

# 15-17 des Oblats Avenue Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Forecasting Report

Step 4 Strategy Report (Revision #1)

Prepared for:

Forum/SLP 15 Oblats Limited Partnership  
226 Argyle Avenue  
Ottawa, ON, K2P 1B9

Prepared by:



6 Plaza Court  
Ottawa, ON K2H 7W1

March 2023

PN: 2021-004

## Table of Contents

1	Screening .....	1
2	Existing and Planned Conditions.....	1
2.1	Proposed Development.....	1
2.2	Existing Conditions.....	3
2.2.1	Area Road Network.....	3
2.2.2	Existing Intersections.....	4
2.2.3	Existing Driveways .....	5
2.2.4	Cycling and Pedestrian Facilities.....	5
2.2.5	Existing Transit.....	7
2.2.6	Existing Area Traffic Management Measures.....	8
2.2.7	Existing Peak Hour Travel Demand.....	9
2.2.8	Collision Analysis.....	11
2.3	Planned Conditions.....	12
2.3.1	Changes to the Area Transportation Network.....	12
2.3.2	Other Study Area Developments .....	13
3	Study Area and Time Periods.....	14
3.1	Study Area .....	14
3.2	Time Periods .....	14
3.3	Horizon Years.....	14
4	Exemption Review .....	14
5	Development-Generated Travel Demand .....	15
5.1	Mode Shares.....	15
5.2	Trip Generation.....	15
5.3	Trip Distribution.....	16
5.4	Trip Assignment.....	16
6	Background Network Travel Demands .....	18
6.1	Transportation Network Plans.....	18
6.2	Background Growth.....	18
6.3	Other Developments .....	18
7	Demand Rationalization .....	19
7.1	2025 Future Background Operations.....	19
7.2	2030 Future Background Operations.....	21
7.3	Modal Share Sensitivity .....	23
8	Development Design .....	23
8.1	Design for Sustainable Modes .....	23
8.2	Circulation and Access .....	24
9	Parking.....	24
9.1	Parking Supply .....	24
9.2	Spillover Parking .....	24
9.2.1	Tenant Factors .....	24
9.2.2	Mobility Options .....	25
9.2.3	Area Parking Restrictions.....	25

9.2.4 Community Adaptation .....25

10 Boundary Street Design .....25

11 Access Intersection Design .....26

11.1 Location and Design of Access.....26

11.2 Intersection Control.....26

11.3 Access Intersection Design .....26

11.3.1 Access Intersection MMLOS .....26

11.3.2 Recommended Design Elements .....26

12 Transportation Demand Management.....26

12.1 Context for TDM .....26

12.2 Need and Opportunity.....27

12.3 TDM Program .....27

13 Neighbourhood Traffic Management.....27

14 Transit.....27

14.1 Route Capacity.....27

14.2 Transit Priority .....28

15 Network Intersection Design .....28

15.1 Network Intersection Control.....28

15.2 Network Intersection Design .....28

15.2.1 2025 Future Total Network Intersection Operations .....28

15.2.2 2030 Future Total Network Intersection Operations .....30

15.2.3 Network Intersection MMLOS .....32

15.2.4 Recommended Design Elements .....33

16 Summary of Improvements Indicated and Modifications Options .....33

17 Conclusion .....36

## List of Figures

Figure 1: Area Context Plan .....1

Figure 2: Concept Plan.....2

Figure 3: Study Area Pedestrian Facilities .....6

Figure 4: Study Area Cycling Facilities .....6

Figure 5: Existing Pedestrian Volumes.....7

Figure 6: Existing Cyclist Volumes.....7

Figure 7: Existing Study Area Transit Service.....8

Figure 8: Existing Study Area Transit Stops .....8

Figure 9: Existing Traffic Counts .....9

Figure 10: Study Area Collision Records .....12

Figure 11: Greenfield Avenue, Main Street, Hawthorne Avenue et al. Reconstruction Project .....13

Figure 12: New Site Generation Auto Volumes .....17

Figure 13: Study Area Background Development Volumes.....19

Figure 14: 2025 Future Background Volumes .....20

Figure 15: 2030 Future Background Volumes .....22

Figure 16: 2025 Future Total Volumes .....29

Figure 17: 2030 Future Total Volumes .....31

## Table of Tables

Table 1: Intersection Count Date.....9  
 Table 2: Existing Intersection Operations.....10  
 Table 3: Study Area Collision Summary, 2016-2020.....11  
 Table 4: Summary of Collision Locations, 2016-2020.....12  
 Table 5: Exemption Review .....14  
 Table 6: Mode Shares – Ottawa Inner .....15  
 Table 7: Trip Generation Person Trip Rates.....15  
 Table 8: Total Person Trip Generation.....16  
 Table 9: Trip Generation by Mode.....16  
 Table 10: OD Survey Distribution – Ottawa Inner .....16  
 Table 11: Trip Assignment .....17  
 Table 12: TRANS Regional Model Projections – Study Area Growth Rates .....18  
 Table 13: 2025 Future Background Intersection Operations .....20  
 Table 14: 2030 Future Background Intersection Operations .....22  
 Table 15: Boundary Street MMLOS Analysis .....26  
 Table 16: Trip Generation by Transit Mode.....27  
 Table 17: Forecasted Site-Generated Transit Ridership .....28  
 Table 18: 2025 Future Total Network Intersection Operations.....29  
 Table 19: 2030 Future Total Network Intersection Operations.....31  
 Table 20: Study Area Intersection MMLOS Analysis.....32

## List of Appendices

Appendix A – TIA Screening Form and Certification Form  
 Appendix B – Turning Movement Count Data  
 Appendix C – Synchro Intersection Worksheets – Existing Conditions  
 Appendix D – Collision Data  
 Appendix E – TRANS Model Plots  
 Appendix F – Synchro Intersection Worksheets – 2025 Future Background Conditions  
 Appendix G – Synchro Intersection Worksheets – 2030 Future Background Conditions  
 Appendix H – MMLOS Analysis  
 Appendix I – TDM Checklist  
 Appendix J – Synchro Intersection Worksheets – 2025 Future Total Conditions  
 Appendix K – Synchro Intersection Worksheets – 2030 Future Total Conditions

## 1 Screening

This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is required including the Design Review component and the Network Impact Component. This TIA is in support of a zoning by-law amendment and site plan application.

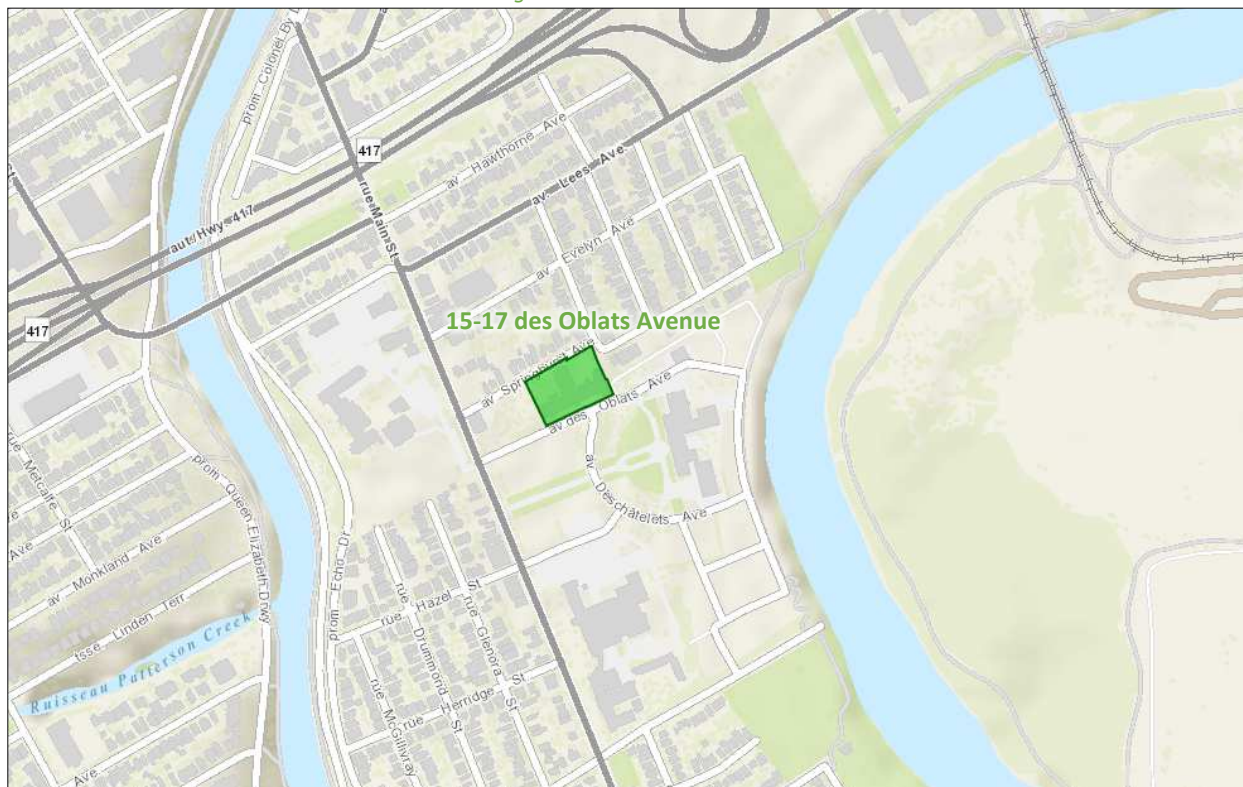
## 2 Existing and Planned Conditions

### 2.1 Proposed Development

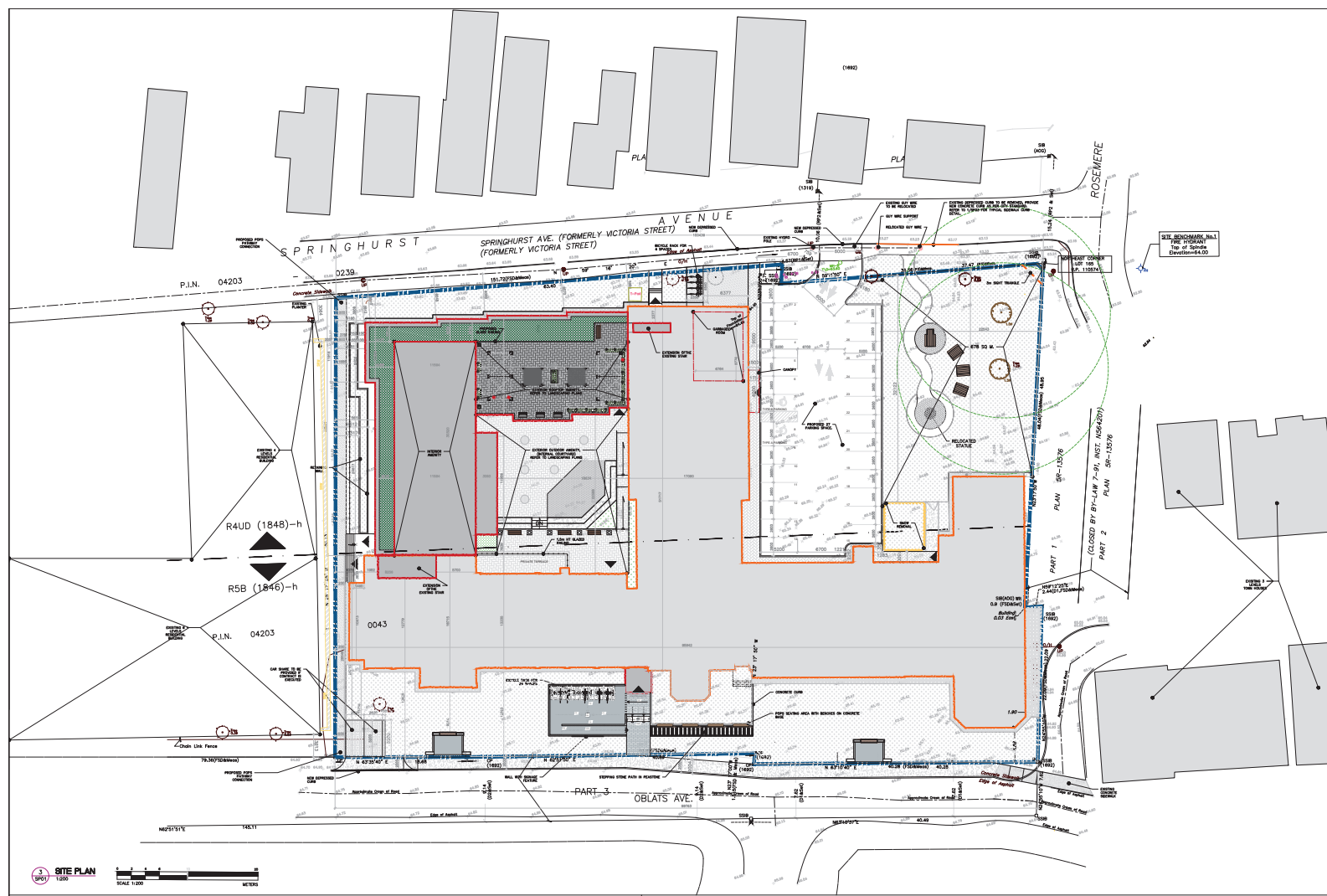
The subject site, zoned as Residential Fourth and Fifth Densities (R4UD, R5B), contains a four-storey T-shaped building, previously the Convent of the Sisters of the Sacred Heart, two surface parking lots each accessing Springhurst Avenue, and perpendicular parking along des Oblats Avenue. The proposed development is a retrofit of the existing T-Shape structure with an addition on the north-west corner for a total of 284 rental apartment units. The existing east side surface parking lot is proposed to remain. The site will access Springhurst Avenue via a right-in-right-out access to a surface parking lot and a depressed curb accessing a loading area. Parking is proposed as 27 vehicle spaces for site visitors and 418 total bicycle spaces, and two carshare spaces are proposed to be reserved on the des Oblats frontage. The development is anticipated to be built-out in a single phase by 2025.

Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: February 6, 2023



LOTS 5, 6 & 6,  
PART OF LOT 3,  
PART OF BLOCK "A"  
REGISTERED PLAN 243  
AND THE REAR PASSAGE  
(CLOSED BY BY-LAW 8066, INST.0215351)  
REGISTERED PLAN 110074  
AND  
PART OF LOT "A"  
CONCESSION D (REAR FRONT)  
GEOGRAPHIC TOWNSHIP OF NEPEAN  
CITY OF OTTAWA  
ALL SURVEY INFORMATION TAKEN FROM TOPOGRAPHIC  
SURVEY AS PREPARED BY ANNIS, O'SULLIVAN, VOLLEBERG  
LTD DATED JUNE 28, 2021.

ELEVATION NOTE:  
1. ELEVATIONS ARE GEODETIC.  
2. IT IS THE RESPONSIBILITY OF THE USER  
OF THIS INFORMATION TO VERIFY THAT THE  
JOB BENCHMARK HAS NOT BEEN ALTERED  
OR DISPLACED AND THAT IT'S RELATIVE  
ELEVATION AND DESCRIPTION AGREES WITH  
THE INFORMATION SHOWN IN THE ABOVE  
REFERENCED SURVEY.

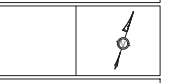
ALL SITE SERVICE, GRADING AND DRAINAGE RELATED  
ALTERATION, REFER TO CIVIL ENGINEERS DRAWINGS.

**LEGEND:**

- EXISTING BUILDING
- NEW BUILDING
- NEW SOD
- PARKING DEDICATION
- GREEN ROOF
- HEATING FLOOR
- GREEN BLOCK
- MANHOLE, REFER TO CIVIL
- FIRE DEPARTMENT CONNECTION
- FIRE HYDRANT, REFER TO CIVIL
- CATCH BASIN, REFER TO CIVIL
- BUILDING ENTRANCE
- BICYCLE RACK
- DIRECTIONAL ARROW
- PROPERTY LINE
- SIDE YARD BACK
- NEW LIGHT STAND/OD
- FIRE ROUTE SIGN
- STOP SIGN
- CENTERLINE
- EXISTING TREES TO BE REMOVED
- LIGHT
- TREE GRATE
- BENCHES
- ACCESSIBLE PICNIC TABLE
- PICNIC TABLE



PROJECT



ALL CONTRACTORS TO VERIFY ALL DIMENSIONS  
ON SITE AND TO REPORT ALL ERRORS AND/OR  
OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL  
CODES AND STANDARDS AND OTHER AUTHORITIES  
HAVING JURISDICTION OVER THE WORK.

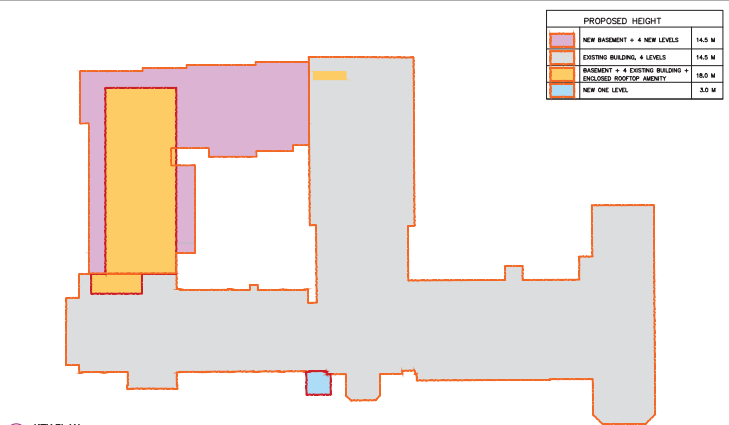
DO NOT SCALE DRAWINGS.  
THIS DRAWING MAY NOT BE USED FOR  
CONSTRUCTION UNLESS SIGNED BY THE  
ARCHITECT.

DISCLAIMER:  
THE ARCHITECT HAS REVIEWED THE EXISTING RECORD AND  
CAN BE HELD RESPONSIBLE FOR OTHER PARTIES, INTERFERENCES OR OMISSIONS,  
UNLESS NOTIFIED OF SUCH INTERFERENCES OR OMISSIONS. Woodman  
Architect & Associates Ltd. reserves the right to remove all or  
part of its drawings and/or annotations in accordance with the  
Professional Practice Act. This removed work will not be used for any other project in  
addition to 15 OBLATS AVE. The drawings should not  
be used for any other purpose except for which the approval  
has been granted by the City of Ottawa. The drawings are the property of Woodman Architect &  
Associates Ltd. and shall not be reproduced or transmitted  
without the Architect's express written permission. The CAD files used to be used in conjunction with the issue for  
construction shall be provided to the contractor. The drawings and  
documents are to be prepared by the Architect before  
proceeding with the work.

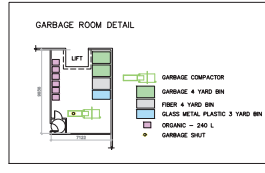
Issued For	Date
ISSUED FOR APPROVAL	17/03/23
ISSUED FOR APPROVAL	24/03/23
ISSUED FOR APPROVAL	28/11/23
ISSUED FOR APPROVAL	28/07/22
ISSUED FOR APPROVAL	09/07/22
ISSUED FOR APPROVAL	16/05/22
ISSUED FOR REVIEW	26/03/22
ISSUED FOR REVIEW	28/09/21
ISSUED FOR REVIEW	26/04/21
NO. REVISION	15/02/21

Issued For	Date
ISSUED FOR APPROVAL	17/03/23
ISSUED FOR APPROVAL	24/03/23
ISSUED FOR APPROVAL	28/11/23
ISSUED FOR APPROVAL	28/07/22
ISSUED FOR APPROVAL	09/07/22
ISSUED FOR APPROVAL	16/05/22
ISSUED FOR REVIEW	26/03/22
ISSUED FOR REVIEW	28/09/21
ISSUED FOR REVIEW	26/04/21
NO. REVISION	15/02/21

1 SITE PLAN  
SCALE: 1/200  
METERS



2 KEY PLAN  
K.T.L.



LEVEL	TOTAL	STUDIO	BEDROOM #1	ONE BATHROOM	TWO BATHROOM	THIRD BATHROOM	FOURTH BATHROOM
BASEMENT	20	10	0	1	0	0	0
FIRST LEVEL	60	46	1	1	0	1	0
SECOND LEVEL	67	46	2	1	1	2	0
THIRD LEVEL	66	45	3	2	2	0	0
FOURTH LEVEL	71	51	4	2	1	0	0
ROOF	0	0	0	0	0	0	0
TOTAL	284	204	10	6	4	3	0

LEVEL	GG.M	GG.P	GG.M	GG.P	GG.M	GG.P
BASEMENT	890	8,847	1,024	10,921	1,897	18,660
FIRST LEVEL	1,102	10,950	882	9,855	1,398	14,445
SECOND LEVEL	1,298	12,700	882	8,882	1,174	12,238
THIRD LEVEL	1,298	12,700	882	8,882	1,174	12,238
FOURTH LEVEL	1,298	12,700	882	8,882	1,174	12,238
TOTAL	6,876	67,997	5,930	55,922	6,836	70,311

Forum/SLP 15 Oblats Limited Partnership

ARCHITECT OF RECORD:  
**WOODMAN ARCHITECT & ASSOCIATES LTD.**

PLANNED BY:  
**FOTENN**  
POTENTIAL PLANNING & DESIGN

CONSULTANTS:  
SURVEY: ANNIS, O'SULLIVAN, VOLLEBERG CO.  
STRUCTURAL: DWB STRUCTURAL INC.  
MECHANICAL: JAM ESTEYMEYER CONSULTANTS  
ELECTRICAL: JAM ESTEYMEYER CONSULTANTS  
LANDSCAPING: JAMES L. DUNN & ASSOCIATES

PROJECT:  
**15 OBLATS AVE  
OTTAWA**

PHASE:  
**SITE PLAN**

DATE: 17/03/23  
JOB NO.: 2021-001  
SCALE: AS SHOWN  
DRAWN BY: J.S. / M.A. / J.S.  
CHECKED BY: M. WOODMAN  
SP01

## 2.2 Existing Conditions

### 2.2.1 Area Road Network

**Main Street:** Main Street is a City of Ottawa arterial road. North of Hawthorne Avenue within the study area, Main Street has a three-lane urban cross-section (two northbound lanes), and between Hawthorne Avenue and Lees Avenue, it has a four-lane urban cross-section. Between Lees Avenue and Evelyn Avenue, Main Street has a three-lane urban cross-section (two southbound lanes), and south of Evelyn Avenue Main Street has a two-lane urban cross-section. Cycletracks are on both sides of the road between Harvey Street and the south end of the Highway 417 overpass, sharrow markings are on the west side of the road and a cycletrack is on the east side of the road between the south end of the Highway 417 overpass and Graham Avenue, and cycletracks are on both sides of the road south of Graham Avenue. Sidewalks are present on both sides of the road within the study area. On-street parking is permitted in framed parking lanes on the east side of the road south of Evelyn Avenue within the study area, and on the west side of the road south of Hazel Street within the study area. The posted speed limit is 40 km/h, and the Ottawa Official Plan reserves a 23.0-metre right of way within the study area. Main Street is a truck route.

**Hawthorne Avenue:** Hawthorne Avenue is a City of Ottawa arterial road with a four-lane urban cross-section including on-street parking permitted (no stopping weekdays 7:00AM-9:00AM, 3:30PM-5:30PM) and sidewalks on both sides of the road west of Main Street. East of Main Street, Hawthorne Avenue is a one-way eastbound local road with a one-lane urban cross-section including sidewalks on both sides of the road, a curbside bike lane on the south side of the road, and on-street parking permitted on the north side of the road. West of Main Street, the unposted speed limit is assumed to be 50 km/h and the posted speed limit is 30 km/h to the east. The Ottawa Official Plan reserves a 20.0-metre right of way to the west, and the measured right of way is 18.0 metres to the east of Main Street. Hawthorne Avenue is a truck route west of Main Street.

**Lees Avenue:** Lees Avenue is a City of Ottawa arterial road with a two-lane urban cross-section including sidewalks on both sides of the road, a curbside bike lane on the south side of the road, and a parking lane on the north side of the road. The posted speed limit is 30 km/h, and the Ottawa Official Plan reserves a 23.0 metre right of way within the study area. Lees Avenue is a truck route.

**Graham Avenue:** Graham Avenue is a City of Ottawa one-way westbound local road with a one-lane urban cross-section including sidewalks on both sides of the road, an eastbound curbside bike lane on the south side of the road, and on-street parking permitted on the north side of the road. The unposted speed limit is assumed to be 50 km/h and the measured right of way is 15.5 metres.

**Evelyn Avenue:** Evelyn Avenue is a City of Ottawa one-way westbound local road west of Rosemere Avenue with a one-lane urban cross-section including sidewalks on both sides of the road and on-street parking permitted in a school bus loading layby along the Lady Evelyn School frontage and on the north side of the road east of the school. East of Rosemere Avenue, Evelyn Avenue is a two-way local road with a two-lane urban cross-section with on-street parking permitted on the south side of the road to its termination at Brunswick Street, and with sidewalks on both sides of the road west of Chestnut Street. The posted gateway speed limit for the neighbourhood is 30 km/h and the measured right of way is 10.0 metres between Main Street and the school, 14.0 metres along the school building, 10.0 metres between the school building and the intersection at Rosemere Avenue, and 15.0 metres through the intersection at Rosemere Avenue and eastward.

**Springhurst Avenue:** Springhurst Avenue is a City of Ottawa one-way eastbound local road west of Rosemere Avenue with a one-lane urban cross-section including sidewalks on both sides of the road and with on-street parking permitted on the north side of the road. East of Rosemere Avenue, Springhurst Avenue is a two-way local

road with a two-lane urban cross-section that includes sidewalks on both sides of the road and on-street parking permitted on the north side of the road west of Chestnut Street. The posted speed limit 30 km/h and the measured right of way is 10.0 metres west of the intersection at Rosemere Avenue, and 15.0 metres through the intersection at Rosemere Avenue and eastward.

*Des Oblats Avenue:* des Oblats Avenue is a City of Ottawa local road with a two-lane urban cross-section including a sidewalk on the north side of the road to the east and west of 15-17 des Oblats Avenue and a sidewalk on the south side of the road. The posted speed limit is 30 km/h, consistent with the gateway speed limit on Hazel Street east of Main Street, and the measured right of way varies between 12.0 metres and 20.0 metres.

*Hazel Street:* Hazel Street is a City of Ottawa local road with a two-lane urban cross-section with on-street parking permitted on the north side of the road west of Main Street and with sidewalks on both sides of the road. The posted speed limit is 30 km/h. East of Main Street, the measured right of way is 18.5 metres and west of Main Street, the measured right of way varies between 15.0 metres and 19.0 metres.

### 2.2.2 Existing Intersections

The existing signalized area intersections within 400 metres of the site have been summarized below:

#### *Main Street at Hawthorne Avenue*

The intersection of Main Street at Hawthorne Avenue is a signalized intersection. The northbound approach consists of a shared left-turn/through lane, a shared through/right-turn lane, and a cycletrack and the southbound approach consists of a shared left-turn/through lane and an auxiliary through/right-turn lane. The eastbound approach consists of a shared left-turn/through lane with a bike box, and a right-turn lane and the east leg is inbound only. No turn restrictions were noted.

#### *Main Street at Graham Avenue / Lees Avenue*

The intersection of Main Street at Graham Avenue/Lees Avenue is a signalized intersection. The northbound approach consists of a shared left-turn/through lane, an auxiliary through/right-turn lane, and a cycletrack and the southbound approach consists of a shared left-turn/through lane and a shared through/right-turn lane. The westbound approach consists of an auxiliary left-turn lane with a bike box and a shared through/right-turn lane, and the west leg is inbound only, though includes a contraflow bike lane. Southbound left-turns are restricted weekdays between 3:30AM-5:30PM, buses excepted.

#### *Main Street at Evelyn Avenue*

The intersection of Main Street at Evelyn Avenue is a signalized T-intersection. The northbound approach consists of a through lane and a cycletrack and the southbound approach consists of two through lanes and a cycletrack. The westbound approach consists of a shared left-turn/right-turn lane with a bike box. No turn restrictions were noted.

#### *Main Street at Springhurst Avenue*

The intersection of Main Street at Springhurst Avenue is an uncontrolled T-intersection. The northbound approach consists of a shared through/right-turn lane and a cycletrack, and the southbound approach consists of an auxiliary left-turn lane, a through lane, and a cycletrack. The east leg of the intersection is inbound only.



Northbound right turns are prohibited weekdays between 7:00AM-9:00AM, bicycles excepted.

*Main Street at Immaculata HS / des Oblats Avenue*

The intersection of Main Street at the Immaculata High School access/des Oblats Avenue is a signalized intersection. The northbound and southbound approaches each consist of an auxiliary left-turn, a shared through/right-turn, and a cycletrack. The eastbound approach consists of a shared all-movements lane and a bike box, and the westbound approach consists of an auxiliary left-turn lane, and a shared through/right-turn lane. No turn restrictions were noted.

*Main Street at Hazel Street*

The intersection of Main Street at Hazel Street is a signalized intersection. The northbound and southbound approaches each consist of an auxiliary left-turn lane, a shared through/right-turn lane, and a cycletrack. The eastbound approach consists of a shared all-movements lane with a bike box and the westbound approach consists of a shared left-turn/through lane and auxiliary right-turn lane with a bike box. No turn restrictions were noted.

### 2.2.3 Existing Driveways

On des Oblats Avenue, two driveways connecting a rear lane for townhomes is present on the north side of the road to the east of the site and a driveway to underground parking for a mixed-use building is present on the north side and a driveway to two mixed-use buildings is present on the south side of the road to the west of the site.

On Springhurst Avenue, a driveway to a mixed-use complex is present on the south side, and driveways to a vacant site and four detached residential dwellings are present on the north side of the road west of the site. Along the site, driveways to seven detached residential dwellings are present on the north side of the road. East of the site on Springhurst Avenue, and east of Rosemere Avenue, a driveway to an institutional building and ten driveways to attached and detached residential dwellings are present on the south side, and six driveways to detached and attached residential dwellings and two public rear lanes are present on the north side of the road.

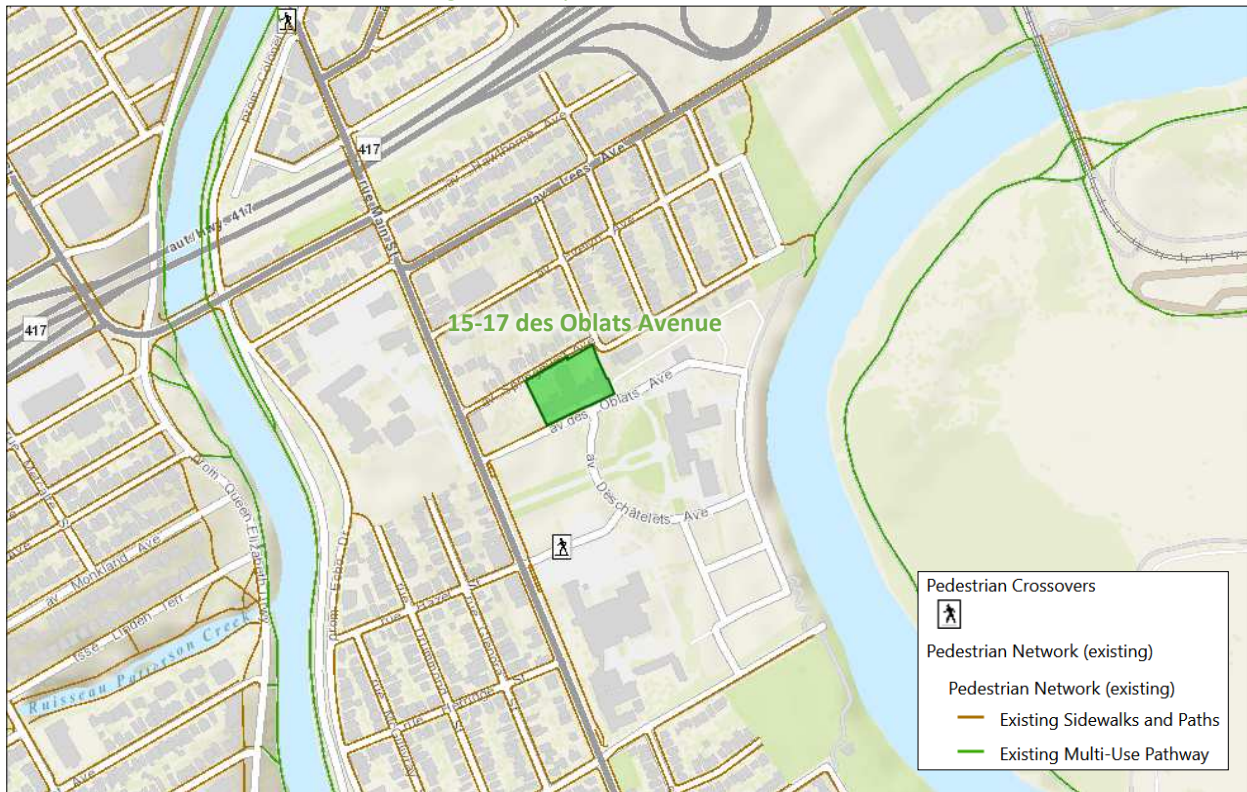
### 2.2.4 Cycling and Pedestrian Facilities

Figure 3 illustrates the pedestrian facilities in the study area and Figure 4 illustrates the cycling facilities.

Sidewalks are provided along both sides of all study area roads, excluding des Oblats Avenue whose north sidewalk is discontinuous. A pedestrian crossover is located on Hazel Street midblock between Main Street and Deschatelets Avenue.

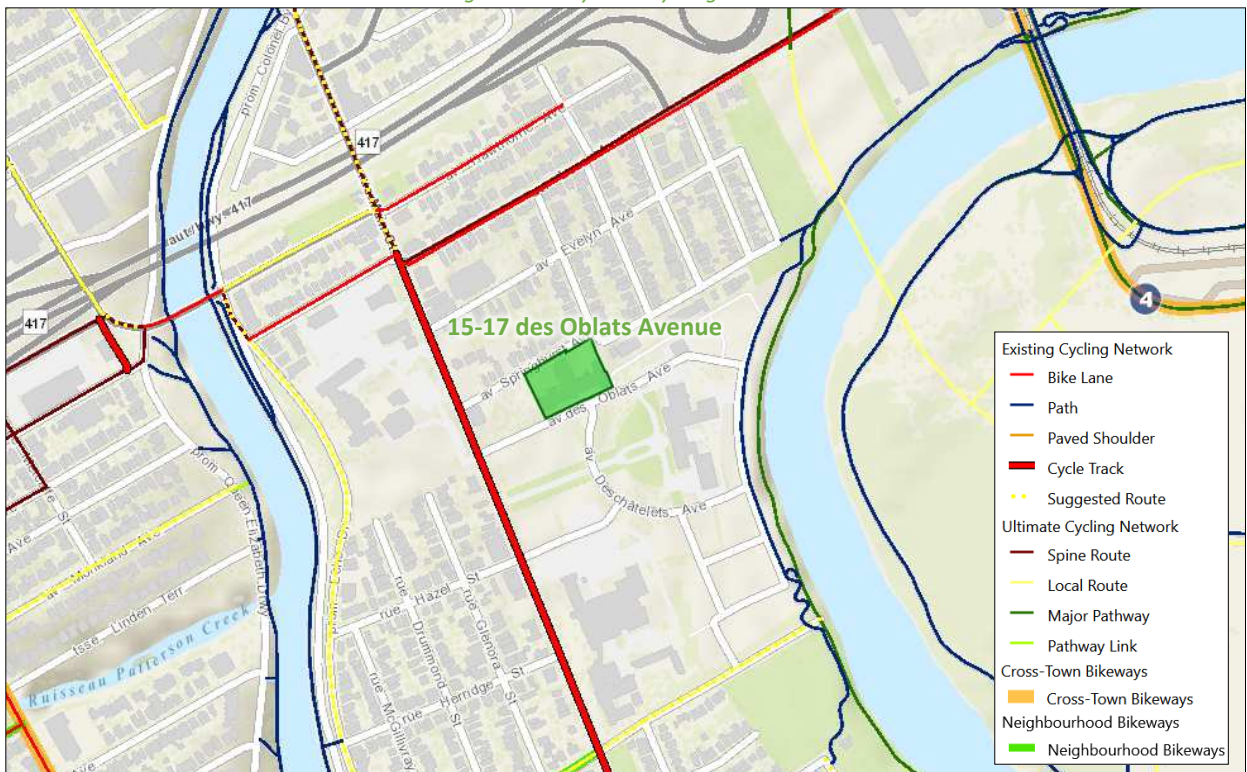
Cycling facilities include cycletracks on both sides of the Main Street south of Lees Avenue and on the east side of the road between Lees Avenue and Hawthorne Avenue, a curbside bike lane on both sides of Hawthorne Avenue over the Pretoria Bridge and on the south side of Hawthorne Avenue east of Main Street, and on the south sides of Lees Avenue and Graham Avenue. The Rideau Canal Eastern Pathway runs along the canal 375 metres west of the site, and the Rideau River Western Pathway runs along the river 300 metres east of the site and connects des Oblats Avenue and Springhurst Avenue to Lees Station. Clegg Street west of Main Street is a neighbourhood bikeway, Hawthorne Avenue west of Colonel By Drive, Colonel By Drive between Hawthorne Avenue and Graham Avenue, Graham Avenue, and Lees Avenue form a spine route and Main Street is a spine route. Hawthorne Avenue east of Colonel By Drive, Echo Drive, and Clegg Street are local routes.

Figure 3: Study Area Pedestrian Facilities



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: February 6, 2023

Figure 4: Study Area Cycling Facilities



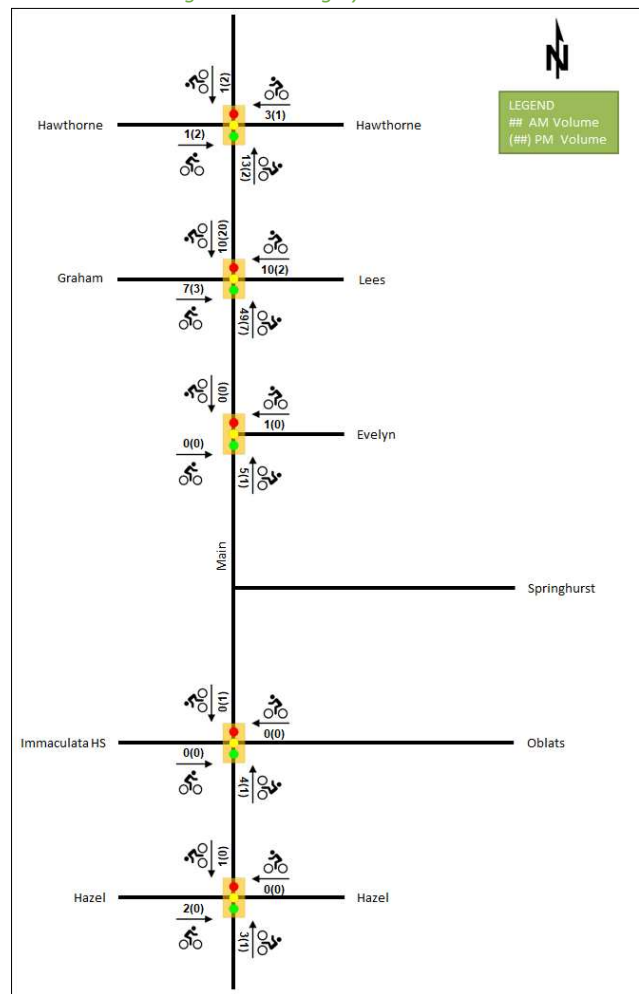
Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: February 6, 2023

Pedestrian and cyclist volumes included in study area intersection counts, presented in Section 2.2.7, have been compiled and are illustrated in Figure 5 and Figure 6 respectively.

Figure 5: Existing Pedestrian Volumes



Figure 6: Existing Cyclist Volumes



### 2.2.5 Existing Transit

Figure 7 illustrates the transit system map in the study area and Figure 8 illustrates nearby transit stops. All transit information is from February 6, 2023 and is included for general information purposes and context to the surrounding area.

Within the study area, the routes #5, #16, #55, #56 travel along Main Street, with the route #5 continuing along Hawthorne Avenue, the route #16 continuing along Lees Avenue and the routes #55 and #56 continuing along both Hawthorne Avenue and Lees Avenue. The site is overlapped by the 800-metre radius from the Lees LRT Station on the O-Train Confederation Line and is within 950 metres' walk. The frequency of these routes within proximity of the proposed site currently are:

- Route #5 – 30-minute service all day
- Route #16 – 30-minute service all day
- Route #55 – 15-minute daytime service, 30-minute service after 7:00PM

- Route #56 – Operating during peak periods only, 15-minute service in peak period/direction, 30-minute service in remainder of peak period and in off-peak period/direction

Figure 7: Existing Study Area Transit Service



Source: <http://www.octranspo.com/> Accessed: February 6, 2023

Figure 8: Existing Study Area Transit Stops



Source: <http://www.octranspo.com/> Accessed: February 6, 2023

### 2.2.6 Existing Area Traffic Management Measures

Bulb-outs, including cycle-friendly bulb-outs, narrow curb radii, and textured crossing treatments at intersections along Main Street, speed humps on Hawthorne Avenue, and on-street parking throughout are the primary traffic calming measures within the study area.

2.2.7 Existing Peak Hour Travel Demand

Existing turning movement counts were acquired from the City of Ottawa for the existing study area intersections. Table 1 summarizes the intersection count dates.

Table 1: Intersection Count Date

Intersection	Count Date
Main Street at Hawthorne Avenue	Tuesday, March 3, 2020
Main Street at Graham Avenue/Lees Avenue	Tuesday, November 6, 2018
Main Street at Evelyn Avenue	Tuesday, March 7, 2017
Main Street at Immaculata HS/des Oblats Avenue	Tuesday, March 7, 2017
Main Street at Hazel Street	Tuesday, March 7, 2017

Figure 9 illustrates the existing traffic counts, balanced along Main Street, and Table 2 summarizes the existing intersection operations. The level of service for signalized intersections is based on volume-to-capacity ratio (v/c) calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection. Detailed turning movement count data is included in Appendix B and the Synchro worksheets are provided in Appendix C.

Figure 9: Existing Traffic Counts

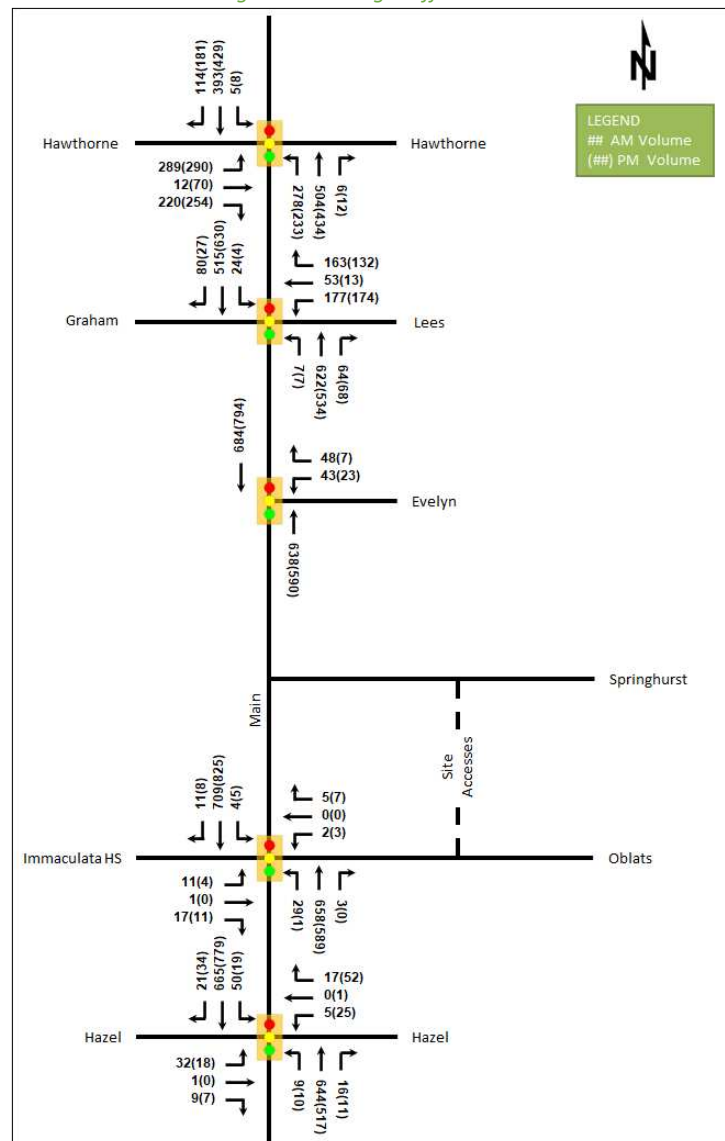


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )	LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )
Main Street at Hawthorne Avenue <i>Signalized</i>	EBL/T	D	0.83	55.2	#136.6	F	1.09	117.3	#197.5
	EBR	A	0.33	3.9	14.6	A	0.43	5.4	18.9
	NB	B	0.68	10.0	31.0	A	0.57	12.7	51.3
	SB	A	0.54	25.1	58.1	A	0.53	21.3	69.2
	<b>Overall</b>	<b>D</b>	<b>0.86</b>	<b>21.0</b>	-	<b>D</b>	<b>0.82</b>	<b>34.2</b>	-
Main Street at Graham Avenue/Lees Avenue <i>Signalized</i>	WBL	D	0.84	69.8	#74.7	B	0.70	53.6	#64.6
	WBT/R	A	0.53	16.8	37.4	A	0.37	8.9	17.4
	NB	A	0.47	14.5	54.7	A	0.41	13.4	46.1
	SB	A	0.44	6.9	23.4	A	0.41	16.3	50.5
	<b>Overall</b>	<b>A</b>	<b>0.56</b>	<b>17.8</b>	-	<b>A</b>	<b>0.47</b>	<b>18.6</b>	-
Main Street at Evelyn Avenue <i>Signalized</i>	WBL/R	A	0.29	20.8	22.2	A	0.09	23.3	11.0
	NBT	B	0.64	15.8	112.8	B	0.63	8.3	34.6
	SBT	A	0.36	11.1	m45.6	A	0.45	12.7	53.3
	<b>Overall</b>	<b>A</b>	<b>0.52</b>	<b>13.5</b>	-	<b>A</b>	<b>0.46</b>	<b>11.1</b>	-
Main Street at Immaculata HS/des Oblats Avenue <i>Signalized</i>	EB	A	0.12	19.3	9.4	A	0.04	0.2	0.0
	WBL	A	0.01	30.5	2.2	A	0.02	30.3	2.8
		A	0.01	0.0	0.0	A	0.01	0.0	0.0
	NBL	A	0.12	7.8	m3.1	A	0.01	9.0	m0.2
	NBT/R	C	0.75	16.2	#180.1	B	0.67	15.3	#72.5
	SBL	A	0.01	6.5	1.3	A	0.02	5.6	m0.7
	SBT/R	E	0.91	38.1	#216.7	E	0.95	37.2	#261.8
	<b>Overall</b>	<b>B</b>	<b>0.64</b>	<b>26.9</b>	-	<b>B</b>	<b>0.69</b>	<b>27.7</b>	-
Main Street at Hazel Street <i>Signalized</i>	EB	A	0.21	29.3	15.0	A	0.08	0.5	0.0
	WBL/T	A	0.03	31.6	4.1	A	0.14	34.1	12.0
	WBR	A	0.06	0.4	0.0	A	0.17	1.0	0.0
	NBL	A	0.04	7.2	2.3	A	0.05	7.0	2.3
	NBT/R	C	0.77	23.8	#170.5	A	0.54	12.8	97.8
	SBL	A	0.23	9.9	m3.9	A	0.06	3.2	m0.5
	SBT/R	B	0.69	10.8	m44.3	C	0.80	7.5	m#33.9
	<b>Overall</b>	<b>B</b>	<b>0.68</b>	<b>17.1</b>	-	<b>C</b>	<b>0.74</b>	<b>9.5</b>	-

Notes: Saturation flow rate of 1800 veh/h/lane  
Queue is measured in metres  
Peak Hour Factor = 0.90

Delay = average driver delay in seconds  
m = metered queue  
# = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, the study area intersections operate well with the exception of the intersection of Main Street and Hawthorne Avenue under the existing signal timing.

Extended queueing may be observed during the AM peak hour on the northbound through/right movements at the intersections of Main Street at the Immaculata High School access/des Oblats Avenue and Main Street at Hazel Street. Extended queueing may additionally be observed during both peak hours on the westbound left movement at the intersection of Main Street at Graham Avenue/Lees Avenue, the southbound through/right movements at the intersections of Main Street at the Immaculata High School access/des Oblats Avenue, and Main Street at Hazel Street.

It is noted that during the PM peak hour, queuing on the northbound movement at the intersection of Main Street at Hawthorne Avenue and on the southbound movement at the intersection of Main Street and Graham Avenue/Lees Avenue will exceed the distance between these two intersections, which may interfere with operations beyond the modelled conditions.

The eastbound left/through movement at the intersection of Main Street at Hawthorne Avenue is modeled as being over theoretical capacity with high delays and extended queues during both peak hours and with potential high delays for the overall intersection during the PM peak hour. As the remaining movements operate with high level of service during both peak hours, split could be reallocated to the overcapacity movement to reduce all movements' v/c ratios to 1.00 or below.

2.2.8 Collision Analysis

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study area road network. Table 3 summarizes the collisions types and conditions in the study area, Figure 10 illustrates the intersections and segments analyzed, and Table 4 summarizes the total collisions for each of these locations. Collision data are included in Appendix D.

Table 3: Study Area Collision Summary, 2016-2020

		Number	%
<b>Total Collisions</b>		<b>23</b>	<b>100%</b>
<b>Classification</b>	<b>Fatality</b>	0	0%
	<b>Non-Fatal Injury</b>	2	9%
	<b>Property Damage Only</b>	21	91%
<b>Initial Impact Type</b>	<b>Angle</b>	5	22%
	<b>Rear end</b>	8	35%
	<b>Sideswipe</b>	5	22%
	<b>Turning Movement</b>	1	4%
	<b>SMV Unattended</b>	1	4%
	<b>SMV Other</b>	2	9%
	<b>Other</b>	1	4%
<b>Road Surface Condition</b>	<b>Dry</b>	15	65%
	<b>Wet</b>	4	17%
	<b>Loose Snow</b>	2	9%
	<b>Packed Snow</b>	1	4%
	<b>Ice</b>	1	4%
<b>Pedestrian Involved</b>		1	4%
<b>Cyclists Involved</b>		0	0%

Figure 10: Study Area Collision Records

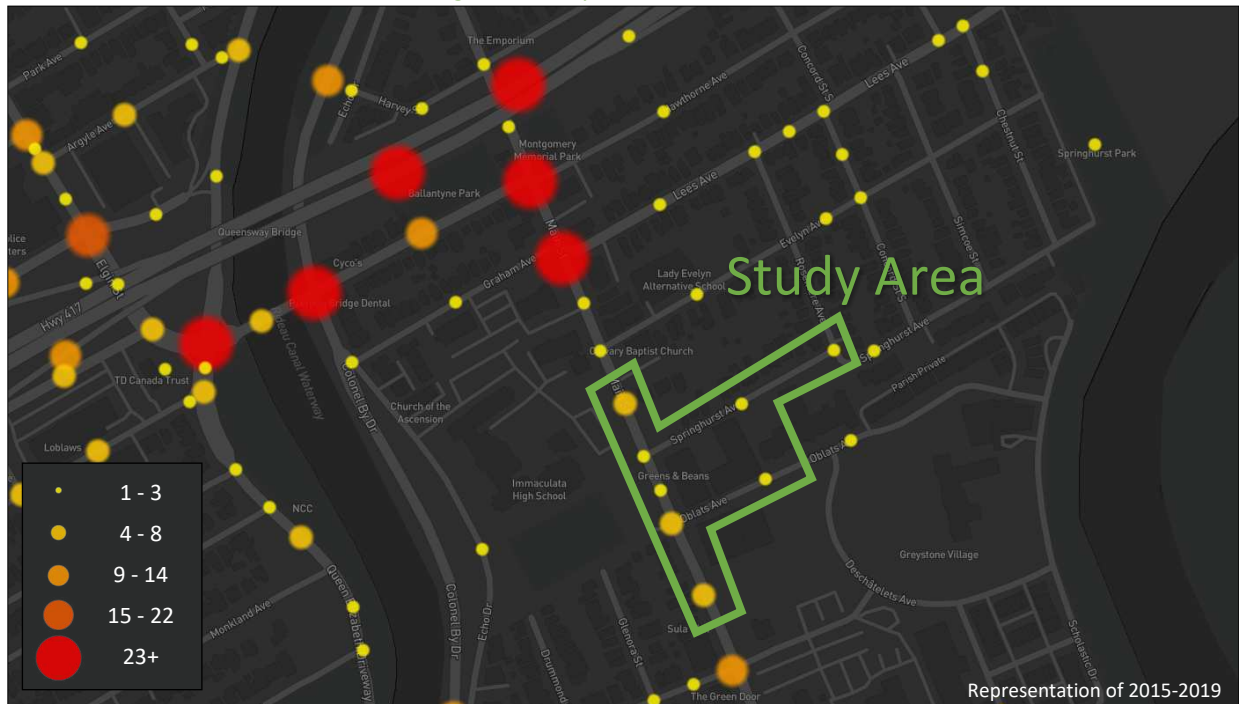


Table 4: Summary of Collision Locations, 2016-2020

Intersections / Segments	Number	%
	<b>23</b>	<b>100%</b>
Main St @ Springhurst Ave	1	4%
Main St @ des Oblats Ave	6	26%
Rosemere Ave @ Springhurst Ave	1	4%
Main St btwn Evelyn Ave & Springhurst Ave	5	22%
Main St btwn Springhurst Ave & Oblats Ave	2	9%
Main St btwn des Oblats Ave & Hazel St	6	26%
Springhurst Ave btwn Main St & Rosemere Ave	1	4%
Des Oblats Ave btwn Main St & End	1	4%

Within the study area, no locations were subject to a high incidence of collisions within the 2016-2020 time period. Twenty-one of the total 23 collisions involved property damage only and the remaining two had non-fatal injuries. The collision types are most represented by rear end with eight collisions, followed by sideswipe and angle with five collisions each, and two or fewer as SMV (other), turning movement, SMV (unattended), and other. Rear end and sideswipe collisions, comprising 57% of study area collisions, are generally associated with congestion. Three of the five angle collisions happened along Main Street and may be associated with private accesses, where the remaining two angle collisions were at the intersection with des Oblats Avenue. No further patterns were noted, and weather conditions are not considered to affect collisions within the study area.

### 2.3 Planned Conditions

#### 2.3.1 Changes to the Area Transportation Network

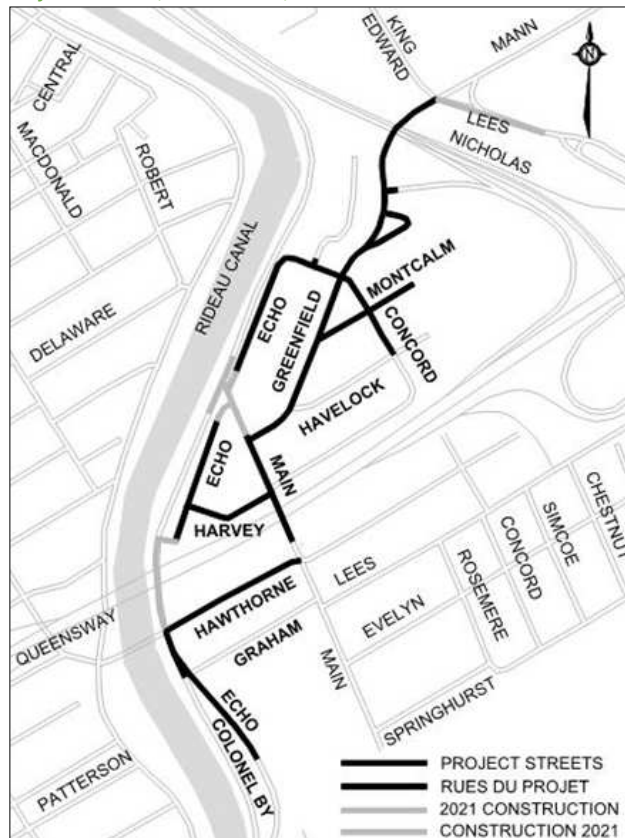
No changes are listed for the study area transportation network in the TMP and in Ottawa’s Planned Construction Projects portal, and the subject site is not within a CDP area and is not subject to any additional policy considerations.



Clegg Street West of Main Street is identified as being included in the Glebe Neighbourhood Bikeway affordable cycling phase one project (2014-2019).

The Greenfield Avenue, Main Street, Hawthorne Avenue et al. Reconstruction Project was initiated in summer 2021 and is anticipated to be completed in 2025. As part of the civil infrastructure project, complete street upgrades will be undertaken to improve the experience of all road users in the northern section of Old Ottawa East. Figure 11 illustrates the project limits.

Figure 11: Greenfield Avenue, Main Street, Hawthorne Avenue et al. Reconstruction Project



Source: Project e-Newsletter, October 6, 2022

### 2.3.2 Other Study Area Developments

#### 172 Main Street, 10 des Oblats Avenue

The proposed development application includes a site plan for the construction of a nine-storey, 119-unit mixed use building with 2,000ft<sup>2</sup> of ground floor commercial space and a six-storey, 125-unit mixed use building with 18,000ft<sup>2</sup> of commercial space. The development was anticipated to be built-out in 2021 and to generate 74 new AM and 101 new PM peak hour two-way auto trips. (Novatech, 2018)

#### 175 Main Street, 225 Scholastic Drive

The proposed development application includes a site plan for the construction of an eight-storey, 146-unit retirement home. Built-out in 2020, the development was anticipated to generate five new AM and 14 new PM peak hour two-way auto trips. (Novatech, 2017)

#### 225 Scholastic Drive

The proposed development application includes a zoning by-law amendment to permit the redevelopment of an existing heritage building to include a school supporting up to 351 students. Anticipated to see initial occupancy

in 2021, the development was anticipated to generate 57 new AM and 140 new PM peak hour two-way auto trips. (Novatech, 2020)

*248 Main Street*

The proposed development application includes a site plan for the construction a three-storey building including two residential units and a commercial unit at grade. No TIA is available for this development.

*375 Deschatelets Avenue*

The proposed development application includes a site plan for the construction of three-and-a-half-storey 18-unit stacked townhouse dwelling. The development was anticipated to be built out in 2021 and to generate seven new AM and eight new PM peak hour two-way auto trips. (Novatech, 2018)

*360 Deschatelets Avenue*

The proposed development application includes a site plan for the construction an 85-unit apartment building. No TIA is available for this development.

### 3 Study Area and Time Periods

#### 3.1 Study Area

The study area will include the intersections of Main Street at:

- Hawthorne Avenue
- Graham Avenue/Lees Avenue
- Evelyn Avenue
- Immaculata HS/des Oblats Avenue
- Hazel Street

The boundary streets will be Springhurst Avenue and des Oblats Avenue and no screenlines are present within proximity to the site.

#### 3.2 Time Periods

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

#### 3.3 Horizon Years

The anticipated build-out year is 2025. As a result, the full build-out plus five years horizon year is 2030.

### 4 Exemption Review

Table 5 summarizes the exemptions for this TIA.

*Table 5: Exemption Review*

Module	Element	Explanation	Exempt/Required
<b>Design Review Component</b>			
<b>4.1 Development Design</b>	4.1.2 Circulation and Access	Only required for site plans	Required
	4.1.3 New Street Networks	Only required for plans of subdivision	Exempt

Module	Element	Explanation	Exempt/Required
4.2 Parking	4.2.1 Parking Supply	Only required for site plans	Required
	4.2.2 Spillover Parking	Only required for site plans where parking supply is 15% below unconstrained demand	Required
<b>Network Impact Component</b>			
4.5 Transportation Demand Management	All Elements	Not required for site plans expected to have fewer than 60 employees and/or students on location at any given time	Required
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds	Required
4.8 Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning	Exempt

## 5 Development-Generated Travel Demand

### 5.1 Mode Shares

Examining the mode shares presented in the TRANS Trip Generation Manual (2020) for the district derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the existing mode shares by land use for Ottawa Inner are summarized in Figure 9. While the development may achieve low-to-no personal auto ownership by the tenants, the auto driver mode has not been modified to account for deliveries and ride-hailing.

Table 6: Mode Shares – Ottawa Inner

Travel Mode	Multi-Unit (High-Rise)	
	AM	PM
Auto Driver	26%	25%
Auto Passenger	6%	8%
Transit	28%	21%
Cycling	5%	6%
Walking	34%	39%
<b>Total</b>	<b>100%</b>	<b>100%</b>

### 5.2 Trip Generation

This TIA has been prepared using the vehicle and person trip rates for the residential dwellings using the TRANS Trip Generation Manual (2020). Table 7 summarizes the person trip rates for the proposed residential land use for each peak period.

Table 7: Trip Generation Person Trip Rates

Dwelling Type	Land Use Code	Peak Period	Person Trip Rates
Multi-Unit (High-Rise)	221 & 222 (TRANS)	AM	0.80
		PM	0.90

Using the above Person Trip rates, the total person trip generation for each peak period has been estimated. Table 8 below illustrates the total person trip generation by dwelling type.

Table 8: Total Person Trip Generation

Land Use	Units / GFA	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
<b>Multi-Unit (High-Rise)</b>	284	70	157	227	148	108	256

Using the above site-specific AM and PM mode shares and the person trip rates, the person trips by mode have been projected. Trip generation by peak hour has been forecasted using the prescribed peak period conversion factors presented in the TRANS Trip Generation Manual (2020) for the residential component. Figure 10 summarizes the trip generation by mode for the residential dwellings.

Table 9: Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
<b>Multi-Unit (High-Rise)</b>	Auto Driver	<b>26%</b>	9	20	28	<b>25%</b>	16	12	28
	Auto Passenger	<b>6%</b>	2	4	7	<b>8%</b>	5	4	9
	Transit	<b>28%</b>	11	24	35	<b>21%</b>	15	11	25
	Cycling	<b>5%</b>	2	5	6	<b>6%</b>	4	3	7
	Walking	<b>34%</b>	14	31	45	<b>39%</b>	30	22	52
	<b>Total</b>	<b>100%</b>	<b>35</b>	<b>79</b>	<b>114</b>	<b>100%</b>	<b>65</b>	<b>48</b>	<b>113</b>

As shown above, 28 AM and 28 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

### 5.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the residential dwellings, and these patterns were applied based on the build-out of Ottawa Inner. Table 10 below summarizes the distributions.

Table 10: OD Survey Distribution – Ottawa Inner

To/From	Residential % of Trips
<b>North</b>	15%
<b>South</b>	30%
<b>East</b>	10%
<b>West</b>	45%
<b>Total</b>	100%

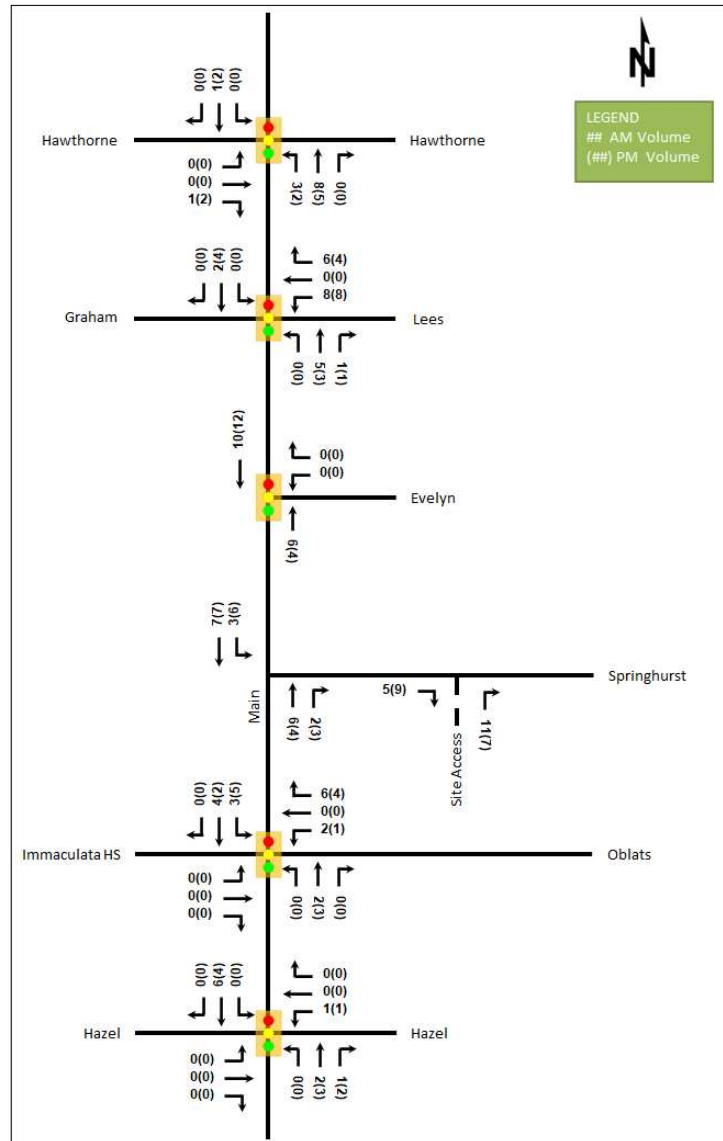
### 5.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Table 11 summarizes the proportional assignment to the study area roadways, and Figure 12 illustrates the new site generated volumes. The vehicles assigned to des Oblats Avenue are accessing the site frontage.

Table 11: Trip Assignment

To/From	Inbound Via	Outbound Via
<b>North</b>	10% Main St (N) 5% Lees Ave (E)	15% Main St (N)
<b>South</b>	30% Main St (S)	30% Main St (S)
<b>East</b>	10% Lees Ave (E)	10 % Lees Ave (E)
<b>West</b>	25% Lees Ave (E) 15% Hawthorne Ave (W) 5% Main St (S)	25% Main St (N) 15% Hawthorne Ave (W) 5% Main St (S)
<b>Total</b>	<b>100%</b>	<b>100%</b>

Figure 12: New Site Generation Auto Volumes



## 6 Background Network Travel Demands

### 6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. No study area projects are considered to have any notable impact on the study area traffic volumes and travel patterns.

### 6.2 Background Growth

A review of the background projections from the City’s TRANS Regional Model for the 2011 and 2031 horizons was completed to determine the background growth for each of the study area roadways. The TRANS model plots and a summary of the results of the model interpolation are provided in Appendix E.

In general, the growth rates in the study area derived from the two TRANS model horizons are projected to be negative along the Main Street corridor, to be low in the eastbound direction and to be higher in the westbound direction on Lees Avenue during the AM peak hour. Growth rates derived from the 2011 to the 2031 model horizons rounded to the nearest 0.25% will be peak-directionally applied to the appropriate major turning movements to and from the identified roadways at the study area intersections. Table 12 summarizes the growth rates applied within the study area.

*Table 12: TRANS Regional Model Projections – Study Area Growth Rates*

Street	AM Peak Hour		PM Peak Hour	
	Eastbound	Westbound	Eastbound	Westbound
Hawthorne Ave	0.75%	-	-	0.75%
Lees Ave	0.25%	6.00%	6.00%	0.25%
	Northbound	Southbound	Northbound	Southbound
Main St	-	-	-	-

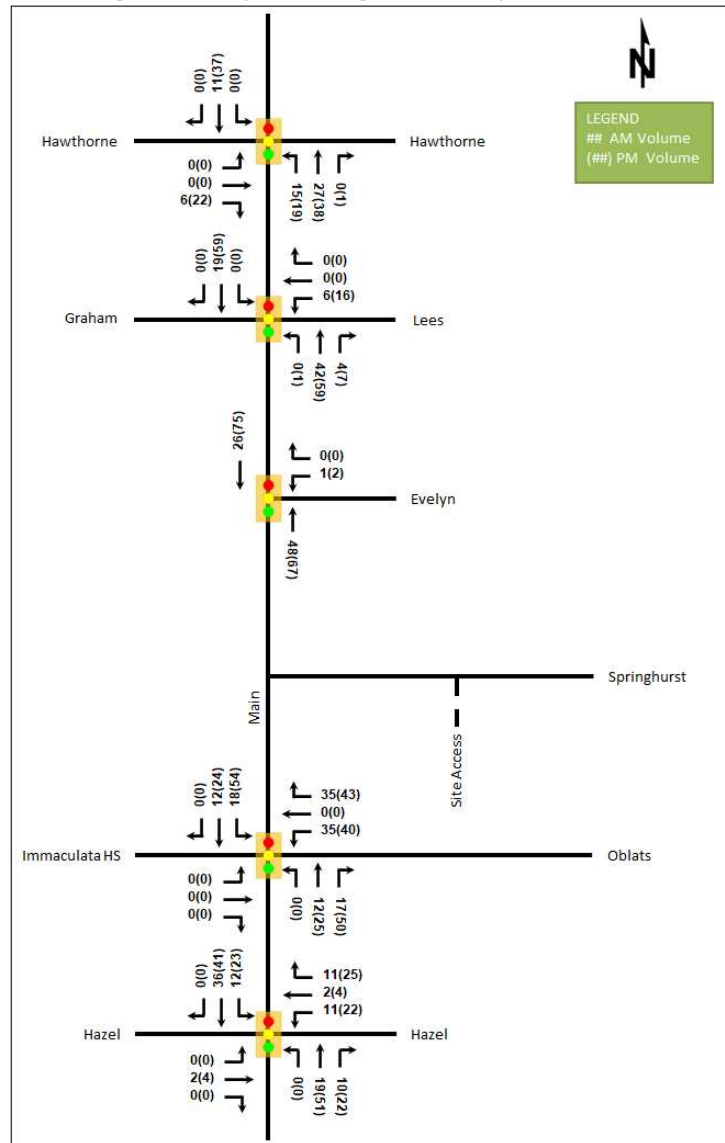
### 6.3 Other Developments

The background developments explicitly considered in the background conditions (Section 6.2) include:

- 172 Main Street, 10 des Oblats Avenue
- 175 Main Street, 225 Scholastic Drive
- 225 Scholastic Drive
- 375 Deschatelets Avenue

These developments are anticipated to be built-out before the subject site and will be included in both background horizons. The background development traffic volumes are illustrated in Figure 13.

Figure 13: Study Area Background Development Volumes



## 7 Demand Rationalization

### 7.1 2025 Future Background Operations

Figure 14 illustrates the 2025 background volumes and Table 13 summarizes the 2025 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and HCM average delay for unsignalized intersections. The synchro worksheets for the 2025 future background horizon are provided in Appendix F.

Figure 14: 2025 Future Background Volumes

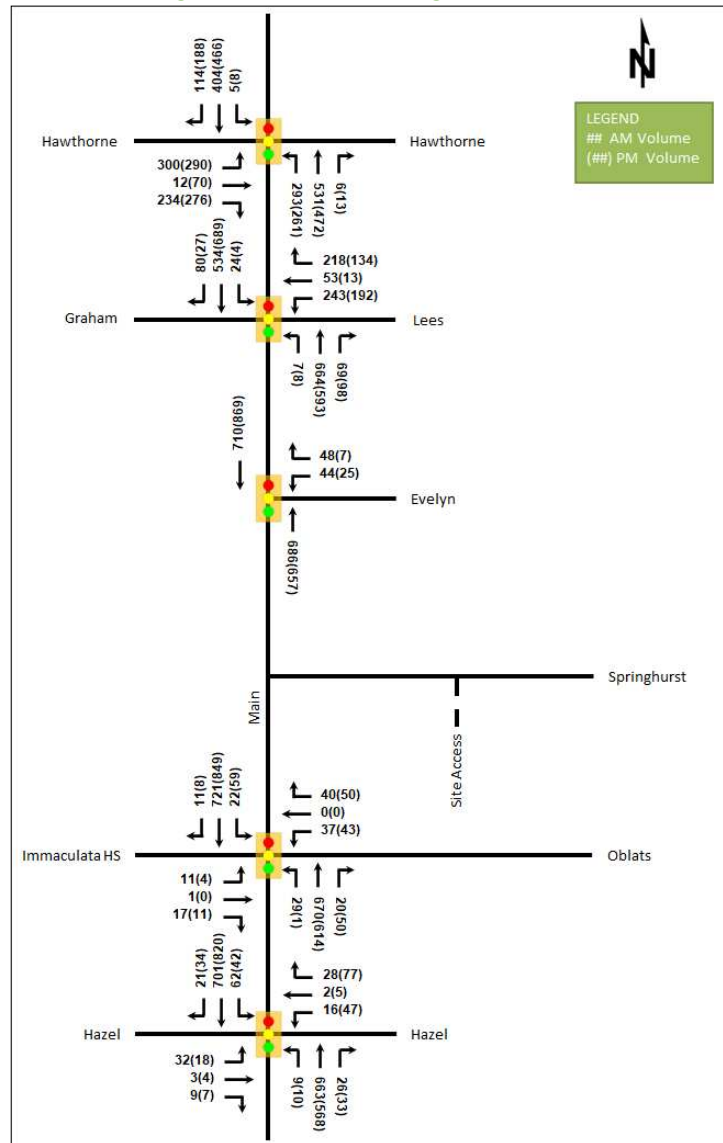


Table 13: 2025 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )	LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )
Main Street at Hawthorne Avenue <i>Signalized</i>	EBL/T	C	0.77	50.6	#126.1	E	0.98	89.3	#175.9
	EBR	A	0.32	3.9	14.5	A	0.42	5.4	18.7
	NB	B	0.63	9.5	31.3	A	0.56	12.6	50.7
	SB	A	0.49	24.2	52.5	A	0.50	20.9	66.2
	<b>Overall</b>	<b>D</b>	<b>0.81</b>	<b>19.6</b>	-	<b>C</b>	<b>0.78</b>	<b>27.8</b>	-
Main Street at Graham Avenue/Lees Avenue <i>Signalized</i>	WBL	F	1.03	109.8	#97.0	B	0.70	53.3	#64.2
	WBT/R	A	0.56	13.9	35.0	A	0.34	8.9	16.6
	NB	A	0.45	13.9	50.9	A	0.43	13.6	47.9
	SB	A	0.40	6.7	22.0	A	0.40	15.8	49.4
	<b>Overall</b>	<b>A</b>	<b>0.59</b>	<b>23.8</b>	-	<b>A</b>	<b>0.48</b>	<b>18.5</b>	-



Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )	LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )
<b>Main Street at Evelyn Avenue Signalized</b>	WBL/R	A	0.27	20.1	20.3	A	0.09	23.7	10.5
	NBT	B	0.62	15.1	106.6	B	0.64	9.2	m37.0
	SBT	A	0.34	12.7	m42.5	A	0.44	12.5	52.2
	<b>Overall</b>	<b>A</b>	<b>0.49</b>	<b>14.3</b>	-	<b>A</b>	<b>0.46</b>	<b>11.3</b>	-
<b>Main Street at Immaculata HS/des Oblats Avenue Signalized</b>	EB	A	0.11	19.7	8.9	A	0.04	0.2	0.0
	WBL	A	0.23	35.6	14.3	A	0.24	35.2	15.8
	WBT/R	A	0.07	0.2	0.0	A	0.09	0.3	0.0
	NBL	A	0.09	3.8	m1.4	A	0.00	10.0	m0.1
	NBT/R	C	0.75	12.6	#168.2	D	0.81	24.1	#161.1
	SBL	A	0.06	6.7	3.7	A	0.17	6.5	6.3
	SBT/R	C	0.79	26.7	#189.3	D	0.88	27.4	#234.7
	<b>Overall</b>	<b>A</b>	<b>0.60</b>	<b>19.3</b>	-	<b>B</b>	<b>0.69</b>	<b>24.5</b>	-
<b>Main Street at Hazel Street Signalized</b>	EB	A	0.20	29.2	14.5	A	0.13	27.9	10.8
	WBL/T	A	0.09	32.7	8.5	A	0.26	36.6	18.3
	WBR	A	0.09	0.5	0.0	A	0.22	1.5	0.0
	NBL	A	0.03	7.2	2.1	A	0.04	7.0	2.2
	NBT/R	C	0.73	21.9	139.1	A	0.59	15.6	106.1
	SBL	A	0.23	11.4	m8.3	A	0.13	4.0	m1.5
	SBT/R	B	0.65	14.2	94.4	C	0.76	7.4	m#42.2
	<b>Overall</b>	<b>B</b>	<b>0.64</b>	<b>17.8</b>	-	<b>C</b>	<b>0.73</b>	<b>11.3</b>	-

Notes: Saturation flow rate of 1800 veh/h/lane  
 Queue is measured in metres  
 Peak Hour Factor = 1.00

Delay = average driver delay in seconds  
 m = metered queue  
 # = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours at the 2025 future background horizon, the study area intersections generally operate similarly to the existing conditions.

The westbound left movement at the intersection of Main Street and Graham Avenue/Lees Avenue is forecasted to be over capacity with high delays during the AM peak hour at this horizon.

The reallocation of one second of split from the northbound/southbound phase to the overcapacity westbound phase would reduce all v/c ratios at the intersection to 1.00 or below.

### 7.2 2030 Future Background Operations

Figure 15 illustrates the 2030 background volumes and Table 14 summarizes the 2030 background intersection operations. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and HCM average delay for unsignalized intersections. The synchro worksheets for the 2030 future background horizon are provided in Appendix G.

Figure 15: 2030 Future Background Volumes

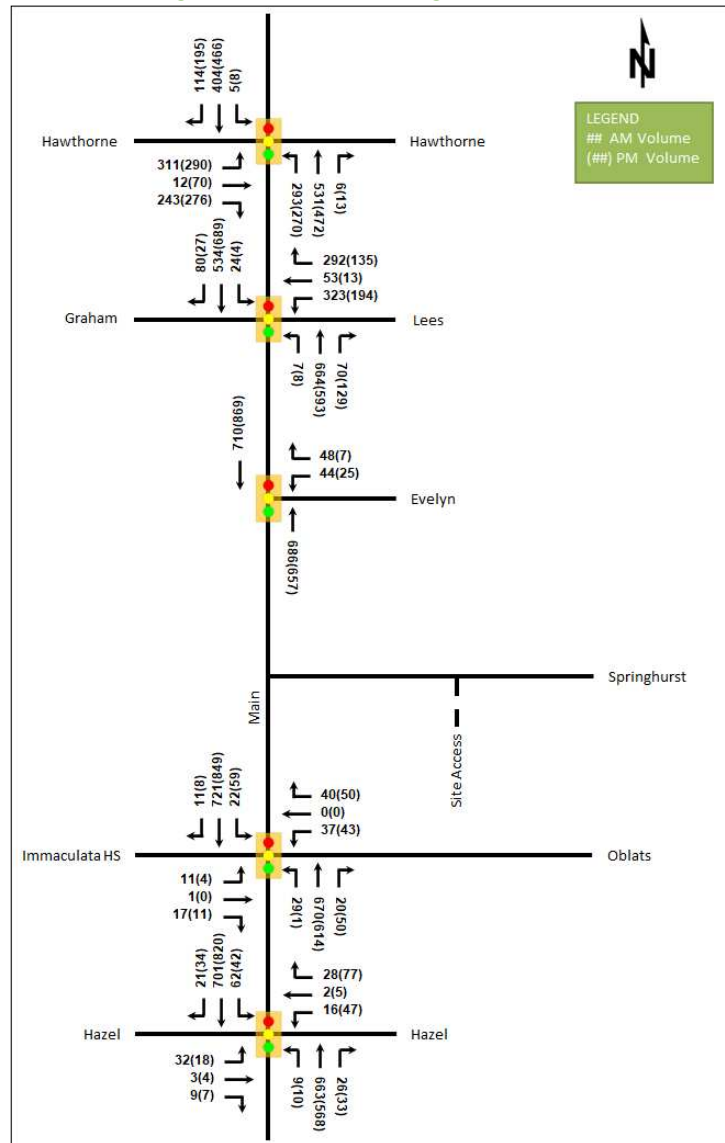


Table 14: 2030 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )	LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )
Main Street at Hawthorne Avenue <i>Signalized</i>	EBL/T	C	0.80	52.7	#131.3	E	0.98	89.3	#175.9
	EBR	A	0.33	3.9	14.6	A	0.42	5.4	18.7
	NB	B	0.63	9.9	35.1	A	0.57	12.7	51.5
	SB	A	0.49	24.2	52.5	A	0.51	20.9	66.7
	<b>Overall</b>	<b>D</b>	<b>0.82</b>	<b>20.3</b>	-	<b>C</b>	<b>0.79</b>	<b>27.8</b>	-
Main Street at Graham Avenue/Lees Avenue <i>Signalized</i>	WBL	<b>F</b>	<b>1.37</b>	<b>226.9</b>	<b>#134.7</b>	C	0.71	53.8	#65.0
	WBT/R	C	0.71	21.5	55.8	A	0.35	8.9	16.6
	NB	A	0.45	13.9	51.1	A	0.46	14.0	50.5
	SB	A	0.40	6.8	22.3	A	0.40	15.8	49.4
	<b>Overall</b>	<b>B</b>	<b>0.67</b>	<b>46.6</b>	-	<b>A</b>	<b>0.50</b>	<b>18.6</b>	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95 <sup>th</sup> )	LOS	V/C	Delay	Q (95 <sup>th</sup> )
<b>Main Street at Evelyn Avenue Signalized</b>	WBL/R	A	0.27	20.1	20.3	A	0.09	23.7	10.5
	NBT	B	0.62	15.1	106.6	B	0.64	9.2	m37.0
	SBT	A	0.34	14.6	m40.9	A	0.44	12.5	52.2
	<b>Overall</b>	<b>A</b>	<b>0.49</b>	<b>15.2</b>	-	<b>A</b>	<b>0.46</b>	<b>11.3</b>	-
<b>Main Street at Immaculata HS/des Oblats Avenue Signalized</b>	EB	A	0.11	19.7	8.9	A	0.04	0.2	0.0
	WBL	A	0.23	35.6	14.3	A	0.24	35.2	15.8
	WBT/R	A	0.07	0.2	0.0	A	0.09	0.3	0.0
	NBL	A	0.09	3.8	m1.4	A	0.00	10.0	m0.1
	NBT/R	C	0.75	12.6	#168.2	D	0.81	24.1	#161.1
	SBL	A	0.06	6.7	3.7	A	0.17	6.5	6.3
	SBT/R	C	0.79	26.7	#189.3	D	0.88	27.4	#234.7
	<b>Overall</b>	<b>A</b>	<b>0.60</b>	<b>19.3</b>	-	<b>B</b>	<b>0.69</b>	<b>24.5</b>	-
<b>Main Street at Hazel Street Signalized</b>	EB	A	0.20	29.2	14.5	A	0.13	27.9	10.8
	WBL/T	A	0.09	32.7	8.5	A	0.26	36.6	18.3
	WBR	A	0.09	0.5	0.0	A	0.22	1.5	0.0
	NBL	A	0.03	7.2	2.1	A	0.04	7.0	2.2
	NBT/R	C	0.73	21.9	139.1	A	0.59	15.6	106.1
	SBL	A	0.23	11.4	m8.3	A	0.13	4.0	m1.5
	SBT/R	B	0.65	14.2	94.4	C	0.76	7.4	m#42.2
	<b>Overall</b>	<b>B</b>	<b>0.64</b>	<b>17.8</b>	-	<b>C</b>	<b>0.73</b>	<b>11.3</b>	-

Notes: Saturation flow rate of 1800 veh/h/lane  
Queue is measured in metres  
Peak Hour Factor = 1.00

Delay = average driver delay in seconds  
m = metered queue  
# = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours at the 2030 future background horizon, the study area intersections operate similarly to the 2025 future background conditions.

The capacity, delay and queuing issues have increased at this horizon on the westbound left movement at the intersection of Main Street and Graham Avenue/Lees Avenue during the AM peak period.

The reallocation of seven seconds of split from the northbound/southbound phase to the overcapacity westbound phase would reduce all v/c ratios at the intersection to 1.00 or below.

### 7.3 Modal Share Sensitivity

Capacity issues have been noted at the Main Street at Hawthorne Avenue on the eastbound left/through movement during the AM peak hour. This effect is due to the intersection timing having been previously calibrated for north-south arterial priority and the balance of volumes being forecast to change with the addition of background growth. Residual capacity exists in the remaining movements and, as previously stated, shifting split from the north-south phases to the westbound phase would resolve the capacity issue. As such, no further rationalization for network demand is required.

The development proposes a reduced parking rate and site-generated auto trips are assumed to be conservative. Considering the foregoing, rationalization for site-generated demand is not required for this TIA.

## 8 Development Design

### 8.1 Design for Sustainable Modes

Hard surface connections are provided between building entrances and the surrounding pedestrian facilities on des Oblats Avenue and Springhurst Avenue. Bicycle parking is provided internal to the building and in surface racks

for visitors/short term on each the des Oblats Avenue and Springhurst Avenue frontages. Surface vehicle parking for visitors is proposed to be accessed via Springhurst Avenue.

Transit stops for all area routes listed in Section 2.2.5 are within 400 metres' walking distance of the closest building entrance, and Lees Station is a 950-metre walk from the building entrance on Springhurst Avenue.

A 1.5-metre-wide mid-block pathway connection is provided between the sidewalks on Springhurst Avenue and des Oblats Avenue on the west property line.

## 8.2 Circulation and Access

Vehicle access is to be provided via a 6.0-metre-wide right-in/right-out access on Springhurst Avenue. Emergency services are anticipated to access the site via the two public road frontages. Garbage collection and loading operations will occur via a depressed curb on Springhurst Road adjacent to the parking lot access.

The existing west site access on Springhurst Avenue is to be removed as part of the development, and the east access is to be relocated, where the curbs will be reinstated to full height in the old access locations.

# 9 Parking

## 9.1 Parking Supply

The development is to provide 390 bicycle parking spaces located below ground and 28 bicycle parking spaces in surface racks. Twenty-seven vehicle parking spaces for visitors are proposed in a surface lot accessing Springhurst Avenue, and two carshare spaces are reserved on the des Oblats Avenue frontage.

The zoning by-law prescribes the inclusion of 136 vehicle parking spaces for residents, 27 vehicle parking spaces for visitors, and 142 bicycle parking spaces for the proposed development. The minimum bicycle parking requirement is satisfied, the minimum vehicle parking requirement for visitors is satisfied, however, a Parking By-Law exemption is being sought to eliminate the vehicle parking requirement for residents. The following section will outline the support and limited impacts of the exemption.

## 9.2 Spillover Parking

As the proposed parking provision is more than 15% below that prescribed by the by-law, spillover parking should be considered. While the required visitor parking is proposed as being met by the development, it is noted that resident parking is below the value prescribed by the zoning by-law by the full 136 spaces.

### 9.2.1 Tenant Factors

A number of mitigating factors are present within the proposed development, however, chief among them will be the composition of the tenancy, and the marketing of units as not to have access to parking.

The building is marketed to prospective tenants who work nearby, attend school nearby, or generally have an urban lifestyle. The housing model is one of "attainable housing" where the units come furnished. It is not anticipated that private vehicle ownership will be high amongst prospective tenants. Furthermore, making these prospective tenants aware that they will have no parking space early in the process of engagement will select for tenants who do not require regular use of a car, especially given the cycling facilities nearby, the proposed bike parking spaces, and proximity to transit. Only a minority of prospective tenants with vehicles might proceed to sign an annual lease a unit with no access to parking and the resultant overall potential for spillover parking will be low.

### 9.2.2 Mobility Options

The site is overlapped by the 800-metre radial distance from the Lees LRT Station and is less than a one-kilometre walking distance to the Station from the building entrances. This distance is similar to TOD applicable sites throughout Ottawa, for which policies including the elimination of parking requirements may be applicable. The walking routes to Lees Station available include sidewalk connectivity through Springhurst Avenue to Rosemere Avenue and Lees Avenue, or through Springhurst Avenue or des Oblats Avenue and the Rideau River Nature Trail along the Rideau River.

Main Street provides protected cycling corridor, an enhanced, wide pedestrian realm including bus stops allowing connections to the larger area network. Similarly, the Rideau River Nature Trail also allows for connectivity to the north and south. To enable the use of these facilities by residents, on-site bicycle parking is proposed at 1.47 spaces per unit, approximately three times the amount as required by the zoning by-law.

Two car share spaces are being provided on the site to provide car flexible options for residents without the need to own and park a car on site. This was an option discussed with the City's Area Traffic Management team as a potential mitigation for the site. The additional benefit of providing the car share is it will add a community benefit for the area to encourage the reduction of auto dependency.

### 9.2.3 Area Parking Restrictions

Notwithstanding the site and tenant factors reducing the likelihood of spill over parking, the adjacent neighbourhood parking restrictions were reviewed.

On-street parking is permitted within the community to the north of the site where most local streets permit parking on at least one side of the road. It is also anticipated that parking will be available within the developing area to the south of the site. Any potential spillover parking would be located as close to the building as available, and Springhurst Avenue, Rosemere Avenue, Concord Street South, and Evelyn Avenue would be the roadways most likely to be utilized.

The community may work with the City and local Councillor to adjust parking restrictions or permitted times on these roadways. It is cautioned that any changes will also affect the existing residents as much as restrict future residents of the community.

### 9.2.4 Community Adaptation

It is acknowledged that the adjacent community has concerns with on-street parking demands increasing. The road space is a public space for everyone to use as the community evolves. The brunt of this change is currently incumbent on the new developments to mitigate/restrict and the existing area is left to continue operating in old habits. The existing community will need to evolve with the community and adapt their mode of travel to reflect the path the City has charted forward with a decrease in auto modes and an increase on pedestrian/cycling and transit trips.

## 10 Boundary Street Design

Table 15 summarizes the MMLOS analysis for the boundary streets of Springhurst Avenue and Des Oblats Avenue. Where the existing and future conditions for both streets will be the same and are considered in one row. The boundary street analysis is based on the policy area of "within 300 m of a school" given these roads are in proximity to Immaculata High School. The MMLOS worksheets has been provided in Appendix H.

Table 15: Boundary Street MMLOS Analysis

Segment		Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS	
		PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target
Des Oblats Avenue	Ex.	<b>F</b>	A	B	D	-	-	-	-
	Fut.	<b>B</b>	A	A					
Springhurst Avenue	Ex./Fut.	<b>B</b>	A	B	D	-	-	-	-

The pedestrian LOS targets will not meet the area targets along boundary streets. To meet pedestrian LOS targets of 'A', des Oblates Avenue and Springhurst Avenue would each need boulevard width of 0.5-to-2.0 metres, which would not be consistent with the urban context.

## 11 Access Intersection Design

### 11.1 Location and Design of Access

The site will access Springhurst Avenue via a right-in-right-out access located in a similar location to the existing eastern parking lot access and approximately 26 metres from the adjacent property line. No turn lanes are proposed for the access intersections, the width is proposed as being 6.0 metres, and the throat length of the access is proposed as being approximately five metres.

A loading area is also proposed via a depressed curb to the west of the proposed parking lot access. This area is proposed as being approximately 6.4 metres wide and will also serve garbage collection operations.

### 11.2 Intersection Control

The site access is proposed as being stop-controlled on the minor approach of the access.

### 11.3 Access Intersection Design

No existing volumes are available along Springhurst Avenue; therefore, no access intersection operational analysis could be performed. The Springhurst Avenue approach operates as free-flow, and even moderate local one-way volumes interacting with a right-in/right-out access to a lot of 27 parking stalls would be anticipated to operate with good level of service on the minor approach.

#### 11.3.1 Access Intersection MMLOS

The access intersection is unsignalized, therefore no access intersection MMLOS analysis is required.

#### 11.3.2 Recommended Design Elements

No design elements for the site accesses on Springhurst Avenue are proposed outside of the typical private approach considerations.

## 12 Transportation Demand Management

### 12.1 Context for TDM

The mode shares used within the TIA represent the unmodified district mode shares. Overall, the modal shares are likely to be achieved and supporting TDM measures should be provided to encourage shifts towards the sustainable modes available within the area context.

The subject site is within the Old Ottawa East Secondary Plan. The total bedroom count within the development is 351 based upon 215 studio, 12 one-bedroom, 47 two-bedroom, and 10 three-bedroom units.

## 12.2 Need and Opportunity

The subject site has been assumed to rely most prominently on walking, followed by transit, and auto travel, and those assumptions have been carried through the analysis. Given the limited parking, the access to cycling infrastructure and the Lees LRT Station, and as the unmodified district mode shares have been applied, risks to other network users from failing to meet mode share targets are low.

## 12.3 TDM Program

The “suite of post occupancy TDM measures” has been summarized in the TDM checklists for the residential land uses. The checklist is provided in Appendix I. The key TDM measures recommended include:

- Display local area maps with walking and cycling routes, and transit route information and schedules at major entrances
- Provide a multimodal travel option information package to new residents
- Contract with providers to install on-site bikeshare (or other micro-mobility, e.g. scootershare) and/or carshare spaces
- Provide a permanent bike repair station

## 13 Neighbourhood Traffic Management

Site traffic is proposed to access the arterial network via Springhurst Avenue, Rosemere Avenue, and Des Oblats Avenue. The TIA Guidelines propose a threshold of 120 vehicles per peak hour for the classification of local roads, equivalent to 2 cars per minute total in both directions.

The overall site auto trips expected in each peak hour is 28 two-way vehicles, which would constitute 23% of the local road classification thresholds if concentrated on a single roadway. Therefore, no impact on the function or classification of the study area roadways is anticipated as a result of the proposed development.

## 14 Transit

### 14.1 Route Capacity

In Section 5.1 the trip generation by mode was estimated, including an estimate of the number of transit trips that will be generated by the proposed development. Table 16 summarizes the transit trip generation.

*Table 16: Trip Generation by Transit Mode*

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
<b>Transit</b>	<b>28% (21%)</b>	11	24	35	15	11	26

The proposed development is anticipated to generate 35 AM peak hour transit trips and 26 PM peak hour transit trips. Trips in all directions may be serviced by Lees Station or those routes connecting to Lees Station. Trips servicing the University of Ottawa campus may additionally be more highly utilized, from a proportional standpoint.

From the trip distribution found in section 5.3, the transit trips can be further broken down. Table 17 summarizes resultant site-generated transit ridership trips by direction and the equivalent peak direction bus loads.

Table 17: Forecasted Site-Generated Transit Ridership

Direction	AM Peak Hour		PM Peak Hour		Service Type	Equivalent Service Increase
	In	Out	In	Out		
North	2	4	2	2	Bus, LRT	Negligible
South	3	7	5	3	Bus, BRT	Negligible
East	1	2	2	1	Bus, LRT	Negligible
West	5	11	7	5	Bus	One fifth standard bus load

### 14.2 Transit Priority

At either future horizon, site traffic is anticipated to increase average delay on existing transit movements by no more than 2.7 seconds except for the westbound left-turn movement at the intersection of Main Street at Graham Avenue/Lees Avenue where the maximum increase of delay is 16.1 seconds. No change in transit level of service at study area intersections is resultant from the addition of site traffic to the network.

## 15 Network Intersection Design

### 15.1 Network Intersection Control

No change to the existing signalized control is recommended for the network intersections.

### 15.2 Network Intersection Design

#### 15.2.1 2025 Future Total Network Intersection Operations

The 2025 future total volumes are illustrated in Figure 16 and the network intersection operations are summarized below in Table 18. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and HCM average delay for unsignalized intersections. The synchro worksheets have been provided in Appendix J.



Figure 16: 2025 Future Total Volumes

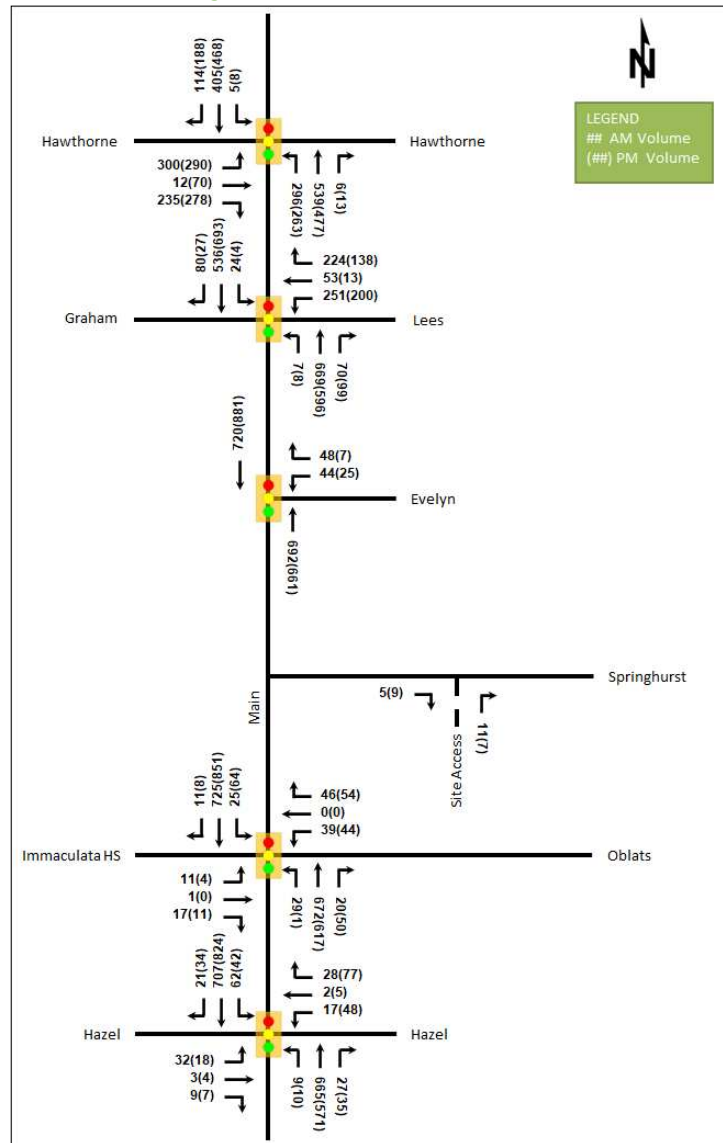


Table 18: 2025 Future Total Network Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )	LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )
Main Street at Hawthorne Avenue <i>Signalized</i>	EBL/T	C	0.78	51.3	#126.6	E	0.99	91.9	#176.5
	EBR	A	0.32	3.9	14.4	A	0.43	5.5	18.7
	NB	B	0.64	9.6	31.8	A	0.56	12.7	51.3
	SB	A	0.50	24.4	53.0	A	0.52	21.3	67.1
	<b>Overall</b>	<b>D</b>	<b>0.82</b>	<b>19.8</b>	-	<b>C</b>	<b>0.79</b>	<b>28.4</b>	-
Main Street at Graham Avenue/Lees Avenue <i>Signalized</i>	WBL	F	1.07	120.2	#101.0	C	0.73	55.9	#68.7
	WBT/R	A	0.58	14.4	36.4	A	0.36	9.0	16.9
	NB	A	0.46	14.0	51.8	A	0.43	13.8	48.5
	SB	A	0.40	6.7	22.1	A	0.41	16.0	49.9
	<b>Overall</b>	<b>A</b>	<b>0.60</b>	<b>25.6</b>	-	<b>A</b>	<b>0.49</b>	<b>19.0</b>	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )	LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )
<b>Main Street at Evelyn Avenue Signalized</b>	WBL/R	A	0.27	20.1	20.3	A	0.09	23.7	10.5
	NBT	B	0.63	15.3	108.3	B	0.64	9.3	m37.1
	SBT	A	0.34	12.9	m42.6	A	0.45	12.7	53.1
	<b>Overall</b>	<b>A</b>	<b>0.50</b>	<b>14.5</b>	-	<b>A</b>	<b>0.46</b>	<b>11.5</b>	-
<b>Main Street at Immaculata HS/des Oblats Avenue Signalized</b>	EB	A	0.11	19.7	8.9	A	0.04	0.2	0.0
	WBL	A	0.25	36.2	15.0	A	0.25	35.5	16.2
	WBT/R	A	0.09	0.3	0.0	A	0.10	0.4	0.0
	NBL	A	0.09	3.8	m1.3	A	0.00	10.0	m0.1
	NBT/R	C	0.76	12.8	#169.1	D	0.81	24.6	#162.9
	SBL	A	0.07	6.8	4.0	A	0.19	6.6	6.6
	SBT/R	C	0.79	27.0	#190.8	D	0.88	30.1	#235.7
	<b>Overall</b>	<b>B</b>	<b>0.61</b>	<b>19.4</b>	-	<b>B</b>	<b>0.70</b>	<b>26.0</b>	-
<b>Main Street at Hazel Street Signalized</b>	EB	A	0.20	29.2	14.5	A	0.13	27.9	10.8
	WBL/T	A	0.10	32.8	8.8	A	0.27	37.1	18.8
	WBR	A	0.09	0.5	0.0	A	0.23	1.5	0.0
	NBL	A	0.03	7.2	2.1	A	0.04	7.0	2.2
	NBT/R	C	0.73	22.1	140.7	A	0.60	15.8	108.3
	SBL	A	0.23	11.4	m8.3	A	0.13	4.0	m1.5
	SBT/R	B	0.66	14.3	95.6	C	0.76	7.5	m#137.9
	<b>Overall</b>	<b>B</b>	<b>0.65</b>	<b>18.0</b>	-	<b>C</b>	<b>0.74</b>	<b>11.5</b>	-

Notes: Saturation flow rate of 1800 veh/h/lane  
Queue is measured in metres  
Peak Hour Factor = 1.00

Delay = average driver delay in seconds  
m = metered queue  
# = volume for the 95th %ile cycle exceeds capacity

The network intersection operations for the 2025 future total horizon operate similarly to the 2025 future background conditions. No new capacity issues are noted.

Similar to the timing adjustments proposed in the background conditions in Section 7.2, shifting two seconds of split from the north-south phased to the overcapacity westbound left-turn, would reduce the v/c of all movements to 1.00 or below at the intersection of Main Street at Graham Avenue/Lees Avenue during the AM peak hour.

### 15.2.2 2030 Future Total Network Intersection Operations

The 2030 future total volumes are illustrated in Figure 17 and the network intersection operations are summarized below in Table 19. The level of service for signalized intersections is based on v/c calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and HCM average delay for unsignalized intersections. The synchro worksheets have been provided in Appendix K.

Figure 17: 2030 Future Total Volumes

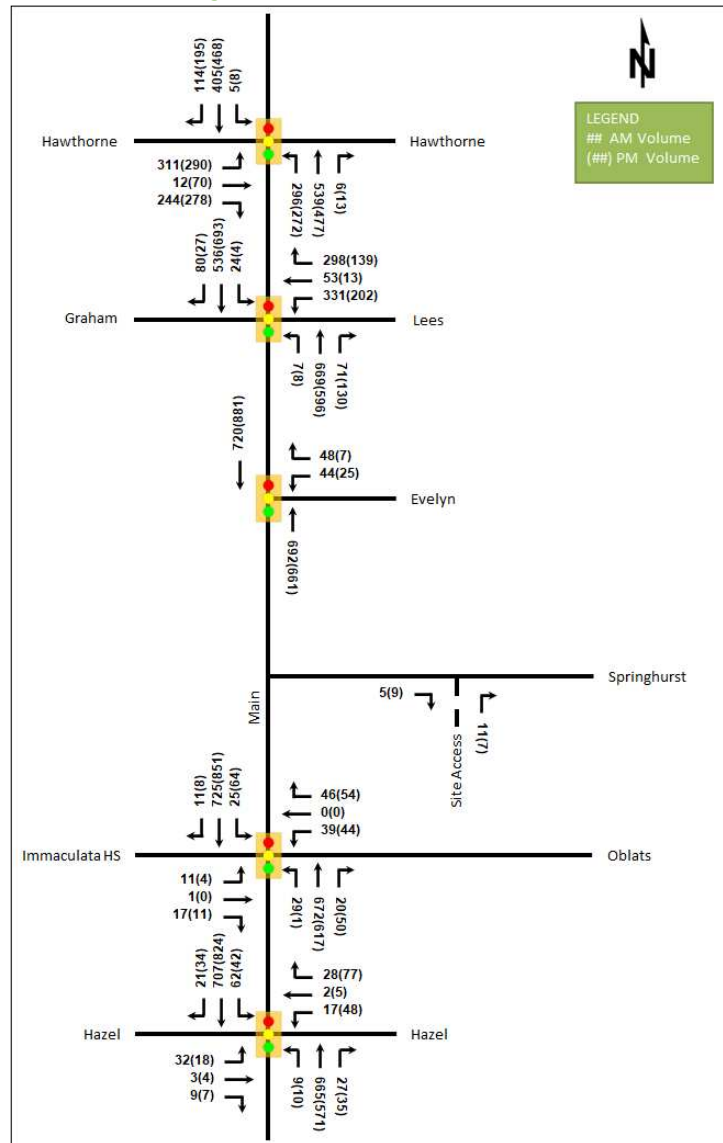


Table 19: 2030 Future Total Network Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )	LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )
Main Street at Hawthorne Avenue <i>Signalized</i>	EBL/T	D	0.81	53.5	#131.8	E	0.99	91.9	#176.5
	EBR	A	0.33	3.9	14.6	A	0.43	5.5	18.7
	NB	B	0.64	10.1	35.9	A	0.57	12.8	52.1
	SB	A	0.50	24.4	53.0	A	0.53	21.3	68.0
	<b>Overall</b>	<b>D</b>	<b>0.83</b>	<b>20.5</b>	-	<b>C</b>	<b>0.79</b>	<b>28.3</b>	-
Main Street at Graham Avenue/Lees Avenue <i>Signalized</i>	WBL	F	1.41	243.0	#139.1	C	0.74	56.5	#69.5
	WBT/R	C	0.75	24.6	#68.3	A	0.36	9.0	17.1
	NB	A	0.46	14.0	52.0	A	0.46	14.1	51.0
	SB	A	0.40	6.8	22.4	A	0.41	16.0	49.9
	<b>Overall</b>	<b>B</b>	<b>0.69</b>	<b>50.2</b>	-	<b>A</b>	<b>0.52</b>	<b>19.1</b>	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )	LOS	V/C	Delay (s)	Q (95 <sup>th</sup> )
<b>Main Street at Evelyn Avenue Signalized</b>	WBL/R	A	0.27	20.1	20.3	A	0.09	23.7	10.5
	NBT	B	0.63	15.3	108.3	B	0.64	9.3	m37.1
	SBT	A	0.34	14.7	m41.1	A	0.45	12.7	53.1
	<b>Overall</b>	<b>A</b>	<b>0.50</b>	<b>15.3</b>	-	<b>A</b>	<b>0.46</b>	<b>11.5</b>	-
<b>Main Street at Immaculata HS/des Oblats Avenue Signalized</b>	EB	A	0.11	19.7	8.9	A	0.04	0.2	0.0
	WBL	A	0.25	36.2	15.0	A	0.25	35.5	16.2
	WBT/R	A	0.09	0.3	0.0	A	0.10	0.4	0.0
	NBL	A	0.09	3.8	m1.3	A	0.00	10.0	m0.1
	NBT/R	C	0.76	12.8	#169.1	D	0.81	24.6	#162.9
	SBL	A	0.07	6.8	4.0	A	0.19	6.6	6.6
	SBT/R	C	0.79	27.0	#190.8	D	0.88	30.1	#235.7
	<b>Overall</b>	<b>B</b>	<b>0.61</b>	<b>19.4</b>	-	<b>B</b>	<b>0.70</b>	<b>26.0</b>	-
<b>Main Street at Hazel Street Signalized</b>	EB	A	0.20	29.2	14.5	A	0.13	27.9	10.8
	WBL/T	A	0.10	32.8	8.8	A	0.27	37.1	18.8
	WBR	A	0.09	0.5	0.0	A	0.23	1.5	0.0
	NBL	A	0.03	7.2	2.1	A	0.04	7.0	2.2
	NBT/R	C	0.73	22.1	140.7	A	0.60	15.8	108.3
	SBL	A	0.23	11.4	m8.3	A	0.13	4.0	m1.5
	SBT/R	B	0.66	14.3	95.6	C	0.76	7.5	m#137.9
	<b>Overall</b>	<b>B</b>	<b>0.65</b>	<b>18.0</b>	-	<b>C</b>	<b>0.74</b>	<b>11.5</b>	-

Notes: Saturation flow rate of 1800 veh/h/lane  
Queue is measured in metres  
Peak Hour Factor = 1.00

Delay = average driver delay in seconds  
m = metered queue  
# = volume for the 95th %ile cycle exceeds capacity

The network intersection operations for the 2030 future total horizon operate similarly to the 2030 future background conditions. The westbound through/right movement at the intersection of Main Street at Graham Avenue/Lees Avenue may exhibit extended queues during the AM peak hour at this horizon. No new capacity issues are noted.

Similar to the timing adjustments proposed in the background conditions in Section 7.2, shifting eight seconds of split from the north-south phased to the overcapacity westbound left-turn, would reduce the v/c of all movements to 1.00 or below at the intersection of Main Street at Graham Avenue/Lees Avenue during the AM peak hour.

### 15.2.3 Network Intersection MMLOS

Table 20 summarizes the MMLOS analysis for the network intersections within study area. The existing and future conditions for both intersections will be the same and are considered in one row. The intersection analysis is based on the policy area of “within 300 m of a school” given the proximity of Immaculata High School. The MMLOS worksheets has been provided in Appendix H.

Table 20: Study Area Intersection MMLOS Analysis

Intersection	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
<b>Main Street at Hawthorne Avenue</b>	<b>D</b>	A	<b>C</b>	B	<b>F</b>	D	D	D	D	E
<b>Main Street at Graham Avenue/Lees Avenue</b>	<b>D</b>	A	<b>E</b>	B	<b>F</b>	D	C	D	B	E
<b>Main Street at Evelyn Avenue</b>	<b>D</b>	A	A	C	C	D	-	-	A	E

Intersection	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
Main Street at Immaculata HS/des Oblats Avenue	D	A	A	C	D	D	-	-	B	E
Main Street at Hazel Street	D	A	D	C	D	D	-	-	C	E

The pedestrian LOS targets will not be met at the intersections throughout the study area. While pedestrian delay is typically the limiting factor, to meet LOS targets, crossing distances of no more than two lane-widths would be required at each crossing based upon Pedestrian Exposure to Traffic at Signalized Intersection (PETS) measures.

The bicycle LOS targets will not be met at the intersections of Main Street at Hawthorne Avenue, Main Street at Graham Avenue/Lees Avenue, and Main Street at Hazel Street. To meet bicycle LOS at the intersections, two-stage left turns or left-turn boxes would be required on all approaches of the intersections of Main Street at Graham Avenue/Lees Avenue and separated facilities would be required on the southbound approach at the intersection of Main Street at Hawthorne Avenue and on the westbound approach at the intersection of Main Street and Hazel Street.

Transit LOS will not be met at the intersection of Main Street at Hawthorne Avenue due to delays on the eastbound approach and of Main Street at Graham Avenue/Lees Avenue due to delays on the westbound approach, where each would need to be reduced to 30 seconds or less to meet LOS targets.

#### 15.2.4 Recommended Design Elements

No study area intersection design elements are proposed as part of this study.

## 16 Summary of Improvements Indicated and Modifications Options

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

### Proposed Site and Screening

- The proposed site includes 284 apartment units
- A right-in-right-out access is proposed to the parking area, and a loading area with a depressed curb are proposed on Springhurst Avenue
- The development is proposed to be completed as a single phase by 2025
- The trip generation and safety triggers were met for the TIA Screening
- This report is in support of a zoning by-law amendment and site plan application

### Existing Conditions

- Main Street, Hawthorne Avenue, and Lees Avenue are arterial roads in the study area
- Sidewalks are provided along both sides of all study area roads, excluding des Oblats Avenue whose north sidewalk is discontinuous
- Cycletracks are provided on both sides of the Main Street south of Lees Avenue and on the east side of the road between Lees Avenue and Hawthorne Avenue, a curbside bike lane on both sides of Hawthorne Avenue over the Pretoria Bridge, on the south side of Hawthorne Avenue east of Main Street, and on the south sides of Lees Avenue and Graham Avenue
- Clegg Street west of Main Street is a neighbourhood bikeway, Hawthorne Avenue west of Colonel By Drive, Colonel By Drive between Hawthorne Avenue and Graham Avenue, Graham Avenue, and Lees

Avenue form a spine route and Main Street is a spine route and Hawthorne Avenue east of Colonel By Drive, Echo Drive, and Clegg Street are local routes

- Four transit routes run along Main Street and the site is within a one-kilometre walk of Lees LRT Station
- Within the study area, the majority of collisions were rear end and sideswipe indicating they are lower speed and influenced by congestion
- Generally the study area intersections operate well with the exception of the intersection of Main Street and Hawthorne Avenue during the PM peak hour which may be improved through a reallocation of split

#### **Development Generated Travel Demand**

- The proposed development is forecasted produce 114 two-way people trips during the AM peak hour and 113 two-way people trips during the PM peak hour
- Of the forecasted people trips, 28 two-way trips will be vehicle trips during each the AM peak and PM peak hour based on 26% and 25% modal share target
- Of the forecasted trips, 15% are anticipated to travel north, 30% to the south, 10% to the east, and 45 % to the west

#### **Background Conditions**

- Growth rates derived from the 2011 to the 2031 model horizons rounded to the nearest 0.25% will be peak-directionally applied to the appropriate major turning movements to and from the identified roadways at the study area intersections
- The study area intersections at future background horizons operate similarly to the existing conditions with increasing capacity, delay and queuing issues on the westbound left movement at the intersection of Main Street and Graham Avenue/Lees Avenue during the AM peak hour due to background growth, which may be alleviated with reallocation of split

#### **Development Design**

- Hard surface connections are provided to surrounding pedestrian facilities and bicycle parking is provided internal to the building and via surface racks
- The existing west surface parking lot will be removed, the east lot will be reconfigured for visitor parking, and the bay parking on des Oblats Avenue frontage will be removed
- A 1.5-metre-wide mid-block pathway connection is provided between the sidewalks on Springhurst Avenue and des Oblats Avenue on the west property line
- A 6.0-metre-wide right-in/right-out access with an approximately five-metre long throat is proposed for the site access on Springhurst Avenue
- A loading area accessing Springhurst Avenue through a depressed curb is proposed west of the proposed parking lot access which will permit garbage collection operations

#### **Parking**

- The site provides 390 bicycle spaces located below ground and 28 spaces in surface racks, approximately three times the amount required by the zoning by-law
- The zoning by-law prescribes 136 vehicle parking spaces for residents and 27 for visitors, where the site plan proposes 27 visitor spaces in the surface lot, leaving a deficit of 136 spaces from the prescribed amount in the zoning by-law, and two carshare spaces are reserved on the des Oblats Avenue frontage

- The tenants are unlikely to rely on private auto travel, and the units are marketed to individuals with an urban lifestyle who live or work nearby, and tenants are to be made aware that they will have no parking space early in the rental process, thereby limiting the demand for on-site parking
- Factors contributing to the elimination of tenant reliance on personal auto travel include rapid transit within a one kilometre walk of the site, protected cycling facilities, enhanced pedestrian facilities, transit facilities, and pathways provided nearby, and a high degree of bicycle parking provided on-site, and carshare on-site
- Any desired mitigation of local area parking impacts may be achieved through the public consultation process and may include further permitting areas, area enforcement, or modification of signed parking, although an evolution of the wider community in orientation towards sustainable modes is in progress

### **Boundary Street Design**

- The pedestrian LOS targets will not meet the area targets along boundary streets, which would require two-metre-wide sidewalks with 0.5-to-2.0-metre-wide boulevards
- Large boulevard widths are not considered appropriate in the highly urban context

### **Access Intersections Design**

- The site will access Springhurst Avenue via a 6.0-metre-wide right-in-right-out access approximately 26 metres from the adjacent property line, and an approximately 6.4-metre-wide loading area is proposed via a depressed curb to the west of the parking lot access
- Concerning the site access intersection, while no background traffic volumes were available, Springhurst Avenue approach operates as free-flow, and even moderate local one-way volumes interacting with a right-in/right-out access to a lot of 27 parking stalls would be anticipated to operate with good level of service on the minor approach
- No design elements for the site accesses on Springhurst Avenue are proposed outside of the typical private approach considerations

### **TDM**

- Supportive TDM measures to be included within the proposed development should include:
  - Display local area maps with walking and cycling routes, and transit route information and schedules at major entrances
  - Provide a multimodal travel option information package to new residents
  - Contract with providers to install on-site bikeshare (or other micro-mobility, e.g. scootershare) and carshare spaces
  - Provide a permanent bike repair station

### **NTM**

- One parking lot is proposed as being removed on Springhurst Avenue as part of the redevelopment, and traffic is anticipated to be reduced on the roadway as a result
- The total auto trip generation of the site is anticipated to be 28 two-way vehicles per peak hour, which would comprise 23% of the local road classification thresholds
- Therefore no impacts to the classification or function of study area local roads is anticipated as a result of the proposed development

### Transit

- The proposed development is anticipated to generate an additional 35 AM peak hour transit trips and 26 PM peak hour transit trips
- Negligible service changes are anticipated as being required to accommodate site-generated transit trips
- No increase in transit LOS at study area intersections is resultant from the addition of site traffic

### Network Intersection Design

- Generally, the network intersections will operate similarly to the future background conditions, where additional queuing may be noted on the westbound through/right movement at the intersection of Mains Street at Graham Avenue/Lees Avenue during the AM peak hour at the 2030 future total horizon
- A reallocation of split of two second at the 2025 horizon and eight seconds at the 2030 horizon from the north-south phases to the overcapacity westbound phase would reduce the v/c of all movements to 1.00 or below during the AM peak hour at the intersection of Main Street at Graham Avenue/Lees Avenue at the future total horizons
- The pedestrian LOS targets will not be met at the intersections throughout the study area, and would require a maximum of two lanes at a crossing to meet a LOS A based upon PETS measures
- The bicycle LOS targets will not be met at the intersections of Main Street at Hawthorne Avenue, Main Street at Graham Avenue/Lees Avenue, and Main Street at Hazel Street, where approaches would require two-stage left-turns or turn boxes, and separated facilities to meet targets
- Transit LOS will not be met at the intersection of Main Street at Hawthorne Avenue due to delays on the eastbound approach and at the intersection Main Street at Graham Avenue/Lees Avenue due to delays on the westbound approach

## 17 Conclusion

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

Prepared By:



John Kingsley, EIT  
Transportation Engineering-Intern

Reviewed By:



Andrew Harte, P.Eng.  
Senior Transportation Engineer



# Appendix A

TIA Screening Form and PM Certification Form

City of Ottawa 2017 TIA Guidelines  
Step 1 - Screening Form

Date: 26-Apr-21  
Project Number: 2021-004  
Project Reference: 15 Oblats

1.1 Description of Proposed Development	
Municipal Address	15 Oblats Avenue
Description of Location	Existing t-shaped building
Land Use Classification	Residential Fourth and Fifth Densit (R4UD, R5B)
Development Size	339 residential units
Accesses	Existing penpendicular parking on Oblats Ave, existing parking access on Springhurst Ave
Phase of Development	Single Phase
Buildout Year	2025
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger	
Land Use Type	Townhomes or apartments
Development Size	339 Units
Trip Generation Trigger	Yes

1.3 Location Triggers	
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks?	No
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?	No
Location Trigger	No

1.4. Safety Triggers	
Are posted speed limits on a boundary street 80 km/hr or greater?	No
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?	No
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	Yes
Is the proposed driveway within auxiliary lanes of an intersection?	No
Does the proposed driveway make use of an existing median break that serves an existing site?	No
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	No
Does the development include a drive-thru facility?	No
Safety Trigger	Yes



## **TIA Plan Reports**

On 14 June 2017, the Council of the City of Ottawa adopted new Transportation Impact Assessment (TIA) Guidelines. In adopting the guidelines, Council established a requirement for those preparing and delivering transportation impact assessments and reports to sign a letter of certification.

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that s/he meets the four criteria listed below.

### **CERTIFICATION**

1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
4. I am either a licensed<sup>1</sup> or registered<sup>2</sup> professional in good standing, whose field of expertise [check  appropriate field(s)] is either transportation engineering  or transportation planning .

**1,2 License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.**


City Of Ottawa  
Infrastructure Services and Community  
Sustainability  
Planning and Growth Management  
110 Laurier Avenue West, 4th fl.  
Ottawa, ON K1P 1J1  
Tel. : 613-580-2424  
Fax: 613-560-6006

Ville d'Ottawa  
Services d'infrastructure et Viabilité des  
collectivités  
Urbanisme et Gestion de la croissance  
110, avenue Laurier Ouest  
Ottawa (Ontario) K1P 1J1  
Tél. : 613-580-2424  
Télécopieur: 613-560-6006

Dated at Ottawa this 20 day of September, 2018.  
(City)

Name: Andrew Harte  
(Please Print)

Professional Title: Professional Engineer

  
\_\_\_\_\_  
Signature of Individual certifier that s/he meets the above four criteria

<b>Office Contact Information (Please Print)</b>
Address: 13 Markham Avenue
City / Postal Code: Ottawa / K2G 3Z1
Telephone / Extension: (613) 697-3797
E-Mail Address: Andrew.Harte@CGHTransportation.com



# Appendix B

Turning Movement Counts



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### HAWTHORNE AVE @ MAIN ST

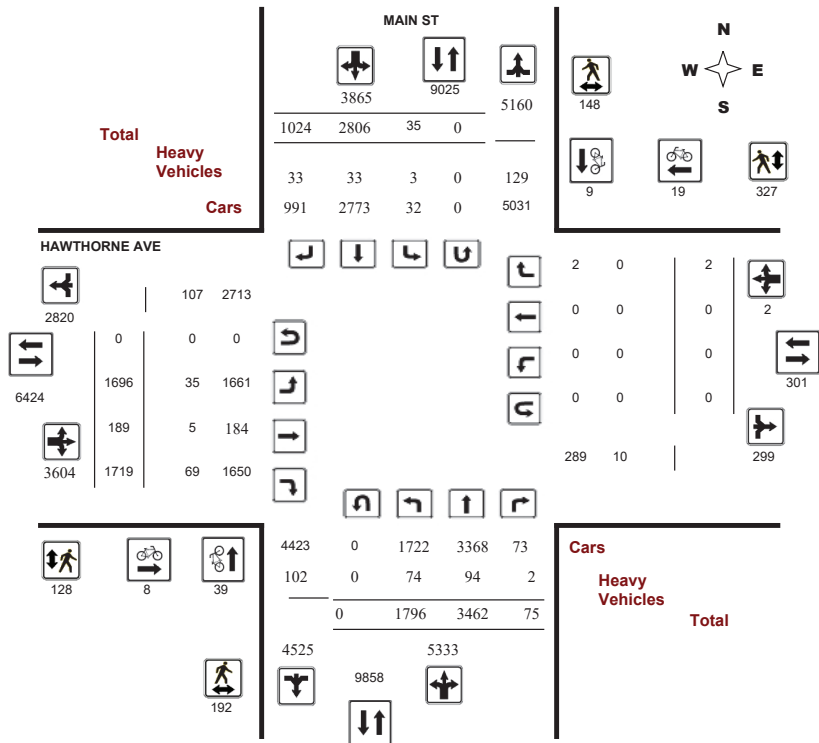
Survey Date: Tuesday, March 03, 2020

WO No: 39570

Start Time: 07:00

Device: Miovision

#### Full Study Diagram



5478558 - MAR 3, 2020 - 8HRS - VANESSA BLACK



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### HAWTHORNE AVE @ MAIN ST

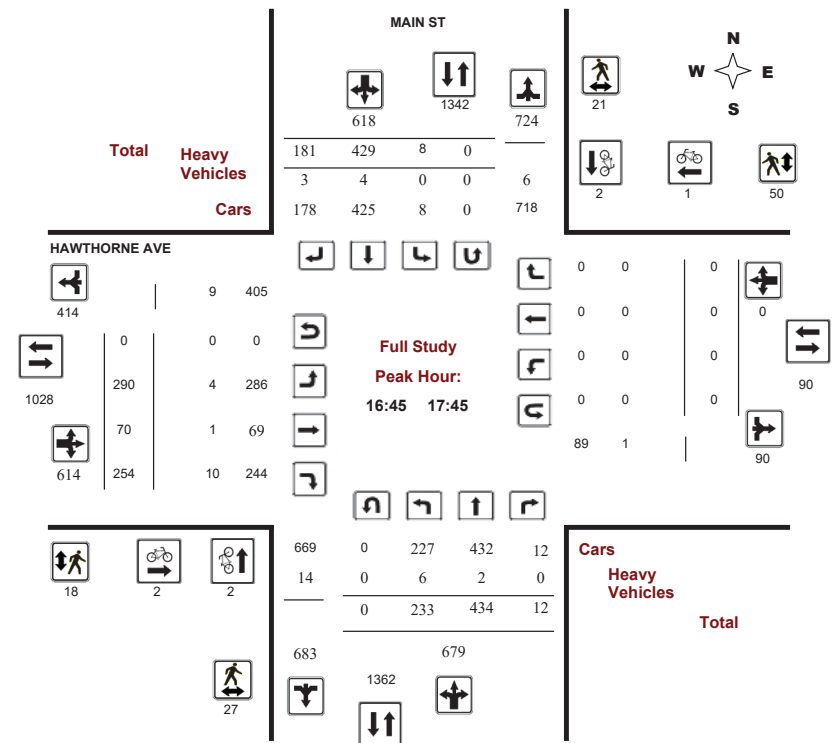
Survey Date: Tuesday, March 03, 2020

WO No: 39570

Start Time: 07:00

Device: Miovision

#### Full Study Peak Hour Diagram



5478558 - MAR 3, 2020 - 8HRS - VANESSA BLACK



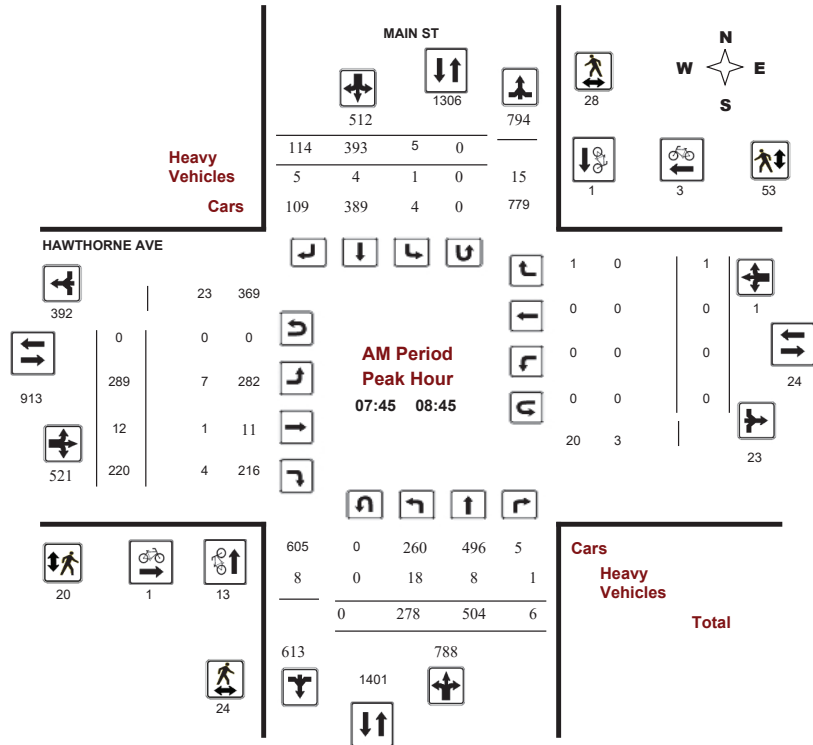
# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

### HAWTHORNE AVE @ MAIN ST

Survey Date: Tuesday, March 03, 2020  
Start Time: 07:00

WO No: 39570  
Device: Miovision



Comments 5478558 - MAR 3, 2020 - 8HRS - VANESSA BLACK



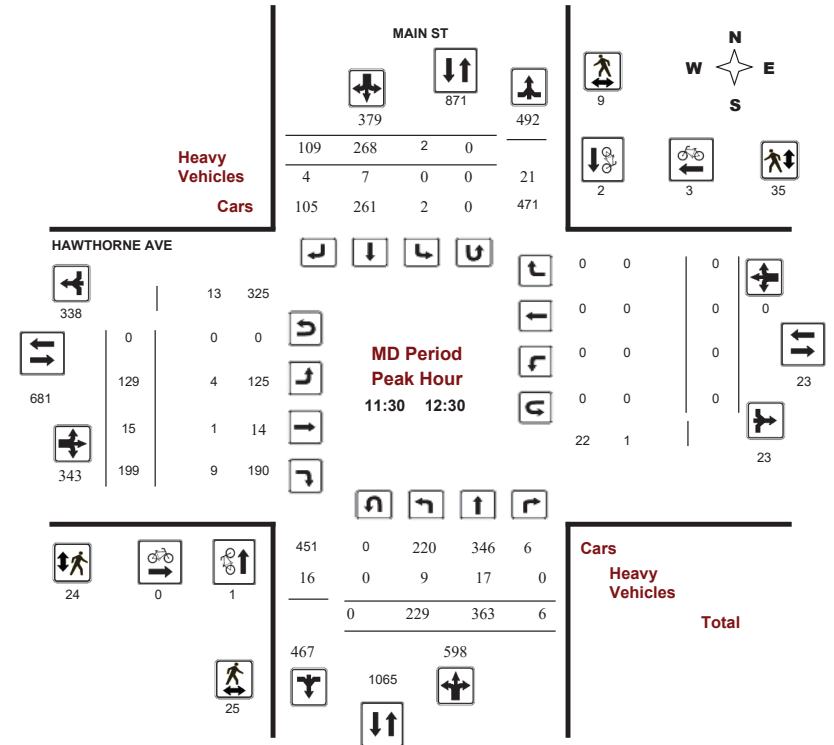
# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

### HAWTHORNE AVE @ MAIN ST

Survey Date: Tuesday, March 03, 2020  
Start Time: 07:00

WO No: 39570  
Device: Miovision



Comments 5478558 - MAR 3, 2020 - 8HRS - VANESSA BLACK



# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

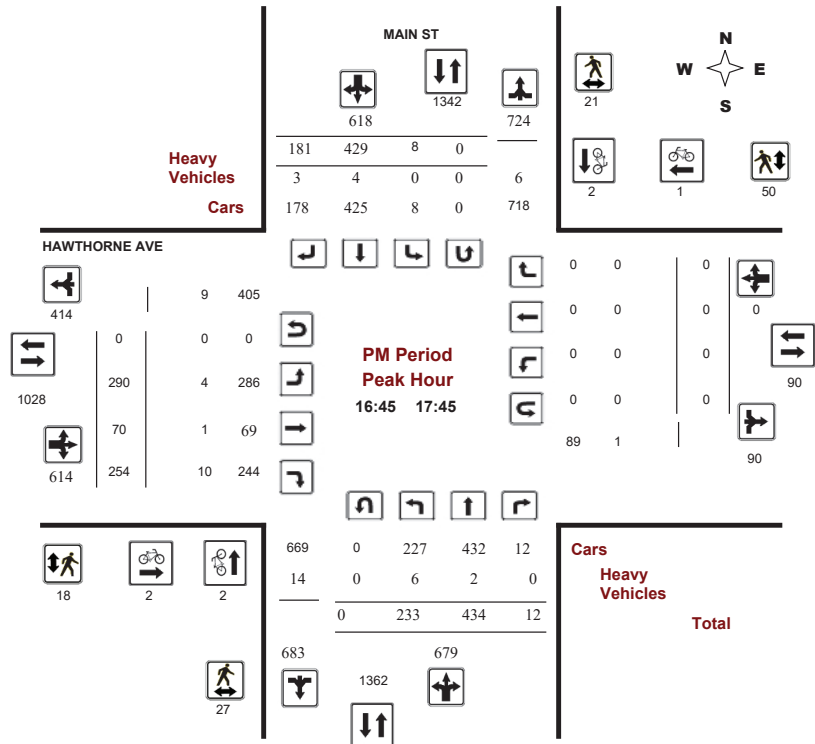
### HAWTHORNE AVE @ MAIN ST

Survey Date: Tuesday, March 03, 2020

Start Time: 07:00

WO No: 39570

Device: Miovision



Comments 5478558 - MAR 3, 2020 - 8HRS - VANESSA BLACK



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### HAWTHORNE AVE @ MAIN ST

Survey Date: Tuesday, March 03, 2020

Start Time: 07:00

WO No: 39570

Device: Miovision

### Full Study Summary (8 HR Standard)

Survey Date: Tuesday, March 03, 2020

**Total Observed U-Turns**

Northbound: 0 Southbound: 0  
Eastbound: 0 Westbound: 0

**AADT Factor**

1.00

Period	MAIN ST								HAWTHORNE AVE								WB TOT	STR TOT	Grand Total	
	Northbound				Southbound				Eastbound				Westbound							
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT				
07:00-08:00	217	462	5	684	3	380	64	447	1131	174	4	194	372	0	0	0	0	372	1503	
08:00-09:00	273	487	5	765	4	399	126	529	1294	299	13	212	524	0	0	1	1	525	1819	
09:00-10:00	229	442	14	685	4	285	109	398	1083	164	11	170	345	0	0	0	0	345	1428	
11:30-12:30	229	363	6	598	2	268	109	379	977	129	15	199	343	0	0	0	0	343	1320	
12:30-13:30	137	363	11	511	1	297	105	403	914	138	7	189	334	0	0	0	0	334	1248	
15:00-16:00	229	492	11	732	7	331	149	487	1219	205	20	267	492	0	0	0	0	492	1711	
16:00-17:00	237	420	13	670	6	416	189	611	1281	307	56	246	609	0	0	0	0	609	1890	
17:00-18:00	245	433	10	688	8	430	173	611	1299	280	63	242	585	0	0	1	1	586	1885	
<b>Sub Total</b>	1796	3462	75	5333	35	2806	1024	3865	9198	1696	189	1719	3604	0	0	2	2	3606	12804	
<b>U Turns</b>	0				0				0				0				0		0	
<b>Total</b>	1796	3462	75	5333	35	2806	1024	3865	9198	1696	189	1719	3604	0	0	2	2	3606	12804	
<b>EQ 12Hr</b>	2496	4812	104	7413	49	3900	1423	5372	12785	2357	263	2389	5010	0	0	3	3	5012	17798	
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.																1.39				
<b>AVG 12Hr</b>	2353	4535	98	6986	46	3676	1341	5063	12785	2222	248	2252	4721	0	0	3	3	5012	17798	
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.																1				
<b>AVG 24Hr</b>	3082	5941	129	9152	60	4815	1757	6633	15785	2911	324	2950	6185	0	0	3	3	6188	21973	
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.																1.31				
Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.																				





Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAWTHORNE AVE @ MAIN ST

Survey Date: Tuesday, March 03, 2020

WO No: 39570

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

Table with columns for Time Period, Northbound (LT, ST, RT, N TOT, STR TOT), Southbound (LT, ST, RT, S TOT, STR TOT), Eastbound (LT, ST, RT, E TOT, STR TOT), Westbound (LT, ST, RT, W TOT, STR TOT), and Grand Total. Rows represent 15-minute intervals from 07:00 to 18:00.

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAWTHORNE AVE @ MAIN ST

Survey Date: Tuesday, March 03, 2020

WO No: 39570

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

Table with columns for Time Period, Northbound, Southbound, Street Total, Eastbound, Westbound, Street Total, and Grand Total. Rows represent 15-minute intervals from 07:00 to 18:00.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAWTHORNE AVE @ MAIN ST

Survey Date: Tuesday, March 03, 2020

WO No: 39570

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

MAIN ST HAWTHORNE AVE

Table with 8 columns: Time Period, NB Approach, SB Approach, Total, EB Approach, WB Approach, Total, Grand Total. Rows show pedestrian volume data for various time intervals from 07:00 to 18:00.

5478558 - MAR 3, 2020 - 8HRS - VANESSA BLACK



Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAWTHORNE AVE @ MAIN ST

Survey Date: Tuesday, March 03, 2020

WO No: 39570

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

MAIN ST HAWTHORNE AVE

Table with 20 columns: Time Period, Northbound (LT, ST, RT, N TOT, STR TOT), Southbound (LT, ST, RT, S TOT, STR TOT), Eastbound (LT, ST, RT, E TOT, STR TOT), Westbound (LT, ST, RT, W TOT, STR TOT), Grand Total. Rows show heavy vehicle volume data for various time intervals from 07:00 to 18:00.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### HAWTHORNE AVE @ MAIN ST

Survey Date: Tuesday, March 03, 2020

WO No: 39570

Start Time: 07:00

Device: Miovision

#### Full Study 15 Minute U-Turn Total

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	0	0	0



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### LEES AVE / GRAHAM AVE @ MAIN ST

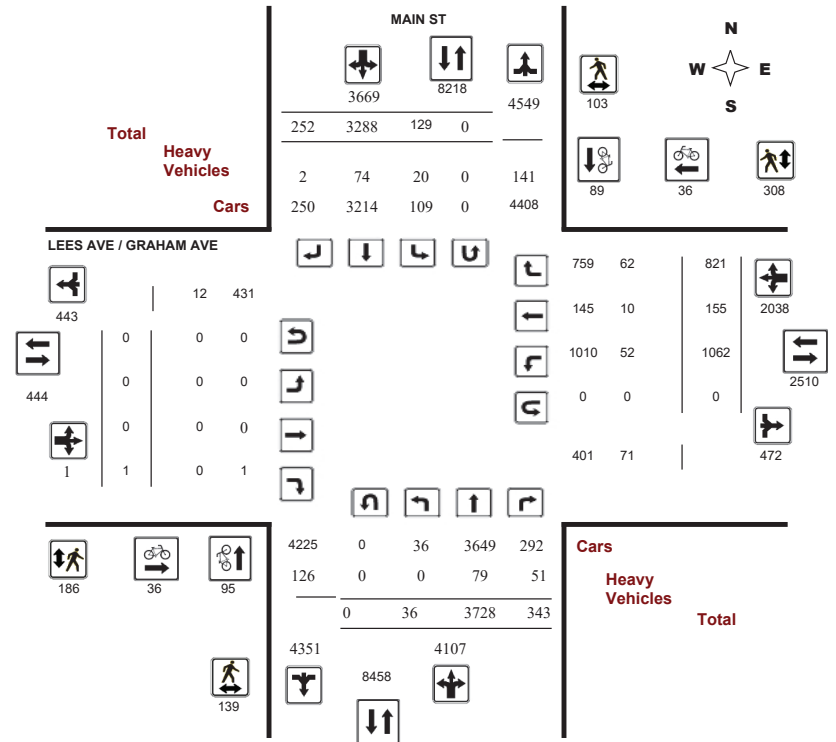
Survey Date: Tuesday, November 06, 2018

WO No: 38085

Start Time: 07:00

Device: Miovision

#### Full Study Diagram





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### LEES AVE / GRAHAM AVE @ MAIN ST

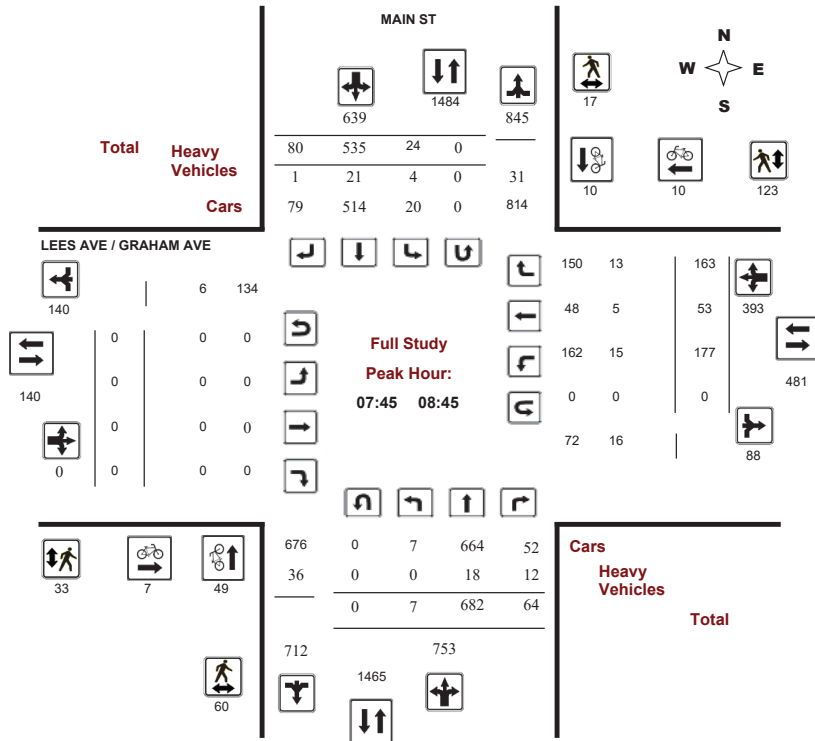
Survey Date: Tuesday, November 06, 2018

WO No: 38085

Start Time: 07:00

Device: Miovision

### Full Study Peak Hour Diagram



# Transportation Services - Traffic Services

## Turning Movement Count - Full Study Summary (No AADT) Report

### LEES AVE / GRAHAM AVE @ MAIN ST

Work Order  
38085

Survey Date: Tuesday, November 06, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

### PM Period

Period	MAIN ST					LEES AVE / GRAHAM AVE							STR TOT	Grand Total						
	Northbound			Southbound		Eastbound			Westbound											
	LT	ST	RT	LT	ST	RT	LT	ST	RT	LT	ST	RT			WB TOT					
15:00-16:00	8	671	63	742	22	537	26	585	1327	0	0	1	1	159	13	124	296	297	1624	
16:00-17:00	5	638	73	716	16	574	42	632	1348	0	0	0	0	156	22	134	312	312	1660	
17:00-18:00	6	580	50	636	28	585	41	654	1290	0	0	0	0	214	24	129	367	367	1657	
<b>Sub Total</b>	<b>19</b>	<b>1889</b>	<b>186</b>	<b>2094</b>	<b>66</b>	<b>1696</b>	<b>109</b>	<b>1871</b>	<b>3965</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>529</b>	<b>59</b>	<b>387</b>	<b>975</b>	<b>976</b>	<b>4941</b>	
<b>U Turns</b>	<b>0</b>					<b>0</b>							<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>	
<b>Total</b>	<b>19</b>	<b>1889</b>	<b>186</b>	<b>2094</b>	<b>66</b>	<b>1696</b>	<b>109</b>	<b>1871</b>	<b>3965</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>529</b>	<b>59</b>	<b>387</b>	<b>975</b>	<b>976</b>	<b>4941</b>	

Survey Date: Tuesday, November 06, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

### AM Period

Period	MAIN ST					LEES AVE / GRAHAM AVE							STR TOT	Grand Total						
	Northbound			Southbound		Eastbound			Westbound											
	LT	ST	RT	LT	ST	RT	LT	ST	RT	LT	ST	RT			WB TOT					
07:00-08:00	3	593	50	646	17	573	68	658	1304	0	0	0	0	175	36	138	349	349	1653	
08:00-09:00	8	687	66	761	21	537	54	612	1373	0	0	0	0	188	43	161	392	392	1765	
09:00-10:00	6	559	41	606	25	482	21	528	1134	0	0	0	0	170	17	135	322	322	1456	
<b>Sub Total</b>	<b>17</b>	<b>1839</b>	<b>157</b>	<b>2013</b>	<b>63</b>	<b>1592</b>	<b>143</b>	<b>1798</b>	<b>3811</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>533</b>	<b>96</b>	<b>434</b>	<b>1063</b>	<b>1063</b>	<b>4874</b>	
<b>U Turns</b>	<b>0</b>					<b>0</b>							<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>	
<b>Total</b>	<b>17</b>	<b>1839</b>	<b>157</b>	<b>2013</b>	<b>63</b>	<b>1592</b>	<b>143</b>	<b>1798</b>	<b>3811</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>533</b>	<b>96</b>	<b>434</b>	<b>1063</b>	<b>1063</b>	<b>4874</b>	

### Comments:

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



### Transportation Services - Traffic Services

#### Turning Movement Count - Study Results

#### LEES AVE / GRAHAM AVE @ MAIN ST

Survey Date: Tuesday, November 06, 2018

WO No: 38085

Start Time: 07:00

Device: Miovision

#### Full Study 15 Minute Increments

		MAIN ST									LEES AVE / GRAHAM AVE										
		Northbound			Southbound			Eastbound			Westbound										
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total	
07:00	07:15	0	101	10	111	4	133	9	146	6	0	0	0	0	38	6	23	67	6	324	
07:15	07:30	1	156	11	168	1	151	8	160	6	0	0	0	0	45	5	42	92	6	420	
07:30	07:45	0	155	16	171	3	151	17	171	16	0	0	0	0	46	6	32	84	16	426	
07:45	08:00	2	181	13	196	9	138	34	181	15	0	0	0	0	46	19	41	106	15	483	
08:00	08:15	2	165	16	183	6	126	23	155	14	0	0	0	0	49	18	35	102	14	440	
08:15	08:30	1	186	13	200	5	131	15	151	11	0	0	0	0	32	9	42	83	11	434	
08:30	08:45	2	150	22	174	4	140	8	152	16	0	0	0	0	50	7	45	102	16	428	
08:45	09:00	3	186	15	204	6	140	8	154	9	0	0	0	0	57	9	39	105	9	463	
09:00	09:15	3	154	15	172	5	105	6	116	16	0	0	0	0	41	5	44	90	16	378	
09:15	09:30	2	136	12	150	6	133	7	146	10	0	0	0	0	46	3	30	79	10	375	
09:30	09:45	1	128	6	135	9	122	4	135	11	0	0	0	0	46	4	32	82	11	352	
09:45	10:00	0	141	8	149	5	122	4	131	11	0	0	0	0	37	5	29	71	11	351	
15:00	15:15	3	163	16	182	6	117	6	129	8	0	0	1	1	27	3	24	54	8	366	
15:15	15:30	1	139	21	161	6	129	10	145	10	0	0	0	0	50	1	38	89	10	395	
15:30	15:45	4	199	12	215	7	155	3	165	11	0	0	0	0	41	3	30	74	11	454	
15:45	16:00	0	170	14	184	3	136	7	146	6	0	0	0	0	41	6	32	79	6	409	
16:00	16:15	2	171	21	194	4	180	7	191	13	0	0	0	0	42	3	32	77	13	462	
16:15	16:30	1	136	16	153	5	129	11	145	7	0	0	0	0	39	4	42	85	7	383	
16:30	16:45	2	178	17	197	4	142	9	155	5	0	0	0	0	33	8	33	74	5	426	
16:45	17:00	0	153	19	172	3	123	15	141	5	0	0	0	0	42	7	27	76	5	389	
17:00	17:15	0	145	10	155	4	152	12	168	6	0	0	0	0	40	4	25	69	6	392	
17:15	17:30	2	131	12	145	4	161	15	180	4	0	0	0	0	54	4	34	92	4	417	
17:30	17:45	1	163	15	179	13	151	10	174	4	0	0	0	0	55	5	34	94	4	447	
17:45	18:00	3	141	13	157	7	121	4	132	6	0	0	0	0	65	11	36	112	6	401	
Total:		36	3728	343	4107	129	3288	252	3669	226	0	0	1	1	1062	155	821	2038	226	9,815	

Note: U-Turns are included in Totals.



### Transportation Services - Traffic Services

#### Turning Movement Count - Study Results

#### LEES AVE / GRAHAM AVE @ MAIN ST

Survey Date: Tuesday, November 06, 2018

WO No: 38085

Start Time: 07:00

Device: Miovision

#### Full Study Cyclist Volume

		MAIN ST			LEES AVE / GRAHAM AVE				
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total	
07:00	07:15	3	1	4	1	4	5	9	
07:15	07:30	5	2	7	2	6	8	15	
07:30	07:45	6	3	9	0	1	1	10	
07:45	08:00	9	0	9	2	3	5	14	
08:00	08:15	14	4	18	3	5	8	26	
08:15	08:30	14	3	17	1	1	2	19	
08:30	08:45	12	3	15	1	1	2	17	
08:45	09:00	4	1	5	2	0	2	7	
09:00	09:15	5	2	7	0	1	1	8	
09:15	09:30	3	1	4	1	0	1	5	
09:30	09:45	1	0	1	0	3	3	4	
09:45	10:00	0	1	1	0	0	0	1	
15:00	15:15	1	2	3	2	0	2	5	
15:15	15:30	2	5	7	3	2	5	12	
15:30	15:45	0	3	3	0	0	0	3	
15:45	16:00	5	5	10	0	0	0	10	
16:00	16:15	0	7	7	0	0	0	7	
16:15	16:30	1	9	10	1	1	2	12	
16:30	16:45	4	5	9	2	3	5	14	
16:45	17:00	1	6	7	2	1	3	10	
17:00	17:15	3	4	7	3	0	3	10	
17:15	17:30	0	11	11	7	1	8	19	
17:30	17:45	2	3	5	3	0	3	8	
17:45	18:00	0	8	8	0	3	3	11	
Total		95	89	184	36	36	72	256	



Transportation Services - Traffic Services

Turning Movement Count - Study Results

LEES AVE / GRAHAM AVE @ MAIN ST

Survey Date: Tuesday, November 06, 2018

WO No: 38085

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

MAIN ST LEES AVE / GRAHAM AVE

Table with columns: Time Period, NB Approach, SB Approach, Total, EB Approach, WB Approach, Grand Total. Rows show pedestrian counts for various time intervals from 07:00 to 17:45.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

LEES AVE / GRAHAM AVE @ MAIN ST

Survey Date: Tuesday, November 06, 2018

WO No: 38085

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

MAIN ST LEES AVE / GRAHAM AVE

Table with columns: Time Period, Northbound (LT, ST, RT, N TOT, STR TOT), Southbound (LT, ST, RT, S TOT, STR TOT), Eastbound (LT, ST, RT, E TOT), Westbound (LT, ST, RT, W TOT, STR TOT), Grand Total. Rows show heavy vehicle counts for various time intervals from 07:00 to 17:45.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

LEES AVE / GRAHAM AVE @ MAIN ST

Survey Date: Tuesday, November 06, 2018

WO No: 38085

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

Time Period	MAIN ST		LEES AVE / GRAHAM AVE		Total
	Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	
07:00 - 07:15	0	0	0	0	0
07:15 - 07:30	0	0	0	0	0
07:30 - 07:45	0	0	0	0	0
07:45 - 08:00	0	0	0	0	0
08:00 - 08:15	0	0	0	0	0
08:15 - 08:30	0	0	0	0	0
08:30 - 08:45	0	0	0	0	0
08:45 - 09:00	0	0	0	0	0
09:00 - 09:15	0	0	0	0	0
09:15 - 09:30	0	0	0	0	0
09:30 - 09:45	0	0	0	0	0
09:45 - 10:00	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0
16:00 - 16:15	0	0	0	0	0
16:15 - 16:30	0	0	0	0	0
16:30 - 16:45	0	0	0	0	0
16:45 - 17:00	0	0	0	0	0
17:00 - 17:15	0	0	0	0	0
17:15 - 17:30	0	0	0	0	0
17:30 - 17:45	0	0	0	0	0
17:45 - 18:00	0	0	0	0	0
Total	0	0	0	0	0



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EVELYN AVE @ MAIN ST

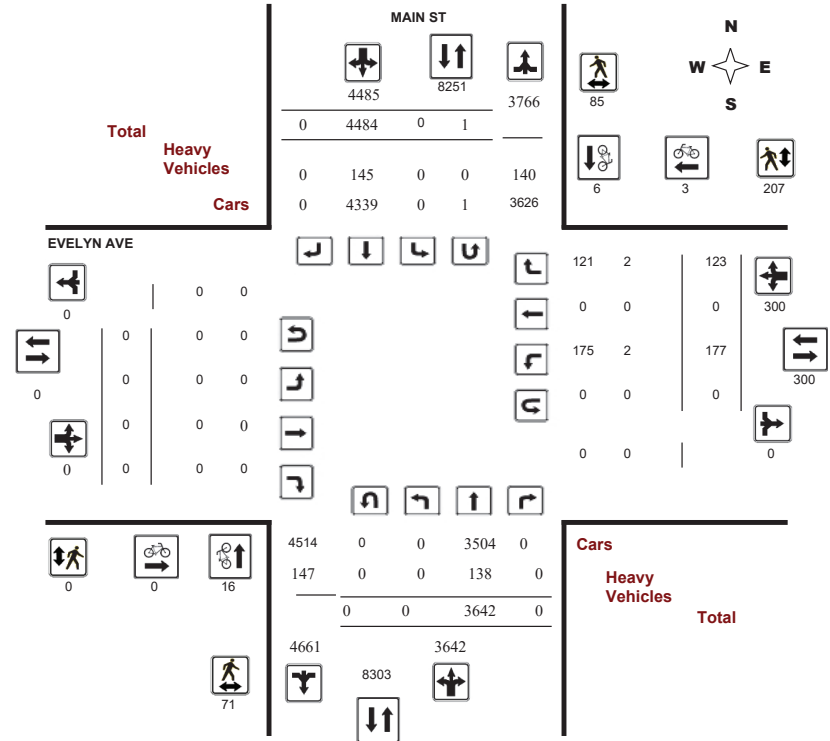
Survey Date: Tuesday, March 07, 2017

WO No: 36734

Start Time: 07:00

Device: Miovision

Full Study Diagram









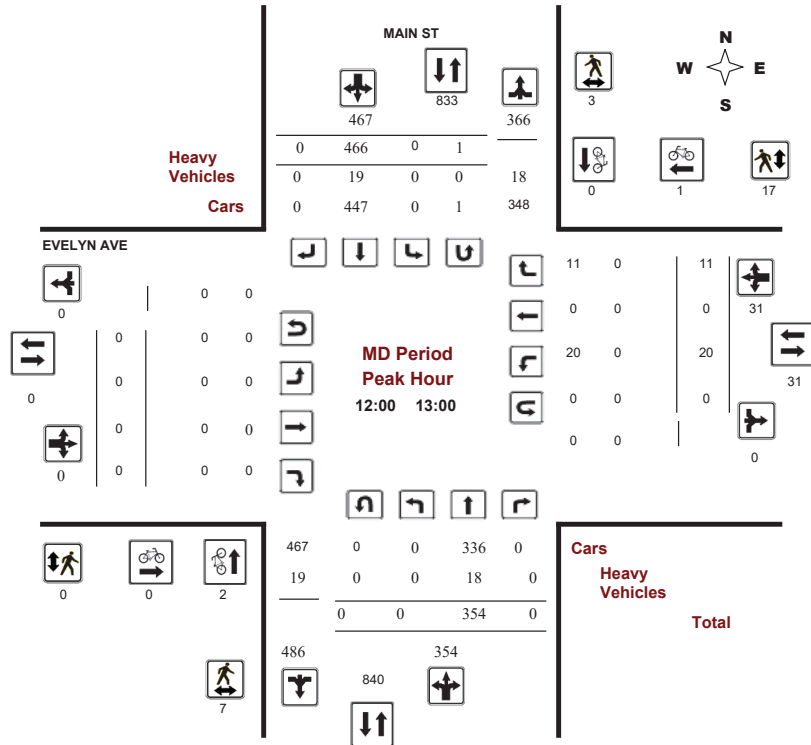
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

EVELYN AVE @ MAIN ST

Survey Date: Tuesday, March 07, 2017  
Start Time: 07:00

WO No: 36734  
Device: Miovision



Comments



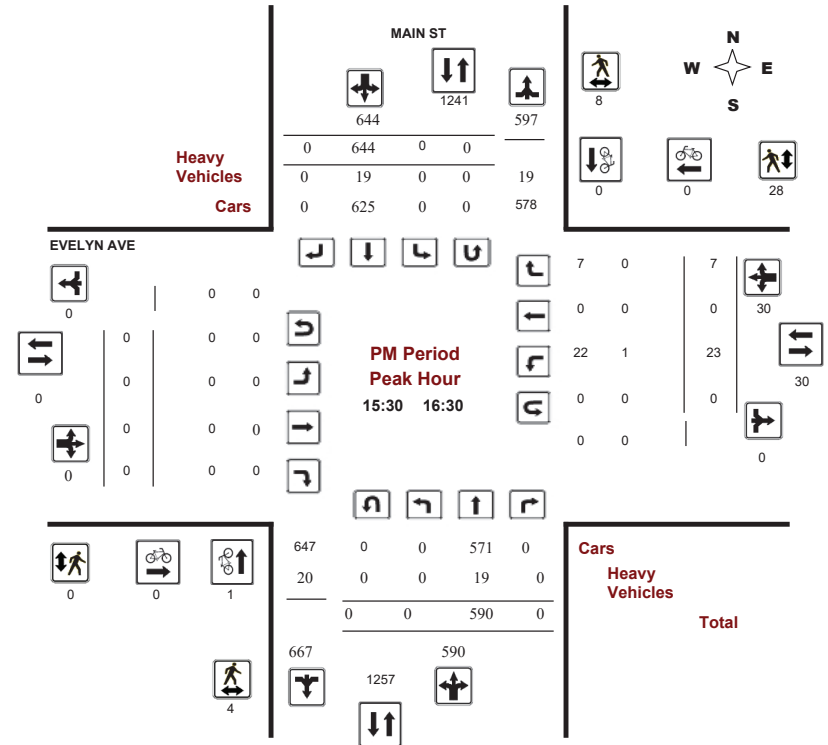
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

EVELYN AVE @ MAIN ST

Survey Date: Tuesday, March 07, 2017  
Start Time: 07:00

WO No: 36734  
Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EVELYN AVE @ MAIN ST

Survey Date: Tuesday, March 07, 2017

WO No: 36734

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, March 07, 2017

Total Observed U-Turns AADT Factor
Northbound: 0 Southbound: 1 Eastbound: 0 Westbound: 0 1.00

Table with columns for Period, MAIN ST (Northbound, Southbound), EVELYN AVE (Eastbound, Westbound), and Grand Total. Includes sub-totals for U Turns, EQ 12Hr, and AVG 12Hr/24Hr.

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EVELYN AVE @ MAIN ST

Survey Date: Tuesday, March 07, 2017

WO No: 36734

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

Table with columns for Time Period, MAIN ST (Northbound, Southbound), EVELYN AVE (Eastbound, Westbound), and Grand Total. Shows 15-minute increments from 07:00 to 18:00.

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EVELYN AVE @ MAIN ST

Survey Date: Tuesday, March 07, 2017

WO No: 36734

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

Time Period	MAIN ST			EVELYN AVE			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 07:15	2	0	2	0	0	0	2
07:15 07:30	1	0	1	0	0	0	1
07:30 07:45	2	0	2	0	0	0	2
07:45 08:00	0	1	1	0	1	1	2
08:00 08:15	1	0	1	0	0	0	1
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	2	0	2	0	1	1	3
08:45 09:00	2	0	2	0	0	0	2
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	1	0	1	0	0	0	1
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	1	0	1	0	0	0	1
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	1	0	1	0	0	0	1
12:45 13:00	1	0	1	0	1	1	2
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	1	0	1	0	0	0	1
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	1	0	1	0	0	0	1
16:30 16:45	0	2	2	0	0	0	2
16:45 17:00	0	3	3	0	0	0	3
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
Total	16	6	22	0	3	3	25



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EVELYN AVE @ MAIN ST

Survey Date: Tuesday, March 07, 2017

WO No: 36734

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

Time Period	MAIN ST			EVELYN AVE			Grand Total
	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	
07:00 07:15	0	2	2	0	1	1	3
07:15 07:30	1	0	1	0	5	5	6
07:30 07:45	1	5	6	0	5	5	11
07:45 08:00	21	21	42	0	24	24	66
08:00 08:15	11	13	24	0	9	9	33
08:15 08:30	2	4	6	0	13	13	19
08:30 08:45	5	0	5	0	10	10	15
08:45 09:00	0	0	0	0	9	9	9
09:00 09:15	1	1	2	0	9	9	11
09:15 09:30	0	1	1	0	4	4	5
09:30 09:45	0	1	1	0	0	0	1
09:45 10:00	1	4	5	0	5	5	10
11:30 11:45	4	4	8	0	4	4	12
11:45 12:00	1	1	2	0	6	6	8
12:00 12:15	3	0	3	0	8	8	11
12:15 12:30	1	1	2	0	3	3	5
12:30 12:45	1	0	1	0	3	3	4
12:45 13:00	2	2	4	0	3	3	7
13:00 13:15	1	1	2	0	3	3	5
13:15 13:30	2	3	5	0	3	3	8
15:00 15:15	0	0	0	0	3	3	3
15:15 15:30	5	0	5	0	11	11	16
15:30 15:45	1	1	2	0	5	5	7
15:45 16:00	0	0	0	0	8	8	8
16:00 16:15	2	0	2	0	10	10	12
16:15 16:30	1	7	8	0	5	5	13
16:30 16:45	0	3	3	0	9	9	12
16:45 17:00	2	2	4	0	5	5	9
17:00 17:15	1	1	2	0	2	2	4
17:15 17:30	1	3	4	0	6	6	10
17:30 17:45	0	1	1	0	10	10	11
17:45 18:00	0	3	3	0	6	6	9
Total	71	85	156	0	207	207	363



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EVELYN AVE @ MAIN ST

Survey Date: Tuesday, March 07, 2017

WO No: 36734

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

		MAIN ST						EVELYN AVE												
		Northbound			Southbound			Eastbound			Westbound									
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	7	0	7	0	3	0	3	10	0	0	0	0	0	0	0	0	0	10
07:15	07:30	0	5	0	5	0	3	0	3	8	0	0	0	0	0	0	0	0	0	8
07:30	07:45	0	5	0	5	0	4	0	4	9	0	0	0	0	0	0	0	0	0	9
07:45	08:00	0	4	0	4	0	4	0	4	8	0	0	0	0	0	0	0	0	0	8
08:00	08:15	0	6	0	6	0	6	0	6	12	0	0	0	0	0	0	0	0	0	12
08:15	08:30	0	2	0	2	0	6	0	6	8	0	0	0	0	0	0	0	0	0	8
08:30	08:45	0	5	0	5	0	4	0	4	9	0	0	0	0	0	0	0	0	0	9
08:45	09:00	0	2	0	2	0	5	0	5	7	0	0	0	0	0	0	0	0	0	7
09:00	09:15	0	7	0	7	0	5	0	5	12	0	0	0	0	0	0	0	0	0	12
09:15	09:30	0	4	0	4	0	7	0	7	11	0	0	0	0	0	0	0	0	0	11
09:30	09:45	0	4	0	4	0	7	0	7	11	0	0	0	0	0	0	0	0	0	11
09:45	10:00	0	6	0	6	0	5	0	5	11	0	0	0	0	0	0	0	0	0	11
11:30	11:45	0	4	0	4	0	5	0	5	9	0	0	0	0	0	0	1	1	1	10
11:45	12:00	0	6	0	6	0	8	0	8	14	0	0	0	0	0	0	0	0	0	14
12:00	12:15	0	8	0	8	0	3	0	3	11	0	0	0	0	0	0	0	0	0	11
12:15	12:30	0	2	0	2	0	7	0	7	9	0	0	0	0	0	0	0	0	0	9
12:30	12:45	0	5	0	5	0	1	0	1	6	0	0	0	0	0	0	0	0	0	6
12:45	13:00	0	3	0	3	0	8	0	8	11	0	0	0	0	0	0	0	0	0	11
13:00	13:15	0	4	0	4	0	1	0	1	5	0	0	0	0	0	0	0	0	0	5
13:15	13:30	0	4	0	4	0	3	0	3	7	0	0	0	0	0	0	0	0	0	7
15:00	15:15	0	4	0	4	0	7	0	7	11	0	0	0	0	0	0	0	0	0	11
15:15	15:30	0	2	0	2	0	4	0	4	6	0	0	0	0	1	0	1	2	2	8
15:30	15:45	0	4	0	4	0	4	0	4	8	0	0	0	0	0	0	0	0	0	8
15:45	16:00	0	6	0	6	0	3	0	3	9	0	0	0	0	0	0	0	0	0	9
16:00	16:15	0	6	0	6	0	6	0	6	12	0	0	0	0	0	0	0	0	0	12
16:15	16:30	0	3	0	3	0	6	0	6	9	0	0	0	0	1	0	0	1	1	10
16:30	16:45	0	5	0	5	0	4	0	4	9	0	0	0	0	0	0	0	0	0	9
16:45	17:00	0	4	0	4	0	4	0	4	8	0	0	0	0	0	0	0	0	0	8
17:00	17:15	0	2	0	2	0	5	0	5	7	0	0	0	0	0	0	0	0	0	7
17:15	17:30	0	2	0	2	0	2	0	2	4	0	0	0	0	0	0	0	0	0	4
17:30	17:45	0	3	0	3	0	4	0	4	7	0	0	0	0	0	0	0	0	0	7
17:45	18:00	0	4	0	4	0	1	0	1	5	0	0	0	0	0	0	0	0	0	5
Total:	None	0	138	0	138	0	145	0	145	283	0	0	0	0	2	0	2	4	4	287



Transportation Services - Traffic Services

Turning Movement Count - Study Results

EVELYN AVE @ MAIN ST

Survey Date: Tuesday, March 07, 2017

WO No: 36734

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

		MAIN ST		EVELYN AVE			
		Northbound	Southbound	Eastbound	Westbound		
Time Period		U-Turn Total	U-Turn Total	U-Turn Total	U-Turn Total	Total	
07:00	07:15	0	0	0	0	0	
07:15	07:30	0	0	0	0	0	
07:30	07:45	0	0	0	0	0	
07:45	08:00	0	0	0	0	0	
08:00	08:15	0	0	0	0	0	
08:15	08:30	0	0	0	0	0	
08:30	08:45	0	0	0	0	0	
08:45	09:00	0	0	0	0	0	
09:00	09:15	0	0	0	0	0	
09:15	09:30	0	0	0	0	0	
09:30	09:45	0	0	0	0	0	
09:45	10:00	0	0	0	0	0	
11:30	11:45	0	0	0	0	0	
11:45	12:00	0	0	0	0	0	
12:00	12:15	0	0	0	0	0	
12:15	12:30	0	1	0	0	1	
12:30	12:45	0	0	0	0	0	
12:45	13:00	0	0	0	0	0	
13:00	13:15	0	0	0	0	0	
13:15	13:30	0	0	0	0	0	
15:00	15:15	0	0	0	0	0	
15:00	15:15	0	0	0	0	0	
15:15	15:30	0	0	0	0	0	
15:30	15:45	0	0	0	0	0	
15:45	16:00	0	0	0	0	0	
16:00	16:15	0	0	0	0	0	
16:15	16:30	0	0	0	0	0	
16:30	16:45	0	0	0	0	0	
16:45	17:00	0	0	0	0	0	
17:00	17:15	0	0	0	0	0	
17:15	17:30	0	0	0	0	0	
17:30	17:45	0	0	0	0	0	
17:45	18:00	0	0	0	0	0	
Total		0	1	0	0	1	



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### MAIN ST @ OBLATE AVE

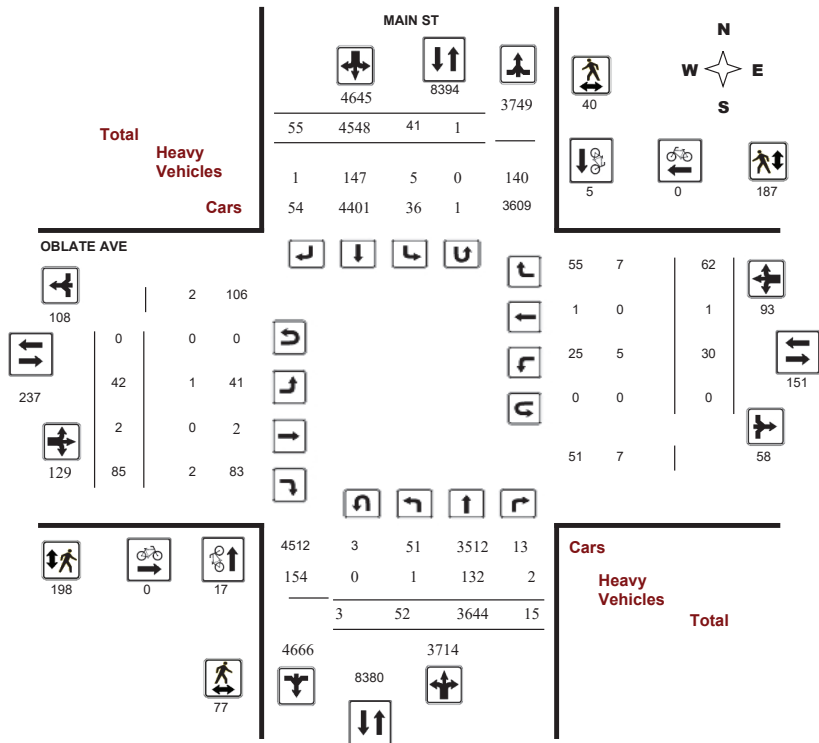
Survey Date: Tuesday, March 07, 2017

WO No: 36739

Start Time: 07:00

Device: Miovision

#### Full Study Diagram



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### MAIN ST @ OBLATE AVE

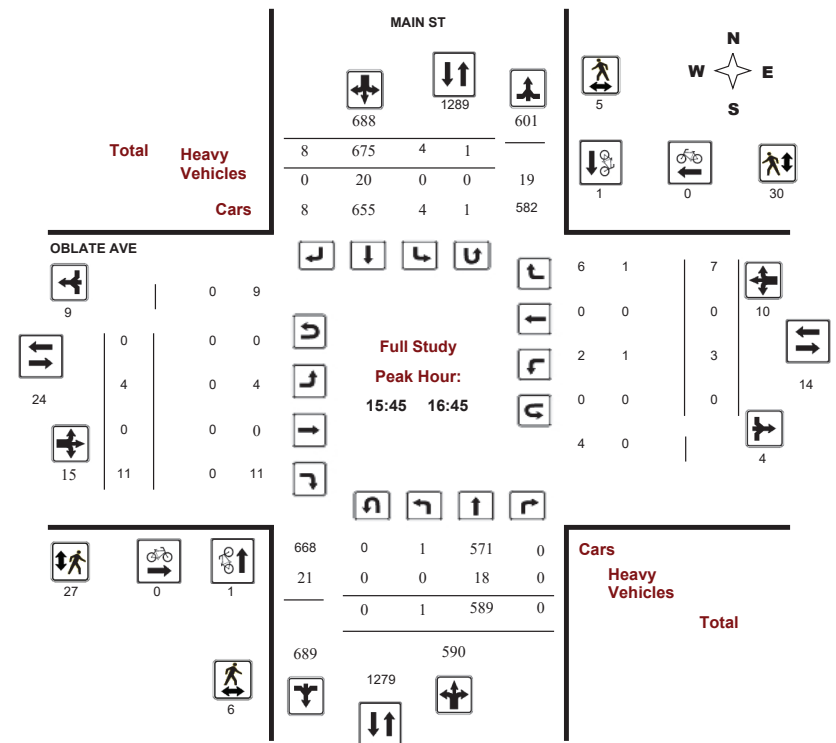
Survey Date: Tuesday, March 07, 2017

WO No: 36739

Start Time: 07:00

Device: Miovision

#### Full Study Peak Hour Diagram





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### MAIN ST @ OBLATE AVE

Survey Date: Tuesday, March 07, 2017

WO No: 36739

Start Time: 07:00

Device: Miovision

### Full Study Summary (8 HR Standard)

Survey Date: Tuesday, March 07, 2017

Total Observed U-Turns

AADT Factor

Northbound: 3 Southbound: 1  
Eastbound: 0 Westbound: 0  
1.00

Period	MAIN ST					OBLATE AVE											Grand Total			
	Northbound			Southbound		Eastbound				Westbound										
	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	WB TOT	STR TOT	WB TOT	STR TOT	WB TOT	STR TOT	Grand Total				
07:00 08:00	14	402	4	420	1062	10	624	8	642	1062	5	1	10	16	5	0	5	10	26	1088
08:00 09:00	19	559	2	580	1238	2	646	10	658	1238	8	0	14	22	1	0	4	5	27	1265
09:00 10:00	3	427	2	432	889	3	448	6	457	889	3	0	8	11	4	0	8	12	23	912
11:30 12:30	4	350	2	356	809	9	438	6	453	809	5	1	12	18	6	0	13	19	37	846
12:30 13:30	6	337	4	347	819	7	458	7	472	819	4	0	14	18	3	0	4	7	25	844
15:00 16:00	1	563	1	565	1142	4	568	5	577	1142	10	0	7	17	7	1	18	26	43	1185
16:00 17:00	3	536	0	539	1242	2	693	8	703	1242	4	0	13	17	3	0	3	6	23	1265
17:00 18:00	2	470	0	472	1154	4	673	5	682	1154	3	0	7	10	1	0	7	8	18	1172
<b>Sub Total</b>	<b>52</b>	<b>3644</b>	<b>15</b>	<b>3711</b>	<b>8355</b>	<b>41</b>	<b>4548</b>	<b>55</b>	<b>4644</b>	<b>8355</b>	<b>42</b>	<b>2</b>	<b>85</b>	<b>129</b>	<b>30</b>	<b>1</b>	<b>62</b>	<b>93</b>	<b>222</b>	<b>8577</b>
<b>U Turns</b>				<b>3</b>	<b>1</b>	<b>4</b>												<b>0</b>	<b>0</b>	<b>4</b>
<b>Total</b>	<b>52</b>	<b>3644</b>	<b>15</b>	<b>3714</b>	<b>8359</b>	<b>41</b>	<b>4548</b>	<b>55</b>	<b>4645</b>	<b>8359</b>	<b>42</b>	<b>2</b>	<b>85</b>	<b>129</b>	<b>30</b>	<b>1</b>	<b>62</b>	<b>93</b>	<b>222</b>	<b>8581</b>
<b>EQ 12Hr</b>	<b>72</b>	<b>5065</b>	<b>21</b>	<b>5162</b>	<b>11619</b>	<b>57</b>	<b>6322</b>	<b>76</b>	<b>6457</b>	<b>11619</b>	<b>58</b>	<b>3</b>	<b>118</b>	<b>179</b>	<b>42</b>	<b>1</b>	<b>86</b>	<b>129</b>	<b>309</b>	<b>11928</b>
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.																	<b>1.39</b>			
<b>AVG 12Hr</b>	<b>68</b>	<b>4774</b>	<b>20</b>	<b>4865</b>	<b>11619</b>	<b>54</b>	<b>5958</b>	<b>72</b>	<b>6085</b>	<b>11619</b>	<b>55</b>	<b>3</b>	<b>111</b>	<b>169</b>	<b>39</b>	<b>1</b>	<b>81</b>	<b>122</b>	<b>309</b>	<b>11928</b>
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.																	<b>1</b>			
<b>AVG 24Hr</b>	<b>89</b>	<b>6253</b>	<b>26</b>	<b>6374</b>	<b>14345</b>	<b>70</b>	<b>7805</b>	<b>94</b>	<b>7971</b>	<b>14345</b>	<b>72</b>	<b>3</b>	<b>146</b>	<b>221</b>	<b>51</b>	<b>2</b>	<b>106</b>	<b>160</b>	<b>381</b>	<b>14726</b>
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.																	<b>1.31</b>			
Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.																				



# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

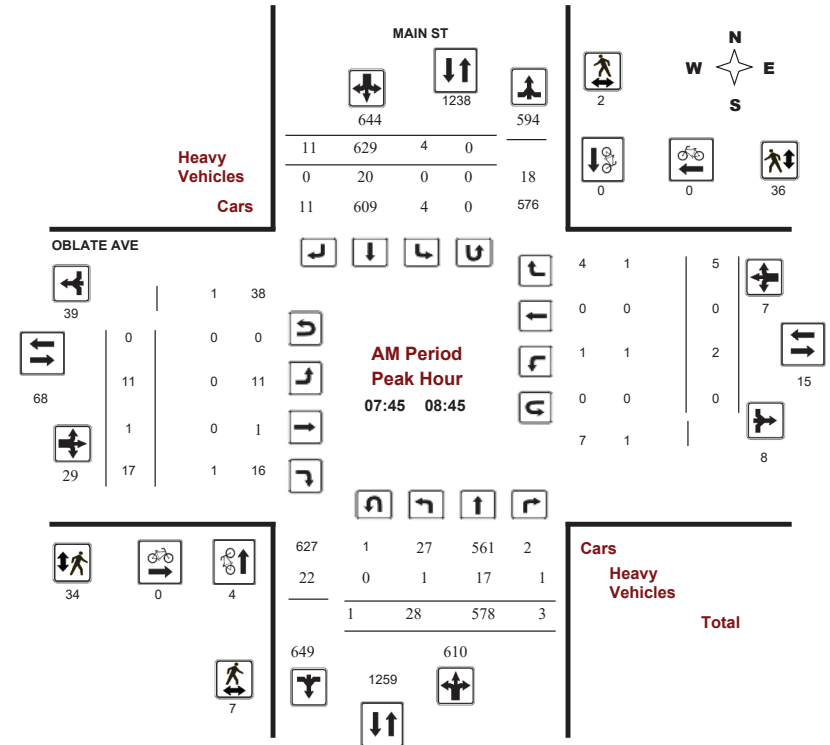
### MAIN ST @ OBLATE AVE

Survey Date: Tuesday, March 07, 2017

WO No: 36739

Start Time: 07:00

Device: Miovision



Comments



# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

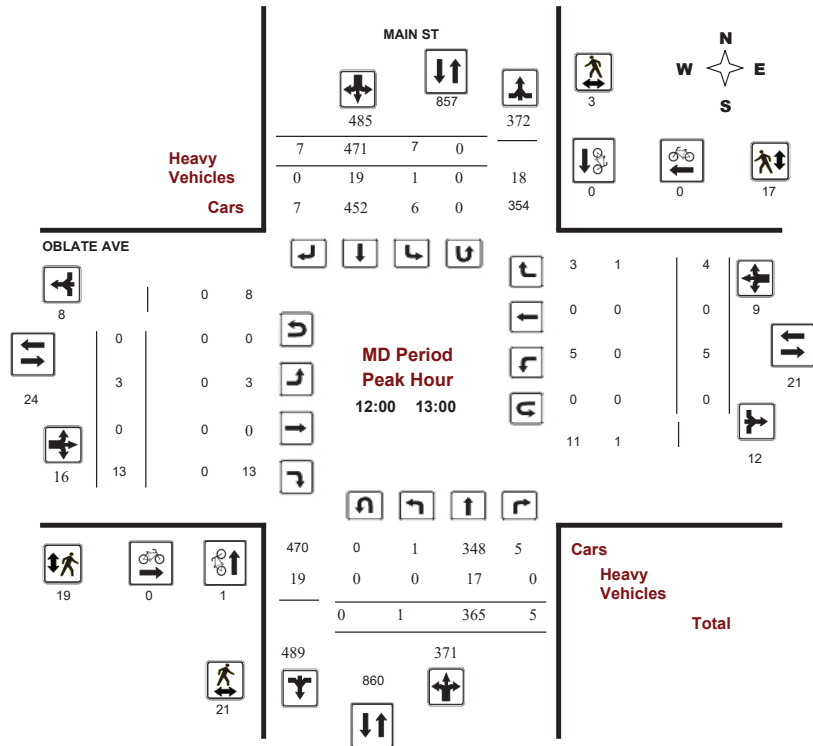
### MAIN ST @ OBLATE AVE

Survey Date: Tuesday, March 07, 2017

Start Time: 07:00

WO No: 36739

Device: Miovision



Comments



# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

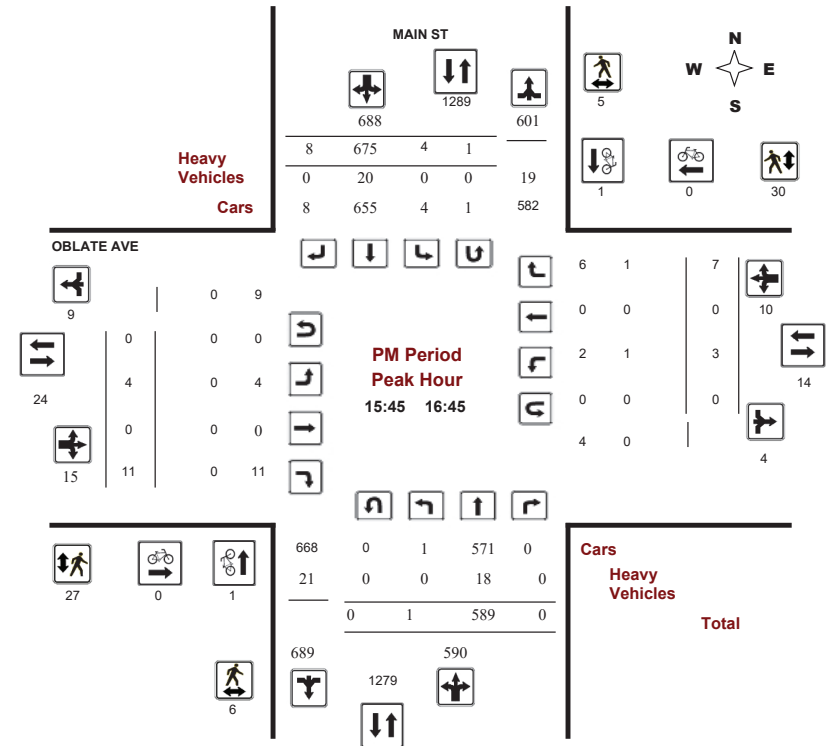
### MAIN ST @ OBLATE AVE

Survey Date: Tuesday, March 07, 2017

Start Time: 07:00

WO No: 36739

Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MAIN ST @ OBLATE AVE

Survey Date: Tuesday, March 07, 2017

WO No: 36739

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

Table with columns for Time Period, Northbound (LT, ST, RT, N TOT, STR TOT), Southbound (LT, ST, RT, S TOT, STR TOT), Eastbound (LT, ST, RT, E TOT), Westbound (LT, ST, RT, W TOT, STR TOT), and Grand Total. Rows represent 15-minute intervals from 07:00 to 18:00.

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MAIN ST @ OBLATE AVE

Survey Date: Tuesday, March 07, 2017

WO No: 36739

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

Table with columns for Time Period, MAIN ST (Northbound, Southbound, Street Total), OBLATE AVE (Eastbound, Westbound, Street Total), and Grand Total. Rows represent 15-minute intervals from 07:00 to 18:00.





Transportation Services - Traffic Services

Turning Movement Count - Study Results

MAIN ST @ OBLATE AVE

Survey Date: Tuesday, March 07, 2017

WO No: 36739

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

MAIN ST OBLATE AVE

Table with 7 columns: Time Period, NB Approach, SB Approach, Total, EB Approach, WB Approach, Grand Total. Rows show pedestrian counts for various time intervals from 07:00 to 17:45.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MAIN ST @ OBLATE AVE

Survey Date: Tuesday, March 07, 2017

WO No: 36739

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

MAIN ST OBLATE AVE

Table with 20 columns: Time Period, Northbound (LT, ST, RT, N TOT, STR TOT), Southbound (LT, ST, RT, S TOT, STR TOT), Eastbound (LT, ST, RT, E TOT), Westbound (LT, ST, RT, W TOT, STR TOT), Grand Total. Rows show heavy vehicle counts for various time intervals from 07:00 to 17:45.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### MAIN ST @ OBLATE AVE

Survey Date: Tuesday, March 07, 2017

WO No: 36739

Start Time: 07:00

Device: Miovision

### Full Study 15 Minute U-Turn Total

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	1	0	0	0	1
08:45	09:00	0	0	0	0	0
09:00	09:15	1	0	0	0	1
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	1	0	0	1
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	1	0	0	0	1
17:45	18:00	0	0	0	0	0
Total		3	1	0	0	4



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### HAZEL ST @ MAIN ST

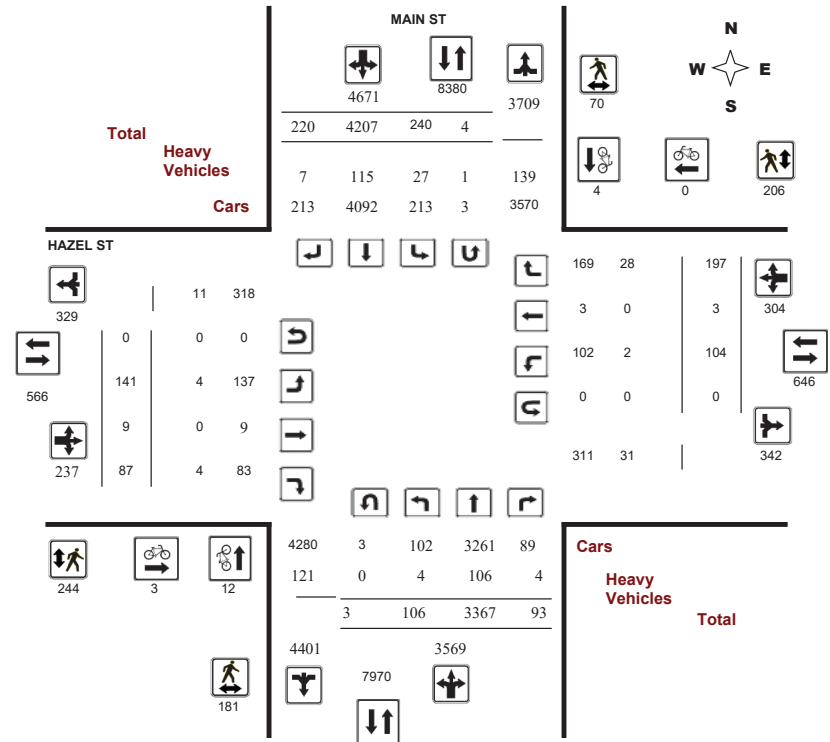
Survey Date: Tuesday, March 07, 2017

WO No: 36733

Start Time: 07:00

Device: Miovision

### Full Study Diagram





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### HAZEL ST @ MAIN ST

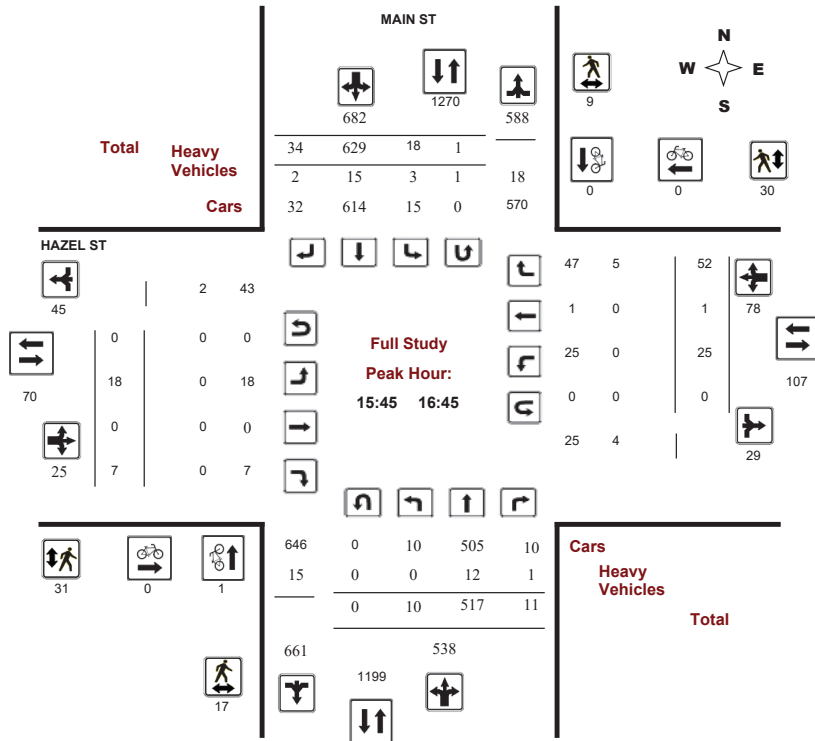
Survey Date: Tuesday, March 07, 2017

WO No: 36733

Start Time: 07:00

Device: Miovision

### Full Study Peak Hour Diagram



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### HAZEL ST @ MAIN ST

Survey Date: Tuesday, March 07, 2017

WO No: 36733

Start Time: 07:00

Device: Miovision

### Full Study Summary (8 HR Standard)

Survey Date: Tuesday, March 07, 2017

Total Observed U-Turns

AADT Factor

Northbound: 3      Southbound: 4  
 Eastbound: 0      Westbound: 0

1.00

Period	MAIN ST				HAZEL ST				Grand Total										
	Northbound		Southbound		Eastbound		Westbound												
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	
07:00-08:00	3	400	10	413	32	579	13	624	1037	16	1	3	20	2	0	9	11	31	1068
08:00-09:00	12	552	20	584	69	567	27	663	1247	23	1	9	33	10	0	17	27	60	1307
09:00-10:00	12	390	12	414	39	400	26	465	879	20	3	8	31	8	0	20	28	59	938
11:30-12:30	31	302	6	339	22	405	27	454	793	15	0	18	33	16	0	27	43	76	869
12:30-13:30	13	312	12	337	23	427	26	476	813	21	2	13	36	6	1	14	21	57	870
15:00-16:00	11	502	8	521	15	535	34	584	1105	22	0	13	35	19	1	29	49	84	1189
16:00-17:00	12	473	10	495	20	659	31	710	1205	11	1	8	20	24	1	52	77	97	1302
17:00-18:00	12	436	15	463	20	635	36	691	1154	13	1	15	29	19	0	29	48	77	1231
<b>Sub Total</b>	<b>106</b>	<b>3367</b>	<b>93</b>	<b>3566</b>	<b>240</b>	<b>4207</b>	<b>220</b>	<b>4667</b>	<b>8233</b>	<b>141</b>	<b>9</b>	<b>87</b>	<b>237</b>	<b>104</b>	<b>3</b>	<b>197</b>	<b>304</b>	<b>541</b>	<b>8774</b>
<b>U Turns</b>				<b>3</b>				<b>4</b>	<b>7</b>				<b>0</b>				<b>0</b>	<b>0</b>	<b>7</b>
<b>Total</b>	<b>106</b>	<b>3367</b>	<b>93</b>	<b>3569</b>	<b>240</b>	<b>4207</b>	<b>220</b>	<b>4671</b>	<b>8240</b>	<b>141</b>	<b>9</b>	<b>87</b>	<b>237</b>	<b>104</b>	<b>3</b>	<b>197</b>	<b>304</b>	<b>541</b>	<b>8781</b>
<b>EQ 12Hr</b>	<b>147</b>	<b>4680</b>	<b>129</b>	<b>4961</b>	<b>334</b>	<b>5848</b>	<b>306</b>	<b>6493</b>	<b>11454</b>	<b>196</b>	<b>13</b>	<b>121</b>	<b>329</b>	<b>145</b>	<b>4</b>	<b>274</b>	<b>423</b>	<b>752</b>	<b>12206</b>
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.																			
<b>AVG 12Hr</b>	<b>139</b>	<b>4411</b>	<b>122</b>	<b>4675</b>	<b>314</b>	<b>5511</b>	<b>288</b>	<b>6119</b>	<b>11454</b>	<b>185</b>	<b>12</b>	<b>114</b>	<b>310</b>	<b>136</b>	<b>4</b>	<b>258</b>	<b>398</b>	<b>752</b>	<b>12206</b>
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.																			
<b>AVG 24Hr</b>	<b>182</b>	<b>5778</b>	<b>160</b>	<b>6125</b>	<b>412</b>	<b>7220</b>	<b>378</b>	<b>8016</b>	<b>14141</b>	<b>242</b>	<b>15</b>	<b>149</b>	<b>407</b>	<b>178</b>	<b>5</b>	<b>338</b>	<b>522</b>	<b>929</b>	<b>15070</b>
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.																			
Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.																			



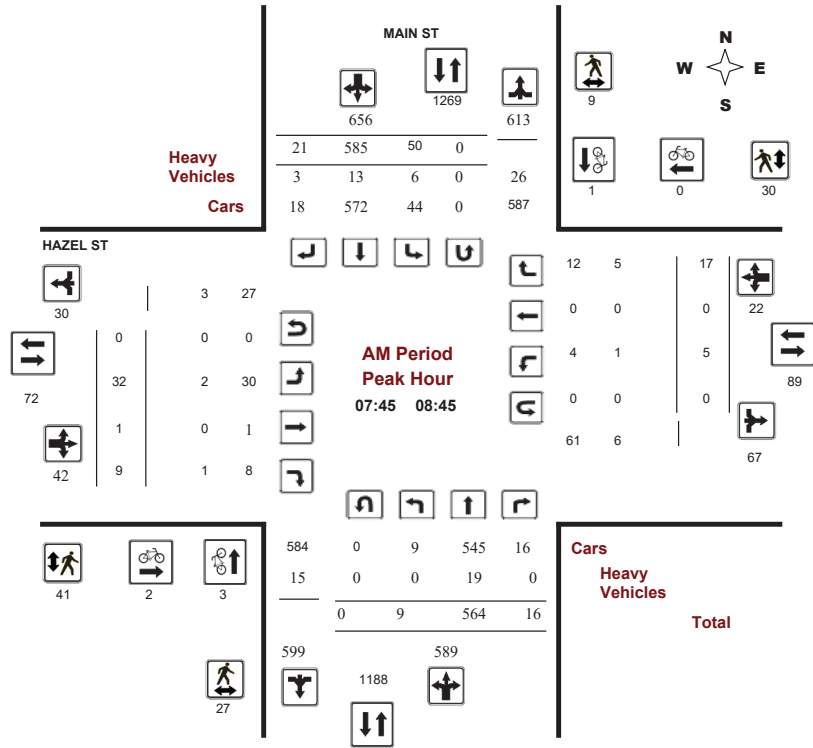
# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

### HAZEL ST @ MAIN ST

Survey Date: Tuesday, March 07, 2017  
Start Time: 07:00

WO No: 36733  
Device: Miovision



Comments



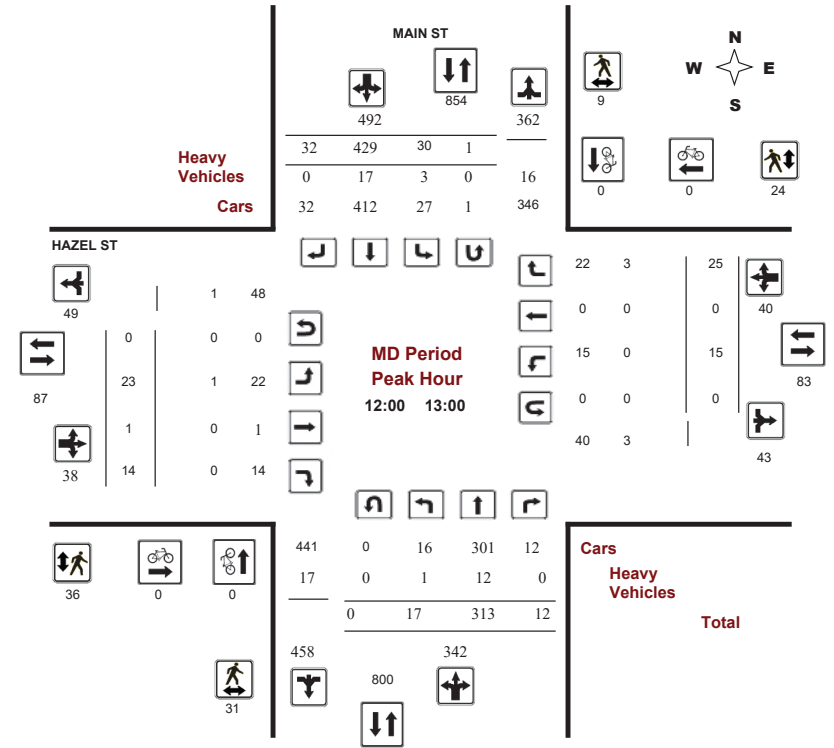
# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

### HAZEL ST @ MAIN ST

Survey Date: Tuesday, March 07, 2017  
Start Time: 07:00

WO No: 36733  
Device: Miovision



Comments



# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

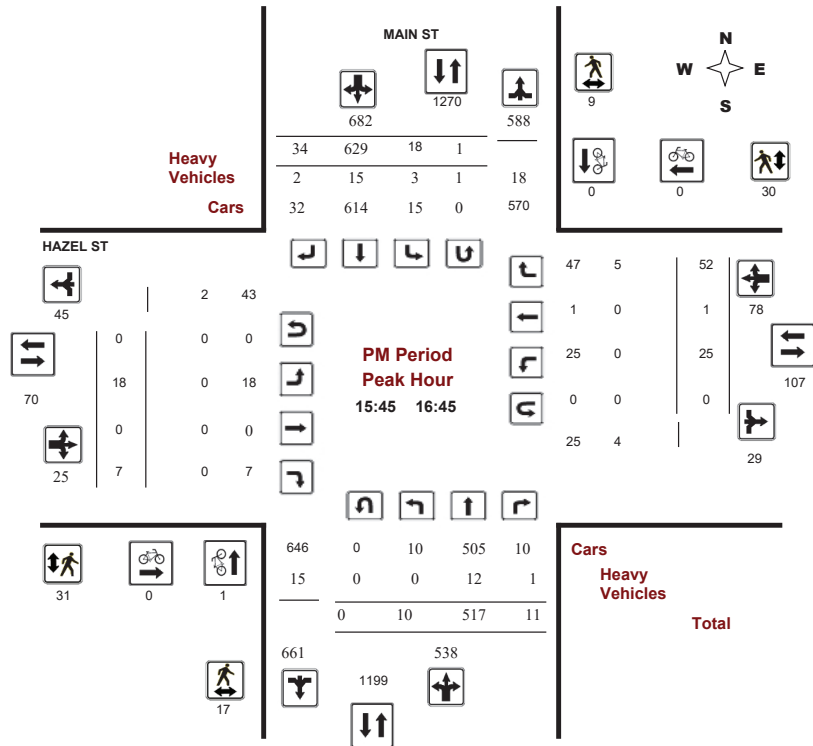
### HAZEL ST @ MAIN ST

Survey Date: Tuesday, March 07, 2017

Start Time: 07:00

WO No: 36733

Device: Miovision



Comments



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### HAZEL ST @ MAIN ST

Survey Date: Tuesday, March 07, 2017

Start Time: 07:00

WO No: 36733

Device: Miovision

## Full Study 15 Minute Increments

Time Period	MAIN ST Northbound				MAIN ST Southbound				HAZEL ST Eastbound				HAZEL ST Westbound				Grand Total			
	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT		W TOT	STR TOT	
07:00	07:15	0	64	1	65	10	140	2	152	5	0	0	0	0	0	4	4	5	221	
07:15	07:30	1	89	4	94	5	134	2	141	10	3	0	0	3	2	0	2	4	10	242
07:30	07:45	1	108	2	111	12	160	6	178	10	3	1	2	6	0	0	0	10	295	
07:45	08:00	1	139	3	143	5	145	3	153	11	10	0	1	11	0	0	3	3	11	310
08:00	08:15	5	138	4	147	9	142	6	157	13	7	0	4	11	0	0	1	1	13	316
08:15	08:30	0	144	3	147	13	154	5	172	8	7	1	1	9	1	0	3	4	8	332
08:30	08:45	3	143	6	152	23	144	7	174	9	8	0	3	11	4	0	10	14	9	351
08:45	09:00	4	127	7	138	24	127	9	160	4	1	0	1	2	5	0	3	8	4	308
09:00	09:15	4	113	2	119	14	89	7	112	9	6	1	1	8	1	0	6	7	9	246
09:15	09:30	2	102	5	109	13	117	10	140	8	4	0	2	6	4	0	5	9	8	264
09:30	09:45	4	89	2	95	6	94	5	105	13	5	1	3	9	1	0	2	3	13	212
09:45	10:00	2	86	3	91	6	100	4	110	10	5	1	2	8	2	0	7	9	10	218
11:30	11:45	7	78	0	85	0	99	6	105	6	1	0	6	7	1	0	8	9	6	206
11:45	12:00	13	82	1	96	4	88	6	98	12	4	0	4	8	2	0	5	7	12	209
12:00	12:15	10	72	3	85	5	113	7	125	12	6	0	6	12	4	0	5	9	12	231
12:15	12:30	1	70	2	73	13	105	8	127	7	4	0	2	6	9	0	9	18	7	224
12:30	12:45	3	72	3	78	5	113	11	129	6	9	1	3	13	1	0	5	6	6	226
12:45	13:00	3	99	4	106	7	98	6	111	8	4	0	3	7	1	0	6	7	8	231
13:00	13:15	4	61	4	72	5	109	4	118	2	3	0	3	6	0	0	2	2	2	198
13:15	13:30	3	80	1	84	6	107	5	118	9	5	1	4	10	4	1	1	6	9	218
15:00	15:15	4	120	0	124	2	130	7	139	11	2	0	2	4	4	1	8	13	11	280
15:15	15:30	1	120	3	124	3	133	5	141	7	4	0	4	8	5	0	7	12	7	285
15:30	15:45	4	112	4	120	6	138	11	155	10	6	0	5	11	4	0	8	12	10	298
15:45	16:00	2	150	1	153	4	134	11	150	8	10	0	2	12	6	0	6	12	8	327
16:00	16:15	2	119	1	122	6	164	9	179	12	3	0	2	5	8	1	19	28	12	334
16:15	16:30	2	138	2	142	3	164	7	174	6	1	0	1	2	5	0	14	19	6	337
16:30	16:45	4	110	7	121	5	167	7	179	8	4	0	2	6	6	0	13	19	8	325
16:45	17:00	4	106	0	110	6	164	8	178	4	3	1	3	7	5	0	6	11	4	306
17:00	17:15	2	118	3	123	3	161	11	175	11	6	0	5	11	4	0	13	17	11	326
17:15	17:30	4	130	5	139	3	154	9	166	3	3	0	1	4	5	0	5	10	3	319
17:30	17:45	3	91	3	97	7	191	6	204	6	0	1	6	7	3	0	7	10	6	318
17:45	18:00	3	97	4	104	7	129	10	146	6	4	0	3	7	7	0	4	11	6	268
Total:		106	3367	93	3569	240	4207	220	4671	264	141	9	87	237	104	3	197	304	264	8,781

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAZEL ST @ MAIN ST

Survey Date: Tuesday, March 07, 2017

WO No: 36733

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

Time Period	MAIN ST			HAZEL ST			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 07:15	2	0	2	0	0	0	2
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	1	0	1	0	0	0	1
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	2	0	2	0	0	0	2
08:15 08:30	0	1	1	0	0	0	1
08:30 08:45	1	0	1	2	0	2	3
08:45 09:00	1	0	1	1	0	1	2
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	1	0	1	0	0	0	1
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	1	0	1	0	0	0	1
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	1	0	1	0	0	0	1
15:15 15:30	1	0	1	0	0	0	1
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	1	0	1	0	0	0	1
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	2	2	0	0	0	2
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	1	1	0	0	0	1
17:45 18:00	0	0	0	0	0	0	0
<b>Total</b>	<b>12</b>	<b>4</b>	<b>16</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>19</b>



Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAZEL ST @ MAIN ST

Survey Date: Tuesday, March 07, 2017

WO No: 36733

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

Time Period	MAIN ST			HAZEL ST			Grand Total
	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	
07:00 07:15	0	1	1	0	1	1	2
07:15 07:30	2	3	5	5	6	11	16
07:30 07:45	4	3	7	2	2	4	11
07:45 08:00	6	1	7	15	3	18	25
08:00 08:15	4	2	6	12	8	20	26
08:15 08:30	4	5	9	6	13	19	28
08:30 08:45	13	1	14	8	6	14	28
08:45 09:00	11	6	17	4	16	20	37
09:00 09:15	7	1	8	9	13	22	30
09:15 09:30	1	3	4	2	4	6	10
09:30 09:45	6	1	7	3	1	4	11
09:45 10:00	3	1	4	2	5	7	11
11:30 11:45	4	3	7	8	3	11	18
11:45 12:00	8	0	8	12	7	19	27
12:00 12:15	8	2	10	13	4	17	27
12:15 12:30	6	1	7	8	5	13	20
12:30 12:45	8	2	10	5	5	10	20
12:45 13:00	9	4	13	10	10	20	33
13:00 13:15	2	1	3	11	3	14	17
13:15 13:30	6	5	11	9	10	19	30
15:00 15:15	9	2	11	10	1	11	22
15:15 15:30	4	2	6	8	2	10	16
15:30 15:45	4	3	7	10	8	18	25
15:45 16:00	1	2	3	10	8	18	21
16:00 16:15	5	2	7	11	3	14	21
16:15 16:30	1	4	5	6	8	14	19
16:30 16:45	10	1	11	4	11	15	26
16:45 17:00	5	2	7	10	11	21	28
17:00 17:15	6	2	8	4	7	11	19
17:15 17:30	8	1	9	7	6	13	22
17:30 17:45	8	1	9	9	6	15	24
17:45 18:00	8	2	10	11	10	21	31
<b>Total</b>	<b>181</b>	<b>70</b>	<b>251</b>	<b>244</b>	<b>206</b>	<b>450</b>	<b>701</b>



Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAZEL ST @ MAIN ST

Survey Date: Tuesday, March 07, 2017

WO No: 36733

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

		MAIN ST						HAZEL ST												
		Northbound			Southbound			Eastbound			Westbound									
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	3	0	3	0	2	0	2	5	0	0	0	0	0	0	1	1	1	6
07:15	07:30	0	6	0	6	1	3	0	4	10	0	0	0	0	0	0	1	1	1	11
07:30	07:45	0	6	0	6	1	3	0	4	10	0	0	0	0	0	0	0	0	0	10
07:45	08:00	0	7	0	7	0	3	1	4	11	0	0	0	0	0	0	1	1	1	12
08:00	08:15	0	6	0	6	2	5	0	7	13	1	0	0	1	0	0	1	1	2	15
08:15	08:30	0	3	0	3	2	1	2	5	8	1	0	1	2	0	0	1	1	3	11
08:30	08:45	0	3	0	3	2	4	0	6	9	0	0	0	0	1	0	2	3	3	12
08:45	09:00	0	1	0	1	1	2	0	3	4	0	0	0	0	0	0	1	1	1	5
09:00	09:15	1	4	0	5	1	3	0	4	9	0	0	1	1	0	0	1	1	2	11
09:15	09:30	0	3	0	3	2	3	0	5	8	1	0	0	1	1	0	1	2	3	11
09:30	09:45	0	3	0	3	2	8	0	10	13	0	0	0	0	0	0	1	1	1	14
09:45	10:00	0	5	0	5	0	5	0	5	10	0	0	0	0	0	0	1	1	1	11
11:30	11:45	0	1	0	1	0	5	0	5	6	0	0	0	0	0	0	1	1	1	7
11:45	12:00	1	4	0	5	1	5	1	7	12	0	0	1	1	0	0	0	0	1	13
12:00	12:15	1	5	0	6	0	6	0	6	12	1	0	0	1	0	0	1	1	2	14
12:15	12:30	0	2	0	2	2	3	0	5	7	0	0	0	0	0	0	0	0	0	7
12:30	12:45	0	2	0	2	0	4	0	4	6	0	0	0	0	0	0	2	2	2	8
12:45	13:00	0	3	0	3	1	4	0	5	8	0	0	0	0	0	0	0	0	0	8
13:00	13:15	0	1	0	1	0	1	0	1	2	0	0	0	0	0	0	1	1	1	3
13:15	13:30	0	5	0	5	0	4	0	4	9	0	0	0	0	0	0	0	0	0	9
15:00	15:15	0	4	0	4	1	6	0	7	11	0	0	0	0	0	0	1	1	1	12
15:15	15:30	0	2	1	3	1	3	0	4	7	0	0	0	0	0	0	1	1	1	8
15:30	15:45	0	3	1	4	0	5	1	6	10	0	0	1	1	0	0	1	1	2	12
15:45	16:00	0	3	1	4	0	3	0	4	8	0	0	0	0	0	0	1	1	1	9
16:00	16:15	0	5	0	5	1	6	0	7	12	0	0	0	0	0	0	1	1	1	13
16:15	16:30	0	2	0	2	0	2	2	4	6	0	0	0	0	0	0	1	1	1	7
16:30	16:45	0	2	0	2	2	4	0	6	8	0	0	0	0	0	0	2	2	2	10
16:45	17:00	0	4	0	4	0	0	0	4	4	0	0	0	0	0	0	0	0	0	4
17:00	17:15	1	2	1	4	1	6	0	7	11	0	0	0	0	0	0	1	1	1	12
17:15	17:30	0	1	0	1	0	2	0	2	3	0	0	0	0	0	0	1	1	1	4
17:30	17:45	0	3	0	3	0	3	0	3	6	0	0	0	0	0	0	0	0	0	6
17:45	18:00	0	2	0	2	3	1	0	4	6	0	0	0	0	0	0	1	1	1	7
Total:	None	4	106	4	114	27	115	7	150	264	4	0	4	8	2	0	28	30	38	302



Transportation Services - Traffic Services

Turning Movement Count - Study Results

HAZEL ST @ MAIN ST

Survey Date: Tuesday, March 07, 2017

WO No: 36733

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

		MAIN ST		HAZEL ST			
		Northbound	Southbound	Eastbound	Westbound		
Time Period		U-Turn Total	U-Turn Total	U-Turn Total	U-Turn Total	Total	
07:00	07:15	0	0	0	0	0	
07:15	07:30	0	0	0	0	0	
07:30	07:45	0	0	0	0	0	
07:45	08:00	0	0	0	0	0	
08:00	08:15	0	0	0	0	0	
08:15	08:30	0	0	0	0	0	
08:30	08:45	0	0	0	0	0	
08:45	09:00	0	0	0	0	0	
09:00	09:15	1	4	0	0	5	
09:15	09:30	0	3	0	0	3	
09:30	09:45	0	3	0	0	3	
09:45	10:00	0	5	0	0	5	
11:30	11:45	0	1	0	0	1	
11:45	12:00	1	4	0	0	5	
12:00	12:15	1	5	0	0	6	
12:15	12:30	0	2	0	0	2	
12:30	12:45	0	2	0	0	2	
12:45	13:00	0	3	0	0	3	
13:00	13:15	0	1	0	0	1	
13:15	13:30	0	5	0	0	5	
15:00	15:15	0	4	0	0	4	
15:15	15:30	0	2	1	0	3	
15:30	15:45	0	3	1	0	4	
15:45	16:00	0	3	1	0	4	
16:00	16:15	0	5	0	0	5	
16:15	16:30	0	2	0	0	2	
16:30	16:45	0	2	0	0	2	
16:45	17:00	0	4	0	0	4	
17:00	17:15	1	2	1	0	4	
17:15	17:30	0	1	0	0	1	
17:30	17:45	0	3	0	0	3	
17:45	18:00	0	2	0	0	2	
Total		3	4	0	0	7	

# Appendix C

Synchro Intersection Worksheets – Existing Conditions



Lanes, Volumes, Timings  
1: Main & Hawthorne

Existing AM Peak Hour  
15 Oblates

Lane Group	EBT	EBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3	Ø5	Ø9	Ø10
Lane Configurations	↔	↔		↔↔		↔↔						
Traffic Volume (vph)	12	220	278	504	5	393						
Future Volume (vph)	12	220	278	504	5	393						
Lane Group Flow (vph)	334	244	0	876	0	570						
Turn Type	NA	pm+ov	custom	NA	custom	NA						
Protected Phases	4	13	13	1 2 9 10		5 6	1	2	3	5	9	10
Permitted Phases		4	10 2		6							
Detector Phase	4	13	13	1 2 9 10	6	5 6						
Switch Phase												
Minimum Initial (s)	10.0	5.0	5.0		10.0		1.0	10.0	1.0	1.0	1.0	5.0
Minimum Split (s)	22.3	11.3	11.3		17.3		5.0	17.3	3.0	5.0	5.0	17.0
Total Split (s)	22.3	22.0	22.0		34.0		5.0	34.0	4.7	5.0	5.0	17.0
Total Split (%)	22.3%	22.0%	22.0%		34.0%		5%	34%	5%	5%	5%	17%
Maximum Green (s)	16.0	15.7	15.7		27.7		3.0	27.7	2.7	3.0	3.0	10.7
Yellow Time (s)	3.3	3.3	3.3		3.3		2.0	3.3	2.0	2.0	2.0	3.3
All-Red Time (s)	3.0	3.0	3.0		3.0		0.0	3.0	0.0	0.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0										
Total Lost Time (s)	6.3	6.3										
Lead/Lag					Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max		C-Max		Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0				2.0		3.0	2.0		3.0	3.0	2.0
Flash Dont Walk (s)	9.0				9.0		0.0	9.0		0.0	0.0	8.7
Pedestrian Calls (#/hr)	28				20		53	53		20	53	53
Act Effct Green (s)	25.6	41.3		57.0		37.0						
Actuated g/C Ratio	0.26	0.41		0.57		0.37						
v/c Ratio	0.83	0.33		0.68		0.54						
Control Delay	55.2	3.9		9.9		25.1						
Queue Delay	0.0	0.0		0.1		0.0						
Total Delay	55.2	3.9		10.0		25.1						
LOS	E	A		B		C						
Approach Delay	33.5			10.0		25.1						
Approach LOS	C			B		C						
Queue Length 50th (m)	59.1	0.0		26.4		41.7						
Queue Length 95th (m)	#136.6	14.6		31.0		58.1						
Internal Link Dist (m)	198.7			59.0		262.1						
Turn Bay Length (m)												
Base Capacity (vph)	403	733		1295		1057						
Starvation Cap Reductn	0	0		30		0						
Spillback Cap Reductn	0	0		0		0						
Storage Cap Reductn	0	0		0		0						
Reduced v/c Ratio	0.83	0.33		0.69		0.54						

Intersection Summary

Cycle Length: 100  
Actuated Cycle Length: 100  
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
Natural Cycle: 85

Lanes, Volumes, Timings  
1: Main & Hawthorne

Existing AM Peak Hour  
15 Oblates

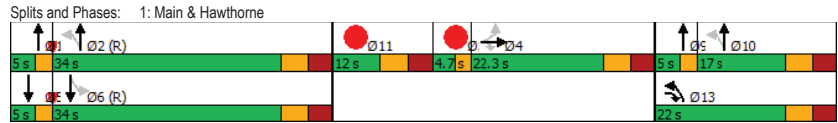
Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	12.0
Total Split (s)	12.0
Total Split (%)	12%
Maximum Green (s)	5.7
Yellow Time (s)	3.3
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.7
Flash Dont Walk (s)	0.0
Pedestrian Calls (#/hr)	3
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
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

Lanes, Volumes, Timings  
1: Main & Hawthorne

Existing AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 21.0 Intersection LOS: C  
 Intersection Capacity Utilization 75.5% ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings  
2: Main & Graham/Lees

Existing AM Peak Hour  
15 Oblates

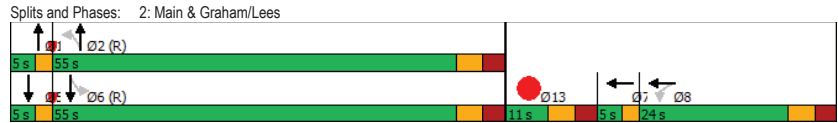
Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations	↖	↗		↕	↖	↗				
Traffic Volume (vph)	177	53	7	622	24	515				
Future Volume (vph)	177	53	7	622	24	515				
Lane Group Flow (vph)	197	240	0	770	0	688				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted Phases	8		2		6					
Detector Phase	8	7 8	2	1 2	6	5 6				
Switch Phase										
Minimum Initial (s)	10.0		10.0		10.0		1.0	1.0	1.0	5.0
Minimum Split (s)	24.0		18.2		18.2		5.0	5.0	5.0	11.0
Total Split (s)	24.0		55.0		55.0		5.0	5.0	5.0	11.0
Total Split (%)	24.0%		55.0%		55.0%		5%	5%	5%	11%
Maximum Green (s)	18.0		48.8		48.8		3.0	3.0	3.0	5.0
Yellow Time (s)	3.3		3.3		3.3		2.0	2.0	2.0	3.3
All-Red Time (s)	2.7		2.9		2.9		0.0	0.0	0.0	2.7
Lost Time Adjust (s)	0.0									
Total Lost Time (s)	6.0									
Lead/Lag			Lag		Lag		Lead	Lead	Lag	Lead
Lead-Lag Optimize?			Yes		Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		C-Max		C-Max		Max	Max	Max	Max
Walk Time (s)	2.0		2.0		2.0		3.0	3.0	3.0	5.0
Flash Dont Walk (s)	9.0		10.0		10.0		0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	60		123		33		123	33	60	7
Act Effct Green (s)	18.0	27.0		58.0		58.0				
Actuated g/C Ratio	0.18	0.27		0.58		0.58				
v/c Ratio	0.84	0.53		0.47		0.44				
Control Delay	69.8	16.8		13.7		6.6				
Queue Delay	0.0	0.0		0.8		0.3				
Total Delay	69.8	16.8		14.5		6.9				
LOS	E	B		B		A				
Approach Delay		40.7		14.5		6.9				
Approach LOS		D		B		A				
Queue Length 50th (m)	37.3	13.6		32.5		15.0				
Queue Length 95th (m)	#74.7	37.4		54.7		23.4				
Internal Link Dist (m)		426.1		69.4		59.0				
Turn Bay Length (m)	40.0									
Base Capacity (vph)	235	449		1631		1576				
Starvation Cap Reductn	0	0		525		336				
Spillback Cap Reductn	0	0		0		0				
Storage Cap Reductn	0	0		0		0				
Reduced v/c Ratio	0.84	0.53		0.70		0.55				

**Intersection Summary**  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 39 (39%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
2: Main & Graham/Lees

Existing AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.84  
 Intersection Signal Delay: 17.8 Intersection LOS: B  
 Intersection Capacity Utilization 58.4% ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings  
3: Main & Evelyn

Existing AM Peak Hour  
15 Oblates

Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations	↕	↑	↑↑	
Traffic Volume (vph)	43	638	684	
Future Volume (vph)	43	638	684	
Lane Group Flow (vph)	101	709	760	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum Split (s)	25.4	27.1	15.1	5.0
Total Split (s)	26.0	69.0	69.0	5.0
Total Split (%)	26.0%	69.0%	69.0%	5%
Maximum Green (s)	20.6	63.9	63.9	3.0
Yellow Time (s)	3.3	3.3	3.3	2.0
All-Red Time (s)	2.1	1.8	1.8	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	5.4	5.1	5.1	
Lead/Lag	Lag			Lead
Lead-Lag Optimize?	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max
Walk Time (s)	10.0	17.0		3.0
Flash Dont Walk (s)	10.0	5.0		0.0
Pedestrian Calls (#/hr)	18	41		18
Act Effct Green (s)	20.6	63.9	63.9	
Actuated g/C Ratio	0.21	0.64	0.64	
v/c Ratio	0.29	0.64	0.36	
Control Delay	20.8	14.4	10.2	
Queue Delay	0.0	1.4	0.9	
Total Delay	20.8	15.8	11.1	
LOS	C	B	B	
Approach Delay	20.8	15.8	11.1	
Approach LOS	C	B	B	
Queue Length 50th (m)	8.2	76.6	33.1	
Queue Length 95th (m)	22.2	112.8	m45.6	
Internal Link Dist (m)	452.4	86.0	69.4	
Turn Bay Length (m)				
Base Capacity (vph)	348	1104	2097	
Starvation Cap Reductn	0	211	974	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.29	0.79	0.68	

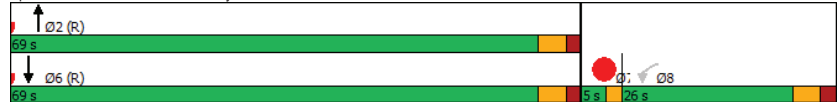
**Intersection Summary**  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 59 (59%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
3: Main & Evelyn

Existing AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 13.9	Intersection LOS: B
Intersection Capacity Utilization 60.9%	ICU Level of Service B
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 3: Main & Evelyn



Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblates

Existing AM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø2	Ø3	Ø6	Ø7
Lane Configurations		↔	↔	↔	↔	↔	↔	↔				
Traffic Volume (vph)	11	1	2	0	29	658	4	709				
Future Volume (vph)	11	1	2	0	29	658	4	709				
Lane Group Flow (vph)	0	32	2	6	32	734	4	800				
Turn Type	Perm	NA	Perm	NA	NA	custom	NA	NA				
Protected Phases		4		8	5	2.9	1	6.13	2	3	6	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	5	2.9	1	6.13				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0		5.0		10.0	1.0	10.0	1.0
Minimum Split (s)	19.3	19.3	19.3	19.3	10.0		10.0		33.0	5.0	33.0	5.0
Total Split (s)	22.0	22.0	22.0	22.0	16.0		16.0		42.0	5.0	42.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	17.8%		17.8%		47%	6%	47%	6%
Maximum Green (s)	16.7	16.7	16.7	16.7	11.0		11.0		37.0	3.0	37.0	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3		3.3	2.0	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.7		1.7		1.7	0.0	1.7	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0					
Total Lost Time (s)		5.3	5.3	5.3	5.0		5.0					
Lead/Lag	Lag	Lag	Lag	Lag	Lead		Lead			Lead		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	None		None		C-Max	Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0					20.0	3.0	20.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0					8.0	0.0	8.0	0.0
Pedestrian Calls (#/hr)	7	7	2	2					36	7	34	2
Act Effct Green (s)		16.7	16.7	16.7	56.2	50.8	51.5	46.1				
Actuated g/C Ratio		0.19	0.19	0.19	0.62	0.56	0.57	0.51				
v/c Ratio		0.12	0.01	0.01	0.12	0.75	0.01	0.91				
Control Delay		19.3	30.5	0.0	7.8	16.0	6.5	38.1				
Queue Delay		0.0	0.0	0.0	0.0	0.2	0.0	0.0				
Total Delay		19.3	30.5	0.0	7.8	16.2	6.5	38.1				
LOS		B	C	A	A	B	A	D				
Approach Delay		19.3		7.6		15.9		37.9				
Approach LOS		B		A		B		D				
Queue Length 50th (m)		1.9	0.3	0.0	1.3	31.6	0.3	132.7				
Queue Length 95th (m)		9.4	2.2	0.0	m3.1	#180.1	1.3	#216.7				
Internal Link Dist (m)		109.1		180.1		118.6		47.0				
Turn Bay Length (m)			15.0		15.0		30.0					
Base Capacity (vph)		275	158	545	336	974	416	882				
Starvation Cap Reductn		0	0	0	0	24	0	0				
Spillback Cap Reductn		0	0	0	0	0	0	0				
Storage Cap Reductn		0	0	0	0	0	0	0				
Reduced v/c Ratio		0.12	0.01	0.01	0.10	0.77	0.01	0.91				

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 57 (63%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats

Existing AM Peak Hour  
15 Oblates

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)	3.0	3.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	36	34
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
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		

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats

Existing AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 26.9 Intersection LOS: C  
 Intersection Capacity Utilization 60.4% ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings  
6: Main & Hazel

Existing AM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3
Lane Configurations		↔		↔	↔	↔	↔	↔	↔			
Traffic Volume (vph)	32	1	5	0	17	9	644	50	665			
Future Volume (vph)	32	1	5	0	17	9	644	50	665			
Lane Group Flow (vph)	0	47	0	6	19	10	734	56	762			
Turn Type	Perm	NA	Perm	NA	Perm	custom	NA	custom	NA			
Protected Phases		4		8		13	12	9	56	1	2	3
Permitted Phases	4		8		8		2	6				
Detector Phase	4	4	8	8	8	13	12	9	56			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0		5.0		1.0	10.0	1.0
Minimum Split (s)	21.2	21.2	21.2	21.2	21.2	10.8		10.8		5.0	34.8	3.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	15.0		15.0		5.0	43.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	24.4%	16.7%		16.7%		6%	48%	6%
Maximum Green (s)	15.8	15.8	15.8	15.8	15.8	9.2		9.2		3.0	37.2	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3		3.3		2.0	3.3	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.5		2.5		0.0	2.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0				
Total Lost Time (s)		6.2		6.2	6.2	5.8		5.8				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes		Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	None		None		Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0					3.0	18.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0					0.0	10.0	
Pedestrian Calls (#/hr)	27	27	9	9	9					30	30	
Act Effct Green (s)		15.8		15.8	15.8	47.5	50.7	55.4	58.6			
Actuated g/C Ratio		0.18		0.18	0.18	0.53	0.56	0.62	0.65			
v/c Ratio		0.21		0.03	0.06	0.04	0.77	0.23	0.69			
Control Delay		29.3		31.6	0.4	7.2	23.2	9.9	10.7			
Queue Delay		0.0		0.0	0.0	0.0	0.6	0.0	0.1			
Total Delay		29.3		31.6	0.4	7.2	23.8	9.9	10.8			
LOS		C		C	A	A	C	A	B			
Approach Delay		29.3		7.9			23.6		10.8			
Approach LOS		C		A			C		B			
Queue Length 50th (m)		5.5		0.9	0.0	0.6	96.4	3.2	31.4			
Queue Length 95th (m)		15.0		4.1	0.0	2.3	#170.5	m3.9	m44.3			
Internal Link Dist (m)		237.6		98.5			241.0		118.6			
Turn Bay Length (m)				30.0	20.0			15.0				
Base Capacity (vph)		221		174	322	339	959	275	1109			
Starvation Cap Reductn		0		0	0	0	0	0	30			
Spillback Cap Reductn		0		0	4	0	47	0	0			
Storage Cap Reductn		0		0	0	0	0	0	0			
Reduced v/c Ratio		0.21		0.03	0.06	0.03	0.80	0.20	0.71			

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 57 (63%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 75

Lanes, Volumes, Timings  
6: Main & Hazel

Existing AM Peak Hour  
15 Oblates

Lane Group	Ø5	Ø6	Ø7
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	5	6	7
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	10.0	1.0
Minimum Split (s)	5.0	34.8	3.0
Total Split (s)	5.0	43.0	5.0
Total Split (%)	6%	48%	6%
Maximum Green (s)	3.0	37.2	3.0
Yellow Time (s)	2.0	3.3	2.0
All-Red Time (s)	0.0	2.5	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max
Walk Time (s)	3.0	18.0	
Flash Dont Walk (s)	0.0	10.0	
Pedestrian Calls (#/hr)	41	41	
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
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

Lanes, Volumes, Timings  
6: Main & Hazel

Existing AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.77  
 Intersection Signal Delay: 17.1 Intersection LOS: B  
 Intersection Capacity Utilization 75.5% ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Main & Hazel



Lanes, Volumes, Timings  
1: Main & Hawthorne

Existing PM Peak Hour  
15 Oblates

Lane Group	EBT	EBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3	Ø5	Ø9	Ø10
Lane Configurations	↔	↔		↔↔		↔↔						
Traffic Volume (vph)	70	254	233	434	8	429						
Future Volume (vph)	70	254	233	434	8	429						
Lane Group Flow (vph)	400	282	0	754	0	687						
Turn Type	NA	pm+ov	custom	NA	custom	NA						
Protected Phases	4	13	13	1 2 9 10		5 6	1	2	3	5	9	10
Permitted Phases		4	10 2		6							
Detector Phase	4	13	13	1 2 9 10	6	5 6						
Switch Phase												
Minimum Initial (s)	10.0	5.0	5.0		10.0		1.0	10.0	1.0	1.0	1.0	5.0
Minimum Split (s)	22.3	11.3	11.3		17.3		5.0	17.3	3.0	5.0	5.0	15.0
Total Split (s)	24.0	20.0	20.0		54.0		5.0	54.0	5.0	5.0	5.0	15.0
Total Split (%)	20.0%	16.7%	16.7%		45.0%		4%	45%	4%	4%	4%	13%
Maximum Green (s)	17.7	13.7	13.7		47.7		3.0	47.7	3.0	3.0	3.0	8.7
Yellow Time (s)	3.3	3.3	3.3		3.3		2.0	3.3	2.0	2.0	2.0	3.3
All-Red Time (s)	3.0	3.0	3.0		3.0		0.0	3.0	0.0	0.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0										
Total Lost Time (s)	6.3	6.3										
Lead/Lag					Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max		C-Max		Max	C-Max	Max	Max	None	Max
Walk Time (s)	7.0				2.0		3.0	2.0		3.0	3.0	2.0
Flash Dont Walk (s)	9.0				9.0		0.0	9.0		0.0	0.0	6.7
Pedestrian Calls (#/hr)	27				18		50	50		18	50	50
Act Effct Green (s)	27.3	41.0		75.0		57.0						
Actuated g/C Ratio	0.23	0.34		0.62		0.48						
v/c Ratio	1.09	0.43		0.57		0.53						
Control Delay	117.3	5.4		11.9		21.3						
Queue Delay	0.0	0.0		0.8		0.0						
Total Delay	117.3	5.4		12.7		21.3						
LOS	F	A		B		C						
Approach Delay	71.1			12.7		21.3						
Approach LOS	E			B		C						
Queue Length 50th (m)	-95.0	0.0		40.3		51.8						
Queue Length 95th (m)	#197.5	18.9		51.3		69.2						
Internal Link Dist (m)	198.7			59.0		262.1						
Turn Bay Length (m)												
Base Capacity (vph)	367	659		1327		1304						
Starvation Cap Reductn	0	0		276		0						
Spillback Cap Reductn	0	0		0		0						
Storage Cap Reductn	0	0		0		0						
Reduced v/c Ratio	1.09	0.43		0.72		0.53						

Intersection Summary

Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 26 (22%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 90

Lanes, Volumes, Timings  
1: Main & Hawthorne

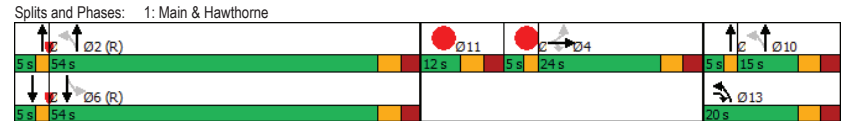
Existing PM Peak Hour  
15 Oblates

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	12.0
Total Split (s)	12.0
Total Split (%)	10%
Maximum Green (s)	5.7
Yellow Time (s)	3.3
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.7
Flash Dont Walk (s)	0.0
Pedestrian Calls (#/hr)	1
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
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	

Lanes, Volumes, Timings  
1: Main & Hawthorne

Existing PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.09  
 Intersection Signal Delay: 34.2 Intersection LOS: C  
 Intersection Capacity Utilization 79.1% ICU Level of Service D  
 Analysis Period (min) 15  
 ~ 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.





Lanes, Volumes, Timings  
2: Main & Graham/Lees

Existing PM Peak Hour  
15 Oblates

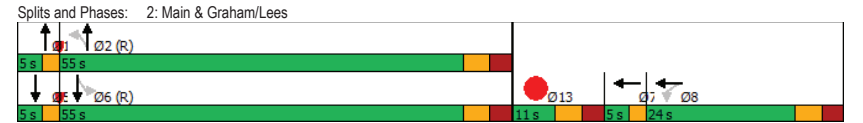
Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations	↔	↔		↕	↕	↕				
Traffic Volume (vph)	174	13	7	534	4	630				
Future Volume (vph)	174	13	7	534	4	630				
Lane Group Flow (vph)	193	161	0	677	0	734				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted Phases	8		2		6					
Detector Phase	8	7 8	2	1 2	6	5 6				
Switch Phase										
Minimum Initial (s)	10.0		10.0		10.0		1.0	1.0	1.0	5.0
Minimum Split (s)	24.0		18.2		18.2		5.0	5.0	5.0	11.0
Total Split (s)	24.0		55.0		55.0		5.0	5.0	5.0	11.0
Total Split (%)	24.0%		55.0%		55.0%		5%	5%	5%	11%
Maximum Green (s)	18.0		48.8		48.8		3.0	3.0	3.0	5.0
Yellow Time (s)	3.3		3.3		3.3		2.0	2.0	2.0	3.3
All-Red Time (s)	2.7		2.9		2.9		0.0	0.0	0.0	2.7
Lost Time Adjust (s)	0.0									
Total Lost Time (s)	6.0									
Lead/Lag			Lag		Lag		Lead	Lead	Lag	Lead
Lead-Lag Optimize?			Yes		Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		C-Max		C-Max		Max	Max	Max	Max
Walk Time (s)	2.0		2.0		2.0		3.0	3.0	3.0	5.0
Flash Dont Walk (s)	9.0		10.0		10.0		0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	15		34		25		34	25	15	3
Act Effct Green (s)	18.0	27.0		58.0		58.0				
Actuated g/C Ratio	0.18	0.27		0.58		0.58				
v/c Ratio	0.70	0.37		0.41		0.41				
Control Delay	53.6	8.9		12.0		12.3				
Queue Delay	0.0	0.0		1.4		3.9				
Total Delay	53.6	8.9		13.4		16.3				
LOS	D	A		B		B				
Approach Delay		33.2		13.4		16.3				
Approach LOS		C		B		B				
Queue Length 50th (m)	35.4	2.0		34.1		38.2				
Queue Length 95th (m)	#64.6	17.4		46.1		50.5				
Internal Link Dist (m)		426.1		69.4		59.0				
Turn Bay Length (m)	40.0									
Base Capacity (vph)	275	436		1667		1782				
Starvation Cap Reductn	0	0		746		942				
Spillback Cap Reductn	0	0		0		0				
Storage Cap Reductn	0	0		0		0				
Reduced v/c Ratio	0.70	0.37		0.74		0.87				

**Intersection Summary**  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 35 (35%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
2: Main & Graham/Lees

Existing PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.70  
 Intersection Signal Delay: 18.6  
 Intersection LOS: B  
 Intersection Capacity Utilization 42.0%  
 ICU Level of Service A  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings  
3: Main & Evelyn

Existing PM Peak Hour  
15 Oblates

	↙	↑	↓	
Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations	↔	↑	↔	
Traffic Volume (vph)	23	590	794	
Future Volume (vph)	23	590	794	
Lane Group Flow (vph)	34	656	882	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum Split (s)	25.4	27.1	15.1	5.0
Total Split (s)	26.0	59.0	59.0	5.0
Total Split (%)	28.9%	65.6%	65.6%	6%
Maximum Green (s)	20.6	53.9	53.9	3.0
Yellow Time (s)	3.3	3.3	3.3	2.0
All-Red Time (s)	2.1	1.8	1.8	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	5.4	5.1	5.1	
Lead/Lag	Lag			Lead
Lead-Lag Optimize?	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max
Walk Time (s)	10.0	17.0		3.0
Flash Dont Walk (s)	10.0	5.0		0.0
Pedestrian Calls (#/hr)	8	28		8
Act Effct Green (s)	20.6	53.9	53.9	
Actuated g/C Ratio	0.23	0.60	0.60	
v/c Ratio	0.09	0.63	0.45	
Control Delay	23.3	8.3	10.8	
Queue Delay	0.0	0.0	1.9	
Total Delay	23.3	8.3	12.7	
LOS	C	A	B	
Approach Delay	23.3	8.3	12.7	
Approach LOS	C	A	B	
Queue Length 50th (m)	3.5	12.4	40.3	
Queue Length 95th (m)	11.0	34.6	53.3	
Internal Link Dist (m)	452.4	86.0	69.4	
Turn Bay Length (m)				
Base Capacity (vph)	372	1034	1966	
Starvation Cap Reductn	0	2	881	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.09	0.64	0.81	

**Intersection Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 54 (60%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
3: Main & Evelyn

Existing PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.63  
 Intersection Signal Delay: 11.1  
 Intersection LOS: B  
 Intersection Capacity Utilization 58.2%  
 ICU Level of Service B  
 Analysis Period (min) 15

Splits and Phases: 3: Main & Evelyn



Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblates

Existing PM Peak Hour  
15 Oblates



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø2	Ø3	Ø6	Ø7
Lane Configurations		↔	↔	↔	↔	↔	↔	↔				
Traffic Volume (vph)	4	0	3	0	1	589	5	825				
Future Volume (vph)	4	0	3	0	1	589	5	825				
Lane Group Flow (vph)	0	16	3	8	1	654	6	926				
Turn Type	Perm	NA	Perm	NA	custom	NA	custom	NA				
Protected Phases		4		8	5	2.9	1	6.13	2	3	6	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	5	2.9	1	6.13				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0		5.0		10.0	1.0	10.0	1.0
Minimum Split (s)	19.3	19.3	19.3	19.3	10.0		10.0		33.0	3.0	33.0	3.0
Total Split (s)	22.0	22.0	22.0	22.0	15.0		15.0		43.0	5.0	43.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	16.7%		16.7%		48%	6%	48%	6%
Maximum Green (s)	16.7	16.7	16.7	16.7	10.0		10.0		38.0	3.0	38.0	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3		3.3	2.0	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.7		1.7		1.7	0.0	1.7	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0					
Total Lost Time (s)		5.3	5.3	5.3	5.0		5.0					
Lead/Lag	Lag	Lag	Lag	Lag	Lead		Lead		Lead		Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes		Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	None		None		C-Max	Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0					20.0		20.0	
Flash Dont Walk (s)	12.0	12.0	12.0	12.0					8.0		8.0	
Pedestrian Calls (#/hr)	6	6	5	5					30		27	
Act Effct Green (s)		16.7	16.7	16.7	55.9	50.8	56.1	50.9				
Actuated g/C Ratio		0.19	0.19	0.19	0.62	0.56	0.62	0.57				
v/c Ratio		0.04	0.02	0.01	0.01	0.67	0.02	0.95				
Control Delay		0.2	30.3	0.0	9.0	15.3	5.6	37.2				
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Total Delay		0.2	30.3	0.0	9.0	15.3	5.6	37.2				
LOS		A	C	A	A	B	A	D				
Approach Delay		0.2		8.3		15.3		37.0				
Approach LOS		A		A		B		D				
Queue Length 50th (m)		0.0	0.4	0.0	0.1	37.2	0.3	68.5				
Queue Length 95th (m)		0.0	2.8	0.0	m0.2	#72.5	m0.7	#261.8				
Internal Link Dist (m)		109.1		180.1		118.6		47.0				
Turn Bay Length (m)			15.0		15.0		30.0					
Base Capacity (vph)		377	181	560	274	975	453	975				
Starvation Cap Reductn		0	0	0	0	1	0	0				
Spillback Cap Reductn		0	0	0	0	0	0	0				
Storage Cap Reductn		0	0	0	0	0	0	0				
Reduced v/c Ratio		0.04	0.02	0.01	0.00	0.67	0.01	0.95				

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 62 (69%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 90

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblates

Existing PM Peak Hour  
15 Oblates

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)	3.0	3.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	30	27
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
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

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblates

Existing PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 27.7 Intersection LOS: C  
 Intersection Capacity Utilization 66.6% ICU Level of Service C  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Main & Immaculata HS/Oblates



Lanes, Volumes, Timings  
6: Main & Hazel

Existing PM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3
Lane Configurations		↔		↔	↔	↔	↔	↔	↔			
Traffic Volume (vph)	18	0	25	1	52	10	517	19	779			
Future Volume (vph)	18	0	25	1	52	10	517	19	779			
Lane Group Flow (vph)	0	28	0	29	58	11	586	21	904			
Turn Type	Perm	NA	Perm	NA	Perm	custom	NA	custom	NA			
Protected Phases		4		8		13	12	9	5 6	1	2	3
Permitted Phases	4		8		8	2		6				
Detector Phase	4	4	8	8	8	13	12	9	5 6			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0		5.0		1.0	10.0	1.0
Minimum Split (s)	21.2	21.2	21.2	21.2	21.2	10.8		10.8		5.0	34.8	3.0
Total Split (s)	21.2	21.2	21.2	21.2	21.2	15.0		15.0		5.0	44.0	4.8
Total Split (%)	23.6%	23.6%	23.6%	23.6%	23.6%	16.7%		16.7%		6%	49%	5%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0	9.2		9.2		3.0	38.2	2.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3		3.3		2.0	3.3	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.5		2.5		0.0	2.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0				
Total Lost Time (s)		6.2		6.2	6.2	5.8		5.8				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes		Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	None		None		Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0					3.0	18.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0					0.0	10.0	
Pedestrian Calls (#/hr)	17	17	9	9	9					30	30	
Act Effct Green (s)		15.0		15.0	15.0	53.7		57.1		56.2	59.6	
Actuated g/C Ratio		0.17		0.17	0.17	0.60		0.63		0.62	0.66	
v/c Ratio		0.08		0.14	0.17	0.05		0.54		0.06	0.80	
Control Delay		0.5		34.1	1.0	7.0		12.8		3.2	7.4	
Queue Delay		0.0		0.0	0.0	0.0		0.0		0.0	0.1	
Total Delay		0.5		34.1	1.0	7.0		12.8		3.2	7.5	
LOS		A		C	A	A		B		A	A	
Approach Delay		0.5		12.1				12.7		7.4		
Approach LOS		A		B				B		A		
Queue Length 50th (m)		0.0		4.3	0.0	0.6		41.3		0.4	3.4	
Queue Length 95th (m)		0.0		12.0	0.0	2.3		97.8		m#0.5	m#33.9	
Internal Link Dist (m)		237.6		98.5				241.0		118.6		
Turn Bay Length (m)				30.0	20.0			15.0				
Base Capacity (vph)		344		204	346	260		1092		384	1125	
Starvation Cap Reductn		0		0	0	0		0		0	8	
Spillback Cap Reductn		1		0	1	0		16		0	0	
Storage Cap Reductn		0		0	0	0		0		0	0	
Reduced v/c Ratio		0.08		0.14	0.17	0.04		0.54		0.05	0.81	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 70 (78%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 90

Lanes, Volumes, Timings  
6: Main & Hazel

Existing PM Peak Hour  
15 Oblates

Lane Group	Ø5	Ø6	Ø7
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	5	6	7
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	10.0	1.0
Minimum Split (s)	5.0	34.8	3.0
Total Split (s)	5.0	44.0	4.8
Total Split (%)	6%	49%	5%
Maximum Green (s)	3.0	38.2	2.8
Yellow Time (s)	2.0	3.3	2.0
All-Red Time (s)	0.0	2.5	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max
Walk Time (s)	3.0	18.0	
Flash Dont Walk (s)	0.0	10.0	
Pedestrian Calls (#/hr)	31	31	
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
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			

Lanes, Volumes, Timings  
6: Main & Hazel

Existing PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 9.5 Intersection LOS: A  
 Intersection Capacity Utilization 68.1% ICU Level of Service C  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



# Appendix D

Collision Data

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
2019-09-28	2019	23:19	MAIN ST @ SPRINGHURST AVE (0007196)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2020-10-20	2020	14:50	MAIN ST @ SPRINGHURST AVE (0007196)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	1	0
2018-12-04	2018	11:00	MAIN ST @ OBLATE AVE (0002597)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2019-02-02	2019	10:01	MAIN ST @ OBLATE AVE (0002597)	03 - Snow	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	02 - Angle	03 - Loose snow	2	0	0	0
2019-06-11	2019	13:55	MAIN ST @ OBLATE AVE (0002597)	01 - Clear	01 - Daylight	01 - Traffic signal	01 - Functioning	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2019-07-30	2019	13:54	ROSEMERE AVE @ SPRINGHURST AVE (0007320)	01 - Clear	01 - Daylight	02 - Stop sign	01 - Functioning	02 - Non-fatal injury	07 - SMV other	02 - Wet	1	0	0	1
2017-11-24	2017	12:35	MAIN ST btwn EVELYN AVE & SPRINGHURST AVE ( _32A3P2)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2018-12-11	2018	16:07	MAIN ST btwn EVELYN AVE & SPRINGHURST AVE ( _32A3P2)	03 - Snow	05 - Dusk	10 - No control	0	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2019-11-30	2019	17:06	MAIN ST btwn EVELYN AVE & SPRINGHURST AVE ( _32A3P2)	01 - Clear	05 - Dusk	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2019-03-01	2019	20:45	MAIN ST btwn EVELYN AVE & SPRINGHURST AVE ( _32A3P2)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	99 - Other	01 - Dry	2	0	0	0
2019-07-24	2019	16:00	MAIN ST btwn EVELYN AVE & SPRINGHURST AVE ( _32A3P2)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2019-10-01	2019	8:50	MAIN ST btwn SPRINGHURST AVE & OBLATE AVE ( _32A380)	02 - Rain	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	02 - Wet	2	0	0	0
2019-03-18	2019	15:58	MAIN ST btwn SPRINGHURST AVE & OBLATE AVE ( _32A380)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	2	0	0	0
2016-08-27	2016	2:41	MAIN ST btwn OBLATE AVE & HAZEL ST ( _32A3B8)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	1	0	0	0
2018-01-06	2018	19:31	MAIN ST btwn OBLATE AVE & HAZEL ST ( _32A3B8)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	03 - Rear end	02 - Wet	2	0	0	0
2018-04-19	2018	20:49	MAIN ST btwn OBLATE AVE & HAZEL ST ( _32A3B8)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	2	0	0	0
2019-11-08	2019	12:00	MAIN ST btwn OBLATE AVE & HAZEL ST ( _32A3B8)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	2	0	0	0
2019-07-06	2019	12:00	MAIN ST btwn OBLATE AVE & HAZEL ST ( _32A3B8)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	2	0	0	0
2018-04-27	2018	14:49	DES OBLATS AVE btwn DESCHAETELES AVE & MAIN ST ( _32A1EA)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	1	0	0	0

# Appendix E

TRANS Model Plots



# TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

**AM Peak Hour Total Traffic Volume**

**Riverside Smyth Area**

2011 Model - Basecase

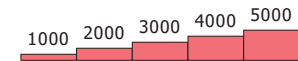
N/A

User Initials: TIMW  
Plot Prepared: April 30, 2021  
EMME Scenario: 21711

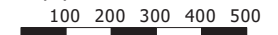


## Legend

AM Peak Hour Total Traffic Volume



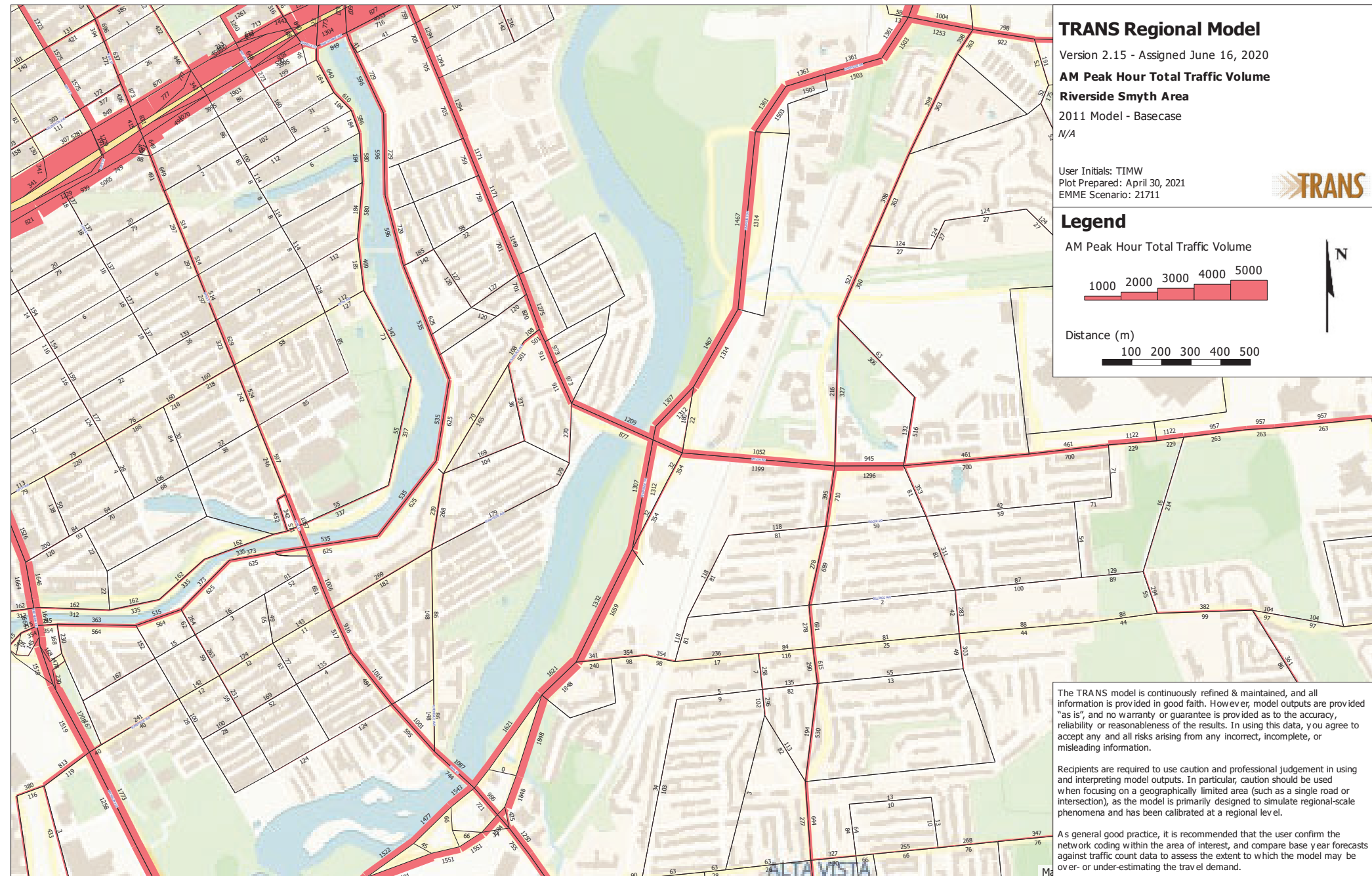
Distance (m)



The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.

As a general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.



# TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

**AM Peak Hour Total Traffic Volume**

**Somerset Street W Growth Rate**

2011 Model - Basecase

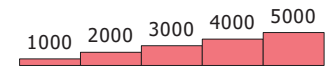
N/A

User Initials: TIMW  
Plot Prepared: September 17, 2020  
EMME Scenario: 21711



## Legend

AM Peak Hour Total Traffic Volume



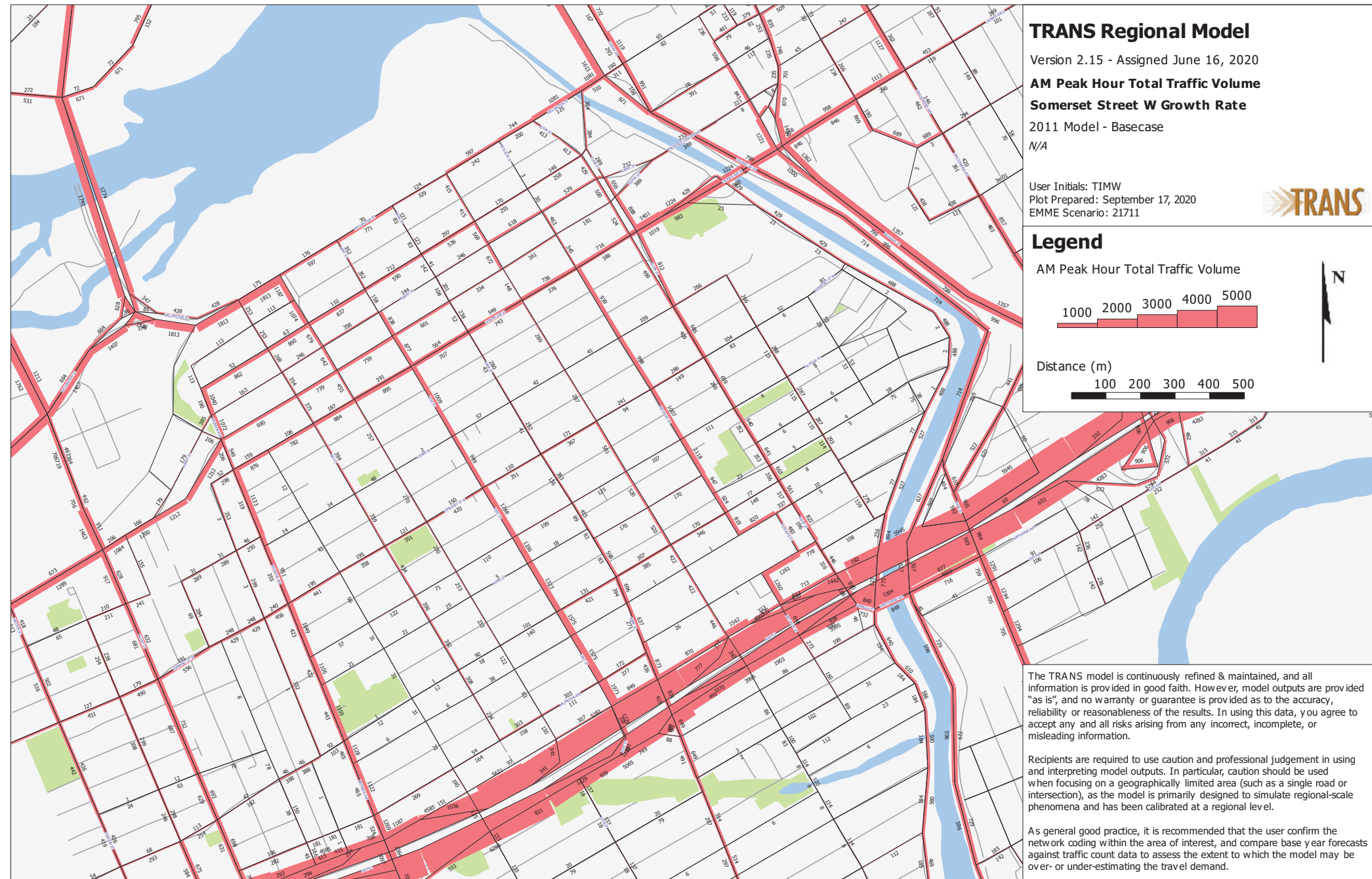
Distance (m)



The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.

As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.



# TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

## AM Peak Hour Total Traffic Volume

### Riverside Smyth Area

2031 Model - Basecase

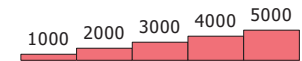
N/A

User Initials: TIMW  
Plot Prepared: April 30, 2021  
EMME Scenario: 21711

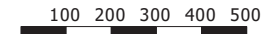


## Legend

AM Peak Hour Total Traffic Volume



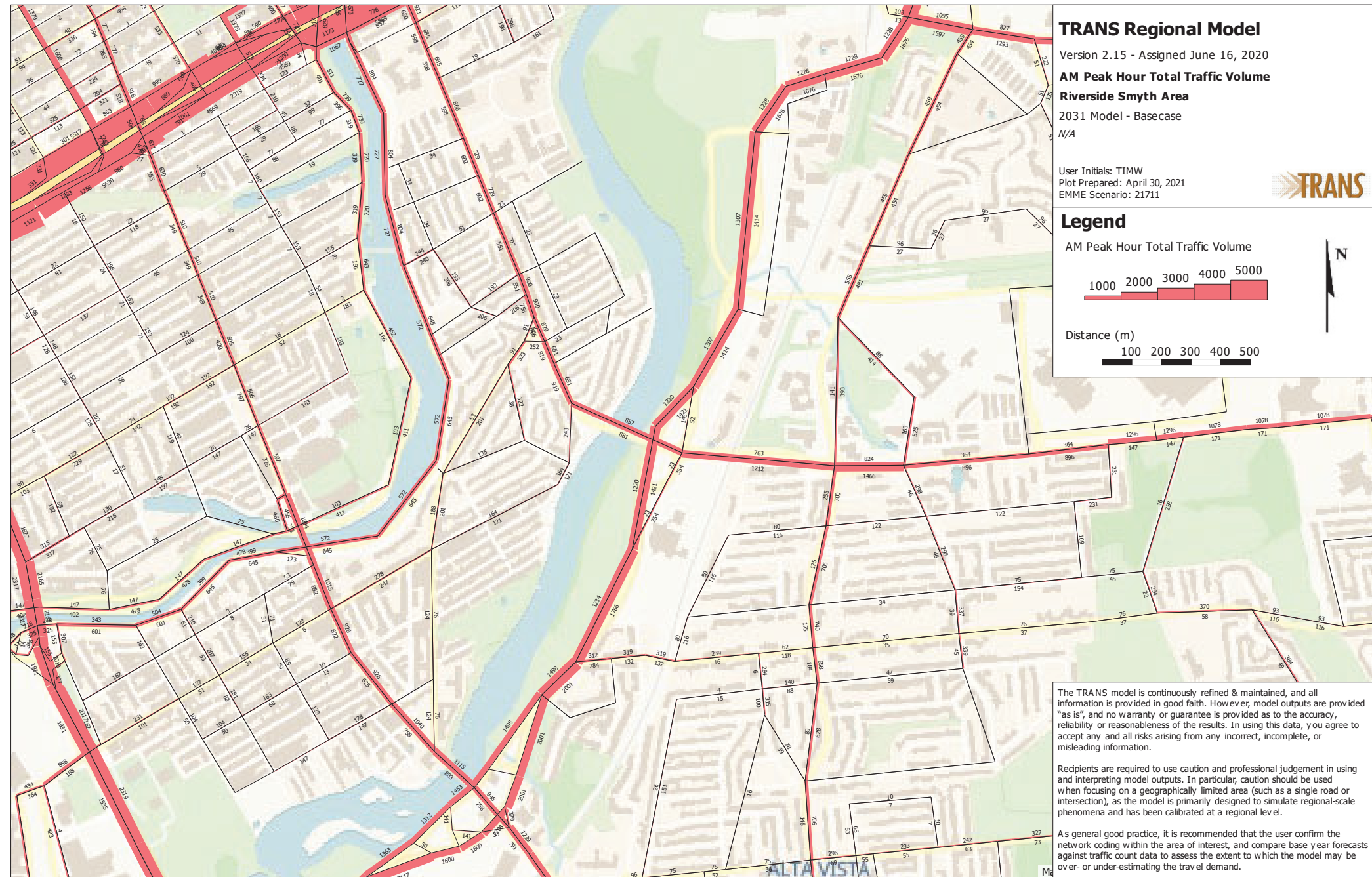
Distance (m)

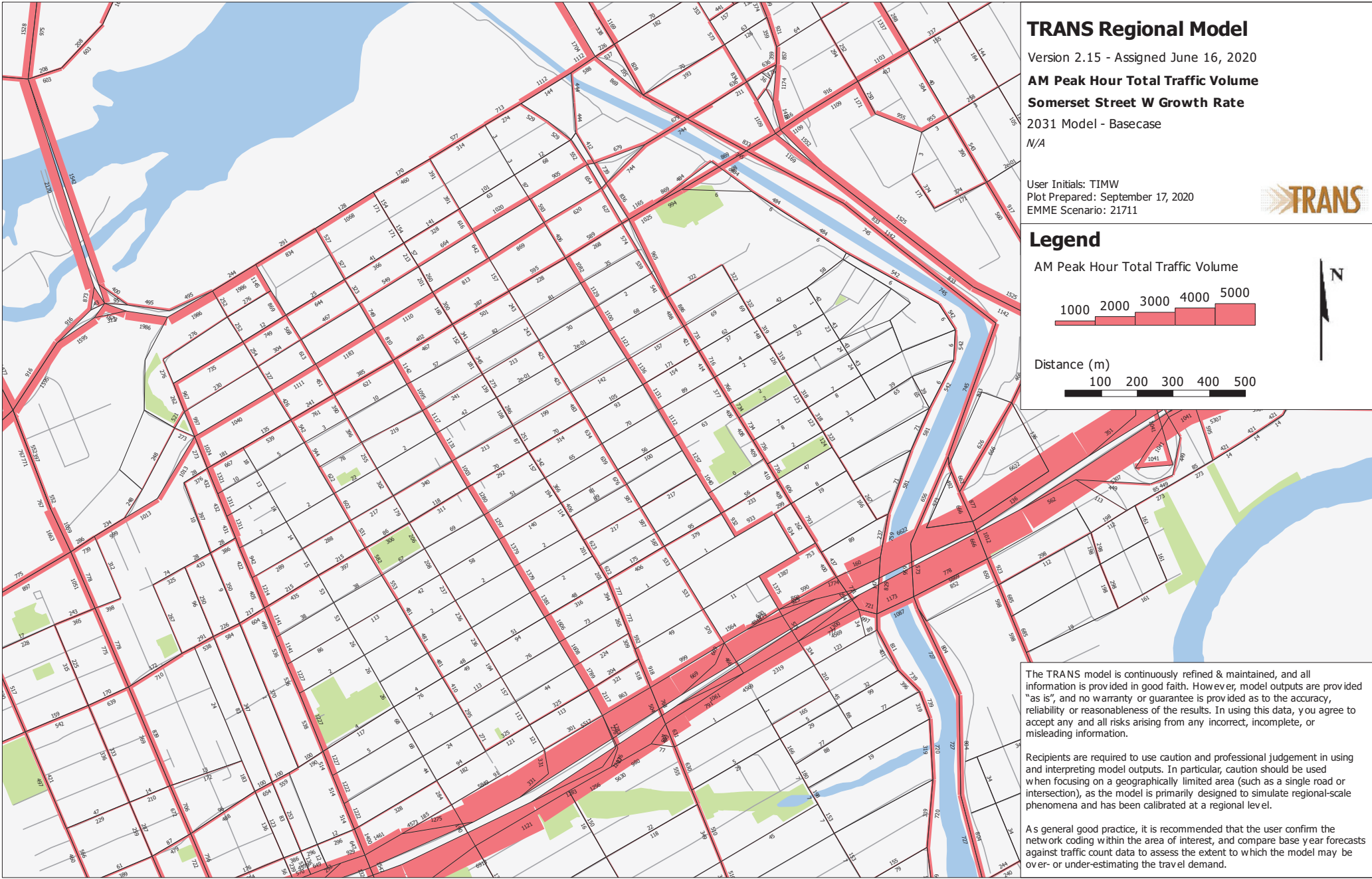


The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.

As a general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.





# TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

**AM Peak Hour Total Traffic Volume**  
**Somerset Street W Growth Rate**

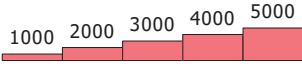
2031 Model - Basecase  
 N/A

User Initials: TIMW  
 Plot Prepared: September 17, 2020  
 EMME Scenario: 21711

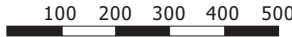


## Legend

AM Peak Hour Total Traffic Volume



Distance (m)



The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.

As a general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.

# Appendix F

Synchro Intersection Worksheets – 2025 Future Background Conditions

Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Background 2025AM Peak Hour  
15 Oblates

Lane Group	EBT	EBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3	Ø5	Ø9	Ø10
Lane Configurations	↔	↔		↔↔		↔↔						
Traffic Volume (vph)	12	234	293	531	5	404						
Future Volume (vph)	12	234	293	531	5	404						
Lane Group Flow (vph)	312	234	0	830	0	523						
Turn Type	NA	pm+ov	custom	NA	custom	NA						
Protected Phases	4	13	13	1 2 9 10		5 6	1	2	3	5	9	10
Permitted Phases		4	10 2		6							
Detector Phase	4	13	13	1 2 9 10	6	5 6						
Switch Phase												
Minimum Initial (s)	10.0	5.0	5.0		10.0		1.0	10.0	1.0	1.0	1.0	5.0
Minimum Split (s)	22.3	11.3	11.3		17.3		5.0	17.3	3.0	5.0	5.0	17.0
Total Split (s)	22.3	22.0	22.0		34.0		5.0	34.0	4.7	5.0	5.0	17.0
Total Split (%)	22.3%	22.0%	22.0%		34.0%		5%	34%	5%	5%	5%	17%
Maximum Green (s)	16.0	15.7	15.7		27.7		3.0	27.7	2.7	3.0	3.0	10.7
Yellow Time (s)	3.3	3.3	3.3		3.3		2.0	3.3	2.0	2.0	2.0	3.3
All-Red Time (s)	3.0	3.0	3.0		3.0		0.0	3.0	0.0	0.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0										
Total Lost Time (s)	6.3	6.3										
Lead/Lag					Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max		C-Max		Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0				2.0		3.0	2.0		3.0	3.0	2.0
Flash Dont Walk (s)	9.0				9.0		0.0	9.0		0.0	0.0	8.7
Pedestrian Calls (#/hr)	28				20		53	53		20	53	53
Act Effct Green (s)	25.6	41.3		57.0		37.0						
Actuated g/C Ratio	0.26	0.41		0.57		0.37						
v/c Ratio	0.77	0.32		0.63		0.49						
Control Delay	50.6	3.9		9.4		24.2						
Queue Delay	0.0	0.0		0.1		0.0						
Total Delay	50.6	3.9		9.5		24.2						
LOS	D	A		A		C						
Approach Delay	30.6			9.5		24.2						
Approach LOS	C			A		C						
Queue Length 50th (m)	54.2	0.0		24.6		37.2						
Queue Length 95th (m)	#126.1	14.5		31.3		52.5						
Internal Link Dist (m)	198.7			59.0		262.1						
Turn Bay Length (m)												
Base Capacity (vph)	403	728		1317		1059						
Starvation Cap Reductn	0	0		37		0						
Spillback Cap Reductn	0	0		0		0						
Storage Cap Reductn	0	0		0		0						
Reduced v/c Ratio	0.77	0.32		0.65		0.49						
<b>Intersection Summary</b>												
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 85												

Lanes, Volumes, Timings  
1: Main & Hawthorne

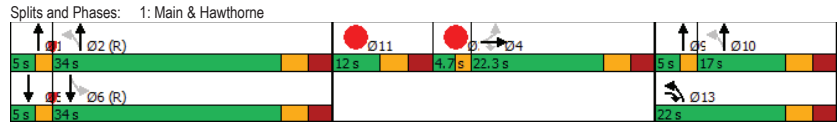
Future Background 2025AM Peak Hour  
15 Oblates

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	12.0
Total Split (s)	12.0
Total Split (%)	12%
Maximum Green (s)	5.7
Yellow Time (s)	3.3
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.7
Flash Dont Walk (s)	0.0
Pedestrian Calls (#/hr)	3
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
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	
<b>Intersection Summary</b>	

Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Background 2025AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.77  
 Intersection Signal Delay: 19.6 Intersection LOS: B  
 Intersection Capacity Utilization 77.7% ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Background 2025AM Peak Hour  
15 Oblates

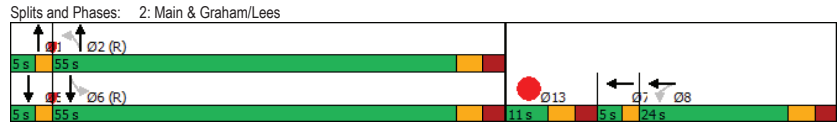
Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations	↖	↗		↕	↖	↗				
Traffic Volume (vph)	243	53	7	664	24	534				
Future Volume (vph)	243	53	7	664	24	534				
Lane Group Flow (vph)	243	271	0	740	0	638				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted Phases	8		2		6					
Detector Phase	8	7 8	2	1 2	6	5 6				
Switch Phase										
Minimum Initial (s)	10.0		10.0		10.0		1.0	1.0	1.0	5.0
Minimum Split (s)	24.0		18.2		18.2		5.0	5.0	5.0	11.0
Total Split (s)	24.0		55.0		55.0		5.0	5.0	5.0	11.0
Total Split (%)	24.0%		55.0%		55.0%		5%	5%	5%	11%
Maximum Green (s)	18.0		48.8		48.8		3.0	3.0	3.0	5.0
Yellow Time (s)	3.3		3.3		3.3		2.0	2.0	2.0	3.3
All-Red Time (s)	2.7		2.9		2.9		0.0	0.0	0.0	2.7
Lost Time Adjust (s)	0.0									
Total Lost Time (s)	6.0									
Lead/Lag			Lag		Lag		Lead	Lead	Lag	Lead
Lead-Lag Optimize?			Yes		Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		C-Max		C-Max		Max	Max	Max	Max
Walk Time (s)	2.0		2.0		2.0		3.0	3.0	3.0	5.0
Flash Dont Walk (s)	9.0		10.0		10.0		0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	60		123		33		123	33	60	7
Act Effct Green (s)	18.0	27.0		58.0		58.0				
Actuated g/C Ratio	0.18	0.27		0.58		0.58				
v/c Ratio	1.03	0.56		0.45		0.40				
Control Delay	109.8	13.9		13.2		6.5				
Queue Delay	0.0	0.0		0.7		0.2				
Total Delay	109.8	13.9		13.9		6.7				
LOS	F	B		B		A				
Approach Delay		59.2		13.9		6.7				
Approach LOS		E		B		A				
Queue Length 50th (m)	~50.8	10.2		30.7		13.8				
Queue Length 95th (m)	#97.0	35.0		50.9		22.0				
Internal Link Dist (m)		426.1		69.4		59.0				
Turn Bay Length (m)	40.0									
Base Capacity (vph)	235	480		1631		1589				
Starvation Cap Reductn	0	0		529		360				
Spillback Cap Reductn	0	0		0		0				
Storage Cap Reductn	0	0		0		0				
Reduced v/c Ratio	1.03	0.56		0.67		0.52				

**Intersection Summary**  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 39 (39%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Background 2025AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.03  
 Intersection Signal Delay: 23.8 Intersection LOS: C  
 Intersection Capacity Utilization 62.6% ICU Level of Service B  
 Analysis Period (min) 15  
 ~ 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.



Lanes, Volumes, Timings  
3: Main & Evelyn

Future Background 2025AM Peak Hour  
15 Oblates

Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations	↕	↑	↕	
Traffic Volume (vph)	44	686	710	
Future Volume (vph)	44	686	710	
Lane Group Flow (vph)	92	686	710	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum Split (s)	25.4	27.1	15.1	5.0
Total Split (s)	26.0	69.0	69.0	5.0
Total Split (%)	26.0%	69.0%	69.0%	5%
Maximum Green (s)	20.6	63.9	63.9	3.0
Yellow Time (s)	3.3	3.3	3.3	2.0
All-Red Time (s)	2.1	1.8	1.8	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	5.4	5.1	5.1	
Lead/Lag	Lag			Lead
Lead-Lag Optimize?	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max
Walk Time (s)	10.0	17.0		3.0
Flash Dont Walk (s)	10.0	5.0		0.0
Pedestrian Calls (#/hr)	18	41		18
Act Effct Green (s)	20.6	63.9	63.9	
Actuated g/C Ratio	0.21	0.64	0.64	
v/c Ratio	0.27	0.62	0.34	
Control Delay	20.1	13.9	11.8	
Queue Delay	0.0	1.2	0.9	
Total Delay	20.1	15.1	12.7	
LOS	C	B	B	
Approach Delay	20.1	15.1	12.7	
Approach LOS	C	B	B	
Queue Length 50th (m)	7.0	72.4	34.4	
Queue Length 95th (m)	20.3	106.6	m42.5	
Internal Link Dist (m)	452.4	86.0	69.4	
Turn Bay Length (m)				
Base Capacity (vph)	347	1104	2097	
Starvation Cap Reductn	0	216	1035	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.27	0.77	0.67	

**Intersection Summary**  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 59 (59%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 65

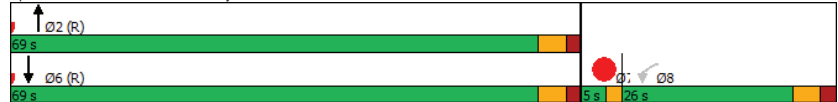


Lanes, Volumes, Timings  
3: Main & Evelyn

Future Background 2025AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 14.3	Intersection LOS: B
Intersection Capacity Utilization 63.5%	ICU Level of Service B
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 3: Main & Evelyn



Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats

Future Background 2025AM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø2	Ø3	Ø6	Ø7
Lane Configurations		↔	↔	↔	↔	↔	↔	↔				
Traffic Volume (vph)	11	1	37	0	29	670	22	721				
Future Volume (vph)	11	1	37	0	29	670	22	721				
Lane Group Flow (vph)	0	29	37	40	29	690	22	732				
Turn Type	Perm	NA	Perm	NA	custom	NA	custom	NA				
Protected Phases		4		8	5	2.9	1	6.13	2	3	6	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	5	2.9	1	6.13				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0		5.0		10.0	1.0	10.0	1.0
Minimum Split (s)	19.3	19.3	19.3	19.3	10.0		10.0		33.0	5.0	33.0	5.0
Total Split (s)	22.0	22.0	22.0	22.0	16.0		16.0		42.0	5.0	42.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	17.8%		17.8%		47%	6%	47%	6%
Maximum Green (s)	16.7	16.7	16.7	16.7	11.0		11.0		37.0	3.0	37.0	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3		3.3	2.0	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.7		1.7		1.7	0.0	1.7	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0					
Total Lost Time (s)		5.3	5.3	5.3	5.0		5.0					
Lead/Lag	Lag	Lag	Lag	Lag	Lead		Lead			Lead		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	None		None		C-Max	Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0					20.0	3.0	20.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0					8.0	0.0	8.0	0.0
Pedestrian Calls (#/hr)	7	7	2	2					36	7	34	2
Act Effct Green (s)		16.7	16.7	16.7	54.1	48.4	53.9	48.3				
Actuated g/C Ratio		0.19	0.19	0.19	0.60	0.54	0.60	0.54				
v/c Ratio		0.11	0.23	0.07	0.09	0.75	0.06	0.79				
Control Delay		19.7	35.6	0.2	3.8	12.4	6.7	26.7				
Queue Delay		0.0	0.0	0.0	0.0	0.3	0.0	0.0				
Total Delay		19.7	35.6	0.2	3.8	12.6	6.7	26.7				
LOS		B	D	A	A	B	A	C				
Approach Delay		19.7		17.2		12.3		26.1				
Approach LOS		B		B		B		C				
Queue Length 50th (m)		1.7	5.5	0.0	0.6	15.0	1.2	83.2				
Queue Length 95th (m)		8.9	14.3	0.0	m1.4	#168.2	3.7	#189.3				
Internal Link Dist (m)		109.1		138.0		118.6		47.0				
Turn Bay Length (m)			15.0		15.0		30.0					
Base Capacity (vph)		271	159	556	394	917	428	926				
Starvation Cap Reductn		0	0	0	0	24	0	0				
Spillback Cap Reductn		0	0	0	0	0	0	0				
Storage Cap Reductn		0	0	0	0	0	0	0				
Reduced v/c Ratio		0.11	0.23	0.07	0.07	0.77	0.05	0.79				

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 57 (63%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)	3.0	3.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	36	34
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
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		

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 19.3  
 Intersection LOS: B  
 Intersection Capacity Utilization 61.1%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings  
6: Main & Hazel

Future Background 2025AM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3
Lane Configurations		↔		↔	↔	↔	↔	↔	↔			
Traffic Volume (vph)	32	3	16	2	28	9	663	62	701			
Future Volume (vph)	32	3	16	2	28	9	663	62	701			
Lane Group Flow (vph)	0	44	0	18	28	9	689	62	722			
Turn Type	Perm	NA	Perm	NA	Perm	custom	NA	custom	NA			
Protected Phases		4		8		13	12	9	56	1	2	3
Permitted Phases	4		8		8	2		6				
Detector Phase	4	4	8	8	8	13	12	9	56			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0		5.0		1.0	10.0	1.0
Minimum Split (s)	21.2	21.2	21.2	21.2	21.2	10.8		10.8		5.0	34.8	3.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	15.0		15.0		5.0	43.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	24.4%	16.7%		16.7%		6%	48%	6%
Maximum Green (s)	15.8	15.8	15.8	15.8	15.8	9.2		9.2		3.0	37.2	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3		3.3		2.0	3.3	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.5		2.5		0.0	2.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0				
Total Lost Time (s)		6.2		6.2	6.2	5.8		5.8				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes		Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	None		None		Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0					3.0	18.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0					0.0	10.0	
Pedestrian Calls (#/hr)	27	27	9	9	9					30	30	
Act Effct Green (s)		15.8		15.8	15.8	47.3	50.5	55.5	58.6			
Actuated g/C Ratio		0.18		0.18	0.18	0.53	0.56	0.62	0.65			
v/c Ratio		0.20		0.09	0.09	0.03	0.73	0.23	0.65			
Control Delay		29.2		32.7	0.5	7.2	21.5	11.4	14.1			
Queue Delay		0.0		0.0	0.0	0.0	0.4	0.0	0.1			
Total Delay		29.2		32.7	0.5	7.2	21.9	11.4	14.2			
LOS		C		C	A	A	C	B	B			
Approach Delay		29.2		13.1			21.7		14.0			
Approach LOS		C		B			C		B			
Queue Length 50th (m)		5.2		2.7	0.0	0.5	87.4	3.0	35.0			
Queue Length 95th (m)		14.5		8.5	0.0	2.1	139.1	m8.3	94.4			
Internal Link Dist (m)		237.6		98.5			241.0		118.6			
Turn Bay Length (m)				30.0	20.0		15.0					
Base Capacity (vph)		223		192	322	364	949	300	1111			
Starvation Cap Reductn		0		0	0	0	0	0	37			
Spillback Cap Reductn		0		0	4	0	44	0	0			
Storage Cap Reductn		0		0	0	0	0	0	0			
Reduced v/c Ratio		0.20		0.09	0.09	0.02	0.76	0.21	0.67			

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 46 (51%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 75

Lanes, Volumes, Timings  
6: Main & Hazel

Future Background 2025AM Peak Hour  
15 Oblates

Lane Group	Ø5	Ø6	Ø7
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	5	6	7
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	10.0	1.0
Minimum Split (s)	5.0	34.8	3.0
Total Split (s)	5.0	43.0	5.0
Total Split (%)	6%	48%	6%
Maximum Green (s)	3.0	37.2	3.0
Yellow Time (s)	2.0	3.3	2.0
All-Red Time (s)	0.0	2.5	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max
Walk Time (s)	3.0	18.0	
Flash Dont Walk (s)	0.0	10.0	
Pedestrian Calls (#/hr)	41	41	
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
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			

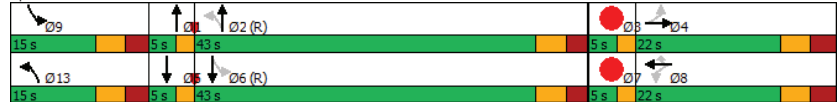
Intersection Summary

Lanes, Volumes, Timings  
6: Main & Hazel

Future Background 2025AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 17.8	Intersection LOS: B
Intersection Capacity Utilization 77.3%	ICU Level of Service D
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 6: Main & Hazel



Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Background 2025PM Peak Hour  
15 Oblates

Lane Group	EBT	EBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3	Ø5	Ø9	Ø10
Lane Configurations	↔	↔		↔↔		↔↔						
Traffic Volume (vph)	70	276	261	472	8	466						
Future Volume (vph)	70	276	261	472	8	466						
Lane Group Flow (vph)	360	276	0	746	0	662						
Turn Type	NA	pm+ov	custom	NA	custom	NA						
Protected Phases	4	13	13	1 2 9 10		5 6	1	2	3	5	9	10
Permitted Phases		4	10 2		6							
Detector Phase	4	13	13	1 2 9 10	6	5 6						
Switch Phase												
Minimum Initial (s)	10.0	5.0	5.0		10.0		1.0	10.0	1.0	1.0	1.0	5.0
Minimum Split (s)	22.3	11.3	11.3		17.3		5.0	17.3	3.0	5.0	5.0	15.0
Total Split (s)	24.0	20.0	20.0		54.0		5.0	54.0	5.0	5.0	5.0	15.0
Total Split (%)	20.0%	16.7%	16.7%		45.0%		4%	45%	4%	4%	4%	13%
Maximum Green (s)	17.7	13.7	13.7		47.7		3.0	47.7	3.0	3.0	3.0	8.7
Yellow Time (s)	3.3	3.3	3.3		3.3		2.0	3.3	2.0	2.0	2.0	3.3
All-Red Time (s)	3.0	3.0	3.0		3.0		0.0	3.0	0.0	0.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0										
Total Lost Time (s)	6.3	6.3										
Lead/Lag					Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max		C-Max		Max	C-Max	Max	Max	None	Max
Walk Time (s)	7.0				2.0		3.0	2.0		3.0	3.0	2.0
Flash Dont Walk (s)	9.0				9.0		0.0	9.0		0.0	0.0	6.7
Pedestrian Calls (#/hr)	27				18		50	50		18	50	50
Act Effct Green (s)	27.3	41.0		75.0		57.0						
Actuated g/C Ratio	0.23	0.34		0.62		0.48						
v/c Ratio	0.98	0.42		0.56		0.50						
Control Delay	89.3	5.4		11.8		20.9						
Queue Delay	0.0	0.0		0.7		0.0						
Total Delay	89.3	5.4		12.6		20.9						
LOS	F	A		B		C						
Approach Delay	52.9			12.6		20.9						
Approach LOS	D			B		C						
Queue Length 50th (m)	82.5	0.0		39.7		49.4						
Queue Length 95th (m)	#175.9	18.7		50.7		66.2						
Internal Link Dist (m)	198.7			59.0		262.1						
Turn Bay Length (m)												
Base Capacity (vph)	367	654		1336		1311						
Starvation Cap Reductn	0	0		285		0						
Spillback Cap Reductn	0	0		0		0						
Storage Cap Reductn	0	0		0		0						
Reduced v/c Ratio	0.98	0.42		0.71		0.50						

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 26 (22%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings  
1: Main & Hawthorne

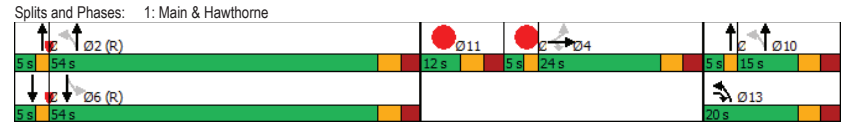
Future Background 2025PM Peak Hour  
15 Oblates

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	12.0
Total Split (s)	12.0
Total Split (%)	10%
Maximum Green (s)	5.7
Yellow Time (s)	3.3
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.7
Flash Dont Walk (s)	0.0
Pedestrian Calls (#/hr)	1
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
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	

Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Background 2025PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 27.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 82.4%  
 ICU Level of Service E  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



HCM Signalized Intersection Capacity Analysis  
1: Main & Hawthorne

Future Background 2025PM Peak Hour  
15 Oblates

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕					↕↔			↕↔	
Traffic Volume (vph)	290	70	276	0	0	0	261	472	13	8	466	188
Future Volume (vph)	290	70	276	0	0	0	261	472	13	8	466	188
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		6.3	6.3					2.0			2.0	
Lane Util. Factor	1.00	1.00						0.95			0.95	
Frbp, ped/bikes	1.00	0.95						0.99			0.89	
Flpb, ped/bikes	0.96	1.00						1.00			1.00	
Frt	1.00	0.85						1.00			0.96	
Flt Protected	0.96	1.00						0.98			1.00	
Satd. Flow (prot)	1614	1384						3205			2836	
Flt Permitted	0.96	1.00						0.55			0.95	
Satd. Flow (perm)	1614	1384						1799			2686	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	290	70	276	0	0	0	261	472	13	8	466	188
RTOR Reduction (vph)	0	0	182	0	0	0	0	1	0	0	40	0
Lane Group Flow (vph)	0	360	94	0	0	0	0	745	0	0	622	0
Confl. Peds. (#/hr)	21		27	27		21	18		50	50		18
Confl. Bikes (#/hr)			2			1			2	2		2
Heavy Vehicles (%)	2%	2%	4%	2%	2%	2%	3%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	pm+ov				custom	NA		custom	NA	
Protected Phases		4	13				13	12	9	10		5
Permitted Phases	4		4				10	2		6		
Actuated Green, G (s)		27.3	41.0					61.4			47.7	
Effective Green, g (s)		27.3	41.0					61.4			47.7	
Actuated g/C Ratio		0.23	0.34					0.51			0.40	
Clearance Time (s)		6.3	6.3									
Vehicle Extension (s)		3.0	3.0									
Lane Grp Cap (vph)		367	545					1081			1067	
v/s Ratio Prot			0.02					c0.08				
v/s Ratio Perm		0.22	0.05					c0.27			0.23	
v/c Ratio		0.98	0.17					0.69			0.58	
Uniform Delay, d1		46.1	27.6					22.1			28.3	
Progression Factor		1.00	1.00					1.00			1.00	
Incremental Delay, d2		42.4	0.7					1.8			2.3	
Delay (s)		88.5	28.3					23.9			30.7	
Level of Service		F	C					C			C	
Approach Delay (s)		62.4			0.0			23.9			30.7	
Approach LOS		E			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	31.2
Intersection Capacity Utilization	82.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Background 2025PM Peak Hour  
15 Oblates

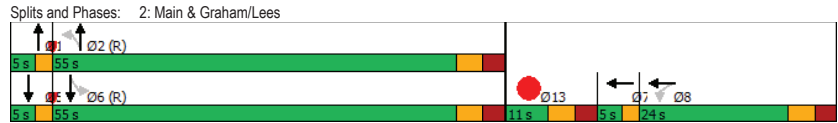
Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations	↕	↕		↕↔		↕↔				
Traffic Volume (vph)	192	13	8	593	4	689				
Future Volume (vph)	192	13	8	593	4	689				
Lane Group Flow (vph)	192	147	0	699	0	720				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7	8	12		5	6	1	5	7
Permitted Phases	8		2		6					
Detector Phase	8	7	8	2	12	6	5	6		
Switch Phase										
Minimum Initial (s)	10.0		10.0		10.0		1.0	1.0	1.0	5.0
Minimum Split (s)	24.0		18.2		18.2		5.0	5.0	5.0	11.0
Total Split (s)	24.0		55.0		55.0		5.0	5.0	5.0	11.0
Total Split (%)	24.0%		55.0%		55.0%		5%	5%	5%	11%
Maximum Green (s)	18.0		48.8		48.8		3.0	3.0	3.0	5.0
Yellow Time (s)	3.3		3.3		3.3		2.0	2.0	2.0	3.3
All-Red Time (s)	2.7		2.9		2.9		0.0	0.0	0.0	2.7
Lost Time Adjust (s)	0.0									
Total Lost Time (s)	6.0									
Lead/Lag			Lag		Lag		Lead	Lead	Lag	Lead
Lead-Lag Optimize?			Yes		Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		C-Max		C-Max		Max	Max	Max	Max
Walk Time (s)	2.0		2.0		2.0		3.0	3.0	3.0	5.0
Flash Dont Walk (s)	9.0		10.0		10.0		0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	15		34		25		34	25	15	3
Act Effct Green (s)	18.0	27.0		58.0		58.0				
Actuated g/C Ratio	0.18	0.27		0.58		0.58				
v/c Ratio	0.70	0.34		0.43		0.40				
Control Delay	53.3	8.9		12.1		12.2				
Queue Delay	0.0	0.0		1.5		3.6				
Total Delay	53.3	8.9		13.6		15.8				
LOS	D	A		B		B				
Approach Delay		34.0		13.6		15.8				
Approach LOS		C		B		B				
Queue Length 50th (m)	35.3	1.9		35.3		37.2				
Queue Length 95th (m)	#64.2	16.6		47.9		49.4				
Internal Link Dist (m)		426.1		69.4		59.0				
Turn Bay Length (m)	40.0									
Base Capacity (vph)	275	427		1635		1785				
Starvation Cap Reductn	0	0		706		950				
Spillback Cap Reductn	0	0		0		0				
Storage Cap Reductn	0	0		0		0				
Reduced v/c Ratio	0.70	0.34		0.75		0.86				

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 35 (35%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 65	

Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Background 2025PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
Maximum v/c Ratio: 0.70  
Intersection Signal Delay: 18.5 Intersection LOS: B  
Intersection Capacity Utilization 46.7% ICU Level of Service A  
Analysis Period (min) 15  
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.



HCM Signalized Intersection Capacity Analysis  
2: Main & Graham/Lees

Future Background 2025PM Peak Hour  
15 Oblates

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations				↖	↗			↕			↕	
Traffic Volume (vph)	0	0	0	192	13	134	8	593	98	4	689	27
Future Volume (vph)	0	0	0	192	13	134	8	593	98	4	689	27
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)				6.0	2.0			2.0				2.0
Lane Util. Factor				1.00	1.00			0.95				0.95
Frbp, ped/bikes				1.00	0.86			0.93				0.98
Flpb, ped/bikes				0.96	1.00			1.00				1.00
Frt				1.00	0.86			0.98				0.99
Flt Protected				0.95	1.00			1.00				1.00
Satd. Flow (prot)				1530	1220			2948				3225
Flt Permitted				0.95	1.00			0.95				0.95
Satd. Flow (perm)				1530	1220			2797				3074
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	0	192	13	134	8	593	98	4	689	27
RTOR Reduction (vph)	0	0	0	0	103	0	0	14	0	0	3	0
Lane Group Flow (vph)	0	0	0	192	44	0	0	685	0	0	717	0
Confl. Peds. (#/hr)	14		15	15		14	25		34	34		25
Confl. Bikes (#/hr)			3			2			7			20
Heavy Vehicles (%)	2%	2%	2%	6%	15%	8%	2%	3%	10%	100%	2%	2%
Turn Type				custom	NA		custom	NA		custom	NA	
Protected Phases					7 8			1 2				5 6
Permitted Phases				8			2			6		
Actuated Green, G (s)				18.0	23.0			53.8				53.8
Effective Green, g (s)				18.0	23.0			53.8				53.8
Actuated g/C Ratio				0.18	0.23			0.54				0.54
Clearance Time (s)				6.0								
Vehicle Extension (s)				3.0								
Lane Grp Cap (vph)				275	280			1504				1653
v/s Ratio Perm					c0.04							
v/s Ratio Perm				c0.13				c0.24				0.23
v/c Ratio				0.70	0.16			0.46				0.43
Uniform Delay, d1				38.5	30.8			14.1				13.9
Progression Factor				1.00	1.00			1.00				1.00
Incremental Delay, d2				13.7	1.2			1.0				0.8
Delay (s)				52.2	31.9			15.1				14.8
Level of Service				D	C			B				B
Approach Delay (s)	0.0				43.4			15.1				14.8
Approach LOS	A				D			B				B
<b>Intersection Summary</b>												
HCM 2000 Control Delay				20.4								HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio				0.48								
Actuated Cycle Length (s)				100.0				Sum of lost time (s) 22.2				
Intersection Capacity Utilization				46.7%				ICU Level of Service A				
Analysis Period (min)				15								
c Critical Lane Group												

Lanes, Volumes, Timings  
3: Main & Evelyn

Future Background 2025PM Peak Hour  
15 Oblates

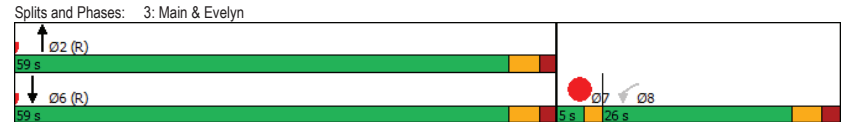
Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations	↘	↑	↗	
Traffic Volume (vph)	25	657	869	
Future Volume (vph)	25	657	869	
Lane Group Flow (vph)	32	657	869	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum Split (s)	25.4	27.1	15.1	5.0
Total Split (s)	26.0	59.0	59.0	5.0
Total Split (%)	28.9%	65.6%	65.6%	6%
Maximum Green (s)	20.6	53.9	53.9	3.0
Yellow Time (s)	3.3	3.3	3.3	2.0
All-Red Time (s)	2.1	1.8	1.8	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	5.4	5.1	5.1	
Lead/Lag	Lag			Lead
Lead-Lag Optimize?	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max
Walk Time (s)	10.0	17.0		3.0
Flash Dont Walk (s)	10.0	5.0		0.0
Pedestrian Calls (#/hr)	8	28		8
Act Effct Green (s)	20.6	53.9	53.9	
Actuated g/C Ratio	0.23	0.60	0.60	
v/c Ratio	0.09	0.64	0.44	
Control Delay	23.7	9.1	10.7	
Queue Delay	0.0	0.1	1.8	
Total Delay	23.7	9.2	12.5	
LOS	C	A	B	
Approach Delay	23.7	9.2	12.5	
Approach LOS	C	A	B	
Queue Length 50th (m)	3.4	25.8	39.5	
Queue Length 95th (m)	10.5	37.0	52.2	
Internal Link Dist (m)	452.4	86.0	69.4	
Turn Bay Length (m)				
Base Capacity (vph)	372	1034	1966	
Starvation Cap Reductn	0	16	886	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.09	0.65	0.80	

**Intersection Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 54 (60%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
3: Main & Evelyn

Future Background 2025PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.64  
 Intersection Signal Delay: 11.3  
 Intersection LOS: B  
 Intersection Capacity Utilization 61.9%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.





HCM Signalized Intersection Capacity Analysis  
3: Main & Evelyn

Future Background 2025PM Peak Hour  
15 Oblates

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑			↕
Traffic Volume (vph)	25	7	657	0	0	869
Future Volume (vph)	25	7	657	0	0	869
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Total Lost time (s)	5.4		5.1			5.1
Lane Util. Factor	1.00		1.00			0.95
Frb. ped/bikes	0.99		1.00			1.00
Flpb. ped/bikes	0.99		1.00			1.00
Frt	0.97		1.00			1.00
Flt Protected	0.96		1.00			1.00
Satd. Flow (prot)	1605		1728			3283
Flt Permitted	0.96		1.00			1.00
Satd. Flow (perm)	1605		1728			3283
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	7	657	0	0	869
RTOR Reduction (vph)	5	0	0	0	0	0
Lane Group Flow (vph)	27	0	657	0	0	869
Confl. Peds. (#/hr)	4	8		28	28	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	2%	2%	3%	2%	2%	3%
Turn Type	Perm		NA			NA
Protected Phases			2			6
Permitted Phases	8					
Actuated Green, G (s)	20.6		53.9			53.9
Effective Green, g (s)	20.6		53.9			53.9
Actuated g/C Ratio	0.23		0.60			0.60
Clearance Time (s)	5.4		5.1			5.1
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	367		1034			1966
v/s Ratio Prot			c0.38			0.26
v/s Ratio Perm	c0.02					
v/c Ratio	0.07		0.64			0.44
Uniform Delay, d1	27.2		11.7			9.8
Progression Factor	1.00		0.59			1.00
Incremental Delay, d2	0.4		1.9			0.7
Delay (s)	27.6		8.8			10.6
Level of Service	C		A			B
Approach Delay (s)	27.6		8.8			10.6
Approach LOS	C		A			B

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats

Future Background 2025PM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø2	Ø3	Ø6	Ø7
Lane Configurations		↔	↔	↔	↔	↔	↔	↔				
Traffic Volume (vph)	4	0	43	0	1	614	59	849				
Future Volume (vph)	4	0	43	0	1	614	59	849				
Lane Group Flow (vph)	0	15	43	50	1	664	59	857				
Turn Type	Perm	NA	Perm	NA	custom	NA	custom	NA				
Protected Phases		4		8	5	2.9	1	6.13	2	3	6	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	5	2.9	1	6.13				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0		5.0		10.0	1.0	10.0	1.0
Minimum Split (s)	19.3	19.3	19.3	19.3	10.0		10.0		33.0	3.0	33.0	3.0
Total Split (s)	22.0	22.0	22.0	22.0	15.0		15.0		43.0	5.0	43.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	16.7%		16.7%		48%	6%	48%	6%
Maximum Green (s)	16.7	16.7	16.7	16.7	10.0		10.0		38.0	3.0	38.0	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3		3.3	2.0	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.7		1.7		1.7	0.0	1.7	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0					
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.0		5.0					
Lead/Lag	Lag	Lag	Lag	Lag	Lead		Lead			Lead		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	None		None		C-Max	Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0					20.0		20.0	
Flash Dont Walk (s)	12.0	12.0	12.0	12.0					8.0		8.0	
Pedestrian Calls (#/hr)	6	6	5	5					30		27	
Act Effct Green (s)		16.7	16.7	16.7	48.8	43.4	56.5	50.9				
Actuated g/C Ratio		0.19	0.19	0.19	0.54	0.48	0.63	0.57				
v/c Ratio		0.04	0.24	0.09	0.00	0.81	0.17	0.88				
Control Delay		0.2	35.2	0.3	10.0	24.0	6.5	27.4				
Queue Delay		0.0	0.0	0.0	0.0	0.1	0.0	0.0				
Total Delay		0.2	35.2	0.3	10.0	24.1	6.5	27.4				
LOS		A	D	A	A	C	A	C				
Approach Delay		0.2		16.5		24.1		26.0				
Approach LOS		A		B		C		C				
Queue Length 50th (m)		0.0	6.4	0.0	0.1	41.6	2.9	53.7				
Queue Length 95th (m)		0.0	15.8	0.0	m0.1	#161.1	6.3	#234.7				
Internal Link Dist (m)		109.1		138.0		118.6		47.0				
Turn Bay Length (m)			15.0		15.0		30.0					
Base Capacity (vph)		375	181	569	320	823	392	975				
Starvation Cap Reductn		0	0	0	0	6	0	0				
Spillback Cap Reductn		0	0	0	0	0	0	0				
Storage Cap Reductn		0	0	0	0	0	0	0				
Reduced v/c Ratio		0.04	0.24	0.09	0.00	0.81	0.15	0.88				

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 62 (69%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 90	

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats

Future Background 2025PM Peak Hour  
15 Oblates

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)	3.0	3.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	30	27
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
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		

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats


Future Background 2025PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 24.5  
 Intersection LOS: C  
 Intersection Capacity Utilization 72.0%  
 ICU Level of Service C  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



HCM Signalized Intersection Capacity Analysis  
5: Main & Immaculata HS/Oblats

Future Background 2025PM Peak Hour  
15 Oblates

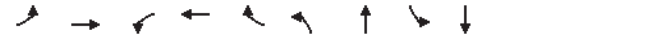


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	
Traffic Volume (vph)	4	0	11	43	0	50	1	614	50	59	849	8
Future Volume (vph)	4	0	11	43	0	50	1	614	50	59	849	8
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		5.3		5.3	5.3		5.0	5.0		5.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frbp, ped/bikes	0.97		1.00	0.97	1.00		1.00	0.99		1.00	1.00	
Fipb, ped/bikes	1.00		0.98	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	0.90		1.00	0.85	1.00		1.00	0.99		1.00	1.00	
Flt Protected	0.99		0.95	1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1501		1243	1292	1656		1700	1653		1725	1725	
Flt Permitted	0.95		0.75	1.00	1.00		0.17	1.00		0.23	1.00	
Satd. Flow (perm)	1440		979	1292	290		1700	403		1725	1725	
Peak-hour factor, PHF	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Adj. Flow (vph)	4		0	11	43		0	50		1	614	
RTOR Reduction (vph)	0		12	0	0		41	0		3	0	
Lane Group Flow (vph)	0		3	0	43		9	0		1	661	
Confl. Peds. (#/hr)	2		7	7	7		2	34		36	36	
Confl. Bikes (#/hr)								4				
Heavy Vehicles (%)	2%		2%	2%	33%		2%	14%		3%	3%	
Turn Type	Perm		NA		Perm		NA	custom		NA	custom	
Protected Phases			4		8		5	2.9		1	6.13	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)			16.7		16.7		16.7			43.5	47.4	
Effective Green, g (s)			16.7		16.7		16.7			43.5	45.4	
Actuated g/C Ratio			0.19		0.19		0.19			0.48	0.50	
Clearance Time (s)			5.3		5.3		5.3			5.0	5.0	
Vehicle Extension (s)			3.0		3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)			267		181		239			156	857	
v/s Ratio Prot					0.01		0.00	0.39		c0.01	c0.50	
v/s Ratio Perm			0.00		c0.04		0.00			0.10		
v/c Ratio			0.01		0.24		0.04			0.01	0.77	
Uniform Delay, d1			29.9		31.2		30.1			14.7	18.1	
Progression Factor			1.00		1.00		1.00			1.51	0.73	
Incremental Delay, d2			0.1		3.1		0.3			0.0	5.7	
Delay (s)			30.0		34.3		30.4			22.2	19.0	
Level of Service			C		C		C			B	A	
Approach Delay (s)			30.0				32.2			19.0		25.9
Approach LOS			C				C			B		C

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	19.3
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings  
6: Main & Hazel

Future Background 2025PM Peak Hour  
15 Oblates



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3
Lane Configurations		↔		↔	↔	↔	↔	↔	↔			
Traffic Volume (vph)	18	4	47	5	77	10	568	42	820			
Future Volume (vph)	18	4	47	5	77	10	568	42	820			
Lane Group Flow (vph)	0	29	0	52	77	10	601	42	854			
Turn Type	Perm	NA	Perm	NA	Perm	custom	NA	custom	NA			
Protected Phases		4		8		13	1.2	9	5.6	1	2	3
Permitted Phases	4		8		8		2		6			
Detector Phase	4	4	8	8	8	13	1.2	9	5.6			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0		5.0		1.0	10.0	1.0
Minimum Split (s)	21.2	21.2	21.2	21.2	21.2	10.8		10.8		5.0	34.8	3.0
Total Split (s)	21.2	21.2	21.2	21.2	21.2	15.0		15.0		5.0	44.0	4.8
Total Split (%)	23.6%	23.6%	23.6%	23.6%	23.6%	16.7%		16.7%		6%	49%	5%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0	9.2		9.2		3.0	38.2	2.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3		3.3		2.0	3.3	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.5		2.5		0.0	2.5	0.0
Lost Time Adjust (s)			0.0		0.0	0.0		0.0				
Total Lost Time (s)			6.2		6.2	6.2		5.8				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes		Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	None		None		Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0					3.0	18.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0					0.0	10.0	
Pedestrian Calls (#/hr)	17	17	9	9	9					30	30	
Act Effct Green (s)			15.0		15.0	15.0	51.0	54.3	56.4	59.6		
Actuated g/C Ratio			0.17		0.17	0.17	0.57	0.60	0.63	0.66		
v/c Ratio			0.13		0.26	0.22	0.04	0.59	0.13	0.76		
Control Delay			27.9		36.6	1.5	7.0	15.5	4.0	7.3		
Queue Delay			0.0		0.0	0.0	0.0	0.1	0.0	0.2		
Total Delay			27.9		36.6	1.5	7.0	15.6	4.0	7.4		
LOS			C		D	A	A	B	A	A		
Approach Delay			27.9		15.6			15.4		7.3		
Approach LOS			C		B			B		A		
Queue Length 50th (m)			3.3		7.9	0.0	0.6	66.9	1.2	10.7		
Queue Length 95th (m)			10.8		18.3	0.0	2.2	106.1	m1.5	m#42.2		
Internal Link Dist (m)			237.6		98.5			241.0		118.6		
Turn Bay Length (m)					30.0	20.0		15.0				
Base Capacity (vph)			229		201	346	292	1015	357	1126		
Starvation Cap Reductn			0		0	0	0	0	0	22		
Spillback Cap Reductn			0		0	3	0	39	0	0		
Storage Cap Reductn			0		0	0	0	0	0	0		
Reduced v/c Ratio			0.13		0.26	0.22	0.03	0.62	0.12	0.77		

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 70 (78%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			

Lanes, Volumes, Timings  
6: Main & Hazel

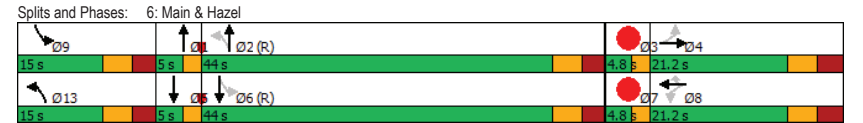
Future Background 2025PM Peak Hour  
15 Oblates

Lane Group	Ø5	Ø6	Ø7
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	5	6	7
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	10.0	1.0
Minimum Split (s)	5.0	34.8	3.0
Total Split (s)	5.0	44.0	4.8
Total Split (%)	6%	49%	5%
Maximum Green (s)	3.0	38.2	2.8
Yellow Time (s)	2.0	3.3	2.0
All-Red Time (s)	0.0	2.5	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max
Walk Time (s)	3.0	18.0	
Flash Dont Walk (s)	0.0	10.0	
Pedestrian Calls (#/hr)	31	31	
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
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			

Lanes, Volumes, Timings  
6: Main & Hazel

Future Background 2025PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.76  
 Intersection Signal Delay: 11.3  
 Intersection LOS: B  
 Intersection Capacity Utilization 72.5%  
 ICU Level of Service C  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



HCM Signalized Intersection Capacity Analysis  
6: Main & Hazel

Future Background 2025PM Peak Hour  
15 Oblates

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔	↔	↔		↔	↔	
Traffic Volume (vph)	18	4	7	47	5	77	10	568	33	42	820	34
Future Volume (vph)	18	4	7	47	5	77	10	568	33	42	820	34
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Total Lost time (s)		6.2			6.2	6.2	5.8	2.0		5.8	2.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Frbp, ped/bikes		0.98			1.00	0.95	1.00	0.97		1.00	0.98	
Fipb, ped/bikes		0.98			0.96	1.00	1.00	1.00		1.00	1.00	
Frt		0.97			1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97			0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1585			1596	1312	1658	1681		1398	1699	
Flt Permitted		0.82			0.73	1.00	0.15	1.00		0.28	1.00	
Satd. Flow (perm)		1340			1210	1312	254	1681		407	1699	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	18	4	7	47	5	77	10	568	33	42	820	34
RTOR Reduction (vph)	0	6	0	0	0	64	0	2	0	0	1	0
Lane Group Flow (vph)	0	23	0	0	52	13	10	599	0	42	853	0
Conf. Peds. (#/hr)		9		17		17		9		30	30	
Conf. Bikes (#/hr)										1		
Heavy Vehicles (%)		2%	2%	2%	2%	10%	2%	2%	9%	21%	2%	6%
Turn Type	Perm	NA		Perm	NA	Perm	custom	NA		custom	NA	
Protected Phases		4			8		13	12		9	5	6
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		15.0			15.0	15.0	44.4	48.2		50.4	51.2	
Effective Green, g (s)		15.0			15.0	15.0	44.4	48.2		50.4	51.2	
Actuated g/C Ratio		0.17			0.17	0.17	0.49	0.54		0.56	0.57	
Clearance Time (s)		6.2			6.2	6.2	5.8			5.8		
Vehicle Extension (s)		3.0			3.0	3.0	3.0			3.0		
Lane Grp Cap (vph)		223			201	218	144	900		274	966	
v/s Ratio Prot							0.00	0.36		c0.01	c0.50	
v/s Ratio Perm		0.02			c0.04	0.01	0.03			0.08		
v/c Ratio		0.10			0.26	0.06	0.07	0.67		0.15	0.88	
Uniform Delay, d1		31.8			32.7	31.6	15.2	15.1		10.7	16.8	
Progression Factor		1.00			1.00	1.00	1.00	1.00		0.58	0.25	
Incremental Delay, d2		0.9			3.1	0.5	0.2	3.9		0.1	6.5	
Delay (s)		32.7			35.8	32.1	15.4	19.0		6.3	10.7	
Level of Service		C			D	C	B	B		A	B	
Approach Delay (s)		32.7			33.6			18.9			10.5	
Approach LOS		C			C			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.7								B	
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			90.0								21.8	
Intersection Capacity Utilization			72.5%								C	
Analysis Period (min)			15									
c Critical Lane Group												

# Appendix G

Synchro Intersection Worksheets – 2030 Future Background Conditions

Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Background 2030AM Peak Hour  
15 Oblates

Lane Group	EBT	EBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3	Ø5	Ø9	Ø10
Lane Configurations	↔	↔		↔↔		↔↔						
Traffic Volume (vph)	12	243	293	531	5	404						
Future Volume (vph)	12	243	293	531	5	404						
Lane Group Flow (vph)	323	243	0	830	0	523						
Turn Type	NA	pm+ov	custom	NA	custom	NA						
Protected Phases	4	13	13	1 2 9 10		5 6	1	2	3	5	9	10
Permitted Phases		4	10 2		6							
Detector Phase	4	13	13	1 2 9 10	6	5 6						
Switch Phase												
Minimum Initial (s)	10.0	5.0	5.0		10.0		1.0	10.0	1.0	1.0	1.0	5.0
Minimum Split (s)	22.3	11.3	11.3		17.3		5.0	17.3	3.0	5.0	5.0	17.0
Total Split (s)	22.3	22.0	22.0		34.0		5.0	34.0	4.7	5.0	5.0	17.0
Total Split (%)	22.3%	22.0%	22.0%		34.0%		5%	34%	5%	5%	5%	17%
Maximum Green (s)	16.0	15.7	15.7		27.7		3.0	27.7	2.7	3.0	3.0	10.7
Yellow Time (s)	3.3	3.3	3.3		3.3		2.0	3.3	2.0	2.0	2.0	3.3
All-Red Time (s)	3.0	3.0	3.0		3.0		0.0	3.0	0.0	0.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0										
Total Lost Time (s)	6.3	6.3										
Lead/Lag					Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max		C-Max		Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0				2.0		3.0	2.0	3.0	3.0	3.0	2.0
Flash Dont Walk (s)	9.0				9.0		0.0	9.0	0.0	0.0	0.0	8.7
Pedestrian Calls (#/hr)	28				20		53	53		20	53	53
Act Effct Green (s)	25.6	41.3		57.0		37.0						
Actuated g/C Ratio	0.26	0.41		0.57		0.37						
v/c Ratio	0.80	0.33		0.63		0.49						
Control Delay	52.7	3.9		9.8		24.2						
Queue Delay	0.0	0.0		0.1		0.0						
Total Delay	52.7	3.9		9.9		24.2						
LOS	D	A		A		C						
Approach Delay	31.7			9.9		24.2						
Approach LOS	C			A		C						
Queue Length 50th (m)	56.6	0.0		28.8		37.2						
Queue Length 95th (m)	#131.3	14.6		35.1		52.5						
Internal Link Dist (m)	198.7			59.0		262.1						
Turn Bay Length (m)												
Base Capacity (vph)	403	733		1317		1059						
Starvation Cap Reductn	0	0		44		0						
Spillback Cap Reductn	0	0		0		0						
Storage Cap Reductn	0	0		0		0						
Reduced v/c Ratio	0.80	0.33		0.65		0.49						
<b>Intersection Summary</b>												
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 85												

Lanes, Volumes, Timings  
1: Main & Hawthorne

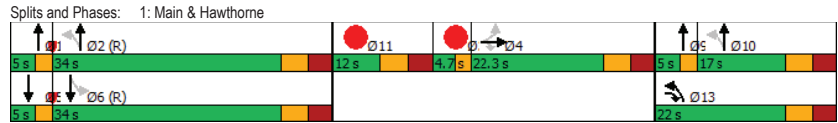
Future Background 2030AM Peak Hour  
15 Oblates

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	12.0
Total Split (s)	12.0
Total Split (%)	12%
Maximum Green (s)	5.7
Yellow Time (s)	3.3
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.7
Flash Dont Walk (s)	0.0
Pedestrian Calls (#/hr)	3
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
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	
<b>Intersection Summary</b>	

Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Background 2030AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 20.3 Intersection LOS: C  
 Intersection Capacity Utilization 78.3% ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Background 2030AM Peak Hour  
15 Oblates

Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations	↔	↔		↕↕		↕↕				
Traffic Volume (vph)	323	53	7	664	24	534				
Future Volume (vph)	323	53	7	664	24	534				
Lane Group Flow (vph)	323	345	0	741	0	638				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted Phases	8		2		6					
Detector Phase	8	7 8	2	1 2	6	5 6				
Switch Phase										
Minimum Initial (s)	10.0		10.0		10.0		1.0	1.0	1.0	5.0
Minimum Split (s)	24.0		18.2		18.2		5.0	5.0	5.0	11.0
Total Split (s)	24.0		55.0		55.0		5.0	5.0	5.0	11.0
Total Split (%)	24.0%		55.0%		55.0%		5%	5%	5%	11%
Maximum Green (s)	18.0		48.8		48.8		3.0	3.0	3.0	5.0
Yellow Time (s)	3.3		3.3		3.3		2.0	2.0	2.0	3.3
All-Red Time (s)	2.7		2.9		2.9		0.0	0.0	0.0	2.7
Lost Time Adjust (s)	0.0									
Total Lost Time (s)	6.0									
Lead/Lag			Lag		Lag		Lead	Lead	Lag	Lead
Lead-Lag Optimize?			Yes		Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		C-Max		C-Max		Max	Max	Max	Max
Walk Time (s)	2.0		2.0		2.0		3.0	3.0	3.0	5.0
Flash Dont Walk (s)	9.0		10.0		10.0		0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	60		123		33		123	33	60	7
Act Effct Green (s)	18.0	27.0		58.0		58.0				
Actuated g/C Ratio	0.18	0.27		0.58		0.58				
v/c Ratio	1.37	0.71		0.45		0.40				
Control Delay	226.9	21.5		13.2		6.5				
Queue Delay	0.0	0.0		0.7		0.3				
Total Delay	226.9	21.5		13.9		6.8				
LOS	F	C		B		A				
Approach Delay		120.8		13.9		6.8				
Approach LOS		F		B		A				
Queue Length 50th (m)	-83.2	21.8		30.7		14.1				
Queue Length 95th (m)	#134.7	55.8		51.1		22.3				
Internal Link Dist (m)		426.1		69.4		59.0				
Turn Bay Length (m)	40.0									
Base Capacity (vph)	235	484		1630		1589				
Starvation Cap Reductn	0	0		525		365				
Spillback Cap Reductn	0	0		8		0				
Storage Cap Reductn	0	0		0		0				
Reduced v/c Ratio	1.37	0.71		0.67		0.52				

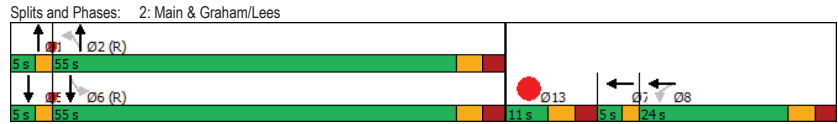
**Intersection Summary**  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 39 (39%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 65



Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Background 2030AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.37  
 Intersection Signal Delay: 46.6 Intersection LOS: D  
 Intersection Capacity Utilization 67.5% ICU Level of Service C  
 Analysis Period (min) 15  
 ~ 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.



Lanes, Volumes, Timings  
3: Main & Evelyn

Future Background 2030AM Peak Hour  
15 Oblates

Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations	↕	↑	↕	
Traffic Volume (vph)	44	686	710	
Future Volume (vph)	44	686	710	
Lane Group Flow (vph)	92	686	710	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum Split (s)	25.4	27.1	15.1	5.0
Total Split (s)	26.0	69.0	69.0	5.0
Total Split (%)	26.0%	69.0%	69.0%	5%
Maximum Green (s)	20.6	63.9	63.9	3.0
Yellow Time (s)	3.3	3.3	3.3	2.0
All-Red Time (s)	2.1	1.8	1.8	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	5.4	5.1	5.1	
Lead/Lag	Lag			Lead
Lead-Lag Optimize?	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max
Walk Time (s)	10.0	17.0		3.0
Flash Dont Walk (s)	10.0	5.0		0.0
Pedestrian Calls (#/hr)	18	41		18
Act Effct Green (s)	20.6	63.9	63.9	
Actuated g/C Ratio	0.21	0.64	0.64	
v/c Ratio	0.27	0.62	0.34	
Control Delay	20.1	13.9	13.5	
Queue Delay	0.0	1.2	1.1	
Total Delay	20.1	15.1	14.6	
LOS	C	B	B	
Approach Delay	20.1	15.1	14.6	
Approach LOS	C	B	B	
Queue Length 50th (m)	7.0	72.4	37.1	
Queue Length 95th (m)	20.3	106.6	m40.9	
Internal Link Dist (m)	452.4	86.0	69.4	
Turn Bay Length (m)				
Base Capacity (vph)	347	1104	2097	
Starvation Cap Reductn	0	216	1073	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.27	0.77	0.69	

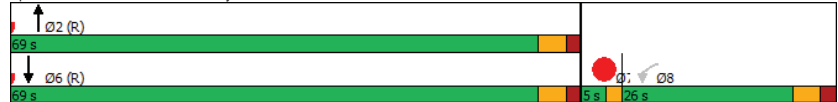
**Intersection Summary**  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 59 (59%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
3: Main & Evelyn

Future Background 2030AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 15.2	Intersection LOS: B
Intersection Capacity Utilization 63.5%	ICU Level of Service B
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 3: Main & Evelyn



Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats

Future Background 2030AM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø2	Ø3	Ø6	Ø7
Lane Configurations		↔	↔	↔	↔	↔	↔	↔				
Traffic Volume (vph)	11	1	37	0	29	670	22	721				
Future Volume (vph)	11	1	37	0	29	670	22	721				
Lane Group Flow (vph)	0	29	37	40	29	690	22	732				
Turn Type	Perm	NA	Perm	NA	custom	NA	custom	NA				
Protected Phases		4		8	5	2.9	1	6.13	2	3	6	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	5	2.9	1	6.13				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0		5.0		10.0	1.0	10.0	1.0
Minimum Split (s)	19.3	19.3	19.3	19.3	10.0		10.0		33.0	5.0	33.0	5.0
Total Split (s)	22.0	22.0	22.0	22.0	16.0		16.0		42.0	5.0	42.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	17.8%		17.8%		47%	6%	47%	6%
Maximum Green (s)	16.7	16.7	16.7	16.7	11.0		11.0		37.0	3.0	37.0	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3		3.3	2.0	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.7		1.7		1.7	0.0	1.7	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0					
Total Lost Time (s)		5.3	5.3	5.3	5.0		5.0					
Lead/Lag	Lag	Lag	Lag	Lag	Lead		Lead			Lead		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	None		None		C-Max	Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0					20.0	3.0	20.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0					8.0	0.0	8.0	0.0
Pedestrian Calls (#/hr)	7	7	2	2					36	7	34	2
Act Effct Green (s)		16.7	16.7	16.7	54.1	48.4	53.9	48.3				
Actuated g/C Ratio		0.19	0.19	0.19	0.60	0.54	0.60	0.54				
v/c Ratio		0.11	0.23	0.07	0.09	0.75	0.06	0.79				
Control Delay		19.7	35.6	0.2	3.8	12.4	6.7	26.7				
Queue Delay		0.0	0.0	0.0	0.0	0.3	0.0	0.0				
Total Delay		19.7	35.6	0.2	3.8	12.6	6.7	26.7				
LOS		B	D	A	A	B	A	C				
Approach Delay		19.7		17.2		12.3		26.1				
Approach LOS		B		B		B		C				
Queue Length 50th (m)		1.7	5.5	0.0	0.6	15.0	1.2	83.2				
Queue Length 95th (m)		8.9	14.3	0.0	m1.4	#168.2	3.7	#189.3				
Internal Link Dist (m)		109.1		138.0		118.6		47.0				
Turn Bay Length (m)			15.0		15.0		30.0					
Base Capacity (vph)		271	159	556	394	917	428	926				
Starvation Cap Reductn		0	0	0	0	24	0	0				
Spillback Cap Reductn		0	0	0	0	0	0	0				
Storage Cap Reductn		0	0	0	0	0	0	0				
Reduced v/c Ratio		0.11	0.23	0.07	0.07	0.77	0.05	0.79				

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 57 (63%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats

Future Background 2030AM Peak Hour  
15 Oblates

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)	3.0	3.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	36	34
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
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		

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats

Future Background 2030AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 19.3  
 Intersection LOS: B  
 Intersection Capacity Utilization 61.1%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings  
6: Main & Hazel

Future Background 2030AM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3
Lane Configurations		↔		↔	↔	↔	↔	↔	↔			
Traffic Volume (vph)	32	3	16	2	28	9	663	62	701			
Future Volume (vph)	32	3	16	2	28	9	663	62	701			
Lane Group Flow (vph)	0	44	0	18	28	9	689	62	722			
Turn Type	Perm	NA	Perm	NA	Perm	custom	NA	custom	NA			
Protected Phases		4		8		13	12	9	56	1	2	3
Permitted Phases	4		8		8		2		6			
Detector Phase	4	4	8	8	8	13	12	9	56			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0		5.0		1.0	10.0	1.0
Minimum Split (s)	21.2	21.2	21.2	21.2	21.2	10.8		10.8		5.0	34.8	3.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	15.0		15.0		5.0	43.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	24.4%	16.7%		16.7%		6%	48%	6%
Maximum Green (s)	15.8	15.8	15.8	15.8	15.8	9.2		9.2		3.0	37.2	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3		3.3		2.0	3.3	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.5		2.5		0.0	2.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0				
Total Lost Time (s)		6.2		6.2	6.2	5.8		5.8				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes		Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	None		None		Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0					3.0	18.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0					0.0	10.0	
Pedestrian Calls (#/hr)	27	27	9	9	9					30	30	
Act Effct Green (s)		15.8		15.8	15.8	47.3	50.5	55.5	58.6			
Actuated g/C Ratio		0.18		0.18	0.18	0.53	0.56	0.62	0.65			
v/c Ratio		0.20		0.09	0.09	0.03	0.73	0.23	0.65			
Control Delay		29.2		32.7	0.5	7.2	21.5	11.4	14.1			
Queue Delay		0.0		0.0	0.0	0.0	0.4	0.0	0.1			
Total Delay		29.2		32.7	0.5	7.2	21.9	11.4	14.2			
LOS		C		C	A	A	C	B	B			
Approach Delay		29.2		13.1			21.7		14.0			
Approach LOS		C		B			C		B			
Queue Length 50th (m)		5.2		2.7	0.0	0.5	87.4	3.0	35.0			
Queue Length 95th (m)		14.5		8.5	0.0	2.1	139.1	m8.3	94.4			
Internal Link Dist (m)		237.6		98.5			241.0		118.6			
Turn Bay Length (m)				30.0	20.0		15.0					
Base Capacity (vph)		223		192	322	364	949	300	1111			
Starvation Cap Reductn		0		0	0	0	0	0	37			
Spillback Cap Reductn		0		0	4	0	44	0	0			
Storage Cap Reductn		0		0	0	0	0	0	0			
Reduced v/c Ratio		0.20		0.09	0.09	0.02	0.76	0.21	0.67			

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 46 (51%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 75

Lanes, Volumes, Timings  
6: Main & Hazel

Future Background 2030AM Peak Hour  
15 Oblates

Lane Group	Ø5	Ø6	Ø7
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	5	6	7
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	10.0	1.0
Minimum Split (s)	5.0	34.8	3.0
Total Split (s)	5.0	43.0	5.0
Total Split (%)	6%	48%	6%
Maximum Green (s)	3.0	37.2	3.0
Yellow Time (s)	2.0	3.3	2.0
All-Red Time (s)	0.0	2.5	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max
Walk Time (s)	3.0	18.0	
Flash Dont Walk (s)	0.0	10.0	
Pedestrian Calls (#/hr)	41	41	
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
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			

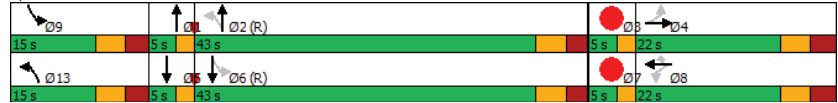
Intersection Summary

Lanes, Volumes, Timings  
6: Main & Hazel

Future Background 2030AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 17.8	Intersection LOS: B
Intersection Capacity Utilization 77.3%	ICU Level of Service D
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 6: Main & Hazel



Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Background 2030PM Peak Hour  
15 Oblates

Lane Group	EBT	EBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3	Ø5	Ø9	Ø10
Lane Configurations	↔	↔		↔↔		↔↔						
Traffic Volume (vph)	70	276	270	472	8	466						
Future Volume (vph)	70	276	270	472	8	466						
Lane Group Flow (vph)	360	276	0	755	0	669						
Turn Type	NA	pm+ov	custom	NA	custom	NA						
Protected Phases	4	13	13	1 2 9 10		5 6	1	2	3	5	9	10
Permitted Phases		4	10 2		6							
Detector Phase	4	13	13	1 2 9 10	6	5 6						
Switch Phase												
Minimum Initial (s)	10.0	5.0	5.0		10.0		1.0	10.0	1.0	1.0	1.0	5.0
Minimum Split (s)	22.3	11.3	11.3		17.3		5.0	17.3	3.0	5.0	5.0	15.0
Total Split (s)	24.0	20.0	20.0		54.0		5.0	54.0	5.0	5.0	5.0	15.0
Total Split (%)	20.0%	16.7%	16.7%		45.0%		4%	45%	4%	4%	4%	13%
Maximum Green (s)	17.7	13.7	13.7		47.7		3.0	47.7	3.0	3.0	3.0	8.7
Yellow Time (s)	3.3	3.3	3.3		3.3		2.0	3.3	2.0	2.0	2.0	3.3
All-Red Time (s)	3.0	3.0	3.0		3.0		0.0	3.0	0.0	0.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0										
Total Lost Time (s)	6.3	6.3										
Lead/Lag					Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max		C-Max		Max	C-Max	Max	Max	None	Max
Walk Time (s)	7.0				2.0		3.0	2.0		3.0	3.0	2.0
Flash Dont Walk (s)	9.0				9.0		0.0	9.0		0.0	0.0	6.7
Pedestrian Calls (#/hr)	27				18		50	50		18	50	50
Act Effct Green (s)	27.3	41.0		75.0		57.0						
Actuated g/C Ratio	0.23	0.34		0.62		0.48						
v/c Ratio	0.98	0.42		0.57		0.51						
Control Delay	89.3	5.4		11.9		20.9						
Queue Delay	0.0	0.0		0.8		0.0						
Total Delay	89.3	5.4		12.7		20.9						
LOS	F	A		B		C						
Approach Delay	52.9			12.7		20.9						
Approach LOS	D			B		C						
Queue Length 50th (m)	82.5	0.0		40.5		49.8						
Queue Length 95th (m)	#175.9	18.7		51.5		66.7						
Internal Link Dist (m)	198.7			59.0		262.1						
Turn Bay Length (m)												
Base Capacity (vph)	367	654		1329		1307						
Starvation Cap Reductn	0	0		278		0						
Spillback Cap Reductn	0	0		0		0						
Storage Cap Reductn	0	0		0		0						
Reduced v/c Ratio	0.98	0.42		0.72		0.51						

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 26 (22%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings  
1: Main & Hawthorne

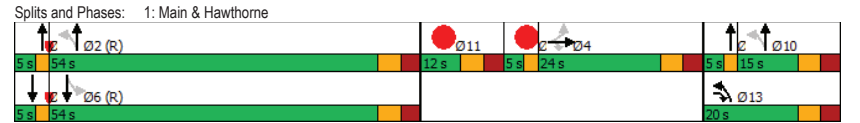
Future Background 2030PM Peak Hour  
15 Oblates

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	12.0
Total Split (s)	12.0
Total Split (%)	10%
Maximum Green (s)	5.7
Yellow Time (s)	3.3
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.7
Flash Dont Walk (s)	0.0
Pedestrian Calls (#/hr)	1
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
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	

Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Background 2030PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 27.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 82.9%  
 ICU Level of Service E  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Background 2030PM Peak Hour  
15 Oblates

Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations	↔	↔		↕	↕	↕				
Traffic Volume (vph)	194	13	8	593	4	689				
Future Volume (vph)	194	13	8	593	4	689				
Lane Group Flow (vph)	194	148	0	730	0	720				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted Phases	8		2		6					
Detector Phase	8	7 8	2	1 2	6	5 6				
Switch Phase										
Minimum Initial (s)	10.0		10.0		10.0		1.0	1.0	1.0	5.0
Minimum Split (s)	24.0		18.2		18.2		5.0	5.0	5.0	11.0
Total Split (s)	24.0		55.0		55.0		5.0	5.0	5.0	11.0
Total Split (%)	24.0%		55.0%		55.0%		5%	5%	5%	11%
Maximum Green (s)	18.0		48.8		48.8		3.0	3.0	3.0	5.0
Yellow Time (s)	3.3		3.3		3.3		2.0	2.0	2.0	3.3
All-Red Time (s)	2.7		2.9		2.9		0.0	0.0	0.0	2.7
Lost Time Adjust (s)	0.0									
Total Lost Time (s)	6.0									
Lead/Lag			Lag		Lag		Lead	Lead	Lag	Lead
Lead-Lag Optimize?			Yes		Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		C-Max		C-Max		Max	Max	Max	Max
Walk Time (s)	2.0		2.0		2.0		3.0	3.0	3.0	5.0
Flash Dont Walk (s)	9.0		10.0		10.0		0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	15		34		25		34	25	15	3
Act Effct Green (s)	18.0	27.0		58.0		58.0				
Actuated g/C Ratio	0.18	0.27		0.58		0.58				
v/c Ratio	0.71	0.35		0.46		0.40				
Control Delay	53.8	8.9		12.3		12.2				
Queue Delay	0.0	0.0		1.7		3.6				
Total Delay	53.8	8.9		14.0		15.8				
LOS	D	A		B		B				
Approach Delay		34.4		14.0		15.8				
Approach LOS		C		B		B				
Queue Length 50th (m)	35.7	1.9		37.2		37.2				
Queue Length 95th (m)	#65.0	16.6		50.5		49.4				
Internal Link Dist (m)		426.1		69.4		59.0				
Turn Bay Length (m)	40.0									
Base Capacity (vph)	275	427		1594		1785				
Starvation Cap Reductn	0	0		656		950				
Spillback Cap Reductn	0	0		0		0				
Storage Cap Reductn	0	0		0		0				
Reduced v/c Ratio	0.71	0.35		0.78		0.86				

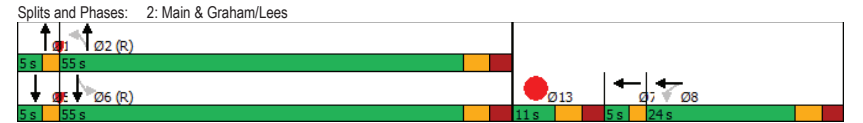
Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 35 (35%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Background 2030PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 18.6  
 Intersection LOS: B  
 Intersection Capacity Utilization 48.0%  
 ICU Level of Service A  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings  
3: Main & Evelyn

Future Background 2030PM Peak Hour  
15 Oblates

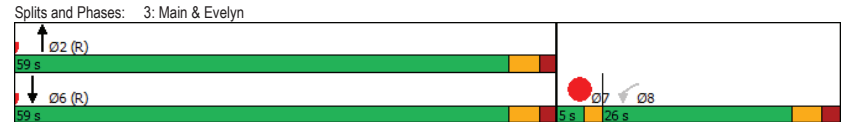
Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations	↘	↑	↗	
Traffic Volume (vph)	25	657	869	
Future Volume (vph)	25	657	869	
Lane Group Flow (vph)	32	657	869	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum Split (s)	25.4	27.1	15.1	5.0
Total Split (s)	26.0	59.0	59.0	5.0
Total Split (%)	28.9%	65.6%	65.6%	6%
Maximum Green (s)	20.6	53.9	53.9	3.0
Yellow Time (s)	3.3	3.3	3.3	2.0
All-Red Time (s)	2.1	1.8	1.8	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	5.4	5.1	5.1	
Lead/Lag	Lag			Lead
Lead-Lag Optimize?	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max
Walk Time (s)	10.0	17.0		3.0
Flash Dont Walk (s)	10.0	5.0		0.0
Pedestrian Calls (#/hr)	8	28		8
Act Effct Green (s)	20.6	53.9	53.9	
Actuated g/C Ratio	0.23	0.60	0.60	
v/c Ratio	0.09	0.64	0.44	
Control Delay	23.7	9.1	10.7	
Queue Delay	0.0	0.1	1.8	
Total Delay	23.7	9.2	12.5	
LOS	C	A	B	
Approach Delay	23.7	9.2	12.5	
Approach LOS	C	A	B	
Queue Length 50th (m)	3.4	25.8	39.5	
Queue Length 95th (m)	10.5	37.0	52.2	
Internal Link Dist (m)	452.4	86.0	69.4	
Turn Bay Length (m)				
Base Capacity (vph)	372	1034	1966	
Starvation Cap Reductn	0	16	886	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.09	0.65	0.80	

**Intersection Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 54 (60%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
3: Main & Evelyn

Future Background 2030PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.64  
 Intersection Signal Delay: 11.3  
 Intersection LOS: B  
 Intersection Capacity Utilization 61.9%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.





Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblates

Future Background 2030PM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø2	Ø3	Ø6	Ø7
Lane Configurations		↔	↔	↔	↔	↔	↔	↔				
Traffic Volume (vph)	4	0	43	0	1	614	59	849				
Future Volume (vph)	4	0	43	0	1	614	59	849				
Lane Group Flow (vph)	0	15	43	50	1	664	59	857				
Turn Type	Perm	NA	Perm	NA	custom	NA	custom	NA				
Protected Phases		4		8	5	2 9	1	6 13	2	3	6	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	5	2 9	1	6 13				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0		5.0		10.0	1.0	10.0	1.0
Minimum Split (s)	19.3	19.3	19.3	19.3	10.0		10.0		33.0	3.0	33.0	3.0
Total Split (s)	22.0	22.0	22.0	22.0	15.0		15.0		43.0	5.0	43.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	16.7%		16.7%		48%	6%	48%	6%
Maximum Green (s)	16.7	16.7	16.7	16.7	10.0		10.0		38.0	3.0	38.0	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3		3.3	2.0	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.7		1.7		1.7	0.0	1.7	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0					
Total Lost Time (s)		5.3	5.3	5.3	5.0		5.0					
Lead/Lag	Lag	Lag	Lag	Lag	Lead		Lead		Lead		Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes		Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	None		None		C-Max	Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0					20.0		20.0	
Flash Dont Walk (s)	12.0	12.0	12.0	12.0					8.0		8.0	
Pedestrian Calls (#/hr)	6	6	5	5					30		27	
Act Effct Green (s)		16.7	16.7	16.7	48.8	43.4	56.5	50.9				
Actuated g/C Ratio		0.19	0.19	0.19	0.54	0.48	0.63	0.57				
v/c Ratio		0.04	0.24	0.09	0.00	0.81	0.17	0.88				
Control Delay		0.2	35.2	0.3	10.0	24.0	6.5	27.4				
Queue Delay		0.0	0.0	0.0	0.0	0.1	0.0	0.0				
Total Delay		0.2	35.2	0.3	10.0	24.1	6.5	27.4				
LOS		A	D	A	A	C	A	C				
Approach Delay		0.2		16.5		24.1		26.0				
Approach LOS		A		B		C		C				
Queue Length 50th (m)		0.0	6.4	0.0	0.1	41.6	2.9	53.7				
Queue Length 95th (m)		0.0	15.8	0.0	m0.1	#161.1	6.3	#234.7				
Internal Link Dist (m)		109.1		138.0		118.6		47.0				
Turn Bay Length (m)			15.0		15.0		30.0					
Base Capacity (vph)		375	181	569	320	823	392	975				
Starvation Cap Reductn		0	0	0	0	6	0	0				
Spillback Cap Reductn		0	0	0	0	0	0	0				
Storage Cap Reductn		0	0	0	0	0	0	0				
Reduced v/c Ratio		0.04	0.24	0.09	0.00	0.81	0.15	0.88				
<b>Intersection Summary</b>												
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 62 (69%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 90												

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblates

Future Background 2030PM Peak Hour  
15 Oblates

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)	3.0	3.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	30	27
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
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		
<b>Intersection Summary</b>		

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblates

Future Background 2030PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 24.5 Intersection LOS: C  
 Intersection Capacity Utilization 72.0% ICU Level of Service C  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Main & Immaculata HS/Oblates



Lanes, Volumes, Timings  
6: Main & Hazel

Future Background 2030PM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3
Lane Configurations		↔		↔	↔	↔	↔	↔	↔			
Traffic Volume (vph)	18	4	47	5	77	10	568	42	820			
Future Volume (vph)	18	4	47	5	77	10	568	42	820			
Lane Group Flow (vph)	0	29	0	52	77	10	601	42	854			
Turn Type	Perm	NA	Perm	NA	Perm	custom	NA	custom	NA			
Protected Phases		4		8		13	12	9	56	1	2	3
Permitted Phases	4		8		8	2		6				
Detector Phase	4	4	8	8	8	13	12	9	56			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0		5.0		1.0	10.0	1.0
Minimum Split (s)	21.2	21.2	21.2	21.2	21.2	10.8		10.8		5.0	34.8	3.0
Total Split (s)	21.2	21.2	21.2	21.2	21.2	15.0		15.0		5.0	44.0	4.8
Total Split (%)	23.6%	23.6%	23.6%	23.6%	23.6%	16.7%		16.7%		6%	49%	5%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0	9.2		9.2		3.0	38.2	2.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3		3.3		2.0	3.3	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.5		2.5		0.0	2.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0				
Total Lost Time (s)		6.2		6.2	6.2	5.8		5.8				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes		Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	None		None		Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0					3.0	18.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0					0.0	10.0	
Pedestrian Calls (#/hr)	17	17	9	9	9					30	30	
Act Effct Green (s)		15.0		15.0	15.0	51.0		54.3	59.6			
Actuated g/C Ratio		0.17		0.17	0.17	0.57		0.60	0.63			
v/c Ratio		0.13		0.26	0.22	0.04		0.59	0.13			
Control Delay		27.9		36.6	1.5	7.0		15.5	4.0		7.3	
Queue Delay		0.0		0.0	0.0	0.0		0.1	0.0		0.2	
Total Delay		27.9		36.6	1.5	7.0		15.6	4.0		7.4	
LOS		C		D	A	A		B	A		A	
Approach Delay		27.9		15.6				15.4			7.3	
Approach LOS		C		B				B			A	
Queue Length 50th (m)		3.3		7.9	0.0	0.6		66.9	1.2		10.7	
Queue Length 95th (m)		10.8		18.3	0.0	2.2		106.1	m#1.5		m#42.2	
Internal Link Dist (m)		237.6		98.5				241.0			118.6	
Turn Bay Length (m)					30.0	20.0		15.0				
Base Capacity (vph)		229		201	346	292		1015	357		1126	
Starvation Cap Reductn		0		0	0	0		0	0		22	
Spillback Cap Reductn		0		0	3	0		39	0		0	
Storage Cap Reductn		0		0	0	0		0	0		0	
Reduced v/c Ratio		0.13		0.26	0.22	0.03		0.62	0.12		0.77	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 70 (78%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 80

Lanes, Volumes, Timings  
6: Main & Hazel

Future Background 2030PM Peak Hour  
15 Oblates

Lane Group	Ø5	Ø6	Ø7
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	5	6	7
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	10.0	1.0
Minimum Split (s)	5.0	34.8	3.0
Total Split (s)	5.0	44.0	4.8
Total Split (%)	6%	49%	5%
Maximum Green (s)	3.0	38.2	2.8
Yellow Time (s)	2.0	3.3	2.0
All-Red Time (s)	0.0	2.5	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max
Walk Time (s)	3.0	18.0	
Flash Dont Walk (s)	0.0	10.0	
Pedestrian Calls (#/hr)	31	31	
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
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			

Lanes, Volumes, Timings  
6: Main & Hazel

Future Background 2030PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.76  
 Intersection Signal Delay: 11.3 Intersection LOS: B  
 Intersection Capacity Utilization 72.5% ICU Level of Service C  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



# Appendix H

MMLOS Analysis

# Multi-Modal Level of Service - Segments Form

Consultant Scenario Comments	CGH Transportation Inc.	Project Date	15 des Oblats Avenue
	Existing/Future		2022-11-30

SEGMENTS			Oblats Ex	Springhurst Ex./Fut.	Oblats Fut.
<b>Pedestrian</b>	Sidewalk Width	<b>-</b>	no sidewalk	≥ 2 m	≥ 2 m
	Boulevard Width		n/a	< 0.5	< 0.5
	Avg Daily Curb Lane Traffic Volume		≤ 3000	≤ 3000	≤ 3000
	Operating Speed		> 30 to 50 km/h	> 30 to 50 km/h	> 30 to 50 km/h
	On-Street Parking		no	yes	no
	<b>Exposure to Traffic PLoS</b>		<b>F</b>	<b>B</b>	<b>B</b>
	Effective Sidewalk Width				
Pedestrian Volume					
<b>Crowding PLoS</b>	<b>-</b>	<b>-</b>	<b>-</b>		
<b>Level of Service</b>	<b>-</b>	<b>-</b>	<b>-</b>		
<b>Bicycle</b>	Type of Cycling Facility	<b>B</b>	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Number of Travel Lanes		2-3 lanes total	≤ 2 (no centreline)	2-3 lanes total
	Operating Speed		≤ 40 km/h	≤ 40 km/h	≤ 40 km/h
	<b># of Lanes &amp; Operating Speed LoS</b>		<b>B</b>	<b>A</b>	<b>B</b>
	Bike Lane (+ Parking Lane) Width				
	<b>Bike Lane Width LoS</b>		<b>-</b>	<b>-</b>	<b>-</b>
	Bike Lane Blockages				
	<b>Blockage LoS</b>		<b>-</b>	<b>-</b>	<b>-</b>
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	≤ 3 lanes
	Sidestreet Operating Speed		≤ 40 km/h	≤ 40 km/h	≤ 40 km/h
<b>Unsignalized Crossing - Lowest LoS</b>	<b>A</b>	<b>A</b>	<b>A</b>		
<b>Level of Service</b>	<b>B</b>	<b>A</b>	<b>B</b>		
<b>Transit</b>	Facility Type	<b>D</b>	Mixed Traffic		Mixed Traffic
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8		Vt/Vp ≥ 0.8
	<b>Level of Service</b>		<b>D</b>	<b>-</b>	<b>D</b>
<b>Truck</b>	Truck Lane Width	<b>-</b>			
	Travel Lanes per Direction				
<b>Level of Service</b>	<b>-</b>	<b>-</b>	<b>-</b>		

**Multi-Modal Level of Service - Intersections Form**

Consultant	CGH Transportation Inc.	Project	15 des Oblats Avenue
Scenario	Existing/Future	Date	2022-11-30
Comments			

INTERSECTIONS		Main @ Hawthorne				Main @ Lees/Graham				Main @ Evelyn				Main @ des Oblats				Main @ Hazel				
Crossing Side		NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	
Pedestrian	Lanes	4	4	0-2	4	4	5	4	0-2	3	3	0-2		4	3	3	3	3	3	3	0-2	
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	
	Conflicting Left Turns	Permissive	No left turn / Prohib.	Permissive	Protected/ Permissive	No left turn / Prohib.	Permissive	Permissive	Permissive	Permissive	No left turn / Prohib.	Permissive	No left turn / Prohib.	Permissive	Permissive	Protected/ Permissive	Protected/ Permissive	Permissive	Permissive	Protected/ Permissive	Protected/ Permissive	
	Conflicting Right Turns	No right turn	Protected/ Permissive	Permissive or yield control	Permissive or yield control	Permissive or yield control	No right turn	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	No right turn	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	
	Right Turns on Red (RTor)?	RTOR allowed	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR prohibited	RTOR prohibited	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed
	Ped Signal Leading Interval?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Right Turn Channel	No Right Turn	No Channel	No Channel	No Channel	No Channel	No Right Turn	No Channel	No Channel	No Channel	No Channel	No Right Turn	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel	No Channel
	Corner Radius	No Right Turn	3-5m	3-5m	3-5m	10-15m	No Right Turn	5-10m	3-5m	5-10m	No Right Turn	5-10m	5-10m	5-10m	5-10m	5-10m	5-10m	5-10m	5-10m	5-10m	5-10m	5-10m
	Crosswalk Type	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement
	PETSI Score	73	68	95	60	66	57	59	95	87	90	97		59	76	76	76	76	76	76	76	91
Ped. Exposure to Traffic LoS	C	C	A	C	C	D	D	A	B	A	A	-	D	B	B	B	B	B	B	B	A	
Cycle Length	100	100	100	100	100	100	100	100	100	100	90		90	90	90	90	90	90	90	90	90	
Effective Walk Time	24	12	46	24	14	14	44	44	16	16	49		10	10	35	35	7	7	32	32	32	
Average Pedestrian Delay	29	39	15	29	37	37	16	16	35	35	9		36	36	17	17	38	38	19	19	19	
Pedestrian Delay LoS	C	D	B	C	D	D	B	B	D	D	A	-	D	D	B	B	D	D	B	B	B	
Level of Service	D				D				D				D				D					
Approach From		NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	
Bicycle	Bicycle Lane Arrangement on Approach		Curb Bike Lane, Cycletrack or MUP				Curb Bike Lane, Cycletrack or MUP				Curb Bike Lane, Cycletrack or MUP			Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP		Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic		
	Right Turn Lane Configuration		Not Applicable				Not Applicable				Not Applicable			Not Applicable	Not Applicable	Not Applicable		Not Applicable	Not Applicable	≤ 50 m		
	Right Turning Speed		Not Applicable				Not Applicable				Not Applicable			Not Applicable	Not Applicable	Not Applicable		Not Applicable	Not Applicable	≤ 25 km/h		
	Cyclist relative to RT motorists	-	Not Applicable	-	-	-	Not Applicable	-	-	-	Not Applicable	-	-	Not Applicable	Not Applicable	-	-	Not Applicable	Not Applicable	D	-	
	Separated or Mixed Traffic	-	Separated	-	-	-	Separated	-	-	-	Separated	-	-	Separated	Separated	-	-	Separated	Separated	Mixed Traffic	-	
	Left Turn Approach	No lane crossed	2-stage, LT box		2-stage, LT box	One lane crossed	2-stage, LT box	2-stage, LT box	2-stage, LT box			2-stage, LT box			2-stage, LT box	2-stage, LT box	No lane crossed	2-stage, LT box	2-stage, LT box	2-stage, LT box	2-stage, LT box	2-stage, LT box
Operating Speed	> 50 to < 60 km/h	> 50 to < 60 km/h		> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h			> 50 to < 60 km/h			> 50 to < 60 km/h	> 50 to < 60 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h	
Left Turning Cyclist	C	A	-	A	E	A	A	A	-	-	A	-	-	A	A	B	A	A	A	A	A	
Level of Service	C				E				A				A				D					
Transit	Average Signal Delay	≤ 30 sec	≤ 20 sec		> 40 sec	≤ 20 sec	≤ 20 sec		> 40 sec	≤ 20 sec	≤ 20 sec			≤ 30 sec	≤ 30 sec		≤ 10 sec	≤ 20 sec	≤ 30 sec			
	Level of Service	D	C	-	F	C	C	F	-	C	C	-	-	D	D	B	-	C	D	-	-	
Truck	Effective Corner Radius	> 15 m			< 10 m		> 15 m		> 15 m													
	Number of Receiving Lanes on Departure from Intersection	1			≥ 2		1		≥ 2													
Level of Service	D				C				-				-				-					
Auto	Volume to Capacity Ratio	0.81 - 0.90				0.61 - 0.70				0.0 - 0.60				0.61 - 0.70				0.71 - 0.80				
	Level of Service	D				B				A				B				C				

# Appendix I

TDM Checklist

**TDM Measures Checklist:**  
*Residential Developments (multi-family, condominium or subdivision)*

Legend	
<b>BASIC</b>	The measure is generally feasible and effective, and in most cases would benefit the development and its users
<b>BETTER</b>	The measure could maximize support for users of sustainable modes, and optimize development performance
<b>★</b>	The measure is one of the most dependably effective tools to encourage the use of sustainable modes

TDM measures: Residential developments		Check if proposed & add descriptions
<b>1. TDM PROGRAM MANAGEMENT</b>		
<b>1.1 Program coordinator</b>		
<b>BASIC</b> ★	1.1.1 Designate an internal coordinator, or contract with an external coordinator	<input type="checkbox"/>
<b>1.2 Travel surveys</b>		
<b>BETTER</b>	1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	<input type="checkbox"/>
<b>2. WALKING AND CYCLING</b>		
<b>2.1 Information on walking/cycling routes &amp; destinations</b>		
<b>BASIC</b>	2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances ( <i>multi-family, condominium</i> )	<input checked="" type="checkbox"/>
<b>2.2 Bicycle skills training</b>		
<b>BETTER</b>	2.2.1 Offer on-site cycling courses for residents, or subsidize off-site courses	<input type="checkbox"/>

TDM measures: Residential developments		Check if proposed & add descriptions
<b>3. TRANSIT</b>		
<b>3.1 Transit information</b>		
<b>BASIC</b>	3.1.1 Display relevant transit schedules and route maps at entrances ( <i>multi-family, condominium</i> )	<input checked="" type="checkbox"/>
<b>BETTER</b>	3.1.2 Provide real-time arrival information display at entrances ( <i>multi-family, condominium</i> )	<input type="checkbox"/>
<b>3.2 Transit fare incentives</b>		
<b>BASIC</b> ★	3.2.1 Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit	<input type="checkbox"/>
<b>BETTER</b>	3.2.2 Offer at least one year of free monthly transit passes on residence purchase/move-in	<input type="checkbox"/>
<b>3.3 Enhanced public transit service</b>		
<b>BETTER</b> ★	3.3.1 Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels ( <i>subdivision</i> )	<input type="checkbox"/>
<b>3.4 Private transit service</b>		
<b>BETTER</b>	3.4.1 Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)	<input type="checkbox"/>
<b>4. CARSHARING &amp; BIKESHARING</b>		
<b>4.1 Bikeshare stations &amp; memberships</b>		
<b>BETTER</b>	4.1.1 Contract with provider to install on-site bikeshare station ( <i>multi-family</i> )	<input checked="" type="checkbox"/>
<b>BETTER</b>	4.1.2 Provide residents with bikeshare memberships, either free or subsidized ( <i>multi-family</i> )	<input type="checkbox"/>
<b>4.2 Carshare vehicles &amp; memberships</b>		
<b>BETTER</b>	4.2.1 Contract with provider to install on-site carshare vehicles and promote their use by residents	<input type="checkbox"/>
<b>BETTER</b>	4.2.2 Provide residents with carshare memberships, either free or subsidized	<input type="checkbox"/>
<b>5. PARKING</b>		
<b>5.1 Priced parking</b>		
<b>BASIC</b> ★	5.1.1 Unbundle parking cost from purchase price ( <i>condominium</i> )	<input type="checkbox"/>
<b>BASIC</b> ★	5.1.2 Unbundle parking cost from monthly rent ( <i>multi-family</i> )	<input type="checkbox"/>



TDM measures: Residential developments		Check if proposed & add descriptions
<b>6. TDM MARKETING &amp; COMMUNICATIONS</b>		
<b>6.1 Multimodal travel information</b>		
BASIC ★	6.1.1 Provide a multimodal travel option information package to new residents	<input checked="" type="checkbox"/>
<b>6.2 Personalized trip planning</b>		
BETTER ★	6.2.1 Offer personalized trip planning to new residents	<input type="checkbox"/>

**TDM-Supportive Development Design and Infrastructure Checklist:**  
*Residential Developments (multi-family or condominium)*

Legend	
REQUIRED	The Official Plan or Zoning By-law provides related guidance that must be followed
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>1. WALKING &amp; CYCLING: ROUTES</b>		
<b>1.1 Building location &amp; access points</b>		
BASIC	1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances	<input checked="" type="checkbox"/>
BASIC	1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	<input checked="" type="checkbox"/>
BASIC	1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	<input checked="" type="checkbox"/>
<b>1.2 Facilities for walking &amp; cycling</b>		
REQUIRED	1.2.1 Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations (see <i>Official Plan policy 4.3.3</i> )	<input checked="" type="checkbox"/>
REQUIRED	1.2.2 Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible (see <i>Official Plan policy 4.3.12</i> )	<input checked="" type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3 Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks (see <i>Official Plan policy 4.3.10</i> )	<input checked="" type="checkbox"/>
REQUIRED	1.2.4 Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps (see <i>Official Plan policy 4.3.10</i> )	<input checked="" type="checkbox"/>
REQUIRED	1.2.5 Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians (see <i>Official Plan policy 4.3.11</i> )	<input checked="" type="checkbox"/>
BASIC	1.2.6 Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	<input checked="" type="checkbox"/>
BASIC	1.2.7 Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	<input type="checkbox"/>
BASIC	1.2.8 Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	<input type="checkbox"/>
<b>1.3 Amenities for walking &amp; cycling</b>		
BASIC	1.3.1 Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	<input type="checkbox"/>
BASIC	1.3.2 Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>2. WALKING &amp; CYCLING: END-OF-TRIP FACILITIES</b>		
<b>2.1 Bicycle parking</b>		
REQUIRED	2.1.1 Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible (see <i>Official Plan policy 4.3.6</i> )	<input checked="" type="checkbox"/>
REQUIRED	2.1.2 Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas (see <i>Zoning By-law Section 111</i> )	<input checked="" type="checkbox"/>
REQUIRED	2.1.3 Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored (see <i>Zoning By-law Section 111</i> )	<input checked="" type="checkbox"/>
BASIC	2.1.4 Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists	<input type="checkbox"/>
<b>2.2 Secure bicycle parking</b>		
REQUIRED	2.2.1 Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers (see <i>Zoning By-law Section 111</i> )	<input checked="" type="checkbox"/>
BETTER	2.2.2 Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	<input checked="" type="checkbox"/>
<b>2.3 Bicycle repair station</b>		
BETTER	2.3.1 Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	<input checked="" type="checkbox"/>
<b>3. TRANSIT</b>		
<b>3.1 Customer amenities</b>		
BASIC	3.1.1 Provide shelters, lighting and benches at any on-site transit stops	<input type="checkbox"/>
BASIC	3.1.2 Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	<input type="checkbox"/>
BETTER	3.1.3 Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>4. RIDESHARING</b>		
<b>4.1 Pick-up &amp; drop-off facilities</b>		
BASIC	4.1.1 Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	<input type="checkbox"/>
<b>5. CARSHARING &amp; BIKESHARING</b>		
<b>5.1 Carshare parking spaces</b>		
BETTER	5.1.1 Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses (see <i>Zoning By-law Section 94</i> )	<input checked="" type="checkbox"/>
<b>5.2 Bikeshare station location</b>		
BETTER	5.2.1 Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	<input checked="" type="checkbox"/>
<b>6. PARKING</b>		
<b>6.1 Number of parking spaces</b>		
REQUIRED	6.1.1 Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	<input type="checkbox"/>
BASIC	6.1.2 Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	<input type="checkbox"/>
BASIC	6.1.3 Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly (see <i>Zoning By-law Section 104</i> )	<input type="checkbox"/>
BETTER	6.1.4 Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking (see <i>Zoning By-law Section 111</i> )	<input type="checkbox"/>
<b>6.2 Separate long-term &amp; short-term parking areas</b>		
BETTER	6.2.1 Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa)	<input type="checkbox"/>

# Appendix J

Synchro Intersection Worksheets – 2025 Future Total Conditions

Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Total 2025AM Peak Hour  
15 Oblates

Lane Group	EBT	EBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3	Ø5	Ø9	Ø10
Lane Configurations	↔	↔		↔↔		↔↔						
Traffic Volume (vph)	12	235	296	539	5	405						
Future Volume (vph)	12	235	296	539	5	405						
Lane Group Flow (vph)	312	235	0	841	0	524						
Turn Type	NA	pm+ov	custom	NA	custom	NA						
Protected Phases	4	13	13	12	9	10	5	6	1	2	3	5
Permitted Phases	4	10	2			6						
Detector Phase	4	13	13	12	9	10	6	5	6			
Switch Phase												
Minimum Initial (s)	10.0	5.0	5.0		10.0		1.0	10.0	1.0	1.0	1.0	5.0
Minimum Split (s)	22.3	11.3	11.3		17.3		5.0	17.3	3.0	5.0	5.0	17.0
Total Split (s)	22.3	22.0	22.0		34.0		5.0	34.0	4.7	5.0	5.0	17.0
Total Split (%)	22.3%	22.0%	22.0%		34.0%		5%	34%	5%	5%	5%	17%
Maximum Green (s)	16.0	15.7	15.7		27.7		3.0	27.7	2.7	3.0	3.0	10.7
Yellow Time (s)	3.3	3.3	3.3		3.3		2.0	3.3	2.0	2.0	2.0	3.3
All-Red Time (s)	3.0	3.0	3.0		3.0		0.0	3.0	0.0	0.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0										
Total Lost Time (s)	6.3	6.3										
Lead/Lag					Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max		C-Max		Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0				2.0		3.0	2.0		3.0	3.0	2.0
Flash Dont Walk (s)	9.0				9.0		0.0	9.0		0.0	0.0	8.7
Pedestrian Calls (#/hr)	33				25		58	58		25	58	58
Act Effct Green (s)	25.6	41.3		57.0		37.0						
Actuated g/C Ratio	0.26	0.41		0.57		0.37						
v/c Ratio	0.78	0.32		0.64		0.50						
Control Delay	51.3	3.9		9.6		24.4						
Queue Delay	0.0	0.0		0.1		0.0						
Total Delay	51.3	3.9		9.6		24.4						
LOS	D	A		A		C						
Approach Delay	30.9			9.6		24.4						
Approach LOS	C			A		C						
Queue Length 50th (m)	54.3	0.0		25.5		37.5						
Queue Length 95th (m)	#126.6	14.4		31.8		53.0						
Internal Link Dist (m)	198.7			59.0		262.1						
Turn Bay Length (m)												
Base Capacity (vph)	399	724		1317		1039						
Starvation Cap Reductn	0	0		37		0						
Spillback Cap Reductn	0	0		0		0						
Storage Cap Reductn	0	0		0		0						
Reduced v/c Ratio	0.78	0.32		0.66		0.50						
<b>Intersection Summary</b>												
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 85												

Lanes, Volumes, Timings  
1: Main & Hawthorne

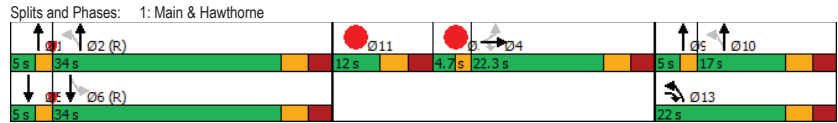
Future Total 2025AM Peak Hour  
15 Oblates

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	12.0
Total Split (s)	12.0
Total Split (%)	12%
Maximum Green (s)	5.7
Yellow Time (s)	3.3
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.7
Flash Dont Walk (s)	0.0
Pedestrian Calls (#/hr)	4
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
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	
<b>Intersection Summary</b>	

Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Total 2025AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.78  
 Intersection Signal Delay: 19.8 Intersection LOS: B  
 Intersection Capacity Utilization 78.1% ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Total 2025AM Peak Hour  
15 Oblates

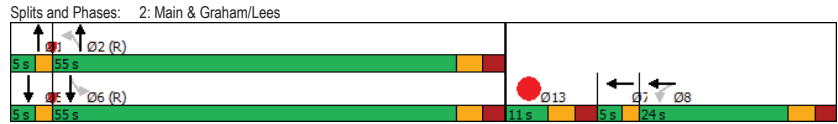
Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations	↔	↔		↔↔		↔↔				
Traffic Volume (vph)	251	53	7	669	24	536				
Future Volume (vph)	251	53	7	669	24	536				
Lane Group Flow (vph)	251	277	0	746	0	640				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted Phases	8		2		6					
Detector Phase	8	7 8	2	1 2	6	5 6				
Switch Phase										
Minimum Initial (s)	10.0		10.0		10.0		1.0	1.0	1.0	5.0
Minimum Split (s)	24.0		18.2		18.2		5.0	5.0	5.0	11.0
Total Split (s)	24.0		55.0		55.0		5.0	5.0	5.0	11.0
Total Split (%)	24.0%		55.0%		55.0%		5%	5%	5%	11%
Maximum Green (s)	18.0		48.8		48.8		3.0	3.0	3.0	5.0
Yellow Time (s)	3.3		3.3		3.3		2.0	2.0	2.0	3.3
All-Red Time (s)	2.7		2.9		2.9		0.0	0.0	0.0	2.7
Lost Time Adjust (s)	0.0									
Total Lost Time (s)	6.0									
Lead/Lag			Lag		Lag		Lead	Lead	Lag	Lead
Lead-Lag Optimize?			Yes		Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		C-Max		C-Max		Max	Max	Max	Max
Walk Time (s)	2.0		2.0		2.0		3.0	3.0	3.0	5.0
Flash Dont Walk (s)	9.0		10.0		10.0		0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	62		137		42		137	42	62	9
Act Effct Green (s)	18.0	27.0		58.0		58.0				
Actuated g/C Ratio	0.18	0.27		0.58		0.58				
v/c Ratio	1.07	0.58		0.46		0.40				
Control Delay	120.2	14.4		13.3		6.5				
Queue Delay	0.0	0.0		0.7		0.2				
Total Delay	120.2	14.4		14.0		6.7				
LOS	F	B		B		A				
Approach Delay		64.7		14.0		6.7				
Approach LOS		E		B		A				
Queue Length 50th (m)	~54.3	10.7		30.9		13.9				
Queue Length 95th (m)	#101.0	36.4		51.8		22.1				
Internal Link Dist (m)		426.1		69.4		59.0				
Turn Bay Length (m)	40.0									
Base Capacity (vph)	234	476		1623		1583				
Starvation Cap Reductn	0	0		519		357				
Spillback Cap Reductn	0	0		0		0				
Storage Cap Reductn	0	0		0		0				
Reduced v/c Ratio	1.07	0.58		0.68		0.52				

Intersection Summary  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 39 (39%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Total 2025AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.07  
 Intersection Signal Delay: 25.6 Intersection LOS: C  
 Intersection Capacity Utilization 63.3% ICU Level of Service B  
 Analysis Period (min) 15  
 ~ 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.



Lanes, Volumes, Timings  
3: Main & Evelyn

Future Total 2025AM Peak Hour  
15 Oblates

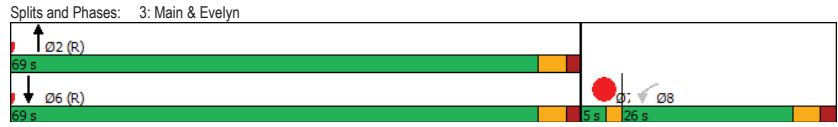
Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations	↕	↑	↕	
Traffic Volume (vph)	44	692	720	
Future Volume (vph)	44	692	720	
Lane Group Flow (vph)	92	692	720	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum Split (s)	25.4	27.1	15.1	5.0
Total Split (s)	26.0	69.0	69.0	5.0
Total Split (%)	26.0%	69.0%	69.0%	5%
Maximum Green (s)	20.6	63.9	63.9	3.0
Yellow Time (s)	3.3	3.3	3.3	2.0
All-Red Time (s)	2.1	1.8	1.8	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	5.4	5.1	5.1	
Lead/Lag	Lag			Lead
Lead-Lag Optimize?	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max
Walk Time (s)	10.0	17.0		3.0
Flash Dont Walk (s)	10.0	5.0		0.0
Pedestrian Calls (#/hr)	24	70		24
Act Effct Green (s)	20.6	63.9	63.9	
Actuated g/C Ratio	0.21	0.64	0.64	
v/c Ratio	0.27	0.63	0.34	
Control Delay	20.1	14.1	12.0	
Queue Delay	0.0	1.3	0.9	
Total Delay	20.1	15.3	12.9	
LOS	C	B	B	
Approach Delay	20.1	15.3	12.9	
Approach LOS	C	B	B	
Queue Length 50th (m)	7.0	73.4	35.0	
Queue Length 95th (m)	20.3	108.3	m42.6	
Internal Link Dist (m)	452.4	86.0	69.4	
Turn Bay Length (m)				
Base Capacity (vph)	343	1104	2097	
Starvation Cap Reductn	0	215	1034	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.27	0.78	0.68	

**Intersection Summary**  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 59 (59%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
3: Main & Evelyn

Future Total 2025AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.63  
 Intersection Signal Delay: 14.5  
 Intersection LOS: B  
 Intersection Capacity Utilization 63.9%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats

Future Total 2025AM Peak Hour  
15 Oblates

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø2	Ø3	Ø6	Ø7
Lane Configurations		↔	↔	↔	↔	↔	↔	↔				
Traffic Volume (vph)	11	1	39	0	29	672	25	725				
Future Volume (vph)	11	1	39	0	29	672	25	725				
Lane Group Flow (vph)	0	29	39	46	29	692	25	736				
Turn Type	Perm	NA	Perm	NA	custom	NA	custom	NA				
Protected Phases		4		8	5	2.9	1	6.13	2	3	6	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	5	2.9	1	6.13				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0		5.0		10.0	1.0	10.0	1.0
Minimum Split (s)	19.3	19.3	19.3	19.3	10.0		10.0		33.0	5.0	33.0	5.0
Total Split (s)	22.0	22.0	22.0	22.0	16.0		16.0		42.0	5.0	42.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	17.8%		17.8%		47%	6%	47%	6%
Maximum Green (s)	16.7	16.7	16.7	16.7	11.0		11.0		37.0	3.0	37.0	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3		3.3	2.0	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.7		1.7		1.7	0.0	1.7	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0					
Total Lost Time (s)		5.3	5.3	5.3	5.0		5.0					
Lead/Lag	Lag	Lag	Lag	Lag	Lead		Lead			Lead		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	None		None		C-Max	Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0					20.0	3.0	20.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0					8.0	0.0	8.0	0.0
Pedestrian Calls (#/hr)	12	12	2	2					45	12	36	2
Act Effct Green (s)		16.7	16.7	16.7	54.0	48.4	54.0	48.3				
Actuated g/C Ratio		0.19	0.19	0.19	0.60	0.54	0.60	0.54				
v/c Ratio		0.11	0.25	0.09	0.09	0.76	0.07	0.79				
Control Delay		19.7	36.2	0.3	3.8	12.5	6.8	27.0				
Queue Delay		0.0	0.0	0.0	0.0	0.3	0.0	0.0				
Total Delay		19.7	36.2	0.3	3.8	12.8	6.8	27.0				
LOS		B	D	A	A	B	A	C				
Approach Delay		19.7		16.8		12.4		26.3				
Approach LOS		B		B		B		C				
Queue Length 50th (m)		1.7	5.8	0.0	0.6	15.0	1.4	84.1				
Queue Length 95th (m)		8.9	15.0	0.0	m1.3	#169.1	4.0	#190.8				
Internal Link Dist (m)		109.1		138.0		118.6		47.0				
Turn Bay Length (m)			15.0		15.0		30.0					
Base Capacity (vph)		262	156	531	391	916	425	926				
Starvation Cap Reductn		0	0	0	0	25	0	0				
Spillback Cap Reductn		0	0	0	0	0	0	0				
Storage Cap Reductn		0	0	0	0	0	0	0				
Reduced v/c Ratio		0.11	0.25	0.09	0.07	0.78	0.06	0.79				

**Intersection Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 57 (63%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 80



Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats

Future Total 2025AM Peak Hour  
15 Oblates

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)	3.0	3.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	45	36
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
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		

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats

Future Total 2025AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 19.4 Intersection LOS: B  
 Intersection Capacity Utilization 61.3% ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings  
6: Main & Hazel

Future Total 2025AM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3
Lane Configurations		↔		↔	↔	↔	↔	↔	↔			
Traffic Volume (vph)	32	3	17	2	28	9	665	62	707			
Future Volume (vph)	32	3	17	2	28	9	665	62	707			
Lane Group Flow (vph)	0	44	0	19	28	9	692	62	728			
Turn Type	Perm	NA	Perm	NA	Perm	custom	NA	custom	NA			
Protected Phases		4		8		13	12	9	56	1	2	3
Permitted Phases	4		8		8	2		6				
Detector Phase	4	4	8	8	8	13	12	9	56			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0		5.0		1.0	10.0	1.0
Minimum Split (s)	21.2	21.2	21.2	21.2	21.2	10.8		10.8		5.0	34.8	3.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	15.0		15.0		5.0	43.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	24.4%	16.7%		16.7%		6%	48%	6%
Maximum Green (s)	15.8	15.8	15.8	15.8	15.8	9.2		9.2		3.0	37.2	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3		3.3		2.0	3.3	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.5		2.5		0.0	2.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0				
Total Lost Time (s)		6.2		6.2	6.2	5.8		5.8				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes		Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	None		None		Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0					3.0	18.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0					0.0	10.0	
Pedestrian Calls (#/hr)	29	29	14	14	14					35	35	
Act Effct Green (s)		15.8		15.8	15.8	47.3	50.5	55.5	58.6			
Actuated g/C Ratio		0.18		0.18	0.18	0.53	0.56	0.62	0.65			
v/c Ratio		0.20		0.10	0.09	0.03	0.73	0.23	0.66			
Control Delay		29.2		32.8	0.5	7.2	21.7	11.4	14.2			
Queue Delay		0.0		0.0	0.0	0.0	0.4	0.0	0.1			
Total Delay		29.2		32.8	0.5	7.2	22.1	11.4	14.3			
LOS		C		C	A	A	C	B	B			
Approach Delay		29.3		13.6			22.0		14.1			
Approach LOS		C		B			C		B			
Queue Length 50th (m)		5.2		2.8	0.0	0.5	88.1	3.0	35.1			
Queue Length 95th (m)		14.5		8.8	0.0	2.1	140.7	m8.3	95.6			
Internal Link Dist (m)		237.6		98.5			241.0		118.6			
Turn Bay Length (m)				30.0	20.0		15.0					
Base Capacity (vph)		221		190	319	361	947	299	1111			
Starvation Cap Reductn		0		0	0	0	0	0	36			
Spillback Cap Reductn		0		0	4	0	45	0	0			
Storage Cap Reductn		0		0	0	0	0	0	0			
Reduced v/c Ratio		0.20		0.10	0.09	0.02	0.77	0.21	0.68			

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 46 (51%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 75

Lanes, Volumes, Timings  
6: Main & Hazel

Future Total 2025AM Peak Hour  
15 Oblates

Lane Group	Ø5	Ø6	Ø7
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	5	6	7
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	10.0	1.0
Minimum Split (s)	5.0	34.8	3.0
Total Split (s)	5.0	43.0	5.0
Total Split (%)	6%	48%	6%
Maximum Green (s)	3.0	37.2	3.0
Yellow Time (s)	2.0	3.3	2.0
All-Red Time (s)	0.0	2.5	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max
Walk Time (s)	3.0	18.0	
Flash Dont Walk (s)	0.0	10.0	
Pedestrian Calls (#/hr)	46	46	
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
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			

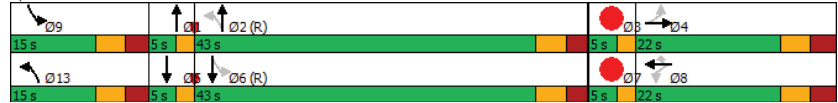
Intersection Summary

Lanes, Volumes, Timings  
6: Main & Hazel

Future Total 2025AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 18.0	Intersection LOS: B
Intersection Capacity Utilization 77.5%	ICU Level of Service D
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 6: Main & Hazel



Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Total 2025PM Peak Hour  
15 Oblates

Lane Group	EBT	EBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3	Ø5	Ø9	Ø10
Lane Configurations	↔	↔		↔↔		↔↔						
Traffic Volume (vph)	70	278	263	477	8	468						
Future Volume (vph)	70	278	263	477	8	468						
Lane Group Flow (vph)	360	278	0	753	0	664						
Turn Type	NA	pm+ov	custom	NA	custom	NA						
Protected Phases	4	13	13	1 2 9 10		5 6	1	2	3	5	9	10
Permitted Phases		4	10 2		6							
Detector Phase	4	13	13	1 2 9 10	6	5 6						
Switch Phase												
Minimum Initial (s)	10.0	5.0	5.0		10.0		1.0	10.0	1.0	1.0	1.0	5.0
Minimum Split (s)	22.3	11.3	11.3		17.3		5.0	17.3	3.0	5.0	5.0	15.0
Total Split (s)	24.0	20.0	20.0		54.0		5.0	54.0	5.0	5.0	5.0	15.0
Total Split (%)	20.0%	16.7%	16.7%		45.0%		4%	45%	4%	4%	4%	13%
Maximum Green (s)	17.7	13.7	13.7		47.7		3.0	47.7	3.0	3.0	3.0	8.7
Yellow Time (s)	3.3	3.3	3.3		3.3		2.0	3.3	2.0	2.0	2.0	3.3
All-Red Time (s)	3.0	3.0	3.0		3.0		0.0	3.0	0.0	0.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0										
Total Lost Time (s)	6.3	6.3										
Lead/Lag					Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max		C-Max		Max	C-Max	Max	Max	None	Max
Walk Time (s)	7.0				2.0		3.0	2.0		3.0	3.0	2.0
Flash Dont Walk (s)	9.0				9.0		0.0	9.0		0.0	0.0	6.7
Pedestrian Calls (#/hr)	29				25		55	55		25	55	55
Act Effct Green (s)	27.3	41.0		75.0		57.0						
Actuated g/C Ratio	0.23	0.34		0.62		0.48						
v/c Ratio	0.99	0.43		0.56		0.52						
Control Delay	91.9	5.5		11.9		21.3						
Queue Delay	0.0	0.0		0.8		0.0						
Total Delay	91.9	5.5		12.7		21.3						
LOS	F	A		B		C						
Approach Delay	54.3			12.7		21.3						
Approach LOS	D			B		C						
Queue Length 50th (m)	82.7	0.0		40.3		50.1						
Queue Length 95th (m)	#176.5	18.7		51.3		67.1						
Internal Link Dist (m)	198.7			59.0		262.1						
Turn Bay Length (m)												
Base Capacity (vph)	363	652		1334		1273						
Starvation Cap Reductn	0	0		282		0						
Spillback Cap Reductn	0	0		0		0						
Storage Cap Reductn	0	0		0		0						
Reduced v/c Ratio	0.99	0.43		0.72		0.52						

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 26 (22%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle: 90

Lanes, Volumes, Timings  
1: Main & Hawthorne

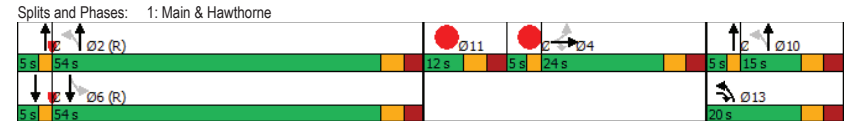
Future Total 2025PM Peak Hour  
15 Oblates

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	12.0
Total Split (s)	12.0
Total Split (%)	10%
Maximum Green (s)	5.7
Yellow Time (s)	3.3
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.7
Flash Dont Walk (s)	0.0
Pedestrian Calls (#/hr)	2
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
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	

Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Total 2025PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.99  
 Intersection Signal Delay: 28.4 Intersection LOS: C  
 Intersection Capacity Utilization 82.8% ICU Level of Service E  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Total 2025PM Peak Hour  
15 Oblates

Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations	↔	↔		↕	↕	↕				
Traffic Volume (vph)	200	13	8	596	4	693				
Future Volume (vph)	200	13	8	596	4	693				
Lane Group Flow (vph)	200	151	0	703	0	724				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted Phases	8		2		6					
Detector Phase	8	7 8	2	1 2	6	5 6				
Switch Phase										
Minimum Initial (s)	10.0		10.0		10.0		1.0	1.0	1.0	5.0
Minimum Split (s)	24.0		18.2		18.2		5.0	5.0	5.0	11.0
Total Split (s)	24.0		55.0		55.0		5.0	5.0	5.0	11.0
Total Split (%)	24.0%		55.0%		55.0%		5%	5%	5%	11%
Maximum Green (s)	18.0		48.8		48.8		3.0	3.0	3.0	5.0
Yellow Time (s)	3.3		3.3		3.3		2.0	2.0	2.0	3.3
All-Red Time (s)	2.7		2.9		2.9		0.0	0.0	0.0	2.7
Lost Time Adjust (s)	0.0									
Total Lost Time (s)	6.0									
Lead/Lag			Lag		Lag		Lead	Lead	Lag	Lead
Lead-Lag Optimize?			Yes		Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		C-Max		C-Max		Max	Max	Max	Max
Walk Time (s)	2.0		2.0		2.0		3.0	3.0	3.0	5.0
Flash Dont Walk (s)	9.0		10.0		10.0		0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	17		48		35		48	35	17	5
Act Effct Green (s)	18.0	27.0		58.0		58.0				
Actuated g/C Ratio	0.18	0.27		0.58		0.58				
v/c Ratio	0.73	0.36		0.43		0.41				
Control Delay	55.9	9.0		12.2		12.3				
Queue Delay	0.0	0.0		1.5		3.7				
Total Delay	55.9	9.0		13.8		16.0				
LOS	E	A		B		B				
Approach Delay		35.7		13.8		16.0				
Approach LOS		D		B		B				
Queue Length 50th (m)	37.0	1.9		35.7		37.5				
Queue Length 95th (m)	#68.7	16.9		48.5		49.9				
Internal Link Dist (m)		426.1		69.4		59.0				
Turn Bay Length (m)	40.0									
Base Capacity (vph)	273	419		1623		1778				
Starvation Cap Reductn	0	0		696		941				
Spillback Cap Reductn	0	0		0		0				
Storage Cap Reductn	0	0		0		0				
Reduced v/c Ratio	0.73	0.36		0.76		0.86				

Intersection Summary

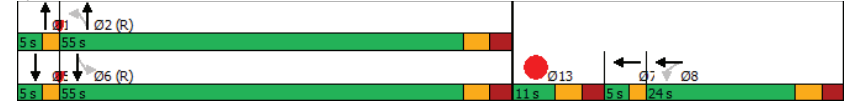
Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 35 (35%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Total 2025PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 19.0  
 Intersection LOS: B  
 Intersection Capacity Utilization 47.4%  
 ICU Level of Service A  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Main & Graham/Lees



Lanes, Volumes, Timings  
3: Main & Evelyn

Future Total 2025PM Peak Hour  
15 Oblates

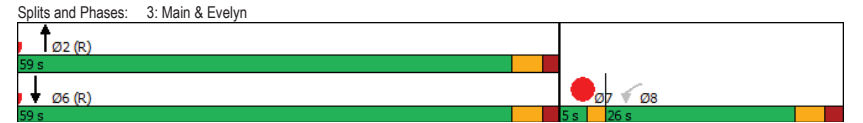
Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations	↘	↑	↗	
Traffic Volume (vph)	25	661	881	
Future Volume (vph)	25	661	881	
Lane Group Flow (vph)	32	661	881	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum Split (s)	25.4	27.1	15.1	5.0
Total Split (s)	26.0	59.0	59.0	5.0
Total Split (%)	28.9%	65.6%	65.6%	6%
Maximum Green (s)	20.6	53.9	53.9	3.0
Yellow Time (s)	3.3	3.3	3.3	2.0
All-Red Time (s)	2.1	1.8	1.8	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	5.4	5.1	5.1	
Lead/Lag	Lag			Lead
Lead-Lag Optimize?	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max
Walk Time (s)	10.0	17.0		3.0
Flash Dont Walk (s)	10.0	5.0		0.0
Pedestrian Calls (#/hr)	16	57		16
Act Effct Green (s)	20.6	53.9	53.9	
Actuated g/C Ratio	0.23	0.60	0.60	
v/c Ratio	0.09	0.64	0.45	
Control Delay	23.7	9.2	10.8	
Queue Delay	0.0	0.1	1.9	
Total Delay	23.7	9.3	12.7	
LOS	C	A	B	
Approach Delay	23.7	9.3	12.7	
Approach LOS	C	A	B	
Queue Length 50th (m)	3.4	26.8	40.2	
Queue Length 95th (m)	10.5	37.1	53.1	
Internal Link Dist (m)	452.4	86.0	69.4	
Turn Bay Length (m)				
Base Capacity (vph)	369	1034	1966	
Starvation Cap Reductn	0	16	882	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.09	0.65	0.81	

**Intersection Summary**  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 54 (60%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
3: Main & Evelyn

Future Total 2025PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.64  
 Intersection Signal Delay: 11.5  
 Intersection LOS: B  
 Intersection Capacity Utilization 62.1%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblates

Future Total 2025PM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø2	Ø3	Ø6	Ø7
Lane Configurations		↔	↔	↔	↔	↔	↔	↔				
Traffic Volume (vph)	4	0	44	0	1	617	64	851				
Future Volume (vph)	4	0	44	0	1	617	64	851				
Lane Group Flow (vph)	0	15	44	54	1	667	64	859				
Turn Type	Perm	NA	Perm	NA	custom	NA	custom	NA				
Protected Phases		4		8	5	2.9	1	6.13	2	3	6	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	5	2.9	1	6.13				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0		5.0		10.0	1.0	10.0	1.0
Minimum Split (s)	19.3	19.3	19.3	19.3	10.0		10.0		33.0	3.0	33.0	3.0
Total Split (s)	22.0	22.0	22.0	22.0	15.0		15.0		43.0	5.0	43.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	16.7%		16.7%		48%	6%	48%	6%
Maximum Green (s)	16.7	16.7	16.7	16.7	10.0		10.0		38.0	3.0	38.0	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3		3.3	2.0	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.7		1.7		1.7	0.0	1.7	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0					
Total Lost Time (s)		5.3	5.3	5.3	5.0		5.0					
Lead/Lag	Lag	Lag	Lag	Lag	Lead		Lead		Lead		Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes		Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	None		None		C-Max	Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0					20.0		20.0	
Flash Dont Walk (s)	12.0	12.0	12.0	12.0					8.0		8.0	
Pedestrian Calls (#/hr)	11	11	25	25					40		30	
Act Effct Green (s)		16.7	16.7	16.7	48.8	43.3	56.5	50.9				
Actuated g/C Ratio		0.19	0.19	0.19	0.54	0.48	0.63	0.57				
v/c Ratio		0.04	0.25	0.10	0.00	0.81	0.19	0.88				
Control Delay		0.2	35.5	0.4	10.0	24.5	6.6	27.6				
Queue Delay		0.0	0.0	0.0	0.0	0.1	0.0	2.6				
Total Delay		0.2	35.5	0.4	10.0	24.6	6.6	30.1				
LOS		A	D	A	A	C	A	C				
Approach Delay		0.2		16.1		24.6		28.5				
Approach LOS		A		B		C		C				
Queue Length 50th (m)		0.0	6.6	0.0	0.1	41.9	3.2	54.0				
Queue Length 95th (m)		0.0	16.2	0.0	m0.1	#162.9	6.6	#235.7				
Internal Link Dist (m)		109.1		138.0		118.6		47.0				
Turn Bay Length (m)			15.0		15.0		30.0					
Base Capacity (vph)		367	179	547	319	821	387	975				
Starvation Cap Reductn		0	0	0	0	7	0	0				
Spillback Cap Reductn		4	0	0	0	0	0	51				
Storage Cap Reductn		0	0	0	0	0	0	0				
Reduced v/c Ratio		0.04	0.25	0.10	0.00	0.82	0.17	0.93				
<b>Intersection Summary</b>												
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 62 (69%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 90												

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblates

Future Total 2025PM Peak Hour  
15 Oblates

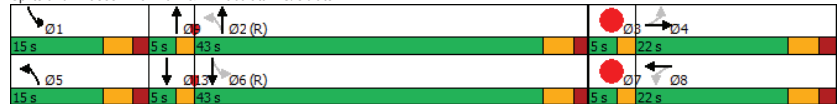
Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)	3.0	3.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	40	30
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
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		
<b>Intersection Summary</b>		

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblates

Future Total 2025PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 26.0 Intersection LOS: C  
 Intersection Capacity Utilization 76.4% ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Main & Immaculata HS/Oblates



Lanes, Volumes, Timings  
6: Main & Hazel

Future Total 2025PM Peak Hour  
15 Oblates

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3
Lane Group												
Lane Configurations		↔		↔	↔	↔	↔	↔	↔			
Traffic Volume (vph)	18	4	48	5	77	10	571	42	824			
Future Volume (vph)	18	4	48	5	77	10	571	42	824			
Lane Group Flow (vph)	0	29	0	53	77	10	606	42	858			
Turn Type	Perm	NA	Perm	NA	Perm	custom	NA	custom	NA			
Protected Phases		4		8		13	12	9	5 6	1	2	3
Permitted Phases	4		8		8	2		6				
Detector Phase	4	4	8	8	8	13	12	9	5 6			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0		5.0		1.0	10.0	1.0
Minimum Split (s)	21.2	21.2	21.2	21.2	21.2	10.8		10.8		5.0	34.8	3.0
Total Split (s)	21.2	21.2	21.2	21.2	21.2	15.0		15.0		5.0	44.0	4.8
Total Split (%)	23.6%	23.6%	23.6%	23.6%	23.6%	16.7%		16.7%		6%	49%	5%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0	9.2		9.2		3.0	38.2	2.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3		3.3		2.0	3.3	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.5		2.5		0.0	2.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0				
Total Lost Time (s)		6.2		6.2	6.2	5.8		5.8				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes		Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	None		None		Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0					3.0	18.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0					0.0	10.0	
Pedestrian Calls (#/hr)	20	20	14	14	14					35	35	
Act Effct Green (s)		15.0		15.0	15.0	51.0	54.3	56.4	59.6			
Actuated g/C Ratio		0.17		0.17	0.17	0.57	0.60	0.63	0.66			
v/c Ratio		0.13		0.27	0.23	0.04	0.60	0.13	0.76			
Control Delay		27.9		37.1	1.5	7.0	15.7	4.0	7.4			
Queue Delay		0.0		0.0	0.0	0.0	0.1	0.0	0.2			
Total Delay		27.9		37.1	1.5	7.0	15.8	4.0	7.5			
LOS		C		D	A	A	B	A	A			
Approach Delay		27.9		16.0			15.7		7.4			
Approach LOS		C		B			B		A			
Queue Length 50th (m)		3.3		8.1	0.0	0.6	68.0	1.2	11.1			
Queue Length 95th (m)		10.8		18.8	0.0	2.2	108.3	m1.5 m#137.9				
Internal Link Dist (m)		237.6		98.5			241.0		118.6			
Turn Bay Length (m)					30.0	20.0		15.0				
Base Capacity (vph)		224		194	342	290	1009	354	1124			
Starvation Cap Reductn		0		0	0	0	0	0	21			
Spillback Cap Reductn		0		0	3	0	41	0	0			
Storage Cap Reductn		0		0	0	0	0	0	0			
Reduced v/c Ratio		0.13		0.27	0.23	0.03	0.63	0.12	0.78			

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 70 (78%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 80



Lanes, Volumes, Timings  
6: Main & Hazel

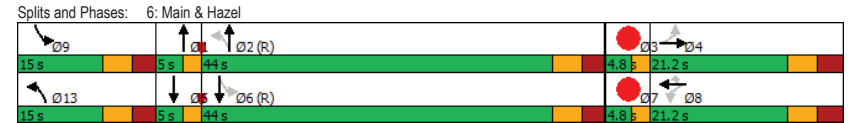
Future Total 2025PM Peak Hour  
15 Oblates

Lane Group	Ø5	Ø6	Ø7
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	5	6	7
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	10.0	1.0
Minimum Split (s)	5.0	34.8	3.0
Total Split (s)	5.0	44.0	4.8
Total Split (%)	6%	49%	5%
Maximum Green (s)	3.0	38.2	2.8
Yellow Time (s)	2.0	3.3	2.0
All-Red Time (s)	0.0	2.5	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max
Walk Time (s)	3.0	18.0	
Flash Dont Walk (s)	0.0	10.0	
Pedestrian Calls (#/hr)	36	36	
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
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			

Lanes, Volumes, Timings  
6: Main & Hazel

Future Total 2025PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.76  
 Intersection Signal Delay: 11.5 Intersection LOS: B  
 Intersection Capacity Utilization 72.8% ICU Level of Service C  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



# Appendix K

Synchro Intersection Worksheets – 2030 Future Total Conditions

Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Total 2030AM Peak Hour  
15 Oblates

Lane Group	EBT	EBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3	Ø5	Ø9	Ø10
Lane Configurations	↔	↔		↔↔		↔↔						
Traffic Volume (vph)	12	244	296	539	5	405						
Future Volume (vph)	12	244	296	539	5	405						
Lane Group Flow (vph)	323	244	0	841	0	524						
Turn Type	NA	pm+ov	custom	NA	custom	NA						
Protected Phases	4	13	13	1 2 9 10		5 6	1	2	3	5	9	10
Permitted Phases		4	10 2		6							
Detector Phase	4	13	13	1 2 9 10	6	5 6						
Switch Phase												
Minimum Initial (s)	10.0	5.0	5.0		10.0		1.0	10.0	1.0	1.0	1.0	5.0
Minimum Split (s)	22.3	11.3	11.3		17.3		5.0	17.3	3.0	5.0	5.0	17.0
Total Split (s)	22.3	22.0	22.0		34.0		5.0	34.0	4.7	5.0	5.0	17.0
Total Split (%)	22.3%	22.0%	22.0%		34.0%		5%	34%	5%	5%	5%	17%
Maximum Green (s)	16.0	15.7	15.7		27.7		3.0	27.7	2.7	3.0	3.0	10.7
Yellow Time (s)	3.3	3.3	3.3		3.3		2.0	3.3	2.0	2.0	2.0	3.3
All-Red Time (s)	3.0	3.0	3.0		3.0		0.0	3.0	0.0	0.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0										
Total Lost Time (s)	6.3	6.3										
Lead/Lag					Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max		C-Max		Max	C-Max	Max	Max	Max	Max
Walk Time (s)	7.0				2.0		3.0	2.0		3.0	3.0	2.0
Flash Dont Walk (s)	9.0				9.0		0.0	9.0		0.0	0.0	8.7
Pedestrian Calls (#/hr)	33				25		58	58		25	58	58
Act Effct Green (s)	25.6	41.3		57.0		37.0						
Actuated g/C Ratio	0.26	0.41		0.57		0.37						
v/c Ratio	0.81	0.33		0.64		0.50						
Control Delay	53.5	3.9		10.0		24.4						
Queue Delay	0.0	0.0		0.1		0.0						
Total Delay	53.5	3.9		10.1		24.4						
LOS	D	A		B		C						
Approach Delay	32.2			10.1		24.4						
Approach LOS	C			B		C						
Queue Length 50th (m)	56.8	0.0		30.3		37.5						
Queue Length 95th (m)	#131.8	14.6		35.9		53.0						
Internal Link Dist (m)	198.7			59.0		262.1						
Turn Bay Length (m)												
Base Capacity (vph)	399	730		1317		1039						
Starvation Cap Reductn	0	0		44		0						
Spillback Cap Reductn	0	0		0		0						
Storage Cap Reductn	0	0		0		0						
Reduced v/c Ratio	0.81	0.33		0.66		0.50						

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 60 (60%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 85

Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Total 2030AM Peak Hour  
15 Oblates

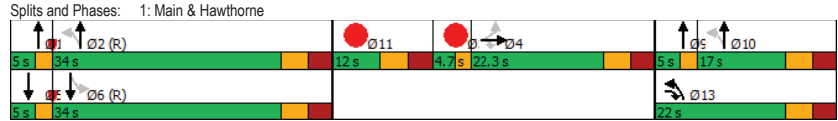
Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	12.0
Total Split (s)	12.0
Total Split (%)	12%
Maximum Green (s)	5.7
Yellow Time (s)	3.3
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.7
Flash Dont Walk (s)	0.0
Pedestrian Calls (#/hr)	4
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
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

Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Total 2030AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 20.5 Intersection LOS: C  
 Intersection Capacity Utilization 78.8% ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Total 2030AM Peak Hour  
15 Oblates

Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations	↔	↔		↔↔		↔↔				
Traffic Volume (vph)	331	53	7	669	24	536				
Future Volume (vph)	331	53	7	669	24	536				
Lane Group Flow (vph)	331	351	0	747	0	640				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted Phases	8		2		6					
Detector Phase	8	7 8	2	1 2	6	5 6				
Switch Phase										
Minimum Initial (s)	10.0		10.0		10.0		1.0	1.0	1.0	5.0
Minimum Split (s)	24.0		18.2		18.2		5.0	5.0	5.0	11.0
Total Split (s)	24.0		55.0		55.0		5.0	5.0	5.0	11.0
Total Split (%)	24.0%		55.0%		55.0%		5%	5%	5%	11%
Maximum Green (s)	18.0		48.8		48.8		3.0	3.0	3.0	5.0
Yellow Time (s)	3.3		3.3		3.3		2.0	2.0	2.0	3.3
All-Red Time (s)	2.7		2.9		2.9		0.0	0.0	0.0	2.7
Lost Time Adjust (s)	0.0									
Total Lost Time (s)	6.0									
Lead/Lag			Lag		Lag		Lead	Lead	Lag	Lead
Lead-Lag Optimize?			Yes		Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		C-Max		C-Max		Max	Max	Max	Max
Walk Time (s)	2.0		2.0		2.0		3.0	3.0	3.0	5.0
Flash Dont Walk (s)	9.0		10.0		10.0		0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	62		137		42		137	42	62	9
Act Effct Green (s)	18.0	27.0		58.0		58.0				
Actuated g/C Ratio	0.18	0.27		0.58		0.58				
v/c Ratio	1.41	0.75		0.46		0.40				
Control Delay	243.0	24.6		13.3		6.5				
Queue Delay	0.0	0.0		0.7		0.3				
Total Delay	243.0	24.6		14.0		6.8				
LOS	F	C		B		A				
Approach Delay		130.6		14.0		6.8				
Approach LOS		F		B		A				
Queue Length 50th (m)	~86.8	25.4		31.0		14.1				
Queue Length 95th (m)	#139.1	#68.3		52.0		22.4				
Internal Link Dist (m)		426.1		69.4		59.0				
Turn Bay Length (m)	40.0									
Base Capacity (vph)	234	470		1621		1583				
Starvation Cap Reductn	0	0		517		361				
Spillback Cap Reductn	0	0		10		0				
Storage Cap Reductn	0	0		0		0				
Reduced v/c Ratio	1.41	0.75		0.68		0.52				

Intersection Summary  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 39 (39%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Total 2030AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.41  
 Intersection Signal Delay: 50.2 Intersection LOS: D  
 Intersection Capacity Utilization 68.2% ICU Level of Service C  
 Analysis Period (min) 15  
 ~ 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.



Lanes, Volumes, Timings  
3: Main & Evelyn

Future Total 2030AM Peak Hour  
15 Oblates

Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations	↕	↑	↕	
Traffic Volume (vph)	44	692	720	
Future Volume (vph)	44	692	720	
Lane Group Flow (vph)	92	692	720	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum Split (s)	25.4	27.1	15.1	5.0
Total Split (s)	26.0	69.0	69.0	5.0
Total Split (%)	26.0%	69.0%	69.0%	5%
Maximum Green (s)	20.6	63.9	63.9	3.0
Yellow Time (s)	3.3	3.3	3.3	2.0
All-Red Time (s)	2.1	1.8	1.8	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	5.4	5.1	5.1	
Lead/Lag	Lag			Lead
Lead-Lag Optimize?	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max
Walk Time (s)	10.0	17.0		3.0
Flash Dont Walk (s)	10.0	5.0		0.0
Pedestrian Calls (#/hr)	24	70		24
Act Effct Green (s)	20.6	63.9	63.9	
Actuated g/C Ratio	0.21	0.64	0.64	
v/c Ratio	0.27	0.63	0.34	
Control Delay	20.1	14.1	13.6	
Queue Delay	0.0	1.3	1.1	
Total Delay	20.1	15.3	14.7	
LOS	C	B	B	
Approach Delay	20.1	15.3	14.7	
Approach LOS	C	B	B	
Queue Length 50th (m)	7.0	73.4	37.6	
Queue Length 95th (m)	20.3	108.3	m41.1	
Internal Link Dist (m)	452.4	86.0	69.4	
Turn Bay Length (m)				
Base Capacity (vph)	343	1104	2097	
Starvation Cap Reductn	0	215	1072	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.27	0.78	0.70	

**Intersection Summary**  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 59 (59%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
3: Main & Evelyn

Future Total 2030AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.63  
 Intersection Signal Delay: 15.3 Intersection LOS: B  
 Intersection Capacity Utilization 63.9% ICU Level of Service B  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Main & Evelyn



Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats

Future Total 2030AM Peak Hour  
15 Oblates

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø2	Ø3	Ø6	Ø7
Lane Configurations		↔	↔	↔	↔	↔	↔	↔				
Traffic Volume (vph)	11	1	39	0	29	672	25	725				
Future Volume (vph)	11	1	39	0	29	672	25	725				
Lane Group Flow (vph)	0	29	39	46	29	692	25	736				
Turn Type	Perm	NA	Perm	NA	custom	NA	custom	NA				
Protected Phases		4		8	5	2.9	1	6.13	2	3	6	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	5	2.9	1	6.13				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0		5.0		10.0	1.0	10.0	1.0
Minimum Split (s)	19.3	19.3	19.3	19.3	10.0		10.0		33.0	5.0	33.0	5.0
Total Split (s)	22.0	22.0	22.0	22.0	16.0		16.0		42.0	5.0	42.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	17.8%		17.8%		47%	6%	47%	6%
Maximum Green (s)	16.7	16.7	16.7	16.7	11.0		11.0		37.0	3.0	37.0	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3		3.3	2.0	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.7		1.7		1.7	0.0	1.7	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0					
Total Lost Time (s)		5.3	5.3	5.3	5.0		5.0					
Lead/Lag	Lag	Lag	Lag	Lag	Lead		Lead			Lead		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	None		None		C-Max	Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0					20.0	3.0	20.0	3.0
Flash Dont Walk (s)	12.0	12.0	12.0	12.0					8.0	0.0	8.0	0.0
Pedestrian Calls (#/hr)	12	12	2	2					45	12	36	2
Act Effct Green (s)		16.7	16.7	16.7	54.0	48.4	54.0	48.3				
Actuated g/C Ratio		0.19	0.19	0.19	0.60	0.54	0.60	0.54				
v/c Ratio		0.11	0.25	0.09	0.09	0.76	0.07	0.79				
Control Delay		19.7	36.2	0.3	3.8	12.5	6.8	27.0				
Queue Delay		0.0	0.0	0.0	0.0	0.3	0.0	0.0				
Total Delay		19.7	36.2	0.3	3.8	12.8	6.8	27.0				
LOS		B	D	A	A	B	A	C				
Approach Delay		19.7		16.8		12.4		26.3				
Approach LOS		B		B		B		C				
Queue Length 50th (m)		1.7	5.8	0.0	0.6	15.0	1.4	84.1				
Queue Length 95th (m)		8.9	15.0	0.0	m1.3	#169.1	4.0	#190.8				
Internal Link Dist (m)		109.1		138.0		118.6		47.0				
Turn Bay Length (m)			15.0		15.0		30.0					
Base Capacity (vph)		262	156	531	391	916	425	926				
Starvation Cap Reductn		0	0	0	0	25	0	0				
Spillback Cap Reductn		0	0	0	0	0	0	0				
Storage Cap Reductn		0	0	0	0	0	0	0				
Reduced v/c Ratio		0.11	0.25	0.09	0.07	0.78	0.06	0.79				

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 57 (63%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 80

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats

Future Total 2030AM Peak Hour  
15 Oblates

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)	3.0	3.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	45	36
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
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		

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblats

Future Total 2030AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 19.4 Intersection LOS: B  
 Intersection Capacity Utilization 61.3% ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings  
6: Main & Hazel

Future Total 2030AM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3
Lane Configurations		↔		↔	↔	↔	↔	↔	↔			
Traffic Volume (vph)	32	3	17	2	28	9	665	62	707			
Future Volume (vph)	32	3	17	2	28	9	665	62	707			
Lane Group Flow (vph)	0	44	0	19	28	9	692	62	728			
Turn Type	Perm	NA	Perm	NA	Perm	custom	NA	custom	NA			
Protected Phases		4		8		13	12	9	56	1	2	3
Permitted Phases	4		8		8		2		6			
Detector Phase	4	4	8	8	8	13	12	9	56			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0		5.0		1.0	10.0	1.0
Minimum Split (s)	21.2	21.2	21.2	21.2	21.2	10.8		10.8		5.0	34.8	3.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	15.0		15.0		5.0	43.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	24.4%	16.7%		16.7%		6%	48%	6%
Maximum Green (s)	15.8	15.8	15.8	15.8	15.8	9.2		9.2		3.0	37.2	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3		3.3		2.0	3.3	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.5		2.5		0.0	2.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0				
Total Lost Time (s)		6.2		6.2	6.2	5.8		5.8				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes		Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	None		None		Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0					3.0	18.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0					0.0	10.0	
Pedestrian Calls (#/hr)	29	29	14	14	14					35	35	
Act Effct Green (s)		15.8		15.8	15.8	47.3	50.5	55.5	58.6			
Actuated g/C Ratio		0.18		0.18	0.18	0.53	0.56	0.62	0.65			
v/c Ratio		0.20		0.10	0.09	0.03	0.73	0.23	0.66			
Control Delay		29.2		32.8	0.5	7.2	21.7	11.4	14.2			
Queue Delay		0.0		0.0	0.0	0.0	0.4	0.0	0.1			
Total Delay		29.2		32.8	0.5	7.2	22.1	11.4	14.3			
LOS		C		C	A	A	C	B	B			
Approach Delay		29.3		13.6			22.0		14.1			
Approach LOS		C		B			C		B			
Queue Length 50th (m)		5.2		2.8	0.0	0.5	88.1	3.0	35.1			
Queue Length 95th (m)		14.5		8.8	0.0	2.1	140.7	m8.3	95.6			
Internal Link Dist (m)		237.6		98.5			241.0		118.6			
Turn Bay Length (m)				30.0	20.0		15.0					
Base Capacity (vph)		221		190	319	361	947	299	1111			
Starvation Cap Reductn		0		0	0	0	0	0	36			
Spillback Cap Reductn		0		0	4	0	45	0	0			
Storage Cap Reductn		0		0	0	0	0	0	0			
Reduced v/c Ratio		0.20		0.10	0.09	0.02	0.77	0.21	0.68			

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 46 (51%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 75

Lanes, Volumes, Timings  
6: Main & Hazel

Future Total 2030AM Peak Hour  
15 Oblates

Lane Group	Ø5	Ø6	Ø7
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	5	6	7
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	10.0	1.0
Minimum Split (s)	5.0	34.8	3.0
Total Split (s)	5.0	43.0	5.0
Total Split (%)	6%	48%	6%
Maximum Green (s)	3.0	37.2	3.0
Yellow Time (s)	2.0	3.3	2.0
All-Red Time (s)	0.0	2.5	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max
Walk Time (s)	3.0	18.0	
Flash Dont Walk (s)	0.0	10.0	
Pedestrian Calls (#/hr)	46	46	
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
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			

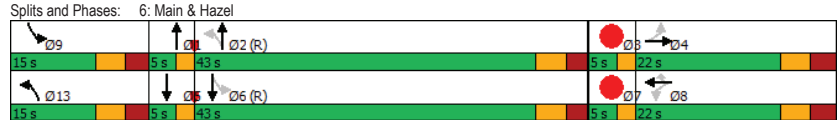
Intersection Summary



Lanes, Volumes, Timings  
6: Main & Hazel

Future Total 2030AM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 18.0 Intersection LOS: B  
 Intersection Capacity Utilization 77.5% ICU Level of Service D  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.



Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Total 2030PM Peak Hour  
15 Oblates

Lane Group	EBT	EBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3	Ø5	Ø9	Ø10
Lane Configurations	↔	↔		↔↔		↔↔						
Traffic Volume (vph)	70	278	272	477	8	468						
Future Volume (vph)	70	278	272	477	8	468						
Lane Group Flow (vph)	360	278	0	762	0	671						
Turn Type	NA	pm+ov	custom	NA	custom	NA						
Protected Phases	4	13	13	1 2 9 10		5 6	1	2	3	5	9	10
Permitted Phases		4	10 2		6							
Detector Phase	4	13	13	1 2 9 10	6	5 6						
Switch Phase												
Minimum Initial (s)	10.0	5.0	5.0		10.0		1.0	10.0	1.0	1.0	1.0	5.0
Minimum Split (s)	22.3	11.3	11.3		17.3		5.0	17.3	3.0	5.0	5.0	15.0
Total Split (s)	24.0	20.0	20.0		54.0		5.0	54.0	5.0	5.0	5.0	15.0
Total Split (%)	20.0%	16.7%	16.7%		45.0%		4%	45%	4%	4%	4%	13%
Maximum Green (s)	17.7	13.7	13.7		47.7		3.0	47.7	3.0	3.0	3.0	8.7
Yellow Time (s)	3.3	3.3	3.3		3.3		2.0	3.3	2.0	2.0	2.0	3.3
All-Red Time (s)	3.0	3.0	3.0		3.0		0.0	3.0	0.0	0.0	0.0	3.0
Lost Time Adjust (s)	0.0	0.0										
Total Lost Time (s)	6.3	6.3										
Lead/Lag					Lag		Lead	Lag	Lag	Lead	Lead	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max		C-Max		Max	C-Max	Max	Max	None	Max
Walk Time (s)	7.0				2.0		3.0	2.0		3.0	3.0	2.0
Flash Dont Walk (s)	9.0				9.0		0.0	9.0		0.0	0.0	6.7
Pedestrian Calls (#/hr)	29				25		55	55		25	55	55
Act Effct Green (s)	27.3	41.0		75.0		57.0						
Actuated g/C Ratio	0.23	0.34		0.62		0.48						
v/c Ratio	0.99	0.43		0.57		0.53						
Control Delay	91.9	5.5		12.0		21.3						
Queue Delay	0.0	0.0		0.8		0.0						
Total Delay	91.9	5.5		12.8		21.3						
LOS	F	A		B		C						
Approach Delay	54.3			12.8		21.3						
Approach LOS	D			B		C						
Queue Length 50th (m)	82.7	0.0		40.8		50.6						
Queue Length 95th (m)	#176.5	18.7		52.1		68.0						
Internal Link Dist (m)	198.7			59.0		262.1						
Turn Bay Length (m)												
Base Capacity (vph)	363	652		1329		1267						
Starvation Cap Reductn	0	0		274		0						
Spillback Cap Reductn	0	0		0		0						
Storage Cap Reductn	0	0		0		0						
Reduced v/c Ratio	0.99	0.43		0.72		0.53						

Intersection Summary  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 26 (22%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 90

Lanes, Volumes, Timings  
1: Main & Hawthorne

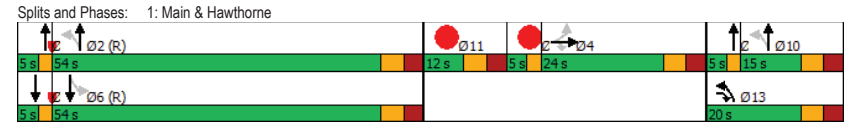
Future Total 2030PM Peak Hour  
15 Oblates

Lane Group	Ø11
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	11
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	12.0
Total Split (s)	12.0
Total Split (%)	10%
Maximum Green (s)	5.7
Yellow Time (s)	3.3
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	5.7
Flash Dont Walk (s)	0.0
Pedestrian Calls (#/hr)	2
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
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	

Lanes, Volumes, Timings  
1: Main & Hawthorne

Future Total 2030PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.99  
 Intersection Signal Delay: 28.3  
 Intersection LOS: C  
 Intersection Capacity Utilization 83.3%  
 ICU Level of Service E  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Total 2030PM Peak Hour  
15 Oblates

Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations	↔	↔		↕↕		↕↕				
Traffic Volume (vph)	202	13	8	596	4	693				
Future Volume (vph)	202	13	8	596	4	693				
Lane Group Flow (vph)	202	152	0	734	0	724				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted Phases	8		2		6					
Detector Phase	8	7 8	2	1 2	6	5 6				
Switch Phase										
Minimum Initial (s)	10.0		10.0		10.0		1.0	1.0	1.0	5.0
Minimum Split (s)	24.0		18.2		18.2		5.0	5.0	5.0	11.0
Total Split (s)	24.0		55.0		55.0		5.0	5.0	5.0	11.0
Total Split (%)	24.0%		55.0%		55.0%		5%	5%	5%	11%
Maximum Green (s)	18.0		48.8		48.8		3.0	3.0	3.0	5.0
Yellow Time (s)	3.3		3.3		3.3		2.0	2.0	2.0	3.3
All-Red Time (s)	2.7		2.9		2.9		0.0	0.0	0.0	2.7
Lost Time Adjust (s)	0.0									
Total Lost Time (s)	6.0									
Lead/Lag			Lag		Lag		Lead	Lead	Lag	Lead
Lead-Lag Optimize?			Yes		Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0		3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max		C-Max		C-Max		Max	Max	Max	Max
Walk Time (s)	2.0		2.0		2.0		3.0	3.0	3.0	5.0
Flash Dont Walk (s)	9.0		10.0		10.0		0.0	0.0	0.0	0.0
Pedestrian Calls (#/hr)	17		48		35		48	35	17	5
Act Effct Green (s)	18.0	27.0		58.0		58.0				
Actuated g/C Ratio	0.18	0.27		0.58		0.58				
v/c Ratio	0.74	0.36		0.46		0.41				
Control Delay	56.5	9.0		12.4		12.3				
Queue Delay	0.0	0.0		1.7		3.7				
Total Delay	56.5	9.0		14.1		16.0				
LOS	E	A		B		B				
Approach Delay		36.1		14.1		16.0				
Approach LOS		D		B		B				
Queue Length 50th (m)	37.4	1.9		37.5		37.5				
Queue Length 95th (m)	#69.5	17.1		51.0		49.9				
Internal Link Dist (m)		426.1		69.4		59.0				
Turn Bay Length (m)	40.0									
Base Capacity (vph)	273	420		1581		1778				
Starvation Cap Reductn	0	0		640		941				
Spillback Cap Reductn	0	0		0		0				
Storage Cap Reductn	0	0		0		0				
Reduced v/c Ratio	0.74	0.36		0.78		0.86				

Intersection Summary

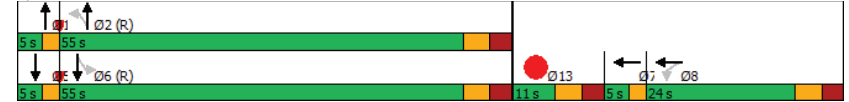
Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 35 (35%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
2: Main & Graham/Lees

Future Total 2030PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.74  
 Intersection Signal Delay: 19.1  
 Intersection LOS: B  
 Intersection Capacity Utilization 48.7%  
 ICU Level of Service A  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Main & Graham/Lees



Lanes, Volumes, Timings  
3: Main & Evelyn

Future Total 2030PM Peak Hour  
15 Oblates

Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations	↘	↑	↗	
Traffic Volume (vph)	25	661	881	
Future Volume (vph)	25	661	881	
Lane Group Flow (vph)	32	661	881	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum Split (s)	25.4	27.1	15.1	5.0
Total Split (s)	26.0	59.0	59.0	5.0
Total Split (%)	28.9%	65.6%	65.6%	6%
Maximum Green (s)	20.6	53.9	53.9	3.0
Yellow Time (s)	3.3	3.3	3.3	2.0
All-Red Time (s)	2.1	1.8	1.8	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	
Total Lost Time (s)	5.4	5.1	5.1	
Lead/Lag	Lag			Lead
Lead-Lag Optimize?	Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0
Recall Mode	Max	C-Max	C-Max	Max
Walk Time (s)	10.0	17.0		3.0
Flash Dont Walk (s)	10.0	5.0		0.0
Pedestrian Calls (#/hr)	16	57		16
Act Effct Green (s)	20.6	53.9	53.9	
Actuated g/C Ratio	0.23	0.60	0.60	
v/c Ratio	0.09	0.64	0.45	
Control Delay	23.7	9.2	10.8	
Queue Delay	0.0	0.1	1.9	
Total Delay	23.7	9.3	12.7	
LOS	C	A	B	
Approach Delay	23.7	9.3	12.7	
Approach LOS	C	A	B	
Queue Length 50th (m)	3.4	26.8	40.2	
Queue Length 95th (m)	10.5	37.1	53.1	
Internal Link Dist (m)	452.4	86.0	69.4	
Turn Bay Length (m)				
Base Capacity (vph)	369	1034	1966	
Starvation Cap Reductn	0	16	882	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.09	0.65	0.81	

Intersection Summary

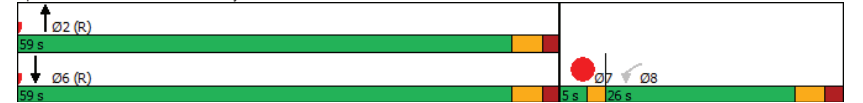
Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 54 (60%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 65

Lanes, Volumes, Timings  
3: Main & Evelyn

Future Total 2030PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.64  
 Intersection Signal Delay: 11.5  
 Intersection LOS: B  
 Intersection Capacity Utilization 62.1%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Main & Evelyn



Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblates

Future Total 2030PM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø2	Ø3	Ø6	Ø7
Lane Configurations		↔	↔	↔	↔	↔	↔	↔				
Traffic Volume (vph)	4	0	44	0	1	617	64	851				
Future Volume (vph)	4	0	44	0	1	617	64	851				
Lane Group Flow (vph)	0	15	44	54	1	667	64	859				
Turn Type	Perm	NA	Perm	NA	custom	NA	custom	NA				
Protected Phases		4		8	5	2.9	1	6.13	2	3	6	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	5	2.9	1	6.13				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0		5.0		10.0	1.0	10.0	1.0
Minimum Split (s)	19.3	19.3	19.3	19.3	10.0		10.0		33.0	3.0	33.0	3.0
Total Split (s)	22.0	22.0	22.0	22.0	15.0		15.0		43.0	5.0	43.0	5.0
Total Split (%)	24.4%	24.4%	24.4%	24.4%	16.7%		16.7%		48%	6%	48%	6%
Maximum Green (s)	16.7	16.7	16.7	16.7	10.0		10.0		38.0	3.0	38.0	3.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		3.3		3.3	2.0	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	1.7		1.7		1.7	0.0	1.7	0.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0					
Total Lost Time (s)		5.3	5.3	5.3	5.0		5.0					
Lead/Lag	Lag	Lag	Lag	Lag	Lead		Lead		Lead		Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes		Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	None		None		C-Max	Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0					20.0		20.0	
Flash Dont Walk (s)	12.0	12.0	12.0	12.0					8.0		8.0	
Pedestrian Calls (#/hr)	11	11	25	25					40		30	
Act Effct Green (s)		16.7	16.7	16.7	48.8	43.3	56.5	50.9				
Actuated g/C Ratio		0.19	0.19	0.19	0.54	0.48	0.63	0.57				
v/c Ratio		0.04	0.25	0.10	0.00	0.81	0.19	0.88				
Control Delay		0.2	35.5	0.4	10.0	24.5	6.6	27.6				
Queue Delay		0.0	0.0	0.0	0.0	0.1	0.0	2.6				
Total Delay		0.2	35.5	0.4	10.0	24.6	6.6	30.1				
LOS		A	D	A	A	C	A	C				
Approach Delay		0.2		16.1		24.6		28.5				
Approach LOS		A		B		C		C				
Queue Length 50th (m)		0.0	6.6	0.0	0.1	41.9	3.2	54.0				
Queue Length 95th (m)		0.0	16.2	0.0	m0.1	#162.9	6.6	#235.7				
Internal Link Dist (m)		109.1		138.0		118.6		47.0				
Turn Bay Length (m)			15.0		15.0		30.0					
Base Capacity (vph)		367	179	547	319	821	387	975				
Starvation Cap Reductn		0	0	0	0	7	0	0				
Spillback Cap Reductn		4	0	0	0	0	0	51				
Storage Cap Reductn		0	0	0	0	0	0	0				
Reduced v/c Ratio		0.04	0.25	0.10	0.00	0.82	0.17	0.93				

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 62 (69%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 90

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblates

Future Total 2030PM Peak Hour  
15 Oblates

Lane Group	Ø9	Ø13
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	13
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Maximum Green (s)	3.0	3.0
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	Max
Walk Time (s)	3.0	3.0
Flash Dont Walk (s)	0.0	0.0
Pedestrian Calls (#/hr)	40	30
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
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

Lanes, Volumes, Timings  
5: Main & Immaculata HS/Oblates

Future Total 2030PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 26.0 Intersection LOS: C  
 Intersection Capacity Utilization 76.4% ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Main & Immaculata HS/Oblates



Lanes, Volumes, Timings  
6: Main & Hazel

Future Total 2030PM Peak Hour  
15 Oblates

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø2	Ø3
Lane Configurations		↔		↔	↔	↔	↔	↔	↔			
Traffic Volume (vph)	18	4	48	5	77	10	571	42	824			
Future Volume (vph)	18	4	48	5	77	10	571	42	824			
Lane Group Flow (vph)	0	29	0	53	77	10	606	42	858			
Turn Type	Perm	NA	Perm	NA	Perm	custom	NA	custom	NA			
Protected Phases		4		8		13	12	9	5 6	1	2	3
Permitted Phases	4		8		8	2		6				
Detector Phase	4	4	8	8	8	13	12	9	5 6			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0		5.0		1.0	10.0	1.0
Minimum Split (s)	21.2	21.2	21.2	21.2	21.2	10.8		10.8		5.0	34.8	3.0
Total Split (s)	21.2	21.2	21.2	21.2	21.2	15.0		15.0		5.0	44.0	4.8
Total Split (%)	23.6%	23.6%	23.6%	23.6%	23.6%	16.7%		16.7%		6%	49%	5%
Maximum Green (s)	15.0	15.0	15.0	15.0	15.0	9.2		9.2		3.0	38.2	2.8
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3		3.3		2.0	3.3	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.5		2.5		0.0	2.5	0.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0		0.0				
Total Lost Time (s)		6.2		6.2	6.2	5.8		5.8				
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes		Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode	Max	Max	Max	Max	Max	None		None		Max	C-Max	Max
Walk Time (s)	2.0	2.0	2.0	2.0	2.0					3.0	18.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	13.0					0.0	10.0	
Pedestrian Calls (#/hr)	20	20	14	14	14					35	35	
Act Effct Green (s)		15.0		15.0	15.0	51.0		54.3		56.4	59.6	
Actuated g/C Ratio		0.17		0.17	0.17	0.57		0.60		0.63	0.66	
v/c Ratio		0.13		0.27	0.23	0.04		0.60		0.13	0.76	
Control Delay		27.9		37.1	1.5	7.0		15.7		4.0	7.4	
Queue Delay		0.0		0.0	0.0	0.0		0.1		0.0	0.2	
Total Delay		27.9		37.1	1.5	7.0		15.8		4.0	7.5	
LOS		C		D	A	A		B		A	A	
Approach Delay		27.9		16.0				15.7		7.4		
Approach LOS		C		B				B		A		
Queue Length 50th (m)		3.3		8.1	0.0	0.6		68.0		1.2	11.1	
Queue Length 95th (m)		10.8		18.8	0.0	2.2		108.3		m1.5 m#137.9		
Internal Link Dist (m)		237.6		98.5				241.0		118.6		
Turn Bay Length (m)					30.0	20.0		15.0				
Base Capacity (vph)		224		194	342	290		1009		354	1124	
Starvation Cap Reductn		0		0	0	0		0		0	21	
Spillback Cap Reductn		0		0	3	0		41		0	0	
Storage Cap Reductn		0		0	0	0		0		0	0	
Reduced v/c Ratio		0.13		0.27	0.23	0.03		0.63		0.12	0.78	

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 70 (78%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 80

Lanes, Volumes, Timings  
6: Main & Hazel

Future Total 2030PM Peak Hour  
15 Oblates

Lane Group	Ø5	Ø6	Ø7
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	5	6	7
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	10.0	1.0
Minimum Split (s)	5.0	34.8	3.0
Total Split (s)	5.0	44.0	4.8
Total Split (%)	6%	49%	5%
Maximum Green (s)	3.0	38.2	2.8
Yellow Time (s)	2.0	3.3	2.0
All-Red Time (s)	0.0	2.5	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag		Lead
Lead-Lag Optimize?	Yes		Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	Max	C-Max	Max
Walk Time (s)	3.0	18.0	
Flash Dont Walk (s)	0.0	10.0	
Pedestrian Calls (#/hr)	36	36	
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
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			

Lanes, Volumes, Timings  
6: Main & Hazel

Future Total 2030PM Peak Hour  
15 Oblates

Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.76  
 Intersection Signal Delay: 11.5  
 Intersection LOS: B  
 Intersection Capacity Utilization 72.8%  
 ICU Level of Service C  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

