APPENDIX J: STADIUM TZ PLOTS

R1408 – Stadium Shopping Centre
Plan|It 2019 & 2039 Target
Select Zone Plots

Request Number:	R1408
Location:	Stadium Shopping Centre
Forecast Requested by:	Kristen Myers
Company:	D.A. Watt Consulting
Date Requested:	December 20, 2011
Forecast Prepared by:	Don King
Date Completed:	**January 17, 2012**
Cost:	
Notes:	**TZ 2304 & 2305**
Databases:	2029 & 2039 Target

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

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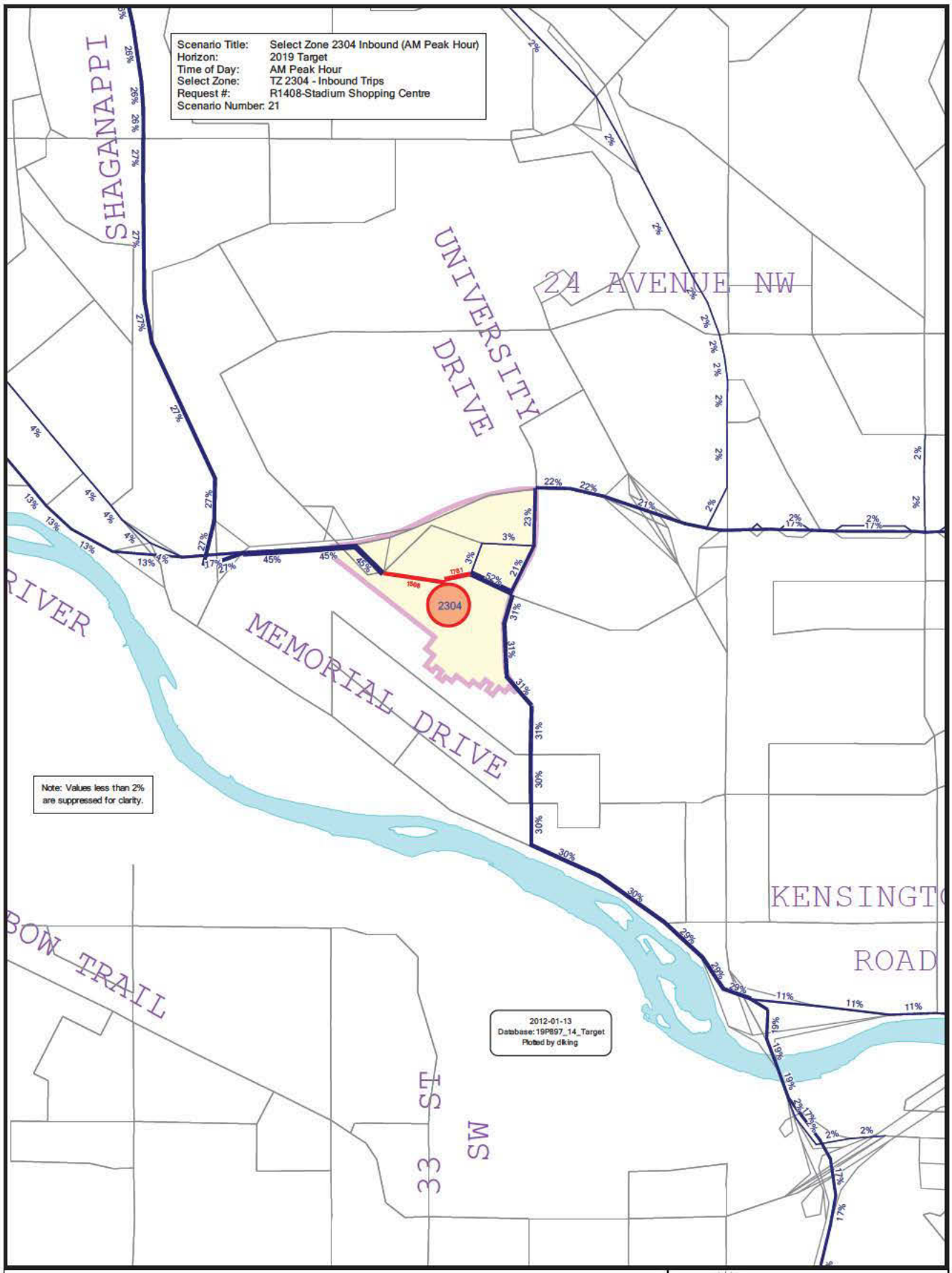

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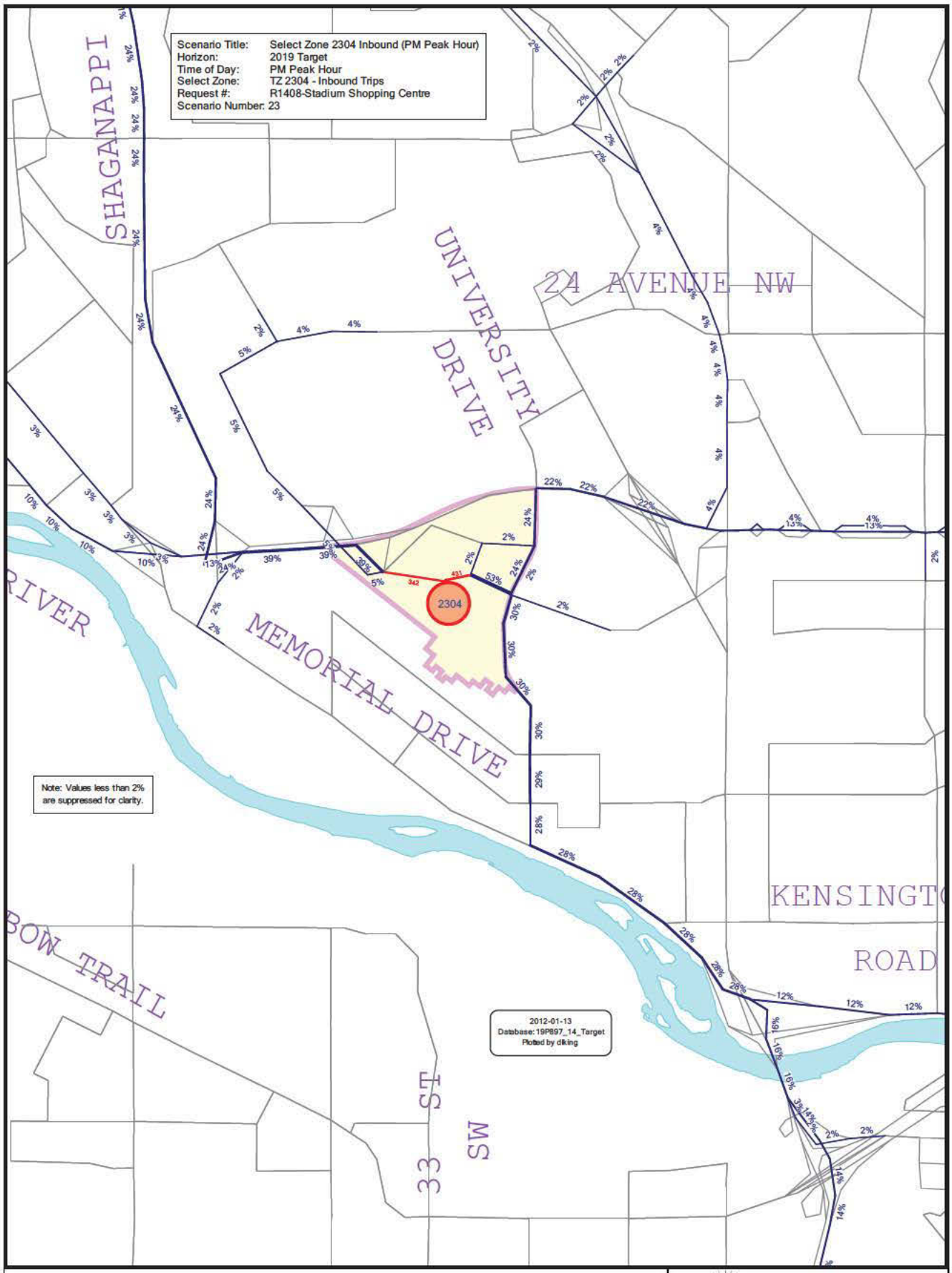

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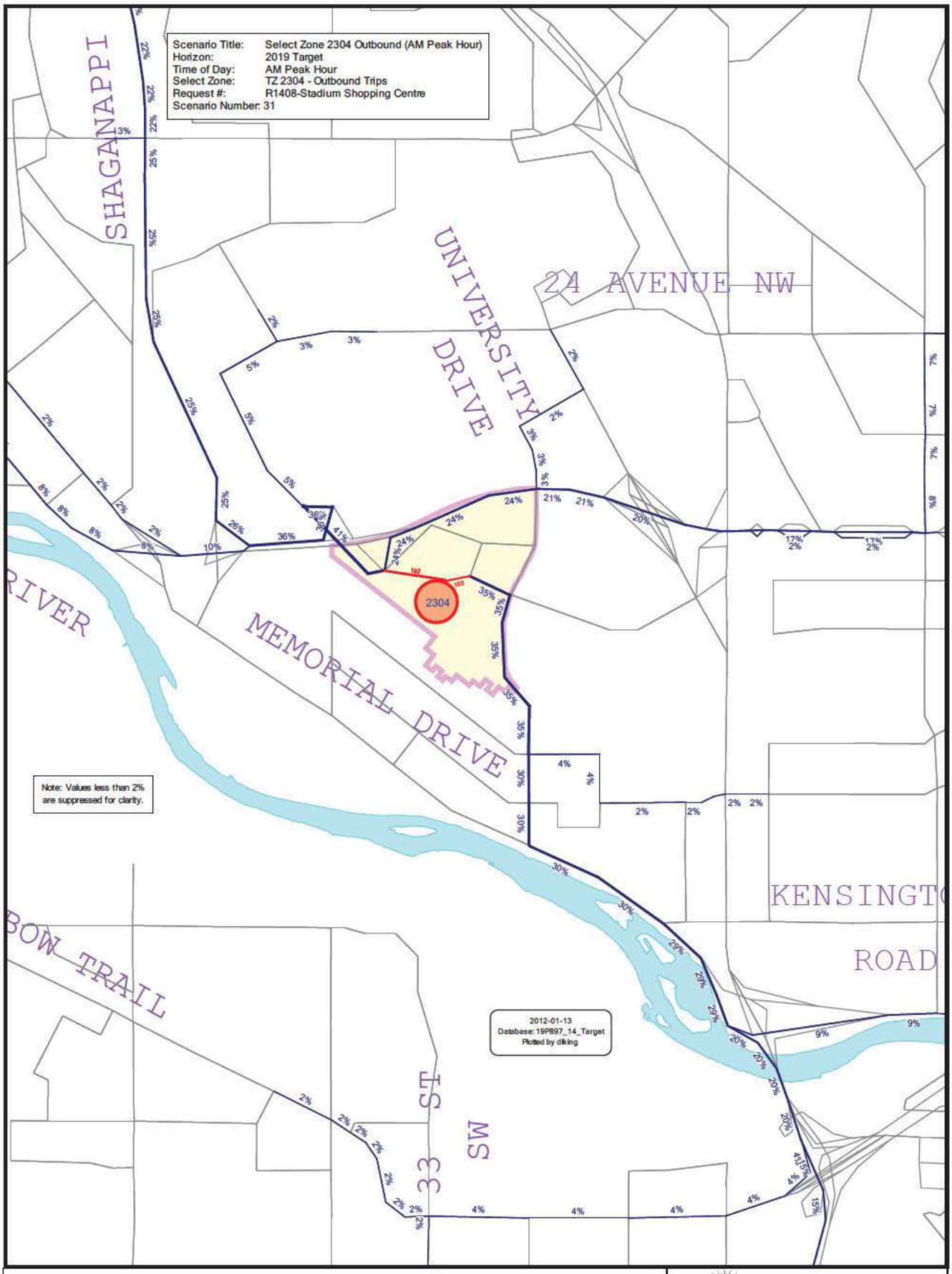

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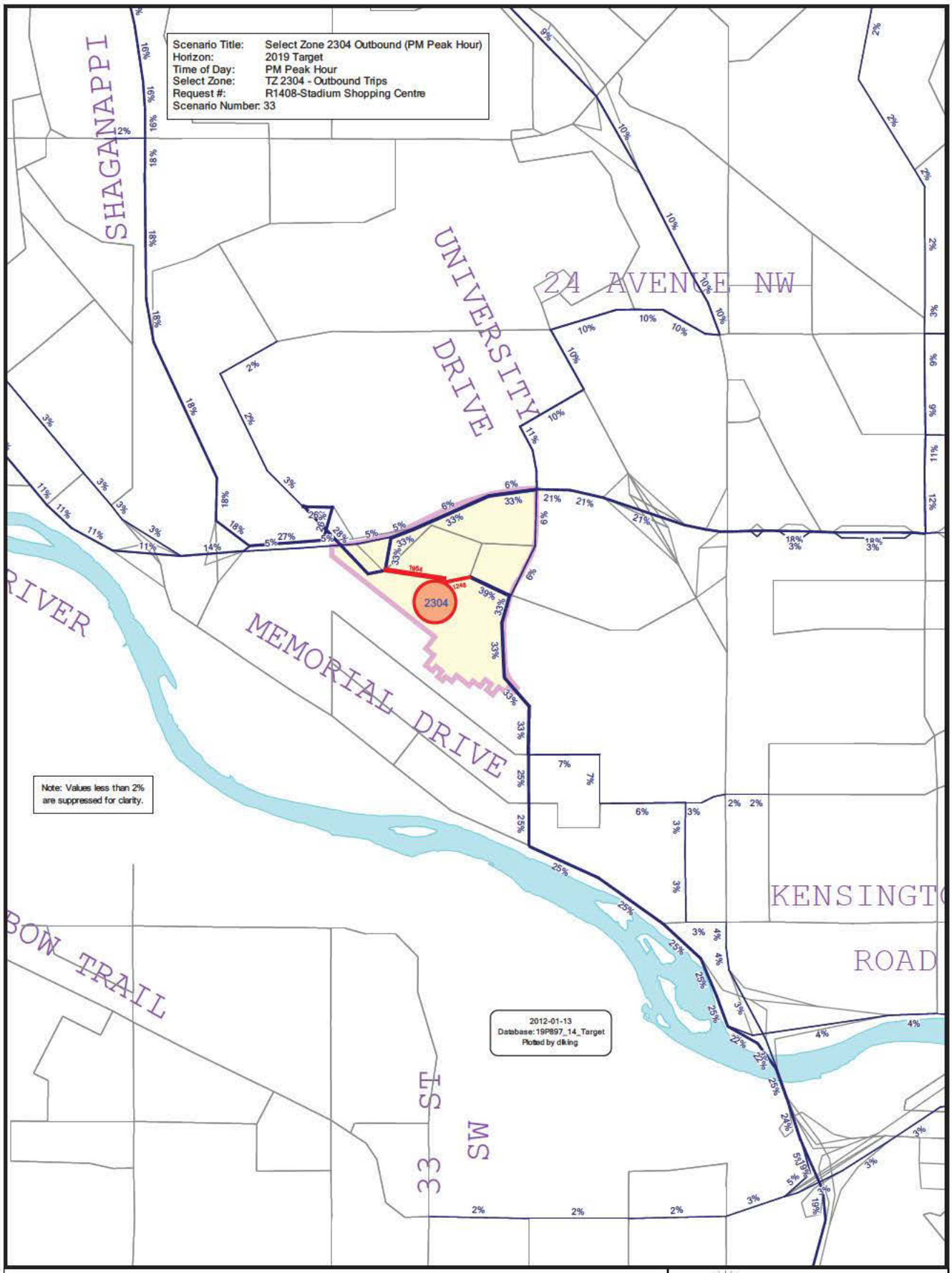

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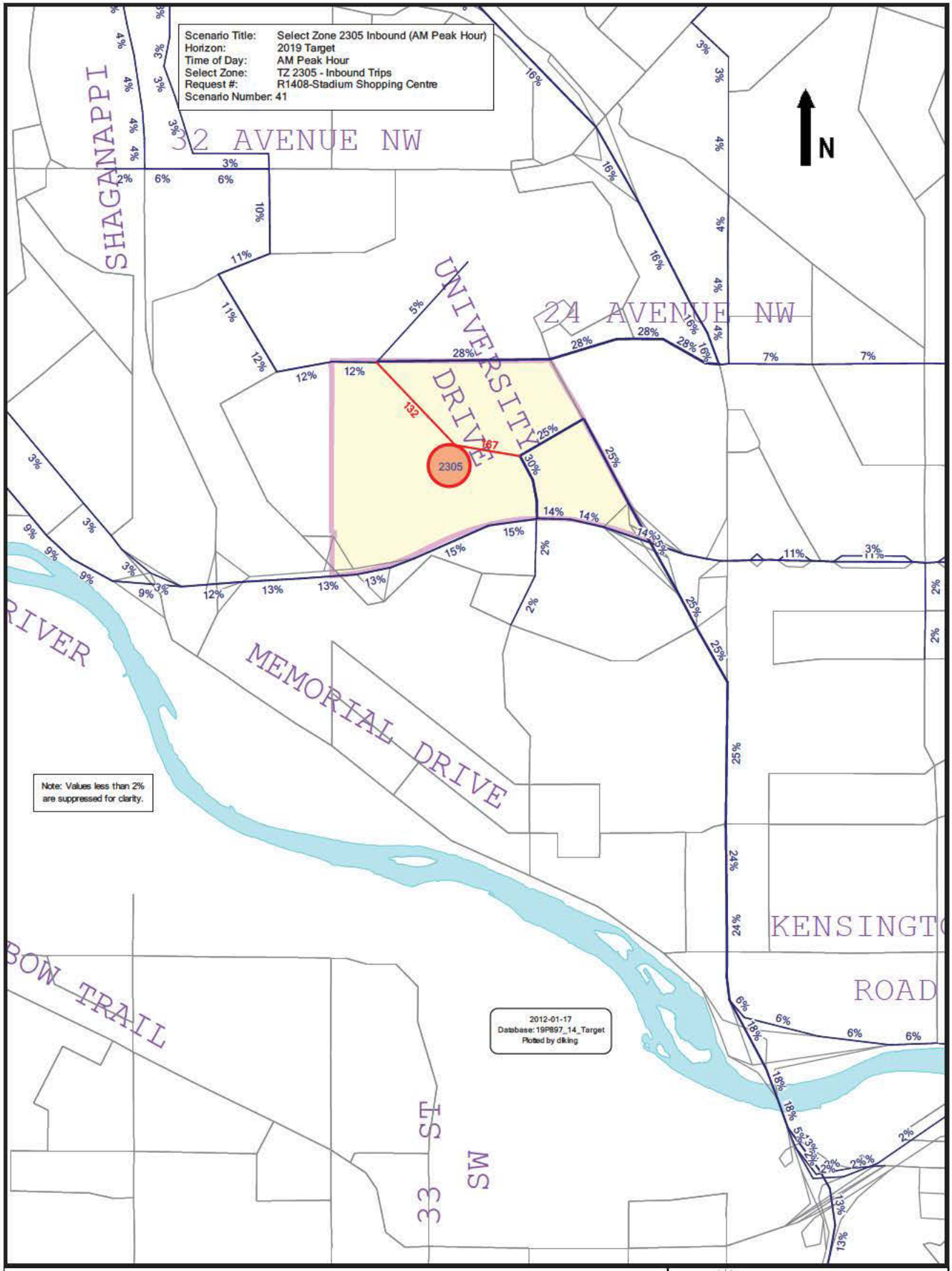

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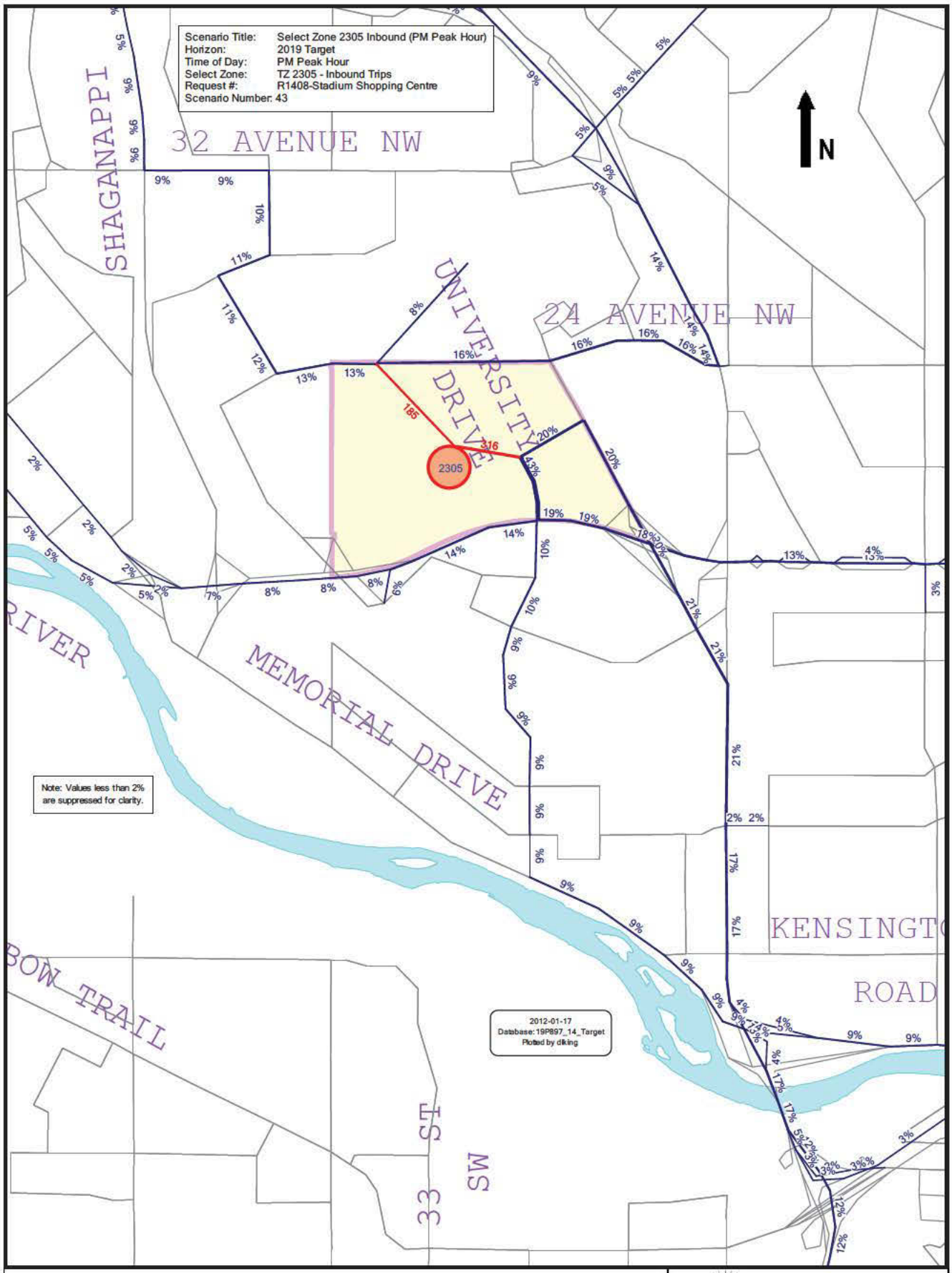

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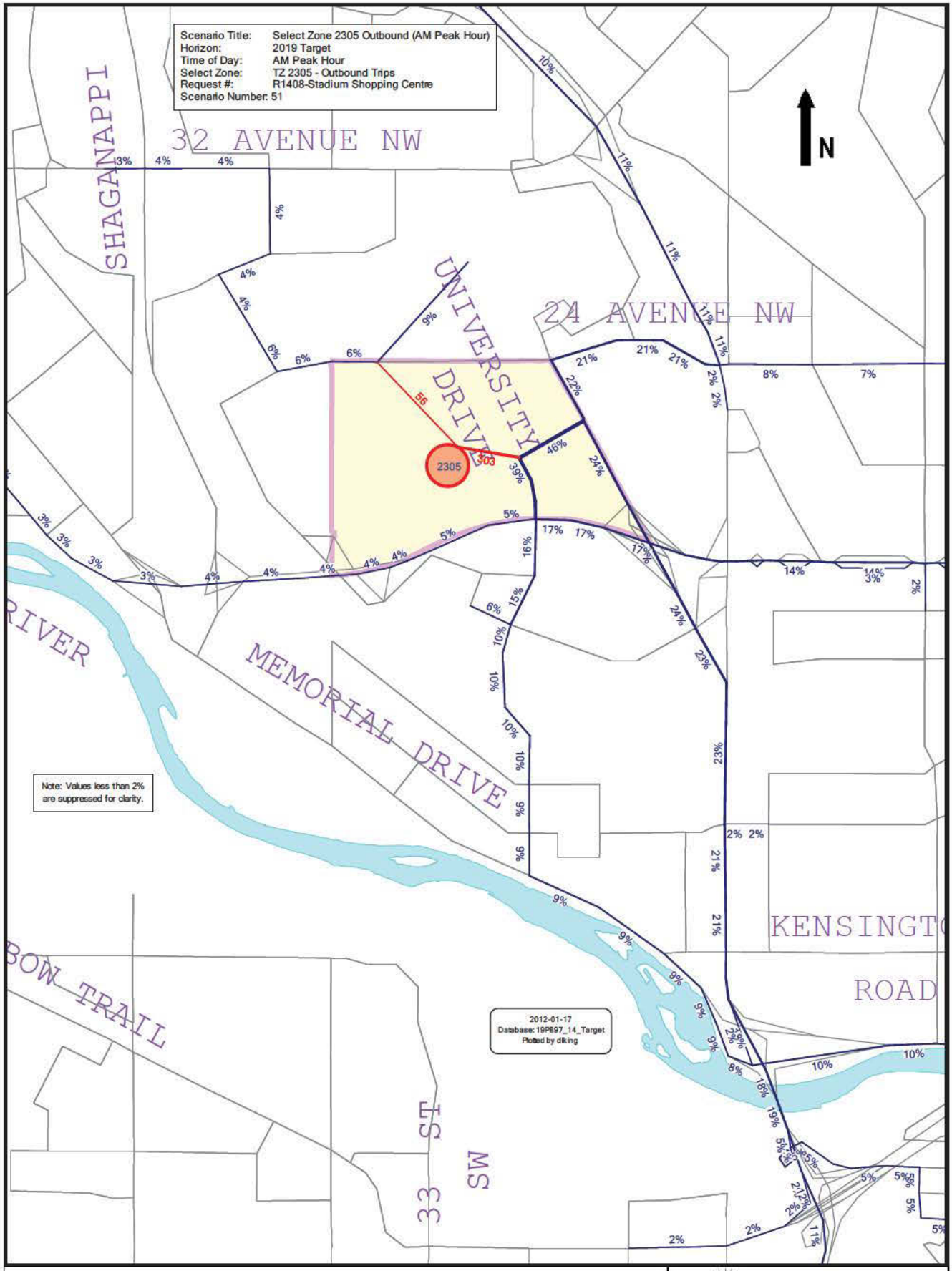

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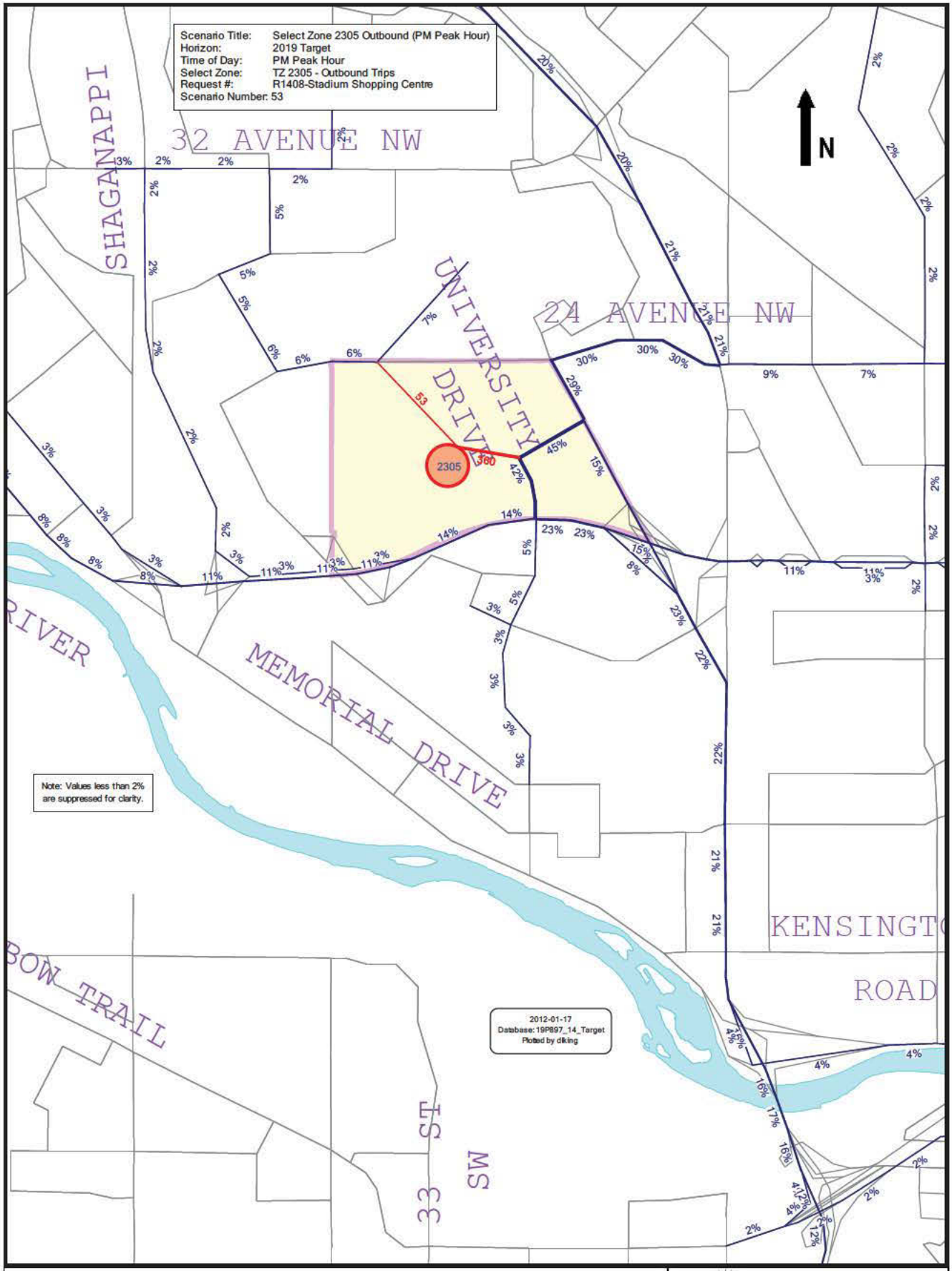

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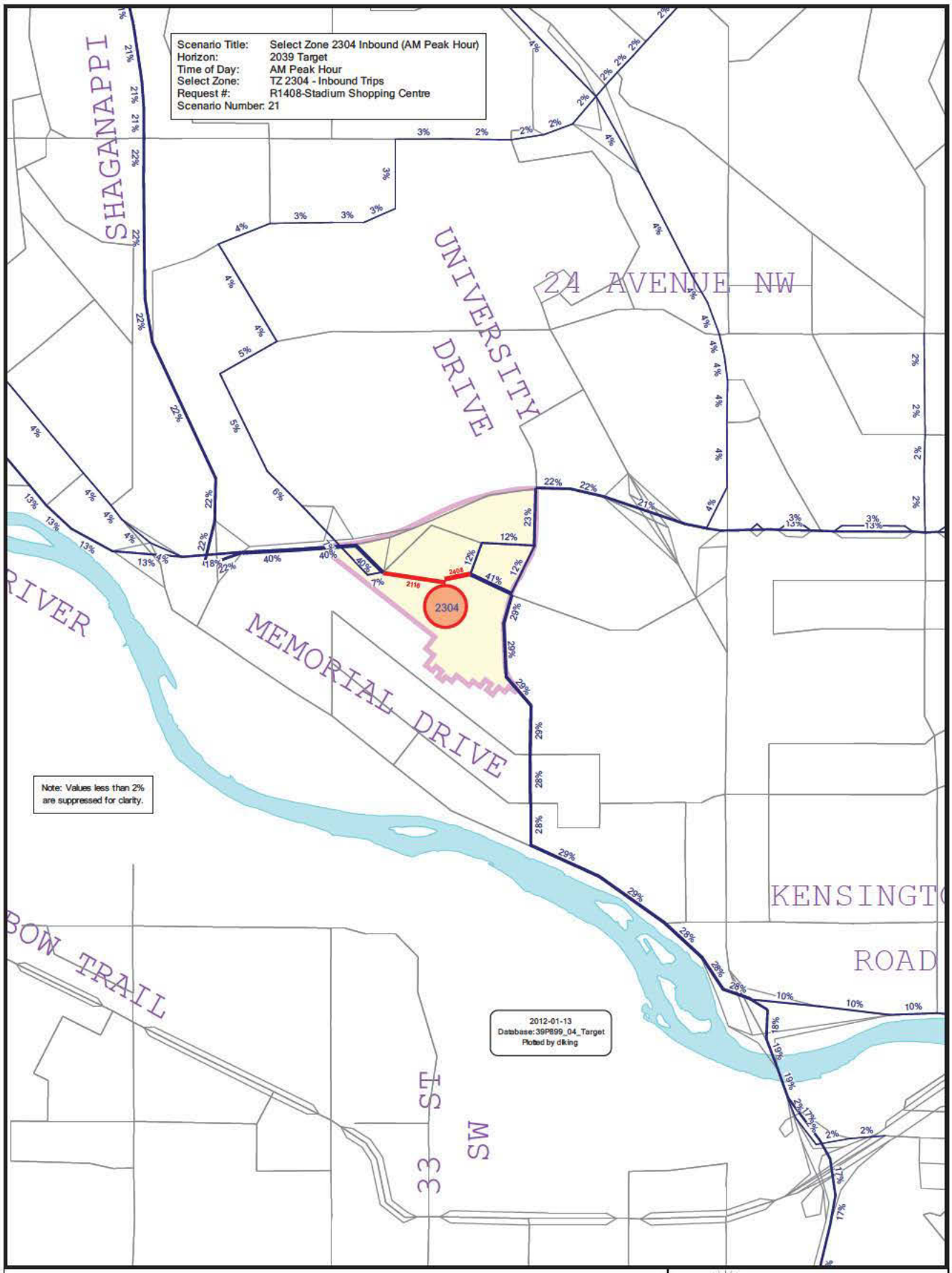

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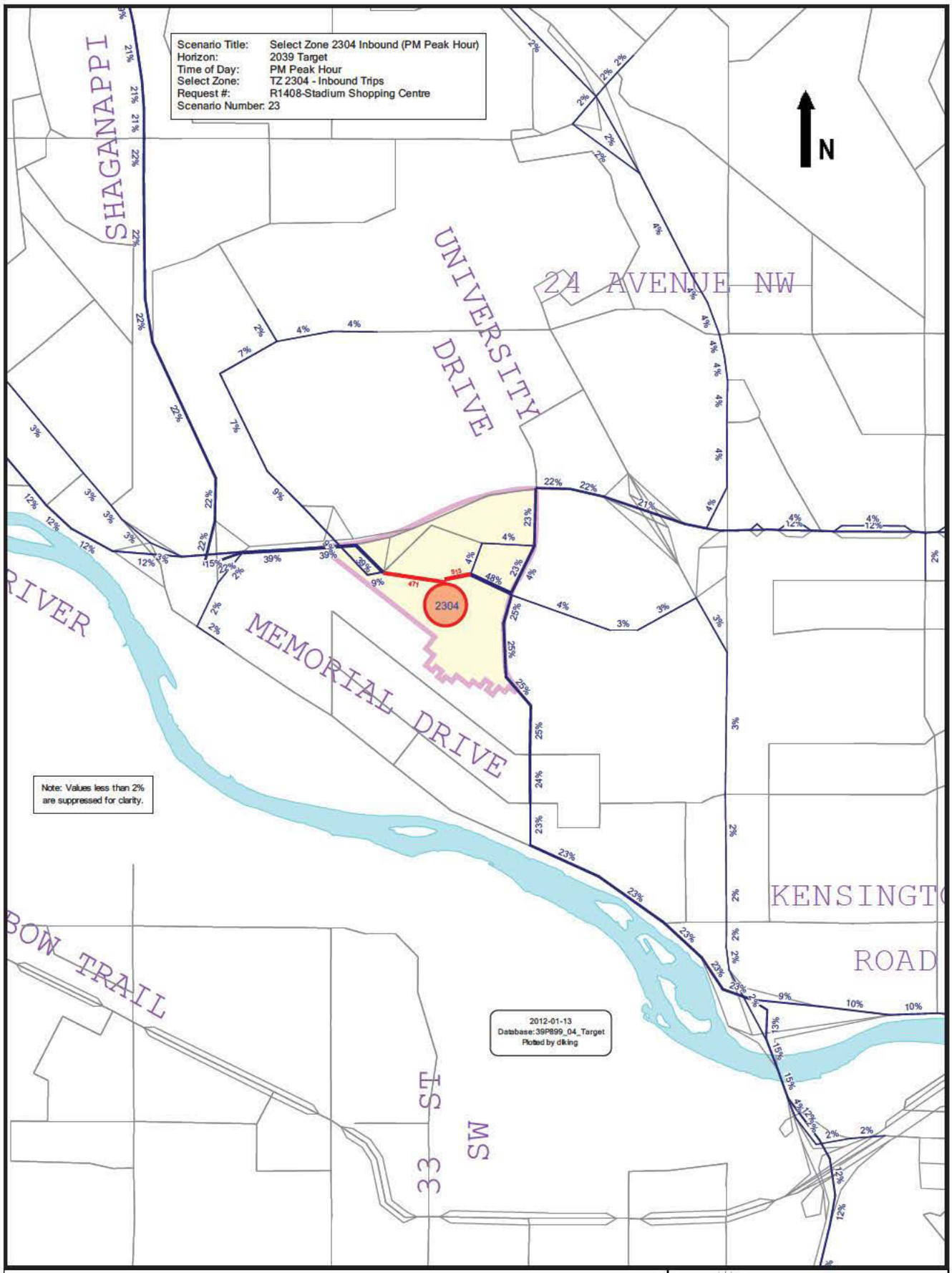

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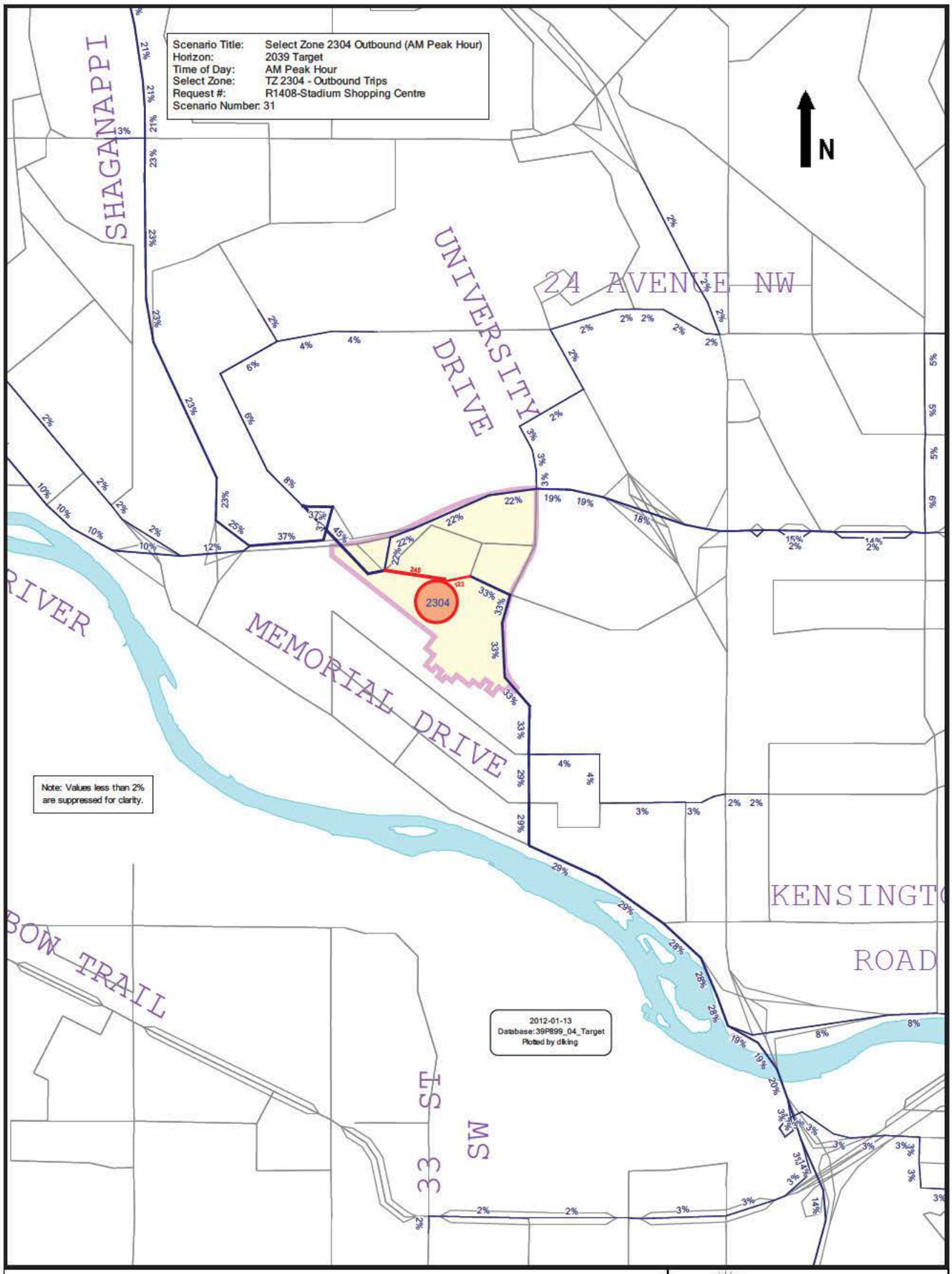

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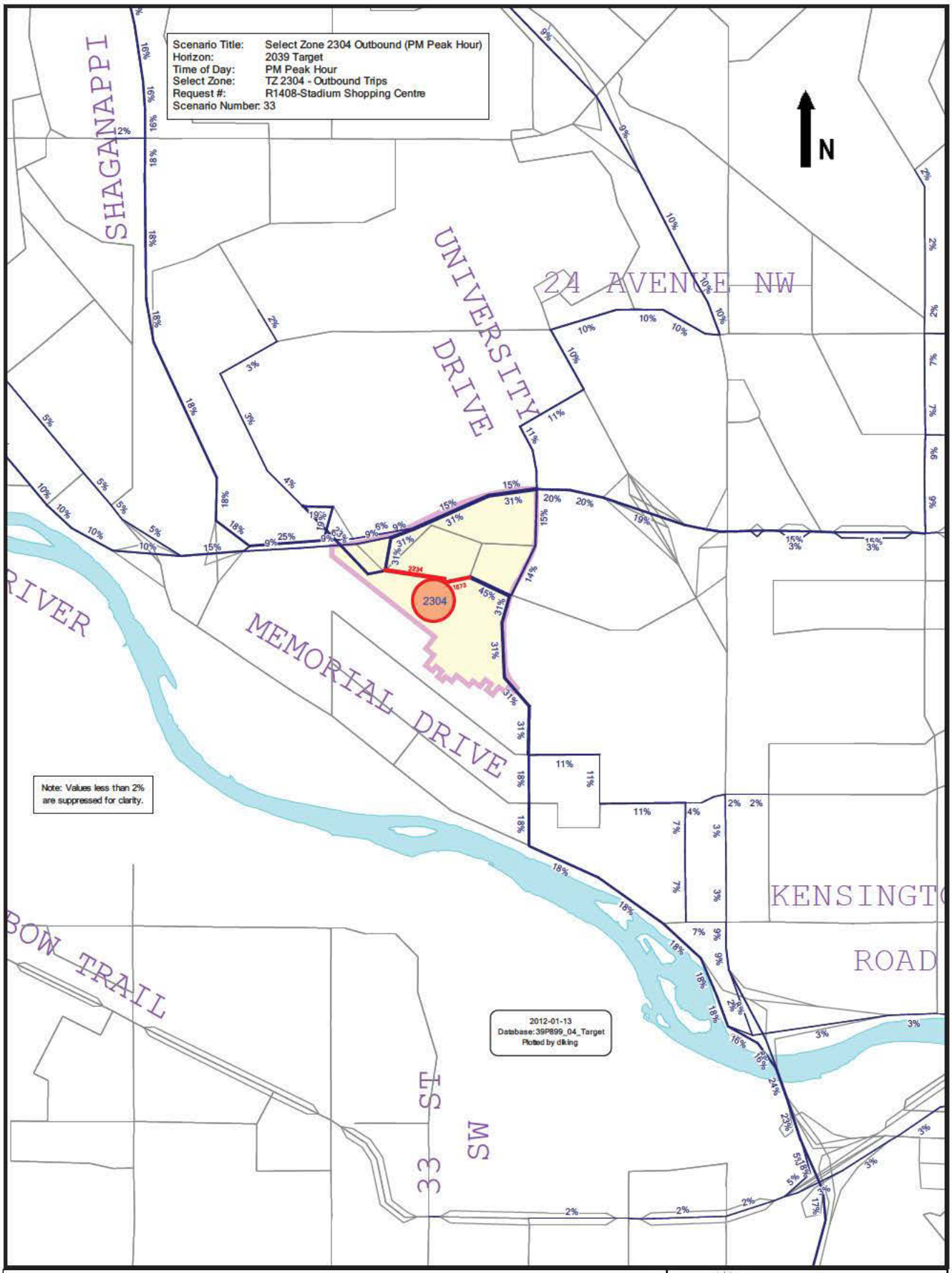

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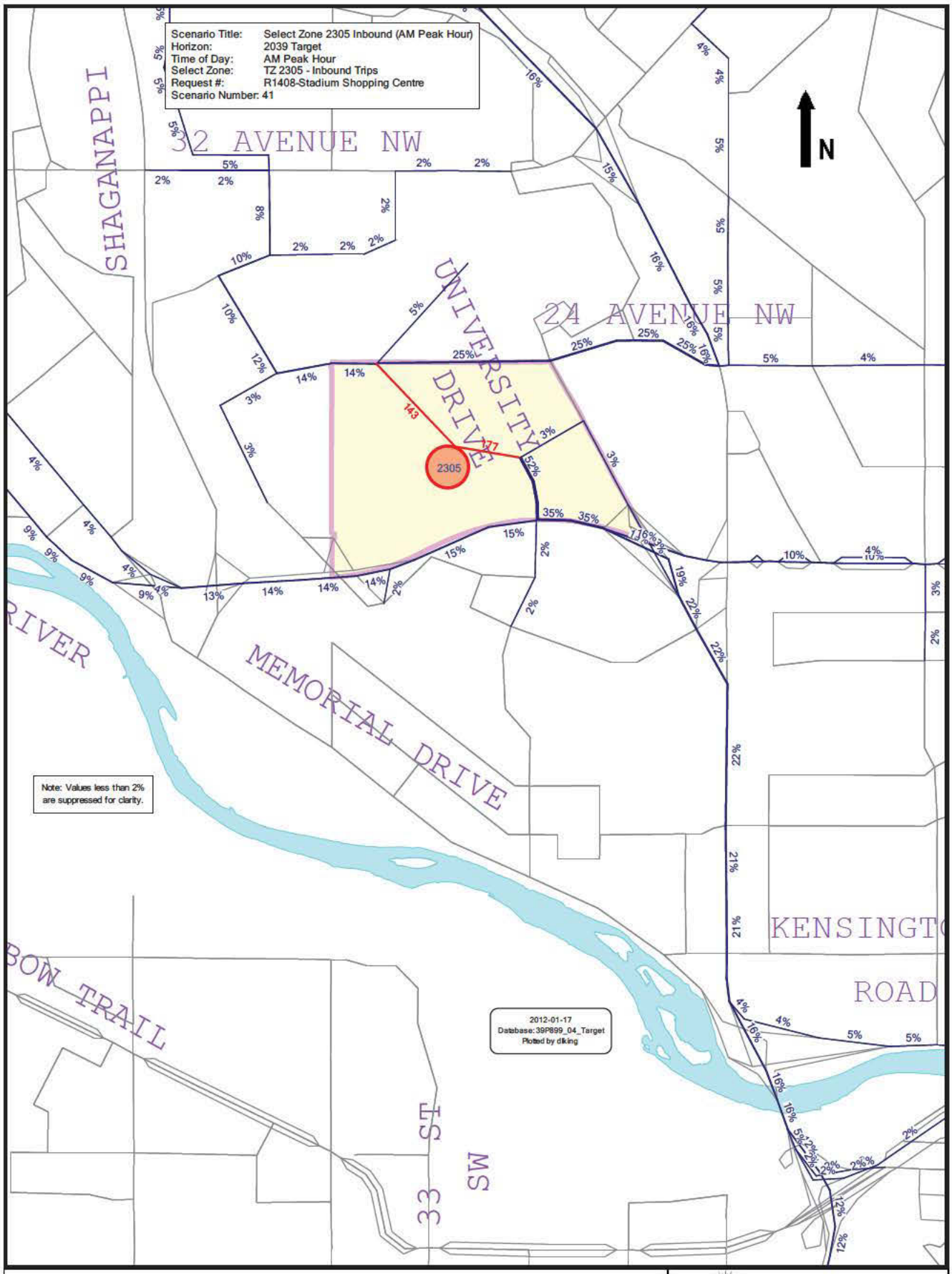

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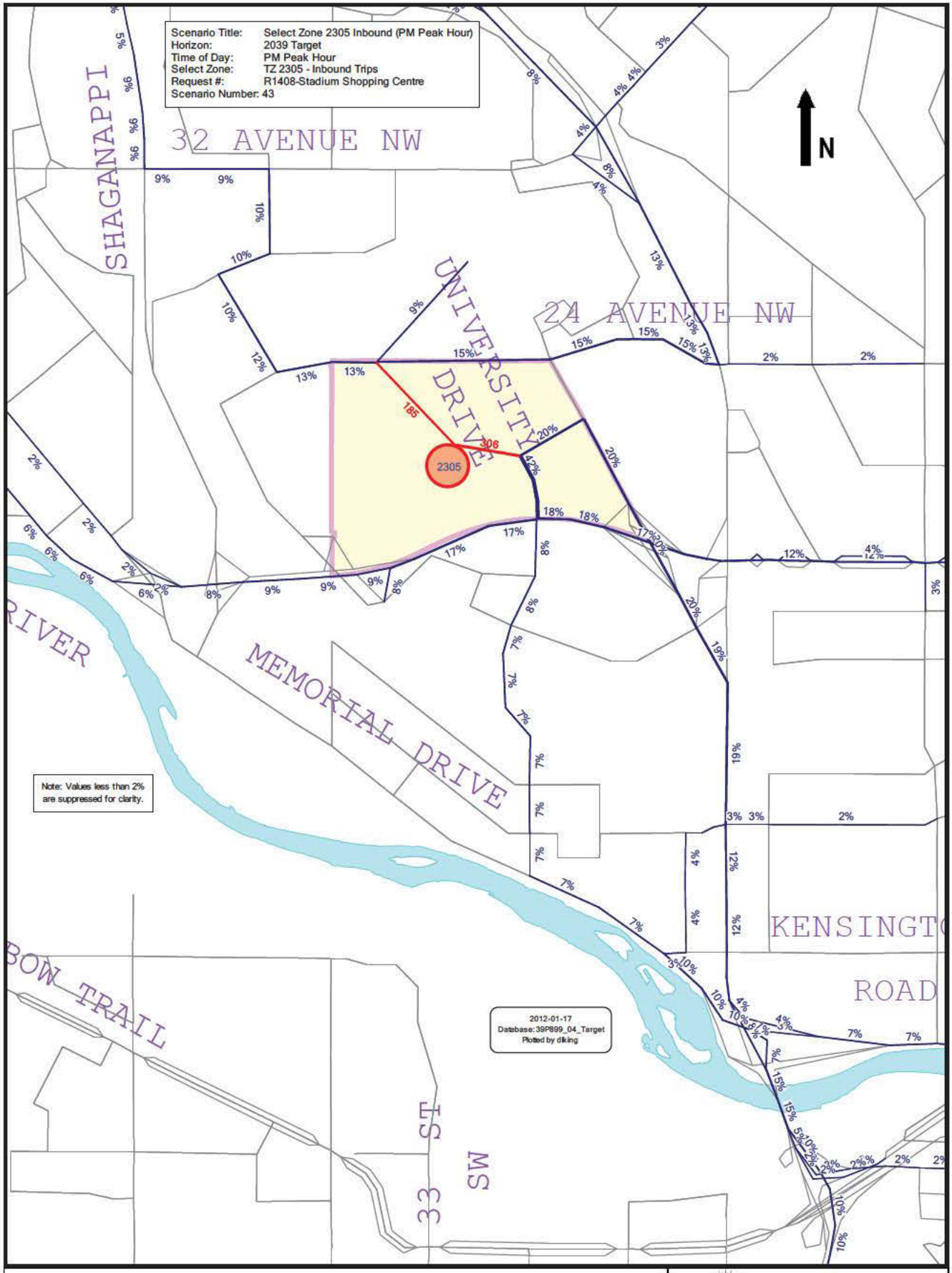

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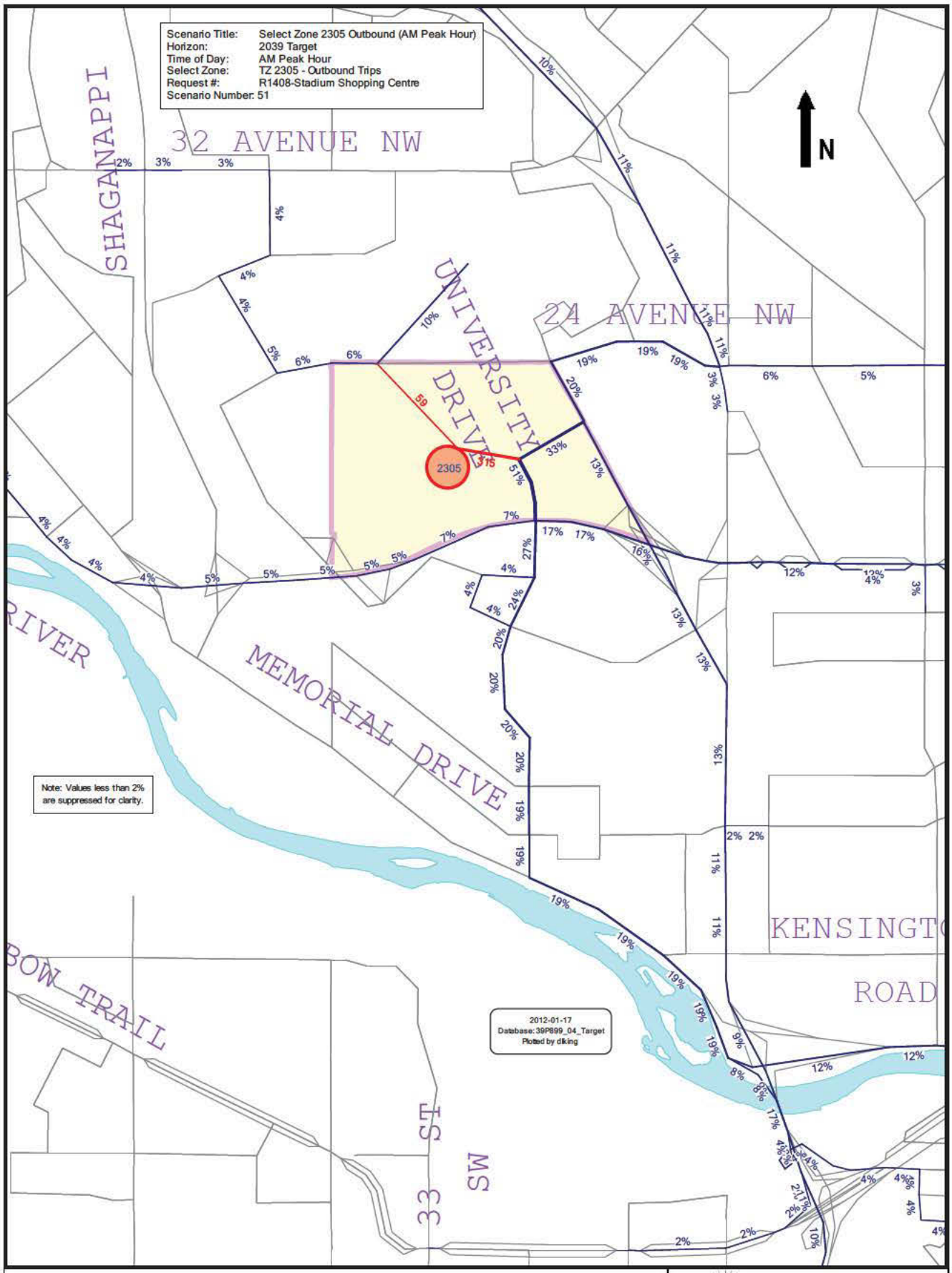

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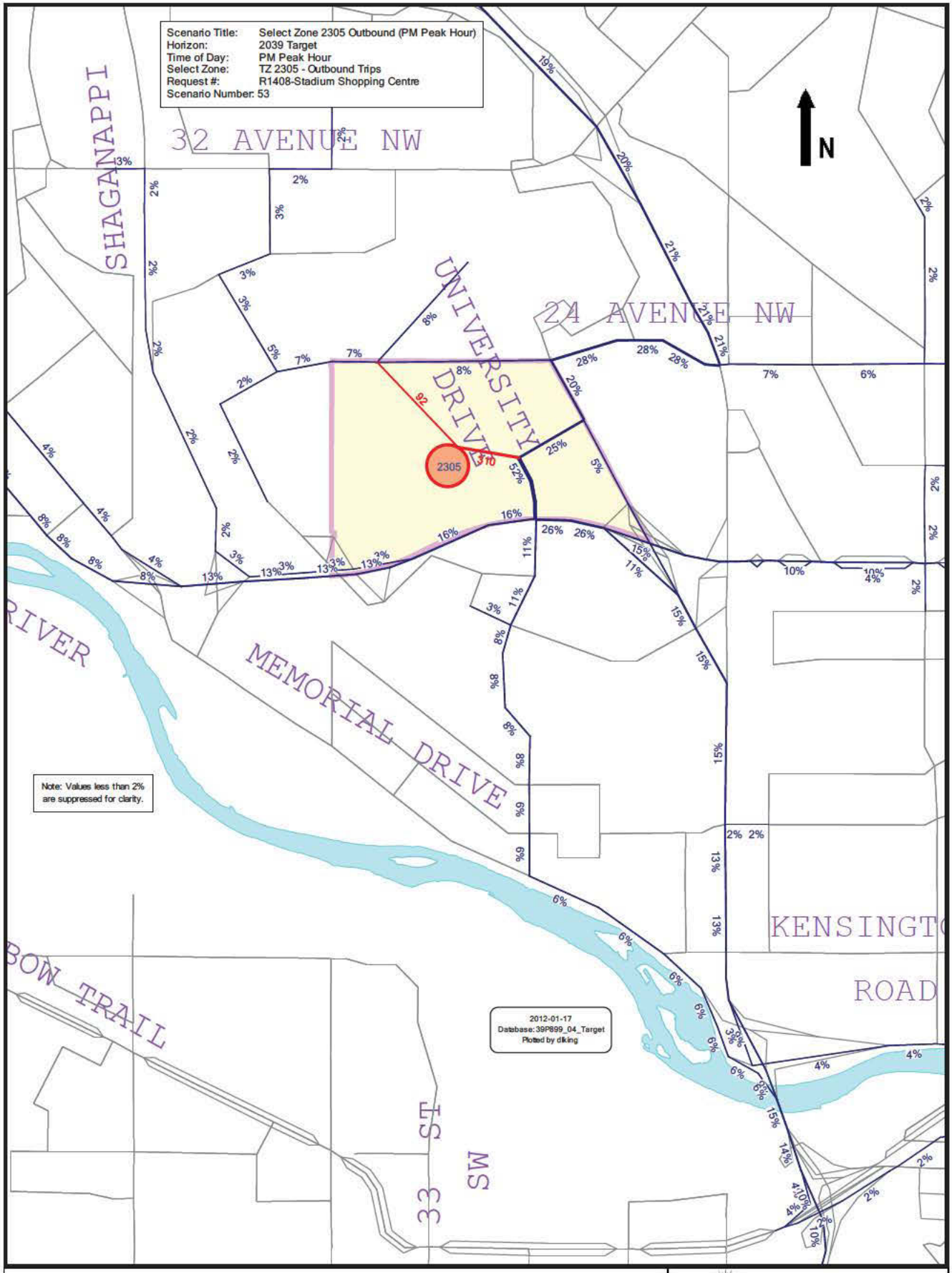

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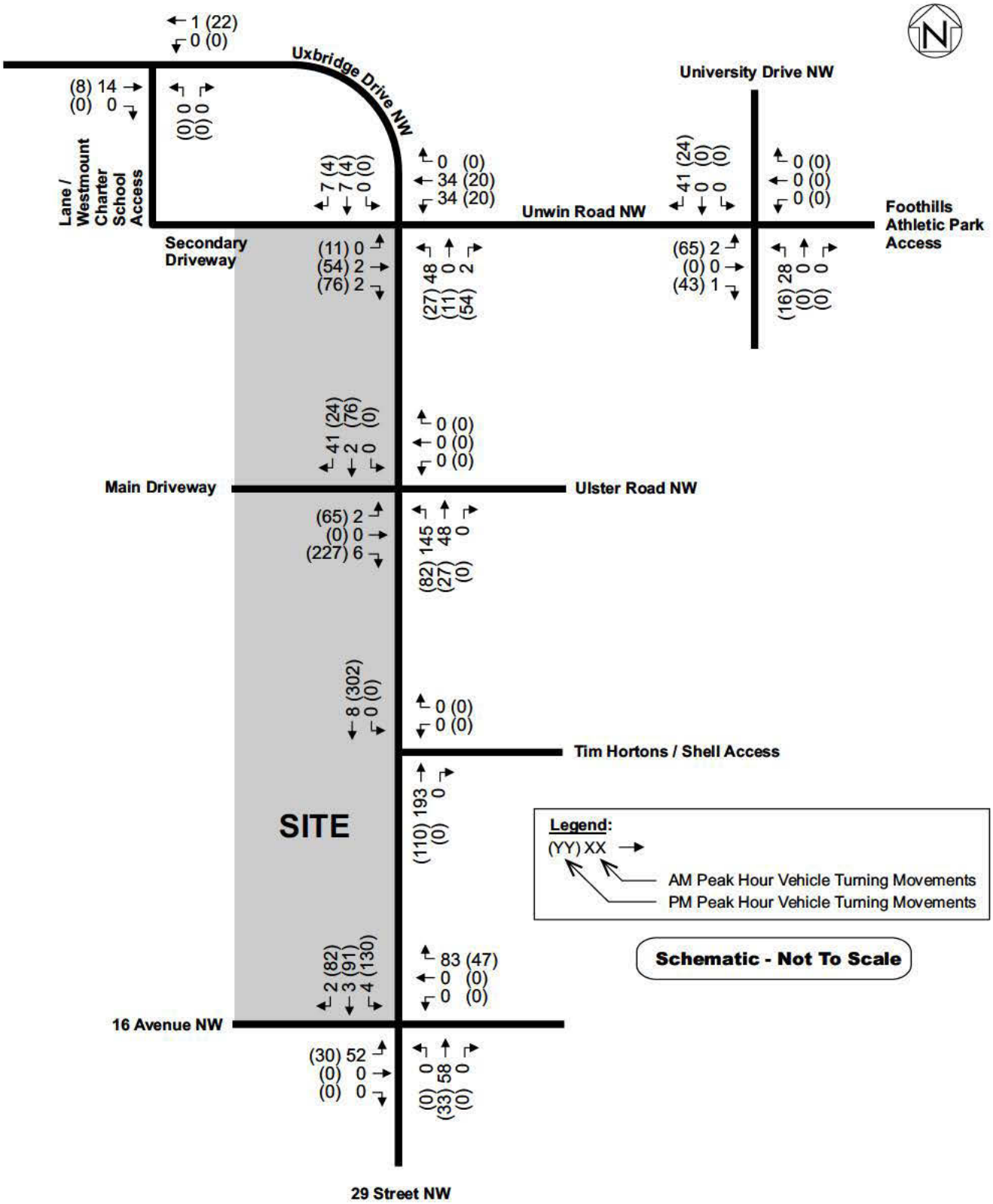
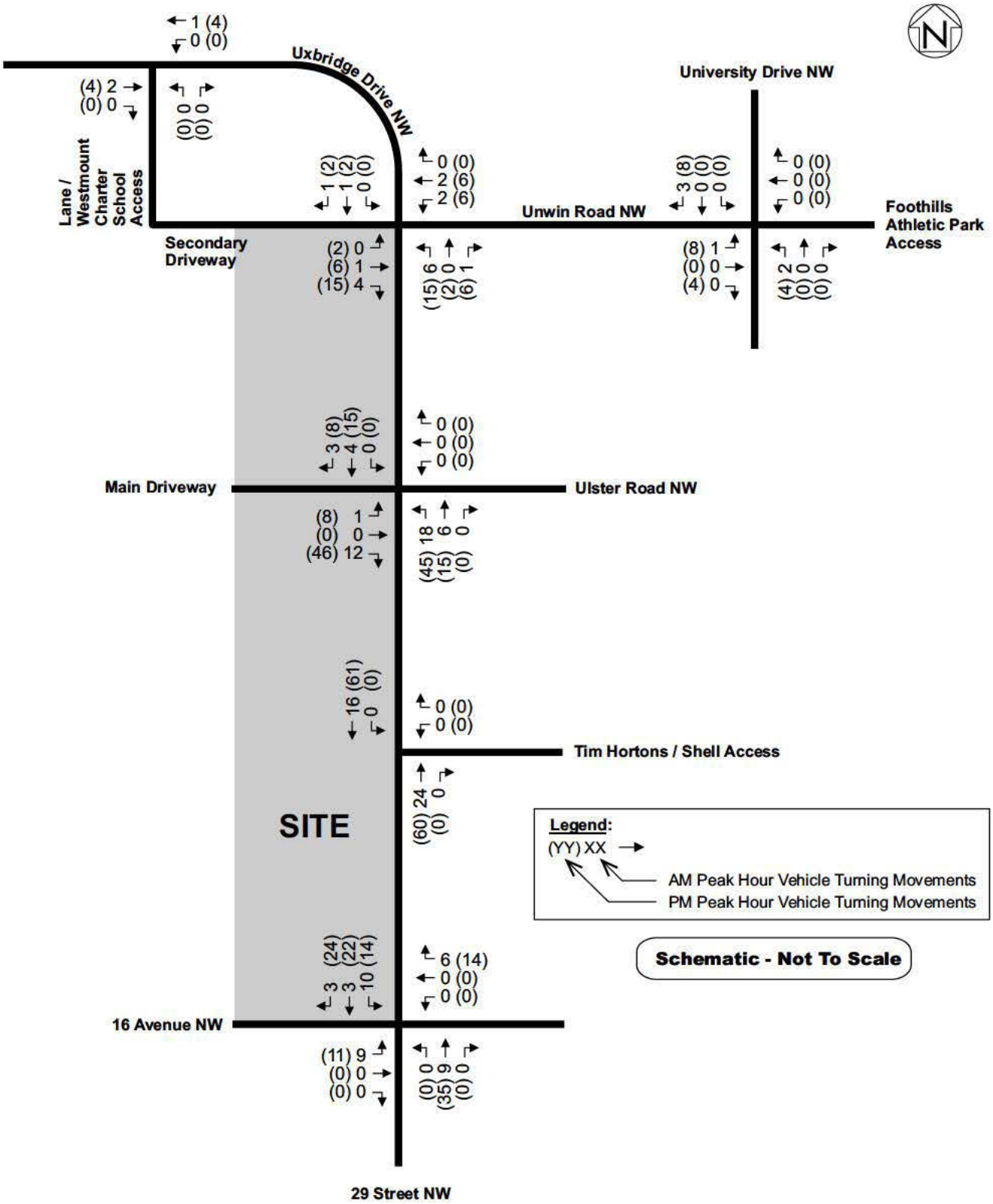
APPENDIX K: INDIVIDUAL TRIP ASSIGNMENT LAYERS



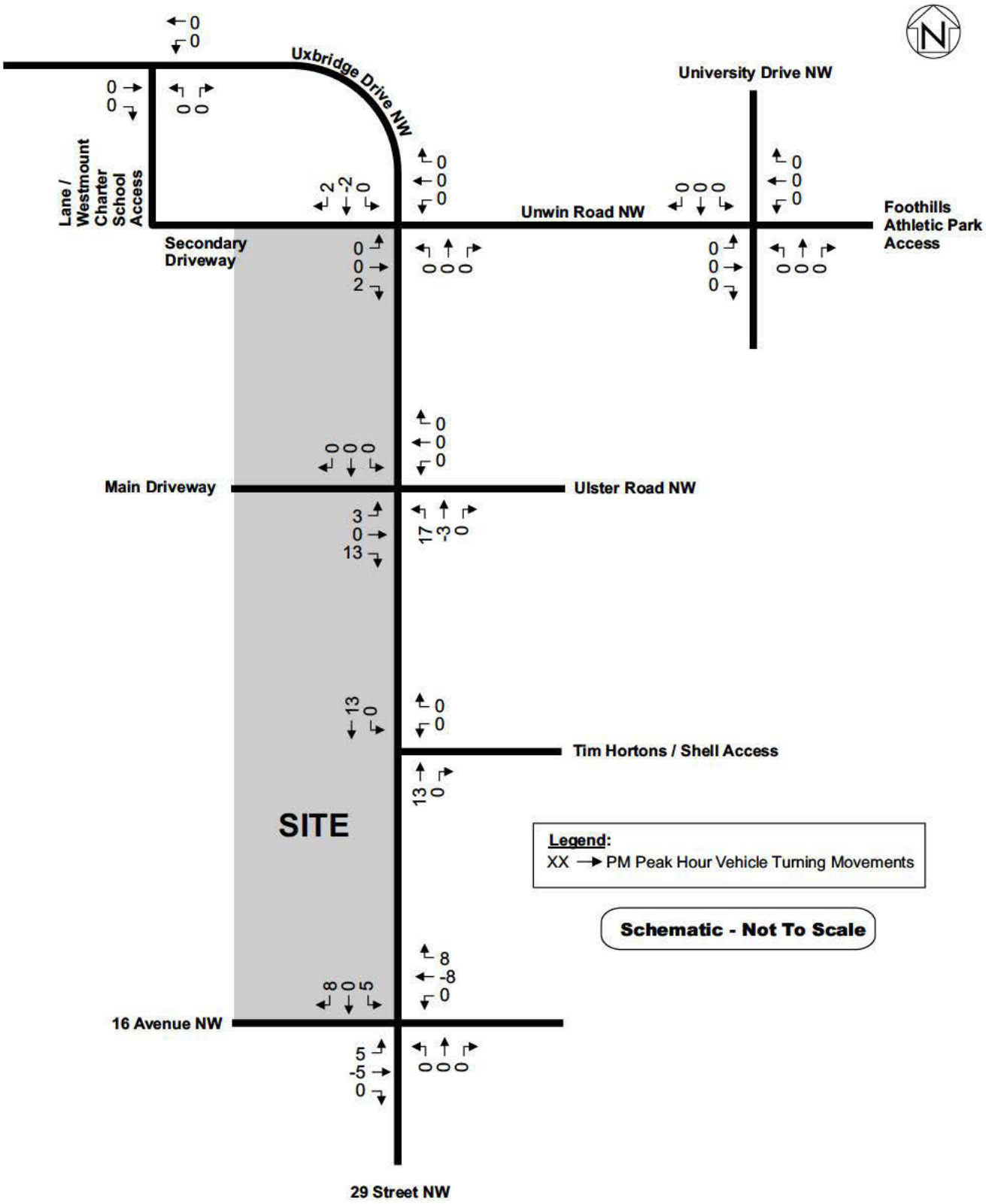
TRIP ASSIGNMENT - OFFICE

K1



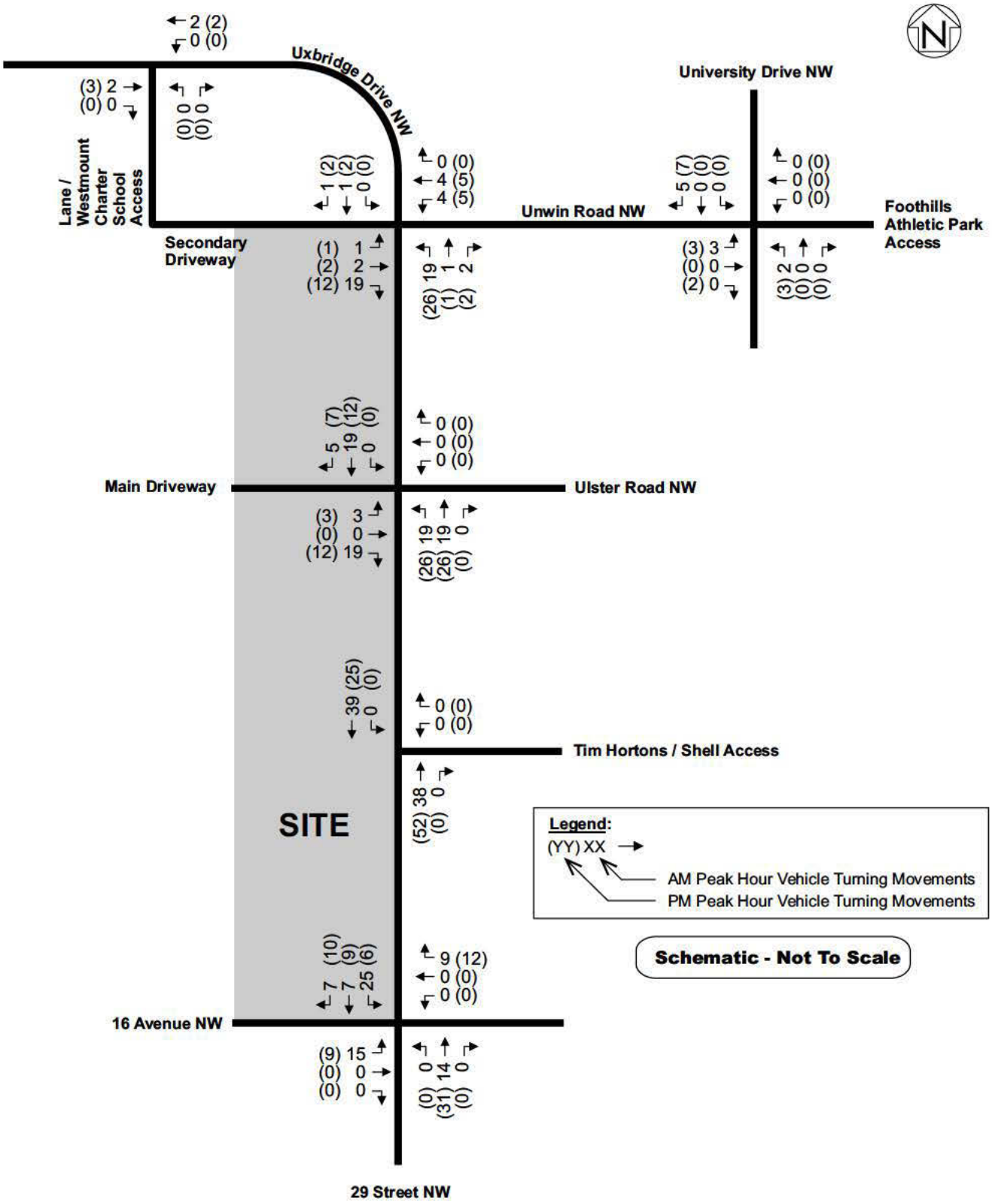
TRIP ASSIGNMENT - RETAIL

K2



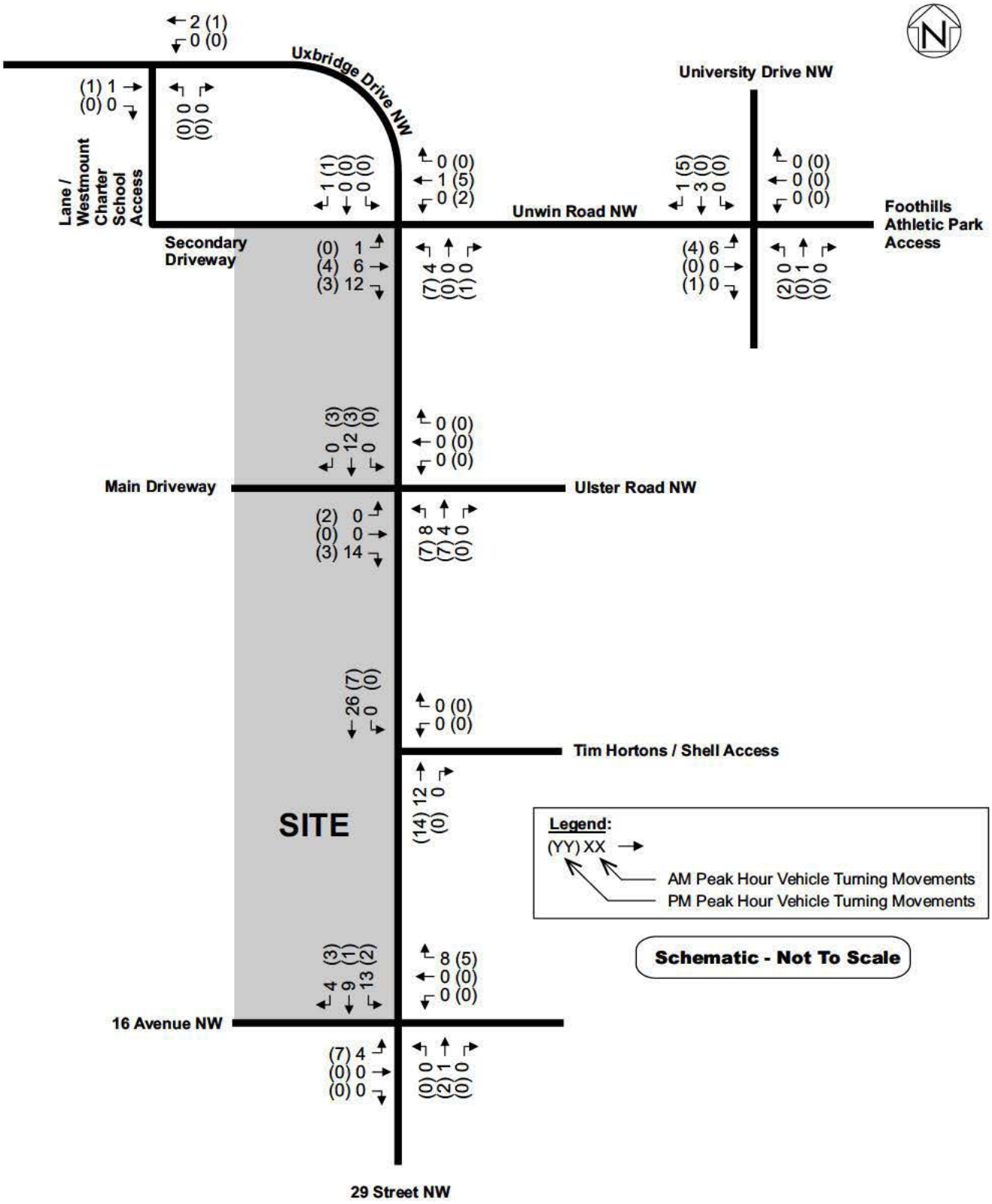
TRIP ASSIGNMENT - RETAIL PASSBY

K3



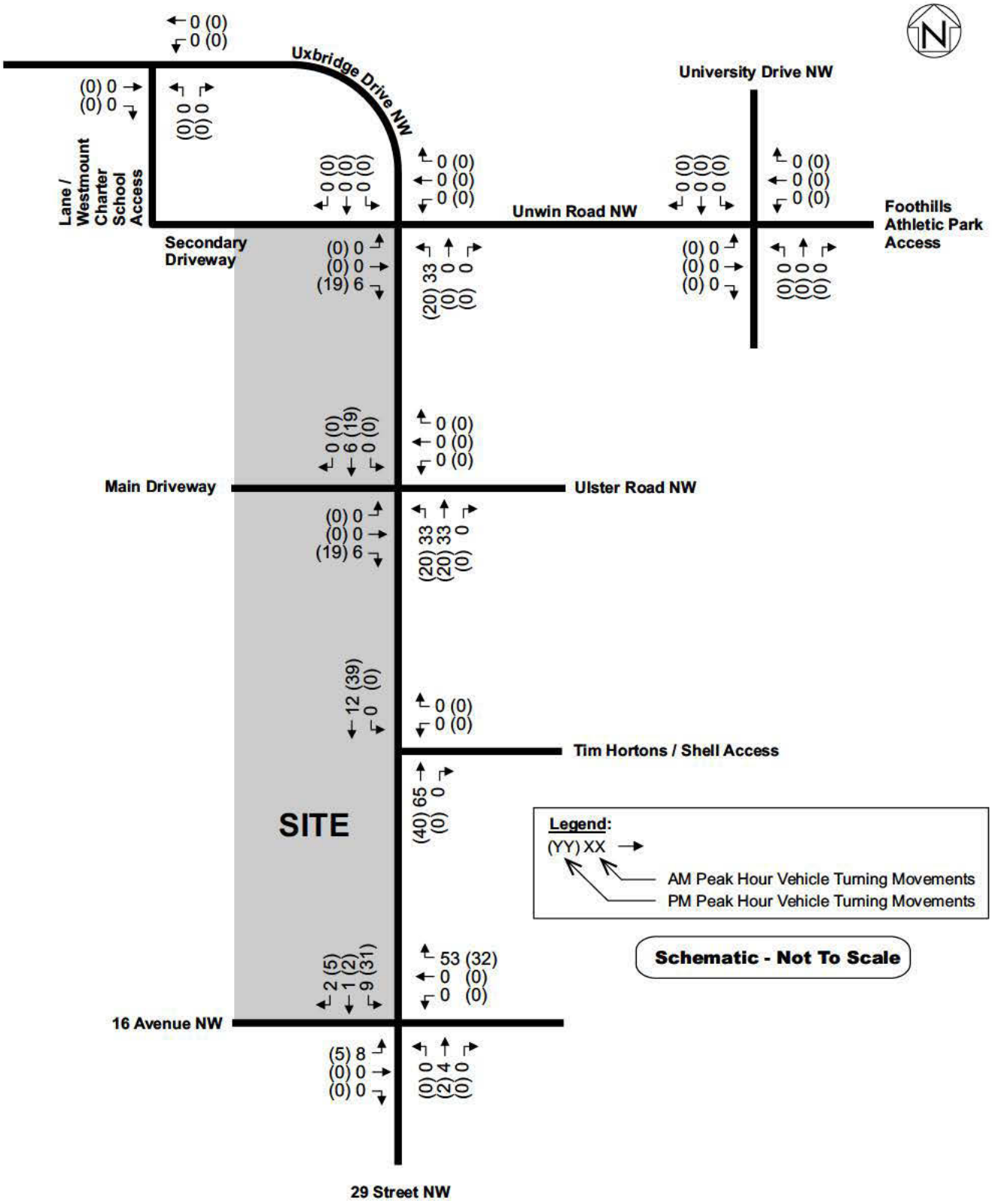
TRIP ASSIGNMENT - RESTAURANT

K4



TRIP ASSIGNMENT - RESIDENTIAL AND SENIORS

K5



TRIP ASSIGNMENT - HOTEL

APPENDIX L: SIDRA ANALYSIS

LANE SUMMARY

Site: PD 2039 AM

Roundabout with 1-lane approaches and circulating road
PD 2039 AM

Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Uxbridge Road South Leg																
Lane 1	352	462	23	837	4.5	1363	0.614	100	2.1	LOS A	5.6	44.4	500	–	0.0	0.0
Approach	352	462	23	837	4.5		0.614		2.1	LOS A	5.6	44.4				
East: Ulster Road																
Lane 1	24	1	9	34	2.0	542	0.063	100	13.8	LOS B	0.5	4.2	500	–	0.0	0.0
Approach	24	1	9	34	2.0		0.063		13.8	LOS B	0.5	4.2				
North: Uxbridge North Leg																
Lane 1	5	372	49	426	5.0	735	0.580	100	6.7	LOS A	5.4	43.1	500	–	0.0	0.0
Approach	5	372	49	426	5.0		0.580		6.7	LOS A	5.4	43.1				
West: Main Driveway																
Lane 1	6	1	57	64	2.0	587	0.109	100	5.9	LOS A	0.6	4.6	500	–	0.0	0.0
Approach	6	1	57	64	2.0		0.109		5.9	LOS A	0.6	4.6				
Intersection				1361	4.5		0.614		4.0	LOS A	5.6	44.4				

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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LANE SUMMARY

Site: PD 2039 PM

Roundabout with 1-lane approaches and circulating road
PD 2039 PM

Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Uxbridge Road South Leg																
Lane 1	207	478	24	709	5.0	1055	0.672	100	2.6	LOS A	6.5	51.5	500	–	0.0	0.0
Approach	207	478	24	709	5.0		0.672		2.6	LOS A	6.5	51.5				
East: Ulster Road																
Lane 1	21	1	9	31	2.0	493	0.063	100	10.7	LOS B	0.4	3.2	500	–	0.0	0.0
Approach	21	1	9	31	2.0		0.063		10.7	LOS B	0.4	3.2				
North: Uxbridge North Leg																
Lane 1	6	513	40	559	5.0	863	0.648	100	4.4	LOS A	6.6	52.5	500	–	0.0	0.0
Approach	6	513	40	559	5.0		0.648		4.4	LOS A	6.6	52.5				
West: Main Driveway																
Lane 1	81	1	321	403	2.0	551	0.731	100	15.6	LOS B	7.9	61.4	500	–	0.0	0.0
Approach	81	1	321	403	2.0		0.731		15.6	LOS B	7.9	61.4				
Intersection				1702	4.2		0.731		6.4	LOS A	7.9	61.4				

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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LANE SUMMARY

Site: PD 2039 AM

Roundabout with 1-lane approaches and circulating road
PD 2039 AM

Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Uxbridge Road South Leg																
Lane 1	111	342	144	597	5.0	924	0.646	100	3.8	LOS A	6.4	50.3	500	–	0.0	0.0
Approach	111	342	144	597	5.0		0.646		3.8	LOS A	6.4	50.3				
East: Unwin Road																
Lane 1	242	49	161	452	2.0	677	0.668	100	9.7	LOS A	5.9	45.6	500	–	0.0	0.0
Approach	242	49	161	452	2.0		0.668		9.7	LOS A	5.9	45.6				
North: Uxbridge North Leg																
Lane 1	191	115	9	315	5.0	717	0.439	100	5.8	LOS A	2.9	23.2	500	–	0.0	0.0
Approach	191	115	9	315	5.0		0.439		5.8	LOS A	2.9	23.2				
West: Secondary Driveway																
Lane 1	4	15	69	88	2.0	642	0.137	100	4.3	LOS A	0.7	5.7	500	–	0.0	0.0
Approach	4	15	69	88	2.0		0.137		4.3	LOS A	0.7	5.7				
Intersection				1452	3.9		0.668		6.1	LOS A	6.4	50.3				

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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LANE SUMMARY

Site: PD 2039 PM

Roundabout with 1-lane approaches and circulating road
PD 2039 PM

Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Uxbridge Road South Leg																
Lane 1	101	228	269	598	5.0	814	0.734	100	7.8	LOS A	8.9	70.8	500	–	0.0	0.0
Approach	101	228	269	598	5.0		0.734		7.8	LOS A	8.9	70.8				
East: Unwin Road																
Lane 1	282	38	84	404	2.0	764	0.529	100	6.2	LOS A	3.7	28.5	500	–	0.0	0.0
Approach	282	38	84	404	2.0		0.529		6.2	LOS A	3.7	28.5				
North: Uxbridge North Leg																
Lane 1	217	120	11	348	5.0	713	0.488	100	6.7	LOS A	3.6	28.6	500	–	0.0	0.0
Approach	217	120	11	348	5.0		0.488		6.7	LOS A	3.6	28.6				
West: Secondary Driveway																
Lane 1	14	74	157	245	2.0	597	0.411	100	6.5	LOS A	2.7	20.7	500	–	0.0	0.0
Approach	14	74	157	245	2.0		0.411		6.5	LOS A	2.7	20.7				
Intersection				1595	3.8		0.734		7.0	LOS A	8.9	70.8				

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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APPENDIX M: SENSITIVITY ANALYSIS

Sensitivity analysis was conducted for all of the study intersections to determine the potential impacts of increasing the site traffic by 20 percent. The analysis indicates that the intersection of 16 Avenue and Uxbridge Drive would operate at a more congested level, especially during the p.m. peak period when the site traffic is highest. The resulting network operations with these volumes are shown in **Table E.** The resulting congestion at the 16 Avenue / Uxbridge Drive intersection if a dual eastbound left-turn lane is constructed is shown in **Table F**. To mitigate the congestion even further, a dual southbound left-turn lane could be constructed. This would alleviate some of the congestion, especially on the southbound approach. Even with a southbound dual left-turn lane average delays to drivers travelling through the intersection are expected to experience a 9 second increase in overall delay, the results of which are shown in **Table G.**

The results of the sensitivity analysis also indicate that the eastbound queues at the south roundabout would extend approximately 180 m into the development site. This would create internal operational issues since driveways and intersections would potentially be blocked by the queue. These queues are more than the 95th percentile projected queue length (~ 110 m) if the site access was signalized, however, the delay and Level of Service (D) are comparable.

TABLE E: 2039 POST DEVELOPMENT OPERATIONS – SITE ACCESS AS ROUNDABOUTS – SENSITIVITY ANALYSIS

INTERSECTION / MOVEMENT			AM PEAK HOUR				PM PEAK HOUR			
			v/c Ratio	LOS	Delay (s)	Queue (m)	v/c Ratio	LOS	Delay (s)	Queue (m)
Uxbridge Dr / Lane (Stop-Controlled)	EB	Through / Right	0.17	A	0	0	0.17	A	0	0
	WB	Left / Through	0.15	A	4	4	0.04	A	1	1
	NB	Left / Right	0.17	B	15	5	0.15	B	12	4
Unwin Rd / Secondary Driveway / Uxbridge Dr (Roundabout)	EB	Left / Through / Right	0.16	A	5	7	0.51	A	9	31
	WB	Left / Through / Right	0.80	B	14	72	0.63	A	8	42
	NB	Left / Through / Right	0.72	A	5	70	0.85	B	13	113
	SB	Left / Through / Right	0.49	A	8	29	0.54	A	9	36
	Intersection Summary		-	**A**	**9**	-	-	**B**	**10**	-
Ulster Rd / Main Driveway / Uxbridge Dr (Roundabout)	EB	Left / Through / Right	0.14	A	7	6	1.01	D	53	180
	WB	Left / Through / Right	0.07	B	20	6	0.08	B	13	4
	NB	Left / Through / Right	0.70	A	2	63	0.79	A	3	77
	SB	Left / Through / Right	0.70	B	11	72	0.79	A	9	95
	Intersection Summary		-	**A**	**6**	-	-	**B**	**18**	-
Tim Hortons / Uxbridge Dr (Stop-Controlled)	WB	Right	0.74	E	40	46	0.11	B	14	3
	NB	Through / Right	0.34	A	0	0	0.33	A	0	0
	SB	-	-	-	-	-	-	-	-	-
16 Avenue/ Uxbridge Dr / 29 Street (Signalized)	EB	Left	1.10	F	138	#169	1.28	F	197	#179
		Through	0.78	D	37	178	0.68	D	35	137
		Right	1.25	F	150	#358	0.17	A	6	12
	WB	Left	0.87	E	80	#86	0.70	E	66	54
		Through / Right	1.02	E	64	#254	1.26	F	156	#327
	NB	Left	0.64	E	77	37	1.14	F	141	#108
		Through / Right	0.86	D	53	#90	1.26	F	160	#176
	SB	Left	0.73	E	56	58	1.31	F	195	#183
		Through / Right	0.94	E	77	#111	1.03	E	79	#122
	Intersection Summary		-	**E**	**73**	-	-	**F**	**122**	-
Unwin Rd / University Dr (Signalized)	EB	Left / Through / Right	0.86	D	44	#130	1.25	F	161	#282
	WB	Left / Through / Right	0.14	B	16	15	0.10	B	15	13
	NB	Left	0.50	B	16	21	0.86	E	65	#56
		Through / Right	0.72	B	16	100	0.53	C	22	97
	SB	Left	0.12	B	18	6	0.07	C	22	7
		Through / Right	0.84	C	25	107	1.07	E	80	#254
	Intersection Summary		-	**C**	**24**	-	-	**E**	**78**	-

TABLE F: 2039 POST DEVELOPMENT OPERATIONS – SENSITIVITY ANALYSIS - DUAL EASTBOUND LEFT TURN LANES

INTERSECTION / MOVEMENT			AM PEAK HOUR				PM PEAK HOUR			
			v/c Ratio	LOS	Delay (s)	Queue (m)	v/c Ratio	LOS	Delay (s)	Queue (m)
16 Avenue/ Uxbridge Dr / 29 Street (Signalized)	EB	Left	0.87	F	87	#74.4	1.08	F	131	#85
		Through	0.78	D	37	178	0.68	D	35	137
		Right	1.24	F	145	#352	0.17	A	6	12
	WB	Left	0.86	E	79	#86	0.70	E	66	54
		Through / Right	0.90	D	40	#214	1.09	F	85	#296
	NB	Left	0.64	E	77	37	1.07	F	120	#104
		Through / Right	0.86	D	52	#90	1.18	F	127	#170
	SB	Left	0.73	E	56	58	1.51	F	276	#194
		Through / Right	0.93	E	77	#111	1.12	F	110	#135
	Intersection Summary		-	**E**	**62**	-	-	**F**	**97**	-

TABLE G: 2039 POST DEVELOPMENT OPERATIONS – SENSITIVITY ANALYSIS - DUAL EASTBOUND AND SOUTHBOUND LEFT TURN LANES

INTERSECTION / MOVEMENT			AM PEAK HOUR				PM PEAK HOUR			
			v/c Ratio	LOS	Delay (s)	Queue (m)	v/c Ratio	LOS	Delay (s)	Queue (m)
16 Avenue/ Uxbridge Dr / 29 Street (Signalized)	EB	Left	0.87	F	87	#74	1.08	F	131	#85
		Through	0.79	D	38	180	0.69	D	36	138
		Right	1.29	F	167	#367	0.17	A	7	13
	WB	Left	0.86	E	79	#86	0.70	E	66	54
		Through / Right	0.92	D	41	217	1.11	F	93	#300
	NB	Left	0.68	E	80	37	1.07	F	120	#104
		Through / Right	0.77	D	43	76	1.15	F	115	#166
	SB	Left	0.68	E	80	#40	1.13	F	144	#96
		Through / Right	0.89	E	69	#105	1.08	F	97	#132
	Intersection Summary		-	**E**	**65**	-	-	**F**	**89**	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	259	10	140	368	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)	273	11	147	387	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			367		1075	415
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			367		1075	415
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)			953		186	563

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	283	535	74
Volume Left	0	147	11
Volume Right	11	0	63
cSH	1700	953	436
Volume to Capacity	0.17	0.15	0.17
Queue Length 95th (m)	0.0	4.4	4.8
Control Delay (s)	0.0	4.0	14.9
Lane LOS		A	B
Approach Delay (s)	0.0	4.0	14.9
Approach LOS			B

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	250	824	220	0	653
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	867	232	0	687
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	1799	677			1227	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1799	677			1227	
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	26			100	
cM capacity (veh/h)	64	354			505	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	263	578	521	687
Volume Left	0	0	0	0
Volume Right	263	0	232	0
cSH	354	1700	1700	1700
Volume to Capacity	0.74	0.34	0.31	0.40
Queue Length 95th (m)	46.1	0.0	0.0	0.0
Control Delay (s)	39.5	0.0	0.0	0.0
Lane LOS	E			
Approach Delay (s)	39.5	0.0		0.0
Approach LOS	E			

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	54.6%	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)	293	1580	790	370	1325	520	150	231	280	157	340	156
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	0.93		0.84	0.88		0.94	0.89	
Frt			0.850		0.958			0.918			0.953	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1704	4802	1638	3122	4367	0	3306	2742	0	1704	2752	0
Flt Permitted	0.950			0.950			0.950			0.147		
Satd. Flow (perm)	1678	4802	1209	2991	4367	0	2772	2742	0	249	2752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			229		84			183			45	
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)	308	1663	832	389	1395	547	158	243	295	165	358	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	308	1663	832	389	1942	0	158	538	0	165	522	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)	28.0	69.0	69.0	26.0	67.0	0.0	16.0	30.0	0.0	20.0	34.0	0.0
Total Split (%)	19.3%	47.6%	47.6%	17.9%	46.2%	0.0%	11.0%	20.7%	0.0%	13.8%	23.4%	0.0%
Maximum Green (s)	23.5	63.0	63.0	21.5	61.0		11.5	24.0		17.0	28.0	
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		1.5	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	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)	23.5	64.0	64.0	20.6	61.0		10.7	24.7		44.4	27.1	
Actuated g/C Ratio	0.16	0.45	0.45	0.14	0.43		0.07	0.17		0.31	0.19	
v/c Ratio	1.10	0.78	1.25	0.87	1.02		0.64	0.86		0.73	0.94	
Control Delay	138.0	37.2	150.4	80.0	64.2		77.1	52.7		56.1	77.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	138.0	37.2	150.4	80.0	64.2		77.1	52.7		56.1	77.4	
LOS	F	D	F	E	E		E	D		E	E	
Approach Delay		81.9			66.8			58.3			72.3	
Approach LOS		F			E			E			E	
Queue Length 50th (m)	~106.5	157.3	~276.2	59.8	~223.8		24.2	57.1		37.4	76.0	
Queue Length 95th (m)	#168.6	177.8	#358.2	#85.5	#254.3		36.9	#90.3		57.9	#111.0	
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)	279	2142	666	468	1907		265	626		251	574	
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	1.10	0.78	1.25	0.83	1.02		0.60	0.86		0.66	0.91	

Intersection Summary			
Area Type:	Other		
Cycle Length: 145			
Actuated Cycle Length: 143.4			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 73.0		Intersection LOS: E	
Intersection Capacity Utilization 102.0%		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

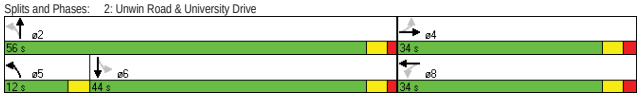
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	265	16	121	29	11	21	128	1197	14	13	690	380
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Width (m)	4.8	4.8	4.8	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Storage Length (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			0.96			1.00		0.99	0.95	
Frt		0.959			0.954			0.998			0.947	
Flt Protected		0.968			0.977		0.950			0.950		
Satd. Flow (prot)	0	1778	0	0	1640	0	1704	3396	0	1704	3050	0
Flt Permitted		0.762			0.793		0.113			0.164		
Satd. Flow (perm)	0	1364	0	0	1297	0	203	3396	0	290	3050	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			22			2			148	
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)	279	17	127	31	12	22	135	1260	15	14	726	400
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	423	0	0	65	0	135	1275	0	14	1126	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)		27.5			27.5		42.7	41.2		32.5	32.5	
Actuated g/C Ratio		0.35			0.35		0.54	0.52		0.41	0.41	
v/c Ratio		0.86			0.14		0.50	0.72		0.12	0.84	
Control Delay		44.3			16.1		16.4	16.4		18.2	25.0	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		44.3			16.1		16.4	16.4		18.2	25.0	
LOS		D			B		B	B		B	C	
Approach Delay		44.3			16.1			16.4			24.9	
Approach LOS		D			B			B			C	
Queue Length 50th (m)		62.9			4.9		10.1	77.6		1.5	79.0	
Queue Length 95th (m)		#129.5			15.0		21.4	99.7		5.7	107.0	
Internal Link Dist (m)		280.8			27.0			175.2			188.1	
Turn Bay Length (m)							70.0			70.0		
Base Capacity (vph)		542			515		291	2318		153	1676	
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		0.78			0.13		0.46	0.55		0.09	0.67	

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 78.6	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 23.5	Intersection LOS: C
Intersection Capacity Utilization 93.7%	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.

Splits and Phases: 2: Unwin Road & University Drive



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	271	3	40	291	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)	285	3	42	306	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			333		743	385
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			333		743	385
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)			1016		346	605

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	288	348	87
Volume Left	0	42	3
Volume Right	3	0	84
cSH	1700	1016	589
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	12.2
Lane LOS		A	B
Approach Delay (s)	0.0	1.4	12.2
Approach LOS			B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	50	798	90	0	1004
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	840	95	0	1057
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	2013	536			1004	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2013	536			1004	
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	89			100	
cM capacity (veh/h)	48	461			647	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1
Volume Total	53	560	375	1057
Volume Left	0	0	0	0
Volume Right	53	0	95	0
cSH	461	1700	1700	1700
Volume to Capacity	0.11	0.33	0.22	0.62
Queue Length 95th (m)	3.1	0.0	0.0	0.0
Control Delay (s)	13.8	0.0	0.0	0.0
Lane LOS	B			
Approach Delay (s)	13.8	0.0		0.0
Approach LOS	B			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	57.6%	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)	314	1264	90	270	1930	267	410	306	560	356	285	363
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	1.00		0.77	0.94	0.99		0.90	0.86			0.85	
Frt			0.850		0.982			0.903			0.916	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1704	4802	1638	3122	4738	0	3306	2635	0	1704	2563	0
Flt Permitted	0.950			0.950			0.950			0.154		
Satd. Flow (perm)	1697	4802	1253	2937	4738	0	2974	2635	0	276	2563	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			93		22			286			210	
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)	331	1331	95	284	2032	281	432	322	589	375	300	382
Shared Lane Traffic (%)												
Lane Group Flow (vph)	331	1331	95	284	2313	0	432	911	0	375	682	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		

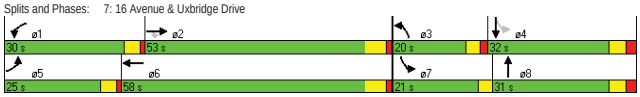
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0		7.0	17.0		10.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0		12.0	29.0		13.0	29.0	
Total Split (s)	25.0	53.0	53.0	30.0	58.0	0.0	20.0	31.0	0.0	21.0	32.0	0.0
Total Split (%)	18.5%	39.3%	39.3%	22.2%	43.0%	0.0%	14.8%	23.0%	0.0%	15.6%	23.7%	0.0%
Maximum Green (s)	20.5	47.0	47.0	25.5	52.0		15.5	25.0		18.0	26.0	
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		1.5	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	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)	20.5	55.1	55.1	17.4	52.0		15.5	25.0		47.0	26.0	
Actuated g/C Ratio	0.15	0.41	0.41	0.13	0.39		0.11	0.19		0.35	0.19	
v/c Ratio	1.28	0.68	0.17	0.70	1.26		1.14	1.26		1.31	1.03	
Control Delay	196.6	35.4	6.2	65.8	156.3		141.2	160.2		194.5	79.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	196.6	35.4	6.2	65.8	156.3		141.2	160.2		194.5	79.1	
LOS	F	D	A	E	F		F	F		F	E	
Approach Delay		64.2			146.4			154.1			120.0	
Approach LOS		E			F			F			F	
Queue Length 50th (m)	~117.4	110.7	0.3	39.9	~297.3		~72.7	~132.8		~118.0	~80.7	
Queue Length 95th (m)	#179.2	136.7	12.4	53.6	#327.0		#107.5	#176.1		#183.0	#121.7	
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)	259	1959	566	590	1839		380	721		286	663	
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	1.28	0.68	0.17	0.48	1.26		1.14	1.26		1.31	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: 1.31			
Intersection Signal Delay: 122.4		Intersection LOS: F	
Intersection Capacity Utilization 131.5%		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)	466	16	154	19	11	21	132	845	24	13	1064	324
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		0.967			0.945			0.996			0.965	
Flt Protected		0.965			0.982		0.950			0.950		
Satd. Flow (prot)	0	1840	0	0	1540	0	1704	3386	0	1704	3177	0
Flt Permitted		0.749			0.796		0.075			0.268		
Satd. Flow (perm)	0	1259	0	0	1248	0	135	3386	0	473	3177	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			22			3			41	
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)	491	17	162	20	12	22	139	889	25	14	1120	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	670	0	0	54	0	139	914	0	14	1461	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		

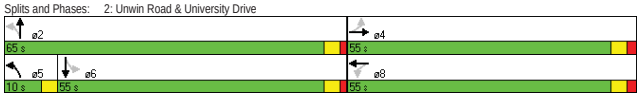
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		4.0	18.5		18.5	18.5	
Minimum Split (s)	28.0	28.0		28.0	28.0		9.0	26.5		26.5	26.5	
Total Split (s)	55.0	55.0	0.0	55.0	55.0	0.0	10.0	65.0	0.0	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		1.25			0.10		0.86	0.53		0.07	1.07	
Control Delay		160.6			14.7		65.3	21.6		22.2	79.9	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		160.6			14.7		65.3	21.6		22.2	79.9	
LOS		F			B		E	C		C	E	
Approach Delay		160.6			14.7			27.3			79.4	
Approach LOS		F			B			C			E	
Queue Length 50th (m)		~206.6			4.7		18.0	78.1		2.0	~209.0	
Queue Length 95th (m)		#281.6			13.2		#56.4	97.2		6.7	#254.3	
Internal Link Dist (m)		280.8			27.0			175.2			188.1	
Turn Bay Length (m)							70.0			70.0		
Base Capacity (vph)		534			533		161	1709		199	1361	
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		1.25			0.10		0.86	0.53		0.07	1.07	

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 100	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.25	
Intersection Signal Delay: 78.2	Intersection LOS: E
Intersection Capacity Utilization 104.7%	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: 2: Unwin Road & University Drive



LANE SUMMARY

Site: PD 2039 AM

Roundabout with 1-lane approaches and circulating road
PD 2039 AM

Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Uxbridge Road South Leg																
Lane 1	397	534	23	954	4.6	1364	0.700	100	2.1	LOS A	8.0	63.3	500	–	0.0	0.0
Approach	397	534	23	954	4.6		0.700		2.1	LOS A	8.0	63.3				
East: Ulster Road																
Lane 1	24	1	9	34	2.0	484	0.070	100	19.5	LOS B	0.8	6.0	500	–	0.0	0.0
Approach	24	1	9	34	2.0		0.070		19.5	LOS B	0.8	6.0				
North: Uxbridge North Leg																
Lane 1	5	430	59	494	5.0	706	0.700	100	11.2	LOS B	9.0	71.5	500	–	0.0	0.0
Approach	5	430	59	494	5.0		0.700		11.2	LOS B	9.0	71.5				
West: Main Driveway																
Lane 1	7	1	69	77	2.0	537	0.143	100	6.7	LOS A	0.8	6.4	500	–	0.0	0.0
Approach	7	1	69	77	2.0		0.143		6.7	LOS A	0.8	6.4				
Intersection				1559	4.5		0.700		5.6	LOS A	9.0	71.5				

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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Project: \\DAW-SAN1\Transpl\Projects\Open\2818.T02 - Stadium Shopping Cntr TIA\Modelling\2039 PD\2039 PD - Main Driveway - Sens with U-Turn.sip
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SIDRA INTERSECTION

LANE SUMMARY

Site: PD 2039 PM

Roundabout with 1-lane approaches and circulating road
PD 2039 PM

Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Uxbridge Road South Leg																
Lane 1	247	547	24	818	5.0	1033	0.792	100	3.2	LOS A	9.7	76.7	500	–	0.0	0.0
Approach	247	547	24	818	5.0		0.792		3.2	LOS A	9.7	76.7				
East: Ulster Road																
Lane 1	21	1	9	31	2.0	400	0.077	100	13.0	LOS B	0.5	4.1	500	–	0.0	0.0
Approach	21	1	9	31	2.0		0.077		13.0	LOS B	0.5	4.1				
North: Uxbridge North Leg																
Lane 1	6	588	48	642	5.0	815	0.788	100	9.2	LOS A	12.0	95.1	500	–	0.0	0.0
Approach	6	588	48	642	5.0		0.788		9.2	LOS A	12.0	95.1				
West: Main Driveway																
Lane 1	97	1	385	483	2.0	477	1.012	100	53.4	LOS D	23.3	179.8	500	–	0.0	0.0
Approach	97	1	385	483	2.0		1.012		53.4	LOS D	23.3	179.8				
Intersection				1974	4.2		1.012		17.6	LOS B	23.3	179.8				

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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SIDRA INTERSECTION

LANE SUMMARY

Site: PD 2039 AM

Roundabout with 1-lane approaches and circulating road
PD 2039 AM

Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Uxbridge Road South Leg																
Lane 1	133	343	194	670	5.0	925	0.724	100	5.2	LOS A	8.8	70.1	500	–	0.0	0.0
Approach	133	343	194	670	5.0		0.724		5.2	LOS A	8.8	70.1				
East: Unwin Road																
Lane 1	300	58	161	519	2.0	650	0.799	100	14.4	LOS B	9.4	72.4	500	–	0.0	0.0
Approach	300	58	161	519	2.0		0.799		14.4	LOS B	9.4	72.4				
North: Uxbridge North Leg																
Lane 1	191	117	11	319	5.0	646	0.494	100	7.8	LOS A	3.7	29.4	500	–	0.0	0.0
Approach	191	117	11	319	5.0		0.494		7.8	LOS A	3.7	29.4				
West: Secondary Driveway																
Lane 1	5	17	77	99	2.0	604	0.164	100	5.0	LOS A	0.9	6.9	500	–	0.0	0.0
Approach	5	17	77	99	2.0		0.164		5.0	LOS A	0.9	6.9				
Intersection				1607	3.8		0.799		8.7	LOS A	9.4	72.4				

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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SIDRA INTERSECTION

LANE SUMMARY

Site: PD 2039 PM

Roundabout with 1-lane approaches and circulating road
PD 2039 PM

Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Uxbridge Road South Leg																
Lane 1	120	230	332	682	5.0	805	0.847	100	12.7	LOS B	14.3	113.1	500	–	0.0	0.0
Approach	120	230	332	682	5.0		0.847		12.7	LOS B	14.3	113.1				
East: Unwin Road																
Lane 1	338	45	84	467	2.0	737	0.634	100	8.0	LOS A	5.4	42.1	500	–	0.0	0.0
Approach	338	45	84	467	2.0		0.634		8.0	LOS A	5.4	42.1				
North: Uxbridge North Leg																
Lane 1	217	122	13	352	5.0	649	0.542	100	8.9	LOS A	4.5	35.6	500	–	0.0	0.0
Approach	217	122	13	352	5.0		0.542		8.9	LOS A	4.5	35.6				
West: Secondary Driveway																
Lane 1	17	87	183	287	2.0	562	0.511	100	9.3	LOS A	4.0	30.6	500	–	0.0	0.0
Approach	17	87	183	287	2.0		0.511		9.3	LOS A	4.0	30.6				
Intersection				1786	3.7		0.847		10.2	LOS B	14.3	113.1				

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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SIDRA INTERSECTION

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	293	1580	790	370	1325	520	150	231	280	157	340	156
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	0.93		0.84	0.88		0.94	0.89	
Frt			0.850		0.958			0.918			0.953	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3306	4802	1638	3122	4367	0	3306	2742	0	1704	2752	0
Flt Permitted	0.950			0.950			0.950			0.148		
Satd. Flow (perm)	3221	4802	1209	2991	4367	0	2772	2742	0	251	2752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			246		93			183			45	
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)	308	1663	832	389	1395	547	158	243	295	165	358	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	308	1663	832	389	1942	0	158	538	0	165	522	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		

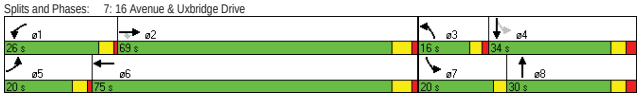
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0		7.0	17.0		10.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0		12.0	29.0		13.0	29.0	
Total Split (s)	20.0	69.0	69.0	26.0	75.0	0.0	16.0	30.0	0.0	20.0	34.0	0.0
Total Split (%)	13.8%	47.6%	47.6%	17.9%	51.7%	0.0%	11.0%	20.7%	0.0%	13.8%	23.4%	0.0%
Maximum Green (s)	15.5	63.0	63.0	21.5	69.0		11.5	24.0		17.0	28.0	
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		1.5	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	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)	15.2	63.1	63.1	20.5	68.4		10.7	24.6		44.2	27.0	
Actuated g/C Ratio	0.11	0.44	0.44	0.14	0.48		0.08	0.17		0.31	0.19	
v/c Ratio	0.87	0.78	1.24	0.86	0.90		0.64	0.86		0.73	0.93	
Control Delay	87.2	37.4	144.8	79.2	39.7		76.6	52.2		55.5	76.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	87.2	37.4	144.8	79.2	39.7		76.6	52.2		55.5	76.6	
LOS	F	D	F	E	D		E	D		E	E	
Approach Delay		74.8			46.3			57.7			71.5	
Approach LOS		E			D			E			E	
Queue Length 50th (m)	48.0	157.3	~270.0	59.8	188.9		24.2	57.1		37.4	76.0	
Queue Length 95th (m)	#74.4	177.8	#352.0	#85.5	213.8		36.9	#90.3		57.9	#111.0	
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)	360	2128	673	472	2168		267	629		254	578	
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	0.86	0.78	1.24	0.82	0.90		0.59	0.86		0.65	0.90	

Intersection Summary

Area Type: Other
Cycle Length: 145
Actuated Cycle Length: 142.3
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.24
Intersection Signal Delay: 62.4 — 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)	314	1264	90	270	1930	267	410	306	560	356	285	363
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	0.99		0.77	0.94	0.99		0.90	0.86			0.85	
Frt			0.850		0.982			0.903			0.916	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3306	4802	1638	3122	4738	0	3306	2636	0	1704	2563	0
Flt Permitted	0.950			0.950			0.950			0.160		
Satd. Flow (perm)	3284	4802	1253	2937	4738	0	2974	2636	0	287	2563	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			93		24			283			167	
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)	331	1331	95	284	2032	281	432	322	589	375	300	382
Shared Lane Traffic (%)												
Lane Group Flow (vph)	331	1331	95	284	2313	0	432	911	0	375	682	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		

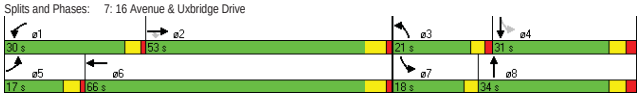
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	29.0	29.0	7.0	29.0		7.0	17.0		10.0	10.0	
Minimum Split (s)	11.5	35.0	35.0	11.5	35.0		12.0	29.0		13.0	29.0	
Total Split (s)	17.0	53.0	53.0	30.0	66.0	0.0	21.0	34.0	0.0	18.0	31.0	0.0
Total Split (%)	12.6%	39.3%	39.3%	22.2%	48.9%	0.0%	15.6%	25.2%	0.0%	13.3%	23.0%	0.0%
Maximum Green (s)	12.5	47.0	47.0	25.5	60.0		16.5	28.0		15.0	25.0	
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		1.5	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	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)	12.5	55.1	55.1	17.4	60.0		16.5	28.0		43.0	25.0	
Actuated g/C Ratio	0.09	0.41	0.41	0.13	0.44		0.12	0.21		0.32	0.19	
v/c Ratio	1.08	0.68	0.17	0.70	1.09		1.07	1.18		1.51	1.12	
Control Delay	131.1	35.4	6.2	65.8	85.3		119.6	126.8		276.0	110.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	131.1	35.4	6.2	65.8	85.3		119.6	126.8		276.0	110.2	
LOS	F	D	A	E	F		F	F		F	F	
Approach Delay		51.9			83.1			124.5			169.0	
Approach LOS		D			F			F			F	
Queue Length 50th (m)	~53.4	110.7	0.3	39.9	~266.5		~69.0	~126.3		~129.2	~94.3	
Queue Length 95th (m)	#85.2	136.7	12.4	53.6	#296.2		#103.8	#169.5		#194.2	#135.3	
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)	306	1959	566	590	2119		404	771		249	611	
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	1.08	0.68	0.17	0.48	1.09		1.07	1.18		1.51	1.12	

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 135
Natural Cycle: 140
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.51
Intersection Signal Delay: 96.7 — Intersection LOS: F
Intersection Capacity Utilization 122.8% — 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)	293	1580	790	370	1325	520	150	231	280	157	340	156
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	2		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	0.97	0.95	0.95
Ped Bike Factor	0.97		0.74	0.96	0.93		0.84	0.88		0.90	0.89	
Frt			0.850		0.958			0.918			0.953	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3306	4802	1638	3122	4367	0	3306	2743	0	3306	2752	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3221	4802	1209	2991	4367	0	2772	2743	0	2983	2752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			210		92			192			46	
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)	308	1663	832	389	1395	547	158	243	295	165	358	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	308	1663	832	389	1942	0	158	538	0	165	522	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			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									

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		14.5	29.0	
Total Split (s)	20.0	68.0	68.0	26.0	74.0	0.0	15.0	36.0	0.0	15.0	36.0	0.0
Total Split (%)	13.8%	46.9%	46.9%	17.9%	51.0%	0.0%	10.3%	24.8%	0.0%	10.3%	24.8%	0.0%
Maximum Green (s)	15.5	62.0	62.0	21.5	68.0		10.5	30.0		10.5	30.0	
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		1.5	2.5		1.5	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	4.0	4.5	6.0	4.0	4.5	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)	15.2	62.1	62.1	20.4	67.3		10.0	28.0		10.4	28.4	
Actuated g/C Ratio	0.11	0.44	0.44	0.14	0.47		0.07	0.20		0.07	0.20	
v/c Ratio	0.87	0.79	1.29	0.86	0.92		0.68	0.77		0.68	0.89	
Control Delay	86.7	38.3	167.1	79.1	41.3		80.0	42.6		79.6	68.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	86.7	38.3	167.1	79.1	41.3		80.0	42.6		79.6	68.5	
LOS	F	D	F	E	D		E	D		E	E	
Approach Delay		81.9			47.6			51.1			71.2	
Approach LOS		F			D			D			E	
Queue Length 50th (m)	48.0	159.4	~284.8	59.8	191.7		24.4	53.2		25.5	74.5	
Queue Length 95th (m)	#74.4	180.1	#366.8	#85.5	217.0		37.2	75.7		#39.8	#104.5	
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)	361	2099	647	473	2142		244	732		244	619	
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	0.85	0.79	1.29	0.82	0.91		0.65	0.73		0.68	0.84	

Intersection Summary

Area Type: Other
Cycle Length: 145
Actuated Cycle Length: 142
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.29
Intersection Signal Delay: 65.2 — 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)	314	1264	90	270	1930	267	410	306	560	356	285	363
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	2		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	0.97	0.95	0.95
Ped Bike Factor	0.99		0.77	0.94	0.99		0.90	0.86		0.94	0.85	
Frt			0.850		0.982			0.903			0.916	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3306	4802	1638	3122	4738	0	3306	2636	0	3306	2563	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3284	4802	1253	2937	4738	0	2974	2636	0	3113	2563	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92		24			286			172	
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)	331	1331	95	284	2032	281	432	322	589	375	300	382
Shared Lane Traffic (%)												
Lane Group Flow (vph)	331	1331	95	284	2313	0	432	911	0	375	682	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			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2									

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		14.5	29.0	
Total Split (s)	17.0	52.0	52.0	30.0	65.0	0.0	21.0	35.0	0.0	18.0	32.0	0.0
Total Split (%)	12.6%	38.5%	38.5%	22.2%	48.1%	0.0%	15.6%	25.9%	0.0%	13.3%	23.7%	0.0%
Maximum Green (s)	12.5	46.0	46.0	25.5	59.0		16.5	29.0		13.5	26.0	
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		1.5	2.5		1.5	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	4.0	4.5	6.0	4.0	4.5	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)	12.5	54.1	54.1	17.4	59.0		16.5	29.0		13.5	26.0	
Actuated g/C Ratio	0.09	0.40	0.40	0.13	0.44		0.12	0.21		0.10	0.19	
v/c Ratio	1.08	0.69	0.17	0.70	1.11		1.07	1.15		1.13	1.08	
Control Delay	131.1	36.4	6.5	65.8	92.8		119.6	114.9		143.8	97.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	131.1	36.4	6.5	65.8	92.8		119.6	114.9		143.8	97.0	
LOS	F	D	A	E	F		F	F		F	F	
Approach Delay		52.6			89.8			116.4			113.6	
Approach LOS		D			F			F			F	
Queue Length 50th (m)	~53.4	112.3	0.5	39.9	~270.4		~69.0	~123.1		~62.9	~90.4	
Queue Length 95th (m)	#85.2	138.4	12.8	53.6	#300.0		#103.8	#166.4		#95.9	#131.5	
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)	306	1923	557	590	2084		404	791		331	632	
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	1.08	0.69	0.17	0.48	1.11		1.07	1.15		1.13	1.08	

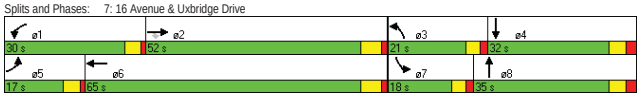
Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 135
Natural Cycle: 140
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.15
Intersection Signal Delay: 89.2 Intersection LOS: F
Intersection Capacity Utilization 113.4% 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



APPENDIX N: PARKING UTILIZATION COUNT

Stadium Shopping Centre - Parking Accumulation

# Vehicles Parked at 7:00am			33
Time Start	Inbound	Outbound	Accum.
07:00	17	13	37
07:15	19	5	51
07:30	19	14	56
07:45	28	15	69
08:00	29	15	83
08:15	45	39	89
08:30	51	33	107
08:45	40	21	126

# Vehicles Parked at 3:00pm			234
Time Start	Inbound	Outbound	Accum.
03:00	66	58	242
03:15	80	81	241
03:30	84	79	246
03:45	49	49	246
04:00	69	65	250
04:15	59	56	253
04:30	77	63	267
04:45	65	75	257
05:00	79	70	266
05:15	74	67	273
05:30	67	55	285
05:45	67	65	287