Vanasse & Associates inc
Transportation Engineers & Planners

35 New England Business Center Drive
Suite 140
Andover, MA 01810

Ref: 9575

March 30, 2023

Mr. Gregory Guertin, Senior Planner
City of Cranston
869 Park Avenue
Cranston, RI 02910

Re: Traffic Peer Review Response to Comments
Cranston PrintWorks Redevelopment
Cranston, Rhode Island

Dear Mr. Guertin:

Vanasse & Associates, Inc. (VAI) hereby submits the following responses to comments provided by Pare Corporation in their traffic peer review of the redevelopment of the former Cranston PrintWorks facility at 1381 Cranston Street in Cranston, Rhode Island. For ease of review, we have provided the initial comment followed by our responses as appropriate.

**PARE Corporation, March 24, 2023**

**Comment:** *1. Introduction Section: Appears accurately described.*

**Response:** No response required.

**Comment:** *2. Existing Conditions Section: It should be noted that the City recently painted white edge lines on Cranston Street and Dyer Avenue in the vicinity of the project to create approximately 12-foot travel lanes and paved shoulders that are intended to make the area more attractive for alternate modes of travel, such as bicycling.*

**Response:** Comment acknowledged.

**Comment:** *3. Future Conditions Section:*

*a. General Background Growth – Between 2010 and 2020, Cranston's population grew at an average rate of 0.3 percent per year. The 1% per year background growth factor appears appropriate.*

**Response:** No response required.

**Comment:** *b. Specific Development by Others – The study indicates that estimates for the Knights Corner Development were developed and included in the future conditions analysis. What land uses were used to generate these projections? How were these trips distributed? Please provide backup information.*

**Response:** Trips were calculated using Institute of Transportation Engineers (ITE) data from the 11th Edition of the *Trip Generation* manual for the proposed uses. Trip generation was based on

Land Use Code (LUC) 221, *Multifamily Housing (Mid-Rise)* for 156 units and LUC 932, *High-Turnover (Sit-Down) Restaurant* for 2,000 square feet (sf). The component sizes were provided by the project attorney. The ITE calculation worksheets along with the trip assignment traffic flow diagrams are provided in the Appendix to this letter.

**Comment:** *c. Previous Site Trip Generation – While it is noted that industrial use could occupy the site in the future, this is not currently proposed. As such, we believe it is inappropriate to add these trips to the no-build conditions.*

**Response:** The reoccupying trips have been removed from the No-Build condition.

**Comment:** *d. Proposed Site Trips – The land uses referenced to generate the anticipated site-generated trips appears to be appropriate.*

**Response:** No response required.

**Comment:** *e. Previous To Proposed Use Comparison – While it is noted that the Cranston Print Works facility once had a significant workforce on-site, this ended more than a decade ago. We suggest basing previous site trip generation values on uses and employment levels present on-site only within the last five years.*

**Response:** Refer back to response for comment 3c.

**Comment:** *f. Trip Distribution and Assignment – The directional distribution of the anticipated site-generated trips appears to be reasonable.*

**Response:** No response required.

**Comment:** *g. Table 9 – Based on comments 3.c. and 3.e. above, the values in this table will likely change.*

**Response:** As noted above, the analysis has been revised and the updated results are provided in Tables 14R and 15R.

**Table 14R**
**SIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY**

| Signalized Intersection/ Peak Hour/Movement | 2028 No-Build V/C | Delay | LOS | Queue Avg/95th | 2028 Build V/C | Delay | LOS | Queue Avg/95th |
|---|---|---|---|---|---|---|---|---|
| ***Cranston Street at Dyer Avenue*** | | | | | | | | |
| *Weekday Morning:* | | | | | | | | |
| Cranston St EB LT/TH/RT | 1.20 | 126.4 | F | 16/23 | 1.22 | 136.0 | F | 17/24 |
| Cranston St WB LT/TH/RT | 0.94 | 43.7 | D | 10/17 | 0.96 | 47.9 | D | 10/17 |
| Dyer Ave NB LT/TH/RT | 0.79 | 26.8 | C | 9/11 | 0.81 | 28.1 | C | 9/11 |
| Dyer Ave SB LT/TH | 0.66 | 20.4 | C | 8/8 | 0.70 | 21.6 | C | 9/9 |
| Dyer Ave SB RT | 0.20 | 13.6 | B | 1/2 | 0.20 | 13.6 | B | 1/2 |
| **Overall** | -- | **54.5** | **D** | -- | -- | **58.7** | **E** | -- |
| *Weekday Evening:* | | | | | | | | |
| Cranston St EB LT/TH/RT | 1.12 | 99.9 | F | 15/19 | 1.15 | 112.1 | F | 12/20 |
| Cranston St WB LT/TH/RT | 0.88 | 32.4 | C | 10/19 | 0.90 | 35.8 | D | 11/20 |
| Dyer Ave NB LT/TH/RT | 0.61 | 19.0 | B | 7/11 | 0.61 | 19.0 | B | 7/11 |
| Dyer Ave SB LT/TH | 0.49 | 16.8 | B | 5/8 | 0.51 | 17.2 | B | 6/9 |
| Dyer Ave SB RT | 0.14 | 13.0 | B | 1/2 | 0.14 | 13.0 | B | 1/2 |
| **Overall** | -- | **40.5** | **D** | -- | -- | **44.4** | **D** | -- |

[a]Volume-to-capacity ratio.
[b]Control (signal) delay per vehicle in seconds.
[c]Level of service.
[d]Queue length in vehicles.
NB = northbound; SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

**Table 15R**
**UNSIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY**

| Unsignalized Intersection/ Critical Movement/Peak Hour | 2028 No-Build Demand | Delay | LOS | Queue | 2028 Build Demand | Delay | LOS | Queue |
|---|---|---|---|---|---|---|---|---|
| ***Dyer Avenue at Puritan Avenue and North Site Driveway:*** | | | | | | | | |
| *Weekday Morning:* | | | | | | | | |
| North Site Driveway EB LT/TH/RT | -- | -- | -- | -- | 2 | 35.0 | E | 0 |
| Puritan Avenue WB LT/TH/RT | 22 | 29.5 | D | 1 | 22 | 34.9 | D | 1 |
| *Weekday Evening:* | | | | | | | | |
| North Site Driveway EB LT/TH/RT | -- | -- | -- | -- | 3 | 28.3 | D | 0 |
| Puritan Avenue WB LT/TH/RT | 49 | 28.2 | D | 2 | 49 | 38.1 | E | 2 |
| ***Dyer Avenue at Governor Street and South Site Driveway:*** | | | | | | | | |
| *Weekday Morning:* | | | | | | | | |
| South Site Driveway EB LT/TH/RT | -- | -- | -- | -- | 22 | 27.9 | D | 1 |
| Governor Street WB LT/TH/RT | 13 | 28.3 | D | 1 | 13 | 38.5 | E | 1 |
| *Weekday Evening:* | | | | | | | | |
| South Site Driveway EB LT/TH/RT | -- | -- | -- | -- | 13 | 21.8 | C | 0 |
| Governor Street WB LT/TH/RT | 22 | 18.6 | C | 1 | 22 | 22.5 | C | 1 |
| ***Cranston Street at Cranston Print Works Driveway:*** | | | | | | | | |
| *Weekday Morning:* | | | | | | | | |
| Cranston Print Works Driveway SB LT/RT | 2 | 25.6 | D | 1 | 21 | 24.1 | C | 1 |
| *Weekday Evening:* | | | | | | | | |
| Cranston Print Works Driveway SB LT/RT | 0 | 0.0 | A | 0 | 15 | 22.3 | C | 1 |
| ***Cranston Street at Haven Avenue:*** | | | | | | | | |
| *Weekday Morning:* | | | | | | | | |
| Cranston Street SB LT/RT | 26 | 14.1 | B | 1 | 26 | 14.2 | B | 1 |
| *Weekday Evening:* | | | | | | | | |
| Cranston Street SB LT/RT | 38 | 15.0 | C | 1 | 38 | 15.2 | C | 1 |

[a]Demand in vehicles per hour.
[b]Delay in seconds per vehicle.
[c]Level of service.
[d]95th percentile queue length in feet.
NB = northbound; SB = southbound; EB = eastbound; WB = westbound; NEB = northeastbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

**Comment:** *4. Parking Generation Section: The parking demand analysis appears to be appropriate.*

**Response:** No response required.

**Comment:** *5. Sight Distance Evaluation Section:*

*a. Why was no speed study conducted on Dyer Avenue? We recommend that at least spot speed studies be conducted in the vicinity of the proposed site access points on Dyer Avenue to base the sight distance analysis on actual operating speeds.*

**Response:** The sight distances were measured in the field at greater than 500+ feet and the speed limit is posted for 25 miles per hour (mph). According to the AASHTO Green Book this sight distance would be acceptable for speeds over 55 miles per hour (mph) for stopping sight distance (SSD) and greater than 45 mph for intersection sight distance (ISD). It is for this reason that we believe a speed study does not need to be conducted on Dyer Avenue.

**Comment:** *b. The duplexes on Dyer Avenue near the site access points are located directly at the back of the sidewalk, less than 10 feet from the curb line. Do these structures limit*

*intersection sight distance?*

**Response:** The duplexes are existing buildings and did not block the sight distance measurements.

**Comment:** *6. Traffic Operations Analysis Section:*

*a. The traffic capacity analyses appears to have been conducted using industry standards.*

**Response:** No response required.

**Comment:** *b. Based on comments 3.c. and 3.e. above, we anticipate the future condition analyses will need to be re-run and the analysis results presented in a revised table.*

**Response:** Refer to the response to comment 3g.

**Comment:** *c. We note that under building conditions, the Cranston Street eastbound approach at Dyer Avenue is over capacity. The existing conditions analyses indicate that this is not the current condition. The applicant's engineer should address this.*

**Response:** It should be noted that under existing conditions, the Cranston Street eastbound approach is shown to be at capacity under the 2023 Existing weekday morning condition and at 97 percent of capacity under the 2023 Existing weekday evening condition. Even under the revised condition prepared for this response letter, both of the 2028 No Build conditions are shown to be well over capacity, without the addition of the Project. This indicates an existing issue with the intersection.

However, a review of operations at the intersection indicates the Cranston Street eastbound approach at the Dyer Avenue intersection can benefit from modifications to the traffic signal timing. The results of adjustments to the signal timing are shown in Table 14RR.

**Table 14RR**
**SIGNALIZED INTERSECTION CAPACITY ANALYSIS SUMMARY**

| Signalized Intersection/ Peak Hour/Movement | 2028 No-Build | | | | 2028 Build | | | | 2028 Build Mitigated | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | V/C | Delay | LOS | Queue Avg/95th | V/C | Delay | LOS | Queue Avg/95th | V/C | Delay | LOS | Queue Avg/95th |
| ***Cranston Street at Dyer Avenue*** | | | | | | | | | | | | |
| *Weekday Morning:* | | | | | | | | | | | | |
| Cranston St EB LT/TH/RT | 1.20 | 126.4 | F | 16/23 | 1.22 | 136.0 | F | 17/24 | 1.05 | 70.5 | E | 15/22 |
| Cranston St WB LT/TH/RT | 0.94 | 43.7 | D | 10/17 | 0.96 | 47.9 | D | 10/17 | 0.83 | 25.9 | C | 9/15 |
| Dyer Ave NB LT/TH/RT | 0.79 | 26.8 | C | 9/11 | 0.81 | 28.1 | C | 9/11 | 1.06 | 79.3 | E | 12/15 |
| Dyer Ave SB LT/TH | 0.66 | 20.4 | C | 8/8 | 0.70 | 21.6 | C | 9/9 | 0.81 | 29.9 | C | 10/10 |
| Dyer Ave SB RT | 0.20 | 13.6 | B | 1/2 | 0.20 | 13.6 | B | 1/2 | 0.23 | 16.4 | B | 2/2 |
| **Overall** | -- | **54.5** | **D** | -- | -- | **58.7** | **E** | -- | -- | **49.9** | **D** | -- |
| *Weekday Evening:* | | | | | | | | | | | | |
| Cranston St EB LT/TH/RT | 1.12 | 99.9 | F | 15/19 | 1.15 | 112.1 | F | 12/20 | 0.93 | 40.6 | D | 8/17 |
| Cranston St WB LT/TH/RT | 0.88 | 32.4 | C | 10/19 | 0.90 | 35.8 | D | 11/20 | 0.78 | 20.3 | C | 9/14 |
| Dyer Ave NB LT/TH/RT | 0.61 | 19.0 | B | 7/11 | 0.61 | 19.0 | B | 7/11 | 0.72 | 24.9 | C | 9/14 |
| Dyer Ave SB LT/TH | 0.49 | 16.8 | B | 5/8 | 0.51 | 17.2 | B | 6/9 | 0.62 | 22.4 | C | 7/10 |
| Dyer Ave SB RT | 0.14 | 13.0 | B | 1/2 | 0.14 | 13.0 | B | 1/2 | 0.17 | 15.7 | B | 1/3 |
| **Overall** | -- | **40.5** | **D** | -- | -- | **44.4** | **D** | -- | -- | **26.1** | **C** | -- |

[a]Volume-to-capacity ratio.
[b]Control (signal) delay per vehicle in seconds.
[c]Level of service.
[d]Queue length in vehicles.
NB = northbound; SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

As shown in Table 14RR, modifications to the signal timing can improve delays on the Cranston Street eastbound approach. The City may wish to review the possibilities for retiming or other modifications to the intersection to increase capacity.

**Comment:** 7. *General: There is no discussion regarding how pedestrians and bicyclists associated with the development will be accommodated. The applicant's engineer should address this.*

**Response:** The site is an adaptive re-use of a former mill complex with constraints on physical space. However, the Applicant will propose indoor and outdoor bicycle parking spaces for residents. Additional details will be provided on the site plans provided by Allen & Major, Inc.

I trust that these responses address the comments and if additional information is required, please do not hesitate to contact me.

Sincerely,

VANASSE & ASSOCIATES, INC.

Scott W. Thornton, P.E.
Principal

Technical Appendix

cc: File

# APPENDIX

BACKGROUND TRIP GENERATION DATA
BACKGROUND FIGURES
CAPACITY ANALYSIS

# BACKGROUND TRIP GENERATION DATA

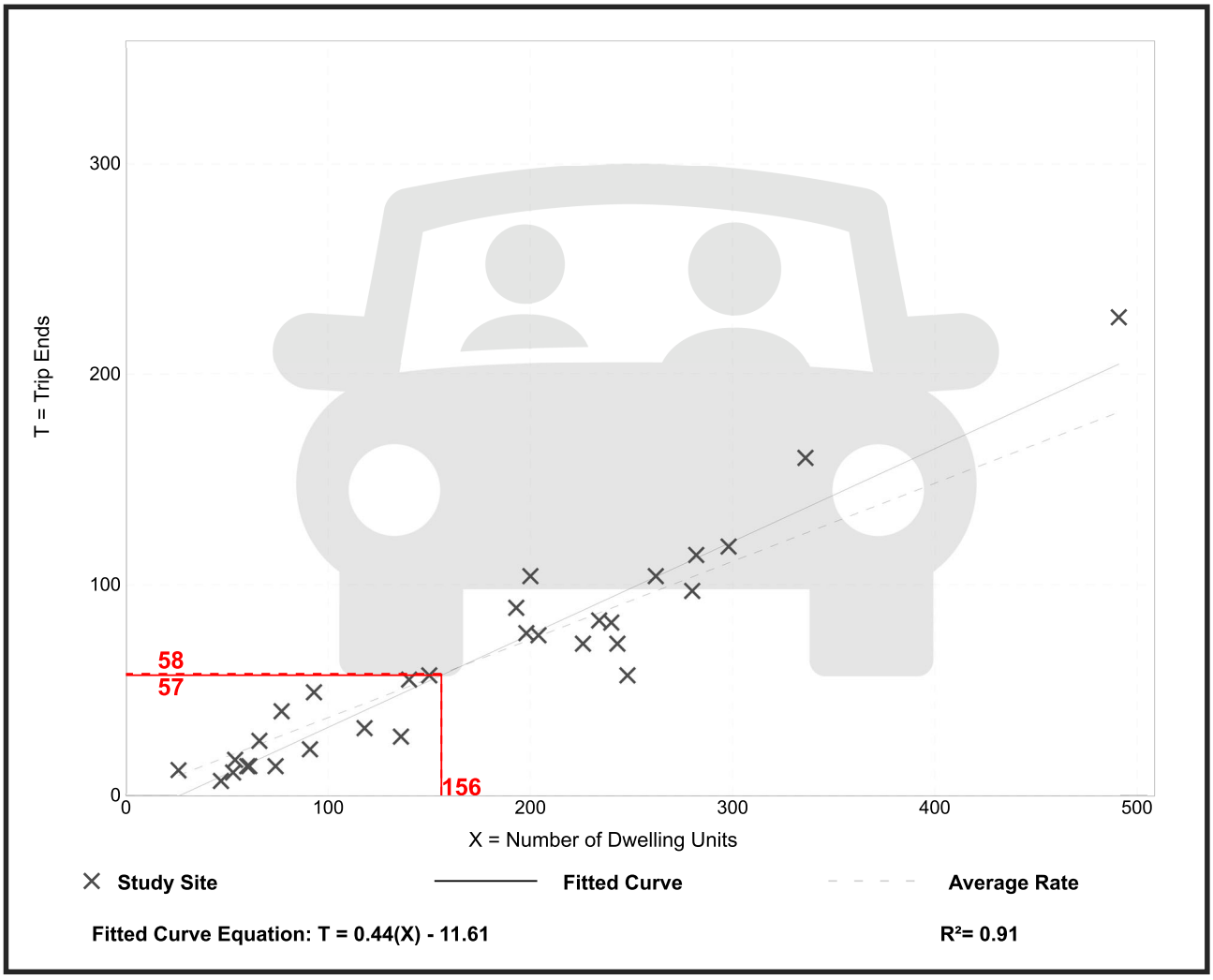
# Multifamily Housing (Mid-Rise)
## Not Close to Rail Transit (221)

**Vehicle Trip Ends vs:** **Dwelling Units**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 30
Avg. Num. of Dwelling Units: 173
Directional Distribution: 23% entering, 77% exiting

## Vehicle Trip Generation per Dwelling Unit

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.37 | 0.15 - 0.53 | 0.09 |

## Data Plot and Equation

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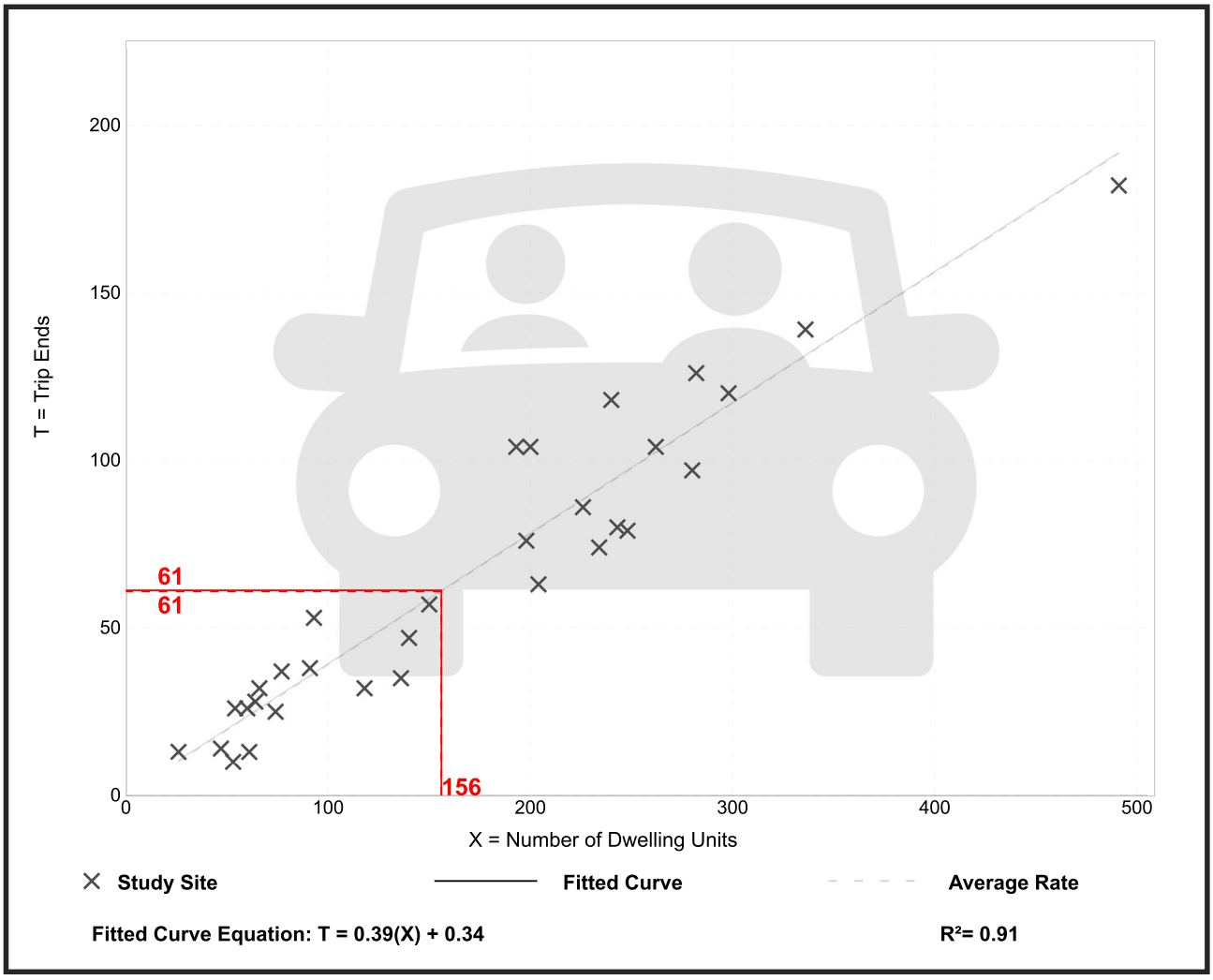
# Multifamily Housing (Mid-Rise)
## Not Close to Rail Transit (221)

**Vehicle Trip Ends vs:** **Dwelling Units**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 31
Avg. Num. of Dwelling Units: 169
Directional Distribution: 61% entering, 39% exiting

## Vehicle Trip Generation per Dwelling Unit

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 0.39 | 0.19 - 0.57 | 0.08 |

## Data Plot and Equation

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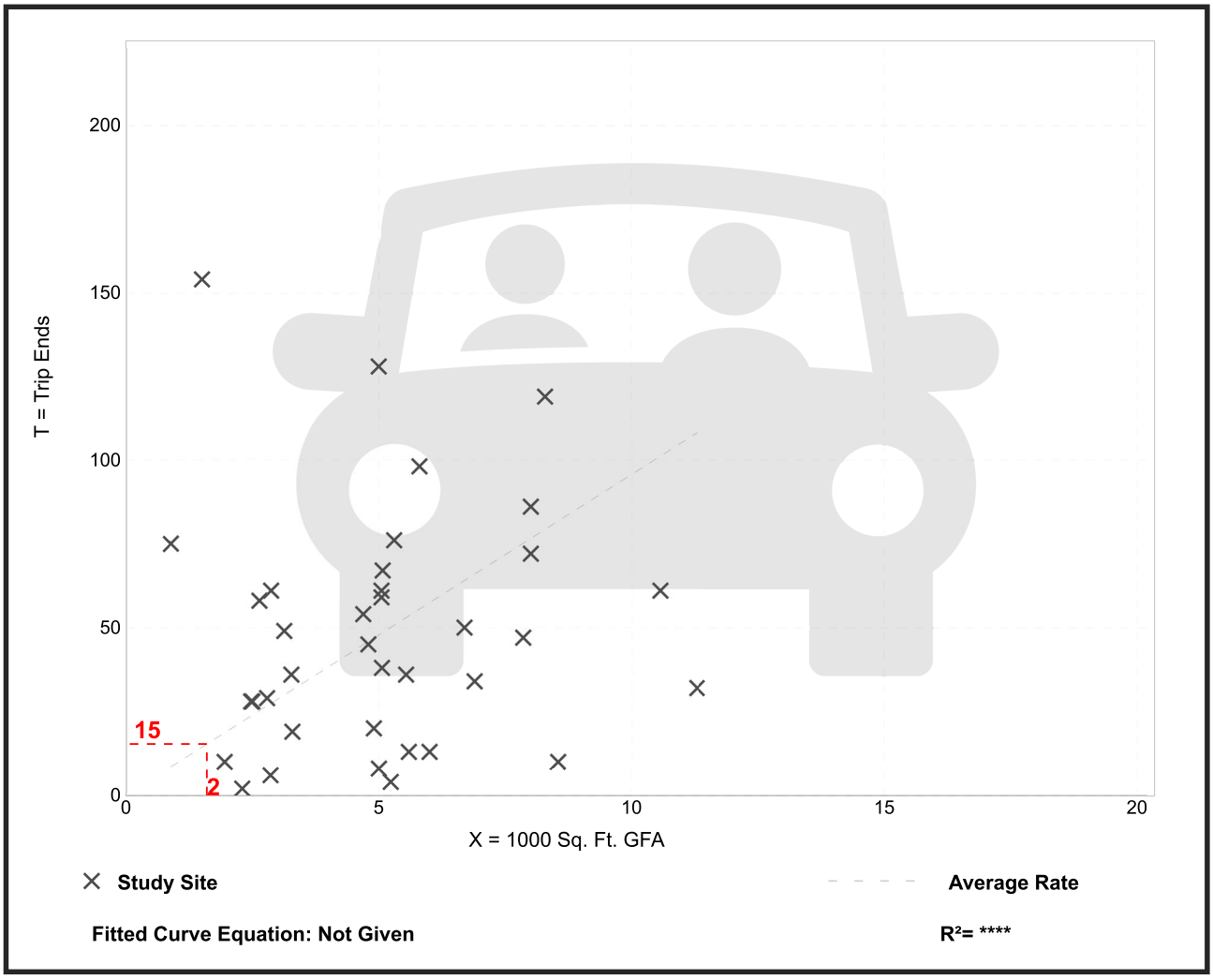
# High-Turnover (Sit-Down) Restaurant
(932)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 7 and 9 a.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 37
Avg. 1000 Sq. Ft. GFA: 5
Directional Distribution: 55% entering, 45% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 9.57 | 0.76 - 102.39 | 11.61 |

## Data Plot and Equation

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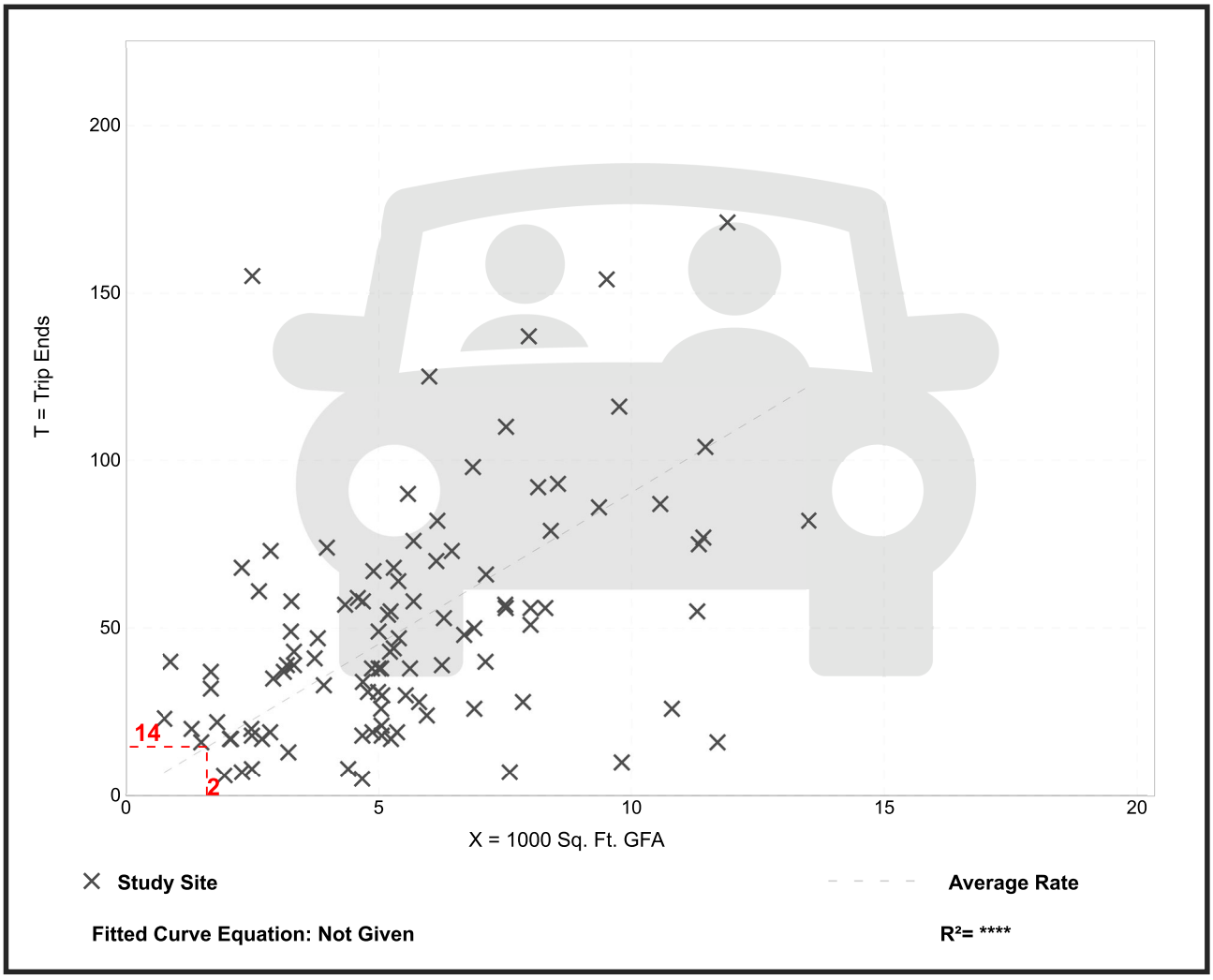
# High-Turnover (Sit-Down) Restaurant
(932)

**Vehicle Trip Ends vs:** **1000 Sq. Ft. GFA**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 104
Avg. 1000 Sq. Ft. GFA: 6
Directional Distribution: 61% entering, 39% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 9.05 | 0.92 - 62.00 | 6.18 |

## Data Plot and Equation

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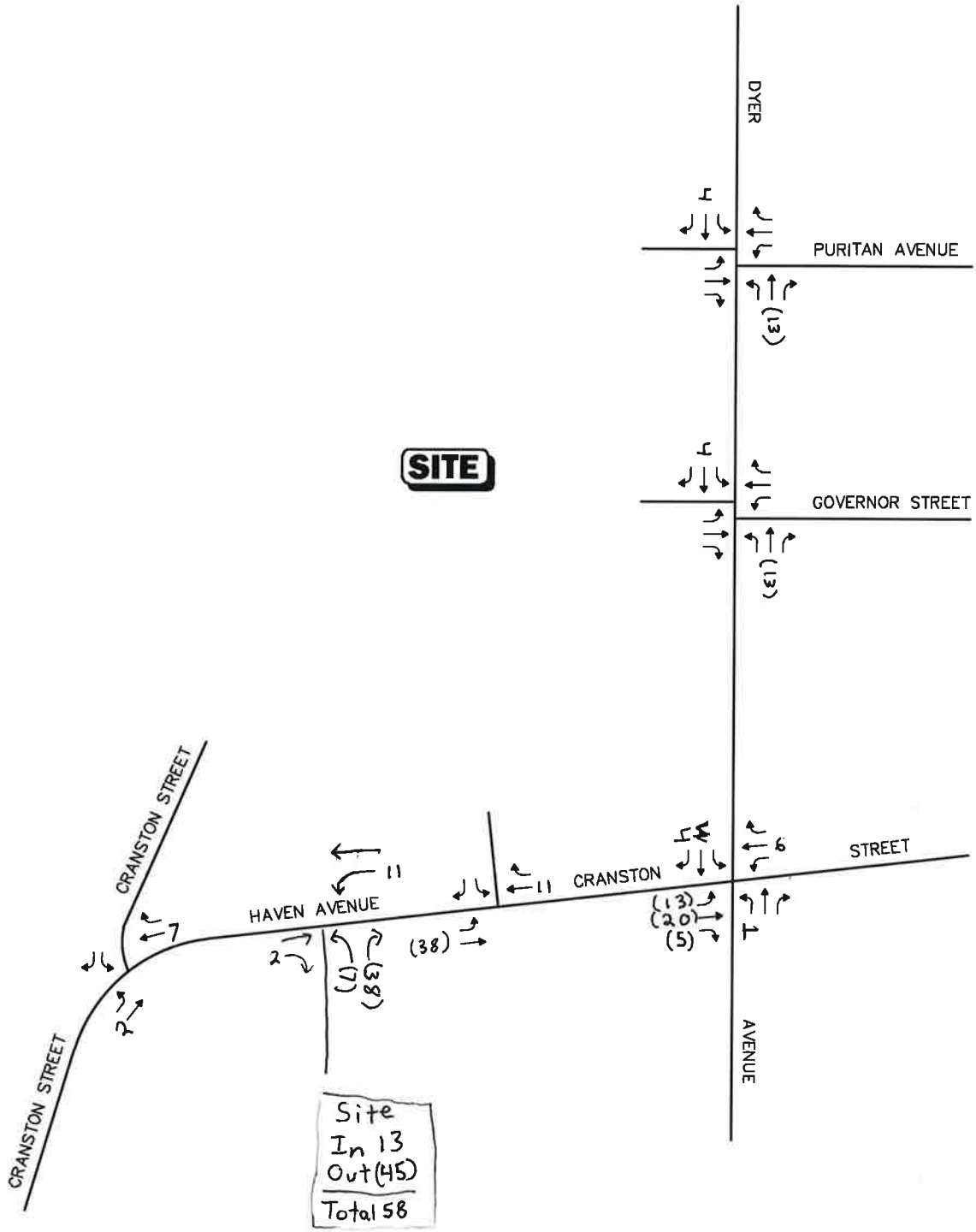
# BACKGROUND FIGURES



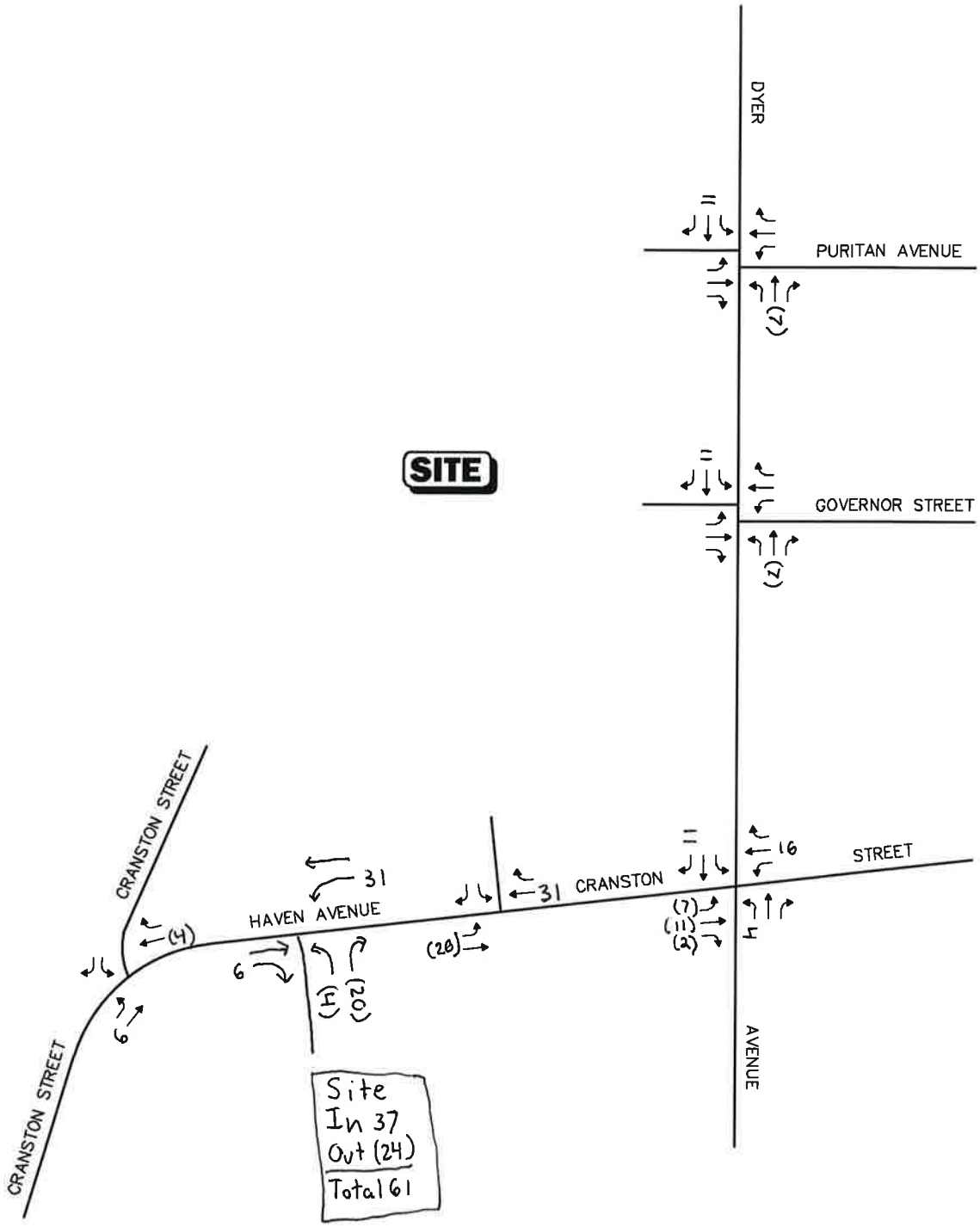

Not To Scale

A-1

Figure

Vanasse & Associates inc

**Build** Knights Corner
**Weekday Morning**
**Peak-Hour Traffic Volumes**
Residential Component



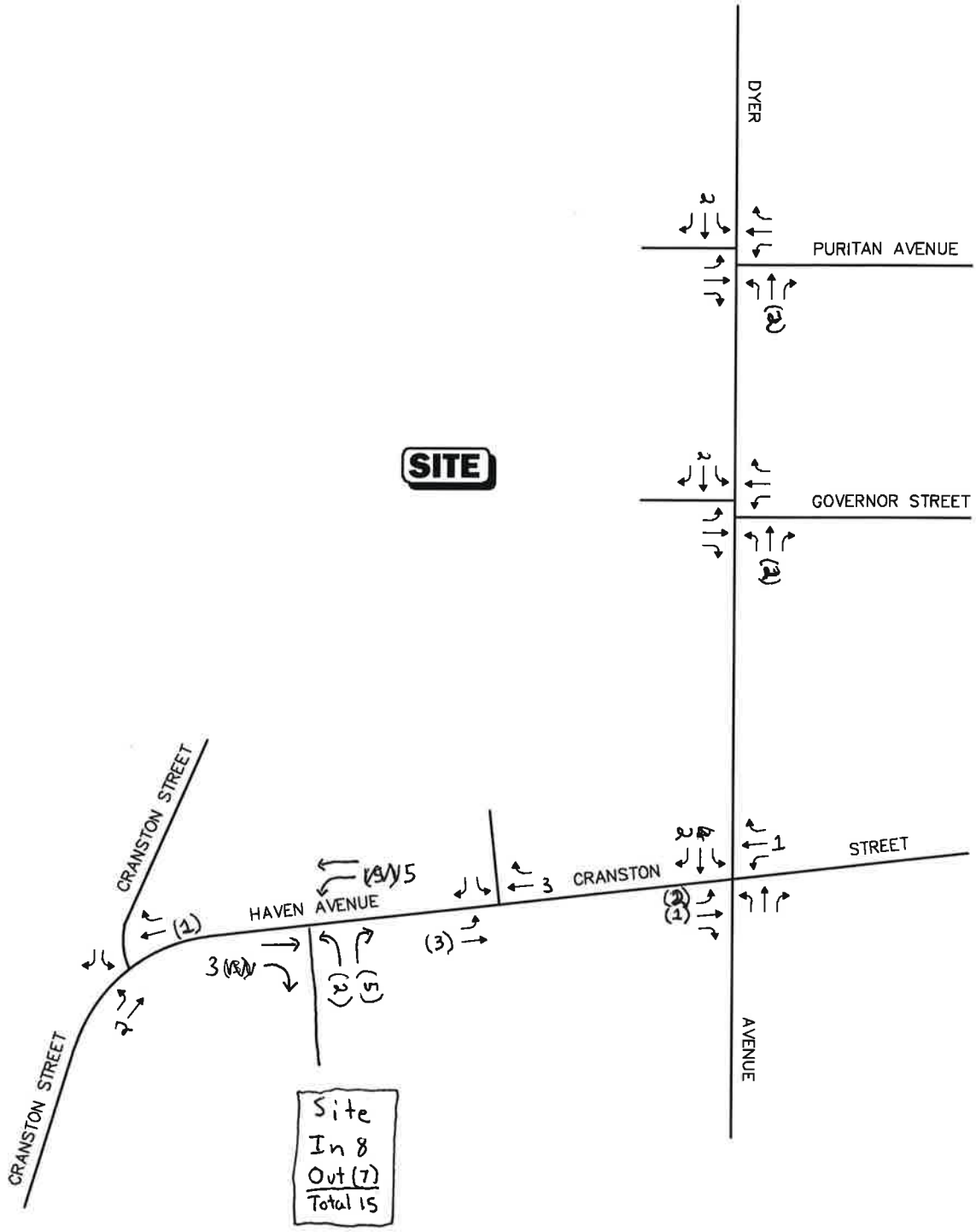

Not To Scale

A-2

**Figure**

**Build** Knights Corner
**Weekday Morning** Evening
**Peak-Hour Traffic Volumes**
Residential Component

Vanasse & Associates inc



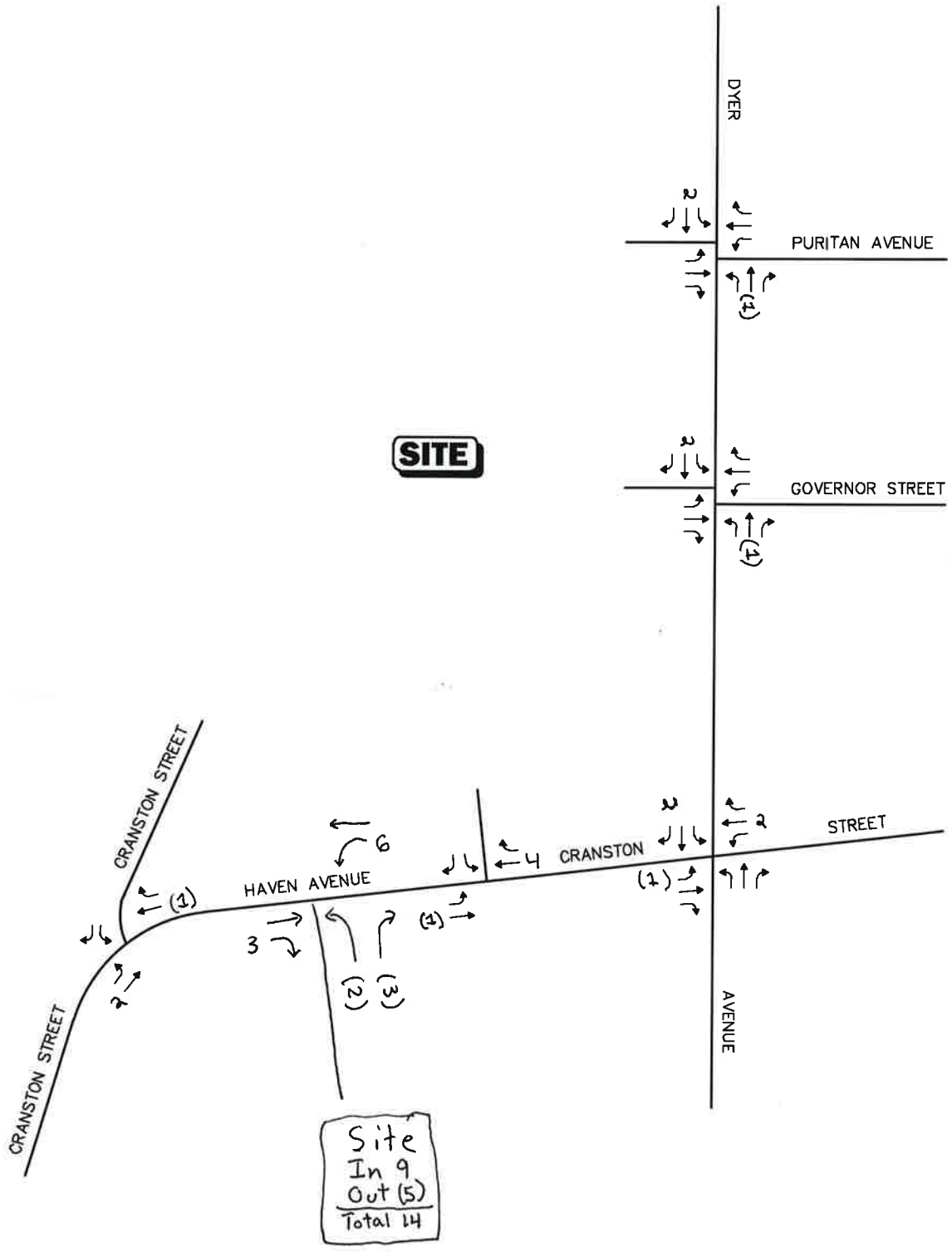

Not To Scale

A-3

**Figure**

Vanasse & Associates inc

**Build** Knights Corner
**Weekday Morning** Morning
**Peak-Hour Traffic Volumes**
Restaurant Component




A-4

Not To Scale

**Figure**

**Build** Knights Corner
**Weekday Morning** Evening
**Peak-Hour Traffic Volumes**
Restaurant Component

Vanasse & Associates inc

CAPACITY ANALYSIS

2028 No-Build Weekday Morning Peak Hour
2028 No-Build Weekday Evening Peak Hour
2028 Build Weekday Morning Peak Hour
2028 Build Weekday Evening Peak Hour
2028 Build Weekday Morning Peak Hour Mitigated
2028 Build Weekday Evening Peak Hour Mitigated

2028 No-Build Weekday Morning Peak Hour

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 16 | 6 | 429 | 33 | 12 | 500 |
| Future Vol, veh/h | 16 | 6 | 429 | 33 | 12 | 500 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 56 | 56 | 79 | 79 | 69 | 69 |
| Heavy Vehicles, % | 0 | 0 | 1 | 3 | 30 | 1 |
| Mvmt Flow | 29 | 11 | 543 | 42 | 17 | 725 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1323 | 564 | 0 | 0 | 585 | 0 |
| Stage 1 | 564 | - | - | - | - | - |
| Stage 2 | 759 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.4 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.47 | - |
| Pot Cap-1 Maneuver | 174 | 529 | - | - | 866 | - |
| Stage 1 | 573 | - | - | - | - | - |
| Stage 2 | 466 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 168 | 529 | - | - | 866 | - |
| Mov Cap-2 Maneuver | 168 | - | - | - | - | - |
| Stage 1 | 573 | - | - | - | - | - |
| Stage 2 | 451 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 26.5 | 0 | 0.2 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 206 | 866 | - |
| HCM Lane V/C Ratio | - | - | 0.191 | 0.02 | - |
| HCM Control Delay (s) | - | - | 26.5 | 9.2 | 0 |
| HCM Lane LOS | - | - | D | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.7 | 0.1 | - |

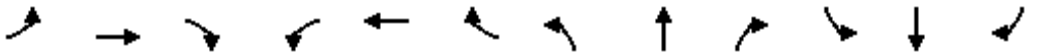
| Intersection | |
|---|---|
| Int Delay, s/veh | 0.4 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 12 | 1 | 459 | 5 | 8 | 509 |
| Future Vol, veh/h | 12 | 1 | 459 | 5 | 8 | 509 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 69 | 69 | 78 | 78 | 69 | 69 |
| Heavy Vehicles, % | 0 | 0 | 2 | 0 | 0 | 2 |
| Mvmt Flow | 17 | 1 | 588 | 6 | 12 | 738 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1353 | 591 | 0 | 0 | 594 | 0 |
| Stage 1 | 591 | - | - | - | - | - |
| Stage 2 | 762 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 167 | 511 | - | - | 992 | - |
| Stage 1 | 557 | - | - | - | - | - |
| Stage 2 | 464 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 164 | 511 | - | - | 992 | - |
| Mov Cap-2 Maneuver | 164 | - | - | - | - | - |
| Stage 1 | 557 | - | - | - | - | - |
| Stage 2 | 455 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 28.3 | 0 | 0.1 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 173 | 992 | - |
| HCM Lane V/C Ratio | - | - | 0.109 | 0.012 | - |
| HCM Control Delay (s) | - | - | 28.3 | 8.7 | 0 |
| HCM Lane LOS | - | - | D | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.4 | 0 | - |

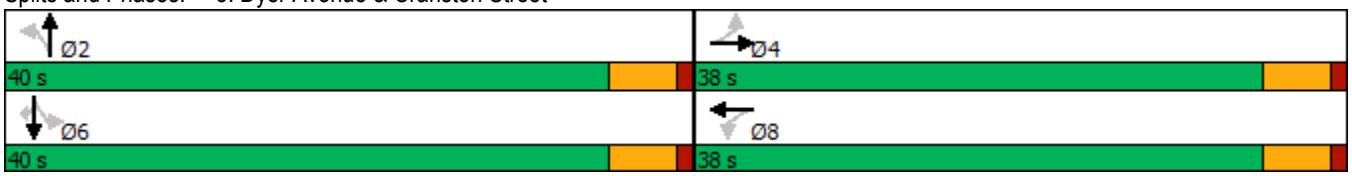


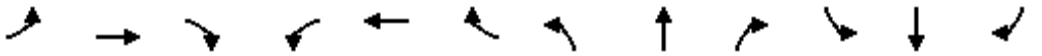
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 148 | 410 | 29 | 108 | 320 | 43 | 37 | 275 | 127 | 34 | 347 | 135 |
| Future Volume (vph) | 148 | 410 | 29 | 108 | 320 | 43 | 37 | 275 | 127 | 34 | 347 | 135 |
| Lane Util. 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 |
| Frt | | 0.993 | | | 0.988 | | | 0.961 | | | | 0.850 |
| Flt Protected | | 0.988 | | | 0.989 | | | 0.996 | | | 0.996 | |
| Satd. Flow (prot) | 0 | 1847 | 0 | 0 | 1888 | 0 | 0 | 1840 | 0 | 0 | 1933 | 1620 |
| Flt Permitted | | 0.690 | | | 0.705 | | | 0.827 | | | 0.922 | |
| Satd. Flow (perm) | 0 | 1290 | 0 | 0 | 1346 | 0 | 0 | 1528 | 0 | 0 | 1789 | 1620 |
| Satd. Flow (RTOR) | | 4 | | | 8 | | | 35 | | | | 89 |
| Adj. Flow (vph) | 170 | 471 | 33 | 127 | 376 | 51 | 49 | 362 | 167 | 49 | 496 | 193 |
| Lane Group Flow (vph) | 0 | 674 | 0 | 0 | 554 | 0 | 0 | 578 | 0 | 0 | 545 | 193 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Detector Phase | 4 | 4 | | 8 | 8 | | 2 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 23.0 | 23.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | 23.0 |
| Total Split (s) | 38.0 | 38.0 | | 38.0 | 38.0 | | 40.0 | 40.0 | | 40.0 | 40.0 | 40.0 |
| Total Split (%) | 48.7% | 48.7% | | 48.7% | 48.7% | | 51.3% | 51.3% | | 51.3% | 51.3% | 51.3% |
| Maximum Green (s) | 33.0 | 33.0 | | 33.0 | 33.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | 35.0 |
| 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) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | | -1.0 | | | -1.0 | | | -1.0 | | | -1.0 | 0.0 |
| Total Lost Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | 5.0 |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | | None | None | | Max | Max | | Max | Max | Max |
| Walk Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | 7.0 |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | 8.0 |
| Pedestrian Calls (#/hr) | 2 | 2 | | 2 | 2 | | 2 | 2 | | 2 | 2 | 2 |
| v/c Ratio | | 1.20 | | | 0.94 | | | 0.80 | | | 0.66 | 0.25 |
| Control Delay | | 128.5 | | | 47.7 | | | 27.1 | | | 21.1 | 8.2 |
| Queue Delay | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | 0.0 |
| Total Delay | | 128.5 | | | 47.7 | | | 27.1 | | | 21.1 | 8.2 |
| Queue Length 50th (ft) | | ~405 | | | 244 | | | 216 | | | 196 | 29 |
| Queue Length 95th (ft) | | #579 | | | #410 | | | 261 | | | 206 | 44 |
| Internal Link Dist (ft) | | 247 | | | 568 | | | 316 | | | 467 | |
| Turn Bay Length (ft) | | | | | | | | | | | | 50 |
| Base Capacity (vph) | | 564 | | | 591 | | | 724 | | | 825 | 775 |
| Starvation Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Spillback Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Storage Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Reduced v/c Ratio | | 1.20 | | | 0.94 | | | 0.80 | | | 0.66 | 0.25 |

| Intersection Summary |
|---|
| Cycle Length: 78 |

Actuated Cycle Length: 78
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Dyer Avenue & Cranston Street





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 148 | 410 | 29 | 108 | 320 | 43 | 37 | 275 | 127 | 34 | 347 | 135 |
| Future Volume (vph) | 148 | 410 | 29 | 108 | 320 | 43 | 37 | 275 | 127 | 34 | 347 | 135 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | 5.0 |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 0.99 | | | 0.99 | | | 0.96 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | 1847 | | | 1887 | | | 1840 | | | 1932 | 1620 |
| Flt Permitted | | 0.69 | | | 0.70 | | | 0.83 | | | 0.92 | 1.00 |
| Satd. Flow (perm) | | 1291 | | | 1345 | | | 1528 | | | 1790 | 1620 |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.85 | 0.85 | 0.85 | 0.76 | 0.76 | 0.76 | 0.70 | 0.70 | 0.70 |
| Adj. Flow (vph) | 170 | 471 | 33 | 127 | 376 | 51 | 49 | 362 | 167 | 49 | 496 | 193 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 19 | 0 | 0 | 0 | 49 |
| Lane Group Flow (vph) | 0 | 672 | 0 | 0 | 549 | 0 | 0 | 559 | 0 | 0 | 545 | 144 |
| Heavy Vehicles (%) | 0% | 1% | 5% | 4% | 1% | 0% | 0% | 2% | 3% | 3% | 1% | 3% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | | 35.0 | | | 35.0 | 35.0 |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 36.0 | | | 36.0 | 35.0 |
| Actuated g/C Ratio | | 0.44 | | | 0.44 | | | 0.46 | | | 0.46 | 0.45 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | 5.0 |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 562 | | | 586 | | | 705 | | | 826 | 726 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.52 | | | 0.41 | | | c0.37 | | | 0.30 | 0.09 |
| v/c Ratio | | 1.20 | | | 0.94 | | | 0.79 | | | 0.66 | 0.20 |
| Uniform Delay, d1 | | 22.0 | | | 21.0 | | | 17.8 | | | 16.3 | 13.0 |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 104.4 | | | 22.7 | | | 8.9 | | | 4.1 | 0.6 |
| Delay (s) | | 126.4 | | | 43.7 | | | 26.8 | | | 20.4 | 13.6 |
| Level of Service | | F | | | D | | | C | | | C | B |
| Approach Delay (s) | | 126.4 | | | 43.7 | | | 26.8 | | | 18.6 | |
| Approach LOS | | F | | | D | | | C | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 54.5 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.99 | | |
| Actuated Cycle Length (s) | 78.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 98.0% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

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

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 0 | 585 | 491 | 1 | 2 | 0 |
| Future Vol, veh/h | 0 | 585 | 491 | 1 | 2 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 87 | 87 | 78 | 78 | 50 | 50 |
| Heavy Vehicles, % | 0 | 1 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 0 | 672 | 629 | 1 | 4 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 630 | 0 | - | 0 | 1302 | 630 |
| Stage 1 | - | - | - | - | 630 | - |
| Stage 2 | - | - | - | - | 672 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 962 | - | - | - | 179 | 485 |
| Stage 1 | - | - | - | - | 535 | - |
| Stage 2 | - | - | - | - | 511 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 962 | - | - | - | 179 | 485 |
| Mov Cap-2 Maneuver | - | - | - | - | 179 | - |
| Stage 1 | - | - | - | - | 535 | - |
| Stage 2 | - | - | - | - | 511 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0 | 0 | 25.6 |
| HCM LOS | | | D |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 962 | - | - | - | 179 |
| HCM Lane V/C Ratio | - | - | - | - | 0.022 |
| HCM Control Delay (s) | 0 | - | - | - | 25.6 |
| HCM Lane LOS | A | - | - | - | D |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.1 |

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

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 24 | 517 | 466 | 4 | 4 | 22 |
| Future Vol, veh/h | 24 | 517 | 466 | 4 | 4 | 22 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 88 | 88 | 89 | 89 |
| Heavy Vehicles, % | 0 | 1 | 2 | 0 | 0 | 16 |
| Mvmt Flow | 26 | 562 | 530 | 5 | 4 | 25 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 535 | 0 | - | 0 | 1147 | 533 |
| Stage 1 | - | - | - | - | 533 | - |
| Stage 2 | - | - | - | - | 614 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.36 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.444 |
| Pot Cap-1 Maneuver | 1043 | - | - | - | 222 | 520 |
| Stage 1 | - | - | - | - | 593 | - |
| Stage 2 | - | - | - | - | 544 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1043 | - | - | - | 214 | 520 |
| Mov Cap-2 Maneuver | - | - | - | - | 214 | - |
| Stage 1 | - | - | - | - | 572 | - |
| Stage 2 | - | - | - | - | 544 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.4 | 0 | 14.1 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1043 | - | - | - | 426 |
| HCM Lane V/C Ratio | 0.025 | - | - | - | 0.069 |
| HCM Control Delay (s) | 8.5 | 0 | - | - | 14.1 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 0.2 |

2028 No-Build Weekday Evening Peak Hour

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

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 44 | 5 | 539 | 33 | 17 | 480 |
| Future Vol, veh/h | 44 | 5 | 539 | 33 | 17 | 480 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 78 | 78 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, % | 3 | 0 | 1 | 3 | 20 | 2 |
| Mvmt Flow | 56 | 6 | 592 | 36 | 19 | 527 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1175 | 610 | 0 | 0 | 628 | 0 |
| Stage 1 | 610 | - | - | - | - | - |
| Stage 2 | 565 | - | - | - | - | - |
| Critical Hdwy | 6.43 | 6.2 | - | - | 4.3 | - |
| Critical Hdwy Stg 1 | 5.43 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.43 | - | - | - | - | - |
| Follow-up Hdwy | 3.527 | 3.3 | - | - | 2.38 | - |
| Pot Cap-1 Maneuver | 211 | 498 | - | - | 873 | - |
| Stage 1 | 540 | - | - | - | - | - |
| Stage 2 | 567 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 204 | 498 | - | - | 873 | - |
| Mov Cap-2 Maneuver | 204 | - | - | - | - | - |
| Stage 1 | 540 | - | - | - | - | - |
| Stage 2 | 549 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 28.2 | 0 | 0.3 |
| HCM LOS | D | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 217 | 873 | - |
| HCM Lane V/C Ratio | - | - | 0.289 | 0.021 | - |
| HCM Control Delay (s) | - | - | 28.2 | 9.2 | 0 |
| HCM Lane LOS | - | - | D | A | A |
| HCM 95th %tile Q(veh) | - | - | 1.2 | 0.1 | - |

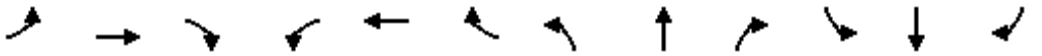
| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 11 | 11 | 560 | 9 | 6 | 514 |
| Future Vol, veh/h | 11 | 11 | 560 | 9 | 6 | 514 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 63 | 63 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 0 | 1 | 0 | 0 | 2 |
| Mvmt Flow | 17 | 17 | 602 | 10 | 6 | 553 |

| Major/Minor | Minor1 | | Major1 | | Major2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 1172 | 607 | 0 | 0 | 612 | 0 |
| Stage 1 | 607 | - | - | - | - | - |
| Stage 2 | 565 | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.2 | - | - | 4.1 | - |
| Critical Hdwy Stg 1 | 5.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.4 | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 3.3 | - | - | 2.2 | - |
| Pot Cap-1 Maneuver | 215 | 500 | - | - | 977 | - |
| Stage 1 | 548 | - | - | - | - | - |
| Stage 2 | 573 | - | - | - | - | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | 213 | 500 | - | - | 977 | - |
| Mov Cap-2 Maneuver | 213 | - | - | - | - | - |
| Stage 1 | 548 | - | - | - | - | - |
| Stage 2 | 568 | - | - | - | - | - |

| Approach | WB | NB | SB |
|---|---|---|---|
| HCM Control Delay, s | 18.6 | 0 | 0.1 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBR | WBLn1 | SBL | SBT |
|---|---|---|---|---|---|
| Capacity (veh/h) | - | - | 299 | 977 | - |
| HCM Lane V/C Ratio | - | - | 0.117 | 0.007 | - |
| HCM Control Delay (s) | - | - | 18.6 | 8.7 | 0 |
| HCM Lane LOS | - | - | C | A | A |
| HCM 95th %tile Q(veh) | - | - | 0.4 | 0 | - |

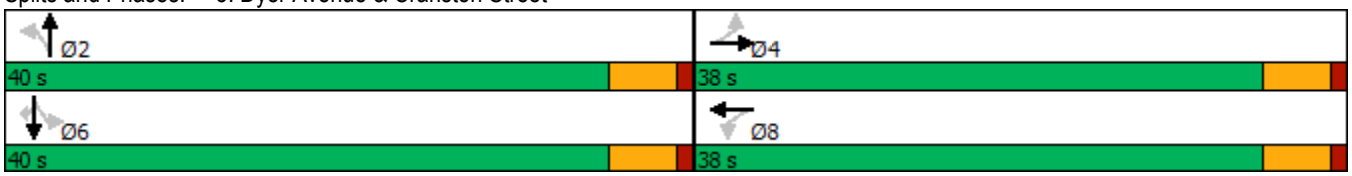


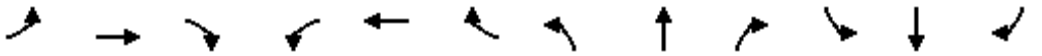
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 178 | 273 | 22 | 103 | 389 | 54 | 24 | 348 | 102 | 52 | 316 | 150 |
| Future Volume (vph) | 178 | 273 | 22 | 103 | 389 | 54 | 24 | 348 | 102 | 52 | 316 | 150 |
| Lane Util. 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 |
| Frt | | 0.994 | | | 0.987 | | | 0.971 | | | | 0.850 |
| Flt Protected | | 0.982 | | | 0.991 | | | 0.997 | | | 0.993 | |
| Satd. Flow (prot) | 0 | 1827 | 0 | 0 | 1899 | 0 | 0 | 1887 | 0 | 0 | 1922 | 1669 |
| Flt Permitted | | 0.553 | | | 0.820 | | | 0.970 | | | 0.889 | |
| Satd. Flow (perm) | 0 | 1029 | 0 | 0 | 1572 | 0 | 0 | 1836 | 0 | 0 | 1721 | 1669 |
| Satd. Flow (RTOR) | | 4 | | | 9 | | | 23 | | | | 103 |
| Adj. Flow (vph) | 189 | 290 | 23 | 114 | 432 | 60 | 27 | 387 | 113 | 55 | 336 | 160 |
| Lane Group Flow (vph) | 0 | 502 | 0 | 0 | 606 | 0 | 0 | 527 | 0 | 0 | 391 | 160 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Detector Phase | 4 | 4 | | 8 | 8 | | 2 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 23.0 | 23.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | 23.0 |
| Total Split (s) | 38.0 | 38.0 | | 38.0 | 38.0 | | 40.0 | 40.0 | | 40.0 | 40.0 | 40.0 |
| Total Split (%) | 48.7% | 48.7% | | 48.7% | 48.7% | | 51.3% | 51.3% | | 51.3% | 51.3% | 51.3% |
| Maximum Green (s) | 33.0 | 33.0 | | 33.0 | 33.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | 35.0 |
| 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) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | | -1.0 | | | -1.0 | | | -1.0 | | | -1.0 | 0.0 |
| Total Lost Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | 5.0 |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | | None | None | | Max | Max | | Max | Max | Max |
| Walk Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | 7.0 |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | 8.0 |
| Pedestrian Calls (#/hr) | 2 | 2 | | 2 | 2 | | 2 | 2 | | 2 | 2 | 2 |
| v/c Ratio | | 1.12 | | | 0.88 | | | 0.61 | | | 0.49 | 0.20 |
| Control Delay | | 102.6 | | | 36.5 | | | 18.8 | | | 17.3 | 6.0 |
| Queue Delay | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | 0.0 |
| Total Delay | | 102.6 | | | 36.5 | | | 18.8 | | | 17.3 | 6.0 |
| Queue Length 50th (ft) | | ~285 | | | 256 | | | 175 | | | 127 | 15 |
| Queue Length 95th (ft) | | #469 | | | #461 | | | 276 | | | 203 | 48 |
| Internal Link Dist (ft) | | 247 | | | 568 | | | 316 | | | 467 | |
| Turn Bay Length (ft) | | | | | | | | | | | | 50 |
| Base Capacity (vph) | | 450 | | | 690 | | | 859 | | | 794 | 805 |
| Starvation Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Spillback Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Storage Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Reduced v/c Ratio | | 1.12 | | | 0.88 | | | 0.61 | | | 0.49 | 0.20 |

| Intersection Summary |
|---|
| Cycle Length: 78 |

Actuated Cycle Length: 78
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Dyer Avenue & Cranston Street





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 178 | 273 | 22 | 103 | 389 | 54 | 24 | 348 | 102 | 52 | 316 | 150 |
| Future Volume (vph) | 178 | 273 | 22 | 103 | 389 | 54 | 24 | 348 | 102 | 52 | 316 | 150 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | 5.0 |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 0.99 | | | 0.99 | | | 0.97 | | | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | | 1.00 | | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1825 | | | 1898 | | | 1888 | | | 1922 | 1669 |
| Flt Permitted | | 0.55 | | | 0.82 | | | 0.97 | | | 0.89 | 1.00 |
| Satd. Flow (perm) | | 1029 | | | 1571 | | | 1835 | | | 1722 | 1669 |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 189 | 290 | 23 | 114 | 432 | 60 | 27 | 387 | 113 | 55 | 336 | 160 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 12 | 0 | 0 | 0 | 57 |
| Lane Group Flow (vph) | 0 | 500 | 0 | 0 | 601 | 0 | 0 | 515 | 0 | 0 | 391 | 103 |
| Heavy Vehicles (%) | 1% | 2% | 0% | 1% | 1% | 2% | 0% | 1% | 0% | 4% | 1% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | | 35.0 | | | 35.0 | 35.0 |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 36.0 | | | 36.0 | 35.0 |
| Actuated g/C Ratio | | 0.44 | | | 0.44 | | | 0.46 | | | 0.46 | 0.45 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | 5.0 |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 448 | | | 684 | | | 846 | | | 794 | 748 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.49 | | | 0.38 | | | c0.28 | | | 0.23 | 0.06 |
| v/c Ratio | | 1.12 | | | 0.88 | | | 0.61 | | | 0.49 | 0.14 |
| Uniform Delay, d1 | | 22.0 | | | 20.1 | | | 15.7 | | | 14.6 | 12.6 |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 77.9 | | | 12.3 | | | 3.2 | | | 2.2 | 0.4 |
| Delay (s) | | 99.9 | | | 32.4 | | | 19.0 | | | 16.8 | 13.0 |
| Level of Service | | F | | | C | | | B | | | B | B |
| Approach Delay (s) | | 99.9 | | | 32.4 | | | 19.0 | | | 15.7 | |
| Approach LOS | | F | | | C | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 40.5 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.85 | | |
| Actuated Cycle Length (s) | 78.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 98.4% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

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

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 2 | 473 | 563 | 0 | 0 | 0 |
| Future Vol, veh/h | 2 | 473 | 563 | 0 | 0 | 0 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 82 | 82 | 25 | 25 |
| Heavy Vehicles, % | 0 | 2 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 2 | 503 | 687 | 0 | 0 | 0 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 687 | 0 | - | 0 | 1194 | 687 |
| Stage 1 | - | - | - | - | 687 | - |
| Stage 2 | - | - | - | - | 507 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 916 | - | - | - | 208 | 450 |
| Stage 1 | - | - | - | - | 503 | - |
| Stage 2 | - | - | - | - | 609 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 916 | - | - | - | 207 | 450 |
| Mov Cap-2 Maneuver | - | - | - | - | 207 | - |
| Stage 1 | - | - | - | - | 501 | - |
| Stage 2 | - | - | - | - | 609 | - |

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

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 916 | - | - | - | - |
| HCM Lane V/C Ratio | 0.002 | - | - | - | - |
| HCM Control Delay (s) | 8.9 | 0 | - | - | 0 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | - |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 16 | 426 | 463 | 17 | 11 | 27 |
| Future Vol, veh/h | 16 | 426 | 463 | 17 | 11 | 27 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 88 | 88 | 71 | 71 |
| Heavy Vehicles, % | 0 | 1 | 1 | 0 | 0 | 4 |
| Mvmt Flow | 16 | 439 | 526 | 19 | 15 | 38 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 545 | 0 | - | 0 | 1007 | 536 |
| Stage 1 | - | - | - | - | 536 | - |
| Stage 2 | - | - | - | - | 471 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.24 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.336 |
| Pot Cap-1 Maneuver | 1034 | - | - | - | 269 | 541 |
| Stage 1 | - | - | - | - | 591 | - |
| Stage 2 | - | - | - | - | 632 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1034 | - | - | - | 264 | 541 |
| Mov Cap-2 Maneuver | - | - | - | - | 264 | - |
| Stage 1 | - | - | - | - | 579 | - |
| Stage 2 | - | - | - | - | 632 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0 | 15 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1034 | - | - | - | 415 |
| HCM Lane V/C Ratio | 0.016 | - | - | - | 0.129 |
| HCM Control Delay (s) | 8.5 | 0 | - | - | 15 |
| HCM Lane LOS | A | A | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.4 |

2028 Build Weekday Morning Peak Hour

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

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 2 | 0 | 0 | 16 | 0 | 6 | 1 | 441 | 33 | 12 | 504 | 2 |
| Future Vol, veh/h | 2 | 0 | 0 | 16 | 0 | 6 | 1 | 441 | 33 | 12 | 504 | 2 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 56 | 92 | 56 | 92 | 79 | 79 | 69 | 69 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 30 | 1 | 0 |
| Mvmt Flow | 2 | 0 | 0 | 29 | 0 | 11 | 1 | 558 | 42 | 17 | 730 | 2 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1352 | 1367 | 731 | 1346 | 1347 | 579 | 732 | 0 | 0 | 600 | 0 | 0 |
| Stage 1 | 765 | 765 | - | 581 | 581 | - | - | - | - | - | - | - |
| Stage 2 | 587 | 602 | - | 765 | 766 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.4 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.47 | - | - |
| Pot Cap-1 Maneuver | 128 | 148 | 425 | 130 | 152 | 519 | 882 | - | - | 854 | - | - |
| Stage 1 | 399 | 415 | - | 503 | 503 | - | - | - | - | - | - | - |
| Stage 2 | 499 | 492 | - | 399 | 415 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 122 | 143 | 425 | 126 | 147 | 519 | 882 | - | - | 854 | - | - |
| Mov Cap-2 Maneuver | 122 | 143 | - | 126 | 147 | - | - | - | - | - | - | - |
| Stage 1 | 398 | 401 | - | 502 | 502 | - | - | - | - | - | - | - |
| Stage 2 | 488 | 491 | - | 385 | 401 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 35 | 34.9 | 0 | 0.2 |
| HCM LOS | E | D | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 882 | - | - | 122 | 159 | 854 | - | - |
| HCM Lane V/C Ratio | 0.001 | - | - | 0.018 | 0.247 | 0.02 | - | - |
| HCM Control Delay (s) | 9.1 | 0 | - | 35 | 34.9 | 9.3 | 0 | - |
| HCM Lane LOS | A | A | - | E | D | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 0.9 | 0.1 | - | - |

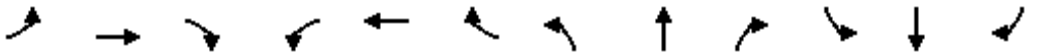
| Intersection | |
|---|---|
| Int Delay, s/veh | 1.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 12 | 0 | 10 | 12 | 0 | 1 | 4 | 460 | 5 | 8 | 509 | 4 |
| Future Vol, veh/h | 12 | 0 | 10 | 12 | 0 | 1 | 4 | 460 | 5 | 8 | 509 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 69 | 92 | 69 | 92 | 78 | 78 | 69 | 69 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 |
| Mvmt Flow | 13 | 0 | 11 | 17 | 0 | 1 | 4 | 590 | 6 | 12 | 738 | 4 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1366 | 1368 | 740 | 1371 | 1367 | 593 | 742 | 0 | 0 | 596 | 0 | 0 |
| Stage 1 | 764 | 764 | - | 601 | 601 | - | - | - | - | - | - | - |
| Stage 2 | 602 | 604 | - | 770 | 766 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 126 | 148 | 420 | 125 | 148 | 509 | 874 | - | - | 990 | - | - |
| Stage 1 | 399 | 416 | - | 491 | 493 | - | - | - | - | - | - | - |
| Stage 2 | 490 | 491 | - | 396 | 415 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 123 | 144 | 420 | 119 | 144 | 509 | 874 | - | - | 990 | - | - |
| Mov Cap-2 Maneuver | 123 | 144 | - | 119 | 144 | - | - | - | - | - | - | - |
| Stage 1 | 396 | 407 | - | 488 | 490 | - | - | - | - | - | - | - |
| Stage 2 | 485 | 488 | - | 378 | 406 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 27.9 | 38.5 | 0.1 | 0.1 |
| HCM LOS | D | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 874 | - | - | 181 | 126 | 990 | - | - |
| HCM Lane V/C Ratio | 0.005 | - | - | 0.132 | 0.15 | 0.012 | - | - |
| HCM Control Delay (s) | 9.1 | 0 | - | 27.9 | 38.5 | 8.7 | 0 | - |
| HCM Lane LOS | A | A | - | D | E | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.4 | 0.5 | 0 | - | - |

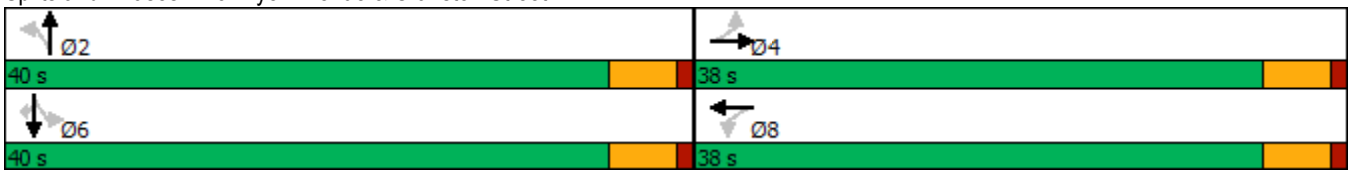


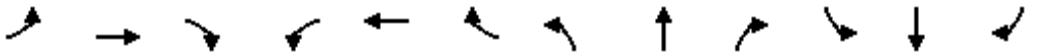
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 148 | 419 | 31 | 108 | 324 | 47 | 37 | 276 | 127 | 42 | 349 | 135 |
| Future Volume (vph) | 148 | 419 | 31 | 108 | 324 | 47 | 37 | 276 | 127 | 42 | 349 | 135 |
| Lane Util. 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 |
| Frt | | 0.993 | | | 0.987 | | | 0.961 | | | | 0.850 |
| Flt Protected | | 0.988 | | | 0.989 | | | 0.996 | | | 0.995 | |
| Satd. Flow (prot) | 0 | 1846 | 0 | 0 | 1887 | 0 | 0 | 1840 | 0 | 0 | 1930 | 1620 |
| Flt Permitted | | 0.690 | | | 0.702 | | | 0.809 | | | 0.898 | |
| Satd. Flow (perm) | 0 | 1289 | 0 | 0 | 1339 | 0 | 0 | 1495 | 0 | 0 | 1742 | 1620 |
| Satd. Flow (RTOR) | | 5 | | | 9 | | | 35 | | | | 87 |
| Adj. Flow (vph) | 170 | 482 | 36 | 127 | 381 | 55 | 49 | 363 | 167 | 60 | 499 | 193 |
| Lane Group Flow (vph) | 0 | 688 | 0 | 0 | 563 | 0 | 0 | 579 | 0 | 0 | 559 | 193 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Detector Phase | 4 | 4 | | 8 | 8 | | 2 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 23.0 | 23.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | 23.0 |
| Total Split (s) | 38.0 | 38.0 | | 38.0 | 38.0 | | 40.0 | 40.0 | | 40.0 | 40.0 | 40.0 |
| Total Split (%) | 48.7% | 48.7% | | 48.7% | 48.7% | | 51.3% | 51.3% | | 51.3% | 51.3% | 51.3% |
| Maximum Green (s) | 33.0 | 33.0 | | 33.0 | 33.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | 35.0 |
| 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) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | | -1.0 | | | -1.0 | | | -1.0 | | | -1.0 | 0.0 |
| Total Lost Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | 5.0 |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | | None | None | | Max | Max | | Max | Max | Max |
| Walk Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | 7.0 |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | 8.0 |
| Pedestrian Calls (#/hr) | 2 | 2 | | 2 | 2 | | 2 | 2 | | 2 | 2 | 2 |
| v/c Ratio | | 1.22 | | | 0.96 | | | 0.82 | | | 0.70 | 0.25 |
| Control Delay | | 138.4 | | | 51.6 | | | 28.7 | | | 22.3 | 8.3 |
| Queue Delay | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | 0.0 |
| Total Delay | | 138.4 | | | 51.6 | | | 28.7 | | | 22.3 | 8.3 |
| Queue Length 50th (ft) | | ~419 | | | 252 | | | 220 | | | 206 | 29 |
| Queue Length 95th (ft) | | #593 | | | #422 | | | 265 | | | 215 | 45 |
| Internal Link Dist (ft) | | 247 | | | 568 | | | 316 | | | 467 | |
| Turn Bay Length (ft) | | | | | | | | | | | | 50 |
| Base Capacity (vph) | | 564 | | | 588 | | | 708 | | | 804 | 774 |
| Starvation Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Spillback Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Storage Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Reduced v/c Ratio | | 1.22 | | | 0.96 | | | 0.82 | | | 0.70 | 0.25 |

| Intersection Summary |
|---|
| Cycle Length: 78 |

Actuated Cycle Length: 78
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Dyer Avenue & Cranston Street





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 148 | 419 | 31 | 108 | 324 | 47 | 37 | 276 | 127 | 42 | 349 | 135 |
| Future Volume (vph) | 148 | 419 | 31 | 108 | 324 | 47 | 37 | 276 | 127 | 42 | 349 | 135 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | 5.0 |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 0.99 | | | 0.99 | | | 0.96 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | | 1.00 | | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1846 | | | 1886 | | | 1840 | | | 1929 | 1620 |
| Flt Permitted | | 0.69 | | | 0.70 | | | 0.81 | | | 0.90 | 1.00 |
| Satd. Flow (perm) | | 1290 | | | 1339 | | | 1495 | | | 1741 | 1620 |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.85 | 0.85 | 0.85 | 0.76 | 0.76 | 0.76 | 0.70 | 0.70 | 0.70 |
| Adj. Flow (vph) | 170 | 482 | 36 | 127 | 381 | 55 | 49 | 363 | 167 | 60 | 499 | 193 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 5 | 0 | 0 | 19 | 0 | 0 | 0 | 48 |
| Lane Group Flow (vph) | 0 | 685 | 0 | 0 | 558 | 0 | 0 | 560 | 0 | 0 | 559 | 145 |
| Heavy Vehicles (%) | 0% | 1% | 5% | 4% | 1% | 0% | 0% | 2% | 3% | 3% | 1% | 3% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | | 35.0 | | | 35.0 | 35.0 |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 36.0 | | | 36.0 | 35.0 |
| Actuated g/C Ratio | | 0.44 | | | 0.44 | | | 0.46 | | | 0.46 | 0.45 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | 5.0 |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 562 | | | 583 | | | 690 | | | 803 | 726 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.53 | | | 0.42 | | | c0.37 | | | 0.32 | 0.09 |
| v/c Ratio | | 1.22 | | | 0.96 | | | 0.81 | | | 0.70 | 0.20 |
| Uniform Delay, d1 | | 22.0 | | | 21.3 | | | 18.1 | | | 16.7 | 13.0 |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 114.0 | | | 26.6 | | | 10.1 | | | 5.0 | 0.6 |
| Delay (s) | | 136.0 | | | 47.9 | | | 28.1 | | | 21.6 | 13.6 |
| Level of Service | | F | | | D | | | C | | | C | B |
| Approach Delay (s) | | 136.0 | | | 47.9 | | | 28.1 | | | 19.6 | |
| Approach LOS | | F | | | D | | | C | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 58.7 | HCM 2000 Level of Service | E |
| HCM 2000 Volume to Capacity ratio | 1.01 | | |
| Actuated Cycle Length (s) | 78.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 99.4% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

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

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 5 | 585 | 491 | 5 | 13 | 8 |
| Future Vol, veh/h | 5 | 585 | 491 | 5 | 13 | 8 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 87 | 87 | 78 | 78 | 50 | 50 |
| Heavy Vehicles, % | 0 | 1 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 6 | 672 | 629 | 6 | 26 | 16 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 635 | 0 | - | 0 | 1316 | 632 |
| Stage 1 | - | - | - | - | 632 | - |
| Stage 2 | - | - | - | - | 684 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 958 | - | - | - | 176 | 484 |
| Stage 1 | - | - | - | - | 534 | - |
| Stage 2 | - | - | - | - | 505 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 958 | - | - | - | 174 | 484 |
| Mov Cap-2 Maneuver | - | - | - | - | 174 | - |
| Stage 1 | - | - | - | - | 529 | - |
| Stage 2 | - | - | - | - | 505 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.1 | 0 | 24.1 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 958 | - | - | - | 230 |
| HCM Lane V/C Ratio | 0.006 | - | - | - | 0.183 |
| HCM Control Delay (s) | 8.8 | 0 | - | - | 24.1 |
| HCM Lane LOS | A | A | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.7 |

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

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 24 | 522 | 474 | 4 | 4 | 22 |
| Future Vol, veh/h | 24 | 522 | 474 | 4 | 4 | 22 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 88 | 88 | 89 | 89 |
| Heavy Vehicles, % | 0 | 1 | 2 | 0 | 0 | 16 |
| Mvmt Flow | 26 | 567 | 539 | 5 | 4 | 25 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 544 | 0 | - | 0 | 1161 | 542 |
| Stage 1 | - | - | - | - | 542 | - |
| Stage 2 | - | - | - | - | 619 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.36 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.444 |
| Pot Cap-1 Maneuver | 1035 | - | - | - | 218 | 514 |
| Stage 1 | - | - | - | - | 587 | - |
| Stage 2 | - | - | - | - | 541 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1035 | - | - | - | 210 | 514 |
| Mov Cap-2 Maneuver | - | - | - | - | 210 | - |
| Stage 1 | - | - | - | - | 565 | - |
| Stage 2 | - | - | - | - | 541 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.4 | 0 | 14.2 |
| HCM LOS | | | B |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1035 | - | - | - | 420 |
| HCM Lane V/C Ratio | 0.025 | - | - | - | 0.07 |
| HCM Control Delay (s) | 8.6 | 0 | - | - | 14.2 |
| HCM Lane LOS | A | A | - | - | B |
| HCM 95th %tile Q(veh) | 0.1 | - | - | - | 0.2 |

2028 Build Weekday Evening Peak Hour

| Intersection | |
|---|---|
| Int Delay, s/veh | 2.1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ⇕ | | | ⇕ | | | ⇕ | | | ⇕ | |
| Traffic Vol, veh/h | 3 | 0 | 0 | 44 | 0 | 5 | 0 | 546 | 33 | 17 | 490 | 3 |
| Future Vol, veh/h | 3 | 0 | 0 | 44 | 0 | 5 | 0 | 546 | 33 | 17 | 490 | 3 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 78 | 92 | 78 | 92 | 91 | 91 | 91 | 91 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 3 | 20 | 2 | 0 |
| Mvmt Flow | 3 | 0 | 0 | 56 | 0 | 6 | 0 | 600 | 36 | 19 | 538 | 3 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1199 | 1214 | 540 | 1196 | 1197 | 618 | 541 | 0 | 0 | 636 | 0 | 0 |
| Stage 1 | 578 | 578 | - | 618 | 618 | - | - | - | - | - | - | - |
| Stage 2 | 621 | 636 | - | 578 | 579 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.13 | 6.5 | 6.2 | 4.1 | - | - | 4.3 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.13 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.13 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.527 | 4 | 3.3 | 2.2 | - | - | 2.38 | - | - |
| Pot Cap-1 Maneuver | 164 | 183 | 546 | 162 | 187 | 493 | 1038 | - | - | 867 | - | - |
| Stage 1 | 505 | 504 | - | 475 | 484 | - | - | - | - | - | - | - |
| Stage 2 | 478 | 475 | - | 500 | 504 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 158 | 177 | 546 | 158 | 181 | 493 | 1038 | - | - | 867 | - | - |
| Mov Cap-2 Maneuver | 158 | 177 | - | 158 | 181 | - | - | - | - | - | - | - |
| Stage 1 | 505 | 488 | - | 475 | 484 | - | - | - | - | - | - | - |
| Stage 2 | 472 | 475 | - | 485 | 488 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 28.3 | 38.1 | 0 | 0.3 |
| HCM LOS | D | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1038 | - | - | 158 | 170 | 867 | - | - |
| HCM Lane V/C Ratio | - | - | - | 0.021 | 0.37 | 0.022 | - | - |
| HCM Control Delay (s) | 0 | - | - | 28.3 | 38.1 | 9.2 | 0 | - |
| HCM Lane LOS | A | - | - | D | E | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 1.6 | 0.1 | - | - |

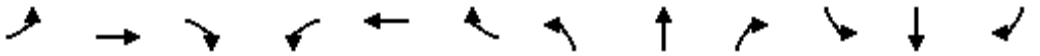
| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Vol, veh/h | 7 | 0 | 6 | 11 | 0 | 11 | 9 | 560 | 9 | 6 | 514 | 10 |
| Future Vol, veh/h | 7 | 0 | 6 | 11 | 0 | 11 | 9 | 560 | 9 | 6 | 514 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 63 | 92 | 63 | 92 | 93 | 93 | 93 | 93 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 |
| Mvmt Flow | 8 | 0 | 7 | 17 | 0 | 17 | 10 | 602 | 10 | 6 | 553 | 11 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1207 | 1203 | 559 | 1201 | 1203 | 607 | 564 | 0 | 0 | 612 | 0 | 0 |
| Stage 1 | 571 | 571 | - | 627 | 627 | - | - | - | - | - | - | - |
| Stage 2 | 636 | 632 | - | 574 | 576 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 162 | 186 | 532 | 163 | 186 | 500 | 1018 | - | - | 977 | - | - |
| Stage 1 | 509 | 508 | - | 475 | 479 | - | - | - | - | - | - | - |
| Stage 2 | 469 | 477 | - | 507 | 505 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 154 | 182 | 532 | 158 | 182 | 500 | 1018 | - | - | 977 | - | - |
| Mov Cap-2 Maneuver | 154 | 182 | - | 158 | 182 | - | - | - | - | - | - | - |
| Stage 1 | 501 | 503 | - | 468 | 472 | - | - | - | - | - | - | - |
| Stage 2 | 446 | 470 | - | 496 | 500 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 21.8 | 22.5 | 0.1 | 0.1 |
| HCM LOS | C | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1018 | - | - | 229 | 240 | 977 | - | - |
| HCM Lane V/C Ratio | 0.01 | - | - | 0.062 | 0.146 | 0.007 | - | - |
| HCM Control Delay (s) | 8.6 | 0 | - | 21.8 | 22.5 | 8.7 | 0 | - |
| HCM Lane LOS | A | A | - | C | C | A | A | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.2 | 0.5 | 0 | - | - |

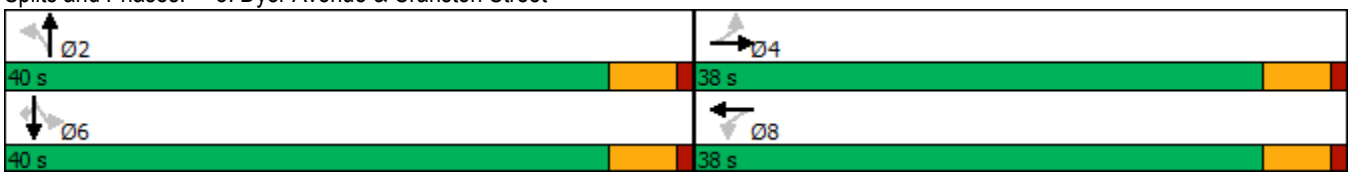


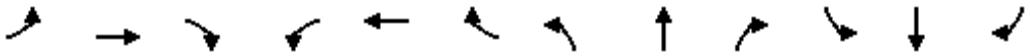
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 178 | 280 | 23 | 103 | 398 | 61 | 25 | 350 | 102 | 57 | 317 | 150 |
| Future Volume (vph) | 178 | 280 | 23 | 103 | 398 | 61 | 25 | 350 | 102 | 57 | 317 | 150 |
| Lane Util. 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 |
| Frt | | 0.994 | | | 0.985 | | | 0.971 | | | | 0.850 |
| Flt Protected | | 0.982 | | | 0.991 | | | 0.997 | | | 0.992 | |
| Satd. Flow (prot) | 0 | 1827 | 0 | 0 | 1895 | 0 | 0 | 1887 | 0 | 0 | 1920 | 1669 |
| Flt Permitted | | 0.547 | | | 0.821 | | | 0.968 | | | 0.873 | |
| Satd. Flow (perm) | 0 | 1017 | 0 | 0 | 1570 | 0 | 0 | 1832 | 0 | 0 | 1689 | 1669 |
| Satd. Flow (RTOR) | | 4 | | | 10 | | | 23 | | | | 101 |
| Adj. Flow (vph) | 189 | 298 | 24 | 114 | 442 | 68 | 28 | 389 | 113 | 61 | 337 | 160 |
| Lane Group Flow (vph) | 0 | 511 | 0 | 0 | 624 | 0 | 0 | 530 | 0 | 0 | 398 | 160 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Detector Phase | 4 | 4 | | 8 | 8 | | 2 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 23.0 | 23.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | 23.0 |
| Total Split (s) | 38.0 | 38.0 | | 38.0 | 38.0 | | 40.0 | 40.0 | | 40.0 | 40.0 | 40.0 |
| Total Split (%) | 48.7% | 48.7% | | 48.7% | 48.7% | | 51.3% | 51.3% | | 51.3% | 51.3% | 51.3% |
| Maximum Green (s) | 33.0 | 33.0 | | 33.0 | 33.0 | | 35.0 | 35.0 | | 35.0 | 35.0 | 35.0 |
| 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) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | | -1.0 | | | -1.0 | | | -1.0 | | | -1.0 | 0.0 |
| Total Lost Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | 5.0 |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | | None | None | | Max | Max | | Max | Max | Max |
| Walk Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | 7.0 |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | 8.0 |
| Pedestrian Calls (#/hr) | 2 | 2 | | 2 | 2 | | 2 | 2 | | 2 | 2 | 2 |
| v/c Ratio | | 1.15 | | | 0.90 | | | 0.62 | | | 0.51 | 0.20 |
| Control Delay | | 114.6 | | | 39.8 | | | 19.0 | | | 17.7 | 6.1 |
| Queue Delay | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | 0.0 |
| Total Delay | | 114.6 | | | 39.8 | | | 19.0 | | | 17.7 | 6.1 |
| Queue Length 50th (ft) | | ~297 | | | 268 | | | 177 | | | 130 | 16 |
| Queue Length 95th (ft) | | #484 | | | #482 | | | 278 | | | 209 | 49 |
| Internal Link Dist (ft) | | 247 | | | 568 | | | 316 | | | 467 | |
| Turn Bay Length (ft) | | | | | | | | | | | | 50 |
| Base Capacity (vph) | | 445 | | | 690 | | | 857 | | | 779 | 804 |
| Starvation Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Spillback Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Storage Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Reduced v/c Ratio | | 1.15 | | | 0.90 | | | 0.62 | | | 0.51 | 0.20 |

| Intersection Summary |
|---|
| Cycle Length: 78 |

Actuated Cycle Length: 78
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Dyer Avenue & Cranston Street





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 178 | 280 | 23 | 103 | 398 | 61 | 25 | 350 | 102 | 57 | 317 | 150 |
| Future Volume (vph) | 178 | 280 | 23 | 103 | 398 | 61 | 25 | 350 | 102 | 57 | 317 | 150 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | 5.0 |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 0.99 | | | 0.99 | | | 0.97 | | | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | | 1.00 | | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1826 | | | 1896 | | | 1888 | | | 1920 | 1669 |
| Flt Permitted | | 0.55 | | | 0.82 | | | 0.97 | | | 0.87 | 1.00 |
| Satd. Flow (perm) | | 1018 | | | 1571 | | | 1833 | | | 1690 | 1669 |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 189 | 298 | 24 | 114 | 442 | 68 | 28 | 389 | 113 | 61 | 337 | 160 |
| RTOR Reduction (vph) | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 12 | 0 | 0 | 0 | 56 |
| Lane Group Flow (vph) | 0 | 509 | 0 | 0 | 618 | 0 | 0 | 518 | 0 | 0 | 398 | 104 |
| Heavy Vehicles (%) | 1% | 2% | 0% | 1% | 1% | 2% | 0% | 1% | 0% | 4% | 1% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 33.0 | | | 33.0 | | | 35.0 | | | 35.0 | 35.0 |
| Effective Green, g (s) | | 34.0 | | | 34.0 | | | 36.0 | | | 36.0 | 35.0 |
| Actuated g/C Ratio | | 0.44 | | | 0.44 | | | 0.46 | | | 0.46 | 0.45 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | 5.0 |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 443 | | | 684 | | | 846 | | | 780 | 748 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.50 | | | 0.39 | | | c0.28 | | | 0.24 | 0.06 |
| v/c Ratio | | 1.15 | | | 0.90 | | | 0.61 | | | 0.51 | 0.14 |
| Uniform Delay, d1 | | 22.0 | | | 20.5 | | | 15.8 | | | 14.8 | 12.6 |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 90.1 | | | 15.4 | | | 3.3 | | | 2.4 | 0.4 |
| Delay (s) | | 112.1 | | | 35.8 | | | 19.0 | | | 17.2 | 13.0 |
| Level of Service | | F | | | D | | | B | | | B | B |
| Approach Delay (s) | | 112.1 | | | 35.8 | | | 19.0 | | | 16.0 | |
| Approach LOS | | F | | | D | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 44.4 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.87 | | |
| Actuated Cycle Length (s) | 78.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 100.4% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

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

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 11 | 473 | 563 | 10 | 8 | 7 |
| Future Vol, veh/h | 11 | 473 | 563 | 10 | 8 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 94 | 94 | 82 | 82 | 25 | 25 |
| Heavy Vehicles, % | 0 | 2 | 1 | 0 | 0 | 0 |
| Mvmt Flow | 12 | 503 | 687 | 12 | 32 | 28 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 699 | 0 | - | 0 | 1220 | 693 |
| Stage 1 | - | - | - | - | 693 | - |
| Stage 2 | - | - | - | - | 527 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 907 | - | - | - | 201 | 447 |
| Stage 1 | - | - | - | - | 500 | - |
| Stage 2 | - | - | - | - | 596 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 907 | - | - | - | 197 | 447 |
| Mov Cap-2 Maneuver | - | - | - | - | 197 | - |
| Stage 1 | - | - | - | - | 491 | - |
| Stage 2 | - | - | - | - | 596 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.2 | 0 | 22.3 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 907 | - | - | - | 267 |
| HCM Lane V/C Ratio | 0.013 | - | - | - | 0.225 |
| HCM Control Delay (s) | 9 | 0 | - | - | 22.3 |
| HCM Lane LOS | A | A | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.8 |

| Intersection | |
|---|---|
| Int Delay, s/veh | 0.9 |

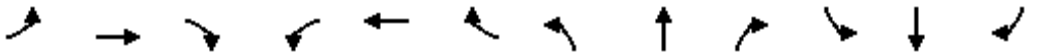
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 16 | 435 | 470 | 17 | 11 | 27 |
| Future Vol, veh/h | 16 | 435 | 470 | 17 | 11 | 27 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 97 | 97 | 88 | 88 | 71 | 71 |
| Heavy Vehicles, % | 0 | 1 | 1 | 0 | 0 | 4 |
| Mvmt Flow | 16 | 448 | 534 | 19 | 15 | 38 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 553 | 0 | - | 0 | 1024 | 544 |
| Stage 1 | - | - | - | - | 544 | - |
| Stage 2 | - | - | - | - | 480 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.24 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.336 |
| Pot Cap-1 Maneuver | 1027 | - | - | - | 263 | 535 |
| Stage 1 | - | - | - | - | 586 | - |
| Stage 2 | - | - | - | - | 627 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1027 | - | - | - | 257 | 535 |
| Mov Cap-2 Maneuver | - | - | - | - | 257 | - |
| Stage 1 | - | - | - | - | 574 | - |
| Stage 2 | - | - | - | - | 627 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.3 | 0 | 15.2 |
| HCM LOS | | | C |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1027 | - | - | - | 407 |
| HCM Lane V/C Ratio | 0.016 | - | - | - | 0.132 |
| HCM Control Delay (s) | 8.6 | 0 | - | - | 15.2 |
| HCM Lane LOS | A | A | - | - | C |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0.5 |

2028 Build Weekday Morning Peak Hour Mitigated

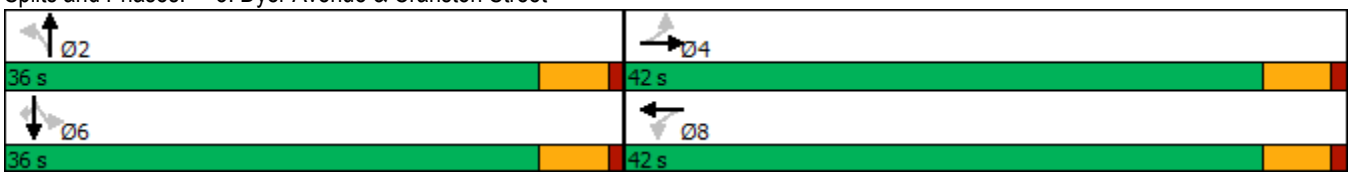


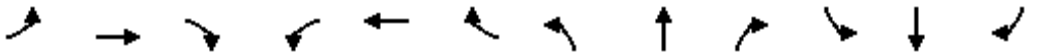
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 148 | 419 | 31 | 108 | 324 | 47 | 37 | 276 | 127 | 42 | 349 | 135 |
| Future Volume (vph) | 148 | 419 | 31 | 108 | 324 | 47 | 37 | 276 | 127 | 42 | 349 | 135 |
| Lane Util. 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 |
| Frt | | 0.993 | | | 0.987 | | | 0.961 | | | | 0.850 |
| Flt Protected | | 0.988 | | | 0.989 | | | 0.996 | | | 0.995 | |
| Satd. Flow (prot) | 0 | 1846 | 0 | 0 | 1887 | 0 | 0 | 1840 | 0 | 0 | 1930 | 1620 |
| Flt Permitted | | 0.715 | | | 0.723 | | | 0.697 | | | 0.873 | |
| Satd. Flow (perm) | 0 | 1336 | 0 | 0 | 1379 | 0 | 0 | 1288 | 0 | 0 | 1693 | 1620 |
| Satd. Flow (RTOR) | | 5 | | | 10 | | | 32 | | | | 79 |
| Adj. Flow (vph) | 170 | 482 | 36 | 127 | 381 | 55 | 49 | 363 | 167 | 60 | 499 | 193 |
| Lane Group Flow (vph) | 0 | 688 | 0 | 0 | 563 | 0 | 0 | 579 | 0 | 0 | 559 | 193 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Detector Phase | 4 | 4 | | 8 | 8 | | 2 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 23.0 | 23.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | 23.0 |
| Total Split (s) | 42.0 | 42.0 | | 42.0 | 42.0 | | 36.0 | 36.0 | | 36.0 | 36.0 | 36.0 |
| Total Split (%) | 53.8% | 53.8% | | 53.8% | 53.8% | | 46.2% | 46.2% | | 46.2% | 46.2% | 46.2% |
| Maximum Green (s) | 37.0 | 37.0 | | 37.0 | 37.0 | | 31.0 | 31.0 | | 31.0 | 31.0 | 31.0 |
| 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) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | | -1.0 | | | -1.0 | | | -1.0 | | | -1.0 | 0.0 |
| Total Lost Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | 5.0 |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | | None | None | | Max | Max | | Max | Max | Max |
| Walk Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | 7.0 |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | 8.0 |
| Pedestrian Calls (#/hr) | 2 | 2 | | 2 | 2 | | 2 | 2 | | 2 | 2 | 2 |
| v/c Ratio | | 1.05 | | | 0.83 | | | 1.06 | | | 0.81 | 0.28 |
| Control Delay | | 72.9 | | | 30.2 | | | 79.4 | | | 31.3 | 10.5 |
| Queue Delay | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | 0.0 |
| Total Delay | | 72.9 | | | 30.2 | | | 79.4 | | | 31.3 | 10.5 |
| Queue Length 50th (ft) | | ~371 | | | 220 | | | ~305 | | | 232 | 35 |
| Queue Length 95th (ft) | | #545 | | | #374 | | | #373 | | | 243 | 52 |
| Internal Link Dist (ft) | | 247 | | | 568 | | | 316 | | | 467 | |
| Turn Bay Length (ft) | | | | | | | | | | | | 50 |
| Base Capacity (vph) | | 653 | | | 676 | | | 547 | | | 694 | 691 |
| Starvation Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Spillback Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Storage Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Reduced v/c Ratio | | 1.05 | | | 0.83 | | | 1.06 | | | 0.81 | 0.28 |

| Intersection Summary |
|---|
| Cycle Length: 78 |

Actuated Cycle Length: 78
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Dyer Avenue & Cranston Street



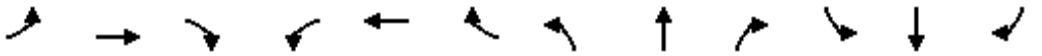


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 148 | 419 | 31 | 108 | 324 | 47 | 37 | 276 | 127 | 42 | 349 | 135 |
| Future Volume (vph) | 148 | 419 | 31 | 108 | 324 | 47 | 37 | 276 | 127 | 42 | 349 | 135 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | 5.0 |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 0.99 | | | 0.99 | | | 0.96 | | | 1.00 | 0.85 |
| Flt Protected | | 0.99 | | | 0.99 | | | 1.00 | | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1846 | | | 1886 | | | 1840 | | | 1929 | 1620 |
| Flt Permitted | | 0.71 | | | 0.72 | | | 0.70 | | | 0.87 | 1.00 |
| Satd. Flow (perm) | | 1335 | | | 1378 | | | 1289 | | | 1694 | 1620 |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.85 | 0.85 | 0.85 | 0.76 | 0.76 | 0.76 | 0.70 | 0.70 | 0.70 |
| Adj. Flow (vph) | 170 | 482 | 36 | 127 | 381 | 55 | 49 | 363 | 167 | 60 | 499 | 193 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 5 | 0 | 0 | 19 | 0 | 0 | 0 | 48 |
| Lane Group Flow (vph) | 0 | 685 | 0 | 0 | 558 | 0 | 0 | 560 | 0 | 0 | 559 | 145 |
| Heavy Vehicles (%) | 0% | 1% | 5% | 4% | 1% | 0% | 0% | 2% | 3% | 3% | 1% | 3% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 37.0 | | | 37.0 | | | 31.0 | | | 31.0 | 31.0 |
| Effective Green, g (s) | | 38.0 | | | 38.0 | | | 32.0 | | | 32.0 | 31.0 |
| Actuated g/C Ratio | | 0.49 | | | 0.49 | | | 0.41 | | | 0.41 | 0.40 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | 5.0 |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 650 | | | 671 | | | 528 | | | 694 | 643 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.51 | | | 0.40 | | | c0.43 | | | 0.33 | 0.09 |
| v/c Ratio | | 1.05 | | | 0.83 | | | 1.06 | | | 0.81 | 0.23 |
| Uniform Delay, d1 | | 20.0 | | | 17.2 | | | 23.0 | | | 20.3 | 15.6 |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 50.5 | | | 8.6 | | | 56.3 | | | 9.7 | 0.8 |
| Delay (s) | | 70.5 | | | 25.9 | | | 79.3 | | | 29.9 | 16.4 |
| Level of Service | | E | | | C | | | E | | | C | B |
| Approach Delay (s) | | 70.5 | | | 25.9 | | | 79.3 | | | 26.5 | |
| Approach LOS | | E | | | C | | | E | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 49.9 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 1.06 | | |
| Actuated Cycle Length (s) | 78.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 99.4% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

2028 Build Weekday Evening Peak Hour Mitigated

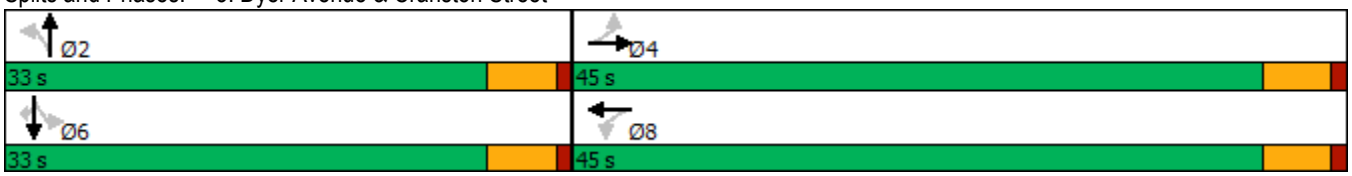


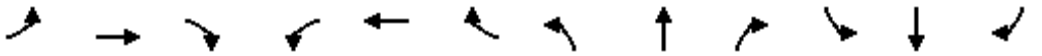
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 178 | 280 | 23 | 103 | 398 | 61 | 25 | 350 | 102 | 57 | 317 | 150 |
| Future Volume (vph) | 178 | 280 | 23 | 103 | 398 | 61 | 25 | 350 | 102 | 57 | 317 | 150 |
| Lane Util. 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 |
| Frt | | 0.994 | | | 0.985 | | | 0.971 | | | | 0.850 |
| Flt Protected | | 0.982 | | | 0.991 | | | 0.997 | | | 0.992 | |
| Satd. Flow (prot) | 0 | 1827 | 0 | 0 | 1895 | 0 | 0 | 1887 | 0 | 0 | 1920 | 1669 |
| Flt Permitted | | 0.591 | | | 0.833 | | | 0.967 | | | 0.840 | |
| Satd. Flow (perm) | 0 | 1099 | 0 | 0 | 1593 | 0 | 0 | 1830 | 0 | 0 | 1625 | 1669 |
| Satd. Flow (RTOR) | | 5 | | | 12 | | | 20 | | | | 87 |
| Adj. Flow (vph) | 189 | 298 | 24 | 114 | 442 | 68 | 28 | 389 | 113 | 61 | 337 | 160 |
| Lane Group Flow (vph) | 0 | 511 | 0 | 0 | 624 | 0 | 0 | 530 | 0 | 0 | 398 | 160 |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Detector Phase | 4 | 4 | | 8 | 8 | | 2 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) | 23.0 | 23.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | | 23.0 | 23.0 | 23.0 |
| Total Split (s) | 45.0 | 45.0 | | 45.0 | 45.0 | | 33.0 | 33.0 | | 33.0 | 33.0 | 33.0 |
| Total Split (%) | 57.7% | 57.7% | | 57.7% | 57.7% | | 42.3% | 42.3% | | 42.3% | 42.3% | 42.3% |
| Maximum Green (s) | 40.0 | 40.0 | | 40.0 | 40.0 | | 28.0 | 28.0 | | 28.0 | 28.0 | 28.0 |
| 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) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) | | -1.0 | | | -1.0 | | | -1.0 | | | -1.0 | 0.0 |
| Total Lost Time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | 5.0 |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | | None | None | | Max | Max | | Max | Max | Max |
| Walk Time (s) | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | 7.0 |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | 8.0 |
| Pedestrian Calls (#/hr) | 2 | 2 | | 2 | 2 | | 2 | 2 | | 2 | 2 | 2 |
| v/c Ratio | | 0.93 | | | 0.78 | | | 0.72 | | | 0.62 | 0.23 |
| Control Delay | | 44.2 | | | 23.0 | | | 26.5 | | | 24.5 | 9.6 |
| Queue Delay | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | 0.0 |
| Total Delay | | 44.2 | | | 23.0 | | | 26.5 | | | 24.5 | 9.6 |
| Queue Length 50th (ft) | | 204 | | | 216 | | | 214 | | | 157 | 23 |
| Queue Length 95th (ft) | | #411 | | | 352 | | | #347 | | | 255 | 63 |
| Internal Link Dist (ft) | | 247 | | | 568 | | | 316 | | | 467 | |
| Turn Bay Length (ft) | | | | | | | | | | | | 50 |
| Base Capacity (vph) | | 615 | | | 894 | | | 734 | | | 641 | 689 |
| Starvation Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Spillback Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Storage Cap Reductn | | 0 | | | 0 | | | 0 | | | 0 | 0 |
| Reduced v/c Ratio | | 0.83 | | | 0.70 | | | 0.72 | | | 0.62 | 0.23 |

| Intersection Summary |
|---|
| Cycle Length: 78 |

Actuated Cycle Length: 74
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Dyer Avenue & Cranston Street





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 178 | 280 | 23 | 103 | 398 | 61 | 25 | 350 | 102 | 57 | 317 | 150 |
| Future Volume (vph) | 178 | 280 | 23 | 103 | 398 | 61 | 25 | 350 | 102 | 57 | 317 | 150 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 12 | 12 | 12 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | 4.0 | 5.0 |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Frt | | 0.99 | | | 0.99 | | | 0.97 | | | 1.00 | 0.85 |
| Flt Protected | | 0.98 | | | 0.99 | | | 1.00 | | | 0.99 | 1.00 |
| Satd. Flow (prot) | | 1826 | | | 1896 | | | 1888 | | | 1920 | 1669 |
| Flt Permitted | | 0.59 | | | 0.83 | | | 0.97 | | | 0.84 | 1.00 |
| Satd. Flow (perm) | | 1098 | | | 1595 | | | 1831 | | | 1625 | 1669 |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 189 | 298 | 24 | 114 | 442 | 68 | 28 | 389 | 113 | 61 | 337 | 160 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 6 | 0 | 0 | 12 | 0 | 0 | 0 | 54 |
| Lane Group Flow (vph) | 0 | 508 | 0 | 0 | 618 | 0 | 0 | 518 | 0 | 0 | 398 | 106 |
| Heavy Vehicles (%) | 1% | 2% | 0% | 1% | 1% | 2% | 0% | 1% | 0% | 4% | 1% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Actuated Green, G (s) | | 35.7 | | | 35.7 | | | 28.2 | | | 28.2 | 28.2 |
| Effective Green, g (s) | | 36.7 | | | 36.7 | | | 29.2 | | | 29.2 | 28.2 |
| Actuated g/C Ratio | | 0.50 | | | 0.50 | | | 0.40 | | | 0.40 | 0.38 |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | 5.0 | 5.0 |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | | 545 | | | 792 | | | 723 | | | 642 | 636 |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.46 | | | 0.39 | | | c0.28 | | | 0.24 | 0.06 |
| v/c Ratio | | 0.93 | | | 0.78 | | | 0.72 | | | 0.62 | 0.17 |
| Uniform Delay, d1 | | 17.4 | | | 15.3 | | | 18.9 | | | 17.9 | 15.1 |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | 1.00 |
| Incremental Delay, d2 | | 23.1 | | | 5.0 | | | 6.0 | | | 4.5 | 0.6 |
| Delay (s) | | 40.6 | | | 20.3 | | | 24.9 | | | 22.4 | 15.7 |
| Level of Service | | D | | | C | | | C | | | C | B |
| Approach Delay (s) | | 40.6 | | | 20.3 | | | 24.9 | | | 20.4 | |
| Approach LOS | | D | | | C | | | C | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 26.1 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.84 | | |
| Actuated Cycle Length (s) | 73.9 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 100.4% | ICU Level of Service | G |
| Analysis Period (min) | 15 | | |

c Critical Lane Group