# 141-153 Plains Road West
# Burlington, ON

# Transportation Impact Study, Parking Study and Access and Circulation Review

Paradigm Transportation Solutions Limited

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Project Summary

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# 141-153 Plains Road West, Burlington, ON Transportation Impact Study, Parking Study, and Access and Circulation Review




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# Executive Summary

## Content

2381798 Ontario Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to prepare this Transportation Impact Study, Parking Study, and Access and Circulation Review for a proposed mixed-use development at 141-153 Plains Road West in the City of Burlington.

The purpose of this study is to assess the impacts of the redevelopment, if any, on the surrounding road network, review the adequacy of the proposed parking supply, and review the on-site circulation of vehicles.

## Development Concept

The subject site is located on the north side of Plains Road West, west of Howard Road, comprising three land parcels: 141, 147, and 153 Plains Road West. The subject site is occupied by a two-storey medical/dental office, and two 1.5 storey dwellings.

Vehicle access is shared between 147 and 153 Plains Road West, via one all-moves driveway to Plains Road West. Vehicle access to 141 Plains Road West is provided via a separate all-moves driveway to Plains Road West. All existing land uses and driveways will be demolished to facilitate redevelopment of the site.

Redevelopment is planned to comprise an eleven-storey mixed-use building with 150 residential units, and 173 $m^2$ (1,884 sq. ft.) of ground floor retail space. One hundred and twelve (112) vehicle parking spaces and one hundred and twenty-eight (128) bicycle parking spaces are proposed on the site.

Vehicle access is proposed by a new all-moves driveway, located approximately 130 metres west of Howard Road. Redevelopment is proposed in one phase before 2028; however, the ultimate build-out will be subject to market conditions.

## Conclusions

Based on the findings of this study, it is concluded:

- Under existing conditions, the study area intersections are operating at acceptable levels of service and within capacity.

- Under future background conditions, including the addition of traffic from planned developments east of Waterdown Road, the study intersections are forecast to operate at acceptable levels of service and within capacity. Critical movements are noted:
  - In both the AM and PM peak hours, the southbound left-turn movement on Howard Road at Plains Road West is forecast to operate with queues that exceed available lane storage.
- The subject site is forecast to generate approximately 61 and 86 new vehicle trips during both the AM and PM peak hours, respectively.
- Under future total conditions, the study intersections are forecast to operate at nearly identical levels of service as under background conditions. Outbound vehicle movements from the subject site are forecast to operate at LOS C or better in either the AM or PM peak hours. The inbound westbound left-turn movement is forecast operate at LOS B or better.
- The position of the subject site driveway is not expected to contribute to weaving between competing left-turn movements at 168 Plains Road West and the subject site because:
  - The driveways are approximately 20 metres from one another;
  - The driveways are forecast to serve relatively equal traffic volumes; about 15 left-turn-movements in the PM peak hour; and
  - The analysis contained herein estimates a peak left-turn queue of one metre for each left-turn movement.
- Transportation Association of Canada (TAC) Medium Single Unit (MSU) Truck, and Passenger (P) design vehicles can enter, exit, and navigate the site without conflict with the proposed geometry.
- The proposed parking supply of 112 vehicular and 128 bicycle spaces meets the minimum parking requirements set out in City of Burlington Community Planning Permit By-law.

## Recommendations

Based on the conclusions of this study, it is recommended the site be approved with no requirement for off-site transportation network improvements.

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# 1 Introduction

## 1.1 Overview

2381798 Ontario Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to prepare this Transportation Impact Study, Parking Study, and Access and Circulation Review for a proposed mixed-use development at 141-153 Plains Road West in the City of Burlington. **Figure 1.1** illustrates the site location, which is in the Aldershot GO Major Transit Station Area.[1]

## 1.2 Purpose and Scope

The purpose of this study is to assess the impacts of the redevelopment, if any, on the surrounding road network, review the adequacy of the proposed parking supply, and review the on-site circulation of expected on-site vehicles.

The scope of this study includes:

- Assessing current traffic conditions in a study area comprising:
  - Plains Road West and Daryl Drive;
  - Plains Road West and Howard Road; and
  - Plains Road West and the proposed Site Driveway.
- Forecasting future background traffic volumes for horizon years five- and ten-years from the date of study;
- Forecasting site generated traffic;
- Analyzing future traffic operations at the study intersections, with and without the redevelopment;
- Identifying any on-site or off-site improvements necessary to accommodate the forecast site-generated traffic;
- Reviewing the site plan to ensure design vehicles can navigate the site without conflict; and
- Assessing the proposed parking supply.

Paradigm confirmed the above scope of work with City of Burlington transportation planning staff via e-mail in December 2022. **Appendix A** contains the pre-study materials. This study has been carried out in general accordance with the Halton Region *Transportation Impact*

[1] City of Burlington, Major Transit Station Areas, Area Specific Plans & Final Report, (Burlington: Halton Region, 2022), 44.

*Study Guidelines*[2] and direction provided by City transportation planning staff during pre-study consultation.

[2] Region of Halton, *Transportation Impact Study Guidelines,* (Oakville, Halton Region, 2015).




Not to Scale
Image Source: City of Burlington Interactive Map (https://navburl-burlington.opendata.arcgis.com/pages/apps)

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# Location of Subject Site

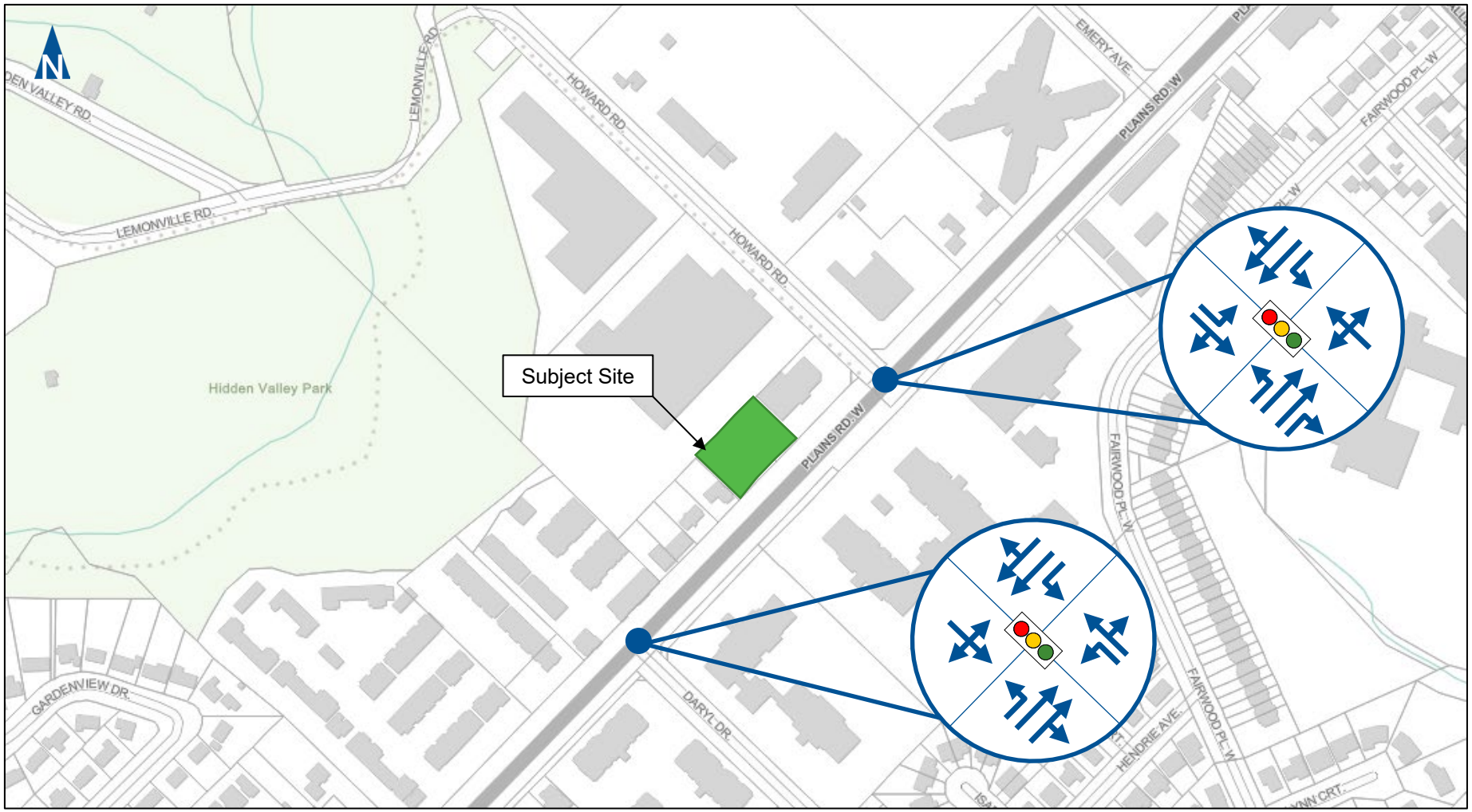
# 2 Existing Conditions

## 2.1 Road Network

The main roadways in the study area comprise the following, all of which operate under the jurisdiction of the City of Burlington:

- **Plains Road West** is an east-west, multi-purpose arterial road with a five-lane urban cross-section. The road features two general purpose travel lanes per direction, a centre two-way left-turn lane (TWLTL) and operates with a posted speed limit of 60 kilometres per hour. Sidewalks and dedicated cycling facilities are provided on both sides of the road.
- **Daryl Drive** is a north-south, neighbourhood connector with a two-lane urban cross-section. The road features one general purpose travel lane per direction and operates with a posted speed limit of 40 kilometres per hour. Sidewalks are provided on both sides of the road; however, the road does not include any dedicated cycling facilities.
- **Howard Road** is a north-south, neighbourhood connector with a two-lane urban cross-section. The road features one general purpose travel lane and operates with an unposted (statutory) speed limit of 50 kilometres per hour. Sidewalks are provided on the west side of Howard Road, north of Plains Road West. Dedicated cycling facilities are not provided; however, sharrow pavement markings are installed north of Plains Road West.

**Figure 2.1** illustrates the existing lane configurations and traffic control at the study intersections.




Not to Scale
Image Source: City of Burlington Interactive Map (https://navburl-burlington.opendata.arcgis.com/pages/apps)

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# Existing Lane Configurations and Traffic Control

## 2.2 Transit Services

Transit service in and near the study area is provided by Burlington Transit, GO Transit, and VIA Rail Canada (VIA Rail). Transit service is centralized around the Aldershot GO Station.

Aldershot GO station provides access to GO Transit Bus and GO Transit Rail service (Lakeshore West) and functions as a turnaround point for Burlington Transit routes. The Aldershot GO station is on the east side of Waterdown Road, north of Plains Road, approximately 1.7 kilometres from the subject site; equivalent to a 20-minute walk, 7-minute bike ride, or 3-minute drive.

**Figure 2.2** illustrates the existing transit network servicing the study area. Burlington Transit Route 1 (Plains-Fairview) operates on Plains Road West connecting the Hamilton GO Centre and Appleby GO Station via the Burlington GO Station. Burlington Transit also operates Route 4 (Central) and Route 87 (North Service – Aldershot). **Table 2.1** summarizes the existing service times and frequencies for Route 1 at Waterdown Road and Plains Road.

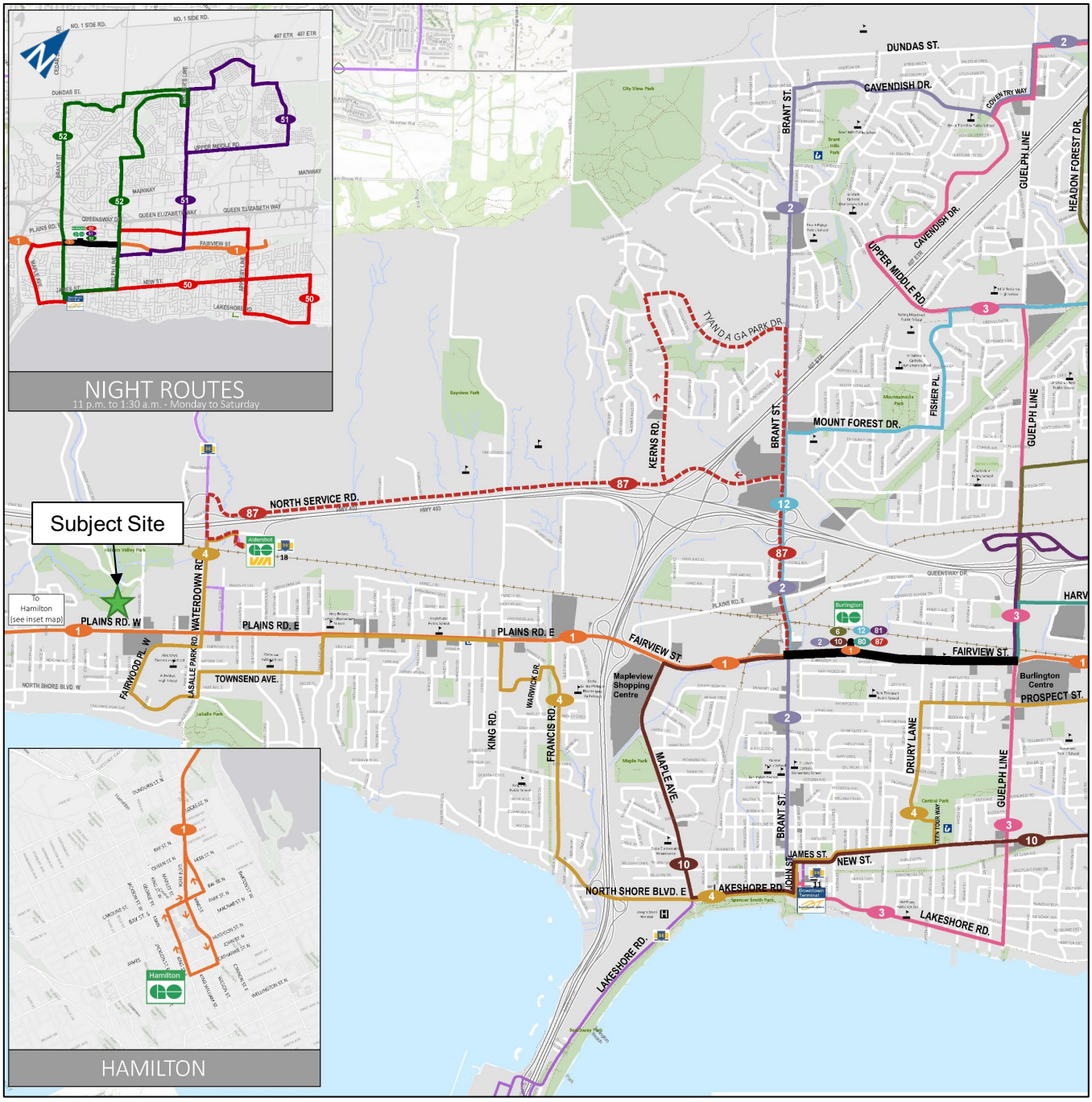
The nearest transit stops to the site are located on the north and south sides of Plains Road West at Howard Road. These stops are approximately 100 metres (~1-to-2-minute walk) from the subject site.

**TABLE 2.1: BURLINGTON TRANSIT ROUTE 1 INFORMATION**

| Day of Week | Route 1 (Plains-Fairview) | | Peak Headway |
|---|---|---|---|
| | EB (to Appleby) | WB (to Hamilton) | |
| Monday to Friday | 4:45 AM – 1:16 AM (next day) | 4:52 AM – 1:13 AM (next day) | ~10 minutes |
| Saturday | 6:30 AM – 12:25 AM (next day) | 6:35 AM – 12:50 AM (next day) | ~15 minutes |
| Sunday | 6:45 AM – 10:05 PM | 6:35 AM – 9:50 PM | ~15 minutes |

Source: Burlington Transit Ride Guide (Temporary – Weekday, Weekend and Holiday Schedule), Effective May 26, 2024.

GO Transit operates Lakeshore West train service seven days a week between Union Station (Toronto) and Niagara Falls. Most trips terminate at West Harbour GO station in Hamilton, with an intermediate stop at Aldershot GO station. Weekday eastbound trains from Aldershot to Union operate from approximately 4:50 AM to 11:10 PM, and weekday westbound trains from Union to Aldershot operate from approximately 6:15 AM to 12:43 AM (next day).




Source: Burlington Transit Route Map, Effective, 2024 from https://www.burlington.ca/en/transit/resources/Schedules-and-Routes/Schedules-and-Maps/Route-Map.pdf

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# Existing Transit Services

## 2.3 Active Transportation

As noted in **Section 2.1**, sidewalks are provided on both sides of Plains Road West between Howard Road and Daryl Drive. The facilities continue west to Spring Gardens Road, and east to and through Waterdown Road. Sidewalks are also provided on both sides of Daryl Drive, terminating at North Shore Boulevard West and on the west side of Howard Road, connecting to the Hidden Valley Park and Hidden Valley Multi-Use Trail.

Cycling facilities in the City of Burlington include bike lanes, sharrows, paved shoulders, and multi-use paths. Howard Road includes sharrows and is defined as a "signed route" in the *Burlington Cycling Plan*.[3] Cycling facilities are not provided on Daryl Drive.

The *Burlington Cycling Plan* identifies a protected bikeway as a future facility type on Plains Road West and identifies Howard Road as a future "local street bikeway". The *Burlington Cycling Plan* does not identify any future cycling improvements on Daryl Drive.

Plains Road West between Spring Gardens Road and Waterdown Road has been recently reconstructed to include "the construction of new bikeway, resurfacing the road, curb and sidewalk replacement, driveway and landscape regrading, and bus pad, streetlight, and hydro pole relocations and upgrades."[4] Specific project elements included:

- A paved bike path on the north side boulevard of Plains Road West;
- A protected on-road bike lane on the south side of Plains Road West;
- Protected bike intersections at Gorton Avenue, Daryl Drive, and Howard Road;
- New and upgraded transit stops;
- Road resurfacing and select curb and sidewalk replacements; and
- Upgrades to streetlights and new traffic signals.

[3] City of Burlington, *Burlington Cycling Plan*, n.d.
[4] "Plains Road Protected Bikeway and Resurfacing," City of Burlington, last updated October 03, 2023, https://www.burlington.ca/en/news/current-city-projects-and-construction/plains-road-protected-bikeway-and-resurfacing.aspx

## 2.4 Traffic Volumes

To assess intersection operations, turning movement counts (TMCs) are used to quantify the movement of vehicles through an intersection or roadway segment. Existing traffic data at an intersection or a road section forms the foundation for the operational analyses. The counts are usually conducted such that they capture peak traffic demands. This ensures the level of service analysis reflects worst case operating conditions.

**Table 2.2** summarizes the traffic data used in this study. **Appendix B** contains the raw turning movement count data.

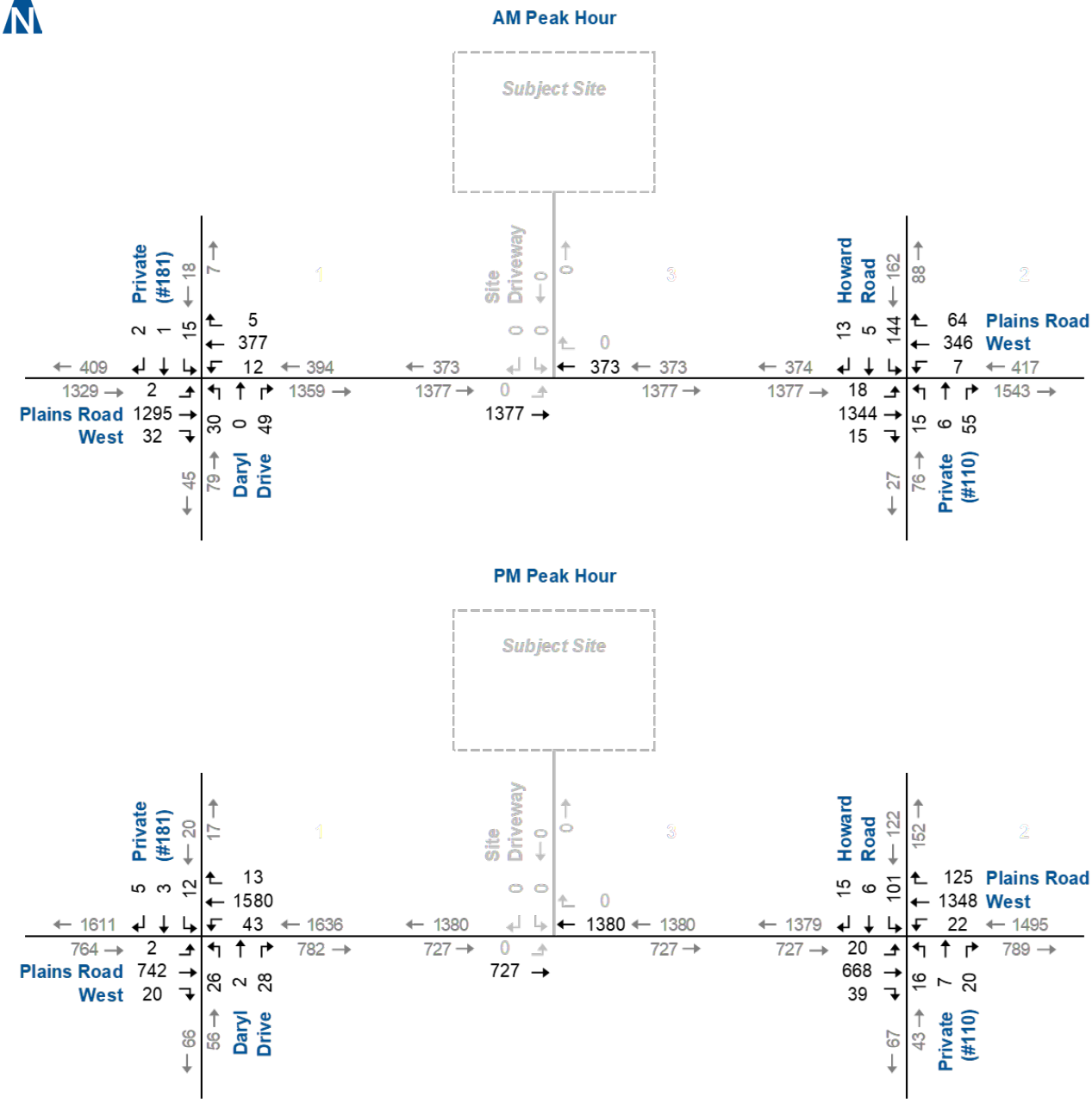
**TABLE 2.2: TRAFFIC DATA**

| Intersection | Date | AM Peak Hour | PM Peak Hour |
|---|---|---|---|
| Plains Road West and Daryl Drive | May 22, 2019 | 7:30 – 8:30 | 5:00 – 6:00 |
| Plains Road West and Howard Road | May 29, 2019 | 7:15 – 8:15 | 4:45 – 5:45 |

Traffic volumes on Plains Road West between the two intersections were not balanced because the respective AM and PM peak hours do not align. In addition, the variety of properties and driveways on both sides of Plains Road West attract and generate trips which may not be continuous through the study area. Traffic volumes were balanced between the subject site and Howard Road due to a lack of significant trip generators/attractors in the eastern portion of the study area.

The 2019 traffic data was factored to a 2024 base year condition by applying a growth rate of 1% compounded per annum to all traffic volumes. City staff approved of this methodology during pre-study consultation.

**Figure 2.3** illustrates the estimated base year (2024) AM and PM peak hour traffic volumes.




*Not to Scale*

# Base Year (2024) Traffic Volumes

## 2.5 Traffic Operations

The quality of intersection operates at signalized and unsignalized intersections is evaluated in terms of level of service (LOS) and volume-to-capacity (v/c) as defined by the Highway Capacity Manual (HCM). LOS is evaluated based on the average control delay per vehicle and includes deceleration delay, queue move-up delay, stopped delay, and final acceleration delay. Volume to capacity is calculated as the total vehicular demand for each movement as compared to the theoretical capacity for each movement.

For signalized intersections, LOS ranges from LOS A (less than 10 seconds of average delay) to LOS F (greater than 80 seconds of average delay). For unsignalized intersections, the LOS ranges from LOS A (less than 10 seconds of average delay) to LOS F (greater than 50 seconds of average delay). Capacity is evaluated in terms of the ratio of demand flow to capacity with an at capacity condition represented by a v/c ratio of 1.00 (that is, volume demand equals capacity).

The City of Burlington does not have published traffic impact study guidelines; therefore, the assessment follows the Region of Halton *Transportation Impact Study Guidelines*.[5] Critical movements at signalized intersections are defined as:

- Volume to capacity ratios for overall intersection operations, through movements, or shared through/turning movements that exceed 0.85;
- Volume to capacity ratios for exclusive movements that exceed 0.95; or
- Queues for an individual movement that exceed available turning lane storage.

Critical movements at unsignalized intersections are defined as:

- Level of service, based on average control delay per vehicle, on individual movements, that exceeds LOS D; or
- Estimated 95th percentile queues for individual movements that exceed available lane storage.

The analysis of base year traffic conditions in the AM and PM peak hours was completed using Synchro 11, a traffic modelling software

[5] Region of Halton, *Transportation Impact Study Guidelines*, (Oakville: Halton Region, 2015).

which implements the methodologies of the HCM. The key parameters used in the analysis include:

- Lane configurations prior to roadway reconstruction;
- Heavy vehicle percentages, and pedestrian volumes as documented in the turning movement counts;
- Signal timing as provided by the City of Burlington (and included in **Appendix B** for reference); and
- Synchro default values for all other inputs.

The analysis relies on City provided signal timings, which reflected modifications for the ongoing construction activities on Plains Road West, at the time of the study. Historic signal timing at either intersection was not available.

**Table 2.3** summarizes the base year traffic operations and the following critical movements is noted:

- In both the AM and PM peak hours, the southbound left-turn movement on Howard Road at Plains Road West is operating with 95th percentile queues that exceed available lane storage by ten and one metres, respectively.

**Appendix C** contains the detailed Synchro reports.

# TABLE 2.3: BASE YEAR (2024) TRAFFIC OPERATIONS

| Analysis Period | Intersection | Control Type | MOE | Direction / Movement / Approach | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | Overall |
| | | | | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | |
| AM Peak Hour | Plains Road West and Daryl Drive | TCS | LOS | A | A | > | **A** | A | A | > | **A** | C | C | > | **C** | < | C | > | **C** | **A** |
| | | | Delay | 3 | 7 | > | **7** | 4 | 4 | > | **4** | 23 | 22 | > | **23** | < | 22 | > | **22** | **7** |
| | | | V/C | 0.00 | 0.64 | > | | 0.08 | 0.19 | > | | 0.25 | 0.03 | > | | < | 0.13 | > | | **0.59** |
| | | | Q | 1 | 70 | > | | 3 | 15 | > | | 9 | 6 | > | | < | 6 | > | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | < | - | > | | |
| | | | Avail. | 24 | - | > | | 23 | - | > | | 11 | - | > | | < | - | > | | |
| | Plains Road West and Howard Road | TCS | LOS | A | B | A | **B** | A | A | > | **A** | < | C | > | **C** | C | B | > | **C** | **B** |
| | | | Delay | 6 | 13 | 6 | **13** | 7 | 7 | > | **7** | < | 20 | > | **20** | 29 | 18 | > | **28** | **13** |
| | | | V/C | 0.05 | 0.75 | 0.01 | | 0.06 | 0.24 | > | | < | 0.23 | > | | 0.64 | 0.03 | > | | **0.72** |
| | | | Q | 5 | 133 | 0 | | 3 | 25 | > | | < | 16 | > | | 30 | 4 | > | | |
| | | | Ex | 50 | - | 30 | | 40 | - | > | | < | - | > | | 20 | - | > | | |
| | | | Avail. | 45 | - | 30 | | 37 | - | > | | < | - | > | | -10 | - | > | | |
| PM Peak Hour | Plains Road West and Daryl Drive | TCS | LOS | A | A | > | **A** | A | A | > | **A** | C | C | > | **C** | < | C | > | **C** | **A** |
| | | | Delay | 4 | 5 | > | **5** | 4 | 9 | > | **8** | 23 | 22 | > | **23** | < | 23 | > | **23** | **8** |
| | | | V/C | 0.01 | 0.36 | > | | 0.11 | 0.75 | > | | 0.21 | 0.03 | > | | < | 0.13 | > | | **0.68** |
| | | | Q | 1 | 30 | > | | 6 | 118 | > | | 8 | 6 | > | | < | 6 | > | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | < | - | > | | |
| | | | Avail. | 24 | - | > | | 19 | - | > | | 12 | - | > | | < | - | > | | |
| | Plains Road West and Howard Road | TCS | LOS | B | A | A | **A** | A | B | > | **B** | < | C | > | **C** | C | B | > | **C** | **B** |
| | | | Delay | 10 | 7 | 5 | **7** | 6 | 13 | > | **12** | < | 20 | > | **20** | 24 | 20 | > | **23** | **12** |
| | | | V/C | 0.21 | 0.36 | 0.03 | | 0.06 | 0.79 | > | | < | 0.10 | > | | 0.44 | 0.06 | > | | **0.71** |
| | | | Q | 7 | 36 | 3 | | 5 | 132 | > | | < | 9 | > | | 22 | 6 | > | | |
| | | | Ex | 50 | - | 30 | | 40 | - | > | | < | - | > | | 20 | - | > | | |
| | | | Avail. | 43 | - | 27 | | 35 | - | > | | < | - | > | | -2 | - | > | | |

*MOE - Measure of Effectiveness*
*LOS - Level of Service*
*Delay - Average Delay per Vehicle in Seconds*
*Q - 95th Percentile Queue Length (m)*
*Ex. - Existing Available Storage (m)*
*Avail. - Available Storage (m)*
*TCS - Traffic Control Signal*
*TWSC - Two-Way Stop Control*
*AWSC - All-Way Stop Control*
*<- Shared Left/Through Lane*
*>- Shared Right/Through Lane*
*UM - Unopposed Movement*

# 3 Development Concept

## 3.1 Site Description and Proposed Development

### 3.1.1 Existing Site

The subject site is located on the north side of Plains Road West, west of Howard Road. It comprises three properties – 141 Plains Road West, 147 Plains Road West, and 153 Plains Road West. **Table 3.1** summarizes the existing land uses on each parcel. Vehicle access is shared between 147 and 153 Plains Road West, via one all-moves driveway to Plains Road West. Vehicle access to 141 Plains Road West is provided via a separate all-moves driveway to Plains Road West.

**TABLE 3.1: CURRENT LAND USES**

| Municipal Address | Current Land Use |
|---|---|
| 141 Plains Road West | Two-storey medical/dental office |
| 147 Plains Road West | 1.5 storey dwelling |
| 153 Plains Road West | 1.5 storey dwelling |

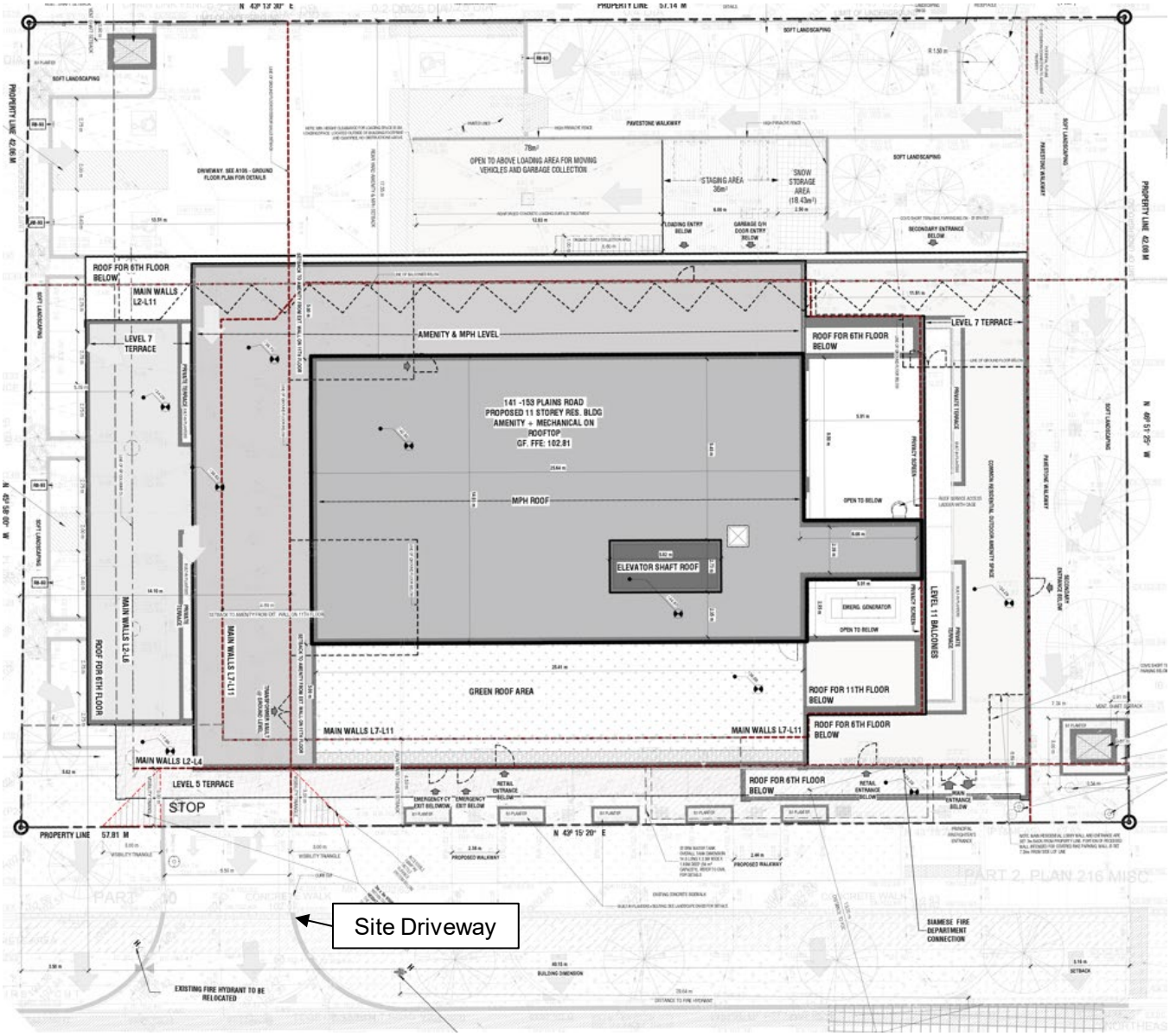
### 3.1.2 Development Description

All existing land uses and driveways will be demolished. Redevelopment is planned to comprise an eleven-storey mixed-use building with 150 residential units, and 173 $m^2$ (1,862 sq. ft.) of ground floor retail space.

One hundred and twelve (112) vehicle parking spaces are proposed, comprising 103 resident/occupant spaces (0.75 space per unit), 5 visitor parking spaces (0.03 spaces per unit), and 4 retail spaces (2.31 per 100 $m^2$ GFA). One hundred and twenty-eight (128) bicycle parking spaces are also proposed, comprised of 105 long-term bicycle parking spaces and 23 short-term bicycle parking spaces.

All existing driveways will be removed and replaced with a new all-moves driveway, the centreline of which is approximately 130 metres west of Howard Road.

Redevelopment is proposed in one phase before 2028; however, the ultimate build-out will be subject to market conditions. **Figure 3.1** illustrates the conceptual site plan.




***Plains Road West***

*Not to Scale*

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# Conceptual Site Plan

## 3.2 Site Circulation and Driveway Spacing

### 3.2.1 Site Circulation

**Appendix D** contains the detailed site-circulation assessments based on a Transportation Association of Canada (TAC) Medium Single Unit (MSU) Truck and TAC Passenger (P) vehicle.

The findings of the site circulation assessment indicate both design vehicles can enter, exit, and navigate the site without conflict with the proposed geometry.

### 3.2.2 Driveway Spacing

The TAC *Geometric Design Guide for Canadian Roads* recommends a minimum driveway spacing of 20 metres for commercial and industrial driveways on an arterial road.[6] Driveway spacing for residential land uses on an arterial road are not published. On local and collector roads, TAC recommends a driveway spacing of 1.0 metre for residential driveways, and 3.0 metres for commercial or industrial driveways. Driveway spacing is "measured between the end and start of the curb returns of the two driveways."[7]

The proposed driveway is approximately 13 metres east of the driveway to 159 Plains Road West (curb return to curb return), and approximately 38 metres west of the driveway to 127 Plains Road West (curb return to curb return).

### 3.2.3 Pavement Marking and Signage Plan

**Appendix E** contains the recommended pavement marking and signage plan for the proposed site concept plan.

The plan is designed in accordance with the Ontario Traffic Manual[8,9] (OTM), where possible. The signage plan does not detail any custom signs the site operator might erect to guide or assist visitors.

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[6] TAC, "Access," chap. 8 in *Geometric Design Guide for Canadian Roads*, (Ottawa: TAC, 2017), 26.
[7] TAC, "Access," chap. 8 in *Geometric Design Guide for Canadian Roads*, (Ottawa: TAC, 2017), 51.
[8] Ontario Traffic Manual - Book 5 – Regulatory Signs, Ministry of Transportation Ontario, 2000
[9] Ontario Traffic Manual - Book 11 – Pavement, Hazard and Delineation Markings, Ministry of Transportation Ontario, 2000

Pedestrian circulation is proposed by on-site sidewalks that link the building entrances to the sidewalks across the site's frontage. All on-site sidewalks should be designed to be fully accessible.

# 4 Transportation Demand Management

Transportation Demand Management (TDM) refers to ways of making the capacity of our roads more efficient by reducing vehicle demands. TDM approaches consider how people's choices of travel mode are affected by land use patterns, development design, parking availability, parking cost, and the relative cost, convenience, and availability of alternative modes of travel.

TDM encourages sustainable travel choices by supporting alternative transportation options over the convention of driving alone. Various TDM strategies are used to influence those factors so that the alternatives are more competitive with driving alone and potentially reduce the reliance on automobiles.

To help manage the site's transportation and parking impacts, a Transportation Demand Management (TDM) program is proposed. The following TDM measures are included in the site plan (e.g., bicycle parking) or will be provided by the site operator (e.g., transit passes) as part to the development program:

- Walking
  - Safe, attractive, and direct walkways for pedestrians linking building entrances with public sidewalks are provided;
  - All on-site sidewalks conform to City of Burlington and Accessibility for Ontarians with Disabilities Act (AODA) design standards;
  - A continuous sidewalk along the subject site's frontage on Plains Road West is provided; and
  - The outdoor space has amenities such as benches, seating areas and pedestrian scale lighting.
- Cycling
  - One-hundred and twenty-seven parking spaces are provided[10] (0.85 spaces per unit), exceeding the number of spaces recommended in the City of Burlington *City-Wide Parking Standards Review*[11] for residential and retail uses:
    - Residential: 0.5 long-term bicycle spaces per unit; and

[10] Section 2.26 (General Parking Provisions) of Part 1 (General Conditions and Provisions) of City of Burlington Zoning By-law 2020 requires 2 bicycle spaces plus 1 bicycle space per 1,000 sq. ft. gross floor area (GFA) for retail land uses. Bicycle parking requirements for residential land uses are not defined in the Zoning By-law.

[11] IBI Group, *Burlington City-Wide Parking Standards Review*, (Burlington: IBI Group, 2017), 116.

    - Retail: 3 long-term spaces plus 1 space per 1,000 sq. ft. GFA.

  Long-term bicycle parking is included on levels P2, P1, the ground floor.

- Twenty-three short-term bicycle parking spaces are provided (0.15 spaces per unit), exceeding the number of spaces recommended in the City of Burlington *City-Wide Parking Standards Review*[12] for residential and retail uses:
    - Residential: 0.05 short-term bicycle spaces per unit; and
    - Retail: 2 short-term spaces plus 1 space per 1,000 sq. ft. GFA.

  Short-term bicycle parking is provided on ground floor, adjacent to the main building entrance.

- Long-term bicycle parking is provided in secure indoor rooms/areas; and
- Short-term bicycle parking is located at grade near primary and secondary building entrances.

- Transit Infrastructure
    - A one-time subsidized transit pass will be provided to occupants who do not purchase or need parking; and
    - Sidewalks connect directly to the adjacent sidewalk network and Burlington Transit stops at Howard Road, and west of Daryl Drive.
- Parking Infrastructure
    - Parking is unbundled from the cost of the units;
    - The parking supply is managed to limit the sale of spaces to a maximum of 2 spaces per unit;
    - Parking costs reflect the full cost of building and operating the parking facility; and
    - Visitor parking will be monitored and enforced to avoid disruption to the local community.
- Wayfinding, Travel Planning, Education/Promotion
    - Travel planning resources will be provided to residents (individualized marketing, active transportation maps, community resources, transit schedules);

[12] IBI Group, *Burlington City-Wide Parking Standards Review*, (Burlington: IBI Group, 2017), 116.

- Wayfinding signage is provided in the lobby or near the main entrance; and
- Marketing material promotes a strong TDM brand.

The above TDM measures will assist in mitigating the site's transportation and parking impacts on the adjacent road network, promote a strong and vibrant economy, and create a livable community that has a balanced transportation network. The monitoring and adjustment of the site's TDM program will be critical to the site's success.

To form a sustainable and balanced transportation system the city is working towards improvements to public transit and active transportation (AT) infrastructure to reduce the use of single-occupant vehicles and create a balanced transportation system.

By shifting travel to public transit and AT, intersection operations could be expected to maintain the status-quo (capacity constraint during peak hours) or possibly improve if fewer vehicles transverse the intersections during the peak hours of a typical weekday.

# 5 Parking Review

## 5.1 Proposed Parking Supply

One hundred and twelve (112) vehicle parking spaces are proposed, comprising 103 resident/occupant spaces (0.69 spaces per unit), 5 visitor parking spaces (0.03 spaces per unit), and 4 retail spaces (2.31 per 100 $m^2$ GFA).

One hundred and twenty-eight (128) bicycle parking spaces are also proposed, comprised of 105 long-term bicycle parking spaces and 23 short-term bicycle parking spaces.

## 5.2 Parking Summary

The site is located within the Aldershot GO Major Transit Station Area (MTSA) and is subject to the Community Planning Permit (CPP) By-law.[13] CPP rates are not yet in effect, the OPA/ZBA application is being filed due to timing constraints to maintain funding commitments for the purpose-built rental building.

Under the Planning Act[14] vehicle parking, other than bicycle parking, can not be regulated inside MTSA. Planning Act Part V Land Use Controls and Related Administration, Zoning By-Laws Section 3.4 (1.1) Restriction, Parking Facilities notes the following:

> *(1.1) Despite paragraph 6 of subsection (1), a zoning by-law may not require an owner or occupant of a building or structure to provide and maintain parking facilities, other than parking facilities for bicycles, on land that is not part of a highway and that is located within,*
>
> *(b) an area delineated in the official plan of the municipality surrounding and including an existing or planned higher order transit station or stop, within which area the official plan policies identify the minimum number of residents and jobs, collectively, per hectare that are planned to be accommodated, but only if those policies are required to be included in the official plan to conform with a provincial plan or be consistent with a policy statement issued under subsection 3 (1);*

[13] City of Burlington, *Community Planning Permit By-law*, (Burlington: City of Burlington, 2024).
[14] Government of Ontario, *Planning Act, RSO 1990 c P.13*, (Ontario: Government of Ontario, 2024) Section 34, 1.1

**Table 5.1** and **Table 5.2** summarizes the vehicular and bicycle parking requirements for the site based on the CPP as compared to the proposed parking supply. The proposed parking supply is in line with the parking requirements outlined in the CPP.

## TABLE 5.1: REQUIRED VEHICULAR PARKING SUPPLY

| Land Use | Parking Type | Minimum Parking Rate | Maximum Parking Rate | Parking Spaces Required | Parking Spaces Provided |
|---|---|---|---|---|---|
| Residential (150 units) | Residential | No minimum | 1.20 parking spaces per dwelling unit | Zero to 180 | 103 |
| | Visitor | No minimum | 0.15 parking spaces per dwelling unit | Zero to 22 | 5 |
| | Accessible Parking | 1+3% (If odd + 1 Type B) | - | 2 Type 'A'<br>3 Type 'B' | 2 Type 'A'<br>3 Type 'B' |
| | Electric Vehicle | 20% of parking spaces | - | 22 | 22 |
| | 'Designed' Electric Vehicle | 80% of parking spaces | - | 90 | 90 |
| Non-Residential (173 $m^2$) | Retail | No minimum | 4.4 spaces per 100 $m^2$ GFA | Zero to 7 | 4 |
| | 'Designed' Electric Vehicle | 10% of parking spaces | - | 1 | 1 |
| **Total** | | | | **2 to 209** | **112** |

## TABLE 5.2: REQUIRED BICYCLE PARKING SUPPLY

| Land Use | Parking Type | Minimum Parking Rate | Parking Spaces Required | Parking Spaces Provided |
|---|---|---|---|---|
| Residential mixed-use building (150 units) | Short Term | 0.1 spaces per dwelling unit | 15 | 23 |
| | Long Term | 0.5 spaces per dwelling unit | 75 | 105 |
| Retail (173 $m^2$) | Short Term | 0.2 spaces per 100$m^2$ GFA (min. 3) | 3 | 23 |
| | Long Term | 0.1 spaces per 100$m^2$ GFA (min. 2) | 2 | 105 |
| **Total** | **Short Term** | **-** | **18** | **23** |
| | **Long Term** | **-** | **77** | **105** |
| | **Large Bicycles** | **5% of total** | **7** | **7** |

# 6 Future Conditions

## 6.1 Horizon Years

The analysis of future traffic conditions assesses two horizon years:

- Five-Years from Date of Study (Year 2028); and
- Ten Years from Date of Study (Year 2033).

## 6.2 Forecast Background Traffic

The future background traffic volumes in the study area (traffic not related to the proposed development) is expected to comprise two components:

- General background traffic growth from developments outside the study area; and
- Traffic generated by approved or in-stream developments in or near the study area.

For the purposes of this report, and based on direction from City transportation planning staff, general background traffic growth has been estimated using a 1% per annum compound growth rate applied to the base year traffic volumes. This growth rate is also consistent with that used in transportation impact studies for other nearby development applications.

In addition to general background traffic growth, Paradigm reviewed the City of Burlington Development Projects portal to identify approved or in-stream developments near the subject site. The review identified four development applications, all on Plains Road East, immediately east of Waterdown Road. **Table 6.1** summarizes the municipal address, development concept, and status of each development.

All background developments, except for 40-70 Plains Road East, are included in the background traffic forecasts in both 2028 and 2033. Estimated trip generation for each background development is based on information extracted from the following public documents:

- 35 Plains Road East Traffic Impact Study, Parking Study, and TDM Options Report (April 2016), prepared by Paradigm Transportation Solutions Limited;
- 53 & 71 Plains Road East Transportation Impact Assessment (December 2020), prepared by Paradigm Transportation Solutions Limited; and





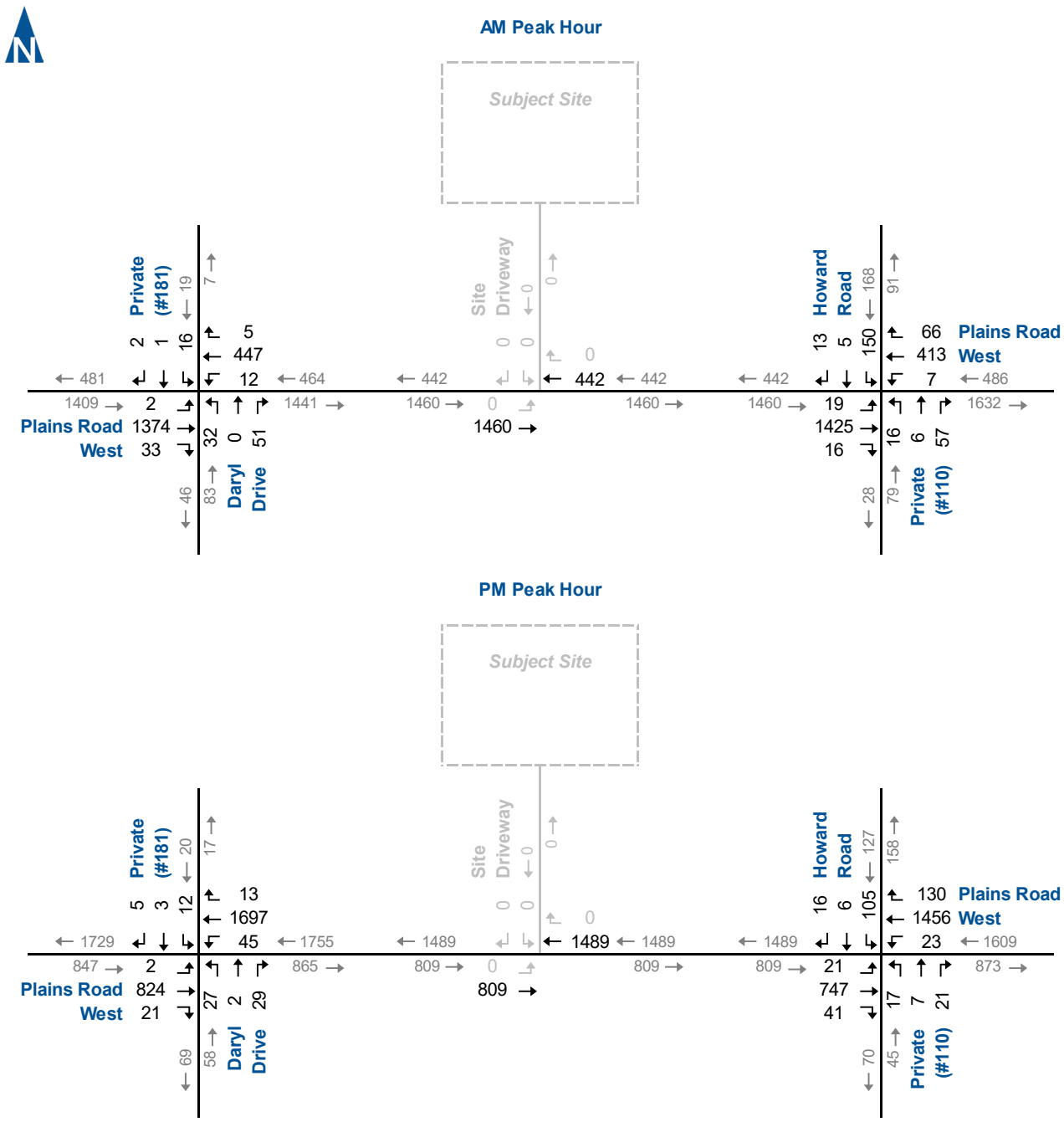
- 92 Plains Road East Traffic Impact Statement and Parking Assessment Update (October 2017), prepared by WSP Canada Group.[15]

**Figure 6.1** illustrates the estimated 2028 background traffic volumes. **Figure 6.2** illustrates the estimated 2033 background traffic volumes. **Appendix F** contains the individual trip assignments for each background development included in this study.

### TABLE 6.1: BACKGROUND DEVELOPMENT APPLICATIONS

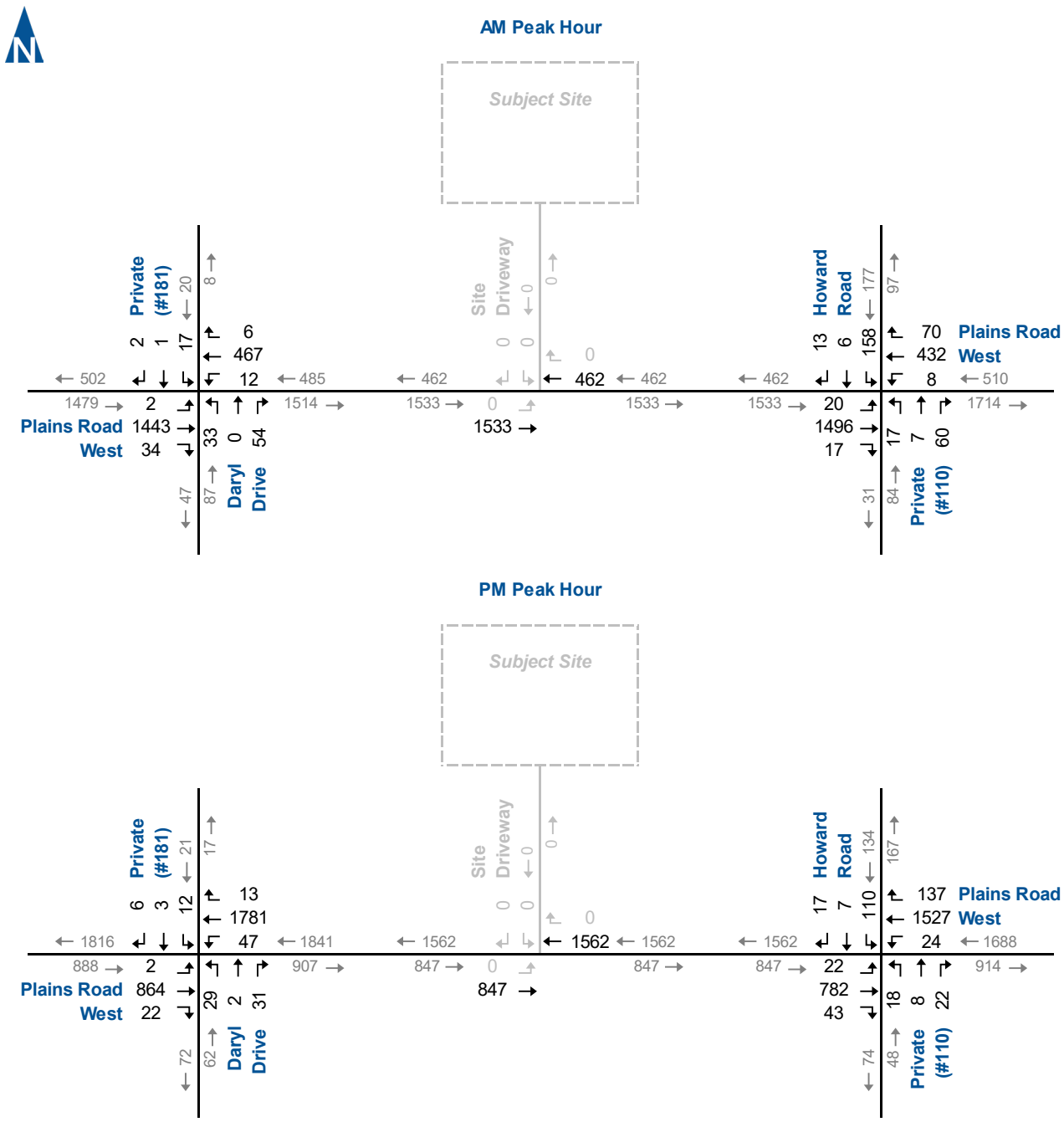
| Address | Development Concept | Status |
|---|---|---|
| 35 Plains Road East | 89 residential condominium units and 276 $m^2$ (3,000 sq. ft.) of ground floor commercial/retail space | Approved |
| 40-70 Plains Road East | Nine-storey residential development with 360 condominium units | Approved |
| 53-71 Plains Road East | 450 condominium units and 1,208 $m^2$ (13,005 sq. ft.) of ground floor commercial/retail space | Approved |
| 92 Plains Road East | 50 residential units and 157 $m^2$ (1,609 sq. ft.) of ground floor office space | Approved |

[15] This document included an estimate of trip generation but did not include an assignment of these trips. Therefore, trips were assigned to the study road network using the trip distribution model developed for this study. See **Section 6.3.2** for further information on the trip distribution model used in this study.




*Not to Scale*

# 2028 Background Traffic Volumes




*Not to Scale*

# 2033 Background Traffic Volumes

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**Figure 6.2**

## 6.3 Forecast Site Traffic

### 6.3.1 Trip Generation

The site trip generation is based on rates and equations contained in the Institute of Transportation Engineers (ITE) *Trip Generation Manual (11th edition)*.[16] In this case, the site trip forecasts have relied on the following land use codes (LUCs):

- 222 (Multifamily Housing, High-Rise); and
- 822 (Strip Retail Plaza (less than 40,000 sq. ft. GFA)).

The tenants for the ground floor commercial space(s) are unknown; therefore, trip generation estimates for this land use references LUC 822. LUC 822 is intended to capture the wide variety of commercial or retail land uses that may be present on the site.

**Table 6.2** summarizes the estimated trip generation for the site. The site is estimated to generate approximately 61 new trips in the weekday AM peak hour and 86 new trips in the weekday PM peak hour.

**TABLE 6.2: ESTIMATED TRIP GENERATION**

| LUC | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|
| | Rate[1] | In | Out | Total | Rate[1] | In | Out | Total |
| LUC 222 (150 units) | Eqn.[2] | 14 | 38 | 52 | Eqn.[3] | 38 | 24 | 62 |
| LUC 822 (1,862 sq. ft.) | Eqn.[4] | 5 | 4 | 10 | Eqn.[5] | 12 | 12 | 24 |
| **Total** | | **19** | **42** | **61** | | **50** | **36** | **86** |

Notes:

1. The independent variable (X) in the regression equations is equal to the number of units (for LUC 222), and the gross floor area divided by 1,000 (for LUC 822).
2. LUC 222 (AM): T = 0.22(X) + 18.85 (26% entering, 74% exiting)
3. LUC 222 (PM): T = 0.26(X) + 23.12 (62% entering, 38% exiting)
4. LUC 822 (AM): Ln(T) = 0.66Ln(X) + 1.84 (60% entering, 40% exiting)
5. LUC 822 (PM): Ln(T) = 0.71Ln(X) + 2.72 (50% entering, 50% exiting)

[16] Institute of Transportation Engineers, *Trip Generation Manual*, 11th ed., (Washington, DC: ITE, 2021).

The estimates for LUC 222 reflect a general urban/suburban environment, not close to rail transit.[17] The estimates for LUC 822 reflect a general urban/suburban environment with no distinction for proximity to rail transit. Consistent with guidance published in the ITE *Trip Generation Handbook*[18], trip generation estimates are based on the regression equations for LUC 222 (AM and PM peak hours), and LUC 822 (PM peak hour only). Trip generation estimates for LUC 822 in the AM peak hour are based on the weighted average rate.

### 6.3.2 Trip Distribution and Assignment

The trip distribution developed for the study area is based on a review of travel characteristics extracted from the 2016 Transportation Tomorrow Survey (TTS). Trip origin and destination information were extracted from the TTS for all trip types into and out of the traffic analysis zone (TAZ) containing the subject site; TAZ 4052.

Information was extracted for TAZ 4052 for all trips occurring between 6:00 AM and 9:00 AM (the AM period) and 3:00 PM and 6:00 PM (the PM period). Given the limited breath of survey in TAZ 4052, neighbouring zones 4050 and 4051 were also included. These additional zones comprise a higher proportion of apartment style dwellings with a similar level of connectivity as TAZ 4052.

These three zones encompass an area bounded by Lake Ontario to the south, the Burlington/Hamilton municipal border to the west, Highway 403 to the north, and Shadeland Avenue to the east. **Appendix G** contains the detailed trip distribution assessment and output. **Table 6.3** summarizes the estimated trip distribution based on the TTS data.

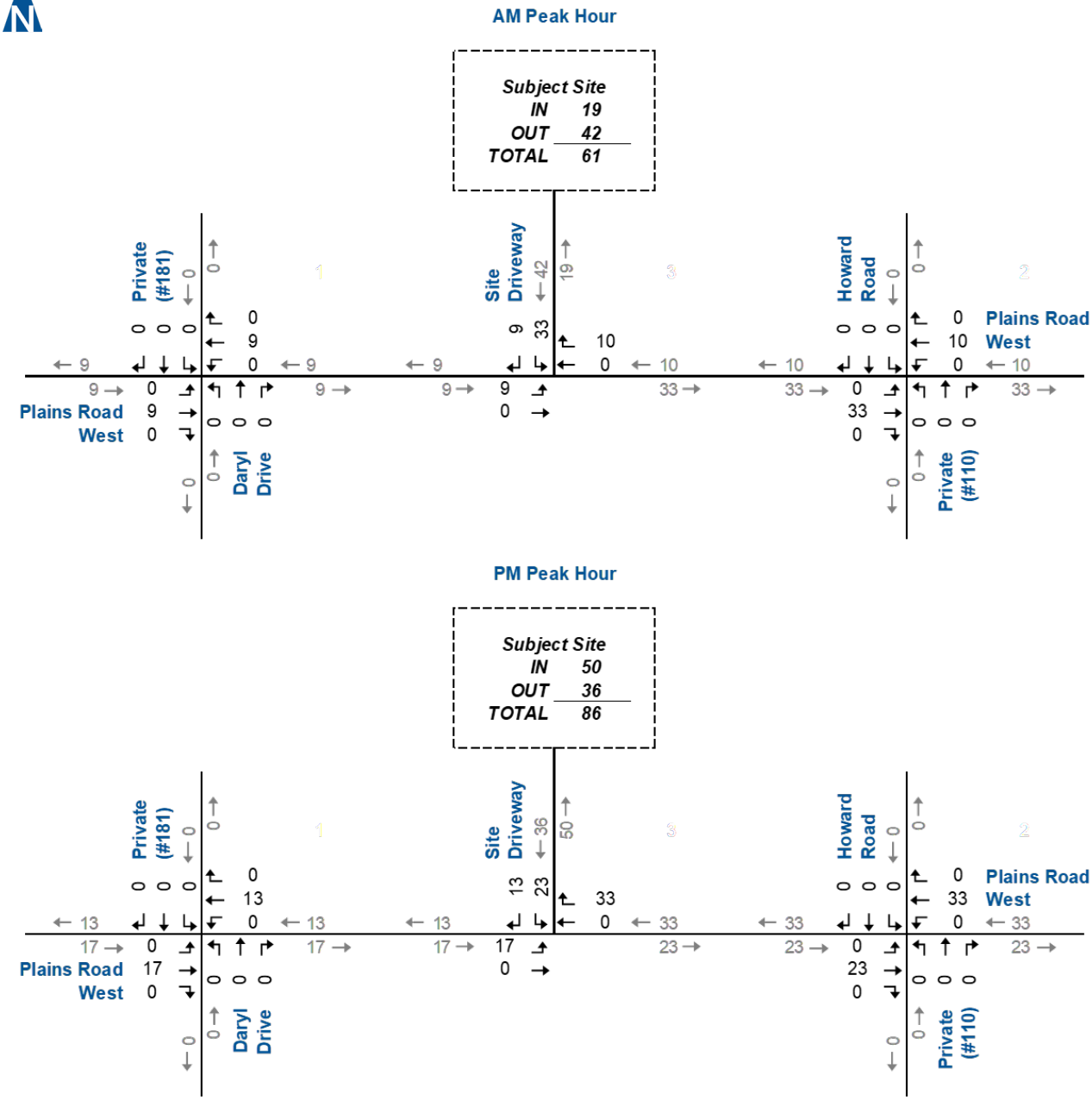
**TABLE 6.3: ESTIMATED TRIP DISTRIBUTION**

| Origin/Destination | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|
| | In | Out | In | Out |
| East via Plains Road West | 52% | 79% | 66% | 63% |
| West via Plains Road West | 48% | 21% | 34% | 37% |
| **Total** | **100%** | **100%** | **100%** | **100%** |

[17] ITE provides trip generation rates for land uses proximate to rail transit. Land uses are considered close to rail transit if located less than 0.5 mile/0.8 kilometers from the rail transit facility. The subject site is approximately 1.8 kilometers from Aldershot GO Station.

[18] Institute of Transportation Engineers, *Trip Generation Handbook*, 3rd ed., (Washington, DC: ITE, 2017).

**Figure 6.3** illustrates the estimated site generated traffic volumes and assignment in the AM and PM peak hours. Trips were not assigned to Howard Road or Daryl Drive due to their local nature.




*Not to Scale*

# Site Generated Traffic Volumes

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220615

**Figure 6.3**

## 6.4 Forecast Total Traffic

The future total traffic volumes reflect the summation of the background traffic volumes at each horizon year and the estimated site generated traffic volumes.

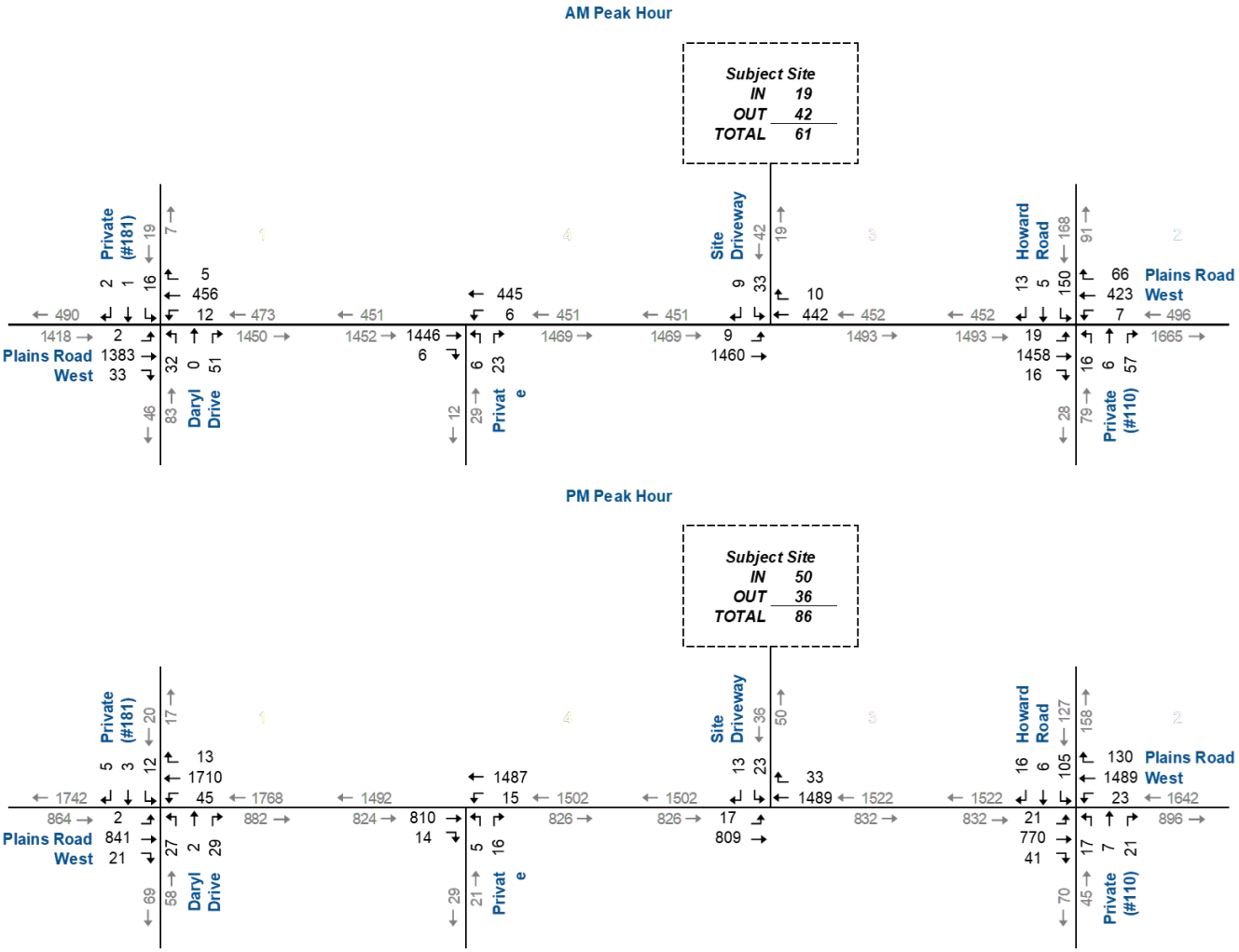
The traffic counts summarized in **Table 2.2** include traffic volumes destinated to and from the existing land uses on the subject site. However, these existing trips have not been documented separately from the overall TMC data and have not been removed from the study road network. This presents a conservative estimate of future traffic volumes and operations.

The analysis of future total traffic conditions includes an assessment of westbound left-turning queues at the driveway to 168 Plains Road West. This property is connected to 945 Daryl Drive, the latter of which includes an all-moves driveway to Daryl Drive. These properties are occupied by an eleven-storey building with approximately 149 residential units, and a nine-storey building with approximately 100 units.

Vehicular traffic generated by both buildings has been estimated using the rates and equations in the ITE *Trip Generation Manual*, namely LUC 221 (Multifamily Housing (Mid-Rise)) for 945 Daryl Drive and LUC 222 (Multifamily Housing (High-Rise)) for 168 Plains Road.

The combined property is estimated to generate approximately 84 trips in the AM peak hour and approximately 101 trips in the PM peak hour. Trip assignment is consistent with that documented in **Section 6.3.2**, assuming an equal distribution of site traffic between the two driveways serving the site. Only the driveway to Plains Road West is included the forecasts and analyses. **Appendix H** summarizes the trip generation calculations and trip assignment.

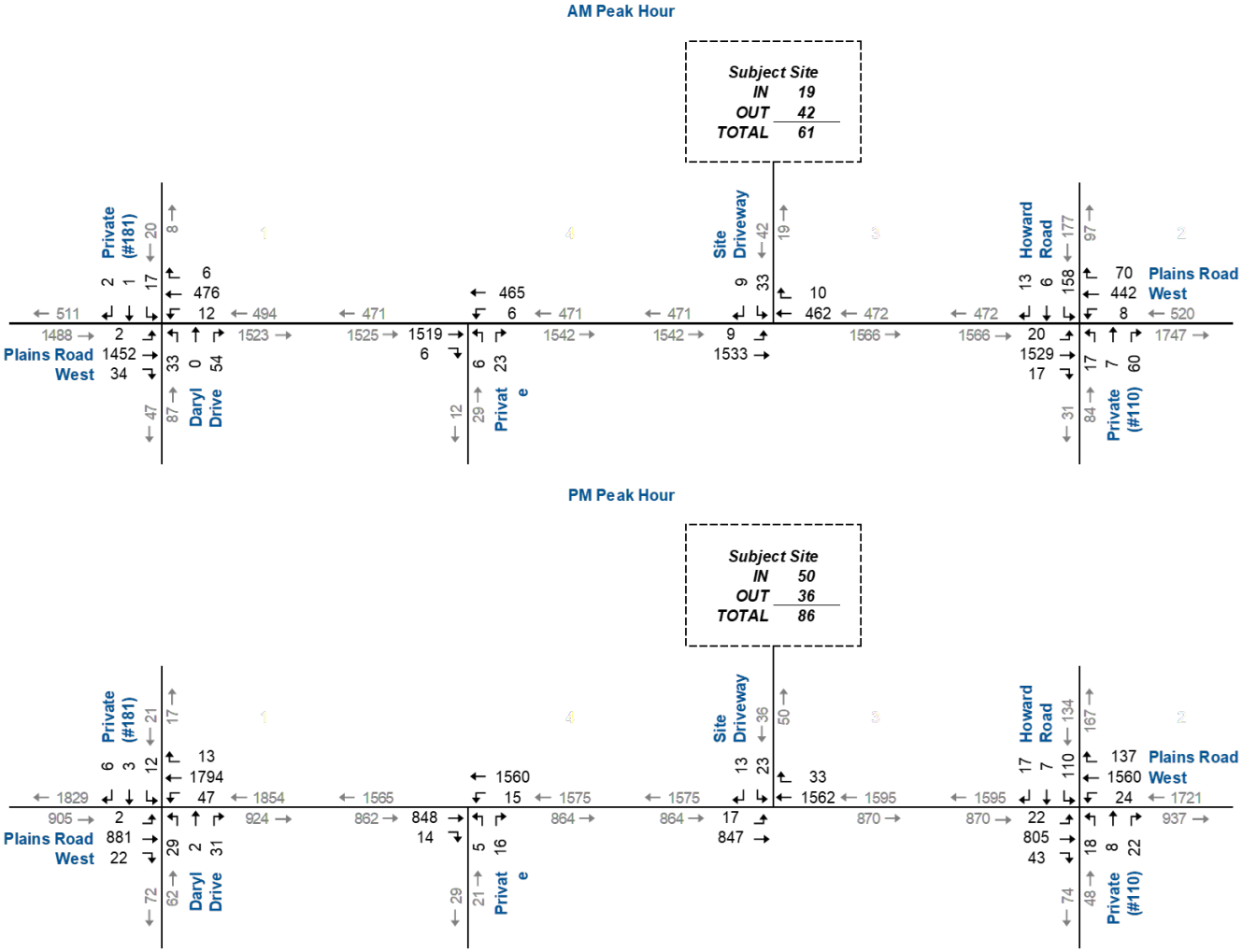
**Figure 6.4** and **Figure 6.5** illustrate the estimated 2028 and 2033 total traffic volumes, respectively.




# 2028 Total Traffic Volumes

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Figure 6.4




# 2033 Total Traffic Volumes

# 7 Traffic Operations Assessment

## 7.1 Background Traffic Operations

### 7.1.1 2028 Background Traffic Operations

The 2028 background traffic conditions have been analyzed using the same methodology as base year traffic conditions. However, the signal timing parameters have been modified to estimated post construction signal timing parameters, optimizing both the cycle length and splits. A three second leading pedestrian and cycling interval was also added to the eastbound and westbound movements on Plains Road West to account for the future protected intersections.

**Table 7.1** summarizes the 2028 background traffic level of service conditions in the AM and PM peak hours, respectively. Critical movements (not including queues exceeding lane storage) are highlighted in yellow. **Appendix I** contains the detailed Synchro reports.

In both the AM and PM peak hours, the southbound left-turn movement on Howard Road at Plains Road West is forecast to operate with 95th percentile queues that exceed available lane storage by 23 and 10 metres, respectively.

### 7.1.2 2033 Background Traffic Operations

The 2033 background traffic conditions have been analyzed using the same methodology as the 2028 background traffic operations.

**Table 7.2** summarizes the 2028 background traffic level of service conditions in the AM and PM peak hours, respectively. Critical movements (not including queues that exceed available lane storage) are highlighted in yellow. **Appendix J** contains the detailed Synchro reports.

In both the AM and PM peak hours, the southbound left-turn movement on Howard Road at Plains Road West is forecast to operate with 95th percentile queues that exceed available lane storage by 25 and 12 metres, respectively.

# TABLE 7.1: 2028 BACKGROUND TRAFFIC OPERATIONS

| Analysis Period | Intersection | Control Type | MOE | Direction / Movement / Approach | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | Overall |
| | | | | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | |
| AM Peak Hour | Plains Road West and Daryl Drive | TCS | LOS | A | A | > | A | A | A | > | A | C | C | > | C | < | C | > | C | A |
| | | | Delay | 4 | 9 | > | 9 | 6 | 5 | > | 5 | 26 | 24 | > | 25 | < | 25 | > | 25 | 9 |
| | | | V/C | 0.00 | 0.70 | > | | 0.10 | 0.23 | > | | 0.29 | 0.04 | > | | < | 0.15 | > | | 0.64 |
| | | | Q | 1 | 91 | > | | 3 | 21 | > | | 11 | 5 | > | | < | 7 | > | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | < | - | > | | |
| | | | Avail. | 24 | - | > | | 22 | - | > | | 9 | - | > | | < | - | > | | |
| | Plains Road West and Howard Road | TCS | LOS | A | B | A | B | A | A | > | A | < | C | > | C | C | C | > | C | B |
| | | | Delay | 8 | 17 | 8 | 17 | 10 | 10 | > | 10 | < | 25 | > | 25 | 34 | 24 | > | 32 | 17 |
| | | | V/C | 0.06 | 0.79 | 0.01 | | 0.08 | 0.28 | > | | < | 0.15 | > | | 0.62 | 0.03 | > | | 0.72 |
| | | | Q | 6 | 155 | 0 | | 4 | 36 | > | | < | 17 | > | | 43 | 6 | > | | |
| | | | Ex | 50 | - | 30 | | 40 | - | > | | < | - | > | | 20 | - | > | | |
| | | | Avail. | 44 | - | 30 | | 36 | - | > | | < | - | > | | -23 | - | > | | |
| PM Peak Hour | Plains Road West and Daryl Drive | TCS | LOS | A | A | > | A | A | A | > | A | C | C | > | C | < | C | > | C | A |
| | | | Delay | 4 | 5 | > | 5 | 4 | 9 | > | 9 | 34 | 32 | > | 33 | < | 33 | > | 33 | 8 |
| | | | V/C | 0.02 | 0.37 | > | | 0.12 | 0.74 | > | | 0.29 | 0.04 | > | | < | 0.17 | > | | 0.69 |
| | | | Q | 1 | 40 | > | | 7 | 123 | > | | 12 | 8 | > | | < | 9 | > | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | < | - | > | | |
| | | | Avail. | 24 | - | > | | 19 | - | > | | 8 | - | > | | < | - | > | | |
| | Plains Road West and Howard Road | TCS | LOS | B | A | A | A | A | B | > | B | < | C | > | C | C | C | > | C | B |
| | | | Delay | 15 | 8 | 6 | 8 | 6 | 14 | > | 14 | < | 27 | > | 27 | 34 | 27 | > | 33 | 13 |
| | | | V/C | 0.28 | 0.37 | 0.03 | | 0.07 | 0.80 | > | | < | 0.13 | > | | 0.55 | 0.04 | > | | 0.74 |
| | | | Q | 9 | 49 | 2 | | 5 | 156 | > | | < | 12 | > | | 30 | 7 | > | | |
| | | | Ex | 50 | - | 30 | | 40 | - | > | | < | - | > | | 20 | - | > | | |
| | | | Avail. | 41 | - | 28 | | 35 | - | > | | < | - | > | | -10 | - | > | | |

*MOE - Measure of Effectiveness*
*LOS - Level of Service*
*Delay - Average Delay per Vehicle in Seconds*
*Q - 95th Percentile Queue Length (m)*
*Ex. - Existing Available Storage (m)*
*Avail. - Available Storage (m)*
*TCS - Traffic Control Signal*
*TWSC - Two-Way Stop Control*
*AWSC - All-Way Stop Control*
*<- Shared Left/Through Lane*
*>- Shared Right/Through Lane*
*UM - Unopposed Movement*

# TABLE 7.2: 2033 BACKGROUND TRAFFIC OPERATIONS

| Analysis Period | Intersection | Control Type | MOE | Direction / Movement / Approach | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | Overall |
| | | | | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | |
| AM Peak Hour | Plains Road West and Daryl Drive | TCS | LOS | A | A | > | A | A | A | > | A | C | C | > | C | < | C | > | C | A |
| | | | Delay | 4 | 10 | > | 10 | 6 | 5 | > | 5 | 26 | 24 | > | 25 | < | 25 | > | 25 | 10 |
| | | | V/C | 0.00 | 0.74 | > | | 0.11 | 0.24 | > | | 0.30 | 0.04 | > | | < | 0.16 | > | | 0.67 |
| | | | Q | 1 | 99 | > | | 3 | 22 | > | | 11 | 6 | > | | < | 7 | > | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | < | - | > | | |
| | | | Avail. | 24 | - | > | | 22 | - | > | | 9 | - | > | | < | - | > | | |
| | Plains Road West and Howard Road | TCS | LOS | A | B | A | B | B | B | > | B | < | C | > | C | C | C | > | C | B |
| | | | Delay | 9 | 19 | 8 | 19 | 11 | 10 | > | 10 | < | 25 | > | 25 | 34 | 24 | > | 33 | 18 |
| | | | V/C | 0.06 | 0.83 | 0.01 | | 0.10 | 0.30 | > | | < | 0.17 | > | | 0.63 | 0.03 | > | | 0.76 |
| | | | Q | 6 | 192 | 0 | | 4 | 39 | > | | < | 18 | > | | 45 | 6 | > | | |
| | | | Ex | 50 | - | 30 | | 40 | - | > | | < | - | > | | 20 | - | > | | |
| | | | Avail. | 44 | - | 30 | | 36 | - | > | | < | - | > | | -25 | - | > | | |
| PM Peak Hour | Plains Road West and Daryl Drive | TCS | LOS | A | A | > | A | A | A | > | A | C | C | > | C | < | C | > | C | A |
| | | | Delay | 4 | 5 | > | 5 | 4 | 10 | > | 10 | 34 | 32 | > | 33 | < | 33 | > | 33 | 9 |
| | | | V/C | 0.02 | 0.39 | > | | 0.13 | 0.78 | > | | 0.32 | 0.04 | > | | < | 0.18 | > | | 0.73 |
| | | | Q | 1 | 43 | > | | 7 | 139 | > | | 12 | 9 | > | | < | 9 | > | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | < | - | > | | |
| | | | Avail. | 24 | - | > | | 18 | - | > | | 8 | - | > | | < | - | > | | |
| | Plains Road West and Howard Road | TCS | LOS | B | A | A | A | A | B | > | B | < | C | > | C | C | C | > | C | B |
| | | | Delay | 16 | 8 | 6 | 8 | 6 | 15 | > | 15 | < | 27 | > | 27 | 34 | 27 | > | 33 | 14 |
| | | | V/C | 0.29 | 0.39 | 0.03 | | 0.07 | 0.84 | > | | < | 0.14 | > | | 0.57 | 0.04 | > | | 0.77 |
| | | | Q | 10 | 53 | 3 | | 6 | 192 | > | | < | 13 | > | | 32 | 7 | > | | |
| | | | Ex | 50 | - | 30 | | 40 | - | > | | < | - | > | | 20 | - | > | | |
| | | | Avail. | 40 | - | 27 | | 34 | - | > | | < | - | > | | -12 | - | > | | |

*MOE - Measure of Effectiveness*
*LOS - Level of Service*
*Delay - Average Delay per Vehicle in Seconds*
*Q - 95th Percentile Queue Length (m)*
*Ex. - Existing Available Storage (m)*
*Avail. - Available Storage (m)*
*TCS - Traffic Control Signal*
*TWSC - Two-Way Stop Control*
*AWSC - All-Way Stop Control*
*<- Shared Left/Through Lane*
*>- Shared Right/Through Lane*
*UM - Unopposed Movement*

## 7.2 Total Traffic Operations

### 7.2.1 2028 Total Traffic Operations

The 2028 total traffic conditions have been analyzed using the same methodology as background traffic operations. Signal timing parameters have been modified to estimate post construction signal timing parameters, optimizing both the cycle length and splits. A three second leading pedestrian and cycling interval was also added to the eastbound and westbound movements on Plains Road West. The analysis includes the private driveway to 168 Plains Road West to identify the potential for competing left-turn space between vehicle entering 168 Plains Road West and the subject site at 141-153 Plains Road West.

**Table 7.3** summarizes the 2028 total traffic level of service conditions in the AM and PM peak hours, respectively. Critical movements (not including queues exceeding lane storage) are highlighted in yellow. **Appendix K** contains the detailed Synchro reports.

In both the AM and PM peak hours, the southbound left-turn movement on Howard Road at Plains Road West is forecast to operate with 95th percentile queues that exceed available lane storage by 23 and 10 metres, respectively.

Outbound movements from the proposed driveway onto Plains Road West are forecast to operate at LOS C or better in both peak hours. The eastbound left-turn movement from Plains Road West into the site is also forecast to operate at LOS B or better in both peak hours. Overall, redevelopment of the subject site is forecast to have a negligible impact on traffic operations in the study area.

The analysis estimates a peak 95th percentile queue of no greater than two metres on Plains Road West at either the Site Driveway or the private driveway to 168 Plains Road West. Given a projected spacing of approximately 20 metres between both driveways, the relatively low volume of left-turning traffic at both driveways (about 15 left-turn-movements in the PM peak hour), and the projected queuing conditions (no greater than one metre), the potential for overlapping left-turns is considered negligible.

No geometric or traffic control changes are required on Plains Road West at the site driveway.





# TABLE 7.3: 2028 TOTAL TRAFFIC OPERATIONS

| Analysis Period | Intersection | Control Type | MOE | Direction / Movement / Approach | | | | | | | | | | | | | | | | Overall |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | |
| | | | | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | |
| AM Peak Hour | Plains Road West and Daryl Drive | TCS | LOS | A | A | > | A | A | A | > | A | C | C | > | C | < | C | > | C | A |
| | | | Delay | 4 | 9 | > | 9 | 6 | 5 | > | 5 | 26 | 24 | > | 25 | < | 25 | > | 25 | 9 |
| | | | V/C | 0.00 | 0.71 | > | | 0.10 | 0.24 | > | | 0.29 | 0.04 | > | | < | 0.15 | > | | 0.64 |
| | | | Q | 1 | 92 | > | | 3 | 21 | > | | 11 | 5 | > | | < | 7 | > | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | < | - | > | | |
| | | | Avail. | 24 | - | > | | 22 | - | > | | 9 | - | > | | < | - | > | | |
| | Plains Road West and Howard Road | TCS | LOS | A | B | A | B | A | A | > | A | < | C | > | C | C | C | > | C | B |
| | | | Delay | 8 | 18 | 8 | 18 | 9 | 9 | > | 10 | < | 25 | > | 25 | 28 | 24 | > | 32 | 17 |
| | | | V/C | 0.06 | 0.80 | 0.01 | | 0.08 | 0.29 | > | | < | 0.16 | > | | 0.62 | 0.03 | > | | 0.74 |
| | | | Q | 6 | 166 | 0 | | 4 | 37 | > | | < | 17 | > | | 43 | 5 | > | | |
| | | | Ex | 50 | - | 30 | | 40 | - | > | | < | - | > | | 20 | - | > | | |
| | | | Avail. | 44 | - | 30 | | 36 | - | > | | < | - | > | | -23 | - | > | | |
| | Plains Road West and Site Driveway | TWSC | LOS | A | UM | | A | | UM | > | UM | | | | | B | | > | B | |
| | | | Delay | 8 | | | 0 | | | > | | | | | | 11 | | > | 11 | |
| | | | V/C | 0.01 | | | | | | > | | | | | | 0.07 | | > | | |
| | | | Q | 0 | | | | | | > | | | | | | 2 | | > | | |
| | | | Ex | - | | | | | | > | | | | | | - | | > | | |
| | | | Avail. | - | | | | | | > | | | | | | - | | > | | |
| | Plains Road West and Private (#168) | TWSC | LOS | | UM | > | UM | B | UM | | A | B | | > | B | | | | | |
| | | | Delay | | | > | | 12 | | | 0 | 13 | | > | 13 | | | | | |
| | | | V/C | | | > | | 0.01 | | | | 0.06 | | > | | | | | | |
| | | | Q | | | > | | 0 | | | | 2 | | > | | | | | | |
| | | | Ex | | | > | | - | | | | - | | > | | | | | | |
| | | | Avail. | | | > | | - | | | | - | | > | | | | | | |
| PM Peak Hour | Plains Road West and Daryl Drive | TCS | LOS | A | A | > | A | A | A | > | A | C | C | > | C | < | C | > | C | A |
| | | | Delay | 4 | 5 | > | 5 | 4 | 9 | > | 9 | 34 | 32 | > | 33 | < | 33 | > | 33 | 8 |
| | | | V/C | 0.02 | 0.38 | > | | 0.12 | 0.75 | > | | 0.29 | 0.04 | > | | < | 0.17 | > | | 0.70 |
| | | | Q | 1 | 41 | > | | 7 | 126 | > | | 12 | 8 | > | | < | 9 | > | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | < | - | > | | |
| | | | Avail. | 24 | - | > | | 18 | - | > | | 8 | - | > | | < | - | > | | |
| | Plains Road West and Howard Road | TCS | LOS | B | A | A | A | A | B | > | B | < | C | > | C | C | C | > | C | B |
| | | | Delay | 15 | 8 | 6 | 8 | 6 | 14 | > | 14 | < | 27 | > | 27 | 34 | 27 | > | 33 | 13 |
| | | | V/C | 0.28 | 0.38 | 0.03 | | 0.07 | 0.81 | > | | < | 0.13 | > | | 0.55 | 0.04 | > | | 0.75 |
| | | | Q | 9 | 51 | 2 | | 5 | 168 | > | | < | 12 | > | | 30 | 7 | > | | |
| | | | Ex | 50 | - | 30 | | 40 | - | > | | < | - | > | | 20 | - | > | | |
| | | | Avail. | 41 | - | 28 | | 35 | - | > | | < | - | > | | -10 | - | > | | |
| | Plains Road West and Site Driveway | TWSC | LOS | B | UM | | A | | UM | > | UM | | | | | C | | > | C | |
| | | | Delay | 12 | | | 0 | | | > | | | | | | 17 | | > | 17 | |
| | | | V/C | 0.03 | | | | | | > | | | | | | 0.12 | | > | | |
| | | | Q | 1 | | | | | | > | | | | | | 3 | | > | | |
| | | | Ex | - | | | | | | > | | | | | | - | | > | | |
| | | | Avail. | - | | | | | | > | | | | | | - | | > | | |
| | Plains Road West and Private (#168) | TWSC | LOS | | UM | > | UM | A | UM | | A | B | | > | B | | | | | |
| | | | Delay | | | > | | 9 | | | 0 | 11 | | > | 11 | | | | | |
| | | | V/C | | | > | | 0.02 | | | | 0.03 | | > | | | | | | |
| | | | Q | | | > | | 1 | | | | 1 | | > | | | | | | |
| | | | Ex | | | > | | - | | | | - | | > | | | | | | |
| | | | Avail. | | | > | | - | | | | - | | > | | | | | | |

*MOE - Measure of Effectiveness*
*LOS - Level of Service*
*Delay - Average Delay per Vehicle in Seconds*
*Q - 95th Percentile Queue Length (m)*
*Ex. - Existing Available Storage (m)*
*Avail. - Available Storage (m)*
*TCS - Traffic Control Signal*
*TWSC - Two-Way Stop Control*
*AWSC - All-Way Stop Control*
*<- Shared Left/Through Lane*
*>- Shared Right/Through Lane*
*UM - Unopposed Movement*

### 7.2.2 2033 Total Traffic Operations

The 2033 total traffic conditions have been analyzed using the same methodology as the 2028 total traffic operations.

**Table 7.4** summarizes the 2033 total traffic level of service conditions in the AM and PM peak hours, respectively. Critical movements (not including queues exceeding lane storage) are highlighted in yellow. **Appendix L** contains the detailed Synchro reports.

In both the AM and PM peak hours, the southbound left-turn movement on Howard Road at Plains Road West is forecast to operate with 95th percentile queues that exceed available lane storage by 25 and 12 metres, respectively.

Outbound movements from the proposed driveway onto Plains Road West is forecast to operate at LOS C or better in both peak hours. The eastbound left-turn movement from Plains Road West into the site is also forecast to operate at LOS B or better in both peak hours. Overall, redevelopment of the subject site is forecast to have a negligible impact on traffic operations in the study area.

The analysis estimates a peak 95th percentile queue of no greater than one metre on Plains Road West at either the Site Driveway or the private driveway to 168 Plains Road West. Given a projected spacing of approximately 20 metres between both driveways, the relatively low volume of left-turning traffic at both driveways (about 15 left-turn-movements in the PM peak hour), and the projected queuing conditions (no greater than one metre), the potential for overlapping left-turns is considered negligible.

No geometric or traffic control changes are required on Plains Road West at the site driveway.





# TABLE 7.4: 2033 TOTAL TRAFFIC OPERATIONS

| Analysis Period | Intersection | Control Type | MOE | Direction / Movement / Approach | | | | | | | | | | | | | | | | Overall |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | |
| | | | | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | |
| AM Peak Hour | Plains Road West and Daryl Drive | TCS | LOS | A | A | > | A | A | A | > | A | C | C | > | C | < | C | > | C | A |
| | | | Delay | 4 | 10 | > | 10 | 6 | 5 | > | 5 | 26 | 24 | > | 25 | < | 25 | > | 25 | 10 |
| | | | V/C | 0.00 | 0.74 | > | | 0.11 | 0.25 | > | | 0.30 | 0.04 | > | | < | 0.16 | > | | 0.67 |
| | | | Q | 1 | 100 | > | | 3 | 22 | > | | 11 | 6 | > | | < | 7 | > | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | < | - | > | | |
| | | | Avail. | 24 | - | > | | 22 | - | > | | 9 | - | > | | < | - | > | | |
| | Plains Road West and Howard Road | TCS | LOS | A | B | A | B | B | B | > | B | < | C | > | C | C | C | > | C | B |
| | | | Delay | 9 | 20 | 8 | 20 | 11 | 10 | > | 10 | < | 25 | > | 25 | 34 | 24 | > | 33 | 19 |
| | | | V/C | 0.06 | 0.85 | 0.01 | | 0.10 | 0.30 | > | | < | 0.17 | > | | 0.63 | 0.03 | > | | 0.77 |
| | | | Q | 6 | 199 | 0 | | 4 | 40 | > | | < | 18 | > | | 45 | 6 | > | | |
| | | | Ex | 50 | - | 30 | | 40 | - | > | | < | - | > | | 20 | - | > | | |
| | | | Avail. | 44 | - | 30 | | 36 | - | > | | < | - | > | | -25 | - | > | | |
| | Plains Road West and Site Driveway | TWSC | LOS | A | UM | | A | | UM | > | UM | | | | | B | | > | B | |
| | | | Delay | 8 | | | 0 | | | > | | | | | | 11 | | > | 11 | |
| | | | V/C | 0.01 | | | | | | > | | | | | | 0.07 | | > | | |
| | | | Q | 0 | | | | | | > | | | | | | 1 | | > | | |
| | | | Ex | - | | | | | | > | | | | | | - | | > | | |
| | | | Avail. | - | | | | | | > | | | | | | - | | > | | |
| | Plains Road West and Private (#168) | TWSC | LOS | | UM | > | UM | B | UM | | A | B | | > | B | | | | | |
| | | | Delay | | | > | | 13 | | | 0 | 13 | | > | 13 | | | | | |
| | | | V/C | | | > | | 0.01 | | | | 0.07 | | > | | | | | | |
| | | | Q | | | > | | 0 | | | | 2 | | > | | | | | | |
| | | | Ex | | | > | | - | | | | - | | > | | | | | | |
| | | | Avail. | | | > | | - | | | | - | | > | | | | | | |
| PM Peak Hour | Plains Road West and Daryl Drive | TCS | LOS | A | A | > | A | A | A | > | A | C | C | > | C | < | C | > | C | A |
| | | | Delay | 4 | 5 | > | 5 | 4 | 10 | > | 10 | 34 | 32 | > | 33 | < | 33 | > | 33 | 9 |
| | | | V/C | 0.02 | 0.40 | > | | 0.14 | 0.79 | > | | 0.32 | 0.04 | > | | < | 0.18 | > | | 0.73 |
| | | | Q | 1 | 44 | > | | 7 | 142 | > | | 12 | 9 | > | | < | 9 | > | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | < | - | > | | |
| | | | Avail. | 24 | - | > | | 18 | - | > | | 8 | - | > | | < | - | > | | |
| | Plains Road West and Howard Road | TCS | LOS | B | A | A | A | A | B | > | B | < | C | > | C | C | C | > | C | B |
| | | | Delay | 16 | 8 | 6 | 8 | 6 | 16 | > | 16 | < | 27 | > | 27 | 34 | 26 | > | 33 | 14 |
| | | | V/C | 0.29 | 0.40 | 0.03 | | 0.07 | 0.85 | > | | < | 0.14 | > | | 0.57 | 0.04 | > | | 0.78 |
| | | | Q | 10 | 55 | 3 | | 6 | 199 | > | | < | 13 | > | | 32 | 7 | > | | |
| | | | Ex | 50 | - | 30 | | 40 | - | > | | < | - | > | | 20 | - | > | | |
| | | | Avail. | 40 | - | 27 | | 34 | - | > | | < | - | > | | -12 | - | > | | |
| | Plains Road West and Site Driveway | TWSC | LOS | B | UM | | A | | UM | > | UM | | | | | C | | > | C | |
| | | | Delay | 12 | | | 0 | | | > | | | | | | 18 | | > | 18 | |
| | | | V/C | 0.04 | | | | | | > | | | | | | 0.12 | | > | | |
| | | | Q | 1 | | | | | | > | | | | | | 3 | | > | | |
| | | | Ex | - | | | | | | > | | | | | | - | | > | | |
| | | | Avail. | - | | | | | | > | | | | | | - | | > | | |
| | Plains Road West and Private (#168) | TWSC | LOS | | UM | > | UM | A | UM | | A | B | | > | B | | | | | |
| | | | Delay | | | > | | 10 | | | 0 | 11 | | > | 11 | | | | | |
| | | | V/C | | | > | | 0.02 | | | | 0.03 | | > | | | | | | |
| | | | Q | | | > | | 1 | | | | 1 | | > | | | | | | |
| | | | Ex | | | > | | - | | | | - | | > | | | | | | |
| | | | Avail. | | | > | | - | | | | - | | > | | | | | | |

*MOE - Measure of Effectiveness*
*LOS - Level of Service*
*Delay - Average Delay per Vehicle in Seconds*
*Q - 95th Percentile Queue Length (m)*
*Ex. - Existing Available Storage (m)*
*Avail. - Available Storage (m)*
*TCS - Traffic Control Signal*
*TWSC - Two-Way Stop Control*
*AWSC - All-Way Stop Control*
*<- Shared Left/Through Lane*
*>- Shared Right/Through Lane*
*UM - Unopposed Movement*

# 8 Conclusions and Recommendations

## 8.1 Conclusions

Based on the findings of this study, it is concluded:

- Under existing conditions, the study area intersections are operating at acceptable levels of service and within capacity.
- Under future background conditions, including the addition of traffic from planned developments east of Waterdown Road, the study intersections are forecast to operate at acceptable levels of service and within capacity. Critical movements are noted:
  - In both the AM and PM peak hours, the southbound left-turn movement on Howard Road at Plains Road West is forecast to operate with queues that exceed available lane storage.
- The subject site is forecast to generate approximately 61 and 86 new vehicle trips during both the AM and PM peak hours, respectively.
- Under future total conditions, the study intersections are forecast to operate at nearly identical levels of service as under background conditions. Outbound vehicle movements from the subject site are forecast to operate at LOS C or better in either the AM or PM peak hours. The inbound westbound left-turn movement is forecast operate at LOS B or better.
- The position of the subject site driveway is not expected to contribute to weaving between competing left-turn movements at 168 Plains Road West and the subject site because:
  - The driveways are approximately 20 metres from one another;
  - The driveways are forecast to serve relatively equal traffic volumes; about 15 left-turn-movements in the PM peak hour; and
  - The analysis contained herein estimates a peak left-turn queue of one metre for each left-turn movement.
- Transportation Association of Canada (TAC) Medium Single Unit (MSU) Truck, and Passenger (P) design vehicles can enter, exit, and navigate the site without conflict with the proposed geometry.
- The proposed parking supply of 112 vehicular and 128 bicycle spaces meets the minimum parking requirements set out in City of Burlington Zoning By-law.

## 8.2 Recommendations

Based on the conclusions of this study, it is recommended the site be approved with no requirement for off-site transportation network improvements.

# Appendix A

## Pre-Study Consultation Notes

## Andrew Steinsky

**From:** Adiga, Smeeta <Smeeta.Adiga@burlington.ca>
**Sent:** April 21, 2023 2:45 PM
**To:** Andrew Steinsky
**Cc:** Ozimkovic , Danijel; Scott Catton
**Subject:** RE: (220615) - 141-153 Plains Road West TIS and PS - Terms of Reference Follow-up

Hi Andrew,

Since the approved Terms of Reference was not included MMLOS analysis, I will take back my MMLOS analysis comment from pre-consultation application. Please proceed to prepare a report as per approved TOR.

Thanks,

**Smeeta Adiga**
**Transportation Planning Technologist**
**Transportation Services Department**

P. 905 335 7600, ext 7691 | E. smeeta.adiga@burlington.ca
Address: 426 Brant Street P.O. Box 5013, Burlington, Ontario, L7R 3Z6

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**From:** Andrew Steinsky <asteinsky@ptsl.com>
**Sent:** Thursday, April 20, 2023 10:07 AM
**To:** Adiga, Smeeta <Smeeta.Adiga@burlington.ca>
**Cc:** Ozimkovic , Danijel <Danijel.Ozimkovic@burlington.ca>; Scott Catton <scatton@ptsl.com>
**Subject:** (220615) - 141-153 Plains Road West TIS and PS - Terms of Reference Follow-up

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Smeeta,

In November 2022, we were retained to prepare a *Transportation Impact Study and Parking Study* for a proposed development at 141-153 Plains Road. We submitted and received approval of the attached terms of reference which was approved by City staff in early December. We prepared the TIS and PS in accordance with Halton Region's *TIS Guidelines (January 2015)* and direction provided by City staff, which did not include an assessment of MMLOS.

This past Tuesday, we received a copy of the draft pre-consultation meeting notes for the site which now include the requirement for MMLOS analysis.

Based on the scope of work approved by City staff in late 2022, is MMLOS analysis still required for this site?

Please let us know.

Thanks,

**Andrew Steinsky, P.Eng., PTP**
*Project Manager, Associate*
*(he/him)*

**Paradigm Transportation Solutions Limited**
5A-150 Pinebush Road, Cambridge ON N1R 8J8
p: 416.479.9684 x507
m: 416.316.0654
e: asteinsky@ptsl.com
w: www.ptsl.com




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## Andrew Steinsky

**From:** Ozimkovic , Danijel <Danijel.Ozimkovic@burlington.ca>
**Sent:** December 5, 2022 11:04 AM
**To:** Andrew Steinsky
**Cc:** Scott Catton
**Subject:** RE: (220615) - 141-153 Plains Road West TIS and PS - Terms of Reference

Hi Andrew,
The TOR looks good to me. 1% annum growth rate is acceptable for Plains Road.
Thanks,

**Dan Ozimkovic, C.E.T., A.Sc.T.**
**Transportation Planning Technologist**
**Transportation Services Department**
**City of Burlington**
*Our working hours may be different. You are not obligated to reply outside of your typical working hours.*

---

**From:** Andrew Steinsky <asteinsky@ptsl.com>
**Sent:** Tuesday, November 22, 2022 7:39 PM
**To:** Ozimkovic , Danijel <Danijel.Ozimkovic@burlington.ca>; Steve.Lucas@burlington.ca
**Cc:** Scott Catton <scatton@ptsl.com>
**Subject:** (220615) - 141-153 Plains Road West TIS and PS - Terms of Reference

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Danijel and Steve,

Paradigm Transportation Solutions Limited (Paradigm) has been retained to prepare a Transportation Impact Study and Parking Study for a proposed mixed-use (primarily residential) development at 141-153 Plains Road in Burlington. The development proposes an 11-storey building with 122 residential units, 300 $m^2$ of ground floor commercial/retail space, and 164 parking spaces. Vehicle access is proposed via an all-moves driveway connection to Plains Road West towards the west end of the site. We've attached a preliminary site plan for reference; however, please note this is for information purposes only and is subject to change.

We propose to carry out the study subject to the following work plan. Can you please review the information below and provide any comments.

1. **Study Area**: We will review and analyze the following intersections during the weekday AM and PM peak hours:
    a. Plains Road West and Howard Road (signalized);
    b. Plains Road West and Daryl Drive (signalized); and
    c. Plains Road West and Site Driveway

2. **Traffic Data**: We understand the section of Plains Road between Spring Gardens Road and Waterdown Road is under construction and traffic volumes may not represent typical conditions. Therefore, we will rely on historic turning movement count data (if available) and apply a per annum growth rate of 1% (or alternative growth rate recommended by City staff ) to estimate base year (2022) conditions. If historical counts are unavailable will the City accept counts completed during construction?

3. **Horizon Years**: We will estimate traffic volumes at two planning horizons: five years from the date of study and ten years from the date of study;
4. **Background Traffic**: We will estimate future background traffic using a 1% per annum growth rate, or alternative growth rate recommended by City staff;
5. **Background Developments**: We will include traffic generated by the following approved developments:
    a. **35 Plains Road East**
    b. **53-71 Plains Road East; and**
    c. **92 Plains Road East**
    d. Are there any other (approved or unapproved) development(s) we should include in the study?
6. **Trip Generation**: We will estimate trip generation using the ITE *Trip Generation Manual (11th ed.)* Trip assignment will be based on TTS data.
7. **Operational Analyses**: Operational analyses will be conducted using Synchro 11
8. **Parking Study**: We will estimate the parking demands of the site and identify parking management measures that could be considered at the site. The estimated parking demand may be calculated from various sources including the ITE *Parking Generation (5th ed.)*, TTS data, or proxy surveys.
9. **Vehicle Queue Study**: We will review the potential queueing requirements of the vehicle elevator system and identify if there are any ramifications for queue spillback onto Plains Road East
10. **Site Circulation Assessment**: We will review on-site vehicle circulation using AutoTURN.

Please let us know if you have any questions.

Thanks,

**Andrew Steinsky, P.Eng., PTP**
*Transportation Engineer*
*(He/Him)*

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**** Paradigm is now operating on a 4-day workweek. Our offices are closed Fridays. ****

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# Appendix B

## Turning Movement Count Data and Signal Timings

# *201075-Plains Rd W & Daryl Dr*

## Morning Peak Diagram

**Specified Period**
**From:** 7:00:00
**To:** 9:00:00

**One Hour Peak**
**From:** 7:30:00
**To:** 8:30:00

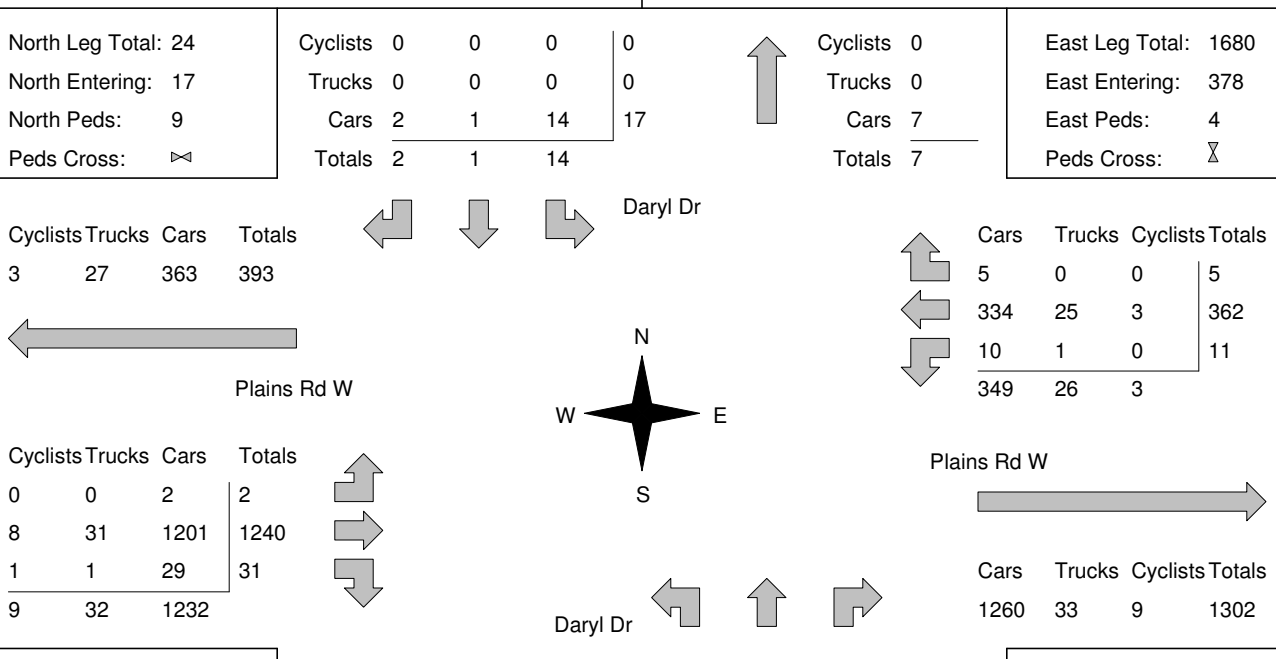
**Municipality:** Burlington
**Site #:** 0000201075
**Intersection:** Plains Rd W & Daryl Dr
**TFR File #:** 1
**Count date:** 22-May-2019

**Weather conditions:**
Sunny

**Person(s) who counted:**
Nick

**** Signalized Intersection ****

**Major Road:** Plains Rd W runs W/E




### Comments

# *201075-Plains Rd W & Daryl Dr*

## Mid-day Peak Diagram

**Specified Period**
**From:** 11:00:00
**To:** 14:00:00

**One Hour Peak**
**From:** 11:45:00
**To:** 12:45:00

**Municipality:** Burlington
**Site #:** 0000201075
**Intersection:** Plains Rd W & Daryl Dr
**TFR File #:** 1
**Count date:** 22-May-2019

**Weather conditions:**
Sunny

**Person(s) who counted:**
Nick

**** Signalized Intersection ****

**Major Road:** Plains Rd W runs W/E

North Leg Total: 21
North Entering: 12
North Peds: 13
Peds Cross: ⋈

| | | | | |
|---|---|---|---|---|
| Cyclists | 0 | 0 | 0 | 0 |
| Trucks | 0 | 0 | 0 | 0 |
| Cars | 2 | 0 | 10 | 12 |
| Totals | 2 | 0 | 10 | |

| | |
|---|---|
| Cyclists | 0 |
| Trucks | 0 |
| Cars | 9 |
| Totals | 9 |

East Leg Total: 1077
East Entering: 535
East Peds: 7
Peds Cross: ⧖

Daryl Dr

| Cyclists | Trucks | Cars | Totals |
|---|---|---|---|
| 2 | 15 | 460 | 477 |

| Cars | Trucks | Cyclists | Totals |
|---|---|---|---|
| 8 | 0 | 0 | 8 |
| 451 | 15 | 2 | 468 |
| 56 | 3 | 0 | 59 |
| 515 | 18 | 2 | |

Plains Rd W

N
W E
S

| Cyclists | Trucks | Cars | Totals |
|---|---|---|---|
| 0 | 0 | 0 | 0 |
| 2 | 16 | 473 | 491 |
| 0 | 1 | 10 | 11 |
| 2 | 17 | 483 | |

Plains Rd W

| Cars | Trucks | Cyclists | Totals |
|---|---|---|---|
| 520 | 20 | 2 | 542 |

Daryl Dr

Peds Cross: ⧖
West Peds: 5
West Entering: 502
West Leg Total: 979

| | | | | |
|---|---|---|---|---|
| Cars | 66 | | | |
| Trucks | 4 | | | |
| Cyclists | 0 | | | |
| Totals | 70 | | | |

| | | | | |
|---|---|---|---|---|
| Cars | 7 | 1 | 37 | 45 |
| Trucks | 0 | 0 | 4 | 4 |
| Cyclists | 0 | 0 | 0 | 0 |
| Totals | 7 | 1 | 41 | |

Peds Cross: ⋈
South Peds: 12
South Entering: 49
South Leg Total: 119

### Comments

# *201075-Plains Rd W & Daryl Dr*

## Afternoon Peak Diagram

**Specified Period**
**From:** 15:00:00
**To:** 18:00:00

**One Hour Peak**
**From:** 17:00:00
**To:** 18:00:00

**Municipality:** Burlington
**Site #:** 0000201075
**Intersection:** Plains Rd W & Daryl Dr
**TFR File #:** 1
**Count date:** 22-May-2019

**Weather conditions:**
Sunny

**Person(s) who counted:**
Nick

**** Signalized Intersection ****

**Major Road:** Plains Rd W runs W/E

North Leg Total: 37
North Entering: 20
North Peds: 11
Peds Cross: ⋈

| | | | | |
|---|---|---|---|---|
| Cyclists | 1 | 0 | 0 | 1 |
| Trucks | 0 | 0 | 0 | 0 |
| Cars | 5 | 3 | 11 | 19 |
| Totals | 6 | 3 | 11 | |

| | |
|---|---|
| Cyclists | 1 |
| Trucks | 0 |
| Cars | 16 |
| Totals | 17 |

East Leg Total: 2305
East Entering: 1560
East Peds: 0
Peds Cross: ⧖

Daryl Dr

| Cyclists | Trucks | Cars | Totals |
|---|---|---|---|
| 4 | 19 | 1514 | 1537 |

| Cars | Trucks | Cyclists | Totals |
|---|---|---|---|
| 12 | 0 | 1 | 13 |
| 1485 | 18 | 3 | 1506 |
| 41 | 0 | 0 | 41 |
| 1538 | 18 | 4 | |

Plains Rd W

N
W E
S

| Cyclists | Trucks | Cars | Totals |
|---|---|---|---|
| 0 | 0 | 2 | 2 |
| 1 | 13 | 693 | 707 |
| 0 | 0 | 19 | 19 |
| 1 | 13 | 714 | |

Plains Rd W

| Cars | Trucks | Cyclists | Totals |
|---|---|---|---|
| 731 | 13 | 1 | 745 |

Daryl Dr

Peds Cross: ⧖
West Peds: 1
West Entering: 728
West Leg Total: 2265

| | |
|---|---|
| Cars | 63 |
| Trucks | 0 |
| Cyclists | 0 |
| Totals | 63 |

| | | | | |
|---|---|---|---|---|
| Cars | 24 | 2 | 27 | 53 |
| Trucks | 1 | 0 | 0 | 1 |
| Cyclists | 0 | 0 | 0 | 0 |
| Totals | 25 | 2 | 27 | |

Peds Cross: ⋈
South Peds: 10
South Entering: 54
South Leg Total: 117

### Comments

# *201075-Plains Rd W & Daryl Dr*

## Total Count Diagram

**Municipality:** Burlington
**Site #:** 0000201075
**Intersection:** Plains Rd W & Daryl Dr
**TFR File #:** 1
**Count date:** 22-May-2019

**Weather conditions:**
Sunny

**Person(s) who counted:**
Nick

**** Signalized Intersection ****

**Major Road:** Plains Rd W runs W/E

| | |
|---|---|
| North Leg Total: | 204 |
| North Entering: | 108 |
| North Peds: | 88 |
| Peds Cross: | ⋈ |

| | | | | |
|---|---|---|---|---|
| Cyclists | 1 | 0 | 0 | 1 |
| Trucks | 1 | 0 | 1 | 2 |
| Cars | 18 | 11 | 76 | 105 |
| Totals | 20 | 11 | 77 | |

| | |
|---|---|
| Cyclists | 1 |
| Trucks | 3 |
| Cars | 92 |
| Totals | 96 |

| | |
|---|---|
| East Leg Total: | 11766 |
| East Entering: | 5876 |
| East Peds: | 29 |
| Peds Cross: | ⧖ |

| Cyclists | Trucks | Cars | Totals |
|---|---|---|---|
| 29 | 172 | 5450 | 5651 |

Daryl Dr

| Cars | Trucks | Cyclists | Totals |
|---|---|---|---|
| 70 | 3 | 1 | 74 |
| 5320 | 165 | 28 | 5513 |
| 280 | 9 | 0 | 289 |
| 5670 | 177 | 29 | |

Plains Rd W

N
W E
S

| Cyclists | Trucks | Cars | Totals |
|---|---|---|---|
| 0 | 0 | 11 | 11 |
| 22 | 157 | 5324 | 5503 |
| 1 | 5 | 111 | 117 |
| 23 | 162 | 5446 | |

Plains Rd W

| Cars | Trucks | Cyclists | Totals |
|---|---|---|---|
| 5698 | 169 | 23 | 5890 |

Daryl Dr

| | |
|---|---|
| Peds Cross: | ⧖ |
| West Peds: | 34 |
| West Entering: | 5631 |
| West Leg Total: | 11282 |

| | |
|---|---|
| Cars | 402 |
| Trucks | 14 |
| Cyclists | 1 |
| Totals | 417 |

| | | | | |
|---|---|---|---|---|
| Cars | 112 | 11 | 298 | 421 |
| Trucks | 6 | 0 | 11 | 17 |
| Cyclists | 0 | 0 | 1 | 1 |
| Totals | 118 | 11 | 310 | |

| | |
|---|---|
| Peds Cross: | ⋈ |
| South Peds: | 111 |
| South Entering: | 439 |
| South Leg Total: | 856 |

### Comments

# *201075-Plains Rd W & Daryl Dr*
# Traffic Count Summary

**Intersection:** Plains Rd W & Daryl Dr | **Count Date:** 22-May-2019 | **Municipality:** Burlington

## North Approach Totals

| Hour Ending | Includes Cars, Trucks, & Cyclists: Left | Thru | Right | Grand Total | Total Peds | North/South Total Approaches |
|---|---|---|---|---|---|---|
| 7:00:00 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00:00 | 13 | 1 | 3 | 17 | 16 | 62 |
| 9:00:00 | 12 | 1 | 1 | 14 | 9 | 96 |
| 11:00:00 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00:00 | 8 | 2 | 2 | 12 | 14 | 72 |
| 13:00:00 | 9 | 1 | 1 | 11 | 14 | 55 |
| 14:00:00 | 4 | 2 | 1 | 7 | 3 | 53 |
| 15:00:00 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00:00 | 13 | 1 | 2 | 16 | 12 | 72 |
| 17:00:00 | 7 | 0 | 4 | 11 | 9 | 63 |
| 18:00:00 | 11 | 3 | 6 | 20 | 11 | 74 |
| Totals: | 77 | 11 | 20 | 108 | 88 | 547 |

## South Approach Totals

| Hour Ending | Includes Cars, Trucks, & Cyclists: Left | Thru | Right | Grand Total | Total Peds |
|---|---|---|---|---|---|
| 7:00:00 | 0 | 0 | 0 | 0 | 0 |
| 8:00:00 | 12 | 0 | 33 | 45 | 8 |
| 9:00:00 | 26 | 1 | 55 | 82 | 25 |
| 11:00:00 | 0 | 0 | 0 | 0 | 0 |
| 12:00:00 | 11 | 2 | 47 | 60 | 12 |
| 13:00:00 | 7 | 1 | 36 | 44 | 14 |
| 14:00:00 | 3 | 0 | 43 | 46 | 5 |
| 15:00:00 | 0 | 0 | 0 | 0 | 0 |
| 16:00:00 | 17 | 3 | 36 | 56 | 16 |
| 17:00:00 | 17 | 2 | 33 | 52 | 21 |
| 18:00:00 | 25 | 2 | 27 | 54 | 10 |
| Totals: | 118 | 11 | 310 | 439 | 111 |

## East Approach Totals

| Hour Ending | Includes Cars, Trucks, & Cyclists: Left | Thru | Right | Grand Total | Total Peds | East/West Total Approaches |
|---|---|---|---|---|---|---|
| 7:00:00 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00:00 | 9 | 253 | 5 | 267 | 6 | 1534 |
| 9:00:00 | 19 | 460 | 7 | 486 | 1 | 1544 |
| 11:00:00 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00:00 | 40 | 434 | 6 | 480 | 6 | 945 |
| 13:00:00 | 55 | 484 | 6 | 545 | 8 | 1037 |
| 14:00:00 | 36 | 480 | 7 | 523 | 3 | 954 |
| 15:00:00 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00:00 | 42 | 707 | 11 | 760 | 5 | 1311 |
| 17:00:00 | 47 | 1189 | 19 | 1255 | 0 | 1894 |
| 18:00:00 | 41 | 1506 | 13 | 1560 | 0 | 2288 |
| Totals: | 289 | 5513 | 74 | 5876 | 29 | 11507 |

## West Approach Totals

| Hour Ending | Includes Cars, Trucks, & Cyclists: Left | Thru | Right | Grand Total | Total Peds |
|---|---|---|---|---|---|
| 7:00:00 | 0 | 0 | 0 | 0 | 0 |
| 8:00:00 | 2 | 1251 | 14 | 1267 | 14 |
| 9:00:00 | 1 | 1029 | 28 | 1058 | 5 |
| 11:00:00 | 0 | 0 | 0 | 0 | 0 |
| 12:00:00 | 1 | 456 | 8 | 465 | 2 |
| 13:00:00 | 0 | 479 | 13 | 492 | 3 |
| 14:00:00 | 1 | 422 | 8 | 431 | 2 |
| 15:00:00 | 0 | 0 | 0 | 0 | 0 |
| 16:00:00 | 0 | 538 | 13 | 551 | 2 |
| 17:00:00 | 4 | 621 | 14 | 639 | 5 |
| 18:00:00 | 2 | 707 | 19 | 728 | 1 |
| Totals: | 11 | 5503 | 117 | 5631 | 34 |

## Calculated Values for Traffic Crossing Major Street

| Hours Ending: | 8:00 | 9:00 | 12:00 | 13:00 | 14:00 | 16:00 | 17:00 | 18:00 |
|---|---|---|---|---|---|---|---|---|
| Crossing Values: | 46 | 45 | 29 | 28 | 14 | 40 | 31 | 40 |

# *201075-Plains Rd W & Howard Rd*

## Morning Peak Diagram

**Specified Period**
**From:** 7:00:00
**To:** 9:00:00

**One Hour Peak**
**From:** 7:15:00
**To:** 8:15:00

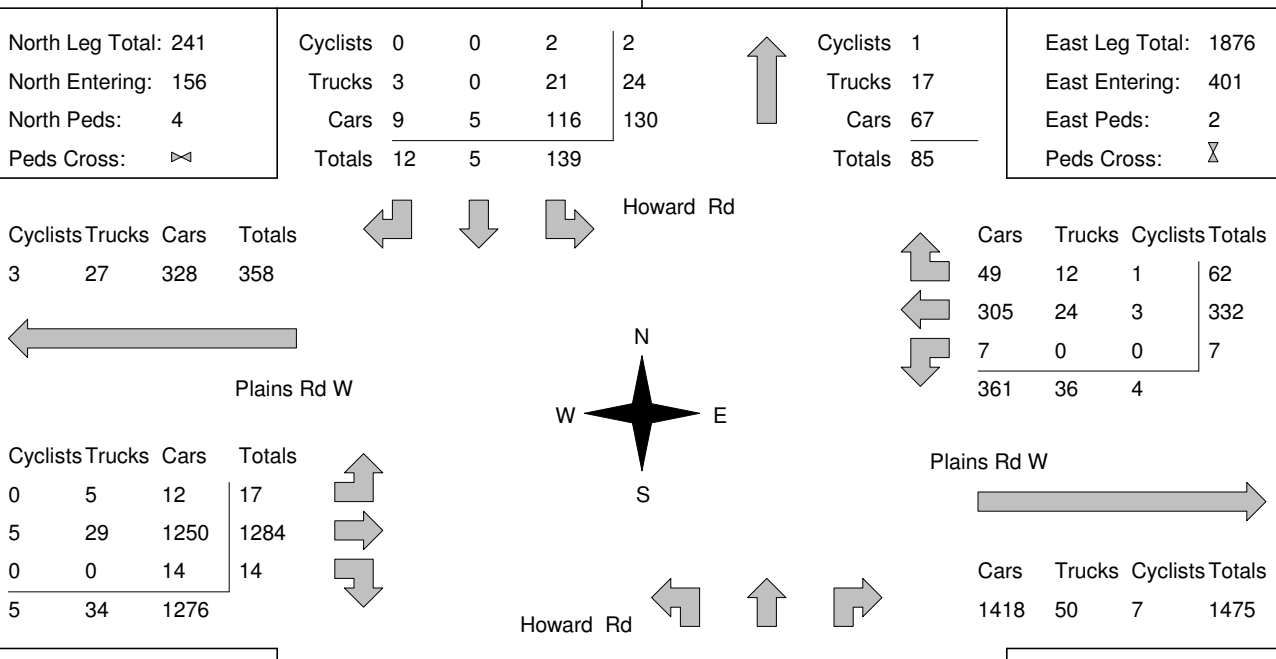
**Municipality:** Burlington
**Site #:** 0000201075
**Intersection:** Plains Rd W & Howard Rd
**TFR File #:** 1
**Count date:** 29-May-2019

**Weather conditions:**
Cloudy

**Person(s) who counted:**
Nick

**** Signalized Intersection ****

**Major Road:** Plains Rd W runs W/E




### Comments

# *201075-Plains Rd W & Howard Rd*

## Mid-day Peak Diagram

**Specified Period**
**From:** 11:00:00
**To:** 14:00:00

**One Hour Peak**
**From:** 11:30:00
**To:** 12:30:00

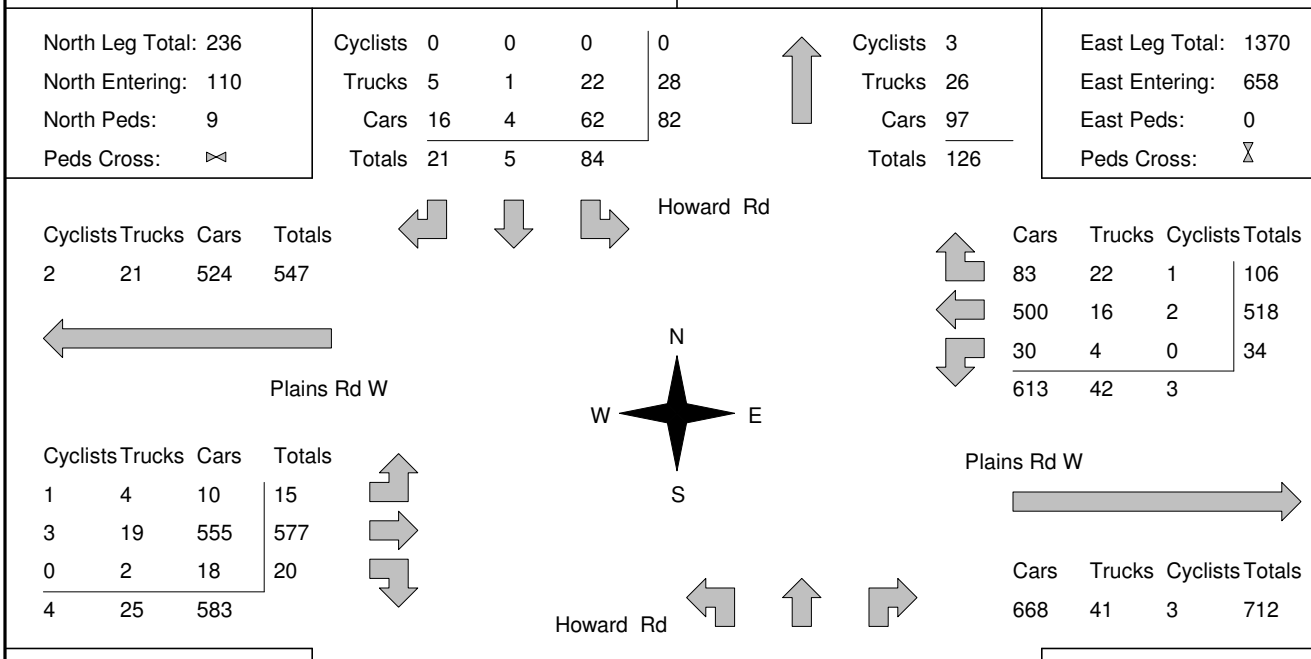
**Municipality:** Burlington
**Site #:** 0000201075
**Intersection:** Plains Rd W & Howard Rd
**TFR File #:** 1
**Count date:** 29-May-2019

**Weather conditions:**
Cloudy

**Person(s) who counted:**
Nick

**** Signalized Intersection ****

**Major Road:** Plains Rd W runs W/E




### Comments

# *201075-Plains Rd W & Howard Rd*

## Afternoon Peak Diagram

**Specified Period**
**From:** 15:00:00
**To:** 18:00:00

**One Hour Peak**
**From:** 16:45:00
**To:** 17:45:00

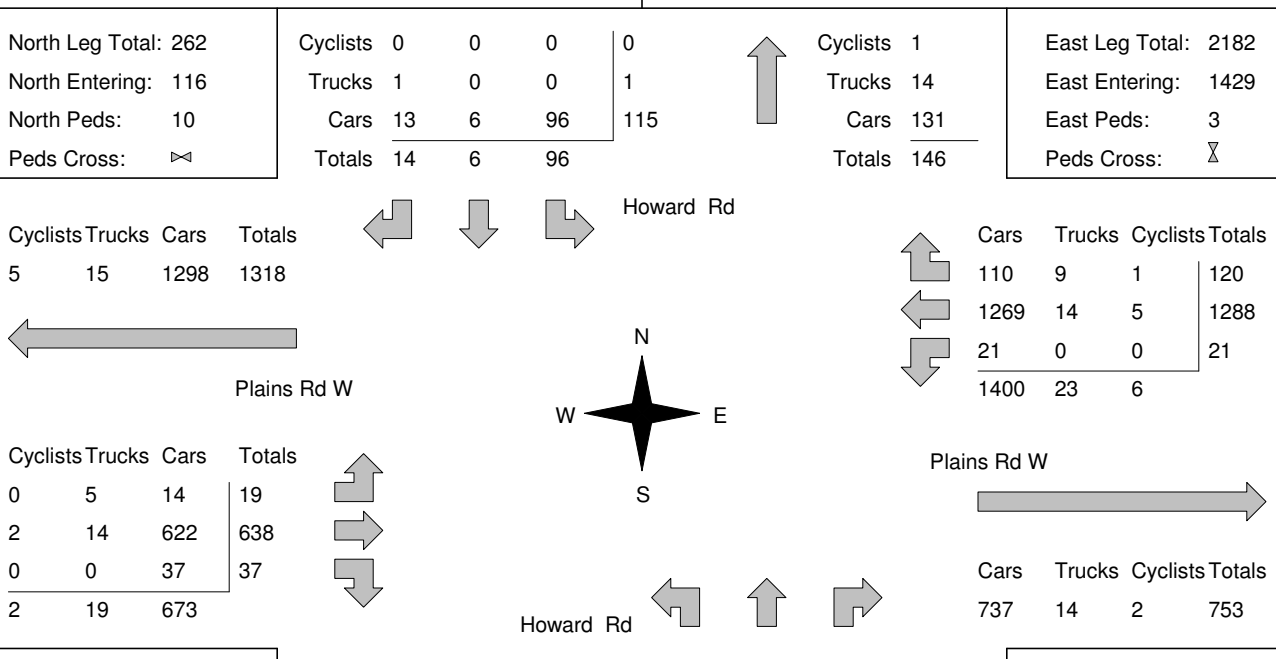
**Municipality:** Burlington
**Site #:** 0000201075
**Intersection:** Plains Rd W & Howard Rd
**TFR File #:** 1
**Count date:** 29-May-2019

**Weather conditions:**
Cloudy

**Person(s) who counted:**
Nick

**** Signalized Intersection ****

**Major Road:** Plains Rd W runs W/E




### Comments

# *201075-Plains Rd W & Howard Rd*

## Total Count Diagram

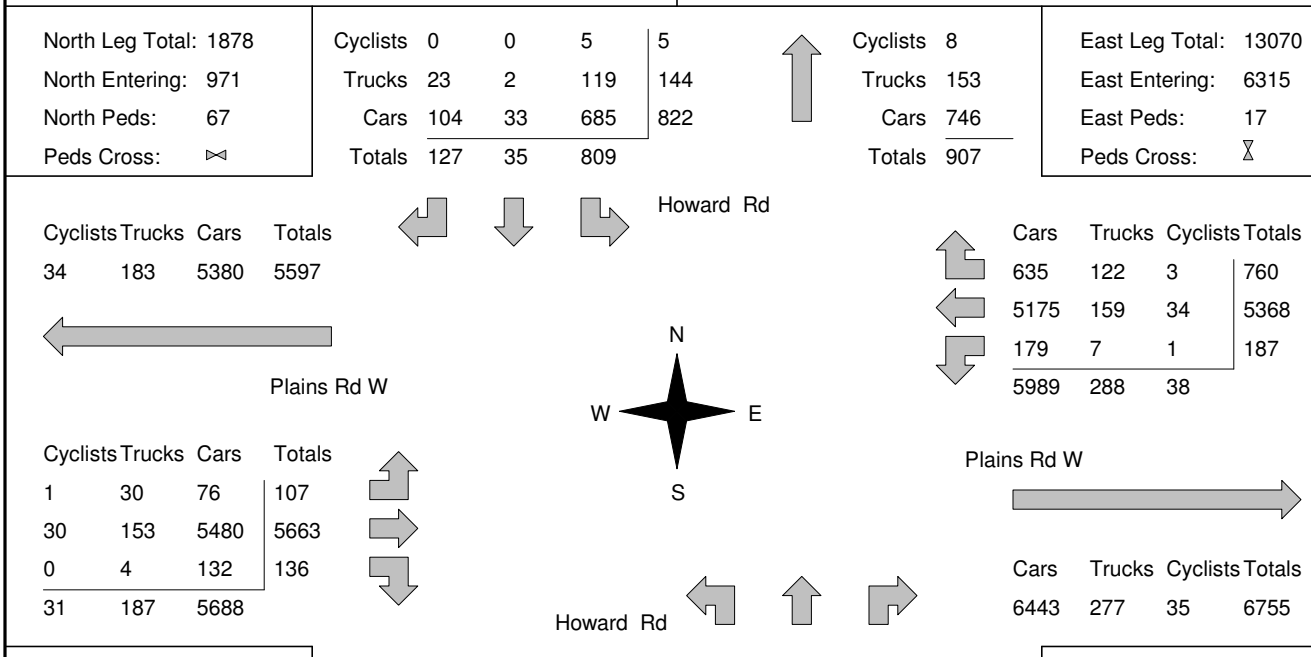
**Municipality:** Burlington
**Site #:** 0000201075
**Intersection:** Plains Rd W & Howard Rd
**TFR File #:** 1
**Count date:** 29-May-2019

**Weather conditions:**
Cloudy

**Person(s) who counted:**
Nick

**** Signalized Intersection ****

**Major Road:** Plains Rd W runs W/E




### Comments

# *201075-Plains Rd W & Howard Rd*
# Traffic Count Summary

**Intersection:** Plains Rd W & Howard Rd | **Count Date:** 29-May-2019 | **Municipality:** Burlington

## North Approach Totals

| Hour Ending | Includes Cars, Trucks, & Cyclists: Left | Thru | Right | Grand Total | Total Peds | North/South Total Approaches |
|---|---|---|---|---|---|---|
| 7:00:00 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00:00 | 121 | 3 | 12 | 136 | 4 | 196 |
| 9:00:00 | 132 | 3 | 7 | 142 | 2 | 208 |
| 11:00:00 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00:00 | 83 | 6 | 21 | 110 | 5 | 164 |
| 13:00:00 | 82 | 5 | 21 | 108 | 11 | 175 |
| 14:00:00 | 72 | 1 | 17 | 90 | 9 | 136 |
| 15:00:00 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00:00 | 110 | 4 | 22 | 136 | 12 | 183 |
| 17:00:00 | 110 | 7 | 16 | 133 | 13 | 180 |
| 18:00:00 | 99 | 6 | 11 | 116 | 11 | 154 |
| Totals: | 809 | 35 | 127 | 971 | 67 | 1396 |

## South Approach Totals

| Hour Ending | Includes Cars, Trucks, & Cyclists: Left | Thru | Right | Grand Total | Total Peds |
|---|---|---|---|---|---|
| 7:00:00 | 0 | 0 | 0 | 0 | 0 |
| 8:00:00 | 10 | 9 | 41 | 60 | 3 |
| 9:00:00 | 21 | 0 | 45 | 66 | 3 |
| 11:00:00 | 0 | 0 | 0 | 0 | 0 |
| 12:00:00 | 7 | 4 | 43 | 54 | 7 |
| 13:00:00 | 9 | 3 | 55 | 67 | 6 |
| 14:00:00 | 8 | 4 | 34 | 46 | 1 |
| 15:00:00 | 0 | 0 | 0 | 0 | 0 |
| 16:00:00 | 13 | 7 | 27 | 47 | 9 |
| 17:00:00 | 20 | 7 | 20 | 47 | 9 |
| 18:00:00 | 14 | 6 | 18 | 38 | 10 |
| Totals: | 102 | 40 | 283 | 425 | 48 |

## East Approach Totals

| Hour Ending | Includes Cars, Trucks, & Cyclists: Left | Thru | Right | Grand Total | Total Peds | East/West Total Approaches |
|---|---|---|---|---|---|---|
| 7:00:00 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8:00:00 | 5 | 293 | 65 | 363 | 2 | 1695 |
| 9:00:00 | 11 | 428 | 63 | 502 | 0 | 1521 |
| 11:00:00 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00:00 | 26 | 521 | 91 | 638 | 0 | 1192 |
| 13:00:00 | 25 | 520 | 90 | 635 | 0 | 1232 |
| 14:00:00 | 33 | 583 | 85 | 701 | 0 | 1232 |
| 15:00:00 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:00:00 | 32 | 752 | 129 | 913 | 11 | 1499 |
| 17:00:00 | 30 | 1014 | 117 | 1161 | 1 | 1799 |
| 18:00:00 | 25 | 1257 | 120 | 1402 | 3 | 2051 |
| Totals: | 187 | 5368 | 760 | 6315 | 17 | 12221 |

## West Approach Totals

| Hour Ending | Includes Cars, Trucks, & Cyclists: Left | Thru | Right | Grand Total | Total Peds |
|---|---|---|---|---|---|
| 7:00:00 | 0 | 0 | 0 | 0 | 0 |
| 8:00:00 | 19 | 1300 | 13 | 1332 | 3 |
| 9:00:00 | 15 | 994 | 10 | 1019 | 2 |
| 11:00:00 | 0 | 0 | 0 | 0 | 0 |
| 12:00:00 | 10 | 526 | 18 | 554 | 4 |
| 13:00:00 | 12 | 571 | 14 | 597 | 8 |
| 14:00:00 | 8 | 511 | 12 | 531 | 10 |
| 15:00:00 | 0 | 0 | 0 | 0 | 0 |
| 16:00:00 | 8 | 567 | 11 | 586 | 9 |
| 17:00:00 | 18 | 595 | 25 | 638 | 17 |
| 18:00:00 | 17 | 599 | 33 | 649 | 15 |
| Totals: | 107 | 5663 | 136 | 5906 | 68 |

## Calculated Values for Traffic Crossing Major Street

| Hours Ending: | 8:00 | 9:00 | 12:00 | 13:00 | 14:00 | 16:00 | 17:00 | 18:00 |
|---|---|---|---|---|---|---|---|---|
| Crossing Values: | 145 | 158 | 100 | 104 | 94 | 150 | 155 | 137 |

| Intersection Name: | TS ID: | Line No: | Model: | IP address: | Controller Make: |
|---|---|---|---|---|---|
| Plains Road @ Daryl Dr | 102 | 4 | ACS/3 | 172.24.4.2 | Econolite |

**Type of Operation:** 8 Phase Semi-Actuated

*-Start from Main Menu

| No | Date | | | Description | Prepared by |
|---|---|---|---|---|---|
| | Y | M | D | | |
| 4 | 2018 | 4 | 4 | Placed in "Free" | |
| 5 | 2020 | 12 | 9 | Updated Phase 4 and 8 Amber/All-Red | JR |
| 6 | 2022 | 12 | 6 | Update Main Street Red | JR |

**PHASE DESCRIPTION**

| | | | |
|---|---|---|---|
| Ph1 | | Ph5 | |
| Ph2 | EB - Plains Road | Ph6 | WB - Plains Road |
| Ph3 | | Ph7 | |
| Ph4 | NB - Daryl Drive | Ph8 | SB - Daryl Drive |

**PHASE IN USE/EXCLUSIVE PED (MM)** *- 1 - 2

| Phase: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phase in Use | | X | | X | | X | | X |
| Exclusive PED | | | | | | | | |

**CONTROLLER TIMING DATA - VEHICLE TIMING** * - 2 - 1

Timing Plan: 1

| | Phase: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Minimum Green | | 8 | | 8 | | 8 | | 8 |
| Walk | | 20 | | 8 | | 20 | | 8 |
| Ped. Clearance | | 8 | | 15 | | 8 | | 15 |
| Pedestrian Carry Over | | | | | | | | |
| Vehicle Extension | | 3 | | 3 | | 3 | | 3 |
| MAX 1 | | 35 | | 25 | | 35 | | 25 |
| MAX 2 | | 35 | | 25 | | 35 | | 25 |
| Yellow Change | | 4 | | 3 | | 4 | | 3 |
| Red Clearance | | 3 | | 4 | | 3 | | 4 |
| **Phase Minimum:** | 0 | 35 | 0 | 30 | 0 | 35 | 0 | 30 |

**PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS** * - 2 - 8

| Phase: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Lock Detector | | | | | | | | |
| Vehicle Recall | | | | | | | | |
| Pedestrian Recall | | X | | | | X | | |
| MAX Recall | | X | | | | X | | |
| Min Recall | | | | | | | | |

**COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN** *** - 3 - 2, - 3 - 3**

| Coordinator Pattern (CP) | Cycle Length | Offset (sec) | Timing Plan | Split Pattern | Phases (sec) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| **10** | **0** | **0** | **1** | **10** | | **0** | | **0** | | **0** | | **0** |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

**TIME BASE: ACTION PLAN, DAY PLAN** *** - 5 - 2, - 5 - 3, -5 - 4**

| Day Plan | Sched. # | Action Plan | Time Period | Pattern | Timing Plan |
|---|---|---|---|---|---|
| **1** | **1** | **10** | **00:00** | **254** | **1** |
| **2** | **2** | **10** | **00:00** | **254** | **1** |
| **3** | **3** | **10** | **00:00** | **254** | **1** |
| | | | | | |
| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

Special Programming:

**TIME BASE DATA - TIME OF YEAR EVENTS** *** - 5 - 5**

| Events | Exception Day | | MON/ MON | DOW/ DOW | WOM/ Year | Day Plan |
|---|---|---|---|---|---|---|
| **New Year's Day** | **1** | **Fixed** | **1** | **1** | **0** | **3** |
| **Family Day** | **2** | **Float** | **2** | **2** | **3** | **3** |
| **Good Friday** | **3** | **Float** | **4** | **6** | **1** | **3** |
| **Victoria Day** | **4** | **Float** | **5** | **2** | **3** | **3** |
| **Canada Day** | **5** | **Fixed** | **7** | **1** | **0** | **3** |
| **Civic Day** | **6** | **Float** | **8** | **2** | **1** | **3** |
| **Labour Day** | **7** | **Float** | **9** | **2** | **1** | **3** |
| **Thanksgiving** | **8** | **Float** | **10** | **2** | **2** | **3** |
| **Christmas Day** | **9** | **Fixed** | **12** | **25** | **0** | **3** |

| Intersection Name: | TS ID: | Line No: | Model: | IP address: | Controller Make: |
|---|---|---|---|---|---|
| Plains Road @ Howard Rd | 101 | 4 | ACS/3 | 172.24.5.2 | Econolite |

**Type of Operation:** 8 Phase Semi-Actuated

| No | Date | | | Description | Prepared by: |
|---|---|---|---|---|---|
| | Y | M | D | | |
| 6 | 2021 | 11 | 15 | Increase Phase 4 & 8 Ped Time per resident Request (adjust splits) | JR |
| 7 | 2022 | 7 | 4 | Adjusted splits for construction | JR |
| | | | | | |

*-Start from Main Menu

**PHASE DESCRIPTION**

| | | | |
|---|---|---|---|
| Ph1 | | Ph5 | |
| Ph2 | EB - Plains Road | Ph6 | WB - Plains Road |
| Ph3 | | Ph7 | |
| Ph4 | NB - Howard Rd | Ph8 | SB - Howard Rd |

**CONFIGURATION (PHASE SEQ): PHASE IN USE/EXCLUSIVE PED (MM)** *- 1 - 2

| Phase: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Phase in Use | | X | | X | | X | | X |
| Exclusive PED | | | | | | | | |

**CONTROLLER TIMING DATA - VEHICLE TIMING** * - 2 - 1

Timing Plan: 1

| | Phase: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Minimum Green | | 8 | | 12 | | 8 | | 12 |
| Walk | | 15 | | 10 | | 15 | | 10 |
| Ped. Clearance | | 14 | | 19 | | 14 | | 19 |
| Pedestrian Carry Over | | | | | | | | |
| Vehicle Extension | | 3 | | 5 | | 3 | | 5 |
| MAX 1 | | 35 | | 25 | | 35 | | 25 |
| MAX 2 | | 35 | | 25 | | 35 | | 25 |
| Yellow Change | | 4 | | 4 | | 4 | | 4 |
| Red Clearance | | 3 | | 3 | | 3 | | 3 |
| **Phase Minimum:** | 0 | 36 | 0 | 36 | 0 | 36 | 0 | 36 |

**PHASE DATA - VEHICLE AND PEDESTRIAN RECALLS** * - 2 - 8

| Phase: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Lock Detector | | | | | | | | |
| Vehicle Recall | | | | | | | | |
| Pedestrian Recall | | X | | | | X | | |
| MAX Recall | | X | | | | X | | |
| Min Recall | | | | | | | | |

| COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN | | | | | * - 3 - 2, - 3 - 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Coordinator Pattern (CP) | Cycle Length | Offset (sec) | Timing Plan | Split Pattern | Phases (sec) | | | | | | | |
| | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | 90 | 35 | 1 | 1 | | 54 | | 36 | | 54 | | 36 |
| 2 | 90 | 44 | 1 | 2 | | 54 | | 36 | | 54 | | 36 |
| 3 | 100 | 23 | 1 | 3 | | 64 | | 36 | | 64 | | 36 |
| 4 | 85 | 7 | 1 | 4 | | 49 | | 36 | | 49 | | 36 |
| 10 | 0 | 0 | 1 | 10 | | 0 | | 0 | | 0 | | 0 |

| TIME BASE: ACTION PLAN, DAY PLAN | | | | | * - 5 - 2, - 5 - 3, -5 - 4 |
|---|---|---|---|---|---|
| Day Plan | Sched. # | Action Plan | Time Period | Pattern | Timing Plan |
| 1 | 1 | 4 | 06:00 | 4 | 1 |
| 1 | 1 | 1 | 07:00 | 1 | 1 |
| 1 | 1 | 2 | 09:00 | 2 | 1 |
| 1 | 1 | 3 | 15:30 | 3 | 1 |
| 1 | 1 | 4 | 19:00 | 4 | 1 |
| 1 | 1 | 10 | 22:00 | 254 | 1 |
| 2 | 2 | 4 | 08:00 | 4 | 1 |
| 2 | 2 | 3 | 10:30 | 3 | 1 |
| 2 | 2 | 4 | 17:00 | 4 | 1 |
| 2 | 2 | 10 | 21:00 | 254 | 1 |
| 3 | 3 | 4 | 09:30 | 4 | 1 |
| 3 | 3 | 2 | 12:00 | 2 | 1 |
| 3 | 3 | 4 | 17:00 | 4 | 1 |
| 3 | 3 | 10 | 21:00 | 254 | 1 |
| | | | | | |

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

Special Programming:

| TIME BASE DATA - TIME OF YEAR EVENTS | * - 5 - 5 |
|---|---|

| Events | Exception Day | | MON/ MON | DOW/ DOW | WOM/ Year | Day Plan |
|---|---|---|---|---|---|---|
| New Year's Day | 1 | Fixed | 1 | 1 | 0 | 3 |
| Family Day | 2 | Float | 2 | 2 | 3 | 3 |
| Good Friday | 3 | Float | 4 | 6 | 1 | 3 |
| Victoria Day | 4 | Float | 5 | 2 | 3 | 3 |
| Canada Day | 5 | Fixed | 7 | 1 | 0 | 3 |
| Civic Day | 6 | Float | 8 | 2 | 1 | 3 |
| Labour Day | 7 | Float | 9 | 2 | 1 | 3 |
| Thanksgiving | 8 | Float | 10 | 2 | 2 | 3 |
| Christmas Day | 9 | Fixed | 12 | 25 | 0 | 3 |

# Appendix C

## Base Year Traffic Operations Reports

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 742 | 20 | 43 | 1580 | 13 | 26 | 2 | 28 | 12 | 3 | 5 |
| Future Volume (vph) | 2 | 742 | 20 | 43 | 1580 | 13 | 26 | 2 | 28 | 12 | 3 | 5 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 15.0 | | | 7.5 | | |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | 1.00 | |
| Frt | | 0.996 | | | 0.999 | | | 0.859 | | | 0.968 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.970 | |
| Satd. Flow (prot) | 1805 | 3524 | 0 | 1805 | 3570 | 0 | 1736 | 1632 | 0 | 0 | 1779 | 0 |
| Flt Permitted | 0.115 | | | 0.340 | | | 0.833 | | | | 0.792 | |
| Satd. Flow (perm) | 218 | 3524 | 0 | 644 | 3570 | 0 | 1521 | 1632 | 0 | 0 | 1452 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 5 | | | 2 | | | 30 | | | 4 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 41 | | | 50 | |
| Link Distance (m) | | 134.7 | | | 261.7 | | | 209.2 | | | 59.5 | |
| Travel Time (s) | | 8.1 | | | 15.7 | | | 18.4 | | | 4.3 | |
| Confl. Peds. (#/hr) | 11 | | 10 | 10 | | 11 | 1 | | | | | 1 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 1% | 0% | 4% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 2 | 807 | 22 | 47 | 1717 | 14 | 28 | 2 | 30 | 13 | 3 | 5 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 2 | 829 | 0 | 47 | 1731 | 0 | 28 | 32 | 0 | 0 | 21 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

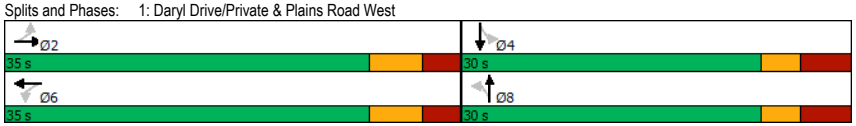




| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 38.0 | 38.0 | | 38.0 | 38.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (s) | 35.0 | 35.0 | | 35.0 | 35.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (%) | 53.8% | 53.8% | | 53.8% | 53.8% | | 46.2% | 46.2% | | 46.2% | 46.2% | |
| Maximum Green (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | |
| Yellow Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | Max | Max | | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 15.0 | 15.0 | | 15.0 | 15.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 37.5 | 37.5 | | 37.5 | 37.5 | | 8.0 | 8.0 | | | 8.0 | |
| Actuated g/C Ratio | 0.74 | 0.74 | | 0.74 | 0.74 | | 0.16 | 0.16 | | | 0.16 | |
| v/c Ratio | 0.01 | 0.32 | | 0.10 | 0.65 | | 0.12 | 0.11 | | | 0.09 | |
| Control Delay | 5.5 | 5.0 | | 5.7 | 9.2 | | 19.6 | 9.7 | | | 17.4 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 5.5 | 5.0 | | 5.7 | 9.2 | | 19.6 | 9.7 | | | 17.4 | |
| LOS | A | A | | A | A | | B | A | | | B | |
| Approach Delay | | 5.0 | | | 9.1 | | | 14.3 | | | 17.4 | |
| Approach LOS | | A | | | A | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 65 | | | |
| Actuated Cycle Length: 50.6 | | | |
| Natural Cycle: 75 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.65 | | | |
| Intersection Signal Delay: 8.0 | | Intersection LOS: A | |
| Intersection Capacity Utilization 64.0% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 1: Daryl Drive/Private & Plains Road West



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 742 | 20 | 43 | 1580 | 13 | 26 | 2 | 28 | 12 | 3 | 5 |
| Future Volume (vph) | 2 | 742 | 20 | 43 | 1580 | 13 | 26 | 2 | 28 | 12 | 3 | 5 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.86 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1804 | 3524 | | 1800 | 3569 | | 1734 | 1633 | | | 1778 | |
| Flt Permitted | 0.12 | 1.00 | | 0.34 | 1.00 | | 0.83 | 1.00 | | | 0.79 | |
| Satd. Flow (perm) | 219 | 3524 | | 643 | 3569 | | 1521 | 1633 | | | 1453 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 2 | 807 | 22 | 47 | 1717 | 14 | 28 | 2 | 30 | 13 | 3 | 5 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 27 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 2 | 827 | 0 | 47 | 1730 | 0 | 28 | 5 | 0 | 0 | 17 | 0 |
| Confl. Peds. (#/hr) | 11 | | 10 | 10 | | 11 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 1% | 0% | 4% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 34.7 | 34.7 | | 34.7 | 34.7 | | 4.8 | 4.8 | | | 4.8 | |
| Effective Green, g (s) | 34.7 | 34.7 | | 34.7 | 34.7 | | 4.8 | 4.8 | | | 4.8 | |
| Actuated g/C Ratio | 0.65 | 0.65 | | 0.65 | 0.65 | | 0.09 | 0.09 | | | 0.09 | |
| Clearance Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | 142 | 2285 | | 417 | 2314 | | 136 | 146 | | | 130 | |
| v/s Ratio Prot | | 0.23 | | | c0.48 | | | 0.00 | | | | |
| v/s Ratio Perm | 0.01 | | | 0.07 | | | c0.02 | | | | 0.01 | |
| v/c Ratio | 0.01 | 0.36 | | 0.11 | 0.75 | | 0.21 | 0.03 | | | 0.13 | |
| Uniform Delay, d1 | 3.3 | 4.3 | | 3.6 | 6.4 | | 22.6 | 22.2 | | | 22.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 0.2 | 0.4 | | 0.5 | 2.3 | | 0.8 | 0.1 | | | 0.5 | |
| Delay (s) | 3.5 | 4.8 | | 4.1 | 8.7 | | 23.3 | 22.3 | | | 22.9 | |
| Level of Service | A | A | | A | A | | C | C | | | C | |
| Approach Delay (s) | | 4.8 | | | 8.6 | | | 22.8 | | | 22.9 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| HCM 2000 Control Delay | 7.8 | HCM 2000 Level of Service | A | |
| HCM 2000 Volume to Capacity ratio | 0.68 | | | |
| Actuated Cycle Length (s) | 53.5 | Sum of lost time (s) | 14.0 | |
| Intersection Capacity Utilization | 64.0% | ICU Level of Service | B | |
| Analysis Period (min) | 15 | | | |

c Critical Lane Group



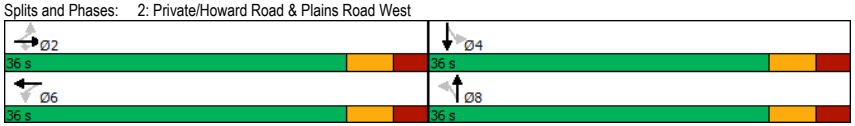


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 20 | 668 | 39 | 22 | 1348 | 125 | 16 | 7 | 20 | 101 | 6 | 15 |
| Future Volume (vph) | 20 | 668 | 39 | 22 | 1348 | 125 | 16 | 7 | 20 | 101 | 6 | 15 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 50.0 | | 30.0 | 40.0 | | 0.0 | 0.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 0 | | 0 | 1 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 7.5 | | | 65.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | | 0.93 | 0.98 | 1.00 | | | 0.99 | | 1.00 | 0.98 | |
| Frt | | | 0.850 | | 0.987 | | | 0.937 | | | 0.896 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.982 | | 0.950 | | |
| Satd. Flow (prot) | 1433 | 3539 | 1615 | 1805 | 3498 | 0 | 0 | 1737 | 0 | 1805 | 1592 | 0 |
| Flt Permitted | 0.122 | | | 0.376 | | | | 0.872 | | 0.726 | | |
| Satd. Flow (perm) | 184 | 3539 | 1500 | 702 | 3498 | 0 | 0 | 1534 | 0 | 1377 | 1592 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 61 | | 16 | | | 22 | | | 7 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 50 | | | 50 | |
| Link Distance (m) | | 261.7 | | | 166.2 | | | 80.0 | | | 166.6 | |
| Travel Time (s) | | 15.7 | | | 10.0 | | | 5.8 | | | 12.0 | |
| Confl. Peds. (#/hr) | 10 | | 42 | 42 | | 10 | 21 | | 3 | 3 | | 21 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 26% | 2% | 0% | 0% | 1% | 8% | 0% | 0% | 0% | 0% | 0% | 7% |
| Adj. Flow (vph) | 22 | 726 | 42 | 24 | 1465 | 136 | 17 | 8 | 22 | 110 | 7 | 16 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 22 | 726 | 42 | 24 | 1601 | 0 | 0 | 47 | 0 | 110 | 23 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | 2.0 | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | 2.0 | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | 2 | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | |
| Minimum Split (s) | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (s) | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (%) | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | | 50.0% | 50.0% | | 50.0% | 50.0% | |
| Maximum Green (s) | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Recall Mode | Max | Max | Max | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | | 19.0 | 19.0 | | 19.0 | 19.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 34.5 | 34.5 | 34.5 | 34.5 | 34.5 | | | 12.9 | | 12.9 | 12.9 | |
| Actuated g/C Ratio | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | | | 0.23 | | 0.23 | 0.23 | |
| v/c Ratio | 0.19 | 0.33 | 0.04 | 0.06 | 0.74 | | | 0.13 | | 0.35 | 0.06 | |
| Control Delay | 13.6 | 8.0 | 1.8 | 7.7 | 14.3 | | | 12.1 | | 21.6 | 14.1 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 13.6 | 8.0 | 1.8 | 7.7 | 14.3 | | | 12.1 | | 21.6 | 14.1 | |
| LOS | B | A | A | A | B | | | B | | C | B | |
| Approach Delay | | 7.8 | | | 14.2 | | | 12.1 | | | 20.3 | |
| Approach LOS | | A | | | B | | | B | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 72 | | | |
| Actuated Cycle Length: 55.7 | | | |
| Natural Cycle: 80 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.74 | | | |
| Intersection Signal Delay: 12.5 | | Intersection LOS: B | |
| Intersection Capacity Utilization 71.3% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 2: Private/Howard Road & Plains Road West








| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 20 | 668 | 39 | 22 | 1348 | 125 | 16 | 7 | 20 | 101 | 6 | 15 |
| Future Volume (vph) | 20 | 668 | 39 | 22 | 1348 | 125 | 16 | 7 | 20 | 101 | 6 | 15 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.94 | 1.00 | 1.00 | | | 0.99 | | 1.00 | 0.98 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | | 0.94 | | 1.00 | 0.90 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 0.98 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1431 | 3539 | 1517 | 1778 | 3499 | | | 1730 | | 1802 | 1595 | |
| Flt Permitted | 0.12 | 1.00 | 1.00 | 0.38 | 1.00 | | | 0.87 | | 0.73 | 1.00 | |
| Satd. Flow (perm) | 183 | 3539 | 1517 | 703 | 3499 | | | 1535 | | 1378 | 1595 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 22 | 726 | 42 | 24 | 1465 | 136 | 17 | 8 | 22 | 110 | 7 | 16 |
| RTOR Reduction (vph) | 0 | 0 | 18 | 0 | 7 | 0 | 0 | 18 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 22 | 726 | 24 | 24 | 1594 | 0 | 0 | 29 | 0 | 110 | 17 | 0 |
| Confl. Peds. (#/hr) | 10 | | 42 | 42 | | 10 | 21 | | 3 | 3 | | 21 |
| Heavy Vehicles (%) | 26% | 2% | 0% | 0% | 1% | 8% | 0% | 0% | 0% | 0% | 0% | 7% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 32.9 | 32.9 | 32.9 | 32.9 | 32.9 | | | 10.3 | | 10.3 | 10.3 | |
| Effective Green, g (s) | 32.9 | 32.9 | 32.9 | 32.9 | 32.9 | | | 10.3 | | 10.3 | 10.3 | |
| Actuated g/C Ratio | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | | | 0.18 | | 0.18 | 0.18 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 105 | 2035 | 872 | 404 | 2012 | | | 276 | | 248 | 287 | |
| v/s Ratio Prot | | 0.21 | | | c0.46 | | | | | | 0.01 | |
| v/s Ratio Perm | 0.12 | | 0.02 | 0.03 | | | | 0.02 | | c0.08 | | |
| v/c Ratio | 0.21 | 0.36 | 0.03 | 0.06 | 0.79 | | | 0.10 | | 0.44 | 0.06 | |
| Uniform Delay, d1 | 5.9 | 6.5 | 5.2 | 5.3 | 9.5 | | | 19.6 | | 20.9 | 19.4 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 4.5 | 0.5 | 0.1 | 0.3 | 3.3 | | | 0.4 | | 2.6 | 0.2 | |
| Delay (s) | 10.4 | 7.0 | 5.3 | 5.6 | 12.8 | | | 19.9 | | 23.5 | 19.6 | |
| Level of Service | B | A | A | A | B | | | B | | C | B | |
| Approach Delay (s) | | 7.0 | | | 12.7 | | | 19.9 | | | 22.9 | |
| Approach LOS | | A | | | B | | | B | | | C | |

| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 11.6 | HCM 2000 Level of Service | | B | |
| HCM 2000 Volume to Capacity ratio | 0.71 | | | | |
| Actuated Cycle Length (s) | 57.2 | Sum of lost time (s) | | 14.0 | |
| Intersection Capacity Utilization | 71.3% | ICU Level of Service | | C | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 1295 | 32 | 12 | 377 | 5 | 30 | 0 | 49 | 15 | 1 | 2 |
| Future Volume (vph) | 2 | 1295 | 32 | 12 | 377 | 5 | 30 | 0 | 49 | 15 | 1 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 15.0 | | | 7.5 | | |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 0.98 | | | 0.99 | |
| Frt | | 0.996 | | | 0.998 | | | 0.850 | | | 0.986 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.960 | |
| Satd. Flow (prot) | 1805 | 3487 | 0 | 1656 | 3369 | 0 | 1687 | 1529 | 0 | 0 | 1794 | 0 |
| Flt Permitted | 0.509 | | | 0.147 | | | 0.816 | | | | 0.752 | |
| Satd. Flow (perm) | 961 | 3487 | 0 | 256 | 3369 | 0 | 1433 | 1529 | 0 | 0 | 1402 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 5 | | | 2 | | | 67 | | | 2 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 41 | | | 50 | |
| Link Distance (m) | | 134.7 | | | 261.7 | | | 209.2 | | | 59.5 | |
| Travel Time (s) | | 8.1 | | | 15.7 | | | 18.4 | | | 4.3 | |
| Confl. Peds. (#/hr) | 9 | | 24 | 24 | | 9 | 13 | | 4 | 4 | | 13 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 9% | 7% | 0% | 7% | 0% | 4% | 0% | 0% | 0% |
| Adj. Flow (vph) | 2 | 1408 | 35 | 13 | 410 | 5 | 33 | 0 | 53 | 16 | 1 | 2 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 2 | 1443 | 0 | 13 | 415 | 0 | 33 | 53 | 0 | 0 | 19 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

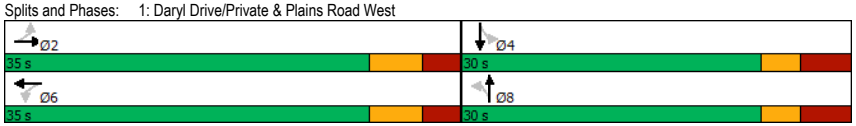




| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 38.0 | 38.0 | | 38.0 | 38.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (s) | 35.0 | 35.0 | | 35.0 | 35.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (%) | 53.8% | 53.8% | | 53.8% | 53.8% | | 46.2% | 46.2% | | 46.2% | 46.2% | |
| Maximum Green (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | |
| Yellow Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | Max | Max | | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 15.0 | 15.0 | | 15.0 | 15.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 36.8 | 36.8 | | 36.8 | 36.8 | | 8.1 | 8.1 | | | 8.1 | |
| Actuated g/C Ratio | 0.73 | 0.73 | | 0.73 | 0.73 | | 0.16 | 0.16 | | | 0.16 | |
| v/c Ratio | 0.00 | 0.56 | | 0.07 | 0.17 | | 0.14 | 0.17 | | | 0.08 | |
| Control Delay | 5.0 | 7.3 | | 6.6 | 4.5 | | 19.7 | 6.4 | | | 17.9 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 5.0 | 7.3 | | 6.6 | 4.5 | | 19.7 | 6.4 | | | 17.9 | |
| LOS | A | A | | A | A | | B | A | | | B | |
| Approach Delay | | 7.3 | | | 4.6 | | | 11.5 | | | 17.9 | |
| Approach LOS | | A | | | A | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 65 | | | |
| Actuated Cycle Length: 50.1 | | | |
| Natural Cycle: 70 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.56 | | | |
| Intersection Signal Delay: 7.0 | | Intersection LOS: A | |
| Intersection Capacity Utilization 60.3% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 1: Daryl Drive/Private & Plains Road West



| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 2 | 1443 | 13 | 415 | 33 | 53 | 19 |
| v/c Ratio | 0.00 | 0.56 | 0.07 | 0.17 | 0.14 | 0.17 | 0.08 |
| Control Delay | 5.0 | 7.3 | 6.6 | 4.5 | 19.7 | 6.4 | 17.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 5.0 | 7.3 | 6.6 | 4.5 | 19.7 | 6.4 | 17.9 |
| Queue Length 50th (m) | 0.1 | 45.8 | 0.5 | 8.8 | 2.7 | 0.0 | 1.4 |
| Queue Length 95th (m) | 0.8 | 70.4 | 2.7 | 15.0 | 8.8 | 6.1 | 5.8 |
| Internal Link Dist (m) | | 110.7 | | 237.7 | | 185.2 | 35.5 |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | |
| Base Capacity (vph) | 706 | 2562 | 188 | 2475 | 657 | 737 | 644 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.00 | 0.56 | 0.07 | 0.17 | 0.05 | 0.07 | 0.03 |

| Intersection Summary |
|---|





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 1295 | 32 | 12 | 377 | 5 | 30 | 0 | 49 | 15 | 1 | 2 |
| Future Volume (vph) | 2 | 1295 | 32 | 12 | 377 | 5 | 30 | 0 | 49 | 15 | 1 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.85 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.96 | |
| Satd. Flow (prot) | 1796 | 3489 | | 1652 | 3369 | | 1672 | 1530 | | | 1790 | |
| Flt Permitted | 0.51 | 1.00 | | 0.15 | 1.00 | | 0.82 | 1.00 | | | 0.75 | |
| Satd. Flow (perm) | 962 | 3489 | | 256 | 3369 | | 1437 | 1530 | | | 1402 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 2 | 1408 | 35 | 13 | 410 | 5 | 33 | 0 | 53 | 16 | 1 | 2 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 48 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 2 | 1441 | 0 | 13 | 414 | 0 | 33 | 5 | 0 | 0 | 17 | 0 |
| Confl. Peds. (#/hr) | 9 | | 24 | 24 | | 9 | 13 | | 4 | 4 | | 13 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 9% | 7% | 0% | 7% | 0% | 4% | 0% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | 4.9 | 4.9 | | | 4.9 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | 4.9 | 4.9 | | | 4.9 | |
| Actuated g/C Ratio | 0.64 | 0.64 | | 0.64 | 0.64 | | 0.09 | 0.09 | | | 0.09 | |
| Clearance Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | 618 | 2242 | | 164 | 2165 | | 133 | 141 | | | 129 | |
| v/s Ratio Prot | | c0.41 | | | 0.12 | | | 0.00 | | | | |
| v/s Ratio Perm | 0.00 | | | 0.05 | | | c0.02 | | | | 0.01 | |
| v/c Ratio | 0.00 | 0.64 | | 0.08 | 0.19 | | 0.25 | 0.03 | | | 0.13 | |
| Uniform Delay, d1 | 3.4 | 5.8 | | 3.6 | 3.8 | | 22.3 | 21.8 | | | 22.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 1.4 | | 0.9 | 0.2 | | 1.0 | 0.1 | | | 0.5 | |
| Delay (s) | 3.4 | 7.2 | | 4.5 | 4.0 | | 23.3 | 21.9 | | | 22.5 | |
| Level of Service | A | A | | A | A | | C | C | | | C | |
| Approach Delay (s) | | 7.2 | | | 4.1 | | | 22.5 | | | 22.5 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 7.3 | HCM 2000 Level of Service | | A | |
| HCM 2000 Volume to Capacity ratio | 0.59 | | | | |
| Actuated Cycle Length (s) | 52.9 | Sum of lost time (s) | | 14.0 | |
| Intersection Capacity Utilization | 60.3% | ICU Level of Service | | B | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 18 | 1344 | 15 | 7 | 346 | 64 | 15 | 6 | 55 | 144 | 5 | 13 |
| Future Volume (vph) | 18 | 1344 | 15 | 7 | 346 | 64 | 15 | 6 | 55 | 144 | 5 | 13 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 50.0 | | 30.0 | 40.0 | | 0.0 | 0.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 0 | | 0 | 1 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 7.5 | | | 65.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | | 0.98 | 1.00 | 1.00 | | | 0.99 | | 1.00 | 0.99 | |
| Frt | | | 0.850 | | 0.976 | | | 0.902 | | | 0.889 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.990 | | 0.950 | | |
| Satd. Flow (prot) | 1399 | 3539 | 1615 | 1805 | 3219 | 0 | 0 | 1680 | 0 | 1570 | 1411 | 0 |
| Flt Permitted | 0.494 | | | 0.123 | | | | 0.938 | | 0.703 | | |
| Satd. Flow (perm) | 726 | 3539 | 1579 | 234 | 3219 | 0 | 0 | 1591 | 0 | 1160 | 1411 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 61 | | 36 | | | 7 | | | 14 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 50 | | | 50 | |
| Link Distance (m) | | 261.7 | | | 166.2 | | | 80.0 | | | 166.6 | |
| Travel Time (s) | | 15.7 | | | 10.0 | | | 5.8 | | | 12.0 | |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 4 | | 2 | 2 | | 4 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 29% | 2% | 0% | 0% | 7% | 20% | 0% | 0% | 0% | 15% | 0% | 25% |
| Adj. Flow (vph) | 20 | 1461 | 16 | 8 | 376 | 70 | 16 | 7 | 60 | 157 | 5 | 14 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 20 | 1461 | 16 | 8 | 446 | 0 | 0 | 83 | 0 | 157 | 19 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | 2.0 | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | 2.0 | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

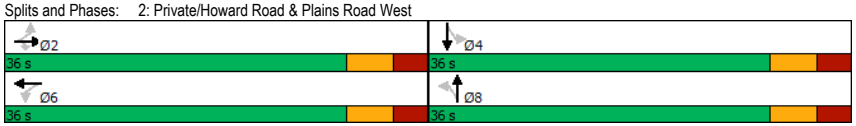




| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | 2 | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | |
| Minimum Split (s) | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (s) | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (%) | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | | 50.0% | 50.0% | | 50.0% | 50.0% | |
| Maximum Green (s) | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Recall Mode | Max | Max | Max | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | | 19.0 | 19.0 | | 19.0 | 19.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 34.2 | 34.2 | 34.2 | 34.2 | 34.2 | | | 15.3 | | 15.3 | 15.3 | |
| Actuated g/C Ratio | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | | | 0.27 | | 0.27 | 0.27 | |
| v/c Ratio | 0.05 | 0.70 | 0.02 | 0.06 | 0.23 | | | 0.19 | | 0.51 | 0.05 | |
| Control Delay | 9.6 | 15.3 | 0.0 | 10.9 | 8.3 | | | 16.3 | | 24.5 | 9.9 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 9.6 | 15.3 | 0.0 | 10.9 | 8.3 | | | 16.3 | | 24.5 | 9.9 | |
| LOS | A | B | A | B | A | | | B | | C | A | |
| Approach Delay | | 15.0 | | | 8.3 | | | 16.3 | | | 22.9 | |
| Approach LOS | | B | | | A | | | B | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 72 | | | |
| Actuated Cycle Length: 57.7 | | | |
| Natural Cycle: 75 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.70 | | | |
| Intersection Signal Delay: 14.3 | | Intersection LOS: B | |
| Intersection Capacity Utilization 64.7% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 2: Private/Howard Road & Plains Road West



| Lane Group | EBL | EBT | EBR | WBL | WBT | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 20 | 1461 | 16 | 8 | 446 | 83 | 157 | 19 |
| v/c Ratio | 0.05 | 0.70 | 0.02 | 0.06 | 0.23 | 0.19 | 0.51 | 0.05 |
| Control Delay | 9.6 | 15.3 | 0.0 | 10.9 | 8.3 | 16.3 | 24.5 | 9.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 9.6 | 15.3 | 0.0 | 10.9 | 8.3 | 16.3 | 24.5 | 9.9 |
| Queue Length 50th (m) | 1.0 | 65.8 | 0.0 | 0.4 | 12.4 | 6.6 | 15.0 | 0.4 |
| Queue Length 95th (m) | 4.9 | #132.6 | 0.0 | 3.1 | 25.3 | 15.6 | 30.4 | 4.4 |
| Internal Link Dist (m) | | 237.7 | | | 142.2 | 56.0 | | 142.6 |
| Turn Bay Length (m) | 50.0 | | 30.0 | 40.0 | | | 20.0 | |
| Base Capacity (vph) | 430 | 2096 | 960 | 138 | 1921 | 808 | 587 | 720 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.05 | 0.70 | 0.02 | 0.06 | 0.23 | 0.10 | 0.27 | 0.03 |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 18 | 1344 | 15 | 7 | 346 | 64 | 15 | 6 | 55 | 144 | 5 | 13 |
| Future Volume (vph) | 18 | 1344 | 15 | 7 | 346 | 64 | 15 | 6 | 55 | 144 | 5 | 13 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.98 | | | 0.90 | | 1.00 | 0.89 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 0.99 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1396 | 3539 | 1579 | 1805 | 3221 | | | 1681 | | 1568 | 1412 | |
| Flt Permitted | 0.49 | 1.00 | 1.00 | 0.12 | 1.00 | | | 0.94 | | 0.70 | 1.00 | |
| Satd. Flow (perm) | 726 | 3539 | 1579 | 233 | 3221 | | | 1591 | | 1160 | 1412 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 20 | 1461 | 16 | 8 | 376 | 70 | 16 | 7 | 60 | 157 | 5 | 14 |
| RTOR Reduction (vph) | 0 | 0 | 7 | 0 | 16 | 0 | 0 | 6 | 0 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 20 | 1461 | 9 | 8 | 430 | 0 | 0 | 77 | 0 | 157 | 8 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 29% | 2% | 0% | 0% | 7% | 20% | 0% | 0% | 0% | 15% | 0% | 25% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 32.6 | 32.6 | 32.6 | 32.6 | 32.6 | | | 12.6 | | 12.6 | 12.6 | |
| Effective Green, g (s) | 32.6 | 32.6 | 32.6 | 32.6 | 32.6 | | | 12.6 | | 12.6 | 12.6 | |
| Actuated g/C Ratio | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | | | 0.21 | | 0.21 | 0.21 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 399 | 1948 | 869 | 128 | 1773 | | | 338 | | 246 | 300 | |
| v/s Ratio Prot | | c0.41 | | | 0.13 | | | | | | 0.01 | |
| v/s Ratio Perm | 0.03 | | 0.01 | 0.03 | | | | 0.05 | | c0.14 | | |
| v/c Ratio | 0.05 | 0.75 | 0.01 | 0.06 | 0.24 | | | 0.23 | | 0.64 | 0.03 | |
| Uniform Delay, d1 | 6.1 | 10.2 | 6.0 | 6.2 | 6.9 | | | 19.3 | | 21.2 | 18.4 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.2 | 2.7 | 0.0 | 0.9 | 0.3 | | | 0.7 | | 7.4 | 0.1 | |
| Delay (s) | 6.4 | 12.9 | 6.0 | 7.1 | 7.2 | | | 20.0 | | 28.6 | 18.5 | |
| Level of Service | A | B | A | A | A | | | C | | C | B | |
| Approach Delay (s) | | 12.7 | | | 7.2 | | | 20.0 | | | 27.5 | |
| Approach LOS | | B | | | A | | | C | | | C | |

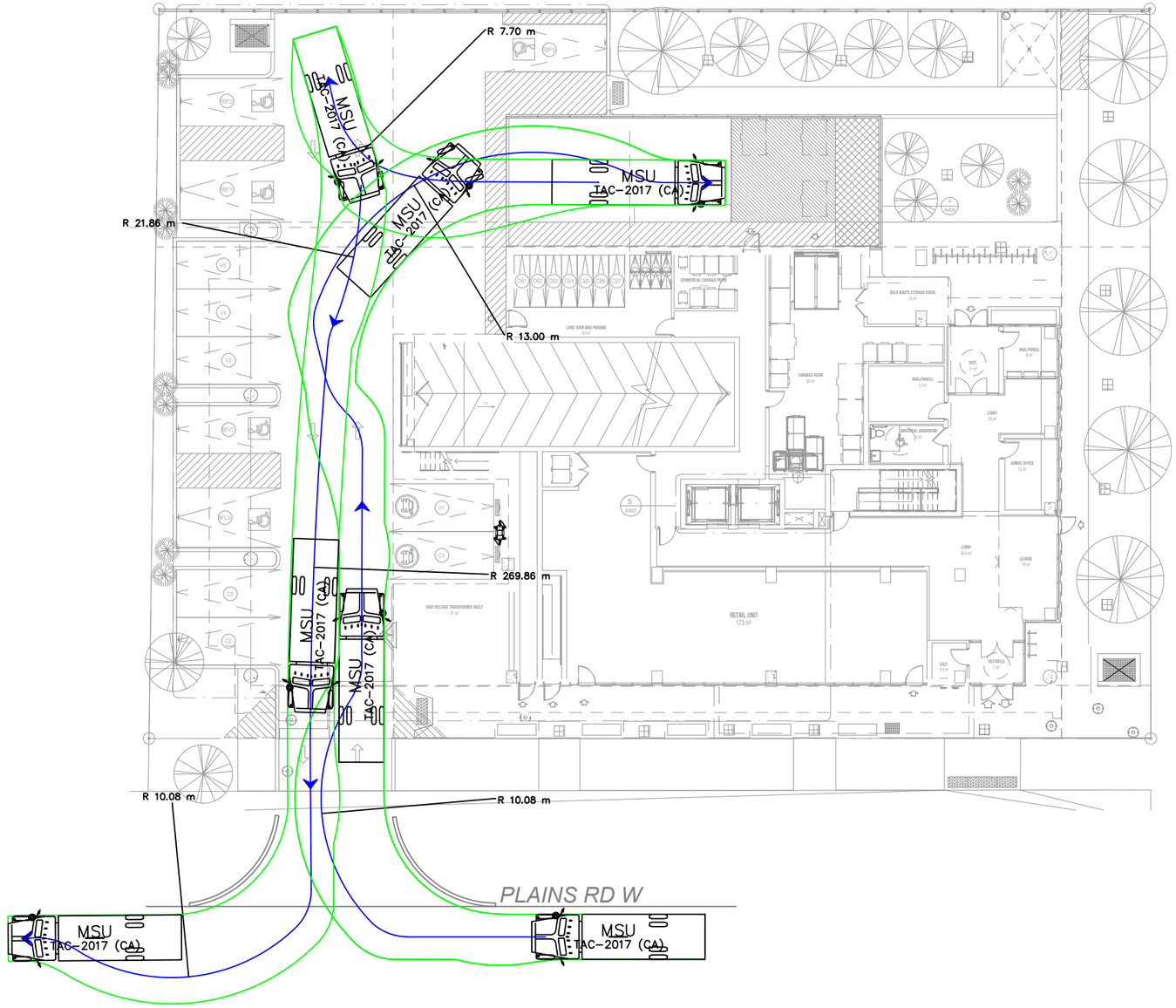
| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 13.0 | HCM 2000 Level of Service | | B | |
| HCM 2000 Volume to Capacity ratio | 0.72 | | | | |
| Actuated Cycle Length (s) | 59.2 | Sum of lost time (s) | | 14.0 | |
| Intersection Capacity Utilization | 64.7% | ICU Level of Service | | C | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

# Appendix D

## AutoTURN Site Circulation Assessments

THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

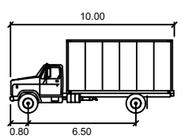



ROOM LEGEND

- ADMIN. OFFICE
- BULK WASTE STORAGE ROOM
- COMMERCIAL GARBAGE ROOM
- DOG RELIEVING AREA
- LOBBY
- LOUNGE
- RETAIL UNIT
- VEST.

| NO. | DATE | INITIAL | REVISION DETAIL |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| 1 | 2024-09-09 | LC | SITE PLAN UPDATE |

DESIGN VEHICLE:




MSU

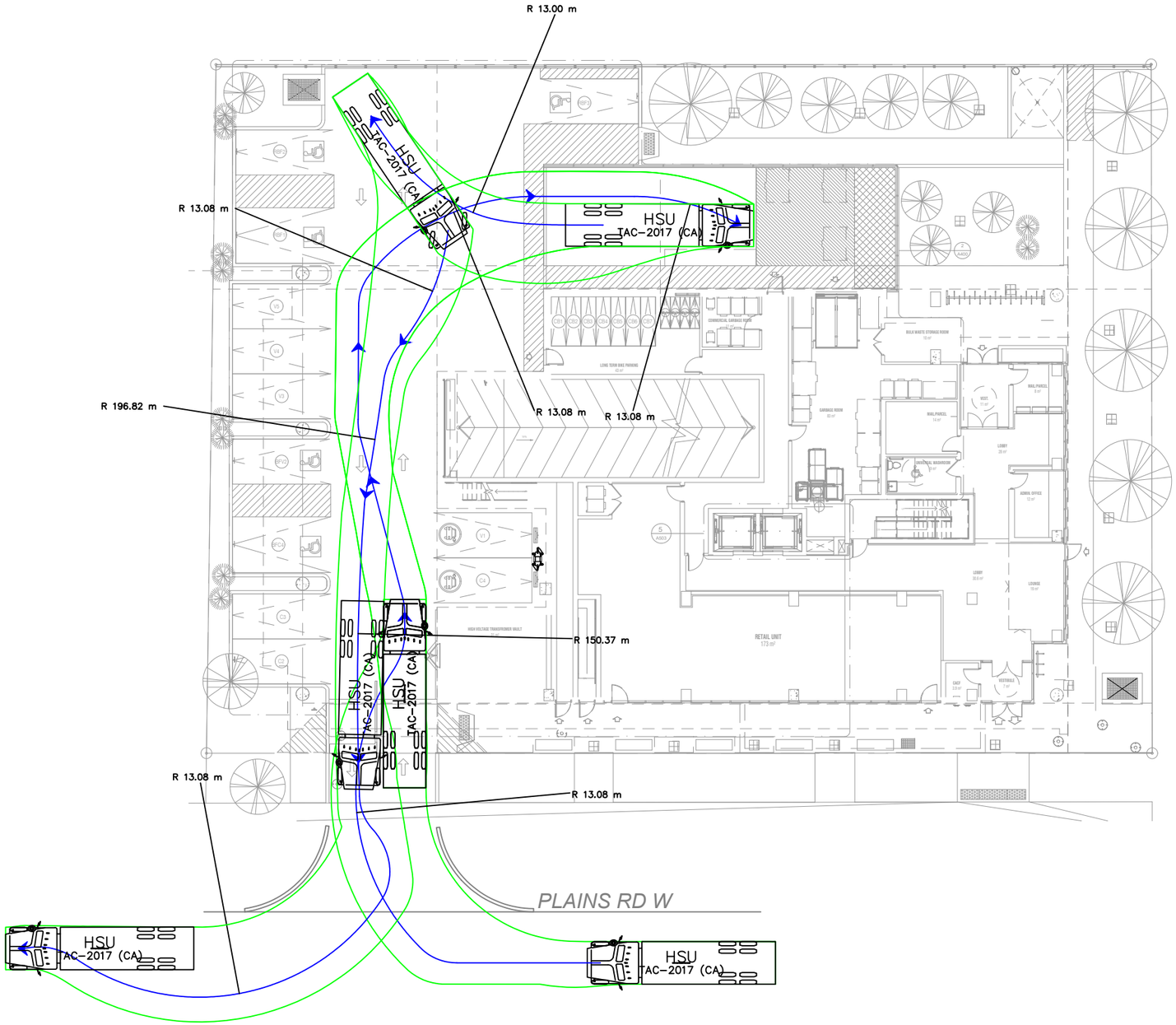
| | meters |
|---|---|
| Width | : 2.60 |
| Track | : 2.60 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 40.2 |

# AUTOTURN ASSESSMENT
# 141-153 PLAINS ROAD WEST
# CITY OF BURLINGTON

paradigm

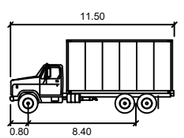
| PROJECT NO.: 220615 | DATE: JANUARY 2024 | SCALE: 1:300 | DRAWING NO.: 01 |
|---|---|---|---|
| DRAWN: SC | DESIGN: SC | CHECK: EB | |

THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.




| NO. | DATE | INITIAL | REVISION DETAIL |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| 1 | 2024-09-09 | LC | SITE PLAN UPDATE |

DESIGN VEHICLE:




HSU

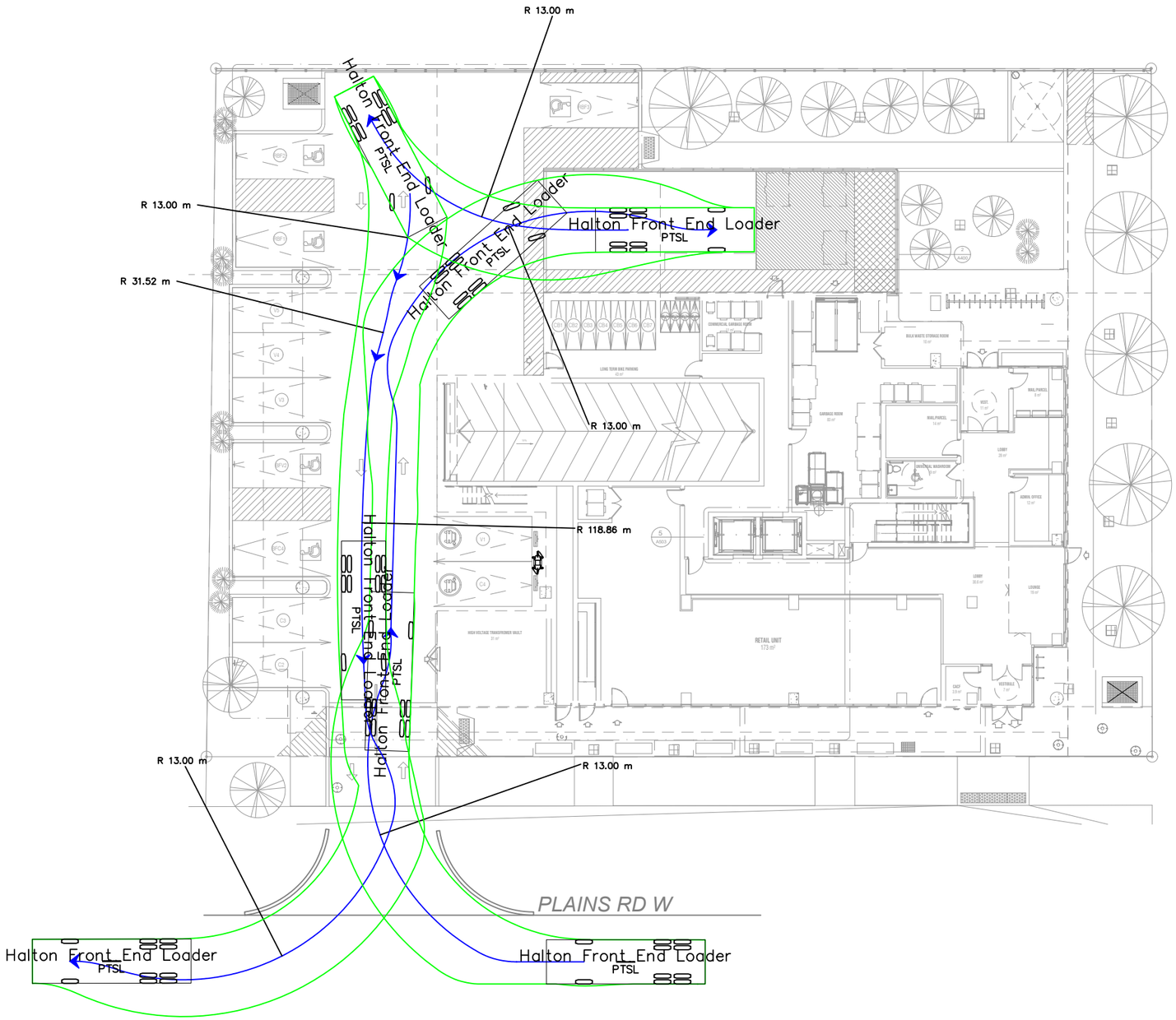
| | meters |
|---|---|
| Width | : 2.60 |
| Track | : 2.60 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 40.0 |

# AUTOTURN ASSESSMENT
# 141-153 PLAINS ROAD WEST
# CITY OF BURLINGTON

paradigm

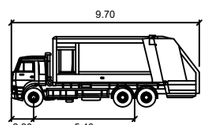
| PROJECT NO.: 220615 | DATE: JANUARY 2024 | SCALE: 1:300 | DRAWING NO.: 02 |
|---|---|---|---|
| DRAWN: SC | DESIGN: SC | CHECK: EB | |

THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.




| NO. | DATE | INITIAL | REVISION DETAIL |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| 1 | 2024-09-09 | LC | SITE PLAN UPDATE |

DESIGN VEHICLE:




Halton Front End Loader

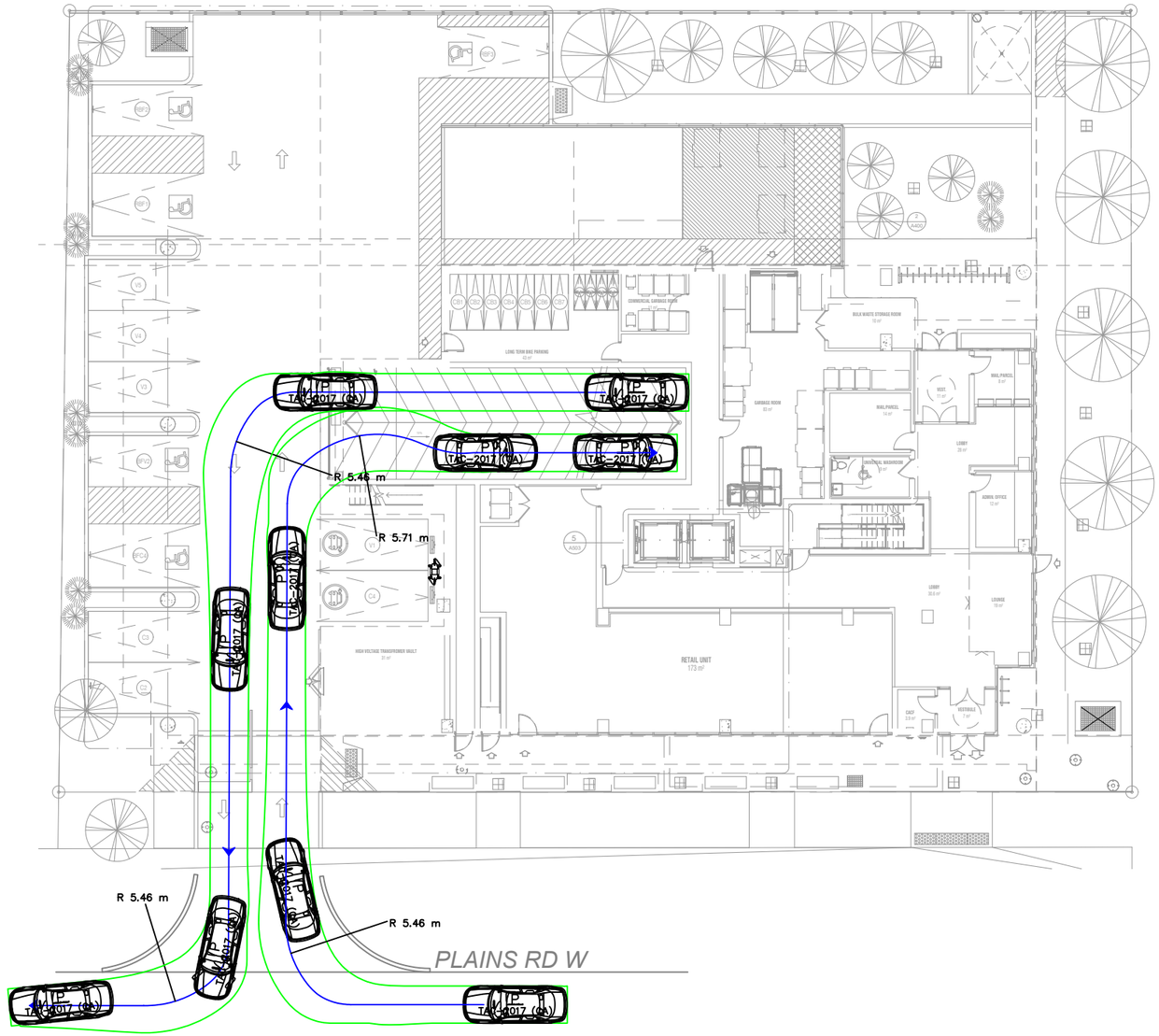
| | meters |
|---|---|
| Width | : 2.70 |
| Track | : 2.70 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 24.5 |

# AUTOTURN ASSESSMENT
# 141-153 PLAINS ROAD WEST
# CITY OF BURLINGTON

paradigm

| PROJECT NO.: 220615 | DATE: JANUARY 2024 | SCALE: 1:300 | DRAWING NO.: 03 |
|---|---|---|---|
| DRAWN: SC | DESIGN: SC | CHECK: EB | |

THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

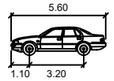



ROOM LEGEND

- ADMIN. OFFICE
- BULK WASTE STORAGE ROOM
- COMMERCIAL GARBAGE ROOM
- DOG RELIEVING AREA
- LOBBY
- LOUNGE
- RETAIL UNIT
- VEST.

| NO. | DATE | INITIAL | REVISION DETAIL |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| 1 | 2024-09-09 | LC | SITE PLAN UPDATE |

DESIGN VEHICLE:




P

| | meters |
|---|---|
| Width | : 2.00 |
| Track | : 2.00 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 35.9 |

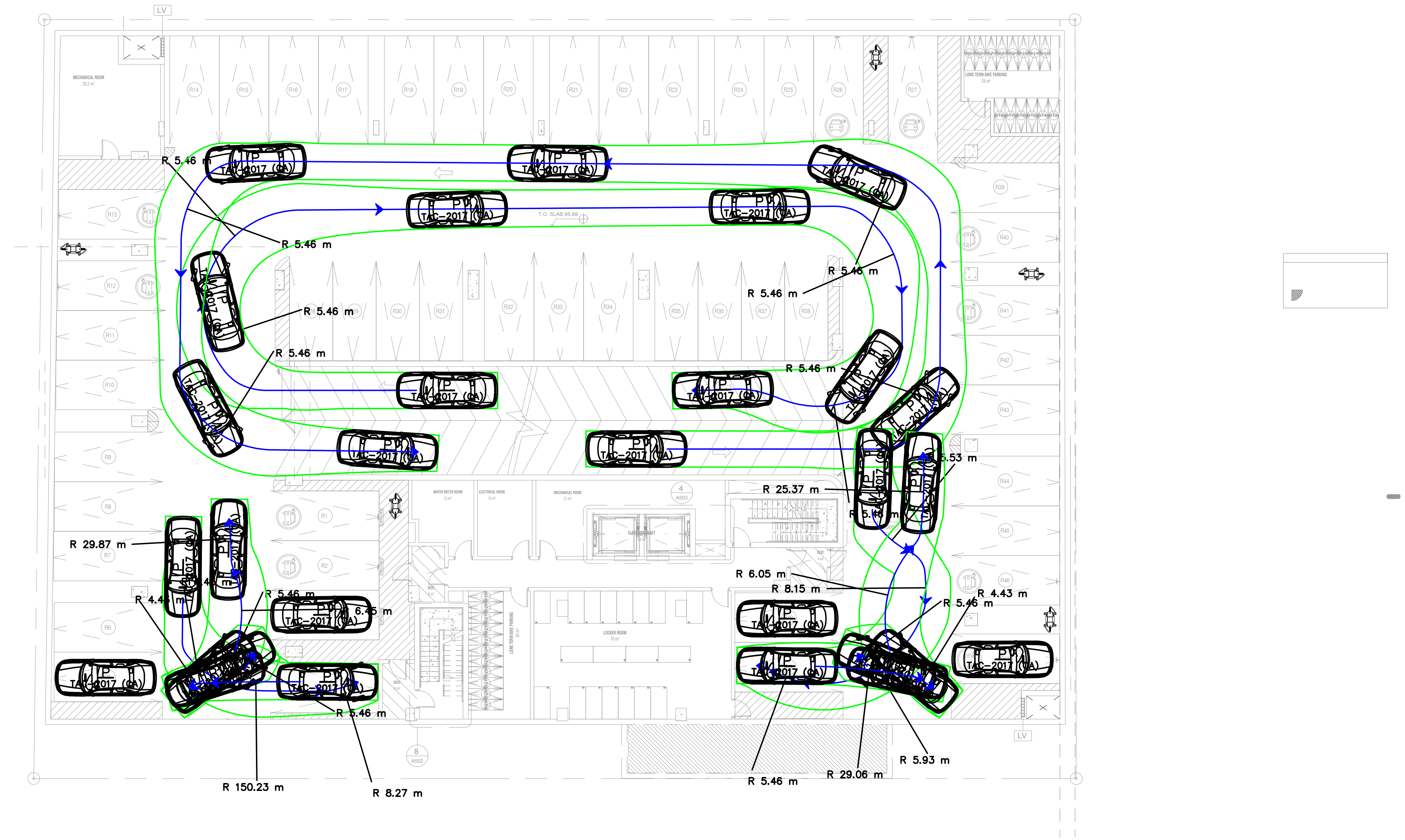
# AUTOTURN ASSESSMENT
# 141-153 PLAINS ROAD WEST
# CITY OF BURLINGTON

paradigm

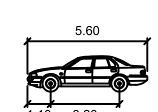
| PROJECT NO.: 220615 | DATE: JANUARY 2024 | SCALE: 1:300 | DRAWING NO.: 04 |
|---|---|---|---|
| DRAWN: SC | DESIGN: SC | CHECK: EB | |

THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

# UNDERGROUND PARKING LEVEL 1




DESIGN VEHICLE:




P

| | meters |
|---|---|
| Width | : 2.00 |
| Track | : 2.00 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 35.9 |

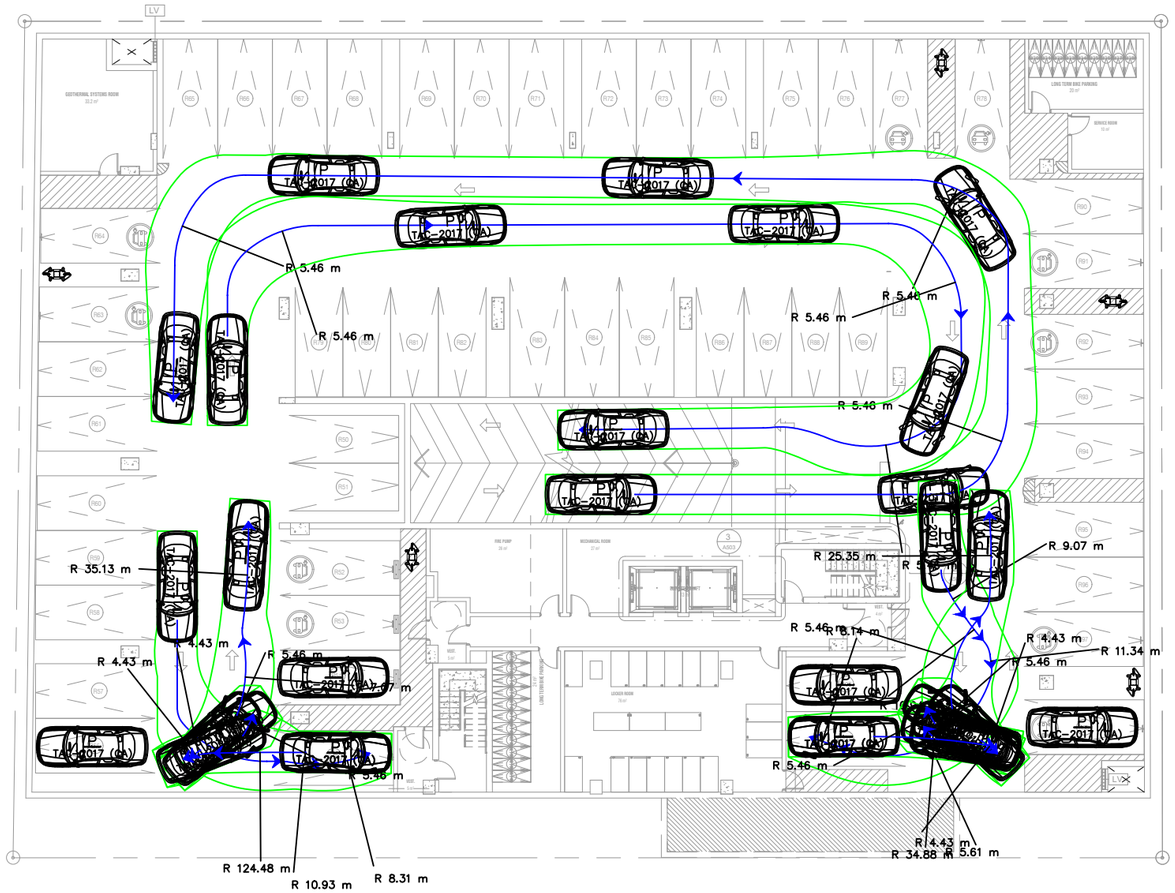
| NO. | DATE | INITIAL | REVISION DETAIL |
|---|---|---|---|
| 1 | 2024-09-09 | LC | SITE PLAN UPDATE |

AUTOTURN ASSESSMENT
141-153 PLAINS ROAD WEST
CITY OF BURLINGTON

paradigm

| | | | |
|---|---|---|---|
| PROJECT NO.: 220615 | DATE: JANUARY 2024 | SCALE: 1:300 | DRAWING NO.: 05 |
| DRAWN: SC | DESIGN: SC | CHECK: EB | |

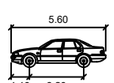
# UNDERGROUND PARKING LEVEL 2




THIS AUTOTURN SWEPT PATH ANALYSIS HAS BEEN PREPARED USING BASE PLANS PROVIDED BY OTHERS. THE PRACTITIONER HAS NOT INSPECTED THE ACCURACY AND/OR THE COMPLETENESS OF THESE BASE PLANS AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

| NO. | DATE | INITIAL | REVISION DETAIL |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| 1 | 2024-09-09 | LC | SITE PLAN UPDATE |

DESIGN VEHICLE:




P

| | meters |
|---|---|
| Width | : 2.00 |
| Track | : 2.00 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 35.9 |

# AUTOTURN ASSESSMENT
# 141-153 PLAINS ROAD WEST
# CITY OF BURLINGTON

paradigm

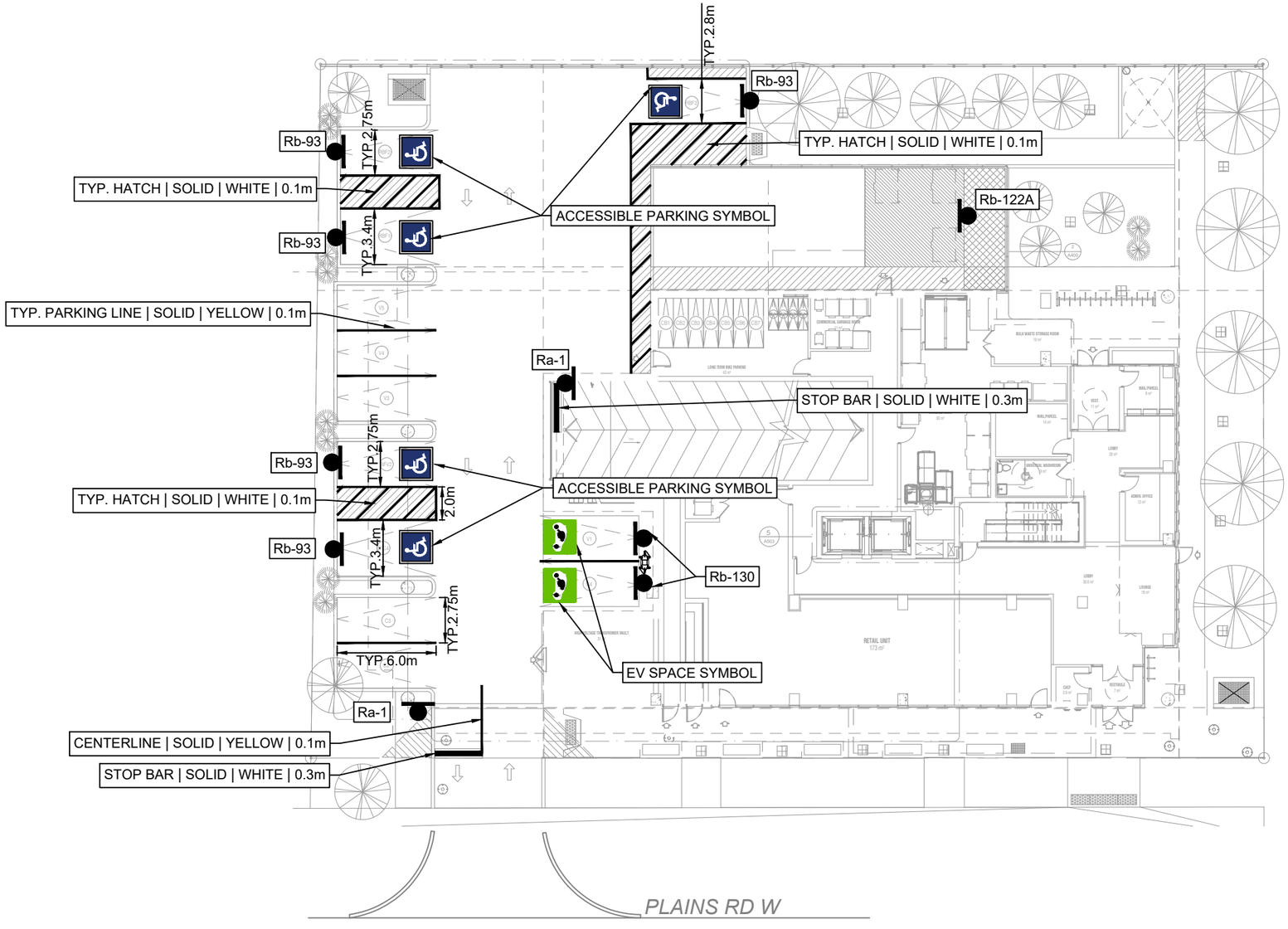
| PROJECT NO.: 220615 | DATE: JANUARY 2024 | SCALE: 1:300 | DRAWING NO.: 06 |
|---|---|---|---|
| DRAWN: SC | DESIGN: SC | CHECK: EB | |

# Appendix E

## Pavement Marking and Signage Plan








ROOM LEGEND

- ADMIN. OFFICE
- BULK WASTE STORAGE ROOM
- COMMERCIAL GARBAGE ROOM
- DOG RELIEVING AREA
- LOBBY
- LOUNGE
- RETAIL UNIT
- VEST.

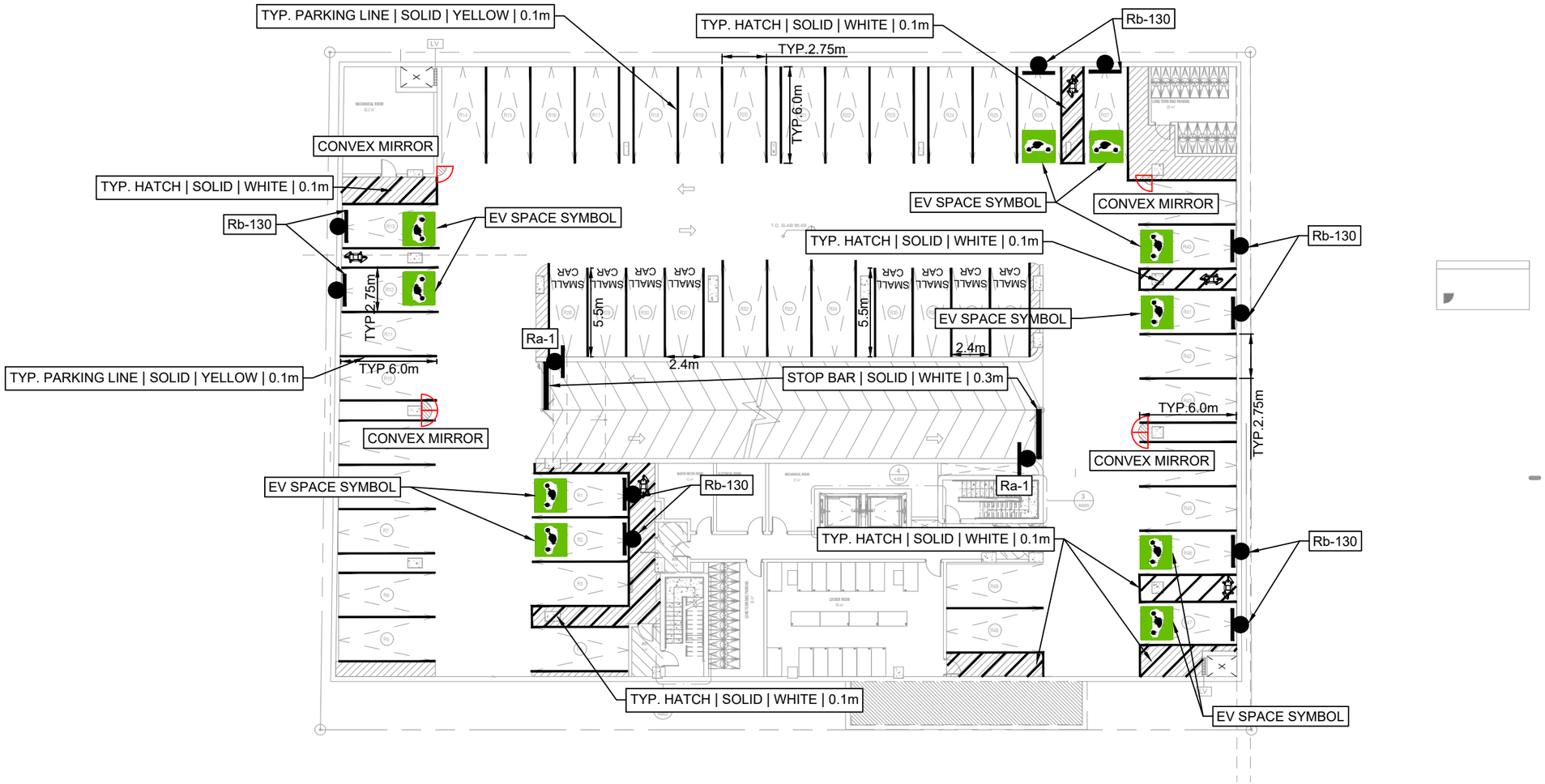
| NO. | DATE | INITIAL | REVISION DETAIL |
|---|---|---|---|
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| | | | |

# PAVEMENT & SIGNAGE PLAN
# 141-153 PLAINS ROAD WEST
# CITY OF BURLINGTON

paradigm

| PROJECT NO.: 220615 | DATE: SEPTEMBER 2024 | SCALE: 1:300 | DRAWING NO.: |
|---|---|---|---|
| DRAWN: LC | DESIGN: LC | CHECK: EB | 01 |

# UNDERGROUND PARKING LEVEL 1



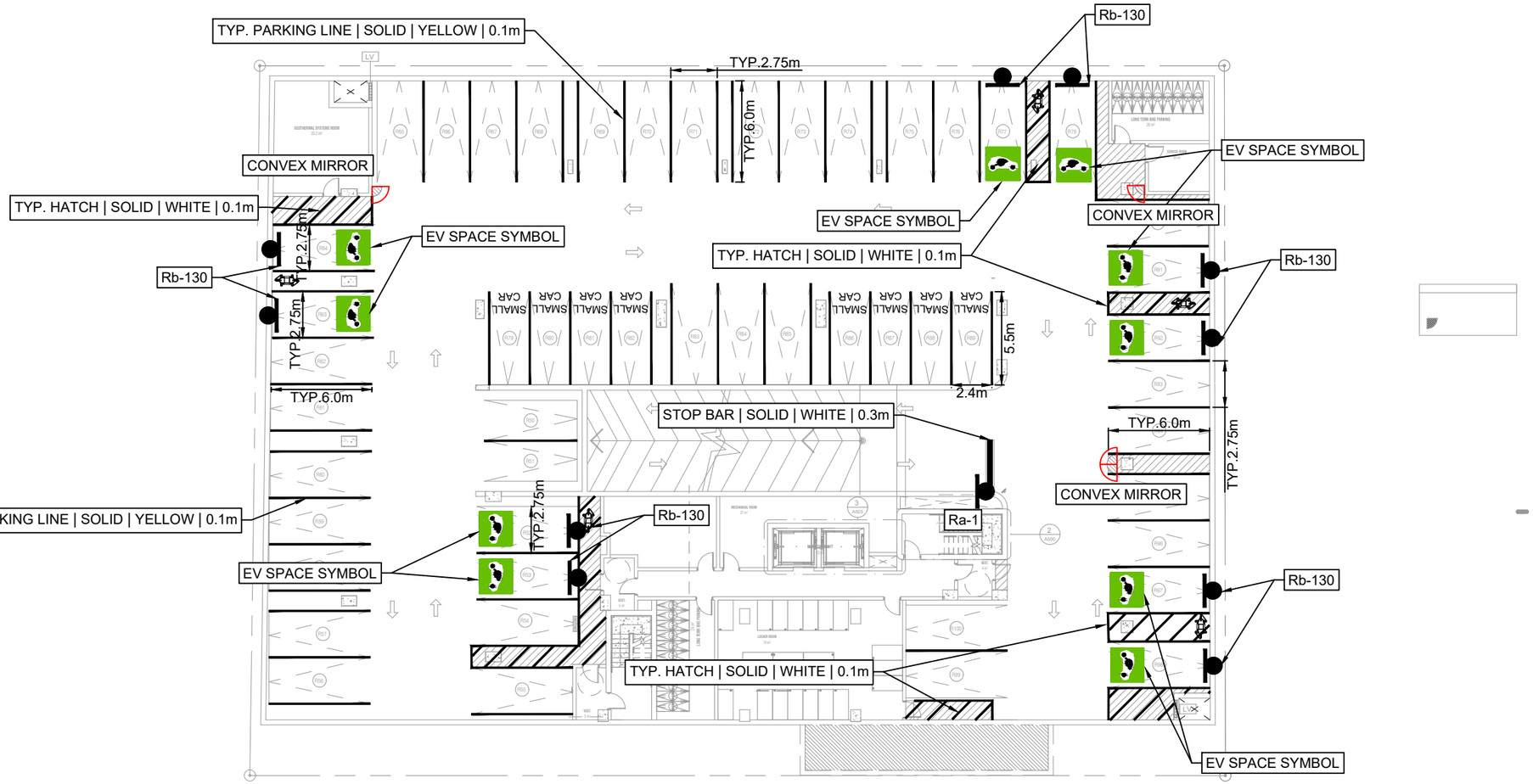

| NO. | DATE | INITIAL | REVISION DETAIL |
|---|---|---|---|
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## PAVEMENT & SIGNAGE PLAN
## 141-153 PLAINS ROAD WEST
## CITY OF BURLINGTON

paradigm

| PROJECT NO.: 220615 | DATE: SEPTEMBER 2024 | SCALE: 1:300 | DRAWING NO.: |
|---|---|---|---|
| DRAWN: LC | DESIGN: LC | CHECK: EB | 02 |

# UNDERGROUND PARKING LEVEL 2




| NO. | DATE | INITIAL | REVISION DETAIL |
|---|---|---|---|
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| | | | |
| | | | |
| | | | |
| | | | |

# PAVEMENT & SIGNAGE PLAN
# 141-153 PLAINS ROAD WEST
# CITY OF BURLINGTON

| | | | |
|---|---|---|---|
| paradigm | PROJECT NO.: 220615 | DATE: SEPTEMBER 2024 | SCALE: 1:300 |
| | DRAWN: LC | DESIGN: LC | CHECK: EB |

DRAWING NO.: 03

**NOTES**

EXISTING SIGN LOCATIONS TO BE CONFIRMED IN FIELD.

ONLY FIGURED DIMENSIONS ARE TO BE REFERENCED. ALL DIMENSIONS TO BE CONFIRMED IN FIELD.

ALL TRAFFIC SIGNS AND PAVEMENT MARKINGS MUST COMPLY WITH OTM.

**SIGNAGE NOTES**

REGULATORY SIGNS SHALL NORMALLY BE LOCATED IN ACCORDANCE WITH SECTION 12 (SIGN POSITION) OF BOOK 1B. HOWEVER, SPECIFIC OR ADDITIONAL REQUIREMENTS FOR CERTAIN REGULATORY SIGNS MAY PRE-EMPT OR REVISE DIRECTIONS OR SPECIFICATIONS PRESCRIBED UNDER THE GENERAL STANDARDS IN BOOK 1B. SUCH DEVIATIONS OR EXCEPTIONS FROM THE BOOK 1B LOCATION PRINCIPLES ARE NOTED IN THIS BOOK UNDER THE HEADING "LOCATION CRITERIA" FOR THE RESPECTIVE SIGNS TO WHICH THEY APPLY. IF FOR A GIVEN SIGN, EXCEPTIONS ARE NOT NOTED UNDER THIS HEADING, THE BOOK 1B LOCATION PRINCIPLES APPLY.

**SIGNAGE POSITION NOTES**

SIGNAGE SHOULD CONFORM TO ONTARIO TRAFFIC MANUAL STANDARDS WHERE POSSIBLE.

HORIZONTAL MOUNTING OFFSET

THE BASIC GUIDELINES FOR HORIZONTAL MOUNTING OFFSETS ARE AS FOLLOWS:

- URBAN OR RESIDENTIAL AREAS WITH RAISED CURBS: 30 CM TO 2 M FROM THE CURB LINE.

WHERE RESTRICTED BY PHYSICAL FEATURES SUCH AS CLIFFS, OR STRUCTURE FEATURES SUCH AS BRIDGE SUPPORTS, THE HORIZONTAL OFFSET SHOULD BE AS CLOSE AS POSSIBLE TO THE ABOVE GUIDELINES.

VERTICAL MOUNTING OFFSET

THE BASIC GUIDELINES FOR VERTICAL MOUNTING OFFSETS OF GROUND-MOUNTED SIGNS INCLUDE THE FOLLOWING:

- AREAS WITH NO PEDESTRIANS AND WITHOUT RAISED CURBS: 1.5 M TO 2.5 M FROM OUTER EDGE OF OUTER LANE TO BOTTOM OF PRINCIPAL SIGN, REGARDLESS OF WHETHER THERE IS A TAB SIGN MOUNTED BENEATH PRINCIPAL SIGN.
- AREAS WITH NO PEDESTRIANS AND WITH RAISED CURBS: 1.5 M TO 2.5 M FROM CURB LINE TO BOTTOM OF PRINCIPAL SIGN, REGARDLESS OF WHETHER THERE IS A TAB SIGN MOUNTED BENEATH PRINCIPAL SIGN.
- AREAS WITH PEDESTRIANS: 2 M TO 3 M FROM GROUND ELEVATION AT THE BASE OF THE SIGN POST TO THE BOTTOM OF THE OVERALL SIGN, INCLUDING TAB IF PRESENT.

HORIZONTAL & VERTICAL ANGLING OF SIGN FACE

GENERALLY, SIGNS MUST BE MOUNTED AT APPROXIMATELY RIGHT ANGLES TO THE DIRECTION OF TRAFFIC, FACING THE TRAFFIC THAT THEY ARE INTENDED TO ADDRESS. EXCEPTIONS TO THIS RULE INCLUDE REGULATORY PARKING CONTROL SIGNS. THESE SIGNS SHOULD BE PLACED AT AN ANGLE OF 30 TO 45 DEGREES TO THE FLOW OF TRAFFIC, AND SHOULD ALWAYS BE VISIBLE TO APPROACHING TRAFFIC.

SIGN MOUNTING

MOUNTING TO BE DETERMINED IN FIELD.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING SERVICES AND UTILITIES IN WORKING AREA PRIOR TO CONSTRUCTION AND SHALL PROTECT THESE UTILITIES AND SERVICES TO THE SATISFACTION OF THE CONCERNED UTILITY COMPANIES AND OWNER. DAMAGES BY THE CONTRACTOR SHALL BE RESTORED TO THE SATISFACTION OF THE CONCERNED UTILITY COMPANY AT NO EXPENSE TO THE OWNER

**PAVEMENT MARKING NOTES**

PROVINCIAL LEGISLATION PROVIDES THAT MARKINGS MAY BE PLACED BY THE ROAD AUTHORITY HAVING JURISDICTION FOR THE PURPOSE OF REGULATING, WARNING OR GUIDING TRAFFIC (SECTION 182 OF THE HIGHWAY TRAFFIC ACT (R.S.O. 1990)).

PAVEMENT AND CURB MARKINGS, BEING EXCLUSIVELY WITHIN THE BOUNDARIES OF PUBLIC HIGHWAYS, SHOULD ONLY BE PLACED BY THE ROAD AUTHORITY. DELINEATORS AND OBJECT MARKERS THAT ARE WITHIN THE HIGHWAY RIGHT-OF-WAY ARE SUBJECT TO THE SAME JURISDICTIONAL REGULATIONS.

MARKINGS AND DELINEATION SERVE AN ADVISORY OR WARNING FUNCTION, AND DO NOT HAVE LEGAL FORCE OF THEIR OWN. THEY MAY BE USED TO COMPLEMENT OTHER TRAFFIC CONTROL DEVICES ENFORCEABLE UNDER THE HTA, ITS REGULATIONS, OR A MUNICIPAL BY-LAW, BUT THEIR ENFORCEABILITY DERIVES FROM THE MAIN REGULATORY TRAFFIC CONTROL DEVICE, NOT FROM THE MARKINGS OR DELINEATION. TO AVOID POSSIBLE CONFLICT OR CONFUSION, THE MEANING OF MARKINGS AND DELINEATION SHOULD BE CHECKED AGAINST THE PREVAILING TRAFFIC LAWS AND REGULATIONS BEFORE THEY ARE INSTALLED OR REMOVED

# SIGNAGE LEGEND

| SIGN DETAIL | NAME |
|---|---|
|   | Ra-1<br>STOP SIGN<br>600 x 600 mm |
|   | Rb-93<br>ACCESSIBLE PARKING SIGN<br>450 x 600 mm |
|   | Rb-122A<br>COMMERCIAL LOADING ZONE SIGN<br>450 x 600 mm |
|   | Rb-130<br>ELECTRIC VEHICLE PARKING ONLY SIGN<br>450 x 600 mm |

| NO. | DATE | INITIAL | REVISION DETAIL |
|---|---|---|---|
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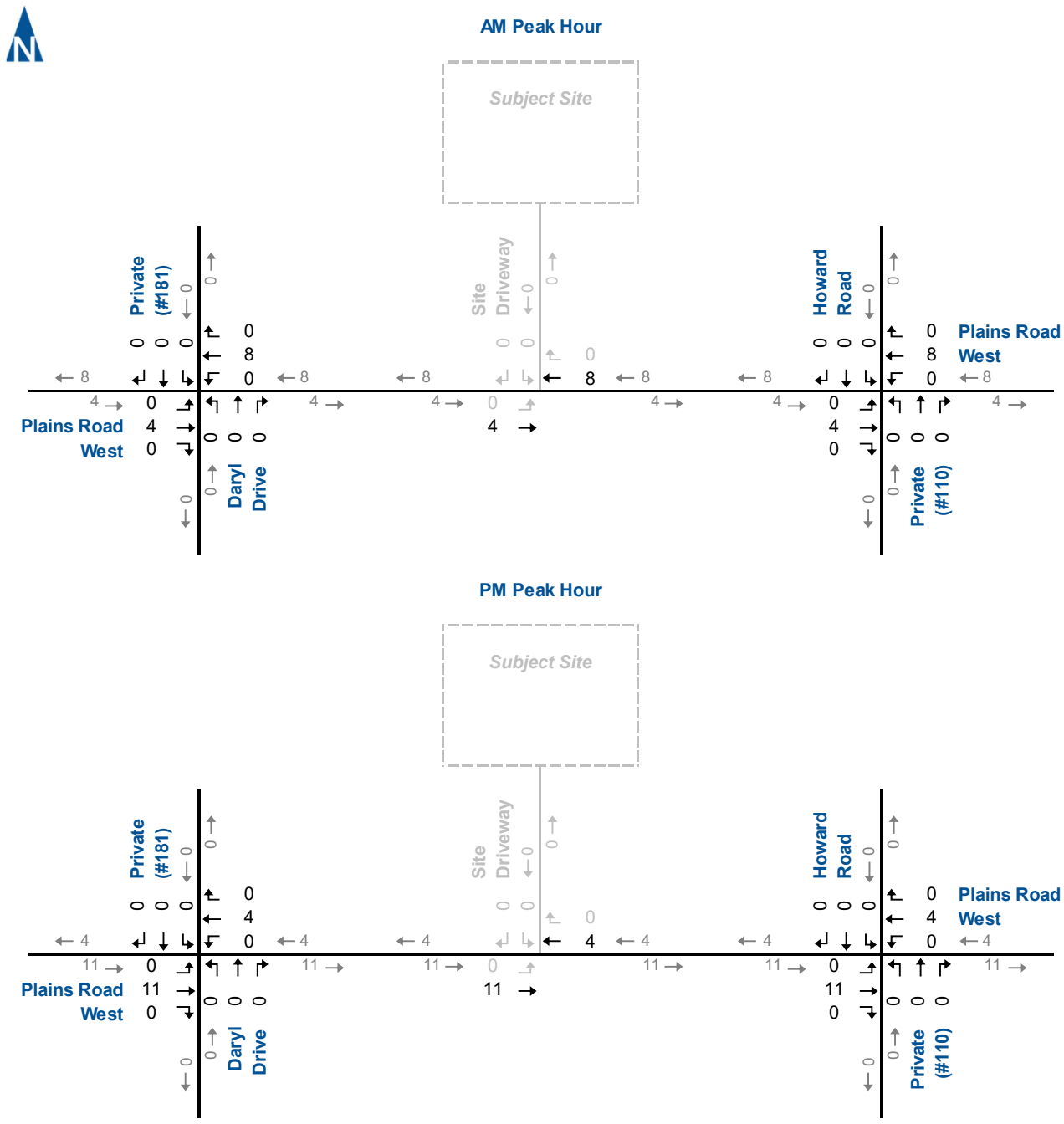
# PAVEMENT & SIGNAGE PLAN
# 141-153 PLAINS ROAD WEST
# CITY OF BURLINGTON

paradigm

| PROJECT NO.: 220615 | DATE: SEPTEMBER 2024 | SCALE: 1:300 | DRAWING NO.: 04 |
|---|---|---|---|
| DRAWN: LC | DESIGN: LC | CHECK: EB | |

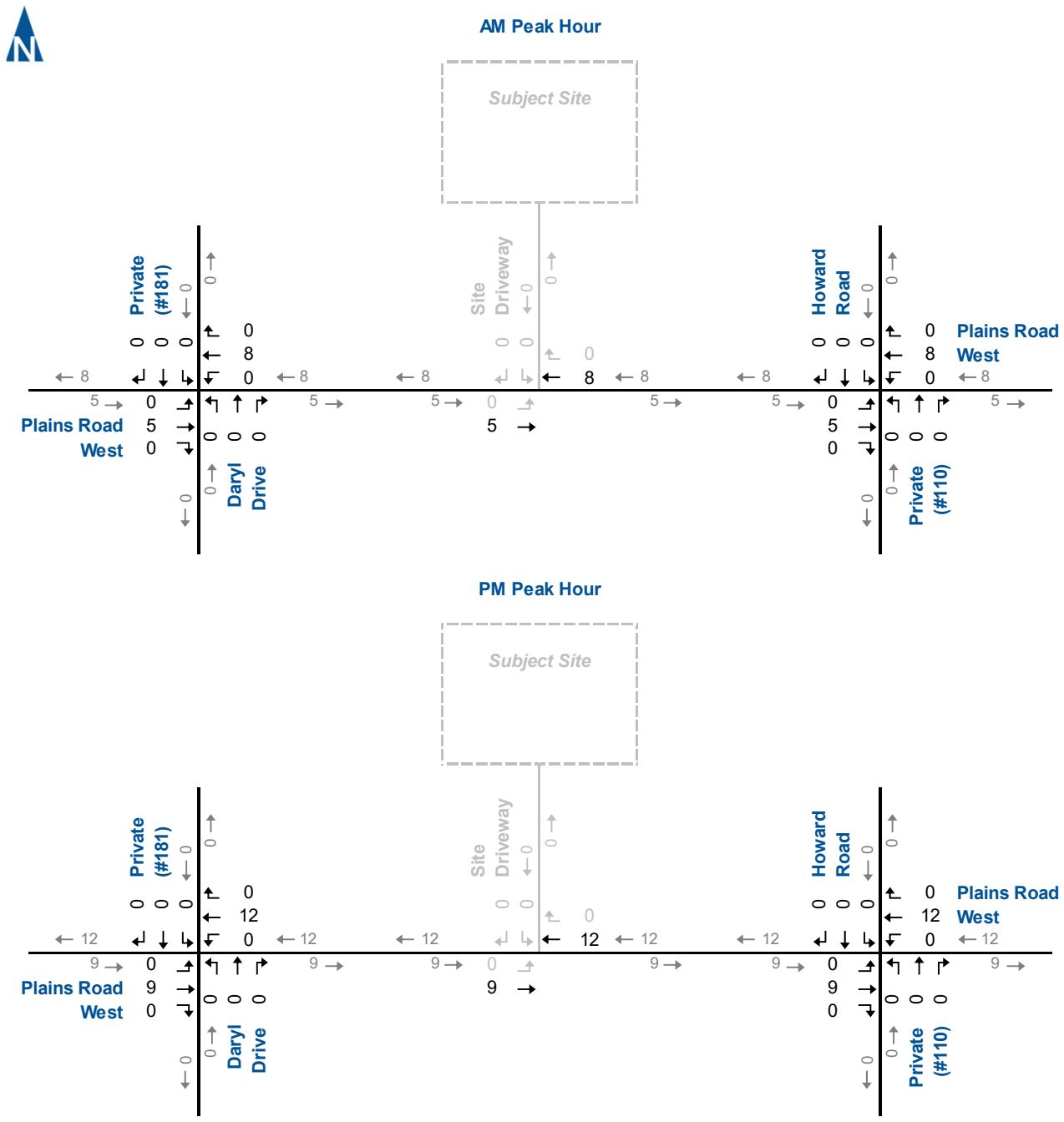
# Appendix F

## Background Development Traffic Forecasts



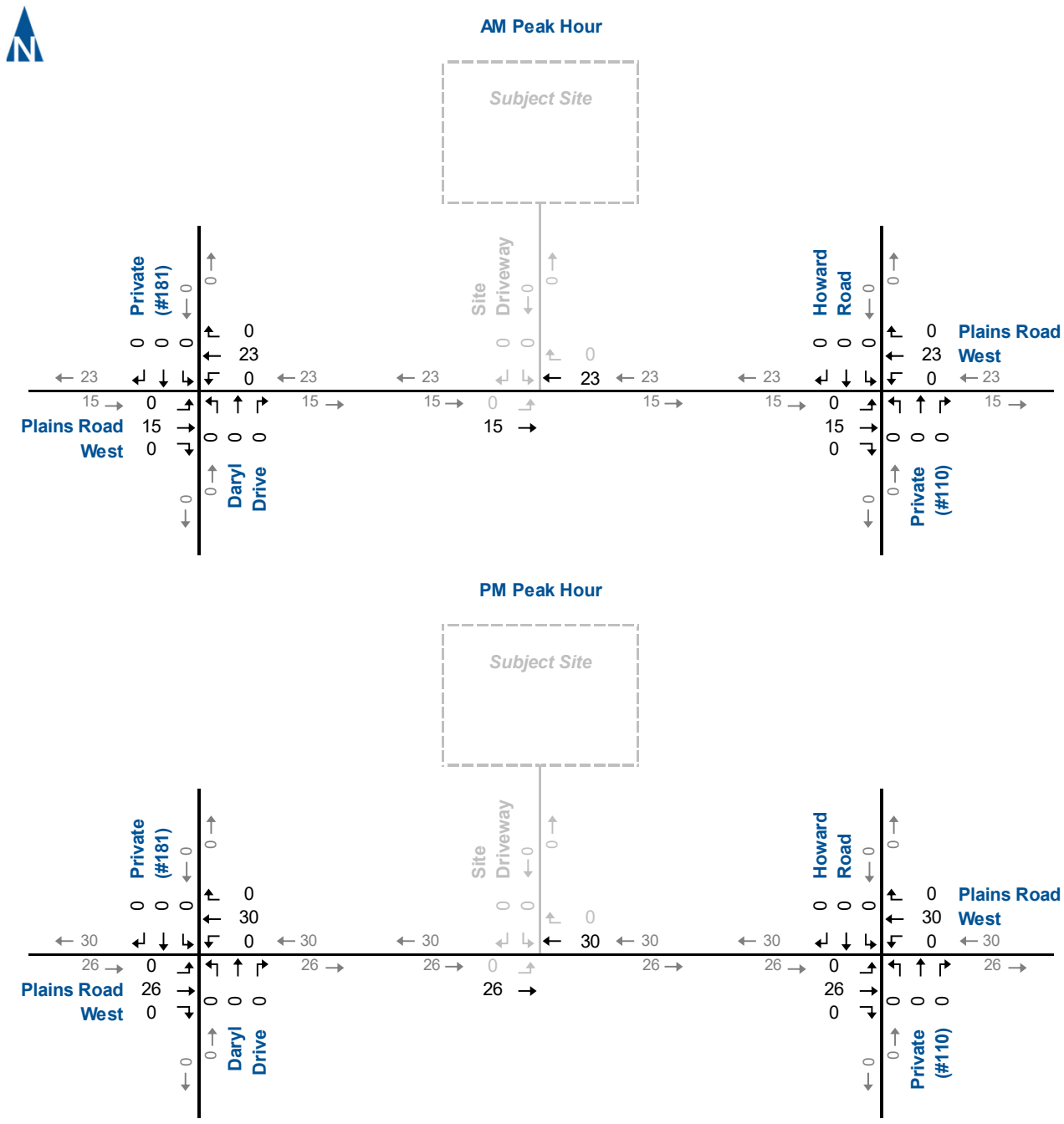

*Not to Scale*

# Background Traffic Forecast
# 35 Plains Road East



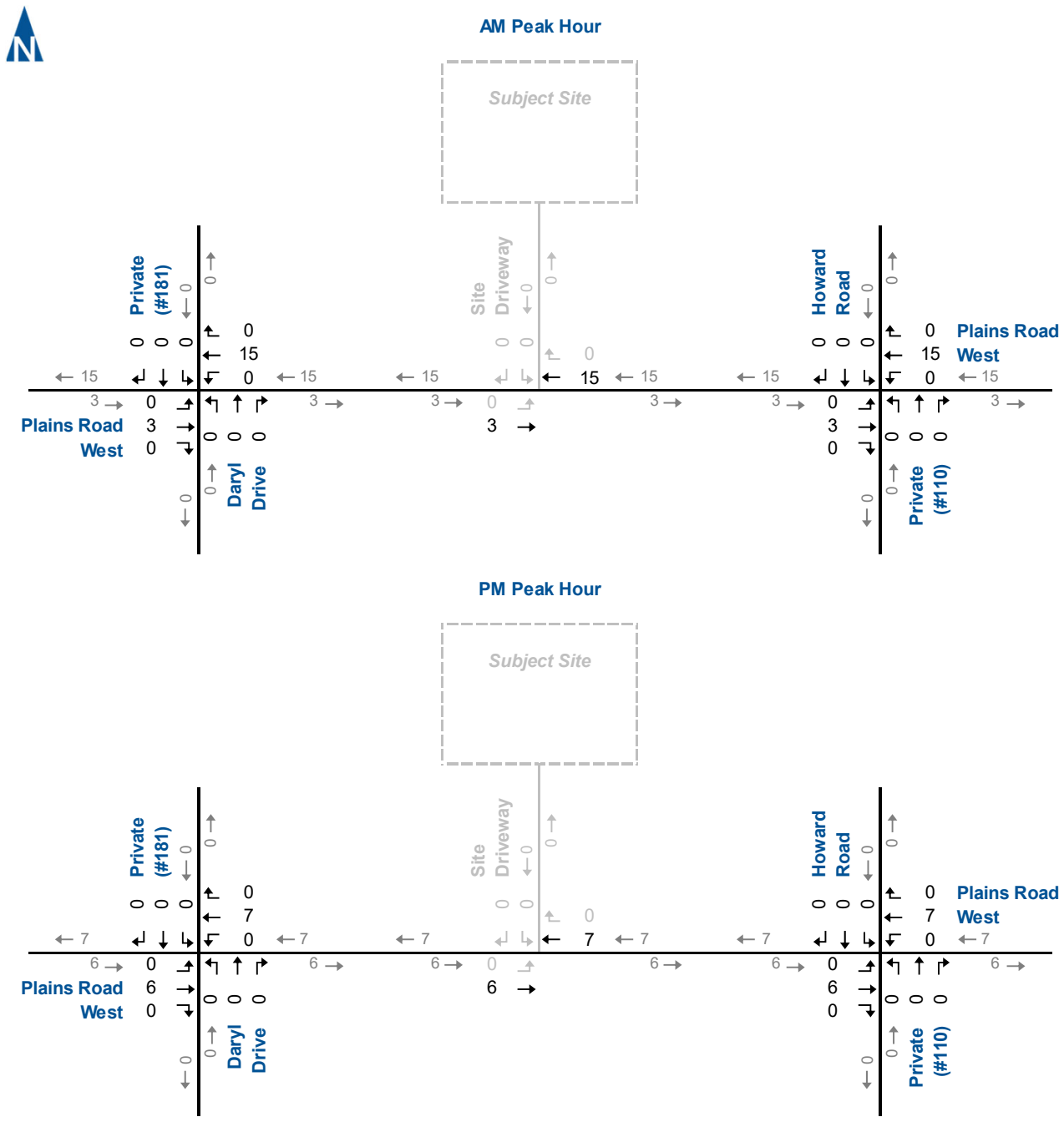

*Not to Scale*

# Background Traffic Forecast
# 40-70 Plains Road East




*Not to Scale*

# Background Traffic Forecast
# 53-71 Plains Road East




*Not to Scale*

# Background Traffic Forecast
# 92 Plains Road East

# Appendix G

## Trip Distribution Model

TTS Results

| Into/Out of Burlington | AM In | AM Out | PM In | PM Out |
|---|---|---|---|---|
| North | 0.00% | 0.00% | 0.00% | 0.00% |
| East | 17.40% | 39.95% | 29.84% | 18.31% |
| South | 0.00% | 0.00% | 0.00% | 0.00% |
| West | 40.65% | 15.97% | 26.07% | 32.05% |
| Total | 58.05% | 55.92% | 55.91% | 50.36% |

| Within Burlington | AM In | AM Out | PM In | PM Out |
|---|---|---|---|---|
| North | 0.00% | 0.00% | 0.00% | 0.00% |
| East | 34.59% | 38.57% | 36.50% | 45.03% |
| South | 0.00% | 0.00% | 0.00% | 0.00% |
| West | 7.35% | 5.51% | 7.59% | 4.61% |
| Total | 41.95% | 44.08% | 44.09% | 49.64% |

| All TTS Zones | AM In | AM Out | PM In | PM Out |
|---|---|---|---|---|
| North | 0.00% | 0.00% | 0.00% | 0.00% |
| East | 51.99% | 78.52% | 66.34% | 63.34% |
| South | 0.00% | 0.00% | 0.00% | 0.00% |
| West | 48.01% | 21.48% | 33.66% | 36.66% |
| Total | 100.00% | 100.00% | 100.00% | 100.00% |

| Distribution by Direction (from TMCs) | | AM Peak Hour IN | AM Peak Hour OUT | PM Peak Hour IN | PM Peak Hour OUT |
|---|---|---|---|---|---|
| North | via Howard Road | 100% | 100% | 100% | 100% |
| South | via Daryl Drive | 100% | 100% | 100% | 100% |
| East | via Plains Road West | 100% | 100% | 100% | 100% |
| West | via Plains Road West | 100% | 100% | 100% | 100% |

Note: Represents percent of traffic assigned to each direction by route
If only one route available for a direction, set value to 100%

| Distribution by Direction | | AM Peak Hour IN | AM Peak Hour OUT | PM Peak Hour IN | PM Peak Hour OUT |
|---|---|---|---|---|---|
| North | via Howard Road | 0.00% | 0.00% | 0.00% | 0.00% |
| South | via Daryl Drive | 0.00% | 0.00% | 0.00% | 0.00% |
| East | via Plains Road West | 51.99% | 78.52% | 66.34% | 63.34% |
| West | via Plains Road West | 48.01% | 21.48% | 33.66% | 36.66% |
| | **Total** | **100.00%** | **100.00%** | **100.00%** | **100.00%** |
| | Pointer Row | 2 | 3 | 4 | 5 |

Cross-multiplication of TTS distribution, and traffic flows in TMC

AM Inbound
Wed Jan 04 2023 15:29:57 GMT-0500 (Eastern Standard Time) - Run Time: 2670ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: Planning district of origin - pd_orig

Filters:
(2006 GTA zone of destination - gta06_dest In 4050,4051,4052
and
Start time of trip - start_time In 0600-0900)

Trip 2016
ROW : gta06_dest
COLUMN : pd_orig

| gta06_dest | pd_orig | total | Jurisdiction | Primary Direction | Percent |
|---|---|---|---|---|---|
| 4050 | 40 | 54 | Burlington | Internal | 2.00% |
| 4050 | 46 | 206 | Hamilton | West | 7.63% |
| 4051 | 36 | 15 | Mississauga | East | 0.56% |
| 4051 | 39 | 51 | Oakville | East | 1.89% |
| 4051 | 40 | 783 | Burlington | Internal | 28.99% |
| 4051 | 42 | 27 | Dundas | West | 1.00% |
| 4051 | 43 | 97 | Ancaster | East | 3.59% |
| 4051 | 46 | 148 | Hamilton | West | 5.48% |
| 4051 | 998 | 14 | External | East | 0.52% |
| 4052 | 1 | 13 | Toronto | East | 0.48% |
| 4052 | 3 | 7 | Toronto | East | 0.26% |
| 4052 | 38 | 15 | Milton | East | 0.56% |
| 4052 | 39 | 46 | Oakville | East | 1.70% |
| 4052 | 40 | 296 | Burlington | Internal | 10.96% |
| 4052 | 41 | 113 | Flamborough | West | 4.18% |
| 4052 | 42 | 102 | Dundas | West | 3.78% |
| 4052 | 43 | 68 | Ancaster | East | 2.52% |
| 4052 | 45 | 83 | Stoney Creek | East | 3.07% |
| 4052 | 46 | 502 | Hamilton | West | 18.59% |
| 4052 | 51 | 45 | Grimsby | East | 1.67% |
| 4052 | 63 | 16 | Waterloo | East | 0.59% |
| | | 2701 | | | |

AM Outbound
Wed Jan 04 2023 15:35:34 GMT-0500 (Eastern Standard Time) - Run Time: 2381ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Planning district of destination - pd_dest

Filters:
(2006 GTA zone of origin - gta06_orig In 4050,4051,4052
and
Start time of trip - start_time In 0600-0900)

Trip 2016
ROW : gta06_orig
COLUMN : pd_dest

| gta06_orig | pd_dest | total | Jurisdiction | Primary Direction | Percent |
|---|---|---|---|---|---|
| 4050 | 1 | 11 | Toronto | East | 0.40% |
| 4050 | 35 | 24 | Brampton | East | 0.88% |
| 4050 | 39 | 47 | Oakville | East | 1.72% |
| 4050 | 40 | 322 | Burlington | Internal | 11.77% |
| 4050 | 41 | 11 | Flamborough | West | 0.40% |
| 4050 | 46 | 84 | Hamilton | West | 3.07% |
| 4050 | 55 | 32 | St. Catharines | East | 1.17% |
| 4050 | 70 | 44 | City of Guelph | East | 1.61% |
| 4050 | 117 | 20 | Muskoka District | East | 0.73% |
| 4051 | 1 | 24 | Toronto | East | 0.88% |
| 4051 | 4 | 26 | Toronto | East | 0.95% |
| 4051 | 9 | 44 | Toronto | East | 1.61% |
| 4051 | 35 | 16 | Brampton | East | 0.58% |
| 4051 | 36 | 171 | Mississauga | East | 6.25% |
| 4051 | 37 | 8 | Halton Hills | East | 0.29% |
| 4051 | 38 | 67 | Milton | East | 2.45% |
| 4051 | 39 | 102 | Oakville | East | 3.73% |
| 4051 | 40 | 584 | Burlington | Internal | 21.35% |
| 4051 | 41 | 18 | Flamborough | West | 0.66% |
| 4051 | 43 | 33 | Ancaster | East | 1.21% |
| 4051 | 46 | 280 | Hamilton | West | 10.23% |
| 4051 | 52 | 33 | Lincoln | East | 1.21% |
| 4051 | 55 | 12 | St. Catharines | East | 0.44% |
| 4051 | 65 | 34 | Cambridge | East | 1.24% |
| 4051 | 122 | 18 | Perth County | East | 0.66% |
| 4052 | 1 | 22 | Toronto | East | 0.80% |
| 4052 | 3 | 17 | Toronto | East | 0.62% |
| 4052 | 9 | 27 | Toronto | East | 0.99% |
| 4052 | 35 | 14 | Brampton | East | 0.51% |
| 4052 | 36 | 66 | Mississauga | East | 2.41% |
| 4052 | 38 | 14 | Milton | East | 0.51% |
| 4052 | 39 | 124 | Oakville | East | 4.53% |
| 4052 | 40 | 300 | Burlington | Internal | 10.96% |
| 4052 | 41 | 22 | Flamborough | West | 0.80% |
| 4052 | 43 | 15 | Ancaster | East | 0.55% |
| 4052 | 46 | 22 | Hamilton | West | 0.80% |
| 4052 | 122 | 13 | Perth County | East | 0.48% |
| 4052 | 998 | 15 | External | East | 0.55% |
| | | 2736 | | | |

| | AM In | AM Out | PM In | PM Out |
|---|---|---|---|---|
| North | 0.00% | 0.00% | 0.00% | 0.00% |
| East | 17.40% | 39.95% | 29.84% | 18.31% |
| South | 0.00% | 0.00% | 0.00% | 0.00% |
| West | 40.65% | 15.97% | 26.07% | 32.05% |
| **Internal** | 41.95% | 44.08% | 44.09% | 49.64% |
| Total | **100.00%** | **100.00%** | **100.00%** | **100.00%** |

PM Inbound
Wed Jan 04 2023 15:30:49 GMT-0500 (Eastern Standard Time) - Run Time: 2800ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: Planning district of origin - pd_orig

Filters:
(2006 GTA zone of destination - gta06_dest In 4050,4051,4052
and
Start time of trip - start_time In 1500-1800)

Trip 2016
ROW : gta06_dest
COLUMN : pd_orig

| gta06_dest | pd_orig | total | Jurisdiction | Primary Direction | Percent |
|---|---|---|---|---|---|
| 4050 | 1 | 11 | Toronto | East | 0.25% |
| 4050 | 36 | 111 | Mississauga | East | 2.51% |
| 4050 | 39 | 47 | Oakville | East | 1.06% |
| 4050 | 40 | 202 | Burlington | Internal | 4.56% |
| 4050 | 41 | 22 | Flamborough | West | 0.50% |
| 4050 | 43 | 21 | Ancaster | East | 0.47% |
| 4050 | 45 | 33 | Stoney Creek | East | 0.75% |
| 4050 | 46 | 171 | Hamilton | West | 3.86% |
| 4050 | 55 | 32 | St. Catharines | East | 0.72% |
| 4050 | 65 | 47 | Cambridge | East | 1.06% |
| 4050 | 70 | 44 | City of Guelph | East | 0.99% |
| 4051 | 1 | 24 | Toronto | East | 0.54% |
| 4051 | 8 | 13 | Toronto | East | 0.29% |
| 4051 | 9 | 44 | Toronto | East | 0.99% |
| 4051 | 13 | 13 | Toronto | East | 0.29% |
| 4051 | 33 | 30 | Vaughan | East | 0.68% |
| 4051 | 35 | 16 | Brampton | East | 0.36% |
| 4051 | 36 | 60 | Mississauga | East | 1.36% |
| 4051 | 38 | 29 | Milton | East | 0.66% |
| 4051 | 39 | 140 | Oakville | East | 3.16% |
| 4051 | 40 | 1180 | Burlington | Internal | 26.65% |
| 4051 | 41 | 107 | Flamborough | West | 2.42% |
| 4051 | 42 | 229 | Dundas | West | 5.17% |
| 4051 | 43 | 38 | Ancaster | East | 0.86% |
| 4051 | 45 | 90 | Stoney Creek | East | 2.03% |
| 4051 | 46 | 302 | Hamilton | West | 6.82% |
| 4051 | 65 | 12 | Cambridge | East | 0.27% |
| 4052 | 1 | 49 | Toronto | East | 1.11% |
| 4052 | 8 | 13 | Toronto | East | 0.29% |
| 4052 | 31 | 18 | Markham | East | 0.41% |
| 4052 | 36 | 119 | Mississauga | East | 2.69% |
| 4052 | 39 | 71 | Oakville | East | 1.60% |
| 4052 | 40 | 570 | Burlington | Internal | 12.88% |
| 4052 | 41 | 82 | Flamborough | West | 1.85% |
| 4052 | 42 | 13 | Dundas | West | 0.29% |
| 4052 | 43 | 41 | Ancaster | East | 0.93% |
| 4052 | 44 | 81 | Glanbrook | East | 1.83% |
| 4052 | 45 | 50 | Stoney Creek | East | 1.13% |
| 4052 | 46 | 228 | Hamilton | West | 5.15% |
| 4052 | 61 | 24 | West Lincoln | East | 0.54% |
| | | 4427 | | | |

PM Outbound
Wed Jan 04 2023 15:38:19 GMT-0500 (Eastern Standard Time) - Run Time: 2459ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: Planning district of destination - pd_dest

Filters:
(2006 GTA zone of origin - gta06_orig In 4050,4051,4052
and
Start time of trip - start_time In 1500-1800)

Trip 2016
ROW : gta06_orig
COLUMN : pd_dest

| gta06_orig | pd_dest | total | Jurisdiction | Primary Direction | Percent |
|---|---|---|---|---|---|
| 4050 | 8 | 20 | Toronto | East | 0.63% |
| 4050 | 38 | 42 | Milton | East | 1.31% |
| 4050 | 40 | 115 | Burlington | Internal | 3.60% |
| 4050 | 41 | 13 | Flamborough | West | 0.41% |
| 4050 | 46 | 194 | Hamilton | West | 6.07% |
| 4050 | 51 | 21 | Grimsby | East | 0.66% |
| 4051 | 36 | 9 | Mississauga | East | 0.28% |
| 4051 | 39 | 22 | Oakville | East | 0.69% |
| 4051 | 40 | 861 | Burlington | Internal | 26.95% |
| 4051 | 41 | 68 | Flamborough | West | 2.13% |
| 4051 | 42 | 29 | Dundas | West | 0.91% |
| 4051 | 43 | 126 | Ancaster | East | 3.94% |
| 4051 | 44 | 68 | Glanbrook | East | 2.13% |
| 4051 | 46 | 141 | Hamilton | West | 4.41% |
| 4051 | 70 | 13 | City of Guelph | East | 0.41% |
| 4052 | 1 | 25 | Toronto | East | 0.78% |
| 4052 | 38 | 15 | Milton | East | 0.47% |
| 4052 | 39 | 46 | Oakville | East | 1.44% |
| 4052 | 40 | 610 | Burlington | Internal | 19.09% |
| 4052 | 41 | 33 | Flamborough | West | 1.03% |
| 4052 | 42 | 34 | Dundas | West | 1.06% |
| 4052 | 43 | 19 | Ancaster | East | 0.59% |
| 4052 | 45 | 150 | Stoney Creek | East | 4.69% |
| 4052 | 46 | 512 | Hamilton | West | 16.03% |
| 4052 | 70 | 9 | City of Guelph | East | 0.28% |
| | | 3195 | | | |

| PD | District |
|---|---|
| 1 | Toronto |
| 2 | Toronto |
| 3 | Toronto |
| 4 | Toronto |
| 5 | Toronto |
| 6 | Toronto |
| 7 | Toronto |
| 8 | Toronto |
| 9 | Toronto |
| 10 | Toronto |
| 11 | Toronto |
| 12 | Toronto |
| 13 | Toronto |
| 14 | Toronto |
| 15 | Toronto |
| 16 | Toronto |
| 17 | Brock |
| 18 | Uxbridge |
| 19 | Scugog |
| 20 | Pickering |
| 21 | Ajax |
| 22 | Whitby |
| 23 | Oshawa |
| 24 | Clarington |
| 25 | Georgina |
| 26 | East Gwillibury |
| 27 | Newmarket |
| 28 | Aurora |
| 29 | Richmond Hill |
| 30 | Whitchurch-Stoufville |
| 31 | Markham |
| 32 | King |
| 33 | Vaughan |
| 34 | Caledon |
| 35 | Brampton |
| 36 | Mississauga |
| 37 | Halton Hills |
| 38 | Milton |
| 39 | Oakville |
| 40 | Burlington |
| 41 | Flamborough |
| 42 | Dundas |
| 43 | Ancaster |
| 44 | Glanbrook |
| 45 | Stoney Creek |
| 46 | Hamilton |
| 47 | Unassigned |
| 48 | Unassigned |
| 49 | Unassigned |
| 50 | Unassigned |
| 51 | Grimsby |
| 52 | Lincoln |
| 53 | Pelham |
| 54 | NOTL |
| 55 | St. Catharines |
| 56 | Thorold |
| 57 | Niagara Falls |
| 58 | Welland |
| 59 | Port Colbourne |
| 60 | Fort Erie |
| 61 | West Lincoln |
| 62 | Wainfleet |
| 63 | Waterloo |
| 64 | Kitchener |
| 65 | Cambridge |
| 66 | North Dumfries |
| 67 | Wilmot |
| 68 | Wellesley |
| 69 | Woolwich |
| 70 | City of Guelph |
| 71 | Puslinch |
| 72 | Guelph/Eramosa |
| 73 | Centre Wellington |
| 74 | Elora |
| 75 | Nichol |
| 76 | Fergus |
| 77 | West Garafraxa |
| 78 | Eramosa |
| 79 | Erin |
| 80 | Orangeville |
| 81 | Barrie |
| 82 | Innisfil |
| 83 | Bradford-West Gwillimbury |
| 84 | Tecumseth |
| 85 | Adjala-Tosorontio |
| 86 | Essa |
| 87 | Clearview |
| 88 | Springwater |
| 89 | Kawartha Lakes |
| 90 | OPS |
| 91 | Manvers |
| 92 | Mariposa |
| 93 | Eldon |
| 94 | Carden |
| 95 | Dalton |
| 96 | L-O-L |
| 97 | Somerville |
| 98 | Bexley |
| 99 | Fenelon |
| 100 | Varulam |
| 101 | Bobcageon |
| 102 | Emily |
| 103 | Peterborough |
| 104 | Cavan-Millbrook-North Monaghan |
| 105 | North Monaghan |
| 106 | Otonabee-South |
| 107 | Otonabee |
| 108 | Asphodel-Norwood |
| 109 | Drummer-Douro |
| 110 | Douro |
| 111 | Lakefiled-Smith-Ennismore |
| 112 | Ennismore |
| 113 | Northumberland County |
| 114 | Rest of Peterborough County |
| 115 | Hastings County |
| 116 | Hailburton County |
| 117 | Muskoka District |
| 118 | Rest of Simcoe |
| 119 | Dufferin County |
| 120 | Grey County |
| 121 | Wellington County |
| 122 | Perth County |
| 123 | Oxford County |
| 124 | Brant County |
| 125 | Haldimand and Norfolk County |
| 126 | Unassigned |
| 127 | Collingwood |
| 128 | Wasaga Beach |
| 129 | Tiny |
| 130 | Penetanguishene |
| 131 | Midland |
| 132 | Tay |
| 133 | Oro-Medonte |
| 134 | Severn |
| 135 | Ramara |
| 136 | Orillia |
| 137 | Unassigned |
| 138 | Unassigned |
| 139 | Unassigned |
| 140 | Mulmur |
| 141 | Shelburne |
| 142 | Amaranth |
| 143 | Melancthon |
| 144 | Mono |
| 145 | East Luther Grand Valley |
| 146 | East Gararaxa |
| 147 | Brantford |
| 888 | No Usual Place of Work or School |
| 997 | External Undefined |
| 998 | External |
| 999 | Unknown |

AM Inbound
Wed Jan 04 2023 16:00:01 GMT-0500 (Eastern Standard Time) - Run Time: 2465ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig

Filters:
(2006 GTA zone of destination - gta06_dest In 4050,4051,4052
and
Start time of trip - start_time In 0600-0900
and
Planning district of origin - pd_orig In 40)

Trip 2016
ROW : gta06_dest
COLUMN : gta06_orig

| gta06_dest | gta06_orig | total | Primary Direction | From TTS (PD) % | 41.95% Weighting |
|---|---|---|---|---|---|
| 4050 | 4051 | 33 | East | 2.91% | 1.22% |
| 4050 | 4057 | 13 | East | 1.15% | 0.48% |
| 4050 | 4189 | 9 | East | 0.79% | 0.33% |
| 4051 | 4050 | 23 | West | 2.03% | 0.85% |
| 4051 | 4051 | 62 | East | 5.46% | 2.29% |
| 4051 | 4052 | 76 | West | 6.70% | 2.81% |
| 4051 | 4054 | 92 | East | 8.11% | 3.40% |
| 4051 | 4055 | 163 | East | 14.36% | 6.02% |
| 4051 | 4057 | 40 | East | 3.52% | 1.48% |
| 4051 | 4059 | 78 | East | 6.87% | 2.88% |
| 4051 | 4064 | 15 | East | 1.32% | 0.55% |
| 4051 | 4088 | 71 | East | 6.26% | 2.62% |
| 4051 | 4091 | 58 | East | 5.11% | 2.14% |
| 4051 | 4092 | 98 | East | 8.63% | 3.62% |
| 4051 | 4190 | 8 | East | 0.70% | 0.30% |
| 4052 | 4050 | 66 | West | 5.81% | 2.44% |
| 4052 | 4051 | 18 | East | 1.59% | 0.67% |
| 4052 | 4052 | 34 | West | 3.00% | 1.26% |
| 4052 | 4062 | 10 | East | 0.88% | 0.37% |
| 4052 | 4074 | 8 | East | 0.70% | 0.30% |
| 4052 | 4084 | 46 | East | 4.05% | 1.70% |
| 4052 | 4088 | 14 | East | 1.23% | 0.52% |
| 4052 | 4089 | 79 | East | 6.96% | 2.92% |
| 4052 | 4091 | 13 | East | 1.15% | 0.48% |
| 4052 | 4188 | 8 | East | 0.70% | 0.30% |
| | | 1135 | | | |

AM Outbound
Wed Jan 04 2023 16:02:18 GMT-0500 (Eastern Standard Time) - Run Time: 2364ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
(2006 GTA zone of origin - gta06_orig In 4050,4051,4052
and
Start time of trip - start_time In 0600-0900
and
Planning district of destination - pd_dest In 40)

Trip 2016
ROW : gta06_orig
COLUMN : gta06_dest

| gta06_orig | gta06_dest | total | Primary Direction | From TTS (PD) % | 44.08% Weighting |
|---|---|---|---|---|---|
| 4050 | 4051 | 23 | East | 1.90% | 0.84% |
| 4050 | 4052 | 66 | West | 5.46% | 2.41% |
| 4050 | 4053 | 55 | East | 4.55% | 2.01% |
| 4050 | 4054 | 11 | East | 0.91% | 0.40% |
| 4050 | 4057 | 13 | East | 1.08% | 0.47% |
| 4050 | 4063 | 18 | East | 1.49% | 0.66% |
| 4050 | 4064 | 11 | East | 0.91% | 0.40% |
| 4050 | 4068 | 55 | East | 4.55% | 2.01% |
| 4050 | 4076 | 47 | East | 3.89% | 1.71% |
| 4050 | 4091 | 24 | East | 1.99% | 0.88% |
| 4051 | 4050 | 33 | West | 2.73% | 1.20% |
| 4051 | 4051 | 62 | East | 5.13% | 2.26% |
| 4051 | 4052 | 18 | West | 1.49% | 0.66% |
| 4051 | 4053 | 70 | East | 5.79% | 2.55% |
| 4051 | 4057 | 41 | East | 3.39% | 1.50% |
| 4051 | 4059 | 11 | East | 0.91% | 0.40% |
| 4051 | 4061 | 13 | East | 1.08% | 0.47% |
| 4051 | 4062 | 26 | East | 2.15% | 0.95% |
| 4051 | 4063 | 26 | East | 2.15% | 0.95% |
| 4051 | 4064 | 39 | East | 3.23% | 1.42% |
| 4051 | 4068 | 42 | East | 3.48% | 1.53% |
| 4051 | 4071 | 24 | East | 1.99% | 0.88% |
| 4051 | 4078 | 6 | East | 0.50% | 0.22% |
| 4051 | 4080 | 72 | East | 5.96% | 2.63% |
| 4051 | 4082 | 13 | East | 1.08% | 0.47% |
| 4051 | 4088 | 21 | East | 1.74% | 0.77% |
| 4051 | 4091 | 42 | East | 3.48% | 1.53% |
| 4051 | 4092 | 13 | East | 1.08% | 0.47% |
| 4051 | 4097 | 12 | East | 0.99% | 0.44% |
| 4052 | 4051 | 76 | East | 6.29% | 2.77% |
| 4052 | 4052 | 34 | West | 2.81% | 1.24% |
| 4052 | 4053 | 27 | East | 2.24% | 0.99% |
| 4052 | 4056 | 22 | East | 1.82% | 0.80% |
| 4052 | 4063 | 52 | East | 4.30% | 1.90% |
| 4052 | 4068 | 48 | East | 3.97% | 1.75% |
| 4052 | 4078 | 22 | East | 1.82% | 0.80% |
| 4052 | 4080 | 8 | East | 0.66% | 0.29% |
| 4052 | 4190 | 12 | East | 0.99% | 0.44% |
| | | 1208 | | | |

| | AM In | AM Out | PM In | PM Out |
|---|---|---|---|---|
| North | 0.00% | 0.00% | 0.00% | 0.00% |
| East | 34.59% | 38.57% | 36.50% | 45.03% |
| South | 0.00% | 0.00% | 0.00% | 0.00% |
| West | 7.35% | 5.51% | 7.59% | 4.61% |
| Total | 41.95% | 44.08% | 44.09% | 49.64% |
| Internal | 41.95% | 44.08% | 44.09% | 49.64% |
| Check | TRUE | TRUE | TRUE | TRUE |

PM Inbound
Wed Jan 04 2023 15:52:05 GMT-0500 (Eastern Standard Time) - Run Time: 2320ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest
Column: 2006 GTA zone of origin - gta06_orig

Filters:
(2006 GTA zone of destination - gta06_dest In 4050,4051,4052
and
Start time of trip - start_time In 1500-1800
and
Planning district of origin - pd_orig In 40)

Trip 2016
ROW : gta06_dest
COLUMN : gta06_orig

| gta06_dest | gta06_orig | total | Primary Direction | From TTS (PD) % | 44.09% Weighting |
|---|---|---|---|---|---|
| 4050 | 4053 | 53 | East | 2.72% | 1.20% |
| 4050 | 4054 | 11 | East | 0.56% | 0.25% |
| 4050 | 4057 | 44 | East | 2.26% | 0.99% |
| 4050 | 4060 | 19 | East | 0.97% | 0.43% |
| 4050 | 4062 | 44 | East | 2.26% | 0.99% |
| 4050 | 4063 | 18 | East | 0.92% | 0.41% |
| 4050 | 4190 | 13 | East | 0.67% | 0.29% |
| 4051 | 4051 | 74 | West | 3.79% | 1.67% |
| 4051 | 4052 | 91 | West | 4.66% | 2.06% |
| 4051 | 4053 | 119 | East | 6.10% | 2.69% |
| 4051 | 4054 | 100 | East | 5.13% | 2.26% |
| 4051 | 4056 | 28 | East | 1.44% | 0.63% |
| 4051 | 4057 | 110 | East | 5.64% | 2.49% |
| 4051 | 4059 | 11 | East | 0.56% | 0.25% |
| 4051 | 4060 | 43 | East | 2.20% | 0.97% |
| 4051 | 4061 | 29 | East | 1.49% | 0.66% |
| 4051 | 4062 | 36 | East | 1.85% | 0.81% |
| 4051 | 4063 | 51 | East | 2.61% | 1.15% |
| 4051 | 4068 | 12 | East | 0.62% | 0.27% |
| 4051 | 4069 | 23 | East | 1.18% | 0.52% |
| 4051 | 4072 | 25 | East | 1.28% | 0.57% |
| 4051 | 4073 | 43 | East | 2.20% | 0.97% |
| 4051 | 4079 | 14 | East | 0.72% | 0.32% |
| 4051 | 4080 | 57 | East | 2.92% | 1.29% |
| 4051 | 4082 | 13 | East | 0.67% | 0.29% |
| 4051 | 4086 | 116 | East | 5.95% | 2.62% |
| 4051 | 4088 | 71 | East | 3.64% | 1.60% |
| 4051 | 4091 | 53 | East | 2.72% | 1.20% |
| 4051 | 4092 | 24 | West | 1.23% | 0.54% |
| 4051 | 4093 | 13 | East | 0.67% | 0.29% |
| 4051 | 4189 | 23 | East | 1.18% | 0.52% |
| 4052 | 4051 | 68 | West | 3.49% | 1.54% |
| 4052 | 4052 | 79 | West | 4.05% | 1.79% |
| 4052 | 4053 | 35 | East | 1.79% | 0.79% |
| 4052 | 4055 | 13 | East | 0.67% | 0.29% |
| 4052 | 4057 | 69 | East | 3.54% | 1.56% |
| 4052 | 4059 | 13 | East | 0.67% | 0.29% |
| 4052 | 4060 | 75 | East | 3.84% | 1.70% |
| 4052 | 4063 | 51 | East | 2.61% | 1.15% |
| 4052 | 4064 | 14 | East | 0.72% | 0.32% |
| 4052 | 4065 | 26 | East | 1.33% | 0.59% |
| 4052 | 4068 | 48 | East | 2.46% | 1.08% |
| 4052 | 4082 | 9 | East | 0.46% | 0.20% |
| 4052 | 4084 | 36 | East | 1.85% | 0.81% |
| 4052 | 4085 | 9 | East | 0.46% | 0.20% |
| 4052 | 4088 | 13 | East | 0.67% | 0.29% |
| 4052 | 4190 | 12 | East | 0.62% | 0.27% |
| | | 1951 | | | |

PM Outbound
Wed Jan 04 2023 16:02:32 GMT-0500 (Eastern Standard Time) - Run Time: 2298ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of origin - gta06_orig
Column: 2006 GTA zone of destination - gta06_dest

Filters:
(2006 GTA zone of origin - gta06_orig In 4050,4051,4052
and
Start time of trip - start_time In 1500-1800
and
Planning district of destination - pd_dest In 40)

Trip 2016
ROW : gta06_orig
COLUMN : gta06_dest

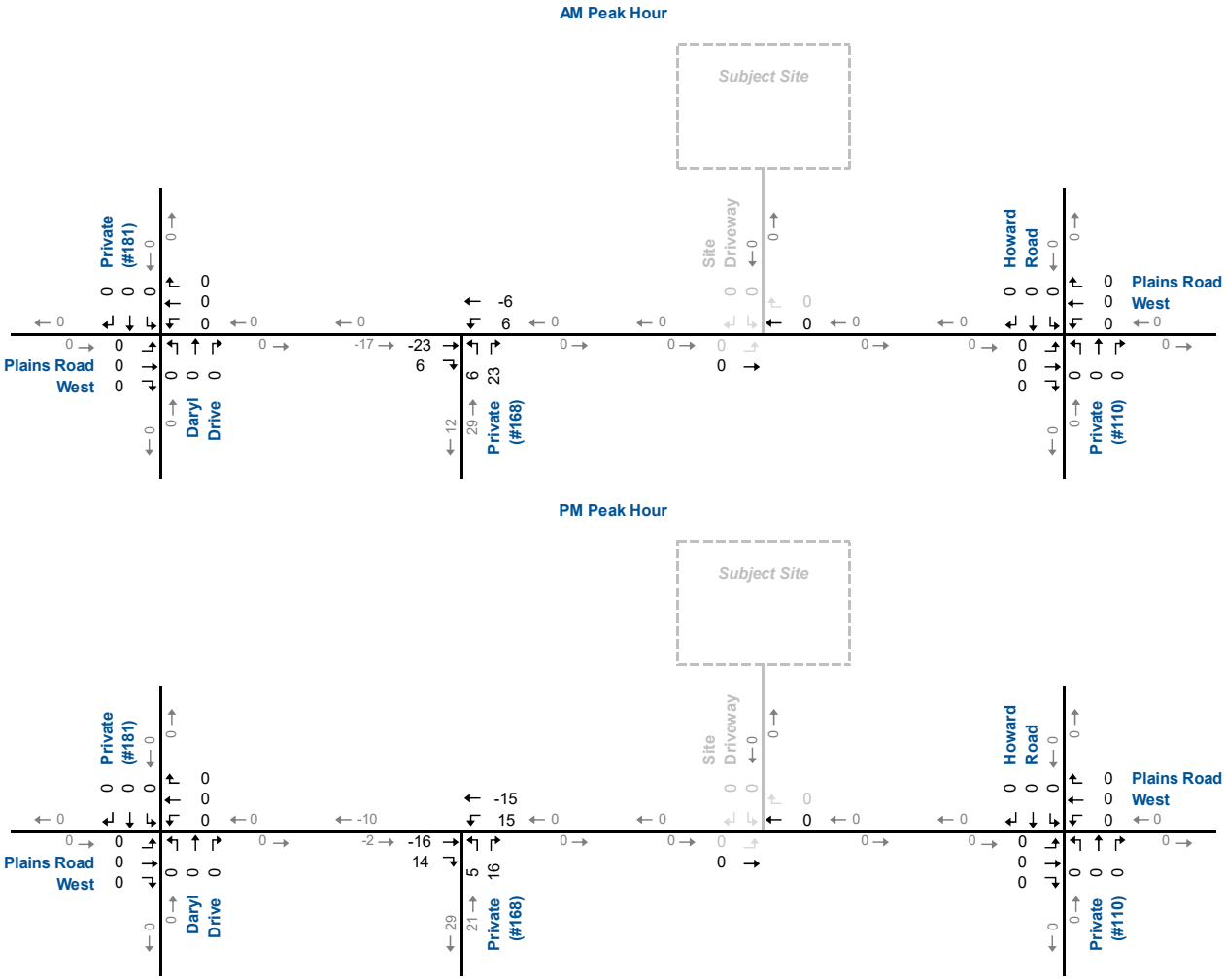
| gta06_orig | gta06_dest | total | Primary Direction | From TTS (PD) % | 49.64% Weighting |
|---|---|---|---|---|---|
| 4050 | 4057 | 68 | East | 4.29% | 2.13% |
| 4050 | 4062 | 22 | East | 1.39% | 0.69% |
| 4050 | 4068 | 24 | East | 1.52% | 0.75% |
| 4051 | 4051 | 74 | East | 4.67% | 2.32% |
| 4051 | 4052 | 68 | West | 4.29% | 2.13% |
| 4051 | 4053 | 13 | East | 0.82% | 0.41% |
| 4051 | 4054 | 160 | East | 10.10% | 5.01% |
| 4051 | 4055 | 85 | East | 5.37% | 2.66% |
| 4051 | 4057 | 18 | East | 1.14% | 0.56% |
| 4051 | 4059 | 34 | East | 2.15% | 1.07% |
| 4051 | 4060 | 34 | East | 2.15% | 1.07% |
| 4051 | 4061 | 36 | East | 2.27% | 1.13% |
| 4051 | 4062 | 23 | East | 1.45% | 0.72% |
| 4051 | 4064 | 15 | East | 0.95% | 0.47% |
| 4051 | 4065 | 12 | East | 0.76% | 0.38% |
| 4051 | 4067 | 32 | East | 2.02% | 1.00% |
| 4051 | 4072 | 12 | East | 0.76% | 0.38% |
| 4051 | 4073 | 22 | East | 1.39% | 0.69% |
| 4051 | 4088 | 17 | East | 1.07% | 0.53% |
| 4051 | 4089 | 23 | East | 1.45% | 0.72% |
| 4051 | 4091 | 84 | East | 5.30% | 2.63% |
| 4051 | 4092 | 73 | East | 4.61% | 2.29% |
| 4051 | 4189 | 23 | East | 1.45% | 0.72% |
| 4052 | 4051 | 91 | East | 5.74% | 2.85% |
| 4052 | 4052 | 79 | West | 4.99% | 2.48% |
| 4052 | 4053 | 70 | East | 4.42% | 2.19% |
| 4052 | 4054 | 32 | East | 2.02% | 1.00% |
| 4052 | 4055 | 31 | East | 1.96% | 0.97% |
| 4052 | 4057 | 27 | East | 1.70% | 0.85% |
| 4052 | 4060 | 36 | East | 2.27% | 1.13% |
| 4052 | 4063 | 35 | East | 2.21% | 1.10% |
| 4052 | 4064 | 19 | East | 1.20% | 0.60% |
| 4052 | 4074 | 31 | East | 1.96% | 0.97% |
| 4052 | 4084 | 11 | East | 0.69% | 0.34% |
| 4052 | 4088 | 44 | East | 2.78% | 1.38% |
| 4052 | 4089 | 79 | East | 4.99% | 2.48% |
| 4052 | 4091 | 13 | East | 0.82% | 0.41% |
| 4052 | 4093 | 14 | East | 0.88% | 0.44% |
| | | 1584 | | | |

# Appendix H

## 168 Plains Road West Trip Generation and Assignment

**(220615) - 141-153 Plains Road West TIS, PS, and ACR**
**Trip Generation Estimates**
**945 Daryl Drive and 168 Plains Road West**

| LUC | Units | GFA (sq. ft.) | Address | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Rate | In | Out | Total | Rate | In | Out | Total |
| 221 (Multifamily Housing (Mid-Rise)) Not Close to Rail Transit | 100 | N/A | 945 Daryl Drive | Eqn. | 7 | 25 | 32 | Eqn. | 24 | 15 | 39 |
| 222 (Multifamily Housing (High-Rise)) Not Close to Rail Transit | 149 | N/A | 168 Plains Road West | Eqn. | 18 | 34 | 52 | Eqn. | 35 | 27 | 62 |
| | | | **Total Trip Generation** | | **25** | **59** | **84** | | **59** | **42** | **101** |




*Not to Scale*

Note: 50% of site traffic is assumed to use the driveway connection to Daryl Drive

# 168 Plains Road East
# Trip Assignment

# Appendix I

## 2028 Background Traffic Operations Reports

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 1295 | 32 | 12 | 377 | 5 | 30 | 0 | 49 | 15 | 1 | 2 |
| Future Volume (vph) | 2 | 1295 | 32 | 12 | 377 | 5 | 30 | 0 | 49 | 15 | 1 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 15.0 | | | 7.5 | | |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 0.98 | | | 0.99 | |
| Frt | | 0.996 | | | 0.998 | | | 0.850 | | | 0.986 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.960 | |
| Satd. Flow (prot) | 1805 | 3487 | 0 | 1656 | 3369 | 0 | 1687 | 1529 | 0 | 0 | 1794 | 0 |
| Flt Permitted | 0.509 | | | 0.147 | | | 0.816 | | | | 0.752 | |
| Satd. Flow (perm) | 961 | 3487 | 0 | 256 | 3369 | 0 | 1433 | 1529 | 0 | 0 | 1402 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 5 | | | 2 | | | 67 | | | 2 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 41 | | | 50 | |
| Link Distance (m) | | 134.7 | | | 261.7 | | | 209.2 | | | 59.5 | |
| Travel Time (s) | | 8.1 | | | 15.7 | | | 18.4 | | | 4.3 | |
| Confl. Peds. (#/hr) | 9 | | 24 | 24 | | 9 | 13 | | 4 | 4 | | 13 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 9% | 7% | 0% | 7% | 0% | 4% | 0% | 0% | 0% |
| Adj. Flow (vph) | 2 | 1408 | 35 | 13 | 410 | 5 | 33 | 0 | 53 | 16 | 1 | 2 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 2 | 1443 | 0 | 13 | 415 | 0 | 33 | 53 | 0 | 0 | 19 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

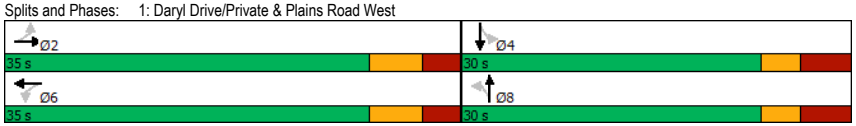




| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 38.0 | 38.0 | | 38.0 | 38.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (s) | 35.0 | 35.0 | | 35.0 | 35.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (%) | 53.8% | 53.8% | | 53.8% | 53.8% | | 46.2% | 46.2% | | 46.2% | 46.2% | |
| Maximum Green (s) | 28.0 | 28.0 | | 28.0 | 28.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | |
| Yellow Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | Max | Max | | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 15.0 | 15.0 | | 15.0 | 15.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 36.8 | 36.8 | | 36.8 | 36.8 | | 8.1 | 8.1 | | | 8.1 | |
| Actuated g/C Ratio | 0.73 | 0.73 | | 0.73 | 0.73 | | 0.16 | 0.16 | | | 0.16 | |
| v/c Ratio | 0.00 | 0.56 | | 0.07 | 0.17 | | 0.14 | 0.17 | | | 0.08 | |
| Control Delay | 5.0 | 7.3 | | 6.6 | 4.5 | | 19.7 | 6.4 | | | 17.9 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 5.0 | 7.3 | | 6.6 | 4.5 | | 19.7 | 6.4 | | | 17.9 | |
| LOS | A | A | | A | A | | B | A | | | B | |
| Approach Delay | | 7.3 | | | 4.6 | | | 11.5 | | | 17.9 | |
| Approach LOS | | A | | | A | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 65 | | | |
| Actuated Cycle Length: 50.1 | | | |
| Natural Cycle: 70 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.56 | | | |
| Intersection Signal Delay: 7.0 | | Intersection LOS: A | |
| Intersection Capacity Utilization 60.3% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 1: Daryl Drive/Private & Plains Road West



| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 2 | 1443 | 13 | 415 | 33 | 53 | 19 |
| v/c Ratio | 0.00 | 0.56 | 0.07 | 0.17 | 0.14 | 0.17 | 0.08 |
| Control Delay | 5.0 | 7.3 | 6.6 | 4.5 | 19.7 | 6.4 | 17.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 5.0 | 7.3 | 6.6 | 4.5 | 19.7 | 6.4 | 17.9 |
| Queue Length 50th (m) | 0.1 | 45.8 | 0.5 | 8.8 | 2.7 | 0.0 | 1.4 |
| Queue Length 95th (m) | 0.8 | 70.4 | 2.7 | 15.0 | 8.8 | 6.1 | 5.8 |
| Internal Link Dist (m) | | 110.7 | | 237.7 | | 185.2 | 35.5 |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | |
| Base Capacity (vph) | 706 | 2562 | 188 | 2475 | 657 | 737 | 644 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.00 | 0.56 | 0.07 | 0.17 | 0.05 | 0.07 | 0.03 |

| Intersection Summary |
|---|





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 1295 | 32 | 12 | 377 | 5 | 30 | 0 | 49 | 15 | 1 | 2 |
| Future Volume (vph) | 2 | 1295 | 32 | 12 | 377 | 5 | 30 | 0 | 49 | 15 | 1 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.85 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.96 | |
| Satd. Flow (prot) | 1796 | 3489 | | 1652 | 3369 | | 1672 | 1530 | | | 1790 | |
| Flt Permitted | 0.51 | 1.00 | | 0.15 | 1.00 | | 0.82 | 1.00 | | | 0.75 | |
| Satd. Flow (perm) | 962 | 3489 | | 256 | 3369 | | 1437 | 1530 | | | 1402 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 2 | 1408 | 35 | 13 | 410 | 5 | 33 | 0 | 53 | 16 | 1 | 2 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 48 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 2 | 1441 | 0 | 13 | 414 | 0 | 33 | 5 | 0 | 0 | 17 | 0 |
| Confl. Peds. (#/hr) | 9 | | 24 | 24 | | 9 | 13 | | 4 | 4 | | 13 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 9% | 7% | 0% | 7% | 0% | 4% | 0% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | 4.9 | 4.9 | | | 4.9 | |
| Effective Green, g (s) | 34.0 | 34.0 | | 34.0 | 34.0 | | 4.9 | 4.9 | | | 4.9 | |
| Actuated g/C Ratio | 0.64 | 0.64 | | 0.64 | 0.64 | | 0.09 | 0.09 | | | 0.09 | |
| Clearance Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | 618 | 2242 | | 164 | 2165 | | 133 | 141 | | | 129 | |
| v/s Ratio Prot | | c0.41 | | | 0.12 | | | 0.00 | | | | |
| v/s Ratio Perm | 0.00 | | | 0.05 | | | c0.02 | | | | 0.01 | |
| v/c Ratio | 0.00 | 0.64 | | 0.08 | 0.19 | | 0.25 | 0.03 | | | 0.13 | |
| Uniform Delay, d1 | 3.4 | 5.8 | | 3.6 | 3.8 | | 22.3 | 21.8 | | | 22.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 1.4 | | 0.9 | 0.2 | | 1.0 | 0.1 | | | 0.5 | |
| Delay (s) | 3.4 | 7.2 | | 4.5 | 4.0 | | 23.3 | 21.9 | | | 22.5 | |
| Level of Service | A | A | | A | A | | C | C | | | C | |
| Approach Delay (s) | | 7.2 | | | 4.1 | | | 22.5 | | | 22.5 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 7.3 | HCM 2000 Level of Service | | A | |
| HCM 2000 Volume to Capacity ratio | 0.59 | | | | |
| Actuated Cycle Length (s) | 52.9 | Sum of lost time (s) | | 14.0 | |
| Intersection Capacity Utilization | 60.3% | ICU Level of Service | | B | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 18 | 1344 | 15 | 7 | 346 | 64 | 15 | 6 | 55 | 144 | 5 | 13 |
| Future Volume (vph) | 18 | 1344 | 15 | 7 | 346 | 64 | 15 | 6 | 55 | 144 | 5 | 13 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 50.0 | | 30.0 | 40.0 | | 0.0 | 0.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 0 | | 0 | 1 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 7.5 | | | 65.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | | 0.98 | 1.00 | 1.00 | | | 0.99 | | 1.00 | 0.99 | |
| Frt | | | 0.850 | | 0.976 | | | 0.902 | | | 0.889 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.990 | | 0.950 | | |
| Satd. Flow (prot) | 1399 | 3539 | 1615 | 1805 | 3219 | 0 | 0 | 1680 | 0 | 1570 | 1411 | 0 |
| Flt Permitted | 0.494 | | | 0.123 | | | | 0.938 | | 0.703 | | |
| Satd. Flow (perm) | 726 | 3539 | 1579 | 234 | 3219 | 0 | 0 | 1591 | 0 | 1160 | 1411 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 61 | | 36 | | | 7 | | | 14 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 50 | | | 50 | |
| Link Distance (m) | | 261.7 | | | 166.2 | | | 80.0 | | | 166.6 | |
| Travel Time (s) | | 15.7 | | | 10.0 | | | 5.8 | | | 12.0 | |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 4 | | 2 | 2 | | 4 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 29% | 2% | 0% | 0% | 7% | 20% | 0% | 0% | 0% | 15% | 0% | 25% |
| Adj. Flow (vph) | 20 | 1461 | 16 | 8 | 376 | 70 | 16 | 7 | 60 | 157 | 5 | 14 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 20 | 1461 | 16 | 8 | 446 | 0 | 0 | 83 | 0 | 157 | 19 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | 2.0 | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | 2.0 | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

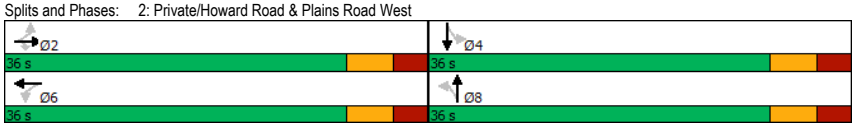




| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | 2 | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | |
| Minimum Split (s) | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (s) | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (%) | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | | 50.0% | 50.0% | | 50.0% | 50.0% | |
| Maximum Green (s) | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Recall Mode | Max | Max | Max | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | | 19.0 | 19.0 | | 19.0 | 19.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 34.2 | 34.2 | 34.2 | 34.2 | 34.2 | | | 15.3 | | 15.3 | 15.3 | |
| Actuated g/C Ratio | 0.59 | 0.59 | 0.59 | 0.59 | 0.59 | | | 0.27 | | 0.27 | 0.27 | |
| v/c Ratio | 0.05 | 0.70 | 0.02 | 0.06 | 0.23 | | | 0.19 | | 0.51 | 0.05 | |
| Control Delay | 9.6 | 15.3 | 0.0 | 10.9 | 8.3 | | | 16.3 | | 24.5 | 9.9 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 9.6 | 15.3 | 0.0 | 10.9 | 8.3 | | | 16.3 | | 24.5 | 9.9 | |
| LOS | A | B | A | B | A | | | B | | C | A | |
| Approach Delay | | 15.0 | | | 8.3 | | | 16.3 | | | 22.9 | |
| Approach LOS | | B | | | A | | | B | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 72 | | | |
| Actuated Cycle Length: 57.7 | | | |
| Natural Cycle: 75 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.70 | | | |
| Intersection Signal Delay: 14.3 | | Intersection LOS: B | |
| Intersection Capacity Utilization 64.7% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 2: Private/Howard Road & Plains Road West



| Lane Group | EBL | EBT | EBR | WBL | WBT | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 20 | 1461 | 16 | 8 | 446 | 83 | 157 | 19 |
| v/c Ratio | 0.05 | 0.70 | 0.02 | 0.06 | 0.23 | 0.19 | 0.51 | 0.05 |
| Control Delay | 9.6 | 15.3 | 0.0 | 10.9 | 8.3 | 16.3 | 24.5 | 9.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 9.6 | 15.3 | 0.0 | 10.9 | 8.3 | 16.3 | 24.5 | 9.9 |
| Queue Length 50th (m) | 1.0 | 65.8 | 0.0 | 0.4 | 12.4 | 6.6 | 15.0 | 0.4 |
| Queue Length 95th (m) | 4.9 | #132.6 | 0.0 | 3.1 | 25.3 | 15.6 | 30.4 | 4.4 |
| Internal Link Dist (m) | | 237.7 | | | 142.2 | 56.0 | | 142.6 |
| Turn Bay Length (m) | 50.0 | | 30.0 | 40.0 | | | 20.0 | |
| Base Capacity (vph) | 430 | 2096 | 960 | 138 | 1921 | 808 | 587 | 720 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.05 | 0.70 | 0.02 | 0.06 | 0.23 | 0.10 | 0.27 | 0.03 |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 18 | 1344 | 15 | 7 | 346 | 64 | 15 | 6 | 55 | 144 | 5 | 13 |
| Future Volume (vph) | 18 | 1344 | 15 | 7 | 346 | 64 | 15 | 6 | 55 | 144 | 5 | 13 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.98 | | | 0.90 | | 1.00 | 0.89 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 0.99 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1396 | 3539 | 1579 | 1805 | 3221 | | | 1681 | | 1568 | 1412 | |
| Flt Permitted | 0.49 | 1.00 | 1.00 | 0.12 | 1.00 | | | 0.94 | | 0.70 | 1.00 | |
| Satd. Flow (perm) | 726 | 3539 | 1579 | 233 | 3221 | | | 1591 | | 1160 | 1412 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 20 | 1461 | 16 | 8 | 376 | 70 | 16 | 7 | 60 | 157 | 5 | 14 |
| RTOR Reduction (vph) | 0 | 0 | 7 | 0 | 16 | 0 | 0 | 6 | 0 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 20 | 1461 | 9 | 8 | 430 | 0 | 0 | 77 | 0 | 157 | 8 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 29% | 2% | 0% | 0% | 7% | 20% | 0% | 0% | 0% | 15% | 0% | 25% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 32.6 | 32.6 | 32.6 | 32.6 | 32.6 | | | 12.6 | | 12.6 | 12.6 | |
| Effective Green, g (s) | 32.6 | 32.6 | 32.6 | 32.6 | 32.6 | | | 12.6 | | 12.6 | 12.6 | |
| Actuated g/C Ratio | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | | | 0.21 | | 0.21 | 0.21 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 399 | 1948 | 869 | 128 | 1773 | | | 338 | | 246 | 300 | |
| v/s Ratio Prot | | c0.41 | | | 0.13 | | | | | | 0.01 | |
| v/s Ratio Perm | 0.03 | | 0.01 | 0.03 | | | | 0.05 | | c0.14 | | |
| v/c Ratio | 0.05 | 0.75 | 0.01 | 0.06 | 0.24 | | | 0.23 | | 0.64 | 0.03 | |
| Uniform Delay, d1 | 6.1 | 10.2 | 6.0 | 6.2 | 6.9 | | | 19.3 | | 21.2 | 18.4 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.2 | 2.7 | 0.0 | 0.9 | 0.3 | | | 0.7 | | 7.4 | 0.1 | |
| Delay (s) | 6.4 | 12.9 | 6.0 | 7.1 | 7.2 | | | 20.0 | | 28.6 | 18.5 | |
| Level of Service | A | B | A | A | A | | | C | | C | B | |
| Approach Delay (s) | | 12.7 | | | 7.2 | | | 20.0 | | | 27.5 | |
| Approach LOS | | B | | | A | | | C | | | C | |

| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 13.0 | HCM 2000 Level of Service | | B | |
| HCM 2000 Volume to Capacity ratio | 0.72 | | | | |
| Actuated Cycle Length (s) | 59.2 | Sum of lost time (s) | | 14.0 | |
| Intersection Capacity Utilization | 64.7% | ICU Level of Service | | C | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 824 | 21 | 45 | 1697 | 13 | 27 | 2 | 29 | 12 | 3 | 5 |
| Future Volume (vph) | 2 | 824 | 21 | 45 | 1697 | 13 | 27 | 2 | 29 | 12 | 3 | 5 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 15.0 | | | 7.5 | | |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | 1.00 | |
| Frt | | 0.996 | | | 0.999 | | | 0.859 | | | 0.968 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.970 | |
| Satd. Flow (prot) | 1805 | 3524 | 0 | 1805 | 3570 | 0 | 1736 | 1632 | 0 | 0 | 1778 | 0 |
| Flt Permitted | 0.079 | | | 0.305 | | | 0.851 | | | | 0.791 | |
| Satd. Flow (perm) | 150 | 3524 | 0 | 577 | 3570 | 0 | 1553 | 1632 | 0 | 0 | 1450 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 4 | | | 1 | | | 32 | | | 5 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 41 | | | 50 | |
| Link Distance (m) | | 134.7 | | | 261.7 | | | 209.2 | | | 59.5 | |
| Travel Time (s) | | 8.1 | | | 15.7 | | | 18.4 | | | 4.3 | |
| Confl. Peds. (#/hr) | 11 | | 10 | 10 | | 11 | 1 | | | | | 1 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 1% | 0% | 4% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 2 | 896 | 23 | 49 | 1845 | 14 | 29 | 2 | 32 | 13 | 3 | 5 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 2 | 919 | 0 | 49 | 1859 | 0 | 29 | 34 | 0 | 0 | 21 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |



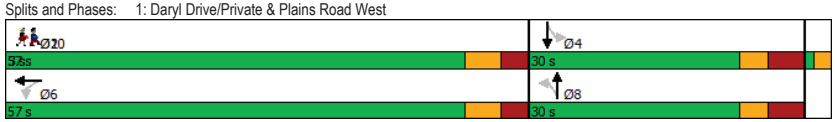


| Lane Group | Ø10 |
|---|---|
| Lane Configurations | |
| Traffic Volume (vph) | |
| Future Volume (vph) | |
| Ideal Flow (vphpl) | |
| Storage Length (m) | |
| Storage Lanes | |
| Taper Length (m) | |
| Lane Util. Factor | |
| Ped Bike Factor | |
| Frt | |
| Flt Protected | |
| Satd. Flow (prot) | |
| Flt Permitted | |
| Satd. Flow (perm) | |
| Right Turn on Red | |
| Satd. Flow (RTOR) | |
| Link Speed (k/h) | |
| Link Distance (m) | |
| Travel Time (s) | |
| Confl. Peds. (#/hr) | |
| Peak Hour Factor | |
| Heavy Vehicles (%) | |
| Adj. Flow (vph) | |
| Shared Lane Traffic (%) | |
| Lane Group Flow (vph) | |
| Enter Blocked Intersection | |
| Lane Alignment | |
| Median Width(m) | |
| Link Offset(m) | |
| Crosswalk Width(m) | |
| Two way Left Turn Lane | |
| Headway Factor | |
| Turning Speed (k/h) | |
| Number of Detectors | |
| Detector Template | |
| Leading Detector (m) | |
| Trailing Detector (m) | |
| Detector 1 Position(m) | |
| Detector 1 Size(m) | |
| Detector 1 Type | |
| Detector 1 Channel | |
| Detector 1 Extend (s) | |
| Detector 1 Queue (s) | |
| Detector 1 Delay (s) | |
| Detector 2 Position(m) | |
| Detector 2 Size(m) | |
| Detector 2 Type | |
| Detector 2 Channel | |
| Detector 2 Extend (s) | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 38.0 | 38.0 | | 38.0 | 38.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (s) | 57.0 | 57.0 | | 57.0 | 57.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (%) | 63.3% | 63.3% | | 63.3% | 63.3% | | 33.3% | 33.3% | | 33.3% | 33.3% | |
| Maximum Green (s) | 50.0 | 50.0 | | 50.0 | 50.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | |
| Yellow Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | Max | Max | | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 15.0 | 15.0 | | 15.0 | 15.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 50.7 | 50.7 | | 50.7 | 50.7 | | 8.4 | 8.4 | | | 8.4 | |
| Actuated g/C Ratio | 0.73 | 0.73 | | 0.73 | 0.73 | | 0.12 | 0.12 | | | 0.12 | |
| v/c Ratio | 0.02 | 0.36 | | 0.12 | 0.71 | | 0.16 | 0.15 | | | 0.12 | |
| Control Delay | 5.0 | 4.9 | | 5.3 | 9.0 | | 32.2 | 14.3 | | | 27.6 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 5.0 | 4.9 | | 5.3 | 9.0 | | 32.2 | 14.3 | | | 27.6 | |
| LOS | A | A | | A | A | | C | B | | | C | |
| Approach Delay | | 4.9 | | | 8.9 | | | 22.5 | | | 27.6 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 69.3 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.71 | | | |
| Intersection Signal Delay: 8.1 | | Intersection LOS: A | |
| Intersection Capacity Utilization 67.2% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 1: Daryl Drive/Private & Plains Road West








| Lane Group | Ø10 |
|---|---|
| Turn Type | |
| Protected Phases | 10 |
| Permitted Phases | |
| Detector Phase | |
| Switch Phase | |
| Minimum Initial (s) | 1.0 |
| Minimum Split (s) | 3.0 |
| Total Split (s) | 3.0 |
| Total Split (%) | 3% |
| Maximum Green (s) | 1.0 |
| Yellow Time (s) | 2.0 |
| All-Red Time (s) | 0.0 |
| Lost Time Adjust (s) | |
| Total Lost Time (s) | |
| Lead/Lag | |
| Lead-Lag Optimize? | |
| Vehicle Extension (s) | 3.0 |
| Recall Mode | Max |
| Walk Time (s) | |
| Flash Dont Walk (s) | |
| Pedestrian Calls (#/hr) | |
| Act Effct Green (s) | |
| Actuated g/C Ratio | |
| v/c Ratio | |
| Control Delay | |
| Queue Delay | |
| Total Delay | |
| LOS | |
| Approach Delay | |
| Approach LOS | |

| Intersection Summary |
|---|

## Queues
### 1: Daryl Drive/Private & Plains Road West

2028 Background - PM Peak Hour

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 2 | 919 | 49 | 1859 | 29 | 34 | 21 |
| v/c Ratio | 0.02 | 0.36 | 0.12 | 0.71 | 0.16 | 0.15 | 0.12 |
| Control Delay | 5.0 | 4.9 | 5.3 | 9.0 | 32.2 | 14.3 | 27.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 5.0 | 4.9 | 5.3 | 9.0 | 32.2 | 14.3 | 27.6 |
| Queue Length 50th (m) | 0.1 | 27.4 | 2.3 | 86.4 | 4.0 | 0.3 | 2.2 |
| Queue Length 95th (m) | 0.8 | 39.7 | 6.5 | 123.3 | 11.6 | 8.2 | 8.6 |
| Internal Link Dist (m) | | 110.7 | | 237.7 | | 185.2 | 35.5 |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | |
| Base Capacity (vph) | 110 | 2576 | 421 | 2609 | 522 | 569 | 490 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.02 | 0.36 | 0.12 | 0.71 | 0.06 | 0.06 | 0.04 |

Intersection Summary



## HCM Signalized Intersection Capacity Analysis
### 1: Daryl Drive/Private & Plains Road West

2028 Background - PM Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 824 | 21 | 45 | 1697 | 13 | 27 | 2 | 29 | 12 | 3 | 5 |
| Future Volume (vph) | 2 | 824 | 21 | 45 | 1697 | 13 | 27 | 2 | 29 | 12 | 3 | 5 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.86 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1804 | 3525 | | 1799 | 3570 | | 1734 | 1632 | | | 1778 | |
| Flt Permitted | 0.08 | 1.00 | | 0.30 | 1.00 | | 0.85 | 1.00 | | | 0.79 | |
| Satd. Flow (perm) | 150 | 3525 | | 577 | 3570 | | 1553 | 1632 | | | 1451 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 2 | 896 | 23 | 49 | 1845 | 14 | 29 | 2 | 32 | 13 | 3 | 5 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 2 | 918 | 0 | 49 | 1859 | 0 | 29 | 4 | 0 | 0 | 16 | 0 |
| Confl. Peds. (#/hr) | 11 | | 10 | 10 | | 11 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 1% | 0% | 4% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 50.6 | 50.6 | | 50.6 | 50.6 | | 4.7 | 4.7 | | | 4.7 | |
| Effective Green, g (s) | 50.6 | 50.6 | | 50.6 | 50.6 | | 4.7 | 4.7 | | | 4.7 | |
| Actuated g/C Ratio | 0.70 | 0.70 | | 0.70 | 0.70 | | 0.07 | 0.07 | | | 0.07 | |
| Clearance Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | 104 | 2467 | | 403 | 2498 | | 100 | 106 | | | 94 | |
| v/s Ratio Prot | | 0.26 | | | c0.52 | | | 0.00 | | | | |
| v/s Ratio Perm | 0.01 | | | 0.08 | | | c0.02 | | | | 0.01 | |
| v/c Ratio | 0.02 | 0.37 | | 0.12 | 0.74 | | 0.29 | 0.04 | | | 0.17 | |
| Uniform Delay, d1 | 3.3 | 4.4 | | 3.6 | 6.8 | | 32.2 | 31.7 | | | 32.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 0.3 | 0.4 | | 0.6 | 2.1 | | 1.6 | 0.1 | | | 0.9 | |
| Delay (s) | 3.6 | 4.8 | | 4.2 | 8.9 | | 33.8 | 31.8 | | | 32.8 | |
| Level of Service | A | A | | A | A | | C | C | | | C | |
| Approach Delay (s) | | 4.8 | | | 8.7 | | | 32.7 | | | 32.8 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| HCM 2000 Control Delay | 8.2 | HCM 2000 Level of Service | A | |
| HCM 2000 Volume to Capacity ratio | 0.69 | | | |
| Actuated Cycle Length (s) | 72.3 | Sum of lost time (s) | 16.0 | |
| Intersection Capacity Utilization | 67.2% | ICU Level of Service | C | |
| Analysis Period (min) | 15 | | | |

c Critical Lane Group

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 21 | 747 | 41 | 23 | 1456 | 130 | 17 | 7 | 21 | 105 | 6 | 16 |
| Future Volume (vph) | 21 | 747 | 41 | 23 | 1456 | 130 | 17 | 7 | 21 | 105 | 6 | 16 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 50.0 | | 30.0 | 40.0 | | 0.0 | 0.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 0 | | 0 | 1 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 7.5 | | | 65.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 0.92 | 0.98 | 1.00 | | | 0.99 | | 1.00 | 0.98 | |
| Frt | | | 0.850 | | 0.988 | | | 0.937 | | | 0.894 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.982 | | 0.950 | | |
| Satd. Flow (prot) | 1433 | 3539 | 1615 | 1805 | 3501 | 0 | 0 | 1736 | 0 | 1805 | 1583 | 0 |
| Flt Permitted | 0.089 | | | 0.332 | | | | 0.869 | | 0.725 | | |
| Satd. Flow (perm) | 134 | 3539 | 1480 | 619 | 3501 | 0 | 0 | 1526 | 0 | 1374 | 1583 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 73 | | 14 | | | 23 | | | 17 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 50 | | | 50 | |
| Link Distance (m) | | 261.7 | | | 166.2 | | | 80.0 | | | 166.6 | |
| Travel Time (s) | | 15.7 | | | 10.0 | | | 5.8 | | | 12.0 | |
| Confl. Peds. (#/hr) | 10 | | 42 | 42 | | 10 | 21 | | 3 | 3 | | 21 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 26% | 2% | 0% | 0% | 1% | 8% | 0% | 0% | 0% | 0% | 0% | 7% |
| Adj. Flow (vph) | 23 | 812 | 45 | 25 | 1583 | 141 | 18 | 8 | 23 | 114 | 7 | 17 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 23 | 812 | 45 | 25 | 1724 | 0 | 0 | 49 | 0 | 114 | 24 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | 2.0 | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | 2.0 | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |



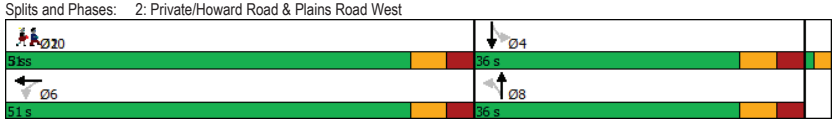


| Lane Group | Ø10 |
|---|---|
| Lane Configurations | |
| Traffic Volume (vph) | |
| Future Volume (vph) | |
| Ideal Flow (vphpl) | |
| Storage Length (m) | |
| Storage Lanes | |
| Taper Length (m) | |
| Lane Util. Factor | |
| Ped Bike Factor | |
| Frt | |
| Flt Protected | |
| Satd. Flow (prot) | |
| Flt Permitted | |
| Satd. Flow (perm) | |
| Right Turn on Red | |
| Satd. Flow (RTOR) | |
| Link Speed (k/h) | |
| Link Distance (m) | |
| Travel Time (s) | |
| Confl. Peds. (#/hr) | |
| Peak Hour Factor | |
| Heavy Vehicles (%) | |
| Adj. Flow (vph) | |
| Shared Lane Traffic (%) | |
| Lane Group Flow (vph) | |
| Enter Blocked Intersection | |
| Lane Alignment | |
| Median Width(m) | |
| Link Offset(m) | |
| Crosswalk Width(m) | |
| Two way Left Turn Lane | |
| Headway Factor | |
| Turning Speed (k/h) | |
| Number of Detectors | |
| Detector Template | |
| Leading Detector (m) | |
| Trailing Detector (m) | |
| Detector 1 Position(m) | |
| Detector 1 Size(m) | |
| Detector 1 Type | |
| Detector 1 Channel | |
| Detector 1 Extend (s) | |
| Detector 1 Queue (s) | |
| Detector 1 Delay (s) | |
| Detector 2 Position(m) | |
| Detector 2 Size(m) | |
| Detector 2 Type | |
| Detector 2 Channel | |
| Detector 2 Extend (s) | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | 2 | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | |
| Minimum Split (s) | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (s) | 51.0 | 51.0 | 51.0 | 51.0 | 51.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (%) | 56.7% | 56.7% | 56.7% | 56.7% | 56.7% | | 40.0% | 40.0% | | 40.0% | 40.0% | |
| Maximum Green (s) | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Recall Mode | Max | Max | Max | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | | 19.0 | 19.0 | | 19.0 | 19.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 44.8 | 44.8 | 44.8 | 44.8 | 44.8 | | | 14.2 | | 14.2 | 14.2 | |
| Actuated g/C Ratio | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | | | 0.20 | | 0.20 | 0.20 | |
| v/c Ratio | 0.27 | 0.37 | 0.05 | 0.06 | 0.78 | | | 0.15 | | 0.42 | 0.07 | |
| Control Delay | 19.7 | 8.5 | 1.1 | 8.1 | 15.5 | | | 17.0 | | 32.0 | 14.8 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 19.7 | 8.5 | 1.1 | 8.1 | 15.5 | | | 17.0 | | 32.0 | 14.8 | |
| LOS | B | A | A | A | B | | | B | | C | B | |
| Approach Delay | | 8.4 | | | 15.4 | | | 17.0 | | | 29.0 | |
| Approach LOS | | A | | | B | | | B | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 71.3 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.78 | | | |
| Intersection Signal Delay: 13.9 | | Intersection LOS: B | |
| Intersection Capacity Utilization 74.5% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 2: Private/Howard Road & Plains Road West








| Lane Group | Ø10 |
|---|---|
| Turn Type | |
| Protected Phases | 10 |
| Permitted Phases | |
| Detector Phase | |
| Switch Phase | |
| Minimum Initial (s) | 1.0 |
| Minimum Split (s) | 3.0 |
| Total Split (s) | 3.0 |
| Total Split (%) | 3% |
| Maximum Green (s) | 1.0 |
| Yellow Time (s) | 2.0 |
| All-Red Time (s) | 0.0 |
| Lost Time Adjust (s) | |
| Total Lost Time (s) | |
| Lead/Lag | |
| Lead-Lag Optimize? | |
| Vehicle Extension (s) | 3.0 |
| Recall Mode | Max |
| Walk Time (s) | |
| Flash Dont Walk (s) | |
| Pedestrian Calls (#/hr) | |
| Act Effct Green (s) | |
| Actuated g/C Ratio | |
| v/c Ratio | |
| Control Delay | |
| Queue Delay | |
| Total Delay | |
| LOS | |
| Approach Delay | |
| Approach LOS | |

| Intersection Summary |
|---|

## Queues
## 2: Private/Howard Road & Plains Road West

2028 Background - PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 23 | 812 | 45 | 25 | 1724 | 49 | 114 | 24 |
| v/c Ratio | 0.27 | 0.37 | 0.05 | 0.06 | 0.78 | 0.15 | 0.42 | 0.07 |
| Control Delay | 19.7 | 8.5 | 1.1 | 8.1 | 15.5 | 17.0 | 32.0 | 14.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 19.7 | 8.5 | 1.1 | 8.1 | 15.5 | 17.0 | 32.0 | 14.8 |
| Queue Length 50th (m) | 1.5 | 29.7 | 0.0 | 1.4 | 95.2 | 3.2 | 15.2 | 0.9 |
| Queue Length 95th (m) | 9.0 | 48.7 | 2.3 | 5.3 | #156.3 | 11.9 | 30.1 | 6.7 |
| Internal Link Dist (m) | | 237.7 | | | 142.2 | 56.0 | | 142.6 |
| Turn Bay Length (m) | 50.0 | | 30.0 | 40.0 | | | 20.0 | |
| Base Capacity (vph) | 84 | 2224 | 957 | 389 | 2205 | 645 | 569 | 665 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.27 | 0.37 | 0.05 | 0.06 | 0.78 | 0.08 | 0.20 | 0.04 |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



## HCM Signalized Intersection Capacity Analysis
## 2: Private/Howard Road & Plains Road West

2028 Background - PM Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 21 | 747 | 41 | 23 | 1456 | 130 | 17 | 7 | 21 | 105 | 6 | 16 |
| Future Volume (vph) | 21 | 747 | 41 | 23 | 1456 | 130 | 17 | 7 | 21 | 105 | 6 | 16 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.93 | 1.00 | 1.00 | | | 0.99 | | 1.00 | 0.98 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | | | 0.99 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | | 0.94 | | 1.00 | 0.89 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 0.98 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1432 | 3539 | 1499 | 1775 | 3501 | | | 1726 | | 1801 | 1586 | |
| Flt Permitted | 0.09 | 1.00 | 1.00 | 0.33 | 1.00 | | | 0.87 | | 0.73 | 1.00 | |
| Satd. Flow (perm) | 135 | 3539 | 1499 | 620 | 3501 | | | 1527 | | 1375 | 1586 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 23 | 812 | 45 | 25 | 1583 | 141 | 18 | 8 | 23 | 114 | 7 | 17 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 5 | 0 | 0 | 20 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 23 | 812 | 28 | 25 | 1719 | 0 | 0 | 29 | 0 | 114 | 10 | 0 |
| Confl. Peds. (#/hr) | 10 | | 42 | 42 | | 10 | 21 | | 3 | 3 | | 21 |
| Heavy Vehicles (%) | 26% | 2% | 0% | 0% | 1% | 8% | 0% | 0% | 0% | 0% | 0% | 7% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 44.8 | 44.8 | 44.8 | 44.8 | 44.8 | | | 11.0 | | 11.0 | 11.0 | |
| Effective Green, g (s) | 44.8 | 44.8 | 44.8 | 44.8 | 44.8 | | | 11.0 | | 11.0 | 11.0 | |
| Actuated g/C Ratio | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | | | 0.15 | | 0.15 | 0.15 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 83 | 2177 | 922 | 381 | 2154 | | | 230 | | 207 | 239 | |
| v/s Ratio Prot | | 0.23 | | | c0.49 | | | | | | 0.01 | |
| v/s Ratio Perm | 0.17 | | 0.02 | 0.04 | | | | 0.02 | | c0.08 | | |
| v/c Ratio | 0.28 | 0.37 | 0.03 | 0.07 | 0.80 | | | 0.13 | | 0.55 | 0.04 | |
| Uniform Delay, d1 | 6.5 | 7.0 | 5.5 | 5.6 | 10.6 | | | 26.7 | | 28.6 | 26.4 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 8.1 | 0.5 | 0.1 | 0.3 | 3.2 | | | 0.5 | | 5.3 | 0.1 | |
| Delay (s) | 14.6 | 7.5 | 5.5 | 5.9 | 13.8 | | | 27.3 | | 33.9 | 26.5 | |
| Level of Service | B | A | A | A | B | | | C | | C | C | |
| Approach Delay (s) | | 7.6 | | | 13.7 | | | 27.3 | | | 32.6 | |
| Approach LOS | | A | | | B | | | C | | | C | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| HCM 2000 Control Delay | 12.9 | HCM 2000 Level of Service | B | |
| HCM 2000 Volume to Capacity ratio | 0.74 | | | |
| Actuated Cycle Length (s) | 72.8 | Sum of lost time (s) | 16.0 | |
| Intersection Capacity Utilization | 74.5% | ICU Level of Service | D | |
| Analysis Period (min) | 15 | | | |

c Critical Lane Group

# Appendix J

## 2033 Background Traffic Operations Reports

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 1443 | 34 | 12 | 467 | 6 | 33 | 0 | 54 | 17 | 1 | 2 |
| Future Volume (vph) | 2 | 1443 | 34 | 12 | 467 | 6 | 33 | 0 | 54 | 17 | 1 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 15.0 | | | 7.5 | | |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.99 | 1.00 | | | 1.00 | | 0.99 | 0.98 | | | 0.99 | |
| Frt | | 0.997 | | | 0.998 | | | 0.850 | | | 0.987 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.959 | |
| Satd. Flow (prot) | 1805 | 3490 | 0 | 1656 | 3369 | 0 | 1687 | 1528 | 0 | 0 | 1794 | 0 |
| Flt Permitted | 0.462 | | | 0.112 | | | 0.870 | | | | 0.807 | |
| Satd. Flow (perm) | 873 | 3490 | 0 | 195 | 3369 | 0 | 1526 | 1528 | 0 | 0 | 1505 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 4 | | | 2 | | | 87 | | | 2 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 41 | | | 50 | |
| Link Distance (m) | | 134.7 | | | 261.7 | | | 209.2 | | | 59.5 | |
| Travel Time (s) | | 8.1 | | | 15.7 | | | 18.4 | | | 4.3 | |
| Confl. Peds. (#/hr) | 9 | | 24 | 24 | | 9 | 13 | | 4 | 4 | | 13 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 9% | 7% | 0% | 7% | 0% | 4% | 0% | 0% | 0% |
| Adj. Flow (vph) | 2 | 1568 | 37 | 13 | 508 | 7 | 36 | 0 | 59 | 18 | 1 | 2 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 2 | 1605 | 0 | 13 | 515 | 0 | 36 | 59 | 0 | 0 | 21 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |



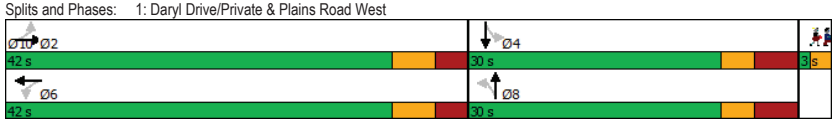


| Lane Group | Ø10 |
|---|---|
| Lane Configurations | |
| Traffic Volume (vph) | |
| Future Volume (vph) | |
| Ideal Flow (vphpl) | |
| Storage Length (m) | |
| Storage Lanes | |
| Taper Length (m) | |
| Lane Util. Factor | |
| Ped Bike Factor | |
| Frt | |
| Flt Protected | |
| Satd. Flow (prot) | |
| Flt Permitted | |
| Satd. Flow (perm) | |
| Right Turn on Red | |
| Satd. Flow (RTOR) | |
| Link Speed (k/h) | |
| Link Distance (m) | |
| Travel Time (s) | |
| Confl. Peds. (#/hr) | |
| Peak Hour Factor | |
| Heavy Vehicles (%) | |
| Adj. Flow (vph) | |
| Shared Lane Traffic (%) | |
| Lane Group Flow (vph) | |
| Enter Blocked Intersection | |
| Lane Alignment | |
| Median Width(m) | |
| Link Offset(m) | |
| Crosswalk Width(m) | |
| Two way Left Turn Lane | |
| Headway Factor | |
| Turning Speed (k/h) | |
| Number of Detectors | |
| Detector Template | |
| Leading Detector (m) | |
| Trailing Detector (m) | |
| Detector 1 Position(m) | |
| Detector 1 Size(m) | |
| Detector 1 Type | |
| Detector 1 Channel | |
| Detector 1 Extend (s) | |
| Detector 1 Queue (s) | |
| Detector 1 Delay (s) | |
| Detector 2 Position(m) | |
| Detector 2 Size(m) | |
| Detector 2 Type | |
| Detector 2 Channel | |
| Detector 2 Extend (s) | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 38.0 | 38.0 | | 38.0 | 38.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (s) | 42.0 | 42.0 | | 42.0 | 42.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (%) | 56.0% | 56.0% | | 56.0% | 56.0% | | 40.0% | 40.0% | | 40.0% | 40.0% | |
| Maximum Green (s) | 35.0 | 35.0 | | 35.0 | 35.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | |
| Yellow Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | Max | Max | | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 15.0 | 15.0 | | 15.0 | 15.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 35.8 | 35.8 | | 35.8 | 35.8 | | 8.4 | 8.4 | | | 8.4 | |
| Actuated g/C Ratio | 0.66 | 0.66 | | 0.66 | 0.66 | | 0.15 | 0.15 | | | 0.15 | |
| v/c Ratio | 0.00 | 0.70 | | 0.10 | 0.23 | | 0.15 | 0.19 | | | 0.09 | |
| Control Delay | 5.5 | 10.0 | | 8.3 | 5.4 | | 24.4 | 5.1 | | | 22.7 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 5.5 | 10.0 | | 8.3 | 5.4 | | 24.4 | 5.1 | | | 22.7 | |
| LOS | A | A | | A | A | | C | A | | | C | |
| Approach Delay | | 10.0 | | | 5.5 | | | 12.4 | | | 22.7 | |
| Approach LOS | | A | | | A | | | B | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 75 | | | |
| Actuated Cycle Length: 54.3 | | | |
| Natural Cycle: 75 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.70 | | | |
| Intersection Signal Delay: 9.2 | | Intersection LOS: A | |
| Intersection Capacity Utilization 64.6% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 1: Daryl Drive/Private & Plains Road West








| Lane Group | Ø10 |
|---|---|
| Turn Type | |
| Protected Phases | 10 |
| Permitted Phases | |
| Detector Phase | |
| Switch Phase | |
| Minimum Initial (s) | 1.0 |
| Minimum Split (s) | 3.0 |
| Total Split (s) | 3.0 |
| Total Split (%) | 4% |
| Maximum Green (s) | 1.0 |
| Yellow Time (s) | 2.0 |
| All-Red Time (s) | 0.0 |
| Lost Time Adjust (s) | |
| Total Lost Time (s) | |
| Lead/Lag | |
| Lead-Lag Optimize? | |
| Vehicle Extension (s) | 3.0 |
| Recall Mode | Max |
| Walk Time (s) | |
| Flash Dont Walk (s) | |
| Pedestrian Calls (#/hr) | |
| Act Effct Green (s) | |
| Actuated g/C Ratio | |
| v/c Ratio | |
| Control Delay | |
| Queue Delay | |
| Total Delay | |
| LOS | |
| Approach Delay | |
| Approach LOS | |

| Intersection Summary |
|---|

## Queues
## 1: Daryl Drive/Private & Plains Road West

2033 Background - AM Peak Hour

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 2 | 1605 | 13 | 515 | 36 | 59 | 21 |
| v/c Ratio | 0.00 | 0.70 | 0.10 | 0.23 | 0.15 | 0.19 | 0.09 |
| Control Delay | 5.5 | 10.0 | 8.3 | 5.4 | 24.4 | 5.1 | 22.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 5.5 | 10.0 | 8.3 | 5.4 | 24.4 | 5.1 | 22.7 |
| Queue Length 50th (m) | 0.1 | 66.0 | 0.6 | 13.4 | 3.8 | 0.0 | 2.0 |
| Queue Length 95th (m) | 0.9 | 99.4 | 3.2 | 21.8 | 11.1 | 5.6 | 7.4 |
| Internal Link Dist (m) | | 110.7 | | 237.7 | | 185.2 | 35.5 |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | |
| Base Capacity (vph) | 575 | 2299 | 128 | 2219 | 659 | 710 | 652 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.00 | 0.70 | 0.10 | 0.23 | 0.05 | 0.08 | 0.03 |

Intersection Summary



## HCM Signalized Intersection Capacity Analysis
## 1: Daryl Drive/Private & Plains Road West

2033 Background - AM Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 1443 | 34 | 12 | 467 | 6 | 33 | 0 | 54 | 17 | 1 | 2 |
| Future Volume (vph) | 2 | 1443 | 34 | 12 | 467 | 6 | 33 | 0 | 54 | 17 | 1 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.85 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.96 | |
| Satd. Flow (prot) | 1797 | 3489 | | 1653 | 3369 | | 1671 | 1530 | | | 1791 | |
| Flt Permitted | 0.46 | 1.00 | | 0.11 | 1.00 | | 0.87 | 1.00 | | | 0.81 | |
| Satd. Flow (perm) | 874 | 3489 | | 195 | 3369 | | 1530 | 1530 | | | 1508 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 2 | 1568 | 37 | 13 | 508 | 7 | 36 | 0 | 59 | 18 | 1 | 2 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 54 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 2 | 1603 | 0 | 13 | 514 | 0 | 36 | 5 | 0 | 0 | 19 | 0 |
| Confl. Peds. (#/hr) | 9 | | 24 | 24 | | 9 | 13 | | 4 | 4 | | 13 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 9% | 7% | 0% | 7% | 0% | 4% | 0% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 35.7 | 35.7 | | 35.7 | 35.7 | | 4.6 | 4.6 | | | 4.6 | |
| Effective Green, g (s) | 35.7 | 35.7 | | 35.7 | 35.7 | | 4.6 | 4.6 | | | 4.6 | |
| Actuated g/C Ratio | 0.62 | 0.62 | | 0.62 | 0.62 | | 0.08 | 0.08 | | | 0.08 | |
| Clearance Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | 544 | 2173 | | 121 | 2099 | | 122 | 122 | | | 121 | |
| v/s Ratio Prot | | c0.46 | | | 0.15 | | | 0.00 | | | | |
| v/s Ratio Perm | 0.00 | | | 0.07 | | | c0.02 | | | | 0.01 | |
| v/c Ratio | 0.00 | 0.74 | | 0.11 | 0.24 | | 0.30 | 0.04 | | | 0.16 | |
| Uniform Delay, d1 | 4.1 | 7.5 | | 4.4 | 4.8 | | 24.8 | 24.3 | | | 24.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 2.3 | | 1.8 | 0.3 | | 1.4 | 0.1 | | | 0.6 | |
| Delay (s) | 4.1 | 9.8 | | 6.1 | 5.1 | | 26.2 | 24.4 | | | 25.2 | |
| Level of Service | A | A | | A | A | | C | C | | | C | |
| Approach Delay (s) | | 9.8 | | | 5.1 | | | 25.1 | | | 25.2 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| HCM 2000 Control Delay | 9.5 | HCM 2000 Level of Service | A | |
| HCM 2000 Volume to Capacity ratio | 0.67 | | | |
| Actuated Cycle Length (s) | 57.3 | Sum of lost time (s) | 16.0 | |
| Intersection Capacity Utilization | 64.6% | ICU Level of Service | C | |
| Analysis Period (min) | 15 | | | |

c Critical Lane Group

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 20 | 1496 | 17 | 8 | 432 | 70 | 17 | 7 | 60 | 158 | 6 | 13 |
| Future Volume (vph) | 20 | 1496 | 17 | 8 | 432 | 70 | 17 | 7 | 60 | 158 | 6 | 13 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 50.0 | | 30.0 | 40.0 | | 0.0 | 0.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 0 | | 0 | 1 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 7.5 | | | 65.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | | 0.98 | | 1.00 | | | 0.99 | | 1.00 | 0.99 | |
| Frt | | | 0.850 | | 0.979 | | | 0.904 | | | 0.900 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.990 | | 0.950 | | |
| Satd. Flow (prot) | 1399 | 3539 | 1615 | 1805 | 3236 | 0 | 0 | 1684 | 0 | 1570 | 1450 | 0 |
| Flt Permitted | 0.448 | | | 0.090 | | | | 0.944 | | 0.698 | | |
| Satd. Flow (perm) | 658 | 3539 | 1578 | 171 | 3236 | 0 | 0 | 1604 | 0 | 1151 | 1450 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 73 | | 28 | | | 35 | | | 14 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 50 | | | 50 | |
| Link Distance (m) | | 261.7 | | | 166.2 | | | 80.0 | | | 166.6 | |
| Travel Time (s) | | 15.7 | | | 10.0 | | | 5.8 | | | 12.0 | |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 4 | | 2 | 2 | | 4 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 29% | 2% | 0% | 0% | 7% | 20% | 0% | 0% | 0% | 15% | 0% | 25% |
| Adj. Flow (vph) | 22 | 1626 | 18 | 9 | 470 | 76 | 18 | 8 | 65 | 172 | 7 | 14 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 22 | 1626 | 18 | 9 | 546 | 0 | 0 | 91 | 0 | 172 | 21 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | 2.0 | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | 2.0 | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |



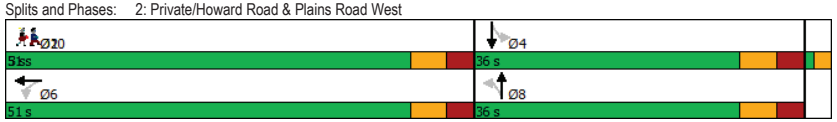


| Lane Group | Ø10 |
|---|---|
| Lane Configurations | |
| Traffic Volume (vph) | |
| Future Volume (vph) | |
| Ideal Flow (vphpl) | |
| Storage Length (m) | |
| Storage Lanes | |
| Taper Length (m) | |
| Lane Util. Factor | |
| Ped Bike Factor | |
| Frt | |
| Flt Protected | |
| Satd. Flow (prot) | |
| Flt Permitted | |
| Satd. Flow (perm) | |
| Right Turn on Red | |
| Satd. Flow (RTOR) | |
| Link Speed (k/h) | |
| Link Distance (m) | |
| Travel Time (s) | |
| Confl. Peds. (#/hr) | |
| Peak Hour Factor | |
| Heavy Vehicles (%) | |
| Adj. Flow (vph) | |
| Shared Lane Traffic (%) | |
| Lane Group Flow (vph) | |
| Enter Blocked Intersection | |
| Lane Alignment | |
| Median Width(m) | |
| Link Offset(m) | |
| Crosswalk Width(m) | |
| Two way Left Turn Lane | |
| Headway Factor | |
| Turning Speed (k/h) | |
| Number of Detectors | |
| Detector Template | |
| Leading Detector (m) | |
| Trailing Detector (m) | |
| Detector 1 Position(m) | |
| Detector 1 Size(m) | |
| Detector 1 Type | |
| Detector 1 Channel | |
| Detector 1 Extend (s) | |
| Detector 1 Queue (s) | |
| Detector 1 Delay (s) | |
| Detector 2 Position(m) | |
| Detector 2 Size(m) | |
| Detector 2 Type | |
| Detector 2 Channel | |
| Detector 2 Extend (s) | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | 2 | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | |
| Minimum Split (s) | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (s) | 51.0 | 51.0 | 51.0 | 51.0 | 51.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (%) | 56.7% | 56.7% | 56.7% | 56.7% | 56.7% | | 40.0% | 40.0% | | 40.0% | 40.0% | |
| Maximum Green (s) | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Recall Mode | Max | Max | Max | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | | 19.0 | 19.0 | | 19.0 | 19.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 44.2 | 44.2 | 44.2 | 44.2 | 44.2 | | | 18.9 | | 18.9 | 18.9 | |
| Actuated g/C Ratio | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | | | 0.24 | | 0.24 | 0.24 | |
| v/c Ratio | 0.06 | 0.83 | 0.02 | 0.10 | 0.30 | | | 0.23 | | 0.63 | 0.06 | |
| Control Delay | 10.9 | 21.2 | 0.1 | 14.1 | 10.5 | | | 17.2 | | 38.3 | 14.0 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 10.9 | 21.2 | 0.1 | 14.1 | 10.5 | | | 17.2 | | 38.3 | 14.0 | |
| LOS | B | C | A | B | B | | | B | | D | B | |
| Approach Delay | | 20.8 | | | 10.6 | | | 17.2 | | | 35.7 | |
| Approach LOS | | C | | | B | | | B | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 80.2 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.83 | | | |
| Intersection Signal Delay: 19.6 | | Intersection LOS: B | |
| Intersection Capacity Utilization 69.5% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 2: Private/Howard Road & Plains Road West








| Lane Group | Ø10 |
|---|---|
| Turn Type | |
| Protected Phases | 10 |
| Permitted Phases | |
| Detector Phase | |
| Switch Phase | |
| Minimum Initial (s) | 1.0 |
| Minimum Split (s) | 3.0 |
| Total Split (s) | 3.0 |
| Total Split (%) | 3% |
| Maximum Green (s) | 1.0 |
| Yellow Time (s) | 2.0 |
| All-Red Time (s) | 0.0 |
| Lost Time Adjust (s) | |
| Total Lost Time (s) | |
| Lead/Lag | |
| Lead-Lag Optimize? | |
| Vehicle Extension (s) | 3.0 |
| Recall Mode | Max |
| Walk Time (s) | |
| Flash Dont Walk (s) | |
| Pedestrian Calls (#/hr) | |
| Act Effct Green (s) | |
| Actuated g/C Ratio | |
| v/c Ratio | |
| Control Delay | |
| Queue Delay | |
| Total Delay | |
| LOS | |
| Approach Delay | |
| Approach LOS | |

| Intersection Summary |
|---|

## Queues
## 2: Private/Howard Road & Plains Road West

2033 Background - AM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 22 | 1626 | 18 | 9 | 546 | 91 | 172 | 21 |
| v/c Ratio | 0.06 | 0.83 | 0.02 | 0.10 | 0.30 | 0.23 | 0.63 | 0.06 |
| Control Delay | 10.9 | 21.2 | 0.1 | 14.1 | 10.5 | 17.2 | 38.3 | 14.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 10.9 | 21.2 | 0.1 | 14.1 | 10.5 | 17.2 | 38.3 | 14.0 |
| Queue Length 50th (m) | 1.5 | 104.3 | 0.0 | 0.6 | 21.3 | 7.1 | 24.8 | 0.9 |
| Queue Length 95th (m) | 6.1 | #191.5 | 0.0 | 3.9 | 39.4 | 18.3 | 44.8 | 6.1 |
| Internal Link Dist (m) | | 237.7 | | | 142.2 | 56.0 | | 142.6 |
| Turn Bay Length (m) | 50.0 | | 30.0 | 40.0 | | | 20.0 | |
| Base Capacity (vph) | 362 | 1951 | 902 | 94 | 1796 | 605 | 418 | 536 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.06 | 0.83 | 0.02 | 0.10 | 0.30 | 0.15 | 0.41 | 0.04 |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



## HCM Signalized Intersection Capacity Analysis
## 2: Private/Howard Road & Plains Road West

2033 Background - AM Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 20 | 1496 | 17 | 8 | 432 | 70 | 17 | 7 | 60 | 158 | 6 | 13 |
| Future Volume (vph) | 20 | 1496 | 17 | 8 | 432 | 70 | 17 | 7 | 60 | 158 | 6 | 13 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.98 | | | 0.90 | | 1.00 | 0.90 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 0.99 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1396 | 3539 | 1578 | 1805 | 3237 | | | 1682 | | 1567 | 1451 | |
| Flt Permitted | 0.45 | 1.00 | 1.00 | 0.09 | 1.00 | | | 0.94 | | 0.70 | 1.00 | |
| Satd. Flow (perm) | 658 | 3539 | 1578 | 172 | 3237 | | | 1604 | | 1152 | 1451 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 22 | 1626 | 18 | 9 | 470 | 76 | 18 | 8 | 65 | 172 | 7 | 14 |
| RTOR Reduction (vph) | 0 | 0 | 8 | 0 | 13 | 0 | 0 | 27 | 0 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 22 | 1626 | 10 | 9 | 533 | 0 | 0 | 64 | 0 | 172 | 10 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 29% | 2% | 0% | 0% | 7% | 20% | 0% | 0% | 0% | 15% | 0% | 25% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 44.2 | 44.2 | 44.2 | 44.2 | 44.2 | | | 18.9 | | 18.9 | 18.9 | |
| Effective Green, g (s) | 44.2 | 44.2 | 44.2 | 44.2 | 44.2 | | | 18.9 | | 18.9 | 18.9 | |
| Actuated g/C Ratio | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | | | 0.24 | | 0.24 | 0.24 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 363 | 1952 | 870 | 94 | 1786 | | | 378 | | 271 | 342 | |
| v/s Ratio Prot | | c0.46 | | | 0.16 | | | | | | 0.01 | |
| v/s Ratio Perm | 0.03 | | 0.01 | 0.05 | | | | 0.04 | | c0.15 | | |
| v/c Ratio | 0.06 | 0.83 | 0.01 | 0.10 | 0.30 | | | 0.17 | | 0.63 | 0.03 | |
| Uniform Delay, d1 | 8.3 | 14.9 | 8.1 | 8.5 | 9.6 | | | 24.4 | | 27.5 | 23.5 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 4.3 | 0.0 | 2.0 | 0.4 | | | 0.4 | | 6.6 | 0.1 | |
| Delay (s) | 8.6 | 19.2 | 8.1 | 10.5 | 10.1 | | | 24.8 | | 34.1 | 23.6 | |
| Level of Service | A | B | A | B | B | | | C | | C | C | |
| Approach Delay (s) | | 19.0 | | | 10.1 | | | 24.8 | | | 33.0 | |
| Approach LOS | | B | | | B | | | C | | | C | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| HCM 2000 Control Delay | 18.3 | HCM 2000 Level of Service | B | |
| HCM 2000 Volume to Capacity ratio | 0.76 | | | |
| Actuated Cycle Length (s) | 80.1 | Sum of lost time (s) | 16.0 | |
| Intersection Capacity Utilization | 69.5% | ICU Level of Service | C | |
| Analysis Period (min) | 15 | | | |

c Critical Lane Group



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 864 | 22 | 47 | 1781 | 13 | 29 | 2 | 31 | 12 | 3 | 6 |
| Future Volume (vph) | 2 | 864 | 22 | 47 | 1781 | 13 | 29 | 2 | 31 | 12 | 3 | 6 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 15.0 | | | 7.5 | | |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | 1.00 | | 1.00 | 1.00 | | 1.00 | | | | 1.00 | |
| Frt | | 0.996 | | | 0.999 | | | 0.858 | | | 0.959 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.973 | |
| Satd. Flow (prot) | 1805 | 3524 | 0 | 1805 | 3570 | 0 | 1736 | 1630 | 0 | 0 | 1766 | 0 |
| Flt Permitted | 0.079 | | | 0.288 | | | 0.851 | | | | 0.805 | |
| Satd. Flow (perm) | 150 | 3524 | 0 | 545 | 3570 | 0 | 1553 | 1630 | 0 | 0 | 1461 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 4 | | | 1 | | | 34 | | | 7 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 41 | | | 50 | |
| Link Distance (m) | | 134.7 | | | 261.7 | | | 209.2 | | | 59.5 | |
| Travel Time (s) | | 8.1 | | | 15.7 | | | 18.4 | | | 4.3 | |
| Confl. Peds. (#/hr) | 11 | | 10 | 10 | | 11 | 1 | | | | | 1 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 1% | 0% | 4% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 2 | 939 | 24 | 51 | 1936 | 14 | 32 | 2 | 34 | 13 | 3 | 7 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 2 | 963 | 0 | 51 | 1950 | 0 | 32 | 36 | 0 | 0 | 23 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |



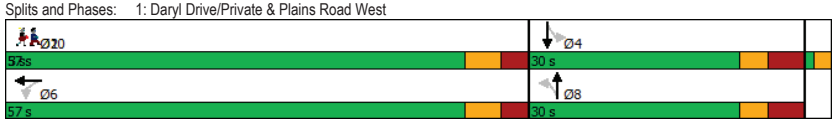


| Lane Group | Ø10 |
|---|---|
| Lane Configurations | |
| Traffic Volume (vph) | |
| Future Volume (vph) | |
| Ideal Flow (vphpl) | |
| Storage Length (m) | |
| Storage Lanes | |
| Taper Length (m) | |
| Lane Util. Factor | |
| Ped Bike Factor | |
| Frt | |
| Flt Protected | |
| Satd. Flow (prot) | |
| Flt Permitted | |
| Satd. Flow (perm) | |
| Right Turn on Red | |
| Satd. Flow (RTOR) | |
| Link Speed (k/h) | |
| Link Distance (m) | |
| Travel Time (s) | |
| Confl. Peds. (#/hr) | |
| Peak Hour Factor | |
| Heavy Vehicles (%) | |
| Adj. Flow (vph) | |
| Shared Lane Traffic (%) | |
| Lane Group Flow (vph) | |
| Enter Blocked Intersection | |
| Lane Alignment | |
| Median Width(m) | |
| Link Offset(m) | |
| Crosswalk Width(m) | |
| Two way Left Turn Lane | |
| Headway Factor | |
| Turning Speed (k/h) | |
| Number of Detectors | |
| Detector Template | |
| Leading Detector (m) | |
| Trailing Detector (m) | |
| Detector 1 Position(m) | |
| Detector 1 Size(m) | |
| Detector 1 Type | |
| Detector 1 Channel | |
| Detector 1 Extend (s) | |
| Detector 1 Queue (s) | |
| Detector 1 Delay (s) | |
| Detector 2 Position(m) | |
| Detector 2 Size(m) | |
| Detector 2 Type | |
| Detector 2 Channel | |
| Detector 2 Extend (s) | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 38.0 | 38.0 | | 38.0 | 38.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (s) | 57.0 | 57.0 | | 57.0 | 57.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (%) | 63.3% | 63.3% | | 63.3% | 63.3% | | 33.3% | 33.3% | | 33.3% | 33.3% | |
| Maximum Green (s) | 50.0 | 50.0 | | 50.0 | 50.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | |
| Yellow Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | Max | Max | | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 15.0 | 15.0 | | 15.0 | 15.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 50.7 | 50.7 | | 50.7 | 50.7 | | 8.5 | 8.5 | | | 8.5 | |
| Actuated g/C Ratio | 0.73 | 0.73 | | 0.73 | 0.73 | | 0.12 | 0.12 | | | 0.12 | |
| v/c Ratio | 0.02 | 0.37 | | 0.13 | 0.75 | | 0.17 | 0.16 | | | 0.13 | |
| Control Delay | 5.0 | 5.1 | | 5.6 | 9.9 | | 32.3 | 14.1 | | | 26.3 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 5.0 | 5.1 | | 5.6 | 9.9 | | 32.3 | 14.1 | | | 26.3 | |
| LOS | A | A | | A | A | | C | B | | | C | |
| Approach Delay | | 5.1 | | | 9.8 | | | 22.7 | | | 26.3 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 69.4 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.75 | | | |
| Intersection Signal Delay: 8.7 | | Intersection LOS: A | |
| Intersection Capacity Utilization 69.6% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 1: Daryl Drive/Private & Plains Road West








| Lane Group | Ø10 |
|---|---|
| Turn Type | |
| Protected Phases | 10 |
| Permitted Phases | |
| Detector Phase | |
| Switch Phase | |
| Minimum Initial (s) | 1.0 |
| Minimum Split (s) | 3.0 |
| Total Split (s) | 3.0 |
| Total Split (%) | 3% |
| Maximum Green (s) | 1.0 |
| Yellow Time (s) | 2.0 |
| All-Red Time (s) | 0.0 |
| Lost Time Adjust (s) | |
| Total Lost Time (s) | |
| Lead/Lag | |
| Lead-Lag Optimize? | |
| Vehicle Extension (s) | 3.0 |
| Recall Mode | Max |
| Walk Time (s) | |
| Flash Dont Walk (s) | |
| Pedestrian Calls (#/hr) | |
| Act Effct Green (s) | |
| Actuated g/C Ratio | |
| v/c Ratio | |
| Control Delay | |
| Queue Delay | |
| Total Delay | |
| LOS | |
| Approach Delay | |
| Approach LOS | |

| Intersection Summary |
|---|

## Queues
### 1: Daryl Drive/Private & Plains Road West

2033 Background - PM Peak Hour

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 2 | 963 | 51 | 1950 | 32 | 36 | 23 |
| v/c Ratio | 0.02 | 0.37 | 0.13 | 0.75 | 0.17 | 0.16 | 0.13 |
| Control Delay | 5.0 | 5.1 | 5.6 | 9.9 | 32.3 | 14.1 | 26.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 5.0 | 5.1 | 5.6 | 9.9 | 32.3 | 14.1 | 26.3 |
| Queue Length 50th (m) | 0.1 | 29.3 | 2.4 | 95.4 | 4.4 | 0.3 | 2.2 |
| Queue Length 95th (m) | 0.8 | 42.9 | 6.9 | 139.4 | 12.4 | 8.5 | 8.8 |
| Internal Link Dist (m) | | 110.7 | | 237.7 | | 185.2 | 35.5 |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | |
| Base Capacity (vph) | 109 | 2573 | 398 | 2606 | 521 | 569 | 495 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.02 | 0.37 | 0.13 | 0.75 | 0.06 | 0.06 | 0.05 |

Intersection Summary



## HCM Signalized Intersection Capacity Analysis
### 1: Daryl Drive/Private & Plains Road West

2033 Background - PM Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 864 | 22 | 47 | 1781 | 13 | 29 | 2 | 31 | 12 | 3 | 6 |
| Future Volume (vph) | 2 | 864 | 22 | 47 | 1781 | 13 | 29 | 2 | 31 | 12 | 3 | 6 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.86 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1804 | 3525 | | 1799 | 3570 | | 1734 | 1631 | | | 1765 | |
| Flt Permitted | 0.08 | 1.00 | | 0.29 | 1.00 | | 0.85 | 1.00 | | | 0.80 | |
| Satd. Flow (perm) | 150 | 3525 | | 546 | 3570 | | 1553 | 1631 | | | 1460 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 2 | 939 | 24 | 51 | 1936 | 14 | 32 | 2 | 34 | 13 | 3 | 7 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 32 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 2 | 962 | 0 | 51 | 1950 | 0 | 32 | 4 | 0 | 0 | 16 | 0 |
| Confl. Peds. (#/hr) | 11 | | 10 | 10 | | 11 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 1% | 0% | 4% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 50.6 | 50.6 | | 50.6 | 50.6 | | 4.7 | 4.7 | | | 4.7 | |
| Effective Green, g (s) | 50.6 | 50.6 | | 50.6 | 50.6 | | 4.7 | 4.7 | | | 4.7 | |
| Actuated g/C Ratio | 0.70 | 0.70 | | 0.70 | 0.70 | | 0.07 | 0.07 | | | 0.07 | |
| Clearance Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | 104 | 2467 | | 382 | 2498 | | 100 | 106 | | | 94 | |
| v/s Ratio Prot | | 0.27 | | | c0.55 | | | 0.00 | | | | |
| v/s Ratio Perm | 0.01 | | | 0.09 | | | c0.02 | | | | 0.01 | |
| v/c Ratio | 0.02 | 0.39 | | 0.13 | 0.78 | | 0.32 | 0.04 | | | 0.18 | |
| Uniform Delay, d1 | 3.3 | 4.5 | | 3.6 | 7.2 | | 32.3 | 31.7 | | | 32.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 0.3 | 0.5 | | 0.7 | 2.5 | | 1.9 | 0.2 | | | 0.9 | |
| Delay (s) | 3.6 | 4.9 | | 4.3 | 9.7 | | 34.1 | 31.8 | | | 32.9 | |
| Level of Service | A | A | | A | A | | C | C | | | C | |
| Approach Delay (s) | | 4.9 | | | 9.5 | | | 32.9 | | | 32.9 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 8.8 | HCM 2000 Level of Service | | A | |
| HCM 2000 Volume to Capacity ratio | 0.73 | | | | |
| Actuated Cycle Length (s) | 72.3 | Sum of lost time (s) | | 16.0 | |
| Intersection Capacity Utilization | 69.6% | ICU Level of Service | | C | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 22 | 782 | 43 | 24 | 1527 | 137 | 18 | 8 | 22 | 110 | 7 | 17 |
| Future Volume (vph) | 22 | 782 | 43 | 24 | 1527 | 137 | 18 | 8 | 22 | 110 | 7 | 17 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 50.0 | | 30.0 | 40.0 | | 0.0 | 0.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 0 | | 0 | 1 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 7.5 | | | 65.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 0.92 | 0.98 | 1.00 | | | 0.99 | | 1.00 | 0.98 | |
| Frt | | | 0.850 | | 0.988 | | | 0.939 | | | 0.896 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.981 | | 0.950 | | |
| Satd. Flow (prot) | 1433 | 3539 | 1615 | 1805 | 3501 | 0 | 0 | 1739 | 0 | 1805 | 1589 | 0 |
| Flt Permitted | 0.089 | | | 0.315 | | | | 0.865 | | 0.722 | | |
| Satd. Flow (perm) | 134 | 3539 | 1480 | 588 | 3501 | 0 | 0 | 1522 | 0 | 1368 | 1589 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 73 | | 15 | | | 24 | | | 18 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 50 | | | 50 | |
| Link Distance (m) | | 261.7 | | | 166.2 | | | 80.0 | | | 166.6 | |
| Travel Time (s) | | 15.7 | | | 10.0 | | | 5.8 | | | 12.0 | |
| Confl. Peds. (#/hr) | 10 | | 42 | 42 | | 10 | 21 | | 3 | 3 | | 21 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 26% | 2% | 0% | 0% | 1% | 8% | 0% | 0% | 0% | 0% | 0% | 7% |
| Adj. Flow (vph) | 24 | 850 | 47 | 26 | 1660 | 149 | 20 | 9 | 24 | 120 | 8 | 18 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 24 | 850 | 47 | 26 | 1809 | 0 | 0 | 53 | 0 | 120 | 26 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | 2.0 | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | 2.0 | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |



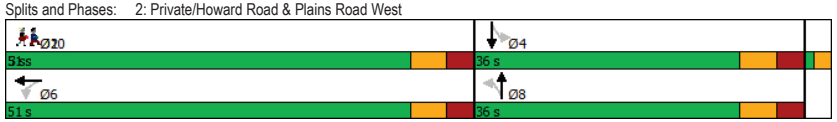


| Lane Group | Ø10 |
|---|---|
| Lane Configurations | |
| Traffic Volume (vph) | |
| Future Volume (vph) | |
| Ideal Flow (vphpl) | |
| Storage Length (m) | |
| Storage Lanes | |
| Taper Length (m) | |
| Lane Util. Factor | |
| Ped Bike Factor | |
| Frt | |
| Flt Protected | |
| Satd. Flow (prot) | |
| Flt Permitted | |
| Satd. Flow (perm) | |
| Right Turn on Red | |
| Satd. Flow (RTOR) | |
| Link Speed (k/h) | |
| Link Distance (m) | |
| Travel Time (s) | |
| Confl. Peds. (#/hr) | |
| Peak Hour Factor | |
| Heavy Vehicles (%) | |
| Adj. Flow (vph) | |
| Shared Lane Traffic (%) | |
| Lane Group Flow (vph) | |
| Enter Blocked Intersection | |
| Lane Alignment | |
| Median Width(m) | |
| Link Offset(m) | |
| Crosswalk Width(m) | |
| Two way Left Turn Lane | |
| Headway Factor | |
| Turning Speed (k/h) | |
| Number of Detectors | |
| Detector Template | |
| Leading Detector (m) | |
| Trailing Detector (m) | |
| Detector 1 Position(m) | |
| Detector 1 Size(m) | |
| Detector 1 Type | |
| Detector 1 Channel | |
| Detector 1 Extend (s) | |
| Detector 1 Queue (s) | |
| Detector 1 Delay (s) | |
| Detector 2 Position(m) | |
| Detector 2 Size(m) | |
| Detector 2 Type | |
| Detector 2 Channel | |
| Detector 2 Extend (s) | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | 2 | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | |
| Minimum Split (s) | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (s) | 51.0 | 51.0 | 51.0 | 51.0 | 51.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (%) | 56.7% | 56.7% | 56.7% | 56.7% | 56.7% | | 40.0% | 40.0% | | 40.0% | 40.0% | |
| Maximum Green (s) | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Recall Mode | Max | Max | Max | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | | 19.0 | 19.0 | | 19.0 | 19.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 44.9 | 44.9 | 44.9 | 44.9 | 44.9 | | | 14.5 | | 14.5 | 14.5 | |
| Actuated g/C Ratio | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | | | 0.20 | | 0.20 | 0.20 | |
| v/c Ratio | 0.29 | 0.38 | 0.05 | 0.07 | 0.82 | | | 0.16 | | 0.43 | 0.08 | |
| Control Delay | 20.7 | 8.8 | 1.2 | 8.4 | 17.3 | | | 17.3 | | 32.3 | 14.7 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 20.7 | 8.8 | 1.2 | 8.4 | 17.3 | | | 17.3 | | 32.3 | 14.7 | |
| LOS | C | A | A | A | B | | | B | | C | B | |
| Approach Delay | | 8.8 | | | 17.2 | | | 17.3 | | | 29.1 | |
| Approach LOS | | A | | | B | | | B | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 71.6 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.82 | | | |
| Intersection Signal Delay: 15.1 | | Intersection LOS: B | |
| Intersection Capacity Utilization 76.8% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 2: Private/Howard Road & Plains Road West








| Lane Group | Ø10 |
|---|---|
| Turn Type | |
| Protected Phases | 10 |
| Permitted Phases | |
| Detector Phase | |
| Switch Phase | |
| Minimum Initial (s) | 1.0 |
| Minimum Split (s) | 3.0 |
| Total Split (s) | 3.0 |
| Total Split (%) | 3% |
| Maximum Green (s) | 1.0 |
| Yellow Time (s) | 2.0 |
| All-Red Time (s) | 0.0 |
| Lost Time Adjust (s) | |
| Total Lost Time (s) | |
| Lead/Lag | |
| Lead-Lag Optimize? | |
| Vehicle Extension (s) | 3.0 |
| Recall Mode | Max |
| Walk Time (s) | |
| Flash Dont Walk (s) | |
| Pedestrian Calls (#/hr) | |
| Act Effct Green (s) | |
| Actuated g/C Ratio | |
| v/c Ratio | |
| Control Delay | |
| Queue Delay | |
| Total Delay | |
| LOS | |
| Approach Delay | |
| Approach LOS | |

| Intersection Summary |
|---|

## Queues
## 2: Private/Howard Road & Plains Road West

2033 Background - PM Peak Hour

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 24 | 850 | 47 | 26 | 1809 | 53 | 120 | 26 |
| v/c Ratio | 0.29 | 0.38 | 0.05 | 0.07 | 0.82 | 0.16 | 0.43 | 0.08 |
| Control Delay | 20.7 | 8.8 | 1.2 | 8.4 | 17.3 | 17.3 | 32.3 | 14.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 20.7 | 8.8 | 1.2 | 8.4 | 17.3 | 17.3 | 32.3 | 14.7 |
| Queue Length 50th (m) | 1.6 | 32.1 | 0.0 | 1.5 | 106.8 | 3.6 | 16.1 | 1.0 |
| Queue Length 95th (m) | 9.7 | 52.6 | 2.6 | 5.7 | #192.4 | 12.5 | 31.6 | 7.1 |
| Internal Link Dist (m) | | 237.7 | | | 142.2 | 56.0 | | 142.6 |
| Turn Bay Length (m) | 50.0 | | 30.0 | 40.0 | | | 20.0 | |
| Base Capacity (vph) | 83 | 2217 | 954 | 368 | 2199 | 642 | 564 | 666 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.29 | 0.38 | 0.05 | 0.07 | 0.82 | 0.08 | 0.21 | 0.04 |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



## HCM Signalized Intersection Capacity Analysis
## 2: Private/Howard Road & Plains Road West

2033 Background - PM Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 22 | 782 | 43 | 24 | 1527 | 137 | 18 | 8 | 22 | 110 | 7 | 17 |
| Future Volume (vph) | 22 | 782 | 43 | 24 | 1527 | 137 | 18 | 8 | 22 | 110 | 7 | 17 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.93 | 1.00 | 1.00 | | | 0.99 | | 1.00 | 0.98 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | | | 0.99 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | | 0.94 | | 1.00 | 0.90 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 0.98 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1432 | 3539 | 1499 | 1777 | 3501 | | | 1729 | | 1801 | 1593 | |
| Flt Permitted | 0.09 | 1.00 | 1.00 | 0.32 | 1.00 | | | 0.86 | | 0.72 | 1.00 | |
| Satd. Flow (perm) | 134 | 3539 | 1499 | 589 | 3501 | | | 1524 | | 1370 | 1593 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 24 | 850 | 47 | 26 | 1660 | 149 | 20 | 9 | 24 | 120 | 8 | 18 |
| RTOR Reduction (vph) | 0 | 0 | 18 | 0 | 6 | 0 | 0 | 20 | 0 | 0 | 15 | 0 |
| Lane Group Flow (vph) | 24 | 850 | 29 | 26 | 1803 | 0 | 0 | 33 | 0 | 120 | 11 | 0 |
| Confl. Peds. (#/hr) | 10 | | 42 | 42 | | 10 | 21 | | 3 | 3 | | 21 |
| Heavy Vehicles (%) | 26% | 2% | 0% | 0% | 1% | 8% | 0% | 0% | 0% | 0% | 0% | 7% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 44.9 | 44.9 | 44.9 | 44.9 | 44.9 | | | 11.3 | | 11.3 | 11.3 | |
| Effective Green, g (s) | 44.9 | 44.9 | 44.9 | 44.9 | 44.9 | | | 11.3 | | 11.3 | 11.3 | |
| Actuated g/C Ratio | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | | | 0.15 | | 0.15 | 0.15 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 82 | 2170 | 919 | 361 | 2147 | | | 235 | | 211 | 245 | |
| v/s Ratio Prot | | 0.24 | | | c0.52 | | | | | | 0.01 | |
| v/s Ratio Perm | 0.18 | | 0.02 | 0.04 | | | | 0.02 | | c0.09 | | |
| v/c Ratio | 0.29 | 0.39 | 0.03 | 0.07 | 0.84 | | | 0.14 | | 0.57 | 0.04 | |
| Uniform Delay, d1 | 6.7 | 7.2 | 5.6 | 5.7 | 11.3 | | | 26.7 | | 28.7 | 26.4 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 8.8 | 0.5 | 0.1 | 0.4 | 4.2 | | | 0.6 | | 5.7 | 0.2 | |
| Delay (s) | 15.5 | 7.7 | 5.6 | 6.1 | 15.4 | | | 27.3 | | 34.4 | 26.5 | |
| Level of Service | B | A | A | A | B | | | C | | C | C | |
| Approach Delay (s) | | 7.8 | | | 15.3 | | | 27.3 | | | 33.0 | |
| Approach LOS | | A | | | B | | | C | | | C | |

| Intersection Summary | | | | |
|---|---|---|---|---|
| HCM 2000 Control Delay | 14.1 | HCM 2000 Level of Service | B | |
| HCM 2000 Volume to Capacity ratio | 0.77 | | | |
| Actuated Cycle Length (s) | 73.2 | Sum of lost time (s) | 16.0 | |
| Intersection Capacity Utilization | 76.8% | ICU Level of Service | D | |
| Analysis Period (min) | 15 | | | |

c Critical Lane Group

# Appendix K

## 2028 Total Traffic Operations Reports

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 1383 | 33 | 12 | 456 | 5 | 32 | 0 | 51 | 16 | 1 | 2 |
| Future Volume (vph) | 2 | 1383 | 33 | 12 | 456 | 5 | 32 | 0 | 51 | 16 | 1 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 15.0 | | | 7.5 | | |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 0.98 | | | 0.99 | |
| Frt | | 0.996 | | | 0.999 | | | 0.850 | | | 0.986 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.959 | |
| Satd. Flow (prot) | 1805 | 3487 | 0 | 1656 | 3372 | 0 | 1687 | 1528 | 0 | 0 | 1792 | 0 |
| Flt Permitted | 0.468 | | | 0.117 | | | 0.870 | | | | 0.804 | |
| Satd. Flow (perm) | 884 | 3487 | 0 | 204 | 3372 | 0 | 1526 | 1528 | 0 | 0 | 1498 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 4 | | | 2 | | | 87 | | | 2 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 41 | | | 50 | |
| Link Distance (m) | | 134.7 | | | 106.1 | | | 209.2 | | | 59.5 | |
| Travel Time (s) | | 8.1 | | | 6.4 | | | 18.4 | | | 4.3 | |
| Confl. Peds. (#/hr) | 9 | | 24 | 24 | | 9 | 13 | | 4 | 4 | | 13 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 9% | 7% | 0% | 7% | 0% | 4% | 0% | 0% | 0% |
| Adj. Flow (vph) | 2 | 1503 | 36 | 13 | 496 | 5 | 35 | 0 | 55 | 17 | 1 | 2 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 2 | 1539 | 0 | 13 | 501 | 0 | 35 | 55 | 0 | 0 | 20 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |





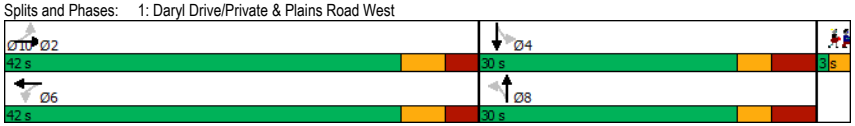
| Lane Group | Ø10 |
|---|---|
| Lane Configurations | |
| Traffic Volume (vph) | |
| Future Volume (vph) | |
| Ideal Flow (vphpl) | |
| Storage Length (m) | |
| Storage Lanes | |
| Taper Length (m) | |
| Lane Util. Factor | |
| Ped Bike Factor | |
| Frt | |
| Flt Protected | |
| Satd. Flow (prot) | |
| Flt Permitted | |
| Satd. Flow (perm) | |
| Right Turn on Red | |
| Satd. Flow (RTOR) | |
| Link Speed (k/h) | |
| Link Distance (m) | |
| Travel Time (s) | |
| Confl. Peds. (#/hr) | |
| Peak Hour Factor | |
| Heavy Vehicles (%) | |
| Adj. Flow (vph) | |
| Shared Lane Traffic (%) | |
| Lane Group Flow (vph) | |
| Enter Blocked Intersection | |
| Lane Alignment | |
| Median Width(m) | |
| Link Offset(m) | |
| Crosswalk Width(m) | |
| Two way Left Turn Lane | |
| Headway Factor | |
| Turning Speed (k/h) | |
| Number of Detectors | |
| Detector Template | |
| Leading Detector (m) | |
| Trailing Detector (m) | |
| Detector 1 Position(m) | |
| Detector 1 Size(m) | |
| Detector 1 Type | |
| Detector 1 Channel | |
| Detector 1 Extend (s) | |
| Detector 1 Queue (s) | |
| Detector 1 Delay (s) | |
| Detector 2 Position(m) | |
| Detector 2 Size(m) | |
| Detector 2 Type | |
| Detector 2 Channel | |
| Detector 2 Extend (s) | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 38.0 | 38.0 | | 38.0 | 38.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (s) | 42.0 | 42.0 | | 42.0 | 42.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (%) | 56.0% | 56.0% | | 56.0% | 56.0% | | 40.0% | 40.0% | | 40.0% | 40.0% | |
| Maximum Green (s) | 35.0 | 35.0 | | 35.0 | 35.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | |
| Yellow Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | Max | Max | | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 15.0 | 15.0 | | 15.0 | 15.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 35.8 | 35.8 | | 35.8 | 35.8 | | 8.4 | 8.4 | | | 8.4 | |
| Actuated g/C Ratio | 0.66 | 0.66 | | 0.66 | 0.66 | | 0.15 | 0.15 | | | 0.15 | |
| v/c Ratio | 0.00 | 0.67 | | 0.10 | 0.23 | | 0.15 | 0.18 | | | 0.09 | |
| Control Delay | 5.5 | 9.4 | | 8.2 | 5.4 | | 24.4 | 4.5 | | | 22.6 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 5.5 | 9.4 | | 8.2 | 5.4 | | 24.4 | 4.5 | | | 22.6 | |
| LOS | A | A | | A | A | | C | A | | | C | |
| Approach Delay | | 9.4 | | | 5.5 | | | 12.2 | | | 22.6 | |
| Approach LOS | | A | | | A | | | B | | | C | |

**Intersection Summary**

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 54.3
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 8.7 Intersection LOS: A
Intersection Capacity Utilization 62.8% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Daryl Drive/Private & Plains Road West








| Lane Group | Ø10 |
|---|---|
| Turn Type | |
| Protected Phases | 10 |
| Permitted Phases | |
| Detector Phase | |
| Switch Phase | |
| Minimum Initial (s) | 1.0 |
| Minimum Split (s) | 3.0 |
| Total Split (s) | 3.0 |
| Total Split (%) | 4% |
| Maximum Green (s) | 1.0 |
| Yellow Time (s) | 2.0 |
| All-Red Time (s) | 0.0 |
| Lost Time Adjust (s) | |
| Total Lost Time (s) | |
| Lead/Lag | |
| Lead-Lag Optimize? | |
| Vehicle Extension (s) | 3.0 |
| Recall Mode | Max |
| Walk Time (s) | |
| Flash Dont Walk (s) | |
| Pedestrian Calls (#/hr) | |
| Act Effct Green (s) | |
| Actuated g/C Ratio | |
| v/c Ratio | |
| Control Delay | |
| Queue Delay | |
| Total Delay | |
| LOS | |
| Approach Delay | |
| Approach LOS | |

**Intersection Summary**

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 2 | 1539 | 13 | 501 | 35 | 55 | 20 |
| v/c Ratio | 0.00 | 0.67 | 0.10 | 0.23 | 0.15 | 0.18 | 0.09 |
| Control Delay | 5.5 | 9.4 | 8.2 | 5.4 | 24.4 | 4.5 | 22.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 5.5 | 9.4 | 8.2 | 5.4 | 24.4 | 4.5 | 22.6 |
| Queue Length 50th (m) | 0.1 | 61.1 | 0.6 | 13.0 | 3.7 | 0.0 | 1.9 |
| Queue Length 95th (m) | 0.9 | 91.7 | 3.2 | 21.1 | 10.9 | 4.9 | 7.1 |
| Internal Link Dist (m) | | 110.7 | | 82.1 | | 185.2 | 35.5 |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | |
| Base Capacity (vph) | 581 | 2297 | 134 | 2221 | 659 | 710 | 649 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.00 | 0.67 | 0.10 | 0.23 | 0.05 | 0.08 | 0.03 |

| Intersection Summary |
|---|





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 1383 | 33 | 12 | 456 | 5 | 32 | 0 | 51 | 16 | 1 | 2 |
| Future Volume (vph) | 2 | 1383 | 33 | 12 | 456 | 5 | 32 | 0 | 51 | 16 | 1 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.85 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.96 | |
| Satd. Flow (prot) | 1797 | 3489 | | 1652 | 3370 | | 1671 | 1530 | | | 1790 | |
| Flt Permitted | 0.47 | 1.00 | | 0.12 | 1.00 | | 0.87 | 1.00 | | | 0.80 | |
| Satd. Flow (perm) | 885 | 3489 | | 203 | 3370 | | 1529 | 1530 | | | 1501 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 2 | 1503 | 36 | 13 | 496 | 5 | 35 | 0 | 55 | 17 | 1 | 2 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 51 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 2 | 1537 | 0 | 13 | 500 | 0 | 35 | 4 | 0 | 0 | 18 | 0 |
| Confl. Peds. (#/hr) | 9 | | 24 | 24 | | 9 | 13 | | 4 | 4 | | 13 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 9% | 7% | 0% | 7% | 0% | 4% | 0% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 35.7 | 35.7 | | 35.7 | 35.7 | | 4.6 | 4.6 | | | 4.6 | |
| Effective Green, g (s) | 35.7 | 35.7 | | 35.7 | 35.7 | | 4.6 | 4.6 | | | 4.6 | |
| Actuated g/C Ratio | 0.62 | 0.62 | | 0.62 | 0.62 | | 0.08 | 0.08 | | | 0.08 | |
| Clearance Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | 551 | 2173 | | 126 | 2099 | | 122 | 122 | | | 120 | |
| v/s Ratio Prot | | c0.44 | | | 0.15 | | | 0.00 | | | | |
| v/s Ratio Perm | 0.00 | | | 0.06 | | | c0.02 | | | | 0.01 | |
| v/c Ratio | 0.00 | 0.71 | | 0.10 | 0.24 | | 0.29 | 0.04 | | | 0.15 | |
| Uniform Delay, d1 | 4.1 | 7.3 | | 4.4 | 4.8 | | 24.8 | 24.3 | | | 24.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 2.0 | | 1.6 | 0.3 | | 1.3 | 0.1 | | | 0.6 | |
| Delay (s) | 4.1 | 9.3 | | 6.0 | 5.0 | | 26.1 | 24.4 | | | 25.1 | |
| Level of Service | A | A | | A | A | | C | C | | | C | |
| Approach Delay (s) | | 9.2 | | | 5.1 | | | 25.1 | | | 25.1 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 9.1 | HCM 2000 Level of Service | | A | |
| HCM 2000 Volume to Capacity ratio | 0.64 | | | | |
| Actuated Cycle Length (s) | 57.3 | Sum of lost time (s) | | 16.0 | |
| Intersection Capacity Utilization | 62.8% | ICU Level of Service | | B | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 19 | 1458 | 16 | 7 | 423 | 66 | 16 | 6 | 57 | 150 | 5 | 13 |
| Future Volume (vph) | 19 | 1458 | 16 | 7 | 423 | 66 | 16 | 6 | 57 | 150 | 5 | 13 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 50.0 | | 30.0 | 40.0 | | 0.0 | 0.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 0 | | 0 | 1 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 7.5 | | | 65.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | | 0.98 | | 1.00 | | | 0.99 | | 1.00 | 0.99 | |
| Frt | | | 0.850 | | 0.980 | | | 0.903 | | | 0.889 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.990 | | 0.950 | | |
| Satd. Flow (prot) | 1399 | 3539 | 1615 | 1805 | 3241 | 0 | 0 | 1682 | 0 | 1570 | 1410 | 0 |
| Flt Permitted | 0.454 | | | 0.090 | | | | 0.944 | | 0.701 | | |
| Satd. Flow (perm) | 667 | 3539 | 1578 | 171 | 3241 | 0 | 0 | 1602 | 0 | 1156 | 1410 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 73 | | 27 | | | 37 | | | 14 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 50 | | | 50 | |
| Link Distance (m) | | 128.1 | | | 166.2 | | | 80.0 | | | 166.6 | |
| Travel Time (s) | | 7.7 | | | 10.0 | | | 5.8 | | | 12.0 | |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 4 | | 2 | 2 | | 4 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 29% | 2% | 0% | 0% | 7% | 20% | 0% | 0% | 0% | 15% | 0% | 25% |
| Adj. Flow (vph) | 21 | 1585 | 17 | 8 | 460 | 72 | 17 | 7 | 62 | 163 | 5 | 14 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 21 | 1585 | 17 | 8 | 532 | 0 | 0 | 86 | 0 | 163 | 19 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | 2.0 | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | 2.0 | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |



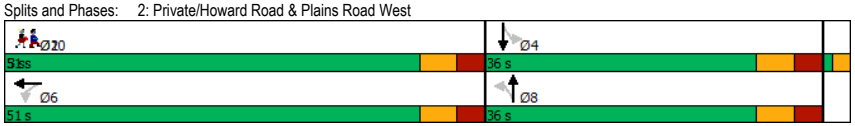


| Lane Group | Ø10 |
|---|---|
| Lane Configurations | |
| Traffic Volume (vph) | |
| Future Volume (vph) | |
| Ideal Flow (vphpl) | |
| Storage Length (m) | |
| Storage Lanes | |
| Taper Length (m) | |
| Lane Util. Factor | |
| Ped Bike Factor | |
| Frt | |
| Flt Protected | |
| Satd. Flow (prot) | |
| Flt Permitted | |
| Satd. Flow (perm) | |
| Right Turn on Red | |
| Satd. Flow (RTOR) | |
| Link Speed (k/h) | |
| Link Distance (m) | |
| Travel Time (s) | |
| Confl. Peds. (#/hr) | |
| Peak Hour Factor | |
| Heavy Vehicles (%) | |
| Adj. Flow (vph) | |
| Shared Lane Traffic (%) | |
| Lane Group Flow (vph) | |
| Enter Blocked Intersection | |
| Lane Alignment | |
| Median Width(m) | |
| Link Offset(m) | |
| Crosswalk Width(m) | |
| Two way Left Turn Lane | |
| Headway Factor | |
| Turning Speed (k/h) | |
| Number of Detectors | |
| Detector Template | |
| Leading Detector (m) | |
| Trailing Detector (m) | |
| Detector 1 Position(m) | |
| Detector 1 Size(m) | |
| Detector 1 Type | |
| Detector 1 Channel | |
| Detector 1 Extend (s) | |
| Detector 1 Queue (s) | |
| Detector 1 Delay (s) | |
| Detector 2 Position(m) | |
| Detector 2 Size(m) | |
| Detector 2 Type | |
| Detector 2 Channel | |
| Detector 2 Extend (s) | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | 2 | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | |
| Minimum Split (s) | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (s) | 51.0 | 51.0 | 51.0 | 51.0 | 51.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (%) | 56.7% | 56.7% | 56.7% | 56.7% | 56.7% | | 40.0% | 40.0% | | 40.0% | 40.0% | |
| Maximum Green (s) | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Recall Mode | Max | Max | Max | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | | 19.0 | 19.0 | | 19.0 | 19.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 44.2 | 44.2 | 44.2 | 44.2 | 44.2 | | | 18.2 | | 18.2 | 18.2 | |
| Actuated g/C Ratio | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | | | 0.23 | | 0.23 | 0.23 | |
| v/c Ratio | 0.06 | 0.81 | 0.02 | 0.08 | 0.29 | | | 0.22 | | 0.62 | 0.06 | |
| Control Delay | 10.5 | 19.6 | 0.1 | 13.1 | 10.1 | | | 16.4 | | 37.7 | 13.6 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 10.5 | 19.6 | 0.1 | 13.1 | 10.1 | | | 16.4 | | 37.7 | 13.6 | |
| LOS | B | B | A | B | B | | | B | | D | B | |
| Approach Delay | | 19.2 | | | 10.2 | | | 16.4 | | | 35.2 | |
| Approach LOS | | B | | | B | | | B | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 79.5 | | | |
| Natural Cycle: 80 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.81 | | | |
| Intersection Signal Delay: 18.3 | | Intersection LOS: B | |
| Intersection Capacity Utilization 68.1% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 2: Private/Howard Road & Plains Road West








| Lane Group | Ø10 |
|---|---|
| Turn Type | |
| Protected Phases | 10 |
| Permitted Phases | |
| Detector Phase | |
| Switch Phase | |
| Minimum Initial (s) | 1.0 |
| Minimum Split (s) | 3.0 |
| Total Split (s) | 3.0 |
| Total Split (%) | 3% |
| Maximum Green (s) | 1.0 |
| Yellow Time (s) | 2.0 |
| All-Red Time (s) | 0.0 |
| Lost Time Adjust (s) | |
| Total Lost Time (s) | |
| Lead/Lag | |
| Lead-Lag Optimize? | |
| Vehicle Extension (s) | 3.0 |
| Recall Mode | Max |
| Walk Time (s) | |
| Flash Dont Walk (s) | |
| Pedestrian Calls (#/hr) | |
| Act Effct Green (s) | |
| Actuated g/C Ratio | |
| v/c Ratio | |
| Control Delay | |
| Queue Delay | |
| Total Delay | |
| LOS | |
| Approach Delay | |
| Approach LOS | |

| Intersection Summary |
|---|

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 21 | 1585 | 17 | 8 | 532 | 86 | 163 | 19 |
| v/c Ratio | 0.06 | 0.81 | 0.02 | 0.08 | 0.29 | 0.22 | 0.62 | 0.06 |
| Control Delay | 10.5 | 19.6 | 0.1 | 13.1 | 10.1 | 16.4 | 37.7 | 13.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 10.5 | 19.6 | 0.1 | 13.1 | 10.1 | 16.4 | 37.7 | 13.6 |
| Queue Length 50th (m) | 1.4 | 97.2 | 0.0 | 0.6 | 20.2 | 6.2 | 23.2 | 0.6 |
| Queue Length 95th (m) | 5.7 | #166.4 | 0.0 | 3.5 | 37.3 | 17.2 | 42.7 | 5.7 |
| Internal Link Dist (m) | | 104.1 | | | 142.2 | 56.0 | | 142.6 |
| Turn Bay Length (m) | 50.0 | | 30.0 | 40.0 | | | 20.0 | |
| Base Capacity (vph) | 370 | 1966 | 909 | 95 | 1813 | 610 | 423 | 525 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.06 | 0.81 | 0.02 | 0.08 | 0.29 | 0.14 | 0.39 | 0.04 |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



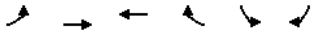


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 19 | 1458 | 16 | 7 | 423 | 66 | 16 | 6 | 57 | 150 | 5 | 13 |
| Future Volume (vph) | 19 | 1458 | 16 | 7 | 423 | 66 | 16 | 6 | 57 | 150 | 5 | 13 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.98 | | | 0.90 | | 1.00 | 0.89 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 0.99 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1396 | 3539 | 1578 | 1805 | 3241 | | | 1681 | | 1567 | 1411 | |
| Flt Permitted | 0.45 | 1.00 | 1.00 | 0.09 | 1.00 | | | 0.94 | | 0.70 | 1.00 | |
| Satd. Flow (perm) | 667 | 3539 | 1578 | 172 | 3241 | | | 1602 | | 1157 | 1411 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 21 | 1585 | 17 | 8 | 460 | 72 | 17 | 7 | 62 | 163 | 5 | 14 |
| RTOR Reduction (vph) | 0 | 0 | 8 | 0 | 12 | 0 | 0 | 29 | 0 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 21 | 1585 | 9 | 8 | 520 | 0 | 0 | 57 | 0 | 163 | 8 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 29% | 2% | 0% | 0% | 7% | 20% | 0% | 0% | 0% | 15% | 0% | 25% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 44.2 | 44.2 | 44.2 | 44.2 | 44.2 | | | 18.2 | | 18.2 | 18.2 | |
| Effective Green, g (s) | 44.2 | 44.2 | 44.2 | 44.2 | 44.2 | | | 18.2 | | 18.2 | 18.2 | |
| Actuated g/C Ratio | 0.56 | 0.56 | 0.56 | 0.56 | 0.56 | | | 0.23 | | 0.23 | 0.23 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 371 | 1970 | 878 | 95 | 1804 | | | 367 | | 265 | 323 | |
| v/s Ratio Prot | | c0.45 | | | 0.16 | | | | | | 0.01 | |
| v/s Ratio Perm | 0.03 | | 0.01 | 0.05 | | | | 0.04 | | c0.14 | | |
| v/c Ratio | 0.06 | 0.80 | 0.01 | 0.08 | 0.29 | | | 0.16 | | 0.62 | 0.03 | |
| Uniform Delay, d1 | 8.1 | 14.1 | 7.8 | 8.2 | 9.3 | | | 24.5 | | 27.5 | 23.7 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 3.6 | 0.0 | 1.7 | 0.4 | | | 0.4 | | 6.0 | 0.1 | |
| Delay (s) | 8.3 | 17.7 | 7.9 | 9.9 | 9.7 | | | 24.9 | | 33.5 | 23.8 | |
| Level of Service | A | B | A | A | A | | | C | | C | C | |
| Approach Delay (s) | | 17.5 | | | 9.7 | | | 24.9 | | | 32.4 | |
| Approach LOS | | B | | | A | | | C | | | C | |

Intersection Summary

| | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 17.2 | HCM 2000 Level of Service | | B | |
| HCM 2000 Volume to Capacity ratio | 0.74 | | | | |
| Actuated Cycle Length (s) | 79.4 | Sum of lost time (s) | | 16.0 | |
| Intersection Capacity Utilization | 68.1% | ICU Level of Service | | C | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

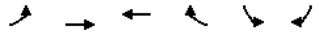


| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 9 | 1460 | 442 | 10 | 33 | 9 |
| Future Volume (vph) | 9 | 1460 | 442 | 10 | 33 | 9 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 15.0 | | | 0.0 | 0.0 | 0.0 |
| Storage Lanes | 1 | | | 0 | 1 | 0 |
| Taper Length (m) | 7.5 | | | | 7.5 | |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 0.95 | 1.00 | 1.00 |
| Frt | | | 0.997 | | 0.971 | |
| Flt Protected | 0.950 | | | | 0.962 | |
| Satd. Flow (prot) | 1805 | 3505 | 3338 | 0 | 1775 | 0 |
| Flt Permitted | 0.950 | | | | 0.962 | |
| Satd. Flow (perm) | 1805 | 3505 | 3338 | 0 | 1775 | 0 |
| Link Speed (k/h) | | 60 | 60 | | 50 | |
| Link Distance (m) | | 27.6 | 128.1 | | 63.9 | |
| Travel Time (s) | | 1.7 | 7.7 | | 4.6 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 3% | 8% | 0% | 0% | 0% |
| Adj. Flow (vph) | 10 | 1587 | 480 | 11 | 36 | 10 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 10 | 1587 | 491 | 0 | 46 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 3.6 | 3.6 | | 3.6 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | 4.8 | | 4.8 | |
| Two way Left Turn Lane | | Yes | Yes | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 |
| Sign Control | | Free | Free | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 50.4% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |







| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 9 | 1460 | 442 | 10 | 33 | 9 |
| Future Volume (Veh/h) | 9 | 1460 | 442 | 10 | 33 | 9 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 10 | 1587 | 480 | 11 | 36 | 10 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | TWLTL | TWLTL | | | |
| Median storage veh) | | 2 | 2 | | | |
| Upstream signal (m) | | 134 | 128 | | | |
| pX, platoon unblocked | 0.94 | | | | 0.71 | 0.94 |
| vC, conflicting volume | 491 | | | | 1299 | 246 |
| vC1, stage 1 conf vol | | | | | 486 | |
| vC2, stage 2 conf vol | | | | | 814 | |
| vCu, unblocked vol | 334 | | | | 246 | 73 |
| tC, single (s) | 4.1 | | | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | 5.8 | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 99 | | | | 94 | 99 |
| cM capacity (veh/h) | 1164 | | | | 610 | 923 |

| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 |
|---|---|---|---|---|---|---|
| Volume Total | 10 | 794 | 794 | 320 | 171 | 46 |
| Volume Left | 10 | 0 | 0 | 0 | 0 | 36 |
| Volume Right | 0 | 0 | 0 | 0 | 11 | 10 |
| cSH | 1164 | 1700 | 1700 | 1700 | 1700 | 659 |
| Volume to Capacity | 0.01 | 0.47 | 0.47 | 0.19 | 0.10 | 0.07 |
| Queue Length 95th (m) | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 |
| Control Delay (s) | 8.1 | 0.0 | 0.0 | 0.0 | 0.0 | 10.9 |
| Lane LOS | A | | | | | B |
| Approach Delay (s) | 0.1 | | | 0.0 | | 10.9 |
| Approach LOS | | | | | | B |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.3 | | | |
| Intersection Capacity Utilization | 50.4% | ICU Level of Service | | A |
| Analysis Period (min) | 15 | | | |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 1446 | 6 | 6 | 445 | 6 | 23 |
| Future Volume (vph) | 1446 | 6 | 6 | 445 | 6 | 23 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | | 0.0 | 15.0 | | 0.0 | 0.0 |
| Storage Lanes | | 0 | 1 | | 1 | 0 |
| Taper Length (m) | | | 7.5 | | 7.5 | |
| Lane Util. Factor | 0.95 | 0.95 | 1.00 | 0.95 | 1.00 | 1.00 |
| Frt | 0.999 | | | | 0.895 | |
| Flt Protected | | | 0.950 | | 0.989 | |
| Satd. Flow (prot) | 3502 | 0 | 1805 | 3343 | 1682 | 0 |
| Flt Permitted | | | 0.950 | | 0.989 | |
| Satd. Flow (perm) | 3502 | 0 | 1805 | 3343 | 1682 | 0 |
| Link Speed (k/h) | 60 | | | 60 | 50 | |
| Link Distance (m) | 106.1 | | | 27.6 | 69.2 | |
| Travel Time (s) | 6.4 | | | 1.7 | 5.0 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 3% | 0% | 0% | 8% | 0% | 0% |
| Adj. Flow (vph) | 1572 | 7 | 7 | 484 | 7 | 25 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 1579 | 0 | 7 | 484 | 32 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 3.6 | | | 3.6 | 3.6 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 4.8 | | | 4.8 | 4.8 | |
| Two way Left Turn Lane | Yes | | | Yes | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 |
| Sign Control | Free | | | Free | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 50.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |





| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 1446 | 6 | 6 | 445 | 6 | 23 |
| Future Volume (Veh/h) | 1446 | 6 | 6 | 445 | 6 | 23 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1572 | 7 | 7 | 484 | 7 | 25 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | TWLTL | | | TWLTL | | |
| Median storage veh) | 2 | | | 2 | | |
| Upstream signal (m) | 106 | | | 156 | | |
| pX, platoon unblocked | | | 0.69 | | 0.71 | 0.69 |
| vC, conflicting volume | | | 1579 | | 1832 | 790 |
| vC1, stage 1 conf vol | | | | | 1576 | |
| vC2, stage 2 conf vol | | | | | 256 | |
| vCu, unblocked vol | | | 926 | | 1053 | 0 |
| tC, single (s) | | | 4.1 | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | 5.8 | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 99 | | 97 | 97 |
| cM capacity (veh/h) | | | 511 | | 235 | 748 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | WB 3 | NB 1 |
|---|---|---|---|---|---|---|
| Volume Total | 1048 | 531 | 7 | 242 | 242 | 32 |
| Volume Left | 0 | 0 | 7 | 0 | 0 | 7 |
| Volume Right | 0 | 7 | 0 | 0 | 0 | 25 |
| cSH | 1700 | 1700 | 511 | 1700 | 1700 | 506 |
| Volume to Capacity | 0.62 | 0.31 | 0.01 | 0.14 | 0.14 | 0.06 |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 1.6 |
| Control Delay (s) | 0.0 | 0.0 | 12.1 | 0.0 | 0.0 | 12.6 |
| Lane LOS | | | B | | | B |
| Approach Delay (s) | 0.0 | | 0.2 | | | 12.6 |
| Approach LOS | | | | | | B |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.2 | | | |
| Intersection Capacity Utilization | 50.2% | ICU Level of Service | | A |
| Analysis Period (min) | 15 | | | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 841 | 21 | 45 | 1710 | 13 | 27 | 2 | 29 | 12 | 3 | 5 |
| Future Volume (vph) | 2 | 841 | 21 | 45 | 1710 | 13 | 27 | 2 | 29 | 12 | 3 | 5 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 15.0 | | | 7.5 | | |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | 1.00 | | | 1.00 | | 1.00 | | | | 1.00 | |
| Frt | | 0.996 | | | 0.999 | | | 0.859 | | | 0.968 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.970 | |
| Satd. Flow (prot) | 1805 | 3524 | 0 | 1805 | 3570 | 0 | 1736 | 1632 | 0 | 0 | 1778 | 0 |
| Flt Permitted | 0.079 | | | 0.298 | | | 0.851 | | | | 0.791 | |
| Satd. Flow (perm) | 150 | 3524 | 0 | 564 | 3570 | 0 | 1553 | 1632 | 0 | 0 | 1450 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 4 | | | 1 | | | 32 | | | 5 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 41 | | | 50 | |
| Link Distance (m) | | 134.7 | | | 107.5 | | | 209.2 | | | 59.5 | |
| Travel Time (s) | | 8.1 | | | 6.5 | | | 18.4 | | | 4.3 | |
| Confl. Peds. (#/hr) | 11 | | 10 | 10 | | 11 | 1 | | | | | 1 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 1% | 0% | 4% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 2 | 914 | 23 | 49 | 1859 | 14 | 29 | 2 | 32 | 13 | 3 | 5 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 2 | 937 | 0 | 49 | 1873 | 0 | 29 | 34 | 0 | 0 | 21 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |





| Lane Group | Ø10 |
|---|---|
| Lane Configurations | |
| Traffic Volume (vph) | |
| Future Volume (vph) | |
| Ideal Flow (vphpl) | |
| Storage Length (m) | |
| Storage Lanes | |
| Taper Length (m) | |
| Lane Util. Factor | |
| Ped Bike Factor | |
| Frt | |
| Flt Protected | |
| Satd. Flow (prot) | |
| Flt Permitted | |
| Satd. Flow (perm) | |
| Right Turn on Red | |
| Satd. Flow (RTOR) | |
| Link Speed (k/h) | |
| Link Distance (m) | |
| Travel Time (s) | |
| Confl. Peds. (#/hr) | |
| Peak Hour Factor | |
| Heavy Vehicles (%) | |
| Adj. Flow (vph) | |
| Shared Lane Traffic (%) | |
| Lane Group Flow (vph) | |
| Enter Blocked Intersection | |
| Lane Alignment | |
| Median Width(m) | |
| Link Offset(m) | |
| Crosswalk Width(m) | |
| Two way Left Turn Lane | |
| Headway Factor | |
| Turning Speed (k/h) | |
| Number of Detectors | |
| Detector Template | |
| Leading Detector (m) | |
| Trailing Detector (m) | |
| Detector 1 Position(m) | |
| Detector 1 Size(m) | |
| Detector 1 Type | |
| Detector 1 Channel | |
| Detector 1 Extend (s) | |
| Detector 1 Queue (s) | |
| Detector 1 Delay (s) | |
| Detector 2 Position(m) | |
| Detector 2 Size(m) | |
| Detector 2 Type | |
| Detector 2 Channel | |
| Detector 2 Extend (s) | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 38.0 | 38.0 | | 38.0 | 38.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (s) | 57.0 | 57.0 | | 57.0 | 57.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (%) | 63.3% | 63.3% | | 63.3% | 63.3% | | 33.3% | 33.3% | | 33.3% | 33.3% | |
| Maximum Green (s) | 50.0 | 50.0 | | 50.0 | 50.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | |
| Yellow Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | Max | Max | | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 15.0 | 15.0 | | 15.0 | 15.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 50.7 | 50.7 | | 50.7 | 50.7 | | 8.4 | 8.4 | | | 8.4 | |
| Actuated g/C Ratio | 0.73 | 0.73 | | 0.73 | 0.73 | | 0.12 | 0.12 | | | 0.12 | |
| v/c Ratio | 0.02 | 0.36 | | 0.12 | 0.72 | | 0.16 | 0.15 | | | 0.12 | |
| Control Delay | 5.0 | 5.0 | | 5.4 | 9.1 | | 32.2 | 14.3 | | | 27.6 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 5.0 | 5.0 | | 5.4 | 9.1 | | 32.2 | 14.3 | | | 27.6 | |
| LOS | A | A | | A | A | | C | B | | | C | |
| Approach Delay | | 5.0 | | | 9.0 | | | 22.5 | | | 27.6 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 69.3 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.72 | | | |
| Intersection Signal Delay: 8.1 | | Intersection LOS: A | |
| Intersection Capacity Utilization 67.6% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 1: Daryl Drive/Private & Plains Road West








| Lane Group | Ø10 |
|---|---|
| Turn Type | |
| Protected Phases | 10 |
| Permitted Phases | |
| Detector Phase | |
| Switch Phase | |
| Minimum Initial (s) | 1.0 |
| Minimum Split (s) | 3.0 |
| Total Split (s) | 3.0 |
| Total Split (%) | 3% |
| Maximum Green (s) | 1.0 |
| Yellow Time (s) | 2.0 |
| All-Red Time (s) | 0.0 |
| Lost Time Adjust (s) | |
| Total Lost Time (s) | |
| Lead/Lag | |
| Lead-Lag Optimize? | |
| Vehicle Extension (s) | 3.0 |
| Recall Mode | Max |
| Walk Time (s) | |
| Flash Dont Walk (s) | |
| Pedestrian Calls (#/hr) | |
| Act Effct Green (s) | |
| Actuated g/C Ratio | |
| v/c Ratio | |
| Control Delay | |
| Queue Delay | |
| Total Delay | |
| LOS | |
| Approach Delay | |
| Approach LOS | |

| Intersection Summary |
|---|

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 2 | 937 | 49 | 1873 | 29 | 34 | 21 |
| v/c Ratio | 0.02 | 0.36 | 0.12 | 0.72 | 0.16 | 0.15 | 0.12 |
| Control Delay | 5.0 | 5.0 | 5.4 | 9.1 | 32.2 | 14.3 | 27.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 5.0 | 5.0 | 5.4 | 9.1 | 32.2 | 14.3 | 27.6 |
| Queue Length 50th (m) | 0.1 | 28.2 | 2.3 | 87.7 | 4.0 | 0.3 | 2.2 |
| Queue Length 95th (m) | 0.8 | 40.8 | 6.6 | 125.6 | 11.6 | 8.2 | 8.6 |
| Internal Link Dist (m) | | 110.7 | | 83.5 | | 185.2 | 35.5 |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | |
| Base Capacity (vph) | 110 | 2576 | 412 | 2609 | 522 | 569 | 490 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.02 | 0.36 | 0.12 | 0.72 | 0.06 | 0.06 | 0.04 |

| Intersection Summary |
|---|





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 841 | 21 | 45 | 1710 | 13 | 27 | 2 | 29 | 12 | 3 | 5 |
| Future Volume (vph) | 2 | 841 | 21 | 45 | 1710 | 13 | 27 | 2 | 29 | 12 | 3 | 5 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.86 | | | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1804 | 3525 | | 1799 | 3570 | | 1734 | 1632 | | | 1778 | |
| Flt Permitted | 0.08 | 1.00 | | 0.30 | 1.00 | | 0.85 | 1.00 | | | 0.79 | |
| Satd. Flow (perm) | 150 | 3525 | | 564 | 3570 | | 1553 | 1632 | | | 1451 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 2 | 914 | 23 | 49 | 1859 | 14 | 29 | 2 | 32 | 13 | 3 | 5 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 2 | 936 | 0 | 49 | 1873 | 0 | 29 | 4 | 0 | 0 | 16 | 0 |
| Confl. Peds. (#/hr) | 11 | | 10 | 10 | | 11 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 1% | 0% | 4% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 50.6 | 50.6 | | 50.6 | 50.6 | | 4.7 | 4.7 | | | 4.7 | |
| Effective Green, g (s) | 50.6 | 50.6 | | 50.6 | 50.6 | | 4.7 | 4.7 | | | 4.7 | |
| Actuated g/C Ratio | 0.70 | 0.70 | | 0.70 | 0.70 | | 0.07 | 0.07 | | | 0.07 | |
| Clearance Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | 104 | 2467 | | 394 | 2498 | | 100 | 106 | | | 94 | |
| v/s Ratio Prot | | 0.27 | | | c0.52 | | | 0.00 | | | | |
| v/s Ratio Perm | 0.01 | | | 0.09 | | | c0.02 | | | | 0.01 | |
| v/c Ratio | 0.02 | 0.38 | | 0.12 | 0.75 | | 0.29 | 0.04 | | | 0.17 | |
| Uniform Delay, d1 | 3.3 | 4.4 | | 3.6 | 6.9 | | 32.2 | 31.7 | | | 32.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 0.3 | 0.4 | | 0.6 | 2.1 | | 1.6 | 0.1 | | | 0.9 | |
| Delay (s) | 3.6 | 4.9 | | 4.2 | 9.0 | | 33.8 | 31.8 | | | 32.8 | |
| Level of Service | A | A | | A | A | | C | C | | | C | |
| Approach Delay (s) | | 4.9 | | | 8.8 | | | 32.7 | | | 32.8 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 8.3 | HCM 2000 Level of Service | | A | |
| HCM 2000 Volume to Capacity ratio | 0.70 | | | | |
| Actuated Cycle Length (s) | 72.3 | Sum of lost time (s) | | 16.0 | |
| Intersection Capacity Utilization | 67.6% | ICU Level of Service | | C | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 21 | 770 | 41 | 23 | 1489 | 130 | 17 | 7 | 21 | 105 | 6 | 16 |
| Future Volume (vph) | 21 | 770 | 41 | 23 | 1489 | 130 | 17 | 7 | 21 | 105 | 6 | 16 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 50.0 | | 30.0 | 40.0 | | 0.0 | 0.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 0 | | 0 | 1 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 7.5 | | | 65.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 0.92 | 0.98 | 1.00 | | | 0.99 | | 1.00 | 0.98 | |
| Frt | | | 0.850 | | 0.988 | | | 0.937 | | | 0.894 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.982 | | 0.950 | | |
| Satd. Flow (prot) | 1433 | 3539 | 1615 | 1805 | 3502 | 0 | 0 | 1736 | 0 | 1805 | 1583 | 0 |
| Flt Permitted | 0.089 | | | 0.321 | | | | 0.869 | | 0.725 | | |
| Satd. Flow (perm) | 134 | 3539 | 1480 | 599 | 3502 | 0 | 0 | 1526 | 0 | 1374 | 1583 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 73 | | 14 | | | 23 | | | 17 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 50 | | | 50 | |
| Link Distance (m) | | 129.4 | | | 166.2 | | | 80.0 | | | 166.6 | |
| Travel Time (s) | | 7.8 | | | 10.0 | | | 5.8 | | | 12.0 | |
| Confl. Peds. (#/hr) | 10 | | 42 | 42 | | 10 | 21 | | 3 | 3 | | 21 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 26% | 2% | 0% | 0% | 1% | 8% | 0% | 0% | 0% | 0% | 0% | 7% |
| Adj. Flow (vph) | 23 | 837 | 45 | 25 | 1618 | 141 | 18 | 8 | 23 | 114 | 7 | 17 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 23 | 837 | 45 | 25 | 1759 | 0 | 0 | 49 | 0 | 114 | 24 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | 2.0 | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | 2.0 | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |



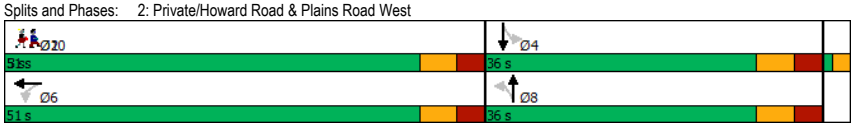


| Lane Group | Ø10 |
|---|---|
| Lane Configurations | |
| Traffic Volume (vph) | |
| Future Volume (vph) | |
| Ideal Flow (vphpl) | |
| Storage Length (m) | |
| Storage Lanes | |
| Taper Length (m) | |
| Lane Util. Factor | |
| Ped Bike Factor | |
| Frt | |
| Flt Protected | |
| Satd. Flow (prot) | |
| Flt Permitted | |
| Satd. Flow (perm) | |
| Right Turn on Red | |
| Satd. Flow (RTOR) | |
| Link Speed (k/h) | |
| Link Distance (m) | |
| Travel Time (s) | |
| Confl. Peds. (#/hr) | |
| Peak Hour Factor | |
| Heavy Vehicles (%) | |
| Adj. Flow (vph) | |
| Shared Lane Traffic (%) | |
| Lane Group Flow (vph) | |
| Enter Blocked Intersection | |
| Lane Alignment | |
| Median Width(m) | |
| Link Offset(m) | |
| Crosswalk Width(m) | |
| Two way Left Turn Lane | |
| Headway Factor | |
| Turning Speed (k/h) | |
| Number of Detectors | |
| Detector Template | |
| Leading Detector (m) | |
| Trailing Detector (m) | |
| Detector 1 Position(m) | |
| Detector 1 Size(m) | |
| Detector 1 Type | |
| Detector 1 Channel | |
| Detector 1 Extend (s) | |
| Detector 1 Queue (s) | |
| Detector 1 Delay (s) | |
| Detector 2 Position(m) | |
| Detector 2 Size(m) | |
| Detector 2 Type | |
| Detector 2 Channel | |
| Detector 2 Extend (s) | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | 2 | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | |
| Minimum Split (s) | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (s) | 51.0 | 51.0 | 51.0 | 51.0 | 51.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (%) | 56.7% | 56.7% | 56.7% | 56.7% | 56.7% | | 40.0% | 40.0% | | 40.0% | 40.0% | |
| Maximum Green (s) | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Recall Mode | Max | Max | Max | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | | 19.0 | 19.0 | | 19.0 | 19.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 44.8 | 44.8 | 44.8 | 44.8 | 44.8 | | | 14.2 | | 14.2 | 14.2 | |
| Actuated g/C Ratio | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | | | 0.20 | | 0.20 | 0.20 | |
| v/c Ratio | 0.27 | 0.38 | 0.05 | 0.07 | 0.80 | | | 0.15 | | 0.42 | 0.07 | |
| Control Delay | 19.7 | 8.6 | 1.1 | 8.1 | 16.1 | | | 17.0 | | 32.0 | 14.8 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 19.7 | 8.6 | 1.1 | 8.1 | 16.1 | | | 17.0 | | 32.0 | 14.8 | |
| LOS | B | A | A | A | B | | | B | | C | B | |
| Approach Delay | | 8.5 | | | 15.9 | | | 17.0 | | | 29.0 | |
| Approach LOS | | A | | | B | | | B | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 71.3 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.80 | | | |
| Intersection Signal Delay: 14.3 | | Intersection LOS: B | |
| Intersection Capacity Utilization 75.4% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 2: Private/Howard Road & Plains Road West








| Lane Group | Ø10 |
|---|---|
| Turn Type | |
| Protected Phases | 10 |
| Permitted Phases | |
| Detector Phase | |
| Switch Phase | |
| Minimum Initial (s) | 1.0 |
| Minimum Split (s) | 3.0 |
| Total Split (s) | 3.0 |
| Total Split (%) | 3% |
| Maximum Green (s) | 1.0 |
| Yellow Time (s) | 2.0 |
| All-Red Time (s) | 0.0 |
| Lost Time Adjust (s) | |
| Total Lost Time (s) | |
| Lead/Lag | |
| Lead-Lag Optimize? | |
| Vehicle Extension (s) | 3.0 |
| Recall Mode | Max |
| Walk Time (s) | |
| Flash Dont Walk (s) | |
| Pedestrian Calls (#/hr) | |
| Act Effct Green (s) | |
| Actuated g/C Ratio | |
| v/c Ratio | |
| Control Delay | |
| Queue Delay | |
| Total Delay | |
| LOS | |
| Approach Delay | |
| Approach LOS | |

| Intersection Summary |
|---|

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 23 | 837 | 45 | 25 | 1759 | 49 | 114 | 24 |
| v/c Ratio | 0.27 | 0.38 | 0.05 | 0.07 | 0.80 | 0.15 | 0.42 | 0.07 |
| Control Delay | 19.7 | 8.6 | 1.1 | 8.1 | 16.1 | 17.0 | 32.0 | 14.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 19.7 | 8.6 | 1.1 | 8.1 | 16.1 | 17.0 | 32.0 | 14.8 |
| Queue Length 50th (m) | 1.5 | 31.1 | 0.0 | 1.4 | 99.2 | 3.2 | 15.2 | 0.9 |
| Queue Length 95th (m) | 9.0 | 50.6 | 2.3 | 5.3 | #180.7 | 11.9 | 30.1 | 6.7 |
| Internal Link Dist (m) | | 105.4 | | | 142.2 | 56.0 | | 142.6 |
| Turn Bay Length (m) | 50.0 | | 30.0 | 40.0 | | | 20.0 | |
| Base Capacity (vph) | 84 | 2224 | 957 | 376 | 2206 | 645 | 569 | 665 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.27 | 0.38 | 0.05 | 0.07 | 0.80 | 0.08 | 0.20 | 0.04 |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



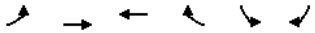


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 21 | 770 | 41 | 23 | 1489 | 130 | 17 | 7 | 21 | 105 | 6 | 16 |
| Future Volume (vph) | 21 | 770 | 41 | 23 | 1489 | 130 | 17 | 7 | 21 | 105 | 6 | 16 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.93 | 1.00 | 1.00 | | | 0.99 | | 1.00 | 0.98 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.98 | 1.00 | | | 0.99 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | | 0.94 | | 1.00 | 0.89 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 0.98 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1432 | 3539 | 1499 | 1776 | 3503 | | | 1726 | | 1801 | 1586 | |
| Flt Permitted | 0.09 | 1.00 | 1.00 | 0.32 | 1.00 | | | 0.87 | | 0.73 | 1.00 | |
| Satd. Flow (perm) | 135 | 3539 | 1499 | 601 | 3503 | | | 1527 | | 1375 | 1586 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 23 | 837 | 45 | 25 | 1618 | 141 | 18 | 8 | 23 | 114 | 7 | 17 |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 5 | 0 | 0 | 20 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 23 | 837 | 28 | 25 | 1754 | 0 | 0 | 29 | 0 | 114 | 10 | 0 |
| Confl. Peds. (#/hr) | 10 | | 42 | 42 | | 10 | 21 | | 3 | 3 | | 21 |
| Heavy Vehicles (%) | 26% | 2% | 0% | 0% | 1% | 8% | 0% | 0% | 0% | 0% | 0% | 7% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 44.8 | 44.8 | 44.8 | 44.8 | 44.8 | | | 11.0 | | 11.0 | 11.0 | |
| Effective Green, g (s) | 44.8 | 44.8 | 44.8 | 44.8 | 44.8 | | | 11.0 | | 11.0 | 11.0 | |
| Actuated g/C Ratio | 0.62 | 0.62 | 0.62 | 0.62 | 0.62 | | | 0.15 | | 0.15 | 0.15 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 83 | 2177 | 922 | 369 | 2155 | | | 230 | | 207 | 239 | |
| v/s Ratio Prot | | 0.24 | | | c0.50 | | | | | | 0.01 | |
| v/s Ratio Perm | 0.17 | | 0.02 | 0.04 | | | | 0.02 | | c0.08 | | |
| v/c Ratio | 0.28 | 0.38 | 0.03 | 0.07 | 0.81 | | | 0.13 | | 0.55 | 0.04 | |
| Uniform Delay, d1 | 6.5 | 7.1 | 5.5 | 5.6 | 10.8 | | | 26.7 | | 28.6 | 26.4 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 8.1 | 0.5 | 0.1 | 0.4 | 3.5 | | | 0.5 | | 5.3 | 0.1 | |
| Delay (s) | 14.6 | 7.6 | 5.5 | 6.0 | 14.3 | | | 27.3 | | 33.9 | 26.5 | |
| Level of Service | B | A | A | A | B | | | C | | C | C | |
| Approach Delay (s) | | 7.6 | | | 14.2 | | | 27.3 | | | 32.6 | |
| Approach LOS | | A | | | B | | | C | | | C | |

Intersection Summary

| | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 13.2 | HCM 2000 Level of Service | | B | |
| HCM 2000 Volume to Capacity ratio | 0.75 | | | | |
| Actuated Cycle Length (s) | 72.8 | Sum of lost time (s) | | 16.0 | |
| Intersection Capacity Utilization | 75.4% | ICU Level of Service | | D | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

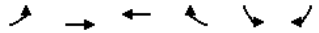


| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 17 | 809 | 1489 | 33 | 23 | 13 |
| Future Volume (vph) | 17 | 809 | 1489 | 33 | 23 | 13 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 15.0 | | | 0.0 | 0.0 | 0.0 |
| Storage Lanes | 2 | | | 0 | 1 | 0 |
| Taper Length (m) | 7.5 | | | | 7.5 | |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 0.95 | 1.00 | 1.00 |
| Frt | | | 0.997 | | 0.952 | |
| Flt Protected | 0.950 | | | | 0.969 | |
| Satd. Flow (prot) | 1805 | 3505 | 3564 | 0 | 1753 | 0 |
| Flt Permitted | 0.950 | | | | 0.969 | |
| Satd. Flow (perm) | 1805 | 3505 | 3564 | 0 | 1753 | 0 |
| Link Speed (k/h) | | 60 | 60 | | 50 | |
| Link Distance (m) | | 24.8 | 129.4 | | 59.7 | |
| Travel Time (s) | | 1.5 | 7.8 | | 4.3 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 3% | 1% | 0% | 0% | 0% |
| Adj. Flow (vph) | 18 | 879 | 1618 | 36 | 25 | 14 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 18 | 879 | 1654 | 0 | 39 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 3.6 | 3.6 | | 3.6 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | 4.8 | | 4.8 | |
| Two way Left Turn Lane | | Yes | Yes | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 |
| Sign Control | | Free | Free | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 52.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |







| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 17 | 809 | 1489 | 33 | 23 | 13 |
| Future Volume (Veh/h) | 17 | 809 | 1489 | 33 | 23 | 13 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 18 | 879 | 1618 | 36 | 25 | 14 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | TWLTL | TWLTL | | | |
| Median storage veh) | | 2 | 2 | | | |
| Upstream signal (m) | | 132 | 130 | | | |
| pX, platoon unblocked | 0.60 | | | | 0.64 | 0.60 |
| vC, conflicting volume | 1654 | | | | 2112 | 827 |
| vC1, stage 1 conf vol | | | | | 1636 | |
| vC2, stage 2 conf vol | | | | | 476 | |
| vCu, unblocked vol | 742 | | | | 966 | 0 |
| tC, single (s) | 4.1 | | | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | 5.8 | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 97 | | | | 90 | 98 |
| cM capacity (veh/h) | 521 | | | | 260 | 650 |

| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 |
|---|---|---|---|---|---|---|
| Volume Total | 18 | 440 | 440 | 1079 | 575 | 39 |
| Volume Left | 18 | 0 | 0 | 0 | 0 | 25 |
| Volume Right | 0 | 0 | 0 | 0 | 36 | 14 |
| cSH | 521 | 1700 | 1700 | 1700 | 1700 | 331 |
| Volume to Capacity | 0.03 | 0.26 | 0.26 | 0.63 | 0.34 | 0.12 |
| Queue Length 95th (m) | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 3.2 |
| Control Delay (s) | 12.2 | 0.0 | 0.0 | 0.0 | 0.0 | 17.3 |
| Lane LOS | B | | | | | C |
| Approach Delay (s) | 0.2 | | | 0.0 | | 17.3 |
| Approach LOS | | | | | | C |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.3 | | | |
| Intersection Capacity Utilization | 52.2% | ICU Level of Service | | A |
| Analysis Period (min) | 15 | | | |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 810 | 14 | 15 | 1487 | 5 | 16 |
| Future Volume (vph) | 810 | 14 | 15 | 1487 | 5 | 16 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | | 0.0 | 15.0 | | 0.0 | 0.0 |
| Storage Lanes | | 0 | 1 | | 1 | 0 |
| Taper Length (m) | | | 7.5 | | 7.5 | |
| Lane Util. Factor | 0.95 | 0.95 | 1.00 | 0.95 | 1.00 | 1.00 |
| Frt | 0.997 | | | | 0.896 | |
| Flt Protected | | | 0.950 | | 0.989 | |
| Satd. Flow (prot) | 3496 | 0 | 1805 | 3574 | 1684 | 0 |
| Flt Permitted | | | 0.950 | | 0.989 | |
| Satd. Flow (perm) | 3496 | 0 | 1805 | 3574 | 1684 | 0 |
| Link Speed (k/h) | 60 | | | 60 | 50 | |
| Link Distance (m) | 107.5 | | | 24.8 | 65.3 | |
| Travel Time (s) | 6.5 | | | 1.5 | 4.7 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 3% | 0% | 0% | 1% | 0% | 0% |
| Adj. Flow (vph) | 880 | 15 | 16 | 1616 | 5 | 17 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 895 | 0 | 16 | 1616 | 22 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 7.2 | | | 7.2 | 3.6 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 4.8 | | | 4.8 | 4.8 | |
| Two way Left Turn Lane | Yes | | | Yes | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 |
| Sign Control | Free | | | Free | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 51.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |





| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 810 | 14 | 15 | 1487 | 5 | 16 |
| Future Volume (Veh/h) | 810 | 14 | 15 | 1487 | 5 | 16 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 880 | 15 | 16 | 1616 | 5 | 17 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | TWLTL | | | TWLTL | | |
| Median storage veh) | 2 | | | 2 | | |
| Upstream signal (m) | 108 | | | 154 | | |
| pX, platoon unblocked | | | 0.90 | | 0.65 | 0.90 |
| vC, conflicting volume | | | 895 | | 1728 | 448 |
| vC1, stage 1 conf vol | | | | | 888 | |
| vC2, stage 2 conf vol | | | | | 840 | |
| vCu, unblocked vol | | | 661 | | 357 | 164 |
| tC, single (s) | | | 4.1 | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | 5.8 | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 98 | | 99 | 98 |
| cM capacity (veh/h) | | | 843 | | 425 | 772 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | WB 3 | NB 1 |
|---|---|---|---|---|---|---|
| Volume Total | 587 | 308 | 16 | 808 | 808 | 22 |
| Volume Left | 0 | 0 | 16 | 0 | 0 | 5 |
| Volume Right | 0 | 15 | 0 | 0 | 0 | 17 |
| cSH | 1700 | 1700 | 843 | 1700 | 1700 | 652 |
| Volume to Capacity | 0.35 | 0.18 | 0.02 | 0.48 | 0.48 | 0.03 |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 | 0.8 |
| Control Delay (s) | 0.0 | 0.0 | 9.4 | 0.0 | 0.0 | 10.7 |
| Lane LOS | | | A | | | B |
| Approach Delay (s) | 0.0 | | 0.1 | | | 10.7 |
| Approach LOS | | | | | | B |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.2 | | | |
| Intersection Capacity Utilization | 51.1% | ICU Level of Service | | A |
| Analysis Period (min) | 15 | | | |

# Appendix L

## 2033 Total Traffic Operations Reports

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 1452 | 34 | 12 | 476 | 6 | 33 | 0 | 54 | 17 | 1 | 2 |
| Future Volume (vph) | 2 | 1452 | 34 | 12 | 476 | 6 | 33 | 0 | 54 | 17 | 1 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 15.0 | | | 7.5 | | |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 0.99 | 1.00 | | | 1.00 | | 0.99 | 0.98 | | | 0.99 | |
| Frt | | 0.997 | | | 0.998 | | | 0.850 | | | 0.987 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.959 | |
| Satd. Flow (prot) | 1805 | 3490 | 0 | 1656 | 3369 | 0 | 1687 | 1528 | 0 | 0 | 1794 | 0 |
| Flt Permitted | 0.458 | | | 0.112 | | | 0.870 | | | | 0.807 | |
| Satd. Flow (perm) | 865 | 3490 | 0 | 195 | 3369 | 0 | 1526 | 1528 | 0 | 0 | 1505 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 4 | | | 2 | | | 87 | | | 2 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 41 | | | 50 | |
| Link Distance (m) | | 134.7 | | | 106.1 | | | 209.2 | | | 59.5 | |
| Travel Time (s) | | 8.1 | | | 6.4 | | | 18.4 | | | 4.3 | |
| Confl. Peds. (#/hr) | 9 | | 24 | 24 | | 9 | 13 | | 4 | 4 | | 13 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 9% | 7% | 0% | 7% | 0% | 4% | 0% | 0% | 0% |
| Adj. Flow (vph) | 2 | 1578 | 37 | 13 | 517 | 7 | 36 | 0 | 59 | 18 | 1 | 2 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 2 | 1615 | 0 | 13 | 524 | 0 | 36 | 59 | 0 | 0 | 21 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |



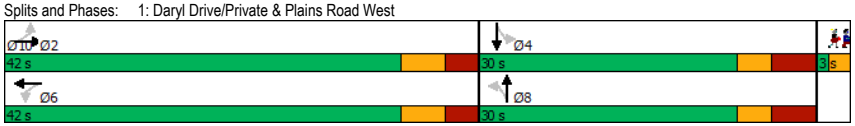


| Lane Group | Ø10 |
|---|---|
| Lane Configurations | |
| Traffic Volume (vph) | |
| Future Volume (vph) | |
| Ideal Flow (vphpl) | |
| Storage Length (m) | |
| Storage Lanes | |
| Taper Length (m) | |
| Lane Util. Factor | |
| Ped Bike Factor | |
| Frt | |
| Flt Protected | |
| Satd. Flow (prot) | |
| Flt Permitted | |
| Satd. Flow (perm) | |
| Right Turn on Red | |
| Satd. Flow (RTOR) | |
| Link Speed (k/h) | |
| Link Distance (m) | |
| Travel Time (s) | |
| Confl. Peds. (#/hr) | |
| Peak Hour Factor | |
| Heavy Vehicles (%) | |
| Adj. Flow (vph) | |
| Shared Lane Traffic (%) | |
| Lane Group Flow (vph) | |
| Enter Blocked Intersection | |
| Lane Alignment | |
| Median Width(m) | |
| Link Offset(m) | |
| Crosswalk Width(m) | |
| Two way Left Turn Lane | |
| Headway Factor | |
| Turning Speed (k/h) | |
| Number of Detectors | |
| Detector Template | |
| Leading Detector (m) | |
| Trailing Detector (m) | |
| Detector 1 Position(m) | |
| Detector 1 Size(m) | |
| Detector 1 Type | |
| Detector 1 Channel | |
| Detector 1 Extend (s) | |
| Detector 1 Queue (s) | |
| Detector 1 Delay (s) | |
| Detector 2 Position(m) | |
| Detector 2 Size(m) | |
| Detector 2 Type | |
| Detector 2 Channel | |
| Detector 2 Extend (s) | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 38.0 | 38.0 | | 38.0 | 38.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (s) | 42.0 | 42.0 | | 42.0 | 42.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (%) | 56.0% | 56.0% | | 56.0% | 56.0% | | 40.0% | 40.0% | | 40.0% | 40.0% | |
| Maximum Green (s) | 35.0 | 35.0 | | 35.0 | 35.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | |
| Yellow Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | Max | Max | | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 15.0 | 15.0 | | 15.0 | 15.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 35.8 | 35.8 | | 35.8 | 35.8 | | 8.4 | 8.4 | | | 8.4 | |
| Actuated g/C Ratio | 0.66 | 0.66 | | 0.66 | 0.66 | | 0.15 | 0.15 | | | 0.15 | |
| v/c Ratio | 0.00 | 0.70 | | 0.10 | 0.24 | | 0.15 | 0.19 | | | 0.09 | |
| Control Delay | 5.5 | 10.1 | | 8.3 | 5.5 | | 24.4 | 5.1 | | | 22.7 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 5.5 | 10.1 | | 8.3 | 5.5 | | 24.4 | 5.1 | | | 22.7 | |
| LOS | A | B | | A | A | | C | A | | | C | |
| Approach Delay | | 10.1 | | | 5.5 | | | 12.4 | | | 22.7 | |
| Approach LOS | | B | | | A | | | B | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 75 | | | |
| Actuated Cycle Length: 54.3 | | | |
| Natural Cycle: 75 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.70 | | | |
| Intersection Signal Delay: 9.2 | | Intersection LOS: A | |
| Intersection Capacity Utilization 64.8% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 1: Daryl Drive/Private & Plains Road West








| Lane Group | Ø10 |
|---|---|
| Turn Type | |
| Protected Phases | 10 |
| Permitted Phases | |
| Detector Phase | |
| Switch Phase | |
| Minimum Initial (s) | 1.0 |
| Minimum Split (s) | 3.0 |
| Total Split (s) | 3.0 |
| Total Split (%) | 4% |
| Maximum Green (s) | 1.0 |
| Yellow Time (s) | 2.0 |
| All-Red Time (s) | 0.0 |
| Lost Time Adjust (s) | |
| Total Lost Time (s) | |
| Lead/Lag | |
| Lead-Lag Optimize? | |
| Vehicle Extension (s) | 3.0 |
| Recall Mode | Max |
| Walk Time (s) | |
| Flash Dont Walk (s) | |
| Pedestrian Calls (#/hr) | |
| Act Effct Green (s) | |
| Actuated g/C Ratio | |
| v/c Ratio | |
| Control Delay | |
| Queue Delay | |
| Total Delay | |
| LOS | |
| Approach Delay | |
| Approach LOS | |

| Intersection Summary |
|---|

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 2 | 1615 | 13 | 524 | 36 | 59 | 21 |
| v/c Ratio | 0.00 | 0.70 | 0.10 | 0.24 | 0.15 | 0.19 | 0.09 |
| Control Delay | 5.5 | 10.1 | 8.3 | 5.5 | 24.4 | 5.1 | 22.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 5.5 | 10.1 | 8.3 | 5.5 | 24.4 | 5.1 | 22.7 |
| Queue Length 50th (m) | 0.1 | 66.6 | 0.6 | 13.7 | 3.8 | 0.0 | 2.0 |
| Queue Length 95th (m) | 0.9 | 100.4 | 3.2 | 22.2 | 11.1 | 5.6 | 7.4 |
| Internal Link Dist (m) | | 110.7 | | 82.1 | | 185.2 | 35.5 |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | |
| Base Capacity (vph) | 569 | 2299 | 128 | 2219 | 659 | 710 | 652 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.00 | 0.70 | 0.10 | 0.24 | 0.05 | 0.08 | 0.03 |

| Intersection Summary |
|---|





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 1452 | 34 | 12 | 476 | 6 | 33 | 0 | 54 | 17 | 1 | 2 |
| Future Volume (vph) | 2 | 1452 | 34 | 12 | 476 | 6 | 33 | 0 | 54 | 17 | 1 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.85 | | | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.96 | |
| Satd. Flow (prot) | 1797 | 3489 | | 1653 | 3369 | | 1671 | 1530 | | | 1791 | |
| Flt Permitted | 0.46 | 1.00 | | 0.11 | 1.00 | | 0.87 | 1.00 | | | 0.81 | |
| Satd. Flow (perm) | 866 | 3489 | | 195 | 3369 | | 1530 | 1530 | | | 1508 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 2 | 1578 | 37 | 13 | 517 | 7 | 36 | 0 | 59 | 18 | 1 | 2 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 54 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 2 | 1613 | 0 | 13 | 523 | 0 | 36 | 5 | 0 | 0 | 19 | 0 |
| Confl. Peds. (#/hr) | 9 | | 24 | 24 | | 9 | 13 | | 4 | 4 | | 13 |
| Heavy Vehicles (%) | 0% | 3% | 3% | 9% | 7% | 0% | 7% | 0% | 4% | 0% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 35.7 | 35.7 | | 35.7 | 35.7 | | 4.6 | 4.6 | | | 4.6 | |
| Effective Green, g (s) | 35.7 | 35.7 | | 35.7 | 35.7 | | 4.6 | 4.6 | | | 4.6 | |
| Actuated g/C Ratio | 0.62 | 0.62 | | 0.62 | 0.62 | | 0.08 | 0.08 | | | 0.08 | |
| Clearance Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | 539 | 2173 | | 121 | 2099 | | 122 | 122 | | | 121 | |
| v/s Ratio Prot | | c0.46 | | | 0.16 | | | 0.00 | | | | |
| v/s Ratio Perm | 0.00 | | | 0.07 | | | c0.02 | | | | 0.01 | |
| v/c Ratio | 0.00 | 0.74 | | 0.11 | 0.25 | | 0.30 | 0.04 | | | 0.16 | |
| Uniform Delay, d1 | 4.1 | 7.6 | | 4.4 | 4.8 | | 24.8 | 24.3 | | | 24.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 0.0 | 2.3 | | 1.8 | 0.3 | | 1.4 | 0.1 | | | 0.6 | |
| Delay (s) | 4.1 | 9.9 | | 6.1 | 5.1 | | 26.2 | 24.4 | | | 25.2 | |
| Level of Service | A | A | | A | A | | C | C | | | C | |
| Approach Delay (s) | | 9.9 | | | 5.1 | | | 25.1 | | | 25.2 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 9.6 | HCM 2000 Level of Service | | A | |
| HCM 2000 Volume to Capacity ratio | 0.67 | | | | |
| Actuated Cycle Length (s) | 57.3 | Sum of lost time (s) | | 16.0 | |
| Intersection Capacity Utilization | 64.8% | ICU Level of Service | | C | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 20 | 1529 | 17 | 8 | 442 | 70 | 17 | 7 | 60 | 158 | 6 | 13 |
| Future Volume (vph) | 20 | 1529 | 17 | 8 | 442 | 70 | 17 | 7 | 60 | 158 | 6 | 13 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 50.0 | | 30.0 | 40.0 | | 0.0 | 0.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 0 | | 0 | 1 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 7.5 | | | 65.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | 1.00 | | 0.98 | | 1.00 | | | 0.99 | | 1.00 | 0.99 | |
| Frt | | | 0.850 | | 0.979 | | | 0.904 | | | 0.900 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.990 | | 0.950 | | |
| Satd. Flow (prot) | 1399 | 3539 | 1615 | 1805 | 3237 | 0 | 0 | 1684 | 0 | 1570 | 1450 | 0 |
| Flt Permitted | 0.444 | | | 0.090 | | | | 0.944 | | 0.698 | | |
| Satd. Flow (perm) | 652 | 3539 | 1578 | 171 | 3237 | 0 | 0 | 1604 | 0 | 1151 | 1450 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 73 | | 27 | | | 34 | | | 14 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 50 | | | 50 | |
| Link Distance (m) | | 128.1 | | | 166.2 | | | 80.0 | | | 166.6 | |
| Travel Time (s) | | 7.7 | | | 10.0 | | | 5.8 | | | 12.0 | |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 4 | | 2 | 2 | | 4 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 29% | 2% | 0% | 0% | 7% | 20% | 0% | 0% | 0% | 15% | 0% | 25% |
| Adj. Flow (vph) | 22 | 1662 | 18 | 9 | 480 | 76 | 18 | 8 | 65 | 172 | 7 | 14 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 22 | 1662 | 18 | 9 | 556 | 0 | 0 | 91 | 0 | 172 | 21 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | 2.0 | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | 2.0 | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |



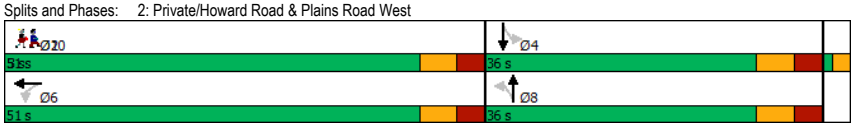


| Lane Group | Ø10 |
|---|---|
| Lane Configurations | |
| Traffic Volume (vph) | |
| Future Volume (vph) | |
| Ideal Flow (vphpl) | |
| Storage Length (m) | |
| Storage Lanes | |
| Taper Length (m) | |
| Lane Util. Factor | |
| Ped Bike Factor | |
| Frt | |
| Flt Protected | |
| Satd. Flow (prot) | |
| Flt Permitted | |
| Satd. Flow (perm) | |
| Right Turn on Red | |
| Satd. Flow (RTOR) | |
| Link Speed (k/h) | |
| Link Distance (m) | |
| Travel Time (s) | |
| Confl. Peds. (#/hr) | |
| Peak Hour Factor | |
| Heavy Vehicles (%) | |
| Adj. Flow (vph) | |
| Shared Lane Traffic (%) | |
| Lane Group Flow (vph) | |
| Enter Blocked Intersection | |
| Lane Alignment | |
| Median Width(m) | |
| Link Offset(m) | |
| Crosswalk Width(m) | |
| Two way Left Turn Lane | |
| Headway Factor | |
| Turning Speed (k/h) | |
| Number of Detectors | |
| Detector Template | |
| Leading Detector (m) | |
| Trailing Detector (m) | |
| Detector 1 Position(m) | |
| Detector 1 Size(m) | |
| Detector 1 Type | |
| Detector 1 Channel | |
| Detector 1 Extend (s) | |
| Detector 1 Queue (s) | |
| Detector 1 Delay (s) | |
| Detector 2 Position(m) | |
| Detector 2 Size(m) | |
| Detector 2 Type | |
| Detector 2 Channel | |
| Detector 2 Extend (s) | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | 2 | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | |
| Minimum Split (s) | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (s) | 51.0 | 51.0 | 51.0 | 51.0 | 51.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (%) | 56.7% | 56.7% | 56.7% | 56.7% | 56.7% | | 40.0% | 40.0% | | 40.0% | 40.0% | |
| Maximum Green (s) | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Recall Mode | Max | Max | Max | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | | 19.0 | 19.0 | | 19.0 | 19.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 44.2 | 44.2 | 44.2 | 44.2 | 44.2 | | | 18.9 | | 18.9 | 18.9 | |
| Actuated g/C Ratio | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | | | 0.24 | | 0.24 | 0.24 | |
| v/c Ratio | 0.06 | 0.85 | 0.02 | 0.10 | 0.31 | | | 0.23 | | 0.63 | 0.06 | |
| Control Delay | 11.0 | 22.1 | 0.1 | 14.1 | 10.6 | | | 17.4 | | 38.3 | 14.0 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 11.0 | 22.1 | 0.1 | 14.1 | 10.6 | | | 17.4 | | 38.3 | 14.0 | |
| LOS | B | C | A | B | B | | | B | | D | B | |
| Approach Delay | | 21.8 | | | 10.7 | | | 17.4 | | | 35.7 | |
| Approach LOS | | C | | | B | | | B | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 80.2 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.85 | | | |
| Intersection Signal Delay: 20.2 | | Intersection LOS: C | |
| Intersection Capacity Utilization 70.4% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 2: Private/Howard Road & Plains Road West








| Lane Group | Ø10 |
|---|---|
| Turn Type | |
| Protected Phases | 10 |
| Permitted Phases | |
| Detector Phase | |
| Switch Phase | |
| Minimum Initial (s) | 1.0 |
| Minimum Split (s) | 3.0 |
| Total Split (s) | 3.0 |
| Total Split (%) | 3% |
| Maximum Green (s) | 1.0 |
| Yellow Time (s) | 2.0 |
| All-Red Time (s) | 0.0 |
| Lost Time Adjust (s) | |
| Total Lost Time (s) | |
| Lead/Lag | |
| Lead-Lag Optimize? | |
| Vehicle Extension (s) | 3.0 |
| Recall Mode | Max |
| Walk Time (s) | |
| Flash Dont Walk (s) | |
| Pedestrian Calls (#/hr) | |
| Act Effct Green (s) | |
| Actuated g/C Ratio | |
| v/c Ratio | |
| Control Delay | |
| Queue Delay | |
| Total Delay | |
| LOS | |
| Approach Delay | |
| Approach LOS | |

| Intersection Summary |
|---|

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 22 | 1662 | 18 | 9 | 556 | 91 | 172 | 21 |
| v/c Ratio | 0.06 | 0.85 | 0.02 | 0.10 | 0.31 | 0.23 | 0.63 | 0.06 |
| Control Delay | 11.0 | 22.1 | 0.1 | 14.1 | 10.6 | 17.4 | 38.3 | 14.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 11.0 | 22.1 | 0.1 | 14.1 | 10.6 | 17.4 | 38.3 | 14.0 |
| Queue Length 50th (m) | 1.5 | 108.5 | 0.0 | 0.6 | 21.9 | 7.2 | 24.8 | 0.9 |
| Queue Length 95th (m) | 6.1 | #198.6 | 0.0 | 3.9 | 40.3 | 18.5 | 44.8 | 6.1 |
| Internal Link Dist (m) | | 104.1 | | | 142.2 | 56.0 | | 142.6 |
| Turn Bay Length (m) | 50.0 | | 30.0 | 40.0 | | | 20.0 | |
| Base Capacity (vph) | 359 | 1951 | 902 | 94 | 1796 | 604 | 418 | 536 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.06 | 0.85 | 0.02 | 0.10 | 0.31 | 0.15 | 0.41 | 0.04 |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

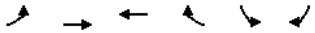




| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 20 | 1529 | 17 | 8 | 442 | 70 | 17 | 7 | 60 | 158 | 6 | 13 |
| Future Volume (vph) | 20 | 1529 | 17 | 8 | 442 | 70 | 17 | 7 | 60 | 158 | 6 | 13 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | | 0.99 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.98 | | | 0.90 | | 1.00 | 0.90 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 0.99 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1396 | 3539 | 1578 | 1805 | 3239 | | | 1682 | | 1567 | 1451 | |
| Flt Permitted | 0.44 | 1.00 | 1.00 | 0.09 | 1.00 | | | 0.94 | | 0.70 | 1.00 | |
| Satd. Flow (perm) | 652 | 3539 | 1578 | 172 | 3239 | | | 1604 | | 1152 | 1451 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 22 | 1662 | 18 | 9 | 480 | 76 | 18 | 8 | 65 | 172 | 7 | 14 |
| RTOR Reduction (vph) | 0 | 0 | 8 | 0 | 12 | 0 | 0 | 26 | 0 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 22 | 1662 | 10 | 9 | 544 | 0 | 0 | 65 | 0 | 172 | 10 | 0 |
| Confl. Peds. (#/hr) | 4 | | 2 | 2 | | 4 | 4 | | 2 | 2 | | 4 |
| Heavy Vehicles (%) | 29% | 2% | 0% | 0% | 7% | 20% | 0% | 0% | 0% | 15% | 0% | 25% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 44.2 | 44.2 | 44.2 | 44.2 | 44.2 | | | 18.9 | | 18.9 | 18.9 | |
| Effective Green, g (s) | 44.2 | 44.2 | 44.2 | 44.2 | 44.2 | | | 18.9 | | 18.9 | 18.9 | |
| Actuated g/C Ratio | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | | | 0.24 | | 0.24 | 0.24 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 359 | 1952 | 870 | 94 | 1787 | | | 378 | | 271 | 342 | |
| v/s Ratio Prot | | c0.47 | | | 0.17 | | | | | | 0.01 | |
| v/s Ratio Perm | 0.03 | | 0.01 | 0.05 | | | | 0.04 | | c0.15 | | |
| v/c Ratio | 0.06 | 0.85 | 0.01 | 0.10 | 0.30 | | | 0.17 | | 0.63 | 0.03 | |
| Uniform Delay, d1 | 8.3 | 15.2 | 8.1 | 8.5 | 9.7 | | | 24.4 | | 27.5 | 23.5 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.3 | 4.9 | 0.0 | 2.0 | 0.4 | | | 0.5 | | 6.6 | 0.1 | |
| Delay (s) | 8.7 | 20.1 | 8.1 | 10.5 | 10.1 | | | 24.8 | | 34.1 | 23.6 | |
| Level of Service | A | C | A | B | B | | | C | | C | C | |
| Approach Delay (s) | | 19.8 | | | 10.1 | | | 24.8 | | | 33.0 | |
| Approach LOS | | B | | | B | | | C | | | C | |

| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 18.8 | HCM 2000 Level of Service | | B | |
| HCM 2000 Volume to Capacity ratio | 0.77 | | | | |
| Actuated Cycle Length (s) | 80.1 | Sum of lost time (s) | | 16.0 | |
| Intersection Capacity Utilization | 70.4% | ICU Level of Service | | C | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

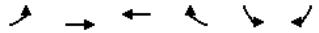


| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 9 | 1533 | 462 | 10 | 33 | 9 |
| Future Volume (vph) | 9 | 1533 | 462 | 10 | 33 | 9 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 15.0 | | | 0.0 | 0.0 | 0.0 |
| Storage Lanes | 1 | | | 0 | 1 | 0 |
| Taper Length (m) | 7.5 | | | | 7.5 | |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 0.95 | 1.00 | 1.00 |
| Frt | | | 0.997 | | 0.971 | |
| Flt Protected | 0.950 | | | | 0.962 | |
| Satd. Flow (prot) | 1805 | 3505 | 3338 | 0 | 1775 | 0 |
| Flt Permitted | 0.950 | | | | 0.962 | |
| Satd. Flow (perm) | 1805 | 3505 | 3338 | 0 | 1775 | 0 |
| Link Speed (k/h) | | 60 | 60 | | 50 | |
| Link Distance (m) | | 27.6 | 128.1 | | 63.9 | |
| Travel Time (s) | | 1.7 | 7.7 | | 4.6 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 3% | 8% | 0% | 0% | 0% |
| Adj. Flow (vph) | 10 | 1666 | 502 | 11 | 36 | 10 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 10 | 1666 | 513 | 0 | 46 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 3.6 | 3.6 | | 3.6 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | 4.8 | | 4.8 | |
| Two way Left Turn Lane | | Yes | Yes | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 |
| Sign Control | | Free | Free | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 52.4% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |







| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 9 | 1533 | 462 | 10 | 33 | 9 |
| Future Volume (Veh/h) | 9 | 1533 | 462 | 10 | 33 | 9 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 10 | 1666 | 502 | 11 | 36 | 10 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | TWLTL | TWLTL | | | |
| Median storage veh) | | 2 | 2 | | | |
| Upstream signal (m) | | 134 | 128 | | | |
| pX, platoon unblocked | 0.93 | | | | 0.68 | 0.93 |
| vC, conflicting volume | 513 | | | | 1360 | 256 |
| vC1, stage 1 conf vol | | | | | 508 | |
| vC2, stage 2 conf vol | | | | | 853 | |
| vCu, unblocked vol | 339 | | | | 176 | 65 |
| tC, single (s) | 4.1 | | | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | 5.8 | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 99 | | | | 94 | 99 |
| cM capacity (veh/h) | 1151 | | | | 608 | 928 |

| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 |
|---|---|---|---|---|---|---|
| Volume Total | 10 | 833 | 833 | 335 | 178 | 46 |
| Volume Left | 10 | 0 | 0 | 0 | 0 | 36 |
| Volume Right | 0 | 0 | 0 | 0 | 11 | 10 |
| cSH | 1151 | 1700 | 1700 | 1700 | 1700 | 657 |
| Volume to Capacity | 0.01 | 0.49 | 0.49 | 0.20 | 0.10 | 0.07 |
| Queue Length 95th (m) | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 |
| Control Delay (s) | 8.2 | 0.0 | 0.0 | 0.0 | 0.0 | 10.9 |
| Lane LOS | A | | | | | B |
| Approach Delay (s) | 0.0 | | | 0.0 | | 10.9 |
| Approach LOS | | | | | | B |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | | 0.3 | | |
| Intersection Capacity Utilization | | 52.4% | ICU Level of Service | A |
| Analysis Period (min) | | 15 | | |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 1519 | 6 | 6 | 465 | 6 | 23 |
| Future Volume (vph) | 1519 | 6 | 6 | 465 | 6 | 23 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | | 0.0 | 15.0 | | 0.0 | 0.0 |
| Storage Lanes | | 0 | 1 | | 1 | 0 |
| Taper Length (m) | | | 7.5 | | 7.5 | |
| Lane Util. Factor | 0.95 | 0.95 | 1.00 | 0.95 | 1.00 | 1.00 |
| Frt | 0.999 | | | | 0.895 | |
| Flt Protected | | | 0.950 | | 0.989 | |
| Satd. Flow (prot) | 3502 | 0 | 1805 | 3343 | 1682 | 0 |
| Flt Permitted | | | 0.950 | | 0.989 | |
| Satd. Flow (perm) | 3502 | 0 | 1805 | 3343 | 1682 | 0 |
| Link Speed (k/h) | 60 | | | 60 | 50 | |
| Link Distance (m) | 106.1 | | | 27.6 | 69.2 | |
| Travel Time (s) | 6.4 | | | 1.7 | 5.0 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 3% | 0% | 0% | 8% | 0% | 0% |
| Adj. Flow (vph) | 1651 | 7 | 7 | 505 | 7 | 25 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 1658 | 0 | 7 | 505 | 32 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 3.6 | | | 3.6 | 3.6 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 4.8 | | | 4.8 | 4.8 | |
| Two way Left Turn Lane | Yes | | | Yes | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 |
| Sign Control | Free | | | Free | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 52.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |





| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 1519 | 6 | 6 | 465 | 6 | 23 |
| Future Volume (Veh/h) | 1519 | 6 | 6 | 465 | 6 | 23 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 1651 | 7 | 7 | 505 | 7 | 25 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | TWLTL | | | TWLTL | | |
| Median storage veh) | 2 | | | 2 | | |
| Upstream signal (m) | 106 | | | 156 | | |
| pX, platoon unblocked | | | 0.65 | | 0.68 | 0.65 |
| vC, conflicting volume | | | 1658 | | 1921 | 829 |
| vC1, stage 1 conf vol | | | | | 1654 | |
| vC2, stage 2 conf vol | | | | | 266 | |
| vCu, unblocked vol | | | 947 | | 1059 | 0 |
| tC, single (s) | | | 4.1 | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | 5.8 | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 99 | | 97 | 96 |
| cM capacity (veh/h) | | | 479 | | 219 | 713 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | WB 3 | NB 1 |
|---|---|---|---|---|---|---|
| Volume Total | 1101 | 557 | 7 | 252 | 252 | 32 |
| Volume Left | 0 | 0 | 7 | 0 | 0 | 7 |
| Volume Right | 0 | 7 | 0 | 0 | 0 | 25 |
| cSH | 1700 | 1700 | 479 | 1700 | 1700 | 477 |
| Volume to Capacity | 0.65 | 0.33 | 0.01 | 0.15 | 0.15 | 0.07 |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 1.7 |
| Control Delay (s) | 0.0 | 0.0 | 12.6 | 0.0 | 0.0 | 13.1 |
| Lane LOS | | | B | | | B |
| Approach Delay (s) | 0.0 | | 0.2 | | | 13.1 |
| Approach LOS | | | | | | B |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.2 | | | |
| Intersection Capacity Utilization | 52.2% | ICU Level of Service | | A |
| Analysis Period (min) | 15 | | | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 881 | 22 | 47 | 1794 | 13 | 29 | 2 | 31 | 12 | 3 | 6 |
| Future Volume (vph) | 2 | 881 | 22 | 47 | 1794 | 13 | 29 | 2 | 31 | 12 | 3 | 6 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 0.0 | | 0.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 0 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 15.0 | | | 7.5 | | |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | 1.00 | | | 1.00 | | 1.00 | | | | 1.00 | |
| Frt | | 0.996 | | | 0.999 | | | 0.858 | | | 0.959 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | | 0.973 | |
| Satd. Flow (prot) | 1805 | 3524 | 0 | 1805 | 3570 | 0 | 1736 | 1630 | 0 | 0 | 1766 | 0 |
| Flt Permitted | 0.079 | | | 0.282 | | | 0.851 | | | | 0.805 | |
| Satd. Flow (perm) | 150 | 3524 | 0 | 534 | 3570 | 0 | 1553 | 1630 | 0 | 0 | 1461 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 4 | | | 1 | | | 34 | | | 7 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 41 | | | 50 | |
| Link Distance (m) | | 134.7 | | | 107.5 | | | 209.2 | | | 59.5 | |
| Travel Time (s) | | 8.1 | | | 6.5 | | | 18.4 | | | 4.3 | |
| Confl. Peds. (#/hr) | 11 | | 10 | 10 | | 11 | 1 | | | | | 1 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 1% | 0% | 4% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 2 | 958 | 24 | 51 | 1950 | 14 | 32 | 2 | 34 | 13 | 3 | 7 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 2 | 982 | 0 | 51 | 1964 | 0 | 32 | 36 | 0 | 0 | 23 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |





| Lane Group | Ø10 |
|---|---|
| Lane Configurations | |
| Traffic Volume (vph) | |
| Future Volume (vph) | |
| Ideal Flow (vphpl) | |
| Storage Length (m) | |
| Storage Lanes | |
| Taper Length (m) | |
| Lane Util. Factor | |
| Ped Bike Factor | |
| Frt | |
| Flt Protected | |
| Satd. Flow (prot) | |
| Flt Permitted | |
| Satd. Flow (perm) | |
| Right Turn on Red | |
| Satd. Flow (RTOR) | |
| Link Speed (k/h) | |
| Link Distance (m) | |
| Travel Time (s) | |
| Confl. Peds. (#/hr) | |
| Peak Hour Factor | |
| Heavy Vehicles (%) | |
| Adj. Flow (vph) | |
| Shared Lane Traffic (%) | |
| Lane Group Flow (vph) | |
| Enter Blocked Intersection | |
| Lane Alignment | |
| Median Width(m) | |
| Link Offset(m) | |
| Crosswalk Width(m) | |
| Two way Left Turn Lane | |
| Headway Factor | |
| Turning Speed (k/h) | |
| Number of Detectors | |
| Detector Template | |
| Leading Detector (m) | |
| Trailing Detector (m) | |
| Detector 1 Position(m) | |
| Detector 1 Size(m) | |
| Detector 1 Type | |
| Detector 1 Channel | |
| Detector 1 Extend (s) | |
| Detector 1 Queue (s) | |
| Detector 1 Delay (s) | |
| Detector 2 Position(m) | |
| Detector 2 Size(m) | |
| Detector 2 Type | |
| Detector 2 Channel | |
| Detector 2 Extend (s) | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 38.0 | 38.0 | | 38.0 | 38.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (s) | 57.0 | 57.0 | | 57.0 | 57.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Split (%) | 63.3% | 63.3% | | 63.3% | 63.3% | | 33.3% | 33.3% | | 33.3% | 33.3% | |
| Maximum Green (s) | 50.0 | 50.0 | | 50.0 | 50.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | |
| Yellow Time (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| All-Red Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | Max | Max | | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 20.0 | 20.0 | | 20.0 | 20.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 15.0 | 15.0 | | 15.0 | 15.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 50.7 | 50.7 | | 50.7 | 50.7 | | 8.5 | 8.5 | | | 8.5 | |
| Actuated g/C Ratio | 0.73 | 0.73 | | 0.73 | 0.73 | | 0.12 | 0.12 | | | 0.12 | |
| v/c Ratio | 0.02 | 0.38 | | 0.13 | 0.75 | | 0.17 | 0.16 | | | 0.13 | |
| Control Delay | 5.0 | 5.2 | | 5.6 | 10.1 | | 32.3 | 14.1 | | | 26.3 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | | 0.0 | |
| Total Delay | 5.0 | 5.2 | | 5.6 | 10.1 | | 32.3 | 14.1 | | | 26.3 | |
| LOS | A | A | | A | B | | C | B | | | C | |
| Approach Delay | | 5.2 | | | 10.0 | | | 22.7 | | | 26.3 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 69.4 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.75 | | | |
| Intersection Signal Delay: 8.8 | | Intersection LOS: A | |
| Intersection Capacity Utilization 69.9% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 1: Daryl Drive/Private & Plains Road West








| Lane Group | Ø10 |
|---|---|
| Turn Type | |
| Protected Phases | 10 |
| Permitted Phases | |
| Detector Phase | |
| Switch Phase | |
| Minimum Initial (s) | 1.0 |
| Minimum Split (s) | 3.0 |
| Total Split (s) | 3.0 |
| Total Split (%) | 3% |
| Maximum Green (s) | 1.0 |
| Yellow Time (s) | 2.0 |
| All-Red Time (s) | 0.0 |
| Lost Time Adjust (s) | |
| Total Lost Time (s) | |
| Lead/Lag | |
| Lead-Lag Optimize? | |
| Vehicle Extension (s) | 3.0 |
| Recall Mode | Max |
| Walk Time (s) | |
| Flash Dont Walk (s) | |
| Pedestrian Calls (#/hr) | |
| Act Effct Green (s) | |
| Actuated g/C Ratio | |
| v/c Ratio | |
| Control Delay | |
| Queue Delay | |
| Total Delay | |
| LOS | |
| Approach Delay | |
| Approach LOS | |

| Intersection Summary |
|---|

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 2 | 982 | 51 | 1964 | 32 | 36 | 23 |
| v/c Ratio | 0.02 | 0.38 | 0.13 | 0.75 | 0.17 | 0.16 | 0.13 |
| Control Delay | 5.0 | 5.2 | 5.6 | 10.1 | 32.3 | 14.1 | 26.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 5.0 | 5.2 | 5.6 | 10.1 | 32.3 | 14.1 | 26.3 |
| Queue Length 50th (m) | 0.1 | 30.1 | 2.4 | 97.0 | 4.4 | 0.3 | 2.2 |
| Queue Length 95th (m) | 0.8 | 43.9 | 7.0 | 141.9 | 12.4 | 8.5 | 8.8 |
| Internal Link Dist (m) | | 110.7 | | 83.5 | | 185.2 | 35.5 |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | |
| Base Capacity (vph) | 109 | 2573 | 390 | 2606 | 521 | 569 | 495 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.02 | 0.38 | 0.13 | 0.75 | 0.06 | 0.06 | 0.05 |

| Intersection Summary |
|---|





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 2 | 881 | 22 | 47 | 1794 | 13 | 29 | 2 | 31 | 12 | 3 | 6 |
| Future Volume (vph) | 2 | 881 | 22 | 47 | 1794 | 13 | 29 | 2 | 31 | 12 | 3 | 6 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 1.00 | | | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Frt | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.86 | | | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 0.97 | |
| Satd. Flow (prot) | 1804 | 3525 | | 1799 | 3570 | | 1734 | 1631 | | | 1765 | |
| Flt Permitted | 0.08 | 1.00 | | 0.28 | 1.00 | | 0.85 | 1.00 | | | 0.80 | |
| Satd. Flow (perm) | 150 | 3525 | | 534 | 3570 | | 1553 | 1631 | | | 1460 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 2 | 958 | 24 | 51 | 1950 | 14 | 32 | 2 | 34 | 13 | 3 | 7 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 32 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 2 | 981 | 0 | 51 | 1964 | 0 | 32 | 4 | 0 | 0 | 16 | 0 |
| Confl. Peds. (#/hr) | 11 | | 10 | 10 | | 11 | 1 | | | | | 1 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 0% | 1% | 0% | 4% | 0% | 0% | 0% | 0% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 50.6 | 50.6 | | 50.6 | 50.6 | | 4.7 | 4.7 | | | 4.7 | |
| Effective Green, g (s) | 50.6 | 50.6 | | 50.6 | 50.6 | | 4.7 | 4.7 | | | 4.7 | |
| Actuated g/C Ratio | 0.70 | 0.70 | | 0.70 | 0.70 | | 0.07 | 0.07 | | | 0.07 | |
| Clearance Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | | 3.0 | |
| Lane Grp Cap (vph) | 104 | 2467 | | 373 | 2498 | | 100 | 106 | | | 94 | |
| v/s Ratio Prot | | 0.28 | | | c0.55 | | | 0.00 | | | | |
| v/s Ratio Perm | 0.01 | | | 0.10 | | | c0.02 | | | | 0.01 | |
| v/c Ratio | 0.02 | 0.40 | | 0.14 | 0.79 | | 0.32 | 0.04 | | | 0.18 | |
| Uniform Delay, d1 | 3.3 | 4.5 | | 3.6 | 7.2 | | 32.3 | 31.7 | | | 32.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | 0.3 | 0.5 | | 0.8 | 2.6 | | 1.9 | 0.2 | | | 0.9 | |
| Delay (s) | 3.6 | 5.0 | | 4.4 | 9.8 | | 34.1 | 31.8 | | | 32.9 | |
| Level of Service | A | A | | A | A | | C | C | | | C | |
| Approach Delay (s) | | 5.0 | | | 9.7 | | | 32.9 | | | 32.9 | |
| Approach LOS | | A | | | A | | | C | | | C | |

| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 8.9 | HCM 2000 Level of Service | | A | |
| HCM 2000 Volume to Capacity ratio | 0.73 | | | | |
| Actuated Cycle Length (s) | 72.3 | Sum of lost time (s) | | 16.0 | |
| Intersection Capacity Utilization | 69.9% | ICU Level of Service | | C | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 22 | 805 | 43 | 24 | 1560 | 137 | 18 | 8 | 22 | 110 | 7 | 17 |
| Future Volume (vph) | 22 | 805 | 43 | 24 | 1560 | 137 | 18 | 8 | 22 | 110 | 7 | 17 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 50.0 | | 30.0 | 40.0 | | 0.0 | 0.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 0 | | 0 | 1 | | 0 |
| Taper Length (m) | 0.0 | | | 0.0 | | | 7.5 | | | 65.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | 0.92 | 0.98 | 1.00 | | | 0.99 | | 1.00 | 0.98 | |
| Frt | | | 0.850 | | 0.988 | | | 0.939 | | | 0.896 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.981 | | 0.950 | | |
| Satd. Flow (prot) | 1433 | 3539 | 1615 | 1805 | 3502 | 0 | 0 | 1739 | 0 | 1805 | 1589 | 0 |
| Flt Permitted | 0.089 | | | 0.305 | | | | 0.865 | | 0.722 | | |
| Satd. Flow (perm) | 134 | 3539 | 1480 | 570 | 3502 | 0 | 0 | 1522 | 0 | 1368 | 1589 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 73 | | 14 | | | 24 | | | 18 | |
| Link Speed (k/h) | | 60 | | | 60 | | | 50 | | | 50 | |
| Link Distance (m) | | 129.4 | | | 166.2 | | | 80.0 | | | 166.6 | |
| Travel Time (s) | | 7.8 | | | 10.0 | | | 5.8 | | | 12.0 | |
| Confl. Peds. (#/hr) | 10 | | 42 | 42 | | 10 | 21 | | 3 | 3 | | 21 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 26% | 2% | 0% | 0% | 1% | 8% | 0% | 0% | 0% | 0% | 0% | 7% |
| Adj. Flow (vph) | 24 | 875 | 47 | 26 | 1696 | 149 | 20 | 9 | 24 | 120 | 8 | 18 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 24 | 875 | 47 | 26 | 1845 | 0 | 0 | 53 | 0 | 120 | 26 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | Yes | | | Yes | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 2.0 | 10.0 | 2.0 | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 2.0 | 0.6 | 2.0 | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |



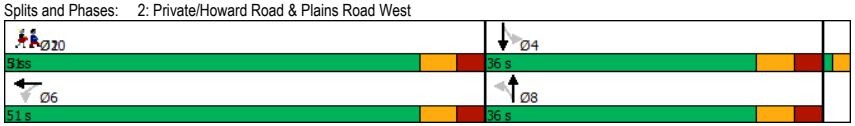


| Lane Group | Ø10 |
|---|---|
| Lane Configurations | |
| Traffic Volume (vph) | |
| Future Volume (vph) | |
| Ideal Flow (vphpl) | |
| Storage Length (m) | |
| Storage Lanes | |
| Taper Length (m) | |
| Lane Util. Factor | |
| Ped Bike Factor | |
| Frt | |
| Flt Protected | |
| Satd. Flow (prot) | |
| Flt Permitted | |
| Satd. Flow (perm) | |
| Right Turn on Red | |
| Satd. Flow (RTOR) | |
| Link Speed (k/h) | |
| Link Distance (m) | |
| Travel Time (s) | |
| Confl. Peds. (#/hr) | |
| Peak Hour Factor | |
| Heavy Vehicles (%) | |
| Adj. Flow (vph) | |
| Shared Lane Traffic (%) | |
| Lane Group Flow (vph) | |
| Enter Blocked Intersection | |
| Lane Alignment | |
| Median Width(m) | |
| Link Offset(m) | |
| Crosswalk Width(m) | |
| Two way Left Turn Lane | |
| Headway Factor | |
| Turning Speed (k/h) | |
| Number of Detectors | |
| Detector Template | |
| Leading Detector (m) | |
| Trailing Detector (m) | |
| Detector 1 Position(m) | |
| Detector 1 Size(m) | |
| Detector 1 Type | |
| Detector 1 Channel | |
| Detector 1 Extend (s) | |
| Detector 1 Queue (s) | |
| Detector 1 Delay (s) | |
| Detector 2 Position(m) | |
| Detector 2 Size(m) | |
| Detector 2 Type | |
| Detector 2 Channel | |
| Detector 2 Extend (s) | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Detector Phase | 2 | 2 | 2 | 6 | 6 | | 8 | 8 | | 4 | 4 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 12.0 | 12.0 | | 12.0 | 12.0 | |
| Minimum Split (s) | 36.0 | 36.0 | 36.0 | 36.0 | 36.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (s) | 51.0 | 51.0 | 51.0 | 51.0 | 51.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | |
| Total Split (%) | 56.7% | 56.7% | 56.7% | 56.7% | 56.7% | | 40.0% | 40.0% | | 40.0% | 40.0% | |
| Maximum Green (s) | 44.0 | 44.0 | 44.0 | 44.0 | 44.0 | | 29.0 | 29.0 | | 29.0 | 29.0 | |
| Yellow Time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | | 4.0 | 4.0 | |
| All-Red Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | |
| Recall Mode | Max | Max | Max | Max | Max | | None | None | | None | None | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | 14.0 | 14.0 | 14.0 | | 19.0 | 19.0 | | 19.0 | 19.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | 44.9 | 44.9 | 44.9 | 44.9 | 44.9 | | | 14.5 | | 14.5 | 14.5 | |
| Actuated g/C Ratio | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | | | 0.20 | | 0.20 | 0.20 | |
| v/c Ratio | 0.29 | 0.39 | 0.05 | 0.07 | 0.84 | | | 0.16 | | 0.43 | 0.08 | |
| Control Delay | 20.7 | 8.9 | 1.2 | 8.5 | 18.1 | | | 17.3 | | 32.3 | 14.7 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 20.7 | 8.9 | 1.2 | 8.5 | 18.1 | | | 17.3 | | 32.3 | 14.7 | |
| LOS | C | A | A | A | B | | | B | | C | B | |
| Approach Delay | | 8.9 | | | 17.9 | | | 17.3 | | | 29.1 | |
| Approach LOS | | A | | | B | | | B | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 71.6 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.84 | | | |
| Intersection Signal Delay: 15.6 | | Intersection LOS: B | |
| Intersection Capacity Utilization 77.7% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 2: Private/Howard Road & Plains Road West








| Lane Group | Ø10 |
|---|---|
| Turn Type | |
| Protected Phases | 10 |
| Permitted Phases | |
| Detector Phase | |
| Switch Phase | |
| Minimum Initial (s) | 1.0 |
| Minimum Split (s) | 3.0 |
| Total Split (s) | 3.0 |
| Total Split (%) | 3% |
| Maximum Green (s) | 1.0 |
| Yellow Time (s) | 2.0 |
| All-Red Time (s) | 0.0 |
| Lost Time Adjust (s) | |
| Total Lost Time (s) | |
| Lead/Lag | |
| Lead-Lag Optimize? | |
| Vehicle Extension (s) | 3.0 |
| Recall Mode | Max |
| Walk Time (s) | |
| Flash Dont Walk (s) | |
| Pedestrian Calls (#/hr) | |
| Act Effct Green (s) | |
| Actuated g/C Ratio | |
| v/c Ratio | |
| Control Delay | |
| Queue Delay | |
| Total Delay | |
| LOS | |
| Approach Delay | |
| Approach LOS | |

| Intersection Summary |
|---|

| Lane Group | EBL | EBT | EBR | WBL | WBT | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 24 | 875 | 47 | 26 | 1845 | 53 | 120 | 26 |
| v/c Ratio | 0.29 | 0.39 | 0.05 | 0.07 | 0.84 | 0.16 | 0.43 | 0.08 |
| Control Delay | 20.7 | 8.9 | 1.2 | 8.5 | 18.1 | 17.3 | 32.3 | 14.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 20.7 | 8.9 | 1.2 | 8.5 | 18.1 | 17.3 | 32.3 | 14.7 |
| Queue Length 50th (m) | 1.6 | 33.5 | 0.0 | 1.5 | 111.3 | 3.6 | 16.1 | 1.0 |
| Queue Length 95th (m) | 9.7 | 54.6 | 2.6 | 5.7 | #199.0 | 12.5 | 31.6 | 7.1 |
| Internal Link Dist (m) | | 105.4 | | | 142.2 | 56.0 | | 142.6 |
| Turn Bay Length (m) | 50.0 | | 30.0 | 40.0 | | | 20.0 | |
| Base Capacity (vph) | 83 | 2217 | 954 | 357 | 2199 | 642 | 564 | 666 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.29 | 0.39 | 0.05 | 0.07 | 0.84 | 0.08 | 0.21 | 0.04 |

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

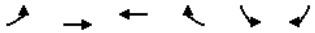




| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 22 | 805 | 43 | 24 | 1560 | 137 | 18 | 8 | 22 | 110 | 7 | 17 |
| Future Volume (vph) | 22 | 805 | 43 | 24 | 1560 | 137 | 18 | 8 | 22 | 110 | 7 | 17 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | | | 1.00 | | 1.00 | 1.00 | |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.93 | 1.00 | 1.00 | | | 0.99 | | 1.00 | 0.98 | |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 0.99 | 1.00 | | | 0.99 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | | 0.94 | | 1.00 | 0.90 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | 0.98 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1432 | 3539 | 1499 | 1778 | 3502 | | | 1729 | | 1801 | 1593 | |
| Flt Permitted | 0.09 | 1.00 | 1.00 | 0.30 | 1.00 | | | 0.86 | | 0.72 | 1.00 | |
| Satd. Flow (perm) | 134 | 3539 | 1499 | 570 | 3502 | | | 1524 | | 1370 | 1593 | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 24 | 875 | 47 | 26 | 1696 | 149 | 20 | 9 | 24 | 120 | 8 | 18 |
| RTOR Reduction (vph) | 0 | 0 | 18 | 0 | 5 | 0 | 0 | 20 | 0 | 0 | 15 | 0 |
| Lane Group Flow (vph) | 24 | 875 | 29 | 26 | 1840 | 0 | 0 | 33 | 0 | 120 | 11 | 0 |
| Confl. Peds. (#/hr) | 10 | | 42 | 42 | | 10 | 21 | | 3 | 3 | | 21 |
| Heavy Vehicles (%) | 26% | 2% | 0% | 0% | 1% | 8% | 0% | 0% | 0% | 0% | 0% | 7% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | 44.9 | 44.9 | 44.9 | 44.9 | 44.9 | | | 11.3 | | 11.3 | 11.3 | |
| Effective Green, g (s) | 44.9 | 44.9 | 44.9 | 44.9 | 44.9 | | | 11.3 | | 11.3 | 11.3 | |
| Actuated g/C Ratio | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | | | 0.15 | | 0.15 | 0.15 | |
| Clearance Time (s) | 7.0 | 7.0 | 7.0 | 7.0 | 7.0 | | | 7.0 | | 7.0 | 7.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | | 5.0 | | 5.0 | 5.0 | |
| Lane Grp Cap (vph) | 82 | 2170 | 919 | 349 | 2148 | | | 235 | | 211 | 245 | |
| v/s Ratio Prot | | 0.25 | | | c0.53 | | | | | | 0.01 | |
| v/s Ratio Perm | 0.18 | | 0.02 | 0.05 | | | | 0.02 | | c0.09 | | |
| v/c Ratio | 0.29 | 0.40 | 0.03 | 0.07 | 0.86 | | | 0.14 | | 0.57 | 0.04 | |
| Uniform Delay, d1 | 6.7 | 7.3 | 5.6 | 5.7 | 11.5 | | | 26.7 | | 28.7 | 26.4 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 8.8 | 0.6 | 0.1 | 0.4 | 4.7 | | | 0.6 | | 5.7 | 0.2 | |
| Delay (s) | 15.5 | 7.8 | 5.6 | 6.1 | 16.2 | | | 27.3 | | 34.4 | 26.5 | |
| Level of Service | B | A | A | A | B | | | C | | C | C | |
| Approach Delay (s) | | 7.9 | | | 16.0 | | | 27.3 | | | 33.0 | |
| Approach LOS | | A | | | B | | | C | | | C | |

| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 14.5 | HCM 2000 Level of Service | | B | |
| HCM 2000 Volume to Capacity ratio | 0.78 | | | | |
| Actuated Cycle Length (s) | 73.2 | Sum of lost time (s) | | 16.0 | |
| Intersection Capacity Utilization | 77.7% | ICU Level of Service | | D | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

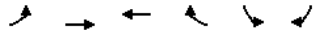


| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 17 | 847 | 1562 | 33 | 23 | 13 |
| Future Volume (vph) | 17 | 847 | 1562 | 33 | 23 | 13 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 15.0 | | | 0.0 | 0.0 | 0.0 |
| Storage Lanes | 2 | | | 0 | 1 | 0 |
| Taper Length (m) | 7.5 | | | | 7.5 | |
| Lane Util. Factor | 1.00 | 0.95 | 0.95 | 0.95 | 1.00 | 1.00 |
| Frt | | | 0.997 | | 0.952 | |
| Flt Protected | 0.950 | | | | 0.969 | |
| Satd. Flow (prot) | 1805 | 3505 | 3564 | 0 | 1753 | 0 |
| Flt Permitted | 0.950 | | | | 0.969 | |
| Satd. Flow (perm) | 1805 | 3505 | 3564 | 0 | 1753 | 0 |
| Link Speed (k/h) | | 60 | 60 | | 50 | |
| Link Distance (m) | | 24.8 | 129.4 | | 59.7 | |
| Travel Time (s) | | 1.5 | 7.8 | | 4.3 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 3% | 1% | 0% | 0% | 0% |
| Adj. Flow (vph) | 18 | 921 | 1698 | 36 | 25 | 14 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 18 | 921 | 1734 | 0 | 39 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 3.6 | 3.6 | | 3.6 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | 4.8 | | 4.8 | |
| Two way Left Turn Lane | | Yes | Yes | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 |
| Sign Control | | Free | Free | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 54.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |







| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 17 | 847 | 1562 | 33 | 23 | 13 |
| Future Volume (Veh/h) | 17 | 847 | 1562 | 33 | 23 | 13 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 18 | 921 | 1698 | 36 | 25 | 14 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | TWLTL | TWLTL | | | |
| Median storage veh) | | 2 | 2 | | | |
| Upstream signal (m) | | 132 | 130 | | | |
| pX, platoon unblocked | 0.55 | | | | 0.60 | 0.55 |
| vC, conflicting volume | 1734 | | | | 2212 | 867 |
| vC1, stage 1 conf vol | | | | | 1716 | |
| vC2, stage 2 conf vol | | | | | 496 | |
| vCu, unblocked vol | 689 | | | | 923 | 0 |
| tC, single (s) | 4.1 | | | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | 5.8 | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 96 | | | | 90 | 98 |
| cM capacity (veh/h) | 501 | | | | 255 | 598 |

| Direction, Lane # | EB 1 | EB 2 | EB 3 | WB 1 | WB 2 | SB 1 |
|---|---|---|---|---|---|---|
| Volume Total | 18 | 460 | 460 | 1132 | 602 | 39 |
| Volume Left | 18 | 0 | 0 | 0 | 0 | 25 |
| Volume Right | 0 | 0 | 0 | 0 | 36 | 14 |
| cSH | 501 | 1700 | 1700 | 1700 | 1700 | 321 |
| Volume to Capacity | 0.04 | 0.27 | 0.27 | 0.67 | 0.35 | 0.12 |
| Queue Length 95th (m) | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 3.3 |
| Control Delay (s) | 12.5 | 0.0 | 0.0 | 0.0 | 0.0 | 17.7 |
| Lane LOS | B | | | | | C |
| Approach Delay (s) | 0.2 | | | 0.0 | | 17.7 |
| Approach LOS | | | | | | C |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.3 | | | |
| Intersection Capacity Utilization | 54.2% | ICU Level of Service | | A |
| Analysis Period (min) | 15 | | | |

| Lane Group | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 848 | 14 | 15 | 1560 | 5 | 16 |
| Future Volume (vph) | 848 | 14 | 15 | 1560 | 5 | 16 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | | 0.0 | 15.0 | | 0.0 | 0.0 |
| Storage Lanes | | 0 | 1 | | 1 | 0 |
| Taper Length (m) | | | 7.5 | | 7.5 | |
| Lane Util. Factor | 0.95 | 0.95 | 1.00 | 0.95 | 1.00 | 1.00 |
| Frt | 0.998 | | | | 0.896 | |
| Flt Protected | | | 0.950 | | 0.989 | |
| Satd. Flow (prot) | 3499 | 0 | 1805 | 3574 | 1684 | 0 |
| Flt Permitted | | | 0.950 | | 0.989 | |
| Satd. Flow (perm) | 3499 | 0 | 1805 | 3574 | 1684 | 0 |
| Link Speed (k/h) | 60 | | | 60 | 50 | |
| Link Distance (m) | 107.5 | | | 24.8 | 65.3 | |
| Travel Time (s) | 6.5 | | | 1.5 | 4.7 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 3% | 0% | 0% | 1% | 0% | 0% |
| Adj. Flow (vph) | 922 | 15 | 16 | 1696 | 5 | 17 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 937 | 0 | 16 | 1696 | 22 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 7.2 | | | 7.2 | 3.6 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 4.8 | | | 4.8 | 4.8 | |
| Two way Left Turn Lane | Yes | | | Yes | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | | 15 | 25 | | 25 | 15 |
| Sign Control | Free | | | Free | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 53.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |





| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 848 | 14 | 15 | 1560 | 5 | 16 |
| Future Volume (Veh/h) | 848 | 14 | 15 | 1560 | 5 | 16 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 922 | 15 | 16 | 1696 | 5 | 17 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | TWLTL | | | TWLTL | | |
| Median storage veh) | 2 | | | 2 | | |
| Upstream signal (m) | 108 | | | 154 | | |
| pX, platoon unblocked | | | 0.89 | | 0.61 | 0.89 |
| vC, conflicting volume | | | 937 | | 1810 | 468 |
| vC1, stage 1 conf vol | | | | | 930 | |
| vC2, stage 2 conf vol | | | | | 880 | |
| vCu, unblocked vol | | | 687 | | 241 | 162 |
| tC, single (s) | | | 4.1 | | 6.8 | 6.9 |
| tC, 2 stage (s) | | | | | 5.8 | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 98 | | 99 | 98 |
| cM capacity (veh/h) | | | 817 | | 410 | 767 |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | WB 2 | WB 3 | NB 1 |
|---|---|---|---|---|---|---|
| Volume Total | 615 | 322 | 16 | 848 | 848 | 22 |
| Volume Left | 0 | 0 | 16 | 0 | 0 | 5 |
| Volume Right | 0 | 15 | 0 | 0 | 0 | 17 |
| cSH | 1700 | 1700 | 817 | 1700 | 1700 | 641 |
| Volume to Capacity | 0.36 | 0.19 | 0.02 | 0.50 | 0.50 | 0.03 |
| Queue Length 95th (m) | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 | 0.9 |
| Control Delay (s) | 0.0 | 0.0 | 9.5 | 0.0 | 0.0 | 10.8 |
| Lane LOS | | | A | | | B |
| Approach Delay (s) | 0.0 | | 0.1 | | | 10.8 |
| Approach LOS | | | | | | B |

| Intersection Summary | | | | |
|---|---|---|---|---|
| Average Delay | 0.1 | | | |
| Intersection Capacity Utilization | 53.1% | ICU Level of Service | | A |
| Analysis Period (min) | 15 | | | |