 254 | 524 | 410 |
| Future Volume (veh/h) | 348 | 530 | 557 | 41 | 525 | 125 | 630 | 544 | 64 | 254 | 524 | 410 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1900 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 387 | 589 | 0 | 46 | 583 | 139 | 700 | 604 | 0 | 282 | 582 | 0 |
| Adj No. of Lanes | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 357 | 865 | 735 | 49 | 378 | 88 | 394 | 559 | 475 | 242 | 399 | 339 |
| Arrive On Green | 0.14 | 0.46 | 0.00 | 0.29 | 0.29 | 0.29 | 0.19 | 0.30 | 0.00 | 0.11 | 0.21 | 0.00 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 76 | 1322 | 309 | 1774 | 1863 | 1583 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 387 | 589 | 0 | 768 | 0 | 0 | 700 | 604 | 0 | 282 | 582 | 0 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1707 | 0 | 0 | 1774 | 1863 | 1583 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 19.0 | 34.7 | 0.0 | 30.3 | 0.0 | 0.0 | 27.0 | 42.0 | 0.0 | 15.0 | 30.0 | 0.0 |
| Cycle Q Clear(g_c), s | 19.0 | 34.7 | 0.0 | 40.0 | 0.0 | 0.0 | 27.0 | 42.0 | 0.0 | 15.0 | 30.0 | 0.0 |
| Prop In Lane | 1.00 | | 1.00 | 0.06 | | 0.18 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 357 | 865 | 735 | 515 | 0 | 0 | 394 | 559 | 475 | 242 | 399 | 339 |
| V/C Ratio(X) | 1.08 | 0.68 | 0.00 | 1.49 | 0.00 | 0.00 | 1.78 | 1.08 | 0.00 | 1.17 | 1.46 | 0.00 |
| Avail Cap(c_a), veh/h | 357 | 865 | 735 | 515 | 0 | 0 | 394 | 559 | 475 | 242 | 399 | 339 |
| 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 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 |
| Uniform Delay (d), s/veh | 31.5 | 29.4 | 0.0 | 50.8 | 0.0 | 0.0 | 44.2 | 49.0 | 0.0 | 40.7 | 55.0 | 0.0 |
| Incr Delay (d2), s/veh | 71.6 | 4.3 | 0.0 | 231.2 | 0.0 | 0.0 | 360.5 | 61.7 | 0.0 | 110.8 | 219.6 | 0.0 |
| 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 | 7.1 | 18.9 | 0.0 | 53.0 | 0.0 | 0.0 | 54.6 | 31.2 | 0.0 | 16.8 | 39.8 | 0.0 |
| LnGrp Delay(d),s/veh | 103.1 | 33.7 | 0.0 | 282.1 | 0.0 | 0.0 | 404.7 | 110.7 | 0.0 | 151.5 | 274.6 | 0.0 |
| LnGrp LOS | F | C | | F | | | F | F | | F | F | |
| Approach Vol, veh/h | | 976 | | | 768 | | | 1304 | | | 864 | |
| Approach Delay, s/veh | | 61.2 | | | 282.1 | | | 268.5 | | | 234.4 | |
| Approach LOS | | E | | | F | | | F | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | | 71.0 | 21.0 | 48.0 | 25.0 | 46.0 | 33.0 | 36.0 |
| Change Period (Y+Rc), s | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | | 65.0 | 15.0 | 42.0 | 19.0 | 40.0 | 27.0 | 30.0 |
| Max Q Clear Time (g_c+I1), s | | 36.7 | 17.0 | 44.0 | 21.0 | 42.0 | 29.0 | 32.0 |
| Green Ext Time (p_c), s | | 11.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | | 211.9 |
| HCM 2010 LOS | | F |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 170 | 974 | 22 | 64 | 2283 | 170 | 136 | 1 | 54 | 170 | 1 | 170 |
| Future Volume (veh/h) | 170 | 974 | 22 | 64 | 2283 | 170 | 136 | 1 | 54 | 170 | 1 | 170 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 189 | 1082 | 24 | 71 | 2537 | 189 | 151 | 1 | 60 | 189 | 1 | 189 |
| Adj No. of Lanes | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 140 | 2135 | 1034 | 439 | 2124 | 1029 | 152 | 3 | 201 | 265 | 1 | 203 |
| Arrive On Green | 0.10 | 1.00 | 1.00 | 0.05 | 0.60 | 0.60 | 0.05 | 0.13 | 0.13 | 0.05 | 0.13 | 0.13 |
| Sat Flow, veh/h | 1774 | 3539 | 1583 | 1774 | 3539 | 1583 | 1774 | 26 | 1561 | 1774 | 8 | 1576 |
| Grp Volume(v), veh/h | 189 | 1082 | 24 | 71 | 2537 | 189 | 151 | 0 | 61 | 189 | 0 | 190 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 1583 | 1774 | 1770 | 1583 | 1774 | 0 | 1587 | 1774 | 0 | 1585 |
| Q Serve(g_s), s | 7.0 | 0.0 | 0.0 | 2.1 | 84.0 | 6.6 | 7.0 | 0.0 | 4.9 | 7.0 | 0.0 | 16.6 |
| Cycle Q Clear(g_c), s | 7.0 | 0.0 | 0.0 | 2.1 | 84.0 | 6.6 | 7.0 | 0.0 | 4.9 | 7.0 | 0.0 | 16.6 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.99 |
| Lane Grp Cap(c), veh/h | 140 | 2135 | 1034 | 439 | 2124 | 1029 | 152 | 0 | 204 | 265 | 0 | 204 |
| V/C Ratio(X) | 1.35 | 0.51 | 0.02 | 0.16 | 1.19 | 0.18 | 0.99 | 0.00 | 0.30 | 0.71 | 0.00 | 0.93 |
| Avail Cap(c_a), veh/h | 140 | 2135 | 1034 | 445 | 2124 | 1029 | 152 | 0 | 204 | 265 | 0 | 204 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.66 | 0.66 | 0.66 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 43.7 | 0.0 | 0.0 | 9.1 | 28.0 | 9.7 | 57.3 | 0.0 | 55.3 | 55.8 | 0.0 | 60.4 |
| Incr Delay (d2), s/veh | 184.7 | 0.6 | 0.0 | 0.2 | 92.5 | 0.4 | 71.3 | 0.0 | 3.7 | 8.6 | 0.0 | 47.6 |
| 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 | 12.6 | 0.2 | 0.0 | 1.0 | 68.0 | 3.0 | 5.4 | 0.0 | 2.3 | 4.3 | 0.0 | 10.0 |
| LnGrp Delay(d),s/veh | 228.4 | 0.6 | 0.0 | 9.3 | 120.5 | 10.1 | 128.6 | 0.0 | 59.0 | 64.4 | 0.0 | 108.0 |
| LnGrp LOS | F | A | A | A | F | B | F | | E | E | | F |
| Approach Vol, veh/h | | 1295 | | | 2797 | | | 212 | | | 379 | |
| Approach Delay, s/veh | | 33.8 | | | 110.3 | | | 108.6 | | | 86.2 | |
| Approach LOS | | C | | | F | | | F | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 12.6 | 90.4 | 13.0 | 24.0 | 13.0 | 90.0 | 13.0 | 24.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 84.0 | 7.0 | 18.0 | 7.0 | 84.0 | 7.0 | 18.0 |
| Max Q Clear Time (g_c+I1), s | 9.0 | 2.0 | 9.0 | 6.9 | 9.0 | 86.0 | 9.0 | 18.6 |
| Green Ext Time (p_c), s | 0.0 | 72.7 | 0.0 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 87.1 |
| HCM 2010 LOS | F |

Notes

| Intersection | |
|---|---|
| Int Delay, s/veh | 32.8 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 84 | 1332 | 1631 | 59 | 0 | 371 |
| Future Vol, veh/h | 84 | 1332 | 1631 | 59 | 0 | 371 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 93 | 1480 | 1812 | 66 | 0 | 412 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1878 | 0 | - | 0 | 2772 | 939 |
| Stage 1 | - | - | - | - | 1845 | - |
| Stage 2 | - | - | - | - | 927 | - |
| Critical Hdwy | 4.14 | - | - | - | 6.84 | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.84 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.84 | - |
| Follow-up Hdwy | 2.22 | - | - | - | 3.52 | 3.32 |
| Pot Cap-1 Maneuver | 316 | - | - | - | 15 | ~ 265 |
| Stage 1 | - | - | - | - | 111 | - |
| Stage 2 | - | - | - | - | 346 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 316 | - | - | - | 11 | ~ 265 |
| Mov Cap-2 Maneuver | - | - | - | - | 74 | - |
| Stage 1 | - | - | - | - | 111 | - |
| Stage 2 | - | - | - | - | 244 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.3 | 0 | $ 302.1 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 316 | - | - | - | - | 265 |
| HCM Lane V/C Ratio | 0.295 | - | - | - | - | 1.556 |
| HCM Control Delay (s) | 21.1 | - | - | - | 0$ | 302.1 |
| HCM Lane LOS | C | - | - | - | A | F |
| HCM 95th %tile Q(veh) | 1.2 | - | - | - | - | 24.7 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 113.8 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 84 | 1248 | 1506 | 59 | 187 | 183 |
| Future Vol, veh/h | 84 | 1248 | 1506 | 59 | 187 | 183 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 93 | 1387 | 1673 | 66 | 208 | 203 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1739 | 0 | - | 0 | 2586 | 869 |
| Stage 1 | - | - | - | - | 1706 | - |
| Stage 2 | - | - | - | - | 880 | - |
| Critical Hdwy | 4.14 | - | - | - | 6.84 | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.84 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.84 | - |
| Follow-up Hdwy | 2.22 | - | - | - | 3.52 | 3.32 |
| Pot Cap-1 Maneuver | 358 | - | - | - | ~ 21 | 295 |
| Stage 1 | - | - | - | - | ~ 132 | - |
| Stage 2 | - | - | - | - | 366 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 358 | - | - | - | ~ 16 | 295 |
| Mov Cap-2 Maneuver | - | - | - | - | ~ 87 | - |
| Stage 1 | - | - | - | - | ~ 132 | - |
| Stage 2 | - | - | - | - | 271 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.2 | 0 | $ 1000.7 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 358 | - | - | - | 134 |
| HCM Lane V/C Ratio | 0.261 | - | - | - | 3.068 |
| HCM Control Delay (s) | 18.6 | - | - | - | $ 1000.7 |
| HCM Lane LOS | C | - | - | - | F |
| HCM 95th %tile Q(veh) | 1 | - | - | - | 38.6 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 239.7 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 211 | 160 | 68 | 949 | 1029 | 75 |
| Future Vol, veh/h | 211 | 160 | 68 | 949 | 1029 | 75 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | Stop | - | None | - | None |
| Storage Length | 0 | 180 | 200 | - | - | 200 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 234 | 178 | 76 | 1054 | 1143 | 83 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2349 | 1143 | 1143 | 0 | - | 0 |
| Stage 1 | 1143 | - | - | - | - | - |
| Stage 2 | 1206 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | ~ 40 | 244 | 611 | - | - | - |
| Stage 1 | 304 | - | - | - | - | - |
| Stage 2 | 283 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 35 | 244 | 611 | - | - | - |
| Mov Cap-2 Maneuver | ~ 35 | - | - | - | - | - |
| Stage 1 | 304 | - | - | - | - | - |
| Stage 2 | 248 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, $ | 1607.6 | 0.8 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | EBLn2 | SBT | SBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 611 | - | 35 | 244 | - | - |
| HCM Lane V/C Ratio | 0.124 | - | 6.698 | 0.729 | - | - |
| HCM Control Delay (s) | 11.7 | - | $ 2787.8 | 51.2 | - | - |
| HCM Lane LOS | B | - | F | F | - | - |
| HCM 95th %tile Q(veh) | 0.4 | - | 28.1 | 5 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 266.5 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 150 | 130 | 30 | 1088 | 1051 | 70 |
| Future Vol, veh/h | 150 | 130 | 30 | 1088 | 1051 | 70 |
| 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 | - | 0 | - | - | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 167 | 144 | 33 | 1209 | 1168 | 78 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2483 | 1207 | 1246 | 0 | - | 0 |
| Stage 1 | 1207 | - | - | - | - | - |
| Stage 2 | 1276 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | ~ 33 | 223 | 559 | - | - | - |
| Stage 1 | 283 | - | - | - | - | - |
| Stage 2 | 262 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 31 | 223 | 559 | - | - | - |
| Mov Cap-2 Maneuver | ~ 31 | - | - | - | - | - |
| Stage 1 | 283 | - | - | - | - | - |
| Stage 2 | 247 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, $ | 2396.8 | 0.3 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 559 | - | 52 | - | - |
| HCM Lane V/C Ratio | 0.06 | - | 5.983 | - | - |
| HCM Control Delay (s) | 11.8 | - | $ 2396.8 | - | - |
| HCM Lane LOS | B | - | F | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | 35.7 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

| Intersection | |
|---|---|
| Int Delay, s/veh | 3.1 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 34 | 28 | 4 | 1085 | 1163 | 18 |
| Future Vol, veh/h | 34 | 28 | 4 | 1085 | 1163 | 18 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 38 | 31 | 4 | 1206 | 1292 | 20 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1914 | 1302 | 1312 | 0 | - | 0 |
| Stage 1 | 1302 | - | - | - | - | - |
| Stage 2 | 612 | - | - | - | - | - |
| Critical Hdwy | 6.63 | 6.23 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.43 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.83 | - | - | - | - | - |
| Follow-up Hdwy | 3.519 | 3.319 | 2.219 | - | - | - |
| Pot Cap-1 Maneuver | 67 | 196 | 525 | - | - | - |
| Stage 1 | 254 | - | - | - | - | - |
| Stage 2 | 505 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 65 | 196 | 525 | - | - | - |
| Mov Cap-2 Maneuver | 65 | - | - | - | - | - |
| Stage 1 | 254 | - | - | - | - | - |
| Stage 2 | 493 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 113.1 | 0.1 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 525 | - | 93 | - | - |
| HCM Lane V/C Ratio | 0.008 | - | 0.741 | - | - |
| HCM Control Delay (s) | 11.9 | 0.1 | 113.1 | - | - |
| HCM Lane LOS | B | A | F | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 3.8 | - | - |

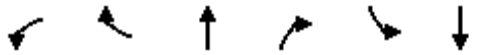
| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 3 | 10 | 1089 | 1190 | 2 |
| Future Vol, veh/h | 0 | 3 | 10 | 1089 | 1190 | 2 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 3 | 11 | 1210 | 1322 | 2 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2555 | 662 | 1324 | 0 | - | 0 |
| Stage 1 | 1323 | - | - | - | - | - |
| Stage 2 | 1232 | - | - | - | - | - |
| Critical Hdwy | 6.63 | 6.93 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.83 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - | - | - | - |
| Follow-up Hdwy | 3.519 | 3.319 | 2.219 | - | - | - |
| Pot Cap-1 Maneuver | 25 | 405 | 520 | - | - | - |
| Stage 1 | 214 | - | - | - | - | - |
| Stage 2 | 274 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 23 | 405 | 520 | - | - | - |
| Mov Cap-2 Maneuver | 23 | - | - | - | - | - |
| Stage 1 | 214 | - | - | - | - | - |
| Stage 2 | 256 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 14 | 0.1 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 520 | - | 405 | - | - |
| HCM Lane V/C Ratio | 0.021 | - | 0.008 | - | - |
| HCM Control Delay (s) | 12.1 | 0 | 14 | - | - |
| HCM Lane LOS | B | A | B | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 0 | - | - |



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 150 | 156 | 942 | 219 | 259 | 933 |
| Future Volume (veh/h) | 150 | 156 | 942 | 219 | 259 | 933 |
| Number | 3 | 18 | 2 | 12 | 1 | 6 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 167 | 173 | 1047 | 243 | 288 | 1037 |
| Adj No. of Lanes | 1 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 213 | 190 | 927 | 215 | 273 | 1490 |
| Arrive On Green | 0.12 | 0.12 | 0.63 | 0.63 | 0.13 | 0.80 |
| Sat Flow, veh/h | 1774 | 1583 | 1463 | 340 | 1774 | 1863 |
| Grp Volume(v), veh/h | 167 | 173 | 0 | 1290 | 288 | 1037 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1583 | 0 | 1803 | 1774 | 1863 |
| Q Serve(g_s), s | 13.7 | 16.2 | 0.0 | 95.0 | 19.0 | 37.7 |
| Cycle Q Clear(g_c), s | 13.7 | 16.2 | 0.0 | 95.0 | 19.0 | 37.7 |
| Prop In Lane | 1.00 | 1.00 | | 0.19 | 1.00 | |
| Lane Grp Cap(c), veh/h | 213 | 190 | 0 | 1142 | 273 | 1490 |
| V/C Ratio(X) | 0.78 | 0.91 | 0.00 | 1.13 | 1.06 | 0.70 |
| Avail Cap(c_a), veh/h | 213 | 190 | 0 | 1142 | 273 | 1490 |
| HCM Platoon Ratio | 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 | 1.00 |
| Uniform Delay (d), s/veh | 64.1 | 65.2 | 0.0 | 27.5 | 57.8 | 6.8 |
| Incr Delay (d2), s/veh | 17.3 | 41.0 | 0.0 | 69.9 | 70.0 | 1.4 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 7.7 | 9.3 | 0.0 | 69.1 | 16.6 | 19.6 |
| LnGrp Delay(d),s/veh | 81.4 | 106.2 | 0.0 | 97.4 | 127.9 | 8.2 |
| LnGrp LOS | F | F | | F | F | A |
| Approach Vol, veh/h | 340 | | 1290 | | | 1325 |
| Approach Delay, s/veh | 94.0 | | 97.4 | | | 34.2 |
| Approach LOS | F | | F | | | C |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 25.0 | 101.0 | | | | 126.0 | | 24.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 19.0 | 95.0 | | | | 120.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 21.0 | 97.0 | | | | 39.7 | | 18.2 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | | | 49.2 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 68.7 |
| HCM 2010 LOS | E |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.8 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 40 | 12 | 88 | 240 | 2 |
| Future Vol, veh/h | 0 | 40 | 12 | 88 | 240 | 2 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 44 | 13 | 98 | 267 | 2 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 111 | 0 | - | 0 | 106 | 62 |
| Stage 1 | - | - | - | - | 62 | - |
| Stage 2 | - | - | - | - | 44 | - |
| 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 | 1479 | - | - | - | 892 | 1003 |
| Stage 1 | - | - | - | - | 961 | - |
| Stage 2 | - | - | - | - | 978 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1479 | - | - | - | 892 | 1003 |
| Mov Cap-2 Maneuver | - | - | - | - | 892 | - |
| Stage 1 | - | - | - | - | 961 | - |
| Stage 2 | - | - | - | - | 978 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 10.8 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1479 | - | - | - | 893 |
| HCM Lane V/C Ratio | - | - | - | - | 0.301 |
| HCM Control Delay (s) | 0 | - | - | - | 10.8 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1.3 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 852.9 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 208 | 220 | 80 | 1080 | 883 | 85 |
| Future Vol, veh/h | 208 | 220 | 80 | 1080 | 883 | 85 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 231 | 244 | 89 | 1200 | 981 | 94 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2406 | 1028 | 1076 | 0 | - | 0 |
| Stage 1 | 1028 | - | - | - | - | - |
| Stage 2 | 1378 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | ~ 36 | 284 | 648 | - | - | - |
| Stage 1 | 345 | - | - | - | - | - |
| Stage 2 | 234 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | ~ 21 | 284 | 648 | - | - | - |
| Mov Cap-2 Maneuver | ~ 21 | - | - | - | - | - |
| Stage 1 | 345 | - | - | - | - | - |
| Stage 2 | ~ 138 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, $ | 5091.4 | 0.8 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 648 | - | 40 | - | - |
| HCM Lane V/C Ratio | 0.137 | - | 11.889 | - | - |
| HCM Control Delay (s) | 11.4 | $ | 5091.4 | - | - |
| HCM Lane LOS | B | A | F | - | - |
| HCM 95th %tile Q(veh) | 0.5 | - | 57.5 | - | - |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |

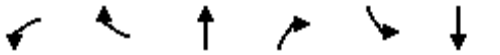
| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 1288 | 969 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 1288 | 969 | 0 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 1431 | 1077 | 0 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2508 | 1077 | 1077 | 0 | - | 0 |
| Stage 1 | 1077 | - | - | - | - | - |
| Stage 2 | 1431 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 31 | 266 | 647 | - | - | - |
| Stage 1 | 327 | - | - | - | - | - |
| Stage 2 | 220 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 31 | 266 | 647 | - | - | - |
| Mov Cap-2 Maneuver | 31 | - | - | - | - | - |
| Stage 1 | 327 | - | - | - | - | - |
| Stage 2 | 220 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 647 | - | - | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - |
| HCM Control Delay (s) | 0 | - | 0 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - |



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 118 | 192 | 959 | 329 | 147 | 850 |
| Future Volume (veh/h) | 118 | 192 | 959 | 329 | 147 | 850 |
| Number | 3 | 18 | 2 | 12 | 1 | 6 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 131 | 213 | 1066 | 366 | 163 | 944 |
| Adj No. of Lanes | 1 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 213 | 190 | 938 | 322 | 143 | 1490 |
| Arrive On Green | 0.12 | 0.12 | 0.71 | 0.71 | 0.05 | 0.80 |
| Sat Flow, veh/h | 1774 | 1583 | 1327 | 456 | 1774 | 1863 |
| Grp Volume(v), veh/h | 131 | 213 | 0 | 1432 | 163 | 944 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1583 | 0 | 1782 | 1774 | 1863 |
| Q Serve(g_s), s | 10.5 | 18.0 | 0.0 | 106.0 | 8.0 | 30.8 |
| Cycle Q Clear(g_c), s | 10.5 | 18.0 | 0.0 | 106.0 | 8.0 | 30.8 |
| Prop In Lane | 1.00 | 1.00 | | 0.26 | 1.00 | |
| Lane Grp Cap(c), veh/h | 213 | 190 | 0 | 1260 | 143 | 1490 |
| V/C Ratio(X) | 0.62 | 1.12 | 0.00 | 1.14 | 1.14 | 0.63 |
| Avail Cap(c_a), veh/h | 213 | 190 | 0 | 1260 | 143 | 1490 |
| HCM Platoon Ratio | 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 | 1.00 |
| Uniform Delay (d), s/veh | 62.7 | 66.0 | 0.0 | 22.0 | 58.2 | 6.1 |
| Incr Delay (d2), s/veh | 5.2 | 101.5 | 0.0 | 71.8 | 118.9 | 0.9 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 5.5 | 13.2 | 0.0 | 76.6 | 10.6 | 15.8 |
| LnGrp Delay(d),s/veh | 67.9 | 167.5 | 0.0 | 93.8 | 177.1 | 7.0 |
| LnGrp LOS | E | F | | F | F | A |
| Approach Vol, veh/h | 344 | | 1432 | | | 1107 |
| Approach Delay, s/veh | 129.6 | | 93.8 | | | 32.0 |
| Approach LOS | F | | F | | | C |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 14.0 | 112.0 | | | | 126.0 | | 24.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 8.0 | 106.0 | | | | 120.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 10.0 | 108.0 | | | | 32.8 | | 20.0 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | | | 58.4 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 74.4 |
| HCM 2010 LOS | E |

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.8 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 196 | 1 | 3 | 419 | 43 | 52 |
| Future Vol, veh/h | 196 | 1 | 3 | 419 | 43 | 52 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 150 | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 218 | 1 | 3 | 466 | 48 | 58 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 218 | 0 | 690 | 218 |
| Stage 1 | - | - | - | - | 218 | - |
| Stage 2 | - | - | - | - | 472 | - |
| 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 | - | - | 1352 | - | 411 | 822 |
| Stage 1 | - | - | - | - | 818 | - |
| Stage 2 | - | - | - | - | 628 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1352 | - | 410 | 822 |
| Mov Cap-2 Maneuver | - | - | - | - | 410 | - |
| Stage 1 | - | - | - | - | 818 | - |
| Stage 2 | - | - | - | - | 627 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 12.8 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 565 | - | - | 1352 | - |
| HCM Lane V/C Ratio | 0.187 | - | - | 0.002 | - |
| HCM Control Delay (s) | 12.8 | - | - | 7.7 | - |
| HCM Lane LOS | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.7 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.2 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 241 | 409 | 134 | 87 | 13 |
| Future Vol, veh/h | 7 | 241 | 409 | 134 | 87 | 13 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 268 | 454 | 149 | 97 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 603 | 0 | - | 0 | 812 | 529 |
| Stage 1 | - | - | - | - | 529 | - |
| Stage 2 | - | - | - | - | 283 | - |
| 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 | 975 | - | - | - | 348 | 550 |
| Stage 1 | - | - | - | - | 591 | - |
| Stage 2 | - | - | - | - | 765 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 975 | - | - | - | 345 | 550 |
| Mov Cap-2 Maneuver | - | - | - | - | 345 | - |
| Stage 1 | - | - | - | - | 591 | - |
| Stage 2 | - | - | - | - | 757 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.2 | 0 | 19.2 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 975 | - | - | - | 363 |
| HCM Lane V/C Ratio | 0.008 | - | - | - | 0.306 |
| HCM Control Delay (s) | 8.7 | 0 | - | - | 19.2 |
| HCM Lane LOS | A | A | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1.3 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 328 | 0 | 0 | 543 | 0 | 0 |
| Future Vol, veh/h | 328 | 0 | 0 | 543 | 0 | 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 | - | 150 | 0 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 364 | 0 | 0 | 603 | 0 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 364 | 0 | 967 | 364 |
| Stage 1 | - | - | - | - | 364 | - |
| Stage 2 | - | - | - | - | 603 | - |
| 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 | - | - | 1195 | - | 282 | 681 |
| Stage 1 | - | - | - | - | 703 | - |
| Stage 2 | - | - | - | - | 546 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1195 | - | 282 | 681 |
| Mov Cap-2 Maneuver | - | - | - | - | 282 | - |
| Stage 1 | - | - | - | - | 703 | - |
| Stage 2 | - | - | - | - | 546 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | 1195 | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - |
| HCM Control Delay (s) | 0 | 0 | - | - | 0 | - |
| HCM Lane LOS | A | A | - | - | A | - |
| HCM 95th %tile Q(veh) | - | - | - | - | 0 | - |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 228 | 100 | 723 | 383 | 160 | 901 |
| Future Volume (veh/h) | 228 | 100 | 723 | 383 | 160 | 901 |
| Number | 2 | 12 | 1 | 6 | 3 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 253 | 111 | 803 | 426 | 178 | 1001 |
| Adj No. of Lanes | 3 | 0 | 2 | 2 | 2 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 424 | 172 | 913 | 1688 | 1165 | 956 |
| Arrive On Green | 0.12 | 0.12 | 0.18 | 0.32 | 0.34 | 0.34 |
| Sat Flow, veh/h | 3721 | 1444 | 3442 | 3632 | 3442 | 1583 |
| Grp Volume(v), veh/h | 240 | 124 | 803 | 426 | 178 | 1001 |
| Grp Sat Flow(s),veh/h/ln | 1695 | 1608 | 1721 | 1770 | 1721 | 1583 |
| Q Serve(g_s), s | 4.4 | 4.8 | 14.8 | 5.8 | 2.3 | 22.0 |
| Cycle Q Clear(g_c), s | 4.4 | 4.8 | 14.8 | 5.8 | 2.3 | 22.0 |
| Prop In Lane | | 0.90 | 1.00 | | 1.00 | 1.00 |
| Lane Grp Cap(c), veh/h | 404 | 192 | 913 | 1688 | 1165 | 956 |
| V/C Ratio(X) | 0.60 | 0.64 | 0.88 | 0.25 | 0.15 | 1.05 |
| Avail Cap(c_a), veh/h | 404 | 192 | 953 | 1688 | 1165 | 956 |
| HCM Platoon Ratio | 1.00 | 1.00 | 0.67 | 0.67 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.66 | 0.66 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 27.1 | 27.3 | 25.7 | 13.5 | 15.0 | 12.9 |
| Incr Delay (d2), s/veh | 6.3 | 15.5 | 6.4 | 0.2 | 0.1 | 42.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.4 | 2.9 | 7.8 | 2.9 | 1.1 | 27.9 |
| LnGrp Delay(d),s/veh | 33.5 | 42.8 | 32.1 | 13.8 | 15.1 | 55.0 |
| LnGrp LOS | C | D | C | B | B | F |
| Approach Vol, veh/h | 364 | | | 1229 | 1179 | |
| Approach Delay, s/veh | 36.6 | | | 25.7 | 49.0 | |
| Approach LOS | D | | | C | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 23.3 | 13.7 | | | | 37.0 | | 28.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 18.0 | 7.0 | | | | 31.0 | | 22.0 |
| Max Q Clear Time (g_c+I1), s | 16.8 | 6.8 | | | | 7.8 | | 24.0 |
| Green Ext Time (p_c), s | 0.5 | 0.1 | | | | 5.1 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 37.1 |
| HCM 2010 LOS | D |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 949 | 179 | 394 | 728 | 0 | 0 | 0 | 0 | 699 | 0 | 379 |
| Future Volume (veh/h) | 0 | 949 | 179 | 394 | 728 | 0 | 0 | 0 | 0 | 699 | 0 | 379 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1863 | 1863 | 1863 | 0 | | | | 1863 | 0 | 1863 |
| Adj Flow Rate, veh/h | 0 | 1054 | 199 | 438 | 809 | 0 | | | | 777 | 0 | 421 |
| Adj No. of Lanes | 0 | 2 | 1 | 1 | 1 | 0 | | | | 2 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 0 | 2 |
| Cap, veh/h | 0 | 1280 | 572 | 532 | 1218 | 0 | | | | 874 | 0 | 402 |
| Arrive On Green | 0.00 | 0.48 | 0.48 | 0.33 | 0.87 | 0.00 | | | | 0.25 | 0.00 | 0.25 |
| Sat Flow, veh/h | 0 | 3632 | 1583 | 1774 | 1863 | 0 | | | | 3442 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 1054 | 199 | 438 | 809 | 0 | | | | 777 | 0 | 421 |
| Grp Sat Flow(s),veh/h/ln | 0 | 1770 | 1583 | 1774 | 1863 | 0 | | | | 1721 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 33.3 | 10.2 | 21.8 | 17.4 | 0.0 | | | | 28.3 | 0.0 | 33.0 |
| Cycle Q Clear(g_c), s | 0.0 | 33.3 | 10.2 | 21.8 | 17.4 | 0.0 | | | | 28.3 | 0.0 | 33.0 |
| Prop In Lane | 0.00 | | 1.00 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 1280 | 572 | 532 | 1218 | 0 | | | | 874 | 0 | 402 |
| V/C Ratio(X) | 0.00 | 0.82 | 0.35 | 0.82 | 0.66 | 0.00 | | | | 0.89 | 0.00 | 1.05 |
| Avail Cap(c_a), veh/h | 0 | 1280 | 572 | 532 | 1218 | 0 | | | | 874 | 0 | 402 |
| HCM Platoon Ratio | 1.00 | 1.33 | 1.33 | 1.33 | 1.33 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 0.49 | 0.49 | 0.56 | 0.56 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 30.2 | 24.2 | 37.4 | 4.1 | 0.0 | | | | 46.7 | 0.0 | 48.5 |
| Incr Delay (d2), s/veh | 0.0 | 3.1 | 0.8 | 6.0 | 1.6 | 0.0 | | | | 13.1 | 0.0 | 57.8 |
| 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/ln | 0.0 | 16.7 | 4.5 | 14.9 | 9.1 | 0.0 | | | | 15.0 | 0.0 | 20.9 |
| LnGrp Delay(d),s/veh | 0.0 | 33.3 | 25.0 | 43.3 | 5.7 | 0.0 | | | | 59.9 | 0.0 | 106.3 |
| LnGrp LOS | | C | C | D | A | | | | | E | | F |
| Approach Vol, veh/h | | 1253 | | | 1247 | | | | | | 1198 | |
| Approach Delay, s/veh | | 32.0 | | | 18.9 | | | | | | 76.2 | |
| Approach LOS | | C | | | B | | | | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 38.0 | 53.0 | | 39.0 | | 91.0 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 32.0 | 47.0 | | 33.0 | | 85.0 | | |
| Max Q Clear Time (g_c+I1), s | 23.8 | 35.3 | | 35.0 | | 19.4 | | |
| Green Ext Time (p_c), s | 4.4 | 5.7 | | 0.0 | | 9.3 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 41.9 |
| HCM 2010 LOS | D |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 581 | 1068 | 0 | 0 | 1029 | 802 | 92 | 0 | 0 | 0 | 0 | 0 |
| Future Volume (veh/h) | 581 | 1068 | 0 | 0 | 1029 | 802 | 92 | 0 | 0 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1863 | 1863 | 0 | 0 | | | |
| Adj Flow Rate, veh/h | 646 | 1187 | 0 | 0 | 1143 | 0 | 102 | 0 | 0 | | | |
| Adj No. of Lanes | 1 | 2 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 0 | 0 | | | |
| Cap, veh/h | 661 | 3376 | 0 | 0 | 2768 | 1238 | 0 | 0 | 0 | | | |
| Arrive On Green | 0.25 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1774 | 3632 | 0 | 0 | 3632 | 1583 | 0 | 0 | 0 | | | |
| Grp Volume(v), veh/h | 646 | 1187 | 0 | 0 | 1143 | 0 | 0 | 0 | 0 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 0 | 0 | 1770 | 1583 | 0 | 0 | 0 | | | |
| Q Serve(g_s), s | 12.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 12.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 0.00 | | 0.00 | | | |
| Lane Grp Cap(c), veh/h | 661 | 3376 | 0 | 0 | 2768 | 1238 | 0 | 0 | 0 | | | |
| V/C Ratio(X) | 0.98 | 0.35 | 0.00 | 0.00 | 0.41 | 0.00 | 0.00 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 985 | 3376 | 0 | 0 | 2768 | 1238 | 0 | 0 | 0 | | | |
| HCM Platoon Ratio | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 0.41 | 0.41 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 6.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 10.6 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 7.8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| LnGrp Delay(d),s/veh | 16.6 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| LnGrp LOS | B | A | | | A | | | | | | | |
| Approach Vol, veh/h | | 1833 | | | 1143 | | | 0 | | | | |
| Approach Delay, s/veh | | 5.9 | | | 0.0 | | | 0.0 | | | | |
| Approach LOS | | A | | | A | | | | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 130.0 | | | 22.3 | 107.7 | | 0.0 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 100.0 | | | 40.0 | 54.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | | 2.0 | | | 14.2 | 2.0 | | 0.0 |
| Green Ext Time (p_c), s | | 37.4 | | | 2.2 | 29.0 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 3.7 |
| HCM 2010 LOS | A |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 275 | 739 | 54 | 47 | 1407 | 469 | 33 | 27 | 354 | 355 | 24 | 392 |
| Future Volume (veh/h) | 275 | 739 | 54 | 47 | 1407 | 469 | 33 | 27 | 354 | 355 | 24 | 392 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 306 | 821 | 60 | 52 | 1563 | 521 | 37 | 30 | 393 | 413 | 0 | 436 |
| Adj No. of Lanes | 2 | 3 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 2 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 185 | 1677 | 122 | 81 | 1198 | 865 | 216 | 175 | 341 | 737 | 0 | 329 |
| Arrive On Green | 0.11 | 0.69 | 0.69 | 0.09 | 0.68 | 0.68 | 0.22 | 0.22 | 0.22 | 0.21 | 0.00 | 0.21 |
| Sat Flow, veh/h | 3442 | 4838 | 352 | 1774 | 3539 | 1583 | 1001 | 812 | 1583 | 3548 | 0 | 1583 |
| Grp Volume(v), veh/h | 306 | 574 | 307 | 52 | 1563 | 521 | 67 | 0 | 393 | 413 | 0 | 436 |
| Grp Sat Flow(s),veh/h/ln | 1721 | 1695 | 1801 | 1774 | 1770 | 1583 | 1813 | 0 | 1583 | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 7.0 | 10.2 | 10.3 | 3.7 | 44.0 | 27.7 | 3.9 | 0.0 | 28.0 | 13.6 | 0.0 | 27.0 |
| Cycle Q Clear(g_c), s | 7.0 | 10.2 | 10.3 | 3.7 | 44.0 | 27.7 | 3.9 | 0.0 | 28.0 | 13.6 | 0.0 | 27.0 |
| Prop In Lane | 1.00 | | 0.20 | 1.00 | | 1.00 | 0.55 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 185 | 1175 | 624 | 81 | 1198 | 865 | 390 | 0 | 341 | 737 | 0 | 329 |
| V/C Ratio(X) | 1.65 | 0.49 | 0.49 | 0.64 | 1.30 | 0.60 | 0.17 | 0.00 | 1.15 | 0.56 | 0.00 | 1.33 |
| Avail Cap(c_a), veh/h | 185 | 1175 | 624 | 96 | 1198 | 865 | 390 | 0 | 341 | 737 | 0 | 329 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.91 | 0.91 | 0.91 | 0.70 | 0.70 | 0.70 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 58.0 | 14.6 | 14.6 | 58.0 | 21.0 | 9.6 | 41.6 | 0.0 | 51.0 | 46.2 | 0.0 | 51.5 |
| Incr Delay (d2), s/veh | 314.0 | 1.3 | 2.5 | 7.6 | 141.5 | 2.2 | 0.2 | 0.0 | 96.8 | 1.0 | 0.0 | 166.3 |
| 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/ln | 11.4 | 4.8 | 5.4 | 2.0 | 44.2 | 17.6 | 2.0 | 0.0 | 21.4 | 6.8 | 0.0 | 27.0 |
| LnGrp Delay(d),s/veh | 372.0 | 15.9 | 17.1 | 65.7 | 162.5 | 11.8 | 41.8 | 0.0 | 147.8 | 47.1 | 0.0 | 217.8 |
| LnGrp LOS | F | B | B | E | F | B | D | | F | D | | F |
| Approach Vol, veh/h | | 1187 | | | 2136 | | | 460 | | | 849 | |
| Approach Delay, s/veh | | 108.0 | | | 123.4 | | | 132.4 | | | 134.8 | |
| Approach LOS | | F | | | F | | | F | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 11.9 | 51.1 | | 33.0 | 13.0 | 50.0 | | 34.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 44.0 | | 27.0 | 7.0 | 44.0 | | 28.0 |
| Max Q Clear Time (g_c+I1), s | 5.7 | 12.3 | | 29.0 | 9.0 | 46.0 | | 30.0 |
| Green Ext Time (p_c), s | 0.0 | 25.1 | | 0.0 | 0.0 | 0.0 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 122.4 |
| HCM 2010 LOS | F |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 34 | 1381 | 34 | 17 | 1734 | 17 | 95 | 16 | 56 | 56 | 16 | 95 |
| Future Volume (veh/h) | 34 | 1381 | 34 | 17 | 1734 | 17 | 95 | 16 | 56 | 56 | 16 | 95 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 38 | 1534 | 38 | 19 | 1927 | 19 | 106 | 18 | 62 | 62 | 18 | 106 |
| Adj No. of Lanes | 1 | 3 | 0 | 1 | 3 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 217 | 2474 | 61 | 468 | 3150 | 31 | 133 | 23 | 395 | 113 | 33 | 193 |
| Arrive On Green | 0.08 | 0.97 | 0.97 | 0.32 | 1.00 | 1.00 | 0.09 | 0.09 | 0.09 | 0.08 | 0.08 | 0.08 |
| Sat Flow, veh/h | 1774 | 5104 | 126 | 1774 | 5193 | 51 | 1527 | 259 | 1583 | 1390 | 403 | 1583 |
| Grp Volume(v), veh/h | 38 | 1019 | 553 | 19 | 1258 | 688 | 124 | 0 | 62 | 80 | 0 | 106 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1695 | 1840 | 1774 | 1695 | 1854 | 1786 | 0 | 1583 | 1793 | 0 | 1583 |
| Q Serve(g_s), s | 1.5 | 3.0 | 3.0 | 0.0 | 0.0 | 0.0 | 8.9 | 0.0 | 0.0 | 5.6 | 0.0 | 8.2 |
| Cycle Q Clear(g_c), s | 1.5 | 3.0 | 3.0 | 0.0 | 0.0 | 0.0 | 8.9 | 0.0 | 0.0 | 5.6 | 0.0 | 8.2 |
| Prop In Lane | 1.00 | | 0.07 | 1.00 | | 0.03 | 0.85 | | 1.00 | 0.77 | | 1.00 |
| Lane Grp Cap(c), veh/h | 217 | 1643 | 892 | 468 | 2057 | 1125 | 155 | 0 | 395 | 146 | 0 | 193 |
| V/C Ratio(X) | 0.18 | 0.62 | 0.62 | 0.04 | 0.61 | 0.61 | 0.80 | 0.00 | 0.16 | 0.55 | 0.00 | 0.55 |
| Avail Cap(c_a), veh/h | 241 | 1643 | 892 | 468 | 2057 | 1125 | 247 | 0 | 476 | 248 | 0 | 283 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.77 | 0.77 | 0.77 | 0.48 | 0.48 | 0.48 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 19.0 | 1.1 | 1.1 | 11.4 | 0.0 | 0.0 | 58.2 | 0.0 | 38.1 | 57.4 | 0.0 | 53.7 |
| Incr Delay (d2), s/veh | 0.3 | 1.4 | 2.5 | 0.0 | 0.7 | 1.2 | 9.1 | 0.0 | 0.2 | 3.2 | 0.0 | 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/ln | 0.8 | 1.2 | 1.5 | 0.3 | 0.2 | 0.4 | 4.8 | 0.0 | 1.7 | 2.9 | 0.0 | 3.7 |
| LnGrp Delay(d),s/veh | 19.3 | 2.4 | 3.6 | 11.4 | 0.7 | 1.2 | 67.3 | 0.0 | 38.3 | 60.5 | 0.0 | 56.2 |
| LnGrp LOS | B | A | A | B | A | A | E | | D | E | | E |
| Approach Vol, veh/h | | 1610 | | | 1965 | | | 186 | | | 186 | |
| Approach Delay, s/veh | | 3.2 | | | 1.0 | | | 57.7 | | | 58.0 | |
| Approach LOS | | A | | | A | | | E | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 17.1 | 69.0 | | 16.6 | 11.2 | 84.9 | | 17.3 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 63.0 | | 18.0 | 7.0 | 63.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 2.5 | 5.0 | | 10.2 | 3.5 | 2.0 | | 10.9 |
| Green Ext Time (p_c), s | 4.2 | 16.5 | | 0.4 | 0.0 | 24.9 | | 0.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 7.2 |
| HCM 2010 LOS | A |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 160 | 908 | 424 | 218 | 1037 | 94 | 543 | 556 | 242 | 152 | 278 | 187 |
| Future Volume (veh/h) | 160 | 908 | 424 | 218 | 1037 | 94 | 543 | 556 | 242 | 152 | 278 | 187 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 178 | 1009 | 471 | 242 | 1152 | 104 | 603 | 618 | 269 | 169 | 309 | 208 |
| Adj No. of Lanes | 1 | 3 | 0 | 1 | 3 | 0 | 2 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 205 | 1069 | 499 | 205 | 1496 | 135 | 609 | 616 | 706 | 151 | 387 | 512 |
| Arrive On Green | 0.04 | 0.10 | 0.10 | 0.04 | 0.10 | 0.10 | 0.18 | 0.33 | 0.33 | 0.05 | 0.21 | 0.21 |
| Sat Flow, veh/h | 1774 | 3391 | 1583 | 1774 | 4749 | 428 | 3442 | 1863 | 1583 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 178 | 1009 | 471 | 242 | 822 | 434 | 603 | 618 | 269 | 169 | 309 | 208 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1695 | 1583 | 1774 | 1695 | 1787 | 1721 | 1863 | 1583 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 13.0 | 38.4 | 38.4 | 15.0 | 30.7 | 30.7 | 22.7 | 43.0 | 14.7 | 7.0 | 20.5 | 13.3 |
| Cycle Q Clear(g_c), s | 13.0 | 38.4 | 38.4 | 15.0 | 30.7 | 30.7 | 22.7 | 43.0 | 14.7 | 7.0 | 20.5 | 13.3 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.24 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 205 | 1069 | 499 | 205 | 1068 | 563 | 609 | 616 | 706 | 151 | 387 | 512 |
| V/C Ratio(X) | 0.87 | 0.94 | 0.94 | 1.18 | 0.77 | 0.77 | 0.99 | 1.00 | 0.38 | 1.12 | 0.80 | 0.41 |
| Avail Cap(c_a), veh/h | 232 | 1069 | 499 | 205 | 1068 | 563 | 609 | 616 | 706 | 151 | 387 | 512 |
| HCM Platoon Ratio | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.85 | 0.85 | 0.85 | 0.56 | 0.56 | 0.56 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 61.5 | 57.1 | 57.1 | 62.5 | 53.6 | 53.7 | 53.4 | 43.5 | 24.0 | 45.7 | 48.9 | 34.3 |
| Incr Delay (d2), s/veh | 22.4 | 15.0 | 25.4 | 106.7 | 3.1 | 5.7 | 33.9 | 37.0 | 0.3 | 109.1 | 11.2 | 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/ln | 7.7 | 20.3 | 20.4 | 13.4 | 14.9 | 16.1 | 13.7 | 28.4 | 6.5 | 4.6 | 11.8 | 5.9 |
| LnGrp Delay(d),s/veh | 83.9 | 72.0 | 82.5 | 169.2 | 56.7 | 59.4 | 87.3 | 80.5 | 24.4 | 154.8 | 60.2 | 34.8 |
| LnGrp LOS | F | E | F | F | E | E | F | F | C | F | E | C |
| Approach Vol, veh/h | | 1658 | | | 1498 | | | 1490 | | | 686 | |
| Approach Delay, s/veh | | 76.3 | | | 75.7 | | | 73.1 | | | 75.8 | |
| Approach LOS | | E | | | E | | | E | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 21.0 | 47.0 | 29.0 | 33.0 | 21.0 | 47.0 | 13.0 | 49.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 15.0 | 41.0 | 23.0 | 27.0 | 17.0 | 39.0 | 7.0 | 43.0 |
| Max Q Clear Time (g_c+I1), s | 17.0 | 40.4 | 24.7 | 22.5 | 15.0 | 32.7 | 9.0 | 45.0 |
| Green Ext Time (p_c), s | 0.0 | 0.5 | 0.0 | 2.8 | 0.1 | 5.8 | 0.0 | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 75.2 |
| HCM 2010 LOS | E |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 85 | 1202 | 16 | 90 | 1372 | 190 | 89 | 28 | 90 | 61 | 31 | 66 |
| Future Volume (veh/h) | 85 | 1202 | 16 | 90 | 1372 | 190 | 89 | 28 | 90 | 61 | 31 | 66 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 94 | 1336 | 18 | 100 | 1524 | 211 | 99 | 31 | 100 | 68 | 34 | 73 |
| Adj No. of Lanes | 1 | 3 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 230 | 3095 | 42 | 313 | 2120 | 948 | 124 | 39 | 226 | 89 | 45 | 200 |
| Arrive On Green | 0.03 | 0.40 | 0.40 | 0.05 | 0.60 | 0.60 | 0.09 | 0.09 | 0.09 | 0.07 | 0.07 | 0.07 |
| Sat Flow, veh/h | 1774 | 5171 | 70 | 1774 | 3539 | 1583 | 1367 | 428 | 1583 | 1202 | 601 | 1583 |
| Grp Volume(v), veh/h | 94 | 876 | 478 | 100 | 1524 | 211 | 130 | 0 | 100 | 102 | 0 | 73 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1695 | 1850 | 1774 | 1770 | 1583 | 1794 | 0 | 1583 | 1803 | 0 | 1583 |
| Q Serve(g_s), s | 2.5 | 24.3 | 24.3 | 2.7 | 39.4 | 8.0 | 9.2 | 0.0 | 7.5 | 7.2 | 0.0 | 5.5 |
| Cycle Q Clear(g_c), s | 2.5 | 24.3 | 24.3 | 2.7 | 39.4 | 8.0 | 9.2 | 0.0 | 7.5 | 7.2 | 0.0 | 5.5 |
| Prop In Lane | 1.00 | | 0.04 | 1.00 | | 1.00 | 0.76 | | 1.00 | 0.67 | | 1.00 |
| Lane Grp Cap(c), veh/h | 230 | 2029 | 1108 | 313 | 2120 | 948 | 162 | 0 | 226 | 134 | 0 | 200 |
| V/C Ratio(X) | 0.41 | 0.43 | 0.43 | 0.32 | 0.72 | 0.22 | 0.80 | 0.00 | 0.44 | 0.76 | 0.00 | 0.37 |
| Avail Cap(c_a), veh/h | 233 | 2029 | 1108 | 343 | 2120 | 948 | 248 | 0 | 302 | 250 | 0 | 302 |
| HCM Platoon Ratio | 0.67 | 0.67 | 0.67 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.39 | 0.39 | 0.39 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 17.8 | 22.9 | 22.9 | 11.4 | 18.4 | 12.1 | 58.0 | 0.0 | 51.0 | 59.1 | 0.0 | 52.0 |
| Incr Delay (d2), s/veh | 0.5 | 0.3 | 0.5 | 0.6 | 2.1 | 0.5 | 10.2 | 0.0 | 1.4 | 8.7 | 0.0 | 1.1 |
| 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/ln | 1.6 | 11.5 | 12.6 | 1.4 | 19.7 | 3.7 | 5.0 | 0.0 | 3.4 | 3.9 | 0.0 | 2.5 |
| LnGrp Delay(d),s/veh | 18.3 | 23.2 | 23.4 | 12.0 | 20.5 | 12.6 | 68.1 | 0.0 | 52.3 | 67.8 | 0.0 | 53.2 |
| LnGrp LOS | B | C | C | B | C | B | E | | D | E | | D |
| Approach Vol, veh/h | | 1448 | | | 1835 | | | 230 | | | 175 | |
| Approach Delay, s/veh | | 22.9 | | | 19.1 | | | 61.3 | | | 61.7 | |
| Approach LOS | | C | | | B | | | E | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 12.8 | 83.8 | | 15.6 | 12.8 | 83.9 | | 17.7 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 9.6 | 61.0 | | 18.0 | 7.0 | 63.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 4.7 | 26.3 | | 9.2 | 4.5 | 41.4 | | 11.2 |
| Green Ext Time (p_c), s | 0.1 | 28.8 | | 0.4 | 0.0 | 19.1 | | 0.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 25.3 |
| HCM 2010 LOS | C |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 515 | 169 | 272 | 723 | 0 | 0 | 0 | 0 | 405 | 0 | 165 |
| Future Volume (veh/h) | 0 | 515 | 169 | 272 | 723 | 0 | 0 | 0 | 0 | 405 | 0 | 165 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1900 | 1863 | 1863 | 0 | | | | 1863 | 0 | 1863 |
| Adj Flow Rate, veh/h | 0 | 572 | 188 | 302 | 803 | 0 | | | | 450 | 0 | 183 |
| Adj No. of Lanes | 0 | 1 | 0 | 1 | 1 | 0 | | | | 1 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 0 | 2 |
| Cap, veh/h | 0 | 604 | 199 | 298 | 1163 | 0 | | | | 489 | 0 | 437 |
| Arrive On Green | 0.00 | 0.45 | 0.45 | 0.25 | 1.00 | 0.00 | | | | 0.28 | 0.00 | 0.28 |
| Sat Flow, veh/h | 0 | 1343 | 442 | 1774 | 1863 | 0 | | | | 1774 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 0 | 760 | 302 | 803 | 0 | | | | 450 | 0 | 183 |
| Grp Sat Flow(s),veh/h/ln | 0 | 0 | 1785 | 1774 | 1863 | 0 | | | | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 0.0 | 48.9 | 14.9 | 0.0 | 0.0 | | | | 29.5 | 0.0 | 11.4 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 48.9 | 14.9 | 0.0 | 0.0 | | | | 29.5 | 0.0 | 11.4 |
| Prop In Lane | 0.00 | | 0.25 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 0 | 803 | 298 | 1163 | 0 | | | | 489 | 0 | 437 |
| V/C Ratio(X) | 0.00 | 0.00 | 0.95 | 1.01 | 0.69 | 0.00 | | | | 0.92 | 0.00 | 0.42 |
| Avail Cap(c_a), veh/h | 0 | 0 | 803 | 298 | 1163 | 0 | | | | 606 | 0 | 541 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 0.00 | 1.00 | 0.16 | 0.16 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 31.6 | 43.1 | 0.0 | 0.0 | | | | 42.2 | 0.0 | 35.6 |
| Incr Delay (d2), s/veh | 0.0 | 0.0 | 21.1 | 24.1 | 0.6 | 0.0 | | | | 17.1 | 0.0 | 0.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.0 | 0.0 | 28.8 | 11.8 | 0.2 | 0.0 | | | | 16.8 | 0.0 | 5.1 |
| LnGrp Delay(d),s/veh | 0.0 | 0.0 | 52.7 | 67.2 | 0.6 | 0.0 | | | | 59.2 | 0.0 | 36.2 |
| LnGrp LOS | | | D | F | A | | | | | E | | D |
| Approach Vol, veh/h | | 760 | | | 1105 | | | | | | 633 | |
| Approach Delay, s/veh | | 52.7 | | | 18.8 | | | | | | 52.6 | |
| Approach LOS | | D | | | B | | | | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 20.9 | 60.0 | | 39.1 | | 80.9 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 7.6 | 54.0 | | 41.0 | | 67.0 | | |
| Max Q Clear Time (g_c+I1), s | 16.9 | 50.9 | | 31.5 | | 2.0 | | |
| Green Ext Time (p_c), s | 0.0 | 1.4 | | 1.6 | | 7.5 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 37.7 |
| HCM 2010 LOS | D |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 96 | 824 | 0 | 0 | 845 | 500 | 150 | 0 | 339 | 0 | 0 | 0 |
| Future Volume (veh/h) | 96 | 824 | 0 | 0 | 845 | 500 | 150 | 0 | 339 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1863 | 1900 | 1863 | 1863 | | | |
| Adj Flow Rate, veh/h | 107 | 916 | 0 | 0 | 939 | 556 | 167 | 0 | 377 | | | |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 177 | 1182 | 0 | 0 | 983 | 835 | 471 | 0 | 421 | | | |
| Arrive On Green | 0.06 | 0.63 | 0.00 | 0.00 | 0.53 | 0.53 | 0.27 | 0.00 | 0.27 | | | |
| Sat Flow, veh/h | 1774 | 1863 | 0 | 0 | 1863 | 1583 | 1774 | 0 | 1583 | | | |
| Grp Volume(v), veh/h | 107 | 916 | 0 | 0 | 939 | 556 | 167 | 0 | 377 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 0 | 0 | 1863 | 1583 | 1774 | 0 | 1583 | | | |
| Q Serve(g_s), s | 3.1 | 42.5 | 0.0 | 0.0 | 57.6 | 30.7 | 9.2 | 0.0 | 27.5 | | | |
| Cycle Q Clear(g_c), s | 3.1 | 42.5 | 0.0 | 0.0 | 57.6 | 30.7 | 9.2 | 0.0 | 27.5 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 1.00 | | 1.00 | | | |
| Lane Grp Cap(c), veh/h | 177 | 1182 | 0 | 0 | 983 | 835 | 471 | 0 | 421 | | | |
| V/C Ratio(X) | 0.60 | 0.78 | 0.00 | 0.00 | 0.96 | 0.67 | 0.35 | 0.00 | 0.90 | | | |
| Avail Cap(c_a), veh/h | 180 | 1182 | 0 | 0 | 983 | 835 | 843 | 0 | 752 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 0.41 | 0.41 | 0.00 | 0.00 | 0.09 | 0.09 | 1.00 | 0.00 | 1.00 | | | |
| Uniform Delay (d), s/veh | 27.5 | 15.8 | 0.0 | 0.0 | 27.0 | 20.6 | 35.7 | 0.0 | 42.5 | | | |
| Incr Delay (d2), s/veh | 2.3 | 2.1 | 0.0 | 0.0 | 3.1 | 0.4 | 0.5 | 0.0 | 7.0 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 2.0 | 22.3 | 0.0 | 0.0 | 30.3 | 13.4 | 4.6 | 0.0 | 12.9 | | | |
| LnGrp Delay(d),s/veh | 29.8 | 17.9 | 0.0 | 0.0 | 30.1 | 21.0 | 36.2 | 0.0 | 49.5 | | | |
| LnGrp LOS | C | B | | | C | C | D | | D | | | |
| Approach Vol, veh/h | | 1023 | | | 1495 | | | 544 | | | | |
| Approach Delay, s/veh | | 19.1 | | | 26.7 | | | 45.4 | | | | |
| Approach LOS | | B | | | C | | | D | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 82.1 | | | 12.8 | 69.3 | | 37.9 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 51.0 | | | 7.0 | 38.0 | | 57.0 |
| Max Q Clear Time (g_c+I1), s | | 44.5 | | | 5.1 | 59.6 | | 29.5 |
| Green Ext Time (p_c), s | | 5.8 | | | 0.0 | 0.0 | | 2.3 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 27.5 |
| HCM 2010 LOS | C |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 290 | 17 | 855 | 7 | 27 | 7 | 937 | 864 | 13 | 12 | 690 | 381 |
| Future Volume (veh/h) | 290 | 17 | 855 | 7 | 27 | 7 | 937 | 864 | 13 | 12 | 690 | 381 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 322 | 19 | 950 | 8 | 30 | 8 | 1041 | 960 | 14 | 13 | 767 | 423 |
| Adj No. of Lanes | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 423 | 9 | 443 | 55 | 404 | 108 | 383 | 1141 | 17 | 281 | 443 | 244 |
| Arrive On Green | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.31 | 1.00 | 1.00 | 0.39 | 0.39 | 0.39 |
| Sat Flow, veh/h | 1364 | 31 | 1557 | 578 | 1418 | 378 | 1774 | 1831 | 27 | 575 | 1130 | 623 |
| Grp Volume(v), veh/h | 322 | 0 | 969 | 8 | 0 | 38 | 1041 | 0 | 974 | 13 | 0 | 1190 |
| Grp Sat Flow(s),veh/h/ln | 1364 | 0 | 1588 | 578 | 0 | 1796 | 1774 | 0 | 1858 | 575 | 0 | 1753 |
| Q Serve(g_s), s | 29.4 | 0.0 | 37.0 | 0.0 | 0.0 | 2.0 | 24.0 | 0.0 | 0.0 | 1.8 | 0.0 | 51.0 |
| Cycle Q Clear(g_c), s | 31.4 | 0.0 | 37.0 | 37.0 | 0.0 | 2.0 | 24.0 | 0.0 | 0.0 | 1.8 | 0.0 | 51.0 |
| Prop In Lane | 1.00 | | 0.98 | 1.00 | | 0.21 | 1.00 | | 0.01 | 1.00 | | 0.36 |
| Lane Grp Cap(c), veh/h | 423 | 0 | 452 | 55 | 0 | 511 | 383 | 0 | 1158 | 281 | 0 | 688 |
| V/C Ratio(X) | 0.76 | 0.00 | 2.14 | 0.14 | 0.00 | 0.07 | 2.72 | 0.00 | 0.84 | 0.05 | 0.00 | 1.73 |
| Avail Cap(c_a), veh/h | 423 | 0 | 452 | 55 | 0 | 511 | 383 | 0 | 1158 | 281 | 0 | 688 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.67 | 1.67 | 1.67 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.54 | 0.00 | 0.54 | 1.00 | 0.00 | 1.00 | 0.09 | 0.00 | 0.09 | 0.64 | 0.00 | 0.64 |
| Uniform Delay (d), s/veh | 45.4 | 0.0 | 46.5 | 65.0 | 0.0 | 34.0 | 43.2 | 0.0 | 0.0 | 24.6 | 0.0 | 39.5 |
| Incr Delay (d2), s/veh | 4.4 | 0.0 | 518.8 | 1.2 | 0.0 | 0.1 | 774.1 | 0.0 | 0.7 | 0.2 | 0.0 | 332.7 |
| 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 | 1.6 | 0.0 | 81.3 | 0.3 | 0.0 | 1.0 | 96.0 | 0.0 | 0.2 | 0.3 | 0.0 | 88.2 |
| LnGrp Delay(d),s/veh | 49.9 | 0.0 | 565.3 | 66.2 | 0.0 | 34.0 | 817.3 | 0.0 | 0.7 | 24.8 | 0.0 | 372.2 |
| LnGrp LOS | D | | F | E | | C | F | | A | C | | F |
| Approach Vol, veh/h | | 1291 | | | 46 | | | 2015 | | | 1203 | |
| Approach Delay, s/veh | | 436.7 | | | 39.6 | | | 422.6 | | | 368.4 | |
| Approach LOS | | F | | | D | | | F | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 87.0 | | 43.0 | 30.0 | 57.0 | | 43.0 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 81.0 | | 37.0 | 24.0 | 51.0 | | 37.0 |
| Max Q Clear Time (g_c+I1), s | | 2.0 | | 39.0 | 26.0 | 53.0 | | 39.0 |
| Green Ext Time (p_c), s | | 20.7 | | 0.0 | 0.0 | 0.0 | | 0.0 |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | | 408.4 |
| HCM 2010 LOS | | F |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 16 | 130 | 81 | 163 | 46 | 897 | 45 | 901 | 200 | 766 | 738 | 47 |
| Future Volume (veh/h) | 16 | 130 | 81 | 163 | 46 | 897 | 45 | 901 | 200 | 766 | 738 | 47 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1900 | 1863 | 1900 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 18 | 144 | 90 | 181 | 51 | 997 | 50 | 1001 | 222 | 851 | 820 | 52 |
| Adj No. of Lanes | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 30 | 113 | 63 | 112 | 18 | 767 | 303 | 702 | 597 | 519 | 1029 | 65 |
| Arrive On Green | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.04 | 0.38 | 0.38 | 0.44 | 0.99 | 0.99 |
| Sat Flow, veh/h | 0 | 507 | 282 | 283 | 80 | 1583 | 1774 | 1863 | 1583 | 1774 | 1733 | 110 |
| Grp Volume(v), veh/h | 252 | 0 | 0 | 232 | 0 | 997 | 50 | 1001 | 222 | 851 | 0 | 872 |
| Grp Sat Flow(s),veh/h/ln | 789 | 0 | 0 | 363 | 0 | 1583 | 1774 | 1863 | 1583 | 1774 | 0 | 1843 |
| Q Serve(g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 29.0 | 2.5 | 49.0 | 13.2 | 34.0 | 0.0 | 2.6 |
| Cycle Q Clear(g_c), s | 29.0 | 0.0 | 0.0 | 29.0 | 0.0 | 29.0 | 2.5 | 49.0 | 13.2 | 34.0 | 0.0 | 2.6 |
| Prop In Lane | 0.07 | | 0.36 | 0.78 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.06 |
| Lane Grp Cap(c), veh/h | 206 | 0 | 0 | 130 | 0 | 767 | 303 | 702 | 597 | 519 | 0 | 1094 |
| V/C Ratio(X) | 1.23 | 0.00 | 0.00 | 1.78 | 0.00 | 1.30 | 0.16 | 1.43 | 0.37 | 1.64 | 0.00 | 0.80 |
| Avail Cap(c_a), veh/h | 206 | 0 | 0 | 130 | 0 | 767 | 319 | 702 | 597 | 519 | 0 | 1094 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.67 | 1.67 | 1.67 |
| Upstream Filter(I) | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.09 | 0.00 | 0.09 |
| Uniform Delay (d), s/veh | 45.8 | 0.0 | 0.0 | 56.0 | 0.0 | 33.5 | 28.7 | 40.5 | 29.3 | 34.8 | 0.0 | 0.2 |
| Incr Delay (d2), s/veh | 136.9 | 0.0 | 0.0 | 380.3 | 0.0 | 144.2 | 0.3 | 199.8 | 1.8 | 288.1 | 0.0 | 0.6 |
| 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 | 15.2 | 0.0 | 0.0 | 18.4 | 0.0 | 52.1 | 1.2 | 64.1 | 6.1 | 60.1 | 0.0 | 0.5 |
| LnGrp Delay(d),s/veh | 182.7 | 0.0 | 0.0 | 436.3 | 0.0 | 177.7 | 28.9 | 240.3 | 31.1 | 322.9 | 0.0 | 0.8 |
| LnGrp LOS | F | | | F | | F | C | F | C | F | | A |
| Approach Vol, veh/h | | 252 | | | 1229 | | | 1273 | | | 1723 | |
| Approach Delay, s/veh | | 182.7 | | | 226.5 | | | 195.5 | | | 159.9 | |
| Approach LOS | | F | | | F | | | F | | | F | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 40.0 | 55.0 | | 35.0 | 11.8 | 83.2 | | 35.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 34.0 | 49.0 | | 29.0 | 7.0 | 76.0 | | 29.0 |
| Max Q Clear Time (g_c+I1), s | 36.0 | 51.0 | | 31.0 | 4.5 | 4.6 | | 31.0 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | 0.0 | 0.0 | 14.1 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 189.6 |
| HCM 2010 LOS | F |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↑ | ↱ | ↰ | ↑ | | | | | ↰ | | ↱ |
| Traffic Vol, veh/h | 0 | 78 | 381 | 71 | 496 | 0 | 0 | 0 | 0 | 81 | 0 | 17 |
| Future Vol, veh/h | 0 | 78 | 381 | 71 | 496 | 0 | 0 | 0 | 0 | 81 | 0 | 17 |
| 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 | 150 | - | - | - | - | - | 0 | - | 0 |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | - | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 87 | 423 | 79 | 551 | 0 | 0 | 0 | 0 | 90 | 0 | 19 |

| Major/Minor | Major1 | | | Major2 | | | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 0 | 0 | 87 | 0 | 0 | | | 796 | - | 551 |
| Stage 1 | - | - | - | - | - | - | | | 709 | - | - |
| Stage 2 | - | - | - | - | - | - | | | 87 | - | - |
| 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 | 0 | - | - | 1509 | - | 0 | | | 356 | 0 | 534 |
| Stage 1 | 0 | - | - | - | - | 0 | | | 488 | 0 | - |
| Stage 2 | 0 | - | - | - | - | 0 | | | 936 | 0 | - |
| Platoon blocked, % | | - | - | | - | | | | | | |
| Mov Cap-1 Maneuver | - | - | - | 1509 | - | - | | | 337 | 0 | 534 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | | | 337 | 0 | - |
| Stage 1 | - | - | - | - | - | - | | | 462 | 0 | - |
| Stage 2 | - | - | - | - | - | - | | | 936 | 0 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.9 | 18.2 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBT | EBR | WBL | WBT | SBLn1 | SBLn2 |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 1509 | - | 337 | 534 |
| HCM Lane V/C Ratio | - | - | 0.052 | - | 0.267 | 0.035 |
| HCM Control Delay (s) | - | - | 7.5 | - | 19.5 | 12 |
| HCM Lane LOS | - | - | A | - | C | B |
| HCM 95th %tile Q(veh) | - | - | 0.2 | - | 1.1 | 0.1 |

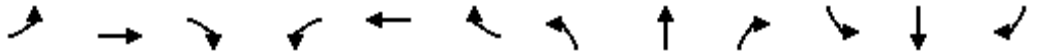
| Intersection | |
|---|---|
| Int Delay, s/veh | 12.3 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 17 | 142 | 0 | 0 | 276 | 208 | 291 | 0 | 140 | 0 | 0 | 0 |
| Future Vol, veh/h | 17 | 142 | 0 | 0 | 276 | 208 | 291 | 0 | 140 | 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 | 160 | - | - | - | - | 330 | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | - | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 19 | 158 | 0 | 0 | 307 | 231 | 323 | 0 | 156 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 307 | 0 | - | - | - | 0 | 503 | 503 | 158 |
| Stage 1 | - | - | - | - | - | - | 196 | 196 | - |
| Stage 2 | - | - | - | - | - | - | 307 | 307 | - |
| Critical Hdwy | 4.12 | - | - | - | - | - | 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 | 2.218 | - | - | - | - | - | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1254 | - | 0 | 0 | - | - | 528 | 471 | 887 |
| Stage 1 | - | - | 0 | 0 | - | - | 837 | 739 | - |
| Stage 2 | - | - | 0 | 0 | - | - | 746 | 661 | - |
| Platoon blocked, % | | - | | | - | - | | | |
| Mov Cap-1 Maneuver | 1254 | - | - | - | - | - | 520 | 0 | 887 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 520 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 824 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 746 | 0 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0.8 | 0 | 30.4 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | NBLn1 | EBL | EBT | WBT | WBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 601 | 1254 | - | - | - |
| HCM Lane V/C Ratio | 0.797 | 0.015 | - | - | - |
| HCM Control Delay (s) | 30.4 | 7.9 | - | - | - |
| HCM Lane LOS | D | A | - | - | - |
| HCM 95th %tile Q(veh) | 7.8 | 0 | - | - | - |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 35 | 595 | 288 | 124 | 565 | 37 | 78 | 39 | 54 | 48 | 142 | 25 |
| Future Volume (veh/h) | 35 | 595 | 288 | 124 | 565 | 37 | 78 | 39 | 54 | 48 | 142 | 25 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 39 | 661 | 320 | 138 | 628 | 41 | 87 | 43 | 60 | 53 | 158 | 28 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 292 | 847 | 720 | 271 | 787 | 51 | 367 | 171 | 238 | 430 | 373 | 66 |
| Arrive On Green | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| Sat Flow, veh/h | 765 | 1863 | 1583 | 571 | 1730 | 113 | 1193 | 705 | 984 | 1286 | 1541 | 273 |
| Grp Volume(v), veh/h | 39 | 661 | 320 | 138 | 0 | 669 | 87 | 0 | 103 | 53 | 0 | 186 |
| Grp Sat Flow(s),veh/h/ln | 765 | 1863 | 1583 | 571 | 0 | 1843 | 1193 | 0 | 1689 | 1286 | 0 | 1815 |
| Q Serve(g_s), s | 1.8 | 11.9 | 5.5 | 6.1 | 0.0 | 12.3 | 2.6 | 0.0 | 1.9 | 1.4 | 0.0 | 3.4 |
| Cycle Q Clear(g_c), s | 14.1 | 11.9 | 5.5 | 18.0 | 0.0 | 12.3 | 6.1 | 0.0 | 1.9 | 3.3 | 0.0 | 3.4 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.06 | 1.00 | | 0.58 | 1.00 | | 0.15 |
| Lane Grp Cap(c), veh/h | 292 | 847 | 720 | 271 | 0 | 838 | 367 | 0 | 408 | 430 | 0 | 439 |
| V/C Ratio(X) | 0.13 | 0.78 | 0.44 | 0.51 | 0.00 | 0.80 | 0.24 | 0.00 | 0.25 | 0.12 | 0.00 | 0.42 |
| Avail Cap(c_a), veh/h | 292 | 847 | 720 | 271 | 0 | 838 | 621 | 0 | 768 | 704 | 0 | 825 |
| 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 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 15.3 | 9.1 | 7.4 | 17.8 | 0.0 | 9.2 | 15.2 | 0.0 | 12.1 | 13.5 | 0.0 | 12.7 |
| Incr Delay (d2), s/veh | 0.2 | 4.7 | 0.4 | 1.6 | 0.0 | 5.5 | 0.3 | 0.0 | 0.3 | 0.1 | 0.0 | 0.7 |
| 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 | 0.4 | 7.0 | 2.4 | 1.6 | 0.0 | 7.4 | 0.9 | 0.0 | 0.9 | 0.5 | 0.0 | 1.8 |
| LnGrp Delay(d),s/veh | 15.5 | 13.8 | 7.8 | 19.4 | 0.0 | 14.7 | 15.6 | 0.0 | 12.4 | 13.6 | 0.0 | 13.3 |
| LnGrp LOS | B | B | A | B | | B | B | | B | B | | B |
| Approach Vol, veh/h | | 1020 | | | 807 | | | 190 | | | 239 | |
| Approach Delay, s/veh | | 12.0 | | | 15.5 | | | 13.9 | | | 13.4 | |
| Approach LOS | | B | | | B | | | B | | | B | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | 4 | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 15.6 | | 24.0 | | 15.6 | | 24.0 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 18.0 | | 18.0 | | 18.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | | 8.1 | | 16.1 | | 5.4 | | 20.0 |
| Green Ext Time (p_c), s | | 1.5 | | 1.6 | | 1.7 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 13.6 |
| HCM 2010 LOS | B |

# Future (2040) Build Mitigated Synchro Reports

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 347 | 57 | 816 | 590 | 0 | 0 | 0 | 0 | 363 | 0 | 129 |
| Future Volume (veh/h) | 0 | 347 | 57 | 816 | 590 | 0 | 0 | 0 | 0 | 363 | 0 | 129 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1900 | 1863 | 1863 | 0 | | | | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 0 | 386 | 0 | 907 | 656 | 0 | | | | 403 | 0 | 143 |
| Adj No. of Lanes | 0 | 2 | 0 | 2 | 2 | 0 | | | | 2 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 2 | 2 |
| Cap, veh/h | 0 | 1241 | 0 | 981 | 2402 | 0 | | | | 836 | 0 | 373 |
| Arrive On Green | 0.00 | 0.35 | 0.00 | 0.48 | 1.00 | 0.00 | | | | 0.24 | 0.00 | 0.24 |
| Sat Flow, veh/h | 0 | 3725 | 0 | 3442 | 3632 | 0 | | | | 3548 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 386 | 0 | 907 | 656 | 0 | | | | 403 | 0 | 143 |
| Grp Sat Flow(s),veh/h/ln | 0 | 1770 | 0 | 1721 | 1770 | 0 | | | | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 11.1 | 0.0 | 34.5 | 0.0 | 0.0 | | | | 13.7 | 0.0 | 10.6 |
| Cycle Q Clear(g_c), s | 0.0 | 11.1 | 0.0 | 34.5 | 0.0 | 0.0 | | | | 13.7 | 0.0 | 10.6 |
| Prop In Lane | 0.00 | | 0.00 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 1241 | 0 | 981 | 2402 | 0 | | | | 836 | 0 | 373 |
| V/C Ratio(X) | 0.00 | 0.31 | 0.00 | 0.92 | 0.27 | 0.00 | | | | 0.48 | 0.00 | 0.38 |
| Avail Cap(c_a), veh/h | 0 | 1241 | 0 | 1401 | 2402 | 0 | | | | 836 | 0 | 373 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.67 | 1.67 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 1.00 | 0.00 | 0.49 | 0.49 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 33.1 | 0.0 | 35.2 | 0.0 | 0.0 | | | | 46.1 | 0.0 | 44.9 |
| Incr Delay (d2), s/veh | 0.0 | 0.1 | 0.0 | 4.3 | 0.1 | 0.0 | | | | 2.0 | 0.0 | 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 |
| %ile BackOfQ(50%),veh/ln | 0.0 | 5.5 | 0.0 | 16.7 | 0.0 | 0.0 | | | | 6.9 | 0.0 | 5.0 |
| LnGrp Delay(d),s/veh | 0.0 | 33.3 | 0.0 | 39.6 | 0.1 | 0.0 | | | | 48.1 | 0.0 | 47.9 |
| LnGrp LOS | | C | | D | A | | | | | D | | D |
| Approach Vol, veh/h | | 386 | | | 1563 | | | | | | 546 | |
| Approach Delay, s/veh | | 33.3 | | | 23.0 | | | | | | 48.1 | |
| Approach LOS | | C | | | C | | | | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 45.9 | 55.1 | | 39.0 | | 101.0 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 57.0 | 32.0 | | 33.0 | | 95.0 | | |
| Max Q Clear Time (g_c+I1), s | 36.5 | 13.1 | | 15.7 | | 2.0 | | |
| Green Ext Time (p_c), s | 3.4 | 6.3 | | 1.8 | | 8.0 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 30.1 |
| HCM 2010 LOS | C |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 119 | 591 | 0 | 0 | 1134 | 1455 | 273 | 0 | 575 | 0 | 0 | 0 |
| Future Volume (veh/h) | 119 | 591 | 0 | 0 | 1134 | 1455 | 273 | 0 | 575 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1863 | 1863 | 1863 | 1863 | | | |
| Adj Flow Rate, veh/h | 132 | 657 | 0 | 0 | 1260 | 0 | 303 | 0 | 639 | | | |
| Adj No. of Lanes | 1 | 2 | 0 | 0 | 2 | 2 | 1 | 0 | 2 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 298 | 2022 | 0 | 0 | 1392 | 1096 | 456 | 0 | 814 | | | |
| Arrive On Green | 0.09 | 0.57 | 0.00 | 0.00 | 0.52 | 0.00 | 0.26 | 0.00 | 0.26 | | | |
| Sat Flow, veh/h | 1774 | 3632 | 0 | 0 | 3632 | 2787 | 1774 | 0 | 3167 | | | |
| Grp Volume(v), veh/h | 132 | 657 | 0 | 0 | 1260 | 0 | 303 | 0 | 639 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 0 | 0 | 1770 | 1393 | 1774 | 0 | 1583 | | | |
| Q Serve(g_s), s | 2.7 | 6.8 | 0.0 | 0.0 | 22.6 | 0.0 | 10.7 | 0.0 | 13.1 | | | |
| Cycle Q Clear(g_c), s | 2.7 | 6.8 | 0.0 | 0.0 | 22.6 | 0.0 | 10.7 | 0.0 | 13.1 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 1.00 | | 1.00 | | | |
| Lane Grp Cap(c), veh/h | 298 | 2022 | 0 | 0 | 1392 | 1096 | 456 | 0 | 814 | | | |
| V/C Ratio(X) | 0.44 | 0.32 | 0.00 | 0.00 | 0.90 | 0.00 | 0.66 | 0.00 | 0.78 | | | |
| Avail Cap(c_a), veh/h | 311 | 2022 | 0 | 0 | 1392 | 1096 | 456 | 0 | 814 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.33 | 1.33 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 0.90 | 0.90 | 0.00 | 0.00 | 0.26 | 0.00 | 1.00 | 0.00 | 1.00 | | | |
| Uniform Delay (d), s/veh | 14.6 | 7.9 | 0.0 | 0.0 | 15.5 | 0.0 | 23.3 | 0.0 | 24.2 | | | |
| Incr Delay (d2), s/veh | 0.9 | 0.4 | 0.0 | 0.0 | 3.0 | 0.0 | 7.4 | 0.0 | 7.5 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 1.4 | 3.4 | 0.0 | 0.0 | 11.4 | 0.0 | 6.2 | 0.0 | 6.5 | | | |
| LnGrp Delay(d),s/veh | 15.5 | 8.3 | 0.0 | 0.0 | 18.5 | 0.0 | 30.7 | 0.0 | 31.7 | | | |
| LnGrp LOS | B | A | | | B | | C | | C | | | |
| Approach Vol, veh/h | | 789 | | | 1260 | | | 942 | | | | |
| Approach Delay, s/veh | | 9.5 | | | 18.5 | | | 31.4 | | | | |
| Approach LOS | | A | | | B | | | C | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 46.0 | | | 12.5 | 33.5 | | 24.0 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 40.0 | | | 7.0 | 27.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | | 8.8 | | | 4.7 | 24.6 | | 15.1 |
| Green Ext Time (p_c), s | | 16.5 | | | 0.1 | 2.1 | | 1.2 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 20.2 |
| HCM 2010 LOS | C |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 309 | 829 | 60 | 34 | 1771 | 197 | 4 | 0 | 18 | 570 | 0 | 741 |
| Future Volume (veh/h) | 309 | 829 | 60 | 34 | 1771 | 197 | 4 | 0 | 18 | 570 | 0 | 741 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1900 | 1863 | 1900 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 343 | 921 | 67 | 38 | 1968 | 219 | 4 | 0 | 20 | 633 | 0 | 0 |
| Adj No. of Lanes | 2 | 2 | 0 | 1 | 3 | 1 | 0 | 1 | 0 | 2 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 394 | 1882 | 137 | 345 | 2475 | 1083 | 0 | 0 | 48 | 947 | 0 | 428 |
| Arrive On Green | 0.11 | 0.56 | 0.56 | 0.04 | 0.49 | 0.49 | 0.00 | 0.00 | 0.03 | 0.20 | 0.00 | 0.00 |
| Sat Flow, veh/h | 3442 | 3346 | 243 | 1774 | 5085 | 1583 | 0 | 0 | 1583 | 3548 | 0 | 1583 |
| Grp Volume(v), veh/h | 343 | 487 | 501 | 38 | 1968 | 219 | 0 | 0 | 20 | 633 | 0 | 0 |
| Grp Sat Flow(s),veh/h/ln | 1721 | 1770 | 1820 | 1774 | 1695 | 1583 | 0 | 0 | 1583 | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 13.7 | 23.3 | 23.3 | 1.5 | 45.4 | 7.1 | 0.0 | 0.0 | 1.7 | 23.1 | 0.0 | 0.0 |
| Cycle Q Clear(g_c), s | 13.7 | 23.3 | 23.3 | 1.5 | 45.4 | 7.1 | 0.0 | 0.0 | 1.7 | 23.1 | 0.0 | 0.0 |
| Prop In Lane | 1.00 | | 0.13 | 1.00 | | 1.00 | 0.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 394 | 996 | 1024 | 345 | 2475 | 1083 | 0 | 0 | 48 | 947 | 0 | 428 |
| V/C Ratio(X) | 0.87 | 0.49 | 0.49 | 0.11 | 0.80 | 0.20 | 0.00 | 0.00 | 0.42 | 0.67 | 0.00 | 0.00 |
| Avail Cap(c_a), veh/h | 442 | 996 | 1024 | 365 | 2475 | 1083 | 0 | 0 | 79 | 1667 | 0 | 428 |
| 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 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 |
| Uniform Delay (d), s/veh | 61.0 | 18.5 | 18.5 | 16.7 | 30.1 | 8.1 | 0.0 | 0.0 | 66.7 | 49.0 | 0.0 | 0.0 |
| Incr Delay (d2), s/veh | 15.8 | 1.7 | 1.7 | 0.1 | 2.7 | 0.4 | 0.0 | 0.0 | 5.7 | 0.8 | 0.0 | 0.0 |
| 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 | 7.4 | 11.8 | 12.2 | 0.7 | 21.8 | 3.2 | 0.0 | 0.0 | 0.8 | 11.4 | 0.0 | 0.0 |
| LnGrp Delay(d),s/veh | 76.8 | 20.2 | 20.2 | 16.9 | 32.8 | 8.5 | 0.0 | 0.0 | 72.3 | 49.8 | 0.0 | 0.0 |
| LnGrp LOS | E | C | C | B | C | A | | | E | D | | |
| Approach Vol, veh/h | | 1331 | | | 2225 | | | 20 | | | 633 | |
| Approach Delay, s/veh | | 34.8 | | | 30.2 | | | 72.3 | | | 49.8 | |
| Approach LOS | | C | | | C | | | E | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 11.4 | 84.8 | 33.6 | 10.2 | 22.0 | 74.2 | 0.0 | 43.8 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 46.0 | 56.0 | 7.0 | 18.0 | 35.0 | 34.0 | 29.0 |
| Max Q Clear Time (g_c+I1), s | 3.5 | 25.3 | 25.1 | 3.7 | 15.7 | 47.4 | 0.0 | 0.0 |
| Green Ext Time (p_c), s | 0.0 | 18.2 | 2.5 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 34.8 |
| HCM 2010 LOS | C |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 348 | 530 | 557 | 41 | 525 | 125 | 630 | 544 | 64 | 254 | 524 | 410 |
| Future Volume (veh/h) | 348 | 530 | 557 | 41 | 525 | 125 | 630 | 544 | 64 | 254 | 524 | 410 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 387 | 589 | 0 | 46 | 583 | 139 | 700 | 604 | 0 | 282 | 582 | 0 |
| Adj No. of Lanes | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 437 | 1312 | 587 | 358 | 1010 | 676 | 766 | 971 | 435 | 405 | 686 | 307 |
| Arrive On Green | 0.21 | 0.62 | 0.00 | 0.04 | 0.29 | 0.29 | 0.22 | 0.27 | 0.00 | 0.14 | 0.19 | 0.00 |
| Sat Flow, veh/h | 3442 | 3539 | 1583 | 1774 | 3539 | 1583 | 3442 | 3539 | 1583 | 1774 | 3539 | 1583 |
| Grp Volume(v), veh/h | 387 | 589 | 0 | 46 | 583 | 139 | 700 | 604 | 0 | 282 | 582 | 0 |
| Grp Sat Flow(s),veh/h/ln | 1721 | 1770 | 1583 | 1774 | 1770 | 1583 | 1721 | 1770 | 1583 | 1774 | 1770 | 1583 |
| Q Serve(g_s), s | 15.3 | 12.3 | 0.0 | 2.5 | 19.7 | 7.7 | 27.8 | 20.9 | 0.0 | 17.6 | 22.2 | 0.0 |
| Cycle Q Clear(g_c), s | 15.3 | 12.3 | 0.0 | 2.5 | 19.7 | 7.7 | 27.8 | 20.9 | 0.0 | 17.6 | 22.2 | 0.0 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 437 | 1312 | 587 | 358 | 1010 | 676 | 766 | 971 | 435 | 405 | 686 | 307 |
| V/C Ratio(X) | 0.89 | 0.45 | 0.00 | 0.13 | 0.58 | 0.21 | 0.91 | 0.62 | 0.00 | 0.70 | 0.85 | 0.00 |
| Avail Cap(c_a), veh/h | 516 | 1312 | 587 | 373 | 1010 | 676 | 860 | 1036 | 464 | 445 | 733 | 328 |
| HCM Platoon Ratio | 1.67 | 1.67 | 1.67 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.82 | 0.82 | 0.00 | 1.00 | 1.00 | 1.00 | 0.42 | 0.42 | 0.00 | 0.31 | 0.31 | 0.00 |
| Uniform Delay (d), s/veh | 54.2 | 19.1 | 0.0 | 32.5 | 42.8 | 25.2 | 53.1 | 44.4 | 0.0 | 37.2 | 54.4 | 0.0 |
| Incr Delay (d2), s/veh | 12.7 | 0.9 | 0.0 | 0.2 | 2.4 | 0.7 | 6.4 | 0.4 | 0.0 | 1.3 | 2.9 | 0.0 |
| 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 | 8.0 | 6.1 | 0.0 | 1.2 | 10.0 | 3.5 | 13.9 | 10.3 | 0.0 | 8.7 | 11.1 | 0.0 |
| LnGrp Delay(d),s/veh | 66.9 | 20.0 | 0.0 | 32.7 | 45.2 | 25.9 | 59.6 | 44.9 | 0.0 | 38.6 | 57.4 | 0.0 |
| LnGrp LOS | E | C | | C | D | C | E | D | | D | E | |
| Approach Vol, veh/h | | 976 | | | 768 | | | 1304 | | | 864 | |
| Approach Delay, s/veh | | 38.6 | | | 41.0 | | | 52.8 | | | 51.2 | |
| Approach LOS | | D | | | D | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 11.8 | 57.9 | 25.9 | 44.4 | 23.8 | 46.0 | 37.1 | 33.1 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 7.8 | 45.0 | 23.0 | 41.0 | 21.0 | 31.0 | 35.0 | 29.0 |
| Max Q Clear Time (g_c+I1), s | 4.5 | 14.3 | 19.6 | 22.9 | 17.3 | 21.7 | 29.8 | 24.2 |
| Green Ext Time (p_c), s | 0.0 | 9.5 | 0.3 | 7.3 | 0.5 | 5.1 | 1.3 | 2.9 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 46.6 |
| HCM 2010 LOS | D |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 170 | 974 | 22 | 64 | 2283 | 170 | 136 | 1 | 54 | 170 | 1 | 170 |
| Future Volume (veh/h) | 170 | 974 | 22 | 64 | 2283 | 170 | 136 | 1 | 54 | 170 | 1 | 170 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 189 | 1082 | 24 | 71 | 2537 | 189 | 151 | 1 | 60 | 189 | 1 | 189 |
| Adj No. of Lanes | 1 | 2 | 1 | 1 | 3 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 209 | 1999 | 1019 | 401 | 2674 | 1005 | 216 | 3 | 169 | 341 | 1 | 218 |
| Arrive On Green | 0.17 | 1.00 | 1.00 | 0.05 | 0.53 | 0.53 | 0.08 | 0.11 | 0.11 | 0.11 | 0.14 | 0.14 |
| Sat Flow, veh/h | 1774 | 3539 | 1583 | 1774 | 5085 | 1583 | 1774 | 26 | 1561 | 1774 | 8 | 1576 |
| Grp Volume(v), veh/h | 189 | 1082 | 24 | 71 | 2537 | 189 | 151 | 0 | 61 | 189 | 0 | 190 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 1583 | 1774 | 1695 | 1583 | 1774 | 0 | 1587 | 1774 | 0 | 1585 |
| Q Serve(g_s), s | 10.0 | 0.0 | 0.0 | 2.5 | 66.1 | 6.9 | 10.6 | 0.0 | 5.0 | 13.0 | 0.0 | 16.4 |
| Cycle Q Clear(g_c), s | 10.0 | 0.0 | 0.0 | 2.5 | 66.1 | 6.9 | 10.6 | 0.0 | 5.0 | 13.0 | 0.0 | 16.4 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.98 | 1.00 | | 0.99 |
| Lane Grp Cap(c), veh/h | 209 | 1999 | 1019 | 401 | 2674 | 1005 | 216 | 0 | 171 | 341 | 0 | 219 |
| V/C Ratio(X) | 0.90 | 0.54 | 0.02 | 0.18 | 0.95 | 0.19 | 0.70 | 0.00 | 0.36 | 0.55 | 0.00 | 0.87 |
| Avail Cap(c_a), veh/h | 222 | 1999 | 1019 | 407 | 2674 | 1005 | 216 | 0 | 204 | 401 | 0 | 306 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.92 | 0.92 | 0.92 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 39.6 | 0.0 | 0.0 | 13.3 | 31.4 | 10.6 | 51.2 | 0.0 | 57.9 | 47.9 | 0.0 | 59.1 |
| Incr Delay (d2), s/veh | 32.4 | 1.0 | 0.0 | 0.2 | 9.0 | 0.4 | 9.6 | 0.0 | 1.2 | 1.4 | 0.0 | 17.0 |
| 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 | 8.9 | 0.3 | 0.0 | 1.2 | 33.0 | 3.1 | 5.7 | 0.0 | 2.2 | 6.5 | 0.0 | 8.3 |
| LnGrp Delay(d),s/veh | 72.0 | 1.0 | 0.0 | 13.5 | 40.4 | 11.0 | 60.9 | 0.0 | 59.2 | 49.3 | 0.0 | 76.0 |
| LnGrp LOS | E | A | A | B | D | B | E | | E | D | | E |
| Approach Vol, veh/h | | 1295 | | | 2797 | | | 212 | | | 379 | |
| Approach Delay, s/veh | | 11.3 | | | 37.7 | | | 60.4 | | | 62.7 | |
| Approach LOS | | B | | | D | | | E | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 12.6 | 85.1 | 21.3 | 21.1 | 18.0 | 79.6 | 17.0 | 25.4 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 71.0 | 20.0 | 18.0 | 13.0 | 65.0 | 11.0 | 27.0 |
| Max Q Clear Time (g_c+I1), s | 4.5 | 2.0 | 15.0 | 7.0 | 12.0 | 68.1 | 12.6 | 18.4 |
| Green Ext Time (p_c), s | 0.0 | 60.2 | 0.2 | 1.1 | 0.1 | 0.0 | 0.0 | 0.9 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 33.5 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 32.8 |

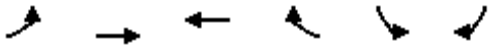
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 84 | 1332 | 1631 | 59 | 0 | 371 |
| Future Vol, veh/h | 84 | 1332 | 1631 | 59 | 0 | 371 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 93 | 1480 | 1812 | 66 | 0 | 412 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1878 | 0 | - | 0 | 2772 | 939 |
| Stage 1 | - | - | - | - | 1845 | - |
| Stage 2 | - | - | - | - | 927 | - |
| Critical Hdwy | 4.14 | - | - | - | 6.84 | 6.94 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.84 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.84 | - |
| Follow-up Hdwy | 2.22 | - | - | - | 3.52 | 3.32 |
| Pot Cap-1 Maneuver | 316 | - | - | - | 15 | ~ 265 |
| Stage 1 | - | - | - | - | 111 | - |
| Stage 2 | - | - | - | - | 346 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 316 | - | - | - | 11 | ~ 265 |
| Mov Cap-2 Maneuver | - | - | - | - | 74 | - |
| Stage 1 | - | - | - | - | 111 | - |
| Stage 2 | - | - | - | - | 244 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 1.3 | 0 | $ 302.1 |
| HCM LOS | | | F |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 | SBLn2 |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 316 | - | - | - | - | 265 |
| HCM Lane V/C Ratio | 0.295 | - | - | - | - | 1.556 |
| HCM Control Delay (s) | 21.1 | - | - | - | 0$ | 302.1 |
| HCM Lane LOS | C | - | - | - | A | F |
| HCM 95th %tile Q(veh) | 1.2 | - | - | - | - | 24.7 |

| Notes | | | |
|---|---|---|---|
| ~: Volume exceeds capacity | $: Delay exceeds 300s | +: Computation Not Defined | *: All major volume in platoon |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 84 | 1248 | 1506 | 59 | 187 | 183 |
| Future Volume (veh/h) | 84 | 1248 | 1506 | 59 | 187 | 183 |
| Number | 5 | 2 | 6 | 16 | 7 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 93 | 1387 | 1673 | 66 | 208 | 203 |
| Adj No. of Lanes | 1 | 2 | 2 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 327 | 2742 | 2372 | 93 | 248 | 298 |
| Arrive On Green | 0.05 | 0.77 | 1.00 | 1.00 | 0.14 | 0.14 |
| Sat Flow, veh/h | 1774 | 3632 | 3565 | 136 | 1774 | 1583 |
| Grp Volume(v), veh/h | 93 | 1387 | 849 | 890 | 208 | 203 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 1770 | 1839 | 1774 | 1583 |
| Q Serve(g_s), s | 2.0 | 20.3 | 0.0 | 0.0 | 16.0 | 16.7 |
| Cycle Q Clear(g_c), s | 2.0 | 20.3 | 0.0 | 0.0 | 16.0 | 16.7 |
| Prop In Lane | 1.00 | | | 0.07 | 1.00 | 1.00 |
| Lane Grp Cap(c), veh/h | 327 | 2742 | 1209 | 1256 | 248 | 298 |
| V/C Ratio(X) | 0.28 | 0.51 | 0.70 | 0.71 | 0.84 | 0.68 |
| Avail Cap(c_a), veh/h | 392 | 2742 | 1209 | 1256 | 329 | 371 |
| HCM Platoon Ratio | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.73 | 0.73 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 4.8 | 5.8 | 0.0 | 0.0 | 58.7 | 52.9 |
| Incr Delay (d2), s/veh | 0.5 | 0.7 | 2.5 | 2.5 | 13.5 | 3.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.0 | 10.1 | 0.8 | 0.9 | 8.8 | 14.5 |
| LnGrp Delay(d),s/veh | 5.3 | 6.5 | 2.5 | 2.5 | 72.2 | 56.5 |
| LnGrp LOS | A | A | A | A | E | E |
| Approach Vol, veh/h | | 1480 | 1739 | | 411 | |
| Approach Delay, s/veh | | 6.4 | 2.5 | | 64.5 | |
| Approach LOS | | A | A | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | 4 | 5 | 6 | | |
| Phs Duration (G+Y+Rc), s | | 114.4 | | 25.6 | 12.8 | 101.6 | | |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 6.0 | 6.0 | | |
| Max Green Setting (Gmax), s | | 102.0 | | 26.0 | 12.0 | 84.0 | | |
| Max Q Clear Time (g_c+I1), s | | 22.3 | | 18.7 | 4.0 | 2.0 | | |
| Green Ext Time (p_c), s | | 55.0 | | 0.8 | 0.1 | 56.0 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 11.1 |
| HCM 2010 LOS | B |

Notes



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 211 | 160 | 68 | 949 | 1029 | 75 |
| Future Volume (veh/h) | 211 | 160 | 68 | 949 | 1029 | 75 |
| Number | 7 | 14 | 5 | 2 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 234 | 0 | 76 | 1054 | 1143 | 83 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 271 | 242 | 114 | 1342 | 1104 | 1180 |
| Arrive On Green | 0.15 | 0.00 | 0.06 | 0.72 | 0.59 | 0.59 |
| Sat Flow, veh/h | 1774 | 1583 | 1774 | 1863 | 1863 | 1583 |
| Grp Volume(v), veh/h | 234 | 0 | 76 | 1054 | 1143 | 83 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1583 | 1774 | 1863 | 1863 | 1583 |
| Q Serve(g_s), s | 12.2 | 0.0 | 4.0 | 34.4 | 56.0 | 1.3 |
| Cycle Q Clear(g_c), s | 12.2 | 0.0 | 4.0 | 34.4 | 56.0 | 1.3 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | 271 | 242 | 114 | 1342 | 1104 | 1180 |
| V/C Ratio(X) | 0.86 | 0.00 | 0.67 | 0.79 | 1.04 | 0.07 |
| Avail Cap(c_a), veh/h | 357 | 318 | 131 | 1360 | 1104 | 1180 |
| 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 | 1.00 |
| Uniform Delay (d), s/veh | 39.1 | 0.0 | 43.2 | 8.5 | 19.2 | 3.2 |
| Incr Delay (d2), s/veh | 15.5 | 0.0 | 10.2 | 3.1 | 36.6 | 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 | 7.1 | 0.0 | 2.3 | 18.4 | 39.7 | 0.9 |
| LnGrp Delay(d),s/veh | 54.5 | 0.0 | 53.4 | 11.6 | 55.8 | 3.3 |
| LnGrp LOS | D | | D | B | F | A |
| Approach Vol, veh/h | 234 | | | 1130 | 1226 | |
| Approach Delay, s/veh | 54.5 | | | 14.4 | 52.3 | |
| Approach LOS | D | | | B | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | 4 | 5 | 6 | | |
| Phs Duration (G+Y+Rc), s | | 74.0 | | 20.4 | 12.0 | 62.0 | | |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 6.0 | 6.0 | | |
| Max Green Setting (Gmax), s | | 69.0 | | 19.0 | 7.0 | 56.0 | | |
| Max Q Clear Time (g_c+I1), s | | 36.4 | | 14.2 | 6.0 | 58.0 | | |
| Green Ext Time (p_c), s | | 24.0 | | 0.3 | 0.0 | 0.0 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 36.0 |
| HCM 2010 LOS | D |



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 150 | 130 | 30 | 1088 | 1051 | 70 |
| Future Volume (veh/h) | 150 | 130 | 30 | 1088 | 1051 | 70 |
| Number | 7 | 14 | 5 | 2 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 167 | 144 | 33 | 1209 | 1168 | 78 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 208 | 252 | 74 | 1422 | 1233 | 1233 |
| Arrive On Green | 0.12 | 0.12 | 0.04 | 0.76 | 0.66 | 0.66 |
| Sat Flow, veh/h | 1774 | 1583 | 1774 | 1863 | 1863 | 1583 |
| Grp Volume(v), veh/h | 167 | 144 | 33 | 1209 | 1168 | 78 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1583 | 1774 | 1863 | 1863 | 1583 |
| Q Serve(g_s), s | 9.2 | 8.4 | 1.8 | 43.9 | 57.1 | 1.2 |
| Cycle Q Clear(g_c), s | 9.2 | 8.4 | 1.8 | 43.9 | 57.1 | 1.2 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | 208 | 252 | 74 | 1422 | 1233 | 1233 |
| V/C Ratio(X) | 0.80 | 0.57 | 0.44 | 0.85 | 0.95 | 0.06 |
| Avail Cap(c_a), veh/h | 318 | 350 | 124 | 1484 | 1243 | 1242 |
| 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 | 43.2 | 39.1 | 47.0 | 8.0 | 15.4 | 2.6 |
| Incr Delay (d2), s/veh | 8.3 | 2.0 | 4.1 | 4.8 | 14.7 | 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 | 5.0 | 7.5 | 1.0 | 23.7 | 33.9 | 0.8 |
| LnGrp Delay(d),s/veh | 51.5 | 41.1 | 51.1 | 12.8 | 30.1 | 2.6 |
| LnGrp LOS | D | D | D | B | C | A |
| Approach Vol, veh/h | 311 | | | 1242 | 1246 | |
| Approach Delay, s/veh | 46.7 | | | 13.8 | 28.4 | |
| Approach LOS | D | | | B | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | 4 | 5 | 6 | | |
| Phs Duration (G+Y+Rc), s | | 82.7 | | 17.8 | 10.2 | 72.5 | | |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 6.0 | 6.0 | | |
| Max Green Setting (Gmax), s | | 80.0 | | 18.0 | 7.0 | 67.0 | | |
| Max Q Clear Time (g_c+I1), s | | 45.9 | | 11.2 | 3.8 | 59.1 | | |
| Green Ext Time (p_c), s | | 27.4 | | 0.6 | 0.0 | 7.3 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 24.0 |
| HCM 2010 LOS | C |

| Intersection | |
|---|---|
| Int Delay, s/veh | 3.1 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 34 | 28 | 4 | 1085 | 1163 | 18 |
| Future Vol, veh/h | 34 | 28 | 4 | 1085 | 1163 | 18 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 38 | 31 | 4 | 1206 | 1292 | 20 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1914 | 1302 | 1312 | 0 | - | 0 |
| Stage 1 | 1302 | - | - | - | - | - |
| Stage 2 | 612 | - | - | - | - | - |
| Critical Hdwy | 6.63 | 6.23 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.43 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.83 | - | - | - | - | - |
| Follow-up Hdwy | 3.519 | 3.319 | 2.219 | - | - | - |
| Pot Cap-1 Maneuver | 67 | 196 | 525 | - | - | - |
| Stage 1 | 254 | - | - | - | - | - |
| Stage 2 | 505 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 65 | 196 | 525 | - | - | - |
| Mov Cap-2 Maneuver | 65 | - | - | - | - | - |
| Stage 1 | 254 | - | - | - | - | - |
| Stage 2 | 493 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 113.1 | 0.1 | 0 |
| HCM LOS | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 525 | - | 93 | - | - |
| HCM Lane V/C Ratio | 0.008 | - | 0.741 | - | - |
| HCM Control Delay (s) | 11.9 | 0.1 | 113.1 | - | - |
| HCM Lane LOS | B | A | F | - | - |
| HCM 95th %tile Q(veh) | 0 | - | 3.8 | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.1 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 3 | 10 | 1089 | 1190 | 2 |
| Future Vol, veh/h | 0 | 3 | 10 | 1089 | 1190 | 2 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 3 | 11 | 1210 | 1322 | 2 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2555 | 662 | 1324 | 0 | - | 0 |
| Stage 1 | 1323 | - | - | - | - | - |
| Stage 2 | 1232 | - | - | - | - | - |
| Critical Hdwy | 6.63 | 6.93 | 4.13 | - | - | - |
| Critical Hdwy Stg 1 | 5.83 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - | - | - | - |
| Follow-up Hdwy | 3.519 | 3.319 | 2.219 | - | - | - |
| Pot Cap-1 Maneuver | 25 | 405 | 520 | - | - | - |
| Stage 1 | 214 | - | - | - | - | - |
| Stage 2 | 274 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 23 | 405 | 520 | - | - | - |
| Mov Cap-2 Maneuver | 23 | - | - | - | - | - |
| Stage 1 | 214 | - | - | - | - | - |
| Stage 2 | 256 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 14 | 0.1 | 0 |
| HCM LOS | B | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 520 | - | 405 | - | - |
| HCM Lane V/C Ratio | 0.021 | - | 0.008 | - | - |
| HCM Control Delay (s) | 12.1 | 0 | 14 | - | - |
| HCM Lane LOS | B | A | B | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | 0 | - | - |

| Movement | NBT | NBR | SBL | SBT | NWL | NWR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 942 | 219 | 259 | 933 | 150 | 156 |
| Future Volume (veh/h) | 942 | 219 | 259 | 933 | 150 | 156 |
| Number | 2 | 12 | 1 | 6 | 3 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 1047 | 243 | 288 | 1037 | 167 | 173 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 1038 | 1065 | 298 | 1450 | 205 | 449 |
| Arrive On Green | 0.56 | 0.56 | 0.17 | 0.78 | 0.12 | 0.12 |
| Sat Flow, veh/h | 1863 | 1583 | 1774 | 1863 | 1774 | 1583 |
| Grp Volume(v), veh/h | 1047 | 243 | 288 | 1037 | 167 | 173 |
| Grp Sat Flow(s),veh/h/ln | 1863 | 1583 | 1774 | 1863 | 1774 | 1583 |
| Q Serve(g_s), s | 63.0 | 6.7 | 18.2 | 31.5 | 10.4 | 9.9 |
| Cycle Q Clear(g_c), s | 63.0 | 6.7 | 18.2 | 31.5 | 10.4 | 9.9 |
| Prop In Lane | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Lane Grp Cap(c), veh/h | 1038 | 1065 | 298 | 1450 | 205 | 449 |
| V/C Ratio(X) | 1.01 | 0.23 | 0.97 | 0.72 | 0.81 | 0.39 |
| Avail Cap(c_a), veh/h | 1038 | 1065 | 298 | 1450 | 314 | 546 |
| 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 | 25.0 | 7.2 | 46.7 | 6.3 | 48.8 | 32.6 |
| Incr Delay (d2), s/veh | 30.1 | 0.1 | 42.8 | 1.7 | 9.3 | 0.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 40.7 | 4.0 | 12.5 | 16.5 | 5.6 | 4.4 |
| LnGrp Delay(d),s/veh | 55.1 | 7.3 | 89.5 | 8.0 | 58.1 | 33.1 |
| LnGrp LOS | F | A | F | A | E | C |
| Approach Vol, veh/h | 1290 | | | 1325 | 340 | |
| Approach Delay, s/veh | 46.1 | | | 25.7 | 45.4 | |
| Approach LOS | D | | | C | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 25.0 | 69.0 | | | | 94.0 | | 19.1 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 19.0 | 63.0 | | | | 88.0 | | 20.0 |
| Max Q Clear Time (g_c+I1), s | 20.2 | 65.0 | | | | 33.5 | | 12.4 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | | | 32.1 | | 0.7 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 36.9 |
| HCM 2010 LOS | D |

| Intersection | |
|---|---|
| Int Delay, s/veh | 6.8 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 40 | 12 | 88 | 240 | 2 |
| Future Vol, veh/h | 0 | 40 | 12 | 88 | 240 | 2 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 44 | 13 | 98 | 267 | 2 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 111 | 0 | - | 0 | 106 | 62 |
| Stage 1 | - | - | - | - | 62 | - |
| Stage 2 | - | - | - | - | 44 | - |
| 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 | 1479 | - | - | - | 892 | 1003 |
| Stage 1 | - | - | - | - | 961 | - |
| Stage 2 | - | - | - | - | 978 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1479 | - | - | - | 892 | 1003 |
| Mov Cap-2 Maneuver | - | - | - | - | 892 | - |
| Stage 1 | - | - | - | - | 961 | - |
| Stage 2 | - | - | - | - | 978 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 10.8 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1479 | - | - | - | 893 |
| HCM Lane V/C Ratio | - | - | - | - | 0.301 |
| HCM Control Delay (s) | 0 | - | - | - | 10.8 |
| HCM Lane LOS | A | - | - | - | B |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1.3 |



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 208 | 220 | 80 | 1080 | 883 | 85 |
| Future Volume (veh/h) | 208 | 220 | 80 | 1080 | 883 | 85 |
| Number | 7 | 14 | 5 | 2 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 231 | 244 | 89 | 1200 | 981 | 94 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 301 | 382 | 128 | 1286 | 1021 | 1136 |
| Arrive On Green | 0.17 | 0.17 | 0.07 | 0.69 | 0.55 | 0.55 |
| Sat Flow, veh/h | 1774 | 1583 | 1774 | 1863 | 1863 | 1583 |
| Grp Volume(v), veh/h | 231 | 244 | 89 | 1200 | 981 | 94 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1583 | 1774 | 1863 | 1863 | 1583 |
| Q Serve(g_s), s | 10.6 | 11.8 | 4.2 | 48.0 | 43.0 | 1.5 |
| Cycle Q Clear(g_c), s | 10.6 | 11.8 | 4.2 | 48.0 | 43.0 | 1.5 |
| Prop In Lane | 1.00 | 1.00 | 1.00 | | | 1.00 |
| Lane Grp Cap(c), veh/h | 301 | 382 | 128 | 1286 | 1021 | 1136 |
| V/C Ratio(X) | 0.77 | 0.64 | 0.70 | 0.93 | 0.96 | 0.08 |
| Avail Cap(c_a), veh/h | 373 | 447 | 145 | 1306 | 1023 | 1138 |
| 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 | 33.9 | 29.1 | 38.8 | 11.5 | 18.5 | 3.6 |
| Incr Delay (d2), s/veh | 7.4 | 2.4 | 11.8 | 12.2 | 19.3 | 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 | 5.8 | 10.4 | 2.5 | 28.4 | 27.3 | 1.1 |
| LnGrp Delay(d),s/veh | 41.3 | 31.4 | 50.6 | 23.7 | 37.8 | 3.7 |
| LnGrp LOS | D | C | D | C | D | A |
| Approach Vol, veh/h | 475 | | | 1289 | 1075 | |
| Approach Delay, s/veh | 36.3 | | | 25.6 | 34.8 | |
| Approach LOS | D | | | C | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | 4 | 5 | 6 | | |
| Phs Duration (G+Y+Rc), s | | 65.0 | | 20.5 | 12.2 | 52.9 | | |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 6.0 | 6.0 | | |
| Max Green Setting (Gmax), s | | 60.0 | | 18.0 | 7.0 | 47.0 | | |
| Max Q Clear Time (g_c+I1), s | | 50.0 | | 13.8 | 6.2 | 45.0 | | |
| Green Ext Time (p_c), s | | 8.8 | | 0.7 | 0.0 | 1.9 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 30.9 |
| HCM 2010 LOS | C |

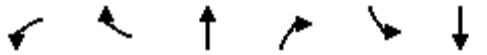
| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 0 | 0 | 1288 | 969 | 0 |
| Future Vol, veh/h | 0 | 0 | 0 | 1288 | 969 | 0 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 1431 | 1077 | 0 |

| Major/Minor | Minor2 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 2508 | 1077 | 1077 | 0 | - | 0 |
| Stage 1 | 1077 | - | - | - | - | - |
| Stage 2 | 1431 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | 4.12 | - | - | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | 2.218 | - | - | - |
| Pot Cap-1 Maneuver | 31 | 266 | 647 | - | - | - |
| Stage 1 | 327 | - | - | - | - | - |
| Stage 2 | 220 | - | - | - | - | - |
| Platoon blocked, % | | | | - | - | - |
| Mov Cap-1 Maneuver | 31 | 266 | 647 | - | - | - |
| Mov Cap-2 Maneuver | 31 | - | - | - | - | - |
| Stage 1 | 327 | - | - | - | - | - |
| Stage 2 | 220 | - | - | - | - | - |

| Approach | EB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | EBLn1 | SBT | SBR |
|---|---|---|---|---|---|
| Capacity (veh/h) | 647 | - | - | - | - |
| HCM Lane V/C Ratio | - | - | - | - | - |
| HCM Control Delay (s) | 0 | - | 0 | - | - |
| HCM Lane LOS | A | - | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - |



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 118 | 192 | 959 | 329 | 147 | 850 |
| Future Volume (veh/h) | 118 | 192 | 959 | 329 | 147 | 850 |
| Number | 3 | 18 | 2 | 12 | 1 | 6 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 131 | 213 | 1066 | 366 | 163 | 944 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 256 | 377 | 1069 | 1137 | 167 | 1361 |
| Arrive On Green | 0.14 | 0.14 | 0.57 | 0.57 | 0.09 | 0.73 |
| Sat Flow, veh/h | 1774 | 1583 | 1863 | 1583 | 1774 | 1863 |
| Grp Volume(v), veh/h | 131 | 213 | 1066 | 366 | 163 | 944 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1583 | 1863 | 1583 | 1774 | 1863 |
| Q Serve(g_s), s | 6.5 | 11.3 | 54.6 | 8.1 | 8.8 | 26.5 |
| Cycle Q Clear(g_c), s | 6.5 | 11.3 | 54.6 | 8.1 | 8.8 | 26.5 |
| Prop In Lane | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Lane Grp Cap(c), veh/h | 256 | 377 | 1069 | 1137 | 167 | 1361 |
| V/C Ratio(X) | 0.51 | 0.56 | 1.00 | 0.32 | 0.98 | 0.69 |
| Avail Cap(c_a), veh/h | 333 | 446 | 1069 | 1137 | 167 | 1361 |
| 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 | 37.9 | 32.1 | 20.3 | 4.9 | 43.3 | 7.1 |
| Incr Delay (d2), s/veh | 1.6 | 1.3 | 26.8 | 0.2 | 63.1 | 1.5 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 3.3 | 5.1 | 35.8 | 5.3 | 7.2 | 14.0 |
| LnGrp Delay(d),s/veh | 39.5 | 33.5 | 47.1 | 5.1 | 106.4 | 8.6 |
| LnGrp LOS | D | C | D | A | F | A |
| Approach Vol, veh/h | 344 | | 1432 | | | 1107 |
| Approach Delay, s/veh | 35.7 | | 36.4 | | | 23.0 |
| Approach LOS | D | | D | | | C |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 15.0 | 61.0 | | | | 76.0 | | 19.8 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 9.0 | 55.0 | | | | 70.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 10.8 | 56.6 | | | | 28.5 | | 13.3 |
| Green Ext Time (p_c), s | 0.0 | 0.0 | | | | 26.7 | | 0.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 31.2 |
| HCM 2010 LOS | C |

Notes

| Intersection | |
|---|---|
| Int Delay, s/veh | 1.8 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 196 | 1 | 3 | 419 | 43 | 52 |
| Future Vol, veh/h | 196 | 1 | 3 | 419 | 43 | 52 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 150 | 150 | - | 0 | - |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 218 | 1 | 3 | 466 | 48 | 58 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 218 | 0 | 690 | 218 |
| Stage 1 | - | - | - | - | 218 | - |
| Stage 2 | - | - | - | - | 472 | - |
| 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 | - | - | 1352 | - | 411 | 822 |
| Stage 1 | - | - | - | - | 818 | - |
| Stage 2 | - | - | - | - | 628 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1352 | - | 410 | 822 |
| Mov Cap-2 Maneuver | - | - | - | - | 410 | - |
| Stage 1 | - | - | - | - | 818 | - |
| Stage 2 | - | - | - | - | 627 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.1 | 12.8 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | NBLn1 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | 565 | - | - | 1352 | - |
| HCM Lane V/C Ratio | 0.187 | - | - | 0.002 | - |
| HCM Control Delay (s) | 12.8 | - | - | 7.7 | - |
| HCM Lane LOS | B | - | - | A | - |
| HCM 95th %tile Q(veh) | 0.7 | - | - | 0 | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.2 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 7 | 241 | 409 | 134 | 87 | 13 |
| Future Vol, veh/h | 7 | 241 | 409 | 134 | 87 | 13 |
| 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 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 8 | 268 | 454 | 149 | 97 | 14 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 603 | 0 | - | 0 | 812 | 529 |
| Stage 1 | - | - | - | - | 529 | - |
| Stage 2 | - | - | - | - | 283 | - |
| 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 | 975 | - | - | - | 348 | 550 |
| Stage 1 | - | - | - | - | 591 | - |
| Stage 2 | - | - | - | - | 765 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 975 | - | - | - | 345 | 550 |
| Mov Cap-2 Maneuver | - | - | - | - | 345 | - |
| Stage 1 | - | - | - | - | 591 | - |
| Stage 2 | - | - | - | - | 757 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.2 | 0 | 19.2 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 975 | - | - | - | 363 |
| HCM Lane V/C Ratio | 0.008 | - | - | - | 0.306 |
| HCM Control Delay (s) | 8.7 | 0 | - | - | 19.2 |
| HCM Lane LOS | A | A | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 1.3 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0 |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 328 | 0 | 0 | 543 | 0 | 0 |
| Future Vol, veh/h | 328 | 0 | 0 | 543 | 0 | 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 | - | 150 | 0 | - | 0 | 0 |
| Veh in Median Storage, # | 0 | - | - | 0 | 0 | - |
| Grade, % | 0 | - | - | 0 | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 364 | 0 | 0 | 603 | 0 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor1 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 0 | 0 | 364 | 0 | 967 | 364 |
| Stage 1 | - | - | - | - | 364 | - |
| Stage 2 | - | - | - | - | 603 | - |
| 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 | - | - | 1195 | - | 282 | 681 |
| Stage 1 | - | - | - | - | 703 | - |
| Stage 2 | - | - | - | - | 546 | - |
| Platoon blocked, % | - | - | | - | | |
| Mov Cap-1 Maneuver | - | - | 1195 | - | 282 | 681 |
| Mov Cap-2 Maneuver | - | - | - | - | 282 | - |
| Stage 1 | - | - | - | - | 703 | - |
| Stage 2 | - | - | - | - | 546 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 0 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBT | EBR | WBL | WBT |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | - | - | 1195 | - |
| HCM Lane V/C Ratio | - | - | - | - | - | - |
| HCM Control Delay (s) | 0 | 0 | - | - | 0 | - |
| HCM Lane LOS | A | A | - | - | A | - |
| HCM 95th %tile Q(veh) | - | - | - | - | 0 | - |

| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 228 | 100 | 723 | 383 | 160 | 901 |
| Future Volume (veh/h) | 228 | 100 | 723 | 383 | 160 | 901 |
| Number | 2 | 12 | 1 | 6 | 3 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 253 | 111 | 803 | 426 | 178 | 1001 |
| Adj No. of Lanes | 3 | 0 | 2 | 2 | 2 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 447 | 182 | 890 | 1688 | 1165 | 945 |
| Arrive On Green | 0.13 | 0.13 | 0.43 | 0.80 | 0.34 | 0.34 |
| Sat Flow, veh/h | 3721 | 1444 | 3442 | 3632 | 3442 | 1583 |
| Grp Volume(v), veh/h | 240 | 124 | 803 | 426 | 178 | 1001 |
| Grp Sat Flow(s),veh/h/ln | 1695 | 1608 | 1721 | 1770 | 1721 | 1583 |
| Q Serve(g_s), s | 4.3 | 4.7 | 14.1 | 2.0 | 2.3 | 22.0 |
| Cycle Q Clear(g_c), s | 4.3 | 4.7 | 14.1 | 2.0 | 2.3 | 22.0 |
| Prop In Lane | | 0.90 | 1.00 | | 1.00 | 1.00 |
| Lane Grp Cap(c), veh/h | 427 | 202 | 890 | 1688 | 1165 | 945 |
| V/C Ratio(X) | 0.56 | 0.61 | 0.90 | 0.25 | 0.15 | 1.06 |
| Avail Cap(c_a), veh/h | 427 | 202 | 953 | 1688 | 1165 | 945 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.67 | 1.67 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 1.00 | 0.66 | 0.66 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 26.7 | 26.9 | 17.7 | 3.7 | 15.0 | 13.1 |
| Incr Delay (d2), s/veh | 5.3 | 13.0 | 7.8 | 0.2 | 0.1 | 46.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 2.4 | 2.8 | 7.5 | 0.9 | 1.1 | 28.7 |
| LnGrp Delay(d),s/veh | 32.0 | 39.9 | 25.5 | 3.9 | 15.1 | 59.2 |
| LnGrp LOS | C | D | C | A | B | F |
| Approach Vol, veh/h | 364 | | | 1229 | 1179 | |
| Approach Delay, s/veh | 34.7 | | | 18.0 | 52.5 | |
| Approach LOS | C | | | B | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 22.8 | 14.2 | | | | 37.0 | | 28.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 18.0 | 7.0 | | | | 31.0 | | 22.0 |
| Max Q Clear Time (g_c+I1), s | 16.1 | 6.7 | | | | 4.0 | | 24.0 |
| Green Ext Time (p_c), s | 0.7 | 0.1 | | | | 5.3 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 34.9 |
| HCM 2010 LOS | C |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 949 | 179 | 394 | 728 | 0 | 0 | 0 | 0 | 699 | 0 | 379 |
| Future Volume (veh/h) | 0 | 949 | 179 | 394 | 728 | 0 | 0 | 0 | 0 | 699 | 0 | 379 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1863 | 1863 | 1863 | 0 | | | | 1863 | 0 | 1863 |
| Adj Flow Rate, veh/h | 0 | 1054 | 199 | 438 | 809 | 0 | | | | 777 | 0 | 421 |
| Adj No. of Lanes | 0 | 2 | 1 | 1 | 1 | 0 | | | | 2 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 0 | 2 |
| Cap, veh/h | 0 | 1280 | 572 | 555 | 1218 | 0 | | | | 874 | 0 | 402 |
| Arrive On Green | 0.00 | 0.72 | 0.72 | 0.49 | 1.00 | 0.00 | | | | 0.25 | 0.00 | 0.25 |
| Sat Flow, veh/h | 0 | 3632 | 1583 | 1774 | 1863 | 0 | | | | 3442 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 1054 | 199 | 438 | 809 | 0 | | | | 777 | 0 | 421 |
| Grp Sat Flow(s),veh/h/ln | 0 | 1770 | 1583 | 1774 | 1863 | 0 | | | | 1721 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 26.5 | 6.0 | 15.1 | 0.0 | 0.0 | | | | 28.3 | 0.0 | 33.0 |
| Cycle Q Clear(g_c), s | 0.0 | 26.5 | 6.0 | 15.1 | 0.0 | 0.0 | | | | 28.3 | 0.0 | 33.0 |
| Prop In Lane | 0.00 | | 1.00 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 1280 | 572 | 555 | 1218 | 0 | | | | 874 | 0 | 402 |
| V/C Ratio(X) | 0.00 | 0.82 | 0.35 | 0.79 | 0.66 | 0.00 | | | | 0.89 | 0.00 | 1.05 |
| Avail Cap(c_a), veh/h | 0 | 1280 | 572 | 555 | 1218 | 0 | | | | 874 | 0 | 402 |
| HCM Platoon Ratio | 1.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 0.49 | 0.49 | 0.56 | 0.56 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 15.2 | 12.3 | 25.3 | 0.0 | 0.0 | | | | 46.7 | 0.0 | 48.5 |
| Incr Delay (d2), s/veh | 0.0 | 3.1 | 0.8 | 4.4 | 1.6 | 0.0 | | | | 13.1 | 0.0 | 57.8 |
| 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/ln | 0.0 | 13.1 | 2.7 | 12.1 | 0.5 | 0.0 | | | | 15.0 | 0.0 | 20.9 |
| LnGrp Delay(d),s/veh | 0.0 | 18.3 | 13.2 | 29.7 | 1.6 | 0.0 | | | | 59.9 | 0.0 | 106.3 |
| LnGrp LOS | | B | B | C | A | | | | | E | | F |
| Approach Vol, veh/h | | 1253 | | | 1247 | | | | | | 1198 | |
| Approach Delay, s/veh | | 17.5 | | | 11.5 | | | | | | 76.2 | |
| Approach LOS | | B | | | B | | | | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 18.0 | 53.0 | | 39.0 | | 91.0 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 12.0 | 47.0 | | 33.0 | | 85.0 | | |
| Max Q Clear Time (g_c+I1), s | 17.1 | 28.5 | | 35.0 | | 2.0 | | |
| Green Ext Time (p_c), s | 6.4 | 7.4 | | 0.0 | | 9.3 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 34.5 |
| HCM 2010 LOS | C |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 581 | 1068 | 0 | 0 | 1029 | 802 | 92 | 0 | 0 | 0 | 0 | 0 |
| Future Volume (veh/h) | 581 | 1068 | 0 | 0 | 1029 | 802 | 92 | 0 | 0 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1863 | 1863 | 0 | 0 | | | |
| Adj Flow Rate, veh/h | 646 | 1187 | 0 | 0 | 1143 | 0 | 102 | 0 | 0 | | | |
| Adj No. of Lanes | 1 | 2 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 0 | 0 | | | |
| Cap, veh/h | 661 | 3376 | 0 | 0 | 2768 | 1238 | 0 | 0 | 0 | | | |
| Arrive On Green | 0.25 | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | |
| Sat Flow, veh/h | 1774 | 3632 | 0 | 0 | 3632 | 1583 | 0 | 0 | 0 | | | |
| Grp Volume(v), veh/h | 646 | 1187 | 0 | 0 | 1143 | 0 | 0 | 0 | 0 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1770 | 0 | 0 | 1770 | 1583 | 0 | 0 | 0 | | | |
| Q Serve(g_s), s | 12.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Cycle Q Clear(g_c), s | 12.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 0.00 | | 0.00 | | | |
| Lane Grp Cap(c), veh/h | 661 | 3376 | 0 | 0 | 2768 | 1238 | 0 | 0 | 0 | | | |
| V/C Ratio(X) | 0.98 | 0.35 | 0.00 | 0.00 | 0.41 | 0.00 | 0.00 | 0.00 | 0.00 | | | |
| Avail Cap(c_a), veh/h | 985 | 3376 | 0 | 0 | 2768 | 1238 | 0 | 0 | 0 | | | |
| HCM Platoon Ratio | 2.00 | 2.00 | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 0.41 | 0.41 | 0.00 | 0.00 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | | | |
| Uniform Delay (d), s/veh | 6.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Incr Delay (d2), s/veh | 10.6 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 7.8 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| LnGrp Delay(d),s/veh | 16.6 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| LnGrp LOS | B | A | | | A | | | | | | | |
| Approach Vol, veh/h | | 1833 | | | 1143 | | | 0 | | | | |
| Approach Delay, s/veh | | 5.9 | | | 0.1 | | | 0.0 | | | | |
| Approach LOS | | A | | | A | | | | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 130.0 | | | 22.3 | 107.7 | | 0.0 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 100.0 | | | 40.0 | 54.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | | 2.0 | | | 14.2 | 2.0 | | 0.0 |
| Green Ext Time (p_c), s | | 37.4 | | | 2.2 | 29.0 | | 0.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 3.7 |
| HCM 2010 LOS | A |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 275 | 739 | 54 | 47 | 1407 | 469 | 33 | 27 | 354 | 355 | 24 | 392 |
| Future Volume (veh/h) | 275 | 739 | 54 | 47 | 1407 | 469 | 33 | 27 | 354 | 355 | 24 | 392 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 306 | 821 | 60 | 52 | 1563 | 521 | 37 | 30 | 393 | 413 | 0 | 436 |
| Adj No. of Lanes | 2 | 3 | 0 | 1 | 2 | 1 | 0 | 1 | 2 | 2 | 0 | 2 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 344 | 2164 | 158 | 81 | 1390 | 871 | 165 | 134 | 460 | 559 | 0 | 499 |
| Arrive On Green | 0.13 | 0.59 | 0.59 | 0.09 | 0.79 | 0.79 | 0.17 | 0.17 | 0.17 | 0.16 | 0.00 | 0.16 |
| Sat Flow, veh/h | 3442 | 4838 | 352 | 1774 | 3539 | 1583 | 1001 | 812 | 2787 | 3548 | 0 | 3167 |
| Grp Volume(v), veh/h | 306 | 574 | 307 | 52 | 1563 | 521 | 67 | 0 | 393 | 413 | 0 | 436 |
| Grp Sat Flow(s),veh/h/ln | 1721 | 1695 | 1801 | 1774 | 1770 | 1583 | 1813 | 0 | 1393 | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 11.4 | 11.5 | 11.6 | 3.7 | 51.1 | 19.9 | 4.2 | 0.0 | 17.8 | 14.4 | 0.0 | 17.5 |
| Cycle Q Clear(g_c), s | 11.4 | 11.5 | 11.6 | 3.7 | 51.1 | 19.9 | 4.2 | 0.0 | 17.8 | 14.4 | 0.0 | 17.5 |
| Prop In Lane | 1.00 | | 0.20 | 1.00 | | 1.00 | 0.55 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 344 | 1516 | 805 | 81 | 1390 | 871 | 299 | 0 | 460 | 559 | 0 | 499 |
| V/C Ratio(X) | 0.89 | 0.38 | 0.38 | 0.64 | 1.12 | 0.60 | 0.22 | 0.00 | 0.85 | 0.74 | 0.00 | 0.87 |
| Avail Cap(c_a), veh/h | 344 | 1516 | 805 | 96 | 1390 | 871 | 446 | 0 | 686 | 600 | 0 | 536 |
| HCM Platoon Ratio | 1.33 | 1.33 | 1.33 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.91 | 0.91 | 0.91 | 0.70 | 0.70 | 0.70 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 55.6 | 16.9 | 16.9 | 58.0 | 13.9 | 6.2 | 47.0 | 0.0 | 52.7 | 52.2 | 0.0 | 53.5 |
| Incr Delay (d2), s/veh | 22.0 | 0.7 | 1.3 | 7.6 | 63.2 | 2.1 | 0.4 | 0.0 | 6.9 | 4.5 | 0.0 | 14.2 |
| 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/ln | 6.5 | 5.5 | 6.0 | 2.0 | 35.7 | 11.5 | 2.1 | 0.0 | 7.3 | 7.4 | 0.0 | 8.6 |
| LnGrp Delay(d),s/veh | 77.6 | 17.6 | 18.2 | 65.7 | 77.1 | 8.3 | 47.4 | 0.0 | 59.6 | 56.7 | 0.0 | 67.7 |
| LnGrp LOS | E | B | B | E | F | A | D | | E | E | | E |
| Approach Vol, veh/h | | 1187 | | | 2136 | | | 460 | | | 849 | |
| Approach Delay, s/veh | | 33.2 | | | 60.1 | | | 57.8 | | | 62.4 | |
| Approach LOS | | C | | | E | | | E | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 11.9 | 64.1 | | 26.5 | 19.0 | 57.1 | | 27.5 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 7.9 | 45.0 | | 22.0 | 13.0 | 39.0 | | 32.0 |
| Max Q Clear Time (g_c+I1), s | 15.7 | 13.6 | | 19.5 | 13.4 | 53.1 | | 19.8 |
| Green Ext Time (p_c), s | 0.0 | 24.9 | | 1.0 | 0.0 | 0.0 | | 1.6 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 53.4 |
| HCM 2010 LOS | D |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 34 | 1381 | 34 | 17 | 1734 | 17 | 95 | 16 | 56 | 56 | 16 | 95 |
| Future Volume (veh/h) | 34 | 1381 | 34 | 17 | 1734 | 17 | 95 | 16 | 56 | 56 | 16 | 95 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 38 | 1534 | 38 | 19 | 1927 | 19 | 106 | 18 | 62 | 62 | 18 | 106 |
| Adj No. of Lanes | 1 | 3 | 0 | 1 | 3 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 217 | 2474 | 61 | 468 | 3150 | 31 | 133 | 23 | 395 | 113 | 33 | 193 |
| Arrive On Green | 0.08 | 0.97 | 0.97 | 0.32 | 1.00 | 1.00 | 0.09 | 0.09 | 0.09 | 0.08 | 0.08 | 0.08 |
| Sat Flow, veh/h | 1774 | 5104 | 126 | 1774 | 5193 | 51 | 1527 | 259 | 1583 | 1390 | 403 | 1583 |
| Grp Volume(v), veh/h | 38 | 1019 | 553 | 19 | 1258 | 688 | 124 | 0 | 62 | 80 | 0 | 106 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1695 | 1840 | 1774 | 1695 | 1854 | 1786 | 0 | 1583 | 1793 | 0 | 1583 |
| Q Serve(g_s), s | 1.5 | 3.0 | 3.0 | 0.0 | 0.0 | 0.0 | 8.9 | 0.0 | 0.0 | 5.6 | 0.0 | 8.2 |
| Cycle Q Clear(g_c), s | 1.5 | 3.0 | 3.0 | 0.0 | 0.0 | 0.0 | 8.9 | 0.0 | 0.0 | 5.6 | 0.0 | 8.2 |
| Prop In Lane | 1.00 | | 0.07 | 1.00 | | 0.03 | 0.85 | | 1.00 | 0.77 | | 1.00 |
| Lane Grp Cap(c), veh/h | 217 | 1643 | 892 | 468 | 2057 | 1125 | 155 | 0 | 395 | 146 | 0 | 193 |
| V/C Ratio(X) | 0.18 | 0.62 | 0.62 | 0.04 | 0.61 | 0.61 | 0.80 | 0.00 | 0.16 | 0.55 | 0.00 | 0.55 |
| Avail Cap(c_a), veh/h | 241 | 1643 | 892 | 468 | 2057 | 1125 | 247 | 0 | 476 | 248 | 0 | 283 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.85 | 0.85 | 0.85 | 0.59 | 0.59 | 0.59 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 19.0 | 1.1 | 1.1 | 11.4 | 0.0 | 0.0 | 58.2 | 0.0 | 38.1 | 57.4 | 0.0 | 53.7 |
| Incr Delay (d2), s/veh | 0.3 | 1.5 | 2.7 | 0.0 | 0.8 | 1.5 | 9.1 | 0.0 | 0.2 | 3.2 | 0.0 | 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/ln | 0.8 | 1.2 | 1.6 | 0.3 | 0.2 | 0.5 | 4.8 | 0.0 | 1.7 | 2.9 | 0.0 | 3.7 |
| LnGrp Delay(d),s/veh | 19.3 | 2.6 | 3.8 | 11.4 | 0.8 | 1.5 | 67.3 | 0.0 | 38.3 | 60.5 | 0.0 | 56.2 |
| LnGrp LOS | B | A | A | B | A | A | E | | D | E | | E |
| Approach Vol, veh/h | | 1610 | | | 1965 | | | 186 | | | 186 | |
| Approach Delay, s/veh | | 3.4 | | | 1.2 | | | 57.7 | | | 58.0 | |
| Approach LOS | | A | | | A | | | E | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 17.1 | 69.0 | | 16.6 | 11.2 | 84.9 | | 17.3 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 7.0 | 63.0 | | 18.0 | 7.0 | 63.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 2.0 | 5.0 | | 10.2 | 3.5 | 2.0 | | 10.9 |
| Green Ext Time (p_c), s | 4.2 | 16.5 | | 0.4 | 0.0 | 24.9 | | 0.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 7.4 |
| HCM 2010 LOS | A |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 160 | 908 | 424 | 218 | 1037 | 94 | 543 | 556 | 242 | 152 | 278 | 187 |
| Future Volume (veh/h) | 160 | 908 | 424 | 218 | 1037 | 94 | 543 | 556 | 242 | 152 | 278 | 187 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 178 | 1009 | 0 | 242 | 1152 | 104 | 603 | 618 | 269 | 169 | 309 | 208 |
| Adj No. of Lanes | 1 | 3 | 1 | 1 | 3 | 1 | 2 | 2 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 201 | 1427 | 444 | 270 | 1626 | 650 | 656 | 1033 | 703 | 305 | 357 | 483 |
| Arrive On Green | 0.23 | 0.56 | 0.00 | 0.05 | 0.11 | 0.11 | 0.19 | 0.29 | 0.29 | 0.09 | 0.19 | 0.19 |
| Sat Flow, veh/h | 1774 | 5085 | 1583 | 1774 | 5085 | 1583 | 3442 | 3539 | 1583 | 1774 | 1863 | 1583 |
| Grp Volume(v), veh/h | 178 | 1009 | 0 | 242 | 1152 | 104 | 603 | 618 | 269 | 169 | 309 | 208 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1695 | 1583 | 1774 | 1695 | 1583 | 1721 | 1770 | 1583 | 1774 | 1863 | 1583 |
| Q Serve(g_s), s | 12.6 | 18.8 | 0.0 | 17.6 | 28.5 | 6.8 | 22.3 | 19.5 | 14.8 | 9.8 | 20.9 | 13.7 |
| Cycle Q Clear(g_c), s | 12.6 | 18.8 | 0.0 | 17.6 | 28.5 | 6.8 | 22.3 | 19.5 | 14.8 | 9.8 | 20.9 | 13.7 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 201 | 1427 | 444 | 270 | 1626 | 650 | 656 | 1033 | 703 | 305 | 357 | 483 |
| V/C Ratio(X) | 0.89 | 0.71 | 0.00 | 0.90 | 0.71 | 0.16 | 0.92 | 0.60 | 0.38 | 0.55 | 0.86 | 0.43 |
| Avail Cap(c_a), veh/h | 232 | 1427 | 444 | 300 | 1626 | 650 | 688 | 1089 | 728 | 308 | 373 | 496 |
| HCM Platoon Ratio | 2.00 | 2.00 | 2.00 | 0.33 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.85 | 0.85 | 0.00 | 0.56 | 0.56 | 0.56 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 49.5 | 24.6 | 0.0 | 60.7 | 52.3 | 32.3 | 51.6 | 39.5 | 24.2 | 37.2 | 50.9 | 36.1 |
| Incr Delay (d2), s/veh | 25.2 | 2.5 | 0.0 | 16.6 | 1.5 | 0.3 | 17.0 | 0.8 | 0.3 | 2.1 | 18.2 | 0.6 |
| 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 | 7.5 | 8.9 | 0.0 | 9.9 | 13.6 | 3.0 | 12.2 | 9.6 | 6.5 | 4.9 | 12.5 | 6.1 |
| LnGrp Delay(d),s/veh | 74.7 | 27.2 | 0.0 | 77.3 | 53.8 | 32.6 | 68.6 | 40.3 | 24.5 | 39.3 | 69.1 | 36.8 |
| LnGrp LOS | E | C | | E | D | C | E | D | C | D | E | D |
| Approach Vol, veh/h | | 1187 | | | 1498 | | | 1490 | | | 686 | |
| Approach Delay, s/veh | | 34.3 | | | 56.1 | | | 48.9 | | | 51.9 | |
| Approach LOS | | C | | | E | | | D | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 25.8 | 42.5 | 17.8 | 43.9 | 20.7 | 47.6 | 30.8 | 30.9 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 22.8 | 32.0 | 12.0 | 40.0 | 17.0 | 37.0 | 26.0 | 26.0 |
| Max Q Clear Time (g_c+I1), s | 19.6 | 20.8 | 11.8 | 21.5 | 14.6 | 30.5 | 24.3 | 22.9 |
| Green Ext Time (p_c), s | 0.2 | 9.2 | 0.0 | 7.3 | 0.1 | 5.7 | 0.4 | 2.0 |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | | 48.0 |
| HCM 2010 LOS | | D |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 85 | 1202 | 16 | 90 | 1372 | 190 | 89 | 28 | 90 | 61 | 31 | 66 |
| Future Volume (veh/h) | 85 | 1202 | 16 | 90 | 1372 | 190 | 89 | 28 | 90 | 61 | 31 | 66 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 94 | 1336 | 18 | 100 | 1524 | 211 | 99 | 31 | 100 | 68 | 34 | 73 |
| Adj No. of Lanes | 1 | 3 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 230 | 3095 | 42 | 297 | 2120 | 948 | 124 | 39 | 226 | 89 | 45 | 200 |
| Arrive On Green | 0.02 | 0.20 | 0.20 | 0.05 | 0.60 | 0.60 | 0.09 | 0.09 | 0.09 | 0.07 | 0.07 | 0.07 |
| Sat Flow, veh/h | 1774 | 5171 | 70 | 1774 | 3539 | 1583 | 1367 | 428 | 1583 | 1202 | 601 | 1583 |
| Grp Volume(v), veh/h | 94 | 876 | 478 | 100 | 1524 | 211 | 130 | 0 | 100 | 102 | 0 | 73 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1695 | 1850 | 1774 | 1770 | 1583 | 1794 | 0 | 1583 | 1803 | 0 | 1583 |
| Q Serve(g_s), s | 2.5 | 29.5 | 29.5 | 2.7 | 39.4 | 8.0 | 9.2 | 0.0 | 7.5 | 7.2 | 0.0 | 5.5 |
| Cycle Q Clear(g_c), s | 2.5 | 29.5 | 29.5 | 2.7 | 39.4 | 8.0 | 9.2 | 0.0 | 7.5 | 7.2 | 0.0 | 5.5 |
| Prop In Lane | 1.00 | | 0.04 | 1.00 | | 1.00 | 0.76 | | 1.00 | 0.67 | | 1.00 |
| Lane Grp Cap(c), veh/h | 230 | 2029 | 1108 | 297 | 2120 | 948 | 162 | 0 | 226 | 134 | 0 | 200 |
| V/C Ratio(X) | 0.41 | 0.43 | 0.43 | 0.34 | 0.72 | 0.22 | 0.80 | 0.00 | 0.44 | 0.76 | 0.00 | 0.37 |
| Avail Cap(c_a), veh/h | 233 | 2029 | 1108 | 327 | 2120 | 948 | 248 | 0 | 302 | 250 | 0 | 302 |
| HCM Platoon Ratio | 0.33 | 0.33 | 0.33 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.74 | 0.74 | 0.74 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 18.2 | 32.8 | 32.8 | 12.8 | 18.4 | 12.1 | 58.0 | 0.0 | 51.0 | 59.1 | 0.0 | 52.0 |
| Incr Delay (d2), s/veh | 0.9 | 0.5 | 0.9 | 0.7 | 2.1 | 0.5 | 10.2 | 0.0 | 1.4 | 8.7 | 0.0 | 1.1 |
| 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/ln | 1.7 | 14.0 | 15.4 | 1.4 | 19.7 | 3.7 | 5.0 | 0.0 | 3.4 | 3.9 | 0.0 | 2.5 |
| LnGrp Delay(d),s/veh | 19.1 | 33.3 | 33.7 | 13.5 | 20.5 | 12.6 | 68.1 | 0.0 | 52.3 | 67.8 | 0.0 | 53.2 |
| LnGrp LOS | B | C | C | B | C | B | E | | D | E | | D |
| Approach Vol, veh/h | | 1448 | | | 1835 | | | 230 | | | 175 | |
| Approach Delay, s/veh | | 32.5 | | | 19.2 | | | 61.3 | | | 61.7 | |
| Approach LOS | | C | | | B | | | E | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | 12.8 | 83.8 | | 15.6 | 12.8 | 83.9 | | 17.7 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | 9.8 | 61.0 | | 18.0 | 7.0 | 63.0 | | 18.0 |
| Max Q Clear Time (g_c+I1), s | 4.7 | 31.5 | | 9.2 | 4.5 | 41.4 | | 11.2 |
| Green Ext Time (p_c), s | 0.1 | 25.1 | | 0.4 | 0.0 | 19.1 | | 0.5 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 29.1 |
| HCM 2010 LOS | C |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 0 | 515 | 169 | 272 | 723 | 0 | 0 | 0 | 0 | 405 | 0 | 165 |
| Future Volume (veh/h) | 0 | 515 | 169 | 272 | 723 | 0 | 0 | 0 | 0 | 405 | 0 | 165 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | | | | 7 | 4 | 14 |
| 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 |
| Adj Sat Flow, veh/h/ln | 0 | 1863 | 1900 | 1863 | 1863 | 0 | | | | 1863 | 0 | 1863 |
| Adj Flow Rate, veh/h | 0 | 572 | 188 | 302 | 803 | 0 | | | | 450 | 0 | 183 |
| Adj No. of Lanes | 0 | 1 | 0 | 1 | 1 | 0 | | | | 1 | 0 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 0 | 2 | 2 | 2 | 2 | 0 | | | | 2 | 0 | 2 |
| Cap, veh/h | 0 | 604 | 199 | 298 | 1163 | 0 | | | | 489 | 0 | 437 |
| Arrive On Green | 0.00 | 0.45 | 0.45 | 0.25 | 1.00 | 0.00 | | | | 0.28 | 0.00 | 0.28 |
| Sat Flow, veh/h | 0 | 1343 | 442 | 1774 | 1863 | 0 | | | | 1774 | 0 | 1583 |
| Grp Volume(v), veh/h | 0 | 0 | 760 | 302 | 803 | 0 | | | | 450 | 0 | 183 |
| Grp Sat Flow(s),veh/h/ln | 0 | 0 | 1785 | 1774 | 1863 | 0 | | | | 1774 | 0 | 1583 |
| Q Serve(g_s), s | 0.0 | 0.0 | 48.9 | 14.9 | 0.0 | 0.0 | | | | 29.5 | 0.0 | 11.4 |
| Cycle Q Clear(g_c), s | 0.0 | 0.0 | 48.9 | 14.9 | 0.0 | 0.0 | | | | 29.5 | 0.0 | 11.4 |
| Prop In Lane | 0.00 | | 0.25 | 1.00 | | 0.00 | | | | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 0 | 0 | 803 | 298 | 1163 | 0 | | | | 489 | 0 | 437 |
| V/C Ratio(X) | 0.00 | 0.00 | 0.95 | 1.01 | 0.69 | 0.00 | | | | 0.92 | 0.00 | 0.42 |
| Avail Cap(c_a), veh/h | 0 | 0 | 803 | 298 | 1163 | 0 | | | | 606 | 0 | 541 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 | 1.00 | | | | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.00 | 0.00 | 1.00 | 0.16 | 0.16 | 0.00 | | | | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 0.0 | 0.0 | 31.6 | 43.1 | 0.0 | 0.0 | | | | 42.2 | 0.0 | 35.6 |
| Incr Delay (d2), s/veh | 0.0 | 0.0 | 21.1 | 24.1 | 0.6 | 0.0 | | | | 17.1 | 0.0 | 0.6 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | | | | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.0 | 0.0 | 28.8 | 11.8 | 0.2 | 0.0 | | | | 16.8 | 0.0 | 5.1 |
| LnGrp Delay(d),s/veh | 0.0 | 0.0 | 52.7 | 67.2 | 0.6 | 0.0 | | | | 59.2 | 0.0 | 36.2 |
| LnGrp LOS | | | D | F | A | | | | | E | | D |
| Approach Vol, veh/h | | 760 | | | 1105 | | | | | | 633 | |
| Approach Delay, s/veh | | 52.7 | | | 18.8 | | | | | | 52.6 | |
| Approach LOS | | D | | | B | | | | | | D | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | | 4 | | 6 | | |
| Phs Duration (G+Y+Rc), s | 20.9 | 60.0 | | 39.1 | | 80.9 | | |
| Change Period (Y+Rc), s | 6.0 | 6.0 | | 6.0 | | 6.0 | | |
| Max Green Setting (Gmax), s | 7.6 | 54.0 | | 41.0 | | 67.0 | | |
| Max Q Clear Time (g_c+I1), s | 16.9 | 50.9 | | 31.5 | | 2.0 | | |
| Green Ext Time (p_c), s | 0.0 | 1.4 | | 1.6 | | 7.5 | | |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 37.7 |
| HCM 2010 LOS | D |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 96 | 824 | 0 | 0 | 845 | 500 | 150 | 0 | 339 | 0 | 0 | 0 |
| Future Volume (veh/h) | 96 | 824 | 0 | 0 | 845 | 500 | 150 | 0 | 339 | 0 | 0 | 0 |
| Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | | | |
| 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 | | | |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 0 | 0 | 1863 | 1863 | 1900 | 1863 | 1863 | | | |
| Adj Flow Rate, veh/h | 107 | 916 | 0 | 0 | 939 | 556 | 167 | 0 | 377 | | | |
| Adj No. of Lanes | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | | | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | | | |
| Percent Heavy Veh, % | 2 | 2 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | | | |
| Cap, veh/h | 177 | 1182 | 0 | 0 | 983 | 835 | 471 | 0 | 421 | | | |
| Arrive On Green | 0.06 | 0.63 | 0.00 | 0.00 | 0.53 | 0.53 | 0.27 | 0.00 | 0.27 | | | |
| Sat Flow, veh/h | 1774 | 1863 | 0 | 0 | 1863 | 1583 | 1774 | 0 | 1583 | | | |
| Grp Volume(v), veh/h | 107 | 916 | 0 | 0 | 939 | 556 | 167 | 0 | 377 | | | |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 0 | 0 | 1863 | 1583 | 1774 | 0 | 1583 | | | |
| Q Serve(g_s), s | 3.1 | 42.5 | 0.0 | 0.0 | 57.6 | 30.7 | 9.2 | 0.0 | 27.5 | | | |
| Cycle Q Clear(g_c), s | 3.1 | 42.5 | 0.0 | 0.0 | 57.6 | 30.7 | 9.2 | 0.0 | 27.5 | | | |
| Prop In Lane | 1.00 | | 0.00 | 0.00 | | 1.00 | 1.00 | | 1.00 | | | |
| Lane Grp Cap(c), veh/h | 177 | 1182 | 0 | 0 | 983 | 835 | 471 | 0 | 421 | | | |
| V/C Ratio(X) | 0.60 | 0.78 | 0.00 | 0.00 | 0.96 | 0.67 | 0.35 | 0.00 | 0.90 | | | |
| Avail Cap(c_a), veh/h | 180 | 1182 | 0 | 0 | 983 | 835 | 843 | 0 | 752 | | | |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Upstream Filter(I) | 0.41 | 0.41 | 0.00 | 0.00 | 0.25 | 0.25 | 1.00 | 0.00 | 1.00 | | | |
| Uniform Delay (d), s/veh | 27.5 | 15.8 | 0.0 | 0.0 | 27.0 | 20.6 | 35.7 | 0.0 | 42.5 | | | |
| Incr Delay (d2), s/veh | 2.3 | 2.1 | 0.0 | 0.0 | 7.2 | 1.1 | 0.5 | 0.0 | 7.0 | | | |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | |
| %ile BackOfQ(50%),veh/ln | 2.0 | 22.3 | 0.0 | 0.0 | 31.4 | 13.5 | 4.6 | 0.0 | 12.9 | | | |
| LnGrp Delay(d),s/veh | 29.8 | 17.9 | 0.0 | 0.0 | 34.2 | 21.7 | 36.2 | 0.0 | 49.5 | | | |
| LnGrp LOS | C | B | | | C | C | D | | D | | | |
| Approach Vol, veh/h | | 1023 | | | 1495 | | | 544 | | | | |
| Approach Delay, s/veh | | 19.1 | | | 29.5 | | | 45.4 | | | | |
| Approach LOS | | B | | | C | | | D | | | | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 82.1 | | | 12.8 | 69.3 | | 37.9 |
| Change Period (Y+Rc), s | | 6.0 | | | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 51.0 | | | 7.0 | 38.0 | | 57.0 |
| Max Q Clear Time (g_c+I1), s | | 44.5 | | | 5.1 | 59.6 | | 29.5 |
| Green Ext Time (p_c), s | | 5.8 | | | 0.0 | 0.0 | | 2.3 |

| Intersection Summary | | |
|---|---|---|
| HCM 2010 Ctrl Delay | | 28.9 |
| HCM 2010 LOS | | C |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 290 | 17 | 855 | 7 | 27 | 7 | 937 | 864 | 13 | 12 | 690 | 381 |
| Future Volume (veh/h) | 290 | 17 | 855 | 7 | 27 | 7 | 937 | 864 | 13 | 12 | 690 | 381 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 322 | 19 | 950 | 8 | 30 | 8 | 1041 | 960 | 14 | 13 | 767 | 423 |
| Adj No. of Lanes | 1 | 1 | 2 | 1 | 1 | 0 | 2 | 1 | 1 | 1 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 315 | 387 | 1350 | 171 | 294 | 79 | 953 | 1304 | 1108 | 272 | 702 | 597 |
| Arrive On Green | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.46 | 1.00 | 1.00 | 0.38 | 0.38 | 0.38 |
| Sat Flow, veh/h | 1364 | 1863 | 2787 | 578 | 1418 | 378 | 3442 | 1863 | 1583 | 575 | 1863 | 1583 |
| Grp Volume(v), veh/h | 322 | 19 | 950 | 8 | 0 | 38 | 1041 | 960 | 14 | 13 | 767 | 423 |
| Grp Sat Flow(s),veh/h/ln | 1364 | 1863 | 1393 | 578 | 0 | 1796 | 1721 | 1863 | 1583 | 575 | 1863 | 1583 |
| Q Serve(g_s), s | 24.8 | 1.1 | 0.0 | 1.5 | 0.0 | 2.2 | 36.0 | 0.0 | 0.0 | 1.9 | 49.0 | 29.5 |
| Cycle Q Clear(g_c), s | 27.0 | 1.1 | 0.0 | 2.5 | 0.0 | 2.2 | 36.0 | 0.0 | 0.0 | 1.9 | 49.0 | 29.5 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.21 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 315 | 387 | 1350 | 171 | 0 | 373 | 953 | 1304 | 1108 | 272 | 702 | 597 |
| V/C Ratio(X) | 1.02 | 0.05 | 0.70 | 0.05 | 0.00 | 0.10 | 1.09 | 0.74 | 0.01 | 0.05 | 1.09 | 0.71 |
| Avail Cap(c_a), veh/h | 315 | 387 | 1350 | 171 | 0 | 373 | 953 | 1304 | 1108 | 272 | 702 | 597 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.67 | 1.67 | 1.67 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 0.54 | 0.54 | 0.54 | 1.00 | 0.00 | 1.00 | 0.69 | 0.69 | 0.69 | 0.61 | 0.61 | 0.61 |
| Uniform Delay (d), s/veh | 54.8 | 41.2 | 26.2 | 42.2 | 0.0 | 41.7 | 34.9 | 0.0 | 0.0 | 25.8 | 40.5 | 34.4 |
| Incr Delay (d2), s/veh | 42.6 | 0.0 | 0.9 | 0.1 | 0.0 | 0.1 | 53.4 | 2.6 | 0.0 | 0.2 | 55.5 | 4.4 |
| 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 | 5.0 | 0.6 | 13.5 | 0.2 | 0.0 | 1.1 | 24.1 | 0.9 | 0.0 | 0.3 | 36.0 | 13.6 |
| LnGrp Delay(d),s/veh | 97.4 | 41.3 | 27.1 | 42.3 | 0.0 | 41.8 | 88.4 | 2.6 | 0.0 | 26.0 | 96.0 | 38.8 |
| LnGrp LOS | F | D | C | D | | D | F | A | A | C | F | D |
| Approach Vol, veh/h | | 1291 | | | 46 | | | 2015 | | | 1203 | |
| Approach Delay, s/veh | | 44.8 | | | 41.9 | | | 46.9 | | | 75.1 | |
| Approach LOS | | D | | | D | | | D | | | E | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 97.0 | | 33.0 | 42.0 | 55.0 | | 33.0 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 91.0 | | 27.0 | 36.0 | 49.0 | | 27.0 |
| Max Q Clear Time (g_c+I1), s | | 2.0 | | 29.0 | 38.0 | 51.0 | | 4.5 |
| Green Ext Time (p_c), s | | 19.5 | | 0.0 | 0.0 | 0.0 | | 6.0 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 53.7 |
| HCM 2010 LOS | D |

Notes



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 16 | 130 | 81 | 163 | 46 | 897 | 45 | 901 | 200 | 766 | 738 | 47 |
| Future Volume (veh/h) | 16 | 130 | 81 | 163 | 46 | 897 | 45 | 901 | 200 | 766 | 738 | 47 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 | 1863 |
| Adj Flow Rate, veh/h | 18 | 144 | 90 | 181 | 51 | 0 | 50 | 1001 | 222 | 851 | 820 | 52 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 234 | 183 | 227 | 267 | 330 | 280 | 232 | 1171 | 689 | 970 | 1057 | 899 |
| Arrive On Green | 0.03 | 0.10 | 0.10 | 0.10 | 0.18 | 0.00 | 0.04 | 0.33 | 0.33 | 0.47 | 0.95 | 0.95 |
| Sat Flow, veh/h | 1774 | 1863 | 1583 | 1774 | 1863 | 1583 | 1774 | 3539 | 1583 | 3442 | 1863 | 1583 |
| Grp Volume(v), veh/h | 18 | 144 | 90 | 181 | 51 | 0 | 50 | 1001 | 222 | 851 | 820 | 52 |
| Grp Sat Flow(s),veh/h/ln | 1774 | 1863 | 1583 | 1774 | 1863 | 1583 | 1774 | 1770 | 1583 | 1721 | 1863 | 1583 |
| Q Serve(g_s), s | 1.2 | 9.8 | 6.7 | 11.5 | 3.0 | 0.0 | 2.6 | 34.3 | 3.1 | 29.0 | 11.3 | 0.2 |
| Cycle Q Clear(g_c), s | 1.2 | 9.8 | 6.7 | 11.5 | 3.0 | 0.0 | 2.6 | 34.3 | 3.1 | 29.0 | 11.3 | 0.2 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 234 | 183 | 227 | 267 | 330 | 280 | 232 | 1171 | 689 | 970 | 1057 | 899 |
| V/C Ratio(X) | 0.08 | 0.79 | 0.40 | 0.68 | 0.15 | 0.00 | 0.22 | 0.86 | 0.32 | 0.88 | 0.78 | 0.06 |
| Avail Cap(c_a), veh/h | 283 | 315 | 339 | 286 | 430 | 365 | 248 | 1171 | 689 | 970 | 1057 | 899 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.67 | 1.67 | 1.67 |
| Upstream Filter(I) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.45 | 0.45 | 0.45 |
| Uniform Delay (d), s/veh | 50.4 | 57.3 | 50.6 | 44.9 | 45.3 | 0.0 | 33.5 | 40.6 | 9.7 | 32.4 | 1.8 | 1.5 |
| Incr Delay (d2), s/veh | 0.1 | 7.3 | 1.1 | 5.8 | 0.2 | 0.0 | 0.5 | 8.1 | 1.2 | 4.5 | 2.6 | 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/ln | 0.6 | 5.5 | 3.0 | 6.1 | 1.6 | 0.0 | 1.3 | 18.0 | 3.3 | 14.2 | 5.2 | 0.1 |
| LnGrp Delay(d),s/veh | 50.5 | 64.6 | 51.7 | 50.7 | 45.5 | 0.0 | 34.0 | 48.7 | 10.9 | 36.9 | 4.4 | 1.5 |
| LnGrp LOS | D | E | D | D | D | | C | D | B | D | A | A |
| Approach Vol, veh/h | | 252 | | | 232 | | | 1273 | | | 1723 | |
| Approach Delay, s/veh | | 59.0 | | | 49.5 | | | 41.5 | | | 20.4 | |
| Approach LOS | | E | | | D | | | D | | | C | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Phs Duration (G+Y+Rc), s | 12.6 | 49.0 | 19.6 | 18.8 | 11.8 | 79.8 | 9.3 | 29.0 |
| Change Period (Y+Rc), s | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Max Green Setting (Gmax), s | 26.0 | 43.0 | 15.0 | 22.0 | 7.0 | 62.0 | 7.0 | 30.0 |
| Max Q Clear Time (g_c+I1), s | 13.1 | 36.3 | 13.5 | 11.8 | 4.6 | 13.3 | 3.2 | 5.0 |
| Green Ext Time (p_c), s | 0.0 | 3.7 | 0.1 | 1.0 | 0.0 | 12.8 | 0.0 | 1.4 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 32.8 |
| HCM 2010 LOS | C |

Notes

| Intersection | |
|---|---|
| Int Delay, s/veh | 2 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 0 | 78 | 381 | 71 | 496 | 0 | 0 | 0 | 0 | 81 | 0 | 17 |
| Future Vol, veh/h | 0 | 78 | 381 | 71 | 496 | 0 | 0 | 0 | 0 | 81 | 0 | 17 |
| 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 | 150 | - | - | - | - | - | 150 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | - | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 0 | 87 | 423 | 79 | 551 | 0 | 0 | 0 | 0 | 90 | 0 | 19 |

| Major/Minor | Major1 | | | Major2 | | | | | Minor2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | - | 0 | 0 | 87 | 0 | 0 | | | 796 | 796 | 551 |
| Stage 1 | - | - | - | - | - | - | | | 709 | 709 | - |
| Stage 2 | - | - | - | - | - | - | | | 87 | 87 | - |
| Critical Hdwy | - | - | - | 4.12 | - | - | | | 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 | - | - | - | 2.218 | - | - | | | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 0 | - | - | 1509 | - | 0 | | | 356 | 320 | 534 |
| Stage 1 | 0 | - | - | - | - | 0 | | | 488 | 437 | - |
| Stage 2 | 0 | - | - | - | - | 0 | | | 936 | 823 | - |
| Platoon blocked, % | | - | - | | - | | | | | | |
| Mov Cap-1 Maneuver | - | - | - | 1509 | - | - | | | 337 | 0 | 534 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | | | 337 | 0 | - |
| Stage 1 | - | - | - | - | - | - | | | 462 | 0 | - |
| Stage 2 | - | - | - | - | - | - | | | 936 | 0 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0.9 | 18.2 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBT | EBR | WBL | WBT | SBLn1 | SBLn2 |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 1509 | - | 337 | 534 |
| HCM Lane V/C Ratio | - | - | 0.052 | - | 0.267 | 0.035 |
| HCM Control Delay (s) | - | - | 7.5 | - | 19.5 | 12 |
| HCM Lane LOS | - | - | A | - | C | B |
| HCM 95th %tile Q(veh) | - | - | 0.2 | - | 1.1 | 0.1 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 7.5 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 17 | 142 | 0 | 0 | 276 | 208 | 291 | 0 | 140 | 0 | 0 | 0 |
| Future Vol, veh/h | 17 | 142 | 0 | 0 | 276 | 208 | 291 | 0 | 140 | 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 | 160 | - | - | - | - | 330 | 150 | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | - | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |
| Heavy Vehicles, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mvmt Flow | 19 | 158 | 0 | 0 | 307 | 231 | 323 | 0 | 156 | 0 | 0 | 0 |

| Major/Minor | Major1 | | | Major2 | | | Minor1 | | |
|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 307 | 0 | - | - | - | 0 | 503 | 503 | 158 |
| Stage 1 | - | - | - | - | - | - | 196 | 196 | - |
| Stage 2 | - | - | - | - | - | - | 307 | 307 | - |
| Critical Hdwy | 4.12 | - | - | - | - | - | 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 | 2.218 | - | - | - | - | - | 3.518 | 4.018 | 3.318 |
| Pot Cap-1 Maneuver | 1254 | - | 0 | 0 | - | - | 528 | 471 | 887 |
| Stage 1 | - | - | 0 | 0 | - | - | 837 | 739 | - |
| Stage 2 | - | - | 0 | 0 | - | - | 746 | 661 | - |
| Platoon blocked, % | | - | | | - | - | | | |
| Mov Cap-1 Maneuver | 1254 | - | - | - | - | - | 520 | 0 | 887 |
| Mov Cap-2 Maneuver | - | - | - | - | - | - | 520 | 0 | - |
| Stage 1 | - | - | - | - | - | - | 824 | 0 | - |
| Stage 2 | - | - | - | - | - | - | 746 | 0 | - |

| Approach | EB | WB | NB |
|---|---|---|---|
| HCM Control Delay, s | 0.8 | 0 | 18.5 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | NBLn1 | NBLn2 | EBL | EBT | WBT | WBR |
|---|---|---|---|---|---|---|
| Capacity (veh/h) | 520 | 887 | 1254 | - | - | - |
| HCM Lane V/C Ratio | 0.622 | 0.175 | 0.015 | - | - | - |
| HCM Control Delay (s) | 22.6 | 9.9 | 7.9 | - | - | - |
| HCM Lane LOS | C | A | A | - | - | - |
| HCM 95th %tile Q(veh) | 4.2 | 0.6 | 0 | - | - | - |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 35 | 595 | 288 | 124 | 565 | 37 | 78 | 39 | 54 | 48 | 142 | 25 |
| Future Volume (veh/h) | 35 | 595 | 288 | 124 | 565 | 37 | 78 | 39 | 54 | 48 | 142 | 25 |
| Number | 7 | 4 | 14 | 3 | 8 | 18 | 5 | 2 | 12 | 1 | 6 | 16 |
| 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 |
| Adj Sat Flow, veh/h/ln | 1863 | 1863 | 1863 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 | 1863 | 1863 | 1900 |
| Adj Flow Rate, veh/h | 39 | 661 | 320 | 138 | 628 | 41 | 87 | 43 | 60 | 53 | 158 | 28 |
| Adj No. of Lanes | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Percent Heavy Veh, % | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Cap, veh/h | 365 | 1033 | 878 | 312 | 959 | 63 | 291 | 155 | 216 | 353 | 338 | 60 |
| Arrive On Green | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
| Sat Flow, veh/h | 765 | 1863 | 1583 | 571 | 1730 | 113 | 1193 | 705 | 984 | 1286 | 1541 | 273 |
| Grp Volume(v), veh/h | 39 | 661 | 320 | 138 | 0 | 669 | 87 | 0 | 103 | 53 | 0 | 186 |
| Grp Sat Flow(s),veh/h/ln | 765 | 1863 | 1583 | 571 | 0 | 1843 | 1193 | 0 | 1689 | 1286 | 0 | 1815 |
| Q Serve(g_s), s | 2.0 | 13.0 | 6.0 | 11.7 | 0.0 | 13.5 | 3.6 | 0.0 | 2.7 | 1.9 | 0.0 | 4.7 |
| Cycle Q Clear(g_c), s | 15.5 | 13.0 | 6.0 | 24.7 | 0.0 | 13.5 | 8.4 | 0.0 | 2.7 | 4.6 | 0.0 | 4.7 |
| Prop In Lane | 1.00 | | 1.00 | 1.00 | | 0.06 | 1.00 | | 0.58 | 1.00 | | 0.15 |
| Lane Grp Cap(c), veh/h | 365 | 1033 | 878 | 312 | 0 | 1022 | 291 | 0 | 371 | 353 | 0 | 398 |
| V/C Ratio(X) | 0.11 | 0.64 | 0.36 | 0.44 | 0.00 | 0.65 | 0.30 | 0.00 | 0.28 | 0.15 | 0.00 | 0.47 |
| Avail Cap(c_a), veh/h | 374 | 1052 | 895 | 318 | 0 | 1041 | 434 | 0 | 573 | 506 | 0 | 615 |
| 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 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| Uniform Delay (d), s/veh | 13.7 | 8.2 | 6.6 | 16.7 | 0.0 | 8.3 | 21.7 | 0.0 | 17.2 | 19.1 | 0.0 | 18.0 |
| Incr Delay (d2), s/veh | 0.1 | 1.3 | 0.3 | 1.0 | 0.0 | 1.5 | 0.6 | 0.0 | 0.4 | 0.2 | 0.0 | 0.9 |
| 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/ln | 0.4 | 7.0 | 2.6 | 1.9 | 0.0 | 7.1 | 1.2 | 0.0 | 1.3 | 0.7 | 0.0 | 2.5 |
| LnGrp Delay(d),s/veh | 13.8 | 9.4 | 6.9 | 17.7 | 0.0 | 9.7 | 22.2 | 0.0 | 17.6 | 19.3 | 0.0 | 18.9 |
| LnGrp LOS | B | A | A | B | | A | C | | B | B | | B |
| Approach Vol, veh/h | | 1020 | | | 807 | | | 190 | | | 239 | |
| Approach Delay, s/veh | | 8.8 | | | 11.1 | | | 19.7 | | | 19.0 | |
| Approach LOS | | A | | | B | | | B | | | B | |

| Timer | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Assigned Phs | | 2 | | 4 | | 6 | | 8 |
| Phs Duration (G+Y+Rc), s | | 17.7 | | 35.4 | | 17.7 | | 35.4 |
| Change Period (Y+Rc), s | | 6.0 | | 6.0 | | 6.0 | | 6.0 |
| Max Green Setting (Gmax), s | | 18.0 | | 30.0 | | 18.0 | | 30.0 |
| Max Q Clear Time (g_c+I1), s | | 10.4 | | 17.5 | | 6.7 | | 26.7 |
| Green Ext Time (p_c), s | | 1.3 | | 8.7 | | 1.6 | | 2.7 |

| Intersection Summary | |
|---|---|
| HCM 2010 Ctrl Delay | 11.6 |
| HCM 2010 LOS | B |

# APPENDIX C

## Agency Correspondence

**DIVISION OF NATURAL RESOURCES**
**Wildlife Resources Section**
**Operations Center**
**P.O. Box 67**
**Elkins, West Virginia 26241-3235**
**Telephone (304) 637-0245**
**Fax (304) 637-0250**

**Jim Justice**
***Governor***

**Stephen S. McDaniel**
***Director***

September 11, 2017

Mr. Tim Sedosky
Division of Highways
Planning Division
1900 Kanawha Boulevard, East
Charleston, WV 25305

Dear Mr. Sedosky:

We have reviewed Natural Heritage Program files for information on rare, threatened and endangered (RTE) species and natural trout streams for the area of the proposed WV Route 9 and Novak Drive Access Road project near Martinsburg, Berkeley County, WV.

We have no known records of any RTE species or natural trout streams within the project area. The Wildlife Resources Section knows of no surveys that have been conducted in the area for rare species or rare species habitat. Consequently, this response is based on information currently available and should not be considered a comprehensive survey of the area under review.

Thank you for your inquiry, and should you have any questions please feel free to contact me at the above number, extension 2048.

Sincerely,

Barbara Sargent
Environmental Resources Specialist
Environmental Coordination
Operations Unit

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PLANNING DIVISION

# APPENDIX D

## Stakeholder Workshops

# Stakeholder Workshop Meeting Summary
# December 13, 2016

# Novak Drive Connector Study

## Meeting Summary

### Stakeholder Meeting No. 1 | December 13, 2016 | 10:00 AM - Noon

Shepherd University-Martinsburg Center, Room 116, 261 Aikens Center, Martinsburg WV

### Attendees

See attached sign-in sheet

### Meeting Materials

- Agenda
- Slide Presentation
- Study Area Exhibit
- Constraints Exhibit

### Meeting Purpose

To introduce the project, the study process, and solicit input from stakeholders on the study goals and objectives, study area issues and potential alternative corridors. The following is a summary of the meeting presentation along with additional group discussion that occurred during each segment of the presentation.

### I. Welcome / Introductions

A. HEPMPO – Matt Mullenax, Steve Thomas
B. WVDOT – Dave Cramer, Perry Keller, Don Meadows, Ken Clohan
C. Michael Baker International – Max Heckman, Dan Szekeres, Lu Ann May

### II. Project Introduction

The study is a partnership of HEPMPO and WVDOT under contract with Michael Baker International as the first step in evaluating the need for a new access road between WV 9 and Airport Road.

A. Purpose of Study
   - The purpose of the study is to identify the project need, analyze traffic, identify potential alternative corridors, identify and evaluate environmental concerns and screen preliminary alternatives.
   - The project development process weaves together planning and environmental screening. The project is not yet on the regions' long-range transportation plan or Transportation Improvement Plan (TIP) which programs projects for the next four years, but should be added to these plans in the near future.

B. Study Area
   - The environmental study area encompasses the area of the potential alternative corridors.
   - The traffic analysis study area includes the major road networks in the area

C. Planned/Proposed Development

- Several developments have been planned/proposed in the area. In addition, a Weis Marketplace is starting construction across from the Commons.
- Several improvements to infrastructure that have been planned/proposed including US 11 connector for access to Procter & Gamble, Development Drive, and US 11 roundabout at Business Park Drive. Additionally, a connection between Tabler Station Road and WV 45 is being studied.

D. Project History

- Planned development in the area in conjunction with results of the WV 45 Traffic and Safety Study identified the need for a study to assess whether an additional connection between WV 9 & I-81 could ease traffic on WV 45 and provide additional access to I-81 from the east
- The WV 45 study public comment period closed in late September and is near completion
- This study will look at the proposed roundabout at US 11 and Business Park Dr/Novak Drive to determine if it will support the projected traffic
- Additional future development is possible with many additional properties for sale along Novak Drive and land available for development on the west side of I-81

*Additional Discussion*

*Currently to get from Frederick, MD to the Airlift 167th it is faster to take US 340 to WV 9 than to take I-70 to I-81. A connector from WV 9 to US 11 would make this route even faster.*

*The Winchester & Western RR train crosses Business Park Drive causing traffic delays along US 11 in both the North and South direction due to vehicles on Business Park Drive sitting within the intersection.*

*Train traffic will increase with 3,500-5000 additional train cars per year due to the Procter & Gamble facility. The Winchester & Western RR runs 10,000-15,000 cars per year with 14,900 in 2015.*

*The train crosses Business Park Drive at 4:00 pm daily, except Saturday. Train counts and schedules will be requested from Winchester & Western RR for inclusion in the study.*

*Procter & Gamble is expecting 1,200 people per day including contractors. There is concern about traffic congestion during the shift change at 3:30 pm.*

E. Study Tasks and Schedule

- The study is anticipated to take 9 months to complete
- A second stakeholder meeting and a public meeting is expected in Spring 2017. Preliminary alternatives will be presented for comment at that time

F. Engage the Public
   - In Spring 2017, a web-based public input tool called MetroQuest will be available for one month to solicit insight and recommendations on preliminary alternatives.

## III. Existing Traffic Conditions / Future Modeling

A. Data Collection
   - The study team will work with developers to obtain projected traffic volumes beyond what is presented in existing Traffic Impact Studies
   - The traffic data / analysis examines the project need, future projections, and project benefits
   - Don Meadows added that traffic counts for Novak Drive and Airport Road counts may be included in the study WVDOT just received
   - Origin-Destination information from StreetLight showed that 14% of travelers at the Short Road and WV9 intersection may potentially divert to the new roadway. StreetLight is a tool that uses cell phone GPS data to track travel patterns

B. Traffic Demand Modeling
   - The region's travel demand model will be enhanced with additional detailed information, used to develop land use and resulting traffic forecasts. To assist in assessing trips from outside the HEPMPO travel model limits, the study team will look at the Maryland travel model to see if it includes Berkeley or Jefferson County

C. Traffic Analysis
   - Focus area intersections will be identified for in-depth traffic analysis

*Additional Discussion*

*Procter & Gamble truck traffic is expected to be 150 trucks outbound daily that will be heading to I-81. P&G representative asked if the information gathered and the results will be passed along for future improvements to I-81. Matt responded yes, it can help with long-term planning.*

## IV. Study Area Issues

A. Environmental Constraints
   - Environmental resource information was collected for the study area including National Register of Historic Places sites, recorded historic structures, historic districts, National Wetland Inventory (NWI) wetlands, 100-year floodplains and floodways, farmland preservation easements along with community resources such as churches

B. Other Issues
   - *Attendees identified the following additional study area issues:*
     - *Chesapeake Bay Stormwater Management Plan*
     - *Source Water Protection Plan for Berkeley County and Martinsburg*
     - *Farmland Conservation Easements*

- *Federal lands*
- *Arsenic on old orchards*
- *Rock blasting*

## V. Project Goals and Objectives

A. Statement of Goals should address what the existing and expected concerns are and how the project should address those concerns. The Goals and Objectives will support development of a Project Need statement, which is an important element of the project development process

B. Attendees identified the following potential project goals and objectives

- ***Mobility***
  - *Alleviate congestion*
    - *WV 45*
    - *WV 51, especially during evening rush hour*
    - *Queen Street & Woodbury Ave, 4-6 pm congestion*
    - *Tavern Road at Railroad crossing*
  - *Access control to maintain thru access to I-81*
    - *2-lane versus 4-lane*
    - *Procter & Gamble will run two shifts at 7:30 am and 7:30 pm with approximately 100 people at each shift change. Recommend 4-lane to help with safety issues.*
  - *Mass transit to support projected growth*
  - *Provide Transit connection to other existing networks and communities (i.e. Ranson)*
  - *Transit is a focal point to growth*
- ***Economic Development***
  - *Support planned projects*
  - *Support economic development in the area*
  - *Promote growth to downtown Martinsburg*
    - *Include marketing of downtown Martinsburg along roadway via signage*
  - *Foreign Trade Zone*
  - *Support freight growth*
    - *Federal FAST Act is a feasible funding source which requires a freight component*
- ***Improve Safety***
  - *StreetLight and crash data will be helpful in identifying high crash locations*
  - *Remove trucks from WV 45*
  - *Railroad crossing accidents are minimal (One recently at King Street)*
  - *Railroad crossings cause blocked intersections and traffic delays*
    - *WV 45 intersection at the mall causes traffic to back to I-81 due to rail crossing*
  - *Roadway ends near airport runway, poor control*

- ***Protect Environment***
  - *Reduce noise*
  - *Protect floodplains*
  - *Preserve the character of Opequon Creek*
  - *Protect Opequon Creek tributaries*

## VI. Identify Potential Alternative Corridors

A. Attendees discussed potential alternative corridors
   1. Connection from Novak Drive northeast toward Paynes Ford Road then connection to WV 9 at Opequon Lane
   2. Connection from Novak Drive due east to WV 9 Short Road interchange
   3. Connection from Novak Drive to WV 9 Kerneysville interchange

B. Additional discussion items / suggestions
   - *Consider connection to WV 9 Kerneysville interchange, not Opequon Lane*
   - *Upgrade existing Airport Road to airport then new connection to WV 9 to provide better access to airport. This alternative crosses several more waterways*
   - *Industrial connector road versus bypass. Determine number of access points / intervals along the new roadway*
   - *Consider message boards to display how long it takes to get to I-81 via alternate routes*
   - *Use signage on WV 9 to show best access to I-81 or to Downtown Martinsburg*

## VII. Next Steps

A. Develop Project Need Statement
B. Collect Traffic Data & Conduct Analysis
C. Develop Preliminary Alternative Corridors

**Novak Driv Connector Study**
**State Stakeholder Meeting No. 1**
**December 13, 2016**

Michael Baker INTERNATIONAL

***December 13, 2016***

| NAME (PLEASE PRINT) | ADDRESS | Email |
|---|---|---|
| Neil Doran | 170 Aviation Way, Suite 105 Martinsburg WV 25405 | ewvrga@frontier.com |
| SANDY HAMILTON | . | shamilton@developmentauthority.com |
| Ryan Moore | 5560 Winchester Ave, Martinsburg WV. 25405 | moore.rt@pg.com |
| JOHN POLAND | 222 SABREJET BLVD 25405 | JOHN.R.POLAND4.MIL@MAIL.MIL |
| Andy Blake | 312 S Mildred St. Ranson WV 25438 | ablake@ransonwv.us |
| DAN ZAPPE | | Zappedan@Reagan.com |
| MICHAEL COVELL | City of Martinsburg | mcovell@cityofmartinsburg.org |
| MARK BALDWIN | " " " | MARKBALDWIN@aol.com |
| Ken Clohan | WV DOH | Kenneth.l.clohan@wv.gov |
| Doug Long | W&W RR Co | dL@winchesterwesternRR.com |
| Don Meadows | WVDOT - TRAFFIC ENGINEERING | Donald.R.Meadows@WV.GOV |
| Heather Williams | Berkeley County Planning 200 W stephen St. | hwilliams@berkeleywv.org |
| Jennie Brockman | | |
| Doug Pixler | 446 Novak Dr Mtg 25405 | dPixler@eptawv.com |
| Elaine Bartoldson | ↓ | ebartoldson@eptawv.com |

# Novak Driv Connector Study
# State Stakeholder Meeting No. 1
# December 13, 2016

Michael Baker INTERNATIONAL

## *December 13, 2016*

| NAME (PLEASE PRINT) | ADDRESS | Email |
|---|---|---|
| Bill Clark | Region 9 400 Stynes St Martinsburg, WV | BClark@region9wv.com |
| Doug Pixler | Eastern Panhandle Transit Authority 446 Novak Drive, Martinsburg, WV 25405 | dpixler@eptawv.com |
| Elaine Bartoldson | Eastern Panhandle Transit Authority 446 Novak Drive, Martinsburg, WV 25405 | ebartoldson@eptawv.com |
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|---|---|
| 1. Welcome / Introductions | Matt Mullenax, HEPMPO / All |
| 2. Project Introduction | |
| a. Purpose of Study | Max Heckman, Michael Baker |
| b. Study Area | Max Heckman, Michael Baker |
| c. Planned Developments | Don Meadows, WVDOT |
| d. Project History | Don Meadows, WVDOT |
| e. Study Tasks and Schedule | Max Heckman, Michael Baker |
| f. Engage the Public | Max Heckman, Michael Baker |
| 3. Existing Traffic Conditions / Future Modeling | Dan Szekeres, Michael Baker |
| 4. Study Area Issues | |
| a. Environmental Constraints Map | Max Heckman, Michael Baker |
| b. Land Use Data | Max Heckman, Michael Baker |
| c. Others | All (flip chart exercise) |
| 5. Project Goals and Objectives | All (flip chart exercise) |
| 6. Identify Potential Alternative Corridors | All (map exercise) |
| 7. Next Steps | Max Heckman, Michael Baker |



# Novak Drive Connector Study

## STAKEHOLDER WORKSHOP

December 13, 2016

Michael Baker INTERNATIONAL

# Project Introduction

**Purpose of Study**

**Study Area**

**Planned / Proposed Development**

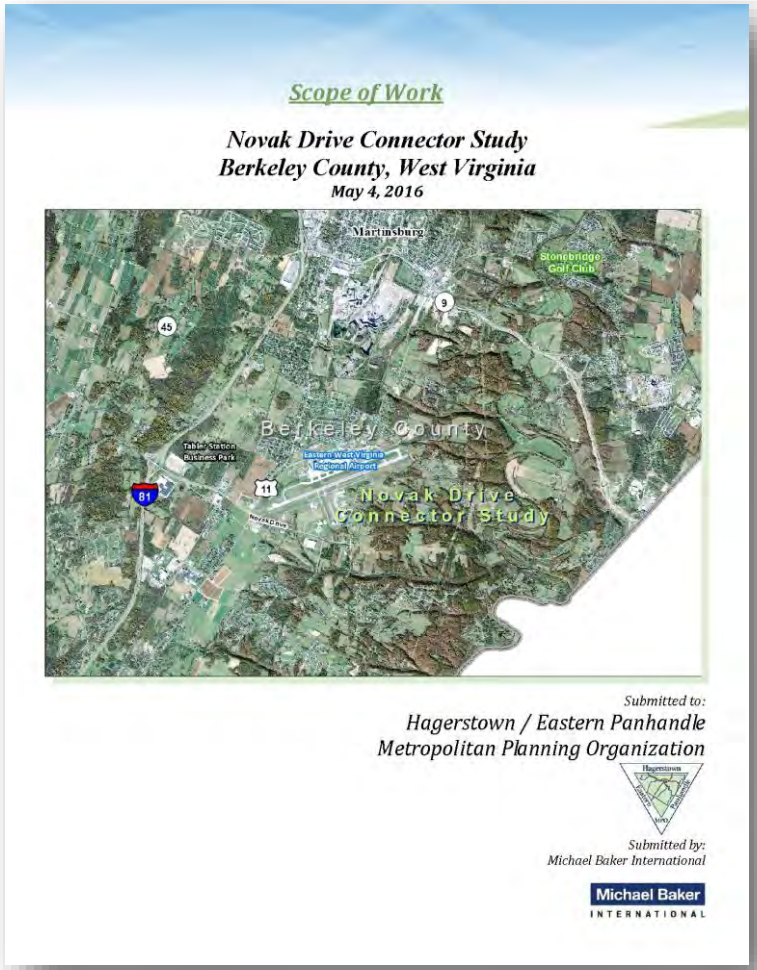
**Project History**

**Study Scope and Schedule**

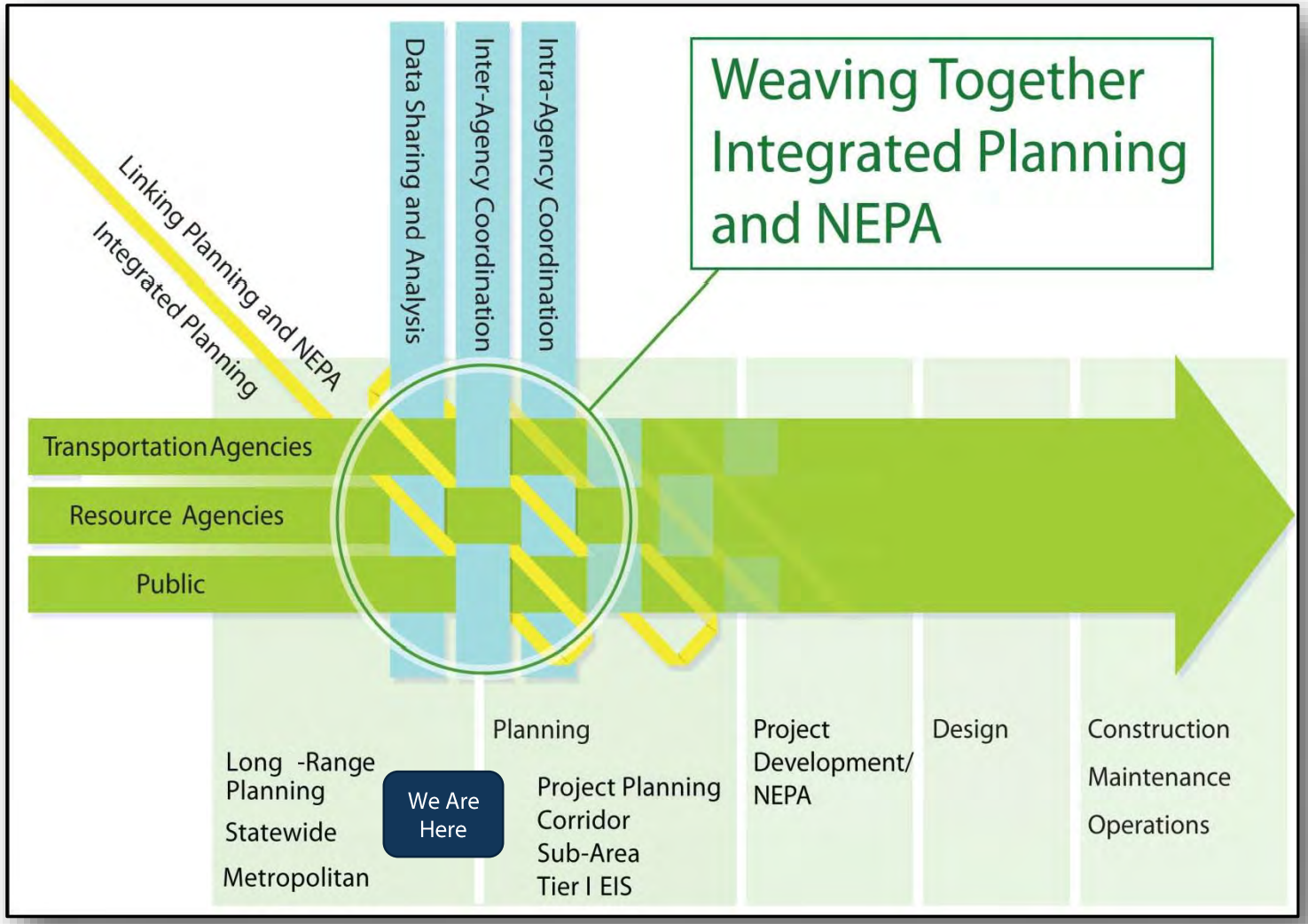
**Public Involvement**

# Purpose of Study

- Identify the project need
- Analyze traffic
- Identify potential alternative corridors
- Identify & Evaluate environmental concerns
- Screen preliminary alternatives



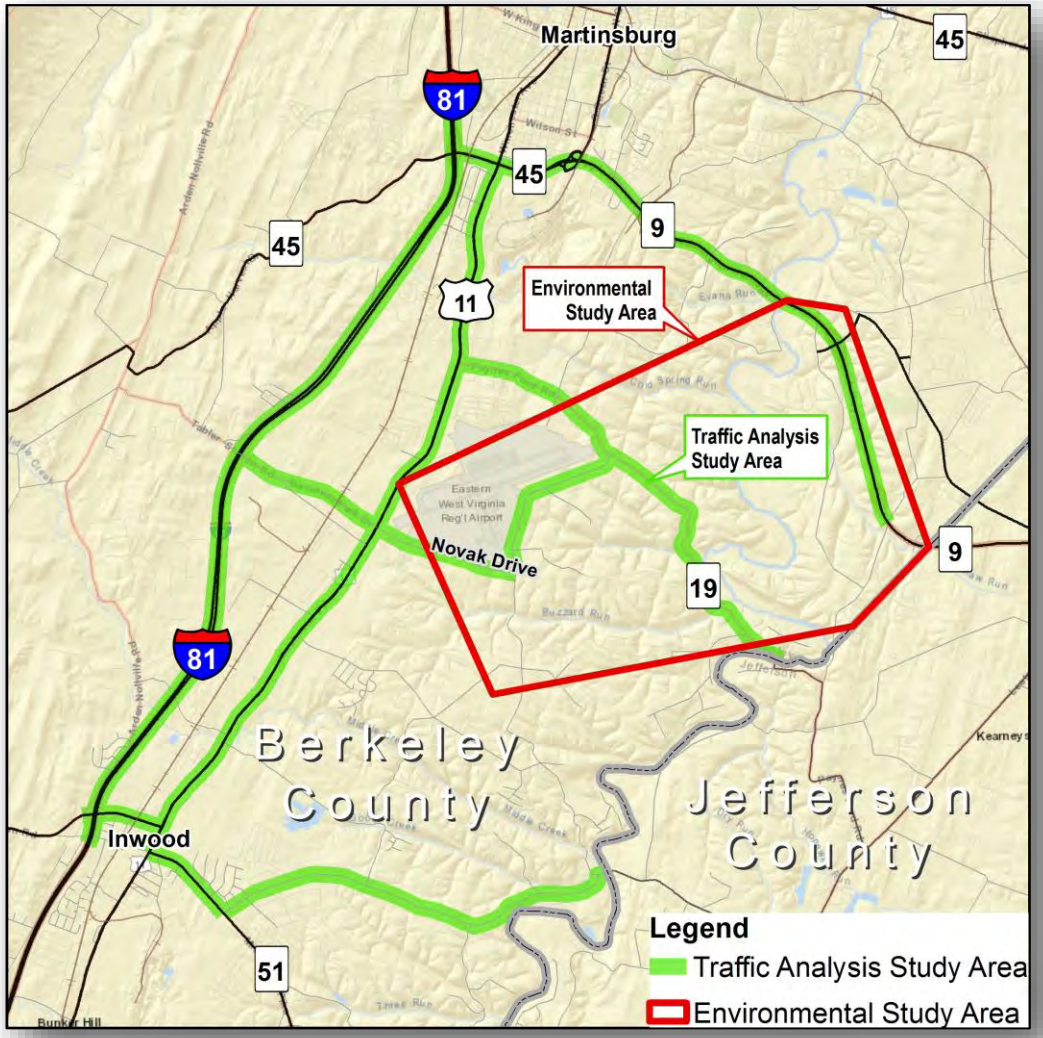
# Project Development Process




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# Study Area

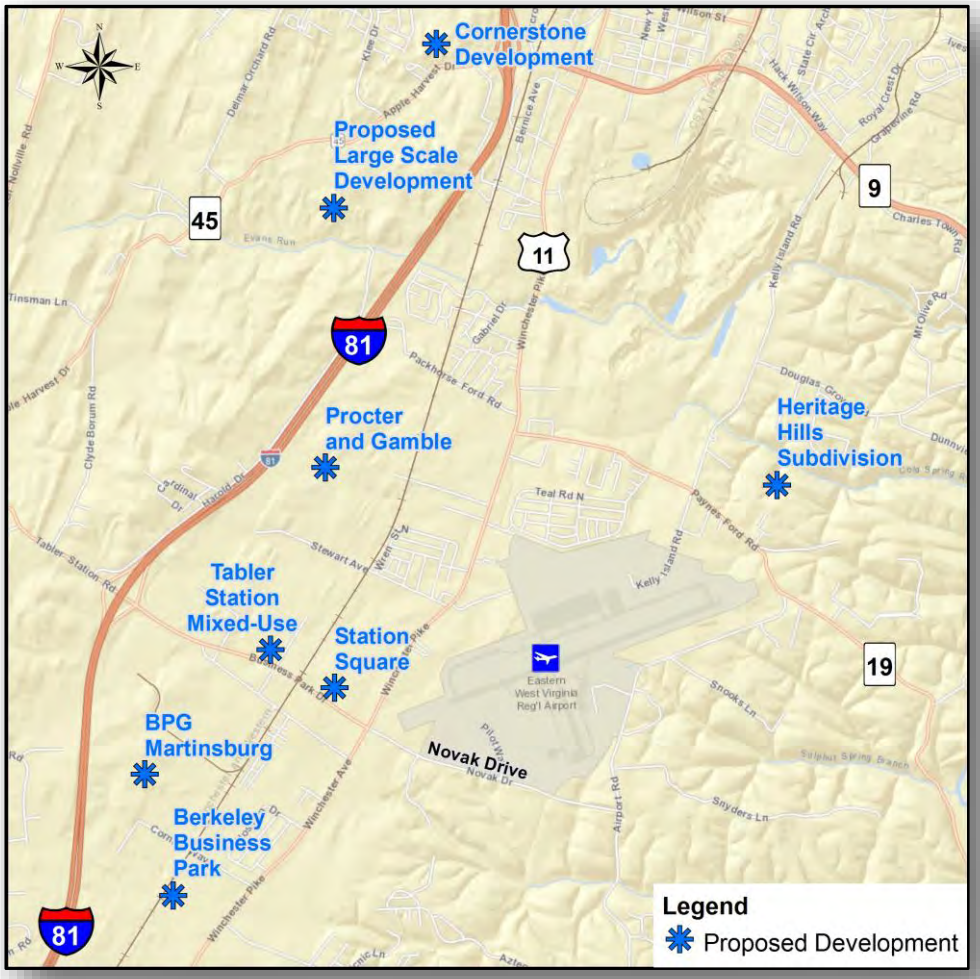
- Traffic Analysis Study Area
- Environmental Study Area




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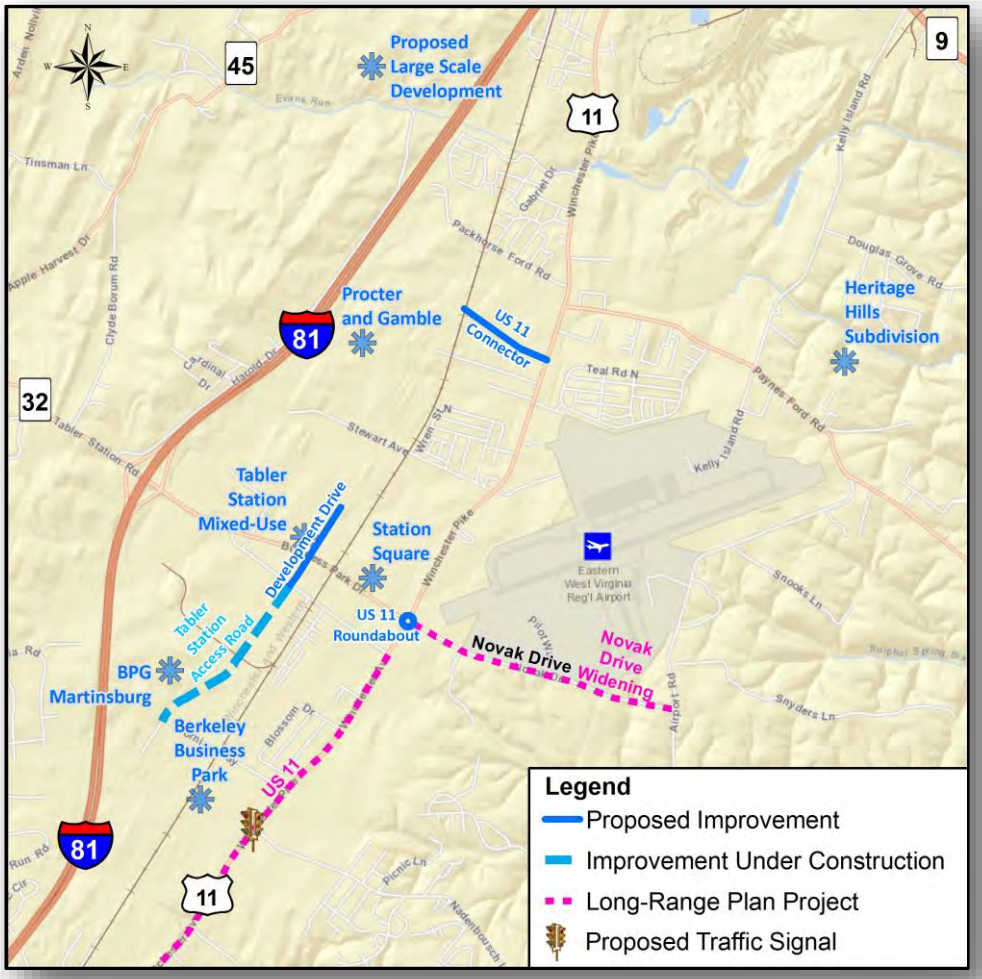
# Planned / Proposed Development

- Cornerstone Development
- Proposed Large Scale Development with CR 32 / WV 45 Connector Road
- Procter & Gamble
- Station Square
- Tabler Station (BTR) Mixed Use
- BPG Martinsburg
- Berkeley Business Park
- Heritage Hills Subdivision



# Planned / Proposed Improvements

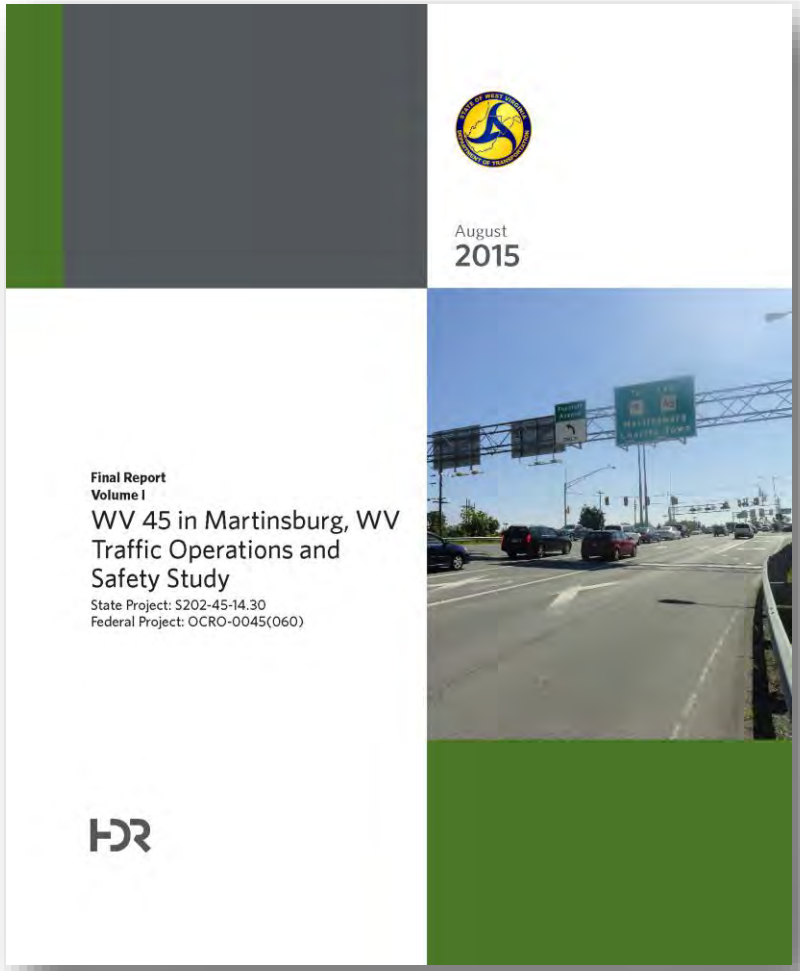
- US 11 Connector
- Development Drive
- US 11 Roundabout
- Tabler Station Access Road




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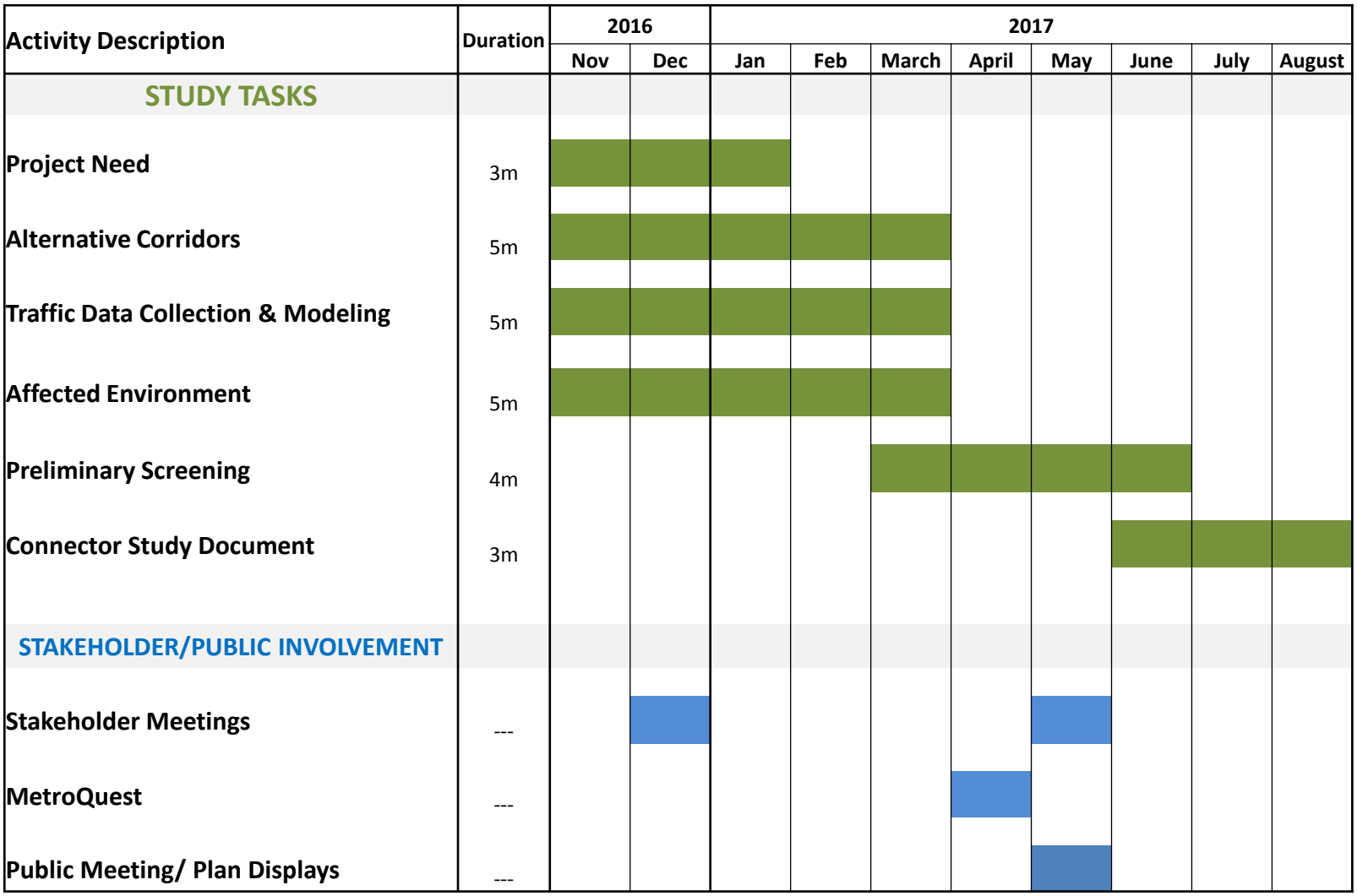
# Project History

- Combination of Planned/Proposed Developments and Results of WV 45 Corridor Study began thought process of is there a potential for an additional connection between WV 9 & I-81?
- Could WV 45 handle additional traffic
- Will the US 11 @ Business Park Dr /Novak Dr intersection be able to handle all the proposed developments?
- Somewhat natural connection potential between the WV 9 Short Rd interchange and the US 11/Novak Dr intersection




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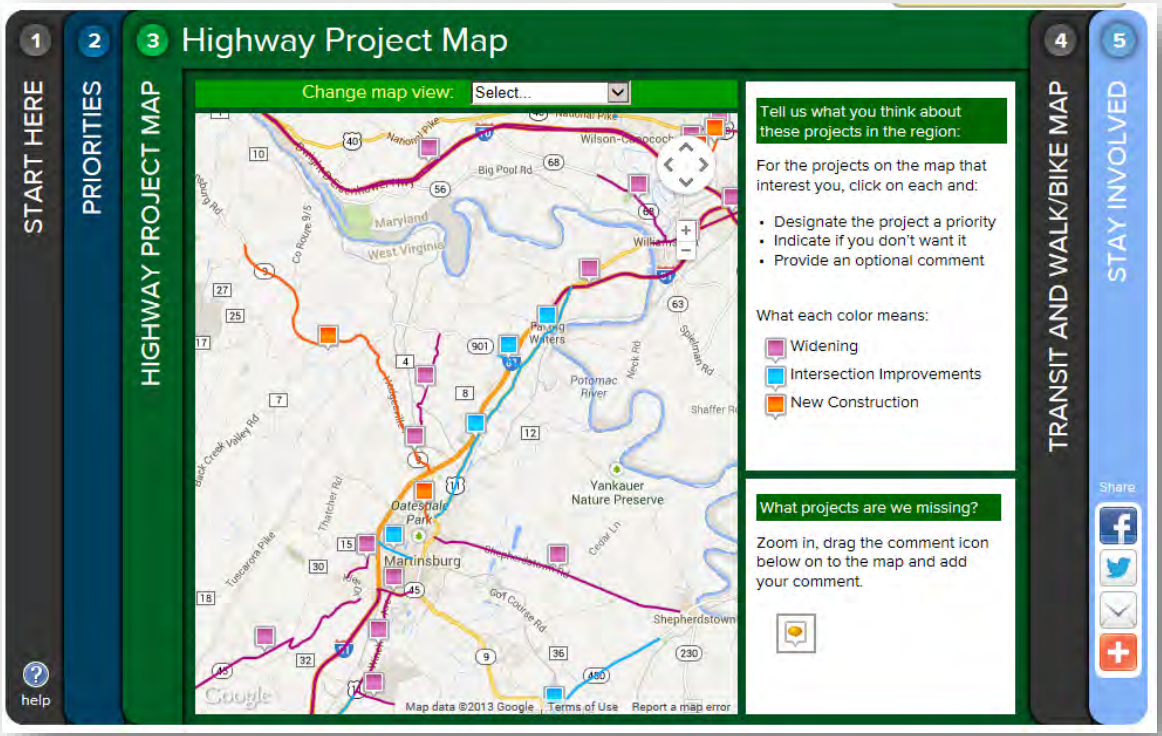
# Study Tasks and Schedule




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# Engage the Public

- Stakeholder Meetings
- MetroQuest Website
- Public Meeting



# Existing Traffic Conditions / Future Modeling

**Data Collection**

**Travel Demand Modeling**

**Traffic Analysis**

# Data Collection

## Data Collection

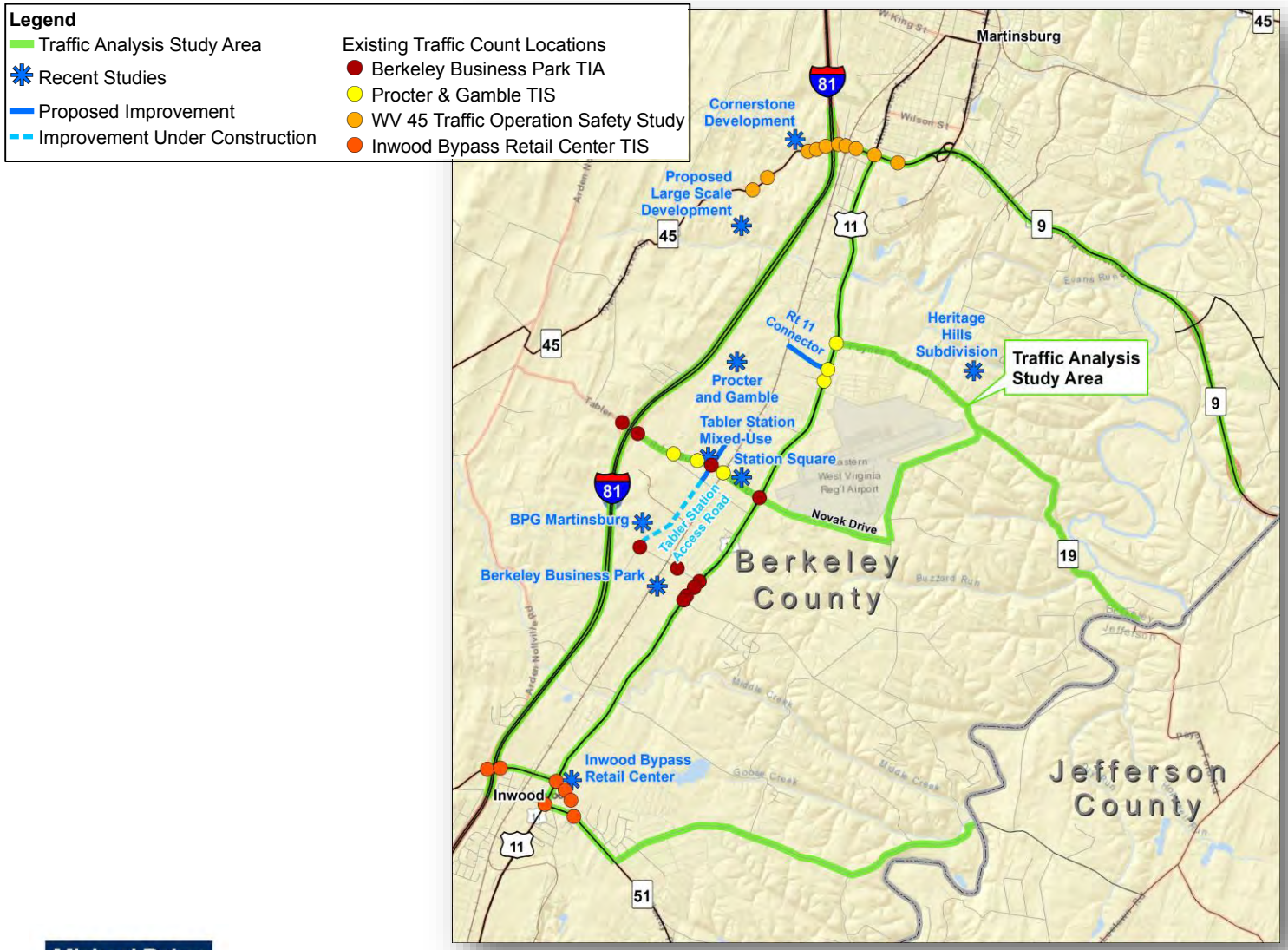
- Roadway geometry and lane configuration
- Traffic Counts (auto, truck)
- Speeds (observed and posted)
- WVDOH crash records and databases
- Origin-Destination information
- Traffic signal timing and coordination
- Socioeconomic forecasts

## Analysis Tools

- Travel Demand Model
- SYNCHRO / Highway Capacity Software
- SIMTRAFFIC

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# Available Study Traffic Counts




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# WVDOT Traffic Counts

**Available WVDOT 2011-2015 Traffic Counts:**

http://geocounts.com/traffic/wvdoh/?latlngzm=39.39441523726747,-77.99972991691902,13

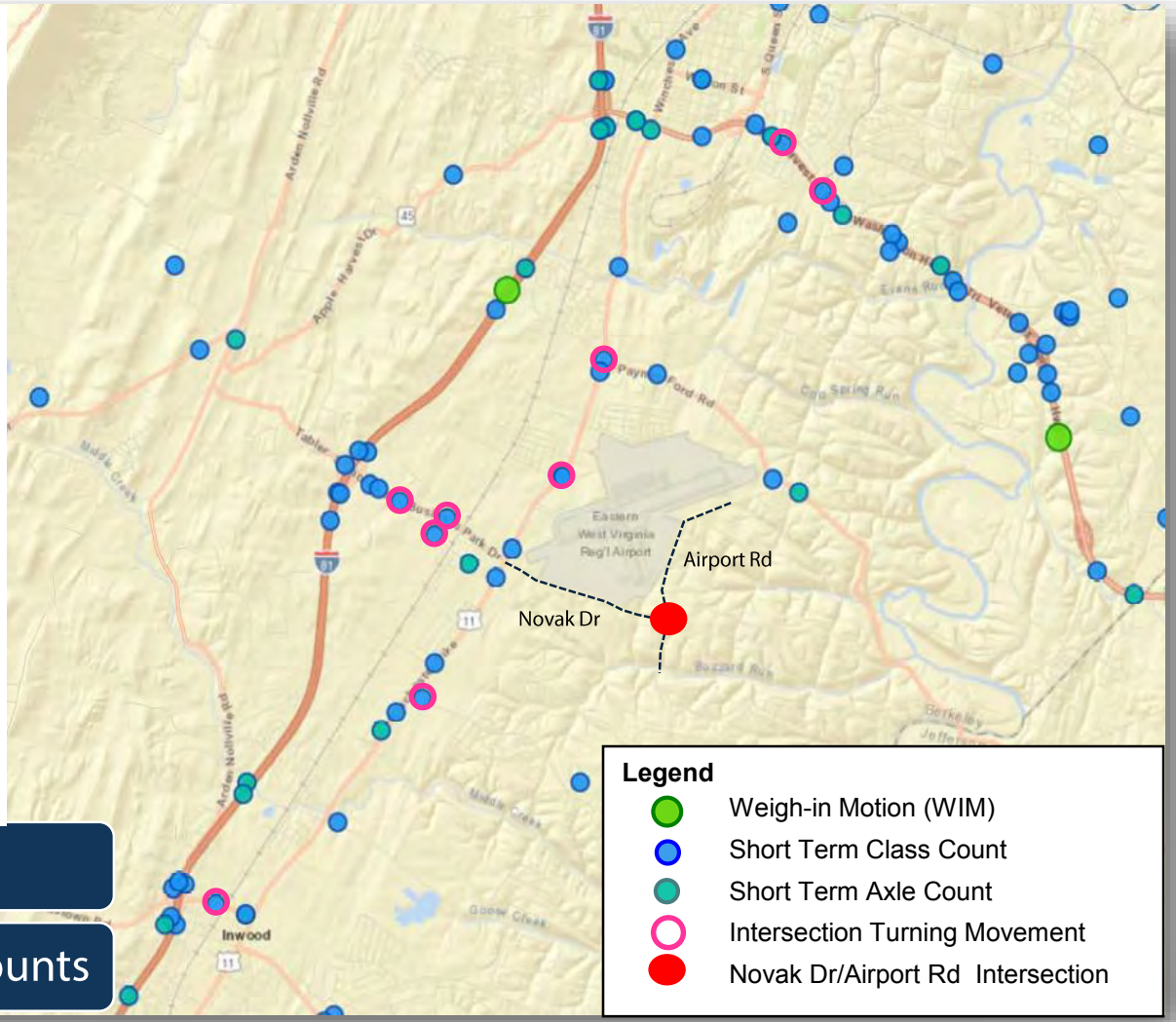
***Includes:***

- Weigh-in-Motion (WIM)
- Short Term Class Count
- Short Term Axle Count
- Intersection Turning Movements

***Additional information or collection may be needed for intersection turning movement counts including Novak/Airport***

Request Additional Counts

Conduct Peak Period Field Counts




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# Use of Technology Data Sources

## TomTom GPS (to be purchased in late December)

- Typical weekday/weekend peak travel speeds and traffic queuing
- Uses: current congestion / microsimulation calibration

## StreetLight GPS and Cellular

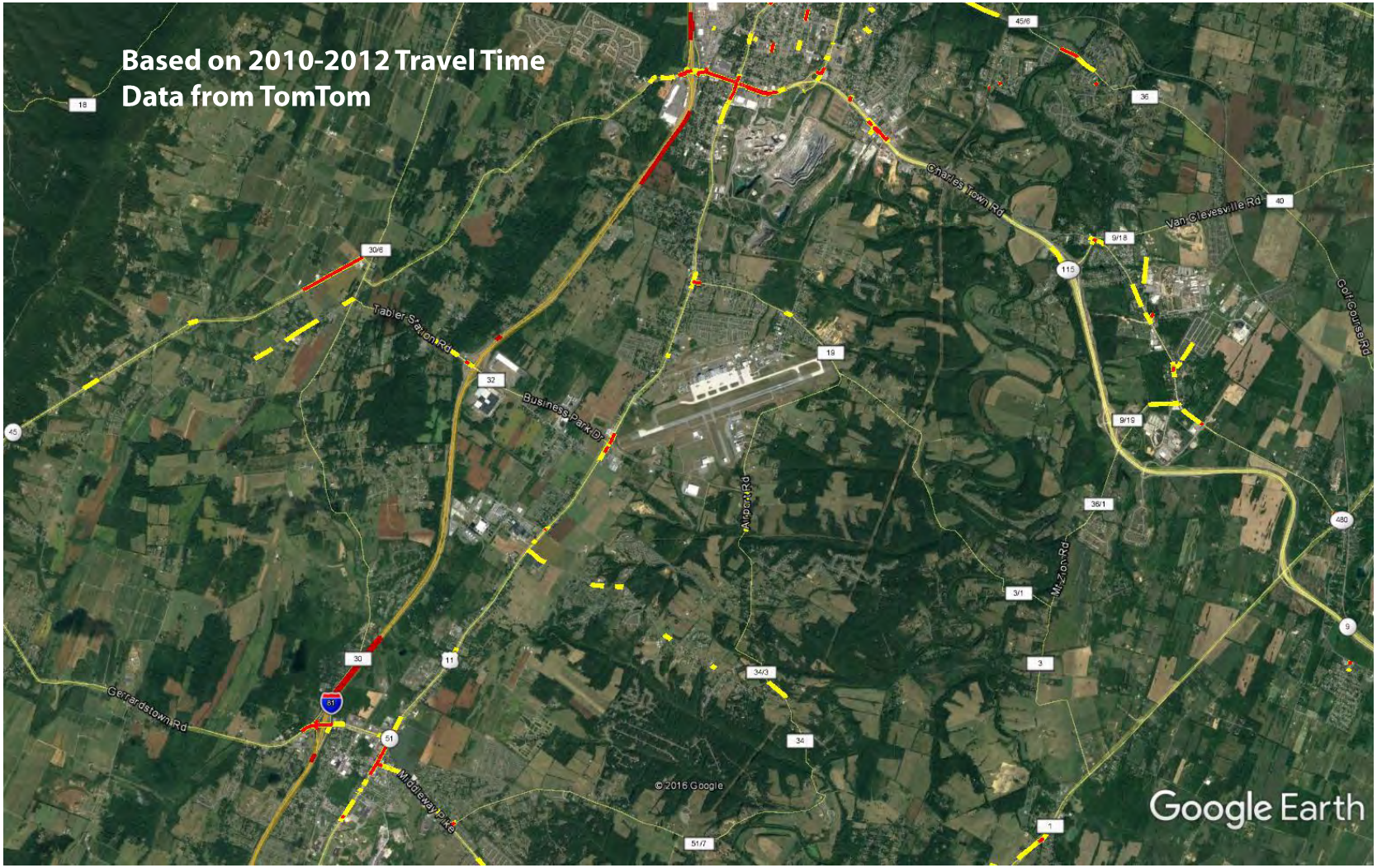
- Origin – Destination information
- Uses: Identify who is using roadways .. Insights on potential diversions

## CENSUS LEHD employment record and synthesis

- Commuting characteristics for the study area
- Uses: Where do people work who live in study area? Where do people live who work in study area?

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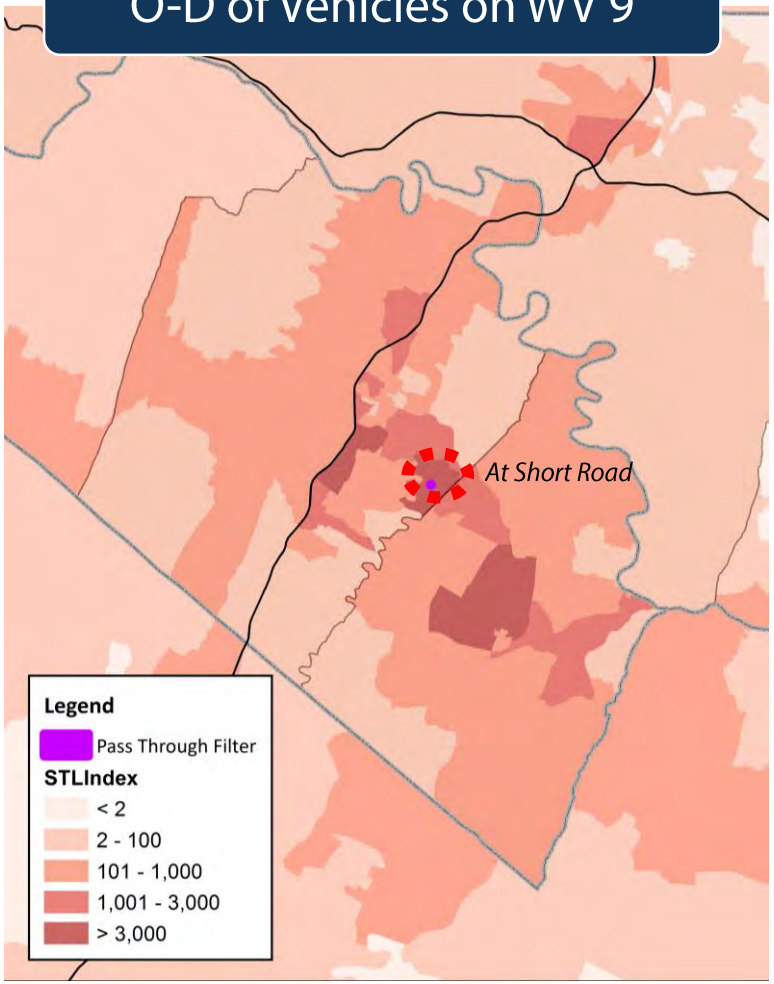
# Sample of GPS Travel Time Data



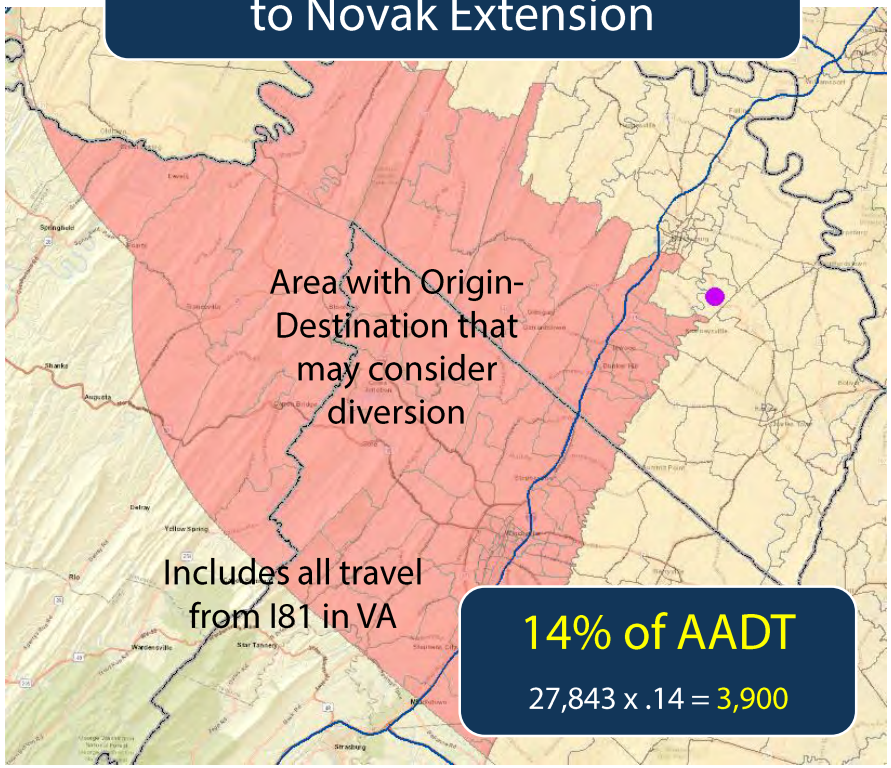

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# Sample of StreetLight Data

## O-D of Vehicles on WV 9

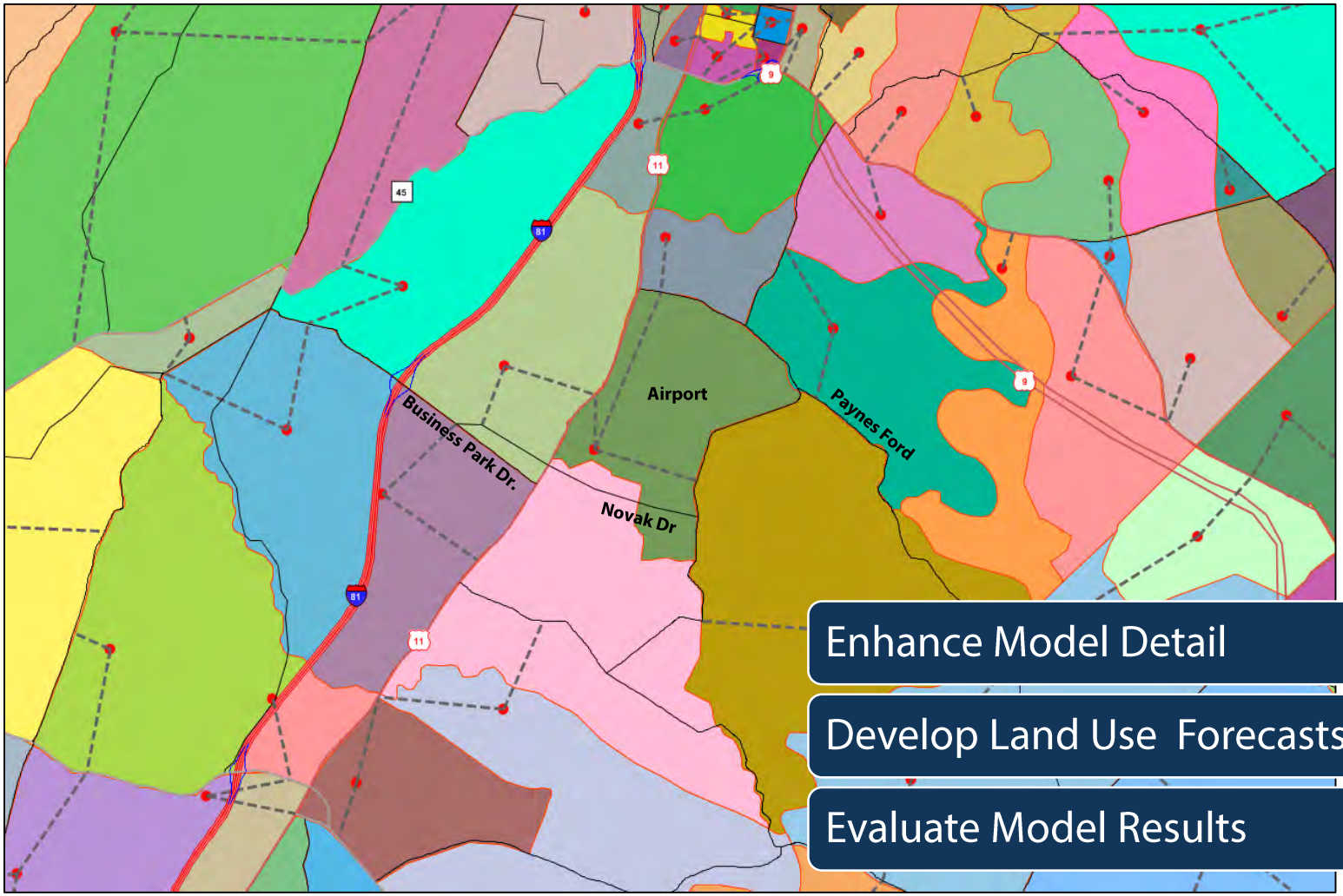



## Potential Diversion to Novak Extension




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# Travel Demand Modeling

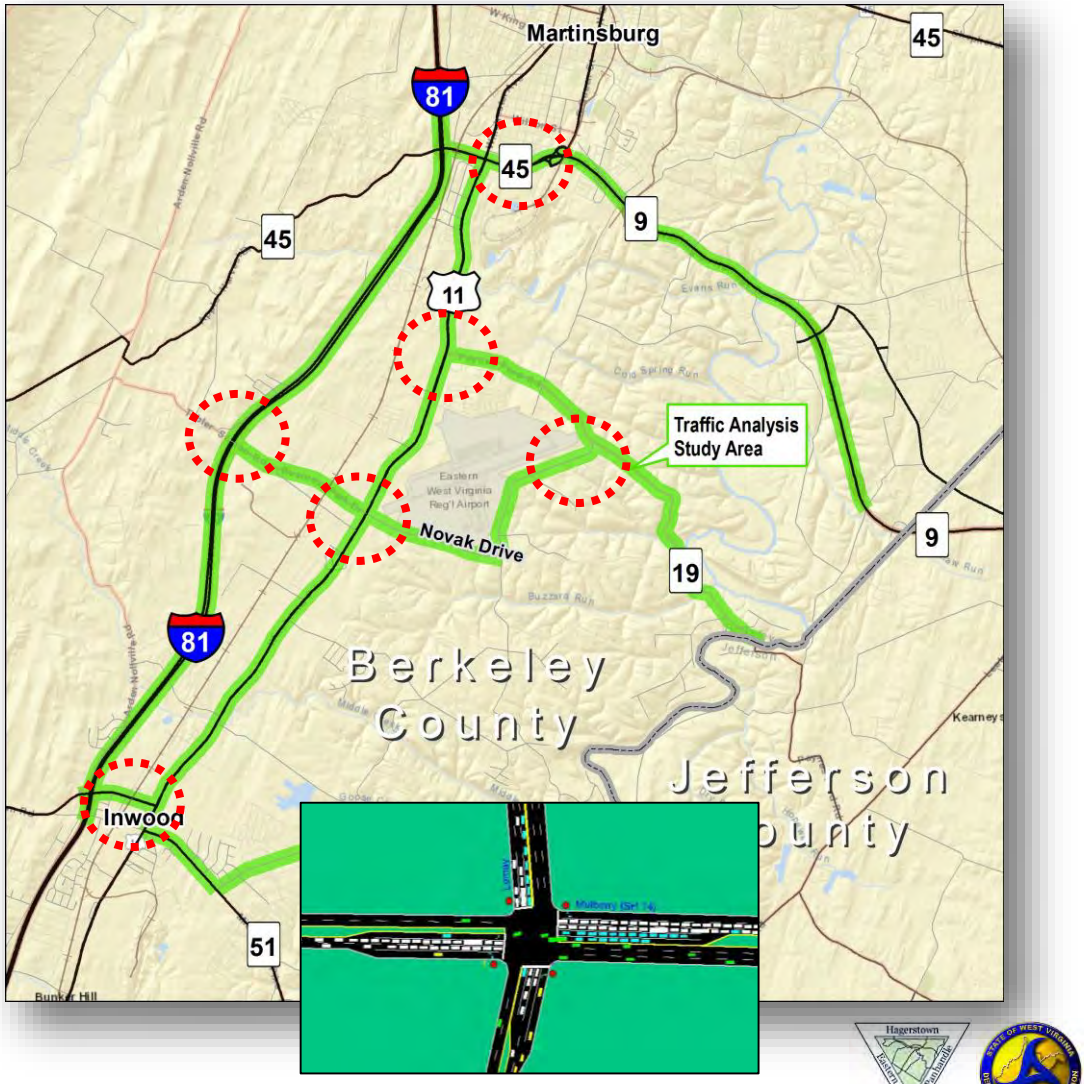



- Enhance Model Detail
- Develop Land Use Forecasts
- Evaluate Model Results

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# Traffic Analysis & Microsimulation

- **Identify focus areas**
- Collect additional data (eg. signal timings)
- Calibrate model to existing conditions
- Integrate forecasts
- Analyze future traffic conditions
- Identify potential improvements



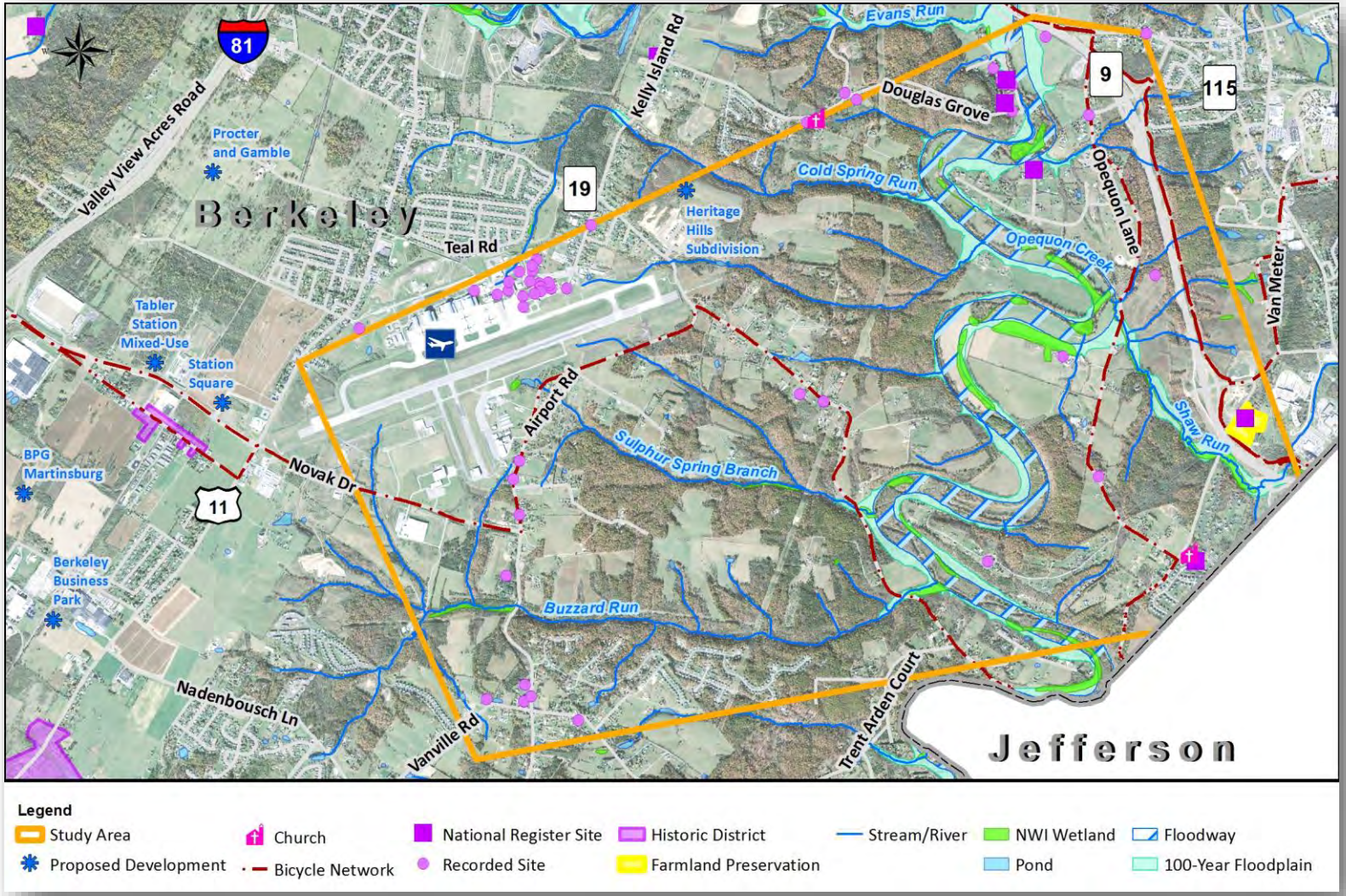

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# Study Area Issues

**Environmental Constraints**

**Other**

# Environmental Constraints




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# Project Goals & Objectives

**Examples**

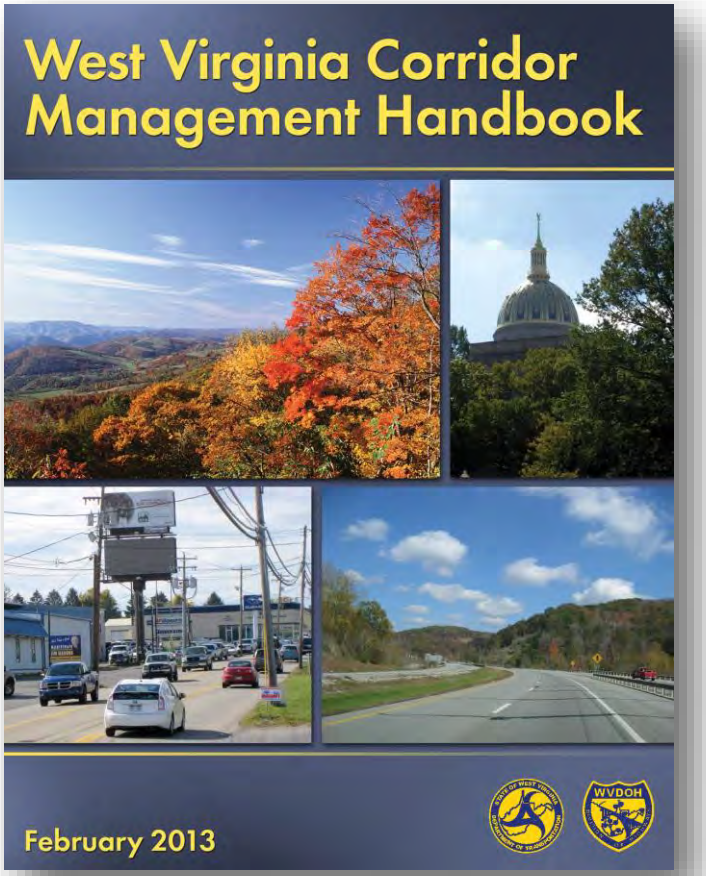
# Project Goals & Objectives

## Statement of Goals

*"Goals should address what the existing or expected concerns are and how the study is expected to address these concerns"*

## Sample Goals

- Ensure that future land use decisions across multiple jurisdictions are compatible with the likely future capacity of the roadway
- Address congestion problems during the tourist seasons
- Support continued development while managing impacts of additional truck traffic
- Address safety "hot spots"
- Minimize environmental impacts and support resource preservation
- Improve intermodal connections




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# Example Goals & Objectives

## US 219 Goals & Objectives

**Safety Goal:** Improve (the level of) safety for motorists traveling on US 219.

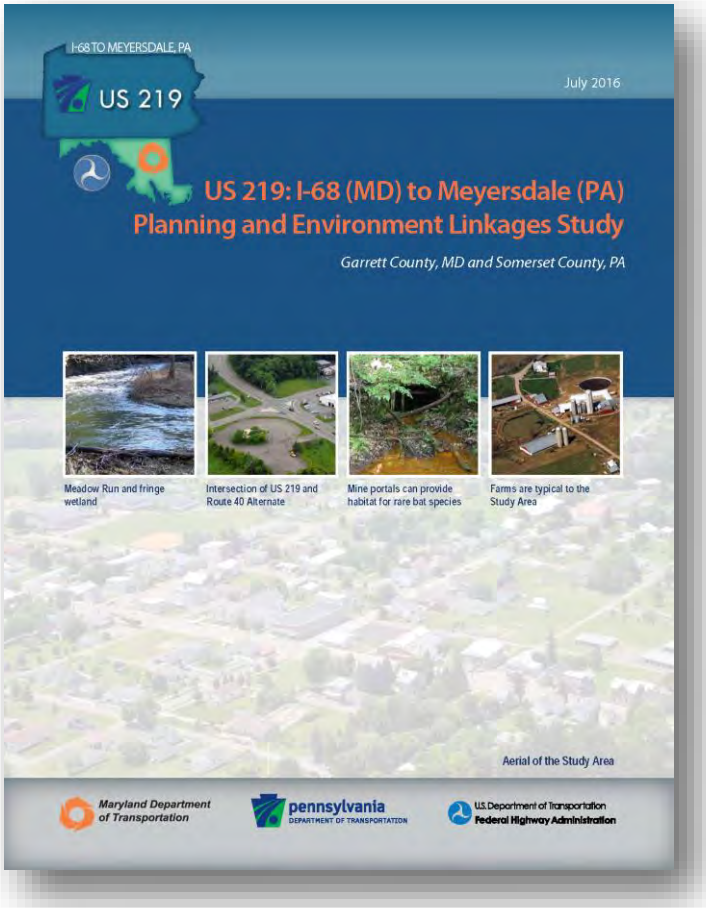
Objectives include:

- Reduce traffic volumes on existing US 219.
- Separate heavy truck traffic from local automobile traffic.

**Mobility Goal:** Improve mobility in the US 219 corridor.

Objectives include:

- Improve the system linkage between I-68 and the Meyersdale Bypass.
- Provide a facility consistent with adjacent four-lane limited access facilities to the north and south of the study area corridor.




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# Identify Potential Alternative Corridors

# Next Steps

**Develop Project Need Statement**

**Collect Traffic Data & Conduct Analysis**

**Develop Preliminary Alternative Corridors**

Martinsburg

Berkeley County

Jefferson County

Cornerstone Development

Proposed Large Scale Development

Procter and Gamble

Heritage Hills Subdivision

Tabler Station Mixed-Use

Station Square

BPG Martinsburg

Berkeley Business Park

Inwood Bypass Retail Center

Inwood

Environmental Study Area

Traffic Analysis Study Area

Poor House
Nollville
Boyd Orchard
Foxcroft Avenue
S Raleigh Street "a"
Rosedale Cemetery
Golf Course Road
Blairton Road
Wilson Street
Old GR 9
Adam Keller
Mt. Olive
Divine Drive
Chapel
Pitzers
Tinsman Lane
Green House
Clyde Borun
Valley View Acres Road
Paynes Fork
Douglas Grove
Van Clevesville
Needy Road
Union Corners
Tabler Station Road
Business Park Drive
Novak Drive
Snooks Drive
Snyders Lane
Airport Road
Opequon Lane
Van Meter
Vanville Road
Stoblridge Road
Nadenbousch
Trent Arden Court
Fish Hatchery Road
Cathaven Road
Lamplight Road
Sulphur Springs
First Street
Baker Quarry
Three Runs

45 81 11 9 19 51

## Legend

- Traffic Analysis Study Area
- Environmental Study Area
- Planned/Proposed Development
- Planned/Proposed Improvement
- Improvement Under Construction

**Novak Drive Connector Study**

**Study Area**

0 850 1,700 3,400 Feet

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**Legend**

- Study Area
- Possible Connector Termini
- Planned/Proposed Development
- Proposed Improvement
- Improvement Under Construction
- Fire Department
- Library
- Place of Worship
- School
- Existing Bicycle Network: Off Road Trail / Path; On Road Bike Route
- Proposed Bicycle Network: On Road (Share the Road); Further study (proposed)
- National Register Site
- Recorded Historic Site
- Historic District
- Protected Farmlands
- Stream
- NWI Wetland
- Freshwater Pond
- Riverine
- Floodway
- 100-year Floodplain

**Novak Drive Connector Study**

## Study Area Constraints

0 300 600 Feet

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# Stakeholder Workshop Meeting Summary
# June 27, 2017

# Novak Drive Connector Study

## Meeting Summary

## Stakeholder Meeting No. 2 | June 27, 2017 | 10:00 AM - Noon

Shepherd University-Martinsburg Center, Room 116, 261 Aikens Center, Martinsburg WV

### Attendees

See attached sign-in sheet

### Meeting Materials

- Agenda
- Slide Presentation
- Study Area Exhibit
- Preliminary Alternative Corridors Exhibit

### Meeting Purpose

To update the stakeholders on the project status, study goals and objectives, results of the initial safety and traffic analysis and solicit input on the preliminary alternative corridors. The following is a summary of the meeting presentation along with additional group discussion that occurred during each segment of the presentation.

### I. Welcome / Introductions

A. HEPMPO – Matt Mullenax, Steve Thomas
B. WVDOT – Dave Cramer, Don Meadows, Ken Clohan
C. Michael Baker International – Max Heckman, Dan Szekeres, Lu Ann May

### II. Project Status

The study is a partnership of HEPMPO and WVDOT under contract with Michael Baker International as the first step in evaluating the need for a new access road between WV 9 and Novak Drive. Results of the WV 45 Traffic and Safety Study identified the need for this study to assess whether an additional connection between WV 9 & I-81 could ease traffic on WV 45 and provide additional access to I-81 from the east.

### III. Goals and Objectives

A. Based on input received at the first Stakeholder Meeting, the following study goals and objectives were identified. These goals and objectives will be carried into each of the next phases of the study.
   - Mobility Goal – to improve access and alleviate congestion
   - Safety Goal – to improve safety
   - Economic Development Goal – to support planned development and promote future growth
   - Environmental Goal - to protect and preserve the environment

### IV. Public Involvement

A. Web-based Survey
   - A web-based survey, hosted by MetroQuest, went on-line June 12th and will run until July 12th
     - To date there have been over 300 visitors to the site

- Over 100 people want to stay involved in the study and provided their email addresses

- Corridor Needs – Responses to Date
  - The top three highest ranked corridor needs are: traffic congestion, transportation safety and preserve rural character, with preserve rural character ranked number one most often
- Rate Alternatives – Responses to Date
  - Alternative 2 is the highest ranked with the No-Build Alternative closely behind
- Map Comments – Responses to Date
  - There have been over 500 map comments, including identifying farmlands; wildlife; safety issues such as sight distance, sinkholes, and concern over potential increase in truck traffic; traffic congestion especially along WV 51 in Inwood; bike/ped interest to connect to the existing WV 9 trail

B. Public Workshop

- Open House format public workshop, June 27, 2017 from 6:00-8:00 p.m. to provide the public an opportunity to ask questions and provide their comments
- Comment form will be available on the WVDOT public comment website after the workshop

## V. Existing and Future Traffic Conditions

A. Data Collection

- Available traffic count data from WVDOT, Traffic Impact Studies (TIS) from planned developments and new traffic counts that were collected at Novak Drive / Airport Road and WV 9 / Short Road were used for the analysis
- GPS data from the Long-Range Plan were used to show travel times and congestion

B. Commuting Patterns

- Census data was used to identify those living and working in the area, with less than 5% of individuals both living and working in the Study Area
- StreetLight data identified origins and destinations and was used as a benchmark for the analysis. StreetLight is a tool that uses aggregate cell phone GPS data to track travel patterns.

C. Existing and Future Traffic Analysis

- Highway capacity software (Synchro) was used to look at each intersection and measure level of service (LOS) for existing and future conditions
- Existing LOS analysis identified five locations with unacceptable LOS, along WV 45 and US 11
- The region's Travel Demand Model was adapted for the project area and was used to develop estimated future traffic growth. Existing TIS were incorporated into the model
- Projected traffic volume growth in 2040 is highest along I-81, US 11 and Business Park Drive

- Projected total traffic volume in both directions daily were calculated for 2017 and 2040 for each of the three alternative corridors. Alternative 2 has the highest traffic volume among the alternatives.
- Projected diversions as a result of the new connector road were identified. There was a significant diversion of traffic from WV 9 west of Short Road, but the diversion from WV 45 was not as large as we expected in the vicinity of US 11 and I-81. Currently Kelly Island Road is being used to avoid the congestion on WV 45. The model shows the new connector road would help that diversion but would not improve the congestion at WV 45 and US 11. The study team will further examine this area and refine the model results if warranted.
- Level of Service (LOS) for the future build scenario identified that WV 45 is still a problem and Business Park Drive will experience unacceptable LOS. The study team will need to look at ways to improve those locations that are projected to be unacceptable LOS.

*Additional discussion*

- *Does the existing LOS include planned improvements, such as the planned traffic signal at Nadenbousch Lane?* No it currently does not but those planned improvements can be added to the model.
- *What lane configuration did the model assume when calculating projected traffic volumes?* The model assumed a four-lane configuration so not to limit the projected volumes.
- *Do the projected volumes support a two-lane or four-lane roadway?* Typically, a four-lane roadway is recommended for traffic volumes greater than 15,000. The projected volume for Alternative 2 is near 13,000 which could support an initial two-lane roadway with future upgrade to four-lane.
- *If the roadway is designed as a future four-lane roadway, would right-of-way be purchased for the full build out?* Novak Drive was designed as a four-lane divided roadway but initially built as a two-lane roadway but with all of the right-of-way acquired. Preservation of the corridor is important but don't want to buy more than is needed.
- Additional analysis is needed to identify the impact on Business Park Drive and Novak Drive and if they can handle the additional projected traffic. Need to determine what additional improvements may be needed.
- *Does the future LOS include the WV 45 Traffic and Safety Study recommended improvements?* No it does not right now but they can be added to the model.
- *How is future land use identified for the projected model?* It based on the regional travel demand model and updated based on information from completed Traffic Impact Studies and the Long-Range Transportation Plan.
- *The Berkeley County Planning Department can include the preliminary alternative corridors to their information so developers are aware of the possibility of a new connector road.*

- *How is future growth added to the projected model?* We use a top down approach to add development so growth isn't over extended. All of the completed TIS studies were included.

## VI. Crash and Safety Analysis

A. Crash Data

- 3-year crash data (2014-2016) from WVDOH was used for analysis
- Average of 158 crashes per year, 2 fatalities and 22% involved injury within the study area

B. Concentration of Crashes

- Highest concentration of crashes is along WV 45, Novak Drive/US 11 and in Inwood

C. Crash Rates

- Crash rates were compared to the statewide average.
- Airport Road had a higher than average rate due to poor sight distances
- Intersection crash rates showed that US 11 at WV 45 had the highest rates

*Additional discussion*

- *Is the severity of crashes included in the crash data?* Yes, the crash types and severity level will be included in the final document.
- *Do the crash rates include I-81?* Yes, crash data along I-81 between WV 45 and WV 51 are included. Some felt it was surprising that there aren't more fatalities along I-81.

## VII. Preliminary Alternative Corridors

A. Preliminary Corridors

- 500-foot wide high-level corridors were identified between Novak Drive and the existing WV 9 interchanges. Corridors were designed for 60 mph and avoided environmental impacts to the extent possible.
- Alternative 1 is 5.0 mile corridor from Novak Drive to the WV 9 Opequon Lane / Baker Heights interchange
- Alternative 2 is 3.4 mile corridor from Novak Drive to the WV 9 Short Road interchange
- Alternative 3 is 5.4 mile corridor from Novak Drive to the WV 9 Kearneysville / Leetown interchange

## VIII. Study Area Issues

A. Environmental Inventory

- Collected available environmental resource information for the study area

B. Preliminary Environmental Screening

- Each of the alternatives were screened against key environmental issues
- Alternative 2 had the smallest overall number of negative impacts and Alternative 1 had the largest number of negative impacts

*Additional discussion*

- *Does the farmland acreage look at bisecting existing farms?* No, it is the total acreage of parcels classified as agricultural.
- *Consider adding the number of parcels impacted by each of the alternatives which is important when considering right of access, especially for farmlands.*
- *Consider evaluating the number of map markers, identified by the public on the web-based survey, within each alternative corridor.*

## IX. Alternative Corridor Discussion

- Alternative 1 – could protect the airport and allow runway expansion by limiting development around the airport. The C5 requires a 10,000 foot runway to take off fully loaded.
    - The airport recommended adjusting the location of alternative 1 to the southeast, closer to the power line, and realigning Airport Road to allow more room for future runway expansion.
    - Airport is in the process of developing a Master Plan which should be completed by the end of the year. They are also working on a Strategic Plan. Michael Baker would like to get a copy of the plan so planned improvements could be included in the document.
    - Airport has plans for an Air Cargo facility that requires access to Novak Drive. Michael Baker would like a copy of those plans.
- Alternative 2 – could bisect large farms which would require access

## X. Next Steps

A. Web-based Survey Results

B. Public Workshop Comments

C. Refine Corridor Alternatives

D. Evaluation Matrix

E. Connector Study Document

# Novak Drive Connector Study
## State Stakeholder Meeting No. 2

Michael Baker INTERNATIONAL

***June 27, 2017***

| NAME (PLEASE PRINT) | ADDRESS | Email |
|---|---|---|
| DAVID CRAMER | WVDOT - CHARLESTON, WV | DAVID.E.CRAMER@WV.GOV |
| Steve Thomas | HEPMPO | sthomas@hepmpo.net |
| Andy Blake | Ranson | ablake@ransonwv.org |
| Don Meadows | WVDOT - Charleston, WV | Donald.R.Meadows@wv.gov |
| Ken Clohan | WVDOT D5 Traffic | Kenneth.I.clohan@wv.gov. |
| SANDY HAMILTON | BCDA | shamilton@developmentauthority.com |
| MICHAEL COVELL | CITY OF MARTINSBURG | mcovell@cityofmartinsburg. |
| Douglas Long | Winchester & Western RR Co | DLong@winchesterwesternRR.com |
| Wade Johnson | 5550 Winchester Ave, Martinsburg 25405 | Wjohnson@shockeycompanies.com |
| Neil Doran | 170 Aviation Way, Martinsburg | ewvraa@frontier.com |
| Heather Williams | W. Stephen Street, Martinsburg | hwilliams@berkeleywv.org |
| John Reisenweber | 1948 Wiltshire Rd Kearneysville | john@jcda.net |
| | | |
| | | |
| | | |

# Novak Drive Connector Study
## Stakeholder Meeting No. 2
## June 27, 2017, 10 AM
## Agenda

| | | |
|---|---|---|
| 1. | Welcome / Introductions | Matt Mullenax, HEPMPO / All |
| 2. | Current Project Status | Max Heckman, Michael Baker |
| 3. | Goals and Objectives | Max Heckman, Michael Baker |
| 4. | Public Involvement | Dan Szekeres, Michael Baker |
| 5. | Existing and Future Traffic Conditions | Dan Szekeres, Michael Baker |
| 6. | Crash and Safety Analysis | Dan Szekeres, Michael Baker |
| 7. | Alternative Corridors | Max Heckman, Michael Baker |
| 8. | Study Area Issues | Max Heckman, Michael Baker |
| 9. | Alternative Corridors Discussion | All (map exercise) |
| 10. | Next Steps | Max Heckman, Michael Baker |



# Novak Drive Connector Study

## STAKEHOLDER WORKSHOP

June 27, 2017

Michael Baker INTERNATIONAL

# Agenda

**Current Project Status**

**Goals and Objectives**

**Public Involvement**

**Existing and Future Traffic Conditions**

**Crash and Safety Analysis**

**Preliminary Alternative Corridors**

**Study Area Issues**

**Alternative Corridor Discussion**

**Next Steps**

# Goals and Objectives

**Mobility**
**Safety**
**Economic Development**
**Environmental**

# Goals and Objectives

## Mobility Goal:

Improve access between WV 9 and the airport area / I-81 while alleviating congestion on area roadways.

**Objectives include:**

- Reduce traffic on WV 45 by providing an alternate access to I-81
- Provide additional access to the Tabler Station area
- Improve multimodal connectivity by facilitating improved transit service, bicycle/ pedestrian accommodations and access to the Eastern West Virginia Regional Airport

# Goals and Objectives

## Safety Goal:

Improve the level of safety for motorists in the study area.

**Objectives include:**

- Reduce truck traffic along WV 45 and other major arterials by providing an alternate route
- Divert traffic away from or make improvements to high crash locations
- Improve bicycle / pedestrian safety by providing appropriate accommodations

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# Goals and Objectives

## Economic Development Goal:

Support planned development and promote future growth in the area.

**Objectives include:**

- Provide additional access to the Tabler Station area
- Promote growth in downtown Martinsburg through congestion relief on WV 45 and highway signage for downtown Martinsburg
- Promote freight growth by providing improved access to I-81

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# Goals and Objectives

## Environmental Goal:

Protect and preserve the environment in the study area.

**Objectives include:**

- Minimize impacts to the Opequon Creek and other environmental and cultural resources
- Preserve the rural character of the area by appropriately controlling access
- Minimize noise impacts by avoiding sensitive locations
- Improve air quality by reducing traffic congestion

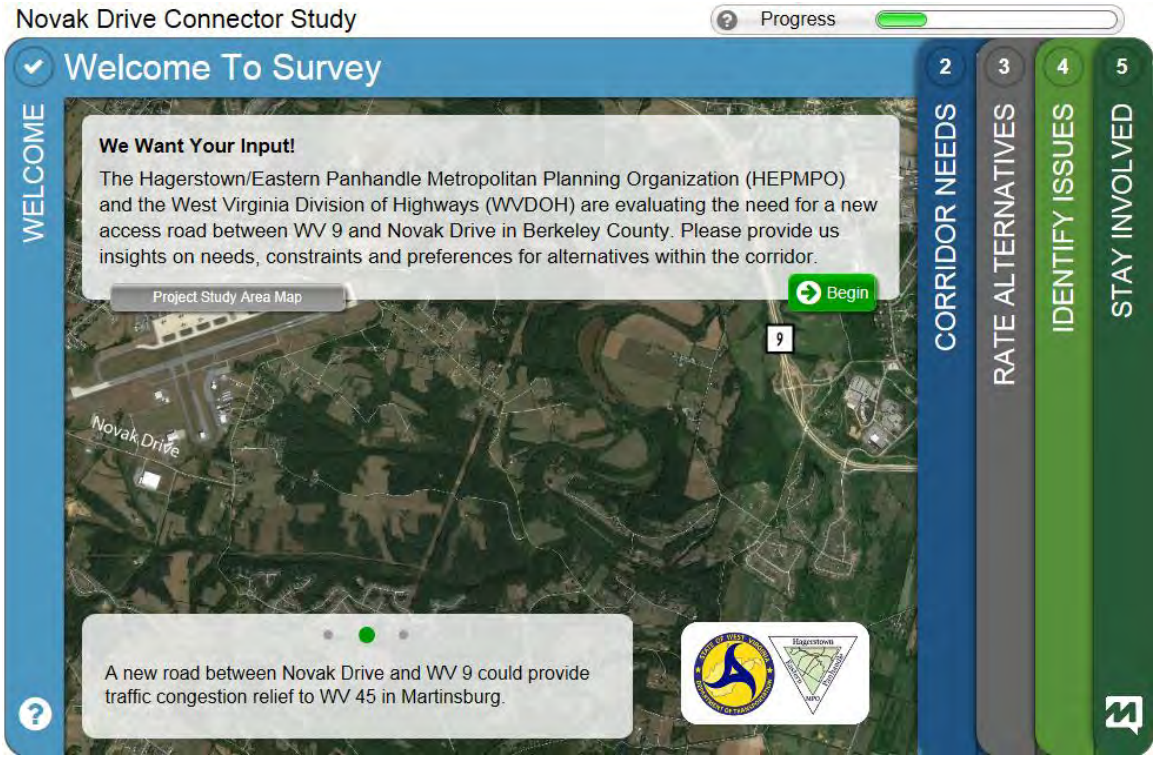
# Public Involvement

**Web-Based Survey**

**Public Workshop**

# Web-Based Survey

- Site active from June 12 – July 12
- ***novak.metroquest.com/***
- Over 272 visitors as of June 26 (about 190 providing significant content)

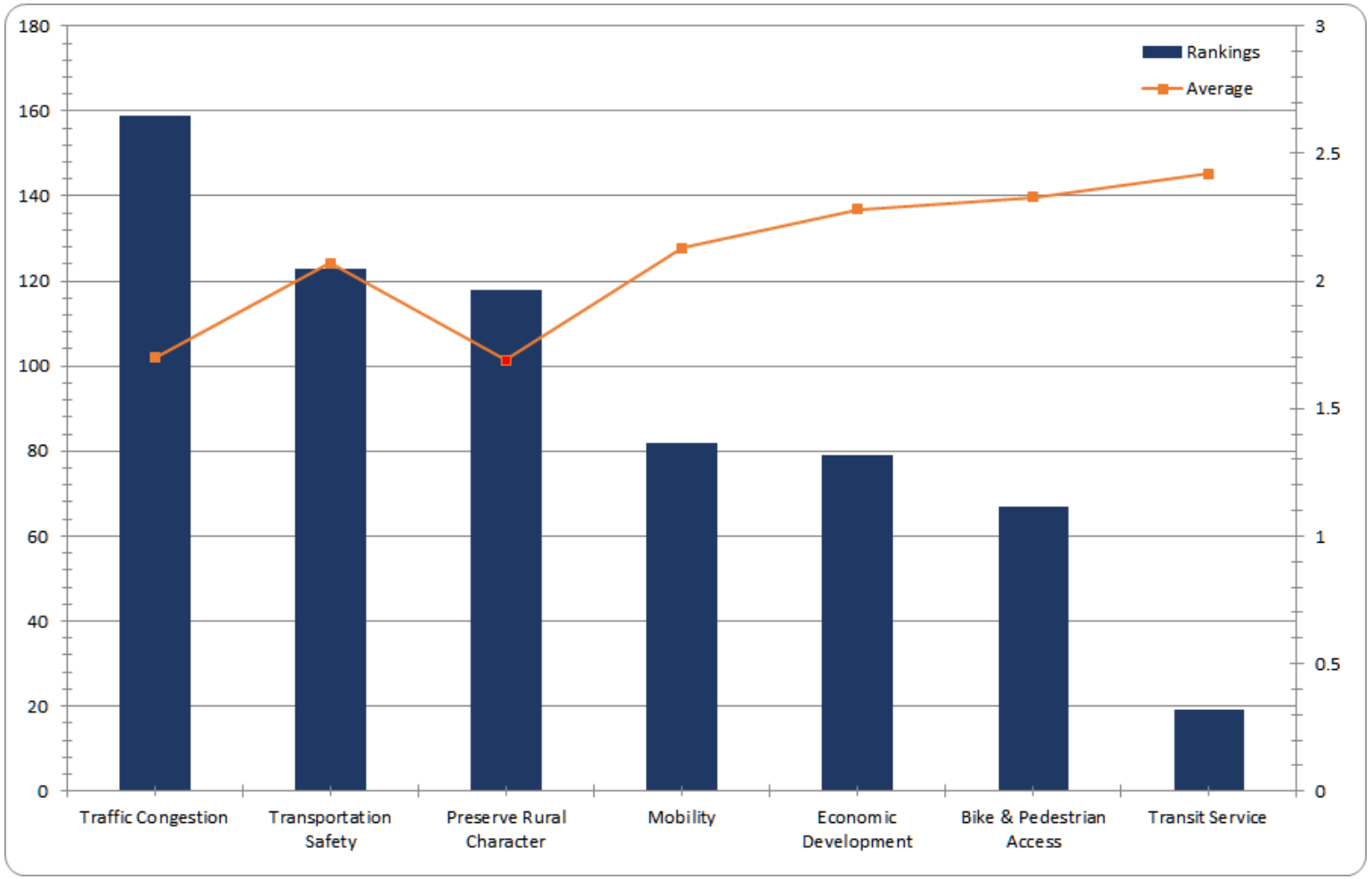



| Date: | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Participants: | 8 | 27 | 4 | 28 | 5 | 3 | 5 | 2 | 5 | 55 | 41 | 32 | 20 | 37 |



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# Responses to Date – Corridor Needs




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# Responses to Date – Rate Alternatives

*Please rate this scenario:*



*Connect at Kearneysville / Leetown Interchange*

## Alternative 3



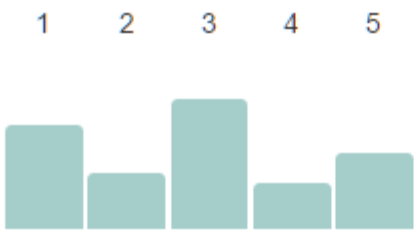

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 61 (37%) | 21 (13%) | 23 (14%) | 20 (12%) | 39 (24%) |

Times rated: 164

Average rating: 2.726

*Connect at Opequon Lane / Baker Heights Interchange*

## Alternative 1




| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 44 (25%) | 24 (14%) | 55 (32%) | 19 (11%) | 32 (18%) |

Times rated: 174

Average rating: 2.833

## No Build



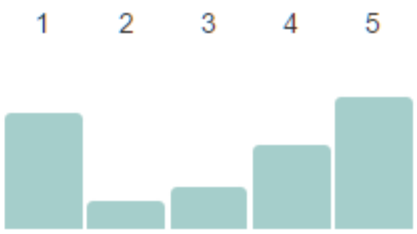

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 72 (39%) | 10 (5%) | 14 (8%) | 11 (6%) | 79 (42%) |

Times rated: 186

Average rating: 3.081

*Connect at Short Road Interchange*

## Alternative 2




| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 49 (29%) | 12 (7%) | 18 (11%) | 35 (21%) | 56 (33%) |

Times rated: 170

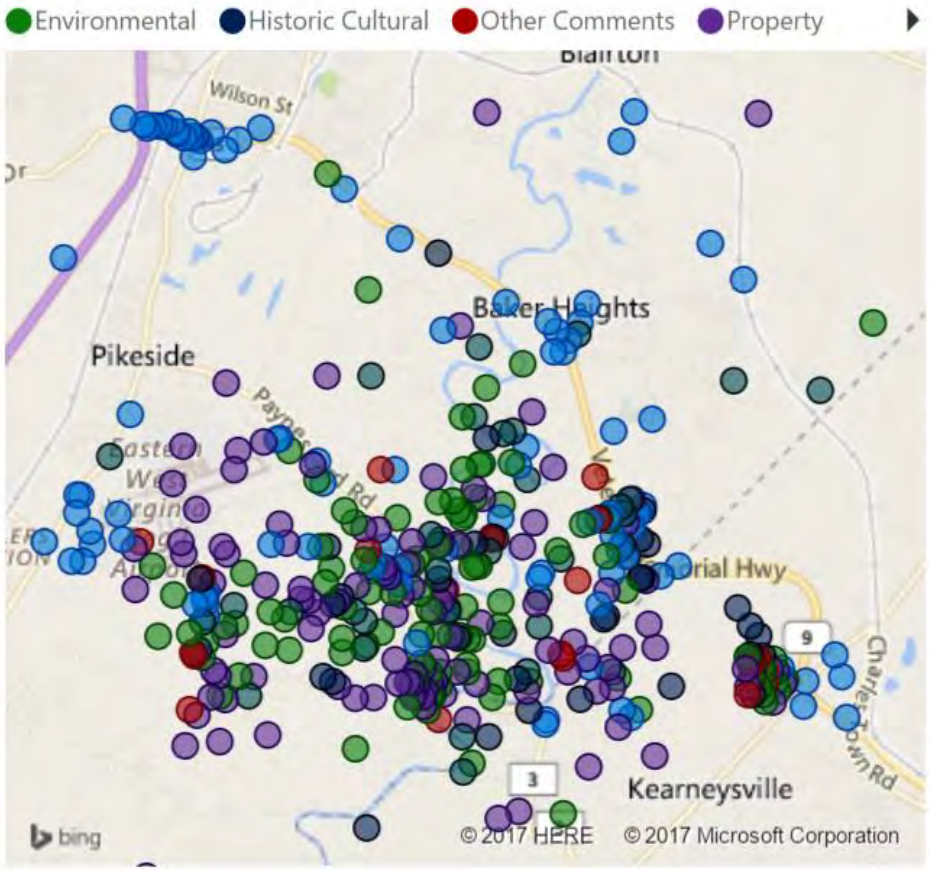
Average rating: 3.218



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# Responses to Date – Map Comments

## 429 Map Comments

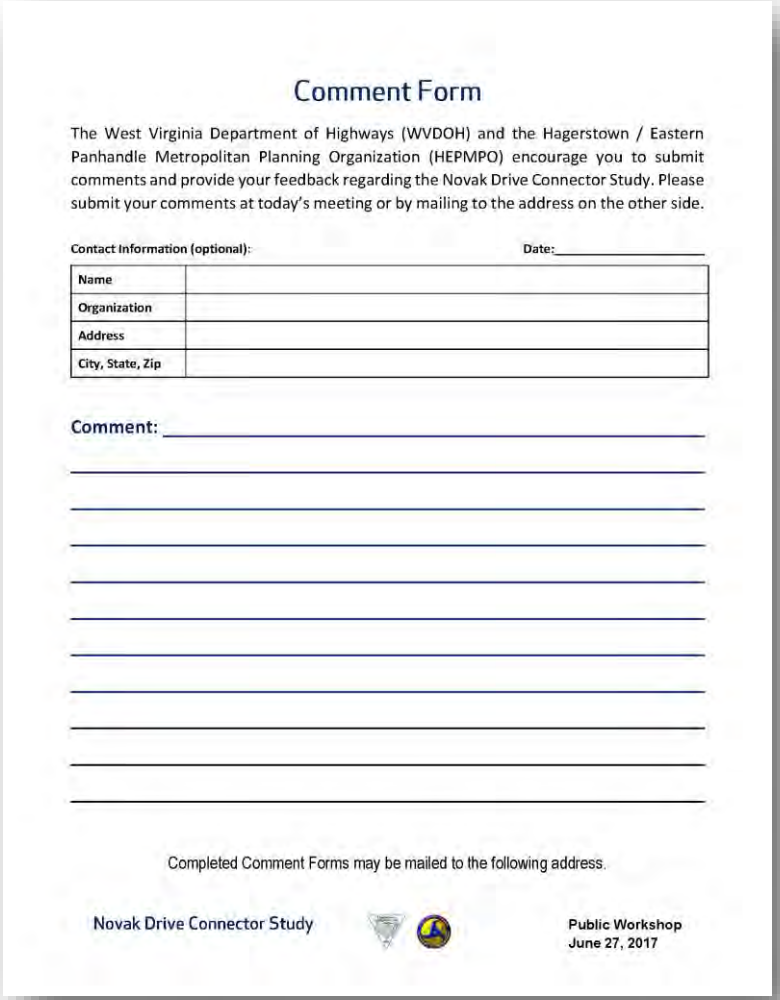



| Category | # Markers |
|---|---|
| Traffic | 106 |
| Property | 121 |
| Environmental | 107 |
| Recreational | 37 |
| Historic /Cultural | 34 |
| Other Comments | 24 |

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# Public Workshop

- Tonight 6:00-8:00 p.m. Blue Ridge CTC Technology Center, Room T04
- Open House Format
- Comment Form



## Comment Form

The West Virginia Department of Highways (WVDOH) and the Hagerstown / Eastern Panhandle Metropolitan Planning Organization (HEPMPO) encourage you to submit comments and provide your feedback regarding the Novak Drive Connector Study. Please submit your comments at today's meeting or by mailing to the address on the other side.

Contact Information (optional): Date:_____

| | |
|---|---|
| Name | |
| Organization | |
| Address | |
| City, State, Zip | |

Comment: _____

Completed Comment Forms may be mailed to the following address.

Novak Drive Connector Study

Public Workshop
June 27, 2017

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# Existing and Future Traffic Conditions

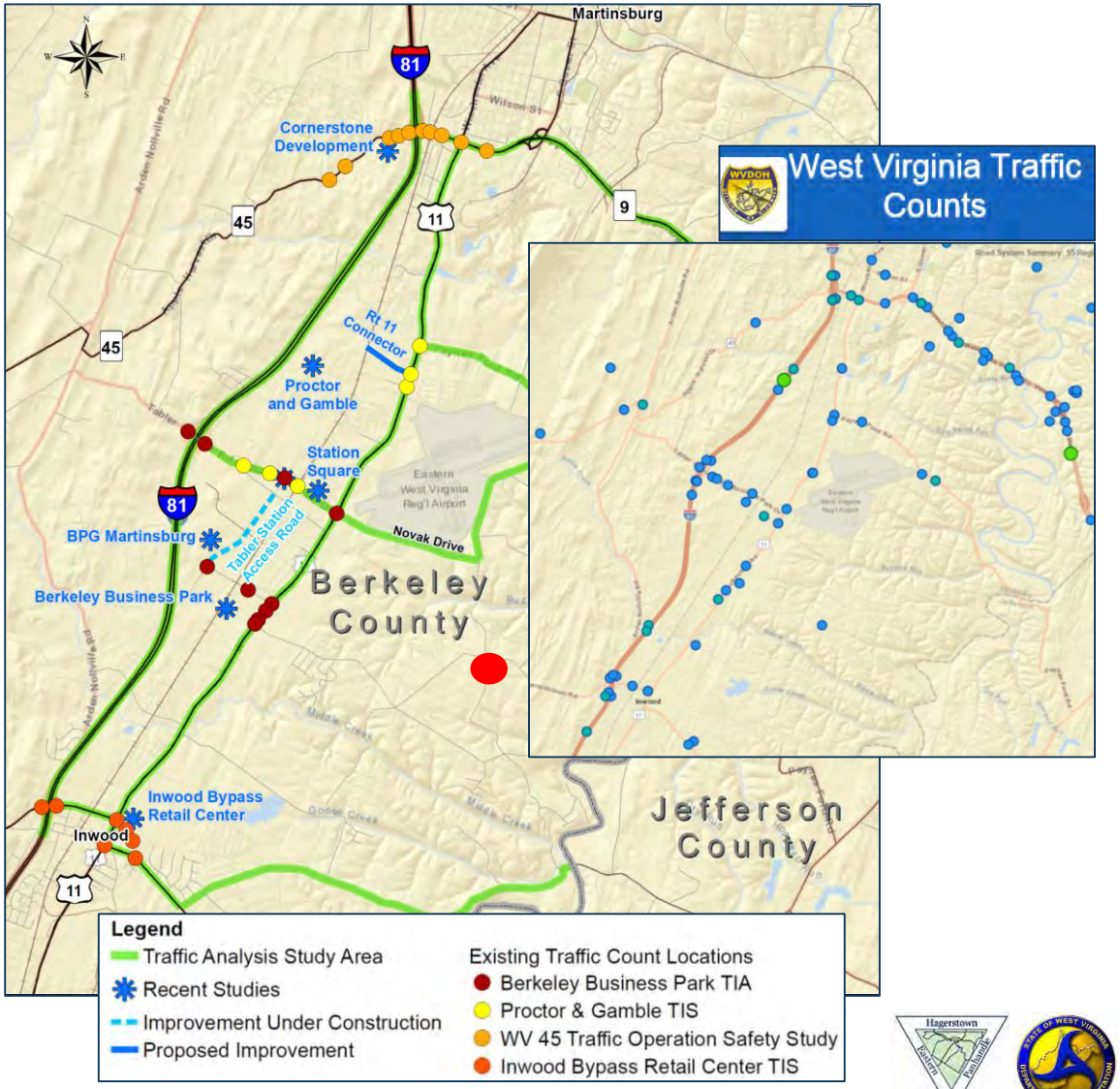
**Existing Traffic Analysis**

**Commuting Patterns**

**Future Traffic  Analysis**

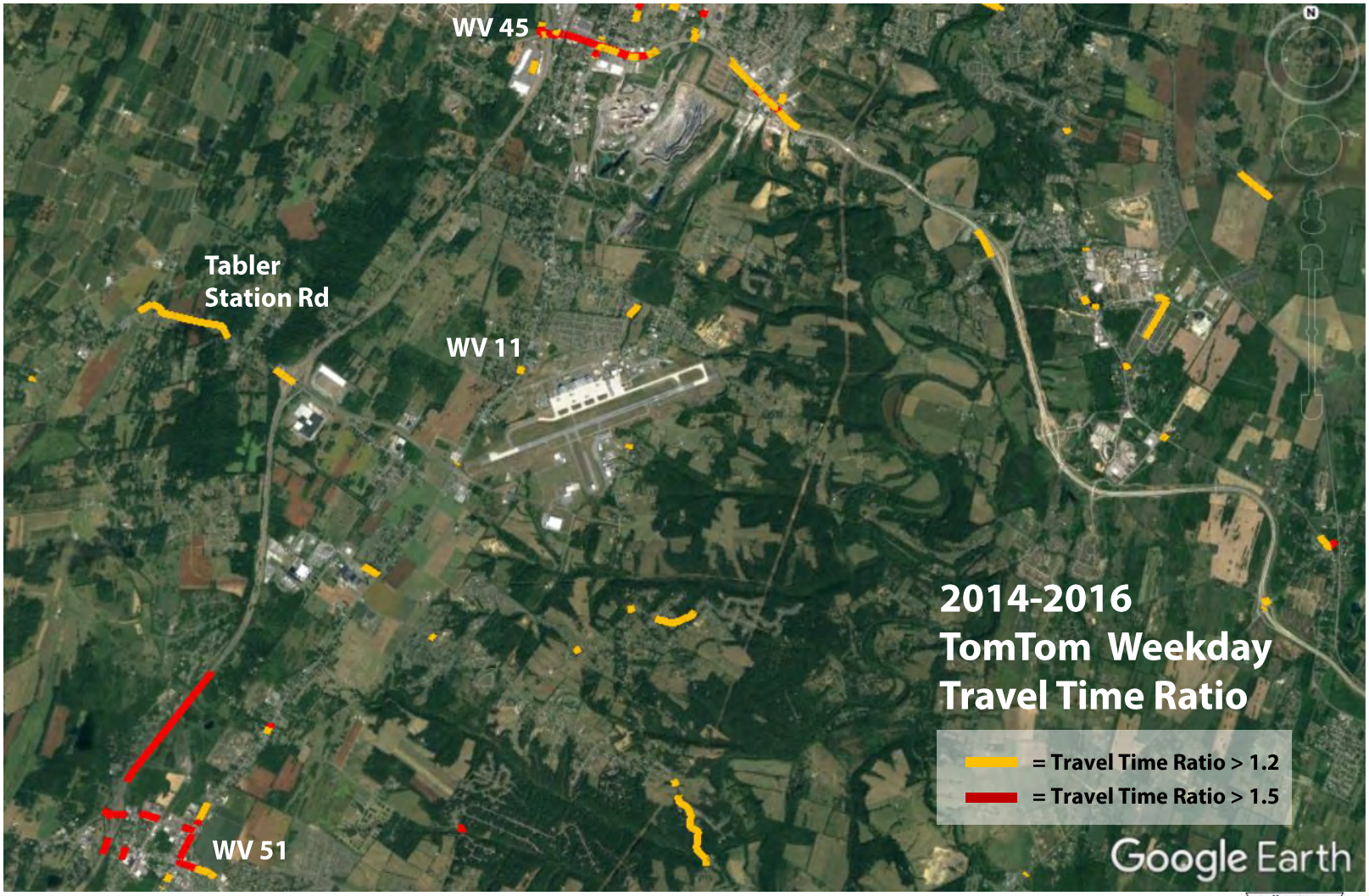
# Existing Traffic Volumes – Balance

- Existing volumes based on available 2011-2015 traffic counts
- Assemble AM, PM peak hour turning movements
- Conduct AM, PM counts at Novak Drive/Airport Road on 3/28/17




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# Existing Traffic Congestion – GPS Data

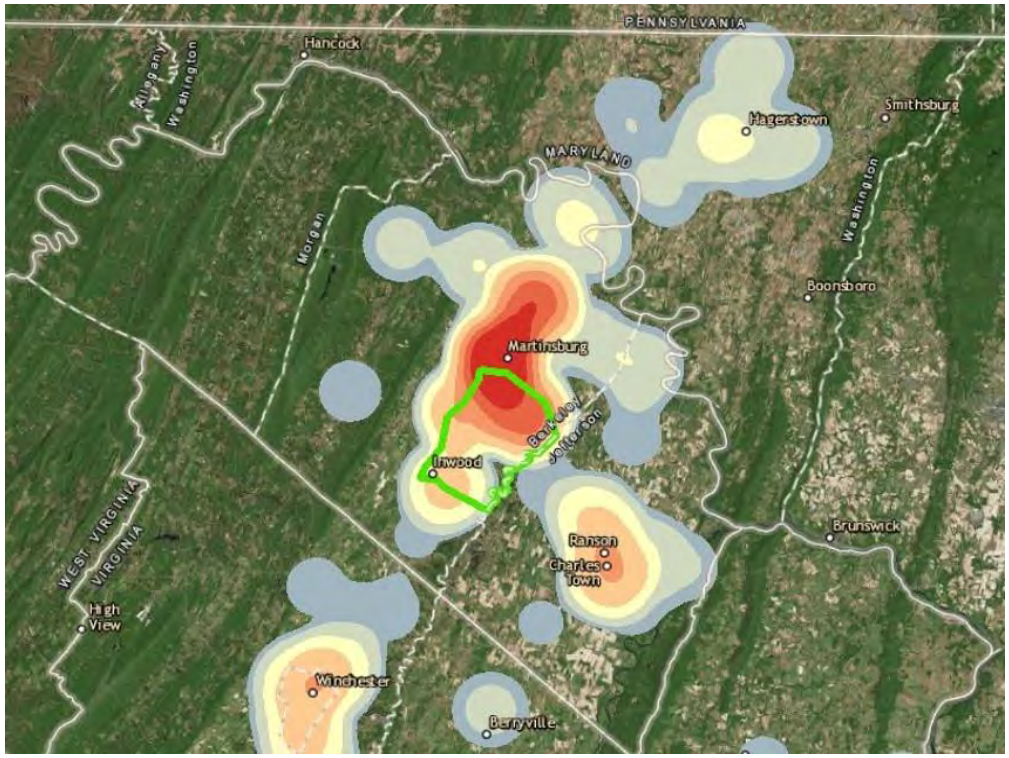



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# Commuting Patterns

- Analysis of those ***living*** and ***working*** in study area
- CENSUS Longitudinal Employer-Household Dynamics (LEHD)
- ***60% of those living*** in the Study Area work inside the HEPMPO 3-county region

Work Locations for those ***living in Study Area***

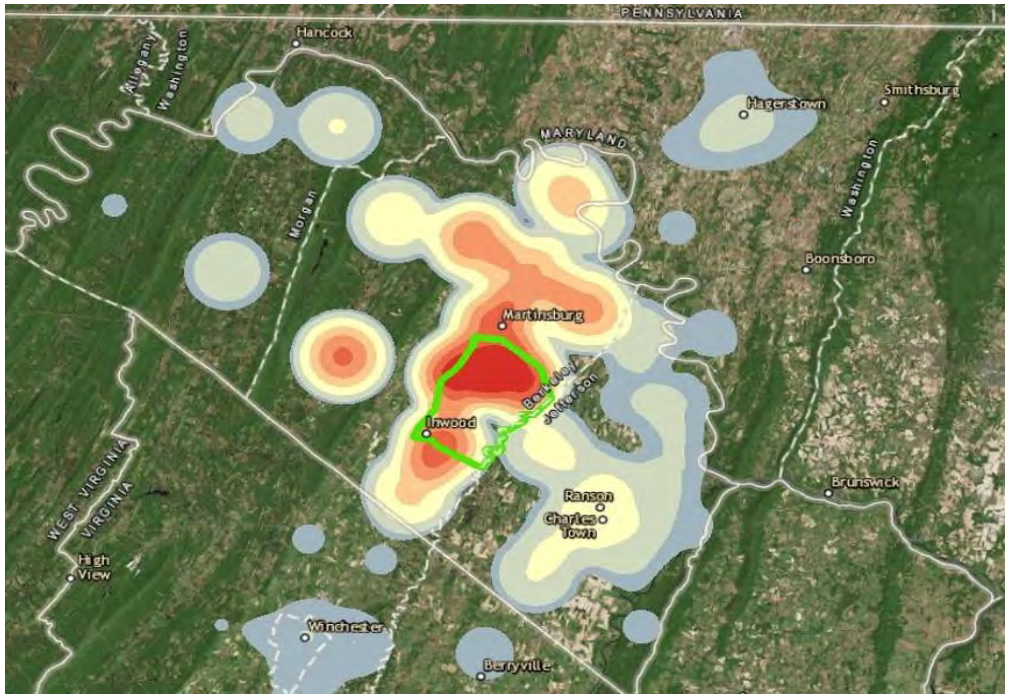



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# Commuting Patterns

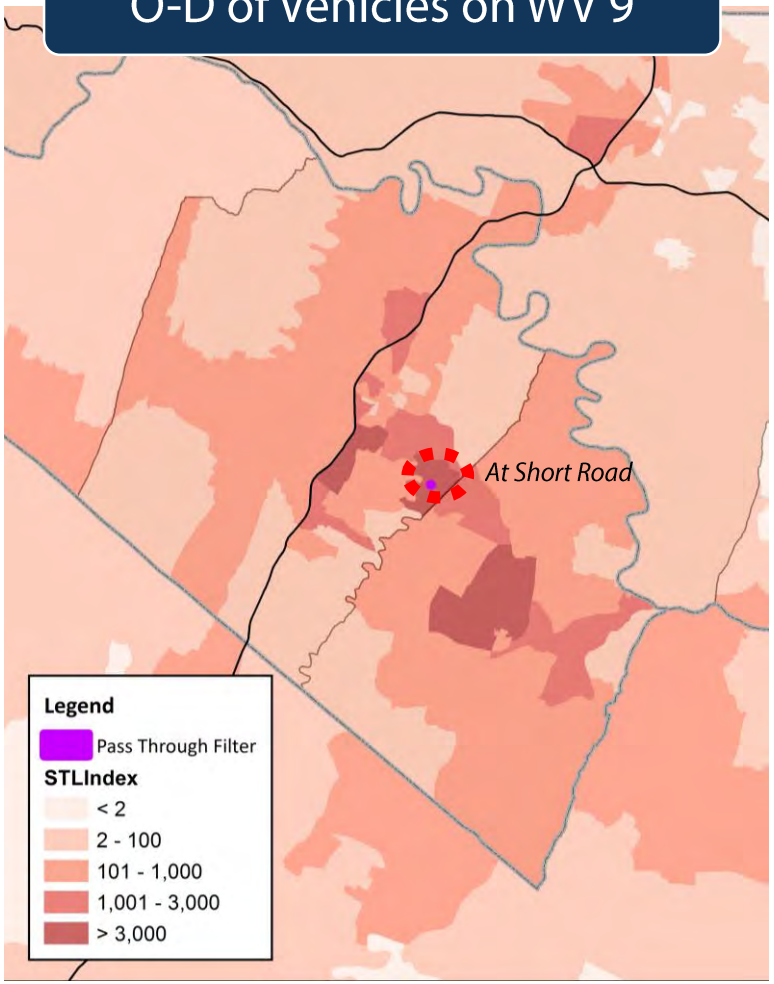
- ***75% of those working*** in the Study Area live in HEPMPO 3-county region
- ***Less than 5% both live and work*** in Study Area

Home Locations for those ***working in Study Area***

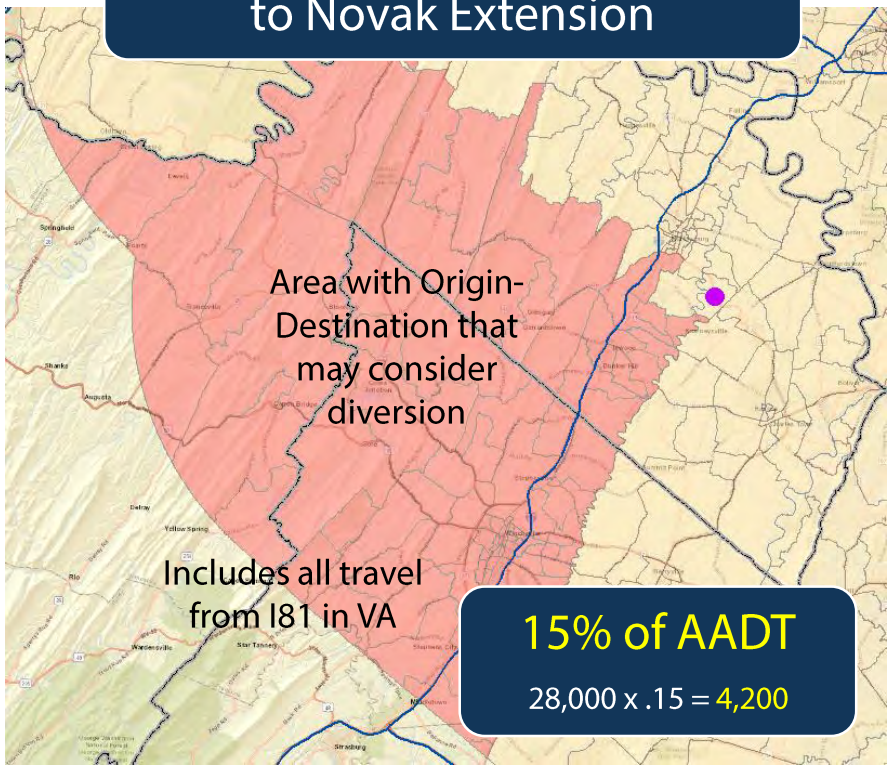


# StreetLight Data

## O-D of Vehicles on WV 9




## Potential Diversion to Novak Extension



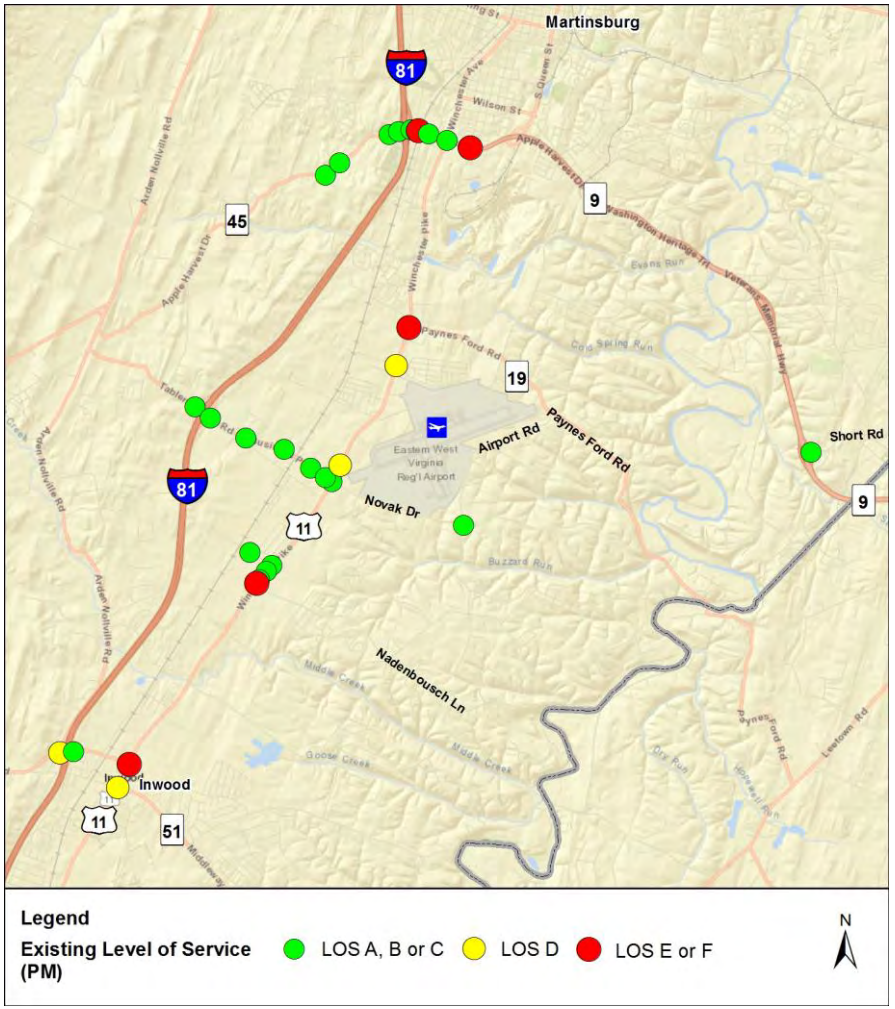

**15% of AADT**

28,000 x .15 = 4,200

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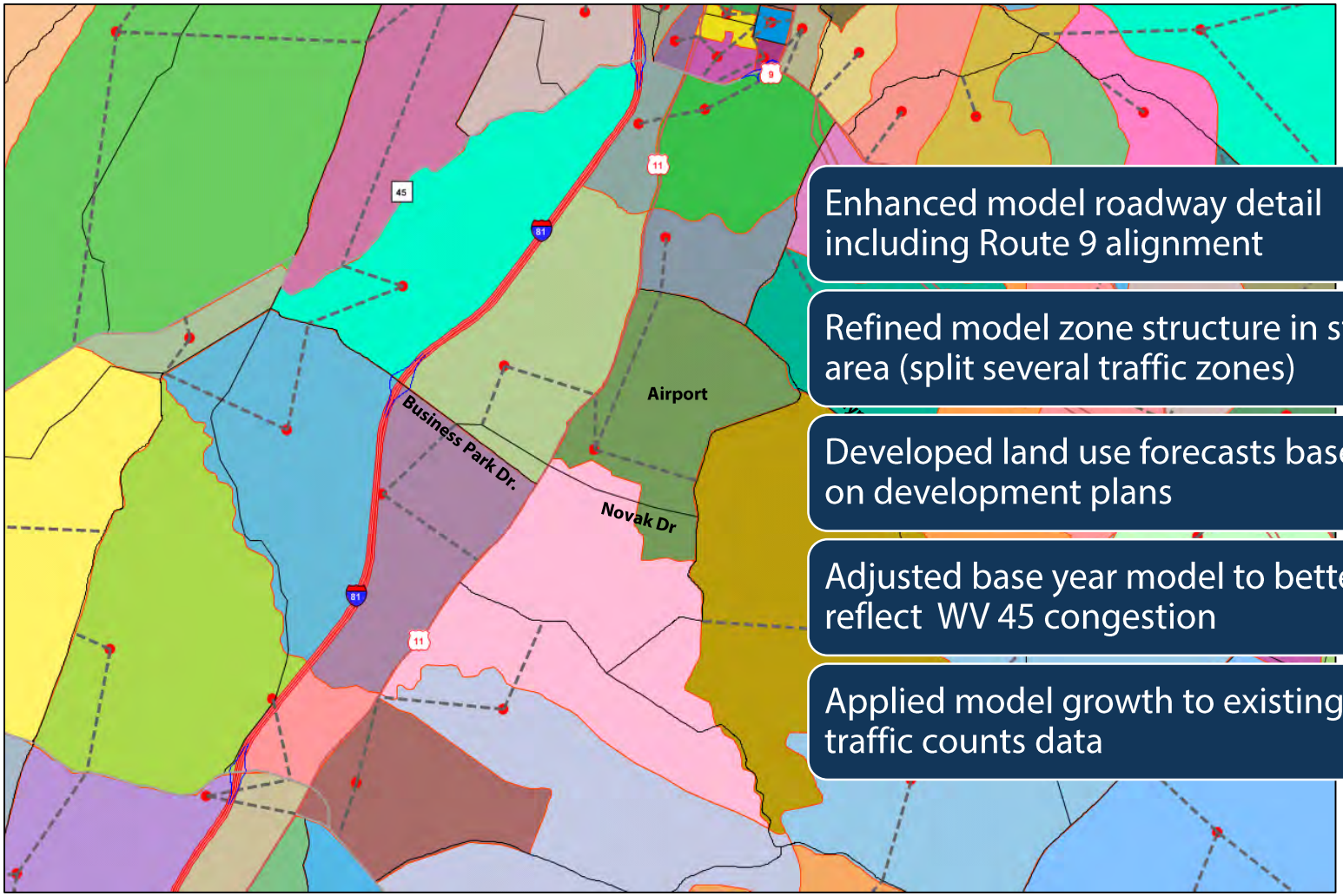
# Existing Traffic Analysis

- 21 locations with acceptable LOS (A, B, or C)
- 4 locations with moderate LOS (D)
- 5 locations with unacceptable LOS (E or F)
  - WV 45 @ Foxcroft Ave
  - WV 45 @ New York Ave
  - US 11 @ Paynes Ford Road
  - US 11 @ Nadenbousch Lane
  - US 11 @ WV 51




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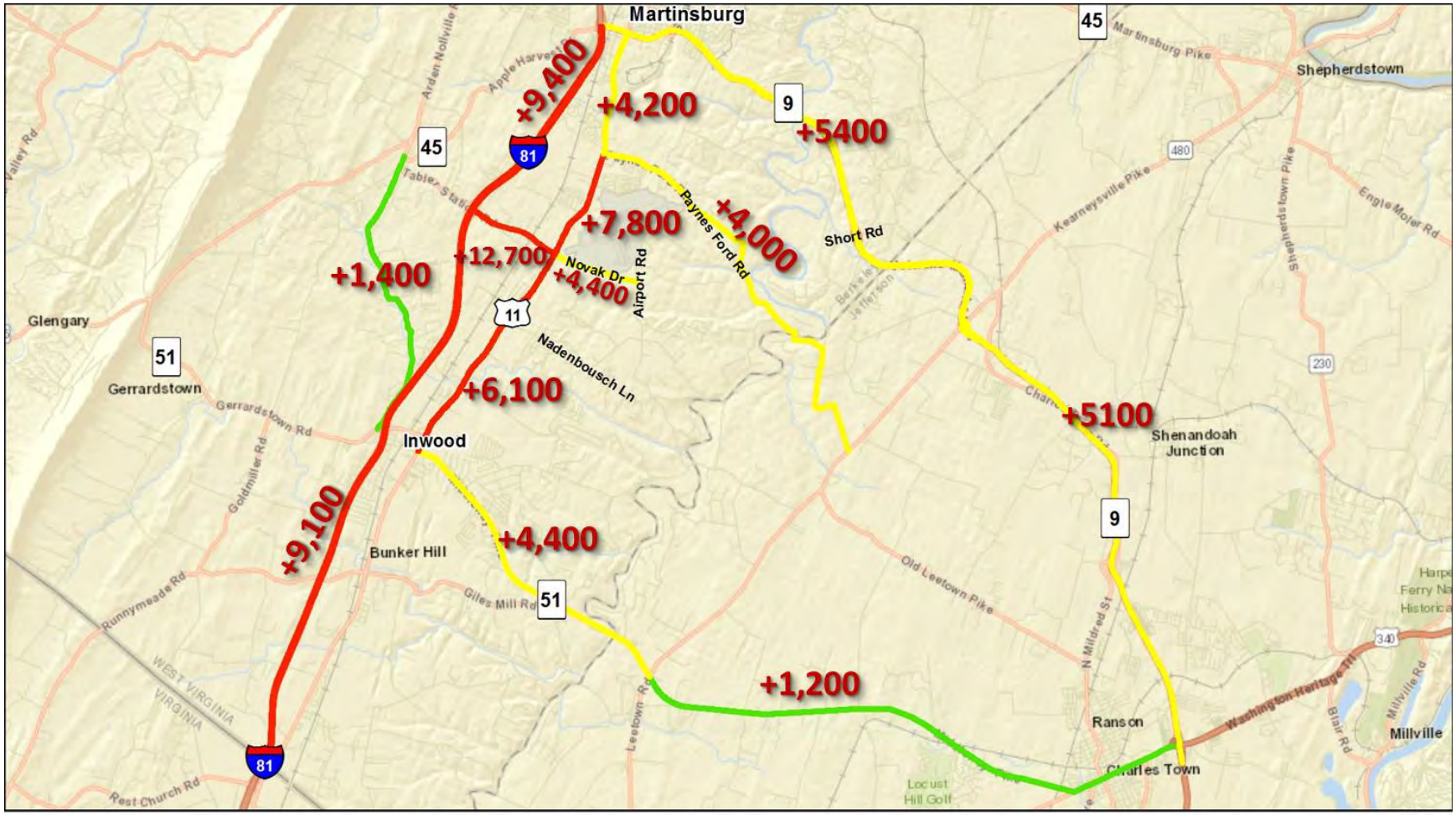
# Travel Demand Modeling




- Enhanced model roadway detail including Route 9 alignment
- Refined model zone structure in study area (split several traffic zones)
- Developed land use forecasts based on development plans
- Adjusted base year model to better reflect WV 45 congestion
- Applied model growth to existing traffic counts data

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# Projected Traffic Volume Growth



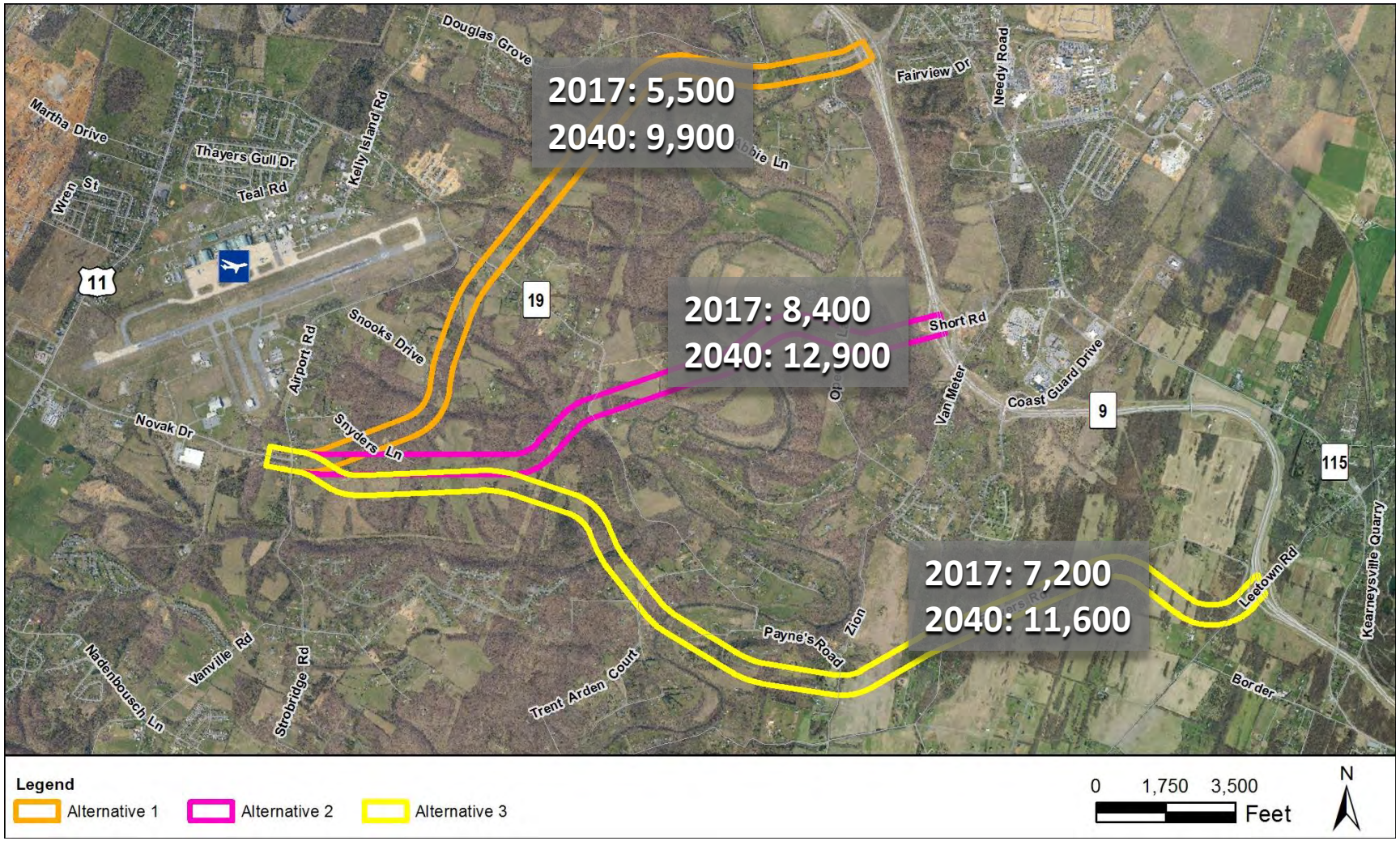

**Legend**

**Projected Traffic Volume Growth (2017 to 2040)** 0 - 1500 | 1501 - 6000 | 6001 - 13000

N

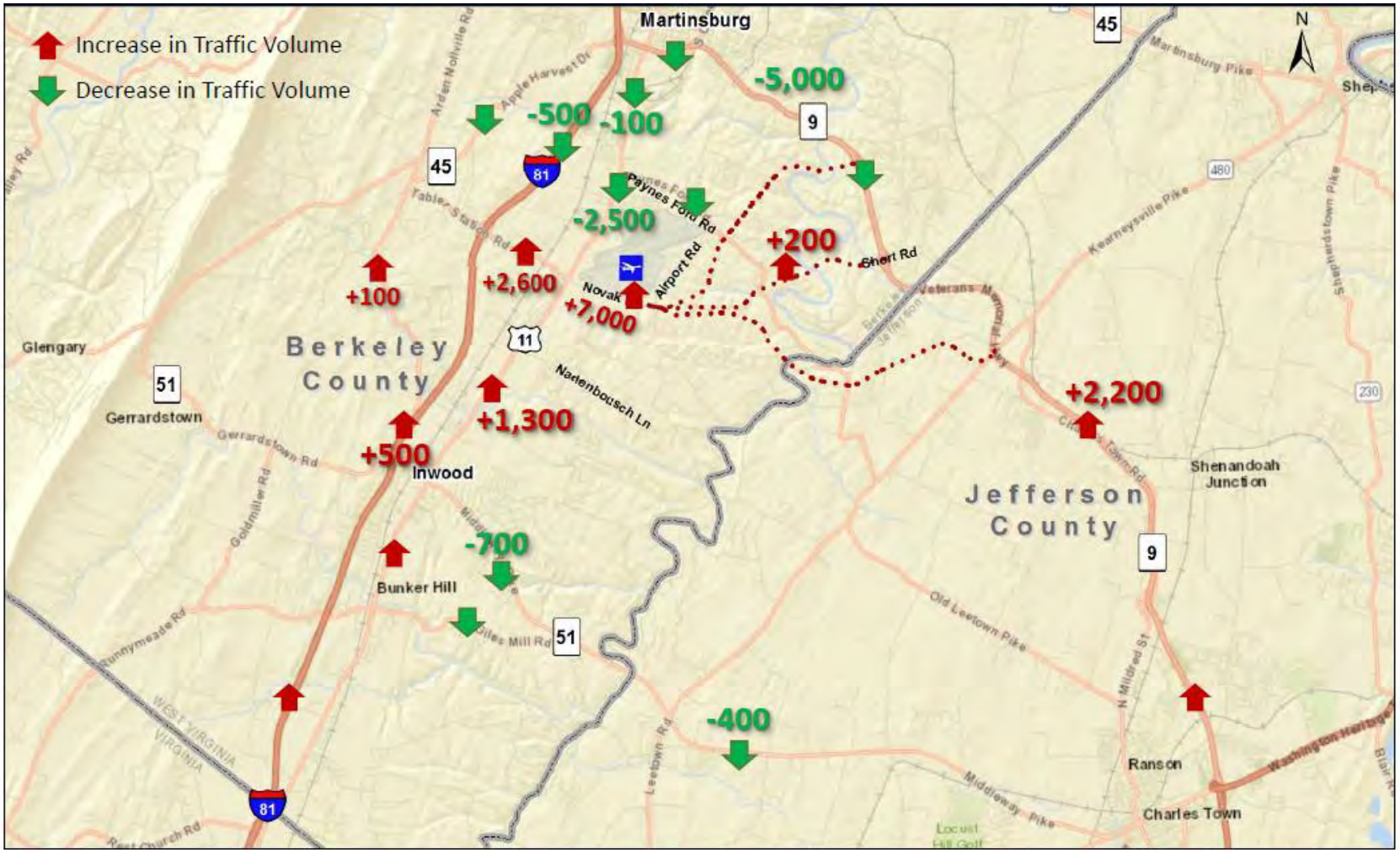
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# Projected Traffic Volumes



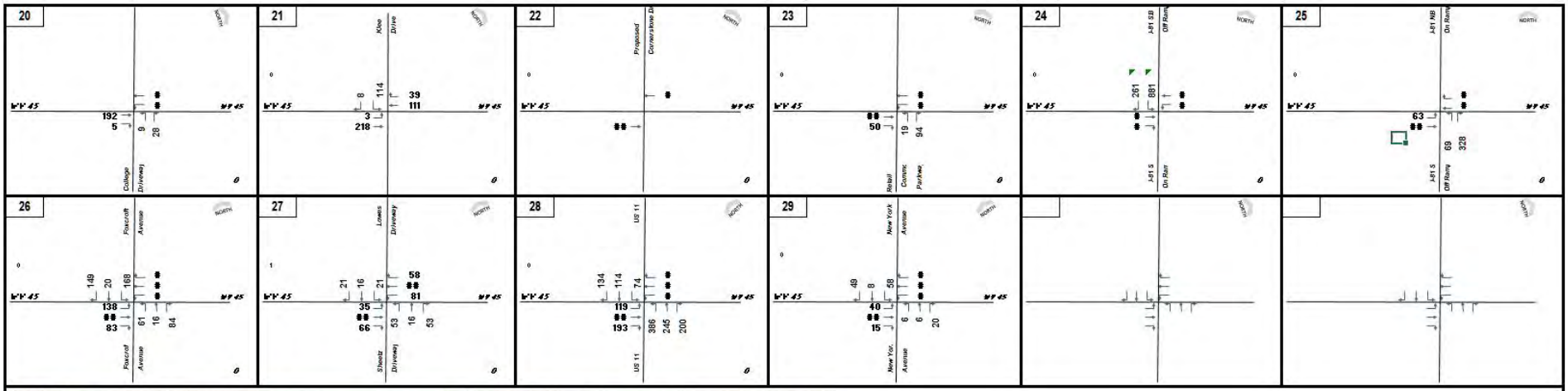

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# Projected Diversions




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# Forecast Peak Hour Intersection Counts







**NOVAK CONNECTOR**
**Intersection Traffic Study**

Year2040 No Build AM Peak Hour Traffic Volumes

Legend
XXX
(YYY)
AM Peak Hour Traffic Volume

Sheet 1 of 3

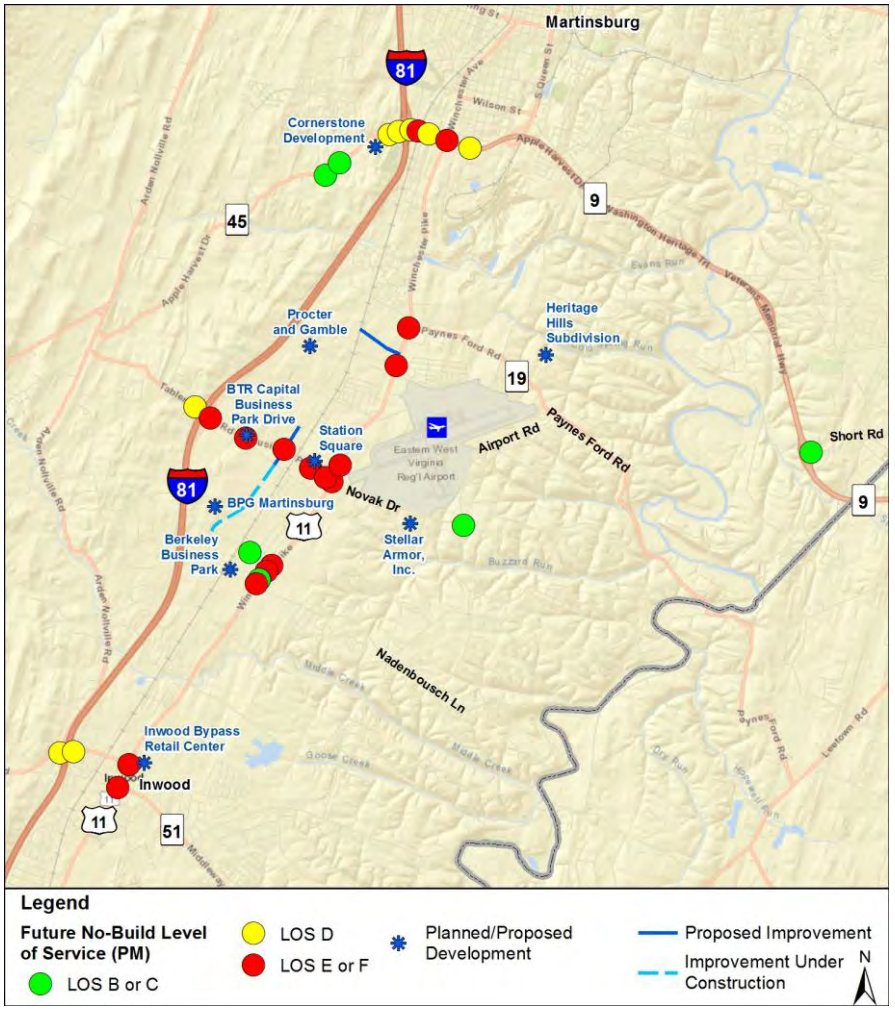
Not To Scale

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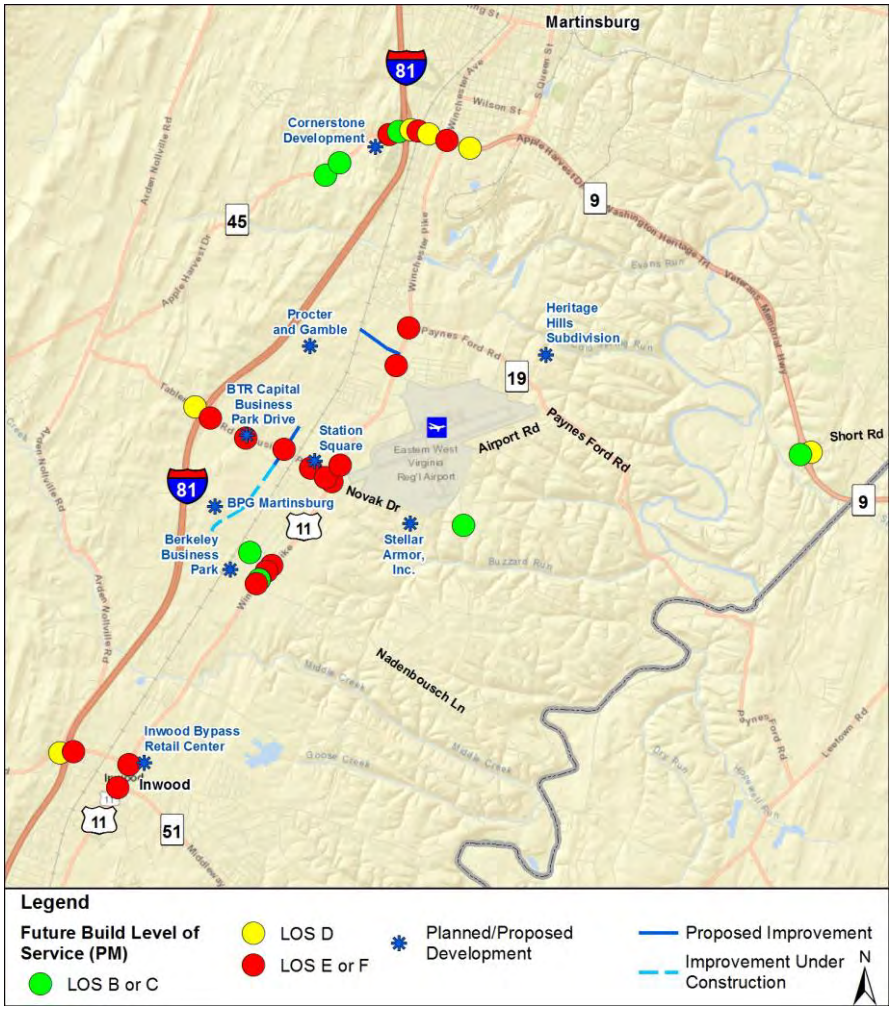
# Future No-Build Traffic Analysis

- 6 locations with acceptable LOS (A, B, or C)
- 8 locations with moderate LOS (D)
- 16 locations with unacceptable LOS (E or F)



# Future Build Traffic Analysis

- 6 locations with acceptable LOS (A, B, or C)
- 6 locations with moderate LOS (D)
- 18 locations with unacceptable LOS (E or F)



# Crash and Safety Analysis

**Crash Data**

**Concentration of Crashes**

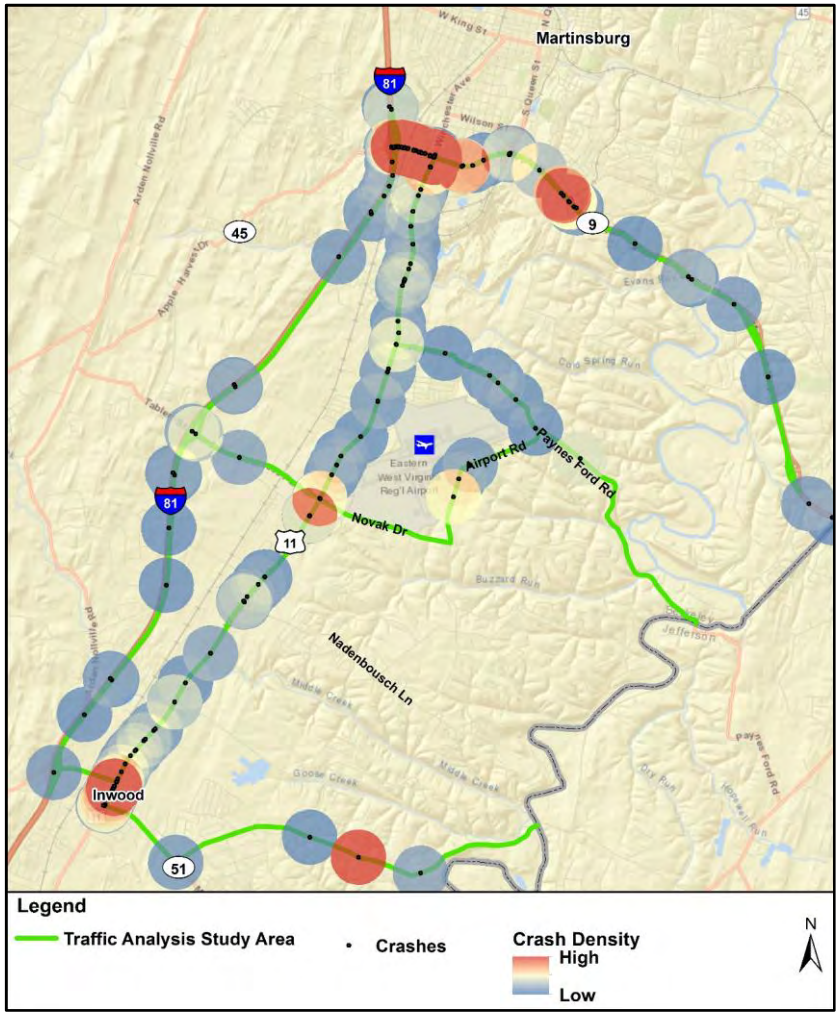
**Crash Rates**

# Crash Analysis

- 3-year Crash Data (2014-2016) from WVDOH
- Average of 158 crashes per year in study area
- 22% of crashes involve injury
- 2 Fatalities

# Crash Analysis

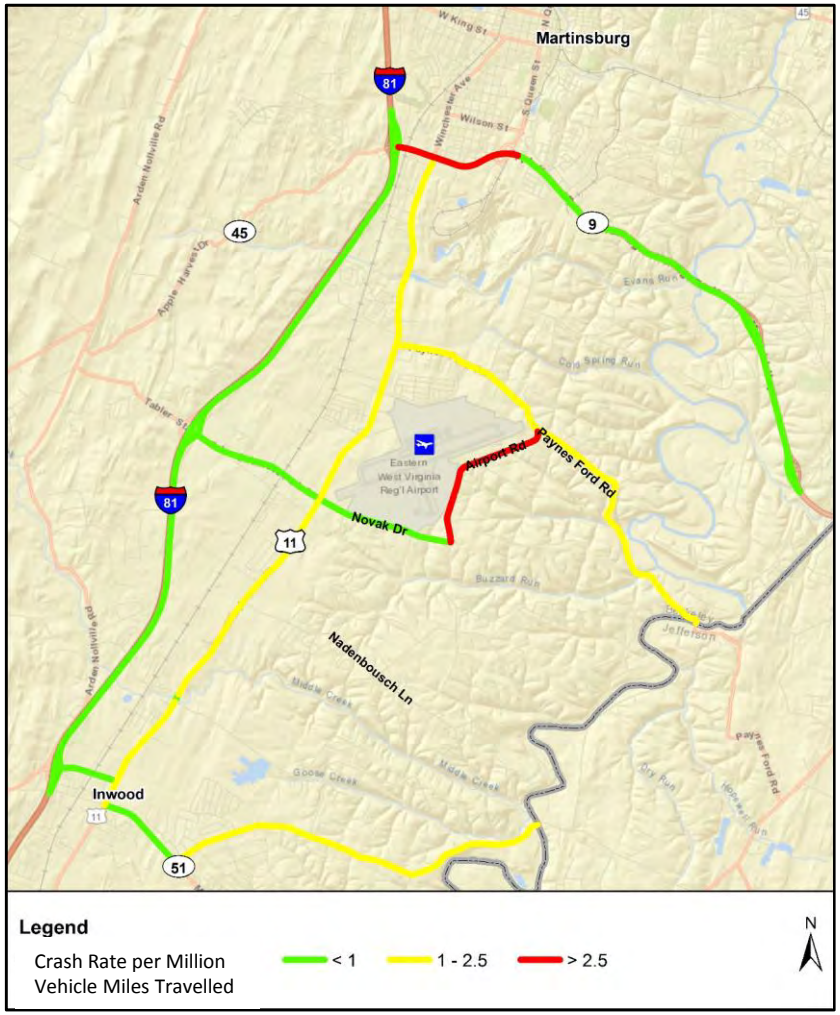
- Highest Concentration of Crashes
  - WV 45 between I-81 and US 11
  - WV 9 east of Queen Street
  - US 11 at Novak Drive
  - US 11 in Inwood
  - WV 51 east of Inwood




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# Crash Analysis

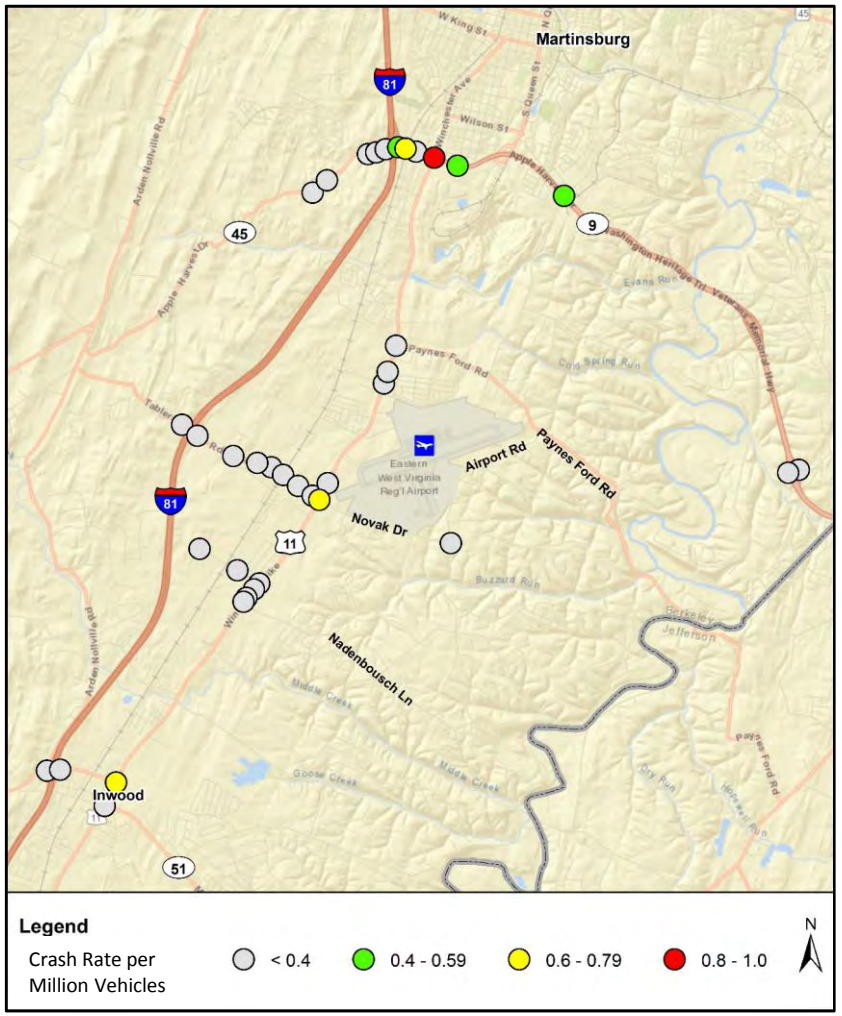
- Highest Crash Rates per million vehicle miles traveled
  - WV 45 between I-81 and Queen Street
  - Airport Road between Novak Drive and Paynes Ford Road
- WV statewide average = **2.50** crashes per million vehicles miles traveled




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# Crash Analysis

- Highest Intersection Crash Rates per million entering vehicles (MEV):
  - WV 45 and US 11
  - WV 45 and Foxcroft Avenue
- Classes used to categorize intersection crash rates:
  - Average < 1.5 crashes per MEV
  - Above Average > 1.5
  - Significantly Above Average > 2.0
- All intersections "average"




Michael Baker INTERNATIONAL

# Alternative Corridors

## Preliminary Alternative Corridors

# Preliminary Alternative Corridors

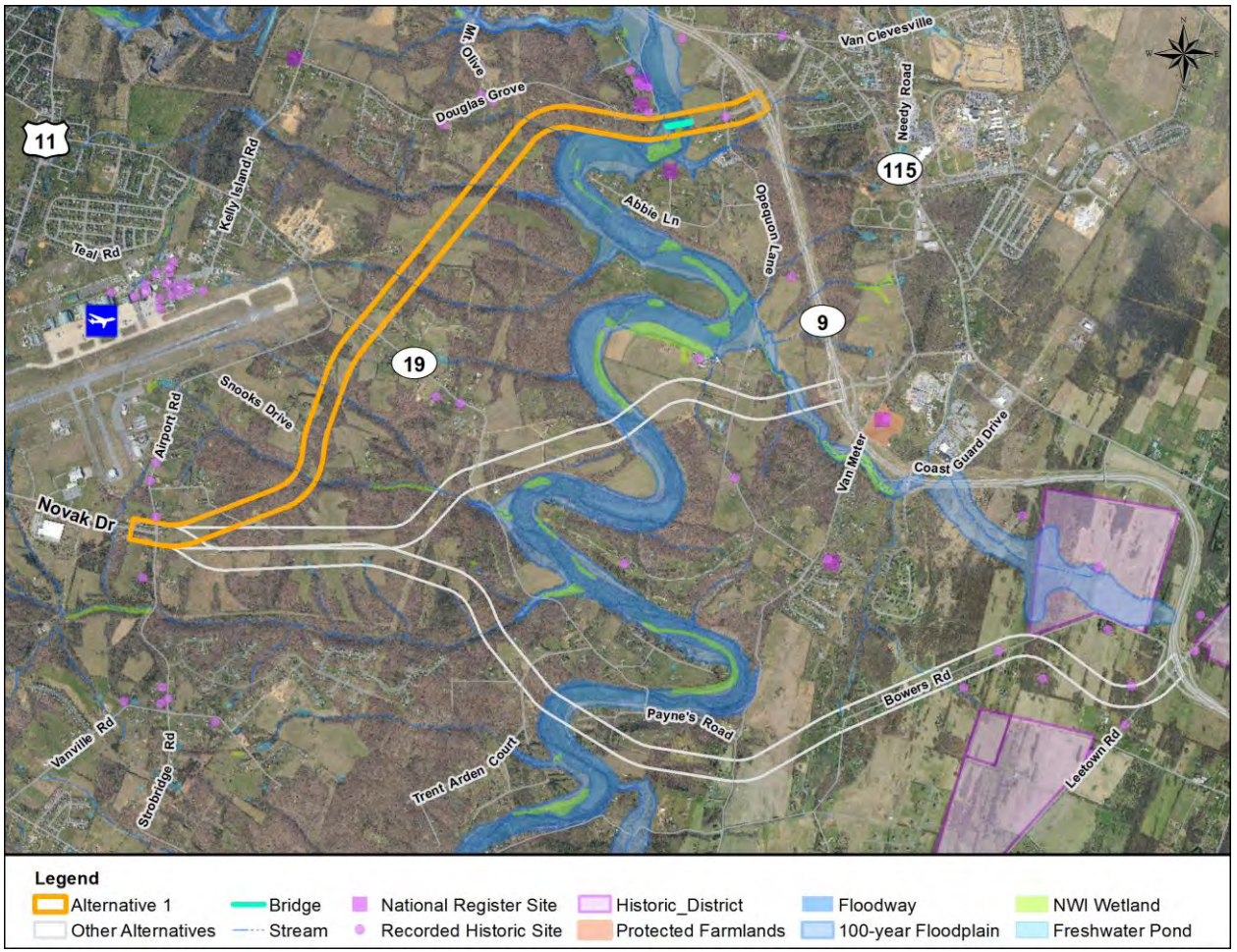
- Termini
  - Novak Drive at Airport Road
  - Existing WV 9 interchanges
- 500-ft wide corridors




Michael Baker INTERNATIONAL

# Preliminary Alternative Corridors

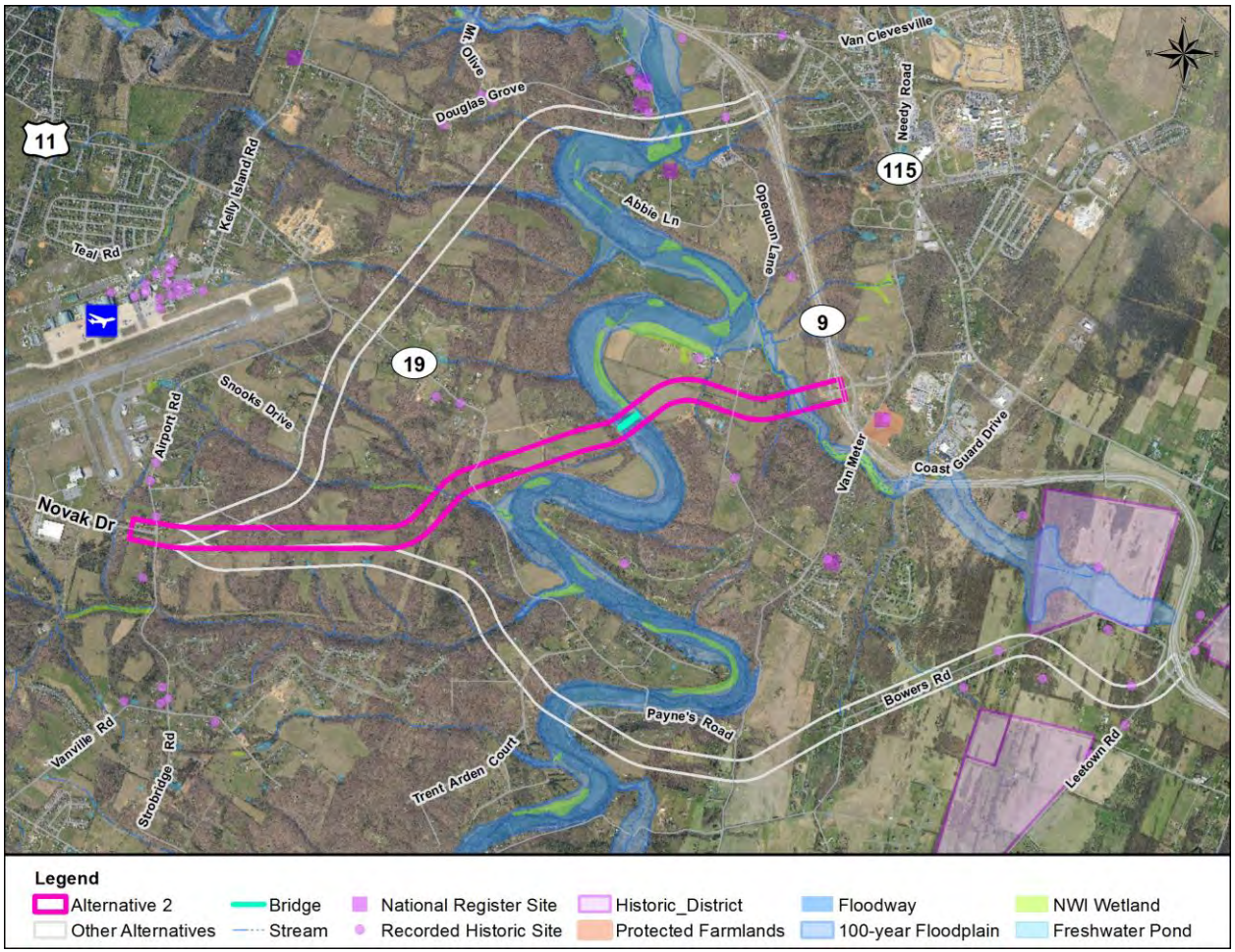
- Alternative 1
  - Novak Drive to the existing WV 9 Opequon Lane / Baker Heights interchange




Michael Baker INTERNATIONAL

# Preliminary Alternative Corridors

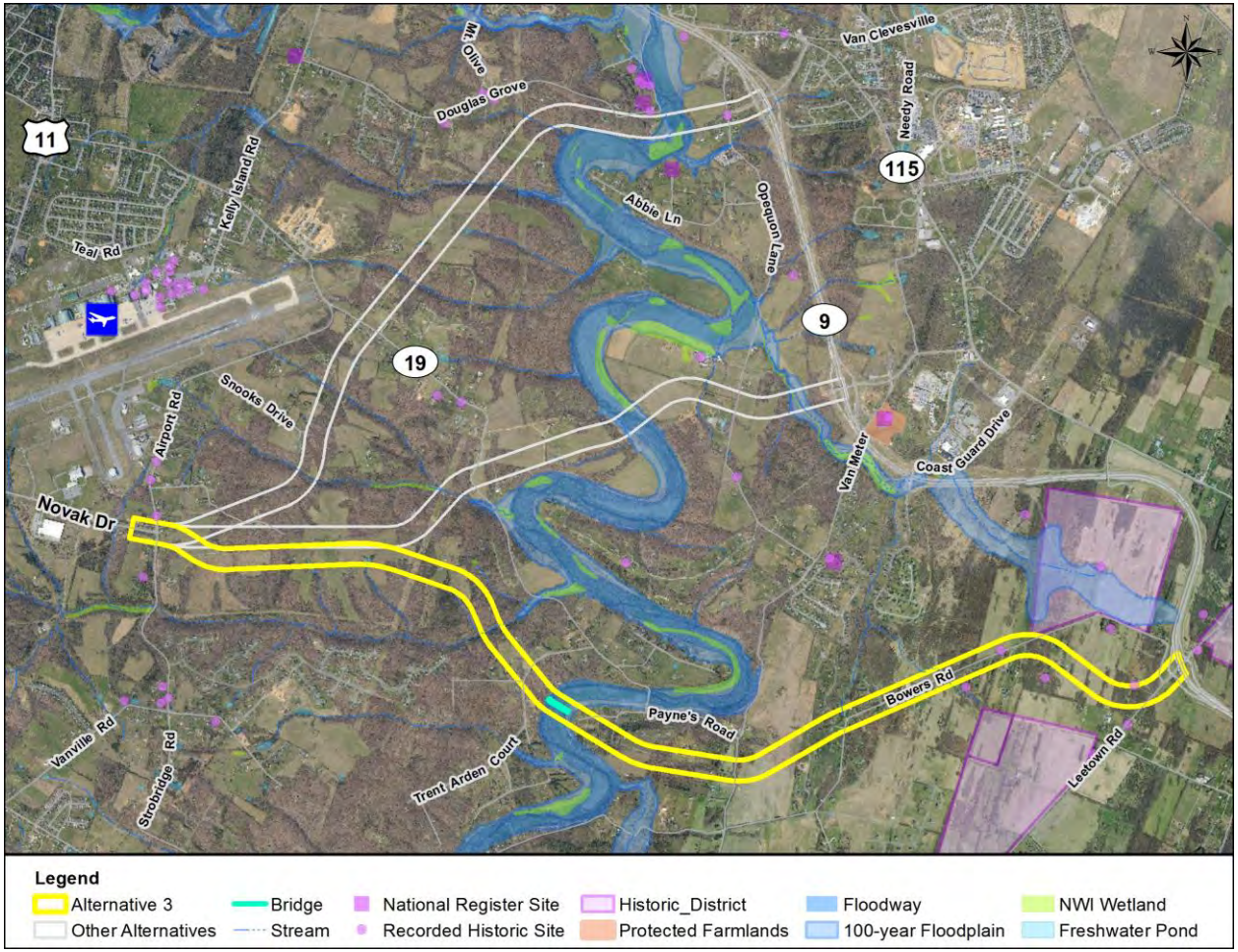
- Alternative 2
  - Novak Drive to the existing WV 9 Short Road interchange




Michael Baker INTERNATIONAL

# Preliminary Alternative Corridors

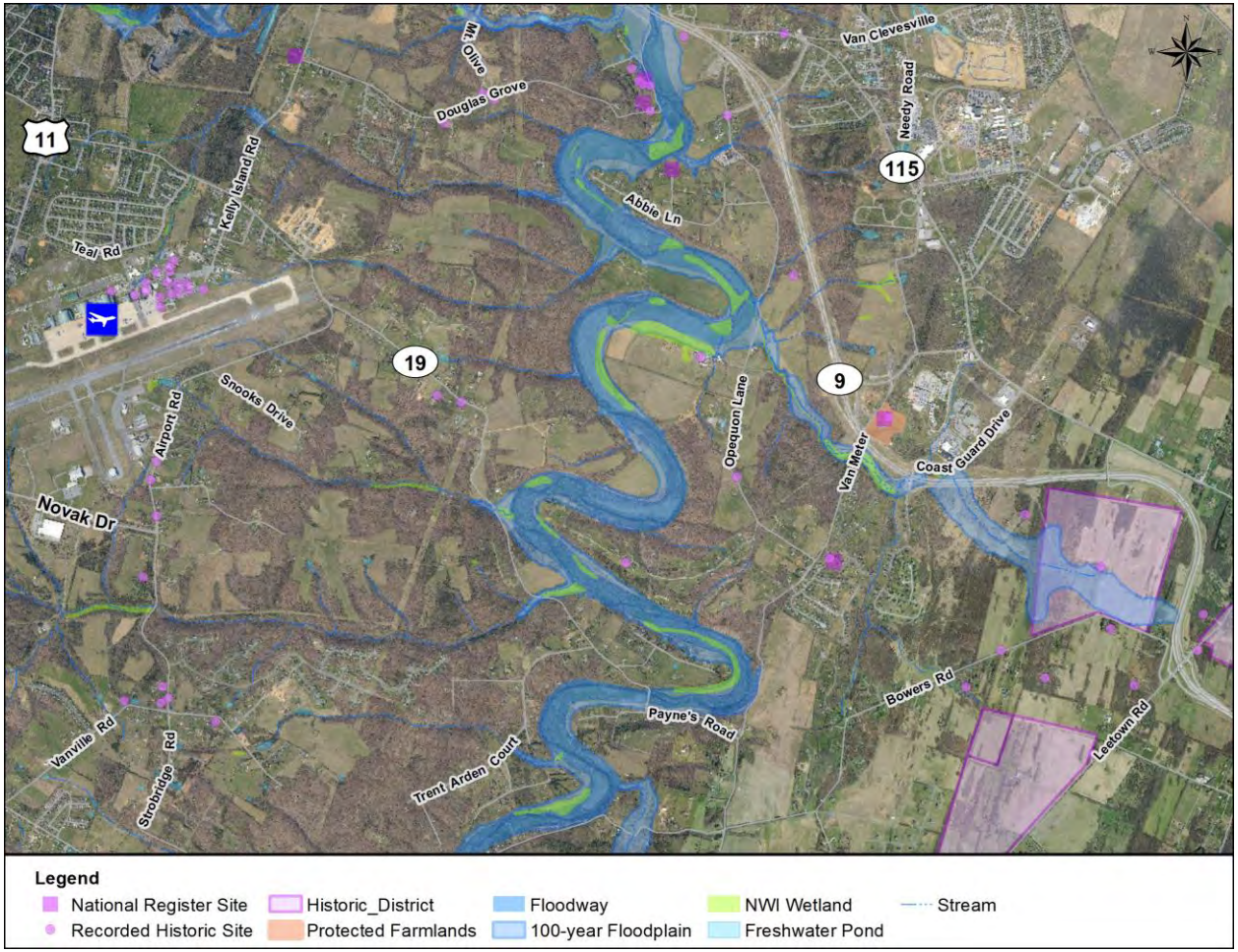
- Alternative 3
  - Novak Drive to the WV 9 existing Kearneysville / Leetown interchange
  - Upgrades to existing Bower Road




Michael Baker INTERNATIONAL

# Preliminary Alternative Corridors

- No-Build Alternative
  - Connection between Novak Drive and WV 9 ***would not*** be constructed
  - Serves as a ***baseline*** against which the other alternatives can be compared




Michael Baker INTERNATIONAL

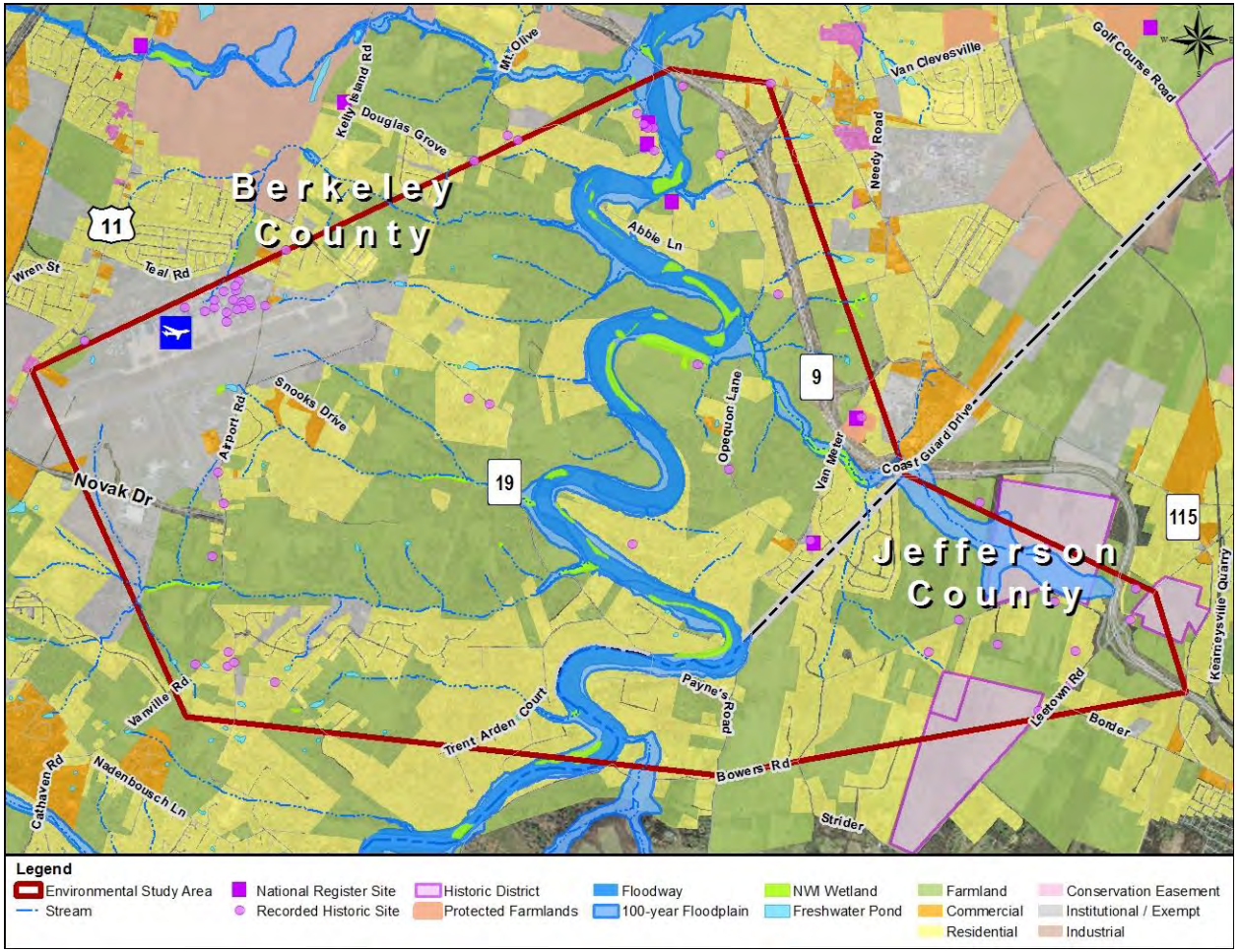
# Study Area Issues

**Environmental Inventory**

**Preliminary Environmental Screening**

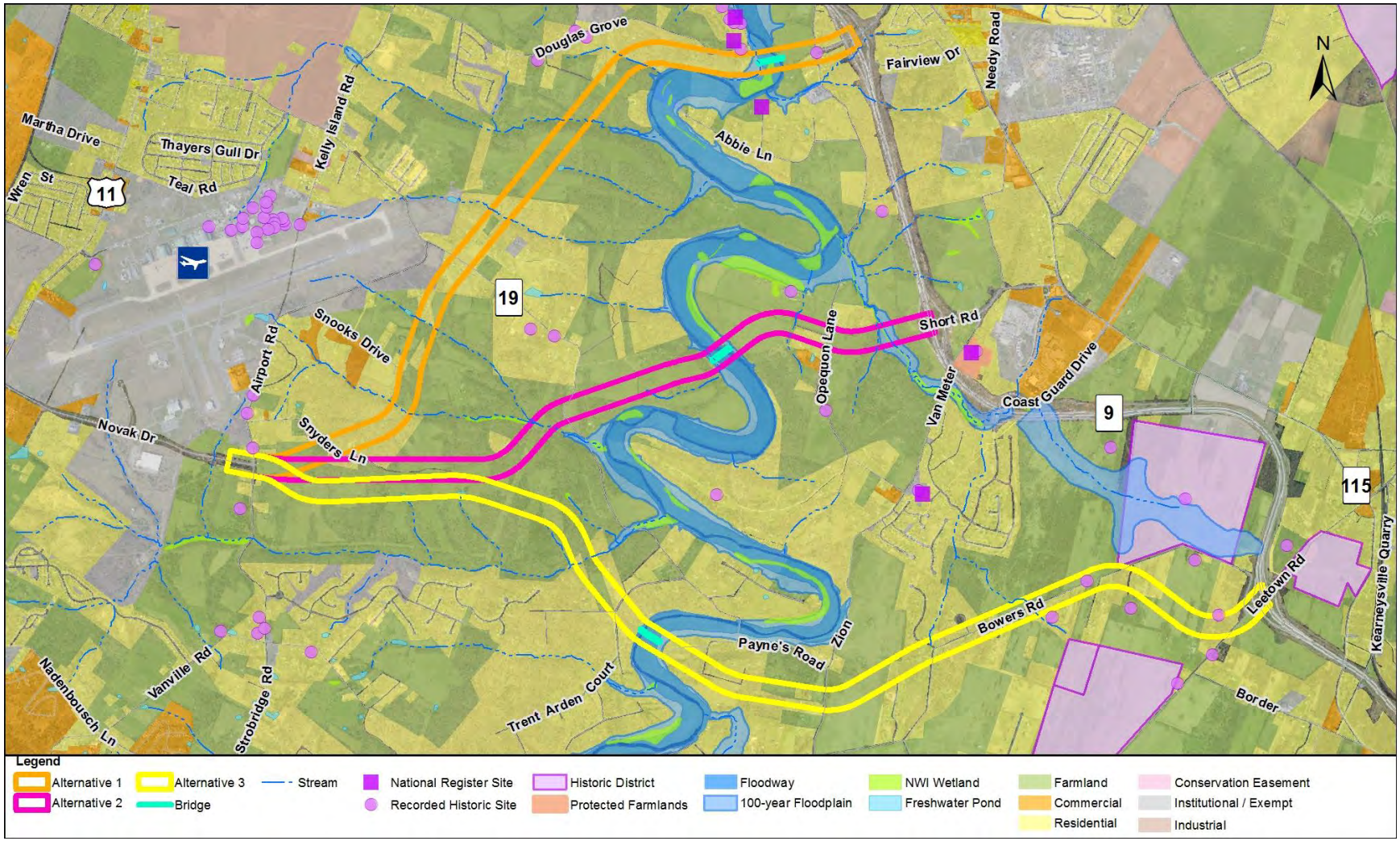
# Environmental Inventory

- Streams
- Historic Resources
- Protected Farmlands
- 100-year Floodplain and Floodway
- NWI Wetlands
- Landuse




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# Preliminary Environmental Screening




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# Preliminary Environmental Screening

| Key Issues | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|
| Length (miles) | 5.0 miles | 3.4 miles | 5.4 miles |
| Bridge over Opequon Creek (feet) | 597 feet | 501 feet | 549 feet |
| NWI Wetlands | 1<br>(0.72 acres) | 2<br>(0.47 acres) | 2<br>(1.15 acres) |
| Historic Resources | 2 | 0 | 1 |
| 100-year Floodplain / Floodway | 6.2 acres /<br>11.2 acres | 13.9 acres /<br>9.4 acres | 3.1 acres /<br>5.8 acres |
| Stream Crossings | 6 | 5 | 3 |
| Residential (acres) vs. Farmland (acres) | 221 acres /<br>143 acres | 15 acres /<br>327 acres | 93 acres /<br>214 acres |
| Number of Negative Issues | **4** | **1** | **2** |

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Smallest Impact

Largest Impact

# Alternative Corridors Discussion

# Next Steps

**Web-Based Survey Results**

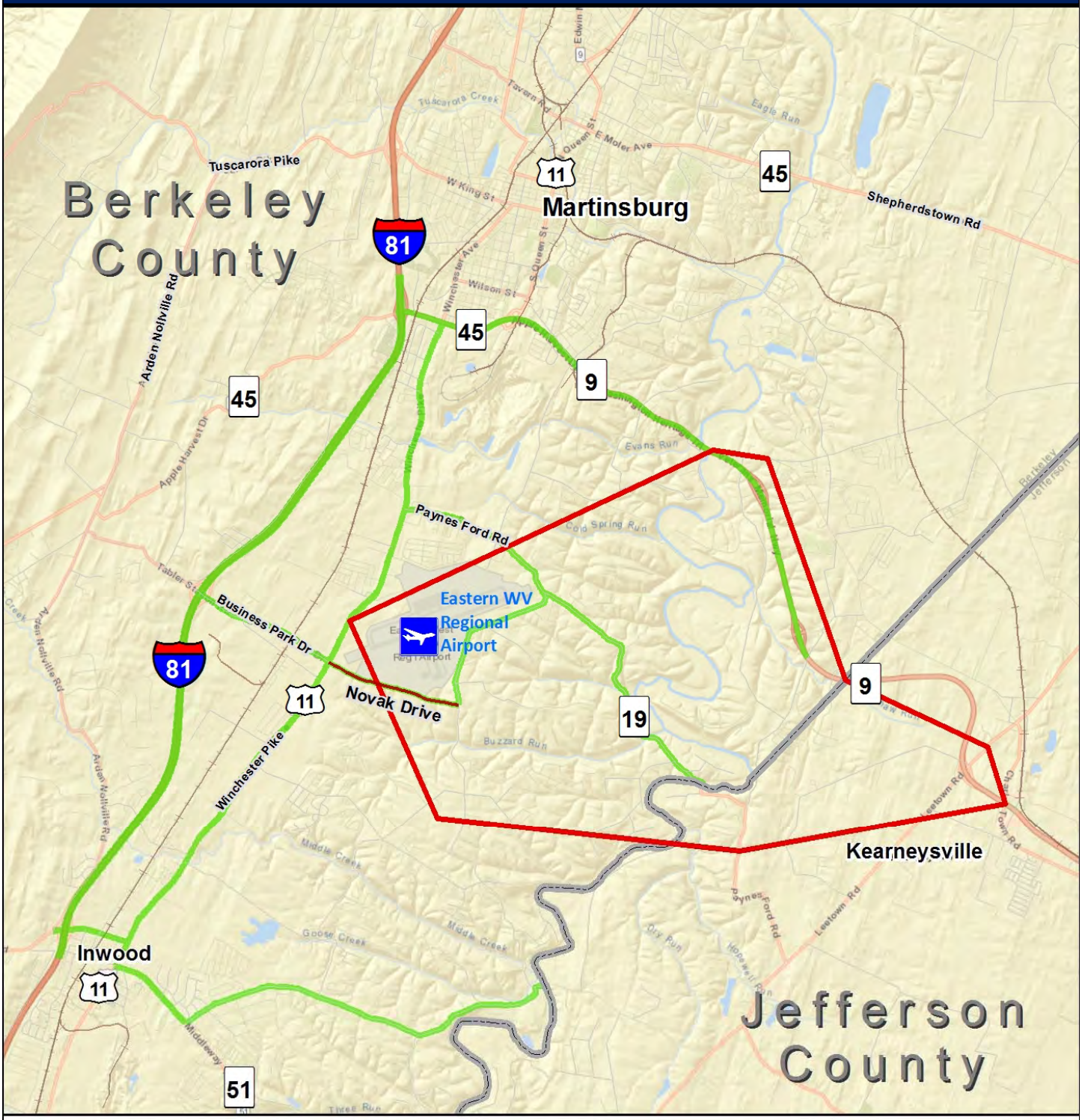
**Public Workshop Comments**

**Refine Corridor Alternatives**

**Evaluation Matrix**

**Connector Study Document**

# Environmental and Traffic Analysis Study Areas



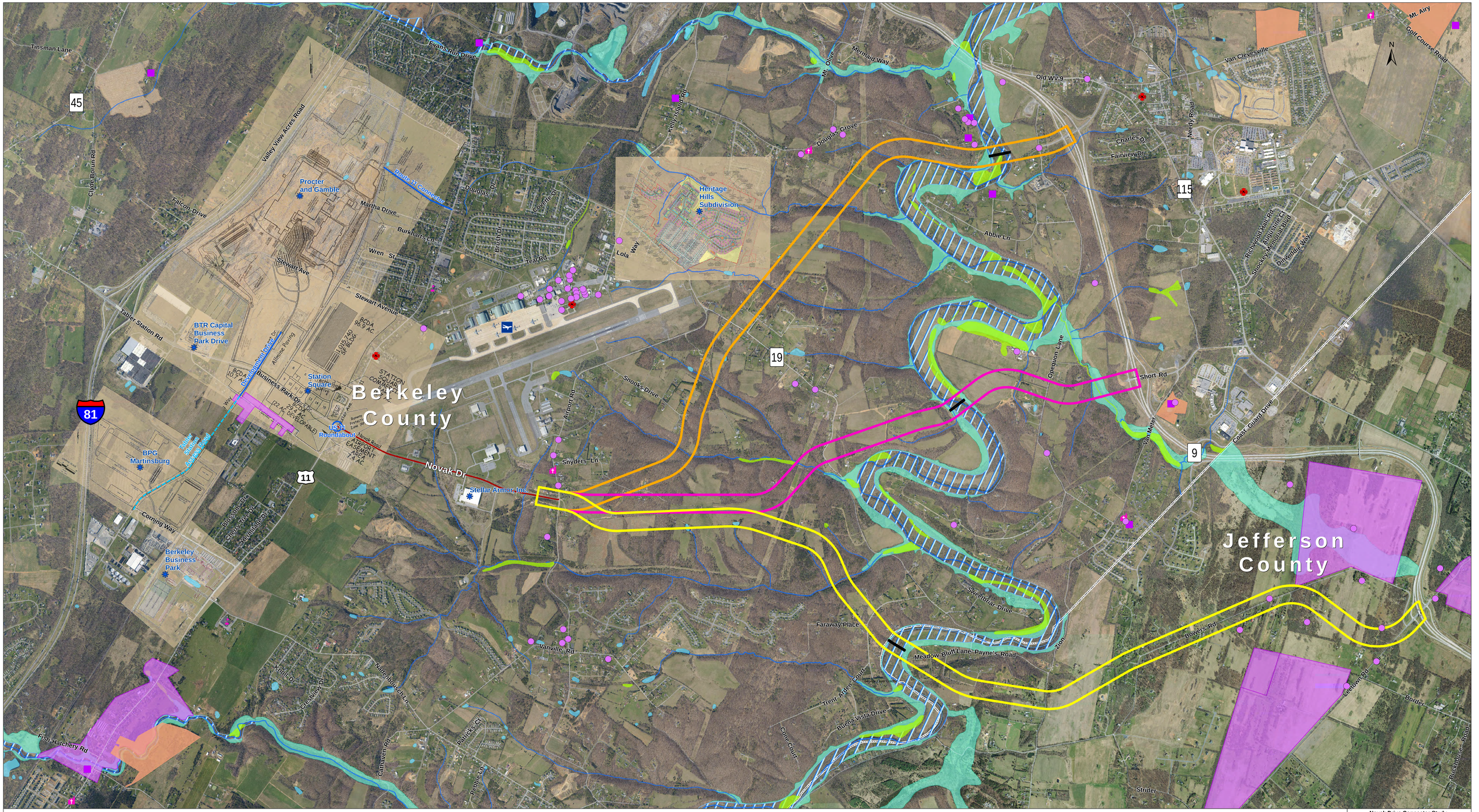

**Legend**

Environmental Study Area — Traffic Analysis Study Area — Existing Novak Drive

N

## Novak Drive Connector Study

**Public Workshop**
**June 27, 2017**


Berkeley County
Jefferson County
Heritage Hills Subdivision
Procter and Gamble
BTR Capital Business Park Drive
Station Square
BPG Martinsburg
Berkeley Business Park
USSH Roundabout
Stellar Armor, Inc.
Route 11 Connector
Tuscarora Trail
Shenandoah Trail
Evans Run Drive
Valley View Acres Road
Falcon Drive
Martha Drive
Burkharts Ln
Wren St
Stewart Ave
Stewart Avenue
Tabler Station Rd
Douglas Dr
Brush Dr
Cougar Ct
Teal Rd
Lola Way
Kelly Island Rd
Mt. Olive
Mermaid Way
Douglas Grove
Old WV 9
Abbie Ln
Fairview Dr
Charles Ct
Needy Road
Van Cleevesville
Mt. Airy
Golf Course Road
Richwood Hall Rd
Augustine Ct
Shockey Memorial Blvd
Dinwiddie Way
Opequon Lane
Short Rd
Van Meter
Coast Guard Drive
Airport Rd
Snooks Drive
Shyders Ln
Novak Dr
Corning Way
Blossom Dr
Cherry Tree Dr
Hemlock Dr
Vanville Rd
Knoll Dr
Chestnut Dr
Neighbors Ln
Catawba Rd
Patricks Ct
Pepper Ln
Fish Hatchery Rd
Faraway Place
Meadow Bluff Lane-Payne's Road
Sweetbriar Drive
Zion
Trent Adam Court
Cone Court
Buena Vista Drive
Bowers Rd
Leedown Rd
Border
Buckwheat Road
Strider
45
81
11
19
115
9
N
Legend
Alternative 1
Alternative 2
Alternative 3
Bridge
Planned/Proposed Development
Proposed Improvement
Improvement Under Construction
Fire Department
Library
Place of Worship
School
National Register Site
Recorded Historic Site
Historic District
Protected Farmlands
NWI Wetland
Freshwater Pond
Riverine
Floodway
100-year Floodplain
Novak Drive Connector Study
Alternative Corridors
0 350 700 Feet
Michael Baker INTERNATIONAL

# APPENDIX E

## Public Workshop

# Public Notice Mailing

# Notice of

# Informational Public Workshop

# Novak Drive Connector Study

## Blue Ridge CTC Technology Center, Room T04
## June 27, 2017
## 6:00 – 8:00 p.m.

The West Virginia Department of Transportation, Division of Highways (WVDOH), in conjunction with the Hagerstown / Eastern Panhandle Metropolitan Planning Organization (HEPMPO) is holding an informational public workshop on June 27, 2017 at the Blue Ridge CTC Technology Center, Room T04, located at 5550 Winchester Avenue, Martinsburg, WV on the Novak Drive Connector Study in Berkeley County, West Virginia.

This is a preliminary planning-level workshop through which WVDOH, HEPMPO and the Consultant Team will present information and seek public input regarding the need for a new access road between WV 9 and Novak Drive.

**No formal presentation will be made**. The scheduled public workshop is from 6:00 to 8:00 p.m. and the public will be afforded the opportunity to ask questions and give written comments on the project throughout the workshop. A handout with project details will be available at the workshop and on the WVDOH website.

Those wishing to file written comments may send them to Elwood Penn, West Virginia Department of Highways, Planning Division, Building Five, Room A-450, 1900 Kanawha Blvd East, Charleston, WV 25305 on or before July 28, 2017.

Individuals can also provide input through an online survey located at https://novak.metroquest.com until July 12th.

**The West Virginia Department of Transportation will, upon request, provide reasonable accommodations including auxiliary aids and services necessary to afford an individual with a disability an equal opportunity to participate in our services, programs and activities. Please contact us at (304) 558-3931. Persons with hearing or speech impairments can reach all state agencies by calling (800) 982-8772 (voice to TDD) or (800) 982-8771 (TDD to voice), toll free.**




**Legend**

- Parcels Public Workshop Mailing
- Preliminary Alternative Corridor 1
- Preliminary Alternative Corridor 2
- Preliminary Alternative Corridor 3

**Novak Drive Connector Study**

**Public Workshop Flyer: Parcel Owner Mailing Within 500-foot Preliminary Alternative Corridors**

0 1,500 3,000 Feet

# Public Workshop Newspaper Notice

**NOTICE OF INFORMATIONAL PUBLIC WORKSHOP NOVAK DRIVE CONNECTOR STUDY**

*Blue Ridge CTC Technology Center, Room T04*
*June 27, 2017*
*6:00-8:00 p.m.*

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# Certificate of Publication

This is to certify the annexed advertisement

HEPMPO
Notice of Informational Public Workshop

appeared for 1 consecutive days/weeks in The Journal Publishing Company, a newspaper in the City of Martinsburg, WV in it's issue beginning:

6-24-17

and ending

6-24-17

**The Journal**
**207 W. King Street**
**Martinsburg, WV 25401**

Fee ($) 59.20

THE STATE OF WEST VIRGINIA
COUNTY OF BERKELEY

The foregoing instrument was acknowledged before me this 7-03-17 by

My commission expires Feb 7 2021

Notary Public

OFFICIAL SEAL
STATE OF WEST VIRGINIA
NOTARY PUBLIC
Jeri L. Wines
203 Grove Springs Lane
Harpers Ferry, WV 25425
My Commission Expires Feb. 7, 2021

The Journal

# Public asked for input on Novak Drive study

MARTINSBURG — Berkeley County residents can now weigh in on whether to extend Novak Drive to Short Road to help alleviate traffic congestion in the area.

Called the *"Novak Drive Connector Study,"* the project is being conducted by the West Virginia Department of Highways and the Hagerstown Eastern Panhandle Municipal Planning Organization which will be collecting public input both online and during a special session to be held at Blue Ridge Community and Technical College this month.

Residents can provide input through an online survey located at http://novak.metroquest.com. from June 12 to July 12.

HEPMPO is also holding a public workshop at Blue Ridge Community and Technical College to provide information on the study and seek public input. The June 27 session will run from 6 to 8 p.m.

*"We'll be able to show some additional information that we are finalizing now where we're looking at our projected traffic growth,"* said Matthew Mullenax, executive director of HEPMPO, the the regional transportation planning agency for Berkeley and Jefferson counties, and Washington County, Maryland.

Going from east to west, Novak Drive begins at Airport Road, and goes through the Eastern Regional Airport Authority industrial park. Novak Drive intersects with U.S. 11. On the other side of U.S. 11, the road continues as Business Park Drive, which becomes Tabler Station Road shortly before the Interstate 81 interchange.

Officials are fielding public comment in examining whether extending Novak Drive to Short Road would relieve congestion on W.Va. 45 by diverting east-west traffic on W.Va. 9 between Martinsburg and Charles Town to the new road.

The extension would also give commercial traffic direct access between I-81 and industrial parks in Jefferson County.

Mullenax said the study is just the first step in a multi-step traffic process.

*"We are at the very, very beginning to try to determine if there is a need for such a facility as this,"* Mullenax said.

The idea for the study originally came up during the West Virginia Department of Transportation's W. Va. 45 Corridor Study in 2015, Mullenax said

*"One recommendation was to investigate if a connection between Novak Drive and W. Va. 9 could create an alternative route to alleviate some of the current congestion and address some of the safety issues happening there,"* Mullenax said.

According to Mullenax, the online survey will provide the public four options for addressing the area's traffic issue.

*"One is to take no action, and the other three are looking at alternative corridors,"* Mullenax said. *"We want to hear from the public as to what they think about these corridors, or if there are other corridors or possibilities that they would suggest the WVDOH and HEPMPO consider."*

The first alignment option runs 5 miles long, extending northeast from Novak Drive to the existing W. Va. 9 Opequon Lane interchange with a bridge over the Opequon Creek and at-grade intersections with major roadways.

A second alignment option runs 3.4 miles long, extending east from Novak Drive to the existing W. Va. 9 Short Road interchange with a bridge over the Opequon Creek and at-grade intersections with major roadways.

A third alignment option runs 5.4 miles long, extending southeast from Novak Drive to the existing W. Va. 9 Kearneysville interchange with a bridge over the

Opequon Creek, at-grade intersections with major roadways and upgrade of Bowers Road.

A W. Va. 45 Corridor Study was first conducted in October 2015 to look at congestion issues on W. Va. 45, also known at Apple Harvest Drive, between the Blue Ridge Community and Technical College campus and New York Avenue, including the I-81 interchange south of Martinsburg.

Likely to soon add to the area's traffic volume: Procter and Gamble will open the first phase of its manufacturing plant off Tabler Station Road in early December. It is expected to significantly increase car and truck traffic at that interchange and on Tabler Station Road.

Mullenax said the public survey information will be used to determine whether a need for a road extension genuinely exists.

*"It's to use the information as a sieve to shape through these alternatives,"* Mullenax said. *"And if so, what does the corridor look like where a facility like this happens."*

If that road extension need is met, the project would be ready to move into the planning stage, Mullenax said.

*"It would be moving into some of the engineering, moving into some of the actual design and just beyond the preliminary planning stage,"* he said.

Staff writer Jim McConville can be reached at 304-263-8931, ext. 215, or Twitter@jmcconvilleJN.

COMMENTS

**0 Comments** Sort by Oldest

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Facebook Comments Plugin

http://www.heraldmailmedia.com/news/tri_state/west_virginia/residents-invited-to-complete-survey-on-w-va-road-project/article_1d40f002-fa50-56a6-9ea4-969bf12f0e22.html

# Residents invited to complete survey on W.Va. road project

Matthew Umstead Jun 20, 2017 Updated Jun 20, 2017

MARTINSBURG, W.Va. — Area residents are invited to share their opinions about a possible road-construction project that could help relieve congestion at exit 12 of Interstate 81.

The project involves the construction of a road that would connect W.Va. 9 east of Martinsburg to Novak Drive south of Martinsburg near Eastern West Virginia Regional Airport.

Novak Drive currently connects to U.S. 11 and Business Park Drive, the latter of which leads traffic past the Tabler Station Business Park to exit 8 of I-81.

As part of the planning process, residents may complete an online survey through July 12 at https://novak.metroquest.com.

A public workshop also will be held Tuesday from 6 to 8 p.m. in room T04 at the Blue Ridge Community and Technical College Technology Center at 5550 Winchester Ave.

Additional information, including existing traffic-safety conditions and crash rates, will be provided, said Matthew Mullenax, executive director of the Hagerstown/Eastern Panhandle Metropolitan Planning Organization.Mullenax said it is important for residents to share their views on the potential project to determine whether the project is needed.

The online survey asks for "insights on needs, constraints and preferences for alternatives within the corridor."

Those who complete the survey are asked to rate four scenarios, including a "no-build" option, by using a one- to five-star system to submit preferences.

Comments on each of the three alternatives also are welcomed.

A 3.4-mile option would extend east from Novak Drive to the existing Short Road interchange for W.Va. 9, with a bridge over Opequon Creek and at-grade intersections with major roadways, according to the survey.

A 5-mile option would extend northeast from Novak Drive to the existing Opequon Lane interchange for W.Va. 9, with a bridge over the the creek.

An approximately 5.4-mile option would extend southeast from Novak Drive to the existing Kearneysville interchange for W.Va. 9, with a bridge over the creek.

That option also would include at-grade intersections with major roadways and an upgrade of Bowers Road.

The survey also asks participants to drag and drop markers on specific locations within the study area outlined in red to identify important features and concerns, such as environmental, historic, cultural and recreational issues.

Mullenax said the process is in the preliminary stage, and he noted that the number of travel lanes for the connector road haven't been determined.

"It's a very preliminary planning exercise," Mullenax said.

The Novak Drive connector road was identified as an alternative in a previous study of congested areas of W.Va. 45 in the area of exit 12.

# Public Workshop Handouts

# Goals and Objectives

**Mobility Goal:** Improve access between WV 9 and the airport area / I-81 while alleviating congestion on area roadways.

**Objectives include:**

- Reduce traffic on WV 45 by providing an alternate access to I-81
- Provide additional access to the Tabler Station area
- Improve multimodal connectivity by facilitating improved transit service, bicycle/ pedestrian accommodations and access to the Eastern West Virginia Regional Airport

**Safety Goal:** Improve the level of safety for motorists in the study area.

**Objectives include:**

- Reduce truck traffic along WV 45 and other major arterials by providing an alternate route
- Divert traffic away from or make improvements to high crash locations
- Improve bicycle / pedestrian safety by providing appropriate accommodations

**Economic Development Goal:** Support planned development and promote future growth in the area.

**Objectives include:**

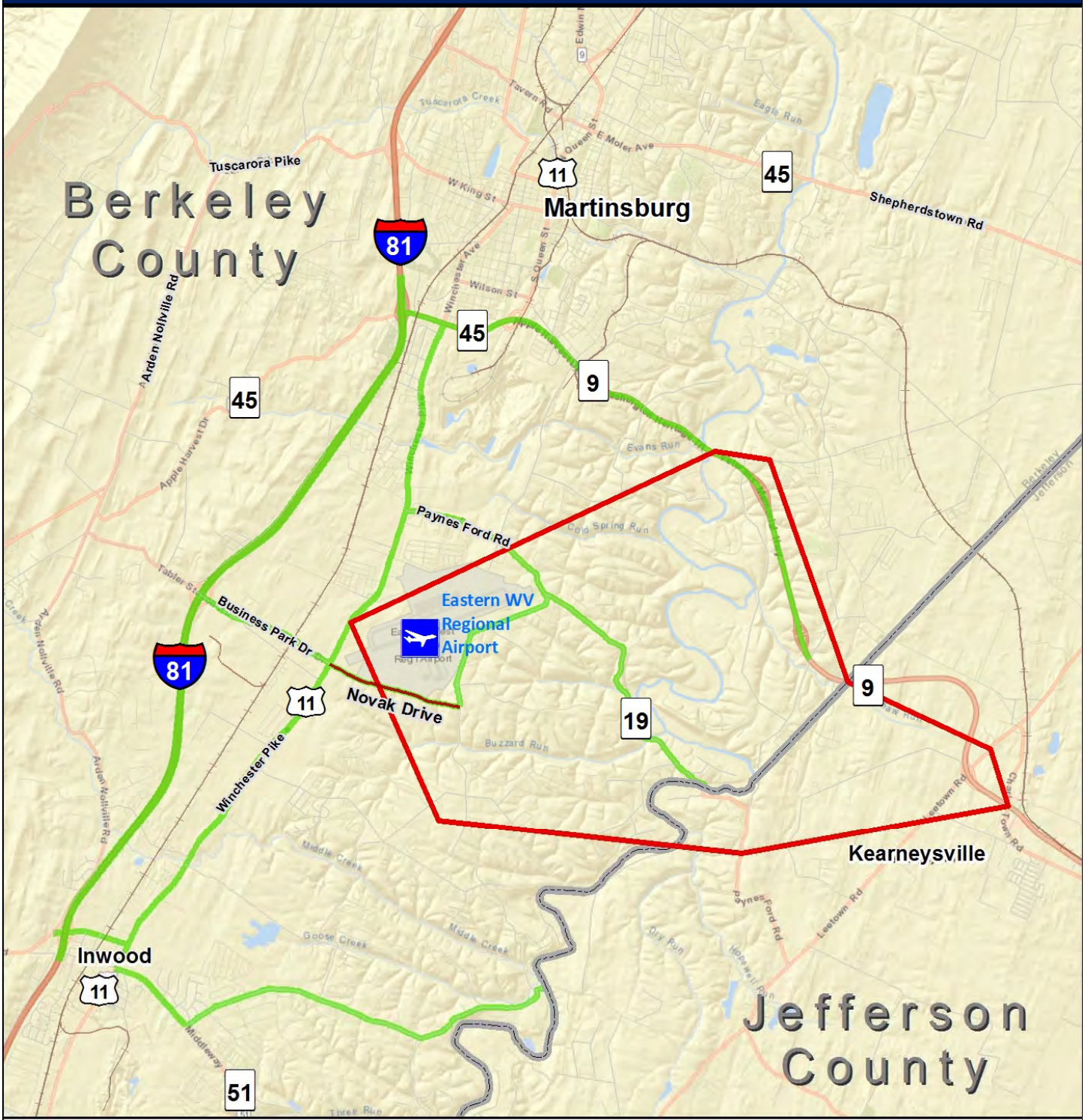
- Provide additional access to the Tabler Station area
- Promote growth in downtown Martinsburg through congestion relief on WV 45 and highway signage for downtown Martinsburg
- Promote freight growth by providing improved access to I-81

**Environmental Goal:** Protect and preserve the environment in the study area.

**Objectives include:**

- Minimize impacts to the Opequon Creek and other environmental and cultural resources
- Preserve the rural character of the area by appropriately controlling access
- Minimize noise impacts by avoiding sensitive locations
- Improve air quality by reducing traffic congestion

# Environmental and Traffic Analysis Study Areas




**Legend**

Environmental Study Area — Traffic Analysis Study Area — Existing Novak Drive

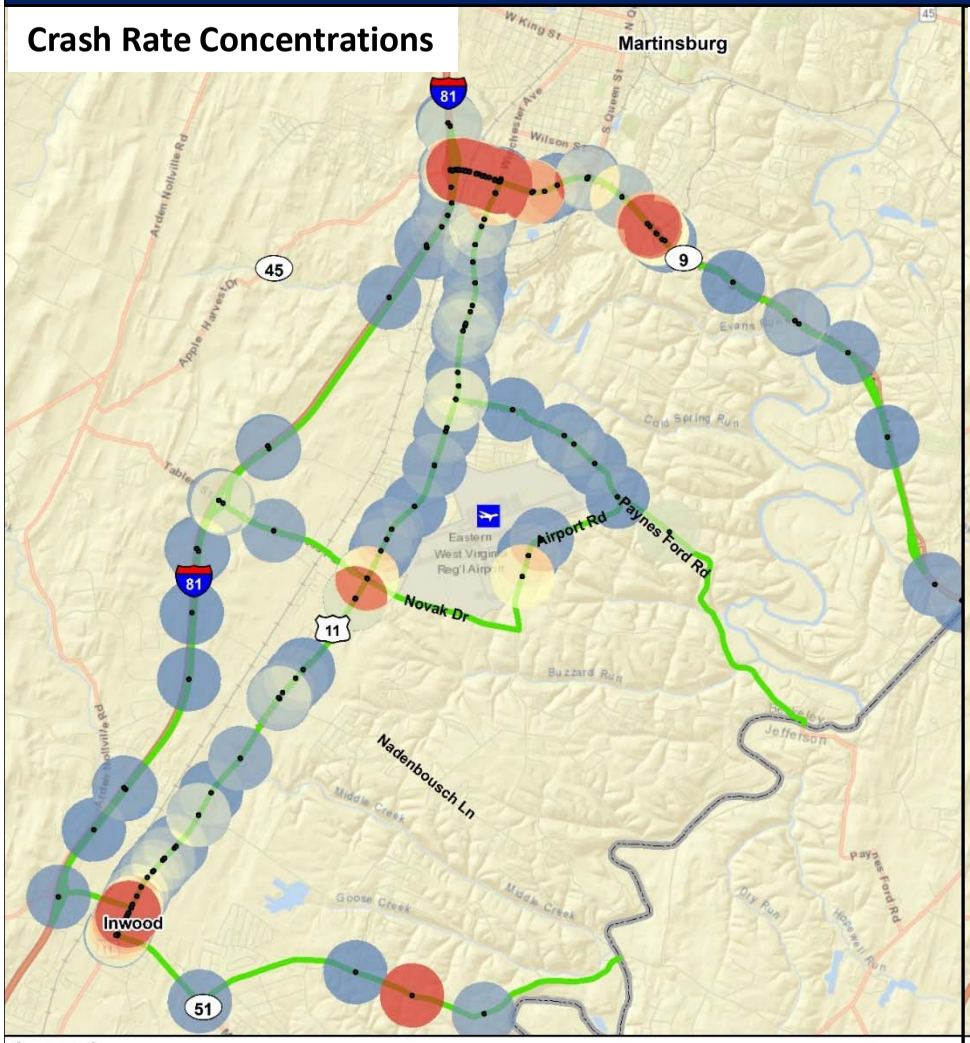
N

## Novak Drive Connector Study

**Public Workshop**
**June 27, 2017**

# Crash Analysis

## Crash Rate Concentrations

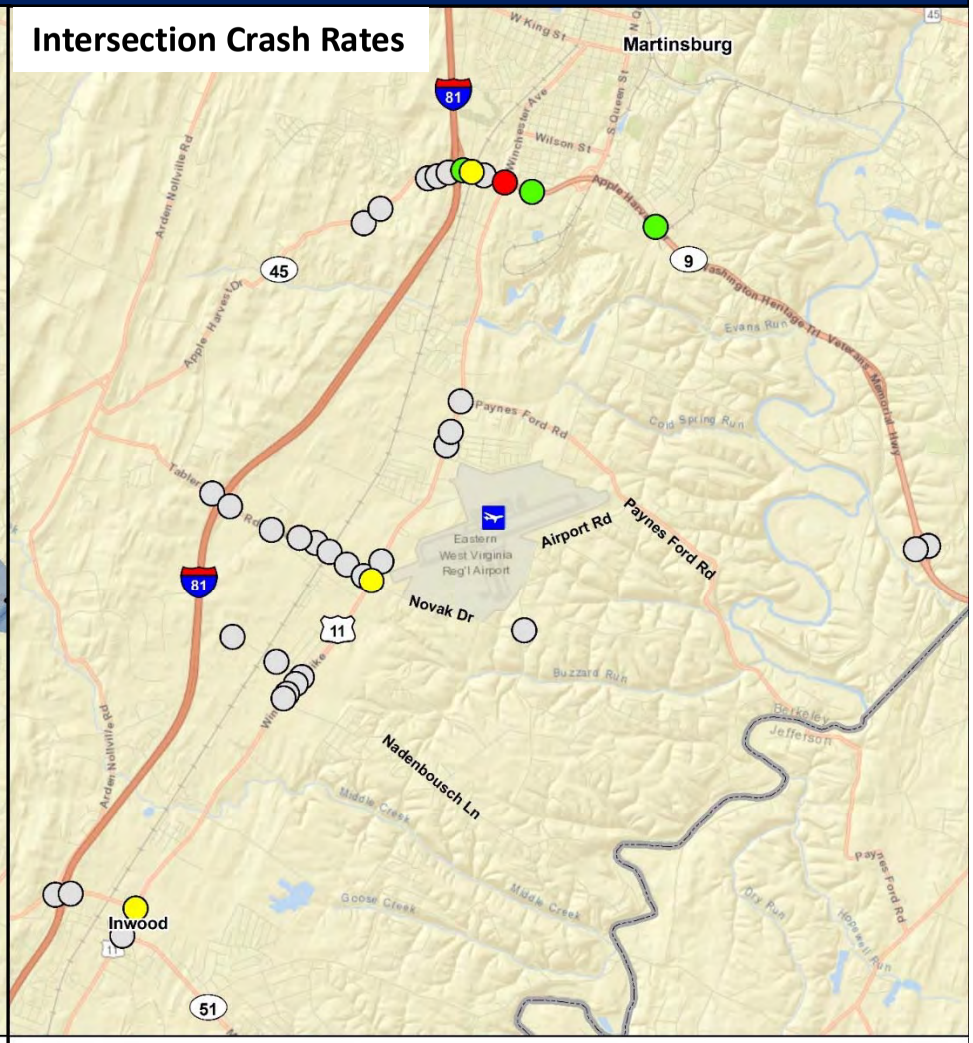



Legend

- Traffic Analysis Study Area
- Crashes
- Crash Density: High / Low

N

## Intersection Crash Rates




Legend

Crash Rate per Million Vehicles

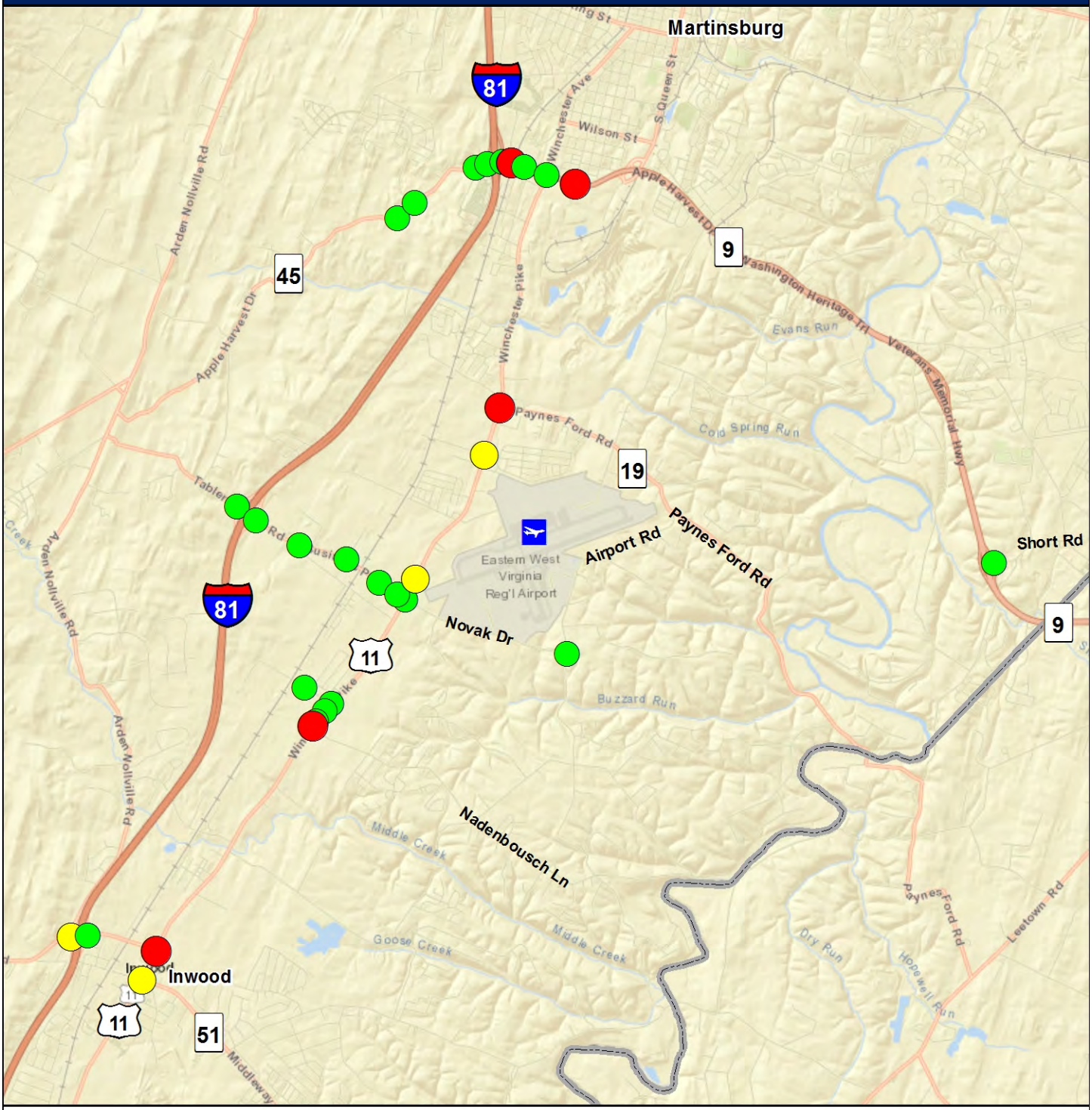
- < 0.4
- 0.4 - 0.59
- 0.6 - 0.79
- 0.8 - 1.0

N

## Novak Drive Connector Study

**Public Workshop**
**June 27, 2017**

# Existing Traffic Analysis




**Legend**

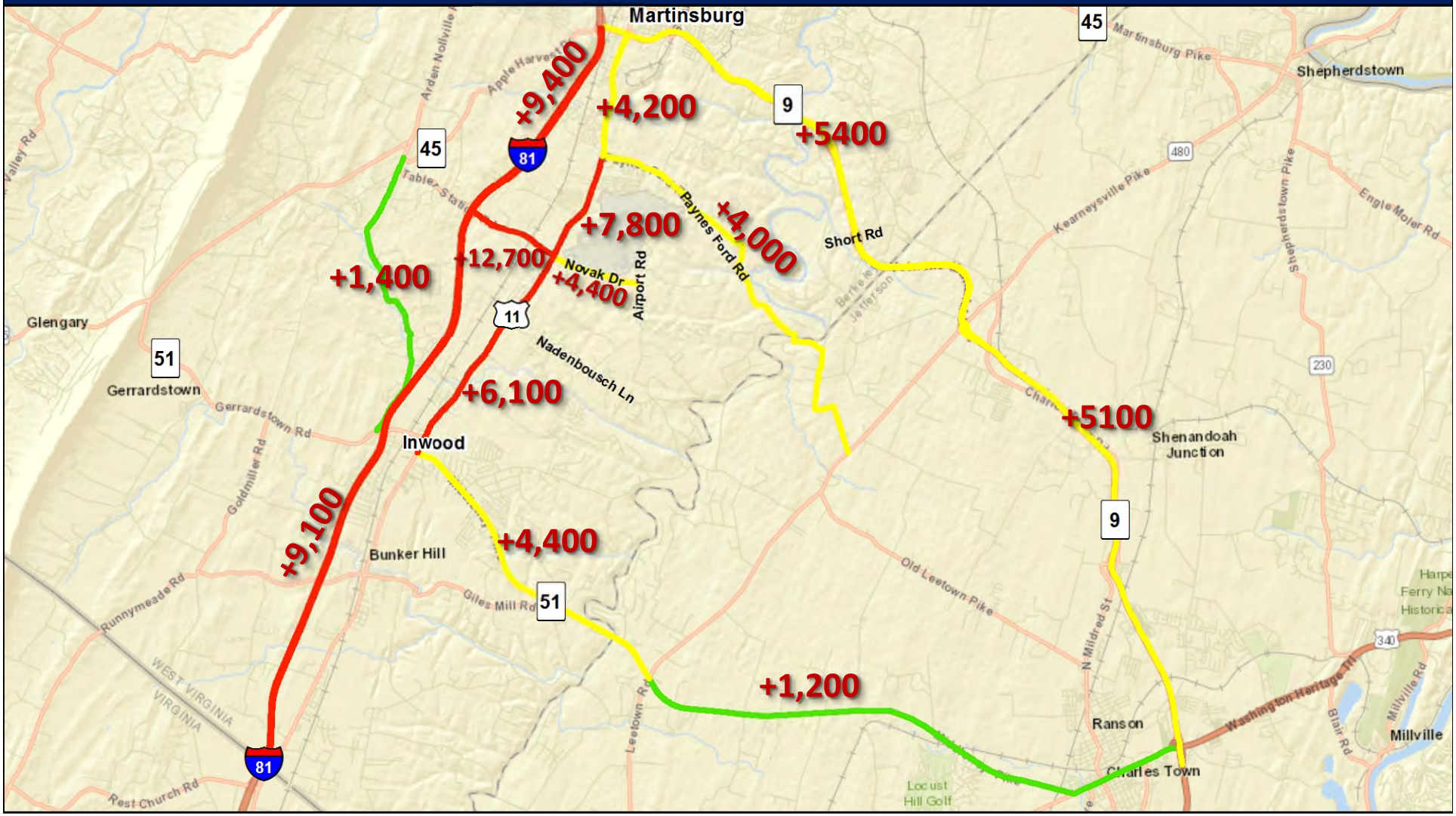
**Existing Level of Service (PM)** — LOS A, B or C — LOS D — LOS E or F

N

## Novak Drive Connector Study

**Public Workshop**
**June 27, 2017**

# Projected Daily Traffic Volume Growth (2017 to 2040)




**Legend**

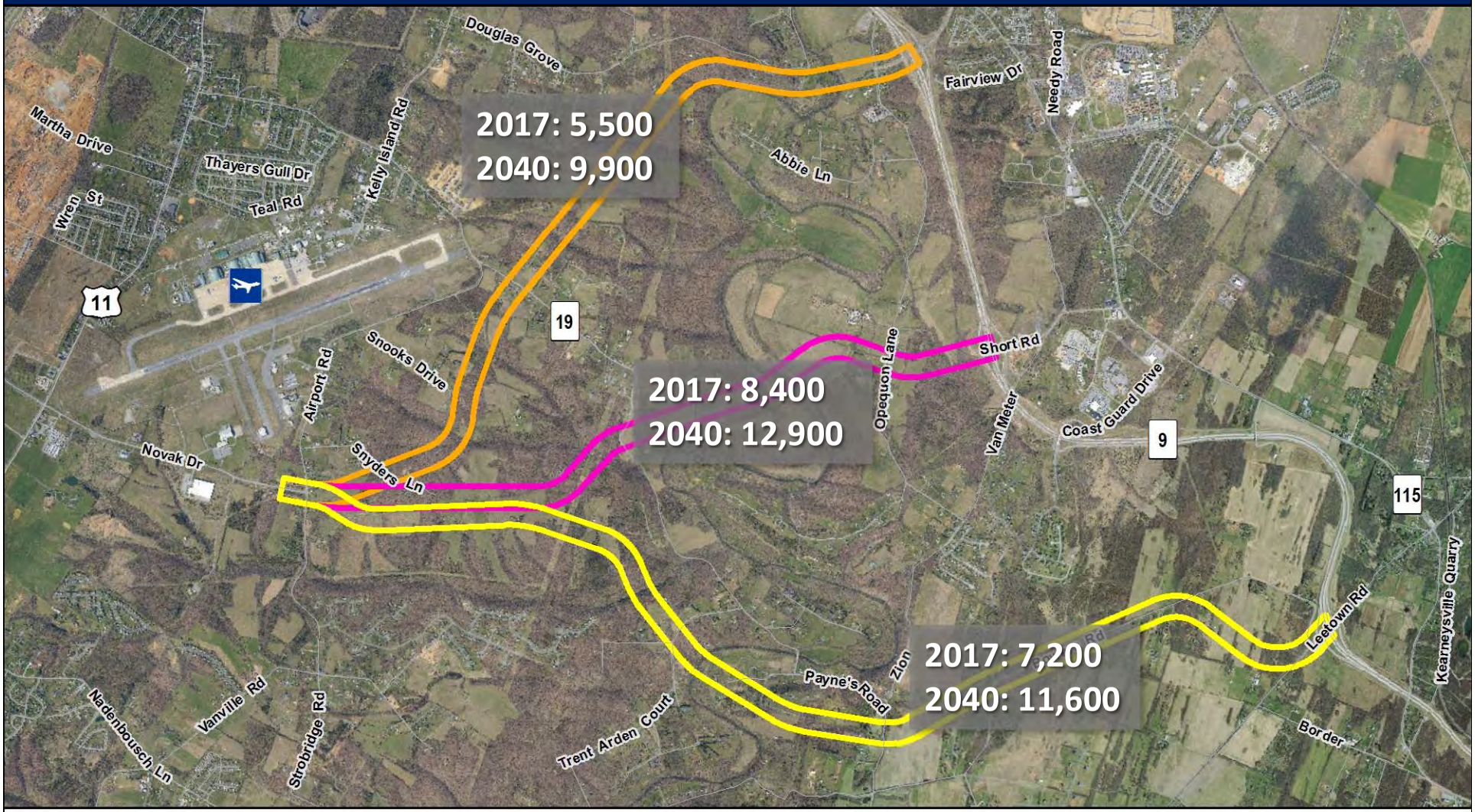
**Projected Traffic Volume Growth (2017 to 2040)** 0 - 1500 | 1501 - 6000 | 6001 - 13000

N

## Novak Drive Connector Study

**Public Workshop**
**June 27, 2017**

# Projected Daily Traffic Volumes From Travel Model




**Legend**

Alternative 1 | Alternative 2 | Alternative 3

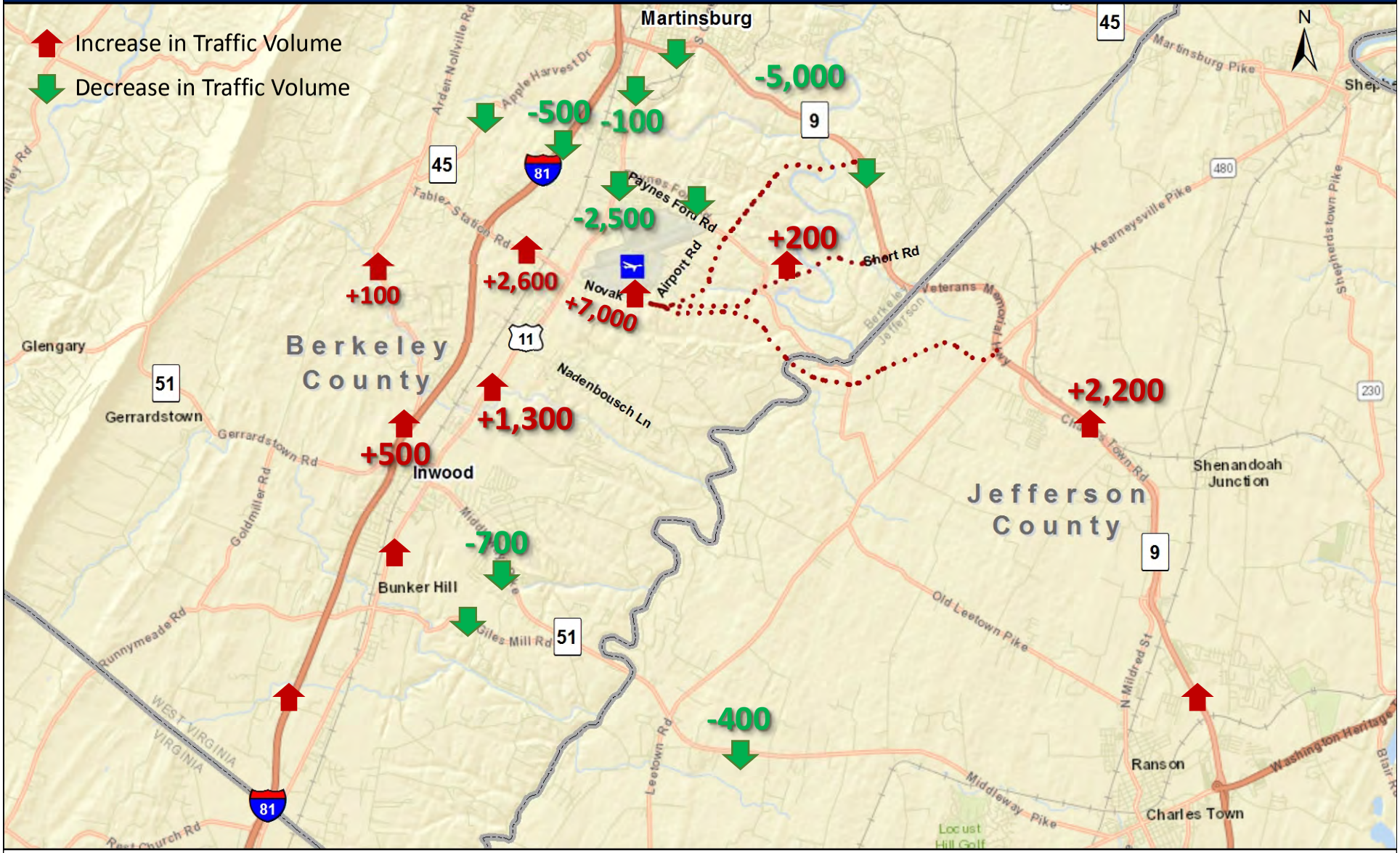
0 1,750 3,500 Feet

N

## Novak Drive Connector Study

**Public Workshop**
**June 27, 2017**

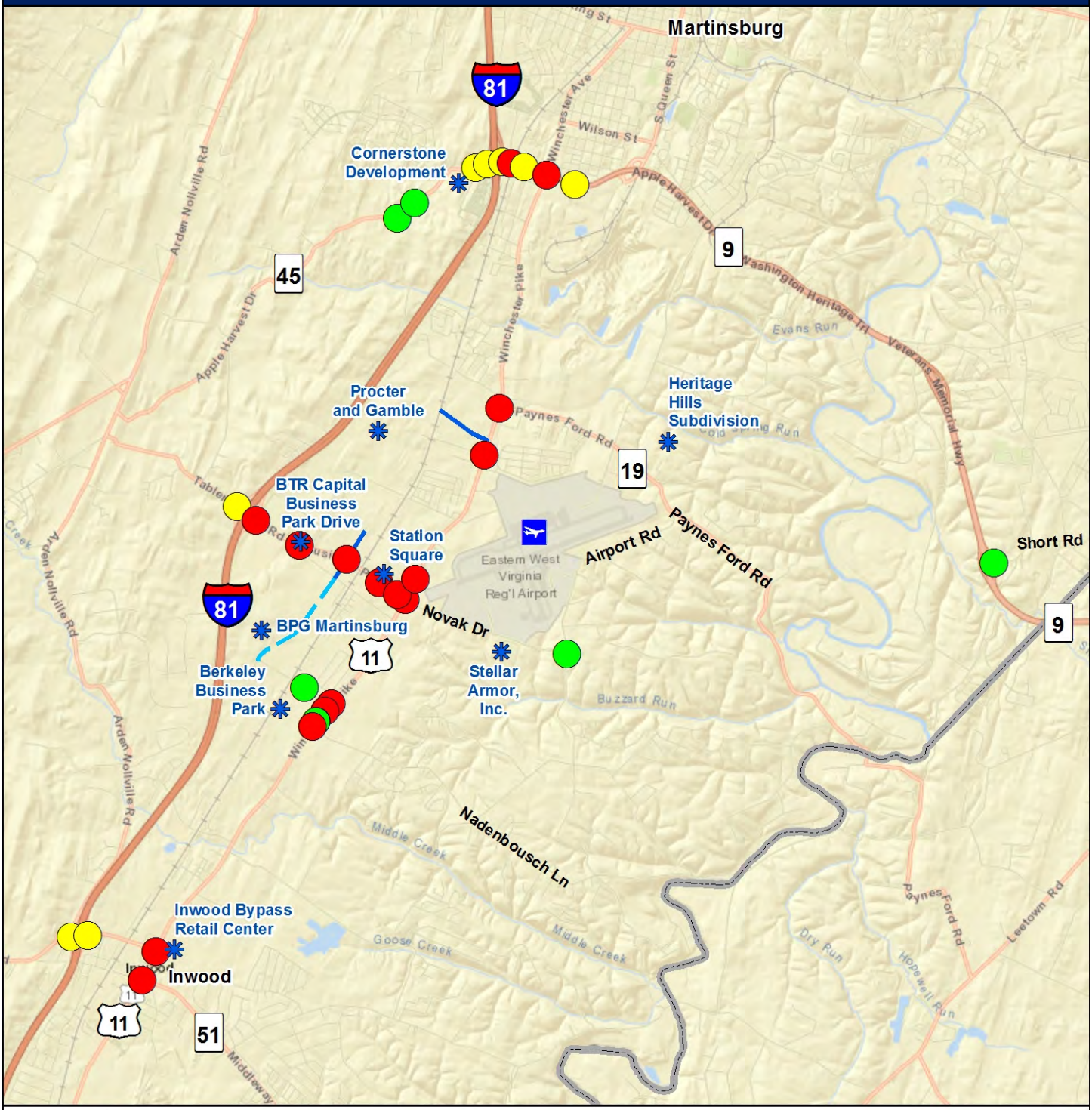
# 2040 Daily Diversions Due To Novak Drive Extension




## Novak Drive Connector Study

**Public Workshop**
**June 27, 2017**

# Future (2040) No-Build Traffic Analysis




**Legend**

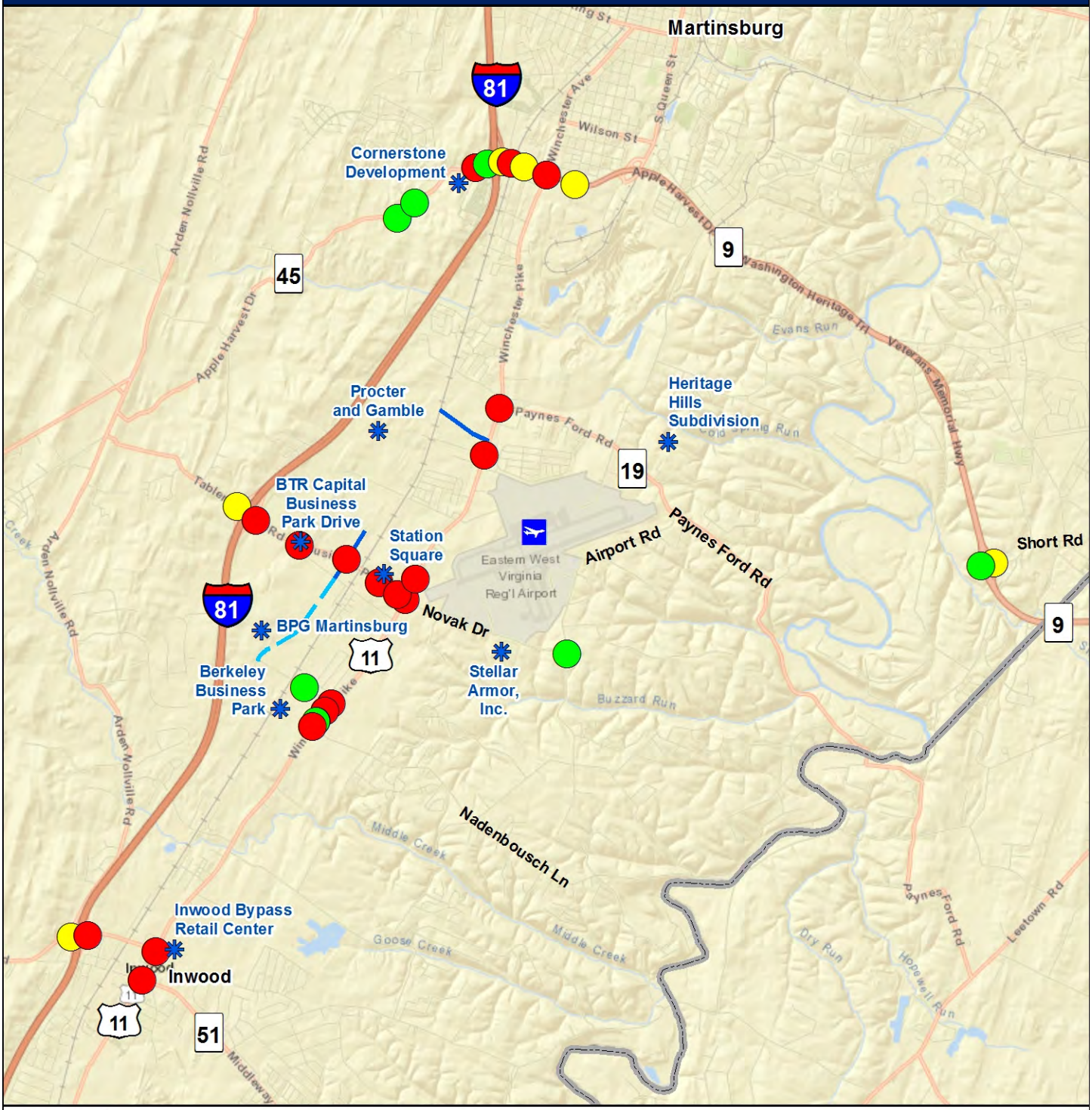
**Future No-Build Level of Service (PM)**

- LOS B or C
- LOS D
- LOS E or F
- Planned/Proposed Development
- Proposed Improvement
- Improvement Under Construction
- N

## Novak Drive Connector Study

**Public Workshop**
**June 27, 2017**

# Future (2040) Build Traffic Analysis




**Legend**

**Future Build Level of Service (PM)**

- LOS B or C
- LOS D
- LOS E or F
- Planned/Proposed Development
- Proposed Improvement
- Improvement Under Construction

N

## Novak Drive Connector Study

**Public Workshop**
**June 27, 2017**

# Preliminary Alternative Corridors

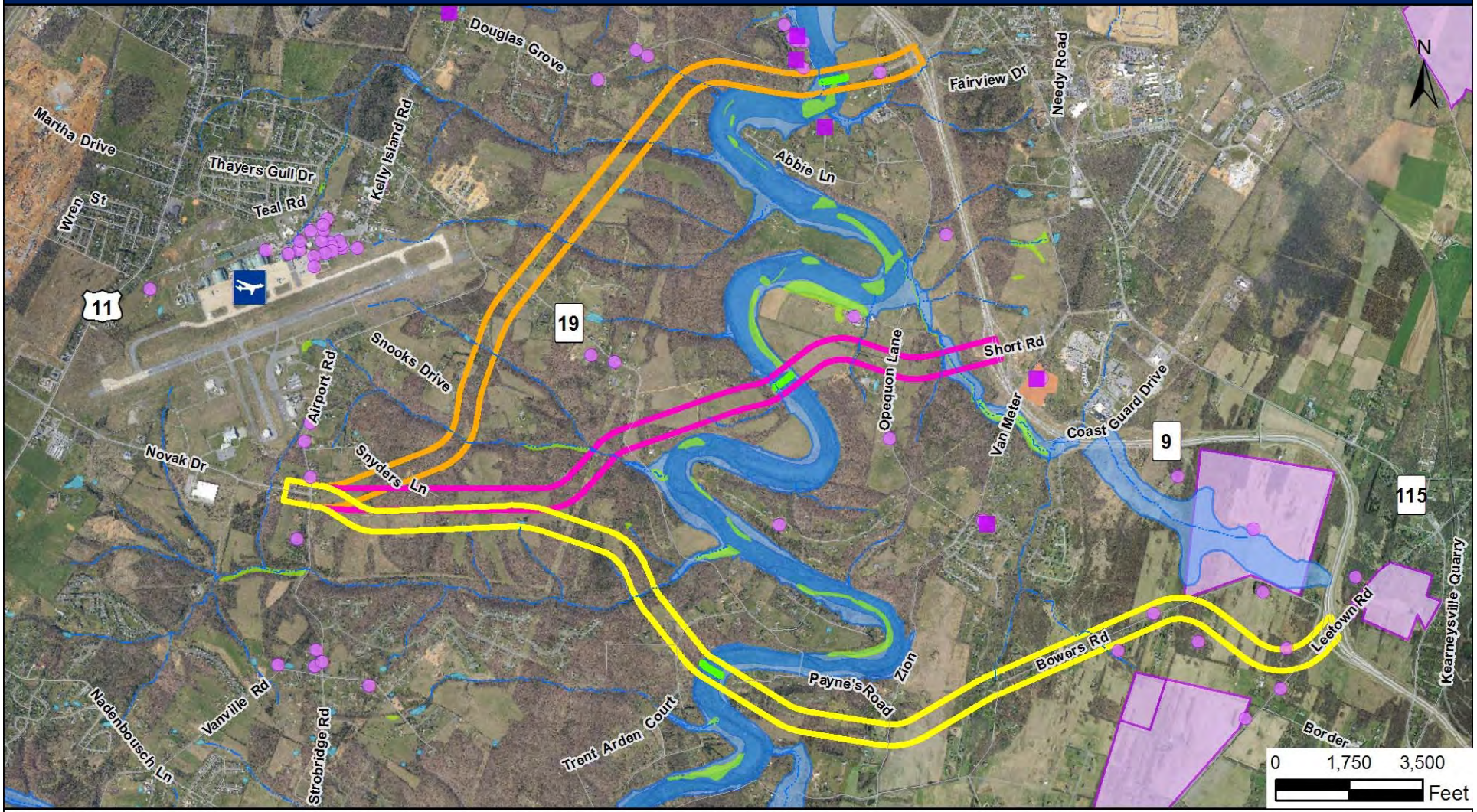
**No Build Alternative:** The No Build Alternative assumes that a new road connection between Novak Drive and WV 9 would not be constructed and serves as a baseline against which the other alternatives can be compared. Improvements would focus on addressing traffic congestion at key intersections within the study corridor including Novak Drive and US 11.

**Alternative 1:** Alternative 1 is a new roadway connection from Novak Drive to WV 9 at the existing Opequon Lane / Baker Heights interchange. The alignment is approximately 5.0 miles long, extending northeast from Novak Drive to the existing WV 9 Opequon Lane interchange with a bridge over the Opequon Creek and at-grade intersections with major roadways while minimizing conflicts with environmental and historic resources to the extent possible.

**Alternative 2:** Alternative 2 is a new roadway connection from Novak Drive to WV 9 at the existing Short Road interchange. The alignment is approximately 3.4 miles long, extending east from Novak Drive to the existing WV 9 Short Road interchange with a bridge over the Opequon Creek and at-grade intersections with major roadways while minimizing conflicts with environmental and historic resources to the extent possible.

**Alternative 3:** Alternative 3 is a new roadway connection from Novak Drive to WV 9 at the existing Kearneysville / Leetown interchange. The alignment is approximately 5.4 miles long, extending southeast from Novak Drive to the existing WV 9 Kearneysville interchange with a bridge over the Opequon Creek, at-grade intersections with major roadways and upgrade of Bowers Road while minimizing conflicts with environmental and historic resources to the extent possible.

# Preliminary Alternative Corridors




**Legend**

- Alternative 1
- Alternative 2
- Alternative 3
- Bridge
- National Register Site
- Recorded Historic Site
- Historic_District
- Protected Farmlands
- Floodway
- 100-year Floodplain
- NWI Wetland
- Freshwater Pond
- Stream

## Novak Drive Connector Study

**Public Workshop**
**June 27, 2017**

# APPENDIX F

## Public Comments

# Comment Forms

# Novak Drive Connector Study
## Comment Forms

| Date | Comment |
|---|---|
| 6/27/2017 | Preserving agriculture should be a #1 priority for our future. Current proposals cut multiple farms in two, disturb the hydrology, will destroy the topography of farms and essentially put everyone out of business. Use your head next time and think of a better solution. NO BUILD |
| 6/27/2017 | Some of us, when we bought our house, did so away from a main road. If they fix the problems @ 81, 45, 11, there would be no need for this road. We don't live in Nova, we like rural roads, I, as well as many of the people that live in the proposed areas, don't want or need a main road. That was the attraction to where we bought our houses. There is no time savings with the new road, only trying to make us look like Nova and forgetting people like how quiet it is. Not to mention there are better ways to spend this money. |
| 6/27/2017 | Notification needs to be sent to all people in these 3 areas and those on the boarders as well. I live on Faraway Pl and only knew about this by a neighbor informing me. We do not live in traditional developments where you can open your door and speak with your next door neighbor. Word of mouth does not work to the many that will be affected by any of these 3 proposed routes. |
| 6/27/2017 | This project is the worst plan I have seen so far for WV. This plan will destroy the homes, land and peaceful tranquility I have grown use to since I moved here 10 years ago. This plan will bring nothing to the area to benefit any homeowner in the path of these roads. Too much development without enough brainpower being used. My backyard will lose its quiet and calming scenery. Just like the circles that have been installed; it's a stupid idea. Circles don't work. We also don't need to keep passing out building permits for corporations and keep giving them tax breaks. You mention you will give homeowners "fair market value" for their land. Let's be real, fair market value is an insult to someone who has built their home on land and has worked that land for years. Call it what it is: stealing. Most people bought and built in 2006-2007 and are already underwater with their mortgages, unless you offer them 5x their "fair market value", you are stealing their land. There has to be other options for Route 45. For the person or people who thought of the "hair brain" idea, I don't know how you sleep at night. Before creating more roads in this state, how about fixing the ones we already have. Look at Airport Road to see what I mean. 81 floods with the littlest amount of rain. So much for "almost heaven". West Virginia already has a bad rap, if this plan goes through, it will definitely earn its new title "_____. |
| 6/27/2017 | We live on Powers Dr. off of Bowers Rd. We moved here due to the charming rural character. Option #3 would create a situation where I'd want to move. I understand that growth needs to happen, but I hope the scenario that affects the least amount of people is chosen. Thanks for your consideration. |
| 6/27/2017 | Widen Airport Road from Novak to Paynes Ford then build new road. Traffic problem on 9/45 are heading north on 81. No one seems to be upset about Alternative #1 – widen airport and pick up Alternative #1. |

# Novak Drive Connector Study
## Comment Forms

| Date | Comment |
|---|---|
| 6/27/2017 | I built my home in the middle of 4th generation family farm – where my kids and grandkids could raise their family. My suggestion is to take some property from airport and widen Airport Road – Property is vacant! I did not build my home in middle of farm with hopes of a 4 lane road passing my porch? No Build! |
| 6/27/2017 | Find better route. Just bought grandmothers home on Grandparents farm. |
| 6/27/2017 | Don't want Alternative 2 – it will split my property > 300 acres – 2 farms and large barn and a double wide that grandson and family live in. Son and daughter-in-law live on one farm. More traffic and very noisy if it goes thru. I have lived there for 61 years and raised a family there. |
| 6/27/2017 | Please do not choose alternative #2. We live on one of 2 farms on <300 acre property. Many acres have numerous wildlife and many trees and bushes and plants that support wildlife. Besides displacing our home (possibly) many forms of wildlife would be pushed out. I've seen deer (many!) coyote, bobcat, groundhogs, foxes, turkey, pheasant, raccoons – creek is on the property. I lived here 30 years and soon to retire. It is peaceful and quiet. This time of year fire flies are out, it's beautiful. Know we need roads, just not Alternative #2. It's my home. |
| 6/27/2017 | Prefer Alt 1 first. Second choice is Alt 2. |
| 6/27/2017 | Against Alternative 3. Do not destroy Horseshoe Bend Community! |
| 6/27/2017 | No Build. None of these will alleviate traffic to the shopping plaza which is a large reason for heavy traffic on 9/45.<br>No to Alternative 3. Study Alternative 2 and cut W before Snooks Drive to connect to Airport Drive. Alternative 3 is super destructive at least 5 subdivisions, at least 50+ homes. I think move. |
| 6/27/2017 | Have you studied use of Alternative #1 and turn west before Snooks Drive to connect to Airport Road? This would increase view of traffic, alleviate traffic on 45/9 and prevent destruction of many homes. We recently learned that the airport is considering selling land at south end of Novak Drive? |
| 6/27/2017 | Please reconsider the options that you presented. We believe that the route you selected are not adequate to traffic flow to Route 9 as your preliminary planning shows. Please consider an alternative plan for the moving traffic from P.G. Plant to Route 9 if that is your goal. What you need to do is upgrade Exit 12 for Route 9 at 81 and the mall entrance. Build new ramps at P.G. Plant off and on ramps for 81. Thank you, please consider this. |
| 6/27/2017 | Short Road option best. Do it! |

# Novak Drive Connector Study
## Comment Forms

| Date | Comment |
|---|---|
| 6/27/2017 | Alternative #3 would wipe out a "Great Blue Heron" rookery – a large group of them nesting in one tree – which sits behind the property owned by Gary and Diane Sylvester (who live on Trent Arden Ct.). These folks were not able to attend this meeting (due to needing to visit family) – but this information will be relayed to them. Both the Sylvester's and my husband & I are birders, and we would certainly make known to the community about this wildlife travesty if Alternative #3 was taken.<br>Our house (+ property) is shown to be smack on the proposed Alternative #3 roadway. We live in a beautiful subdivision area. This proposed action would rape and disfigure everything in its path, including precious wooded areas, indigenous wildlife and marring the Creekside views. Besides destroying our living situation, it would greatly affect those neighbors who live beyond Trent Arden Court (the back part of "Horseshoe Bend") Also, I don't believe taxpayers would be happy knowing the longest Alternative route was chosen. I vote for Alternative #3 – No Connector Road. |
| 6/27/2017 | I do not see how Opt 3 is a feasible option. It appears that it will displace many, many more families. This is going to affect these family's lives and those that are close by the new road. There needs to be relief up in town at Foxcroft, 81, & Route 11. I believe that the options to improve the roads & traffic patterns (new roads, etc.) is the best plan to address the congestion that downtown Martinsburg is and will be experiencing . No Build! |
| 6/27/2017 | Seems like Kelly Island Road to Airport Road makes more sense. Roadwork is mostly there. Just needs to be expanded. 81 N dump off to Route 9 at Foxcroft would be a big help. Also heard about building a road behind Lowes from Route 11 to Foxcroft. Whole lot cheaper. |
| 6/27/2017 | After attending the public workshop on 6/27/27 and viewing the purpose of the study and the three proposed routes, I believe the shortest and most direct route, Short Road, would be less disruptive. Bowers Road is the longest route and the least direct. It has a number of historic homes, small farmsteads offering produce sales, horseback riding lessons, and many families with small children. Biking, walking and school buses frequent the road. It is a quiet area with many mature trees along the immediate roadside, one of which is well over 100 years. The noise, congestion, and increased vehicle traffic would drastically change the character of the neighborhood. |
| 6/27/2017 | No Build! Find better Route – I plan on building my home on our family farm when I get out of college. |
| 6/27/2017 | This will take my Farm, I grew up on. I suggest another route. Widen Airport Road. My family roots mean more than people sitting in traffic to go in opposite direction what this road will accomplish. |
| 6/29/2017 | Use funding that was given to fix the congestion at Exit 12. Where is that money? Stop taking away the farms and country life that is so needed. |

# Novak Drive Connector Study
## Comment Forms

| Date | Comment |
|---|---|
| 6/29/2017 | We as a family say “NO Build”. This road is going to effect a lot of families no matter what way it goes. It’s also going to effect a lot of wildlife and country living.<br>This road if it goes the shorter route is going to affect my family in the worst possible way. My cattle will no long be able to go to the barn (for tagging-worming) and to make sure they stay in good health. They will no longer have a pasture to grow and eat. In some ways it effects the food on our table and yours. Please no road. |
| 7/1/2017 | Alternative 2 will go through the middle of Kackley Farms (owned since 1949 & 1951). This road will split the farm taking the main fields for hay and pasture. It will also take away from the wildlife. There are also other farms on this route which will take away from the wildlife. The wildlife has nowhere to go with all the building of new homes. This is just another road to see deer, squirrels, etc. lying along the roadside. I do not see where any of these roads are needed. There is not enough equipment operational to take care of the roads that we have. There is never enough money for guardrails, etc. when asked about the safety on the existing roads, but there is always enough money for new ones. If there are problems with traffic and wrecks, work on the problems in that area. Don’t add to the County to make problems elsewhere. These projected road sites are taking people’s homes and property that they have worked hard for years. If a road has to be build, follow the airport road to the merge at Paynes Ford. The shortest distance would be from there because the airport road is already built. My family and I have lived on our farms for a lot of years. My wife and I are getting ready to retire and enjoy what we have worked for. We do not need to worry about losing our home or property for a road or have to deal with a road through the middle of our property. |
| 7/5/2017 | I'm glad that this planning project is being started to reduce congestion and decrease public safety issues while guiding development in a reasoned fashion. If it proves feasible, it should be done with the least impact to current residents while achieving its purposes.<br>I attended the public workshop on June 27and have examined the documents available. From the materials provided and comments of representatives present, it seems clear that the preferred choice should be the most direct route (Alternative 2) to Short Road. It provides the shortest path by 40% and offers no extraordinary construction obstacles. It has the least impact (in terms of numbers affected) on current residents and has an already constructed access/egress to Rt9.<br>Because of the numbers of current residents affected, the extraordinary construction cost of elevation changes crossing the Opequon Creek, and the construction disruption and cost of upgrading the existing Bowers Road (utility relocation, roadbed improvement, increased right-of-way setbacks, and sound and visual abatements); Alternative 3 must be the least preferred. Not shown in the aerial maps is the quantity of residential development along the affected portion of Bowers Road. Not only is there substantial occupancy directly on Bowers Road but there are a number of subdivisions which only have access and egress from Bowers Road. These are family oriented residential communities with all of the collateral issues of school bus access, child safety, etc. that will be directly affected.<br>I understand that multiple alternatives are an important part of the planning process but I cannot see that Alternative 3 merits inclusion in the study. |

# Novak Drive Connector Study
## Comment Forms

| Date | Comment |
|---|---|
| 7/10/2017 | Homes, farms and woodlands should not be taken away from Berkeley and Jefferson County landowners in hopes of reducing congestion at Exit 12. Implement the plans the DOH has already presented that would be less costly than new roads and would fix the problem where it exists at Exit 12. No new roads for the Novak Drive Study. |
| 7/11/2017 | I attended the public workshop on June 27, 2017 and found that the information given out by the presenters was inconsistent from table to table. For example, one presenter suggested that the project was 15-20 years out, while another presenter suggested 5-10 years. Another presenter suggested that the expansion of Bower Road would not be used for truck traffic, while yet another suggested that Proctor and Gamble intends to run three shifts, 24 hours a day, and that there would be great benefit to truck traffic getting products into the area east of the plant.<br>There was also a gap in critical information. No one could tell us if Bower would remain a two-lane road or become another four-lane highway. No one could tell us how the 100ft drop to Opequon would be managed. Think about the botched Corridor H project, and the danger it poses to the safety of truck drivers, many of whom refuse to use it. Based on these inconsistencies and lack of critical details, it is difficult to evaluate the extent of the problem or the suitability of the proposed options. Even though the "planners" of the interchange did a poor job in designing Exit 12, 181 & Route 45/9, it does not give license to the State to upend the Route 9 corridor. Moreover, our confidence is low that they will get it right this time. Our understanding is that the State may not have the money to make these changes, but if it did, those funds should be used to fix exit 12.<br>Again, it has not been satisfactorily demonstrated that any of your three proposals will have a positive effect on the conditions at that intersection and I respectfully suggest that they be abandoned for the following three reasons: 1. Most traffic will not be diverted from Exit 12 because the intention of those drivers is to shop at that intersection; 2. The proposed connector roads lead to destinations very few have a need to reach; and 3. The information on Proctor and Gamble is too unclear to base any analysis or evaluation that can be relied upon. Therefore, any of these proposals would only serve to destroy farm land, family homes, and the reason most of us have located to this area-peace and quiet. |
| 7/16/2017 | Option 3 is the longest and less direct route with a meandering design so it would be the most expensive alternative and the least desirable as it would cause the most disruption for farms and homes. Option 3 also parallels Route 9 about a third of its length instead of connection in a more direct way (Short Rd Alt). Bowers Road is currently a very narrow country road with many homes built close to the road, some of them historic or very old original country homes. The proposed upgrade of the road would impact these homes. This road is used by residents to walk, jog and bike as it is a shady road with abundant mature trees growing close to the road.<br>Our home would effectively be isolated by this alternative as there would be road all around u (current Bowers Rd, new Bowers Rd, Rt. 9). The property would become an island. This would cause the property to be devalued. We depend on the value of our property as a financial asset for security in old age. It is also our home. Historic traveler's Rest would also be isolated and the road would bisect our neighbor's farm. The noise, congestion and increased traffic (especially trucks) would destroy this peaceful road. |

# Novak Drive Connector Study
## Comment Forms

| Date | Comment |
|---|---|
| | The impact on children who live along Bowers Road would be affected as they would not be able to play outdoors and access to school buses would affected. There is also the impact on wildlife habitat this project would have.<br>Thank you for accepting my comments and concerns. |
| 7/16/2017 | The objectives listed by the workshop; safety goals, economic development and environmental, do no warrant this change to our community. In fact, your environmental goals state exactly the opposite. What does my land have anything to do with Martinsburg traffic or airport freight? Do Nothing. |
| 7/17/2017 | I do not want Novak Drive Extension running through adjoining farm (Kackley Farm on Paynes Ford Road). I don't want to look out my back door at a 4 lane highway. This will decrease my property values along with losing my privacy. I love my country setting. Unless you want to buy my property at above appraisal value. All of this property has been in our family since 1930's when my Grandfather & his brother purchased and farmed all these years. |
| 7/20/2017 | We are very fortunate in our area to have historical homes which we love and are willing to preserve to the best of our ability, such as "Travelers Rest", the home of Revolutionary General Horatio Gates. I know from owning "Huxley Hall", the home of Revolutionary Patriot Captain John Kerney, that the treatment of the perimeters is very important to the atmosphere which they deserve. Both homes have been gracefully open to the public on the annual House & Garden Tour, and for other occasions. I certainly hope our plea to preserve history will be appreciated, and I strongly oppose and vote No against Alternative 3. Thank you. |
| 7/24/2017 | Please include the following input regarding the Novak Drive Connector (NRC) Study.<br>I do not support ANY expansion of Novak Drive to WV Rt. 9 as identified in the NDC Study and as identified in the Direction 2040, Long Range Transportation Plan, final report, July 1, 2014 (the Plan) found on the HEPMPO website, identified as project ID #92.<br>See goals and objectives identified for the NDC Study can be accomplished by the implementation of HEPMPO, project ID #40, I-81 to WV 9 (Queen Street).<br>The Eastern WV Regional Airport (EWVRA) does not require additional road access beyond the current Tabler Station Road and I-81 connection. A new access road from Novak Drive to Route 9 has no purpose when aforementioned HEPMPO project #40, I-81 to WV 9 (Queen St) is implemented. This project has a priority one (1) for Berkeley County as identified in the aforementioned HEPMPO Plan. Absolutely no additional road access to Tabler Station Road is required given its proximity to I-81 and given I-81 exit proximity from WV 45E to WV 9. When properly surveyed, Berkeley County residents will veto expansion of the EWVRA, especially the ridiculous long range plans identified in the Martinsburg Journal, July 21, 2017, "Airport Shows High Flying Ambition".<br>Congestion on WV 45 and WV 11, especially at WV 45/WV 9 intersection, can be relieved in the interim (prior to project #40 implementation if the stop lights on WV 45 and the intersection of WV 45/WV 9 are synchronized and provide more time for left-turn vehicles at this intersection. Additionally installing traffic cameras that will capture vehicles blocking the intersection will |

# Novak Drive Connector Study
## Comment Forms

| Date | Comment |
|---|---|
| | greatly reduce congestion. An act as simple as breaking the law by totally blocking the intersection at WV 45/ WV 11 has a major impact on the congestion at this intersection. As long as drivers can go unpunished by breaking the law in this way will continue to create a major cause in the congestion issue.<br>Implementing project #40 will also address the vast majority of crashes identified on WV 45E as shown on the HEPMPO website page.<br>Project #92 will make no difference in the crashes identified in the material provided in this study. It does not address crashes identified at Tabler Station Road as Tabler Station Road must be accessed to access Novak Drive, even with a direction connection to WV 9.<br>Truck access from I-81 to WV 9 is and will be quite efficiently provided by the existing I-81 exit onto WV 45 to the WV 9, especially when HEPMPO project #40 is implemented.<br>It is a shameful expenditure of WV tax payer money to even consider building an entirely new road from Novak Drive to WV 9 for all of the reasons cited above.<br>Improvement of the existing connection from I-81 to WV 9 as identified in HEPMPO project #40 will satisfy the need to alleviate congestion and improve the safety; mobility; environmental; and economic development goals outlined in the NDC Study.<br>In summary:<br>I submit that any further funds allotted to the NDC Study and/or HEPMPO project #92 is waste and should be immediately halted.<br>Project ID #40 on the HEPMPO aforementioned Long Range Plan document, Chapter 8, is a for more efficient and cost effective approach to realizing the objectives and goals identified in the NDC Study. No residents will be impacted while alleviating traffic congestion and subsequent collision incidents cited in the NDC Study and the crash analysis identified on the HEPMPO website.<br>I formally request that my name and address be added to existing lists used by Metroquest; HEPMPO; the WV Dept of Highways, Planning Division; and the Berkeley County Reg 9 Planning and Development Council regarding the Novak Drive Connector Project, not just “the study”.<br>I was not included as an impacted resident of the NDC Study nor were many residents on Faraway Place and Bowers Road, Berkeley and Jefferson Counties, respectively. We are impacted residents and property owners and should have been notified by mail regarding the NDC Study.<br>The information previously contained in the Martinsburg Journal did not identify the level of detail that made it possible to determine who would be impacted by any one of these alternatives as a Novak Drive access road. Therefore, the Metroquest firm must update the mailing list for the NDC Study to be more inclusive and accurate. |

# Novak Drive Connector Study
## Comment Forms

| Date | Comment |
|---|---|
| 7/24/2017 | I oppose Alternative 3, the Bowers Road Connection from Novak Drive to WV 9 at the existing Kearneysville/Leetown interchange.<br>Alternative 3 would adversely affect my property which is Traveler's Rest, a working farm since the 1700's. Traveler's Rest is a National Historic Landmark which is protected by Federal laws. It was selected as Jefferson County's first Historical Landmark.<br>Other farms on Bowers Road would be adversely affected as well. We live on Bower Road for a peaceful rural existence, which would be destroyed. |
| 7/25/2017 | I write to oppose Alternate 3 for the Novak Drive project. Alternate 3 is longer in miles, would disrupt a large number of houses and stabled developments and the topography of this proposed alternate would be more challenging thereby costing a considerable amount more to construct. Common sense should tell us to take the shortest, most direct connection to Novak Drive. Thank you. |
| 7/28/2017 | I am opposed to any new road impacting Jefferson County which is already well served by our current roads.<br>Impact on construction on historic sites would be too harmful.<br>I am in favor of the "No Build Alternative". |

# Comment Letters

# Road study omits important factors (Letter to the Editor)

JUL 13, 2017

MIKE MCGINNIS
Martinsburg

The Novak Drive Connector Road Study looks at the possibility of building one of three proposed new roads to provide another connection from W.Va. 9 to Interstate 81, or to not build a connector road. The study doesn't take into account traffic improvements from the planned and proposed solutions for Exit 12 found during the W.Va. 45 Study. Nor does it show traffic improvements from the work under construction in Inwood (Inwood Bypass).

We should be directing money and resources to fixing W.Va. 9 and 45 and exit 12.

1. Fix the problem where the problem exists, at and near exit 12.

2. Implement the plans the DOH has already presented during the W.Va. 45 Traffic Study that are less costly than building new roads and will improve Exit 12.

3. Fix the roads we have, no new roads for the Novak Drive Study.

4. The Study should be modified to show improvements that can be make at W.Va. 45 and Exit 12, and the Inwood bypass project.

Please help protect the home and land owners in rural Berkeley and Jefferson County. Take the survey located at https://novak.metroquest.com by Wednesday 7/12.

The following are rebuttals to the Goals and Objectives of the Novak Drive Connector Road Study.

The mobility goal of the study is to reduce traffic on W.Va. 45, and to provide access to Tabler Station and the airport. Rebuttal: Traffic congestion on W.Va. 45 would be reduced by implementing proposed solutions for Exit 12 found during the W.Va. 45 Study. The Tabler Station area and the airport is easily accessed by I-81, U.S. 11, and Airport Road.

The safety goal of the study is to reduce truck traffic on W.Va. 45 and divert traffic from high crash locations. Rebuttal: The majority of truck traffic, and most of the traffic, is along W.Va. 9 and 45 and exit 12 and is in queue to go northbound on I-81. Reducing congestion where the problems exists will improve high crash locations, which are at W.Va. 45 and Exit 12.

The economic goal of the study is to promote freight growth and promote growth in downtown Martinsburg. Rebuttal: Promoting freight growth will add to the congestion this study is intended to relieve. New roads through the rural lands of Berkeley and Jefferson Counties will not improve downtown Martinsburg. Tabler Station is easily accessed already. The Inwood Bypass and W.Va. 45 Study improvements will better the existing accesses.

Finally, the environmental goal is to minimize impacts to the Opequon Creek, preserve the rural nature of the study area, minimize noise, and improve air quality. Rebuttal:

Not building a Novak Connector Road will best protect the Opequon Creek, preserve the rural charter of the area, minimize noise impacts, and maintain air quality. New roads through farms, woodlands, and large residential lots does not preserve the rural charter of the area. Fix the congestion where it exists, at W.Va. 45 and Exit 12.

Woodlands and fields are better for air quality than new roads.

# Berkeley County Council

400 W. Stephen Street, Suite 201
Martinsburg, WV 25401
Phone: (304) 264-1923

www.berkeleywv.org



RECEIVED
JUL 17 2017
PLANNING DIVISION



The Council

Douglas E. Copenhaver, Jr.
Jim Whitacre
Elaine C. Mauck, M.A.
James R. Barnhart
Dan Dulyea

Alan J. Davis
County Administrator


July 12, 2017

Elwood Penn
West Virginia Department of Highways
Planning Division
Building 5, Room A-450
1900 Kanawha Boulevard East
Charleston, WV 25305

Re: Novak Drive Connector Road Study

Dear Mr. Penn,

As the President of the Berkeley County Council I would like to take this opportunity to express my thoughts and concerns with the road study for an access road between WV Route 9 and Novak Drive in Berkeley County.

While I am in support of economic growth in Berkeley County, I have concerns with intrusion on the homes and land of Berkeley County residents. Route 9 has direct access to I81 at Exit 12. By implementing the plans that you (the DOH) have already presented during the WV Route 45 traffic study the cost would be much less than building new roads and will also improve Exit 12. The problem needs to be fixed where the problem exists which is Exit 12. Berkeley County needs the roads repaired and maintained that we currently have before we add new roads to the Novak Drive Study.

In closing I believe the study should be modified to show improvements that can be made at Route 45 and Exit 12 and the Inwood Bypass.

Sincerely,

Douglas E. Copenhaver, Jr.
Berkeley County Council President

Eastern West Virginia
Regional Airport Authority
SHEPHERD FIELD

304-263-2106
FAX: 304-267-6350

September 5, 2017

Mr. Matt Mullenax, GISP, Executive Director
Hagerstown/Eastern Panhandle Metropolitan Planning Organization (HEPMPO)
33 West Washington Street, Suite 402 (4th Floor), Hagerstown, MD 21740
T: (240) 313-2080 ; E: mmullenax@hepmpo.net

**RE: Comment on proposed path of Novak Drive extension project**

Dear Mr. Mullenax:

Thank you for the opportunity to comment upon the proposed routing of the Novak Drive Extension project currently in the early stages of planning.

In the absence of county-wide zoning, the Airport Authority is very concerned about new developments in the vicinity of our airport that: 1) include noise-sensitive land uses and 2) involve the construction of tall structures encroaching into our runway approach/departure corridors and Part 77 airspace surfaces.

One of our airport's most exciting prospects is the future potential to develop new domestic and international air cargo operations. To meet the needs of large aircraft flying very long-distances at maximum takeoff weight in all weather and air-density conditions - our airport must plan for future runway lengthening project(s). While we already have the longest, widest and strongest runway in our state – our current runway length could limit the capability and range of very large air freighters.

In comparison, the largest airports serving intercontinental flights often build runways 10, 11 or even 12,000 or more feet in length. They also often include advanced runway approach lighting systems leading up to their associated runways. In our attached graphic, we have depicted an 11,500 foot-long runway with 2,500-foot-long ALSF-2 approach lighting system at Martinsburg. This is similar to the large runways at the Washington-Dulles International Airport (IAD). Dulles is a facility that long-ago acquired the land and infrastructure necessary for international air cargo operations and today they reap enormous financial rewards for having done so.

Due to high-value developments occurring near the Business Park Drive/U.S. Route 11 intersection - our airport may already be inhibited in terms of westward expansion. *As a result, it becomes all the more important to protect MRB's future viability by giving attention to the airport's still-sparsely populated East side.*

We have spoken to the Berkeley County Council about the possibility of additional land ordinances, "spot zoning", land acquisitions and other strategies aimed at protecting this important future for our airport. We remind everyone that MRB is the only public airport in the 3-county Eastern Panhandle region and likely the only facility in the state of West Virginia having both the runway length and flat "shovel-ready" land necessary for the construction of large-scale international air freight facilities.

Eastern West Virginia
Regional Airport Authority
SHEPHERD FIELD

304-263-2106
FAX: 304-267-6350

How can a road project be used to delineate land parcels needed for airport purposes from those neighboring parcels usable for industrial or other airport-friendly developments?

The attached PDF drawing shows how Payne's Ford Road traffic could be wrapped around the airport's proposed eastward expansion area by means of an improved Pond Lane. Perhaps this might also improve the estimated traffic counts being considered in the planning process for the Novak Drive extension?

This northernmost path also appears to improve overall connectivity by providing access to the WV Route 9 - Baker Heights exit and the Martinsburg VA Medical Center. As a matter of history, the Martinsburg VA hospital was made possible by our large airport where injured troops could be flown in from overseas conflicts and receive medical treatment. Swift access to the VA Medical Center from our airport is still a relevant consideration today.

Another way to look at the Novak Drive extension is in combination with other previously identified road needs. The need to widen the existing segment of Novak Drive and the need for an east-side bypass highway around the city of Martinsburg were identified many years ago. If we look at the existing and future Novak Drive segments as part of this much-needed, multi-lane thoroughfare - we may begin seeing its great value and the urgency with which it should be built.

This roadway could provide a valuable connection starting at the I-81 exit 8 south of Martinsburg and ending with the I-81 exit 16 interchange north of the city (see attached graphic). Imagine a road where attractive and lucrative commercial and residential opportunities would crop up at each intersection. This would provide a much-needed economic "boost" to the east side of our city, a municipality that seems to be growing in a very asymmetrical way, with much more development occurring to the west than to the east at present.

This could also provide many traffic flow benefits, much like that performed by Winchester, Virginia's Route 37. Here in Martinsburg, such a road could alleviate a great deal of the gridlock caused by forcing thousands of cars to pass through our low-speed central business district with its narrow streets and many crosswalks, stop lights and stop signs slowing and frustrating motorists who simply want to quickly traverse our compact little city.

Among the three Novak Drive extension options presented by the Michael Baker consultant team, we believe a slightly-modified northernmost "Alternative 1" would be best not only for our airport needs but also in providing traffic mitigation for the city as its path is closest to Martinsburg corporate limits. This roadway might also lessen the notoriously bad traffic conditions occurring near Exit 12.

We have also recently received comments from a home-owner expressing his opposition to the Novak Drive extension "Alternative Two" involving the Short Road intersection. This family expressed a strong preference for "Alternative 1".

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It should also be noted that the military had originally intended (as shown within its 2001 Airfield Development Plan), to extend Martinsburg's primary runway 08-26 to some 10,000' linear feet in anticipation of the C-5 Galaxy aircraft.

Despite hundreds of millions of dollars of federal and state investment in the mid-2000s, it appears that the airport was shortchanged in terms of runway length. This seems to have been caused by an inability to acquire additional land east of the MALSR approach lighting system and inability to relocate any portion of Payne's Ford Road to another location further away from the airport fence-line.

As a result, we have a blast fence constructed to protect cars on the road. And our runway cannot be all that it could otherwise be. For aircraft landing on runway 26 - we lose 1,000 feet of our available paved runway length. Only 7,815' is usable for landing rather than the full 8,815'. This too is an unnecessary limitation that could be corrected with a road and fence realignment and land acquisition project.

The FAA has also encouraged the EWVRAA to consider acquiring land underlying its runway protection zones. This is viewed to be a matter of public safety. A runway protection zone (RPZ) is a trapezoidal area off the end of a runway that serves to enhance the protection of people and property on the ground in the event that an aircraft lands or crashes beyond the runway end. RPZ's are statistically speaking, the areas near an airport most likely to be impacted by an aircraft incident or accident. As such, these should not be areas with residential housing nor should they be areas of public assembly, commercial shopping areas or places of business.

We observe the growth of the Heritage Hills subdivision moving alarmingly close to our airport. Surely this will be a source of contention and strife in the years to come as property owners may conceivably complain about noise, vibration, fumes, particulate matter and other by-products of normal aircraft and airport operations. In addition, morning school bus stop activity associated with the entrance of this subdivision causes road backups and places stopped cars in the "no stopping area" preceding runway 26, an area clearly marked with road signs.

Another concern has been brought to our attention by FAA technicians maintaining our approach light system in that same area. They have pointed out that the gravel road or "approach light lane" is not as secure as it would be if it was completely enclosed by airport fence. As a result, unscrupulous individuals have used the gravel road for the illegal dumping of their trash and construction debris. This has brought airport staff much frustration as the Airport must expend scarce money and man-power hours in cleaning this up.

One remedy for all these situations would be a financial partnership allowing the EWVRAA to acquire land underlying current and future runway protection zones and those parcels necessary for future approach lighting and runway expansions. Owning and controlling this property and placing it within our airport fence-line is critical. Doing so would additionally help limit dangerous wildlife intrusions onto our airfield.

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The Air Guard has expressed some interest in potentially funding the construction of taller, more effective wildlife exclusion/security fencing along our perimeter. This is also an important priority of the Air Guard Safety and Security offices as they are tasked with protecting a fleet of eight C-17 Globemaster III aircraft valued at more than $200 million each.

*In conclusion, the EWVRAA views the northern-most routing (with modification as depicted in the attached graphic) and the use of the Baker Heights exit will best assist the Airport in meeting its obligations to the FAA, namely to protect the airport from residential encroachment and unnecessary obstructions to the airspace around our facility.*

We also desire the path of the proposed Novak Drive extension to allow us the needed room should we, in partnership with the military, elect in the future to build a 3,500' X 90' paved assault landing strip. This crosswind runway would be built with a generally north-south orientation utilizing land between Snooks Lane and Salvage Drive. This facility is also depicted on the attached graphic.

If built, this would likely require the closure of a segment of the existing Airport Road. Having such a runway could help insulate the base from closure by providing an additional and vitally important "mission", serving as a C-17 mid-Atlantic tactical landing facility and pilot training site.

Thank you for your attention to this letter and for all your efforts in improving the transportation facilities so vital to our metro area's economic growth and prosperity.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

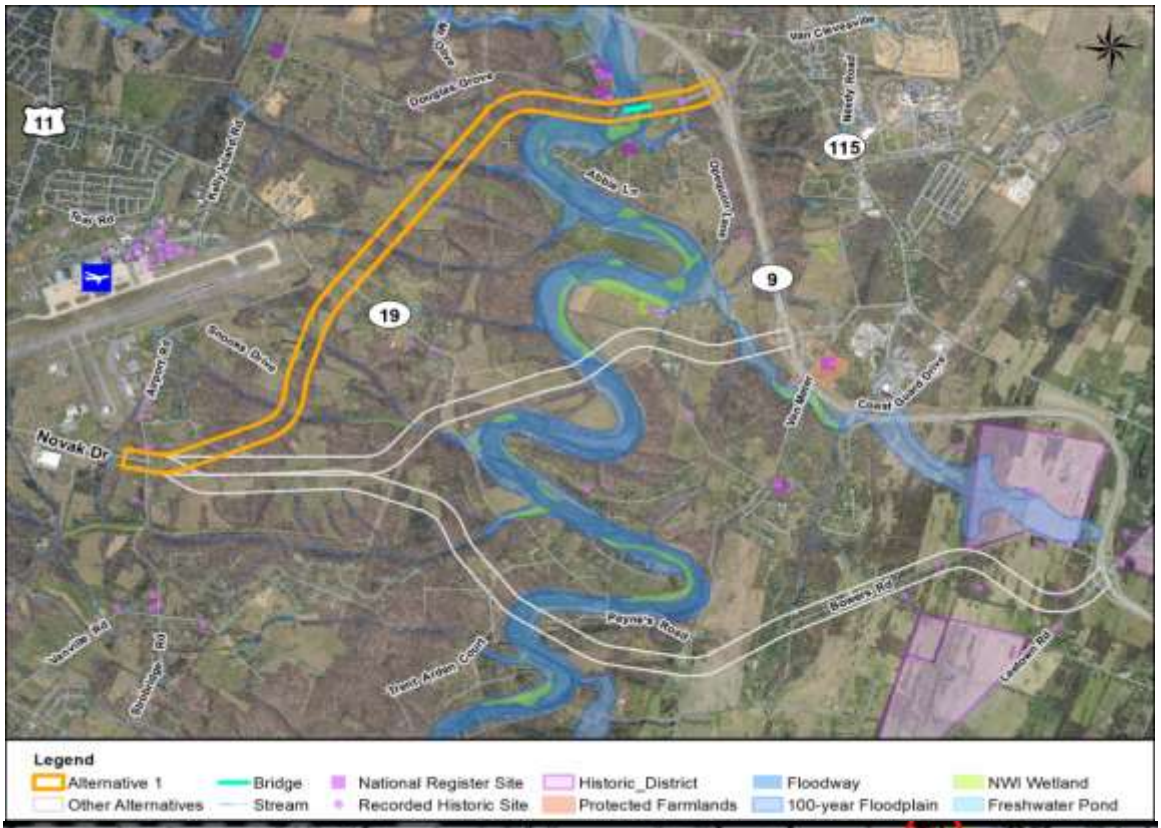
Neil R. Doran

Mr. Neil R. Doran, C.M., A.C.E.
Executive Director / Airport Manager

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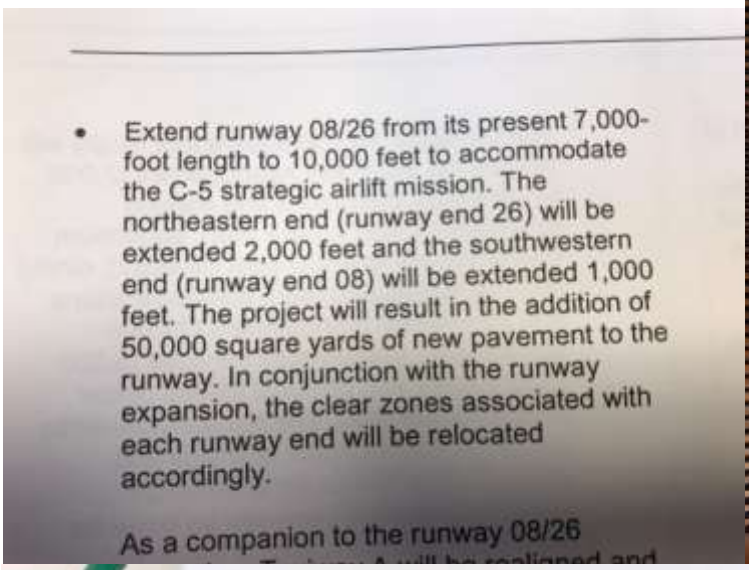
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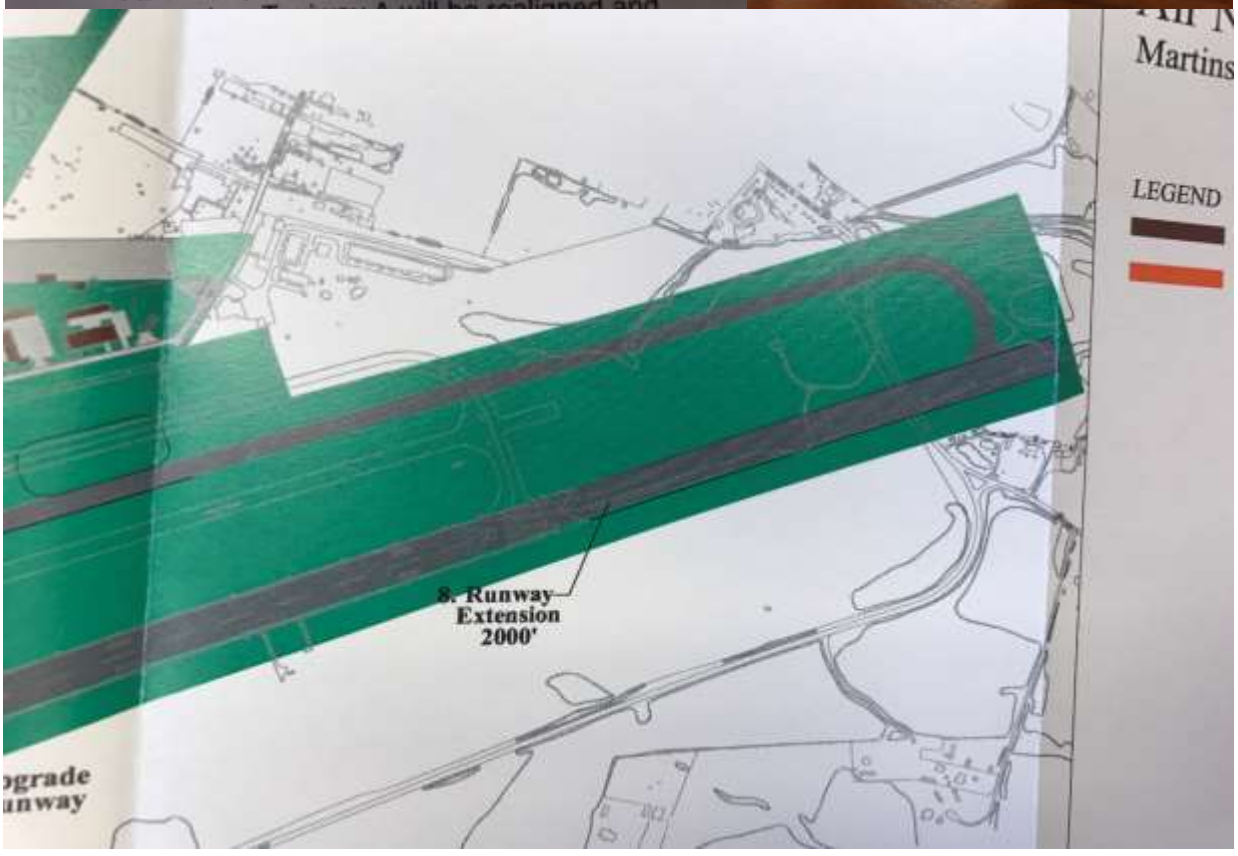
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- Extend runway 08/26 from its present 7,000-foot length to 10,000 feet to accommodate the C-5 strategic airlift mission. The northeastern end (runway end 26) will be extended 2,000 feet and the southwestern end (runway end 08) will be extended 1,000 feet. The project will result in the addition of 50,000 square yards of new pavement to the runway. In conjunction with the runway expansion, the clear zones associated with each runway end will be relocated accordingly.

As a companion to the runway 08/26



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