APPENDIX A: SCOPE OF WORK

Stadium Shopping Centre Area Redevelopment Plan
Transportation Impact Assessment | FINAL Scope of Work | 2013-03-06

1) **PREAMBLE**
   A. Western Securities is proposing to redevelop the Stadium Shopping Centre into a mixed use site with office, retail and residential land uses. It is our understanding that the City is leading an Area Redevelopment Plan (ARP) for the site and will require transportation analysis to support the plan.
   B. DA Watt has been retained by Western Securities to provide this information in support of the ARP and proposes the following scope of work for the Transportation Impact Assessment (TIA).

2) **HORIZON YEARS**
   A. Existing Conditions (Baseline)
   B. Future Conditions (2039)
   C. Counts shall include vehicular, bicycle, and pedestrian traffic. DA Watt shall provide balanced traffic volumes between intersections that are going to be analysed for both existing and future time horizons.

3) **TIME PERIODS**
   A. Weekday AM/PM Peak Hours reflective of the timing of Foothills Medical Centre shift changes and Westmount Charter School start/end times.
   B. DA Watt shall show 24-hour data for the roadways in the area to confirm that peak periods are being picked up.
   C. DA Watt shall count Uxbridge and the City will update 16 Avenue volumes if necessary.

4) **INTERSECTION CAPACITY ANALYSIS**
   A. 16 Avenue & Uxbridge Drive
   B. Site Access (South)
   C. Site Access (North) – existing horizon only
   D. Site Access (North – Unwin Road (Lane) / Uxbridge Drive)
   E. Uxbridge Drive and Lane (on the west side of the Queen of Peace Church)
   F. Unwin Road & University Drive
   G. Volume shifts from Tim Horton's/Shell resulting from project and potential modifications to Uxbridge Drive shall be included in analysis of study area intersections.
   H. In addition to Synchro analysis, SIDRA roundabout analysis shall be done for intersections of Uxbridge Dr & Unwin Rd NW / lane north of site and Uxbridge Dr & Ulster Rd NW in comparing and recommending ultimate intersection control and configuration at these locations.

5) **WEAVING ANALYSIS**
   A. DA Watt shall review existing and future conditions of weaving area westbound on 16 Avenue between University Drive and Uxbridge Drive during AM and PM peak hours.

6) **SENSITIVITY ANALYSIS**
   A. DA Watt shall conduct sensitivity analysis for all of the study intersections based on a more conservative mode split data (assuming more people driving). The recommended numbers to be used will be verified with the City prior to the analysis.

7) REVIEW OF MODEL DATA

A. DA Watt shall review City's Regional Transportation Model (RTM) data to check population and growth forecasts for Foothills Medical Centre, West Campus, the University of Calgary, McMahon Stadium and the Foothills Athletic Park.
B. As per the City's TIA guidelines, DA Watt shall include information about new developments in the area surrounding the proposed site (West campus, Foothills Medical Centre future expansion, Foothills Athletic centre expansion, McMahon redevelopment etc.) and projected traffic volumes in the background traffic. DA Watt shall provide comments on the relocation of Westmount Charter School (citywide catchment) to University Heights and the impacts of University Elementary School having a 30% non community enrolment.

8) DAILY VOLUME ANALYSIS

A. Uxbridge Drive
B. Unwin Road and the lane to the north of the site
C. 16 Avenue
D. Significant internal roads

9) MODE SPLIT DATA

A. Current mode split data for site (based on survey to be conducted by DA Watt)
B. Discussion on mode split for future (full-build scenario)
C. DA Watt to obtain RTM mode split and discuss implications

10) PROPOSED TRIP GENERATION RATES

A. 16 Avenue west of Uxbridge Drive is part of the future primary transit network, therefore DA Watt shall use the following mix of TOD and standard rates for the proposed land uses as follows:
B. TOD Office: 1.39 (AM) / 1.57 (PM) – City of Calgary Standard Rate
C. Medical Office: 3.00 (AM) / 4.0 (PM) – Local Example (Ashton Professional Centre)
D. Retail: 2.00 (AM) / 6.00 (PM) – City of Calgary
E. Hotel: 0.56 (AM) / 0.59 (PM) - ITE
F. TOD Residential: 0.35 (AM) / 0.45 (PM) – City of Calgary Standard Rate

11) TRIP ASSIGNMENT AND DISTRIBUTION

A. DA Watt shall estimate the vehicular, bicycle, and pedestrian trip generation for the proposed site for the AM and PM peak periods, and assign all trips to the adjacent roadways.
B. The City's RTM select zone analysis shall be used for the trip distribution patterns. If some minor adjustments need to be done this has to be approved by the City.

12) SITE ACCESS REVIEW

A. DA Watt shall assess the operation of the site access locations, and provide commentary related to on-site circulation.
B. South site access proximity to the signalized intersection of 16 Avenue & Uxbridge Drive NW shall be included in this review.

13) INTERNAL TRIP CAPTURE, PASS-BY, AND DIVERTED LINKED TRIPS

A. DA Watt shall use Transportation Research Board methodology for calculating internal trip rates.

B. The City estimates that 20% of the external trips to/from the site will be either diverted linked trips (drivers already travelling along 16 Avenue that divert to the site and then continue on 16 Avenue) or pass-by trips (drivers already travelling along Uxbridge Drive that turn into the site and then continue along Uxbridge Drive). DA Watt shall document the split between pass-by and diverted linked trips in the TIA report.

14) PARKING REVIEW

A. DA Watt shall review on- and off-site parking requirements and management issues, including: bylaw requirements and justification for any reduction, hospital traffic currently using the parking lot and where they will be relocated to, and recommendations for neighbourhood spillover parking mitigation.

15) TRANSIT

A. Existing Transit Service & Conditions
B. Current Pedestrian Facilities
C. Current Pedestrian Volumes
D. Future Transit Service Planned for the Immediate Area (assessment of what's needed to meet the anticipated demand)
E. Forecast of transit trips generated to/from the site using the forecast mode split
F. Proposed transit facilities for site and surrounding area (bus shelters, benches, bus bays connections etc.

16) ACTIVE MODES

A. DA Watt shall review the HCM 2010 methodology for assessing bikes/peds and will provide the City with an assessment of whether this analysis will add value to the process and at what cost.
B. DA Watt shall provide an assessment of available infrastructure in the area surrounding the site for pedestrians and cyclists (with photos)
C. DA Watt shall map out destinations, routes, and barriers within 1km and 3km of the site, including the identification of potential improvements
D. DA Watt shall estimate future peak hour pedestrian volumes generated by the site

17) SHORT-CUTTING TRAFFIC REVIEW

A. DA Watt shall review the potential impacts of the site on short-cutting traffic by:
    a. Identifying potential routes
    b. Estimating the potential increase in volumes
    c. Develop potential mitigation measures including closures, turn restrictions, and both horizontal and vertical calming installations

18) TDM

A. DA Watt shall comment on the high level characteristics of a TDM plan that is appropriate for the site and things that can be included in conditions of development (i.e. carpool parking, bike lockers, shower facilities, car share program etc.).

B. Include recommendations for design/improvements as required for all report sections (e.g. access, parking, proposed road cross-sections, and TDM measures)

19) PROJECT MANAGEMENT

A. The City and DA Watt shall meet at least every two weeks to discuss the progress and results. Some additional work might be required after these consultations.

Project: STADIUM SHOPPING CENTRE –TIA: Version 3
RE: PROPOSED SCOPE OF WORK

Western Securities is proposing to redevelop the Stadium Shopping Centre into a mixed use site with office, retail and residential land uses. It is our understanding that the City is leading an Area Redevelopment Plan Amendment (ARPA) for the site and will require transportation analysis to support the plan. DAW has been retained by Western Securities to provide this information in support of the ARPA. We propose the following scope of work for the Transportation Impact Assessment (TIA).

1) HORIZON YEARS
• Existing Conditions (Baseline)
• Future - 2039
Counts shall include the vehicular, bicycle, and pedestrian traffic. Please provide balanced traffic volumes between intersections that are going to be analysed for both existing and future time horizons.

2) TIME PERIODS
• Weekday AM/PM Peak Hours
• We will show 24-hour data for the roadways in the area to confirm that we are picking up the peak periods (we will count Uxbridge and the City will update 16th Avenue volumes if required)

3) INTERSECTION CAPACITY ANALYSIS
• 16th Avenue & Uxbridge Drive
• Site Access (South)
• Site Access (North) – existing horizon only
• Site Access (North –Unwin Road(Lane)/ Uxbridge Drive)
• Uxbridge Drive and Lane (on west side of Queen of Peace Church)
• Unwin Road & University Drive
• Volume shifts from Tim Horton's/Gas Station resulting from project to be included in analysis of study area intersections.

In addition to Synchro, SIDRA roundabout analysis is to be done for intersections of Uxbridge Dr & Unwin Rd NW/ lane north of site and Uxbridge Dr & Ulster Rd NW in comparing and recommending ultimate intersection control and configuration at these locations.

4) WEAVING ANALYSIS
• Review existing and future conditions of weaving area westbound on 16th Avenue between University Drive and Uxbridge Drive during a.m. and p.m. peak hours

5) SENSITIVITY ANALYSIS
• Conduct sensitivity analysis for all of the study intersections based on a more conservative mode split data (more people driving). The recommended number used will be verified with the City prior to the analysis.

6) REVIEW OF MODEL DATA
• Review City's Regional Transportation Model (RTM) data to see what has been assumed for Foothills Medical Centre, West Campus, Uo C, McMahon Stadium and the Foothills Athletic Park.
• Add a discussion in the report that addresses the above information.

As per TIA guidelines, include information about new developments in the area surrounding the proposed site (like West campus, Foothills Hospital future expansion, Foothills Athletic centre expansion, McMahon redevelopment etc.) and projected traffic volumes in the background traffic. Provide comments on the relocation of Westmount Charter School to University Heights, including University Elementary School having a 30% non community enrolment.

7) DAILY VOLUME ANALYSIS
- Uxbridge Drive
- Unwin Road
- 16th Avenue
- Significant Internal roads
- Lane north of site

8) MODE SPLIT DATA
- Current mode split data for site (based on survey)
- Discussion on mode split for future (full-build scenario)
- Obtain RTM Mode Split and provide discussion

9) PROPOSED TRIP GENERATION RATES

16th Avenue west of Uxbridge Drive is part of the future primary transit network. Therefore we propose to use the following mix of TOD and standard rates for the proposed land uses as follows:
- TOD Office: 1.39 (AM) / 1.57 (PM) – City of Calgary Standard Rate
- Medical Office: 3.00 (AM) / 4.0 (PM) – Calgary Example (Ashton Professional Centre)
- Retail: **2.00** (AM) / 6.00 (PM) – City of Calgary
- Hotel: 0.56 (AM) / 0.59 (PM) - ITE
- TOD Residential: 0.35 (AM) / 0.45 (PM) – City of Calgary Standard Rate

Estimate the vehicular, bicycle, and pedestrian trip generation for the proposed site for the a.m. and p.m. peak periods, and assign all trips to the adjacent roadways

Needs a section for TRIP DISTRIBUTION

City's Regional Transportation Model (RTM) select zone analysis shall be used for the trip distribution patterns. If some minor adjustments need to be done this has to be approved by TDS.

Needs a section for Site Access Review

Assessment of the operation of the site access locations, and a commentary related to on-site circulation. South site access proximity to the signalized intersection of 16th Avenue & Uxbridge Drive NW shall be reviewed and commented on too.

10) INTERNAL TRIPS
- Propose to use TRB method for calculating internal trip rates

11) PASS-BY AND DIVERTED LINKED TRIPS
- We estimate that 20% of the external trips to/from the site will be either diverted linked trips (drivers already travelling along 16th Avenue that divert to the site and then continue on 16th Avenue) or pass-by trips (drivers already travelling along Uxbridge Drive that turn into the site and then continue along Uxbridge Drive). The split between pass-by and diverted linked trips will be documented in the TIA report.

Needs a section for Parking Review

Please provide scope for this section – include bylaw requirement, justification for any reduction, discussion of hospital traffic currently using parking lot and where they will be relocated to; include recommendations for neighborhood parking mitigation if needed.

12) TRANSIT

• Existing Transit Service & Conditions
• Current Pedestrian Facilities
• Current Pedestrian Volumes
• Future Transit Service Planned for the Immediate Area (assessment of what's needed to meet the anticipated demand)
• Forecast of transit trips generated to/from the site using the forecast mode split
• Proposed transit facilities for site and surrounding area (bus shelters, benches, bus bays connections etc.

13) ACTIVE MODES

• We will review the HCM 2010 methodology for assessing bikes/peds and will provide the City with an assessment of whether this analysis will add value to the process and at what cost.
• Description of Available Infrastructure in the area surrounding the site for pedestrians and cyclists (with photos)
• Figure of destinations within 1km and 3 km of site
• Discussion of Barriers and potential improvements
• Estimate of future peak hour pedestrian volumes generated by the site

14) SHORT-CUTTING TRAFFIC REVIEW

• Review the potential impacts of the site on short-cutting traffic by
o Identifying potential routes
o Estimating the potential increase in volumes
o Develop potential mitigation measures

15) TDM

• Commentary on a TDM plan that is appropriate for the site and things that can be included in conditions of development (i.e. carpool parking, bike lockers, shower facilities, car share program etc.).

Include recommendations for design/improvements as required for all report sections (e.g. access, parking, proposed road cross-sections, and TDM measures)

TDS and D.A. Watt will meet at least every two weeks to discuss the progress and results. Some additional work might be required after these consultations.

APPENDIX B: INTERSECTION COUNTS

Location : North Leg : East Leg: Uxbridge Drive NW

South Leg : Westmount School Access West Leg: Uxbridge Drive NW

Date : Wednesday February 13, 2013

Observer(s) : Barb

Job # : 2818.T02

Job Name: Stadium Shopping Centre TIA

Time Starting	From the North On:							From the South On: Westmount School Access							From the East On: Uxbridge Drive NW							From the West On: Uxbridge Drive NW							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
07:00	0	0	0	0	0	0	0	0	0	0	0	2	0	2	5	0	10	0	0	0	0	0	0	19	0	0	0	0	36	0	2	36
07:15	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	0	8	0	0	0	0	0	0	17	0	0	0	0	29	0	1	29
07:30	0	0	0	0	0	0	5	0	0	0	0	1	0	0	8	0	13	2	0	0	4	0	0	24	1	0	0	1	46	3	10	49
07:45	0	0	0	0	0	0	0	2	0	0	0	5	0	6	20	0	22	0	0	0	1	0	0	33	1	1	0	0	83	1	7	84
08:00	0	0	0	0	0	0	0	0	0	0	0	13	0	19	32	0	38	3	0	0	3	0	0	48	0	1	0	1	132	3	23	135
08:15	0	0	0	0	0	0	0	0	0	0	0	17	0	21	49	0	62	3	0	0	5	0	0	68	11	3	0	0	199	14	26	213
08:30	0	0	0	0	0	0	3	1	0	0	0	9	0	13	11	0	54	2	0	0	8	0	0	51	1	0	0	0	126	3	24	129
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	0	41	3	0	0	7	0	0	69	5	0	0	0	118	8	8	126
2 Hour Total	0	0	0	0	0	0	8	3	0	0	0	48	0	63	136	0	248	13	0	0	28	0	0	329	19	5	0	2	769	32	101	801
Peak Hour: 8:00 - 9:00	0	0	0	0	0	0	3	1	0	0	0	39	0	54	100	0	195	11	0	0	23	0	0	236	17	4	0	1	575	28	81	603
Total Veh & % Trucks	0	0%	0	0%	0	0%		1	0%	0	0%	39	0%		100	0%	206	5%	0	0%		0	0%	253	7%	4	0%					
	PHF	0.00			Peak Total =		0	PHF	0.77			Peak Total =		40	PHF	1.05			Peak Total =		306	PHF	1.31			Peak Total =		257				

Time Starting	From the North On:							From the South On: Westmount School Access							From the East On: Uxbridge Drive NW							From the West On: Uxbridge Drive NW							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
03:00	0	0	0	0	0	0	0	0	0	0	0	4	2	0	3	4	36	0	0	0	9	0	0	26	0	0	0	0	69	6	9	75
03:15	0	0	0	0	0	0	0	1	0	0	0	14	1	24	5	3	53	2	0	0	13	0	0	34	2	1	0	0	108	8	37	116
03:30	0	0	0	0	0	0	0	1	0	0	0	16	2	0	10	2	46	1	0	0	7	0	0	68	1	1	0	0	142	6	7	148
03:45	0	0	0	0	0	0	0	1	0	0	0	14	1	0	1	2	38	1	0	0	3	0	0	35	1	1	0	0	90	5	3	95
04:00	0	0	0	0	0	0	0	0	0	0	0	8	0	0	3	0	31	1	0	0	3	0	0	26	1	1	0	0	69	2	3	71
04:15	0	0	0	0	0	0	0	0	0	0	0	9	0	0	1	0	25	0	0	0	2	0	0	15	0	1	0	0	51	0	2	51
04:30	0	0	0	0	0	0	0	0	0	0	0	9	0	0	1	0	28	0	0	0	3	0	0	25	0	0	0	0	63	0	3	63
04:45	0	0	0	0	0	0	0	0	0	0	0	7	0	0	2	0	25	0	0	0	7	0	0	33	0	1	0	0	68	0	7	68
05:00	0	0	0	0	0	0	0	0	0	0	0	10	0	1	2	0	27	0	0	0	4	0	0	30	0	0	0	0	69	0	5	69
05:15	0	0	0	0	0	0	0	0	0	0	0	5	0	1	0	0	24	0	0	0	3	0	0	22	0	0	0	0	51	0	4	51
05:30	0	0	0	0	0	0	0	0	0	0	0	11	0	1	2	0	30	0	0	0	1	0	0	30	0	0	0	0	73	0	2	73
05:45	0	0	0	0	0	0	0	0	0	0	0	5	0	0	2	0	29	0	0	0	3	0	0	21	0	0	0	0	57	0	3	57
3 Hour Total	0	0	0	0	0	0	0	3	0	0	0	112	6	27	32	11	392	5	0	0	58	0	0	365	5	6	0	0	910	27	85	937
Peak Hour: 3:00-4:00	0	0	0	0	0	0	0	3	0	0	0	48	6	24	19	11	173	4	0	0	32	0	0	163	4	3	0	0	409	25	56	434
Total Veh & % Trucks	0	0%	0	0%	0	0%		3	0%	0	0%	54	11%		30	37%	177	2%	0	0%		0	0%	167	2%	3	0%					
	PHF	0.00			Peak Total =		0	PHF	1.43			Peak Total =		57	PHF	1.48			Peak Total =		207	PHF	1.25			Peak Total =		170				

5 Hour Total	0	0	0	0	0	0	8	6	0	0	0	160	6	90	168	11	640	18	0	0	86	0	0	694	24	11	0	2				
	0		0		0			6		0		166			179		658		0			0		718		11						
	0							172							837							729										

Location : North Leg : Uxbridge Drive NW
South Leg : Uxbridge Drive NW
East Leg: Unwin Road NW
West Leg: Lane
Date : Wednesday February 13, 2013
Observer(s) : Roland
Job # : 2818.T02
Job Name: Stadium Shopping Centre TIA

D.A. Watt Consulting

Time Starting	From the North On: Uxbridge Drive NW							From the South On: Uxbridge Drive NW							From the East On: Unwin Road NW							From the West On: Lane							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
07:00	2	0	17	0	0	0	1	1	0	7	0	11	2	1	42	2	2	0	9	0	2	0	0	0	0	0	0	5	91	4	9	95
07:15	5	0	14	0	0	0	0	0	0	8	0	26	2	0	51	1	0	0	6	0	1	0	0	0	0	0	0	2	110	3	3	113
07:30	10	0	15	1	0	0	3	2	0	18	1	34	1	1	52	3	1	0	11	0	0	0	0	0	0	0	0	3	143	6	7	149
07:45	11	1	31	0	0	0	2	0	0	26	0	33	2	3	61	3	0	0	18	0	4	0	0	0	0	0	0	11	180	6	20	186
08:00	14	0	46	0	0	0	6	1	0	54	2	19	4	2	54	3	1	0	22	1	4	0	0	1	0	3	0	20	215	10	32	225
08:15	21	0	64	11	0	0	12	1	0	80	3	16	1	5	52	3	4	0	41	0	3	0	0	3	0	18	0	30	300	18	50	318
08:30	23	0	50	1	0	0	20	1	0	50	1	28	3	3	51	3	1	0	32	1	3	0	0	1	0	5	0	30	242	9	56	251
08:45	17	2	51	3	0	0	9	1	0	55	2	34	1	12	54	2	2	0	34	1	4	1	0	0	0	0	0	13	249	11	38	260
2 Hour Total	103	3	288	16	0	0	53	7	0	298	9	201	16	27	417	20	11	0	173	3	21	1	0	5	0	26	0	114	1530	67	215	1597
Peak Hour: 8:00 - 9:00	75	2	211	15	0	0	47	4	0	239	8	97	9	22	211	11	8	0	129	3	14	1	0	5	0	26	0	93	1006	48	176	1054
Total Veh & % Trucks	77	3%	226	7%	0	0%		4	0%	247	3%	106	8%		222	5%	8	0%	132	2%		1	0%	5	0%	26	0%					
	PHF	1.26			Peak Total =		303	PHF	1.12			Peak Total =		357	PHF	1.10			Peak Total =		362	PHF	2.00			Peak Total =		32				

Time Starting	From the North On: Uxbridge Drive NW							From the South On: Uxbridge Drive NW							From the East On: Unwin Road NW							From the West On: Lane							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
03:00	10	0	27	0	0	0	4	4	0	27	1	46	2	8	51	4	2	0	16	0	3	0	0	0	0	1	0	12	184	7	27	191
03:15	13	0	45	3	0	0	14	3	0	46	0	43	1	38	58	3	0	0	15	1	0	0	0	8	0	13	0	82	244	8	134	252
03:30	26	0	63	9	0	0	2	1	0	42	0	41	2	11	47	2	1	0	15	1	2	0	0	0	0	11	0	18	247	14	33	261
03:45	15	1	35	1	0	0	6	1	0	33	0	54	1	5	49	2	0	0	11	1	9	0	0	0	0	5	0	10	203	6	30	209
04:00	8	0	28	1	0	0	4	0	0	26	1	41	5	2	42	2	0	0	10	0	5	0	0	1	0	0	0	4	156	9	15	165
04:15	8	0	25	0	0	0	1	0	0	21	0	61	3	5	45	2	0	0	13	0	3	0	0	0	0	2	0	6	175	5	15	180
04:30	10	0	28	0	0	0	7	0	0	22	0	48	0	2	46	2	0	0	6	0	7	0	0	1	0	3	0	12	164	2	28	166
04:45	6	0	37	0	0	0	3	1	0	22	0	56	1	1	60	1	0	0	10	0	4	0	0	0	0	0	0	5	192	2	13	194
05:00	6	0	38	0	0	0	6	0	0	18	0	42	3	3	59	2	0	0	9	0	2	0	0	0	0	2	0	9	174	5	20	179
05:15	6	0	26	0	0	0	3	1	0	18	0	47	2	0	44	1	0	0	7	0	0	1	0	0	0	2	0	6	152	3	9	155
05:30	12	0	30	0	0	0	7	0	0	20	0	45	1	4	55	2	0	0	12	0	4	0	0	1	0	1	0	10	176	3	25	179
05:45	13	0	15	0	0	0	5	1	0	24	0	55	3	2	49	1	1	0	13	0	2	0	0	1	0	2	0	10	174	4	19	178
3 Hour Total	133	1	397	14	0	0	62	12	0	319	2	579	24	81	605	24	4	0	137	3	41	1	0	12	0	42	0	184	2241	68	368	2309
Peak Hour: 3:00-4:00	64	1	170	13	0	0	26	9	0	148	1	184	6	62	205	11	3	0	57	3	14	0	0	8	0	30	0	122	878	35	224	913
Total Veh & % Trucks	65	2%	183	7%	0	0%		9	0%	149	1%	190	3%		216	5%	3	0%	60	5%		0	0%	8	0%	30	0%					
	PHF	1.41			Peak Total =		248	PHF	1.02			Peak Total =		348	PHF	0.98			Peak Total =		279	PHF	2.38			Peak Total =		38				

5 Hour Total	236	4	685	30	0	0	115	19	0	617	11	780	40	108	1022	44	15	0	310	6	62	2	0	17	0	68	0	298				
	240		715		0			19		628		820			1066		15		316			2		17		68						
	955							1467							1397							87										

Location : North Leg : University Drive
South Leg : University Drive
East Leg: David Bauer Arena Access
West Leg: Unwin Road NW
Date : Wednesday February 13, 2013
Observer(s) : Kelly
Job # : 2818.T02
Job Name: Stadium Shopping Centre TIA

D.A. Watt Consulting

Time Starting	From the North On: University Drive							From the South On: University Drive							From the East On: David Bauer Arena Access							From the West On: Unwin Road NW							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
07:00	2	0	34	4	43	2	1	10	0	71	3	0	0	6	1	0	0	0	0	0	1	16	0	1	0	7	0	4	185	9	12	194
07:15	1	0	57	2	46	2	0	8	0	101	4	0	0	11	0	0	0	0	0	0	1	20	0	0	0	17	0	5	250	8	17	258
07:30	3	0	86	5	57	2	3	10	0	152	4	1	0	25	0	0	0	0	0	0	1	38	2	0	0	14	0	8	361	13	37	374
07:45	2	0	84	6	66	2	3	17	0	193	2	1	0	20	1	0	0	0	2	0	0	41	1	0	0	20	0	7	427	11	30	438
08:00	2	0	87	2	63	4	5	26	6	180	3	2	0	14	1	0	1	0	0	0	0	32	2	0	0	7	0	11	401	17	30	418
08:15	2	0	85	7	69	3	1	38	0	194	2	3	0	12	7	0	0	0	0	0	8	34	2	0	0	8	0	3	440	14	24	454
08:30	1	0	72	2	59	4	0	27	1	220	3	2	0	35	2	0	1	0	2	0	3	42	3	0	0	15	0	0	443	13	38	456
08:45	1	0	79	2	67	4	0	19	0	218	5	2	0	28	8	0	1	0	0	0	3	56	2	1	0	10	0	6	462	13	37	475
2 Hour Total	14	0	584	30	470	23	13	155	7	1329	26	11	0	151	20	0	3	0	4	0	17	279	12	2	0	98	0	44	2969	98	225	3067
Peak Hour: 8:00 - 9:00	6	0	323	13	258	15	6	110	7	812	13	9	0	89	18	0	3	0	2	0	14	164	9	1	0	40	0	20	1746	57	129	1803
Total Veh & % Trucks	6	0%	336	4%	273	5%		117	6%	825	2%	9	0%		18	0%	3	0%	2	0%		173	5%	1	0%	40	0%					
	PHF	0.96			Peak Total =		615	PHF	1.10			Peak Total =		951	PHF	1.92			Peak Total =		23	PHF	0.86			Peak Total =		214				

Time Starting	From the North On: University Drive							From the South On: University Drive							From the East On: David Bauer Arena Access							From the West On: Unwin Road NW							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
03:00	6	0	131	2	47	2	48	27	1	99	1	3	0	8	2	0	0	0	0	0	0	63	1	2	0	11	0	0	391	7	56	398
03:15	3	0	132	0	59	2	12	27	1	72	1	1	0	5	3	0	1	0	0	0	1	45	1	0	0	11	0	6	354	5	24	359
03:30	1	0	123	2	48	1	11	22	0	108	4	5	1	6	1	0	1	0	0	0	0	68	0	0	0	21	0	5	398	8	22	406
03:45	2	0	102	2	49	2	10	15	1	115	3	5	0	4	1	0	1	0	1	0	0	63	1	1	0	10	0	3	365	9	17	374
04:00	4	0	117	2	45	1	34	31	0	107	1	1	0	2	5	0	1	0	0	0	1	43	3	3	0	7	0	5	364	7	42	371
04:15	1	0	106	3	46	3	21	20	0	97	3	5	0	6	0	0	1	0	1	0	0	59	1	3	0	11	0	3	350	10	30	360
04:30	6	0	109	4	46	1	12	9	0	110	1	5	0	4	1	0	0	0	0	0	0	48	0	0	0	13	0	3	347	6	19	353
04:45	4	0	137	3	75	1	30	13	0	120	5	2	0	3	2	0	0	0	0	0	2	70	1	1	0	14	0	1	438	10	36	448
05:00	2	0	150	3	57	2	27	27	0	133	0	4	0	3	2	0	3	0	0	0	0	49	2	0	0	11	0	1	438	7	31	445
05:15	2	0	109	3	38	2	20	16	0	103	0	1	0	7	2	0	0	0	1	0	0	46	0	1	0	10	0	3	329	5	30	334
05:30	2	0	87	2	47	1	19	25	0	101	2	1	0	1	0	0	0	0	0	0	0	51	0	0	0	8	0	7	322	5	27	327
05:45	0	0	97	0	58	1	12	21	0	136	3	2	0	4	2	0	0	0	0	0	0	61	0	0	0	12	0	4	389	4	20	393
3 Hour Total	33	0	1400	26	615	19	256	253	3	1301	24	35	1	53	21	0	8	0	3	0	4	666	10	11	0	139	0	41	4485	83	354	4568
Peak Hour: 4:15 - 5:15	13	0	502	13	224	7	90	69	0	460	9	16	0	16	5	0	4	0	1	0	2	226	4	4	0	49	0	8	1573	33	116	1606
Total Veh & % Trucks	13	0%	515	3%	231	3%		69	0%	469	2%	16	0%		5	0%	4	0%	1	0%		230	2%	4	0%	49	0%					
	PHF	0.86			Peak Total =		759	PHF	0.84			Peak Total =		554	PHF	0.42			Peak Total =		10	PHF	0.82			Peak Total =		283				

5 Hour Total	47	0	1984	56	1085	42	269	408	10	2630	50	46	1	204	41	0	11	0	7	0	21	945	22	13	0	237	0	85				
	47		2040		1127			418		2680		47			41		11		7			967		13		237						
	3214							3145							59							1217										

Location : North Leg : Uxbridge Drive NW
South Leg : Uxbridge Drive NW
East Leg:
West Leg: North Mall Access
Date : Thursday February 21, 2013
Observer(s) : Matthew
Job # : 2818.T02
Job Name: Stadium Shopping Centre TIA

NOTE: through movements on Uxbridge Drive not counted

D.A. Watt Consulting

Time Starting	From the North On: Uxbridge Drive NW							From the South On: Uxbridge Drive NW							From the East On:							From the West On: North Mall Access							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
07:00					2			1														2				4			9	0	0	9
07:15					4			0														0				2			6	0	0	6
07:30					5			5														0				6			16	0	0	16
07:45					1			9														2				4			16	0	0	16
08:00					4			7														0				4			15	0	0	15
08:15					9			12														3				15			39	0	0	39
08:30					10			19														5				15			49	0	0	49
08:45					11			12														1				7			31	0	0	31
2 Hour Total	0	0	0	0	46	0	0	65	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	57	0	0	181	0	0	181
Peak Hour: 8:00 - 9:00	0	0	0	0	34	0	0	50	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	41	0	0	134	0	0	134
Total Veh & % Trucks	0	0%	0	0%	34	0%		50	0%	0	0%	0	0%		0	0%	0	0%	0	0%		9	0%	0	0%	41	0%					
	PHF	1.70			Peak Total =		34	PHF	1.39			Peak Total =		50	PHF	0.00			Peak Total =		0	PHF	2.08			Peak Total =		50				

Time Starting	From the North On: Uxbridge Drive NW							From the South On: Uxbridge Drive NW							From the East On:							From the West On: North Mall Access							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
03:00					9			15														18				8			50	0	0	50
03:15					13			18														8				25			64	0	0	64
03:30					19			26														5				31			81	0	0	81
03:45					15			8														14				13			50	0	0	50
04:00					25			6														6				19			56	0	0	56
04:15					13			8														7				16			44	0	0	44
04:30					14			21														12				17			64	0	0	64
04:45					19			16														11				23			69	0	0	69
05:00					13			17														14				22			66	0	0	66
05:15					10			13														13				14			50	0	0	50
05:30					12			13														6				12			43	0	0	43
05:45					12			13														16				16			57	0	0	57
3 Hour Total	0	0	0	0	174	0	0	174	0	0	0	0	0	0	0	0	0	0	0	0	0	130	0	0	0	216	0	0	694	0	0	694
Peak Hour: 3:15-4:15	0	0	0	0	72	0	0	58	0	0	0	0	0	0	0	0	0	0	0	0	0	33	0	0	0	88	0	0	245	0	0	245
Total Veh & % Trucks	0	0%	0	0%	72	0%		58	0%	0	0%	0	0%		0	0%	0	0%	0	0%		33	0%	0	0%	88	0%					
	PHF	0.72			Peak Total =		72	PHF	0.69			Peak Total =		58	PHF	0.00			Peak Total =		0	PHF	0.84			Peak Total =		121				
					71							51															36						
																											75					

5 Hour Total	0	0	0	0	220	0	0	239	0	0	0	0	0	0	0	0	0	0	0	0	0	143	0	0	0	273	0	0				
	0		0		220			239		0		0			0		0		0			143		0		273						
	220							239							0							416										

Location : North Leg : Uxbridge Drive NW
South Leg : Uxbridge Drive NW
East Leg:
West Leg: South Mall Access
Date : Thursday February 21, 2013
Observer(s) : Kelly
Job # : 2818.T02
Job Name: Stadium Shopping Centre TIA

NOTE: through movements on Uxbridge Drive not counted

D.A. Watt Consulting

Time Starting	From the North On: Uxbridge Drive NW							From the South On: Uxbridge Drive NW							From the East On:							From the West On: South Mall Access							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
07:00					0			12														0				7			19	0	0	19
07:15					0			14														0				2			16	0	0	16
07:30					0			9														1				7			17	0	0	17
07:45					1			16														0				9			26	0	0	26
08:00					1			14														0				9			24	0	0	24
08:15					3			15														0				14			32	0	0	32
08:30					2			17														0				13			32	0	0	32
08:45					0			16														3				10			29	0	0	29
2 Hour Total	0	0	0	0	7	0	0	113	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	71	0	0	195	0	0	195
Peak Hour: 8:00 - 9:00	0	0	0	0	6	0	0	62	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	46	0	0	117	0	0	117
Total Veh & % Trucks	0	0%	0	0%	6	0%		62	0%	0	0%	0	0%		0	0%	0	0%	0	0%		3	0%	0	0%	46	0%					
	PHF 1.50				Peak Total =		6	PHF 0.97				Peak Total =		62	PHF 0.00				Peak Total =		0	PHF 1.36				Peak Total =		49				

Time Starting	From the North On: Uxbridge Drive NW							From the South On: Uxbridge Drive NW							From the East On:							From the West On: South Mall Access							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
03:00					4			37														1				30			72	0	0	72
03:15					1			40														3				42			86	0	0	86
03:30					7			30														1				41			79	0	0	79
03:45					1			25														1				21			48	0	0	48
04:00					2			36														0				40			78	0	0	78
04:15					1			37														3				29			70	0	0	70
04:30					4			38														0				33			75	0	0	75
04:45					7			23														2				39			71	0	0	71
05:00					5			43														0				34			82	0	0	82
05:15					8			43														2				35			88	0	0	88
05:30					6			36														5				31			78	0	0	78
05:45					5			37														3				29			74	0	0	74
3 Hour Total	0	0	0	0	51	0	0	425	0	0	0	0	0	0	0	0	0	0	0	0	0	21	0	0	0	404	0	0	901	0	0	901
Peak Hour: 5:00-6:00	0	0	0	0	24	0	0	159	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	129	0	0	285	0	0	285
Total Veh & % Trucks	0	0%	0	0%	24	0%		159	0%	0	0%	0	0%		0	0%	0	0%	0	0%		10	0%	0	0%	129	0%					
	PHF 0.86				Peak Total =		24	PHF 0.92				Peak Total =		159	PHF 0.00				Peak Total =		0	PHF 0.85				Peak Total =		139				

5 Hour Total	0	0	0	0	58	0	0	538	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	475	0	0				
	0		0		58			538		0		0			0		0		0			25		0		475						
	58							538							0							500										

Location : North Leg : Uxbridge Drive NW East Leg: Ulster Road NW

South Leg : Uxbridge Drive NW West Leg:

Date : Tuesday February 12, 2013

Observer(s) : Kelly

Job # : 2818.T02

Job Name: Stadium Shopping Centre TIA

Time Starting	From the North On: Uxbridge Drive NW							From the South On: Uxbridge Drive NW							From the East On: Ulster Road NW							From the West On:							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
07:00	1	0	75	2	0	0	4	0	0	38	3	7	0	2	8	0	0	0	1	0	4	0	0	0	0	0	0	0	130	5	10	135
07:15	0	0	56	0	0	0	4	0	0	44	1	2	0	2	6	0	0	0	1	0	4	0	0	0	0	0	0	0	109	1	10	110
07:30	0	0	82	3	0	0	5	0	0	36	3	3	0	2	7	0	0	0	0	0	2	0	0	0	0	0	0	0	128	6	9	134
07:45	1	1	74	1	0	0	6	0	0	60	1	7	0	6	2	0	0	0	1	0	8	0	0	0	0	0	0	2	145	3	22	148
08:00	1	0	92	4	0	0	8	0	0	71	7	6	0	10	3	0	0	0	1	0	10	0	0	0	0	0	0	0	174	11	28	185
08:15	2	0	136	14	0	0	20	0	0	97	3	2	0	6	2	0	0	0	3	0	8	0	0	0	0	0	0	0	242	17	34	259
08:30	0	0	118	3	0	0	26	0	0	85	5	2	0	9	9	0	0	0	2	0	19	0	0	0	0	0	0	4	216	8	58	224
08:45	2	0	77	3	0	0	10	0	0	75	3	13	0	11	0	0	0	0	3	0	30	0	0	0	0	0	0	15	170	6	66	176
2 Hour Total	7	1	710	30	0	0	83	0	0	506	26	42	0	48	37	0	0	0	12	0	85	0	0	0	0	0	0	21	1314	57	237	1371
Peak Hour: 8:00 - 9:00	5	0	423	24	0	0	64	0	0	328	18	23	0	36	14	0	0	0	9	0	67	0	0	0	0	0	0	19	802	42	186	844
Total Veh & % Trucks	5	0%	447	5%	0	0%		0	0%	346	5%	23	0%		14	0%	0	0%	9	0%		0	0%	0	0%	0	0%					
	PHF	1.16			Peak Total =		452	PHF	1.10			Peak Total =		369	PHF	0.64			Peak Total =		23	PHF	0.00			Peak Total =		0				

Time Starting	From the North On: Uxbridge Drive NW							From the South On: Uxbridge Drive NW							From the East On: Ulster Road NW							From the West On:							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
03:00	1	0	58	1	0	0	6	0	0	77	2	12	0	17	5	0	0	0	0	0	5	0	0	0	0	0	0	4	153	3	32	156
03:15	0	0	92	2	0	0	19	0	0	97	1	12	0	15	5	0	0	0	6	0	9	0	0	0	0	0	0	0	212	3	43	215
03:30	1	0	147	4	0	0	10	0	0	93	2	4	0	12	6	0	0	0	1	0	8	0	0	0	0	0	0	0	252	6	30	258
03:45	0	0	72	1	0	0	9	0	0	100	2	5	0	17	5	0	0	0	2	0	5	0	0	0	0	0	0	1	184	3	32	187
04:00	5	0	82	1	0	0	3	0	0	76	6	3	0	19	5	0	0	0	0	0	4	0	0	0	0	0	0	0	171	7	26	178
04:15	1	0	94	0	0	0	13	0	0	86	0	9	0	10	4	0	0	0	3	0	7	0	0	0	0	0	0	2	197	0	32	197
04:30	1	0	56	2	0	0	5	0	0	69	0	7	0	17	8	0	0	0	0	0	3	0	0	0	0	0	0	5	141	2	30	143
04:45	0	0	80	0	0	0	2	0	0	69	0	3	0	11	11	0	0	0	1	0	9	0	0	0	0	0	0	10	164	0	32	164
05:00	0	0	84	0	0	0	6	0	0	64	0	8	0	14	7	0	0	0	1	0	4	0	0	0	0	0	0	7	164	0	31	164
05:15	3	0	81	0	0	0	2	0	0	64	1	4	0	16	7	0	0	0	1	0	11	0	0	0	0	0	0	9	160	1	38	161
05:30	0	0	68	0	0	0	6	0	0	58	0	13	0	9	7	0	0	0	0	0	8	0	0	0	0	0	0	3	146	0	26	146
05:45	3	0	46	0	0	0	3	0	0	53	0	11	0	10	1	0	0	0	2	0	7	0	0	0	0	0	0	5	116	0	25	116
3 Hour Total	15	0	960	11	0	0	84	0	0	906	14	91	0	167	71	0	0	0	17	0	80	0	0	0	0	0	0	46	2060	25	377	2085
Peak Hour: 3:15-4:15	6	0	393	8	0	0	41	0	0	366	11	24	0	63	21	0	0	0	9	0	26	0	0	0	0	0	0	1	819	19	131	838
Total Veh & % Trucks	6	0%	401	2%	0	0%		0	0%	377	3%	24	0%		21	0%	0	0%	9	0%		0	0%	0	0%	0	0%					
	PHF	1.07			Peak Total =		407	PHF	1.06			Peak Total =		401	PHF	0.63			Peak Total =		30	PHF	0.00			Peak Total =		0				

5 Hour Total	22	1	1670	41	0	0	167	0	0	1412	40	133	0	215	108	0	0	0	29	0	165	0	0	0	0	0	0	67				
	23		1711		0			0		1452		133			108		0		29			0		0		0						
	1734							1585							137							0										

Location : North Leg : Uxbridge Drive NW
South Leg : 29 Street NW
East Leg: 16 Avenue NW
West Leg: 16 Avenue NW
Date : Tuesday February 12, 2013
Observer(s) : Roland & Barb
Job # : 2818.T02
Job Name: Stadium Shopping Centre TIA

Time Starting	From the North On: Uxbridge Drive NW							From the South On: 29 Street NW							From the East On: 16 Avenue NW							From the West On: 16 Avenue NW							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
07:00	25	0	76	2	12	1	2	19	0	38	1	44	2	5	84	4	121	9	23	1	14	16	0	295	1	103	2	0	856	23	21	879
07:15	23	0	57	1	20	2	0	45	1	36	1	67	2	7	93	4	110	12	14	2	5	17	0	385	3	131	1	18	998	29	30	1027
07:30	25	0	64	4	21	0	5	33	0	28	2	40	2	7	90	2	138	13	46	0	8	30	1	391	8	147	2	15	1053	34	35	1087
07:45	20	0	66	2	15	1	5	43	2	35	2	51	1	18	111	3	189	15	21	0	7	38	1	331	8	139	2	28	1059	37	58	1096
08:00	23	2	80	3	19	0	20	20	1	36	2	30	4	14	88	5	118	12	30	1	19	36	3	338	4	163	3	36	981	40	89	1021
08:15	33	1	102	14	35	0	25	28	2	45	3	41	2	23	99	4	188	14	36	0	10	51	0	280	4	81	0	59	1019	44	117	1063
08:30	24	0	100	3	34	1	9	19	1	43	2	62	1	18	105	1	204	7	32	2	12	50	0	292	7	120	3	62	1085	28	101	1113
08:45	20	1	75	4	31	0	20	31	3	36	2	53	3	29	97	1	161	18	31	1	34	25	2	252	7	87	4	46	899	46	129	945
2 Hour Total	193	4	620	33	187	5	86	238	10	297	15	388	17	121	767	24	1229	100	233	7	109	263	7	2564	42	971	17	264	7950	281	580	8231
Peak Hour: 7:45 - 8:45	100	3	348	22	103	2	59	110	6	159	9	184	8	73	403	13	699	48	119	3	48	175	4	1241	23	503	8	185	4144	149	365	4293
Total Veh & % Trucks	103	3%	370	6%	105	2%		116	5%	168	5%	192	4%		416	3%	747	6%	122	2%		179	2%	1264	2%	511	2%					
	PHF	1.14			Peak Total =		578	PHF	0.78			Peak Total =		476	PHF	0.95			Peak Total =		1285	PHF	0.84			Peak Total =		1954				

Time Starting	From the North On: Uxbridge Drive NW							From the South On: 29 Street NW							From the East On: 16 Avenue NW							From the West On: 16 Avenue NW							Total			Total Vehicles
	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds	Left Turn		Straight		Right Turn		Peds				
	Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Cars	Trucks	Cars	Trucks		Cars	Trucks	Peds	
03:00	27	0	32	3	29	0	5	89	0	80	3	149	1	15	81	2	218	12	39	3	20	26	0	186	5	23	1	37	979	30	77	1009
03:15	43	2	68	4	66	1	2	98	2	71	2	146	3	24	56	2	204	11	36	0	8	29	0	177	11	32	2	19	1026	40	53	1066
03:30	37	0	57	13	72	1	1	91	1	80	3	141	3	22	54	5	239	3	14	1	11	26	0	219	12	22	3	41	1052	45	75	1097
03:45	46	0	42	4	50	0	1	115	0	85	2	142	4	20	65	5	236	5	34	2	32	29	0	210	9	23	0	20	1077	31	73	1108
04:00	32	1	48	2	55	0	9	102	3	68	3	149	2	23	53	6	270	7	36	1	15	21	1	221	7	17	0	16	1072	33	63	1105
04:15	24	1	42	3	59	1	2	101	0	80	3	112	4	20	47	2	284	7	40	0	16	21	0	213	7	35	1	27	1058	29	65	1087
04:30	22	1	25	3	63	0	4	119	2	64	3	104	1	19	53	2	314	4	27	1	4	32	0	195	7	16	2	13	1034	26	40	1060
04:45	35	0	50	1	57	1	3	83	1	52	0	107	1	19	55	2	309	3	36	0	27	30	0	202	11	25	2	35	1041	22	84	1063
05:00	25	0	40	1	59	1	5	83	0	46	3	83	4	18	43	2	336	5	34	1	15	36	1	178	6	22	1	28	985	25	66	1010
05:15	27	0	39	2	53	0	10	74	2	46	3	68	3	30	51	1	305	2	32	0	24	32	1	232	0	27	2	27	986	16	91	1002
05:30	30	0	31	2	40	0	7	52	1	56	1	70	1	22	49	2	275	6	31	1	15	21	1	196	10	22	1	29	873	26	73	899
05:45	20	0	43	0	41	1	5	60	1	48	3	55	2	16	46	2	274	1	42	0	11	33	0	191	2	27	2	30	880	14	62	894
3 Hour Total	368	5	517	38	644	6	54	1067	13	776	29	1326	29	248	653	33	3264	66	401	10	198	336	4	2420	87	291	17	322	12063	337	822	12400
Peak Hour: 3:30-4:30	139	2	189	22	236	2	13	409	4	313	11	544	13	85	219	18	1029	22	124	4	74	97	1	863	35	97	4	104	4259	138	276	4397
Total Veh & % Trucks	141	1%	211	10%	238	1%		413	1%	324	3%	557	2%		237	8%	1051	2%	128	3%		98	1%	898	4%	101	4%					
	PHF	1.02			Peak Total =		590	PHF	0.99			Peak Total =		1294	PHF	0.84			Peak Total =		1416	PHF	0.99			Peak Total =		1097				

5 Hour Total	561	9	1137	71	831	11	140	1305	23	1073	44	1714	46	369	1420	57	4493	166	634	17	307	599	11	4984	129	1262	34	586				
	570		1208		842			1328		1117		1760			1477		4659		651			610		5113		1296						
	2620							**4205**							**6787**							**7019**										

APPENDIX C: MODE SPLIT COUNTS

Stadium Shopping Centre
Mode Split Count - Raw Data

Time Start	Shopping Centre												Peak Hour	
	Vehicles		Passengers		Pedestrians		Bicycles		Transit		Total			
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out		
07:00	17	13	0	3	3	5	1	0	0	0	21	21		
07:15	19	5	0	1	2	10	1	1	0	0	22	17		
07:30	19	14	1	6	2	12	0	0	0	0	22	32		
07:45	28	15	2	3	3	11	0	1	0	0	33	30		
08:00	29	15	2	1	4	10	0	0	0	0	35	26		
08:15	45	39	7	8	3	4	0	0	0	0	55	51		
08:30	51	33	11	6	19	25	2	1	1	0	84	65		
08:45	40	21	2	1	30	31	1	1	1	0	74	54	**444**	8:00-9:00
Total	248	155	25	29	66	108	5	4	2	0	346	296		
Peak Hour Total	165	108	22	16	56	70	3	2	2	0	248	196		
MODE SPLIT	72%	52%	7%	10%	19%	36%	1%	1%	1%	0%				

	Vehicles		Passengers		Pedestrians		Bicycles		Transit		Total		Peak Hour	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out		
03:00	66	58	1	1	21	16	0	0	0	1	88	76		
03:15	80	81	9	12	44	18	0	0	0	0	133	111		
03:30	84	79	6	18	31	26	1	0	0	0	122	123		
03:45	49	49	8	10	25	15	0	0	0	2	82	76		
04:00	69	65	12	6	18	21	0	0	0	1	99	93	**839**	3:15-4:15
04:15	59	56	7	5	21	18	0	0	0	0	87	79		
04:30	77	63	10	2	20	13	1	0	0	0	108	78		
04:45	65	75	13	8	22	14	0	0	0	0	100	97		
05:00	79	70	7	3	17	7	0	0	0	3	103	83		
05:15	74	67	6	3	13	13	0	0	0	1	93	84		
05:30	67	55	8	5	24	8	0	1	0	0	99	69		
05:45	67	65	4	10	20	6	1	0	0	0	92	81		
Total	836	783	91	83	276	175	3	1	0	8	1206	1050		
Peak Hour Total	282	274	35	46	118	80	1	0	0	3	436	403		
MODE SPLIT	69%	75%	8%	8%	23%	17%	0%	0%	0%	1%				

NOTE: **Due to the large number of movments observed, occupancy was not monitored for vehicle lane Access**
Assumed to be one

APPENDIX D: SIGNAL TIMING PLANS

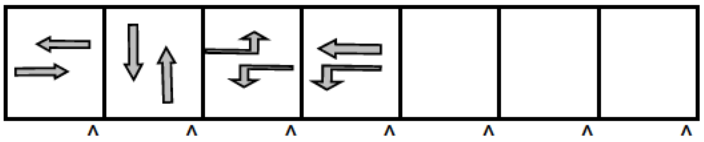
SIGNAL TIMING SUMMARY

LOCATION: 16 AVENUE - UXBRIDGE DR/29 STREET NW **INT #:** 191

Date Coded: 2012 NOV 29 **Date Installed:**

TIMING PLAN NO: MP1

CYCLE LENGTH: max 119.5
OFFSET: -
START TIME: 6:30
END TIME: 9:00



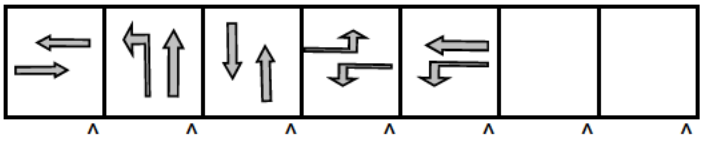
	4.5+1.5	3.5+2.5	3.5+1				
MAX	44+6**	23	20	10			
MIN if Actuated	23+6**	10	7	-			
Pedestrian	10+13	8+15	-	-			

**AWF

	Pro Only	Pro/ Per	Per Only
NBLT			x
SBLT			x
EBLT	x		
WBLT	x		

TIMING PLAN NO: MP2

CYCLE LENGTH: max 100.5
OFFSET: -
START TIME: 9:00
END TIME: 15:30
WEEKDAYS 18:30 - 23:00



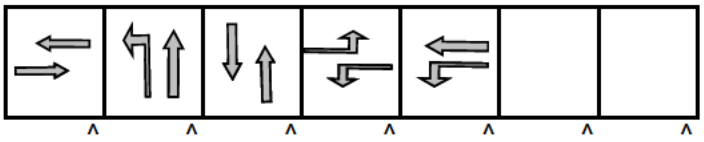
	4.5+1.5	3	3.5+2.5	3.5+1			
MAX	17+6**	10	23	12	13		
MIN if Actuated	17+6**	7	10	7	-		
Pedestrian	10+13	-	8+15	-	-		

NOTE: DON'T WALK FLASHES THROUGH AWF TIME

	Pro Only	Pro/ Per	Per Only
NBLT		x	
SBLT			x
EBLT	x		
WBLT	x		

TIMING PLAN NO: MP3

CYCLE LENGTH: max 143.5
OFFSET: -
START TIME: 15:30
END TIME: 18:30



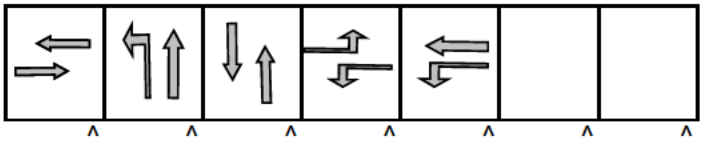
	4.5+1.5	3	3.5+2.5	3.5+1			
MAX	43+6**	24	23	10	20		
MIN if Actuated	23+6**	7	10	7	-		
Pedestrian	10+13	-	8+15	-	-		

**AWF

	Pro Only	Pro/ Per	Per Only
NBLT		x	
SBLT			x
EBLT	x		
WBLT	x		

TIMING PLAN NO: MP4

CYCLE LENGTH: max 100.5
OFFSET: -
START TIME: 6:30
END TIME: 23:00
SAT & SUN

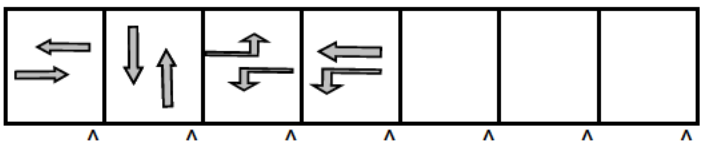


	4.5+1.5	3	3.5+2.5	3.5+1			
MAX	25+6**	10	25	10	5		
MIN if Actuated	-	7	10+13*	7	-		
Pedestrian	10+13	-	8+15	-	-		

	Pro Only	Pro/ Per	Per Only
NBLT		x	
SBLT			x
EBLT	x		
WBLT	x		

TIMING PLAN NO: FREE

CYCLE LENGTH: max 100.5
OFFSET: -
START TIME: 23:00
END TIME: 6:30
SAT & SUN 23:00 - 6:30



	4.5+1.5	3.5+2.5	3.5+1				
MAX	40+6**	20+3*	10	5			
MIN if Actuated	23+6	10+13*	7	-			
Pedestrian	10+13	8+15	-	-			

	Pro Only	Pro/ Per	Per Only
NBLT			x
SBLT			x
EBLT	x		
WBLT	x		

*If pedestrian-actuated, ** Advance warning flash

Notes: The offset point is referenced to the beginning of the first column of traffic movements.
If the max time is less than the pedestrian time, the extra unused pedestrian time is passed to the main street unless otherwise noted.

SIGNAL TIMING SUMMARY

LOCATION: University Drive - Unwin Road NW **INT #:** 179

Date Coded: Dec 28 2010 **Date Installed:** _____ **Removed:** _____

TIMING PLAN NO: MAX I
CYCLE LENGTH: max 71.5
OFFSET:
START TIME: 06:00
END TIME: 24:00

	Pro Only	Pro/Per	Per Only
NBLT			x
SBLT			x
EBLT			x
WBLT			x

FLASH 00:00-06:00

	4+1.5	3.5+2.5
MAX	35	25
MIN if Actuated	21	10+13*
Pedestrian	8+13	8+15

*with ped

TIMING PLAN NO: _____
CYCLE LENGTH: _____
OFFSET: _____
START TIME: _____
END TIME: _____

	Pro Only	Pro/Per	Per Only
NBLT			
SBLT			
EBLT			
WBLT			

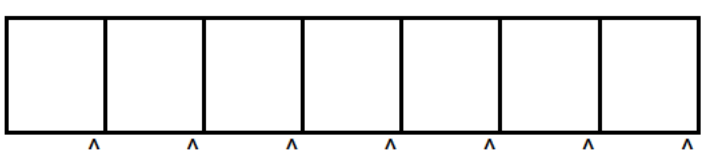
MAX							
MIN if Actuated							
Pedestrian							

TIMING PLAN NO: _____
CYCLE LENGTH: _____
OFFSET: _____
START TIME: _____
END TIME: _____

	Pro Only	Pro/Per	Per Only
NBLT			
SBLT			
EBLT			
WBLT			

MAX							
MIN if Actuated							
Pedestrian							

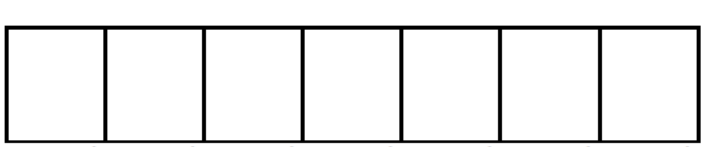
TIMING PLAN NO: _____
CYCLE LENGTH: _____
OFFSET: _____
START TIME: _____
END TIME: _____



	Pro Only	Pro/Per	Per Only
NBLT			
SBLT			
EBLT			
WBLT			

MAX							
MIN if Actuated							
Pedestrian							

TIMING PLAN NO: _____
CYCLE LENGTH: _____
OFFSET: _____
START TIME: _____
END TIME: _____



	Pro Only	Pro/Per	Per Only
NBLT			
SBLT			
EBLT			
WBLT			

MAX							
MIN if Actuated							
Pedestrian							

Notes: The offset point is referenced to the beginning of the first column of traffic movements.

APPENDIX E: SYNCHRO ANALYSIS RESULTS

HCM Unsignalized Intersection Capacity Analysis
5: Uxbridge Drive & Lane

Existing Condtions
AM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	254	4	140	251	1	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	270	4	149	267	1	64
Pedestrians	1			23	54	
Lane Width (m)	4.3			4.3	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			2	4	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			328		892	349
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			328		892	349
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			87		100	90
cM capacity (veh/h)			1177		261	648

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	274	416	65
Volume Left	0	149	1
Volume Right	4	0	64
cSH	1700	1177	633
Volume to Capacity	0.16	0.13	0.10
Queue Length 95th (m)	0.0	3.5	2.7
Control Delay (s)	0.0	3.9	11.3
Lane LOS		A	B
Approach Delay (s)	0.0	3.9	11.3
Approach LOS			B

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
1: Unwin Road & Uxbridge Drive

Existing Condtions
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	5	26	242	8	143	4	247	121	88	226	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	1	5	28	257	9	152	4	263	129	94	240	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	34	418	396	334
Volume Left (vph)	1	257	4	94
Volume Right (vph)	28	152	129	0
Hadj (s)	-0.45	-0.03	-0.11	0.16
Departure Headway (s)	6.8	6.1	6.0	6.3
Degree Utilization, x	0.06	0.71	0.65	0.59
Capacity (veh/h)	397	561	574	531
Control Delay (s)	10.3	22.7	19.5	17.9
Approach Delay (s)	10.3	22.7	19.5	17.9
Approach LOS	B	C	C	C

Intersection Summary			
Delay	19.9		
HCM Level of Service	C		
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
14: North Driveway & Uxbridge Drive

Existing Condtions
AM Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	9	41	50	363	460	34
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	10	44	53	386	489	36
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				221		
pX, platoon unblocked	0.99					
vC, conflicting volume	1000	507	526			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	996	507	526			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	92	95			
cM capacity (veh/h)	255	565	1041			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	53	439	526
Volume Left	10	53	0
Volume Right	44	0	36
cSH	464	1041	1700
Volume to Capacity	0.11	0.05	0.31
Queue Length 95th (m)	3.1	1.3	0.0
Control Delay (s)	13.8	1.5	0.0
Lane LOS	B	A	
Approach Delay (s)	13.8	1.5	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
16: Ulster Road & Uxbridge Drive

Existing Condtions
AM Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	14	9	404	23	5	496
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	15	10	430	24	5	528
Pedestrians	67		36			64
Lane Width (m)	3.5		3.5			4.8
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	5		3			7
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			153			
pX, platoon unblocked						
vC, conflicting volume	1083	358			521	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1083	358			521	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	98			99	
cM capacity (veh/h)	193	561			985	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	24	287	168	533
Volume Left	15	0	0	5
Volume Right	10	0	24	0
cSH	260	1700	1700	985
Volume to Capacity	0.09	0.17	0.10	0.01
Queue Length 95th (m)	2.5	0.0	0.0	0.1
Control Delay (s)	20.3	0.0	0.0	0.2
Lane LOS	C			A
Approach Delay (s)	20.3	0.0		0.2
Approach LOS	C			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
12: South Driveway & Uxbridge Drive

Existing Condtions
AM Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	3	46	62	424	504	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	3	49	66	451	536	6
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				94		
pX, platoon unblocked						
vC, conflicting volume	897	271	543			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	897	271	543			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	93	94			
cM capacity (veh/h)	261	727	1022			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	52	66	226	226	357	185
Volume Left	3	66	0	0	0	0
Volume Right	49	0	0	0	0	6
cSH	655	1022	1700	1700	1700	1700
Volume to Capacity	0.08	0.06	0.13	0.13	0.21	0.11
Queue Length 95th (m)	2.1	1.7	0.0	0.0	0.0	0.0
Control Delay (s)	11.0	8.8	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	11.0	1.1			0.0	
Approach LOS	B					

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		31.4%	ICU Level of Service	A
Analysis Period (min)		15		

Lanes, Volumes, Timings
7: 16 Avenue & Uxbridge Drive

Existing Condtions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	179	1264	511	416	747	122	116	168	192	103	370	105
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8
Storage Length (m)	85.0		0.0	75.0		0.0	110.0		0.0	50.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.97		0.88	0.98		0.90	0.89	0.95		0.96	0.93	
Frt			0.850			0.850		0.920			0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1704	3408	1649	1687	3279	1691	1655	2915	0	1687	2988	0
Flt Permitted	0.950			0.950			0.251			0.387		
Satd. Flow (perm)	1652	3408	1446	1658	3279	1519	389	2915	0	661	2988	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			58			130		204			27	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		328.0			201.4			258.5			93.8	
Travel Time (s)		16.9			10.4			18.6			6.8	
Confl. Peds. (#/hr)	59		73	73		59	185		48	48		185
Confl. Bikes (#/hr)									4			3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	3%	6%	2%	5%	5%	4%	3%	6%	2%
Bus Blockages (#/hr)	0	0	14	0	0	8	0	0	0	0	0	0
Adj. Flow (vph)	190	1345	544	443	795	130	123	179	204	110	394	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	190	1345	544	443	795	130	123	383	0	110	506	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	0.95	1.05	1.05	0.92	1.05	1.05	0.88	1.05	1.05	0.88
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1	1	1	1	1	1	1		1	1	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	8.0	4.0	4.0	8.0	4.0	2.0	8.0	4.0		8.0	4.0	
Trailing Detector (m)	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0		2.0	2.0	
Detector 1 Position(m)	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0		2.0	2.0	
Detector 1 Size(m)	6.0	2.0	2.0	6.0	2.0	2.0	6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		

Lanes, Volumes, Timings
7: 16 Avenue & Uxbridge Drive

Existing Condtions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0	29.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0	35.0	29.0	29.0		29.0	29.0	
Total Split (s)	24.5	56.0	56.0	34.5	66.0	66.0	29.0	29.0	0.0	29.0	29.0	0.0
Total Split (%)	20.5%	46.9%	46.9%	28.9%	55.2%	55.2%	24.3%	24.3%	0.0%	24.3%	24.3%	0.0%
Maximum Green (s)	20.0	50.0	50.0	30.0	60.0	60.0	23.0	23.0		23.0	23.0	
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5	1.5	2.5	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
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	3.0		3.0	3.0	
Recall Mode	None	Min	Min	None	Min	Min	None	None		None	None	
Walk Time (s)		10.0	10.0		10.0	10.0	8.0	8.0		8.0	8.0	
Flash Dont Walk (s)		13.0	13.0		13.0	13.0	15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)		73	73		59	59	48	48		185	185	
Act Effct Green (s)	17.1	49.1	49.1	30.0	62.0	62.0	23.0	23.0		23.0	23.0	
Actuated g/C Ratio	0.14	0.41	0.41	0.25	0.52	0.52	0.19	0.19		0.19	0.19	
v/c Ratio	0.78	0.95	0.86	1.04	0.46	0.15	1.62	0.52		0.86	0.84	
Control Delay	69.8	49.2	43.3	97.3	19.4	3.1	366.8	22.5		96.9	57.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	69.8	49.2	43.3	97.3	19.4	3.1	366.8	22.5		96.9	57.5	
LOS	E	D	D	F	B	A	F	C		F	E	
Approach Delay		49.6			43.0			106.2			64.6	
Approach LOS		D			D			F			E	
Queue Length 50th (m)	45.2	165.1	108.7	~118.8	63.7	0.0	~44.0	20.2		26.5	60.8	
Queue Length 95th (m)	70.5	#214.8	#176.6	#184.0	83.0	10.0	#84.0	36.6		#62.4	#88.8	
Internal Link Dist (m)		304.0			177.4			234.5			69.8	
Turn Bay Length (m)	85.0			75.0			110.0			50.0		
Base Capacity (vph)	287	1437	643	427	1714	856	76	730		128	601	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.66	0.94	0.85	1.04	0.46	0.15	1.62	0.52		0.86	0.84	

Intersection Summary			
Area Type:	Other		
Cycle Length: 119.5			
Actuated Cycle Length: 118.6			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.62			
Intersection Signal Delay: 55.9		Intersection LOS: E	
Intersection Capacity Utilization 105.8%		ICU Level of Service G	
Analysis Period (min) 15			

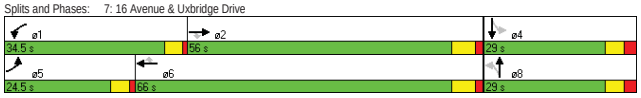
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
7: 16 Avenue & Uxbridge Drive

Existing Condtions
AM Peak Hour

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

Splits and Phases: 7: 16 Avenue & Uxbridge Drive

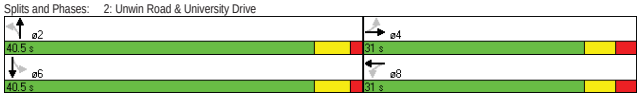


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	173	1	40	18	3	2	117	825	9	6	336	273
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	4.8	4.8	4.8	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	70.0		0.0	70.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.98			0.95		0.99	1.00		0.99	0.98	
Frt		0.975			0.989			0.998			0.933	
Flt Protected		0.961			0.962		0.950			0.950		
Satd. Flow (prot)	0	1804	0	0	1704	0	1640	3399	0	1704	3031	0
Flt Permitted		0.751			0.721		0.400			0.274		
Satd. Flow (perm)	0	1404	0	0	1221	0	681	3399	0	489	3031	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			2			2			290	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		304.8			51.0			199.2			212.1	
Travel Time (s)		21.9			3.7			14.3			15.3	
Confl. Peds. (#/hr)	6		89	89		6	20		14	14		20
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	2%	2%	2%	2%	2%	6%	2%	2%	2%	4%	5%
Bus Blockages (#/hr)	0	6	6	0	0	0	0	0	11	0	0	11
Adj. Flow (vph)	184	1	43	19	3	2	124	878	10	6	357	290
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	228	0	0	24	0	124	888	0	6	647	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	0.88	0.91	0.88	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	4.0		2.0	4.0		8.0	4.0		8.0	4.0	
Trailing Detector (m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Position(m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Size(m)	2.0	2.0		2.0	2.0		6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		21.0	21.0		21.0	21.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		26.5	26.5		26.5	26.5	
Total Split (s)	31.0	31.0	0.0	31.0	31.0	0.0	40.5	40.5	0.0	40.5	40.5	0.0
Total Split (%)	43.4%	43.4%	0.0%	43.4%	43.4%	0.0%	56.6%	56.6%	0.0%	56.6%	56.6%	0.0%
Maximum Green (s)	25.0	25.0		25.0	25.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	5.5	5.5	4.0	5.5	5.5	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	20	20		14	14		89	89		6	6	
Act Effct Green (s)		13.4			13.4		22.7	22.7		22.7	22.7	
Actuated g/C Ratio		0.28			0.28		0.47	0.47		0.47	0.47	
v/c Ratio		0.56			0.07		0.39	0.55		0.03	0.41	
Control Delay		19.4			12.6		13.9	11.2		8.8	5.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		19.4			12.6		13.9	11.2		8.8	5.7	
LOS		B			B		B	B		A	A	
Approach Delay		19.4			12.6			11.5			5.7	
Approach LOS		B			B			B			A	
Queue Length 50th (m)		14.6			1.3		5.8	23.8		0.2	8.1	
Queue Length 95th (m)		36.6			6.1		22.9	56.5		2.2	24.0	
Internal Link Dist (m)		280.8			27.0			175.2			188.1	
Turn Bay Length (m)							70.0			70.0		
Base Capacity (vph)		760			654		510	2547		366	2343	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.30			0.04		0.24	0.35		0.02	0.28	

Intersection Summary			
Area Type:	Other		
Cycle Length: 71.5			
Actuated Cycle Length: 47.8			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 10.5		Intersection LOS: B	
Intersection Capacity Utilization 74.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Unwin Road & University Drive



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	172	3	40	180	3	80
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	181	3	42	189	3	84
Pedestrians				32	24	
Lane Width (m)				4.3	3.5	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				3	2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			208		480	239
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			208		480	239
tC, single (s)			4.5		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.5		3.5	3.3
p0 queue free %			96		99	89
cM capacity (veh/h)			1157		514	760

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	184	232	87
Volume Left	0	42	3
Volume Right	3	0	84
cSH	1700	1157	747
Volume to Capacity	0.11	0.04	0.12
Queue Length 95th (m)	0.0	0.9	3.2
Control Delay (s)	0.0	1.8	10.5
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	10.5
Approach LOS			B

Intersection Summary			
Average Delay		2.6	
Intersection Capacity Utilization		45.1%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
1: Unwin Road & Uxbridge Drive

Exisitng Conditions
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	8	30	236	3	65	9	155	206	69	183	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	8	32	248	3	68	9	163	217	73	193	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	40	320	389	265
Volume Left (vph)	0	248	9	73
Volume Right (vph)	32	68	217	0
Hadj (s)	-0.44	0.11	-0.29	0.15
Departure Headway (s)	6.0	5.8	5.2	5.8
Degree Utilization, x	0.07	0.52	0.56	0.43
Capacity (veh/h)	478	574	655	583
Control Delay (s)	9.4	15.0	14.6	13.0
Approach Delay (s)	9.4	15.0	14.6	13.0
Approach LOS	A	C	B	B

Intersection Summary				
Delay		14.1		
HCM Level of Service		B		
Intersection Capacity Utilization		71.3%	ICU Level of Service	C
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
14: North Driveway & Uxbridge Drive

Exisitng Conditions
PM Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	45	77	67	325	393	56
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	47	81	71	342	414	59
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				223		
pX, platoon unblocked						
vC, conflicting volume	926	443	473			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	926	443	473			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	83	87	94			
cM capacity (veh/h)	279	615	1089			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	128	413	473
Volume Left	47	71	0
Volume Right	81	0	59
cSH	426	1089	1700
Volume to Capacity	0.30	0.06	0.28
Queue Length 95th (m)	10.0	1.7	0.0
Control Delay (s)	17.1	2.0	0.0
Lane LOS	C	A	
Approach Delay (s)	17.1	2.0	0.0
Approach LOS	C		

Intersection Summary				
Average Delay		3.0		
Intersection Capacity Utilization		63.5%	ICU Level of Service	B
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
16: Ulster Road & Uxbridge Drive

Exisitng Conditions
PM Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	21	9	383	24	6	464
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	22	9	403	25	6	488
Pedestrians	26		63			41
Lane Width (m)	3.5		3.5			4.8
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	2		5			5
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			154			
pX, platoon unblocked						
vC, conflicting volume	1006	281			454	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1006	281			454	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	99			99	
cM capacity (veh/h)	219	669			1079	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	32	269	160	495
Volume Left	22	0	0	6
Volume Right	9	0	25	0
cSH	275	1700	1700	1079
Volume to Capacity	0.11	0.16	0.09	0.01
Queue Length 95th (m)	3.1	0.0	0.0	0.1
Control Delay (s)	19.8	0.0	0.0	0.2
Lane LOS	C			A
Approach Delay (s)	19.8	0.0		0.2
Approach LOS	C			

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		47.5%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
12: South Driveway & Uxbridge Drive

Exisitng Conditions
PM Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	6	134	132	401	472	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	6	141	139	422	497	14
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				95		
pX, platoon unblocked						
vC, conflicting volume	993	255	511			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	993	255	511			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	81	87			
cM capacity (veh/h)	210	744	1051			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	147	139	211	211	331	179
Volume Left	6	139	0	0	0	0
Volume Right	141	0	0	0	0	14
cSH	671	1051	1700	1700	1700	1700
Volume to Capacity	0.22	0.13	0.12	0.12	0.19	0.11
Queue Length 95th (m)	6.7	3.6	0.0	0.0	0.0	0.0
Control Delay (s)	11.9	8.9	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	11.9	2.2			0.0	
Approach LOS	B					

Intersection Summary				
Average Delay		2.5		
Intersection Capacity Utilization		40.2%	ICU Level of Service	A
Analysis Period (min)		15		

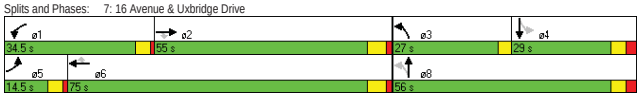
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	98	898	101	237	1051	128	413	324	557	141	211	238
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8
Storage Length (m)	85.0		0.0	75.0		0.0	110.0		0.0	50.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99		0.83	0.96		0.96	0.93	0.91		0.96	0.89	
Frt			0.850			0.850		0.905			0.920	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1704	3342	1638	1609	3408	1689	1704	2781	0	1704	2690	0
Flt Permitted	0.950			0.950			0.210			0.308		
Satd. Flow (perm)	1695	3342	1360	1539	3408	1628	352	2781	0	532	2690	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			88			120		325			155	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		328.0			201.4			258.5			95.4	
Travel Time (s)		16.9			10.4			18.6			6.9	
Confl. Peds. (#/hr)	13		85	85		13	104		74	74		104
Confl. Bikes (#/hr)									1			3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	4%	4%	8%	2%	3%	2%	3%	2%	2%	10%	2%
Bus Blockages (#/hr)	0	0	11	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	103	945	106	249	1106	135	435	341	586	148	222	251
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	945	106	249	1106	135	435	927	0	148	473	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	0.93	1.05	1.05	0.91	1.05	1.05	0.88	1.05	1.05	0.88
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1	1	1	1	1	1	1		1	1	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	8.0	4.0	4.0	8.0	4.0	2.0	8.0	4.0		8.0	4.0	
Trailing Detector (m)	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0		2.0	2.0	
Detector 1 Position(m)	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0		2.0	2.0	
Detector 1 Size(m)	6.0	2.0	2.0	6.0	2.0	2.0	6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Prot		Perm	Prot		Perm	pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8			4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0	29.0	7.0	17.0		10.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0	35.0	10.0	29.0		29.0	29.0	
Total Split (s)	14.5	55.0	55.0	34.5	75.0	75.0	27.0	56.0	0.0	29.0	29.0	0.0
Total Split (%)	10.0%	37.8%	37.8%	23.7%	51.5%	51.5%	18.6%	38.5%	0.0%	19.9%	19.9%	0.0%
Maximum Green (s)	10.0	49.0	49.0	30.0	69.0	69.0	24.0	50.0		23.0	23.0	
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	3.0	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5	1.5	0.0	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	3.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
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	None	Min	Min	None	Min	Min	None	None		None	None	
Walk Time (s)		10.0	10.0		10.0	10.0		8.0		8.0	8.0	
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		15.0		15.0	15.0	
Pedestrian Calls (#/hr)		85	85		13	13		74		104	104	
Act Effct Green (s)	10.1	42.1	42.1	24.8	56.8	56.8	53.5	50.5		23.2	23.2	
Actuated g/C Ratio	0.08	0.31	0.31	0.19	0.42	0.42	0.40	0.38		0.17	0.17	
v/c Ratio	0.80	0.90	0.22	0.84	0.77	0.18	1.13	0.74		1.61	0.80	
Control Delay	102.4	56.4	10.5	77.2	36.3	5.3	119.2	28.4		352.6	47.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	102.4	56.4	10.5	77.2	36.3	5.3	119.2	28.4		352.6	47.5	
LOS	F	E	B	E	D	A	F	C		F	D	
Approach Delay		56.3			40.3			57.4			120.2	
Approach LOS		E			D			E			F	
Queue Length 50th (m)	29.7	134.5	3.5	68.8	135.1	2.4	~126.6	83.1		~61.7	47.7	
Queue Length 95th (m)	#68.2	168.2	17.8	#109.6	160.7	14.4	#211.4	120.1		#113.9	#79.9	
Internal Link Dist (m)		304.0			177.4			234.5			71.4	
Turn Bay Length (m)	85.0			75.0			110.0			50.0		
Base Capacity (vph)	128	1233	557	364	1771	904	385	1250		92	594	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.80	0.77	0.19	0.68	0.62	0.15	1.13	0.74		1.61	0.80	

Intersection Summary			
Area Type:	Other		
Cycle Length: 145.5			
Actuated Cycle Length: 134			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.61			
Intersection Signal Delay: 60.0		Intersection LOS: E	
Intersection Capacity Utilization 98.7%		ICU Level of Service F	
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: 7: 16 Avenue & Uxbridge Drive

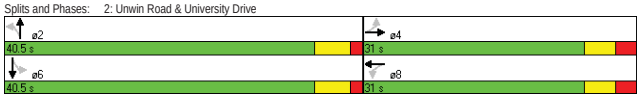


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	4	49	5	4	1	69	469	16	13	515	231
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	4.8	4.8	4.8	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	70.0		0.0	70.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.93			0.99		1.00	1.00		1.00	0.99	
Frt		0.976			0.986			0.995			0.954	
Flt Protected		0.961			0.976		0.950			0.950		
Satd. Flow (prot)	0	1873	0	0	1710	0	1704	3388	0	1704	3186	0
Flt Permitted		0.760			0.834		0.315			0.464		
Satd. Flow (perm)	0	1382	0	0	1455	0	563	3388	0	831	3186	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			1			7			141	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		304.8			51.0			199.2			212.1	
Travel Time (s)		21.9			3.7			14.3			15.3	
Confl. Peds. (#/hr)	90		16	16		90	8		2	2		8
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%
Bus Blockages (#/hr)	0	6	6	0	0	0	0	0	9	0	0	9
Adj. Flow (vph)	242	4	52	5	4	1	73	494	17	14	542	243
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	298	0	0	10	0	73	511	0	14	785	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	0.88	0.91	0.88	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	4.0		2.0	4.0		8.0	4.0		8.0	4.0	
Trailing Detector (m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Position(m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Size(m)	2.0	2.0		2.0	2.0		6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		21.0	21.0		21.0	21.0	
Minimum Split (s)	16.0	16.0		16.0	16.0		26.5	26.5		26.5	26.5	
Total Split (s)	31.0	31.0	0.0	31.0	31.0	0.0	40.5	40.5	0.0	40.5	40.5	0.0
Total Split (%)	43.4%	43.4%	0.0%	43.4%	43.4%	0.0%	56.6%	56.6%	0.0%	56.6%	56.6%	0.0%
Maximum Green (s)	25.0	25.0		25.0	25.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.5	2.5		2.5	2.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	5.5	5.5	4.0	5.5	5.5	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	8	8		2	2		90	90		16	16	
Act Effct Green (s)		15.0			15.0		21.7	21.7		21.7	21.7	
Actuated g/C Ratio		0.31			0.31		0.45	0.45		0.45	0.45	
v/c Ratio		0.68			0.02		0.29	0.34		0.04	0.52	
Control Delay		22.0			10.6		14.1	10.2		9.8	10.0	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		22.0			10.6		14.1	10.2		9.8	10.0	
LOS		C			B		B	B		A	A	
Approach Delay		22.0			10.6			10.7			10.0	
Approach LOS		C			B			B			A	
Queue Length 50th (m)		21.0			0.5		3.7	13.8		0.6	18.7	
Queue Length 95th (m)		44.2			3.0		15.0	30.3		3.8	42.7	
Internal Link Dist (m)		280.8			27.0			175.2			188.1	
Turn Bay Length (m)							70.0			70.0		
Base Capacity (vph)		731			762		413	2485		609	2373	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.41			0.01		0.18	0.21		0.02	0.33	

Intersection Summary			
Area Type:	Other		
Cycle Length: 71.5			
Actuated Cycle Length: 48.3			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 12.4		Intersection LOS: B	
Intersection Capacity Utilization 77.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Unwin Road & University Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	179	1264	511	416	747	122	116	168	192	103	370	105
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8
Storage Length (m)	85.0		0.0	75.0		0.0	110.0		0.0	50.0		0.0
Storage Lanes	1		1	2		1	1		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.97		0.87	0.97		0.89	0.90	0.95		0.95	0.93	
Frt			0.850			0.850		0.920			0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1704	3408	1649	3273	3279	1691	1655	2912	0	1687	2980	0
Flt Permitted	0.950			0.950			0.209			0.525		
Satd. Flow (perm)	1650	3408	1437	3173	3279	1512	327	2912	0	890	2980	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			214			130		204			26	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		328.0			201.4			258.5			90.4	
Travel Time (s)		16.9			10.4			18.6			6.5	
Confl. Peds. (#/hr)	59		73	73		59	185		48	48		185
Confl. Bikes (#/hr)									4			3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	3%	6%	2%	5%	5%	4%	3%	6%	2%
Bus Blockages (#/hr)	0	0	14	0	0	8	0	0	0	0	0	0
Adj. Flow (vph)	190	1345	544	443	795	130	123	179	204	110	394	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	190	1345	544	443	795	130	123	383	0	110	506	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	0.95	1.05	1.05	0.92	1.05	1.05	0.88	1.05	1.05	0.88
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1	1	1	1	1	1	1		1	1	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	8.0	4.0	4.0	8.0	4.0	2.0	8.0	4.0		8.0	4.0	
Trailing Detector (m)	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0		2.0	2.0	
Detector 1 Position(m)	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0		2.0	2.0	
Detector 1 Size(m)	6.0	2.0	2.0	6.0	2.0	2.0	6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Prot		Perm	Prot		Perm	pm+pt			Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases			2			6	8			4		

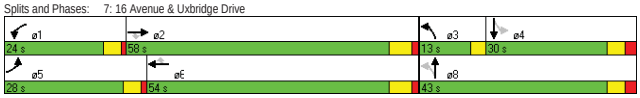
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8		4	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0	29.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0	35.0	13.0	29.0		29.0	29.0	
Total Split (s)	28.0	58.0	58.0	24.0	54.0	54.0	13.0	43.0	0.0	30.0	30.0	0.0
Total Split (%)	22.4%	46.4%	46.4%	19.2%	43.2%	43.2%	10.4%	34.4%	0.0%	24.0%	24.0%	0.0%
Maximum Green (s)	23.5	52.0	52.0	19.5	48.0	48.0	10.0	37.0		24.0	24.0	
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	3.0	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5	1.5	0.0	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	3.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	
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	None	Min	Min	None	Min	Min	None	None		None	None	
Walk Time (s)		10.0	10.0		10.0	10.0		8.0		8.0	8.0	
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		15.0		15.0	15.0	
Pedestrian Calls (#/hr)		185	185		48	48		73		59	59	
Act Effct Green (s)	18.2	50.4	50.4	18.8	51.0	51.0	38.6	35.6		22.6	22.6	
Actuated g/C Ratio	0.15	0.42	0.42	0.15	0.42	0.42	0.32	0.29		0.19	0.19	
v/c Ratio	0.74	0.95	0.75	0.87	0.58	0.18	0.57	0.38		0.67	0.88	
Control Delay	67.1	49.5	25.6	69.3	29.9	4.8	42.6	16.8		67.0	63.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	67.1	49.5	25.6	69.3	29.9	4.8	42.6	16.8		67.0	63.6	
LOS	E	D	C	E	C	A	D	B		E	E	
Approach Delay		44.9			40.3			23.1			64.2	
Approach LOS		D			D			C			E	
Queue Length 50th (m)	47.6	174.0	74.5	58.4	81.6	0.0	23.3	18.3		26.5	64.0	
Queue Length 95th (m)	71.4	#224.5	124.2	#86.1	109.4	13.0	39.7	32.5		#52.5	#92.9	
Internal Link Dist (m)		304.0			177.4			234.5			66.4	
Turn Bay Length (m)	85.0			75.0			110.0			50.0		
Base Capacity (vph)	331	1465	740	528	1377	710	214	1032		177	612	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.57	0.92	0.74	0.84	0.58	0.18	0.57	0.37		0.62	0.83	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 121.4			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 43.7		Intersection LOS: D	
Intersection Capacity Utilization 93.1%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Lanes, Volumes, Timings
7: 16 Avenue & Uxbridge Drive

Existing Improved
AM Peak Hour

Splits and Phases: 7: 16 Avenue & Uxbridge Drive



Lanes, Volumes, Timings
7: 16 Avenue & Uxbridge Drive

Exisiting Improved
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	98	898	101	237	1051	128	413	324	557	141	211	238
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8
Storage Length (m)	85.0		0.0	75.0		0.0	110.0		0.0	50.0		0.0
Storage Lanes	1		1	2		1	1		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	0.95	1.00	0.97	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.87	0.95		0.97	0.94	0.93		0.98	0.91	
Frt			0.850			0.850		0.905			0.920	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1704	3342	1638	3122	3408	1689	1704	2846	0	1704	2766	0
Flt Permitted	0.950			0.950			0.261			0.198		
Satd. Flow (perm)	1697	3342	1423	2951	3408	1638	440	2846	0	347	2766	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			106			122		248			206	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		328.0			201.4			258.5			90.4	
Travel Time (s)		16.9			10.4			18.6			6.5	
Confl. Peds. (#/hr)	13		85	85		13	104		74	74		104
Confl. Bikes (#/hr)									1			3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	4%	4%	8%	2%	3%	2%	3%	2%	2%	10%	2%
Bus Blockages (#/hr)	0	0	11	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	103	945	106	249	1106	135	435	341	586	148	222	251
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	945	106	249	1106	135	435	927	0	148	473	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	0.93	1.05	1.05	0.91	1.05	1.05	0.88	1.05	1.05	0.88
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1	1	1	1	1	1	1		1	1	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	8.0	4.0	4.0	8.0	4.0	2.0	8.0	4.0		8.0	4.0	
Trailing Detector (m)	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0		2.0	2.0	
Detector 1 Position(m)	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0		2.0	2.0	
Detector 1 Size(m)	6.0	2.0	2.0	6.0	2.0	2.0	6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	Prot		Perm	Prot		Perm	pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8			4		

Lanes, Volumes, Timings
7: 16 Avenue & Uxbridge Drive

Exisiting Improved
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0	29.0	7.0	17.0		10.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0	35.0	12.0	29.0		13.0	29.0	
Total Split (s)	14.0	41.0	41.0	14.0	41.0	41.0	24.0	42.0	0.0	13.0	31.0	0.0
Total Split (%)	12.7%	37.3%	37.3%	12.7%	37.3%	37.3%	21.8%	38.2%	0.0%	11.8%	28.2%	0.0%
Maximum Green (s)	9.5	35.0	35.0	9.5	35.0	35.0	21.0	36.0		10.0	25.0	
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5	4.5	3.0	3.5		3.0	3.5	
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5	1.5	0.0	2.5		0.0	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	3.0	6.0	4.0	3.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	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	None	Min	Min	None	Min	Min	None	None		None	None	
Walk Time (s)		10.0	10.0		10.0	10.0		8.0			8.0	
Flash Dont Walk (s)		13.0	13.0		13.0	13.0		15.0			15.0	
Pedestrian Calls (#/hr)		104	104		74	74		104			13	
Act Effct Green (s)	9.1	34.7	34.7	9.5	35.1	35.1	47.3	31.2		33.2	20.2	
Actuated g/C Ratio	0.09	0.33	0.33	0.09	0.33	0.33	0.45	0.30		0.32	0.19	
v/c Ratio	0.70	0.86	0.20	0.88	0.97	0.21	0.96	0.99dr		0.62	0.68	
Control Delay	73.1	42.7	6.3	78.7	56.3	7.2	58.4	39.2		31.0	26.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	73.1	42.7	6.3	78.7	56.3	7.2	58.4	39.2		31.0	26.7	
LOS	E	D	A	E	E	A	E	D		C	C	
Approach Delay		42.1			55.6			45.3			27.7	
Approach LOS		D			E			D			C	
Queue Length 50th (m)	22.6	103.5	0.0	28.7	~129.1	2.0	67.5	77.4		18.8	28.0	
Queue Length 95th (m)	#49.7	#143.7	12.5	#53.9	#182.3	16.0	#132.6	106.3		32.1	46.0	
Internal Link Dist (m)		304.0			177.4			234.5			66.4	
Turn Bay Length (m)	85.0			75.0			110.0			50.0		
Base Capacity (vph)	155	1118	546	284	1140	629	452	1142		239	818	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.66	0.85	0.19	0.88	0.97	0.21	0.96	0.81		0.62	0.58	

Intersection Summary

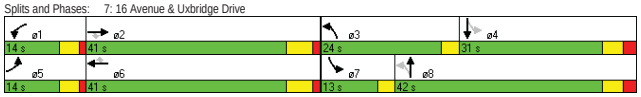
Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 105
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 45.5 Intersection LOS: D
Intersection Capacity Utilization 95.4% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
7: 16 Avenue & Uxbridge Drive

Exisiting Improved
PM Peak Hour

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 7: 16 Avenue & Uxbridge Drive



HCM Unsignalized Intersection Capacity Analysis
5: Uxbridge Drive & Lane

2039 Background
AM Peak Hour

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	237	10	140	362	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	252	11	149	385	11	64
Pedestrians	1			28	65	
Lane Width (m)	4.3			4.3	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			3	5	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			328		1006	350
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			328		1006	350
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			87		95	90
cM capacity (veh/h)			1167		221	638

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	263	534	74
Volume Left	0	149	11
Volume Right	11	0	64
cSH	1700	1167	502
Volume to Capacity	0.15	0.13	0.15
Queue Length 95th (m)	0.0	3.5	4.1
Control Delay (s)	0.0	3.4	13.4
Lane LOS		A	B
Approach Delay (s)	0.0	3.4	13.4
Approach LOS			B

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	61.8%	ICU Level of Service		B
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
1: Secondary Driveway & Uxbridge Drive

2039 Background
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	1	5	25	262	8	161	1	340	140	131	166	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	1	5	27	279	9	171	1	362	149	139	177	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	33	459	512	316
Volume Left (vph)	1	279	1	139
Volume Right (vph)	27	171	149	0
Hadj (s)	-0.44	-0.04	-0.10	0.18
Departure Headway (s)	7.7	6.5	6.3	6.9
Degree Utilization, x	0.07	0.83	0.89	0.61
Capacity (veh/h)	408	535	557	486
Control Delay (s)	11.2	34.3	41.1	20.2
Approach Delay (s)	11.2	34.3	41.1	20.2
Approach LOS	B	D	E	C

Intersection Summary				
Delay	33.0			
HCM Level of Service	D			
Intersection Capacity Utilization	87.8%	ICU Level of Service		E
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
16: Main Driveway & Uxbridge Drive

2039 Background
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	24	0	9	0	472	23	5	448	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	0	26	0	10	0	502	24	5	477	0
Pedestrians		48			80			43			77	
Lane Width (m)		3.5			3.5			3.5			4.8	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		4			6			3			9	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								149				
pX, platoon unblocked												
vC, conflicting volume	873	1142	568	1125	1130	420	525			607		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	873	1142	568	1125	1130	420	525			607		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	81	100	98	100			99		
cM capacity (veh/h)	193	178	433	133	181	497	998			905		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	0	35	251	276	482
Volume Left	0	26	0	0	5
Volume Right	0	10	0	24	0
cSH	1700	166	998	1700	905
Volume to Capacity	0.00	0.21	0.00	0.16	0.01
Queue Length 95th (m)	0.0	6.2	0.0	0.0	0.1
Control Delay (s)	0.0	32.5	0.0	0.0	0.2
Lane LOS	A	D			A
Approach Delay (s)	0.0	32.5	0.0		0.2
Approach LOS	A	D			

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	47.6%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
12: Tim Hortons & Uxbridge Drive

2039 Background
AM Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	130	120	375	100	120	352
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	138	128	399	106	128	374
Pedestrians	80					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	6					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			84			
pX, platoon unblocked						
vC, conflicting volume	975	333			585	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	975	333			585	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	31	79			86	
cM capacity (veh/h)	201	620			922	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	266	266	239	252	250
Volume Left	138	0	0	128	0
Volume Right	128	0	106	0	0
cSH	297	1700	1700	922	1700
Volume to Capacity	0.90	0.16	0.14	0.14	0.15
Queue Length 95th (m)	65.9	0.0	0.0	3.8	0.0
Control Delay (s)	67.3	0.0	0.0	5.5	0.0
Lane LOS	F			A	
Approach Delay (s)	67.3	0.0		2.8	
Approach LOS	F				

Intersection Summary				
Average Delay	15.2			
Intersection Capacity Utilization	53.6%	ICU Level of Service		A
Analysis Period (min)	15			

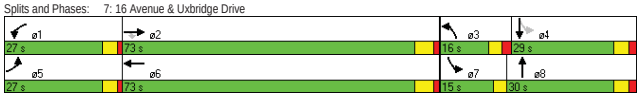
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	136	1580	790	370	1325	210	150	129	280	84	314	84
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8
Storage Length (m)	85.0		85.0	75.0		0.0	110.0		0.0	50.0		0.0
Storage Lanes	1		1	2		0	2		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	0.91	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99		0.82	0.97	0.98		0.82	0.91		0.95	0.93	
Frt			0.850		0.980			0.897			0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1704	4896	1649	3273	4549	0	3211	2733	0	1687	2976	0
Flt Permitted	0.950			0.950			0.950			0.298		
Satd. Flow (perm)	1680	4896	1358	3186	4549	0	2633	2733	0	505	2976	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			240		27			298			20	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		328.0			201.4			258.5			84.2	
Travel Time (s)		16.9			10.4			18.6			6.1	
Confl. Peds. (#/hr)	71		88	88		71	222		58	58		222
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	3%	6%	2%	5%	5%	4%	3%	6%	2%
Bus Blockages (#/hr)	0	0	14	0	0	8	0	0	0	0	0	0
Adj. Flow (vph)	145	1681	840	394	1410	223	160	137	298	89	334	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	1681	840	394	1633	0	160	435	0	89	423	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	0.95	1.05	1.05	0.88	1.05	1.05	0.88	1.05	1.05	0.88
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	8.0	4.0	4.0	8.0	4.0		8.0	4.0		8.0	4.0	
Trailing Detector (m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Position(m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Size(m)	6.0	2.0	2.0	6.0	2.0		6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot		Perm	Prot			Prot			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2							4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0		10.0	10.0		4.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0		15.0	29.0		9.0	29.0	
Total Split (s)	27.0	73.0	73.0	27.0	73.0	0.0	16.0	30.0	0.0	15.0	29.0	0.0
Total Split (%)	18.6%	50.3%	50.3%	18.6%	50.3%	0.0%	11.0%	20.7%	0.0%	10.3%	20.0%	0.0%
Maximum Green (s)	22.5	67.0	67.0	22.5	67.0		11.0	24.5		12.0	23.5	
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5		3.0	3.5		3.0	3.5	
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5		2.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	4.0	5.0	5.5	4.0	3.0	5.5	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
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	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Walk Time (s)		10.0	10.0		10.0			8.0			8.0	
Flash Dont Walk (s)		13.0	13.0		13.0			15.0			15.0	
Pedestrian Calls (#/hr)		185	185		48			73			59	
Act Effct Green (s)	17.0	67.1	67.1	20.7	70.8		10.8	24.8		34.9	22.2	
Actuated g/C Ratio	0.12	0.47	0.47	0.15	0.50		0.08	0.17		0.25	0.16	
v/c Ratio	0.71	0.73	1.09	0.83	0.71		0.66	0.60		0.43	0.88	
Control Delay	79.0	32.7	86.8	74.2	30.2		77.8	20.6		45.2	75.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	79.0	32.7	86.8	74.2	30.2		77.8	20.6		45.2	75.2	
LOS	E	C	F	E	C		E	C		D	E	
Approach Delay		52.3			38.7			36.0			70.0	
Approach LOS		D			D			D			E	
Queue Length 50th (m)	42.8	150.0	~248.6	59.7	136.5		24.6	19.1		20.3	63.3	
Queue Length 95th (m)	65.4	169.0	#331.2	78.9	166.7		37.6	38.7		35.2	#90.8	
Internal Link Dist (m)		304.0			177.4			234.5			60.2	
Turn Bay Length (m)	85.0		85.0	75.0			110.0			50.0		
Base Capacity (vph)	270	2317	769	520	2285		250	730		231	511	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.54	0.73	1.09	0.76	0.71		0.64	0.60		0.39	0.83	

Intersection Summary			
Area Type:	Other		
Cycle Length: 145			
Actuated Cycle Length: 141.8			
Natural Cycle: 145			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 47.4		Intersection LOS: D	
Intersection Capacity Utilization 99.2%		ICU Level of Service F	
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: 7: 16 Avenue & Uxbridge Drive

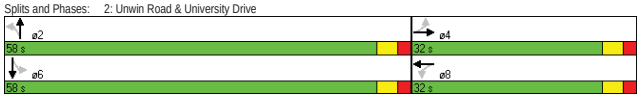


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	16	60	29	11	21	120	1195	14	13	656	300
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	4.8	4.8	4.8	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	70.0		0.0	70.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.96			0.96		0.99	1.00		1.00	0.98	
Frt		0.971			0.954			0.998			0.953	
Flt Protected		0.965			0.977		0.950			0.950		
Satd. Flow (prot)	0	1785	0	0	1658	0	1640	3399	0	1704	3102	0
Flt Permitted		0.744			0.821		0.224			0.139		
Satd. Flow (perm)	0	1369	0	0	1351	0	383	3399	0	248	3102	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			22			2			144	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		304.8			51.0			199.2			212.1	
Travel Time (s)		21.9			3.7			14.3			15.3	
Confl. Peds. (#/hr)	7		107	107		7	24		17	17		24
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	5%	2%	2%	2%	2%	2%	6%	2%	2%	2%	4%	5%
Bus Blockages (#/hr)	0	6	6	0	0	0	0	0	11	0	0	11
Adj. Flow (vph)	213	17	64	31	12	22	128	1271	15	14	698	319
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	294	0	0	65	0	128	1286	0	14	1017	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	0.88	0.91	0.88	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	4.0		2.0	4.0		8.0	4.0		8.0	4.0	
Trailing Detector (m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Position(m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Size(m)	2.0	2.0		2.0	2.0		6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		21.0	21.0		21.0	21.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		26.5	26.5		26.5	26.5	
Total Split (s)	32.0	32.0	0.0	32.0	32.0	0.0	58.0	58.0	0.0	58.0	58.0	0.0
Total Split (%)	35.6%	35.6%	0.0%	35.6%	35.6%	0.0%	64.4%	64.4%	0.0%	64.4%	64.4%	0.0%
Maximum Green (s)	27.0	27.0		27.0	27.0		53.0	53.0		53.0	53.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	20	20		14	14		89	89		6	6	
Act Effct Green (s)		17.7			17.7		32.9	32.9		32.9	32.9	
Actuated g/C Ratio		0.29			0.29		0.54	0.54		0.54	0.54	
v/c Ratio		0.72			0.16		0.62	0.71		0.11	0.59	
Control Delay		32.1			15.2		26.9	13.3		10.2	9.9	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		32.1			15.2		26.9	13.3		10.2	9.9	
LOS		C			B		C	B		B	A	
Approach Delay		32.1			15.2			14.6			9.9	
Approach LOS		C			B			B			A	
Queue Length 50th (m)		26.2			3.3		9.0	51.0		0.7	30.5	
Queue Length 95th (m)		#75.8			15.5		36.0	96.5		4.1	62.1	
Internal Link Dist (m)		280.8			27.0			175.2			188.1	
Turn Bay Length (m)							70.0			70.0		
Base Capacity (vph)		659			653		327	2899		211	2667	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.45			0.10		0.39	0.44		0.07	0.38	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 61.4			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 88.4%		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: 2: Unwin Road & University Drive



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	252	3	40	258	3	80
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	265	3	42	272	3	84
Pedestrians				38	29	
Lane Width (m)				4.3	3.5	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				4	2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			297		652	334
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			297		652	334
tC, single (s)			4.5		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.5		3.5	3.3
p0 queue free %			96		99	87
cM capacity (veh/h)			1063		406	665

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	268	314	87
Volume Left	0	42	3
Volume Right	3	0	84
cSH	1700	1063	650
Volume to Capacity	0.16	0.04	0.13
Queue Length 95th (m)	0.0	1.0	3.7
Control Delay (s)	0.0	1.5	11.4
Lane LOS		A	B
Approach Delay (s)	0.0	1.5	11.4
Approach LOS			B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	8	29	264	3	84	5	214	206	202	130	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	8	31	278	3	88	5	225	217	213	137	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	39	369	447	349
Volume Left (vph)	0	278	5	213
Volume Right (vph)	31	88	217	0
Hadj (s)	-0.44	0.09	-0.25	0.19
Departure Headway (s)	6.9	6.4	5.8	6.3
Degree Utilization, x	0.07	0.66	0.72	0.61
Capacity (veh/h)	399	369	600	533
Control Delay (s)	10.5	20.8	21.9	18.9
Approach Delay (s)	10.5	20.8	21.9	18.9
Approach LOS	B	C	C	C

Intersection Summary			
Delay	20.3		
HCM Level of Service	C		
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
16: Main Driveway & Uxbridge Drive

2039 Background
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	21	0	9	0	416	24	6	417	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	0	0	22	0	9	0	438	25	6	439	0
Pedestrians		22			31			76			49	
Lane Width (m)		3.5			3.5			3.5			4.8	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		2			3			6			5	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								148				
pX, platoon unblocked												
vC, conflicting volume	751	968	537	1009	955	312	461			494		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	751	968	537	1009	955	312	461			494		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	87	100	98	100			99		
cM capacity (veh/h)	264	240	450	171	244	631	1077			1039		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	0	32	219	244	445
Volume Left	0	22	0	0	6
Volume Right	0	9	0	25	0
cSH	1700	219	1077	1700	1039
Volume to Capacity	0.00	0.14	0.00	0.14	0.01
Queue Length 95th (m)	0.0	4.0	0.0	0.0	0.1
Control Delay (s)	0.0	24.2	0.0	0.0	0.2
Lane LOS	A	C			A
Approach Delay (s)	0.0	24.2	0.0		0.2
Approach LOS	A	C			

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	46.7%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
13: Tim Hortons & Uxbridge Drive

2039 Background
PM Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	10	40	400	60	30	408
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	42	421	63	32	429
Pedestrians	31					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	3					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			83			
pX, platoon unblocked						
vC, conflicting volume	762	273			515	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	762	273			515	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	94			97	
cM capacity (veh/h)	322	706			1020	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	53	281	204	175	286
Volume Left	11	0	0	32	0
Volume Right	42	0	63	0	0
cSH	570	1700	1700	1020	1700
Volume to Capacity	0.09	0.17	0.12	0.03	0.17
Queue Length 95th (m)	2.4	0.0	0.0	0.8	0.0
Control Delay (s)	12.0	0.0	0.0	1.8	0.0
Lane LOS	B			A	
Approach Delay (s)	12.0	0.0		0.7	
Approach LOS	B				

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	39.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lanes, Volumes, Timings
7: 16 Avenue & Uxbridge Drive

2039 Background
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	184	1270	90	270	1940	93	410	182	560	154	134	129
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8
Storage Length (m)	85.0		85.0	75.0		0.0	110.0		0.0	50.0		0.0
Storage Lanes	1		1	2		0	2		1	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	0.91	0.97	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00		0.81	0.95	1.00		0.85		0.83	0.88	0.89	
Frt			0.850		0.993				0.850		0.926	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1704	4802	1638	3122	4851	0	3306	1776	1747	1704	2689	0
Flt Permitted	0.950			0.950			0.950			0.637		
Satd. Flow (perm)	1701	4802	1326	2976	4851	0	2810	1776	1452	1005	2689	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			90		7				354		136	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		328.0			201.4			258.5			82.8	
Travel Time (s)		16.9			10.4			18.6			6.0	
Confl. Peds. (#/hr)	16		102	102		16	125		89	89		125
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	4%	4%	8%	2%	3%	2%	3%	2%	2%	10%	2%
Bus Blockages (#/hr)	0	0	11	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	194	1337	95	284	2042	98	432	192	589	162	141	136
Shared Lane Traffic (%)												
Lane Group Flow (vph)	194	1337	95	284	2140	0	432	192	589	162	277	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	0.93	1.05	1.05	0.88	1.05	1.05	0.88	1.05	1.05	0.88
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1	1	1	1		1	1	1	1	1	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	8.0	4.0	4.0	8.0	4.0		8.0	4.0	2.0	8.0	4.0	
Trailing Detector (m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0	2.0	2.0	
Detector 1 Position(m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0	2.0	2.0	
Detector 1 Size(m)	6.0	2.0	2.0	6.0	2.0		6.0	2.0	2.0	6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot		Perm	Prot			Prot		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8	4		

Lanes, Volumes, Timings
7: 16 Avenue & Uxbridge Drive

2039 Background
PM Peak Hour

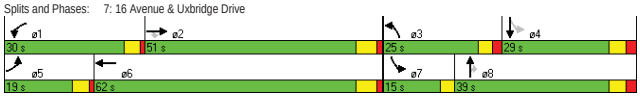
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0		7.0	17.0	17.0	4.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0		12.0	29.0	29.0	9.0	29.0	
Total Split (s)	19.0	51.0	51.0	30.0	62.0	0.0	25.0	39.0	39.0	15.0	29.0	0.0
Total Split (%)	14.1%	37.8%	37.8%	22.2%	45.9%	0.0%	18.5%	28.9%	28.9%	11.1%	21.5%	0.0%
Maximum Green (s)	14.5	45.0	45.0	25.5	56.0		20.0	33.0	33.0	12.0	23.0	
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5		3.0	3.5	3.5	3.0	3.5	
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5		2.0	2.5	2.5	0.0	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	4.0	5.0	6.0	6.0	3.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	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	None	Min	Min	None	Min		None	None	None	None	None	
Walk Time (s)		10.0	10.0		10.0			8.0	8.0		8.0	
Flash Dont Walk (s)		13.0	13.0		13.0			15.0	15.0		15.0	
Pedestrian Calls (#/hr)		104	104		74			104	104		13	
Act Effct Green (s)	14.5	53.4	53.4	17.2	56.1		19.3	30.9	30.9	35.5	21.0	
Actuated g/C Ratio	0.11	0.40	0.40	0.13	0.42		0.15	0.23	0.23	0.27	0.16	
v/c Ratio	1.04	0.69	0.16	0.70	1.04		0.89	0.46	0.97	0.49	0.51	
Control Delay	133.2	36.2	7.0	64.8	68.8		77.7	47.7	49.1	36.0	28.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	133.2	36.2	7.0	64.8	68.8		77.7	47.7	49.1	36.0	28.8	
LOS	F	D	A	E	E		E	D	D	D	C	
Approach Delay		46.0			68.3			59.1			31.5	
Approach LOS		D			E			E			C	
Queue Length 50th (m)	~59.7	114.5	0.9	39.9	~241.4		62.0	45.9	76.4	31.1	18.4	
Queue Length 95th (m)	#110.4	140.9	13.3	53.6	#271.7		#91.0	70.7	#156.4	49.2	33.4	
Internal Link Dist (m)		304.0			177.4			234.5			58.8	
Turn Bay Length (m)	85.0		85.0	75.0			110.0			50.0		
Base Capacity (vph)	187	1936	588	602	2057		500	443	628	337	580	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	1.04	0.69	0.16	0.47	1.04		0.86	0.43	0.94	0.48	0.48	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 132.5			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 57.1		Intersection LOS: E	
Intersection Capacity Utilization 100.1%		ICU Level of Service G	
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: 7: 16 Avenue & Uxbridge Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	320	16	80	19	11	21	110	845	24	13	1056	231
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	4.8	4.8	4.8	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	70.0		0.0	70.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.92			0.95			1.00		1.00	0.99	
Frt		0.974			0.945			0.996			0.973	
Flt Protected		0.963			0.982		0.950			0.950		
Satd. Flow (prot)	0	1870	0	0	1584	0	1704	3392	0	1704	3259	0
Flt Permitted		0.740			0.848		0.121			0.312		
Satd. Flow (perm)	0	1328	0	0	1364	0	217	3392	0	559	3259	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			22			6			43	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		304.8			51.0			199.2			212.1	
Travel Time (s)		21.9			3.7			14.3			15.3	
Confl. Peds. (#/hr)	108		19	19		108	10		2	2		10
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%
Bus Blockages (#/hr)	0	6	6	0	0	0	0	0	9	0	0	9
Adj. Flow (vph)	337	17	84	20	12	22	116	889	25	14	1112	243
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	438	0	0	54	0	116	914	0	14	1355	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	0.88	0.91	0.88	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	4.0		2.0	4.0		8.0	4.0		8.0	4.0	
Trailing Detector (m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Position(m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Size(m)	2.0	2.0		2.0	2.0		6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		

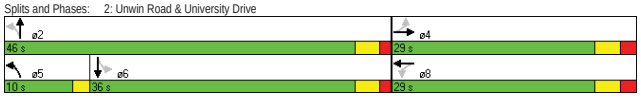
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	18.5		18.5	18.5	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	26.5		26.5	26.5	
Total Split (s)	29.0	29.0	0.0	29.0	29.0	0.0	10.0	46.0	0.0	36.0	36.0	0.0
Total Split (%)	38.7%	38.7%	0.0%	38.7%	38.7%	0.0%	13.3%	61.3%	0.0%	48.0%	48.0%	0.0%
Maximum Green (s)	24.0	24.0		24.0	24.0		8.0	41.5		31.5	31.5	
Yellow Time (s)	3.0	3.0		3.0	3.0		2.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		0.0	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	2.0	4.5	4.0	4.5	4.5	4.0
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		Min	Min	
Walk Time (s)	8.0	8.0		8.0	8.0			8.0		8.0	8.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	8	8		2	2			90		16	16	
Act Effct Green (s)		24.1			24.1		41.2	38.7		31.1	31.1	
Actuated g/C Ratio		0.33			0.33		0.57	0.53		0.43	0.43	
v/c Ratio		0.96			0.12		0.42	0.50		0.06	0.95	
Control Delay		61.6			13.1		11.7	11.6		13.9	36.4	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		61.6			13.1		11.7	11.6		13.9	36.4	
LOS		E			B		B	B		B	D	
Approach Delay		61.6			13.1			11.6			36.2	
Approach LOS		E			B			B			D	
Queue Length 50th (m)		~62.9			3.3		6.9	39.8		1.2	98.0	
Queue Length 95th (m)		#123.0			11.0		13.7	54.4		4.7	#148.5	
Internal Link Dist (m)		280.8			27.0			175.2			188.1	
Turn Bay Length (m)							70.0			70.0		
Base Capacity (vph)		454			469		289	1957		245	1449	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.96			0.12		0.40	0.47		0.06	0.94	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 72.4			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 30.9		Intersection LOS: C	
Intersection Capacity Utilization 86.3%		ICU Level of Service E	
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: Unwin Road & University Drive



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	255	10	140	367	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	268	11	147	386	11	63
Pedestrians	31			53	84	
Lane Width (m)	4.3			4.3	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	3			5	7	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				148		
pX, platoon unblocked					0.92	
vC, conflicting volume			363		1070	411
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			363		1030	411
tC, single (s)			4.5		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.5		3.5	3.3
p0 queue free %			85		94	89
cM capacity (veh/h)			956		181	566

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	279	534	74
Volume Left	0	147	11
Volume Right	11	0	63
cSH	1700	956	434
Volume to Capacity	0.16	0.15	0.17
Queue Length 95th (m)	0.0	4.3	4.8
Control Delay (s)	0.0	4.0	15.0
Lane LOS		A	B
Approach Delay (s)	0.0	4.0	15.0
Approach LOS			B

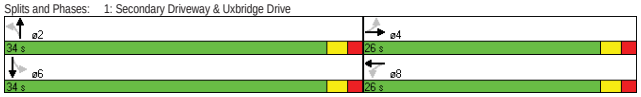
Intersection Summary			
Average Delay		3.6	
Intersection Capacity Utilization		64.8%	ICU Level of Service C
Analysis Period (min)		15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	15	69	302	49	161	111	342	144	131	175	9
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	3.5	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.89			0.89			0.95			0.98	
Frt		0.894			0.958			0.967			0.996	
Flt Protected		0.998			0.971			0.991			0.980	
Satd. Flow (prot)	0	1432	0	0	1764	0	0	1908	0	0	1894	0
Flt Permitted		0.984			0.766			0.886			0.616	
Satd. Flow (perm)	0	1409	0	0	1313	0	0	1668	0	0	1175	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		73			44			39			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			304.8			122.1			148.0	
Travel Time (s)		7.2			21.9			8.8			10.7	
Confl. Peds. (#/hr)	103		78	78		103	149		70	70		149
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	5%	2%	5%	2%	2%	3%	2%	7%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Adj. Flow (vph)	4	16	73	318	52	169	117	360	152	138	184	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	93	0	0	539	0	0	629	0	0	331	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	1.05	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.91	0.88
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (m)	2.0	4.0		2.0	4.0		2.0	4.0		2.0	4.0	
Trailing Detector (m)	0.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Detector 1 Position(m)	0.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Detector 1 Size(m)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	25.5	25.5		25.5	25.5		25.5	25.5		25.5	25.5	
Total Split (s)	26.0	26.0	0.0	26.0	26.0	0.0	34.0	34.0	0.0	34.0	34.0	0.0
Total Split (%)	43.3%	43.3%	0.0%	43.3%	43.3%	0.0%	56.7%	56.7%	0.0%	56.7%	56.7%	0.0%
Maximum Green (s)	22.5	22.5		22.5	22.5		30.5	30.5		30.5	30.5	
Yellow Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		22.8			22.8			23.2			23.2	
Actuated g/C Ratio		0.43			0.43			0.44			0.44	
v/c Ratio		0.14			0.91			0.84			0.64	
Control Delay		5.6			40.6			23.5			17.7	
Queue Delay		0.0			0.0			0.1			0.0	
Total Delay		5.6			40.6			23.5			17.7	
LOS		A			D			C			B	
Approach Delay		5.6			40.6			23.5			17.7	
Approach LOS		A			D			C			B	
Queue Length 50th (m)		1.1			45.8			48.7			23.8	
Queue Length 95th (m)		9.3			#120.9			86.4			46.3	
Internal Link Dist (m)		75.8			280.8			98.1			124.0	
Turn Bay Length (m)												
Base Capacity (vph)		648			590			989			686	
Starvation Cap Reductn		0			0			20			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.14			0.91			0.65			0.48	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 53.1			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 27.1		Intersection LOS: C	
Intersection Capacity Utilization 82.7%		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: Secondary Driveway & Uxbridge Drive

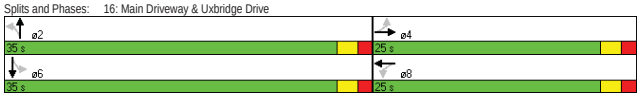


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	0	57	24	0	9	222	582	23	5	492	49
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.8	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.86			0.87		0.93	0.99			0.98	
Frt		0.877			0.964			0.994			0.988	
Flt Protected		0.995			0.965		0.950					
Satd. Flow (prot)	0	1358	0	0	1598	0	1704	1753	0	0	1944	0
Flt Permitted		0.969			0.779		0.482				0.997	
Satd. Flow (perm)	0	1307	0	0	1174	0	806	1753	0	0	1938	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		60			9			5			13	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		50.3			95.6			62.4			122.1	
Travel Time (s)		3.6			6.9			4.5			8.8	
Confl. Peds. (#/hr)	97		156	156		97	134		126	126		134
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	6	6	6	0
Adj. Flow (vph)	6	0	60	25	0	9	234	613	24	5	518	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	66	0	0	34	0	234	637	0	0	575	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	0.88	0.91	1.05
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (m)	2.0	4.0		2.0	4.0		8.0	4.0		2.0	4.0	
Trailing Detector (m)	0.0	2.0		0.0	2.0		2.0	2.0		0.0	2.0	
Detector 1 Position(m)	0.0	2.0		0.0	2.0		2.0	2.0		0.0	2.0	
Detector 1 Size(m)	2.0	2.0		2.0	2.0		6.0	2.0		2.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	24.5	24.5		24.5	24.5		24.5	24.5		24.5	24.5	
Total Split (s)	25.0	25.0	0.0	25.0	25.0	0.0	35.0	35.0	0.0	35.0	35.0	0.0
Total Split (%)	41.7%	41.7%	0.0%	41.7%	41.7%	0.0%	58.3%	58.3%	0.0%	58.3%	58.3%	0.0%
Maximum Green (s)	21.5	21.5		21.5	21.5		31.5	31.5		31.5	31.5	
Yellow Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		8.5			8.5		32.7	32.7			32.7	
Actuated g/C Ratio		0.21			0.21		0.79	0.79			0.79	
v/c Ratio		0.21			0.14		0.37	0.46			0.38	
Control Delay		7.6			14.2		7.2	6.2			5.1	
Queue Delay		0.0			0.0		0.0	0.0			0.1	
Total Delay		7.6			14.2		7.2	6.3			5.3	
LOS		A			B		A	A			A	
Approach Delay		7.6			14.3			6.5			5.3	
Approach LOS		A			B			A			A	
Queue Length 50th (m)		0.4			1.9		5.3	15.9			12.7	
Queue Length 95th (m)		7.6			7.3		35.8	81.6			63.7	
Internal Link Dist (m)		26.3			71.6			38.4			98.1	
Turn Bay Length (m)												
Base Capacity (vph)		780			682		636	1385			1533	
Starvation Cap Reductn		0			0		0	35			266	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.08			0.05		0.37	0.47			0.45	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 41.4			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 6.3		Intersection LOS: A	
Intersection Capacity Utilization 91.1%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 16: Main Driveway & Uxbridge Drive



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	130	120	707	100	120	453
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	137	126	744	105	126	477
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			85			62
pX, platoon unblocked						
vC, conflicting volume	1288	425			849	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1288	425			849	
tC, single (s)	6.8	6.9			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	78			83	
cM capacity (veh/h)	130	578			765	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	263	496	353	285	318
Volume Left	137	0	0	126	0
Volume Right	126	0	105	0	0
cSH	207	1700	1700	765	1700
Volume to Capacity	1.27	0.29	0.21	0.17	0.19
Queue Length 95th (m)	112.4	0.0	0.0	4.7	0.0
Control Delay (s)	200.4	0.0	0.0	5.8	0.0
Lane LOS	F			A	
Approach Delay (s)	200.4	0.0		2.7	
Approach LOS	F				

Intersection Summary			
Average Delay	31.7		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

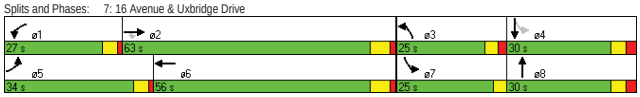
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	225	1580	790	370	1325	369	150	214	280	145	336	102
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8
Storage Length (m)	85.0		85.0	75.0		0.0	110.0		0.0	50.0		0.0
Storage Lanes	1		1	2		0	2		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	0.91	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.98		0.74	0.96	0.95		0.82	0.88		0.93	0.92	
Frt			0.850		0.967			0.915			0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1704	4802	1638	3122	4482	0	3306	2720	0	1704	2856	0
Flt Permitted	0.950			0.950			0.950			0.180		
Satd. Flow (perm)	1671	4802	1209	2991	4482	0	2725	2720	0	302	2856	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			341		53			195			23	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		328.0			201.4			258.5			85.4	
Travel Time (s)		16.9			10.4			18.6			6.1	
Confl. Peds. (#/hr)	120		134	134		120	246		109	109		246
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	4%	4%	8%	2%	3%	2%	3%	2%	2%	10%	2%
Bus Blockages (#/hr)	0	0	11	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	237	1663	832	389	1395	388	158	225	295	153	354	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	237	1663	832	389	1783	0	158	520	0	153	461	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	0.93	1.05	1.05	0.88	1.05	1.05	0.88	1.05	1.05	0.88
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	8.0	4.0	4.0	8.0	4.0		8.0	4.0		8.0	4.0	
Trailing Detector (m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Position(m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Size(m)	6.0	2.0	2.0	6.0	2.0		6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot		Perm	Prot			Prot			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2							4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0		7.0	17.0		10.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0		12.0	29.0		13.0	29.0	
Total Split (s)	34.0	63.0	63.0	27.0	56.0	0.0	25.0	30.0	0.0	25.0	30.0	0.0
Total Split (%)	23.4%	43.4%	43.4%	18.6%	38.6%	0.0%	17.2%	20.7%	0.0%	17.2%	20.7%	0.0%
Maximum Green (s)	29.5	57.0	57.0	22.5	50.0		20.0	24.0		22.0	24.0	
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5		3.0	3.5		3.0	3.5	
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5		2.0	2.5		0.0	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	4.0	5.0	6.0	4.0	3.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
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	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Walk Time (s)		10.0	10.0		10.0			8.0			8.0	
Flash Dont Walk (s)		13.0	13.0		13.0			15.0			15.0	
Pedestrian Calls (#/hr)		104	104		74			104			13	
Act Effct Green (s)	23.2	57.1	57.1	20.6	54.5		11.6	23.7		42.2	24.6	
Actuated g/C Ratio	0.17	0.42	0.42	0.15	0.40		0.09	0.17		0.31	0.18	
v/c Ratio	0.81	0.82	1.18	0.82	0.97		0.56	0.82		0.62	0.86	
Control Delay	75.8	39.7	116.4	70.8	54.2		67.7	45.2		45.6	67.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	75.8	39.7	116.4	70.8	54.2		67.7	45.2		45.6	67.8	
LOS	E	D	F	E	D		E	D		D	E	
Approach Delay		66.2			57.2			50.4			62.3	
Approach LOS		E			E			D			E	
Queue Length 50th (m)	65.3	152.6	~224.3	55.1	175.5		22.6	48.8		32.5	65.0	
Queue Length 95th (m)	97.3	188.0	#320.9	#79.0	#250.8		35.4	#79.8		51.5	#93.6	
Internal Link Dist (m)		304.0			177.4			234.5			61.4	
Turn Bay Length (m)	85.0		85.0	75.0			110.0			50.0		
Base Capacity (vph)	372	2023	707	519	1836		489	643		327	543	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.64	0.82	1.18	0.75	0.97		0.32	0.81		0.47	0.85	

Intersection Summary			
Area Type:	Other		
Cycle Length: 145			
Actuated Cycle Length: 135.5			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 60.9		Intersection LOS: E	
Intersection Capacity Utilization 100.8%		ICU Level of Service G	
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: 7: 16 Avenue & Uxbridge Drive

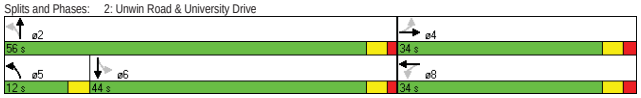


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	212	16	61	29	11	21	151	1196	14	13	659	350
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	4.8	4.8	4.8	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	70.0		0.0	70.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.94			0.95			1.00			0.99	0.96
Frt		0.972			0.954			0.998			0.948	
Flt Protected		0.965			0.977		0.950			0.950		
Satd. Flow (prot)	0	1822	0	0	1640	0	1704	3396	0	1704	3056	0
Flt Permitted		0.742			0.819		0.126			0.208		
Satd. Flow (perm)	0	1361	0	0	1328	0	226	3396	0	368	3056	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			22			2			137	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		304.8			51.0			199.2			212.1	
Travel Time (s)		21.9			3.7			14.3			15.3	
Confl. Peds. (#/hr)	36		119	119		36	50		44	44		50
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%
Bus Blockages (#/hr)	0	6	6	0	0	0	0	0	9	0	0	9
Adj. Flow (vph)	223	17	64	31	12	22	159	1259	15	14	694	368
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	304	0	0	65	0	159	1274	0	14	1062	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	0.88	0.91	0.88	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	4.0		2.0	4.0		8.0	4.0		8.0	4.0	
Trailing Detector (m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Position(m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Size(m)	2.0	2.0		2.0	2.0		6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	18.5		18.5	18.5	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	26.5		26.5	26.5	
Total Split (s)	34.0	34.0	0.0	34.0	34.0	0.0	12.0	56.0	0.0	44.0	44.0	0.0
Total Split (%)	37.8%	37.8%	0.0%	37.8%	37.8%	0.0%	13.3%	62.2%	0.0%	48.9%	48.9%	0.0%
Maximum Green (s)	29.0	29.0		29.0	29.0		9.0	51.5		39.5	39.5	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		0.0	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	3.0	4.5	4.0	4.5	4.5	4.0
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		Min	Min	
Walk Time (s)	8.0	8.0		8.0	8.0			8.0		8.0	8.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	8	8		2	2			90		16	16	
Act Effct Green (s)		19.8			19.8		41.9	40.3		28.6	28.6	
Actuated g/C Ratio		0.28			0.28		0.60	0.57		0.41	0.41	
v/c Ratio		0.77			0.17		0.50	0.65		0.09	0.80	
Control Delay		36.9			16.1		14.6	12.7		16.4	21.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		36.9			16.1		14.6	12.7		16.4	21.7	
LOS		D			B		B	B		B	C	
Approach Delay		36.9			16.1			12.9			21.6	
Approach LOS		D			B			B			C	
Queue Length 50th (m)		36.4			4.4		8.8	57.2		1.2	58.3	
Queue Length 95th (m)		75.5			15.0		25.3	99.7		5.5	98.0	
Internal Link Dist (m)		280.8			27.0			175.2			188.1	
Turn Bay Length (m)							70.0			70.0		
Base Capacity (vph)		603			591		335	2580		219	1871	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.50			0.11		0.47	0.49		0.06	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 70.1			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 18.8		Intersection LOS: B	
Intersection Capacity Utilization 86.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Unwin Road & University Drive



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	268	3	40	286	3	80
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	282	3	42	301	3	84
Pedestrians	21			53	45	
Lane Width (m)	4.3			4.3	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	2			5	4	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				148		
pX, platoon unblocked						
vC, conflicting volume			330		735	382
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			330		735	382
tC, single (s)			4.5		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.5		3.5	3.3
p0 queue free %			96		99	86
cM capacity (veh/h)			1018		350	607

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	285	343	87
Volume Left	0	42	3
Volume Right	3	0	84
cSH	1700	1018	592
Volume to Capacity	0.17	0.04	0.15
Queue Length 95th (m)	0.0	1.0	4.1
Control Delay (s)	0.0	1.4	12.1
Lane LOS		A	B
Approach Delay (s)	0.0	1.4	12.1
Approach LOS			B

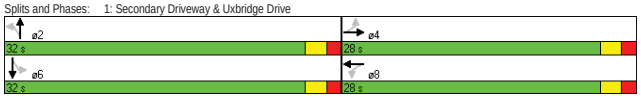
Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	74	157	297	38	84	101	228	269	202	135	11
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	3.5	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.89			0.91			0.93			0.98	
Frt		0.914			0.973			0.939			0.996	
Flt Protected		0.997			0.966			0.992			0.972	
Satd. Flow (prot)	0	1456	0	0	1836	0	0	1818	0	0	1890	0
Flt Permitted		0.972			0.623			0.891			0.467	
Satd. Flow (perm)	0	1416	0	0	1107	0	0	1600	0	0	895	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		165			25			93			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		99.8			304.8			120.7			148.0	
Travel Time (s)		7.2			21.9			8.7			10.7	
Confl. Peds. (#/hr)	69		105	105		69	165		57	57		165
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	5%	2%	5%	2%	2%	3%	2%	7%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	6	0
Adj. Flow (vph)	15	78	165	313	40	88	106	240	283	213	142	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	258	0	0	441	0	0	629	0	0	367	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	1.05	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.91	0.88
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (m)	2.0	4.0		2.0	4.0		2.0	4.0		2.0	4.0	
Trailing Detector (m)	0.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Detector 1 Position(m)	0.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Detector 1 Size(m)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	25.5	25.5		25.5	25.5		25.5	25.5		25.5	25.5	
Total Split (s)	28.0	28.0	0.0	28.0	28.0	0.0	32.0	32.0	0.0	32.0	32.0	0.0
Total Split (%)	46.7%	46.7%	0.0%	46.7%	46.7%	0.0%	53.3%	53.3%	0.0%	53.3%	53.3%	0.0%
Maximum Green (s)	24.5	24.5		24.5	24.5		28.5	28.5		28.5	28.5	
Yellow Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		24.3			24.3			25.1			25.1	
Actuated g/C Ratio		0.43			0.43			0.45			0.45	
v/c Ratio		0.37			0.90			0.82			0.92	
Control Delay		6.6			41.7			22.6			46.5	
Queue Delay		0.0			0.0			0.2			0.0	
Total Delay		6.6			41.7			22.8			46.5	
LOS		A			D			C			D	
Approach Delay		6.6			41.7			22.8			46.5	
Approach LOS		A			D			C			D	
Queue Length 50th (m)		6.5			44.8			48.1			34.8	
Queue Length 95th (m)		20.3			#100.3			#105.9			#84.6	
Internal Link Dist (m)		75.8			280.8			96.7			124.0	
Turn Bay Length (m)												
Base Capacity (vph)		715			500			863			459	
Starvation Cap Reductn		0			0			22			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.36			0.88			0.75			0.80	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 56.4			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 30.4		Intersection LOS: C	
Intersection Capacity Utilization 106.2%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Secondary Driveway & Uxbridge Drive

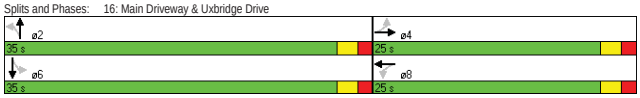


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	81	0	321	21	0	9	197	508	24	6	543	40
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.8	4.8	3.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.87			0.93		0.96	0.99			0.99	
Frt		0.892			0.961			0.993			0.991	
Flt Protected		0.990			0.966		0.950					
Satd. Flow (prot)	0	1401	0	0	1607	0	1704	1754	0	0	1968	0
Flt Permitted		0.936			0.814		0.372				0.996	
Satd. Flow (perm)	0	1300	0	0	1300	0	640	1754	0	0	1960	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		168			9			6			9	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		50.3			95.6			59.4			120.7	
Travel Time (s)		3.6			6.9			4.3			8.7	
Confl. Peds. (#/hr)	68		155	155		68	88		75	75		88
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	6	6	6	0
Adj. Flow (vph)	85	0	338	22	0	9	207	535	25	6	572	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	423	0	0	31	0	207	560	0	0	620	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	0.88	0.91	1.05
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (m)	2.0	4.0		2.0	4.0		8.0	4.0		2.0	4.0	
Trailing Detector (m)	0.0	2.0		0.0	2.0		2.0	2.0		0.0	2.0	
Detector 1 Position(m)	0.0	2.0		0.0	2.0		2.0	2.0		0.0	2.0	
Detector 1 Size(m)	2.0	2.0		2.0	2.0		6.0	2.0		2.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	24.5	24.5		24.5	24.5		24.5	24.5		24.5	24.5	
Total Split (s)	25.0	25.0	0.0	25.0	25.0	0.0	35.0	35.0	0.0	35.0	35.0	0.0
Total Split (%)	41.7%	41.7%	0.0%	41.7%	41.7%	0.0%	58.3%	58.3%	0.0%	58.3%	58.3%	0.0%
Maximum Green (s)	21.5	21.5		21.5	21.5		31.5	31.5		31.5	31.5	
Yellow Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
All-Red Time (s)	1.5	1.5		1.5	1.5		1.5	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	5	5		5	5		5	5		5	5	
Act Effct Green (s)		14.9			14.9		21.4	21.4			21.4	
Actuated g/C Ratio		0.34			0.34		0.49	0.49			0.49	
v/c Ratio		0.77			0.07		0.67	0.66			0.65	
Control Delay		20.1			10.4		22.4	13.3			12.6	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		20.1			10.4		22.4	13.3			12.7	
LOS		C			B		C	B			B	
Approach Delay		20.1			10.4			15.8			12.7	
Approach LOS		C			B			B			B	
Queue Length 50th (m)		15.5			1.1		11.2	29.8			32.7	
Queue Length 95th (m)		#68.3			6.4		#45.6	69.0			73.0	
Internal Link Dist (m)		26.3			71.6			35.4			96.7	
Turn Bay Length (m)												
Base Capacity (vph)		782			708		485	1329			1486	
Starvation Cap Reductn		0			0		0	0			57	
Spillback Cap Reductn		0			0		0	0			0	
Storage Cap Reductn		0			0		0	0			0	
Reduced v/c Ratio		0.54			0.04		0.43	0.42			0.43	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 44.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 15.6		Intersection LOS: B	
Intersection Capacity Utilization 101.8%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 16: Main Driveway & Uxbridge Drive



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	10	40	690	60	30	855
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	42	726	63	32	900
Pedestrians	69		69			69
Lane Width (m)	3.5		3.5			3.5
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	6		6			6
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			88			59
pX, platoon unblocked						
vC, conflicting volume	1409	533			858	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1409	533			858	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	90			96	
cM capacity (veh/h)	111	438			735	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	53	484	305	332	600
Volume Left	11	0	0	32	0
Volume Right	42	0	63	0	0
cSH	275	1700	1700	735	1700
Volume to Capacity	0.19	0.28	0.18	0.04	0.35
Queue Length 95th (m)	5.5	0.0	0.0	1.1	0.0
Control Delay (s)	21.2	0.0	0.0	1.4	0.0
Lane LOS	C			A	
Approach Delay (s)	21.2	0.0		0.5	
Approach LOS	C				

Intersection Summary				
Average Delay		0.9		
Intersection Capacity Utilization		66.0%	ICU Level of Service	C
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	251	1265	90	270	1932	213	410	286	560	318	260	287
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8
Storage Length (m)	85.0		85.0	75.0		0.0	110.0		0.0	50.0		0.0
Storage Lanes	1		1	2		0	2		1	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	0.91	0.97	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00		0.77	0.94	0.99		0.88		0.78	0.91	0.86	
Frt			0.850		0.985				0.850		0.921	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1704	4802	1638	3122	4765	0	3306	1776	1747	1704	2599	0
Flt Permitted	0.950			0.950			0.950			0.239		
Satd. Flow (perm)	1697	4802	1253	2938	4765	0	2921	1776	1367	388	2599	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			93		16				258		181	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		328.0			201.4			258.5			88.4	
Travel Time (s)		16.9			10.4			18.6			6.4	
Confl. Peds. (#/hr)	56		128	128		56	147		117	117		147
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	4%	4%	8%	2%	3%	2%	3%	2%	2%	10%	2%
Bus Blockages (#/hr)	0	0	11	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	264	1332	95	284	2034	224	432	301	589	335	274	302
Shared Lane Traffic (%)												
Lane Group Flow (vph)	264	1332	95	284	2258	0	432	301	589	335	576	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	0.93	1.05	1.05	0.88	1.05	1.05	0.88	1.05	1.05	0.88
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1	1	1	1		1	1	1	1	1	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	8.0	4.0	4.0	8.0	4.0		8.0	4.0	2.0	8.0	4.0	
Trailing Detector (m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0	2.0	2.0	
Detector 1 Position(m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0	2.0	2.0	
Detector 1 Size(m)	6.0	2.0	2.0	6.0	2.0		6.0	2.0	2.0	6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot		Perm	Prot			Prot		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8	4		

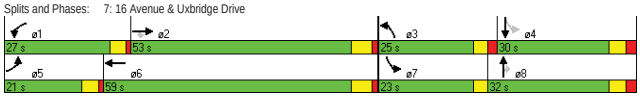
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0		7.0	17.0	17.0	10.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0		12.0	29.0	29.0	13.0	29.0	
Total Split (s)	21.0	53.0	53.0	27.0	59.0	0.0	25.0	32.0	32.0	23.0	30.0	0.0
Total Split (%)	15.6%	39.3%	39.3%	20.0%	43.7%	0.0%	18.5%	23.7%	23.7%	17.0%	22.2%	0.0%
Maximum Green (s)	16.5	47.0	47.0	22.5	53.0		20.0	26.0	26.0	20.0	24.0	
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5		3.0	3.5	3.5	3.0	3.5	
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5		2.0	2.5	2.5	0.0	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	4.0	5.0	6.0	6.0	3.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	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	None	Min	Min	None	Min		None	None	None	None	None	
Walk Time (s)		10.0	10.0		10.0			8.0	8.0		8.0	
Flash Dont Walk (s)		13.0	13.0		13.0			15.0	15.0		15.0	
Pedestrian Calls (#/hr)		104	104		74			104	104		13	
Act Effct Green (s)	16.5	52.1	52.1	17.4	53.0		19.6	26.0	26.0	47.4	24.4	
Actuated g/C Ratio	0.12	0.39	0.39	0.13	0.39		0.15	0.19	0.19	0.35	0.18	
v/c Ratio	1.27	0.72	0.18	0.70	1.20		0.90	0.88	1.25	1.01	0.93	
Control Delay	200.0	38.5	6.7	65.8	132.4		79.0	79.3	153.6	86.8	60.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	200.0	38.5	6.7	65.8	132.4		79.0	79.3	153.6	86.8	60.2	
LOS	F	D	A	E	F		E	E	F	F	E	
Approach Delay		61.9			125.0			112.3			70.0	
Approach LOS		E			F			F			E	
Queue Length 50th (m)	~93.1	115.4	0.3	39.9	~281.3		62.0	83.0	~144.3	~73.8	60.6	
Queue Length 95th (m)	#150.2	141.9	12.9	53.6	#311.1		#91.0	#135.1	#219.4	#138.4	#98.4	
Internal Link Dist (m)		304.0			177.4			234.5			64.4	
Turn Bay Length (m)	85.0		85.0	75.0			110.0			50.0		
Base Capacity (vph)	208	1852	540	520	1880		490	342	472	331	618	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	1.27	0.72	0.18	0.55	1.20		0.88	0.88	1.25	1.01	0.93	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.27			
Intersection Signal Delay: 98.1		Intersection LOS: F	
Intersection Capacity Utilization 112.2%		ICU Level of Service H	
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: 7: 16 Avenue & Uxbridge Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	400	16	129	19	11	21	135	845	24	13	1056	273
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	4.8	4.8	4.8	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	70.0		0.0	70.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.92			0.95			1.00		0.99	0.98	
Frt		0.968			0.945			0.996			0.969	
Flt Protected		0.965			0.982		0.950			0.950		
Satd. Flow (prot)	0	1852	0	0	1582	0	1704	3388	0	1704	3220	0
Flt Permitted		0.749			0.832		0.127			0.308		
Satd. Flow (perm)	0	1331	0	0	1335	0	228	3388	0	546	3220	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			22			5			49	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		304.8			51.0			199.2			212.1	
Travel Time (s)		21.9			3.7			14.3			15.3	
Confl. Peds. (#/hr)	111		37	37		111	29		23	23		29
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%
Bus Blockages (#/hr)	0	6	6	0	0	0	0	0	9	0	0	9
Adj. Flow (vph)	421	17	136	20	12	22	142	889	25	14	1112	287
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	574	0	0	54	0	142	914	0	14	1399	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	0.88	0.91	0.88	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	4.0		2.0	4.0		8.0	4.0		8.0	4.0	
Trailing Detector (m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Position(m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Size(m)	2.0	2.0		2.0	2.0		6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		

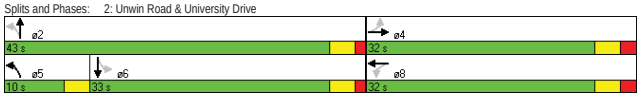
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	18.5		18.5	18.5	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	26.5		25.5	25.5	
Total Split (s)	32.0	32.0	0.0	32.0	32.0	0.0	10.0	43.0	0.0	33.0	33.0	0.0
Total Split (%)	42.7%	42.7%	0.0%	42.7%	42.7%	0.0%	13.3%	57.3%	0.0%	44.0%	44.0%	0.0%
Maximum Green (s)	27.0	27.0		27.0	27.0		7.0	38.5		28.5	28.5	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		0.0	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	3.0	4.5	4.0	4.5	4.5	4.0
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		Min	Min	
Walk Time (s)	8.0	8.0		8.0	8.0			8.0		8.0	8.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	8	8		2	2			90		16	16	
Act Effct Green (s)		27.1			27.1		37.9	36.4		28.6	28.6	
Actuated g/C Ratio		0.37			0.37		0.52	0.50		0.39	0.39	
v/c Ratio		1.13			0.11		0.55	0.54		0.07	1.08	
Control Delay		105.9			11.6		18.3	13.8		16.0	75.0	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		105.9			11.6		18.3	13.8		16.0	75.0	
LOS		F			B		B	B		B	E	
Approach Delay		105.9			11.6			14.4			74.4	
Approach LOS		F			B			B			E	
Queue Length 50th (m)		~101.5			3.1		10.0	44.4		1.3	~126.3	
Queue Length 95th (m)		#162.6			10.3		20.8	60.4		5.1	#168.0	
Internal Link Dist (m)		280.8			27.0			175.2			188.1	
Turn Bay Length (m)							70.0			70.0		
Base Capacity (vph)		508			509		260	1795		213	1291	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		1.13			0.11		0.55	0.51		0.07	1.08	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 73			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 58.7		Intersection LOS: E	
Intersection Capacity Utilization 97.5%		ICU Level of Service F	
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: Unwin Road & University Drive



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	255	10	140	367	10	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	268	11	147	386	11	63
Pedestrians	31			53	84	
Lane Width (m)	4.3			4.3	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	3			5	7	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			363		1070	411
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			363		1070	411
tC, single (s)			4.5		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.5		3.5	3.3
p0 queue free %			85		94	89
cM capacity (veh/h)			956		187	566

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	279	534	74
Volume Left	0	147	11
Volume Right	11	0	63
cSH	1700	956	439
Volume to Capacity	0.16	0.15	0.17
Queue Length 95th (m)	0.0	4.3	4.8
Control Delay (s)	0.0	4.0	14.8
Lane LOS		A	B
Approach Delay (s)	0.0	4.0	14.8
Approach LOS			B

Intersection Summary			
Average Delay		3.6	
Intersection Capacity Utilization		64.8%	ICU Level of Service C
Analysis Period (min)		15	

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	250	707	220	0	583
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	263	744	232	0	614
Pedestrians	128					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	10					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			83			
pX, platoon unblocked						
vC, conflicting volume	1602	616			1104	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1602	616			1104	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	32			100	
cM capacity (veh/h)	87	389			563	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	263	496	480	614
Volume Left	0	0	0	0
Volume Right	263	0	232	0
cSH	389	1700	1700	1700
Volume to Capacity	0.68	0.29	0.28	0.36
Queue Length 95th (m)	38.5	0.0	0.0	0.0
Control Delay (s)	31.6	0.0	0.0	0.0
Lane LOS	D			
Approach Delay (s)	31.6	0.0		0.0
Approach LOS	D			

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization		51.4%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	225	1580	790	370	1325	489	150	214	280	145	336	102
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8
Storage Length (m)	85.0		85.0	75.0		0.0	110.0		0.0	50.0		0.0
Storage Lanes	1		1	2		0	2		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	0.91	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.98		0.74	0.96	0.94		0.82	0.88		0.93	0.92	
Frt			0.850		0.960			0.915			0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1704	4802	1638	3122	4389	0	3306	2720	0	1704	2856	0
Flt Permitted	0.950			0.950			0.950			0.180		
Satd. Flow (perm)	1677	4802	1209	2991	4389	0	2725	2720	0	302	2856	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			341		70			195			23	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		328.0			201.4			258.5			82.8	
Travel Time (s)		16.9			10.4			18.6			6.0	
Confl. Peds. (#/hr)	120		134	134		120	246		109	109		246
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	4%	4%	8%	2%	3%	2%	3%	2%	2%	10%	2%
Bus Blockages (#/hr)	0	0	11	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	237	1663	832	389	1395	515	158	225	295	153	354	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	237	1663	832	389	1910	0	158	520	0	153	461	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	0.93	1.05	1.05	0.88	1.05	1.05	0.88	1.05	1.05	0.88
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	8.0	4.0	4.0	8.0	4.0		8.0	4.0		8.0	4.0	
Trailing Detector (m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Position(m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Size(m)	6.0	2.0	2.0	6.0	2.0		6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot		Perm	Prot			Prot			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2							4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0		7.0	17.0		10.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0		12.0	29.0		13.0	29.0	
Total Split (s)	34.0	63.0	63.0	27.0	56.0	0.0	25.0	30.0	0.0	25.0	30.0	0.0
Total Split (%)	23.4%	43.4%	43.4%	18.6%	38.6%	0.0%	17.2%	20.7%	0.0%	17.2%	20.7%	0.0%
Maximum Green (s)	29.5	57.0	57.0	22.5	50.0		20.0	24.0		22.0	24.0	
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5		3.0	3.5		3.0	3.5	
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5		2.0	2.5		0.0	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	4.0	5.0	6.0	4.0	3.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
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	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Walk Time (s)		10.0	10.0		10.0			8.0			8.0	
Flash Dont Walk (s)		13.0	13.0		13.0			15.0			15.0	
Pedestrian Calls (#/hr)		104	104		74			104			13	
Act Effct Green (s)	23.2	57.1	57.1	20.6	54.5		11.6	23.7		42.2	24.6	
Actuated g/C Ratio	0.17	0.42	0.42	0.15	0.40		0.09	0.17		0.31	0.18	
v/c Ratio	0.81	0.82	1.18	0.82	1.06		0.56	0.82		0.62	0.86	
Control Delay	75.8	39.7	116.4	70.8	75.6		67.7	45.2		45.6	67.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	75.8	39.7	116.4	70.8	75.6		67.7	45.2		45.6	67.8	
LOS	E	D	F	E	E		E	D		D	E	
Approach Delay		66.2			74.8			50.4			62.3	
Approach LOS		E			E			D			E	
Queue Length 50th (m)	65.3	152.6	~224.3	55.1	~211.3		22.6	48.8		32.5	65.0	
Queue Length 95th (m)	97.3	188.0	#320.9	#79.0	#280.8		35.4	#79.8		51.5	#93.6	
Internal Link Dist (m)		304.0			177.4			234.5			58.8	
Turn Bay Length (m)	85.0		85.0	75.0			110.0			50.0		
Base Capacity (vph)	372	2023	707	519	1809		489	643		327	543	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.64	0.82	1.18	0.75	1.06		0.32	0.81		0.47	0.85	

Intersection Summary			
Area Type:	Other		
Cycle Length: 145			
Actuated Cycle Length: 135.5			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 67.3		Intersection LOS: E	
Intersection Capacity Utilization 100.8%		ICU Level of Service G	
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: 7: 16 Avenue & Uxbridge Drive

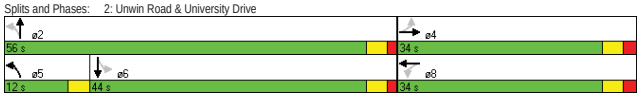
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	212	16	121	29	11	21	121	1196	14	13	689	320
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	4.8	4.8	4.8	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	70.0		0.0	70.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.93			0.95			1.00		0.99	0.96	
Frt		0.953			0.954			0.998			0.952	
Flt Protected		0.971			0.977		0.950			0.950		
Satd. Flow (prot)	0	1759	0	0	1640	0	1704	3396	0	1704	3081	0
Flt Permitted		0.776			0.805		0.128			0.178		
Satd. Flow (perm)	0	1373	0	0	1312	0	230	3396	0	315	3081	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			22			2			108	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		304.8			51.0			199.2			212.1	
Travel Time (s)		21.9			3.7			14.3			15.3	
Confl. Peds. (#/hr)	36		119	119		36	50		44	44		50
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%
Bus Blockages (#/hr)	0	6	6	0	0	0	0	0	9	0	0	9
Adj. Flow (vph)	223	17	127	31	12	22	127	1259	15	14	725	337
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	367	0	0	65	0	127	1274	0	14	1062	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	0.88	0.91	0.88	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	4.0		2.0	4.0		8.0	4.0		8.0	4.0	
Trailing Detector (m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Position(m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Size(m)	2.0	2.0		2.0	2.0		6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	18.5		18.5	18.5	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	26.5		26.5	26.5	
Total Split (s)	34.0	34.0	0.0	34.0	34.0	0.0	12.0	56.0	0.0	44.0	44.0	0.0
Total Split (%)	37.8%	37.8%	0.0%	37.8%	37.8%	0.0%	13.3%	62.2%	0.0%	48.9%	48.9%	0.0%
Maximum Green (s)	29.0	29.0		29.0	29.0		9.0	51.5		39.5	39.5	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		0.0	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	3.0	4.5	4.0	4.5	4.5	4.0
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		Min	Min	
Walk Time (s)	8.0	8.0		8.0	8.0			8.0		8.0	8.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	8	8		2	2			90		16	16	
Act Effct Green (s)		23.0			23.0		40.2	38.6		30.1	30.1	
Actuated g/C Ratio		0.32			0.32		0.56	0.54		0.42	0.42	
v/c Ratio		0.80			0.15		0.42	0.70		0.11	0.79	
Control Delay		37.5			15.9		12.3	14.7		17.6	22.3	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		37.5			15.9		12.3	14.7		17.6	22.3	
LOS		D			B		B	B		B	C	
Approach Delay		37.5			15.9			14.5			22.3	
Approach LOS		D			B			B			C	
Queue Length 50th (m)		47.1			4.6		8.3	68.2		1.3	68.1	
Queue Length 95th (m)		#102.2			15.0		17.4	99.7		5.6	100.3	
Internal Link Dist (m)		280.8			27.0			175.2			188.1	
Turn Bay Length (m)							70.0			70.0		
Base Capacity (vph)		619			587		329	2470		188	1882	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.59			0.11		0.39	0.52		0.07	0.56	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.9			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 20.3		Intersection LOS: C	
Intersection Capacity Utilization 91.0%		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: 2: Unwin Road & University Drive



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	268	3	40	286	3	80
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	282	3	42	301	3	84
Pedestrians	21			53	45	
Lane Width (m)	4.3			4.3	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	2			5	4	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			330		735	382
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			330		735	382
tC, single (s)			4.5		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.5		3.5	3.3
p0 queue free %			96		99	86
cM capacity (veh/h)			1018		350	607

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	285	343	87
Volume Left	0	42	3
Volume Right	3	0	84
cSH	1700	1018	592
Volume to Capacity	0.17	0.04	0.15
Queue Length 95th (m)	0.0	1.0	4.1
Control Delay (s)	0.0	1.4	12.1
Lane LOS		A	B
Approach Delay (s)	0.0	1.4	12.1
Approach LOS			B

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	55.1%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	50	690	90	0	865
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	53	726	95	0	911
Pedestrians	69					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	6					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			83			
pX, platoon unblocked						
vC, conflicting volume	1753	480			890	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1753	480			890	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	90			100	
cM capacity (veh/h)	72	503			715	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	53	484	337	911
Volume Left	0	0	0	0
Volume Right	53	0	95	0
cSH	503	1700	1700	1700
Volume to Capacity	0.10	0.28	0.20	0.54
Queue Length 95th (m)	2.8	0.0	0.0	0.0
Control Delay (s)	13.0	0.0	0.0	0.0
Lane LOS	B			
Approach Delay (s)	13.0	0.0		0.0
Approach LOS	B			

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	50.1%	ICU Level of Service		A
Analysis Period (min)	15			

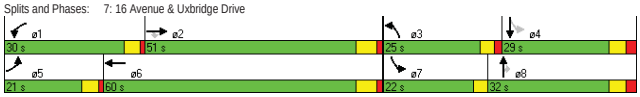
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	251	1265	90	270	1932	243	410	286	560	318	260	287
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8
Storage Length (m)	85.0		85.0	75.0		0.0	110.0		0.0	50.0		0.0
Storage Lanes	1		1	2		0	2		1	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	0.91	0.97	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00		0.77	0.94	0.99		0.88		0.78	0.90	0.86	
Frt			0.850		0.983				0.850		0.921	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1704	4802	1638	3122	4748	0	3306	1776	1747	1704	2598	0
Flt Permitted	0.950			0.950			0.950			0.248		
Satd. Flow (perm)	1697	4802	1253	2938	4748	0	2921	1776	1367	401	2598	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91		20				293		180	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		328.0			201.4			258.5			82.8	
Travel Time (s)		16.9			10.4			18.6			6.0	
Confl. Peds. (#/hr)	56		128	128		56	147		117	117		147
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	4%	4%	8%	2%	3%	2%	3%	2%	2%	10%	2%
Bus Blockages (#/hr)	0	0	11	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	264	1332	95	284	2034	256	432	301	589	335	274	302
Shared Lane Traffic (%)												
Lane Group Flow (vph)	264	1332	95	284	2290	0	432	301	589	335	576	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	0.93	1.05	1.05	0.88	1.05	1.05	0.88	1.05	1.05	0.88
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1	1	1	1		1	1	1	1	1	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	8.0	4.0	4.0	8.0	4.0		8.0	4.0	2.0	8.0	4.0	
Trailing Detector (m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0	2.0	2.0	
Detector 1 Position(m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0	2.0	2.0	
Detector 1 Size(m)	6.0	2.0	2.0	6.0	2.0		6.0	2.0	2.0	6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot		Perm	Prot			Prot		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8	4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0		7.0	17.0	17.0	10.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0		12.0	29.0	29.0	13.0	29.0	
Total Split (s)	21.0	51.0	51.0	30.0	60.0	0.0	25.0	32.0	32.0	22.0	29.0	0.0
Total Split (%)	15.6%	37.8%	37.8%	22.2%	44.4%	0.0%	18.5%	23.7%	23.7%	16.3%	21.5%	0.0%
Maximum Green (s)	16.5	45.0	45.0	25.5	54.0		20.5	26.0	26.0	19.0	23.0	
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5		3.0	3.5	3.5	3.0	3.5	
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5		1.5	2.5	2.5	0.0	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	4.0	4.5	6.0	6.0	3.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	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	None	Min	Min	None	Min		None	None	None	None	None	
Walk Time (s)		10.0	10.0		10.0			8.0	8.0		8.0	
Flash Dont Walk (s)		13.0	13.0		13.0			15.0	15.0		15.0	
Pedestrian Calls (#/hr)		104	104		74			104	104		13	
Act Effct Green (s)	16.5	53.1	53.1	17.4	54.0		20.0	26.0	26.0	45.5	23.5	
Actuated g/C Ratio	0.12	0.39	0.39	0.13	0.40		0.15	0.19	0.19	0.34	0.17	
v/c Ratio	1.27	0.71	0.17	0.70	1.20		0.88	0.88	1.18	1.05	0.96	
Control Delay	200.0	37.5	6.9	65.8	130.8		76.6	79.3	123.2	98.8	65.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	200.0	37.5	6.9	65.8	130.8		76.6	79.3	123.2	98.8	65.5	
LOS	F	D	A	E	F		E	E	F	F	E	
Approach Delay		61.1			123.6			98.0			77.7	
Approach LOS		E			F			F			E	
Queue Length 50th (m)	~93.1	113.9	0.7	39.9	~284.6		61.8	83.0	~127.3	~79.6	61.4	
Queue Length 95th (m)	#150.2	140.3	13.1	53.6	#314.2		#89.1	#135.1	#202.4	#142.4	#101.4	
Internal Link Dist (m)		304.0			177.4			234.5			58.8	
Turn Bay Length (m)	85.0		85.0	75.0			110.0			50.0		
Base Capacity (vph)	208	1887	548	590	1911		502	342	500	319	602	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	1.27	0.71	0.17	0.48	1.20		0.86	0.88	1.18	1.05	0.96	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.27			
Intersection Signal Delay: 95.7		Intersection LOS: F	
Intersection Capacity Utilization 112.9%		ICU Level of Service H	
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: 7: 16 Avenue & Uxbridge Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	400	16	144	19	11	21	127	845	24	13	1064	265
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	4.8	4.8	4.8	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (m)	0.0		0.0	0.0		0.0	70.0		0.0	70.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		0.87			0.92			1.00		0.98	0.98	
Frt		0.965			0.945			0.996			0.970	
Flt Protected		0.966			0.982		0.950			0.950		
Satd. Flow (prot)	0	1836	0	0	1540	0	1704	3386	0	1704	3205	0
Flt Permitted		0.754			0.801		0.075			0.268		
Satd. Flow (perm)	0	1268	0	0	1250	0	135	3386	0	473	3205	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			22			3			32	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		304.8			51.0			199.2			212.1	
Travel Time (s)		21.9			3.7			14.3			15.3	
Confl. Peds. (#/hr)	111		37	37		111	29		23	23		29
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	3%
Bus Blockages (#/hr)	0	6	6	0	0	0	0	0	9	0	0	9
Adj. Flow (vph)	421	17	152	20	12	22	134	889	25	14	1120	279
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	590	0	0	54	0	134	914	0	14	1399	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	0.88	0.91	0.88	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	4.0		2.0	4.0		8.0	4.0		8.0	4.0	
Trailing Detector (m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Position(m)	0.0	2.0		0.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Size(m)	2.0	2.0		2.0	2.0		6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		

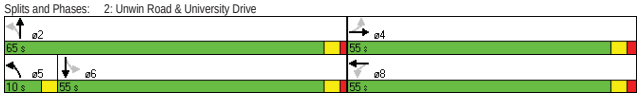
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	18.5		18.5	18.5	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	26.5		26.5	26.5	
Total Split (s)	55.0	55.0	0.0	55.0	55.0	0.0	10.0	65.0	0.0	55.0	55.0	0.0
Total Split (%)	45.8%	45.8%	0.0%	45.8%	45.8%	0.0%	8.3%	54.2%	0.0%	45.8%	45.8%	0.0%
Maximum Green (s)	50.0	50.0		50.0	50.0		7.0	60.5		50.5	50.5	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		0.0	1.5		1.5	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	3.0	4.5	4.0	4.5	4.5	4.0
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		Min	Min	
Walk Time (s)	8.0	8.0		8.0	8.0			8.0		8.0	8.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	8	8		2	2			90		16	16	
Act Effct Green (s)		50.0			50.0		62.0	60.5		50.5	50.5	
Actuated g/C Ratio		0.42			0.42		0.52	0.50		0.42	0.42	
v/c Ratio		1.09			0.10		0.83	0.53		0.07	1.02	
Control Delay		100.4			14.7		59.7	21.6		22.2	64.4	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		100.4			14.7		59.7	21.6		22.2	64.4	
LOS		F			B		E	C		C	E	
Approach Delay		100.4			14.7			26.4			64.0	
Approach LOS		F			B			C			E	
Queue Length 50th (m)		~163.0			4.7		16.8	78.1		2.0	~191.7	
Queue Length 95th (m)		#235.4			13.2		#52.8	97.2		6.7	#236.7	
Internal Link Dist (m)		280.8			27.0			175.2			188.1	
Turn Bay Length (m)							70.0			70.0		
Base Capacity (vph)		539			534		161	1709		199	1367	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		1.09			0.10		0.83	0.53		0.07	1.02	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 57.4		Intersection LOS: E	
Intersection Capacity Utilization 98.0%		ICU Level of Service F	
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: Unwin Road & University Drive



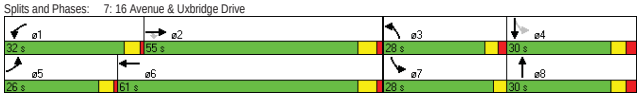
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	225	1580	790	370	1325	369	150	214	280	145	336	102
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8
Storage Length (m)	85.0		85.0	75.0		0.0	110.0		0.0	50.0		0.0
Storage Lanes	2		1	2		0	2		0	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	0.91	0.97	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.97		0.74	0.96	0.95		0.82	0.88		0.93	0.92	
Frt			0.850		0.967			0.915			0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3306	4802	1638	3122	4482	0	3306	2720	0	1704	2856	0
Flt Permitted	0.950			0.950			0.950			0.208		
Satd. Flow (perm)	3200	4802	1209	2991	4482	0	2725	2720	0	348	2856	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			382		56			195			23	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		328.0			201.4			258.5			82.8	
Travel Time (s)		16.9			10.4			18.6			6.0	
Confl. Peds. (#/hr)	120		134	134		120	246		109	109		246
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	4%	4%	8%	2%	3%	2%	3%	2%	2%	10%	2%
Bus Blockages (#/hr)	0	0	11	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	237	1663	832	389	1395	388	158	225	295	153	354	107
Shared Lane Traffic (%)												
Lane Group Flow (vph)	237	1663	832	389	1783	0	158	520	0	153	461	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	0.93	1.05	1.05	0.88	1.05	1.05	0.88	1.05	1.05	0.88
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1	1	1	1		1	1		1	1	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	8.0	4.0	4.0	8.0	4.0		8.0	4.0		8.0	4.0	
Trailing Detector (m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Position(m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Detector 1 Size(m)	6.0	2.0	2.0	6.0	2.0		6.0	2.0		6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot		Perm	Prot			Prot			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2							4		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0		7.0	17.0		10.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0		12.0	29.0		13.0	29.0	
Total Split (s)	26.0	55.0	55.0	32.0	61.0	0.0	28.0	30.0	0.0	28.0	30.0	0.0
Total Split (%)	17.9%	37.9%	37.9%	22.1%	42.1%	0.0%	19.3%	20.7%	0.0%	19.3%	20.7%	0.0%
Maximum Green (s)	21.5	49.0	49.0	27.5	55.0		23.0	24.0		25.0	24.0	
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5		3.0	3.5		3.0	3.5	
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5		2.0	2.5		0.0	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	4.0	5.0	6.0	4.0	3.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
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	
Recall Mode	None	Min	Min	None	Min		None	None		None	None	
Walk Time (s)		10.0	10.0		10.0			8.0			8.0	
Flash Dont Walk (s)		13.0	13.0		13.0			15.0			15.0	
Pedestrian Calls (#/hr)		104	104		74			104			13	
Act Effct Green (s)	14.3	49.5	49.5	20.9	56.0		11.3	23.8		41.7	24.6	
Actuated g/C Ratio	0.11	0.39	0.39	0.16	0.44		0.09	0.19		0.33	0.19	
v/c Ratio	0.64	0.89	1.19	0.76	0.89		0.54	0.78		0.58	0.81	
Control Delay	63.0	44.8	117.8	61.8	39.7		63.7	40.4		40.2	59.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	63.0	44.8	117.8	61.8	39.7		63.7	40.4		40.2	59.8	
LOS	E	D	F	E	D		E	D		D	E	
Approach Delay		68.6			43.6			45.9			54.9	
Approach LOS		E			D			D			D	
Queue Length 50th (m)	31.0	148.0	~197.3	50.7	151.3		20.7	43.9		28.9	58.7	
Queue Length 95th (m)	47.9	#212.6	#305.9	72.3	#214.3		34.7	#76.8		49.7	#90.4	
Internal Link Dist (m)		304.0			177.4			234.5			58.8	
Turn Bay Length (m)	85.0		85.0	75.0			110.0			50.0		
Base Capacity (vph)	558	1859	702	674	1995		597	671		386	573	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.42	0.89	1.19	0.58	0.89		0.26	0.77		0.40	0.80	

Intersection Summary			
Area Type:	Other		
Cycle Length: 145			
Actuated Cycle Length: 127.8			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.19			
Intersection Signal Delay: 56.0		Intersection LOS: E	
Intersection Capacity Utilization 100.8%		ICU Level of Service G	
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: 7: 16 Avenue & Uxbridge Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	251	1265	90	270	1932	213	410	286	560	318	260	287
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8	3.5	3.5	4.8
Storage Length (m)	85.0		85.0	75.0		0.0	110.0		0.0	50.0		0.0
Storage Lanes	2		1	2		0	2		1	1		0
Taper Length (m)	7.5		7.5	7.5		7.5	7.5		7.5	7.5		7.5
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	0.91	0.97	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor	0.99		0.77	0.94	0.99		0.88		0.78	0.89	0.86	
Frt			0.850		0.985				0.850		0.921	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3306	4802	1638	3122	4765	0	3306	1776	1747	1704	2598	0
Flt Permitted	0.950			0.950			0.950			0.344		
Satd. Flow (perm)	3282	4802	1254	2938	4765	0	2921	1776	1368	550	2598	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95		18				189		141	
Link Speed (k/h)		70			70			50			50	
Link Distance (m)		328.0			201.4			258.5			92.4	
Travel Time (s)		16.9			10.4			18.6			6.7	
Confl. Peds. (#/hr)	56		128	128		56	147		117	117		147
Confl. Bikes (#/hr)			5			5			5			5
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	4%	4%	8%	2%	3%	2%	3%	2%	2%	10%	2%
Bus Blockages (#/hr)	0	0	11	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	264	1332	95	284	2034	224	432	301	589	335	274	302
Shared Lane Traffic (%)												
Lane Group Flow (vph)	264	1332	95	284	2258	0	432	301	589	335	576	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.0			7.0			7.0			7.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.05	1.05	0.93	1.05	1.05	0.88	1.05	1.05	0.88	1.05	1.05	0.88
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	1	1	1	1		1	1	1	1	1	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	8.0	4.0	4.0	8.0	4.0		8.0	4.0	2.0	8.0	4.0	
Trailing Detector (m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0	2.0	2.0	
Detector 1 Position(m)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0	2.0	2.0	
Detector 1 Size(m)	6.0	2.0	2.0	6.0	2.0		6.0	2.0	2.0	6.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Prot		Perm	Prot			Prot		Perm	pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2						8	4		

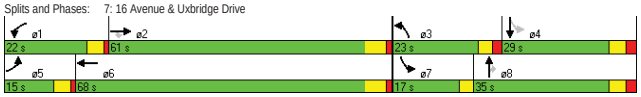
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6		3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0		7.0	17.0	17.0	10.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0		12.0	29.0	29.0	13.0	29.0	
Total Split (s)	15.0	61.0	61.0	22.0	68.0	0.0	23.0	35.0	35.0	17.0	29.0	0.0
Total Split (%)	11.1%	45.2%	45.2%	16.3%	50.4%	0.0%	17.0%	25.9%	25.9%	12.6%	21.5%	0.0%
Maximum Green (s)	10.5	55.0	55.0	17.5	62.0		18.0	29.0	29.0	14.0	23.0	
Yellow Time (s)	3.5	4.5	4.5	3.5	4.5		3.0	3.5	3.5	3.0	3.5	
All-Red Time (s)	1.0	1.5	1.5	1.0	1.5		2.0	2.5	2.5	0.0	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.0	6.0	4.5	6.0	4.0	5.0	6.0	6.0	3.0	6.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	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	None	Min	Min	None	Min		None	None	None	None	None	
Walk Time (s)		10.0	10.0		10.0			8.0	8.0		8.0	
Flash Dont Walk (s)		13.0	13.0		13.0			15.0	15.0		15.0	
Pedestrian Calls (#/hr)		104	104		74			104	104		13	
Act Effct Green (s)	10.5	56.4	56.4	16.1	62.0		18.0	29.0	29.0	40.0	23.0	
Actuated g/C Ratio	0.08	0.42	0.42	0.12	0.46		0.13	0.21	0.21	0.30	0.17	
v/c Ratio	1.03	0.66	0.16	0.76	1.03		0.98	0.79	1.33	1.18	1.03	
Control Delay	123.3	33.9	5.4	71.4	62.3		96.0	65.8	192.8	146.9	86.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	123.3	33.9	5.4	71.4	62.3		96.0	65.8	192.8	146.9	86.5	
LOS	F	C	A	E	E		F	E	F	F	F	
Approach Delay		46.2			63.3			132.3			108.7	
Approach LOS		D			E			F			F	
Queue Length 50th (m)	~40.6	110.8	0.0	39.9	~246.3		63.1	80.6	~171.0	~81.1	~72.4	
Queue Length 95th (m)	#70.1	128.6	11.3	55.9	#276.2		#98.3	#123.6	#246.1	#142.2	#111.6	
Internal Link Dist (m)		304.0			177.4			234.5			68.4	
Turn Bay Length (m)	85.0		85.0	75.0			110.0			50.0		
Base Capacity (vph)	257	2007	579	405	2198		441	382	442	283	560	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	1.03	0.66	0.16	0.70	1.03		0.98	0.79	1.33	1.18	1.03	

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 135
Natural Cycle: 140
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.33
Intersection Signal Delay: 79.4 Intersection LOS: E
Intersection Capacity Utilization 105.3% ICU Level of Service G
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: 7: 16 Avenue & Uxbridge Drive



APPENDIX F: 2039 MODE SPLIT DATA FROM RTM

2039 Horizon TZ 2305 Mode Split

	AM Peak 2-Hour Person Trips by mode				PM Peak 2-Hour Person Trips by mode			
	Productions		Attractions		Productions		Attractions	
	TZ 2305	%	TZ 2305	%	TZ 2305	%	TZ 2305	%
SOV	498	33	421	29	577	41	712	40
HOV	360	24	369	25	506	36	571	32
Transit	237	16	268	18	142	10	217	12
Bike	25	2	15	1	12	1	23	1
Walk	367	25	377	26	172	12	261	15
Totals	1487	100	1450	100	1409	100	1784	100

APPENDIX G: METHODOLOGY OF BACKGROUND TRAFFIC VOLUMES

The City of Calgary provided forecast turning movement volumes at the intersection of 16 Avenue / Uxbridge Drive and University Drive / Unwin Road. The RTM 2039 forecast traffic volumes are shown in **Figure A.**

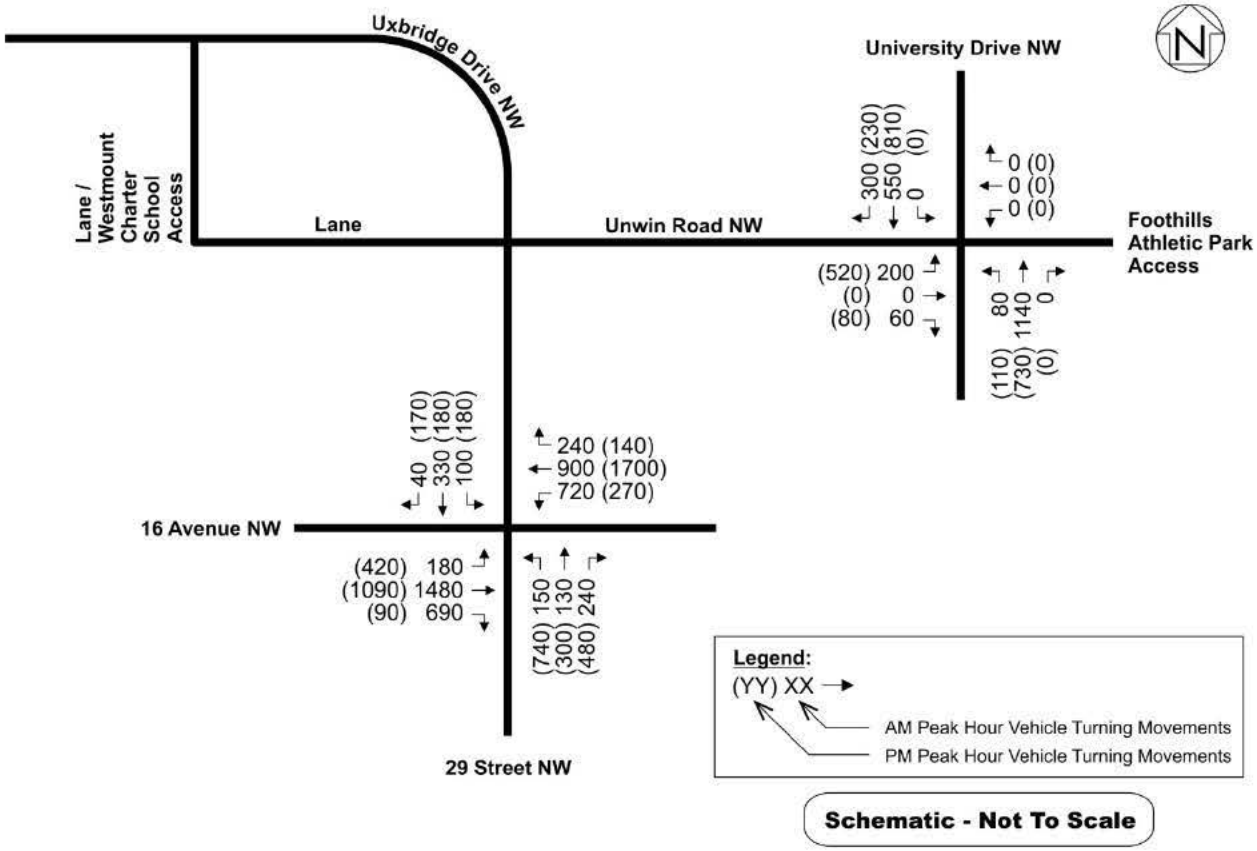


FIGURE A: RTM 2039 FORECAST TRAFFIC VOLUMES

Using the forecast turning movement volumes at these two intersections and existing traffic counts, turning movement volumes were estimated at the remaining study intersections and balanced between intersections. Then a series of traffic volume adjustments were discussed with TDS and applied to the forecast traffic volumes to further refine the estimate of future traffic volumes as follows:

Step 1 – Adjustments were applied based on congestion reassignment and a comparison to the existing traffic volumes. The adjustments are summarized in **Tables A, B, C and D.** Traffic volumes were again balanced between study intersections.

TABLE A: 16 AVENUE / UXBRIDGE DRIVE AM PEAK HOUR ADJUSTMENTS

Adjustment	Reason
- 350 WB left turns	Assume more traffic will use West Campus Boulevard interchange, no volume assigned to interchange in hospital TZ
+350 WB through	
+60 SB right	Increase forecast to meet existing traffic count
+40 SB through	Increase forecast to meet existing traffic count
+40 NB through	Increase forecast to meet existing traffic count
+40 NB right	No volume assigned to NB right from hospital TZ in forecast model
-40 EB through	

TABLE B: 16 AVENUE / UXBRIDGE DRIVE PM PEAK HOUR ADJUSTMENTS

Adjustment	Reason
-200 EB left	Growth on EB Left movement attributed to unrealistic short cutting in the model, reassign to 16 Avenue
+200 EB through	
+80 NB right	No volume assigned to NB right from hospital TZ in forecast model
-80 EB through	
-370 NB left	Assume more traffic will use West Campus Boulevard interchange
+70 SB right	Increase forecast to meet existing count
+30 SB through	Increase forecast to meet existing count

TABLE C: UNIVERSITY DRIVE/ UNWIN ROAD AM PEAK HOUR ADJUSTMENTS

Adjustment	Reason
+20 WB left	Volumes were set at zero, increase to match existing
+10 WB through	
+10 WB right	
+10 NB right	
+10 SB left	
+10 EB through	
+40 NB left	Increase to match existing

TABLE D: UNIVERSITY DRIVE/ UNWIN ROAD PM PEAK HOUR ADJUSTMENTS

Adjustment	Reason
+10 WB left	Volumes set at zero, increase to match existing
+10 WB through	
+10 WB right	
+20 NB right	
+10 SB left	
+10 EB through	
-200 EB left	Growth attributed to unrealistic short-cutting in the model, reassign to 16 avenue

Step 2 – Adjustments were applied to account for the shortfall in estimated population and jobs in the West Campus TZ's. The following methodology was applied:

a) Compare the west campus job and population estimates from the forecast model to the current understanding. This showed an 83% increase in density from the forecast model estimate to the current estimate.
b) Using the total forecast trip generation from the two west campus zones (TZ 2403 and 2405) estimate the total additional trips to/from the west campus zones as 80% of the forecast model trips. (i.e. apply an 80% increase)
c) Using the select zone plots for the west campus zones **(Appendix H)** calculate the increase in through volumes on each road. (16 Avenue and University Drive)

Step 3 – Adjust for the impact of the Foothills Athletic Park redevelopment.

To estimate the impact of this development, TDS staff provided the turning movement volumes shown in **Figure B** to be added to the a.m. and p.m. peak hour future background traffic volumes at University Drive/ Unwin Road.

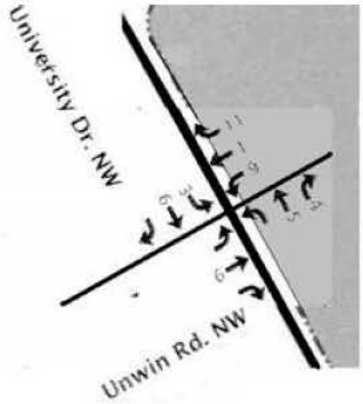


FIGURE B: FOOTHILLS ATHLETIC CENTRE TURNING VOLUMES

Step 4 – Net out traffic volumes associated with the existing Stadium Shopping Centre.

Using exiting traffic counts, the turning movement volumes associated with the existing shopping centre uses were netted out from the future background traffic volumes.

Step 5 – All adjustment layers were summed together resulting in the final 2039 future background traffic volumes.

Pedestrian and cyclist volumes were grown by 20 percent in the future background to account for general growth in pedestrian traffic outside Stadium Shopping Centre.

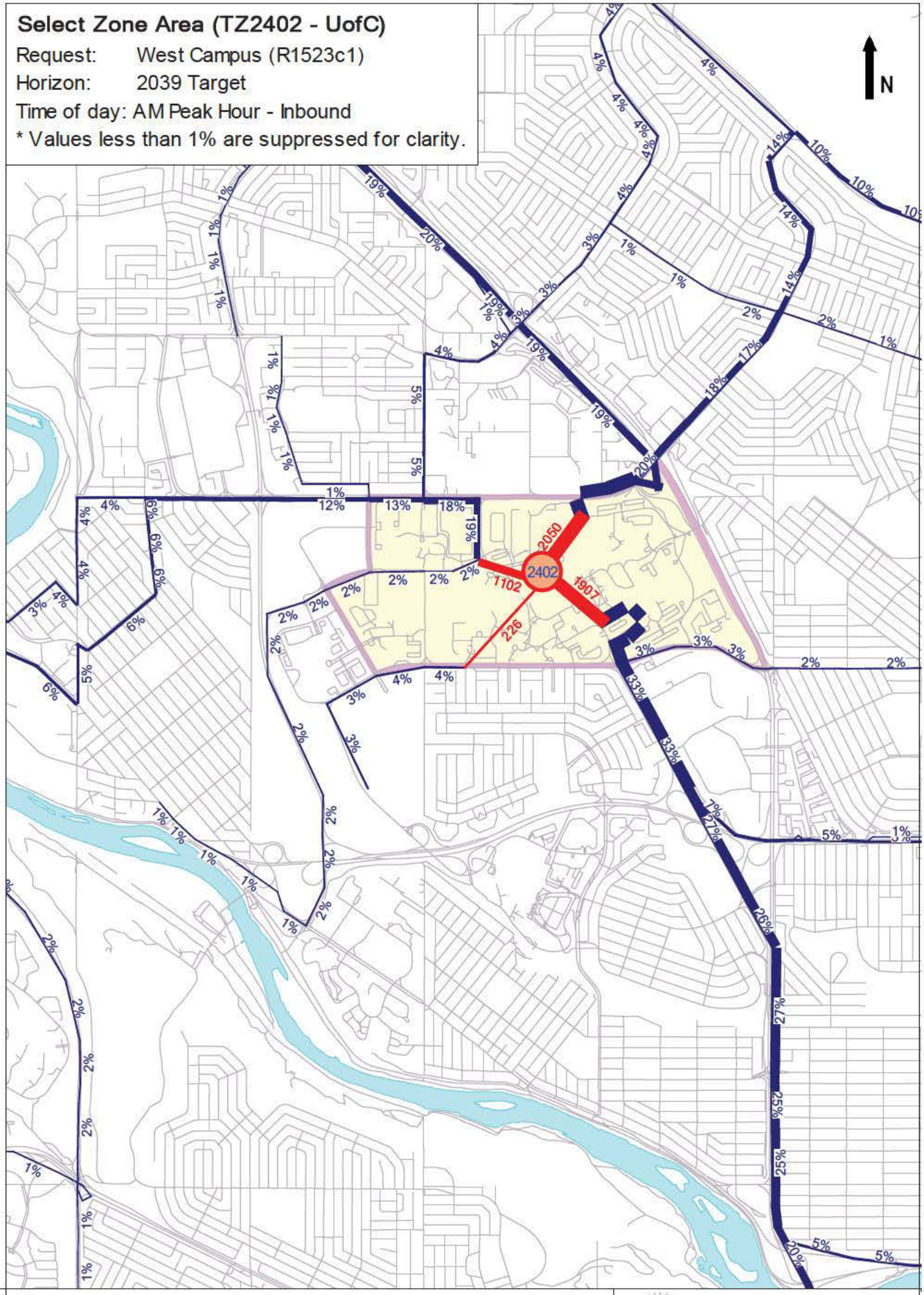
APPENDIX H: WEST CAMPUS SELECT ZONE PLOTS

R1523c1- West Campus TIA

Select Zone Plots

Request Number:	R523c1
Location:	West Campus
Forecast Requested by:	Zoran Carkic
Company:	Development Services
Date Requested:	March 11, 2013
Forecast Prepared by:	Martin Kycak
Date Completed:	March 13, 2013
Cost:	N/A
Notes:	
Horizon:	2039 Target
Databases:	39P899_05_Target

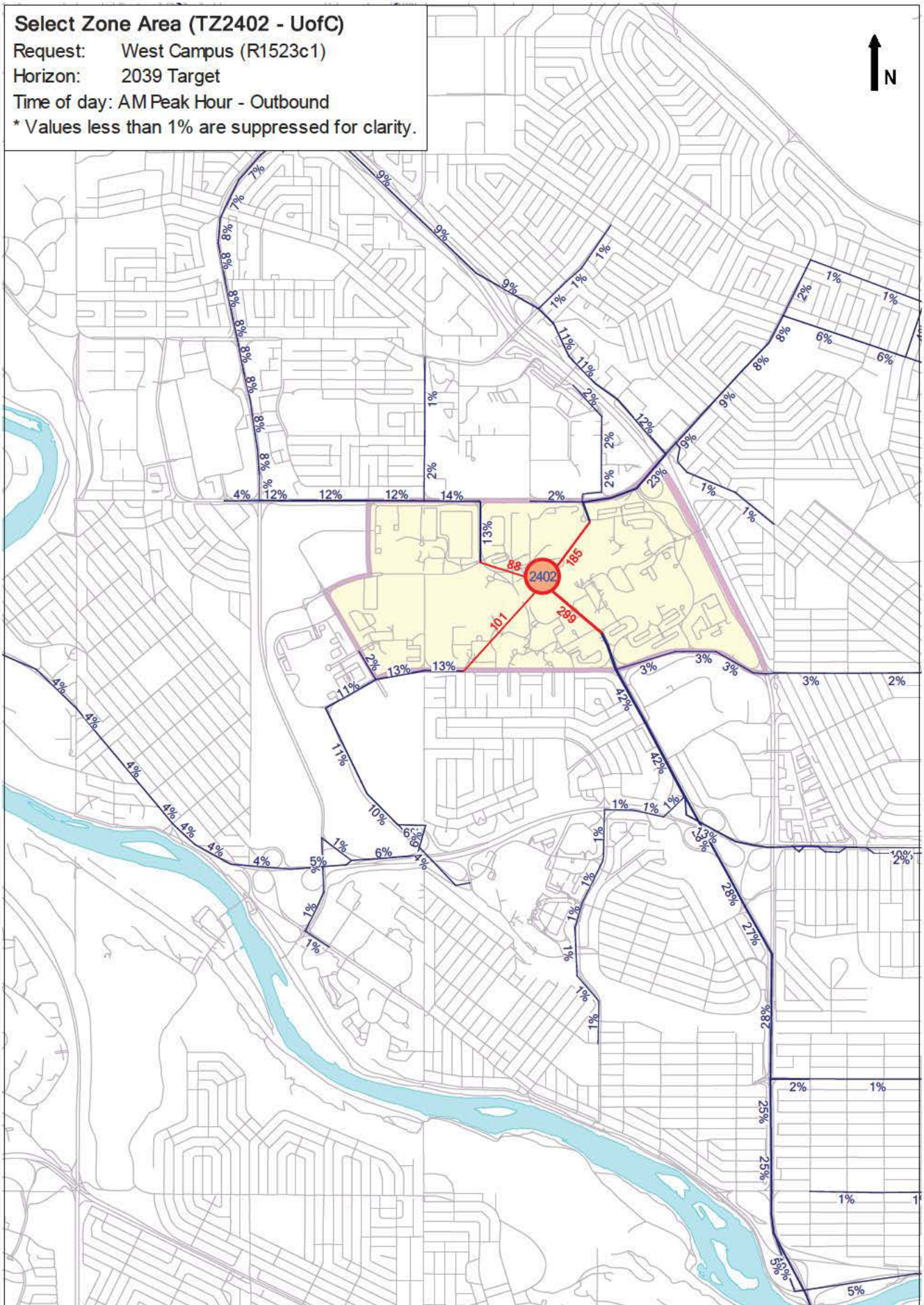
If you have any questions regarding this forecast, please e-mail: TranPlanForecast@calgary.ca



rior to application in any study, all model inputs and outputs require interpretation and adjustment. The City of Calgary provides this information in good faith but provides no warranty, nor accepts any g from any incorrect, incomplete or misleading information or its improper use. If you have any uire clarification or would like more details on this data please contact TranPlanForecast@calgary.ca.

THE CITY OF CALGARY
TRANSPORTATION PLANNING

Date: 2013-03-13 Databank: STANDARD PROJECT DATA BANK Scen. 120: Select Zone 2402 Inbound (AM Peak Hour) Plotted by: mkycak



ADVISORY: Prior to application in any study, all model inputs and outputs require interpretation and adjustment.
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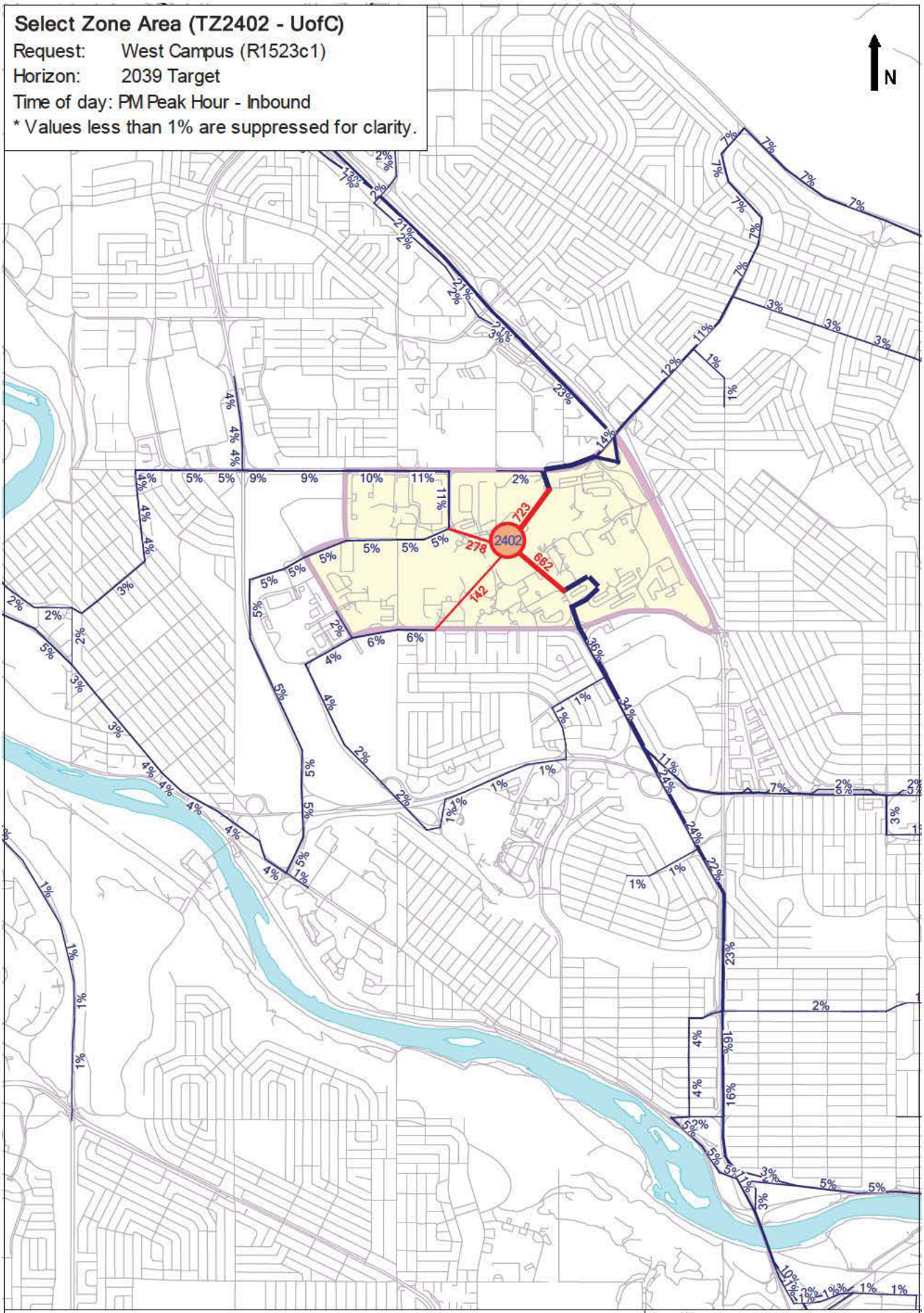
THE CITY OF CALGARY
TRANSPORTATION PLANNING

Date: 2013-03-12 Databank: STANDARD PROJECT DATA BANK Scen. 121: Select Zone 2402 Outbound (AM Peak Hour) Plotted by: mkycak



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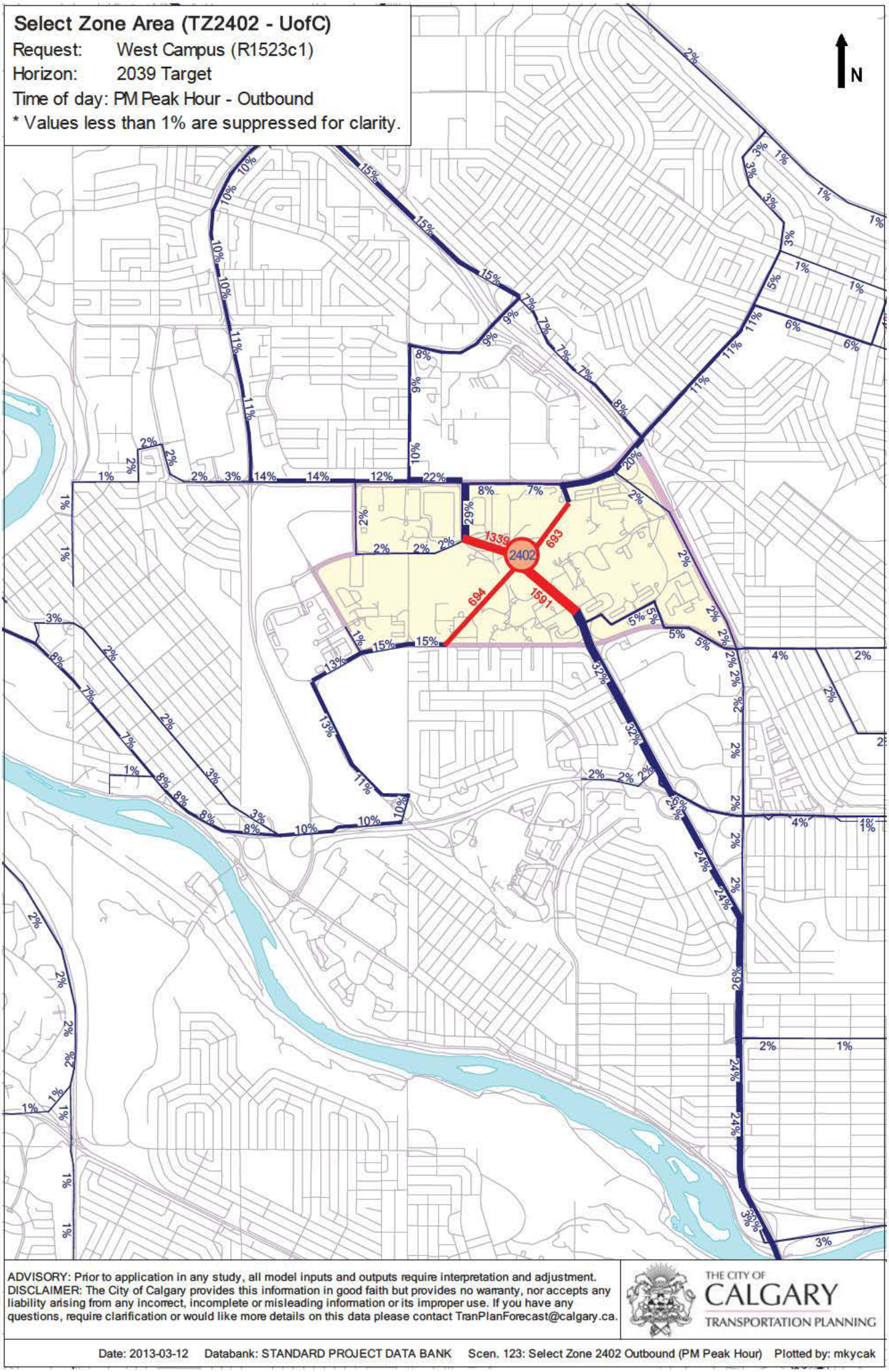
THE CITY OF CALGARY
TRANSPORTATION PLANNING

Date: 2013-03-12 Databank: STANDARD PROJECT DATA BANK Scen. 122: Select Zone 2402 Inbound (PM Peak Hour) Plotted by: mkycak


Select Zone Area (TZ2402 - UofC)
Request: West Campus (R1523c1)
Horizon: 2039 Target
Time of day: PM Peak Hour - Outbound
* Values less than 1% are suppressed for clarity.
N
2402
1339
693
694
1591
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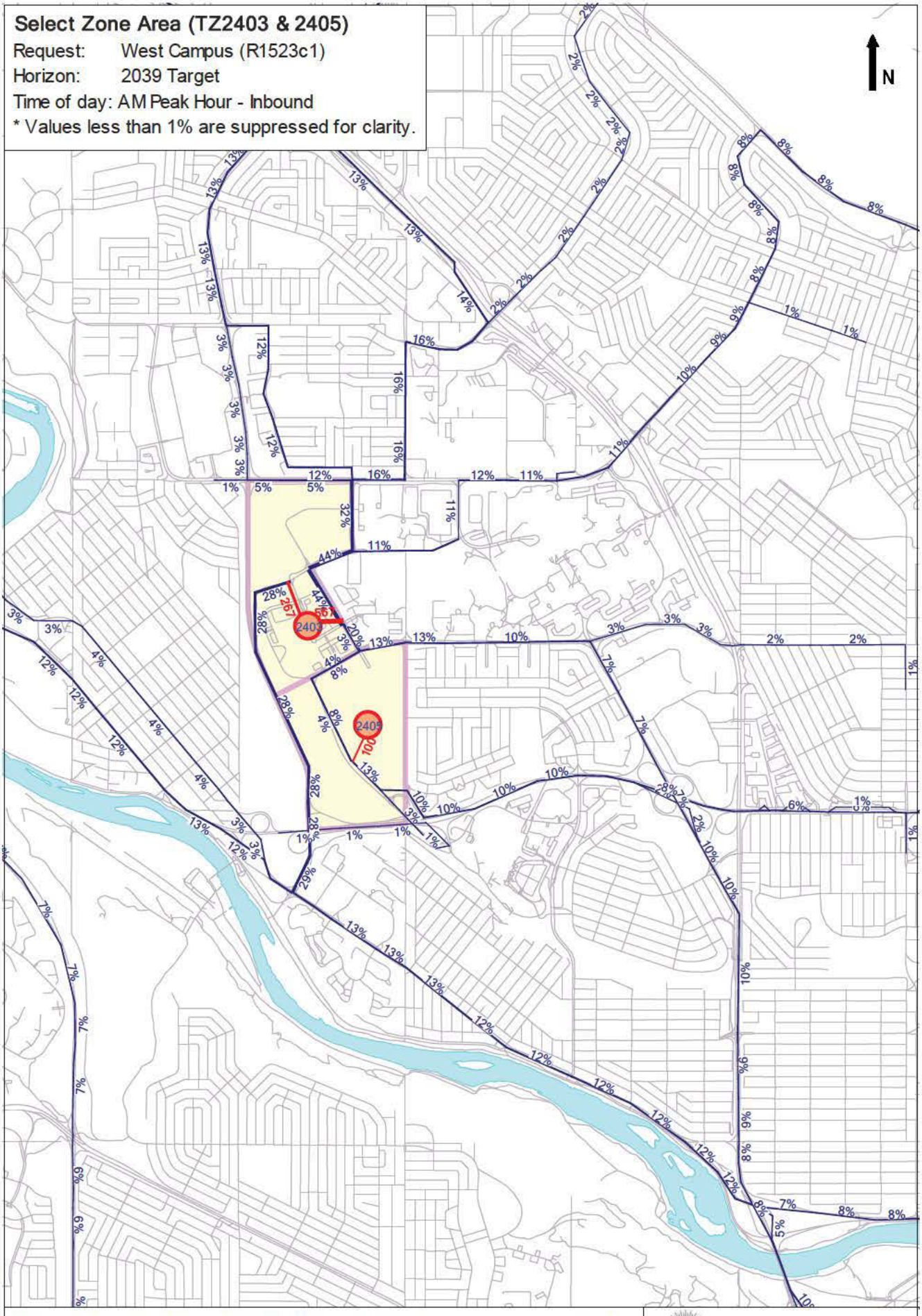
THE CITY OF CALGARY
TRANSPORTATION PLANNING
Date: 2013-03-12 Databank: STANDARD PROJECT DATA BANK Scen. 123: Select Zone 2402 Outbound (PM Peak Hour) Plotted by: mkycak



ADVISORY: Prior to application in any study, all model inputs and outputs require interpretation and adjustment.
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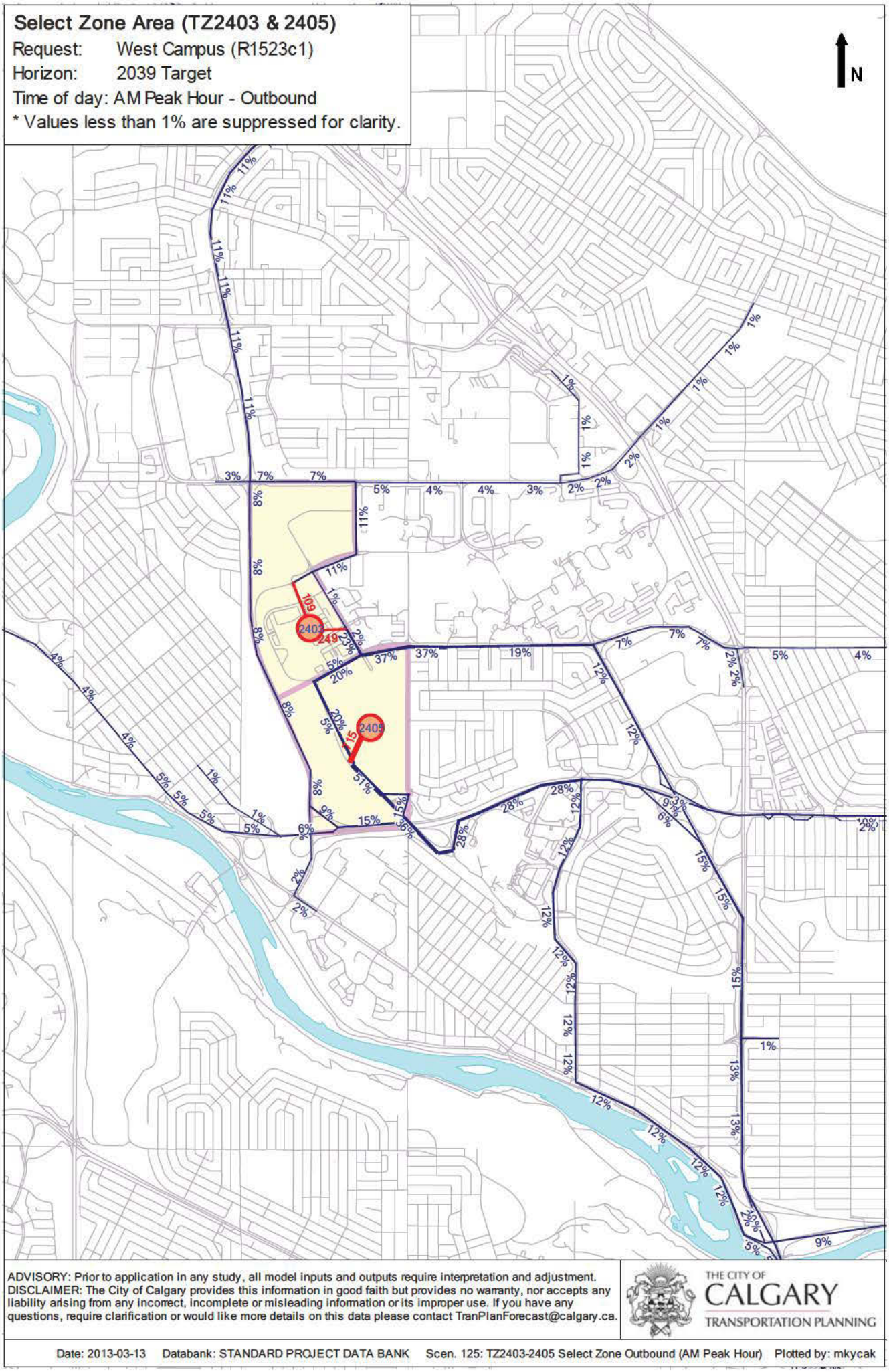
THE CITY OF CALGARY
TRANSPORTATION PLANNING

Date: 2013-03-13 Databank: STANDARD PROJECT DATA BANK Scen. 124: TZ2403-2405 Select Zone Inbound (AM Peak Hour) Plotted by: mkycak


Select Zone Area (TZ2403 & 2405)
Request: West Campus (R1523c1)
Horizon: 2039 Target
Time of day: AM Peak Hour - Outbound
* Values less than 1% are suppressed for clarity.
N
2403
2405
109
249
15
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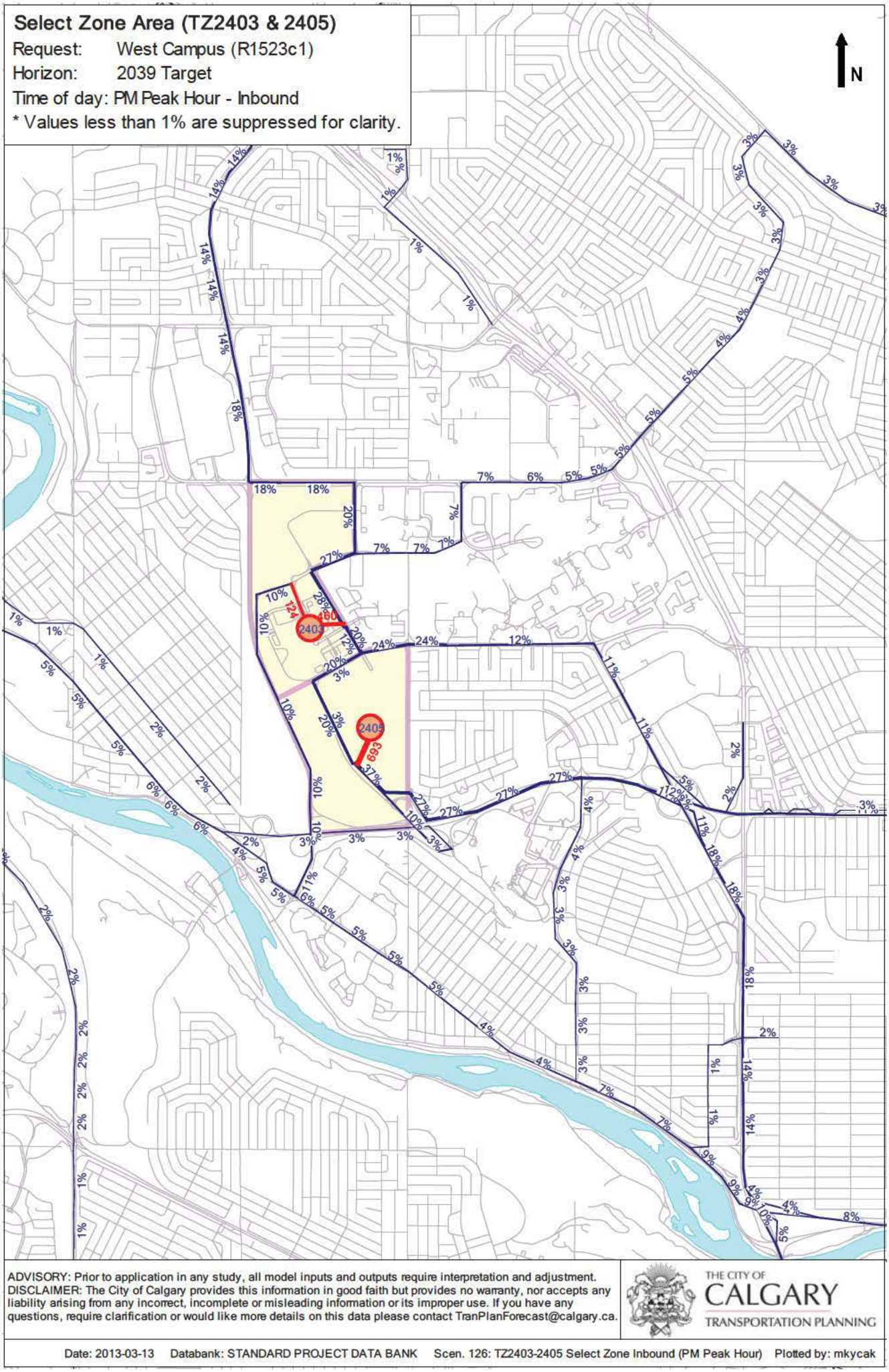
THE CITY OF CALGARY
TRANSPORTATION PLANNING
Date: 2013-03-13 Databank: STANDARD PROJECT DATA BANK Scen. 125: TZ2403-2405 Select Zone Outbound (AM Peak Hour) Plotted by: mkycak


Select Zone Area (TZ2403 & 2405)
Request: West Campus (R1523c1)
Horizon: 2039 Target
Time of day: PM Peak Hour - Inbound
* Values less than 1% are suppressed for clarity.
N
2403
2405
124
460
693
ADVISORY: Prior to application in any study, all model inputs and outputs require interpretation and adjustment.
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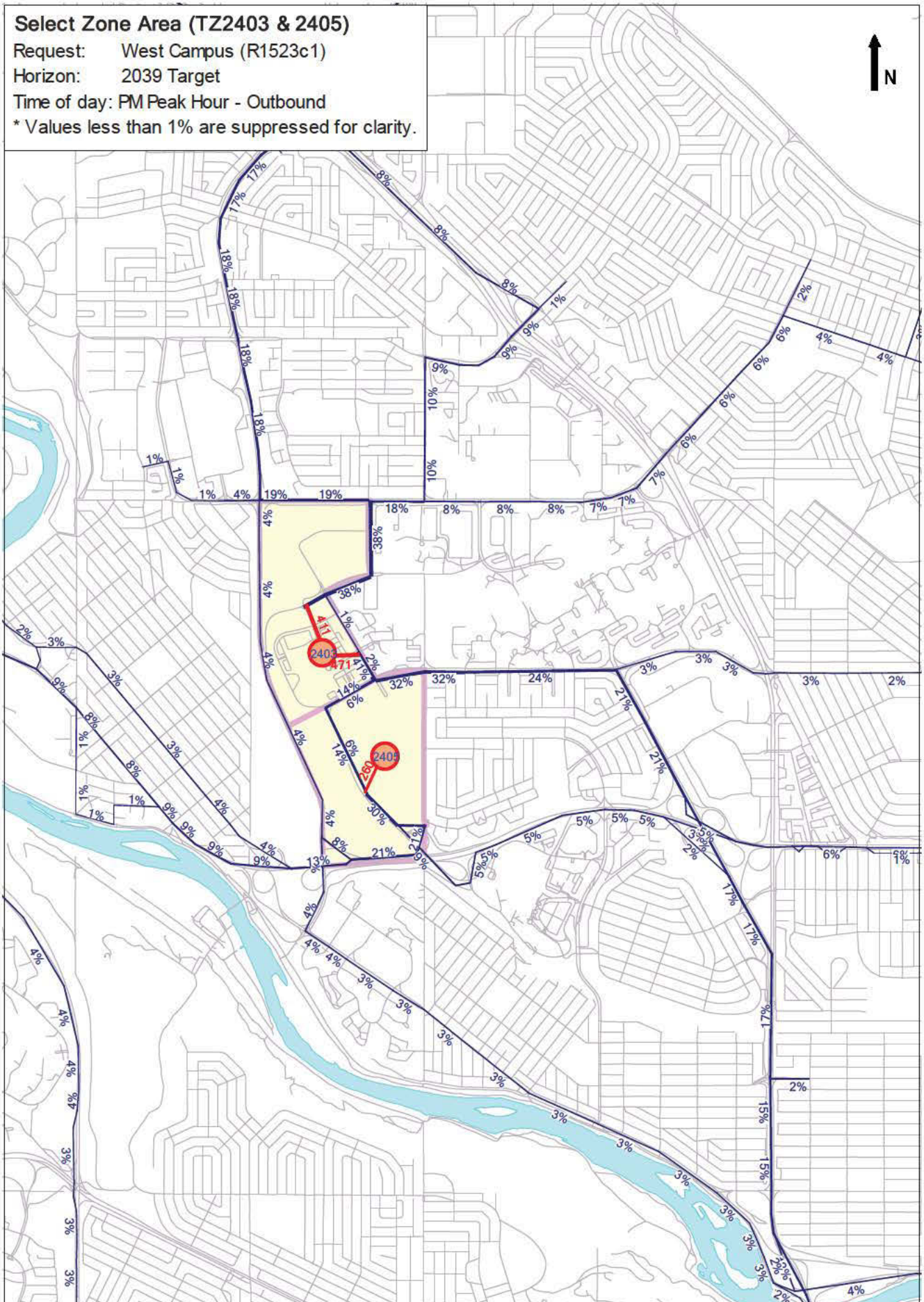
THE CITY OF CALGARY
TRANSPORTATION PLANNING
Date: 2013-03-13 Databank: STANDARD PROJECT DATA BANK Scen. 126: TZ2403-2405 Select Zone Inbound (PM Peak Hour) Plotted by: mkycak



ADVISORY: Prior to application in any study, all model inputs and outputs require interpretation and adjustment.
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THE CITY OF CALGARY
TRANSPORTATION PLANNING

Date: 2013-03-13 Databank: STANDARD PROJECT DATA BANK Scen. 127: TZ2403-2405 Select Zone Outbound (PM Peak Hour) Plotted by: mkycak

APPENDIX I: DETAILED TRIP RATE TABLES

Trip Rates

Land Use	Vehicle Trip Generation Rate											Source
	AM Peak Hour (IB/OB)			PM Peak Hour (IB/OB/PB)				Daily (IB/OB/PB)				
Office	1.39 / 1000 ft^2	88%	12%	1.57 / 1000 ft^2	17%	83%		/ 1000 ft^2	50%	50%		City of Calgary - Suburban
Hotel	0.56 / unit	61%	39%	0.59 / unit	53%	47%		5.9 / unit	50%	50%		ITE - 310
Seniors	0.35 / unit	25%	75%	0.45 / unit	65%	35%		/ unit	50%	50%		City of Calgary TOD
Residential	0.35 / unit	25%	75%	0.45 / unit	65%	35%		/ unit	50%	50%		City of Calgary TOD
Restaurant	11.52 / 1000 ft^2	52%	48%	11.15 / 1000 ft^2	59%	41%		127.15 / 1000 ft^2	50%	50%		ITE 932 - Highturnover (sit-down) restaurant
Medical Office	3 / 1000 ft^2	88%	12%	4 / 1000 ft^2	40%	60%						Ashton Professional Centre
Retail	2.0 / 1000 ft^2	60%	40%	6.0 / 1000 ft^2	50%	50%	20%	60.0 / 1000 ft^2	50%	50%	20%	Stadium Survey