Merivale Road Central Park Mixed-Use Development

Transportation Impact Study / Community Transportation Study

Prepared by:

Delcan
TRANSPORTATION • INFORMATION TECHNOLOGY • WATER

CTS/TIS Check List

prepared for: Ashcroft Homes
18 Antares Drive
Ottawa, ON K2E 1A9

OUR REF: TO3020TOI00

Report Context

- ☑ Municipal address;
  No inclusion rational: _____
- ☑ Location relative to major elements of the existing transportation system (e.g., the site is located in the southwest quadrant of the intersection of Main Street/ First Street, 600metres from the Maple Street Rapid Transit Station);
  No inclusion rational: _____
- ☑ Existing land uses or permitted use provisions in the Official Plan, Zoning By-law, etc.;
  No inclusion rational: _____
- ☑ Proposed land uses and relevant planning regulations to be used in the analysis;
  No inclusion rational: _____
- ☑ Proposed development size (building size, number of residential units, etc.) and location on site;
  No inclusion rational: _____
- ☑ Estimated date of occupancy;
  No inclusion rational: _____
- ☑ Planned phasing of development;
  No inclusion rational: _____
- ☑ Proposed number of parking spaces (not relevant for Draft Plans of Subdivision);
  No inclusion rational: _____
- ☑ Proposed access points and type of access (full turns, right-in/ right-out, turning restrictions, etc.
  No inclusion rational: _____
- ☑ Study area;
  No inclusion rational: _____

Existing Conditions

- ☑ Existing roads and ramps in the study area, including jurisdiction, classification, number of lanes, and posted speed limit;
  No inclusion rational: _____
- ☑ Existing intersections, indicating type of control, lane configurations, turning restrictions, and any other relevant data (e.g., extraordinary lane widths, grades, etc.);
  No inclusion rational: _____
- ☑ Existing access points to adjacent developments (both sides of all roads bordering the site);
  No inclusion rational: _____
- ☑ Existing transit system, including stations and stops;
  No inclusion rational: _____
- ☑ Existing on- and off-road bicycle facilities and pedestrian sidewalks and pathway networks;
  No inclusion rational: _____
- ☑ Existing system operations (V/C, LOS);
  No inclusion rational: _____
- ☑ Major trip generators/ attractors within the Study Area should be indicated.
  No inclusion rational: _____

Demand Forecasting

- ☑ General background growth;
  No inclusion rational: _____
- ☑ Other study area developments;
  No inclusion rational: _____
- ☑ Changes to the study area road network;
  No inclusion rational: _____
- ☑ Future background system operations (V/C, LOS, queue lengths):
  No inclusion rational: _____
- ☑ Trip generation rates;
  No inclusion rational: _____
- ☑ Trip distribution and assignment.
  No inclusion rational: _____

Impact Analysis

- ☑ Total future system operations (V/C, LOS, queue lengths);

  No inclusion rational: _____
- ☑ Signal and auxiliary lane (device) warrants;

  No inclusion rational: _____
- ☑ Operational/ safety assessment (e.g., sight line assessment where grades are an issue);

  No inclusion rational: _____
- ☑ Storage analysis for closely spaced intersections;

  No inclusion rational: _____
- ☑ Pedestrian and bicycle network connections and continuity;

  No inclusion rational: _____
- ☑ On-site circulation and design;

  No inclusion rational: _____
- ☑ Potential for neighbourhood impacts; and TDM.

  No inclusion rational: _____
- ☑ Synchro Files

  No inclusion rational: _____

CTS

Impact Analysis

- ☑ Network Capacity Analysis;

  No inclusion rational: _____
- ☑ Non-auto network connections and continuity;

  No inclusion rational: _____
- ☑ Potential for community impacts, and TDM.

  No inclusion rational: _____
- ☑ Synchro Files

  No inclusion rational: _____
- ☑ Screenline Analysis

  No inclusion rational: _____

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Transportation Impact Study / Community Transportation Study

prepared for:
Ashcroft Homes
18 Antares Drive
Ottawa, ON K2E 1A9

prepared by:
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1223 Michael Street
Suite 100
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May 4, 2011

TO3020TOI00

TRAFFIC IMPACT ASSESSMENT UPDATE

The Site Plan included within the Transportation Impact Assessment (TIA) submitted as part of the Zoning By-Law Amendment Application has since undergone minor changes to the total number of proposed parking spaces and the overall gross floor area (GFA) of the site.

The total amount of proposed parking has decreased by 6 spaces from 1107 vehicle parking spaces to 1101 vehicle parking spaces. This new total number of parking spaces is still sufficient with respect to the City's Zoning By-Law requirements of 1000 total parking spaces for Area B identified in Schedule 1 of the City's Zoning By-Law.

The overall GFA has increased by approximately 18,000 ft^2 (2%) from an approximate total of 929,000 ft^2 to approximately 947,000 ft^2. This change results in an approximate increase of 20 to 40 veh/h (3% and 5%) more potential "new" two-way vehicle trips for the proposed development during the weekday morning and afternoon peak hours respectively, than the total potential "new" two-way vehicle trips summarized within the original TIA. This increase in projected traffic volumes is not significant and has no impact on the findings and conclusions of the TIA.

Therefore, the conclusions and recommendations found within the TIA remain valid and the proposed Merivale Road Central Park Mixed-Use Development is still recommended from a transportation perspective.

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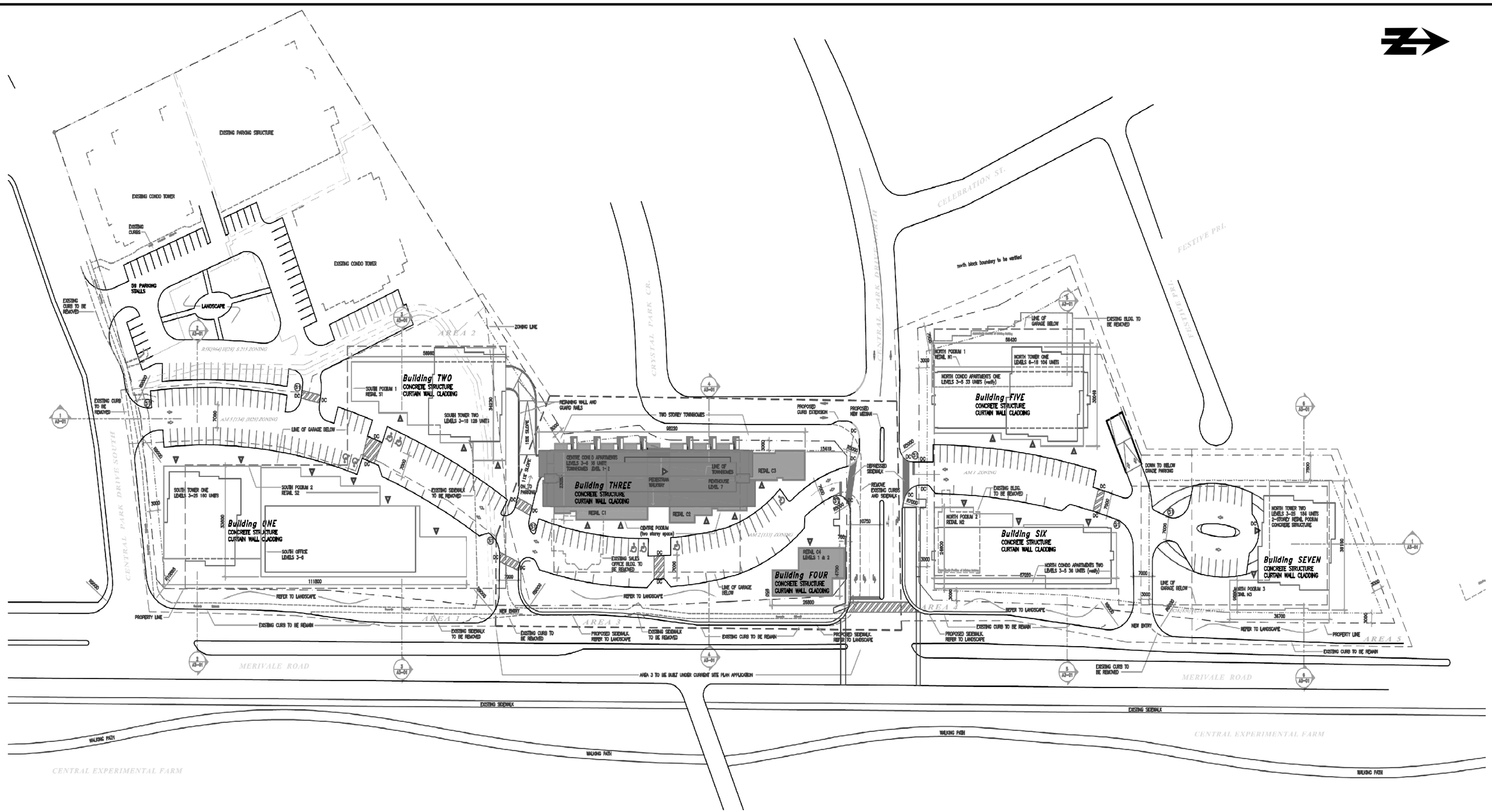
1. INTRODUCTION

From our review of the background material provided, Ashcroft Homes is proposing to construct a multi-use development consisting of approximately 740 high-rise condominium/townhome units, 180,000 ft^2 of retail and 48,000 ft^2 office type land uses contained within the municipal addresses of 1230 Merivale Road, 1232 Merivale Road, 1 Crystal Park Crescent and 300 Central Park Drive. Potential retail land uses will consist of restaurant, specialty retail, bank and pharmacy type land uses. The local site context is depicted in Figure 1 and the Site Plan is provided as Figure 2.

Figure 1: Site Context

The planned phasing of the proposed development is dependent on market demand and will occur over several years. However, depending on the approval process, the construction of Phase 1, consisting of the central buildings located between Central Park North and South could occur during the 2012/2013 time frame.

As part of the rezoning and subsequent Site Plan Approval process, the City of Ottawa requires submission of a formal Transportation Impact Assessment (TIA) consistent with their guidelines dated October 2006. For a rezoning and for this level of development, a combined Transportation Impact Study (TIS)/Community Transportation Study (CTS) is the appropriate type of study for the subject application.



Delcan

Figure 2: Site Plan

2. EXISTING CONDITIONS

2.1 Study Area

The subject site is located along the west side of Merivale Road from the northwest corner of the signalized Central Park S./Merivale intersection to approximately 200 meters north of the signalized Central Park N./Merivale intersection. The study area limits include the signalized Kirkwood/Merivale, Central Park N./Merivale, Central Park S./Merivale and the Baseline/Merivale intersections. Also included in the following analysis is the existing unsignalized Central Park N./Crystal Park/Retail Plaza intersection.

As depicted in Figure 2, the site will be accessed by two right-in/right-out driveway connections to Merivale Road and a new North-South Spine Road that will run parallel to Merivale Road and have full-movement connections to Central Park Drive North and South.

2.2 Area Road Network

Merivale Road is a major north-south arterial, which extends from Prince of Wales Drive in south to Island Park Drive in the north. Within the study area, Merivale Road has a four-lane cross-section and auxiliary turn lanes at major intersections. The posted speed limits within the study area are 50 and 60 km/h.

Baseline Road is a major east-west arterial, which extends from Richmond Road in the west to Prince of Wales Drive in the east where it continues as Heron Road. Within the study area, Baseline Road has a four-lane cross-section and auxiliary turn lanes at major intersections. The posted speed limit within the study area is 60 km/h.

Central Park Drive is a local roadway that currently serves the residential Central Park community. Central Park Drive has a two-lane cross-section with parking permitted along both sides. The posted speed limit on Central Park Drive is 50 km/h.

2.3 Pedestrian/Cycling Network

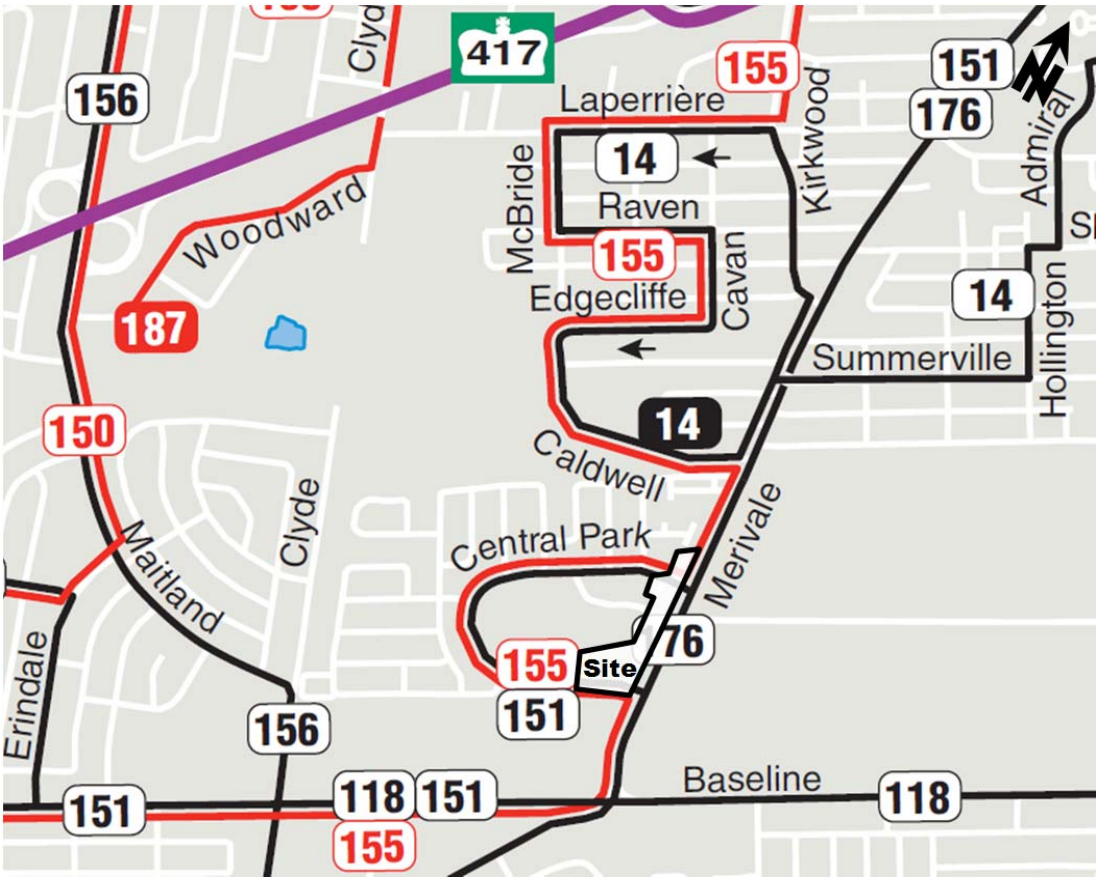
Sidewalk facilities in the vicinity of the proposed site are provided along both sides of the study area streets and a multi-use recreational pathway exists along the eastside of Merivale Road, which connects to an east-west pedestrian/cycling network just south of Caldwell Avenue. Bike lanes are currently provided in both directions on Merivale Road between Central Park Drive S. and Baseline Road.

According to the City's 2008 Official Cycling Plan (OCP), Merivale Road and Baseline Road are classified as "spine or City-wide" cycling routes and Kirkwood Avenue is classified as a "community" cycling route. Bike lanes are proposed on Merivale Road and on Baseline Road in the long term (2018-2028) along their entire lengths and shared-use lanes are proposed on Baseline Road in the short term (2008-2018) along its entire length.

2.4 Transit Network

Transit service within the vicinity of the site is provided by OC Transpo Routes #151, 155 and 176. Bus stops for Routes #151, 155 and 176 are located on Merivale Road, 160 meters south of Caldwell Avenue and approximately 40 meters south of the Central Park Drive S. Bus stops on Central Park Drive are located approximately every 160 meters along its length for Routes #151 and 155.

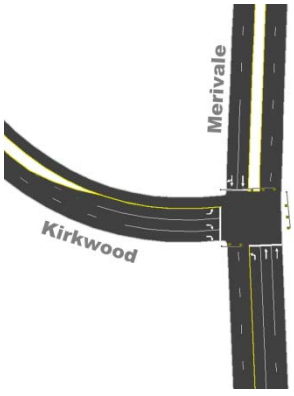
Figure 3: Area Transit Network



Black Routes #151 and 176 provide frequent all-day service and Red Route 155 provides weekday morning and afternoon peak hour service only. Existing Study Area Intersections

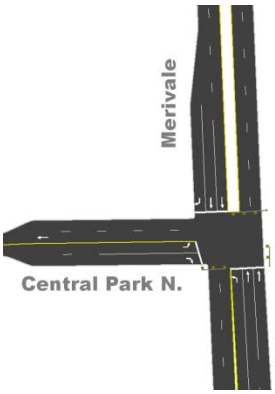
Kirkwood / Merivale

The Kirkwood/Merivale intersection is a signalized 'T' intersection. The eastbound approach consists of a single left-turn lane, and two right-turn lanes. The northbound approach consists of a single left-turn lane and two through lanes. The southbound approach consists of a single shared through/right-turn lane and a single through lane. All turning movements are permitted.



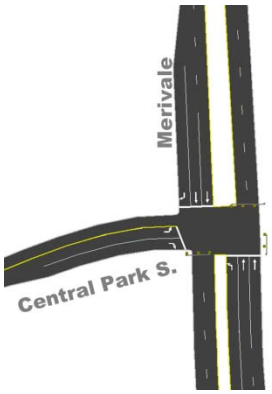
Central Park N./Merivale

The Central Park N./Merivale intersection is a signalized, 'T' intersection. The northbound approach consists of a single left-turn lane and two through lanes. The southbound approach consists of a single right-turn lane and two through lanes. The eastbound approach consists of single left and right-turn lanes. All turning movements are permitted.



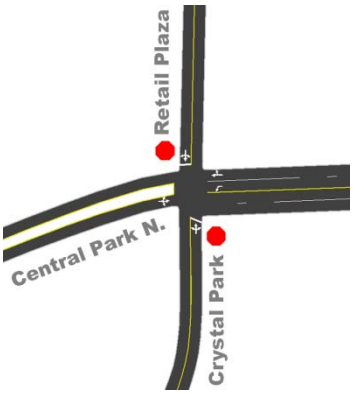
Central Park S./Merivale

The Central Park S./Merivale intersection is a signalized, 'T' intersection. The northbound approach consists of a single left-turn lane and two through lanes. The southbound approach consists of a single right-turn lane and two through lanes. The eastbound approach consists of single left and right-turn lanes. All turning movements are permitted.



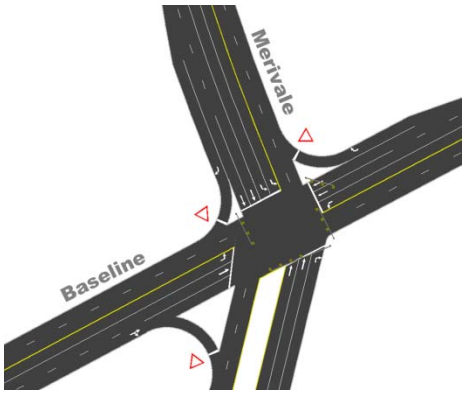
Central Park N./Crystal Park

The Central Park N./Crystal Park intersection is an unsignalized four-legged intersection. The east, west north and southbound approaches consist of single all-movement lanes. However, Central Park Drive is wide enough for through vehicles to slip around vehicles waiting to turn. All turning movements are permitted.



Baseline / Merivale

The Baseline/Merivale intersection is a signalized four-legged intersection. The eastbound approach consists of a single left-turn lane, single through lane and a single shared through/right-turn lane (the right-turn is channelized). The westbound approach consists of a single left-turn lane, two through lanes and a single channelized right-turn lane. The northbound approach consists of two through lanes and a single right-turn lane. The southbound approach consists of two left-turn lanes, two through lanes and a single right-turn lane. Northbound left-turns are not permitted.



2.5 Traffic Volumes

The City provided the most recent weekday peak hour counts at the signalized study area intersections and Delcan conducted weekday morning and afternoon peak hour counts at the unsignalized Central Park N./Crystal Park/Retail Plaza intersection during the month of February 2011. It is noteworthy that this intersection accommodates the majority of traffic generated by the existing Tim Hortons. Existing volumes are illustrated as Figure 4.

2.6 Existing Intersection Operations

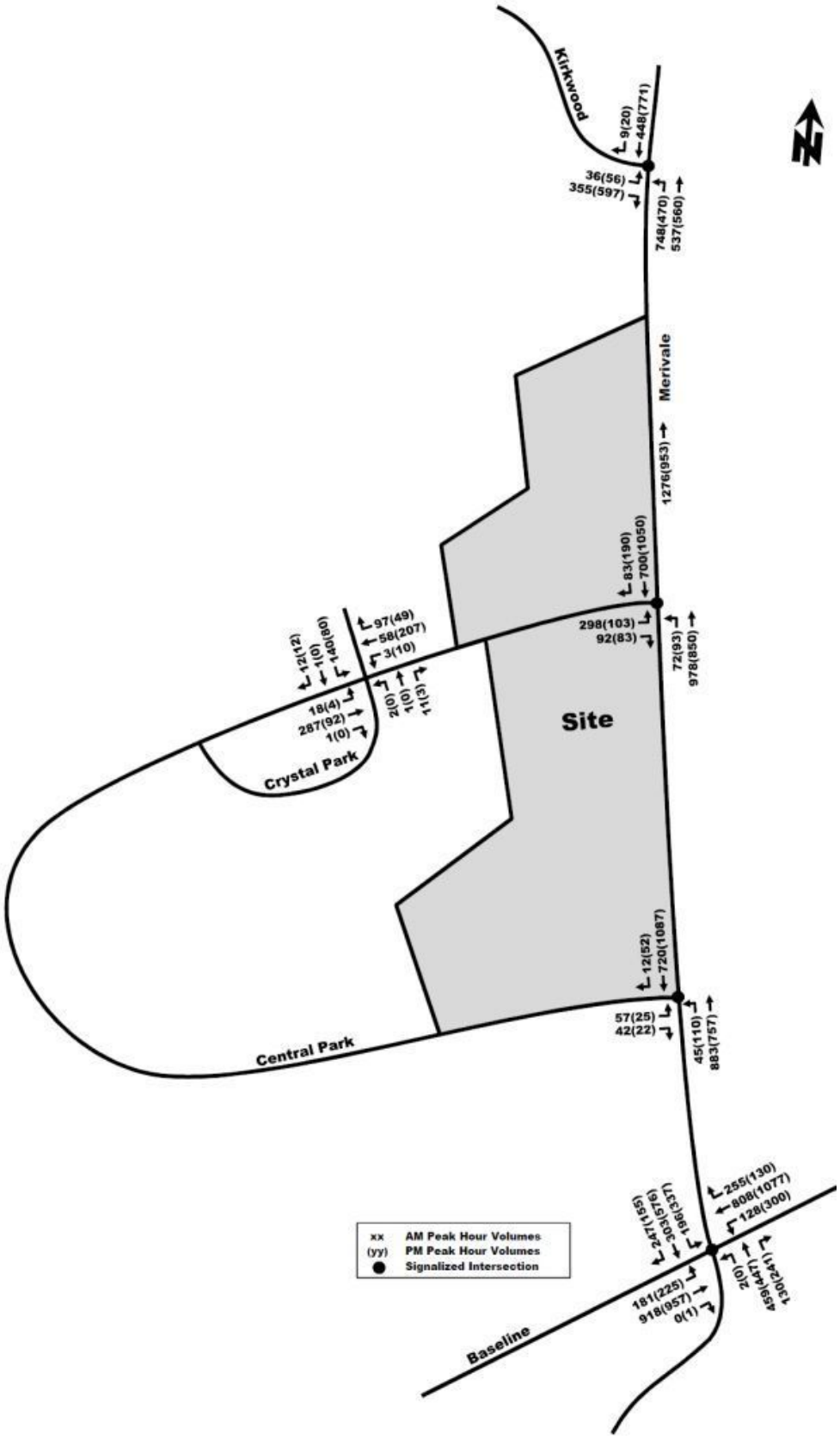
Table 1 provides a summary of existing traffic operations at study area intersections based on the SYNCHRO (V7) traffic analysis software. The subject intersections were assessed in terms of the volume-to-capacity (v/c) ratio and the corresponding Level of Service (LoS) for the critical movement(s). The subject intersections 'as a whole' were assessed based on a weighted v/c ratio. Existing peak hour traffic counts are provided within Appendix A and the Synchro model output of existing conditions are provided within Appendix B.

Table 1: Existing Performance at 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
Baseline/Merivale	C(F)	0.79(1.08)	EBL(WBL)	37.7(63.3)	C(E)	0.75(0.94)
Central Park S./Merivale	A(A)	0.36(0.51)	NBT(SBT)	8.5(3.0)	A(A)	0.35(0.48)
Central Park N./Merivale	C(D)	0.75(0.84)	EBL(SBT)	16.6(17.0)	B(C)	0.65(0.79)
Central Park N./ Crystal Park/Retail Plaza	C(B)	15.4(12.2)	SBL(SBL)	4.3(2.7)	-	-
Kirkwood/Merivale	F(F)	1.08(1.03)	NBL(NBL)	32.8(27.4)	C(C)	0.71(0.73)

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

Figure 4: Existing Traffic Volumes



As shown in Table 1, with the exception of the Baseline/Merivale intersection during the afternoon peak hour, the signalized study area intersections, 'as a whole', are currently operating at an acceptable LoS 'C' or better during both peak hours, with respect to the City of Ottawa operating standards of LoS 'D' or better (*0.90 > v/c > 0.00*). The Baseline/Merivale intersection during the weekday morning peak hour is currently also operating acceptably 'as a whole' at an overall LoS 'C', however, it is currently operating with an overall LoS 'E' during the afternoon peak hour. With regard to 'critical movements' at study area intersections, they are operating acceptably at an LoS 'D' or better during peak hours with the exception of the failing northbound left-turn during both peak hours at the Kirkwood/Merivale intersection and the failing westbound left-turn at the Baseline/Merivale intersection during the afternoon peak hour.

Consistent with field observations, the current peak hour 95th percentile queues, as estimated in Synchro, in the critical eastbound direction at the Central Park N./Merivale intersection are approximately 3 to 9 vehicles (65 and 25 meters during the weekday morning and afternoon peak hours, respectively). Observed eastbound queues at the Central Park S./Merivale intersection were approximately 1 to 3 vehicles (10 to 20 meters) on during the weekday morning and afternoon peak hours.

2.7 Existing Road Safety Conditions

Collision history for study area roads (2007 to 2009) was obtained from the City of Ottawa. Most collisions (74%) involved only property damage, indicating low impact speeds and 25% were non-fatal, while the rest (1%) were non reportable. The primary causes of collisions cited by police include rear end (47%), sideswipe (15%) and turning movement (14%) type collisions.

At intersections within the study area, collisions take place at a rate of 0.66, 0.25, 0.23, and 0.75 per million entering vehicles at the Kirkwood/Merivale, Central Park N./Merivale, Central Park S./Merivale and Baseline/Merivale intersections, respectively.

Based on the available data, there does not appear to be any safety issues within the study area. The source collision data as provided by the City of Ottawa and the analysis is provided as Appendix C.

3. PROJECTED CONDITIONS

3.1 Background Traffic Growth

Background traffic growth through the immediate study area was determined from the available historical count data (years 2004, 2006 and 2010) provided by the City of Ottawa at the Baseline/Merivale intersection. Average annual background growth is summarized in Table 2 and detailed analysis is attached as Appendix D.

Table 2: Baseline / Merivale Historical Background Growth (2004 – 2010)

Time Period	Percent Annual Change				
	North Leg	South Leg	East Leg	West Leg	Overall
AM Peak	-1.50%	-2.74%	-0.52%	1.23%	**-0.52%**
PM Peak	-2.58%	-0.34%	-0.38%	-0.48%	**-0.86%**

As shown in Table 2, Merivale Road has experienced a negative annual growth in past years along the frontage of the proposed site (north leg of Baseline/Merivale). Therefore, for the purpose of this assessment, the subsequent analysis will assume a background growth rate of zero.

3.2 Future Screenline Analysis

In keeping with the City of Ottawa requirements for Zoning By-Law changes it is necessary to address the future macro-transportation network situation at the most adjacent screenline to the site of the proposed rezoning. In the case of the subject site, the most adjacent screenline in the City Strategic Screenline system is the CPR Screenline (#27-29) which follows the CPR Railway Corridor from the Ottawa River Parkway to Colonel By Drive.

The recently approved 2008 Transportation Master Plan includes detailed analysis of the CPR Screenline conditions by 2031, the horizon year of the new City of Ottawa Official Plan. An extract from the 2008 TMP is shown in Table 3. As shown in Table 3, at the CPR Screenline, by 2031, subject to the achievement of a 51%/52% transit model split during the a.m./p.m. peak hours respectively (as compared to the current 37% (a.m.) and 32% (p.m.) modal splits) there would be no major road network capacity deficiency during the afternoon peak hour at 2031, while a deficiency of approximately 500 PCU would arise during the morning peak hour.

Consequently, the projected level of service during the morning peak hour would be LoS 'E' (v/c = 0.94) with LoS 'D' (v/c = 0.90) during the afternoon.

Table 3: 2008 Transportation Master Plan: CPR Screenline Analysis: 2031

Screenline Name and Number	Total Peak Hour Person Trips Peak Direction am/pm (model)	Peak Hour Transit Modal Split (model)	Peak Hour Auto Person Trips (modal)	Assumed Auto Occupancy Factor	Projected pcus / hour / peak direction	Assumed Commercial Vehicle Factor	Projected Total pcus / hour / peak direction	Current Screenline Capacity LoS 'D' pcus	Projected Screenline Deficiency by 2031 pcus / dir.
CPR Line #27-29	34,200/ 33,200	51%/ 52%	16,700/ 16,100	1.20 ppv	13,920/ 13,420	1.16	16,150/ 15,570	15,660	490/ none

The implementation of light rail through the Downtown Core and within the O-Train Corridor, combined with the development of Carling Avenue as a supplementary transit corridor is anticipated to deliver the rapid transit modal splits that are forecast in the 2008 TMP as being achievable by 2031, i.e., 51%/52%.

As the proposed supplementary transit system is likely to utilize the existing lanes/median on Carling Avenue in the vicinity of the CPR Screenline, there is limited opportunity to address the projected morning peak hour deficiency. Nevertheless, the following is likely to have the potential to further relieve the projected morning congestion at the west-end of the downtown by 2031;

- The Highway 417 improvements by MTO through the Central Area;
- The recently adopted recommendations to implement a six-lane Hunt Club Road, extending Hunt Club Road to an interchange on Highway 417 East;
- The construction of a new Strandherd-Armstrong Bridge over the Rideau River; and
- The potential construction of a second new Rideau River Bridge linking Fallowfield and Leitrim Roads.

3.3 Existing Land Uses

Delcan recently conducted turning movement counts (February 2011) at the Central Park N./Crystal Park/Retail Plaza intersection to capture trips generated by the existing retail land uses to be replaced by the proposed development. To establish a baseline for future analysis, trips to/from the north leg of the Central Park N./Crystal Park/Retail Plaza intersection were removed and adjacent study area intersections were balanced accordingly. These volumes were removed, as the existing plaza will ultimately be replaced by the proposed new development. Baseline volumes are illustrated as Figure 5.

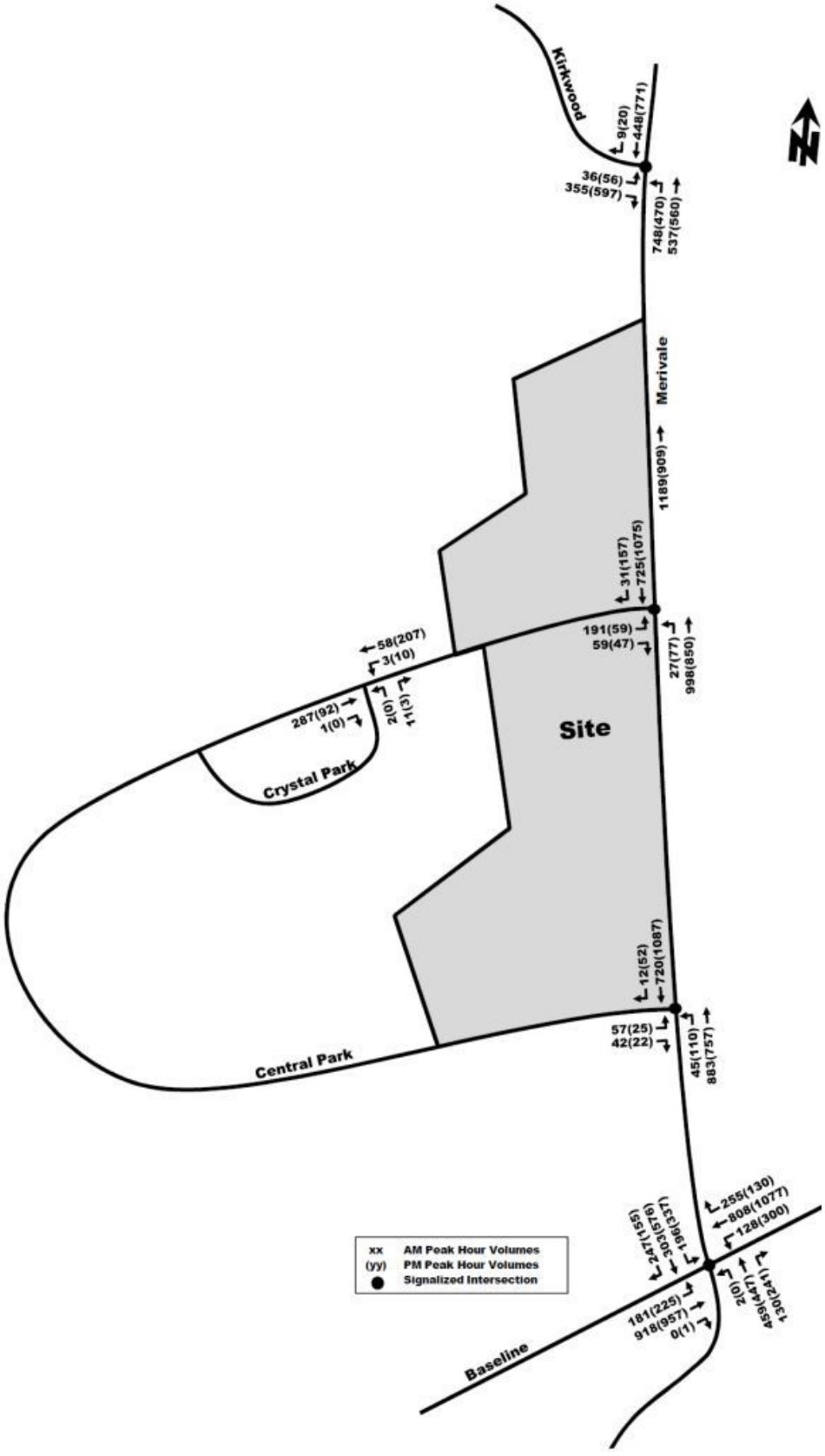
3.4 Planned Study Area Transportation Network Changes

Within the study area, there are no major planned roadway network changes. However, notable transportation network changes, related to transit, identified in the City's Transportation Master Plan (TMP) include; the Baseline Road Bus Rapid Transit from 417/416 split to the Baseline/Woodroffe LRT station planned as a Phase 2 project and Transit Priority measures for Merivale Road from Hunt Club Road to Carling Avenue. These future improvements to transit will ensure a high transit modal share can be achieved within the study area.

3.5 Other Area Development

Area development identified by using the City's online Development Application Search tool includes; a Smartcentre located at 1357 Baseline Road and a 1-storey commercial building located at 1537 Merivale Road. The Smartcentre application type is listed as Site Plan Control with a status date of Nov 12, 2010 and the review status is "Comment Period in Progress". The 1-storey commercial building application type is listed as Site Plan Control with a status date of January 10, 2011 and the review status is "Application on Hold".

Figure 5: Baseline Traffic Volumes



3.6 Site Trip Generation

The proposed development consists of approximately 740 high-rise condominium/townhome units, 180,000 ft^2 of retail and 48,000 ft^2 office type land uses. Appropriate trip generation rates for potential land uses were obtained from the 8th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual and are summarized in Table 4.

To convert ITE vehicle trip rates to person trips, an auto occupancy factor and a non-auto trip factor were applied to the ITE vehicle trip rates. Our review of the available literature suggests that a combined factor of approximately 1.3 is considered reasonable to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%. The person trip generation for the proposed site is summarized in Table 5.

Table 4: ITE Trip Generation Rates

Land Use	Data Source	Trip Rates	
		AM Peak	PM Peak
Townhome	ITE 230	T = 0.44(du); ln(T) = 0.80 ln(du)+0.26	T = 0.52(du); ln(T) = 0.82 ln(du)+0.32
High-Rise Condominium	ITE 232	T = 0.34(du); T = 0.29(du)+29.86	T = 0.38(du); T = 0.34(du)+15.47
High-Turnover Restaurant	ITE 932	T = 11.54(X);	T = 11.15(X);
Fast Food Restaurant	ITE 934	T = 49.35(X);	T = 33.84(X);
Specialty Retail	ITE 814	T = 1.36(X); T(0.5) = 2.40(X)+21.48	T = 2.71(X); T = 2.40(X)+21.48
Bank	ITE 912	T = 12.35(X);	T = 25.82(X);
Pharmacy	ITE 880	T = 3.20(X); T = 9.5(X)-66.58	T = 8.42(X);
Medical-Dental Office	ITE 720	T = 2.30(X);	T = 3.46(X); ln(T) = 0.88 ln(X)+1.59

Notes: *T = Average Vehicle Trip Ends*
X = 1000 ft^2 Gross Floor Area
du = dwelling units
Specialty Retail AM Peak is assumed to be 50% of the PM Peak

As ITE trip generation surveys only record vehicle trips and typically reflect highly suburban locations (with little to no access by travel modes other than private automobiles), appropriate adjustment factors were applied to attain estimates of person trips for the proposed development.

The person trips shown in Table 5 for the proposed site were then reduced by modal share values, including a reduction for 'pass-by' trips based on the site's location and proximity to adjacent communities, employment, other shopping uses and transit availability. Modal share and 'pass-by' values for residential, office and retail land uses within the proposed

development are summarized in Tables 6, 7 and 8, respectively, with the total site vehicle trip generation summarized in Table 10.

Table 5: Modified Person Trip Generation

Land Use	Area	AM Peak (persons/h)			PM Peak (persons/h)		
		In	Out	Total	In	Out	Total
Townhome	7 Du	1	7	8	6	3	9
High-Rise Condominium	730 Du	72	316	388	236	147	383
High-Turnover Restaurant	6,189 ft²	48	45	93	48	42	90
Fast Food Restaurant	1,959 ft²	55	71	126	38	49	87
Specialty Retail	109,168 ft²	91	120	211	186	239	425
Bank	3,229 ft²	29	23	52	54	55	109
Pharmacy	61,677 ft²	398	277	675	338	338	676
Medical-Dental Office	47,792 ft²	112	31	143	51	141	192
Total Person Trips		**806**	**890**	**1,696**	**957**	**1,014**	**1,971**

Note: 1.3 factor to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%

Table 6: Residential Modal Site Trip Generation

Travel Mode	Mode Share	AM Peak (persons/h)			PM Peak (persons/h)		
		In	Out	Total	In	Out	Total
Auto Driver	60%	44	194	238	146	90	236
Auto Passenger	15%	10	48	58	36	22	58
Transit	20%	15	64	79	48	30	78
Non-motorized	5%	4	17	21	12	8	20
Total Person Trips	100%	73	323	396	242	150	392
Total 'New' Auto Trips		**44**	**194**	**238**	**146**	**90**	**236**

Table 7: Office Modal Site Trip Generation

Travel Mode	Mode Share	AM Peak (persons/h)			PM Peak (persons/h)		
		In	Out	Total	In	Out	Total
Auto Driver	60%	68	19	87	31	85	116
Auto Passenger	15%	16	4	20	7	21	28
Transit	20%	23	7	30	11	28	39
Non-motorized	5%	5	1	6	2	7	9
Total Person Trips	100%	112	31	143	51	141	192
Total 'New' Auto Trips		**68**	**19**	**87**	**31**	**85**	**116**

Table 8: Retail Modal Site Trip Generation

Travel Mode	Mode Share	AM Peak (persons/h)			PM Peak (persons/h)		
		In	Out	Total	In	Out	Total
Auto Driver	60%	373	322	695	399	434	833
Auto Passenger	15%	93	80	173	99	108	207
Transit	20%	124	108	232	133	145	278
Non-motorized	5%	31	26	57	33	36	69
Total Person Trips	100%	621	536	1,157	664	723	1,387
Less 30% Pass-By		-105	-104	-209	-125	-125	-250
Total 'New' Auto Trips		**268**	**218**	**486**	**274**	**309**	**583**

Table 9: Total Person Trip Generation Summary by Travel Mode

Travel Mode	AM Peak (persons/h)			PM Peak (persons/h)		
	In	Out	Total	In	Out	Total
Auto Passengers/Drivers	604	667	1,271	718	760	1,478
Transit Riders	162	179	341	192	203	395
Walk/Cycle	40	44	84	47	51	98
Total Person Trips	**806**	**890**	**1,696**	**957**	**1,014**	**1,971**

As shown in Table 9, the resulting number of potential two-way trips to/from the proposed development by travel modes other than private automobile is approximately 425 (341 Transit Riders + 84 Walk/Cycle) and 493 (395 Transit Riders + 98 Walk/Cycle) person trips during the weekday morning and afternoon peak hours, respectively. As current transit ridership data for OC Transpo Routes #151, 155 and 176 within the study area is not readily available, projected capacity analysis for transit will not be included herein.

The following is a summary of potential two-way vehicle trips to/from the proposed development.

Table 10: Total Site Vehicle Trip Generation

Land Use	AM Peak (veh/h)			PM Peak (veh/h)		
	In	Out	Total	In	Out	Total
Residential	44	194	238	146	90	236
Office	68	19	87	31	85	116
Retail	373	322	695	399	434	833
Retail Pass-by	-105	-104	-209	-125	-125	-250
Less Multipurpose (10%)	-49	-54	-102	-58	-61	-119
Total 'New' Auto Trips	**331**	**377**	**709**	**393**	**423**	**816**

As shown in Table 10, the resulting number of potential 'new' two-way vehicle trips for the proposed development is 709 and 816 veh/h during the weekday morning and afternoon peak hours, respectively.

3.7 Vehicle Traffic Distribution and Assignment

Traffic distribution was based on existing volume splits at study area intersections and our knowledge of the surrounding area. The resultant distribution is outlined as follows:

- 60% to/from the north (30% to/from Kirkwood Avenue and 30% to/from Merivale Road);
- 20% to/from the south via Merivale Road;
- 10% to/from the east via Baseline Road; and
- 10% to/from the west via Baseline Road.

100%

'New' site-generated trips are illustrated in Figure 6 and the site-generated 'Pass-By' trips are illustrated in Figure 7.

Figure 6: 'New' Site-Generated Traffic Volumes

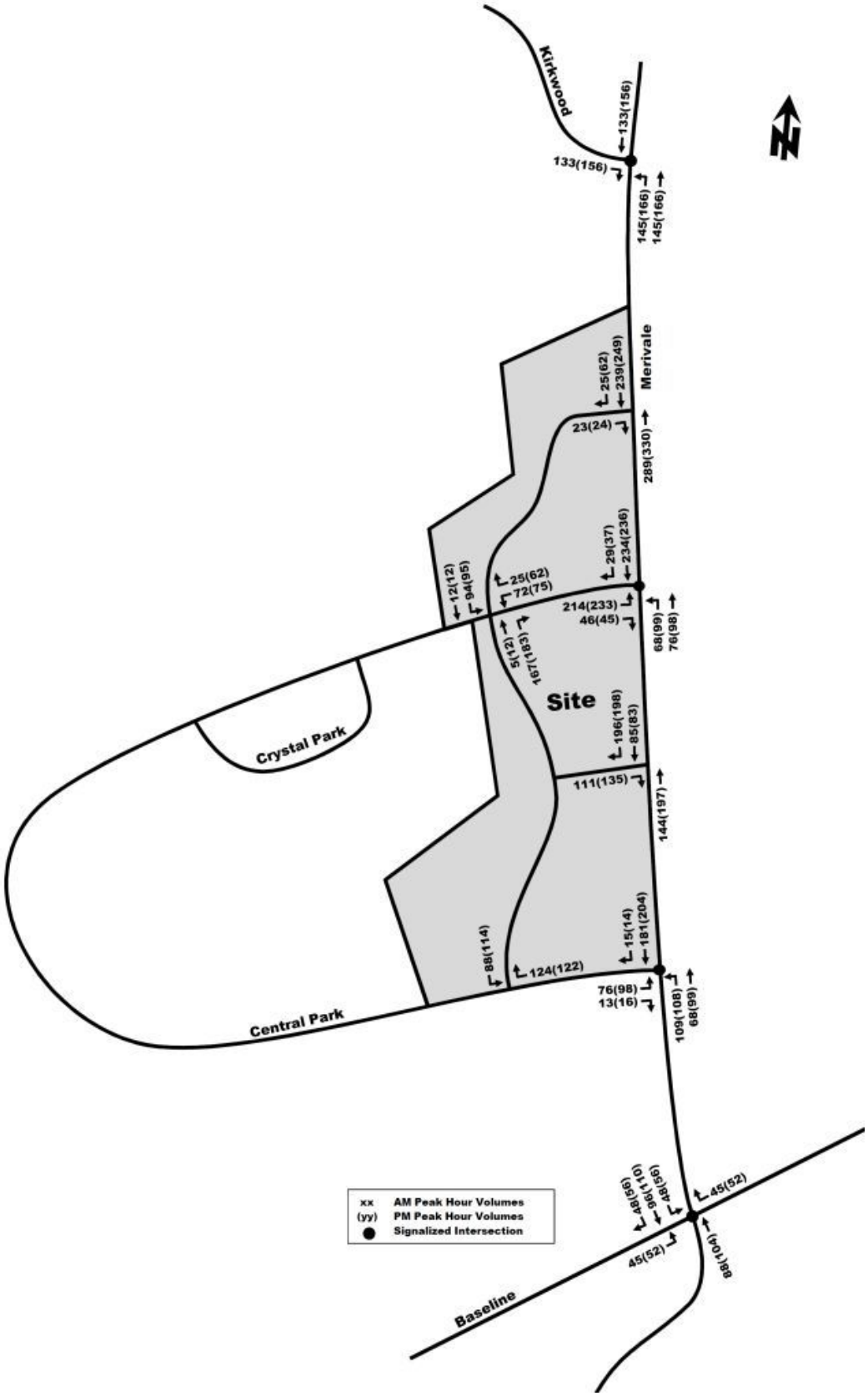
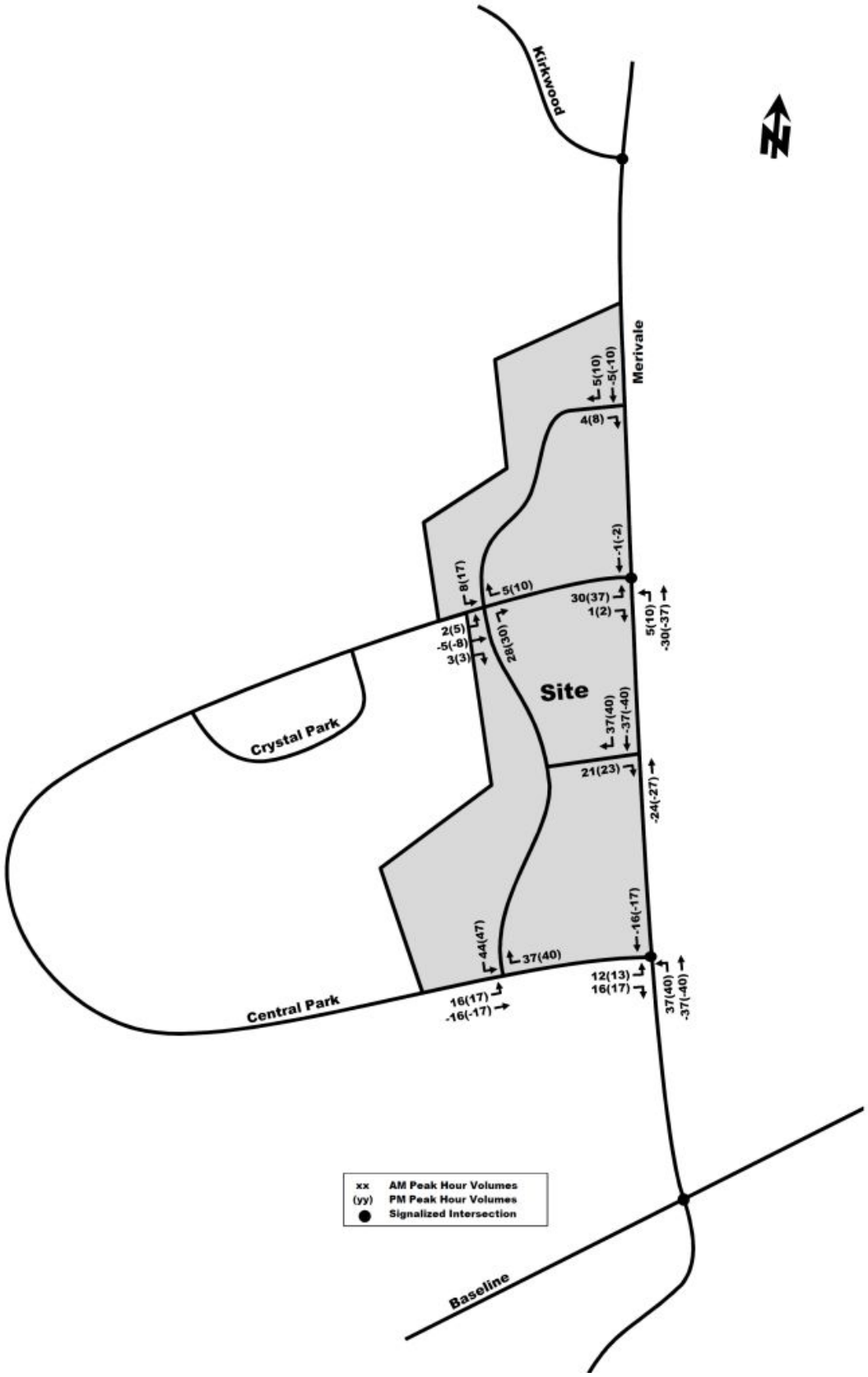


Figure 7: Site-Generated 'Pass-By' Traffic Volumes



3.8 Projected Intersection Operations without Roadway or Signal Modifications

Total projected traffic volumes illustrated in Figure 8 were determined by superimposing 'new' site-generated traffic volumes (Figure 6) and site-generated 'pass-by' volumes (Figure 7) onto projected baseline volumes (Figure 5).

Table 11 provides a summary of projected performance of study area intersections assuming full development and no roadway or signal timing plan modifications. Measures to mitigate poor performance are identified in Section 3.9. The Synchro model output of projected conditions without roadway or signal modifications are provided within Appendix E.

Table 11: Projected Performance of Study Area Intersections without Roadway or Signal Modifications

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
Baseline/Merivale	F(F)	1.05(1.22)	EBL(WBL)	44.1(75.3)	D(F)	0.85(1.00)
Central Park S./Merivale	A(E)	0.59(0.91)	SBT(SBT)	14.7(12.7)	A(D)	0.57(0.83)
Central Park N./Merivale	E(F)	0.91(1.05)	EBL(SBT)	22.3(37.2)	C(E)	0.77(0.96)
New North-South Spine/ Central Park N.	E(E)	35.9(35.9)	SBL(SBL)	9.2(9.2)	-	-
Kirkwood/Merivale	F(F)	1.55(1.59)	NBL(NBL)	100.0(77.2)	E(E)	0.96(0.99)

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

As shown in Table 11, all signalized study area intersections are projected to operate, 'as a whole', at or close to capacity during the weekday afternoon peak hour. During the weekday morning peak hour, study area intersections, with the exception of the Kirkwood/Merivale intersection, are projected to operate, 'as a whole', with an acceptable LoS 'D' or better.

The 'critical' movements at study area intersections are projected to operate at or above capacity during both peak hours, with the exception for the 'critical' southbound through movement (LoS 'A') at the Central Park S./Merivale intersection during the weekday morning peak hour.

With the proposed new North-South Spine/Central Park Drive N. intersection located approximately 40 meters west of Merivale Road, the critical eastbound 95th percentile queues at the Central Park N./Merivale intersection are projected to be approximately 115 and 70 meters during the weekday morning and afternoon peak hours, respectively. Therefore, with no roadway or signal timing plan modifications, eastbound queues

generated by the Central Park N./Merivale intersection are projected to extend through and block the new North-South Spine/Central Park Drive N. intersection.

The new North-South Spine/Central Park Drive S. intersection is currently located 50 meters west of Merivale Road and the critical eastbound 95th percentile queues at the Central Park S./Merivale intersection are projected to be approximately 40 and 35 meters during the weekday morning and afternoon peak hours, respectively. Therefore, with no roadway or signal timing plan modifications, the Central Park S./Merivale intersection is projected to operate acceptably with the proposed new North-South Spine/Central Park Drive S. intersection.

3.9 Projected Intersection Operations with Roadway and Signal Modifications

To help mitigate failing conditions at study area intersections, an additional eastbound left-turn turn lane at the Central Park N./Merivale intersection and study area signal timing plan modifications are recommended. Signal timing plan modifications include; increasing cycle lengths to 120 seconds at the Baseline/Merivale and Kirkwood/Merivale intersections during both peak hours; increasing cycle lengths to 90 seconds at both Central Park N./Merivale and Central Park S./Merivale intersections during both peak hours; and optimization of phase splits/signal offsets.

It should be noted that an additional eastbound left-turn turn lane will require the pedestrian crossing of the north leg at the Central Park N./Merivale intersection to be banned and without knowing the extent of signal coordination outside the study area, it may be difficult to modify existing signal timing plans that are linked to a coordinated network. Therefore, the subsequent analysis assumes study area intersections are within an isolated network only and pedestrians are prohibited from crossing the north leg of the Central Park N./Merivale intersection.

As shown in Table 12, study area intersections are projected to operate similar to existing conditions with the additional site generated traffic, along with an additional eastbound left-turn turn lane at the Central Park N./Merivale intersection and signal timing plan modifications. The Synchro model output of projected conditions with roadway and signal modifications are provided within Appendix F.

Figure 8: Total Projected Peak Hour Traffic Volumes

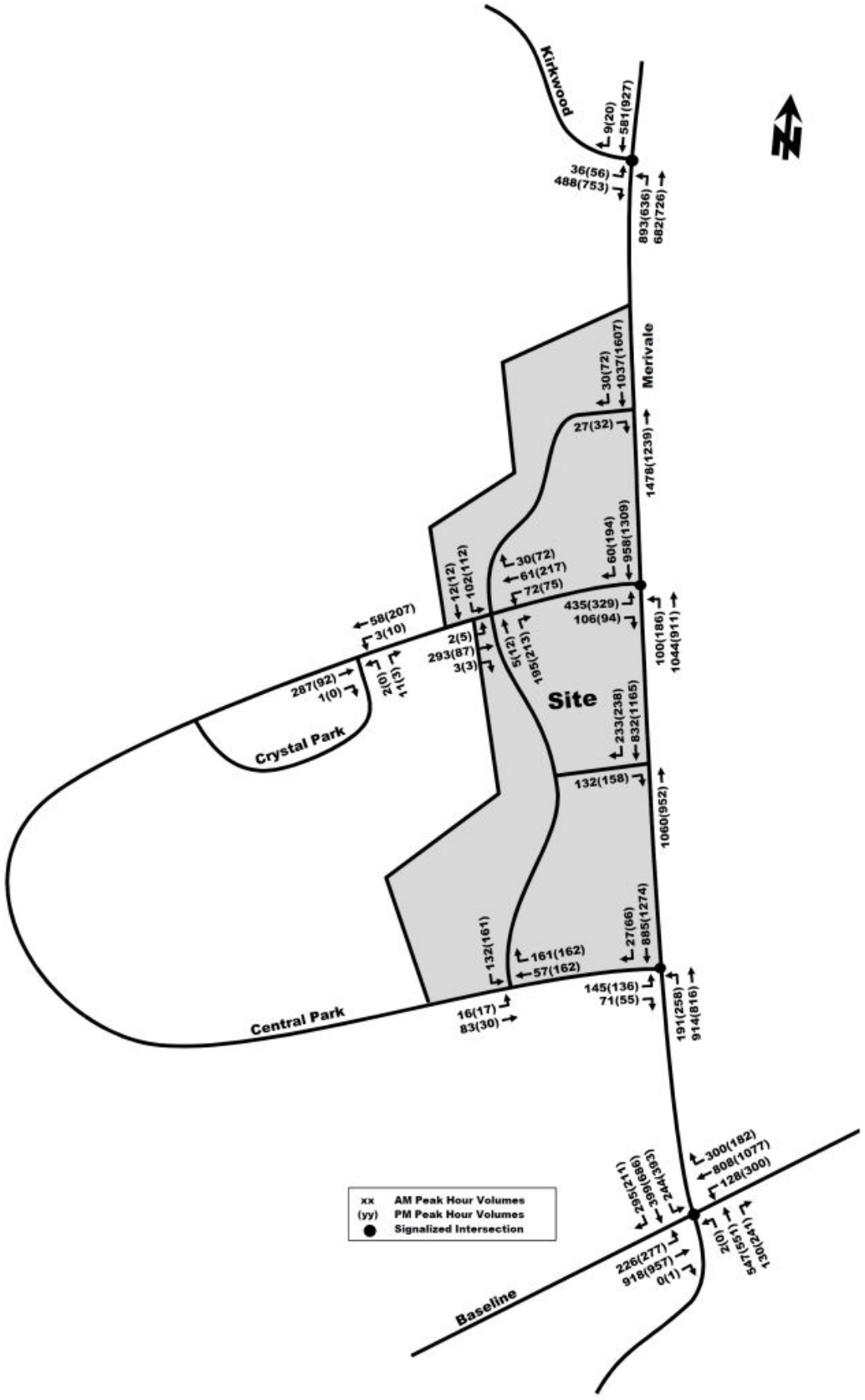


Table 12: Projected Performance of Study Area Intersections with Roadway and Signal Modifications

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
Baseline/Merivale	D(F)	0.89(1.12)	SBL(WBL)	43.4(76.2)	D(F)	0.83(1.01)
Central Park S./Merivale	A(D)	0.59(0.83)	SBT(SBT)	8.2(11.3)	A(C)	0.57(0.79)
Central Park N./Merivale	B(C)	0.66(0.79)	EBL(SBT)	15.7(18.9)	B(C)	0.61(0.75)
New North-South Spine/ Central Park N.	E(E)	35.9(35.9)	SBL(SBL)	9.2(9.2)	-	-
Kirkwood/Merivale	E(E)	0.96(0.97)	NBL(NBL)	33.9(35.5)	C(D)	0.79(0.81)

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

The 95th percentile queues in the critical eastbound direction at the Central Park N./Merivale intersection are projected to range from 40 to 45 meters during both peak hours. The 50th percentile queues (the average queue length) in the critical eastbound direction are projected to range from 30 to 35 meters during both peak hours. Therefore, with an additional eastbound left-turn lane and signal timing plan modifications, eastbound queues at the Central Park N./Merivale intersection are not expected to block the new North-South Spine/Central Park N. intersection during peak hours 95% of the time.

Based on projected volumes, it is recommended that the existing westbound right-turn lane at the new North-South Spine/Central Park N. intersection should be clearly delineated. The existing westbound right-turn lane at the new North-South Spine/Central Park N. intersection can also serve as a 'slip around' for any westbound through traffic caught behind westbound left-turning vehicles in queue, minimizing queue spill back towards Merivale Road.

3.10 Neighbourhood Impacts

Since the proposed site is located along a major arterial roadway, there will be no neighbourhood impacts with respect to cut through traffic.

4. SITE PLAN REVIEW

This section provides an overview of site access, parking requirements, pedestrian circulation and transit accessibility. The proposed site plan was previously illustrated in Figure 2.

Parking

With regard to vehicle parking, a total of 1,107 parking spaces (169 and 983 surface and underground, respectively) are proposed to serve the development. The total number of surface and subsurface parking is sufficient with respect to the City's Zoning By-Law requirements of 1,000 total parking spaces for Area B identified in Schedule 1 of the City's Zoning By-Law.

Site Circulation

With regard to on-site circulation, the proposed surface parking is well laid out as a curvilinear spine road and subsurface parking is fashioned as rectangular type layouts, as a result, on-site vehicle circulation will operate efficiently. Sufficient turning radii for fire, garbage and delivery truck circulation should be provided.

It should be noted that the new North-South Spine/Central Park Drive N. intersection is proposed in close proximity to the existing Central Park N./Merivale and Crystal Park/Central Park N. intersections. On occasion, queue spill-back from the Central Park N./Merivale may block this new North-South Spine/Central Park Drive N. intersection. However, given the low speeds on Central Park Drive N. and common driver courtesies on local roadways, it is expected that eastbound vehicles on Central Park Drive N. will provide gaps for left-turning vehicles exiting or entering the site to/from Central Park Drive N. and typically, drivers will not block an intersection when a queue is present.

Access Requirements

Based on projected volumes and proximity to adjacent signalized intersections, traffic signal control is not warranted at the proposed site driveway connections to Central Park Drive. However, an additional eastbound left-turn lane at the Central Park N./Merivale intersection is recommended and the existing westbound right-turn lane at the new North-South Spine/Central Park N. intersection should be clearly delineated.

Pedestrians/Transit

To connect pedestrians to transit service and other nearby employment, shopping and recreation opportunities, sidewalks are currently provided along both sides of all study area roads. The proposed curvilinear spine road also provides a convenient link to/from on-site amenities for pedestrians and connects them to bus stops and adjacent recreational pathways. Bus stops for Routes #151, 155 and 176 are located on Merivale Road, 160 meters south of Caldwell Avenue and approximately 40 meters south of the Central Park Drive S. Bus stops on Central Park Drive are located approximately every 160 meters along its length for Routes #151 and 155.

Bicycles

Bicycle parking is not identified on the proposed Site Plan but the provided should meet By-Law requirements and be located in well-lit areas and close to building entrances. The proposed curvilinear spine road also provides a convenient link to/from on-site amenities for bicycles and connects them to established off-site facilities.

5. TRANSPORTATION DEMAND MANAGEMENT

Depending on the nature of a development, Transportation Demand Management (TDM) strategies have the potential to be an integral part of a planned development in order to address and support the City of Ottawa policies with regard to TDM. For this particular site, its proximity to the existing transit service and recreational pathways are considered very advantageous in lessening the reliance on the private automobile. A number of TDM measures could also be considered, including:

- improving the quality and safety of pedestrian facilities, such as enhanced sidewalk lighting;
- provide incentives for ride sharing or transit, such as VRTUCAR or OC Transpo's ECOPASS;
- improving bicycle facilities, such as provision of on-site bicycle storage; and
- provide change/shower facilities for any on-site staff.

These are important strategies for encouraging active modes of transportation to/from the site.

6. FINDINGS AND RECOMMENDATIONS

Based on the foregoing analysis of the proposed development, the following transportation-related conclusions are offered:

EXISTING CONDITIONS

- The pedestrian, bicycle, transit and roadway networks are all established within the study area;

- The study area intersections are currently operating, 'as a whole', at an acceptable LoS 'C' or better during both peak hours, with the exception of the Baseline/Merivale intersection operating at an LoS 'E' during the afternoon peak hour;

- With regard to 'critical movements' at study area intersections, they are operating acceptably at an LoS 'D' or better during peak hours with the exception of the failing northbound left-turn during both peak hours at the Kirkwood/Merivale intersection and the failing westbound left-turn at the Baseline/Merivale intersection during the afternoon peak hour;

- Based on the available data, there does not appear to be any safety issues within the study area;

PROJECTED CONDITIONS

- Based on historic counts at the Baseline/Merivale intersection, Merivale Road has experienced a negative annual growth in past years along the frontage of the proposed development;

- The proposed development is projected to generate approximately 709 and 816 'new' veh/h during the weekday morning and afternoon peak hours, respectively;

- The impact of site-generated traffic on the performance of study area intersections was found to be significant without roadway or signal timing plan modifications;

- With an additional eastbound left-turn turn lane at the Central Park N./Merivale intersection and signal timing plan modifications, study area intersections are projected to operate similar to existing conditions with the additional site generated traffic; and

- Traffic signal control is not warranted at the proposed site driveway connections, based on projected volumes and proximity to adjacent signalized intersections.

NEW INTERSECTION

With regard to the new North-South Spine/Central Park N. intersection, City staff in our initial meetings expressed the following concerns;

- the offset between the new North-South Spine/Central Park N. and the Crystal Park/Central Park N. intersections is too short, which will create driver confusion; and
- the offset between the new North-South Spine/Central Park N. and the Merivale/Central Park N. intersections is also too short and eastbound queues extending back from the traffic signal will block the new North-South Spine/Central Park N. intersection.

With regard to proximity creating driver confusion, the total number of two-way trips to/from Crystal Park Crescent is approximately 15 to 20 veh/h during peak hours. This amount of volume equates to approximately 1 vehicle every 3 to 4 minutes, therefore, the risk of potential conflicts as a result of driver confusion is considered low. However, there are also design features that can also help mitigate driver confusion such as;

- Minimize turn radii at the new North-South Spine/Central Park N. intersection;

- A bulb-out in the northbound direction on Crystal Park at the Crystal Park/Central Park N. intersection; and

- A short length of median on Central Park Drive N. between the North-South Spine Road and the Crystal Park Crescent intersections.

As vehicles no larger than a fire or garbage truck are anticipated to access the site from the new North-South Spine/Central Park N. intersection, the turning radii can be reduced (such that functionality is maintained at these intersections) to improve the offset between them and to reduce the amount of open asphalt in the immediate area. A functional plan illustrating these design features is provided as Figure 9. As noted, this plan shows the additional approach lanes to the signalized Merivale intersection as well as all proposed paint lines and curb adjustments.

With regard to the potential for eastbound queues blocking the new North-South Spine/Central Park N. intersection, it is projected that with an additional eastbound left-turn lane and signal timing plan modifications, eastbound queues at the Central Park N./Merivale intersection will not block the new North-South Spine/Central Park N. intersection during peak hours 95% of the time. During the other 22 hours (outside peak hours) of a typical weekday, there is expected to be no queue blockage and for the 5% occurrence during peak hours, the potential blockage would be a very short duration (assuming no gaps for exiting traffic). The likely reality is that gaps would be left by drivers during the few times that queues of this length occur.

SITE PLAN

The review of the Site Plan, from a transportation perspective, revealed the proposed development is characterized by numerous positive design features. Notable features include; a new curvilinear spine road that provides a convenient link for pedestrians, bicycles and vehicles to all on-site amenities; and good on-site provision of pedestrian/bicycle facilities and connectivity to existing sidewalks, recreational pathways and transit.

It is recommended that updates to the Site Plan include details regarding the location and number of on-site bicycle, which must meet By-Law requirements and bicycle parking should be located in well-lit areas and close to building entrances. Sufficient turning radii, depressed curb and sidewalk for fire, garbage and delivery truck circulation should be provided.

An additional eastbound left-turn lane at the Central Park N./Merivale intersection is recommended and the existing westbound right-turn lane at the new North-South Spine/Central Park N. intersection should be clearly delineated, based on projected volumes.

The proposed development fits well into the context of the surrounding area, and its location and design serves to promote use of walking, cycling, and transit modes, thus supporting City of Ottawa policies, goals and objectives with respect to redevelopment, intensification and modal share.

PROPOSED CURB EXTENSION

PROPOSED NEW MEDIAN

DEPRESSED CONCRETE SIDEWALK

DEPRESSED CONCRETE SIDEWALK

A3-01

A3-01

CENTRE PODIUM (two storey space) HEIGHT 7.570m.

PENTHOUSE LEVEL 7 HEIGHT 21.500m.

AM1 ZONING

AM1 ZONING

LEVELS 1 & 2 HEIGHT 7.570m.

Building FOUR

LINE OF GARAGE BELOW

NORTH CONDO APARTMENTS ONE LEVELS 3-5 HEIGHT 16.100m.

NORTH PODIUM 1 LEVELS 1 & 2 HEIGHT 7.570m.

LINE OF GARAGE BELOW

Building FIVE

NORTH TOW LEVELS 6- HEIGHT 58.

NORTH PODIUM 2 LEVELS 1 & 2 HEIGHT 7.570m.

Building SIX

NOR LEV HEI

MERIVALE ROAD

FIGURE 9:
CENTRAL PARK
PROPOSED INTERSECTION LAYOUT

SPINE ROAD/ CENTRAL PARK NORTH
CRYSTAL PARK/ CENTRAL PARK NORTH

Ottawa

Contract No.	Drawing No.
TO3020TOI	001

Sheet No. 1 of 1

Asset No.

Asset Group

Des:	Chk'd:
Dwn:	Chk'd:

Utility Circulation No.:

Construction Inspector:

Code:

Scale: 1:200

NOTE:
The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

Delcan

REVISIONS	No.	Description	By	Date (dd/mm/yy)

Therefore, the proposed Merivale Road Central Park Mixed-Use Development is recommended from a transportation perspective.

Prepared By:

Gordon R. Scobie, E.I.T.
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Reviewed By:

Ronald M. Jack, P.Eng.
Vice President Transportation
Manager Ottawa Operations

Appendix A:
Existing Peak Hour Traffic Counts

Public Works and Services Department

Count ID 2751

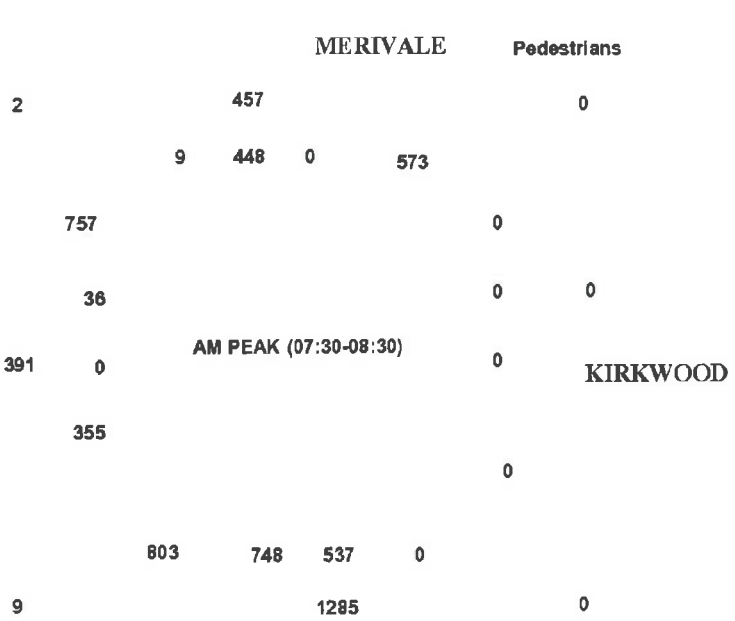
KIRKWOOD AVE and MERIVALE RD

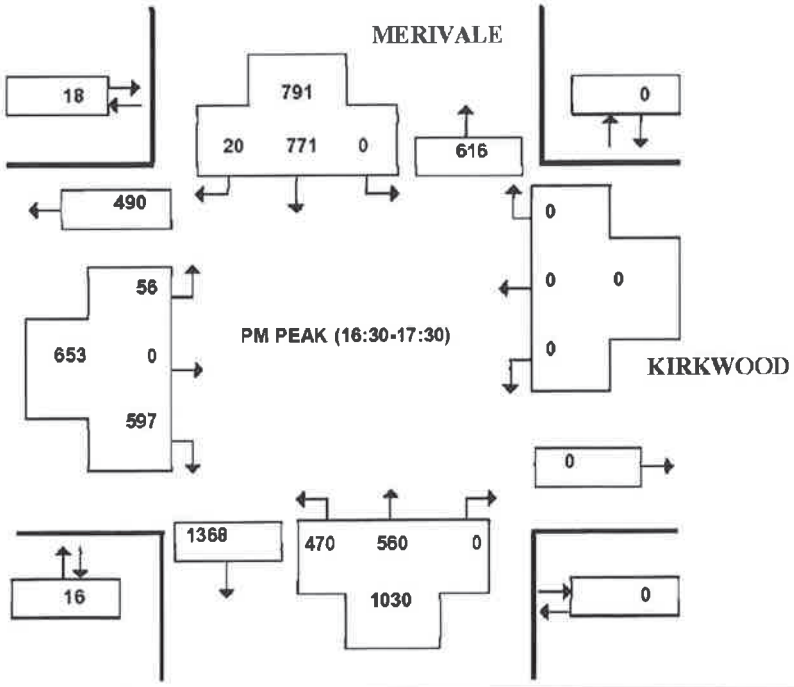
(ULRS Listing KIRKWOOD & MERIVALE)

Survey Date: Tuesday 17 August 2010
Conditions: Dry
Start Time: 0700

Total Observed U-Turns
Northbound: 1 Southbound: 1
Eastbound: 3 Westbound: 0

AADT Factor
Tuesday in August is 0.9





Approved by : AW

Printed on : 12/11/2010

Ottawa *Public Works and Services Department*

Count ID 2123

CENTRAL PARK NORTH and MERIVALE ROAD

(ULRS Listing CENTRALN & MERIVALE)

Survey Date: Wednesday 5 July 2006
Conditions: DRY
Start Time: 0700

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

AADT Factor
Wednesday in July is
0.9

MERIVALE

Pedestrians

1 710 0

54 656 0 1187

137 0

265 0 0

335 0 AM PEAK (07:45-08:45) 0 CENTRALN

70 0

726 83 922 0

8 1005 6

MERIVALE

4 1297 0

160 1137 0 990

252 0

133 0 0

202 0 PM PEAK (16:45-17:45) 0 CENTRALN

69 0

1206 92 857 0

15 949 4

Approved by : GZ

Printed on : 09 01 2007

Public Works and Services Department

Count ID **1972**

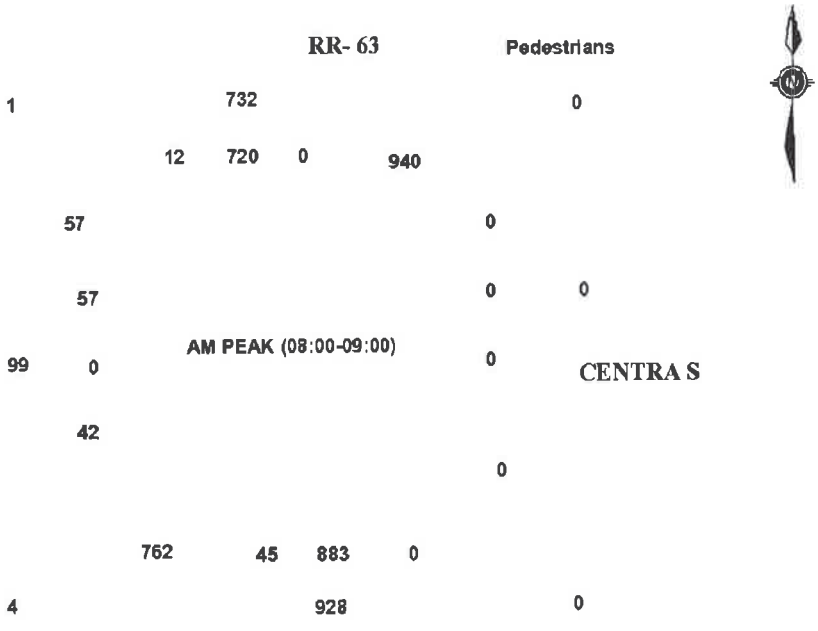
MERIVALE RD and CENTRAL PARK DR SOUT

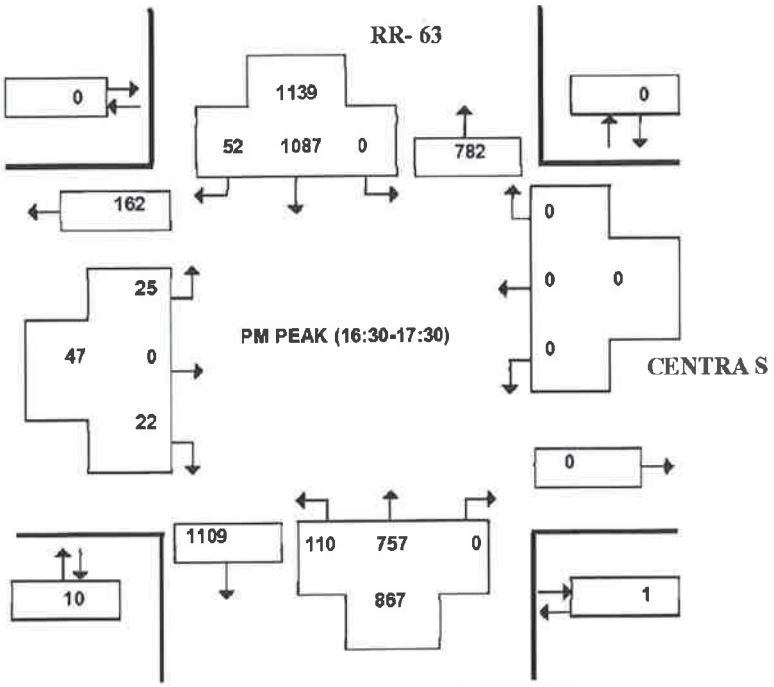
(ULRS Listing RR- 63 & CENTRA S)

Survey Date: Monday 11 July 2005
Conditions: DRY
Start Time: 0700

Total Observed U-Turns
Northbound: 14 Southbound: 3
Eastbound: 0 Westbound: 0

AADT Factor
Monday in July is
1





Approved by : GZ

Printed on : 12/11/2010

Public Works and Services Department

Count ID 2704

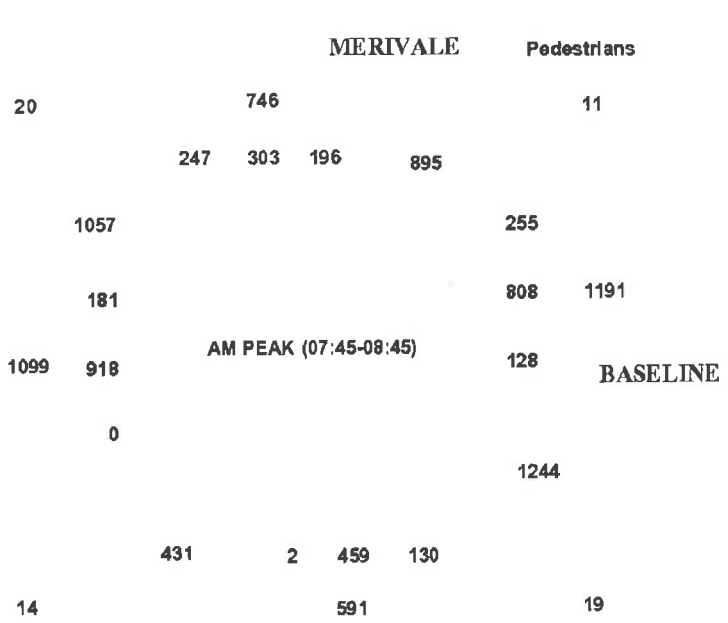
BASELINE RD and MERIVALE RD

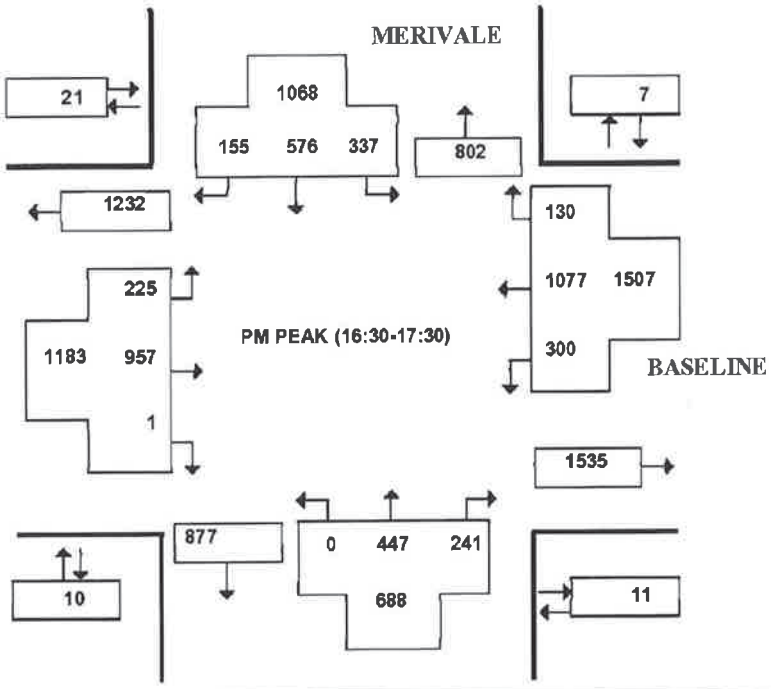
(ULRS Listing BASELINE & MERIVALE)

Survey Date: Friday 25 June 2010
Conditions: dry
Start Time: 0700

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

AADT Factor
Friday in June is 0.8





Approved by : DT

Printed on : 12/11/2010

DIRECTIONAL TRAFFIC FLOW

Intersection: Central Park at Crystal Park

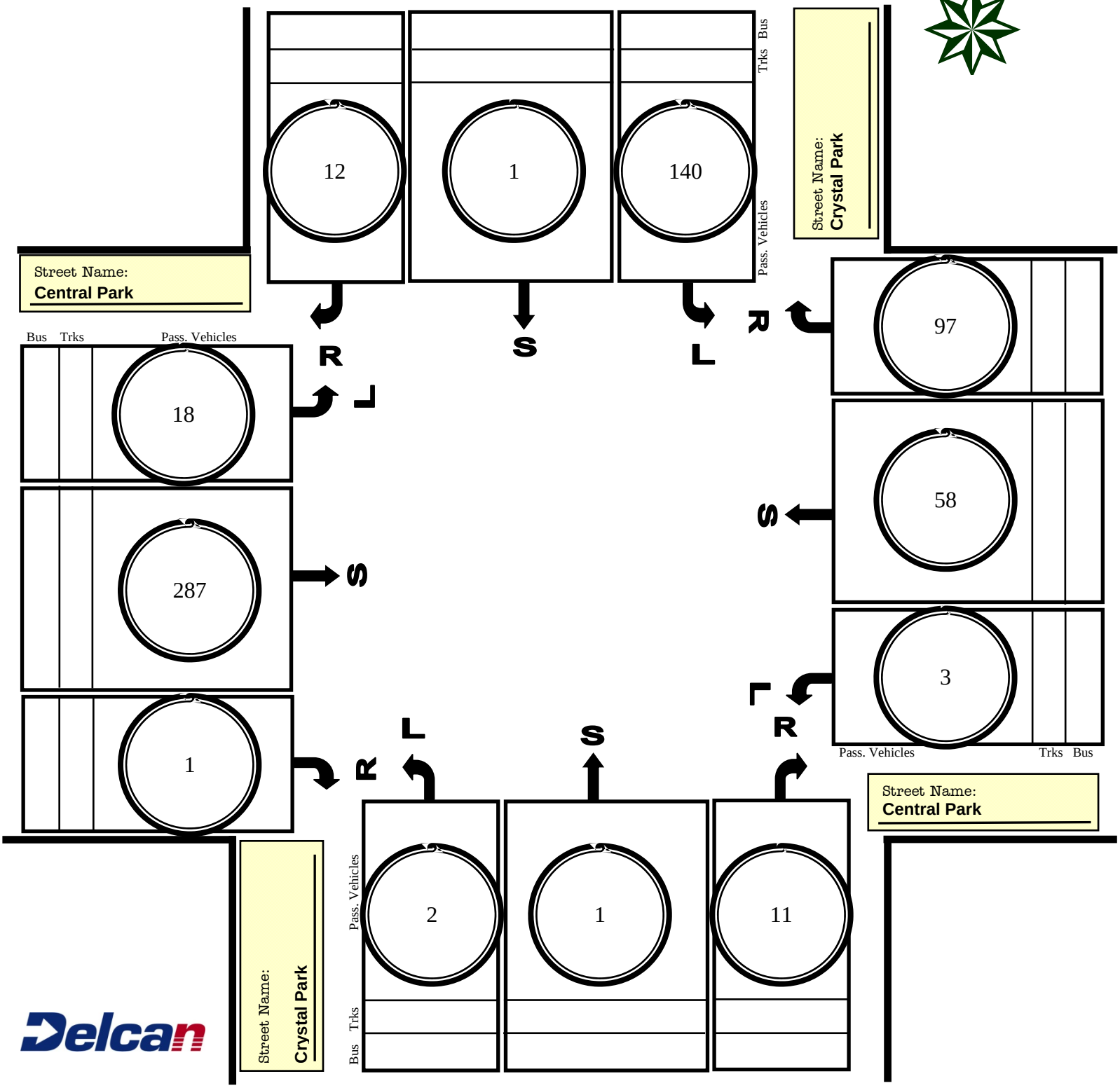
DATE: Day: 3 Month: Feb Year: 2011 Day of Week: Thursday

Observer: Kyle Delaney Weather: Clear

Chkd by: ---------- Date: ----------

TIME PERIOD: From: 7 : 30 To: 8 : 30

Instructions: 1) Use tally marks to indicate vehicles.
2) Use one sheet for each 15-minute period.



Delcan

DIRECTIONAL TRAFFIC FLOW

Intersection: Central Park at Crystal Park

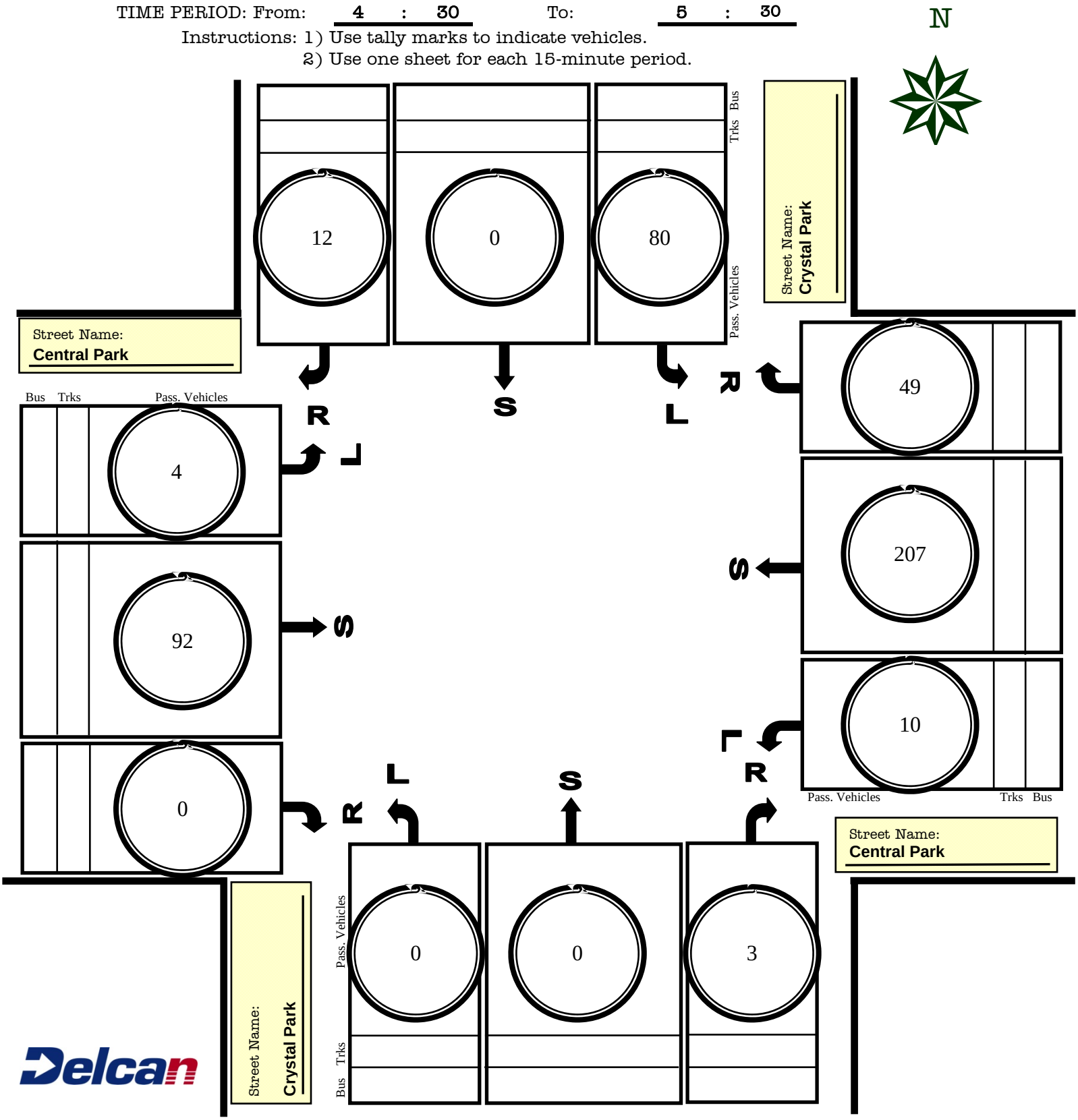
DATE: Day: 3 Month: Feb Year: 2011 Day of Week: Thursday

Observer: Kyle Delaney Weather: Clear

Chkd by: ---------- Date: ----------

TIME PERIOD: From: 4 : 30 To: 5 : 30

Instructions: 1) Use tally marks to indicate vehicles.
2) Use one sheet for each 15-minute period.



Delcan

Appendix B:

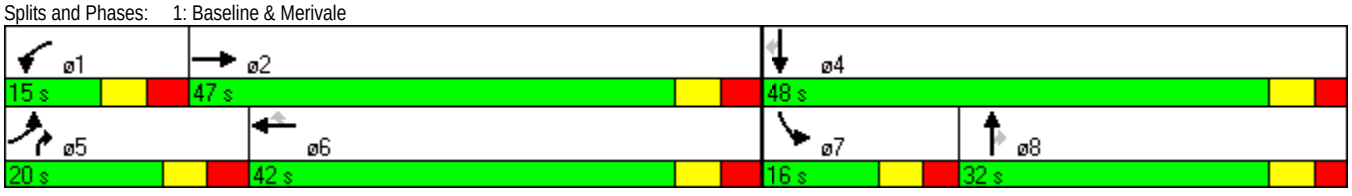
Existing Peak Hour Capacity Analysis

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	181	918	128	808	255	459	130	196	303	247
Lane Group Flow (vph)	191	966	135	851	268	483	137	206	319	260
Turn Type	Prot		Prot		Perm		custom	Prot		Perm
Protected Phases	5	2!	1	6		8	5!	7	4	
Permitted Phases					6		8			4
Detector Phase	5	2	1	6	6	8	5	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	5.0	5.0	10.0	10.0
Minimum Split (s)	12.1	35.1	12.1	35.1	35.1	31.5	12.1	11.5	31.5	31.5
Total Split (s)	20.0	47.0	15.0	42.0	42.0	32.0	20.0	16.0	48.0	48.0
Total Split (%)	18.2%	42.7%	13.6%	38.2%	38.2%	29.1%	18.2%	14.5%	43.6%	43.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	2.8	3.4	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.1	7.1	7.1	7.1	6.5	7.1	6.5	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	15.7	40.0	12.3	36.6	36.6	21.1	43.3	9.4	37.0	37.0
Actuated g/C Ratio	0.14	0.36	0.11	0.33	0.33	0.19	0.39	0.09	0.34	0.34
v/c Ratio	0.79	0.78	0.71	0.75	0.43	0.74	0.22	0.73	0.28	0.39
Control Delay	69.5	36.6	70.2	38.3	12.3	49.1	17.1	65.1	26.8	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.5	36.6	70.2	38.3	12.3	49.1	17.1	65.1	26.8	6.8
LOS	E	D	E	D	B	D	B	E	C	A
Approach Delay		42.0		36.2		42.0			30.3	
Approach LOS		D		D		D			C	
Queue Length 50th (m)	39.7	96.2	28.6	87.2	13.6	51.4	13.9	22.6	25.9	5.0
Queue Length 95th (m)	#84.9	121.0	#71.3	111.0	35.9	66.3	27.2	#38.0	34.8	21.8
Internal Link Dist (m)		486.2		372.5		341.7			253.7	
Turn Bay Length (m)	120.0		200.0		40.0		95.0	110.0		50.0
Base Capacity (vph)	242	1234	190	1129	625	786	617	284	1279	712
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	0.78	0.71	0.75	0.43	0.61	0.22	0.73	0.25	0.37

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 34 (31%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 37.7 Intersection LOS: D
Intersection Capacity Utilization 76.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

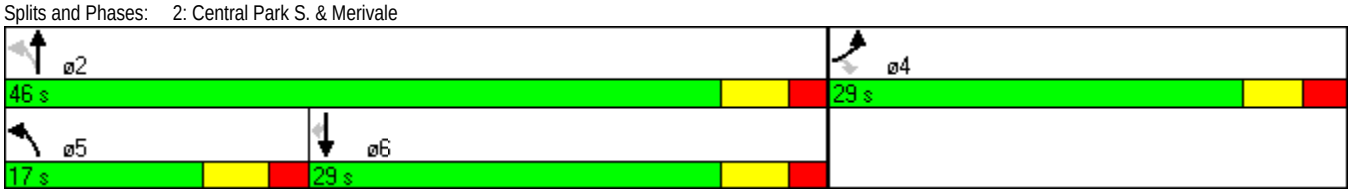
Splits and Phases: 1: Baseline & Merivale



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	57	42	45	883	720	12
Lane Group Flow (vph)	60	44	47	929	758	13
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	28.9	28.9	16.0	26.0	26.0	26.0
Total Split (s)	29.0	29.0	17.0	46.0	29.0	29.0
Total Split (%)	38.7%	38.7%	22.7%	61.3%	38.7%	38.7%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.6	2.6	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	10.2	10.2	56.1	57.3	49.8	49.8
Actuated g/C Ratio	0.14	0.14	0.75	0.76	0.66	0.66
v/c Ratio	0.26	0.18	0.09	0.36	0.34	0.01
Control Delay	34.2	14.6	3.9	4.4	8.6	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	14.6	3.9	4.4	8.6	8.6
LOS	C	B	A	A	A	A
Approach Delay	25.9			4.4	8.6	
Approach LOS	C			A	A	
Queue Length 50th (m)	8.5	1.1	1.6	22.6	8.1	0.0
Queue Length 95th (m)	19.2	9.6	4.3	32.7	44.4	m1.6
Internal Link Dist (m)	490.0			253.7	254.4	
Turn Bay Length (m)		45.0	70.0			45.0
Base Capacity (vph)	522	498	574	2589	2250	1011
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	0.09	0.08	0.36	0.34	0.01

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 24 (32%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.36	
Intersection Signal Delay: 7.4	Intersection LOS: A
Intersection Capacity Utilization 48.4%	ICU Level of Service A
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

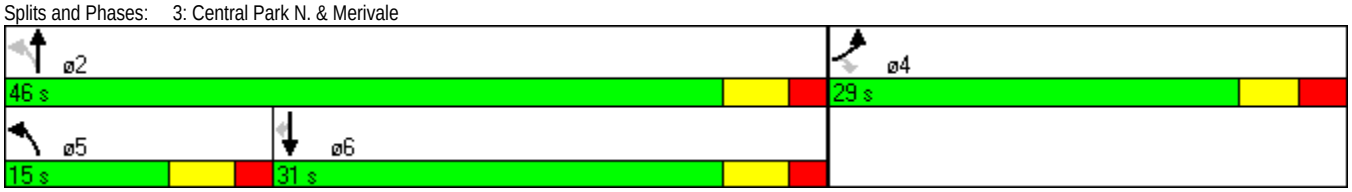
Splits and Phases: 2: Central Park S. & Merivale



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	298	92	72	978	700	83
Lane Group Flow (vph)	314	97	76	1029	737	87
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	28.1	28.1	10.9	26.9	26.9	26.9
Total Split (s)	29.0	29.0	15.0	46.0	31.0	31.0
Total Split (%)	38.7%	38.7%	20.0%	61.3%	41.3%	41.3%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.9	5.9	5.9	5.9
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	18.4	18.4	44.6	44.6	33.9	33.9
Actuated g/C Ratio	0.25	0.25	0.59	0.59	0.45	0.45
v/c Ratio	0.75	0.22	0.19	0.51	0.48	0.12
Control Delay	38.8	7.0	8.0	8.5	16.2	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	7.0	8.0	8.5	16.2	6.8
LOS	D	A	A	A	B	A
Approach Delay	31.3			8.5	15.2	
Approach LOS	C			A	B	
Queue Length 50th (m)	42.0	0.2	3.8	32.2	40.6	1.6
Queue Length 95th (m)	63.7	10.2	8.3	40.6	72.8	10.9
Internal Link Dist (m)	47.9			254.4	750.7	
Turn Bay Length (m)			45.0			35.0
Base Capacity (vph)	518	531	425	2016	1534	734
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	0.61	0.18	0.18	0.51	0.48	0.12

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 17 (23%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 14.9	Intersection LOS: B
Intersection Capacity Utilization 57.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Central Park N. & Merivale



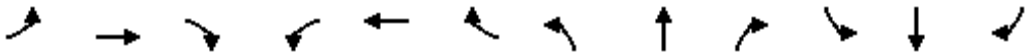
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	36	355	748	537	448
Lane Group Flow (vph)	38	374	787	565	481
Turn Type		pt+ov	pm+pt		
Protected Phases	4	4 5	5	2	6
Permitted Phases			2		
Detector Phase	4	4 5	5	2	6
Switch Phase					
Minimum Initial (s)	10.0		5.0	10.0	10.0
Minimum Split (s)	26.0		11.0	29.0	29.0
Total Split (s)	26.0	45.0	19.0	49.0	30.0
Total Split (%)	34.7%	60.0%	25.3%	65.3%	40.0%
Yellow Time (s)	3.3		3.7	3.7	3.7
All-Red Time (s)	2.7		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None		None	C-Max	C-Max
Act Effct Green (s)	11.7	39.0	51.3	51.3	24.0
Actuated g/C Ratio	0.16	0.52	0.68	0.68	0.32
v/c Ratio	0.14	0.27	1.08	0.24	0.44
Control Delay	27.7	10.7	71.1	4.1	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.7	10.7	71.1	4.1	21.7
LOS	C	B	E	A	C
Approach Delay	12.3			43.1	21.7
Approach LOS	B			D	C
Queue Length 50th (m)	4.8	15.6	~104.8	6.9	27.8
Queue Length 95th (m)	11.8	24.0	#156.3	11.0	40.6
Internal Link Dist (m)	304.5			750.7	321.4
Turn Bay Length (m)	40.0		90.0		
Base Capacity (vph)	452	1383	727	2317	1084
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.08	0.27	1.08	0.24	0.44

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 10 (13%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 32.8	Intersection LOS: C
Intersection Capacity Utilization 80.5%	ICU Level of Service D
Analysis Period (min) 15	

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

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

Splits and Phases: 4: Kirkwood & Merivale



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	287	1	3	58	97	2	1	11	140	1	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	19	302	1	3	61	102	2	1	12	147	1	13
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					72							
pX, platoon unblocked												
vC, conflicting volume	163			303			421	510	303	471	459	112
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	163			303			421	510	303	471	459	112
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	98	70	100	99
cM capacity (veh/h)	1415			1258			528	459	737	488	490	941

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	322	3	163	15	161
Volume Left	19	3	0	2	147
Volume Right	1	0	102	12	13
cSH	1415	1258	1700	670	507
Volume to Capacity	0.01	0.00	0.10	0.02	0.32
Queue Length 95th (m)	0.3	0.1	0.0	0.5	10.3
Control Delay (s)	0.6	7.9	0.0	10.5	15.4
Lane LOS	A	A		B	C
Approach Delay (s)	0.6	0.1		10.5	15.4
Approach LOS				B	C

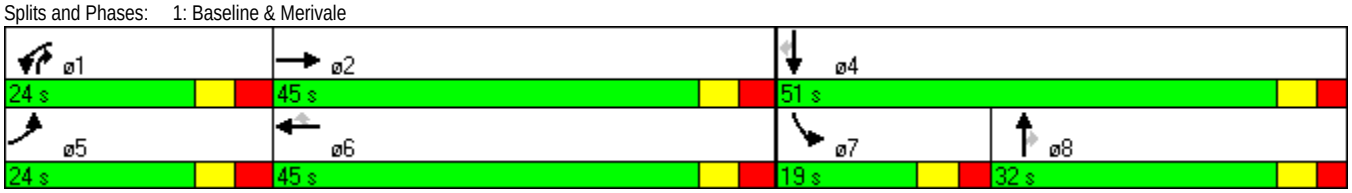
Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	52.2%	ICU Level of Service		A
Analysis Period (min)	15			

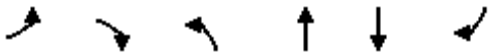
Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	225	957	300	1077	130	447	241	337	576	155
Lane Group Flow (vph)	237	1008	316	1134	137	471	254	355	606	163
Turn Type	Prot		Prot		Perm		pm+ov	Prot		Perm
Protected Phases	5	2	1	6		8	1	7	4	
Permitted Phases					6		8			4
Detector Phase	5	2	1	6	6	8	1	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	5.0	5.0	10.0	10.0
Minimum Split (s)	12.1	35.1	12.1	35.1	35.1	31.5	12.1	11.5	31.5	31.5
Total Split (s)	24.0	45.0	24.0	45.0	45.0	32.0	24.0	19.0	51.0	51.0
Total Split (%)	20.0%	37.5%	20.0%	37.5%	37.5%	26.7%	20.0%	15.8%	42.5%	42.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	2.8	3.4	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.1	7.1	7.1	7.1	6.5	7.1	6.5	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	19.9	37.9	20.7	38.8	38.8	21.7	48.9	12.5	40.7	40.7
Actuated g/C Ratio	0.17	0.32	0.17	0.32	0.32	0.18	0.41	0.10	0.34	0.34
v/c Ratio	0.84	0.94	1.08	1.03	0.26	0.77	0.41	1.03	0.53	0.26
Control Delay	75.2	56.9	122.3	76.8	18.0	55.5	26.3	110.2	33.4	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.2	56.9	122.3	76.8	18.0	55.5	26.3	110.2	33.4	5.0
LOS	E	E	F	E	B	E	C	F	C	A
Approach Delay		60.4		80.8		45.3			53.6	
Approach LOS		E		F		D			D	
Queue Length 50th (m)	54.3	121.3	~83.6	~154.4	12.5	56.0	39.6	~46.3	60.0	0.0
Queue Length 95th (m)	#107.1	#162.3	#151.2	#195.4	28.1	71.6	61.9	#76.2	73.7	13.6
Internal Link Dist (m)		486.2		870.9		341.7			253.7	
Turn Bay Length (m)	120.0		200.0		40.0		95.0	110.0		50.0
Base Capacity (vph)	281	1071	293	1096	533	720	626	343	1257	665
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.94	1.08	1.03	0.26	0.65	0.41	1.03	0.48	0.25

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 65 (54%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 63.3 Intersection LOS: E
Intersection Capacity Utilization 91.4% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Baseline & Merivale

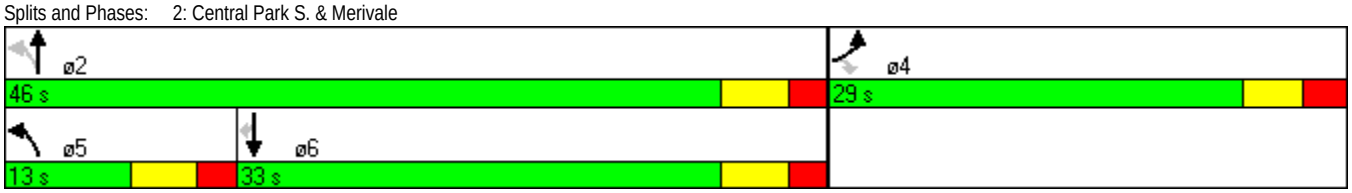




Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	25	22	110	757	1087	52
Lane Group Flow (vph)	26	23	116	797	1144	55
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	28.9	28.9	11.0	26.0	26.0	26.0
Total Split (s)	29.0	29.0	13.0	46.0	33.0	33.0
Total Split (%)	38.7%	38.7%	17.3%	61.3%	44.0%	44.0%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.6	2.6	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	10.0	10.0	59.5	61.9	50.1	50.1
Actuated g/C Ratio	0.13	0.13	0.79	0.83	0.67	0.67
v/c Ratio	0.12	0.10	0.31	0.29	0.51	0.05
Control Delay	36.0	19.7	5.1	3.3	1.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.0	19.7	5.1	3.3	1.7	0.1
LOS	D	B	A	A	A	A
Approach Delay	28.4			3.5	1.6	
Approach LOS	C			A	A	
Queue Length 50th (m)	3.1	0.6	4.2	18.4	4.2	0.0
Queue Length 95th (m)	9.4	6.0	8.3	25.3	6.8	m0.2
Internal Link Dist (m)	490.0			253.7	254.4	
Turn Bay Length (m)		45.0	70.0			45.0
Base Capacity (vph)	522	483	387	2796	2264	1029
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	0.05	0.05	0.30	0.29	0.51	0.05

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 65 (87%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 3.0	Intersection LOS: A
Intersection Capacity Utilization 61.4%	ICU Level of Service B
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

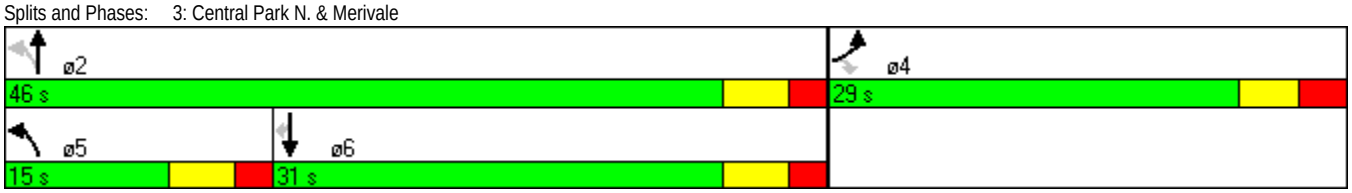
Splits and Phases: 2: Central Park S. & Merivale



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	103	83	93	850	1050	190
Lane Group Flow (vph)	108	87	98	895	1105	200
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	28.1	28.1	10.9	26.9	26.9	26.9
Total Split (s)	29.0	29.0	15.0	46.0	31.0	31.0
Total Split (%)	38.7%	38.7%	20.0%	61.3%	41.3%	41.3%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.9	5.9	5.9	5.9
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	11.2	11.2	55.0	56.2	45.6	45.6
Actuated g/C Ratio	0.15	0.15	0.73	0.75	0.61	0.61
v/c Ratio	0.43	0.29	0.28	0.35	0.54	0.20
Control Delay	30.6	8.2	7.8	4.8	15.2	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	8.2	7.8	4.8	15.2	6.9
LOS	C	A	A	A	B	A
Approach Delay	20.6			5.1	14.0	
Approach LOS	C			A	B	
Queue Length 50th (m)	14.3	1.6	3.5	20.8	63.9	9.1
Queue Length 95th (m)	25.3	9.3	11.7	35.5	102.8	m18.7
Internal Link Dist (m)	47.9			254.4	750.7	
Turn Bay Length (m)			45.0			35.0
Base Capacity (vph)	518	524	395	2541	2063	978
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	0.21	0.17	0.25	0.35	0.54	0.20

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 59.3%	ICU Level of Service B
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 3: Central Park N. & Merivale

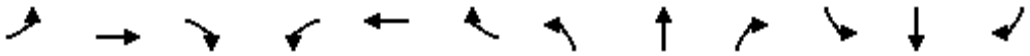


Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	56	597	470	560	771
Lane Group Flow (vph)	59	628	495	589	833
Turn Type		pt+ov	pm+pt		
Protected Phases	4	4 5	5	2	6
Permitted Phases			2		
Detector Phase	4	4 5	5	2	6
Switch Phase					
Minimum Initial (s)	10.0		5.0	10.0	10.0
Minimum Split (s)	26.0		11.0	29.0	29.0
Total Split (s)	26.0	45.0	19.0	49.0	30.0
Total Split (%)	34.7%	60.0%	25.3%	65.3%	40.0%
Yellow Time (s)	3.3		3.7	3.7	3.7
All-Red Time (s)	2.7		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None		None	C-Max	C-Max
Act Effct Green (s)	16.5	39.0	46.5	46.5	24.0
Actuated g/C Ratio	0.22	0.52	0.62	0.62	0.32
v/c Ratio	0.16	0.45	1.03	0.28	0.77
Control Delay	23.3	12.6	70.7	5.3	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.3	12.6	70.7	5.3	28.6
LOS	C	B	E	A	C
Approach Delay	13.5			35.2	28.6
Approach LOS	B			D	C
Queue Length 50th (m)	6.8	29.6	~66.4	12.8	55.0
Queue Length 95th (m)	14.8	42.8	#131.1	15.8	75.3
Internal Link Dist (m)	304.5			750.7	321.4
Turn Bay Length (m)	40.0		90.0		
Base Capacity (vph)	452	1326	482	2101	1083
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.13	0.47	1.03	0.28	0.77

Intersection Summary

Cycle Length: 75
Actuated Cycle Length: 75
Offset: 29 (39%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 27.4 — Intersection LOS: C
Intersection Capacity Utilization 74.0% — ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Kirkwood & Merivale



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	92	0	10	207	49	0	0	3	80	0	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	97	0	11	218	52	0	0	3	84	0	13
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					72							
pX, platoon unblocked												
vC, conflicting volume	269			97			357	396	97	373	370	244
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	269			97			357	396	97	373	370	244
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	100	100	85	100	98
cM capacity (veh/h)	1294			1497			584	536	959	577	554	795

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	101	11	269	3	97
Volume Left	4	11	0	0	84
Volume Right	0	0	52	3	13
cSH	1294	1497	1700	959	599
Volume to Capacity	0.00	0.01	0.16	0.00	0.16
Queue Length 95th (m)	0.1	0.2	0.0	0.1	4.4
Control Delay (s)	0.4	7.4	0.0	8.8	12.2
Lane LOS	A	A		A	B
Approach Delay (s)	0.4	0.3		8.8	12.2
Approach LOS				A	B

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	33.4%	ICU Level of Service		A
Analysis Period (min)	15			

Appendix C:
Collision History

Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	65	17	24	7	1	8	0	6	128	74%
Non-fatal injury	17	6	2	10	0	7	1	1	44	25%
Non reportable	0	1	0	0	0	0	0	0	1	1%
Total	82	24	26	17	1	15	1	7	**173**	
	47%	14%	15%	10%	1%	9%	1%	4%		

KIRKWOOD AVE @ MERIVALE RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2007-2009	32	26,439	1825	**0.66**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	11	5	5	0	0	2	0	2	25	78%
Non-fatal injury	5	1	0	1	0	0	0	0	7	22%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	16	6	5	1	0	2	0	2	**32**	
	50%	19%	16%	3%	0%	6%	0%	6%		

CENTRAL PARK DR N @ MERIVALE RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2007-2009	12	25,846	1825	**0.25**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	5	3	1	0	0	1	0	0	10	83%
Non-fatal injury	0	2	0	0	0	0	0	0	2	17%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	5	5	1	0	0	1	0	0	**12**	
	42%	42%	8%	0%	0%	8%	0%	0%		

CENTRAL PARK DR S @ MERIVALE RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2007-2009	10	23,623	1825	**0.23**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	2	1	2	0	0	0	0	1	6	60%
Non-fatal injury	0	2	0	0	0	1	1	0	4	40%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	2	3	2	0	0	1	1	1	**10**	
	20%	30%	20%	0%	0%	10%	10%	10%		

BASELINE RD @ MERIVALE RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2007-2009	56	40,892	1825	**0.75**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	30	0	9	1	0	2	0	1	43	77%
Non-fatal injury	5	0	0	4	0	3	0	0	12	21%
Non reportable	0	1	0	0	0	0	0	0	1	2%
Total	35	1	9	5	0	5	0	1	**56**	
	63%	2%	16%	9%	0%	9%	0%	2%		

Collision Main Detail Summary

OnTRAC Reporting System

FROM: 2007-01-01 TO: 2010-01-01

BASELINE RD & MERIVALE RD

Former Municipality: **Ottawa** Traffic Control: **Traffic signal** Number of Collisions: **52**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
1	2007-01-24	We	07:40	Clear	Dawn	Rear end	P.D. only	V1 E	Wet	Slowing or	Pick-up truck	Other motor vehicle		0
								V2 E	Wet	Stopped	Automobile, station	Other motor vehicle		
2	2007-02-13	Tue	13:39	Clear	Daylight	Turning	Non	V1 N	Dry	Turning left	Automobile, station	Other motor vehicle		0
								V2 S	Dry	Going ahead	Automobile, station	Other motor vehicle		
3	2007-03-26	Mo	17:58	Rain	Daylight	Rear end	Non-fatal	V1 W	Wet	Going ahead	Automobile, station	Other motor vehicle		0
								V2 W	Wet	Stopped	Automobile, station	Other motor vehicle		
4	2007-04-26	Thu	13:30	Clear	Daylight	Sideswipe	P.D. only	V1 W	Dry	Unknown	Unknown	Other motor vehicle		0
								V2 W	Dry	Going ahead	Automobile, station	Other motor vehicle		
5	2007-05-05	Sat	16:19	Clear	Daylight	Rear end	P.D. only	V1 N	Dry	Slowing or	Automobile, station	Other motor vehicle		0
								V2 N	Dry	Stopped	Automobile, station	Other motor vehicle		
6	2007-06-19	Tue	19:40	Clear	Daylight	Sideswipe	P.D. only	V1 N	Dry	Unknown	Automobile, station	Other motor vehicle		0
								V2 N	Dry	Unknown	Automobile, station	Other motor vehicle		
7	2007-06-23	Sat	14:38	Clear	Daylight	Angle	Non-fatal	V1 W	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2 S	Dry	Going ahead	Automobile, station	Other motor vehicle		
8	2007-07-16	Mo	16:30	Clear	Daylight	Rear end	P.D. only	V1 W	Dry	Slowing or	Automobile, station	Other motor vehicle		0
								V2 W	Dry	Slowing or	Automobile, station	Other motor vehicle		
9	2007-07-27	Frid	12:07	Clear	Daylight	Sideswipe	P.D. only	V1 W	Dry	Changing lanes	Automobile, station	Other motor vehicle		0
								V2 W	Dry	Going ahead	Automobile, station	Other motor vehicle		
10	2007-08-20	Mo	14:20	Clear	Daylight	Rear end	P.D. only	V1 E	Dry	Slowing or	Automobile, station	Other motor vehicle		0
								V2 E	Dry	Stopped	Automobile, station	Other motor vehicle		
11	2007-09-06	Thu	14:30	Clear	Daylight	Rear end	P.D. only	V1 W	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2 W	Dry	Stopped	Pick-up truck	Other motor vehicle		
12	2007-09-07	Frid	15:19	Clear	Daylight	Sideswipe	P.D. only	V1 E	Dry	Going ahead	Pick-up truck	Other motor vehicle		0
								V2 E	Dry	Going ahead	Passenger van	Other motor vehicle		
	COMMENTS: V1 SWERVED TO AVOID UNKNOWN N/B RIGHT TURNING VEHICLE.													
13	2007-09-11	Tue	08:30	Rain	Daylight	Rear end	Non-fatal	V1 W	Wet	Going ahead	Automobile, station	Other motor vehicle		0
								V2 W	Wet	Stopped	Automobile, station	Other motor vehicle		

(Note: Time of Day = "00:00" represents unknown collision time

14	2007-09-30	Sun	15:45	Clear	Daylight	Rear end	P.D. only	V1	W	Dry	Turning left	Automobile, station	Other motor vehicle		0
								V2	W	Dry	Turning left	Automobile, station	Other motor vehicle		
	COMMENTS: D1 SNEEZED, DISTRACTED.														
15	2007-11-13	Tue	09:55	Clear	Daylight	Rear end	P.D. only	V1	W	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2	W	Dry	Stopped	Automobile, station	Other motor vehicle		
16	2007-11-23	Frid	13:40	Clear	Daylight	Sideswipe	P.D. only	V1	N	Wet	Turning left	Automobile, station	Other motor vehicle		0
								V2	N	Wet	Changing lanes	Automobile, station	Other motor vehicle		
17	2007-12-27	Thu	14:38	Snow	Daylight	Rear end	P.D. only	V1	E	Slush	Slowing or	Automobile, station	Skidding/Sliding		0
								V2	E	Slush	Unknown	Automobile, station	Other motor vehicle		
18	2008-01-03	Thu	16:18	Clear	Daylight	Rear end	P.D. only	V1	W	Dry	Turning left	Automobile, station	Other motor vehicle		0
								V2	W	Dry	Changing lanes	Automobile, station	Other motor vehicle		
19	2008-02-12	Tue	14:48	Clear	Daylight	Rear end	P.D. only	V1	W	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2	W	Dry	Stopped	Pick-up truck	Other motor vehicle		
	COMMENTS: D1'S FOOT SLIPPED OFF THE BRAKE PEDAL														
20	2008-02-26	Tue	19:00	Snow	Dark	Rear end	Non-fatal	V1	W	Loose snow	Slowing or	Automobile, station	Other motor vehicle		0
								V2	W	Loose snow	Stopped	Automobile, station	Other motor vehicle		
21	2008-04-07	Mo	15:10	Clear	Daylight	Rear end	P.D. only	V1	N	Dry	Slowing or	Delivery van	Other motor vehicle		0
								V2	N	Dry	Slowing or	Automobile, station	Other motor vehicle		
22	2008-05-15	Thu	01:39	Clear	Dark	Angle	Non-fatal	V1	E	Wet	Turning left	Automobile, station	Other motor vehicle		0
								V2	S	Wet	Going ahead	Automobile, station	Other motor vehicle		
23	2008-05-17	Sat	22:26	Clear	Dark	Other	P.D. only	V1	S	Dry	Turning right	Truck and trailer	Other Moveable		0
	COMMENTS: V1 TOWING ANOTHER VEHICLE. VEHICLE BEING TOWED STRUCK V1														
24	2008-06-25	We	01:15	Clear	Dark	Angle	P.D. only	V1	E	Dry	Going ahead	Pick-up truck	Other motor vehicle		0
								V2	S	Dry	Going ahead	Fire vehicle	Other motor vehicle		
25	2008-07-11	Frid	15:44	Clear	Daylight	Rear end	P.D. only	V1	W	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2	W	Dry	Stopped	Automobile, station	Other motor vehicle		
								V3	W	Dry	Stopped	Automobile, station	Other motor vehicle		
26	2008-08-14	Thu	12:47	Clear	Daylight	Rear end	P.D. only	V1	E	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2	E	Dry	Stopped	Pick-up truck	Other motor vehicle		
								V3	E	Dry	Stopped	Automobile, station	Other motor vehicle		
27	2008-08-28	Thu	12:58	Clear	Daylight	Rear end	P.D. only	V1	W	Dry	Turning right	Automobile, station	Other motor vehicle		0
								V2	W	Dry	Turning right	Automobile, station	Other motor vehicle		
								V3	W	Dry	Turning right	Pick-up truck	Other motor vehicle		
28	2008-09-22	Mo	15:50	Clear	Daylight	Rear end	P.D. only	V1	W	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2	W	Dry	Stopped	Pick-up truck	Other motor vehicle		

(Note: Time of Day = "00:00" represents unknown collision time

29	2008-10-28	Tue	15:50	Clear	Daylight	Single vehicle	Non-fatal	V1	N	Dry	Turning right	Pick-up truck	Pedestrian	1
30	2008-11-03	Mo	19:41	Clear	Dark	Rear end	P.D. only	V1	E	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2	E	Dry	Stopped	Passenger van	Other motor vehicle	
31	2008-12-17	We	17:10	Clear	Dark	Sideswipe	P.D. only	V1	W	Dry	Changing lanes	Passenger van	Other motor vehicle	0
								V2	W	Dry	Going ahead	Automobile, station	Other motor vehicle	
32	2009-01-14	We	00:14	Clear	Dark	Single vehicle	P.D. only	V1	E	Packed snow	Going ahead	Pick-up truck	Pole (utility, tower)	0
	COMMENTS: V1 SWERVED TO AVOID AN UNKNOWN VEHICLE THAT WAS CUT OFF BY A SNOWPLOW.													
33	2009-01-15	Thu	07:15	Clear	Dawn	Rear end	P.D. only	V1	E	Ice	Slowing or	Automobile, station	Other motor vehicle	0
								V2	E	Ice	Stopped	Automobile, station	Other motor vehicle	
34	2009-01-28	We	07:20	Snow	Dawn	Rear end	P.D. only	V1	E	Slush	Going ahead	Automobile, station	Other motor vehicle	0
								V2	E	Slush	Stopped	Automobile, station	Other motor vehicle	
35	2009-01-31	Sat	13:30	Clear	Daylight	Sideswipe	P.D. only	V1	W	Dry	Changing lanes	Automobile, station	Other motor vehicle	0
								V2	W	Dry	Going ahead	Passenger van	Other motor vehicle	
36	2009-02-06	Frid	11:26	Clear	Daylight	Rear end	Non-fatal	V1	W	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2	W	Dry	Stopped	Automobile, station	Other motor vehicle	
								V3	W	Dry	Stopped	Automobile, station	Other motor vehicle	
37	2009-02-08	Sun	14:00	Clear	Daylight	Rear end	P.D. only	V1	S	Dry	Changing lanes	Automobile, station	Other motor vehicle	0
								V2	S	Dry	Stopped	Automobile, station	Other motor vehicle	
	COMMENTS: V2 PREVIOUS BUMPER DAMAGE.													
38	2009-03-04	We	14:25	Clear	Daylight	Rear end	P.D. only	V1	E	Dry	Turning right	Automobile, station	Other motor vehicle	0
								V2	E	Dry	Turning right	Automobile, station	Other motor vehicle	
39	2009-03-29	Sun	11:07	Rain	Daylight	Single vehicle	P.D. only	V1	W	Wet	Turning right	Passenger van	Ran off road	0
40	2009-05-16	Sat	18:14	Rain	Daylight	Angle	Non-fatal	V1	E	Wet	Going ahead	Automobile, station	Other motor vehicle	0
								V2	S	Wet	Going ahead	Pick-up truck	Other motor vehicle	
41	2009-06-17	We	09:10	Clear	Daylight	Rear end	P.D. only	V1	E	Dry	Going ahead	Pick-up truck	Other motor vehicle	0
								V2	E	Dry	Stopped	Automobile, station	Other motor vehicle	
42	2009-06-19	Frid	09:50	Clear	Daylight	Rear end	P.D. only	V1	E	Dry	Going ahead	Automobile, station	Other motor vehicle	0
								V2	E	Dry	Slowing or	Automobile, station	Other motor vehicle	
43	2009-07-12	Sun	16:21	Clear	Daylight	Rear end	P.D. only	V1	N	Dry	Turning right	Automobile, station	Other motor vehicle	0
								V2	N	Dry	Turning right	Automobile, station	Other motor vehicle	
44	2009-08-07	Frid	13:57	Clear	Daylight	Rear end	P.D. only	V1	N	Dry	Slowing or	Automobile, station	Other motor vehicle	0
								V2	N	Dry	Slowing or	Pick-up truck	Other motor vehicle	
45	2009-08-13	Thu	19:25	Clear	Daylight	Angle	Non-fatal	V1	W	Dry	Making U-Turn	Automobile, station	Other motor vehicle	0
								V2	N	Dry	Turning right	Motorcycle	Other motor vehicle	

(Note: Time of Day = "00:00" represents unknown collision time

46	2009-08-21	Frid	15:31	Clear	Daylight	Rear end	P.D. only	V1	W	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2	W	Dry	Slowing or	Automobile, station	Other motor vehicle		
47	2009-09-05	Sat	00:24	Clear	Dark	Rear end	P.D. only	V1	E	Dry	Turning left	Automobile, station	Other motor vehicle		0
								V2	E	Dry	Turning left	Pick-up truck	Other motor vehicle		
48	2009-10-19	Mo	15:00	Clear	Daylight	Rear end	Non-fatal	V1	W	Dry	Slowing or	Automobile, station	Other motor vehicle		0
								V2	W	Dry	Stopped	Automobile, station	Other motor vehicle		
49	2009-11-03	Tue	15:45	Clear	Daylight	Sideswipe	P.D. only	V1	W	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2	W	Dry	Turning left	Automobile, station	Other motor vehicle		
	COMMENTS: V2 CHANGED LANES TO GO INTO THE LEFT TURN LANE.														
50	2009-11-10	Tue	15:21	Clear	Daylight	Rear end	P.D. only	V1	E	Dry	Turning left	Pick-up truck	Other motor vehicle		0
								V2	E	Dry	Turning left	Automobile, station	Other motor vehicle		
51	2009-12-13	Sun	03:10	Clear	Dark	Single vehicle	Non-fatal	V1	W	Wet	Turning right	Automobile, station	Skidding/Sliding		0
52	2009-12-16	We	11:55	Clear	Daylight	Rear end	P.D. only	V1	W	Wet	Going ahead	Automobile, station	Other motor vehicle		0
								V2	W	Wet	Changing lanes	Automobile, station	Other motor vehicle		

CALDWELL AVE & MERIVALE RD

Former Municipality: **Ottawa** Traffic Control: **Traffic signal** Number of Collisions: **17**

COLLISION ID	DATE	DAY	TIME	ENV	IMPACT TYPE	CLASS	DIR		SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
53	2007-03-20	Tue	16:28	Clear	Daylight Rear end	P.D. only	V1	S	Dry	Slowing or	Automobile, station	Other motor vehicle		0
							V2	S	Dry	Stopped	Pick-up truck	Other motor vehicle		
54	2007-05-07	Mo	07:00	Clear	Daylight Rear end	P.D. only	V1	N	Dry	Going ahead	Automobile, station	Other motor vehicle		0
							V2	N	Dry	Stopped	Delivery van	Other motor vehicle		
55	2007-09-21	Frid	07:45	Clear	Daylight Rear end	Non-fatal	V1	N	Dry	Going ahead	Automobile, station	Other motor vehicle		0
							V2	N	Dry	Stopped	Automobile, station	Other motor vehicle		
56	2007-10-27	Sat	16:45	Rain	Daylight Rear end	P.D. only	V1	E	Wet	Unknown	Automobile, station	Other motor vehicle		0
							V2	E	Wet	Stopped	Automobile, station	Other motor vehicle		
57	2007-11-29	Thu	16:45	Snow	Dusk Single vehicle	P.D. only	V1	E	Loose snow	Going ahead	Automobile, station	Skidding/Sliding		0
58	2007-12-25	Tue	00:01	Clear	Dark Rear end	Non-fatal	V1	N	Wet	Going ahead	Automobile, station	Other motor vehicle		0
							V2	N	Wet	Stopped	Automobile, station	Other motor vehicle		

(Note: Time of Day = "00:00" represents unknown collision time

59	2008-02-12	Tue	08:28	Clear	Daylight	Rear end	Non-fatal	V1	S	Ice	Going ahead	Automobile, station	Other motor vehicle		0
								V2	S	Ice	Stopped	Automobile, station	Other motor vehicle		
								V3	S	Ice	Going ahead	Automobile, station	Other motor vehicle		
								V4	S	Ice	Going ahead	Automobile, station	Other motor vehicle		
								V5	S	Ice	Going ahead	Automobile, station	Other motor vehicle		
60	2008-03-04	Tue	07:49	Clear	Daylight	Sideswipe	Non-fatal	V1	N	Wet	Changing lanes	Automobile, station	Other motor vehicle		0
								V2	N	Wet	Going ahead	Automobile, station	Other motor vehicle		
61	2008-07-10	Thu	15:00	Clear	Daylight	Rear end	Non-fatal	V1	S	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2	S	Dry	Slowing or	Automobile, station	Other motor vehicle		
62	2008-11-25	Tue	23:13	Snow	Dark	Angle	Non-fatal	V1	E	Ice	Slowing or	Municipal transit bus	Other motor vehicle		0
								V2	S	Ice	Slowing or	Municipal transit bus	Other motor vehicle		
63	2009-02-17	Tue	08:23	Clear	Daylight	Rear end	P.D. only	V1	N	Dry	Going ahead	Pick-up truck	Other motor vehicle		0
								V2	N	Dry	Going ahead	Automobile, station	Other motor vehicle		
64	2009-03-26	Thu	22:52	Rain	Dark	Turning	P.D. only	V1	S	Wet	Going ahead	Passenger van	Other motor vehicle		0
								V2	N	Wet	Turning left	Automobile, station	Other motor vehicle		
65	2009-05-16	Sat	10:06	Clear	Daylight	Rear end	P.D. only	V1	S	Dry	Slowing or	Passenger van	Other motor vehicle		0
								V2	S	Dry	Stopped	Passenger van	Other motor vehicle		
	COMMENTS: D1 DELIBERATE CONTACT.														
66	2009-07-05	Sun	14:54	Clear	Daylight	Approaching	P.D. only	V1	S	Dry	Going ahead	Pick-up truck	Ran off road		0
								V2	N	Dry	Stopped	Pick-up truck	Other motor vehicle		
	COMMENTS: V1 EVADING POLICE AND HIT V2.														
67	2009-07-06	Mo	07:15	Clear	Daylight	Rear end	P.D. only	V1	S	Dry	Slowing or	Pick-up truck	Other motor vehicle		0
								V2	S	Dry	Stopped	Automobile, station	Other motor vehicle		
68	2009-08-14	Frid	21:12	Clear	Dark	Single vehicle	Non-fatal	V1	S	Dry	Going ahead	Automobile, station	Pedestrian		1
69	2009-09-26	Sat	13:20	Clear	Daylight	Turning	Non-fatal	V1	S	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2	N	Dry	Turning left	Automobile, station	Other motor vehicle		

CENTRAL PARK DR, BLOOMINGDALE ST to CRYSTAL PARK CRES

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **1**

COLLISION ID	DATE	DAY	TIME	ENV	IMPACT TYPE	CLASS	DIR		SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
70	2008-05-07	We	15:30	Clear	Daylight Turning	P.D. only	V1	W	Dry	Turning right	Automobile, station	Other motor vehicle		0
							V2	W	Dry	Overtaking	Automobile, station	Other motor vehicle		

(Note: Time of Day = "00:00" represents unknown collision time

CENTRAL PARK DR, CRYSTAL PARK CRES to MERIVALE RD

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **2**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
71	2007-02-28	We	15:30	Clear	Daylight	Turning	P.D. only	V1 W	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2 W	Dry	Making U-Turn	Passenger van	Other motor vehicle		
72	2007-05-09	We	13:00	Clear	Daylight	Turning	P.D. only	V1 E	Dry	Going ahead	Pick-up truck	Other motor vehicle		0
								V2 E	Dry	Making U-Turn	Automobile, station	Other motor vehicle		

CENTRAL PARK DR, MANHATTAN CRES to MERIVALE RD

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **2**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
73	2007-12-10	Mo	16:05	Clear	Dusk	Turning	P.D. only	V1 W	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2 W	Dry	Making U-Turn	Automobile, station	Other motor vehicle		
74	2008-02-16	Sat	13:35	Clear	Daylight	Turning	P.D. only	V1 W	Wet	Overtaking	Automobile, station	Other motor vehicle		0
								V2 W	Wet	Making U-Turn	Pick-up truck	Other motor vehicle		

CENTRAL PARK DR, SCOUT ST to STATEN WAY

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **1**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
75	2007-10-24	We	18:15	Clear	Dusk	Sideswipe	P.D. only	V1 E	Dry	Pulling away	Automobile, station	Other motor vehicle		0
								V2 E	Dry	Going ahead	Automobile, station	Other motor vehicle		

CENTRAL PARK DR N & MERIVALE RD

Former Municipality: **Ottawa** Traffic Control: **Traffic signal** Number of Collisions: **12**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
76	2007-02-07	We	08:02	Clear	Daylight	Rear end	P.D. only	V1 S	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2 S	Dry	Changing lanes	Automobile, station	Other motor vehicle		
								V3 S	Dry	Stopped	Truck - closed	Other motor vehicle		
77	2007-03-08	Thu	07:00	Clear	Daylight	Sideswipe	P.D. only	V1 S	Dry	Changing lanes	Automobile, station	Other motor vehicle		0
								V2 S	Dry	Going ahead	Automobile, station	Other motor vehicle		

(Note: Time of Day = "00:00" represents unknown collision time

78		2008-03-22	Sat	22:18	Clear	Dark	Single vehicle	P.D. only	V1	E	Dry	Turning left	Truck and trailer	Pole (utility, tower)		0
	COMMENTS: THE DUMP TRUCK'S TRAILER WAS LEFT IN THE UPRIGHT POSITION AND HIT OVERHEAD WIRES.															
79		2008-05-23	Frid	21:30	Clear	Dark	Turning	P.D. only	V1	N	Dry	Turning left	Automobile, station	Other motor vehicle		0
									V2	N	Dry	Making U-Turn	Automobile, station	Other motor vehicle		
80		2008-07-26	Sat	15:35	Clear	Daylight	Turning	Non-fatal	V1	S	Dry	Going ahead	Automobile, station	Other motor vehicle		0
									V2	N	Dry	Turning left	Automobile, station	Other motor vehicle		
81		2008-09-11	Thu	08:05	Clear	Daylight	Rear end	P.D. only	V1	E	Dry	Turning right	Pick-up truck	Other motor vehicle		0
									V2	E	Dry	Stopped	Automobile, station	Other motor vehicle		
82		2008-09-19	Frid	12:28	Clear	Daylight	Turning	P.D. only	V1	E	Dry	Turning right	Truck - dump	Other motor vehicle		0
									V2	E	Dry	Stopped	Automobile, station	Other motor vehicle		
83		2008-11-21	Frid	17:45	Clear	Dark	Rear end	P.D. only	V1	E	Dry	Going ahead	Automobile, station	Other motor vehicle		0
									V2	E	Dry	Stopped	Automobile, station	Other motor vehicle		
84		2009-05-30	Sat	08:26	Rain	Daylight	Rear end	P.D. only	V1	S	Wet	Slowing or	Automobile, station	Skidding/Sliding		0
									V2	S	Wet	Making U-Turn	Municipal transit bus	Other motor vehicle		
85		2009-07-08	We	21:40	Clear	Dark	Turning	Non-fatal	V1	S	Dry	Going ahead	Motorcycle	Other motor vehicle		0
									V2	N	Dry	Turning left	Automobile, station	Other motor vehicle		
86		2009-09-21	Mo	07:45	Clear	Daylight	Turning	P.D. only	V1	N	Dry	Turning left	Passenger van	Other motor vehicle		0
									V2	S	Dry	Going ahead	Automobile, station	Other motor vehicle		
87		2009-12-04	Frid	16:56	Clear	Dark	Rear end	P.D. only	V1	S	Dry	Slowing or	Automobile, station	Other motor vehicle		0
									V2	S	Dry	Going ahead	Automobile, station	Other motor vehicle		

CENTRAL PARK DR S & MERIVALE RD

Former Municipality: **Ottawa** Traffic Control: **Traffic signal** Number of Collisions: **10**

COLLISION ID	DATE	DAY	TIME	ENV	IMPACT TYPE LIGHT	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
88	2007-03-06	Tue	18:55	Clear	Dark	Single vehicle	Non-fatal	V1 E	Dry	Turning right	Automobile, station	Pedestrian		1
89	2007-04-04	We	13:50	Rain	Daylight	Other	P.D. only	V1 S	Wet	Reversing	Municipal transit bus	Other motor vehicle		0
								V2 N	Wet	Stopped	Automobile, station	Other motor vehicle		
90	2008-01-07	Mo	12:38	Fog,	Daylight	Rear end	P.D. only	V1 N	Wet	Changing lanes	Automobile, station	Other motor vehicle		
								V2 N	Wet	Stopped	Truck - closed	Other motor vehicle		

(Note: Time of Day = "00:00" represents unknown collision time

91	2008-03-28	Frid	08:15	Clear	Daylight	Sideswipe	P.D. only	V1	N	Dry	Slowing or	Automobile, station	Other motor vehicle		0
								V2	N	Dry	Going ahead	Truck and trailer	Other motor vehicle		
92	2008-06-10	Tue	18:02	Clear	Daylight	Turning	P.D. only	V1	S	Wet	Going ahead	Passenger van	Other motor vehicle		0
								V2	N	Wet	Turning left	Automobile, station	Other motor vehicle		
93	2008-08-25	Mo	09:00	Clear	Daylight	Rear end	P.D. only	V1	S	Dry	Going ahead	Passenger van	Other motor vehicle		0
								V2	S	Dry	Stopped	Pick-up truck	Other motor vehicle		
94	2009-02-11	We	21:43	Clear	Dark	Single vehicle	Non-fatal	V1	N	Dry	Turning left	Passenger van	Pedestrian		1
95	2009-03-12	Thu	07:35	Clear	Daylight	Turning	Non-fatal	V1	S	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2	N	Dry	Turning left	Moped	Other motor vehicle		
	COMMENTS: V1 WENT THROUGH AMBER LIGHT.														
96	2009-10-07	We	08:45	Clear	Daylight	Turning	Non-fatal	V1	S	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2	N	Dry	Turning left	Municipal transit bus	Other motor vehicle		
97	2009-11-22	Sun	20:16	Clear	Dark	Sideswipe	P.D. only	V1	S	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2	S	Dry	Going ahead	Automobile, station	Other motor vehicle		
								V3	S	Dry	Slowing or	Pick-up truck	Other motor vehicle		
								V4	S	Dry	Stopped	Automobile, station	Other motor vehicle		

DORCHESTER AVE & MERIVALE RD

Former Municipality: **Ottawa** Traffic Control: **Stop sign** Number of Collisions: **3**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR		SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
98	2008-01-09	We	06:30	Rain	Dark	Sideswipe	Non-fatal	V1	N	Wet	Going ahead	Delivery van	Other motor vehicle		0
								V2	N	Wet	Going ahead	Automobile, station	Other motor vehicle		
99	2008-07-18	Frid	16:00	Rain	Daylight	Rear end	P.D. only	V1	N	Wet	Slowing or	Automobile, station	Other motor vehicle		0
								V2	N	Wet	Turning left	Automobile, station	Other motor vehicle		
100	2008-09-13	Sat	23:14	Clear	Dark	Angle	P.D. only	V1	W	Dry	Turning left	Automobile, station	Other motor vehicle		0
								V2	S	Dry	Going ahead	Passenger van	Other motor vehicle		
	COMMENTS: CONFLICTING COUNTS OF EVENTS														

KINGSTON AVE & MERIVALE RD

Former Municipality: **Ottawa** Traffic Control: **Stop sign** Number of Collisions: **1**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR		SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
101	2009-06-10	We	07:53	Clear	Daylight	Angle	Non-fatal	V1	N	Dry	Turning right	Automobile, station	Cyclist		0
								V2	W	Dry	Overtaking	Bicycle	Other motor vehicle		
	COMMENTS: V2 W/B IN E/B LANE.														

(Note: Time of Day = "00:00" represents unknown collision time

KIRKWOOD AVE & MERIVALE RD

Former Municipality: **Ottawa** Traffic Control: **Traffic signal** Number of Collisions: **32**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
102	2007-01-15	Mo	12:33	Snow	Daylight	Rear end	Non-fatal	V1 N	Loose snow	Turning left	Automobile, station	Other motor vehicle		0
								V2 N	Loose snow	Stopped	Automobile, station	Other motor vehicle		
103	2007-01-21	Sun	12:20	Clear	Daylight	Single vehicle	P.D. only	V1 N	Dry	Turning left	Automobile, station	Ran off road		0
104	2007-01-31	We	15:25	Clear	Daylight	Sideswipe	P.D. only	V1 E	Unknown	Turning right	Automobile, station	Other motor vehicle		0
								V2 E	Unknown	Turning right	Automobile, station	Other motor vehicle		
105	2007-02-09	Frid	19:09	Clear	Dark	Rear end	P.D. only	V1 N	Dry	Going ahead	Pick-up truck	Other motor vehicle		0
								V2 N	Dry	Going ahead	Automobile, station	Other motor vehicle		
106	2007-02-14	We	15:32	Snow	Daylight	Rear end	P.D. only	V1 N	Loose snow	Slowing or	Passenger van	Other motor vehicle		0
								V2 N	Loose snow	Turning left	School bus	Other motor vehicle		
107	2007-04-26	Thu	19:20	Clear	Daylight	Turning	P.D. only	V1 S	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2 N	Dry	Turning left	Automobile, station	Other motor vehicle		
108	2007-08-09	Thu	19:00	Clear	Daylight	Angle	Non-fatal	V1 N	Dry	Turning left	Automobile, station	Cyclist		0
								V2 N	Dry	Other	Bicycle	Other motor vehicle		
	COMMENTS: V2 WAS RIDING BIKE IN THE CROSSWALK GOING NORTHBOUND IN SOUTHBOUND LANES													
109	2007-08-17	Frid	14:34	Clear	Daylight	Rear end	P.D. only	V1 E	Dry	Turning right	Passenger van	Other motor vehicle		0
								V2 E	Dry	Stopped	Automobile, station	Other motor vehicle		
	COMMENTS: D1 DISTRACTED													
110	2007-09-20	Thu	14:07	Clear	Daylight	Rear end	P.D. only	V1 E	Dry	Turning left	Automobile, station	Other motor vehicle		0
								V2 E	Dry	Turning left	Automobile, station	Other motor vehicle		
111	2007-10-27	Sat	11:48	Rain	Daylight	Rear end	P.D. only	V1 N	Wet	Slowing or	Automobile, station	Other motor vehicle		0
								V2 N	Wet	Stopped	Automobile, station	Other motor vehicle		
112	2007-11-29	Thu	19:50	Snow	Dark	Rear end	P.D. only	V1 N	Loose snow	Turning left	Automobile, station	Other motor vehicle		0
								V2 N	Loose snow	Turning left	Automobile, station	Other motor vehicle		
113	2007-12-19	We	14:46	Snow	Daylight	Rear end	Non-fatal	V1 N	Loose snow	Turning left	Municipal transit bus	Other motor vehicle		0
								V2 N	Loose snow	Stopped	Automobile, station	Other motor vehicle		
114	2008-01-19	Sat	16:29	Clear	Daylight	Single vehicle	P.D. only	V1 E	Dry	Turning right	Automobile, station	Pedestrian		1
	COMMENTS: P1 FLED THE SCENE													
115	2008-02-11	Mo	14:01	Clear	Daylight	Sideswipe	P.D. only	V1 E	Dry	Turning right	Intercity bus	Other motor vehicle		0
								V2 E	Dry	Turning right	Automobile, station	Other motor vehicle		

(Note: Time of Day = "00:00" represents unknown collision time

116		2008-05-07	We	19:04	Rain	Daylight	Turning	P.D. only	V1	N	Wet	Turning left	Automobile, station	Other motor vehicle	0
									V2	S	Wet	Going ahead	Automobile, station	Other motor vehicle	
117		2008-06-23	Mo	20:00	Clear	Daylight	Rear end	P.D. only	V1	N	Dry	Slowing or	Automobile, station	Other motor vehicle	0
									V2	N	Dry	Stopped	Automobile, station	Other motor vehicle	
118		2008-08-02	Sat	17:20	Rain	Daylight	Rear end	P.D. only	V1	S	Wet	Turning right	Automobile, station	Other motor vehicle	0
									V2	S	Wet	Turning right	Automobile, station	Other motor vehicle	
119		2008-08-13	We	10:44	Rain	Daylight	Rear end	Non-fatal	V1	N	Wet	Turning left	Passenger van	Other motor vehicle	0
									V2	N	Wet	Stopped	Automobile, station	Other motor vehicle	
120		2008-10-23	Thu	15:19	Clear	Daylight	Other	P.D. only	V1	N	Dry	Turning left	Passenger van	Other motor vehicle	0
									V2	E	Dry	Other	Truck and trailer	Other motor vehicle	
	COMMENTS: V2'S TRAILER DETACHED AND HIT V1.														
121		2008-11-26	We	22:20	Snow	Dark	Rear end	P.D. only	V1	N	Slush	Slowing or	Passenger van	Other motor vehicle	0
									V2	N	Slush	Stopped	Pick-up truck	Other motor vehicle	
122		2009-01-07	We	15:30	Snow	Daylight	Rear end	Non-fatal	V1	N	Loose snow	Slowing or	Automobile, station	Other motor vehicle	0
									V2	N	Loose snow	Stopped	Automobile, station	Other motor vehicle	
123		2009-01-15	Thu	11:18	Clear	Daylight	Turning	P.D. only	V1	N	Ice	Going ahead	Automobile, station	Other motor vehicle	0
									V2	S	Ice	Turning left	Automobile, station	Other motor vehicle	
124		2009-01-15	Thu	08:10	Clear	Daylight	Rear end	P.D. only	V1	N	Ice	Going ahead	Automobile, station	Other motor vehicle	0
									V2	N	Ice	Going ahead	Automobile, station	Other motor vehicle	
125		2009-02-10	Tue	12:26	Clear	Daylight	Sideswipe	P.D. only	V1	S	Dry	Changing lanes	Automobile, station	Other motor vehicle	0
									V2	S	Dry	Going ahead	Automobile, station	Other motor vehicle	
126		2009-02-18	We	16:05	Snow	Daylight	Rear end	Non-fatal	V1	N	Ice	Turning left	Automobile, station	Other motor vehicle	0
									V2	N	Ice	Turning left	Automobile, station	Other motor vehicle	
127		2009-02-28	Sat	03:20	Clear	Dark	Rear end	P.D. only	V1	S	Wet	Going ahead	Automobile, station	Other motor vehicle	0
									V2	S	Wet	Making U-Turn	Automobile, station	Other motor vehicle	
128		2009-03-19	Thu	15:45	Clear	Daylight	Turning	Non-fatal	V1	N	Dry	Going ahead	Bicycle	Other motor vehicle	0
									V2	N	Dry	Turning left	Delivery van	Cyclist	
	COMMENTS: V1 WAS RIDING ON SIDEWALK.														
129		2009-05-26	Tue	22:06	Clear	Dark	Turning	P.D. only	V1	S	Dry	Going ahead	Automobile, station	Other motor vehicle	0
									V2	N	Dry	Turning left	Automobile, station	Other motor vehicle	
130		2009-06-04	Thu	13:11	Clear	Daylight	Turning	P.D. only	V1	S	Dry	Slowing or	Automobile, station	Other motor vehicle	0
									V2	N	Dry	Turning left	Automobile, station	Other motor vehicle	
131	090196015	2009-07-14	Tue	18:41	Clear	Daylight	Sideswipe	P.D. only	V1	E	Dry	Turning right	Truck and trailer	Other motor vehicle	0
									V2	E	Dry	Turning right	Pick-up truck	Other motor vehicle	
	COMMENTS: UNABLE TO DETERMINE WHO VEERED INTO OTHER LANE.														

(Note: Time of Day = "00:00" represents unknown collision time

132	2009-09-09	We	18:30	Clear	Daylight	Sideswipe	P.D. only	V1	E	Dry	Turning right	Automobile, station	Other motor vehicle		0
								V2	E	Dry	Turning right	Automobile, station	Other motor vehicle		
133	2009-09-18	Frid	14:15	Clear	Daylight	Other	P.D. only	V1	S	Dry	Reversing	Automobile, station	Other motor vehicle		0
								V2	N	Dry	Turning left	Passenger van	Other motor vehicle		

COMMENTS: V1 REVERSED INTO V2.

MAYVIEW AVE & MERIVALE RD

Former Municipality: **Ottawa** Traffic Control: **Stop sign** Number of Collisions: **3**

COLLISION ID	DATE	DAY	TIME	ENV	IMPACT TYPE / LIGHT	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
134	2008-03-10	Mo	13:10	Clear	Daylight Turning	P.D. only	V1 S	Dry	Going ahead	Automobile, station	Other motor vehicle		0
							V2 S	Dry	Turning right	Pick-up truck	Other motor vehicle		
135	2008-10-29	We	07:41	Snow	Daylight Rear end	P.D. only	V1 N	Slush	Slowing or	Automobile, station	Other motor vehicle		0
							V2 N	Slush	Slowing or	School bus	Other motor vehicle		
136	2009-01-07	We	08:45	Snow	Daylight Angle	P.D. only	V1 S	Loose snow	Turning right	Automobile, station	Other motor vehicle		0
							V2 E	Loose snow	Going ahead	Automobile, station	Other motor vehicle		

MCCOOEY LANE & MERIVALE RD

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **1**

COLLISION ID	DATE	DAY	TIME	ENV	IMPACT TYPE / LIGHT	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
137	2009-07-05	Sun	14:54	Clear	Daylight Single vehicle	P.D. only	V1 E	Dry	Stopped	Automobile, station	Other Fixed Objects		0

COMMENTS: V1 STRUCK BY A METAL GATE THAT SWUNG BACK.

MERIVALE RD, BASELINE RD to CENTRAL PARK DR S

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **4**

COLLISION ID	DATE	DAY	TIME	ENV	IMPACT TYPE / LIGHT	CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
138	2007-08-08	We	13:00	Clear	Daylight Rear end	P.D. only	V1 N	Dry	Slowing or	Automobile, station	Other motor vehicle		0
							V2 N	Dry	Slowing or	Automobile, station	Other motor vehicle		
139	2007-11-09	Frid	09:17	Clear	Daylight Sideswipe	P.D. only	V1 N	Dry	Merging	Truck - dump	Other motor vehicle		0
							V2 N	Dry	Going ahead	Automobile, station	Other motor vehicle		
140	2009-05-06	We	16:09	Clear	Daylight Single vehicle	Non-fatal	V1 E	Dry	Turning right	Automobile, station	Pedestrian		1

(Note: Time of Day = "00:00" represents unknown collision time

141		2009-09-02	We	09:50	Clear	Daylight	Rear end	P.D. only	V1	S	Dry	Going ahead	Automobile, station	Other motor vehicle		0
									V2	S	Dry	Slowing or	Automobile, station	Other motor vehicle		

COMMENTS: VEHICLE IN FRONT OF V2 LOST ITS MUFFLER.

MERIVALE RD, CALDWELL AVE to CENTRAL PARK DR

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **13**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR		SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
142	2007-01-22	Mo	17:15	Clear	Dusk	Sideswipe	P.D. only	V1	S	Wet	Going ahead	Automobile, station	Other motor vehicle		0
								V2	S	Wet	Going ahead	Trucktor semi trailer	Other motor vehicle		
COMMENTS: CONFLICTING STORIES, V1 HAD A REAR BRAKE LIGHT OUT.															
143	2007-01-22	Mo	11:06	Clear	Daylight	Rear end	Non-fatal	V1	N	Wet	Going ahead	Automobile, station	Other motor vehicle		0
								V2	N	Wet	Stopped	Delivery van	Other motor vehicle		
144	2007-01-29	Mo	08:00	Clear	Daylight	Rear end	P.D. only	V1	N	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2	N	Dry	Slowing or	Automobile, station	Other motor vehicle		
COMMENTS: D1 MOMENTARILY LOOKED AWAY.															
145	2007-05-05	Sat	15:05	Clear	Daylight	Single vehicle	Non-fatal	V1	S	Dry	Going ahead	Automobile, station	Pedestrian		1
146	2007-11-12	Mo	17:29	Rain	Dark	Rear end	P.D. only	V1	S	Wet	Going ahead	Automobile, station	Other motor vehicle		0
								V2	S	Wet	Slowing or	Automobile, station	Other motor vehicle		
147	2008-04-28	Mo	14:15	Rain	Daylight	Sideswipe	P.D. only	V1	S	Wet	Changing lanes	Automobile, station	Other motor vehicle		0
								V2	S	Wet	Going ahead	Automobile, station	Other motor vehicle		
148	2008-06-13	Frid	09:00	Clear	Daylight	Sideswipe	P.D. only	V1	S	Dry	Changing lanes	Passenger van	Other motor vehicle		
								V2	S	Dry	Going ahead	Automobile, station	Other motor vehicle		
149	2008-09-23	Tue	10:09	Clear	Daylight	Other	Non-fatal	V1	S	Dry	Going ahead	Automobile, station	Ran off road		0
								V2	E	Dry	Stopped	Pick-up truck	Other motor vehicle		
COMMENTS: D1 FELL ASLEEP AND V1 HIT A FENCE THEN V2.															
150	2009-02-25	We	08:57	Clear	Daylight	Other	P.D. only	V1	S	Dry	Going ahead	Automobile, station	Debris falling off		0
								V2	S	Dry	Stopped	Pick-up truck	Other motor vehicle		
COMMENTS: V2 LOST A BOX OF VENTS OFF THE TRUCK.															
151	2009-08-06	Thu	16:20	Clear	Daylight	Sideswipe	P.D. only	V1	S	Dry	Overtaking	Unknown	Other motor vehicle		0
								V2	S	Dry	Stopped	Municipal transit bus	Other motor vehicle		
COMMENTS: V2 STOPPED TO PICK UP PASSENGERS															

(Note: Time of Day = "00:00" represents unknown collision time

152	2009-08-28	Frid	11:58	Clear	Daylight	Sideswipe	P.D. only	V1	S	Dry	Changing lanes	Automobile, station	Other motor vehicle		0
								V2	S	Dry	Going ahead	Automobile, station	Other motor vehicle		
153	2009-12-09	We	16:40	Snow	Dusk	Rear end	P.D. only	V1	S	Loose snow	Going ahead	Automobile, station	Other motor vehicle		0
								V2	S	Loose snow	Slowing or	Automobile, station	Other motor vehicle		
154	2009-12-23	We	16:23	Clear	Dusk	Rear end	P.D. only	V1	S	Slush	Slowing or	Automobile, station	Other motor vehicle		0
								V2	S	Slush	Turning right	Pick-up truck	Other motor vehicle		

MERIVALE RD, DORCHESTER AVE to MORISSET AVE

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **3**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR		SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
155	2007-08-21	Tue	18:15	Clear	Daylight	Sideswipe	P.D. only	V1	S	Dry	Changing lanes	Automobile, station	Other motor vehicle		0
								V2	S	Dry	Going ahead	Automobile, station	Other motor vehicle		
156	2008-12-10	We	18:55	Clear	Dark	Angle	P.D. only	V1	W	Loose snow	Turning right	Passenger van	Other motor vehicle		0
								V2	N	Loose snow	Going ahead	Automobile, station	Other motor vehicle		
COMMENTS: D1 MADE A WIDE RIGHT TURN.															
157	2009-12-01	Tue	16:10	Clear	Dusk	Rear end	Non-fatal	V1	S	Dry	Going ahead	School bus	Other motor vehicle		0
								V2	S	Dry	Stopped	Automobile, station	Other motor vehicle		

MERIVALE RD, DORCHESTER AVE to KIRKWOOD AVE

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **2**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR		SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
158	2008-08-11	Mo	18:27	Clear	Daylight	Rear end	P.D. only	V1	S	Wet	Going ahead	Automobile, station	Other motor vehicle		0
								V2	S	Wet	Turning right	Automobile, station	Other motor vehicle		
COMMENTS: D1 DISTRACTED LOOKING IN BACKSEAT															
159	2009-10-22	Thu	07:46	Clear	Daylight	Single vehicle	Non-fatal	V1	N	Dry	Going ahead	Delivery van	Pedestrian		1

MERIVALE RD, KINGSTON AVE to ROSENTHAL AVE

Former Municipality: **Ottawa** Traffic Control: **No control** Number of Collisions: **1**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR		SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
160	2009-04-24	Frid	11:32	Clear	Daylight	Rear end	Non-fatal	V1	S	Dry	Slowing or	Pick-up truck	Other motor vehicle		0
								V2	S	Dry	Stopped	Automobile, station	Other motor vehicle		

(Note: Time of Day = "00:00" represents unknown collision time

MERIVALE RD & MORISSET AVE

Former Municipality: **Ottawa** Traffic Control: **Stop sign** Number of Collisions: **4**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR		SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
161	2008-03-13	Thu	22:42	Clear	Dark	Rear end	P.D. only	V1	N	Loose snow	Turning left	Automobile, station	Other motor vehicle		0
								V2	N	Loose snow	Stopped	Automobile, station	Other motor vehicle		
162	2009-01-16	Frid	08:10	Clear	Daylight	Angle	P.D. only	V1	N	Ice	Turning left	Automobile, station	Other motor vehicle		0
								V2	E	Ice	Slowing or	Automobile, station	Other motor vehicle		
163	2009-07-20	Mo	08:19	Clear	Daylight	Angle	Non-fatal	V1	E	Dry	Going ahead	Pick-up truck	Cyclist		0
								V2	N	Dry	Going ahead	Bicycle	Other motor vehicle		
COMMENTS: D2 RIDING BICYCLE ACROSS CROSSWALK. D2 N/B ON WRONG SIDE OF ROAD.															
164	2009-12-26	Sat	06:11	Freezing	Dark	Angle	P.D. only	V1	E	Ice	Slowing or	Automobile, station	Other motor vehicle		0
								V2	S	Ice	Going ahead	Automobile, station	Other motor vehicle		
COMMENTS: V1 SLID INTO INTERSECTION.															

MERIVALE RD & ROSENTHAL AVE

Former Municipality: **Ottawa** Traffic Control: **Stop sign** Number of Collisions: **3**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR		SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
165	2008-02-26	Tue	19:15	Rain	Dark	Rear end	P.D. only	V1	N	Wet	Going ahead	Unknown	Other motor vehicle		0
								V2	N	Wet	Stopped	Automobile, station	Other motor vehicle		
166	2008-12-18	Thu	15:30	Clear	Daylight	Angle	Non-fatal	V1	N	Packed snow	Slowing or	Bicycle	Other motor vehicle		0
								V2	E	Wet	Turning right	Passenger van	Cyclist		
167	2009-10-16	Frid	11:50	Clear	Daylight	Rear end	P.D. only	V1	S	Dry	Going ahead	Delivery van	Other motor vehicle		0
								V2	S	Dry	Turning right	Passenger van	Other motor vehicle		

MERIVALE RD & SUMMERVILLE AVE

Former Municipality: **Ottawa** Traffic Control: **Traffic signal** Number of Collisions: **1**

COLLISION ID	DATE	DAY	TIME	ENV	LIGHT	IMPACT TYPE	CLASS	DIR		SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
168	2008-01-14	Mo	15:00	Snow	Daylight	Rear end	P.D. only	V1	N	Loose snow	Slowing or	Automobile, station	Other motor vehicle		0
								V2	N	Ice	Stopped	Municipal transit bus	Other motor vehicle		
COMMENTS: V2 STOPPED AT BUS STOP															

(Note: Time of Day = "00:00" represents unknown collision time

MERIVALE RD & TRENTON AVE

Former Municipality: **Ottawa** Traffic Control: **Stop sign** Number of Collisions: **5**

COLLISION ID	DATE	DAY	TIME	ENV	IMPACT TYPE LIGHT		CLASS	DIR	SURFACE COND'N	VEHICLE MANOEUVRE	VEHICLE TYPE	FIRST EVENT	DRIVER ACTION	No. PED
169	2007-09-23	Sun	10:20	Clear	Daylight	Other	P.D. only	V1 E	Dry	Reversing	Automobile, station	Other motor vehicle		0
								V2 W	Dry	Stopped	Automobile, station	Other motor vehicle		
	COMMENTS: V1 REVERSED AND HIT V2 THEN TOOK OFF.													
170	2007-11-15	Thu	14:35	Clear	Daylight	Angle	Non-fatal	V1 W	Dry	Turning left	Automobile, station	Other motor vehicle		0
								V2 N	Dry	Going ahead	Automobile, station	Other motor vehicle		
171	2008-05-10	Sat	04:40	Clear	Dark	Single vehicle	P.D. only	V1 N	Dry	Going ahead	Automobile, station	Ran off road		0
172	2008-09-30	Tue	14:59	Clear	Daylight	Turning	P.D. only	V1 S	Wet	Turning left	Automobile, station	Other motor vehicle		0
								V2 N	Wet	Going ahead	Passenger van	Other motor vehicle		
173	2009-10-15	Thu	14:07	Clear	Daylight	Angle	P.D. only	V1 W	Dry	Going ahead	Automobile, station	Other motor vehicle		0
								V2 N	Dry	Going ahead	Automobile, station	Other motor vehicle		

(Note: Time of Day = "00:00" represents unknown collision time

Appendix D:

Detailed Historic Background Growth Analysis

Baseline / Merivale
8 hrs

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2004	Thursday, June 17									
2006	Thursday, July 6									
2010	Friday, June 25									

North Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2004				0				
2006								
2010								

Regression Estimate 2004
Regression Estimate 2010
Average Annual Change

West Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2004				0				
2006								
2010								

Regression Estimate 2004
Regression Estimate 2010
Average Annual Change

East Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2004				0				
2006								
2010								

Regression Estimate 2004
Regression Estimate 2010
Average Annual Change

South Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2004				0				
2006								
2010								

Regression Estimate 2004
Regression Estimate 2010
Average Annual Change

Baseline / Merivale
AM Peak

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2004	Thursday, June 17	603	1204	734	478	1445	1166	1021	955	7606
2006	Thursday, July 6	827	870	628	493	1156	920	1236	920	7050
2010	Friday, June 25	746	895	591	431	1191	1244	1099	1057	7254

North Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2004	1204	603	1807	7606				
2006	870	827	1697	7050	-27.7%	37.1%	-6.1%	-7.3%
2010	895	746	1641	7254	2.9%	-9.8%	-3.3%	2.9%

Regression Estimate	2004	1105	679	1784
Regression Estimate	2010	846	784	1629
Average Annual Change		**-4.36%**	**2.43%**	**-1.50%**

West Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2004	1021	955	1976	7606				
2006	1236	920	2156	7050	21.1%	-3.7%	9.1%	-7.3%
2010	1099	1057	2156	7254	-11.1%	14.9%	0.0%	2.9%

Regression Estimate	2004	1102	925	2027
Regression Estimate	2010	1140	1042	2182
Average Annual Change		**0.56%**	**2.00%**	**1.23%**

East Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2004	1166	1445	2611	7606				
2006	920	1156	2076	7050	-21.1%	-20.0%	-20.5%	-7.3%
2010	1244	1191	2435	7254	35.2%	3.0%	17.3%	2.9%

Regression Estimate	2004	1049	1357	2407
Regression Estimate	2010	1186	1147	2333
Average Annual Change		**2.06%**	**-2.77%**	**-0.52%**

South Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2004	734	478	1212	7606				
2006	628	493	1121	7050	-14.4%	3.1%	-7.5%	-7.3%
2010	591	431	1022	7254	-5.9%	-12.6%	-8.8%	2.9%

Regression Estimate	2004	709	491	1200
Regression Estimate	2010	579	438	1016
Average Annual Change		**-3.33%**	**-1.91%**	**-2.74%**

Baseline / Merivale
PM Peak

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2004	Thursday, June 17	1231	946	650	937	1696	1395	1090	1389	9334
2006	Thursday, July 6	1218	913	719	912	1632	1544	1146	1346	9430
2010	Friday, June 25	1068	802	688	877	1507	1535	1183	1232	8892

North Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2004	946	1231	2177	9334				
2006	913	1218	2131	9430	-3.5%	-1.1%	-2.1%	1.0%
2010	802	1068	1870	8892	-12.2%	-12.3%	-12.2%	-5.7%

Regression Estimate	2004	952	1249	2201
Regression Estimate	2010	805	1077	1882
Average Annual Change		**-2.76%**	**-2.44%**	**-2.58%**

West Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2004	1090	1389	2479	9334				
2006	1146	1346	2492	9430	5.1%	-3.1%	0.5%	1.0%
2010	1183	1232	2415	8892	3.2%	-8.5%	-3.1%	-5.7%

Regression Estimate	2004	1101	1393	2494
Regression Estimate	2010	1188	1234	2422
Average Annual Change		**1.29%**	**-2.00%**	**-0.48%**

East Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2004	1395	1696	3091	9334				
2006	1544	1632	3176	9430	10.7%	-3.8%	2.7%	1.0%
2010	1535	1507	3042	8892	-0.6%	-7.7%	-4.2%	-5.7%

Regression Estimate	2004	1439	1696	3134
Regression Estimate	2010	1557	1507	3064
Average Annual Change		**1.32%**	**-1.95%**	**-0.38%**

South Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2004	650	937	1587	9334				
2006	719	912	1631	9430	10.6%	-2.7%	2.8%	1.0%
2010	688	877	1565	8892	-4.3%	-3.8%	-4.0%	-5.7%

Regression Estimate	2004	674	935	1609
Regression Estimate	2010	700	876	1576
Average Annual Change		**0.63%**	**-1.08%**	**-0.34%**

Ottawa *Transportation, Utilities, and Public Works Department*

Count ID 1762

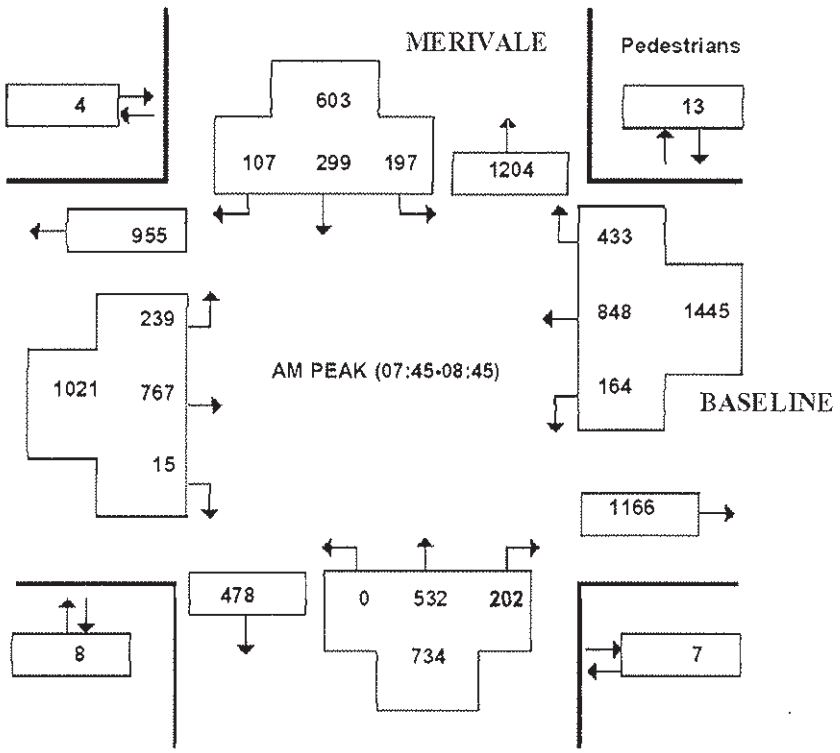
BASELINE RD and MERIVALE RD

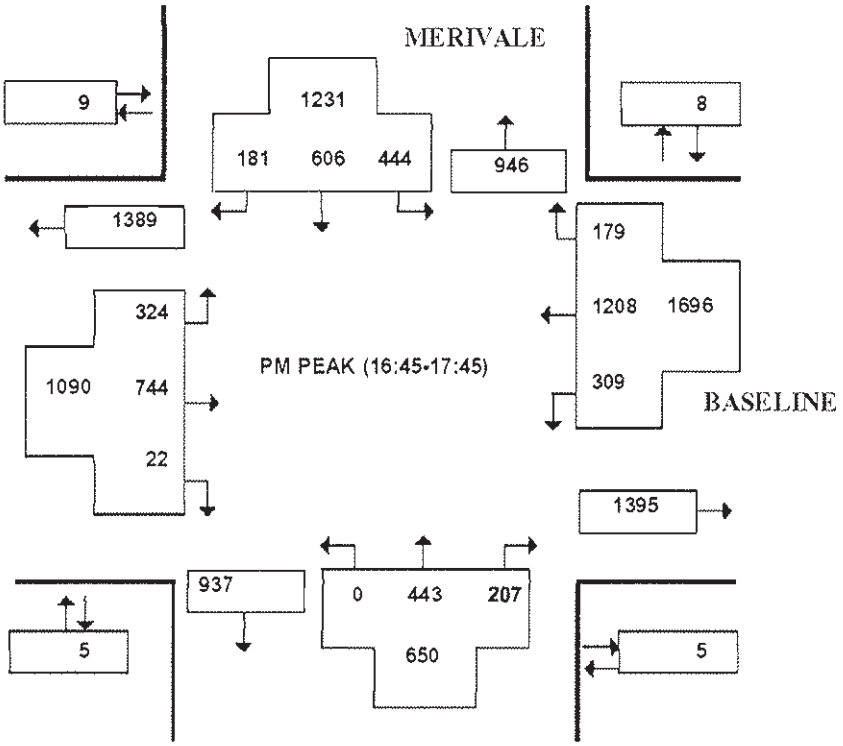
(ULRS Listing BASELINE & MERIVALE)

Survey Date: Thursday 17 June 2004
Conditions: DRY
Start Time: 0700

Total Observed U-Turns
Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

AADT Factor
Thursday in June is 0.9





Ottawa *Public Works and Services Department*

Count ID 2116

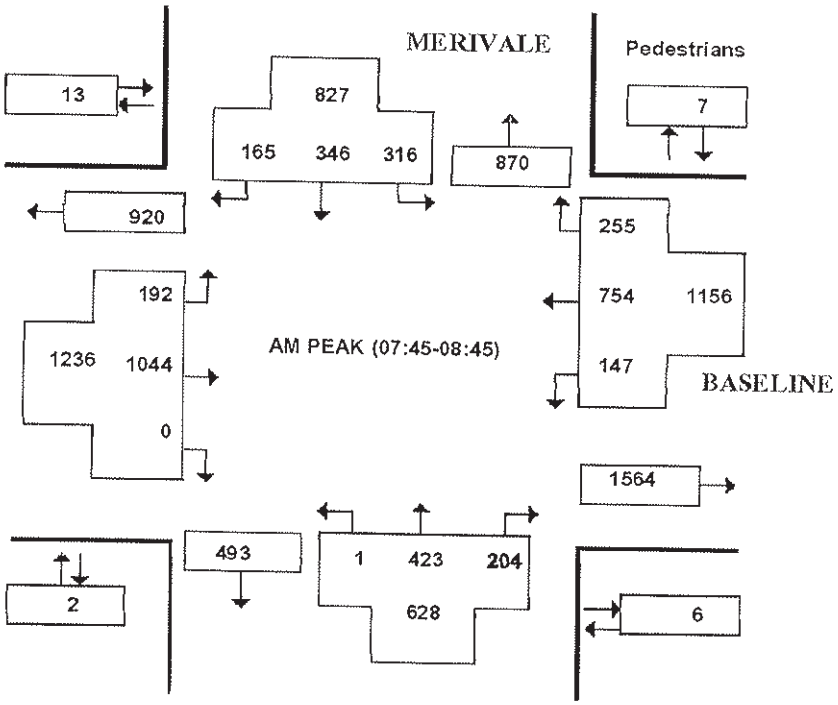
BASELINE RD and MERIVALE RD

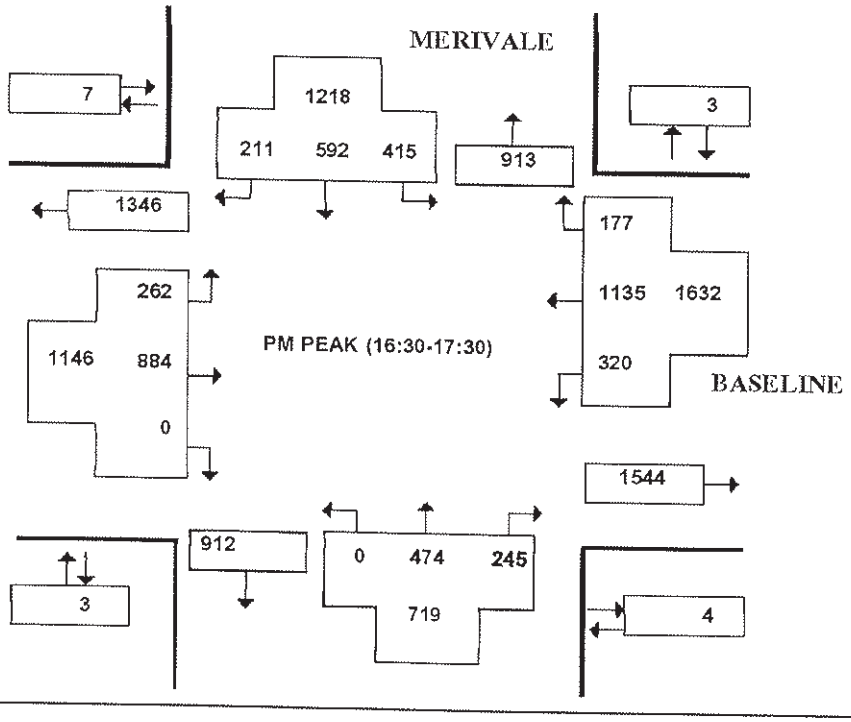
(ULRS Listing BASELINE & MERIVALE)

Survey Date: Thursday 6 July 2006
Conditions: DRY
Start Time: 0700

Total Observed U-Turns
Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

AADT Factor
Thursday in July is 0.9





Approved by : GZ

Printed on : 12/09/2006

Public Works and Services Department

Count ID 2704

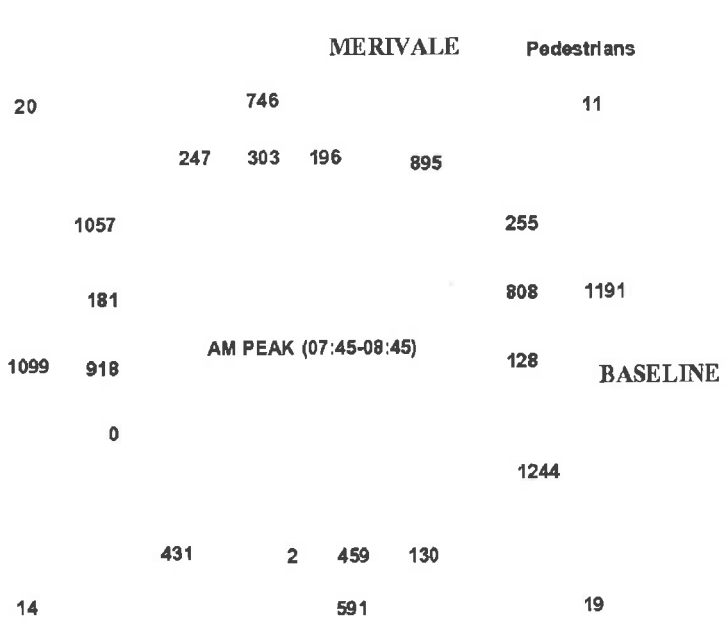
BASELINE RD and MERIVALE RD

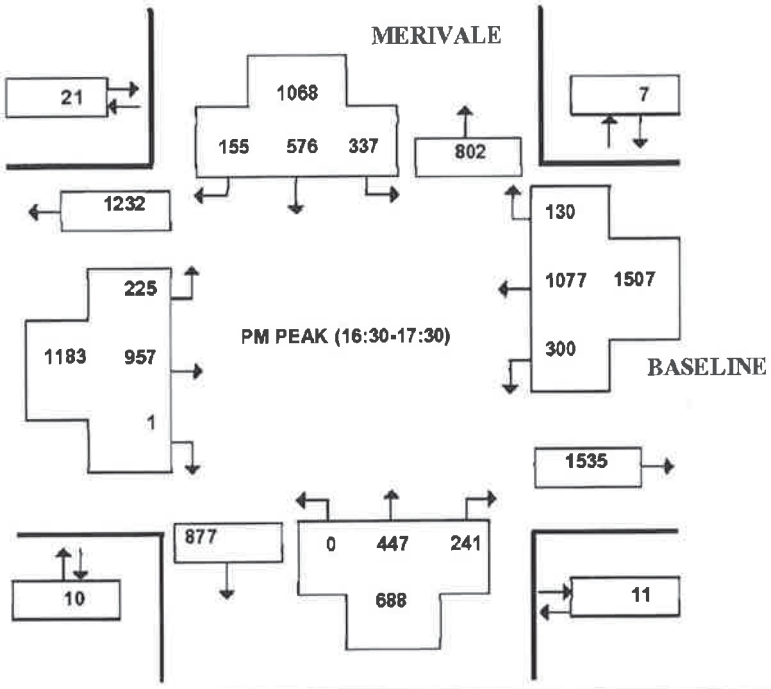
(ULRS Listing BASELINE & MERIVALE)

Survey Date: Friday 25 June 2010
Conditions: dry
Start Time: 0700

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

AADT Factor
Friday in June is 0.8





Approved by : DT

Printed on : 12/11/2010

Appendix E:

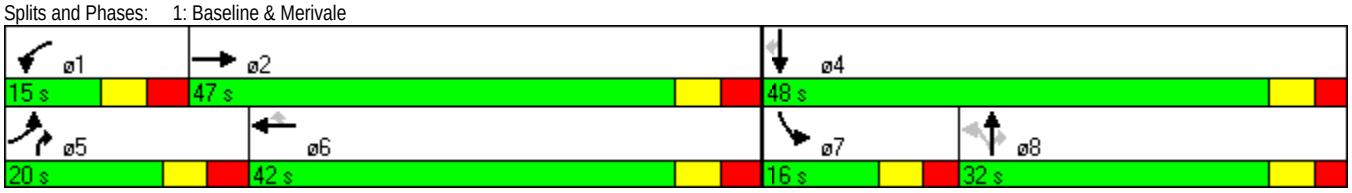
Projected Capacity Analysis without Roadway or Signal Modifications

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	226	918	128	808	300	2	547	130	244	399	295
Lane Group Flow (vph)	238	966	135	851	316	0	578	137	257	420	311
Turn Type	Prot		Prot		Perm	Perm		custom	Prot		Perm
Protected Phases	5	2!	1	6			8	5!	7	4	
Permitted Phases					6	8		8			4
Detector Phase	5	2	1	6	6	8	8	5	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	5.0	5.0	10.0	10.0
Minimum Split (s)	12.1	35.1	12.1	35.1	35.1	31.5	31.5	12.1	11.5	31.5	31.5
Total Split (s)	20.0	47.0	15.0	42.0	42.0	32.0	32.0	20.0	16.0	48.0	48.0
Total Split (%)	18.2%	42.7%	13.6%	38.2%	38.2%	29.1%	29.1%	18.2%	14.5%	43.6%	43.6%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	2.8	2.8	3.4	2.8	2.8	2.8
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
Total Lost Time (s)	7.1	7.1	7.1	7.1	7.1	6.5	6.5	7.1	6.5	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	14.7	39.9	9.7	34.9	34.9		23.7	44.9	9.5	39.7	39.7
Actuated g/C Ratio	0.13	0.36	0.09	0.32	0.32		0.22	0.41	0.09	0.36	0.36
v/c Ratio	1.05	0.79	0.91	0.79	0.50		0.83	0.22	0.90	0.34	0.45
Control Delay	121.4	36.8	103.7	40.6	13.1		52.3	17.9	84.3	26.2	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	121.4	36.8	103.7	40.6	13.1		52.3	17.9	84.3	26.2	9.5
LOS	F	D	F	D	B		D	B	F	C	A
Approach Delay		53.5		40.5			45.7			36.1	
Approach LOS		D		D			D			D	
Queue Length 50th (m)	~61.7	96.2	~32.9	87.2	16.3		61.4	14.8	28.7	33.4	12.1
Queue Length 95th (m)	#110.0	121.0	#71.3	111.0	41.8		81.4	28.1	#51.9	45.8	33.6
Internal Link Dist (m)		486.2		372.5			341.7			253.7	
Turn Bay Length (m)	120.0		200.0		40.0			95.0	110.0		50.0
Base Capacity (vph)	226	1230	149	1076	626		749	635	284	1279	712
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0
Reduced v/c Ratio	1.05	0.79	0.91	0.79	0.50		0.77	0.22	0.90	0.33	0.44

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 110
Offset: 34 (31%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 44.1 Intersection LOS: D
Intersection Capacity Utilization 87.1% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

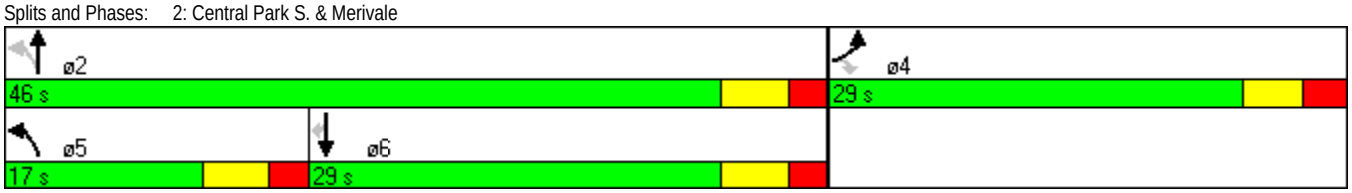
Splits and Phases: 1: Baseline & Merivale



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	145	71	191	914	885	27
Lane Group Flow (vph)	153	75	201	962	932	28
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	28.9	28.9	16.0	26.0	26.0	26.0
Total Split (s)	29.0	29.0	17.0	46.0	29.0	29.0
Total Split (%)	38.7%	38.7%	22.7%	61.3%	38.7%	38.7%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.6	2.6	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	12.6	12.6	50.5	50.5	35.0	35.0
Actuated g/C Ratio	0.17	0.17	0.67	0.67	0.47	0.47
v/c Ratio	0.54	0.24	0.50	0.42	0.59	0.04
Control Delay	37.1	10.8	9.5	6.7	20.8	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.1	10.8	9.5	6.7	20.8	14.0
LOS	D	B	A	A	C	B
Approach Delay	28.4			7.2	20.6	
Approach LOS	C			A	C	
Queue Length 50th (m)	21.1	1.1	8.7	26.8	39.0	0.6
Queue Length 95th (m)	36.5	11.2	19.5	46.1	60.3	m1.8
Internal Link Dist (m)	490.0			253.7	254.4	
Turn Bay Length (m)		45.0	70.0			45.0
Base Capacity (vph)	522	519	444	2282	1583	723
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	0.29	0.14	0.45	0.42	0.59	0.04

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 24 (32%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 60.4%	ICU Level of Service B
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Central Park S. & Merivale



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	435	106	100	1044	958	60
Lane Group Flow (vph)	458	112	105	1099	1008	63
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	28.1	28.1	10.9	26.9	26.9	26.9
Total Split (s)	29.0	29.0	15.0	46.0	31.0	31.0
Total Split (%)	38.7%	38.7%	20.0%	61.3%	41.3%	41.3%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.9	5.9	5.9	5.9
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	22.2	22.2	40.8	40.8	29.6	29.6
Actuated g/C Ratio	0.30	0.30	0.54	0.54	0.39	0.39
v/c Ratio	0.91	0.21	0.39	0.60	0.75	0.10
Control Delay	54.8	8.5	17.2	10.0	23.8	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	8.5	17.2	10.0	23.8	7.4
LOS	D	A	B	B	C	A
Approach Delay	45.7			10.7	22.8	
Approach LOS	D			B	C	
Queue Length 50th (m)	65.8	1.8	4.9	38.9	77.9	1.7
Queue Length 95th (m)	#114.8	13.2	18.3	46.4	#108.5	m8.0
Internal Link Dist (m)	28.2			254.4	750.7	
Turn Bay Length (m)			45.0			35.0
Base Capacity (vph)	518	541	298	1846	1340	629
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	0.88	0.21	0.35	0.60	0.75	0.10

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 17 (23%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 22.3	Intersection LOS: C
Intersection Capacity Utilization 74.2%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 3: Central Park N. & Merivale

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	36	488	893	682	581
Lane Group Flow (vph)	38	514	940	718	621
Turn Type		pt+ov	pm+pt		
Protected Phases	4	4 5	5	2	6
Permitted Phases			2		
Detector Phase	4	4 5	5	2	6
Switch Phase					
Minimum Initial (s)	10.0		5.0	10.0	10.0
Minimum Split (s)	26.0		11.0	29.0	29.0
Total Split (s)	26.0	45.0	19.0	49.0	30.0
Total Split (%)	34.7%	60.0%	25.3%	65.3%	40.0%
Yellow Time (s)	3.3		3.7	3.7	3.7
All-Red Time (s)	2.7		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None		None	C-Max	C-Max
Act Effct Green (s)	14.4	39.0	48.6	48.6	24.0
Actuated g/C Ratio	0.19	0.52	0.65	0.65	0.32
v/c Ratio	0.12	0.37	1.55	0.33	0.57
Control Delay	24.2	11.7	273.3	6.3	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	11.7	273.3	6.3	23.7
LOS	C	B	F	A	C
Approach Delay	12.5			157.7	23.7
Approach LOS	B			F	C
Queue Length 50th (m)	4.5	22.8	~155.6	13.4	37.9
Queue Length 95th (m)	10.7	33.8	m#253.9	m36.1	53.5
Internal Link Dist (m)	304.5			750.7	321.4
Turn Bay Length (m)	40.0		90.0		
Base Capacity (vph)	452	1335	605	2197	1084
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.08	0.39	1.55	0.33	0.57

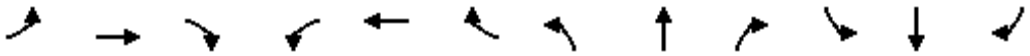
Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 10 (13%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.55	
Intersection Signal Delay: 100.0	Intersection LOS: F
Intersection Capacity Utilization 92.8%	ICU Level of Service F
Analysis Period (min) 15	

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

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

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Kirkwood & Merivale



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	293	3	72	61	30	0	5	195	102	12	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	308	3	76	64	32	0	5	205	107	13	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					52							
pX, platoon unblocked												
vC, conflicting volume	96			312			536	562	310	754	547	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	96			312			536	562	310	754	547	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			94			100	99	72	51	97	100
cM capacity (veh/h)	1498			1249			424	409	730	221	417	980

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	314	76	96	211	120
Volume Left	2	76	0	0	107
Volume Right	3	0	32	205	0
cSH	1498	1249	1700	716	232
Volume to Capacity	0.00	0.06	0.06	0.29	0.52
Queue Length 95th (m)	0.0	1.5	0.0	9.3	20.4
Control Delay (s)	0.1	8.1	0.0	12.1	35.9
Lane LOS	A	A		B	E
Approach Delay (s)	0.1	3.6		12.1	35.9
Approach LOS				B	E

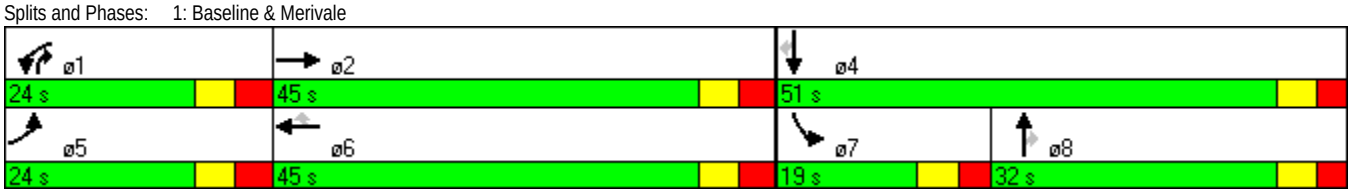
Intersection Summary				
Average Delay	9.2			
Intersection Capacity Utilization	54.9%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	277	957	300	1077	182	551	241	393	686	211
Lane Group Flow (vph)	292	1008	316	1134	192	580	254	414	722	222
Turn Type	Prot		Prot		Perm		pm+ov	Prot		Perm
Protected Phases	5	2	1	6		8	1	7	4	
Permitted Phases					6		8			4
Detector Phase	5	2	1	6	6	8	1	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	5.0	5.0	10.0	10.0
Minimum Split (s)	12.1	35.1	12.1	35.1	35.1	31.5	12.1	11.5	31.5	31.5
Total Split (s)	24.0	45.0	24.0	45.0	45.0	32.0	24.0	19.0	51.0	51.0
Total Split (%)	20.0%	37.5%	20.0%	37.5%	37.5%	26.7%	20.0%	15.8%	42.5%	42.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	2.8	3.4	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.1	7.1	7.1	7.1	6.5	7.1	6.5	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	18.3	37.9	18.3	37.9	37.9	24.1	48.9	12.5	43.1	43.1
Actuated g/C Ratio	0.15	0.32	0.15	0.32	0.32	0.20	0.41	0.10	0.36	0.36
v/c Ratio	1.13	0.94	1.22	1.06	0.36	0.85	0.41	1.21	0.59	0.33
Control Delay	142.5	56.9	173.7	84.4	18.8	58.9	26.4	162.9	33.4	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	142.5	56.9	173.7	84.4	18.8	58.9	26.4	162.9	33.4	5.4
LOS	F	E	F	F	B	E	C	F	C	A
Approach Delay		76.1		93.9		49.0			68.3	
Approach LOS		E		F		D			E	
Queue Length 50th (m)	~84.6	121.3	~96.4	~154.4	18.0	68.8	39.8	~61.3	70.8	1.6
Queue Length 95th (m)	#138.0	#162.3	#151.2	#195.4	37.6	89.4	62.1	#92.3	90.1	17.2
Internal Link Dist (m)		486.2		870.9		341.7			253.7	
Turn Bay Length (m)	120.0		200.0		40.0		95.0	110.0		50.0
Base Capacity (vph)	258	1071	258	1071	539	720	625	343	1257	695
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.94	1.22	1.06	0.36	0.81	0.41	1.21	0.57	0.32

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 65 (54%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.22
Intersection Signal Delay: 75.3 — Intersection LOS: E
Intersection Capacity Utilization 98.2% — ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Baseline & Merivale



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	136	55	258	816	1274	66
Lane Group Flow (vph)	143	58	272	859	1341	69
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	28.9	28.9	11.0	26.0	26.0	26.0
Total Split (s)	29.0	29.0	13.0	46.0	33.0	33.0
Total Split (%)	38.7%	38.7%	17.3%	61.3%	44.0%	44.0%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.6	2.6	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	12.3	12.3	54.0	55.2	32.5	32.5
Actuated g/C Ratio	0.16	0.16	0.72	0.74	0.43	0.43
v/c Ratio	0.52	0.20	0.61	0.34	0.91	0.10
Control Delay	49.0	23.9	19.3	5.5	12.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	23.9	19.3	5.5	12.3	0.2
LOS	D	C	B	A	B	A
Approach Delay	41.7			8.8	11.7	
Approach LOS	D			A	B	
Queue Length 50th (m)	21.2	0.7	19.3	22.3	14.1	0.3
Queue Length 95th (m)	m33.0	m9.8	#51.3	38.7	m#16.7	m0.0
Internal Link Dist (m)	490.0			253.7	254.4	
Turn Bay Length (m)		45.0	70.0			45.0
Base Capacity (vph)	522	507	448	2496	1470	687
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	0.27	0.11	0.61	0.34	0.91	0.10

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 65 (87%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 12.7	Intersection LOS: B
Intersection Capacity Utilization 75.5%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Central Park S. & Merivale

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	329	94	186	911	1309	194
Lane Group Flow (vph)	346	99	196	959	1378	204
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	28.1	28.1	10.9	26.9	26.9	26.9
Total Split (s)	29.0	29.0	15.0	46.0	31.0	31.0
Total Split (%)	38.7%	38.7%	20.0%	61.3%	41.3%	41.3%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.9	5.9	5.9	5.9
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	19.4	19.4	43.6	43.6	29.1	29.1
Actuated g/C Ratio	0.26	0.26	0.58	0.58	0.39	0.39
v/c Ratio	0.79	0.21	0.67	0.49	1.05	0.31
Control Delay	38.8	6.0	30.3	10.4	62.4	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.8	6.0	30.3	10.4	62.4	12.0
LOS	D	A	C	B	E	B
Approach Delay	31.5			13.8	55.9	
Approach LOS	C			B	E	
Queue Length 50th (m)	45.0	0.3	16.4	32.7	~125.5	10.4
Queue Length 95th (m)	71.1	m9.6	#41.4	57.0	m#161.1	m19.9
Internal Link Dist (m)	28.2			254.4	750.7	
Turn Bay Length (m)			45.0			35.0
Base Capacity (vph)	518	532	303	1972	1314	658
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	0.67	0.19	0.65	0.49	1.05	0.31

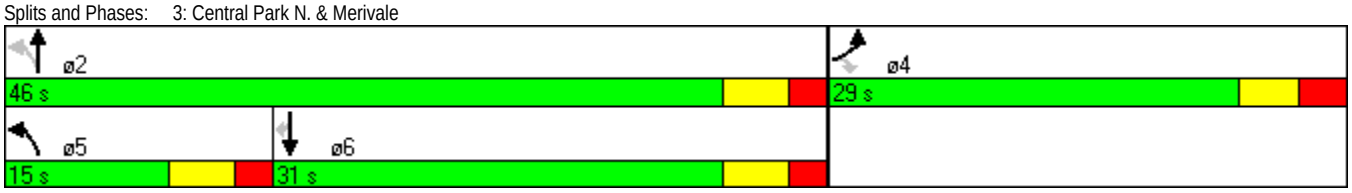
Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.05	
Intersection Signal Delay: 37.2	Intersection LOS: D
Intersection Capacity Utilization 83.2%	ICU Level of Service E
Analysis Period (min) 15	

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

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

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Central Park N. & Merivale

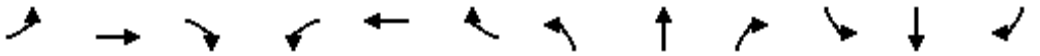


Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	56	753	636	726	927
Lane Group Flow (vph)	59	793	669	764	997
Turn Type		pt+ov	pm+pt		
Protected Phases	4	4 5	5	2	6
Permitted Phases			2		
Detector Phase	4	4 5	5	2	6
Switch Phase					
Minimum Initial (s)	10.0		5.0	10.0	10.0
Minimum Split (s)	26.0		11.0	29.0	29.0
Total Split (s)	26.0	45.0	19.0	49.0	30.0
Total Split (%)	34.7%	60.0%	25.3%	65.3%	40.0%
Yellow Time (s)	3.3		3.7	3.7	3.7
All-Red Time (s)	2.7		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None		None	C-Max	C-Max
Act Effct Green (s)	18.5	39.0	44.5	44.5	24.0
Actuated g/C Ratio	0.25	0.52	0.59	0.59	0.32
v/c Ratio	0.14	0.57	1.59	0.38	0.92
Control Delay	22.2	14.3	293.6	6.4	39.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	14.3	293.6	6.4	39.7
LOS	C	B	F	A	D
Approach Delay	14.9			140.5	39.7
Approach LOS	B			F	D
Queue Length 50th (m)	6.3	40.6	~128.4	18.1	70.4
Queue Length 95th (m)	14.8	57.8	#184.7	24.2	#107.6
Internal Link Dist (m)	304.5			750.7	321.4
Turn Bay Length (m)	40.0		90.0		
Base Capacity (vph)	452	1355	422	2011	1084
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.13	0.59	1.59	0.38	0.92

Intersection Summary

Cycle Length: 75
Actuated Cycle Length: 75
Offset: 29 (39%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.59
Intersection Signal Delay: 77.2 — Intersection LOS: E
Intersection Capacity Utilization 88.2% — ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Kirkwood & Merivale



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	87	3	75	217	72	0	12	213	112	12	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	92	3	79	228	76	0	13	224	118	13	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					52							
pX, platoon unblocked												
vC, conflicting volume	304			95			496	566	93	758	529	266
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	304			95			496	566	93	758	529	266
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			100	97	77	49	97	100
cM capacity (veh/h)	1257			1499			453	409	964	232	429	772

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	100	79	304	237	131
Volume Left	5	79	0	0	118
Volume Right	3	0	76	224	0
cSH	1257	1499	1700	899	243
Volume to Capacity	0.00	0.05	0.18	0.26	0.54
Queue Length 95th (m)	0.1	1.3	0.0	8.1	22.0
Control Delay (s)	0.4	7.5	0.0	10.4	35.9
Lane LOS	A	A		B	E
Approach Delay (s)	0.4	1.6		10.4	35.9
Approach LOS				B	E

Intersection Summary					
Average Delay	9.2				
Intersection Capacity Utilization	48.5%	ICU Level of Service		A	
Analysis Period (min)	15				

Appendix F:

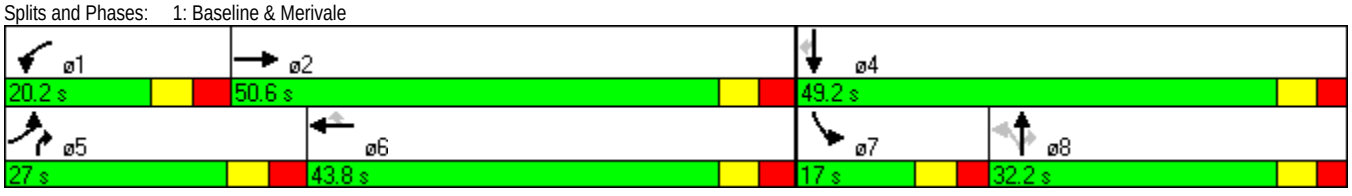
Projected Capacity Analysis with Roadway and Signal Modifications

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	226	918	128	808	300	2	547	130	244	399	295
Lane Group Flow (vph)	238	966	135	851	316	0	578	137	257	420	311
Turn Type	Prot		Prot		Perm	Perm		custom	Prot		Perm
Protected Phases	5	2!	1	6			8	5!	7	4	
Permitted Phases					6	8		8			4
Detector Phase	5	2	1	6	6	8	8	5	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	5.0	5.0	10.0	10.0
Minimum Split (s)	12.1	35.1	12.1	35.1	35.1	31.5	31.5	12.1	11.5	31.5	31.5
Total Split (s)	27.0	50.6	20.2	43.8	43.8	32.2	32.2	27.0	17.0	49.2	49.2
Total Split (%)	22.5%	42.2%	16.8%	36.5%	36.5%	26.8%	26.8%	22.5%	14.2%	41.0%	41.0%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	2.8	2.8	3.4	2.8	2.8	2.8
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
Total Lost Time (s)	7.1	7.1	7.1	7.1	7.1	6.5	6.5	7.1	6.5	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	19.2	45.2	12.4	38.4	38.4		24.7	50.4	10.5	41.7	41.7
Actuated g/C Ratio	0.16	0.38	0.10	0.32	0.32		0.21	0.42	0.09	0.35	0.35
v/c Ratio	0.88	0.76	0.77	0.78	0.51		0.87	0.21	0.89	0.36	0.43
Control Delay	80.2	37.7	79.9	43.7	16.3		60.8	17.8	86.0	30.0	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	80.2	37.7	79.9	43.7	16.3		60.8	17.8	86.0	30.0	5.2
LOS	F	D	E	D	B		E	B	F	C	A
Approach Delay		46.1		40.8			52.6			36.8	
Approach LOS		D		D			D			D	
Queue Length 50th (m)	55.0	105.7	31.3	97.6	22.8		69.0	15.3	31.3	38.0	0.9
Queue Length 95th (m)	#97.3	131.2	#60.5	122.4	50.6		#95.4	28.6	#54.8	51.5	19.3
Internal Link Dist (m)		486.2		372.5			341.7			253.7	
Turn Bay Length (m)	120.0		200.0		40.0			95.0	110.0		50.0
Base Capacity (vph)	282	1278	185	1086	616		692	662	288	1206	736
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.84	0.76	0.73	0.78	0.51		0.84	0.21	0.89	0.35	0.42

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 43.4	Intersection LOS: D
Intersection Capacity Utilization 87.1%	ICU Level of Service E
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
! Phase conflict between lane groups.

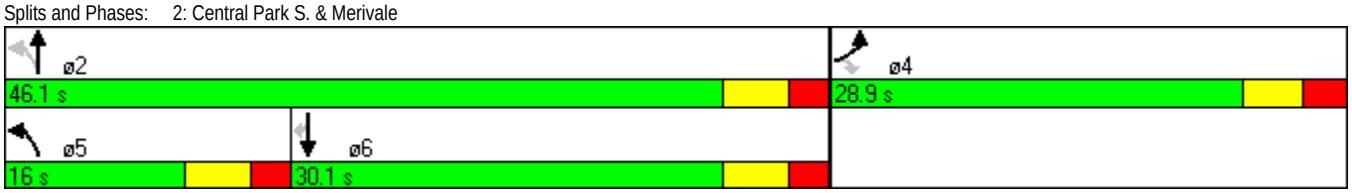
Splits and Phases: 1: Baseline & Merivale



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	145	71	191	914	885	27
Lane Group Flow (vph)	153	75	201	962	932	28
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	28.9	28.9	16.0	26.0	26.0	26.0
Total Split (s)	28.9	28.9	16.0	46.1	30.1	30.1
Total Split (%)	38.5%	38.5%	21.3%	61.5%	40.1%	40.1%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.6	2.6	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	12.6	12.6	50.5	50.5	34.9	34.9
Actuated g/C Ratio	0.17	0.17	0.67	0.67	0.47	0.47
v/c Ratio	0.54	0.24	0.50	0.42	0.59	0.04
Control Delay	34.8	8.9	9.4	6.6	5.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	8.9	9.4	6.6	5.3	0.2
LOS	C	A	A	A	A	A
Approach Delay	26.3			7.1	5.2	
Approach LOS	C			A	A	
Queue Length 50th (m)	19.4	0.2	8.7	26.8	4.8	0.0
Queue Length 95th (m)	32.0	8.7	19.4	46.0	8.5	m0.1
Internal Link Dist (m)	490.0			253.7	254.4	
Turn Bay Length (m)		45.0	70.0			45.0
Base Capacity (vph)	520	517	431	2283	1578	721
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	0.29	0.15	0.47	0.42	0.59	0.04

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 25 (33%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 8.2	Intersection LOS: A
Intersection Capacity Utilization 60.4%	ICU Level of Service B
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Central Park S. & Merivale

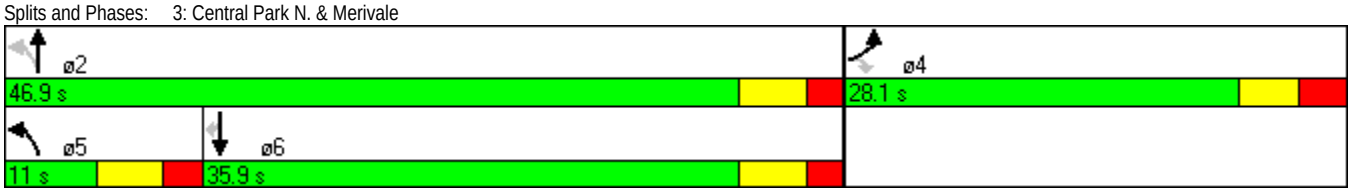


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	435	106	100	1044	958	60
Lane Group Flow (vph)	458	112	105	1099	1008	63
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	28.1	28.1	10.9	26.9	26.9	26.9
Total Split (s)	28.1	28.1	11.0	46.9	35.9	35.9
Total Split (%)	37.5%	37.5%	14.7%	62.5%	47.9%	47.9%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.9	5.9	5.9	5.9
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	15.8	15.8	47.2	47.2	36.8	36.8
Actuated g/C Ratio	0.21	0.21	0.63	0.63	0.49	0.49
v/c Ratio	0.66	0.27	0.33	0.51	0.61	0.08
Control Delay	29.6	6.4	12.2	10.0	17.6	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	6.4	12.2	10.0	17.6	5.7
LOS	C	A	B	B	B	A
Approach Delay	25.1			10.2	16.9	
Approach LOS	C			B	B	
Queue Length 50th (m)	30.9	1.8	4.5	32.2	55.7	0.8
Queue Length 95th (m)	41.4	10.6	19.5	70.1	84.0	7.4
Internal Link Dist (m)	28.2			254.4	750.7	
Turn Bay Length (m)			45.0			35.0
Base Capacity (vph)	964	524	320	2134	1663	771
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	0.48	0.21	0.33	0.51	0.61	0.08

Intersection Summary

Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 15.7 — Intersection LOS: B
Intersection Capacity Utilization 61.8% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 3: Central Park N. & Merivale

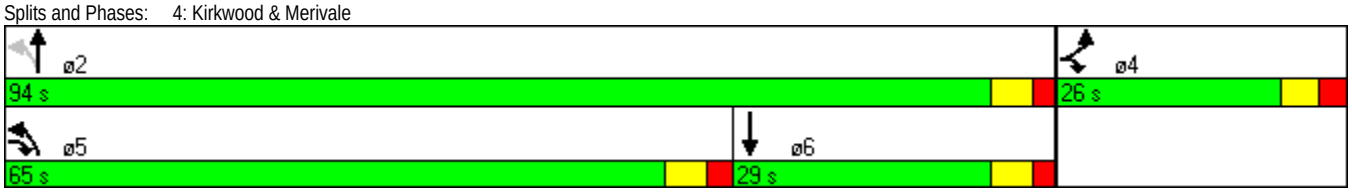


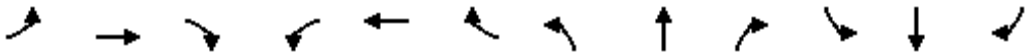
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	36	488	893	682	581
Lane Group Flow (vph)	38	514	940	718	621
Turn Type		pt+ov	pm+pt		
Protected Phases	4	4 5	5	2	6
Permitted Phases			2		
Detector Phase	4	4 5	5	2	6
Switch Phase					
Minimum Initial (s)	10.0		5.0	10.0	10.0
Minimum Split (s)	26.0		11.0	29.0	29.0
Total Split (s)	26.0	91.0	65.0	94.0	29.0
Total Split (%)	21.7%	75.8%	54.2%	78.3%	24.2%
Yellow Time (s)	3.3		3.7	3.7	3.7
All-Red Time (s)	2.7		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None		None	C-Max	C-Max
Act Effct Green (s)	14.1	85.0	93.9	93.9	23.0
Actuated g/C Ratio	0.12	0.71	0.78	0.78	0.19
v/c Ratio	0.19	0.27	0.96	0.27	0.96
Control Delay	48.9	6.8	44.3	4.1	74.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	6.8	44.3	4.1	74.4
LOS	D	A	D	A	E
Approach Delay	9.7			26.9	74.4
Approach LOS	A			C	E
Queue Length 50th (m)	8.2	22.1	183.7	20.0	76.7
Queue Length 95th (m)	18.1	29.6	#297.8	31.3	#112.9
Internal Link Dist (m)	304.5			750.7	321.4
Turn Bay Length (m)	40.0		90.0		
Base Capacity (vph)	283	1867	976	2653	649
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.13	0.28	0.96	0.27	0.96

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 33.9	Intersection LOS: C
Intersection Capacity Utilization 92.8%	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: 4: Kirkwood & Merivale





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	293	3	72	61	30	0	5	195	102	12	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	308	3	76	64	32	0	5	205	107	13	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					52							
pX, platoon unblocked												
vC, conflicting volume	96			312			536	562	310	754	547	80
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	96			312			536	562	310	754	547	80
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			94			100	99	72	51	97	100
cM capacity (veh/h)	1498			1249			424	409	730	221	417	980

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	314	76	96	211	120
Volume Left	2	76	0	0	107
Volume Right	3	0	32	205	0
cSH	1498	1249	1700	716	232
Volume to Capacity	0.00	0.06	0.06	0.29	0.52
Queue Length 95th (m)	0.0	1.5	0.0	9.3	20.4
Control Delay (s)	0.1	8.1	0.0	12.1	35.9
Lane LOS	A	A		B	E
Approach Delay (s)	0.1	3.6		12.1	35.9
Approach LOS				B	E

Intersection Summary				
Average Delay	9.2			
Intersection Capacity Utilization	54.9%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	277	957	300	1077	182	551	241	393	686	211
Lane Group Flow (vph)	292	1008	316	1134	192	580	254	414	722	222
Turn Type	Prot		Prot		Perm		pm+ov	Prot		Perm
Protected Phases	5	2	1	6		8	1	7	4	
Permitted Phases					6		8			4
Detector Phase	5	2	1	6	6	8	1	7	4	4
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	5.0	5.0	10.0	10.0
Minimum Split (s)	12.1	35.1	12.1	35.1	35.1	31.5	12.1	11.5	31.5	31.5
Total Split (s)	25.0	42.5	26.0	43.5	43.5	31.5	26.0	20.0	51.5	51.5
Total Split (%)	20.8%	35.4%	21.7%	36.3%	36.3%	26.3%	21.7%	16.7%	42.9%	42.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.4	3.4	3.4	3.4	3.4	2.8	3.4	2.8	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.1	7.1	7.1	7.1	7.1	6.5	7.1	6.5	6.5	6.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	19.0	35.4	20.0	36.4	36.4	23.9	50.4	13.5	43.9	43.9
Actuated g/C Ratio	0.16	0.30	0.17	0.30	0.30	0.20	0.42	0.11	0.37	0.37
v/c Ratio	1.09	1.01	1.12	1.10	0.37	0.86	0.40	1.12	0.58	0.32
Control Delay	127.5	72.7	134.9	100.2	19.8	60.0	25.6	131.3	32.7	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.5	72.7	134.9	100.2	19.8	60.0	25.6	131.3	32.7	5.2
LOS	F	E	F	F	B	E	C	F	C	A
Approach Delay		85.0		97.5		49.5			58.3	
Approach LOS		F		F		D			E	
Queue Length 50th (m)	~81.1	~126.8	~89.4	~159.8	18.5	69.2	39.4	~57.8	70.3	1.3
Queue Length 95th (m)	#134.6	#171.4	#144.3	#200.8	38.6	#91.6	61.2	#88.9	89.5	16.8
Internal Link Dist (m)		486.2		870.9		341.7			253.7	
Turn Bay Length (m)	120.0		200.0		40.0		95.0	110.0		50.0
Base Capacity (vph)	269	1000	283	1028	521	706	642	370	1271	702
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.01	1.12	1.10	0.37	0.82	0.40	1.12	0.57	0.32

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.12
Intersection Signal Delay: 76.2 Intersection LOS: E
Intersection Capacity Utilization 98.2% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Baseline & Merivale

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	136	55	258	816	1274	66
Lane Group Flow (vph)	143	58	272	859	1341	69
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	28.9	28.9	11.0	26.0	26.0	26.0
Total Split (s)	28.9	28.9	17.0	61.1	44.1	44.1
Total Split (%)	32.1%	32.1%	18.9%	67.9%	49.0%	49.0%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.6	2.6	2.3	2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.9	5.9	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	13.3	13.3	64.8	64.8	42.9	42.9
Actuated g/C Ratio	0.15	0.15	0.72	0.72	0.48	0.48
v/c Ratio	0.57	0.21	0.72	0.35	0.83	0.09
Control Delay	36.3	5.6	30.5	5.5	9.2	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.3	5.6	30.5	5.5	9.2	0.3
LOS	D	A	C	A	A	A
Approach Delay	27.4			11.6	8.8	
Approach LOS	C			B	A	
Queue Length 50th (m)	21.8	0.0	28.0	24.1	4.2	0.0
Queue Length 95th (m)	m28.9	m1.9	#63.9	40.1	#152.8	m0.0
Internal Link Dist (m)	490.0			253.7	254.4	
Turn Bay Length (m)		45.0	70.0			45.0
Base Capacity (vph)	433	431	378	2440	1616	748
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	0.33	0.13	0.72	0.35	0.83	0.09

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 24 (27%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 11.3	Intersection LOS: B
Intersection Capacity Utilization 75.5%	ICU Level of Service D
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Central Park S. & Merivale

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	329	94	186	911	1309	194
Lane Group Flow (vph)	346	99	196	959	1378	204
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	28.1	28.1	10.9	26.9	26.9	26.9
Total Split (s)	28.1	28.1	14.0	61.9	47.9	47.9
Total Split (%)	31.2%	31.2%	15.6%	68.8%	53.2%	53.2%
Yellow Time (s)	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.8	2.8	2.2	2.2	2.2	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	5.9	5.9	5.9	5.9
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max
Act Effct Green (s)	14.7	14.7	63.3	63.3	46.3	46.3
Actuated g/C Ratio	0.16	0.16	0.70	0.70	0.51	0.51
v/c Ratio	0.64	0.30	0.66	0.40	0.79	0.24
Control Delay	42.7	11.5	29.3	5.4	23.2	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.7	11.5	29.3	5.4	23.2	6.9
LOS	D	B	C	A	C	A
Approach Delay	35.7			9.5	21.1	
Approach LOS	D			A	C	
Queue Length 50th (m)	30.1	0.6	17.9	25.7	100.3	7.5
Queue Length 95th (m)	m42.0	m12.5	#44.0	39.4	#140.5	20.6
Internal Link Dist (m)	28.2			254.4	750.7	
Turn Bay Length (m)			45.0			35.0
Base Capacity (vph)	804	446	297	2384	1746	838
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	0.43	0.22	0.66	0.40	0.79	0.24

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 18.9	Intersection LOS: B
Intersection Capacity Utilization 73.9%	ICU Level of Service D
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

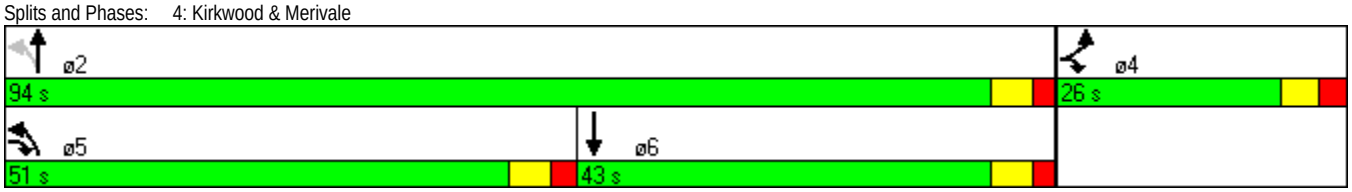
Splits and Phases: 3: Central Park N. & Merivale

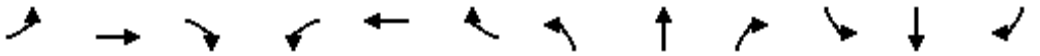
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	56	753	636	726	927
Lane Group Flow (vph)	59	793	669	764	997
Turn Type		pt+ov	pm+pt		
Protected Phases	4	4 5	5	2	6
Permitted Phases			2		
Detector Phase	4	4 5	5	2	6
Switch Phase					
Minimum Initial (s)	10.0		5.0	10.0	10.0
Minimum Split (s)	26.0		11.0	29.0	29.0
Total Split (s)	26.0	77.0	51.0	94.0	43.0
Total Split (%)	21.7%	64.2%	42.5%	78.3%	35.8%
Yellow Time (s)	3.3		3.7	3.7	3.7
All-Red Time (s)	2.7		2.3	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None		None	C-Max	C-Max
Act Effct Green (s)	20.0	70.5	88.0	88.0	37.5
Actuated g/C Ratio	0.17	0.59	0.73	0.73	0.31
v/c Ratio	0.21	0.51	0.97	0.31	0.94
Control Delay	45.5	15.9	59.4	5.9	57.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	45.5	15.9	59.4	5.9	57.3
LOS	D	B	E	A	E
Approach Delay	17.9			30.9	57.3
Approach LOS	B			C	E
Queue Length 50th (m)	12.1	58.2	136.5	28.5	120.7
Queue Length 95th (m)	24.5	75.2	#213.9	36.0	#163.1
Internal Link Dist (m)	304.5			750.7	321.4
Turn Bay Length (m)	40.0		90.0		
Base Capacity (vph)	283	1579	694	2486	1059
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.21	0.50	0.96	0.31	0.94

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 35.5 — Intersection LOS: D
Intersection Capacity Utilization 88.2% — ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Kirkwood & Merivale





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	87	3	75	217	72	0	12	213	112	12	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	5	92	3	79	228	76	0	13	224	118	13	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					52							
pX, platoon unblocked												
vC, conflicting volume	304			95			496	566	93	758	529	266
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	304			95			496	566	93	758	529	266
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			100	97	77	49	97	100
cM capacity (veh/h)	1257			1499			453	409	964	232	429	772

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1
Volume Total	100	79	304	237	131
Volume Left	5	79	0	0	118
Volume Right	3	0	76	224	0
cSH	1257	1499	1700	899	243
Volume to Capacity	0.00	0.05	0.18	0.26	0.54
Queue Length 95th (m)	0.1	1.3	0.0	8.1	22.0
Control Delay (s)	0.4	7.5	0.0	10.4	35.9
Lane LOS	A	A		B	E
Approach Delay (s)	0.4	1.6		10.4	35.9
Approach LOS				B	E

Intersection Summary				
Average Delay	9.2			
Intersection Capacity Utilization	48.5%	ICU Level of Service		A
Analysis Period (min)	15			