355 Franktown Road
Transportation Impact Study

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July 2022

PN: 2022-033

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Executive Summary

The following summarizes the analysis and results presented in this TIA report:

Study Area

- The subject site is greenfield, and the surrounding area is developing
- Highway 7 and Highway 15 are provincially owned freeways, McNeely Avenue is a county arterial, Franktown Road is a town arterial, and Coleman Street and Park Avenue are town collectors in the study area
- Sidewalks are provided along both sides of Franktown Road north of Alexander Street, and on Coleman Street west of Franktown Road and along one side of Franktown Road between Alexander Street and Findlay Avenue, on Coleman Street between Christie Street and McNeely Avenue, on Park Avenue, Findlay Avenue, McGregor Street, and Christie Street
- Asphalt pathways are located on one side of Coleman Street east of Franktown Road, and on McNeely Avenue north of Coleman Street, gravel pathways are located on both sides of McNeely Avenue south of Coleman Street, and a cycletrack is located on the north side of Coleman Street west of Franktown Road.
- Typically, commuter bus service between Carleton Place and Ottawa/Gatineau during AM and PM weekday peak periods comprising the OC Transpo rural partner route #538 is provided by Classic Alliance Motorcoach
- A TESR was completed for Highway 7 and Highway 15 within the study area, including new intersection geometry and active connections at these two highways and a new east-west arterial connection between Franktown Road (at Findlay Avenue) and McNeely Avenue
- Two developments are within the study area that will contribute traffic to the future conditions, being the Coleman Subdivision and the 347 Franktown Road development
- The TESR includes volumes from other developments outside of the study area that will be considered within the subject report

Site Plan Review

- The proposed development consists of a residential subdivision with six townhouses and two condominium buildings of 48 units each, for a total of 102 dwelling units
- An extension of two planned public roads is proposed as part of the development forming a connection between each adjacent subdivision
- This new extension of the adjacent planned public roads is proposed as having a 20-metre right of way with a sidewalk along the west side of the roadway continuing on the south side of the roadway
- Vehicle access to the townhouses is proposed via private driveways to each accessing proposed public road extension
- Vehicle access for the condominium residents is proposed via a driveway to the proposed public road on the north side of the site to underground parking, and for condominium visitors via a driveway to the proposed public road on south the south end of the site to a surface lot
- All site accesses are proposed as having minor stop control an each meets the minimum widths from The Town of Carleton Place Development Permit By-Law
- Garbage collection for the condominium units is proposed as taking place on the new public roadway at the proposed underground garage access and garbage collection for the townhomes is proposed via residential collection

- An emergency access route is to be provided from south and east of the adjacent retail plaza on Franktown Road with a fire access lane connecting to a hard surface amenity area and the visitor parking lot
- No concerns were noted for car or truck access to the site driveways or for emergency vehicle access to the fire access lane
- A 2.0-metre-wide sidewalk is located along the condominium frontage on the new public road, through the site and along the adjacent property fire lane to connect to the development to the north
- A walkway is proposed from each main building entrance to the sidewalk where the three easterly walkways include stairs, and the westerly walkway includes a ramped connection with a 2% grade
- A fully accessible building entrance is provided on the east side of the east condominium building
- Condominium resident parking is proposed as 130 vehicle spaces below ground, and condominium visitor parking is proposed as 18 vehicle spaces within a surface lot
- Bicycle parking for the condominium units is proposed as comprising 54 spaces with 15 exterior spaces via surface racks, and the remaining 39 spaces in the underground parking garage
- Resident vehicle and bicycle parking rates meet minimum values from the Development Permit by-law, but visitor vehicle parking is under the minimum value by six spaces, all barrier-free vehicle parking spaces required are proposed as being provided

Study Area and Development Traffic

- The anticipated build-out year is 2024 and the study horizons will be 2024, 2029, and 2034, where the AM and PM peak hours will be examined
- Traffic volumes were collected from the adjacent development traffic studies and from the Highway 7 and Highway 15 Intersection Improvements TESR
- The improvements recommended within the TESR were included at the 2029 horizon, and the new east-west arterial road was included at the 2034 horizon
- Growth rates identified in the Highway 7 and Highway 15 Intersection Improvements TESR were applied and the volumes from the two study area developments and from the TESR background developments were included to obtain background volumes at the future horizons
- Consistent with area traffic studies, ITE Trip Generation Manual vehicle trip rates were used to forecast development traffic
- The development is anticipated to generate 48 new AM and 58 new PM peak hour two-way vehicle trips, and 25% of site traffic is anticipated to travel to/from the north, 10% to/from the south, 45% to/from the east and 20% to/from the west

Traffic Impacts

- Synchro Version 11 was used to model traffic conditions and analyze operations and HCM 6th Edition methodology was used to calculate level of service and delay for individual movements and the overall intersections
- The study area intersections operate well in the existing conditions with the exception of the intersection of Franktown Road/Highway 15 at Highway 7 during the PM peak hour where the westbound left experiences capacity and delay issues, and extended queueing is generally noted at this intersection during both peak hours
- The study area intersections at the 2024 background horizon operate similarly to the existing conditions

- The study area intersections at the 2029 background horizon with the planned geometric changes at the intersection of Franktown Road/Highway 15 at Highway 7 and with proposed signal timing for the new geometry generally operate satisfactorily
- At this horizon, the minor approaches at the intersection of Franktown Road at Nelson Street West/Nelson Street East are forecasted to experience high delays during the PM peak hour with increasing mainline volumes on Franktown Road
- The study area intersections at the 2034 background horizon operate similarly to the 2029 future background conditions, with the exception of the intersection of Franktown Road at Findlay Avenue with the proposed arterial east leg of the intersection, where queuing on the northbound approach may spill back to the intersection of Franktown Road/Highway 15 at Highway 7
- The study area intersections for all three future total horizons operate similarly to the background horizons, with the additional through volumes from site traffic at the intersection of Franktown Road at Findlay Avenue increasing delay on the eastbound approach during the PM peak hour by approximately 3.2 seconds, scoring the movement a LOS F at the 2029 future total horizon
- At the 2034 future total horizon, similarly to in the background conditions, potential for queuing on the northbound approach spilling back to the intersection of Franktown Road/Highway 15 at Highway 7 may be possible
- While it is noted that the growth scenario employed in the TESR and this report are conservative, the trend of delay increasing on minor stop-controlled side streets intersecting Franktown Road as mainline arterial volumes increase into the future has been identified and signalization may be a potential strategy employed by the Town to mitigate these effects if desired
- Performing a SimTraffic analysis, the potential spillback reported previously on the northbound approach is not present when examined using this alternative methodology, and furthermore, signal timing optimization to reduce queues may be employed should this potential remain a concern

Conclusion and Recommendations

- The proposed development is anticipated to produce negligible transportation impacts
- It is recommended that the Town of Carleton Place monitor the future volumes along Franktown Road to assess intersection operations and queuing along Franktown Road
- From a transportation perspective, the proposed development is recommended to proceed

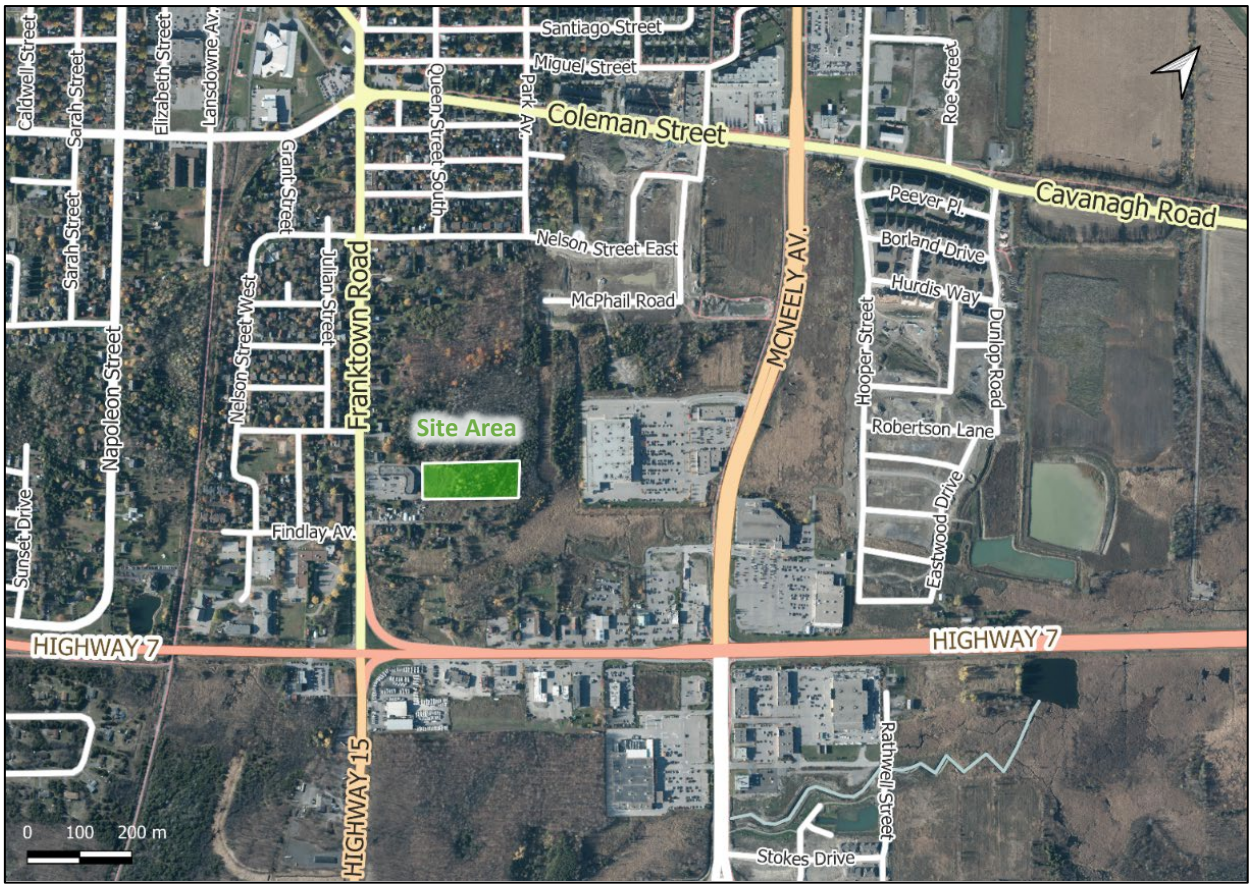
1 Introduction

This study has been prepared for a residential subdivision comprising 96 condominium units across two low-rise buildings and six freehold townhomes served by the extension of two previously planned local roads. As part of subdivision approval requirements this report will be submitted to the Town of Carleton Place and circulated to Lanark County and the Ministry of Transportation of Ontario. The format and methodologies applied within this report are responding to the General Guidelines for the Preparation of Traffic Impact Studies Ministry of Transportation (MTO, 2021). This study will include a description of the proposed development, a forecast of the vehicular traffic generated by the development, an operation assessment of the study area intersections, and a discussion on the site impacts and any mitigations required to support it.

2 Study Area

The site lies to the east of an existing retail plaza on Franktown Road and approximately 290 metres north of Highway 7. The parcel is a greenfield site, surrounded on all but the west side by other greenfield development areas. The planned land use of the parcel to the north is mixed retirement care, seniors' apartments, and residential dwellings, and a planned residential subdivision borders the site to the east. Figure 1 illustrates the study area context.

Figure 1: Area Context Plan



Source: https://www.openstreetmap.org/ Accessed: April 8, 2022

2.1 Existing Area Road Network

Highway 7: Highway 7 is an Ontario Ministry of Transportation freeway with an undivided cross-section within the study area. To the east of Franktown Road, it has a five-lane urban cross-section including a two-way left-turn lane, and it has a two-lane rural cross-section to the west. The posted speed limit is 60 km/h and the right-of-way varies throughout the study area.

Highway 15: Highway 15 7 is an Ontario Ministry of Transportation freeway with a two-lane undivided rural cross-section. The posted speed limit is 50 km/h for 300 m south of Highway 7 and 70 km/h to the south, and the right-of-way varies throughout the study area.

McNeely Avenue: McNeely Avenue is a Lanark County arterial road with a two-lane rural cross-section including gravel shoulders and an asphalt pathway on the east side of the road to the north of Coleman Street and a four-lane urban cross-section to the south including gravel paths on both sides of the road. The posted speed limit is 60 km/h and the measured right-of-way is 37 metres.

Franktown Road: Franktown Road is a Town of Carleton Place arterial road with a two-lane cross-section. The cross-section is fully urban north of Alexander Street and includes sidewalks on both sides of the road. Between Alexander Street and Findlay Avenue, the cross-section is semi-urban, curbed with a sidewalk on the west side of the road and with a gravel shoulder on the east side of the road. South of Findlay Avenue, the cross-section is curbed on the east side of the road and has a gravel shoulder on the west side of the road. The posted speed limit is 50 km/h and the right-of-way varies between 13 metres, 18 metres, 23 metres, and 27.5 metres within the study area.

Coleman Street: Coleman Steet is a Town of Carleton Place collector road with a two-lane urban cross-section. West of Franktown Road sidewalks are included on both sided of the road and a cycletrack is provided on the north side of the road. Between Franktown Road and Christie Street an asphalt pathway is present on the north side of the road, and east of Christie Street, a sidewalk is present on the south side of the road and an asphalt pathway is provided on the north side of the road. The posted speed limit is 50 km/h and the measured right-of-way varies from 18.0 metres 40.0 metres within the study area.

Park Avenue: Park Avenue is a Town of Carleton Place collector road with a two-lane urban cross-section including a sidewalk on the west side of the road. The unposted speed limit is assumed to be 50 km/h and the measured right-of-way is 12 metres.

Nelson Street: Nelson Street is a Town of Carleton Place local road with a two-lane urban cross-section. The unposted speed limit is assumed to be 50 km/h and the measured right-of-way is 20 metres to the west of Franktown Road and 12 metres to the east.

Findlay Avenue: Findlay Avenue is a Town of Carleton Place local road with a two-lane urban cross-section including a sidewalk on the south side of the road. The unposted speed limit is assumed to be 50 km/h and the measured right-of-way is 20 metres.

McGregor Street: McGregor Street is a Town of Carleton Place local road with a two-lane urban cross-section including a sidewalk on the west side of the road. The unposted speed limit is assumed to be 50 km/h and the measured right-of-way is 20 metres

Christie Street: Christie Street is a Town of Carleton Place local road with a two-lane urban cross-section including a sidewalk on the west/north side of the road. The unposted speed limit is assumed to be 50 km/h and the measured right-of-way is 24 metres north of its 90-degree bend, and 20 metres to the west of the bend.

2.2 Existing Intersections

The key existing area intersections as arrived at through consultation with the Town, County, and Province have been summarized below:

Franktown Road at Coleman Street	The intersection of Franktown Road at Coleman Street is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane and a shred through/channelized right-turn lane, and the southbound approach consists of an auxiliary left-turn lane, a through lane, and an auxiliary right-turn lane. The eastbound and westbound approaches each consist of a shared left-turn/through lane and an auxiliary channelized right-turn lane. No turn restrictions were noted.
Franktown Road at Nelson Street West / Nelson Street East	The intersection of Franktown Road at Nelson Street West/Nelson Street East is an unsignalized intersection stop-controlled on the minor approaches of Nelson Street West and Nelson Street East. All approaches consist of shared all-movements lanes. No turn restrictions were noted.
Franktown Road at Findlay Avenue	The intersection of Franktown Road at Findlay Avenue is an unsignalized T-intersection stop-controlled on the minor approach of Findlay Avenue. The northbound approach consists of a shared left-turn/through lane and the southbound approach consists of a shared through/right-turn lane. The eastbound approach consists of a shared left-turn/right-turn lane. No turn restrictions were noted.
Franktown Road / Highway 15 at Highway 7	The intersection of Franktown Road/Highway 15 at Highway 7 is a signalized intersection. The northbound approach consists of an auxiliary left-turn lane and a shared through/channelized right-turn lane and the southbound approach consists of an auxiliary left-turn lane, a through lane, and an auxiliary right-turn lane. The eastbound approach consists of an auxiliary left-turn lane, a through lane, and an auxiliary right-turn lane, and the westbound approach consists of an auxiliary left-turn lane, a through lane, and a channelized right-turn lane. No turn restrictions were noted.
Park Avenue at Coleman Street	The intersection of Franktown Road at Nelson Street West/Nelson Street East is an unsignalized intersection stop-controlled on the minor approaches of Park Avenue. The northbound and southbound approaches each consist of a shared all-movements lane. The eastbound and westbound approaches each consist of an auxiliary left-turn lane and a shared through/right-turn lane. No turn restrictions were noted.
McGregor Street / Christie Street at Coleman Street	The intersection of McGregor Street/Christie Street at Coleman Street East is an unsignalized intersection stop-controlled on the minor approaches of McGregor Street and Christie Street. The northbound and southbound approaches each consist of a shared all-movements lane. The eastbound approach consists of a shared left-turn/through lane and a shared through/right-turn lane, and the westbound

approach consists of a shared left-turn/through lane and a right-turn lane. No turn restrictions were noted.

2.3 Cycling and Pedestrian Facilities

Sidewalks are provided along both sides of Franktown Road north of Alexander Street, and on Coleman Street west of Franktown Road. Sidewalks are provided along one side of Franktown Road between Alexander Street and Findlay Avenue, on Coleman Street between Christie Street and McNeely Avenue, on Park Avenue, Findlay Avenue, McGregor Street, and Christie Street.

Asphalt pathways are located on one side of Coleman Street east of Franktown Road, and on McNeely Avenue north of Coleman Street. Gravel pathways are located on both sides of McNeely Avenue south of Coleman Street. A cycletrack is located on the north side of Coleman Street west of Franktown Road.

2.4 Existing Transit

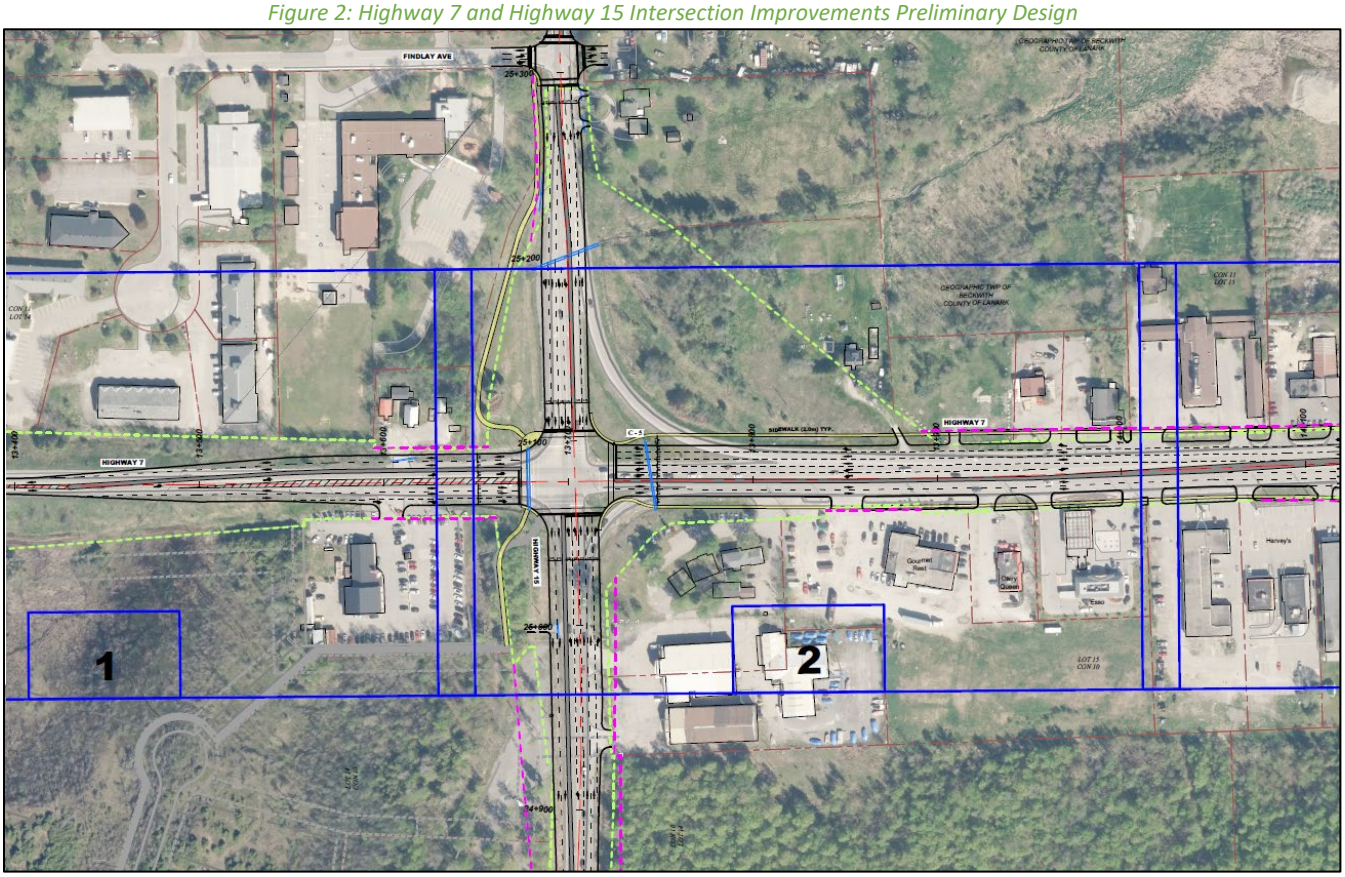
Typically, commuter bus service between Carleton Place and Ottawa/Gatineau during AM and PM weekday peak periods comprising the OC Transpo rural partner route #538 is provided by Classic Alliance Motorcoach.

2.5 Future Changes to the Area Transportation Network

Highway 7 and Highway 15 Intersection Improvements

The Ministry of Transportation retained WSP to complete a Preliminary Design and Class Environmental Assessment Study for improvements to the intersection of Highway 7 and Highway 15. As part of this study approach lane configurations and active mode facilities at the intersection were investigated. Also investigated within the Highway 7 and Highway 15 Intersection Improvements Transportation Environmental Study Report (TESR) was a new road connection between Franktown Road and McNeely Avenue. This connection would form the east leg of the Franktown Road at Findlay Avenue intersection, which would be signalized. Figure 2 illustrates the preliminary design of the intersection from Appendix L of the Highway 7 and Highway 15 Intersection Improvements TESR.

Figure 2: Highway 7 and Highway 15 Intersection Improvements Preliminary Design



Source: https://hwy7-15ea.ca/ Accessed: April 8, 2022

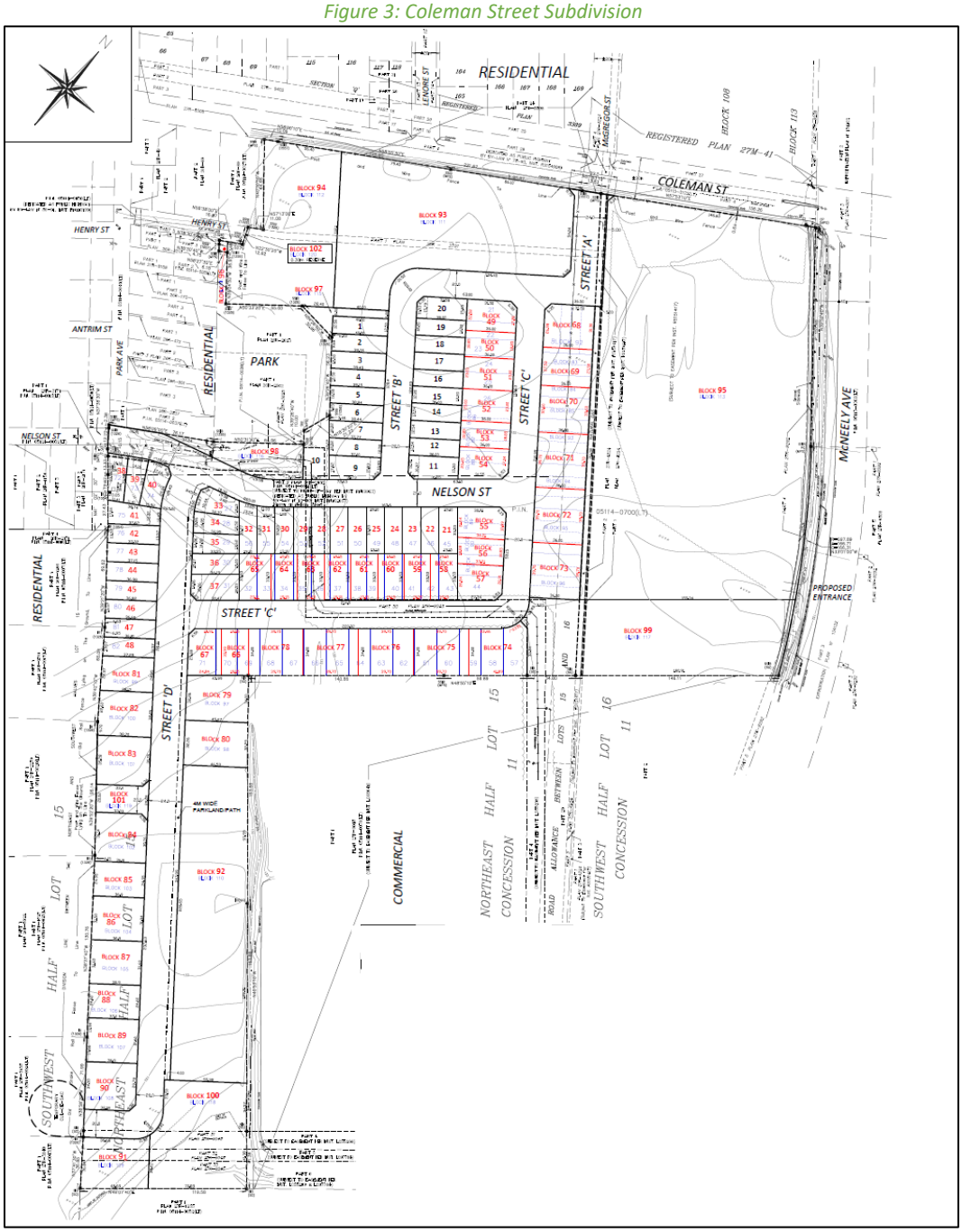
2.6 Other Study Area Developments

As confirmed by the Town of Carleton Place, the two studies that will explicitly be accounted for in the background traffic and road network conditions are:

Coleman Subdivision

The proposed development plan consists of 48 single detached dwellings, 262 townhouse and/or low-rise dwellings, and one commercial block. The development is anticipated to be built-out by 2024 and to generate 163 new two-way AM and 206 new two-way PM peak hour auto trips. Figure 3 illustrates the planned development to the east, to which the subjected development is proposed to connect at the terminus of Street 'D'. (McIntosh Perry, 2019)

Figure 3: Coleman Street Subdivision



347 Franktown Road

The proposed development plan consists of a retirement care home, a senior's apartment building, a commercial plaza and a townhouse development. The first phase of development is anticipated to be built-out by 2023 and the full development by 2027, and the full build-out is forecasted to generate 77 new two-way AM and 114 new two-way PM peak hour auto trips. (BT Engineering, 2021)

In addition to these two developments, traffic from other developments outside of the study area will be assigned to the road network as provided within the Highway 7 and Highway 15 Intersection Improvements TESR. These TESR background development volumes are provided for the horizons of 2025 and 2029. Linear extrapolation will

be used to estimate the volumes at horizons outside of these years, and linear interpolation will be used to estimate the volumes horizons between these years. It is noted that volumes from the Coleman Street Subdivision are included in these volumes, and thus were discounted from the two horizons' volumes.

The background development volumes within the study area have been provided in Appendix A.

3 Site Plan Review

3.1 Proposed Development

The proposed development is a residential subdivision comprising six townhouses, and two condominium buildings of 48 units each, for a total of 102 dwelling units along an extension of two planned public roads within the adjacent developments. Figure 4 illustrates the proposed concept plan.

3.1.1 New Streets

The proposed development includes a new extension of a planned north-south public road on the east side of the 347 Franktown Road development as illustrated in Figure 4. Connection to the planned public road within the 347 Franktown Road development would facilitate access to the right-in-only access on Franktown Road proposed as part of that development.

The subject development road extension is also to include a 90-degree bend and is to connect to a road terminus in the Coleman Street Subdivision, labelled "Street 'D'" in Figure 3. This connection would facilitate access to Nelson Street East and the intersecting local roads accessing Coleman Street.

The new public road proposed as part of the subject development includes as 20-metre right-of-way. A sidewalk is proposed along the west side of the north-south alignment continuing to the south side of the east-west alignment.

3.1.2 Circulation and Access

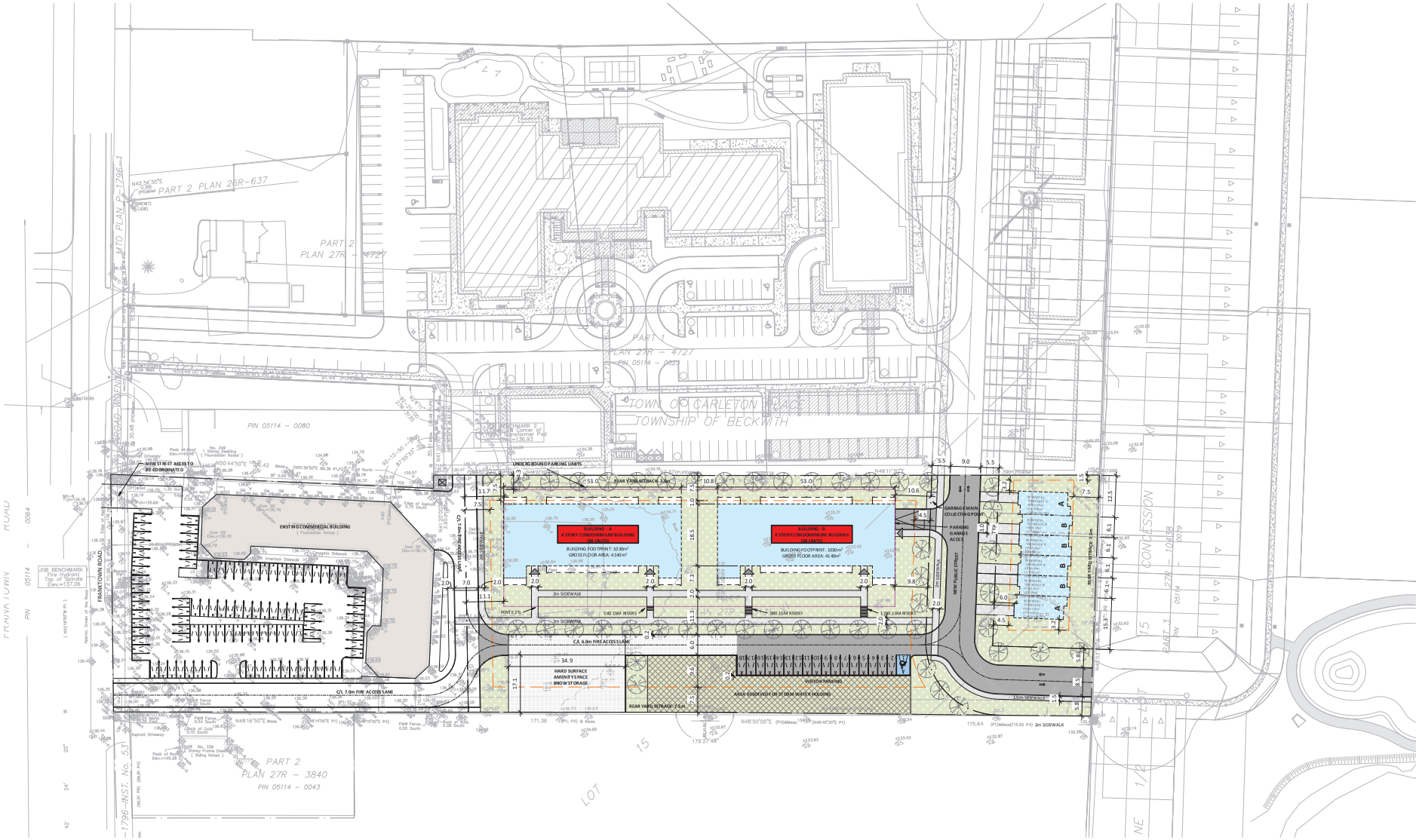
Vehicle access to the townhouse units is proposed via private driveways to each unit on the east side of the new public road. Access for residents of the condominium units is to be provided via a 6.0-metre-wide ramp to underground parking and for visitors of the condominium units via a surface lot comprising eighteen spaces. The surface lot is proposed to access the new public road via a 6.0-metre-wide driveway north of the 90-degree bend.

The driveway to the underground parking and the driveway to the surface visitor parking lot are proposed to be stop controlled on the minor access approaches and meet the minimum widths from The Town of Carleton Place Development Permit By-Law. No turn lanes are proposed to the driveways.

Garbage collection for the condominium units is proposed as taking place on the new public roadway at the proposed underground garage access. Garbage collection for the townhomes is proposed via residential collection.

An emergency access route is to be provided from the south and east of the adjacent retail plaza parcel on Franktown Road via a fire access lane as part of the 347 Franktown Road development. An on-site fire access lane is to intersect this adjacent lane and connect to the visitor parking lot and adjacent hard surface amenity and snow storage area.

No concerns were noted for car or truck access to the site driveways, or for emergency vehicle access to the fire access lane.



North

355 FRANKTOWN DEVELOPMENT
96 CONDOMINIUMS UNITS
6 FREEHOLD TOWNHOUSES

102 UNITS TOTAL

PARKINGS
VISITOR: 18
UNDERGROUND: 130
TOTAL: 148

FOR INFORMATION
IN PROGRESS
JUNE 30, 2022

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Franktown Development
355 Franktown Rd
Carleton Place, ON K7C 4M8

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Landscape architect

Structural engineer

Designer

Seal

Seal

Revision

N°	Description	Date

Reference
A: Detail number
B: Number of the sheet where it is detailed

Note
Before starting work the contractor will have to check all dimensions and site conditions and notify the architect in writing if there is a discrepancy. This document and its content are protected by copyright laws and any copying is prohibited unless granted permission by the architect.

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Title: SITE PLAN

Sheet: A101

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3.1.3 Design for Active Modes

A 2.0-metre-wide sidewalk is located along the condominium frontage on the new public road, through the site and along the adjacent property fire lane to connect to the development to the north. Sidewalks connect the condominium building entrances, including stairs on the three easterly main entrances due to the site grades, and the westerly connection is accessible via a 2% slope. An east-west walkway is proposed at grade with the building entrances, between each entrance connection permitting accessible access from the west of the site.

A fully accessible building entrance is provided on the east side of the east condominium building adjacent to the garage entrance, with a walkway connection to the sidewalk on the east side of the property.

3.1.4 Parking

Parking for residents of the condominium is proposed via an underground parking garage comprising 130 spaces of which two spaces are designated barrier-free. Parking for the townhomes is proposed via the private driveways and private garages within the units. The proposed plan meets the Town's Development Permit By-Law requires Parking (1.25 parking spaces per condominium dwelling unit or 120 spaces).

Eighteen vehicle parking spaces for visitors are proposed for the condominium in a surface lot, of which one space is designated barrier-free. The Town's Development Permit By-law requires 0.25 visitor parking spaces per condominium dwelling unit, equating to 24 spaces, therefore the site will require an exemption for the visitor parking, but is meeting the barrier-free visitor vehicle parking space requirement.

Bicycle parking for the condominium units is proposed as comprising 54 spaces with 15 exterior spaces via surface racks, and the remaining 39 spaces in the underground parking garage. Bicycle parking for the townhome units is assumed to be within each of the dwellings. The bike parking meets the Town's Development Permit By-Law requirements (0.5 spaces per condominium dwelling unit plus six spaces for developments of 20 or more dwelling units for the condominium component, or a total of 54 spaces).

4 Study Area and Development Traffic

4.1 Study Horizons

The anticipated build-out year is 2024. As a result, the full build-out plus five years horizon year is 2029, and the build-out plus ten-year horizon is 2034.

4.2 Time Periods

As the proposed development is composed entirely of residential units, the weekday AM and PM peak hours will be examined.

4.3 Existing Peak Hour Travel Demand

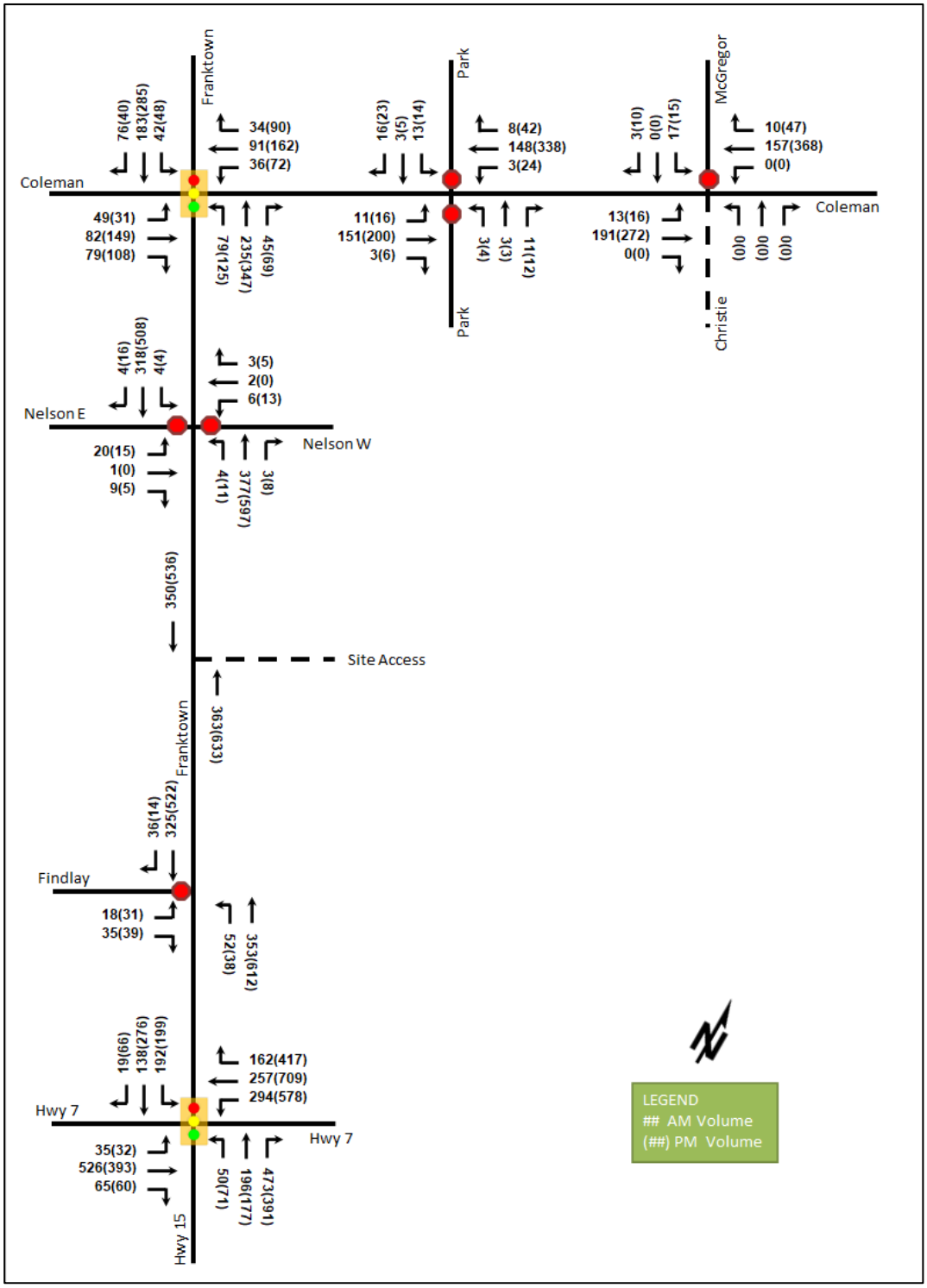
Existing turning movement volumes for the study area intersections were collected from area Transportation Impact Studies and the Highway 7 and Highway 15 Intersection Improvement TESR (WSP, 2020). Table 1 summarizes the data sources by intersection and Figure 5 illustrates these existing traffic volumes grown to the 2022 horizon. Volumes on Christie Street will be provided in the future conditions based upon the findings of the Coleman Street Subdivision TIS (McIntosh Perry, 2019)

Table 1: Traffic Volume Sources

Intersections	Data Source
Park Avenue @ Coleman Street **Franktown Road @ Nelson Street** **Franktown Road @ Findlay Avenue**	347 Franktown Road Transportation Impact Assessment Report, Revision 1 (BTE, 2021)

Intersections	Data Source
Franktown Road/Highway 15 @ Highway 7	Highway 7 and Highway 15 Intersection Improvements TESR (WSP, 2020)
Franktown Road @ Coleman Street **McGregor Street @ Coleman Street**	Coleman Street Subdivision Traffic Impact Study – Addendum (McIntosh Perry, 2019)

Figure 5: 2022 Existing Traffic Counts



4.4 Background Network Travel Demands

4.4.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.5. The Highway 7 and Highway 15 improvements are assumed to be in place for the buildout plus five-year horizon of 2029, and the signalization of the intersection of Franktown Road and Findlay Avenue including the new east leg have been included within the buildout plus ten-year horizon conditions.

4.4.2 Background Growth

Based upon the Highway 7 and Highway 15 Intersection Improvements TESR, the historical growth within the study area has been calculated as 1.5%. The methodology employed within the TESR included this historical growth rate as a background rate for forecasting future volumes, and explicitly considered all development planned at the time that would impact the corridor. While considered to be conservative, this methodology will be used within the subject study.

A background growth rate of 1.5% will be bi-directionally applied to the mainline volumes on Franktown Road and Coleman Street, and to all movements at the intersection of Franktown Road/Highway 15 at Highway 7.

4.4.3 Future Background Traffic Volumes

The future background volumes were obtained by applying the background growth to the existing volumes and superimposing the background development volumes described in Section 2.6. Future background volumes for the 2024 horizon are illustrated in Figure 6, for the 2029 horizon are illustrated in Figure 7, and for the 2034 horizon are illustrated in Figure 8.

Figure 6: 2024 Future Background Volumes

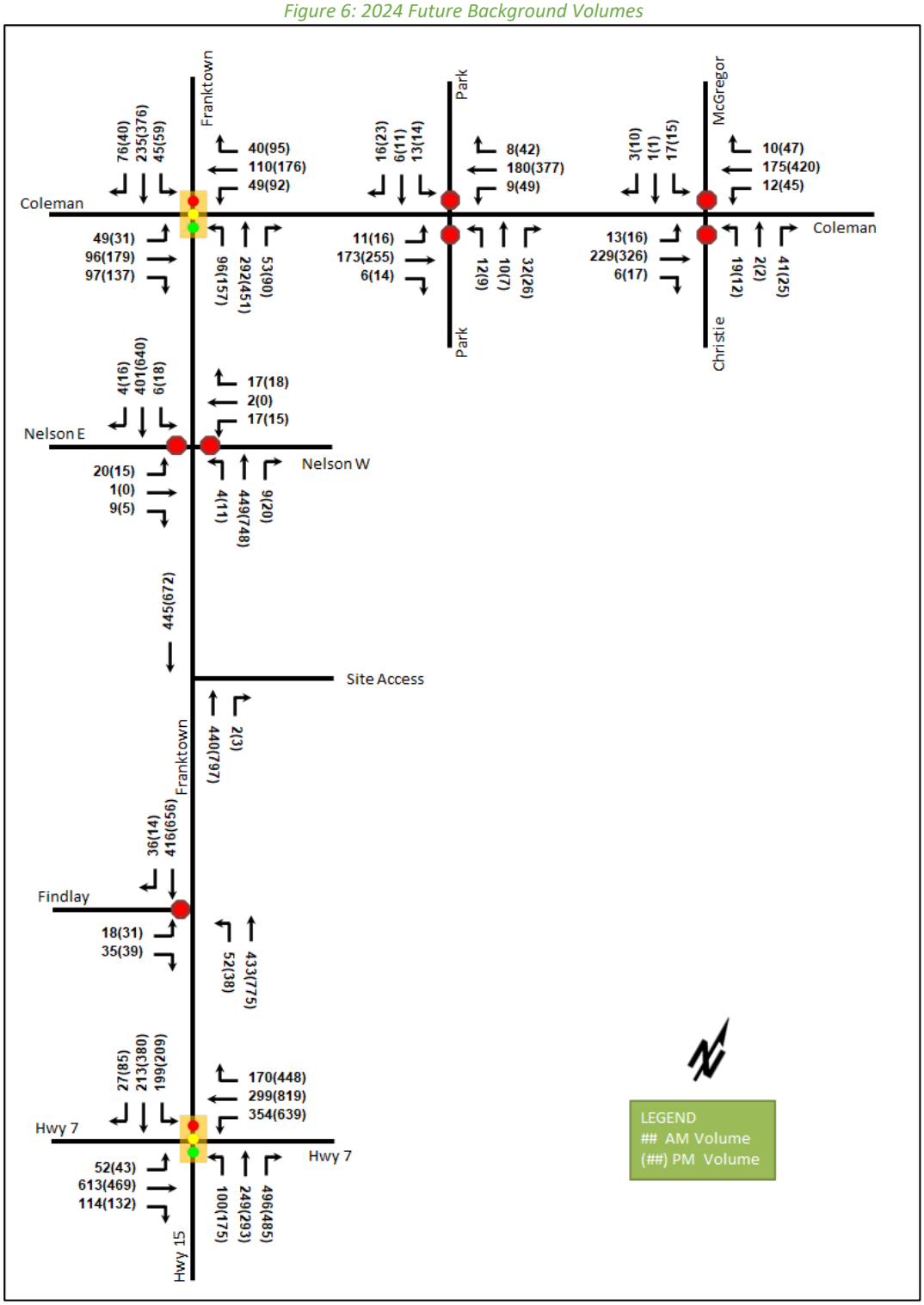


Figure 7: 2029 Future Background Volumes

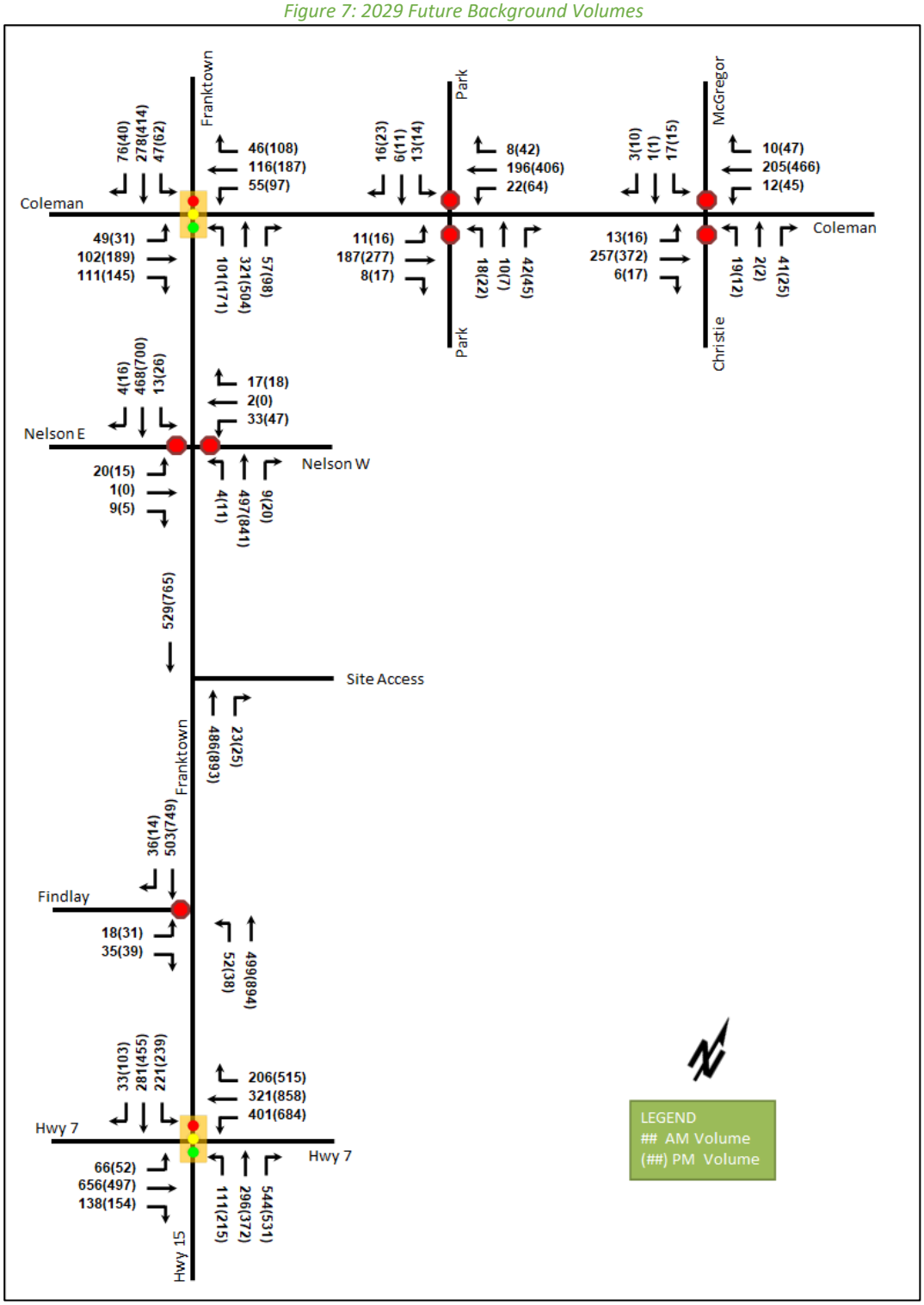
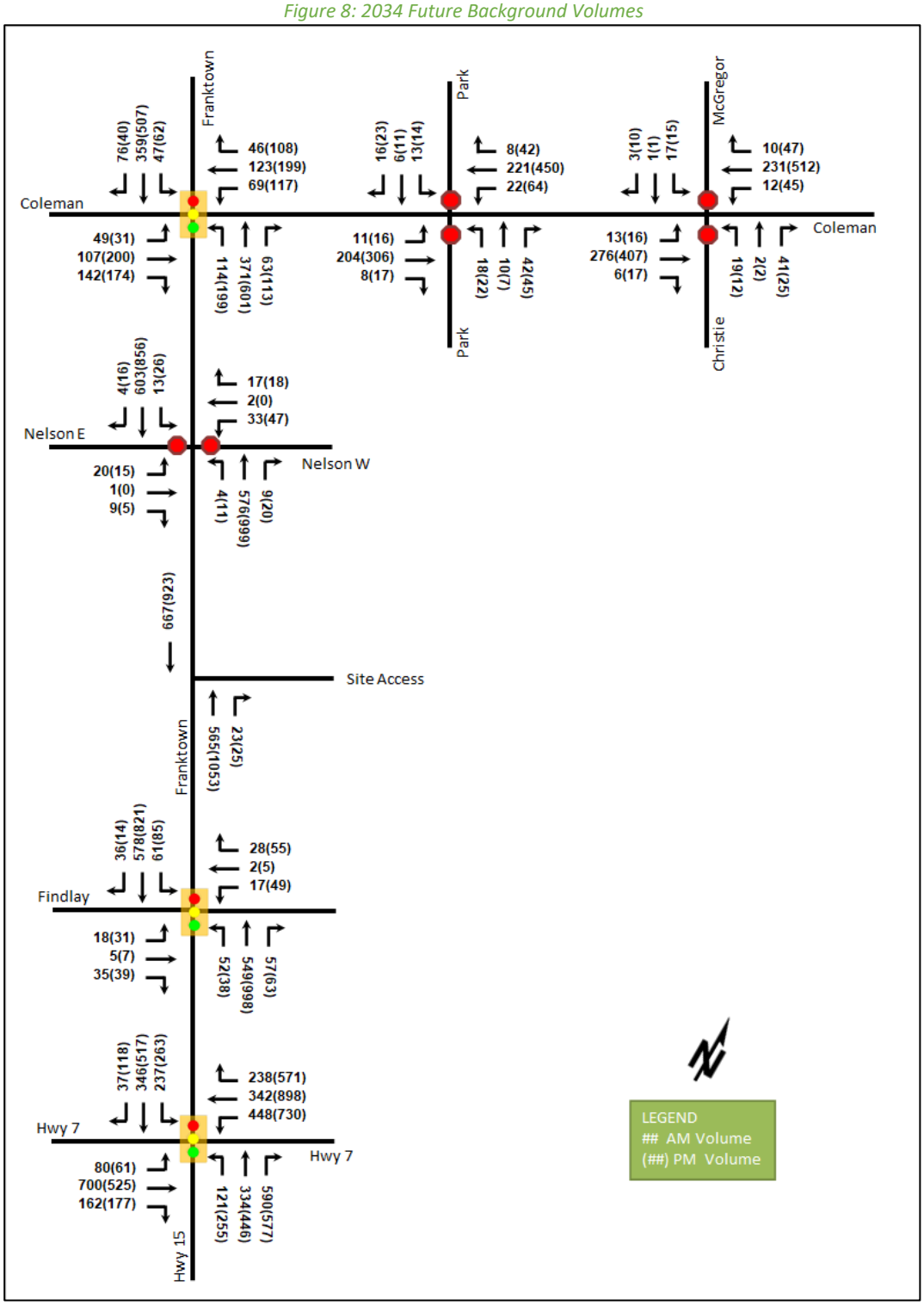


Figure 8: 2034 Future Background Volumes



4.5 Development-Generated Travel Demand

4.5.1 Trip Generation and Mode Shares

Traffic generation for the proposed development has been prepared using the vehicle trip rates both the townhomes and condominium units using the average rates from the ITE Trip Generation Manual 11th Edition (2021). Table 2 summarizes the vehicle trip rates for the proposed land use.

Table 2: Trip Generation Vehicle Trip Rates

Dwelling Type	ITE Land Use Code	Peak Hour	Vehicle Trip Rate
Multi-Family Low Rise	220	AM	0.47
		PM	0.57

Using the above vehicle trip rates, the total vehicle trip generation has been estimated. Table 3 below illustrates the total vehicle trip generation for both the townhomes and condominium units.

Table 3: Total Vehicle Trip Generation – Scenario 1

Land Use	Units / GFA	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Multi-Family Low Rise	**102**	12	36	48	36	22	58

As shown above, 48 AM and 58 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

4.5.2 Trip Distribution

The trip distributions from the adjacent traffic studies were based upon existing travel patterns observed within the study area. The distributions from these studies were analyzed and confirmed based upon the area directional distributions, turning movement splits, and a general knowledge of the traffic patterns withing the Town of Carleton Place. Table 4 below summarizes the distributions.

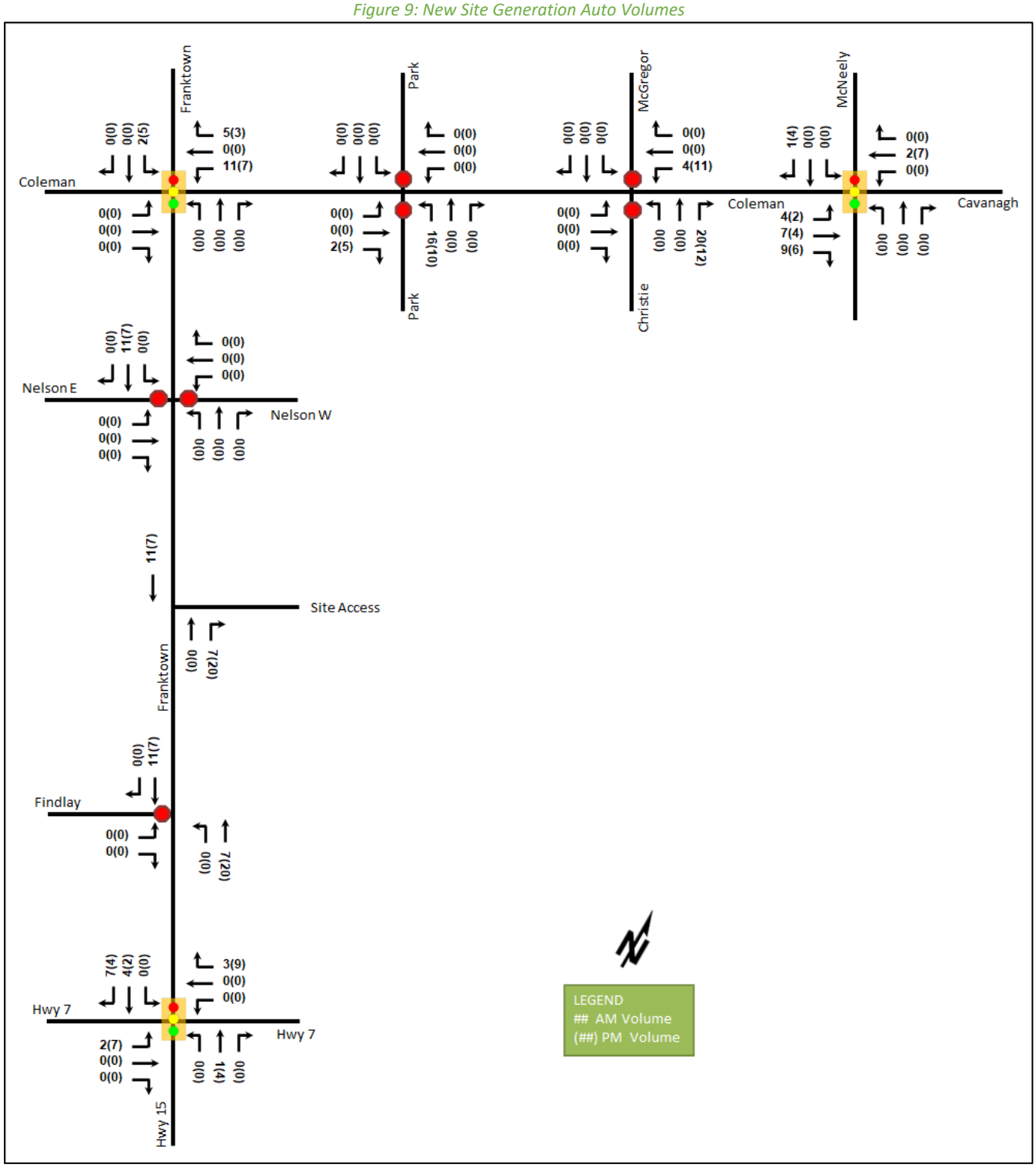
Table 4: Trip Distribution

To/From	Percent of Trips	Via
North	25%	15% Franktown Rd,10% McNeely Ave
South	10%	10% Hwy 15
East	45%	20% Cavanagh Rd,25% Hwy 7
West	20%	20% Hwy 7
Total	**100%**	**100%**

4.5.3 Trip Assignment

Using the distribution outlined above, the trips generated by the site have been assigned to the site access intersections and study area road network. While not operationally analyzed within this report, at the request of Lanark County, the volumes assigned to the intersection of Coleman Street/Cavanagh Road at McNeely Avenue have been included for the purposes of understanding the future conditions of McNeely Avenue. Figure 9 illustrates the new site generated volumes.

Figure 9: New Site Generation Auto Volumes



4.5.4 Future Total Traffic Volumes

The future total volumes were obtained by superimposing the subject development volumes on the future background volumes at each horizon. Future background volumes for the 2024 horizon are illustrated in Figure 10, for the 2029 horizon are illustrated in Figure 11, and for the 2034 horizon are illustrated in Figure 12.

Figure 10: 2024 Future Total Volumes

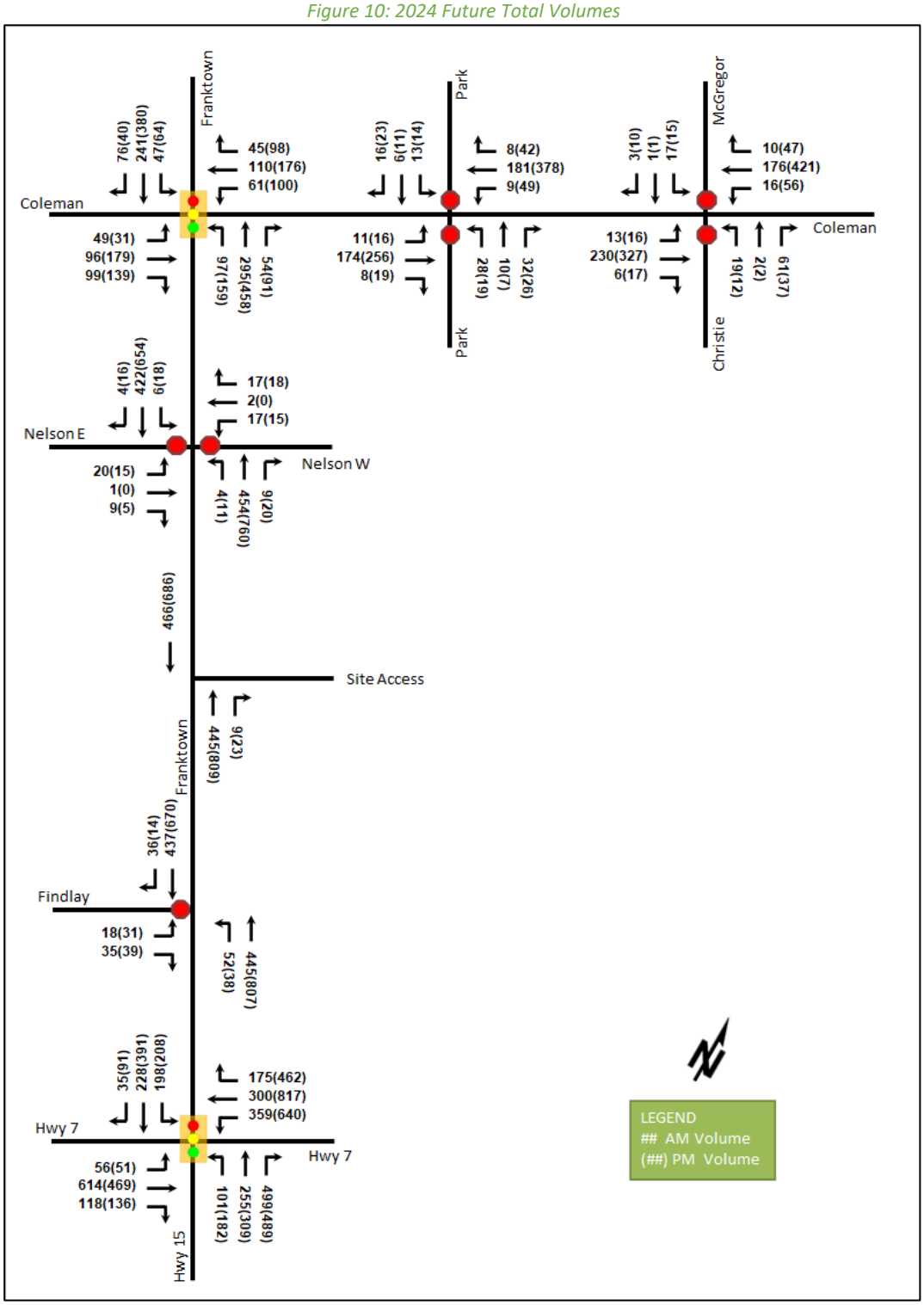


Figure 11: 2029 Future Total Volumes

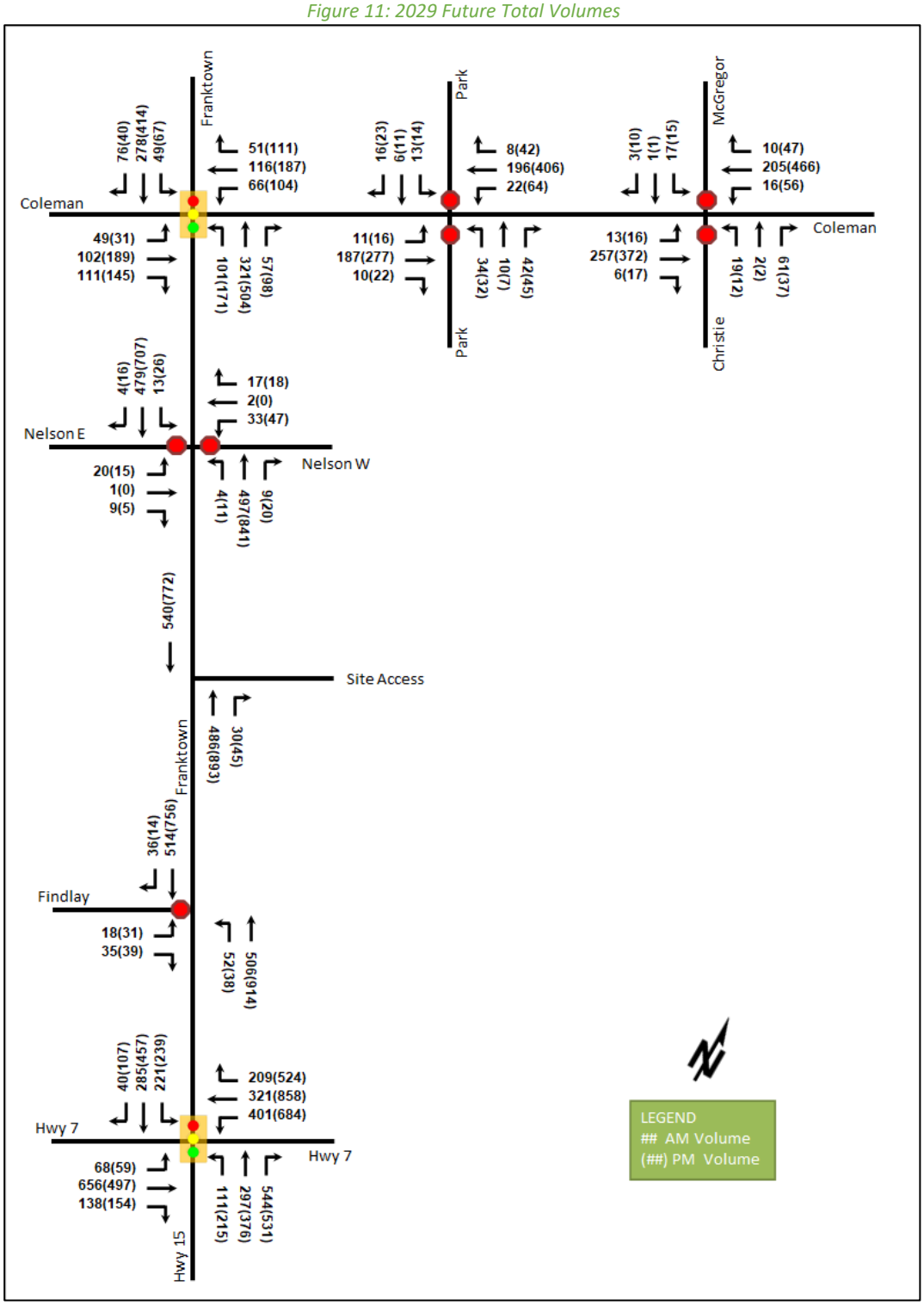
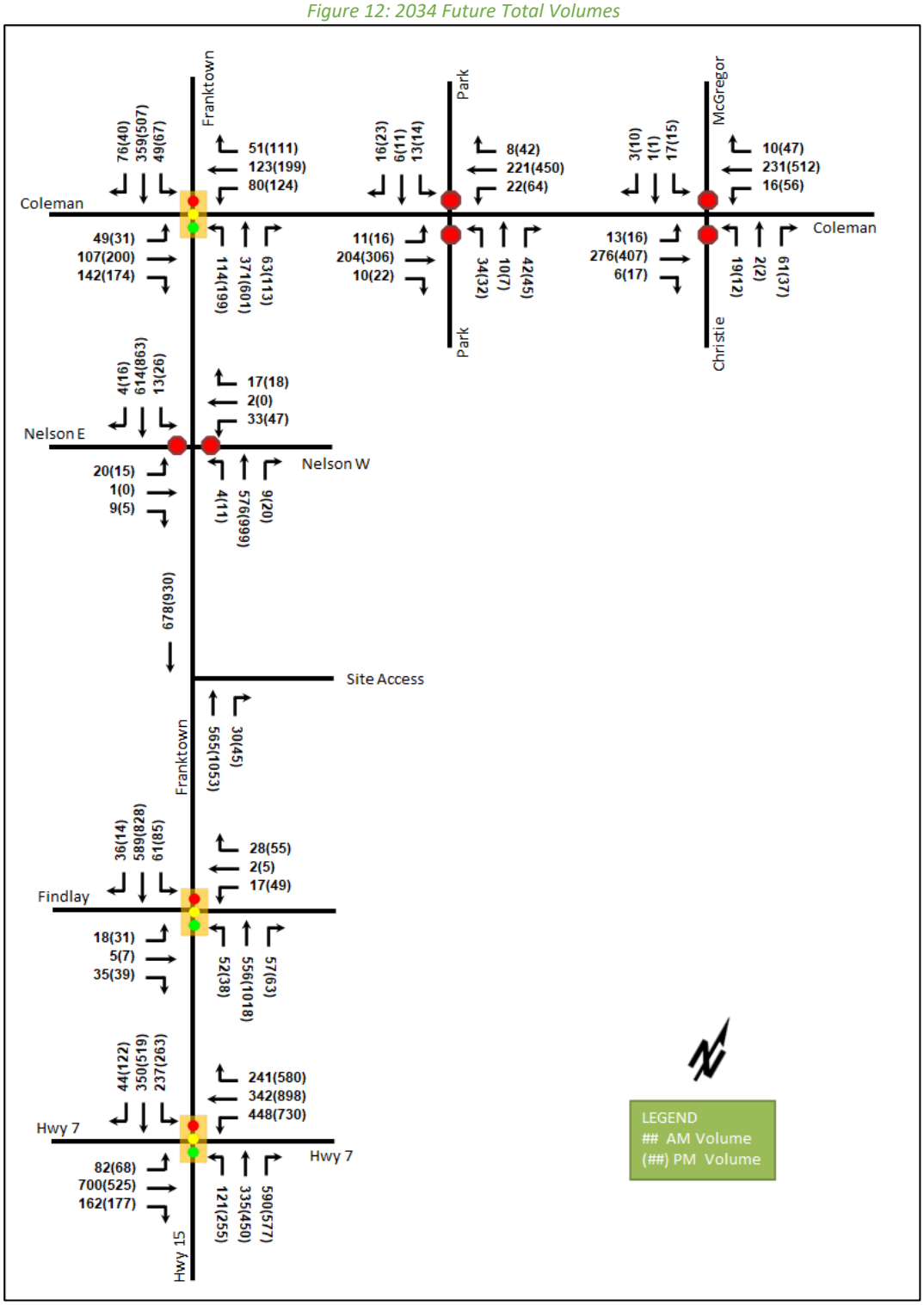


Figure 12: 2034 Future Total Volumes



5 Traffic Impacts

5.1 Operational Analysis

Synchro version 11 was used to model traffic conditions and analyze the operations for each the existing horizon, the future background horizons, and the future total horizons. The level of service for signalized intersections is based on HCM 6th Edition lane group delay for individual movements and average control delay for the overall intersection, and average control delay for unsignalized intersections.

5.1.1 Existing Operations

Table 5 summarizes the existing intersection operations. The Synchro worksheets are provided in Appendix B.

Table 5: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Franktown Rd at Coleman St *Signalized*	EBL/T	B	0.42	19.6	25.6	B	0.45	18.5	33.2
	EBR	-	-	-	4.6	-	-	-	8.4
	WBL/T	B	0.41	19.5	24.6	B	0.59	19.8	45.2
	WBR	-	-	-	0.0	-	-	-	5.8
	NBL	A	0.13	5.8	8.8	A	0.25	8.0	14.6
	NBT/R	A	0.31	8.5	41.1	B	0.50	12.7	**#82.8**
	SBL	A	0.07	6.1	5.5	A	0.11	8.3	6.7
	SBT	A	0.25	8.7	27.5	B	0.45	13.1	48.7
	SBR	A	0.12	7.8	3.3	A	0.07	9.6	0.0
	Overall	**B**	-	**11.4**	-	**B**	-	**14.2**	-
Franktown Rd at Nelson St W / Nelson St E *Unsignalized*	EB	C	0.09	15.9	2.3	D	0.13	29.2	3.0
	WB	C	0.04	15.6	0.8	D	0.12	28.5	3.0
	NB	A	0.00	8.0	0.0	A	0.01	8.7	0.0
	SB	A	0.00	8.2	0.0	A	0.01	8.9	0.0
	Overall	**A**	-	**1.0**	-	**A**	-	**1.1**	-
Franktown Rd at Findlay Ave *Unsignalized*	EBL/R	B	0.13	13.8	3.0	D	0.31	25.5	9.8
	NBL/T	A	0.05	8.3	1.5	A	0.04	8.8	0.8
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	-	**1.4**	-	**A**	-	**1.7**	-
Franktown Rd / Hwy 15 at Hwy 7 *Signalized*	EBL	B	0.07	18.3	15.8	C	0.13	30.5	17.9
	EBT	C	0.71	31.2	**#230.9**	C	0.64	34.4	**#163.7**
	EBR	B	0.10	18.6	1.4	C	0.12	24.0	0.4
	WBL	C	0.83	34.6	**#144.7**	**F**	**1.20**	**129.0**	**#277.1**
	WBT	B	0.26	10.9	65.0	B	0.72	19.5	**#247.2**
	WBR	-	-	-	12.4	-	-	-	32.5
	NBL	D	0.23	45.7	19.5	D	0.43	51.5	28.9
	NBT/R	D	0.81	54.8	**#280.9**	D	0.78	54.6	**#246.7**
	SBL	E	0.89	72.7	**#88.9**	E	0.86	65.5	**#90.5**
	SBT	C	0.31	34.6	34.8	D	0.63	39.3	76.6
	SBR	C	0.05	31.8	0.0	C	0.18	33.2	6.9
	Overall	**D**	-	**35.9**	-	**E**	-	**56.1**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Park Ave at Coleman St *Unsignalized*	EBL	A	0.01	7.6	0.0	A	0.02	8.2	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	0.00	7.6	0.0	A	0.02	7.7	0.8
	WBT/R	-	-	-	-	-	-	-	-
	NB	B	0.03	10.1	0.8	B	0.04	12.2	0.8
	SB	B	0.05	10.5	1.5	B	0.10	13.9	2.3
	Overall	**A**	**-**	**1.6**	**-**	**A**	**-**	**1.7**	**-**
Christie St / McGregor St at Coleman St *Unsignalized*	EBT/L	A	0.01	7.6	0.0	A	0.02	8.3	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBT/L	A	-	0.0	0.0	A	-	0.0	0.0
	WBR	-	-	-	-	-	-	-	-
	NB	-	-	-	-	-	-	-	-
	SB	B	0.03	10.7	0.8	B	0.06	13.2	1.5
	Overall	**A**	**-**	**0.8**	**-**	**A**	**-**	**0.7**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 0.90
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity
V/C = volume-to-capacity ratio

The study area intersections operate well in the existing conditions with the exception of the intersection of Franktown Road/Highway 15 at Highway 7 during the PM peak hour where the westbound left-turn movement is over theoretical capacity and may be subject to high delays. At this intersection, the eastbound through, westbound left, northbound through/right and southbound left movements may exhibit extended queues during both peak hours, and the westbound through movement may exhibit extended queues during the PM peak hour.

The northbound through/right movement at the intersection of Franktown Road at Coleman Street may also exhibit extended queues during the PM peak hour.

5.1.2 2024 Future Background Operations

Table 6 summarizes the 2024 future background intersection operations. The Synchro worksheets are provided in Appendix C.

Table 6: 2024 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Franktown Rd at Coleman St *Signalized*	EBL/T	B	0.40	19.1	25.4	B	0.47	19.3	34.8
	EBR	-	-	-	5.8	-	-	-	10.0
	WBL/T	B	0.45	19.4	27.6	C	0.61	20.7	**#53.5**
	WBR	-	-	-	0.0	-	-	-	5.3
	NBL	A	0.15	6.1	9.8	A	0.30	8.5	16.2
	NBT/R	A	0.35	9.0	46.9	B	0.58	14.2	**#104.8**
	SBL	A	0.07	6.5	5.5	A	0.13	8.6	7.3
	SBT	A	0.30	9.4	32.9	B	0.52	14.3	56.8
	SBR	A	0.12	8.1	2.5	A	0.07	9.6	0.0
	Overall	**B**	**-**	**11.6**	**-**	**B**	**-**	**15.1**	**-**
Franktown Rd at Nelson St W / Nelson St E *Unsignalized*	EB	C	0.10	17.8	2.3	E	0.17	40.9	4.5
	WB	C	0.10	16.2	2.3	D	0.19	31.2	5.3
	NB	A	0.00	8.1	0.0	A	0.01	8.9	0.0
	SB	A	0.01	8.3	0.0	A	0.02	9.3	0.8
	Overall	**A**	**-**	**1.3**	**-**	**A**	**-**	**1.4**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Franktown Rd at Findlay Ave *Unsignalized*	EBL/R	B	0.13	14.7	3.0	D	0.34	31.0	10.5
	NBL/T	A	0.05	8.4	0.8	A	0.04	9.1	0.8
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**1.2**	**-**	**A**	**-**	**1.6**	**-**
Franktown Rd / Hwy 15 at Hwy 7 *Signalized*	EBL	C	0.10	20.5	19.7	D	0.26	49.6	18.8
	EBT	D	0.79	37.5	**#245.6**	D	0.85	53.4	**#159.4**
	EBR	C	0.18	21.3	11.3	C	0.29	32.7	13.7
	WBL	E	0.96	59.7	**#153.1**	**F**	**1.52**	**274.5**	**#257.2**
	WBT	B	0.28	11.6	66.3	C	0.85	32.1	**#232.1**
	WBR	-	-	-	11.6	-	-	-	25.4
	NBL	D	0.40	46.3	32.6	E	0.79	67.7	**#78.8**
	NBT/R	D	0.83	53.7	**#290.0**	D	0.66	43.8	**#337.6**
	SBL	E	0.88	71.8	**#84.1**	D	0.77	52.0	**#96.9**
	SBT	D	0.42	35.2	49.2	C	0.61	33.8	106.3
	SBR	C	0.06	31.1	0.0	C	0.16	26.9	10.2
	Overall	**D**	**-**	**41.3**	**-**	**F**	**-**	**87.5**	**-**
Park Ave at Coleman St *Unsignalized*	EBL	A	0.01	7.6	0.0	A	0.01	8.2	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	0.01	7.6	0.0	A	0.04	7.9	0.8
	WBT/R	-	-	-	-	-	-	-	-
	NB	B	0.08	10.7	2.3	B	0.09	13.5	2.3
	SB	B	0.06	11.0	1.5	C	0.12	15.5	3.0
	Overall	**A**	**-**	**2.3**	**-**	**A**	**-**	**2.2**	**-**
Christie St / McGregor St at Coleman St *Unsignalized*	EBT/L	A	0.01	7.6	0.0	A	0.02	8.3	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBT/L	A	0.01	7.7	0.0	A	0.04	8.1	0.8
	WBR	-	-	-	-	-	-	-	-
	NB	B	0.09	10.6	2.3	B	0.09	14.2	2.3
	SB	B	0.04	11.3	0.8	C	0.07	15.2	1.5
	Overall	**A**	**-**	**2.1**	**-**	**A**	**-**	**1.6**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity
V/C = volume-to-capacity ratio

The study area intersections at the 2024 background horizon operate similarly to the existing conditions. At this horizon, the overall intersection of Franktown Road/Highway 15 at Highway 7 is forecasted to experience high delay and the northbound left-turn movement may exhibit extended queues, both during the PM peak hour.

5.1.3 2029 Future Background Operations

Table 7 summarizes the 2029 future background intersection operations. Given the proposed geometric changes at the intersection of Franktown Road/Highway 15 at Highway 7, protected left-turn phases have been included on all approaches, and a protected northbound right-turn phase overlapping with the protected westbound left-turn phase is provided. It is noted that westbound U-turns are assumed to be restricted under the proposed phasing. The Synchro worksheets are provided in Appendix D.

Table 7: 2029 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Franktown Rd at Coleman St *Signalized*	EBL/T	B	0.41	19.1	26.3	C	0.51	27.8	51.1
	EBR	-	-	-	7.4	-	-	-	12.5
	WBL/T	B	0.47	19.5	29.4	C	0.71	31.3	**#84.3**
	WBR	-	-	-	0.0	-	-	-	10.9
	NBL	A	0.16	6.4	10.5	A	0.31	9.2	22.5
	NBT/R	A	0.39	9.6	53.7	B	0.54	14.3	124.5
	SBL	A	0.08	6.7	5.8	A	0.13	9.4	9.6
	SBT	B	0.36	10.2	40.1	B	0.46	14.4	82.3
	SBR	A	0.12	8.3	2.5	B	0.05	10.1	0.7
	Overall	**B**	**-**	**12.0**	**-**	**B**	**-**	**18.1**	**-**
Franktown Rd at Nelson St W / Nelson St E *Unsignalized*	EB	C	0.12	20.8	3.0	**F**	**0.22**	**55.4**	**6.0**
	WB	C	0.20	21.8	5.3	**F**	**0.68**	**99.1**	**25.5**
	NB	A	0.00	8.3	0.0	A	0.01	9.1	0.0
	SB	A	0.01	8.4	0.0	A	0.03	9.8	0.8
	Overall	**A**	**-**	**1.8**	**-**	**A**	**-**	**4.6**	**-**
Franktown Rd at Findlay Ave *Unsignalized*	EBL/R	C	0.16	17.4	3.8	E	0.46	47.9	15.8
	NBL/T	A	0.05	8.7	1.5	A	0.05	9.5	0.8
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**1.2**	**-**	**A**	**-**	**2.1**	**-**
Franktown Rd / Hwy 15 at Hwy 7 *Signalized*	EBL	E	0.79	71.4	28.5	E	0.79	75.5	24.7
	EBT	D	0.80	51.0	**#106.0**	D	0.59	42.6	72.5
	EBR	D	0.38	41.1	12.2	D	0.41	41.0	3.8
	WBL	E	0.89	68.4	57.7	E	0.93	64.4	**#117.0**
	WBT	C	0.29	30.3	39.4	C	0.59	27.4	107.6
	WBR	C	0.42	33.8	15.4	D	0.79	38.9	57.2
	NBL	E	0.68	61.1	22.4	E	0.83	74.2	**#46.6**
	NBT	C	0.29	31.8	45.7	D	0.53	42.9	56.9
	NBR	D	0.82	37.2	118.0	D	0.82	38.5	116.8
	SBL	E	0.81	69.3	**#45.3**	E	0.83	72.6	**#50.3**
	SBT/R	C	0.27	29.0	46.3	D	0.77	54.3	83.7
	Overall	**D**	**-**	**45.5**	**-**	**D**	**-**	**46.8**	**-**
Park Ave at Coleman St *Unsignalized*	EBL	A	0.01	7.7	0.0	A	0.01	8.3	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	0.02	7.7	0.0	A	0.05	8.0	1.5
	WBT/R	-	-	-	-	-	-	-	-
	NB	B	0.11	11.2	3.0	C	0.18	15.7	5.3
	SB	B	0.06	11.6	1.5	C	0.14	17.1	3.8
	Overall	**A**	**-**	**2.7**	**-**	**A**	**-**	**2.8**	**-**
Christie St / McGregor St at Coleman St *Unsignalized*	EBT/L	A	0.01	7.7	0.0	A	0.02	8.5	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBT/L	A	0.01	7.8	0.0	A	0.04	8.2	0.8
	WBR	-	-	-	-	-	-	-	-
	NB	B	0.09	11.0	2.3	C	0.10	15.4	2.3
	SB	B	0.04	11.8	0.8	C	0.08	16.4	1.5
	Overall	**A**	**-**	**1.9**	**-**	**A**	**-**	**1.5**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity
V/C = volume-to-capacity ratio

The study area intersections at the 2029 future background horizon operate similarly to the 2024 future background conditions with the exceptions of the intersection of Franktown Road/Highway 15 at Highway 7 given the proposed intersection improvements and the intersection of Franktown Road at Nelson Street East/Nelson Street West.

At the intersection of Franktown Road/Highway 15 at Highway 7, capacity constraints are alleviated by the TESR modifications proposed for the approach configurations. Extended queueing may be exhibited on the eastbound through and southbound through movements during the AM peak hour, and on the westbound left, northbound left, and southbound left movements during the PM peak hour.

At the intersection of Franktown Road at Nelson Street East/Nelson Street West, high delays may be experienced on the eastbound and westbound approaches. As through traffic on Franktown Road increases, the availability of gaps in the bi-directional traffic stream for drivers on the minor approaches to complete turns is reduced and delays are anticipated to increase. This effect is evident on the eastbound approach of the intersection of Franktown Road and Findlay Avenue, where the delay is approaching 50 seconds.

5.1.4 2034 Future Background Operations

Table 7 summarizes the 2034 future background intersection operations. The Synchro worksheets are provided in Appendix E.

Table 8: 2034 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Franktown Rd at Coleman St *Signalized*	EBL/T	B	0.40	19.2	27.3	C	0.49	27.3	53.6
	EBR	-	-	-	10.3	-	-	-	13.6
	WBL/T	C	0.50	20.0	33.0	C	0.75	33.8	**#99.9**
	WBR	-	-	-	0.0	-	-	-	12.2
	NBL	A	0.20	7.0	12.3	B	0.44	12.1	26.0
	NBT/R	B	0.45	10.6	**#68.3**	B	0.66	18.5	**#180.7**
	SBL	A	0.08	7.1	6.1	B	0.16	12.0	9.6
	SBT	B	0.47	11.9	53.6	B	0.60	18.9	101.5
	SBR	A	0.12	8.7	2.5	B	0.06	11.7	0.7
	Overall	**B**	**-**	**12.8**	**-**	**C**	**-**	**21.1**	**-**
Franktown Rd at Nelson St W / Nelson St E *Unsignalized*	EB	D	0.16	27.9	4.5	**F**	**0.38**	**109.4**	**10.5**
	WB	D	0.27	29.9	7.5	**F**	**1.12**	**273.2**	**40.5**
	NB	A	0.00	8.7	0.0	A	0.01	9.7	0.0
	SB	A	0.01	8.7	0.0	B	0.04	10.5	0.8
	Overall	**A**	**-**	**2.0**	**-**	**B**	**-**	**10.1**	**-**
Franktown Rd at Findlay Ave *Signalized*	EBL	C	0.08	25.9	5.5	D	0.17	35.5	10.9
	EBT/R	C	0.27	25.9	6.3	C	0.27	33.3	9.0
	WBL	C	0.08	26.2	5.3	D	0.24	35.4	15.2
	WBT/R	C	0.21	25.5	5.2	C	0.36	34.2	9.8
	NBL	A	0.09	6.8	5.1	B	0.09	10.4	5.4
	NBT	A	0.44	4.7	63.7	A	0.76	9.0	**#205.7**
	NBR	A	0.05	2.8	1.2	A	0.06	2.8	3.5
	SBL	A	0.10	6.2	8.2	B	0.28	18.8	14.4
	SBT/R	A	0.50	5.4	73.3	A	0.64	7.4	117.6
	Overall	**A**	**-**	**6.6**	**-**	**B**	**-**	**10.8**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Franktown Rd / Hwy 15 at Hwy 7 ***Signalized***	EBL	E	0.79	68.7	33.1	E	0.79	75.8	**#30.1**
	EBT	D	0.82	51.1	**#106.4**	D	0.66	45.7	78.0
	EBR	D	0.43	41.2	16.4	D	0.50	44.8	9.2
	WBL	E	0.90	69.9	66.5	E	0.95	66.1	**#125.8**
	WBT	C	0.30	29.7	43.1	C	0.63	29.0	112.2
	WBR	C	0.47	34.2	16.8	D	0.90	50.1	84.2
	NBL	E	0.70	60.9	24.0	E	0.86	75.0	**#53.7**
	NBT	C	0.36	34.8	51.3	D	0.63	45.1	68.3
	NBR	D	0.92	50.7	**#162.4**	D	0.87	42.4	**#136.3**
	SBL	E	0.83	71.9	**#50.3**	E	0.89	76.3	**#56.3**
	SBT/R	D	0.36	37.4	62.0	E	0.91	68.7	**#110.0**
	Overall	**D**	**-**	**48.9**	**-**	**D**	**-**	**52.1**	**-**
Park Ave at Coleman St ***Unsignalized***	EBL	A	0.01	7.7	0.0	A	0.02	8.4	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	0.02	7.7	0.0	A	0.05	8.1	1.5
	WBT/R	-	-	-	-	-	-	-	-
	NB	B	0.11	11.5	3.0	C	0.20	17.0	5.3
	SB	B	0.06	11.9	1.5	C	0.15	18.6	3.8
	Overall	**A**	**-**	**2.6**	**-**	**A**	**-**	**2.7**	**-**
Christie St / McGregor St at Coleman St ***Unsignalized***	EBT/L	A	0.01	7.7	0.0	A	0.02	8.6	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBT/L	A	0.01	7.8	0.0	A	0.04	8.3	0.8
	WBR	-	-	-	-	-	-	-	-
	NB	B	0.10	11.3	2.3	C	0.11	16.7	3.0
	SB	B	0.04	12.2	0.8	C	0.08	17.6	2.3
	Overall	**A**	**-**	**1.8**	**-**	**A**	**-**	**1.5**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity
V/C = volume-to-capacity ratio

The study area intersections at the 2034 future background horizon operate similarly to the 2029 future background conditions with the exception of Franktown Road at Findlay Avenue which is forecasted to operate differently given the proposed geometric and control changes. At this intersection, extended queueing may be noted on the northbound through movement during the PM peak hour at this horizon, potentially spilling back into the intersection of Franktown Road/Highway 15 at Highway 7.

At the intersection of Franktown Road/Highway 15 at Highway 7, extended queueing may be exhibited on the northbound right movement during both peak hours and on the eastbound left and southbound through/right movements during the PM peak hour at this horizon.

5.1.5 2024 Future Total Operations

Table 6 summarizes the 2024 future total intersection operations. The Synchro worksheets are provided in Appendix F.

Table 9: 2024 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Franktown Rd at Coleman St ***Signalized***	EBL/T	B	0.39	18.9	25.3	B	0.46	19.1	34.8
	EBR	-	-	-	5.9	-	-	-	10.1
	WBL/T	B	0.46	19.5	29.5	C	0.62	20.8	**#56.3**
	WBR	-	-	-	0.0	-	-	-	5.7
	NBL	A	0.15	6.3	10.3	A	0.31	8.7	16.5
	NBT/R	A	0.36	9.3	49.1	B	0.60	14.8	**#107.3**
	SBL	A	0.08	6.6	5.9	A	0.14	8.9	7.7
	SBT	A	0.31	9.7	34.8	B	0.53	14.6	57.3
	SBR	A	0.12	8.3	2.5	A	0.07	9.8	0.0
	Overall	**B**	**-**	**11.9**	**-**	**B**	**-**	**15.4**	**-**
Franktown Rd at Nelson St W / Nelson St E ***Unsignalized***	EB	C	0.10	18.3	2.3	E	0.17	42.8	4.5
	WB	C	0.10	16.6	2.3	D	0.20	32.2	5.3
	NB	A	0.00	8.2	0.0	A	0.01	9.0	0.0
	SB	A	0.01	8.3	0.0	A	0.02	9.4	0.8
	Overall	**A**	**-**	**1.3**	**-**	**A**	**-**	**1.4**	**-**
Franktown Rd at Findlay Ave ***Unsignalized***	EBL/R	C	0.13	15.1	3.0	D	0.36	33.2	11.3
	NBL/T	A	0.05	8.5	0.8	A	0.04	9.1	0.8
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**1.2**	**-**	**A**	**-**	**1.7**	**-**
Franktown Rd / Hwy 15 at Hwy 7 ***Signalized***	EBL	C	0.11	20.8	21.0	D	0.31	50.9	22.0
	EBT	D	0.80	38.3	**#246.1**	D	0.85	53.4	**#159.4**
	EBR	C	0.18	21.7	12.2	C	0.29	32.9	13.9
	WBL	E	0.99	68.3	**#155.6**	**F**	**1.52**	**275.9**	**#257.7**
	WBT	B	0.28	11.8	66.3	C	0.84	31.9	**#231.0**
	WBR	-	-	-	11.9	-	-	-	31.3
	NBL	D	0.40	46.1	33.2	E	0.85	78.6	**#85.2**
	NBT/R	D	0.83	53.5	**#295.0**	D	0.69	45.3	**#349.4**
	SBL	E	0.87	70.4	**#84.1**	E	0.80	56.2	**#96.4**
	SBT	D	0.44	35.2	52.7	C	0.63	34.4	109.9
	SBR	C	0.08	31.0	0.0	C	0.17	27.0	10.8
	Overall	**D**	**-**	**42.7**	**-**	**F**	**-**	**88.2**	**-**
Park Ave at Coleman St ***Unsignalized***	EBL	A	0.01	7.6	0.0	A	0.01	8.2	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	0.01	7.6	0.0	A	0.04	7.9	0.8
	WBT/R	-	-	-	-	-	-	-	-
	NB	B	0.11	11.3	3.0	C	0.13	15.2	3.0
	SB	B	0.06	11.1	1.5	C	0.12	15.6	3.0
	Overall	**A**	**-**	**2.7**	**-**	**A**	**-**	**2.4**	**-**
Christie St / McGregor St at Coleman St ***Unsignalized***	EBT/L	A	0.01	7.6	0.0	A	0.02	8.3	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBT/L	A	0.01	7.7	0.0	A	0.05	8.1	0.8
	WBR	-	-	-	-	-	-	-	-
	NB	B	0.11	10.5	3.0	B	0.11	13.5	3.0
	SB	B	0.04	11.6	0.8	C	0.07	15.7	1.5
	Overall	**A**	**-**	**2.4**	**-**	**A**	**-**	**1.8**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity
V/C = volume-to-capacity ratio

The study area intersections at the 2024 future total horizon operate similarly to the 2024 future background conditions. No new capacity issues are noted.

5.1.6 2029 Future Total Operations

Table 7 summarizes the 2029 future total intersection operations. The Synchro worksheets are provided in Appendix G.

Table 10: 2029 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Franktown Rd at Coleman St *Signalized*	EBL/T	B	0.40	18.9	26.2	C	0.50	27.6	51.1
	EBR	-	-	-	7.3	-	-	-	12.5
	WBL/T	B	0.48	19.5	31.3	C	0.72	31.5	**#87.7**
	WBR	-	-	-	0.0	-	-	-	11.4
	NBL	A	0.16	6.5	11.0	A	0.32	9.5	22.5
	NBT/R	A	0.39	9.9	55.4	B	0.54	14.8	124.5
	SBL	A	0.08	6.8	6.3	A	0.14	9.7	10.1
	SBT	B	0.36	10.4	41.1	B	0.47	14.8	82.3
	SBR	A	0.12	8.5	2.5	B	0.05	10.4	0.7
	Overall	**B**	**-**	**12.2**	**-**	**B**	**-**	**18.5**	**-**
Franktown Rd at Nelson St W / Nelson St E *Unsignalized*	EB	C	0.12	21.1	3.0	**F**	**0.22**	**56.1**	**6.0**
	WB	C	0.20	22.0	5.3	**F**	**0.68**	**101.1**	**25.5**
	NB	A	0.00	8.3	0.0	A	0.01	9.1	0.0
	SB	A	0.01	8.4	0.0	A	0.03	9.8	0.8
	Overall	**A**	**-**	**1.8**	**-**	**A**	**-**	**4.7**	**-**
Franktown Rd at Findlay Ave *Unsignalized*	EBL/R	C	0.16	17.8	4.5	**F**	**0.48**	**51.1**	**17.3**
	NBL/T	A	0.05	8.8	1.5	A	0.05	9.5	0.8
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**1.2**	**-**	**A**	**-**	**2.2**	**-**
Franktown Rd / Hwy 15 at Hwy 7 *Signalized*	EBL	E	0.79	71.0	29.2	E	0.79	73.2	27.3
	EBT	D	0.80	51.0	**#106.0**	D	0.59	42.6	72.5
	EBR	D	0.38	41.1	12.2	D	0.41	41.0	3.8
	WBL	E	0.89	68.4	57.7	E	0.93	64.4	**#117.0**
	WBT	C	0.29	30.5	39.5	C	0.59	28.0	107.6
	WBR	C	0.43	34.1	15.5	D	0.82	41.2	63.9
	NBL	E	0.68	61.1	22.4	E	0.83	74.2	**#46.6**
	NBT	C	0.29	31.8	45.8	D	0.53	43.0	57.6
	NBR	D	0.82	37.2	118.0	D	0.82	38.5	116.8
	SBL	E	0.81	69.3	**#45.3**	E	0.83	72.6	**#50.3**
	SBT/R	C	0.29	29.2	47.3	E	0.78	55.1	84.5
	Overall	**D**	**-**	**45.4**	**-**	**D**	**-**	**47.2**	**-**
Park Ave at Coleman St *Unsignalized*	EBL	A	0.01	7.7	0.0	A	0.01	8.3	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	0.02	7.7	0.0	A	0.05	8.0	1.5
	WBT/R	-	-	-	-	-	-	-	-
	NB	B	0.14	11.8	3.8	C	0.22	17.3	6.0
	SB	B	0.06	11.6	1.5	C	0.14	17.2	3.8
	Overall	**A**	**-**	**3.0**	**-**	**A**	**-**	**3.0**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Christie St / McGregor St at Coleman St *Unsignalized*	EBT/L	A	0.01	7.7	0.0	A	0.02	8.5	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBT/L	A	0.01	7.8	0.0	A	0.05	8.2	1.5
	WBR	-	-	-	-	-	-	-	-
	NB	B	0.12	10.8	3.0	B	0.12	14.6	3.0
	SB	B	0.04	12.1	0.8	C	0.08	17.0	2.3
	Overall	**A**	**-**	**2.2**	**-**	**A**	**-**	**1.7**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity
V/C = volume-to-capacity ratio

The study area intersections at the 2029 future total horizon operate similarly to the 2029 future background conditions. At the intersection of Franktown Road at Findlay Avenue, during the PM peak hour, the addition of the 27 two-way site-generated through volumes on Franktown Road are forecasted to increase delay on the eastbound approach from the background conditions by 3.2 seconds in the total conditions, thereby scoring LOS F.

5.1.7 2034 Future Total Operations

Table 7 summarizes the 2034 future total intersection operations. The Synchro worksheets are provided in Appendix H.

Table 11: 2034 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Franktown Rd at Coleman St *Signalized*	EBL/T	B	0.39	19.0	26.9	C	0.48	27.0	53.8
	EBR	-	-	-	10.3	-	-	-	13.6
	WBL/T	C	0.52	20.1	35.1	C	0.75	34.4	**#103.1**
	WBR	-	-	-	0.0	-	-	-	12.9
	NBL	A	0.21	7.1	12.3	B	0.44	12.5	26.0
	NBT/R	B	0.45	10.9	**#68.3**	B	0.67	19.2	**#180.7**
	SBL	A	0.09	7.3	6.3	B	0.18	12.4	10.1
	SBT	B	0.47	12.1	53.6	B	0.61	19.5	101.5
	SBR	A	0.12	8.8	2.5	B	0.06	12.1	0.7
	Overall	**B**	**-**	**13.0**	**-**	**C**	**-**	**21.6**	**-**
Franktown Rd at Nelson St W / Nelson St E *Unsignalized*	EB	D	0.16	28.5	4.5	**F**	**0.38**	**109.4**	**10.5**
	WB	D	0.27	30.4	7.5	**F**	**1.16**	**292.2**	**41.3**
	NB	A	0.00	8.8	0.0	A	0.01	9.7	0.0
	SB	A	0.01	8.7	0.0	B	0.04	10.5	0.8
	Overall	**A**	**-**	**2.0**	**-**	**B**	**-**	**10.7**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Franktown Rd at Findlay Ave *Signalized*	EBL	C	0.08	25.9	5.5	D	0.17	35.5	10.9
	EBT/R	C	0.27	25.9	6.3	C	0.27	33.3	9.0
	WBL	C	0.08	26.2	5.3	D	0.24	35.4	15.2
	WBT/R	C	0.21	25.5	5.2	C	0.36	34.2	9.8
	NBL	A	0.09	6.9	5.2	B	0.09	10.6	5.4
	NBT	A	0.44	4.7	65.8	A	0.77	9.3	**#212.4**
	NBR	A	0.05	2.8	1.2	A	0.06	2.8	3.5
	SBL	A	0.10	6.3	8.2	B	0.29	20.0	15.0
	SBT/R	A	0.50	5.5	75.5	A	0.64	7.5	119.5
	Overall	**A**	-	**6.6**	-	**B**		**11.0**	-
Franktown Rd / Hwy 15 at Hwy 7 *Signalized*	EBL	E	0.80	68.5	33.7	E	0.79	79.3	**#35.0**
	EBT	D	0.82	51.1	**#106.4**	D	0.66	45.7	78.0
	EBR	D	0.43	41.2	16.4	D	0.50	44.8	9.2
	WBL	E	0.90	69.9	66.5	E	0.95	66.1	**#125.8**
	WBT	C	0.30	29.9	43.2	C	0.63	29.6	112.2
	WBR	C	0.48	34.5	17.0	D	0.92	54.4	91.0
	NBL	E	0.70	60.9	24.0	E	0.86	75.0	**#53.7**
	NBT	C	0.36	34.9	51.5	D	0.64	45.3	69.0
	NBR	D	0.92	50.7	**#162.4**	D	0.87	42.4	**#136.3**
	SBL	E	0.83	71.8	**#50.1**	E	0.89	76.1	**#56.3**
	SBT/R	D	0.37	37.7	63.4	E	0.93	72.0	**#111.4**
	Overall	**D**	-	**48.9**	-	**D**	-	**52.9**	-
Park Ave at Coleman St *Unsignalized*	EBL	A	0.01	7.7	0.0	A	0.02	8.4	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	0.02	7.7	0.0	A	0.05	8.1	1.5
	WBT/R	-	-	-	-	-	-	-	-
	NB	B	0.15	12.3	3.8	C	0.25	19.0	7.5
	SB	B	0.06	12.0	1.5	C	0.15	18.7	3.8
	Overall	**A**	-	**2.9**	-	**A**	-	**3.0**	-
Christie St / McGregor St at Coleman St *Unsignalized*	EBT/L	A	0.01	7.7	0.0	A	0.02	8.6	0.0
	EBT/R	-	-	-	-	-	-	-	-
	WBT/L	A	0.01	7.8	0.0	A	0.05	8.3	1.5
	WBR	-	-	-	-	-	-	-	-
	NB	B	0.12	11.0	3.0	C	0.13	15.7	3.0
	SB	B	0.04	12.5	0.8	C	0.09	18.3	2.3
	Overall	**A**	-	**2.1**	-	**A**	-	**1.7**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity
V/C = volume-to-capacity ratio

The study area intersections at the 2034 future total horizon operate similarly to the 2034 future background conditions. No new capacity issues are noted. As in the background conditions, the 95th percentile queue on the northbound through movement at the intersection of Franktown Road at Findlay Avenue may spill back into the intersection of Franktown Road/Highway 15 at Highway 7.

5.2 Discussion and Mitigation Options

5.2.1 Franktown Road Corridor

The general trend of increasing background traffic along Franktown Road resulting in left-turn movements from side roads being subject to increased delays is noted between the study area horizons. This effect is due to the

unavailability of gaps in the bi-directional traffic stream for drivers to make the desired turns onto Franktown Road. As noted with the intersection of Franktown Road at Findlay Avenue between the 2029 future total horizon and 2034 future total horizon, signalization may address this issue. While potentially not meeting volume warrants, it is recommended that the Town of Carleton Place investigate strategic signalization of the Franktown Road corridor to achieve its desired operations. Such signalization would not be required to support the subject development, however.

It is noteworthy that the background volumes applied represent a conservative scenario. Periodic monitoring of the traffic conditions by the MTO is recommended to compare the realized traffic increase against the growth assumptions presented in the Highway 7 and Highway 15 Intersection Improvements TESR.

5.2.2 Queueing and Spillback

Through macroscopic analysis, queueing on the northbound approach of the intersection of Franktown Road at Findlay Avenue was reported to have the potential to spill back to the intersection of Franktown Road/Highway 15 at Highway 7 during the PM peak hour at the 2034 horizons. Running a microscopic analysis at this horizon using SimTraffic version 11, a maximum queue of 149.5 metres was reported in the PM peak hour, as provided in Appendix I. Furthermore, optimizing the signal timing for queueing, the 95th percentile queues on this approach during the PM peak hour at the 2034 future total horizon may be reduced to metres above the values presented 37.5 metres as reported by a SimTraffic analysis. Table 12 summarizes the operations with the proposed timing adjustments, noting that the queue reported is higher than that from the SimTraffic analysis. The SimTraffic analysis and Synchro worksheets for the optimized PM peak hour 2034 future total horizon are provided in Appendix I.

Table 12: 2034 Future Total PM Peak Hour Northbound Queue Optimization

Intersection	Lane	PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)
Franktown Rd at Findlay Ave ***Signalized***	EBL	E	0.23	55.3	16.1
	EBT/R	D	0.32	51.7	12.3
	WBL	E	0.32	55.2	22.8
	WBT/R	D	0.43	53.0	13.4
	NBL	A	0.08	9.0	m0.8
	NBT	A	0.71	7.4	207.1
	NBR	A	0.05	2.4	m0.0
	SBL	B	0.25	16.6	11.0
	SBT/R	A	0.59	6.1	105.4
	Overall	**B**	**-**	**11.0**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity
V/C = volume-to-capacity ratio

It is noted that the operations of the intersection of Franktown Road at Findlay Avenue during the PM peak hour at the 2034 future total horizon operate satisfactorily when optimized for queue length on the northbound approach. Therefore, given the opportunity to reduce queues through signal timing changes, no concern is noted for the spillback from this approach for the intersection of Franktown Road/Highway 15 at Highway 7.

6 Conclusions and Recommendations

The proposed residential development is anticipated to produce negligible transportation impacts.

It is recommended that the Ministry of Transportation of Ontario and Town of Carleton Place consider the spillback from the intersection of Franktown Road at Findlay Road, and that the Town of Carleton Place consider the performance of side streets along Franktown Road, each through the Town monitoring the mainline volumes on Franktown Road ultimately realized in the future.

It is recommended that, from a transportation perspective, the proposed development applications proceed.

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Appendix A

Background Development Volumes

CGH TRANSPORTATION

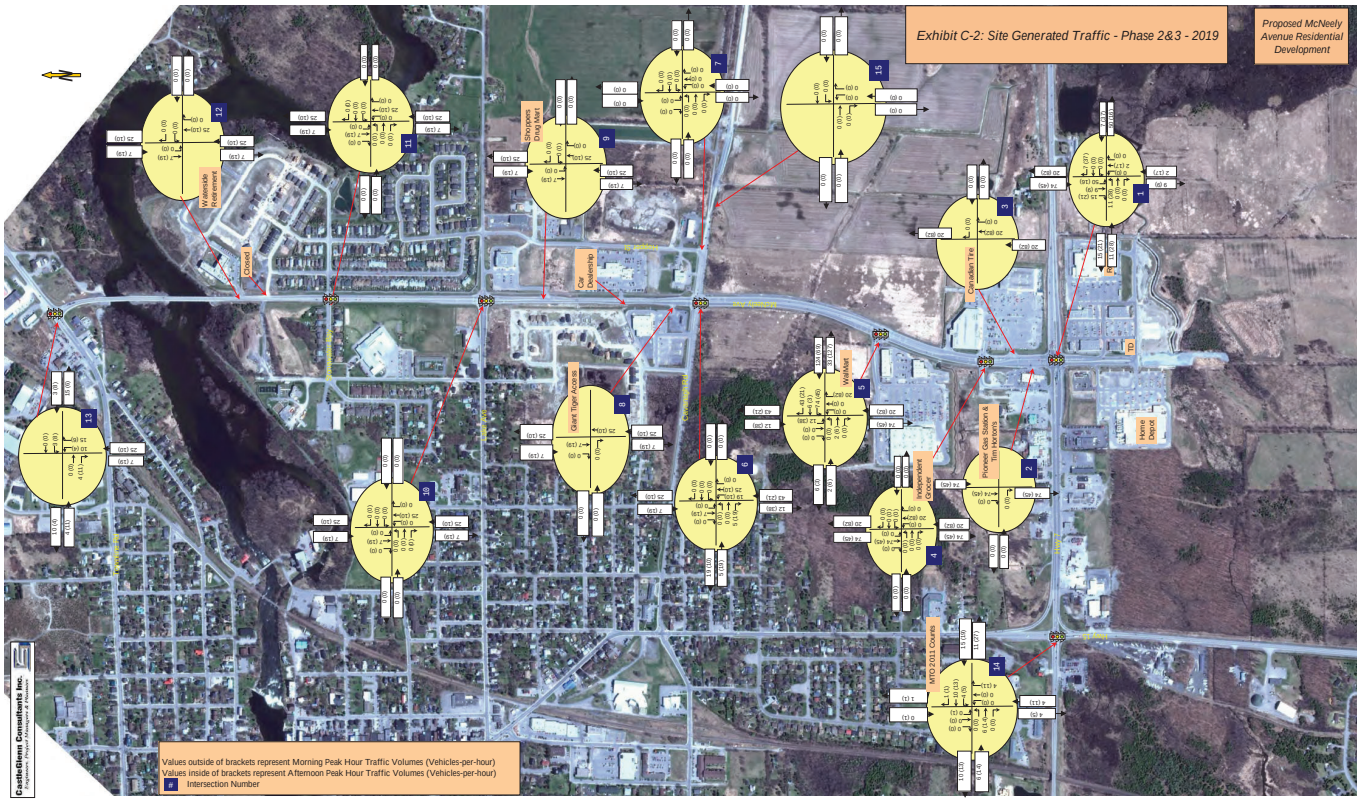


Exhibit C-2: Site Generated Traffic - Phase 2&3 - 2019
Proposed McNeely Avenue Residential Development
Values outside of brackets represent Morning Peak Hour Traffic Volumes (Vehicles-per-hour)
Values inside of brackets represent Afternoon Peak Hour Traffic Volumes (Vehicles-per-hour)
Intersection Number
CastleGlenn Consultants Inc.

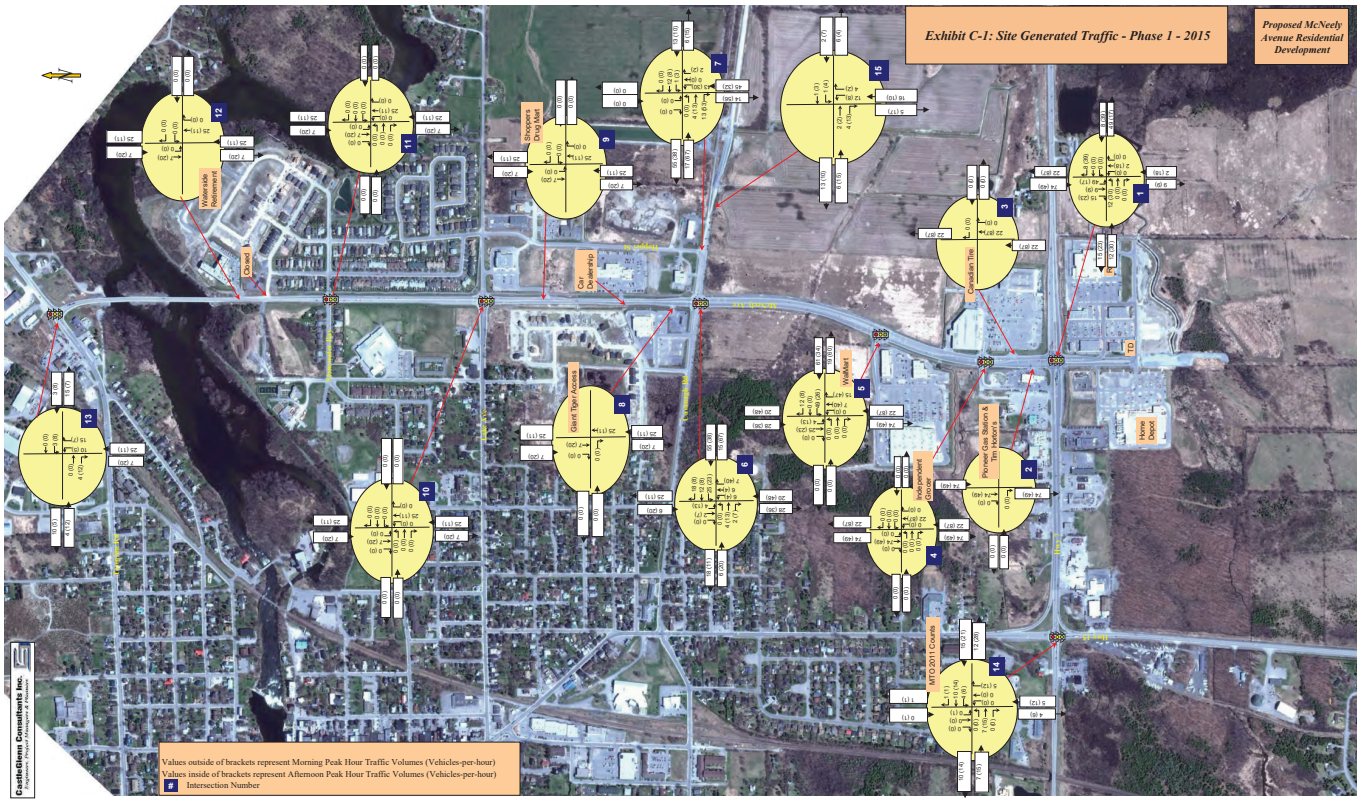


Exhibit C-1: Site Generated Traffic - Phase 1 - 2015
Proposed McNeely Avenue Residential Development
Values outside of brackets represent Morning Peak Hour Traffic Volumes (Vehicles-per-hour)
Values inside of brackets represent Afternoon Peak Hour Traffic Volumes (Vehicles-per-hour)
Intersection Number
CastleGlenn Consultants Inc.

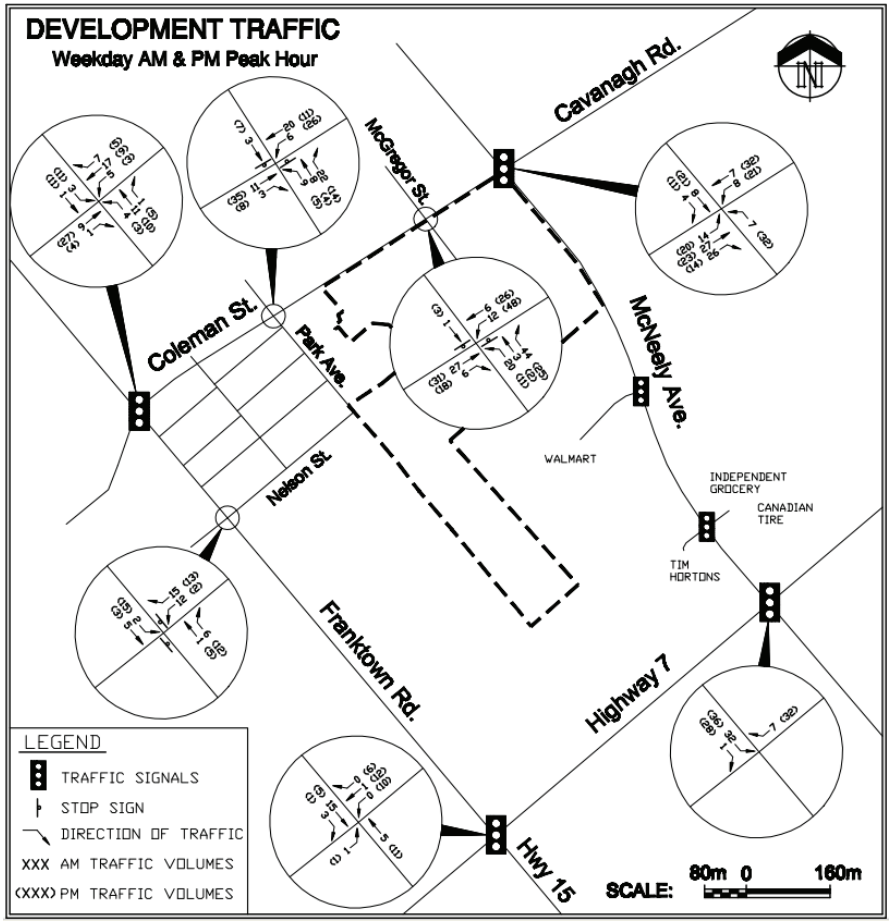
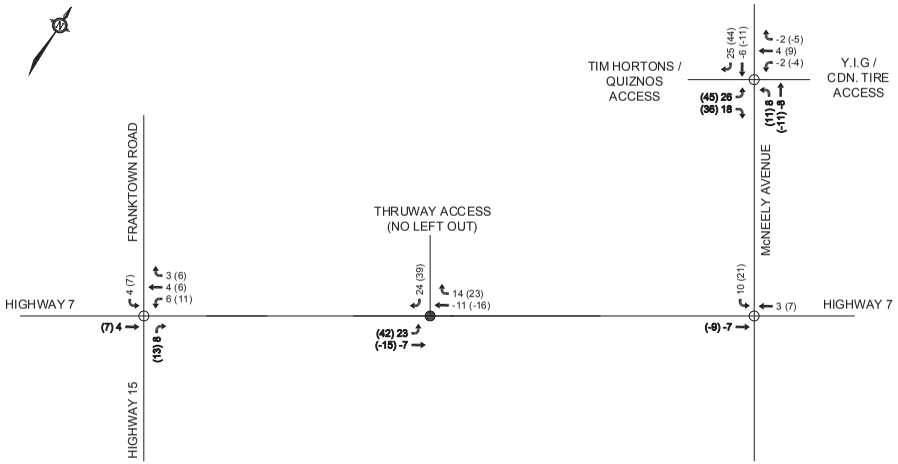
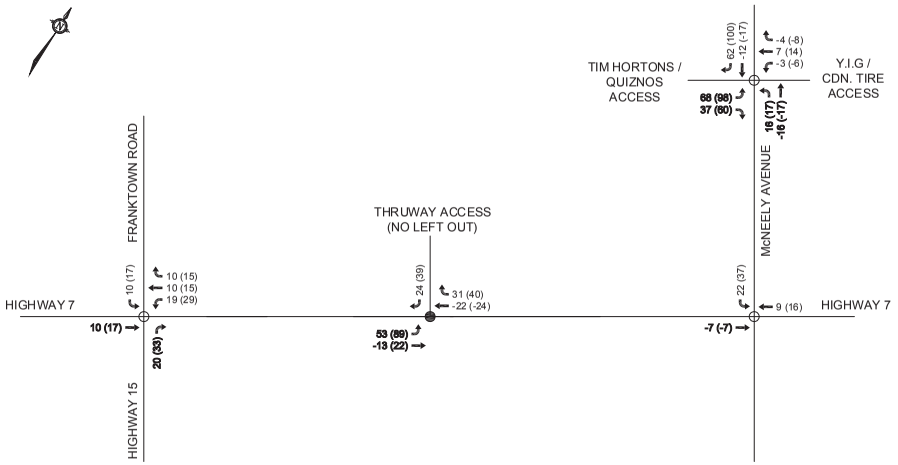


Figure 10: Development Traffic – Weekday A.M. and P.M. Peak Hour

PARTIAL BUILDOUT (2013)



FULL BUILDOUT (2018 & 2023)



NOVATECH ENGINEERING CONSULTANTS LTD. ENGINEERS & PLANNERS Suite 200, 240 Michael Cowpland Drive Ottawa, Ontario, Canada K2M 1P6 Telephone (613) 254-9643 Facsimile (613) 254-5867 Email novainfo@novatech-eng.com	LEGEND Unsignalized Intersection Signalized Intersection xx VPH Weekday PM Peak Hour (xx) VPH Saturday Peak Hour
THRUWAY COMMERCIAL PLAZA CARLETON PLACE, ON TOTAL SITE TRAFFIC	
APRIL 2013 111084 FIGURE 16	

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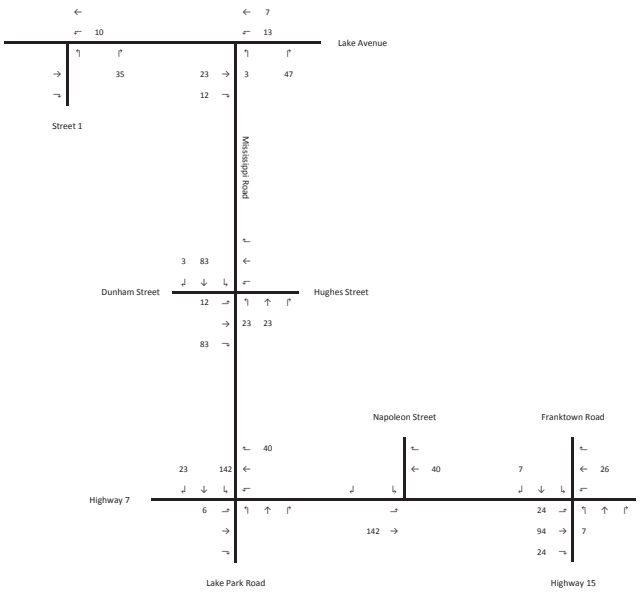
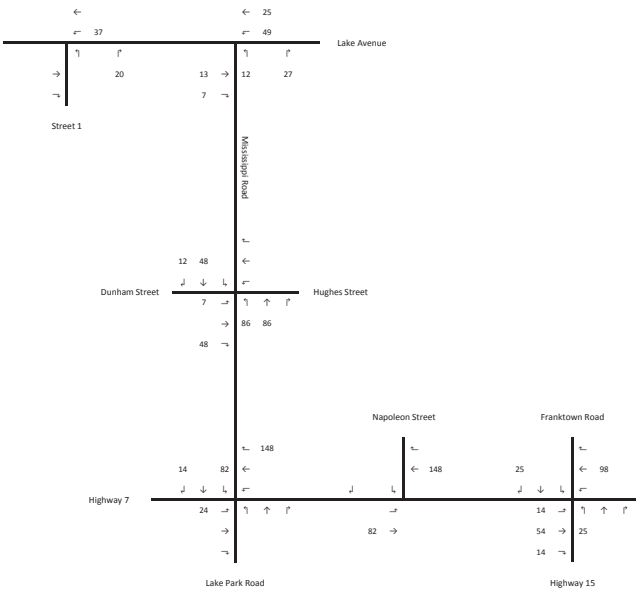
AM Peak Hour

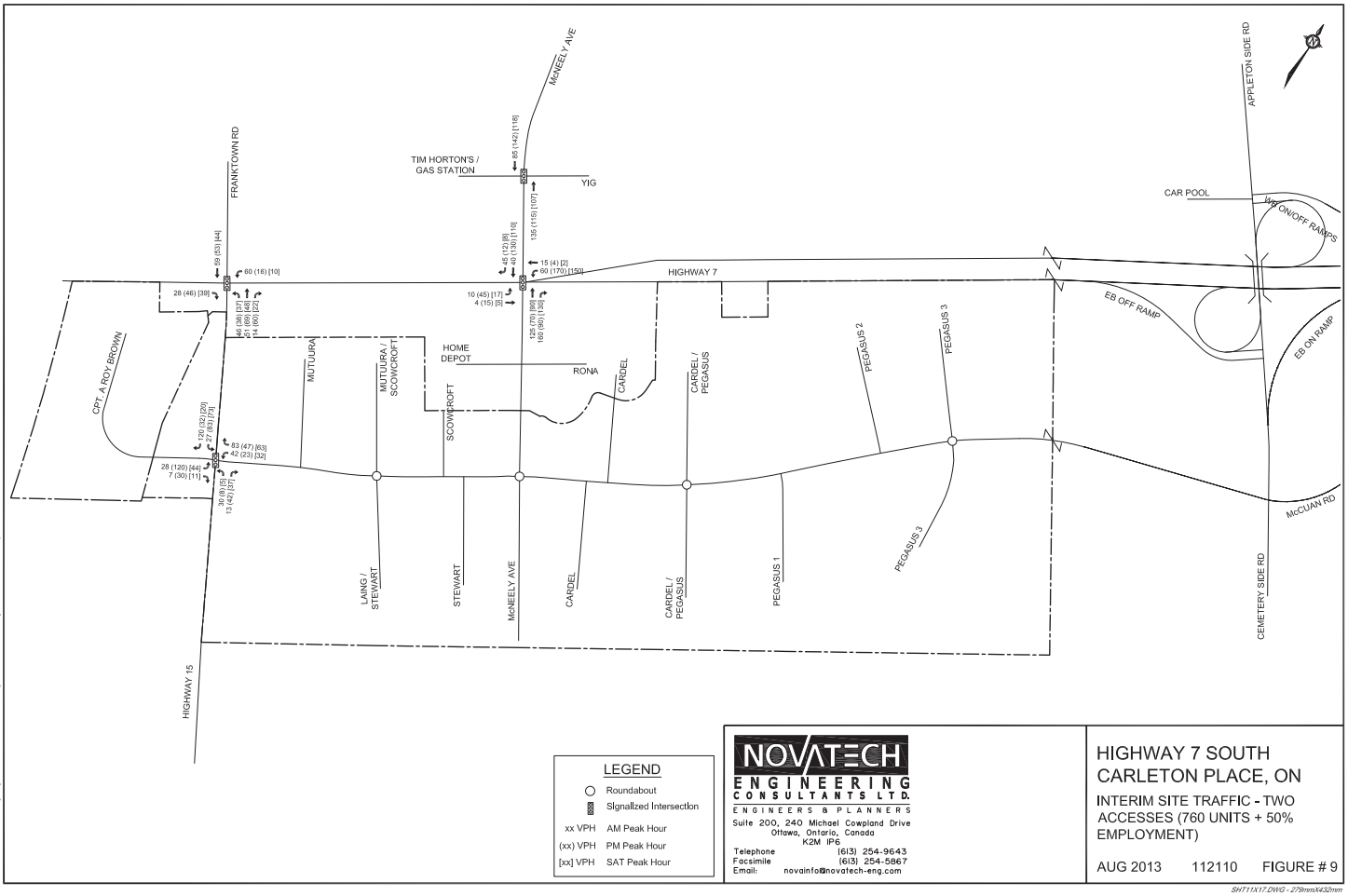


PM Peak Hour



Stantec

1384341 Ontario Ltd
Bodnar Lands, Carleton Place
Figure 10: Site Traffic Volumes



LEGEND

- Roundabout
- Signallized Intersection
- xx VPH — AM Peak Hour
- (xx) VPH — PM Peak Hour
- [xx] VPH — SAT Peak Hour

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HIGHWAY 7 SOUTH
CARLETON PLACE, ON
INTERIM SITE TRAFFIC - TWO ACCESSES (760 UNITS + 50% EMPLOYMENT)

AUG 2013 112110 FIGURE # 9

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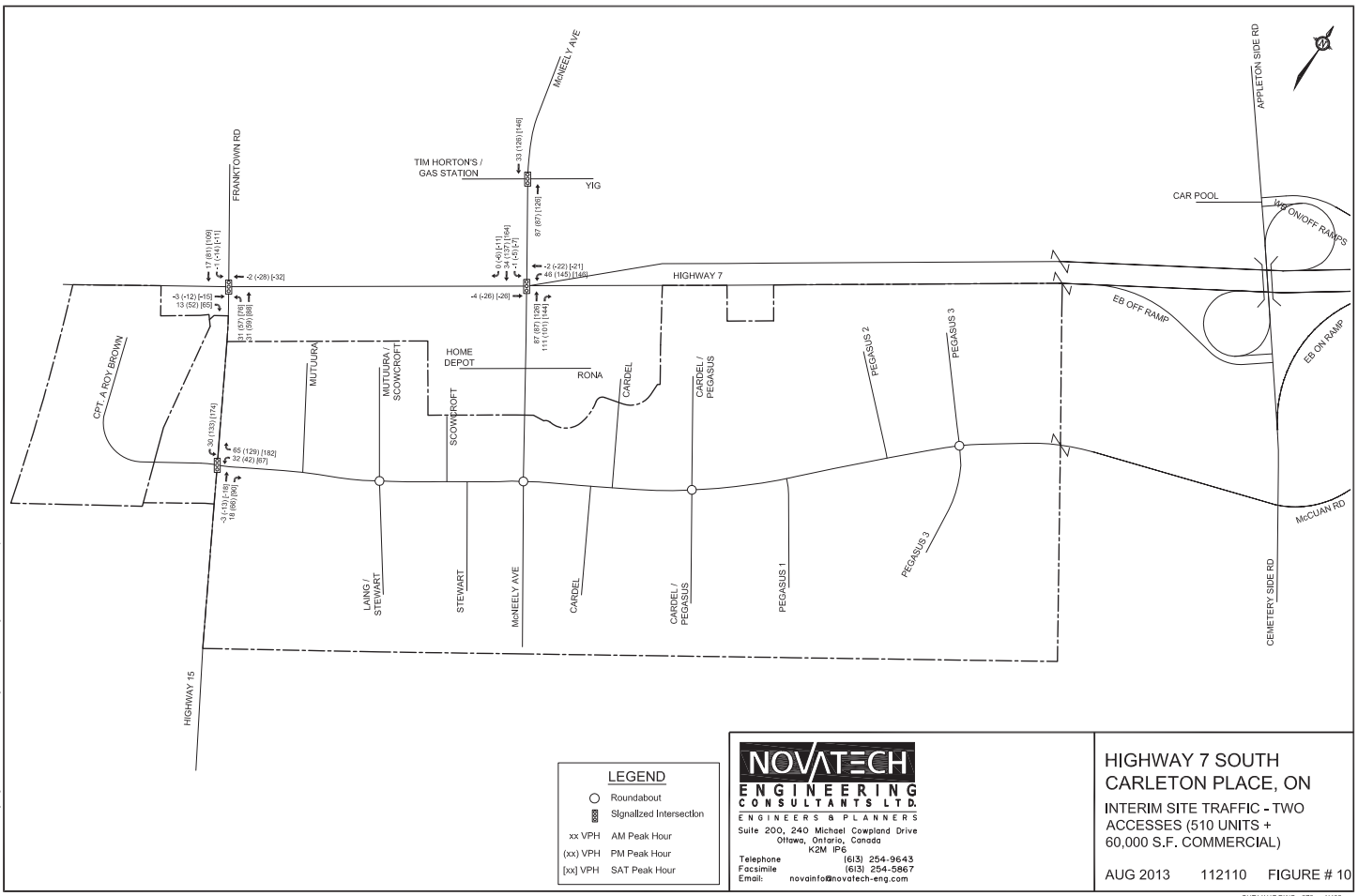
SHT11X17.DWG - 279mmX432mm


FRANKTOWN RD
TIM HORTON'S / GAS STATION
YIG
McNEELY AVE
HIGHWAY 7
APPLETON SIDE RD
CAR POOL
WB ON/OFF RAMPS
EB OFF RAMP
EB ON RAMP
McCUAN RD
CEMETERY SIDE RD
CPT. A ROY BROWN
MUTUURA
MUTUURA / SCOWCROFT
SCOWCROFT
HOME DEPOT
RONA
CARDEL
CARDEL / PEGASUS
PEGASUS 2
PEGASUS 3
PEGASUS 1
LAING / STEWART
STEWART
HIGHWAY 15
LEGEND
Roundabout
Signallzed Intersection
xx VPH AM Peak Hour
(xx) VPH PM Peak Hour
[xx] VPH SAT Peak Hour
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HIGHWAY 7 SOUTH
CARLETON PLACE, ON
INTERIM SITE TRAFFIC - TWO ACCESSES (510 UNITS + 60,000 S.F. COMMERCIAL)
AUG 2013 112110 FIGURE # 10
SHT11X17.DWG - 279mmX432mm
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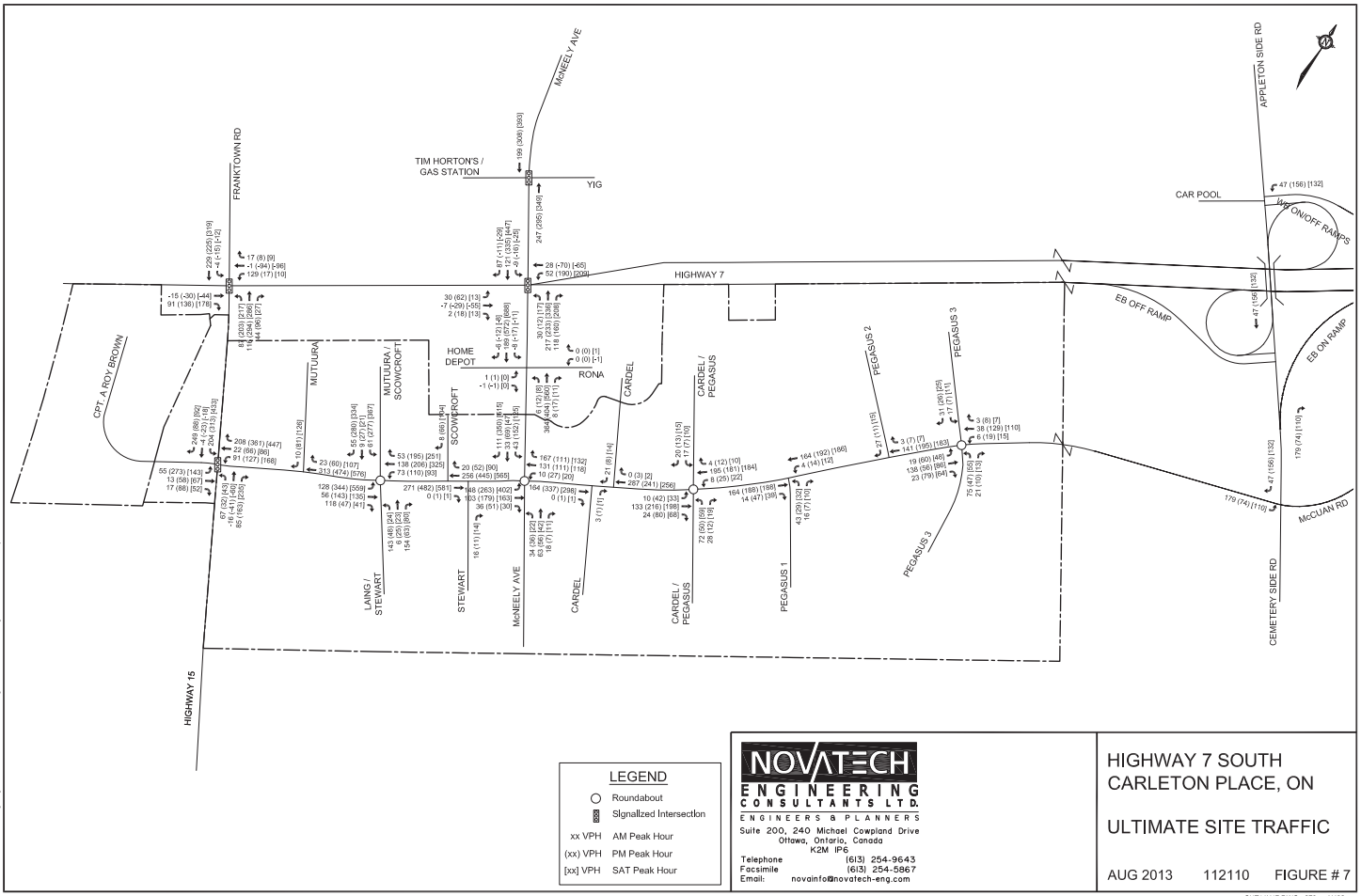
FRANKTOWN RD
TIM HORTON'S / GAS STATION
YIG
McNEELY AVE
HIGHWAY 7
APPLETON SIDE RD
CAR POOL
WB ON/OFF RAMPS
EB OFF RAMP
EB ON RAMP
McCUAN RD
CEMETERY SIDE RD
CPT. A ROY BROWN
MUTUURA
MUTUURA / SCOWCROFT
SCOWCROFT
HOME DEPOT
RONA
CARDEL
CARDEL / PEGASUS
PEGASUS 2
PEGASUS 3
PEGASUS 1
LAING / STEWART
STEWART
HIGHWAY 15
LEGEND
Roundabout
Signallzed Intersection
xx VPH AM Peak Hour
(xx) VPH PM Peak Hour
[xx] VPH SAT Peak Hour
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HIGHWAY 7 SOUTH
CARLETON PLACE, ON
ULTIMATE SITE TRAFFIC
AUG 2013 112110 FIGURE # 7
SHT11X17.DWG - 279mmX432mm
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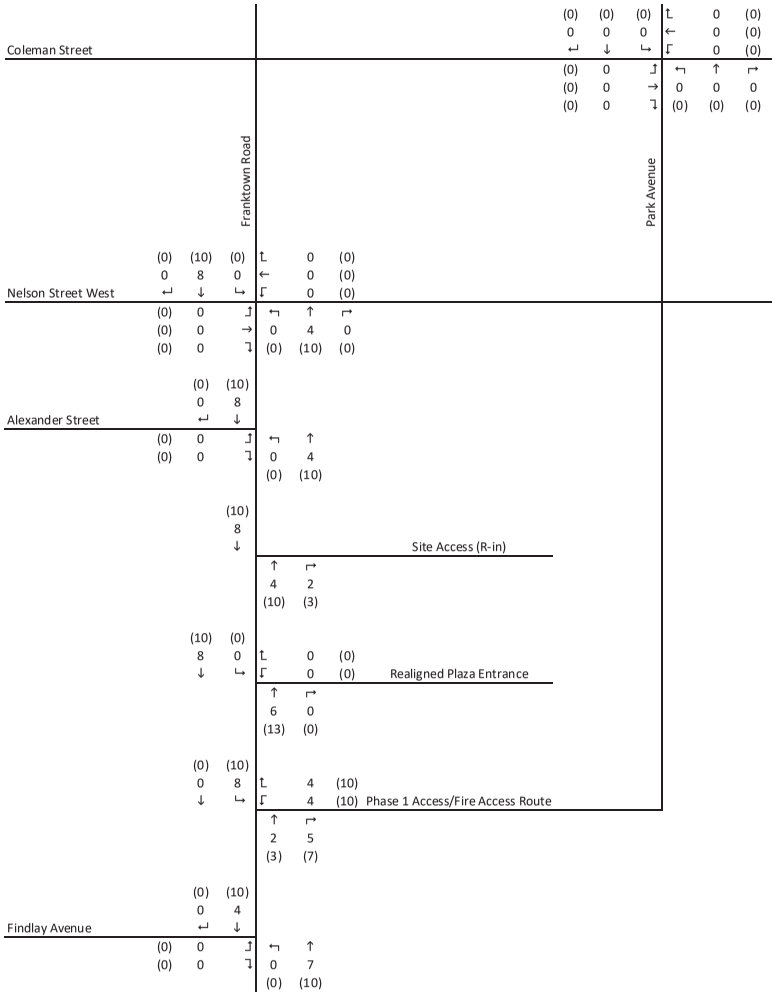

Figure 6: Scenario 1 AM (PM) Peak Hour Site Generated Traffic

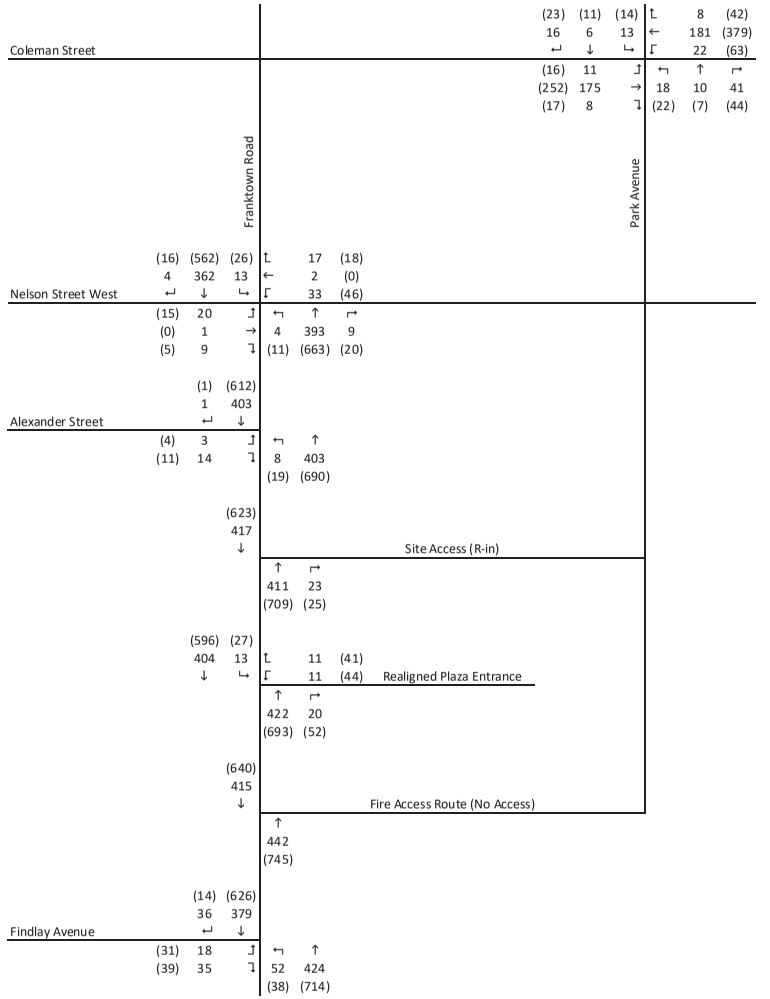

Figure 14: 2032 Scenario 3 Total Future AM (PM) Peak Hour Traffic

Appendix B

Synchro Intersection Worksheets – Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	82	79	36	91	34	79	235	45	42	183	76
Future Volume (veh/h)	49	82	79	36	91	34	79	235	45	42	183	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	0.98		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	54	91	0	40	101	0	88	261	0	47	203	84
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	174	171		147	197		693	849		668	807	676
Arrive On Green	0.15	0.15	0.00	0.15	0.15	0.00	0.07	0.48	0.00	0.05	0.46	0.46
Sat Flow, veh/h	473	1173	1502	334	1347	1502	1688	1772	0	1688	1772	1485
Grp Volume(v), veh/h	145	0	0	141	0	0	88	261	0	47	203	84
Grp Sat Flow(s),veh/h/ln	1645	0	1502	1681	0	1502	1688	1772	0	1688	1772	1485
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	1.2	4.2	0.0	0.7	3.3	1.5
Cycle Q Clear(g_c), s	3.7	0.0	0.0	3.5	0.0	0.0	1.2	4.2	0.0	0.7	3.3	1.5
Prop In Lane	0.37		1.00	0.28		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	345	0		343	0		693	849		668	807	676
V/C Ratio(X)	0.42	0.00		0.41	0.00		0.13	0.31		0.07	0.25	0.12
Avail Cap(c_a), veh/h	707	0		719	0		753	849		764	807	676
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.8	0.0	0.0	18.7	0.0	0.0	5.7	7.5	0.0	6.1	7.9	7.4
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.8	0.0	0.0	0.1	0.9	0.0	0.0	0.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	0.6	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.6	0.0	0.0	19.5	0.0	0.0	5.8	8.5	0.0	6.1	8.7	7.8
LnGrp LOS	B	A		B	A		A	A		A	A	A
Approach Vol, veh/h		145	A		141	A		349	A		334	
Approach Delay, s/veh		19.6			19.5			7.8			8.1	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	27.7		12.1	8.5	26.6		12.1				
Change Period (Y+Rc), s	* 5.1	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	* 5	* 22		* 18	* 5.1	* 22		* 18				
Max Q Clear Time (g_c+I1), s	2.7	6.2		5.7	3.2	5.3		5.5				
Green Ext Time (p_c), s	0.0	1.5		0.6	0.0	1.5		0.6				

Intersection Summary		
HCM 6th Ctrl Delay		11.4
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	1	9	6	2	3	4	377	3	4	318	4
Future Vol, veh/h	20	1	9	6	2	3	4	377	3	4	318	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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	1	10	7	2	3	4	419	3	4	353	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	794	793	355	798	794	421	357	0	0	422	0	0
Stage 1	363	363	-	429	429	-	-	-	-	-	-	-
Stage 2	431	430	-	369	365	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	306	321	689	304	321	632	1202	-	-	1137	-	-
Stage 1	656	625	-	604	584	-	-	-	-	-	-	-
Stage 2	603	583	-	651	623	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	301	318	689	297	318	632	1202	-	-	1137	-	-
Mov Cap-2 Maneuver	301	318	-	297	318	-	-	-	-	-	-	-
Stage 1	653	623	-	602	582	-	-	-	-	-	-	-
Stage 2	595	581	-	638	621	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.9	15.6	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1202	-	-	363	352	1137	-	-
HCM Lane V/C Ratio	0.004	-	-	0.092	0.035	0.004	-	-
HCM Control Delay (s)	8	0	-	15.9	15.6	8.2	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	35	52	353	325	36
Future Vol, veh/h	18	35	52	353	325	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	39	58	392	361	40

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	889	381	401	0	-	0
Stage 1	381	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	314	666	1158	-	-	-
Stage 1	691	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	294	666	1158	-	-	-
Mov Cap-2 Maneuver	294	-	-	-	-	-
Stage 1	647	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.8	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1158	-	466	-	-
HCM Lane V/C Ratio	0.05	-	0.126	-	-
HCM Control Delay (s)	8.3	0	13.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	526	65	294	257	162	50	196	473	192	138	19
Future Volume (veh/h)	35	526	65	294	257	162	50	196	473	192	138	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		1.00	0.98		1.00	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	39	584	72	327	286	0	56	218	0	213	153	21
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	579	848	711	414	1128		242	270		212	462	387
Arrive On Green	0.48	0.48	0.48	0.11	0.64	0.00	0.15	0.15	0.00	0.07	0.26	0.26
Sat Flow, veh/h	1085	1772	1486	1688	1772	1502	1192	1772	0	1688	1772	1484
Grp Volume(v), veh/h	39	584	72	327	286	0	56	218	0	213	153	21
Grp Sat Flow(s),veh/h/ln	1085	1772	1486	1688	1772	1502	1192	1772	0	1688	1772	1484
Q Serve(g_s), s	2.3	30.8	3.2	11.5	8.4	0.0	5.0	14.3	0.0	8.1	8.4	1.3
Cycle Q Clear(g_c), s	2.3	30.8	3.2	11.5	8.4	0.0	5.0	14.3	0.0	8.1	8.4	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	579	848	711	414	1128		242	270		212	462	387
V/C Ratio(X)	0.07	0.69	0.10	0.79	0.25		0.23	0.81		1.00	0.33	0.05
Avail Cap(c_a), veh/h	579	848	711	414	1128		449	579		212	771	646
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.9	24.3	17.2	19.5	9.4	0.0	45.2	49.2	0.0	46.6	35.9	33.3
Incr Delay (d2), s/veh	0.2	4.6	0.3	9.9	0.5	0.0	0.5	5.7	0.0	62.4	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	9.3	0.8	3.3	1.6	0.0	1.2	5.5	0.0	5.3	2.8	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.2	28.9	17.4	29.4	10.0	0.0	45.7	54.8	0.0	109.0	36.3	33.3
LnGrp LOS	B	C	B	C	A		D	D		F	D	C
Approach Vol, veh/h		695			613	A		274	A		387	
Approach Delay, s/veh		27.0			20.3			53.0			76.1	
Approach LOS		C			C			D			E	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	19.0	63.9	13.0	24.1		82.9		37.1				
Change Period (Y+Rc), s	* 6.1	* 6.5	4.9	* 5.8		* 6.5		* 5.8				
Max Green Setting (Gmax), s	* 13	* 37	8.1	* 39		* 56		* 52				
Max Q Clear Time (g_c+I1), s	13.5	32.8	10.1	16.3		10.4		10.4				
Green Ext Time (p_c), s	0.0	1.7	0.0	1.7		2.2		1.2				

Intersection Summary	
HCM 6th Ctrl Delay	38.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	151	3	3	148	8	3	3	11	13	3	16
Future Vol, veh/h	11	151	3	3	148	8	3	3	11	13	3	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	168	3	3	164	9	3	3	12	14	3	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	173	0	0	171	0	0	379	373	170	376	370	169
Stage 1	-	-	-	-	-	-	194	194	-	175	175	-
Stage 2	-	-	-	-	-	-	185	179	-	201	195	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1404	-	-	1406	-	-	579	557	874	581	560	875
Stage 1	-	-	-	-	-	-	808	740	-	827	754	-
Stage 2	-	-	-	-	-	-	817	751	-	801	739	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1404	-	-	1406	-	-	560	551	874	565	554	875
Mov Cap-2 Maneuver	-	-	-	-	-	-	560	551	-	565	554	-
Stage 1	-	-	-	-	-	-	801	733	-	820	752	-
Stage 2	-	-	-	-	-	-	795	749	-	779	732	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.1	10.1	10.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	727	1404	-	-	1406	-	-	685
HCM Lane V/C Ratio	0.026	0.009	-	-	0.002	-	-	0.052
HCM Control Delay (s)	10.1	7.6	-	-	7.6	-	-	10.5
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	191	0	0	157	10	0	0	0	17	0	3
Future Vol, veh/h	13	191	0	0	157	10	0	0	0	17	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	212	0	0	174	11	0	0	0	19	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	185	0	0	212	0	0	421	425	106	308	414	174
Stage 1	-	-	-	-	-	-	240	240	-	174	174	-
Stage 2	-	-	-	-	-	-	181	185	-	134	240	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1388	-	-	1357	-	-	530	520	928	633	528	869
Stage 1	-	-	-	-	-	-	743	706	-	827	754	-
Stage 2	-	-	-	-	-	-	820	746	-	856	706	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1388	-	-	1357	-	-	524	514	928	628	522	869
Mov Cap-2 Maneuver	-	-	-	-	-	-	524	514	-	628	522	-
Stage 1	-	-	-	-	-	-	735	698	-	818	754	-
Stage 2	-	-	-	-	-	-	817	746	-	847	698	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	0	10.7
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1388	-	-	1357	-	-	655
HCM Lane V/C Ratio	-	0.01	-	-	-	-	-	0.034
HCM Control Delay (s)	0	7.6	0	-	0	-	-	10.7
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1772	1772				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	0.90	0.90				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						
Timer - Assigned Phs						
Phs Duration (G+Y+Rc), s						
Change Period (Y+Rc), s						
Max Green Setting (Gmax), s						
Max Q Clear Time (g_c+I1), s						
Green Ext Time (p_c), s						
Intersection Summary						
HCM 6th Ctrl Delay			0.0			
HCM 6th LOS			A			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	149	108	72	162	90	125	347	69	48	285	40
Future Volume (veh/h)	31	149	108	72	162	90	125	347	69	48	285	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	0.99		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	34	166	0	80	180	0	139	386	0	53	317	44
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	119	325		177	261		561	768		505	709	594
Arrive On Green	0.21	0.21	0.00	0.21	0.21	0.00	0.08	0.43	0.00	0.05	0.40	0.40
Sat Flow, veh/h	171	1553	1502	400	1245	1502	1688	1772	0	1688	1772	1483
Grp Volume(v), veh/h	200	0	0	260	0	0	139	386	0	53	317	44
Grp Sat Flow(s),veh/h/ln	1724	0	1502	1645	0	1502	1688	1772	0	1688	1772	1483
Q Serve(g_s), s	0.0	0.0	0.0	2.2	0.0	0.0	2.3	8.0	0.0	0.9	6.6	0.9
Cycle Q Clear(g_c), s	5.1	0.0	0.0	7.3	0.0	0.0	2.3	8.0	0.0	0.9	6.6	0.9
Prop In Lane	0.17		1.00	0.31		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	445	0		438	0		561	768		505	709	594
V/C Ratio(X)	0.45	0.00		0.59	0.00		0.25	0.50		0.11	0.45	0.07
Avail Cap(c_a), veh/h	689	0		669	0		628	768		584	709	594
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.8	0.0	0.0	18.5	0.0	0.0	7.8	10.4	0.0	8.2	11.0	9.3
Incr Delay (d2), s/veh	0.7	0.0	0.0	1.3	0.0	0.0	0.2	2.3	0.0	0.1	2.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	1.1	0.0	0.0	0.0	0.5	0.0	0.0	0.6	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.5	0.0	0.0	19.8	0.0	0.0	8.0	12.7	0.0	8.3	13.1	9.6
LnGrp LOS	B	A		B	A		A	B		A	B	A
Approach Vol, veh/h		200	A		260	A		525	A		414	
Approach Delay, s/veh		18.5			19.8			11.5			12.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	27.0		15.8	9.4	25.3		15.8				
Change Period (Y+Rc), s	* 5.1	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	* 5	* 22		* 18	* 6.3	* 20		* 18				
Max Q Clear Time (g_c+I1), s	2.9	10.0		7.1	4.3	8.6		9.3				
Green Ext Time (p_c), s	0.0	2.1		0.9	0.1	1.8		1.1				

Intersection Summary			
HCM 6th Ctrl Delay		14.2	
HCM 6th LOS		B	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	0	5	13	0	5	11	597	8	4	508	16
Future Vol, veh/h	15	0	5	13	0	5	11	597	8	4	508	16
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	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	0	6	14	0	6	12	663	9	4	564	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1276	1277	573	1276	1282	668	582	0	0	672	0	0
Stage 1	581	581	-	692	692	-	-	-	-	-	-	-
Stage 2	695	696	-	584	590	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	144	166	519	144	165	458	992	-	-	919	-	-
Stage 1	499	500	-	434	445	-	-	-	-	-	-	-
Stage 2	433	443	-	498	495	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	140	162	519	140	161	458	992	-	-	919	-	-
Mov Cap-2 Maneuver	140	162	-	140	161	-	-	-	-	-	-	-
Stage 1	490	497	-	426	437	-	-	-	-	-	-	-
Stage 2	420	435	-	490	492	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	29.2	28.5	0.2	0.1
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	992	-	-	171	173	919	-	-
HCM Lane V/C Ratio	0.012	-	-	0.13	0.116	0.005	-	-
HCM Control Delay (s)	8.7	0	-	29.2	28.5	8.9	0	-
HCM Lane LOS	A	A	-	D	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.4	0	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	39	38	612	522	14
Future Vol, veh/h	31	39	38	612	522	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	43	42	680	580	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1352	588	596	0	-	0
Stage 1	588	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	165	509	980	-	-	-
Stage 1	555	-	-	-	-	-
Stage 2	460	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	154	509	980	-	-	-
Mov Cap-2 Maneuver	154	-	-	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	460	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.5	0.5	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	980	-	252	-	-
HCM Lane V/C Ratio	0.043	-	0.309	-	-
HCM Control Delay (s)	8.8	0	25.5	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	393	60	578	709	417	71	177	391	199	276	66
Future Volume (veh/h)	32	393	60	578	709	417	71	177	391	199	276	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	0.99		1.00	0.99		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	36	437	67	642	788	0	79	197	0	221	307	73
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	292	634	529	570	1121		170	263		237	469	393
Arrive On Green	0.36	0.36	0.36	0.22	0.63	0.00	0.15	0.15	0.00	0.08	0.26	0.26
Sat Flow, veh/h	685	1772	1481	1688	1772	1502	993	1772	0	1688	1772	1485
Grp Volume(v), veh/h	36	437	67	642	788	0	79	197	0	221	307	73
Grp Sat Flow(s),veh/h/ln	685	1772	1481	1688	1772	1502	993	1772	0	1688	1772	1485
Q Serve(g_s), s	4.4	25.2	3.7	26.9	35.3	0.0	9.2	12.8	0.0	9.1	18.5	4.6
Cycle Q Clear(g_c), s	6.7	25.2	3.7	26.9	35.3	0.0	13.7	12.8	0.0	9.1	18.5	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	292	634	529	570	1121		170	263		237	469	393
V/C Ratio(X)	0.12	0.69	0.13	1.13	0.70		0.46	0.75		0.93	0.65	0.19
Avail Cap(c_a), veh/h	292	634	529	570	1121		289	475		237	682	572
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.7	32.9	25.9	23.8	14.6	0.0	51.5	49.0	0.0	45.4	39.2	34.1
Incr Delay (d2), s/veh	0.9	6.1	0.5	77.4	3.7	0.0	2.0	4.3	0.0	40.5	1.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	8.5	1.0	17.4	6.3	0.0	2.0	4.8	0.0	3.9	6.4	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.6	38.9	26.4	101.2	18.3	0.0	53.5	53.3	0.0	85.9	40.8	34.3
LnGrp LOS	C	D	C	F	B		D	D		F	D	C
Approach Vol, veh/h		540			1430	A		276	A		601	
Approach Delay, s/veh		36.7			55.5			53.3			56.6	
Approach LOS		D			E			D			E	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	33.0	49.4	14.0	23.6		82.4		37.6				
Change Period (Y+Rc), s	* 6.1	* 6.5	4.9	* 5.8		* 6.5		* 5.8				
Max Green Setting (Gmax), s	* 27	* 29	9.1	* 32		* 62		* 46				
Max Q Clear Time (g_c+I1), s	28.9	27.2	11.1	15.7		37.3		20.5				
Green Ext Time (p_c), s	0.0	0.5	0.0	1.6		7.1		2.6				

Intersection Summary	
HCM 6th Ctrl Delay	51.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	200	6	24	338	42	4	3	12	14	5	23
Future Vol, veh/h	16	200	6	24	338	42	4	3	12	14	5	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	222	7	27	376	47	4	3	13	16	6	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	423	0	0	229	0	0	732	739	226	724	719	400
Stage 1	-	-	-	-	-	-	262	262	-	454	454	-
Stage 2	-	-	-	-	-	-	470	477	-	270	265	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1136	-	-	1339	-	-	337	345	813	341	354	650
Stage 1	-	-	-	-	-	-	743	691	-	586	569	-
Stage 2	-	-	-	-	-	-	574	556	-	736	689	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1136	-	-	1339	-	-	311	333	813	324	341	650
Mov Cap-2 Maneuver	-	-	-	-	-	-	311	333	-	324	341	-
Stage 1	-	-	-	-	-	-	731	680	-	577	558	-
Stage 2	-	-	-	-	-	-	535	545	-	709	678	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.5	12.2	13.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	519	1136	-	-	1339	-	-	450
HCM Lane V/C Ratio	0.041	0.016	-	-	0.02	-	-	0.104
HCM Control Delay (s)	12.2	8.2	-	-	7.7	-	-	13.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0.3

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	272	0	0	368	47	0	0	0	15	0	10
Future Vol, veh/h	16	272	0	0	368	47	0	0	0	15	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	302	0	0	409	52	0	0	0	17	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	461	0	0	302	0	0	779	799	151	596	747	409
Stage 1	-	-	-	-	-	-	338	338	-	409	409	-
Stage 2	-	-	-	-	-	-	441	461	-	187	338	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1098	-	-	1257	-	-	299	318	869	401	341	642
Stage 1	-	-	-	-	-	-	651	640	-	619	595	-
Stage 2	-	-	-	-	-	-	594	564	-	797	640	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1098	-	-	1257	-	-	289	312	869	395	334	642
Mov Cap-2 Maneuver	-	-	-	-	-	-	289	312	-	395	334	-
Stage 1	-	-	-	-	-	-	638	627	-	607	595	-
Stage 2	-	-	-	-	-	-	584	564	-	781	627	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	0	13.2
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1098	-	-	1257	-	-	467
HCM Lane V/C Ratio	-	0.016	-	-	-	-	-	0.059
HCM Control Delay (s)	0	8.3	0.1	-	0	-	-	13.2
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1772	1772				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	0.90	0.90				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						
Timer - Assigned Phs						
Phs Duration (G+Y+Rc), s						
Change Period (Y+Rc), s						
Max Green Setting (Gmax), s						
Max Q Clear Time (g_c+I1), s						
Green Ext Time (p_c), s						
Intersection Summary						
HCM 6th Ctrl Delay			0.0			
HCM 6th LOS			A			

Appendix C

Synchro Intersection Worksheets – 2024 Future Background Conditions

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	145	97	159	40	96	345	45	235	76
v/c Ratio	0.49	0.25	0.53	0.10	0.14	0.34	0.07	0.26	0.10
Control Delay	24.5	3.9	25.3	0.5	6.1	10.7	6.0	12.9	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	3.9	25.3	0.5	6.1	10.7	6.0	12.9	1.2
Queue Length 50th (m)	12.3	0.0	13.6	0.0	3.3	12.9	1.5	14.8	0.0
Queue Length 95th (m)	25.4	5.8	27.6	0.0	9.8	46.9	5.5	32.9	2.5
Internal Link Dist (m)	366.8		295.8			248.5		496.5	
Turn Bay Length (m)		40.0		30.0	15.0		25.0		30.0
Base Capacity (vph)	505	585	517	585	665	1019	601	890	782
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.17	0.31	0.07	0.14	0.34	0.07	0.26	0.10

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	96	97	49	110	40	96	292	53	45	235	76
Future Volume (veh/h)	49	96	97	49	110	40	96	292	53	45	235	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	0.98		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	49	96	0	49	110	0	96	292	0	45	235	76
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	166	193		158	199		662	836		630	785	658
Arrive On Green	0.15	0.15	0.00	0.15	0.15	0.00	0.08	0.47	0.00	0.05	0.44	0.44
Sat Flow, veh/h	411	1252	1502	376	1290	1502	1688	1772	0	1688	1772	1485
Grp Volume(v), veh/h	145	0	0	159	0	0	96	292	0	45	235	76
Grp Sat Flow(s),veh/h/ln	1663	0	1502	1666	0	1502	1688	1772	0	1688	1772	1485
Q Serve(g_s), s	0.0	0.0	0.0	0.4	0.0	0.0	1.4	4.9	0.0	0.7	4.0	1.4
Cycle Q Clear(g_c), s	3.6	0.0	0.0	4.0	0.0	0.0	1.4	4.9	0.0	0.7	4.0	1.4
Prop In Lane	0.34		1.00	0.31		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	359	0		357	0		662	836		630	785	658
V/C Ratio(X)	0.40	0.00		0.45	0.00		0.15	0.35		0.07	0.30	0.12
Avail Cap(c_a), veh/h	713	0		716	0		738	836		730	785	658
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.4	0.0	0.0	18.5	0.0	0.0	6.0	7.9	0.0	6.4	8.4	7.7
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.9	0.0	0.0	0.1	1.2	0.0	0.0	1.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	1.2	0.0	0.0	0.2	1.1	0.0	0.1	1.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.1	0.0	0.0	19.4	0.0	0.0	6.1	9.0	0.0	6.5	9.4	8.1
LnGrp LOS	B	A		B	A		A	A		A	A	A
Approach Vol, veh/h		145			159			388			356	
Approach Delay, s/veh		19.1			19.4			8.3			8.7	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	27.4		12.5	8.7	26.0		12.5				
Change Period (Y+Rc), s	* 5.1	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	* 5	* 22		* 18	* 5.7	* 21		* 18				
Max Q Clear Time (g_c+I1), s	2.7	6.9		5.6	3.4	6.0		6.0				
Green Ext Time (p_c), s	0.0	1.7		0.6	0.1	1.6		0.7				

Intersection Summary			
HCM 6th Ctrl Delay		11.6	
HCM 6th LOS		B	

Notes

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

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	1	9	17	2	17	4	449	9	6	401	4
Future Vol, veh/h	20	1	9	17	2	17	4	449	9	6	401	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	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	1	9	17	2	17	4	449	9	6	401	4

Major/Minor	Minor2			Minor1				Major1			Major2	
Conflicting Flow All	886	881	403	882	879	454	405	0	0	458	0	0
Stage 1	415	415	-	462	462	-	-	-	-	-	-	-
Stage 2	471	466	-	420	417	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	265	285	647	267	286	606	1154	-	-	1103	-	-
Stage 1	615	592	-	580	565	-	-	-	-	-	-	-
Stage 2	573	562	-	611	591	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	254	282	647	260	283	606	1154	-	-	1103	-	-
Mov Cap-2 Maneuver	254	282	-	260	283	-	-	-	-	-	-	-
Stage 1	612	588	-	577	562	-	-	-	-	-	-	-
Stage 2	552	559	-	597	587	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.8	16.2	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1154	-	-	312	358	1103	-	-
HCM Lane V/C Ratio	0.003	-	-	0.096	0.101	0.005	-	-
HCM Control Delay (s)	8.1	0	-	17.8	16.2	8.3	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	18	35	52	433	416	36
Future Vol, veh/h	18	35	52	433	416	36
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	35	52	433	416	36

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	971	434	452	0	-	0
Stage 1	434	-	-	-	-	-
Stage 2	537	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	280	622	1109	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	586	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	263	622	1109	-	-	-
Mov Cap-2 Maneuver	263	-	-	-	-	-
Stage 1	613	-	-	-	-	-
Stage 2	586	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.7	0.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1109	-	425	-	-
HCM Lane V/C Ratio	0.047	-	0.125	-	-
HCM Control Delay (s)	8.4	0	14.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	52	613	114	354	299	170	100	745	199	213	27
v/c Ratio	0.18	1.22	0.23	1.34	0.37	0.23	0.29	1.36	1.08	0.28	0.04
Control Delay	34.4	155.0	5.8	205.8	22.6	3.5	33.8	202.5	116.0	23.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	155.0	5.8	205.8	22.6	3.5	33.8	202.5	116.0	23.1	0.1
Queue Length 50th (m)	9.2	~177.5	0.0	~94.3	44.6	0.0	17.7	~216.8	~37.2	31.7	0.0
Queue Length 95th (m)	19.7	#245.6	11.3	#153.1	66.3	11.6	32.6	#290.0	#84.1	49.2	0.0
Internal Link Dist (m)		351.4			363.2			476.8		204.0	
Turn Bay Length (m)	85.0		90.0	105.0			130.0		90.0		100.0
Base Capacity (vph)	284	501	493	264	807	742	339	549	185	759	661
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	1.22	0.23	1.34	0.37	0.23	0.29	1.36	1.08	0.28	0.04

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	613	114	354	299	170	100	249	496	199	213	27
Future Volume (veh/h)	52	613	114	354	299	170	100	249	496	199	213	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		1.00	0.99		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	52	613	114	354	299	0	100	249	0	199	213	27
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	527	772	646	369	1082		252	302		227	509	426
Arrive On Green	0.44	0.44	0.44	0.12	0.61	0.00	0.17	0.17	0.00	0.08	0.29	0.29
Sat Flow, veh/h	1072	1772	1484	1688	1772	1502	1126	1772	0	1688	1772	1486
Grp Volume(v), veh/h	52	613	114	354	299	0	100	249	0	199	213	27
Grp Sat Flow(s),veh/h/ln	1072	1772	1484	1688	1772	1502	1126	1772	0	1688	1772	1486
Q Serve(g_s), s	3.5	35.8	5.6	13.5	9.5	0.0	9.7	16.3	0.0	9.1	11.7	1.6
Cycle Q Clear(g_c), s	3.5	35.8	5.6	13.5	9.5	0.0	9.7	16.3	0.0	9.1	11.7	1.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	527	772	646	369	1082		252	302		227	509	426
V/C Ratio(X)	0.10	0.79	0.18	0.96	0.28		0.40	0.83		0.88	0.42	0.06
Avail Cap(c_a), veh/h	527	772	646	369	1082		418	564		227	771	646
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.1	29.2	20.7	23.7	10.9	0.0	45.3	48.1	0.0	42.2	34.7	31.1
Incr Delay (d2), s/veh	0.4	8.3	0.6	36.1	0.6	0.0	1.0	5.7	0.0	29.6	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	14.7	1.9	7.8	3.0	0.0	2.6	7.2	0.0	3.4	4.8	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.5	37.5	21.3	59.7	11.6	0.0	46.3	53.7	0.0	71.8	35.2	31.1
LnGrp LOS	C	D	C	E	B		D	D		E	D	C
Approach Vol, veh/h		779			653			349			439	
Approach Delay, s/veh		34.0			37.7			51.6			51.5	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	21.0	58.8	14.0	26.2		79.8		40.2
Change Period (Y+Rc), s	* 6.1	* 6.5	4.9	* 5.8		* 6.5		* 5.8
Max Green Setting (Gmax), s	* 15	* 35	9.1	* 38		* 56		* 52
Max Q Clear Time (g_c+I1), s	15.5	37.8	11.1	18.3		11.5		13.7
Green Ext Time (p_c), s	0.0	0.0	0.0	2.2		2.2		1.7

Intersection Summary	
HCM 6th Ctrl Delay	41.3
HCM 6th LOS	D

Notes

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

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	173	6	9	180	8	12	10	32	13	6	16
Future Vol, veh/h	11	173	6	9	180	8	12	10	32	13	6	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	173	6	9	180	8	12	10	32	13	6	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	188	0	0	179	0	0	411	404	176	421	403	184
Stage 1	-	-	-	-	-	-	198	198	-	202	202	-
Stage 2	-	-	-	-	-	-	213	206	-	219	201	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1386	-	-	1397	-	-	551	536	867	543	536	858
Stage 1	-	-	-	-	-	-	804	737	-	800	734	-
Stage 2	-	-	-	-	-	-	789	731	-	783	735	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1386	-	-	1397	-	-	530	528	867	510	528	858
Mov Cap-2 Maneuver	-	-	-	-	-	-	530	528	-	510	528	-
Stage 1	-	-	-	-	-	-	798	731	-	794	730	-
Stage 2	-	-	-	-	-	-	763	727	-	738	729	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.3	10.7	11
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	688	1386	-	-	1397	-	-	631
HCM Lane V/C Ratio	0.078	0.008	-	-	0.006	-	-	0.055
HCM Control Delay (s)	10.7	7.6	-	-	7.6	-	-	11
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.2

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	13	229	6	12	175	10	19	2	41	17	1	3
Future Vol, veh/h	13	229	6	12	175	10	19	2	41	17	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	229	6	12	175	10	19	2	41	17	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	185	0	0	235	0	0	464	467	118	341	460	175
Stage 1	-	-	-	-	-	-	258	258	-	199	199	-
Stage 2	-	-	-	-	-	-	206	209	-	142	261	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1388	-	-	1331	-	-	495	493	912	601	497	868
Stage 1	-	-	-	-	-	-	725	694	-	802	736	-
Stage 2	-	-	-	-	-	-	795	729	-	847	692	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1388	-	-	1331	-	-	485	483	912	563	487	868
Mov Cap-2 Maneuver	-	-	-	-	-	-	485	483	-	563	487	-
Stage 1	-	-	-	-	-	-	717	686	-	793	729	-
Stage 2	-	-	-	-	-	-	783	722	-	798	684	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.5	10.6	11.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	702	1388	-	-	1331	-	-	588
HCM Lane V/C Ratio	0.088	0.009	-	-	0.009	-	-	0.036
HCM Control Delay (s)	10.6	7.6	0	-	7.7	0	-	11.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.1

Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1772	1772				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	1.00	1.00				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						
Timer - Assigned Phs						
Phs Duration (G+Y+Rc), s						
Change Period (Y+Rc), s						
Max Green Setting (Gmax), s						
Max Q Clear Time (g_c+I1), s						
Green Ext Time (p_c), s						

Intersection Summary		
HCM 6th Ctrl Delay	0.0	
HCM 6th LOS	A	

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	210	139	276	98	159	549	64	380	40
v/c Ratio	0.49	0.29	0.76	0.21	0.36	0.73	0.18	0.54	0.06
Control Delay	21.8	5.4	34.9	3.2	10.1	24.2	8.3	18.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.8	5.4	34.9	3.2	10.1	24.2	8.3	18.4	0.2
Queue Length 50th (m)	18.4	0.0	26.4	0.0	7.9	51.9	3.0	32.3	0.0
Queue Length 95th (m)	34.8	10.1	#56.3	5.7	16.5	#107.3	7.7	57.3	0.0
Internal Link Dist (m)	366.8		295.8			248.5		496.5	
Turn Bay Length (m)		40.0		30.0	15.0		25.0		30.0
Base Capacity (vph)	530	564	446	559	444	748	348	699	642
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.25	0.62	0.18	0.36	0.73	0.18	0.54	0.06

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	179	139	100	176	98	159	458	91	64	380	40
Future Volume (veh/h)	31	179	139	100	176	98	159	458	91	64	380	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	0.99		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	31	179	0	100	176	0	159	458	0	64	380	40
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	109	346		200	242		516	769		454	720	603
Arrive On Green	0.22	0.22	0.00	0.22	0.22	0.00	0.09	0.43	0.00	0.06	0.41	0.41
Sat Flow, veh/h	143	1591	1502	494	1116	1502	1688	1772	0	1688	1772	1483
Grp Volume(v), veh/h	210	0	0	276	0	0	159	458	0	64	380	40
Grp Sat Flow(s),veh/h/ln	1735	0	1502	1610	0	1502	1688	1772	0	1688	1772	1483
Q Serve(g_s), s	0.0	0.0	0.0	2.7	0.0	0.0	2.8	10.4	0.0	1.1	8.6	0.9
Cycle Q Clear(g_c), s	5.6	0.0	0.0	8.3	0.0	0.0	2.8	10.4	0.0	1.1	8.6	0.9
Prop In Lane	0.15		1.00	0.36		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	455	0		442	0		516	769		454	720	603
V/C Ratio(X)	0.46	0.00		0.62	0.00		0.31	0.60		0.14	0.53	0.07
Avail Cap(c_a), veh/h	658	0		628	0		535	769		520	720	603
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.4	0.0	0.0	19.3	0.0	0.0	8.4	11.4	0.0	8.7	11.9	9.6
Incr Delay (d2), s/veh	0.7	0.0	0.0	1.4	0.0	0.0	0.3	3.4	0.0	0.1	2.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.0	3.6	0.0	0.0	1.1	5.1	0.0	0.5	4.2	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.1	0.0	0.0	20.8	0.0	0.0	8.7	14.8	0.0	8.9	14.6	9.8
LnGrp LOS	B	A		C	A		A	B		A	B	A
Approach Vol, veh/h		210			276			617			484	
Approach Delay, s/veh		19.1			20.8			13.2			13.5	
Approach LOS		B			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.1	28.1		16.7	9.6	26.6		16.7				
Change Period (Y+Rc), s	* 5.1	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	* 5.1	* 22		* 18	* 5.1	* 22		* 18				
Max Q Clear Time (g_c+I1), s	3.1	12.4		7.6	4.8	10.6		10.3				
Green Ext Time (p_c), s	0.0	2.2		0.9	0.0	2.1		1.1				

Intersection Summary			
HCM 6th Ctrl Delay		15.4	
HCM 6th LOS		B	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	0	5	15	0	18	11	760	20	18	654	16
Future Vol, veh/h	15	0	5	15	0	18	11	760	20	18	654	16
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	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	0	5	15	0	18	11	760	20	18	654	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1499	1500	662	1493	1498	770	670	0	0	780	0	0
Stage 1	698	698	-	792	792	-	-	-	-	-	-	-
Stage 2	801	802	-	701	706	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	101	122	462	102	122	401	920	-	-	837	-	-
Stage 1	431	442	-	382	401	-	-	-	-	-	-	-
Stage 2	378	396	-	429	439	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	92	115	462	97	115	401	920	-	-	837	-	-
Mov Cap-2 Maneuver	92	115	-	97	115	-	-	-	-	-	-	-
Stage 1	422	427	-	374	393	-	-	-	-	-	-	-
Stage 2	353	388	-	410	424	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	42.8	32.2	0.1	0.2
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	920	-	-	115	165	837	-	-
HCM Lane V/C Ratio	0.012	-	-	0.174	0.2	0.022	-	-
HCM Control Delay (s)	9	0	-	42.8	32.2	9.4	0	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.7	0.1	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	39	38	807	670	14
Future Vol, veh/h	31	39	38	807	670	14
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	39	38	807	670	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1560	677	684	0	-	0
Stage 1	677	-	-	-	-	-
Stage 2	883	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	123	453	909	-	-	-
Stage 1	505	-	-	-	-	-
Stage 2	404	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	114	453	909	-	-	-
Mov Cap-2 Maneuver	114	-	-	-	-	-
Stage 1	467	-	-	-	-	-
Stage 2	404	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33.2	0.4	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	909	-	196	-	-
HCM Lane V/C Ratio	0.042	-	0.357	-	-
HCM Control Delay (s)	9.1	0	33.2	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1.5	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	51	469	136	640	817	462	182	798	208	391	91
v/c Ratio	0.37	0.86	0.26	1.56	0.86	0.49	0.91	1.82	1.32	0.64	0.16
Control Delay	41.7	55.8	6.3	288.6	34.2	5.3	88.7	405.2	211.7	38.2	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.7	55.8	6.3	288.6	34.2	5.3	88.7	405.2	211.7	38.2	6.1
Queue Length 50th (m)	9.3	103.6	0.0	~187.5	157.4	10.5	41.7	~274.6	~48.6	76.4	0.0
Queue Length 95th (m)	22.0	#159.4	13.9	#257.7	#231.0	31.3	#85.2	#349.4	#96.4	109.9	10.8
Internal Link Dist (m)		351.4			363.2			476.8		204.0	
Turn Bay Length (m)	85.0		90.0	105.0			130.0		90.0		100.0
Base Capacity (vph)	138	545	533	410	952	935	200	438	157	613	554
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.86	0.26	1.56	0.86	0.49	0.91	1.82	1.32	0.64	0.16

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	469	136	640	817	462	182	309	489	208	391	91
Future Volume (veh/h)	51	469	136	640	817	462	182	309	489	208	391	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	51	469	136	640	817	0	182	309	0	208	391	91
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	554	462	421	967		213	446		260	623	524
Arrive On Green	0.31	0.31	0.31	0.18	0.55	0.00	0.25	0.25	0.00	0.06	0.35	0.35
Sat Flow, veh/h	669	1772	1478	1688	1772	1502	910	1772	0	1688	1772	1489
Grp Volume(v), veh/h	51	469	136	640	817	0	182	309	0	208	391	91
Grp Sat Flow(s),veh/h/ln	669	1772	1478	1688	1772	1502	910	1772	0	1688	1772	1489
Q Serve(g_s), s	8.3	29.7	8.4	21.9	46.6	0.0	20.2	19.0	0.0	7.1	22.0	5.1
Cycle Q Clear(g_c), s	27.0	29.7	8.4	21.9	46.6	0.0	30.2	19.0	0.0	7.1	22.0	5.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	165	554	462	421	967		213	446		260	623	524
V/C Ratio(X)	0.31	0.85	0.29	1.52	0.84		0.85	0.69		0.80	0.63	0.17
Avail Cap(c_a), veh/h	165	554	462	421	967		213	446		260	623	524
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.1	38.6	31.2	29.9	23.0	0.0	51.5	40.7	0.0	40.1	32.4	26.9
Incr Delay (d2), s/veh	4.8	14.8	1.6	246.0	9.0	0.0	27.1	4.6	0.0	16.1	2.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	15.9	3.5	37.0	23.0	0.0	7.5	9.5	0.0	4.5	10.6	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.9	53.4	32.9	275.9	31.9	0.0	78.6	45.3	0.0	56.2	34.4	27.0
LnGrp LOS	D	D	C	F	C		E	D		E	C	C
Approach Vol, veh/h		656			1457			491			690	
Approach Delay, s/veh		48.9			139.1			57.6			40.0	
Approach LOS		D			F			E			D	

Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	28.0	44.0	12.0	36.0		72.0		48.0
Change Period (Y+Rc), s	* 6.1	* 6.5	4.9	* 5.8		* 6.5		* 5.8
Max Green Setting (Gmax), s	* 22	* 38	7.1	* 30		* 66		* 42
Max Q Clear Time (g_c+I1), s	23.9	31.7	9.1	32.2		48.6		24.0
Green Ext Time (p_c), s	0.0	2.2	0.0	0.0		6.3		3.1

Intersection Summary	
HCM 6th Ctrl Delay	88.2
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	256	19	49	378	42	19	7	26	14	11	23
Future Vol, veh/h	16	256	19	49	378	42	19	7	26	14	11	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	256	19	49	378	42	19	7	26	14	11	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	420	0	0	275	0	0	812	816	266	811	804	399
Stage 1	-	-	-	-	-	-	298	298	-	497	497	-
Stage 2	-	-	-	-	-	-	514	518	-	314	307	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1139	-	-	1288	-	-	298	311	773	298	316	651
Stage 1	-	-	-	-	-	-	711	667	-	555	545	-
Stage 2	-	-	-	-	-	-	543	533	-	697	661	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1139	-	-	1288	-	-	268	295	773	272	300	651
Mov Cap-2 Maneuver	-	-	-	-	-	-	268	295	-	272	300	-
Stage 1	-	-	-	-	-	-	701	658	-	547	524	-
Stage 2	-	-	-	-	-	-	493	513	-	657	652	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.8	15.2	15.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	405	1139	-	-	1288	-	-	389
HCM Lane V/C Ratio	0.128	0.014	-	-	0.038	-	-	0.123
HCM Control Delay (s)	15.2	8.2	-	-	7.9	-	-	15.6
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0.4

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	327	17	56	421	47	12	2	37	15	1	10
Future Vol, veh/h	16	327	17	56	421	47	12	2	37	15	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	327	17	56	421	47	12	2	37	15	1	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	468	0	0	344	0	0	930	948	172	730	909	421
Stage 1	-	-	-	-	-	-	368	368	-	533	533	-
Stage 2	-	-	-	-	-	-	562	580	-	197	376	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1092	-	-	1213	-	-	234	260	842	324	274	632
Stage 1	-	-	-	-	-	-	625	621	-	530	524	-
Stage 2	-	-	-	-	-	-	511	499	-	787	616	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1092	-	-	1213	-	-	216	239	842	289	252	632
Mov Cap-2 Maneuver	-	-	-	-	-	-	216	239	-	289	252	-
Stage 1	-	-	-	-	-	-	614	610	-	520	491	-
Stage 2	-	-	-	-	-	-	470	468	-	736	605	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.9	13.5	15.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	473	1092	-	-	1213	-	-	363
HCM Lane V/C Ratio	0.108	0.015	-	-	0.046	-	-	0.072
HCM Control Delay (s)	13.5	8.3	0.1	-	8.1	0	-	15.7
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0.2

Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1772	1772				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	1.00	1.00				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						
Timer - Assigned Phs						
Phs Duration (G+Y+Rc), s						
Change Period (Y+Rc), s						
Max Green Setting (Gmax), s						
Max Q Clear Time (g_c+I1), s						
Green Ext Time (p_c), s						
Intersection Summary						
HCM 6th Ctrl Delay			0.0			
HCM 6th LOS			A			

Appendix D

Synchro Intersection Worksheets – 2029 Future Background Conditions

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	151	111	171	46	101	378	47	278	76
v/c Ratio	0.50	0.27	0.55	0.11	0.16	0.37	0.08	0.31	0.10
Control Delay	24.2	4.9	25.7	0.6	6.4	11.4	6.3	13.7	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	4.9	25.7	0.6	6.4	11.4	6.3	13.7	1.2
Queue Length 50th (m)	12.8	0.0	14.8	0.0	3.5	15.1	1.6	18.4	0.0
Queue Length 95th (m)	26.3	7.4	29.4	0.0	10.5	53.7	5.8	40.1	2.5
Internal Link Dist (m)	366.8		295.8			248.5		496.5	
Turn Bay Length (m)		40.0		30.0	15.0		25.0		30.0
Base Capacity (vph)	502	582	507	582	638	1012	584	884	777
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.19	0.34	0.08	0.16	0.37	0.08	0.31	0.10

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	102	111	55	116	46	101	321	57	47	278	76
Future Volume (veh/h)	49	102	111	55	116	46	101	321	57	47	278	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	0.98		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	49	102	0	55	116	0	101	321	0	47	278	76
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	163	206		164	203		624	828		601	777	651
Arrive On Green	0.16	0.16	0.00	0.16	0.16	0.00	0.08	0.47	0.00	0.05	0.44	0.44
Sat Flow, veh/h	390	1279	1502	400	1259	1502	1688	1772	0	1688	1772	1485
Grp Volume(v), veh/h	151	0	0	171	0	0	101	321	0	47	278	76
Grp Sat Flow(s),veh/h/ln	1670	0	1502	1659	0	1502	1688	1772	0	1688	1772	1485
Q Serve(g_s), s	0.0	0.0	0.0	0.6	0.0	0.0	1.5	5.6	0.0	0.7	5.0	1.4
Cycle Q Clear(g_c), s	3.8	0.0	0.0	4.4	0.0	0.0	1.5	5.6	0.0	0.7	5.0	1.4
Prop In Lane	0.32		1.00	0.32		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	369	0		367	0		624	828		601	777	651
V/C Ratio(X)	0.41	0.00		0.47	0.00		0.16	0.39		0.08	0.36	0.12
Avail Cap(c_a), veh/h	707	0		707	0		695	828		696	777	651
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.3	0.0	0.0	18.6	0.0	0.0	6.2	8.3	0.0	6.7	8.9	7.9
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.9	0.0	0.0	0.1	1.4	0.0	0.1	1.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	2.0	0.0	0.0	0.6	2.6	0.0	0.3	2.3	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.1	0.0	0.0	19.5	0.0	0.0	6.4	9.6	0.0	6.7	10.2	8.3
LnGrp LOS	B	A		B	A		A	A		A	B	A
Approach Vol, veh/h		151			171			422			401	
Approach Delay, s/veh		19.1			19.5			8.9			9.4	
Approach LOS		B			B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	27.4		12.9	8.8	26.0		12.9				
Change Period (Y+Rc), s	* 5.1	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	* 5	* 22		* 18	* 5.7	* 21		* 18				
Max Q Clear Time (g_c+I1), s	2.7	7.6		5.8	3.5	7.0		6.4				
Green Ext Time (p_c), s	0.0	1.8		0.7	0.1	1.9		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		12.0	
HCM 6th LOS		B	

Notes

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

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	1	9	33	2	17	4	497	9	13	468	4
Future Vol, veh/h	20	1	9	33	2	17	4	497	9	13	468	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	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	1	9	33	2	17	4	497	9	13	468	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1015	1010	470	1011	1008	502	472	0	0	506	0	0
Stage 1	496	496	-	510	510	-	-	-	-	-	-	-
Stage 2	519	514	-	501	498	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	217	240	594	218	240	569	1090	-	-	1059	-	-
Stage 1	556	545	-	546	538	-	-	-	-	-	-	-
Stage 2	540	535	-	552	544	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	206	235	594	210	235	569	1090	-	-	1059	-	-
Mov Cap-2 Maneuver	206	235	-	210	235	-	-	-	-	-	-	-
Stage 1	553	536	-	543	535	-	-	-	-	-	-	-
Stage 2	519	532	-	533	535	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.8	21.8	0.1	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1090	-	-	258	266	1059	-	-
HCM Lane V/C Ratio	0.004	-	-	0.116	0.195	0.012	-	-
HCM Control Delay (s)	8.3	0	-	20.8	21.8	8.4	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.7	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	18	35	52	499	503	36
Future Vol, veh/h	18	35	52	499	503	36
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	35	52	499	503	36

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1144	541	549	0	-	0
Stage 1	531	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	221	541	1021	-	-	-
Stage 1	590	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	202	533	1013	-	-	-
Mov Cap-2 Maneuver	202	-	-	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	537	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.4	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1013	-	342	-	-
HCM Lane V/C Ratio	0.051	-	0.155	-	-
HCM Control Delay (s)	8.7	0	17.4	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	66	656	138	401	321	206	111	296	544	221	314
v/c Ratio	0.47	0.62	0.24	0.56	0.20	0.26	0.50	0.63	0.91	0.79	0.59
Control Delay	62.8	39.4	5.2	44.4	20.8	4.2	61.9	54.1	47.4	74.3	49.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.8	39.4	5.2	44.4	20.8	4.2	61.9	54.1	47.4	74.3	49.4
Queue Length 50th (m)	15.1	70.0	0.0	42.4	23.0	0.0	13.1	35.3	90.3	26.7	35.7
Queue Length 95th (m)	28.5	#106.0	12.2	57.7	39.4	15.4	22.4	45.7	118.0	#45.3	46.3
Internal Link Dist (m)		198.7			363.2			476.8			130.7
Turn Bay Length (m)	190.0		75.0	235.0			145.0		115.0	100.0	
Base Capacity (vph)	160	1064	570	711	1590	801	233	1016	596	281	1054
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.62	0.24	0.56	0.20	0.26	0.48	0.29	0.91	0.79	0.30

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	656	138	401	321	206	111	296	544	221	281	33
Future Volume (veh/h)	66	656	138	401	321	206	111	296	544	221	281	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	66	656	138	401	321	206	111	296	544	221	281	33
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	816	359	453	1115	493	162	1032	664	273	1034	120
Arrive On Green	0.05	0.24	0.24	0.14	0.33	0.33	0.05	0.31	0.31	0.08	0.34	0.34
Sat Flow, veh/h	1688	3367	1483	3274	3367	1488	3274	3367	1487	3274	3035	353
Grp Volume(v), veh/h	66	656	138	401	321	206	111	296	544	221	155	159
Grp Sat Flow(s),veh/h/ln	1688	1683	1483	1637	1683	1488	1637	1683	1487	1637	1683	1705
Q Serve(g_s), s	4.6	22.0	9.3	14.4	8.5	12.9	4.0	8.0	36.8	8.0	8.0	8.2
Cycle Q Clear(g_c), s	4.6	22.0	9.3	14.4	8.5	12.9	4.0	8.0	36.8	8.0	8.0	8.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	84	816	359	453	1115	493	162	1032	664	273	573	581
V/C Ratio(X)	0.79	0.80	0.38	0.89	0.29	0.42	0.68	0.29	0.82	0.81	0.27	0.27
Avail Cap(c_a), veh/h	152	816	359	469	1115	493	237	1032	664	286	573	581
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.4	42.8	38.0	50.8	29.7	31.2	56.1	31.6	29.1	54.1	28.7	28.8
Incr Delay (d2), s/veh	15.0	8.3	3.1	17.6	0.7	2.6	5.0	0.2	8.0	15.2	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	10.6	4.0	7.3	3.8	5.4	1.9	3.6	16.3	4.1	3.6	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.4	51.0	41.1	68.4	30.3	33.8	61.1	31.8	37.2	69.3	29.0	29.0
LnGrp LOS	E	D	D	E	C	C	E	C	D	E	C	C
Approach Vol, veh/h		860			928			951			535	
Approach Delay, s/veh		51.0			47.5			38.3			45.6	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.4	36.4	16.5	43.7	12.8	47.0	12.4	47.8
Change Period (Y+Rc), s	* 6.8	7.3	6.5	6.9	* 6.8	7.3	6.5	6.9
Max Green Setting (Gmax), s	* 17	28.0	10.5	36.8	* 11	34.4	8.7	38.6
Max Q Clear Time (g_c+I1), s	16.4	24.0	10.0	38.8	6.6	14.9	6.0	10.2
Green Ext Time (p_c), s	0.2	2.0	0.1	0.0	0.1	3.2	0.1	2.2

Intersection Summary	
HCM 6th Ctrl Delay	45.5
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	187	8	22	196	8	18	10	42	13	6	16
Future Vol, veh/h	11	187	8	22	196	8	18	10	42	13	6	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	187	8	22	196	8	18	10	42	13	6	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	204	0	0	195	0	0	468	461	191	483	461	200
Stage 1	-	-	-	-	-	-	213	213	-	244	244	-
Stage 2	-	-	-	-	-	-	255	248	-	239	217	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1368	-	-	1378	-	-	505	497	851	494	497	841
Stage 1	-	-	-	-	-	-	789	726	-	760	704	-
Stage 2	-	-	-	-	-	-	749	701	-	764	723	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1368	-	-	1378	-	-	482	485	851	454	485	841
Mov Cap-2 Maneuver	-	-	-	-	-	-	482	485	-	454	485	-
Stage 1	-	-	-	-	-	-	783	720	-	754	693	-
Stage 2	-	-	-	-	-	-	717	690	-	710	717	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.7	11.2	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	652	1368	-	-	1378	-	-	583
HCM Lane V/C Ratio	0.107	0.008	-	-	0.016	-	-	0.06
HCM Control Delay (s)	11.2	7.7	-	-	7.7	-	-	11.6
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	257	6	12	205	10	19	2	41	17	1	3
Future Vol, veh/h	13	257	6	12	205	10	19	2	41	17	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	257	6	12	205	10	19	2	41	17	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	215	0	0	263	0	0	522	525	132	385	518	205
Stage 1	-	-	-	-	-	-	286	286	-	229	229	-
Stage 2	-	-	-	-	-	-	236	239	-	156	289	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1354	-	-	1300	-	-	451	457	894	561	461	835
Stage 1	-	-	-	-	-	-	698	674	-	773	714	-
Stage 2	-	-	-	-	-	-	766	707	-	831	672	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1354	-	-	1300	-	-	442	447	894	525	451	835
Mov Cap-2 Maneuver	-	-	-	-	-	-	442	447	-	525	451	-
Stage 1	-	-	-	-	-	-	690	667	-	764	707	-
Stage 2	-	-	-	-	-	-	755	700	-	782	665	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4	11	11.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	664	1354	-	-	1300	-	-	550
HCM Lane V/C Ratio	0.093	0.01	-	-	0.009	-	-	0.038
HCM Control Delay (s)	11	7.7	0	-	7.8	0	-	11.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.1

Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1772	1772				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	1.00	1.00				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						
Timer - Assigned Phs						
Phs Duration (G+Y+Rc), s						
Change Period (Y+Rc), s						
Max Green Setting (Gmax), s						
Max Q Clear Time (g_c+I1), s						
Green Ext Time (p_c), s						

Intersection Summary		
HCM 6th Ctrl Delay	0.0	
HCM 6th LOS	A	

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	220	145	284	108	171	602	62	414	40
v/c Ratio	0.53	0.30	0.90	0.24	0.36	0.69	0.18	0.53	0.06
Control Delay	31.2	6.1	62.6	6.3	10.4	22.4	9.8	21.5	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.2	6.1	62.6	6.3	10.4	22.4	9.8	21.5	0.4
Queue Length 50th (m)	30.4	0.0	44.5	0.0	11.7	75.4	3.9	49.9	0.0
Queue Length 95th (m)	51.1	12.5	#84.3	10.9	22.5	124.5	9.6	82.3	0.7
Internal Link Dist (m)	366.8		295.8			248.5		496.5	
Turn Bay Length (m)		40.0		30.0	15.0		25.0		30.0
Base Capacity (vph)	514	559	387	534	497	875	341	778	664
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.26	0.73	0.20	0.34	0.69	0.18	0.53	0.06

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	189	145	97	187	108	171	504	98	62	414	40
Future Volume (veh/h)	31	189	145	97	187	108	171	504	98	62	414	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	31	189	0	97	187	0	171	504	0	62	414	40
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	351		162	238		547	940		479	893	749
Arrive On Green	0.23	0.23	0.00	0.23	0.23	0.00	0.07	0.53	0.00	0.05	0.50	0.50
Sat Flow, veh/h	138	1552	1502	446	1052	1502	1688	1772	0	1688	1772	1487
Grp Volume(v), veh/h	220	0	0	284	0	0	171	504	0	62	414	40
Grp Sat Flow(s),veh/h/ln	1690	0	1502	1497	0	1502	1688	1772	0	1688	1772	1487
Q Serve(g_s), s	0.0	0.0	0.0	5.5	0.0	0.0	3.7	14.7	0.0	1.3	11.9	1.1
Cycle Q Clear(g_c), s	8.8	0.0	0.0	14.3	0.0	0.0	3.7	14.7	0.0	1.3	11.9	1.1
Prop In Lane	0.14		1.00	0.34		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	435	0		400	0		547	940		479	893	749
V/C Ratio(X)	0.51	0.00		0.71	0.00		0.31	0.54		0.13	0.46	0.05
Avail Cap(c_a), veh/h	646	0		594	0		630	940		509	893	749
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	0.0	29.0	0.0	0.0	8.9	12.1	0.0	9.3	12.6	9.9
Incr Delay (d2), s/veh	0.9	0.0	0.0	2.3	0.0	0.0	0.3	2.2	0.0	0.1	1.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	0.0	4.6	0.0	0.0	1.0	4.7	0.0	0.4	3.9	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.8	0.0	0.0	31.3	0.0	0.0	9.2	14.3	0.0	9.4	14.4	10.1
LnGrp LOS	C	A		C	A		A	B		A	B	B
Approach Vol, veh/h		220			284			675			516	
Approach Delay, s/veh		27.8			31.3			13.0			13.4	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	46.8		23.0	10.9	44.7		23.0				
Change Period (Y+Rc), s	* 5.1	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	* 5.1	* 42		* 28	* 9.7	* 37		* 28				
Max Q Clear Time (g_c+I1), s	3.3	16.7		10.8	5.7	13.9		16.3				
Green Ext Time (p_c), s	0.0	4.1		1.3	0.2	3.3		1.5				

Intersection Summary			
HCM 6th Ctrl Delay		18.1	
HCM 6th LOS		B	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	0	5	47	0	18	11	841	20	26	700	16
Future Vol, veh/h	15	0	5	47	0	18	11	841	20	26	700	16
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	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	0	5	47	0	18	11	841	20	26	700	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1642	1643	708	1636	1641	851	716	0	0	861	0	0
Stage 1	760	760	-	873	873	-	-	-	-	-	-	-
Stage 2	882	883	-	763	768	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	80	100	435	81	100	360	885	-	-	781	-	-
Stage 1	398	414	-	345	368	-	-	-	-	-	-	-
Stage 2	341	364	-	397	411	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	72	92	435	75	92	360	885	-	-	781	-	-
Mov Cap-2 Maneuver	72	92	-	75	92	-	-	-	-	-	-	-
Stage 1	388	391	-	337	359	-	-	-	-	-	-	-
Stage 2	316	355	-	371	388	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	55.4	99.1	0.1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	885	-	-	91	96	781	-	-
HCM Lane V/C Ratio	0.012	-	-	0.22	0.677	0.033	-	-
HCM Control Delay (s)	9.1	0	-	55.4	99.1	9.8	0	-
HCM Lane LOS	A	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.8	3.4	0.1	-	-

Intersection						
Int Delay, s/veh	2.1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	39	38	894	749	14
Future Vol, veh/h	31	39	38	894	749	14
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	39	38	894	749	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1746	776	773	0	-	0
Stage 1	766	-	-	-	-	-
Stage 2	980	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	95	397	842	-	-	-
Stage 1	459	-	-	-	-	-
Stage 2	364	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	85	391	835	-	-	-
Mov Cap-2 Maneuver	85	-	-	-	-	-
Stage 1	414	-	-	-	-	-
Stage 2	361	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	47.9	0.4	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	835	-	151	-	-
HCM Lane V/C Ratio	0.046	-	0.464	-	-
HCM Control Delay (s)	9.5	0	47.9	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0.1	-	2.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	52	497	154	684	858	515	215	372	531	239	558
v/c Ratio	0.46	0.58	0.29	0.91	0.58	0.60	0.85	0.59	0.78	0.85	0.85
Control Delay	66.2	42.4	2.4	62.9	28.6	10.1	82.7	48.0	29.9	80.5	57.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.2	42.4	2.4	62.9	28.6	10.1	82.7	48.0	29.9	80.5	57.5
Queue Length 50th (m)	11.9	54.7	0.0	81.3	84.1	19.6	26.2	41.7	76.1	29.0	63.9
Queue Length 95th (m)	24.7	72.5	3.8	#117.0	107.6	57.2	#46.6	56.9	116.8	#50.3	83.7
Internal Link Dist (m)		198.7			363.2			476.8			148.1
Turn Bay Length (m)	190.0		75.0	235.0			145.0		115.0	100.0	
Base Capacity (vph)	132	859	536	750	1471	857	254	693	679	281	713
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.58	0.29	0.91	0.58	0.60	0.85	0.54	0.78	0.85	0.78

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	497	154	684	858	515	215	372	531	239	455	103
Future Volume (veh/h)	52	497	154	684	858	515	215	372	531	239	455	103
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	52	497	154	684	858	515	215	372	531	239	455	103
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	66	843	372	732	1465	649	259	704	646	286	592	133
Arrive On Green	0.04	0.25	0.25	0.22	0.44	0.44	0.08	0.21	0.21	0.09	0.22	0.22
Sat Flow, veh/h	1688	3367	1484	3274	3367	1491	3274	3367	1480	3274	2723	612
Grp Volume(v), veh/h	52	497	154	684	858	515	215	372	531	239	280	278
Grp Sat Flow(s),veh/h/ln	1688	1683	1484	1637	1683	1491	1637	1683	1480	1637	1683	1652
Q Serve(g_s), s	3.7	15.6	10.4	24.6	23.2	35.8	7.8	11.8	25.1	8.6	18.7	19.0
Cycle Q Clear(g_c), s	3.7	15.6	10.4	24.6	23.2	35.8	7.8	11.8	25.1	8.6	18.7	19.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	66	843	372	732	1465	649	259	704	646	286	366	359
V/C Ratio(X)	0.79	0.59	0.41	0.93	0.59	0.79	0.83	0.53	0.82	0.83	0.76	0.77
Avail Cap(c_a), veh/h	135	843	372	742	1465	649	259	704	646	286	366	359
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.2	39.6	37.6	45.7	25.7	29.3	54.5	42.2	30.1	53.9	44.1	44.2
Incr Delay (d2), s/veh	18.4	3.0	3.4	18.7	1.7	9.7	19.7	0.7	8.4	18.7	9.3	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	6.2	3.9	10.9	8.3	13.1	3.7	4.7	13.5	4.1	8.2	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.5	42.6	41.0	64.4	27.4	38.9	74.2	42.9	38.5	72.6	53.3	54.3
LnGrp LOS	E	D	D	E	C	D	E	D	D	E	D	D
Approach Vol, veh/h		703			2057			1118			797	
Approach Delay, s/veh		44.7			42.6			46.8			59.4	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.6	37.4	17.0	32.0	11.5	59.5	16.0	33.0
Change Period (Y+Rc), s	* 6.8	7.3	6.5	6.9	* 6.8	7.3	6.5	6.9
Max Green Setting (Gmax), s	* 27	29.7	10.5	25.1	* 9.6	47.3	9.5	26.1
Max Q Clear Time (g_c+I1), s	26.6	17.6	10.6	27.1	5.7	37.8	9.8	21.0
Green Ext Time (p_c), s	0.2	3.5	0.0	0.0	0.0	6.0	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	46.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	277	17	64	406	42	22	7	45	14	11	23
Future Vol, veh/h	16	277	17	64	406	42	22	7	45	14	11	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	277	17	64	406	42	22	7	45	14	11	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	448	0	0	294	0	0	890	894	286	899	881	427
Stage 1	-	-	-	-	-	-	318	318	-	555	555	-
Stage 2	-	-	-	-	-	-	572	576	-	344	326	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1112	-	-	1268	-	-	264	280	753	260	285	628
Stage 1	-	-	-	-	-	-	693	654	-	516	513	-
Stage 2	-	-	-	-	-	-	505	502	-	671	648	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1112	-	-	1268	-	-	234	262	753	228	267	628
Mov Cap-2 Maneuver	-	-	-	-	-	-	234	262	-	228	267	-
Stage 1	-	-	-	-	-	-	683	645	-	509	487	-
Stage 2	-	-	-	-	-	-	452	477	-	615	639	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1	15.7	17.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	410	1112	-	-	1268	-	-	345
HCM Lane V/C Ratio	0.18	0.014	-	-	0.05	-	-	0.139
HCM Control Delay (s)	15.7	8.3	-	-	8	-	-	17.1
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.5

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	372	17	45	466	47	12	2	25	15	1	10
Future Vol, veh/h	16	372	17	45	466	47	12	2	25	15	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	372	17	45	466	47	12	2	25	15	1	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	513	0	0	389	0	0	998	1016	195	775	977	466
Stage 1	-	-	-	-	-	-	413	413	-	556	556	-
Stage 2	-	-	-	-	-	-	585	603	-	219	421	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1051	-	-	1168	-	-	210	237	814	301	250	596
Stage 1	-	-	-	-	-	-	588	593	-	515	512	-
Stage 2	-	-	-	-	-	-	496	487	-	764	588	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1051	-	-	1168	-	-	194	220	814	274	232	596
Mov Cap-2 Maneuver	-	-	-	-	-	-	194	220	-	274	232	-
Stage 1	-	-	-	-	-	-	577	582	-	505	484	-
Stage 2	-	-	-	-	-	-	460	461	-	724	577	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.7	15.4	16.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	384	1051	-	-	1168	-	-	343
HCM Lane V/C Ratio	0.102	0.015	-	-	0.039	-	-	0.076
HCM Control Delay (s)	15.4	8.5	0.1	-	8.2	0	-	16.4
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.2

Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1772	1772				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	1.00	1.00				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						
Timer - Assigned Phs						
Phs Duration (G+Y+Rc), s						
Change Period (Y+Rc), s						
Max Green Setting (Gmax), s						
Max Q Clear Time (g_c+I1), s						
Green Ext Time (p_c), s						
Intersection Summary						
HCM 6th Ctrl Delay			0.0			
HCM 6th LOS			A			

Appendix E

Synchro Intersection Worksheets – 2034 Future Background Conditions

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	156	142	192	46	114	434	47	359	76
v/c Ratio	0.50	0.33	0.59	0.11	0.20	0.43	0.09	0.40	0.10
Control Delay	24.1	6.0	26.6	0.5	7.3	13.1	6.7	14.8	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.1	6.0	26.6	0.5	7.3	13.1	6.7	14.8	1.2
Queue Length 50th (m)	13.4	0.0	16.9	0.0	4.3	19.5	1.7	25.6	0.0
Queue Length 95th (m)	27.3	10.3	33.0	0.0	12.3	#68.3	6.1	53.6	2.5
Internal Link Dist (m)	366.8		295.8			248.5		496.5	
Turn Bay Length (m)		40.0		30.0	15.0		25.0		30.0
Base Capacity (vph)	473	582	488	575	562	1000	541	888	780
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.24	0.39	0.08	0.20	0.43	0.09	0.40	0.10

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	107	142	69	123	46	114	371	63	47	359	76
Future Volume (veh/h)	49	107	142	69	123	46	114	371	63	47	359	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	0.98		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	49	107	0	69	123	0	114	371	0	47	359	76
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	225		180	202		559	828		556	772	647
Arrive On Green	0.17	0.17	0.00	0.17	0.17	0.00	0.08	0.47	0.00	0.05	0.44	0.44
Sat Flow, veh/h	371	1308	1502	466	1174	1502	1688	1772	0	1688	1772	1484
Grp Volume(v), veh/h	156	0	0	192	0	0	114	371	0	47	359	76
Grp Sat Flow(s),veh/h/ln	1679	0	1502	1640	0	1502	1688	1772	0	1688	1772	1484
Q Serve(g_s), s	0.0	0.0	0.0	1.2	0.0	0.0	1.7	7.0	0.0	0.7	7.1	1.5
Cycle Q Clear(g_c), s	4.0	0.0	0.0	5.2	0.0	0.0	1.7	7.0	0.0	0.7	7.1	1.5
Prop In Lane	0.31		1.00	0.36		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	385	0		382	0		559	828		556	772	647
V/C Ratio(X)	0.40	0.00		0.50	0.00		0.20	0.45		0.08	0.47	0.12
Avail Cap(c_a), veh/h	686	0		679	0		598	828		646	772	647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.5	0.0	0.0	19.0	0.0	0.0	6.8	8.9	0.0	7.1	9.9	8.3
Incr Delay (d2), s/veh	0.7	0.0	0.0	1.0	0.0	0.0	0.2	1.8	0.0	0.1	2.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	2.3	0.0	0.0	0.7	3.3	0.0	0.3	3.4	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.2	0.0	0.0	20.0	0.0	0.0	7.0	10.6	0.0	7.1	11.9	8.7
LnGrp LOS	B	A		C	A		A	B		A	B	A
Approach Vol, veh/h		156			192			485			482	
Approach Delay, s/veh		19.2			20.0			9.7			10.9	
Approach LOS		B			C			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	28.2		13.7	9.1	26.6		13.7				
Change Period (Y+Rc), s	* 5.1	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	* 5	* 22		* 18	* 5.1	* 22		* 18				
Max Q Clear Time (g_c+I1), s	2.7	9.0		6.0	3.7	9.1		7.2				
Green Ext Time (p_c), s	0.0	2.1		0.7	0.0	2.3		0.9				

Intersection Summary			
HCM 6th Ctrl Delay		12.8	
HCM 6th LOS		B	

Notes

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

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	1	9	33	2	17	4	576	9	13	603	4
Future Vol, veh/h	20	1	9	33	2	17	4	576	9	13	603	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	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	1	9	33	2	17	4	576	9	13	603	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1229	1224	605	1225	1222	581	607	0	0	585	0	0
Stage 1	631	631	-	589	589	-	-	-	-	-	-	-
Stage 2	598	593	-	636	633	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	155	179	498	156	180	514	971	-	-	990	-	-
Stage 1	469	474	-	494	495	-	-	-	-	-	-	-
Stage 2	489	493	-	466	473	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	146	174	498	149	175	514	971	-	-	990	-	-
Mov Cap-2 Maneuver	146	174	-	149	175	-	-	-	-	-	-	-
Stage 1	466	465	-	491	492	-	-	-	-	-	-	-
Stage 2	468	490	-	447	464	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.9	29.9	0.1	0.2
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	971	-	-	187	196	990	-	-
HCM Lane V/C Ratio	0.004	-	-	0.16	0.265	0.013	-	-
HCM Control Delay (s)	8.7	0	-	27.9	29.9	8.7	0	-
HCM Lane LOS	A	A	-	D	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	1	0	-	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	18	40	17	30	52	549	57	61	614
v/c Ratio	0.11	0.17	0.10	0.14	0.10	0.40	0.05	0.10	0.45
Control Delay	21.6	10.7	21.5	10.3	3.2	7.6	0.9	5.2	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.6	10.7	21.5	10.3	3.2	7.6	0.9	5.2	6.5
Queue Length 50th (m)	1.9	0.5	1.7	0.2	2.1	32.9	0.0	1.7	23.5
Queue Length 95th (m)	5.5	6.3	5.3	5.2	5.1	63.7	1.2	8.2	73.3
Internal Link Dist (m)		218.0		77.7		204.0			546.2
Turn Bay Length (m)	30.0		30.0		37.5			65.0	
Base Capacity (vph)	349	436	349	420	542	1372	1126	596	1358
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.09	0.05	0.07	0.10	0.40	0.05	0.10	0.45

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	5	35	17	2	28	52	549	57	61	578	36
Future Volume (veh/h)	18	5	35	17	2	28	52	549	57	61	578	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.97	0.98		0.95	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	18	5	35	17	2	28	52	549	57	61	578	36
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	19	130	220	10	135	563	1253	1054	588	1166	73
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.71	0.71	0.71	0.71	0.71	0.71
Sat Flow, veh/h	1320	186	1303	1333	96	1349	808	1772	1491	814	1650	103
Grp Volume(v), veh/h	18	0	40	17	0	30	52	549	57	61	0	614
Grp Sat Flow(s),veh/h/ln	1320	0	1490	1333	0	1445	808	1772	1491	814	0	1753
Q Serve(g_s), s	0.8	0.0	1.5	0.7	0.0	1.1	1.9	7.9	0.7	2.1	0.0	9.5
Cycle Q Clear(g_c), s	1.9	0.0	1.5	2.2	0.0	1.1	11.3	7.9	0.7	10.0	0.0	9.5
Prop In Lane	1.00		0.88	1.00		0.93	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	226	0	149	220	0	144	563	1253	1054	588	0	1239
V/C Ratio(X)	0.08	0.00	0.27	0.08	0.00	0.21	0.09	0.44	0.05	0.10	0.00	0.50
Avail Cap(c_a), veh/h	460	0	412	456	0	400	563	1253	1054	588	0	1239
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.85	0.85	0.85	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.7	0.0	25.0	26.0	0.0	24.8	6.5	3.7	2.7	5.8	0.0	4.0
Incr Delay (d2), s/veh	0.1	0.0	1.0	0.1	0.0	0.7	0.3	0.9	0.1	0.4	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.6	0.3	0.0	0.5	0.4	3.3	0.2	0.4	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.9	0.0	25.9	26.2	0.0	25.5	6.8	4.7	2.8	6.2	0.0	5.4
LnGrp LOS	C	A	C	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h		58			47			658			675	
Approach Delay, s/veh		25.9			25.8			4.7			5.5	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		48.1		11.9		48.1		11.9				
Change Period (Y+Rc), s		* 5.7		* 5.9		* 5.7		* 5.9				
Max Green Setting (Gmax), s		* 32		* 17		* 32		* 17				
Max Q Clear Time (g_c+I1), s		13.3		3.9		12.0		4.2				
Green Ext Time (p_c), s		4.8		0.2		5.4		0.1				

Intersection Summary												
HCM 6th Ctrl Delay			6.6									
HCM 6th LOS			A									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	80	700	162	448	342	238	121	334	590	237	383
v/c Ratio	0.52	0.72	0.30	0.59	0.23	0.30	0.53	0.67	0.94	0.84	0.69
Control Delay	63.3	44.0	7.0	44.0	22.6	4.4	62.1	54.2	49.8	74.5	55.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.3	44.0	7.0	44.0	22.6	4.4	62.1	54.2	49.8	74.5	55.5
Queue Length 50th (m)	18.3	80.0	0.0	46.8	26.0	0.0	14.3	39.6	97.9	28.9	42.9
Queue Length 95th (m)	33.1	#106.4	16.4	66.5	43.1	16.8	24.0	51.3	#162.4	#50.3	62.0
Internal Link Dist (m)		198.7			363.2			476.8			204.0
Turn Bay Length (m)	190.0		75.0	235.0			145.0		115.0	100.0	
Base Capacity (vph)	183	977	540	761	1519	792	243	925	631	281	954
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.72	0.30	0.59	0.23	0.30	0.50	0.36	0.94	0.84	0.40

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	700	162	448	342	238	121	334	590	237	346	37
Future Volume (veh/h)	80	700	162	448	342	238	121	334	590	237	346	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	80	700	162	448	342	238	121	334	590	237	346	37
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	851	375	495	1146	506	173	940	642	286	962	102
Arrive On Green	0.06	0.25	0.25	0.15	0.34	0.34	0.05	0.28	0.28	0.06	0.21	0.21
Sat Flow, veh/h	1688	3367	1484	3274	3367	1488	3274	3367	1485	3274	3067	326
Grp Volume(v), veh/h	80	700	162	448	342	238	121	334	590	237	189	194
Grp Sat Flow(s),veh/h/ln	1688	1683	1484	1637	1683	1488	1637	1683	1485	1637	1683	1710
Q Serve(g_s), s	5.6	23.5	11.0	16.1	9.0	15.1	4.4	9.5	33.5	8.6	11.5	11.7
Cycle Q Clear(g_c), s	5.6	23.5	11.0	16.1	9.0	15.1	4.4	9.5	33.5	8.6	11.5	11.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.19
Lane Grp Cap(c), veh/h	101	851	375	495	1146	506	173	940	642	286	528	536
V/C Ratio(X)	0.79	0.82	0.43	0.90	0.30	0.47	0.70	0.36	0.92	0.83	0.36	0.36
Avail Cap(c_a), veh/h	179	851	375	497	1146	506	248	940	642	286	528	536
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90
Uniform Delay (d), s/veh	55.7	42.3	37.6	50.1	29.1	31.1	55.9	34.6	32.3	55.6	37.1	37.1
Incr Delay (d2), s/veh	13.0	8.8	3.6	19.9	0.7	3.1	5.0	0.2	18.5	16.3	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	11.4	4.7	8.3	4.0	6.3	2.0	4.3	20.7	4.5	5.3	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.7	51.1	41.2	69.9	29.7	34.2	60.9	34.8	50.7	71.9	37.4	37.5
LnGrp LOS	E	D	D	E	C	C	E	C	D	E	D	D
Approach Vol, veh/h		942			1028			1045			620	
Approach Delay, s/veh		50.9			48.3			46.8			50.6	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.0	37.6	17.0	40.4	14.5	48.1	12.9	44.5
Change Period (Y+Rc), s	* 6.8	7.3	6.5	6.9	7.3	7.3	6.5	6.9
Max Green Setting (Gmax), s	* 18	30.3	10.5	33.5	12.7	35.3	9.1	34.9
Max Q Clear Time (g_c+I1), s	18.1	25.5	10.6	35.5	7.6	17.1	6.4	13.7
Green Ext Time (p_c), s	0.0	2.4	0.0	0.0	0.1	3.5	0.1	2.6

Intersection Summary	
HCM 6th Ctrl Delay	48.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	204	8	22	221	8	18	10	42	13	6	16
Future Vol, veh/h	11	204	8	22	221	8	18	10	42	13	6	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	204	8	22	221	8	18	10	42	13	6	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	229	0	0	212	0	0	510	503	208	525	503	225
Stage 1	-	-	-	-	-	-	230	230	-	269	269	-
Stage 2	-	-	-	-	-	-	280	273	-	256	234	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1339	-	-	1358	-	-	474	471	832	463	471	814
Stage 1	-	-	-	-	-	-	773	714	-	737	687	-
Stage 2	-	-	-	-	-	-	727	684	-	749	711	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1339	-	-	1358	-	-	452	460	832	425	460	814
Mov Cap-2 Maneuver	-	-	-	-	-	-	452	460	-	425	460	-
Stage 1	-	-	-	-	-	-	767	708	-	731	676	-
Stage 2	-	-	-	-	-	-	695	673	-	695	705	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.7	11.5	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	625	1339	-	-	1358	-	-	553
HCM Lane V/C Ratio	0.112	0.008	-	-	0.016	-	-	0.063
HCM Control Delay (s)	11.5	7.7	-	-	7.7	-	-	11.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	276	6	12	231	10	19	2	41	17	1	3
Future Vol, veh/h	13	276	6	12	231	10	19	2	41	17	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	276	6	12	231	10	19	2	41	17	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	241	0	0	282	0	0	567	570	141	420	563	231
Stage 1	-	-	-	-	-	-	305	305	-	255	255	-
Stage 2	-	-	-	-	-	-	262	265	-	165	308	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1324	-	-	1279	-	-	420	431	882	530	435	807
Stage 1	-	-	-	-	-	-	680	662	-	749	696	-
Stage 2	-	-	-	-	-	-	742	689	-	821	660	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1324	-	-	1279	-	-	410	421	882	494	425	807
Mov Cap-2 Maneuver	-	-	-	-	-	-	410	421	-	494	425	-
Stage 1	-	-	-	-	-	-	672	654	-	740	688	-
Stage 2	-	-	-	-	-	-	730	681	-	771	652	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	11.3	12.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	635	1324	-	-	1279	-	-	519
HCM Lane V/C Ratio	0.098	0.01	-	-	0.009	-	-	0.04
HCM Control Delay (s)	11.3	7.7	0	-	7.8	0	-	12.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.1

Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1772	1772				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	1.00	1.00				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						
Timer - Assigned Phs						
Phs Duration (G+Y+Rc), s						
Change Period (Y+Rc), s						
Max Green Setting (Gmax), s						
Max Q Clear Time (g_c+I1), s						
Green Ext Time (p_c), s						
Intersection Summary						
HCM 6th Ctrl Delay			0.0			
HCM 6th LOS			A			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	231	174	316	108	199	714	62	507	40
v/c Ratio	0.50	0.32	0.93	0.22	0.53	0.85	0.26	0.65	0.06
Control Delay	30.0	5.6	67.4	7.4	14.8	32.3	11.6	24.4	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	5.6	67.4	7.4	14.8	32.3	11.6	24.4	0.4
Queue Length 50th (m)	32.2	0.0	51.9	1.2	15.3	108.3	4.4	67.2	0.0
Queue Length 95th (m)	53.6	13.6	#99.9	12.2	26.0	#180.7	9.6	101.5	0.7
Internal Link Dist (m)	366.8		295.8			248.5		496.5	
Turn Bay Length (m)		40.0		30.0	15.0		25.0		30.0
Base Capacity (vph)	489	559	358	506	377	843	238	779	665
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.31	0.88	0.21	0.53	0.85	0.26	0.65	0.06

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	200	174	117	199	108	199	601	113	62	507	40
Future Volume (veh/h)	31	200	174	117	199	108	199	601	113	62	507	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	31	200	0	117	199	0	199	601	0	62	507	40
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	392		183	241		457	911		381	846	710
Arrive On Green	0.25	0.25	0.00	0.25	0.25	0.00	0.08	0.51	0.00	0.05	0.48	0.48
Sat Flow, veh/h	128	1546	1502	485	951	1502	1688	1772	0	1688	1772	1486
Grp Volume(v), veh/h	231	0	0	316	0	0	199	601	0	62	507	40
Grp Sat Flow(s),veh/h/ln	1675	0	1502	1436	0	1502	1688	1772	0	1688	1772	1486
Q Serve(g_s), s	0.0	0.0	0.0	8.2	0.0	0.0	4.9	20.6	0.0	1.5	17.3	1.2
Cycle Q Clear(g_c), s	9.4	0.0	0.0	17.6	0.0	0.0	4.9	20.6	0.0	1.5	17.3	1.2
Prop In Lane	0.13		1.00	0.37		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	474	0		424	0		457	911		381	846	710
V/C Ratio(X)	0.49	0.00		0.75	0.00		0.44	0.66		0.16	0.60	0.06
Avail Cap(c_a), veh/h	611	0		547	0		467	911		408	846	710
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	0.0	0.0	29.7	0.0	0.0	11.4	14.8	0.0	11.8	15.8	11.6
Incr Delay (d2), s/veh	0.8	0.0	0.0	4.1	0.0	0.0	0.7	3.7	0.0	0.2	3.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	0.0	5.7	0.0	0.0	1.3	7.1	0.0	0.4	6.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.3	0.0	0.0	33.8	0.0	0.0	12.1	18.5	0.0	12.0	18.9	11.7
LnGrp LOS	C	A		C	A		B	B		B	B	B
Approach Vol, veh/h		231			316			800			609	
Approach Delay, s/veh		27.3			33.8			16.9			17.7	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	47.6		26.2	11.9	44.6		26.2				
Change Period (Y+Rc), s	* 5.1	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	* 5.1	* 42		* 28	* 7.3	* 40		* 28				
Max Q Clear Time (g_c+I1), s	3.5	22.6		11.4	6.9	19.3		19.6				
Green Ext Time (p_c), s	0.0	4.6		1.4	0.0	4.0		1.4				

Intersection Summary			
HCM 6th Ctrl Delay		21.1	
HCM 6th LOS		C	

Notes

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

Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	0	5	47	0	18	11	999	20	26	856	16
Future Vol, veh/h	15	0	5	47	0	18	11	999	20	26	856	16
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	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	0	5	47	0	18	11	999	20	26	856	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1956	1957	864	1950	1955	1009	872	0	0	1019	0	0
Stage 1	916	916	-	1031	1031	-	-	-	-	-	-	-
Stage 2	1040	1041	-	919	924	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	48	64	354	48	64	292	773	-	-	681	-	-
Stage 1	326	351	-	281	310	-	-	-	-	-	-	-
Stage 2	278	307	-	325	348	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	41	57	354	~ 44	57	292	773	-	-	681	-	-
Mov Cap-2 Maneuver	41	57	-	~ 44	57	-	-	-	-	-	-	-
Stage 1	315	325	-	272	300	-	-	-	-	-	-	-
Stage 2	252	297	-	297	322	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	109.4	273.2	0.1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	773	-	-	53	58	681	-	-
HCM Lane V/C Ratio	0.014	-	-	0.377	1.121	0.038	-	-
HCM Control Delay (s)	9.7	0	-	109.4	273.2	10.5	0	-
HCM Lane LOS	A	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0	-	-	1.4	5.4	0.1	-	-

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	31	46	49	60	38	998	63	85	835
v/c Ratio	0.22	0.22	0.34	0.28	0.10	0.73	0.06	0.30	0.62
Control Delay	33.5	14.6	37.0	13.2	4.7	11.9	1.4	8.3	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	33.5	14.6	37.0	13.2	4.7	12.1	1.4	8.3	8.4
Queue Length 50th (m)	4.4	1.0	7.1	0.7	1.2	69.6	0.0	3.3	47.8
Queue Length 95th (m)	10.9	9.0	15.2	9.8	5.4	#205.7	3.5	14.4	117.6
Internal Link Dist (m)		218.0		77.7		204.0			546.2
Turn Bay Length (m)	30.0		30.0		37.5			65.0	
Base Capacity (vph)	253	339	259	343	387	1361	1110	280	1357
Starvation Cap Reductn	0	0	0	0	0	39	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.14	0.19	0.17	0.10	0.75	0.06	0.30	0.62

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	7	39	49	5	55	38	998	63	85	821	14
Future Volume (veh/h)	31	7	39	49	5	55	38	998	63	85	821	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.97	0.98		0.96	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	31	7	39	49	5	55	38	998	63	85	821	14
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	187	26	144	203	14	151	426	1315	1107	308	1289	22
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.74	0.74	0.74	0.74	0.74	0.74
Sat Flow, veh/h	1297	229	1273	1330	122	1337	658	1772	1492	532	1737	30
Grp Volume(v), veh/h	31	0	46	49	0	60	38	998	63	85	0	835
Grp Sat Flow(s),veh/h/ln	1297	0	1502	1330	0	1458	658	1772	1492	532	0	1766
Q Serve(g_s), s	1.8	0.0	2.2	2.8	0.0	3.0	2.4	26.6	0.9	9.0	0.0	18.5
Cycle Q Clear(g_c), s	4.9	0.0	2.2	5.0	0.0	3.0	20.9	26.6	0.9	35.6	0.0	18.5
Prop In Lane	1.00		0.85	1.00		0.92	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	187	0	169	203	0	164	426	1315	1107	308	0	1311
V/C Ratio(X)	0.17	0.00	0.27	0.24	0.00	0.36	0.09	0.76	0.06	0.28	0.00	0.64
Avail Cap(c_a), veh/h	310	0	312	329	0	303	426	1315	1107	308	0	1311
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.69	0.69	0.69	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.1	0.0	32.5	34.8	0.0	32.8	10.1	6.1	2.8	16.6	0.0	5.0
Incr Delay (d2), s/veh	0.4	0.0	0.9	0.6	0.0	1.4	0.3	2.9	0.1	2.2	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.8	0.8	0.0	1.0	0.3	4.0	0.1	1.1	0.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.5	0.0	33.3	35.4	0.0	34.2	10.4	9.0	2.8	18.8	0.0	7.4
LnGrp LOS	D	A	C	D	A	C	B	A	A	B	A	A
Approach Vol, veh/h		77			109			1099			920	
Approach Delay, s/veh		34.2			34.7			8.7			8.5	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		65.1		14.9		65.1		14.9				
Change Period (Y+Rc), s		* 5.7		* 5.9		* 5.7		* 5.9				
Max Green Setting (Gmax), s		* 52		* 17		* 52		* 17				
Max Q Clear Time (g_c+I1), s		28.6		6.9		37.6		7.0				
Green Ext Time (p_c), s		11.2		0.2		7.0		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		10.8	
HCM 6th LOS		B	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	61	525	177	730	898	571	255	446	577	263	635
v/c Ratio	0.57	0.67	0.35	0.96	0.63	0.69	0.87	0.65	0.82	0.91	0.94
Control Delay	75.3	46.4	4.0	69.4	30.1	15.0	82.6	48.7	31.9	88.6	68.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.3	46.4	4.0	69.4	30.1	15.0	82.6	48.7	31.9	88.6	68.2
Queue Length 50th (m)	14.2	59.3	0.0	88.1	89.7	40.1	31.0	50.9	87.1	32.1	75.5
Queue Length 95th (m)	#30.1	78.0	9.2	#125.8	112.2	84.2	#53.7	68.3	#136.3	#56.3	#110.0
Internal Link Dist (m)		198.7			363.2			476.8			204.0
Turn Bay Length (m)	190.0		75.0	235.0			145.0		115.0	100.0	
Base Capacity (vph)	113	785	508	762	1428	830	292	693	706	289	684
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.67	0.35	0.96	0.63	0.69	0.87	0.64	0.82	0.91	0.93

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	525	177	730	898	571	255	446	577	263	517	118
Future Volume (veh/h)	61	525	177	730	898	571	255	446	577	263	517	118
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	61	525	177	730	898	571	255	446	577	263	517	118
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	797	351	769	1434	635	297	704	662	295	566	129
Arrive On Green	0.05	0.24	0.24	0.23	0.43	0.43	0.09	0.21	0.21	0.09	0.21	0.21
Sat Flow, veh/h	1688	3367	1483	3274	3367	1491	3274	3367	1480	3274	2717	617
Grp Volume(v), veh/h	61	525	177	730	898	571	255	446	577	263	319	316
Grp Sat Flow(s),veh/h/ln	1688	1683	1483	1637	1683	1491	1637	1683	1480	1637	1683	1650
Q Serve(g_s), s	4.3	16.9	12.4	26.3	25.1	42.8	9.2	14.5	25.1	9.5	22.2	22.5
Cycle Q Clear(g_c), s	4.3	16.9	12.4	26.3	25.1	42.8	9.2	14.5	25.1	9.5	22.2	22.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.37
Lane Grp Cap(c), veh/h	77	797	351	769	1434	635	297	704	662	295	351	344
V/C Ratio(X)	0.79	0.66	0.50	0.95	0.63	0.90	0.86	0.63	0.87	0.89	0.91	0.92
Avail Cap(c_a), veh/h	115	797	351	769	1434	635	297	704	662	295	351	344
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.77	0.77
Uniform Delay (d), s/veh	56.7	41.4	39.7	45.2	27.0	32.0	53.8	43.3	30.3	54.0	46.4	46.5
Incr Delay (d2), s/veh	19.1	4.2	5.1	20.9	2.1	18.1	21.2	1.9	12.1	22.3	22.3	23.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	6.8	4.7	11.8	9.0	16.8	4.5	5.8	15.5	4.6	10.8	10.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.8	45.7	44.8	66.1	29.0	50.1	75.0	45.1	42.4	76.3	68.7	70.4
LnGrp LOS	E	D	D	E	C	D	E	D	D	E	E	E
Approach Vol, veh/h		763			2199			1278			898	
Approach Delay, s/veh		47.9			46.8			49.9			71.5	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	35.0	35.7	17.3	32.0	12.3	58.4	17.4	31.9
Change Period (Y+Rc), s	* 6.8	7.3	6.5	6.9	* 6.8	7.3	6.5	6.9
Max Green Setting (Gmax), s	* 28	28.4	10.8	25.1	* 8.2	48.4	10.9	25.0
Max Q Clear Time (g_c+I1), s	28.3	18.9	11.5	27.1	6.3	44.8	11.2	24.5
Green Ext Time (p_c), s	0.0	3.3	0.0	0.0	0.0	2.8	0.0	0.2

Intersection Summary		
HCM 6th Ctrl Delay		52.1
HCM 6th LOS		D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	306	17	64	450	42	22	7	45	14	11	23
Future Vol, veh/h	16	306	17	64	450	42	22	7	45	14	11	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	306	17	64	450	42	22	7	45	14	11	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	492	0	0	323	0	0	963	967	315	972	954	471
Stage 1	-	-	-	-	-	-	347	347	-	599	599	-
Stage 2	-	-	-	-	-	-	616	620	-	373	355	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1071	-	-	1237	-	-	235	254	725	232	259	593
Stage 1	-	-	-	-	-	-	669	635	-	488	490	-
Stage 2	-	-	-	-	-	-	478	480	-	648	630	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1071	-	-	1237	-	-	207	237	725	202	242	593
Mov Cap-2 Maneuver	-	-	-	-	-	-	207	237	-	202	242	-
Stage 1	-	-	-	-	-	-	659	625	-	481	465	-
Stage 2	-	-	-	-	-	-	425	455	-	592	621	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.9	17	18.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	374	1071	-	-	1237	-	-	313
HCM Lane V/C Ratio	0.198	0.015	-	-	0.052	-	-	0.153
HCM Control Delay (s)	17	8.4	-	-	8.1	-	-	18.6
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0.2	-	-	0.5

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	407	17	45	512	47	12	2	25	15	1	10
Future Vol, veh/h	16	407	17	45	512	47	12	2	25	15	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	407	17	45	512	47	12	2	25	15	1	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	559	0	0	424	0	0	1079	1097	212	839	1058	512
Stage 1	-	-	-	-	-	-	448	448	-	602	602	-
Stage 2	-	-	-	-	-	-	631	649	-	237	456	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1010	-	-	1133	-	-	184	212	794	272	224	561
Stage 1	-	-	-	-	-	-	561	572	-	486	488	-
Stage 2	-	-	-	-	-	-	468	465	-	746	567	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1010	-	-	1133	-	-	169	195	794	246	207	561
Mov Cap-2 Maneuver	-	-	-	-	-	-	169	195	-	246	207	-
Stage 1	-	-	-	-	-	-	549	560	-	476	460	-
Stage 2	-	-	-	-	-	-	432	438	-	705	555	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.6	16.7	17.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	346	1010	-	-	1133	-	-	311
HCM Lane V/C Ratio	0.113	0.016	-	-	0.04	-	-	0.084
HCM Control Delay (s)	16.7	8.6	0.1	-	8.3	0	-	17.6
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	0.3

Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1772	1772				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	1.00	1.00				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						
Timer - Assigned Phs						
Phs Duration (G+Y+Rc), s						
Change Period (Y+Rc), s						
Max Green Setting (Gmax), s						
Max Q Clear Time (g_c+I1), s						
Green Ext Time (p_c), s						
Intersection Summary						
HCM 6th Ctrl Delay			0.0			
HCM 6th LOS			A			

Appendix F

Synchro Intersection Worksheets – 2024 Future Total Conditions

Queues
1: Franktown & Coleman

Future Total 2024AM Peak Hour
355 Franktown Road

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	145	99	171	45	97	349	47	241	76
v/c Ratio	0.48	0.24	0.56	0.11	0.15	0.35	0.08	0.27	0.10
Control Delay	23.7	3.9	25.9	0.6	6.4	11.1	6.3	13.3	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	3.9	25.9	0.6	6.4	11.1	6.3	13.3	1.2
Queue Length 50th (m)	12.3	0.0	14.8	0.0	3.4	13.6	1.6	15.6	0.0
Queue Length 95th (m)	25.3	5.9	29.5	0.0	10.3	49.1	5.9	34.8	2.5
Internal Link Dist (m)	366.8		295.8			248.5		496.5	
Turn Bay Length (m)		40.0		30.0	15.0		25.0		30.0
Base Capacity (vph)	497	581	499	581	656	1010	594	883	777
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.17	0.34	0.08	0.15	0.35	0.08	0.27	0.10

Intersection Summary

HCM 6th Signalized Intersection Summary
1: Franktown & Coleman

Future Total 2024AM Peak Hour
355 Franktown Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	96	99	61	110	45	97	295	54	47	241	76
Future Volume (veh/h)	49	96	99	61	110	45	97	295	54	47	241	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	0.98		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	49	96	0	61	110	0	97	295	0	47	241	76
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	167	204		176	193		650	826		621	778	652
Arrive On Green	0.16	0.16	0.00	0.16	0.16	0.00	0.08	0.47	0.00	0.05	0.44	0.44
Sat Flow, veh/h	405	1263	1502	454	1191	1502	1688	1772	0	1688	1772	1485
Grp Volume(v), veh/h	145	0	0	171	0	0	97	295	0	47	241	76
Grp Sat Flow(s),veh/h/ln	1668	0	1502	1645	0	1502	1688	1772	0	1688	1772	1485
Q Serve(g_s), s	0.0	0.0	0.0	0.8	0.0	0.0	1.4	5.1	0.0	0.7	4.2	1.4
Cycle Q Clear(g_c), s	3.6	0.0	0.0	4.4	0.0	0.0	1.4	5.1	0.0	0.7	4.2	1.4
Prop In Lane	0.34		1.00	0.36		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	371	0		369	0		650	826		621	778	652
V/C Ratio(X)	0.39	0.00		0.46	0.00		0.15	0.36		0.08	0.31	0.12
Avail Cap(c_a), veh/h	708	0		705	0		724	826		717	778	652
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	0.0	0.0	18.5	0.0	0.0	6.2	8.1	0.0	6.6	8.7	7.9
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.9	0.0	0.0	0.1	1.2	0.0	0.1	1.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	1.4	0.0	0.0	0.2	1.2	0.0	0.1	1.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.9	0.0	0.0	19.5	0.0	0.0	6.3	9.3	0.0	6.6	9.7	8.3
LnGrp LOS	B	A		B	A		A	A		A	A	A
Approach Vol, veh/h		145			171			392			364	
Approach Delay, s/veh		18.9			19.5			8.6			9.0	
Approach LOS		B			B			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.4	27.3		12.9	8.7	26.0		12.9				
Change Period (Y+Rc), s	* 5.1	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	* 5	* 22		* 18	* 5.7	* 21		* 18				
Max Q Clear Time (g_c+I1), s	2.7	7.1		5.6	3.4	6.2		6.4				
Green Ext Time (p_c), s	0.0	1.7		0.6	0.1	1.7		0.8				

Intersection Summary

HCM 6th Ctrl Delay		11.9
HCM 6th LOS		B

Notes

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

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	1	9	17	2	17	4	454	9	6	422	4
Future Vol, veh/h	20	1	9	17	2	17	4	454	9	6	422	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	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	1	9	17	2	17	4	454	9	6	422	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	912	907	424	908	905	459	426	0	0	463	0	0
Stage 1	436	436	-	467	467	-	-	-	-	-	-	-
Stage 2	476	471	-	441	438	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	255	276	630	256	276	602	1133	-	-	1098	-	-
Stage 1	599	580	-	576	562	-	-	-	-	-	-	-
Stage 2	570	560	-	595	579	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	244	273	630	249	273	602	1133	-	-	1098	-	-
Mov Cap-2 Maneuver	244	273	-	249	273	-	-	-	-	-	-	-
Stage 1	596	576	-	573	559	-	-	-	-	-	-	-
Stage 2	549	557	-	581	575	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.3	16.6	0.1	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1133	-	-	300	347	1098	-	-
HCM Lane V/C Ratio	0.004	-	-	0.1	0.104	0.005	-	-
HCM Control Delay (s)	8.2	0	-	18.3	16.6	8.3	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	18	35	52	445	437	36
Future Vol, veh/h	18	35	52	445	437	36
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	35	52	445	437	36

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1004	455	473	0	-	0
Stage 1	455	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	268	605	1089	-	-	-
Stage 1	639	-	-	-	-	-
Stage 2	579	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	251	605	1089	-	-	-
Mov Cap-2 Maneuver	251	-	-	-	-	-
Stage 1	599	-	-	-	-	-
Stage 2	579	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.1	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1089	-	409	-	-
HCM Lane V/C Ratio	0.048	-	0.13	-	-
HCM Control Delay (s)	8.5	0	15.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	56	614	118	359	300	175	101	754	198	228	35
v/c Ratio	0.20	1.23	0.24	1.36	0.37	0.23	0.30	1.37	1.07	0.30	0.05
Control Delay	34.7	155.7	6.2	213.5	22.6	3.5	34.0	209.5	114.4	23.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	155.7	6.2	213.5	22.6	3.5	34.0	209.5	114.4	23.4	0.1
Queue Length 50th (m)	10.0	~178.0	0.0	~96.8	44.8	0.0	17.9	~221.8	~36.7	34.2	0.0
Queue Length 95th (m)	21.0	#246.1	12.2	#155.6	66.3	11.9	33.2	#295.0	#84.1	52.7	0.0
Internal Link Dist (m)		351.4			363.2			476.8		204.0	
Turn Bay Length (m)	85.0		90.0	105.0			130.0		90.0		100.0
Base Capacity (vph)	283	501	493	264	807	745	334	549	185	759	661
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	1.23	0.24	1.36	0.37	0.23	0.30	1.37	1.07	0.30	0.05

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	614	118	359	300	175	101	255	499	198	228	35
Future Volume (veh/h)	56	614	118	359	300	175	101	255	499	198	228	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		1.00	0.99		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	56	614	118	359	300	0	101	255	0	198	228	35
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	523	765	641	364	1075		252	308		227	515	432
Arrive On Green	0.43	0.43	0.43	0.12	0.61	0.00	0.17	0.17	0.00	0.08	0.29	0.29
Sat Flow, veh/h	1071	1772	1484	1688	1772	1502	1103	1772	0	1688	1772	1486
Grp Volume(v), veh/h	56	614	118	359	300	0	101	255	0	198	228	35
Grp Sat Flow(s),veh/h/ln	1071	1772	1484	1688	1772	1502	1103	1772	0	1688	1772	1486
Q Serve(g_s), s	3.8	36.2	5.9	14.4	9.6	0.0	10.0	16.7	0.0	9.1	12.6	2.1
Cycle Q Clear(g_c), s	3.8	36.2	5.9	14.4	9.6	0.0	10.0	16.7	0.0	9.1	12.6	2.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	523	765	641	364	1075		252	308		227	515	432
V/C Ratio(X)	0.11	0.80	0.18	0.99	0.28		0.40	0.83		0.87	0.44	0.08
Avail Cap(c_a), veh/h	523	765	641	364	1075		411	564		227	771	646
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	29.6	21.0	25.1	11.2	0.0	45.1	47.8	0.0	41.9	34.7	30.9
Incr Delay (d2), s/veh	0.4	8.7	0.6	43.2	0.6	0.0	1.0	5.6	0.0	28.5	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	14.9	2.0	8.8	3.1	0.0	2.6	7.4	0.0	3.3	5.1	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.8	38.3	21.7	68.3	11.8	0.0	46.1	53.5	0.0	70.4	35.2	31.0
LnGrp LOS	C	D	C	E	B		D	D		E	D	C
Approach Vol, veh/h		788			659			356			461	
Approach Delay, s/veh		34.6			42.6			51.4			50.0	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4		6		8
Phs Duration (G+Y+Rc), s	21.0	58.3	14.0	26.7		79.3		40.7
Change Period (Y+Rc), s	* 6.1	* 6.5	4.9	* 5.8		* 6.5		* 5.8
Max Green Setting (Gmax), s	* 15	* 35	9.1	* 38		* 56		* 52
Max Q Clear Time (g_c+I1), s	16.4	38.2	11.1	18.7		11.6		14.6
Green Ext Time (p_c), s	0.0	0.0	0.0	2.2		2.3		1.9

Intersection Summary			
HCM 6th Ctrl Delay		42.7	
HCM 6th LOS		D	

Notes

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

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	174	8	9	181	8	28	10	32	13	6	16
Future Vol, veh/h	11	174	8	9	181	8	28	10	32	13	6	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	174	8	9	181	8	28	10	32	13	6	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	189	0	0	182	0	0	414	407	178	424	407	185
Stage 1	-	-	-	-	-	-	200	200	-	203	203	-
Stage 2	-	-	-	-	-	-	214	207	-	221	204	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1385	-	-	1393	-	-	549	533	865	540	533	857
Stage 1	-	-	-	-	-	-	802	736	-	799	733	-
Stage 2	-	-	-	-	-	-	788	731	-	781	733	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1385	-	-	1393	-	-	528	526	865	507	526	857
Mov Cap-2 Maneuver	-	-	-	-	-	-	528	526	-	507	526	-
Stage 1	-	-	-	-	-	-	796	730	-	793	729	-
Stage 2	-	-	-	-	-	-	762	727	-	736	727	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.3	11.3	11.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	642	1385	-	-	1393	-	-	628
HCM Lane V/C Ratio	0.109	0.008	-	-	0.006	-	-	0.056
HCM Control Delay (s)	11.3	7.6	-	-	7.6	-	-	11.1
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	230	6	16	176	10	19	2	61	17	1	3
Future Vol, veh/h	13	230	6	16	176	10	19	2	61	17	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	230	6	16	176	10	19	2	61	17	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	186	0	0	236	0	0	474	477	118	350	470	176
Stage 1	-	-	-	-	-	-	259	259	-	208	208	-
Stage 2	-	-	-	-	-	-	215	218	-	142	262	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1387	-	-	1330	-	-	487	486	912	592	491	867
Stage 1	-	-	-	-	-	-	724	693	-	793	729	-
Stage 2	-	-	-	-	-	-	787	722	-	847	691	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1387	-	-	1330	-	-	476	474	912	540	479	867
Mov Cap-2 Maneuver	-	-	-	-	-	-	476	474	-	540	479	-
Stage 1	-	-	-	-	-	-	716	685	-	784	720	-
Stage 2	-	-	-	-	-	-	773	713	-	779	683	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.6	10.5	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	739	1387	-	-	1330	-	-	567
HCM Lane V/C Ratio	0.111	0.009	-	-	0.012	-	-	0.037
HCM Control Delay (s)	10.5	7.6	0	-	7.7	0	-	11.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.1

Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1772	1772				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	1.00	1.00				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						
Timer - Assigned Phs						
Phs Duration (G+Y+Rc), s						
Change Period (Y+Rc), s						
Max Green Setting (Gmax), s						
Max Q Clear Time (g_c+I1), s						
Green Ext Time (p_c), s						

Intersection Summary		
HCM 6th Ctrl Delay	0.0	
HCM 6th LOS	A	

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	210	137	268	95	157	541	59	376	40
v/c Ratio	0.50	0.29	0.75	0.20	0.35	0.72	0.16	0.53	0.06
Control Delay	22.1	5.5	33.8	3.1	9.7	23.2	8.1	18.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	5.5	33.8	3.1	9.7	23.2	8.1	18.0	0.2
Queue Length 50th (m)	18.4	0.0	25.5	0.0	7.5	49.3	2.6	31.0	0.0
Queue Length 95th (m)	34.8	10.0	#53.5	5.3	16.2	#104.8	7.3	56.8	0.0
Internal Link Dist (m)	366.8		295.8			248.5		496.5	
Turn Bay Length (m)		40.0		30.0	15.0		25.0		30.0
Base Capacity (vph)	534	565	453	561	453	755	359	706	647
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.24	0.59	0.17	0.35	0.72	0.16	0.53	0.06

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	179	137	92	176	95	157	451	90	59	376	40
Future Volume (veh/h)	31	179	137	92	176	95	157	451	90	59	376	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	0.99		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	31	179	0	92	176	0	157	451	0	59	376	40
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	109	336		190	247		524	780		464	726	607
Arrive On Green	0.21	0.21	0.00	0.21	0.21	0.00	0.09	0.44	0.00	0.05	0.41	0.41
Sat Flow, veh/h	144	1589	1502	464	1165	1502	1688	1772	0	1688	1772	1483
Grp Volume(v), veh/h	210	0	0	268	0	0	157	451	0	59	376	40
Grp Sat Flow(s),veh/h/ln	1733	0	1502	1629	0	1502	1688	1772	0	1688	1772	1483
Q Serve(g_s), s	0.0	0.0	0.0	2.3	0.0	0.0	2.7	10.0	0.0	1.0	8.4	0.9
Cycle Q Clear(g_c), s	5.6	0.0	0.0	7.9	0.0	0.0	2.7	10.0	0.0	1.0	8.4	0.9
Prop In Lane	0.15		1.00	0.34		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	445	0		437	0		524	780		464	726	607
V/C Ratio(X)	0.47	0.00		0.61	0.00		0.30	0.58		0.13	0.52	0.07
Avail Cap(c_a), veh/h	662	0		636	0		544	780		535	726	607
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.5	0.0	0.0	19.3	0.0	0.0	8.2	11.0	0.0	8.5	11.6	9.4
Incr Delay (d2), s/veh	0.8	0.0	0.0	1.4	0.0	0.0	0.3	3.1	0.0	0.1	2.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.0	3.5	0.0	0.0	1.1	4.9	0.0	0.4	4.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	0.0	0.0	20.7	0.0	0.0	8.5	14.2	0.0	8.6	14.3	9.6
LnGrp LOS	B	A		C	A		A	B		A	B	A
Approach Vol, veh/h		210			268			608			475	
Approach Delay, s/veh		19.3			20.7			12.7			13.2	
Approach LOS		B			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.0	28.2		16.3	9.6	26.6		16.3				
Change Period (Y+Rc), s	* 5.1	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	* 5.1	* 22		* 18	* 5.1	* 22		* 18				
Max Q Clear Time (g_c+I1), s	3.0	12.0		7.6	4.7	10.4		9.9				
Green Ext Time (p_c), s	0.0	2.2		0.9	0.0	2.1		1.1				

Intersection Summary		
HCM 6th Ctrl Delay		15.1
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	0	5	15	0	18	11	748	20	18	640	16
Future Vol, veh/h	15	0	5	15	0	18	11	748	20	18	640	16
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	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	0	5	15	0	18	11	748	20	18	640	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1473	1474	648	1467	1472	758	656	0	0	768	0	0
Stage 1	684	684	-	780	780	-	-	-	-	-	-	-
Stage 2	789	790	-	687	692	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	105	127	470	106	127	407	931	-	-	846	-	-
Stage 1	439	449	-	388	406	-	-	-	-	-	-	-
Stage 2	384	402	-	437	445	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	96	120	470	100	120	407	931	-	-	846	-	-
Mov Cap-2 Maneuver	96	120	-	100	120	-	-	-	-	-	-	-
Stage 1	430	434	-	380	397	-	-	-	-	-	-	-
Stage 2	359	394	-	418	430	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	40.9	31.2	0.1	0.2
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	931	-	-	120	170	846	-	-
HCM Lane V/C Ratio	0.012	-	-	0.167	0.194	0.021	-	-
HCM Control Delay (s)	8.9	0	-	40.9	31.2	9.3	0	-
HCM Lane LOS	A	A	-	E	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.7	0.1	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	39	38	775	656	14
Future Vol, veh/h	31	39	38	775	656	14
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	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	39	38	775	656	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1514	663	670	0	-	0
Stage 1	663	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	132	461	920	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	122	461	920	-	-	-
Mov Cap-2 Maneuver	122	-	-	-	-	-
Stage 1	475	-	-	-	-	-
Stage 2	419	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31	0.4	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	920	-	207	-	-
HCM Lane V/C Ratio	0.041	-	0.338	-	-
HCM Control Delay (s)	9.1	0	31	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1.4	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	43	469	132	639	819	448	175	778	209	380	85
v/c Ratio	0.32	0.86	0.25	1.56	0.86	0.48	0.84	1.77	1.33	0.62	0.15
Control Delay	39.4	55.8	6.3	287.6	34.4	4.5	75.9	383.6	214.2	37.6	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.4	55.8	6.3	287.6	34.4	4.5	75.9	383.6	214.2	37.6	6.0
Queue Length 50th (m)	7.7	103.6	0.0	~187.0	158.1	7.2	39.3	~263.8	~49.1	73.6	0.0
Queue Length 95th (m)	18.8	#159.4	13.7	#257.2	#232.1	25.4	#78.8	#337.6	#96.9	106.3	10.2
Internal Link Dist (m)		351.4			363.2			476.8		204.0	
Turn Bay Length (m)	85.0		90.0	105.0			130.0		90.0		100.0
Base Capacity (vph)	136	545	530	410	952	941	208	439	157	613	551
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.86	0.25	1.56	0.86	0.48	0.84	1.77	1.33	0.62	0.15

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	469	132	639	819	448	175	293	485	209	380	85
Future Volume (veh/h)	43	469	132	639	819	448	175	293	485	209	380	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	43	469	132	639	819	0	175	293	0	209	380	85
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	554	462	421	967		221	446		272	623	524
Arrive On Green	0.31	0.31	0.31	0.18	0.55	0.00	0.25	0.25	0.00	0.06	0.35	0.35
Sat Flow, veh/h	668	1772	1478	1688	1772	1502	924	1772	0	1688	1772	1489
Grp Volume(v), veh/h	43	469	132	639	819	0	175	293	0	209	380	85
Grp Sat Flow(s),veh/h/ln	668	1772	1478	1688	1772	1502	924	1772	0	1688	1772	1489
Q Serve(g_s), s	7.0	29.7	8.1	21.9	46.8	0.0	21.0	17.8	0.0	7.1	21.2	4.7
Cycle Q Clear(g_c), s	25.8	29.7	8.1	21.9	46.8	0.0	30.2	17.8	0.0	7.1	21.2	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	164	554	462	421	967		221	446		272	623	524
V/C Ratio(X)	0.26	0.85	0.29	1.52	0.85		0.79	0.66		0.77	0.61	0.16
Avail Cap(c_a), veh/h	164	554	462	421	967		221	446		272	623	524
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	38.6	31.1	29.9	23.0	0.0	50.3	40.3	0.0	39.6	32.1	26.7
Incr Delay (d2), s/veh	3.9	14.8	1.6	244.7	9.1	0.0	17.4	3.5	0.0	12.4	1.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	15.9	3.3	36.8	23.1	0.0	6.7	8.8	0.0	4.2	10.2	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.6	53.4	32.7	274.5	32.1	0.0	67.7	43.8	0.0	52.0	33.8	26.9
LnGrp LOS	D	D	C	F	C		E	D		D	C	C
Approach Vol, veh/h		644			1458			468			674	
Approach Delay, s/veh		48.9			138.4			52.7			38.6	
Approach LOS		D			F			D			D	

Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	28.0	44.0	12.0	36.0		72.0		48.0				
Change Period (Y+Rc), s	* 6.1	* 6.5	4.9	* 5.8		* 6.5		* 5.8				
Max Green Setting (Gmax), s	* 22	* 38	7.1	* 30		* 66		* 42				
Max Q Clear Time (g_c+I1), s	23.9	31.7	9.1	32.2		48.8		23.2				
Green Ext Time (p_c), s	0.0	2.1	0.0	0.0		6.3		3.0				

Intersection Summary		
HCM 6th Ctrl Delay		87.5
HCM 6th LOS		F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	255	14	49	377	42	9	7	26	14	11	23
Future Vol, veh/h	16	255	14	49	377	42	9	7	26	14	11	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	255	14	49	377	42	9	7	26	14	11	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	419	0	0	269	0	0	807	811	262	807	797	398
Stage 1	-	-	-	-	-	-	294	294	-	496	496	-
Stage 2	-	-	-	-	-	-	513	517	-	311	301	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1140	-	-	1295	-	-	300	313	777	300	319	652
Stage 1	-	-	-	-	-	-	714	670	-	556	545	-
Stage 2	-	-	-	-	-	-	544	534	-	699	665	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1140	-	-	1295	-	-	270	297	777	274	303	652
Mov Cap-2 Maneuver	-	-	-	-	-	-	270	297	-	274	303	-
Stage 1	-	-	-	-	-	-	704	661	-	548	524	-
Stage 2	-	-	-	-	-	-	494	514	-	659	656	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.8	13.5	15.5
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	465	1140	-	-	1295	-	-	391
HCM Lane V/C Ratio	0.09	0.014	-	-	0.038	-	-	0.123
HCM Control Delay (s)	13.5	8.2	-	-	7.9	-	-	15.5
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.4

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	326	17	45	420	47	12	2	25	15	1	10
Future Vol, veh/h	16	326	17	45	420	47	12	2	25	15	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	326	17	45	420	47	12	2	25	15	1	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	467	0	0	343	0	0	906	924	172	706	885	420
Stage 1	-	-	-	-	-	-	367	367	-	510	510	-
Stage 2	-	-	-	-	-	-	539	557	-	196	375	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1093	-	-	1214	-	-	244	269	842	336	283	632
Stage 1	-	-	-	-	-	-	626	621	-	545	537	-
Stage 2	-	-	-	-	-	-	526	511	-	788	616	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1093	-	-	1214	-	-	227	251	842	307	264	632
Mov Cap-2 Maneuver	-	-	-	-	-	-	227	251	-	307	264	-
Stage 1	-	-	-	-	-	-	615	610	-	535	510	-
Stage 2	-	-	-	-	-	-	491	485	-	748	605	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.7	14.2	15.2
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	431	1093	-	-	1214	-	-	380
HCM Lane V/C Ratio	0.09	0.015	-	-	0.037	-	-	0.068
HCM Control Delay (s)	14.2	8.3	0.1	-	8.1	0	-	15.2
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.2

Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1772	1772				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	1.00	1.00				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						
Timer - Assigned Phs						
Phs Duration (G+Y+Rc), s						
Change Period (Y+Rc), s						
Max Green Setting (Gmax), s						
Max Q Clear Time (g_c+I1), s						
Green Ext Time (p_c), s						
Intersection Summary						
HCM 6th Ctrl Delay			0.0			
HCM 6th LOS			A			

Appendix G

Synchro Intersection Worksheets – 2029 Future Total Conditions

Queues
1: Franktown & Coleman

Future Total 2029AM Peak Hour
355 Franktown Road

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	151	111	182	51	101	378	49	278	76
v/c Ratio	0.48	0.27	0.58	0.12	0.16	0.38	0.08	0.32	0.10
Control Delay	23.6	4.7	26.2	0.6	6.8	11.8	6.6	14.1	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	4.7	26.2	0.6	6.8	11.8	6.6	14.1	1.2
Queue Length 50th (m)	12.9	0.0	15.9	0.0	3.7	15.6	1.7	18.8	0.0
Queue Length 95th (m)	26.2	7.3	31.3	0.0	11.0	55.4	6.3	41.1	2.5
Internal Link Dist (m)	366.8		295.8			248.5		496.5	
Turn Bay Length (m)		40.0		30.0	15.0		25.0		30.0
Base Capacity (vph)	491	577	492	577	632	1004	579	877	772
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.19	0.37	0.09	0.16	0.38	0.08	0.32	0.10

Intersection Summary

HCM 6th Signalized Intersection Summary
1: Franktown & Coleman

Future Total 2029AM Peak Hour
355 Franktown Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	102	111	66	116	51	101	321	57	49	278	76
Future Volume (veh/h)	49	102	111	66	116	51	101	321	57	49	278	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	0.98		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	49	102	0	66	116	0	101	321	0	49	278	76
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	216		180	197		617	818		596	770	645
Arrive On Green	0.17	0.17	0.00	0.17	0.17	0.00	0.08	0.46	0.00	0.05	0.43	0.43
Sat Flow, veh/h	386	1288	1502	467	1174	1502	1688	1772	0	1688	1772	1484
Grp Volume(v), veh/h	151	0	0	182	0	0	101	321	0	49	278	76
Grp Sat Flow(s),veh/h/ln	1674	0	1502	1641	0	1502	1688	1772	0	1688	1772	1484
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.0	0.0	1.5	5.7	0.0	0.7	5.1	1.5
Cycle Q Clear(g_c), s	3.8	0.0	0.0	4.8	0.0	0.0	1.5	5.7	0.0	0.7	5.1	1.5
Prop In Lane	0.32		1.00	0.36		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	380	0		378	0		617	818		596	770	645
V/C Ratio(X)	0.40	0.00		0.48	0.00		0.16	0.39		0.08	0.36	0.12
Avail Cap(c_a), veh/h	703	0		697	0		687	818		687	770	645
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	0.0	0.0	18.6	0.0	0.0	6.4	8.5	0.0	6.8	9.1	8.1
Incr Delay (d2), s/veh	0.7	0.0	0.0	1.0	0.0	0.0	0.1	1.4	0.0	0.1	1.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	2.1	0.0	0.0	0.6	2.7	0.0	0.3	2.4	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.9	0.0	0.0	19.5	0.0	0.0	6.5	9.9	0.0	6.8	10.4	8.5
LnGrp LOS	B	A		B	A		A	A		A	B	A
Approach Vol, veh/h		151			182			422			403	
Approach Delay, s/veh		18.9			19.5			9.1			9.6	
Approach LOS		B			B			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	27.3		13.3	8.8	26.0		13.3				
Change Period (Y+Rc), s	* 5.1	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	* 5	* 22		* 18	* 5.7	* 21		* 18				
Max Q Clear Time (g_c+I1), s	2.7	7.7		5.8	3.5	7.1		6.8				
Green Ext Time (p_c), s	0.0	1.8		0.7	0.1	1.9		0.8				

Intersection Summary	
HCM 6th Ctrl Delay	12.2
HCM 6th LOS	B

Notes

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

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	1	9	33	2	17	4	497	9	13	479	4
Future Vol, veh/h	20	1	9	33	2	17	4	497	9	13	479	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	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	1	9	33	2	17	4	497	9	13	479	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1026	1021	481	1022	1019	502	483	0	0	506	0	0
Stage 1	507	507	-	510	510	-	-	-	-	-	-	-
Stage 2	519	514	-	512	509	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	213	236	585	214	237	569	1080	-	-	1059	-	-
Stage 1	548	539	-	546	538	-	-	-	-	-	-	-
Stage 2	540	535	-	545	538	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	202	231	585	207	232	569	1080	-	-	1059	-	-
Mov Cap-2 Maneuver	202	231	-	207	232	-	-	-	-	-	-	-
Stage 1	545	530	-	543	535	-	-	-	-	-	-	-
Stage 2	519	532	-	526	529	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.1	22	0.1	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1080	-	-	253	263	1059	-	-
HCM Lane V/C Ratio	0.004	-	-	0.119	0.198	0.012	-	-
HCM Control Delay (s)	8.3	0	-	21.1	22	8.4	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.7	0	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	18	35	52	506	514	36
Future Vol, veh/h	18	35	52	506	514	36
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	35	52	506	514	36

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1162	552	560	0	-	0
Stage 1	542	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	216	533	1011	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	536	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	197	525	1003	-	-	-
Mov Cap-2 Maneuver	197	-	-	-	-	-
Stage 1	537	-	-	-	-	-
Stage 2	532	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.8	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1003	-	335	-	-
HCM Lane V/C Ratio	0.052	-	0.158	-	-
HCM Control Delay (s)	8.8	0	17.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	68	656	138	401	321	209	111	297	544	221	325
v/c Ratio	0.48	0.62	0.24	0.56	0.20	0.26	0.50	0.63	0.91	0.79	0.61
Control Delay	62.8	39.4	5.2	44.4	20.9	4.2	61.9	54.1	47.3	74.3	49.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.8	39.4	5.2	44.4	20.9	4.2	61.9	54.1	47.3	74.3	49.5
Queue Length 50th (m)	15.5	70.0	0.0	42.4	23.1	0.0	13.1	35.4	90.3	26.7	36.7
Queue Length 95th (m)	29.2	#106.0	12.2	57.7	39.5	15.5	22.4	45.8	118.0	#45.3	47.3
Internal Link Dist (m)		198.7			363.2			476.8			130.7
Turn Bay Length (m)	190.0		75.0	235.0			145.0		115.0	100.0	
Base Capacity (vph)	162	1064	570	711	1586	801	233	1016	596	281	1053
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.62	0.24	0.56	0.20	0.26	0.48	0.29	0.91	0.79	0.31

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	656	138	401	321	209	111	297	544	221	285	40
Future Volume (veh/h)	68	656	138	401	321	209	111	297	544	221	285	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	68	656	138	401	321	209	111	297	544	221	285	40
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	86	816	359	453	1110	491	162	1032	664	273	1010	140
Arrive On Green	0.05	0.24	0.24	0.14	0.33	0.33	0.05	0.31	0.31	0.08	0.34	0.34
Sat Flow, veh/h	1688	3367	1483	3274	3367	1488	3274	3367	1487	3274	2965	412
Grp Volume(v), veh/h	68	656	138	401	321	209	111	297	544	221	160	165
Grp Sat Flow(s),veh/h/ln	1688	1683	1483	1637	1683	1488	1637	1683	1487	1637	1683	1694
Q Serve(g_s), s	4.8	22.0	9.3	14.4	8.5	13.1	4.0	8.0	36.8	8.0	8.3	8.5
Cycle Q Clear(g_c), s	4.8	22.0	9.3	14.4	8.5	13.1	4.0	8.0	36.8	8.0	8.3	8.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.24
Lane Grp Cap(c), veh/h	86	816	359	453	1110	491	162	1032	664	273	573	577
V/C Ratio(X)	0.79	0.80	0.38	0.89	0.29	0.43	0.68	0.29	0.82	0.81	0.28	0.29
Avail Cap(c_a), veh/h	152	816	359	469	1110	491	237	1032	664	286	573	577
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.3	42.8	38.0	50.8	29.8	31.4	56.1	31.6	29.1	54.1	28.8	28.9
Incr Delay (d2), s/veh	14.7	8.3	3.1	17.6	0.7	2.7	5.0	0.2	8.0	15.2	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	10.6	4.0	7.3	3.8	5.5	1.9	3.6	16.3	4.1	3.7	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.0	51.0	41.1	68.4	30.5	34.1	61.1	31.8	37.2	69.3	29.1	29.2
LnGrp LOS	E	D	D	E	C	C	E	C	D	E	C	C
Approach Vol, veh/h		862			931			952			546	
Approach Delay, s/veh		51.0			47.6			38.3			45.4	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.4	36.4	16.5	43.7	12.9	46.9	12.4	47.8
Change Period (Y+Rc), s	* 6.8	7.3	6.5	6.9	* 6.8	7.3	6.5	6.9
Max Green Setting (Gmax), s	* 17	28.0	10.5	36.8	* 11	34.4	8.7	38.6
Max Q Clear Time (g_c+I1), s	16.4	24.0	10.0	38.8	6.8	15.1	6.0	10.5
Green Ext Time (p_c), s	0.2	2.0	0.1	0.0	0.1	3.2	0.1	2.3

Intersection Summary	
HCM 6th Ctrl Delay	45.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	187	10	22	196	8	34	10	42	13	6	16
Future Vol, veh/h	11	187	10	22	196	8	34	10	42	13	6	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	187	10	22	196	8	34	10	42	13	6	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	204	0	0	197	0	0	469	462	192	484	463	200
Stage 1	-	-	-	-	-	-	214	214	-	244	244	-
Stage 2	-	-	-	-	-	-	255	248	-	240	219	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1368	-	-	1376	-	-	505	497	850	493	496	841
Stage 1	-	-	-	-	-	-	788	725	-	760	704	-
Stage 2	-	-	-	-	-	-	749	701	-	763	722	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1368	-	-	1376	-	-	482	485	850	453	484	841
Mov Cap-2 Maneuver	-	-	-	-	-	-	482	485	-	453	484	-
Stage 1	-	-	-	-	-	-	782	719	-	754	693	-
Stage 2	-	-	-	-	-	-	717	690	-	709	716	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.7	11.8	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	612	1368	-	-	1376	-	-	582
HCM Lane V/C Ratio	0.141	0.008	-	-	0.016	-	-	0.06
HCM Control Delay (s)	11.8	7.7	-	-	7.7	-	-	11.6
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	257	6	16	205	10	19	2	61	17	1	3
Future Vol, veh/h	13	257	6	16	205	10	19	2	61	17	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	257	6	16	205	10	19	2	61	17	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	215	0	0	263	0	0	530	533	132	393	526	205
Stage 1	-	-	-	-	-	-	286	286	-	237	237	-
Stage 2	-	-	-	-	-	-	244	247	-	156	289	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1354	-	-	1300	-	-	446	452	894	553	456	835
Stage 1	-	-	-	-	-	-	698	674	-	766	708	-
Stage 2	-	-	-	-	-	-	759	701	-	831	672	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1354	-	-	1300	-	-	435	441	894	504	445	835
Mov Cap-2 Maneuver	-	-	-	-	-	-	435	441	-	504	445	-
Stage 1	-	-	-	-	-	-	690	667	-	758	698	-
Stage 2	-	-	-	-	-	-	745	691	-	763	665	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.5	10.8	12.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	704	1354	-	-	1300	-	-	531
HCM Lane V/C Ratio	0.116	0.01	-	-	0.012	-	-	0.04
HCM Control Delay (s)	10.8	7.7	0	-	7.8	0	-	12.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.1

Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1772	1772				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	1.00	1.00				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						
Timer - Assigned Phs						
Phs Duration (G+Y+Rc), s						
Change Period (Y+Rc), s						
Max Green Setting (Gmax), s						
Max Q Clear Time (g_c+I1), s						
Green Ext Time (p_c), s						

Intersection Summary		
HCM 6th Ctrl Delay	0.0	
HCM 6th LOS	A	

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	220	145	291	111	171	602	67	414	40
v/c Ratio	0.51	0.30	0.91	0.24	0.36	0.70	0.20	0.54	0.06
Control Delay	30.5	6.0	62.8	6.5	10.7	23.0	10.2	22.0	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	6.0	62.8	6.5	10.7	23.0	10.2	22.0	0.4
Queue Length 50th (m)	30.4	0.0	46.0	0.3	12.4	79.0	4.5	52.3	0.0
Queue Length 95th (m)	51.1	12.5	#87.7	11.4	22.5	124.5	10.1	82.3	0.7
Internal Link Dist (m)	366.8		295.8			248.5		496.5	
Turn Bay Length (m)		40.0		30.0	15.0		25.0		30.0
Base Capacity (vph)	510	555	380	531	487	866	334	768	657
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.26	0.77	0.21	0.35	0.70	0.20	0.54	0.06

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	189	145	104	187	111	171	504	98	67	414	40
Future Volume (veh/h)	31	189	145	104	187	111	171	504	98	67	414	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	31	189	0	104	187	0	171	504	0	67	414	40
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	361		171	235		540	930		473	884	742
Arrive On Green	0.23	0.23	0.00	0.23	0.23	0.00	0.07	0.52	0.00	0.05	0.50	0.50
Sat Flow, veh/h	137	1549	1502	469	1009	1502	1688	1772	0	1688	1772	1487
Grp Volume(v), veh/h	220	0	0	291	0	0	171	504	0	67	414	40
Grp Sat Flow(s),veh/h/ln	1686	0	1502	1478	0	1502	1688	1772	0	1688	1772	1487
Q Serve(g_s), s	0.0	0.0	0.0	6.3	0.0	0.0	3.8	15.0	0.0	1.5	12.1	1.1
Cycle Q Clear(g_c), s	8.8	0.0	0.0	15.0	0.0	0.0	3.8	15.0	0.0	1.5	12.1	1.1
Prop In Lane	0.14		1.00	0.36		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	444	0		406	0		540	930		473	884	742
V/C Ratio(X)	0.50	0.00		0.72	0.00		0.32	0.54		0.14	0.47	0.05
Avail Cap(c_a), veh/h	638	0		582	0		621	930		499	884	742
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.7	0.0	0.0	29.1	0.0	0.0	9.2	12.5	0.0	9.6	13.0	10.2
Incr Delay (d2), s/veh	0.9	0.0	0.0	2.4	0.0	0.0	0.3	2.3	0.0	0.1	1.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	0.0	4.8	0.0	0.0	1.0	4.8	0.0	0.4	4.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.6	0.0	0.0	31.5	0.0	0.0	9.5	14.8	0.0	9.7	14.8	10.4
LnGrp LOS	C	A		C	A		A	B		A	B	B
Approach Vol, veh/h		220			291			675			521	
Approach Delay, s/veh		27.6			31.5			13.5			13.8	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	46.8		23.7	11.0	44.8		23.7				
Change Period (Y+Rc), s	* 5.1	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	* 5.1	* 42		* 28	* 9.7	* 37		* 28				
Max Q Clear Time (g_c+I1), s	3.5	17.0		10.8	5.8	14.1		17.0				
Green Ext Time (p_c), s	0.0	4.0		1.3	0.2	3.3		1.5				

Intersection Summary			
HCM 6th Ctrl Delay		18.5	
HCM 6th LOS		B	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	0	5	47	0	18	11	841	20	26	707	16
Future Vol, veh/h	15	0	5	47	0	18	11	841	20	26	707	16
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	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	0	5	47	0	18	11	841	20	26	707	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1649	1650	715	1643	1648	851	723	0	0	861	0	0
Stage 1	767	767	-	873	873	-	-	-	-	-	-	-
Stage 2	882	883	-	770	775	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	79	99	431	80	99	360	879	-	-	781	-	-
Stage 1	395	411	-	345	368	-	-	-	-	-	-	-
Stage 2	341	364	-	393	408	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	71	91	431	74	91	360	879	-	-	781	-	-
Mov Cap-2 Maneuver	71	91	-	74	91	-	-	-	-	-	-	-
Stage 1	386	388	-	337	359	-	-	-	-	-	-	-
Stage 2	316	355	-	367	385	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	56.1	101.1	0.1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	879	-	-	90	95	781	-	-
HCM Lane V/C Ratio	0.013	-	-	0.222	0.684	0.033	-	-
HCM Control Delay (s)	9.1	0	-	56.1	101.1	9.8	0	-
HCM Lane LOS	A	A	-	F	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.8	3.4	0.1	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	39	38	914	756	14
Future Vol, veh/h	31	39	38	914	756	14
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	31	39	38	914	756	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1773	783	780	0	-	0
Stage 1	773	-	-	-	-	-
Stage 2	1000	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	91	394	837	-	-	-
Stage 1	455	-	-	-	-	-
Stage 2	356	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	81	388	831	-	-	-
Mov Cap-2 Maneuver	81	-	-	-	-	-
Stage 1	410	-	-	-	-	-
Stage 2	353	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	51.1	0.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	831	-	145	-	-
HCM Lane V/C Ratio	0.046	-	0.483	-	-
HCM Control Delay (s)	9.5	0	51.1	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.1	-	2.3	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	59	497	154	684	858	524	215	376	531	239	564
v/c Ratio	0.50	0.58	0.29	0.92	0.59	0.62	0.85	0.59	0.78	0.85	0.85
Control Delay	68.2	42.4	2.4	63.5	28.9	11.3	82.7	48.0	29.9	80.5	57.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.2	42.4	2.4	63.5	28.9	11.3	82.7	48.0	29.9	80.5	57.6
Queue Length 50th (m)	13.5	54.7	0.0	81.5	85.2	25.1	26.2	42.1	76.1	29.0	64.4
Queue Length 95th (m)	27.3	72.5	3.8	#117.0	107.6	63.9	#46.6	57.6	116.8	#50.3	84.5
Internal Link Dist (m)		198.7			363.2			476.8			148.1
Turn Bay Length (m)	190.0		75.0	235.0			145.0		115.0	100.0	
Base Capacity (vph)	132	858	536	747	1461	848	254	693	679	281	714
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.58	0.29	0.92	0.59	0.62	0.85	0.54	0.78	0.85	0.79

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	497	154	684	858	524	215	376	531	239	457	107
Future Volume (veh/h)	59	497	154	684	858	524	215	376	531	239	457	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	59	497	154	684	858	524	215	376	531	239	457	107
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	75	843	372	732	1447	641	259	704	646	286	588	137
Arrive On Green	0.04	0.25	0.25	0.22	0.43	0.43	0.08	0.21	0.21	0.09	0.22	0.22
Sat Flow, veh/h	1688	3367	1484	3274	3367	1491	3274	3367	1480	3274	2704	628
Grp Volume(v), veh/h	59	497	154	684	858	524	215	376	531	239	283	281
Grp Sat Flow(s),veh/h/ln	1688	1683	1484	1637	1683	1491	1637	1683	1480	1637	1683	1648
Q Serve(g_s), s	4.2	15.6	10.4	24.6	23.4	37.1	7.8	11.9	25.1	8.6	19.0	19.3
Cycle Q Clear(g_c), s	4.2	15.6	10.4	24.6	23.4	37.1	7.8	11.9	25.1	8.6	19.0	19.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	75	843	372	732	1447	641	259	704	646	286	366	359
V/C Ratio(X)	0.79	0.59	0.41	0.93	0.59	0.82	0.83	0.53	0.82	0.83	0.77	0.78
Avail Cap(c_a), veh/h	135	843	372	742	1447	641	259	704	646	286	366	359
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.8	39.6	37.6	45.7	26.2	30.1	54.5	42.2	30.1	53.9	44.2	44.3
Incr Delay (d2), s/veh	16.5	3.0	3.4	18.7	1.8	11.1	19.7	0.8	8.4	18.7	9.9	10.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	6.2	3.9	10.9	8.4	13.7	3.7	4.7	13.5	4.1	8.4	8.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.2	42.6	41.0	64.4	28.0	41.2	74.2	43.0	38.5	72.6	54.0	55.1
LnGrp LOS	E	D	D	E	C	D	E	D	D	E	D	E
Approach Vol, veh/h		710			2066			1122			803	
Approach Delay, s/veh		44.8			43.4			46.8			59.9	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.6	37.4	17.0	32.0	12.1	58.9	16.0	33.0
Change Period (Y+Rc), s	* 6.8	7.3	6.5	6.9	* 6.8	7.3	6.5	6.9
Max Green Setting (Gmax), s	* 27	29.7	10.5	25.1	* 9.6	47.3	9.5	26.1
Max Q Clear Time (g_c+I1), s	26.6	17.6	10.6	27.1	6.2	39.1	9.8	21.3
Green Ext Time (p_c), s	0.2	3.5	0.0	0.0	0.0	5.3	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	47.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	277	22	64	406	42	32	7	45	14	11	23
Future Vol, veh/h	16	277	22	64	406	42	32	7	45	14	11	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	277	22	64	406	42	32	7	45	14	11	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	448	0	0	299	0	0	892	896	288	901	886	427
Stage 1	-	-	-	-	-	-	320	320	-	555	555	-
Stage 2	-	-	-	-	-	-	572	576	-	346	331	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1112	-	-	1262	-	-	263	280	751	259	284	628
Stage 1	-	-	-	-	-	-	692	652	-	516	513	-
Stage 2	-	-	-	-	-	-	505	502	-	670	645	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1112	-	-	1262	-	-	233	262	751	227	266	628
Mov Cap-2 Maneuver	-	-	-	-	-	-	233	262	-	227	266	-
Stage 1	-	-	-	-	-	-	682	643	-	509	487	-
Stage 2	-	-	-	-	-	-	451	476	-	614	636	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1	17.3	17.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	375	1112	-	-	1262	-	-	344
HCM Lane V/C Ratio	0.224	0.014	-	-	0.051	-	-	0.14
HCM Control Delay (s)	17.3	8.3	-	-	8	-	-	17.2
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.8	0	-	-	0.2	-	-	0.5

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	372	17	56	466	47	12	2	37	15	1	10
Future Vol, veh/h	16	372	17	56	466	47	12	2	37	15	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	372	17	56	466	47	12	2	37	15	1	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	513	0	0	389	0	0	1020	1038	195	797	999	466
Stage 1	-	-	-	-	-	-	413	413	-	578	578	-
Stage 2	-	-	-	-	-	-	607	625	-	219	421	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1051	-	-	1168	-	-	203	230	814	291	243	596
Stage 1	-	-	-	-	-	-	588	593	-	500	500	-
Stage 2	-	-	-	-	-	-	482	476	-	764	588	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1051	-	-	1168	-	-	186	210	814	258	222	596
Mov Cap-2 Maneuver	-	-	-	-	-	-	186	210	-	258	222	-
Stage 1	-	-	-	-	-	-	577	582	-	491	466	-
Stage 2	-	-	-	-	-	-	441	444	-	713	577	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.8	14.6	17
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	427	1051	-	-	1168	-	-	327
HCM Lane V/C Ratio	0.119	0.015	-	-	0.048	-	-	0.08
HCM Control Delay (s)	14.6	8.5	0.1	-	8.2	0	-	17
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0.2	-	-	0.3

Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1772	1772				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	1.00	1.00				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						
Timer - Assigned Phs						
Phs Duration (G+Y+Rc), s						
Change Period (Y+Rc), s						
Max Green Setting (Gmax), s						
Max Q Clear Time (g_c+I1), s						
Green Ext Time (p_c), s						
Intersection Summary						
HCM 6th Ctrl Delay			0.0			
HCM 6th LOS			A			

Appendix H

Synchro Intersection Worksheets – 2034 Future Total Conditions

Queues
1: Franktown & Coleman

Future Total 2034AM Peak Hour
355 Franktown Road

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	156	142	203	51	114	434	49	359	76
v/c Ratio	0.47	0.32	0.63	0.12	0.23	0.50	0.10	0.47	0.11
Control Delay	22.7	5.9	28.1	0.6	7.6	14.2	6.9	16.0	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	5.9	28.1	0.6	7.6	14.2	6.9	16.0	1.3
Queue Length 50th (m)	13.3	0.0	18.1	0.0	4.5	20.2	1.8	26.2	0.0
Queue Length 95th (m)	26.9	10.3	35.1	0.0	12.3	#68.3	6.3	53.6	2.5
Internal Link Dist (m)	366.8		295.8			248.5		496.5	
Turn Bay Length (m)		40.0		30.0	15.0		25.0		30.0
Base Capacity (vph)	477	564	459	556	503	872	482	756	684
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.25	0.44	0.09	0.23	0.50	0.10	0.47	0.11

Intersection Summary

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

HCM 6th Signalized Intersection Summary
1: Franktown & Coleman

Future Total 2034AM Peak Hour
355 Franktown Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	107	142	80	123	51	114	371	63	49	359	76
Future Volume (veh/h)	49	107	142	80	123	51	114	371	63	49	359	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	0.98		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	49	107	0	80	123	0	114	371	0	49	359	76
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	236		195	197		553	819		550	765	641
Arrive On Green	0.18	0.18	0.00	0.18	0.18	0.00	0.08	0.46	0.00	0.05	0.43	0.43
Sat Flow, veh/h	368	1315	1502	526	1098	1502	1688	1772	0	1688	1772	1484
Grp Volume(v), veh/h	156	0	0	203	0	0	114	371	0	49	359	76
Grp Sat Flow(s),veh/h/ln	1683	0	1502	1624	0	1502	1688	1772	0	1688	1772	1484
Q Serve(g_s), s	0.0	0.0	0.0	1.6	0.0	0.0	1.8	7.1	0.0	0.8	7.2	1.5
Cycle Q Clear(g_c), s	4.0	0.0	0.0	5.6	0.0	0.0	1.8	7.1	0.0	0.8	7.2	1.5
Prop In Lane	0.31		1.00	0.39		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	397	0		392	0		553	819		550	765	641
V/C Ratio(X)	0.39	0.00		0.52	0.00		0.21	0.45		0.09	0.47	0.12
Avail Cap(c_a), veh/h	682	0		671	0		591	819		637	765	641
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.4	0.0	0.0	19.0	0.0	0.0	7.0	9.1	0.0	7.2	10.1	8.5
Incr Delay (d2), s/veh	0.6	0.0	0.0	1.1	0.0	0.0	0.2	1.8	0.0	0.1	2.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	0.0	2.5	0.0	0.0	0.7	3.3	0.0	0.3	3.4	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.0	0.0	0.0	20.1	0.0	0.0	7.1	10.9	0.0	7.3	12.1	8.8
LnGrp LOS	B	A		C	A		A	B		A	B	A
Approach Vol, veh/h		156			203			485			484	
Approach Delay, s/veh		19.0			20.1			10.0			11.1	
Approach LOS		B			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	28.1		14.1	9.1	26.6		14.1				
Change Period (Y+Rc), s	* 5.1	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	* 5	* 22		* 18	* 5.1	* 22		* 18				
Max Q Clear Time (g_c+I1), s	2.8	9.1		6.0	3.8	9.2		7.6				
Green Ext Time (p_c), s	0.0	2.1		0.7	0.0	2.3		0.9				

Intersection Summary			
HCM 6th Ctrl Delay		13.0	
HCM 6th LOS		B	

Notes

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

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	1	9	33	2	17	4	576	9	13	614	4
Future Vol, veh/h	20	1	9	33	2	17	4	576	9	13	614	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	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	1	9	33	2	17	4	576	9	13	614	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1240	1235	616	1236	1233	581	618	0	0	585	0	0
Stage 1	642	642	-	589	589	-	-	-	-	-	-	-
Stage 2	598	593	-	647	644	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	152	176	491	153	177	514	962	-	-	990	-	-
Stage 1	463	469	-	494	495	-	-	-	-	-	-	-
Stage 2	489	493	-	460	468	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	143	171	491	147	172	514	962	-	-	990	-	-
Mov Cap-2 Maneuver	143	171	-	147	172	-	-	-	-	-	-	-
Stage 1	460	460	-	491	492	-	-	-	-	-	-	-
Stage 2	468	490	-	442	459	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.5	30.4	0.1	0.2
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	962	-	-	183	193	990	-	-
HCM Lane V/C Ratio	0.004	-	-	0.164	0.269	0.013	-	-
HCM Control Delay (s)	8.8	0	-	28.5	30.4	8.7	0	-
HCM Lane LOS	A	A	-	D	D	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	1	0	-	-

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	18	40	17	30	52	556	57	61	625
v/c Ratio	0.11	0.17	0.10	0.14	0.10	0.41	0.05	0.10	0.46
Control Delay	21.6	10.7	21.5	10.3	3.2	7.7	0.9	5.2	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.6	10.7	21.5	10.3	3.2	7.7	0.9	5.2	6.6
Queue Length 50th (m)	1.9	0.5	1.7	0.2	2.2	33.1	0.0	1.7	24.2
Queue Length 95th (m)	5.5	6.3	5.3	5.2	5.2	65.8	1.2	8.2	75.5
Internal Link Dist (m)		218.0		77.7		204.0			546.2
Turn Bay Length (m)	30.0		30.0		37.5			65.0	
Base Capacity (vph)	349	436	349	420	533	1372	1126	589	1358
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.09	0.05	0.07	0.10	0.41	0.05	0.10	0.46

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	5	35	17	2	28	52	556	57	61	589	36
Future Volume (veh/h)	18	5	35	17	2	28	52	556	57	61	589	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.97	0.98		0.95	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	18	5	35	17	2	28	52	556	57	61	589	36
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	19	130	220	10	135	555	1253	1054	583	1168	71
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.71	0.71	0.71	0.71	0.71	0.71
Sat Flow, veh/h	1320	186	1303	1333	96	1349	800	1772	1491	808	1652	101
Grp Volume(v), veh/h	18	0	40	17	0	30	52	556	57	61	0	625
Grp Sat Flow(s),veh/h/ln	1320	0	1490	1333	0	1445	800	1772	1491	808	0	1753
Q Serve(g_s), s	0.8	0.0	1.5	0.7	0.0	1.1	1.9	8.0	0.7	2.1	0.0	9.7
Cycle Q Clear(g_c), s	1.9	0.0	1.5	2.2	0.0	1.1	11.6	8.0	0.7	10.1	0.0	9.7
Prop In Lane	1.00		0.88	1.00		0.93	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	226	0	149	220	0	144	555	1253	1054	583	0	1239
V/C Ratio(X)	0.08	0.00	0.27	0.08	0.00	0.21	0.09	0.44	0.05	0.10	0.00	0.50
Avail Cap(c_a), veh/h	460	0	412	456	0	400	555	1253	1054	583	0	1239
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.85	0.85	0.85	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.7	0.0	25.0	26.0	0.0	24.8	6.7	3.8	2.7	5.9	0.0	4.0
Incr Delay (d2), s/veh	0.1	0.0	1.0	0.1	0.0	0.7	0.3	1.0	0.1	0.4	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.6	0.3	0.0	0.5	0.4	3.3	0.2	0.5	0.0	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.9	0.0	25.9	26.2	0.0	25.5	6.9	4.7	2.8	6.3	0.0	5.5
LnGrp LOS	C	A	C	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h		58			47			665			686	
Approach Delay, s/veh		25.9			25.8			4.7			5.5	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		48.1		11.9		48.1		11.9				
Change Period (Y+Rc), s		* 5.7		* 5.9		* 5.7		* 5.9				
Max Green Setting (Gmax), s		* 32		* 17		* 32		* 17				
Max Q Clear Time (g_c+I1), s		13.6		3.9		12.1		4.2				
Green Ext Time (p_c), s		4.8		0.2		5.5		0.1				

Intersection Summary			
HCM 6th Ctrl Delay		6.6	
HCM 6th LOS		A	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	82	700	162	448	342	241	121	335	590	237	394
v/c Ratio	0.53	0.72	0.30	0.59	0.23	0.31	0.53	0.66	0.94	0.84	0.71
Control Delay	63.6	44.0	7.0	44.2	22.9	4.4	62.1	53.8	49.7	74.3	55.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.6	44.0	7.0	44.2	22.9	4.4	62.1	53.8	49.7	74.3	55.5
Queue Length 50th (m)	18.7	80.2	0.0	46.8	26.2	0.0	14.3	39.6	97.5	28.9	43.6
Queue Length 95th (m)	33.7	#106.4	16.4	66.5	43.2	17.0	24.0	51.5	#162.4	#50.1	63.4
Internal Link Dist (m)		198.7			363.2			476.8			204.0
Turn Bay Length (m)	190.0		75.0	235.0			145.0		115.0	100.0	
Base Capacity (vph)	184	976	540	758	1511	790	243	925	631	281	953
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.72	0.30	0.59	0.23	0.31	0.50	0.36	0.94	0.84	0.41

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	700	162	448	342	241	121	335	590	237	350	44
Future Volume (veh/h)	82	700	162	448	342	241	121	335	590	237	350	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	82	700	162	448	342	241	121	335	590	237	350	44
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	103	851	375	495	1141	504	173	940	642	286	944	118
Arrive On Green	0.06	0.25	0.25	0.15	0.34	0.34	0.05	0.28	0.28	0.06	0.21	0.21
Sat Flow, veh/h	1688	3367	1484	3274	3367	1488	3274	3367	1485	3274	3008	375
Grp Volume(v), veh/h	82	700	162	448	342	241	121	335	590	237	195	199
Grp Sat Flow(s),veh/h/ln	1688	1683	1484	1637	1683	1488	1637	1683	1485	1637	1683	1700
Q Serve(g_s), s	5.8	23.5	11.0	16.1	9.0	15.3	4.4	9.6	33.5	8.6	11.9	12.1
Cycle Q Clear(g_c), s	5.8	23.5	11.0	16.1	9.0	15.3	4.4	9.6	33.5	8.6	11.9	12.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	103	851	375	495	1141	504	173	940	642	286	528	533
V/C Ratio(X)	0.80	0.82	0.43	0.90	0.30	0.48	0.70	0.36	0.92	0.83	0.37	0.37
Avail Cap(c_a), veh/h	179	851	375	497	1141	504	248	940	642	286	528	533
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.89	0.89
Uniform Delay (d), s/veh	55.6	42.3	37.6	50.1	29.2	31.3	55.9	34.6	32.3	55.6	37.2	37.3
Incr Delay (d2), s/veh	12.9	8.8	3.6	19.9	0.7	3.2	5.0	0.2	18.5	16.2	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	11.4	4.7	8.3	4.0	6.5	2.0	4.3	20.7	4.5	5.4	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.5	51.1	41.2	69.9	29.9	34.5	60.9	34.9	50.7	71.8	37.6	37.7
LnGrp LOS	E	D	D	E	C	C	E	C	D	E	D	D
Approach Vol, veh/h		944			1031			1046			631	
Approach Delay, s/veh		50.9			48.4			46.8			50.5	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.0	37.6	17.0	40.4	14.6	48.0	12.9	44.5
Change Period (Y+Rc), s	* 6.8	7.3	6.5	6.9	7.3	7.3	6.5	6.9
Max Green Setting (Gmax), s	* 18	30.3	10.5	33.5	12.7	35.3	9.1	34.9
Max Q Clear Time (g_c+I1), s	18.1	25.5	10.6	35.5	7.8	17.3	6.4	14.1
Green Ext Time (p_c), s	0.0	2.4	0.0	0.0	0.1	3.5	0.1	2.7

Intersection Summary	
HCM 6th Ctrl Delay	48.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	204	10	22	221	8	34	10	42	13	6	16
Future Vol, veh/h	11	204	10	22	221	8	34	10	42	13	6	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	204	10	22	221	8	34	10	42	13	6	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	229	0	0	214	0	0	511	504	209	526	505	225
Stage 1	-	-	-	-	-	-	231	231	-	269	269	-
Stage 2	-	-	-	-	-	-	280	273	-	257	236	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1339	-	-	1356	-	-	473	470	831	462	470	814
Stage 1	-	-	-	-	-	-	772	713	-	737	687	-
Stage 2	-	-	-	-	-	-	727	684	-	748	710	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1339	-	-	1356	-	-	451	459	831	423	459	814
Mov Cap-2 Maneuver	-	-	-	-	-	-	451	459	-	423	459	-
Stage 1	-	-	-	-	-	-	766	707	-	731	676	-
Stage 2	-	-	-	-	-	-	695	673	-	694	704	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.7	12.3	12
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	582	1339	-	-	1356	-	-	552
HCM Lane V/C Ratio	0.148	0.008	-	-	0.016	-	-	0.063
HCM Control Delay (s)	12.3	7.7	-	-	7.7	-	-	12
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.2

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	13	276	6	16	231	10	19	2	61	17	1	3
Future Vol, veh/h	13	276	6	16	231	10	19	2	61	17	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	276	6	16	231	10	19	2	61	17	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	241	0	0	282	0	0	575	578	141	428	571	231
Stage 1	-	-	-	-	-	-	305	305	-	263	263	-
Stage 2	-	-	-	-	-	-	270	273	-	165	308	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1324	-	-	1279	-	-	415	426	882	524	430	807
Stage 1	-	-	-	-	-	-	680	662	-	741	690	-
Stage 2	-	-	-	-	-	-	735	683	-	821	660	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1324	-	-	1279	-	-	405	415	882	476	419	807
Mov Cap-2 Maneuver	-	-	-	-	-	-	405	415	-	476	419	-
Stage 1	-	-	-	-	-	-	672	654	-	732	680	-
Stage 2	-	-	-	-	-	-	721	673	-	753	652	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.5	11	12.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	678	1324	-	-	1279	-	-	502
HCM Lane V/C Ratio	0.121	0.01	-	-	0.013	-	-	0.042
HCM Control Delay (s)	11	7.7	0	-	7.8	0	-	12.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.1

Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1772	1772				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	1.00	1.00				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						
Timer - Assigned Phs						
Phs Duration (G+Y+Rc), s						
Change Period (Y+Rc), s						
Max Green Setting (Gmax), s						
Max Q Clear Time (g_c+I1), s						
Green Ext Time (p_c), s						
Intersection Summary						
HCM 6th Ctrl Delay			0.0			
HCM 6th LOS			A			

Queues
1: Franktown & Coleman

Future Total 2034PM Peak Hour
355 Franktown Road

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	231	174	323	111	199	714	67	507	40
v/c Ratio	0.50	0.32	0.95	0.23	0.53	0.85	0.29	0.65	0.06
Control Delay	29.9	5.6	70.4	7.7	15.0	32.8	12.0	24.6	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	5.6	70.4	7.7	15.0	32.8	12.0	24.6	0.4
Queue Length 50th (m)	32.3	0.0	53.6	1.6	15.3	108.3	4.7	67.2	0.0
Queue Length 95th (m)	53.8	13.6	#103.1	12.9	26.0	#180.7	10.1	101.5	0.7
Internal Link Dist (m)	366.8		295.8			248.5		496.5	
Turn Bay Length (m)		40.0		30.0	15.0		25.0		30.0
Base Capacity (vph)	483	557	355	504	373	838	235	775	662
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.31	0.91	0.22	0.53	0.85	0.29	0.65	0.06

Intersection Summary

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

HCM 6th Signalized Intersection Summary
1: Franktown & Coleman

Future Total 2034PM Peak Hour
355 Franktown Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	200	174	124	199	111	199	601	113	67	507	40
Future Volume (veh/h)	31	200	174	124	199	111	199	601	113	67	507	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	31	200	0	124	199	0	199	601	0	67	507	40
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	401		191	238		451	901		375	838	702
Arrive On Green	0.26	0.26	0.00	0.26	0.26	0.00	0.08	0.51	0.00	0.05	0.47	0.47
Sat Flow, veh/h	128	1544	1502	504	916	1502	1688	1772	0	1688	1772	1486
Grp Volume(v), veh/h	231	0	0	323	0	0	199	601	0	67	507	40
Grp Sat Flow(s),veh/h/ln	1672	0	1502	1420	0	1502	1688	1772	0	1688	1772	1486
Q Serve(g_s), s	0.0	0.0	0.0	9.1	0.0	0.0	5.0	21.1	0.0	1.7	17.7	1.2
Cycle Q Clear(g_c), s	9.3	0.0	0.0	18.4	0.0	0.0	5.0	21.1	0.0	1.7	17.7	1.2
Prop In Lane	0.13		1.00	0.38		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	484	0		429	0		451	901		375	838	702
V/C Ratio(X)	0.48	0.00		0.75	0.00		0.44	0.67		0.18	0.61	0.06
Avail Cap(c_a), veh/h	604	0		537	0		459	901		399	838	702
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.3	0.0	0.0	29.8	0.0	0.0	11.8	15.3	0.0	12.2	16.3	11.9
Incr Delay (d2), s/veh	0.7	0.0	0.0	4.6	0.0	0.0	0.7	3.9	0.0	0.2	3.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.0	0.0	5.9	0.0	0.0	1.4	7.3	0.0	0.5	6.3	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.0	0.0	0.0	34.4	0.0	0.0	12.5	19.2	0.0	12.4	19.5	12.1
LnGrp LOS	C	A		C	A		B	B		B	B	B
Approach Vol, veh/h		231			323			800			614	
Approach Delay, s/veh		27.0			34.4			17.5			18.2	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	47.6		26.9	12.0	44.6		26.9				
Change Period (Y+Rc), s	* 5.1	* 5.1		* 5.2	* 5.1	* 5.1		* 5.2				
Max Green Setting (Gmax), s	* 5.1	* 42		* 28	* 7.3	* 40		* 28				
Max Q Clear Time (g_c+I1), s	3.7	23.1		11.3	7.0	19.7		20.4				
Green Ext Time (p_c), s	0.0	4.6		1.4	0.0	4.0		1.3				

Intersection Summary		
HCM 6th Ctrl Delay		21.6
HCM 6th LOS		C

Notes

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

Intersection	
Int Delay, s/veh	10.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	0	5	47	0	18	11	999	20	26	863	16
Future Vol, veh/h	15	0	5	47	0	18	11	999	20	26	863	16
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	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	0	5	47	0	18	11	999	20	26	863	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1963	1964	871	1957	1962	1009	879	0	0	1019	0	0
Stage 1	923	923	-	1031	1031	-	-	-	-	-	-	-
Stage 2	1040	1041	-	926	931	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	47	63	350	48	63	292	769	-	-	681	-	-
Stage 1	323	349	-	281	310	-	-	-	-	-	-	-
Stage 2	278	307	-	322	346	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	41	56	350	~ 43	56	292	769	-	-	681	-	-
Mov Cap-2 Maneuver	41	56	-	~ 43	56	-	-	-	-	-	-	-
Stage 1	312	323	-	272	300	-	-	-	-	-	-	-
Stage 2	252	297	-	294	320	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	109.4	292.2	0.1	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	769	-	-	53	56	681	-	-
HCM Lane V/C Ratio	0.014	-	-	0.377	1.161	0.038	-	-
HCM Control Delay (s)	9.7	0	-	109.4	292.2	10.5	0	-
HCM Lane LOS	A	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0	-	-	1.4	5.5	0.1	-	-

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

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	31	46	49	60	38	1018	63	85	842
v/c Ratio	0.22	0.22	0.34	0.28	0.10	0.75	0.06	0.32	0.62
Control Delay	33.5	14.6	37.0	13.2	4.8	12.5	1.4	8.8	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	33.5	14.6	37.0	13.2	4.8	12.7	1.4	8.8	8.5
Queue Length 50th (m)	4.4	1.0	7.1	0.7	1.2	72.8	0.0	3.4	48.7
Queue Length 95th (m)	10.9	9.0	15.2	9.8	5.4	#212.4	3.5	15.0	119.5
Internal Link Dist (m)		218.0		77.7		204.0			546.2
Turn Bay Length (m)	30.0		30.0		37.5			65.0	
Base Capacity (vph)	253	339	259	343	382	1361	1110	268	1358
Starvation Cap Reductn	0	0	0	0	0	38	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.14	0.19	0.17	0.10	0.77	0.06	0.32	0.62

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	7	39	49	5	55	38	1018	63	85	828	14
Future Volume (veh/h)	31	7	39	49	5	55	38	1018	63	85	828	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.97	0.98		0.96	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	31	7	39	49	5	55	38	1018	63	85	828	14
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	187	26	144	203	14	151	422	1315	1107	296	1289	22
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.74	0.74	0.74	0.74	0.74	0.74
Sat Flow, veh/h	1297	229	1273	1330	122	1337	653	1772	1492	522	1737	29
Grp Volume(v), veh/h	31	0	46	49	0	60	38	1018	63	85	0	842
Grp Sat Flow(s),veh/h/ln	1297	0	1502	1330	0	1458	653	1772	1492	522	0	1766
Q Serve(g_s), s	1.8	0.0	2.2	2.8	0.0	3.0	2.4	27.8	0.9	9.4	0.0	18.8
Cycle Q Clear(g_c), s	4.9	0.0	2.2	5.0	0.0	3.0	21.2	27.8	0.9	37.3	0.0	18.8
Prop In Lane	1.00		0.85	1.00		0.92	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	187	0	169	203	0	164	422	1315	1107	296	0	1311
V/C Ratio(X)	0.17	0.00	0.27	0.24	0.00	0.36	0.09	0.77	0.06	0.29	0.00	0.64
Avail Cap(c_a), veh/h	310	0	312	329	0	303	422	1315	1107	296	0	1311
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.68	0.68	0.68	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.1	0.0	32.5	34.8	0.0	32.8	10.3	6.2	2.8	17.5	0.0	5.1
Incr Delay (d2), s/veh	0.4	0.0	0.9	0.6	0.0	1.4	0.3	3.1	0.1	2.4	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.8	0.8	0.0	1.0	0.3	4.2	0.1	1.1	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.5	0.0	33.3	35.4	0.0	34.2	10.6	9.3	2.8	20.0	0.0	7.5
LnGrp LOS	D	A	C	D	A	C	B	A	A	B	A	A
Approach Vol, veh/h		77			109			1119			927	
Approach Delay, s/veh		34.2			34.7			9.0			8.6	
Approach LOS		C			C			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		65.1		14.9		65.1		14.9				
Change Period (Y+Rc), s		* 5.7		* 5.9		* 5.7		* 5.9				
Max Green Setting (Gmax), s		* 52		* 17		* 52		* 17				
Max Q Clear Time (g_c+I1), s		29.8		6.9		39.3		7.0				
Green Ext Time (p_c), s		11.2		0.2		6.5		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		11.0	
HCM 6th LOS		B	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	68	525	177	730	898	580	255	450	577	263	641
v/c Ratio	0.63	0.67	0.35	0.96	0.63	0.70	0.87	0.66	0.82	0.91	0.94
Control Delay	79.8	46.4	4.0	69.8	30.1	16.3	82.6	48.7	31.9	88.6	68.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.8	46.4	4.0	69.8	30.1	16.3	82.6	48.7	31.9	88.6	68.9
Queue Length 50th (m)	15.9	59.3	0.0	88.1	89.7	44.8	31.0	51.4	87.1	32.1	76.3
Queue Length 95th (m)	#35.0	78.0	9.2	#125.8	112.2	91.0	#53.7	69.0	#136.3	#56.3	#111.4
Internal Link Dist (m)		198.7			363.2			476.8			204.0
Turn Bay Length (m)	190.0		75.0	235.0			145.0		115.0	100.0	
Base Capacity (vph)	113	784	508	760	1425	823	292	693	706	289	684
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.67	0.35	0.96	0.63	0.70	0.87	0.65	0.82	0.91	0.94

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	525	177	730	898	580	255	450	577	263	519	122
Future Volume (veh/h)	68	525	177	730	898	580	255	450	577	263	519	122
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	68	525	177	730	898	580	255	450	577	263	519	122
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	86	797	351	769	1417	627	297	704	662	295	562	132
Arrive On Green	0.05	0.24	0.24	0.23	0.42	0.42	0.09	0.21	0.21	0.09	0.21	0.21
Sat Flow, veh/h	1688	3367	1483	3274	3367	1491	3274	3367	1480	3274	2699	631
Grp Volume(v), veh/h	68	525	177	730	898	580	255	450	577	263	323	318
Grp Sat Flow(s),veh/h/ln	1688	1683	1483	1637	1683	1491	1637	1683	1480	1637	1683	1647
Q Serve(g_s), s	4.8	16.9	12.4	26.3	25.3	44.3	9.2	14.6	25.1	9.5	22.5	22.8
Cycle Q Clear(g_c), s	4.8	16.9	12.4	26.3	25.3	44.3	9.2	14.6	25.1	9.5	22.5	22.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	86	797	351	769	1417	627	297	704	662	295	351	343
V/C Ratio(X)	0.79	0.66	0.50	0.95	0.63	0.92	0.86	0.64	0.87	0.89	0.92	0.93
Avail Cap(c_a), veh/h	115	797	351	769	1417	627	297	704	662	295	351	343
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.76	0.76	0.76
Uniform Delay (d), s/veh	56.3	41.4	39.7	45.2	27.4	32.9	53.8	43.3	30.3	54.0	46.5	46.6
Incr Delay (d2), s/veh	23.0	4.2	5.1	20.9	2.2	21.5	21.2	1.9	12.1	22.0	23.7	25.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	6.8	4.7	11.8	9.1	17.8	4.5	5.9	15.5	4.6	11.1	11.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.3	45.7	44.8	66.1	29.6	54.4	75.0	45.3	42.4	76.1	70.2	72.0
LnGrp LOS	E	D	D	E	C	D	E	D	D	E	E	E
Approach Vol, veh/h		770			2208			1282			904	
Approach Delay, s/veh		48.4			48.2			49.9			72.6	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	35.0	35.7	17.3	32.0	12.9	57.8	17.4	31.9
Change Period (Y+Rc), s	* 6.8	7.3	6.5	6.9	* 6.8	7.3	6.5	6.9
Max Green Setting (Gmax), s	* 28	28.4	10.8	25.1	* 8.2	48.4	10.9	25.0
Max Q Clear Time (g_c+I1), s	28.3	18.9	11.5	27.1	6.8	46.3	11.2	24.8
Green Ext Time (p_c), s	0.0	3.3	0.0	0.0	0.0	1.7	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	52.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	306	22	64	450	42	32	7	45	14	11	23
Future Vol, veh/h	16	306	22	64	450	42	32	7	45	14	11	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	20	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	306	22	64	450	42	32	7	45	14	11	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	492	0	0	328	0	0	965	969	317	974	959	471
Stage 1	-	-	-	-	-	-	349	349	-	599	599	-
Stage 2	-	-	-	-	-	-	616	620	-	375	360	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1071	-	-	1232	-	-	234	254	724	231	257	593
Stage 1	-	-	-	-	-	-	667	633	-	488	490	-
Stage 2	-	-	-	-	-	-	478	480	-	646	626	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1071	-	-	1232	-	-	206	237	724	201	240	593
Mov Cap-2 Maneuver	-	-	-	-	-	-	206	237	-	201	240	-
Stage 1	-	-	-	-	-	-	657	624	-	481	465	-
Stage 2	-	-	-	-	-	-	425	455	-	590	617	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.9	19	18.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	340	1071	-	-	1232	-	-	311
HCM Lane V/C Ratio	0.247	0.015	-	-	0.052	-	-	0.154
HCM Control Delay (s)	19	8.4	-	-	8.1	-	-	18.7
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1	0	-	-	0.2	-	-	0.5

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	407	17	56	512	47	12	2	37	15	1	10
Future Vol, veh/h	16	407	17	56	512	47	12	2	37	15	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	407	17	56	512	47	12	2	37	15	1	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	559	0	0	424	0	0	1101	1119	212	861	1080	512
Stage 1	-	-	-	-	-	-	448	448	-	624	624	-
Stage 2	-	-	-	-	-	-	653	671	-	237	456	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1010	-	-	1133	-	-	178	206	794	262	217	561
Stage 1	-	-	-	-	-	-	561	572	-	472	477	-
Stage 2	-	-	-	-	-	-	455	454	-	746	567	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1010	-	-	1133	-	-	162	187	794	231	197	561
Mov Cap-2 Maneuver	-	-	-	-	-	-	162	187	-	231	197	-
Stage 1	-	-	-	-	-	-	549	560	-	462	443	-
Stage 2	-	-	-	-	-	-	414	421	-	694	555	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.8	15.7	18.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	388	1010	-	-	1133	-	-	296
HCM Lane V/C Ratio	0.131	0.016	-	-	0.049	-	-	0.088
HCM Control Delay (s)	15.7	8.6	0.1	-	8.3	0	-	18.3
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0.2	-	-	0.3

Lane Group
Lane Group Flow (vph)
v/c Ratio
Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillback Cap Reductn
Storage Cap Reductn
Reduced v/c Ratio

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	0	0	0
Future Volume (veh/h)	0	0	0	0	0	0
Initial Q (Qb), veh	0	0				
Ped-Bike Adj(A_pbT)	1.00	1.00				
Parking Bus, Adj	1.00	1.00				
Work Zone On Approach	No					
Adj Sat Flow, veh/h/ln	1772	1772				
Adj Flow Rate, veh/h	0	0				
Peak Hour Factor	1.00	1.00				
Percent Heavy Veh, %	2	2				
Cap, veh/h	0	0				
Arrive On Green	0.00	0.00				
Sat Flow, veh/h	0					
Grp Volume(v), veh/h	0.0					
Grp Sat Flow(s),veh/h/ln						
Q Serve(g_s), s						
Cycle Q Clear(g_c), s						
Prop In Lane						
Lane Grp Cap(c), veh/h						
V/C Ratio(X)						
Avail Cap(c_a), veh/h						
HCM Platoon Ratio						
Upstream Filter(I)						
Uniform Delay (d), s/veh						
Incr Delay (d2), s/veh						
Initial Q Delay(d3),s/veh						
%ile BackOfQ(50%),veh/ln						
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh						
LnGrp LOS						
Approach Vol, veh/h						
Approach Delay, s/veh						
Approach LOS						
Timer - Assigned Phs						
Phs Duration (G+Y+Rc), s						
Change Period (Y+Rc), s						
Max Green Setting (Gmax), s						
Max Q Clear Time (g_c+I1), s						
Green Ext Time (p_c), s						
Intersection Summary						
HCM 6th Ctrl Delay			0.0			
HCM 6th LOS			A			

Appendix I

SimTraffic/Synchro Intersection Worksheets – 2034 Future Total/Queue-Optimized Conditions

SimTraffic Simulation Summary
Future Total 2034
07-18-2022

Summary of All Intervals

Run Number	1	2	3	Avg
Start Time	4:15	4:15	4:15	4:15
End Time	5:30	5:30	5:30	5:30
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	6446	6625	6507	6529
Vehs Exited	6320	6607	6484	6472
Starting Vehs	229	268	293	261
Ending Vehs	355	286	316	315
Travel Distance (km)	7305	7516	7456	7426
Travel Time (hr)	288.3	297.6	302.0	295.9
Total Delay (hr)	137.0	142.0	147.6	142.2
Total Stops	8978	9582	9419	9326
Fuel Used (l)	685.9	712.8	712.5	703.7

Interval #0 Information Seeding

Start Time	4:15
End Time	4:30
Total Time (min)	15

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	Avg
Vehs Entered	6446	6625	6507	6529
Vehs Exited	6320	6607	6484	6472
Starting Vehs	229	268	293	261
Ending Vehs	355	286	316	315
Travel Distance (km)	7305	7516	7456	7426
Travel Time (hr)	288.3	297.6	302.0	295.9
Total Delay (hr)	137.0	142.0	147.6	142.2
Total Stops	8978	9582	9419	9326
Fuel Used (l)	685.9	712.8	712.5	703.7

Queuing and Blocking Report
Future Total 2034
07-18-2022

Intersection: 4: Franktown & Findlay

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	T	R	L	TR
Maximum Queue (m)	15.4	19.1	21.9	22.7	52.2	180.8	42.0	79.2	115.6
Average Queue (m)	4.9	9.1	10.0	8.6	11.9	88.0	4.0	27.1	49.7
95th Queue (m)	12.5	16.3	20.3	18.0	33.1	149.5	22.5	57.4	100.6
Link Distance (m)		228.1		88.2		202.0	202.0		555.1
Upstream Blk Time (%)						0			
Queuing Penalty (veh)						0			
Storage Bay Dist (m)	30.0		30.0		37.5			65.0	
Storage Blk Time (%)			0	0		13		1	3
Queuing Penalty (veh)			0	0		5		10	3

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	31	46	49	60	38	1018	63	85	842
v/c Ratio	0.30	0.28	0.46	0.35	0.08	0.69	0.05	0.25	0.57
Control Delay	57.0	22.7	64.4	20.0	1.3	9.6	0.1	5.1	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Total Delay	57.0	22.7	64.4	20.0	1.3	10.2	0.1	5.1	6.0
Queue Length 50th (m)	7.0	1.5	11.2	1.1	0.5	170.3	0.0	3.6	54.0
Queue Length 95th (m)	16.1	12.3	22.8	13.4	m0.8	207.1	m0.0	11.0	105.4
Internal Link Dist (m)		218.0		77.7		204.0			546.2
Turn Bay Length (m)	30.0		30.0		37.5			65.0	
Base Capacity (vph)	167	238	171	244	449	1475	1177	342	1471
Starvation Cap Reductn	0	0	0	0	0	153	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.19	0.29	0.25	0.08	0.77	0.05	0.25	0.57

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	7	39	49	5	55	38	1018	63	85	828	14
Future Volume (veh/h)	31	7	39	49	5	55	38	1018	63	85	828	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		0.97	0.98		0.95	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772	1772
Adj Flow Rate, veh/h	31	7	39	49	5	55	38	1018	63	85	828	14
Peak Hour 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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	22	124	151	12	129	471	1428	1203	344	1400	24
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.81	0.81	0.81	0.81	0.81	0.81
Sat Flow, veh/h	1292	228	1268	1326	121	1328	653	1772	1492	522	1737	29
Grp Volume(v), veh/h	31	0	46	49	0	60	38	1018	63	85	0	842
Grp Sat Flow(s),veh/h/ln	1292	0	1496	1326	0	1448	653	1772	1492	522	0	1766
Q Serve(g_s), s	2.8	0.0	3.4	4.3	0.0	4.7	2.7	31.5	1.0	10.7	0.0	21.2
Cycle Q Clear(g_c), s	7.5	0.0	3.4	7.7	0.0	4.7	24.0	31.5	1.0	42.1	0.0	21.2
Prop In Lane	1.00		0.85	1.00		0.92	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	136	0	146	151	0	141	471	1428	1203	344	0	1424
V/C Ratio(X)	0.23	0.00	0.32	0.32	0.00	0.43	0.08	0.71	0.05	0.25	0.00	0.59
Avail Cap(c_a), veh/h	188	0	207	205	0	200	471	1428	1203	344	0	1424
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.69	0.69	0.69	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.5	0.0	50.4	54.0	0.0	51.0	8.8	5.3	2.4	14.9	0.0	4.3
Incr Delay (d2), s/veh	0.8	0.0	1.2	1.2	0.0	2.0	0.2	2.1	0.1	1.7	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.3	1.4	0.0	1.7	0.4	5.7	0.2	1.3	0.0	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.3	0.0	51.7	55.2	0.0	53.0	9.0	7.4	2.4	16.6	0.0	6.1
LnGrp LOS	E	A	D	E	A	D	A	A	A	B	A	A
Approach Vol, veh/h		77			109			1119			927	
Approach Delay, s/veh		53.1			54.0			7.2			7.1	
Approach LOS		D			D			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		102.4		17.6		102.4		17.6				
Change Period (Y+Rc), s		* 5.7		* 5.9		* 5.7		* 5.9				
Max Green Setting (Gmax), s		* 92		* 17		* 92		* 17				
Max Q Clear Time (g_c+I1), s		33.5		9.5		44.1		9.7				
Green Ext Time (p_c), s		16.5		0.2		12.0		0.2				

Intersection Summary

HCM 6th Ctrl Delay		11.0
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.