Residential Development 1335 and 1339 Bank St

TIA Report

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TIA Plan Reports

On 14 June 2017, the Council of the City of Ottawa adopted new Transportation Impact Assessment (TIA) Guidelines. In adopting the guidelines, Council established a requirement for those preparing and delivering transportation impact assessments and reports to sign a letter of certification.

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that s/he meets the four criteria listed below.

CERTIFICATION

1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
4. I am either a licensed1 or registered 2 professional in good standing, whose field of expertise [check ✓ appropriate field(s)] is either transportation engineering ☑ or transportation planning □.

[1,2] **License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.**

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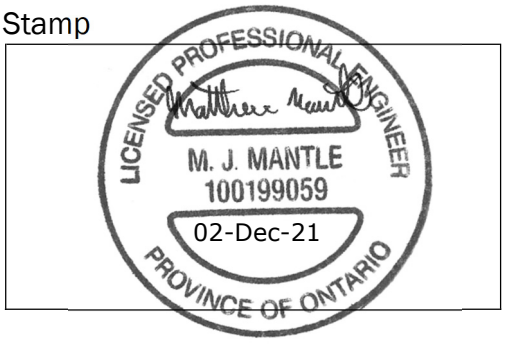

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Parsons has been retained by Lofty Riverside GP Inc. to prepare a Transportation Impact Assessment (TIA) in support of a Site Plan Application (SPA) for a residential development located at 1335 & 1339 Bank Street. Note that an earlier version of this TIA document was submitted for City review in support of ZBLA, which is superseded. This document follows the TIA process, as outlined in the City's TIA Guidelines (2017).

1. Screening Form

The Screening Form confirmed the need for a TIA Report based on the following:

- Trip Generation trigger, given that the proposed development consists of a 26-storey apartment building with approximately 391 residential units;
- Location trigger, given that the development is located within a Design Priority Area (DPA) and within 600 meters of the existing Billings Bridge Rapid Transit Station; and
- Safety trigger, given that a driveway access will connect to a road with horizontal curvature, the proposed driveway is in the influence area of an adjacent traffic signal and there are documented safety concerns on boundary streets within 500 meters of the development.

The Screening Form has been provided in Appendix A, along with responses to City comments.

2. Scoping Report

2.1. Existing and Planned Conditions

2.1.1. PROPOSED DEVELOPMENT

The proposed site is located at the combined addresses of 1335 & 1339 Bank Street and will be composed of a 26-storey apartment building consisting of approximately 391 residential units and 524m^2 of ground floor commercial space (Café/Bar, Fitness, etc.), which will be constructed in a single phase by horizon year 2022. It is noted that approximately 65 of the residential units will be reassigned as short-lease units (that is, a total 326 apartment units and 65 short-lease units). Until recently, the site was occupied by an automobile service building/used car lot and a Harvey's Restaurant.

The proposed site will be located in-between the westbound and eastbound travel lanes for Riverside Drive (Referred to as Riverside Drive WB and Riverside Drive EB herein respectively). The site proposes a one-way driveway access connection linking Riverside Drive WB and Riverside Drive EB. Additionally, the total number of parking spaces proposed are 172 vehicle parking spaces and 269 bicycle parking spaces. The two properties are currently zoned as AM8 (Arterial Mainstreet), Bank Street Subzone. The local context of the site is displayed in Figure 1 and the proposed Site Plan shown in Figure 2.

2.1.2. EXISTING CONDITIONS

Area Road Network

Bank Street is a north-south municipal arterial roadway within the City of Ottawa, that extends from Wellington Street in the north, to past the City's limits at Belmeade Road in the south. Within the study area, Bank Street has a four-lane cross-section. The posted speed limit is 40 km/h north of Riverdale Avenue, and 50 km/h south of Riverdale Avenue. Immediately adjacent to, and south of the site, Bank Street is designated as an Arterial Mainstreet, while the designation changes to Traditional Mainstreet north of Riverside Drive (at the Rideau River).

Figure 1: Local Context

Riverside Drive is a municipal arterial roadway in Ottawa, that extends from its north terminus at Tremblay Road and the Hwy 417 EB Off Ramps, to its south terminus at Limebank Road, where it continues as River Road until the City's limits. Within the study area and east of Data Centre Road, the Riverside Drive eastbound and Riverside Drive westbound travel lanes diverge from one another to form two separate intersections at Bank Street, with the development site located between the two roadways. Three ramps on the east and west sides of Bank Street connect the two Riverside Drive roadways. The two roadways converge again at their intersection with Neil Way, approximately 385 m east of Bank Street. Riverside Drive provides a four-lane cross-section, with auxiliary turn lanes at major intersections. The posted speed limit is 60 km/h.

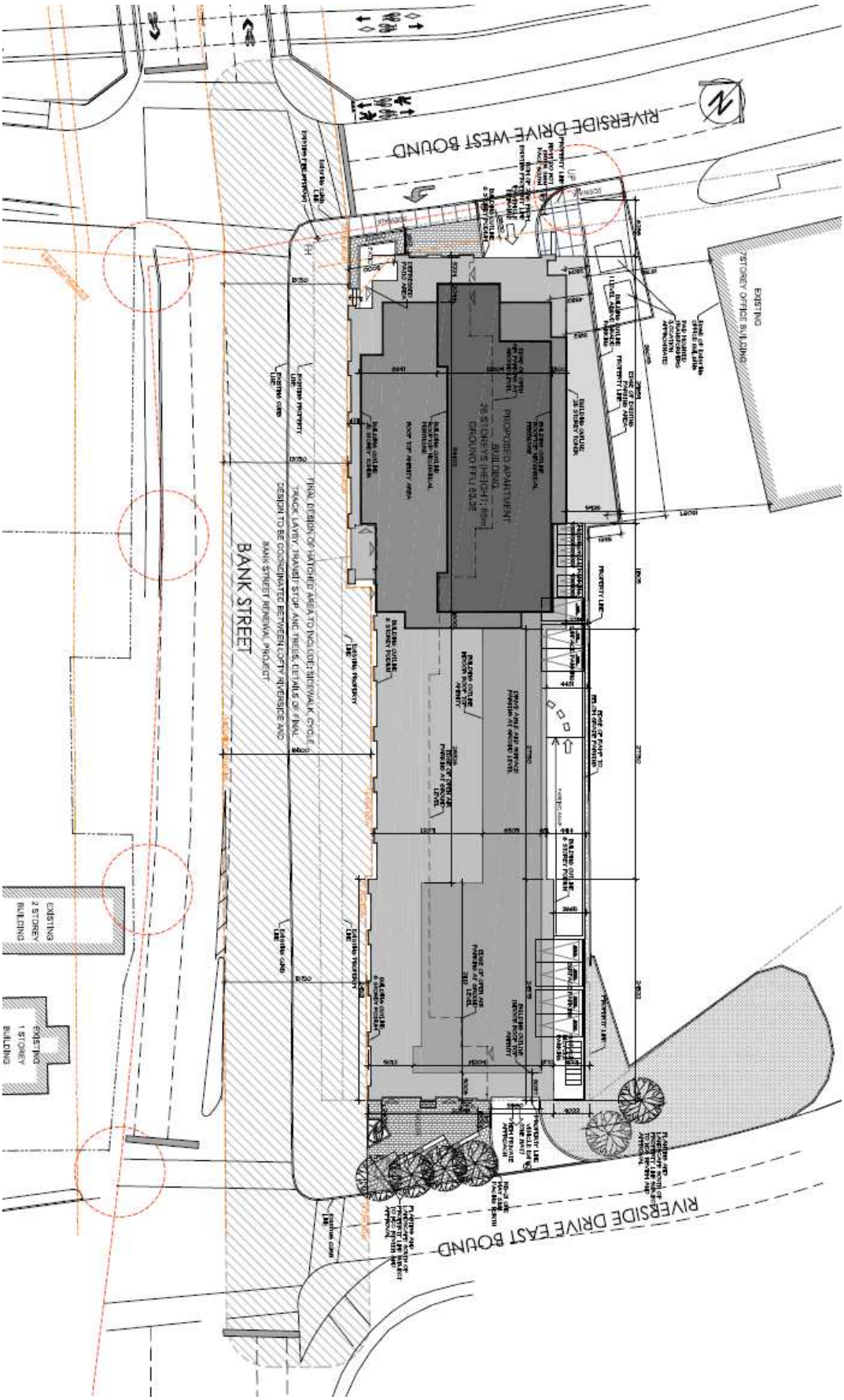
Riverdale Avenue is a municipal collector roadway in Ottawa, that runs from Bank Street in the west to Main Street in the east. The roadway provides a two-lane cross-section, with space for on-street parking. The posted speed limit is 40 km/h.

Billings Transit is an east-west local municipal roadway in Ottawa that is restricted to buses only. The roadway extends from Bank Street in the east to the Data Centre Road in the west and connects buses to the Transitway.

Data Centre Road is a north-south arterial municipal roadway that connects Riverside Drive in the north to Heron Road in the south. The roadway provides a two-lane cross-section and auxiliary turn lanes at major intersections. The posted speed limit is 50 km/h.

Pleasant Park Rd is a collector municipal roadway that extends from Riverside Dr in the west to St Laurent Blvd in the east. The roadway provides a two-lane cross-section and a posted speed limit of 50km/h.

Figure 2: Proposed Site Plan



Three ***ramps*** (identified as R1, R2 and R3 in Figure 1) provide connections between the separated, unidirectional roadways Riverside Dr WB and Riverside Dr EB.

- Ramp 1 is located on Riverside Drive approximately 110m west of Bank St, which provides a connection for westbound traffic access to Billings Bridge Mall and allows traffic to change its heading to eastbound on Riverside Drive.

- Ramp 2 is located on Riverside Drive approximately 130m east of Bank St and provides a connection that allows eastbound traffic to change it heading to westbound on Riverside Drive.

- Ramps 3 is approximately 265m west of Bank St and permits Billings Bridge northbound traffic to head westbound on Riverside Drive

Existing Study Area Intersections

Bank/Riverdale

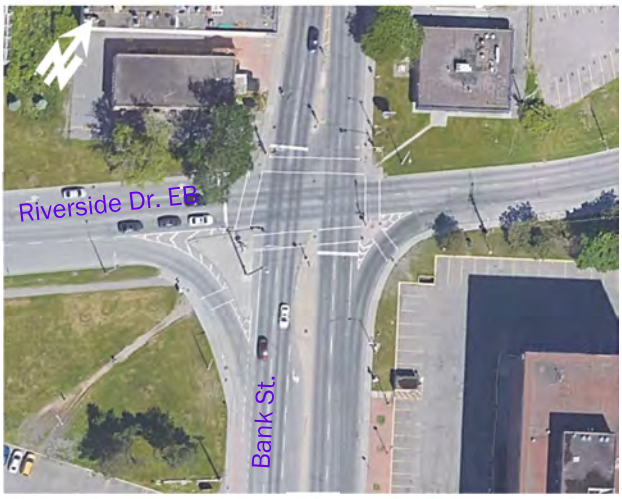
The Bank/Riverdale intersection provides signal control for its north, south and east legs of the intersection and no control for the access on the west leg of the intersection. The north and south legs of the intersection consist of one shared through/right-turn lane and one shared through/left-turn lane. The east and west legs of the intersection consist of a single all-movement lane. There are no restricted movements at this intersection.

Bank/Riverside Westbound

The Bank/Riverside WB intersection is a signalized intersection consisting of northbound, southbound and westbound movements. The north leg of the intersection provides a through lane and a shared through/right-turn lane. The south leg provides two through lanes. The east leg provides one shared through/right-turn lane, one through lane and an auxiliary left-turn lane. With regards to restricted movements, there are no eastbound movements at this intersection, the NBL movement is prohibited and the SBR is prohibited on a red light.

Bank/Riverside Eastbound

The Bank/Riverside EB intersection is a signalized intersection consisting of northbound, southbound and eastbound movements. The north leg of the intersection provides two through lanes. The south leg provides two through lanes and a channelized right-turn lane. The west leg provides two through lanes, a channelized right-turn lane and an auxiliary left-turn lane. With regards to restricted movements, there are no westbound movements at this intersection and the SBL is prohibited.

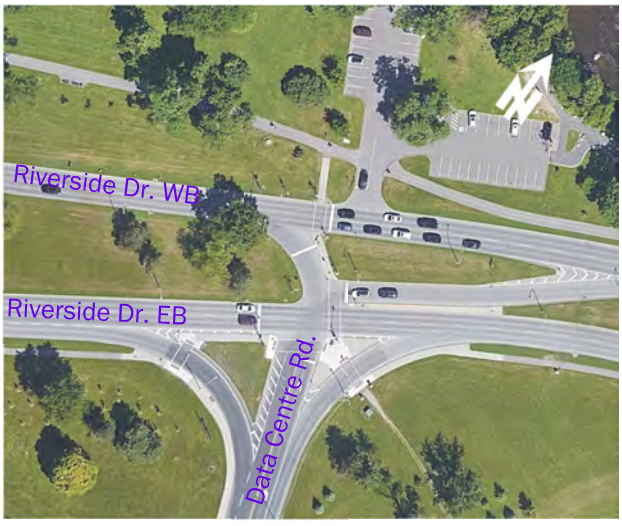


Bank/Billings Transit

The Bank/Billings Transit intersection is a signalized 3-legged intersection providing northbound, southbound and eastbound movements. However, movements to/from the west leg are restricted to buses only. The south leg consists of two through lanes and one auxiliary left-turn lane, the north leg consists of two through lanes and a channelized right-turn lane. The west leg consists of a single left-turn lane and a channelized right-turn lane. U-turns are prohibited from the southbound (north leg) approach.

Data Centre/Riverside

The Data Centre/Riverside intersection is a signalized 3-legged intersection, consisting of south, east and west legs. The south leg consists of an auxiliary left-turn lane and a channelized right-turn lane. The east leg consists of two through lanes and an auxiliary left-turn lane. The west leg consists of two through lanes and a channelized auxiliary right-turn lane. U-turns are prohibited from the west leg of the intersection. Note that a second traffic signal control is provided for the NBLT movement, to halt any vehicles that do not manage to clear the intersection prior to the westbound through movement activating.



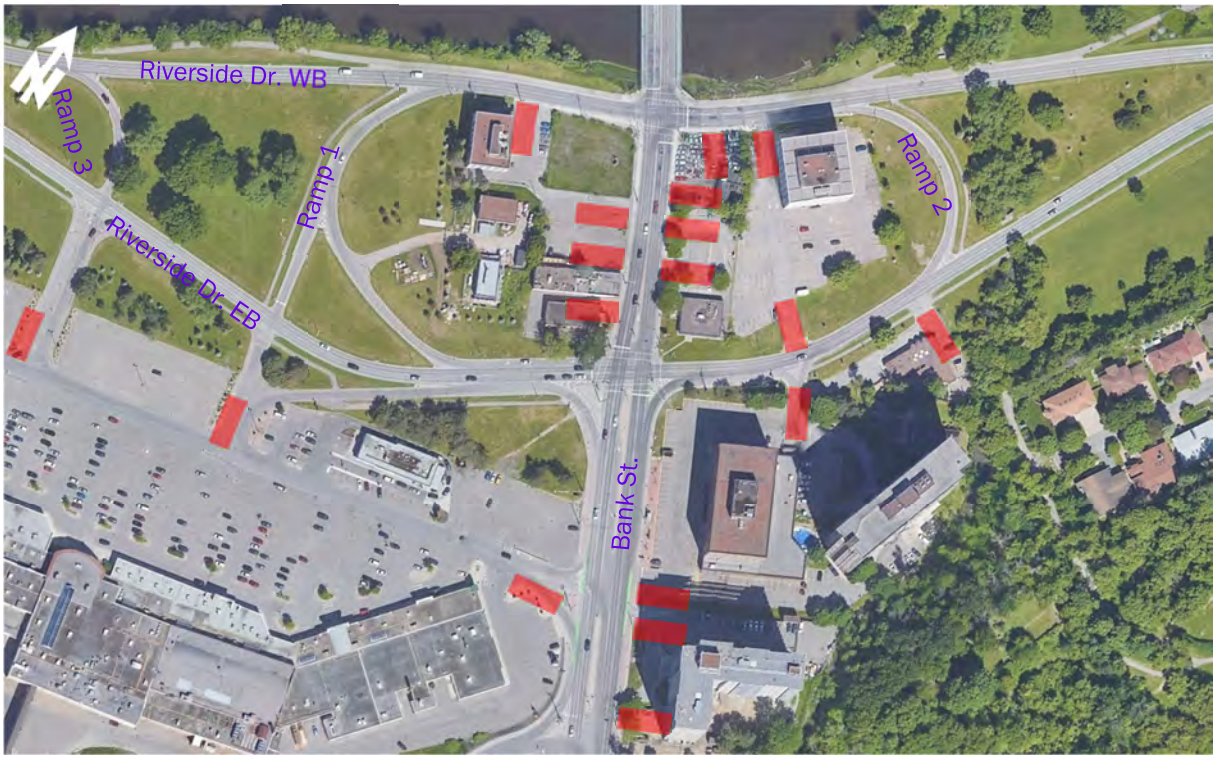
Pleasant Park/Riverside

The Pleasant Park/Riverside intersection is a signalized 3-legged intersection, consisting of south, east and west legs. The south leg consists of an left-turn lane and a channelized right-turn lane. The east leg consists of two through lanes and an auxiliary left-turn lane. The west leg consists of one through lane and a share through/right-turn lane. On the north leg of the intersection, a southbound signal is dedicated to bicycles coming from the pathway. There are no restricted movements at this intersection.

Existing Driveways to Adjacent Developments

As shown highlighted red in Figure 3, there are several adjacent driveways within 200m of the proposed sites driveways.

Figure 3: Adjacent Driveways



- Bank Street
  - East Side: There are currently 6 driveways on the east side of Bank Street. Three are located within the site boundaries, servicing the auto lot and Harvey's Restaurant, which will be removed once the site is redeveloped. The remaining 3 driveways are located to the south of Riverside Drive EB.
  - West Side: There are currently 4 driveways on the west side of Bank Street. Three are located adjacent to the site, servicing a low-rise commercial building and restaurants, which is anticipated to be replaced by a single driveway once the site is redeveloped by nearby 1346 Bank Street

Development. The fourth driveway is located south of Riverside Drive EB, providing access to Billings Bridge Shopping Center.

- Riverside Drive WB
  - South Side: There are 3 driveways on the south side of Riverside Drive WB. One of the driveways provides access to the auto lot within site boundaries. This access is proposed to be extended south to Riverside Drive EB to provide a one-way access road, similar to the driveway located just east of the site, which provides one-way access to 'The Registry' parking lot. The final driveway is located to the west side of Bank Street and is anticipated to be relocated once the site is redeveloped by nearby 1346 Bank Street Development.
- Riverside Drive EB
  - North Side: There is a single driveway located approximately 40 meters east of the proposed site which provides a one-way exit only for 'The Registry' parking lot on to Riverside Drive EB.
  - South Side: There are 4 driveways on the south side of Riverside Drive EB. East of Bank Street, there are 2 driveways, with one located opposite to the one-way egress for 'The Registry' and the other located approximately 100 meters east of site. West of Bank Street, there are 2 driveways which provide access to Billings Bridge Shopping Center.

Existing Area Traffic Management Measures

Below are the existing area traffic management measures within the study area:

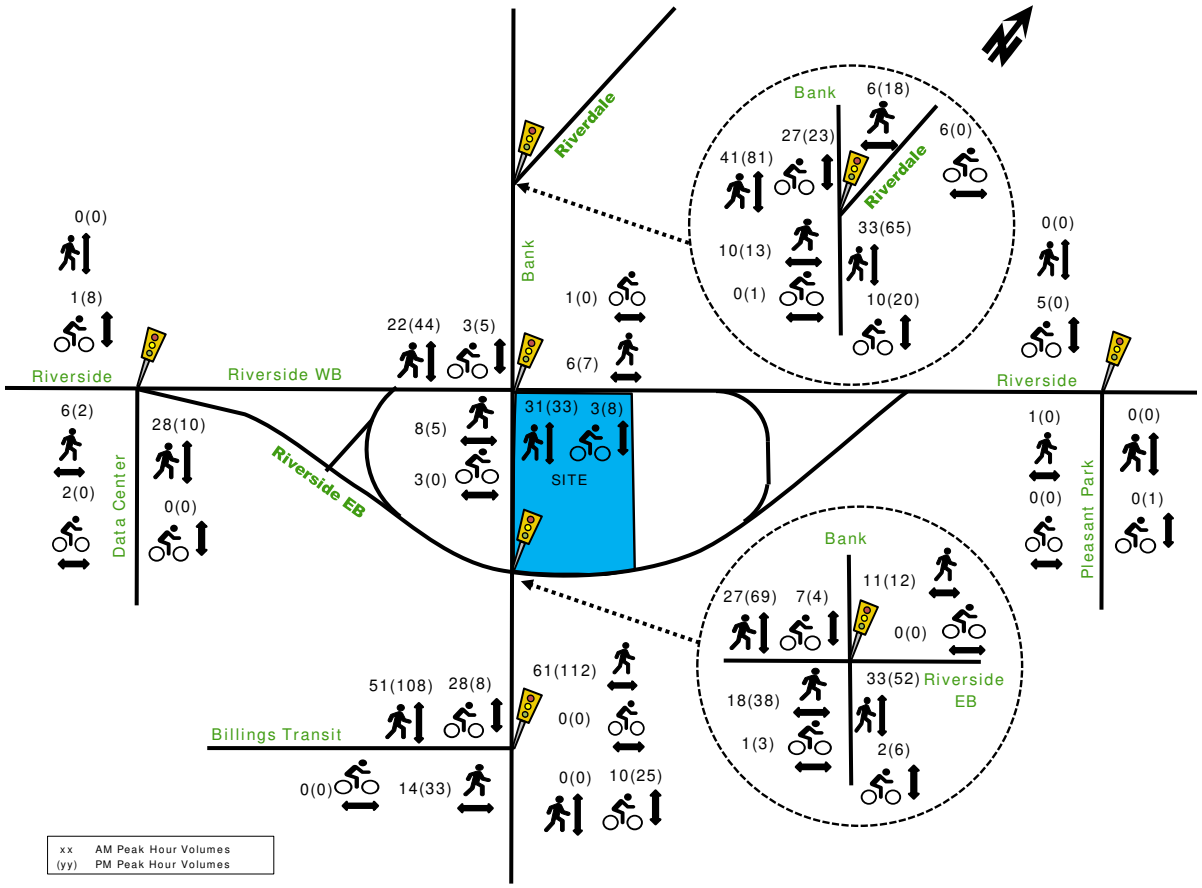
- Channelized right-turns at Bank/Riverside EB, Riverside/Data Centre and Bank/Billings Transit.

Pedestrian/Cycling Network

Pedestrian sidewalk facilities are provided throughout the study area, including on the south side of Riverside Drive EB, along both sides of Bank Street, on the west side of Data Centre Road, on both sides of Billings Transit roadway, on both sides of Riverdale Avenue, on the west side of Pleasant Park Rd, on the west side of Ramp 1 and on the east side of Ramp 2.

With regards to cycling, bike lanes exist along the east and west sides of Bank Street, south of the Bank/Riverside EB intersection. A multi-use pathway (Rideau River Eastern Pathway) runs along the north side of Riverside Drive WB, which can be used by cyclists and pedestrians. Note that in July 2019, a 3m wide grade-separated pathway project was completed that removed the need to cross Bank Street at-grade for users of the Eastern Pathway. GeoOttawa shows suggested cycling routes along Data Centre Road and parts of Riverdale Avenue and Bank Street (north of the Bank/Riverdale intersection). Figure 4 below shows the existing active transportation volumes at study area intersections, although it is noted that the counts at Riverside Drive date back to 2014/2015. Also, counts at the two Bank/Riverside intersections were conducted in November, which is outside the peak season of active transportation.

Figure 4: Existing Active Transportation



Transit Network

The following OC Transpo routes currently operate along Bank Street, at the frontage of the site:

- **Route #5 (Rideau <-> Billings Bridge)**: identified by OC Transpo as a "Local Route", this route operates on customized routing and schedules, to serve local destinations. Route #5 operates at an average rate of every 15-to-30 minutes during weekdays. Bus stops for this route are available on both sides of Bank Street, at the frontage of the site.
- **Route #6 (Rockcliffe <-> Greenboro)**: identified by OC Transpo as a "Frequent Route", this route operates at a high frequency along major roads. Route #6 operates 7 days a week, at an average rate of every 15 minutes or less during weekday peak hours. Bus stops for this route are available on both sides of Bank Street, at the frontage of the site.

In addition to the above mentioned bus routes, the transitway operates directly south of the Billings Bridge Shopping Centre and intersects with Pleasant Park Rd, providing bus stops for the following routes: #5, #6, #10, #40, #44, #46, #48, #88, #90, #92, #93, #96, #97, #98, #99, #111, #140, #141, #190, #199, #290, #291, #294, #299 and #304.

OC Transpo route maps for routes #5 and #6 have been provided in Appendix B. Figure 5 below illustrates the area transit network surrounding the subject site, while Figure 6 provides the nearest bus stop locations to the development site in the form of blue dots.

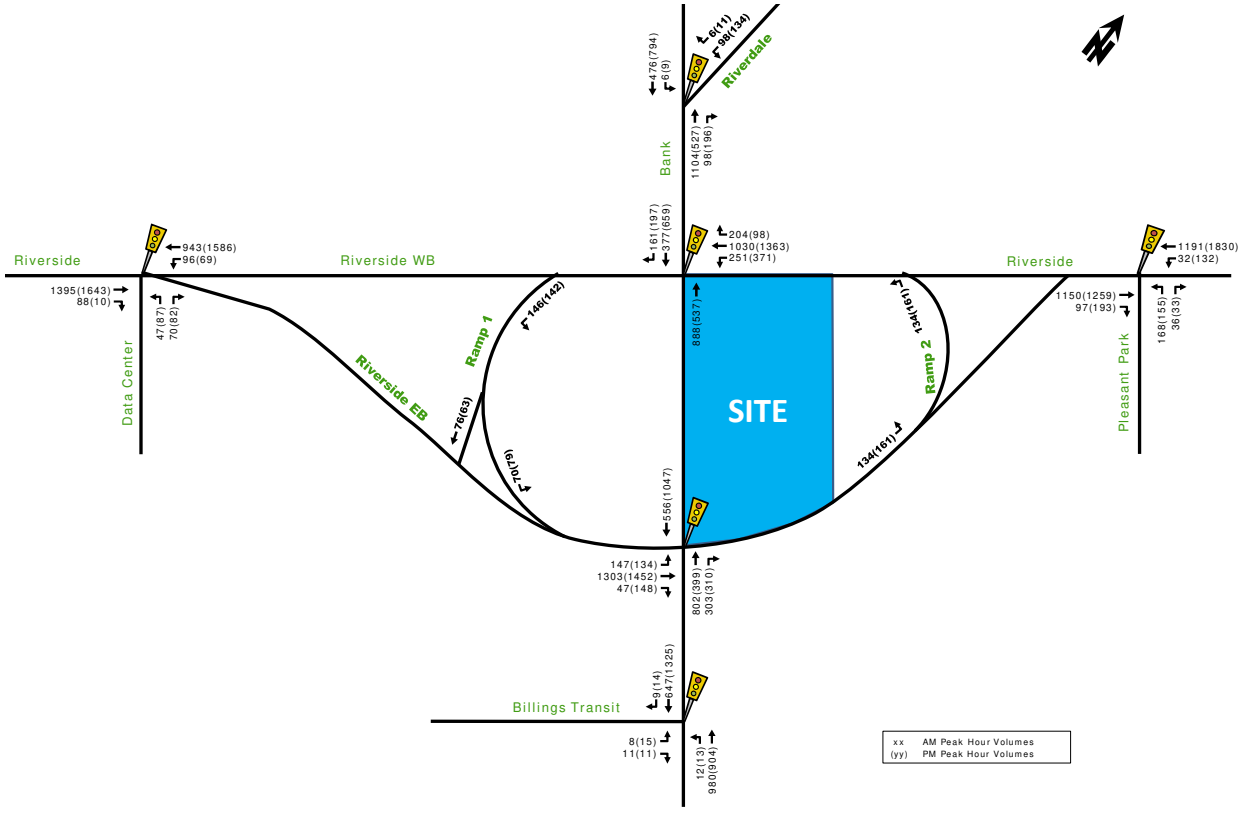
Figure 5: Area Transit Network

Figure 6: Bus Stop Locations

Peak Hour Travel Demands

The existing peak hour traffic volumes within the study area, as illustrated in Figure 7, were obtained from the City of Ottawa or conducted recently by Parsons. The peak hour traffic volume count data has been provided in Appendix C. Note that the EBT volume at Riverside/Data Centre was conservatively increased to balance with the EB approach volumes at Bank/Riverside EB.

Figure 7: Existing Peak Hour Traffic Volumes



Existing Road Safety Conditions

A five-year collision history data (2014-2018, inclusive) was requested and obtained from the City of Ottawa for all intersections and road segments within the study area. Upon analyzing the collision data, the total number of collisions observed within the study area was determined to be 337 collisions within the past five-years. The majority of the collisions (79%) resulted in property damage only, while the remaining collisions resulted in a non-fatal injury. Furthermore, the type of impacts that resulted in 337 collisions were broken down into the following: 115 (34%) rear end, 103 (31%) angled, 80 (24%) sideswipes, 32 (10%) turning movement, 2 (<1%) approaching and 5 (1%) other.

A standard unit of measure for assessing collisions at an intersection is based on the number of collisions per million entering vehicles (MEV). At signalized intersections within the study area, reported collisions have historically taken place at a rate of:

- 0.11 Collisions/MEV at the intersection of Bank/Billings Transit (total of 5 collisions with no particular collision patterns observed)
- 0.39 Collisions/MEV at the intersection of Bank/Riverdale (total of 14 collisions with no particular collision patterns observed)
- 1.33 Collisions/MEV at the intersection of Bank/Riverside WB. A total of 97 collisions took place at this intersection within the past five years.
- 0.91 Collisions/MEV at the intersection of Bank/Riverside EB. A total of 73 collisions took place at this intersection, the majority of which 35 (48%) were rear end accidents, with 18 (25%) occurring in the EB approach alone.
- 0.40 Collisions/MEV at the intersection of Data Centre/Riverside. A total of 23 collisions took place at this intersection, 18 (78%) of which were recorded as rear end (10 (43%) in the NB approach and 8 (35%) in the EB approach).

Other collisions within the study area include:

- 12 collisions between along Bank Street, between Riverside Dr EB and WB, of which 3 occurred in the NB near the proposed lay-by parking area as a result of 2 rear end collisions and 1 sideswipe.
- 12 sideswipe collisions along Riverside Dr EB, between Bank St and Ramp 2.
- 10 angled collisions at the Ramp 3 and Riverside Dr EB intersection.
- 8 angled collisions at the Ramp 3 and Riverside Dr WB intersection.
- 10 angled collisions at the Ramp 1 and Riverside Dr EB intersection.
- 6 turning movement and 7 angle collisions along Bank Street, between Riverside Drive and Billings Transit.

The source collision data as provided by the City of Ottawa and related analysis is provided as Appendix D. Also included as Appendix I is the Safety Audit completed for the Bank Street Renewal Study (Section 4.3).

2.1.3. PLANNED CONDITIONS

Planned Study Area Transportation Network Changes

Based on the City of Ottawa's TMP, the 2031 Affordable Network for Rapid Transit and Transit Priority illustrates Bank Street as a Transit Priority Corridor (Isolated Measures) at the frontage of the site.

Furthermore, a Bank Street Renewal Project (Riverside to Ledbury) is currently underway by the City of Ottawa, with detailed design expected to begin in Winter 2021. The timing of construction is yet to be determined and is subject to funding availability but is anticipated to be beyond the horizon years of the proposed development. The street design identified by the Bank Street Renewal Project will influence various aspects of the ultimate Site Plan for the subject development, including available right-of-way, pedestrian/cycling facilities, driveway access, landscaping, etc. The Functional Design plan for Bank Street (Obtained September 2021), provided in Appendix E illustrates future designs of the two Bank/Riverside intersections, as well as the future geometry and general layout of Bank St between the two intersections. While not illustrated in the Functional Design Plan, it is

also anticipated that Ramp 1 will be modified by removing the Riverside Dr EB on ramp and widening the ramp's SBT lane to include a left-turn auxiliary lane.

The design is continuing to evolve, however, some considerations for the ultimate design of Bank St can include smart channels for right-turns, median between Riverside EB and WB, physically separated bike lanes (cycle tracks) on both sides of Bank St and modified intersection designs at Billings Bridge, Riverside Dr EB and Riverside Dr WB.

Other Area Developments

The following section outlines adjacent developments in the general area that were considered in the TIA. Figure 8 illustrates the site context for other area developments nearby.

Figure 8: Other Nearby Developments

1346 Bank Street

Cushman & Wakefield is proposing to construct a residential development consisting of a 31-storey and a 34-storey high-rise buildings containing 564 apartment units and 3,603 ft^2 commercial space. The development is anticipated to be constructed in two phases, with Phase 1 constructed by 2023 and Phase 2 constructed by 2026. The anticipated two-way vehicle trips are approximately 74 and 54 veh/h during the AM and PM peak hours respectively.

2.2. Study Area and Time Periods

The proposed site is a residential development that is planned to be constructed in 2022. As such, the horizon years being analyzed in this report are the 2022 and 2027 (five-years after full buildout) horizon years, using the weekday morning and afternoon peak hour time periods. Proposed study area intersections and boundary roads are outlined below and highlighted in Figure 9.

- Bank/Riverdale intersection;
- Bank/Riverside WB intersection;
- Bank/Riverside EB intersection;
- Bank/Billings Transit intersection;
- Pleasant Park/Riverside intersection;
- Riverside WB/Site Access intersection;
- Riverside EB/Site Access intersection;
- Data Center/Riverside intersection;
- Riverside EB/Ramp 1;
- Riverside WB/Ramp 2;
- Along Bank Street adjacent to the site;
- Along Riverside Drive EB adjacent to the site; and,
- Along Riverside Drive WB adjacent to the site.

Figure 9: Study Area Intersections

2.3. Exemption Review

The following modules/elements of the TIA process recommended to be exempt in the subsequent steps of the TIA process, based on the City's TIA guidelines and the subject site:

Table 1: Exemptions Review Summary

Module	Element	Exemption Consideration
4.1 Development Design	4.1.2 New Streets Network	Not required for applications involving site plans.
4.6 Neighborhood Traffic Management	4.6.1 Adjacent Neighborhoods	The development relies on arterial roads for access.
4.8 Review of Network Concept	All elements	The site is not expected to generate 200 trips more than the established zoning.

3. Forecasting

3.1. Development Generated Travel Demand

3.1.1. TRIP GENERATION AND MODE SHARES

The proposed development will consist of a 26-storey high-rise apartment building, containing 391 residential units (326 apartment units and 65 short-lease units) and approximately 524m^2 (5,640ft^2) commercial space consisting of a café/bar space and fitness area. For the purposes of trip generation, we have assumed only a portion of the commercial space – 174m^2 (1,873ft^2) that is occupied by the café/bar – would generate trips by non-residents.

As previously mentioned, the site was occupied by some existing developments. Since the traffic counts were all conducted while the existing developments were still operating, the number of trips generated by the proposed development will be the net difference between the projected future trips of the site and the existing trips of the site.

The appropriate trip generation rates for the apartment land use of the proposed development were obtained from the 2009 TRANS Trip Generation Residential Trip Rates Report (Table 6.3). Trip rates for the café/bar land use were obtained from the ITE Trip Generation Manual (10th edition). For the short lease units, the "hotel rooms" land use in the ITE Manual were assumed to have similar characteristics. The trip rates are summarized in Table 2 below.

Table 2: Trip Generation Trip Rates

Land Use	Data Source	Trip Rates	
		AM Peak	PM Peak
High-Rise Apartments (10+ floors)	TRANS	T = 0.24(du);	T = 0.27(du);
First Floor Café/Bar	ITE 925	N/A	T = 11.36(x);
Short-Lease Units (Hotel Rooms)	ITE 310	T = 0.50(du) + 5.34;	T = 0.75(du) – 26.02;

Notes: *T = Average Vehicle Trip Ends*
du = Dwelling unit
x = Gross Floor Area (GFA) (1000 ft²)

The trip rates shown in Table 2 represent the vehicle trips/hour for the residential land use and person trips/hour for the café/bar and short lease units. Note that during the morning peak hour, the café/bar is expected to generate internal trips only. As such, only an afternoon peak hour trip rate has been provided. With regards to the residential land use, the number of vehicles per hour were determined as shown in Table 3 below.

Table 3: Apartment Units Vehicle Trip Generation

Land Use	Dwelling Units	AM Peak (Vehicles/h)			PM Peak (Vehicles/h)		
		In (24%)	Out (76%)	Total	In (62%)	Out (38%)	Total
High-Rise Apartments (10+ floors)	326	18	60	78	54	34	88

The 2009 TRANS Trip Generation Report was then used to convert the total vehicle trips of the residential land use to total person trips, based on the mode share percentages of each respective travel mode. The total trips were also divided into inbound and outbound trips. Table 4 below provides the detailed mode share breakdowns for the residential land use of the proposed development.

Table 4: Apartment Units Mode Shares Breakdown (2009 TRANS Report)

Travel Mode	Mode Share	AM Peak (Person Trips/h)			Mode Share	PM Peak (Person Trips/h)		
		In (24%)	Out (76%)	Total		In (62%)	Out (38%)	Total
Auto Driver	37%	18	60	78	40%	54	34	88
Auto Passenger	8%	5	12	17	9%	13	7	20
Transit	41%	21	66	87	37%	51	31	82
Non-motorized	14%	7	22	29	14%	19	11	30
Total Person Trips	**100%**	**51**	**160**	**211**	**100%**	**137**	**83**	**220**

As shown in Table 4, the total number of person trips anticipated to be generated by the apartment units is 211 and 220 person trips/h during the morning and afternoon peak hour periods, respectively.

With regards to the café/bar space and short-lease units, the person trips/hour are calculated directly using the trip rates shown in Table 2 and multiplied by a factor of 1.28, as per TIA standards, 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 resulting total person trips/hour for the café/bar and short-lease unit land uses of the proposed development are summarized in Table 5.

Table 5: Café/Bar and Short-Lease Units Person Trips

Land Use	Units or Area	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
First Floor Café/Bar	1,873 ft²	0	0	0	17	10	27
Short-Lease Units	65 Units	28	20	48	11	18	29
Total Person Trips		**28**	**20**	**48**	**28**	**28**	**56**

The total person trips of the residential land use can now be combined with the total person trips of the café/bar and short-lease units land uses. Typically, the total person trips are distributed by forecasted mode share percentages that are obtained from the 2011 NCR Household Origin-Destination Survey. These mode shares, which represent the broader Alta Vista District in Ottawa, are provided in Table 6. However, based on information provided by City's Transportation Planning Staff, transit modal percentages in the vicinity of Billings Bridge Plaza/Billings Station range between 50% and 60% based on studies conducted using the 2016 Census data. As such, the forecasted mode shares were adjusted to the percentages shown in Table 7.

Table 6: 2011 NCR Mode Share Percentages (Alta Vista District)

Travel Mode	Mode Share
Auto Driver	55%
Auto Passenger	15%
Transit	20%
Walk	5%
Bike	5%
Total	**100%**

Table 7: Modified Mode Share Percentages (2016 Census)

Travel Mode	Mode Share
Auto Driver	25%
Auto Passenger	10%
Transit	55%
Walk	5%
Bike	5%
Total	**100%**

The person trips of the apartment units, the café/bar and the short-lease units were combined and distributed using the revised mode share assumptions. The total person trips anticipated to be generated by the proposed development based on the travel modes are provided in Table 8.

Table 8: OD Survey Mode Shares Breakdown, Alta Vista District

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Auto Driver	25%	19	45	64	42	29	71
Auto Passenger	10%	9	17	26	16	12	28
Transit	55%	43	100	143	90	61	151
Walk	5%	4	10	14	8	6	14
Bike	5%	3	9	12	7	5	12
Total Person Trips	100%	78	181	259	163	113	276
Total Auto Trips		**19**	**45**	**64**	**42**	**29**	**71**

As such, the anticipated number of total auto trips generated by proposed development is approximately 64 and 71 vehicle trips/h during the morning and afternoon peak hour, respectively.

Since this proposed development does not satisfy the permitted zoning, with respect to height, the following assumptions were used to estimate the number of site generated person trips greater than the established zoning:

- The site current zoned as AM8, which permits buildings up to 50m in height (approximately 11 storeys assuming 4.3m average storey height);
- The proposed building is 26 storeys;

Using the assumptions stated above, the number of residential units per floor template within the proposed building are as follows:

Ground floor to top of podium (6th floor)

- 175 residential units

Bottom of tower (7th floor) to 11th floor

- 48 residential units
- total of 223 residential units within the first 50m of building height

12th floor to 26th floor

- 168 residential units

Using the above values, a ratio can be obtained that will be used to apply to the total number of anticipated generated person trips during the morning and afternoon peak hours.
Person trip ratio = 168 / (223+168) ~ 0.43 (43%)

Total estimated trips greater than the established zoning during the peak periods using the above ratio are (residential person trips from Table 4):
AM peak
259 person trips/h * 0.43 = 111 person trips/h over the current zoning (using the assumptions stated above)
PM peak
276 person trips/h * 0.43 = 119 person trips/h over the current zoning (using the assumptions stated above)

Therefore, the development is not anticipated generate 200 trips more than the established zoning during both the morning and afternoon peak hours, and module 4.8 Review of Network Concept is exempted from this report.

Estimated Net Difference in Trips Generated

With regards to the existing developments at the site, the number of trips generated in existing conditions were estimated using the ITE Trip Generation Manual (10th edition). As the proposed development is planned to replace the existing developments at 1335 and 1339 Bank St, which consist of a Harvey's fast-food restaurant and a car service shop, Table 9 provides the estimated peak hour vehicle volumes of the existing developments. Note that the mode shares in Table 7 were used to determine the vehicle trips of the existing developments.

Table 9: Existing Vehicle Trips at 1335 and 1339 Bank St

Land Use	Data Source	GFA (ft²)	AM Peak (Vehicles/h)			PM Peak (Vehicles/h)		
			In	Out	Total	In	Out	Total
Harvey's Fast-Food Restaurant	ITE 934	3,300	0	0	0	18	17	35
Reliable Auto Car Service	ITE 943	1,600	1	1	2	1	1	2
Total		**4,900**	**1**	**1**	**2**	**19**	**18**	**37**

Since the Harvey's restaurant does not open until (10:30 AM) and is not operating throughout the morning peak hour, vehicle trips are anticipated to be very low (zero) during the AM peak hour. As for the Reliable Auto car service shop, it is anticipated that low volumes of vehicles will be experienced due to the size of the building and the usage of the site. The anticipated net difference between the proposed development's vehicle trips (Table 8) and the existing site's vehicle trips (Table 9) is summarized in Table 10.

Table 10: Anticipated 'New' Vehicle Trips

Land Use	AM Peak (Vehicles/h)			PM Peak (Vehicles/h)		
	In	Out	Total	In	Out	Total
Proposed Development	18	44	62	23	11	34

As shown in Table 10 above, the anticipated 'new' vehicle trips of the proposed development are 62 and 34 vehicle trips/hour during the morning and afternoon peak hours, respectively.

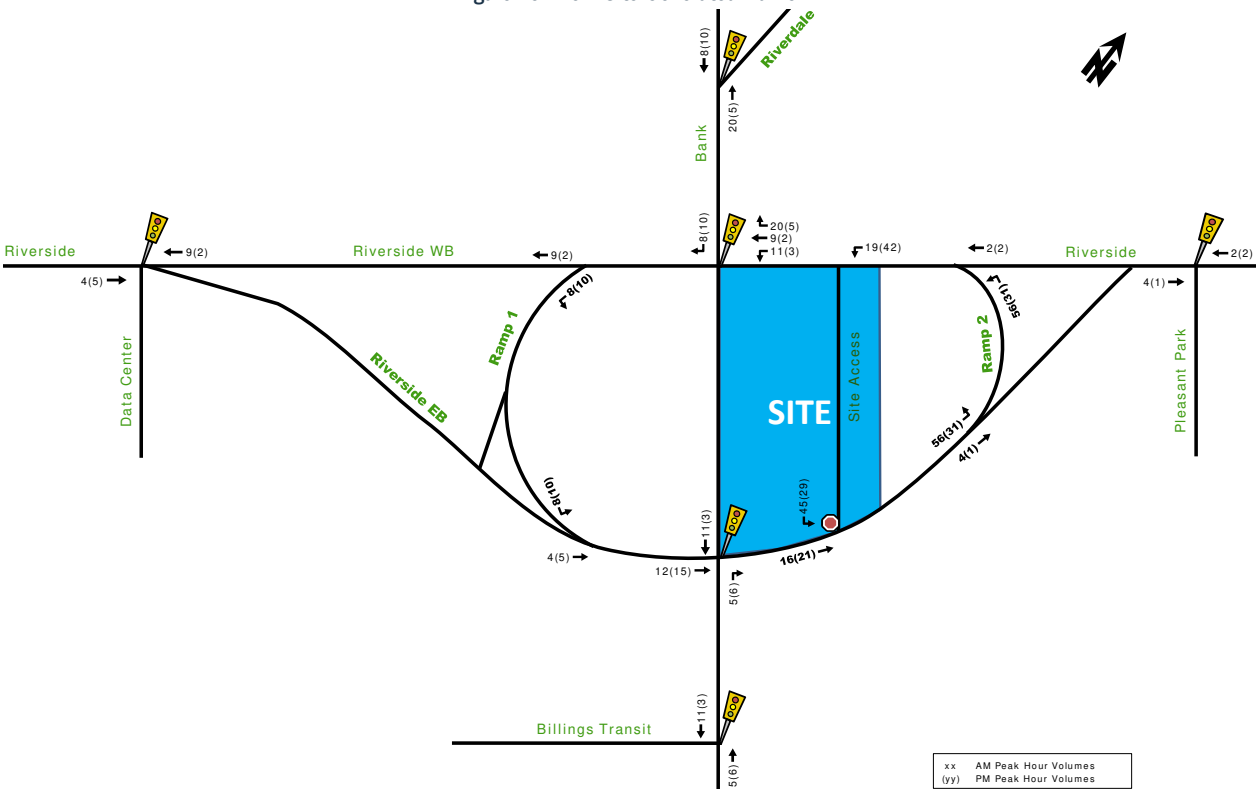
3.1.2. TRIP DISTRIBUTION AND ASSIGNMENT

Based on the 2011 OD Survey (Alta Vista district) and the location of adjacent arterial roadways and neighbourhoods, the distribution of site-generated traffic volumes was estimated as follows:

- 45% to/from the north;
- 25% to/from the south;
- 10% to/from the east; and,
- 20% to/from the west.

The anticipated 'new' site-generated auto trips of the proposed development (Table 10) were then assigned to the study area road networks as shown in Figure 10. At site accesses, the in/out volumes are reflective of the actual total auto trips in Table 8.

Figure 10: 'New' Site-Generated Traffic



3.2. Background Network Traffic

3.2.1. TRANSPORTATION NETWORK PLANS

Refer to Section 2.1.3: Planned Study Area Transportation Network Changes.

3.2.2. BACKGROUND GROWTH

Since the lands surrounding the study area are well developed, with not many major other area developments planned near the subject site, traffic within the study area is not anticipated to increase significantly in the next few years. As a conservative estimate, traffic growth is assumed to be 1% per year along both Bank St and Riverside Dr for the future horizon years 2022 and 2027. Along Billings Transit, Riverdale Ave and Data Centre Rd, the traffic growth was assumed to be negligible. Traffic volumes anticipated for the future background horizon years are illustrated in Figure 11 and Figure 12.

Figure 11: Future Background 2022 Traffic Volumes

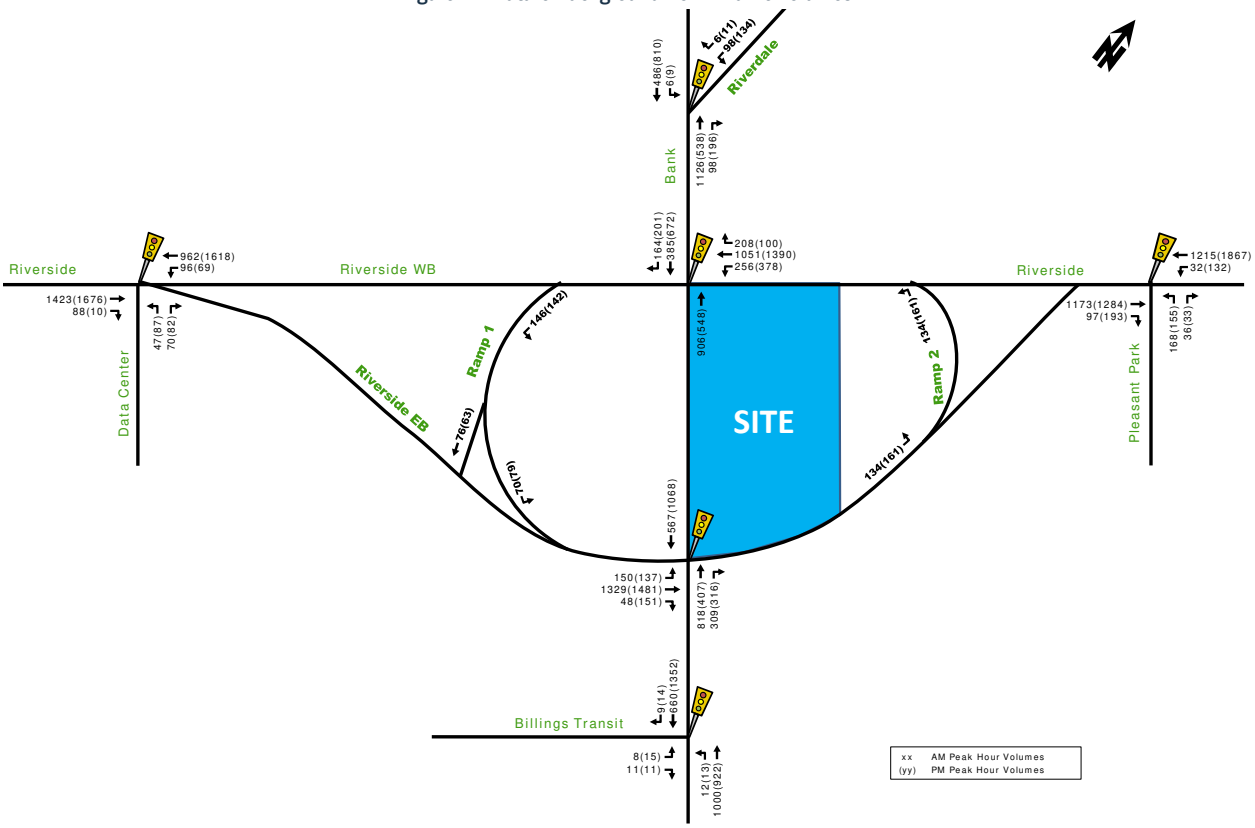
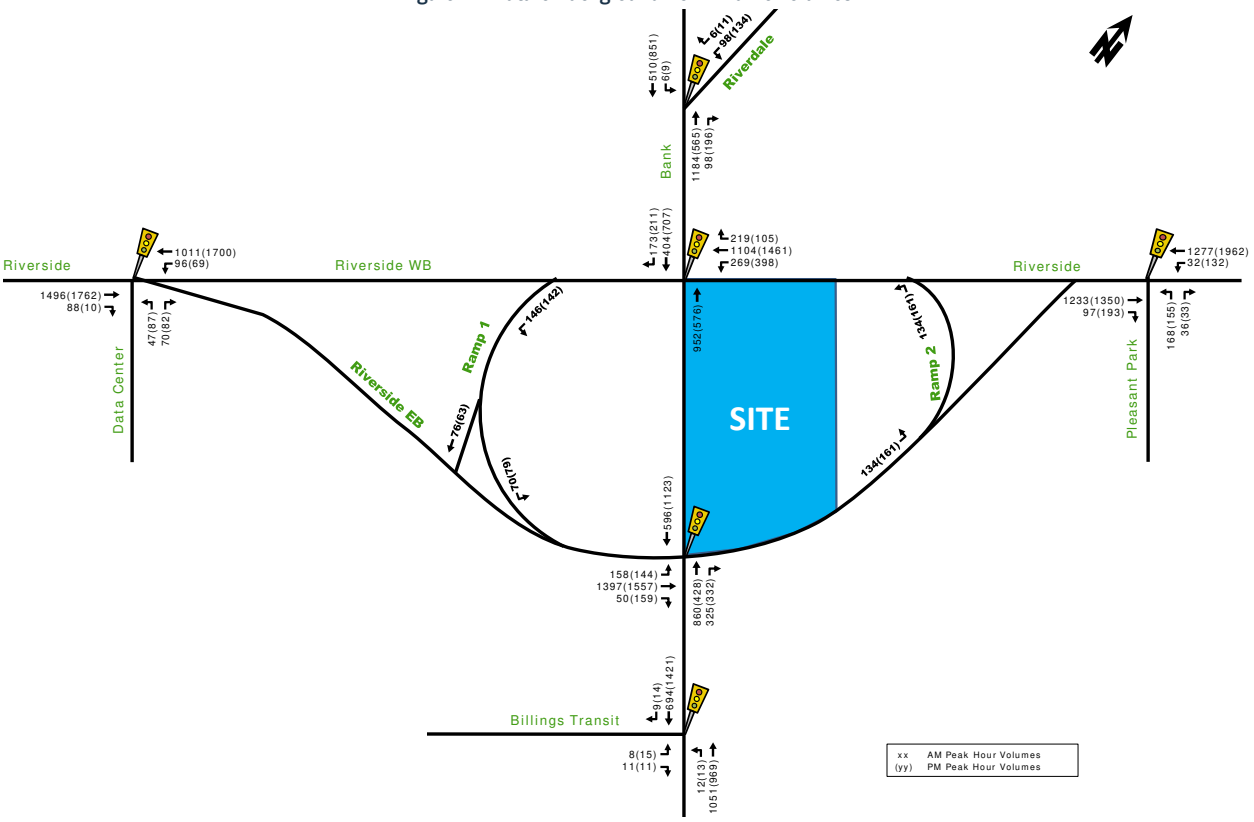


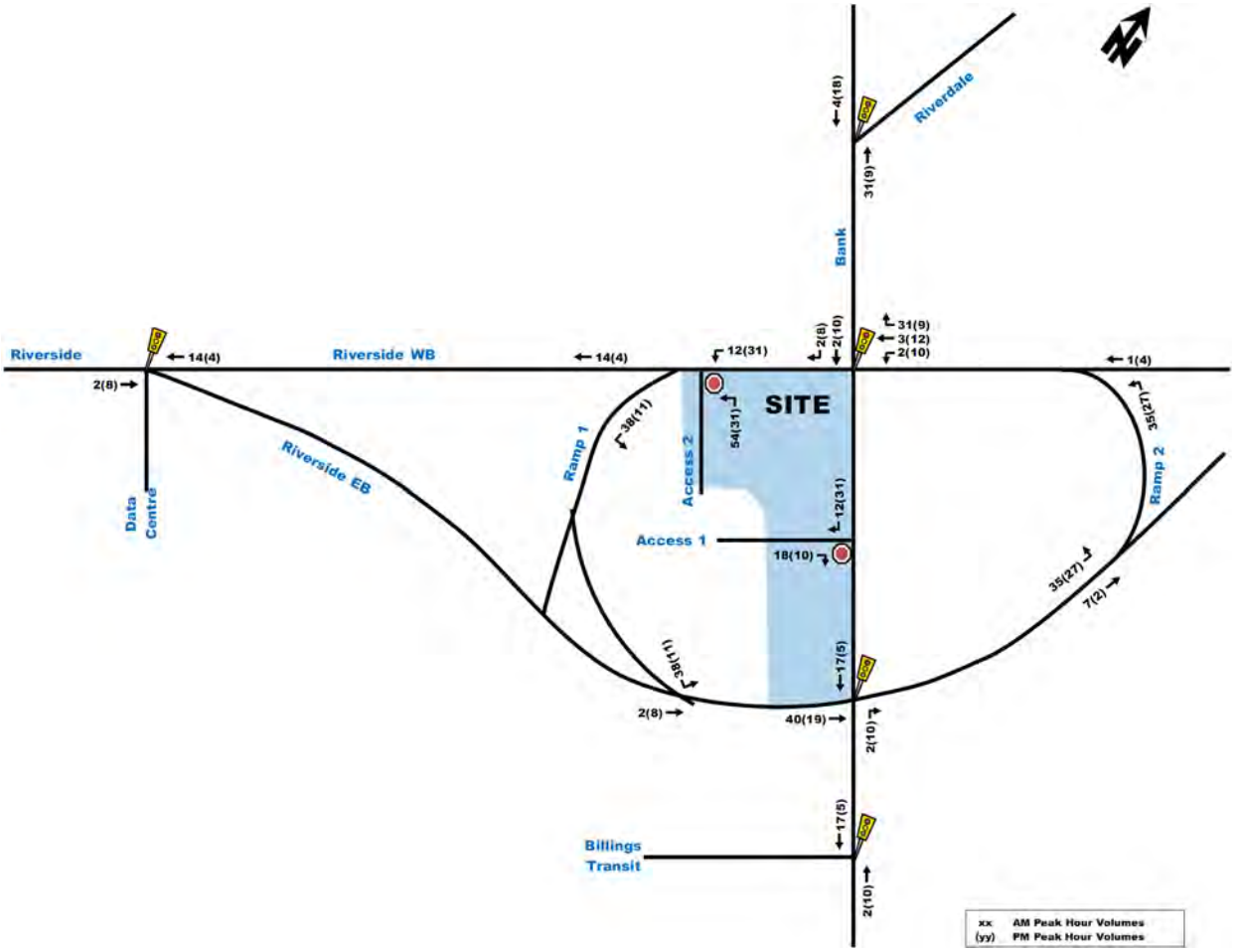
Figure 12: Future Background 2027 Traffic Volumes



3.2.3. OTHER DEVELOPMENTS

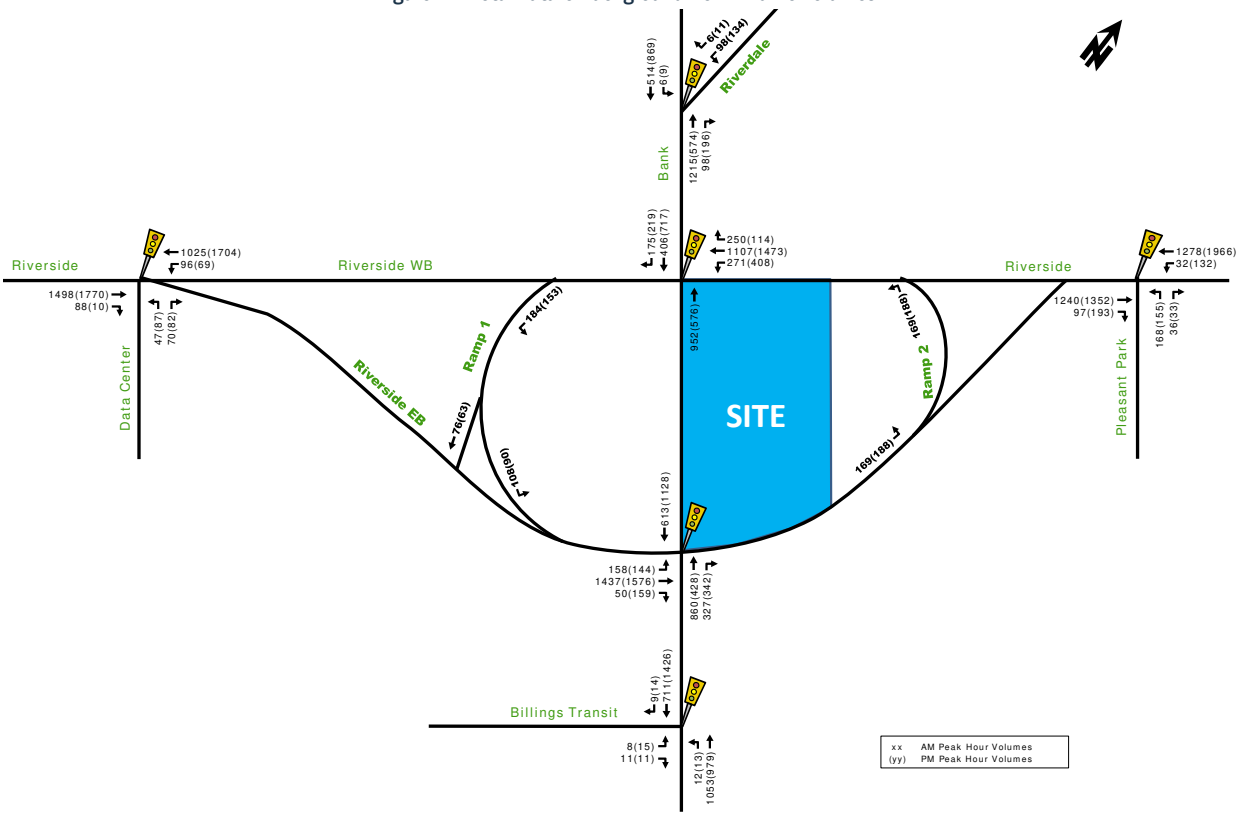
Description of other area developments taking place within the study area was provided in Section 2.1.3 - Other Area Developments. Traffic volumes anticipated to be generated by the future adjacent development at 1346 Bank St are illustrated in Figure 13.

Figure 13: 1346 Bank St Total Anticipated Site-Generated Traffic



Since the adjacent future development at 1346 Bank St is anticipated to be constructed in two phases, with both phases taking place after the full buildout of the subject development at 1335 & 1339 Bank St (2022), the traffic volumes in Figure 13 are added only to the future background 2027 traffic volumes in Figure 12. The resulting total future background 2027 traffic volumes are illustrated in Figure 14.

Figure 14: Total Future Background 2027 Traffic Volumes



3.3. Demand Rationalization

Total projected traffic volumes for horizon years 2022 and 2027 were determined by superimposing the site-generated traffic volumes in Figure 10, onto the future background 2022 and 2027 traffic volumes in Figure 11 and Figure 14. The resulting total projected 2022 and 2027 traffic volumes are illustrated in Figure 15 and Figure 16, respectively.

As mentioned in Section 2.1.3: Planned Study Area Transportation Network Changes, a Bank St renewal project is currently underway. The project entails the rehabilitation of the underground structures of Bank St, as well as enhanced surface elements such as sidewalks, cycle track and transit facilities. Although not currently anticipated to be completed within the horizon years of the proposed development, it is ultimately anticipated to increase transit and active mode shares.

Figure 15: Total Projected 2022 Traffic Volumes

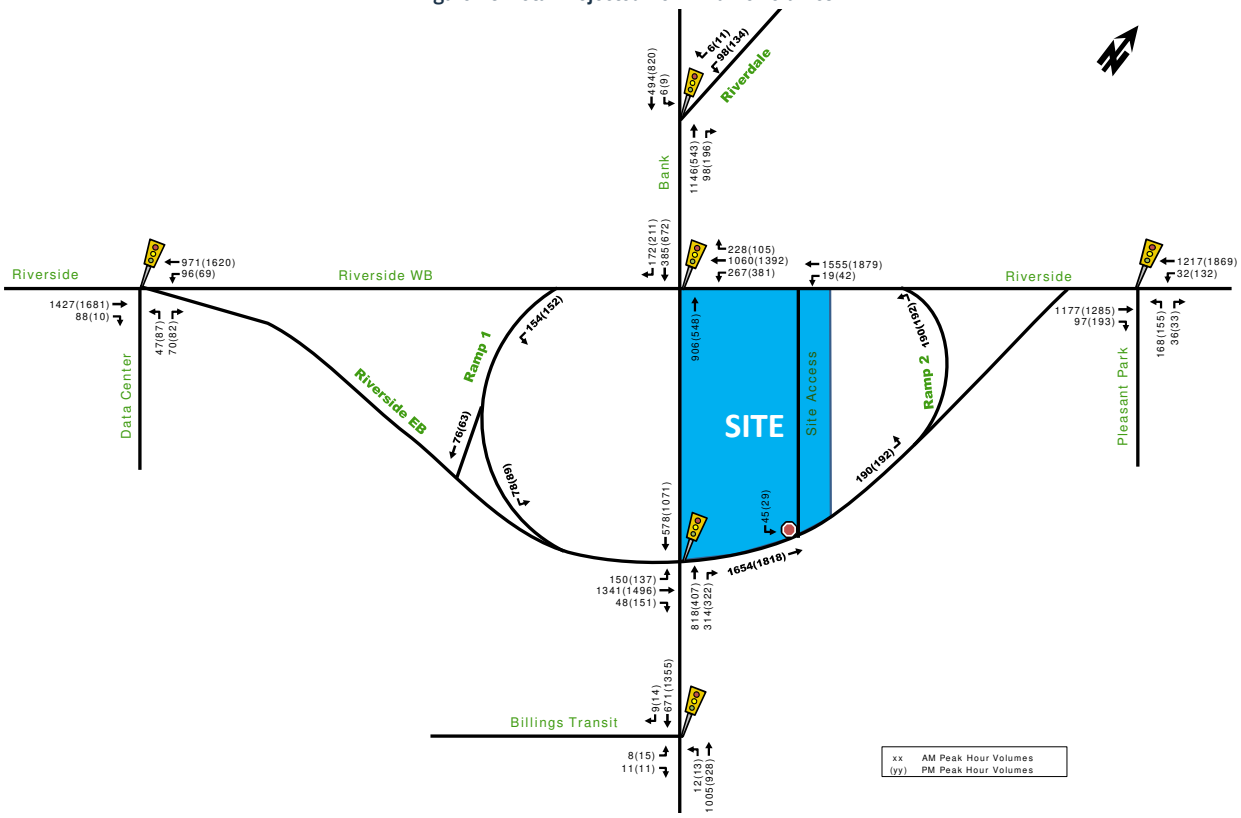
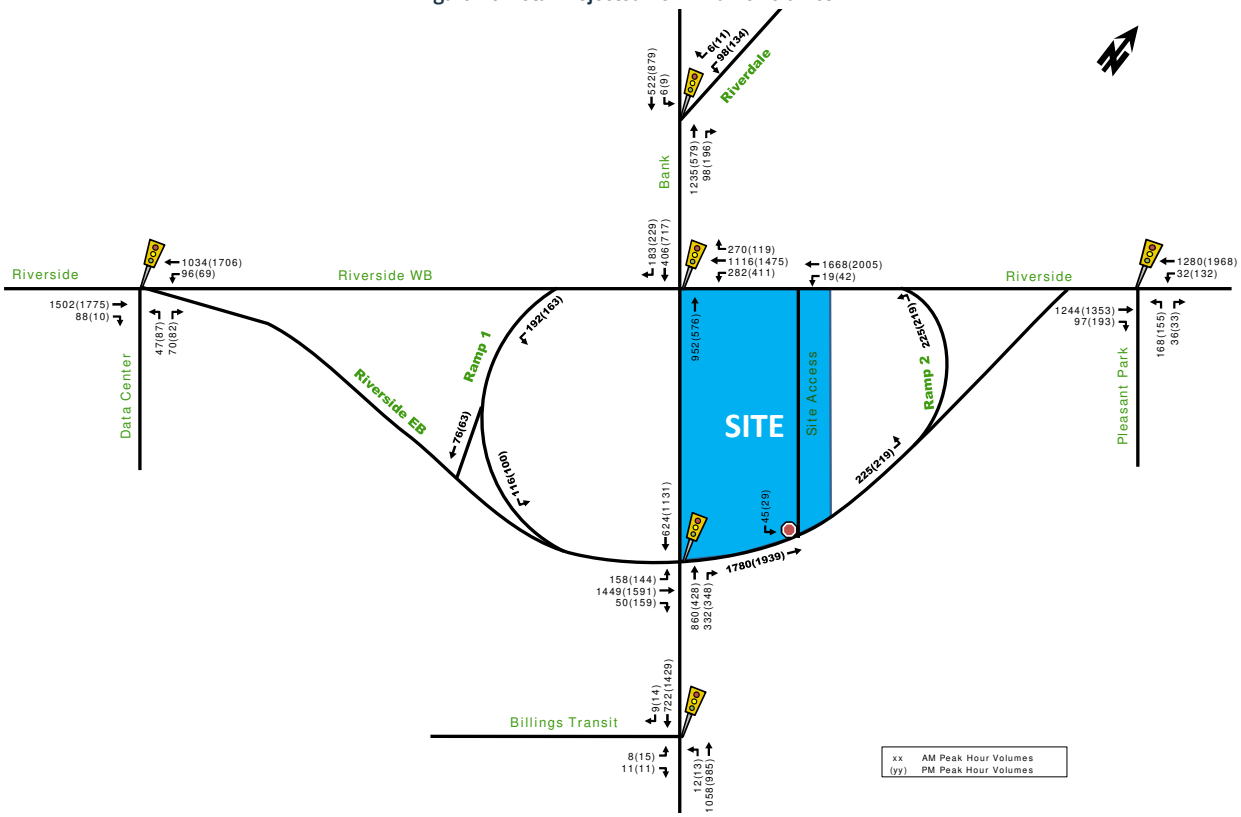


Figure 16: Total Projected 2027 Traffic Volumes



4. Analysis

4.1. Development Design

As per TIA Guidelines, the City of Ottawa's TDM-supportive Development Design and Infrastructure has been completed and provided in Appendix F.

Car parking spaces are proposed in the form of a two-level underground parking garage and surface parking spaces located along the internal driveway of the site (see Figure 2). Similarly, bicycle parking spaces are provided on a mezzanine level and within the two-level underground parking garage.

Transit amenities will continue to be provided along Bank St as described in Section 2.1.2: Transit Network. However, it is understood that OC Transpo intends to make some refinements to the bus stop locations in the area in concert with the Bank Street Renewal Project, including a relocation of the existing northbound stop on Bank St (currently near side Riverside WB) southerly towards Riverside EB. This move is reflected in the Site Plan (see Figure 2).

There are no anticipated issues with regards to the accommodation of municipal vehicles and trucks as they turn in/out of the site. Truck turning movements at sight accesses, assuming an MSU vehicle, are illustrated in a drawing provided in Appendix G. Trucks can turn into the proposed site driveway via a left-turn on Riverside Dr WB and exit the site driveway via a left turn onto Riverside Dr EB.

4.2. Parking

4.2.1. PARKING SUPPLY

A total of 172 vehicle parking spaces are proposed to be provided for the development, the majority of which are situated in two levels of underground parking, and the balance as surface parking spaces along the site's internal driveway (35 spaces, plus 6 motorcycle parking spaces). Three parallel parking spaces for short-term parking or loading/unloading are also proposed in a lay-by area along Bank St, at the frontage of the site (see Section 0).

It is anticipated that about half of the total proposed parking spaces have "regular" parking space dimensions, with a width of 2.6m and length of 5.2m long. The other half is anticipated to have "short" parking dimensions, with a width of 2.6m and length of 4.6m long. The City of Ottawa Parking Space Provisions indicate that up to 40% of the required and provided parking spaces may be reduced to a minimum length of 4.6m. The parallel parking spaces will also have "regular" parking space dimensions as per parking provisions.

A total of 269 bicycle parking spaces are proposed to be provided, the majority of which are situated on the mezzanine level of the building and the balance on the surface and/or the underground parking garage.

Based on the City of Ottawa's Parking Provisions and the location of the proposed development in "Area Y", a rate of 0.5 parking spaces per dwelling unit applies with the exemption of the first 12 units, which equates to 190 parking spaces. For visitor parking spaces, a rate of 0.1 parking space per dwelling unit is required, with the exemption of the first 12 units, up to a maximum of 30 parking spaces. The proposed number of 172 total vehicle parking spaces (dwelling unit + visitor) is approximately 50 parking spaces less than the required 220 total spaces.

Furthermore, the minimum number of spaces required for bicycles is 0.5 per dwelling unit and 1.0 per 250m^2 of commercial space, which equates to approximately 198 parking spaces. The number of proposed bicycle parking spaces of 269 exceeds the Parking Provisions requirements by approximately 70 spaces.

4.2.2. SPILLOVER PARKING

This module of the TIA is required if parking supply may not meet the parking demand on site. Due to the location of the proposed development along arterial roads, local on-street parking that could be utilized by residents for long-term parking use is not available. Parking lots within a 400m walking distance (as indicated by the TIA Guidelines) include the following:

- The underground parking garage of the future other area development west of the site at 1346 Bank;
- The Billings Bridge Shopping Centre surface parking lot to the southwest of the site;
- The underground parking garage of the existing office building south of the site at 1355 Bank;
- The existing surface parking lot immediately east of the site at 2197 Riverside;
- The underground parking garage of the existing residential building south of the site at 1365 Bank; and,
- The underground parking garage of the existing residential building south of the site at 2201 Riverside.

4.3. Boundary Street Design

Boundary Street MMLOS Analysis

Using discrete quantitative methods, the Multi-Modal Level of Service (MMLOS) analysis describes the level of convenience and comfort experienced by pedestrians, cyclists, transit and trucks. MMLOS analysis was conducted at the boundary roads of the proposed development, Bank St, Riverside Dr EB and Riverside Dr WB. The geometry and features along both Riverside Dr roadways is anticipated to be the same in both existing and future horizon year conditions. As shown in the Site Plan (Figure 2), Bank St geometry and features will be different in future conditions. Below is a description of the proposed development's boundary streets at the site's frontage:

Bank St (arterial road classification)

- Existing Conditions Only:
  - 1.8m sidewalk width and no boulevard,
  - No on-street parking or cycling facilities (designated spine route).
- Future Conditions Only:
  - More than 2.0m wide sidewalks and boulevard,
  - Physically separated bike lanes,
  - On-street lay-by loading and unloading zone.
- Both Existing and Future Conditions:
  - 4 lanes total (2 NB and 2 SB),
  - 3.7m wide curb-side lanes,
  - Operating speed of 50km/h,
  - More than 3000 average daily curb lane traffic volume,
  - Designated truck route,
  - Designated Transit Priority corridor – Isolated Measures,

Riverside Dr EB (arterial road classification)

- Both Existing and Future Conditions:
  - No sidewalk and no boulevard,
  - 3 lanes total EB only,
  - 3.5m wide curb-side lanes,
  - Operating speed of 60km/h,
  - More than 3000 average daily curb lane traffic volume,
  - No on-street parking, cycling facilities or transit measures, and
  - Designated truck route.

Riverside Dr WB (arterial road classification)

- Both Existing and Future Conditions:
  - 1.8m wide sidewalk and no boulevard,
  - 3 lanes total WB only,
  - 3.7m wide curb-side lanes,
  - Operating speed of 60km/h,
  - More than 3000 average daily curb lane traffic volume,
  - Physically separated bike lanes,
  - No on-street parking or transit measures, and
  - Designated truck route.

Detailed analysis results have been provided in Appendix H. Table 11 below provides a summary of the results, along with the minimum desirable targets obtained from the MMLOS Guidelines, for each respective travel mode. The targets are based on the proposed development site's location in a "within 600m of a rapid transit station" Policy Area, as indicated by the MMLOS Guidelines, as well as the designations/classifications indicated by the road descriptions above.

Table 11: MMLOS Analysis, Boundary Road Segments

Road Segment	Level of Service							
	Pedestrian (PLOS)		Bicycle (BLOS)		Transit (TLOS)		Truck (TkLOS)	
	PLOS	Target	BLOS	Target	TLOS	Target	TkLOS	Target
Bank St	D	A	E	C	D	D	A	D
Bank St (future)	B	A	A	C	D	D	A	D
Riverside Dr EB	F	A	F	C	D	N/A	A	D
Riverside Dr WB	F	A	A	C	D	N/A	A	D

Red font in the table above indicates that the respective desirable target has not been met. As shown in Table 11, the pedestrian LOS targets are not met at any of the boundary roads in both existing and future conditions, along with the bicycle LOS target for both the existing Bank St and the Riverside Dr roads. Minimum desirable LOS targets for transit are not applicable for the two Riverside Dr roadways as they are not designated for rapid transit or transit priority corridor.

For PLOS, the targets on Bank St are not met in both existing and future conditions due to the high daily curb lane traffic volume, although the future design has improved the LOS from 'D' to 'B'. The Riverside Dr WB PLOS target is not met due to high daily curb lane traffic volumes and high operating speeds of 60km/h. The Riverside Dr EB PLOS target is not met due to the lack of sidewalks directly at the frontage of the site, the high daily curb lane traffic volumes and high operating speeds of 60km/h. Although it should be noted that there are sidewalks on the south side of Riverside Dr EB.

For BLOS, the target is not met on Riverside Dr EB due to the lack of dedicated cycling facilities, which forces cyclists to travel in mixed traffic.

Bank St Safety Audit

A Safety Audit was conducted in 2020 as part of the Bank Street Renewal project, for the intersections of Bank/Riverside EB and Bank/Riverside WB, based on the Functional Design Plan of Bank St (Appendix E). The Audit has been provided in Appendix I.

The audit noted sight line issues for the SBR and WBR movements at the intersection of Bank/Riverside WB, which is also an existing issue that may be a contributing factor for vehicle collisions and a safety concern for vehicle conflict with pedestrians and cyclists. Potential countermeasures (as identified in the Safety Audit) to the sight line concerns include retaining a right-turn on red prohibition for the SBR movement and considering adding a right-turn on red prohibition for the WBR movement, along with potentially shifting the intersection south to accommodate better sight lines.

At Bank/Riverside EB, it was noted that the existing EB weave between the Billings Bridge Shopping Centre exit ramp and the EB traffic on Riverside Dr is a safety concern due to its short distance. Potential countermeasures (as identified in the Safety Audit) to the weave concern include closing the ramp and redirecting traffic to exit at another access point. Another measure is moving the exit ramp further west to increase available weave distance.

Proposed Bank Street Lay-by

The Site Plan (see Figure 2) proposes an on-street lay-by within the site's Bank Street frontage. Such a feature is considered uncommon within an Arterial Mainstreet environment, rather more commonly found within a Traditional Mainstreet where the user experience along the corridor (including motorists) is where one would expect curb side activity, such as on-street parking, loading, police services zones, taxi stands, street spots, etc. Although the formal Traditional Mainstreet designation for Bank St begins less than 100m away to the north at the Rideau River, it is understood that the vision of the Proponent is to convey this subject section of Bank St as a Traditional Mainstreet feel. The redevelopment of both sites, immediately south of the River, represents a significant (if not only) opportunity to create an appropriate transition before the bridge. After some deliberation between the proponent and the City's Transportation Engineering Services, it is understood that the placement of the lay-by on Bank Street has been supported.

The following is a summary of the opportunities and constraints associated with the proposed lay-by for consideration.

Constraints	Opportunities
• The lay-by results in an expansion of overall road pavement width.	• The length of the 2.5m wide lay-by is limited to less than 35m of the available 100m of Bank St frontage
• The lay-by uses valuable space in the ROW that could otherwise be used for active modes, landscaping, etc.	• A 2.0m wide cycle track and minimum 2.0m wide sidewalk is provided adjacent to the lay-by, in addition to planting boxes along the building face in this area.
• The concept with the lay-by as depicted that assumes a 27.5m ROW line, would push the sidewalk onto private property – requiring a pedestrian easement. It is much preferred by the City to keep the sidewalk on public property whenever possible.	• The proposed ROW in Bank St adjacent to the lay-by is 15.25m from centerline. • A small easement would be required to achieve the full sidewalk width to be contained within the City ROW. Any easement could be minimized by eliminating the proposed centre median, which is feasible only if the future development on the west side of Bank St no longer proposes a right-in/right-out access to Bank St.
• The lay-by is in a very congested area, and any parking maneuvers may potentially add to the congested environment, result in collisions (sideswipes, rear-ends) and delay transit vehicles.	• The three existing driveways on the east side of Bank St within this section will be removed as a result of this development, while the three existing driveways on the west side serving 1330-1346 Bank St will be consolidated to a single driveway limited to right-in/right-out operation as a result of the proposed centre median. As such turning movement conflicts in this segment will be minimized resulting in less mid-block congestion than today. • Also note that there are no turning movements available for northbound vehicles on Bank St at Riverside WB leaving the lay-by, thereby minimizing the need for any aggressive lane changes immediately downstream. • Parking maneuvers would be the only source of vehicle friction within this section, other than when a bus is present at the stop. This may be desirable to reduce vehicle speeds in this section of Bank St. • Should the lay-by not be provided, the Proponent has advised that it may be necessary to introduce a driveway connection to Bank St. This would adversely impact the Bank St frontage, introduce increased conflict with pedestrian and cyclists (where the driveway crosses the sidewalk and cycle track) and generate turning movement conflicts for vehicles. This alternative is considered to be less desirable from an active transportation perspective. • Should the lay-by not be provided, it is envisioned that the same drop-off/pick-up behavior will occur in the curb lane, which is considered a less safe situation.

• Although the intention is for the lay-by be restricted to short term parking or loading only, the fact the lay-by is located within City ROW means the area could be used as short term or longer-term hourly parking for visitors to all surrounding land uses. This would negate the intended benefit of providing an area for short-term parking.	• The Proponent would be seeking support from the City given a relatively low parking supply rate is proposed for such a large-scale building. Providing opportunities to eliminate the need for car ownership, such as a dedicated and convenient facility for short-term parking or loading, would be encouraged.
• Section 3.15 of the City's Urban Design Guidelines for High-Rise Buildings outlines: *"Locate drop-off and pick up areas on private lands and where possible, at the rear of the property."*	• The narrow depth of the property limits the ability to provide a high-quality short-term parking area at the rear of the building. • The Proponent has expressed a desire to identify a statement feature at the main Bank St entrance

Bank Street Right of Way

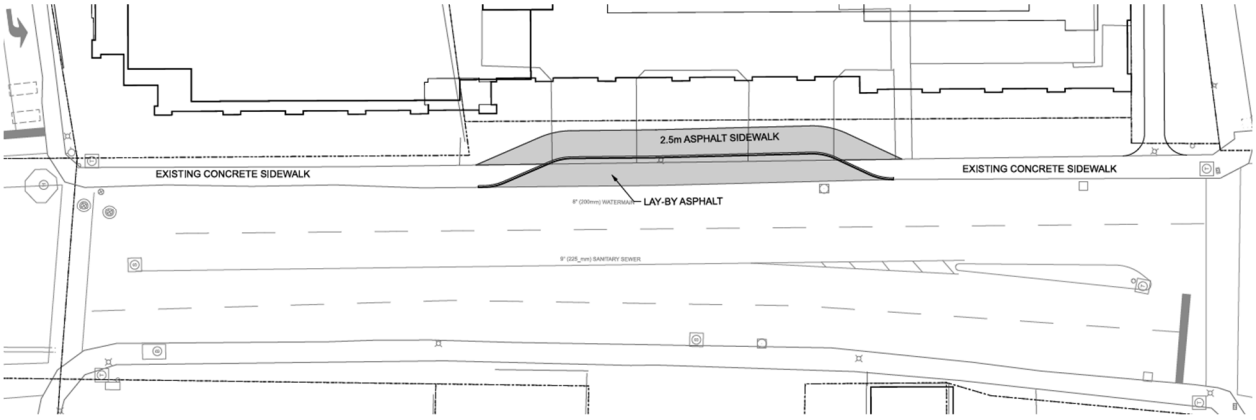
The protected Right of Way (ROW) for the subject frontage of Bank Street is 37.5m. Preliminary discussions have taken place with the City regarding the right-of-way requirements for this section of Bank St related to both the subject development on the east side (1335 to 1339 Bank), as well as the adjacent development on the west side (1330 to 1346 Bank). The City has confirmed the need to ultimately provide a centre median along the Bank St frontage on the basis that it maximizes safety, reduces vehicle speeds, provides space for additional roadway lighting, as well as supplemental signage and signal plant as required. Based on input from City staff, the purpose of the median is to ensure no left-turns are made on Bank St from the site access of the future west side. Based on this direction, candidate cross-sections were created to help guide the discussion of the ultimate right-of-way (ROW) requirements for Bank St (see supporting memo included as Appendix J).

Proposed Interim Bank Street Design

As the timing of the Bank Street Renewal Project is uncertain, consideration was given to several interim designs, in which the development at 1335-1339 Bank Street is constructed prior to the Bank Street Renewal project. Several interim designs along the east Bank Street property frontage have been considered. The following describes many of these options:

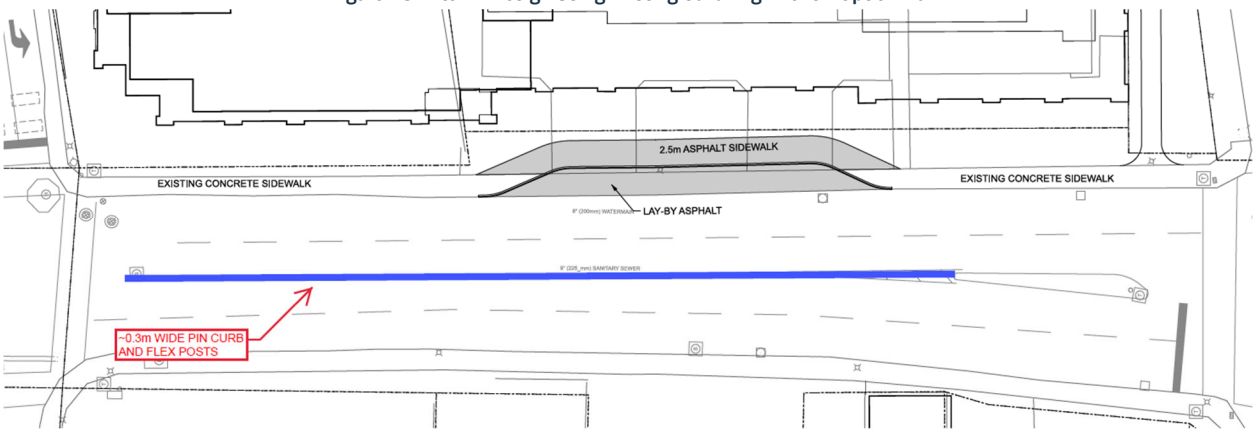
1. Should the Bank Street Project construction occur within a short period after the proposed site's construction, a simple interim design may satisfy the short term needs until the ultimate Bank Street Design is constructed.
    a. This design uses existing curbs on the west side of Bank Street and provides a lay-by, a temporary asphalt sidewalk connection and minimize the amount of reconstruction when Bank Street Renewal is implemented.

Figure 17: Interim Design Using Existing Curb Alignment – Option 1a



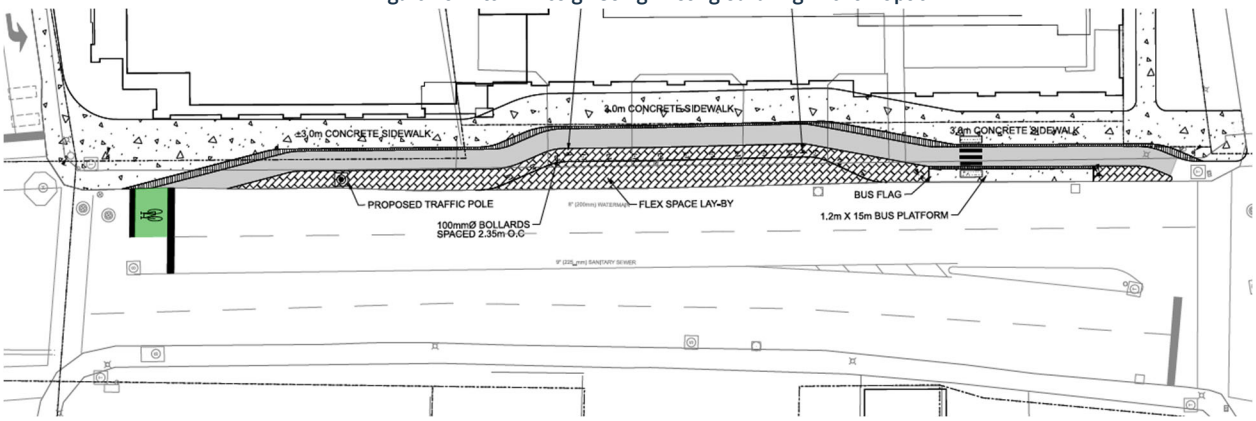
    b. This design has the same design features as Option 1a, with exception to the inclusion of a pin curb with flex posts is temporarily provided as a physical barrier preventing the U-turn movement. This will prohibit left-turns to and from Bank Street for existing developments along the west side. This will reduce travel lane widths slightly by approximately by 15cm from the center lanes to accommodate the flex posts. Winter maintenance may be problematic.

Figure 18: Interim Design Using Existing Curb Alignment – Option 1b



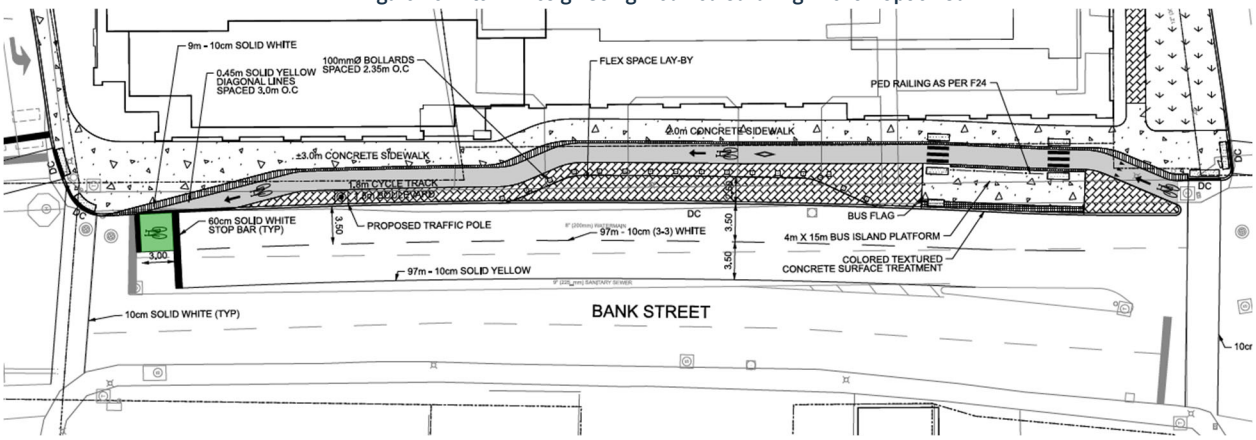
2. An Interim design using the existing curbs on the west sides of Bank Street. This option is the least preferred option as the existing curbs result in insufficient space to provide all defined facility design parameters and will require the most reconstruction once Bank Street Renewal is implemented.

Figure 19: Interim Design Using Existing Curb Alignment – Option 2



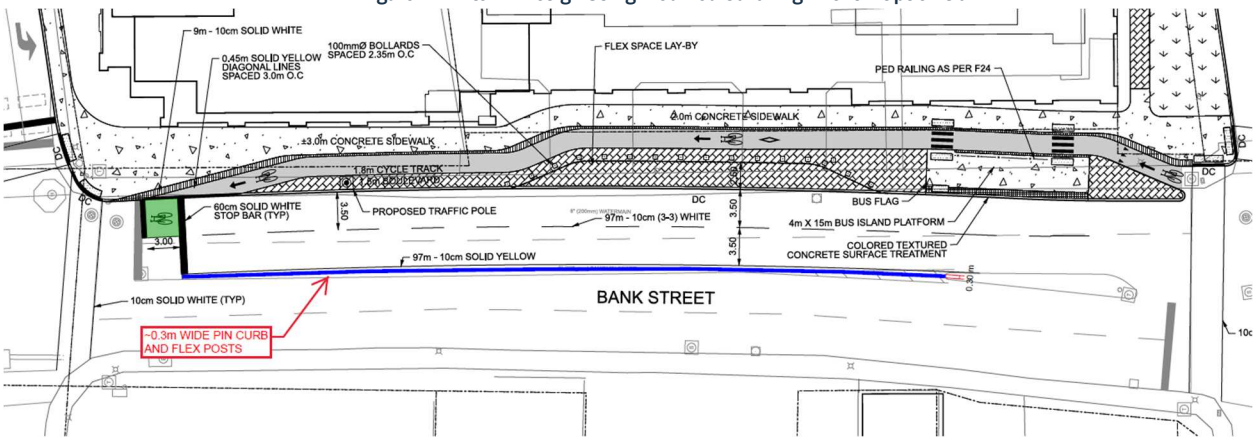
3. An interim design where the curb is modified along the east side of Bank St and the required cycle track and sidewalk are provided. With regards to the median, the following options are available:
   a. No median is provided, and a monitoring plan is implemented to identify potential safety concerns involving U-Turns from the layby. It is recommended that the review consider collision patterns over a three-year period and establish a baseline condition prior to the layby construction.

Figure 20: Interim Design Using Modified Curb Alignment – Option 3a



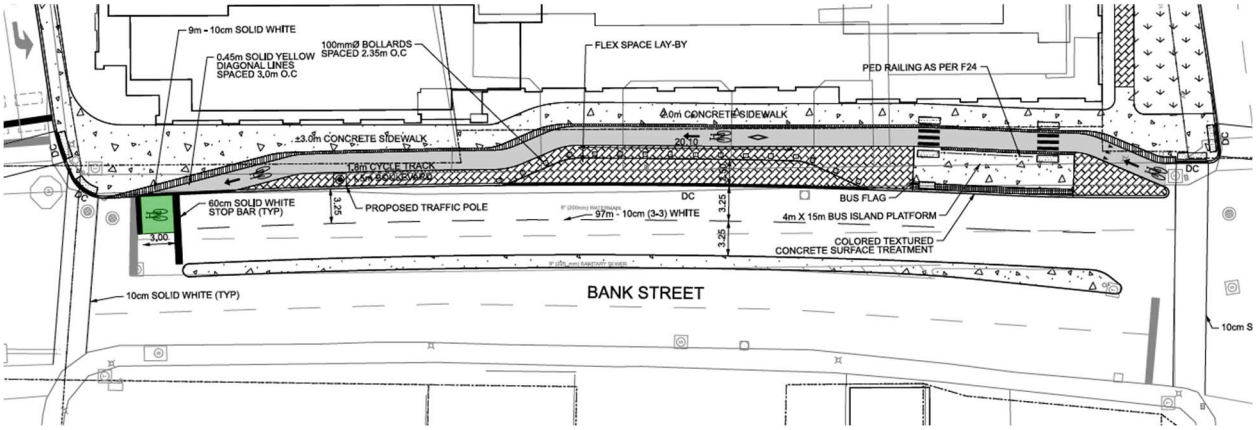
b. A pin curb with flex posts is temporarily provided as a physical barrier preventing the U-turn movement. This will prohibit left-turns to and from Bank Street for existing developments along the west side. This will reduce travel lane widths slightly by approximately by 15cm from the center lanes to accommodate the flex posts. Winter maintenance may be problematic.

Figure 21: Interim Design Using Modified Curb Alignment – Option 3b



c. A 1.2m wide concrete center median is provided. This will prevent U-turn movements and prohibit left-turns movements to and from Bank Street for existing developments along the west side. This will reduce travel lane widths to approximately 3.3m on average.

Figure 22: Interim Design Using Modified Curb Alignment – Option 3c

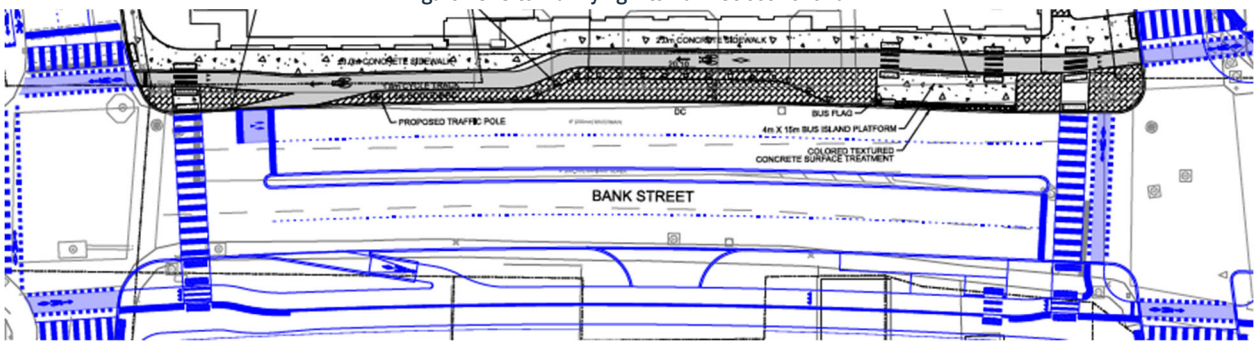


Based on the above, it is our recommendation that option 1a be implemented, where **no** median is installed in the interim conditions and Bank St is monitored to assess if a median is needed. Should a median be determined as necessary by the monitoring program, consideration be given to option 1b, as well as the anticipated timing for construction of Bank Street Renewal.

Proposed Ultimate Bank Street Design

Should option 3a as discussed above be implemented, the modification to option 3a is anticipated to be limited to the east and west ends of the property that will tie into future cycling and pedestrian facilities. How the proposed plan ties in is shown in Figure 23 below, where the Bank Street Renewal concept (prepared by others) is displayed in blue.

Figure 23: Site Plan Tying into Bank Street Renewal



4.4. Access Intersection Design

Access to the development is proposed through a one-way driveway that allows inbound only traffic at Riverside Dr WB and outbound only traffic at Riverside Dr EB. The driveways will be located approximately 20 to 25m east of Bank St. A summary of general features is provided below:

- The inbound driveway connection to Riverside Dr WB is situated near the eastern extent of the property to maximize the distance from the signalized Bank/Riverside WB intersection. There is a driveway 7m upstream serving The Registry Building. The left-turn vehicle movements into the site driveway from Riverside Dr WB will occur from within the existing auxiliary turn lane serving the Bank St intersection. The access has a width of approximately 6m.
- The outbound driveway connection to Riverside Dr EB is situated near the eastern extent of the property to maximize the distance from the signalized Bank/Riverside EB intersection. There is a driveway 35m downstream serving The Registry Building. The left-turn vehicle movements from the site driveway onto Riverside Dr EB will be into the middle lane. From this point, vehicles can choose to travel eastbound on Riverside Dr or use Ramp 2 to access Riverside Dr WB and subsequently either direction on Bank St. The access width is approximately 6m

A departure distance sightline drawing at the driveway exit onto Riverside Dr EB has been provided in Appendix G.

4.5. Transportation Demand Management

4.5.1. CONTEXT FOR TDM

The proposed development is located in a Design Priority Area (DPA), known as Bank Arterial Mainstreet, as well as within 500m of the Billings Bridge Station. The development is proposing to provide 391 apartment units in a 26-storey building, where units will range from bachelor units up to three-bedroom units.

Based on the type of development, it is assumed that most trips generated by the proposed site will be residents leaving the site in the AM peak to go to work and returning from work to the proposed site in the PM peak. Sections 3.1.1 and 3.1.2 describe how many trips are anticipated per travel mode and anticipates the likely locations that they will travel to and from based on the 2011 OD Survey.

4.5.2. NEED AND OPPORTUNITY

As identified using data from the 2016 Census, a high transit modal share is observed in the vicinity of the Billings Bridge Station. This has been reflected in the trip generation for the proposed development, where transit trips account for more than 50% of total trips, resulting in significant reductions to the auto trips.

Additionally, the proposed development is expected to utilize Transportation Demand Management (TDM) measures to maintain sustainable transit and active mode shares, as described in more detail in Section 4.5.3 below.

4.5.3. TDM PROGRAM

The completed TDM Measures Checklist(s) for Residential Developments has been provided in Appendix F.

Regarding the TDM Supportive Development Design and Infrastructure Checklist:

- All ten (10) "Required" measures related to Walking and Cycling (facilities and bicycle parking) and Vehicle Parking have been satisfied
  - *note a variance is being applied for a supply less than the By-law requirement*
- All fourteen (14) Basic measures related to Walking and Cycling, Transit, Ridesharing and Parking have been satisfied
- Four (4) of the of the seven (7) "Better" measures are also proposed, namely:
  - Provide bicycle repair station
  - Provide car share parking
  - Provide bike share station
  - Separate long-term and short-term parking areas

Regarding the TDM Measures Checklist, the developer has indicated there is a willingness to consider the following measures:

- Designate a TDM program coordinator; will consider conducting periodic surveys.
- Display walking and cycling information at major entrances
- Display transit information at major entrances
- Contract with a provider to install an on-site bike share station and subsidize bike share memberships for residents
- Contract with a provider to install on-site car share vehicles and subsidize car share memberships for residents
- Unbundle parking costs from monthly rent; and
- Provide multi-modal travel information package to new residents

4.6. Neighbourhood Traffic Management

Exempt – see Table 1.

4.7. Transit

Transit routes within the study area are expected to continue operating as described in Section 2.1.2: Transit Network within the future horizon years. In the City of Ottawa TMP, Bank St is illustrated as a Transit Priority Corridor (Isolated Measures) at the frontage of the site. Furthermore, the Billings Bridge bus stops on the Transitway are within a 500m walking distance (less than 10-minute walk) from the proposed development site, which provides access to many OC Transpo bus routes.

Existing conditions (pre-COVID) transit ridership data was obtained from OC Transpo for two bus stops near the proposed development site, as shown in Figure 24. The data, provided in Table 12, is a summary of average bus boarding, alighting and occupancy information for bus routes at each of the respective stop numbers, during morning and afternoon peak hours.

Figure 24: Transit Ridership Data Bus Stop Locations

Table 12: Transit Ridership Data (5 Jan 2020 - 7 Mar 2020)

Stop No.	Location	Route	Direction	AM			PM		
				Boarding	Alighting	Avg. Load at Depart.	Boarding	Alighting	Avg. Load at Depart.
8298	Bank / Riverside	6	NB	6	12	24	14	1	24
		5	EB	0	3	13	3	0	12
8261	Bank / Riverside	6	SB	3	14	19	13	28	21
		5	WB	0	3	10	4	11	11

As shown in Table 12, the average load of each bus route at its respective bus stop ranges from about 10 to 24 persons during the morning peak hour and afternoon peak hours. Bus route #5 is a local route that arrives every 15-to-30 minutes during peak hours, while bus route #6 is a frequent route that arrives every 15 minutes or less during peak hours. Therefore, bus routes #5 provides service at least 2 times, while bus route #6 provides service at least 4 times to their respective bus stops during the morning and afternoon peak hours.

Based on information obtained from the OC Transpo website, the person capacity of OC Transpo buses, which includes the number of seats on the bus plus the standing capacity, ranges from approximately 65 occupants in its smallest vehicles to approximately 150 occupants in its largest vehicles. As previously calculated in Table 8, the proposed development is anticipated to generate 143 total in/out transit person trips during the morning peak hour and 151 in/out transit person trips during the afternoon peak hour. Based on the current bus loads and the available capacity of the existing bus routes, as well as the close proximity of the Transitway bus routes, the proposed development is anticipated to have minor impact the available transit services.

4.8. Review of Network Concept

Exempt – see Table 1 and Section 3.1.1.

4.9. Intersection Design

4.9.1. INTERSECTION CONTROL

The proposed development driveway is anticipated to use STOP Control at its outbound only access on Riverside Dr EB.

4.9.2. INTERSECTION DESIGN

Synchro 10 Trafficware was used to analyze intersection performance of intersections within the study area. Critical movements at each of the intersections were assessed based on either the movement with the highest volume-to-capacity ratio (for signalized intersections), or the movement experiencing the highest average delay

(for unsignalized intersections). It should be noted that, as per the TIA Guidelines, the Peak Hour Factor (PHF) used for analysis was 0.9 in existing conditions and 1.0 in all future scenario conditions. All Synchro report outputs for existing and future conditions have been provided in Appendix K.

Existing Conditions

Table 13 below summarizes the intersection performance of study area intersections, based on existing conditions traffic volumes illustrated in Figure 7.

Table 13: Existing Conditions Intersection Performance

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
Bank St/Riverdale Ave (S)	A(B)	0.54(0.66)	NBT(WBL)	7.7(7.7)	A(A)	0.45(0.43)
Bank St/Riverside Dr WB (S)	D(E)	0.83(0.93)	WBT(WBT)	20.1(23.8)	C(D)	0.80(0.89)
Bank St/Riverside Dr EB (S)	D(E)	0.84(1.00)	EBT(EBT)	24.2(28.9)	C(E)	0.80(0.95)
Bank St/Billings Transit (S)	A(A)	0.35(0.49)	NBT(SBT)	1.9(3.8)	A(A)	0.35(0.48)
Data Centre Rd/Riverside Dr (S)	B(D)	0.69(0.87)	EBT(EBT)	12.0(19.7)	B(D)	0.67(0.84)
Pleasant Park Rd/Riverside Dr (S)	B(D)	0.66(0.87)	EBT(EBT)	11.8(17.0)	B(D)	0.65(0.83)
Ramp 1/Riverside EB (U)	E(E)	42.0(38.6)	SBT(SBT)	2.1(1.4)	-	-
Ramp 2/Riverside WB (U)	C(F)	23.2(81.2)	NB(NB)	2.1(6.1)	-	-

Note: Analysis of signalized intersections assumes a PHF of 0.9 and a saturation flow rate of 1800 veh/h/lane.
(S) – Signalized intersection, LOS criterion based on Max v/c.
(U) – Unsignalized Intersection, LOS criterion based on average delay.

As shown in Table 13, the critical movement at the intersection of Bank St/Riverside Dr WB operates near capacity during the afternoon peak hour. Similarly, the critical movement at Bank St/Riverside Dr EB, as well as the intersection 'as a whole' operate near capacity during the afternoon peak hour.

The merging movement from Ramp 2 onto Riverside WB operates at capacity during the afternoon peak hour, as a result of high traffic volumes (approximately 2000 veh/h) on Riverside Dr WB. The 95th percentile queue length in Synchro indicates that the queue on Ramp 2 is approximately 50m during the afternoon peak hour.

Future Background 2022

Table 14 below summarizes the Synchro traffic operations at study area intersections, based on future background 2022 conditions in Figure 11.

Table 14: Future Background 2022 Intersection Performance

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
Bank St/Riverdale Ave (S)	A(B)	0.50(0.62)	NBT(WBL)	7.0(7.2)	A(A)	0.42(0.39)
Bank St/Riverside Dr WB (S)	C(D)	0.76(0.86)	WBT(WBT)	18.6(21.0)	C(D)	0.73(0.82)
Bank St/Riverside Dr EB (S)	C(E)	0.77(0.92)	EBT(EBT)	23.0(22.1)	C(D)	0.73(0.87)
Bank St/Billings Transit (S)	A(A)	0.32(0.45)	NBT(SBT)	1.8(3.1)	A(A)	0.32(0.44)
Data Centre Rd/Riverside Dr (S)	B(C)	0.62(0.74)	EBT(EBT)	10.9(15.8)	A(C)	0.60(0.71)
Pleasant Park Rd/Riverside Dr (S)	B(C)	0.63(0.78)	NBL(EBT)	10.7(13.3)	A(C)	0.59(0.75)
Ramp 1/Riverside EB (U)	D(E)	34.1(40.3)	SBT(SBT)	1.7(1.4)	-	-
Ramp 2/Riverside WB (U)	C(E)	19.7(47.8)	NB(NB)	1.7(3.5)	-	-

Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.
(S) – Signalized intersection, LOS criterion based on Max v/c.
(U) – Unsignalized Intersection, LOS criterion based on average delay.

As shown in Table 14, study area intersections are projected to operate better than existing conditions due to increasing the PHF to 1.0. The merging movement from Ramp 2 onto Riverside Dr WB operates near capacity during the afternoon peak hour.

Total Future Background 2027

Table 15 below summarizes the Synchro traffic operations at study area intersections, based on total future background traffic volumes in Figure 14.

Table 15: Total Future Background 2027 Intersection Performance

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
Bank St/Riverdale Ave (S)	A(B)	0.53(0.62)	NBT(WBL)	7.2(7.2)	A(A)	0.44(0.41)
Bank St/Riverside Dr WB (S)	D(E)	0.83(0.91)	WBT(WBT)	20.0(23.2)	C(D)	0.79(0.87)
Bank St/Riverside Dr EB (S)	D(E)	0.83(0.98)	EBT(EBT)	24.2(26.7)	C(E)	0.78(0.92)
Bank St/Billings Transit (S)	A(A)	0.34(0.48)	NBT(SBT)	1.8(3.4)	A(A)	0.34(0.47)
Data Centre Rd/Riverside Dr (S)	B(C)	0.66(0.78)	EBT(EBT)	11.1(16.6)	B(C)	0.64(0.75)
Pleasant Park Rd/Riverside Dr (S)	B(D)	0.63(0.81)	EBT(EBT)	10.7(14.5)	B(C)	0.62(0.77)
Ramp 1/Riverside EB (U)	E(E)	37.2(41.9)	SBT(SBT)	1.7(1.4)	-	-
Ramp 2/Riverside WB (U)	C(F)	23.4(75.3)	NB(NB)	2.5(6.1)	-	-

Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.
(S) – Signalized intersection, LOS criterion based on Max v/c.
(U) – Unsignalized Intersection, LOS criterion based on average delay.

With regards to critical movements, the intersection of Bank St/Riverside Dr EB operates near capacity during the afternoon peak hour. The merge movement from Ramp 2 to Riverside Dr WB operates at capacity during the afternoon peak hour.

Total Projected 2022

Based on total projected 2022 traffic volumes in Figure 15, study area intersections were analyzed using Synchro, with results summarized in Table 16 below.

Table 16: Total Projected 2022 Intersection Performance

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
Bank St/Riverdale Ave (S)	A(B)	0.50(0.62)	NBT(WBL)	7.0(7.3)	A(A)	0.42(0.40)
Bank St/Riverside Dr WB (S)	C(D)	0.78(0.86)	WBT(WBT)	19.0(21.2)	C(D)	0.74(0.82)
Bank St/Riverside Dr EB (S)	C(E)	0.78(0.93)	EBT(EBT)	23.1(22.7)	C(D)	0.74(0.88)
Bank St/Billings Transit (S)	A(A)	0.32(0.45)	NBT(SBT)	1.8(3.1)	A(A)	0.32(0.44)
Data Centre Rd/Riverside Dr (S)	B(C)	0.62(0.74)	EBT(EBT)	10.9(15.8)	A(C)	0.60(0.71)
Pleasant Park Rd/Riverside Dr (S)	B(C)	0.63(0.78)	NBL(EBT)	10.7(13.4)	A(C)	0.59(0.75)
Ramp 1/Riverside EB (U)	D(E)	34.3(40.4)	SBT(SBT)	1.7(1.4)	-	-
Ramp 2/Riverside WB (U)	C(F)	23.8(64.4)	NB(NB)	2.9(5.6)	-	-
Riverside Dr EB/Site Access (U)	B(B)	10.6(11.4)	SB(SB)	0.3(0.2)	-	-

Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.
(S) – Signalized intersection, LOS criterion based on Max v/c.
(U) – Unsignalized Intersection, LOS criterion based on average delay.

As shown in Table 16, study area intersections in total projected 2022 conditions are projected to operate similar to future background 2022 conditions, with slightly higher v/c ratios and delays. The merge movement from Ramp 2 to Riverside Dr WB operates at capacity during the afternoon peak hour. The SB movement of the proposed site access along Riverside Dr EB operates at LOS 'B' during both peak hours.

Total Projected 2027

Based on total projected 2027 traffic volumes in Figure 16, study are intersections were analyzed using Synchro, with results summarized in Table 17 below.

Table 17: Total Projected 2027 Intersection Performance

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
Bank St/Riverdale Ave (S)	A(B)	0.54(0.62)	NBT(WBL)	7.2(7.2)	A(A)	0.45(0.41)
Bank St/Riverside Dr WB (S)	D(E)	0.85(0.92)	WBT(WBT)	20.5(23.6)	C(D)	0.80(0.88)
Bank St/Riverside Dr EB (S)	D(E)	0.84(0.99)	EBT(EBT)	24.4(27.7)	C(E)	0.79(0.93)
Bank St/Billings Transit (S)	A(A)	0.34(0.48)	NBT(SBT)	1.8(3.5)	A(A)	0.34(0.47)
Data Centre Rd/Riverside Dr (S)	B(C)	0.66(0.78)	EBT(EBT)	11.1(16.6)	B(C)	0.64(0.75)
Pleasant Park Rd/Riverside Dr (S)	B(D)	0.63(0.81)	EBT(EBT)	10.7(14.6)	B(C)	0.62(0.77)
Ramp 1/Riverside EB (U)	E(E)	37.4(41.9)	SBT(SBT)	1.7(1.4)	-	-
Ramp 2/Riverside WB (U)	D(F)	30.2(107.8)	NB(NB)	4.1(10.1)	-	-
Riverside Dr EB/Site Access (U)	B(B)	11.0(12.0)	SB(SB)	0.3(0.2)	-	-

Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.
(S) – Signalized intersection, LOS criterion based on Max v/c.
(U) – Unsignalized Intersection, LOS criterion based on average delay.

As shown in Table 17, study area intersections in total projected 2027 conditions are anticipated to operate similar to total future background 2027 conditions, with slightly higher v/c ratios and delays. With regards to critical movements, the EBT movement at the intersection of Bank/Riverside Dr EB operates near capacity during the afternoon peak hour. If needed, the intersection of Bank/Riverside Dr EB can be optimized in Synchro to provide better overall operations.

The merge movement from Ramp 2 to Riverside Dr WB continues to operate at capacity during the afternoon peak hour. The 95th percentile queue length in Synchro is anticipated to be approximately 70m, which does not exceed the 110m length of the ramp.

The proposed site access SB movement along Riverside Dr EB continues to operate at a LOS 'B' during both peak hours.

Queuing Analysis

As requested by the City, a Queuing and Blocking analysis was conducted using SimTraffic, the companion simulation software of Synchro. For comparison purposes, the simulation was conducted for two scenarios, existing conditions (Figure 7) and total projected 2027 conditions (Figure 16). The detailed analysis results have been provided in Appendix L. Based on 95th percentile queue lengths at study area intersections, the analysis results indicated the following:

- **Existing Conditions – queue lengths are generally manageable:**
  - Along Bank St, queue lengths at the study area intersections do not exceed available storage lengths or cause blocking at downstream and upstream intersections.
  - Along Riverside Dr WB, there are no issues with regards to WB queue lengths at the Bank/Riverside WB intersection and the queue length at the auxiliary WBL lane do not exceed the available storage space.
  - Along Riverside Dr EB, the queue length at the auxiliary EBR for the intersection of Bank/Riverside Dr EB exceeds the available storage length by approximately 25m during the afternoon peak hour.
  - The queue lengths along the separate SBT and SBL merge movements of Ramp 1 do not exceed their respective storage lengths.
  - The queue length along the NBL merge movement of Ramp 2 does not exceed the available storage length.
- **Total Projected 2027 Conditions – in addition to somewhat longer but still manageable traffic queues compared to existing conditions, the following is noted:**
  - Along Bank St, the queue length of the NBR auxiliary lane at the intersection of Bank/Riverside EB slightly exceeds the available storage length by approximately 7m during the morning peak hour. However, it should be noted that the auxiliary lane has a taper length of approximately 8m that may help offset the additional queue length.

- Longer WB traffic queues at the intersection of Bank/Riverside Dr WB may extend to Pleasant Park intersection at times.
- Longer EB traffic queues at the intersection of Bank/Riverside Dr EB may extend to Data Centre Rd at times.
- The queue length along the NBL merge movement of Ramp 2 may fully occupy the available storage length at times.

Signalized Intersections MMLOS Analysis

Similar to boundary roads, MMLOS analysis is conducted for signalized intersections. The analysis was conducted for the intersections of Bank/Riverside Dr EB and Bank/Riverside Dr WB only due to their close proximity to the proposed development site. Detailed analysis results have been provided in Appendix H. Table 18 below provides a summary of the results, along with the minimum desirable targets for each respective travel mode, obtained from the MMLOS Guidelines. The targets reflect the "within 600m of a rapid transit station" Policy Area, with the designations of Bank St and Riverside Dr as arterial roads, spine routes and truck routes, with Transit Priority Isolated Measures on Bank St. It should be noted that there are no anticipated changes to the two subject intersections in future horizon year conditions of the proposed development.

Table 18: MMLOS Analysis, Signalized Intersections

Signalized Intersection	Level of Service							
	Pedestrian (PLOS)		Bicycle (BLOS)		Transit (TLOS)		Truck (TkLOS)	
	PLOS	Target	BLOS	Target	TLOS	Target	TkLOS	Target
Bank/Riverside Dr EB	F	A	F	C	D	D	A	D
Bank/Riverside Dr WB	C	A	F	C	D	D	D	D

Red font in the table above indicates that the respective desirable target has not been met. As shown in Table 18, the pedestrian and bicycle LOS desirable targets are not met at the two intersections.

For PLOS, the number of lanes that pedestrians have to cross at a given crosswalk has the single largest effect on the LOS result. To meet the PLOS target 'A', it would require that the intersection be fully protected (i.e. no conflicting left or right-turn movements from vehicles during the pedestrian phase) and at most 2 to 3 lanes of crosswalk width. Given the location and designation of these intersections, meeting the PLOS target would require unideal measures. It is noteworthy that the east and west crosswalks at Bank/Riverside Dr WB both result in a PLOS 'A' as shown in the detailed analysis, due to the combination of prohibited turning movements, one-way road operations and low number of lanes at the respective crosswalks.

For BLOS, the results are dependent on the left and right-turn operations of bikes approaching the intersection. The lack of bike crossings and dedicated bike lanes for some movements at both intersections reduce safety and convenience for cyclists. However, it is anticipated that bike lanes and bike crossings will be added at these intersections as part of the future Bank St Renewal project.

5. Findings, Conclusions and Recommendations

Based on the results summarized herein, the following transportation related conclusions are offered:

Proposed Development

- The proposed development will consist of a high-rise residential building, which will be constructed in a single phase.
- The existing car service shop/dealership and fast-food restaurant at 1335 and 1339 Bank St will be replaced by the proposed developments.
- The proposed building will consist of approximately 391 residential units with 525m^2 of ground floor commercial space (Café/Bar, Fitness, etc.). Additionally, 65 residential units will be utilized as short-lease units (i.e. there will be 326 apartment units).

- A one-way driveway permitting inbound traffic along Riverside Dr WB and outbound traffic along Riverside Dr EB is proposed to serve the development.
- A total of 172 vehicle parking spaces are proposed to be provided, with 137 located within a two-level underground parking garage and 35 as surface parking spaces. Three short-term lay-by parking spaces for loading/unloading purposes are also proposed along Bank St. A total of 269 bicycle parking spaces are also proposed.
- The number of new vehicle trips anticipated to be generated by the proposed development are 62 and 34 veh/h during the morning and afternoon peak hours, respectively.

Existing and Background Conditions

- In existing conditions, notable traffic operations include the following:
  - Critical movements at the two Bank/Riverside intersections operate near capacity during the afternoon peak hour. The Bank St/Riverside Dr EB intersection 'as a whole' operates near capacity during the afternoon peak hour.
  - Ramp 2 merge onto Riverside Dr WB operates at capacity during afternoon peak hour. The 95th percentile queue length is 50m and does not exceed available storage.
- A background growth rate of 1% per year was applied along Bank St and Riverside Dr between existing conditions and future horizon years 2022 and 2027.
- In future background 2022 and 2027 conditions, study area intersections operate slightly better than existing conditions due to increasing the PHF to 1.0, as per TIA requirements.

Projected Conditions

- Total projected 2022 traffic operations are similar to future background 2022 operations, with slightly higher v/c ratios and delays.
- Total projected 2027 operations are similar to future background 2027 operations, with slightly higher v/c ratios and delays. The 95th percentile queue length of Ramp 2 increases to 70m, which does not exceed available storage length.
- With regards to the proposed site access, the outbound movement along Riverside Dr EB was analyzed with STOP Control and was projected to operate at a LOS 'B' during both the morning and afternoon peak hours of horizon years 2022 and 2027.
- Using existing transit ridership data obtained from OC Transpo and the available bus capacities in the area, the number of transit trips (143 trips/h AM and 151 trips/h PM) are anticipated to have minor impact to transit services.
- MMLOS analysis for boundary roads indicated the following:
  - PLOS desired target is not met for Bank St in existing conditions; however, the combination of proposed wider sidewalks and larger boulevards does improve pedestrian conditions in the future. PLOS desired target is not met for Riverside Dr EB and Riverside Dr WB.
  - BLOS desired target is not met on Bank St in existing conditions, however the proposed cycle track along the property frontage does improve cycling conditions in the future. BLOS desired target is not met on Riverside Dr EB.
- MMLOS analysis for the two Bank/Riverside signalized intersections indicated the following:
  - PLOS desired target is not met
  - BLOS desired target is not met
  - The cycling and pedestrian experience is anticipated to be improved as a result of the planned intersection modifications as part of the Bank Street Renewal project, where it is understood that cross-rides and crosswalks are being considered for both intersections.
- SimTraffic queueing and blocking analysis indicated that the queue length of the EBR at Bank/Riverside Dr EB exceeded available storage in existing conditions during the afternoon peak hour. In Total projected 2027 conditions, the queue length of the NBR at Bank/Riverside Dr EB may be slightly exceeded during morning peak hour. Also, storage length of Ramp 2 may be fully occupied at times.

Bank Street Design

- The short-term lay-by parking spaces on Bank St have been supported by City's Transportation Engineering Services.
- Should the timing of the proposed development occur prior Bank Street Renewal project and an interim design be required, it is recommended that option 1a discussed in Section 4.3 be considered as it will require the minimum amount reconstruction for when Bank Street Renewal Project is completed. Note that if option 1a is to be constructed and the Bank Street Renewal project is not to be constructed within a reasonable timeframe, a monitoring plan may be implemented to identify potential safety concerns involving U-Turns from the layby. Within the monitoring plan, it is recommended that the review consider collision patterns over a three-year period and establish a baseline condition prior to the layby construction.

In summary, the subject development is located in close proximity to existing rapid transit and active transportation networks, and although situated within the middle of the unusual configuration of the Bank/Riverside intersections, the vehicle access is well integrated and the development is forecasted to generate traffic volumes that do not adversely impact the performance of the nearby study area intersections. The development is recommended from a transportation perspective.

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Appendix A

SCREENING FORM AND COMMENT RESPONSES

PARSONS

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City of Ottawa 2017 TIA Guidelines

TIA Screening Form

Date	11-Feb-20
Project	1335 Bank Street
Project Number	908489 - 50073

Results of Screening	Yes/No
Development Satisfies the Trip Generation Trigger	Yes
Development Satisfies the Location Trigger	Yes
Development Satisfies the Safety Trigger	Yes

Module 1.1 - Description of Proposed Development	
Municipal Address	1335 Bank Street
Description of location	East side of Bank Street, between Riverside Dr east and west
Land Use	Mixed-use (residential and first floor commercial space)
Development Size	405 residential apartment units and 594 m^2 commercial
Number of Accesses and Locations	2 accesses, one on Riverside east and one on Riverside west
Development Phasing	single phase
Buildout Year	2022
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger		
Land Use Type	Townhomes or Apartments	
Development Size	405	Units
Trip Generation Trigger Met?	Yes	

Module 1.3 - Location Triggers	
Development Proposes a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit, or Spine Bicycle Networks (See Sheet 3)	Yes
Development is in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone. (See Sheet 3)	Yes
Location Trigger Met?	Yes

Module 1.4 - Safety Triggers		
Posted Speed Limit on any boundary road	<80	km/h
Horizontal / Vertical Curvature on a boundary street limits sight lines at a proposed driveway	Yes	
A proposed driveway is within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions) or within auxiliary lanes of an intersection;	Yes	
A proposed driveway makes use of an existing median break that serves an existing site	No	
There is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development	Yes	
The development includes a drive-thru facility	No	
Safety Trigger Met?	Yes	

1223 Michael Street North, Suite 100 | Ottawa, ON K1J 7T2
P: +1 613.738.4160 | F: +1 613.739.7105 | www.parsons.com

3 December 2021

City of Ottawa
Development Review Services
110 Laurier Avenue West
Ottawa, ON K1P 1J1

Attention: Josiane Gervais, P.Eng.

Dear Josiane:

Re: 1335 Bank Street TIA Report
Step 5 – Comment and Response Form

This comment and response form has been prepared to address the comments received on August 25th, 2021, with corresponding responses from Parsons.

TRANSPORTATION ENGINEERING SERVICES

Comment 1: *Section 4.1 Development Design (including comments on the RMA/Functional Design/Site Plan):*

a. *Discuss with Traffic Signal Design the possibility of moving the northbound curb lane stop bar south another 2-3m so that northbound cyclists would have access to the bike box if they arrive at the signal on a red light.*
   Ultimate Bank Street design to be coordinated by Bank Street Renewal team.
b. *Provide a yield line for northbound cyclists at the end of the northbound cycle track.*
   Ultimate Bank Street design to be coordinated by Bank Street Renewal team.
c. *The delineation needs to be widened where the cycle track bends at the northern limit of the parking layby.*
   Ultimate Bank Street design to be coordinated by Bank Street Renewal team.
d. *Include double wide directional TWSI at the bus stop island platform. Refer to the bus stop detail circulated by Josiane Gervais on January 19th, 2021.*
   Ultimate Bank Street design to be coordinated by Bank Street Renewal team.
e. *The deviation in pedestrian path of travel where the cycle track starts (just north of the Riverside Drive Eastbound intersection) looks too abrupt. Per the January 7th, 2021 email by Josiane Gervais, support of the layby by TES is conditional on limiting the cycle track and sidewalk taper to 3:1 (longitudinal translation: lateral translation) or more gradual. Recommend shifting the bus stop further north by several meters and shortening the layby to allow for the more gradual cycle track/sidewalk deviation. Check and label the other deviation on the north side of the layby to ensure it is also a 3:1 taper or more gradual.*
   Ultimate Bank Street design to be coordinated by Bank Street Renewal team.

Comment 2: *Section 4.5 Transportation Demand Management:*
Provide additional supporting information for TDM as required by Element 4.5.1- Context for TDM and Element.
Report updated.
Comment 3: Section 4.9.2 Intersection Design:

In the PETSI evaluation in Appendix H, there appears to be some confusion about which crossings receive which inputs in terms of corner radius, conflicting right turns, and right turn channel. Review item 2.11 of the 2017 Addendum to the MMLOS Guidelines and revise MMLOS evaluation as required.
MMLOS analysis and report updated.

TRAFFIC SIGNAL DESIGN

Comment 4: *Due to the proposed changes in the existing roadway geometry for the purpose of construction of a new Traffic Control Signal(s) or modifications to existing TCS(s) the City of Ottawa Traffic Signal Design and Specification Unit is required to complete a review for traffic signal plant re-design and provide the actual re-design to the proponent or involved consultant.*
Noted. To be addressed during Detailed Design

Comment 5: *If the proposed traffic signals are warranted/approved for installation or modifications to existing TCS are approved, please forward approved geometric* detail *design drawings (dwg digital format in NAD 83 coordinates) including the following: base mapping, existing and new underground utilities/sewers, new/existing catch basins locations, AutoTurn Radius Modeling for approved vehicles and approved pavement markings drawings in separate files , no Xref files attached in master file(s), for detail traffic plant design lay out.*
Noted. To be addressed during Detailed Design

Comment 6: *Please send all digital (CADD) design files to Jon.Pach@ottawa.ca, or Peter.Grajcar@ottawa.ca 613-580-2424x23035, If not sure as per above request and more detail info needed as per input files, (i.e. format, etc.) please ask for our Dispatch Checklist document and it will be gladly provided.*
Noted.

STREET LIGHTING

Comment 7: *Future considerations are as follows:*

a. *If there are any proposed changes to the existing roadway geometry, the City of Ottawa Street Light Asset Management Group is required to provide a full street light design. Upon completion of proposed roadway geometry design changes, please submit digital Micro Station drawings with proposed roadway geometry changes to the Street Lighting Department, so that we may proceed with the detailed street light design and coordination with the Street Light maintenance provider and all necessary parties. Be advised that the applicant will be 100% responsible for all costs associated with any Street Light design as a result of the roadway geometry change.Constraint/opportunity table, 3rd row: Elimination of the proposed centre median is feasible only if the development on the west side of Bank Street no longer proposes a right-in/right-out access to Bank Street*
b. *Alterations and/or repairs are required where the existing street light plant is directly, indirectly or adversely affected by the scope of work under this circulation, due to the proposed road reconstruction process. All street light plant alterations and/or repairs must be performed by the City of Ottawa's Street Light maintenance provider.*

Noted.

TRANSIT SERVICES

Comment 8: *On the functional design, a "Cyclists Yield to Pedestrians" sign (Rb-73) is required for the cycle lane in the vicinity of the yield markings on approach to the bus stop.*
Ultimate Bank Street design to be coordinated by Bank Street Renewal team.

DEVELOPMENT REVIEW – TRANSPORTATION

Comment 9: *TIA: Correct headings in Table 5, they should reference person trips.*
Report updated.

Comment 10: *TIA: Please address the above comments and proceed to submitting the Step 5: Final TIA (remove draft watermark, sign and include Certification Form).*
Comments addressed.

Comment 11: *There are differences between the Site Plan and Functional Plan/RMA. Ensure consistency throughout plans.*
Noted.

Comment 12: *The functional plan and site plan provided assume the existing Bank Street frontage. Please provide a plan that shows what the site would look like assuming the Bank St Renewal project is complete.*
Report has been updated to include concept of how Bank St. Renewal can be incorporated.

Comment 13: *Site plan does not show signal pole that requested to be shown in January 2021 communications with Parsons.*
Ultimate Bank Street design to be coordinated by Bank Street Renewal team.

Comment 14: *Sidewalk is to be depressed and continuous across access as per City Specification 7.1.*
Noted.

Comment 15: *Show all curb radii dimensions; ensure that all curb radii are reduced as much as possible.*
Functional updated.

Comment 16: *Corner triangles (5m x 5m) are required at both intersections with Riverside WB and Riverside EB. These are measured from the existing/proposed ROW line. There are to be no structure above or below this triangle.*
Riverside WB 5m x 5m sight triangle provided. Riverside EB is bordered by NCC property not included in proposed site.

Comment 17: *Functional plan should show proposed ROW.*
Functional updated.

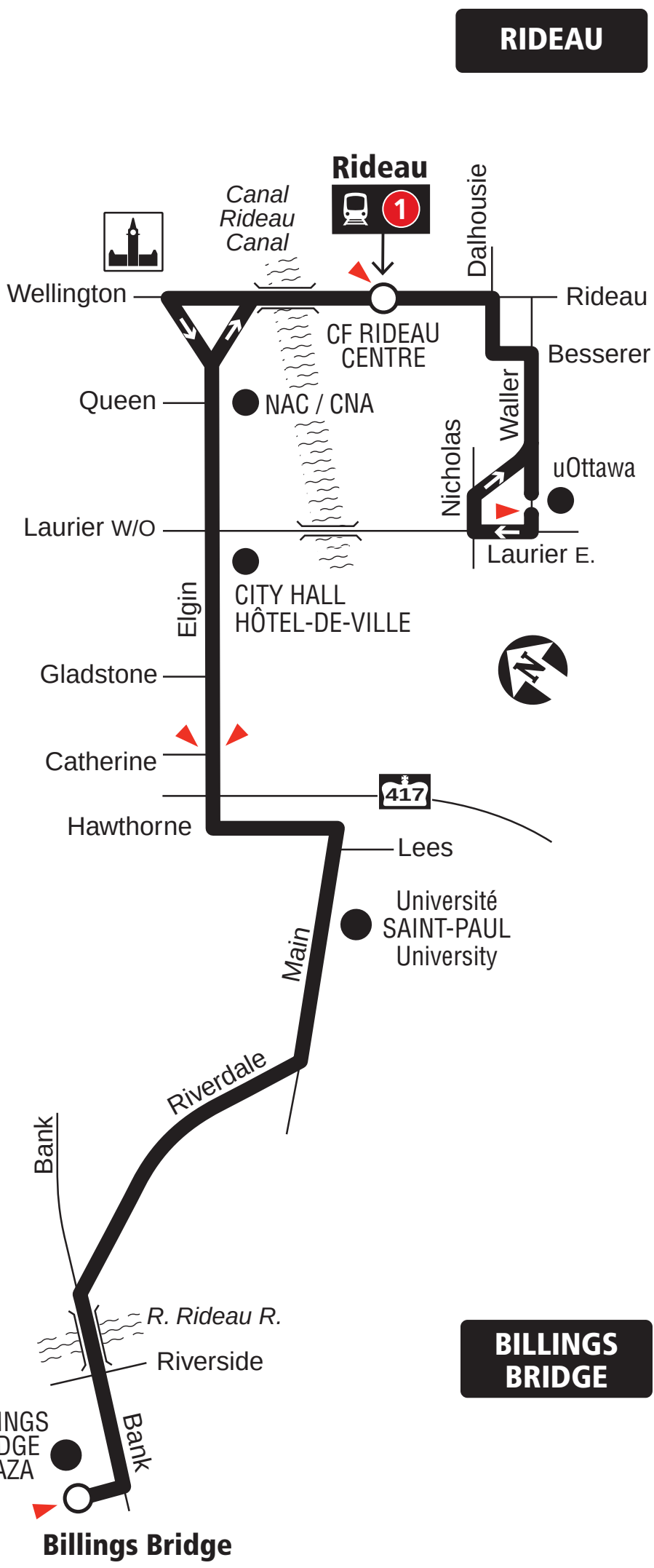
Appendix B

TRANSIT ROUTE MAPS

5 BILLINGS BRIDGE / RIDEAU

Local

7 days a week / 7 jours par semaine
All day service
Service toute la journée



○ Station

▲ Timepoint / Heures de passage

2019.07

Future route after O-Train Line 1 is open
Trajet du circuit après l'ouverture de la Ligne 1 de l'O-Train

Lost and Found / Objets perdus..... **613-563-4011**
Security / Sécurité..... **613-741-2478**

OC Transpo
INFO 613-741-4390
octranspo.com

6

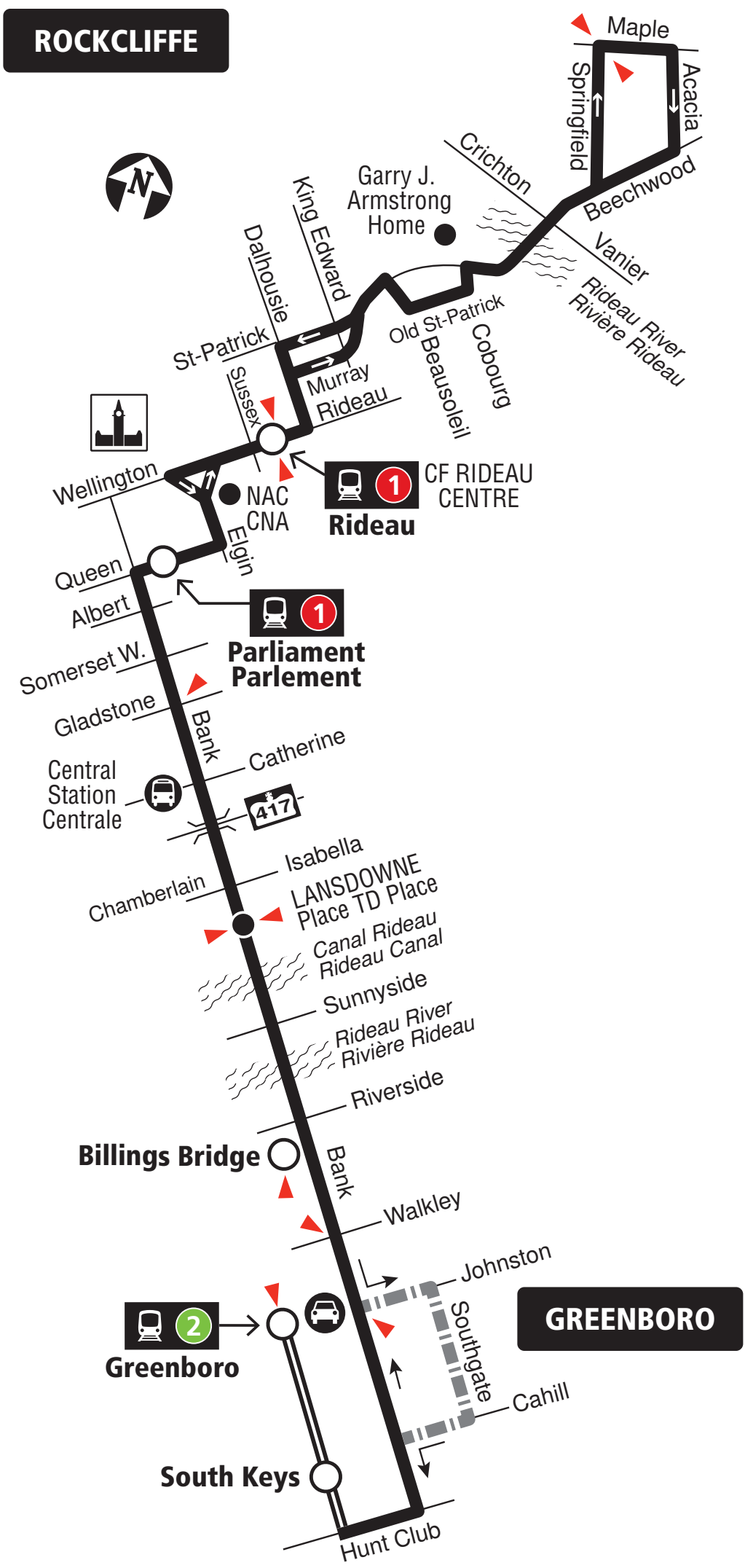
ROCKCLIFFE
GREENBORO

Fréquent

7 days a week / 7 jours par semaine

All day service

Service toute la journée



Transitway & Station

No early morning service / Aucun service matinal

Park & Ride / Parc-o-Bus

Timepoint / Heures de passage

2019.06

Schedule / Horaire.....613-560-1000

Text / Texto 560560

plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres

Customer Service
Service à la clientèle **613-741-4390**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité **613-741-2478**

Effective September 2, 2018
En vigueur 2 septembre 2018

OC Transpo

INFO 613-741-4390
octranspo.com

Appendix C

TRAFFIC DATA

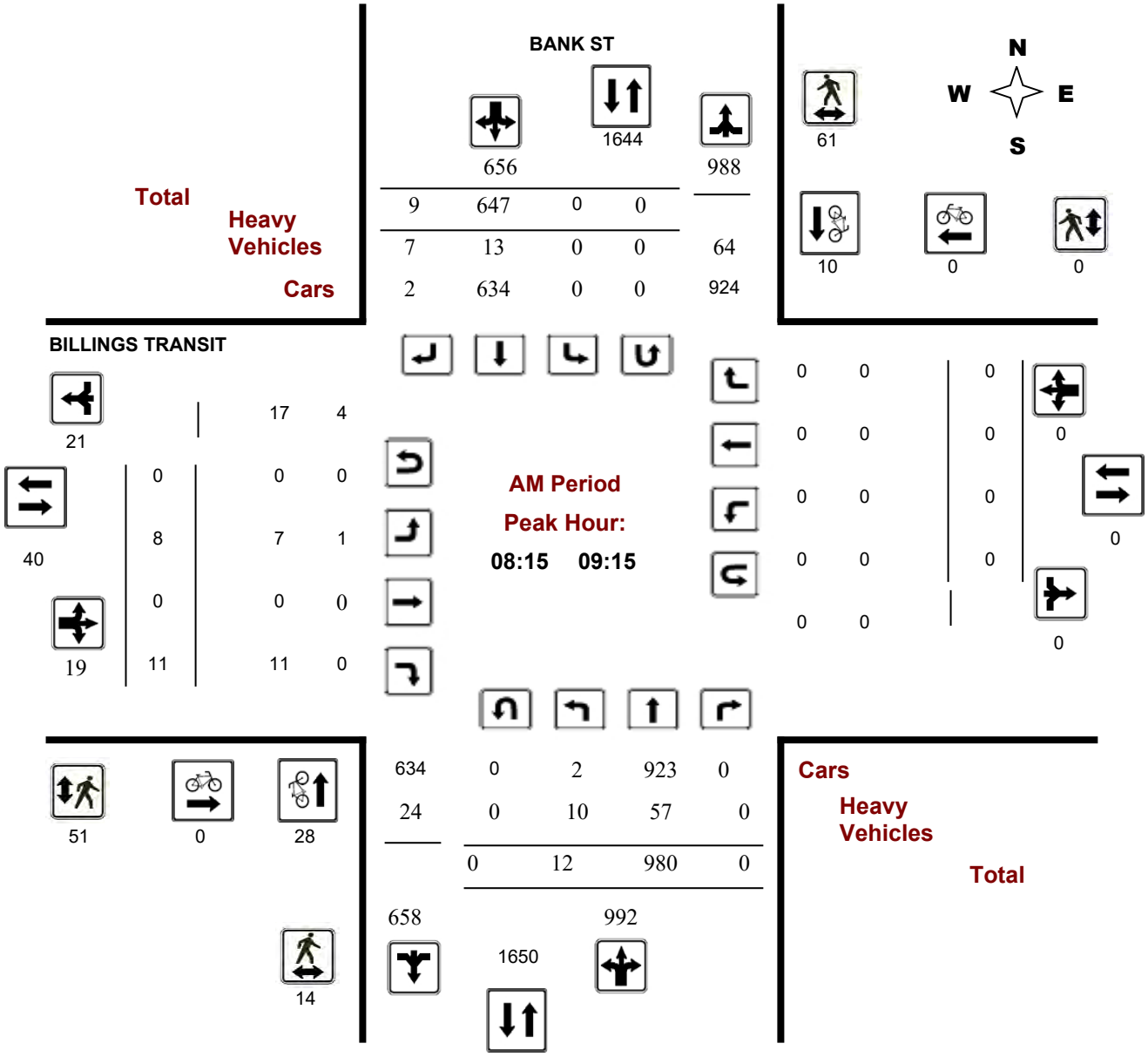
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ BILLINGS TRANSIT

Survey Date: Thursday, August 06, 2015 **WO No:** 35210

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



Comments

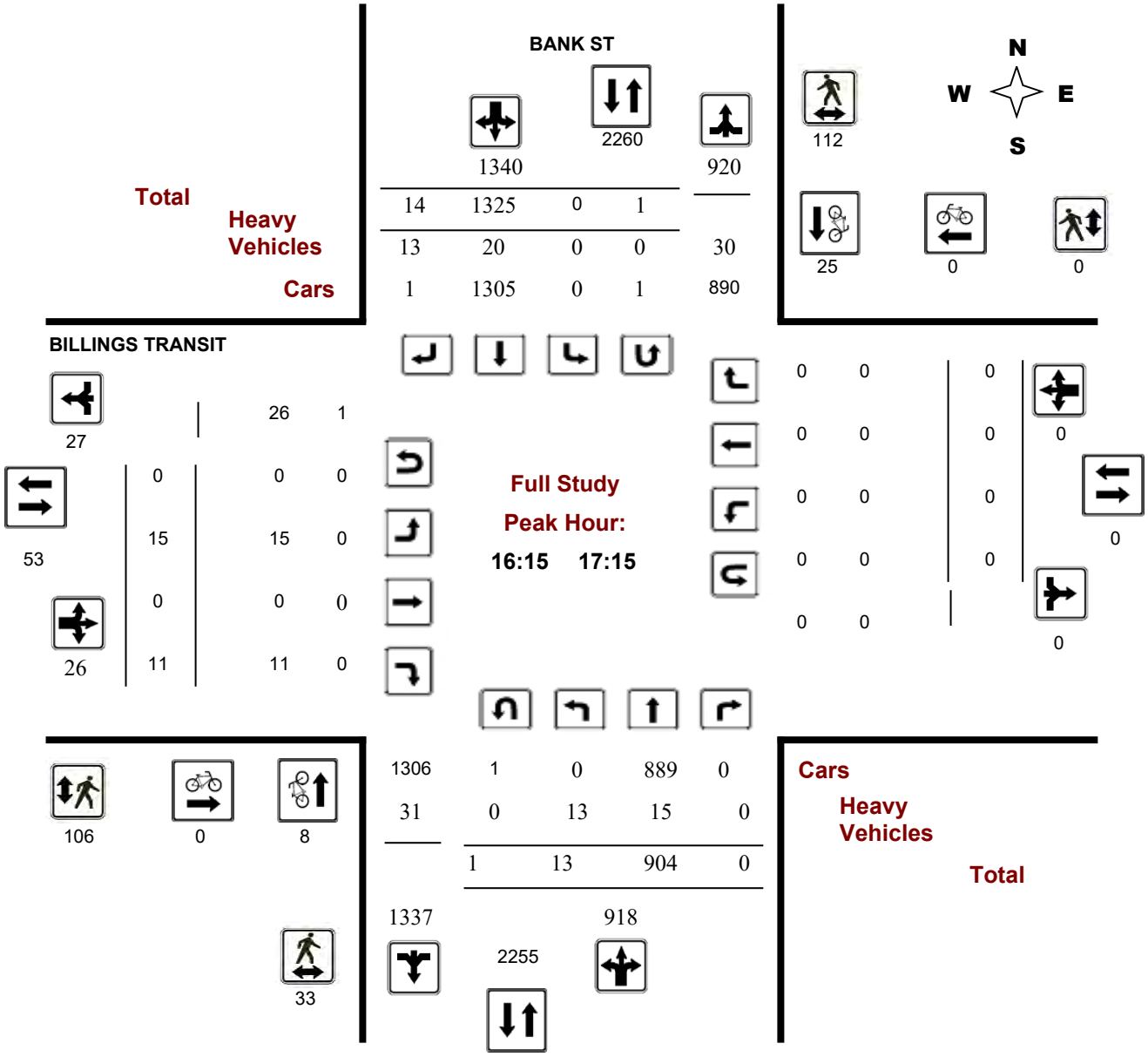
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ BILLINGS TRANSIT

Survey Date: Thursday, August 06, 2015 **WO No:** 35210

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



Comments

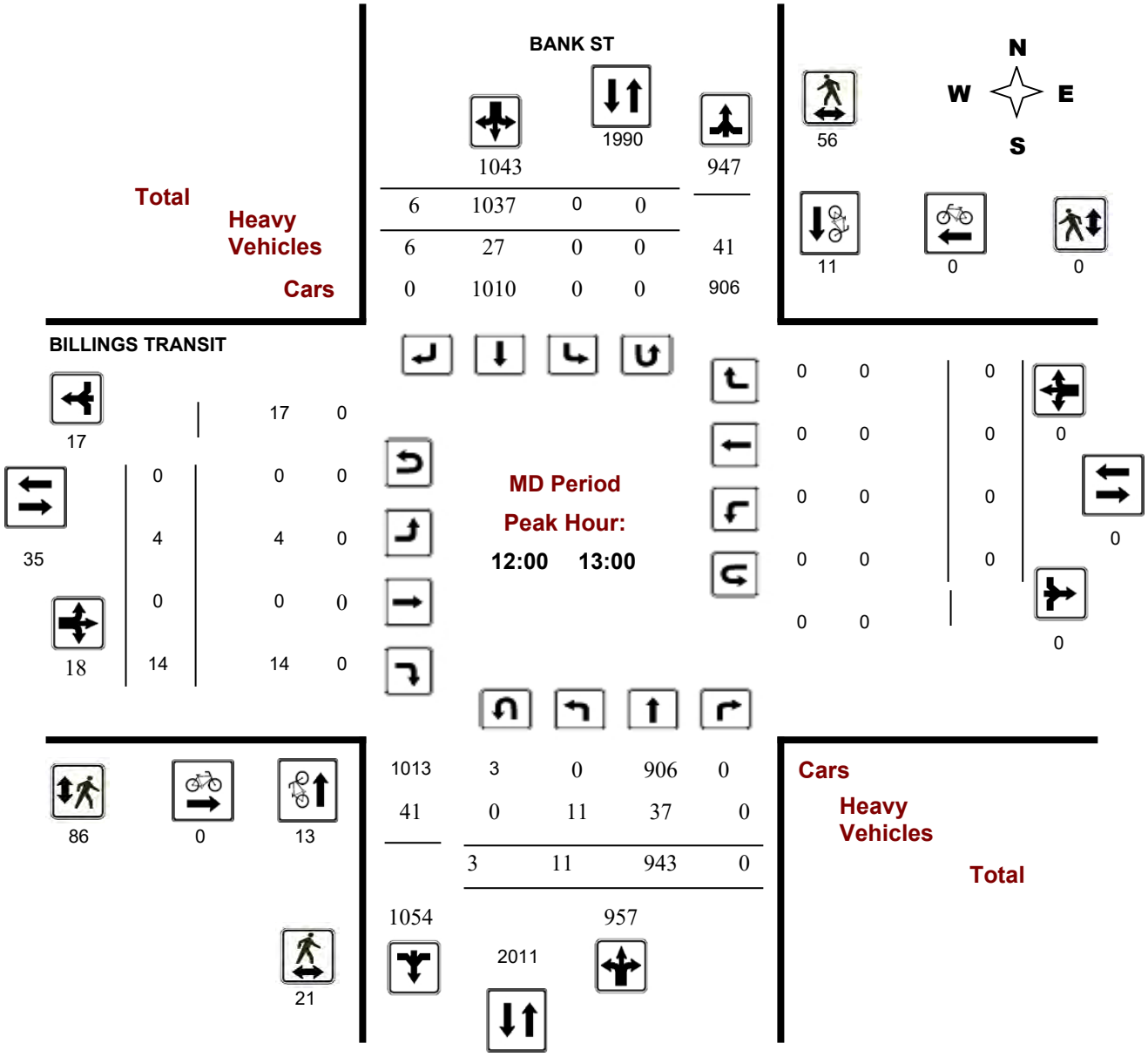
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ BILLINGS TRANSIT

Survey Date: Thursday, August 06, 2015 **WO No:** 35210

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



Comments

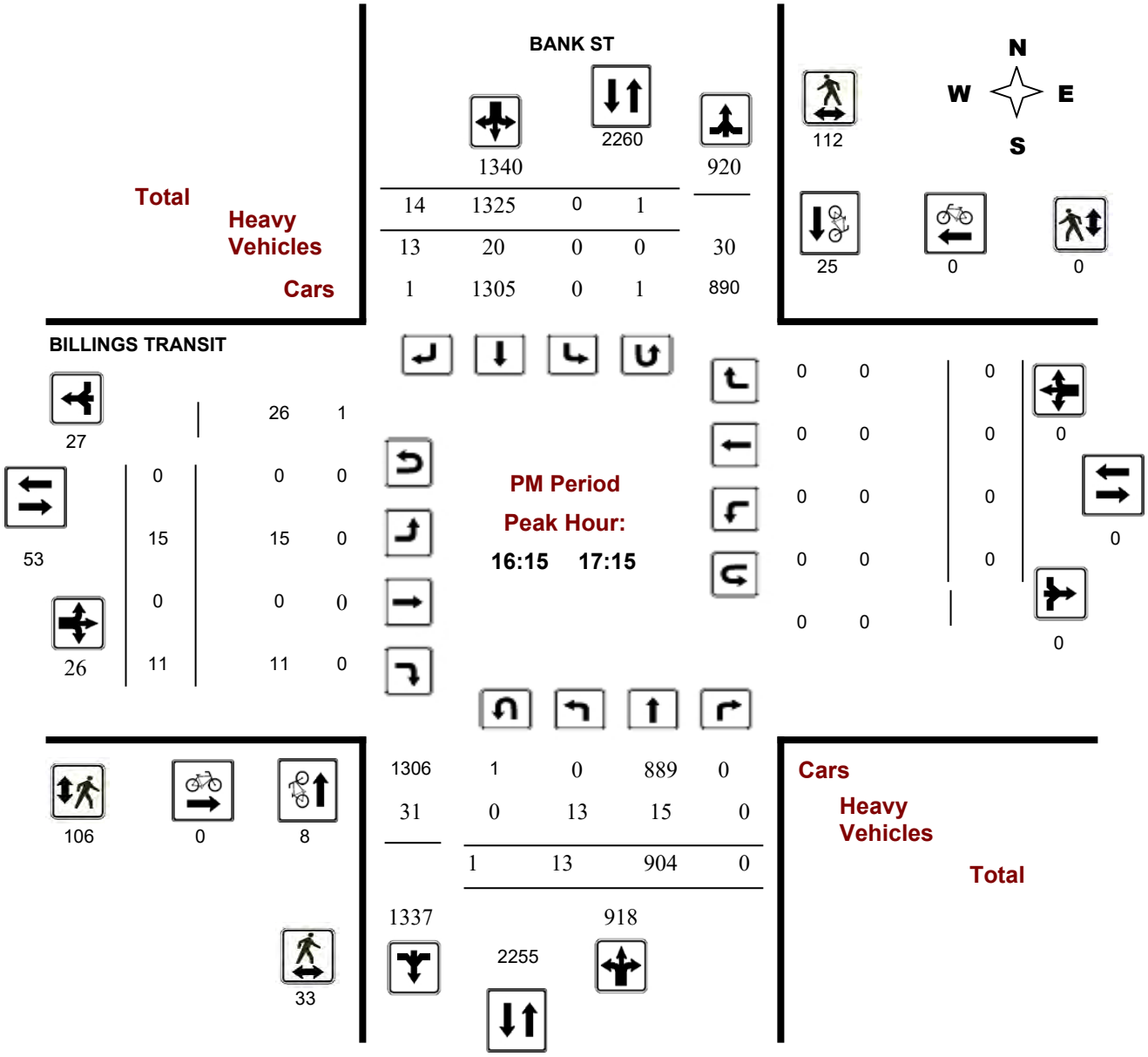
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ BILLINGS TRANSIT

Survey Date: Thursday, August 06, 2015 **WO No:** 35210

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



Comments

Transportation Services - Traffic Services

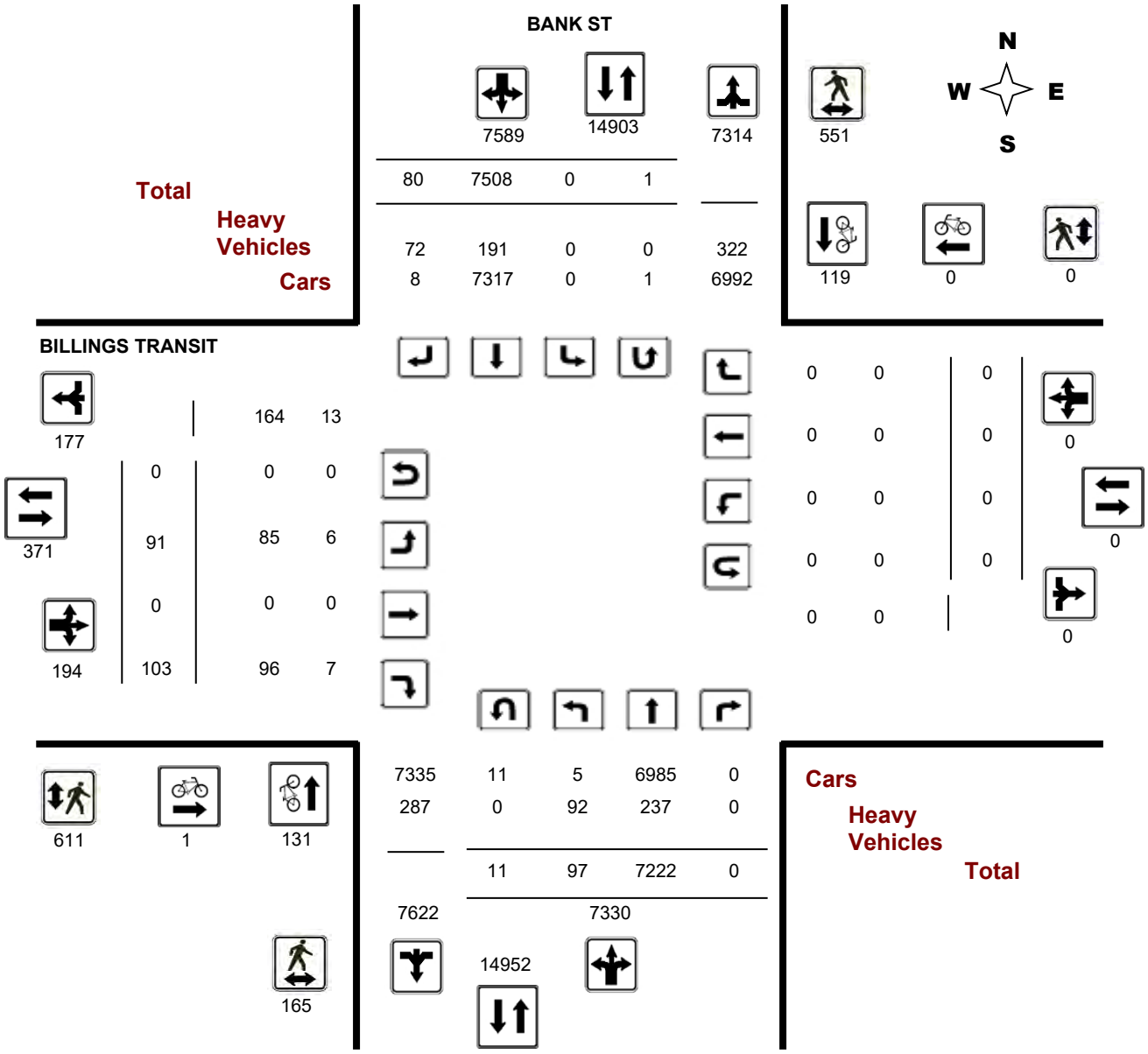
Turning Movement Count - Full Study Diagram

BANK ST @ BILLINGS TRANSIT

Survey Date: Thursday, August 06, 2015

WO#: 35210

Device: Miovision



Comments

Transportation Services - Traffic Services

Work Order 35210

Turning Movement Count - Full Study Summary Report

BANK ST @ BILLINGS TRANSIT

Survey Date: Thursday, August 06, 2015

Total Observed U-Turns

Northbound: 11 Southbound: 1

Eastbound: 0 Westbound: 0

AADT Factor .90

Full Study

	BANK ST									BILLINGS TRANSIT									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	13	813	0	**826**	0	401	8	**409**	**1235**	16	0	13	**29**	0	0	0	**0**	**29**	**1264**
08:00 09:00	11	1012	0	**1023**	0	589	13	**602**	**1625**	11	0	10	**21**	0	0	0	**0**	**21**	**1646**
09:00 10:00	13	868	0	**881**	0	753	8	**761**	**1642**	8	0	14	**22**	0	0	0	**0**	**22**	**1664**
11:30 12:30	13	958	0	**971**	0	974	8	**982**	**1953**	5	0	13	**18**	0	0	0	**0**	**18**	**1971**
12:30 13:30	9	885	0	**894**	0	1073	6	**1079**	**1973**	9	0	14	**23**	0	0	0	**0**	**23**	**1996**
15:00 16:00	11	884	0	**895**	0	1219	10	**1229**	**2124**	12	0	12	**24**	0	0	0	**0**	**24**	**2148**
16:00 17:00	15	929	0	**944**	0	1295	15	**1310**	**2254**	15	0	13	**28**	0	0	0	**0**	**28**	**2282**
17:00 18:00	12	873	0	**885**	0	1204	12	**1216**	**2101**	15	0	14	**29**	0	0	0	**0**	**29**	**2130**
Sub Total	97	7222	0	**7319**	0	7508	80	**7588**	**14907**	91	0	103	**194**	0	0	0	**0**	**194**	**15101**
U Turns				**11**				**1**	**12**				**0**				**0**	**0**	**12**
Total	97	7222	0	**7330**	0	7508	80	**7589**	**14919**	91	0	103	**194**	0	0	0	**0**	**194**	**15113**
EQ 12Hr	135	10039	0	**10189**	0	10436	111	**10549**	**20738**	126	0	143	**270**	0	0	0	**0**	**270**	**21008**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	121	9035	0	**9170**	0	9393	100	**9494**	**18664**	114	0	129	**243**	0	0	0	**0**	**243**	**18907**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	159	11835	0	**12012**	0	12304	131	**12437**	**24449**	149	0	169	**318**	0	0	0	**0**	**318**	**24767**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

Transportation Services - Traffic Services

W.O. 35210

Turning Movement Count - 15 Minute Summary Report

BANK ST @ BILLINGS TRANSIT

Survey Date: Thursday, August 06, 2015

Total Observed U-Turns

Northbound: 11 Southbound: 1

Eastbound: 0 Westbound: 0

		BANK ST									BILLINGS TRANSIT									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	2	168	0	**170**	0	93	2	**95**	**265**	4	0	4	**8**	0	0	0	**0**	**8**	**273**
07:15	07:30	3	189	0	**192**	0	77	1	**78**	**270**	4	0	3	**7**	0	0	0	**0**	**7**	**277**
07:30	07:45	4	215	0	**219**	0	117	2	**119**	**338**	3	0	2	**5**	0	0	0	**0**	**5**	**343**
07:45	08:00	4	241	0	**246**	0	114	3	**117**	**363**	5	0	4	**9**	0	0	0	**0**	**9**	**372**
08:00	08:15	3	253	0	**256**	0	125	5	**130**	**386**	4	0	3	**7**	0	0	0	**0**	**7**	**393**
08:15	08:30	4	247	0	**251**	0	126	3	**129**	**380**	2	0	2	**4**	0	0	0	**0**	**4**	**384**
08:30	08:45	1	259	0	**260**	0	179	3	**182**	**442**	3	0	2	**5**	0	0	0	**0**	**5**	**447**
08:45	09:00	3	253	0	**256**	0	159	2	**161**	**417**	2	0	3	**5**	0	0	0	**0**	**5**	**422**
09:00	09:15	4	221	0	**225**	0	183	1	**184**	**409**	1	0	4	**5**	0	0	0	**0**	**5**	**414**
09:15	09:30	4	192	0	**197**	0	163	2	**165**	**362**	1	0	3	**4**	0	0	0	**0**	**4**	**366**
09:30	09:45	1	228	0	**229**	0	211	5	**216**	**445**	3	0	4	**7**	0	0	0	**0**	**7**	**452**
09:45	10:00	4	227	0	**231**	0	196	0	**196**	**427**	3	0	3	**6**	0	0	0	**0**	**6**	**433**
11:30	11:45	3	247	0	**251**	0	249	2	**251**	**502**	1	0	1	**2**	0	0	0	**0**	**2**	**504**
11:45	12:00	3	206	0	**210**	0	242	2	**244**	**454**	3	0	4	**7**	0	0	0	**0**	**7**	**461**
12:00	12:15	1	257	0	**258**	0	243	3	**246**	**504**	1	0	4	**5**	0	0	0	**0**	**5**	**509**
12:15	12:30	6	248	0	**254**	0	240	1	**241**	**495**	0	0	4	**4**	0	0	0	**0**	**4**	**499**
12:30	12:45	0	200	0	**200**	0	280	1	**281**	**481**	1	0	3	**4**	0	0	0	**0**	**4**	**485**
12:45	13:00	4	238	0	**245**	0	274	1	**275**	**520**	2	0	3	**5**	0	0	0	**0**	**5**	**525**
13:00	13:15	3	207	0	**210**	0	256	2	**258**	**468**	2	0	4	**6**	0	0	0	**0**	**6**	**474**
13:15	13:30	2	240	0	**242**	0	263	2	**265**	**507**	4	0	4	**8**	0	0	0	**0**	**8**	**515**
15:00	15:15	3	219	0	**222**	0	299	3	**302**	**524**	4	0	2	**6**	0	0	0	**0**	**6**	**530**
15:15	15:30	4	224	0	**230**	0	293	1	**294**	**524**	2	0	4	**6**	0	0	0	**0**	**6**	**530**
15:30	15:45	2	223	0	**225**	0	312	2	**314**	**539**	2	0	2	**4**	0	0	0	**0**	**4**	**543**
15:45	16:00	2	218	0	**220**	0	315	4	**319**	**539**	4	0	4	**8**	0	0	0	**0**	**8**	**547**
16:00	16:15	3	224	0	**227**	0	312	4	**316**	**543**	4	0	5	**9**	0	0	0	**0**	**9**	**552**
16:15	16:30	6	236	0	**242**	0	312	3	**315**	**557**	5	0	3	**8**	0	0	0	**0**	**8**	**565**
16:30	16:45	3	253	0	**256**	0	324	4	**328**	**584**	3	0	3	**6**	0	0	0	**0**	**6**	**590**
16:45	17:00	3	216	0	**219**	0	347	4	**351**	**570**	3	0	2	**5**	0	0	0	**0**	**5**	**575**
17:00	17:15	1	199	0	**201**	0	342	3	**346**	**547**	4	0	3	**7**	0	0	0	**0**	**7**	**554**
17:15	17:30	3	231	0	**235**	0	306	1	**307**	**542**	5	0	3	**8**	0	0	0	**0**	**8**	**550**
17:30	17:45	4	207	0	**211**	0	259	4	**263**	**474**	3	0	5	**8**	0	0	0	**0**	**8**	**482**
17:45	18:00	4	236	0	**240**	0	297	4	**301**	**541**	3	0	3	**6**	0	0	0	**0**	**6**	**547**
TOTAL:		97	7222	0	**7330**	0	7508	80	**7589**	**14919**	91	0	103	**194**	0	0	0	**0**	**194**	**15113**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
35210

BANK ST @ BILLINGS TRANSIT

Count Date: Thursday, August 06, 2015 **Start Time:** 07:00

	BANK ST			BILLINGS TRANSIT			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	31	3	**34**	0	0	**0**	**34**
08:00 09:00	36	9	**45**	0	0	**0**	**45**
09:00 10:00	15	4	**19**	0	0	**0**	**19**
11:30 12:30	12	18	**30**	0	0	**0**	**30**
12:30 13:30	18	9	**27**	0	0	**0**	**27**
15:00 16:00	7	24	**31**	1	0	**1**	**32**
16:00 17:00	6	26	**32**	0	0	**0**	**32**
17:00 18:00	6	26	**32**	0	0	**0**	**32**
Total	131	119	**250**	1	0	**1**	**251**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

W.O. 35210

Turning Movement Count - Heavy Vehicle Report

BANK ST @ BILLINGS TRANSIT

Survey Date: Thursday, August 06, 2015

		BANK ST									BILLINGS TRANSIT									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	**N TOT**	LT	ST	RT	**S TOT**	**STR TOT**	LT	ST	RT	**E TOT**	LT	ST	RT	**W TOT**	**STR TOT**	**Grand Total**
07:00	08:00	12	31	0	**43**	0	21	7	**28**	**71**	16	0	12	**28**	0	0	0	**0**	**28**	**99**
08:00	09:00	11	62	0	**73**	0	12	9	**21**	**94**	9	0	10	**19**	0	0	0	**0**	**19**	**113**
09:00	10:00	11	33	0	**44**	0	31	7	**38**	**82**	6	0	13	**19**	0	0	0	**0**	**19**	**101**
11:30	12:30	13	35	0	**48**	0	20	7	**27**	**75**	5	0	12	**17**	0	0	0	**0**	**17**	**92**
12:30	13:30	9	33	0	**42**	0	35	6	**41**	**83**	9	0	12	**21**	0	0	0	**0**	**21**	**104**
15:00	16:00	10	13	0	**23**	0	38	10	**48**	**71**	12	0	11	**23**	0	0	0	**0**	**23**	**94**
16:00	17:00	15	20	0	**35**	0	16	14	**30**	**65**	14	0	13	**27**	0	0	0	**0**	**27**	**92**
17:00	18:00	11	10	0	**21**	0	18	12	**30**	**51**	14	0	13	**27**	0	0	0	**0**	**27**	**78**
Sub Total		92	237	0	**329**	0	191	72	**263**	**592**	85	0	96	**181**	0	0	0	**0**	**181**	**773**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		92	237	0	**0**	0	191	72	**263**	**592**	85	0	96	**181**	0	0	0	**0**	**181**	**773**

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

Work Order
35210

Turning Movement Count - Pedestrian Volume Report

BANK ST @ BILLINGS TRANSIT

Count Date: Thursday, August 06, 2015 **Start Time:** 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	6	**6**	6	0	**6**	**12**
07:15 07:30	2	12	**14**	11	0	**11**	**25**
07:30 07:45	0	9	**9**	11	0	**11**	**20**
07:45 08:00	5	19	**24**	21	0	**21**	**45**
07:00 08:00	7	46	**53**	49	0	**49**	**102**
08:00 08:15	5	8	**13**	18	0	**18**	**31**
08:15 08:30	3	19	**22**	11	0	**11**	**33**
08:30 08:45	5	16	**21**	16	0	**16**	**37**
08:45 09:00	2	14	**16**	11	0	**11**	**27**
08:00 09:00	15	57	**72**	56	0	**56**	**128**
09:00 09:15	4	12	**16**	13	0	**13**	**29**
09:15 09:30	5	14	**19**	12	0	**12**	**31**
09:30 09:45	3	13	**16**	16	0	**16**	**32**
09:45 10:00	9	16	**25**	19	0	**19**	**44**
09:00 10:00	21	55	**76**	60	0	**60**	**136**
11:30 11:45	4	26	**30**	18	0	**18**	**48**
11:45 12:00	10	17	**27**	11	0	**11**	**38**
12:00 12:15	9	15	**24**	24	0	**24**	**48**
12:15 12:30	3	14	**17**	17	0	**17**	**34**
11:30 12:30	26	72	**98**	70	0	**70**	**168**
12:30 12:45	4	9	**13**	21	0	**21**	**34**
12:45 13:00	5	18	**23**	24	0	**24**	**47**
13:00 13:15	5	24	**29**	19	0	**19**	**48**
13:15 13:30	3	17	**20**	15	0	**15**	**35**
12:30 13:30	17	68	**85**	79	0	**79**	**164**
15:00 15:15	5	13	**18**	23	0	**23**	**41**
15:15 15:30	5	17	**22**	25	0	**25**	**47**
15:30 15:45	3	15	**18**	25	0	**25**	**43**
15:45 16:00	0	15	**15**	27	0	**27**	**42**
15:00 16:00	13	60	**73**	100	0	**100**	**173**
16:00 16:15	4	18	**22**	20	0	**20**	**42**
16:15 16:30	3	27	**30**	23	0	**23**	**53**
16:30 16:45	14	27	**41**	35	0	**35**	**76**
16:45 17:00	11	26	**37**	25	0	**25**	**62**
16:00 17:00	32	98	**130**	103	0	**103**	**233**
17:00 17:15	5	32	**37**	23	0	**23**	**60**
17:15 17:30	11	21	**32**	29	0	**29**	**61**
17:30 17:45	8	26	**34**	21	0	**21**	**55**
17:45 18:00	10	16	**26**	21	0	**21**	**47**
17:00 18:00	34	95	**129**	94	0	**94**	**223**
Total	165	551	**716**	611	0	**611**	**1327**

Comment:

Transportation Services - Traffic Services

Work Order
35210

Turning Movement Count - 15 Min U-Turn Total Report

BANK ST @ BILLINGS TRANSIT

Survey Date: Thursday, August 06, 2015

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	1	0	0	0	1
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	1	0	0	0	1
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	1	0	0	0	1
11:45	12:00	1	0	0	0	1
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	3	0	0	0	3
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	2	0	0	0	2
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	1	1	0	0	2
17:15	17:30	1	0	0	0	1
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		11	1	0	0	12

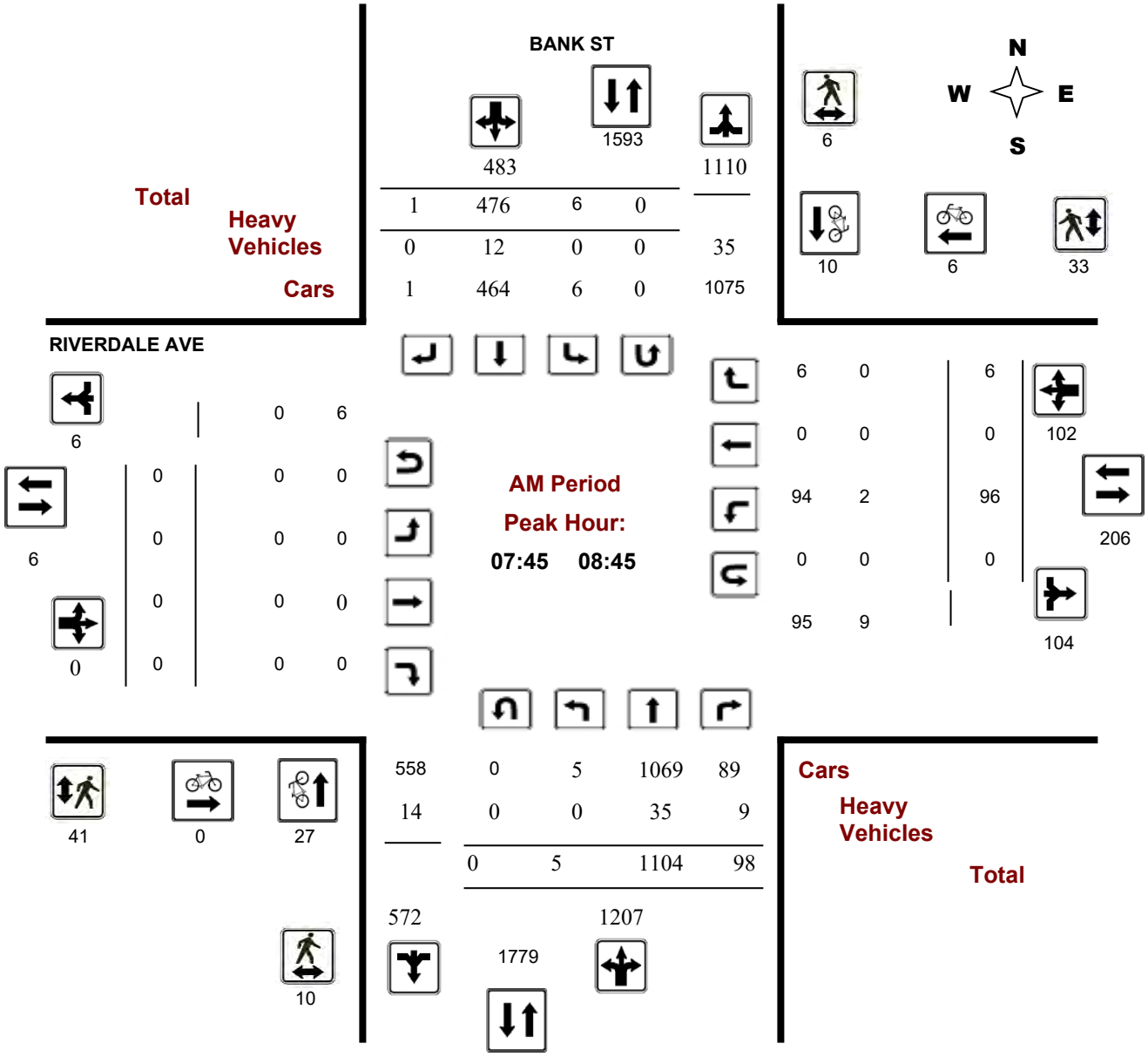
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ RIVERDALE AVE

Survey Date: Tuesday, April 16, 2019
Start Time: 07:00

WO No: 38542
Device: Miovision



Comments

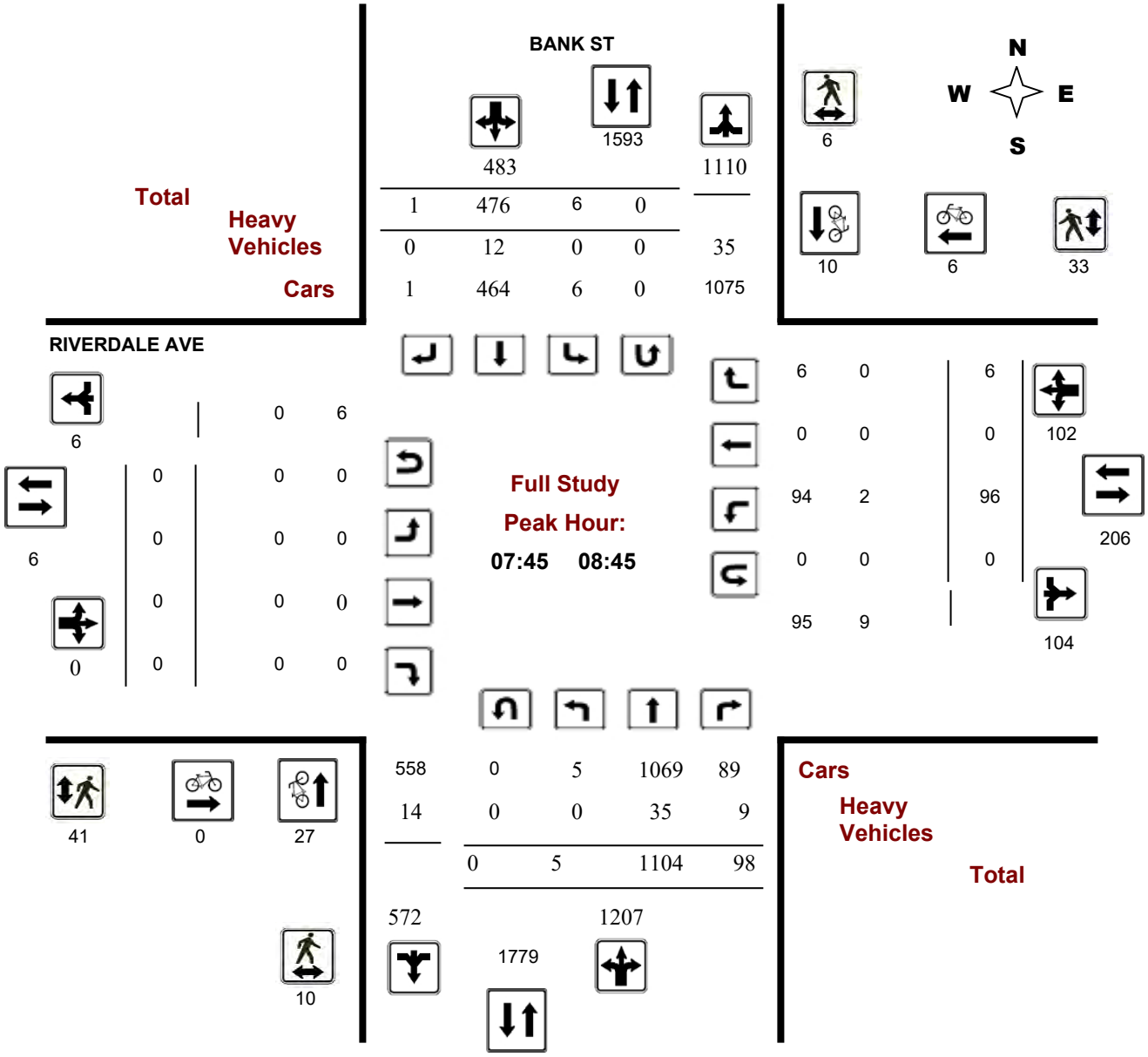
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ RIVERDALE AVE

Survey Date: Tuesday, April 16, 2019 **WO No:** 38542

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



Comments

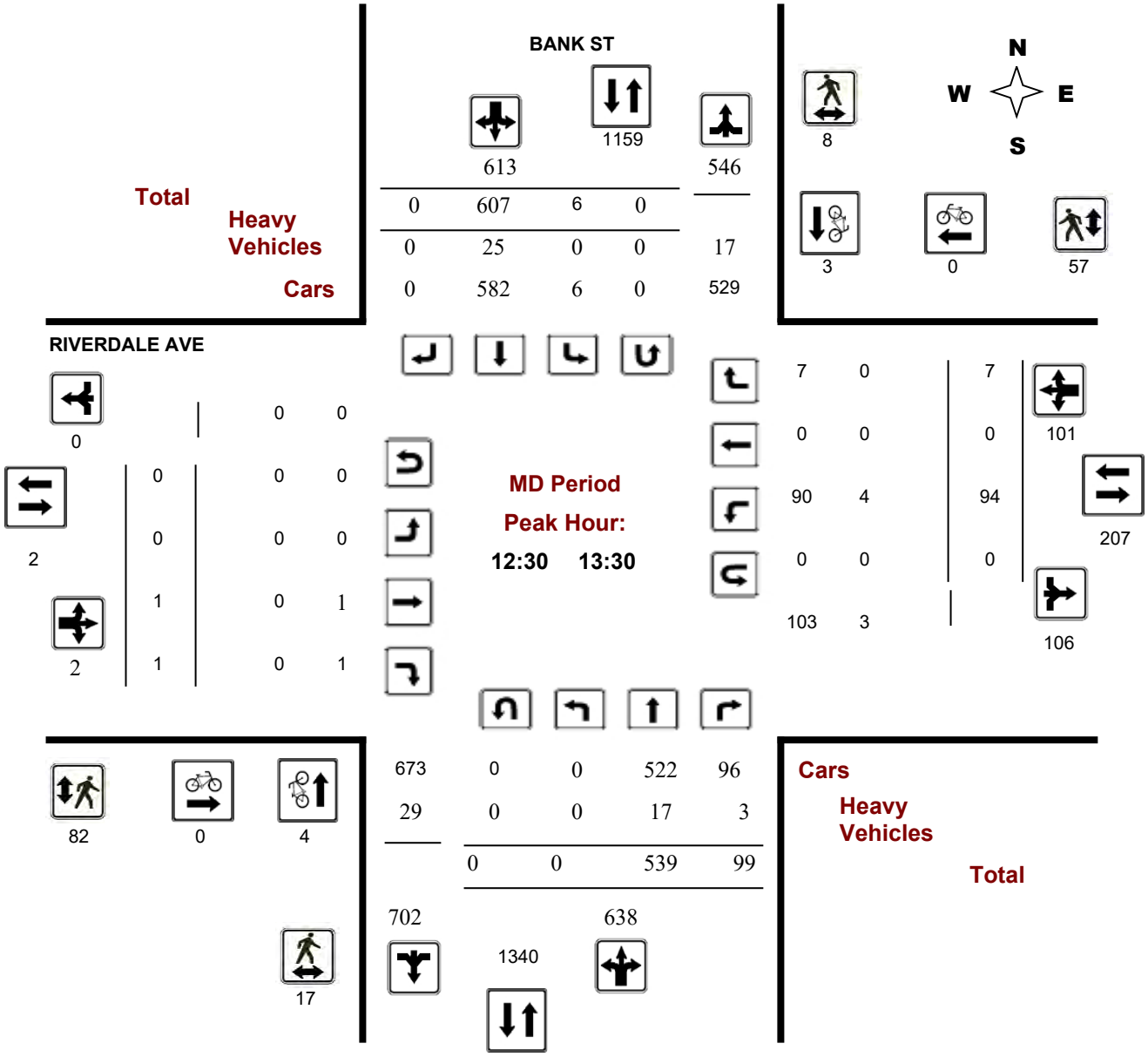
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ RIVERDALE AVE

Survey Date: Tuesday, April 16, 2019
Start Time: 07:00

WO No: 38542
Device: Miovision



Comments

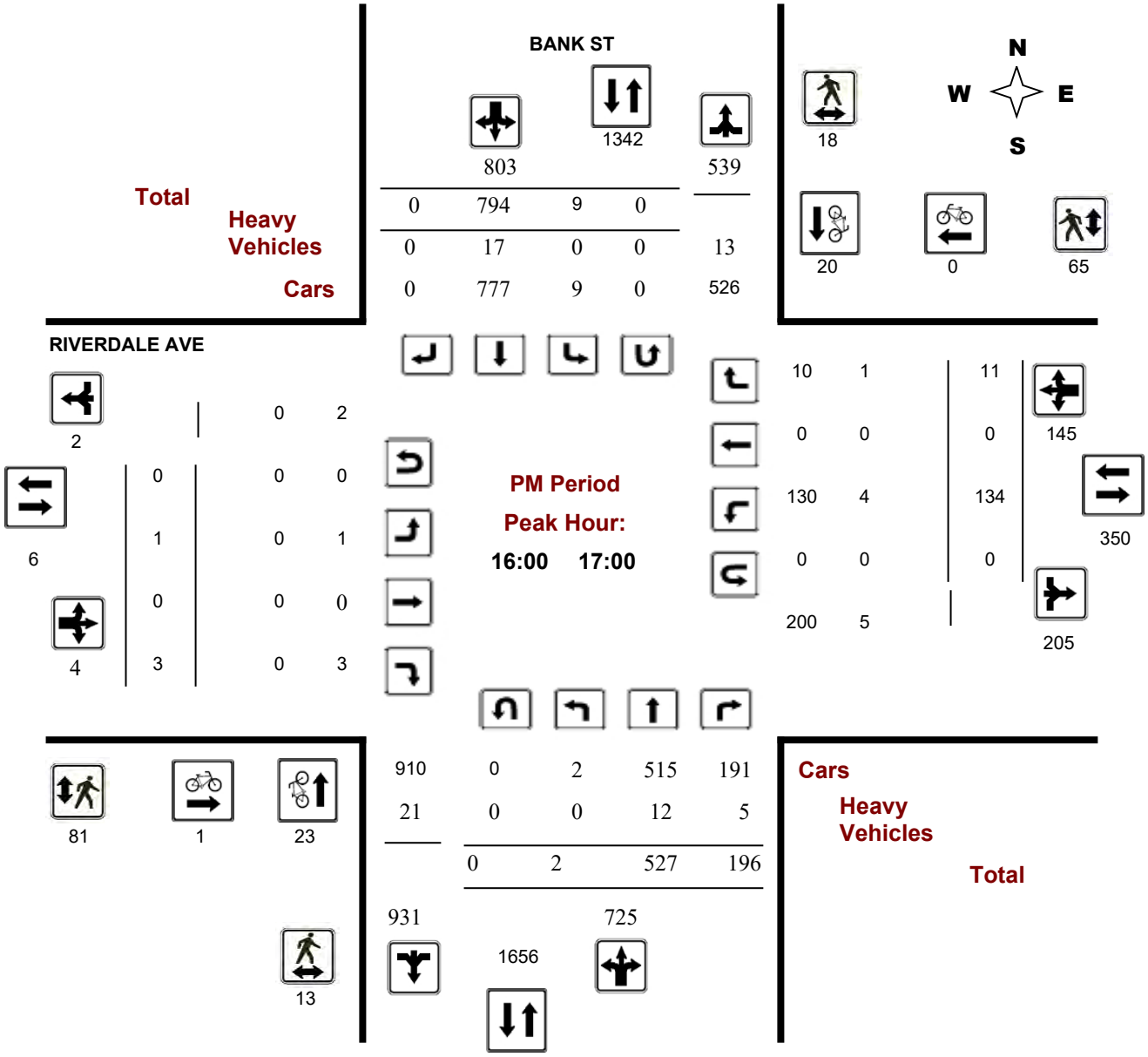
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ RIVERDALE AVE

Survey Date: Tuesday, April 16, 2019
Start Time: 07:00

WO No: 38542
Device: Miovision



Comments

Transportation Services - Traffic Services

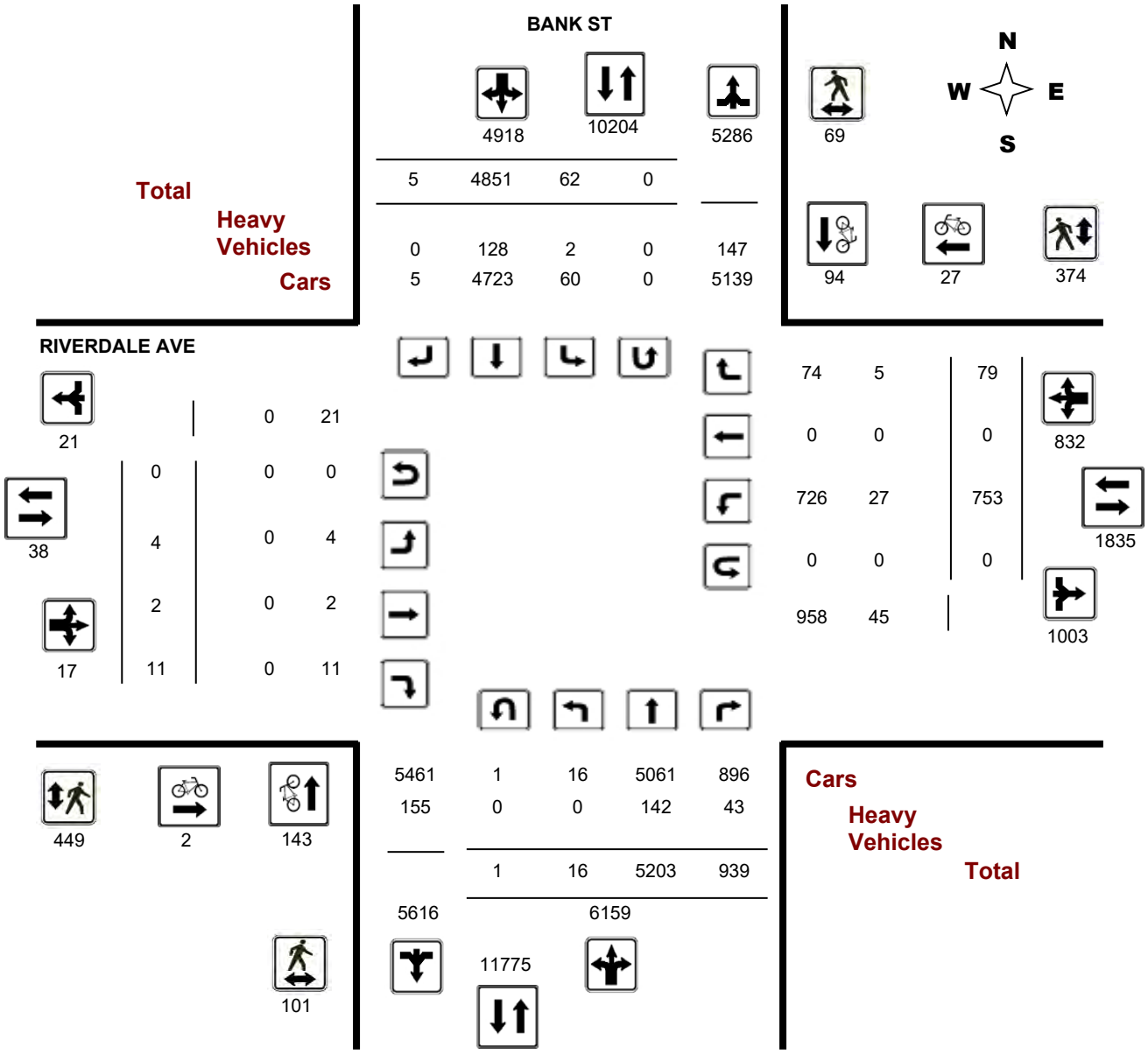
Turning Movement Count - Full Study Diagram

BANK ST @ RIVERDALE AVE

Survey Date: Tuesday, April 16, 2019

WO#: 38542

Device: Miovision



Comments

Transportation Services - Traffic Services

Work Order
38542

Turning Movement Count - Full Study Summary Report

BANK ST @ RIVERDALE AVE

Survey Date: Tuesday, April 16, 2019

Total Observed U-Turns

Northbound: 1 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor

.90

Full Study

	BANK ST									RIVERDALE AVE									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	2	831	76	**909**	1	389	1	**391**	**1300**	0	0	0	**0**	58	0	4	**62**	**62**	**1362**
08:00 09:00	6	1046	106	**1158**	9	504	0	**513**	**1671**	0	0	0	**0**	98	0	7	**105**	**105**	**1776**
09:00 10:00	4	569	79	**652**	6	505	1	**512**	**1164**	0	0	0	**0**	79	0	14	**93**	**93**	**1257**
11:30 12:30	0	590	97	**687**	10	551	1	**562**	**1249**	0	0	0	**0**	83	0	17	**100**	**100**	**1349**
12:30 13:30	0	539	99	**638**	6	607	0	**613**	**1251**	0	1	1	**2**	94	0	7	**101**	**103**	**1354**
15:00 16:00	0	547	147	**694**	9	706	0	**715**	**1409**	0	0	1	**1**	111	0	12	**123**	**124**	**1533**
16:00 17:00	2	527	196	**725**	9	794	0	**803**	**1528**	1	0	3	**4**	134	0	11	**145**	**149**	**1677**
17:00 18:00	2	554	139	**695**	12	795	2	**809**	**1504**	3	1	6	**10**	96	0	7	**103**	**113**	**1617**
Sub Total	16	5203	939	**6158**	62	4851	5	**4918**	**11076**	4	2	11	**17**	753	0	79	**832**	**849**	**11925**
U Turns				**1**				**0**	**1**				**0**				**0**	**0**	**1**
Total	16	5203	939	**6159**	62	4851	5	**4918**	**11077**	4	2	11	**17**	753	0	79	**832**	**849**	**11926**
EQ 12Hr	22	7232	1305	**8561**	86	6743	7	**6836**	**15397**	6	3	15	**24**	1047	0	110	**1156**	**1180**	**16577**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	20	6509	1175	**7705**	78	6069	6	**6152**	**13857**	5	3	14	**21**	942	0	99	**1041**	**1062**	**14919**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	26	8527	1539	**10093**	102	7950	8	**8060**	**18153**	7	3	18	**28**	1234	0	129	**1363**	**1391**	**19544**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

Transportation Services - Traffic Services

W.O. 38542

Turning Movement Count - 15 Minute Summary Report

BANK ST @ RIVERDALE AVE

Survey Date: Tuesday, April 16, 2019

Total Observed U-Turns

Northbound: 1 Southbound: 0

Eastbound: 0 Westbound: 0

		BANK ST									RIVERDALE AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	158	20	**178**	1	81	0	**82**	**260**	0	0	0	**0**	14	0	1	**15**	**15**	**275**
07:15	07:30	0	179	16	**195**	0	96	0	**96**	**291**	0	0	0	**0**	9	0	2	**11**	**11**	**302**
07:30	07:45	0	219	17	**236**	0	98	0	**98**	**334**	0	0	0	**0**	10	0	1	**11**	**11**	**345**
07:45	08:00	2	275	23	**300**	0	114	1	**115**	**415**	0	0	0	**0**	25	0	0	**25**	**25**	**440**
08:00	08:15	0	270	30	**300**	1	113	0	**114**	**414**	0	0	0	**0**	26	0	2	**28**	**28**	**442**
08:15	08:30	2	297	20	**319**	2	120	0	**122**	**441**	0	0	0	**0**	22	0	1	**23**	**23**	**464**
08:30	08:45	1	262	25	**288**	3	129	0	**132**	**420**	0	0	0	**0**	23	0	3	**26**	**26**	**446**
08:45	09:00	3	217	31	**251**	3	142	0	**145**	**396**	0	0	0	**0**	27	0	1	**28**	**28**	**424**
09:00	09:15	0	154	18	**172**	1	127	1	**129**	**301**	0	0	0	**0**	19	0	2	**21**	**21**	**322**
09:15	09:30	1	156	19	**176**	2	118	0	**120**	**296**	0	0	0	**0**	20	0	3	**23**	**23**	**319**
09:30	09:45	0	135	22	**157**	1	137	0	**138**	**295**	0	0	0	**0**	25	0	7	**32**	**32**	**327**
09:45	10:00	3	124	20	**148**	2	123	0	**125**	**273**	0	0	0	**0**	15	0	2	**17**	**17**	**290**
11:30	11:45	0	154	26	**180**	3	135	0	**138**	**318**	0	0	0	**0**	19	0	3	**22**	**22**	**340**
11:45	12:00	0	157	23	**180**	2	145	0	**147**	**327**	0	0	0	**0**	23	0	4	**27**	**27**	**354**
12:00	12:15	0	139	30	**169**	2	131	1	**134**	**303**	0	0	0	**0**	21	0	6	**27**	**27**	**330**
12:15	12:30	0	140	18	**158**	3	140	0	**143**	**301**	0	0	0	**0**	20	0	4	**24**	**24**	**325**
12:30	12:45	0	129	23	**152**	1	139	0	**140**	**292**	0	0	0	**0**	25	0	3	**28**	**28**	**320**
12:45	13:00	0	154	30	**184**	1	166	0	**167**	**351**	0	0	0	**0**	19	0	1	**20**	**20**	**371**
13:00	13:15	0	134	17	**151**	2	141	0	**143**	**294**	0	0	1	**1**	19	0	2	**21**	**22**	**316**
13:15	13:30	0	122	29	**151**	2	161	0	**163**	**314**	0	1	0	**1**	31	0	1	**32**	**33**	**347**
15:00	15:15	0	134	39	**173**	0	173	0	**173**	**346**	0	0	1	**1**	31	0	4	**35**	**36**	**382**
15:15	15:30	0	146	32	**178**	2	180	0	**182**	**360**	0	0	0	**0**	28	0	2	**30**	**30**	**390**
15:30	15:45	0	154	26	**180**	4	177	0	**181**	**361**	0	0	0	**0**	26	0	1	**27**	**27**	**388**
15:45	16:00	0	113	50	**163**	3	176	0	**179**	**342**	0	0	0	**0**	26	0	5	**31**	**31**	**373**
16:00	16:15	2	115	73	**190**	2	201	0	**203**	**393**	0	0	0	**0**	41	0	4	**45**	**45**	**438**
16:15	16:30	0	151	41	**192**	3	204	0	**207**	**399**	0	0	0	**0**	30	0	0	**30**	**30**	**429**
16:30	16:45	0	133	46	**179**	1	200	0	**201**	**380**	1	0	3	**4**	33	0	4	**37**	**41**	**421**
16:45	17:00	0	128	36	**164**	3	189	0	**192**	**356**	0	0	0	**0**	30	0	3	**33**	**33**	**389**
17:00	17:15	1	121	43	**165**	5	224	1	**230**	**395**	3	1	3	**7**	26	0	1	**27**	**34**	**429**
17:15	17:30	0	129	33	**162**	2	189	0	**191**	**353**	0	0	1	**1**	33	0	2	**35**	**36**	**389**
17:30	17:45	0	143	26	**169**	1	200	0	**201**	**370**	0	0	1	**1**	16	0	2	**18**	**19**	**389**
17:45	18:00	1	161	37	**199**	4	182	1	**187**	**386**	0	0	1	**1**	21	0	2	**23**	**24**	**410**
TOTAL:		16	5203	939	**6159**	62	4851	5	**4918**	**11077**	4	2	11	**17**	753	0	79	**832**	**849**	**11926**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
38542

BANK ST @ RIVERDALE AVE

Count Date: Tuesday, April 16, 2019 **Start Time:** 07:00

	BANK ST			RIVERDALE AVE			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	24	6	**30**	0	5	**5**	**35**
08:00 09:00	30	12	**42**	0	5	**5**	**47**
09:00 10:00	9	5	**14**	0	1	**1**	**15**
11:30 12:30	10	5	**15**	0	3	**3**	**18**
12:30 13:30	4	3	**7**	0	0	**0**	**7**
15:00 16:00	19	19	**38**	0	4	**4**	**42**
16:00 17:00	23	20	**43**	1	0	**1**	**44**
17:00 18:00	24	24	**48**	1	9	**10**	**58**
Total	143	94	**237**	2	27	**29**	**266**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

W.O. 38542

Turning Movement Count - Heavy Vehicle Report

BANK ST @ RIVERDALE AVE

Survey Date: Tuesday, April 16, 2019

		BANK ST									RIVERDALE AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	08:00	0	27	5	**32**	0	11	0	**11**	**43**	0	0	0	**0**	2	0	0	**2**	**2**	**45**
08:00	09:00	0	30	9	**39**	0	16	0	**16**	**55**	0	0	0	**0**	4	0	0	**4**	**4**	**59**
09:00	10:00	0	14	6	**20**	0	18	0	**18**	**38**	0	0	0	**0**	4	0	1	**5**	**5**	**43**
11:30	12:30	0	16	4	**20**	2	12	0	**14**	**34**	0	0	0	**0**	2	0	3	**5**	**5**	**39**
12:30	13:30	0	17	3	**20**	0	25	0	**25**	**45**	0	0	0	**0**	4	0	0	**4**	**4**	**49**
15:00	16:00	0	14	6	**20**	0	13	0	**13**	**33**	0	0	0	**0**	5	0	0	**5**	**5**	**38**
16:00	17:00	0	12	5	**17**	0	17	0	**17**	**34**	0	0	0	**0**	4	0	1	**5**	**5**	**39**
17:00	18:00	0	12	5	**17**	0	16	0	**16**	**33**	0	0	0	**0**	2	0	0	**2**	**2**	**35**
Sub Total		0	142	43	**185**	2	128	0	**130**	**315**	0	0	0	**0**	27	0	5	**32**	**32**	**347**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		0	142	43	**0**	2	128	0	**130**	**315**	0	0	0	**0**	27	0	5	**32**	**32**	**347**

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

Work Order
38542

Turning Movement Count - Pedestrian Volume Report

BANK ST @ RIVERDALE AVE

Count Date: Tuesday, April 16, 2019 **Start Time:** 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	**0**	2	3	**5**	**5**
07:15 07:30	2	2	**4**	1	10	**11**	**15**
07:30 07:45	2	0	**2**	4	9	**13**	**15**
07:45 08:00	2	4	**6**	9	6	**15**	**21**
07:00 08:00	6	6	**12**	16	28	**44**	**56**
08:00 08:15	6	0	**6**	7	1	**8**	**14**
08:15 08:30	0	2	**2**	16	15	**31**	**33**
08:30 08:45	2	0	**2**	9	11	**20**	**22**
08:45 09:00	1	2	**3**	4	5	**9**	**12**
08:00 09:00	9	4	**13**	36	32	**68**	**81**
09:00 09:15	2	1	**3**	13	5	**18**	**21**
09:15 09:30	0	1	**1**	6	8	**14**	**15**
09:30 09:45	1	0	**1**	5	6	**11**	**12**
09:45 10:00	4	1	**5**	10	10	**20**	**25**
09:00 10:00	7	3	**10**	34	29	**63**	**73**
11:30 11:45	5	3	**8**	9	8	**17**	**25**
11:45 12:00	3	0	**3**	13	8	**21**	**24**
12:00 12:15	4	3	**7**	9	3	**12**	**19**
12:15 12:30	3	3	**6**	19	13	**32**	**38**
11:30 12:30	15	9	**24**	50	32	**82**	**106**
12:30 12:45	5	4	**9**	20	7	**27**	**36**
12:45 13:00	6	2	**8**	21	18	**39**	**47**
13:00 13:15	5	1	**6**	30	18	**48**	**54**
13:15 13:30	1	1	**2**	11	14	**25**	**27**
12:30 13:30	17	8	**25**	82	57	**139**	**164**
15:00 15:15	5	0	**5**	6	13	**19**	**24**
15:15 15:30	6	1	**7**	16	18	**34**	**41**
15:30 15:45	4	2	**6**	17	14	**31**	**37**
15:45 16:00	4	2	**6**	16	10	**26**	**32**
15:00 16:00	19	5	**24**	55	55	**110**	**134**
16:00 16:15	3	3	**6**	18	14	**32**	**38**
16:15 16:30	1	1	**2**	21	8	**29**	**31**
16:30 16:45	6	3	**9**	20	23	**43**	**52**
16:45 17:00	3	11	**14**	22	20	**42**	**56**
16:00 17:00	13	18	**31**	81	65	**146**	**177**
17:00 17:15	3	2	**5**	30	18	**48**	**53**
17:15 17:30	3	5	**8**	20	23	**43**	**51**
17:30 17:45	5	5	**10**	25	24	**49**	**59**
17:45 18:00	4	4	**8**	20	11	**31**	**39**
17:00 18:00	15	16	**31**	95	76	**171**	**202**
Total	101	69	**170**	449	374	**823**	**993**

Comment:

Transportation Services - Traffic Services

Work Order
38542

Turning Movement Count - 15 Min U-Turn Total Report

BANK ST @ RIVERDALE AVE

Survey Date: Tuesday, April 16, 2019

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	1	0	0	0	1
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		1	0	0	0	1

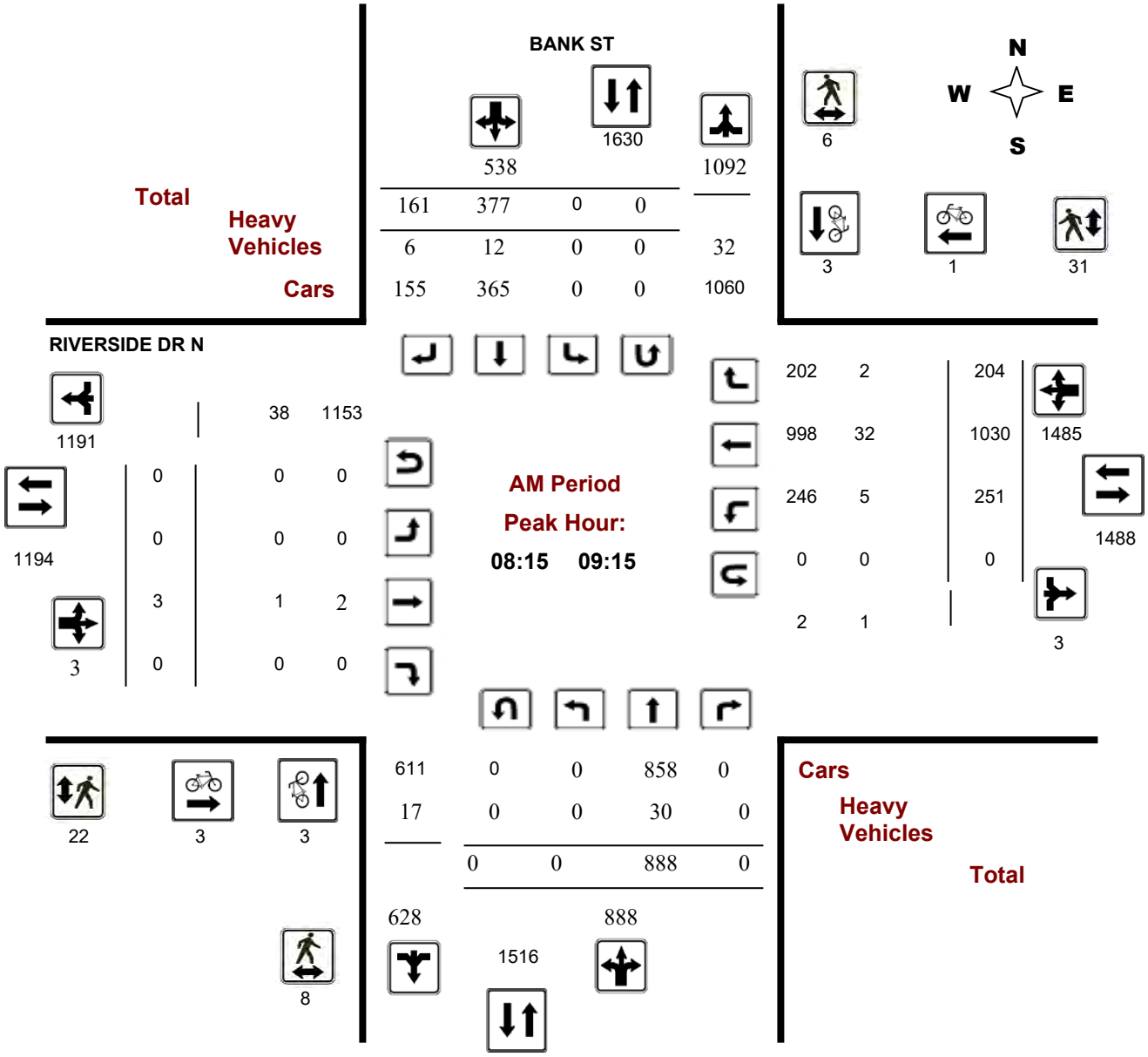
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ RIVERSIDE DR N

Survey Date: Tuesday, November 20, 2018 **WO No:** 38131

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



Comments

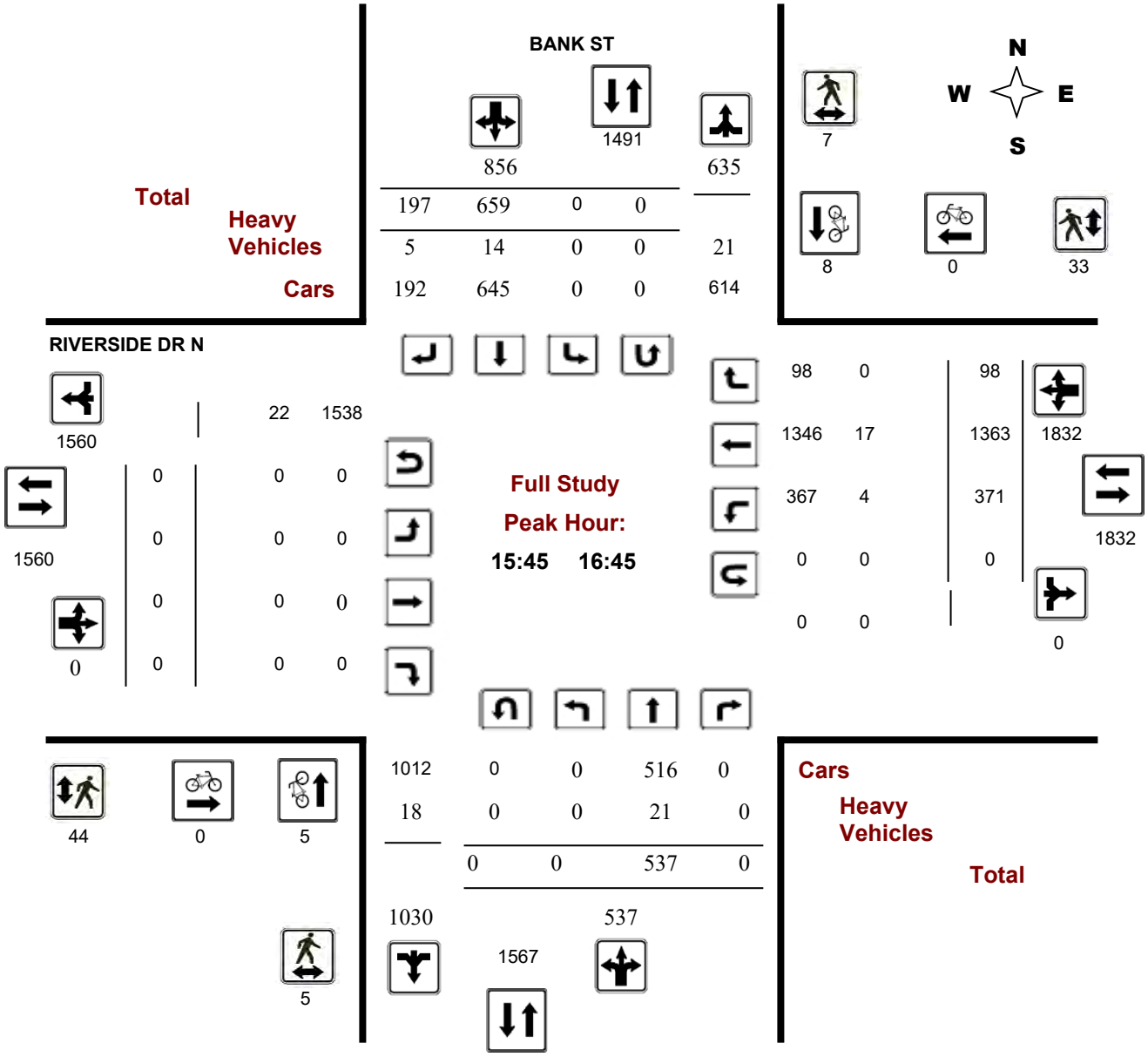
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ RIVERSIDE DR N

Survey Date: Tuesday, November 20, 2018 **WO No:** 38131

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



Comments

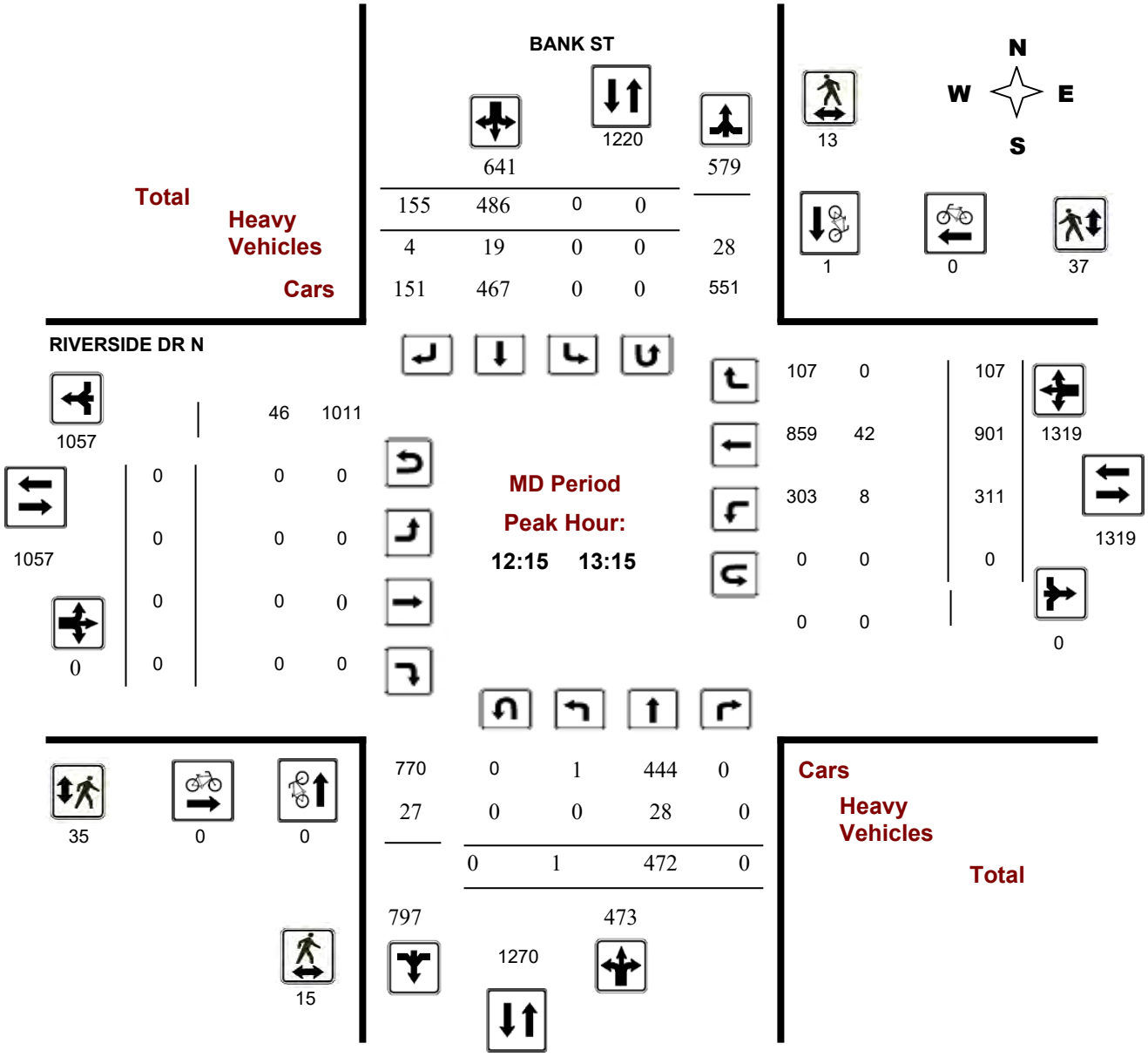
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ RIVERSIDE DR N

Survey Date: Tuesday, November 20, 2018 **WO No:** 38131

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



Comments

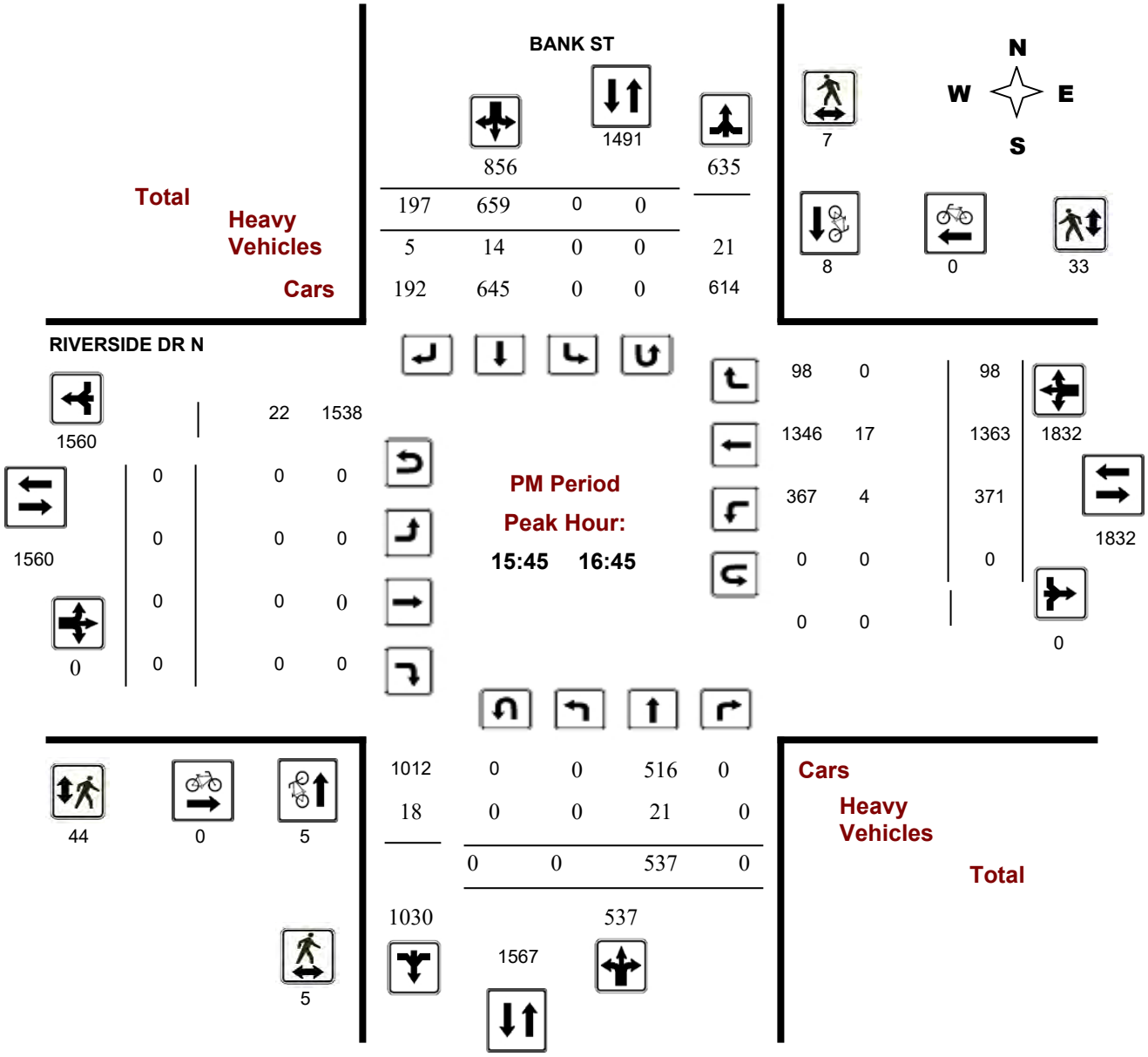
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ RIVERSIDE DR N

Survey Date: Tuesday, November 20, 2018 **WO No:** 38131

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



Comments

Transportation Services - Traffic Services

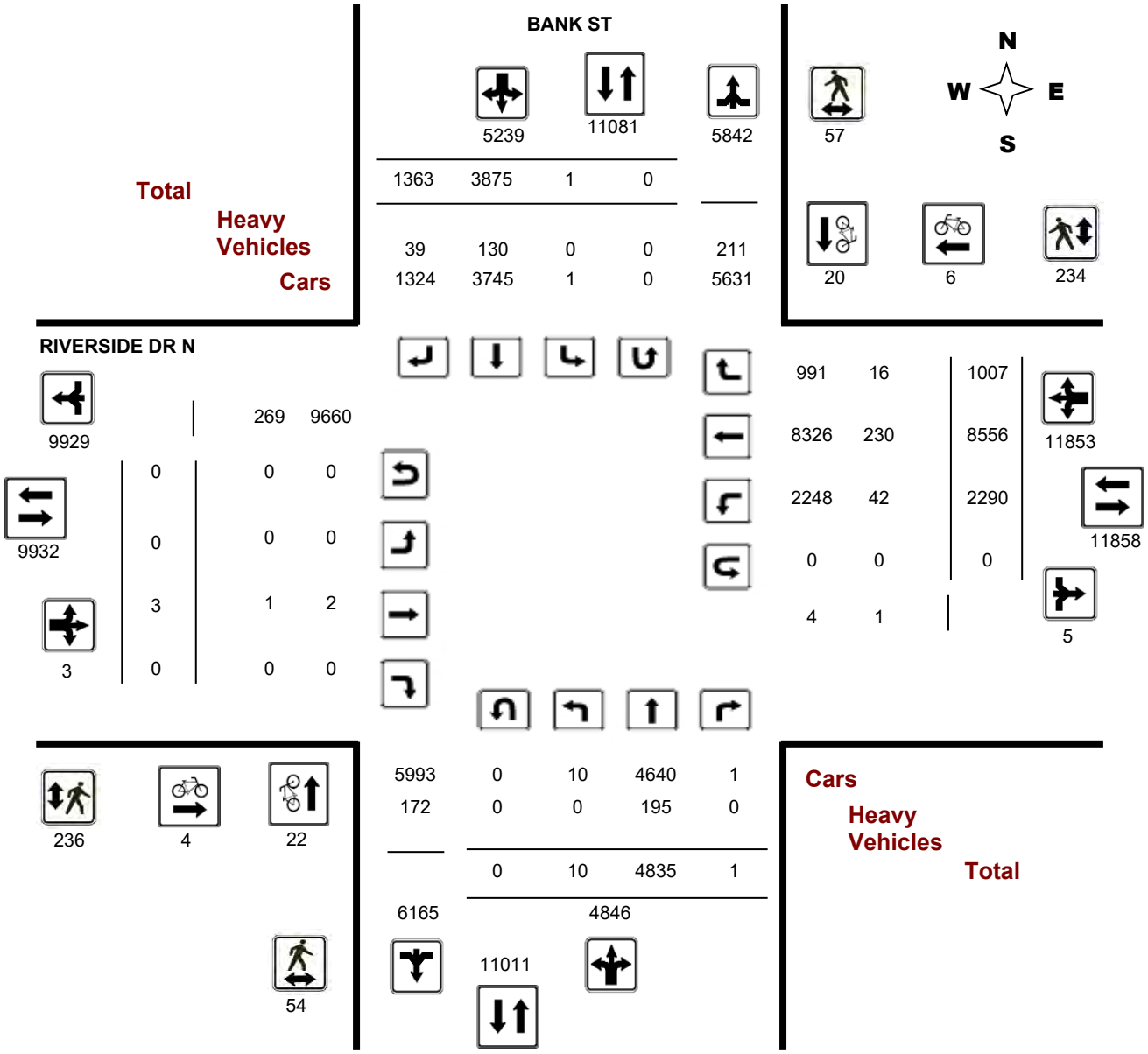
Turning Movement Count - Full Study Diagram

BANK ST @ RIVERSIDE DR N

Survey Date: Tuesday, November 20, 2018

WO#: 38131

Device: Miovision



Comments

Transportation Services - Traffic Services

Work Order 38131

Turning Movement Count - Full Study Summary Report

BANK ST @ RIVERSIDE DR N

Survey Date: Tuesday, November 20, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor 1.00

Full Study

	BANK ST									RIVERSIDE DR N									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	0	757	1	**758**	0	289	142	**431**	**1189**	0	0	0	**0**	161	983	113	**1257**	**1257**	**2446**
08:00 09:00	0	939	0	**939**	0	348	165	**513**	**1452**	0	3	0	**3**	239	992	208	**1439**	**1442**	**2894**
09:00 10:00	2	649	0	**651**	0	385	147	**532**	**1183**	0	0	0	**0**	276	978	149	**1403**	**1403**	**2586**
11:30 12:30	3	487	0	**490**	0	441	174	**615**	**1105**	0	0	0	**0**	316	857	104	**1277**	**1277**	**2382**
12:30 13:30	0	476	0	**476**	0	509	158	**667**	**1143**	0	0	0	**0**	318	852	89	**1259**	**1259**	**2402**
15:00 16:00	4	488	0	**492**	0	578	175	**753**	**1245**	0	0	0	**0**	314	1399	102	**1815**	**1815**	**3060**
16:00 17:00	0	534	0	**534**	0	703	201	**904**	**1438**	0	0	0	**0**	355	1304	106	**1765**	**1765**	**3203**
17:00 18:00	1	505	0	**506**	1	622	201	**824**	**1330**	0	0	0	**0**	311	1191	136	**1638**	**1638**	**2968**
Sub Total	10	4835	1	**4846**	1	3875	1363	**5239**	**10085**	0	3	0	**3**	2290	8556	1007	**11853**	**11856**	**21941**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	10	4835	1	**4846**	1	3875	1363	**5239**	**10085**	0	3	0	**3**	2290	8556	1007	**11853**	**11856**	**21941**
EQ 12Hr	14	6721	1	**6736**	1	5386	1895	**7282**	**14018**	0	4	0	**4**	3183	11893	1400	**16476**	**16480**	**30498**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	14	6721	1	**6736**	1	5386	1895	**7282**	**14018**	0	4	0	**4**	3183	11893	1400	**16476**	**16480**	**30498**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**1.00**						
AVG 24Hr	18	8804	2	**8824**	2	7056	2482	**9540**	**18364**	0	5	0	**5**	4170	15580	1834	**21583**	**21588**	**39952**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

Transportation Services - Traffic Services

W.O. 38131

Turning Movement Count - 15 Minute Summary Report

BANK ST @ RIVERSIDE DR N

Survey Date: Tuesday, November 20, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

		BANK ST									RIVERSIDE DR N									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	150	1	**151**	0	56	33	**89**	**240**	0	0	0	**0**	30	193	15	**238**	**238**	**478**
07:15	07:30	0	176	0	**176**	0	73	39	**112**	**288**	0	0	0	**0**	36	245	28	**309**	**309**	**597**
07:30	07:45	0	207	0	**207**	0	73	36	**109**	**316**	0	0	0	**0**	43	272	30	**345**	**345**	**661**
07:45	08:00	0	224	0	**224**	0	87	34	**121**	**345**	0	0	0	**0**	52	273	40	**365**	**365**	**710**
08:00	08:15	0	241	0	**241**	0	73	40	**113**	**354**	0	0	0	**0**	49	227	50	**326**	**326**	**680**
08:15	08:30	0	241	0	**241**	0	92	36	**128**	**369**	0	0	0	**0**	45	235	49	**329**	**329**	**698**
08:30	08:45	0	238	0	**238**	0	93	37	**130**	**368**	0	0	0	**0**	75	278	54	**407**	**407**	**775**
08:45	09:00	0	219	0	**219**	0	90	52	**142**	**361**	0	3	0	**3**	70	252	55	**377**	**380**	**741**
09:00	09:15	0	190	0	**190**	0	102	36	**138**	**328**	0	0	0	**0**	61	265	46	**372**	**372**	**700**
09:15	09:30	1	175	0	**176**	0	95	32	**127**	**303**	0	0	0	**0**	65	257	34	**356**	**356**	**659**
09:30	09:45	0	149	0	**149**	0	96	35	**131**	**280**	0	0	0	**0**	68	250	34	**352**	**352**	**632**
09:45	10:00	1	135	0	**136**	0	92	44	**136**	**272**	0	0	0	**0**	82	206	35	**323**	**323**	**595**
11:30	11:45	1	119	0	**120**	0	111	40	**151**	**271**	0	0	0	**0**	66	166	30	**262**	**262**	**533**
11:45	12:00	1	135	0	**136**	0	109	42	**151**	**287**	0	0	0	**0**	80	242	21	**343**	**343**	**630**
12:00	12:15	0	121	0	**121**	0	110	48	**158**	**279**	0	0	0	**0**	96	199	18	**313**	**313**	**592**
12:15	12:30	1	112	0	**113**	0	111	44	**155**	**268**	0	0	0	**0**	74	250	35	**359**	**359**	**627**
12:30	12:45	0	127	0	**127**	0	128	27	**155**	**282**	0	0	0	**0**	74	184	28	**286**	**286**	**568**
12:45	13:00	0	129	0	**129**	0	118	38	**156**	**285**	0	0	0	**0**	80	243	22	**345**	**345**	**630**
13:00	13:15	0	104	0	**104**	0	129	46	**175**	**279**	0	0	0	**0**	83	224	22	**329**	**329**	**608**
13:15	13:30	0	116	0	**116**	0	134	47	**181**	**297**	0	0	0	**0**	81	201	17	**299**	**299**	**596**
15:00	15:15	2	124	0	**126**	0	139	43	**182**	**308**	0	0	0	**0**	66	348	19	**433**	**433**	**741**
15:15	15:30	0	120	0	**120**	0	153	50	**203**	**323**	0	0	0	**0**	70	348	28	**446**	**446**	**769**
15:30	15:45	2	112	0	**114**	0	153	45	**198**	**312**	0	0	0	**0**	79	345	29	**453**	**453**	**765**
15:45	16:00	0	132	0	**132**	0	133	37	**170**	**302**	0	0	0	**0**	99	358	26	**483**	**483**	**785**
16:00	16:15	0	159	0	**159**	0	173	49	**222**	**381**	0	0	0	**0**	87	360	22	**469**	**469**	**850**
16:15	16:30	0	124	0	**124**	0	172	60	**232**	**356**	0	0	0	**0**	94	320	23	**437**	**437**	**793**
16:30	16:45	0	122	0	**122**	0	181	51	**232**	**354**	0	0	0	**0**	91	325	27	**443**	**443**	**797**
16:45	17:00	0	129	0	**129**	0	177	41	**218**	**347**	0	0	0	**0**	83	299	34	**416**	**416**	**763**
17:00	17:15	0	124	0	**124**	1	177	57	**235**	**359**	0	0	0	**0**	79	303	25	**407**	**407**	**766**
17:15	17:30	0	108	0	**108**	0	159	54	**213**	**321**	0	0	0	**0**	82	314	41	**437**	**437**	**758**
17:30	17:45	0	144	0	**144**	0	158	55	**213**	**357**	0	0	0	**0**	77	295	45	**417**	**417**	**774**
17:45	18:00	1	129	0	**130**	0	128	35	**163**	**293**	0	0	0	**0**	73	279	25	**377**	**377**	**670**
TOTAL:		10	4835	1	**4846**	1	3875	1363	**5239**	**10085**	0	3	0	**3**	2290	8556	1007	**11853**	**11856**	**21941**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
38131

BANK ST @ RIVERSIDE DR N

Count Date: Tuesday, November 20, 2018 **Start Time:** 07:00

	BANK ST			RIVERSIDE DR N			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	6	2	**8**	1	1	**2**	**10**
08:00 09:00	3	2	**5**	1	1	**2**	**7**
09:00 10:00	2	2	**4**	2	0	**2**	**6**
11:30 12:30	2	1	**3**	0	0	**0**	**3**
12:30 13:30	0	2	**2**	0	0	**0**	**2**
15:00 16:00	8	4	**12**	0	1	**1**	**13**
16:00 17:00	1	7	**8**	0	0	**0**	**8**
17:00 18:00	0	0	**0**	0	3	**3**	**3**
Total	22	20	**42**	4	6	**10**	**52**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

W.O. 38131

Turning Movement Count - Heavy Vehicle Report

BANK ST @ RIVERSIDE DR N

Survey Date: Tuesday, November 20, 2018

		BANK ST									RIVERSIDE DR N									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	08:00	0	32	0	**32**	0	13	6	**19**	**51**	0	0	0	**0**	8	32	3	**43**	**43**	**94**
08:00	09:00	0	35	0	**35**	0	10	5	**15**	**50**	0	1	0	**1**	6	27	3	**36**	**37**	**87**
09:00	10:00	0	29	0	**29**	0	17	4	**21**	**50**	0	0	0	**0**	6	31	3	**40**	**40**	**90**
11:30	12:30	0	18	0	**18**	0	19	10	**29**	**47**	0	0	0	**0**	3	42	3	**48**	**48**	**95**
12:30	13:30	0	25	0	**25**	0	23	6	**29**	**54**	0	0	0	**0**	9	36	0	**45**	**45**	**99**
15:00	16:00	0	19	0	**19**	0	12	1	**13**	**32**	0	0	0	**0**	6	28	1	**35**	**35**	**67**
16:00	17:00	0	20	0	**20**	0	18	5	**23**	**43**	0	0	0	**0**	4	18	0	**22**	**22**	**65**
17:00	18:00	0	17	0	**17**	0	18	2	**20**	**37**	0	0	0	**0**	0	16	3	**19**	**19**	**56**
Sub Total		0	195	0	**195**	0	130	39	**169**	**364**	0	1	0	**1**	42	230	16	**288**	**289**	**653**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		0	195	0	**0**	0	130	39	**169**	**364**	0	1	0	**1**	42	230	16	**288**	**289**	**653**

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

Work Order
38131

Turning Movement Count - Pedestrian Volume Report

BANK ST @ RIVERSIDE DR N

Count Date: Tuesday, November 20, 2018 **Start Time:** 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	1	0	**1**	5	4	**9**	**10**
07:15 07:30	0	0	**0**	3	5	**8**	**8**
07:30 07:45	1	0	**1**	9	4	**13**	**14**
07:45 08:00	2	3	**5**	6	5	**11**	**16**
07:00 08:00	4	3	**7**	23	18	**41**	**48**
08:00 08:15	0	5	**5**	3	1	**4**	**9**
08:15 08:30	0	0	**0**	4	6	**10**	**10**
08:30 08:45	2	1	**3**	6	4	**10**	**13**
08:45 09:00	5	4	**9**	6	12	**18**	**27**
08:00 09:00	7	10	**17**	19	23	**42**	**59**
09:00 09:15	1	1	**2**	6	9	**15**	**17**
09:15 09:30	3	0	**3**	9	3	**12**	**15**
09:30 09:45	6	0	**6**	7	3	**10**	**16**
09:45 10:00	1	0	**1**	4	3	**7**	**8**
09:00 10:00	11	1	**12**	26	18	**44**	**56**
11:30 11:45	4	2	**6**	1	5	**6**	**12**
11:45 12:00	4	4	**8**	4	10	**14**	**22**
12:00 12:15	0	1	**1**	5	9	**14**	**15**
12:15 12:30	1	4	**5**	5	8	**13**	**18**
11:30 12:30	9	11	**20**	15	32	**47**	**67**
12:30 12:45	2	1	**3**	8	14	**22**	**25**
12:45 13:00	7	3	**10**	7	4	**11**	**21**
13:00 13:15	5	5	**10**	15	11	**26**	**36**
13:15 13:30	1	0	**1**	5	7	**12**	**13**
12:30 13:30	15	9	**24**	35	36	**71**	**95**
15:00 15:15	0	1	**1**	8	4	**12**	**13**
15:15 15:30	1	3	**4**	9	9	**18**	**22**
15:30 15:45	0	1	**1**	12	7	**19**	**20**
15:45 16:00	0	2	**2**	14	8	**22**	**24**
15:00 16:00	1	7	**8**	43	28	**71**	**79**
16:00 16:15	0	0	**0**	8	9	**17**	**17**
16:15 16:30	3	3	**6**	12	14	**26**	**32**
16:30 16:45	2	2	**4**	10	2	**12**	**16**
16:45 17:00	2	3	**5**	10	16	**26**	**31**
16:00 17:00	7	8	**15**	40	41	**81**	**96**
17:00 17:15	0	2	**2**	3	11	**14**	**16**
17:15 17:30	0	1	**1**	12	12	**24**	**25**
17:30 17:45	0	2	**2**	10	8	**18**	**20**
17:45 18:00	0	3	**3**	10	7	**17**	**20**
17:00 18:00	0	8	**8**	35	38	**73**	**81**
Total	54	57	**111**	236	234	**470**	**581**

Comment:

Transportation Services - Traffic Services

Work Order
38131

Turning Movement Count - 15 Min U-Turn Total Report

BANK ST @ RIVERSIDE DR N

Survey Date: Tuesday, November 20, 2018

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	0	0	0

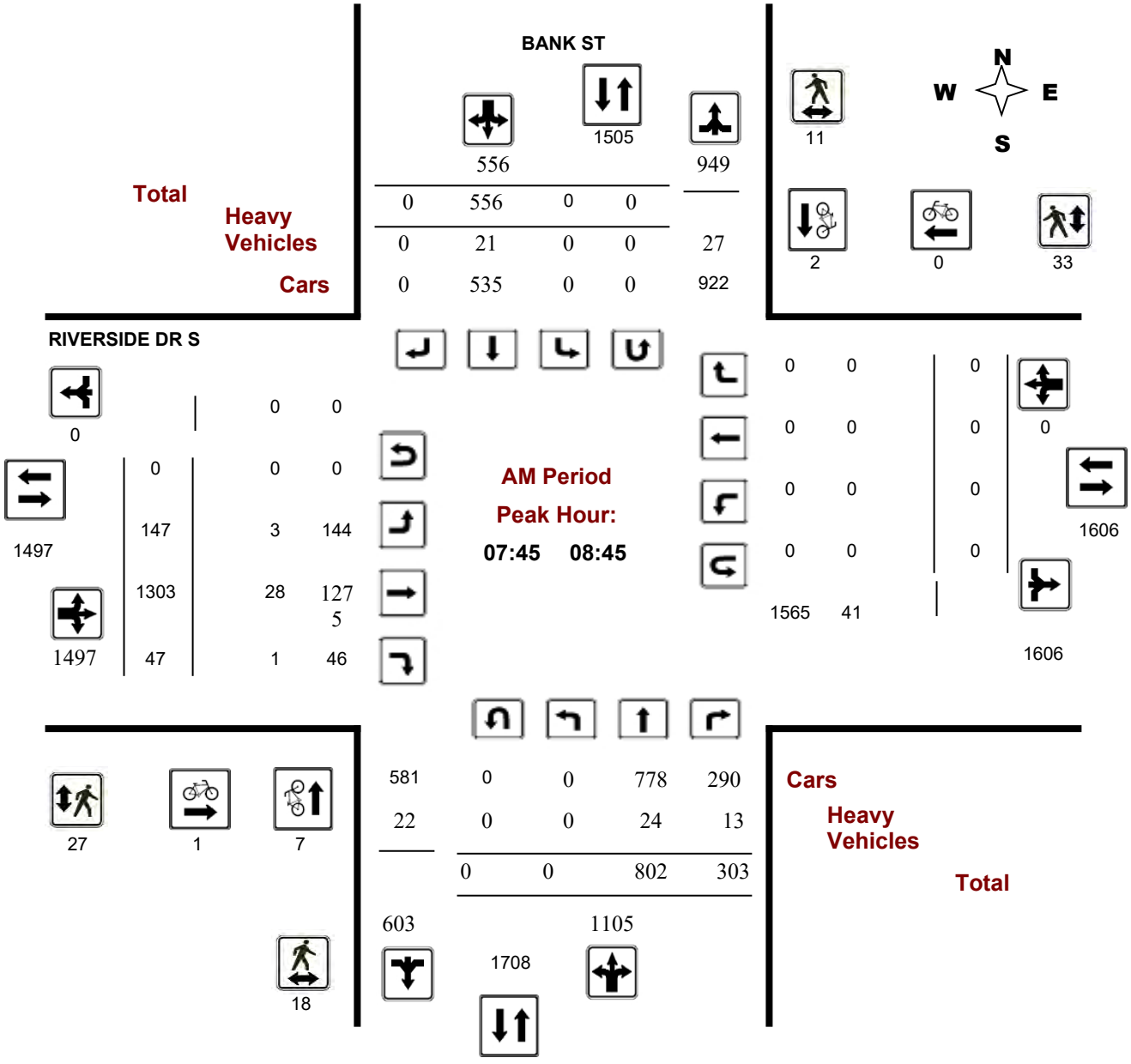
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ RIVERSIDE DR S

Survey Date: Tuesday, November 20, 2018 **WO No:** 38130

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



Comments

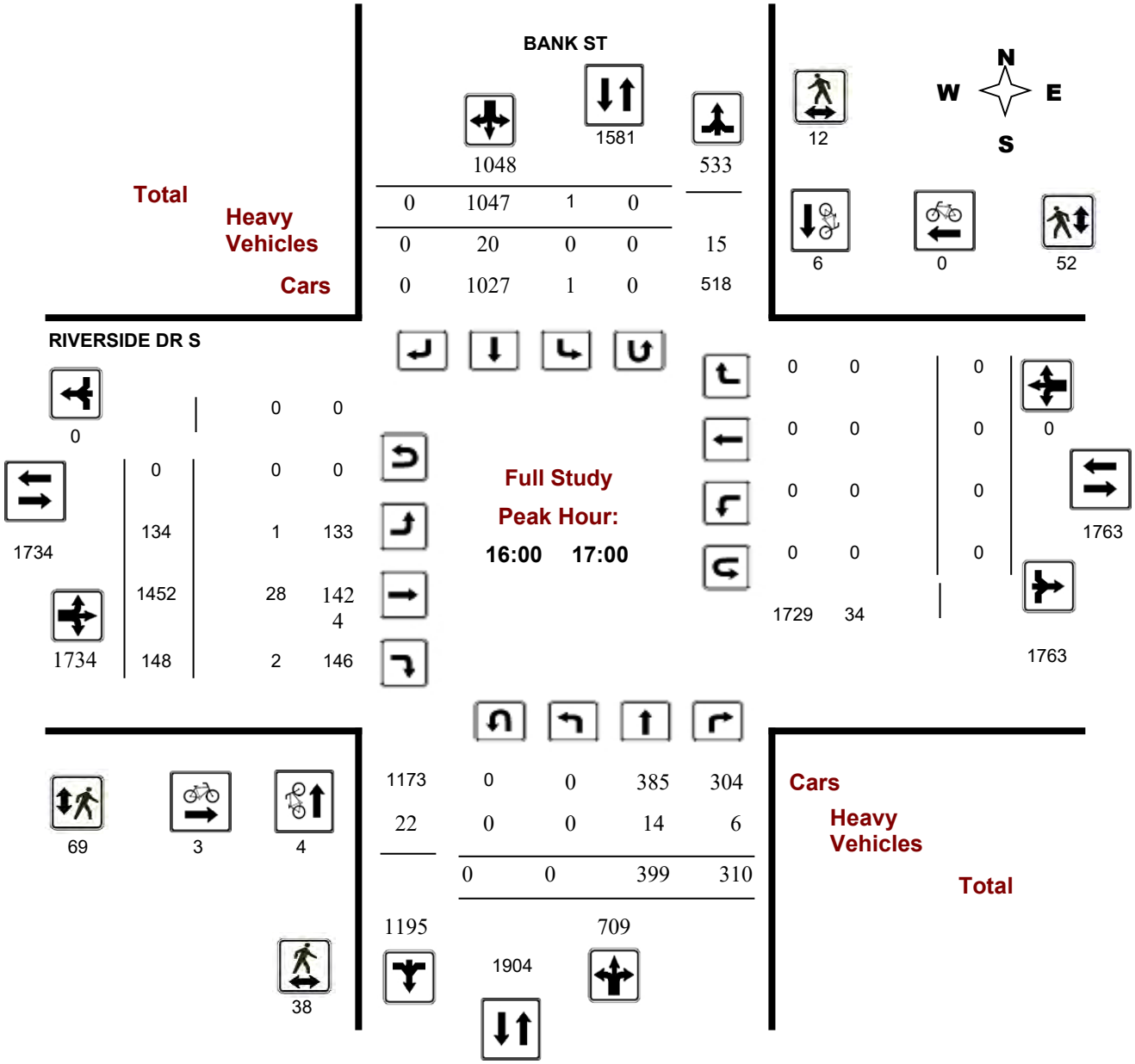
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ RIVERSIDE DR S

Survey Date: Tuesday, November 20, 2018 **WO No:** 38130

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



Comments

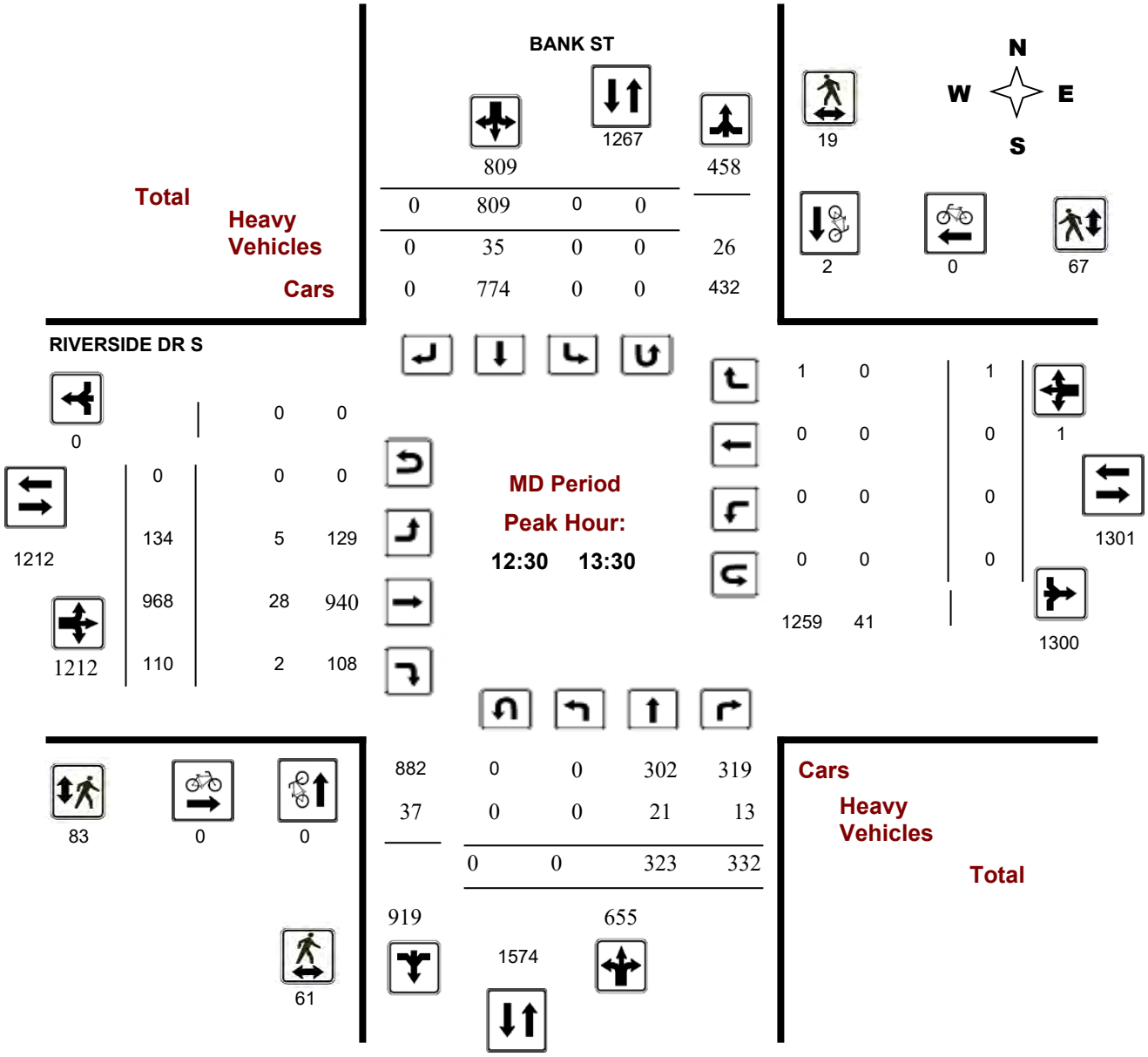
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ RIVERSIDE DR S

Survey Date: Tuesday, November 20, 2018 **WO No:** 38130

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



Comments

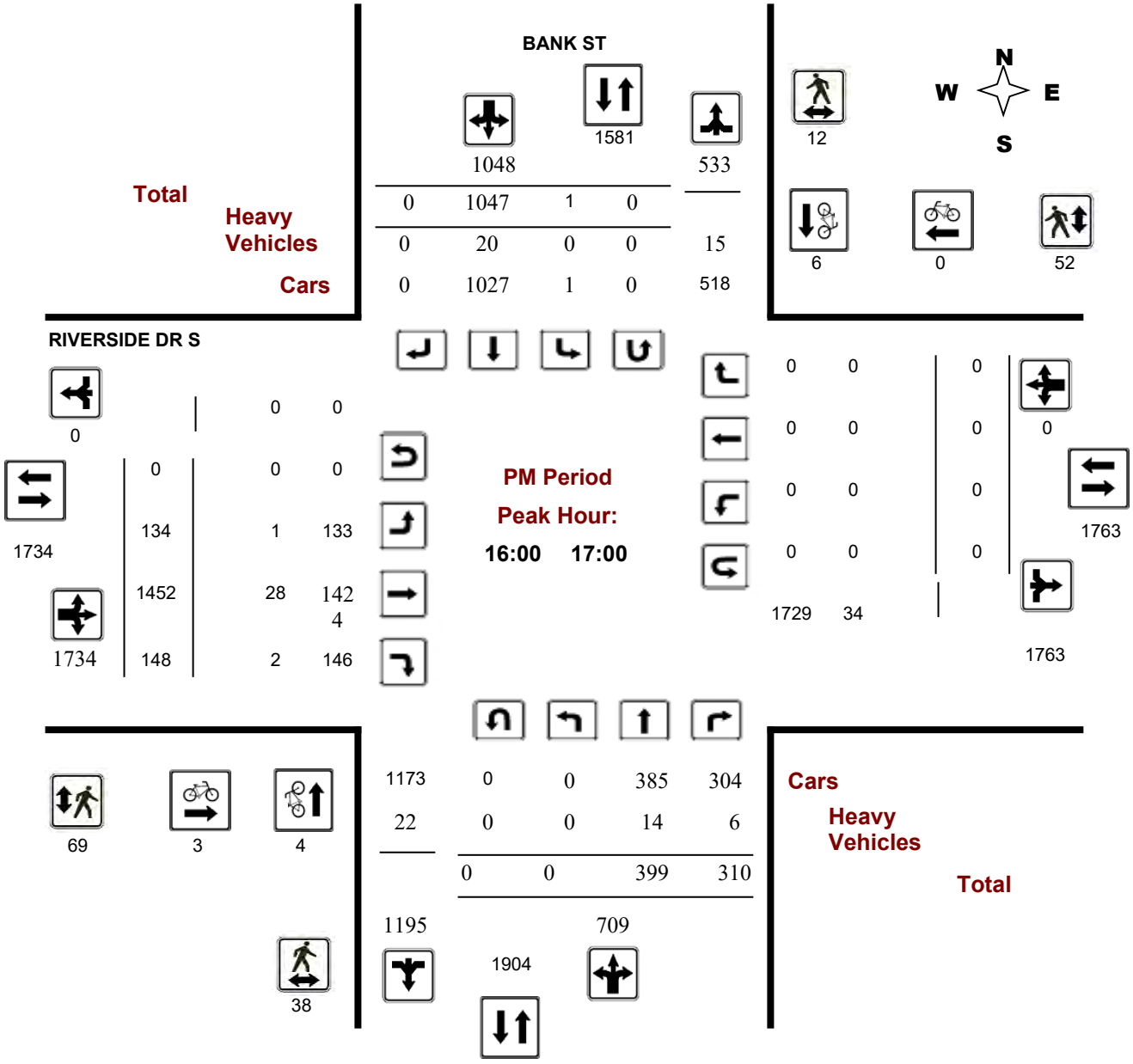
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BANK ST @ RIVERSIDE DR S

Survey Date: Tuesday, November 20, 2018 **WO No:** 38130

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



Comments

Transportation Services - Traffic Services

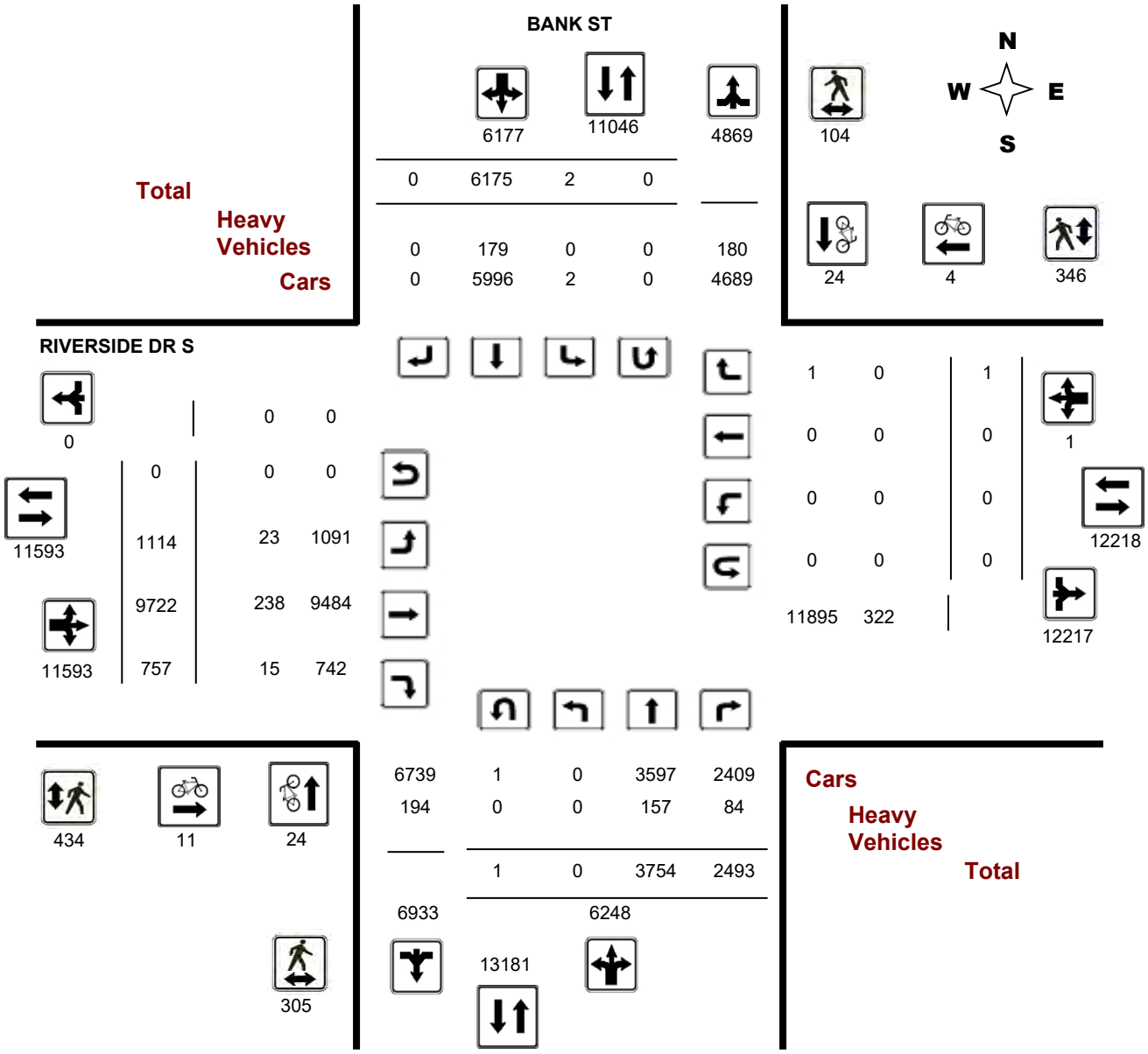
Turning Movement Count - Full Study Diagram

BANK ST @ RIVERSIDE DR S

Survey Date: Tuesday, November 20, 2018

WO#: 38130

Device: Miovision



Comments

Transportation Services - Traffic Services

Work Order
38130

Turning Movement Count - Full Study Summary Report

BANK ST @ RIVERSIDE DR S

Survey Date: Tuesday, November 20, 2018

Total Observed U-Turns

Northbound: 1 Southbound: 0
Eastbound: 0 Westbound: 0

AADT Factor
1.00

Full Study

	BANK ST									RIVERSIDE DR S									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	0	634	332	**966**	0	421	0	**421**	**1387**	91	1316	24	**1431**	0	0	0	**0**	**1431**	**2818**
08:00 09:00	0	784	289	**1073**	0	585	0	**585**	**1658**	162	1189	56	**1407**	0	0	0	**0**	**1407**	**3065**
09:00 10:00	0	517	311	**828**	0	665	0	**665**	**1493**	158	1251	74	**1483**	0	0	0	**0**	**1483**	**2976**
11:30 12:30	0	351	294	**645**	0	753	0	**753**	**1398**	156	983	109	**1248**	0	0	0	**0**	**1248**	**2646**
12:30 13:30	0	323	332	**655**	0	809	0	**809**	**1464**	134	968	110	**1212**	0	0	1	**1**	**1213**	**2677**
15:00 16:00	0	375	312	**687**	1	905	0	**906**	**1593**	128	1241	112	**1481**	0	0	0	**0**	**1481**	**3074**
16:00 17:00	0	399	310	**709**	1	1047	0	**1048**	**1757**	134	1452	148	**1734**	0	0	0	**0**	**1734**	**3491**
17:00 18:00	0	371	313	**684**	0	990	0	**990**	**1674**	151	1322	124	**1597**	0	0	0	**0**	**1597**	**3271**
Sub Total	0	3754	2493	**6247**	2	6175	0	**6177**	**12424**	1114	9722	757	**11593**	0	0	1	**1**	**11594**	**24018**
U Turns				**1**				**0**	**1**				**0**				**0**	**0**	**1**
Total	0	3754	2493	**6248**	2	6175	0	**6177**	**12425**	1114	9722	757	**11593**	0	0	1	**1**	**11594**	**24019**
EQ 12Hr	0	5218	3465	**8685**	3	8583	0	**8586**	**17271**	1548	13514	1052	**16114**	0	0	1	**1**	**16115**	**33386**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	0	5218	3465	**8685**	3	8583	0	**8586**	**17271**	1548	13514	1052	**16114**	0	0	1	**1**	**16115**	**33386**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**1.00**						
AVG 24Hr	0	6836	4540	**11377**	4	11244	0	**11248**	**22625**	2028	17703	1378	**21110**	0	0	2	**2**	**21112**	**43737**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

Transportation Services - Traffic Services

W.O. 38130

Turning Movement Count - 15 Minute Summary Report

BANK ST @ RIVERSIDE DR S

Survey Date: Tuesday, November 20, 2018

Total Observed U-Turns

Northbound: 1 Southbound: 0

Eastbound: 0 Westbound: 0

		BANK ST									RIVERSIDE DR S									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	115	62	**177**	0	78	0	**78**	**255**	18	272	2	**292**	0	0	0	**0**	**292**	**547**
07:15	07:30	0	142	69	**211**	0	107	0	**107**	**318**	27	320	9	**356**	0	0	0	**0**	**356**	**674**
07:30	07:45	0	183	95	**278**	0	108	0	**108**	**386**	16	344	9	**369**	0	0	0	**0**	**369**	**755**
07:45	08:00	0	194	106	**300**	0	128	0	**128**	**428**	30	380	4	**414**	0	0	0	**0**	**414**	**842**
08:00	08:15	0	209	66	**275**	0	137	0	**137**	**412**	33	337	16	**386**	0	0	0	**0**	**386**	**798**
08:15	08:30	0	199	63	**262**	0	140	0	**140**	**402**	33	316	11	**360**	0	0	0	**0**	**360**	**762**
08:30	08:45	0	200	68	**268**	0	151	0	**151**	**419**	51	270	16	**337**	0	0	0	**0**	**337**	**756**
08:45	09:00	0	176	92	**268**	0	157	0	**157**	**425**	45	266	13	**324**	0	0	0	**0**	**324**	**749**
09:00	09:15	0	144	74	**218**	0	168	0	**168**	**386**	43	270	20	**333**	0	0	0	**0**	**333**	**719**
09:15	09:30	0	154	75	**229**	0	162	0	**162**	**391**	36	278	17	**331**	0	0	0	**0**	**331**	**722**
09:30	09:45	0	108	69	**177**	0	160	0	**160**	**337**	44	347	15	**406**	0	0	0	**0**	**406**	**743**
09:45	10:00	0	111	93	**204**	0	175	0	**175**	**379**	35	356	22	**413**	0	0	0	**0**	**413**	**792**
11:30	11:45	0	82	80	**162**	0	176	0	**176**	**338**	38	267	25	**330**	0	0	0	**0**	**330**	**668**
11:45	12:00	0	86	73	**159**	0	190	0	**190**	**349**	45	244	23	**312**	0	0	0	**0**	**312**	**661**
12:00	12:15	0	86	73	**159**	0	193	0	**193**	**352**	39	241	25	**305**	0	0	0	**0**	**305**	**657**
12:15	12:30	0	97	68	**165**	0	194	0	**194**	**359**	34	231	36	**301**	0	0	0	**0**	**301**	**660**
12:30	12:45	0	98	82	**180**	0	176	0	**176**	**356**	28	234	26	**288**	0	0	0	**0**	**288**	**644**
12:45	13:00	0	77	72	**149**	0	210	0	**210**	**359**	46	279	22	**347**	0	0	0	**0**	**347**	**706**
13:00	13:15	0	78	95	**173**	0	213	0	**213**	**386**	30	221	29	**280**	0	0	1	**1**	**281**	**667**
13:15	13:30	0	70	83	**153**	0	210	0	**210**	**363**	30	234	33	**297**	0	0	0	**0**	**297**	**660**
15:00	15:15	0	83	78	**162**	1	205	0	**206**	**368**	38	298	25	**361**	0	0	0	**0**	**361**	**729**
15:15	15:30	0	101	80	**181**	0	223	0	**223**	**404**	29	318	30	**377**	0	0	0	**0**	**377**	**781**
15:30	15:45	0	91	71	**162**	0	215	0	**215**	**377**	26	307	31	**364**	0	0	0	**0**	**364**	**741**
15:45	16:00	0	100	83	**183**	0	262	0	**262**	**445**	35	318	26	**379**	0	0	0	**0**	**379**	**824**
16:00	16:15	0	111	93	**204**	0	247	0	**247**	**451**	37	369	43	**449**	0	0	0	**0**	**449**	**900**
16:15	16:30	0	97	70	**167**	0	279	0	**279**	**446**	38	373	23	**434**	0	0	0	**0**	**434**	**880**
16:30	16:45	0	99	74	**173**	0	260	0	**260**	**433**	31	339	36	**406**	0	0	0	**0**	**406**	**839**
16:45	17:00	0	92	73	**165**	1	261	0	**262**	**427**	28	371	46	**445**	0	0	0	**0**	**445**	**872**
17:00	17:15	0	91	67	**158**	0	254	0	**254**	**412**	44	365	31	**440**	0	0	0	**0**	**440**	**852**
17:15	17:30	0	82	83	**165**	0	248	0	**248**	**413**	29	342	33	**404**	0	0	0	**0**	**404**	**817**
17:30	17:45	0	85	85	**170**	0	254	0	**254**	**424**	45	330	32	**407**	0	0	0	**0**	**407**	**831**
17:45	18:00	0	113	78	**191**	0	234	0	**234**	**425**	33	285	28	**346**	0	0	0	**0**	**346**	**771**
TOTAL:		0	3754	2493	**6248**	2	6175	0	**6177**	**12425**	1114	9722	757	**11593**	0	0	1	**1**	**11594**	**24019**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
38130

BANK ST @ RIVERSIDE DR S

Count Date: Tuesday, November 20, 2018 **Start Time:** 07:00

	BANK ST			RIVERSIDE DR S			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	7	8	**15**	3	3	**6**	**21**
08:00 09:00	6	2	**8**	1	0	**1**	**9**
09:00 10:00	2	1	**3**	1	0	**1**	**4**
11:30 12:30	2	1	**3**	1	1	**2**	**5**
12:30 13:30	0	2	**2**	0	0	**0**	**2**
15:00 16:00	3	4	**7**	1	0	**1**	**8**
16:00 17:00	4	6	**10**	3	0	**3**	**13**
17:00 18:00	0	0	**0**	1	0	**1**	**1**
Total	24	24	**48**	11	4	**15**	**63**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

W.O. 38130

Turning Movement Count - Heavy Vehicle Report

BANK ST @ RIVERSIDE DR S

Survey Date: Tuesday, November 20, 2018

		BANK ST									RIVERSIDE DR S									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	08:00	0	30	13	**43**	0	18	0	**18**	**61**	4	23	0	**27**	0	0	0	**0**	**27**	**88**
08:00	09:00	0	26	11	**37**	0	19	0	**19**	**56**	3	29	1	**33**	0	0	0	**0**	**33**	**89**
09:00	10:00	0	23	17	**40**	0	23	0	**23**	**63**	4	38	3	**45**	0	0	0	**0**	**45**	**108**
11:30	12:30	0	14	10	**24**	0	23	0	**23**	**47**	2	52	6	**60**	0	0	0	**0**	**60**	**107**
12:30	13:30	0	21	13	**34**	0	35	0	**35**	**69**	5	28	2	**35**	0	0	0	**0**	**35**	**104**
15:00	16:00	0	18	14	**32**	0	21	0	**21**	**53**	0	22	1	**23**	0	0	0	**0**	**23**	**76**
16:00	17:00	0	14	6	**20**	0	20	0	**20**	**40**	1	28	2	**31**	0	0	0	**0**	**31**	**71**
17:00	18:00	0	11	0	**11**	0	20	0	**20**	**31**	4	18	0	**22**	0	0	0	**0**	**22**	**53**
Sub Total		0	157	84	**241**	0	179	0	**179**	**420**	23	238	15	**276**	0	0	0	**0**	**276**	**696**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		0	157	84	**0**	0	179	0	**179**	**420**	23	238	15	**276**	0	0	0	**0**	**276**	**696**

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

Work Order
38130

Turning Movement Count - Pedestrian Volume Report

BANK ST @ RIVERSIDE DR S

Count Date: Tuesday, November 20, 2018 **Start Time:** 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	2	0	**2**	4	3	**7**	**9**
07:15 07:30	3	2	**5**	5	4	**9**	**14**
07:30 07:45	5	0	**5**	5	3	**8**	**13**
07:45 08:00	1	2	**3**	9	6	**15**	**18**
07:00 08:00	11	4	**15**	23	16	**39**	**54**
08:00 08:15	7	1	**8**	6	6	**12**	**20**
08:15 08:30	6	6	**12**	4	11	**15**	**27**
08:30 08:45	4	2	**6**	8	10	**18**	**24**
08:45 09:00	10	2	**12**	7	12	**19**	**31**
08:00 09:00	27	11	**38**	25	39	**64**	**102**
09:00 09:15	8	4	**12**	15	10	**25**	**37**
09:15 09:30	9	2	**11**	16	11	**27**	**38**
09:30 09:45	5	1	**6**	15	4	**19**	**25**
09:45 10:00	6	0	**6**	9	7	**16**	**22**
09:00 10:00	28	7	**35**	55	32	**87**	**122**
11:30 11:45	6	1	**7**	7	6	**13**	**20**
11:45 12:00	16	5	**21**	12	9	**21**	**42**
12:00 12:15	15	8	**23**	17	14	**31**	**54**
12:15 12:30	4	10	**14**	14	7	**21**	**35**
11:30 12:30	41	24	**65**	50	36	**86**	**151**
12:30 12:45	17	4	**21**	23	18	**41**	**62**
12:45 13:00	18	6	**24**	22	17	**39**	**63**
13:00 13:15	11	3	**14**	21	17	**38**	**52**
13:15 13:30	15	6	**21**	17	15	**32**	**53**
12:30 13:30	61	19	**80**	83	67	**150**	**230**
15:00 15:15	18	6	**24**	18	12	**30**	**54**
15:15 15:30	10	1	**11**	13	6	**19**	**30**
15:30 15:45	12	1	**13**	16	11	**27**	**40**
15:45 16:00	12	4	**16**	17	15	**32**	**48**
15:00 16:00	52	12	**64**	64	44	**108**	**172**
16:00 16:15	6	5	**11**	15	8	**23**	**34**
16:15 16:30	17	2	**19**	15	18	**33**	**52**
16:30 16:45	7	5	**12**	20	8	**28**	**40**
16:45 17:00	8	0	**8**	19	18	**37**	**45**
16:00 17:00	38	12	**50**	69	52	**121**	**171**
17:00 17:15	17	4	**21**	13	14	**27**	**48**
17:15 17:30	12	2	**14**	22	16	**38**	**52**
17:30 17:45	9	1	**10**	16	12	**28**	**38**
17:45 18:00	9	8	**17**	14	18	**32**	**49**
17:00 18:00	47	15	**62**	65	60	**125**	**187**
Total	305	104	**409**	434	346	**780**	**1189**

Comment:

Transportation Services - Traffic Services

Work Order
38130

Turning Movement Count - 15 Min U-Turn Total Report

BANK ST @ RIVERSIDE DR S

Survey Date: Tuesday, November 20, 2018

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	1	0	0	0	1
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		1	0	0	0	1

Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

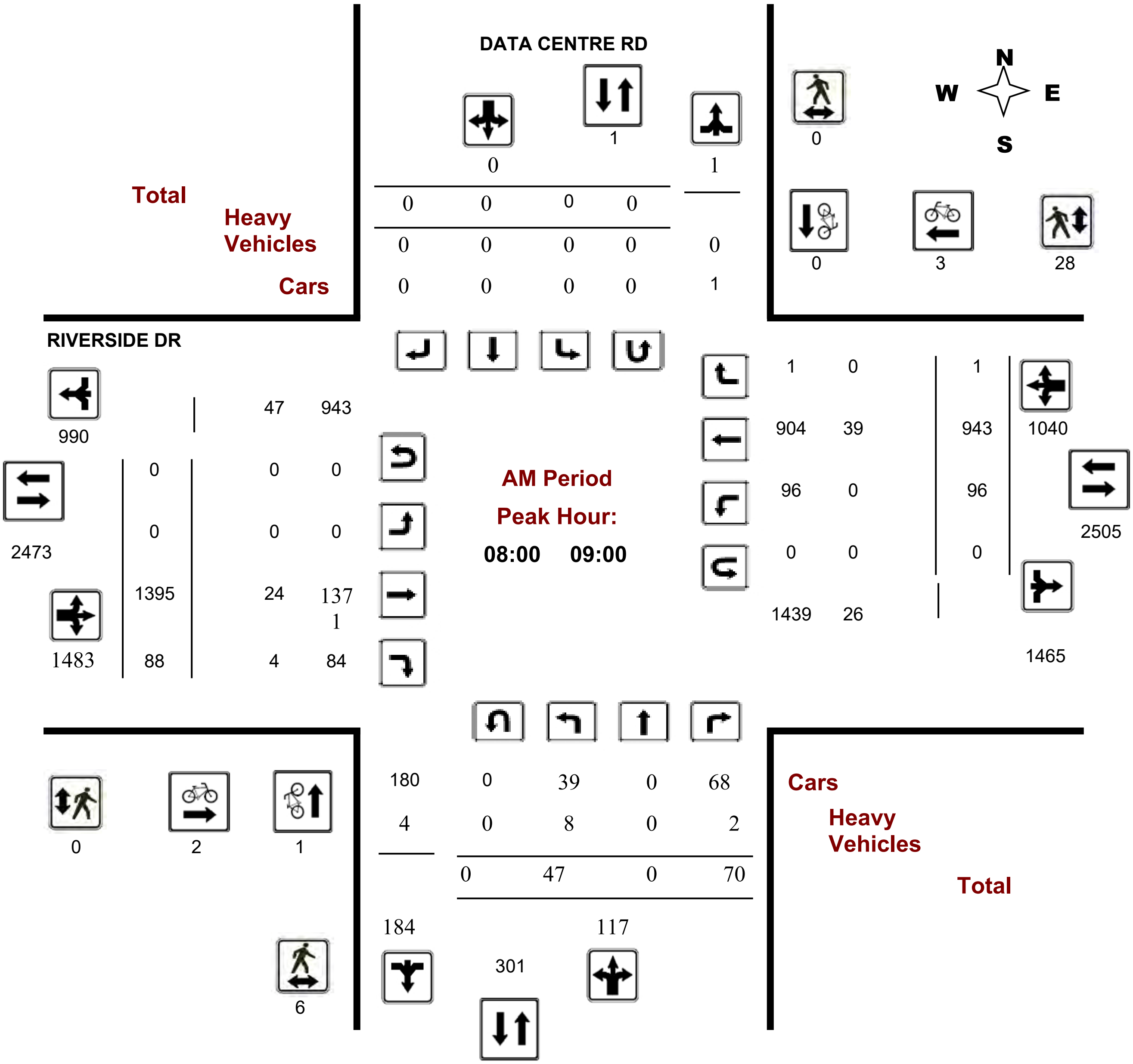
DATA CENTRE RD @ RIVERSIDE DR

Survey Date: Friday, July 17, 2015

Start Time: 07:00

WO No: 34957

Device: Jamar Technologies, Inc



Comments

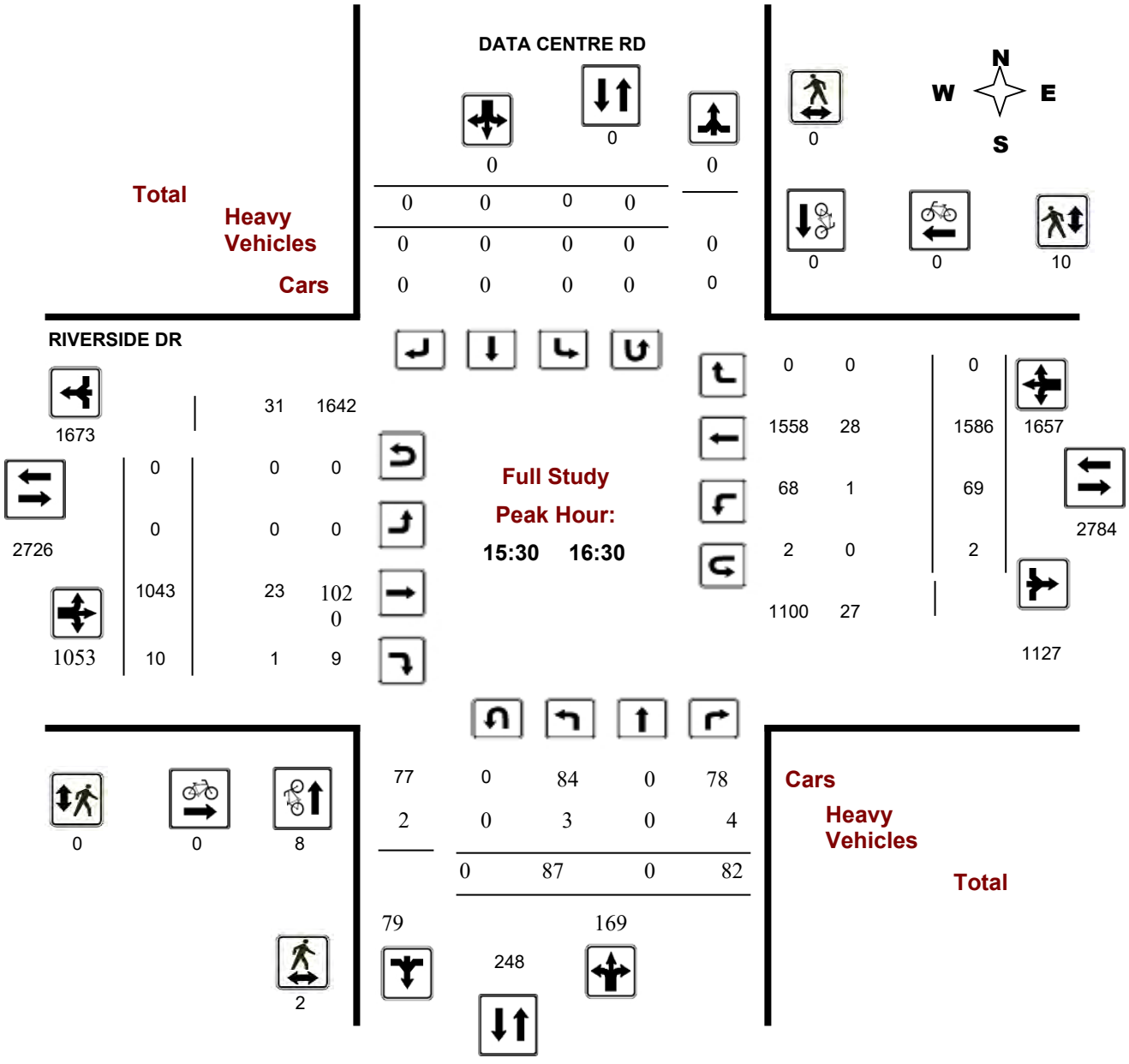
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

DATA CENTRE RD @ RIVERSIDE DR

Survey Date: Friday, July 17, 2015
Start Time: 07:00

WO No: 34957
Device: Jamar Technologies, Inc



Comments

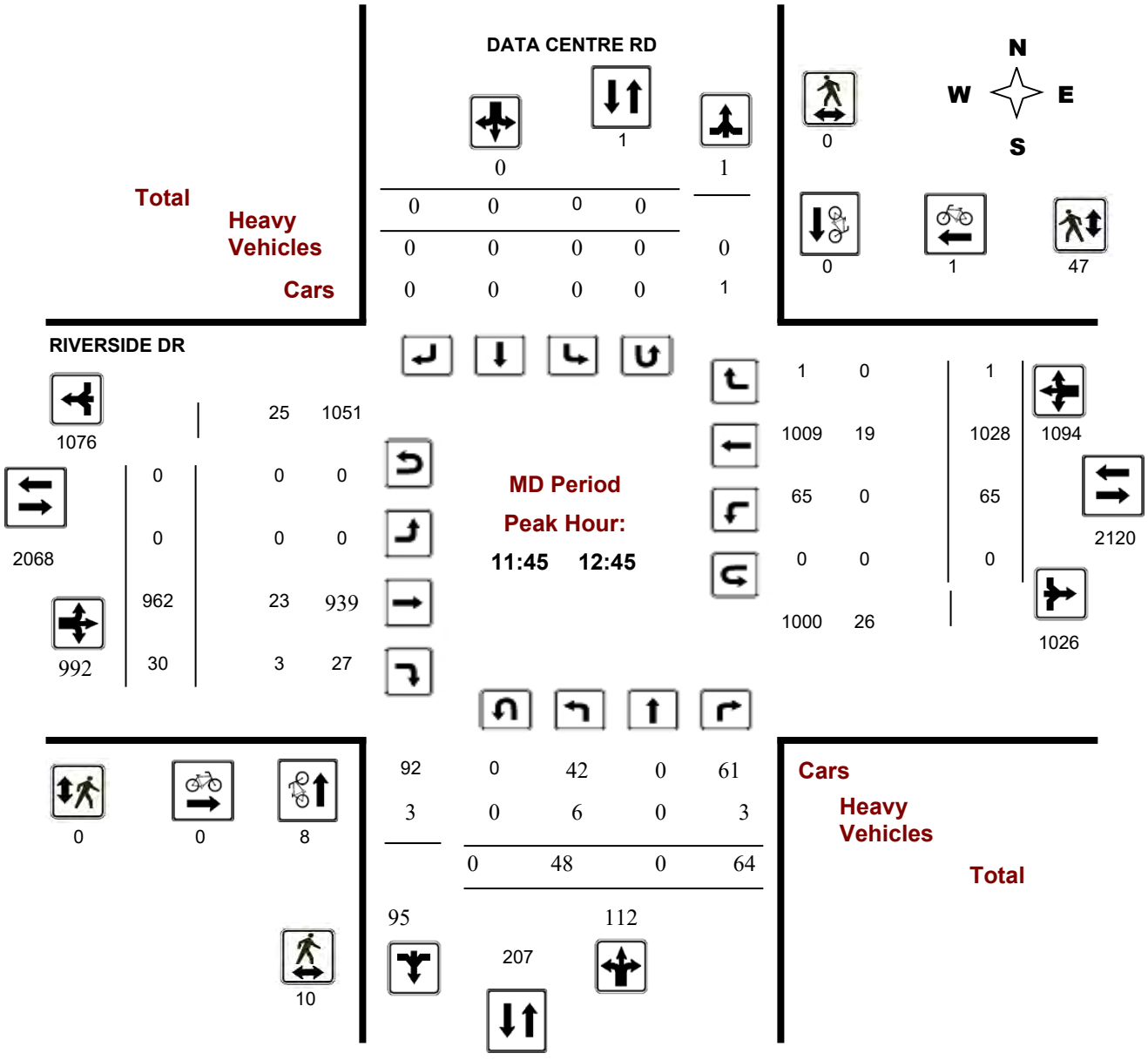
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

DATA CENTRE RD @ RIVERSIDE DR

Survey Date: Friday, July 17, 2015
Start Time: 07:00

WO No: 34957
Device: Jamar Technologies, Inc



Comments

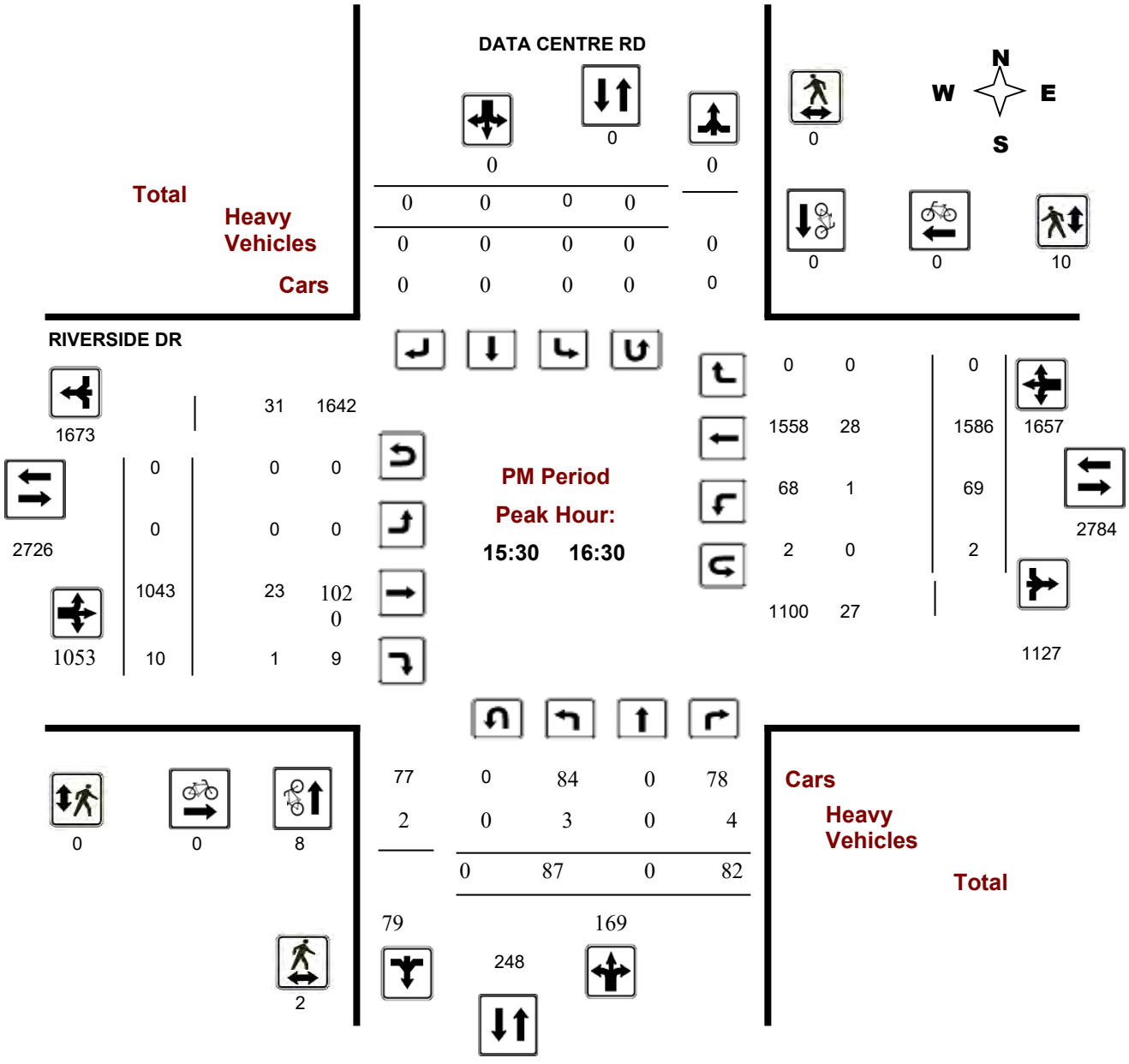
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

DATA CENTRE RD @ RIVERSIDE DR

Survey Date: Friday, July 17, 2015
Start Time: 07:00

WO No: 34957
Device: Jamar Technologies, Inc



Comments

Transportation Services - Traffic Services

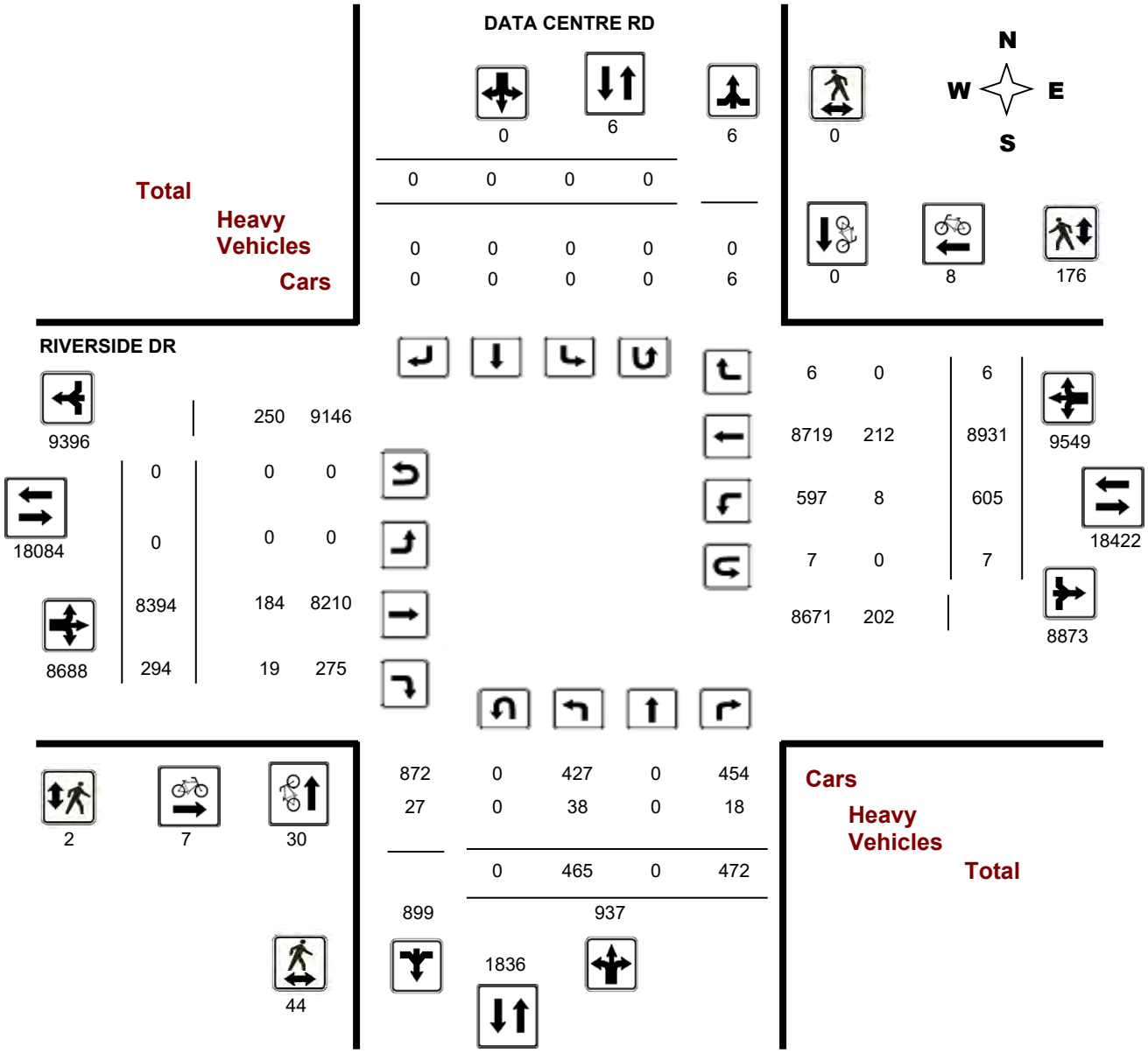
Turning Movement Count - Full Study Diagram

DATA CENTRE RD @ RIVERSIDE DR

Survey Date: Friday, July 17, 2015

WO#: 34957

Device: Jamar Technologies, Inc



Comments

Transportation Services - Traffic Services

Work Order
34957

Turning Movement Count - Full Study Summary Report

DATA CENTRE RD @ RIVERSIDE DR

Survey Date: Friday, July 17, 2015

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 7

AADT Factor
.90

Full Study

	DATA CENTRE RD									RIVERSIDE DR									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	23	0	43	**66**	0	0	0	**0**	**66**	0	1190	57	**1247**	128	865	1	**994**	**2241**	**2307**
08:00 09:00	47	0	70	**117**	0	0	0	**0**	**117**	0	1395	88	**1483**	96	943	1	**1040**	**2523**	**2640**
09:00 10:00	24	0	42	**66**	0	0	0	**0**	**66**	0	1043	46	**1089**	74	858	0	**932**	**2021**	**2087**
11:30 12:30	50	0	64	**114**	0	0	0	**0**	**114**	0	946	27	**973**	59	1009	4	**1072**	**2045**	**2159**
12:30 13:30	62	0	53	**115**	0	0	0	**0**	**115**	0	919	22	**941**	54	937	0	**991**	**1932**	**2047**
15:00 16:00	77	0	87	**164**	0	0	0	**0**	**164**	0	983	14	**997**	57	1411	0	**1468**	**2465**	**2629**
16:00 17:00	106	0	84	**190**	0	0	0	**0**	**190**	0	999	22	**1021**	89	1515	0	**1604**	**2625**	**2815**
17:00 18:00	76	0	29	**105**	0	0	0	**0**	**105**	0	919	18	**937**	48	1393	0	**1441**	**2378**	**2483**
Sub Total	465	0	472	**937**	0	0	0	**0**	**937**	0	8394	294	**8688**	605	8931	6	**9542**	**18230**	**19167**
U Turns				**0**				**0**	**0**				**0**				**7**	**7**	**7**
Total	465	0	472	**937**	0	0	0	**0**	**937**	0	8394	294	**8688**	605	8931	6	**9549**	**18237**	**19174**
EQ 12Hr	646	0	656	**1302**	0	0	0	**0**	**1302**	0	11668	409	**12076**	841	12414	8	**13273**	**25349**	**26651**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	582	0	590	**1172**	0	0	0	**0**	**1172**	0	10501	368	**10869**	757	11173	8	**11946**	**22815**	**23987**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	762	0	774	**1536**	0	0	0	**0**	**1536**	0	13756	482	**14238**	991	14636	10	**15649**	**29887**	**31423**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

Transportation Services - Traffic Services

W.O. 34957

Turning Movement Count - 15 Minute Summary Report

DATA CENTRE RD @ RIVERSIDE DR

Survey Date: Friday, July 17, 2015

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 7

		DATA CENTRE RD									RIVERSIDE DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	**N TOT**	LT	ST	RT	**S TOT**	**STR TOT**	LT	ST	RT	**E TOT**	LT	ST	RT	**W TOT**	**STR TOT**	**Grand Total**
07:00	07:15	4	0	12	**16**	0	0	0	**0**	**16**	0	264	12	**276**	31	160	1	**192**	**468**	**484**
07:15	07:30	5	0	8	**13**	0	0	0	**0**	**13**	0	294	16	**310**	29	207	0	**236**	**546**	**559**
07:30	07:45	4	0	10	**14**	0	0	0	**0**	**14**	0	368	19	**387**	33	239	0	**272**	**659**	**673**
07:45	08:00	10	0	13	**23**	0	0	0	**0**	**23**	0	264	10	**274**	35	259	0	**294**	**568**	**591**
08:00	08:15	22	0	21	**43**	0	0	0	**0**	**43**	0	300	22	**322**	25	232	1	**258**	**580**	**623**
08:15	08:30	6	0	12	**18**	0	0	0	**0**	**18**	0	311	16	**327**	30	232	0	**262**	**589**	**607**
08:30	08:45	10	0	19	**29**	0	0	0	**0**	**29**	0	347	28	**375**	15	243	0	**258**	**633**	**662**
08:45	09:00	9	0	18	**27**	0	0	0	**0**	**27**	0	437	22	**459**	26	236	0	**262**	**721**	**748**
09:00	09:15	12	0	15	**27**	0	0	0	**0**	**27**	0	318	9	**327**	31	222	0	**253**	**580**	**607**
09:15	09:30	3	0	7	**10**	0	0	0	**0**	**10**	0	243	15	**258**	13	190	0	**203**	**461**	**471**
09:30	09:45	6	0	7	**13**	0	0	0	**0**	**13**	0	261	14	**275**	13	240	0	**253**	**528**	**541**
09:45	10:00	3	0	13	**16**	0	0	0	**0**	**16**	0	221	8	**229**	17	206	0	**223**	**452**	**468**
11:30	11:45	14	0	11	**25**	0	0	0	**0**	**25**	0	204	4	**208**	9	229	3	**241**	**449**	**474**
11:45	12:00	10	0	20	**30**	0	0	0	**0**	**30**	0	223	13	**236**	14	254	0	**268**	**504**	**534**
12:00	12:15	17	0	17	**34**	0	0	0	**0**	**34**	0	235	1	**236**	19	262	0	**281**	**517**	**551**
12:15	12:30	9	0	16	**25**	0	0	0	**0**	**25**	0	284	9	**293**	17	264	1	**282**	**575**	**600**
12:30	12:45	12	0	11	**23**	0	0	0	**0**	**23**	0	220	7	**227**	15	248	0	**263**	**490**	**513**
12:45	13:00	13	0	16	**29**	0	0	0	**0**	**29**	0	217	2	**219**	18	250	0	**269**	**488**	**517**
13:00	13:15	19	0	8	**27**	0	0	0	**0**	**27**	0	255	9	**264**	13	215	0	**228**	**492**	**519**
13:15	13:30	18	0	18	**36**	0	0	0	**0**	**36**	0	227	4	**231**	8	224	0	**232**	**463**	**499**
15:00	15:15	27	0	36	**63**	0	0	0	**0**	**63**	0	227	6	**233**	14	289	0	**303**	**536**	**599**
15:15	15:30	14	0	19	**33**	0	0	0	**0**	**33**	0	203	3	**206**	13	329	0	**343**	**549**	**582**
15:30	15:45	18	0	15	**33**	0	0	0	**0**	**33**	0	319	3	**322**	13	386	0	**401**	**723**	**756**
15:45	16:00	18	0	17	**35**	0	0	0	**0**	**35**	0	234	2	**236**	17	407	0	**424**	**660**	**695**
16:00	16:15	24	0	25	**49**	0	0	0	**0**	**49**	0	278	2	**280**	18	384	0	**402**	**682**	**731**
16:15	16:30	27	0	25	**52**	0	0	0	**0**	**52**	0	212	3	**215**	21	409	0	**430**	**645**	**697**
16:30	16:45	29	0	22	**51**	0	0	0	**0**	**51**	0	239	7	**246**	26	380	0	**406**	**652**	**703**
16:45	17:00	26	0	12	**38**	0	0	0	**0**	**38**	0	270	10	**280**	24	342	0	**366**	**646**	**684**
17:00	17:15	19	0	8	**27**	0	0	0	**0**	**27**	0	258	5	**263**	24	361	0	**386**	**649**	**676**
17:15	17:30	28	0	15	**43**	0	0	0	**0**	**43**	0	309	9	**318**	8	360	0	**370**	**688**	**731**
17:30	17:45	18	0	2	**20**	0	0	0	**0**	**20**	0	135	3	**138**	5	350	0	**355**	**493**	**513**
17:45	18:00	11	0	4	**15**	0	0	0	**0**	**15**	0	217	1	**218**	11	322	0	**333**	**551**	**566**
TOTAL:		465	0	472	**937**	0	0	0	**0**	**937**	0	8394	294	**8688**	605	8931	6	**9549**	**18237**	**19174**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
34957

DATA CENTRE RD @ RIVERSIDE DR

Count Date: Friday, July 17, 2015 **Start Time:** 07:00

	DATA CENTRE RD			RIVERSIDE DR			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	1	0	**1**	2	2	**4**	**5**
08:00 09:00	1	0	**1**	2	3	**5**	**6**
09:00 10:00	2	0	**2**	1	1	**2**	**4**
11:30 12:30	8	0	**8**	0	1	**1**	**9**
12:30 13:30	1	0	**1**	0	0	**0**	**1**
15:00 16:00	6	0	**6**	0	1	**1**	**7**
16:00 17:00	7	0	**7**	0	0	**0**	**7**
17:00 18:00	4	0	**4**	2	0	**2**	**6**
Total	30	0	**30**	7	8	**15**	**45**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

W.O. 34957

Turning Movement Count - Heavy Vehicle Report

DATA CENTRE RD @ RIVERSIDE DR

Survey Date: Friday, July 17, 2015

Time Period		DATA CENTRE RD Northbound LT	ST	RT	N TOT	DATA CENTRE RD Southbound LT	ST	RT	S TOT	STR TOT	RIVERSIDE DR Eastbound LT	ST	RT	E TOT	RIVERSIDE DR Westbound LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	08:00	3	0	0	**3**	0	0	0	**0**	**3**	0	32	1	**33**	2	28	0	**30**	**63**	**66**
08:00	09:00	8	0	2	**10**	0	0	0	**0**	**10**	0	24	4	**28**	0	39	0	**39**	**67**	**77**
09:00	10:00	4	0	2	**6**	0	0	0	**0**	**6**	0	42	4	**46**	3	26	0	**29**	**75**	**81**
11:30	12:30	5	0	3	**8**	0	0	0	**0**	**8**	0	20	3	**23**	0	22	0	**22**	**45**	**53**
12:30	13:30	6	0	6	**12**	0	0	0	**0**	**12**	0	20	1	**21**	1	20	0	**21**	**42**	**54**
15:00	16:00	5	0	2	**7**	0	0	0	**0**	**7**	0	18	3	**21**	1	28	0	**29**	**50**	**57**
16:00	17:00	3	0	3	**6**	0	0	0	**0**	**6**	0	18	1	**19**	0	30	0	**30**	**49**	**55**
17:00	18:00	4	0	0	**4**	0	0	0	**0**	**4**	0	10	2	**12**	1	19	0	**20**	**32**	**36**
Sub Total		38	0	18	**56**	0	0	0	**0**	**56**	0	184	19	**203**	8	212	0	**220**	**423**	**479**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		38	0	18	**0**	0	0	0	**0**	**56**	0	184	19	**203**	8	212	0	**220**	**423**	**479**

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

Work Order
34957

Turning Movement Count - Pedestrian Volume Report

DATA CENTRE RD @ RIVERSIDE DR

Count Date: Friday, July 17, 2015 **Start Time:** 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	**0**	0	5	**5**	**5**
07:15 07:30	0	0	**0**	0	2	**2**	**2**
07:30 07:45	0	0	**0**	0	4	**4**	**4**
07:45 08:00	0	0	**0**	0	4	**4**	**4**
07:00 08:00	0	0	**0**	0	15	**15**	**15**
08:00 08:15	1	0	**1**	0	8	**8**	**9**
08:15 08:30	1	0	**1**	0	5	**5**	**6**
08:30 08:45	1	0	**1**	0	7	**7**	**8**
08:45 09:00	3	0	**3**	0	8	**8**	**11**
08:00 09:00	6	0	**6**	0	28	**28**	**34**
09:00 09:15	0	0	**0**	0	2	**2**	**2**
09:15 09:30	0	0	**0**	1	3	**4**	**4**
09:30 09:45	0	0	**0**	1	1	**2**	**2**
09:45 10:00	0	0	**0**	0	1	**1**	**1**
09:00 10:00	0	0	**0**	2	7	**9**	**9**
11:30 11:45	2	0	**2**	0	1	**1**	**3**
11:45 12:00	0	0	**0**	0	5	**5**	**5**
12:00 12:15	5	0	**5**	0	20	**20**	**25**
12:15 12:30	3	0	**3**	0	7	**7**	**10**
11:30 12:30	10	0	**10**	0	33	**33**	**43**
12:30 12:45	2	0	**2**	0	15	**15**	**17**
12:45 13:00	4	0	**4**	0	14	**14**	**18**
13:00 13:15	6	0	**6**	0	41	**41**	**47**
13:15 13:30	1	0	**1**	0	0	**0**	**1**
12:30 13:30	13	0	**13**	0	70	**70**	**83**
15:00 15:15	1	0	**1**	0	1	**1**	**2**
15:15 15:30	0	0	**0**	0	6	**6**	**6**
15:30 15:45	0	0	**0**	0	3	**3**	**3**
15:45 16:00	0	0	**0**	0	4	**4**	**4**
15:00 16:00	1	0	**1**	0	14	**14**	**15**
16:00 16:15	2	0	**2**	0	1	**1**	**3**
16:15 16:30	0	0	**0**	0	2	**2**	**2**
16:30 16:45	2	0	**2**	0	1	**1**	**3**
16:45 17:00	5	0	**5**	0	2	**2**	**7**
16:00 17:00	9	0	**9**	0	6	**6**	**15**
17:00 17:15	3	0	**3**	0	0	**0**	**3**
17:15 17:30	2	0	**2**	0	2	**2**	**4**
17:30 17:45	0	0	**0**	0	1	**1**	**1**
17:45 18:00	0	0	**0**	0	0	**0**	**0**
17:00 18:00	5	0	**5**	0	3	**3**	**8**
Total	44	0	**44**	2	176	**178**	**222**

Comment:

Transportation Services - Traffic Services

Work Order
34957

Turning Movement Count - 15 Min U-Turn Total Report

DATA CENTRE RD @ RIVERSIDE DR

Survey Date: Friday, July 17, 2015

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	1	1
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	1	1
15:30	15:45	0	0	0	2	2
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	1	1
17:15	17:30	0	0	0	2	2
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	0	7	7

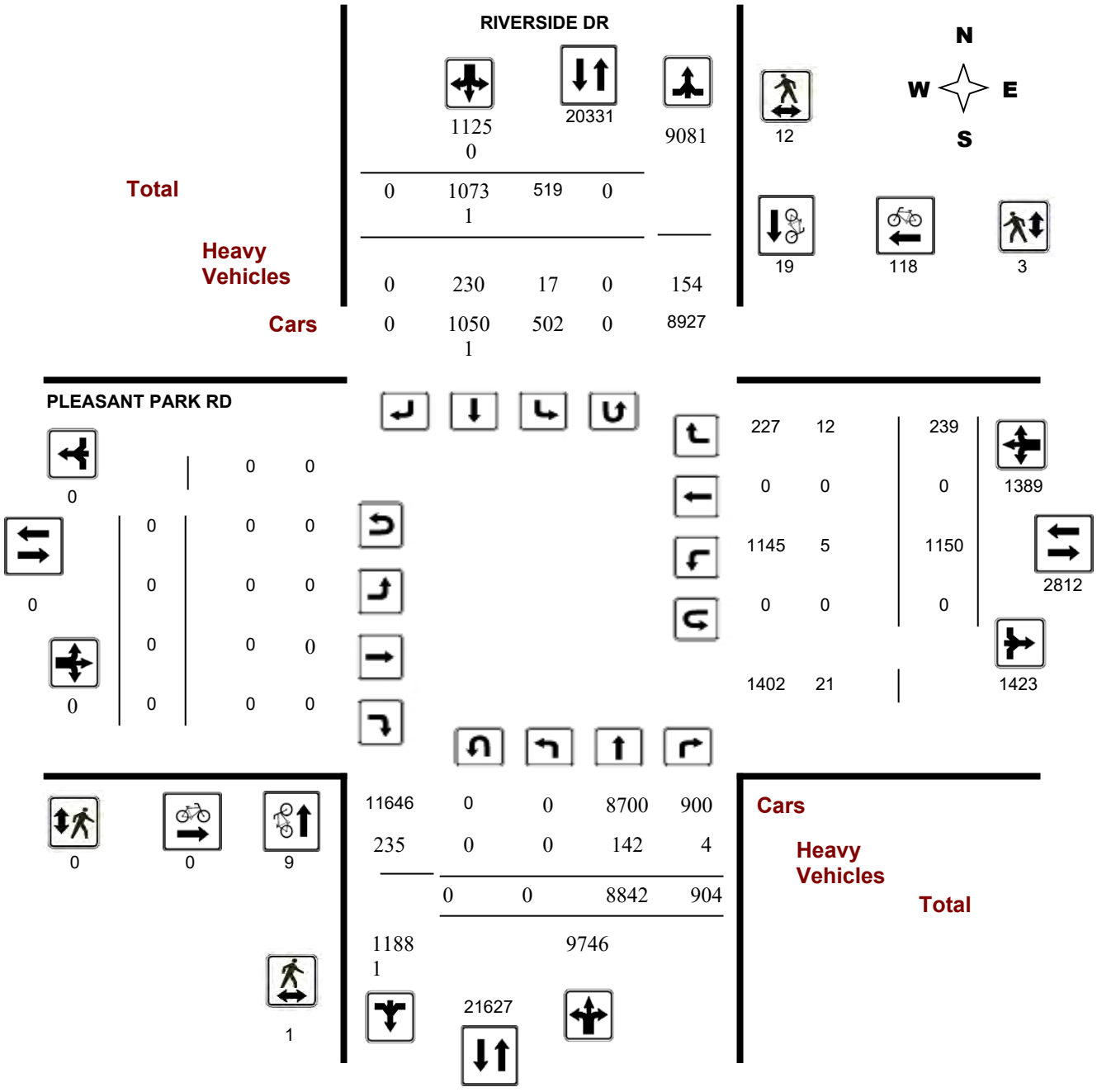
Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ PLEASANT PARK RD

Survey Date: Friday, July 24, 2015
Start Time: 07:00
WO No: 35006
Device: Jamar Technologies, Inc

Full Study Diagram



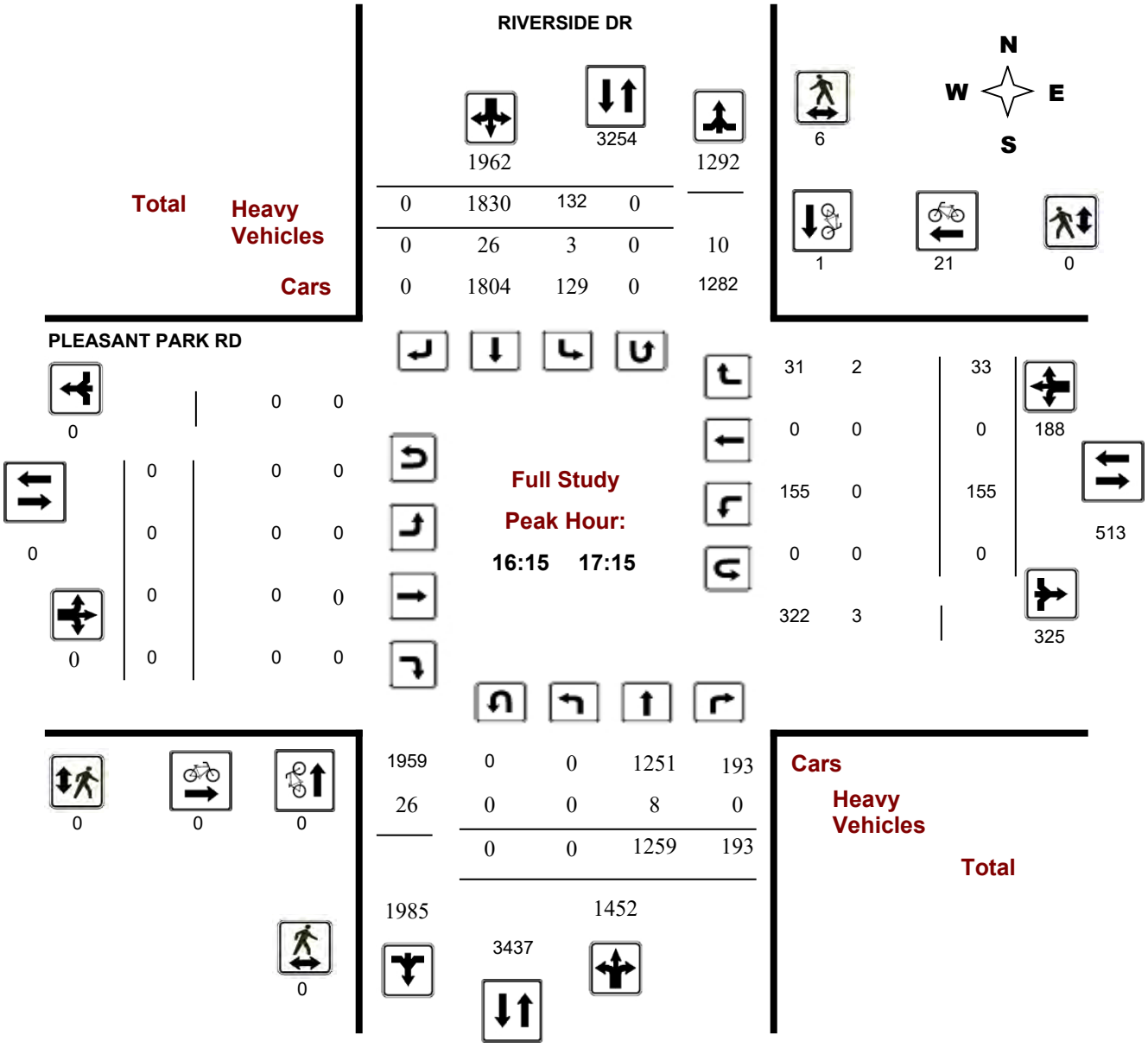
Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ PLEASANT PARK RD

Survey Date: Friday, July 24, 2015
Start Time: 07:00
WO No: 35006
Device: Jamar Technologies, Inc

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ PLEASANT PARK RD

Survey Date: Friday, July 24, 2015 **WO No:** 35006

Start Time: 07:00 **Device:** Jamar Technologies, Inc

Full Study Summary (8 HR Standard)

Survey Date: Friday, July 24, 2015

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor

.90

	RIVERSIDE DR									PLEASANT PARK RD									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	0	922	91	**1013**	29	1063	0	**1092**	**2105**	0	0	0	**0**	94	0	22	**116**	**116**	**2221**
08:00 09:00	0	1072	77	**1149**	33	1179	0	**1212**	**2361**	0	0	0	**0**	212	0	38	**250**	**250**	**2611**
09:00 10:00	0	1150	94	**1244**	44	1002	0	**1046**	**2290**	0	0	0	**0**	136	0	26	**162**	**162**	**2452**
11:30 12:30	0	1033	89	**1122**	53	1202	0	**1255**	**2377**	0	0	0	**0**	131	0	28	**159**	**159**	**2536**
12:30 13:30	0	1156	89	**1245**	59	1209	0	**1268**	**2513**	0	0	0	**0**	102	0	33	**135**	**135**	**2648**
15:00 16:00	0	1083	139	**1222**	74	1651	0	**1725**	**2947**	0	0	0	**0**	179	0	24	**203**	**203**	**3150**
16:00 17:00	0	1173	169	**1342**	139	1881	0	**2020**	**3362**	0	0	0	**0**	157	0	37	**194**	**194**	**3556**
17:00 18:00	0	1253	156	**1409**	88	1544	0	**1632**	**3041**	0	0	0	**0**	139	0	31	**170**	**170**	**3211**
Sub Total	0	8842	904	**9746**	519	10731	0	**11250**	**20996**	0	0	0	**0**	1150	0	239	**1389**	**1389**	**22385**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	0	8842	904	**9746**	519	10731	0	**11250**	**20996**	0	0	0	**0**	1150	0	239	**1389**	**1389**	**22385**
EQ 12Hr	0	12290	1257	**13547**	721	14916	0	**15637**	**29184**	0	0	0	**0**	1598	0	332	**1931**	**1931**	**31115**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	0	10425	1066	**11491**	612	12652	0	**13264**	**26266**	0	0	0	**0**	1356	0	282	**1638**	**1738**	**28004**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**0.9**					
AVG 24Hr	0	13656	1396	**15053**	802	16574	0	**17376**	**32429**	0	0	0	**0**	1776	0	369	**2145**	**2145**	**34574**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

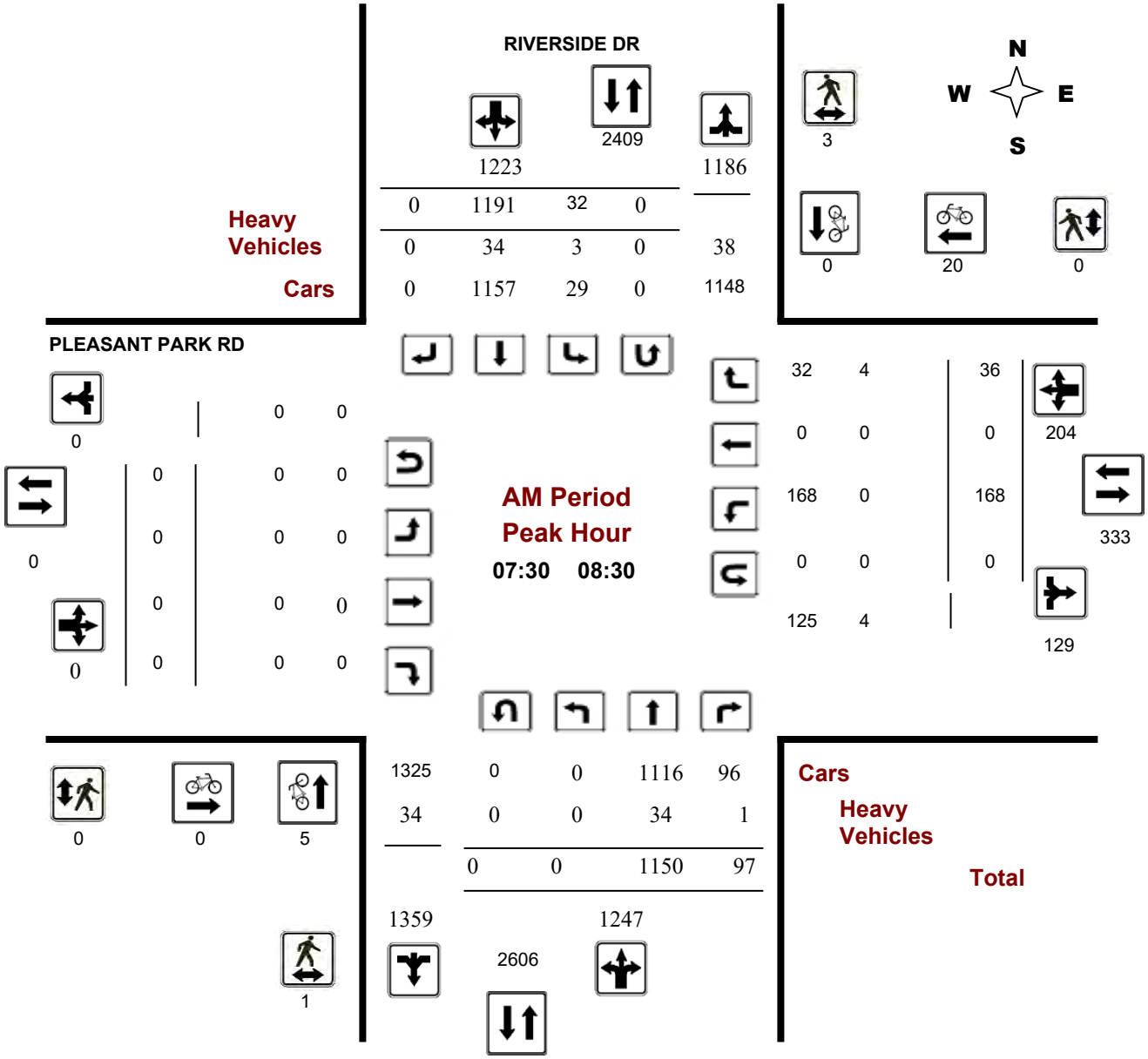
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

RIVERSIDE DR @ PLEASANT PARK RD

Survey Date: Friday, July 24, 2015
Start Time: 07:00

WO No: 35006
Device: Jamar Technologies, Inc



Comments

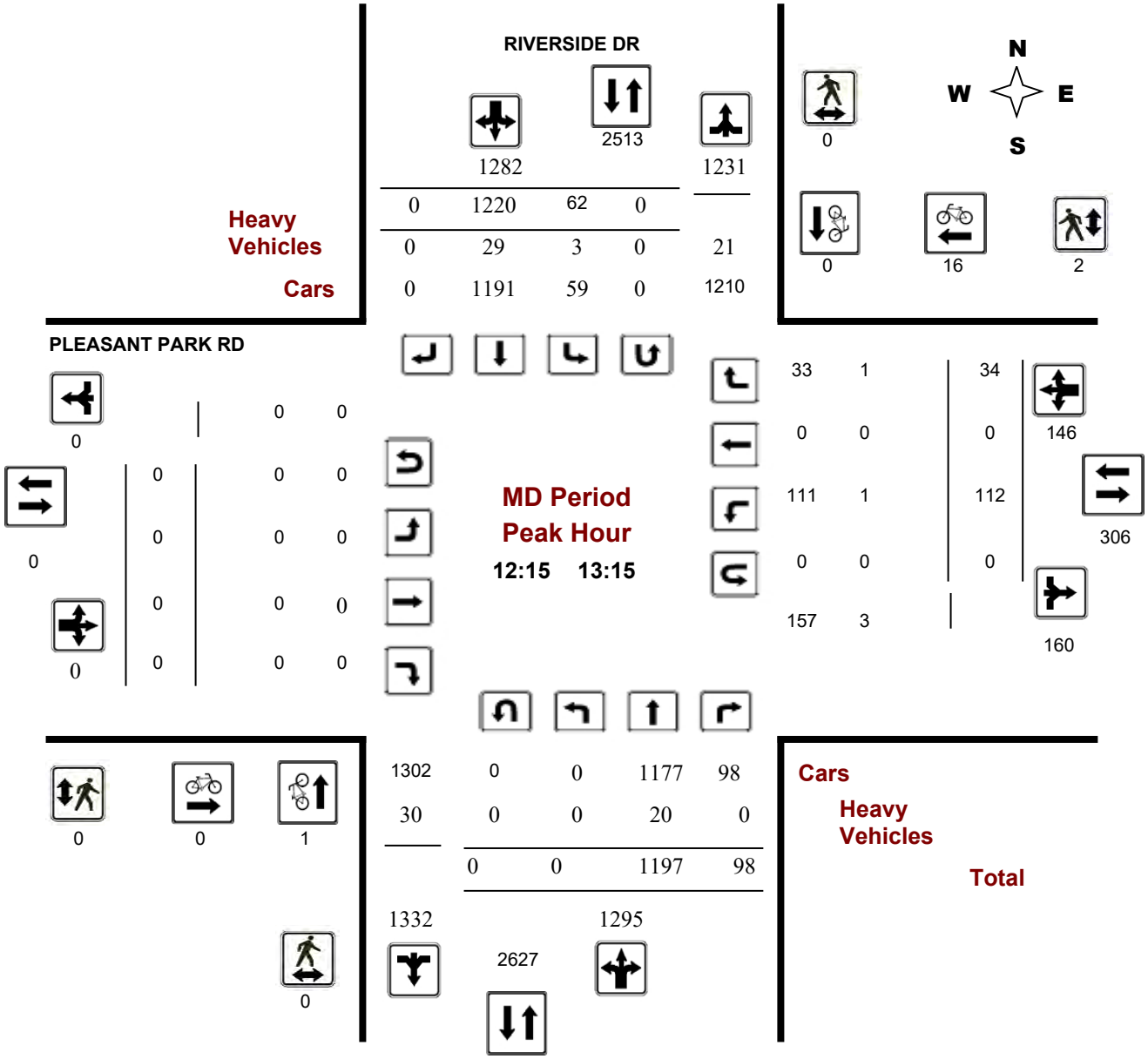
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

RIVERSIDE DR @ PLEASANT PARK RD

Survey Date: Friday, July 24, 2015
Start Time: 07:00

WO No: 35006
Device: Jamar Technologies, Inc



Comments

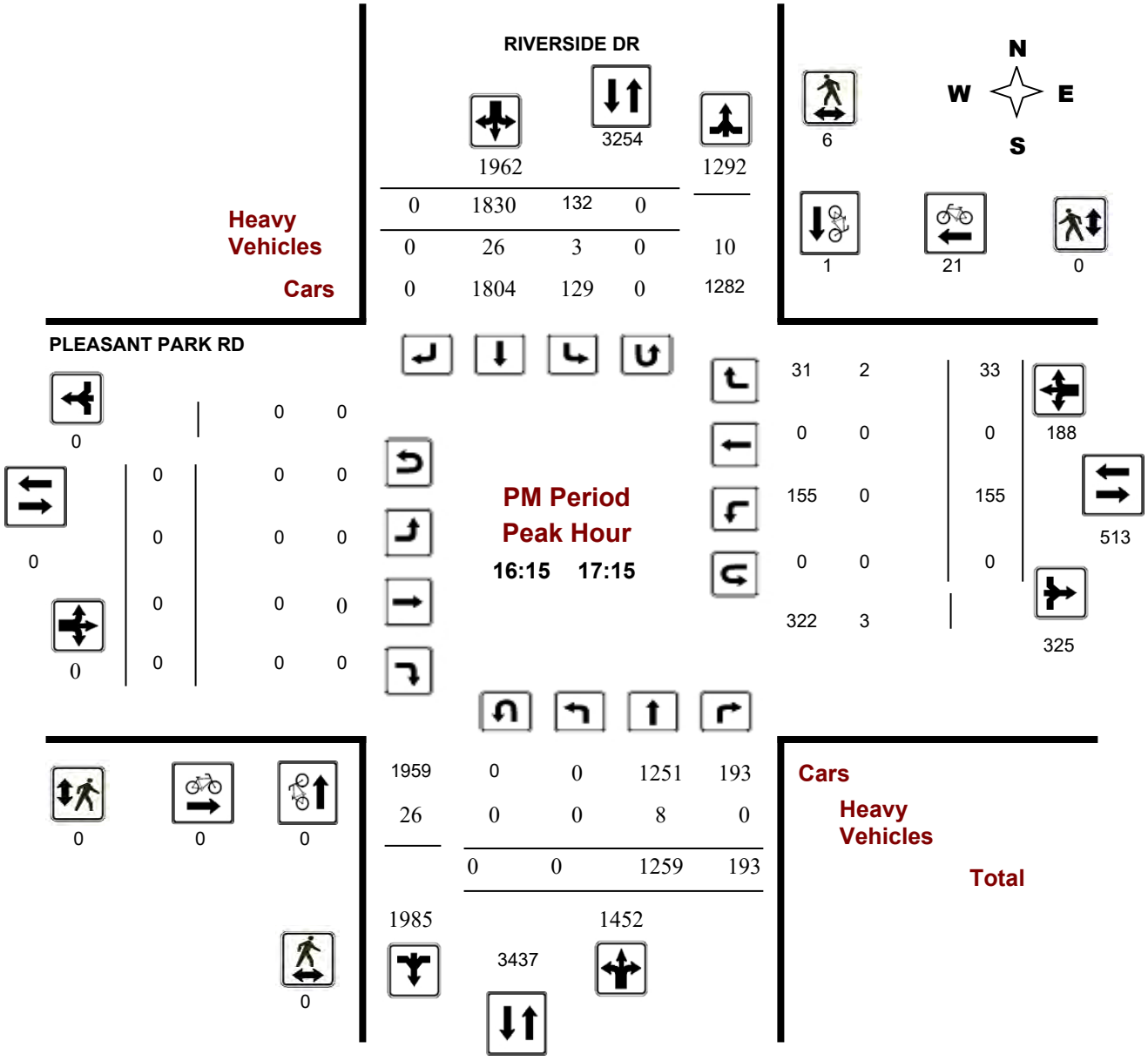
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

RIVERSIDE DR @ PLEASANT PARK RD

Survey Date: Friday, July 24, 2015
Start Time: 07:00

WO No: 35006
Device: Jamar Technologies, Inc



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ PLEASANT PARK RD

Survey Date: Friday, July 24, 2015 **WO No:** 35006

Start Time: 07:00 **Device:** Jamar Technologies, Inc

Full Study 15 Minute Increments

		RIVERSIDE DR									PLEASANT PARK RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:45	08:00	0	298	27	325	10	323	0	333	23	0	0	0	0	39	0	9	48	23	706
08:00	08:15	0	282	25	307	7	285	0	292	16	0	0	0	0	49	0	6	55	16	654
08:15	08:30	0	270	21	291	6	298	0	304	22	0	0	0	0	60	0	17	77	22	672
08:30	08:45	0	283	16	299	9	271	0	280	7	0	0	0	0	43	0	7	50	7	629
08:45	09:00	0	237	15	252	11	325	0	336	19	0	0	0	0	60	0	8	68	19	656
09:00	09:15	0	250	19	269	9	237	0	246	16	0	0	0	0	37	0	6	43	16	558
09:15	09:30	0	336	32	368	8	259	0	267	16	0	0	0	0	29	0	6	35	16	670
09:30	09:45	0	301	25	326	14	255	0	269	20	0	0	0	0	27	0	8	35	20	630
09:45	10:00	0	263	18	281	13	251	0	264	17	0	0	0	0	43	0	6	49	17	594
11:30	11:45	0	225	20	245	6	288	0	294	10	0	0	0	0	44	0	6	50	10	589
11:45	12:00	0	248	16	264	16	300	0	316	17	0	0	0	0	30	0	7	37	17	617
12:00	12:15	0	279	22	301	16	326	0	342	14	0	0	0	0	24	0	11	35	14	678
12:15	12:30	0	281	31	312	15	288	0	303	10	0	0	0	0	33	0	4	37	10	652
12:30	12:45	0	323	19	342	11	309	0	320	11	0	0	0	0	28	0	11	39	11	701
12:45	13:00	0	272	30	302	29	321	0	350	19	0	0	0	0	28	0	9	37	19	689
13:00	13:15	0	321	18	339	7	302	0	309	12	0	0	0	0	23	0	10	33	12	681
13:15	13:30	0	240	22	262	12	277	0	289	14	0	0	0	0	23	0	3	26	14	577
15:00	15:15	0	249	32	281	21	374	0	395	11	0	0	0	0	37	0	6	43	11	719
15:15	15:30	0	266	31	297	25	403	0	428	8	0	0	0	0	50	0	4	54	8	779
15:30	15:45	0	288	37	325	16	405	0	421	9	0	0	0	0	44	0	9	53	9	799
15:45	16:00	0	280	39	319	12	469	0	481	19	0	0	0	0	48	0	5	53	19	853
16:00	16:15	0	295	42	337	37	461	0	498	12	0	0	0	0	38	0	11	49	12	884
16:15	16:30	0	292	40	332	42	520	0	562	9	0	0	0	0	35	0	8	43	9	937
16:30	16:45	0	296	38	334	31	404	0	435	9	0	0	0	0	36	0	7	43	9	812
16:45	17:00	0	290	49	339	29	496	0	525	11	0	0	0	0	48	0	11	59	11	923
17:00	17:15	0	381	66	447	30	410	0	440	8	0	0	0	0	36	0	7	43	8	930
17:15	17:30	0	311	41	352	22	417	0	439	4	0	0	0	0	43	0	8	51	4	842
17:30	17:45	0	273	28	301	25	384	0	409	6	0	0	0	0	38	0	6	44	6	754
17:45	18:00	0	288	21	309	11	333	0	344	7	0	0	0	0	22	0	10	32	7	685
07:30	07:45	0	300	24	324	9	285	0	294	11	0	0	0	0	20	0	4	24	11	642
07:00	07:15	0	30	20	50	5	215	0	220	2	0	0	0	0	18	0	5	23	2	293
07:15	07:30	0	294	20	314	5	240	0	245	4	0	0	0	0	17	0	4	21	4	580
Total:		0	8842	904	9746	519	10731	0	11250	393	0	0	0	0	1150	0	239	1389	393	22,385

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ PLEASANT PARK RD

Survey Date: Friday, July 24, 2015 **WO No:** 35006

Start Time: 07:00 **Device:** Jamar Technologies, Inc

Full Study Cyclist Volume

Time Period		RIVERSIDE DR			PLEASANT PARK RD			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:45	08:00	0	0	0	0	4	4	4
08:00	08:15	3	0	3	0	8	8	11
08:15	08:30	1	0	1	0	4	4	5
08:30	08:45	1	0	1	0	1	1	2
08:45	09:00	0	1	1	0	0	0	1
09:00	09:15	0	0	0	0	5	5	5
09:15	09:30	1	0	1	0	2	2	3
09:30	09:45	0	0	0	0	2	2	2
09:45	10:00	0	0	0	0	7	7	7
11:30	11:45	0	0	0	0	4	4	4
11:45	12:00	0	0	0	0	5	5	5
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	0	5	5	5
12:30	12:45	0	0	0	0	3	3	3
12:45	13:00	0	0	0	0	5	5	5
13:00	13:15	1	0	1	0	3	3	4
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	2	2	0	1	1	3
15:15	15:30	0	0	0	0	8	8	8
15:30	15:45	1	0	1	0	1	1	2
15:45	16:00	0	0	0	0	6	6	6
16:00	16:15	0	0	0	0	6	6	6
16:15	16:30	0	0	0	0	5	5	5
16:30	16:45	0	1	1	0	3	3	4
16:45	17:00	0	0	0	0	6	6	6
17:00	17:15	0	0	0	0	7	7	7
17:15	17:30	0	0	0	0	6	6	6
17:30	17:45	0	0	0	0	3	3	3
17:45	18:00	0	0	0	0	4	4	4
07:30	07:45	1	0	1	0	4	4	5
07:00	07:15	0	6	6	0	0	0	6
07:15	07:30	0	9	9	0	0	0	9
Total		9	19	**28**	0	118	118	146

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ PLEASANT PARK RD

Survey Date: Friday, July 24, 2015 **WO No:** 35006

Start Time: 07:00 **Device:** Jamar Technologies, Inc

Full Study Pedestrian Volume

		RIVERSIDE DR			PLEASANT PARK RD			
Time Period		NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	**Total**	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	**Total**	**Grand Total**
07:45	08:00	0	2	**2**	0	0	**0**	**2**
08:00	08:15	0	1	**1**	0	0	**0**	**1**
08:15	08:30	0	0	**0**	0	0	**0**	**0**
08:30	08:45	0	0	**0**	0	0	**0**	**0**
08:45	09:00	0	0	**0**	0	0	**0**	**0**
09:00	09:15	0	0	**0**	0	0	**0**	**0**
09:15	09:30	0	0	**0**	0	0	**0**	**0**
09:30	09:45	0	0	**0**	0	0	**0**	**0**
09:45	10:00	0	0	**0**	0	0	**0**	**0**
11:30	11:45	0	0	**0**	0	0	**0**	**0**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:00	12:15	0	0	**0**	0	0	**0**	**0**
12:15	12:30	0	0	**0**	0	0	**0**	**0**
12:30	12:45	0	0	**0**	0	0	**0**	**0**
12:45	13:00	0	0	**0**	0	2	**2**	**2**
13:00	13:15	0	0	**0**	0	0	**0**	**0**
13:15	13:30	0	0	**0**	0	0	**0**	**0**
15:00	15:15	0	0	**0**	0	0	**0**	**0**
15:15	15:30	0	2	**2**	0	0	**0**	**2**
15:30	15:45	0	0	**0**	0	0	**0**	**0**
15:45	16:00	0	0	**0**	0	1	**1**	**1**
16:00	16:15	0	0	**0**	0	0	**0**	**0**
16:15	16:30	0	0	**0**	0	0	**0**	**0**
16:30	16:45	0	4	**4**	0	0	**0**	**4**
16:45	17:00	0	2	**2**	0	0	**0**	**2**
17:00	17:15	0	0	**0**	0	0	**0**	**0**
17:15	17:30	0	0	**0**	0	0	**0**	**0**
17:30	17:45	0	0	**0**	0	0	**0**	**0**
17:45	18:00	0	0	**0**	0	0	**0**	**0**
07:30	07:45	1	0	**1**	0	0	**0**	**1**
07:00	07:15	0	0	**0**	0	0	**0**	**0**
07:15	07:30	0	1	**1**	0	0	**0**	**1**
Total	.....	1	12	**13**	0	3	**3**	**16**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ PLEASANT PARK RD

Survey Date: Friday, July 24, 2015 **WO No:** 35006

Start Time: 07:00 **Device:** Jamar Technologies, Inc

Full Study Heavy Vehicles

		RIVERSIDE DR									PLEASANT PARK RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:45	08:00	0	12	0	**12**	1	10	0	**11**	**23**	0	0	0	**0**	0	0	1	**1**	**1**	**24**
08:00	08:15	0	6	1	**7**	0	9	0	**9**	**16**	0	0	0	**0**	0	0	1	**1**	**1**	**17**
08:15	08:30	0	10	0	**10**	1	11	0	**12**	**22**	0	0	0	**0**	0	0	1	**1**	**1**	**23**
08:30	08:45	0	2	0	**2**	0	5	0	**5**	**7**	0	0	0	**0**	0	0	0	**0**	**0**	**7**
08:45	09:00	0	5	1	**6**	0	13	0	**13**	**19**	0	0	0	**0**	0	0	0	**0**	**0**	**19**
09:00	09:15	0	6	0	**6**	0	10	0	**10**	**16**	0	0	0	**0**	0	0	1	**1**	**1**	**17**
09:15	09:30	0	0	1	**1**	1	14	0	**15**	**16**	0	0	0	**0**	2	0	0	**2**	**2**	**18**
09:30	09:45	0	5	1	**6**	0	14	0	**14**	**20**	0	0	0	**0**	0	0	0	**0**	**0**	**20**
09:45	10:00	0	6	0	**6**	0	11	0	**11**	**17**	0	0	0	**0**	1	0	0	**1**	**1**	**18**
11:30	11:45	0	3	0	**3**	0	7	0	**7**	**10**	0	0	0	**0**	0	0	0	**0**	**0**	**10**
11:45	12:00	0	6	0	**6**	0	11	0	**11**	**17**	0	0	0	**0**	0	0	0	**0**	**0**	**17**
12:00	12:15	0	4	0	**4**	0	10	0	**10**	**14**	0	0	0	**0**	0	0	0	**0**	**0**	**14**
12:15	12:30	0	3	0	**3**	1	6	0	**7**	**10**	0	0	0	**0**	0	0	0	**0**	**0**	**10**
12:30	12:45	0	3	0	**3**	0	8	0	**8**	**11**	0	0	0	**0**	1	0	0	**1**	**1**	**12**
12:45	13:00	0	9	0	**9**	2	8	0	**10**	**19**	0	0	0	**0**	0	0	1	**1**	**1**	**20**
13:00	13:15	0	5	0	**5**	0	7	0	**7**	**12**	0	0	0	**0**	0	0	0	**0**	**0**	**12**
13:15	13:30	0	5	0	**5**	0	9	0	**9**	**14**	0	0	0	**0**	0	0	0	**0**	**0**	**14**
15:00	15:15	0	5	0	**5**	0	6	0	**6**	**11**	0	0	0	**0**	0	0	1	**1**	**1**	**12**
15:15	15:30	0	3	0	**3**	2	3	0	**5**	**8**	0	0	0	**0**	1	0	0	**1**	**1**	**9**
15:30	15:45	0	4	0	**4**	1	4	0	**5**	**9**	0	0	0	**0**	0	0	0	**0**	**0**	**9**
15:45	16:00	0	7	0	**7**	2	10	0	**12**	**19**	0	0	0	**0**	0	0	1	**1**	**1**	**20**
16:00	16:15	0	5	0	**5**	1	6	0	**7**	**12**	0	0	0	**0**	0	0	1	**1**	**1**	**13**
16:15	16:30	0	1	0	**1**	1	7	0	**8**	**9**	0	0	0	**0**	0	0	0	**0**	**0**	**9**
16:30	16:45	0	3	0	**3**	0	6	0	**6**	**9**	0	0	0	**0**	0	0	1	**1**	**1**	**10**
16:45	17:00	0	3	0	**3**	1	7	0	**8**	**11**	0	0	0	**0**	0	0	0	**0**	**0**	**11**
17:00	17:15	0	1	0	**1**	1	6	0	**7**	**8**	0	0	0	**0**	0	0	1	**1**	**1**	**9**
17:15	17:30	0	0	0	**0**	1	3	0	**4**	**4**	0	0	0	**0**	0	0	0	**0**	**0**	**4**
17:30	17:45	0	3	0	**3**	0	3	0	**3**	**6**	0	0	0	**0**	0	0	1	**1**	**1**	**7**
17:45	18:00	0	5	0	**5**	0	2	0	**2**	**7**	0	0	0	**0**	0	0	0	**0**	**0**	**7**
07:30	07:45	0	6	0	**6**	1	4	0	**5**	**11**	0	0	0	**0**	0	0	1	**1**	**1**	**12**
07:00	07:15	0	2	0	**2**	0	0	0	**0**	**2**	0	0	0	**0**	0	0	0	**0**	**0**	**2**
07:15	07:30	0	4	0	**4**	0	0	0	**0**	**4**	0	0	0	**0**	0	0	0	**0**	**0**	**4**
Total:	None	0	142	4	**146**	17	230	0	**247**	**393**	0	0	0	**0**	5	0	12	**17**	**17**	**410**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RIVERSIDE DR @ PLEASANT PARK RD

Survey Date: Friday, July 24, 2015 **WO No:** 35006

Start Time: 07:00 **Device:** Jamar Technologies, Inc

Full Study 15 Minute U-Turn Total

Time Period		RIVERSIDE DR Northbound U-Turn Total	RIVERSIDE DR Southbound U-Turn Total	PLEASANT PARK RD Eastbound U-Turn Total	PLEASANT PARK RD Westbound U-Turn Total	Total
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
Total		0	0	0	0	0

Appendix D

COLLISION DATA

Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	87	23	74	76	2	0	0	5	267	79%
Non-fatal injury	28	9	6	27	0	0	0	0	70	21%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	115	32	80	103	2	0	0	5	337	100%
	#1 or 34%	#4 or 10%	#3 or 24%	#2 or 31%	#6 or 1%	#7 or 0%	#7 or 0%	#5 or 1%		

BANK ST/ BILLINGS TRANSIT

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	5	24,767	1825	0.11

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	2	0	0	1	0	0	0	0	3	60%
Non-fatal injury	2	0	0	0	0	0	0	0	2	40%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	4	0	0	1	0	0	0	0	5	100%
	80%	0%	0%	20%	0%	0%	0%	0%		

BANK ST/ RIVERDALE AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	14	19,544	1825	0.39

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	4	1	3	1	2	0	0	0	11	79%
Non-fatal injury	1	1	1	0	0	0	0	0	3	21%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	5	2	4	1	2	0	0	0	14	100%
	36%	14%	29%	7%	14%	0%	0%	0%		

BANK ST/ RIVERSIDE DR N

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	97	39,952	1825	1.33

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	23	4	20	26	0	0	0	0	73	75%
Non-fatal injury	4	4	1	15	0	0	0	0	24	25%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	27	8	21	41	0	0	0	0	97	100%
	28%	8%	22%	42%	0%	0%	0%	0%		

BANK ST/ RIVERSIDE DR S

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	73	43,737	1825	0.91

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	27	4	14	16	0	0	0	1	62	85%
Non-fatal injury	8	1	0	2	0	0	0	0	11	15%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	35	5	14	18	0	0	0	1	73	100%
	48%	7%	19%	25%	0%	0%	0%	1%		

BANK ST, RIVERDALE AVE to RIVERSIDE DR

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	5	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	4	0	0	0	0	0	4	80%
Non-fatal injury	1	0	0	0	0	0	0	0	1	20%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	1	0	4	0	0	0	0	0	5	100%
	20%	0%	80%	0%	0%	0%	0%	0%		

BANK ST, RIVERSIDE DR to BILLINGS TRANSIT

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	18	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	3	2	6	0	0	0	1	12	67%
Non-fatal injury	1	3	1	1	0	0	0	0	6	33%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	1	6	3	7	0	0	0	1	18	100%
	6%	33%	17%	39%	0%	0%	0%	6%		

BANK ST, RIVERSIDE DR to RIVERSIDE DR

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	12	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	3	5	2	0	0	0	0	1	11	92%
Non-fatal injury	0	0	0	1	0	0	0	0	1	8%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	3	5	2	1	0	0	0	1	12	100%
	25%	42%	17%	8%	0%	0%	0%	8%		

BILLINGS BRIDGE NB/ RIVERSIDE DR EB

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	2	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	2	0	0	0	0	0	2	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	0	0	2	0	0	0	0	0	2	100%
	0%	0%	100%	0%	0%	0%	0%	0%		

BILLINGS BRIDGESC RAMP NB/ RIVERSIDE DR EB

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	10	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	0	6	0	0	0	0	6	60%
Non-fatal injury	0	0	0	4	0	0	0	0	4	40%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	0	0	0	10	0	0	0	0	10	100%
	0%	0%	0%	100%	0%	0%	0%	0%		

BILLINGS BRIDGESC RAMP NB/ RIVERSIDE DR WB

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	8	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	0	7	0	0	0	0	7	88%
Non-fatal injury	0	0	0	1	0	0	0	0	1	13%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	0	0	0	8	0	0	0	0	8	100%
	0%	0%	0%	100%	0%	0%	0%	0%		

BILLINGS BRIDGESC RAMP SB/ RIVERSIDE DR EB

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	10	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	0	9	0	0	0	0	9	90%
Non-fatal injury	0	0	0	1	0	0	0	0	1	10%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	0	0	0	10	0	0	0	0	10	100%
	0%	0%	0%	100%	0%	0%	0%	0%		

BILLINGS BRIDGESC RAMP SB/ RIVERSIDE DR SB

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	1	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	0	0	0	0	0	0	0	1	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	1	0	0	0	0	0	0	0	1	100%
	100%	0%	0%	0%	0%	0%	0%	0%		

DATA CENTRE RD/ RIVERSIDE DR

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	23	31,423	1825	0.40

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	14	1	1	3	0	0	0	0	19	83%
Non-fatal injury	4	0	0	0	0	0	0	0	4	17%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	18	1	1	3	0	0	0	0	23	100%
	78%	4%	4%	13%	0%	0%	0%	0%		

RIVERSIDE DR EB/ BILLINGS BRIDGE SC SE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	2	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	0	0	0	0	0	1	1	50%
Non-fatal injury	1	0	0	0	0	0	0	0	1	50%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	1	0	0	0	0	0	0	1	2	100%
	50%	0%	0%	0%	0%	0%	0%	50%		

RIVERSIDE DR NB, BANK ST to RIVERSIDE DR NB RAMP FROM EB TO WB

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	22	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	2	4	10	1	0	0	0	0	17	77%
Non-fatal injury	3	0	2	0	0	0	0	0	5	23%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	5	4	12	1	0	0	0	0	22	100%
	23%	18%	55%	5%	0%	0%	0%	0%		

RIVERSIDE DR NB, BILLINGS BRIDGE SC RAMP NB to BILLINGS BRIDGE SC R

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	1	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	0	0	0	0	0	0	0	0%
Non-fatal injury	1	0	0	0	0	0	0	0	1	100%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	1	0	0	0	0	0	0	0	1	100%
	100%	0%	0%	0%	0%	0%	0%	0%		

RIVERSIDE DR NB, BILLINGS BRIDGE SC RAMP SB to BANK ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	4	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	2	0	2	0	0	0	0	0	4	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	2	0	2	0	0	0	0	0	4	100%

	50%	0%	50%	0%	0%	0%	0%	0%

RIVERSIDE DR NB, BILLINGS BRIDGE SC RAMP SB to BILLINGS BRIDGE SC R

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	5	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	5	0	0	0	0	0	5	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	0	0	5	0	0	0	0	0	5	100%
	0%	0%	100%	0%	0%	0%	0%	0%		

RIVERSIDE DR NB, DATA CENTRE RD to BILLINGS BRIDGESC RAMP NB

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	2	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	0	0	0	0	0	0	0	1	50%
Non-fatal injury	0	0	0	1	0	0	0	0	1	50%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	1	0	0	1	0	0	0	0	2	100%
	50%	0%	0%	50%	0%	0%	0%	0%		

RIVERSIDE DR NB, RIVERSIDE DR NB RAMP FROM EB TO WB to NEIL WAY

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	3	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	2	0	1	0	0	0	0	0	3	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	2	0	1	0	0	0	0	0	3	100%
	67%	0%	33%	0%	0%	0%	0%	0%		

RIVERSIDE DR SB, BANK ST to BILLINGS BRIDGE NB RAMP

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	6	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	1	3	0	0	0	0	1	5	83%
Non-fatal injury	0	0	0	1	0	0	0	0	1	17%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	0	1	3	1	0	0	0	1	6	100%
	0%	17%	50%	17%	0%	0%	0%	17%		

RIVERSIDE DR SB, BILLINGS BRIDGE NB RAMP to NEIL WAY

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	2	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	0	0	0	0	0	0	0	0%
Non-fatal injury	1	0	1	0	0	0	0	0	2	100%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	1	0	1	0	0	0	0	0	2	100%
	50%	0%	50%	0%	0%	0%	0%	0%		

RIVERSIDE DR SB, BILLINGS BRIDGE SC RAMP SB to BANK ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2014-2018	8	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	4	0	3	0	0	0	0	0	7	88%
Non-fatal injury	1	0	0	0	0	0	0	0	1	13%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	5	0	3	0	0	0	0	0	8	100%

	63%	0%	38%	0%	0%	0%	0%	0%

RIVERSIDE DR SB, BILLINGS BRIDGESC RAMP NB to DATA CENTRE RD

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2014-2018	2	n/a	1825	n/a

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*Single Vehicle (other)*	*Single vehicle (Unattended vehicle)*	*Other*	*Total*	
P.D. only	1	0	1	0	0	0	0	0	2	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	1	0	1	0	0	0	0	0	2	100%
	50%	0%	50%	0%	0%	0%	0%	0%		

RIVERSIDE DR SB, BILLINGS BRIDGESC RAMP SB to BILLINGS BRIDGE SC RA

Years	*Total # Collisions*	*24 Hr AADT Veh Volume*	*Days*	*Collisions/MEV*
2014-2018	2	n/a	1825	n/a

Classification of Accident	*Rear End*	*Turning Movement*	*Sideswipe*	*Angle*	*Approaching*	*Single Vehicle (other)*	*Single vehicle (Unattended vehicle)*	*Other*	*Total*	
P.D. only	1	0	1	0	0	0	0	0	2	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	1	0	1	0	0	0	0	0	2	100%
	50%	0%	50%	0%	0%	0%	0%	0%		

City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2014 **To:** December 31, 2018

Location: BANK ST @ BILLINGS TRANSIT

Traffic Control: Traffic signal

Total Collisions: 6

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Feb-14, Fri,18:31	Snow	Angle	P.D. only	Slush	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Municipal transit bus	Other motor vehicle	
2014-Apr-13, Sun,15:17	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Pick-up truck	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Jul-22, Tue,10:48	Clear	Rear end	Non-fatal injury	Dry	South	Slowing or stopping	Delivery van	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Jan-14, Thu,08:15	Snow	Rear end	P.D. only	Loose snow	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Pick-up truck	Other motor vehicle	
2017-Jan-04, Wed,21:00	Snow	Rear end	Non-fatal injury	Ice	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	

2018-Mar-14, Wed,16:55	Clear	SMV other	Non-fatal injury	Dry	East	Turning left	Municipal transit bus	Pedestrian	1

Location: BANK ST @ RIVERDALE AVE

Traffic Control: Traffic signal

Total Collisions: 16

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jun-17, Tue,08:00	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Cyclist	
					South	Going ahead	Bicycle	Other motor vehicle	
2014-Aug-19, Tue,09:06	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2014-Nov-20, Thu,19:00	Clear	Rear end	P.D. only	Wet	South	Going ahead	Passenger van	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Nov-21, Fri,15:38	Clear	SMV other	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Pedestrian	1
2015-Jun-17, Wed,13:01	Clear	SMV other	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Pedestrian	1
2016-Feb-17, Wed,16:48	Clear	Rear end	P.D. only	Slush	South	Slowing or stopping	Passenger van	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Aug-12, Fri,13:51	Rain	Turning movement	P.D. only	Wet	South	Turning left	Construction equipment	Other motor vehicle	

					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jun-11, Sat,06:38	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Passenger van	Other motor vehicle
					North	Going ahead	Motorcycle	Other motor vehicle
2016-Jun-09, Thu,09:08	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Passenger van	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2017-Jan-28, Sat,10:21	Snow	Sideswipe	Non-fatal injury	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Dec-08, Thu,19:15	Snow	Approaching	P.D. only	Ice	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Dec-22, Fri,19:48	Snow	Angle	P.D. only	Loose snow	West	Turning left	Passenger van	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Feb-03, Sat,22:15	Snow	Approaching	P.D. only	Loose snow	North	Slowing or stopping	Automobile, station wagon	Skidding/sliding
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Jul-17, Tue,15:55	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle

2018-Oct-15, Mon,01:21	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Nov-22, Thu,18:30	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Intercity bus	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: BANK ST @ RIVERSIDE DR N

Traffic Control: Traffic signal

Total Collisions: 102

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-03, Fri,12:24	Clear	Angle	P.D. only	Ice	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Delivery van	Other motor vehicle	
2014-Jan-29, Wed,08:24	Clear	Rear end	P.D. only	Wet	West	Turning left	Pick-up truck	Other motor vehicle	
					West	Turning left	Pick-up truck	Other motor vehicle	
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2014-Mar-02, Sun,09:35	Clear	Angle	P.D. only	Wet	North	Going ahead	Truck - closed	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	
2014-Mar-08, Sat,19:48	Clear	SMV other	P.D. only	Dry	West	Turning left	Automobile, station wagon	Pedestrian	1

2014-Mar-13, Thu,10:37	Clear	Angle	P.D. only	Wet	North	Slowing or stopping	Truck and trailer	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Mar-07, Fri,12:33	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Passenger van	Other motor vehicle
2014-Apr-19, Sat,12:23	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2014-May-20, Tue,17:31	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2014-Apr-15, Tue,16:22	Snow	Angle	P.D. only	Ice	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Jul-01, Tue,15:42	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Passenger van	Other motor vehicle
2014-Jul-07, Mon,12:30	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

2014-Aug-01, Fri,12:58	Clear	Angle	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2014-Jul-30, Wed,13:50	Clear	Angle	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Jul-19, Sat,16:31	Clear	Angle	Non-fatal injury	Dry	South	Turning right	Pick-up truck	Cyclist
					East	Going ahead	Bicycle	Other motor vehicle
2014-Dec-06, Sat,22:16	Clear	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jan-25, Sun,15:34	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2015-Jan-26, Mon,10:41	Clear	Rear end	P.D. only	Ice	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Passenger van	Other motor vehicle
2015-May-04, Mon,07:47	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Apr-23, Thu,09:41	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Truck and trailer	Other motor vehicle

					West	Turning left	Automobile, station wagon	Other motor vehicle
2015-Feb-13, Fri,17:35	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Passenger van	Other motor vehicle
2015-Jan-23, Fri,16:06	Clear	Angle	P.D. only	Dry	North	Stopped	Passenger van	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Feb-15, Sun,11:37	Clear	Angle	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Feb-01, Sun,09:06	Clear	Angle	Non-fatal injury	Wet	North	Going ahead	Passenger van	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jan-20, Tue,08:49	Clear	Angle	Non-fatal injury	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Passenger van	Other motor vehicle
2015-Jan-29, Thu,17:48	Snow	Angle	P.D. only	Loose snow	South	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2014-Dec-19, Fri,13:35	Clear	Angle	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle

2014-Dec-25, Thu,11:16	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jul-20, Mon,16:35	Clear	Rear end	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-Mar-03, Tue,12:07	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Unknown	Unknown	Other motor vehicle
2015-Sep-02, Wed,06:28	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Aug-15, Sat,14:00	Clear	Angle	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Aug-11, Tue,12:34	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle
					South	Going ahead	Passenger van	Other motor vehicle
2015-Jun-04, Thu,18:06	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle

2015-Jul-07, Tue,11:30	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2015-Jul-17, Fri,23:51	Rain	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-May-12, Tue,09:41	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Delivery van	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-May-20, Wed,15:34	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2015-Sep-15, Tue,17:32	Clear	Sideswipe	Non-fatal injury	Dry	West	Changing lanes	Motorcycle	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Sep-23, Wed,13:19	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Passenger van	Other motor vehicle
2016-Mar-06, Sun,08:55	Clear	Angle	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle

					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Feb-26, Fri,14:06	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Truck and trailer	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2016-Sep-01, Thu,11:06	Clear	Sideswipe	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2016-Sep-20, Tue,17:27	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-May-07, Thu,11:36	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Passenger van	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Nov-18, Wed,21:30	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Dec-15, Tue,14:07	Rain	Rear end	P.D. only	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Sep-04, Fri,13:30	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Passenger van	Other motor vehicle

					West	Going ahead	Motorcycle	Other motor vehicle	
2015-Dec-04, Fri,09:42	Clear	Rear end	P.D. only	Wet	South	Slowing or stopping	Pick-up truck	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	
2016-Apr-23, Sat,07:55	Clear	Angle	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Mar-16, Wed,12:10	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Sep-13, Tue,14:28	Clear	SMV other	Non-fatal injury	Dry	West	Turning left	Pick-up truck	Pedestrian	1
2016-Apr-04, Mon,12:58	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Mar-28, Mon,11:25	Rain	Angle	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Jun-09, Thu,16:15	Clear	Turning movement	Non-fatal injury	Dry	South	Turning right	Unknown	Cyclist	
					South	Going ahead	Bicycle	Other motor vehicle	

2016-Jul-29, Fri,10:11	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Aug-25, Thu,10:25	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2016-Nov-23, Wed,18:12	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Oct-04, Tue,09:10	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jan-05, Thu,09:05	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Passenger van	Other motor vehicle
2017-Jan-09, Mon,11:59	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Nov-02, Thu,23:15	Rain	Angle	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle

					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Oct-12, Thu,00:00	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Unknown	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Aug-31, Thu,15:55	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2017-Aug-30, Wed,11:35	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Motorcycle	Other motor vehicle
2017-Feb-15, Wed,17:57	Snow	Rear end	P.D. only	Loose snow	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2017-Jan-19, Thu,11:17	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Changing lanes	Automobile, station wagon	Other motor vehicle
2017-Jan-20, Fri,06:35	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Feb-28, Tue,21:04	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle

2016-Nov-20, Sun,23:44	Snow	Rear end	P.D. only	Loose snow	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2016-Dec-08, Thu,19:45	Drifting Snow	Rear end	P.D. only	Ice	South	Slowing or stopping	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-May-25, Thu,13:27	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Passenger van	Other motor vehicle
2017-May-26, Fri,13:17	Rain	Turning movement	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2017-Jul-09, Sun,15:09	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2017-Dec-03, Sun,08:27	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Passenger van	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Sep-19, Tue,10:08	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle

2017-Aug-09, Wed,07:59	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Nov-26, Sun,01:40	Rain	Angle	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-06, Sat,10:00	Clear	Rear end	P.D. only	Loose snow	West	Turning right	Automobile, station wagon	Other motor vehicle	
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Sep-11, Mon,12:02	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Dec-07, Thu,15:40	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Dec-28, Thu,23:27	Snow	Rear end	P.D. only	Ice	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Dec-24, Sun,13:58	Clear	SMV other	Non-fatal injury	Dry	West	Turning right	Pick-up truck	Pedestrian	1
2018-Mar-09, Fri,16:49	Clear	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

					West	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Mar-16, Fri,09:17	Clear	SMV other	Non-fatal injury	Dry	North	Going ahead	Municipal transit bus	Steel guide rail
2018-Mar-08, Thu,16:47	Clear	Turning movement	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2018-Mar-23, Fri,16:45	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2018-May-04, Fri,13:35	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Passenger van	Other motor vehicle
					South	Stopped	Truck - open	Other motor vehicle
2018-Apr-25, Wed,11:12	Rain	Sideswipe	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-May-29, Tue,09:03	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Truck - tank	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2018-Jun-01, Fri,12:39	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle

2018-Oct-12, Fri,14:00	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Sep-15, Sat,00:35	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Unknown	Other motor vehicle	
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Sep-09, Sun,12:09	Clear	Rear end	Non-fatal injury	Dry	West	Turning left	Pick-up truck	Other motor vehicle	
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Jul-24, Tue,13:10	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Sep-07, Fri,17:13	Clear	Turning movement	Non-fatal injury	Dry	South	Turning right	Pick-up truck	Cyclist	
					South	Going ahead	Bicycle	Other motor vehicle	
2018-Aug-19, Sun,16:18	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-02, Thu,17:38	Clear	SMV other	Non-fatal injury	Dry	West	Pulling onto shoulder or toward curb	Automobile, station wagon	Pedestrian	2
2018-Aug-01, Wed,09:00	Clear	Turning movement	Non-fatal injury	Dry	South	Turning right	Automobile, station wagon	Cyclist	

					South	Going ahead	Bicycle	Other motor vehicle
2018-Jul-17, Tue,15:07	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2018-Dec-28, Fri,23:37	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Truck and trailer	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2018-Oct-17, Wed,10:40	Clear	Turning movement	Non-fatal injury	Dry	South	Turning right	Unknown	Cyclist
					South	Going ahead	Bicycle	Other motor vehicle
2018-Nov-21, Wed,10:39	Clear	Angle	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle

Location: BANK ST @ RIVERSIDE DR S

Traffic Control: Traffic signal **Total Collisions:** 78

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Feb-11, Tue,16:33	Clear	Angle	P.D. only	Wet	East	Going ahead	Truck - tractor	Other motor vehicle	
					North	Turning right	Pick-up truck	Other motor vehicle	
2014-Feb-14, Fri,18:30	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Pick-up truck	Other motor vehicle	

2014-Feb-12, Wed,07:50	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2014-May-03, Sat,15:03	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2014-Jun-19, Thu,13:25	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Delivery van	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2014-Jun-24, Tue,23:16	Rain	Angle	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Sep-04, Thu,18:06	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Nov-13, Thu,15:20	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2014-Nov-06, Thu,06:27	Clear	Angle	P.D. only	Dry	North	Turning right	Unknown	Other motor vehicle

					East	Going ahead	Passenger van	Other motor vehicle
2014-Sep-17, Wed,16:30	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Sep-05, Fri,15:15	Clear	Other	P.D. only	Dry	North	Reversing	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2014-Oct-25, Sat,10:44	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Aug-06, Thu,20:07	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Passenger van	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Apr-22, Wed,15:50	Clear	Rear end	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Oct-03, Fri,22:47	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Feb-02, Mon,13:00	Snow	Sideswipe	P.D. only	Loose snow	East	Turning left	Passenger van	Other motor vehicle

					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Apr-29, Wed,14:42	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2015-Jun-12, Fri,17:36	Rain	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2015-Apr-20, Mon,20:05	Rain	Turning movement	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Oct-21, Tue,14:21	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Truck - dump	Other motor vehicle
2015-Jan-08, Thu,15:07	Clear	Rear end	P.D. only	Slush	North	Turning right	School bus	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2014-Sep-28, Sun,16:47	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2015-Mar-02, Mon,18:27	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle

					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Mar-17, Tue,10:15	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2015-Feb-20, Fri,18:52	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Ambulance	Other motor vehicle
					North	Stopped	Passenger van	Other motor vehicle
2015-Jul-07, Tue,14:45	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Aug-03, Mon,10:21	Clear	Angle	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Sep-28, Mon,10:35	Clear	Rear end	P.D. only	Dry	North	Turning right	Unknown	Other motor vehicle
					North	Turning right	Pick-up truck	Other motor vehicle
2015-Sep-28, Mon,10:55	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Truck - open	Other motor vehicle
2015-Jun-23, Tue,21:34	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle

					East	Stopped	Automobile, station wagon	Other motor vehicle
2016-Aug-30, Tue,17:06	Clear	Rear end	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2016-Feb-09, Tue,15:15	Clear	Sideswipe	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2016-Jan-20, Wed,15:28	Clear	Rear end	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2016-Jan-20, Wed,10:02	Clear	Angle	Non-fatal injury	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Oct-27, Thu,13:32	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Nov-02, Wed,11:27	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2015-Aug-30, Sun,01:20	Clear	SMV other	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Curb

2015-Jul-03, Fri,15:23	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jul-04, Sat,14:28	Clear	Turning movement	P.D. only	Dry	East	Turning left	Passenger van	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Dec-07, Mon,20:11	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2016-Jan-21, Thu,13:34	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jan-20, Wed,13:55	Clear	Rear end	P.D. only	Wet	East	Turning right	Passenger van	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle
2016-Jan-01, Fri,03:21	Snow	Angle	P.D. only	Loose snow	East	Going ahead	Other emergency vehicle	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jul-08, Fri,12:30	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Motorcycle	Other motor vehicle

2016-Jun-29, Wed,23:14	Clear	Angle	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Sep-24, Sat,15:44	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Dec-30, Fri,15:47	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Unknown	Automobile, station wagon	Other motor vehicle
2017-Aug-26, Sat,15:16	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2016-Dec-10, Sat,14:26	Clear	Rear end	P.D. only	Ice	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle
2016-Dec-30, Fri,13:43	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2017-Apr-15, Sat,18:28	Rain	SMV other	P.D. only	Wet	North	Going ahead	Pick-up truck	Pole (utility, power)
2017-Mar-25, Sat,09:09	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle

					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jan-04, Wed,18:09	Snow	SMV other	P.D. only	Ice	North	Slowing or stopping	Pick-up truck	Skidding/sliding
2017-Jun-24, Sat,14:28	Clear	Rear end	P.D. only	Dry	North	Turning right	Pick-up truck	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2017-Dec-14, Thu,14:26	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Truck - open	Other motor vehicle
2017-Sep-26, Tue,21:27	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Feb-01, Thu,19:09	Snow	Rear end	Non-fatal injury	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2018-Mar-15, Thu,09:38	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Turning left	Truck - closed	Other motor vehicle
2018-Mar-27, Tue,05:11	Clear	Angle	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle

2018-Feb-20, Tue,23:48	Rain	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Delivery van	Other motor vehicle
2018-Mar-20, Tue,08:35	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Pick-up truck	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2017-Sep-12, Tue,03:41	Clear	SMV other	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Curb
2018-Jan-21, Sun,01:16	Clear	Angle	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Mar-19, Mon,14:30	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Apr-16, Mon,06:04	Freezing Rain	Angle	P.D. only	Ice	East	Going ahead	Pick-up truck	Skidding/sliding
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2018-May-24, Thu,09:36	Clear	Rear end	P.D. only	Dry	North	Changing lanes	Truck - open	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2018-May-28, Mon,17:55	Clear	SMV other	Non-fatal injury	Dry	East	Going ahead	Motorcycle	Curb

2018-Jul-04, Wed,15:05	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2018-Jul-05, Thu,15:14	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2018-Jul-02, Mon,09:05	Clear	Rear end	Non-fatal injury	Dry	North	Turning right	Unknown	Other motor vehicle
					North	Turning right	Passenger van	Other motor vehicle
2018-Jun-26, Tue,13:08	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Truck - closed	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2018-Oct-23, Tue,08:15	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2018-Nov-25, Sun,12:39	Fog, mist, smoke, dust	Rear end	Non-fatal injury	Wet	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2018-Aug-26, Sun,20:13	Clear	Rear end	Non-fatal injury	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle

					North	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Aug-31, Fri,15:18	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-02, Thu,21:25	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Nov-15, Thu,14:30	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Nov-12, Mon,05:58	Snow	Rear end	P.D. only	Wet	East	Going ahead	Pick-up truck	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	

Location: BANK ST btwn RIVERDALE AVE & RIVERSIDE DR

Traffic Control: No control

Total Collisions: 5

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Mar-25, Tue,18:30	Clear	Sideswipe	P.D. only	Dry	South	Pulling away from shoulder or curb	Pick-up truck	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2016-Oct-07, Fri,13:03	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Truck - closed	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

2015-Nov-26, Thu,17:43	Clear	Sideswipe	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Oct-04, Tue,12:10	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-May-25, Thu,09:50	Clear	Sideswipe	P.D. only	Dry	North	Unknown	Unknown	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: BANK ST btwn RIVERSIDE DR & BILLINGS TRANSIT

Traffic Control: No control

Total Collisions: 19

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-15, Wed,10:58	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Feb-15, Sat,14:13	Clear	Angle	P.D. only	Wet	West	Turning left	Passenger van	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Jun-25, Wed,14:58	Clear	Angle	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	

2014-Aug-04, Mon,19:39	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Aug-07, Thu,15:59	Clear	Angle	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Nov-06, Thu,10:25	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2014-Aug-06, Wed,08:44	Clear	Turning movement	Non-fatal injury	Dry	North	Turning right	Automobile, station wagon	Cyclist	
					North	Going ahead	Bicycle	Other motor vehicle	
2015-Oct-20, Tue,10:55	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Pick-up truck	Other motor vehicle	
					North	Going ahead	Delivery van	Other motor vehicle	
2015-Feb-04, Wed,11:47	Snow	Sideswipe	P.D. only	Loose snow	North	Turning left	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Aug-21, Fri,13:59	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Oct-18, Tue,23:49	Clear	SMV other	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Pedestrian	1

2017-Aug-08, Tue,19:44	Clear	Turning movement	Non-fatal injury	Dry	North	Turning right	Automobile, station wagon	Cyclist
					North	Going ahead	Bicycle	Other motor vehicle
2017-Oct-02, Mon,15:06	Clear	Sideswipe	Non-fatal injury	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Aug-12, Sat,08:38	Clear	Angle	P.D. only	Dry	North	Making "U" turn	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2017-Jan-27, Fri,13:18	Clear	Angle	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Passenger van	Other motor vehicle
2017-Apr-20, Thu,06:00	Clear	Other	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Debris falling off vehicle
					North	Going ahead	Unknown	Other
2017-Aug-01, Tue,17:22	Clear	Turning movement	Non-fatal injury	Dry	North	Turning right	Automobile, station wagon	Cyclist
					North	Going ahead	Bicycle	Other motor vehicle
2018-Apr-06, Fri,11:38	Clear	Rear end	Non-fatal injury	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle

2018-Jun-09, Sat,13:08	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: BANK ST btwn RIVERSIDE DR & RIVERSIDE DR

Traffic Control: No control

Total Collisions: 12

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-May-01, Thu,12:15	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Passenger van	Other motor vehicle	
					North	Going ahead	Passenger van	Other motor vehicle	
2014-Aug-31, Sun,14:01	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Oct-24, Fri,11:24	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2014-Jun-27, Fri,17:43	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Apr-27, Mon,12:22	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Bus (other)	Other motor vehicle	

2015-Jul-31, Fri,16:33	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Aug-03, Wed,13:16	Clear	Turning movement	P.D. only	Dry	North	Turning left	Passenger van	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2016-Jan-22, Fri,07:35	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2016-Aug-24, Wed,15:23	Clear	Other	P.D. only	Dry	North	Going ahead	Passenger van	Pole (sign, parking meter)
					South	Stopped	Pick-up truck	Other motor vehicle
2015-Oct-19, Mon,16:12	Rain	Angle	Non-fatal injury	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Nov-07, Tue,20:20	Clear	Turning movement	P.D. only	Dry	North	Turning left	Passenger van	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Dec-08, Sat,13:23	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

Location: BILLINGS BRIDGE NB RAMP @ RIVERSIDE DR EB

Traffic Control: No control

Total Collisions: 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-May-03, Tue,13:15	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Delivery van	Other motor vehicle	
2018-Nov-27, Tue,20:09	Snow	Sideswipe	P.D. only	Wet	North	Turning left	Unknown	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: BILLINGS BRIDGESC RAMP NB @ RIVERSIDE DR EB

Traffic Control: Stop sign

Total Collisions: 11

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-31, Fri,15:38	Clear	Angle	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Aug-01, Fri,15:45	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Nov-02, Sun,18:26	Clear	Angle	Non-fatal injury	Dry	West	Turning left	Pick-up truck	Cyclist	
					North	Going ahead	Bicycle	Other motor vehicle	
2015-Feb-11, Wed,22:53	Snow	SMV other	P.D. only	Ice	East	Changing lanes	Automobile, station wagon	Skidding/sliding	

2015-Feb-17, Tue,17:44	Clear	Angle	P.D. only	Ice	North	Going ahead	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Feb-25, Wed,14:51	Clear	Angle	Non-fatal injury	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jan-22, Fri,16:16	Clear	Angle	P.D. only	Loose snow	North	Going ahead	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Mar-10, Thu,12:22	Clear	Angle	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Feb-28, Tue,18:00	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Unknown	Other motor vehicle
2017-Feb-28, Tue,18:15	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Dec-23, Sun,12:00	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle

Location: BILLINGS BRIDGESC RAMP NB @ RIVERSIDE DR WB

Traffic Control: Yield sign

Total Collisions: 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Sep-16, Tue,15:28	Clear	Angle	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	
2015-Jan-26, Mon,17:15	Clear	Angle	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Aug-23, Sat,14:50	Clear	Angle	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2015-Jan-29, Thu,10:20	Clear	Angle	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jul-25, Sat,12:29	Clear	Angle	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Jan-11, Mon,11:54	Clear	Angle	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Mar-10, Thu,14:09	Clear	Angle	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	

					South	Going ahead	Passenger van	Other motor vehicle	
2016-Nov-10, Thu,14:25	Clear	Angle	P.D. only	Dry	North	Merging	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Pick-up truck	Other motor vehicle	

Location: BILLINGS BRIDGESC RAMP SB @ RIVERSIDE DR EB

Traffic Control: Stop sign **Total Collisions:** 10

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-17, Fri,16:15	Snow	Angle	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Mar-10, Mon,16:02	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Mar-08, Sun,16:10	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Oct-11, Sun,10:01	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Mar-25, Wed,08:09	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

2015-Dec-30, Wed,14:31	Clear	Angle	Non-fatal injury	Slush	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2017-Jun-29, Thu,17:36	Rain	Angle	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Dec-21, Thu,08:49	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Passenger van	Other motor vehicle
2018-Oct-19, Fri,16:39	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Sep-24, Mon,10:38	Clear	Angle	P.D. only	Dry	South	Going ahead	Passenger van	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle

Location: BILLINGS BRIDGESC RAMP SB @ RIVERSIDE DR SB

Traffic Control: No control

Total Collisions: 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Feb-13, Fri,15:30	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	

Location: DATA CENTRE RD @ RIVERSIDE DR

Traffic Control: Traffic signal

Total Collisions: 26

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-28, Tue,06:46	Clear	Rear end	P.D. only	Ice	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Aug-18, Mon,15:47	Clear	SMV other	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Ran off road	1
2014-Sep-16, Tue,19:00	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2014-Sep-30, Tue,18:30	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2014-Sep-30, Tue,08:31	Clear	SMV other	Non-fatal injury	Dry	North	Going ahead	Motorcycle	Skidding/sliding	
2014-Oct-06, Mon,18:02	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2014-Oct-31, Fri,11:09	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Feb-19, Thu,20:28	Clear	Angle	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	

					West	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jun-24, Wed,21:00	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Pick-up truck	Other motor vehicle
2015-May-20, Wed,15:36	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Pick-up truck	Other motor vehicle
2016-Mar-19, Sat,18:11	Clear	Rear end	P.D. only	Dry	North	Turning right	Passenger van	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2016-May-21, Sat,14:58	Clear	Angle	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Feb-01, Mon,11:32	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning left	Pick-up truck	Other motor vehicle
2016-Nov-16, Wed,18:30	Clear	Rear end	Non-fatal injury	Dry	North	Turning right	Passenger van	Other motor vehicle
					North	Turning right	Pick-up truck	Other motor vehicle

2016-Apr-06, Wed,18:20	Snow	Sideswipe	P.D. only	Slush	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jan-28, Sat,14:13	Clear	Rear end	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2016-Nov-30, Wed,18:24	Rain	SMV other	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Curb
2017-Mar-14, Tue,16:10	Snow	Rear end	P.D. only	Loose snow	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2017-Feb-18, Sat,08:43	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Slowing or stopping	Pick-up truck	Other motor vehicle
2017-Aug-31, Thu,13:59	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Motorcycle	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Nov-07, Tue,17:22	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2018-Mar-13, Tue,15:31	Snow	Rear end	P.D. only	Wet	East	Slowing or stopping	Pick-up truck	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle

					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Feb-14, Wed,15:39	Clear	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-20, Tue,18:53	Rain	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-May-25, Fri,16:02	Clear	Rear end	P.D. only	Dry	East	Unknown	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Sep-21, Fri,20:20	Rain	Angle	P.D. only	Wet	East	Going ahead	Passenger van	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: RIVERSIDE DR EB @ BILLINGS BRIDGE SC SE

Traffic Control: Yield sign **Total Collisions:** 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Feb-20, Thu,12:20	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Aug-06, Wed,09:31	Clear	Other	P.D. only	Dry	West	Reversing	Truck and trailer	Other motor vehicle	

					East	Stopped	Automobile, station wagon	Other motor vehicle	

Location: RIVERSIDE DR NB btwn BANK ST & RIVERSIDE DR NB RAMP FROM EB TO WB

Traffic Control: No control **Total Collisions:** 23

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-02, Thu,10:00	Clear	Angle	P.D. only	Packed snow	North	Turning right	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Jan-07, Tue,03:29	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Construction equipment	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Mar-08, Sat,18:25	Clear	Sideswipe	Non-fatal injury	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Feb-20, Thu,08:23	Clear	Sideswipe	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Mar-05, Wed,18:22	Clear	Rear end	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2014-May-29, Thu,10:25	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	

					North	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Jun-04, Wed,21:39	Clear	Turning movement	P.D. only	Dry	North	Overtaking	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2014-Jun-12, Thu,14:40	Rain	Rear end	P.D. only	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2014-Oct-09, Thu,16:30	Rain	Sideswipe	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Jun-18, Wed,12:07	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Police vehicle	Other motor vehicle
					North	Slowing or stopping	Police vehicle	Other motor vehicle
2015-Sep-02, Wed,23:04	Clear	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jan-29, Thu,08:26	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Delivery van	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2015-Jan-27, Tue,18:50	Clear	SMV other	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Skidding/sliding

2014-Dec-23, Tue,11:30	Rain	Sideswipe	P.D. only	Wet	North	Changing lanes	Truck - closed	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Feb-11, Wed,13:43	Snow	Turning movement	P.D. only	Slush	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2014-Dec-30, Tue,13:36	Clear	Rear end	P.D. only	Dry	North	Going ahead	Passenger van	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2015-Feb-18, Wed,09:00	Clear	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Passenger van	Other motor vehicle
2015-Jul-14, Tue,20:47	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2015-Dec-30, Wed,17:18	Snow	Sideswipe	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-May-24, Tue,20:54	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Mar-17, Thu,14:18	Rain	Sideswipe	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle

					North	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Apr-10, Tue,18:00	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Aug-12, Sun,11:43	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle

Location: RIVERSIDE DR NB btwn BILLINGS BRIDGE SC RAMP NB & BILLINGS BRIDGE SC R

Traffic Control: No control

Total Collisions: 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-10, Sat,22:58	Clear	SMV other	P.D. only	Other	North	Going ahead	Automobile, station wagon	Skidding/sliding	
2016-Jun-07, Tue,14:34	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Pick-up truck	Other motor vehicle	

Location: RIVERSIDE DR NB btwn BILLINGS BRIDGE SC RAMP SB & BANK ST

Traffic Control: No control

Total Collisions: 5

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Oct-17, Fri,05:30	Rain	SMV other	P.D. only	Wet	North	Going ahead	Passenger van	Curb	
2015-Feb-08, Sun,11:30	Snow	Rear end	P.D. only	Packed snow	North	Changing lanes	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Pick-up truck	Other motor vehicle	

2016-Jan-06, Wed,14:39	Clear	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jun-22, Thu,22:30	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-18, Sat,22:29	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Unknown	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: RIVERSIDE DR NB btwn BILLINGS BRIDGE SC RAMP SB & BILLINGS BRIDGE SC R

Traffic Control: No control

Total Collisions: 5

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Feb-02, Tue,14:27	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle	
					East	Going ahead	Tow truck	Other motor vehicle	
2015-Dec-10, Thu,18:47	Clear	Sideswipe	P.D. only	Dry	North	Unknown	Unknown	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-15, Thu,08:51	Freezing Rain	Sideswipe	P.D. only	Ice	North	Slowing or stopping	Automobile, station wagon	Skidding/sliding	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jun-05, Tue,16:19	Rain	Sideswipe	P.D. only	Wet	North	Changing lanes	Passenger van	Other motor vehicle	

					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Oct-07, Sun,13:47	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: RIVERSIDE DR NB btwn DATA CENTRE RD & BILLINGS BRIDGESC RAMP NB

Traffic Control: No control **Total Collisions:** 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Apr-01, Tue,08:15	Clear	SMV other	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Curb	
2014-Jul-13, Sun,21:57	Clear	SMV other	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Curb	
2016-Mar-23, Wed,11:19	Clear	Rear end	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	
					East	Going ahead	Pick-up truck	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other	
2018-Jul-24, Tue,16:05	Rain	Angle	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: RIVERSIDE DR NB btwn RIVERSIDE DR NB RAMP FROM EB TO WB & NEIL WAY

Traffic Control: No control **Total Collisions:** 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped

2014-Feb-11, Tue,13:00	Clear	Sideswipe	P.D. only	Ice	North	Going ahead	Pick-up truck	Skidding/sliding
					North	Going ahead	Truck - closed	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Skidding/sliding
2015-Aug-18, Tue,16:23	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Dec-09, Sat,16:57	Snow	Rear end	P.D. only	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle

Location: RIVERSIDE DR SB btwn BANK ST & BILLINGS BRIDGE NB RAMP

Traffic Control: No control

Total Collisions: 6

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Mar-11, Wed,10:30	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2014-Oct-16, Thu,18:19	Rain	Angle	Non-fatal injury	Wet	West	Turning left	Passenger van	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jan-21, Wed,10:33	Clear	Other	P.D. only	Dry	West	Turning left	Truck - closed	Pole (utility, power)	

					South	Going ahead	Passenger van	Other
2015-Apr-26, Sun,13:41	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jan-25, Mon,10:53	Clear	Turning movement	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jun-26, Sun,09:55	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle

Location: RIVERSIDE DR SB btwn BILLINGS BRIDGE NB RAMP & NEIL WAY

Traffic Control: No control **Total Collisions:** 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Jun-21, Tue,11:44	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Mar-14, Wed,12:22	Snow	Sideswipe	Non-fatal injury	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: RIVERSIDE DR SB btwn BILLINGS BRIDGE SC RAMP SB & BANK ST

Traffic Control: No control

Total Collisions: 9

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Feb-03, Mon,13:03	Clear	Rear end	Non-fatal injury	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
2014-May-27, Tue,14:35	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2014-Jul-02, Wed,17:28	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	
2014-Dec-10, Wed,22:01	Snow	SMV other	P.D. only	Loose snow	South	Going ahead	Automobile, station wagon	Curb	
2015-Mar-09, Mon,11:35	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Slowing or stopping	Pick-up truck	Other motor vehicle	
2015-Aug-14, Fri,12:57	Clear	Rear end	P.D. only	Wet	South	Going ahead	Passenger van	Other motor vehicle	
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

2017-Oct-12, Thu,07:11	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Curb	
2018-Apr-30, Mon,12:30	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-02, Thu,17:19	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Going ahead	Truck - tractor	Other motor vehicle	

Location: RIVERSIDE DR SB btwn BILLINGS BRIDGESC RAMP NB & DATA CENTRE RD

Traffic Control: No control

Total Collisions: 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Aug-31, Sun,05:51	Clear	SMV other	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Curb	
2015-May-06, Wed,15:29	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2015-Sep-26, Sat,18:21	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	

Location: RIVERSIDE DR SB btwn BILLINGS BRIDGESC RAMP SB & BILLINGS BRIDGE SC RA

Traffic Control: No control

Total Collisions: 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped

2015-Nov-03, Tue,11:40	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Passenger van	Other motor vehicle
2018-May-22, Tue,18:46	Rain	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

Appendix E

BANK STREET RENEWAL FUNCTIONAL DESIGN PLAN

BANK STREET RECONSTRUCTION
RIVERSIDE DRIVE TO
LEDBURY AVENUE

GEOMETRY & GENERAL LAYOUT
BANK STREET
STA. 9+925 TO STA. 10+225

C. Duclos, P. Eng.	R. Tubb, P. Eng.
Acting Director Infrastructure Projects	Senior Engineer Infrastructure Services

Robinson Consultants

Ottawa

Contract No.	Dwg. No.
CP000308	G 01

Sheet - of -

Asset No. ----------

Asset Group ----

Des.	Chk'd.
R.V. / I.M.	K.L / R.C.
Dwn.	Chk'd.
R.V. / I.M.	K.L / R.C.
Utility Circ. No. -------	Index No. -------

Const. Inspector ----------

Scale: HORIZONTAL 0m 5 10
0m 1 2
VERTICAL

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.

REVISIONS

No.	Description	By	Date (dd/mm/yy)
1.	ISSUED FOR 30% DESIGN	K.L.	31.01.20
2.	UPDATED 30% DESIGN	K.L.	31.03.20
3.	90% PRELIMINARY DESIGN	K.L.	15.12.20
4.	ISSUED FOR 100% PRELIMINARY DESIGN	K.L.	26.03.21

NOT FOR CONSTRUCTION

GENERAL DESIGN FEATURES:

1. DESIGN DEVELOPED IN ACCORDANCE WITH PARAMETERS OUTLINED IN CP000308 BANK STREET RECONSTRUCTION DESIGN CRITERIA TABLE (REV. 4, OCTOBER 2019)
2. MEDIAN WIDTH VARIES (MIN. 1.5m), TRAVERSABLE WHERE NOTED
3. 1.2m 2.0m BOULEVARD, NARROWED TO 0.5m WHERE REQUIRED. MINIMUM 1.0m BOULEVARD PROVIDED AT ALL BI-DIRECTIONAL CYCLING LOCATIONS
4. 2.0m UNIDIRECTIONAL CYCLE TRACKS, NARROWING TO 1.5m AT ALL INTERSECTION CROSSINGS. LOCALIZED NARROWING TO 1.8m OR 1.5m AS REQUIRED. 3.0m BI-DIRECTIONAL CYCLE TRACKS IN LOCALIZED AREAS AS NOTED
5. 0.2m TACTILE DEMARCATION STRIP AS REQUIRED BETWEEN CYCLE TRACK AND SIDEWALK. INCREASED TO 0.6m WHERE ALIGNMENT SHIFTS.
6. 2.0m CONCRETE SIDEWALK, NARROWING TO 1.8m IN LOCALIZED AREAS AS REQUIRED
7. 1.0m TO 1.5m SEPERATION BETWEEN ALL CYCLE AND PEDESTRIAN CROSSINGS AT SIGNALIZED INTERSECTIONS
8. LOCAL STREET THROAT NARROWING TO 7.0m WHERE APPLICABLE
9. 2.0m LANDSCAPE BOULEVARD BETWEEN CYCLE TRACK AND SIDEWALK, WHERE APPLICABLE
10. EXTERIOR TRAVERSABLE APRONS WHERE NOTED TO PROVIDE LARGE VEHICLE ACCOMODATIONS

Appendix F

TDM CHECKLISTS

TDM-Supportive Development Design and Infrastructure Checklist: *Residential Developments (multi-family or condominium)*

Legend

REQUIRED	The Official Plan or Zoning By-law provides related guidance that must be followed
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance

		TDM-supportive design & infrastructure measures: ***Residential developments***	Check if completed & add descriptions, explanations or plan/drawing references
	1.	WALKING & CYCLING: ROUTES	
	1.1	Building location & access points	
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	☑
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☑
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☑
	1.2	Facilities for walking & cycling	
REQUIRED	1.2.1	Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations *(see Official Plan policy 4.3.3)*	☑
REQUIRED	1.2.2	Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible *(see Official Plan policy 4.3.12)*	☑

TDM-supportive design & infrastructure measures: ***Residential developments***			Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3	Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks *(see Official Plan policy 4.3.10)*	☑
REQUIRED	1.2.4	Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps *(see Official Plan policy 4.3.10)*	☑
REQUIRED	1.2.5	Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians *(see Official Plan policy 4.3.11)*	☑
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	☑
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	☑
BASIC	1.2.8	Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	☑
	1.3	Amenities for walking & cycling	
BASIC	1.3.1	Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	☑
BASIC	1.3.2	Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	☑

		TDM-supportive design & infrastructure measures: ***Residential developments***	Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)*	☑
REQUIRED	2.1.2	Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas *(see Zoning By-law Section 111)*	☑
REQUIRED	2.1.3	Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored *(see Zoning By-law Section 111)*	☑
BASIC	2.1.4	Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists	☑
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers *(see Zoning By-law Section 111)*	☑
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	☐
	2.3	**Bicycle repair station**	
BETTER	2.3.1	Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	☑
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☑
BASIC	3.1.2	Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	☑
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐

		TDM-supportive design & infrastructure measures: ***Residential developments***	Check if completed & add descriptions, explanations or plan/drawing references
	4.	**RIDESHARING**	
	4.1	**Pick-up & drop-off facilities**	
BASIC	4.1.1	Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	☑
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses *(see Zoning By-law Section 94)*	☑
	5.2	**Bikeshare station location**	
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☑
	6.	**PARKING**	
	6.1	**Number of parking spaces**	
REQUIRED	6.1.1	Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	☑
BASIC	6.1.2	Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	☑
BASIC	6.1.3	Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly *(see Zoning By-law Section 104)*	☑
BETTER	6.1.4	Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking *(see Zoning By-law Section 111)*	☐
	6.2	**Separate long-term & short-term parking areas**	
BETTER	6.2.1	Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa)	☑

TDM Measures Checklist:
Residential Developments (multi-family, condominium or subdivision)

Legend

BASIC — The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER — The measure could maximize support for users of sustainable modes, and optimize development performance

★ — The measure is one of the most dependably effective tools to encourage the use of sustainable modes

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

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

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

Appendix G

SIGHT LINE AND TRUCK TURNING MOVEMENT DRAWINGS

Appendix H

MMLOS ANALYSIS

Multi-Modal Level of Service - Segments Form

Consultant	Parsons	Project	477450-01000
Scenario	Existing and Future	Date	16-Feb-21
Comments			

SEGMENTS		Street A	Bank St (existing)	Riverside Dr EB	Riverside Dr WB	Bank St (future)
			1	2	3	4
Pedestrian	Sidewalk Width Boulevard Width	-	1.8 m < 0.5 m	no sidewalk n/a	1.8 m < 0.5 m	≥ 2 m > 2 m
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000	> 3000	> 3000
	Operating Speed On-Street Parking		> 30 to 50 km/h no	> 50 to 60 km/h no	> 50 to 60 km/h no	> 30 to 50 km/h yes
	Exposure to Traffic PLoS		D	F	F	B
	Effective Sidewalk Width					
	Pedestrian Volume					
	Crowding PLoS		-	-	-	-
	Level of Service		-	-	-	-
Bicycle	Type of Cycling Facility	F	Mixed Traffic	Mixed Traffic	Physically Separated	Physically Separated
	Number of Travel Lanes		4-5 lanes total	2-3 lanes total		
	Operating Speed		>40 to <50 km/h	≥ 60 km/h		
	# of Lanes & Operating Speed LoS		E	F	-	-
	Bike Lane (+ Parking Lane) Width					
	Bike Lane Width LoS		-	-	-	-
	Bike Lane Blockages					
	Blockage LoS		-	-	-	-
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge		
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes		
	Sidestreet Operating Speed		≤ 40 km/h	≤ 40 km/h		
	Unsignalized Crossing - Lowest LoS		A	A	~~A~~	~~A~~
	Level of Service		E	F	A	A
Transit	Facility Type	D	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8
	Level of Service		D	D	D	D
Truck	Truck Lane Width	A	> 3.7 m	≤ 3.5 m	> 3.7 m	> 3.7 m
	Travel Lanes per Direction		> 1	> 1	> 1	> 1
	Level of Service		A	A	A	A

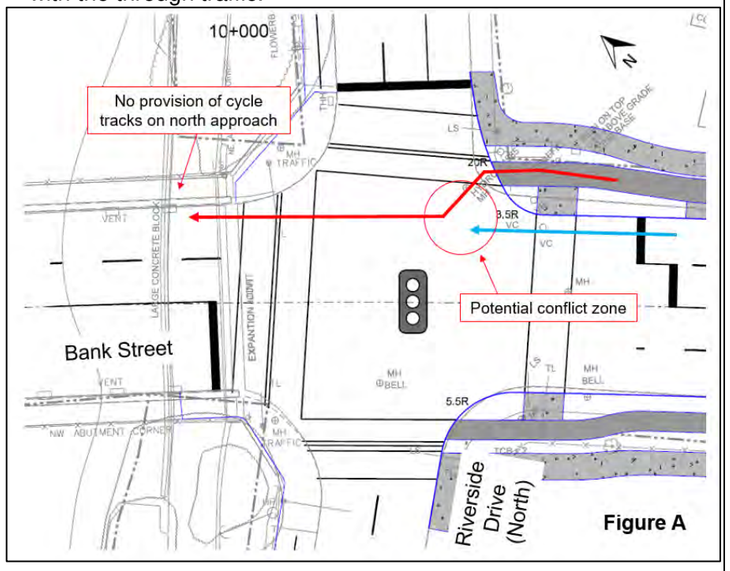
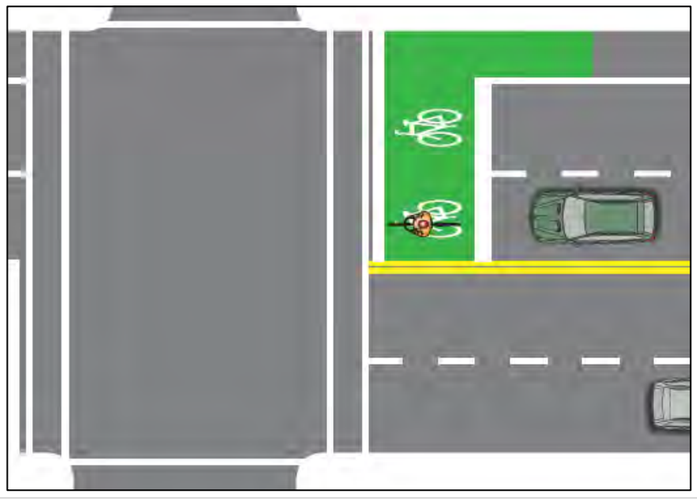
Multi-Modal Level of Service - Intersections Form

Consultant	**Parsons**	**Project**	**477450-01000**
Scenario	**Existing and Future**	**Date**	**23-Sep-21**
Comments			

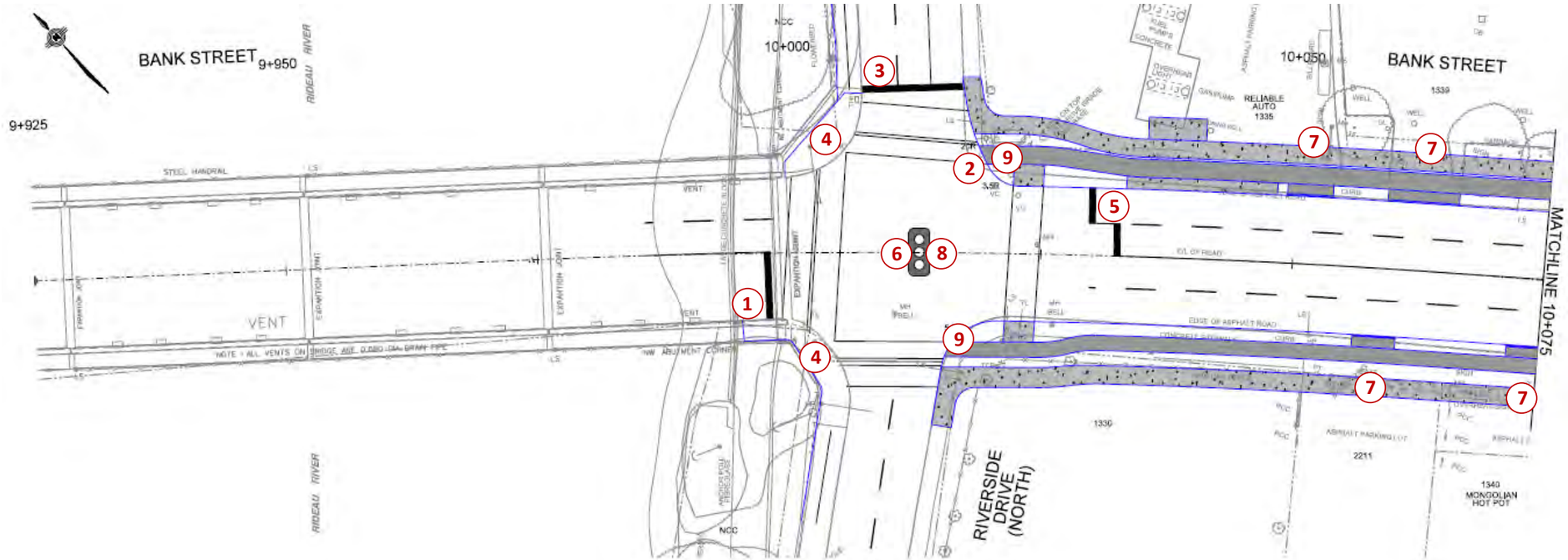
	INTERSECTIONS	Bank / Riverside EB				Bank / Riverside WB			
	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	4	6	3	4	4	4	3	0 - 2
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m
	Conflicting Left Turns	Permissive	No left turn / Prohib.	No left turn / Prohib.	No left turn / Prohib.	No left turn / Prohib.	Permissive	No left turn / Prohib.	No left turn / Prohib.
	Conflicting Right Turns	No right turn	Permissive or yield control	Permissive or yield control	No right turn	Permissive or yield control	No right turn	No right turn	Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR prohibited	RTOR allowed	RTOR prohibited	RTOR allowed	RTOR prohibited	RTOR prohibited	RTOR allowed	RTOR prohibited
	Ped Signal Leading Interval?	No	No	No	No	No	No	No	No
	Right Turn Channel	No Right Turn	Conventional with Receiving Lane	Conv'tl without Receiving Lane	No Right Turn	No Channel	No Right Turn	No Right Turn	No Channel
	Corner Radius	No Right Turn	15-25m	15-25m	No Right Turn	5-10m	No Right Turn	No Right Turn	5-10m
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings
	PETSI Score	**71**	**27**	**83**	**76**	**65**	**71**	**93**	**97**
	Ped. Exposure to Traffic LoS	**C**	**F**	**B**	**B**	**C**	**C**	**A**	**A**
	Cycle Length								
	Effective Walk Time								
	Average Pedestrian Delay								
	Pedestrian Delay LoS	-	-	-	-	-	-	-	-
	Level of Service	**C**	**F**	**B**	**B**	**C**	**C**	**A**	**A**
		F				**C**			
	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Pocket Bike Lane		Curb Bike Lane, Cycletrack or MUP	Mixed Traffic		Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP
	Right Turn Lane Configuration	≤ 50 m	Bike lane shifts to the left of right turn		Not Applicable	> 50 m		Not Applicable	Not Applicable
	Right Turning Speed	≤ 25 km/h	≤ 25 km/h		Not Applicable	≤ 25 km/h		Not Applicable	Not Applicable
	Cyclist relative to RT motorists	**D**	**D**	**-**	**Not Applicable**	**F**	**-**	**Not Applicable**	**Not Applicable**
	Separated or Mixed Traffic	**Mixed Traffic**	**Separated**	**-**	**Separated**	**Mixed Traffic**	**-**	**Separated**	**Separated**
	Left Turn Approach				Other LT config		One lane crossed	Other LT config	Other LT config
	Operating Speed				≥ 60 km/h		> 40 to ≤ 50 km/h	≥ 60 km/h	≥ 60 km/h
	Left Turning Cyclist	-	-	-	**F**	-	**D**	**F**	**F**
	Level of Service	**-**	**-**	**-**	**F**	**-**	**-**	**F**	**F**
		F				**F**			
Transit	Average Signal Delay	≤ 30 sec	≤ 30 sec			≤ 30 sec	≤ 20 sec		
	Level of Service	**D**	**D**	**-**	**-**	**D**	**C**	**-**	**-**
		D				**D**			
Truck	Effective Corner Radius		> 15 m		> 15 m	< 10 m		< 10 m	
	Number of Receiving Lanes on Departure from Intersection		≥ 2		≥ 2	≥ 2		≥ 2	
	Level of Service	**-**	**A**	**-**	**A**	**D**	**-**	**D**	**-**
		A				**D**			
Auto	Volume to Capacity Ratio	0.91 - 1.00				0.91 - 1.00			
	Level of Service	**E**				**E**			

Appendix I

BANK STREET SAFETY AUDIT

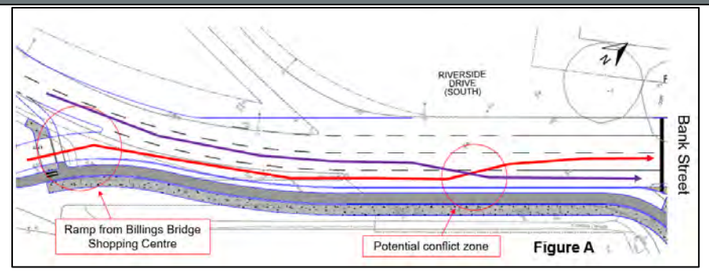
Bank Street STA. 9+925 TO STA. 10+075		
Issues Identified	**Possible Countermeasures**	**Client Response**
1. SB right-turn sight line issues resulting from bridge abutments/concrete barrier and skewed alignment of the WB approach. May result in right-turn crossing collisions. Could also result in pedestrian and cyclist conflicts/collisions, when a SB motorist is focussed on searching for a gap in the WB traffic, they may not look to ensure the north or west crosswalks are clear. There are high pedestrian and cyclist volumes at this location due to land use and proximity to the river pathway system.	• Retain SB right-turn on red prohibition. • Replace concrete barrier with a barrier that is transparent	VB: the consultant is considering realigning the Southbound right turn.
2. Eastside cycle track terminating at the south approach of the intersection. Northbound cyclists intending to travel westbound may use the crossride. However, the northbound cyclists intending to travel further north may not use the crossride and leave the track and swerve through the intersection during green interval conflicting with the through traffic. 	• Consider reviewing and modifying the design to address this issue. A potential solution is to transition the cycle track through the intersection (Figure 4.86 OTM Book 18) in combination with a bike box (Figure 4.50 OTM Book 18) between the crosswalk and the stop bar for cyclists to wait ahead of queuing traffic during red signal indication before proceeding ahead of motorists on the green indication to go straight (left-turns are not permitted at this location). Another option can be to transition the cycle track through the intersection as a conventional bike lane. 	VB: Bike box should only be located in front of curbside lane, so as not to encourage cyclist left turns, as they are not permitted. EP: Concerned about how cyclists will navigate this bike box transition if they arrive on a green signal.
3. WB right-turn sight lines, for similar reasons to above. Driver workload is high, due to the high traffic, pedestrian and cyclist volumes.	• Consider shifting intersection south to accommodate better sight lines. • Consider WB right-turn on red prohibition. • Consider LPI and LBI	Noted and to be further reviewed in later design phases.
4. North side pedestrian and cyclist staging area is small. Mixing zone with cyclists and pedestrians can result in conflicts involving cyclists, pedestrians and motorists if cyclists or pedestrians chose to use the road to get around other sidewalk users.	• Confirm adequate sidewalk space for accessibility. • Expand sidewalk area	Noted and to be further reviewed in later design phases.

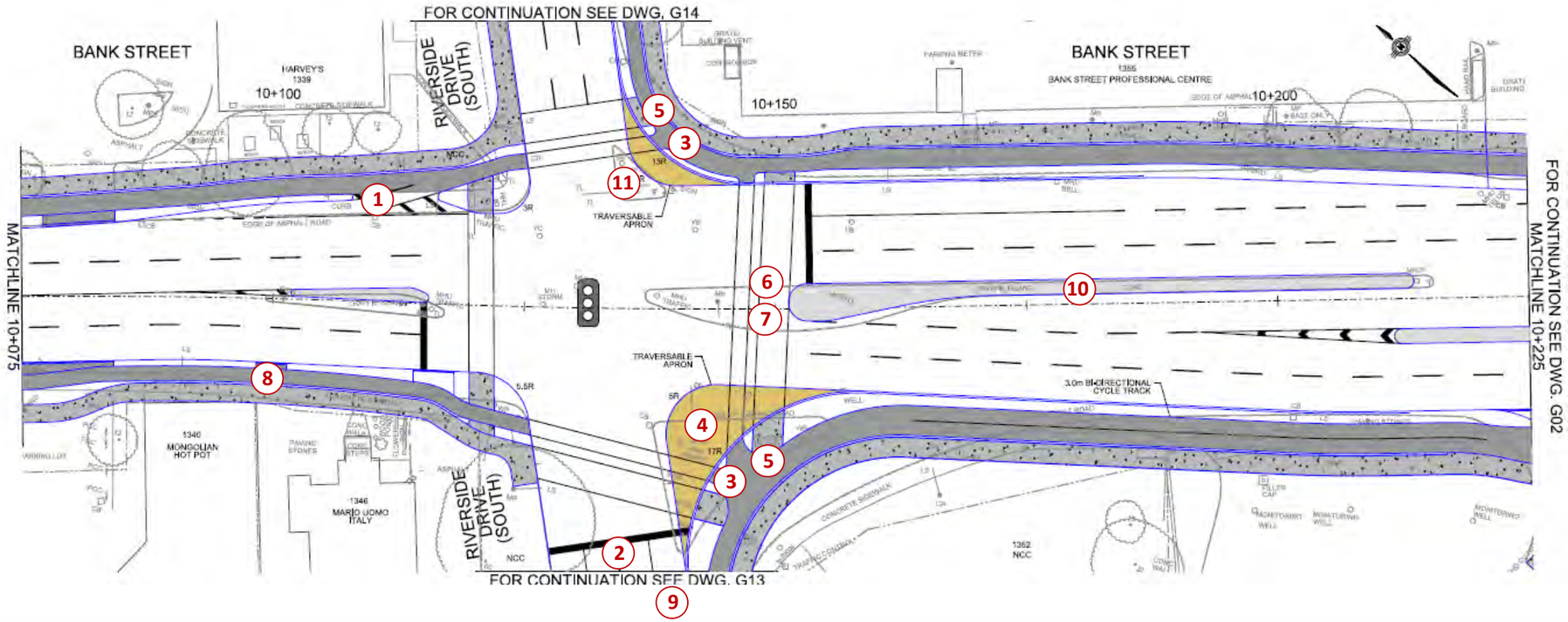
Bank Street STA. 9+925 TO STA. 10+075		
Issues Identified	**Possible Countermeasures**	**Client Response**
5. Potential for erroneous NB right-turn (one-way WB).	• Additional cues to one-way status: o right-turn prohibition signage o Straight ahead arrow signal lenses o Straight ahead pavement markings	VB: Tight radius at one-ways where there are no turns. Already looks fairly tight though.
6. High angle collision location – confirm w/ City Road Safety Group.	If driveways consolidated and/or median installed, it may be possible to install a red-light camera at a location that was previously unavailable due to space constraints.	Noted and to be further reviewed in later design phases.
7. Driveways disorganized, spacing and proximity to intersections contributes to potential for increased left-turn conflicts (CP)	Consider Access Management	Noted and to be further reviewed in later design phases.
8.		JM: Traffic Signals Group will reserve comment until updated design is provided. Note that LPI and LBI should be evaluated before being considered at this location. KL: The Design is currently on hold as a result of AODA guidance/standards coming from the City. Therefore, this will have to be reviewed later in the design process.
9. CP: Concerns about cycling safety on the SB approach to the Bank @ Riverside intersection are not addressed in this design and may potentially become worse with the presence of a cycle track south of the intersection.		AC: cannot install a SB crossride as there are no cycling facilities to begin from. NB is the same, except with lack of receiving facilities. suggested alternative for SB is sharrows from appropriate SB curb side position leading to the CT.



Bank Street STA. 10+075 TO STA. 10+225		
Issues Identified	**Possible Countermeasures**	**Client Response**
1. NE quadrant, there appears to be a ramp off the cycle track onto the road. This can result in conflict/collisions between cyclists and motor vehicles and is not required due to the continuous cycle track.	• Remove the ramp. • Coordinate with countermeasure discussion for Issue 2, in the previous section (9+925 to 10+075)	VB: the cycle track off ramp could be accommodated with the possible intersection possible treatments at Riverside N, please review. AC: This transition is awkward and offers too many options. employ a similar merge into a bike pocket and box at Riverside N EP: The northbound cycling merge lane shown in the functional design just north of Riverside Drive South was proposed to provide an option to merge into mixed traffic prior to the Riverside Drive North intersection - even if a cyclist was going to arrive on a green signal. If this northbound cycling merge lane is removed (per Issue #1 on page 10 of the Bank Street Safety Audit), consider transitioning the northbound cycle track to a narrow northbound on-road bike lane prior the Riverside Drive north intersection. This may make the further transition during a green light to a wide shared lane on the bridge more intuitive.
2. EB lane arrangement through the intersection allows for 3 through lanes. Currently there is an exclusive right-turn lane and right turn channel on the approach to the intersection, which allows for free flow right turns. The change in this arrangement may introduce significant right-turn delays, which may result the Traffic Signals group to consider modifications to the signal phasing. If there is a requirement for an exclusive right-turn lane and/or phase, then the EB exit lane arrangement should be modified, with the benefit of reducing the crossing distance.	Consider signal phasing before finalizing the geometric design for this intersection. • Consider that making the curb lane a shared through & right-turn lane will reduce the existing weaving issue on the EB approach to the intersection. • If long delays to right-turn motor vehicles, then weaving will continue regardless of the lane configuration. Note recommendation 10 below.	VB: If the Eastbound Through and right lane is turned into an eastbound right lane, then the acceleration lane on the far side should be removed. Review Synchro before proceeding with any changes. EP: Regarding Issue #2 of the Bank Street Road Safety Audit: a. A possible countermeasure suggested is to make the curb eastbound lane a shared through and right-turn lane. However, it is already a shared through and right-turn lane in the design. b. The number of eastbound right-turn vehicles is relatively low, and extensive delays or requirements for an exclusive right-turn phase are not anticipated (although this should be confirmed with Synchro).
3. The removal of the right-turn channels can cause temporary confusion for motorists, and will likely result in some motorists driving on the cycle track and sidewalk either out of confusion or frustration due to increased delays.	• Educational signage, or temporary flex posts can be installed to help with the transition/discourage sidewalk driving. • Consider awareness campaigns.	VB: Consider smart channel for northbound right-turn (replacing SE truck apron). EP: Regarding Issue #3 of the Bank Street Road Safety Audit, the likelihood of vehicles driving on the cycle track or sidewalk does not seem “likely” given that there are long cycle tracks on both the eastbound and northbound approaches to the intersection and therefore mixed-traffic to cycle track transitions (that could be confused with right-turn channels) do not occur close to the intersection like at the Donald Street and St. Laurent Boulevard intersection.
4. SW truck apron is very large, if right-turn on red is allowed, this apron is likely to be used by vehicles waiting to turn because they would not be traveling fast, and they will want to cut the corner to avoid encroaching on the other lane when they make the turn. Note that approach is skewed to less than 90 degrees which means turns will be slower and tighter, but also means that you can relax the radius a little, to make it easier for drivers to navigate.	• Relax radius slightly to make it easier for drivers to navigate greater than 90 degree turn. • Prohibit RTOR • Consider general comment on truck aprons.	JM: We recommend smart channel for the EBRT movement to reduce the ped crossing length and eliminate the truck apron issues. This also eliminates RT vehicles competing with ST bikes for green time. VB: Consider replacing SW truck apron with a smart channel, it would accommodate the turns without a large truck apron. CP: The transversable apron on the SW corner is unlikely to be followed by smaller vehicles because of the skew of the intersection (most people wouldn't drive this far east into the intersection when turning south). Consider whether a larger radius on the "inside" (small radius) part of the truck apron would be more appropriate (we might get better compliance of the truck apron if it follows a more natural vehicle path). EP: Given the existing intersection lane arrangement (I.e. no eastbound smart channel). a: Slightly decrease the radius of the southwest corner, but increase the radius of the southwest truck apron (per Issue #4 of the Bank Street Safety Audit) EP: Given an intersection design with an eastbound smart channel:

Bank Street STA. 10+075 TO STA. 10+225		
Issues Identified	**Possible Countermeasures**	**Client Response**
		a. Providing an eastbound smart channel without also modifying the Shopping Centre exit ramp re-introduces the existing eastbound weave condition. b. Providing an eastbound smart channel reduces the proposed eastbound through capacity. Synchro analysis is required to confirm acceptable operations given this change from the functional design. c. Reduce the number of eastbound receiving lanes from 2 to 3.
5. Ped/bike mixing zones – ped/bike conflicts CP: Potential for conflicts in bi-directional bikes in the curve	sidewalk and cycle track intersections should be properly marked with "cyclists yield to pedestrians signs or pavement markings. Bike and ped stencils to help delineate their respective spaces are also recommended.	CP: Need to clearly mark the end of the bidirectional facility AC: agreed to the points above here, the transition to bidirectional needs to be as clear as possible, and also the direction that the NB cyclists must make (NB RT). The geometry suggests that these critical movements and adjustments will happen right where the ped access/crossing of the CT to the south leg crosswalk EP: Bidirectional cycle track is not recommended between 10+150 and 10+250.
6. S Leg – Long crossing distance for pedestrians and cyclists.	South leg median island – can the island be extended beyond the crosswalk and crossride? This refuge is often cited by pedestrians as providing comfort, especially for people who have mobility challenges and might not be able to cross the entire street at once. If not entirely possible, consider just the crosswalk.	VB: Agreed to extend the south leg median island if turning movements can still be accommodated.
7. South leg crosswalk and cross ride – given the skew of the intersection, consider that pedestrians and cyclists may cross north of the designated crossing area. This kind of disorganized crossing may be an issue if right-turn on red is allowed.	Prohibit right-turn on red	VB: if a channel is considered, then prohibiting a right-turn on red would not be possible unless the turn is signalized. Traffic impact should be reviewed on Synchro if right turn on red is considered. CP: Is this the best alignment for the crosswalks and crossrides here? Have you considered removing skew for the west crosswalk and pushing the south crosswalk further south? I'm not sure whether these ideas would be beneficial, but it might make the geometry simpler for pedestrians and cyclists.
8. As with previous section, the driveway configuration is an issue. In particular: a. Driveway at NW corner of Riverside Drive South intersection (servicing 1346 Bank Street) is particularly close to the intersection. Good that it only serves inbound vehicles, and that intersection only allows for through movements (no turning). b. Driveway also servicing 1346 Bank Street exiting vehicles has inadequate sightlines that will cause pedestrian-vehicle as well as vehicle-vehicle conflicts/collisions.	Consider Access Management	VB: Access management for driveway at NW corner of Riverside Drive South intersection (servicing 1346 Bank Street) will be redeveloped.
9. EB weave between the Shopping Centre exit ramp and the EB Riverside traffic results in sideswipe and rear end conflicts and collisions.	Consider closing the ramp and redirecting mall traffic to exit at one of the other access points.	VB: The ramp from Billings Bridge Shopping Center (as depicted in Figure A) should considered to be removed. The right-turn out of mall that currently using the ramp should be directed to the existing inbound access. This would reduce speeds of RT vehicles existing mall. EP: Regarding Issue #9 of the Bank Street Road Safety Audit: a. Note that the Shopping Centre exit ramps joins Riverside Drive eastbound much sooner than under existing conditions. This, combined with the eastbound through-right lane at Bank Street, greatly lengthens the weave for vehicles exiting the Shopping Centre. b. If the Shopping Centre exit ramp is moved even further west, adjacent to the inbound Shopping Centre access (as discussed during the April 30th meeting),

Bank Street STA. 10+075 TO STA. 10+225		
Issues Identified	**Possible Countermeasures**	**Client Response**
		suggest that it be angled as a “smart channel” to avoid any potential confusion that may arise if it were to be located directly opposite the southbound left-turn of the Riverside Drive westbound to eastbound ramp.
10. Pedestrian jaywalking		JM: We also strongly recommend a chain link fence (similar to Carlingwood S.C) be installed to discourage pedestrian crossings at this location.
11. CP: This radius seems large considering that there are 3 lanes to turn in to. (SE radius)	Reduce radius	Consider reducing the radius.



Appendix J

BANK-STREET CROSS-SECTION OPTIONS

PARSONS

1223 Michael Street North, Suite 100 | Ottawa, ON K1J 7T2
P: +1 613.738.4160 | F: +1 613.739.7105 | www.parsons.com

Memorandum

To: Christine McCuaig, RPP MCIP M.Pl (Lloyd Phillips)
Date: 29 May 2020
From: Mark Baker, P.Eng. (Parosns)
Project: 477450
Subject: Bank Street (Riverside) Cross-Sections

As part of on-going work for two adjacent development sites near Riverside Drive, namely 1335-1339 Bank on the EAST and 1330-1346 Bank on the WEST, street cross-sections were developed by Parsons illustrating the various components within the existing and proposed right-of-way (ROW). It is noted that:

- the existing ROW within this segment of Bank Street ranges between 20 and 30m, whereas the protected ROW is 37.5m;
- there are unique constraints for both development parcels that limit the ability to fully grant the City's requested width from centreline (18.75m); and
- there is an on-going detailed design assignment by the City referred to as the Bank Street Renewal Project. https://ottawa.ca/en/city-hall/public-engagement/projects/bank-street-renewal-riverside-drive-north-ledbury-avenue [ottawa.ca]

For the dimensions indicated for the proposed cross-section elements (i.e., widths of vehicle lanes, cycle track, sidewalks, etc.), the starting point for reference was the recent update to the arterial road design guidelines: https://ottawa.ca/en/regional-road-corridor-design-guidelines-and-arterial-road-cross-sections [ottawa.ca]. Some of these elements, including the width of the buffer, cycle track and boulevard, were refined based on a meeting with City technical staff dated 26 February 2020, including the PM for the aforementioned Bank Street Renewal Project, that focussed on 1330-1346 Bank on the WEST. The key elements agreed to by City staff at the time were as follows:

- 0.75m (from centreline) for median
- 3.5m inner lane
- 3.5m curb lane
- 1.2m buffer
- 2.0m cycle track
- 3.0m landscaped boulevard
- minimum of 2.0m sidewalk (min 2.5m to building face)
- 0.5m transition space (to be added to the sidewalk)

Note that the City of Ottawa have indicated that a centre median is required for this segment of Bank Street. The rationale for the centre median: it provides the most effective means to physically restrict the left-turn movements to/from the proposed site driveway on the WEST side; contributes to reduced vehicle speeds; provides space for additional roadway lighting, as well as space for supplemental signage and traffic signal poles for driver guidance.

Regarding 1335-1339 Bank on the EAST, these same City-endorsed elements were used to develop candidate cross-sections in support of this development site. Street cross-sections were developed at three locations, namely Section A at the north end, Section B in the middle, and Section 3 at the south end. Distances from centreline of 13,75m (E1) and 15.25m (E2) were proposed. The various cross-sections are intended to demonstrate how the resulting sidewalk and landscaping space between the edge of the cycle track and building face could be programmed. The wider 15.25m option provides the opportunity for enhanced landscaping treatments throughout, superior transit amenities, and short on-street parking lane (2.5m) area mid-block (Section B). Note that preliminary discussions with OC Transpo support the movement of the existing northbound bus stop southerly to within Section C.

The package of existing and candidate street cross-sections is attached.

Existing (20.0m ROW)

Bank Street Right-of-Way Looking South

Section A: South of Riverside Westbound

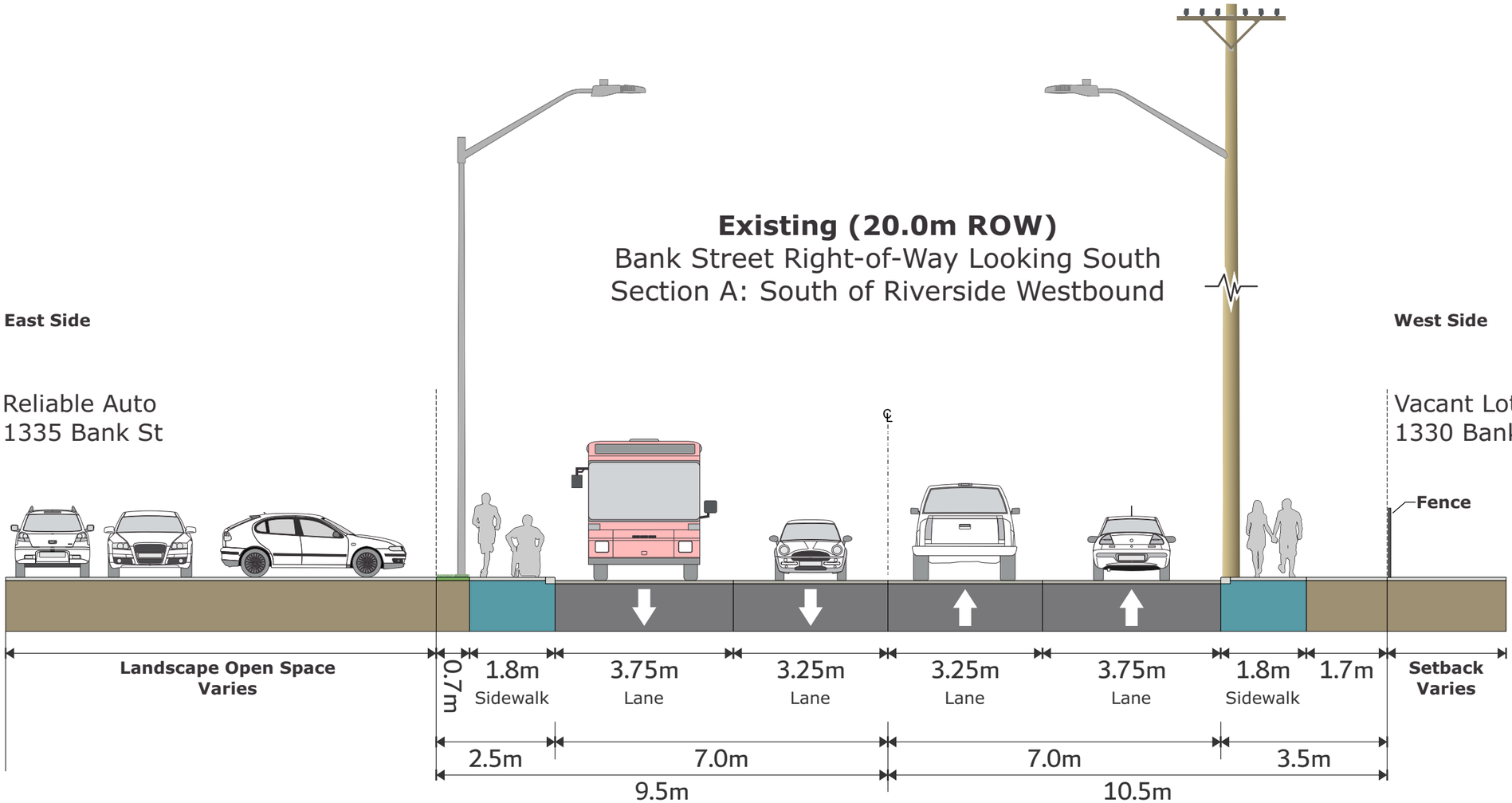
East Side

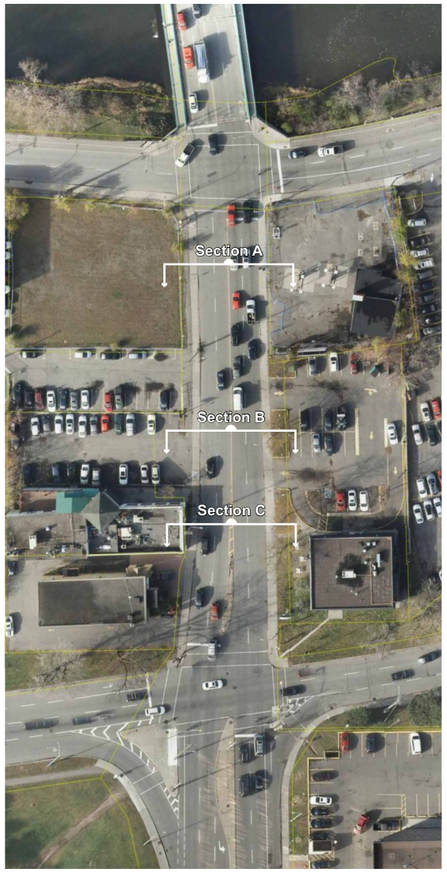
West Side

Reliable Auto
1335 Bank St

Vacant Lot
1330 Bank St

Fence





Landscape Open Space
Varies

0.7m

1.8m
Sidewalk

3.75m
Lane

3.25m
Lane

3.25m
Lane

3.75m
Lane

1.8m
Sidewalk

1.7m

Setback
Varies

2.5m

7.0m

9.5m

7.0m

3.5m

10.5m

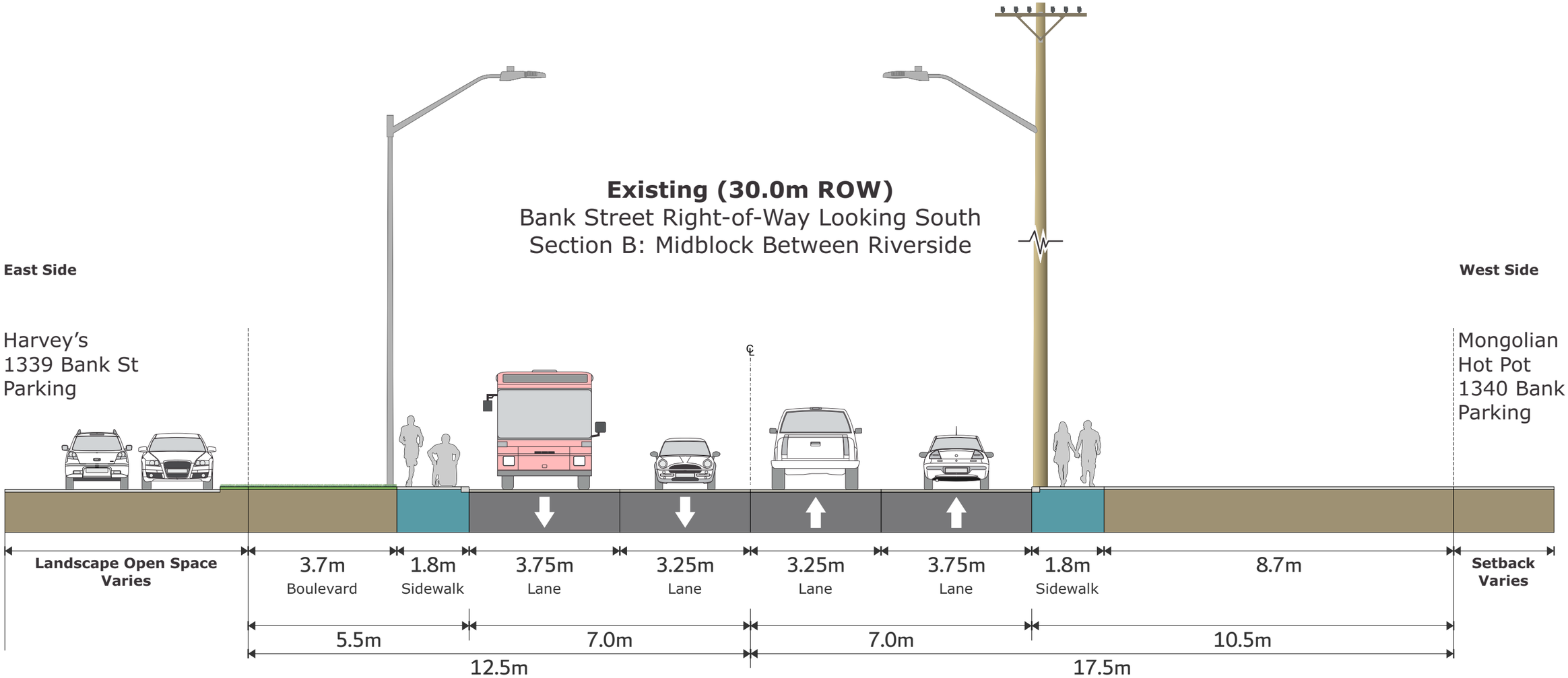
Existing (30.0m ROW)
Bank Street Right-of-Way Looking South
Section B: Midblock Between Riverside

East Side

Harvey's
1339 Bank St
Parking

West Side

Mongolian
Hot Pot
1340 Bank St
Parking



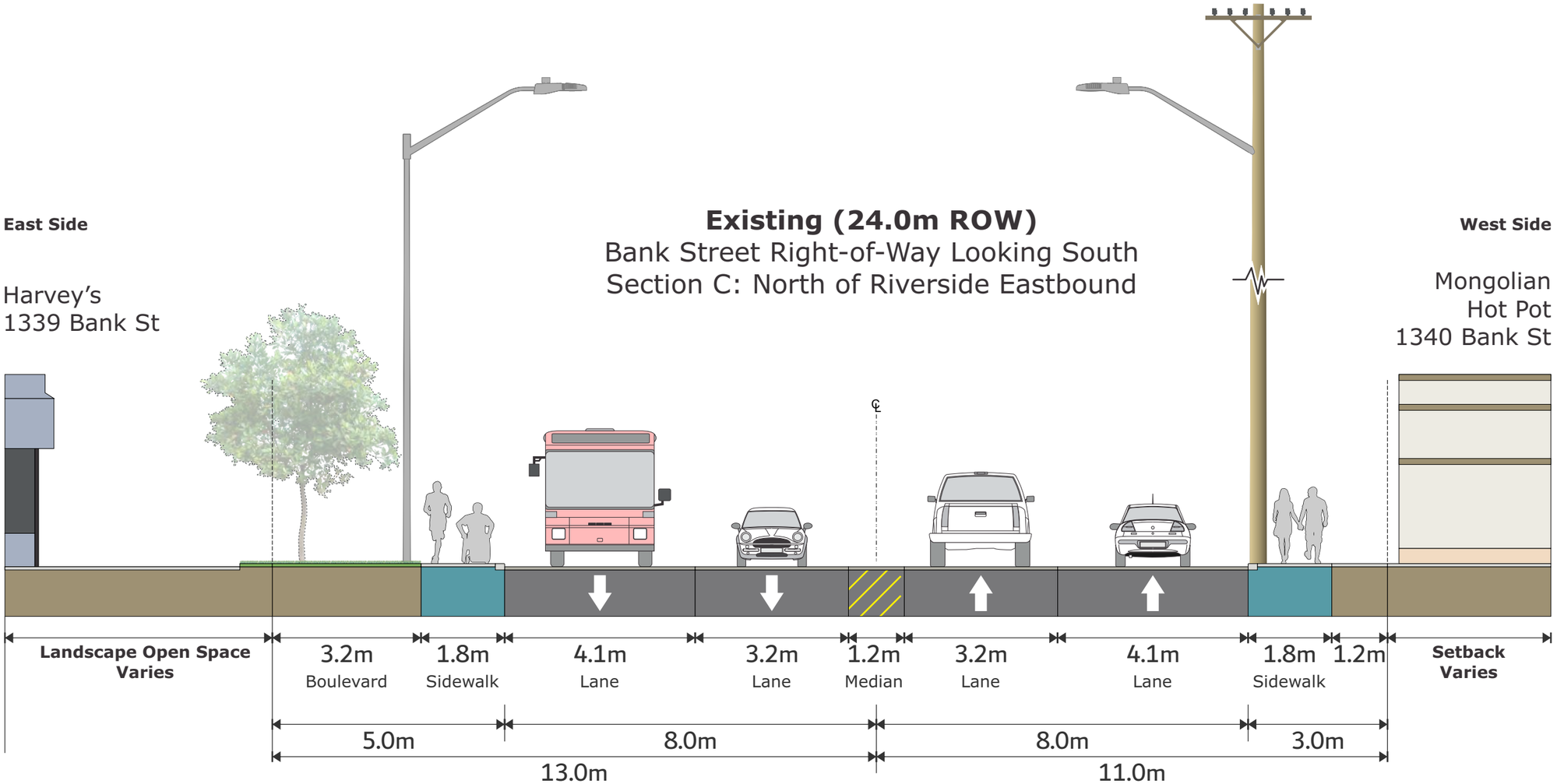
East Side

Harvey's
1339 Bank St

Existing (24.0m ROW)
Bank Street Right-of-Way Looking South
Section C: North of Riverside Eastbound

West Side

Mongolian
Hot Pot
1340 Bank St



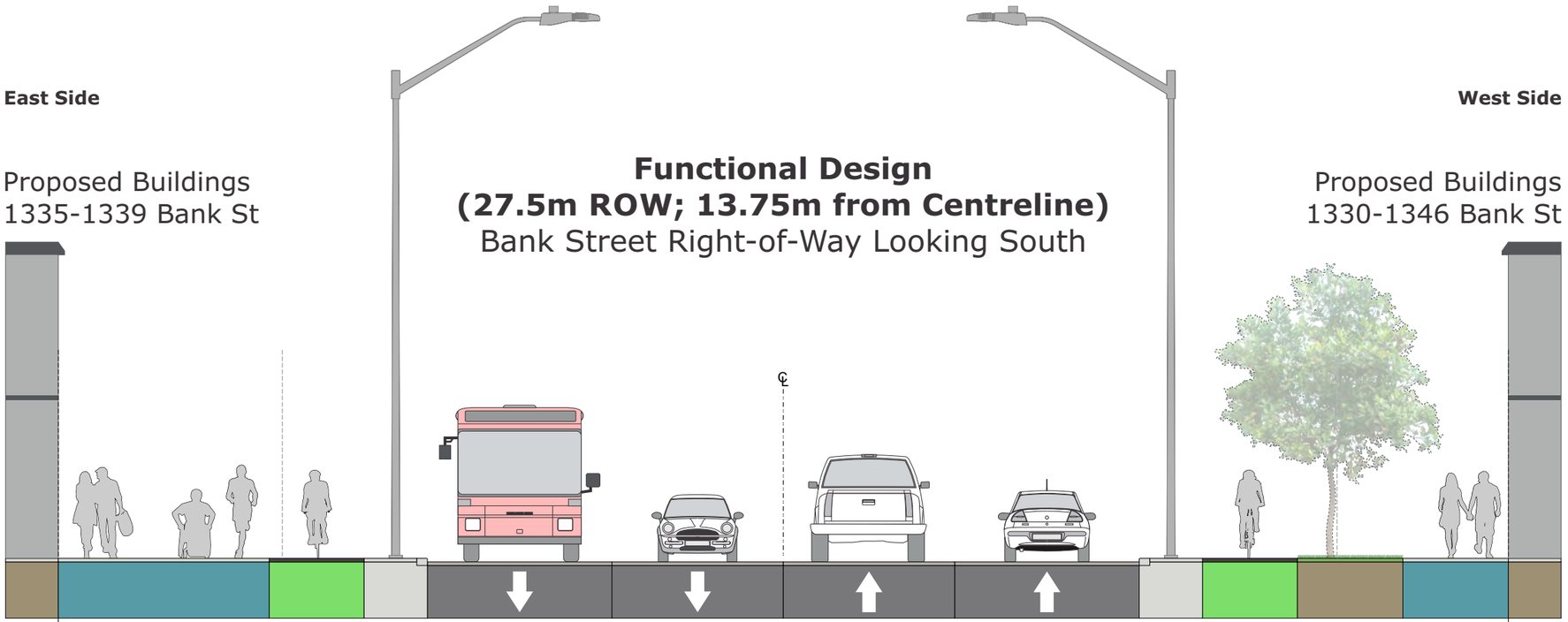
East Side

West Side

Proposed Buildings
1335-1339 Bank St

Proposed Buildings
1330-1346 Bank St

Functional Design
(27.5m ROW; 13.75m from Centreline)
Bank Street Right-of-Way Looking South



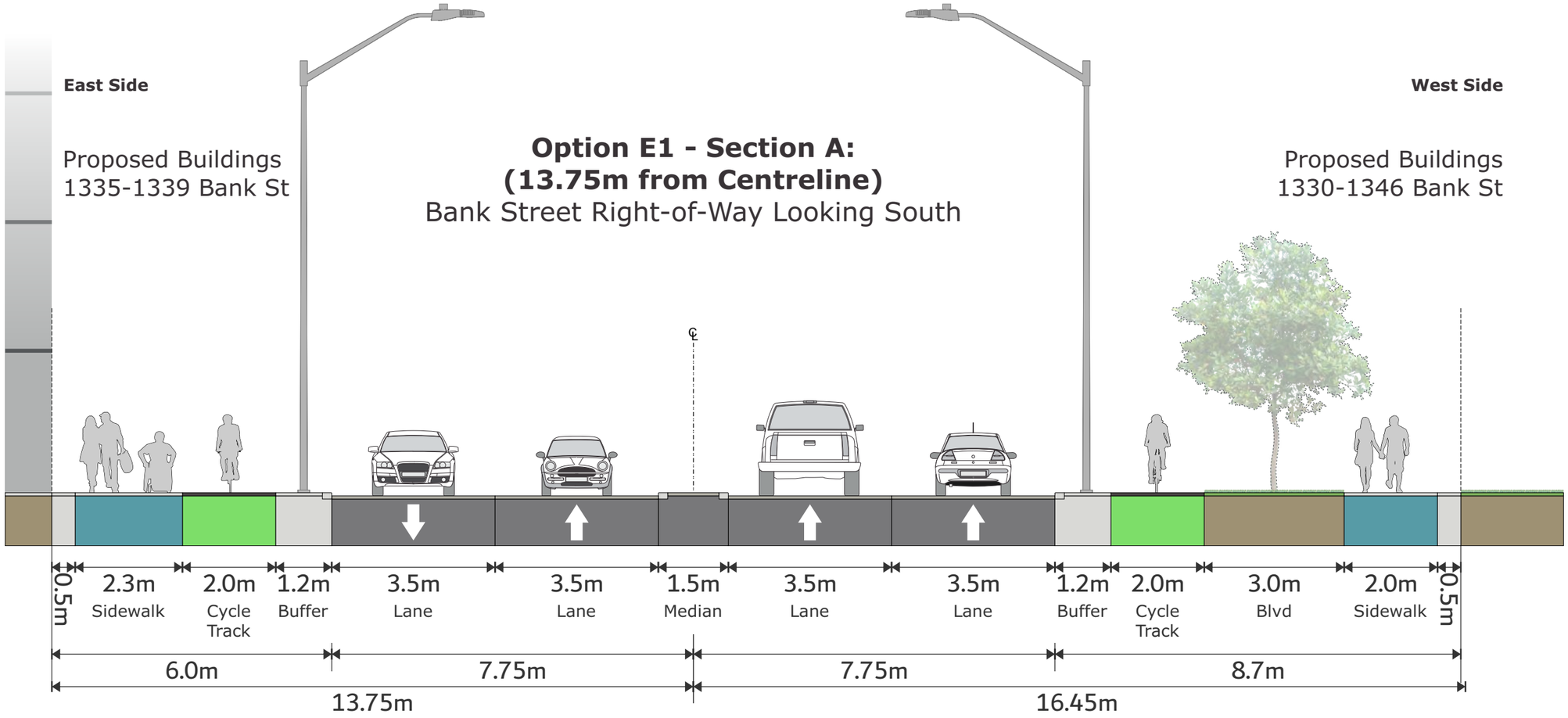
East Side

Proposed Buildings
1335-1339 Bank St

Option E1 - Section A:
(13.75m from Centreline)
Bank Street Right-of-Way Looking South

West Side

Proposed Buildings
1330-1346 Bank St



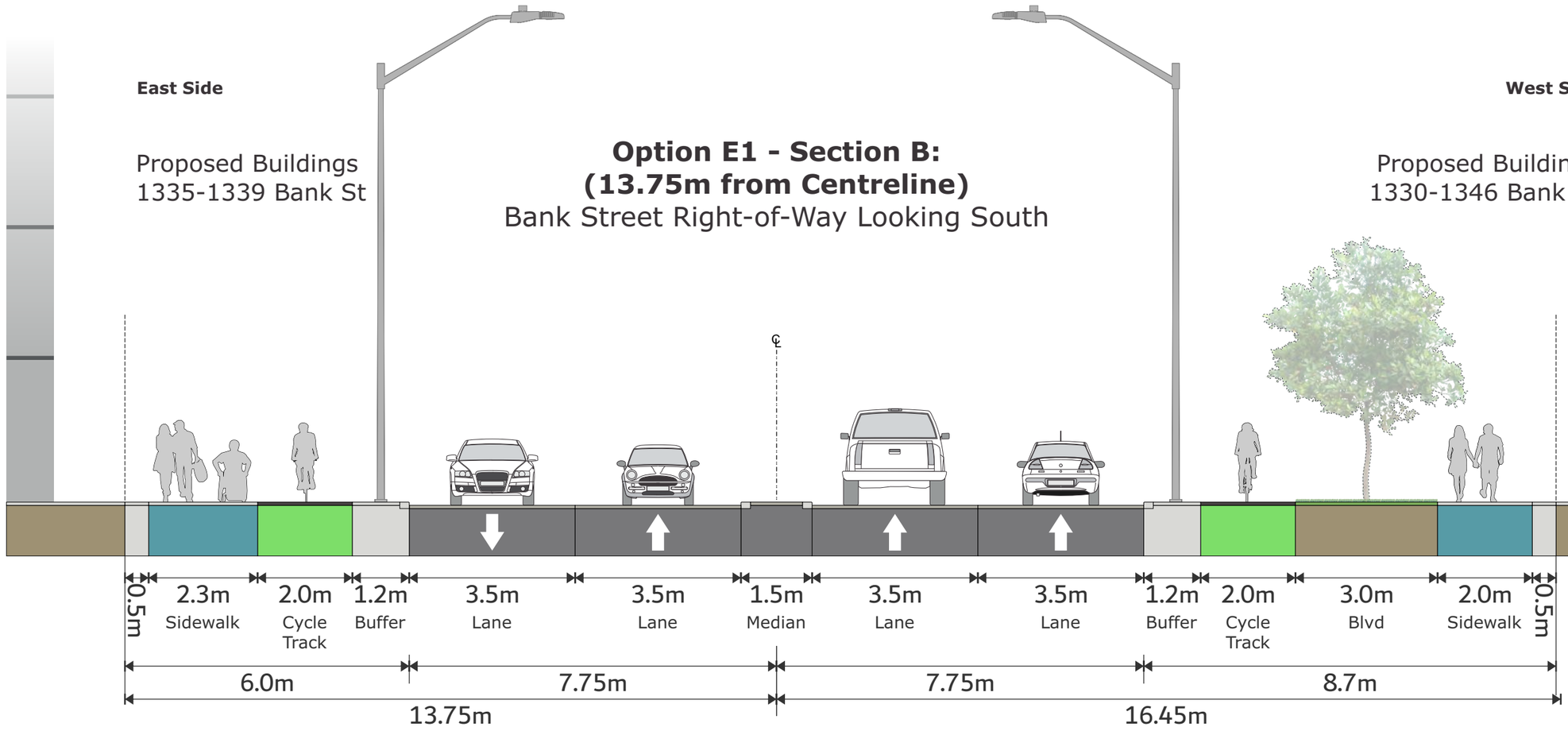
East Side

Proposed Buildings
1335-1339 Bank St

Option E1 - Section B:
(13.75m from Centreline)
Bank Street Right-of-Way Looking South

West Side

Proposed Buildings
1330-1346 Bank St



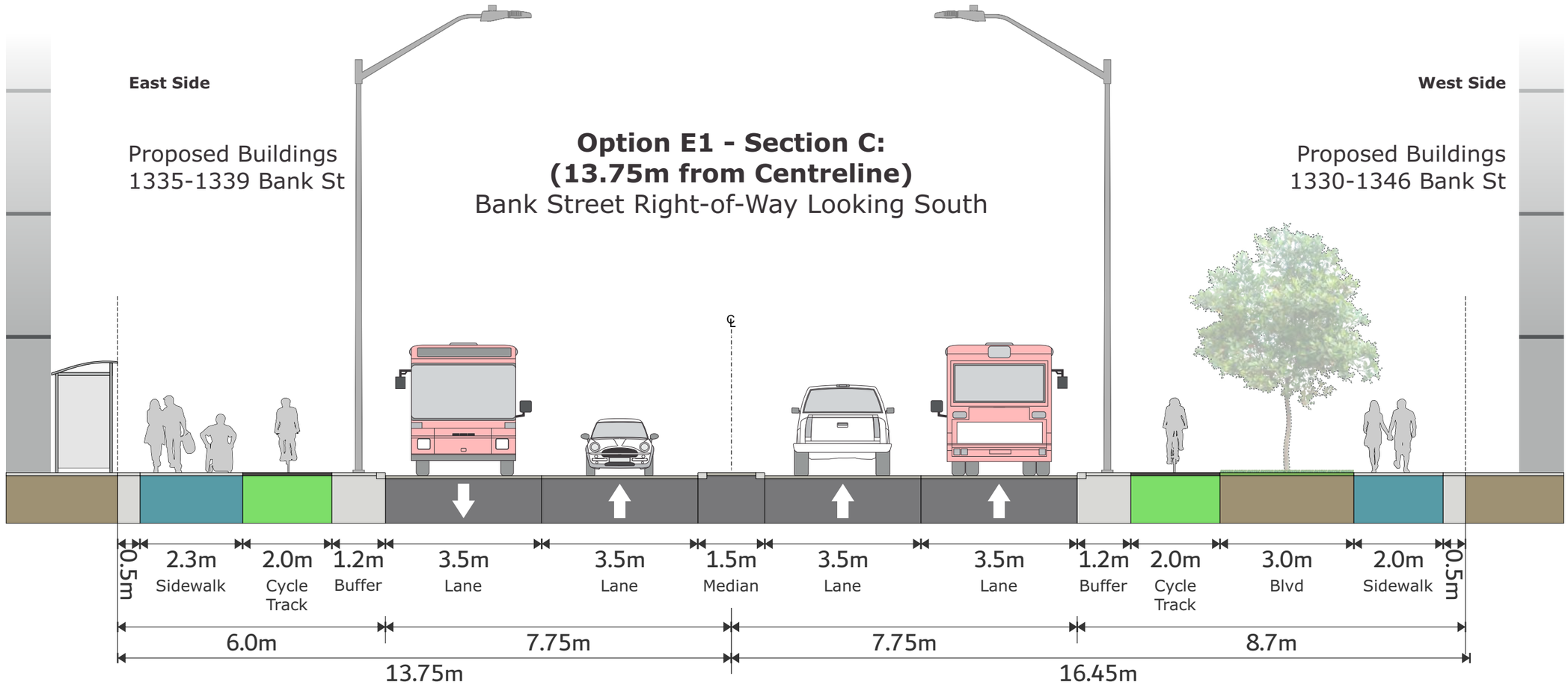
East Side

Proposed Buildings
1335-1339 Bank St

Option E1 - Section C:
(13.75m from Centreline)
Bank Street Right-of-Way Looking South

West Side

Proposed Buildings
1330-1346 Bank St



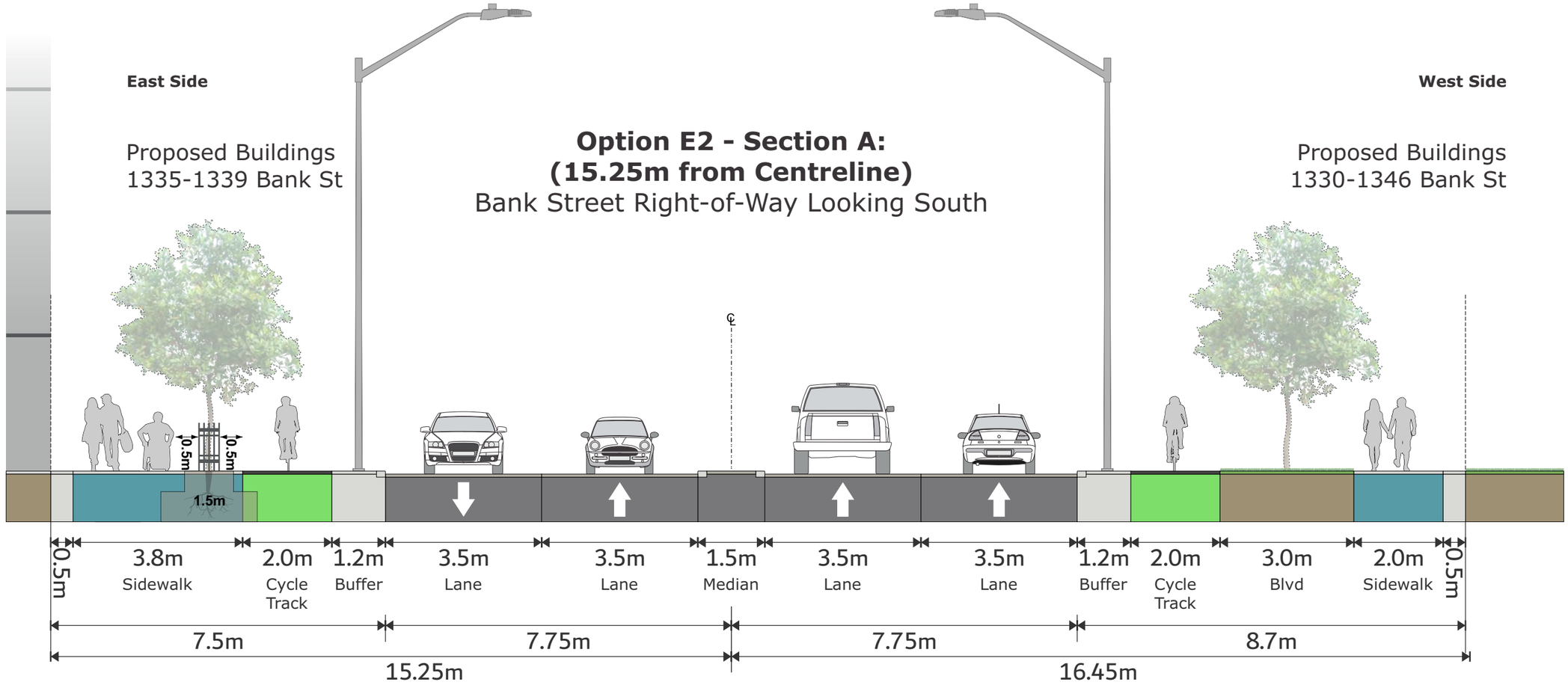
East Side

West Side

Proposed Buildings
1335-1339 Bank St

Proposed Buildings
1330-1346 Bank St

Option E2 - Section A:
(15.25m from Centreline)
Bank Street Right-of-Way Looking South



East Side

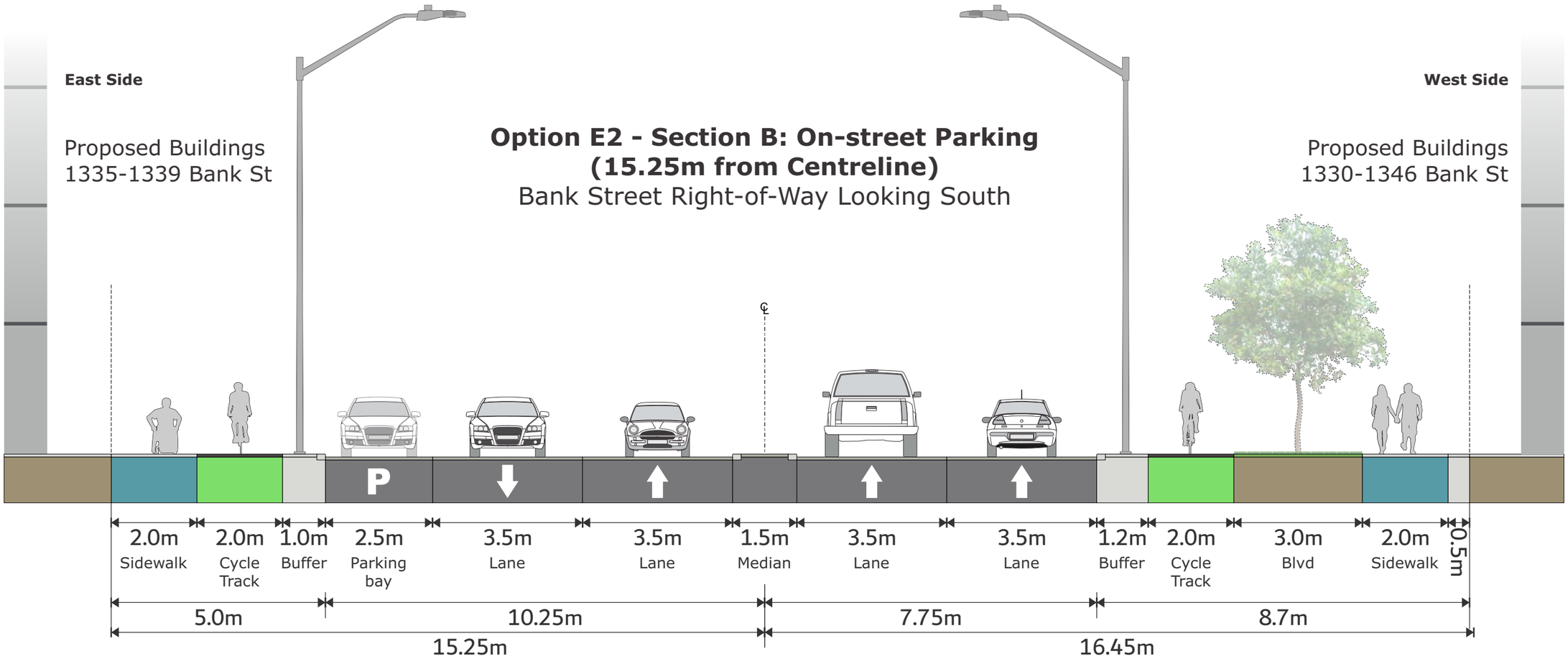
Proposed Buildings
1335-1339 Bank St

Option E2 - Section B: On-street Parking (15.25m from Centreline)

Bank Street Right-of-Way Looking South

West Side

Proposed Buildings
1330-1346 Bank St



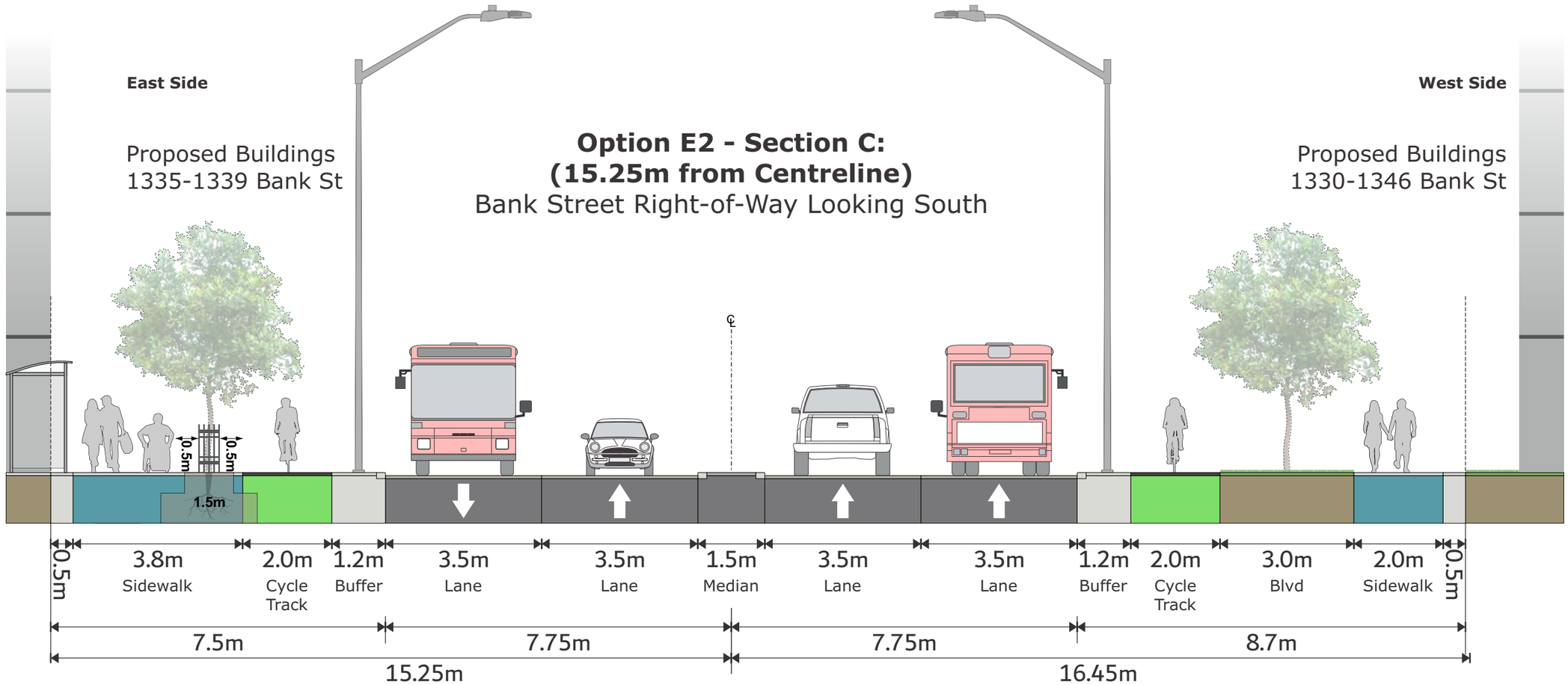
East Side

West Side

Option E2 - Section C:
(15.25m from Centreline)
Bank Street Right-of-Way Looking South

Proposed Buildings
1335-1339 Bank St

Proposed Buildings
1330-1346 Bank St



Appendix K

SYNCHRO ANALYSIS RESULTS

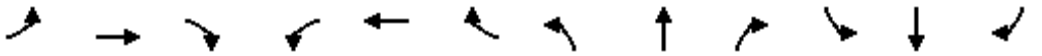
Existing Conditions

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	98	6	1104	98	6	476
Future Volume (vph)	98	6	1104	98	6	476
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Right Turn on Red		Yes		Yes		
Link Speed (k/h)	40		50			50
Link Distance (m)	227.4		190.3			201.0
Travel Time (s)	20.5		13.7			14.5
Lane Group Flow (vph)	116	0	1336	0	0	536
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		10.0		10.0	10.0
Minimum Split (s)	22.0		22.5		22.5	22.5
Total Split (s)	22.0		48.0		48.0	48.0
Total Split (%)	31.4%		68.6%		68.6%	68.6%
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	3.2		2.6		2.6	2.6
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.2		5.9			5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max		C-Max	C-Max
Act Effct Green (s)	9.9		51.6			51.6
Actuated g/C Ratio	0.14		0.74			0.74
v/c Ratio	0.48		0.54			0.23
Control Delay	32.5		6.7			4.6
Queue Delay	0.0		0.0			0.0
Total Delay	32.5		6.7			4.6
LOS	C		A			A
Approach Delay	32.5		6.7			4.6
Approach LOS	C		A			A
Queue Length 50th (m)	13.7		38.8			11.4
Queue Length 95th (m)	26.1		66.5			21.0
Internal Link Dist (m)	203.4		166.3			177.0
Turn Bay Length (m)						
Base Capacity (vph)	384		2452			2340
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.30		0.54			0.23

Intersection Summary	
Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 17 (24%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 7.7	Intersection LOS: A
Intersection Capacity Utilization 53.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Bank St & Riverdale Ave

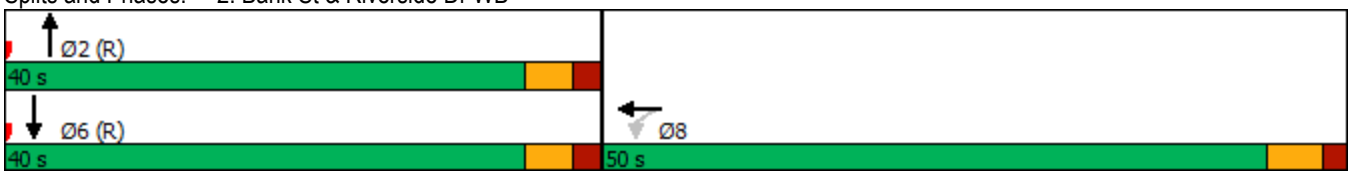


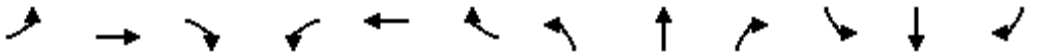
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	251	1030	204	0	888	0	0	377	161
Future Volume (vph)	0	0	0	251	1030	204	0	888	0	0	377	161
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		335.6			105.9			124.8			190.3	
Travel Time (s)		20.1			6.4			9.0			13.7	
Lane Group Flow (vph)	0	0	0	279	1371	0	0	987	0	0	598	0
Turn Type				Perm	NA			NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8								
Minimum Split (s)				28.5	28.5			30.2			30.2	
Total Split (s)				50.0	50.0			40.0			40.0	
Total Split (%)				55.6%	55.6%			44.4%			44.4%	
Yellow Time (s)				3.7	3.7			3.3			3.3	
All-Red Time (s)				1.8	1.8			1.9			1.9	
Lost Time Adjust (s)				0.0	0.0			0.0			0.0	
Total Lost Time (s)				5.5	5.5			5.2			5.2	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)				44.5	44.5			34.8			34.8	
Actuated g/C Ratio				0.49	0.49			0.39			0.39	
v/c Ratio				0.34	0.83			0.75			0.48	
Control Delay				15.8	26.6			10.7			22.5	
Queue Delay				0.0	0.0			0.1			0.0	
Total Delay				15.8	26.6			10.8			22.5	
LOS				B	C			B			C	
Approach Delay					24.7			10.8			22.5	
Approach LOS					C			B			C	
Queue Length 50th (m)				33.6	115.3			16.8			40.1	
Queue Length 95th (m)				55.7	149.3			20.2			55.1	
Internal Link Dist (m)		311.6			81.9			100.8			166.3	
Turn Bay Length (m)				75.0								
Base Capacity (vph)				830	1643			1310			1236	
Starvation Cap Reductn				0	0			18			0	
Spillback Cap Reductn				0	0			0			0	
Storage Cap Reductn				0	0			0			0	
Reduced v/c Ratio				0.34	0.83			0.76			0.48	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 41 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	

Control Type: Pretimed
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 20.1 Intersection LOS: C
Intersection Capacity Utilization 71.9% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 2: Bank St & Riverside Dr WB



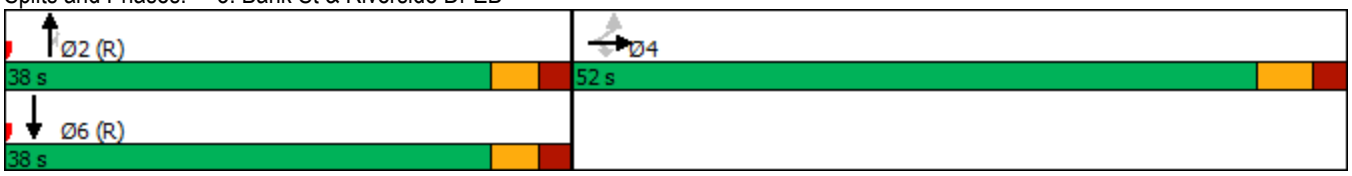


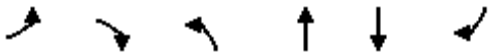
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	1303	47	0	0	0	0	802	303	0	556	0
Future Volume (vph)	147	1303	47	0	0	0	0	802	303	0	556	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	60.0		45.0	0.0		0.0	0.0		60.0	0.0		0.0
Storage Lanes	0		1	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		72.6			357.9			168.7			124.8	
Travel Time (s)		4.4			21.5			12.1			9.0	
Lane Group Flow (vph)	163	1448	52	0	0	0	0	891	337	0	618	0
Turn Type	Perm	NA	Perm					NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4		4						2			
Minimum Split (s)	29.1	29.1	29.1					25.5	25.5		25.5	
Total Split (s)	52.0	52.0	52.0					38.0	38.0		38.0	
Total Split (%)	57.8%	57.8%	57.8%					42.2%	42.2%		42.2%	
Yellow Time (s)	3.7	3.7	3.7					3.3	3.3		3.3	
All-Red Time (s)	2.4	2.4	2.4					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	6.1					5.5	5.5		5.5	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)	45.9	45.9	45.9					32.5	32.5		32.5	
Actuated g/C Ratio	0.51	0.51	0.51					0.36	0.36		0.36	
v/c Ratio	0.19	0.84	0.07					0.73	0.63		0.50	
Control Delay	10.7	26.4	5.2					27.6	25.4		18.6	
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.0	
Total Delay	10.7	26.4	5.2					27.6	25.4		18.6	
LOS	B	C	A					C	C		B	
Approach Delay		24.2						27.0			18.6	
Approach LOS		C						C			B	
Queue Length 50th (m)	21.0	142.7	3.5					69.2	42.1		29.8	
Queue Length 95th (m)	m20.3	164.8	m3.7					90.9	70.9		39.1	
Internal Link Dist (m)		48.6			333.9			144.7			100.8	
Turn Bay Length (m)	60.0		45.0						60.0			
Base Capacity (vph)	853	1728	766					1224	535		1224	
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	0.19	0.84	0.07					0.73	0.63		0.50	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 36 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 60	

Control Type: Pretimed
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 24.2 Intersection LOS: C
Intersection Capacity Utilization 71.9% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Bank St & Riverside Dr EB





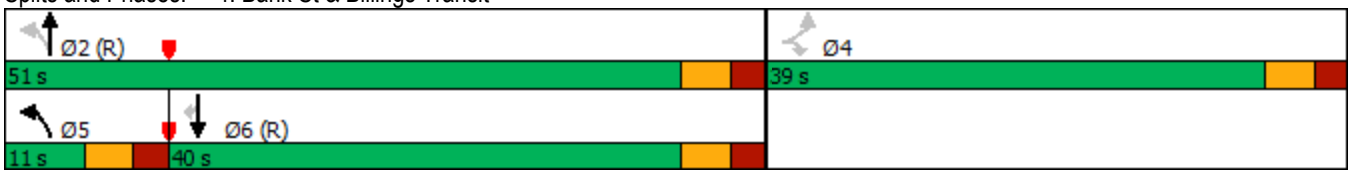
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	8	11	12	980	647	9
Future Volume (vph)	8	11	12	980	647	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	65.0			15.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Right Turn on Red		Yes				Yes
Link Speed (k/h)	50			50	50	
Link Distance (m)	251.4			166.8	168.7	
Travel Time (s)	18.1			12.0	12.1	
Lane Group Flow (vph)	9	12	13	1089	719	10
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0	10.0
Minimum Split (s)	38.6	38.6	10.7	28.7	28.7	28.7
Total Split (s)	39.0	39.0	11.0	51.0	40.0	40.0
Total Split (%)	43.3%	43.3%	12.2%	56.7%	44.4%	44.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.7	5.7	5.7	5.7
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)	6.8	6.8	78.8	82.2	79.7	79.7
Actuated g/C Ratio	0.08	0.08	0.88	0.91	0.89	0.89
v/c Ratio	0.15	0.18	0.04	0.35	0.24	0.02
Control Delay	43.2	25.6	2.2	1.9	0.9	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	25.6	2.2	1.9	0.9	0.8
LOS	D	C	A	A	A	A
Approach Delay	33.2			1.9	0.9	
Approach LOS	C			A	A	
Queue Length 50th (m)	1.5	0.0	0.2	0.0	0.2	0.0
Queue Length 95th (m)	6.0	5.1	1.5	33.1	7.8	m0.1
Internal Link Dist (m)	227.4			142.8	144.7	
Turn Bay Length (m)			65.0			15.0
Base Capacity (vph)	304	288	306	3095	3003	592
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	0.03	0.04	0.04	0.35	0.24	0.02

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 50 (56%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.35	
Intersection Signal Delay: 1.9	Intersection LOS: A
Intersection Capacity Utilization 50.9%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 4: Bank St & Billings Transit

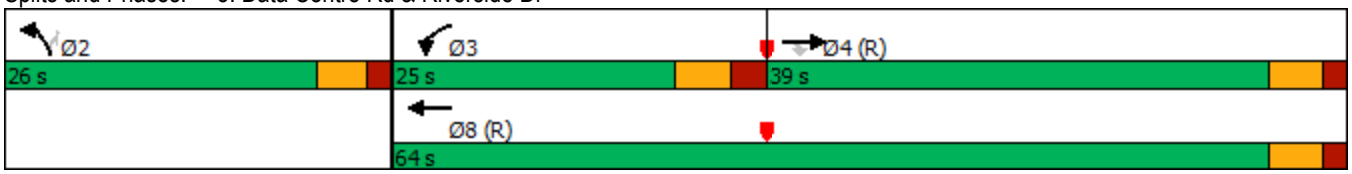


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1395	88	96	943	47	70
Future Volume (vph)	1395	88	96	943	47	70
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		40.0	75.0		85.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Right Turn on Red		Yes				Yes
Link Speed (k/h)	60			60	50	
Link Distance (m)	262.9			119.4	217.7	
Travel Time (s)	15.8			7.2	15.7	
Lane Group Flow (vph)	1550	98	107	1048	52	78
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0	5.0
Minimum Split (s)	23.4	23.4	11.1	23.4	23.1	23.1
Total Split (s)	39.0	39.0	25.0	64.0	26.0	26.0
Total Split (%)	43.3%	43.3%	27.8%	71.1%	28.9%	28.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	1.7	1.7	2.4	1.7	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	6.1	5.4	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	60.0	60.0	11.0	74.5	8.2	8.2
Actuated g/C Ratio	0.67	0.67	0.12	0.83	0.09	0.09
v/c Ratio	0.69	0.10	0.52	0.37	0.34	0.39
Control Delay	15.4	5.6	55.2	1.4	43.5	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.4	5.6	55.2	1.4	43.5	15.0
LOS	B	A	E	A	D	B
Approach Delay	14.9			6.4	26.4	
Approach LOS	B			A	C	
Queue Length 50th (m)	94.3	3.3	19.9	9.8	8.6	0.0
Queue Length 95th (m)	151.4	11.5	m25.6	13.0	18.8	12.2
Internal Link Dist (m)	238.9			95.4	193.7	
Turn Bay Length (m)		40.0	75.0		85.0	
Base Capacity (vph)	2259	985	355	2806	393	393
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	0.69	0.10	0.30	0.37	0.13	0.20

Intersection Summary	
Area Type:	Other

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 37 (41%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 12.0 Intersection LOS: B
Intersection Capacity Utilization 70.9% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Data Centre Rd & Riverside Dr

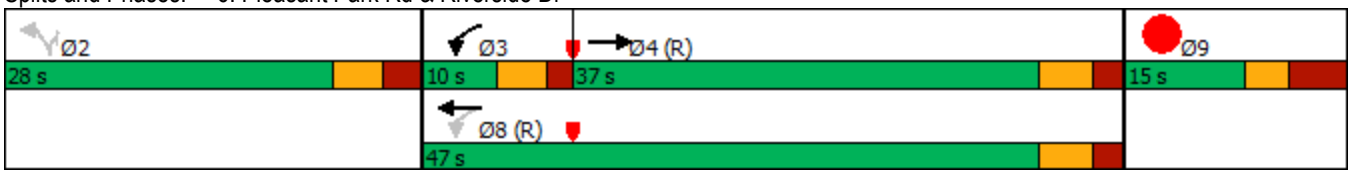


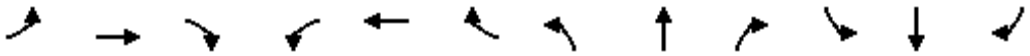
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1150	97	32	1191	168	36	
Future Volume (vph)	1150	97	32	1191	168	36	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	30.0		0.0	40.0	
Storage Lanes		0	1		1	1	
Taper Length (m)			7.5		7.5		
Right Turn on Red		Yes				Yes	
Link Speed (k/h)	60			60	50		
Link Distance (m)	242.5			151.7	243.4		
Travel Time (s)	14.6			9.1	17.5		
Lane Group Flow (vph)	1386	0	36	1323	187	40	
Turn Type	NA		pm+pt	NA	Perm	Perm	
Protected Phases	4		3	8			9
Permitted Phases			8		2	2	
Detector Phase	4		3	8	2	2	
Switch Phase							
Minimum Initial (s)	10.0		5.0	10.0	5.0	5.0	5.0
Minimum Split (s)	28.8		10.0	28.8	25.0	25.0	12.0
Total Split (s)	37.0		10.0	47.0	28.0	28.0	15.0
Total Split (%)	41.1%		11.1%	52.2%	31.1%	31.1%	17%
Yellow Time (s)	3.7		3.3	3.7	3.3	3.3	3.0
All-Red Time (s)	2.1		1.7	2.1	2.7	2.7	4.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8		5.0	5.8	6.0	6.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	C-Max		None	C-Max	None	None	None
Act Effct Green (s)	56.2		63.9	63.1	15.1	15.1	
Actuated g/C Ratio	0.62		0.71	0.70	0.17	0.17	
v/c Ratio	0.66		0.14	0.56	0.66	0.14	
Control Delay	10.8		6.2	8.3	45.5	10.6	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	10.8		6.2	8.3	45.5	10.6	
LOS	B		A	A	D	B	
Approach Delay	10.8			8.3	39.3		
Approach LOS	B			A	D		
Queue Length 50th (m)	109.5		1.6	50.6	30.5	0.0	
Queue Length 95th (m)	150.2		5.1	82.5	47.9	7.6	
Internal Link Dist (m)	218.5			127.7	219.4		
Turn Bay Length (m)			30.0			40.0	
Base Capacity (vph)	2090		249	2375	414	401	
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	0.66		0.14	0.56	0.45	0.10	

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 50 (56%), Referenced to phase 4:EBT and 8:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 11.8	Intersection LOS: B
Intersection Capacity Utilization 56.5%	ICU Level of Service B
Analysis Period (min) 15	

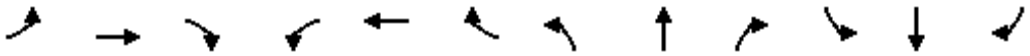
Splits and Phases: 6: Pleasant Park Rd & Riverside Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	1465	0	0	0	0	0	0	0	0	76	0
Future Volume (vph)	0	1465	0	0	0	0	0	0	0	0	76	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60			60			48			40	
Link Distance (m)		191.9			95.9			54.0			65.5	
Travel Time (s)		11.5			5.8			4.1			5.9	
Lane Group Flow (vph)	0	1628	0	0	0	0	0	0	0	0	84	0
Sign Control		Free			Free			Stop			Stop	

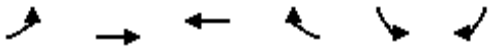
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (veh/h)	0	1465	0	0	0	0	0	0	0	0	76	0
Future Volume (Veh/h)	0	1465	0	0	0	0	0	0	0	0	76	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1628	0	0	0	0	0	0	0	0	84	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)		311			169							
pX, platoon unblocked				0.66			0.66	0.66	0.66	0.66	0.66	
vC, conflicting volume	0			1628			1670	1628	814	814	1628	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			916			980	916	0	0	916	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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			100			100	100	100	100	53	100
cM capacity (veh/h)	1622			487			85	178	714	673	178	1084

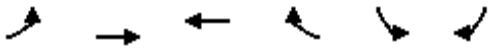
Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	814	814	84
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	178
Volume to Capacity	0.48	0.48	0.47
Queue Length 95th (m)	0.0	0.0	17.1
Control Delay (s)	0.0	0.0	42.0
Lane LOS			E
Approach Delay (s)	0.0		42.0
Approach LOS			E

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	53.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1465	0	0	70	0
Future Volume (vph)	0	1465	0	0	70	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60	60		40	
Link Distance (m)		95.9	72.6		114.9	
Travel Time (s)		5.8	4.4		10.3	
Lane Group Flow (vph)	0	1628	0	0	78	0
Sign Control		Free	Free		Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.2%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1465	0	0	70	0
Future Volume (Veh/h)	0	1465	0	0	70	0
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1628	0	0	78	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)			73			
pX, platoon unblocked						
vC, conflicting volume	0				814	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				814	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				75	100
cM capacity (veh/h)	1622				316	1084

Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	814	814	78
Volume Left	0	0	78
Volume Right	0	0	0
cSH	1700	1700	316
Volume to Capacity	0.48	0.48	0.25
Queue Length 95th (m)	0.0	0.0	7.2
Control Delay (s)	0.0	0.0	20.1
Lane LOS			C
Approach Delay (s)	0.0		20.1
Approach LOS			C

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		63.2%	ICU Level of Service
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1359	134	0
Future Volume (vph)	0	0	0	1359	134	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)	60			60	40	
Link Distance (m)	105.9			206.7	83.1	
Travel Time (s)	6.4			12.4	7.5	
Lane Group Flow (vph)	0	0	0	1510	149	0
Sign Control	Free			Free	Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	1359	134	0
Future Volume (Veh/h)	0	0	0	1359	134	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	0	1510	149	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)	106					
pX, platoon unblocked						
vC, conflicting volume			0		755	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		755	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		57	100
cM capacity (veh/h)			1622		345	1084

Direction, Lane #	WB 1	WB 2	NB 1
Volume Total	755	755	149
Volume Left	0	0	149
Volume Right	0	0	0
cSH	1700	1700	345
Volume to Capacity	0.44	0.44	0.43
Queue Length 95th (m)	0.0	0.0	16.0
Control Delay (s)	0.0	0.0	23.2
Lane LOS			C
Approach Delay (s)	0.0		23.2
Approach LOS			C

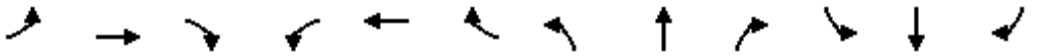
Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	134	11	527	196	9	794
Future Volume (vph)	134	11	527	196	9	794
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Right Turn on Red		Yes		Yes		
Link Speed (k/h)	40		50			50
Link Distance (m)	227.4		190.3			201.0
Travel Time (s)	20.5		13.7			14.5
Lane Group Flow (vph)	161	0	804	0	0	892
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		10.0		10.0	10.0
Minimum Split (s)	22.0		22.5		22.5	22.5
Total Split (s)	22.0		68.0		68.0	68.0
Total Split (%)	24.4%		75.6%		75.6%	75.6%
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	3.2		2.6		2.6	2.6
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.2		5.9			5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max		C-Max	C-Max
Act Effct Green (s)	13.0		64.9			64.9
Actuated g/C Ratio	0.14		0.72			0.72
v/c Ratio	0.66		0.36			0.39
Control Delay	48.0		1.8			5.7
Queue Delay	0.0		0.0			0.0
Total Delay	48.0		1.8			5.7
LOS	D		A			A
Approach Delay	48.0		1.8			5.7
Approach LOS	D		A			A
Queue Length 50th (m)	25.8		4.3			27.1
Queue Length 95th (m)	44.3		m6.2			39.7
Internal Link Dist (m)	203.4		166.3			177.0
Turn Bay Length (m)						
Base Capacity (vph)	298		2242			2309
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.54		0.36			0.39

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 57 (63%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 7.7 Intersection LOS: A
Intersection Capacity Utilization 50.3% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Bank St & Riverdale Ave

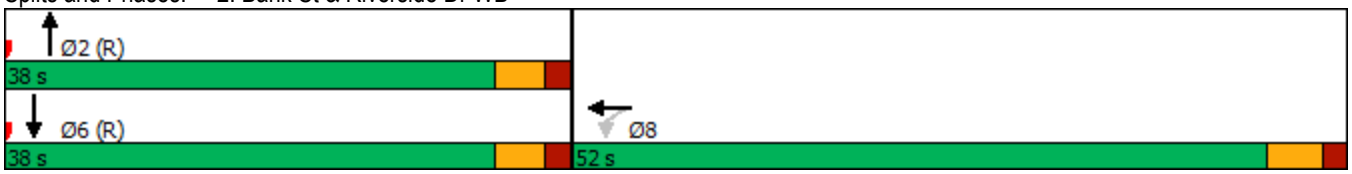


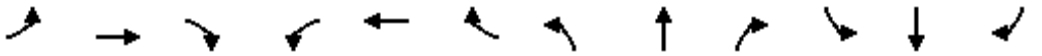
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	371	1363	98	0	537	0	0	659	197
Future Volume (vph)	0	0	0	371	1363	98	0	537	0	0	659	197
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		344.9			96.6			124.8			190.3	
Travel Time (s)		20.7			5.8			9.0			13.7	
Lane Group Flow (vph)	0	0	0	412	1623	0	0	597	0	0	951	0
Turn Type				Perm	NA			NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8								
Minimum Split (s)				28.5	28.5			30.2			30.2	
Total Split (s)				52.0	52.0			38.0			38.0	
Total Split (%)				57.8%	57.8%			42.2%			42.2%	
Yellow Time (s)				3.7	3.7			3.3			3.3	
All-Red Time (s)				1.8	1.8			1.9			1.9	
Lost Time Adjust (s)				0.0	0.0			0.0			0.0	
Total Lost Time (s)				5.5	5.5			5.2			5.2	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)				46.5	46.5			32.8			32.8	
Actuated g/C Ratio				0.52	0.52			0.36			0.36	
v/c Ratio				0.47	0.93			0.48			0.81	
Control Delay				13.0	27.8			12.9			27.4	
Queue Delay				0.0	0.0			0.0			1.1	
Total Delay				13.0	27.8			12.9			28.6	
LOS				B	C			B			C	
Approach Delay					24.8			12.9			28.6	
Approach LOS					C			B			C	
Queue Length 50th (m)				49.2	152.0			19.2			80.3	
Queue Length 95th (m)				m48.9	#190.1			24.9			104.0	
Internal Link Dist (m)		320.9			72.6			100.8			166.3	
Turn Bay Length (m)				75.0								
Base Capacity (vph)				870	1737			1235			1172	
Starvation Cap Reductn				0	0			0			0	
Spillback Cap Reductn				0	0			0			76	
Storage Cap Reductn				0	0			0			0	
Reduced v/c Ratio				0.47	0.93			0.48			0.87	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 64 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	

Control Type: Pretimed
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 23.8 Intersection LOS: C
Intersection Capacity Utilization 82.6% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bank St & Riverside Dr WB



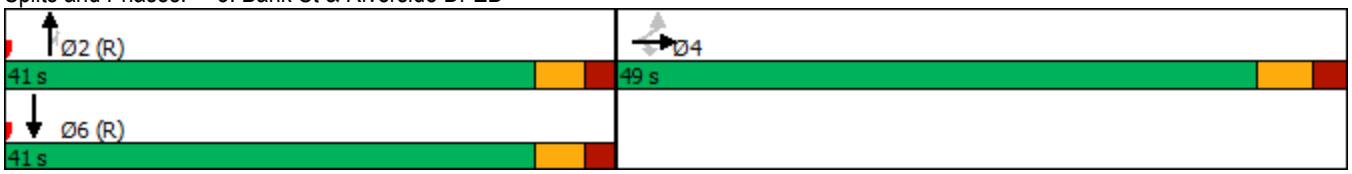


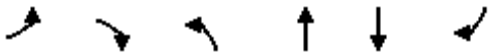
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	1452	148	0	0	0	0	399	310	0	1047	0
Future Volume (vph)	134	1452	148	0	0	0	0	399	310	0	1047	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	60.0		45.0	0.0		0.0	0.0		60.0	0.0		0.0
Storage Lanes	0		1	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		78.2			357.9			168.7			124.8	
Travel Time (s)		4.7			21.5			12.1			9.0	
Lane Group Flow (vph)	149	1613	164	0	0	0	0	443	344	0	1163	0
Turn Type	Perm	NA	Perm					NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4		4						2			
Minimum Split (s)	29.1	29.1	29.1					25.5	25.5		25.5	
Total Split (s)	49.0	49.0	49.0					41.0	41.0		41.0	
Total Split (%)	54.4%	54.4%	54.4%					45.6%	45.6%		45.6%	
Yellow Time (s)	3.7	3.7	3.7					3.3	3.3		3.3	
All-Red Time (s)	2.4	2.4	2.4					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	6.1					5.5	5.5		5.5	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)	42.9	42.9	42.9					35.5	35.5		35.5	
Actuated g/C Ratio	0.48	0.48	0.48					0.39	0.39		0.39	
v/c Ratio	0.19	1.00	0.24					0.33	0.61		0.87	
Control Delay	15.3	37.0	13.0					18.1	22.8		25.5	
Queue Delay	0.0	0.0	0.0					0.0	0.0		2.0	
Total Delay	15.3	37.0	13.0					18.1	22.8		27.5	
LOS	B	D	B					B	C		C	
Approach Delay		33.3						20.2			27.5	
Approach LOS		C						C			C	
Queue Length 50th (m)	10.1	59.0	8.0					27.8	41.7		51.1	
Queue Length 95th (m)	m16.4	#189.0	m14.3					39.4	70.1		#100.7	
Internal Link Dist (m)		54.2			333.9			144.7			100.8	
Turn Bay Length (m)	60.0		45.0						60.0			
Base Capacity (vph)	796	1615	697					1337	564		1337	
Starvation Cap Reductn	0	0	0					0	0		79	
Spillback Cap Reductn	0	0	0					0	0		0	
Storage Cap Reductn	0	0	0					0	0		0	
Reduced v/c Ratio	0.19	1.00	0.24					0.33	0.61		0.92	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 61 (68%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	

Control Type: Pretimed
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 28.9 Intersection LOS: C
Intersection Capacity Utilization 82.6% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Bank St & Riverside Dr EB





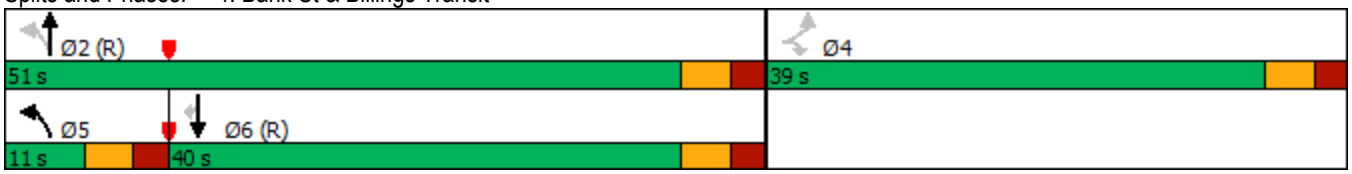
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	11	13	904	1325	14
Future Volume (vph)	15	11	13	904	1325	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	65.0			15.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Right Turn on Red		Yes				Yes
Link Speed (k/h)	50			50	50	
Link Distance (m)	251.4			166.8	168.7	
Travel Time (s)	18.1			12.0	12.1	
Lane Group Flow (vph)	17	12	14	1004	1472	16
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0	10.0
Minimum Split (s)	38.6	38.6	10.7	28.7	28.7	28.7
Total Split (s)	39.0	39.0	11.0	51.0	40.0	40.0
Total Split (%)	43.3%	43.3%	12.2%	56.7%	44.4%	44.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.7	5.7	5.7	5.7
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)	7.7	7.7	78.1	81.5	79.0	79.0
Actuated g/C Ratio	0.09	0.09	0.87	0.91	0.88	0.88
v/c Ratio	0.25	0.16	0.09	0.33	0.49	0.03
Control Delay	46.7	23.7	3.4	2.1	4.3	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.7	23.7	3.4	2.1	4.3	3.7
LOS	D	C	A	A	A	A
Approach Delay	37.2			2.2	4.3	
Approach LOS	D			A	A	
Queue Length 50th (m)	2.8	0.0	0.2	0.0	2.1	0.0
Queue Length 95th (m)	8.9	5.0	1.8	33.9	49.6	m0.2
Internal Link Dist (m)	227.4			142.8	144.7	
Turn Bay Length (m)			65.0			15.0
Base Capacity (vph)	291	283	156	3069	2976	501
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	0.06	0.04	0.09	0.33	0.49	0.03

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 68 (76%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.49	
Intersection Signal Delay: 3.8	Intersection LOS: A
Intersection Capacity Utilization 67.8%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 4: Bank St & Billings Transit

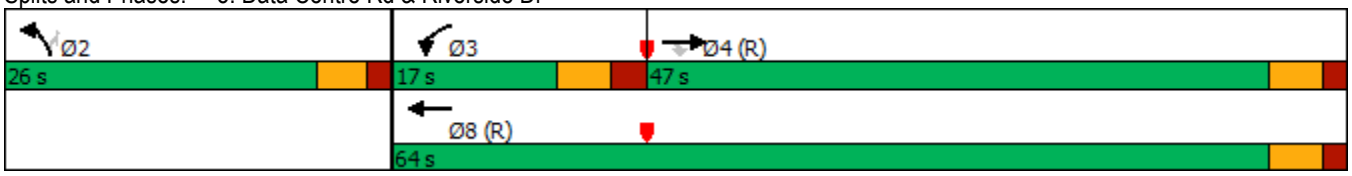


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1643	10	69	1586	87	82
Future Volume (vph)	1643	10	69	1586	87	82
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		40.0	75.0		85.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Right Turn on Red		Yes				Yes
Link Speed (k/h)	60			60	50	
Link Distance (m)	262.9			119.4	217.7	
Travel Time (s)	15.8			7.2	15.7	
Lane Group Flow (vph)	1826	11	77	1762	97	91
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0	5.0
Minimum Split (s)	23.4	23.4	11.1	23.4	23.1	23.1
Total Split (s)	47.0	47.0	17.0	64.0	26.0	26.0
Total Split (%)	52.2%	52.2%	18.9%	71.1%	28.9%	28.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	1.7	1.7	2.4	1.7	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	6.1	5.4	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	55.9	55.9	9.4	69.0	10.5	10.5
Actuated g/C Ratio	0.62	0.62	0.10	0.77	0.12	0.12
v/c Ratio	0.87	0.01	0.44	0.68	0.49	0.36
Control Delay	22.8	7.9	27.8	15.3	45.0	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	7.9	27.8	15.3	45.0	12.1
LOS	C	A	C	B	D	B
Approach Delay	22.7			15.9	29.1	
Approach LOS	C			B	C	
Queue Length 50th (m)	134.2	0.4	11.0	128.3	16.0	0.0
Queue Length 95th (m)	#225.8	3.0	m12.0	m147.3	29.3	12.4
Internal Link Dist (m)	238.9			95.4	193.7	
Turn Bay Length (m)		40.0	75.0		85.0	
Base Capacity (vph)	2105	919	213	2599	393	410
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	0.87	0.01	0.36	0.68	0.25	0.22

Intersection Summary	
Area Type:	Other

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 6 (7%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 19.7 Intersection LOS: B
Intersection Capacity Utilization 73.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Data Centre Rd & Riverside Dr

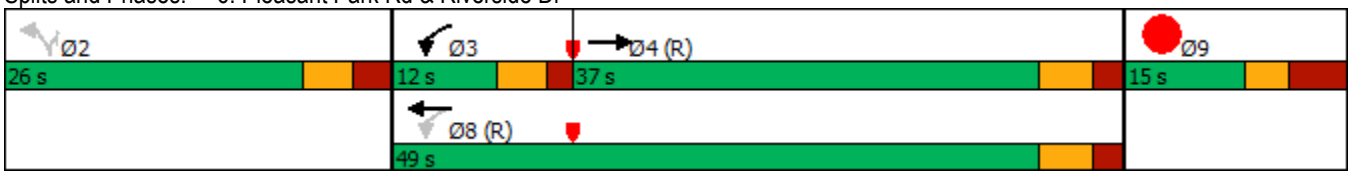


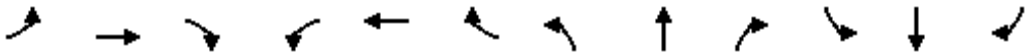
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1259	193	132	1830	155	33	
Future Volume (vph)	1259	193	132	1830	155	33	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	30.0		0.0	40.0	
Storage Lanes		0	1		1	1	
Taper Length (m)			7.5		7.5		
Right Turn on Red		Yes				Yes	
Link Speed (k/h)	60			60	50		
Link Distance (m)	242.5			151.7	243.4		
Travel Time (s)	14.6			9.1	17.5		
Lane Group Flow (vph)	1613	0	147	2033	172	37	
Turn Type	NA		pm+pt	NA	Perm	Perm	
Protected Phases	4		3	8			9
Permitted Phases			8		2	2	
Detector Phase	4		3	8	2	2	
Switch Phase							
Minimum Initial (s)	10.0		5.0	10.0	5.0	5.0	5.0
Minimum Split (s)	28.8		10.0	28.8	25.0	25.0	12.0
Total Split (s)	37.0		12.0	49.0	26.0	26.0	15.0
Total Split (%)	41.1%		13.3%	54.4%	28.9%	28.9%	17%
Yellow Time (s)	3.7		3.3	3.7	3.3	3.3	3.0
All-Red Time (s)	2.1		1.7	2.1	2.7	2.7	4.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8		5.0	5.8	6.0	6.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	C-Max		None	C-Max	None	None	None
Act Effct Green (s)	49.8		64.7	63.9	14.3	14.3	
Actuated g/C Ratio	0.55		0.72	0.71	0.16	0.16	
v/c Ratio	0.87		0.59	0.85	0.64	0.14	
Control Delay	16.0		22.6	15.1	45.6	11.2	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	16.0		22.6	15.1	45.6	11.2	
LOS	B		C	B	D	B	
Approach Delay	16.0			15.6	39.5		
Approach LOS	B			B	D		
Queue Length 50th (m)	129.6		8.8	114.4	28.1	0.0	
Queue Length 95th (m)	m#174.7		28.4	#203.1	44.9	7.5	
Internal Link Dist (m)	218.5			127.7	219.4		
Turn Bay Length (m)			30.0			40.0	
Base Capacity (vph)	1845		253	2405	376	365	
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	0.87		0.58	0.85	0.46	0.10	

Intersection Summary	
Area Type:	Other

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 75 (83%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 17.0 Intersection LOS: B
Intersection Capacity Utilization 74.0% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

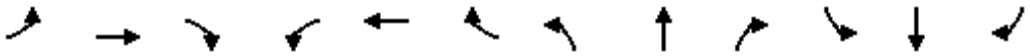
Splits and Phases: 6: Pleasant Park Rd & Riverside Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	1725	0	0	0	0	0	0	0	0	63	0
Future Volume (vph)	0	1725	0	0	0	0	0	0	0	0	63	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60			60			48			40	
Link Distance (m)		192.9			87.5			69.7			62.3	
Travel Time (s)		11.6			5.3			5.2			5.6	
Lane Group Flow (vph)	0	1917	0	0	0	0	0	0	0	0	70	0
Sign Control		Free			Free			Stop			Stop	

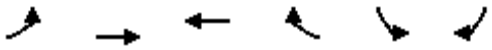
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.5%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (veh/h)	0	1725	0	0	0	0	0	0	0	0	63	0
Future Volume (Veh/h)	0	1725	0	0	0	0	0	0	0	0	63	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1917	0	0	0	0	0	0	0	0	70	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)		312			166							
pX, platoon unblocked				0.46			0.46	0.46	0.46	0.46	0.46	
vC, conflicting volume	0			1917			1952	1917	958	958	1917	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			668			744	668	0	0	668	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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			100			100	100	100	100	60	100
cM capacity (veh/h)	1622			426			97	175	504	475	175	1084

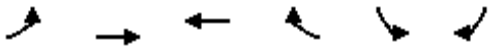
Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	958	958	70
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	175
Volume to Capacity	0.56	0.56	0.40
Queue Length 95th (m)	0.0	0.0	13.4
Control Delay (s)	0.0	0.0	38.6
Lane LOS			E
Approach Delay (s)	0.0		38.6
Approach LOS			E

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	60.5%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1725	0	0	79	0
Future Volume (vph)	0	1725	0	0	79	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60	60		40	
Link Distance (m)		87.5	78.2		106.8	
Travel Time (s)		5.3	4.7		9.6	
Lane Group Flow (vph)	0	1917	0	0	88	0
Sign Control		Free	Free		Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 69.7%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1725	0	0	79	0
Future Volume (Veh/h)	0	1725	0	0	79	0
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1917	0	0	88	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)		400	78			
pX, platoon unblocked					0.46	
vC, conflicting volume	0				958	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				81	100
cM capacity (veh/h)	1622				468	1084

Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	958	958	88
Volume Left	0	0	88
Volume Right	0	0	0
cSH	1700	1700	468
Volume to Capacity	0.56	0.56	0.19
Queue Length 95th (m)	0.0	0.0	5.2
Control Delay (s)	0.0	0.0	14.5
Lane LOS			B
Approach Delay (s)	0.0		14.5
Approach LOS			B

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization		69.7%	ICU Level of Service C
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1985	161	0
Future Volume (vph)	0	0	0	1985	161	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)	60			60	40	
Link Distance (m)	96.6			216.2	87.9	
Travel Time (s)	5.8			13.0	7.9	
Lane Group Flow (vph)	0	0	0	2206	179	0
Sign Control	Free			Free	Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.0%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	1985	161	0
Future Volume (Veh/h)	0	0	0	1985	161	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	0	2206	179	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)	97					
pX, platoon unblocked						
vC, conflicting volume			0		1103	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		1103	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		13	100
cM capacity (veh/h)			1622		206	1084

Direction, Lane #	WB 1	WB 2	NB 1
Volume Total	1103	1103	179
Volume Left	0	0	179
Volume Right	0	0	0
cSH	1700	1700	206
Volume to Capacity	0.65	0.65	0.87
Queue Length 95th (m)	0.0	0.0	50.9
Control Delay (s)	0.0	0.0	81.2
Lane LOS			F
Approach Delay (s)	0.0		81.2
Approach LOS			F

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

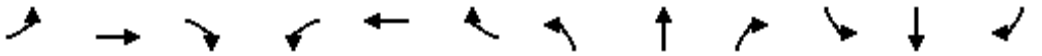
Future Background 2022

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	98	6	1126	98	6	486
Future Volume (vph)	98	6	1126	98	6	486
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Right Turn on Red		Yes		Yes		
Link Speed (k/h)	40		50			50
Link Distance (m)	227.4		190.3			201.0
Travel Time (s)	20.5		13.7			14.5
Lane Group Flow (vph)	104	0	1224	0	0	492
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		10.0		10.0	10.0
Minimum Split (s)	22.0		22.5		22.5	22.5
Total Split (s)	22.0		48.0		48.0	48.0
Total Split (%)	31.4%		68.6%		68.6%	68.6%
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	3.2		2.6		2.6	2.6
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.2		5.9			5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max		C-Max	C-Max
Act Effct Green (s)	9.5		52.0			52.0
Actuated g/C Ratio	0.14		0.74			0.74
v/c Ratio	0.45		0.50			0.21
Control Delay	32.2		6.0			4.3
Queue Delay	0.0		0.0			0.0
Total Delay	32.2		6.0			4.3
LOS	C		A			A
Approach Delay	32.2		6.0			4.3
Approach LOS	C		A			A
Queue Length 50th (m)	12.2		32.8			10.1
Queue Length 95th (m)	24.1		55.5			18.5
Internal Link Dist (m)	203.4		166.3			177.0
Turn Bay Length (m)						
Base Capacity (vph)	384		2472			2369
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.27		0.50			0.21

Intersection Summary	
Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 17 (24%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 7.0	Intersection LOS: A
Intersection Capacity Utilization 53.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Bank St & Riverdale Ave

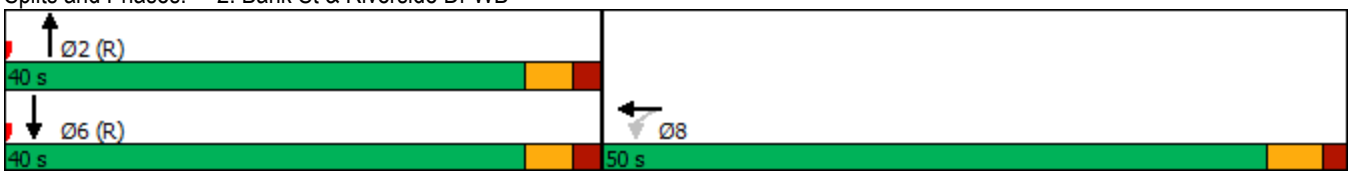


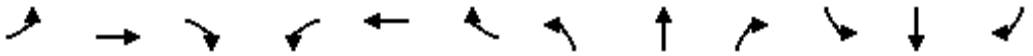
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	256	1051	208	0	906	0	0	385	164
Future Volume (vph)	0	0	0	256	1051	208	0	906	0	0	385	164
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		335.6			105.9			124.8			190.3	
Travel Time (s)		20.1			6.4			9.0			13.7	
Lane Group Flow (vph)	0	0	0	256	1259	0	0	906	0	0	549	0
Turn Type				Perm	NA			NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8								
Minimum Split (s)				28.5	28.5			30.2			30.2	
Total Split (s)				50.0	50.0			40.0			40.0	
Total Split (%)				55.6%	55.6%			44.4%			44.4%	
Yellow Time (s)				3.7	3.7			3.3			3.3	
All-Red Time (s)				1.8	1.8			1.9			1.9	
Lost Time Adjust (s)				0.0	0.0			0.0			0.0	
Total Lost Time (s)				5.5	5.5			5.2			5.2	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)				44.5	44.5			34.8			34.8	
Actuated g/C Ratio				0.49	0.49			0.39			0.39	
v/c Ratio				0.31	0.76			0.69			0.44	
Control Delay				16.0	24.0			10.0			21.9	
Queue Delay				0.0	0.0			0.1			0.0	
Total Delay				16.0	24.0			10.1			21.9	
LOS				B	C			B			C	
Approach Delay					22.6			10.1			21.9	
Approach LOS					C			B			C	
Queue Length 50th (m)				30.2	99.2			15.4			36.2	
Queue Length 95th (m)				50.7	132.3			18.7			50.2	
Internal Link Dist (m)		311.6			81.9			100.8			166.3	
Turn Bay Length (m)				75.0								
Base Capacity (vph)				830	1647			1310			1236	
Starvation Cap Reductn				0	0			19			0	
Spillback Cap Reductn				0	0			0			0	
Storage Cap Reductn				0	0			0			0	
Reduced v/c Ratio				0.31	0.76			0.70			0.44	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 41 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 60	

Control Type: Pretimed
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 18.6 Intersection LOS: B
Intersection Capacity Utilization 73.1% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 2: Bank St & Riverside Dr WB





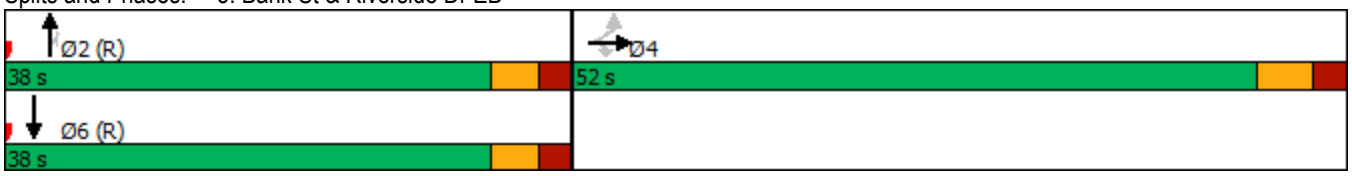
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	1329	48	0	0	0	0	818	309	0	567	0
Future Volume (vph)	150	1329	48	0	0	0	0	818	309	0	567	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	60.0		45.0	0.0		0.0	0.0		60.0	0.0		0.0
Storage Lanes	0		1	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		72.6			357.9			168.7			124.8	
Travel Time (s)		4.4			21.5			12.1			9.0	
Lane Group Flow (vph)	150	1329	48	0	0	0	0	818	309	0	567	0
Turn Type	Perm	NA	Perm					NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4		4						2			
Minimum Split (s)	29.1	29.1	29.1					25.5	25.5		25.5	
Total Split (s)	52.0	52.0	52.0					38.0	38.0		38.0	
Total Split (%)	57.8%	57.8%	57.8%					42.2%	42.2%		42.2%	
Yellow Time (s)	3.7	3.7	3.7					3.3	3.3		3.3	
All-Red Time (s)	2.4	2.4	2.4					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	6.1					5.5	5.5		5.5	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)	45.9	45.9	45.9					32.5	32.5		32.5	
Actuated g/C Ratio	0.51	0.51	0.51					0.36	0.36		0.36	
v/c Ratio	0.18	0.77	0.06					0.67	0.58		0.46	
Control Delay	11.6	24.9	5.8					26.0	23.7		18.3	
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.0	
Total Delay	11.6	24.9	5.8					26.0	23.7		18.3	
LOS	B	C	A					C	C		B	
Approach Delay		23.0						25.4			18.3	
Approach LOS		C						C			B	
Queue Length 50th (m)	19.8	130.7	3.6					61.6	37.0		27.2	
Queue Length 95th (m)	m22.5	151.5	m4.2					81.7	63.4		36.2	
Internal Link Dist (m)		48.6			333.9			144.7			100.8	
Turn Bay Length (m)	60.0		45.0						60.0			
Base Capacity (vph)	853	1728	766					1224	535		1224	
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	0.18	0.77	0.06					0.67	0.58		0.46	

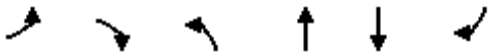
Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 36 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 60	

Control Type: Pretimed	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 23.0	Intersection LOS: C
Intersection Capacity Utilization 73.1%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 3: Bank St & Riverside Dr EB





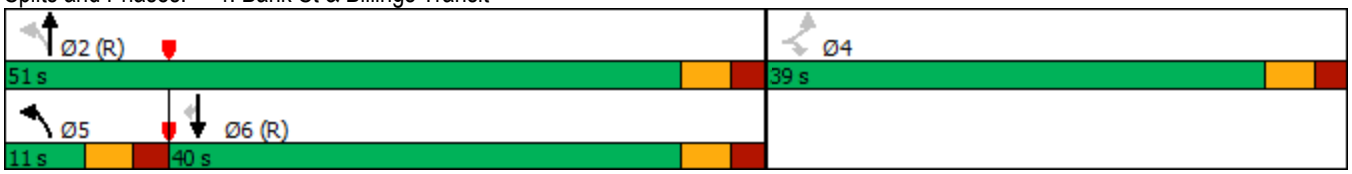
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	8	11	12	1000	660	9
Future Volume (vph)	8	11	12	1000	660	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	65.0			15.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Right Turn on Red		Yes				Yes
Link Speed (k/h)	50			50	50	
Link Distance (m)	251.4			166.8	168.7	
Travel Time (s)	18.1			12.0	12.1	
Lane Group Flow (vph)	8	11	12	1000	660	9
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0	10.0
Minimum Split (s)	38.6	38.6	10.7	28.7	28.7	28.7
Total Split (s)	39.0	39.0	11.0	51.0	40.0	40.0
Total Split (%)	43.3%	43.3%	12.2%	56.7%	44.4%	44.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.7	5.7	5.7	5.7
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)	6.7	6.7	78.8	82.3	79.8	79.8
Actuated g/C Ratio	0.07	0.07	0.88	0.91	0.89	0.89
v/c Ratio	0.13	0.17	0.04	0.32	0.22	0.02
Control Delay	42.9	25.8	2.1	1.8	0.9	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	25.8	2.1	1.8	0.9	0.8
LOS	D	C	A	A	A	A
Approach Delay	33.0			1.8	0.9	
Approach LOS	C			A	A	
Queue Length 50th (m)	1.3	0.0	0.1	0.0	0.2	0.0
Queue Length 95th (m)	5.5	5.0	1.4	29.0	7.2	m0.1
Internal Link Dist (m)	227.4			142.8	144.7	
Turn Bay Length (m)			65.0			15.0
Base Capacity (vph)	304	287	321	3098	3007	593
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	0.03	0.04	0.04	0.32	0.22	0.02

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 50 (56%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.32	
Intersection Signal Delay: 1.8	Intersection LOS: A
Intersection Capacity Utilization 51.5%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 4: Bank St & Billings Transit



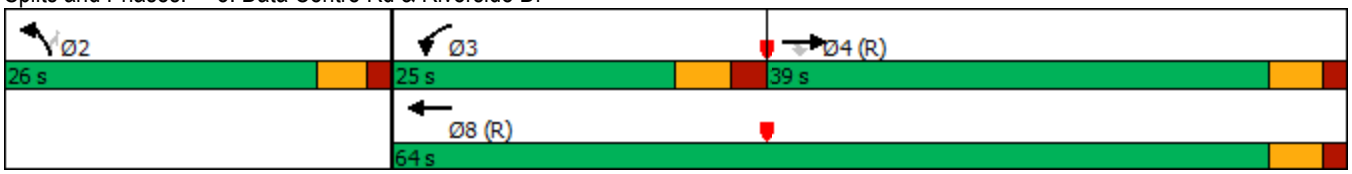
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1423	88	96	962	47	70
Future Volume (vph)	1423	88	96	962	47	70
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		40.0	75.0		85.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Right Turn on Red		Yes				Yes
Link Speed (k/h)	60			60	50	
Link Distance (m)	262.9			119.4	217.7	
Travel Time (s)	15.8			7.2	15.7	
Lane Group Flow (vph)	1423	88	96	962	47	70
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0	5.0
Minimum Split (s)	23.4	23.4	11.1	23.4	23.1	23.1
Total Split (s)	39.0	39.0	25.0	64.0	26.0	26.0
Total Split (%)	43.3%	43.3%	27.8%	71.1%	28.9%	28.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	1.7	1.7	2.4	1.7	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	6.1	5.4	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	60.7	60.7	10.4	74.7	8.0	8.0
Actuated g/C Ratio	0.67	0.67	0.12	0.83	0.09	0.09
v/c Ratio	0.62	0.09	0.49	0.34	0.31	0.37
Control Delay	13.3	5.1	56.2	1.4	43.1	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.3	5.1	56.2	1.4	43.1	15.5
LOS	B	A	E	A	D	B
Approach Delay	12.8			6.4	26.6	
Approach LOS	B			A	C	
Queue Length 50th (m)	78.8	2.6	17.9	8.8	7.8	0.0
Queue Length 95th (m)	125.8	9.9	m24.8	11.9	17.5	11.6
Internal Link Dist (m)	238.9			95.4	193.7	
Turn Bay Length (m)		40.0	75.0		85.0	
Base Capacity (vph)	2285	996	355	2813	393	386
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	0.62	0.09	0.27	0.34	0.12	0.18

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 37 (41%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 10.9	Intersection LOS: B
Intersection Capacity Utilization 71.7%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 5: Data Centre Rd & Riverside Dr

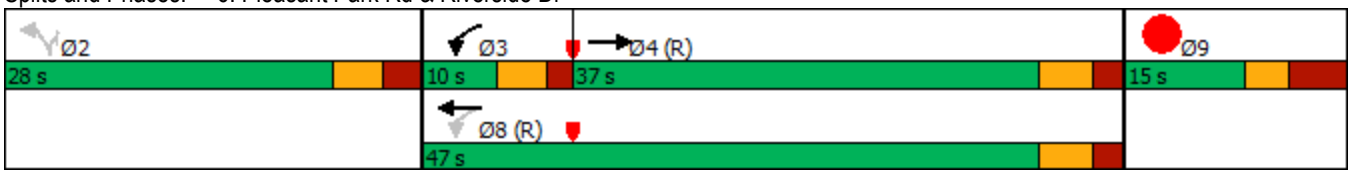


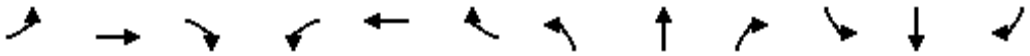
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1173	97	32	1215	168	36	
Future Volume (vph)	1173	97	32	1215	168	36	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	30.0		0.0	40.0	
Storage Lanes		0	1		1	1	
Taper Length (m)			7.5		7.5		
Right Turn on Red		Yes				Yes	
Link Speed (k/h)	60			60	50		
Link Distance (m)	242.5			151.7	243.4		
Travel Time (s)	14.6			9.1	17.5		
Lane Group Flow (vph)	1270	0	32	1215	168	36	
Turn Type	NA		pm+pt	NA	Perm	Perm	
Protected Phases	4		3	8			9
Permitted Phases			8		2	2	
Detector Phase	4		3	8	2	2	
Switch Phase							
Minimum Initial (s)	10.0		5.0	10.0	5.0	5.0	5.0
Minimum Split (s)	28.8		10.0	28.8	25.0	25.0	12.0
Total Split (s)	37.0		10.0	47.0	28.0	28.0	15.0
Total Split (%)	41.1%		11.1%	52.2%	31.1%	31.1%	17%
Yellow Time (s)	3.7		3.3	3.7	3.3	3.3	3.0
All-Red Time (s)	2.1		1.7	2.1	2.7	2.7	4.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8		5.0	5.8	6.0	6.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	C-Max		None	C-Max	None	None	None
Act Effct Green (s)	57.2		64.8	64.0	14.2	14.2	
Actuated g/C Ratio	0.64		0.72	0.71	0.16	0.16	
v/c Ratio	0.60		0.11	0.50	0.63	0.13	
Control Delay	9.4		5.4	7.3	45.5	11.4	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	9.4		5.4	7.3	45.5	11.4	
LOS	A		A	A	D	B	
Approach Delay	9.4			7.2	39.5		
Approach LOS	A			A	D		
Queue Length 50th (m)	81.4		1.3	42.2	27.5	0.0	
Queue Length 95th (m)	138.2		4.5	69.0	44.3	7.3	
Internal Link Dist (m)	218.5			127.7	219.4		
Turn Bay Length (m)			30.0			40.0	
Base Capacity (vph)	2131		284	2412	414	398	
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	0.60		0.11	0.50	0.41	0.09	

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 50 (56%), Referenced to phase 4:EBT and 8:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 10.7	Intersection LOS: B
Intersection Capacity Utilization 57.2%	ICU Level of Service B
Analysis Period (min) 15	

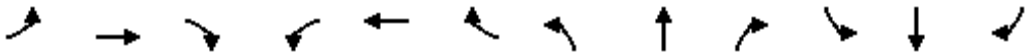
Splits and Phases: 6: Pleasant Park Rd & Riverside Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	1493	0	0	0	0	0	0	0	0	76	0
Future Volume (vph)	0	1493	0	0	0	0	0	0	0	0	76	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60			60			48			40	
Link Distance (m)		191.9			95.9			54.0			65.5	
Travel Time (s)		11.5			5.8			4.1			5.9	
Lane Group Flow (vph)	0	1493	0	0	0	0	0	0	0	0	76	0
Sign Control		Free			Free			Stop			Stop	

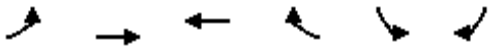
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (veh/h)	0	1493	0	0	0	0	0	0	0	0	76	0
Future Volume (Veh/h)	0	1493	0	0	0	0	0	0	0	0	76	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1493	0	0	0	0	0	0	0	0	76	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)		311			169							
pX, platoon unblocked				0.72			0.72	0.72	0.72	0.72	0.72	
vC, conflicting volume	0			1493			1531	1493	746	746	1493	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			905			958	905	0	0	905	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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			100			100	100	100	100	62	100
cM capacity (veh/h)	1622			538			107	198	780	736	198	1084

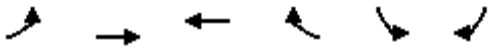
Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	746	746	76
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	198
Volume to Capacity	0.44	0.44	0.38
Queue Length 95th (m)	0.0	0.0	12.8
Control Delay (s)	0.0	0.0	34.1
Lane LOS			D
Approach Delay (s)	0.0		34.1
Approach LOS			D

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	54.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1493	0	0	70	0
Future Volume (vph)	0	1493	0	0	70	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60	60		40	
Link Distance (m)		95.9	72.6		114.9	
Travel Time (s)		5.8	4.4		10.3	
Lane Group Flow (vph)	0	1493	0	0	70	0
Sign Control		Free	Free		Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.1%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1493	0	0	70	0
Future Volume (Veh/h)	0	1493	0	0	70	0
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1493	0	0	70	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)			73			
pX, platoon unblocked						
vC, conflicting volume	0				746	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				746	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				80	100
cM capacity (veh/h)	1622				349	1084

Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	746	746	70
Volume Left	0	0	70
Volume Right	0	0	0
cSH	1700	1700	349
Volume to Capacity	0.44	0.44	0.20
Queue Length 95th (m)	0.0	0.0	5.6
Control Delay (s)	0.0	0.0	17.9
Lane LOS			C
Approach Delay (s)	0.0		17.9
Approach LOS			C

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization		64.1%	ICU Level of Service C
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1383	134	0
Future Volume (vph)	0	0	0	1383	134	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)	60			60	40	
Link Distance (m)	105.9			206.7	83.1	
Travel Time (s)	6.4			12.4	7.5	
Lane Group Flow (vph)	0	0	0	1383	134	0
Sign Control	Free			Free	Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.9%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	1383	134	0
Future Volume (Veh/h)	0	0	0	1383	134	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	1383	134	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)	106					
pX, platoon unblocked						
vC, conflicting volume			0		692	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		692	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		65	100
cM capacity (veh/h)			1622		378	1084

Direction, Lane #	WB 1	WB 2	NB 1
Volume Total	692	692	134
Volume Left	0	0	134
Volume Right	0	0	0
cSH	1700	1700	378
Volume to Capacity	0.41	0.41	0.35
Queue Length 95th (m)	0.0	0.0	11.9
Control Delay (s)	0.0	0.0	19.7
Lane LOS			C
Approach Delay (s)	0.0		19.7
Approach LOS			C

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

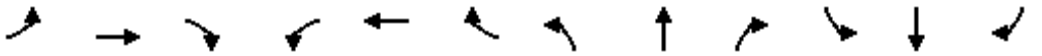
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	134	11	538	196	9	810
Future Volume (vph)	134	11	538	196	9	810
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Right Turn on Red		Yes		Yes		
Link Speed (k/h)	40		50			50
Link Distance (m)	227.4		190.3			201.0
Travel Time (s)	20.5		13.7			14.5
Lane Group Flow (vph)	145	0	734	0	0	819
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		10.0		10.0	10.0
Minimum Split (s)	22.0		22.5		22.5	22.5
Total Split (s)	22.0		68.0		68.0	68.0
Total Split (%)	24.4%		75.6%		75.6%	75.6%
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	3.2		2.6		2.6	2.6
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.2		5.9			5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max		C-Max	C-Max
Act Effct Green (s)	12.4		65.5			65.5
Actuated g/C Ratio	0.14		0.73			0.73
v/c Ratio	0.62		0.32			0.35
Control Delay	46.7		1.6			5.3
Queue Delay	0.0		0.0			0.0
Total Delay	46.7		1.6			5.3
LOS	D		A			A
Approach Delay	46.7		1.6			5.3
Approach LOS	D		A			A
Queue Length 50th (m)	23.1		4.0			23.1
Queue Length 95th (m)	40.2		m5.5			35.6
Internal Link Dist (m)	203.4		166.3			177.0
Turn Bay Length (m)						
Base Capacity (vph)	298		2265			2335
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.49		0.32			0.35

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 57 (63%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 7.2	Intersection LOS: A
Intersection Capacity Utilization 50.8%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 1: Bank St & Riverdale Ave

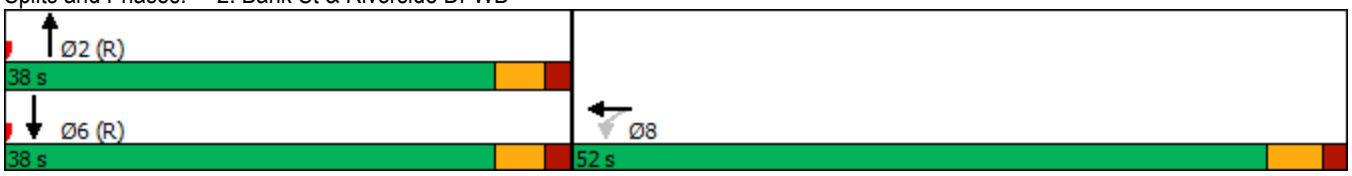


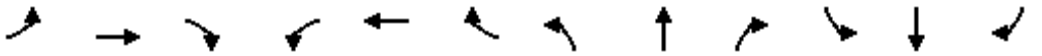
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	378	1390	100	0	548	0	0	672	201
Future Volume (vph)	0	0	0	378	1390	100	0	548	0	0	672	201
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		344.9			96.6			124.8			190.3	
Travel Time (s)		20.7			5.8			9.0			13.7	
Lane Group Flow (vph)	0	0	0	378	1490	0	0	548	0	0	873	0
Turn Type				Perm	NA			NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8								
Minimum Split (s)				28.5	28.5			30.2			30.2	
Total Split (s)				52.0	52.0			38.0			38.0	
Total Split (%)				57.8%	57.8%			42.2%			42.2%	
Yellow Time (s)				3.7	3.7			3.3			3.3	
All-Red Time (s)				1.8	1.8			1.9			1.9	
Lost Time Adjust (s)				0.0	0.0			0.0			0.0	
Total Lost Time (s)				5.5	5.5			5.2			5.2	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)				46.5	46.5			32.8			32.8	
Actuated g/C Ratio				0.52	0.52			0.36			0.36	
v/c Ratio				0.43	0.86			0.44			0.74	
Control Delay				13.3	23.5			12.5			25.1	
Queue Delay				0.0	0.0			0.0			0.2	
Total Delay				13.3	23.5			12.5			25.3	
LOS				B	C			B			C	
Approach Delay					21.5			12.5			25.3	
Approach LOS					C			B			C	
Queue Length 50th (m)				46.8	130.0			17.5			71.6	
Queue Length 95th (m)				m50.9	165.9			23.2			93.3	
Internal Link Dist (m)		320.9			72.6			100.8			166.3	
Turn Bay Length (m)				75.0								
Base Capacity (vph)				870	1737			1235			1172	
Starvation Cap Reductn				0	0			0			0	
Spillback Cap Reductn				0	0			0			34	
Storage Cap Reductn				0	0			0			0	
Reduced v/c Ratio				0.43	0.86			0.44			0.77	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 64 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 70	

Control Type: Pretimed
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 21.0 Intersection LOS: C
Intersection Capacity Utilization 84.0% ICU Level of Service E
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bank St & Riverside Dr WB



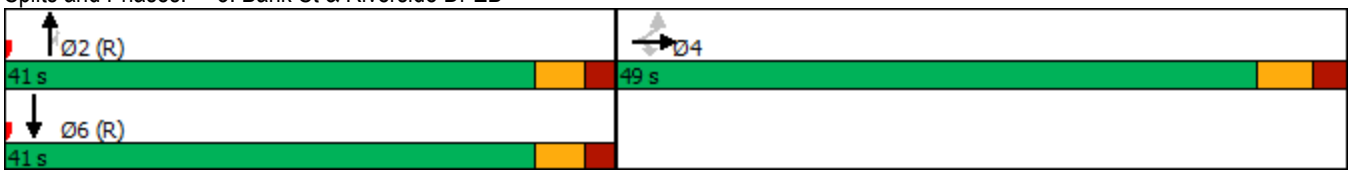


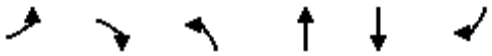
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	1481	151	0	0	0	0	407	316	0	1068	0
Future Volume (vph)	137	1481	151	0	0	0	0	407	316	0	1068	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	60.0		45.0	0.0		0.0	0.0		60.0	0.0		0.0
Storage Lanes	0		1	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		78.2			357.9			168.7			124.8	
Travel Time (s)		4.7			21.5			12.1			9.0	
Lane Group Flow (vph)	137	1481	151	0	0	0	0	407	316	0	1068	0
Turn Type	Perm	NA	Perm					NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4		4						2			
Minimum Split (s)	29.1	29.1	29.1					25.5	25.5		25.5	
Total Split (s)	49.0	49.0	49.0					41.0	41.0		41.0	
Total Split (%)	54.4%	54.4%	54.4%					45.6%	45.6%		45.6%	
Yellow Time (s)	3.7	3.7	3.7					3.3	3.3		3.3	
All-Red Time (s)	2.4	2.4	2.4					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	6.1					5.5	5.5		5.5	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)	42.9	42.9	42.9					35.5	35.5		35.5	
Actuated g/C Ratio	0.48	0.48	0.48					0.39	0.39		0.39	
v/c Ratio	0.17	0.92	0.22					0.30	0.56		0.80	
Control Delay	14.3	25.1	11.9					18.0	21.4		21.5	
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.8	
Total Delay	14.3	25.1	11.9					18.0	21.4		22.3	
LOS	B	C	B					B	C		C	
Approach Delay		23.1						19.5			22.3	
Approach LOS		C						B			C	
Queue Length 50th (m)	7.3	42.7	4.9					25.2	36.9		44.8	
Queue Length 95th (m)	m16.9	#163.8	m15.0					36.2	62.9		65.8	
Internal Link Dist (m)		54.2			333.9			144.7			100.8	
Turn Bay Length (m)	60.0		45.0						60.0			
Base Capacity (vph)	796	1615	697					1337	564		1337	
Starvation Cap Reductn	0	0	0					0	0		80	
Spillback Cap Reductn	0	0	0					0	0		0	
Storage Cap Reductn	0	0	0					0	0		0	
Reduced v/c Ratio	0.17	0.92	0.22					0.30	0.56		0.85	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 61 (68%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 75	

Control Type: Pretimed
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 22.1 Intersection LOS: C
Intersection Capacity Utilization 84.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Bank St & Riverside Dr EB





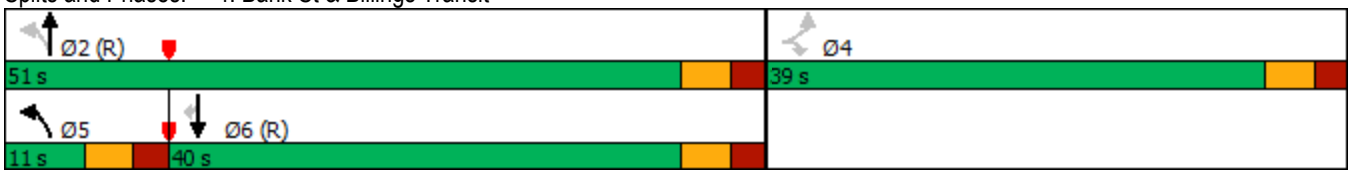
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	11	13	922	1352	14
Future Volume (vph)	15	11	13	922	1352	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	65.0			15.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Right Turn on Red		Yes				Yes
Link Speed (k/h)	50			50	50	
Link Distance (m)	251.4			166.8	168.7	
Travel Time (s)	18.1			12.0	12.1	
Lane Group Flow (vph)	15	11	13	922	1352	14
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0	10.0
Minimum Split (s)	38.6	38.6	10.7	28.7	28.7	28.7
Total Split (s)	39.0	39.0	11.0	51.0	40.0	40.0
Total Split (%)	43.3%	43.3%	12.2%	56.7%	44.4%	44.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.7	5.7	5.7	5.7
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)	7.5	7.5	78.2	81.6	79.2	79.2
Actuated g/C Ratio	0.08	0.08	0.87	0.91	0.88	0.88
v/c Ratio	0.23	0.15	0.07	0.30	0.45	0.03
Control Delay	46.0	24.1	3.0	2.0	3.2	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.0	24.1	3.0	2.0	3.2	3.6
LOS	D	C	A	A	A	A
Approach Delay	36.7			2.0	3.2	
Approach LOS	D			A	A	
Queue Length 50th (m)	2.5	0.0	0.2	0.0	1.0	0.0
Queue Length 95th (m)	8.3	4.8	1.7	29.4	39.4	m0.1
Internal Link Dist (m)	227.4			142.8	144.7	
Turn Bay Length (m)			65.0			15.0
Base Capacity (vph)	291	283	174	3075	2982	503
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	0.04	0.07	0.30	0.45	0.03

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 68 (76%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 3.1	Intersection LOS: A
Intersection Capacity Utilization 68.6%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 4: Bank St & Billings Transit

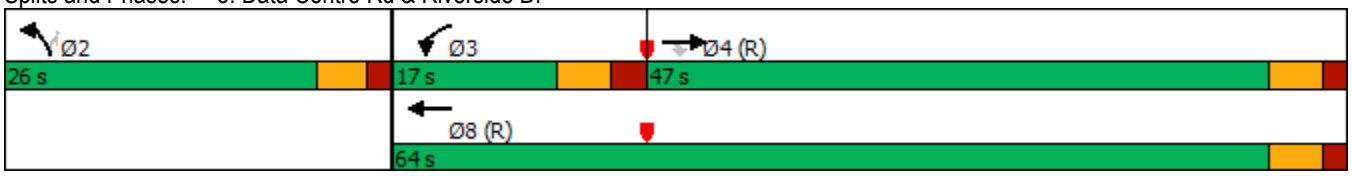


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1676	10	69	1618	87	82
Future Volume (vph)	1676	10	69	1618	87	82
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		40.0	75.0		85.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Right Turn on Red		Yes				Yes
Link Speed (k/h)	60			60	50	
Link Distance (m)	262.9			119.4	217.7	
Travel Time (s)	15.8			7.2	15.7	
Lane Group Flow (vph)	1676	10	69	1618	87	82
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0	5.0
Minimum Split (s)	23.4	23.4	11.1	23.4	23.1	23.1
Total Split (s)	47.0	47.0	17.0	64.0	26.0	26.0
Total Split (%)	52.2%	52.2%	18.9%	71.1%	28.9%	28.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	1.7	1.7	2.4	1.7	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	6.1	5.4	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	60.1	60.1	9.0	72.8	10.0	10.0
Actuated g/C Ratio	0.67	0.67	0.10	0.81	0.11	0.11
v/c Ratio	0.74	0.01	0.41	0.59	0.47	0.35
Control Delay	17.0	7.4	27.3	12.6	44.8	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.0	7.4	27.3	12.6	44.8	12.7
LOS	B	A	C	B	D	B
Approach Delay	17.0			13.2	29.2	
Approach LOS	B			B	C	
Queue Length 50th (m)	109.2	0.3	9.6	111.7	14.3	0.0
Queue Length 95th (m)	#192.1	2.7	m11.6	140.1	27.3	11.9
Internal Link Dist (m)	238.9			95.4	193.7	
Turn Bay Length (m)		40.0	75.0		85.0	
Base Capacity (vph)	2263	987	211	2743	393	403
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	0.74	0.01	0.33	0.59	0.22	0.20

Intersection Summary	
Area Type:	Other

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 6 (7%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 15.8 Intersection LOS: B
Intersection Capacity Utilization 74.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Data Centre Rd & Riverside Dr

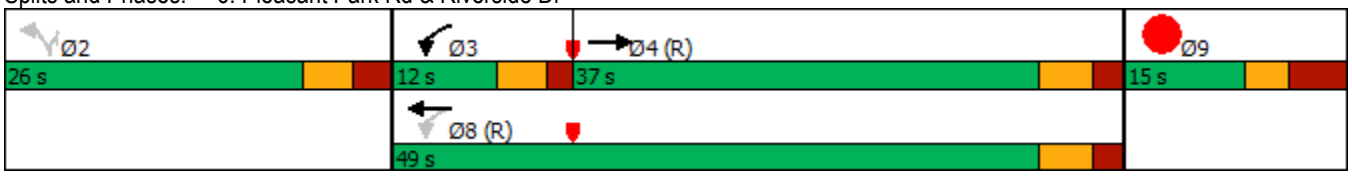


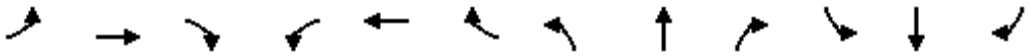
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1284	193	132	1867	155	33	
Future Volume (vph)	1284	193	132	1867	155	33	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	30.0		0.0	40.0	
Storage Lanes		0	1		1	1	
Taper Length (m)			7.5		7.5		
Right Turn on Red		Yes				Yes	
Link Speed (k/h)	60			60	50		
Link Distance (m)	242.5			151.7	243.4		
Travel Time (s)	14.6			9.1	17.5		
Lane Group Flow (vph)	1477	0	132	1867	155	33	
Turn Type	NA		pm+pt	NA	Perm	Perm	
Protected Phases	4		3	8			9
Permitted Phases			8		2	2	
Detector Phase	4		3	8	2	2	
Switch Phase							
Minimum Initial (s)	10.0		5.0	10.0	5.0	5.0	5.0
Minimum Split (s)	28.8		10.0	28.8	25.0	25.0	12.0
Total Split (s)	37.0		12.0	49.0	26.0	26.0	15.0
Total Split (%)	41.1%		13.3%	54.4%	28.9%	28.9%	17%
Yellow Time (s)	3.7		3.3	3.7	3.3	3.3	3.0
All-Red Time (s)	2.1		1.7	2.1	2.7	2.7	4.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8		5.0	5.8	6.0	6.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	C-Max		None	C-Max	None	None	None
Act Effct Green (s)	51.4		65.5	64.7	13.5	13.5	
Actuated g/C Ratio	0.57		0.73	0.72	0.15	0.15	
v/c Ratio	0.78		0.52	0.77	0.61	0.13	
Control Delay	12.0		15.5	11.5	45.6	12.0	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	12.0		15.5	11.5	45.6	12.0	
LOS	B		B	B	D	B	
Approach Delay	12.0			11.7	39.7		
Approach LOS	B			B	D		
Queue Length 50th (m)	78.1		5.6	89.3	25.4	0.0	
Queue Length 95th (m)	m#161.7		21.4	147.4	41.8	7.3	
Internal Link Dist (m)	218.5			127.7	219.4		
Turn Bay Length (m)			30.0			40.0	
Base Capacity (vph)	1905		260	2438	376	362	
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	0.78		0.51	0.77	0.41	0.09	

Intersection Summary	
Area Type:	Other

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 75 (83%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 13.3 Intersection LOS: B
Intersection Capacity Utilization 74.7% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

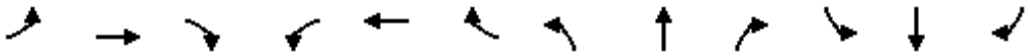
Splits and Phases: 6: Pleasant Park Rd & Riverside Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	1758	0	0	0	0	0	0	0	0	63	0
Future Volume (vph)	0	1758	0	0	0	0	0	0	0	0	63	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60			60			48			40	
Link Distance (m)		192.9			87.5			69.7			62.3	
Travel Time (s)		11.6			5.3			5.2			5.6	
Lane Group Flow (vph)	0	1758	0	0	0	0	0	0	0	0	63	0
Sign Control		Free			Free			Stop			Stop	

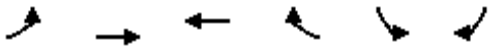
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (veh/h)	0	1758	0	0	0	0	0	0	0	0	63	0
Future Volume (Veh/h)	0	1758	0	0	0	0	0	0	0	0	63	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1758	0	0	0	0	0	0	0	0	63	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)		312			166							
pX, platoon unblocked				0.59			0.59	0.59	0.59	0.59	0.59	
vC, conflicting volume	0			1758			1790	1758	879	879	1758	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			903			957	903	0	0	903	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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			100			100	100	100	100	61	100
cM capacity (veh/h)	1622			443			88	163	642	606	163	1084

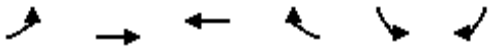
Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	879	879	63
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	163
Volume to Capacity	0.52	0.52	0.39
Queue Length 95th (m)	0.0	0.0	12.7
Control Delay (s)	0.0	0.0	40.3
Lane LOS			E
Approach Delay (s)	0.0		40.3
Approach LOS			E

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1758	0	0	79	0
Future Volume (vph)	0	1758	0	0	79	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60	60		40	
Link Distance (m)		87.5	78.2		106.8	
Travel Time (s)		5.3	4.7		9.6	
Lane Group Flow (vph)	0	1758	0	0	79	0
Sign Control		Free	Free		Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.6%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1758	0	0	79	0
Future Volume (Veh/h)	0	1758	0	0	79	0
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1758	0	0	79	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)		400	78			
pX, platoon unblocked					0.58	
vC, conflicting volume	0				879	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				87	100
cM capacity (veh/h)	1622				595	1084

Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	879	879	79
Volume Left	0	0	79
Volume Right	0	0	0
cSH	1700	1700	595
Volume to Capacity	0.52	0.52	0.13
Queue Length 95th (m)	0.0	0.0	3.5
Control Delay (s)	0.0	0.0	12.0
Lane LOS			B
Approach Delay (s)	0.0		12.0
Approach LOS			B

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		70.6%	ICU Level of Service
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2022	161	0
Future Volume (vph)	0	0	0	2022	161	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)	60			60	40	
Link Distance (m)	96.6			216.2	87.9	
Travel Time (s)	5.8			13.0	7.9	
Lane Group Flow (vph)	0	0	0	2022	161	0
Sign Control	Free			Free	Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 75.1%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	2022	161	0
Future Volume (Veh/h)	0	0	0	2022	161	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	2022	161	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)	97					
pX, platoon unblocked						
vC, conflicting volume			0		1011	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		1011	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		32	100
cM capacity (veh/h)			1622		236	1084

Direction, Lane #	WB 1	WB 2	NB 1
Volume Total	1011	1011	161
Volume Left	0	0	161
Volume Right	0	0	0
cSH	1700	1700	236
Volume to Capacity	0.59	0.59	0.68
Queue Length 95th (m)	0.0	0.0	33.4
Control Delay (s)	0.0	0.0	47.8
Lane LOS			E
Approach Delay (s)	0.0		47.8
Approach LOS			E

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

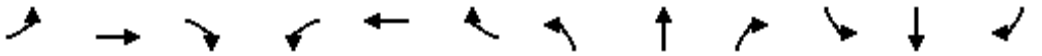
Future Background 2027

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	98	6	1215	98	6	514
Future Volume (vph)	98	6	1215	98	6	514
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Right Turn on Red		Yes		Yes		
Link Speed (k/h)	40		50			50
Link Distance (m)	227.4		190.3			201.0
Travel Time (s)	20.5		13.7			14.5
Lane Group Flow (vph)	104	0	1313	0	0	520
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		10.0		10.0	10.0
Minimum Split (s)	22.0		22.5		22.5	22.5
Total Split (s)	22.0		48.0		48.0	48.0
Total Split (%)	31.4%		68.6%		68.6%	68.6%
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	3.2		2.6		2.6	2.6
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.2		5.9			5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max		C-Max	C-Max
Act Effct Green (s)	9.5		52.0			52.0
Actuated g/C Ratio	0.14		0.74			0.74
v/c Ratio	0.45		0.53			0.22
Control Delay	32.2		6.3			4.3
Queue Delay	0.0		0.0			0.0
Total Delay	32.2		6.3			4.3
LOS	C		A			A
Approach Delay	32.2		6.3			4.3
Approach LOS	C		A			A
Queue Length 50th (m)	12.2		36.7			10.7
Queue Length 95th (m)	24.1		62.4			19.6
Internal Link Dist (m)	203.4		166.3			177.0
Turn Bay Length (m)						
Base Capacity (vph)	384		2475			2369
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.27		0.53			0.22

Intersection Summary	
Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 17 (24%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 7.2	Intersection LOS: A
Intersection Capacity Utilization 56.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Bank St & Riverdale Ave

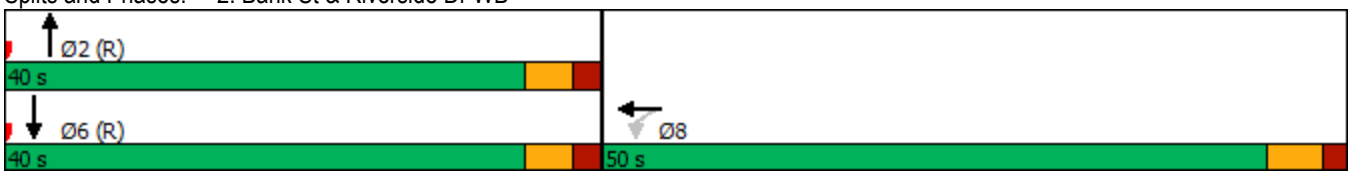


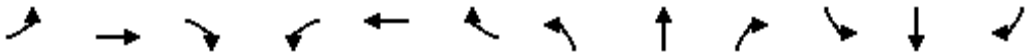
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	271	1107	250	0	952	0	0	406	175
Future Volume (vph)	0	0	0	271	1107	250	0	952	0	0	406	175
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		335.6			105.9			124.8			190.3	
Travel Time (s)		20.1			6.4			9.0			13.7	
Lane Group Flow (vph)	0	0	0	271	1357	0	0	952	0	0	581	0
Turn Type				Perm	NA			NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8								
Minimum Split (s)				28.5	28.5			30.2			30.2	
Total Split (s)				50.0	50.0			40.0			40.0	
Total Split (%)				55.6%	55.6%			44.4%			44.4%	
Yellow Time (s)				3.7	3.7			3.3			3.3	
All-Red Time (s)				1.8	1.8			1.9			1.9	
Lost Time Adjust (s)				0.0	0.0			0.0			0.0	
Total Lost Time (s)				5.5	5.5			5.2			5.2	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)				44.5	44.5			34.8			34.8	
Actuated g/C Ratio				0.49	0.49			0.39			0.39	
v/c Ratio				0.33	0.83			0.73			0.47	
Control Delay				16.0	26.5			10.4			22.2	
Queue Delay				0.0	0.0			0.1			0.0	
Total Delay				16.0	26.5			10.4			22.2	
LOS				B	C			B			C	
Approach Delay					24.7			10.4			22.2	
Approach LOS					C			B			C	
Queue Length 50th (m)				32.1	112.3			16.3			38.8	
Queue Length 95th (m)				53.2	147.4			19.6			53.4	
Internal Link Dist (m)		311.6			81.9			100.8			166.3	
Turn Bay Length (m)				75.0								
Base Capacity (vph)				830	1639			1310			1236	
Starvation Cap Reductn				0	0			19			0	
Spillback Cap Reductn				0	0			0			0	
Storage Cap Reductn				0	0			0			0	
Reduced v/c Ratio				0.33	0.83			0.74			0.47	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 41 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	

Control Type: Pretimed
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 20.0 Intersection LOS: B
Intersection Capacity Utilization 77.5% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 2: Bank St & Riverside Dr WB



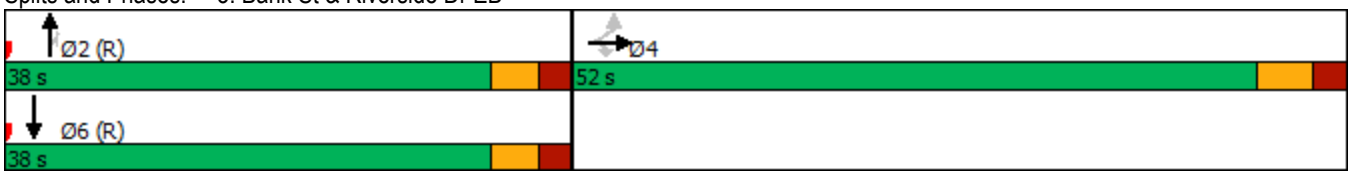


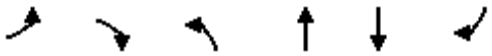
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	1437	50	0	0	0	0	860	327	0	613	0
Future Volume (vph)	158	1437	50	0	0	0	0	860	327	0	613	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	60.0		45.0	0.0		0.0	0.0		60.0	0.0		0.0
Storage Lanes	0		1	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		72.6			357.9			168.7			124.8	
Travel Time (s)		4.4			21.5			12.1			9.0	
Lane Group Flow (vph)	158	1437	50	0	0	0	0	860	327	0	613	0
Turn Type	Perm	NA	Perm					NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4		4						2			
Minimum Split (s)	29.1	29.1	29.1					25.5	25.5		25.5	
Total Split (s)	52.0	52.0	52.0					38.0	38.0		38.0	
Total Split (%)	57.8%	57.8%	57.8%					42.2%	42.2%		42.2%	
Yellow Time (s)	3.7	3.7	3.7					3.3	3.3		3.3	
All-Red Time (s)	2.4	2.4	2.4					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	6.1					5.5	5.5		5.5	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)	45.9	45.9	45.9					32.5	32.5		32.5	
Actuated g/C Ratio	0.51	0.51	0.51					0.36	0.36		0.36	
v/c Ratio	0.19	0.83	0.07					0.70	0.61		0.50	
Control Delay	11.3	26.8	5.7					26.9	24.8		18.6	
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.0	
Total Delay	11.3	26.8	5.7					26.9	24.8		18.6	
LOS	B	C	A					C	C		B	
Approach Delay		24.7						26.3			18.6	
Approach LOS		C						C			B	
Queue Length 50th (m)	20.8	141.3	3.6					66.0	40.2		29.5	
Queue Length 95th (m)	m21.5	163.3	m3.9					86.8	68.2		38.8	
Internal Link Dist (m)		48.6			333.9			144.7			100.8	
Turn Bay Length (m)	60.0		45.0						60.0			
Base Capacity (vph)	853	1728	765					1224	535		1224	
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	0.19	0.83	0.07					0.70	0.61		0.50	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 36 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 60	

Control Type: Pretimed
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 24.2 Intersection LOS: C
Intersection Capacity Utilization 77.5% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Bank St & Riverside Dr EB





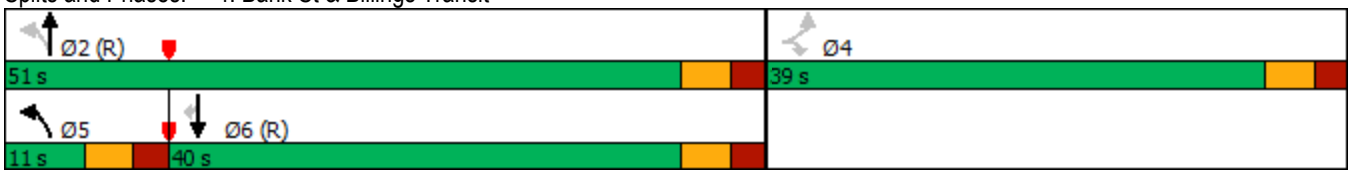
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	8	11	12	1053	711	9
Future Volume (vph)	8	11	12	1053	711	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	65.0			15.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Right Turn on Red		Yes				Yes
Link Speed (k/h)	50			50	50	
Link Distance (m)	251.4			166.8	168.7	
Travel Time (s)	18.1			12.0	12.1	
Lane Group Flow (vph)	8	11	12	1053	711	9
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0	10.0
Minimum Split (s)	38.6	38.6	10.7	28.7	28.7	28.7
Total Split (s)	39.0	39.0	11.0	51.0	40.0	40.0
Total Split (%)	43.3%	43.3%	12.2%	56.7%	44.4%	44.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.7	5.7	5.7	5.7
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)	6.7	6.7	78.8	82.3	79.8	79.8
Actuated g/C Ratio	0.07	0.07	0.88	0.91	0.89	0.89
v/c Ratio	0.13	0.17	0.04	0.34	0.24	0.02
Control Delay	42.9	25.8	2.1	1.9	0.9	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	25.8	2.1	1.9	0.9	0.7
LOS	D	C	A	A	A	A
Approach Delay	33.0			1.9	0.9	
Approach LOS	C			A	A	
Queue Length 50th (m)	1.3	0.0	0.1	0.0	0.3	0.0
Queue Length 95th (m)	5.5	5.0	1.4	31.1	7.5	m0.1
Internal Link Dist (m)	227.4			142.8	144.7	
Turn Bay Length (m)			65.0			15.0
Base Capacity (vph)	304	287	308	3098	3007	593
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	0.03	0.04	0.04	0.34	0.24	0.02

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 50 (56%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.34	
Intersection Signal Delay: 1.8	Intersection LOS: A
Intersection Capacity Utilization 53.0%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 4: Bank St & Billings Transit

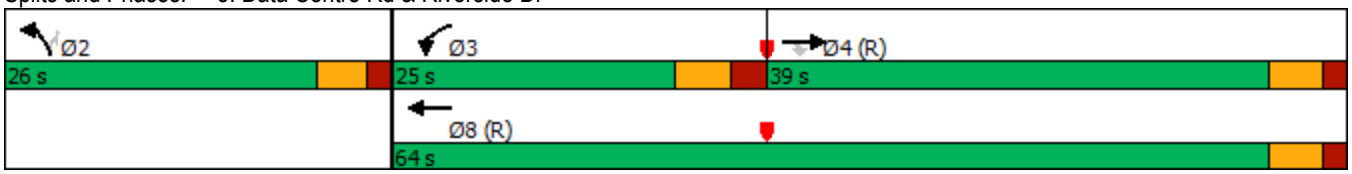


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1498	88	96	1025	47	70
Future Volume (vph)	1498	88	96	1025	47	70
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		40.0	75.0		85.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Right Turn on Red		Yes				Yes
Link Speed (k/h)	60			60	50	
Link Distance (m)	262.9			119.4	217.7	
Travel Time (s)	15.8			7.2	15.7	
Lane Group Flow (vph)	1498	88	96	1025	47	70
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0	5.0
Minimum Split (s)	23.4	23.4	11.1	23.4	23.1	23.1
Total Split (s)	39.0	39.0	25.0	64.0	26.0	26.0
Total Split (%)	43.3%	43.3%	27.8%	71.1%	28.9%	28.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	1.7	1.7	2.4	1.7	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	6.1	5.4	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	60.7	60.7	10.4	74.7	8.0	8.0
Actuated g/C Ratio	0.67	0.67	0.12	0.83	0.09	0.09
v/c Ratio	0.66	0.09	0.49	0.36	0.31	0.37
Control Delay	14.0	5.3	54.6	1.4	43.1	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.0	5.3	54.6	1.4	43.1	15.5
LOS	B	A	D	A	D	B
Approach Delay	13.5			6.0	26.6	
Approach LOS	B			A	C	
Queue Length 50th (m)	86.3	2.7	17.9	9.6	7.8	0.0
Queue Length 95th (m)	137.7	10.1	m23.1	12.7	17.5	11.6
Internal Link Dist (m)	238.9			95.4	193.7	
Turn Bay Length (m)		40.0	75.0		85.0	
Base Capacity (vph)	2285	995	355	2813	393	386
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	0.66	0.09	0.27	0.36	0.12	0.18

Intersection Summary	
Area Type:	Other

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 37 (41%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 11.1 Intersection LOS: B
Intersection Capacity Utilization 73.9% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Data Centre Rd & Riverside Dr

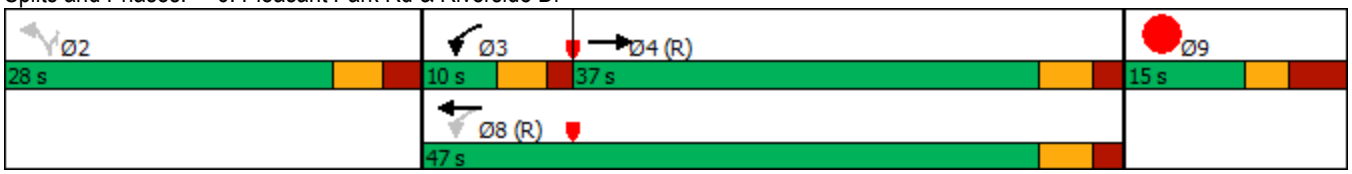


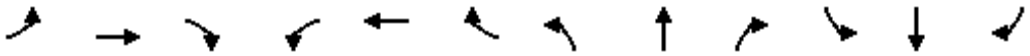
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1240	97	32	1278	168	36	
Future Volume (vph)	1240	97	32	1278	168	36	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	30.0		0.0	40.0	
Storage Lanes		0	1		1	1	
Taper Length (m)			7.5		7.5		
Right Turn on Red		Yes				Yes	
Link Speed (k/h)	60			60	50		
Link Distance (m)	242.5			151.7	243.4		
Travel Time (s)	14.6			9.1	17.5		
Lane Group Flow (vph)	1337	0	32	1278	168	36	
Turn Type	NA		pm+pt	NA	Perm	Perm	
Protected Phases	4		3	8			9
Permitted Phases			8		2	2	
Detector Phase	4		3	8	2	2	
Switch Phase							
Minimum Initial (s)	10.0		5.0	10.0	5.0	5.0	5.0
Minimum Split (s)	28.8		10.0	28.8	25.0	25.0	12.0
Total Split (s)	37.0		10.0	47.0	28.0	28.0	15.0
Total Split (%)	41.1%		11.1%	52.2%	31.1%	31.1%	17%
Yellow Time (s)	3.7		3.3	3.7	3.3	3.3	3.0
All-Red Time (s)	2.1		1.7	2.1	2.7	2.7	4.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8		5.0	5.8	6.0	6.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	C-Max		None	C-Max	None	None	None
Act Effct Green (s)	57.2		64.8	64.0	14.2	14.2	
Actuated g/C Ratio	0.64		0.72	0.71	0.16	0.16	
v/c Ratio	0.63		0.12	0.53	0.63	0.13	
Control Delay	9.3		5.5	7.6	45.5	11.4	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	9.3		5.5	7.6	45.5	11.4	
LOS	A		A	A	D	B	
Approach Delay	9.3			7.5	39.5		
Approach LOS	A			A	D		
Queue Length 50th (m)	79.2		1.3	45.6	27.5	0.0	
Queue Length 95th (m)	145.3		4.5	74.5	44.3	7.3	
Internal Link Dist (m)	218.5			127.7	219.4		
Turn Bay Length (m)			30.0			40.0	
Base Capacity (vph)	2132		266	2412	414	398	
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	0.63		0.12	0.53	0.41	0.09	

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 50 (56%), Referenced to phase 4:EBT and 8:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 10.7	Intersection LOS: B
Intersection Capacity Utilization 59.1%	ICU Level of Service B
Analysis Period (min) 15	

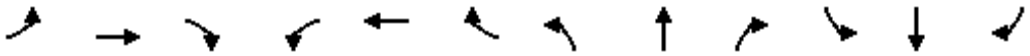
Splits and Phases: 6: Pleasant Park Rd & Riverside Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	1568	0	0	0	0	0	0	0	0	76	0
Future Volume (vph)	0	1568	0	0	0	0	0	0	0	0	76	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60			60			48			40	
Link Distance (m)		191.9			95.9			54.0			65.5	
Travel Time (s)		11.5			5.8			4.1			5.9	
Lane Group Flow (vph)	0	1568	0	0	0	0	0	0	0	0	76	0
Sign Control		Free			Free			Stop			Stop	

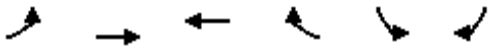
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.6%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (veh/h)	0	1568	0	0	0	0	0	0	0	0	76	0
Future Volume (Veh/h)	0	1568	0	0	0	0	0	0	0	0	76	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1568	0	0	0	0	0	0	0	0	76	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)		311			169							
pX, platoon unblocked				0.69			0.69	0.69	0.69	0.69	0.69	
vC, conflicting volume	0			1568			1606	1568	784	784	1568	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			919			975	919	0	0	919	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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			100			100	100	100	100	59	100
cM capacity (veh/h)	1622			508			96	186	746	704	186	1084

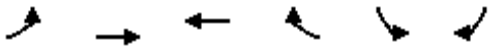
Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	784	784	76
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	186
Volume to Capacity	0.46	0.46	0.41
Queue Length 95th (m)	0.0	0.0	13.9
Control Delay (s)	0.0	0.0	37.2
Lane LOS			E
Approach Delay (s)	0.0		37.2
Approach LOS			E

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	56.6%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1568	0	0	108	0
Future Volume (vph)	0	1568	0	0	108	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60	60		40	
Link Distance (m)		95.9	72.6		114.9	
Travel Time (s)		5.8	4.4		10.3	
Lane Group Flow (vph)	0	1568	0	0	108	0
Sign Control		Free	Free		Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.3%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1568	0	0	108	0
Future Volume (Veh/h)	0	1568	0	0	108	0
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1568	0	0	108	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)			73			
pX, platoon unblocked						
vC, conflicting volume	0				784	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				784	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				67	100
cM capacity (veh/h)	1622				330	1084

Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	784	784	108
Volume Left	0	0	108
Volume Right	0	0	0
cSH	1700	1700	330
Volume to Capacity	0.46	0.46	0.33
Queue Length 95th (m)	0.0	0.0	10.6
Control Delay (s)	0.0	0.0	21.1
Lane LOS			C
Approach Delay (s)	0.0		21.1
Approach LOS			C

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1446	169	0
Future Volume (vph)	0	0	0	1446	169	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)	60			60	40	
Link Distance (m)	105.9			206.7	83.1	
Travel Time (s)	6.4			12.4	7.5	
Lane Group Flow (vph)	0	0	0	1446	169	0
Sign Control	Free			Free	Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	1446	169	0
Future Volume (Veh/h)	0	0	0	1446	169	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	1446	169	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)	106					
pX, platoon unblocked						
vC, conflicting volume			0		723	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		723	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		53	100
cM capacity (veh/h)			1622		361	1084

Direction, Lane #	WB 1	WB 2	NB 1
Volume Total	723	723	169
Volume Left	0	0	169
Volume Right	0	0	0
cSH	1700	1700	361
Volume to Capacity	0.43	0.43	0.47
Queue Length 95th (m)	0.0	0.0	18.2
Control Delay (s)	0.0	0.0	23.4
Lane LOS			C
Approach Delay (s)	0.0		23.4
Approach LOS			C

Intersection Summary			
Average Delay		2.5	
Intersection Capacity Utilization		58.7%	ICU Level of Service
Analysis Period (min)		15	

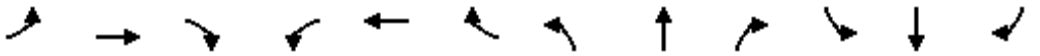
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	134	11	574	196	9	869
Future Volume (vph)	134	11	574	196	9	869
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Right Turn on Red		Yes		Yes		
Link Speed (k/h)	40		50			50
Link Distance (m)	227.4		190.3			201.0
Travel Time (s)	20.5		13.7			14.5
Lane Group Flow (vph)	145	0	770	0	0	878
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		10.0		10.0	10.0
Minimum Split (s)	22.0		22.5		22.5	22.5
Total Split (s)	22.0		68.0		68.0	68.0
Total Split (%)	24.4%		75.6%		75.6%	75.6%
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	3.2		2.6		2.6	2.6
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.2		5.9			5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max		C-Max	C-Max
Act Effct Green (s)	12.4		65.5			65.5
Actuated g/C Ratio	0.14		0.73			0.73
v/c Ratio	0.62		0.34			0.38
Control Delay	46.7		1.8			5.5
Queue Delay	0.0		0.0			0.0
Total Delay	46.7		1.8			5.5
LOS	D		A			A
Approach Delay	46.7		1.8			5.5
Approach LOS	D		A			A
Queue Length 50th (m)	23.1		4.5			25.4
Queue Length 95th (m)	40.2		m6.4			39.0
Internal Link Dist (m)	203.4		166.3			177.0
Turn Bay Length (m)						
Base Capacity (vph)	298		2273			2335
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.49		0.34			0.38

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 57 (63%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 7.2	Intersection LOS: A
Intersection Capacity Utilization 52.5%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 1: Bank St & Riverdale Ave

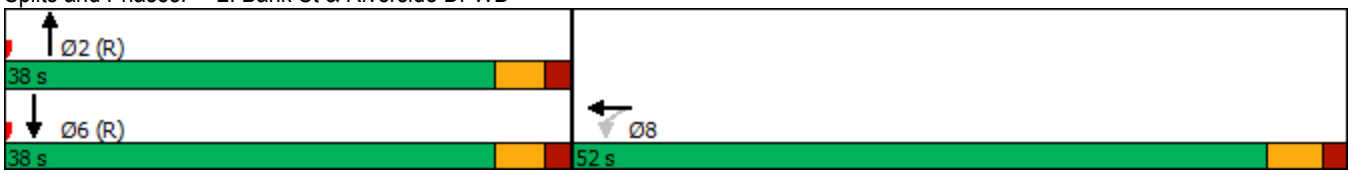


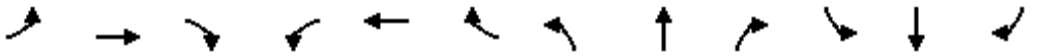
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	408	1473	114	0	576	0	0	717	219
Future Volume (vph)	0	0	0	408	1473	114	0	576	0	0	717	219
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		344.9			96.6			124.8			190.3	
Travel Time (s)		20.7			5.8			9.0			13.7	
Lane Group Flow (vph)	0	0	0	408	1587	0	0	576	0	0	936	0
Turn Type				Perm	NA			NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8								
Minimum Split (s)				28.5	28.5			30.2			30.2	
Total Split (s)				52.0	52.0			38.0			38.0	
Total Split (%)				57.8%	57.8%			42.2%			42.2%	
Yellow Time (s)				3.7	3.7			3.3			3.3	
All-Red Time (s)				1.8	1.8			1.9			1.9	
Lost Time Adjust (s)				0.0	0.0			0.0			0.0	
Total Lost Time (s)				5.5	5.5			5.2			5.2	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)				46.5	46.5			32.8			32.8	
Actuated g/C Ratio				0.52	0.52			0.36			0.36	
v/c Ratio				0.47	0.91			0.47			0.80	
Control Delay				13.5	26.8			12.7			27.1	
Queue Delay				0.0	0.0			0.0			0.8	
Total Delay				13.5	26.8			12.7			27.8	
LOS				B	C			B			C	
Approach Delay					24.0			12.7			27.8	
Approach LOS					C			B			C	
Queue Length 50th (m)				51.5	145.2			18.5			78.4	
Queue Length 95th (m)				m52.5	#182.9			24.2			101.6	
Internal Link Dist (m)		320.9			72.6			100.8			166.3	
Turn Bay Length (m)				75.0								
Base Capacity (vph)				870	1736			1235			1172	
Starvation Cap Reductn				0	0			0			0	
Spillback Cap Reductn				0	0			0			64	
Storage Cap Reductn				0	0			0			0	
Reduced v/c Ratio				0.47	0.91			0.47			0.84	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 64 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 75	

Control Type: Pretimed
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 23.2 Intersection LOS: C
Intersection Capacity Utilization 88.6% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bank St & Riverside Dr WB



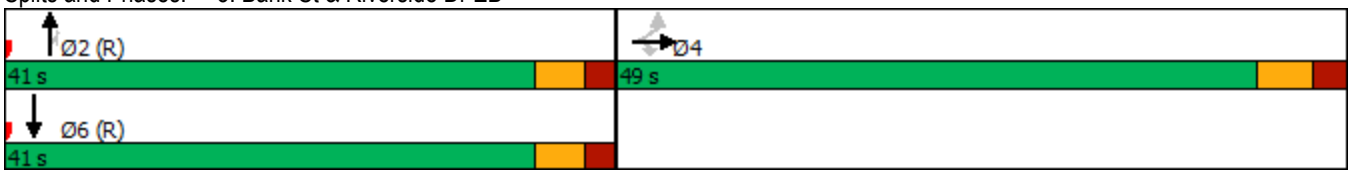


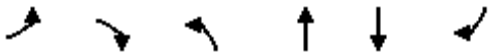
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	1576	159	0	0	0	0	428	342	0	1128	0
Future Volume (vph)	144	1576	159	0	0	0	0	428	342	0	1128	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	60.0		45.0	0.0		0.0	0.0		60.0	0.0		0.0
Storage Lanes	0		1	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		78.2			357.9			168.7			124.8	
Travel Time (s)		4.7			21.5			12.1			9.0	
Lane Group Flow (vph)	144	1576	159	0	0	0	0	428	342	0	1128	0
Turn Type	Perm	NA	Perm					NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4		4						2			
Minimum Split (s)	29.1	29.1	29.1					25.5	25.5		25.5	
Total Split (s)	49.0	49.0	49.0					41.0	41.0		41.0	
Total Split (%)	54.4%	54.4%	54.4%					45.6%	45.6%		45.6%	
Yellow Time (s)	3.7	3.7	3.7					3.3	3.3		3.3	
All-Red Time (s)	2.4	2.4	2.4					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	6.1					5.5	5.5		5.5	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)	42.9	42.9	42.9					35.5	35.5		35.5	
Actuated g/C Ratio	0.48	0.48	0.48					0.39	0.39		0.39	
v/c Ratio	0.18	0.98	0.23					0.32	0.61		0.84	
Control Delay	14.9	33.3	12.6					18.1	22.9		23.9	
Queue Delay	0.0	0.0	0.0					0.0	0.0		1.4	
Total Delay	14.9	33.3	12.6					18.1	22.9		25.4	
LOS	B	C	B					B	C		C	
Approach Delay		30.1						20.2			25.4	
Approach LOS		C						C			C	
Queue Length 50th (m)	8.7	51.5	6.5					26.7	41.4		48.3	
Queue Length 95th (m)	m16.9	#182.4	m15.0					38.0	69.6		82.9	
Internal Link Dist (m)		54.2			333.9			144.7			100.8	
Turn Bay Length (m)	60.0		45.0						60.0			
Base Capacity (vph)	796	1615	697					1337	564		1337	
Starvation Cap Reductn	0	0	0					0	0		82	
Spillback Cap Reductn	0	0	0					0	0		0	
Storage Cap Reductn	0	0	0					0	0		0	
Reduced v/c Ratio	0.18	0.98	0.23					0.32	0.61		0.90	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 61 (68%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 80	

Control Type: Pretimed
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 26.7 Intersection LOS: C
Intersection Capacity Utilization 88.6% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Bank St & Riverside Dr EB





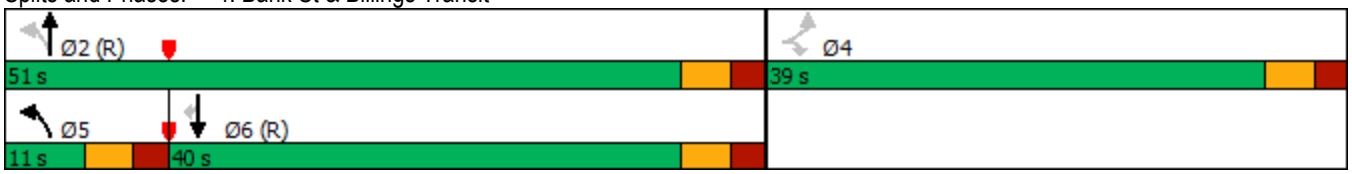
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	11	13	979	1426	14
Future Volume (vph)	15	11	13	979	1426	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	65.0			15.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Right Turn on Red		Yes				Yes
Link Speed (k/h)	50			50	50	
Link Distance (m)	251.4			166.8	168.7	
Travel Time (s)	18.1			12.0	12.1	
Lane Group Flow (vph)	15	11	13	979	1426	14
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0	10.0
Minimum Split (s)	38.6	38.6	10.7	28.7	28.7	28.7
Total Split (s)	39.0	39.0	11.0	51.0	40.0	40.0
Total Split (%)	43.3%	43.3%	12.2%	56.7%	44.4%	44.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.7	5.7	5.7	5.7
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)	7.5	7.5	78.2	81.6	79.2	79.2
Actuated g/C Ratio	0.08	0.08	0.87	0.91	0.88	0.88
v/c Ratio	0.23	0.15	0.08	0.32	0.48	0.03
Control Delay	46.0	24.1	3.2	2.0	3.8	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.0	24.1	3.2	2.0	3.8	3.6
LOS	D	C	A	A	A	A
Approach Delay	36.7			2.1	3.8	
Approach LOS	D			A	A	
Queue Length 50th (m)	2.5	0.0	0.2	0.0	1.5	0.0
Queue Length 95th (m)	8.3	4.8	1.7	31.9	44.2	m0.1
Internal Link Dist (m)	227.4			142.8	144.7	
Turn Bay Length (m)			65.0			15.0
Base Capacity (vph)	291	283	163	3075	2982	503
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	0.04	0.08	0.32	0.48	0.03

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 68 (76%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 3.4	Intersection LOS: A
Intersection Capacity Utilization 70.8%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 4: Bank St & Billings Transit

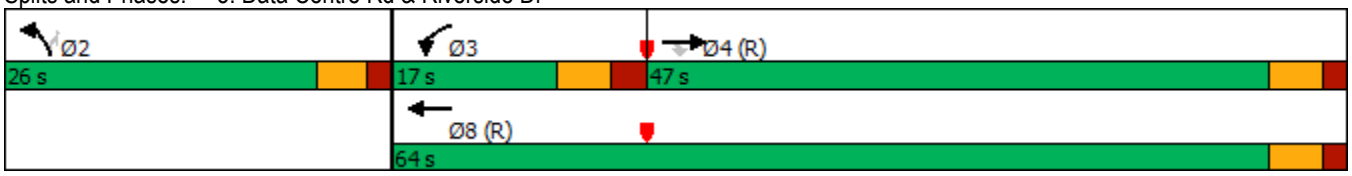


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1770	10	69	1704	87	82
Future Volume (vph)	1770	10	69	1704	87	82
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		40.0	75.0		85.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Right Turn on Red		Yes				Yes
Link Speed (k/h)	60			60	50	
Link Distance (m)	262.9			119.4	217.7	
Travel Time (s)	15.8			7.2	15.7	
Lane Group Flow (vph)	1770	10	69	1704	87	82
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0	5.0
Minimum Split (s)	23.4	23.4	11.1	23.4	23.1	23.1
Total Split (s)	47.0	47.0	17.0	64.0	26.0	26.0
Total Split (%)	52.2%	52.2%	18.9%	71.1%	28.9%	28.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	1.7	1.7	2.4	1.7	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	6.1	5.4	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	60.1	60.1	9.0	72.8	10.0	10.0
Actuated g/C Ratio	0.67	0.67	0.10	0.81	0.11	0.11
v/c Ratio	0.78	0.01	0.41	0.62	0.47	0.35
Control Delay	18.5	7.4	28.2	12.9	44.8	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	7.4	28.2	12.9	44.8	12.7
LOS	B	A	C	B	D	B
Approach Delay	18.4			13.5	29.2	
Approach LOS	B			B	C	
Queue Length 50th (m)	121.8	0.3	9.8	121.6	14.3	0.0
Queue Length 95th (m)	#210.3	2.7	m10.9	m143.7	27.3	11.9
Internal Link Dist (m)	238.9			95.4	193.7	
Turn Bay Length (m)		40.0	75.0		85.0	
Base Capacity (vph)	2263	987	211	2743	393	403
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.01	0.33	0.62	0.22	0.20

Intersection Summary	
Area Type:	Other

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 6 (7%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 16.6 Intersection LOS: B
Intersection Capacity Utilization 77.2% 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: 5: Data Centre Rd & Riverside Dr

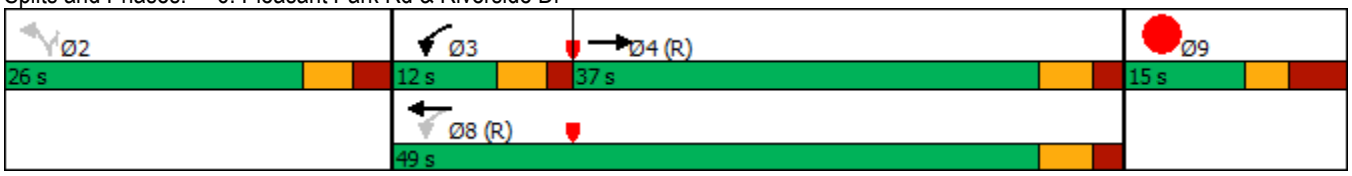


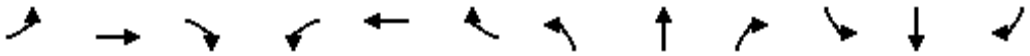
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1352	193	132	1966	155	33	
Future Volume (vph)	1352	193	132	1966	155	33	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	30.0		0.0	40.0	
Storage Lanes		0	1		1	1	
Taper Length (m)			7.5		7.5		
Right Turn on Red		Yes				Yes	
Link Speed (k/h)	60			60	50		
Link Distance (m)	242.5			151.7	243.4		
Travel Time (s)	14.6			9.1	17.5		
Lane Group Flow (vph)	1545	0	132	1966	155	33	
Turn Type	NA		pm+pt	NA	Perm	Perm	
Protected Phases	4		3	8			9
Permitted Phases			8		2	2	
Detector Phase	4		3	8	2	2	
Switch Phase							
Minimum Initial (s)	10.0		5.0	10.0	5.0	5.0	5.0
Minimum Split (s)	28.8		10.0	28.8	25.0	25.0	12.0
Total Split (s)	37.0		12.0	49.0	26.0	26.0	15.0
Total Split (%)	41.1%		13.3%	54.4%	28.9%	28.9%	17%
Yellow Time (s)	3.7		3.3	3.7	3.3	3.3	3.0
All-Red Time (s)	2.1		1.7	2.1	2.7	2.7	4.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8		5.0	5.8	6.0	6.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	C-Max		None	C-Max	None	None	None
Act Effct Green (s)	51.4		65.5	64.7	13.5	13.5	
Actuated g/C Ratio	0.57		0.73	0.72	0.15	0.15	
v/c Ratio	0.81		0.55	0.81	0.61	0.13	
Control Delay	12.9		19.2	12.9	45.6	12.0	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	12.9		19.2	12.9	45.6	12.0	
LOS	B		B	B	D	B	
Approach Delay	12.9			13.3	39.7		
Approach LOS	B			B	D		
Queue Length 50th (m)	84.6		5.6	100.3	25.4	0.0	
Queue Length 95th (m)	m#159.9		24.1	167.5	41.8	7.3	
Internal Link Dist (m)	218.5			127.7	219.4		
Turn Bay Length (m)			30.0			40.0	
Base Capacity (vph)	1907		245	2438	376	362	
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	0.81		0.54	0.81	0.41	0.09	

Intersection Summary	
Area Type:	Other

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 75 (83%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 14.5 Intersection LOS: B
Intersection Capacity Utilization 76.7% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

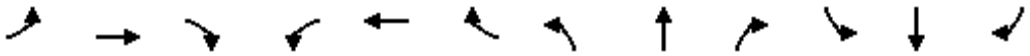
Splits and Phases: 6: Pleasant Park Rd & Riverside Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	1852	0	0	0	0	0	0	0	0	63	0
Future Volume (vph)	0	1852	0	0	0	0	0	0	0	0	63	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60			60			48			40	
Link Distance (m)		192.9			87.5			69.7			62.3	
Travel Time (s)		11.6			5.3			5.2			5.6	
Lane Group Flow (vph)	0	1852	0	0	0	0	0	0	0	0	63	0
Sign Control		Free			Free			Stop			Stop	

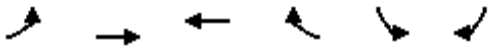
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (veh/h)	0	1852	0	0	0	0	0	0	0	0	63	0
Future Volume (Veh/h)	0	1852	0	0	0	0	0	0	0	0	63	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1852	0	0	0	0	0	0	0	0	63	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)		312			166							
pX, platoon unblocked				0.53			0.53	0.53	0.53	0.53	0.53	
vC, conflicting volume	0			1852			1884	1852	926	926	1852	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			845			904	845	0	0	845	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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			100			100	100	100	100	60	100
cM capacity (veh/h)	1622			419			85	159	578	545	159	1084

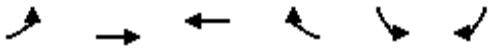
Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	926	926	63
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	159
Volume to Capacity	0.54	0.54	0.40
Queue Length 95th (m)	0.0	0.0	13.1
Control Delay (s)	0.0	0.0	41.9
Lane LOS			E
Approach Delay (s)	0.0		41.9
Approach LOS			E

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	64.2%	ICU Level of Service	C	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1852	0	0	90	0
Future Volume (vph)	0	1852	0	0	90	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60	60		40	
Link Distance (m)		87.5	78.2		106.8	
Travel Time (s)		5.3	4.7		9.6	
Lane Group Flow (vph)	0	1852	0	0	90	0
Sign Control		Free	Free		Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.4%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1852	0	0	90	0
Future Volume (Veh/h)	0	1852	0	0	90	0
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1852	0	0	90	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)		400	78			
pX, platoon unblocked					0.52	
vC, conflicting volume	0				926	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				83	100
cM capacity (veh/h)	1622				529	1084

Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	926	926	90
Volume Left	0	0	90
Volume Right	0	0	0
cSH	1700	1700	529
Volume to Capacity	0.54	0.54	0.17
Queue Length 95th (m)	0.0	0.0	4.6
Control Delay (s)	0.0	0.0	13.2
Lane LOS			B
Approach Delay (s)	0.0		13.2
Approach LOS			B

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization		73.4%	ICU Level of Service
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2121	188	0
Future Volume (vph)	0	0	0	2121	188	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)	60			60	40	
Link Distance (m)	96.6			216.2	87.9	
Travel Time (s)	5.8			13.0	7.9	
Lane Group Flow (vph)	0	0	0	2121	188	0
Sign Control	Free			Free	Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 79.5%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	2121	188	0
Future Volume (Veh/h)	0	0	0	2121	188	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	2121	188	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)	97					
pX, platoon unblocked						
vC, conflicting volume			0		1060	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		1060	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		14	100
cM capacity (veh/h)			1622		219	1084

Direction, Lane #	WB 1	WB 2	NB 1
Volume Total	1060	1060	188
Volume Left	0	0	188
Volume Right	0	0	0
cSH	1700	1700	219
Volume to Capacity	0.62	0.62	0.86
Queue Length 95th (m)	0.0	0.0	50.7
Control Delay (s)	0.0	0.0	75.3
Lane LOS			F
Approach Delay (s)	0.0		75.3
Approach LOS			F

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

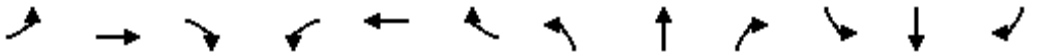
Total Projected 2022

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	98	6	1146	98	6	494
Future Volume (vph)	98	6	1146	98	6	494
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Right Turn on Red		Yes		Yes		
Link Speed (k/h)	40		50			50
Link Distance (m)	227.4		190.3			201.0
Travel Time (s)	20.5		13.7			14.5
Lane Group Flow (vph)	104	0	1244	0	0	500
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		10.0		10.0	10.0
Minimum Split (s)	22.0		22.5		22.5	22.5
Total Split (s)	22.0		48.0		48.0	48.0
Total Split (%)	31.4%		68.6%		68.6%	68.6%
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	3.2		2.6		2.6	2.6
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.2		5.9			5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max		C-Max	C-Max
Act Effct Green (s)	9.5		52.0			52.0
Actuated g/C Ratio	0.14		0.74			0.74
v/c Ratio	0.45		0.50			0.21
Control Delay	32.2		6.1			4.3
Queue Delay	0.0		0.0			0.0
Total Delay	32.2		6.1			4.3
LOS	C		A			A
Approach Delay	32.2		6.1			4.3
Approach LOS	C		A			A
Queue Length 50th (m)	12.2		33.6			10.3
Queue Length 95th (m)	24.1		57.0			18.8
Internal Link Dist (m)	203.4		166.3			177.0
Turn Bay Length (m)						
Base Capacity (vph)	384		2472			2369
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.27		0.50			0.21

Intersection Summary	
Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 17 (24%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 7.0	Intersection LOS: A
Intersection Capacity Utilization 54.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Bank St & Riverdale Ave

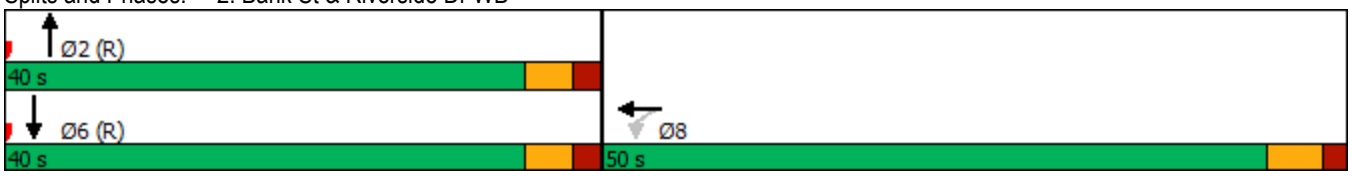


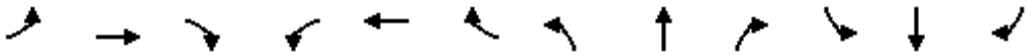
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	267	1060	228	0	906	0	0	385	172
Future Volume (vph)	0	0	0	267	1060	228	0	906	0	0	385	172
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		335.6			32.6			124.8			190.3	
Travel Time (s)		20.1			2.0			9.0			13.7	
Lane Group Flow (vph)	0	0	0	267	1288	0	0	906	0	0	557	0
Turn Type				Perm	NA			NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8								
Minimum Split (s)				28.5	28.5			30.2			30.2	
Total Split (s)				50.0	50.0			40.0			40.0	
Total Split (%)				55.6%	55.6%			44.4%			44.4%	
Yellow Time (s)				3.7	3.7			3.3			3.3	
All-Red Time (s)				1.8	1.8			1.9			1.9	
Lost Time Adjust (s)				0.0	0.0			0.0			0.0	
Total Lost Time (s)				5.5	5.5			5.2			5.2	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)				44.5	44.5			34.8			34.8	
Actuated g/C Ratio				0.49	0.49			0.39			0.39	
v/c Ratio				0.32	0.78			0.69			0.45	
Control Delay				16.1	24.6			10.0			22.0	
Queue Delay				0.0	0.0			0.1			0.0	
Total Delay				16.1	24.6			10.0			22.0	
LOS				B	C			B			C	
Approach Delay					23.1			10.0			22.0	
Approach LOS					C			B			C	
Queue Length 50th (m)				31.4	102.4			15.5			36.8	
Queue Length 95th (m)				52.4	136.5			18.7			51.1	
Internal Link Dist (m)		311.6			8.6			100.8			166.3	
Turn Bay Length (m)				75.0								
Base Capacity (vph)				830	1643			1310			1234	
Starvation Cap Reductn				0	0			19			0	
Spillback Cap Reductn				0	0			0			0	
Storage Cap Reductn				0	0			0			0	
Reduced v/c Ratio				0.32	0.78			0.70			0.45	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 41 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 60	

Control Type: Pretimed
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 19.0 Intersection LOS: B
Intersection Capacity Utilization 74.1% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 2: Bank St & Riverside Dr WB



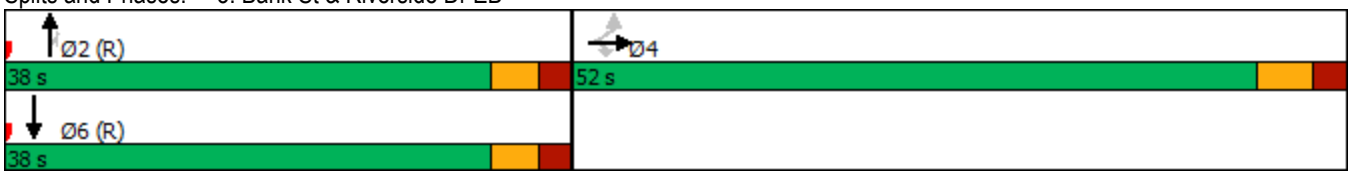


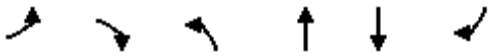
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	1341	48	0	0	0	0	818	314	0	578	0
Future Volume (vph)	150	1341	48	0	0	0	0	818	314	0	578	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	60.0		45.0	0.0		0.0	0.0		60.0	0.0		0.0
Storage Lanes	0		1	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		72.6			33.2			168.7			124.8	
Travel Time (s)		4.4			2.0			12.1			9.0	
Lane Group Flow (vph)	150	1341	48	0	0	0	0	818	314	0	578	0
Turn Type	Perm	NA	Perm					NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4		4						2			
Minimum Split (s)	29.1	29.1	29.1					25.5	25.5		25.5	
Total Split (s)	52.0	52.0	52.0					38.0	38.0		38.0	
Total Split (%)	57.8%	57.8%	57.8%					42.2%	42.2%		42.2%	
Yellow Time (s)	3.7	3.7	3.7					3.3	3.3		3.3	
All-Red Time (s)	2.4	2.4	2.4					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	6.1					5.5	5.5		5.5	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)	45.9	45.9	45.9					32.5	32.5		32.5	
Actuated g/C Ratio	0.51	0.51	0.51					0.36	0.36		0.36	
v/c Ratio	0.18	0.78	0.06					0.67	0.59		0.47	
Control Delay	11.6	25.1	5.8					26.0	24.0		18.5	
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.0	
Total Delay	11.6	25.1	5.8					26.0	24.0		18.5	
LOS	B	C	A					C	C		B	
Approach Delay		23.1						25.5			18.5	
Approach LOS		C						C			B	
Queue Length 50th (m)	19.7	131.7	3.6					61.6	38.0		28.2	
Queue Length 95th (m)	m22.3	153.2	m4.2					81.7	64.5		37.3	
Internal Link Dist (m)		48.6			9.2			144.7			100.8	
Turn Bay Length (m)	60.0		45.0						60.0			
Base Capacity (vph)	853	1728	766					1224	535		1224	
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	0.18	0.78	0.06					0.67	0.59		0.47	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 36 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 60	

Control Type: Pretimed
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 23.1 Intersection LOS: C
Intersection Capacity Utilization 74.1% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Bank St & Riverside Dr EB





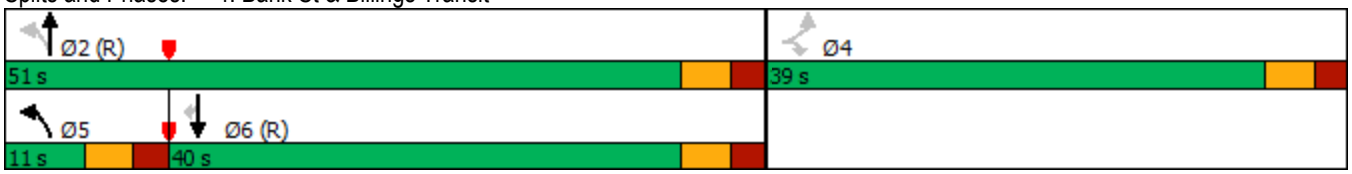
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	8	11	12	1005	671	9
Future Volume (vph)	8	11	12	1005	671	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	65.0			15.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Right Turn on Red		Yes				Yes
Link Speed (k/h)	50			50	50	
Link Distance (m)	251.4			166.8	168.7	
Travel Time (s)	18.1			12.0	12.1	
Lane Group Flow (vph)	8	11	12	1005	671	9
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0	10.0
Minimum Split (s)	38.6	38.6	10.7	28.7	28.7	28.7
Total Split (s)	39.0	39.0	11.0	51.0	40.0	40.0
Total Split (%)	43.3%	43.3%	12.2%	56.7%	44.4%	44.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.7	5.7	5.7	5.7
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)	6.7	6.7	78.8	82.3	79.8	79.8
Actuated g/C Ratio	0.07	0.07	0.88	0.91	0.89	0.89
v/c Ratio	0.13	0.17	0.04	0.32	0.22	0.02
Control Delay	42.9	25.8	2.1	1.8	0.9	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	25.8	2.1	1.8	0.9	0.8
LOS	D	C	A	A	A	A
Approach Delay	33.0			1.8	0.9	
Approach LOS	C			A	A	
Queue Length 50th (m)	1.3	0.0	0.1	0.0	0.2	0.0
Queue Length 95th (m)	5.5	5.0	1.4	29.3	7.2	m0.1
Internal Link Dist (m)	227.4			142.8	144.7	
Turn Bay Length (m)			65.0			15.0
Base Capacity (vph)	304	287	317	3098	3007	593
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	0.03	0.04	0.04	0.32	0.22	0.02

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 50 (56%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.32	
Intersection Signal Delay: 1.8	Intersection LOS: A
Intersection Capacity Utilization 51.6%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 4: Bank St & Billings Transit



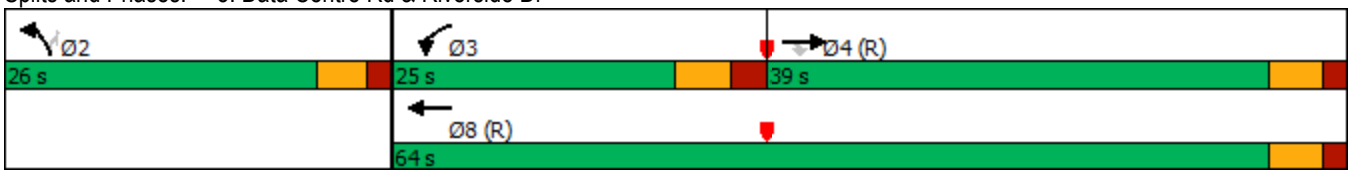
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1427	88	96	971	47	70
Future Volume (vph)	1427	88	96	971	47	70
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		40.0	75.0		85.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Right Turn on Red		Yes				Yes
Link Speed (k/h)	60			60	50	
Link Distance (m)	262.9			119.4	217.7	
Travel Time (s)	15.8			7.2	15.7	
Lane Group Flow (vph)	1427	88	96	971	47	70
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0	5.0
Minimum Split (s)	23.4	23.4	11.1	23.4	23.1	23.1
Total Split (s)	39.0	39.0	25.0	64.0	26.0	26.0
Total Split (%)	43.3%	43.3%	27.8%	71.1%	28.9%	28.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	1.7	1.7	2.4	1.7	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	6.1	5.4	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	60.7	60.7	10.4	74.7	8.0	8.0
Actuated g/C Ratio	0.67	0.67	0.12	0.83	0.09	0.09
v/c Ratio	0.62	0.09	0.49	0.35	0.31	0.37
Control Delay	13.3	5.1	55.5	1.5	43.1	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.3	5.1	55.5	1.5	43.1	15.5
LOS	B	A	E	A	D	B
Approach Delay	12.9			6.3	26.6	
Approach LOS	B			A	C	
Queue Length 50th (m)	79.2	2.6	17.8	9.3	7.8	0.0
Queue Length 95th (m)	126.5	9.9	m24.3	12.5	17.5	11.6
Internal Link Dist (m)	238.9			95.4	193.7	
Turn Bay Length (m)		40.0	75.0		85.0	
Base Capacity (vph)	2285	996	355	2813	393	386
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	0.62	0.09	0.27	0.35	0.12	0.18

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 37 (41%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 10.9	Intersection LOS: B
Intersection Capacity Utilization 71.8%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 5: Data Centre Rd & Riverside Dr

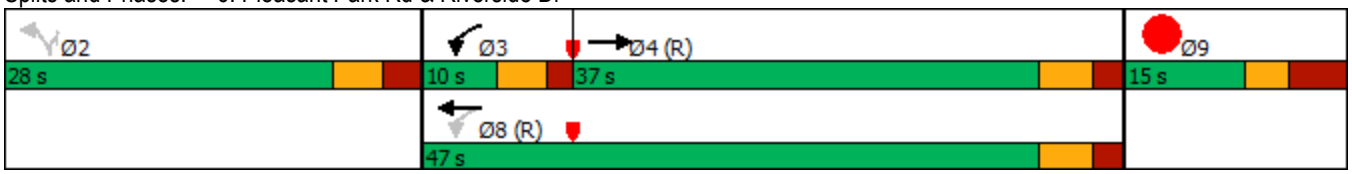


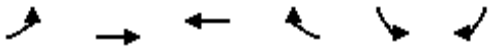
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1177	97	32	1217	168	36	
Future Volume (vph)	1177	97	32	1217	168	36	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	30.0		0.0	40.0	
Storage Lanes		0	1		1	1	
Taper Length (m)			7.5		7.5		
Right Turn on Red		Yes				Yes	
Link Speed (k/h)	60			60	50		
Link Distance (m)	242.5			151.7	243.4		
Travel Time (s)	14.6			9.1	17.5		
Lane Group Flow (vph)	1274	0	32	1217	168	36	
Turn Type	NA		pm+pt	NA	Perm	Perm	
Protected Phases	4		3	8			9
Permitted Phases			8		2	2	
Detector Phase	4		3	8	2	2	
Switch Phase							
Minimum Initial (s)	10.0		5.0	10.0	5.0	5.0	5.0
Minimum Split (s)	28.8		10.0	28.8	25.0	25.0	12.0
Total Split (s)	37.0		10.0	47.0	28.0	28.0	15.0
Total Split (%)	41.1%		11.1%	52.2%	31.1%	31.1%	17%
Yellow Time (s)	3.7		3.3	3.7	3.3	3.3	3.0
All-Red Time (s)	2.1		1.7	2.1	2.7	2.7	4.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8		5.0	5.8	6.0	6.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	C-Max		None	C-Max	None	None	None
Act Effct Green (s)	57.2		64.8	64.0	14.2	14.2	
Actuated g/C Ratio	0.64		0.72	0.71	0.16	0.16	
v/c Ratio	0.60		0.11	0.50	0.63	0.13	
Control Delay	9.6		5.4	7.3	45.5	11.4	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	9.6		5.4	7.3	45.5	11.4	
LOS	A		A	A	D	B	
Approach Delay	9.6			7.2	39.5		
Approach LOS	A			A	D		
Queue Length 50th (m)	80.9		1.3	42.2	27.5	0.0	
Queue Length 95th (m)	138.0		4.5	69.1	44.3	7.3	
Internal Link Dist (m)	218.5			127.7	219.4		
Turn Bay Length (m)			30.0			40.0	
Base Capacity (vph)	2131		284	2412	414	398	
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	0.60		0.11	0.50	0.41	0.09	

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 50 (56%), Referenced to phase 4:EBT and 8:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 10.7	Intersection LOS: B
Intersection Capacity Utilization 57.3%	ICU Level of Service B
Analysis Period (min) 15	

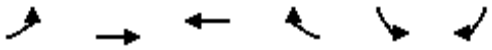
Splits and Phases: 6: Pleasant Park Rd & Riverside Dr





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1654	0	0	45	0
Future Volume (vph)	0	1654	0	0	45	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60	60		40	
Link Distance (m)		33.2	321.5		38.9	
Travel Time (s)		2.0	19.3		3.5	
Lane Group Flow (vph)	0	1654	0	0	45	0
Sign Control		Free	Free		Stop	

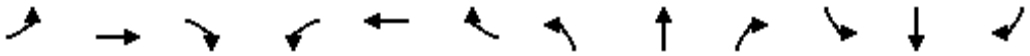
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.3%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1654	0	0	45	0
Future Volume (Veh/h)	0	1654	0	0	45	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1654	0	0	45	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)		33				
pX, platoon unblocked					0.68	
vC, conflicting volume	0				827	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				93	100
cM capacity (veh/h)	1622				692	1084

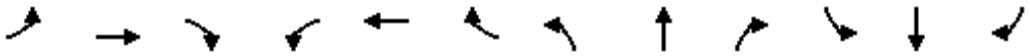
Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	827	827	45
Volume Left	0	0	45
Volume Right	0	0	0
cSH	1700	1700	692
Volume to Capacity	0.49	0.49	0.07
Queue Length 95th (m)	0.0	0.0	1.6
Control Delay (s)	0.0	0.0	10.6
Lane LOS			B
Approach Delay (s)	0.0		10.6
Approach LOS			B

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization		58.3%	ICU Level of Service
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	1497	0	0	0	0	0	0	0	0	76	0
Future Volume (vph)	0	1497	0	0	0	0	0	0	0	0	76	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60			60			48			40	
Link Distance (m)		191.9			95.9			54.0			65.5	
Travel Time (s)		11.5			5.8			4.1			5.9	
Lane Group Flow (vph)	0	1497	0	0	0	0	0	0	0	0	76	0
Sign Control		Free			Free			Stop			Stop	

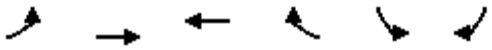
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (veh/h)	0	1497	0	0	0	0	0	0	0	0	76	0
Future Volume (Veh/h)	0	1497	0	0	0	0	0	0	0	0	76	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1497	0	0	0	0	0	0	0	0	76	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)		311			169							
pX, platoon unblocked				0.72			0.72	0.72	0.72	0.72	0.72	
vC, conflicting volume	0			1497			1535	1497	748	748	1497	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			906			959	906	0	0	906	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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			100			100	100	100	100	61	100
cM capacity (veh/h)	1622			536			106	197	778	734	197	1084

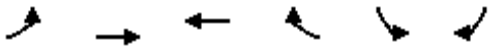
Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	748	748	76
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	197
Volume to Capacity	0.44	0.44	0.39
Queue Length 95th (m)	0.0	0.0	12.9
Control Delay (s)	0.0	0.0	34.3
Lane LOS			D
Approach Delay (s)	0.0		34.3
Approach LOS			D

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	54.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1497	0	0	78	0
Future Volume (vph)	0	1497	0	0	78	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60	60		40	
Link Distance (m)		95.9	72.6		114.9	
Travel Time (s)		5.8	4.4		10.3	
Lane Group Flow (vph)	0	1497	0	0	78	0
Sign Control		Free	Free		Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1497	0	0	78	0
Future Volume (Veh/h)	0	1497	0	0	78	0
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1497	0	0	78	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)			73			
pX, platoon unblocked						
vC, conflicting volume	0				748	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				748	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				78	100
cM capacity (veh/h)	1622				348	1084

Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	748	748	78
Volume Left	0	0	78
Volume Right	0	0	0
cSH	1700	1700	348
Volume to Capacity	0.44	0.44	0.22
Queue Length 95th (m)	0.0	0.0	6.4
Control Delay (s)	0.0	0.0	18.3
Lane LOS			C
Approach Delay (s)	0.0		18.3
Approach LOS			C

Intersection Summary			
Average Delay		0.9	
Intersection Capacity Utilization		64.2%	ICU Level of Service C
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1385	190	0
Future Volume (vph)	0	0	0	1385	190	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)	60			60	40	
Link Distance (m)	73.3			206.7	83.1	
Travel Time (s)	4.4			12.4	7.5	
Lane Group Flow (vph)	0	0	0	1385	190	0
Sign Control	Free			Free	Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.2%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	1385	190	0
Future Volume (Veh/h)	0	0	0	1385	190	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	1385	190	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)	106					
pX, platoon unblocked						
vC, conflicting volume			0		692	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		692	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		50	100
cM capacity (veh/h)			1622		378	1084

Direction, Lane #	WB 1	WB 2	NB 1
Volume Total	692	692	190
Volume Left	0	0	190
Volume Right	0	0	0
cSH	1700	1700	378
Volume to Capacity	0.41	0.41	0.50
Queue Length 95th (m)	0.0	0.0	20.7
Control Delay (s)	0.0	0.0	23.8
Lane LOS			C
Approach Delay (s)	0.0		23.8
Approach LOS			C

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	134	11	543	196	9	820
Future Volume (vph)	134	11	543	196	9	820
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Right Turn on Red		Yes		Yes		
Link Speed (k/h)	40		50			50
Link Distance (m)	227.4		190.3			201.0
Travel Time (s)	20.5		13.7			14.5
Lane Group Flow (vph)	145	0	739	0	0	829
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		10.0		10.0	10.0
Minimum Split (s)	22.0		22.5		22.5	22.5
Total Split (s)	22.0		68.0		68.0	68.0
Total Split (%)	24.4%		75.6%		75.6%	75.6%
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	3.2		2.6		2.6	2.6
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.2		5.9			5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max		C-Max	C-Max
Act Effct Green (s)	12.4		65.5			65.5
Actuated g/C Ratio	0.14		0.73			0.73
v/c Ratio	0.62		0.33			0.36
Control Delay	46.7		1.7			5.3
Queue Delay	0.0		0.0			0.0
Total Delay	46.7		1.7			5.3
LOS	D		A			A
Approach Delay	46.7		1.7			5.3
Approach LOS	D		A			A
Queue Length 50th (m)	23.1		4.2			23.5
Queue Length 95th (m)	40.2		m5.8			36.3
Internal Link Dist (m)	203.4		166.3			177.0
Turn Bay Length (m)						
Base Capacity (vph)	298		2266			2335
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.49		0.33			0.36

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 57 (63%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 7.3	Intersection LOS: A
Intersection Capacity Utilization 51.1%	ICU Level of Service A
Analysis Period (min) 15	

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

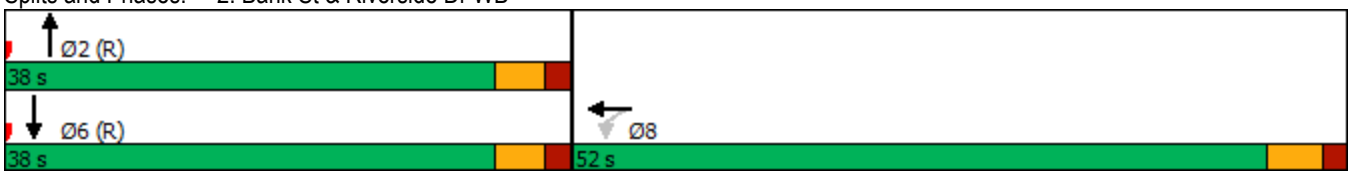
Splits and Phases: 1: Bank St & Riverdale Ave

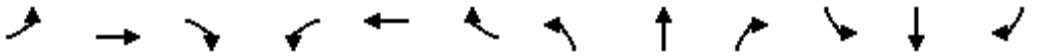
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	381	1392	105	0	548	0	0	672	211
Future Volume (vph)	0	0	0	381	1392	105	0	548	0	0	672	211
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		344.9			36.2			124.8			190.3	
Travel Time (s)		20.7			2.2			9.0			13.7	
Lane Group Flow (vph)	0	0	0	381	1497	0	0	548	0	0	883	0
Turn Type				Perm	NA			NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8								
Minimum Split (s)				28.5	28.5			30.2			30.2	
Total Split (s)				52.0	52.0			38.0			38.0	
Total Split (%)				57.8%	57.8%			42.2%			42.2%	
Yellow Time (s)				3.7	3.7			3.3			3.3	
All-Red Time (s)				1.8	1.8			1.9			1.9	
Lost Time Adjust (s)				0.0	0.0			0.0			0.0	
Total Lost Time (s)				5.5	5.5			5.2			5.2	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)				46.5	46.5			32.8			32.8	
Actuated g/C Ratio				0.52	0.52			0.36			0.36	
v/c Ratio				0.44	0.86			0.44			0.75	
Control Delay				13.4	23.8			12.5			25.4	
Queue Delay				0.0	0.0			0.0			0.2	
Total Delay				13.4	23.8			12.5			25.7	
LOS				B	C			B			C	
Approach Delay					21.7			12.5			25.7	
Approach LOS					C			B			C	
Queue Length 50th (m)				47.2	130.9			17.5			72.7	
Queue Length 95th (m)				m51.3	166.4			23.2			94.7	
Internal Link Dist (m)		320.9			12.2			100.8			166.3	
Turn Bay Length (m)				75.0								
Base Capacity (vph)				870	1736			1235			1170	
Starvation Cap Reductn				0	0			0			0	
Spillback Cap Reductn				0	0			0			36	
Storage Cap Reductn				0	0			0			0	
Reduced v/c Ratio				0.44	0.86			0.44			0.78	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 64 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 70	

Control Type: Pretimed
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 21.2 Intersection LOS: C
Intersection Capacity Utilization 84.6% ICU Level of Service E
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bank St & Riverside Dr WB



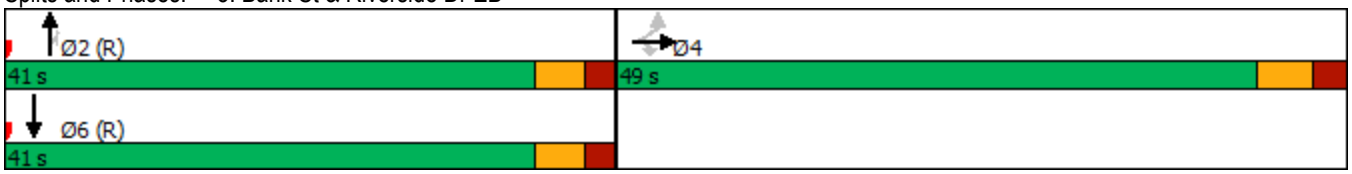


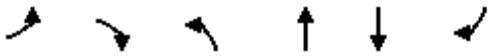
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	1496	151	0	0	0	0	407	322	0	1071	0
Future Volume (vph)	137	1496	151	0	0	0	0	407	322	0	1071	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	60.0		45.0	0.0		0.0	0.0		60.0	0.0		0.0
Storage Lanes	0		1	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		78.2			37.7			168.7			124.8	
Travel Time (s)		4.7			2.3			12.1			9.0	
Lane Group Flow (vph)	137	1496	151	0	0	0	0	407	322	0	1071	0
Turn Type	Perm	NA	Perm					NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4		4						2			
Minimum Split (s)	29.1	29.1	29.1					25.5	25.5		25.5	
Total Split (s)	49.0	49.0	49.0					41.0	41.0		41.0	
Total Split (%)	54.4%	54.4%	54.4%					45.6%	45.6%		45.6%	
Yellow Time (s)	3.7	3.7	3.7					3.3	3.3		3.3	
All-Red Time (s)	2.4	2.4	2.4					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	6.1					5.5	5.5		5.5	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)	42.9	42.9	42.9					35.5	35.5		35.5	
Actuated g/C Ratio	0.48	0.48	0.48					0.39	0.39		0.39	
v/c Ratio	0.17	0.93	0.22					0.30	0.57		0.80	
Control Delay	14.4	26.0	11.9					18.0	21.7		21.8	
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.8	
Total Delay	14.4	26.0	11.9					18.0	21.7		22.6	
LOS	B	C	B					B	C		C	
Approach Delay		23.9						19.6			22.6	
Approach LOS		C						B			C	
Queue Length 50th (m)	7.4	43.7	5.0					25.3	37.9		45.2	
Queue Length 95th (m)	m16.8	#166.5	m14.9					36.2	64.4		67.0	
Internal Link Dist (m)		54.2			13.7			144.7			100.8	
Turn Bay Length (m)	60.0		45.0						60.0			
Base Capacity (vph)	796	1615	697					1337	564		1337	
Starvation Cap Reductn	0	0	0					0	0		82	
Spillback Cap Reductn	0	0	0					0	0		0	
Storage Cap Reductn	0	0	0					0	0		0	
Reduced v/c Ratio	0.17	0.93	0.22					0.30	0.57		0.85	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 61 (68%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 75	

Control Type: Pretimed
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 22.7 Intersection LOS: C
Intersection Capacity Utilization 84.6% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Bank St & Riverside Dr EB





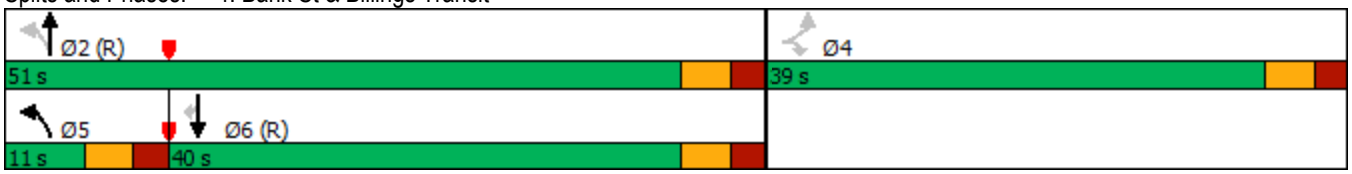
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	11	13	928	1355	14
Future Volume (vph)	15	11	13	928	1355	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	65.0			15.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Right Turn on Red		Yes				Yes
Link Speed (k/h)	50			50	50	
Link Distance (m)	251.4			166.8	168.7	
Travel Time (s)	18.1			12.0	12.1	
Lane Group Flow (vph)	15	11	13	928	1355	14
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0	10.0
Minimum Split (s)	38.6	38.6	10.7	28.7	28.7	28.7
Total Split (s)	39.0	39.0	11.0	51.0	40.0	40.0
Total Split (%)	43.3%	43.3%	12.2%	56.7%	44.4%	44.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.7	5.7	5.7	5.7
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)	7.5	7.5	78.2	81.6	79.2	79.2
Actuated g/C Ratio	0.08	0.08	0.87	0.91	0.88	0.88
v/c Ratio	0.23	0.15	0.07	0.30	0.45	0.03
Control Delay	46.0	24.1	3.0	2.0	3.2	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.0	24.1	3.0	2.0	3.2	3.6
LOS	D	C	A	A	A	A
Approach Delay	36.7			2.0	3.2	
Approach LOS	D			A	A	
Queue Length 50th (m)	2.5	0.0	0.2	0.0	1.0	0.0
Queue Length 95th (m)	8.3	4.8	1.7	29.6	39.7	m0.1
Internal Link Dist (m)	227.4			142.8	144.7	
Turn Bay Length (m)			65.0			15.0
Base Capacity (vph)	291	283	174	3075	2982	503
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	0.04	0.07	0.30	0.45	0.03

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 68 (76%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 3.1	Intersection LOS: A
Intersection Capacity Utilization 68.7%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 4: Bank St & Billings Transit

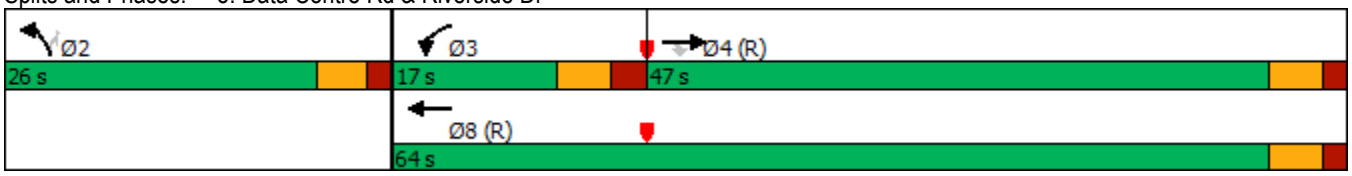


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1681	10	69	1620	87	82
Future Volume (vph)	1681	10	69	1620	87	82
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		40.0	75.0		85.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Right Turn on Red		Yes				Yes
Link Speed (k/h)	60			60	50	
Link Distance (m)	262.9			119.4	217.7	
Travel Time (s)	15.8			7.2	15.7	
Lane Group Flow (vph)	1681	10	69	1620	87	82
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0	5.0
Minimum Split (s)	23.4	23.4	11.1	23.4	23.1	23.1
Total Split (s)	47.0	47.0	17.0	64.0	26.0	26.0
Total Split (%)	52.2%	52.2%	18.9%	71.1%	28.9%	28.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	1.7	1.7	2.4	1.7	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	6.1	5.4	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	60.1	60.1	9.0	72.8	10.0	10.0
Actuated g/C Ratio	0.67	0.67	0.10	0.81	0.11	0.11
v/c Ratio	0.74	0.01	0.41	0.59	0.47	0.35
Control Delay	17.1	7.4	27.4	12.5	44.8	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.1	7.4	27.4	12.5	44.8	12.7
LOS	B	A	C	B	D	B
Approach Delay	17.1			13.2	29.2	
Approach LOS	B			B	C	
Queue Length 50th (m)	109.8	0.3	9.7	111.5	14.3	0.0
Queue Length 95th (m)	#193.1	2.7	m11.6	139.7	27.3	11.9
Internal Link Dist (m)	238.9			95.4	193.7	
Turn Bay Length (m)		40.0	75.0		85.0	
Base Capacity (vph)	2263	987	211	2743	393	403
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	0.74	0.01	0.33	0.59	0.22	0.20

Intersection Summary	
Area Type:	Other

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 6 (7%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 15.8 Intersection LOS: B
Intersection Capacity Utilization 74.9% 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: 5: Data Centre Rd & Riverside Dr

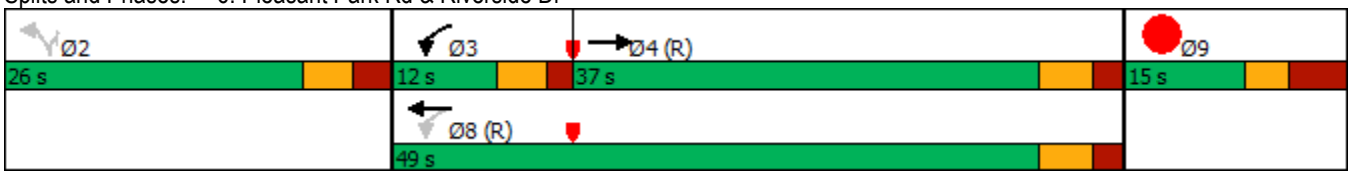


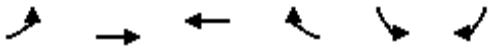
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1285	193	132	1869	155	33	
Future Volume (vph)	1285	193	132	1869	155	33	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	30.0		0.0	40.0	
Storage Lanes		0	1		1	1	
Taper Length (m)			7.5		7.5		
Right Turn on Red		Yes				Yes	
Link Speed (k/h)	60			60	50		
Link Distance (m)	242.5			151.7	243.4		
Travel Time (s)	14.6			9.1	17.5		
Lane Group Flow (vph)	1478	0	132	1869	155	33	
Turn Type	NA		pm+pt	NA	Perm	Perm	
Protected Phases	4		3	8			9
Permitted Phases			8		2	2	
Detector Phase	4		3	8	2	2	
Switch Phase							
Minimum Initial (s)	10.0		5.0	10.0	5.0	5.0	5.0
Minimum Split (s)	28.8		10.0	28.8	25.0	25.0	12.0
Total Split (s)	37.0		12.0	49.0	26.0	26.0	15.0
Total Split (%)	41.1%		13.3%	54.4%	28.9%	28.9%	17%
Yellow Time (s)	3.7		3.3	3.7	3.3	3.3	3.0
All-Red Time (s)	2.1		1.7	2.1	2.7	2.7	4.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8		5.0	5.8	6.0	6.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	C-Max		None	C-Max	None	None	None
Act Effct Green (s)	51.4		65.5	64.7	13.5	13.5	
Actuated g/C Ratio	0.57		0.73	0.72	0.15	0.15	
v/c Ratio	0.78		0.52	0.77	0.61	0.13	
Control Delay	12.2		15.8	11.5	45.6	12.0	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	12.2		15.8	11.5	45.6	12.0	
LOS	B		B	B	D	B	
Approach Delay	12.2			11.8	39.7		
Approach LOS	B			B	D		
Queue Length 50th (m)	80.7		5.6	89.6	25.4	0.0	
Queue Length 95th (m)	m#159.6		21.6	147.8	41.8	7.3	
Internal Link Dist (m)	218.5			127.7	219.4		
Turn Bay Length (m)			30.0			40.0	
Base Capacity (vph)	1905		258	2438	376	362	
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	0.78		0.51	0.77	0.41	0.09	

Intersection Summary	
Area Type:	Other

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 75 (83%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 13.4 Intersection LOS: B
Intersection Capacity Utilization 74.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

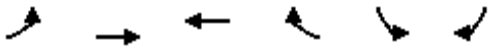
Splits and Phases: 6: Pleasant Park Rd & Riverside Dr





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1818	0	0	29	0
Future Volume (vph)	0	1818	0	0	29	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60	60		40	
Link Distance (m)		37.7	318.4		40.9	
Travel Time (s)		2.3	19.1		3.7	
Lane Group Flow (vph)	0	1818	0	0	29	0
Sign Control		Free	Free		Stop	

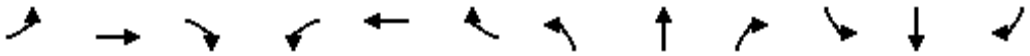
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.0%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑			↰	
Traffic Volume (veh/h)	0	1818	0	0	29	0
Future Volume (Veh/h)	0	1818	0	0	29	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1818	0	0	29	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)		38				
pX, platoon unblocked					0.58	
vC, conflicting volume	0				909	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				95	100
cM capacity (veh/h)	1622				595	1084

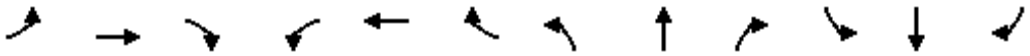
Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	909	909	29
Volume Left	0	0	29
Volume Right	0	0	0
cSH	1700	1700	595
Volume to Capacity	0.53	0.53	0.05
Queue Length 95th (m)	0.0	0.0	1.2
Control Delay (s)	0.0	0.0	11.4
Lane LOS			B
Approach Delay (s)	0.0		11.4
Approach LOS			B

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		63.0%	ICU Level of Service
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	1763	0	0	0	0	0	0	0	0	63	0
Future Volume (vph)	0	1763	0	0	0	0	0	0	0	0	63	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60			60			48			40	
Link Distance (m)		192.9			87.5			69.7			62.3	
Travel Time (s)		11.6			5.3			5.2			5.6	
Lane Group Flow (vph)	0	1763	0	0	0	0	0	0	0	0	63	0
Sign Control		Free			Free			Stop			Stop	

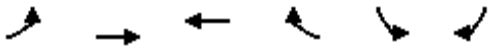
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.6%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (veh/h)	0	1763	0	0	0	0	0	0	0	0	63	0
Future Volume (Veh/h)	0	1763	0	0	0	0	0	0	0	0	63	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1763	0	0	0	0	0	0	0	0	63	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)		312			166							
pX, platoon unblocked				0.59			0.59	0.59	0.59	0.59	0.59	
vC, conflicting volume	0			1763			1794	1763	882	882	1763	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			902			955	902	0	0	902	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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			100			100	100	100	100	61	100
cM capacity (veh/h)	1622			442			88	163	639	603	163	1084

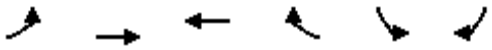
Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	882	882	63
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	163
Volume to Capacity	0.52	0.52	0.39
Queue Length 95th (m)	0.0	0.0	12.7
Control Delay (s)	0.0	0.0	40.4
Lane LOS			E
Approach Delay (s)	0.0		40.4
Approach LOS			E

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	61.6%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1763	0	0	89	0
Future Volume (vph)	0	1763	0	0	89	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60	60		40	
Link Distance (m)		87.5	78.2		106.8	
Travel Time (s)		5.3	4.7		9.6	
Lane Group Flow (vph)	0	1763	0	0	89	0
Sign Control		Free	Free		Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.8%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1763	0	0	89	0
Future Volume (Veh/h)	0	1763	0	0	89	0
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1763	0	0	89	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)		400	78			
pX, platoon unblocked					0.58	
vC, conflicting volume	0				882	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				85	100
cM capacity (veh/h)	1622				591	1084

Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	882	882	89
Volume Left	0	0	89
Volume Right	0	0	0
cSH	1700	1700	591
Volume to Capacity	0.52	0.52	0.15
Queue Length 95th (m)	0.0	0.0	4.0
Control Delay (s)	0.0	0.0	12.2
Lane LOS			B
Approach Delay (s)	0.0		12.2
Approach LOS			B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2024	192	0
Future Volume (vph)	0	0	0	2024	192	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)	60			60	40	
Link Distance (m)	60.4			216.2	87.9	
Travel Time (s)	3.6			13.0	7.9	
Lane Group Flow (vph)	0	0	0	2024	192	0
Sign Control	Free			Free	Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 77.0%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	2024	192	0
Future Volume (Veh/h)	0	0	0	2024	192	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	2024	192	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)	97					
pX, platoon unblocked						
vC, conflicting volume			0		1012	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		1012	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		18	100
cM capacity (veh/h)			1622		236	1084

Direction, Lane #	WB 1	WB 2	NB 1
Volume Total	1012	1012	192
Volume Left	0	0	192
Volume Right	0	0	0
cSH	1700	1700	236
Volume to Capacity	0.60	0.60	0.82
Queue Length 95th (m)	0.0	0.0	47.1
Control Delay (s)	0.0	0.0	64.4
Lane LOS			F
Approach Delay (s)	0.0		64.4
Approach LOS			F

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		

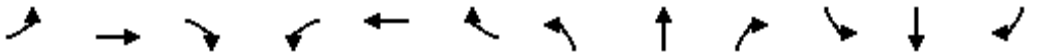
Total Projected 2027

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	98	6	1235	98	6	522
Future Volume (vph)	98	6	1235	98	6	522
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Right Turn on Red		Yes		Yes		
Link Speed (k/h)	40		50			50
Link Distance (m)	227.4		190.3			201.0
Travel Time (s)	20.5		13.7			14.5
Lane Group Flow (vph)	104	0	1333	0	0	528
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		10.0		10.0	10.0
Minimum Split (s)	22.0		22.5		22.5	22.5
Total Split (s)	22.0		48.0		48.0	48.0
Total Split (%)	31.4%		68.6%		68.6%	68.6%
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	3.2		2.6		2.6	2.6
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.2		5.9			5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max		C-Max	C-Max
Act Effct Green (s)	9.5		52.0			52.0
Actuated g/C Ratio	0.14		0.74			0.74
v/c Ratio	0.45		0.54			0.22
Control Delay	32.2		6.4			4.3
Queue Delay	0.0		0.0			0.0
Total Delay	32.2		6.4			4.3
LOS	C		A			A
Approach Delay	32.2		6.4			4.3
Approach LOS	C		A			A
Queue Length 50th (m)	12.2		37.7			10.9
Queue Length 95th (m)	24.1		64.2			19.9
Internal Link Dist (m)	203.4		166.3			177.0
Turn Bay Length (m)						
Base Capacity (vph)	384		2476			2367
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.27		0.54			0.22

Intersection Summary	
Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 17 (24%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 7.2	Intersection LOS: A
Intersection Capacity Utilization 56.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Bank St & Riverdale Ave

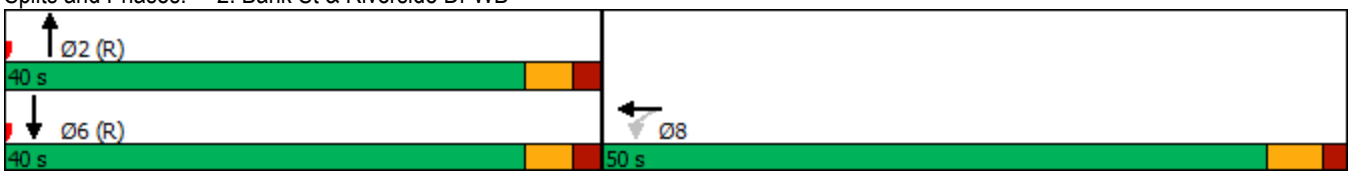


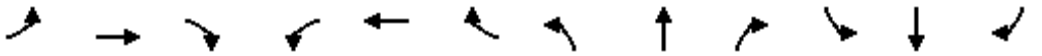
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	282	1116	270	0	952	0	0	406	183
Future Volume (vph)	0	0	0	282	1116	270	0	952	0	0	406	183
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		335.6			32.6			124.8			190.3	
Travel Time (s)		20.1			2.0			9.0			13.7	
Lane Group Flow (vph)	0	0	0	282	1386	0	0	952	0	0	589	0
Turn Type				Perm	NA			NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8								
Minimum Split (s)				28.5	28.5			30.2			30.2	
Total Split (s)				50.0	50.0			40.0			40.0	
Total Split (%)				55.6%	55.6%			44.4%			44.4%	
Yellow Time (s)				3.7	3.7			3.3			3.3	
All-Red Time (s)				1.8	1.8			1.9			1.9	
Lost Time Adjust (s)				0.0	0.0			0.0			0.0	
Total Lost Time (s)				5.5	5.5			5.2			5.2	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)				44.5	44.5			34.8			34.8	
Actuated g/C Ratio				0.49	0.49			0.39			0.39	
v/c Ratio				0.34	0.85			0.73			0.48	
Control Delay				16.2	27.5			10.4			22.4	
Queue Delay				0.0	0.0			0.1			0.0	
Total Delay				16.2	27.5			10.4			22.4	
LOS				B	C			B			C	
Approach Delay					25.6			10.4			22.4	
Approach LOS					C			B			C	
Queue Length 50th (m)				33.4	115.9			16.3			39.5	
Queue Length 95th (m)				55.2	150.1			19.6			54.3	
Internal Link Dist (m)		311.6			8.6			100.8			166.3	
Turn Bay Length (m)				75.0								
Base Capacity (vph)				830	1636			1310			1233	
Starvation Cap Reductn				0	0			19			0	
Spillback Cap Reductn				0	0			0			0	
Storage Cap Reductn				0	0			0			0	
Reduced v/c Ratio				0.34	0.85			0.74			0.48	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 41 (46%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 65	

Control Type: Pretimed
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 20.5 Intersection LOS: C
Intersection Capacity Utilization 78.5% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 2: Bank St & Riverside Dr WB



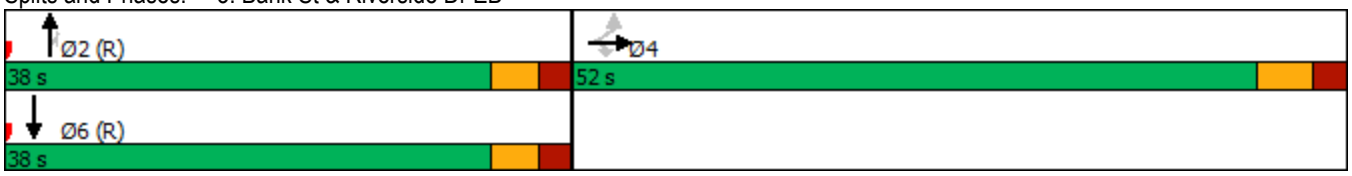


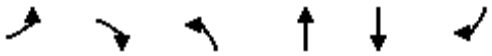
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	1449	50	0	0	0	0	860	332	0	624	0
Future Volume (vph)	158	1449	50	0	0	0	0	860	332	0	624	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	60.0		45.0	0.0		0.0	0.0		60.0	0.0		0.0
Storage Lanes	0		1	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		72.6			33.2			168.7			124.8	
Travel Time (s)		4.4			2.0			12.1			9.0	
Lane Group Flow (vph)	158	1449	50	0	0	0	0	860	332	0	624	0
Turn Type	Perm	NA	Perm					NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4		4						2			
Minimum Split (s)	29.1	29.1	29.1					25.5	25.5		25.5	
Total Split (s)	52.0	52.0	52.0					38.0	38.0		38.0	
Total Split (%)	57.8%	57.8%	57.8%					42.2%	42.2%		42.2%	
Yellow Time (s)	3.7	3.7	3.7					3.3	3.3		3.3	
All-Red Time (s)	2.4	2.4	2.4					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	6.1					5.5	5.5		5.5	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)	45.9	45.9	45.9					32.5	32.5		32.5	
Actuated g/C Ratio	0.51	0.51	0.51					0.36	0.36		0.36	
v/c Ratio	0.19	0.84	0.07					0.70	0.62		0.51	
Control Delay	11.3	27.2	5.7					26.9	25.2		18.8	
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.0	
Total Delay	11.3	27.2	5.7					26.9	25.2		18.8	
LOS	B	C	A					C	C		B	
Approach Delay		25.0						26.4			18.8	
Approach LOS		C						C			B	
Queue Length 50th (m)	20.8	142.4	3.6					66.0	41.2		30.5	
Queue Length 95th (m)	m21.5	164.6	m4.0					87.0	69.7		40.1	
Internal Link Dist (m)		48.6			9.2			144.7			100.8	
Turn Bay Length (m)	60.0		45.0						60.0			
Base Capacity (vph)	853	1728	765					1224	535		1224	
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	0.19	0.84	0.07					0.70	0.62		0.51	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 36 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 60	

Control Type: Pretimed
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 24.4 Intersection LOS: C
Intersection Capacity Utilization 78.5% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Bank St & Riverside Dr EB





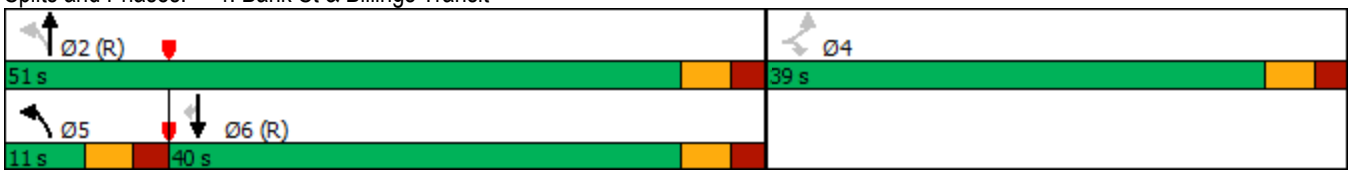
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	8	11	12	1058	722	9
Future Volume (vph)	8	11	12	1058	722	9
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	65.0			15.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Right Turn on Red		Yes				Yes
Link Speed (k/h)	50			50	50	
Link Distance (m)	251.4			166.8	168.7	
Travel Time (s)	18.1			12.0	12.1	
Lane Group Flow (vph)	8	11	12	1058	722	9
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0	10.0
Minimum Split (s)	38.6	38.6	10.7	28.7	28.7	28.7
Total Split (s)	39.0	39.0	11.0	51.0	40.0	40.0
Total Split (%)	43.3%	43.3%	12.2%	56.7%	44.4%	44.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.7	5.7	5.7	5.7
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)	6.7	6.7	78.8	82.3	79.8	79.8
Actuated g/C Ratio	0.07	0.07	0.88	0.91	0.89	0.89
v/c Ratio	0.13	0.17	0.04	0.34	0.24	0.02
Control Delay	42.9	25.8	2.1	1.9	0.9	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	25.8	2.1	1.9	0.9	0.7
LOS	D	C	A	A	A	A
Approach Delay	33.0			1.9	0.9	
Approach LOS	C			A	A	
Queue Length 50th (m)	1.3	0.0	0.1	0.0	0.1	0.0
Queue Length 95th (m)	5.5	5.0	1.4	31.3	7.5	m0.1
Internal Link Dist (m)	227.4			142.8	144.7	
Turn Bay Length (m)			65.0			15.0
Base Capacity (vph)	304	287	305	3098	3007	593
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	0.03	0.04	0.04	0.34	0.24	0.02

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 50 (56%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.34	
Intersection Signal Delay: 1.8	Intersection LOS: A
Intersection Capacity Utilization 53.2%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 4: Bank St & Billings Transit



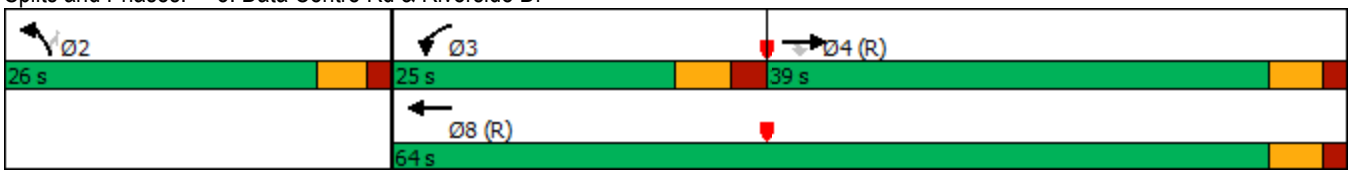
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1502	88	96	1034	47	70
Future Volume (vph)	1502	88	96	1034	47	70
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		40.0	75.0		85.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Right Turn on Red		Yes				Yes
Link Speed (k/h)	60			60	50	
Link Distance (m)	262.9			119.4	217.7	
Travel Time (s)	15.8			7.2	15.7	
Lane Group Flow (vph)	1502	88	96	1034	47	70
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0	5.0
Minimum Split (s)	23.4	23.4	11.1	23.4	23.1	23.1
Total Split (s)	39.0	39.0	25.0	64.0	26.0	26.0
Total Split (%)	43.3%	43.3%	27.8%	71.1%	28.9%	28.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	1.7	1.7	2.4	1.7	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	6.1	5.4	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	60.7	60.7	10.4	74.7	8.0	8.0
Actuated g/C Ratio	0.67	0.67	0.12	0.83	0.09	0.09
v/c Ratio	0.66	0.09	0.49	0.37	0.31	0.37
Control Delay	14.1	5.4	54.0	1.5	43.1	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.1	5.4	54.0	1.5	43.1	15.5
LOS	B	A	D	A	D	B
Approach Delay	13.6			5.9	26.6	
Approach LOS	B			A	C	
Queue Length 50th (m)	86.6	2.8	17.9	10.1	7.8	0.0
Queue Length 95th (m)	138.6	10.2	m22.7	m13.2	17.5	11.6
Internal Link Dist (m)	238.9			95.4	193.7	
Turn Bay Length (m)		40.0	75.0		85.0	
Base Capacity (vph)	2285	995	355	2813	393	386
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	0.66	0.09	0.27	0.37	0.12	0.18

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 37 (41%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 11.1	Intersection LOS: B
Intersection Capacity Utilization 74.0%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 5: Data Centre Rd & Riverside Dr

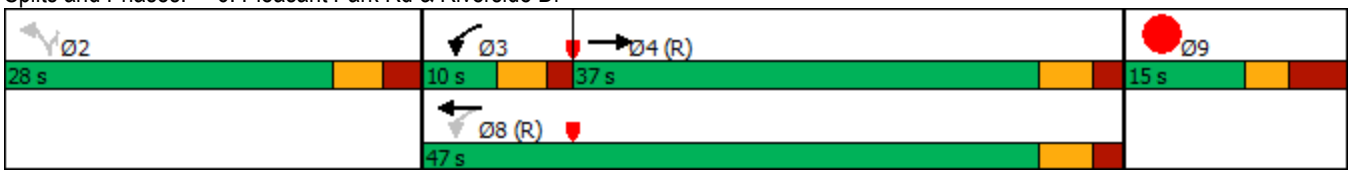


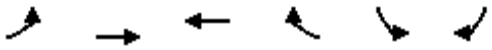
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1244	97	32	1280	168	36	
Future Volume (vph)	1244	97	32	1280	168	36	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	30.0		0.0	40.0	
Storage Lanes		0	1		1	1	
Taper Length (m)			7.5		7.5		
Right Turn on Red		Yes				Yes	
Link Speed (k/h)	60			60	50		
Link Distance (m)	242.5			151.7	243.4		
Travel Time (s)	14.6			9.1	17.5		
Lane Group Flow (vph)	1341	0	32	1280	168	36	
Turn Type	NA		pm+pt	NA	Perm	Perm	
Protected Phases	4		3	8			9
Permitted Phases			8		2	2	
Detector Phase	4		3	8	2	2	
Switch Phase							
Minimum Initial (s)	10.0		5.0	10.0	5.0	5.0	5.0
Minimum Split (s)	28.8		10.0	28.8	25.0	25.0	12.0
Total Split (s)	37.0		10.0	47.0	28.0	28.0	15.0
Total Split (%)	41.1%		11.1%	52.2%	31.1%	31.1%	17%
Yellow Time (s)	3.7		3.3	3.7	3.3	3.3	3.0
All-Red Time (s)	2.1		1.7	2.1	2.7	2.7	4.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8		5.0	5.8	6.0	6.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	C-Max		None	C-Max	None	None	None
Act Effct Green (s)	57.2		64.8	64.0	14.2	14.2	
Actuated g/C Ratio	0.64		0.72	0.71	0.16	0.16	
v/c Ratio	0.63		0.12	0.53	0.63	0.13	
Control Delay	9.5		5.5	7.6	45.5	11.4	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	9.5		5.5	7.6	45.5	11.4	
LOS	A		A	A	D	B	
Approach Delay	9.5			7.5	39.5		
Approach LOS	A			A	D		
Queue Length 50th (m)	80.6		1.3	45.7	27.5	0.0	
Queue Length 95th (m)	145.3		4.5	74.7	44.3	7.3	
Internal Link Dist (m)	218.5			127.7	219.4		
Turn Bay Length (m)			30.0			40.0	
Base Capacity (vph)	2132		265	2412	414	398	
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	0.63		0.12	0.53	0.41	0.09	

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 50 (56%), Referenced to phase 4:EBT and 8:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 10.7	Intersection LOS: B
Intersection Capacity Utilization 59.2%	ICU Level of Service B
Analysis Period (min) 15	

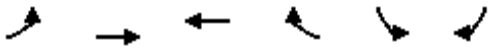
Splits and Phases: 6: Pleasant Park Rd & Riverside Dr





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1780	0	0	45	0
Future Volume (vph)	0	1780	0	0	45	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60	60		40	
Link Distance (m)		33.2	321.5		38.9	
Travel Time (s)		2.0	19.3		3.5	
Lane Group Flow (vph)	0	1780	0	0	45	0
Sign Control		Free	Free		Stop	

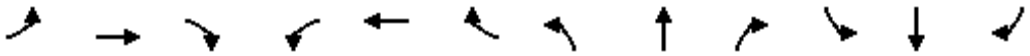
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.9%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1780	0	0	45	0
Future Volume (Veh/h)	0	1780	0	0	45	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1780	0	0	45	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)		33				
pX, platoon unblocked					0.63	
vC, conflicting volume	0				890	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				93	100
cM capacity (veh/h)	1622				645	1084

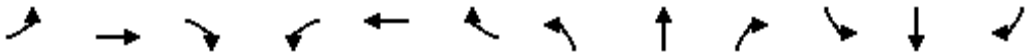
Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	890	890	45
Volume Left	0	0	45
Volume Right	0	0	0
cSH	1700	1700	645
Volume to Capacity	0.52	0.52	0.07
Queue Length 95th (m)	0.0	0.0	1.7
Control Delay (s)	0.0	0.0	11.0
Lane LOS			B
Approach Delay (s)	0.0		11.0
Approach LOS			B

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization		61.9%	ICU Level of Service
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	1572	0	0	0	0	0	0	0	0	76	0
Future Volume (vph)	0	1572	0	0	0	0	0	0	0	0	76	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60			60			48			40	
Link Distance (m)		191.9			95.9			54.0			65.5	
Travel Time (s)		11.5			5.8			4.1			5.9	
Lane Group Flow (vph)	0	1572	0	0	0	0	0	0	0	0	76	0
Sign Control		Free			Free			Stop			Stop	

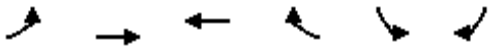
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (veh/h)	0	1572	0	0	0	0	0	0	0	0	76	0
Future Volume (Veh/h)	0	1572	0	0	0	0	0	0	0	0	76	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1572	0	0	0	0	0	0	0	0	76	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)		311			169							
pX, platoon unblocked				0.69			0.69	0.69	0.69	0.69	0.69	
vC, conflicting volume	0			1572			1610	1572	786	786	1572	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			920			975	920	0	0	920	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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			100			100	100	100	100	59	100
cM capacity (veh/h)	1622			506			96	185	744	702	185	1084

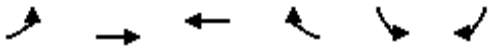
Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	786	786	76
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	185
Volume to Capacity	0.46	0.46	0.41
Queue Length 95th (m)	0.0	0.0	14.0
Control Delay (s)	0.0	0.0	37.4
Lane LOS			E
Approach Delay (s)	0.0		37.4
Approach LOS			E

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	56.8%	ICU Level of Service	B	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1572	0	0	116	0
Future Volume (vph)	0	1572	0	0	116	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60	60		40	
Link Distance (m)		95.9	72.6		114.9	
Travel Time (s)		5.8	4.4		10.3	
Lane Group Flow (vph)	0	1572	0	0	116	0
Sign Control		Free	Free		Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.4%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1572	0	0	116	0
Future Volume (Veh/h)	0	1572	0	0	116	0
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1572	0	0	116	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)			73			
pX, platoon unblocked						
vC, conflicting volume	0				786	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				786	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				65	100
cM capacity (veh/h)	1622				329	1084

Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	786	786	116
Volume Left	0	0	116
Volume Right	0	0	0
cSH	1700	1700	329
Volume to Capacity	0.46	0.46	0.35
Queue Length 95th (m)	0.0	0.0	11.7
Control Delay (s)	0.0	0.0	21.8
Lane LOS			C
Approach Delay (s)	0.0		21.8
Approach LOS			C

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1448	225	0
Future Volume (vph)	0	0	0	1448	225	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)	60			60	40	
Link Distance (m)	73.3			206.7	83.1	
Travel Time (s)	4.4			12.4	7.5	
Lane Group Flow (vph)	0	0	0	1448	225	0
Sign Control	Free			Free	Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	1448	225	0
Future Volume (Veh/h)	0	0	0	1448	225	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	1448	225	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)	106					
pX, platoon unblocked						
vC, conflicting volume			0		724	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		724	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		38	100
cM capacity (veh/h)			1622		361	1084

Direction, Lane #	WB 1	WB 2	NB 1
Volume Total	724	724	225
Volume Left	0	0	225
Volume Right	0	0	0
cSH	1700	1700	361
Volume to Capacity	0.43	0.43	0.62
Queue Length 95th (m)	0.0	0.0	30.6
Control Delay (s)	0.0	0.0	30.2
Lane LOS			D
Approach Delay (s)	0.0		30.2
Approach LOS			D

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

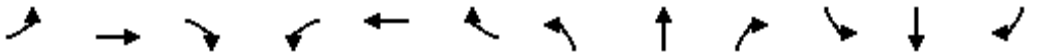
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	134	11	579	196	9	879
Future Volume (vph)	134	11	579	196	9	879
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Right Turn on Red		Yes		Yes		
Link Speed (k/h)	40		50			50
Link Distance (m)	227.4		190.3			201.0
Travel Time (s)	20.5		13.7			14.5
Lane Group Flow (vph)	145	0	775	0	0	888
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		10.0		10.0	10.0
Minimum Split (s)	22.0		22.5		22.5	22.5
Total Split (s)	22.0		68.0		68.0	68.0
Total Split (%)	24.4%		75.6%		75.6%	75.6%
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	3.2		2.6		2.6	2.6
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	6.2		5.9			5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		C-Max		C-Max	C-Max
Act Effct Green (s)	12.4		65.5			65.5
Actuated g/C Ratio	0.14		0.73			0.73
v/c Ratio	0.62		0.34			0.38
Control Delay	46.7		1.8			5.5
Queue Delay	0.0		0.0			0.0
Total Delay	46.7		1.8			5.5
LOS	D		A			A
Approach Delay	46.7		1.8			5.5
Approach LOS	D		A			A
Queue Length 50th (m)	23.1		4.7			25.7
Queue Length 95th (m)	40.2		m6.8			39.5
Internal Link Dist (m)	203.4		166.3			177.0
Turn Bay Length (m)						
Base Capacity (vph)	298		2274			2336
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.49		0.34			0.38

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 57 (63%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	

Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 7.2	Intersection LOS: A
Intersection Capacity Utilization 52.8%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 1: Bank St & Riverdale Ave

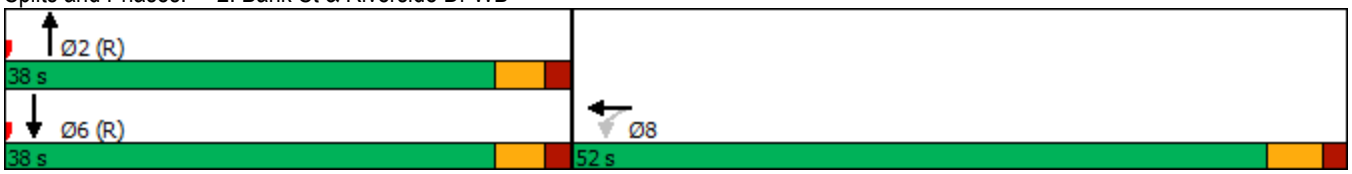


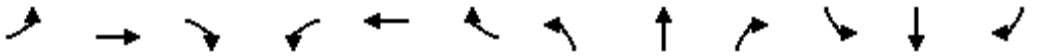
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	411	1475	119	0	576	0	0	717	229
Future Volume (vph)	0	0	0	411	1475	119	0	576	0	0	717	229
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	75.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			No
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		344.9			36.2			124.8			190.3	
Travel Time (s)		20.7			2.2			9.0			13.7	
Lane Group Flow (vph)	0	0	0	411	1594	0	0	576	0	0	946	0
Turn Type				Perm	NA			NA			NA	
Protected Phases					8			2			6	
Permitted Phases				8								
Minimum Split (s)				28.5	28.5			30.2			30.2	
Total Split (s)				52.0	52.0			38.0			38.0	
Total Split (%)				57.8%	57.8%			42.2%			42.2%	
Yellow Time (s)				3.7	3.7			3.3			3.3	
All-Red Time (s)				1.8	1.8			1.9			1.9	
Lost Time Adjust (s)				0.0	0.0			0.0			0.0	
Total Lost Time (s)				5.5	5.5			5.2			5.2	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)				46.5	46.5			32.8			32.8	
Actuated g/C Ratio				0.52	0.52			0.36			0.36	
v/c Ratio				0.47	0.92			0.47			0.81	
Control Delay				13.6	27.2			12.7			27.6	
Queue Delay				0.0	0.0			0.0			0.9	
Total Delay				13.6	27.2			12.7			28.5	
LOS				B	C			B			C	
Approach Delay					24.4			12.7			28.5	
Approach LOS					C			B			C	
Queue Length 50th (m)				51.9	146.1			18.5			79.6	
Queue Length 95th (m)				m53.2	#183.9			24.1			103.1	
Internal Link Dist (m)		320.9			12.2			100.8			166.3	
Turn Bay Length (m)				75.0								
Base Capacity (vph)				870	1736			1235			1170	
Starvation Cap Reductn				0	0			0			0	
Spillback Cap Reductn				0	0			0			65	
Storage Cap Reductn				0	0			0			0	
Reduced v/c Ratio				0.47	0.92			0.47			0.86	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 64 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 75	

Control Type: Pretimed
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 23.6 Intersection LOS: C
Intersection Capacity Utilization 89.1% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Bank St & Riverside Dr WB



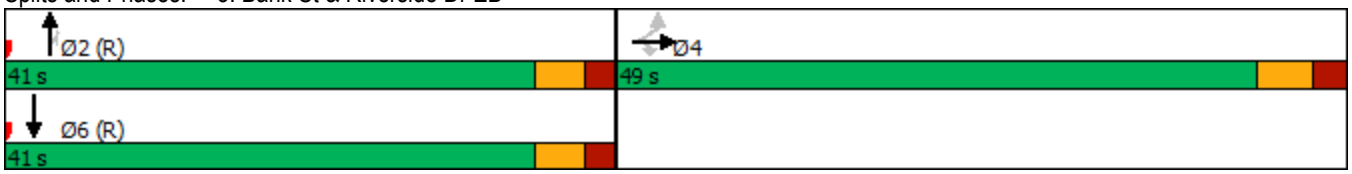


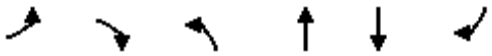
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	1591	159	0	0	0	0	428	348	0	1131	0
Future Volume (vph)	144	1591	159	0	0	0	0	428	348	0	1131	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	60.0		45.0	0.0		0.0	0.0		60.0	0.0		0.0
Storage Lanes	0		1	0		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		78.2			37.7			168.7			124.8	
Travel Time (s)		4.7			2.3			12.1			9.0	
Lane Group Flow (vph)	144	1591	159	0	0	0	0	428	348	0	1131	0
Turn Type	Perm	NA	Perm					NA	Perm		NA	
Protected Phases		4						2			6	
Permitted Phases	4		4						2			
Minimum Split (s)	29.1	29.1	29.1					25.5	25.5		25.5	
Total Split (s)	49.0	49.0	49.0					41.0	41.0		41.0	
Total Split (%)	54.4%	54.4%	54.4%					45.6%	45.6%		45.6%	
Yellow Time (s)	3.7	3.7	3.7					3.3	3.3		3.3	
All-Red Time (s)	2.4	2.4	2.4					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	6.1					5.5	5.5		5.5	
Lead/Lag												
Lead-Lag Optimize?												
Act Effct Green (s)	42.9	42.9	42.9					35.5	35.5		35.5	
Actuated g/C Ratio	0.48	0.48	0.48					0.39	0.39		0.39	
v/c Ratio	0.18	0.99	0.23					0.32	0.62		0.85	
Control Delay	14.9	35.2	12.6					18.1	23.2		24.2	
Queue Delay	0.0	0.0	0.0					0.0	0.0		1.6	
Total Delay	14.9	35.2	12.6					18.1	23.2		25.8	
LOS	B	D	B					B	C		C	
Approach Delay		31.8						20.4			25.8	
Approach LOS		C						C			C	
Queue Length 50th (m)	8.7	52.6	6.5					26.7	42.4		49.4	
Queue Length 95th (m)	m16.9	#185.1	m15.0					38.0	71.2		83.6	
Internal Link Dist (m)		54.2			13.7			144.7			100.8	
Turn Bay Length (m)	60.0		45.0						60.0			
Base Capacity (vph)	796	1615	697					1337	564		1337	
Starvation Cap Reductn	0	0	0					0	0		85	
Spillback Cap Reductn	0	0	0					0	0		0	
Storage Cap Reductn	0	0	0					0	0		0	
Reduced v/c Ratio	0.18	0.99	0.23					0.32	0.62		0.90	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 61 (68%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 80	

Control Type: Pretimed
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 27.7 Intersection LOS: C
Intersection Capacity Utilization 89.1% 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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Bank St & Riverside Dr EB





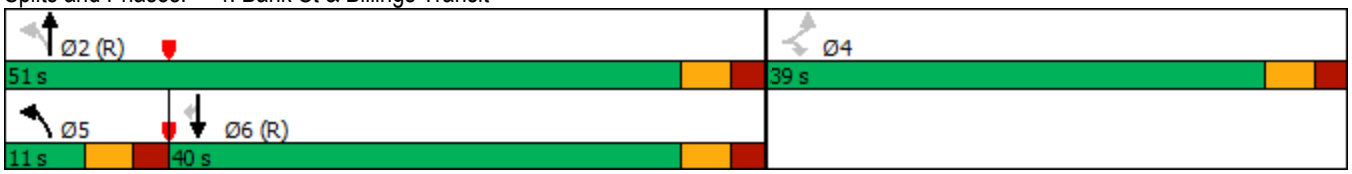
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	15	11	13	985	1429	14
Future Volume (vph)	15	11	13	985	1429	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	65.0			15.0
Storage Lanes	1	1	1			1
Taper Length (m)	7.5		7.5			
Right Turn on Red		Yes				Yes
Link Speed (k/h)	50			50	50	
Link Distance (m)	251.4			166.8	168.7	
Travel Time (s)	18.1			12.0	12.1	
Lane Group Flow (vph)	15	11	13	985	1429	14
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases	4	4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	10.0	10.0	10.0
Minimum Split (s)	38.6	38.6	10.7	28.7	28.7	28.7
Total Split (s)	39.0	39.0	11.0	51.0	40.0	40.0
Total Split (%)	43.3%	43.3%	12.2%	56.7%	44.4%	44.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.7	5.7	5.7	5.7
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)	7.5	7.5	78.2	81.6	79.2	79.2
Actuated g/C Ratio	0.08	0.08	0.87	0.91	0.88	0.88
v/c Ratio	0.23	0.15	0.08	0.32	0.48	0.03
Control Delay	46.0	24.1	3.2	2.0	3.8	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.0	24.1	3.2	2.0	3.8	3.6
LOS	D	C	A	A	A	A
Approach Delay	36.7			2.1	3.8	
Approach LOS	D			A	A	
Queue Length 50th (m)	2.5	0.0	0.2	0.0	1.7	0.0
Queue Length 95th (m)	8.3	4.8	1.7	32.1	44.5	m0.1
Internal Link Dist (m)	227.4			142.8	144.7	
Turn Bay Length (m)			65.0			15.0
Base Capacity (vph)	291	283	163	3075	2982	503
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	0.04	0.08	0.32	0.48	0.03

Intersection Summary	
Area Type:	Other

Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 68 (76%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 3.5	Intersection LOS: A
Intersection Capacity Utilization 70.8%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 4: Bank St & Billings Transit

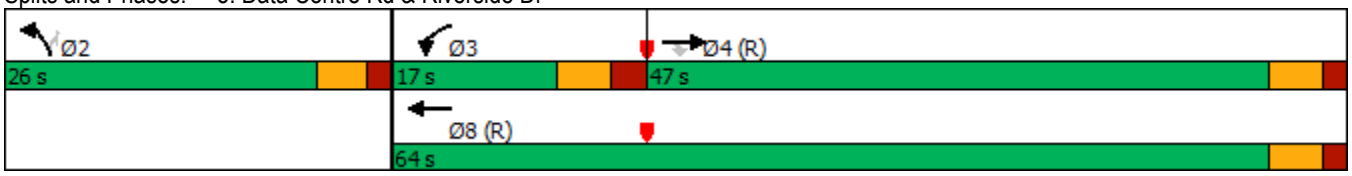


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1775	10	69	1706	87	82
Future Volume (vph)	1775	10	69	1706	87	82
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)		40.0	75.0		85.0	0.0
Storage Lanes		1	1		1	1
Taper Length (m)			7.5		7.5	
Right Turn on Red		Yes				Yes
Link Speed (k/h)	60			60	50	
Link Distance (m)	262.9			119.4	217.7	
Travel Time (s)	15.8			7.2	15.7	
Lane Group Flow (vph)	1775	10	69	1706	87	82
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0	5.0
Minimum Split (s)	23.4	23.4	11.1	23.4	23.1	23.1
Total Split (s)	47.0	47.0	17.0	64.0	26.0	26.0
Total Split (%)	52.2%	52.2%	18.9%	71.1%	28.9%	28.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	1.7	1.7	2.4	1.7	1.8	1.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	6.1	5.4	5.1	5.1
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	None	C-Max	None	None
Act Effct Green (s)	60.1	60.1	9.0	72.8	10.0	10.0
Actuated g/C Ratio	0.67	0.67	0.10	0.81	0.11	0.11
v/c Ratio	0.78	0.01	0.41	0.62	0.47	0.35
Control Delay	18.6	7.4	28.3	12.8	44.8	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	7.4	28.3	12.8	44.8	12.7
LOS	B	A	C	B	D	B
Approach Delay	18.5			13.4	29.2	
Approach LOS	B			B	C	
Queue Length 50th (m)	122.7	0.3	10.0	121.3	14.3	0.0
Queue Length 95th (m)	#211.3	2.7	m10.9	m143.0	27.3	11.9
Internal Link Dist (m)	238.9			95.4	193.7	
Turn Bay Length (m)		40.0	75.0		85.0	
Base Capacity (vph)	2263	987	211	2743	393	403
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.01	0.33	0.62	0.22	0.20

Intersection Summary	
Area Type:	Other

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 6 (7%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 16.6 Intersection LOS: B
Intersection Capacity Utilization 77.2% 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: 5: Data Centre Rd & Riverside Dr

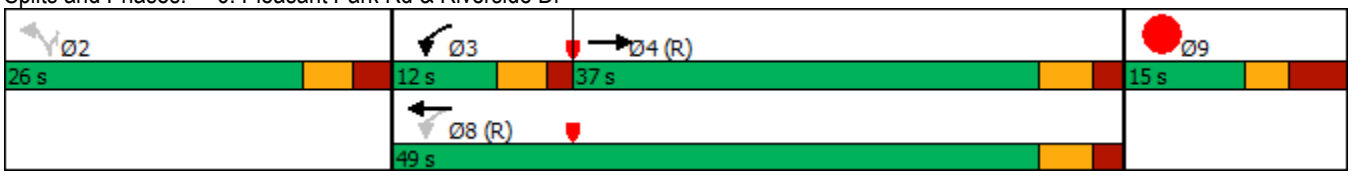


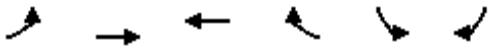
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1353	193	132	1968	155	33	
Future Volume (vph)	1353	193	132	1968	155	33	
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	
Storage Length (m)		0.0	30.0		0.0	40.0	
Storage Lanes		0	1		1	1	
Taper Length (m)			7.5		7.5		
Right Turn on Red		Yes				Yes	
Link Speed (k/h)	60			60	50		
Link Distance (m)	242.5			151.7	243.4		
Travel Time (s)	14.6			9.1	17.5		
Lane Group Flow (vph)	1546	0	132	1968	155	33	
Turn Type	NA		pm+pt	NA	Perm	Perm	
Protected Phases	4		3	8			9
Permitted Phases			8		2	2	
Detector Phase	4		3	8	2	2	
Switch Phase							
Minimum Initial (s)	10.0		5.0	10.0	5.0	5.0	5.0
Minimum Split (s)	28.8		10.0	28.8	25.0	25.0	12.0
Total Split (s)	37.0		12.0	49.0	26.0	26.0	15.0
Total Split (%)	41.1%		13.3%	54.4%	28.9%	28.9%	17%
Yellow Time (s)	3.7		3.3	3.7	3.3	3.3	3.0
All-Red Time (s)	2.1		1.7	2.1	2.7	2.7	4.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.8		5.0	5.8	6.0	6.0	
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	C-Max		None	C-Max	None	None	None
Act Effct Green (s)	51.4		65.5	64.7	13.5	13.5	
Actuated g/C Ratio	0.57		0.73	0.72	0.15	0.15	
v/c Ratio	0.81		0.55	0.81	0.61	0.13	
Control Delay	13.1		19.6	12.9	45.6	12.0	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	13.1		19.6	12.9	45.6	12.0	
LOS	B		B	B	D	B	
Approach Delay	13.1			13.4	39.7		
Approach LOS	B			B	D		
Queue Length 50th (m)	84.5		5.6	100.6	25.4	0.0	
Queue Length 95th (m)	m#158.3		24.4	167.7	41.8	7.3	
Internal Link Dist (m)	218.5			127.7	219.4		
Turn Bay Length (m)			30.0			40.0	
Base Capacity (vph)	1907		244	2438	376	362	
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	0.81		0.54	0.81	0.41	0.09	

Intersection Summary	
Area Type:	Other

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 75 (83%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 14.6 Intersection LOS: B
Intersection Capacity Utilization 76.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

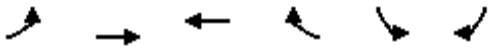
Splits and Phases: 6: Pleasant Park Rd & Riverside Dr





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1939	0	0	29	0
Future Volume (vph)	0	1939	0	0	29	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60	60		40	
Link Distance (m)		37.7	318.4		40.9	
Travel Time (s)		2.3	19.1		3.7	
Lane Group Flow (vph)	0	1939	0	0	29	0
Sign Control		Free	Free		Stop	

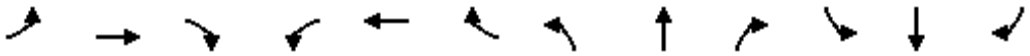
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑			↰	
Traffic Volume (veh/h)	0	1939	0	0	29	0
Future Volume (Veh/h)	0	1939	0	0	29	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1939	0	0	29	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)		38				
pX, platoon unblocked					0.53	
vC, conflicting volume	0				970	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				95	100
cM capacity (veh/h)	1622				545	1084

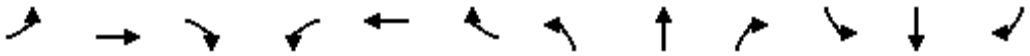
Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	970	970	29
Volume Left	0	0	29
Volume Right	0	0	0
cSH	1700	1700	545
Volume to Capacity	0.57	0.57	0.05
Queue Length 95th (m)	0.0	0.0	1.3
Control Delay (s)	0.0	0.0	12.0
Lane LOS			B
Approach Delay (s)	0.0		12.0
Approach LOS			B

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		66.6%	ICU Level of Service C
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑									↑	
Traffic Volume (vph)	0	1857	0	0	0	0	0	0	0	0	63	0
Future Volume (vph)	0	1857	0	0	0	0	0	0	0	0	63	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60			60			48			40	
Link Distance (m)		192.9			87.5			69.7			62.3	
Travel Time (s)		11.6			5.3			5.2			5.6	
Lane Group Flow (vph)	0	1857	0	0	0	0	0	0	0	0	63	0
Sign Control		Free			Free			Stop			Stop	

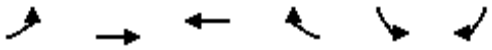
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1857	0	0	0	0	0	0	0	0	63	0
Future Volume (Veh/h)	0	1857	0	0	0	0	0	0	0	0	63	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1857	0	0	0	0	0	0	0	0	63	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)		312			166							
pX, platoon unblocked				0.53			0.53	0.53	0.53	0.53	0.53	
vC, conflicting volume	0			1857			1888	1857	928	928	1857	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			840			900	840	0	0	840	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
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			100			100	100	100	100	60	100
cM capacity (veh/h)	1622			418			85	159	574	541	159	1084

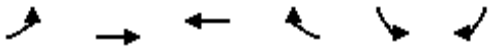
Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	928	928	63
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	159
Volume to Capacity	0.55	0.55	0.40
Queue Length 95th (m)	0.0	0.0	13.1
Control Delay (s)	0.0	0.0	41.9
Lane LOS			E
Approach Delay (s)	0.0		41.9
Approach LOS			E

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	64.4%	ICU Level of Service	C	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1857	0	0	100	0
Future Volume (vph)	0	1857	0	0	100	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)		60	60		40	
Link Distance (m)		87.5	78.2		106.8	
Travel Time (s)		5.3	4.7		9.6	
Lane Group Flow (vph)	0	1857	0	0	100	0
Sign Control		Free	Free		Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.5%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1857	0	0	100	0
Future Volume (Veh/h)	0	1857	0	0	100	0
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1857	0	0	100	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)		400	78			
pX, platoon unblocked					0.51	
vC, conflicting volume	0				928	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				0	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				81	100
cM capacity (veh/h)	1622				525	1084

Direction, Lane #	EB 1	EB 2	SB 1
Volume Total	928	928	100
Volume Left	0	0	100
Volume Right	0	0	0
cSH	1700	1700	525
Volume to Capacity	0.55	0.55	0.19
Queue Length 95th (m)	0.0	0.0	5.3
Control Delay (s)	0.0	0.0	13.5
Lane LOS			B
Approach Delay (s)	0.0		13.5
Approach LOS			B

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		73.5%	ICU Level of Service D
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2123	219	0
Future Volume (vph)	0	0	0	2123	219	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Link Speed (k/h)	60			60	40	
Link Distance (m)	60.4			216.2	87.9	
Travel Time (s)	3.6			13.0	7.9	
Lane Group Flow (vph)	0	0	0	2123	219	0
Sign Control	Free			Free	Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 81.4%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	2123	219	0
Future Volume (Veh/h)	0	0	0	2123	219	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	2123	219	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)	97					
pX, platoon unblocked						
vC, conflicting volume			0		1062	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		1062	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		0	100
cM capacity (veh/h)			1622		219	1084

Direction, Lane #	WB 1	WB 2	NB 1
Volume Total	1062	1062	219
Volume Left	0	0	219
Volume Right	0	0	0
cSH	1700	1700	219
Volume to Capacity	0.62	0.62	1.00
Queue Length 95th (m)	0.0	0.0	69.0
Control Delay (s)	0.0	0.0	107.8
Lane LOS			F
Approach Delay (s)	0.0		107.8
Approach LOS			F

Intersection Summary			
Average Delay	10.1		
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

Appendix L

SIMTRAFFIC ANALYSIS RESULTS

Intersection: 1: Bank St & Riverdale Ave

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	TR	LT	T
Maximum Queue (m)	41.0	73.7	80.1	39.0	27.5
Average Queue (m)	15.8	26.6	32.7	13.3	9.0
95th Queue (m)	31.3	59.8	67.0	28.0	21.7
Link Distance (m)	204.2	169.1	169.1	183.4	183.4
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: Bank St & Riverside Dr WB

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	T	T	T	TR
Maximum Queue (m)	52.6	87.0	87.8	36.2	40.6	54.1	58.4
Average Queue (m)	25.5	60.0	67.7	20.9	22.1	28.9	33.1
95th Queue (m)	45.4	81.7	88.7	32.4	35.2	47.5	52.9
Link Distance (m)	83.3	83.3	83.3	113.9	113.9	169.1	169.1
Upstream Blk Time (%)		0	1				
Queuing Penalty (veh)		2	4				
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Bank St & Riverside Dr EB

Movement	EB	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	T	T	R	T	T
Maximum Queue (m)	39.2	65.2	64.3	50.4	92.9	95.2	66.4	41.1	46.1
Average Queue (m)	11.9	48.8	47.9	4.5	46.6	42.1	27.6	25.4	27.7
95th Queue (m)	28.5	68.8	68.1	28.0	72.5	69.4	58.8	39.2	42.4
Link Distance (m)	50.8	50.8	50.8		144.9	144.9		113.9	113.9
Upstream Blk Time (%)	0	8	8	0					
Queuing Penalty (veh)	0	43	43	0					
Storage Bay Dist (m)				45.0			60.0		
Storage Blk Time (%)			11	0		2	1		
Queuing Penalty (veh)			5	0		5	4		

Intersection: 4: Bank St & Billings Transit

Movement	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	T	T	T	T	R
Maximum Queue (m)	25.4	40.6	78.9	86.6	23.7	22.0	21.2
Average Queue (m)	4.4	5.6	41.4	40.6	5.6	6.3	4.1
95th Queue (m)	17.5	23.4	72.9	75.3	16.7	17.1	16.8
Link Distance (m)	235.8		156.7	156.7	144.9	144.9	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)		65.0					15.0
Storage Blk Time (%)		0	1			2	0
Queuing Penalty (veh)		0	0			0	0

Intersection: 5: Data Centre Rd & Riverside Dr

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	R	L	T	T	L	R
Maximum Queue (m)	107.4	103.6	42.7	41.5	40.1	45.1	28.4	8.3
Average Queue (m)	61.0	49.4	5.8	19.9	12.8	17.2	10.6	0.4
95th Queue (m)	99.3	90.3	31.4	35.3	32.1	36.8	23.4	4.8
Link Distance (m)	250.5	250.5			100.6	100.6		202.2
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			40.0	75.0			85.0	
Storage Blk Time (%)		8	0					
Queuing Penalty (veh)		7	0					

Intersection: 6: Pleasant Park Rd & Riverside Dr

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (m)	49.1	56.1	29.7	76.0	63.6	62.4	47.2
Average Queue (m)	17.6	23.4	7.8	34.5	22.1	32.3	3.7
95th Queue (m)	40.0	45.5	19.9	64.2	50.1	54.2	24.6
Link Distance (m)	229.3	229.3		136.5	136.5	223.2	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)			30.0				40.0
Storage Blk Time (%)			0	7		6	0
Queuing Penalty (veh)			0	2		2	0

Intersection: 10: Riverside Dr EB & Ramp 1 SBT

Movement	EB	EB	SB
Directions Served	T	T	T
Maximum Queue (m)	13.7	9.5	39.8
Average Queue (m)	0.6	0.5	14.5
95th Queue (m)	7.0	6.0	28.1
Link Distance (m)	178.5	178.5	50.0
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Riverside Dr EB & Ramp 1 SBL

Movement	EB	EB	SB
Directions Served	T	T	L
Maximum Queue (m)	80.4	80.3	26.5
Average Queue (m)	24.4	26.1	10.0
95th Queue (m)	64.6	66.9	21.7
Link Distance (m)	84.0	84.0	97.8
Upstream Blk Time (%)	0	0	
Queuing Penalty (veh)	1	2	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: Ramp 2 NB & Riverside Dr WB

Movement	WB	WB	NB
Directions Served	T	T	L
Maximum Queue (m)	17.8	21.5	40.2
Average Queue (m)	0.8	2.3	17.2
95th Queue (m)	7.6	12.5	33.3
Link Distance (m)	197.0	197.0	78.3
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15: Riverside Dr WB/Riverside Dr & Riverside Dr EB

Movement	NB	NB
Directions Served	R	R
Maximum Queue (m)	4.6	357.0
Average Queue (m)	0.2	26.6
95th Queue (m)	2.7	179.5
Link Distance (m)	340.8	340.8
Upstream Blk Time (%)		1
Queuing Penalty (veh)		6
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 18: Riverside Dr/Riverside Dr EB & Riverside Dr WB

Movement	EB	SB
Directions Served	T	R
Maximum Queue (m)	0.4	1.3
Average Queue (m)	0.0	0.0
95th Queue (m)	0.4	0.9
Link Distance (m)	100.6	318.3
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 21: Ramp 1 SBT & Ramp 1 SBL

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 129

Intersection: 1: Bank St & Riverdale Ave

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	TR	LT	T
Maximum Queue (m)	51.8	15.6	21.0	51.6	51.1
Average Queue (m)	25.0	4.3	9.5	23.7	15.8
95th Queue (m)	43.7	13.2	19.9	43.6	35.9
Link Distance (m)	204.2	168.2	168.2	183.4	183.4
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: Bank St & Riverside Dr WB

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	T	T	T	TR
Maximum Queue (m)	73.2	91.1	88.7	39.8	43.0	71.4	83.1
Average Queue (m)	34.9	65.5	70.1	20.0	23.5	41.0	48.1
95th Queue (m)	63.4	92.7	91.8	32.8	37.7	62.1	71.6
Link Distance (m)	73.8	73.8	73.8	114.0	114.0	168.2	168.2
Upstream Blk Time (%)	0	6	8				
Queuing Penalty (veh)	2	40	58				
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Bank St & Riverside Dr EB

Movement	EB	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	T	T	R	T	T
Maximum Queue (m)	35.0	74.7	76.4	52.5	30.0	38.0	44.7	83.3	80.1
Average Queue (m)	16.2	65.2	63.9	26.7	12.5	12.6	13.1	48.4	50.6
95th Queue (m)	30.6	75.2	74.2	69.3	24.4	26.7	35.2	73.5	75.0
Link Distance (m)	57.1	57.1	57.1		145.4	145.4		114.0	114.0
Upstream Blk Time (%)		36	35	0					
Queuing Penalty (veh)		218	208	0					
Storage Bay Dist (m)				45.0			60.0		
Storage Blk Time (%)			42	0			0		
Queuing Penalty (veh)			63	1			0		

Intersection: 4: Bank St & Billings Transit

Movement	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	T	T	T	T	R
Maximum Queue (m)	27.4	24.7	65.4	78.8	98.2	135.2	22.5
Average Queue (m)	6.3	5.8	37.4	44.4	41.6	45.5	6.6
95th Queue (m)	20.7	19.7	59.2	71.4	72.2	89.7	21.6
Link Distance (m)	235.8		156.7	156.7	145.4	145.4	
Upstream Blk Time (%)					0	0	
Queuing Penalty (veh)					0	1	
Storage Bay Dist (m)		65.0					15.0
Storage Blk Time (%)			0			41	0
Queuing Penalty (veh)			0			6	1

Intersection: 5: Data Centre Rd & Riverside Dr

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	R	L	T	T	L	R
Maximum Queue (m)	146.9	137.0	23.6	35.8	65.4	68.1	40.8	25.8
Average Queue (m)	80.1	70.1	1.3	15.6	28.1	33.2	18.0	1.8
95th Queue (m)	164.3	157.2	13.8	29.3	57.5	61.1	34.0	12.6
Link Distance (m)	250.5	250.5			103.6	103.6		202.2
Upstream Blk Time (%)	3	3						
Queuing Penalty (veh)	0	0						
Storage Bay Dist (m)			40.0	75.0			85.0	
Storage Blk Time (%)		15	0					
Queuing Penalty (veh)		1	0					

Intersection: 6: Pleasant Park Rd & Riverside Dr

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (m)	85.8	89.2	37.4	141.8	135.4	56.3	23.3
Average Queue (m)	42.2	49.0	24.4	77.1	58.2	28.5	1.1
95th Queue (m)	71.1	77.2	41.3	140.8	114.4	48.7	12.7
Link Distance (m)	229.3	229.3		136.5	136.5	223.2	
Upstream Blk Time (%)				2	0		
Queuing Penalty (veh)				0	0		
Storage Bay Dist (m)			30.0				40.0
Storage Blk Time (%)			6	16		4	0
Queuing Penalty (veh)			55	22		1	0

Intersection: 10: Riverside Dr EB & Ramp 1 SBT

Movement	EB	EB	SB
Directions Served	T	T	T
Maximum Queue (m)	135.1	136.8	31.5
Average Queue (m)	63.7	65.7	12.7
95th Queue (m)	179.3	181.5	24.0
Link Distance (m)	175.9	175.9	46.2
Upstream Blk Time (%)	3	3	0
Queuing Penalty (veh)	28	29	0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Riverside Dr EB & Ramp 1 SBL

Movement	EB	EB	SB
Directions Served	T	T	L
Maximum Queue (m)	85.4	87.2	32.1
Average Queue (m)	62.8	64.9	11.7
95th Queue (m)	107.0	106.1	25.5
Link Distance (m)	77.9	77.9	88.5
Upstream Blk Time (%)	15	17	
Queuing Penalty (veh)	133	143	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: Ramp 2 NB & Riverside Dr WB

Movement	WB	WB	NB
Directions Served	T	T	L
Maximum Queue (m)	112.9	114.4	75.1
Average Queue (m)	28.1	30.8	35.8
95th Queue (m)	92.7	94.5	68.6
Link Distance (m)	206.6	206.6	83.1
Upstream Blk Time (%)	0		2
Queuing Penalty (veh)	0		0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15: Riverside Dr WB/Riverside Dr & Riverside Dr EB

Movement	NB	NB	SW
Directions Served	R	R	T
Maximum Queue (m)	37.9	321.3	0.9
Average Queue (m)	2.4	19.9	0.0
95th Queue (m)	48.1	151.0	0.9
Link Distance (m)	340.8	340.8	229.3
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		5	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 18: Riverside Dr/Riverside Dr EB & Riverside Dr WB

Movement	EB	EB	SB	SB
Directions Served	T	T	R	R
Maximum Queue (m)	38.6	84.4	10.6	14.3
Average Queue (m)	15.5	19.6	0.4	0.8
95th Queue (m)	72.1	85.8	5.5	6.9
Link Distance (m)	103.6	103.6	320.9	320.9
Upstream Blk Time (%)	1	3		
Queuing Penalty (veh)	8	27		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 21: Ramp 1 SBT & Ramp 1 SBL

Movement	SB
Directions Served	LT
Maximum Queue (m)	0.9
Average Queue (m)	0.0
95th Queue (m)	0.9
Link Distance (m)	30.8
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 1051

Intersection: 1: Bank St & Riverdale Ave

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	TR	LT	T
Maximum Queue (m)	37.3	77.2	87.2	44.2	34.4
Average Queue (m)	16.2	31.0	37.9	15.3	10.6
95th Queue (m)	30.6	67.9	76.2	32.3	25.7
Link Distance (m)	204.2	168.5	168.5	183.4	183.4
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: Bank St & Riverside Dr WB

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	T	T	T	TR
Maximum Queue (m)	12.8	17.5	19.3	43.5	43.6	53.0	65.7
Average Queue (m)	8.2	9.1	10.7	23.2	23.9	29.2	36.3
95th Queue (m)	10.5	13.5	16.6	38.0	38.8	47.7	58.3
Link Distance (m)	8.0	8.0	8.0	114.2	114.2	168.5	168.5
Upstream Blk Time (%)	37	41	43				
Queuing Penalty (veh)	207	228	239				
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Bank St & Riverside Dr EB

Movement	EB	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	T	T	R	T	T
Maximum Queue (m)	37.4	69.0	67.6	50.6	89.0	91.9	67.1	49.7	50.3
Average Queue (m)	13.1	53.0	51.4	6.0	51.0	46.7	35.7	27.8	31.2
95th Queue (m)	29.0	72.2	69.8	32.8	78.8	77.1	67.2	42.5	46.9
Link Distance (m)	50.8	50.8	50.8		144.8	144.8		114.2	114.2
Upstream Blk Time (%)	0	13	13	0					
Queuing Penalty (veh)	0	75	74	0					
Storage Bay Dist (m)				45.0			60.0		
Storage Blk Time (%)			17	0		3	1		
Queuing Penalty (veh)			8	1		9	4		

Intersection: 4: Bank St & Billings Transit

Movement	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	T	T	T	T	R
Maximum Queue (m)	26.7	36.6	83.4	90.1	22.2	34.0	21.0
Average Queue (m)	3.9	5.6	45.6	46.3	6.2	6.3	4.7
95th Queue (m)	16.4	22.6	78.0	82.1	17.7	24.0	18.2
Link Distance (m)	235.8		156.7	156.7	144.8	144.8	
Upstream Blk Time (%)						0	
Queuing Penalty (veh)						0	
Storage Bay Dist (m)		65.0					15.0
Storage Blk Time (%)		0	2			2	0
Queuing Penalty (veh)		0	0			0	0

Intersection: 5: Data Centre Rd & Riverside Dr

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	R	L	T	T	L	R
Maximum Queue (m)	128.4	107.8	47.5	45.2	45.8	46.9	27.9	11.3
Average Queue (m)	67.0	54.4	7.2	20.5	18.8	23.1	9.5	0.5
95th Queue (m)	110.7	97.4	35.3	37.0	41.2	44.3	21.7	6.1
Link Distance (m)	250.5	250.5			100.6	100.6		202.2
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			40.0	75.0			85.0	
Storage Blk Time (%)		10	0					
Queuing Penalty (veh)		9	0					

Intersection: 6: Pleasant Park Rd & Riverside Dr

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (m)	56.8	62.7	33.3	77.3	66.2	67.5	37.5
Average Queue (m)	25.0	30.3	8.1	37.1	25.2	32.1	2.4
95th Queue (m)	47.7	53.0	22.1	65.5	53.8	53.8	19.2
Link Distance (m)	229.3	229.3		136.5	136.5	223.2	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)			30.0				40.0
Storage Blk Time (%)			0	8		5	0
Queuing Penalty (veh)			0	3		2	0

Intersection: 8: Riverside Dr EB & Site Access

Movement	EB	SB
Directions Served	T	L
Maximum Queue (m)	36.3	23.1
Average Queue (m)	6.0	9.1
95th Queue (m)	26.2	18.8
Link Distance (m)	14.3	32.4
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	3	0
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Riverside Dr EB & Ramp 1 SBT

Movement	EB	EB	SB
Directions Served	T	T	T
Maximum Queue (m)	47.2	45.3	34.2
Average Queue (m)	4.8	4.9	15.4
95th Queue (m)	28.3	28.6	28.9
Link Distance (m)	178.5	178.5	50.0
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Riverside Dr EB & Ramp 1 SBL

Movement	EB	EB	SB
Directions Served	T	T	L
Maximum Queue (m)	89.3	88.0	40.1
Average Queue (m)	41.2	42.9	16.3
95th Queue (m)	91.3	93.0	31.6
Link Distance (m)	84.0	84.0	97.8
Upstream Blk Time (%)	1	1	
Queuing Penalty (veh)	11	10	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: Ramp 2 NB & Riverside Dr WB

Movement	WB	WB	NB
Directions Served	T	T	L
Maximum Queue (m)	98.2	98.4	81.1
Average Queue (m)	32.7	35.5	37.0
95th Queue (m)	86.2	84.1	70.8
Link Distance (m)	197.1	197.1	78.3
Upstream Blk Time (%)	0		3
Queuing Penalty (veh)	0		0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15: Riverside Dr WB/Riverside Dr & Riverside Dr EB

Movement	NB
Directions Served	R
Maximum Queue (m)	8.6
Average Queue (m)	0.4
95th Queue (m)	4.7
Link Distance (m)	309.1
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 18: Riverside Dr/Riverside Dr EB & Riverside Dr WB

Movement	EB	EB	SB
Directions Served	T	T	R
Maximum Queue (m)	19.8	79.0	2.1
Average Queue (m)	0.7	3.3	0.1
95th Queue (m)	14.0	34.4	2.1
Link Distance (m)	100.6	100.6	318.3
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 21: Ramp 1 SBT & Ramp 1 SBL

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 24: Riverside Dr WB

Movement	WB	WB	WB
Directions Served	LT	T	T
Maximum Queue (m)	61.4	79.6	77.8
Average Queue (m)	28.1	62.6	63.9
95th Queue (m)	52.6	79.9	76.1
Link Distance (m)	60.3	60.3	60.3
Upstream Blk Time (%)	0	10	15
Queuing Penalty (veh)	1	58	82
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 1026

Intersection: 1: Bank St & Riverdale Ave

Movement	WB	NB	NB	SB	SB
Directions Served	LR	T	TR	LT	T
Maximum Queue (m)	57.4	16.9	24.9	55.0	50.9
Average Queue (m)	26.3	3.4	9.1	26.0	19.9
95th Queue (m)	47.6	11.9	19.6	47.4	41.6
Link Distance (m)	204.2	167.8	167.8	183.4	183.4
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 2: Bank St & Riverside Dr WB

Movement	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	T	T	T	TR
Maximum Queue (m)	13.9	15.6	19.0	36.9	40.7	103.6	108.6
Average Queue (m)	12.2	13.5	15.0	19.8	23.6	51.3	59.4
95th Queue (m)	13.6	14.8	17.2	31.8	38.0	83.0	92.8
Link Distance (m)	11.4	11.4	11.4	114.3	114.3	167.8	167.8
Upstream Blk Time (%)	38	38	40				
Queuing Penalty (veh)	252	256	270				
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Bank St & Riverside Dr EB

Movement	EB	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	T	T	R	T	T	R	T	T
Maximum Queue (m)	42.2	75.8	76.9	52.5	32.8	34.8	56.3	84.2	85.2
Average Queue (m)	16.5	67.1	66.2	30.0	13.7	13.1	20.5	52.7	55.6
95th Queue (m)	33.8	74.5	74.2	72.2	26.4	28.3	47.0	79.1	82.9
Link Distance (m)	57.1	57.1	57.1		145.3	145.3		114.3	114.3
Upstream Blk Time (%)	0	42	40	0				0	0
Queuing Penalty (veh)	0	275	261	0				0	0
Storage Bay Dist (m)				45.0			60.0		
Storage Blk Time (%)			46	0			0		
Queuing Penalty (veh)			73	1			1		

Intersection: 4: Bank St & Billings Transit

Movement	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	T	T	T	T	R
Maximum Queue (m)	31.1	24.9	72.9	87.9	88.7	145.7	22.0
Average Queue (m)	5.7	6.6	41.8	49.4	47.1	53.1	7.1
95th Queue (m)	21.2	20.8	64.8	77.9	75.6	97.1	22.3
Link Distance (m)	235.8		156.7	156.7	145.3	145.3	
Upstream Blk Time (%)					0	0	
Queuing Penalty (veh)					0	2	
Storage Bay Dist (m)		65.0					15.0
Storage Blk Time (%)			0			44	0
Queuing Penalty (veh)			0			6	2

Intersection: 5: Data Centre Rd & Riverside Dr

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	T	R	L	T	T	L	R
Maximum Queue (m)	257.0	256.2	33.2	35.2	69.1	69.6	35.2	30.6
Average Queue (m)	186.3	180.5	2.2	15.0	26.4	31.7	16.3	4.9
95th Queue (m)	320.7	319.8	18.6	28.6	56.9	60.8	30.3	23.1
Link Distance (m)	250.5	250.5			103.6	103.6		202.2
Upstream Blk Time (%)	29	28						
Queuing Penalty (veh)	0	0						
Storage Bay Dist (m)			40.0	75.0			85.0	
Storage Blk Time (%)		42	0		0			
Queuing Penalty (veh)		4	0		0			

Intersection: 6: Pleasant Park Rd & Riverside Dr

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	T	T	L	R
Maximum Queue (m)	79.4	86.6	37.4	151.8	149.5	58.5	18.6
Average Queue (m)	43.4	50.4	30.5	132.2	128.0	29.3	0.8
95th Queue (m)	68.7	75.2	47.1	179.0	182.2	50.5	10.4
Link Distance (m)	229.3	229.3		136.5	136.5	223.2	
Upstream Blk Time (%)				48	29		
Queuing Penalty (veh)				0	0		
Storage Bay Dist (m)			30.0				40.0
Storage Blk Time (%)			6	41		5	0
Queuing Penalty (veh)			61	54		1	0

Intersection: 8: Riverside Dr EB & Site Access

Movement	EB	SB
Directions Served	T	L
Maximum Queue (m)	31.5	19.0
Average Queue (m)	2.7	6.9
95th Queue (m)	18.2	16.4
Link Distance (m)	18.9	35.5
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	1	
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Riverside Dr EB & Ramp 1 SBT

Movement	EB	EB	SB
Directions Served	T	T	T
Maximum Queue (m)	185.0	186.3	27.8
Average Queue (m)	167.4	168.6	12.4
95th Queue (m)	226.9	226.5	23.7
Link Distance (m)	175.9	175.9	46.2
Upstream Blk Time (%)	18	20	
Queuing Penalty (veh)	166	185	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Riverside Dr EB & Ramp 1 SBL

Movement	EB	EB	SB
Directions Served	T	T	L
Maximum Queue (m)	87.1	88.8	38.5
Average Queue (m)	80.4	80.9	14.9
95th Queue (m)	86.4	87.3	32.0
Link Distance (m)	77.9	77.9	88.5
Upstream Blk Time (%)	34	35	
Queuing Penalty (veh)	315	327	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: Ramp 2 NB & Riverside Dr WB

Movement	WB	WB	NB
Directions Served	T	T	L
Maximum Queue (m)	217.4	219.6	88.3
Average Queue (m)	205.6	205.9	50.8
95th Queue (m)	235.4	238.9	91.8
Link Distance (m)	206.6	206.6	83.1
Upstream Blk Time (%)	17	18	8
Queuing Penalty (veh)	184	194	0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15: Riverside Dr WB/Riverside Dr & Riverside Dr EB

Movement	NB	NB	SW	SW
Directions Served	R	R	T	T
Maximum Queue (m)	9.4	21.1	236.3	237.1
Average Queue (m)	0.3	1.8	194.4	194.9
95th Queue (m)	4.8	10.7	301.3	301.6
Link Distance (m)	306.6	306.6	229.3	229.3
Upstream Blk Time (%)			2	2
Queuing Penalty (veh)			17	16
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 18: Riverside Dr/Riverside Dr EB & Riverside Dr WB

Movement	EB	EB	SB	SB
Directions Served	T	T	R	R
Maximum Queue (m)	110.1	124.6	11.8	7.6
Average Queue (m)	85.1	93.4	0.5	0.3
95th Queue (m)	146.7	158.7	5.3	4.2
Link Distance (m)	103.6	103.6	320.9	320.9
Upstream Blk Time (%)	8	24		
Queuing Penalty (veh)	73	227		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 21: Ramp 1 SBT & Ramp 1 SBL

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 24: Riverside Dr WB

Movement	WB	WB	WB
Directions Served	LT	T	T
Maximum Queue (m)	63.4	67.3	66.9
Average Queue (m)	39.1	59.9	55.9
95th Queue (m)	65.7	67.9	64.3
Link Distance (m)	48.3	48.3	48.3
Upstream Blk Time (%)	10	31	33
Queuing Penalty (veh)	80	239	257
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 3799