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:

CGH TRANSPORTATION

6 Plaza Court
Ottawa, ON K2H 7W1

March 2023

PN: 2021-004

Table of Contents

List of Figures

Table of Tables

List of Appendices

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.

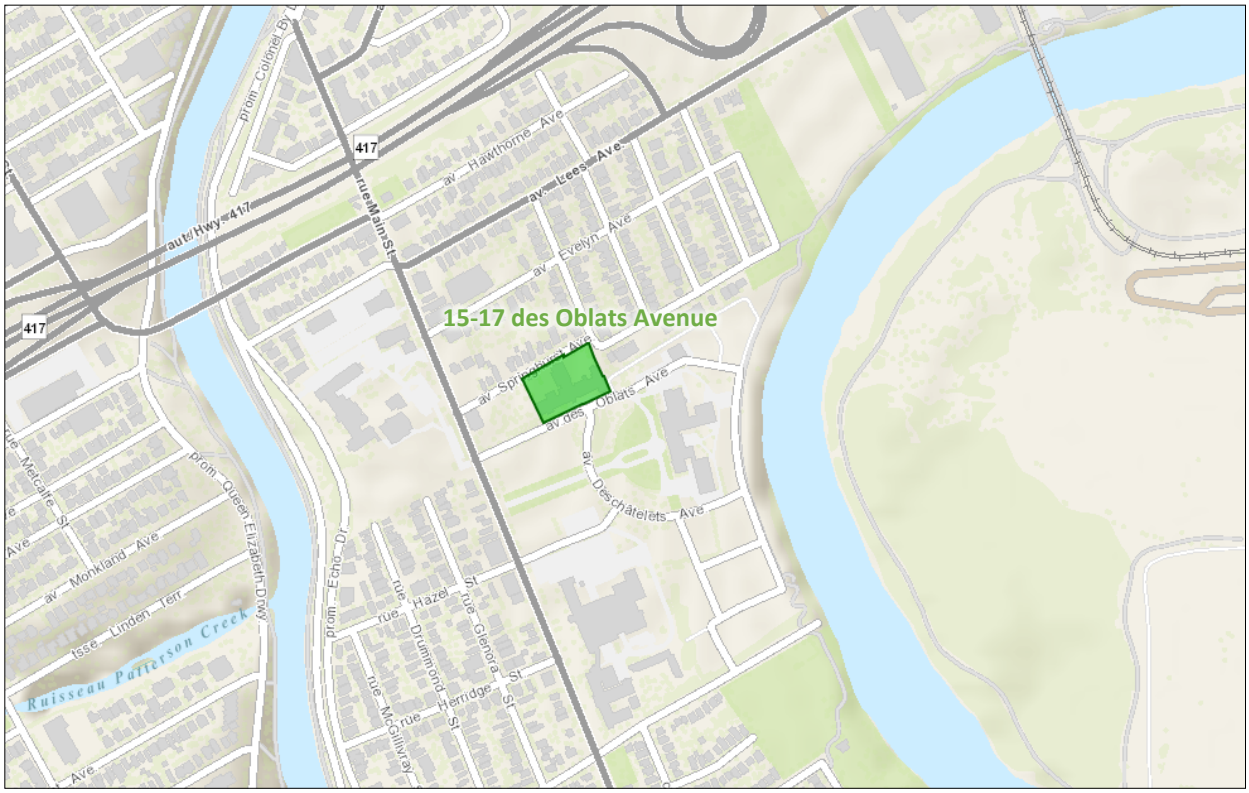
2 Existing and Planned Conditions

2.1 Proposed Development

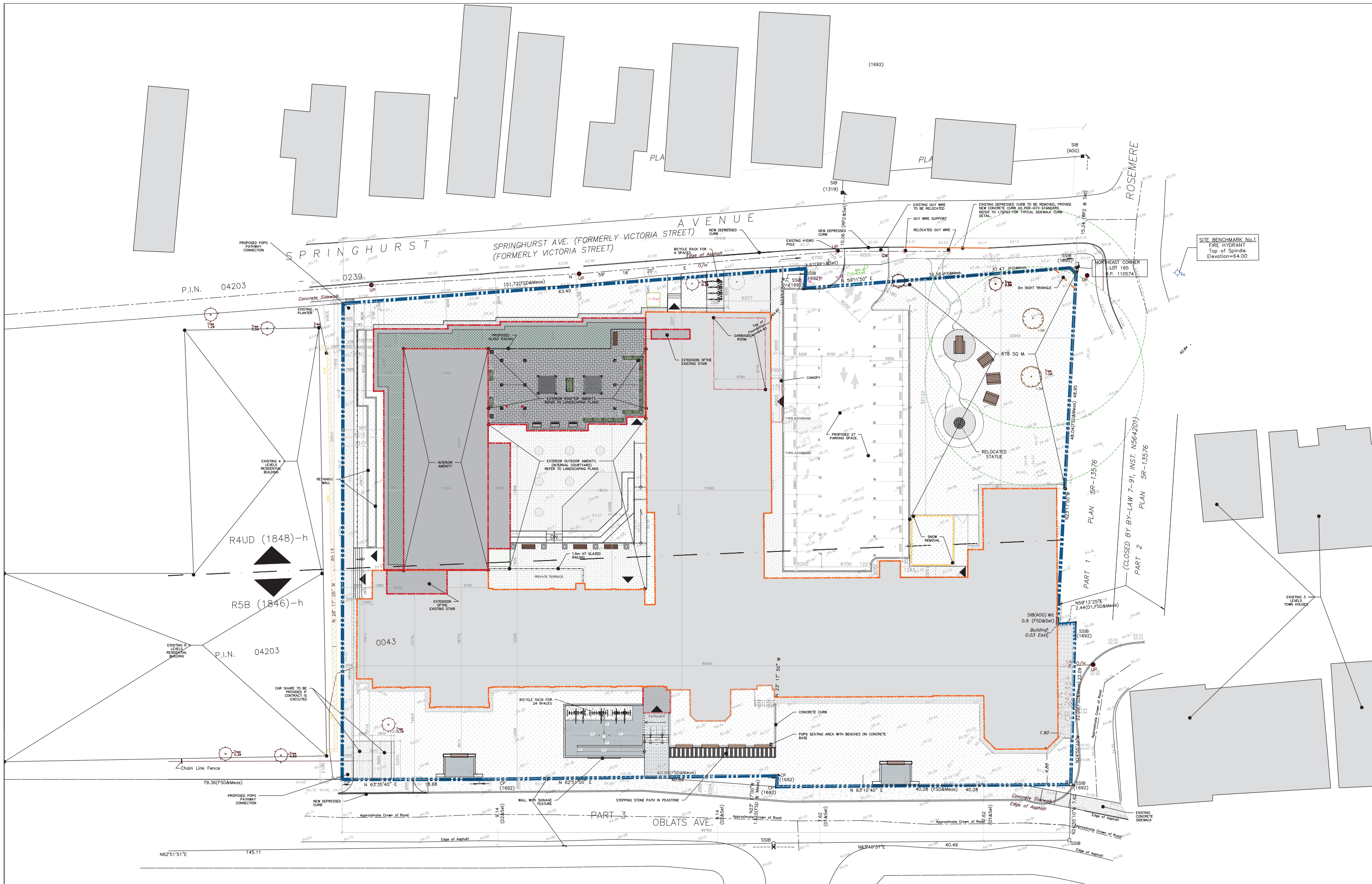
The subject site, zoned as Residential Fourth and Fifth Densities (R4UD, R5B), contains a four-storey T-shaped building, previously the Convent of the Sisters of the Sacred Heart, two surface parking lots each accessing Springhurst Avenue, and perpendicular parking along des Oblats Avenue. The proposed 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

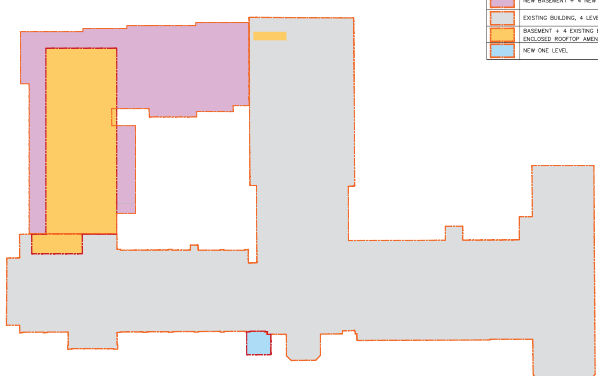


Source: http://maps.ottawa.ca/geoOttawa/ Accessed: February 6, 2023



3 SP01 SITE PLAN 1:200

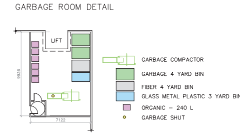
SCALE 1:200 METERS



2 SP01 KEY PLAN N.T.S.

PROPOSED HEIGHT	
NEW BASEMENT + 4 NEW LEVELS	14.5 M
EXISTING BUILDING, 4 LEVELS	14.5 M
BASEMENT + 4 EXISTING BUILDING + ENCLOSED ROOFTOP AMENITY	18.0 M
NEW ONE LEVEL	3.0 M

GARBAGE ROOM DETAIL



1 SP01 ZONING PLAN N.T.S.

LEVEL	TOTAL	STUDIO	STUDIO B.F.	ONE BEDROOM	ONE BEDROOM B.F.	TWO BEDROOM	TWO BEDROOM B.F.	3 BEDROOM	3 BEDROOM B.F.
BASEMENT	20	16	0	1	0	2	0	1	0
FIRST LEVEL	60	46	2	1	0	7	2	1	1
SECOND LEVEL	67	46	2	2	1	11	2	2	1
THIRD LEVEL	66	45	3	2	2	10	2	1	1
FOURTH LEVEL	71	51	4	2	1	10	1	1	1
ROOF	0								
TOTAL	284	204	11	8	4	40	7	6	4
%	100.00%	71.83%	3.87%	2.82%	1.41%	14.08%	2.46%	2.11%	1.41%
TOTAL TWO + THREE BEDROOM UNITS PROVIDED						57	UNITS	20.07%	
BARRIER FREE UNITS PROVIDED		26							

LEVEL	EXISTING G.B.A. SQ M	EXISTING SQ FT	ADDITION SQ M	ADDITION SQ FT	TOTAL SQ M	TOTAL SQ FT
BASEMENT	803	8 647	1 024	11 022	1 827	19 669
FIRST LEVEL	2 322	24 992	882	9 497	3 204	34 489
SECOND LEVEL	2 295	24 704	882	9 497	3 177	34 201
THIRD LEVEL	2 295	24 706	882	9 497	3 178	34 203
FOURTH LEVEL	2 257	24 289	902	9 710	3 159	33 999
TOTAL	9 972	107 338	5 003	53 853	14 975	161 191

LOTS 4, 5 & 6,
PART OF LOT 3,
PART OF BLOCK 'A'
REGISTERED PLAN 243
AND
LOTS 91,165, 166, 167, 168
AND THE REAR PASSAGE
(CLOSED BY BY-LAW 8069, INST.CR215351)
REGISTERED PLAN 110574
AND
PART OF LOT 'H'
CONCESSION D (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF NEPEAN
CITY OF OTTAWA

ALL SURVEY INFORMATION TAKEN FROM TOPOGRAPHIC SURVEY AS PREPARED BY ANNIS, O'SULLIVA, VOLLEBEKK 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 DISTURBED AND THAT IT'S RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION SHOWN THE ABOVE REFERENCED SURVEY.

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

LEGEND:

- EXISTING BUILDING
- NEW BUILDING
- NEW SOD
- PARKLAND 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 STANDARD
- FIRE ROUTE SIGN
- STOP SIGN
- CENTERLINE
- EXISTING TREES TO BE REMOVED
- LIGHT
- TREE GRATE
- BENCHES
- ACCESSIBLE PICNIC TABLE
- PICNIC TABLE

Zoning Mechanism	R5B Provisions Low-Rise Apartment	Proposed Development	Compliance
Minimum Lot Width	18 m	100 m	Yes
Minimum Lot Area	540 m²	6,776 m²	Yes
Maximum Building Height	14.5 m	14.5 m	Yes
Minimum Front Yard Setback	3 m	Oblats: 4.88 m Springhurst: 3.5 m	Yes
Minimum Corner Side Yard Setback	3 m	N/A	N/A
Minimum Rear Yard Setback Section 135	3 m	Oblats: 4.88 m Springhurst: 3.5 m	Yes
Minimum Interior Side Yard Setback	For any part of a building located within 21 metres of a front lot line: 3 m All other cases: 6 m	North Property Line (abutting parkland boundary): 1.5 m East Property Line Within 21 m of Oblats: 1.9 m Further than 21 m from Oblats: 0.03 m West Property Line: Within 21 m of Oblats: 2 m Within 21 m of Springhurst: 1.8 m Further than 21 m from Oblats and Springhurst: 3.3 m	No No No No No No
Landscaped Area (total lot)	30%	30 % (2062 m²)	Yes
Permitted Projections Above the Height Limit Section 64	See list of permitted projections in Section 64	Enclosed amenity area with washrooms	No
Amenity Area Section 137	Total: 15 m² per dwelling unit up to eight units, plus 6 m² per unit in excess of 8 (1,776 m²) Communal: 100% of the amenity area required for	Total: 2,281 m² Communal: 2,281 m²	Yes Yes
	the first eight units (120 m²)		
	Communal amenity area for the first 8 units must: • Be located at grade and in the rear yard; • Be landscaped; • Consist of at least 80% soft landscaping; and • Be located at grade and in the rear yard and may include one interior yard that abuts both the rear yard and interior side yard, unless the lot has access to a rear lane.	• Located at-grade in the front yard (through lot); • Is landscaped; • Has soft landscaping;	No Yes Yes
Parking	**Required**	**Proposed**	**Compliance**
Vehicle Parking Spaces Area X Residential: 0.5 spaces/dwelling unit, after the first 12 units Visitor: 0.1 spaces/dwelling unit, after the first 12 units	Residential: 136 spaces Visitor: 27.2 spaces Total: 163 spaces	Residential: 0 spaces Visitor: 27 spaces Total: 27 spaces	No Yes
Bicycle Parking Spaces 0.5 spaces/dwelling unit	142 spaces	354 stacked spaces 36 horizontal spaces 28 visitor at grade Total: 418 spaces	Yes
Minimum Width of Landscaped Buffer of Parking Lot For 11-99 spaces	3 m	0 m	No
Landscaped Area – Parking Lot	15%	16.2% (hard landscaping)	Yes
Minimum Width of Driveway	Double traffic lane – 6.0 m	6.0 m	Yes
Minimum Width of an Aisle Providing Access to Parking Space	6.0 m	6.7 m	Yes
Location of Parking	No parking space may be established and no person may park a motor vehicle: / In a required and provided front yard;	Proposed parking lot along Springhurst Avenue is an existing condition 2 proposed car share spaces	Yes No
	/ In a required and provided corner side yard; or / In the extension of a required and provided corner side yard into a rear yard.		

KEY PLAN

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 BYLAWS AND OTHER AUTHORITIES HAVING JURISDICTION OVER THE WORK.

DO NOT SCALE DRAWINGS.

THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

DISCLAIMER
Due to the fact that AutoCAD is an electronic format and can be modified by other parties, intentionally or otherwise, without notice or indication of said modifications. Woodman Architect & Associates Ltd. reserves the right to remove all indices of its ownership and/or involvement in material from each electronic medium not held in its possession. This material shall not be used by Westview Projects or transferred to any other party for use in any other project. In addition to 655-755 Anand Private, the drawings should not be used for any other purpose except for which the material was intended by Woodman Architect & Associates. All drawings remain the property of Woodman Architect & Associates Ltd. and shall not be reproduced or reused without the Architect's express written permission. The CAD files are to be read in conjunction with the 'Issue For Tender' and 'Issue For Construction' PDF Drawing and discrepancies are to be reported to the Architect before proceeding with the work.

NO.	REVISION	DD/MM/YY DATE
9	ISSUED FOR APPROVAL	17/03/23
9	ISSUED FOR APPROVAL	24/01/23
8	ISSUED FOR APPROVAL	28/11/22
7	ISSUED FOR APPROVAL	28/07/22
6	ISSUED FOR APPROVAL	05/07/22
5	ISSUED FOR APPROVAL	16/05/22
4	ISSUED FOR REVIEW	29/03/22
3	ISSUED FOR REVIEW	12/01/22
2	ISSUED FOR REVIEW	28/08/21
1	ISSUED FOR REVIEW	26/04/21

Forum/SLP 15 Oblats Limited Partnership

Forum

SMART LIVING PROPERTIES

ARCHITECT OF RECORD:
WOODMAN ARCHITECT & ASSOCIATES LTD.

PLANNERS:
FOTENN
FOTENN PLANNING+DESIGN

CONSULTANTS:

SURVEY: ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
STRUCTURAL: D+M STRUCTURAL INC.
MECHANICAL: JAIN SUSTAINABILITY CONSULTANTS
CIVIL: WSP
ELECTRICAL: JAIN SUSTAINABILITY CONSULTANTS
LANDSCAPING: JAMES B. LENNOX & ASSOCIATES LTD.

PROJECT
15 OBLATS AVE.
OTTAWA

DRAWING:
SITE PLAN

DATE
SCALE
DRAWN BY: A.D - M.M - A.S
REVIEWED BY: R. WOODMAN - R.W

JOB NO.: 2019
DRAWING NO. SP01

D07-12-21-0083

18846

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 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.

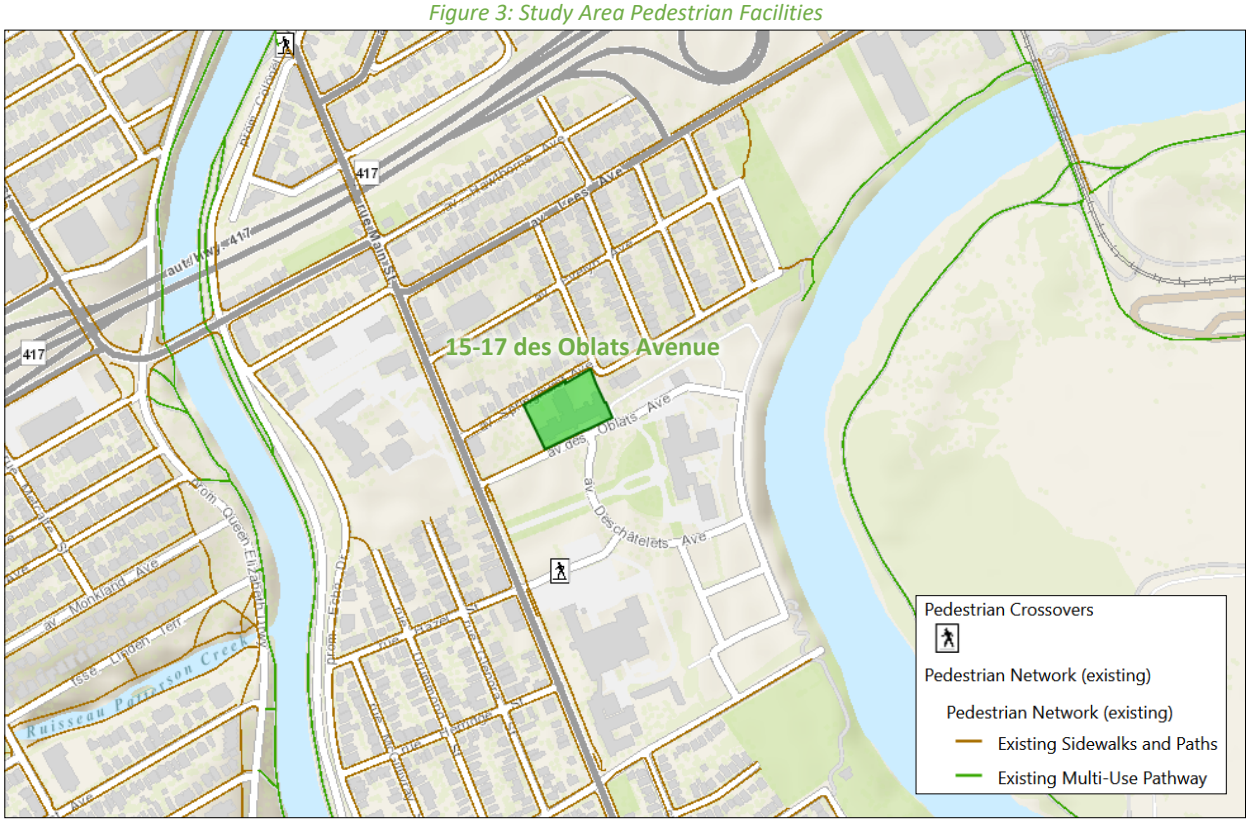
2.2.4 Cycling and Pedestrian Facilities

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.

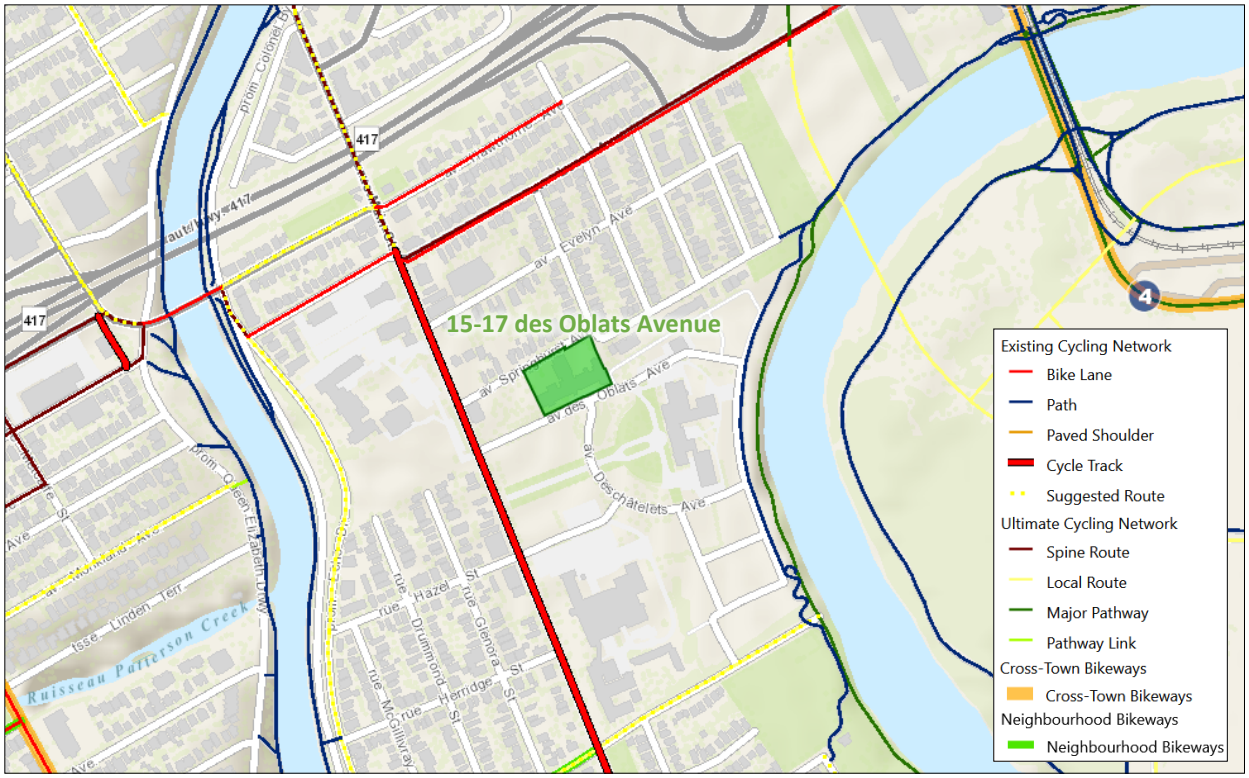
Cycling facilities include cycletracks on both sides of the Main Street south of Lees Avenue and on the east side of the road between Lees Avenue and Hawthorne Avenue, a curbside bike lane on both sides of Hawthorne Avenue over the Pretoria Bridge and on the south side of Hawthorne Avenue east of Main 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

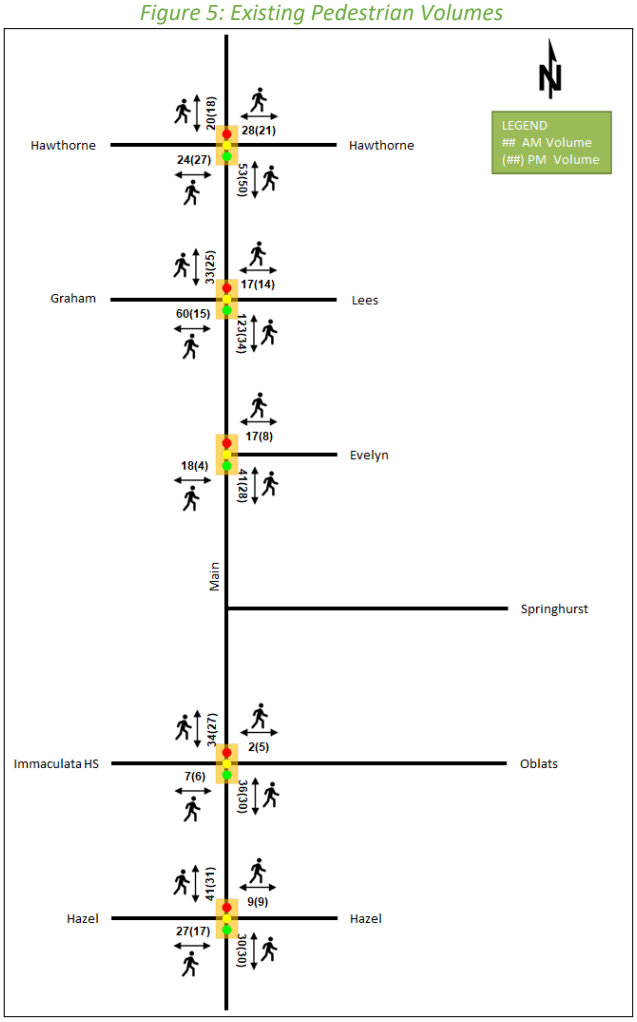
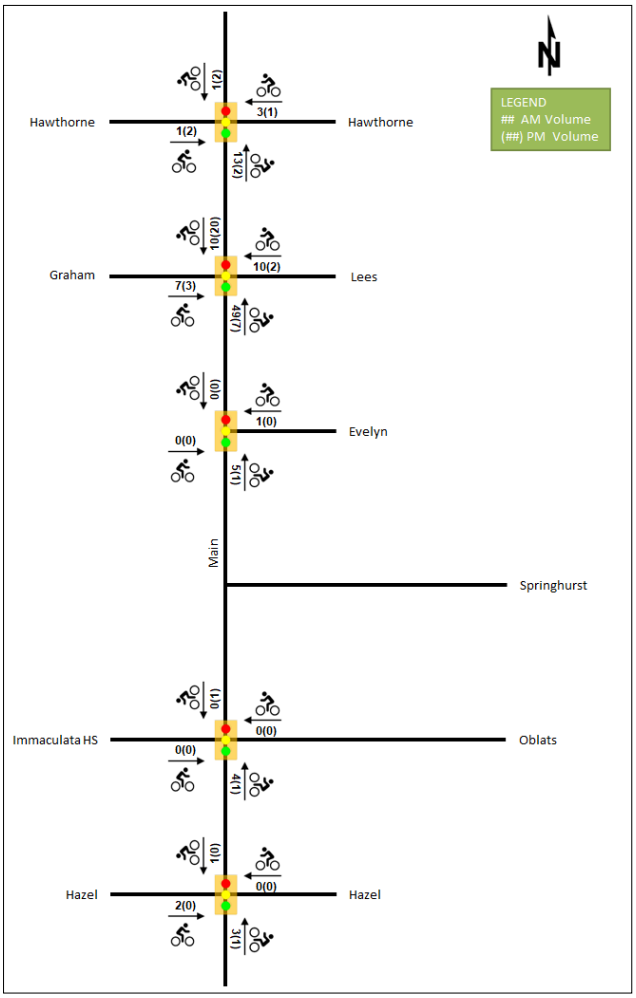


Figure 6: Existing Cyclist Volumes



2.2.5 Existing Transit

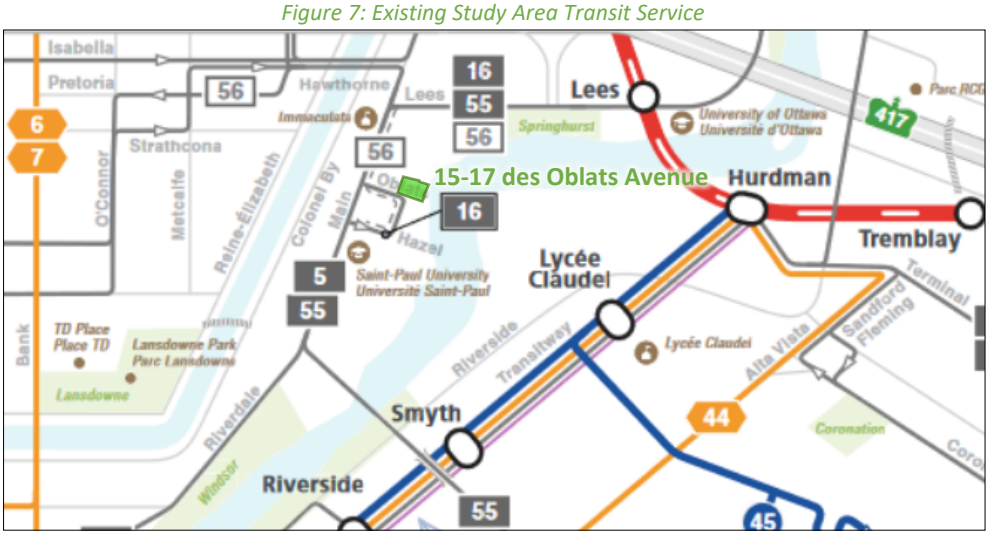
Figure 7 illustrates the transit system map in the study area and Figure 8 illustrates nearby transit stops. All transit information is from February 6, 2023 and is included for general information purposes and context to the surrounding area.

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

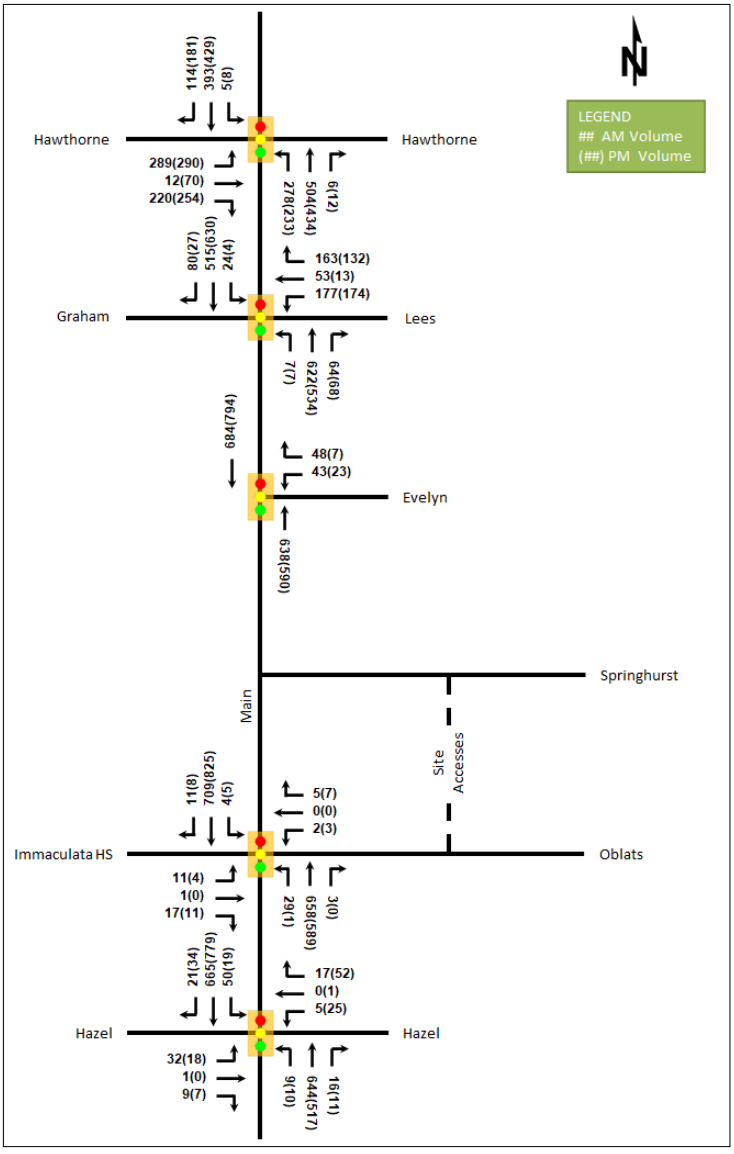


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Main Street at Hawthorne Avenue *Signalized*	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
	Overall	**D**	**0.86**	**21.0**	-	**D**	**0.82**	**34.2**	-
Main Street at Graham Avenue/Lees Avenue *Signalized*	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
	Overall	**A**	**0.56**	**17.8**	-	**A**	**0.47**	**18.6**	-
Main Street at Evelyn Avenue *Signalized*	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
	Overall	**A**	**0.52**	**13.5**	-	**A**	**0.46**	**11.1**	-
Main Street at Immaculata HS/des Oblats Avenue *Signalized*	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**
	Overall	**B**	**0.64**	**26.9**	-	**B**	**0.69**	**27.7**	-
Main Street at Hazel Street *Signalized*	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**
	Overall	**B**	**0.68**	**17.1**	-	**C**	**0.74**	**9.5**	-

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

Figure 10: Study Area Collision Records

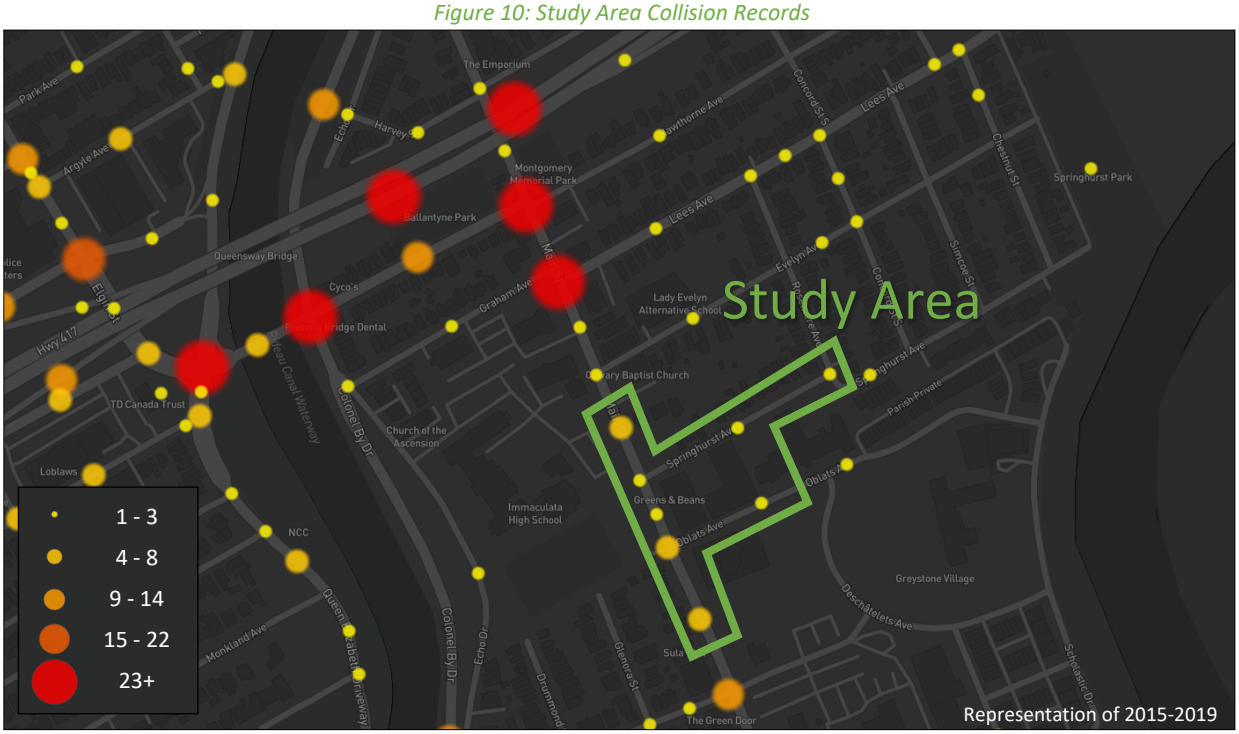


Table 4: Summary of Collision Locations, 2016-2020

	Number	%
Intersections / Segments	**23**	**100%**
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

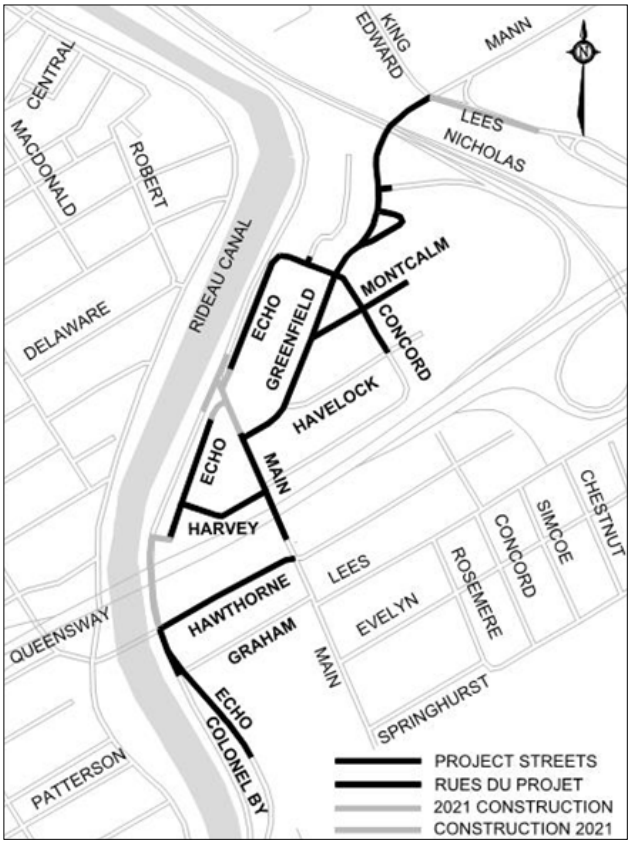
2.3.1 Changes to the Area Transportation Network

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^2 of ground floor commercial space and a six-storey, 125-unit mixed use building with 18,000ft^2 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
Design Review Component			
4.1 Development Design	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
Network Impact Component			
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%
Total	**100%**	**100%**

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
Multi-Unit (High-Rise)	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
Multi-Unit (High-Rise)	Auto Driver	**26%**	9	20	28	**25%**	16	12	28
	Auto Passenger	**6%**	2	4	7	**8%**	5	4	9
	Transit	**28%**	11	24	35	**21%**	15	11	25
	Cycling	**5%**	2	5	6	**6%**	4	3	7
	Walking	**34%**	14	31	45	**39%**	30	22	52
	Total	**100%**	**35**	**79**	**114**	**100%**	**65**	**48**	**113**

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
North	15%
South	30%
East	10%
West	45%
Total	100%

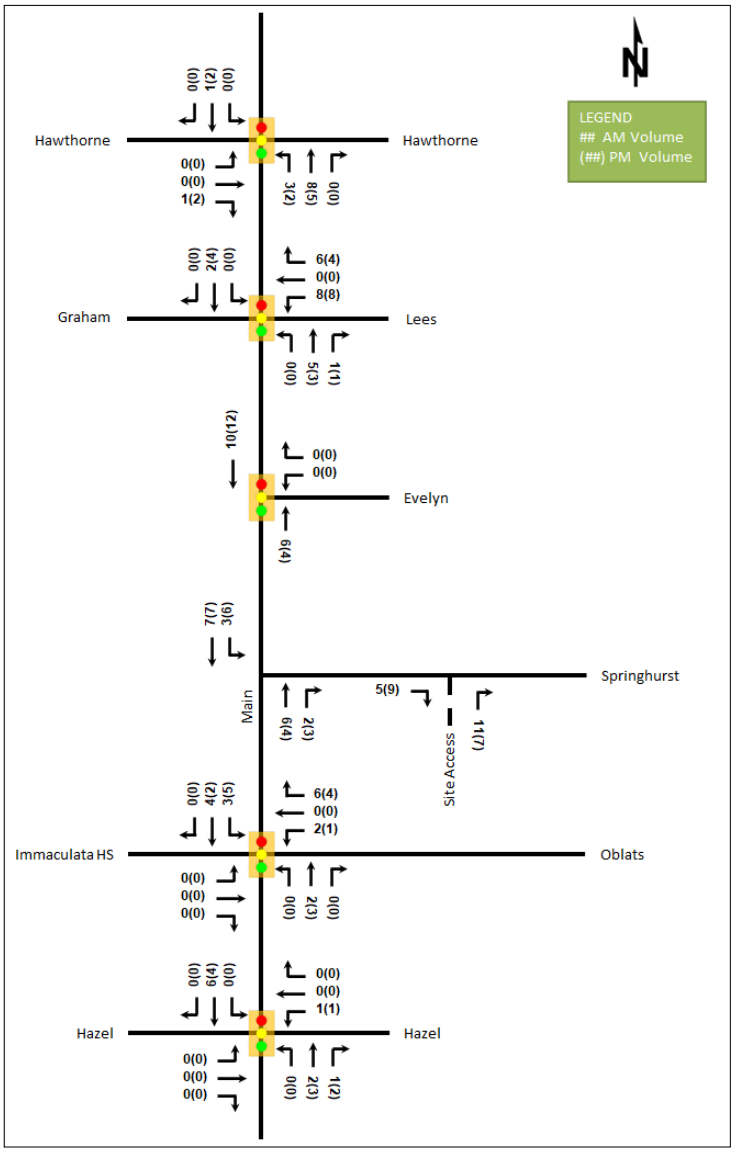
5.4 Trip Assignment

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
North	10% Main St (N) 5% Lees Ave (E)	15% Main St (N)
South	30% Main St (S)	30% Main St (S)
East	10% Lees Ave (E)	10 % Lees Ave (E)
West	25% Lees Ave (E) 15% Hawthorne Ave (W) 5% Main St (S)	25% Main St (N) 15% Hawthorne Ave (W) 5% Main St (S)
Total	**100%**	**100%**

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	-	-	-	-

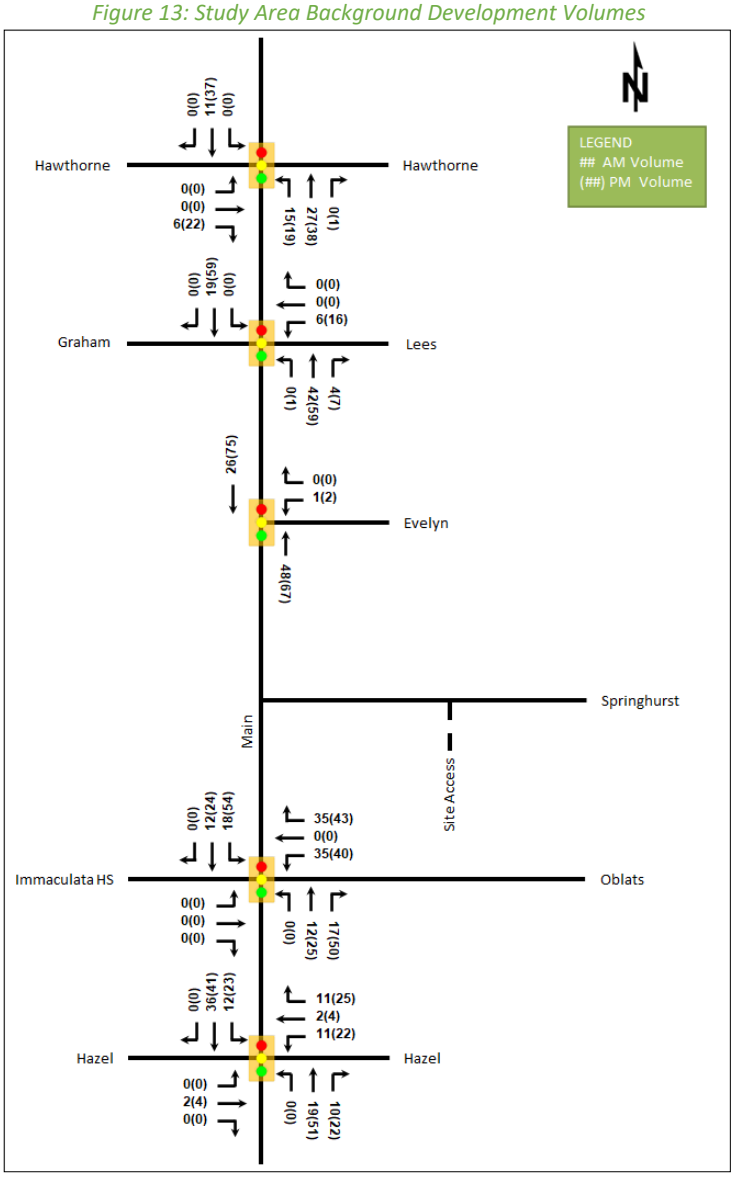
6.3 Other Developments

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

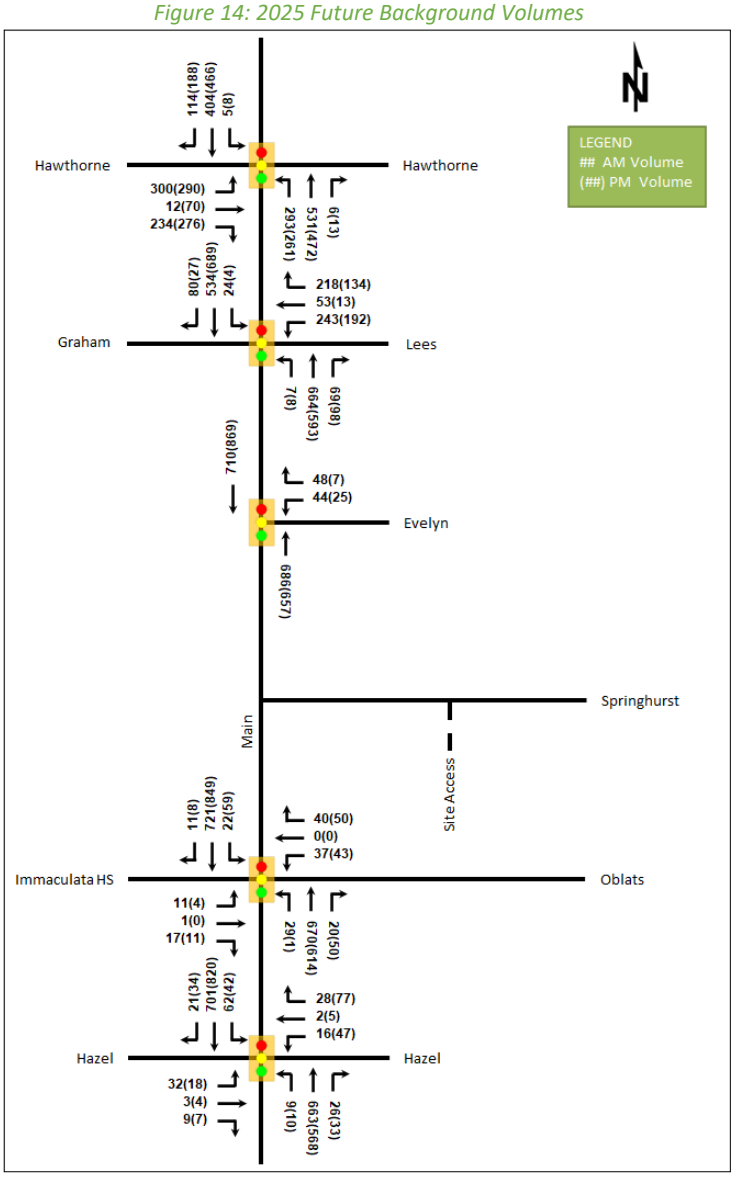


Table 13: 2025 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Main Street at Hawthorne Avenue *Signalized*	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
	Overall	**D**	**0.81**	**19.6**	-	**C**	**0.78**	**27.8**	-
Main Street at Graham Avenue/Lees Avenue *Signalized*	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
	Overall	**A**	**0.59**	**23.8**	-	**A**	**0.48**	**18.5**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Main Street at Evelyn Avenue *Signalized*	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
	Overall	**A**	**0.49**	**14.3**	**-**	**A**	**0.46**	**11.3**	**-**
Main Street at Immaculata HS/des Oblats Avenue *Signalized*	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**
	Overall	**A**	**0.60**	**19.3**	**-**	**B**	**0.69**	**24.5**	**-**
Main Street at Hazel Street *Signalized*	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**
	Overall	**B**	**0.64**	**17.8**	**-**	**C**	**0.73**	**11.3**	**-**

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

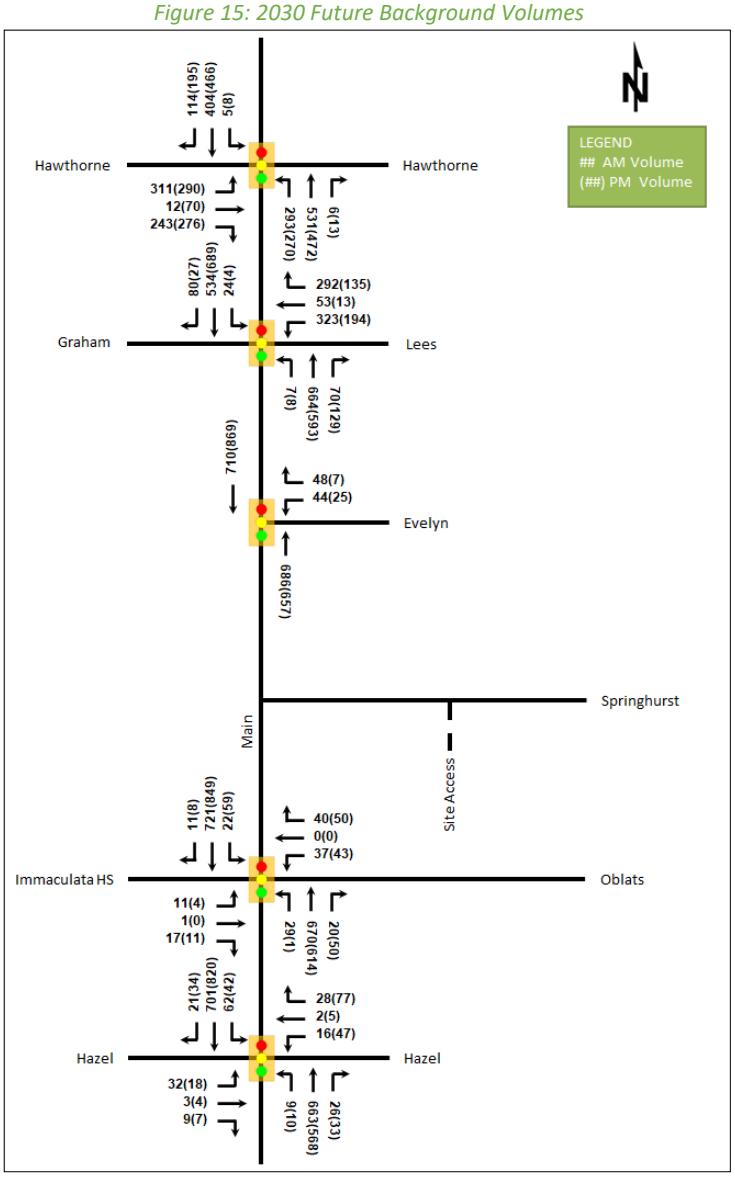


Table 14: 2030 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Main Street at Hawthorne Avenue *Signalized*	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
	Overall	**D**	**0.82**	**20.3**	-	**C**	**0.79**	**27.8**	-
Main Street at Graham Avenue/Lees Avenue *Signalized*	WBL	**F**	**1.37**	**226.9**	**#134.7**	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
	Overall	**B**	**0.67**	**46.6**	-	**A**	**0.50**	**18.6**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Main Street at Evelyn Avenue *Signalized*	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
	Overall	**A**	**0.49**	**15.2**	**-**	**A**	**0.46**	**11.3**	**-**
Main Street at Immaculata HS/des Oblats Avenue *Signalized*	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**
	Overall	**A**	**0.60**	**19.3**	**-**	**B**	**0.69**	**24.5**	**-**
Main Street at Hazel Street *Signalized*	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**
	Overall	**B**	**0.64**	**17.8**	**-**	**C**	**0.73**	**11.3**	**-**

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 will 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.	F	A	B	D	-	-	-	-
	Fut.	B	A	A					
Springhurst Avenue	Ex./Fut.	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
Transit	**28% (21%)**	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

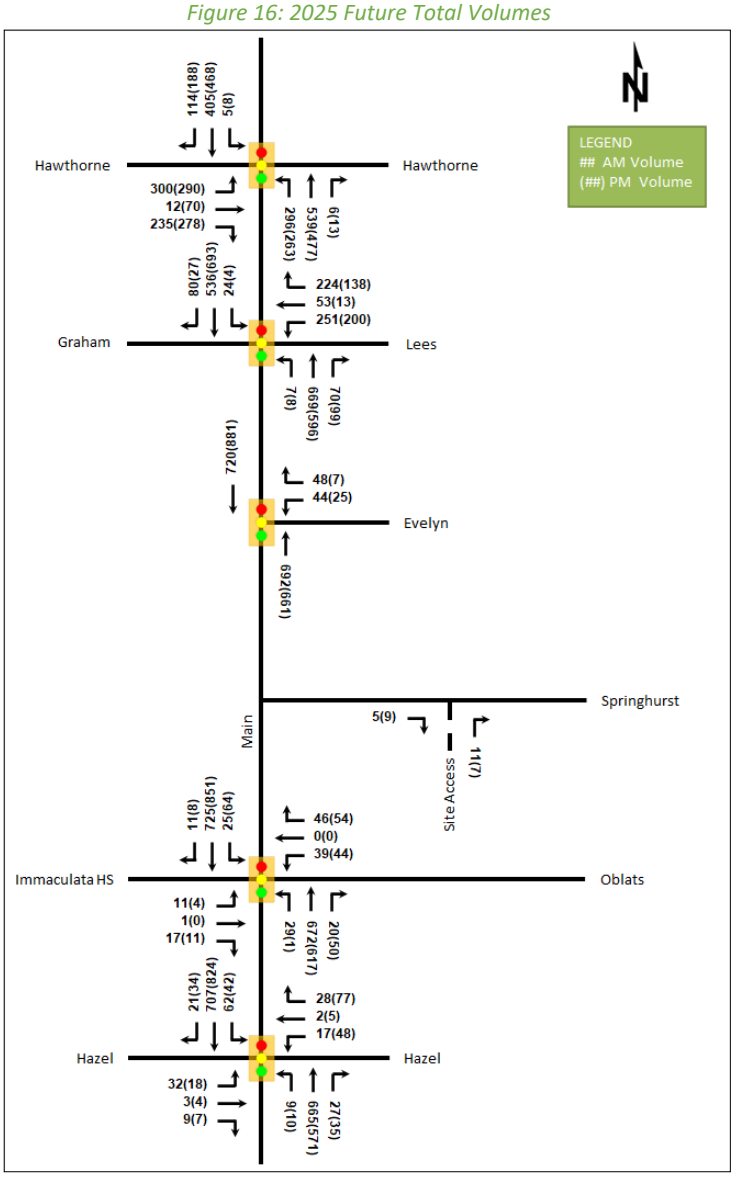


Table 18: 2025 Future Total Network Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Main Street at Hawthorne Avenue *Signalized*	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
	Overall	**D**	**0.82**	**19.8**	-	**C**	**0.79**	**28.4**	-
Main Street at Graham Avenue/Lees Avenue *Signalized*	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
	Overall	**A**	**0.60**	**25.6**	-	**A**	**0.49**	**19.0**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Main Street at Evelyn Avenue *Signalized*	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
	Overall	**A**	**0.50**	**14.5**	**-**	**A**	**0.46**	**11.5**	**-**
Main Street at Immaculata HS/des Oblats Avenue *Signalized*	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**
	Overall	**B**	**0.61**	**19.4**	**-**	**B**	**0.70**	**26.0**	**-**
Main Street at Hazel Street *Signalized*	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**
	Overall	**B**	**0.65**	**18.0**	**-**	**C**	**0.74**	**11.5**	**-**

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

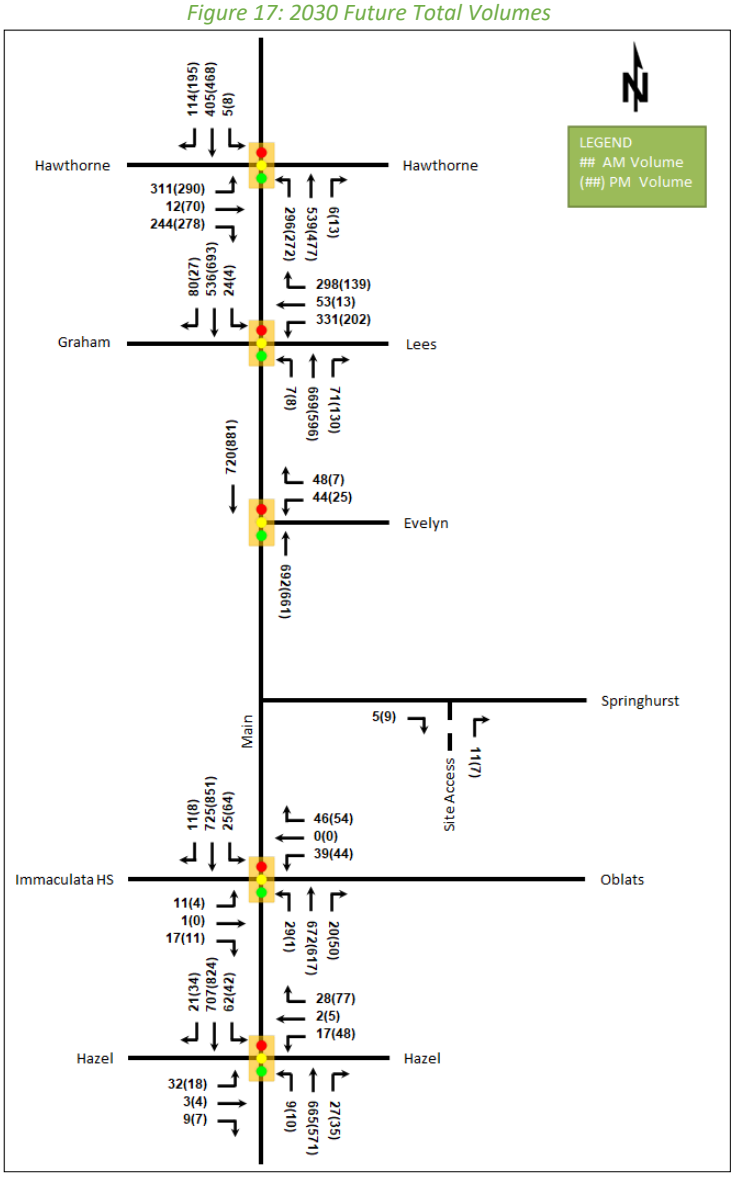


Table 19: 2030 Future Total Network Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Main Street at Hawthorne Avenue *Signalized*	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
	Overall	**D**	**0.83**	**20.5**	-	**C**	**0.79**	**28.3**	-
Main Street at Graham Avenue/Lees Avenue *Signalized*	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
	Overall	**B**	**0.69**	**50.2**	-	**A**	**0.52**	**19.1**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Main Street at Evelyn Avenue *Signalized*	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
	Overall	**A**	**0.50**	**15.3**	-	**A**	**0.46**	**11.5**	-
Main Street at Immaculata HS/des Oblats Avenue *Signalized*	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**
	Overall	**B**	**0.61**	**19.4**	-	**B**	**0.70**	**26.0**	-
Main Street at Hazel Street *Signalized*	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**
	Overall	**B**	**0.65**	**18.0**	-	**C**	**0.74**	**11.5**	-

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
Main Street at Hawthorne Avenue	**D**	A	**C**	B	**F**	D	D	D	D	E
Main Street at Graham Avenue/Lees Avenue	**D**	A	**E**	B	**F**	D	C	D	B	E
Main Street at Evelyn Avenue	**D**	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 (PETSI) 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 Oblates 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 queueing 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 PETSI 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

CGH TRANSPORTATION

6 Plaza Court
Ottawa ON K2H 7W1

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[1] or registered[2] 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

Office Contact Information (Please Print)
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

CGH TRANSPORTATION

Transportation Services - Traffic Services

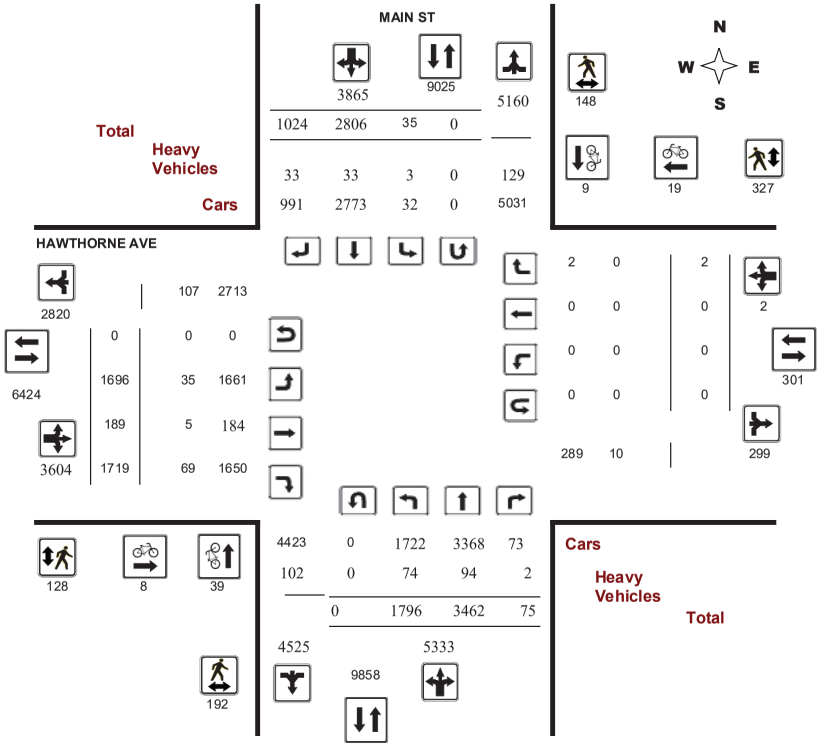
Turning Movement Count - Study Results

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

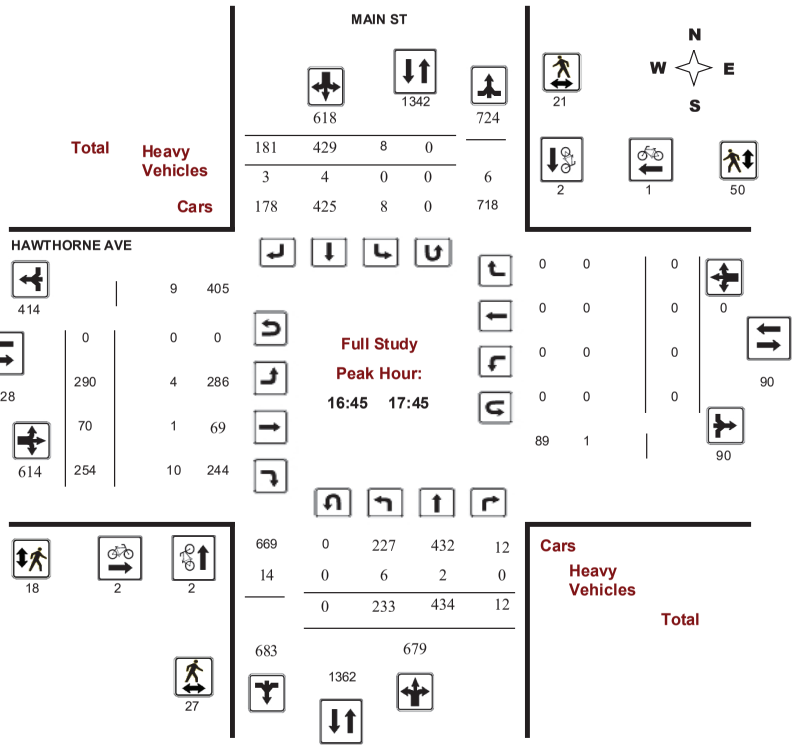
Turning Movement Count - Study Results

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

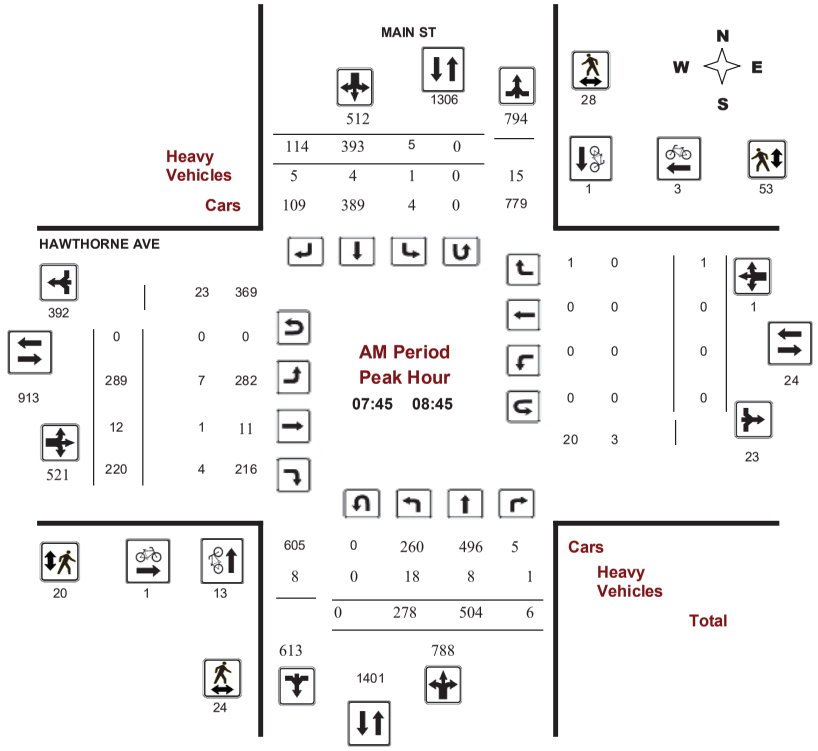
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HAWTHORNE AVE @ MAIN ST

Survey Date: Tuesday, March 03, 2020 **WO No:** 39570

Start Time: 07:00 **Device:** Miovision



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

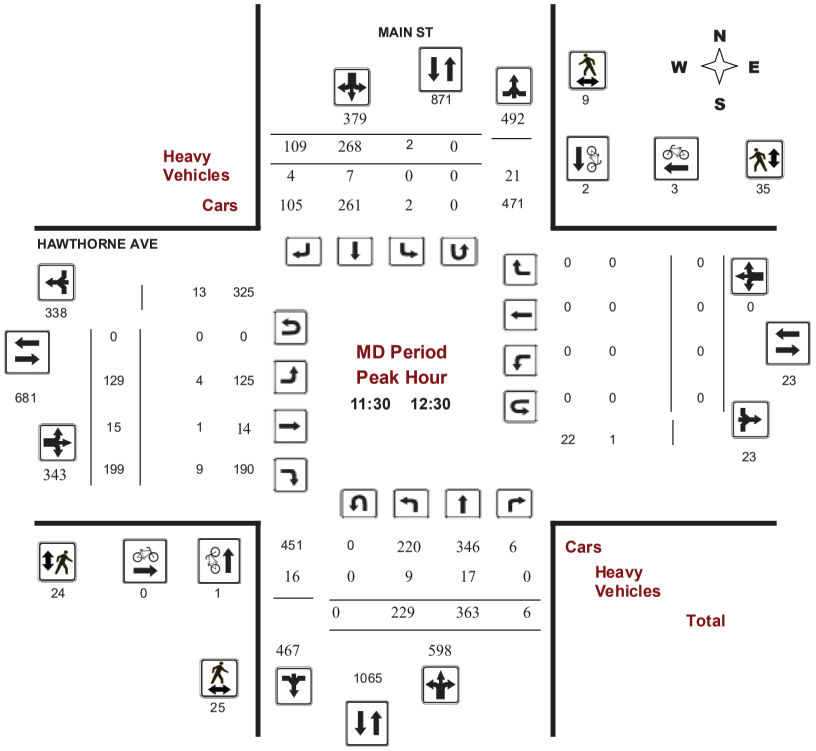
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HAWTHORNE AVE @ MAIN ST

Survey Date: Tuesday, March 03, 2020 **WO No:** 39570

Start Time: 07:00 **Device:** Miovision



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

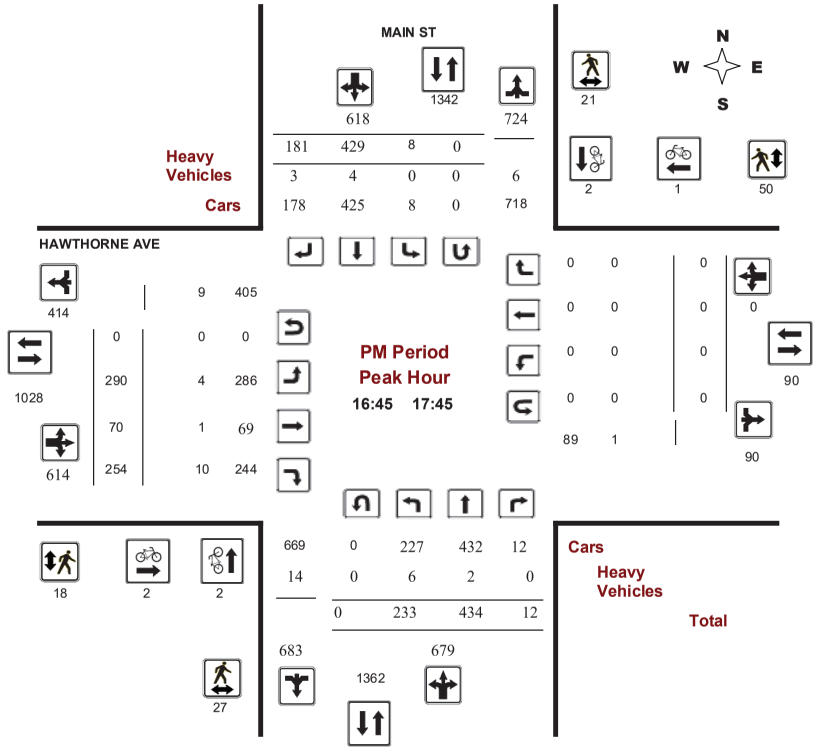
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HAWTHORNE AVE @ MAIN ST

Survey Date: Tuesday, March 03, 2020 **WO No:** 39570

Start Time: 07:00 **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 **WO No:** 39570

Start Time: 07:00 **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

	MAIN ST								HAWTHORNE AVE								
	Northbound				Southbound				Eastbound				Westbound				
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
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**
Sub Total	1796	3462	75	**5333**	35	2806	1024	**3865**	**9198**	1696	189	1719	**3604**	0	0	2	**2**	**3606**	**12804**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	1796	3462	75	**5333**	35	2806	1024	**3865**	**9198**	1696	189	1719	**3604**	0	0	2	**2**	**3606**	**12804**
EQ 12Hr	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**					
AVG 12Hr	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**					
AVG 24Hr	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

		MAIN ST									HAWTHORNE 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	41	97	0	138	0	104	11	115	521	31	2	36	69	0	0	0	0	521	322
07:15	07:30	60	107	1	168	0	86	10	96	524	29	1	38	68	0	0	0	0	524	332
07:30	07:45	54	126	1	181	2	96	13	111	629	54	0	61	115	0	0	0	0	629	407
07:45	08:00	62	132	3	197	1	94	30	125	667	60	1	59	120	0	0	0	0	667	442
08:00	08:15	66	114	2	182	2	103	30	135	673	83	5	55	143	0	0	1	1	673	461
08:15	08:30	78	134	0	212	0	112	27	139	723	75	3	51	129	0	0	0	0	723	480
08:30	08:45	72	124	1	197	2	84	27	113	644	71	3	55	129	0	0	0	0	644	439
08:45	09:00	57	115	2	174	0	100	42	142	652	70	2	51	123	0	0	0	0	652	439
09:00	09:15	59	128	3	190	0	68	32	100	572	45	2	41	88	0	0	0	0	572	378
09:15	09:30	62	106	4	172	1	66	20	87	516	42	4	43	89	0	0	0	0	516	348
09:30	09:45	53	103	2	158	2	77	26	105	529	37	2	49	88	0	0	0	0	529	351
09:45	10:00	55	105	5	165	1	74	31	106	527	40	3	37	80	0	0	0	0	527	351
11:30	11:45	61	76	1	138	1	70	24	95	449	25	5	45	75	0	0	0	0	449	308
11:45	12:00	56	82	1	139	0	63	36	99	475	45	6	47	98	0	0	0	0	475	336
12:00	12:15	54	86	3	143	1	66	23	90	475	35	2	55	92	0	0	0	0	475	325
12:15	12:30	58	119	1	178	0	69	26	95	537	24	2	52	78	0	0	0	0	537	351
12:30	12:45	42	85	3	130	0	74	22	96	464	36	1	43	80	0	0	0	0	464	306
12:45	13:00	35	91	2	128	1	61	29	91	462	39	3	52	94	0	0	0	0	462	313
13:00	13:15	26	99	2	127	0	80	31	111	504	36	2	51	89	0	0	0	0	504	327
13:15	13:30	34	88	4	126	0	82	23	105	471	27	1	43	71	0	0	0	0	471	302
15:00	15:15	40	131	2	173	2	73	20	95	558	31	4	55	90	0	0	0	0	558	358
15:15	15:30	57	130	2	189	2	97	32	131	663	44	3	72	119	0	0	0	0	663	439
15:30	15:45	66	110	2	178	1	75	49	125	619	60	7	71	138	0	0	0	0	619	441
15:45	16:00	66	121	5	192	2	86	48	136	674	70	6	69	145	0	0	0	0	674	473
16:00	16:15	52	111	1	164	1	93	42	136	642	85	8	53	146	0	0	0	0	642	446
16:15	16:30	56	103	4	163	2	114	40	156	677	72	11	69	152	0	0	0	0	677	471
16:30	16:45	65	106	4	175	2	110	41	153	674	71	19	59	149	0	0	0	0	674	477
16:45	17:00	64	100	4	168	1	99	66	166	677	79	18	65	162	0	0	0	0	677	496
17:00	17:15	47	114	1	162	5	99	32	136	653	74	17	68	159	0	0	0	0	653	457
17:15	17:30	65	109	5	179	1	95	33	129	640	76	20	52	148	0	0	0	0	640	456
17:30	17:45	57	111	2	170	1	136	50	187	734	61	15	69	145	0	0	0	0	734	502
17:45	18:00	76	99	2	177	1	100	58	159	658	69	11	53	133	0	0	1	1	658	470
Total:		1796	3462	75	5333	35	2806	1024	3865	18883	1696	189	1719	3604	0	0	2	2	18883	12,804

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

		MAIN ST			HAWTHORNE AVE			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	2	0	2	0	1	1	3
07:15	07:30	1	0	1	0	1	1	2
07:30	07:45	3	0	3	0	1	1	4
07:45	08:00	3	1	4	1	0	1	5
08:00	08:15	4	0	4	0	1	1	5
08:15	08:30	2	0	2	0	1	1	3
08:30	08:45	4	0	4	0	1	1	5
08:45	09:00	4	0	4	0	0	0	4
09:00	09:15	4	0	4	0	3	3	7
09:15	09:30	2	0	2	0	1	1	3
09:30	09:45	0	0	0	0	0	0	0
09:45	10:00	0	1	1	1	0	1	2
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	2	2	0	1	1	3
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	1	0	1	0	2	2	3
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	3	0	3	0	3	3	6
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	1	1	0	0	0	1
15:15	15:30	0	1	1	1	0	1	2
15:30	15:45	3	0	3	2	1	3	6
15:45	16:00	1	0	1	0	0	0	1
16:00	16:15	0	1	1	0	1	1	2
16:15	16:30	0	0	0	0	0	0	0
16:30	16:45	0	0	0	1	0	1	1
16:45	17:00	1	1	2	0	0	0	2
17:00	17:15	0	0	0	0	0	0	0
17:15	17:30	1	1	2	2	1	3	5
17:30	17:45	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0
Total		39	9	48	8	19	27	75

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

Time Period	MAIN ST NB Approach (E or W Crossing)	MAIN ST SB Approach (E or W Crossing)	MAIN ST Total	HAWTHORNE AVE EB Approach (N or S Crossing)	HAWTHORNE AVE WB Approach (N or S Crossing)	HAWTHORNE AVE Total	Grand Total
07:00 07:15	2	1	**3**	2	5	**7**	**10**
07:15 07:30	3	5	**8**	0	5	**5**	**13**
07:30 07:45	8	9	**17**	5	6	**11**	**28**
07:45 08:00	5	7	**12**	3	8	**11**	**23**
08:00 08:15	6	10	**16**	7	11	**18**	**34**
08:15 08:30	4	5	**9**	5	27	**32**	**41**
08:30 08:45	9	6	**15**	5	7	**12**	**27**
08:45 09:00	3	4	**7**	4	3	**7**	**14**
09:00 09:15	4	4	**8**	4	8	**12**	**20**
09:15 09:30	4	2	**6**	3	7	**10**	**16**
09:30 09:45	4	5	**9**	4	14	**18**	**27**
09:45 10:00	4	0	**4**	3	2	**5**	**9**
11:30 11:45	6	2	**8**	6	13	**19**	**27**
11:45 12:00	7	3	**10**	5	7	**12**	**22**
12:00 12:15	6	2	**8**	5	7	**12**	**20**
12:15 12:30	6	2	**8**	8	8	**16**	**24**
12:30 12:45	8	6	**14**	1	15	**16**	**30**
12:45 13:00	5	6	**11**	6	7	**13**	**24**
13:00 13:15	3	4	**7**	3	3	**6**	**13**
13:15 13:30	5	2	**7**	9	10	**19**	**26**
15:00 15:15	2	10	**12**	4	9	**13**	**25**
15:15 15:30	17	9	**26**	2	31	**33**	**59**
15:30 15:45	5	3	**8**	1	9	**10**	**18**
15:45 16:00	2	0	**2**	2	19	**21**	**23**
16:00 16:15	9	5	**14**	2	6	**8**	**22**
16:15 16:30	10	7	**17**	2	5	**7**	**24**
16:30 16:45	8	5	**13**	5	9	**14**	**27**
16:45 17:00	4	3	**7**	4	10	**14**	**21**
17:00 17:15	10	2	**12**	6	11	**17**	**29**
17:15 17:30	5	8	**13**	5	11	**16**	**29**
17:30 17:45	8	8	**16**	3	18	**21**	**37**
17:45 18:00	10	3	**13**	4	16	**20**	**33**
Total	192	148	**340**	128	327	**455**	**795**

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 Northbound				MAIN ST Southbound					HAWTHORNE AVE Eastbound				HAWTHORNE AVE 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	2	3	0	**6**	0	0	2	**5**	**11**	0	0	1	**5**	0	0	0	**0**	**5**	**8**
07:15	07:30	5	3	0	**13**	0	2	0	**5**	**18**	0	0	3	**8**	0	0	0	**0**	**8**	**13**
07:30	07:45	3	9	1	**15**	0	1	2	**13**	**28**	1	0	1	**7**	0	0	0	**1**	**8**	**18**
07:45	08:00	5	2	0	**10**	0	1	1	**5**	**15**	1	0	2	**9**	0	0	0	**0**	**9**	**12**
08:00	08:15	1	1	0	**3**	1	1	1	**6**	**9**	2	0	0	**4**	0	0	0	**1**	**5**	**7**
08:15	08:30	6	2	0	**10**	0	1	2	**6**	**16**	1	0	1	**10**	0	0	0	**0**	**10**	**13**
08:30	08:45	6	3	1	**12**	0	1	1	**8**	**20**	3	1	1	**12**	0	0	0	**2**	**14**	**17**
08:45	09:00	2	3	0	**9**	0	1	2	**8**	**17**	2	0	3	**9**	0	0	0	**0**	**9**	**13**
09:00	09:15	4	2	0	**16**	0	3	3	**8**	**24**	0	0	7	**14**	0	0	0	**0**	**14**	**19**
09:15	09:30	3	6	0	**13**	0	2	1	**10**	**23**	1	0	2	**7**	0	0	0	**0**	**7**	**15**
09:30	09:45	3	7	0	**12**	0	0	0	**10**	**22**	3	0	2	**8**	0	0	0	**0**	**8**	**15**
09:45	10:00	2	3	0	**11**	0	2	1	**6**	**17**	0	0	4	**7**	0	0	0	**0**	**7**	**12**
11:30	11:45	1	6	0	**10**	0	1	1	**10**	**20**	2	0	2	**6**	0	0	0	**0**	**6**	**13**
11:45	12:00	1	4	0	**9**	0	2	0	**7**	**16**	1	1	2	**5**	0	0	0	**1**	**6**	**11**
12:00	12:15	4	3	0	**8**	0	0	1	**4**	**12**	0	0	1	**6**	0	0	0	**0**	**6**	**9**
12:15	12:30	3	4	0	**15**	0	4	2	**11**	**26**	1	0	4	**10**	0	0	0	**0**	**10**	**18**
12:30	12:45	2	3	0	**6**	0	0	0	**4**	**10**	1	0	1	**4**	0	0	0	**0**	**4**	**7**
12:45	13:00	1	5	0	**8**	0	0	0	**8**	**16**	3	0	2	**6**	0	0	0	**0**	**6**	**11**
13:00	13:15	1	5	0	**7**	0	1	1	**7**	**14**	0	0	0	**2**	0	0	0	**0**	**2**	**8**
13:15	13:30	1	2	0	**5**	0	1	1	**4**	**9**	0	0	1	**3**	0	0	0	**0**	**3**	**6**
15:00	15:15	0	6	0	**9**	0	1	0	**8**	**17**	1	0	2	**3**	0	0	0	**0**	**3**	**10**
15:15	15:30	2	5	0	**10**	1	2	1	**10**	**20**	1	1	1	**6**	0	0	0	**2**	**8**	**14**
15:30	15:45	3	1	0	**10**	0	1	1	**4**	**14**	1	1	5	**11**	0	0	0	**1**	**12**	**13**
15:45	16:00	3	0	0	**5**	1	0	1	**4**	**9**	2	0	2	**8**	0	0	0	**1**	**9**	**9**
16:00	16:15	0	2	0	**5**	0	1	3	**6**	**11**	0	0	2	**5**	0	0	0	**0**	**5**	**8**
16:15	16:30	2	2	0	**7**	0	0	1	**5**	**12**	2	0	3	**8**	0	0	0	**0**	**8**	**10**
16:30	16:45	1	0	0	**3**	0	0	1	**1**	**4**	0	0	2	**4**	0	0	0	**0**	**4**	**4**
16:45	17:00	3	1	0	**7**	0	1	1	**4**	**11**	1	0	2	**7**	0	0	0	**0**	**7**	**9**
17:00	17:15	1	1	0	**6**	0	2	0	**4**	**10**	1	0	2	**4**	0	0	0	**0**	**4**	**7**
17:15	17:30	1	0	0	**4**	0	1	2	**3**	**7**	0	0	2	**5**	0	0	0	**0**	**5**	**6**
17:30	17:45	1	0	0	**5**	0	0	0	**2**	**7**	2	1	4	**8**	0	0	0	**1**	**9**	**8**
17:45	18:00	1	0	0	**3**	0	0	0	**2**	**5**	2	0	2	**5**	0	0	0	**0**	**5**	**5**
Total:	None	74	94	2	**272**	3	33	33	**198**	**470**	35	5	69	**216**	0	0	0	**10**	**226**	**348**

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

		MAIN ST		HAWTHORNE AVE		
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

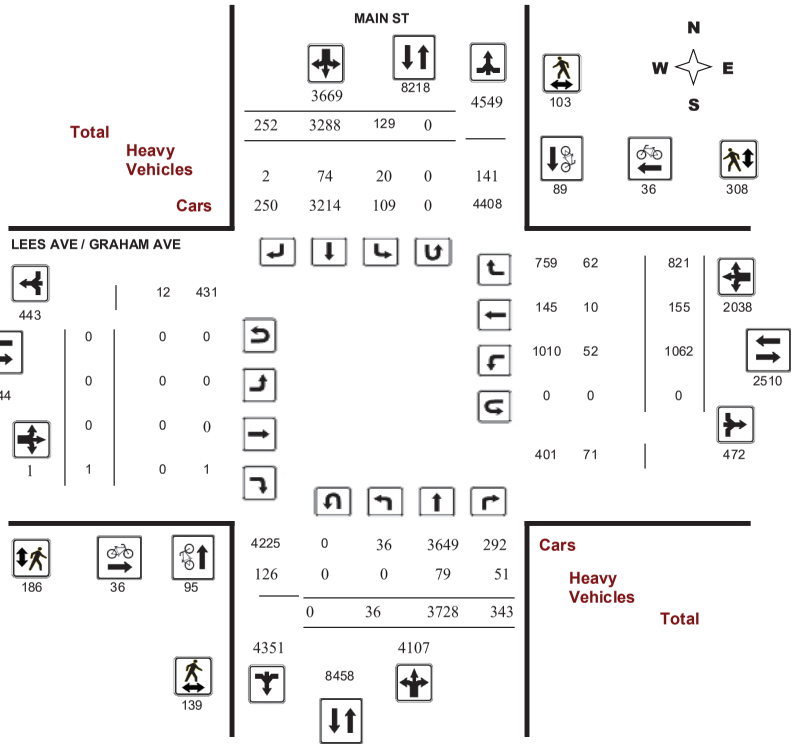
Turning Movement Count - Study Results

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

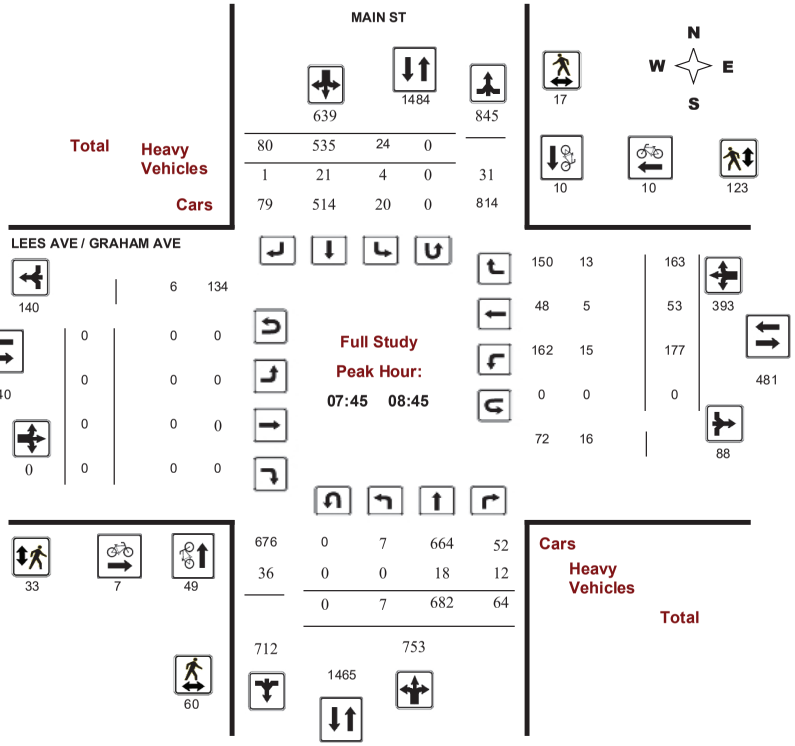
Turning Movement Count - Study Results

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

Work Order 38085

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

LEES AVE / GRAHAM AVE @ MAIN ST

Survey Date: Tuesday, November 06, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

PM Period

	MAIN ST								LEES AVE / GRAHAM AVE									
	Northbound				Southbound				Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
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**
Sub Total	19	1889	186	**2094**	66	1696	109	**1871**	**3965**	0	0	1	**1**	529	59	387	**975**	**976**	**4941**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	19	1889	186	**2094**	66	1696	109	**1871**	**3965**	0	0	1	**1**	529	59	387	**975**	**976**	**4941**

Survey Date: Tuesday, November 06, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AM Period

	MAIN ST								LEES AVE / GRAHAM AVE									
	Northbound				Southbound				Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
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**
Sub Total	17	1839	157	**2013**	63	1592	143	**1798**	**3811**	0	0	0	**0**	533	96	434	**1063**	**1063**	**4874**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	17	1839	157	**2013**	63	1592	143	**1798**	**3811**	0	0	0	**0**	533	96	434	**1063**	**1063**	**4874**

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			
Time Period		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

Time Period	MAIN ST NB Approach (E or W Crossing)	MAIN ST SB Approach (E or W Crossing)	MAIN ST Total	LEES AVE / GRAHAM AVE EB Approach (N or S Crossing)	LEES AVE / GRAHAM AVE WB Approach (N or S Crossing)	LEES AVE / GRAHAM AVE Total	Grand Total
07:00 07:15	3	4	**7**	4	5	**9**	**16**
07:15 07:30	0	6	**6**	4	21	**25**	**31**
07:30 07:45	4	3	**7**	5	14	**19**	**26**
07:45 08:00	34	5	**39**	11	52	**63**	**102**
08:00 08:15	22	4	**26**	7	26	**33**	**59**
08:15 08:30	2	6	**8**	11	13	**24**	**32**
08:30 08:45	2	2	**4**	4	32	**36**	**40**
08:45 09:00	3	2	**5**	5	13	**18**	**23**
09:00 09:15	2	5	**7**	6	9	**15**	**22**
09:15 09:30	3	2	**5**	0	6	**6**	**11**
09:30 09:45	3	4	**7**	5	8	**13**	**20**
09:45 10:00	2	1	**3**	4	2	**6**	**9**
15:00 15:15	1	2	**3**	5	2	**7**	**10**
15:15 15:30	3	4	**7**	5	4	**9**	**16**
15:30 15:45	2	2	**4**	7	15	**22**	**26**
15:45 16:00	4	2	**6**	5	7	**12**	**18**
16:00 16:15	6	6	**12**	8	8	**16**	**28**
16:15 16:30	2	8	**10**	9	13	**22**	**32**
16:30 16:45	6	8	**14**	13	12	**25**	**39**
16:45 17:00	6	4	**10**	18	16	**34**	**44**
17:00 17:15	5	11	**16**	14	5	**19**	**35**
17:15 17:30	10	8	**18**	18	12	**30**	**48**
17:30 17:45	5	2	**7**	12	7	**19**	**26**
17:45 18:00	9	2	**11**	6	6	**12**	**23**
Total	139	103	**242**	186	308	**494**	**736**

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

Time Period		MAIN ST Northbound LT	MAIN ST Northbound ST	MAIN ST Northbound RT	MAIN ST N TOT	MAIN ST Southbound LT	MAIN ST Southbound ST	MAIN ST Southbound RT	MAIN ST S TOT	MAIN ST STR TOT	LEES AVE / GRAHAM AVE Eastbound LT	LEES AVE / GRAHAM AVE Eastbound ST	LEES AVE / GRAHAM AVE Eastbound RT	LEES AVE / GRAHAM AVE E TOT	LEES AVE / GRAHAM AVE Westbound LT	LEES AVE / GRAHAM AVE Westbound ST	LEES AVE / GRAHAM AVE Westbound RT	LEES AVE / GRAHAM AVE W TOT	LEES AVE / GRAHAM AVE STR TOT	Grand Total
07:00	07:15	0	2	2	**4**	1	1	0	**2**	**6**	0	0	0	**0**	0	0	4	**4**	**4**	**10**
07:15	07:30	0	2	0	**2**	1	3	0	**4**	**6**	0	0	0	**0**	2	0	4	**6**	**6**	**12**
07:30	07:45	0	3	4	**7**	0	8	1	**9**	**16**	0	0	0	**0**	2	0	3	**5**	**5**	**21**
07:45	08:00	0	6	3	**9**	2	3	1	**6**	**15**	0	0	0	**0**	4	1	3	**8**	**8**	**23**
08:00	08:15	0	4	4	**8**	1	5	0	**6**	**14**	0	0	0	**0**	6	1	3	**10**	**10**	**24**
08:15	08:30	0	4	1	**5**	0	6	0	**6**	**11**	0	0	0	**0**	2	1	4	**7**	**7**	**18**
08:30	08:45	0	4	4	**8**	1	7	0	**8**	**16**	0	0	0	**0**	3	2	3	**8**	**8**	**24**
08:45	09:00	0	1	3	**4**	0	5	0	**5**	**9**	0	0	0	**0**	3	1	3	**7**	**7**	**16**
09:00	09:15	0	8	4	**12**	2	2	0	**4**	**16**	0	0	0	**0**	2	2	4	**8**	**8**	**24**
09:15	09:30	0	4	5	**9**	1	0	0	**1**	**10**	0	0	0	**0**	2	0	2	**4**	**4**	**14**
09:30	09:45	0	2	3	**5**	0	6	0	**6**	**11**	0	0	0	**0**	1	0	2	**3**	**3**	**14**
09:45	10:00	0	4	2	**6**	1	4	0	**5**	**11**	0	0	0	**0**	4	0	2	**6**	**6**	**17**
15:00	15:15	0	4	2	**6**	0	2	0	**2**	**8**	0	0	0	**0**	0	0	3	**3**	**3**	**11**
15:15	15:30	0	5	3	**8**	1	1	0	**2**	**10**	0	0	0	**0**	3	0	1	**4**	**4**	**14**
15:30	15:45	0	6	1	**7**	0	4	0	**4**	**11**	0	0	0	**0**	4	2	3	**9**	**9**	**20**
15:45	16:00	0	2	1	**3**	1	2	0	**3**	**6**	0	0	0	**0**	3	0	4	**7**	**7**	**13**
16:00	16:15	0	6	2	**8**	2	3	0	**5**	**13**	0	0	0	**0**	1	0	2	**3**	**3**	**16**
16:15	16:30	0	2	1	**3**	2	2	0	**4**	**7**	0	0	0	**0**	1	0	2	**3**	**3**	**10**
16:30	16:45	0	1	2	**3**	1	1	0	**2**	**5**	0	0	0	**0**	1	0	0	**1**	**1**	**6**
16:45	17:00	0	2	1	**3**	0	2	0	**2**	**5**	0	0	0	**0**	1	0	2	**3**	**3**	**8**
17:00	17:15	0	3	0	**3**	1	2	0	**3**	**6**	0	0	0	**0**	1	0	1	**2**	**2**	**8**
17:15	17:30	0	1	1	**2**	0	2	0	**2**	**4**	0	0	0	**0**	3	0	1	**4**	**4**	**8**
17:30	17:45	0	2	0	**2**	1	1	0	**2**	**4**	0	0	0	**0**	1	0	4	**5**	**5**	**9**
17:45	18:00	0	1	2	**3**	1	2	0	**3**	**6**	0	0	0	**0**	2	0	2	**4**	**4**	**10**
Total:	None	0	79	51	**130**	20	74	2	**96**	**226**	0	0	0	**0**	52	10	62	**124**	**124**	**350**

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 Northbound U-Turn Total	MAIN ST Southbound U-Turn Total	LEES AVE / GRAHAM AVE Eastbound U-Turn Total	LEES AVE / GRAHAM AVE 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
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

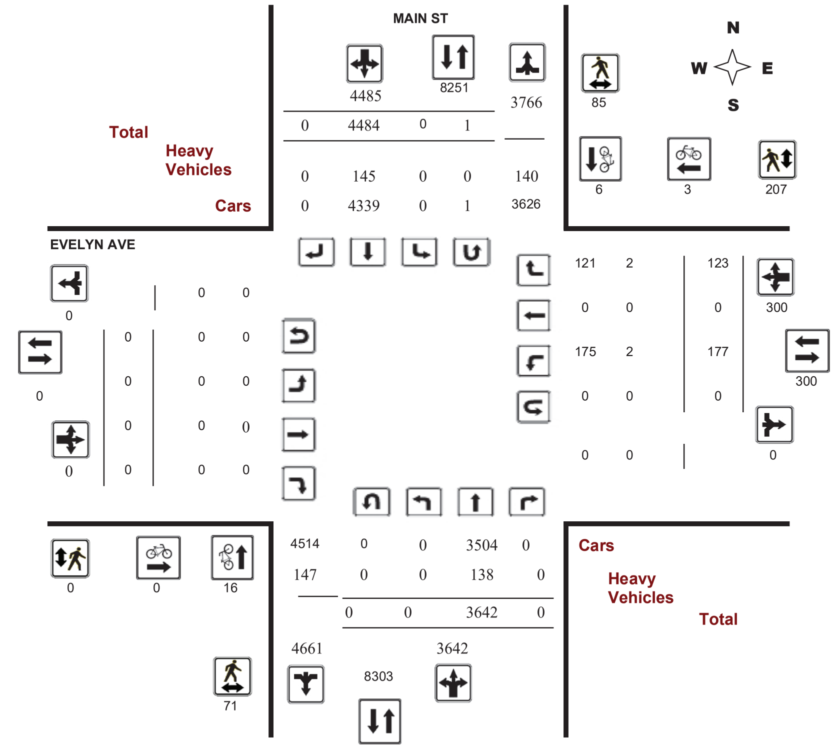
Turning Movement Count - Study Results

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

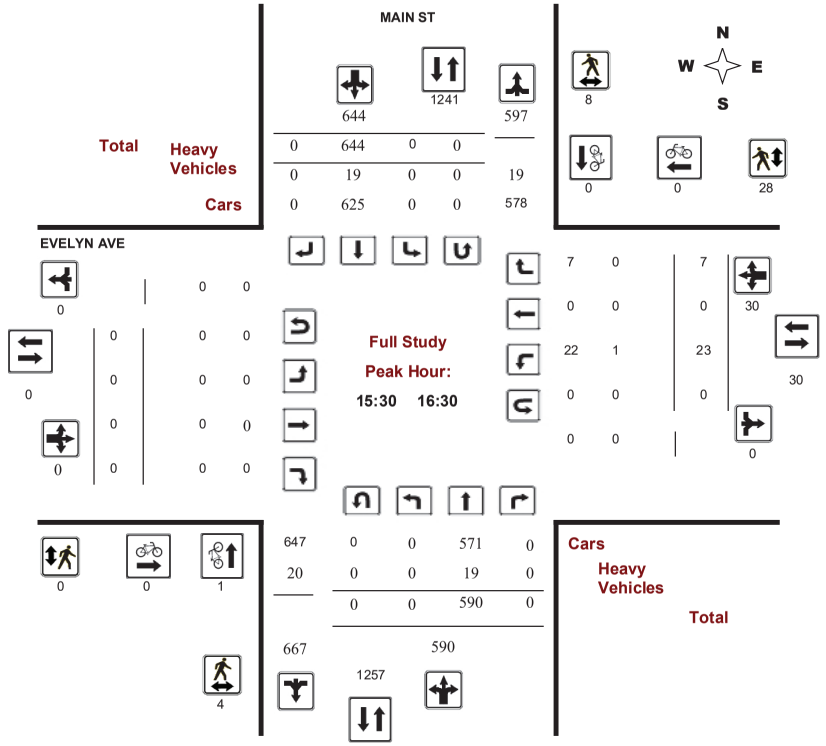
Turning Movement Count - Study Results

EVELYN AVE @ MAIN ST

Survey Date: Tuesday, March 07, 2017 **WO No:** 36734

Start Time: 07:00 **Device:** Miovision

Full Study Peak Hour Diagram



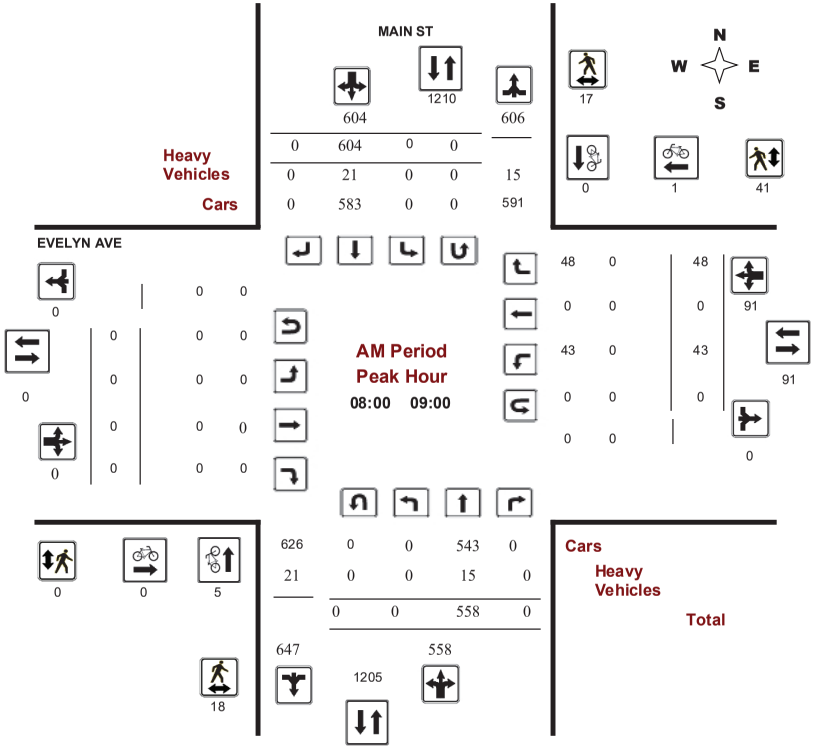
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

EVELYN AVE @ MAIN ST

Survey Date: Tuesday, March 07, 2017 **WO No:** 36734

Start Time: 07:00 **Device:** Miovision



Comments

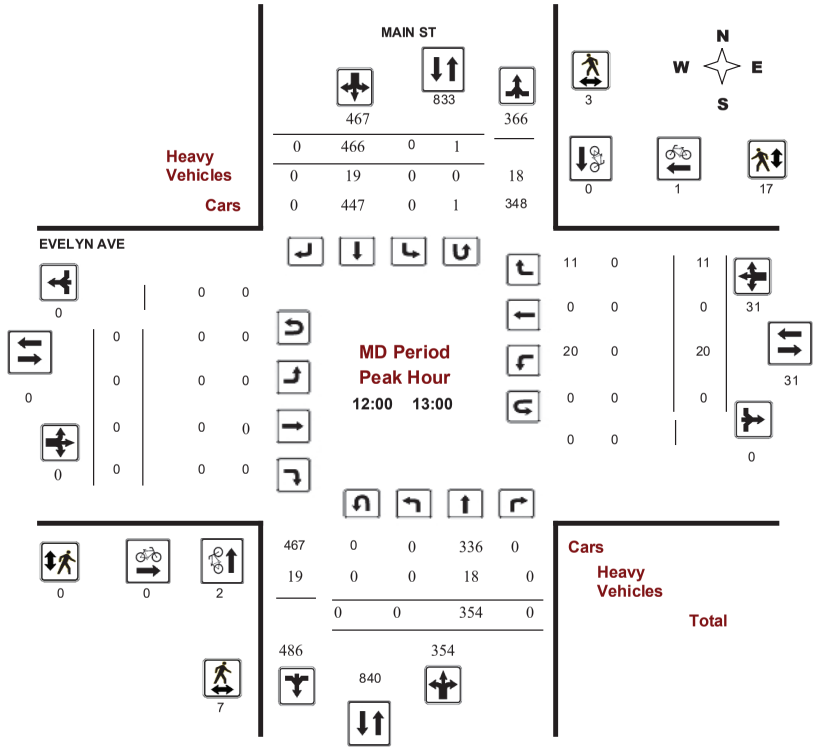
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

EVELYN AVE @ MAIN ST

Survey Date: Tuesday, March 07, 2017 **WO No:** 36734

Start Time: 07:00 **Device:** Miovision



Comments

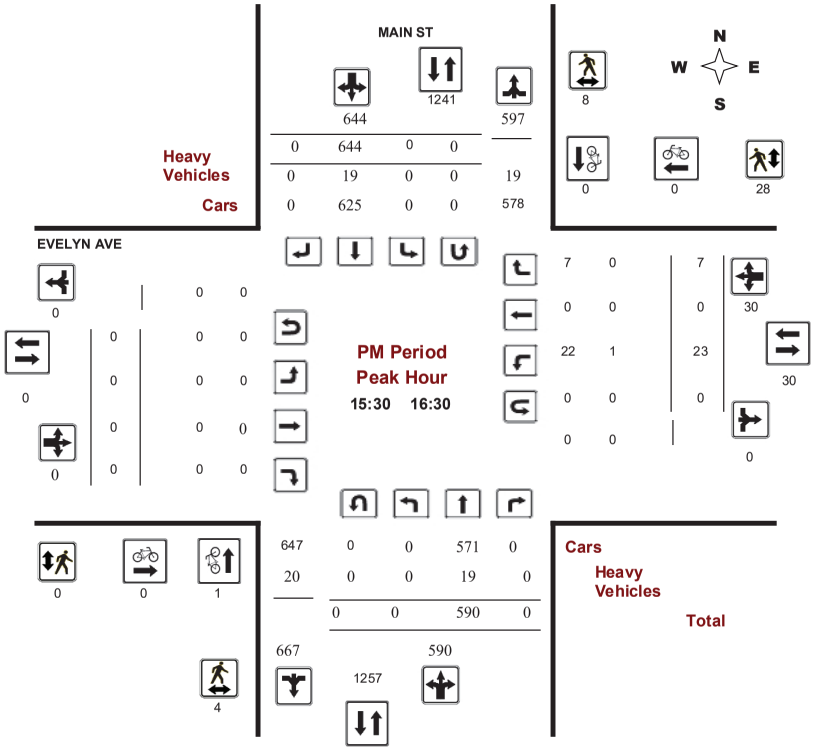
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

EVELYN AVE @ MAIN ST

Survey Date: Tuesday, March 07, 2017 **WO No:** 36734

Start Time: 07:00 **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

Northbound: 0 Southbound: 1

Eastbound: 0 Westbound: 0

AADT Factor 1.00

	MAIN ST									EVELYN AVE									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	0	399	0	**399**	0	638	0	**638**	**1037**	0	0	0	**0**	23	0	15	**38**	**38**	**1075**
08:00 09:00	0	558	0	**558**	0	604	0	**604**	**1162**	0	0	0	**0**	43	0	48	**91**	**91**	**1253**
09:00 10:00	0	422	0	**422**	0	443	0	**443**	**865**	0	0	0	**0**	14	0	10	**24**	**24**	**889**
11:30 12:30	0	357	0	**357**	0	446	0	**446**	**803**	0	0	0	**0**	15	0	11	**26**	**26**	**829**
12:30 13:30	0	333	0	**333**	0	456	0	**456**	**789**	0	0	0	**0**	19	0	8	**27**	**27**	**816**
15:00 16:00	0	567	0	**567**	0	544	0	**544**	**1111**	0	0	0	**0**	25	0	13	**38**	**38**	**1149**
16:00 17:00	0	533	0	**533**	0	691	0	**691**	**1224**	0	0	0	**0**	13	0	6	**19**	**19**	**1243**
17:00 18:00	0	473	0	**473**	0	662	0	**662**	**1135**	0	0	0	**0**	25	0	12	**37**	**37**	**1172**
Sub Total	0	3642	0	**3642**	0	4484	0	**4484**	**8126**	0	0	0	**0**	177	0	123	**300**	**300**	**8426**
U Turns	0			**0**	1			**1**	**1**	**0**			**0**	0			**0**	**0**	**1**
Total	0	3642	0	**3642**	1	4484	0	**4485**	**8127**	0	0	0	**0**	177	0	123	**300**	**300**	**8427**
EQ 12Hr	0	5062	0	**5062**	1	6233	0	**6234**	**11296**	0	0	0	**0**	246	0	171	**417**	**417**	**11713**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	0	5062	0	**5062**	1	6233	0	**6234**	**11296**	0	0	0	**0**	246	0	171	**417**	**417**	**11713**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.00**					
AVG 24Hr	0	6631	0	**6631**	1	8165	0	**8166**	**14797**	0	0	0	**0**	322	0	224	**546**	**546**	**15343**
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

EVELYN AVE @ MAIN ST

Survey Date: Tuesday, March 07, 2017 **WO No:** 36734

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute Increments

		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	61	0	61	0	156	0	156	**217**	0	0	0	0	6	0	0	6	**6**	**223**
07:15	07:30	0	93	0	93	0	148	0	148	**241**	0	0	0	0	3	0	2	5	**5**	**246**
07:30	07:45	0	104	0	104	0	191	0	191	**295**	0	0	0	0	6	0	2	8	**8**	**303**
07:45	08:00	0	141	0	141	0	143	0	143	**284**	0	0	0	0	8	0	11	19	**19**	**303**
08:00	08:15	0	128	0	128	0	144	0	144	**272**	0	0	0	0	10	0	18	28	**28**	**300**
08:15	08:30	0	143	0	143	0	151	0	151	**294**	0	0	0	0	13	0	16	29	**29**	**323**
08:30	08:45	0	155	0	155	0	155	0	155	**310**	0	0	0	0	8	0	5	13	**13**	**323**
08:45	09:00	0	132	0	132	0	154	0	154	**286**	0	0	0	0	12	0	9	21	**21**	**307**
09:00	09:15	0	125	0	125	0	103	0	103	**228**	0	0	0	0	6	0	3	9	**9**	**237**
09:15	09:30	0	104	0	104	0	123	0	123	**227**	0	0	0	0	3	0	3	6	**6**	**233**
09:30	09:45	0	99	0	99	0	115	0	115	**214**	0	0	0	0	1	0	4	5	**5**	**219**
09:45	10:00	0	94	0	94	0	102	0	102	**196**	0	0	0	0	4	0	0	4	**4**	**200**
11:30	11:45	0	97	0	97	0	107	0	107	**204**	0	0	0	0	5	0	2	7	**7**	**211**
11:45	12:00	0	90	0	90	0	105	0	105	**195**	0	0	0	0	2	0	1	3	**3**	**198**
12:00	12:15	0	89	0	89	0	109	0	109	**198**	0	0	0	0	3	0	2	5	**5**	**203**
12:15	12:30	0	81	0	81	1	125	0	126	**207**	0	0	0	0	5	0	6	11	**11**	**218**
12:30	12:45	0	82	0	82	0	121	0	121	**203**	0	0	0	0	6	0	1	7	**7**	**210**
12:45	13:00	0	102	0	102	0	111	0	111	**213**	0	0	0	0	6	0	2	8	**8**	**221**
13:00	13:15	0	68	0	68	0	110	0	110	**178**	0	0	0	0	4	0	4	8	**8**	**186**
13:15	13:30	0	81	0	81	0	114	0	114	**195**	0	0	0	0	3	0	1	4	**4**	**199**
15:00	15:15	0	127	0	127	0	109	0	109	**236**	0	0	0	0	6	0	4	10	**10**	**246**
15:15	15:30	0	147	0	147	0	126	0	126	**273**	0	0	0	0	6	0	3	9	**9**	**282**
15:30	15:45	0	130	0	130	0	170	0	170	**300**	0	0	0	0	6	0	5	11	**11**	**311**
15:45	16:00	0	163	0	163	0	139	0	139	**302**	0	0	0	0	7	0	1	8	**8**	**310**
16:00	16:15	0	146	0	146	0	166	0	166	**312**	0	0	0	0	5	0	1	6	**6**	**318**
16:15	16:30	0	151	0	151	0	169	0	169	**320**	0	0	0	0	5	0	0	5	**5**	**325**
16:30	16:45	0	121	0	121	0	184	0	184	**305**	0	0	0	0	1	0	4	5	**5**	**310**
16:45	17:00	0	115	0	115	0	172	0	172	**287**	0	0	0	0	2	0	1	3	**3**	**290**
17:00	17:15	0	146	0	146	0	178	0	178	**324**	0	0	0	0	5	0	3	8	**8**	**332**
17:15	17:30	0	130	0	130	0	163	0	163	**293**	0	0	0	0	5	0	4	9	**9**	**302**
17:30	17:45	0	101	0	101	0	192	0	192	**293**	0	0	0	0	8	0	1	9	**9**	**302**
17:45	18:00	0	96	0	96	0	129	0	129	**225**	0	0	0	0	7	0	4	11	**11**	**236**
Total:		0	3642	0	3642	1	4484	0	4485	**8127**	0	0	0	0	177	0	123	300	**8127**	**8,427**

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			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand 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			
	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	Grand 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		
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	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**
15:15	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

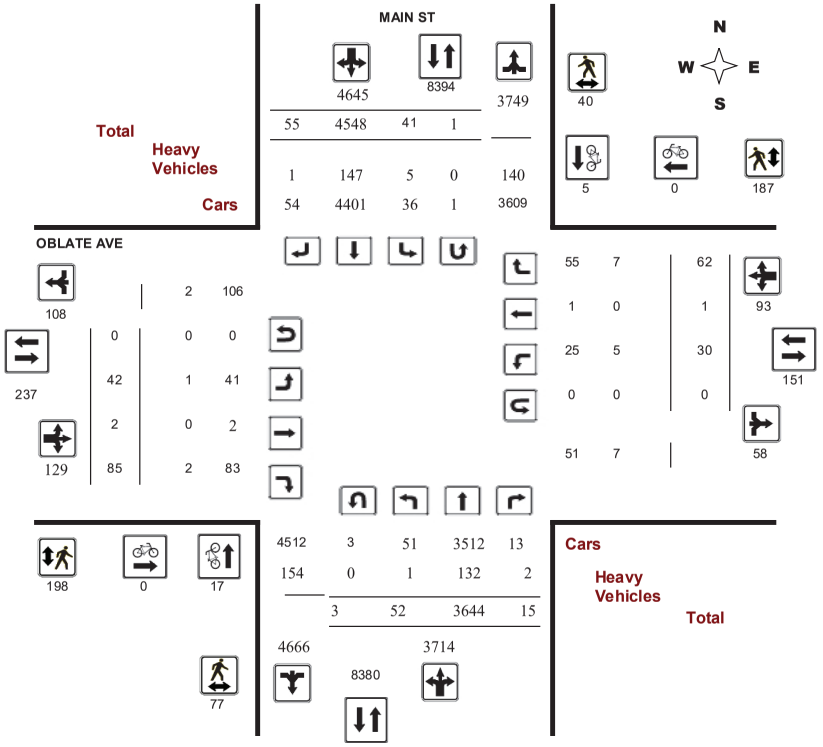
Turning Movement Count - Study Results

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

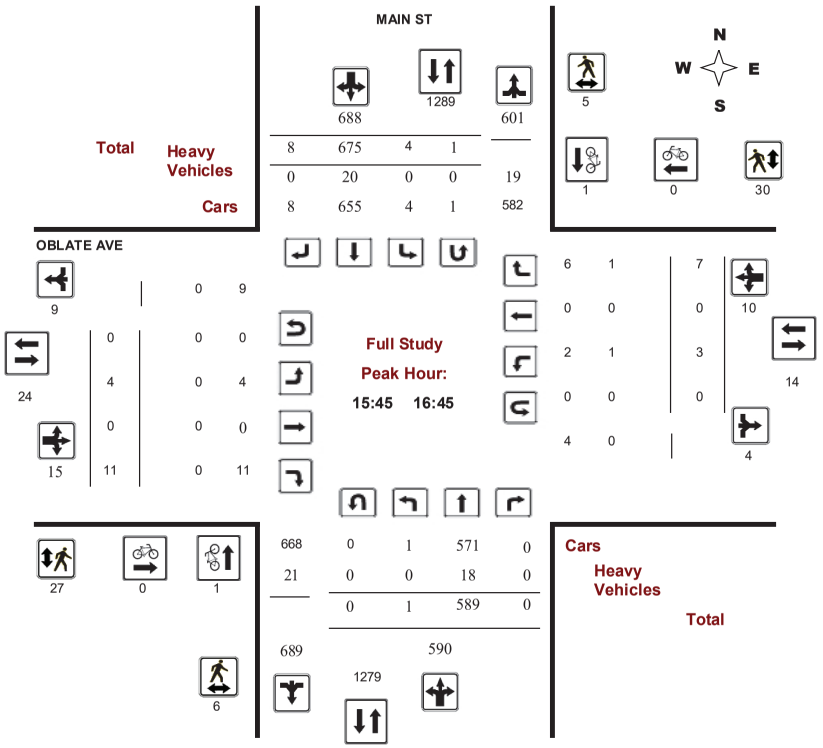
Turning Movement Count - Study Results

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

Northbound: 3 Southbound: 1

Eastbound: 0 Westbound: 0

AADT Factor 1.00

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

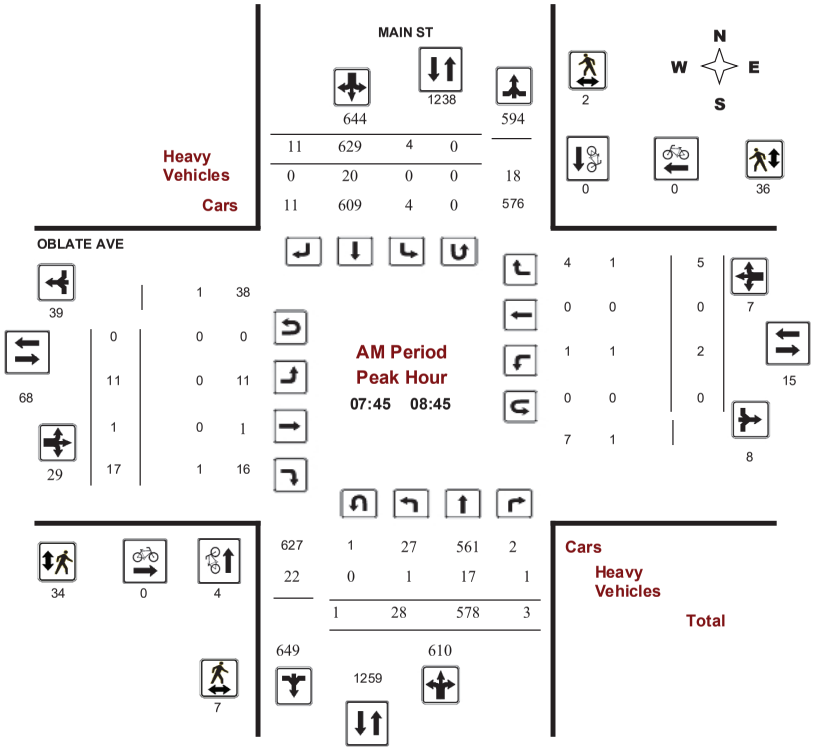
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MAIN ST @ OBLATE AVE

Survey Date: Tuesday, March 07, 2017 **WO No:** 36739

Start Time: 07:00 **Device:** Miovision



Comments

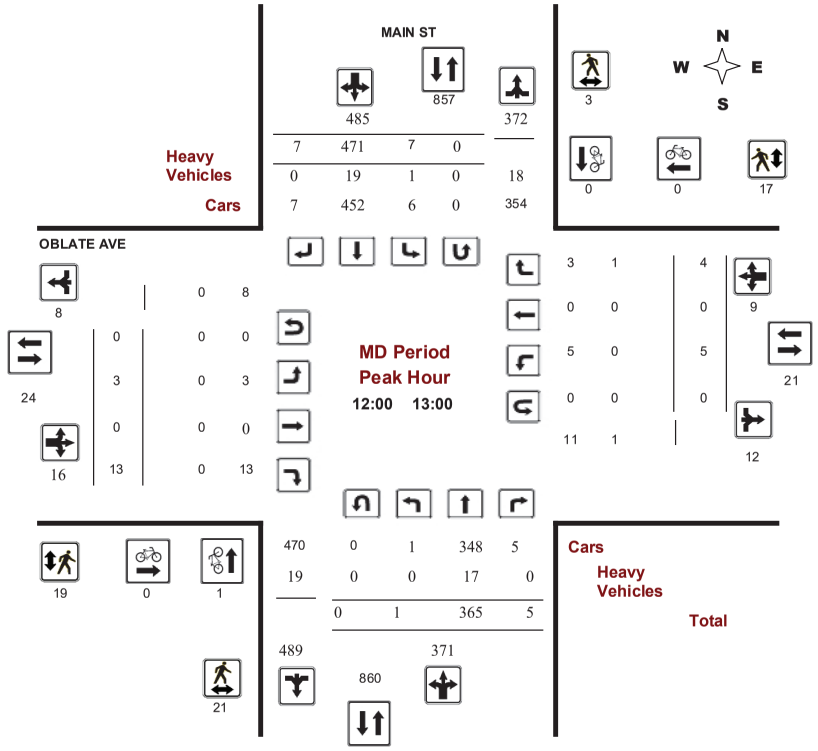
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MAIN ST @ OBLATE AVE

Survey Date: Tuesday, March 07, 2017 **WO No:** 36739

Start Time: 07:00 **Device:** Miovision



Comments

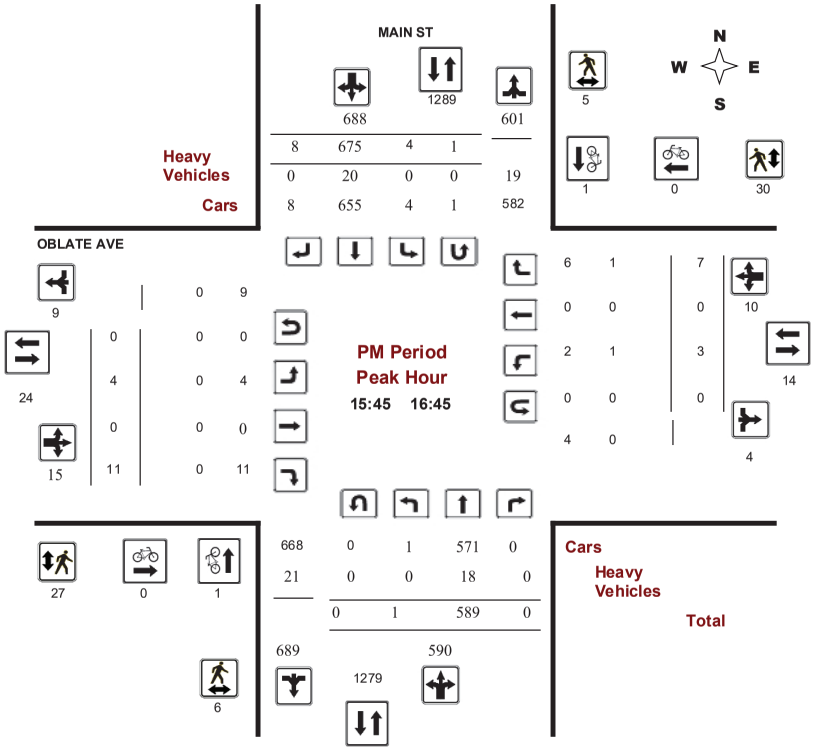
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MAIN ST @ OBLATE AVE

Survey Date: Tuesday, March 07, 2017 **WO No:** 36739

Start Time: 07:00 **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

		MAIN ST									OBLATE 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	2	61	2	65	4	153	0	157	7	1	0	2	3	2	0	2	4	7	229
07:15	07:30	0	95	1	96	2	146	1	149	11	0	0	0	0	1	0	0	1	11	246
07:30	07:45	2	101	0	103	1	180	3	184	9	0	0	4	4	0	0	0	0	9	291
07:45	08:00	10	145	1	156	3	145	4	152	8	4	1	4	9	2	0	3	5	8	322
08:00	08:15	8	128	2	138	1	153	5	159	13	3	0	8	11	0	0	1	1	13	309
08:15	08:30	7	141	0	148	0	166	1	167	7	4	0	2	6	0	0	0	0	7	321
08:30	08:45	3	164	0	168	0	165	1	166	11	0	0	3	3	0	0	1	1	11	338
08:45	09:00	1	126	0	127	1	162	3	166	7	1	0	1	2	1	0	2	3	7	298
09:00	09:15	1	130	0	132	1	109	0	110	10	1	0	3	4	2	0	2	4	10	250
09:15	09:30	1	104	2	107	1	126	2	129	10	1	0	2	3	0	0	1	1	10	240
09:30	09:45	1	98	0	99	1	107	1	109	11	0	0	1	1	1	0	4	5	11	214
09:45	10:00	0	95	0	95	0	106	3	109	11	1	0	2	3	1	0	1	2	11	209
11:30	11:45	2	87	1	90	2	107	2	111	10	2	1	2	5	1	0	9	10	10	216
11:45	12:00	1	91	0	92	3	99	0	102	13	1	0	2	3	2	0	3	5	13	202
12:00	12:15	0	92	1	93	2	106	4	112	11	2	0	5	7	3	0	0	3	11	215
12:15	12:30	1	80	0	81	2	126	0	128	8	0	0	3	3	0	0	1	1	8	213
12:30	12:45	0	86	0	86	2	124	0	126	8	0	0	4	4	1	0	1	2	8	218
12:45	13:00	0	107	4	111	1	115	3	119	10	1	0	1	2	1	0	2	3	10	235
13:00	13:15	3	66	0	69	2	115	1	118	5	2	0	4	6	1	0	0	1	5	194
13:15	13:30	3	78	0	81	2	104	3	109	9	1	0	5	6	0	0	1	1	9	197
15:00	15:15	1	133	1	135	0	129	2	131	14	4	0	1	5	0	0	1	1	14	272
15:15	15:30	0	131	0	131	0	130	0	130	7	3	0	5	8	7	1	10	18	7	287
15:30	15:45	0	126	0	126	2	158	0	160	9	1	0	0	1	0	0	3	3	9	290
15:45	16:00	0	173	0	173	2	151	3	156	9	2	0	1	3	0	0	4	4	9	336
16:00	16:15	0	147	0	147	2	173	1	177	12	0	0	4	4	2	0	1	3	12	331
16:15	16:30	1	145	0	146	0	157	2	159	6	0	0	3	3	1	0	2	3	6	311
16:30	16:45	0	124	0	124	0	194	2	196	11	2	0	3	5	0	0	0	0	11	325
16:45	17:00	2	120	0	122	0	169	3	172	8	2	0	3	5	0	0	0	0	8	299
17:00	17:15	0	140	0	140	1	177	2	180	8	0	0	2	2	0	0	3	3	8	325
17:15	17:30	0	130	0	130	1	156	0	157	4	3	0	1	4	0	0	1	1	4	292
17:30	17:45	1	99	0	101	1	200	2	203	6	0	0	2	2	1	0	2	3	6	309
17:45	18:00	1	101	0	102	1	140	1	142	5	0	0	2	2	0	0	1	1	5	247
Total:		52	3644	15	3714	41	4548	55	4645	288	42	2	85	129	30	1	62	93	288	8,581

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

		MAIN ST			OBLATE AVE			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand 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	0	0	0	0	0	0
08:00	08:15	2	0	2	0	0	0	2
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	2	0	2	0	0	0	2
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	0	0	0	0	0	0	0
12:45	13:00	1	0	1	0	0	0	1
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	1	1	0	0	0	1
16:45	17:00	0	2	2	0	0	0	2
17:00	17:15	0	1	1	0	0	0	1
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
Total		17	5	**22**	0	0	0	22

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			
Time Period		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	Grand Total
07:00	07:15	0	0	**0**	2	2	**4**	**4**
07:15	07:30	0	0	**0**	2	5	**7**	**7**
07:30	07:45	6	0	**6**	1	5	**6**	**12**
07:45	08:00	0	2	**2**	13	5	**18**	**20**
08:00	08:15	4	0	**4**	7	6	**13**	**17**
08:15	08:30	1	0	**1**	8	17	**25**	**26**
08:30	08:45	2	0	**2**	6	8	**14**	**16**
08:45	09:00	4	1	**5**	5	8	**13**	**18**
09:00	09:15	1	0	**1**	6	14	**20**	**21**
09:15	09:30	3	1	**4**	2	4	**6**	**10**
09:30	09:45	7	4	**11**	4	2	**6**	**17**
09:45	10:00	4	3	**7**	3	2	**5**	**12**
11:30	11:45	0	1	**1**	6	4	**10**	**11**
11:45	12:00	2	0	**2**	6	4	**10**	**12**
12:00	12:15	10	0	**10**	7	4	**11**	**21**
12:15	12:30	8	1	**9**	5	2	**7**	**16**
12:30	12:45	1	0	**1**	2	4	**6**	**7**
12:45	13:00	2	2	**4**	5	7	**12**	**16**
13:00	13:15	3	0	**3**	7	5	**12**	**15**
13:15	13:30	0	0	**0**	5	3	**8**	**8**
15:00	15:15	2	2	**4**	6	4	**10**	**14**
15:15	15:30	3	12	**15**	8	6	**14**	**29**
15:30	15:45	1	1	**2**	3	6	**9**	**11**
15:45	16:00	2	0	**2**	5	6	**11**	**13**
16:00	16:15	2	0	**2**	5	10	**15**	**17**
16:15	16:30	0	0	**0**	6	4	**10**	**10**
16:30	16:45	2	5	**7**	11	10	**21**	**28**
16:45	17:00	3	0	**3**	7	6	**13**	**16**
17:00	17:15	1	0	**1**	14	3	**17**	**18**
17:15	17:30	3	1	**4**	12	9	**21**	**25**
17:30	17:45	0	0	**0**	5	7	**12**	**12**
17:45	18:00	0	4	**4**	14	5	**19**	**23**
Total	.....	77	40	**117**	198	187	**385**	**502**

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									
		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	5	0	**5**	1	1	0	**2**	**7**	0	0	1	**1**	1	0	1	**2**	**3**	**10**
07:15	07:30	0	5	1	**6**	0	5	0	**5**	**11**	0	0	0	**0**	0	0	0	**0**	**0**	**11**
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	1	**5**	0	3	0	**3**	**8**	0	0	0	**0**	1	0	0	**1**	**1**	**9**
08:00	08:15	0	6	0	**6**	0	7	0	**7**	**13**	0	0	0	**0**	0	0	0	**0**	**0**	**13**
08:15	08:30	1	2	0	**3**	0	4	0	**4**	**7**	0	0	1	**1**	0	0	0	**0**	**1**	**8**
08:30	08:45	0	5	0	**5**	0	6	0	**6**	**11**	0	0	0	**0**	0	0	1	**1**	**1**	**12**
08:45	09:00	0	2	0	**2**	1	4	0	**5**	**7**	0	0	0	**0**	0	0	0	**0**	**0**	**7**
09:00	09:15	0	5	0	**5**	0	5	0	**5**	**10**	0	0	0	**0**	1	0	0	**1**	**1**	**11**
09:15	09:30	0	4	0	**4**	0	6	0	**6**	**10**	0	0	0	**0**	0	0	0	**0**	**0**	**10**
09:30	09:45	0	4	0	**4**	0	6	1	**7**	**11**	0	0	0	**0**	1	0	0	**1**	**1**	**12**
09:45	10:00	0	6	0	**6**	0	5	0	**5**	**11**	1	0	0	**1**	0	0	1	**1**	**2**	**13**
11:30	11:45	0	4	0	**4**	0	6	0	**6**	**10**	0	0	0	**0**	0	0	0	**0**	**0**	**10**
11:45	12:00	0	5	0	**5**	0	8	0	**8**	**13**	0	0	0	**0**	0	0	1	**1**	**1**	**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**	1	5	0	**6**	**8**	0	0	0	**0**	0	0	0	**0**	**0**	**8**
12:30	12:45	0	4	0	**4**	0	4	0	**4**	**8**	0	0	0	**0**	0	0	1	**1**	**1**	**9**
12:45	13:00	0	3	0	**3**	0	7	0	**7**	**10**	0	0	0	**0**	0	0	0	**0**	**0**	**10**
13:00	13:15	0	4	0	**4**	1	0	0	**1**	**5**	0	0	0	**0**	0	0	0	**0**	**0**	**5**
13:15	13:30	0	5	0	**5**	1	3	0	**4**	**9**	0	0	0	**0**	0	0	0	**0**	**0**	**9**
15:00	15:15	0	5	0	**5**	0	9	0	**9**	**14**	0	0	0	**0**	0	0	0	**0**	**0**	**14**
15:15	15:30	0	3	0	**3**	0	4	0	**4**	**7**	0	0	0	**0**	0	0	0	**0**	**0**	**7**
15:30	15:45	0	4	0	**4**	0	5	0	**5**	**9**	0	0	0	**0**	0	0	0	**0**	**0**	**9**
15:45	16:00	0	5	0	**5**	0	4	0	**4**	**9**	0	0	0	**0**	0	0	1	**1**	**1**	**10**
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	3	0	**3**	**6**	0	0	0	**0**	1	0	0	**1**	**1**	**7**
16:30	16:45	0	4	0	**4**	0	7	0	**7**	**11**	0	0	0	**0**	0	0	0	**0**	**0**	**11**
16:45	17:00	0	3	0	**3**	0	5	0	**5**	**8**	0	0	0	**0**	0	0	0	**0**	**0**	**8**
17:00	17:15	0	3	0	**3**	0	5	0	**5**	**8**	0	0	0	**0**	0	0	0	**0**	**0**	**8**
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	3	0	**3**	**6**	0	0	0	**0**	0	0	1	**1**	**1**	**7**
17:45	18:00	0	3	0	**3**	0	2	0	**2**	**5**	0	0	0	**0**	0	0	0	**0**	**0**	**5**
Total:	None	1	132	2	**135**	5	147	1	**153**	**288**	1	0	2	**3**	5	0	7	**12**	**15**	**303**

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		MAIN ST Northbound U-Turn Total	MAIN ST Southbound U-Turn Total	OBLATE AVE Eastbound U-Turn Total	OBLATE AVE 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

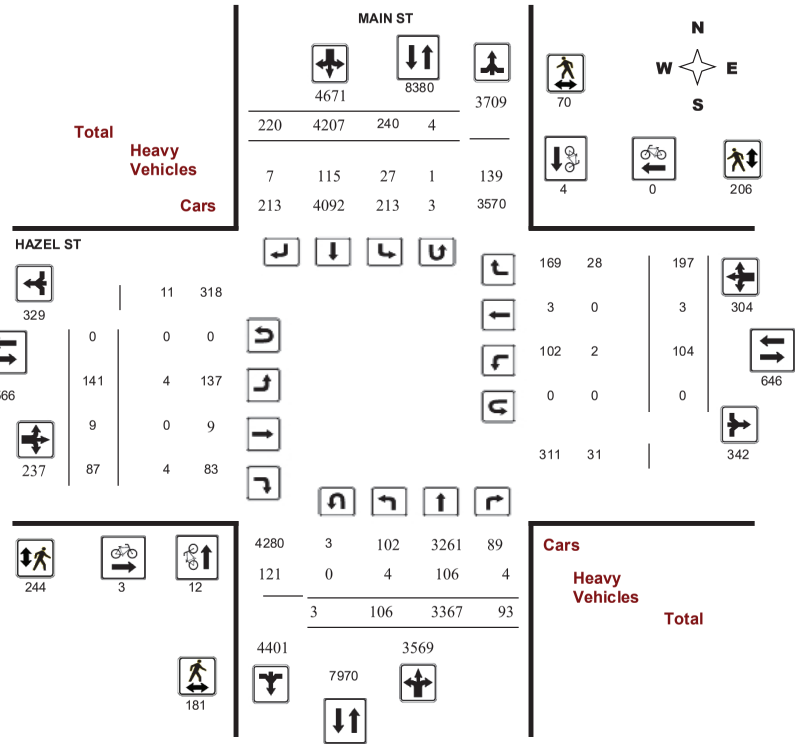
Turning Movement Count - Study Results

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

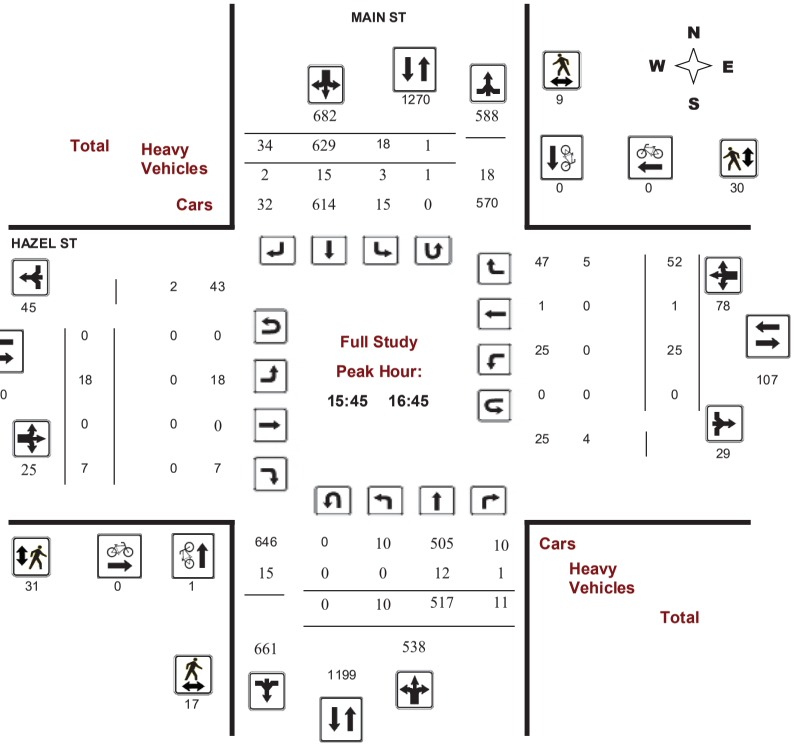
Turning Movement Count - Study Results

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

Northbound: 3 Southbound: 4

Eastbound: 0 Westbound: 0

AADT Factor 1.00

	MAIN ST									HAZEL ST									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
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**
Sub Total	106	3367	93	**3566**	240	4207	220	**4667**	**8233**	141	9	87	**237**	104	3	197	**304**	**541**	**8774**
U Turns				**3**				**4**	**7**				**0**				**0**	**0**	**7**
Total	106	3367	93	**3569**	240	4207	220	**4671**	**8240**	141	9	87	**237**	104	3	197	**304**	**541**	**8781**
EQ 12Hr	147	4680	129	**4961**	334	5848	306	**6493**	**11454**	196	13	121	**329**	145	4	274	**423**	**752**	**12206**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	139	4411	122	**4675**	314	5511	288	**6119**	**11454**	185	12	114	**310**	136	4	258	**398**	**752**	**12206**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1**					
AVG 24Hr	182	5778	160	**6125**	412	7220	378	**8016**	**14141**	242	15	149	**407**	178	5	338	**522**	**929**	**15070**

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.

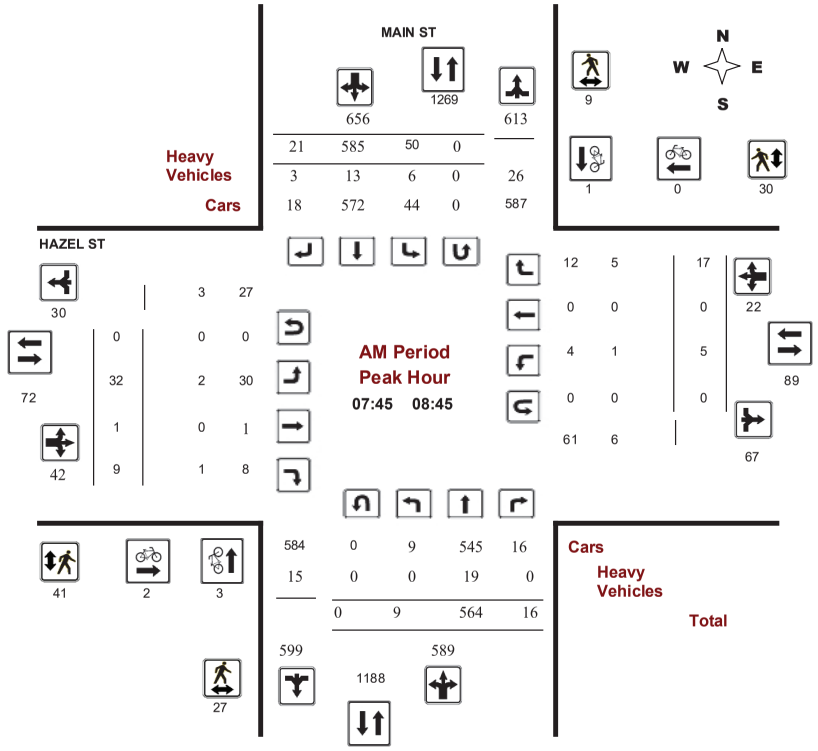
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HAZEL ST @ MAIN ST

Survey Date: Tuesday, March 07, 2017 **WO No:** 36733

Start Time: 07:00 **Device:** Miovision



Comments

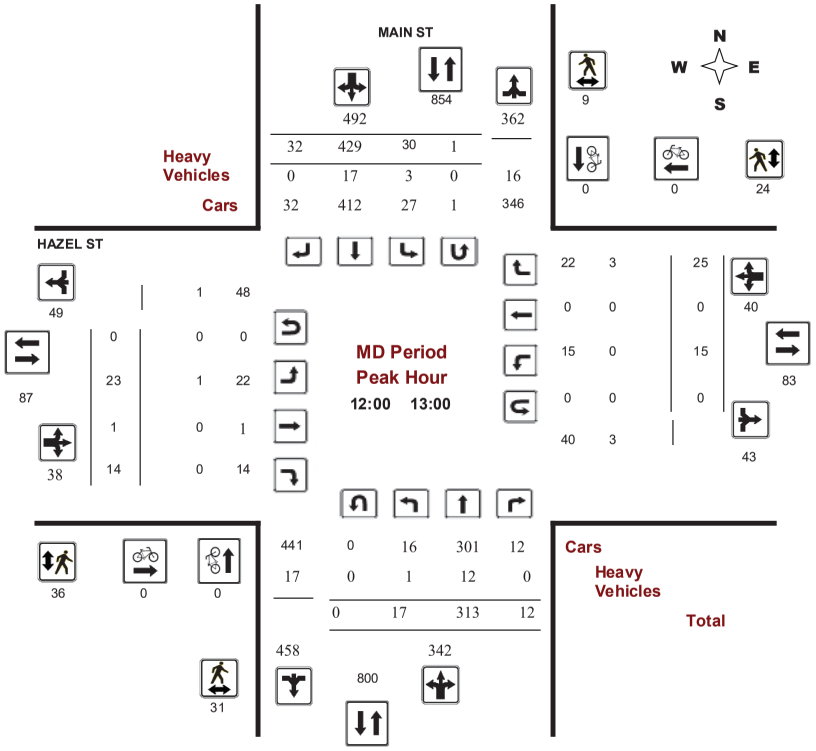
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HAZEL ST @ MAIN ST

Survey Date: Tuesday, March 07, 2017 **WO No:** 36733

Start Time: 07:00 **Device:** Miovision



Comments

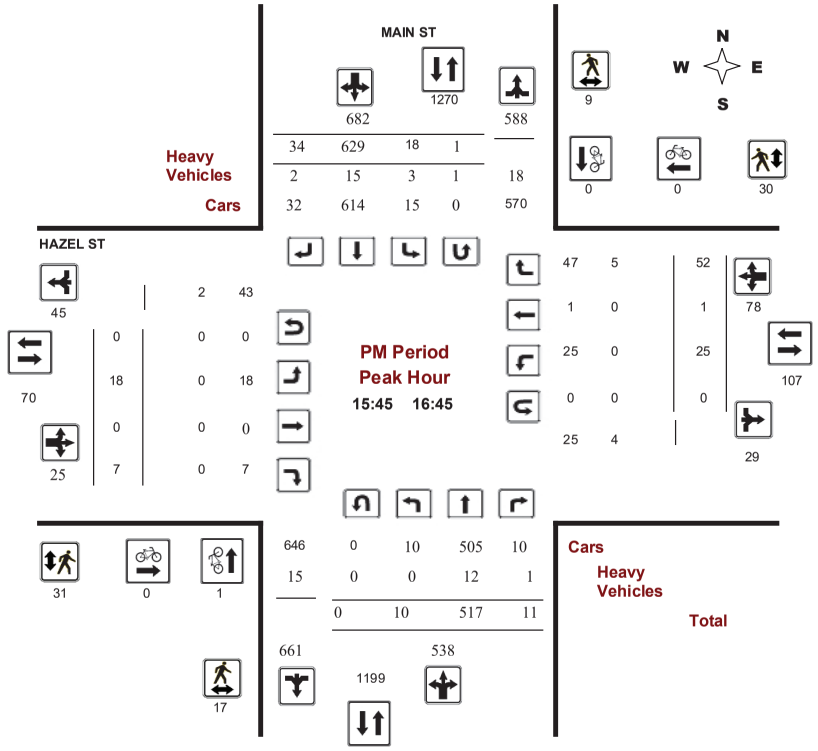
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

HAZEL ST @ MAIN ST

Survey Date: Tuesday, March 07, 2017 **WO No:** 36733

Start Time: 07:00 **Device:** Miovision



Comments

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 Increments

		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	64	1	65	10	140	2	152	5	0	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	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 Northbound	MAIN ST Southbound	MAIN ST Street Total	HAZEL ST Eastbound	HAZEL ST Westbound	HAZEL ST Street Total	Grand 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
Total		12	4	**16**	3	0	3	19

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 NB Approach (E or W Crossing)	MAIN ST SB Approach (E or W Crossing)	MAIN ST Total	HAZEL ST EB Approach (N or S Crossing)	HAZEL ST WB Approach (N or S Crossing)	HAZEL ST Total	Grand 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**
Total		181	70	**251**	244	206	**450**	**701**

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	**0**	**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		
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	2	0	0	2
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	3	0	0	0	3
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	1	0	0	1
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		3	4	0	0	7

Appendix C

Synchro Intersection Worksheets – Existing Conditions

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						

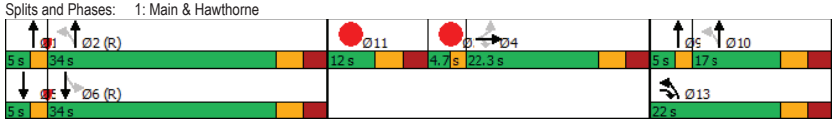
Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 85

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

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.

Splits and Phases: 1: Main & Hawthorne

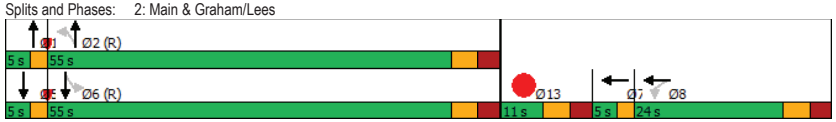


Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations										
Traffic Volume (vph)	177	53	7	622	24	515				
Future Volume (vph)	177	53	7	622	24	515				
Lane Group Flow (vph)	197	240	0	770	0	688				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted 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:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65

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.

Splits and Phases: 2: Main & Graham/Lees

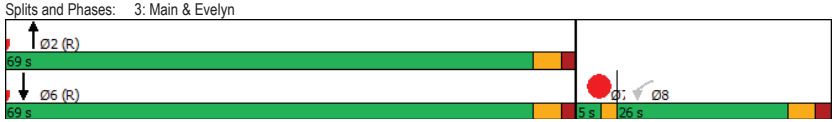


Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations				
Traffic Volume (vph)	43	638	684	
Future Volume (vph)	43	638	684	
Lane Group Flow (vph)	101	709	760	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum 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

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



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	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	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:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

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: 0.91
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.

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

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	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)	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

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

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

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						

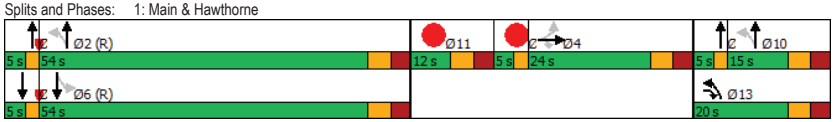
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 26 (22%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

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

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.

Splits and Phases: 1: Main & Hawthorne

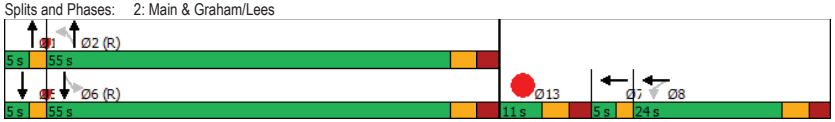


Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations										
Traffic Volume (vph)	174	13	7	534	4	630				
Future Volume (vph)	174	13	7	534	4	630				
Lane Group Flow (vph)	193	161	0	677	0	734				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted 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

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.

Splits and Phases: 2: Main & Graham/Lees



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

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

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

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

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/Oblats

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	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		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	m0.5	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

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

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.

Splits and Phases: 6: Main & Hazel

Appendix D

Collision Data

CGH TRANSPORTATION

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
2020-10-30	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 (__3ZA3PZ)	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 (__3ZA3PZ)	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 (__3ZA3PZ)	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 (__3ZA3PZ)	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 (__3ZA3PZ)	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 (__3ZA3B0)	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 (__3ZA3B0)	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 (__3ZA3B8)	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 (__3ZA3B8)	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 (__3ZA3B8)	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 (__3ZA3B8)	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 (__3ZA3B8)	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 DESCHATELETS AVE & MAIN ST (__3ZA1EA)	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

CGH TRANSPORTATION

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

TRANS

Legend

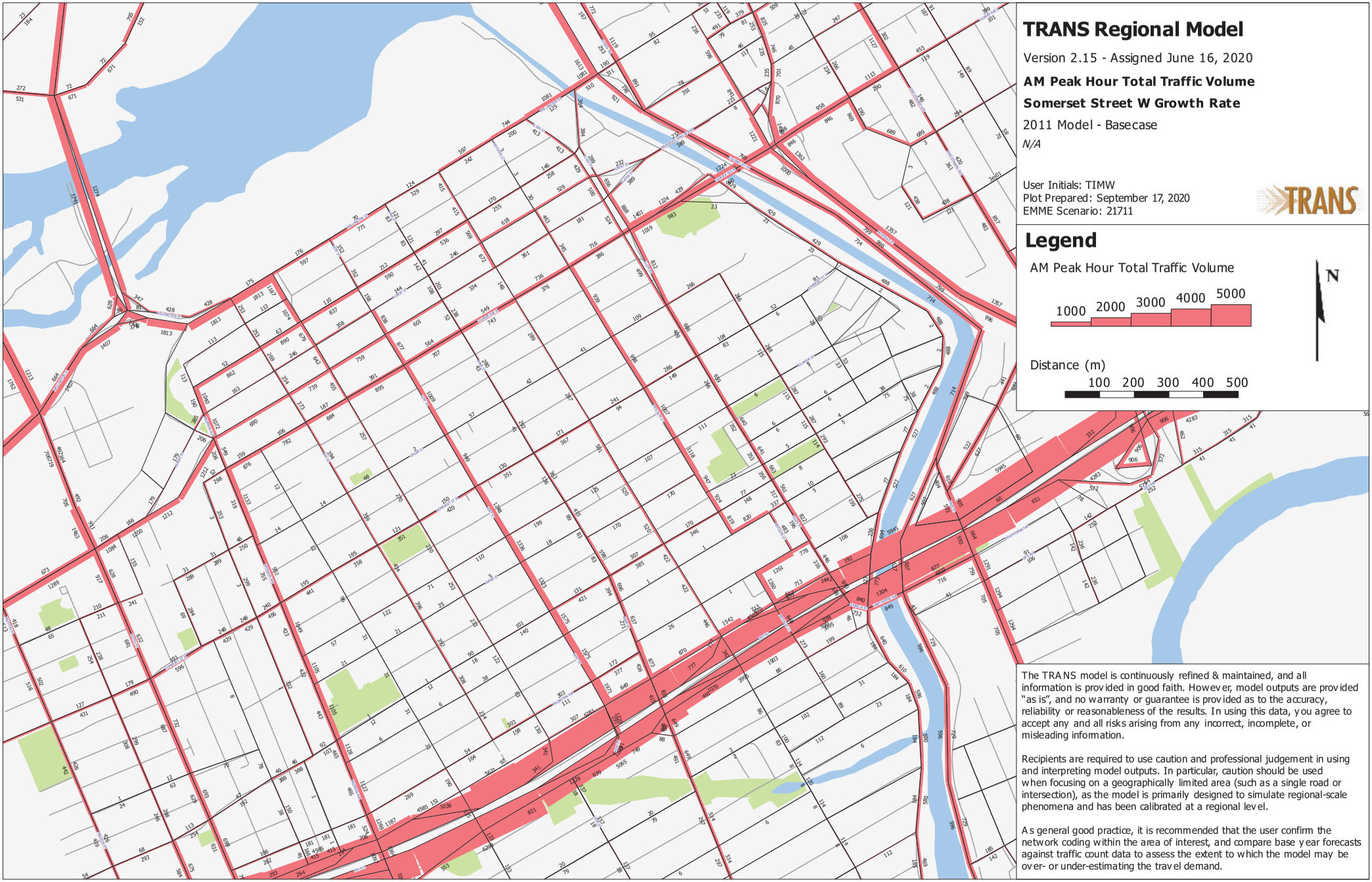
AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

Distance (m)

100 200 300 400 500

N



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

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

100 200 300 400 500

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

TRANS

Legend

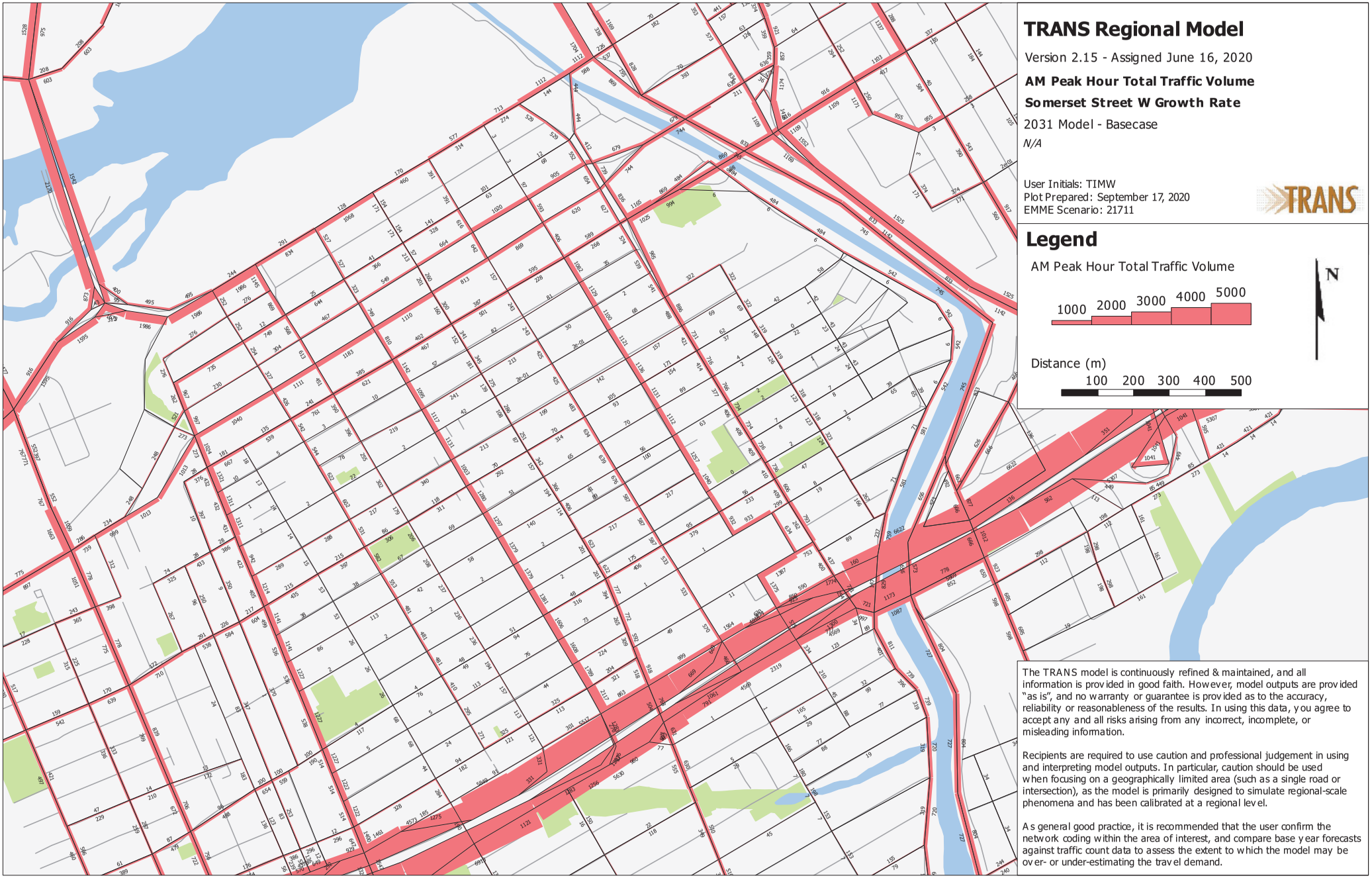
AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

Distance (m)

100 200 300 400 500

N



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

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

Distance (m)

100 200 300 400 500

N

Appendix F

Synchro Intersection Worksheets – 2025 Future Background Conditions

CGH TRANSPORTATION

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						

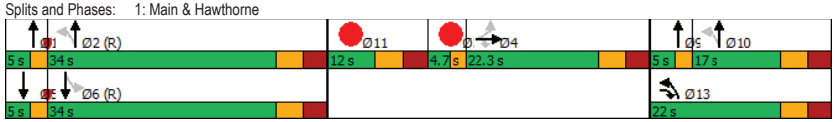
Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 85

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

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.

Splits and Phases: 1: Main & Hawthorne

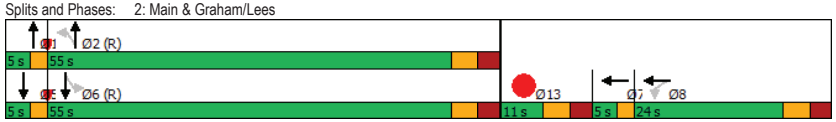


Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations										
Traffic Volume (vph)	243	53	7	664	24	534				
Future Volume (vph)	243	53	7	664	24	534				
Lane Group Flow (vph)	243	271	0	740	0	638				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted 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:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65

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.

Splits and Phases: 2: Main & Graham/Lees

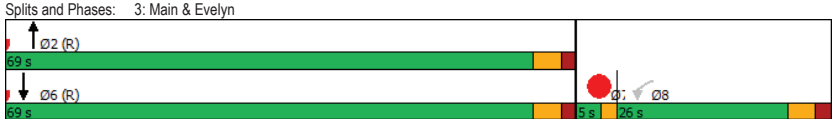


Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations				
Traffic Volume (vph)	44	686	710	
Future Volume (vph)	44	686	710	
Lane Group Flow (vph)	92	686	710	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum 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

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



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.

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

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	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)	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			

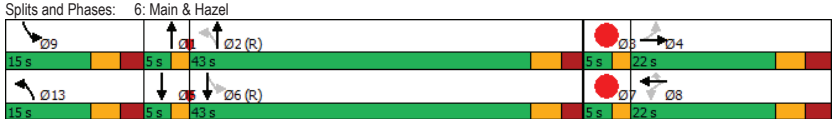
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 46 (51%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75

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

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



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						

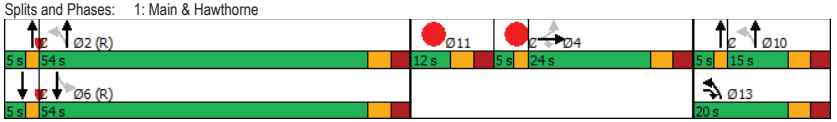
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 26 (22%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

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	

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.

Splits and Phases: 1: Main & Hawthorne



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	
Frpb, 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
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	1 2 9 10			5 6	
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	

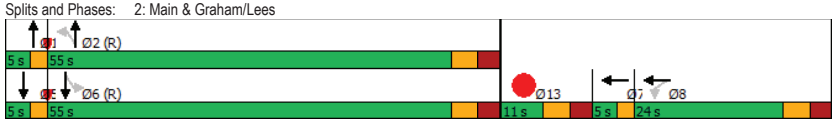
Intersection Summary				
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	31.2	
Intersection Capacity Utilization	82.4%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

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		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	0.34		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

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.

Splits and Phases: 2: Main & Graham/Lees



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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	
Frpb, 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 Prot					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	

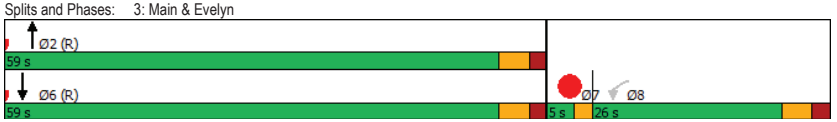
Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	22.2
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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	m37.0	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

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.

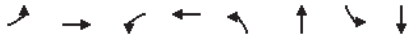
Splits and Phases: 3: Main & Evelyn



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
Frpb, 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



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				

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

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

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/Oblats

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	
Frpb, ped/bikes		0.97		1.00	0.97		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00		0.98	1.00		1.00	1.00		1.00	1.00	
Frt		0.90		1.00	0.85		1.00	0.99		1.00	1.00	
Flt Protected		0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1501		1243	1292		1656	1700		1653	1725	
Flt Permitted		0.95		0.75	1.00		0.17	1.00		0.23	1.00	
Satd. Flow (perm)		1440		979	1292		290	1700		403	1725	
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)	4	0	11	43	0	50	1	614	50	59	849	8
RTOR Reduction (vph)	0	12	0	0	41	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	3	0	43	9	0	1	661	0	59	857	0
Confl. Peds. (#/hr)	2		7	7		2	34		36	36		34
Confl. Bikes (#/hr)									4			
Heavy Vehicles (%)	2%	2%	2%	33%	2%	14%	2%	3%	2%	2%	3%	2%
Turn Type	Perm	NA		Perm	NA		custom	NA		custom	NA	
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		52.5	51.9	
Effective Green, g (s)		16.7		16.7	16.7		43.5	45.4		52.5	49.9	
Actuated g/C Ratio		0.19		0.19	0.19		0.48	0.50		0.58	0.55	
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		312	956	
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		0.19	0.90	
Uniform Delay, d1		29.9		31.2	30.1		14.7	18.1		10.7	17.8	
Progression Factor		1.00		1.00	1.00		1.51	0.73		0.88	0.85	
Incremental Delay, d2		0.1		3.1	0.3		0.0	5.7		0.3	11.9	
Delay (s)		30.0		34.3	30.4		22.2	19.0		9.7	27.0	
Level of Service		C		C	C		C	B		A	C	
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				

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		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	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

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

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.

Splits and Phases: 6: Main & Hazel

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	
Frpb, ped/bikes		0.98			1.00	0.95	1.00	0.97		1.00	0.98	
Flpb, 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
Confl. Peds. (#/hr)	9		17	17		9	31		30	30		31
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	2%	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	1 2		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	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	21.8
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Appendix G

Synchro Intersection Worksheets – 2030 Future Background Conditions

CGH TRANSPORTATION

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	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	0.80	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						

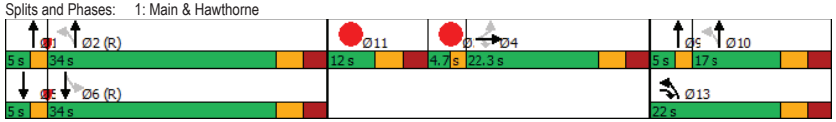
Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 85

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

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.

Splits and Phases: 1: Main & Hawthorne

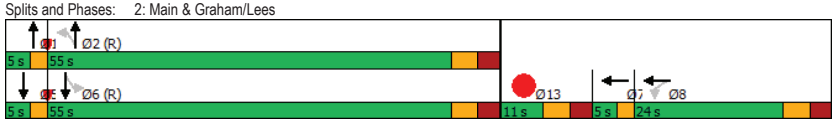


Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations										
Traffic Volume (vph)	323	53	7	664	24	534				
Future Volume (vph)	323	53	7	664	24	534				
Lane Group Flow (vph)	323	345	0	741	0	638				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted 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:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65

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.

Splits and Phases: 2: Main & Graham/Lees

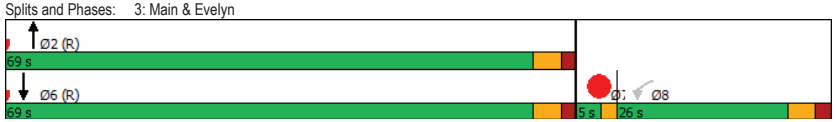


Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations				
Traffic Volume (vph)	44	686	710	
Future Volume (vph)	44	686	710	
Lane Group Flow (vph)	92	686	710	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum 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

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



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.

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

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	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)	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			

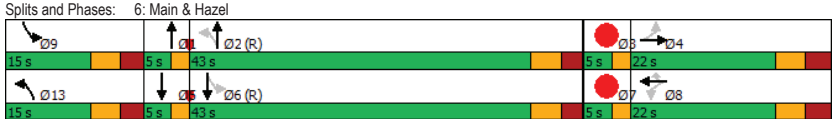
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 46 (51%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75

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

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



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						

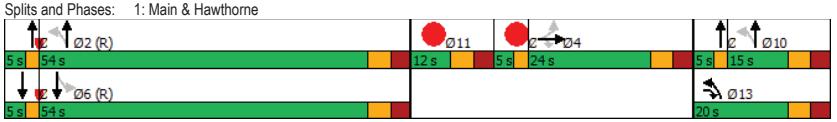
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 26 (22%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

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	

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.

Splits and Phases: 1: Main & Hawthorne



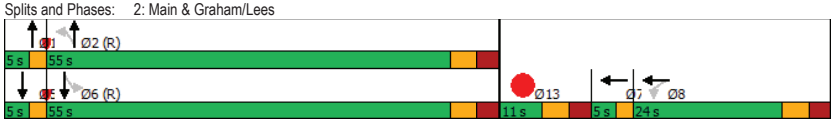
Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations										
Traffic Volume (vph)	194	13	8	593	4	689				
Future Volume (vph)	194	13	8	593	4	689				
Lane Group Flow (vph)	194	148	0	730	0	720				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted 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

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.

Splits and Phases: 2: Main & Graham/Lees

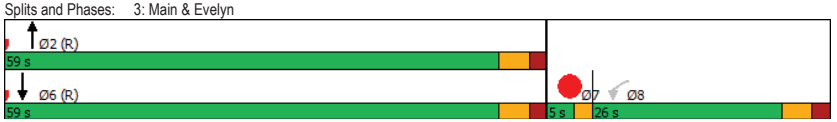


Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations				
Traffic Volume (vph)	25	657	869	
Future Volume (vph)	25	657	869	
Lane Group Flow (vph)	32	657	869	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum 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	m37.0	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

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.

Splits and Phases: 3: Main & Evelyn



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				

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

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

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/Oblats

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		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	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

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

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.

Splits and Phases: 6: Main & Hazel

Appendix H

MMLOS Analysis

CGH TRANSPORTATION

Multi-Modal Level of Service - Segments Form

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

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

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
	Conflicting Left Turns	Permissive	No left turn / Prohib.	Permissive	Protected/ Permissive	No left turn / Prohib.	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	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 prohibited	RTOR prohibited	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		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 Right Turn	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
	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
	PETSI Score	**73**	**68**	**95**	**60**	**66**	**57**	**59**	**95**	**87**	**90**	**97**		**59**	**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**	**A**
	Cycle Length	100	100	100	100	100	100	100	100	100	100	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
	Average Pedestrian Delay	**29**	**39**	**15**	**29**	**37**	**37**	**16**	**16**	**35**	**35**	**9**		**36**	**36**	**17**	**17**	**38**	**38**	**19**	**19**
	Pedestrian Delay LoS	**C**	**D**	**B**	**C**	**D**	**D**	**B**	**B**	**D**	**D**	**A**	**-**	**D**	**D**	**B**	**B**	**D**	**D**	**B**	**B**
	Level of Service	**C**	**D**	**B**	**C**	**D**	**D**	**D**	**B**	**D**	**D**	**A**	**-**	**D**	**D**	**B**	**B**	**D**	**D**	**B**	**B**
		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	Mixed Traffic	
	Right Turn Lane Configuration		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	≤ 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	≤ 40 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**	**A**	**-**	**A**	**E**	**A**	**A**	**A**	**-**	**-**	**A**	**-**	**A**	**A**	**A**	**A**	**A**	**A**	**D**	**A**
		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**	**-**	**-**
		F				**F**				**C**				**D**				**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	**C**	**-**	**-**	**D**	**-**	**C**	**A**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		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

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

★ — 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
		1. TDM PROGRAM MANAGEMENT	
		1.1 Program coordinator	
BASIC	★ 1.1.1	Designate an internal coordinator, or contract with an external coordinator	☐
		1.2 Travel surveys	
BETTER	1.2.1	Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
		2. WALKING AND CYCLING	
		2.1 Information on walking/cycling routes & destinations	
BASIC	2.1.1	Display local area maps with walking/cycling access routes and key destinations at major entrances *(multi-family, condominium)*	☑
		2.2 Bicycle skills training	
BETTER	2.2.1	Offer on-site cycling courses for residents, or subsidize off-site courses	☐

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

			TDM measures: *Residential developments*	Check if proposed & add descriptions
		6.	**TDM MARKETING & COMMUNICATIONS**	
		6.1	**Multimodal travel information**	
BASIC	★	6.1.1	Provide a multimodal travel option information package to new residents	☑
		6.2	**Personalized trip planning**	
BETTER	★	6.2.1	Offer personalized trip planning to new residents	☐

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: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	1.	**WALKING & CYCLING: ROUTES**	
	1.1	**Building location & access points**	
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	☑
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☑
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☑
	1.2	**Facilities for walking & cycling**	
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 Official Plan policy 4.3.3)*	☑
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 Official Plan policy 4.3.12)*	☑

		TDM-supportive design & infrastructure measures: *Residential developments*	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 Official Plan policy 4.3.10)*	☑
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 Official Plan policy 4.3.10)*	☑
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 Official Plan policy 4.3.11)*	☑
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	☑
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	☐
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	☐
	1.3	**Amenities for walking & cycling**	
BASIC	1.3.1	Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	☐
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)	☐

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)*	☑
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 Zoning By-law Section 111)*	☑
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 Zoning By-law Section 111)*	☑
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	☐
	2.2	**Secure bicycle parking**	
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 Zoning By-law Section 111)*	☑
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	☑
	2.3	**Bicycle repair station**	
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)	☑
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☐
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	☐
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐

TDM-Supportive Development Design and Infrastructure Checklist **City of Ottawa**
Version 1.0 (30 June 2017)

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	4.	**RIDESHARING**	
	4.1	**Pick-up & drop-off facilities**	
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	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses *(see Zoning By-law Section 94)*	☑
	5.2	**Bikeshare station location**	
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☑
	6.	**PARKING**	
	6.1	**Number of parking spaces**	
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	☐
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	☐
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 Zoning By-law Section 104)*	☐
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 Zoning By-law Section 111)*	☐
	6.2	**Separate long-term & short-term parking areas**	
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)	☐

Appendix J

Synchro Intersection Worksheets – 2025 Future Total Conditions

CGH TRANSPORTATION

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 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	0.78	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						

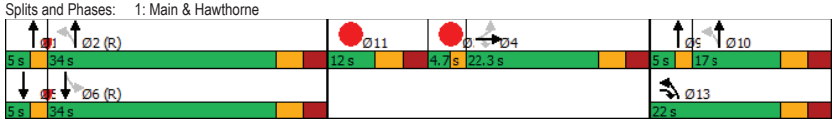
Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 85

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

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.

Splits and Phases: 1: Main & Hawthorne

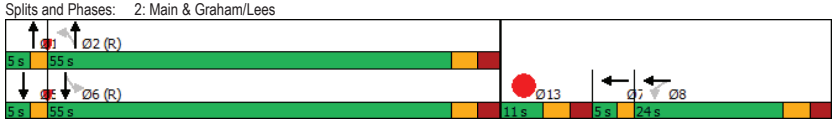


Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations										
Traffic Volume (vph)	251	53	7	669	24	536				
Future Volume (vph)	251	53	7	669	24	536				
Lane Group Flow (vph)	251	277	0	746	0	640				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted 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:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65

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.

Splits and Phases: 2: Main & Graham/Lees

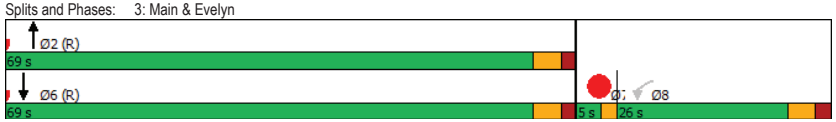


Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations				
Traffic Volume (vph)	44	692	720	
Future Volume (vph)	44	692	720	
Lane Group Flow (vph)	92	692	720	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum 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

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.

Splits and Phases: 3: Main & Evelyn



Lane Group	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

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

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.

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

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	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)	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			

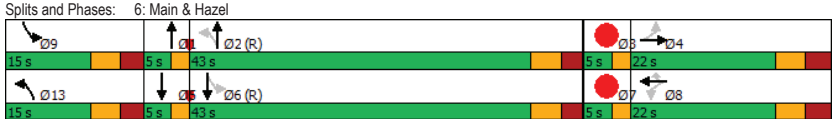
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 46 (51%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75

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

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



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						

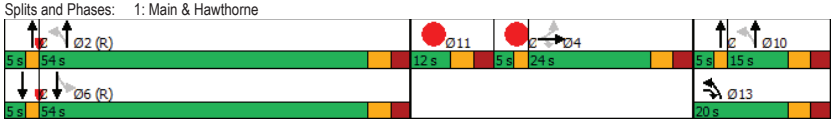
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 26 (22%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

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	

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.

Splits and Phases: 1: Main & Hawthorne



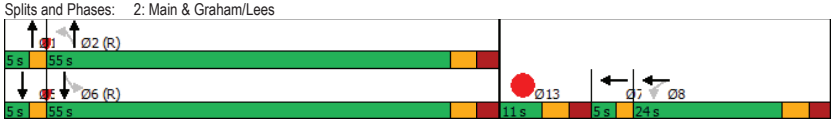
Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations										
Traffic Volume (vph)	200	13	8	596	4	693				
Future Volume (vph)	200	13	8	596	4	693				
Lane Group Flow (vph)	200	151	0	703	0	724				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted 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

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

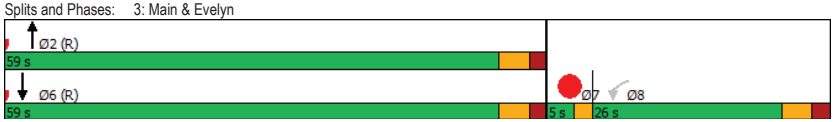


Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations				
Traffic Volume (vph)	25	661	881	
Future Volume (vph)	25	661	881	
Lane Group Flow (vph)	32	661	881	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum 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	m37.1	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

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.

Splits and Phases: 3: Main & Evelyn



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

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

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/Oblats

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	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		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

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

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.

Splits and Phases: 6: Main & Hazel

Appendix K

Synchro Intersection Worksheets – 2030 Future Total Conditions

CGH TRANSPORTATION

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						

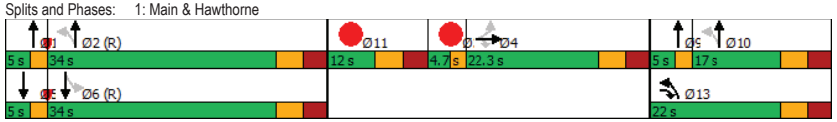
Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 60 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 85

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

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.

Splits and Phases: 1: Main & Hawthorne

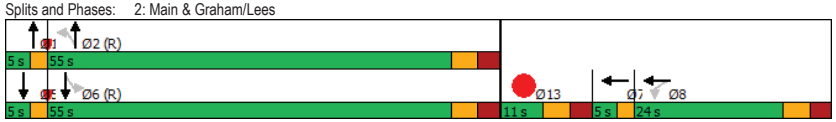


Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations										
Traffic Volume (vph)	331	53	7	669	24	536				
Future Volume (vph)	331	53	7	669	24	536				
Lane Group Flow (vph)	331	351	0	747	0	640				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted 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:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65

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.

Splits and Phases: 2: Main & Graham/Lees

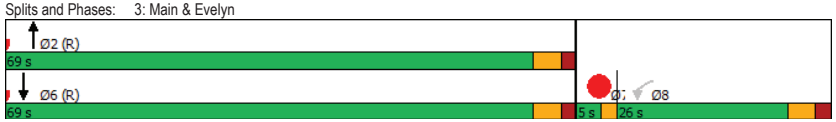


Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations				
Traffic Volume (vph)	44	692	720	
Future Volume (vph)	44	692	720	
Lane Group Flow (vph)	92	692	720	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum 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

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



Lane Group	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

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

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.

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

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	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)	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			

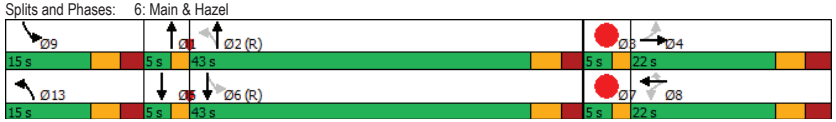
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 46 (51%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75

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

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



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						

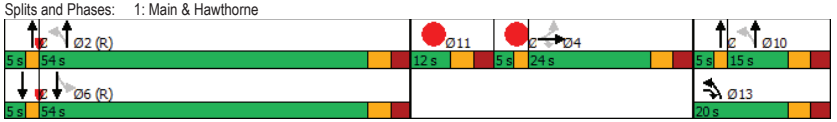
Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 26 (22%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 90

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	

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.

Splits and Phases: 1: Main & Hawthorne



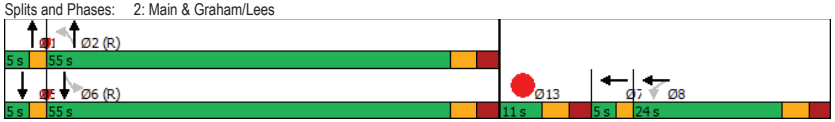
Lane Group	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5	Ø7	Ø13
Lane Configurations										
Traffic Volume (vph)	202	13	8	596	4	693				
Future Volume (vph)	202	13	8	596	4	693				
Lane Group Flow (vph)	202	152	0	734	0	724				
Turn Type	custom	NA	custom	NA	custom	NA				
Protected Phases		7 8		1 2		5 6	1	5	7	13
Permitted 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

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

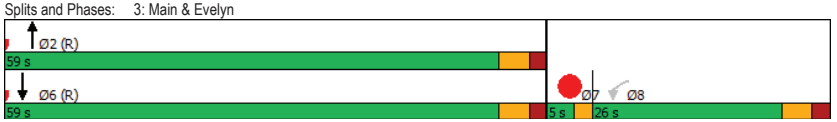


Lane Group	WBL	NBT	SBT	Ø7
Lane Configurations				
Traffic Volume (vph)	25	661	881	
Future Volume (vph)	25	661	881	
Lane Group Flow (vph)	32	661	881	
Turn Type	Perm	NA	NA	
Protected Phases		2	6	7
Permitted Phases	8			
Detector Phase	8	2	6	
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	1.0
Minimum 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	m37.1	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

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.

Splits and Phases: 3: Main & Evelyn



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

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

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/Oblats

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	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		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

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

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.

Splits and Phases: 6: Main & Hazel