

1 August 2014

OUR REF: TO3131TOI00

**Bronson Inc.**

786 King Street West  
Toronto, ON M5V 1M6

**Attention: Ms. Debbie Macdonald**

Dear Ms. Macdonald:

**Re: 192 Bronson Avenue – Residential Development  
Transportation Brief  
Addendum #1**

**1. REPORT CONTEXT**

This Addendum #1 has been prepared to identify the transportation-related implications of the revised Site Plan of the 192 Bronson Avenue residential development, which includes the removal of the driveway connection to Cambridge Street, a proposed driveway connection to Bronson Avenue, a reduction of ground floor retail GFA and a reduction of residential units.

**2. REVISED DEMAND FORECASTING**

**2.1 Revised Trip Generation**

Based on the revised Site Plan, projected vehicle trips for the ground floor retail and residential units have been reduced based on the revised Site Plan. The following Table 1 summarized the updated trip generation for the proposed site.

**Table 1: Revised Site-Trip Generation**

Land Use	Data Source	Area	AM Peak			PM Peak		
			In	Out	Total	In	Out	Total
High-Rise Condominium	ITE 232	211 units	11	47	58	35	22	57
Specialty Retail	ITE 826	1,613 ft <sup>2</sup>	4	4	8	7	10	17
Less 30% Retail Pass-by			-1	-1	-2	-3	-3	-6
<b>Resulting Net Increase</b>			<b>14</b>	<b>50</b>	<b>64</b>	<b>39</b>	<b>29</b>	<b>68</b>

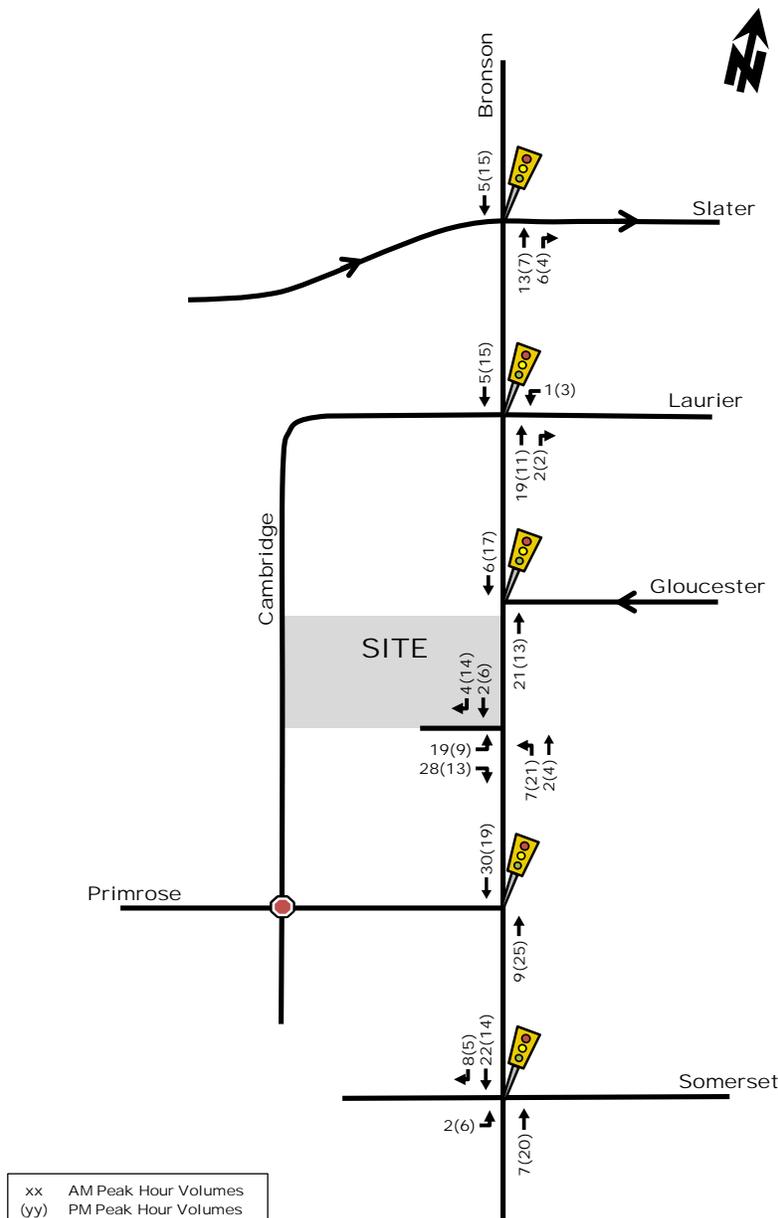
As shown in Table 1, the resulting two-way vehicle trip generation for the revised site is approximately 65 and 70 veh/h during the morning and afternoon peak hours, respectively. As mentioned in the original TB, the site is currently occupied by an approximate 40 space

parking lot. Therefore the revised 'net' two-way vehicle increase in traffic is approximately 45 and 50 veh/h during the weekday morning and afternoon peak hours, respectively. This is approximately 5 to 10 veh/h less than the site-trip generation assessed in the original TB.

### 2.2 Revised Vehicle Traffic Distribution and Assignment

Traffic distribution and assignment was revised to reflect the proposed site access/egress to Bronson Street and the update site trip-generation. The revised site-generated 'new' and 'pass-by' trips are illustrated in Figure 1. As no retail parking is proposed for the subject site, the retail trips will not use the site driveway. This is reflected in Figure 1.

**Figure 1: Revised 'New' and 'Pass-by' Site-Generated Traffic Volumes**



### 3. REVISED FUTURE TRAFFIC OPERATIONS

#### 3.1 Revised Projected Conditions at Full Site Development

Total projected volumes associated with the revised Site Plan for the proposed development are illustrated in Figure 3. They were derived by superimposing 'new' and 'pass-by' site-generated volumes (Figure 1) onto existing traffic volumes (illustrated as Figure 4 in the original TB).

Figure 2: Revised Total Projected Peak Hour Traffic Volumes

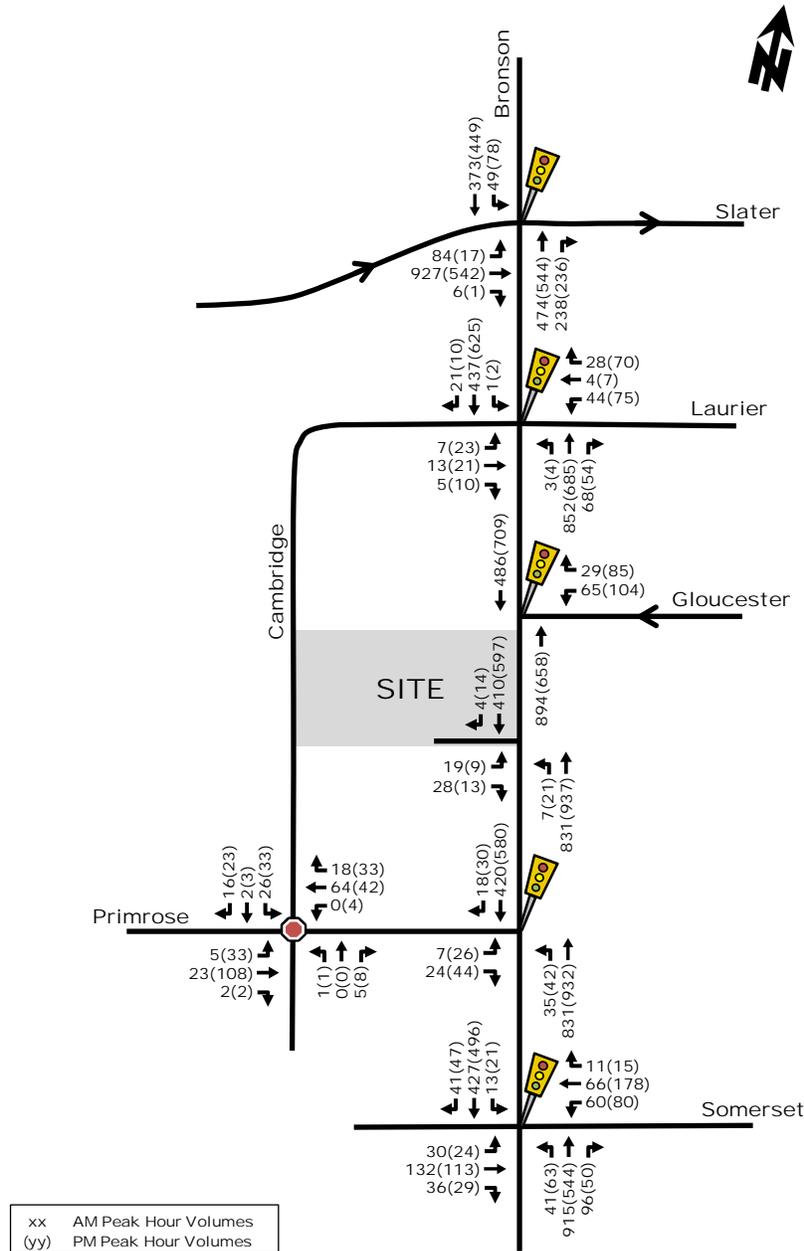


Table 2 provides a summary of the projected performance of study area intersections at full site build-out. The SYNCHRO model output of projected conditions is provided within Appendix A.

**Table 2: Revised Projected Performance of Study Area Intersections**

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'as a whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Bronson/Slater	E(B)	0.96(0.68)	EBT(NBT)	25.2(14.1)	C(B)	0.80(0.61)
Bronson/Laurier	A(A)	0.44(0.58)	NBT(WBT)	4.5(6.8)	A(A)	0.36(0.41)
Bronson/Gloucester	A(A)	0.40(0.36)	NBT(SBT)	2.7(3.3)	A(A)	0.39(0.36)
Bronson/Primrose	A(A)	0.39(0.50)	NBT(NBT)	4.8(8.1)	A(A)	0.38(0.48)
Bronson/Somerset	D(A)	0.83(0.57)	NBT(NBT)	24.8(21.8)	B(A)	0.65(0.50)
Cambridge/Primrose	A(A)	7.4(8.1)	WBT(EBT)	7.3(7.8)	-	-
Bronson/Site	B(B)	12.0(11.8)	EBL(EBL)	0.5(0.3)	-	-

Note: Analysis of signalized intersections assumes a PHF of 0.95, a saturation flow rate of 1800 veh/h/lane, and a CBD type area.

As shown in Table 2, with the revised Site Plan, the study area intersections are projected to operate similar to, if not the same as, the projection conditions summarized in Table 7 of the original TB.

The proposed site driveway connection to Bronson Avenue is projected to operate with acceptable delays of approximately 12 seconds with 95<sup>th</sup> percentile queues of approximately 2.5 metres (no more than 1 vehicle in queue) during peak hours. An auxiliary northbound left-turn lane is warranted with a storage length of 15 m. However, as this auxiliary lane is only warranted during the afternoon peak hour and given the existing roadway geometry of Bronson Avenue (proximity to the existing Bronson/Gloucester intersection and lack of available right-of-way to accommodate a turn lane and taper), it is not recommended. Also, it is noteworthy that no other existing driveways or intersections along this section of Bronson Avenue have auxiliary left-turn lanes. The left-turn lane warrant analysis is provided as Appendix B.

#### 4. REVISED SITE PLAN REVIEW

This section provides an overview of site access and parking requirements associated with the revised Site Plan, which is included as Appendix C.

##### *Parking*

A total of 170 residential parking spaces (plus 5 'small car' spaces), 17 visitor parking spaces and no retail parking spaces are proposed to serve the subject site. This amount of

residential and retail parking is sufficient with respect to the City's Zoning By-Law requirements for a Traditional Mainstreet located in Area B, identified in Schedule 1 of the City's Zoning By-Law. The proponent will be seeking a reduced rate for visitor parking of 0.083 per residential unit as per the old City of Ottawa guidelines.

According to the City of Ottawa's Parking Operations Memo, dated December 2013, existing on-street parking activity on Cambridge Street North and Primrose Avenue within the vicinity of the site is currently at or above capacity, but there is capacity available both at off-street lots within walking distance of the proposed site, and also on-street along Bronson Avenue (where on-street parking is permitted outside of the weekday peak periods). The City memo recommends that less residential parking and more retail/visitor parking be provided as part of the proposed development, and that parking be "unbundled", meaning that parking spaces are rented or sold separately from the residential units, with any excess spaces not purchased used as public parking. While we agree that this is a potential option, the substantial reduction in retail GFA (to the point where no retail parking is required under the proposed zoning) and re-orientation of the site access to Bronson Avenue impacts the viability of a public parking garage on this site. The 17 proposed visitor parking spaces, while significantly less than the 40 required under the City's current Zoning By-Law, is considered sufficient given the site's highly urban location and proximity to good pedestrian, cycling and transit links, and the availability of on-street parking along Bronson Avenue during weekday evenings and on weekends, when demand for residential visitor parking is highest.

#### *Access Requirements*

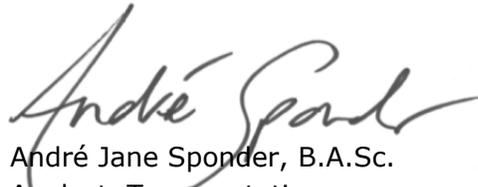
The proposed location of the ramp is noted as approximately 1.5 m from the southern property line. The proposed ramp starts approximately 5 m from the eastern property line with a 5% grade for 3 m, which increases to 7.5% for an additional 3 m, finally increasing to 15% approximately 11 m from the property line. These revised dimensions and ramp location are considered acceptable and will result in good sight lines for exiting vehicles approaching the sidewalk and road edge.

#### *Bicycles*

A total of 116 bicycle parking lockers are proposed to serve the residential development and 12 bicycle parking spaces are proposed to serve the retail development. This amount of bicycle parking is sufficient with respect to the City's By-Law requirement. The residential bicycle parking spaces are located at ground level and on parking level 1. Cyclists should have the ability to access the parking garages/storage lockers via the parking garage elevators as the 15% ramp grade is considered too steep for pedestrians/cyclists.

Based on the foregoing, the proposed 192 Bronson Street mixed use development continues to be recommended from a transportation perspective. If there are any questions, please call.

Prepared By:



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Ottawa Operations

Reviewed By:



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Ottawa Operations

Attachment



Appendix A  
SYNCHRO Capacity Analysis

Projected AM  
1: Bronson & Slater

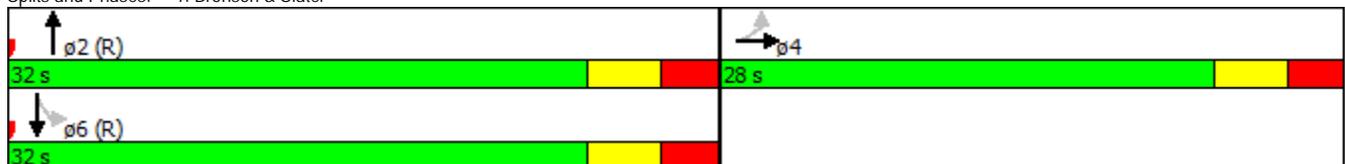


Lane Group	EBT	NBT	SBL	SBT
Lane Configurations				
Volume (vph)	927	474	49	373
Lane Group Flow (vph)	1070	750	52	393
Turn Type	NA	NA	Perm	NA
Protected Phases	4	2		6
Permitted Phases			6	
Detector Phase	4	2	6	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	19.9	26.0	26.0	26.0
Total Split (s)	28.0	32.0	32.0	32.0
Total Split (%)	46.7%	53.3%	53.3%	53.3%
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	C-Max	C-Max	C-Max
Act Effct Green (s)	22.1	26.0	26.0	26.0
Actuated g/C Ratio	0.37	0.43	0.43	0.43
v/c Ratio	0.96	0.60	0.24	0.30
Control Delay	39.6	12.4	14.3	11.8
Queue Delay	0.0	0.1	0.0	0.0
Total Delay	39.6	12.5	14.3	11.8
LOS	D	B	B	B
Approach Delay	39.6	12.5		12.1
Approach LOS	D	B		B
Queue Length 50th (m)	58.6	11.1	3.4	14.0
Queue Length 95th (m)	#98.0	28.5	10.3	22.3
Internal Link Dist (m)	157.6	69.3		35.9
Turn Bay Length (m)			17.0	
Base Capacity (vph)	1116	1249	220	1322
Starvation Cap Reductn	0	42	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.96	0.62	0.24	0.30

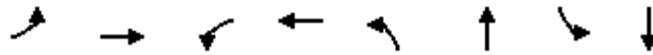
Intersection Summary

Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 13 (22%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 25.2  
 Intersection Capacity Utilization 84.1%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Bronson & Slater



Projected AM  
2: Bronson & Laurier

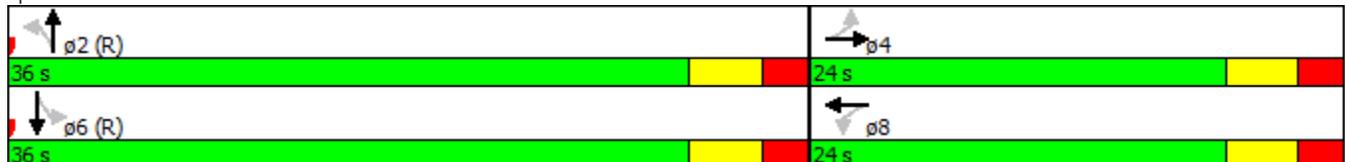


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	7	13	44	4	3	852	1	437
Lane Group Flow (vph)	0	26	0	79	0	972	0	483
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.4	23.4	23.4	23.4	30.5	30.5	30.5	30.5
Total Split (s)	24.0	24.0	24.0	24.0	36.0	36.0	36.0	36.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.4		5.4		5.5		5.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effect Green (s)		11.8		11.8		45.7		45.7
Actuated g/C Ratio		0.20		0.20		0.76		0.76
v/c Ratio		0.10		0.35		0.44		0.22
Control Delay		16.4		24.3		4.1		1.6
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		16.4		24.3		4.1		1.6
LOS		B		C		A		A
Approach Delay		16.4		24.3		4.1		1.6
Approach LOS		B		C		A		A
Queue Length 50th (m)		2.0		7.9		11.2		2.3
Queue Length 95th (m)		6.2		15.5		23.3		m4.6
Internal Link Dist (m)		67.7		479.7		47.5		69.3
Turn Bay Length (m)								
Base Capacity (vph)		425		358		2187		2197
Starvation Cap Reductn		0		0		7		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.06		0.22		0.45		0.22

Intersection Summary

Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 13 (22%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.44  
 Intersection Signal Delay: 4.5  
 Intersection Capacity Utilization 56.4%  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bronson & Laurier



Projected AM  
3: Bronson & Gloucester



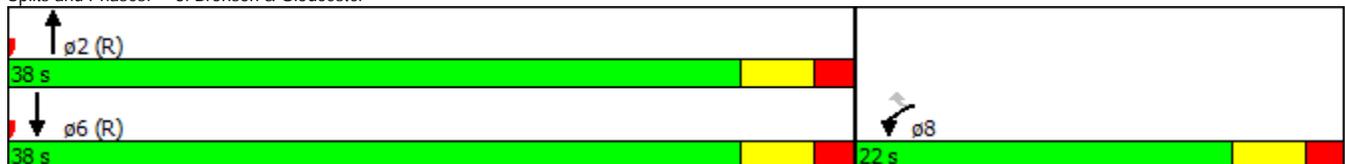
Lane Group	WBL	WBR	NBT	SBT
Lane Configurations				
Volume (vph)	65	29	894	486
Lane Group Flow (vph)	68	31	941	512
Turn Type	Prot	Perm	NA	NA
Protected Phases	8		2	6
Permitted Phases		8		
Detector Phase	8	8	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	25.1	25.1	25.1	22.1
Total Split (s)	22.0	22.0	38.0	38.0
Total Split (%)	36.7%	36.7%	63.3%	63.3%
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	5.1
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	None	C-Max	C-Max
Act Effct Green (s)	11.4	11.4	46.5	46.5
Actuated g/C Ratio	0.19	0.19	0.78	0.78
v/c Ratio	0.24	0.11	0.40	0.22
Control Delay	21.8	8.5	1.9	1.3
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	21.8	8.5	1.9	1.3
LOS	C	A	A	A
Approach Delay	17.7		1.9	1.3
Approach LOS	B		A	A
Queue Length 50th (m)	6.6	0.0	21.5	3.3
Queue Length 95th (m)	13.6	5.0	3.6	4.7
Internal Link Dist (m)	364.2		29.0	47.5
Turn Bay Length (m)				
Base Capacity (vph)	429	396	2364	2364
Starvation Cap Reductn	0	0	0	606
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.16	0.08	0.40	0.29

Intersection Summary

Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 16 (27%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.40  
 Intersection Signal Delay: 2.7  
 Intersection Capacity Utilization 49.6%  
 Analysis Period (min) 15

Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 3: Bronson & Gloucester



Projected AM  
4: Bronson & Primrose



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Volume (vph)	7	35	831	420
Lane Group Flow (vph)	32	0	912	461
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	6
Permitted Phases		2		
Detector Phase	4	2	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	25.2	23.2	23.2	23.2
Total Split (s)	26.0	34.0	34.0	34.0
Total Split (%)	43.3%	56.7%	56.7%	56.7%
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	1.9	1.9	1.9	1.9
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	5.2		5.2	5.2
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
Act Effct Green (s)	12.0		49.8	49.8
Actuated g/C Ratio	0.20		0.83	0.83
v/c Ratio	0.11		0.39	0.18
Control Delay	9.8		5.3	3.5
Queue Delay	0.0		0.0	0.0
Total Delay	9.8		5.3	3.5
LOS	A		A	A
Approach Delay	9.8		5.3	3.5
Approach LOS	A		A	A
Queue Length 50th (m)	0.7		0.0	0.0
Queue Length 95th (m)	5.2		54.0	18.1
Internal Link Dist (m)	71.5		171.7	51.1
Turn Bay Length (m)				
Base Capacity (vph)	490		2341	2516
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.07		0.39	0.18

Intersection Summary

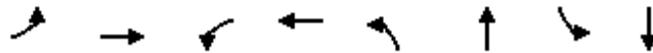
Cycle Length: 60  
 Actuated Cycle Length: 60  
 Offset: 12 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.39  
 Intersection Signal Delay: 4.8  
 Intersection Capacity Utilization 70.7%  
 Analysis Period (min) 15

Intersection LOS: A  
ICU Level of Service C

Splits and Phases: 4: Bronson & Primrose



Projected AM  
6: Bronson & Somerset W



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	ø1	ø3	ø5	ø7
Lane Configurations												
Volume (vph)	30	132	60	66	41	915	13	427				
Lane Group Flow (vph)	32	177	63	81	0	1107	0	506				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		4		8		2		6	1	3	5	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	2	2	6	6				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	18.9	18.9	18.9	18.9	18.8	18.8	18.8	18.8	7.0	20.0	7.0	20.0
Total Split (s)	32.0	32.0	32.0	32.0	53.0	53.0	53.0	53.0	5.0	5.0	5.0	5.0
Total Split (%)	33.7%	33.7%	33.7%	33.7%	55.8%	55.8%	55.8%	55.8%	5%	5%	5%	5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0
All-Red Time (s)	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Total Lost Time (s)	5.9	5.9	5.9	5.9		5.8		5.8				
Lead/Lag	Lag	Lead	Lead	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	26.1	26.1	26.1	26.1		47.2		47.2				
Actuated g/C Ratio	0.27	0.27	0.27	0.27		0.50		0.50				
v/c Ratio	0.11	0.43	0.27	0.19		0.83		0.38				
Control Delay	27.2	32.3	30.8	27.9		27.1		15.8				
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0				
Total Delay	27.2	32.3	30.8	27.9		27.1		15.8				
LOS	C	C	C	C		C		B				
Approach Delay		31.5		29.2		27.1		15.8				
Approach LOS		C		C		C		B				
Queue Length 50th (m)	4.4	26.7	9.0	11.4		87.2		28.8				
Queue Length 95th (m)	11.5	46.0	20.2	22.9		116.7		40.6				
Internal Link Dist (m)		306.8		381.0		115.2		171.7				
Turn Bay Length (m)												
Base Capacity (vph)	281	411	235	424		1337		1345				
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	0.11	0.43	0.27	0.19		0.83		0.38				

Intersection Summary

Cycle Length: 95  
 Actuated Cycle Length: 95  
 Offset: 22 (23%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 24.8  
 Intersection Capacity Utilization 90.7%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service E

Splits and Phases: 6: Bronson & Somerset W

5 s	53 s					5 s	32 s
5 s	53 s					5 s	32 s

Projected AM  
5: Cambridge & Primrose

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	5	23	2	0	64	18	1	0	5	26	2	16
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)	5	24	2	0	67	19	1	0	5	27	2	17
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	32	86	6	46								
Volume Left (vph)	5	0	1	27								
Volume Right (vph)	2	19	5	17								
Hadj (s)	0.03	-0.10	-0.43	-0.07								
Departure Headway (s)	4.1	3.9	3.8	4.1								
Degree Utilization, x	0.04	0.09	0.01	0.05								
Capacity (veh/h)	854	895	915	853								
Control Delay (s)	7.3	7.4	6.8	7.3								
Approach Delay (s)	7.3	7.4	6.8	7.3								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.3									
Level of Service			A									
Intersection Capacity Utilization			26.7%	ICU Level of Service	A							
Analysis Period (min)			15									

Projected AM  
8: Bronson & Site



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	19	28	7	831	410	4
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)	20	29	7	875	432	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked	0.91	0.99	0.99			
vC, conflicting volume	886	218	436			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	611	185	405			
iC, single (s)	6.8	6.9	4.1			
iC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	95	96	99			
cM capacity (veh/h)	383	816	1136			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	49	299	583	288	148	
Volume Left	20	7	0	0	0	
Volume Right	29	0	0	0	4	
cSH	560	1136	1700	1700	1700	
Volume to Capacity	0.09	0.01	0.34	0.17	0.09	
Queue Length 95th (m)	2.2	0.1	0.0	0.0	0.0	
Control Delay (s)	12.0	0.3	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	12.0	0.1		0.0		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.5			
Intersection Capacity Utilization			39.4%		ICU Level of Service	A
Analysis Period (min)			15			

Projected PM  
1: Bronson & Slater



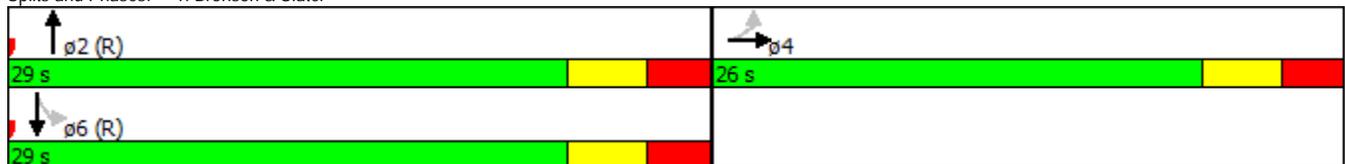
Lane Group	EBT	NBT	SBL	SBT
Lane Configurations				
Volume (vph)	542	544	78	449
Lane Group Flow (vph)	590	821	82	473
Turn Type	NA	NA	Perm	NA
Protected Phases	4	2		6
Permitted Phases			6	
Detector Phase	4	2	6	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	19.9	26.0	26.0	26.0
Total Split (s)	26.0	29.0	29.0	29.0
Total Split (%)	47.3%	52.7%	52.7%	52.7%
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	C-Max	C-Max	C-Max
Act Effct Green (s)	20.1	23.0	23.0	23.0
Actuated g/C Ratio	0.37	0.42	0.42	0.42
v/c Ratio	0.53	0.68	0.44	0.37
Control Delay	15.9	13.4	20.4	12.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.9	13.5	20.4	12.1
LOS	B	B	C	B
Approach Delay	15.9	13.5		13.3
Approach LOS	B	B		B
Queue Length 50th (m)	23.5	17.1	5.5	16.1
Queue Length 95th (m)	36.2	36.2	16.9	25.5
Internal Link Dist (m)	157.6	69.3		35.9
Turn Bay Length (m)			17.0	
Base Capacity (vph)	1112	1212	188	1275
Starvation Cap Reductn	0	3	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.68	0.44	0.37

Intersection Summary

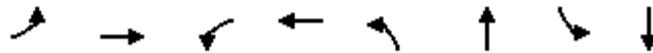
Cycle Length: 55  
 Actuated Cycle Length: 55  
 Offset: 48 (87%), Referenced to phase 2:NBT and 6:SBTL, Start of Green  
 Natural Cycle: 50  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.68  
 Intersection Signal Delay: 14.1  
 Intersection Capacity Utilization 71.5%  
 Analysis Period (min) 15

Intersection LOS: B  
ICU Level of Service C

Splits and Phases: 1: Bronson & Slater



Projected PM  
2: Bronson & Laurier



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	23	21	75	7	4	685	2	625
Lane Group Flow (vph)	0	57	0	160	0	782	0	671
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
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)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.4	23.4	23.4	23.4	30.5	30.5	30.5	30.5
Total Split (s)	24.0	24.0	24.0	24.0	31.0	31.0	31.0	31.0
Total Split (%)	43.6%	43.6%	43.6%	43.6%	56.4%	56.4%	56.4%	56.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.4		5.4		5.5		5.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		13.2		13.2		35.1		35.1
Actuated g/C Ratio		0.24		0.24		0.64		0.64
v/c Ratio		0.18		0.58		0.43		0.36
Control Delay		14.1		26.3		5.9		2.5
Queue Delay		0.0		0.0		0.1		0.0
Total Delay		14.1		26.3		6.0		2.5
LOS		B		C		A		A
Approach Delay		14.1		26.3		6.0		2.5
Approach LOS		B		C		A		A
Queue Length 50th (m)		3.7		14.3		8.8		4.1
Queue Length 95th (m)		9.4		25.7		26.3		7.7
Internal Link Dist (m)		66.2		479.7		47.5		69.3
Turn Bay Length (m)								
Base Capacity (vph)		444		391		1831		1850
Starvation Cap Reductn		0		0		132		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.13		0.41		0.46		0.36

Intersection Summary

Cycle Length: 55  
 Actuated Cycle Length: 55  
 Offset: 52 (95%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.58  
 Intersection Signal Delay: 6.8  
 Intersection Capacity Utilization 52.9%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 2: Bronson & Laurier



Projected PM  
3: Bronson & Gloucester

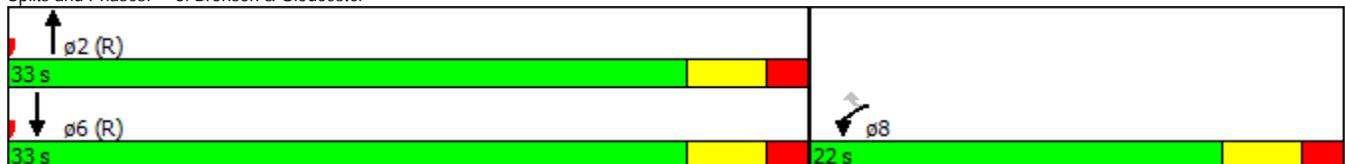


Lane Group	WBL	WBR	NBT	SBT
Lane Configurations				
Volume (vph)	104	85	658	709
Lane Group Flow (vph)	109	89	693	746
Turn Type	Prot	Perm	NA	NA
Protected Phases	8		2	6
Permitted Phases		8		
Detector Phase	8	8	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	25.1	25.1	25.1	22.1
Total Split (s)	22.0	22.0	33.0	33.0
Total Split (%)	40.0%	40.0%	60.0%	60.0%
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	1.8	1.8	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	5.1
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	None	C-Max	C-Max
Act Effct Green (s)	11.5	11.5	37.3	37.3
Actuated g/C Ratio	0.21	0.21	0.68	0.68
v/c Ratio	0.34	0.26	0.33	0.36
Control Delay	20.9	6.6	1.4	2.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	20.9	6.6	1.4	2.1
LOS	C	A	A	A
Approach Delay	14.4		1.4	2.1
Approach LOS	B		A	A
Queue Length 50th (m)	9.7	0.0	0.7	5.6
Queue Length 95th (m)	17.7	7.8	1.4	8.0
Internal Link Dist (m)	364.2		34.0	47.5
Turn Bay Length (m)				
Base Capacity (vph)	468	460	2070	2070
Starvation Cap Reductn	0	0	0	214
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.19	0.33	0.40

Intersection Summary

Cycle Length: 55  
 Actuated Cycle Length: 55  
 Offset: 54 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.36  
 Intersection Signal Delay: 3.3  
 Intersection Capacity Utilization 46.4%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A

Splits and Phases: 3: Bronson & Gloucester



Projected PM  
4: Bronson & Primrose

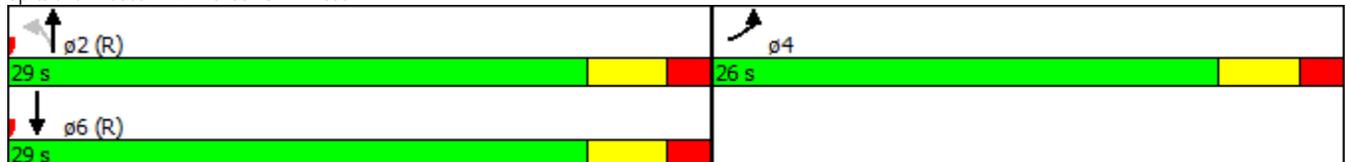


Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Volume (vph)	26	42	932	580
Lane Group Flow (vph)	73	0	1025	643
Turn Type	Prot	Perm	NA	NA
Protected Phases	4		2	6
Permitted Phases		2		
Detector Phase	4	2	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	25.2	23.2	23.2	23.2
Total Split (s)	26.0	29.0	29.0	29.0
Total Split (%)	47.3%	52.7%	52.7%	52.7%
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	1.9	1.9	1.9	1.9
Lost Time Adjust (s)	0.0		0.0	0.0
Total Lost Time (s)	5.2		5.2	5.2
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	C-Max	C-Max	C-Max
Act Effct Green (s)	12.0		40.8	40.8
Actuated g/C Ratio	0.22		0.74	0.74
v/c Ratio	0.21		0.50	0.29
Control Delay	9.6		8.6	7.2
Queue Delay	0.0		0.0	0.0
Total Delay	9.6		8.6	7.2
LOS	A		A	A
Approach Delay	9.6		8.6	7.2
Approach LOS	A		A	A
Queue Length 50th (m)	2.3		26.0	15.2
Queue Length 95th (m)	8.2		#77.8	30.7
Internal Link Dist (m)	71.5		171.7	46.0
Turn Bay Length (m)				
Base Capacity (vph)	561		2052	2241
Starvation Cap Reductn	0		0	0
Spillback Cap Reductn	0		0	0
Storage Cap Reductn	0		0	0
Reduced v/c Ratio	0.13		0.50	0.29

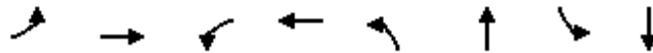
Intersection Summary

Cycle Length: 55  
 Actuated Cycle Length: 55  
 Offset: 49 (89%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.50  
 Intersection Signal Delay: 8.1  
 Intersection Capacity Utilization 78.4%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 4: Bronson & Primrose



Projected PM  
6: Bronson & Somerset W



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	ø1	ø3	ø5	ø7
Lane Configurations												
Volume (vph)	24	113	80	178	63	544	21	496				
Lane Group Flow (vph)	25	150	84	203	0	692	0	593				
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA				
Protected Phases		4		8		2		6	1	3	5	7
Permitted Phases	4		8		2		6					
Detector Phase	4	4	8	8	2	2	6	6				
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	18.9	18.9	18.9	18.9	18.8	18.8	18.8	18.8	7.0	7.0	7.0	7.0
Total Split (s)	32.0	32.0	32.0	32.0	53.0	53.0	53.0	53.0	5.0	5.0	5.0	5.0
Total Split (%)	33.7%	33.7%	33.7%	33.7%	55.8%	55.8%	55.8%	55.8%	5%	5%	5%	5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0	2.0	2.0
All-Red Time (s)	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0				
Total Lost Time (s)	5.9	5.9	5.9	5.9		5.8		5.8				
Lead/Lag	Lag	Lead	Lead	Lead	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	Max	Max	Max	Max	C-Max	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	26.1	26.1	26.1	26.1		47.2		47.2				
Actuated g/C Ratio	0.27	0.27	0.27	0.27		0.50		0.50				
v/c Ratio	0.11	0.38	0.39	0.47		0.57		0.44				
Control Delay	27.4	31.2	34.5	33.0		19.1		16.7				
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0				
Total Delay	27.4	31.2	34.5	33.0		19.1		16.7				
LOS	C	C	C	C		B		B				
Approach Delay		30.7		33.4		19.1		16.7				
Approach LOS		C		C		B		B				
Queue Length 50th (m)	3.4	22.2	12.5	31.0		44.8		35.2				
Queue Length 95th (m)	9.9	39.5	26.4	51.7		61.9		48.7				
Internal Link Dist (m)		306.8		381.0		115.2		171.7				
Turn Bay Length (m)												
Base Capacity (vph)	228	399	216	431		1213		1345				
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	0.11	0.38	0.39	0.47		0.57		0.44				

Intersection Summary

Cycle Length: 95  
 Actuated Cycle Length: 95  
 Offset: 24 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.57  
 Intersection Signal Delay: 21.8  
 Intersection Capacity Utilization 81.0%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service D

Splits and Phases: 6: Bronson & Somerset W

	ø2 (R)		ø4
5 s	53 s	5 s	32 s
	ø6 (R)		ø7
5 s	53 s	5 s	32 s
	ø8		

Projected PM  
5: Cambridge & Primrose

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	33	108	2	4	42	33	1	0	8	33	3	23
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)	35	114	2	4	44	35	1	0	8	35	3	24
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	151	83	9	62								
Volume Left (vph)	35	4	1	35								
Volume Right (vph)	2	35	8	24								
Hadj (s)	0.07	-0.21	-0.48	-0.09								
Departure Headway (s)	4.2	4.0	4.0	4.3								
Degree Utilization, x	0.18	0.09	0.01	0.07								
Capacity (veh/h)	835	874	837	777								
Control Delay (s)	8.1	7.4	7.0	7.7								
Approach Delay (s)	8.1	7.4	7.0	7.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.8									
Level of Service			A									
Intersection Capacity Utilization			33.8%	ICU Level of Service	A							
Analysis Period (min)			15									

Projected PM  
8: Bronson & Site



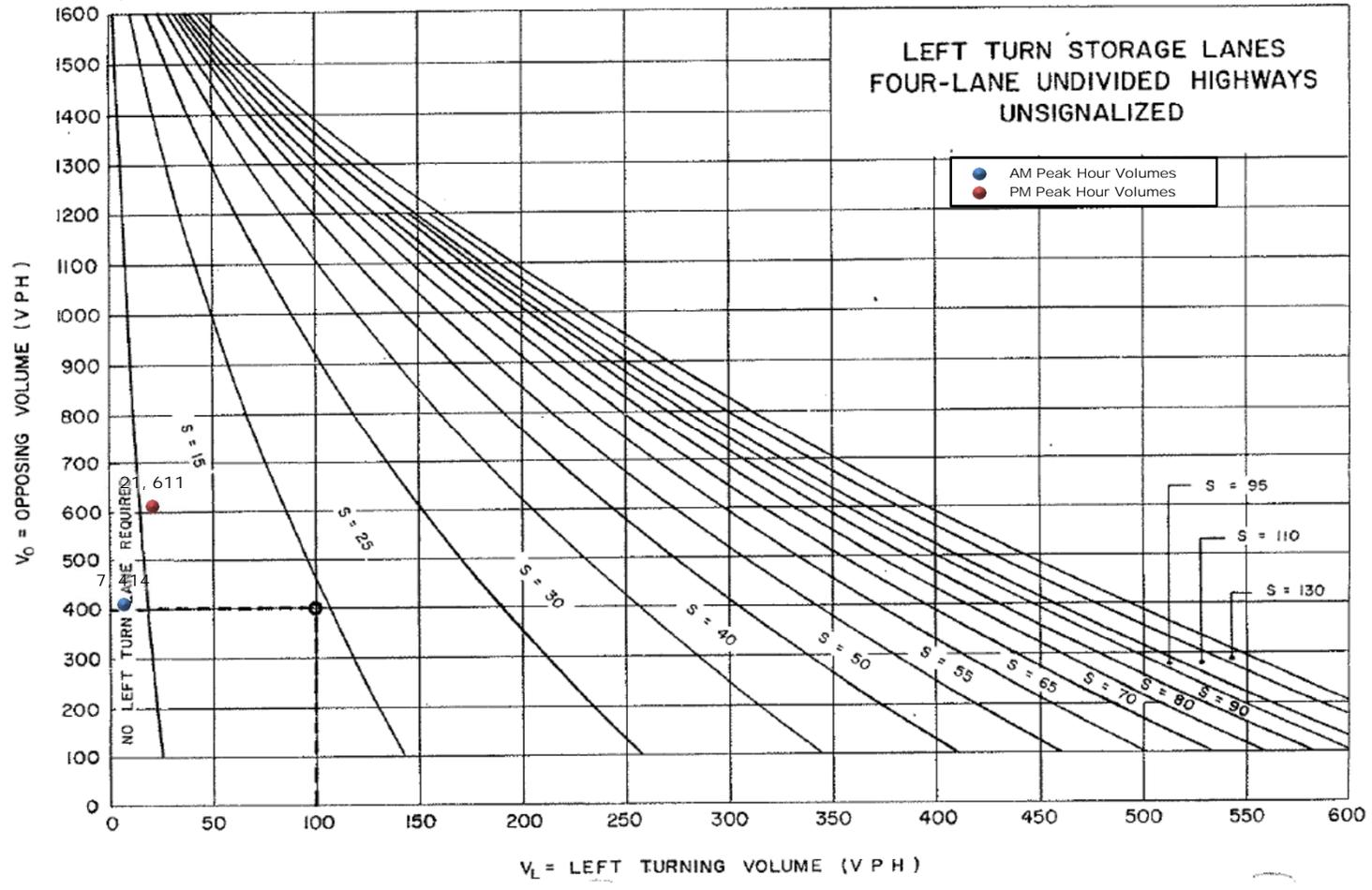
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	9	13	21	937	597	14
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	9	14	22	986	628	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				70	58	
pX, platoon unblocked	0.88	0.94	0.94			
vC, conflicting volume	1173	322	643			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	597	141	484			
iC, single (s)	6.8	6.9	4.1			
iC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	98			
cM capacity (veh/h)	373	826	1007			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	23	351	658	419	224	
Volume Left	9	22	0	0	0	
Volume Right	14	0	0	0	15	
cSH	552	1007	1700	1700	1700	
Volume to Capacity	0.04	0.02	0.39	0.25	0.13	
Queue Length 95th (m)	1.0	0.5	0.0	0.0	0.0	
Control Delay (s)	11.8	0.8	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	11.8	0.3		0.0		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.3			
Intersection Capacity Utilization			53.2%	ICU Level of Service		A
Analysis Period (min)			15			

Appendix B  
Left-Turn Warrant Analysis

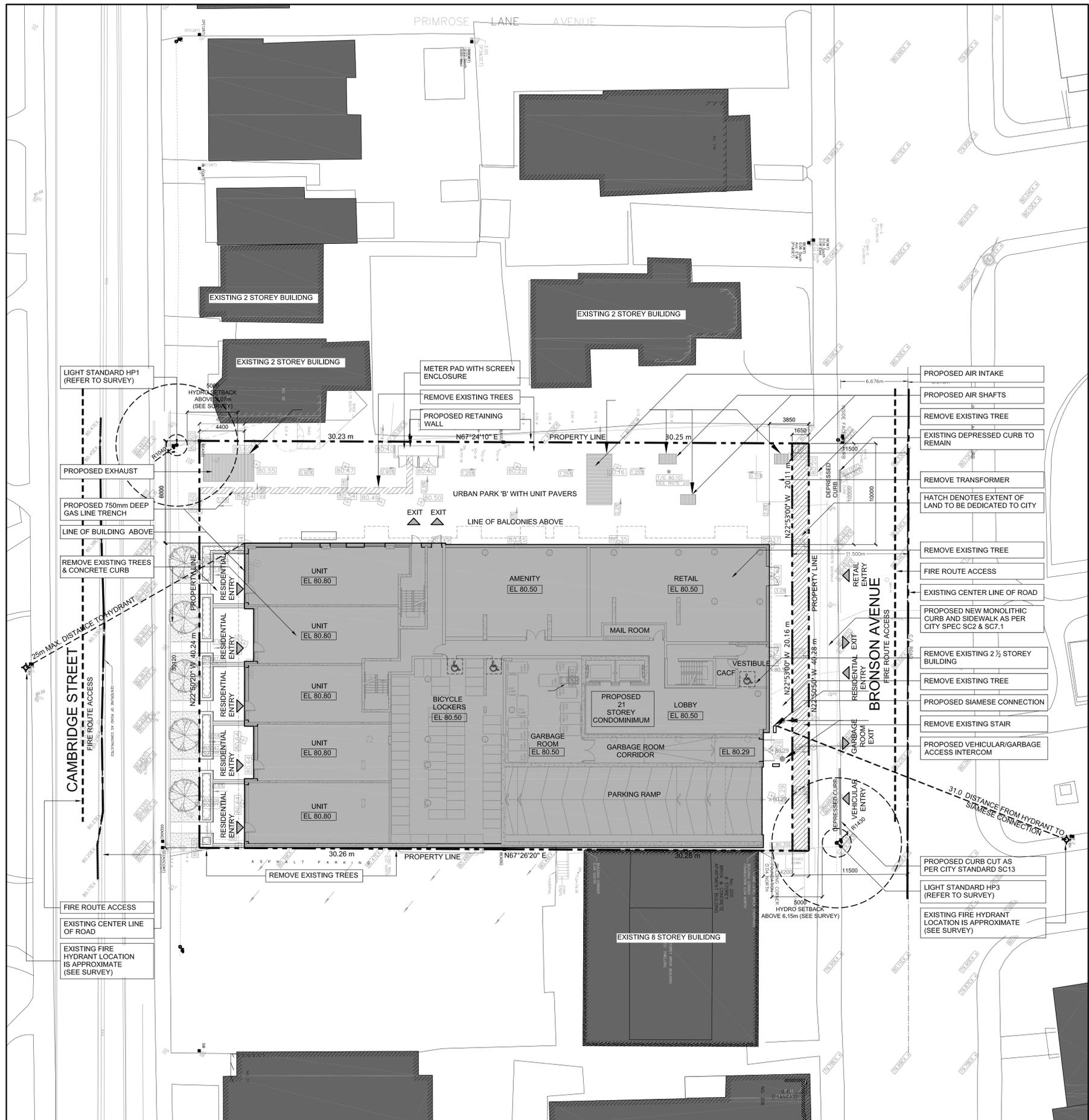
	Design Speed	Advancing Traffic Volume ( $V_A$ )		Opposing Traffic Volume ( $V_O$ )		Left Turn Traffic Volume ( $V_L$ )		% of Left Turning Traffic		Warrant Left Turn Lane
		AM	PM	AM	PM	AM	PM	AM	PM	
Existing										
Bronson/Site	60	838	958	414	611	7	21	1%	2%	Yes

Peak	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
	Warrant?											
AM	7	831	0	0	410	4	19	0	28	0	0	0
PM	21	937	0	0	597	14	9	0	13	0	0	0

Figure EB-1



Appendix C  
Revised Site Plan



**4 SITE PLAN**  
SCALE: 1:200

**PROJECT CONTACTS**

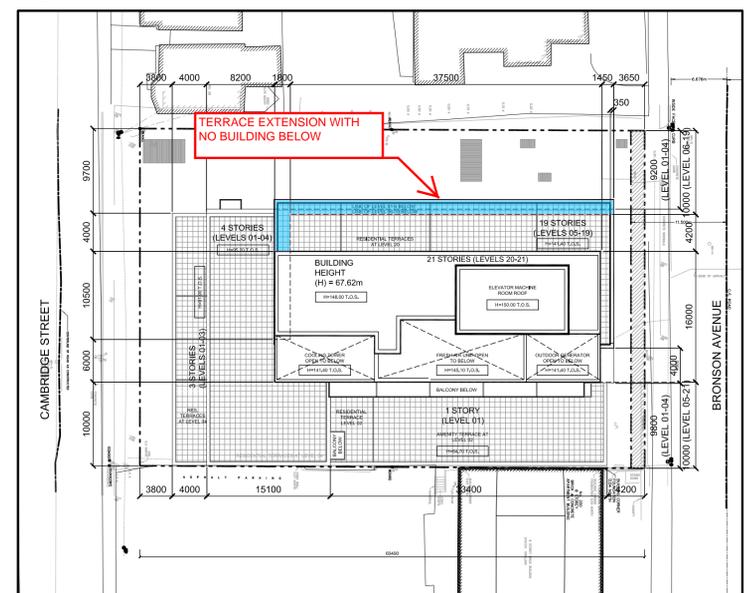
<b>CLIENT</b> LAMB DEVELOPMENT CORP. 778 KING STREET WEST TORONTO, ON M5V 1N6	<b>LANDSCAPE</b> OZ PLANNING + DESIGN INC. 510 255 17 AVENUE SW CALGARY, AB T2S 2T8	<b>MECHANICAL &amp; ELECTRICAL</b> TRACE ENGINEERING 85 CURLEW DRIVE NORTH YORK, ON M3A 2P8
<b>ARCHITECT</b> CORE ARCHITECTS INC. 317 ADELADE STREET WEST TORONTO, ON M5V 1P9	<b>SURVEYOR</b> STANTEC 1331 CLAYDE AVE., SUITE 400 OTTAWA, ON K2G 3H7	<b>CIVIL ENGINEER</b> BI GROUP SUITE 400-333 PRESTON STREET OTTAWA, ON K1S 5M4
<b>PLANNER</b> FOURTEEN PLANNING AND URBAN DESIGN 223 MCLEOD STREET OTTAWA, ON K2P 0G3	<b>STRUCTURAL</b> JACOBSNY PARTNERS 1131 LESLIE, UNIT A NORTH YORK, ON M2C 3J3	<b>TRANSPORTATION &amp; TRAFFIC</b> DELCOAN 1223 MICHAEL STREET, SUITE 100 OTTAWA, ON K1J 7T2

**3 PROJECT CONTACTS**  
A100

**ZONING TABLE**

CURRENT ZONING	RHM (H19) R4T	PROGRAM	MIXED USE OCCUPANCY	LEVEL 03 & 04: RESIDENTIAL UNITS LEVEL 05: RESIDENTIAL UNITS LEVEL 06 TO 19: RESIDENTIAL UNITS LEVEL 20: RESIDENTIAL UNITS LEVEL 21: RESIDENTIAL UNITS
SITE AREA TOTAL AREA FOR THE FOLLOWING ADDRESSES: 192 BRONSON AVENUE 196 BRONSON AVENUE 31 CAMBRIDGE ST. N.	2,433.51m <sup>2</sup> (26,194ft <sup>2</sup> ) SURVEY BY STANTEC GEOMATICS LTD. TEL (613) 722-4420 FAX (613) 722-0789	NO. OF DWELLING UNITS	211 UNITS	
RETAIL AREA	149.9m <sup>2</sup> (1,613ft <sup>2</sup> )	REQUIRED	30% ZONE PROVISION (9), BY-LAW 2008-341	PROVIDED 30% AT GRADE
PERCENTAGE OF SITE AS LANDSCAPED AREA (SITE AREA-GCA/SITE AREA*% LANDSCAPED)		HEIGHT AVERAGE GRADE TO ROOF T.O.S. (TOP OF SLAB)	CAMBRIDGE ST.: 14.50m BRONSON AVE.: 19.00m	67.62m (TOP OF SLAB) AVERAGE GRADE: # 80.38m
SETBACKS UNDER CURRENT ZONING	EAST (BRONSON AVE.): 3.00m WEST (CAMBRIDGE ST.): 3.00m NORTH: 1.50m SOUTH: 1.50m	LOADING	0 REQUIRED WHEN RETAIL AREA IS LESS THAN 999 m <sup>2</sup>	NONE
AMENITY SPACE TOTAL: 6 SQ. M./UNIT OF WHICH 50% IS REQUIRED TO BE COMMUNAL	TOTAL: 1,266m <sup>2</sup> COMMUNAL: 633m <sup>2</sup>	PARKING	RESIDENTIAL: 0.5 SPACES PER UNIT VISITOR: 0.05 PER UNIT RETAIL: 0 SPACES FOR 150m <sup>2</sup> OF RETAIL, GFA OR LESS	TOTAL PROVIDED: 192 SPACES RESIDENTIAL: 170 SPACES SMALL CARS: 5 SPACES VISITOR: 17 SPACES RETAIL: 0 SPACES
BICYCLE PARKING	TOTAL SPACES: 107 SPACES RESIDENTIAL: 0.5 SPACES PER UNIT RETAIL: 1 SPACES	TOTAL DEDUCTIONS TOTAL GROSS FLOOR AREA (TO THE INSIDE OF THE EXTERIOR WALL)	REFER TO GFA TABLE ON A002	TOTAL PROVIDED IN LOCKERS: 128 SPACES RESIDENTIAL: 60 LOCKERS, AT GROUND LEVEL 56 LOCKERS, AT LEVEL P1 RETAIL: 12 SPACES (8 BIKE RACKS AT SIDEWALK)

**2 ZONING TABLE**  
A100



**1 ZONING PLAN**  
SCALE: 1:400

**NOTES**  
REFER TO LANDSCAPE DRAWINGS FOR LANDSCAPE INFORMATION  
FOR EXISTING TREES TO BE REMOVED, SEE ARBORIST REPORT

**LEGEND**  
BICYCLE PARKING LOCKER:  
AT GROUND LEVEL AND P1 ONLY

**GARBAGE**  
2135 (847)

**RECYCLING**  
2135 (847)

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PROJECT NORTH

Drawn DA Scale AS NOTED  
Checked CB/DA Date 18 APRIL 2014

SITE PLAN  
ZONING TABLE, ZONING PLAN  
PROJECT CONTACTS

Project No. 13-128 Drawing No. **A101**