2946 Baseline Road

TIA Final 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 licensed[1] 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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TIA Final Report

Parsons has been retained by Brigil to prepare a Transportation Impact Assessment (TIA) in support of a Zoning By-Law Amendment (ZBLA) and a Site Plan Application (SPA) for a residential development located at 2946 Baseline Road in Bayshore/Cedarview district. **The previous submission on May 30, 2023 focused on Phases/Towers 4, 5 and 6 as Phases/Towers 1, 2 and 3 were already approved. At this time, Tower 1 has been constructed and fully occupied, while Tower 2 is under construction. The previously approved Tower 3 is now being integrated with Tower 4 as part of a new vision for the development site. Therefore, the new development proposal will contain a total of five phases/towers, and this application is being provided in support of Phases 3-5.** For the purpose of this report, "Phase 3-4" will be referred to as "Phase 4".

The following document has been prepared for three additional phases/towers, which follows the new TIA process, as outlined in the City Transportation Impact Assessment (TIA) Guidelines (2017). The following report represents Step 5 – TIA Final Report.

1. Screening Form

The screening form confirmed the need for a TIA Report based on the following:

- The Trip Generation trigger. Phases 4 to 5 consist of three mixed-use buildings with approximately 890 residential apartment units and 2,180 m^2 (23,480 ft^2) of commercial space.
- The Location trigger has also been triggered, given that the development is located within a transit priority corridor and spine cycling route.
- The Safety trigger given that the proposed driveway is within the influence of an adjacent traffic signal at Sandcastle/Baseline.

The Screening Form and responses to City of Ottawa comments have been provided in **Appendix A**.

2. Scoping Report

2.1. Existing and Planned Conditions

2.1.1. PROPOSED DEVELOPMENT

The subject site is located at the municipal addresses of 2946 and 2940 Baseline Road on the southeast corner of the Sandcastle/Baseline intersection. The previous Phases 1-3 was approved under a separate development application, "2940 Baseline Road Community Transportation Study" by Delcan, submitted on October 21, 2011, and supported by an updated Memo TIA by Parsons submitted to the City on June 16, 2021. Since then, Phases 1 and 2 have been constructed, and the previous Phase 3 tower has been integrated within the current development proposal. Therefore, this TIA is being provided in support of Phases 4, 5 and 6 (note that Phase 3 has been incorporated into Phase 4).

The existing site has a small shopping plaza and surface parking which will be redeveloped to a high-density residential mixed used site. The proposed study area includes the intersections of Cedarview/Baseline, Valley Stream/Baseline, Sandcastle/Baseline, Monterey/Baseline, Morrison/Baseline, and roadway segments adjacent to site or between intersections as shown in **Figure 1**. More details regarding the study area can be found in **Section 2.1.2**.

Figure 1: Local Context

Note: Phase 3 has been removed and combined with Phase 4.

The property is currently zoned as GM[2138] S(325-h) which allows general mixed-use. Under this zoning's specific exceptions, Phase 6 is capped at 13-storeys, Phase 5 at 16-storeys, Phase 4 at 10-storeys and Phase 3 at 10-storeys, which triggers the re-zoning application to allow a higher maximum building height forecasted at 32-, 28-, and 9-storeys for Phase 4 respectively.

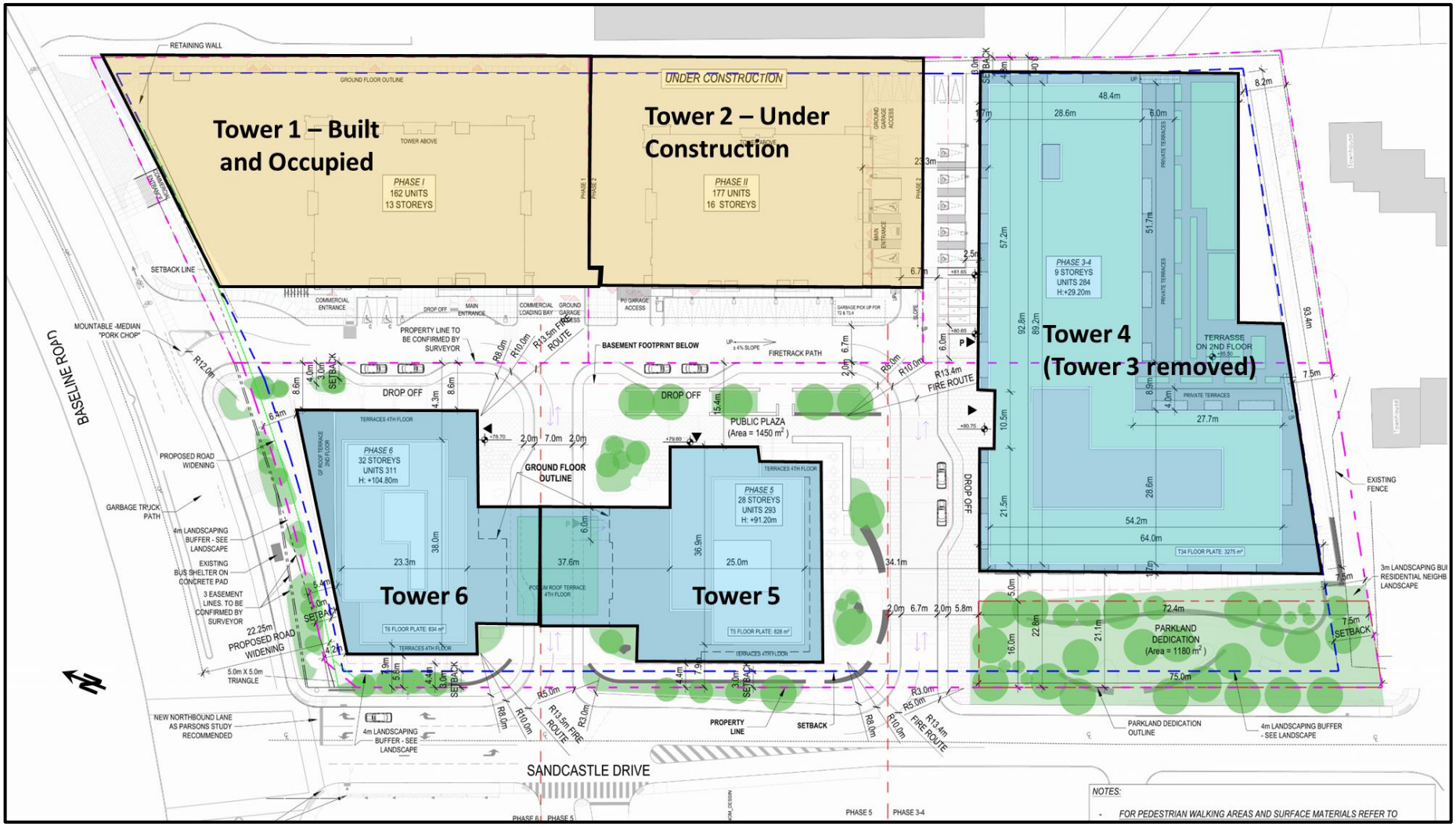
Brigil is proposing to advance with combined Phases 4, Phase 5 and 6 of their development, which include three additional Phases as summarized in **Table 1**.

Table 1: Proposed Site Statistics

Phase of Development	Number of Storeys	Number of Units	Proposed Commercial Space m²(ft²)	Proposed Number of Parking
Phase 1: T1 – Fully Occupied	13	162	883 (9,500)	172
Phase 2: T2 – Under Construction	16	177	-	280
Phase 3: T3 (has been removed and combined with Phase 4. Referred to Phase 4 throughout report)				
Phase 4: T4	9	284	1,025 (11,033)	227
Phase 5: T5	28	293	312 (3,358)	220
Phase 6: T6	32	311	844 (9,085)	252
Total Phases 4-6		888	2,181 (23,476)	699
Total All Phase Combined		1,227	3,064 (32,976)	1,151

Full buildout of the site is estimated by 2030. Once complete, the full buildout of the site will make use of three accesses into the site: a right-in right-out (RIRO) to Baseline Road that has already been built and is located approximately 60m east of Sandcastle Drive; a full movement access located approximately 45m south of Baseline Road; and a second full movement access located approximately 115m south of Baseline Road. The latest site plan concept is shown in **Figure 2**.

Figure 2: Proposed Site Plan



2.1.2. EXISTING CONDITIONS

Area Road Network

Baseline Road is a major east-west arterial road, which extends from Richmond Road in the west to Prince of Wales Drive in the east where it continues as Heron Road. Within the study area, Baseline Road has a four-lane cross section with auxiliary turn lanes at major intersections and a posted speed limit of 70 km/h.

Cedarview Road is a north-south arterial road, which extends from the City's Barrhaven community in the south to the Queensway Carleton Hospital on Baseline Road. Within the study area, Cedarview Road has a two-lane cross section with auxiliary turn lanes at major intersections and a posted speed limit of 60 km/h.

Valley Stream Drive is a local road that serves the residential community directly south of the site. It extends from the Queensway Carleton Hospital's south driveway connection to Gladecrest Court. Valley Stream Drive has an approximate three-lane cross section with on street parking permitted on the south side only and auxiliary turn lanes at major intersections. The posted speed limit within the study area is 40 km/h.

Sandcastle Drive is a collector road, which extends from Baseline Road south to Valley Stream Drive. Sandcastle Drive has an approximate three-lane cross section with on street parking permitted on the east side only and auxiliary turn lanes at major intersections. The posted speed on Sandcastle Drive is 40 km/h.

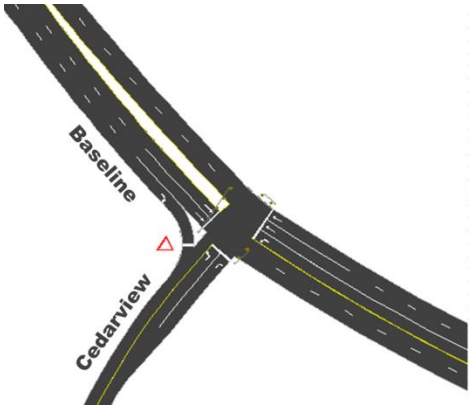
Monterey Drive is a collector road, which extends from Baseline Road east to Greenbank Road. Monterey Drive has an approximate three-lane cross section with on street parking permitted on the north side only and auxiliary turn lanes at major intersections. The posted speed limit within the study area is 40 km/h.

Morrison Drive is a collector road, which extends from Baseline Road north to Greenbank Road. Morrison Drive has an approximate three-lane cross section with on street parking permitted on the west side only and auxiliary turn lanes at major intersections. The unposted speed on Morrison Drive is 50 km/h.

Existing Study Area Intersections

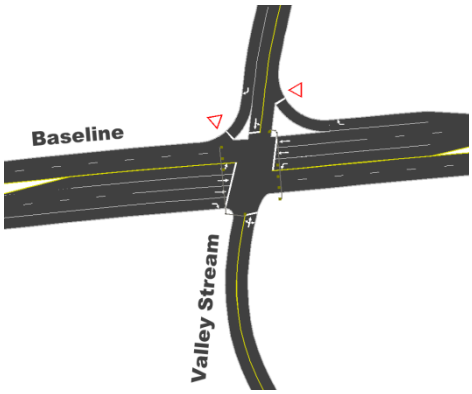
Cedarview/Baseline

The Cedarview/Baseline intersection is a signalized, 'T' intersection. The eastbound approach consists of a single right-turn lane and two through lanes. The westbound approach consists of a single left-turn lane and two through lanes. The northbound approach consists of a single all-movement lane, but is wide enough and operates as single left and right-turn lanes. All turning movements are permitted.



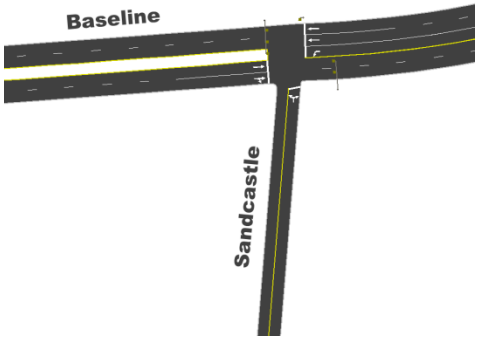
Valley Stream/Baseline

The Valley Stream/Baseline intersection is a signalized four-legged intersection. The westbound approach consists of single left and right-turn lanes with two through lanes. The eastbound approach consists of single left and right-turn lanes with two through lanes. The northbound approach consists of a single all-movement lane. The southbound approach consists of a single right-turn lane and a shared through/left-turn lane. All turning movements are permitted.



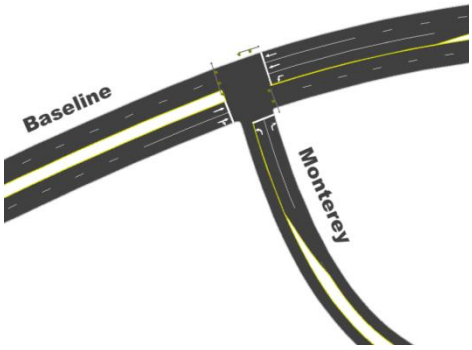
Sandcastle/Baseline

The Sandcastle/Baseline intersection is a signalized, 'T' intersection. The eastbound approach consists of a single through lane and a shared through/right-turn lane. The westbound approach consists of a single left-turn lane and two through lanes. The northbound approach consists of a single all-movement lane. All turning movements are permitted, except for U-turns on Baseline.



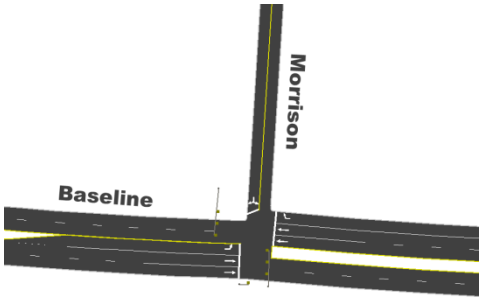
Monterey/Baseline

The Monterey/Baseline intersection is a signalized, 'T' intersection. The eastbound approach consists of a single through lane and a shared through/right-turn lane. The westbound approach consists of a single left-turn lane and two through lanes. The northbound approach consists of single right and left-turn lanes. All turning movements are permitted, except for U-turns on Baseline.



Morrison/Baseline

The Morrison/Baseline intersection is a signalized, 'T' intersection. The eastbound approach consists of a single left-turn lane and two through lanes. The westbound approach consists of a single right-turn lane and two through lanes. The southbound approach consists of a single all-movement lane. All turning movements are permitted, including U-turns.



Existing Driveways to Adjacent Developments

The existing driveways on adjacent roads to the development and within influence as shown in **Figure 3** include:

- Access Driveways to Sandcastle Drive:
  - 2946 Baseline Road: The previous access to the site which was located approximately 25m south of Baseline Rd has been relocated as of 2022, to its new permanent location located approximately 45m south of Baseline Rd. A secondary access to the site is proposed approximately 115m south of Baseline Rd.
  - 80 Sandcastle: there are two accesses to a parking garage for the 12-storey Carleton Condominium Corporation 336. These accesses are located approximately 155 and 220 meters south of Baseline Road.
  - 142 Valley Stream: a driveway to 10 surface lots and two driveways is located approximately 215 meters south of Baseline Road.
  - 142 Valley Stream: there are 2 private driveways directly to Sandcastle Drive to duplex homes (4 units) approximately 235 and 250 meters south of Baseline Road.
- Access Driveways to Baseline Road:
  - 2944 Baseline: A right-in-right-out access was built as part of Phase 1 construction. This driveway will remain in the future and is located approximately 70 meters east of Sandcastle Drive.
  - 2930 Baseline: driveway access to the office towers east of the proposed development. The access is located approximately 130 meters east of Sandcastle Drive.
- Access Driveways to Brookhaven Court (located across the street to the proposed site, off Sandcastle Drive):
  - 12 private driveways to single detached homes

Figure 3: Existing Driveways Adjacent to Development

Existing Area Traffic Management Measures

Existing area traffic management measures within the study area include:

- Sidewalk facilities on all intersection approaches and on various road segments (further details in following section).
- On-street parking on Valley Stream Drive, Sandcastle Drive, Monterey Drive and Morrison Drive.
- 40km/h posted speed on Valley Stream Drive, Sandcastle Drive, and Monterey Drive.
- No U-turns allowed at various intersections.
- Centerline delineators on Monterey Drive.

Pedestrian/Cycling Network

Sidewalks are provided at the following locations:

- On both sides of Baseline Road (some parts as pedestrian pathways).
- On the north side of Valley Stream Drive
- On the west side of Sandcastle Drive
- On the north side of Monterey Drive, and
- On the west side of Morrison Drive.

Cedarview Road has a multi-use pathway facility (MUP) on the east side, which connects to MUP facilities on the west side of Queensway Carleton Hospital. These facilities are interconnected with MUPs all the way up to the Trans-Canada Trail (Watts Creek Pathway) which provides connection to the Ottawa River Pathway.

The Crosstown Bikeway Network (March 1, 2023) [1] in the new Transportation Master Plan Part 1 classifies Cedarview Road as a Crosstown Bikeway Network route – see Section 2.1.3 for further detail. Baselline Road is classified as a spine bike route, while Valley Stream Drive and nearby Beaumaris Drive are suggested routes within the previous TMP (2013). Note that only Part 1 of the new TMP has been released to date.

Transit Network

The transit network for the study area is illustrated in **Figure 4** with nearby transit stops shows in **Figure 5**. The following OC Transpo routes currently operating within 600m walking distance to the site include:

- **Route #57 (Tunney's Pasture <-> N Rideau)**: identified by OC Transpo as a "Rapid Route", this route operates in all time periods, 7 days a week with high frequency of approximately 15 minutes or less. Route #57 provides quick connection from the Confederation LRT Line at Tunney's Pasture and provides connection to Bayshore Shopping Center, Moodie Station and Carling Campus. Bus stops for this route are available on both sides of Baseline Road, approximately 550 to 600 meters from the site.
- **Route #88 (Hurdman <-> Terry Fox)**: identified by OC Transpo as a "Frequent Route", this route operates at a frequency of every 15 minutes or less on weekdays and operates 7 days a week. Route #88 provides quick connection from the Confederation LRT Line at Hurdman Station, Trillium LRT Line at Mooney's Bay Station and provides connection to Baseline (Algonquin College) and Terry Fox. Bus stops for this route are available on both sides of Baseline Road, adjacent to the site.
- **Route #58 (Crystal Bay <-> Lincoln Fields)**: identified by OC Transpo as a "Local Route", this route operates on customized routing and schedules, to serve local destinations with connection to the BRT Transitway at Lincoln Fields (future LRT), Bayshore Shopping Center and Carling Campus. Route #58 operates at an average rate of every 30 minutes during weekdays. Bus stops for this route are available on both sides of Baseline Road, adjacent to the site.

[1] Crosstown Bikeway Network, March 1, 2023

Figure 4: Area Transit Network

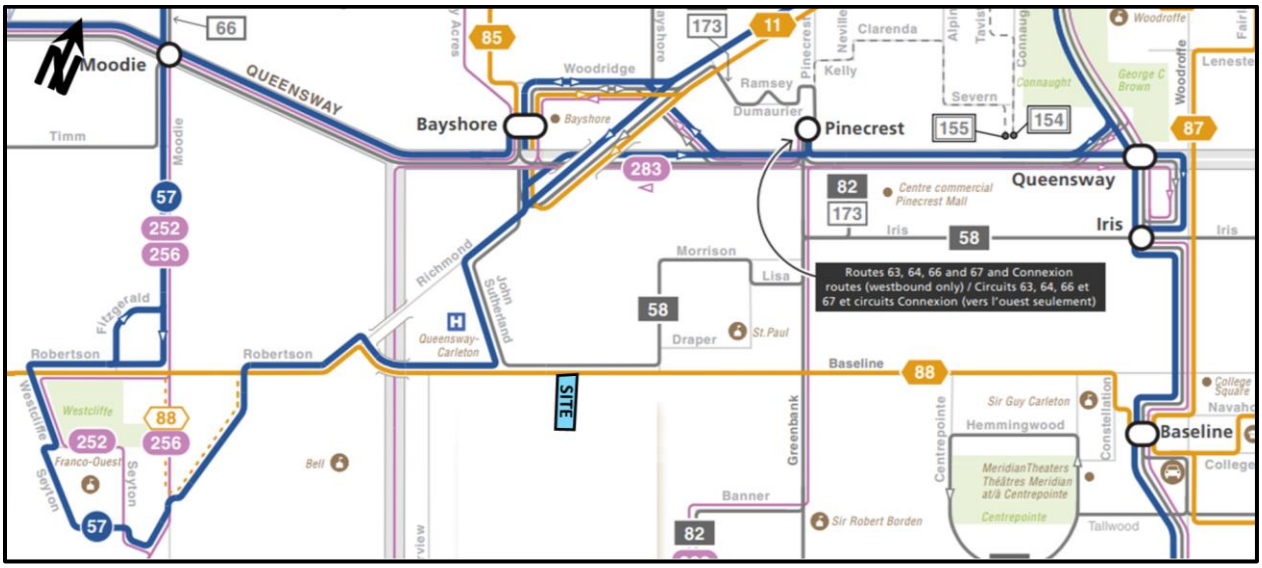
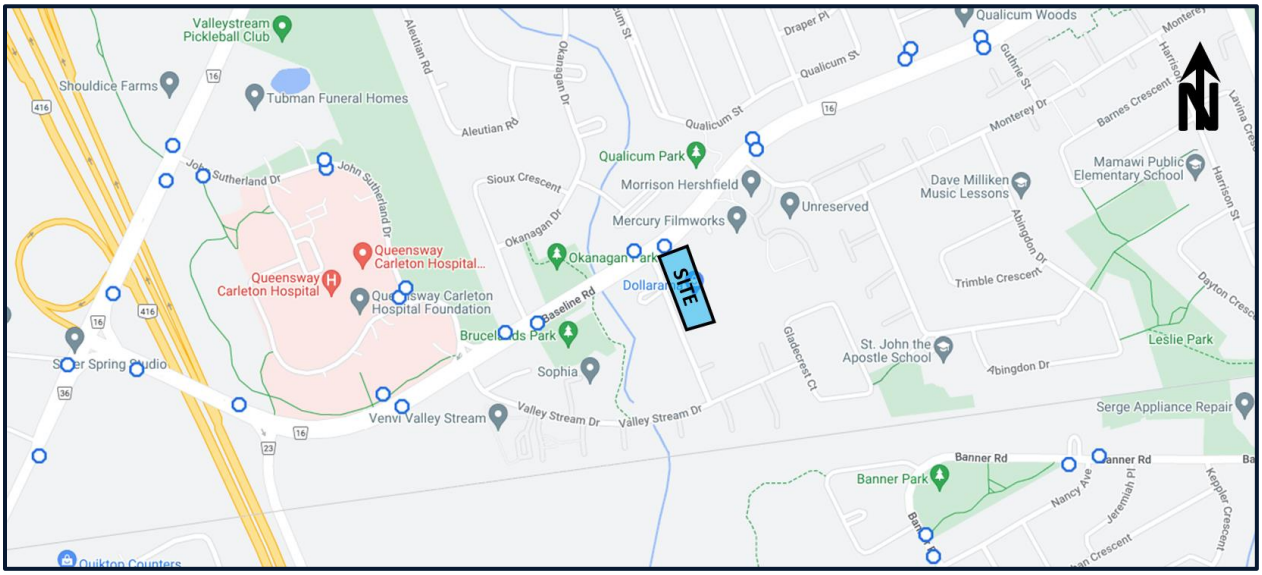


Figure 5: Transit Stops Near Proposed Development



Peak Hour Travel Demands

The existing peak hour traffic vehicle and active travel volumes within the study area, as illustrated in **Figure 6** and **Figure 7** respectively, were obtained from the City of Ottawa or counted by Parsons. Both existing accesses to the site were counted on June 20th, 2024. The peak hour traffic volume count data has been provided in **Appendix B**.

Figure 6: Existing Peak Hour Traffic Volumes

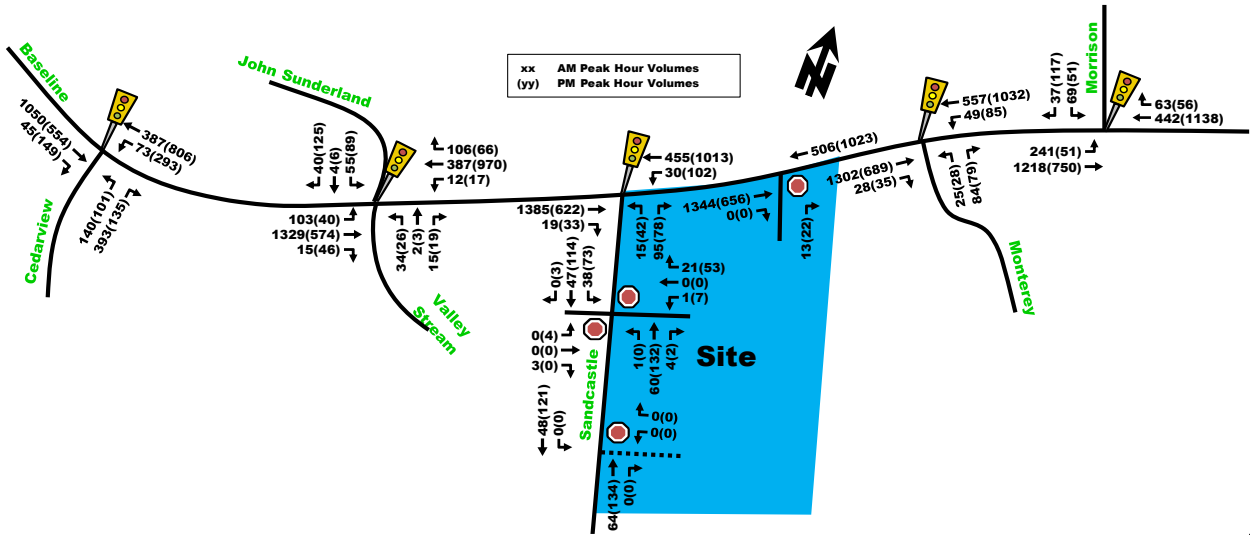
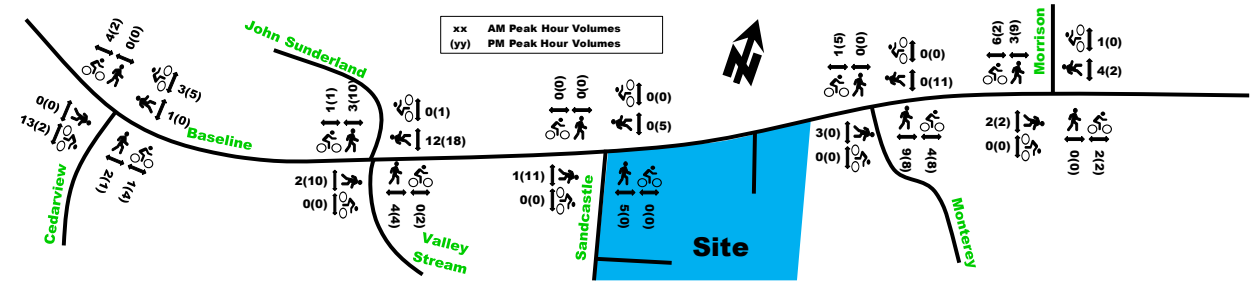


Figure 7: Existing Peak Hour Pedestrian/Cycling Volumes



Existing Road Safety Conditions

A five-year collision history data (2017-2021, 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 68 collisions within the past five-years, with 79% causing property damage only and 21% causing non-fatal injuries. There were no fatal injuries recorded. Within the study area, the quantity of collisions and distance of mid-block at each location has occurred at a rate of:

- Cedarview/Baseline: 15
- Valley Stream/Baseline: 13
- Sandcastle/Baseline: 9
- Monterey/Baseline: 9
- Morrison/Baseline: 11
- Mid-block west of Cedarview: 3 (350m)
- Mid-block Cedarview to Sandcastle: 4 (750m)
- Mid-block Sandcastle to Morrison: 4 (580m)
- Collisions with Pedestrians: 0
- Collisions with Cyclists: 1 (1%)

The collision involving a cyclist occurred at the intersection of Cedarview/Baseline, which has since received a 36 second fully time separated phase for cyclists and pedestrians crossing Baseline Road from the MUP on Cedarview Road the active transportation facilities north of Baseline Road.

Valley Stream/Baseline and Sandcastle/Baseline both had more than 30% of collisions (but less than 40%) producing non-fatal injuries. The injuries are likely caused from the higher operating speed on Baseline Road, posted at 70km/h. Although some collisions did cause injury, overall, they were infrequent especially for intersections along busy arterial roads around the city which tend to have higher rate of collisions than less busy roads.

Detailed collision analysis has been provided in **Appendix C**.

2.1.3. PLANNED CONDITIONS

Planned Study Area Transportation Network Changes

Baseline Road BRT Transit Corridor

Within the Official Plan and 2013 Transportation Master Plan (TMP), Baseline Road is classified as an at-grade transitway and a transit priority corridor with isolated measures respectively. An update to the TMP Phase 2 is currently ongoing and will have further details to the future of the Baseline Road transit priority.

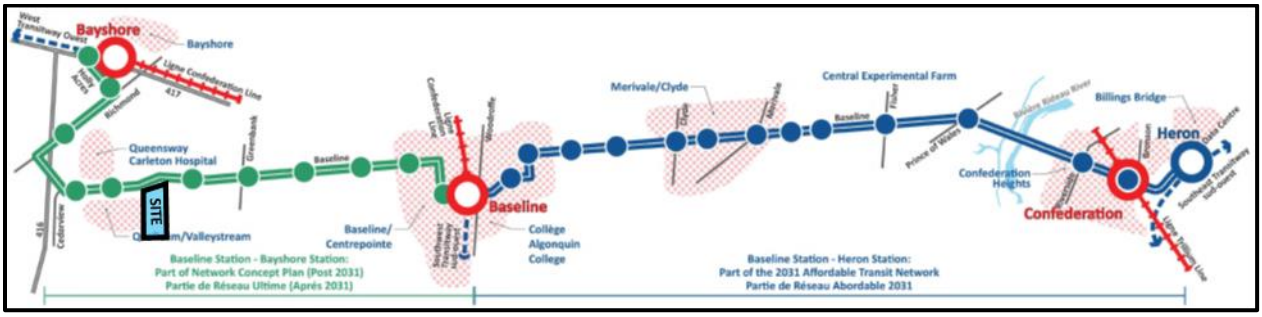
The City of Ottawa has completed an EA and are currently preparing the detailed design for a future bus rapid transit (BRT) corridor on Baseline Road. The proposed works is expected to include median bus lanes from Bayshore Shopping Center and future LRT Station via Richmond Road and Baseline Road to Heron BRT Station as shown in **Figure 8.** The BRT corridor will cross the Confederation LRT Line twice, at Bayshore Shopping Center and at Baseline Station near Woodroffe Avenue. It will also connect to the Trillium LRT Line at Mooney's Bay Station near Confederation Heights.

Buses are anticipated to run every 5-6 minutes in the AM peak hour and every 7-8 minutes in the PM peak hour, with over 10,000 ridership per day forecasted. Time savings of up to 11 minutes along the corridor are expected[2]. In addition to transit improvements, the Baseline BRT corridor will enhance active transportation by adding 22.8kms of new concrete sidewalks, 3.5kms of multi-use pathways (MUPs), 22.1kms of separated cycle-tracks and 1.3kms of buffered shoulder lanes.

The full buildout of this transit priority corridor is estimated to be constructed between 2030 to 2035 timeframe based on current estimates from the city.

For the purpose of this analysis, existing conditions were assumed for year 2030 and the future transit priority design was expected to be constructed by the 2035 horizon year. The 2035 horizon year will include protected left-turns only on Baseline Road and transit priority measures where applicable.

Figure 8: Baseline BRT Project Limits and Future Stations (TMP 2023)



Note that the Confederation LRT Station has been renamed Mooney's Bay Station

Cycling Network

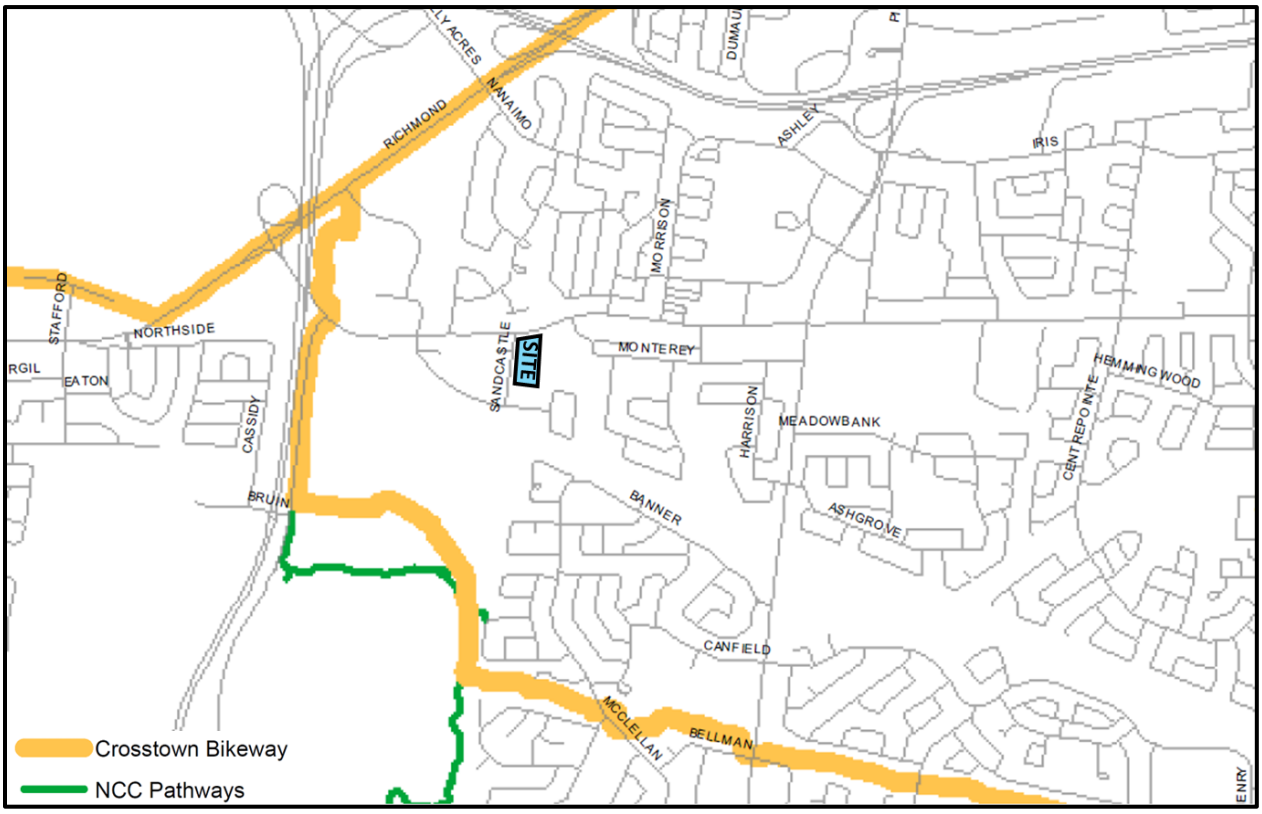
The City of Ottawa released Part 1 of the Transportation Master Plan (TMP) Update, March 2023, which highlights the Crosstown Bikeway Network. The nearest Crosstown Bikeway is located on Cedarview Road and Richmond Road as shown in **Figure 9.**

According to the 2013 TMP Ultimate Cycling Network, Valley Stream Drive and Beaumaris Drive are suggested local routes. Baseline Road and Cedarview Road are spine route classification. Nearby Richmond Road is also classified a spine route.

[2] https://documents.ottawa.ca/sites/documents/files/baseline_brtboards_final_en.pdf. Date Accessed: May 29, 2023.

As previously discussed, the Baseline BRT project includes the addition of multi-use pathways, cycle-tracks, and intersection modifications to support cyclists. Within the study area, the Baseline BRT project proposes new uni-directional cycle-tracks and parallel sidewalk facilities on both sides of the road.

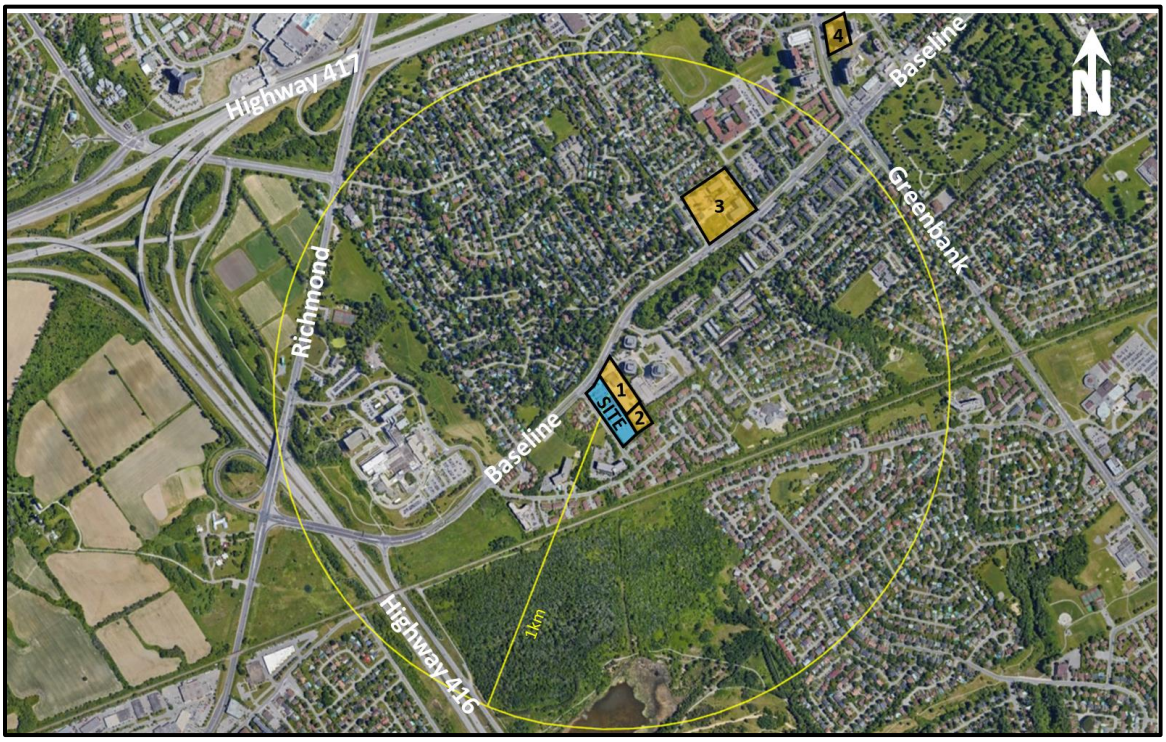
Figure 9: March 2023 TMP Part 1 Update – Crosstown Bikeway Network



Other Area Developments

The following section outlines adjacent developments in the general area that were considered in the TIA. The criteria for inclusion of other area developments are either approved developments or developments that have an active planning application that are generally within a 1-km radius of the subject site. **Figure 10** illustrates the location and relative size of relevant other area developments.

Figure 10: Other Area Developments



1 – 2940 Baseline Road (Phase 1 and 2)

A TIA was prepared by Delcan and submitted on October 21, 2011 in support of three residential Phases within this greater development. Phase 1 has been built and is occupied; Phase 2 is almost complete its construction. An on-site traffic count and vehicle trip generation associated with Phase 1 was conducted on June 20th, 2024. It was observed that approximately 32 and 24 vehicles two-way were generated by Phase 1 for the AM and PM peak hours. It is forecasted that Phase 2 will generate approximately 35 and 26 new two-way vehicle trips based on proportionate development size compared to Phase 1, which will be added to background conditions.

2 – 2940 Baseline Road (Phase 3)

Phase 3 has since been redesigned and incorporated as part of this packaged submission. Formerly the greater site proposed 6 towers, which have now been reduced to 5 towers, with tower 3 and 4 becoming one. The Site Plans refer to this combined tower as Tower 3-4, but for the purpose of this report, it is being referred to as Phase 4.

3 – 2785 Baseline Road

The site envisions a mixture of residential, commercial, and medical land uses. The latest ZBLA according to the City's Development Application tool proposes 66 units in Building D, 80 units in Building E, 81 units and medical uses in Building F, which is an increase of approximately 31 units from the original proposal. A TIA from Castleglenn date June 18th, 2019 was found. The majority of the development has already been built. No further TIA's were found. For this TIA, the projected volumes from the Castleglenn TIA will be layered on to future background conditions.

4 – 1300 McWaters Road

Proposed 25-storey 235-unit residential development. The TIA by GHD Limited projects 36 two-way trips in the AM peak and 37 two-way trips in the PM peak. Although this development is located further than 1km away, for completeness, trips forecasted on Baseline Road will be layered on to future background conditions.

2.2. Study Area and Time Periods

Full buildout of the proposed residential development is envisioned by 2030. As such, the horizon years being analyzed in this report are the 2030 and 2035 (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 11**.

- Cedarview/Baseline intersection
- Valley Stream/Baseline intersection
- Sandcastle/Baseline intersection
- Monterey/Baseline intersection
- Morrison/Baseline intersection
- Along Baseline Road and Sandcastle Drive adjacent to the site

Figure 11: Study Area Boundaries and 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 2: Exemptions Review Summary

Module	Element	Exemption Consideration
4.1 Development Design	4.1.3 New Streets Networks	Only required for plans of subdivision
4.2 Parking	4.2.2 Spillover Parking	Section removed from TIA.

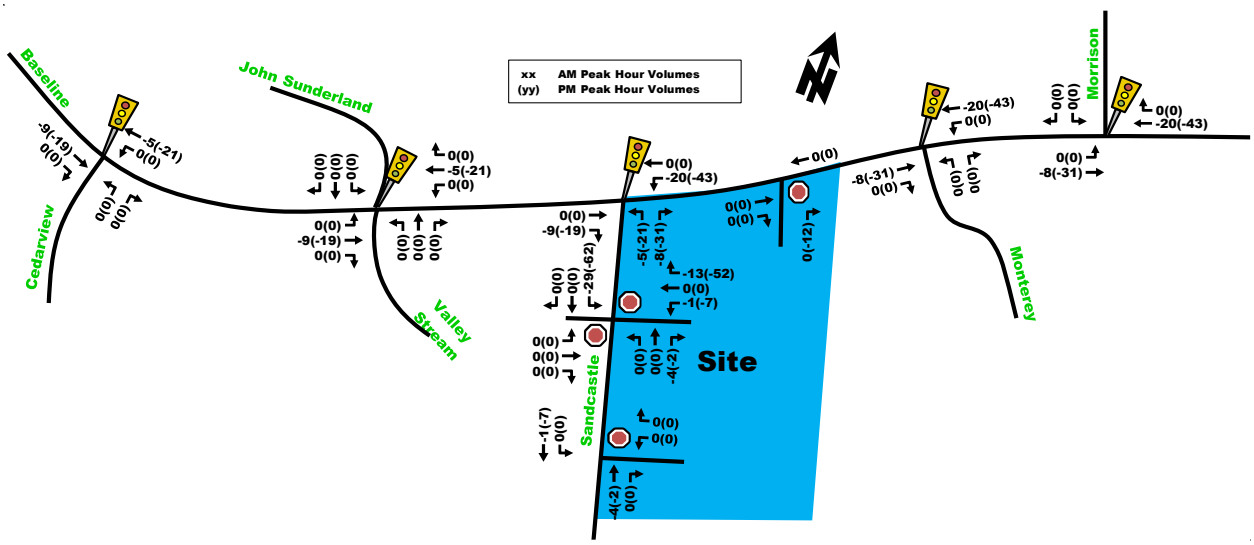
3. Forecasting Report

3.1. Development-Generated Travel Demand

3.1.1. TRIP GENERATION AND MODE SHARES

The existing site consists of a fully occupied Phase 1 building, a small shopping plaza which contains tenants such as Dollarama, Bar and Bistro, Edward Jones Bank, a small pharmacy, and a physiotherapy treatment center. Peak hour traffic counts were completed on June 20, 2024 that captured vehicle trips from both the existing shopping plaza and Phase 1. Vehicles that utilized the surface parking lot and walked to/from Phase 1 or vehicles using the garage to/from the underground parking lot were considered trips to/from Phase 1, while all other trips were assumed to be associated to the shopping plaza. By creating this distinction, the trips associated with Phase 1 can be maintained as future background volumes, while the trips associated with the commercial plaza can be reduced from background conditions. **Figure 12** illustrates the vehicle volumes that will be reduced from background conditions as they pertain to the commercial plaza to be demolished for the construction of Phases 4-6.

Figure 12: Existing Commercial Plaza Site Vehicle Traffic to be Removed



Residential Uses

Trip generation rates for proposed residential units, consisting of approximately 888 high-rise apartment units within three Phases (including conjoined Phases 3-4 referred as Phase 4), were based on the city's 2020 TRANS Trip Generation Manual. The trip generation rates for proposed commercial uses were based on the ITE's Trip Generation Manual 11th Edition. These trip generation rates have been summarized in **Table 3**.

Table 3: 2020 TRANS Residential Trip Generation Rates & ITE Commercial Rates

Land Use	Data Source	Units or Size	Trip Rates	
			AM Peak	PM Peak
High Rise Apartments	TRANS 2020	888 units	T = 0.80(du)	T = 0.90(du)
Strip Retail Plaza (<40K ft²)	ITE 822	32,976 ft²₁	T = 0.66Ln(x) + 1.84	T = 0.71Ln(x) + 2.72
Note: T = Average Vehicle Trip Ends; du = dwelling units; x = GFA in 1,000 ft². 1 – The commercial space for Phase 1 has not been occupied yet and therefore was not captured in recent on-site trip generation. For the purpose of this assessment, the GFA from Phase 1 has been added to this trip generation.				

Using the TRANS Trip Generation rates, the total amount of person trips generated by the proposed 888 residential units was calculated. The results are summarized in **Table 4**.

Table 4: Projected Residential Peak Period Person Trip Generation – TRANS Model 2020

Land Use	Dwelling Units	AM Peak Period Person Trips	PM Peak Period Person Trips
Three Residential Towers	888	710	799

The projected site peak period person trips were then divided based on the mode shares for Bayshore/Cedarview according to TRANS 2020 table 5, as summarized in **Table 5**.

Table 5: Residential Peak Period Trips using TRANS 2020 Mode Shares

Travel Mode	AM Peak Period		PM Peak Period	
	Mode Share	Person Trip	Mode Share	Person Trips
Auto Driver	40%	282	40%	320
Auto Passenger	12%	88	15%	119
Transit	38%	273	33%	260
Cycling	2%	11	1%	9
Walking	8%	57	11%	91
Total Person Trips	100%	710	100%	799

Standard traffic analysis is usually conducted using the morning and afternoon peak hour trips as they represent a worst-case scenario. The 2020 TRANS Manual uses peak periods which can exceed the peak hours. Table 4 within the 2020 TRANS Manual includes factors for converting peak periods into peak hour traffic volumes as seen in **Table 6**. Note that conversion factors for passenger trips are assumed to be the same as auto driver.

Table 6: Peak Period to Peak Hour Conversion Factor (2020 TRANS Manual)

Travel Mode	Peak Period to Peak Hour Conversion Factors	
	AM	PM
Auto Driver	0.48	0.44
Passenger	0.48	0.44
Transit	0.55	0.47
Bike	0.58	0.48
Walk	0.58	0.52

Using the peak period to peak hour conversion rates from **Table 6**, the derived peak period trips by mode shares from **Table 5**, and the inbound and outbound splits from table 9 within the TRANS 2020 Manual, then the residential peak hour trips generated by the site for TRANS 2020 Bayshore/Cedarview mode share can be calculated, as seen summarized in **Table 7**.

Table 7: Residential Peak Hour Trips Generated using TRANS 2020 Mode Shares

Travel Mode	Mode Share	AM Peak Hour (Trips/h)			Mode Share	PM Peak Hour (Trips/h)		
		In	Out	Total		In	Out	Total
Auto Driver	40%	42	93	135	40%	82	59	141
Auto Passenger	12%	13	29	42	15%	30	22	53
Transit	38%	46	103	150	33%	71	51	122
Cycling	2%	2	4	6	1%	2	2	4
Walking	8%	10	23	33	11%	27	20	47
Total Person Trips	100%	114	253	367	100%	213	154	367

Commercial Uses

The commercial elements of the proposed development are intended primarily to serve local people and nearby high-density developments such as office uses to the east, Carleton Condominiums, Revera Residence, and the Sophia Residence to the south, and nearby communities.

Given the mixture of land uses proposed onsite, an internal reduction rate was applied based on mixed-use parameters described in Section 6.5 of the ITE Trip Generation Manual 3rd Edition, to account for multi-purpose

trips such as a local resident shopping prior to travelling to work within the towers. These trips may be reduced to reflect double counted trips, which has been incorporated in the trip generation tables that follow. The base calculation for determining the quantity of internal reductions has been provided in **Appendix D.**

Pass-by trips were also considered for commercial uses. Pass-by trips are intermediate trips along the original route between the primary origin and destination, such as a trip to retail within this site between an origin and destination trip that is not within this site. These are not considered 'new' trips, but existing trips already on the network. Appendix E of the ITE Trip Generation Manual 3rd edition was used to determine pass-by rates. Pass-by trips were calculated after the internal reduction factor was applied.

The trip generation rates for commercial land uses from **Table 3** were used along with the proposed sizes for each commercial land use. The mode shares for the non-residential aspect of the site were justified based on the site context, location and with guidance from the TRANS 2020 mode share projections for Bayshore/Cedarview. The proposed non-residential mode shares are summarized in **Table 8**.

Table 8: TRANS 2020 and Proposed Mode Shares for Bayshore/Cedarview Commercial

Travel Mode	TRANS Commercial Mode Shares		Proposed Mode Share (AM & PM)	Proposed Modal Share Rationale
	AM	PM		
Auto Driver	64%	62%	50%	A reduction in driver mode share from TRANS is justifiable given the close proximity to nearby frequent transit and nearby high-density residential uses, commercial and offices (promoting walking).
Auto Passenger	15%	20%	15%	
Transit	4%	6%	18%	Transit anticipated to be higher than the ward based on proximity to frequent transit and being located adjacent to future Baseline BRT corridor.
Cycling	0%	1%	2%	The majority of trips are anticipated to be generated locally and will most likely attract nearby pedestrians, cyclists or even residents of the same development.
Walking	17%	11%	15%	

The new strip retail plaza trips generated are shown in **Table 9.**

Table 9: Strip Retail Plaza Peak Hour Trips Generated by Mode

Travel Mode	Mode Share	AM Peak Hour (Trips/hr)			PM Peak Hour (Trips/hr)		
		In	Out	Total	In	Out	Total
Auto Driver	50%	23	16	39	50	43	93
Pre-Internal Reduction		*24*	*17*	*41*	*58*	*58*	*116*
Vehicles Reduced		*-1*	*-1*	*-2*	*-8*	*-15*	*-23*
Auto Passenger	15%	8	5	13	18	18	36
Transit	18%	8	6	14	21	21	42
Cycling	2%	1	1	2	2	2	4
Walking	15%	7	4	11	17	17	34
Total Person Trips	100%	47	32	79	108	101	209
Less Pass-by 0% AM (35% PM)		0	0	0	-17	-17	-34
Total 'New' Strip Retail Plaza Auto Trips		**23**	**16**	**39**	**33**	**26**	**59**

Additionally, an internal reduction to residential trips is applicable, as shown in **Table 10**.

Table 10: TRANS 2020 Mode Shares Residential Peak Hour Trips with Internal Reduction

Travel Mode	AM Peak Hour (Trips/hr)			PM Peak Hour (Trips/hr)		
	In	Out	Total	In	Out	Total
Net Auto Driver	**41**	**92**	**133**	**67**	**51**	**118**
Pre-Internal Reduction	*42*	*93*	*135*	*82*	*59*	*141*
Vehicles Reduced	*-1*	*-1*	*-2*	*-15*	*-8*	*-23*
Auto Passenger, Transit, Cycling, Walking, Total Person Trips all remain the same (refer to Table 7)						

Using the total commercial trips generated from **Table 9** and the internally reduced residential trips generated from **Table 10**, the combined trips generated at full buildout using TRANS mode shares for residential and custom mode shares for non-residential can be found on **Table 11**.

Table 11: Combined New Development Peak Hour Trips

Travel Mode	AM Peak Hour (Trips/hr)			PM Peak Hour (Trips/hr)		
	In	Out	Total	In	Out	Total
Auto Driver	64	108	172	117	94	211
Pre-Internal Reduction	*66*	*110*	*176*	*140*	*117*	*257*
Vehicles Reduced	*-2*	*-2*	*-4*	*-23*	*-23*	*-46*
Auto Passenger	21	34	55	48	40	89
Transit	54	109	164	92	72	164
Cycling	3	5	8	4	4	8
Walking	17	27	44	44	37	81
Total Person Trips	160	284	444	306	247	553
Less Pass-by AM (PM)	0	0	0	-17	-17	-34
Total 'New' Shopping Auto Trips	**64**	**108**	**172**	**100**	**77**	**177**

As shown in **Table 11**, based on the 2020 TRANS Trip Generation Manual, the proposed site is projected to generate approximately 170 to 175 new auto-trips per hour during the weekday commuter peak hours. The increase in two-way transit trips is estimated to be approximately 165 persons trips per hour, the increase in walking trips by 45 to 80 person trips per hour and cycling trips approximately 10 persons per hour during the AM and PM peak hours.

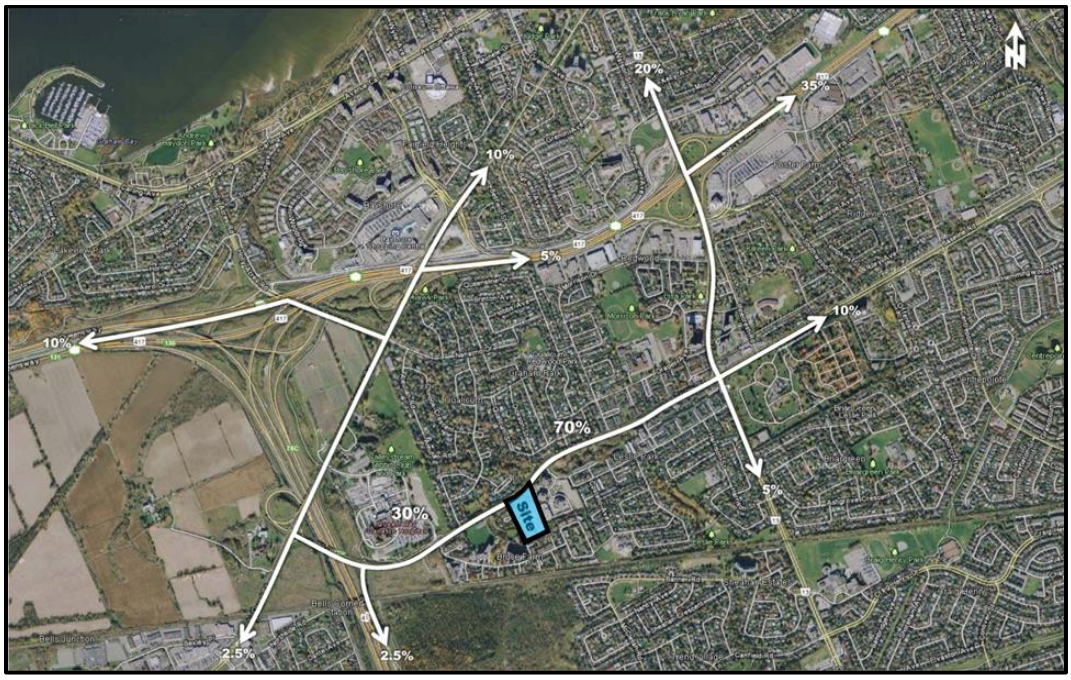
3.1.2. TOD MODE SHARES FOR RESIDENTIAL

While it is expected there will be an increase in the development transit mode share with a partial reduction in vehicle mode share upon completion of the Baseline BRT, the TRANS 2020 Trip Generation Manual for Bayshore/Cedarview mode shares were maintained to represent a worst-case scenario. Typical TOD targets were not considered reasonable since the site is not located within 600m walking distance to a major LRT Station.

3.1.3. TRIP DISTRIBUTION

Based on the OD Mode Share Survey, existing traffic volume counts and the location of adjacent arterial roadways and neighborhoods, the distribution of site-generated traffic volumes has been illustrated in **Figure 13**.

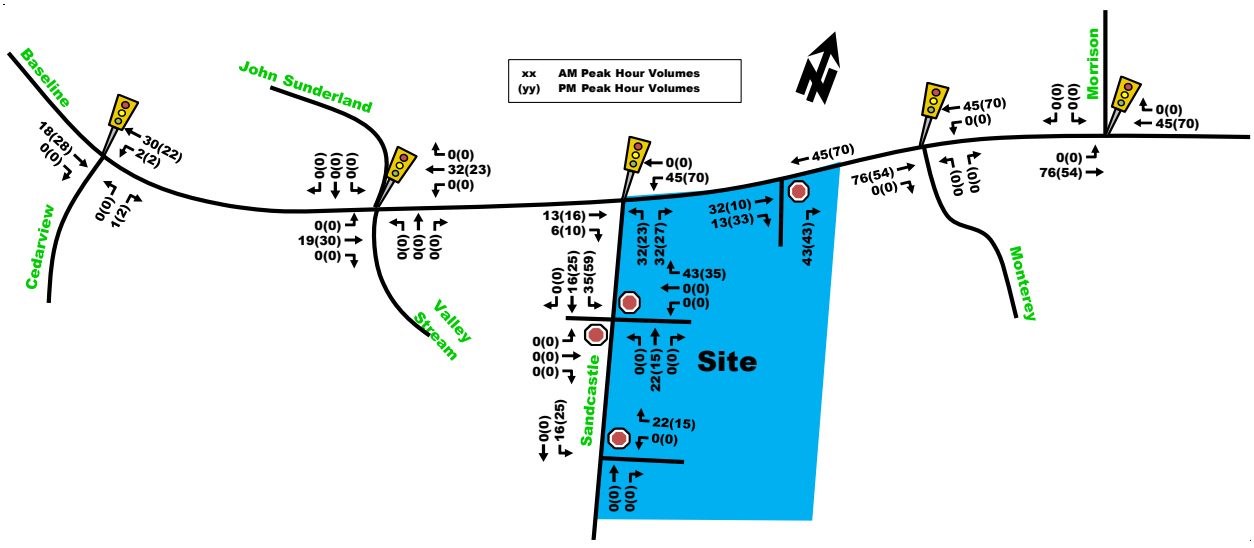
Figure 13: Site Generated Traffic Percent Distribution



3.1.4. TRIP ASSIGNMENT

The site, including Phases 1 through 6 will all share three accesses to the surrounding network. The three accesses include a RIRO to Baseline Road approximately 70m east of Sandcastle Drive and two full movement accesses to Sandcastle Drive located approximately 40m and 170m south of Baseline Road. The 'new' site-generated vehicle trips provided in **Table 11,** were assigned to the study area network as shown in **Figure 14**.

Figure 14: 'New' Site-Generated Traffic Phase 4-6



3.2. Background Network Travel Demands

3.2.1. TRANSPORTATION NETWORK PLANS

As mentioned in Section 2.1.3 Planned Conditions, Baseline Road is designated as a 'transit priority corridor with isolated measures' from Bayshore Shopping Center to Baseline Station within the 2031 Affordable Network.

The City of Ottawa is currently undertaking a study to provide future bus rapid transit (BRT). Though the design is still in its early stages, the study aims at improving transit efficiency and connectivity to LRT while also improving the travel environment for all other modes of transportation such as pedestrians and cyclists. These conditions are anticipated to be in place by the 2035 horizon.

For further detail refer to Section 2.1.3.

3.2.2. BACKGROUND GROWTH

The emphasis in the City's recent Official Plan and current Transportation Master Plan is to place priority on transit, encourage intensification around transit stations, encourage mixed-use developments and provide "complete streets" that better accommodate the active transportation needs of its residents and reduce the use of the private auto. Given the location of the site near frequent bus service within the Baseline Road transit priority corridor, close bus connectivity to the LRT Confederation Line Stage 2 at Baseline Station and future Baseline BRT corridor, the trips generated from this development as well as nearby developments will likely choose alternate modes of transportation over driving as transit infrastructure improves.

The following background traffic growth (summarized in Table 12) was calculated based on historical traffic count data (years 2010, 2011, 2012, 2015, and 2017) provided by the City of Ottawa at the Sandcastle/ Baseline intersection near the site. Note that the year 2022 was omitted as counts were very low compared to any other year count due to the COVID-19 pandemic. Detailed background traffic growth analysis is included as Appendix E.

Table 12: Sandcastle/Baseline Historical Background Growth (2010-2017)

Time Period	Percent Annual Change		
	South Leg	East Leg	West Leg
8 hrs	0.27%	0.63%	0.72%
AM Peak	-1.55%	1.21%	1.08%
PM Peak	0.00%	0.99%	1.09%

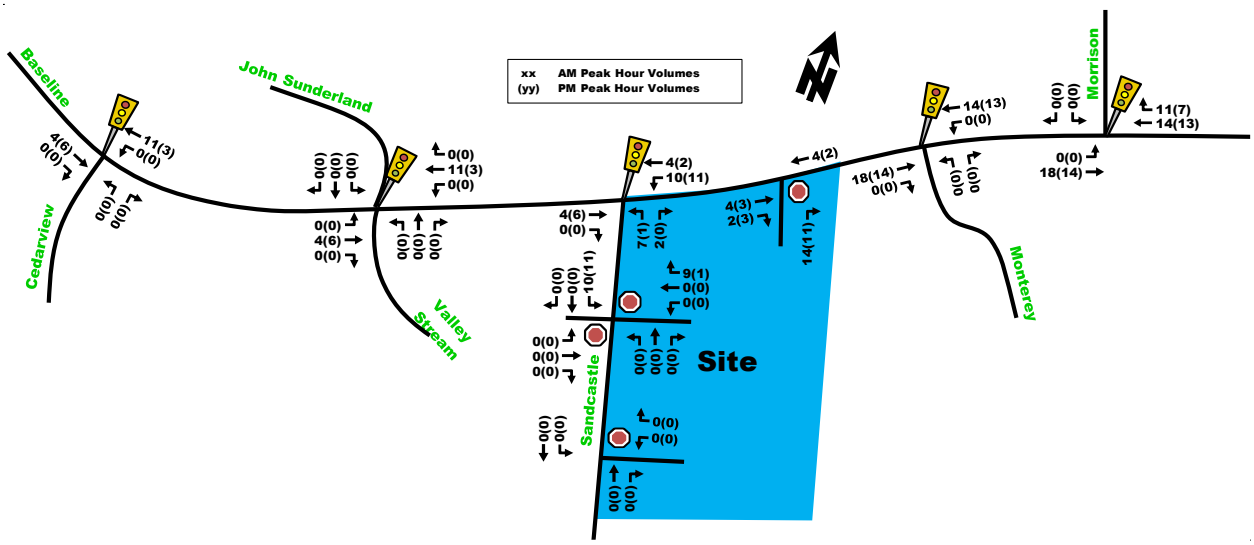
As shown in Table 12, the Sandcastle/Baseline intersection, has experienced on average negligible growth on the south leg, but approximately 1% growth for the east and west legs during the AM and PM peak hours.

A growth rate of 1% annually will be added to background growth on east-west through traffic on Baseline Road and on all movements at Cedarview/Baseline intersection to account for future potential growth along the corridor and towards the suburbs. It is acknowledged that this rate is expected to drop to 0% or even negative growth once the future transit priority is built. For the purpose of this analysis, only the more conservative 1% growth scenario will be analyzed. Other area developments will also be manually added.

3.2.3. OTHER DEVELOPMENTS

The volumes from the other area development as mentioned in Section 2.1.3 were layered onto the existing traffic volumes for the future analysis volumes. Figure 15 outlines the site generated volumes for other area developments including Phase 2 of this development (2940 Baseline Road), 1300 McWatters Road and 2785 Baseline Road. Note that Phase 1 was captured within the existing traffic counts performed on June 20, 2024.

Figure 15: Other Area Development Background Volumes



3.3. Demand Rationalization

The following **Table 13** provides a summary of the existing traffic operations at the study area intersection based on the Synchro (V11) traffic analysis software. The subject intersections were assessed in terms of the volume-to-capacity (v/c) ratio and the corresponding Level of Service (LoS) for the critical movement(s). The Synchro model outputs of existing conditions are provided within **Appendix F** and the volumes used were obtained from **Figure 6**.

Table 13: Existing Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Cedarview/Baseline	B(B)	0.66(0.61)	NBL(NBL)	13.2(11.4)	A(A)	0.54(0.40)
Valley Stream/Baseline	A(A)	0.59(0.52)	EBT(SBT)	10.0(10.4)	A(A)	0.56(0.44)
Sandcastle/Baseline	B(A)	0.64(0.51)	EBT(NBL)	9.1(7.3)	B(A)	0.62(0.45)
Monterey/Baseline	A(A)	0.59(0.43)	EBT(WBT)	10.5(8.7)	A(A)	0.57(0.42)
Morrison/Baseline	A(B)	0.54(0.61)	EBT(SBL)	6.8(11.0)	A(A)	0.53(0.52)

Note: Analysis of signalized intersections assumes a PHF of 0.9 and a saturation flow rate of 1800 veh/h/lane. U = Unsignalized.

As seen in **Table 13** all intersections operate overall at very good LoS 'B' or better with critical movements operating at LoS 'B' or better during the existing conditions. The Synchro analysis confirms that the overall network is expected to operate well, with ample capacity remaining.

Although a 1% annual growth rate is proposed for future horizon years based on historical traffic counts, it is anticipated to gradually taper as city wide initiatives aimed at reducing auto-usage take place. Some of the more relevant initiatives for this study area include the Baseline BRT corridor which would provide improved transit connectivity from the site to Baseline Station on Woodroffe Road. Baseline Station, along with nearby Bayshore Station will both become LRT stations as part of the Stage 2 LRT expansion which will add 44kms of new rail and 24 new LRT stations by 2026.

Given the city-wide initiatives to promote alternate modes of transportation, including advancements to the greater transit network such as LRT Stage 2 and the transit network adjacent to the site with the Baseline BRT

corridor, coupled with changes to the ways people commute and work from home/hybrid workspace, then the 1% annual growth rate is considered conservative. There is an argument to be made that a 0% growth rate is justifiable; however, the current 1% background growth rate will be maintained. If congestion is observed in future horizons, then the lower growth rate may be tested to assess sensitivity of the network to a less conservative assumption.

4. Strategy Report

4.1. Development Design

4.1.1. DESIGN FOR SUSTAINABLE MODES

Location of Transit Facilities

The subject site has bus stops located along the site frontage and across the street from the site, for frequent route #88 and local route #58. Within 600m walk, there are bus stops for rapid route #57. All these routes provide connectivity to the Confederation (and some Trillium) LRT Lines.

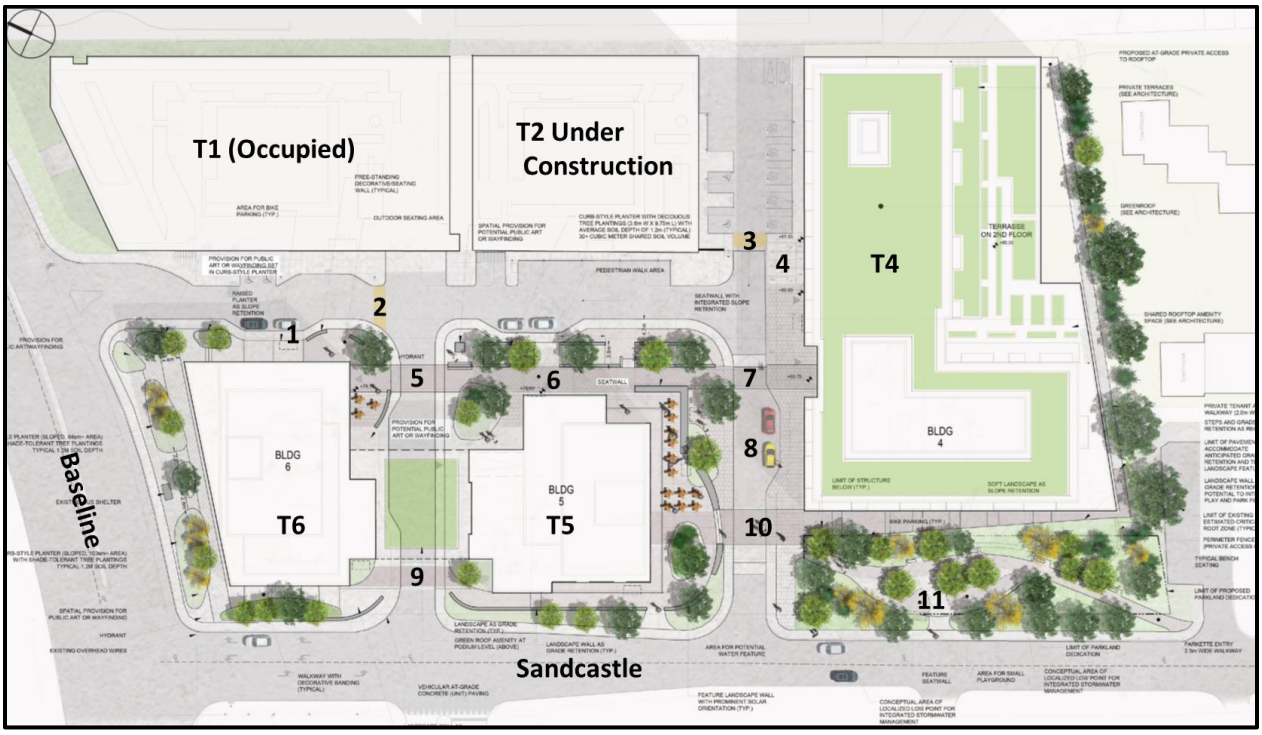
The Official Plan shows Baseline Road as an "at-grade" transitway. The Transportation Master Plan (TMP) Phase 2 is currently being updated which would outline future transit priority funding, projects and estimated schedules within the next 15 or so years. The previous 2013 TMP (governing document until Phase 2 of the TMP becomes approved) illustrates the "Affordable Network" for transit projects. Baseline Road is proposed to be upgraded to a transit priority corridor with isolated measures within the 2013 Affordable Network. As previously described in Section 2.1.3, the City of Ottawa Baseline Road Transit Priority Corridor Planning Study between future Bayshore LRT Station to Heron BRT Station, with proposed segregated median bus lanes and connectivity to both the Confederation and Trillium LRT Lines. The project aims at improving travel times for bus routes by up to 11 minutes within the corridor and provide improved connectivity to the Confederation LRT Line at future Baseline Station to the east, Bayshore Station to the northwest and Mooney's Bay Station on the Trillium Line. Future bus headways are forecasted every 5-6 minutes in the AM peak hour and 7-8 minutes in PM peak hours.

Pedestrian/Cycling Routes and Facilities

The following Figure 16 highlights key active transportation facilities with descriptions of the corresponding numbers summarized below:

1. All sidewalks proposed are at least 2.0m wide and envelope the perimeter of each tower. These facilities also connect to the external network, including sidewalk facilities on Baseline Road.
2. A textured crosswalk is proposed between Phase 1 and Phase 6.
3. A textured crosswalk is proposed between Phase 2 and Phase 4.
4. An AODA compliant ramp is proposed due to the grade differentials.
5. A textured crosswalk is proposed between Phase 5 and Phase 6 which connects to the "catwalk".
6. A wide pedestrian corridor with benches is proposed.
7. A textured crosswalk is proposed between Phase 4 and Phase 5.
8. A 'woonerf like' treatment is proposed to encourage traffic calming and emphasize active transportation priority.
9. A textured crosswalk is proposed between Phase 1 and Phase 6 which connects to crosswalk at number 10 which connects to the public park.
10. A textured crosswalk is proposed between Phase 5 and the public park.
11. Pathways provided within the park.

Figure 16: Landscaping Plan and Proposed Pedestrian Facilities



Bicycle Parking

A combined total of 807 bicycle parking is currently proposed. Due to the grade differentials between some of the towers, the bike parking is effectively provided within level -1 for all Phases, some in level -2 (basement 1) for the east side of Phase 4 and ground floor for Phase 5 and 4. The indoor bike parking spaces in levels below ground floor will be located close to elevators which provide access to the ground floor. There are also outdoor bike racks proposed near the commercial uses, including racks on the west side of Phase 4.

4.1.2. CIRCULATION AND ACCESS

This report focuses on Phases 4, 5 and 6 within the subject site. Once the site is fully developed, it will consist of 6 towers, approximately 1,227 residential units and 32,976 ft^2 of commercial space accessible via three private driveways, referred to as RIRO Access Baseline, North Access Sandcastle and South Access Sandcastle as illustrated in **Figure 17**.

The right-in-right-out (RIRO) access to Baseline Road and the North Access Sandcastle have already been built to serve the completed Phase 1 tower, as well as under construction Phases 2 tower. A third South Access Sandcastle will be provided once Phases 4-6 begin construction.

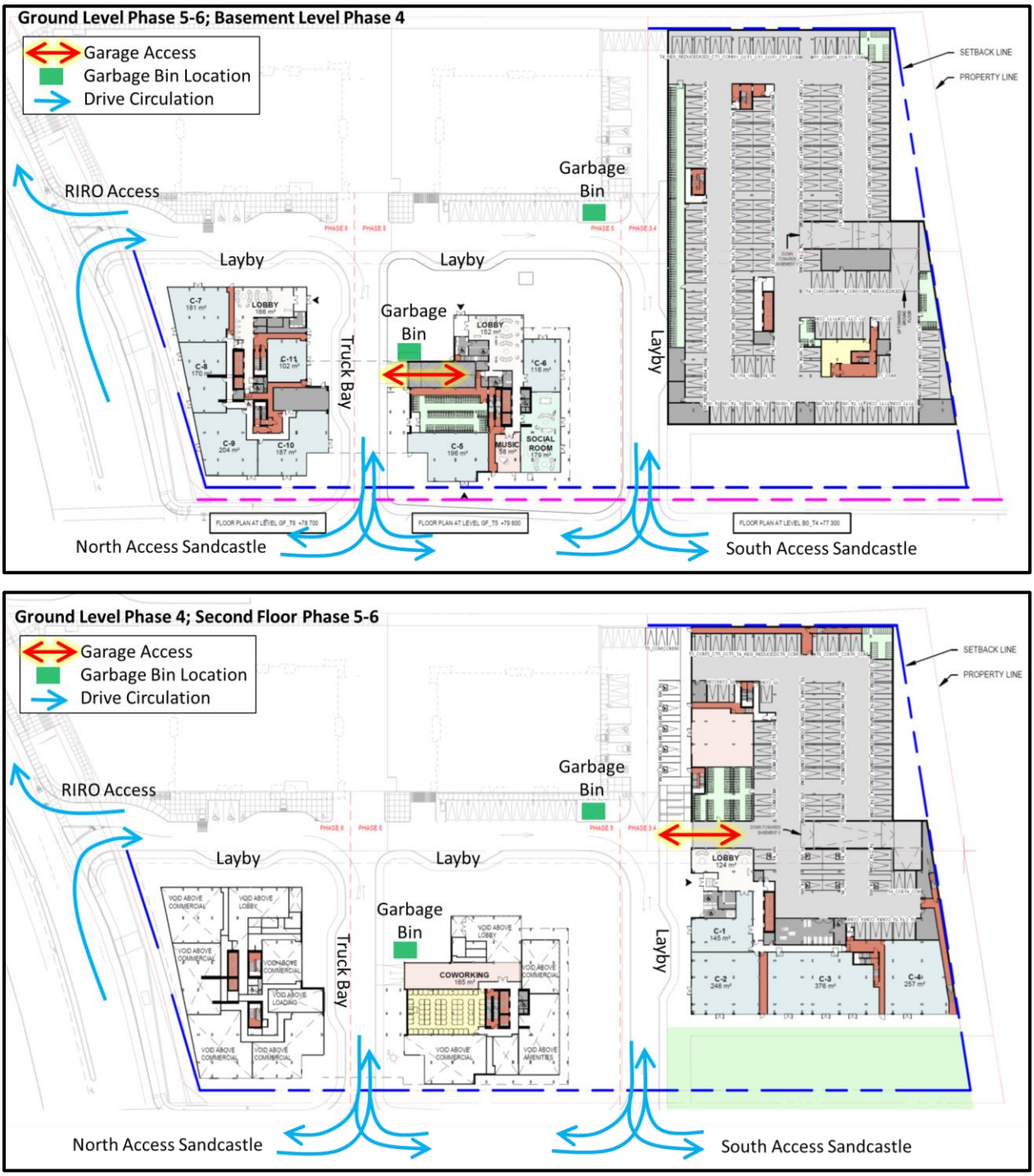
The North Access Sandcastle was shifted further away from Baseline Road in 2022, from a former 25m separation to approximately 45m separation. This adjustment of the location of the former access further away from Baseline Road is seen as an overall improvement by providing a larger distance buffer from a major arterial road. The second all-movement South Access Sandcastle is proposed approximately 115m south of Baseline Road.

The Baseline Road private driveway and the North Sandcastle Drive private driveway are both 7m wide at their narrowest and wider where on street parking or laybys are located, which conforms with the minimum 6.7m requirement. The northern Sandcastle Drive private aisle has a 2.5m wide layby for commercial delivery trucks on the south side of Phase 6. A new drop off lay-by has also been proposed on the east side of Phase 5 and 6 and north side of Phase 4. The South Access Sandcastle private driveway has a width of 6.7m. Surface level

short-term parking will be provided on the south side of Phase 2 and north side of Phase 4 for commercial and visitor parking.

Figure 17 illustrates driveway circulation, proposed garbage pick-up locations, layby locations and parking garage ramp locations. Note that due to grades, the accesses to the parking garage are located at different levels for Phase 4 and 5-6, however, it is understood that the parking garage structure is a single unit with vehicles allowed to enter or exit using any of the ramp accesses.

Figure 17: Internal Driveway Circulation and Parking Garage Access Locations



The parking garage for Phases 4-6 are all located within a shared structure, with two floors below grade under Phases 5 and 6 and an additional floor underground for Phase 4. This parking garage structure will be accessed via two 6m wide two-way ramps, one located on the north side of Phase 5 tower and the other located on the north side of Phase 4 tower. The ramp grades are proposed indoors with transitions from 8% to a maximum of 16% incline, which is considered acceptable. Buildings are set back a notable distance from the main aisle which allows for adequate sight lines. Additionally, the main private driveways are designed for low operating speeds and present low risk for vehicle circulation conflict.

Internal circulation has been designed to accommodate MSU/HSU style trucks for deliveries to the retail and garbage pick-up. Garbage pick-ups for all Phases will be located on ground level near the north side of Phase 5 and the southwest quadrant of Phase 2. The truck turning templates have been provided in **Appendix G.**

4.1.3. NEW STREETS NETWORK

Exempt. See **Table 2**.

4.2. Parking

4.2.1. PARKING SUPPLY

According to Part 4 – Parking, Queueing and Loading Provisions for the City of Ottawa By-Laws, the site is located in Area C based on Schedule 1A and is not within Rapid Transit Stations within Schedule 2A. **Table 14** summarizes the vehicle parking minimum allowed within the parking by-law and the quantities proposed. Note that some towers will provide parking for adjacent towers. The table below summarizes the parking allocated to each tower.

Table 14: Proposed Vehicle Parking Space Supply

Rate per Unit/Size	Land Use	Required Vehicle Spaces			Proposed Spaces[1]		
		Residents	Res. Visitor	Commercial	Residents	Res. Visitor	Commercial
1.0 base residential per unit; 0.2 visitor parking per unit; 3.4 spaces per 100 m² of commercial	P4: 284 units and 1,025 m² retail	284	57	28	142	57	28
	P5: 293 units and 312 m² retail	293	59	18	143	59	18
	P6: 311 units and 844 m² retail	311	62	30	160	62	30
	Totals	888	178	76	445	178	76

1. The proposed spaces documented reflect the allotted quantity of parking reserved for that tower, despite their physical parking location possibly being in an adjacent tower.

Table 15 summarizes the bicycle parking requirements as per City of Ottawa Zoning By-Law-Part 4, sections 100-114.

Table 15: Bicycle Parking Requirements

Land Use		Rate per Unit/Size	Required Bicycle Spaces	Proposed Spaces
Residential	888 units	0.5 per unit	444	807
Strip Retail Plaza	2,181 m²	1 per 250 m²	9	
		Totals	453	Exceeds mins.

The city parking by-law requires a minimum of 888 residential vehicle parking spaces, 178 residential visitor spaces and 76 commercial spaces. The development proposes 178 residential visitor spaces and 76 commercial spaces which both meet the minimum requirements.

The residential parking supply has been lowered from minimum by-law requirement. The developer is proposing a reduced residential parking rate of approximately 0.5 spaces per unit for Phases 4-6. **Section 4.2.2.** below will address the potential implications for residential vehicle parking demand.

The parking by-law requires a minimum of 453 bike parking spaces. The proposed development proposes a total of 807 bike parking spaces which far exceeds the minimum, approaching a 1:1 rate for bike parking spaces to units. As mentioned in **Section 4.1.1.**, the majority of bike parking spaces will be provided indoors in a secured parking area, generally within ground floor or with access to elevators connecting to ground floor.

4.2.2. SPILLOVER PARKING

The development site is adhering to both commercial and residential visitor parking requirements. However, the site is proposing a reduced residential vehicle parking rate. The site context offers the opportunity for alternate modes of transportation and a reduced reliance on vehicles, which justifies the reduced residential parking rate.

The City's long-term plan for Baseline Road includes a new transit priority BRT median bus lanes with bus stops along the development frontage and across the street, as well as augmented pedestrian and cycling facilities at study area intersections. As mentioned in **Section 2.1.3**, the Baseline BRT project will increase rapid transit frequency to 5-6 minute headways in the AM and 7-8 minutes in the PM. New uni-directional cycle-tracks and improvements to sidewalk facilities are also proposed. The site is far exceeding the minimum bike parking requirement, approaching a rate of 1:1 for bike parking spaces to units, encouraging the use of active mode shares. In addition, the developer plans to include bike-share and car-share facilities and contracts to augment the use of shared mobility, thus reducing the need for personal vehicles. A strong TDM program will be developed to encourage alternate modes of transportation that will leverage the existing and planned infrastructure provided by the city which reduces the need for excess vehicle parking.

The site is located near an office building plaza and the site itself offers commercial uses, which can promote walkable neighbourhoods where tenants can live, work and shop within a walkable distance. The city has already seen changes in travel behaviours post Covid-19, with people working more flexible schedules and working from home, thus eliminating some trips altogether.

Phases 4-6 will provide a residential parking rate of approximately 0.5 space per unit. Based on the existing Parking By-law provisions, areas such as the Inner Urban, Outer Urban, within the influence of rapid transit or inner urban mainstreets, residential occupant rates between 0 to 0.5 per unit are suggested. The Official Plan (OP) identifies various goals to minimize provisions of vehicle parking and in some cases, discourages parking such as Bank Street and Elgin Street (Section 3.3.2, 18 and 44a)[3], suggesting a strong desire to minimize parking where possible. Furthermore, clause 117 states "in future planning, land use should be the initial determinant of transportation needs. The latter should then be used to set any necessary limits on the provision of parking in light of motor vehicle impacts on existing streets", and Section 4.6.1 "Minimum and maximum parking requirements shall be reduced to reflect downtown urban conditions and ratios that support high transit use".

The decision to provide a reduced residential tenant parking space greatly aligns with the OP for higher density with minimal parking near rapid transit corridors, such as the Baseline BRT Corridor. As per Schedule B3 in the OP, the site is located within a transit main-street corridor, within an evolving neighbourhood, adjacent to a transitway station and within the Outer Urban transect. The Outer Urban Transect has a clause within Section 5.3.3. 2a) which states "minimum parking requirements may be reduced or eliminated [within outer urban hubs]" (Page 153 OP). In addition, a draft New Zoning By-Law was released in May 2024 (has not been adopted yet) which suggests that minimum parking rates may be eliminated altogether (Section 601[4]). This draft document highlights the direction in which the City of Ottawa is headed, towards reduced dependency on private motor vehicle trips.

Spillover parking is anticipated to be of low risk due to various factors:

[3] Official Plan, Volume 2A

[4] Draft New Zoning By-Law

- Short term parking for visitors and commercial customers has been provided and meets the minimum parking bylaws. The demand for this type of high-turnover parking should be completely covered within the proposed short-term parking supply.
- The shortfall in parking at the site compared to the parking bylaws is for residential tenant parking. There is already high demand for parking in this area coupled with various restrictions, making long-term on-street parking by tenants highly undesirable and not realistic. For this reason, it is believed that most tenants who move to this development will not own vehicles and will choose to live at this location knowing that they will not have a personal vehicle.
- There are paid private parking lots located at the following locations:
    - Precise ParkLink (3045 Baseline)
    - Impark (2934 Baseline)
- Sandcastle Drive, Brookhaven Court and Valley Stream Drive all provide on-street parking. Additional parking capacity may be available at neighbouring lot 2934 Baseline Road which has off-street parking managed by Impark.
- In the unlikely event of frequent spillover parking is observed, City By-Law is equipped to respond with greater enforcement if there is an observed increase in parking infractions.

Lastly, it is noteworthy to mention that parking supply was vetted by the City of Ottawa Transportation and Infrastructure Approvals Team and no issues were documented. The Transit Review Team also commented that they appreciate the reduced parking rate proposed.

Given the site's proximity to future high frequency BRT corridor with three connections to LRT stations, this development should aim at having a reduced residential occupant parking ratio. A residential parking rate of 0.5 spaces per unit was considered acceptable.

4.3. Boundary Street Design

4.3.1. EXISTING AND FUTURE CONDITIONS

The boundary street for the development is Baseline Road and Sandcastle Drive. The existing roadway geometries consist of the following features:

- *Baseline Road:*
    - 2 vehicle travel lanes in each direction;
    - >2m sidewalk with no boulevard separation on both sides of roadway;
    - More than 3,000 vehicles per day;
    - Posted speed limit is 70km/h;
    - Classified as major arterial roadway and identified as a trucking route;
    - Identified as a transit priority corridor; and,
    - Identified as a spine route with curbside painted cycling facilities.
- *Sandcastle Drive:*
    - 1 vehicle travel lane in each direction;
    - 1.5m sidewalk with 0.5m boulevard separation on west side, partial to no sidewalks currently on east side. Future site proposes a 2m sidewalk with no boulevard separation;
    - Less than 3,000 vehicles per day;
    - Posted speed limit is 40km/h;
    - Classified as local roadway and is not part of a trucking route; and,
    - Not part of a transit priority corridor or cycling route.

Multi-modal Level of Service (MMLOS) analysis for the subject road segments adjacent to the site is summarized in **Table 16** with detail analysis provided in **Appendix H**. It is acknowledged that Baseline Road may look different in the future, but no official plan has been made public yet.

Table 16: MMLOS – Boundary Street Segment Existing

Road Segment	Multi-Modal Level of Service							
	Pedestrian		Bicycle		Transit		Truck	
	PLoS	Target	BLoS	Target	TLoS	Target	TkLoS	Target
Existing								
Baseline Rd – both sides between Sandcastle & Monterey	F	C	E	C	D	D	A	D
Sandcastle Dr – west side between Baseline & Valley Stream	C	C	B	D	-	n/a	-	n/a
Sandcastle Dr – east side between Baseline & Valley Stream	F	C	B	D	-	n/a	-	n/a
Future								
Sandcastle Dr – east side between Baseline & Valley Stream	B	C	B	D	-	n/a	-	n/a

Pedestrian

- The west side of Sandcastle Drive meets the pedestrian PLoS targets. Once the proposed development builds sidewalks along their site frontage on Sandcastle Drive, then both sides of the road will meet PLoS targets. Baseline Road does not meet existing PLoS targets. For the targets to be met, Baseline Road would require its posted speed be reduced to at least 60km/h and have a speed test confirm compliance.

Bicycle

- The cyclist BLoS targets were met on Sandcastle Drive. Baseline Road did not meet the BLoS targets given the fast-operating speeds. If the speeds were reduced to 50km/h posted or 60km/h with a confirmed speed test, then the BLoS targets would be met.

Transit

- Only Baseline Road has active transit services. The transit TLoS targets were met.

Truck

- Only Baseline Road is classified as a truck route. The trucking TkLoS targets were met.

4.4. Access Intersection Design

4.4.1. LOCATION AND DESIGN OF ACCESS

As described in **Section 4.1.2**, the site proposes three private accesses to the municipal road network:

1. Right-in-right-out (RIRO) to Baseline Rd, approximately 60m east of Sandcastle/Baseline intersection (already built and operational)
2. Full movement access from Sandcastle Drive, North Access approximately 45m south of Sandcastle/Baseline intersection (already built and operational)
3. Full movement access from Sandcastle Drive, South Access approximately 115m south of Sandcastle/Baseline intersection (to be built)

At full buildout, the development site will provide three accesses. The Private Approach By-Law Section 25 m(ii) suggests that for residential developments with more than 300 parking spaces (per access), then the distance between a private approach and the nearest intersecting street line should be 60m and the distance between a two-way private approach and any other private approach shall be at least 60m.

All accesses exceed a 60m separation from the nearest two-way private approach, however the North Access Sandcastle will be approximately 45m away from the Baseline/ Sandcastle signalized intersection. This is an existing access which had a 20m left-turn lane added in 2022 as part of Phase 1 and 2 developments to

ensure left-turn traffic does not interfere with through traffic. The north access is also supplemented by a southern access which will spread traffic and reduce the risk of overloading any one location.

4.4.2. INTERSECTION CONTROL

The site accesses are all proposed as STOP-controlled for the site access and free-flow on the city roads (Baseline Road and Sandcastle Drive). Forecasted traffic volumes at proposed access intersections are relatively low; traffic signals or all-way-stop-control (AWSC) were not warranted. **Section 4.9.2** will confirm operational capacity of proposed access intersection and if the need for alternate intersection controls is recommended.

4.4.3. INTERSECTION DESIGN

The site frontage on Sandcastle Drive is approximately 190m and the Baseline Road frontage is approximately 120m, which allows for two two-way private approaches on both. The proposed accesses align with the Private Approach By-Law Section 25 for quantity and type of accesses.

According to the Transportation Association of Canada (TAC) Section 8.9.10, all driveways with direct access to a collector or arterial road should provide sufficient clear throat lengths to prevent internal spillback on to the major roads. Only the RIRO provides access to a collector or arterial road. For apartment buildings with more than 200 units and accessing an arterial road, TAC suggests a clear throat length of 40m. The RIRO site access has its first minor conflict point located about 40m from Baseline Road, where on-street layby and parking are proposed. This distance adheres to TAC and the risk of spillback to Baseline Road is considered very low.

Storage lanes for the site accesses are not anticipated for this site based on the low turning volumes. **Section 4.9.2** will confirm if any access has sub-par operation and if storage lanes are recommended.

The grades of the private approaches do not exceed 2% for the first 9m from the curb line. The private approaches are also all more than 3m away from the adjacent property lines. The RIRO and North Access off Sandcastle follow City of Ottawa Standard Detail SC7.1. It is anticipated that the South Access on Sandcastle to be built will follow this spec also. The accesses are in adherence to the Private Approach By-Laws.

4.5. Transportation Demand Management

4.5.1. CONTEXT FOR TDM

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 OD-Survey 2011 for Ottawa. The site is not located within 600m of rapid transit; however, it is located in a transit priority corridor with isolated measures and the City of Ottawa is currently undertaking a study to include median bus lanes as part of a BRT corridor on Baseline Road.

4.5.2. NEED AND OPPORTUNITY

Since the development is located in a transit priority corridor with isolated measures (and future BRT being studied by the city), measures to provide sustainable active mode shares are encouraged. Such measures are described in more detail in Section 4.5.3 below and include reduced parking ratios (proposed 0.5/unit for residents), more aggressive Multi-Modal Levels of Service (MMLOS) as described in Section 4.3 and 4.9 and safe and efficient connectivity to public transit as described in Section 4.7, to name a few.

4.5.3. TDM PROGRAM

The TDM infrastructure checklist and TDM Measures are attached as **Appendix I**.

Regarding the TDM Supportive Development Design and Infrastructure Checklist:

- Nine (9) out of the ten (10) "Required" measures have been satisfied, with the exception of providing less vehicle parking than required by zoning.
- At least ten (10) of fourteen (14) Basic measures related to Walking and Cycling, Transit, Ridesharing and Parking have been satisfied or are not applicable
- Four (4) of the of the seven (7) candidate Better measures are also proposed or are non-applicable, including:
  - Client investigating the potential to include car and bike share facilities
  - Separate long-term and short-term parking areas

Regarding the TDM Measures Checklist:

- Five (5) out of seven (7) "Basic" measures related to Walking and Cycling, Transit, Parking and TDM Marketing have been satisfied. Three (3) of those, which have been designated by an asterisk (*), are considered by the TDM Measures to be some of the most dependably effective tools to encourage sustainable travel modes. This includes:
  - Display walking and cycling information at major entrances.
  - Display transit information at major entrances.
  - *Offer preloaded PRESTO card to residents with one monthly transit pass.
  - * Unbundle parking costs from monthly rent.
  - * Provide multi-modal travel information package to new residents.
- Five (5) out of eleven (11) "Better" measures related to Walking and Cycling, Transit, Carsharing and Bikesharing, Parking and TDM Marketing have been satisfied. One (1) of those, which has been designated by an asterisk (*), is considered by the TDM Measures to be some of the most dependably effective tools to encourage sustainable travel modes. This includes:
  - Offer on-site cycling courses for residents or subsidize off-site courses.
  - Install on-site bikeshare station.
  - Provide on-site carshare vehicles for residents.
  - *Offer personalized trip planning to new residents.

4.6. Neighborhood Traffic Management

4.6.1. ADJACENT NEIGHBORHOODS

The RIRO access to Baseline Road will connect to an arterial roadway, hence no further analysis is required there. However, Sandcastle Drive is a collector road which already has one access and will receive an additional site access.

Based on the City of Ottawa TIA Guidelines, collector roads have a suggested maximum threshold of 300 vehicles per hour or 2,500 vehicles per day limit and major collectors 600 per peak hour and 5,000 per day limit.

Sandcastle Drive approaching Baseline Road, the peak hour two-way volumes are forecasted at 250 and 280 vehicles for the AM and PM peak respectively. This vehicular range falls within a collector and approaching a major collector roadway, fitting its current designation. There are only private low-density driveways within the 265m stretch of road, posing a low driveway density consistent with a collector road and higher vehicle volumes.

On-street parking is allowed on Sandcastle Drive, functioning as a road narrowing and promoting slower driving speeds. The short segment of road leads to a small low-density community south of the roadway which does not connect to the greater network aside from Sandcastle Drive and Valley Stream Drive, which is the adjacent intersection on Baseline Road. Since both accesses to the neighbourhood are close to each other and do not provide access to surrounding neighbourhoods, then the risk of shortcutting via Sandcastle Drive is low.

If future speeds along Sandcastle Drive are observed to be high, then adjustments to the roadway such as speed humps, centerline flex poles or horizontal deflections could be used to reduce driving speeds, subject to a formal review that satisfies the process requirements set by the Neighbourhood Traffic Calming Branch.

4.7. Transit

4.7.1. ROUTE CAPACITY

Route 88 has average headways of 15 minutes during the day, and occasionally less than 15 minutes during peak hours. Furthermore, local route 58 provides additional capacity with service every 30 minutes.

Table 17 below provides a summary of existing boarding and alighting transit data from OC Transpo for routes 88 and 58. Route 688 is not included in the table as it only passes through this area during school season and operates on tailored routes around school bell times. The data was collected in winter of 2023, between January 8th and April 22nd.

Table 17: Boarding and Alighting Transit Data from OC Transpo Near Site Stops

Bus Stop ID and Direction (on Baseline Rd)	AM (6:00 – 9:00)			PM (15:00 – 18:00)			24-hr		
	Boarding	Alighting	Avg. Load departure	Boarding	Alighting	Avg. Load departure	Boarding	Alighting	Avg. Load departure
#1698 Sandcastle EB Route 58	2	7	8	4	7	7	11	37	5
#4049 Sandcastle WB Route 58	3	1	6	6	1	7	22	3	6
#1698 Sandcastle EB Route 88	17	3	16	20	6	33	81	19	19
#4049 Sandcastle WB Route 88	2	8	25	2	24	23	9	73	18
#0941 Valley Stream EB Route 57	0	0	5	8	1	14	12	1	8
#0946 Queensway Carleton H. WB Route 57	0	3	9	0	0	10	2	4	7

Based on the data provided from OC Transpo, Routes 58 and 57 have ample capacity near the site, normally operating with minimal average departure loads, and boarding and alighting trips. Route 88 exhibits more usage near the site compared to Routes 58 and 57, predominantly riders alighting from the east in the AM and boardings heading east in the PM.

Since the proposed development is primarily a residential development, transit trips are expected to be the reverse of existing trends – riders boarding to travel towards downtown (eastbound) and returning from the east in the PM peak. Some users may take the bus westbound in the AM to head to Bayshore Shopping Center and take different transit routes from there.

OC Transpo has buses such as the New Flyer D60L with a total capacity of 110 passengers or Alexander Dennis Enviro 500 with approximately 100 passengers, so it is expected to have sufficient capacity to support roughly 125 'new' two-way transit passenger trips forecasted during the AM and PM peak hours.

The city is currently investigating and designing the future Baseline Road transit priority corridor with median segregated bus rapid transit (BRT) lanes. Once these lanes are incorporated into Baseline Road, adjacent to the site, then the capacity of the corridor is anticipated to be greatly increased, with more than 10,000 daily riders projected and rapid transit identified routes operating at high frequency at all time periods, with headways of 5-6 minutes during the AM peak and 7-8 minutes during the PM peak, subject to City Transit Services Branch.

4.7.2. TRANSIT PRIORITY

Future BRT bus lanes on Baseline Road will provide high quality transit priority since vehicle queues in general purpose lanes will not affect bus travel times. Section 4.9.2 will examine the anticipated delays from a high-level perspective for east-west through travel on Baseline Road.

4.8. Review of Network Concept

The site is currently zoned as GM[2138] S(325-h) which allows general mixed-use. Under this zoning's specific exceptions, Phase 6 is capped at 13-storeys, Phase 5 at 16-storeys and Phase 4 at 10-storeys. The future commercial land uses will be smaller but similar in context to the existing permitted land uses and as such, the future commercial uses should be allowed within the existing zoning.

For the residential aspect however, the developer is proposing 9-storeys for Phase 4 which is within the 10-storey allowable but 28-storeys for Phase 5 and 32-storeys for Phase 6.

The first floor of each tower will be occupied by a lobby and commercial uses, with no units on the first floor. Additionally, it will be assumed that each floor has the same number of units, disregarding setbacks which would probably have a smaller GFA and fewer units on higher floors for a more conservative analysis. Using the above assumptions, a base calculation for how many projected units above existing zoning can be derived as seen in Table 18.

Table 18: Projected Number of Units Above Existing Zoning

Tower	Storeys Allowed	Storeys Proposed	Floors Above Existing Zoning	Units Proposed	Units / Storey Proposed[1]	Units Above Permitted Height
Phase 4	10	9	0	283	35.4	0
Phase 5	16	28	12	293	10.9	131
Phase 6	13	32	19	311	10.0	190
			Totals	888	-	321

1. Units per storey was calculated by dividing number of units by number of storeys minus 1 floor.

Based on Table 18, approximately 321 units will be located above allowable zoning which would create approximate 133 more peak hour person trips than the equivalent volume permitted by established zoning (refer to Appendix J for calculations).

Since 200 peak hour person trips or more above the equivalent volume permitted by established zoning is the trigger according to the TIA Guidelines, the remainder of this step can be exempt.

4.9. Intersection Design

4.9.1. INTERSECTION CONTROL

Both of the intersections to Sandcastle Drive will operate as unsignalized intersections with STOP-control on the site access and free-flow on Sandcastle Drive. The access to Baseline Road will be a right-in-right-out (RIRO) with a STOP-control on the site access and free-flow on Baseline Road. No changes are proposed at the Sandcastle/Baseline intersection at this time. An on-going study for the feasibility of bus rapid transit (BRT) with median segregated bus lanes on Baseline Road between Bayshore Shopping Center and Heron BRT via Richmond Road and Baseline Road will likely result in new intersection geometries along the Baseline Road corridor, however no official public details have been released at this time and the function of that access is not anticipated to change.

4.9.2. INTERSECTION DESIGN

Multi-Modal Level of Service

As stated in the MMLOS Guidelines, only signalized intersections are considered for the intersection Level of Service measures. The MMLOS analysis is summarized in **Table 19**, with detailed analyses provided in **Appendix K**.

Table 19: MMLOS – Existing and Future Adjacent Signalized Intersections

Road Segment	Multi-Modal Level of Service							
	Pedestrian		Bicycle		Transit		Truck	
	PLoS	Target	BLoS	Target	TLoS	Target	TkLoS	Target
Cedarview/Baseline	F	C	F	C	C	D	C	D
Valley Stream/Baseline	F	C	F	B	D	D	-	n/a
Sandcastle/Baseline	F	C	F	C	B	D	-	n/a
Monterey/Baseline	F	C	F	C	C	D	-	n/a
Morrison/Baseline	F	C	F	C	E	D	-	n/a

Pedestrian

- For all intersections, pedestrians must cross the equivalent of at least 8 lanes of traffic due to the Baseline Road cross-section plus median width. There are no options that can help improve the PLoS significantly enough to come anywhere near achieving the target PLoS 'C'.

Bicycle

- The bicycle BLoS target was not met at any intersection due to the lack of 2-stage left-turn boxes and high operating speeds on Baseline Road.

Transit

- To achieve the TLoS targets, a maximum transit delay of 30 seconds or less for the bus movements must be met. All movements having buses met this criterion and the TLoS target was met, with the exception of the southbound movement at Morrison/Baseline which had delays of up to 40 seconds. The east-west movements where the future Baseline BRT is proposed all meet the TLoS targets.

Truck

- Truck target level of service was met for Cedarview/Baseline. No other intersection had receiving truck routes.

Background Conditions 2035

The future background 2035 conditions represent the impact of additional development including Phases 1 and 2 for 2940 Baseline, 2785 Baseline and 1300 McWatters, along with forecasted east-west annual growth in background volumes. Since 2035 background has the same intersection layouts as 2030 and is the more critical of the two scenarios, only 2035 will be analyzed. The future projected 2035 background volumes are illustrated in **Figure 18** with projected operation outputs in **Table 20**. The detailed Synchro results can be found in **Appendix L**.

Figure 18: 2035 Background Projected Volumes

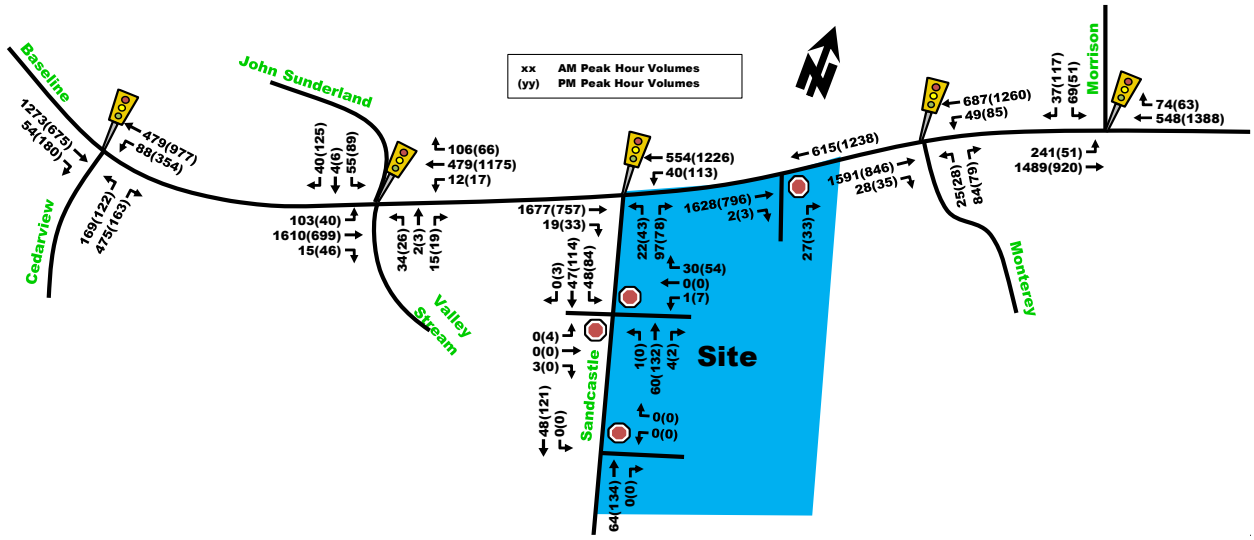


Table 20: 2035 Background Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Cedarview/Baseline	B(B)	0.68(0.63)	NBL(NBL)	14.1(12.9)	A(A)	0.59(0.46)
Valley Stream/Baseline	B(A)	0.65(0.49)	EBT(WBT)	10.6(10.2)	B(A)	0.62(0.47)
Sandcastle/Baseline	B(A)	0.70(0.48)	EBT(WBT)	10.1(7.3)	B(A)	0.67(0.48)
Monterey/Baseline	B(A)	0.64(0.47)	EBT(WBT)	11.2(9.3)	B(A)	0.62(0.46)
Morrison/Baseline	A(A)	0.59(0.58)	EBT(SBL)	7.0(11.0)	A(A)	0.57(0.56)
N Access/Sandcastle (U)	A(B)	9(10)	WB(WB)	3(3)	A(A)	-
RIRO Access/Baseline (U)	C(B)	17(11)	NB(NB)	0(0)	A(A)	-

Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane. U = Unsignalized.

As seen in **Table 20**, all intersections operate overall at good LoS 'B' or better with critical movements operating at LoS 'C' or better during the 2035 background volumes. Operations are slightly worse than existing intersection performance as expected considering that a 1% annual growth rate has been added for approximately 19 years and other area developments.

Future Conditions 2030 – Full Buildout

The future full build-out 2030 volumes were derived by superimposing background 2030 volumes which include other area developments and background growth, with future site-generated volumes. The future projected 2030 volumes are illustrated in **Figure 19** with projected operation outputs in **Table 21**. The detailed Synchro results can be found in **Appendix M**. No-right-on-red for eastbound right turns is proposed.

Figure 19: 2030 Total Projected Volumes

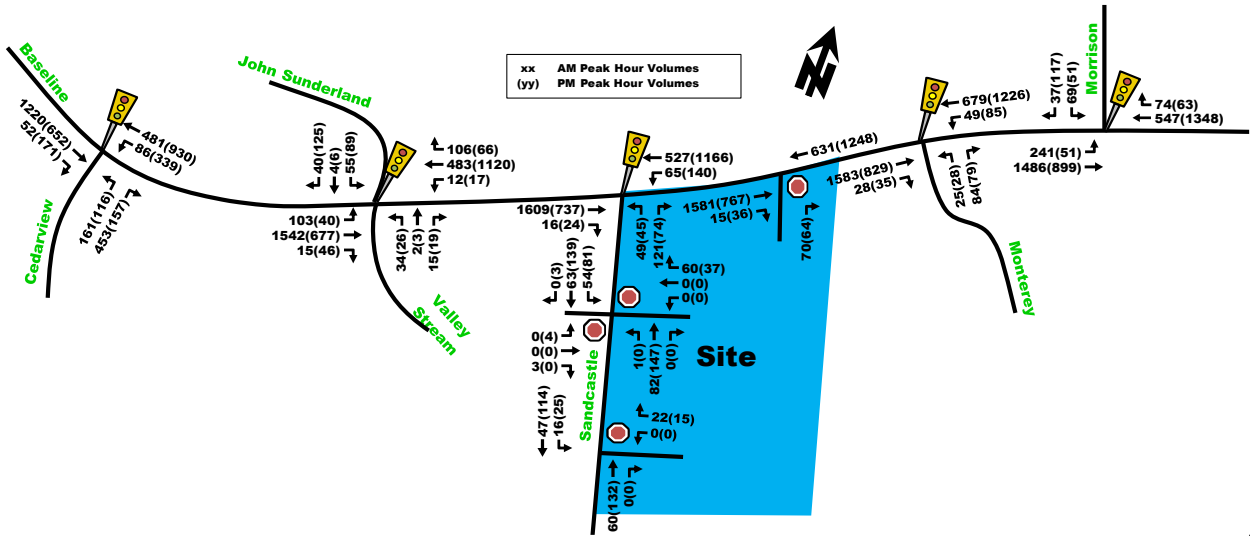


Table 21: 2030 Full Build-out Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Cedarview/Baseline	B(B)	0.67(0.62)	NBL(NBL)	13.5(12.2)	A(A)	0.56(0.43)
Valley Stream/Baseline	B(A)	0.62(0.48)	EBT(SBT)	10.2(10.0)	A(A)	0.59(0.44)
Sandcastle/Baseline	B(A)	0.68(0.50)	EBT(NBL)	11.4(7.4)	B(A)	0.67(0.46)
Monterey/Baseline	B(A)	0.64(0.46)	EBT(WBT)	11.2(8.8)	B(A)	0.62(0.45)
Morrison/Baseline	A(A)	0.59(0.58)	EBT(SBL)	7.0(11.1)	A(A)	0.57(0.54)
N Access/Sandcastle (U)	A(A)	9(9)	WB(WB)	4(2)	A(A)	-
S Access/Sandcastle (U)	A(A)	9(9)	WB(WB)	2(1)	A(A)	-
RIRO Access/Baseline (U)	C(B)	20(12)	NB(NB)	1(0)	A(A)	-

Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane. U = Unsignalized.

As seen in **Table 21**, all study area intersections are expected to operate similarly to existing conditions and future background 2035 conditions, with minor delays.

Future Conditions 2035 – Full Buildout + 5 Years

This scenario assumes that the Baseline BRT Corridor has been implemented. Given that no detailed design has been made public yet, this analysis will assume that all left-turns from east and west travel on Baseline Road will require a protected phase.

The future full build-out 2035 volumes were derived by superimposing background 2035 volumes which include other area developments and background growth, with future site-generated volumes. The future projected 2035 volumes are illustrated in **Figure 20** with projected operation outputs in **Table 22.** The detailed Synchro results can be found in **Appendix M**.

Figure 20: 2035 Total Projected Volumes

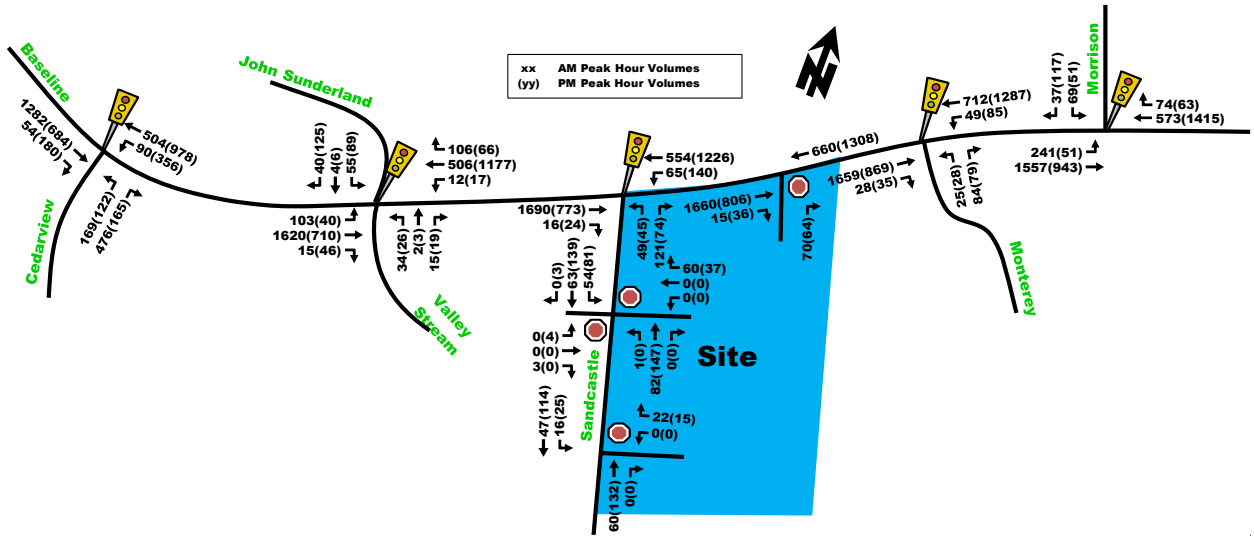


Table 22: 2035 Full Build-out Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Cedarview/Baseline	B(B)	0.68(0.63)	NBL(NBL)	17.5(21.0)	B(A)	0.64(0.57)
Valley Stream/Baseline	B(A)	0.67(0.55)	EBT(WBT)	15.8(11.8)	B(A)	0.64(0.53)
Sandcastle/Baseline	D(B)	0.89(0.61)	EBT(WBL)	22.7(15.7)	D(A)	0.84(0.46)
Monterey/Baseline	C(A)	0.74(0.52)	EBT(WBL)	10.2(10.5)	C(A)	0.71(0.41)
Morrison/Baseline	C(B)	0.76(0.67)	EBL(WBT)	20.9(12.8)	A(B)	0.46(0.65)
N Access/Sandcastle (U)	A(A)	9(9)	WB(WB)	4(2)	A(A)	-
S Access/Sandcastle (U)	A(A)	9(9)	WB(WB)	2(1)	A(A)	-
RIRO Access/Baseline (U)	C(B)	21(12)	NB(NB)	1(0)	A(A)	-

Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane. U = Unsignalized.

As seen in **Table 22**, a slight deterioration in intersection performance from existing and background 2035 conditions has occurred, predominantly influenced by signal timings with new protected only eastbound and westbound left-turns to eliminate the risk of left-turners colliding with through advancing buses in the median lanes. Despite this worsening intersection performance, all intersections operate with overall and critical movement LoS 'D' or better, which is considered acceptable to good performance.

Queuing Assessment

The 2035 future projected scenario was used to determine the most critical queues within the study area. Overall, the animations from SimTraffic showed a relatively fluid network, with occasional platoon buildups. To reduce these platoons, the City of Ottawa could consider coordinating and optimizing the intersections to provide a more fluid 'green light' corridor along Baseline Road.

The site accesses and Sandcastle/Baseline intersection all had modest queues and no concerns were noted.

Within Synchro, some signalized intersections exhibited queues of up to 250m on the eastbound movement on Baseline Road. Most intersection-to-intersection distances are beyond 300m apart, meaning that no queue spillback would occur.

Finally, it is worth noting that this scenario analyzed may be overly conservative, with a continuous growth rate of 1% annually and fully protected left-turn movements. It is likelier that over time, traffic volume growth will taper and possibly even decrease over the years as the transit network matures and city-wide active transportation initiatives take charge.

Future Transit Priority Corridor – Baseline BRT

At the time of this report, the detailed design for the Baseline BRT project was ongoing. Consequently, the future 2035 scenario only included addition of protected eastbound and westbound left-turn signal timing to eliminate conflicts with through moving median buses, but a detailed analysis with the future road geometry was not done.

The future conditions 2035 scenario had good overall intersection performance, and given the modest increase in vehicular volumes to the study area intersections, the development is not expected to affect operations for the planned Baseline BRT corridor.

5. Findings and Recommendations

Based on the results summarized herein the following findings and recommendations are provided:

Existing Conditions

- The site is currently occupied by commercial uses and is zoned as GM[2138] S(325-h).
- The site is located in a transit priority corridor with isolated measures based on the 2013 TMP and an at-grade transitway within the Official Plan. The TMP update phase 2 has not been released yet and no further details are available.
- The City of Ottawa is currently undertaking a study for the Baseline Road BRT Corridor with exclusive median bus lanes from Bayshore Shopping Center to Heron BRT, via Richmond Road and Baseline Road. The site will have direct frontage to a BRT Station. The BRT corridor will connect to the Confederation LRT Line at Bayshore Shopping Center and Baseline Station (near Woodroffe) and Trillium Line at Mooney's Bay Station.
- Overall, there were 68 collisions recorded in five years within the study area. No areas were flagged as high risk or requiring imminent modifications.
- The site is currently accessed by a full movement access off Sandcastle Drive approximately 45m south of Baseline Road and a right-in-right-out off Baseline Road approximately 70m east of Sandcastle Drive which will remain for future phases.
- Existing intersections operate at good overall LoS 'B' or better with all critical movements operating at LoS 'B' or better during the weekday peak hours.

Proposed Development

- This report focuses on the combined 3-4th (referred to as Phase 4), 5th and 6th Phase of the development. Phase 1 has already been built and Phase 2 is under construction.
- In total, the site will have approximately 1,227 residential units and 32,976 ft^2 of commercial space. This report focuses on the remainder 4, 5, and 6th Phase which will comprise of approximately 888 residential units and 23,476 ft^2 of retail space in three 9 to 32-storey buildings.
- The existing site accesses will be maintained, and an additional full movement access off Sandcastle Drive approximately 115m south of Baseline Road is proposed.
- Site counts were performed on June 20th, 2024 with observations of inbound and outbound vehicle trips relating to the fully occupied Phase 1 and existing commercial land uses. Trips relating to the existing

commercial land uses were removed from future background volumes but the trip generation observed from Phase 1 will be carried forward. Other area development trip generation including trips forecasted for Phase 2 have been layered on to background traffic volumes.

- The proposed buildout of Phases 4, 5 and 6, plus the currently unoccupied commercial space for Phase 1 is projected to generate approximately 165 'new' transit trips during the AM and PM peak hour periods, which can be accommodated by frequent route 88 and local route 58 which operate on Baseline Road. Additional capacity is anticipated once the Baseline BRT Corridor is built, which will operate with headways of 5-6 minutes during the AM peak and 7-8 minutes during the PM peak.
- The proposed buildout of Phases 4, 5 and 6, plus the currently unoccupied commercial space for Phase 1 is projected to generate 'new' vehicle volumes of approximately 175 veh/h two-way total during the weekday morning and afternoon peak hours.
- The developer proposes 807 bike parking spaces which well exceeds the minimum by-law requirements, approaching a rate close to 1:1 unit to bike parking. The majority of bike parking will be located indoors in a well-lit secured area near elevators or on ground floor. Outdoor bike parking spaces are also proposed near the commercial uses.
- Once the entire site is fully built-out, a total of 1,151 parking spaces will be available. The commercial and resident visitor spaces meet the city's minimum parking requirements; however, the resident occupant parking quantities fall short with a proposed residential rate of 0.5 spaces per unit. Given the sites location near future BRT corridor and strong TDM program, the reduction in parking is justifiable and jives with the 0.5 spaces per unit rate used near rapid transit or in the downtown core (excluding Area Z). A reduced parking rate is also consistent with Official Plan guidance.
- A strong TDM plan is proposed for this development to encourage the use of alternate modes of transportation and reduce the need for vehicular reliance. Refer to **Section 4.5** for further details.

Future Conditions

- Other nearby developments and a 1% growth rate were applied to existing volumes to estimate background conditions. The 2035 background overall intersection performance of all study area intersections was LoS 'B' or better and with critical movement of 'C' or better which is similar to existing.
- The MMLOS road segment analysis shows that pedestrian and cyclist targets could be met on Sandcastle Drive in the future based on proposed conditions, however, would still be deficient at Baseline Road due to high operating speeds and daily curb volumes. All other targets were met at all locations.
- The MMLOS intersection analysis shows that truck target goals are met at all intersections. Given the higher-operating speeds and number of travel lanes, it is not possible to meet pedestrian target goals. The bicycle target goals were also not met given the lack of cycling facilities on all approaches, the quantity of lanes required to be crossed and the higher operating speeds. The transit TLoS was met at all locations except for Morrison/Baseline as the bus movement delays were over 30 seconds at that location.
- The 2035 full buildout conditions assumed the Baseline BRT Corridor to be built. Although no official design plans have been revealed, it is understood that the eastbound and westbound left-turns would have to be protected to eradicate conflicts between median lane through buses and left-turning general traffic.
- Future conditions with the addition of pedestrians, cyclists, and protected eastbound and westbound left-turns on Baseline Road to simulate transit BRT, along with site vehicle traffic layered on performed at acceptable levels of service with respect to v/c and delay resulting in overall LoS 'D' or better and with critical movement of 'D' or better.

- No major queueing implications were noted, however coordinating the traffic signals could reduce queues and reduce delays for east-west movements on the future BRT.
- The development is forecasted to have negligible impacts to travel times and operations for the future Baseline BRT corridor. The future corridor is anticipated to have minor delays at study area intersections.
- The future Baseline BRT project will enhance the pedestrian and cycling facilities along the Baseline corridor, namely adding uni-directional cycle-tracks fronting the site and upgrades to sidewalk facilities. The site proposes new sidewalks along all building frontages which will connect to the new facilities on Baseline Road.

Based on the foregoing findings, the proposed development located at 2946 Baseline Road is recommended from a transportation perspective.

Prepared By:

Juan Lavin, P. Eng.

Transportation Engineer

Reviewed By:

Austin Shih, P.Eng.

Senior Transportation Engineer

APPENDIX A

SCREENING FORM & CITY COMMENTS

Office: +1 613.738.4160
1223 Michael Street, Suite 100|Ottawa, ON K1J 7T2

City of Ottawa 2017 TIA Guidelines

TIA Screening Form

Date	03-Jul-24
Project	2946 Baseline Road - Phase 4-6
Project Number	477915

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

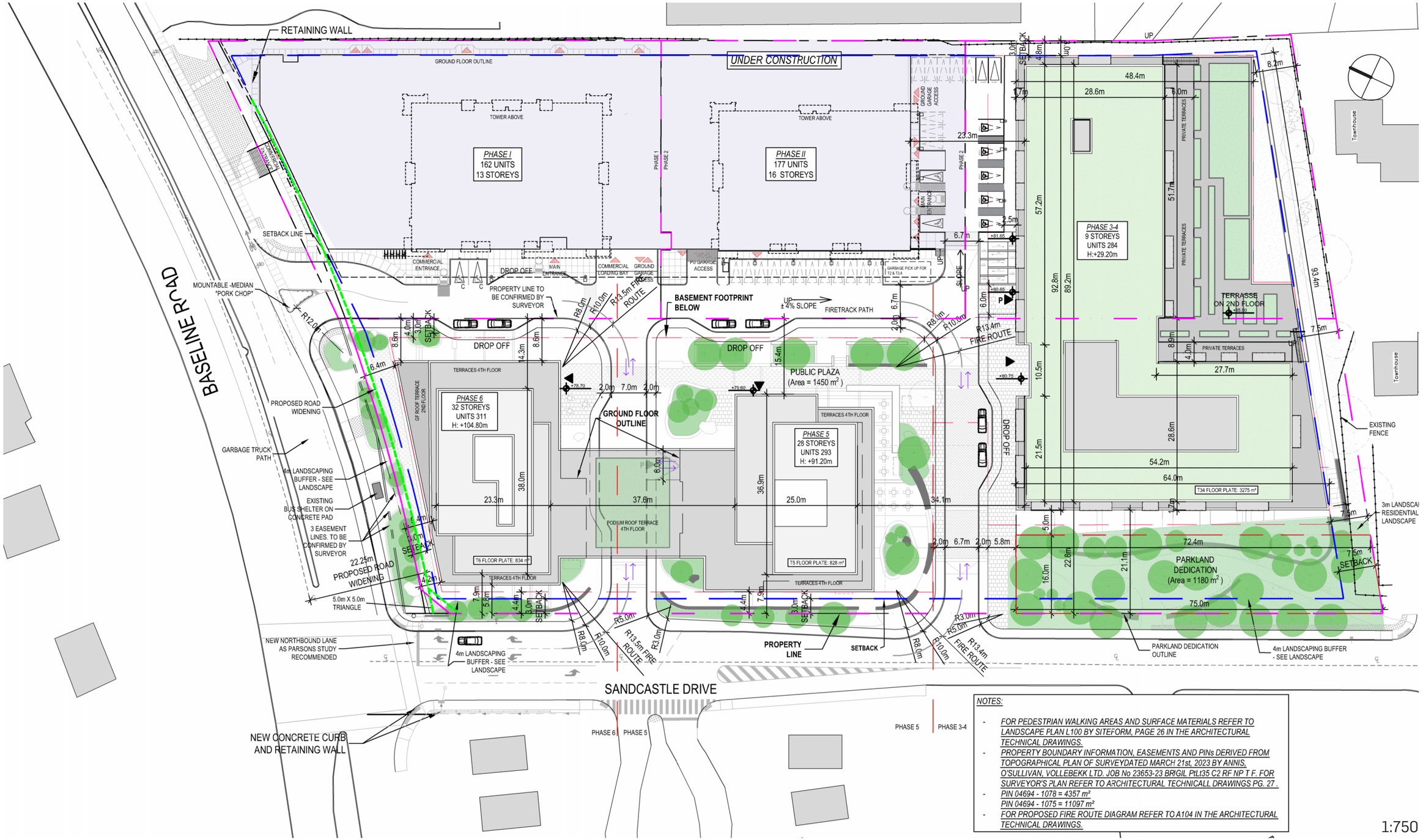
Module 1.1 - Description of Proposed Development	
Municipal Address	2946 Baseline Road
Description of location	
Land Use	Residential
Development Size	Three towers ranging from 9 to 32-storeys, combined 888 units and 23,500 sq ft of commercial use
Number of Accesses and Locations	Two full movement off Sandcastle Drive, one RIRO off Baseline Rd
Development Phasing	3 Phases
Buildout Year	Assumed 2030
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger		
Land Use Type	Townhomes or Apartments	
Development Size	888	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	Baseline Road is part of a transit priority corridor (isolated measures) and is a spine route.
Development is in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone. (See Sheet 3)	No	
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	No	
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	An all movement access on Sandcastle is proposed, which is located approximately 40 meters south of Baseline Road. A RIRO on Baseline is proposed approximately 70 m east of Sandcastle Drive.
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	No	
The development includes a drive-thru facility	No	
Safety Trigger Met?	Yes	

SITE PLAN

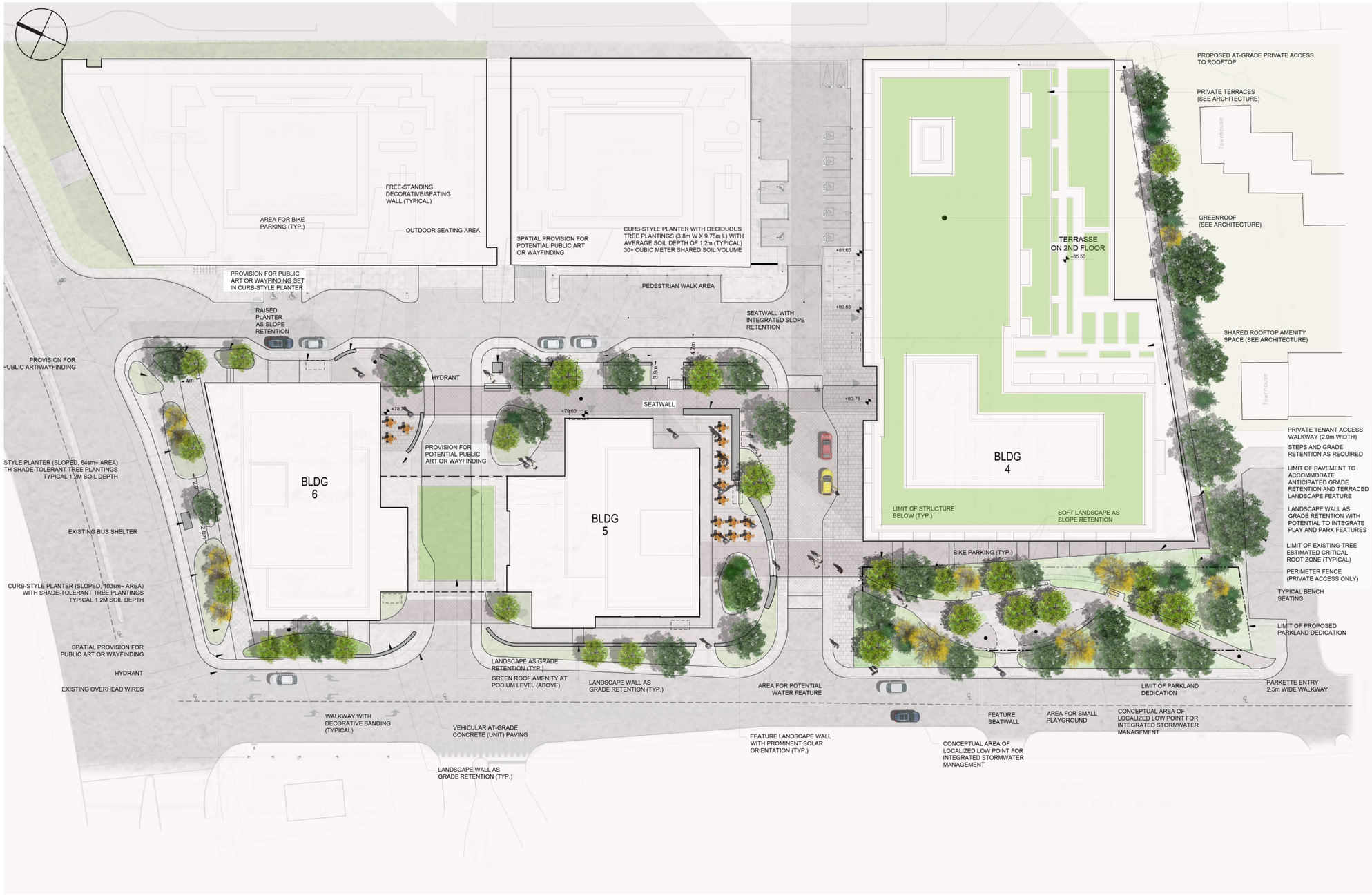


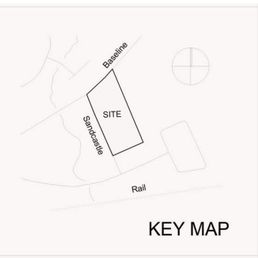
NOTES:

- *FOR PEDESTRIAN WALKING AREAS AND SURFACE MATERIALS REFER TO LANDSCAPE PLAN L100 BY SITEFORM, PAGE 26 IN THE ARCHITECTURAL TECHNICAL DRAWINGS.*
- *PROPERTY BOUNDARY INFORMATION, EASEMENTS AND PINs DERIVED FROM TOPOGRAPHICAL PLAN OF SURVEYDATED MARCH 21st, 2023 BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD. JOB No 23653-23 BRIGIL PtLt35 C2 RF NP T F. FOR SURVEYOR'S PLAN REFER TO ARCHITECTURAL TECHNICALL DRAWINGS PG. 27 .*
- *PIN 04694 - 1078 = 4357 m²*
  PIN 04694 - 1075 = 11097 m²
- *FOR PROPOSED FIRE ROUTE DIAGRAM REFER TO A104 IN THE ARCHITECTURAL TECHNICAL DRAWINGS.*

1:750

LANDSCAPE PLAN BY SITEFORM





KEY MAP

LEGEND

- DECIDUOUS TREE (SMALL-MEDIUM)
- CONIFEROUS TREE
- DECIDUOUS TREE (SHADE)
- PROVISION FOR ART OR WAYFINDING
- OUTDOOR SEATING
- SOFT LANDSCAPING
- HARD LANDSCAPING (TYPE 1)
- HARD LANDSCAPING (TYPE 2)
- HARD LANDSCAPING (TYPE 3)
- BIKE PARKING
- BOLLARD
- TERRACED LANDSCAPE WALL
- LANDSCAPE STEPS

RECORD OF DRAWING

Issued for Site Plan Application I JUNE 18, 2024 I by JL
Final Coordination

Final Internal Coordination
June 18, 2024

siteform

Siteform Inc. Landscape Architecture
Ottawa, ON K1S 3G8
613.796.4537 www.siteform.ca

2496 Baseline Road, Ottawa
for
BRIGIL

1:400
SCALE

5m 0 10m
GRAPHIC SCALE

NORTH

23003
PROJECT

JL DRAWN

JL REVIEWED

Landscape Plan

L100

PLANS & SECTIONS

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

3 July 2024

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

Attention: Kieran Watson

Dear Kieran:

Re: 2946 Baseline Road
Step 4 – Response to City Comments

The following response has been prepared in response to City of Ottawa TIA Strategy Report comments received on August 25, 2023. City comments are presented in black with the corresponding responses from Parsons in blue.

Traffic Engineering Services Comments:

3.1.1. Trip Generation

"Appendix E of the ITE Trip Generation Manual 3rd edition was used to determine pass-by rates. Pass by trips were calculated after the internal reduction factor was applied." Please provide the ITE worksheets as separate appendix for pass by rates. The requested ITE percent derivation has been attached to Appendix D. As mentioned in TIA, the pass-by reduction was calculated using the internally reduced vehicle trips forecasted.

4.1.1 Provide reference to TDM Design checklist. TDM Design Checklist has been provided in Appendix I.

4.3.1 Boundary Street

Use SC7.1 for the private approaches giving paramountcy to the pedestrian mode. Parsons has provided NEUF the city standard detail to incorporate into the site plan.

Transit Comments:

Section 2.1.1 Existing Transit Network:

Please indicate the frequency of Route 57 based on current schedules for this portion of the route. Please remove reference to Route 283 - it operates along Hwy 416 and does not stop near the subject site. Noted, text refined in revised report.

Section 4.2 Parking:

Transit Services is supportive of the reduced residential parking rate and appreciates the forward-looking rationale. Noted.

Section 4.7.1 Transit Route Capacity:

Please contact octdevelopmentreview@ottawa.ca to request ridership data to verify the assumptions in this section. Refer to Section 4.7 in report for update.

Site Plan:

The truck loading lay-by in the breezeway should be available for use by ParaTranspo for accessible pick-up/drop-off to both buildings 5 and 6. Brigil confirmed that they do not see an issue with this request, to be provided between Towers 5 and 6. Parsons does not see an issue with this.

Additional Comments:

2.1. Access to development:

2.1.1. Please indicate the frequency of Route 57 based on current schedules for this portion of the route. Please remove reference to Route 283 - it operates along Hwy 416 and does not stop near the subject site. Noted, text refined in revised report.

2.2. Proximity to transit:

2.2.1. Please contact octdevelopmentreview@ottawa.ca to request ridership data to verify the assumptions in this section. See previous response.

2.3. Parking requirements:

2.3.1. Transit Services is supportive of the reduced residential parking rate and appreciates the forward-looking rationale. Noted.

2.4. Required ROW width:

2.4.1. Please label ROW on Site Plan Parsons has relayed this information to NEUF.

Feel free to contact Mike Giampa (mike.giampa@ottawa.ca) , Transportation Project Manager, for follow-up questions.

APPENDIX B

TRAFFIC COUNT DATA

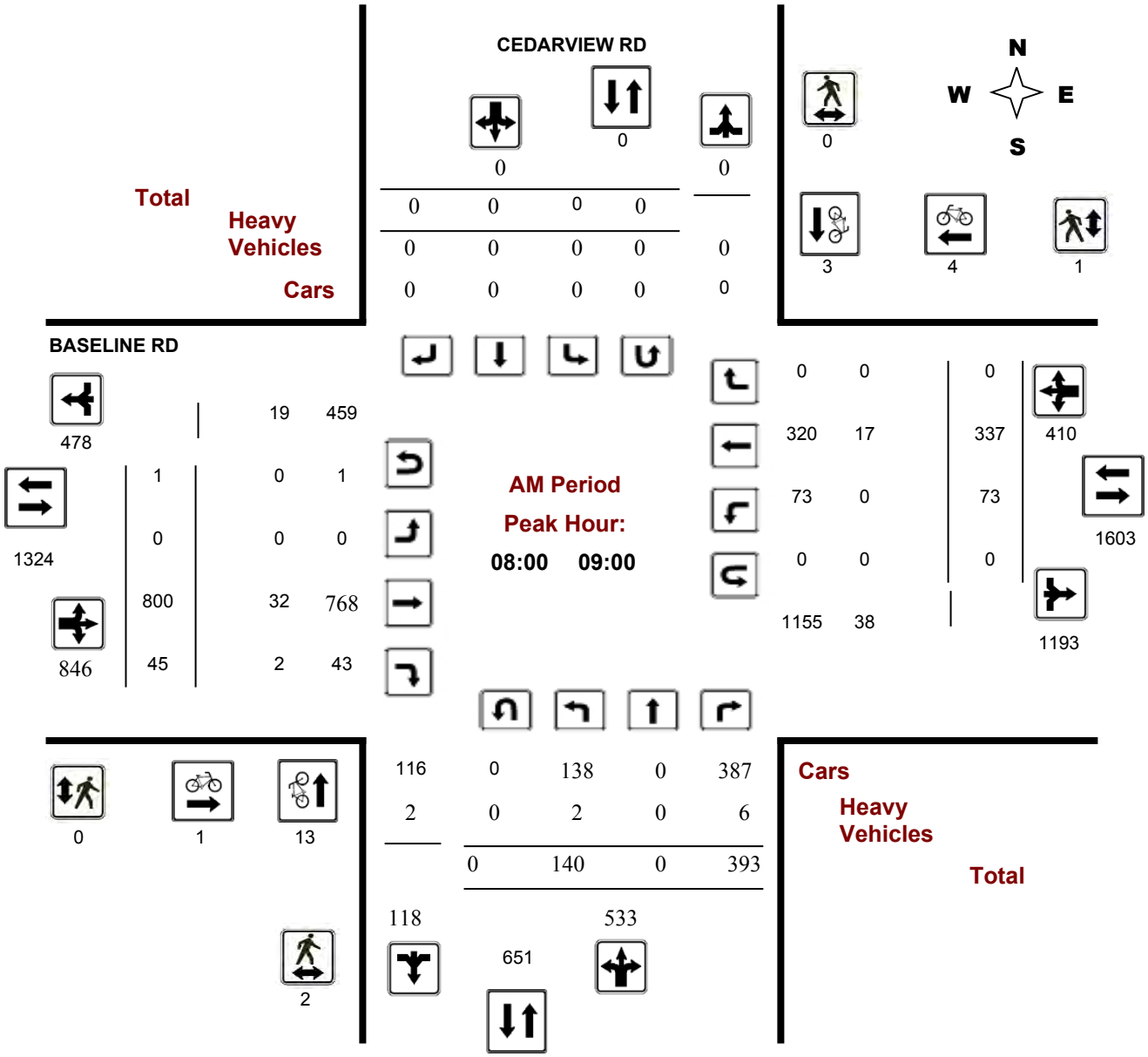
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BASELINE RD @ CEDARVIEW RD

Survey Date: Wednesday, August 26, 2015
Start Time: 07:00

WO No: 35295
Device: Jamar Technologies, Inc



Comments

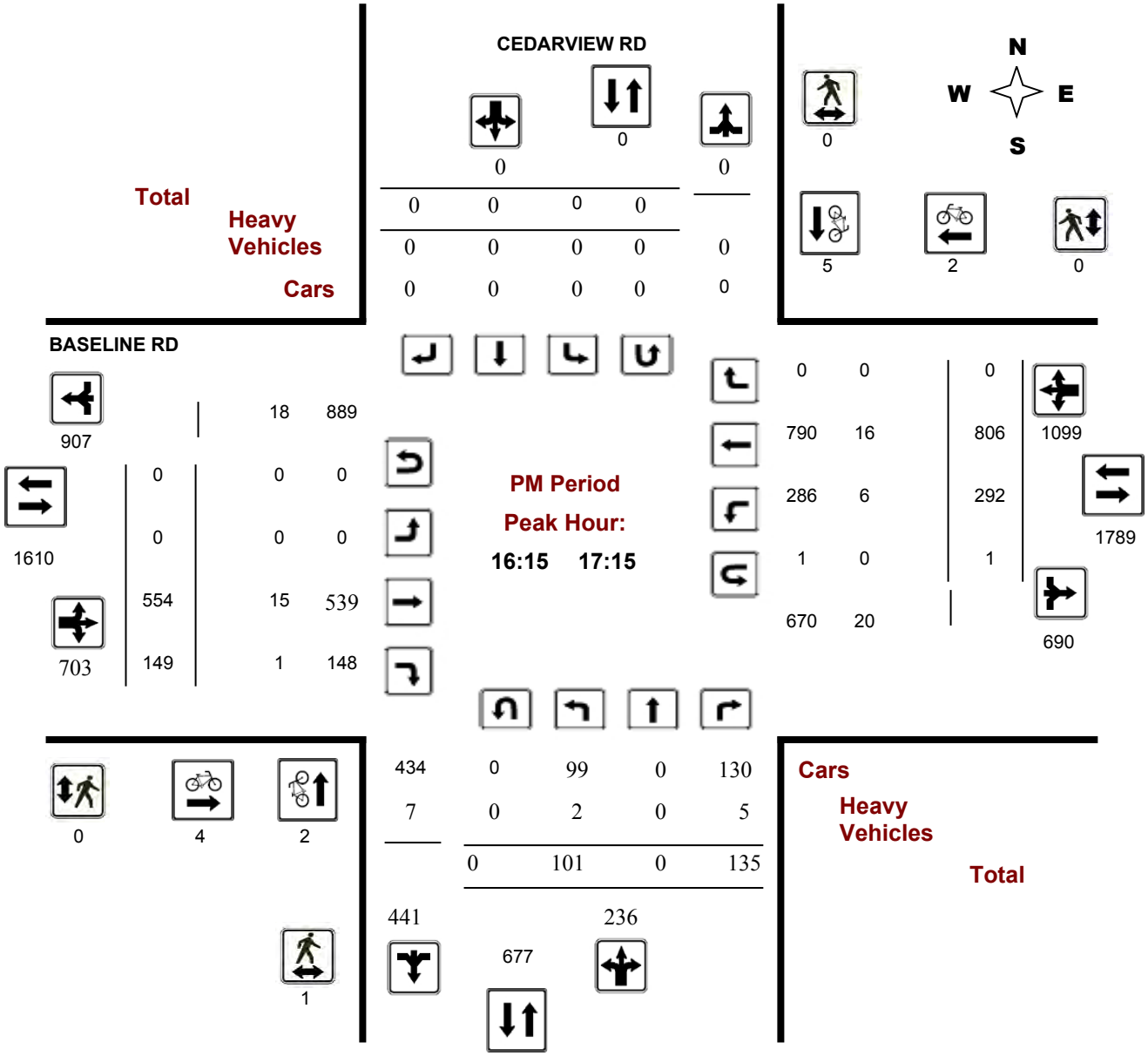
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BASELINE RD @ CEDARVIEW RD

Survey Date: Wednesday, August 26, 2015
Start Time: 07:00

WO No: 35295
Device: Jamar Technologies, Inc



Comments

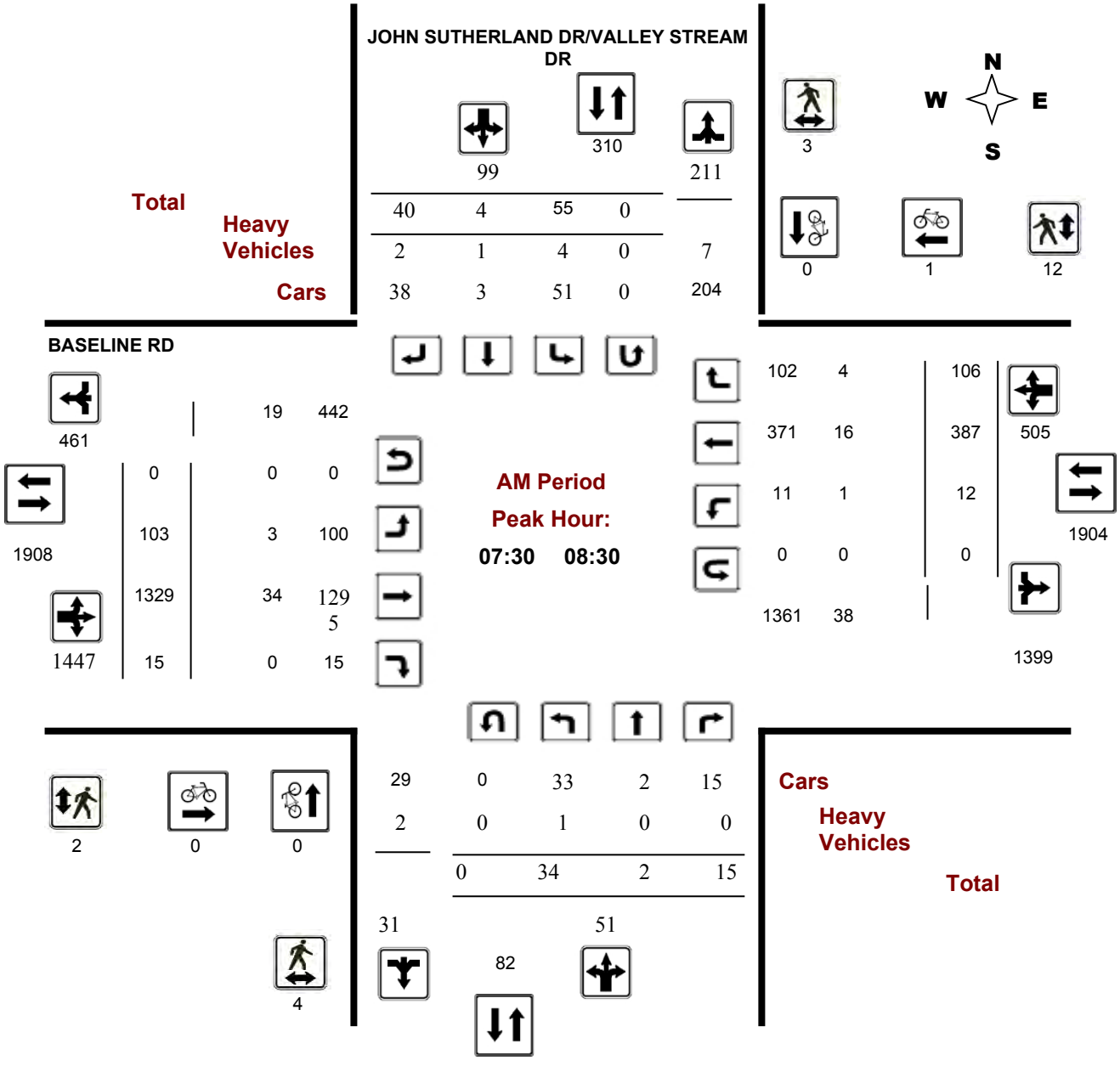
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BASELINE RD @ JOHN SUTHERLAND DR/VALLEY STREAM

Survey Date: Wednesday, March 23, 2016 **WO No:** 35814

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



Comments

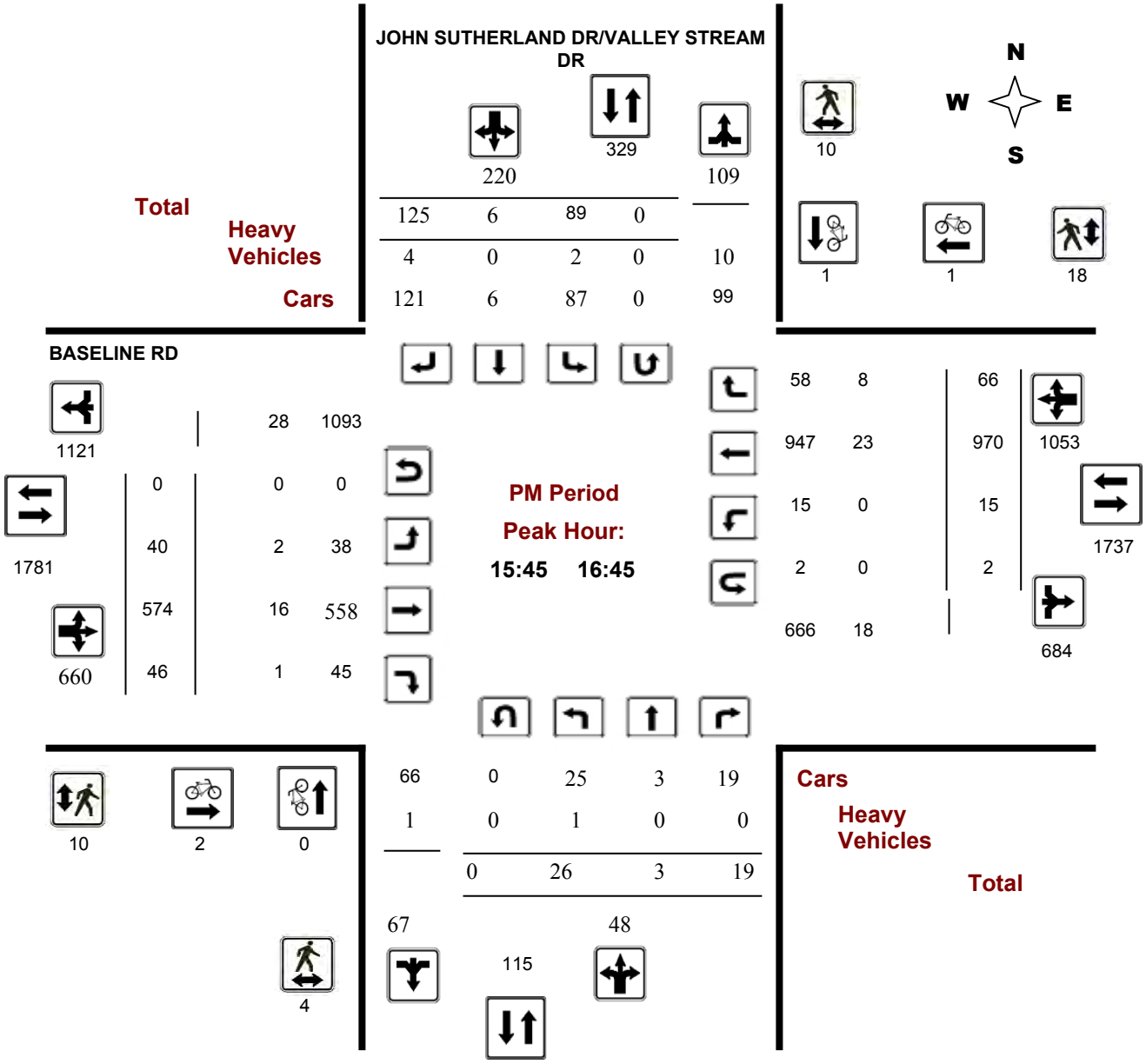
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BASELINE RD @ JOHN SUTHERLAND DR/VALLEY STREAM

Survey Date: Wednesday, March 23, 2016 **WO No:** 35814

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



Comments

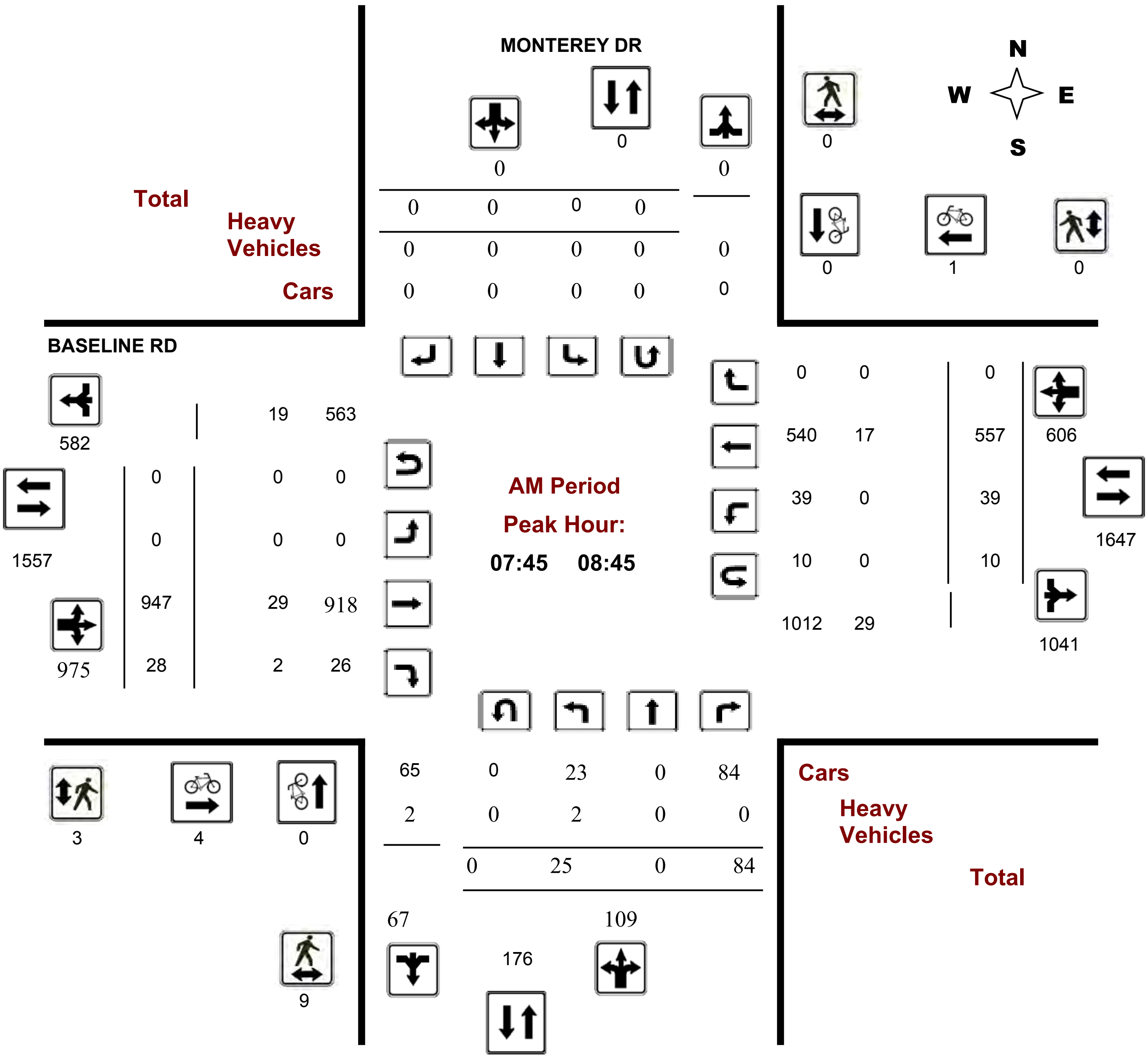
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BASELINE RD @ MONTEREY DR

Survey Date: Wednesday, July 20, 2016 **WO No:** 36053

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



Comments

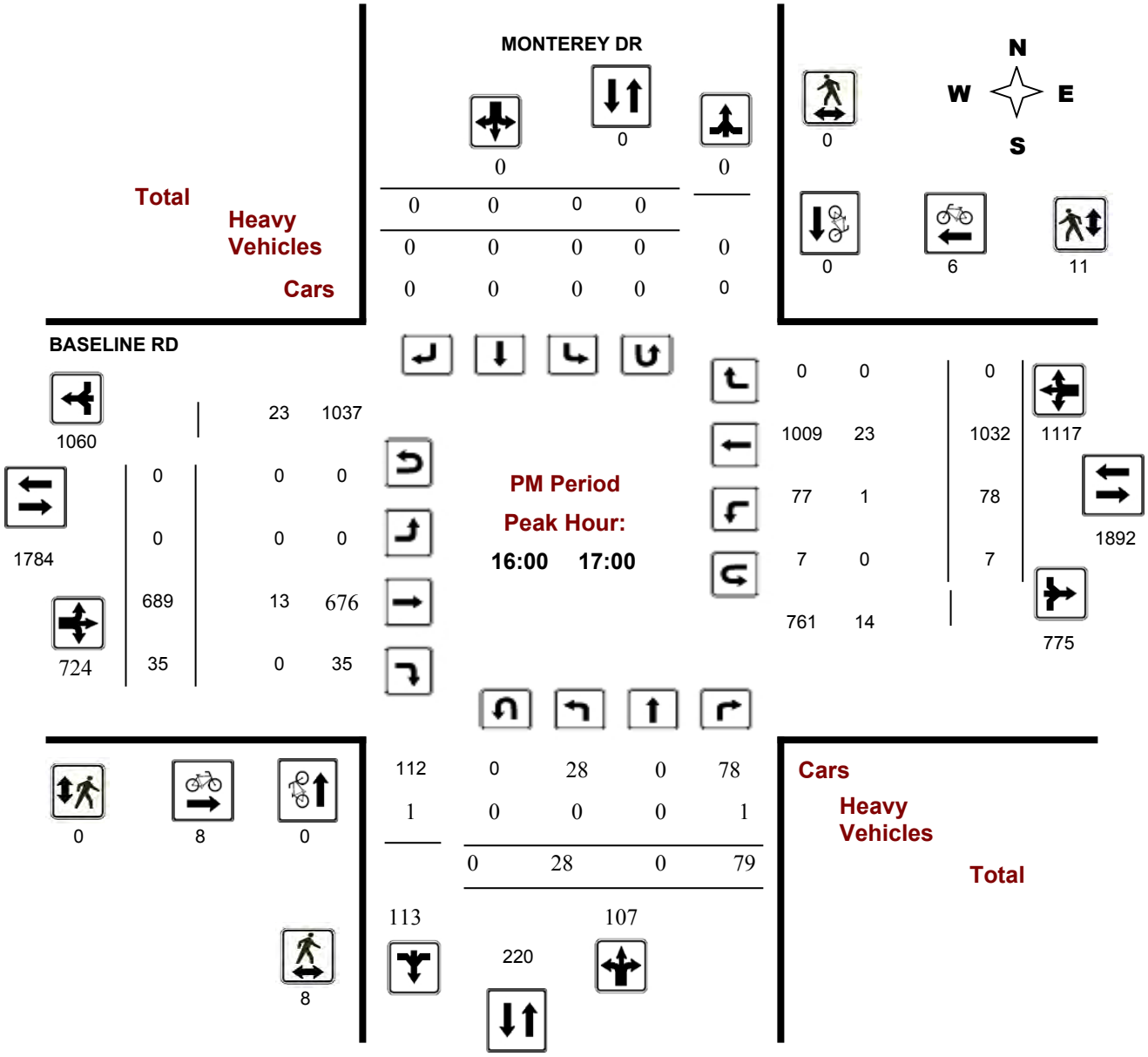
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BASELINE RD @ MONTEREY DR

Survey Date: Wednesday, July 20, 2016 **WO No:** 36053

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



Comments

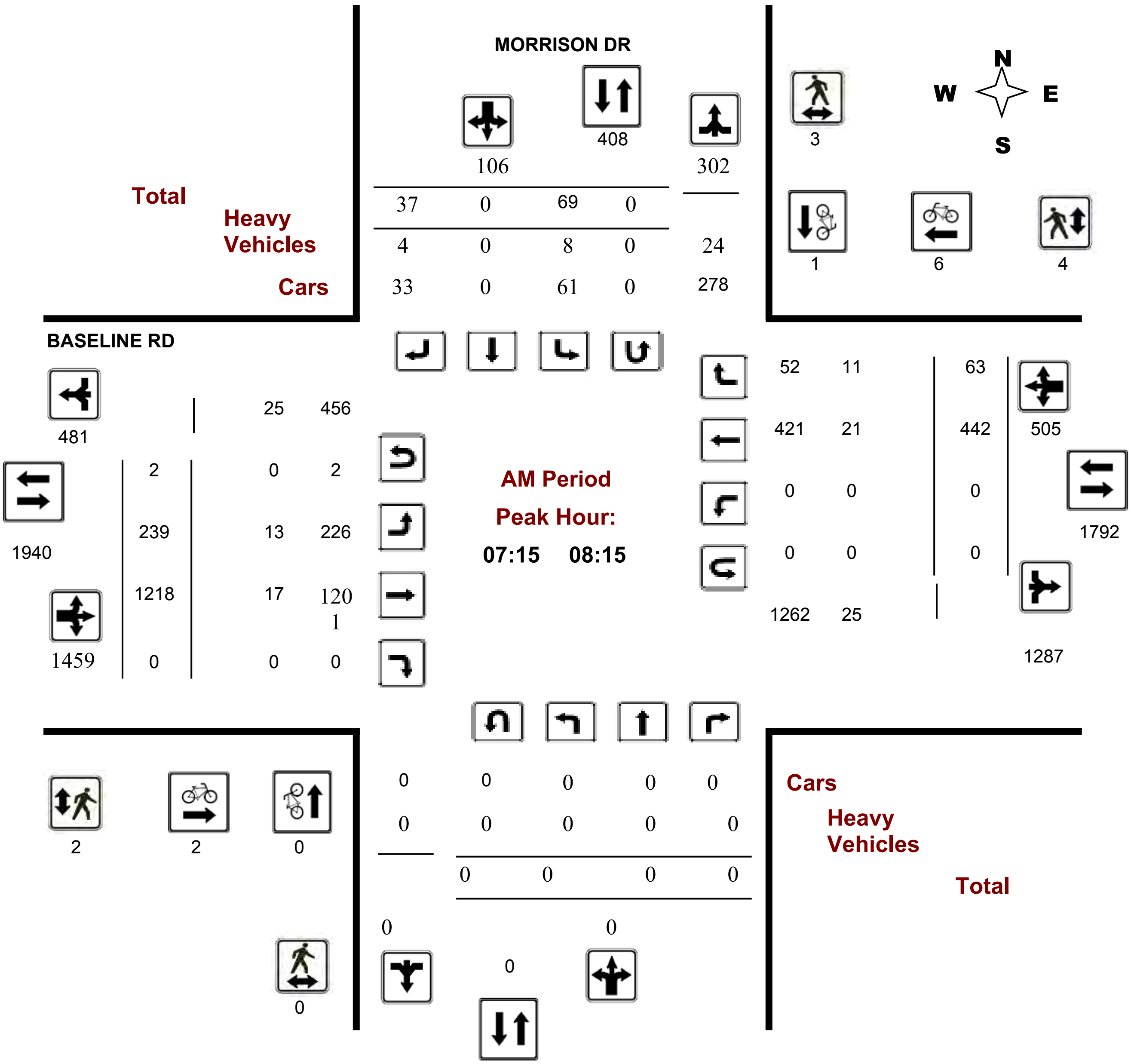
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MORRISON DR @ BASELINE RD

Survey Date: Wednesday, October 26, 2016 **WO No:** 36418

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



Comments

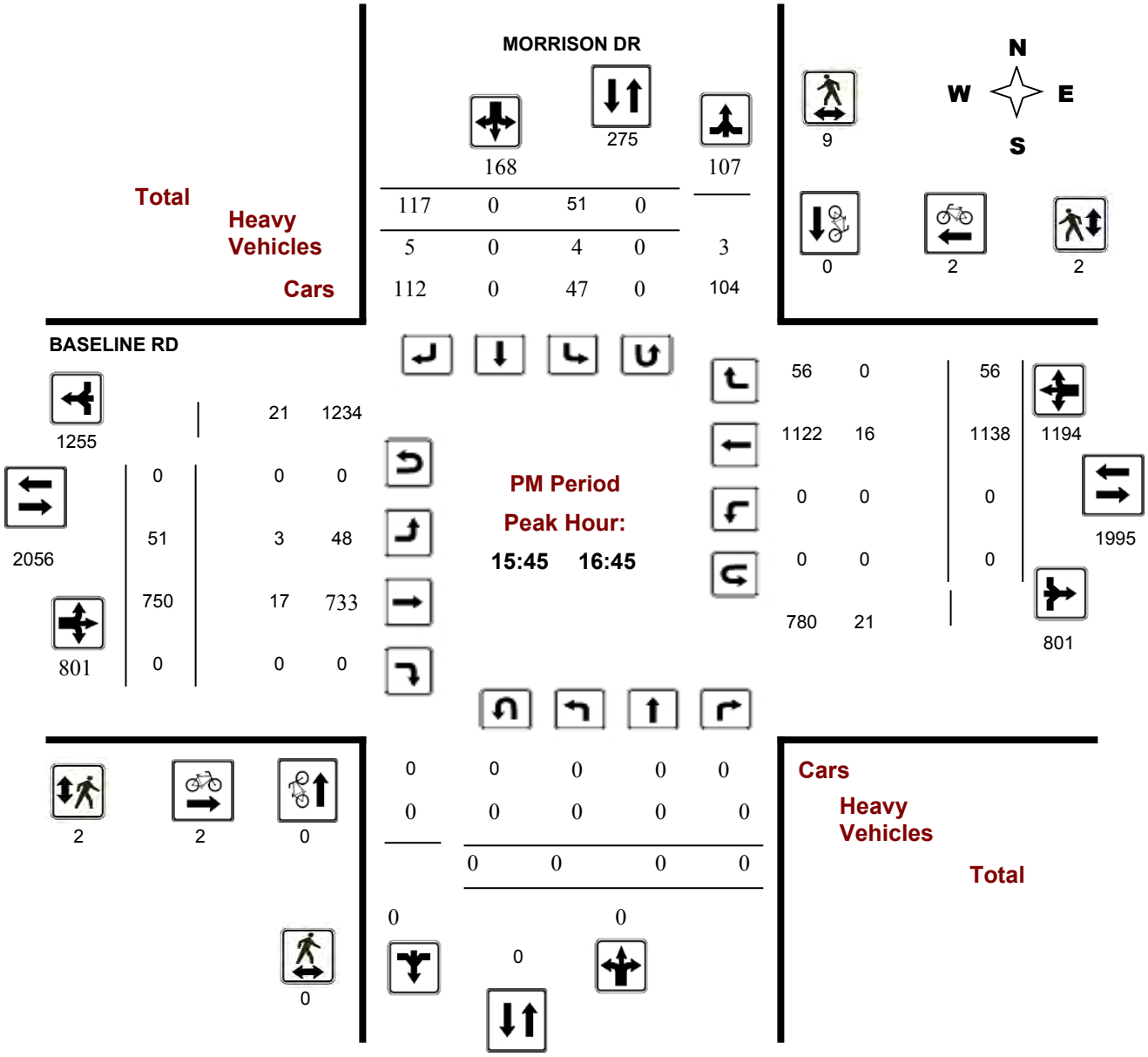
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

MORRISON DR @ BASELINE RD

Survey Date: Wednesday, October 26, 2016 **WO No:** 36418

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



Comments

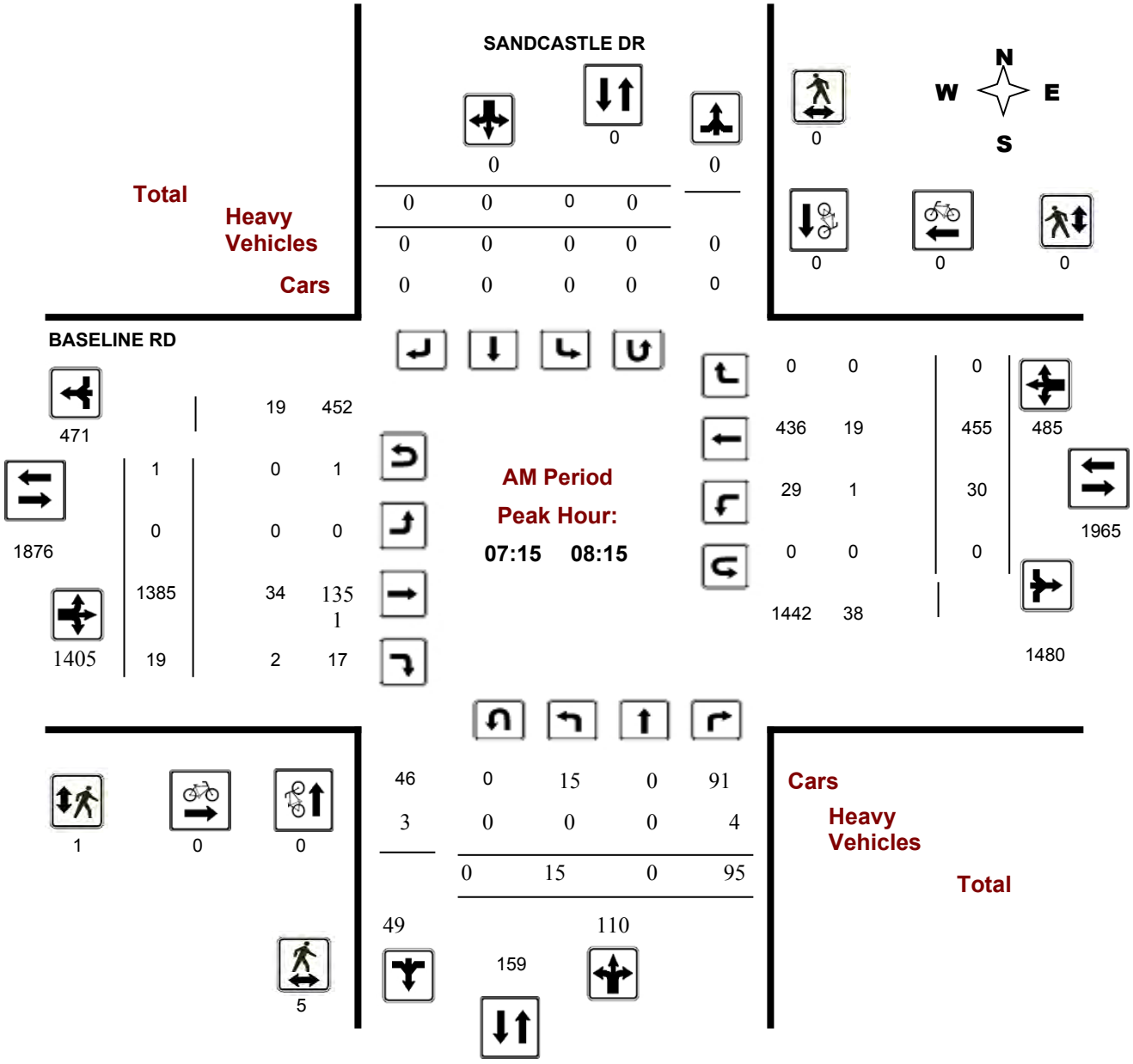
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BASELINE RD @ SANDCASTLE DR

Survey Date: Thursday, January 12, 2017 **WO No:** 36634

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



Comments

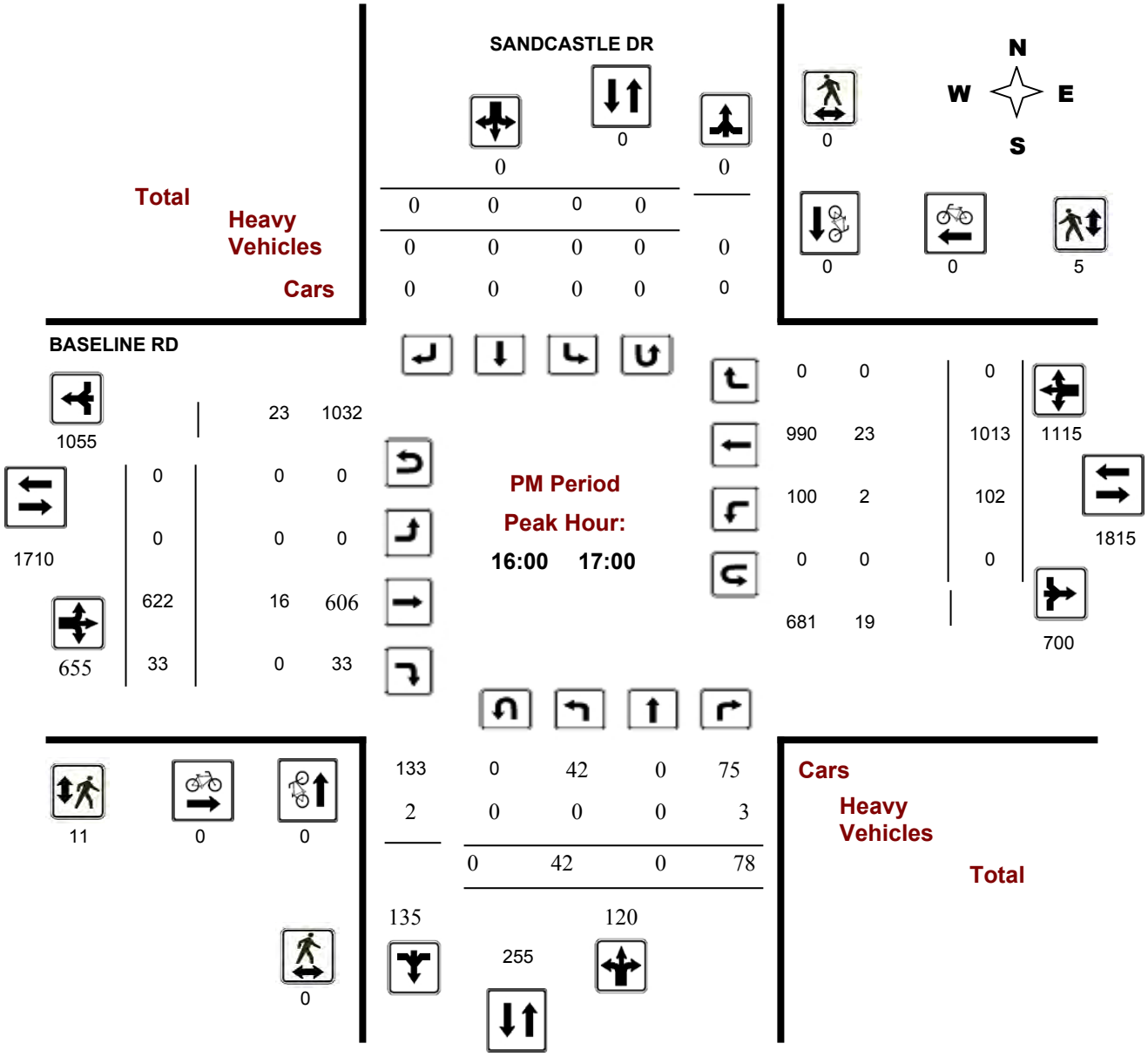
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

BASELINE RD @ SANDCASTLE DR

Survey Date: Thursday, January 12, 2017 **WO No:** 36634

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



Comments

APPENDIX C

COLLISION DATA

Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	23	8	13	2	0	5	0	3	54	79%
Non-fatal injury	5	6	0	1	0	2	0	0	14	21%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**28**	**14**	**13**	**3**	**0**	**7**	**0**	**3**	**68**	100%
	#1 or 41%	#2 or 21%	#3 or 19%	#5 or 4%	#7 or 0%	#4 or 10%	#7 or 0%	#5 or 4%		

BASELINE RD/CEDARVIEW RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	15	27,974	1825	**0.29**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	3	3	4	0	0	1	0	1	12	80%
Non-fatal injury	1	2	0	0	0	0	0	0	3	20%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**4**	**5**	**4**	**0**	**0**	**1**	**0**	**1**	**15**	100%
	27%	33%	27%	0%	0%	7%	0%	7%		

BASELINE RD/JOHN SUTHERLAND DR/VALLEY STREAM

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	13	24,065	1825	**0.30**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	3	4	1	0	0	0	0	0	8	62%
Non-fatal injury	0	3	0	1	0	1	0	0	5	38%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**3**	**7**	**1**	**1**	**0**	**1**	**0**	**0**	**13**	100%
	23%	54%	8%	8%	0%	8%	0%	0%		

BASELINE RD/SANDCASTLE DR

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	9	23,142	1825	**0.21**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	3	0	2	1	0	0	0	0	6	67%
Non-fatal injury	2	1	0	0	0	0	0	0	3	33%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**5**	**1**	**2**	**1**	**0**	**0**	**0**	**0**	**9**	100%
	56%	11%	22%	11%	0%	0%	0%	0%		

BASELINE RD/MONTEREY DR

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	9	20,048	1825	**0.25**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	5	1	1	0	0	1	0	1	9	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	**5**	**1**	**1**	**0**	**0**	**1**	**0**	**1**	**9**	100%
	56%	11%	11%	0%	0%	11%	0%	11%		

MORRISON DR/BASELINE RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	11	22,626	1825	**0.27**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	6	0	1	1	0	1	0	1	10	91%
Non-fatal injury	1	0	0	0	0	0	0	0	1	9%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**7**	**0**	**1**	**1**	**0**	**1**	**0**	**1**	**11**	100%
	64%	0%	9%	9%	0%	9%	0%	9%		

ROAD SEGMENTS

BASELINE RD, CEDARVIEW RD to TURN LANE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
1171652--75.7943	3	n/a	371.3259829	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	0	0	1	0	0	1	0	0	2	67%
Non-fatal injury	0	0	0	0	0	1	0	0	1	33%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**3**	100%
	0%	0%	33%	0%	0%	67%	0%	0%		

BASELINE RD Btwn CEDARVIEW & VALLEY STREAM

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
1171652--75.7943	2	n/a	371.3259829	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV 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%		

BASELINE RD, SANDCASTLE DR to SIOUX CRES

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
1171652--75.7943	2	n/a	371.3259829	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	1	0	0	0	0	1	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**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	100%
	50%	0%	0%	0%	0%	50%	0%	0%		

BASELINE RD, MONTEREY DR to SANDCASTLE DR

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
1171652--75.7943	4	n/a	371.3259829	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	1	0	2	0	0	0	0	0	3	75%
Non-fatal injury	1	0	0	0	0	0	0	0	1	25%
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%		

APPENDIX D

INTERNAL TRIP REDUCTION CALCULATIONS

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	2942 Baseline Road	**Organization:**	Parsons
Project Location:		**Performed By:**	
Scenario Description:	AM Internal Reduction	**Date:**	6/26/2024
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (***For Information Only***)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				41	24	17
Restaurant				0		
Cinema/Entertainment				0		
Residential				135	42	93
Hotel				0		
All Other Land Uses[2]				0		
				176	66	110

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	1	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	176	66	110
Internal Capture Percentage	2%	3%	2%
External Vehicle-Trips[5]	172	64	108
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	4%	6%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from ***Trip Generation Manual***, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE ***Trip Generation Manual***).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	2942 Baseline Road
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	24	24	1.00	17	17
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	42	42	1.00	93	93
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	5		2	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	1	19	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		8	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	2		0	2	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	23	24	23	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	41	42	41	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	16	17	16	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	92	93	92	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	2942 Baseline Road	**Organization:**	Parsons
Project Location:		**Performed By:**	
Scenario Description:	PM Internal Reduction	**Date:**	6/26/2024
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (***For Information Only***)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				141	82	59
Restaurant				0		
Cinema/Entertainment				0		
Residential				116	58	58
Hotel				0		
All Other Land Uses[2]				0		
				257	140	117

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail					150	
Restaurant						
Cinema/Entertainment						
Residential		150				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	15	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	8	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	257	140	117
Internal Capture Percentage	18%	16%	20%
External Vehicle-Trips[5]	211	117	94
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	10%	25%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	26%	14%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from ***Trip Generation Manual***, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE ***Trip Generation Manual***).

[4]Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	2942 Baseline Road
Analysis Period:	**PM Street Peak Hour**

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	82	82	1.00	59	59
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	58	58	1.00	58	58
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		17	2	15	3
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	2	24	12	0		2
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		7	0	0	2	0
Retail	0		0	0	27	0
Restaurant	0	41		0	9	0
Cinema/Entertainment	0	3	0		2	0
Residential	0	8	0	0		0
Hotel	0	2	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	8	74	82	74	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	15	43	58	43	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	15	44	59	44	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	8	50	58	50	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[2]Person-Trips

[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Table 5.6
Pass-By Trips and Diverted Linked Trips
Weekday, p.m. Peak Period

Land Use 820—Shopping Center

SIZE (1,000 SQ. FT. GLA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS-BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	ADJ. STREET PEAK HOUR VOLUME	AVERAGE 24-HOUR TRAFFIC	SOURCE
53	Port Orange, FL	1993	162	2:00–6:00 p.m.	—	41	—	59	n/a	n/a	TPD Inc.
9	Kissimmee, FL	1994	107	2:00–6:00 p.m.	20	—	14	66	n/a	n/a	TPD Inc.
77	Edgewater, FL	1992	365	2:00–6:00 p.m.	—	54	—	46	n/a	n/a	TPD Inc.
82	Deltona, FL	1992	336	2:00–6:00 p.m.	—	66	—	34	n/a	n/a	TPD Inc.
78	Orlando, FL	1991	702	2:00–6:00 p.m.	23	—	22	55	n/a	n/a	TPD Inc.
45	Orlando, FL	1992	844	2:00–6:00 p.m.	24	—	20	56	n/a	n/a	TPD Inc.
50	Orlando, FL	1992	555	2:00–6:00 p.m.	41	—	18	41	n/a	n/a	TPD Inc.
52	Orlando, FL	1995	665	2:00–6:00 p.m.	33	—	25	42	n/a	n/a	TPD Inc.
17	Orlando, FL	1994	196	2:00–6:00 p.m.	—	34	—	66	n/a	n/a	TPD Inc.
60	Orlando, FL	1995	1,583	3:00–7:00 p.m.	38	—	22	40	n/a	n/a	TPD Inc.
158	Crestwood, KY	Jun. 1993	129	4:00–6:00 p.m.	39	—	25	36	759	n/a	Barton-Aschman Assoc.
118	Louisville area, KY	Jun. 1993	133	4:00–6:00 p.m.	51	—	27	22	3,555	n/a	Barton-Aschman Assoc.
74	Louisville, KY	Jun. 1993	187	4:00–6:00 p.m.	43	—	27	30	922	n/a	Barton-Aschman Assoc.
59	Louisville area, KY	Jun. 1993	247	4:00–6:00 p.m.	52	—	17	31	2,659	n/a	Barton-Aschman Assoc.
145	Louisville area, KY	Jun. 1993	210	4:00–6:00 p.m.	30	—	17	53	2,636	n/a	Barton-Aschman Assoc.
104	Louisville area, KY	Jun. 1993	281	4:00–6:00 p.m.	50	—	22	28	2,111	n/a	Barton-Aschman Assoc.
235	Louisville, KY	Jun. 1993	211	4:00–6:00 p.m.	29	—	36	35	2,593	n/a	Barton-Aschman Assoc.
71	Louisville, KY	Jun. 1993	109	4:00–6:00 p.m.	42	—	33	25	1,559	n/a	Barton-Aschman Assoc.
350	Worcester, MA	Apr. 1994	224	4:00–6:00 p.m.	45	—	37	18	2,112	n/a	ICSC
738	East Brunswick, NJ	Apr. 1994	283	4:00–6:00 p.m.	79	—	7	14	8,059	n/a	ICSC
294	Philadelphia, PA	Apr. 1994	213	4:00–6:00 p.m.	51	—	24	25	4,055	n/a	ICSC
256	Hamden, CT	Apr. 1994	208	4:00–6:00 p.m.	51	—	22	27	3,422	n/a	ICSC
418	Glen Burnie, MD	Apr. 1994	281	4:00–6:00 p.m.	51	—	29	20	5,610	n/a	ICSC
560	Harrisonburg, VA	Apr. 1994	437	4:00–6:00 p.m.	49	—	32	19	3,051	n/a	ICSC

Table 5.6 (Cont'd)
Pass-By Trips and Diverted Linked Trips
Weekday, p.m. Peak Period

Land Use 820—Shopping Center

SIZE (1,000 SQ. FT. GLA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS-BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	ADJ. STREET PEAK HOUR VOLUME	AVERAGE 24-HOUR TRAFFIC	SOURCE
361	Glen Allen, VA	Apr. 1994	315	4:00–6:00 p.m.	54	—	29	17	2,034	n/a	ICSC
375	Shelby, NC	May 1994	214	4:00–6:00 p.m.	48	—	22	30	3,053	n/a	ICSC
413	Texas City, TX	May 1994	228	4:00–6:00 p.m.	52	—	20	28	589	n/a	ICSC
488	Texas City, TX	May 1994	257	4:00–6:00 p.m.	75	—	13	12	1,094	n/a	ICSC
293	Berwyn, IL	May 1994	282	4:00–6:00 p.m.	70	—	6	24	4,606	n/a	ICSC
667	Bourbonais, IL	May 1994	200	4:00–6:00 p.m.	53	—	31	16	2,770	n/a	ICSC
225	Belleville, IL	May 1994	264	4:00–6:00 p.m.	32	—	33	35	1,970	n/a	ICSC
255	Bettendorf, IA	May 1994	222	4:00–6:00 p.m.	37	—	39	24	3,706	n/a	ICSC
808	Laguna Hills, CA	Jun. 1994	240	4:00–6:00 p.m.	73	—	14	13	4,035	n/a	ICSC
450	Hanford, CA	May 1994	321	4:00–6:00 p.m.	49	—	28	23	2,787	n/a	ICSC
800	San Jose, CA	May 1994	205	4:00–6:00 p.m.	51	—	28	21	7,474	n/a	ICSC
598	Greeley, CO	May 1994	205	4:00–6:00 p.m.	55	—	28	17	3,840	n/a	ICSC
581	Pueblo, CO	May 1994	296	4:00–6:00 p.m.	53	—	29	18	2,939	n/a	ICSC
476	Bellevue, WA	May 1994	234	4:00–6:00 p.m.	54	—	20	26	3,427	n/a	ICSC
720	Framingham, MA	Dec. 1982	92	3:30–7:00 p.m.	39	—	38	23	n/a	73,628	Raymond Keyes Assoc.
890	Newark, DE	Jul. 1984	179	3:00–8:00 p.m.	49	—	39	12	n/a	n/a	Raymond Keyes Assoc.
402	Manassas, VA	Jun. 1984	87	4:00–6:00 p.m.	25	—	27	48	n/a	n/a	Raymond Keyes Assoc.
462	Ross, PA	Jun. 1980	175	5:30–7:00 p.m.	—	64	—	36	n/a	27,200	Raymond Keyes Assoc.
234	Huntington LI, NY	Nov. 1985	181	4:00–7:00 p.m.	21	—	33	46	n/a	34,630	Raymond Keyes Assoc.
658	Wayne, NJ	Sept. 1984	243	3:00–6:00 p.m.	61	—	12	27	n/a	85,600	Raymond Keyes Assoc.
1,200	Washington, DC	1980	364	4:00–6:00 p.m.	35	—	40	25	n/a	n/a	Gorove-Slade
800	Southern CA	n/a	1,000	4:00–6:00 p.m.	45	—	43	12	n/a	n/a	Frischer
451	Portland, OR	n/a	n/a	5:00–6:00 p.m.	—	75	—	25	n/a	n/a	Buttke
113	Portland, OR	n/a	n/a	5:00–6:00 p.m.	—	83	—	17	n/a	n/a	Buttke

Table 5.6 (Cont'd)
Pass-By Trips and Diverted Linked Trips
Weekday, p.m. Peak Period

Land Use 820—Shopping Center

SIZE (1,000 SQ. FT. GLA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS-BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	ADJ. STREET PEAK HOUR VOLUME	AVERAGE 24-HOUR TRAFFIC	SOURCE
622	Ramsey, MN	Nov. 1985	46	4:00–9:00 p.m.	26	—	30	44	n/a	36,370	Raymond Keyes Assoc.
736	Pensacola, FL	Oct. 1985	383	3:00–7:00 p.m.	35	—	39	26	n/a	n/a	Raymond Keyes Assoc.
84	Dover, DE	Jul. 1985	218	3:30–7:00 p.m.	6	—	44	50	n/a	n/a	Raymond Keyes Assoc.
500	Meriden, CT	Apr. 1985	n/a	4:00–6:00 p.m.	—	92	—	8	n/a	n/a	Connecticut DOT
660	Enfield, CT	Apr. 1985	n/a	4:00–6:00 p.m.	—	78	—	22	n/a	n/a	Connecticut DOT
845	Waterford, CT	Apr. 1985	n/a	4:00–6:00 p.m.	—	86	—	14	n/a	n/a	Connecticut DOT
1,060	West Hartford, CT	Apr. 1985	n/a	4:00–6:00 p.m.	—	83	—	17	n/a	n/a	Connecticut DOT
131	Pr. Georges Co., MD	1982/83	88	4:00–6:00 p.m.	—	11	—	89	n/a	n/a	JHK
181	Pr. Georges Co., MD	1982/83	105	4:00–6:00 p.m.	—	64	—	36	n/a	n/a	JHK
100	Pr. Georges Co., MD	1982/83	93	4:00–6:00 p.m.	—	64	—	36	n/a	n/a	JHK
475	Pr. Georges Co., MD	1982/83	130	4:00–6:00 p.m.	—	80	—	20	n/a	n/a	JHK
60	Pr. Georges Co., MD	1982/83	72	4:00–6:00 p.m.	—	18	—	82	n/a	n/a	JHK
90	Pr. Georges Co., MD	1982/83	91	4:00–6:00 p.m.	—	42	—	58	n/a	n/a	JHK
78	Pr. Georges Co., MD	1982/83	113	4:00–6:00 p.m.	—	41	—	59	n/a	n/a	JHK
44	Pr. Georges Co., MD	1982/83	97	4:00–6:00 p.m.	—	49	—	51	n/a	n/a	JHK
467	Pr. Georges Co., MD	1982/83	99	4:00–6:00 p.m.	—	44	—	56	n/a	n/a	JHK
352	W. Orange, NJ	Mar. 1986	149	4:00–6:00 p.m.	19	—	43	38	n/a	21,520	Raymond Keyes Assoc.
176	Tarpon Springs, FL	May 1986	124	3:00–7:00 p.m.	28	—	35	37	n/a	34,080	Raymond Keyes Assoc.
762	Orlando, FL	Fall 1985	182	4:00–6:00 p.m.	52	—	23	25	n/a	n/a	Kimley-Horn and Assoc. Inc.
166	Orlando, FL	Fall 1985	124	4:00–6:00 p.m.	48	—	25	27	n/a	n/a	Kimley-Horn and Assoc. Inc.
129	Orlando, FL	Fall 1985	116	4:00–6:00 p.m.	50	—	22	28	n/a	n/a	Kimley-Horn and Assoc. Inc.
71	Orlando, FL	Fall 1985	81	4:00–6:00 p.m.	44	—	6	50	n/a	n/a	Kimley-Horn and Assoc. Inc.

Table 5.6 (Cont'd)
Pass-By Trips and Diverted Linked Trips
Weekday, p.m. Peak Period

Land Use 820—Shopping Center

SIZE (1,000 SQ. FT. GLA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS-BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	ADJ. STREET PEAK HOUR VOLUME	AVERAGE 24-HOUR TRAFFIC	SOURCE
921	Albany, NY	Jul. & Aug. 1985	196	4:00–6:00 P.M.	42	—	35	23	n/a	60,950	Raymond Keyes Assoc.
108	Overland Park, KS	Jul. 1988	111	4:30–5:30 p.m.	61	—	13	26	n/a	34,000	n/a
118	Overland Park, KS	Aug. 1988	123	4:30–5:30 p.m.	55	—	20	25	n/a	—	n/a
256	Greece, NY	Jun. 1988	120	4:00–6:00 p.m.	62	—	—	38	n/a	23,410	Sear Brown
160	Greece, NY	Jun. 1988	78	4:00–6:00 p.m.	71	—	—	29	n/a	57,306	Sear Brown
550	Greece, NY	Jun. 1988	117	4:00–6:00 p.m.	52	—	—	48	n/a	40,763	Sear Brown
51	Boca Raton, FL	Dec. 1987	110	4:00–6:00 p.m.	34	—	33	33	n/a	42,225	Kimley-Horn and Assoc. Inc.
1,090	Ross Twp, PA	Jul. 1988	411	2:00–8:00 p.m.	56	—	10	34	n/a	51,500	Wilbur Smith and Assoc.
97	Upper Dublin Twp, PA	Winter 1988/89	n/a	4:00–6:00 p.m.	—	59	—	41	n/a	34,000	McMahon Associates
118	Tredyffrin Twp, PA	Winter 1988/89	n/a	4:00–6:00 p.m.	—	76	—	24	n/a	10,000	Booz Allen & Hamilton
122	Lawnside, NJ	Winter 1988/89	n/a	4:00–6:00 p.m.	—	63	—	37	n/a	20,000	Pennoni Associates
126	Boca Raton, FL	Winter 1988/89	n/a	4:00–6:00 p.m.	—	57	—	43	n/a	40,000	McMahon Associates
150	Willow Grove, PA	Winter 1988/89	n/a	4:00–6:00 p.m.	—	61	—	39	n/a	26,000	Booz Allen & Hamilton
153	Broward Cnty, FL	Winter 1988/89	n/a	4:00–6:00 p.m.	—	50	—	50	n/a	85,000	McMahon Associates
153	Arden, DE	Winter 1988/89	n/a	4:00–6:00 p.m.	—	70	—	30	n/a	26,000	Orth-Rodgers & Assoc. Inc.
154	Doylestown, PA	Winter 1988/89	n/a	4:00–6:00 p.m.	—	68	—	32	n/a	29,000	Orth-Rodgers & Assoc. Inc.
164	Middletown Twp, PA	Winter 1988/89	n/a	4:00–6:00 p.m.	—	67	—	33	n/a	25,000	Booz Allen & Hamilton
166	Haddon Twp, NJ	Winter 1988/89	n/a	4:00–6:00 p.m.	—	80	—	20	n/a	6,000	Pennoni Associates
205	Broward Cnty., FL	Winter 1988/89	n/a	4:00–6:00 p.m.	—	45	—	55	n/a	62,000	McMahon Associates

Table 5.6 (Cont'd)
Pass-By Trips and Diverted Linked Trips
Weekday, p.m. Peak Period

Land Use 820—Shopping Center

SIZE (1,000 SQ. FT. GLA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS-BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	ADJ. STREET PEAK HOUR VOLUME	AVERAGE 24-HOUR TRAFFIC	SOURCE
237	W. Windsor Twp, NJ	Winter 1988/89	n/a	4:00–6:00 p.m.	—	52	—	48	n/a	46,000	Booz Allen & Hamilton
242	Willow Grove, PA	Winter 1988/89	n/a	4:00–6:00 p.m.	—	63	—	37	n/a	26,000	McMahon Associates
297	Whitehall, PA	Winter 1988/89	n/a	4:00–6:00 p.m.	—	67	—	33	n/a	26,000	Orth-Rodgers & Assoc. Inc.
360	Broward Cnty., FL	Winter 1988/89	n/a	4:00–6:00 p.m.	—	56	—	44	n/a	73,000	McMahon Associates
370	Pittsburgh, PA	Winter 1988/89	n/a	4:00–6:00 p.m.	—	81	—	19	n/a	33,000	Wilbur Smith
150	Portland, OR	n/a	519	4:00–6:00 p.m.	6	—	26	68	n/a	25,000	Kittleson and Associates
150	Portland, OR	n/a	655	4:00–6:00 p.m.	7	—	28	65	n/a	30,000	Kittleson and Associates
760	Calgary, Alberta	Oct-Dec 1987	15,436	4:00–6:00 p.m.	39	—	41	20	n/a	n/a	City of Calgary DOT
178	Bordentown, NJ	Apr. 1989	154	2:00–6:00 p.m.	—	65	—	35	n/a	37,980	Raymond Keyes Assoc.
144	Manalapan, NJ	Jul. 1990	176	3:30–6:15 p.m.	44	—	24	32	n/a	69,347	Raymond Keyes Assoc.
549	Natick, MA	Feb. 1989	n/a	4:45–5:45 p.m.	26	—	41	33	n/a	48,782	Raymond Keyes Assoc.

Average Pass-By Trip Percentage: 34

Chose 35%

Figure 5.5 Shopping Center (820)

Average Pass-By Trip Percentage vs: **1,000 Sq. Feet Gross Leasable Area**
On a: **Weekday, p.m. Peak Period**
Number of Studies: 100
Average 1,000 Sq. Feet GLA: 329

Data Plot

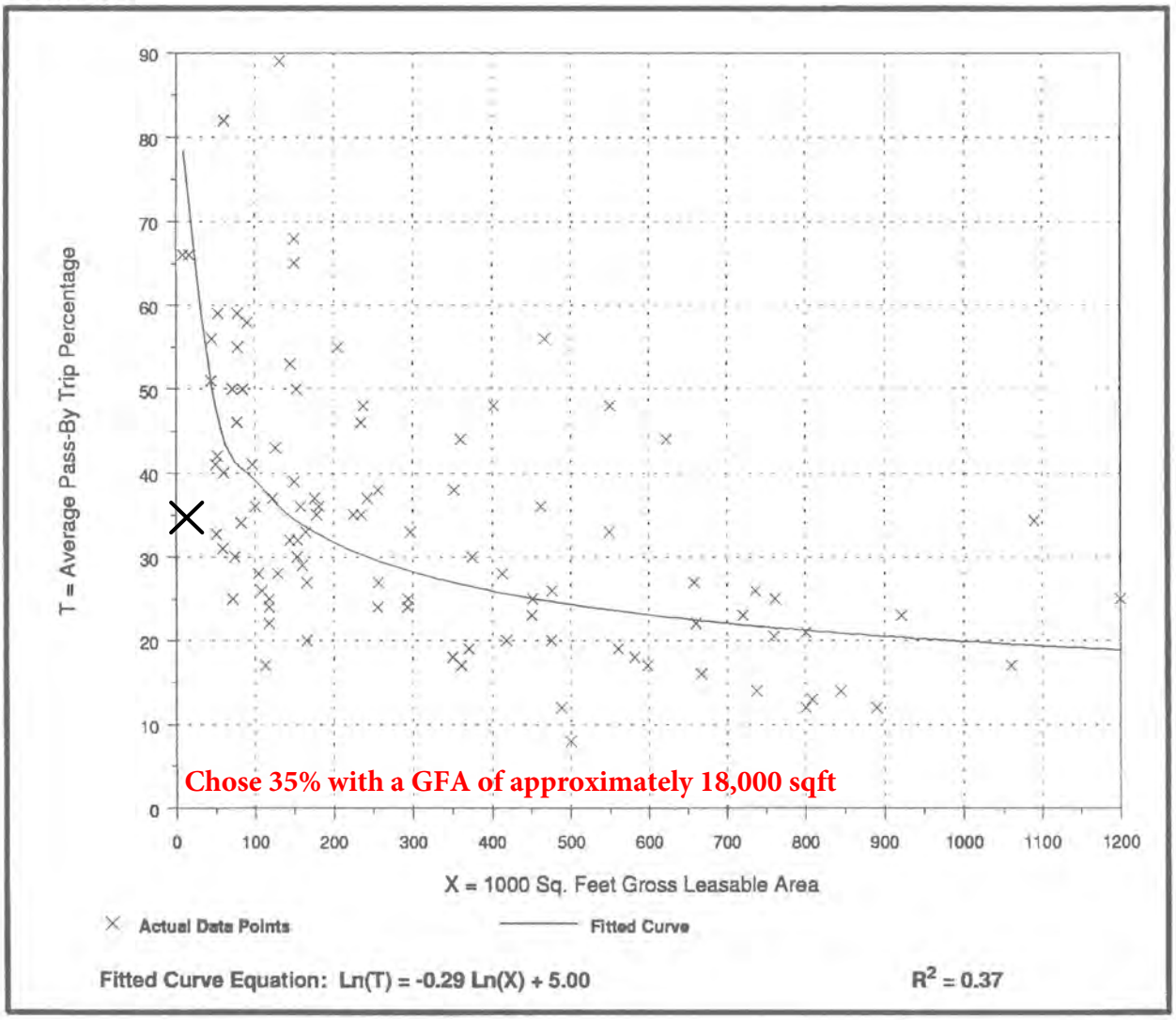
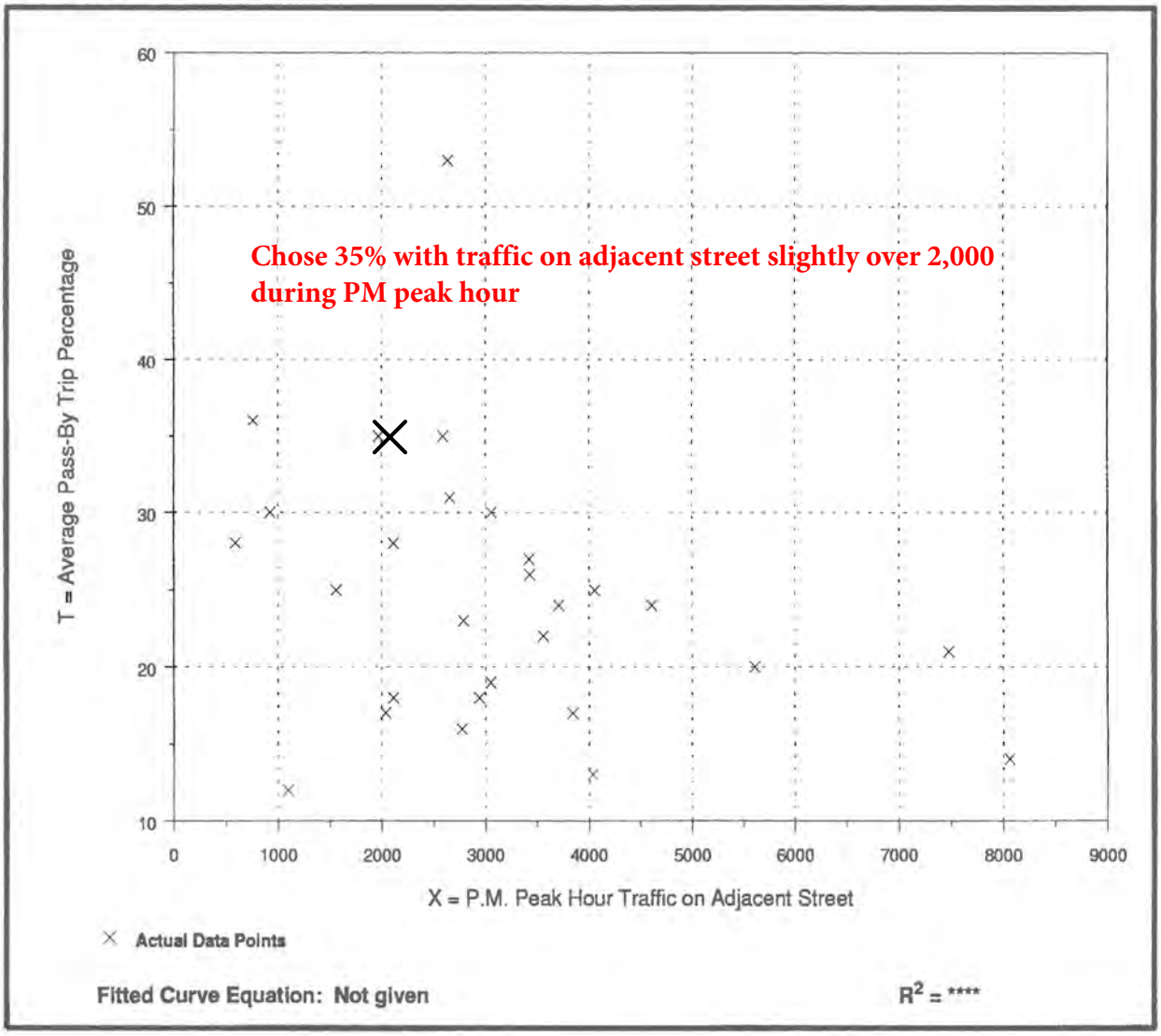


Figure 5.6 Shopping Center (820)

Average Pass-By Trip Percentage vs: **P.M. Peak Hour Traffic on Adjacent Street**
On a: **Weekday, p.m. Peak Period**
Number of Studies: 28
Average P.M. Peak Hr. Traf. on Adj. Street: 3,122

Data Plot



APPENDIX E

PROJECTED BACKGROUND GROWTH

Sandcastle/Baseline
8 hrs

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2010	Friday June 11, 2010	0	0	776	795	5658	6117	5810	5332	24488
2011	Tuesday July 19, 2011	0	0	984	790	5483	5285	4773	5165	22480
2012	Wednesday June 27, 2012	0	0	857	802	5868	6221	5828	5530	25106
2015	Wednesday Feb 18, 2015	0	0	852	809	5590	5710	5350	5273	23584
2017	Thursday Jan 12, 2017	0	0	888	800	5780	6430	6041	5479	25418

North Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2010				24488				
2011				22480				-8.2%
2012				25106				11.7%
2015				23584				-6.1%
2017				25418				7.8%

Regression Estimate 2010
Regression Estimate 2017
Average Annual Change

West Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2010	5810	5332	11142	24488				
2011	4773	5165	9938	22480	-17.8%	-3.1%	-10.8%	-8.2%
2012	5828	5530	11358	25106	22.1%	7.1%	14.3%	11.7%
2015	5350	5273	10623	23584	-8.2%	-4.6%	-6.5%	-6.1%
2017	6041	5479	11520	25418	12.9%	3.9%	8.4%	7.8%

Regression Estimate	2010	5379	5302	10681
Regression Estimate	2017	5803	5427	11230
Average Annual Change		**1.09%**	**0.33%**	**0.72%**

East Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2010	6117	5658	11775	24488				
2011	5285	5483	10768	22480	-13.6%	-3.1%	-8.6%	-8.2%
2012	6221	5868	12089	25106	17.7%	7.0%	12.3%	11.7%
2015	5710	5590	11300	23584	-8.2%	-4.7%	-6.5%	-6.1%
2017	6430	5780	12210	25418	12.6%	3.4%	8.1%	7.8%

Regression Estimate	2010	5776	5632	11409
Regression Estimate	2017	6188	5734	11921
Average Annual Change		**0.99%**	**0.25%**	**0.63%**

South Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2010	776	795	1571	24488				
2011	984	790	1774	22480	26.8%	-0.6%	12.9%	-8.2%
2012	857	802	1659	25106	-12.9%	1.5%	-6.5%	11.7%
2015	852	809	1661	23584	-0.6%	0.9%	0.1%	-6.1%
2017	888	800	1688	25418	4.2%	-1.1%	1.6%	7.8%

Regression Estimate	2010	862	795	1657
Regression Estimate	2017	884	805	1689
Average Annual Change		**0.35%**	**0.19%**	**0.27%**

Sandcastle/Baseline
AM Peak

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2010	Friday June 11, 2010	0	0	106	70	604	1263	1198	575	3816
2011	Tuesday July 19, 2011	0	0	86	60	492	1152	1116	482	3388
2012	Wednesday June 27, 2012	0	0	108	84	539	1239	1198	522	3690
2015	Wednesday Feb 18, 2015	0	0	105	40	454	1321	1242	440	3602
2017	Thursday Jan 12, 2017	0	0	110	49	485	1480	1405	471	4000

North Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2010				3816				
2011				3388				-11.2%
2012				3690				8.9%
2015				3602				-2.4%
2017				4000				11.0%

Regression Estimate 2010
Regression Estimate 2017
Average Annual Change

West Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2010	1198	575	1773	3816				
2011	1116	482	1598	3388	-6.8%	-16.2%	-9.9%	-11.2%
2012	1198	522	1720	3690	7.3%	8.3%	7.6%	8.9%
2015	1242	440	1682	3602	3.7%	-15.7%	-2.2%	-2.4%
2017	1405	471	1876	4000	13.1%	7.0%	11.5%	11.0%

Regression Estimate	2010	1137	537	1674
Regression Estimate	2017	1359	445	1804
Average Annual Change		**2.59%**	**-2.65%**	**1.08%**

East Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2010	1263	604	1867	3816				
2011	1152	492	1644	3388	-8.8%	-18.5%	-11.9%	-11.2%
2012	1239	539	1778	3690	7.6%	9.6%	8.2%	8.9%
2015	1321	454	1775	3602	6.6%	-15.8%	-0.2%	-2.4%
2017	1480	485	1965	4000	12.0%	6.8%	10.7%	11.0%

Regression Estimate	2010	1182	558	1740
Regression Estimate	2017	1436	458	1893
Average Annual Change		**2.81%**	**-2.79%**	**1.21%**

South Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2010	106	70	176	3816				
2011	86	60	146	3388	-18.9%	-14.3%	-17.0%	-11.2%
2012	108	84	192	3690	25.6%	40.0%	31.5%	8.9%
2015	105	40	145	3602	-2.8%	-52.4%	-24.5%	-2.4%
2017	110	49	159	4000	4.8%	22.5%	9.7%	11.0%

Regression Estimate	2010	98	73	171
Regression Estimate	2017	109	44	153
Average Annual Change		**1.49%**	**-6.83%**	**-1.55%**

Sandcastle/Baseline
PM Peak

Year	Date	North Leg		South Leg		East Leg		West Leg		Total
		SB	NB	NB	SB	WB	EB	EB	WB	
2010	Friday June 11, 2010	0	0	99	107	1047	704	675	1010	3642
2011	Tuesday July 19, 2011	0	0	184	140	991	602	505	938	3360
2012	Wednesday June 27, 2012	0	0	105	135	1123	725	692	1060	3840
2015	Wednesday Feb 18, 2015	0	0	113	130	1160	650	621	1114	3788
2017	Thursday Jan 12, 2017	0	0	120	135	1115	700	655	1055	3780

North Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2010				3642				
2011				3360				-7.7%
2012				3840				14.3%
2015				3788				-1.4%
2017				3780				-0.2%

Regression Estimate 2010
Regression Estimate 2017
Average Annual Change

West Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2010	675	1010	1685	3642				
2011	505	938	1443	3360	-25.2%	-7.1%	-14.4%	-7.7%
2012	692	1060	1752	3840	37.0%	13.0%	21.4%	14.3%
2015	621	1114	1735	3788	-10.3%	5.1%	-1.0%	-1.4%
2017	655	1055	1710	3780	5.5%	-5.3%	-1.4%	-0.2%

Regression Estimate	2010	618	993	1611
Regression Estimate	2017	645	1092	1738
Average Annual Change		**0.63%**	**1.37%**	**1.09%**

East Leg

Year	Counts				% Change			
	EB	*WB*	*EB+WB*	*INT*	*EB*	*WB*	*EB+WB*	*INT*
2010	704	1047	1751	3642				
2011	602	991	1593	3360	-14.5%	-5.3%	-9.0%	-7.7%
2012	725	1123	1848	3840	20.4%	13.3%	16.0%	14.3%
2015	650	1160	1810	3788	-10.3%	3.3%	-2.1%	-1.4%
2017	700	1115	1815	3780	7.7%	-3.9%	0.3%	-0.2%

Regression Estimate	2010	671	1040	1711
Regression Estimate	2017	683	1150	1833
Average Annual Change		**0.26%**	**1.45%**	**0.99%**

South Leg

Year	Counts				% Change			
	NB	*SB*	*NB+SB*	*INT*	*NB*	*SB*	*NB+SB*	*INT*
2010	99	107	206	3642				
2011	184	140	324	3360	85.9%	30.8%	57.3%	-7.7%
2012	105	135	240	3840	-42.9%	-3.6%	-25.9%	14.3%
2015	113	130	243	3788	7.6%	-3.7%	1.3%	-1.4%
2017	120	135	255	3780	6.2%	3.8%	4.9%	-0.2%

Regression Estimate	2010	130	124	254
Regression Estimate	2017	117	137	254
Average Annual Change		**-1.52%**	**1.46%**	**0.00%**

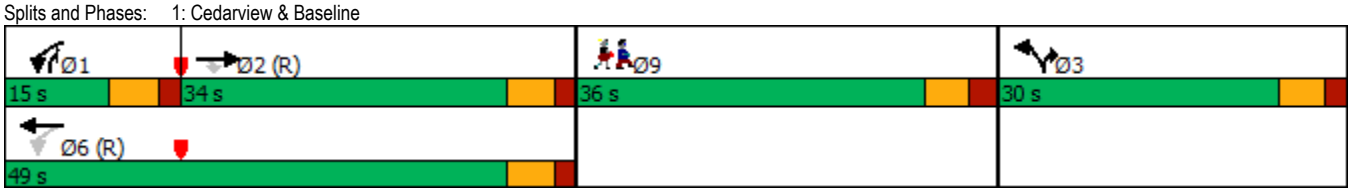
APPENDIX F

SYNCHRO ANALYSIS: EXISTING CONDITIONS

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1050	45	73	387	140	393	
Future Volume (vph)	1050	45	73	387	140	393	
Satd. Flow (prot)	3390	1517	1695	3390	1695	1517	
Flt Permitted			0.178		0.950		
Satd. Flow (perm)	3390	1476	318	3390	1695	1517	
Satd. Flow (RTOR)		37				437	
Lane Group Flow (vph)	1167	50	81	430	156	437	
Turn Type	NA	Perm	pm+pt	NA	Prot	pt+ov	
Protected Phases	2		1	6	3	3 1	9
Permitted Phases		2	6				
Detector Phase	2	2	1	6	3	3 1	
Switch Phase							
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0		10.0
Minimum Split (s)	27.4	27.4	11.2	27.4	16.0		36.0
Total Split (s)	34.0	34.0	15.0	49.0	30.0		36.0
Total Split (%)	29.6%	29.6%	13.0%	42.6%	26.1%		31%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.0		3.7
All-Red Time (s)	1.9	1.9	1.9	1.9	2.0		2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.0		
Lead/Lag	Lag	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes				
Recall Mode	C-Min	C-Min	None	C-Min	None		None
Act Effct Green (s)	73.7	73.7	86.9	86.9	16.0	29.2	
Actuated g/C Ratio	0.64	0.64	0.76	0.76	0.14	0.25	
v/c Ratio	0.54	0.05	0.25	0.17	0.66	0.61	
Control Delay	13.3	4.5	6.2	4.5	59.7	6.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	13.3	4.5	6.2	4.5	59.7	6.9	
LOS	B	A	A	A	E	A	
Approach Delay	12.9			4.8	20.8		
Approach LOS	B			A	C		
Queue Length 50th (m)	69.3	1.0	4.0	12.0	33.8	0.0	
Queue Length 95th (m)	106.8	6.5	9.8	21.3	52.0	22.2	
Internal Link Dist (m)	136.9			418.5	239.0		
Turn Bay Length (m)			100.0			30.0	
Base Capacity (vph)	2172	959	346	2560	353	719	
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	0.54	0.05	0.23	0.17	0.44	0.61	

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 30 (26%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 105	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 13.2	Intersection LOS: B
Intersection Capacity Utilization 66.5%	ICU Level of Service C
Analysis Period (min) 15	

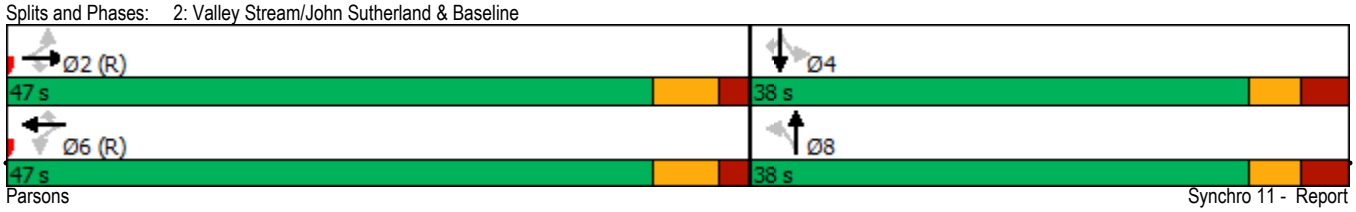
Splits and Phases: 1: Cedarview & Baseline



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	1329	15	12	387	106	34	2	15	55	4	40
Future Volume (vph)	103	1329	15	12	387	106	34	2	15	55	4	40
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	0	1647	0	0	1704	1517
Flt Permitted	0.502			0.139				0.760			0.698	
Satd. Flow (perm)	893	3390	1479	248	3390	1475	0	1292	0	0	1235	1496
Satd. Flow (RTOR)			45			118		16				44
Lane Group Flow (vph)	114	1477	17	13	430	118	0	57	0	0	65	44
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		4
Detector Phase	2	2	2	6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	32.2	32.2	32.2	32.2	32.2	32.2	37.5	37.5		37.5	37.5	37.5
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	38.0	38.0		38.0	38.0	38.0
Total Split (%)	55.3%	55.3%	55.3%	55.3%	55.3%	55.3%	44.7%	44.7%		44.7%	44.7%	44.7%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2	4.2	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2		6.5			6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None		None	None	None
Act Effct Green (s)	62.4	62.4	62.4	62.4	62.4	62.4		14.5			14.5	14.5
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73	0.73		0.17			0.17	0.17
v/c Ratio	0.17	0.59	0.02	0.07	0.17	0.11		0.24			0.31	0.15
Control Delay	8.0	10.5	0.7	9.6	6.2	2.3		23.4			32.1	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	8.0	10.5	0.7	9.6	6.2	2.3		23.4			32.1	8.6
LOS	A	B	A	A	A	A		C			C	A
Approach Delay		10.3			5.4			23.4			22.6	
Approach LOS		B			A			C			C	
Queue Length 50th (m)	4.6	48.6	0.0	0.5	9.1	0.0		6.2			10.0	0.0
Queue Length 95th (m)	21.2	#157.6	0.8	4.6	29.7	7.9		11.9			15.5	6.4
Internal Link Dist (m)		418.5			413.1			206.5			123.4	
Turn Bay Length (m)	50.0		140.0	50.0		50.0						40.0
Base Capacity (vph)	655	2487	1097	181	2487	1113		488			457	582
Starvation Cap Reductn	0	0	0	0	0	0		0			0	0
Spillback Cap Reductn	0	0	0	0	0	0		0			0	0
Storage Cap Reductn	0	0	0	0	0	0		0			0	0
Reduced v/c Ratio	0.17	0.59	0.02	0.07	0.17	0.11		0.12			0.14	0.08

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 37 (44%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 10.0	Intersection LOS: A
Intersection Capacity Utilization 78.1%	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.	

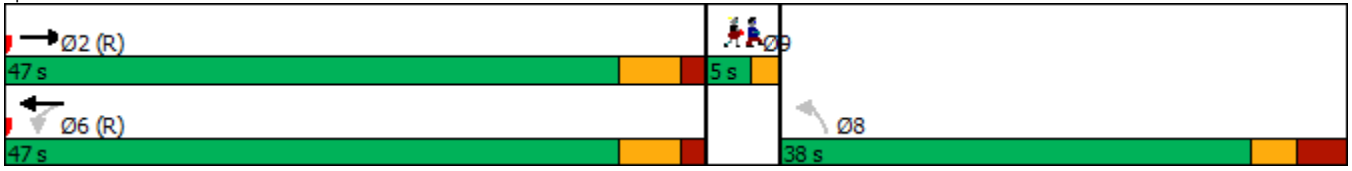
Splits and Phases: 2: Valley Stream/John Sutherland & Baseline



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1385	19	30	455	15	95	
Future Volume (vph)	1385	19	30	455	15	95	
Satd. Flow (prot)	3382	0	1695	3390	1566	0	
Flt Permitted			0.119		0.993		
Satd. Flow (perm)	3382	0	212	3390	1566	0	
Satd. Flow (RTOR)	2				84		
Lane Group Flow (vph)	1560	0	33	506	123	0	
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6			9
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0		1.0
Minimum Split (s)	23.9		23.9	23.9	35.5		5.0
Total Split (s)	47.0		47.0	47.0	38.0		5.0
Total Split (%)	52.2%		52.2%	52.2%	42.2%		6%
Yellow Time (s)	4.2		4.2	4.2	3.0		2.0
All-Red Time (s)	1.7		1.7	1.7	3.5		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.9		5.9	5.9	6.5		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Min		C-Min	C-Min	None		None
Act Effct Green (s)	64.4		64.4	64.4	12.2		
Actuated g/C Ratio	0.72		0.72	0.72	0.14		
v/c Ratio	0.64		0.22	0.21	0.43		
Control Delay	9.6		11.1	5.3	17.9		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	9.6		11.1	5.3	17.9		
LOS	A		B	A	B		
Approach Delay	9.6			5.7	17.9		
Approach LOS	A			A	B		
Queue Length 50th (m)	52.7		1.4	10.8	6.3		
Queue Length 95th (m)	134.2		9.5	29.8	18.9		
Internal Link Dist (m)	413.1			132.4	26.3		
Turn Bay Length (m)			70.0				
Base Capacity (vph)	2420		151	2425	602		
Starvation Cap Reductn	0		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.64		0.22	0.21	0.20		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 55 (61%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 9.1	Intersection LOS: A
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

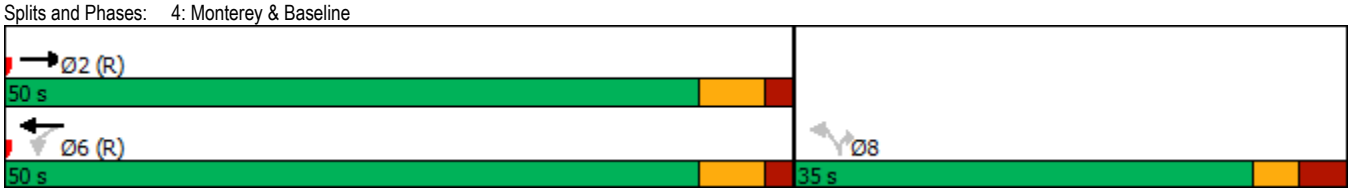
Splits and Phases: 3: Sandcastle & Baseline

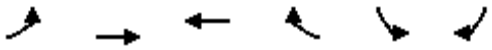


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1302	28	49	557	25	84
Future Volume (vph)	1302	28	49	557	25	84
Satd. Flow (prot)	3377	0	1695	3390	1695	1517
Flt Permitted			0.141		0.950	
Satd. Flow (perm)	3377	0	251	3390	1691	1517
Satd. Flow (RTOR)	4					23
Lane Group Flow (vph)	1478	0	54	619	28	93
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	34.1		34.1	34.1	35.1	35.1
Total Split (s)	50.0		50.0	50.0	35.0	35.0
Total Split (%)	58.8%		58.8%	58.8%	41.2%	41.2%
Yellow Time (s)	4.2		4.2	4.2	3.0	3.0
All-Red Time (s)	1.9		1.9	1.9	3.1	3.1
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min		C-Min	C-Min	None	None
Act Effct Green (s)	63.2		63.2	63.2	14.0	14.0
Actuated g/C Ratio	0.74		0.74	0.74	0.16	0.16
v/c Ratio	0.59		0.29	0.25	0.10	0.35
Control Delay	9.5		19.8	8.8	27.5	25.7
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	9.5		19.8	8.8	27.5	25.7
LOS	A		B	A	C	C
Approach Delay	9.5			9.7	26.1	
Approach LOS	A			A	C	
Queue Length 50th (m)	47.2		2.2	13.0	4.2	10.7
Queue Length 95th (m)	133.5		20.8	65.2	8.5	18.0
Internal Link Dist (m)	103.0			384.9	183.4	
Turn Bay Length (m)			55.0		30.0	
Base Capacity (vph)	2513		186	2521	574	530
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	0.59		0.29	0.25	0.05	0.18

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 65 (76%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 10.5	Intersection LOS: B
Intersection Capacity Utilization 61.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 4: Monterey & Baseline

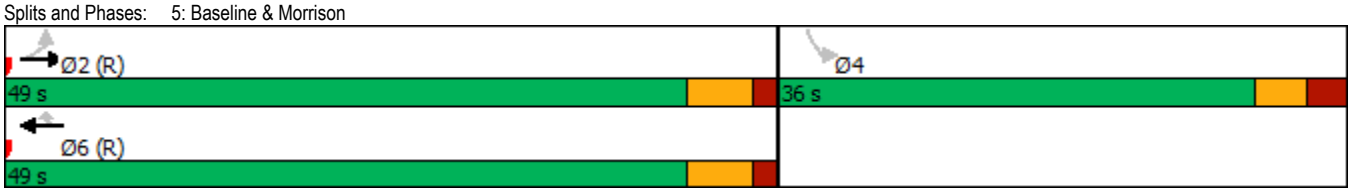




Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	241	1218	442	63	69	37
Future Volume (vph)	241	1218	442	63	69	37
Satd. Flow (prot)	1695	3390	3390	1517	1638	0
Flt Permitted	0.473				0.968	
Satd. Flow (perm)	842	3390	3390	1472	1635	0
Satd. Flow (RTOR)				70	35	
Lane Group Flow (vph)	268	1353	491	70	118	0
Turn Type	Perm	NA	NA	Perm	Perm	
Protected Phases		2	6			
Permitted Phases	2			6	4	
Detector Phase	2	2	6	6	4	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	30.4	30.4	30.4	30.4	36.5	
Total Split (s)	49.0	49.0	49.0	49.0	36.0	
Total Split (%)	57.6%	57.6%	57.6%	57.6%	42.4%	
Yellow Time (s)	4.2	4.2	4.2	4.2	3.3	
All-Red Time (s)	1.7	1.7	1.7	1.7	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	5.9	5.9	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	63.1	63.1	63.1	63.1	14.3	
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.17	
v/c Ratio	0.43	0.54	0.19	0.06	0.39	
Control Delay	7.0	5.9	5.8	2.6	24.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.0	5.9	5.8	2.6	24.1	
LOS	A	A	A	A	C	
Approach Delay		6.1	5.4		24.1	
Approach LOS		A	A		C	
Queue Length 50th (m)	12.0	58.8	10.1	0.0	12.8	
Queue Length 95th (m)	64.6	119.5	32.4	5.9	20.4	
Internal Link Dist (m)		384.9	355.9		174.0	
Turn Bay Length (m)	55.0			160.0		
Base Capacity (vph)	625	2518	2518	1111	599	
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	0.43	0.54	0.19	0.06	0.20	

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 11 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 6.8	Intersection LOS: A
Intersection Capacity Utilization 58.3%	ICU Level of Service B
Analysis Period (min) 15	

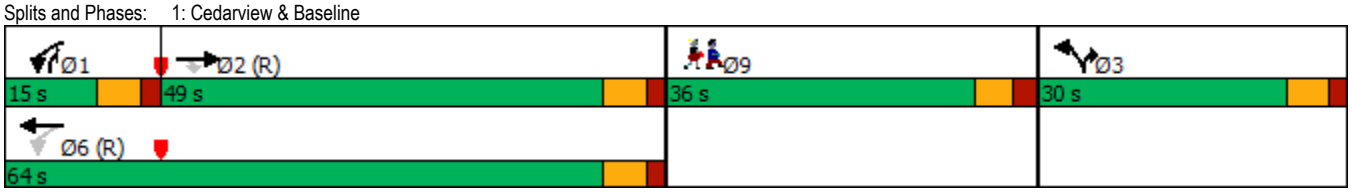
Splits and Phases: 5: Baseline & Morrison



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	554	149	293	806	101	135	
Future Volume (vph)	554	149	293	806	101	135	
Satd. Flow (prot)	3390	1517	1695	3390	1695	1517	
Flt Permitted			0.343		0.950		
Satd. Flow (perm)	3390	1475	612	3390	1695	1517	
Satd. Flow (RTOR)		166				150	
Lane Group Flow (vph)	616	166	326	896	112	150	
Turn Type	NA	Perm	pm+pt	NA	Prot	pt+ov	
Protected Phases	2		1	6	3	3 1	9
Permitted Phases		2	6				
Detector Phase	2	2	1	6	3	3 1	
Switch Phase							
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0		10.0
Minimum Split (s)	27.4	27.4	11.2	27.4	16.0		36.0
Total Split (s)	49.0	49.0	15.0	64.0	30.0		36.0
Total Split (%)	37.7%	37.7%	11.5%	49.2%	23.1%		28%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.0		3.7
All-Red Time (s)	1.9	1.9	1.9	1.9	2.0		2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.0		
Lead/Lag	Lag	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes				
Recall Mode	C-Min	C-Min	None	C-Min	None		None
Act Effct Green (s)	68.5	68.5	103.7	103.7	14.2	49.4	
Actuated g/C Ratio	0.53	0.53	0.80	0.80	0.11	0.38	
v/c Ratio	0.34	0.19	0.45	0.33	0.61	0.22	
Control Delay	18.6	2.9	5.6	4.2	68.6	4.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.6	2.9	5.6	4.2	68.6	4.7	
LOS	B	A	A	A	E	A	
Approach Delay	15.2			4.6	32.0		
Approach LOS	B			A	C		
Queue Length 50th (m)	44.9	0.0	17.0	27.1	27.9	0.0	
Queue Length 95th (m)	61.9	10.9	31.2	42.2	45.7	12.8	
Internal Link Dist (m)	136.9			418.5	239.0		
Turn Bay Length (m)			100.0			30.0	
Base Capacity (vph)	1786	855	730	2704	312	666	
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	0.34	0.19	0.45	0.33	0.36	0.23	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 30 (23%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 11.4	Intersection LOS: B
Intersection Capacity Utilization 58.1%	ICU Level of Service B
Analysis Period (min) 15	

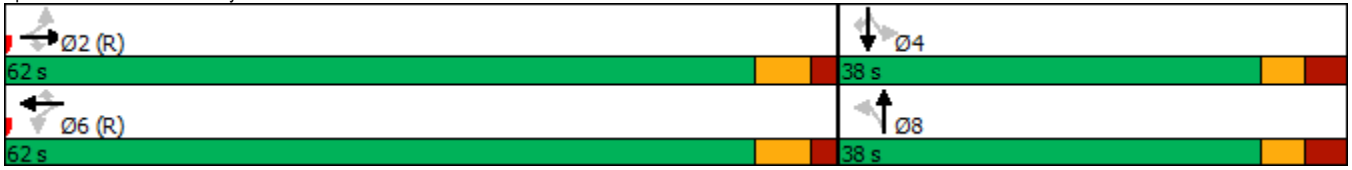
Splits and Phases: 1: Cedarview & Baseline



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	574	46	17	970	66	26	3	19	89	6	125
Future Volume (vph)	40	574	46	17	970	66	26	3	19	89	6	125
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	0	1625	0	0	1704	1517
Flt Permitted	0.238			0.407				0.790			0.702	
Satd. Flow (perm)	423	3390	1473	724	3390	1457	0	1313	0	0	1234	1484
Satd. Flow (RTOR)			51			73		21				79
Lane Group Flow (vph)	44	638	51	19	1078	73	0	53	0	0	106	139
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		4
Detector Phase	2	2	2	6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	32.2	32.2	32.2	32.2	32.2	32.2	37.5	37.5		37.5	37.5	37.5
Total Split (s)	62.0	62.0	62.0	62.0	62.0	62.0	38.0	38.0		38.0	38.0	38.0
Total Split (%)	62.0%	62.0%	62.0%	62.0%	62.0%	62.0%	38.0%	38.0%		38.0%	38.0%	38.0%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2	4.2	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2		6.5			6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None		None	None	None
Act Effct Green (s)	70.7	70.7	70.7	70.7	70.7	70.7		16.6			16.6	16.6
Actuated g/C Ratio	0.71	0.71	0.71	0.71	0.71	0.71		0.17			0.17	0.17
v/c Ratio	0.15	0.27	0.05	0.04	0.45	0.07		0.23			0.52	0.45
Control Delay	8.7	6.7	2.6	7.2	8.2	2.3		23.9			45.2	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	8.7	6.7	2.6	7.2	8.2	2.3		23.9			45.2	20.3
LOS	A	A	A	A	A	A		C			D	C
Approach Delay		6.5			7.8			23.9			31.1	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	2.1	18.0	0.0	0.9	36.2	0.0		5.5			19.6	10.6
Queue Length 95th (m)	10.2	43.7	4.8	4.8	84.3	5.7		13.2			29.3	22.6
Internal Link Dist (m)		418.5			413.1			206.5			123.4	
Turn Bay Length (m)	50.0		140.0	50.0		50.0						40.0
Base Capacity (vph)	299	2398	1056	512	2398	1051		427			388	521
Starvation Cap Reductn	0	0	0	0	0	0		0			0	0
Spillback Cap Reductn	0	0	0	0	0	0		0			0	0
Storage Cap Reductn	0	0	0	0	0	0		0			0	0
Reduced v/c Ratio	0.15	0.27	0.05	0.04	0.45	0.07		0.12			0.27	0.27

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 37 (37%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.52	
Intersection Signal Delay: 10.4	Intersection LOS: B
Intersection Capacity Utilization 74.5%	ICU Level of Service D
Analysis Period (min) 15	

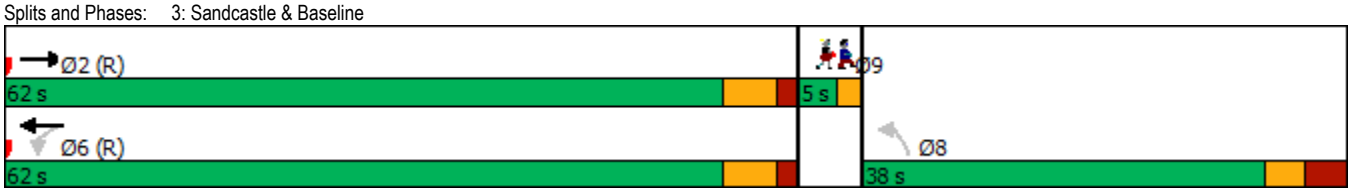
Splits and Phases: 2: Valley Stream/John Sutherland & Baseline



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	622	33	102	1013	42	78	
Future Volume (vph)	622	33	102	1013	42	78	
Satd. Flow (prot)	3359	0	1695	3390	1579	0	
Flt Permitted			0.367		0.983		
Satd. Flow (perm)	3359	0	655	3390	1570	0	
Satd. Flow (RTOR)	8				87		
Lane Group Flow (vph)	728	0	113	1126	134	0	
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6			9
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0		1.0
Minimum Split (s)	23.9		23.9	23.9	35.5		5.0
Total Split (s)	62.0		62.0	62.0	38.0		5.0
Total Split (%)	59.0%		59.0%	59.0%	36.2%		5%
Yellow Time (s)	4.2		4.2	4.2	3.0		2.0
All-Red Time (s)	1.7		1.7	1.7	3.5		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.9		5.9	5.9	6.5		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Min		C-Min	C-Min	None		None
Act Effct Green (s)	78.7		78.7	78.7	12.4		
Actuated g/C Ratio	0.75		0.75	0.75	0.12		
v/c Ratio	0.29		0.23	0.44	0.51		
Control Delay	5.4		6.9	6.6	23.6		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	5.4		6.9	6.6	23.6		
LOS	A		A	A	C		
Approach Delay	5.4			6.6	23.6		
Approach LOS	A			A	C		
Queue Length 50th (m)	16.7		4.8	30.8	9.1		
Queue Length 95th (m)	46.4		20.4	82.2	24.4		
Internal Link Dist (m)	413.1			132.4	26.3		
Turn Bay Length (m)			70.0				
Base Capacity (vph)	2518		490	2539	531		
Starvation Cap Reductn	0		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.29		0.23	0.44	0.25		

Intersection Summary	
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 55 (52%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.51	
Intersection Signal Delay: 7.3	Intersection LOS: A
Intersection Capacity Utilization 52.6%	ICU Level of Service A
Analysis Period (min) 15	

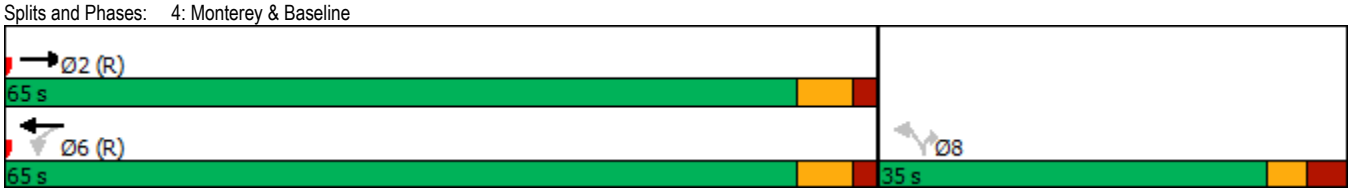
Splits and Phases: 3: Sandcastle & Baseline

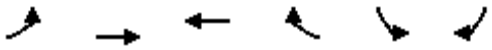


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	689	35	85	1032	28	79
Future Volume (vph)	689	35	85	1032	28	79
Satd. Flow (prot)	3361	0	1695	3390	1695	1517
Flt Permitted			0.342		0.950	
Satd. Flow (perm)	3361	0	608	3390	1690	1482
Satd. Flow (RTOR)	9					88
Lane Group Flow (vph)	805	0	94	1147	31	88
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	34.1		34.1	34.1	35.1	35.1
Total Split (s)	65.0		65.0	65.0	35.0	35.0
Total Split (%)	65.0%		65.0%	65.0%	35.0%	35.0%
Yellow Time (s)	4.2		4.2	4.2	3.0	3.0
All-Red Time (s)	1.9		1.9	1.9	3.1	3.1
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min		C-Min	C-Min	None	None
Act Effct Green (s)	78.4		78.4	78.4	13.8	13.8
Actuated g/C Ratio	0.78		0.78	0.78	0.14	0.14
v/c Ratio	0.31		0.20	0.43	0.13	0.31
Control Delay	5.3		9.4	10.1	35.9	10.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	5.3		9.4	10.1	35.9	10.1
LOS	A		A	B	D	B
Approach Delay	5.3			10.1	16.8	
Approach LOS	A			B	B	
Queue Length 50th (m)	18.7		7.9	63.3	5.6	0.0
Queue Length 95th (m)	53.3		27.4	130.8	11.1	10.8
Internal Link Dist (m)	103.0			384.9	183.4	
Turn Bay Length (m)			55.0		30.0	
Base Capacity (vph)	2638		477	2659	488	490
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	0.31		0.20	0.43	0.06	0.18

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 65 (65%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 60.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 4: Monterey & Baseline

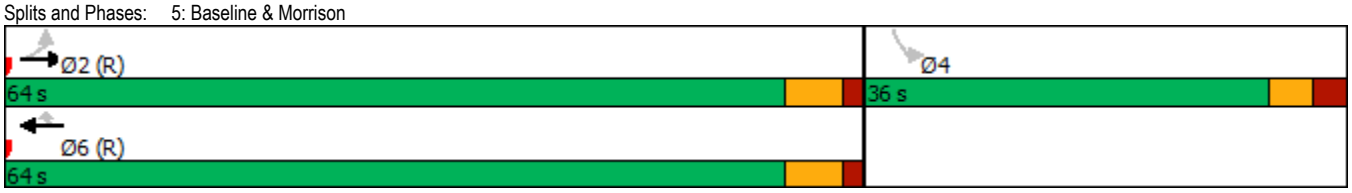




Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	51	750	1138	56	51	117
Future Volume (vph)	51	750	1138	56	51	117
Satd. Flow (prot)	1695	3390	3390	1517	1577	0
Flt Permitted	0.187				0.985	
Satd. Flow (perm)	333	3390	3390	1457	1576	0
Satd. Flow (RTOR)				62	57	
Lane Group Flow (vph)	57	833	1264	62	187	0
Turn Type	Perm	NA	NA	Perm	Perm	
Protected Phases		2	6			
Permitted Phases	2			6	4	
Detector Phase	2	2	6	6	4	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	30.4	30.4	30.4	30.4	36.5	
Total Split (s)	64.0	64.0	64.0	64.0	36.0	
Total Split (%)	64.0%	64.0%	64.0%	64.0%	36.0%	
Yellow Time (s)	4.2	4.2	4.2	4.2	3.3	
All-Red Time (s)	1.7	1.7	1.7	1.7	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	5.9	5.9	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	71.8	71.8	71.8	71.8	16.3	
Actuated g/C Ratio	0.72	0.72	0.72	0.72	0.16	
v/c Ratio	0.24	0.34	0.52	0.06	0.61	
Control Delay	15.5	9.8	8.5	2.2	34.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	15.5	9.8	8.5	2.2	34.1	
LOS	B	A	A	A	C	
Approach Delay		10.2	8.2		34.1	
Approach LOS		B	A		C	
Queue Length 50th (m)	2.9	24.4	44.4	0.0	24.1	
Queue Length 95th (m)	23.4	97.4	101.6	5.1	37.7	
Internal Link Dist (m)		384.9	355.9		174.0	
Turn Bay Length (m)	55.0			160.0		
Base Capacity (vph)	239	2432	2432	1063	512	
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	0.24	0.34	0.52	0.06	0.37	

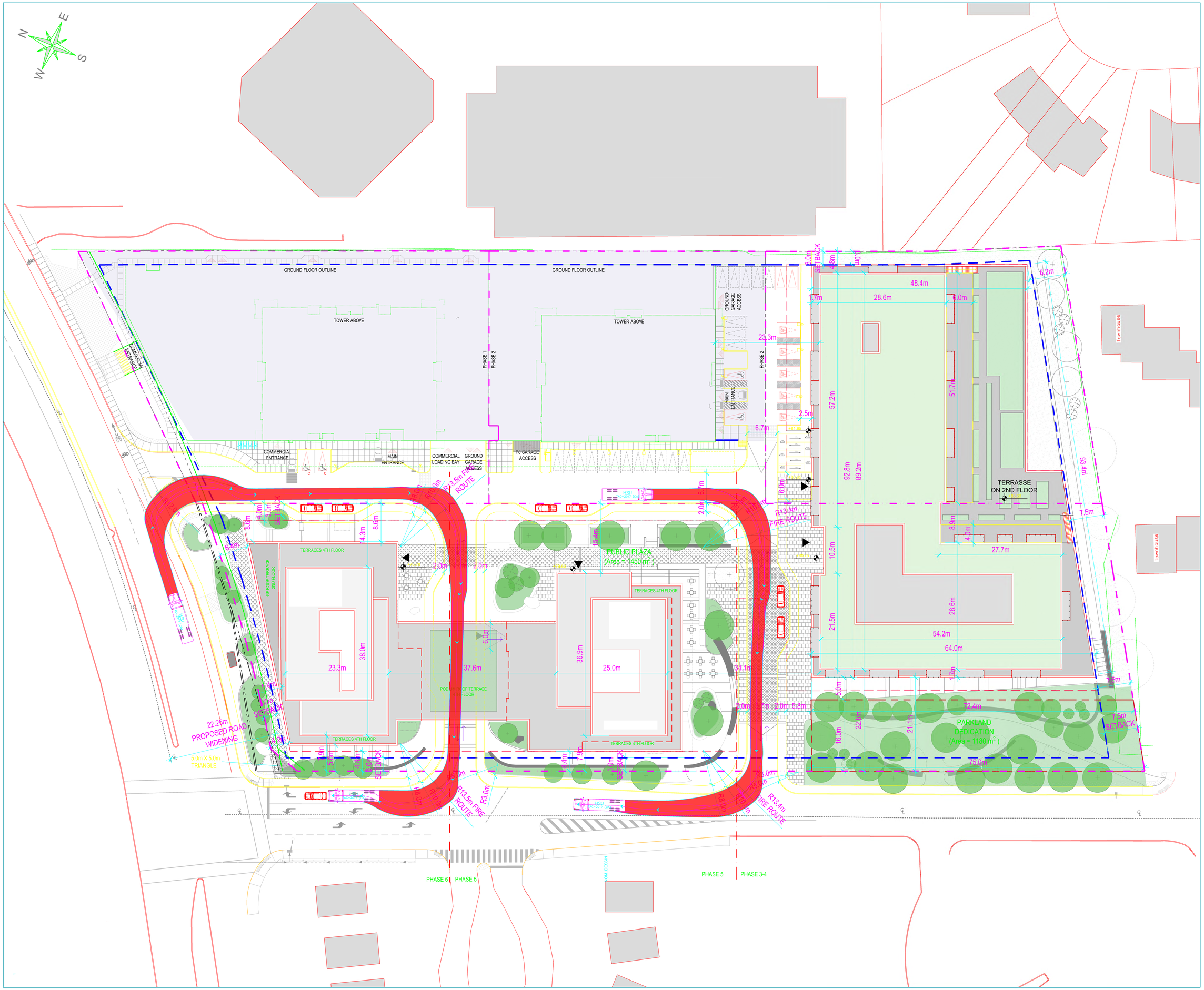
Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 11 (11%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 66.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Baseline & Morrison



APPENDIX G

TRUCK TURNING TEMPLATES



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STRUCTURE Structure

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OUVRAGE Project

BASELINE_456

EMPLACEMENT Location: OTTAWA

NO PROJET No.: 12762

NO	RÉVISION	DATE (aa.mm.jj)
00	COORDINATION	2023-03-07
00	COORDINATION	2023-03-22

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VÉRIFIÉ PAR Checked by: FP

DATE (aa.mm.jj): 24.05.07

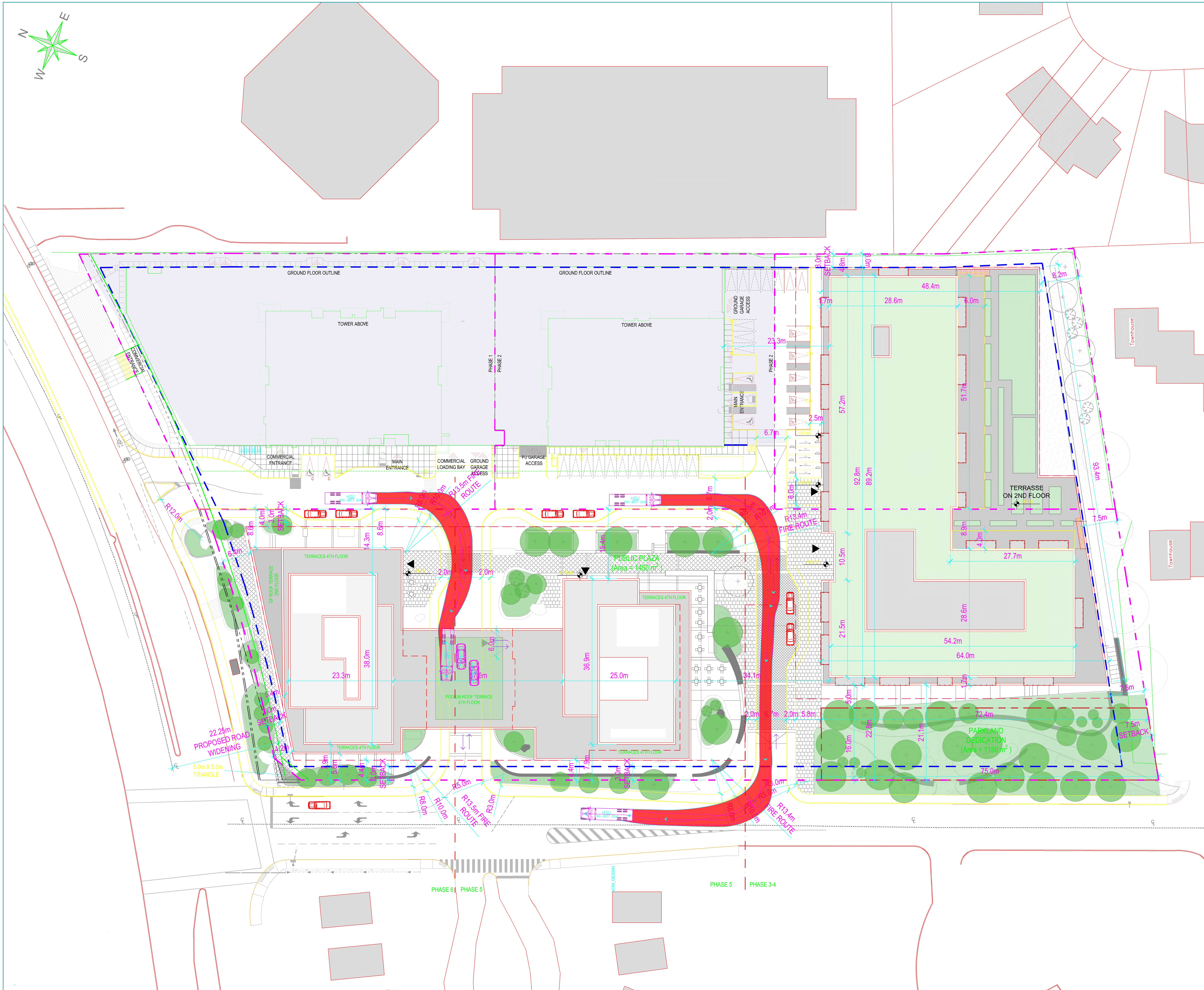
ÉCHELLE Scale: 1:250

TITRE DU DESSIN Drawing Title

SITE_PLAN

RÉVISION Revision: -

NO DESSIN Dwg Number: A100



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OUVRAGE Project
BASELINE_456

EMPLACEMENT Location: OTTAWA
NO PROJET No.: 12762

NO	RÉVISION	DATE (aa.mm.jj)
00	COORDINATION	2023-03-07
00	COORDINATION	2023-03-22

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VÉRIFIÉ PAR Checked by: FP
DATE (aa.mm.jj): 24.05.07
ÉCHELLE Scale: 1:250
TITRE DU DESSIN Drawing Title: SITE_PLAN
RÉVISION Revision: -
NO. DESSIN Dwg Number: A100

APPENDIX H

MMLOS ANALYSIS: ROAD SEGMENTS

Multi-Modal Level of Service - Segments Form

Consultant	**Parsons**	**Project**	**477915**
Scenario	**2946 Baseline**	**Date**	**23-May-23**
Comments			

SEGMENTS		Street A	Baseline	Sandcastle	Sandcastle	Sandcastle	Section	Mitigation	Section	Section	Section
			Both Sides	West Side	East Side	Future Both Sides	5	6	7	8	9
Pedestrian	Sidewalk Width Boulevard Width	-	≥ 2 m < 0.5	1.5 m 0.5 - 2 m	no sidewalk n/a	≥ 2 m < 0.5		≥ 2 m > 2 m			
	Avg Daily Curb Lane Traffic Volume		> 3000	≤ 3000	≤ 3000	≤ 3000		> 3000			
	Operating Speed On-Street Parking		> 60 km/h no	> 30 to 50 km/h no	> 30 to 50 km/h yes	> 30 to 50 km/h yes		> 60 km/h no			
	Exposure to Traffic PLoS		**F**	**C**	**F**	**B**	**-**	**D**	**-**	**-**	**-**
	Effective Sidewalk Width										
	Pedestrian Volume										
	Crowding PLoS		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Level of Service		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Bicycle	Type of Cycling Facility	**E**	Curbside Bike Lane	Mixed Traffic	Mixed Traffic	Mixed Traffic					
	Number of Travel Lanes		2 ea. dir. (w median)	≤ 2 (no centreline)	≤ 2 (no centreline)	≤ 2 (no centreline)					
	Operating Speed		> 70 km/h	>40 to <50 km/h	>40 to <50 km/h	>40 to <50 km/h					
	# of Lanes & Operating Speed LoS		**E**	**B**	**B**	**B**	**-**	**-**	**-**	**-**	**-**
	Bike Lane (+ Parking Lane) Width		≥1.5 to <1.8 m								
	Bike Lane Width LoS		**B**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Bike Lane Blockages		Rare								
	Blockage LoS		**A**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge					
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	≤ 3 lanes	≤ 3 lanes					
	Sidestreet Operating Speed		>40 to 50 km/h	>40 to 50 km/h	>40 to 50 km/h	>40 to 50 km/h					
	Unsignalized Crossing - Lowest LoS		**B**	**B**	**B**	**B**	**-**	**-**	**-**	**-**	**-**
	Level of Service		**E**	**B**	**B**	**B**	**-**	**-**	**-**	**-**	**-**
Transit	Facility Type	**D**	Mixed Traffic					Segregated ROW			
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8								
	Level of Service		**D**	**-**	**-**	**-**	**-**	**A**	**-**	**-**	**-**
Truck	Truck Lane Width	**A**	≤ 3.5 m								
	Travel Lanes per Direction		> 1								
	Level of Service		**A**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

APPENDIX I

TDM CHECKLIST

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	☑ no parking between front door and street
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☑ buildings near sidewalk
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☑ modern design building
	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)*	☑ sidewalks connect to existing bus stops on Baseline Road
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)*	☑ sidewalks connect building entrance to existing facilities connecting to transit

		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)*	☑ sidewalks built to city standards.
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)*	☑ sidewalks built to city standards.
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)*	☑ sidewalks connect building entrance to existing facilities connecting to transit
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	☑ refer to comment above
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	☑ existing street lighting and bus shelter
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	☑ refer to landscape plan
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)	☑ signage will be added

		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)*	☑ mostly located indoors in sheltered secure area
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)*	☑ exceeds minimum
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)*	☑ meets bylaw
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)*	☑ meets bylaw
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	☐ shelter and lighting already exist on Baseline Road
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	☑ drop off layby on east side of Tower 6
	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)*	☑ carshare proposed and being investigated
	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	☑ bikeshare proposed and being investigated
	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	☑ less provided and variance 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	☑ visitor and resident parking separated
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)*	☑ shared parking provisions proposed
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)*	☑ lockers and bike storage proposed. Car parking numbers reduced from minimum by-law
	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)	☑ visitor and resident parking separated, with commercial located outdoors

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	☑

TDM-Supportive Development Design and Infrastructure Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

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: *Non-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: *Non-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: *Non-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 commuter cyclists (assuming the cycling mode share target is met), plus the expected peak number of customer/visitor cyclists	☑
BETTER	2.1.5	Provide bicycle parking spaces equivalent to the expected number of commuter and customer/visitor cyclists, plus an additional buffer (e.g. 25 percent extra) to encourage other cyclists and ensure adequate capacity in peak cycling season	☐
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single office 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 the expected number of commuter cyclists (assuming the cycling mode share target is met)	☑
	2.3	**Shower & change facilities**	
BASIC	2.3.1	Provide shower and change facilities for the use of active commuters	☐
BETTER	2.3.2	In addition to shower and change facilities, provide dedicated lockers, grooming stations, drying racks and laundry facilities for the use of active commuters	☐
	2.4	**Bicycle repair station**	
BETTER	2.4.1	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)	☐

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	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	☐
	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	☑
	4.2	**Carpool parking**	
BASIC	4.2.1	Provide signed parking spaces for carpools in a priority location close to a major building entrance, sufficient in number to accommodate the mode share target for carpools	☐
BETTER	4.2.2	At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces *(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	☐

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	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	☑ variance applied
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	Separate short-term and long-term parking areas using signage or physical barriers, to permit access controls and simplify enforcement (i.e. to discourage employees from parking in visitor spaces, and vice versa)	☑
	7.	**OTHER**	
	7.1	**On-site amenities to minimize off-site trips**	
BETTER	7.1.1	Provide on-site amenities to minimize mid-day or mid-commute errands	☑ daycare envisioned in Tower 4

TDM Measures Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

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: *Non-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	☑
	2.2	**Bicycle skills training**	
		Commuter travel	
BETTER ★	2.2.1	Offer on-site cycling courses for commuters, or subsidize off-site courses	☑
	2.3	**Valet bike parking**	
		Visitor travel	
BETTER	2.3.1	Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games)	☐

			TDM measures: *Non-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	☑
BASIC		3.1.2	Provide online links to OC Transpo and STO information	☑
BETTER		3.1.3	Provide real-time arrival information display at entrances	☐
		3.2	**Transit fare incentives**	
			Commuter travel	
BETTER		3.2.1	Offer preloaded PRESTO cards to encourage commuters to use transit	☑
BETTER	★	3.2.2	Subsidize or reimburse monthly transit pass purchases by employees	☐
			Visitor travel	
BETTER		3.2.3	Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	☐
		3.3	**Enhanced public transit service**	
			Commuter travel	
BETTER		3.3.1	Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	☐
			Visitor travel	
BETTER		3.3.2	Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	☐
		3.4	**Private transit service**	
			Commuter travel	
BETTER		3.4.1	Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)	☐
			Visitor travel	
BETTER		3.4.2	Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games)	☐

		TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		4. RIDESHARING	
		4.1 Ridematching service	
		Commuter travel	
BASIC	★ 4.1.1	Provide a dedicated ridematching portal at OttawaRideMatch.com	☐
		4.2 Carpool parking price incentives	
		Commuter travel	
BETTER	4.2.1	Provide discounts on parking costs for registered carpools	☐
		4.3 Vanpool service	
		Commuter travel	
BETTER	4.3.1	Provide a vanpooling service for long-distance commuters	☐
		5. CARSHARING & BIKESHARING	
		5.1 Bikeshare stations & memberships	
BETTER	5.1.1	Contract with provider to install on-site bikeshare station for use by commuters and visitors	☑
		Commuter travel	
BETTER	5.1.2	Provide employees with bikeshare memberships for local business travel	☑
		5.2 Carshare vehicles & memberships	
		Commuter travel	
BETTER	5.2.1	Contract with provider to install on-site carshare vehicles and promote their use by tenants	☑
BETTER	5.2.2	Provide employees with carshare memberships for local business travel	☐
		6. PARKING	
		6.1 Priced parking	
		Commuter travel	
BASIC	★ 6.1.1	Charge for long-term parking (daily, weekly, monthly)	☐
BASIC	6.1.2	Unbundle parking cost from lease rates at multi-tenant sites	☑
		Visitor travel	
BETTER	6.1.3	Charge for short-term parking (hourly)	☐

		TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		7. TDM MARKETING & COMMUNICATIONS	
		7.1 Multimodal travel information	
		Commuter travel	
BASIC	★	7.1.1 Provide a multimodal travel option information package to new/relocating employees and students	☑
		Visitor travel	
BETTER	★	7.1.2 Include multimodal travel option information in invitations or advertising that attract visitors or customers (e.g. for festivals, concerts, games)	☐
		7.2 Personalized trip planning	
		Commuter travel	
BETTER	★	7.2.1 Offer personalized trip planning to new/relocating employees	☑
		7.3 Promotions	
		Commuter travel	
BETTER		7.3.1 Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes	☐
		8. OTHER INCENTIVES & AMENITIES	
		8.1 Emergency ride home	
		Commuter travel	
BETTER	★	8.1.1 Provide emergency ride home service to non-driving commuters	☐
		8.2 Alternative work arrangements	
		Commuter travel	
BASIC	★	8.2.1 Encourage flexible work hours	☐
BETTER		8.2.2 Encourage compressed workweeks	☐
BETTER	★	8.2.3 Encourage telework	☐
		8.3 Local business travel options	
		Commuter travel	
BASIC	★	8.3.1 Provide local business travel options that minimize the need for employees to bring a personal car to work	☐
		8.4 Commuter incentives	
		Commuter travel	
BETTER		8.4.1 Offer employees a taxable, mode-neutral commuting allowance	☐
		8.5 On-site amenities	
		Commuter travel	
BETTER		8.5.1 Provide on-site amenities/services to minimize mid-day or mid-commute errands	☐

APPENDIX J

REVIEW OF NETWORK CONCEPT CALCULATIONS

Time	Number of Units	Type of Unit	District
Peak Hour	321	High-Rise	Bayshore/Cedarview

	AM peak			PM peak			AM peak	PM peak
	In	Out	Total	In	Out	Total	Mode Share	Mode Share
Auto Driver	15	34	49	29	21	51	40%	40%
Auto Passenger	5	10	15	11	8	19	12%	15%
Transit	17	37	54	26	19	44	38%	33%
Cycling	1	2	2	1	1	2	2%	1%
Pedestrian	4	8	12	10	7	17	8%	11%
Total	41	92	133	77	56	133	100%	100%

APPENDIX K

MMLOS ANALYSIS: INTERSECTIONS

Multi-Modal Level of Service - Intersections Form

Consultant	**Parsons**	**Project**	**477915**
Scenario	**2946 Baseline Road**	**Date**	**23-May-23**
Comments			

Unlocked Rows for Replicating

	INTERSECTIONS	Cedarview/Baseline				Valley Stream/Baseline				Sandcastle/Baseline				Monterey/Basel	
	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH
Pedestrian	Lanes		7	9	8	6	7	8	10+		4	8	8		6
	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	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m
	Conflicting Left Turns		Protected	Protected/ Permissive	No left turn / Prohib.	Permissive	Permissive	Permissive	Permissive		Permissive	Permissive	No left turn / Prohib.		Permissive
	Conflicting Right Turns		Protected	No right turn	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control		Permissive or yield control	No right turn	Permissive or yield control		Permissive or yield control
	Right Turns on Red (RToR) ?		RTOR allowed	RTOR prohibited	RTOR allowed	RTOR allowed	RTOR allowed	RTOR prohibited	RTOR allowed		RTOR allowed	RTOR prohibited	RTOR allowed		RTOR allowed
	Ped Signal Leading Interval?		Yes	Yes	Yes	No	No	No	No		Yes	No	No		No
	Right Turn Channel		No Channel	No Right Turn	Conv'tl without Receiving Lane	Conventional with Receiving Lane	No Channel	Conv'tl without Receiving Lane	No Channel		No Channel	No Right Turn	No Channel		No Channel
	Corner Radius		10-15m	No Right Turn	>25m	15-25m	10-15m	15-25m	10-15m		5-10m	No Right Turn	10-15m		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	Std transverse markings	Std transverse markings		Std transverse markings
	PETSI Score		**19**	**-9**	**-1**	**19**	**4**	**-7**	**-45**		**56**	**6**	**-4**		**21**
	Ped. Exposure to Traffic LoS	-	**F**	**F**	**F**	**F**	**F**	**F**	**#N/A**	-	**D**	**F**	**F**	-	**F**
	Cycle Length														
	Effective Walk Time														
	Average Pedestrian Delay														
	Pedestrian Delay LoS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Level of Service	-	**F**	**F**	**F**	**F**	**F**	**F**	**#N/A**	-	**D**	**F**	**F**	-	**F**
		F				**#N/A**				**F**				**F**	
	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH
Bicycle	Bicycle Lane Arrangement on Approach		Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Pocket Bike Lane	Mixed Traffic	Mixed Traffic	Pocket Bike Lane	Pocket Bike Lane		Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP		Mixed Traffic
	Right Turn Lane Configuration		Not Applicable	Not Applicable	> 50 m Introduced right turn lane	≤ 50 m	≤ 50 m	> 50 m Introduced right turn lane	> 50 m Introduced right turn lane		≤ 50 m	Not Applicable	Not Applicable		≤ 50 m
	Right Turning Speed		Not Applicable	Not Applicable	>25 to 30 km/h	>25 km/h	≤ 25 km/h	>25 to 30 km/h	≤ 25 km/h		≤ 25 km/h	Not Applicable	Not Applicable		≤ 25 km/h
	Cyclist relative to RT motorists	-	**Not Applicable**	**Not Applicable**	**D**	**E**	**D**	**D**	**D**	-	**D**	**Not Applicable**	**Not Applicable**	-	**D**
	Separated or Mixed Traffic	-	**Separated**	**Separated**	**Separated**	**Mixed Traffic**	**Mixed Traffic**	**Separated**	**Separated**	-	**Mixed Traffic**	**Separated**	**Separated**	-	**Mixed Traffic**
	Left Turn Approach		No lane crossed	≥ 2 lanes crossed	No lane crossed	No lane crossed	No lane crossed	≥ 2 lanes crossed	≥ 2 lanes crossed		No lane crossed	≥ 2 lanes crossed	No lane crossed		No lane crossed
	Operating Speed		≥ 60 km/h	≥ 60 km/h	≥ 60 km/h	> 50 to < 60 km/h	> 40 to ≤ 50 km/h	≥ 60 km/h	≥ 60 km/h		> 40 to ≤ 50 km/h	≥ 60 km/h	≥ 60 km/h		> 40 to ≤ 50 km/h
	Left Turning Cyclist	-	**C**	**F**	**C**	**C**	**B**	**F**	**F**	-	**B**	**F**	**C**	-	**B**
	Level of Service	-	**C**	**F**	**D**	**E**	**D**	**F**	**F**	-	**D**	**F**	**C**	-	**D**
		F				**F**				**F**				**F**	
Transit	Average Signal Delay			≤ 10 sec	≤ 20 sec	≤ 30 sec		≤ 10 sec	≤ 20 sec			≤ 10 sec	≤ 10 sec		
	Level of Service	-	-	**B**	**C**	**D**	-	**B**	**C**	-	-	**B**	**B**	-	-
		C				**D**				**B**				**C**	
Truck	Effective Corner Radius		10 - 15 m		> 15 m	> 15 m	10 - 15 m	> 15 m	10 - 15 m		< 10 m		10 - 15 m		< 10 m
	Number of Receiving Lanes on Departure from Intersection		≥ 2		1	≥ 2	≥ 2	1	1		≥ 2		1		≥ 2
	Level of Service	-	**B**	-	**C**	**A**	**B**	**C**	**E**	-	**D**	-	**E**	-	**D**
		C				**E**				**E**				**E**	
Auto	Volume to Capacity Ratio														
	Level of Service	-				-				-				-	

ine		Morrison/Baseline			
EAST	WEST	NORTH	SOUTH	EAST	WEST
8	7	5		8	8
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
Permissive	No left turn / Prohib.	Permissive		No left turn / Prohib.	Permissive
No right turn	Permissive or yield control	Permissive or yield control		Permissive or yield control	No right turn
RTOR prohibited	RTOR allowed	RTOR allowed		RTOR allowed	RTOR prohibited
No	No	No		No	No
No Right Turn	No Channel	No Channel		No Channel	No Right Turn
No Right Turn	10-15m	10-15m		10-15m	No Right Turn
Std transverse markings	Std transverse markings	Std transverse markings		Std transverse markings	Std transverse markings
6	**12**	**37**		**-4**	**6**
F	**F**	**E**	**-**	**F**	**F**
-	**-**	**-**	**-**	**-**	**-**
-	**-**	**-**	**-**	**-**	**-**
F	**F**	**E**	**-**	**F**	**F**
		F			
EAST	WEST	NORTH	SOUTH	EAST	WEST
Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Mixed Traffic		Pocket Bike Lane	Curb Bike Lane, Cycletrack or MUP
Not Applicable	Not Applicable	≤ 50 m		> 50 m Introduced right turn lane	Not Applicable
Not Applicable	Not Applicable	≤ 25 km/h		≤ 25 km/h	Not Applicable
Not Applicable	**Not Applicable**	**D**	**-**	**D**	**Not Applicable**
Separated	**Separated**	**Mixed Traffic**	**-**	**Separated**	**Separated**
≥ 2 lanes crossed	No lane crossed	No lane crossed		No lane crossed	≥ 2 lanes crossed
≥ 60 km/h	≥ 60 km/h	> 50 to < 60 km/h		≥ 60 km/h	≥ 60 km/h
F	**C**	**C**	**-**	**C**	**F**
F	**C**	**D**	**-**	**D**	**F**
		F			
≤ 20 sec	≤ 10 sec	≤ 40 sec		≤ 10 sec	≤ 20 sec
C	**B**	**E**	**-**	**B**	**C**
		E			
	10 - 15 m	10 - 15 m		10 - 15 m	
	1	≥ 2		1	
-	**E**	**B**	**-**	**E**	**-**
		E			
		-			

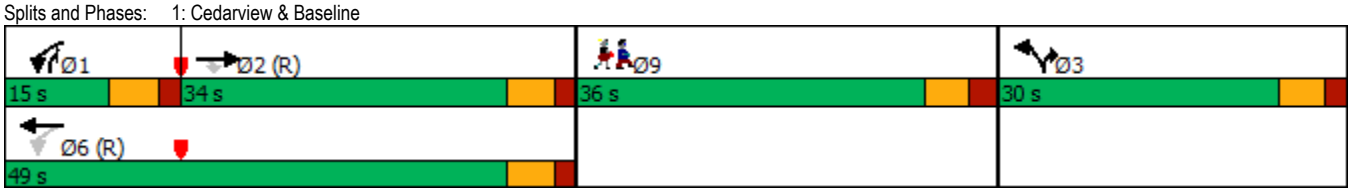
APPENDIX L

SYCNHRO ANALYSIS: BACKGROUND CONDITIONS

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1273	54	88	479	169	475	
Future Volume (vph)	1273	54	88	479	169	475	
Satd. Flow (prot)	3390	1517	1695	3390	1695	1517	
Flt Permitted			0.148		0.950		
Satd. Flow (perm)	3390	1476	264	3390	1695	1517	
Satd. Flow (RTOR)		37				475	
Lane Group Flow (vph)	1273	54	88	479	169	475	
Turn Type	NA	Perm	pm+pt	NA	Prot	pt+ov	
Protected Phases	2		1	6	3	3 1	9
Permitted Phases		2	6				
Detector Phase	2	2	1	6	3	3 1	
Switch Phase							
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0		10.0
Minimum Split (s)	27.4	27.4	11.2	27.4	16.0		36.0
Total Split (s)	34.0	34.0	15.0	49.0	30.0		36.0
Total Split (%)	29.6%	29.6%	13.0%	42.6%	26.1%		31%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.0		3.7
All-Red Time (s)	1.9	1.9	1.9	1.9	2.0		2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.0		
Lead/Lag	Lag	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes				
Recall Mode	C-Min	C-Min	None	C-Min	None		None
Act Effct Green (s)	72.3	72.3	85.9	85.9	17.0	30.6	
Actuated g/C Ratio	0.63	0.63	0.75	0.75	0.15	0.27	
v/c Ratio	0.60	0.06	0.30	0.19	0.68	0.63	
Control Delay	15.2	5.2	7.4	5.0	59.1	6.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	15.2	5.2	7.4	5.0	59.1	6.7	
LOS	B	A	A	A	E	A	
Approach Delay	14.8			5.3	20.5		
Approach LOS	B			A	C		
Queue Length 50th (m)	81.4	1.3	4.5	14.1	36.6	0.0	
Queue Length 95th (m)	128.4	7.5	10.9	24.6	55.4	22.4	
Internal Link Dist (m)	136.9			418.5	239.0		
Turn Bay Length (m)			100.0			30.0	
Base Capacity (vph)	2132	942	311	2531	353	753	
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	0.60	0.06	0.28	0.19	0.48	0.63	

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 30 (26%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 115	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 14.1	Intersection LOS: B
Intersection Capacity Utilization 78.4%	ICU Level of Service D
Analysis Period (min) 15	

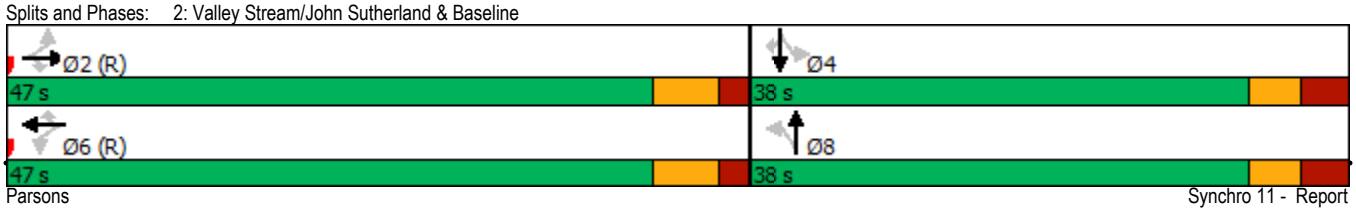
Splits and Phases: 1: Cedarview & Baseline



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	1610	15	12	479	106	34	2	15	55	4	40
Future Volume (vph)	103	1610	15	12	479	106	34	2	15	55	4	40
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	0	1648	0	0	1704	1517
Flt Permitted	0.478			0.113				0.763			0.703	
Satd. Flow (perm)	850	3390	1479	202	3390	1475	0	1297	0	0	1244	1496
Satd. Flow (RTOR)			45			106		11				41
Lane Group Flow (vph)	103	1610	15	12	479	106	0	51	0	0	59	40
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		4
Detector Phase	2	2	2	6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	32.2	32.2	32.2	32.2	32.2	32.2	37.5	37.5		37.5	37.5	37.5
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	38.0	38.0		38.0	38.0	38.0
Total Split (%)	55.3%	55.3%	55.3%	55.3%	55.3%	55.3%	44.7%	44.7%		44.7%	44.7%	44.7%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2	4.2	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2		6.5			6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None		None	None	None
Act Effct Green (s)	62.5	62.5	62.5	62.5	62.5	62.5		14.4			14.4	14.4
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.74	0.74		0.17			0.17	0.17
v/c Ratio	0.16	0.65	0.01	0.08	0.19	0.10		0.22			0.28	0.14
Control Delay	8.0	11.6	0.3	10.2	6.2	2.3		24.8			31.5	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	8.0	11.6	0.3	10.2	6.2	2.3		24.8			31.5	8.6
LOS	A	B	A	B	A	A		C			C	A
Approach Delay		11.3			5.6			24.8			22.3	
Approach LOS		B			A			C			C	
Queue Length 50th (m)	4.2	57.0	0.0	0.5	10.3	0.0		6.0			9.0	0.0
Queue Length 95th (m)	19.6	#182.3	0.4	4.5	33.2	7.5		11.4			14.3	5.9
Internal Link Dist (m)		418.5			413.1			206.5			123.4	
Turn Bay Length (m)	50.0		140.0	50.0		50.0						40.0
Base Capacity (vph)	625	2491	1099	148	2491	1112		487			461	580
Starvation Cap Reductn	0	0	0	0	0	0		0			0	0
Spillback Cap Reductn	0	0	0	0	0	0		0			0	0
Storage Cap Reductn	0	0	0	0	0	0		0			0	0
Reduced v/c Ratio	0.16	0.65	0.01	0.08	0.19	0.10		0.10			0.13	0.07

Intersection Summary		
Cycle Length: 85		
Actuated Cycle Length: 85		
Offset: 37 (44%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.65		
Intersection Signal Delay: 10.6	Intersection LOS: B	
Intersection Capacity Utilization 86.3%	ICU Level of Service E	
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

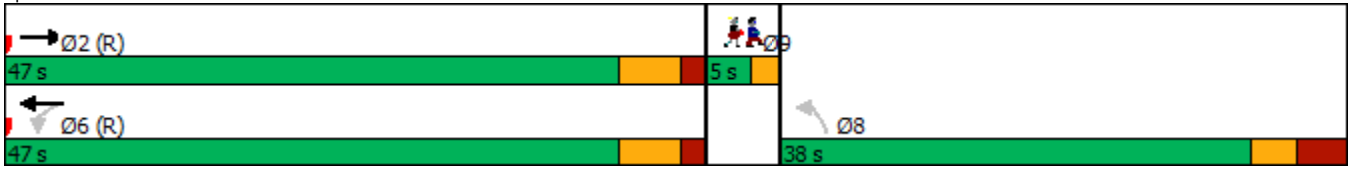
Splits and Phases: 2: Valley Stream/John Sutherland & Baseline



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1677	19	40	554	22	97	
Future Volume (vph)	1677	19	40	554	22	97	
Satd. Flow (prot)	3382	0	1695	3390	1574	0	
Flt Permitted			0.095		0.991		
Satd. Flow (perm)	3382	0	170	3390	1573	0	
Satd. Flow (RTOR)	2				80		
Lane Group Flow (vph)	1696	0	40	554	119	0	
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6			9
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0		1.0
Minimum Split (s)	23.9		23.9	23.9	35.5		5.0
Total Split (s)	47.0		47.0	47.0	38.0		5.0
Total Split (%)	52.2%		52.2%	52.2%	42.2%		6%
Yellow Time (s)	4.2		4.2	4.2	3.0		2.0
All-Red Time (s)	1.7		1.7	1.7	3.5		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.9		5.9	5.9	6.5		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Min		C-Min	C-Min	None		None
Act Effct Green (s)	64.4		64.4	64.4	12.2		
Actuated g/C Ratio	0.72		0.72	0.72	0.14		
v/c Ratio	0.70		0.33	0.23	0.42		
Control Delay	10.9		17.0	5.5	18.1		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	10.9		17.0	5.5	18.1		
LOS	B		B	A	B		
Approach Delay	10.9			6.2	18.1		
Approach LOS	B			A	B		
Queue Length 50th (m)	62.0		1.8	12.1	6.2		
Queue Length 95th (m)	158.3		14.8	32.8	18.7		
Internal Link Dist (m)	413.1			132.4	26.3		
Turn Bay Length (m)			70.0				
Base Capacity (vph)	2420		121	2425	602		
Starvation Cap Reductn	0		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.70		0.33	0.23	0.20		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 55 (61%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 10.1	Intersection LOS: B
Intersection Capacity Utilization 68.2%	ICU Level of Service C
Analysis Period (min) 15	

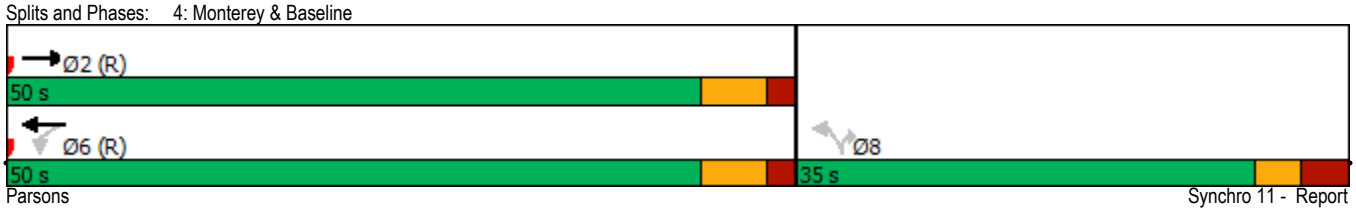
Splits and Phases: 3: Sandcastle & Baseline

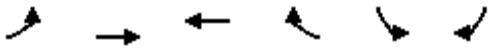


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1591	28	49	687	25	84
Future Volume (vph)	1591	28	49	687	25	84
Satd. Flow (prot)	3378	0	1695	3390	1695	1517
Flt Permitted			0.114		0.950	
Satd. Flow (perm)	3378	0	203	3390	1691	1517
Satd. Flow (RTOR)	3					15
Lane Group Flow (vph)	1619	0	49	687	25	84
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	34.1		34.1	34.1	35.1	35.1
Total Split (s)	50.0		50.0	50.0	35.0	35.0
Total Split (%)	58.8%		58.8%	58.8%	41.2%	41.2%
Yellow Time (s)	4.2		4.2	4.2	3.0	3.0
All-Red Time (s)	1.9		1.9	1.9	3.1	3.1
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min		C-Min	C-Min	None	None
Act Effct Green (s)	63.3		63.3	63.3	14.0	14.0
Actuated g/C Ratio	0.74		0.74	0.74	0.16	0.16
v/c Ratio	0.64		0.33	0.27	0.09	0.32
Control Delay	10.7		23.2	9.1	27.3	27.3
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	10.7		23.2	9.1	27.3	27.3
LOS	B		C	A	C	C
Approach Delay	10.7			10.0	27.3	
Approach LOS	B			B	C	
Queue Length 50th (m)	55.9		2.2	14.9	3.7	10.5
Queue Length 95th (m)	#175.3		#21.2	72.6	7.8	17.5
Internal Link Dist (m)	103.0			384.9	183.4	
Turn Bay Length (m)			55.0		30.0	
Base Capacity (vph)	2514		150	2522	574	525
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	0.64		0.33	0.27	0.04	0.16

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 65 (76%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 11.2	Intersection LOS: B
Intersection Capacity Utilization 65.9%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 4: Monterey & Baseline

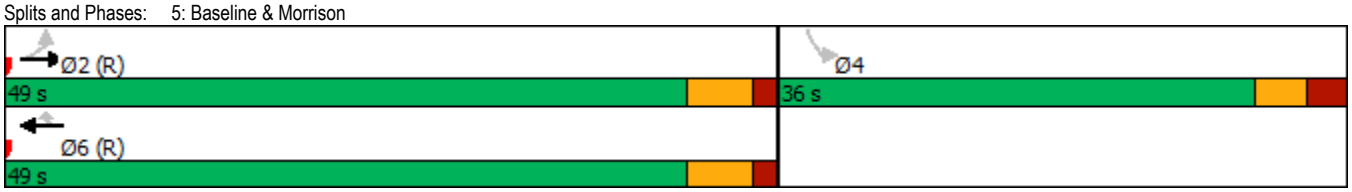




Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	241	1489	548	74	69	37
Future Volume (vph)	241	1489	548	74	69	37
Satd. Flow (prot)	1695	3390	3390	1517	1638	0
Flt Permitted	0.447				0.968	
Satd. Flow (perm)	796	3390	3390	1472	1635	0
Satd. Flow (RTOR)				74	35	
Lane Group Flow (vph)	241	1489	548	74	106	0
Turn Type	Perm	NA	NA	Perm	Perm	
Protected Phases		2	6			
Permitted Phases	2			6	4	
Detector Phase	2	2	6	6	4	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	30.4	30.4	30.4	30.4	36.5	
Total Split (s)	49.0	49.0	49.0	49.0	36.0	
Total Split (%)	57.6%	57.6%	57.6%	57.6%	42.4%	
Yellow Time (s)	4.2	4.2	4.2	4.2	3.3	
All-Red Time (s)	1.7	1.7	1.7	1.7	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	5.9	5.9	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	63.3	63.3	63.3	63.3	14.2	
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.17	
v/c Ratio	0.41	0.59	0.22	0.07	0.35	
Control Delay	6.1	6.6	5.9	2.5	22.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	6.1	6.6	5.9	2.5	22.9	
LOS	A	A	A	A	C	
Approach Delay		6.6	5.5		22.9	
Approach LOS		A	A		C	
Queue Length 50th (m)	4.3	41.6	11.5	0.0	10.8	
Queue Length 95th (m)	52.5	158.3	36.4	6.0	18.2	
Internal Link Dist (m)		384.9	355.9		174.0	
Turn Bay Length (m)	55.0			160.0		
Base Capacity (vph)	592	2524	2524	1115	599	
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	0.41	0.59	0.22	0.07	0.18	

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 11 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 7.0	Intersection LOS: A
Intersection Capacity Utilization 62.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: Baseline & Morrison



Intersection	
Int Delay, s/veh	3.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	30	60	4	48	47
Future Vol, veh/h	1	30	60	4	48	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	30	60	4	48	47

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	205	62	0	0	64	0
Stage 1	62	-	-	-	-	-
Stage 2	143	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	783	1003	-	-	1538	-
Stage 1	961	-	-	-	-	-
Stage 2	884	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	758	1003	-	-	1538	-
Mov Cap-2 Maneuver	758	-	-	-	-	-
Stage 1	961	-	-	-	-	-
Stage 2	856	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	3.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	993	1538	-
HCM Lane V/C Ratio	-	-	0.031	0.031	-
HCM Control Delay (s)	-	-	8.7	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	64	0	0	48
Future Vol, veh/h	0	0	64	0	0	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	64	0	0	48

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	112	64	0	0	64	0
Stage 1	64	-	-	-	-	-
Stage 2	48	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	885	1000	-	-	1538	-
Stage 1	959	-	-	-	-	-
Stage 2	974	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	885	1000	-	-	1538	-
Mov Cap-2 Maneuver	885	-	-	-	-	-
Stage 1	959	-	-	-	-	-
Stage 2	974	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1538	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1628	2	0	615	0	27
Future Vol, veh/h	1628	2	0	615	0	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1628	2	0	615	0	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1630	0	-	815
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	394	-	0	321
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	394	-	-	321
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

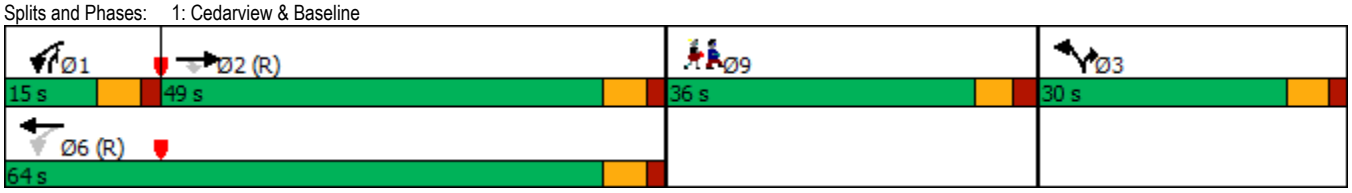
Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	321	-	-	394	-
HCM Lane V/C Ratio	0.084	-	-	-	-
HCM Control Delay (s)	17.2	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	675	180	354	977	122	163	
Future Volume (vph)	675	180	354	977	122	163	
Satd. Flow (prot)	3390	1517	1695	3390	1695	1517	
Flt Permitted			0.297		0.950		
Satd. Flow (perm)	3390	1475	530	3390	1695	1517	
Satd. Flow (RTOR)		180				163	
Lane Group Flow (vph)	675	180	354	977	122	163	
Turn Type	NA	Perm	pm+pt	NA	Prot	pt+ov	
Protected Phases	2		1	6	3	3 1	9
Permitted Phases		2	6				
Detector Phase	2	2	1	6	3	3 1	
Switch Phase							
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0		10.0
Minimum Split (s)	27.4	27.4	11.2	27.4	16.0		36.0
Total Split (s)	49.0	49.0	15.0	64.0	30.0		36.0
Total Split (%)	37.7%	37.7%	11.5%	49.2%	23.1%		28%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.0		3.7
All-Red Time (s)	1.9	1.9	1.9	1.9	2.0		2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.0		
Lead/Lag	Lag	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes				
Recall Mode	C-Min	C-Min	None	C-Min	None		None
Act Effct Green (s)	61.6	61.6	103.1	103.1	14.8	56.3	
Actuated g/C Ratio	0.47	0.47	0.79	0.79	0.11	0.43	
v/c Ratio	0.42	0.23	0.48	0.36	0.63	0.22	
Control Delay	23.0	3.2	6.2	4.6	69.0	4.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	23.0	3.2	6.2	4.6	69.0	4.2	
LOS	C	A	A	A	E	A	
Approach Delay	18.8			5.1	31.9		
Approach LOS	B			A	C		
Queue Length 50th (m)	54.8	0.0	19.5	31.6	30.4	0.0	
Queue Length 95th (m)	71.0	11.6	35.8	49.3	48.5	13.2	
Internal Link Dist (m)	136.9			418.5	239.0		
Turn Bay Length (m)			100.0			30.0	
Base Capacity (vph)	1606	793	737	2687	312	744	
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	0.42	0.23	0.48	0.36	0.39	0.22	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 30 (23%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 12.9	Intersection LOS: B
Intersection Capacity Utilization 63.9%	ICU Level of Service B
Analysis Period (min) 15	

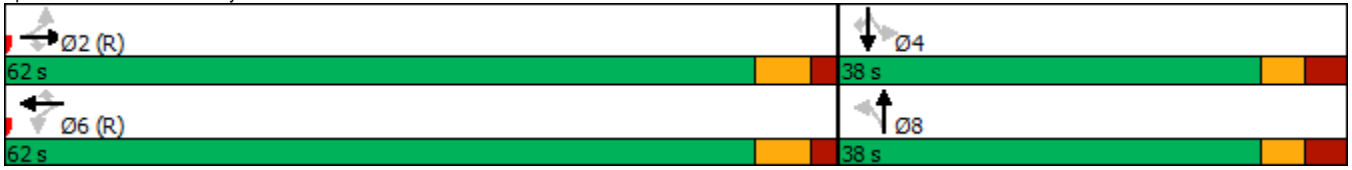
Splits and Phases: 1: Cedarview & Baseline



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	699	46	17	1175	66	26	3	19	89	6	125
Future Volume (vph)	40	699	46	17	1175	66	26	3	19	89	6	125
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	0	1626	0	0	1704	1517
Flt Permitted	0.211			0.379				0.799			0.705	
Satd. Flow (perm)	376	3390	1473	674	3390	1457	0	1328	0	0	1239	1484
Satd. Flow (RTOR)			46			66		19				62
Lane Group Flow (vph)	40	699	46	17	1175	66	0	48	0	0	95	125
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		4
Detector Phase	2	2	2	6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	32.2	32.2	32.2	32.2	32.2	32.2	37.5	37.5		37.5	37.5	37.5
Total Split (s)	62.0	62.0	62.0	62.0	62.0	62.0	38.0	38.0		38.0	38.0	38.0
Total Split (%)	62.0%	62.0%	62.0%	62.0%	62.0%	62.0%	38.0%	38.0%		38.0%	38.0%	38.0%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2	4.2	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2		6.5			6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None		None	None	None
Act Effct Green (s)	71.3	71.3	71.3	71.3	71.3	71.3		16.0			16.0	16.0
Actuated g/C Ratio	0.71	0.71	0.71	0.71	0.71	0.71		0.16			0.16	0.16
v/c Ratio	0.15	0.29	0.04	0.04	0.49	0.06		0.21			0.48	0.43
Control Delay	8.8	6.6	2.6	7.1	8.4	2.3		24.1			44.1	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	8.8	6.6	2.6	7.1	8.4	2.3		24.1			44.1	22.8
LOS	A	A	A	A	A	A		C			D	C
Approach Delay		6.5			8.1			24.1			32.0	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	1.9	19.3	0.0	0.7	39.4	0.0		5.1			17.6	11.3
Queue Length 95th (m)	9.7	48.6	4.6	4.5	95.4	5.4		12.1			26.6	22.4
Internal Link Dist (m)		418.5			413.1			206.5			123.4	
Turn Bay Length (m)	50.0		140.0	50.0		50.0						40.0
Base Capacity (vph)	267	2417	1063	480	2417	1057		431			390	509
Starvation Cap Reductn	0	0	0	0	0	0		0			0	0
Spillback Cap Reductn	0	0	0	0	0	0		0			0	0
Storage Cap Reductn	0	0	0	0	0	0		0			0	0
Reduced v/c Ratio	0.15	0.29	0.04	0.04	0.49	0.06		0.11			0.24	0.25

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 37 (37%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.49	
Intersection Signal Delay: 10.2	Intersection LOS: B
Intersection Capacity Utilization 80.4%	ICU Level of Service D
Analysis Period (min) 15	

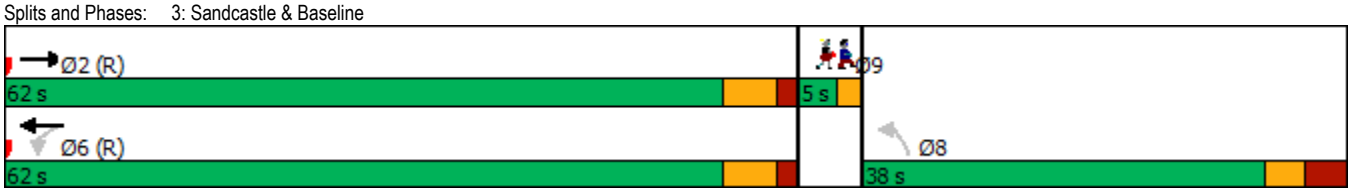
Splits and Phases: 2: Valley Stream/John Sutherland & Baseline



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	757	33	113	1226	43	78	
Future Volume (vph)	757	33	113	1226	43	78	
Satd. Flow (prot)	3367	0	1695	3390	1581	0	
Flt Permitted			0.341		0.983		
Satd. Flow (perm)	3367	0	608	3390	1571	0	
Satd. Flow (RTOR)	6				78		
Lane Group Flow (vph)	790	0	113	1226	121	0	
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6			9
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0		1.0
Minimum Split (s)	23.9		23.9	23.9	35.5		5.0
Total Split (s)	62.0		62.0	62.0	38.0		5.0
Total Split (%)	59.0%		59.0%	59.0%	36.2%		5%
Yellow Time (s)	4.2		4.2	4.2	3.0		2.0
All-Red Time (s)	1.7		1.7	1.7	3.5		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.9		5.9	5.9	6.5		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Min		C-Min	C-Min	None		None
Act Effct Green (s)	78.7		78.7	78.7	12.4		
Actuated g/C Ratio	0.75		0.75	0.75	0.12		
v/c Ratio	0.31		0.25	0.48	0.48		
Control Delay	5.5		7.3	6.9	23.4		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	5.5		7.3	6.9	23.4		
LOS	A		A	A	C		
Approach Delay	5.5			7.0	23.4		
Approach LOS	A			A	C		
Queue Length 50th (m)	18.6		4.8	35.0	8.3		
Queue Length 95th (m)	51.3		21.0	93.4	22.7		
Internal Link Dist (m)	413.1			132.4	26.3		
Turn Bay Length (m)			70.0				
Base Capacity (vph)	2526		456	2541	525		
Starvation Cap Reductn	0		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.31		0.25	0.48	0.23		

Intersection Summary	
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 55 (52%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 7.3	Intersection LOS: A
Intersection Capacity Utilization 56.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Sandcastle & Baseline

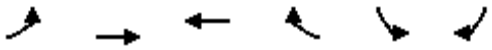


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	846	35	85	1260	28	79
Future Volume (vph)	846	35	85	1260	28	79
Satd. Flow (prot)	3365	0	1695	3390	1695	1517
Flt Permitted			0.313		0.950	
Satd. Flow (perm)	3365	0	556	3390	1690	1482
Satd. Flow (RTOR)	7					79
Lane Group Flow (vph)	881	0	85	1260	28	79
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	34.1		34.1	34.1	35.1	35.1
Total Split (s)	65.0		65.0	65.0	35.0	35.0
Total Split (%)	65.0%		65.0%	65.0%	35.0%	35.0%
Yellow Time (s)	4.2		4.2	4.2	3.0	3.0
All-Red Time (s)	1.9		1.9	1.9	3.1	3.1
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min		C-Min	C-Min	None	None
Act Effct Green (s)	78.4		78.4	78.4	13.8	13.8
Actuated g/C Ratio	0.78		0.78	0.78	0.14	0.14
v/c Ratio	0.33		0.19	0.47	0.12	0.29
Control Delay	5.5		9.8	11.3	35.6	10.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	5.5		9.8	11.3	35.6	10.2
LOS	A		A	B	D	B
Approach Delay	5.5			11.2	16.8	
Approach LOS	A			B	B	
Queue Length 50th (m)	21.3		7.6	78.1	5.1	0.0
Queue Length 95th (m)	59.8		m24.9	150.9	10.3	10.2
Internal Link Dist (m)	103.0			384.9	183.4	
Turn Bay Length (m)			55.0		30.0	
Base Capacity (vph)	2641		436	2659	488	484
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	0.33		0.19	0.47	0.06	0.16

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 65 (65%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.47	
Intersection Signal Delay: 9.3	Intersection LOS: A
Intersection Capacity Utilization 62.7%	ICU Level of Service B
Analysis Period (min) 15	

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

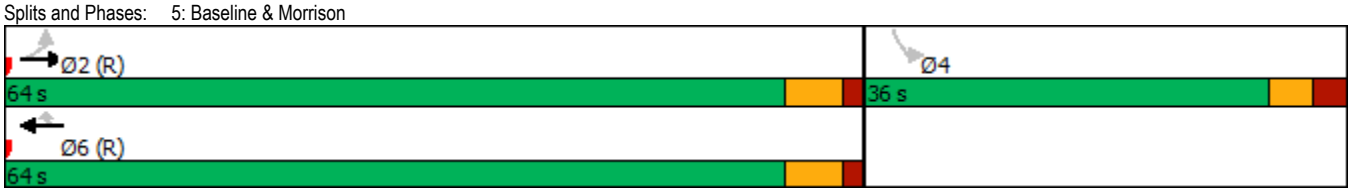
Splits and Phases: 4: Monterey & Baseline



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	51	920	1388	63	51	117
Future Volume (vph)	51	920	1388	63	51	117
Satd. Flow (prot)	1695	3390	3390	1517	1577	0
Flt Permitted	0.159				0.985	
Satd. Flow (perm)	283	3390	3390	1457	1576	0
Satd. Flow (RTOR)				63	42	
Lane Group Flow (vph)	51	920	1388	63	168	0
Turn Type	Perm	NA	NA	Perm	Perm	
Protected Phases		2	6			
Permitted Phases	2			6	4	
Detector Phase	2	2	6	6	4	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	30.4	30.4	30.4	30.4	36.5	
Total Split (s)	64.0	64.0	64.0	64.0	36.0	
Total Split (%)	64.0%	64.0%	64.0%	64.0%	36.0%	
Yellow Time (s)	4.2	4.2	4.2	4.2	3.3	
All-Red Time (s)	1.7	1.7	1.7	1.7	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	5.9	5.9	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	72.0	72.0	72.0	72.0	16.1	
Actuated g/C Ratio	0.72	0.72	0.72	0.72	0.16	
v/c Ratio	0.25	0.38	0.57	0.06	0.58	
Control Delay	16.0	9.7	9.1	2.2	35.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.0	9.7	9.1	2.2	35.4	
LOS	B	A	A	A	D	
Approach Delay		10.1	8.8		35.4	
Approach LOS		B	A		D	
Queue Length 50th (m)	2.5	27.4	51.0	0.0	23.4	
Queue Length 95th (m)	21.6	108.4	118.0	5.1	35.8	
Internal Link Dist (m)		384.9	355.9		174.0	
Turn Bay Length (m)	55.0			160.0		
Base Capacity (vph)	203	2439	2439	1066	502	
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	0.25	0.38	0.57	0.06	0.33	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 11 (11%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 66.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Baseline & Morrison



Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	54	132	2	84	114
Future Vol, veh/h	7	54	132	2	84	114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	54	132	2	84	114

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	415	133	0	0	134	0
Stage 1	133	-	-	-	-	-
Stage 2	282	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	594	916	-	-	1451	-
Stage 1	893	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	557	916	-	-	1451	-
Mov Cap-2 Maneuver	557	-	-	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	719	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	3.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	853	1451	-
HCM Lane V/C Ratio	-	-	0.072	0.058	-
HCM Control Delay (s)	-	-	9.5	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	134	0	0	121
Future Vol, veh/h	0	0	134	0	0	121
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	134	0	0	121

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	255	134	0	0	134	0
Stage 1	134	-	-	-	-	-
Stage 2	121	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	734	915	-	-	1451	-
Stage 1	892	-	-	-	-	-
Stage 2	904	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	734	915	-	-	1451	-
Mov Cap-2 Maneuver	734	-	-	-	-	-
Stage 1	892	-	-	-	-	-
Stage 2	904	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1451	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	796	3	0	1238	0	33
Future Vol, veh/h	796	3	0	1238	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	796	3	0	1238	0	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	799	0	-	400
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	819	-	0	600
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	819	-	-	600
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	600	-	-	819	-
HCM Lane V/C Ratio	0.055	-	-	-	-
HCM Control Delay (s)	11.3	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

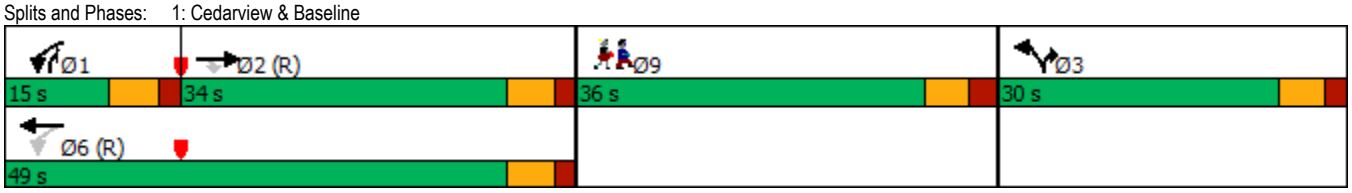
APPENDIX M

SYCNHRO ANALYSIS: FUTURE CONDITIONS

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1220	52	86	481	161	453	
Future Volume (vph)	1220	52	86	481	161	453	
Satd. Flow (prot)	3390	1517	1695	3390	1695	1517	
Flt Permitted			0.163		0.950		
Satd. Flow (perm)	3390	1434	291	3390	1683	1517	
Satd. Flow (RTOR)		37				453	
Lane Group Flow (vph)	1220	52	86	481	161	453	
Turn Type	NA	Perm	pm+pt	NA	Prot	pt+ov	
Protected Phases	2		1	6	3	3 1	9
Permitted Phases		2	6				
Detector Phase	2	2	1	6	3	3 1	
Switch Phase							
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0		10.0
Minimum Split (s)	27.4	27.4	11.2	27.4	16.0		36.0
Total Split (s)	34.0	34.0	15.0	49.0	30.0		36.0
Total Split (%)	29.6%	29.6%	13.0%	42.6%	26.1%		31%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.0		3.7
All-Red Time (s)	1.9	1.9	1.9	1.9	2.0		2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.0		
Lead/Lag	Lag	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes				
Recall Mode	C-Min	C-Min	None	C-Min	None		None
Act Effct Green (s)	73.1	73.1	86.6	86.6	16.3	29.8	
Actuated g/C Ratio	0.64	0.64	0.75	0.75	0.14	0.26	
v/c Ratio	0.57	0.06	0.28	0.19	0.67	0.62	
Control Delay	14.2	4.9	6.7	4.7	59.9	6.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	14.2	4.9	6.7	4.7	59.9	6.8	
LOS	B	A	A	A	E	A	
Approach Delay	13.8			5.0	20.7		
Approach LOS	B			A	C		
Queue Length 50th (m)	74.8	1.1	4.3	13.8	34.9	0.0	
Queue Length 95th (m)	118.4	6.9	10.4	24.3	53.3	22.1	
Internal Link Dist (m)	136.9			418.5	239.0		
Turn Bay Length (m)			100.0			30.0	
Base Capacity (vph)	2154	924	330	2552	353	734	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.57	0.06	0.26	0.19	0.46	0.62	

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 30 (26%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 105	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 13.5	Intersection LOS: B
Intersection Capacity Utilization 75.8%	ICU Level of Service D
Analysis Period (min) 15	

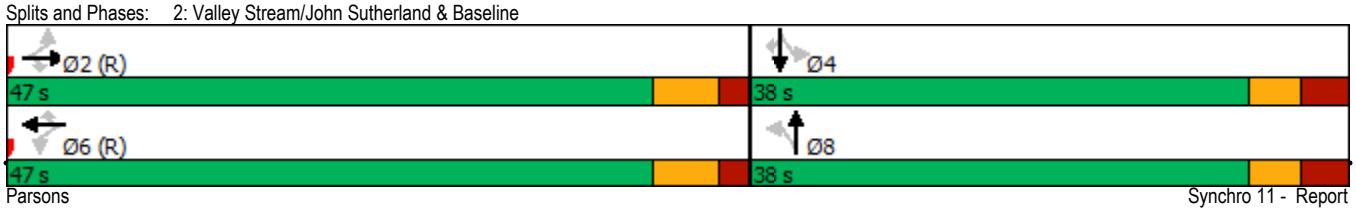
Splits and Phases: 1: Cedarview & Baseline



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	1542	15	12	483	106	34	2	15	55	4	40
Future Volume (vph)	103	1542	15	12	483	106	34	2	15	55	4	40
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	0	1646	0	0	1704	1517
Flt Permitted	0.476			0.126				0.763			0.703	
Satd. Flow (perm)	842	3390	1456	225	3390	1456	0	1291	0	0	1241	1486
Satd. Flow (RTOR)			45			106		13				41
Lane Group Flow (vph)	103	1542	15	12	483	106	0	51	0	0	59	40
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		4
Detector Phase	2	2	2	6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	32.2	32.2	32.2	32.2	32.2	32.2	37.5	37.5		37.5	37.5	37.5
Total Split (s)	47.0	47.0	47.0	47.0	47.0	47.0	38.0	38.0		38.0	38.0	38.0
Total Split (%)	55.3%	55.3%	55.3%	55.3%	55.3%	55.3%	44.7%	44.7%		44.7%	44.7%	44.7%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2	4.2	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2		6.5			6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None		None	None	None
Act Effct Green (s)	62.5	62.5	62.5	62.5	62.5	62.5		14.4			14.4	14.4
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.74	0.74		0.17			0.17	0.17
v/c Ratio	0.17	0.62	0.01	0.07	0.19	0.10		0.22			0.28	0.14
Control Delay	8.0	11.0	0.3	9.8	6.2	2.3		23.8			31.5	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	8.0	11.0	0.3	9.8	6.2	2.3		23.8			31.5	8.6
LOS	A	B	A	A	A	A		C			C	A
Approach Delay		10.7			5.6			23.8			22.3	
Approach LOS		B			A			C			C	
Queue Length 50th (m)	4.2	52.6	0.0	0.5	10.4	0.0		5.7			9.0	0.0
Queue Length 95th (m)	19.7	#169.7	0.4	4.4	33.4	7.5		11.1			14.3	5.9
Internal Link Dist (m)		418.5			413.1			206.5			123.4	
Turn Bay Length (m)	50.0		140.0	50.0		50.0						40.0
Base Capacity (vph)	619	2491	1082	165	2491	1098		486			459	576
Starvation Cap Reductn	0	0	0	0	0	0		0			0	0
Spillback Cap Reductn	0	0	0	0	0	0		0			0	0
Storage Cap Reductn	0	0	0	0	0	0		0			0	0
Reduced v/c Ratio	0.17	0.62	0.01	0.07	0.19	0.10		0.10			0.13	0.07

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 37 (44%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 10.2	Intersection LOS: B
Intersection Capacity Utilization 85.4%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

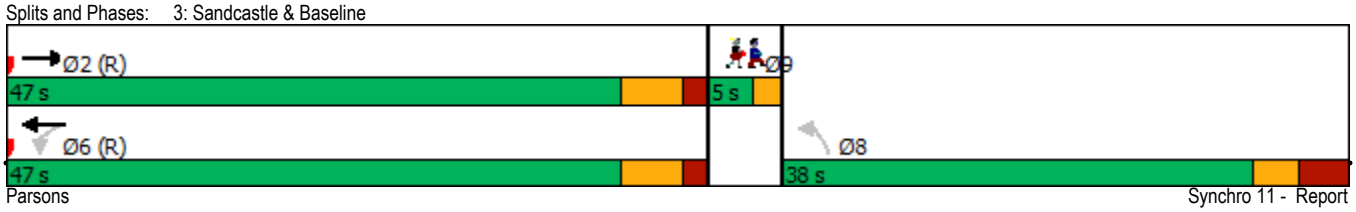
Splits and Phases: 2: Valley Stream/John Sutherland & Baseline



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1609	16	65	527	49	121	
Future Volume (vph)	1609	16	65	527	49	121	
Satd. Flow (prot)	3384	0	1695	3390	1467	0	
Flt Permitted			0.104		0.986		
Satd. Flow (perm)	3384	0	186	3390	1453	0	
Satd. Flow (RTOR)	1				81		
Lane Group Flow (vph)	1625	0	65	527	170	0	
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6			9
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0		1.0
Minimum Split (s)	23.9		23.9	23.9	35.5		5.0
Total Split (s)	47.0		47.0	47.0	38.0		5.0
Total Split (%)	52.2%		52.2%	52.2%	42.2%		6%
Yellow Time (s)	4.2		4.2	4.2	3.0		2.0
All-Red Time (s)	1.7		1.7	1.7	3.5		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.9		5.9	5.9	6.5		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Min		C-Min	C-Min	None		None
Act Effct Green (s)	63.4		63.4	63.4	13.2		
Actuated g/C Ratio	0.70		0.70	0.70	0.15		
v/c Ratio	0.68		0.50	0.22	0.60		
Control Delay	10.8		27.1	5.8	27.6		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	10.8		27.1	5.8	27.6		
LOS	B		C	A	C		
Approach Delay	10.8			8.1	27.6		
Approach LOS	B			A	C		
Queue Length 50th (m)	61.1		3.7	12.2	14.6		
Queue Length 95th (m)	145.2		#29.3	31.1	30.6		
Internal Link Dist (m)	413.1			132.4	26.3		
Turn Bay Length (m)			70.0				
Base Capacity (vph)	2382		130	2386	561		
Starvation Cap Reductn	0		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.68		0.50	0.22	0.30		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 55 (61%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 11.4	Intersection LOS: B
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.	

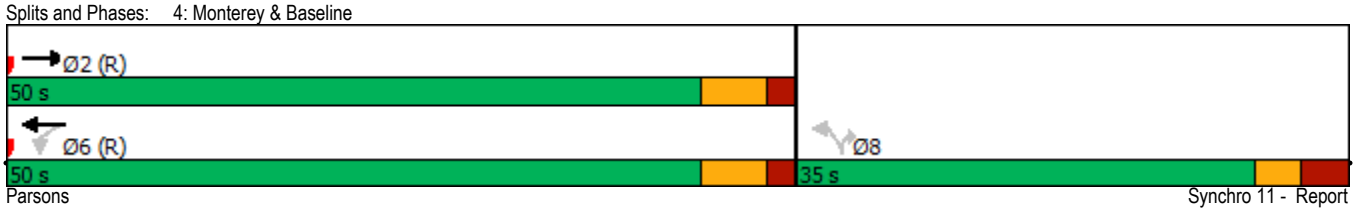
Splits and Phases: 3: Sandcastle & Baseline

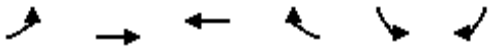


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1583	28	49	679	25	84
Future Volume (vph)	1583	28	49	679	25	84
Satd. Flow (prot)	3377	0	1695	3390	1695	1517
Flt Permitted			0.116		0.950	
Satd. Flow (perm)	3377	0	207	3390	1680	1485
Satd. Flow (RTOR)	3					15
Lane Group Flow (vph)	1611	0	49	679	25	84
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	34.1		34.1	34.1	35.1	35.1
Total Split (s)	50.0		50.0	50.0	35.0	35.0
Total Split (%)	58.8%		58.8%	58.8%	41.2%	41.2%
Yellow Time (s)	4.2		4.2	4.2	3.0	3.0
All-Red Time (s)	1.9		1.9	1.9	3.1	3.1
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min		C-Min	C-Min	None	None
Act Effct Green (s)	63.2		63.2	63.2	14.0	14.0
Actuated g/C Ratio	0.74		0.74	0.74	0.16	0.16
v/c Ratio	0.64		0.32	0.27	0.09	0.33
Control Delay	10.7		22.8	9.1	27.2	27.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	10.7		22.8	9.1	27.2	27.4
LOS	B		C	A	C	C
Approach Delay	10.7			10.0	27.4	
Approach LOS	B			B	C	
Queue Length 50th (m)	55.5		2.1	14.6	3.7	10.5
Queue Length 95th (m)	#173.9		#20.7	72.1	7.8	17.5
Internal Link Dist (m)	103.0			384.9	183.4	
Turn Bay Length (m)			55.0		30.0	
Base Capacity (vph)	2513		153	2522	571	514
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	0.64		0.32	0.27	0.04	0.16

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 65 (76%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 11.2	Intersection LOS: B
Intersection Capacity Utilization 70.1%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 4: Monterey & Baseline

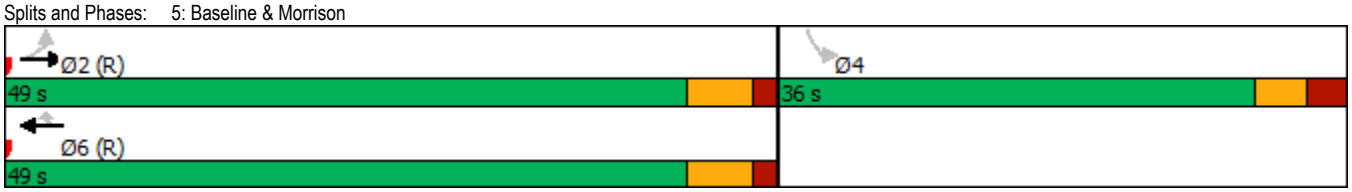




Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	241	1486	547	74	69	37
Future Volume (vph)	241	1486	547	74	69	37
Satd. Flow (prot)	1695	3390	3390	1517	1634	0
Flt Permitted	0.448				0.968	
Satd. Flow (perm)	793	3390	3390	1449	1625	0
Satd. Flow (RTOR)				74	35	
Lane Group Flow (vph)	241	1486	547	74	106	0
Turn Type	Perm	NA	NA	Perm	Perm	
Protected Phases		2	6			
Permitted Phases	2			6	4	
Detector Phase	2	2	6	6	4	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	30.4	30.4	30.4	30.4	36.5	
Total Split (s)	49.0	49.0	49.0	49.0	36.0	
Total Split (%)	57.6%	57.6%	57.6%	57.6%	42.4%	
Yellow Time (s)	4.2	4.2	4.2	4.2	3.3	
All-Red Time (s)	1.7	1.7	1.7	1.7	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	5.9	5.9	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	63.3	63.3	63.3	63.3	14.2	
Actuated g/C Ratio	0.74	0.74	0.74	0.74	0.17	
v/c Ratio	0.41	0.59	0.22	0.07	0.35	
Control Delay	6.2	6.7	5.9	2.5	22.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	6.2	6.7	5.9	2.5	22.9	
LOS	A	A	A	A	C	
Approach Delay		6.6	5.5		22.9	
Approach LOS		A	A		C	
Queue Length 50th (m)	5.0	48.5	11.5	0.0	10.8	
Queue Length 95th (m)	53.0	158.3	36.3	6.0	18.3	
Internal Link Dist (m)		384.9	355.9		174.0	
Turn Bay Length (m)	55.0			160.0		
Base Capacity (vph)	590	2523	2523	1097	596	
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	0.41	0.59	0.22	0.07	0.18	

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 11 (13%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 7.0	Intersection LOS: A
Intersection Capacity Utilization 66.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Baseline & Morrison



Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	60	82	0	54	63
Future Vol, veh/h	0	60	82	0	54	63
Conflicting Peds, #/hr	0	0	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	60	82	0	54	63

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	273	102	0	0	102	0
Stage 1	102	-	-	-	-	-
Stage 2	171	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	716	953	-	-	1490	-
Stage 1	922	-	-	-	-	-
Stage 2	859	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	677	937	-	-	1465	-
Mov Cap-2 Maneuver	677	-	-	-	-	-
Stage 1	906	-	-	-	-	-
Stage 2	826	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	3.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	937	1465	-
HCM Lane V/C Ratio	-	-	0.064	0.037	-
HCM Control Delay (s)	-	-	9.1	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	22	60	0	16	47
Future Vol, veh/h	0	22	60	0	16	47
Conflicting Peds, #/hr	0	0	0	15	15	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	60	0	16	47

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	154	75	0	0	75	0
Stage 1	75	-	-	-	-	-
Stage 2	79	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	838	986	-	-	1524	-
Stage 1	948	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	818	973	-	-	1505	-
Mov Cap-2 Maneuver	818	-	-	-	-	-
Stage 1	936	-	-	-	-	-
Stage 2	934	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	1.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	973	1505	-
HCM Lane V/C Ratio	-	-	0.023	0.011	-
HCM Control Delay (s)	-	-	8.8	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1581	15	0	631	0	70
Future Vol, veh/h	1581	15	0	631	0	70
Conflicting Peds, #/hr	0	25	25	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1581	15	0	631	0	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1621	0	-	823
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	398	-	0	317
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	390	-	-	310
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

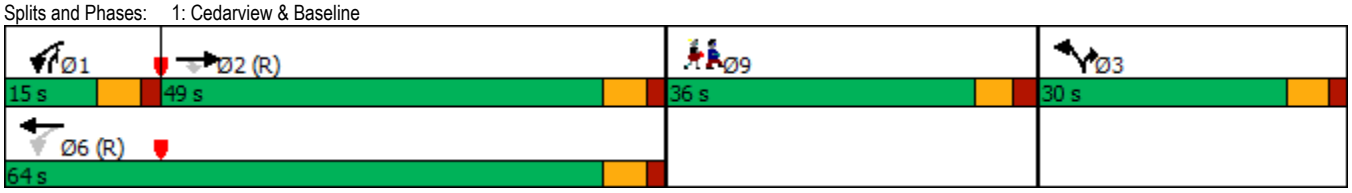
Approach	EB	WB	NB
HCM Control Delay, s	0	0	20
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	310	-	-	390	-
HCM Lane V/C Ratio	0.226	-	-	-	-
HCM Control Delay (s)	20	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.9	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	652	171	339	930	116	157	
Future Volume (vph)	652	171	339	930	116	157	
Satd. Flow (prot)	3390	1517	1695	3390	1695	1517	
Flt Permitted			0.317		0.950		
Satd. Flow (perm)	3390	1424	562	3390	1668	1517	
Satd. Flow (RTOR)		171				157	
Lane Group Flow (vph)	652	171	339	930	116	157	
Turn Type	NA	Perm	pm+pt	NA	Prot	pt+ov	
Protected Phases	2		1	6	3	3 1	9
Permitted Phases		2	6				
Detector Phase	2	2	1	6	3	3 1	
Switch Phase							
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0		10.0
Minimum Split (s)	27.4	27.4	11.2	27.4	16.0		36.0
Total Split (s)	49.0	49.0	15.0	64.0	30.0		36.0
Total Split (%)	37.7%	37.7%	11.5%	49.2%	23.1%		28%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.0		3.7
All-Red Time (s)	1.9	1.9	1.9	1.9	2.0		2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.0		
Lead/Lag	Lag	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes				
Recall Mode	C-Min	C-Min	None	C-Min	None		None
Act Effct Green (s)	65.0	65.0	103.4	103.4	14.5	52.9	
Actuated g/C Ratio	0.50	0.50	0.80	0.80	0.11	0.41	
v/c Ratio	0.38	0.21	0.47	0.34	0.62	0.22	
Control Delay	20.7	3.1	5.9	4.4	68.7	4.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	20.7	3.1	5.9	4.4	68.7	4.5	
LOS	C	A	A	A	E	A	
Approach Delay	17.1			4.8	31.7		
Approach LOS	B			A	C		
Queue Length 50th (m)	50.4	0.0	18.2	29.0	28.9	0.0	
Queue Length 95th (m)	66.9	11.3	33.2	45.1	46.6	13.0	
Internal Link Dist (m)	136.9			418.5	239.0		
Turn Bay Length (m)			100.0			30.0	
Base Capacity (vph)	1695	797	728	2697	312	706	
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	0.38	0.21	0.47	0.34	0.37	0.22	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 30 (23%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 12.2	Intersection LOS: B
Intersection Capacity Utilization 62.3%	ICU Level of Service B
Analysis Period (min) 15	

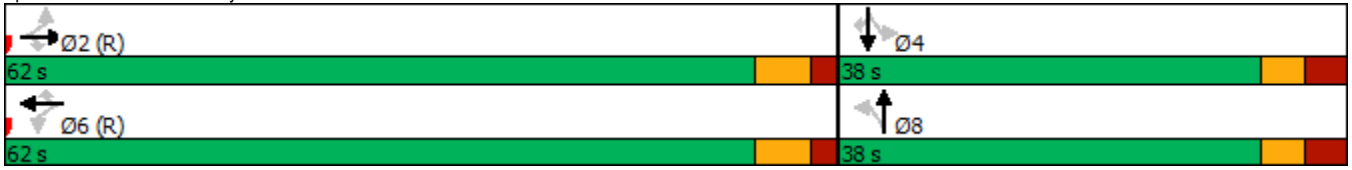
Splits and Phases: 1: Cedarview & Baseline



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	677	46	17	1120	66	26	3	19	89	6	125
Future Volume (vph)	40	677	46	17	1120	66	26	3	19	89	6	125
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	0	1625	0	0	1704	1517
Flt Permitted	0.227			0.389				0.799			0.705	
Satd. Flow (perm)	403	3390	1453	689	3390	1439	0	1324	0	0	1237	1477
Satd. Flow (RTOR)			46			66		19				70
Lane Group Flow (vph)	40	677	46	17	1120	66	0	48	0	0	95	125
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases	2		2	6		6	8			4		4
Detector Phase	2	2	2	6	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	32.2	32.2	32.2	32.2	32.2	32.2	37.5	37.5		37.5	37.5	37.5
Total Split (s)	62.0	62.0	62.0	62.0	62.0	62.0	38.0	38.0		38.0	38.0	38.0
Total Split (%)	62.0%	62.0%	62.0%	62.0%	62.0%	62.0%	38.0%	38.0%		38.0%	38.0%	38.0%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.2	4.2	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2		6.5			6.5	6.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None		None	None	None
Act Effct Green (s)	71.3	71.3	71.3	71.3	71.3	71.3		16.0			16.0	16.0
Actuated g/C Ratio	0.71	0.71	0.71	0.71	0.71	0.71		0.16			0.16	0.16
v/c Ratio	0.14	0.28	0.04	0.03	0.46	0.06		0.21			0.48	0.42
Control Delay	8.5	6.6	2.6	7.1	8.2	2.3		24.1			44.2	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	8.5	6.6	2.6	7.1	8.2	2.3		24.1			44.2	20.6
LOS	A	A	A	A	A	A		C			D	C
Approach Delay		6.5			7.8			24.1			30.8	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	1.9	18.5	0.0	0.7	36.6	0.0		5.1			17.6	9.8
Queue Length 95th (m)	9.5	46.8	4.6	4.5	88.9	5.4		12.1			26.6	21.0
Internal Link Dist (m)		418.5			413.1			206.5			123.4	
Turn Bay Length (m)	50.0		140.0	50.0		50.0						40.0
Base Capacity (vph)	287	2417	1049	491	2417	1044		430			389	513
Starvation Cap Reductn	0	0	0	0	0	0		0			0	0
Spillback Cap Reductn	0	0	0	0	0	0		0			0	0
Storage Cap Reductn	0	0	0	0	0	0		0			0	0
Reduced v/c Ratio	0.14	0.28	0.04	0.03	0.46	0.06		0.11			0.24	0.24

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 37 (37%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 10.0	Intersection LOS: A
Intersection Capacity Utilization 81.6%	ICU Level of Service D
Analysis Period (min) 15	

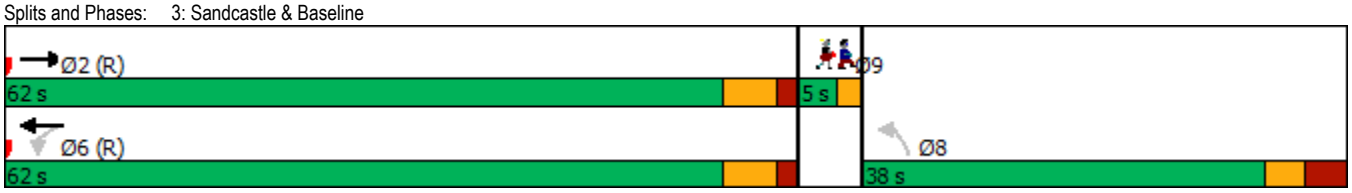
Splits and Phases: 2: Valley Stream/John Sutherland & Baseline



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	737	24	140	1166	45	74	
Future Volume (vph)	737	24	140	1166	45	74	
Satd. Flow (prot)	3363	0	1695	3390	1478	0	
Flt Permitted			0.353		0.981		
Satd. Flow (perm)	3363	0	617	3390	1458	0	
Satd. Flow (RTOR)	5				74		
Lane Group Flow (vph)	761	0	140	1166	119	0	
Turn Type	NA		Perm	NA	Perm		
Protected Phases	2			6			9
Permitted Phases			6		8		
Detector Phase	2		6	6	8		
Switch Phase							
Minimum Initial (s)	10.0		10.0	10.0	10.0		1.0
Minimum Split (s)	23.9		23.9	23.9	35.5		5.0
Total Split (s)	62.0		62.0	62.0	38.0		5.0
Total Split (%)	59.0%		59.0%	59.0%	36.2%		5%
Yellow Time (s)	4.2		4.2	4.2	3.0		2.0
All-Red Time (s)	1.7		1.7	1.7	3.5		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.9		5.9	5.9	6.5		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Min		C-Min	C-Min	None		None
Act Effct Green (s)	78.6		78.6	78.6	12.5		
Actuated g/C Ratio	0.75		0.75	0.75	0.12		
v/c Ratio	0.30		0.30	0.46	0.50		
Control Delay	5.5		8.0	6.7	25.3		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	5.5		8.0	6.7	25.3		
LOS	A		A	A	C		
Approach Delay	5.5			6.9	25.3		
Approach LOS	A			A	C		
Queue Length 50th (m)	17.8		6.3	32.4	8.7		
Queue Length 95th (m)	49.1		26.9	86.6	23.4		
Internal Link Dist (m)	413.1			132.4	26.3		
Turn Bay Length (m)			70.0				
Base Capacity (vph)	2519		462	2538	489		
Starvation Cap Reductn	0		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.30		0.30	0.46	0.24		

Intersection Summary	
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 55 (52%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 7.4	Intersection LOS: A
Intersection Capacity Utilization 62.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Sandcastle & Baseline

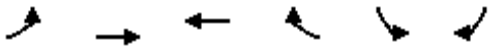


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	829	35	85	1226	28	79
Future Volume (vph)	829	35	85	1226	28	79
Satd. Flow (prot)	3363	0	1695	3390	1695	1517
Flt Permitted			0.319		0.950	
Satd. Flow (perm)	3363	0	565	3390	1678	1475
Satd. Flow (RTOR)	7					79
Lane Group Flow (vph)	864	0	85	1226	28	79
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	2			6		
Permitted Phases			6		8	8
Detector Phase	2		6	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		10.0	10.0	10.0	10.0
Minimum Split (s)	34.1		34.1	34.1	35.1	35.1
Total Split (s)	65.0		65.0	65.0	35.0	35.0
Total Split (%)	65.0%		65.0%	65.0%	35.0%	35.0%
Yellow Time (s)	4.2		4.2	4.2	3.0	3.0
All-Red Time (s)	1.9		1.9	1.9	3.1	3.1
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min		C-Min	C-Min	None	None
Act Effct Green (s)	78.4		78.4	78.4	13.8	13.8
Actuated g/C Ratio	0.78		0.78	0.78	0.14	0.14
v/c Ratio	0.33		0.19	0.46	0.12	0.29
Control Delay	5.4		9.1	10.5	35.6	10.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	5.4		9.1	10.5	35.6	10.2
LOS	A		A	B	D	B
Approach Delay	5.4			10.4	16.9	
Approach LOS	A			B	B	
Queue Length 50th (m)	20.7		7.1	69.8	5.1	0.0
Queue Length 95th (m)	58.3		m24.8	145.3	10.3	10.3
Internal Link Dist (m)	103.0			384.9	183.4	
Turn Bay Length (m)			55.0		30.0	
Base Capacity (vph)	2639		443	2659	484	482
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	0.33		0.19	0.46	0.06	0.16

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 65 (65%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.46	
Intersection Signal Delay: 8.8	Intersection LOS: A
Intersection Capacity Utilization 63.6%	ICU Level of Service B
Analysis Period (min) 15	

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

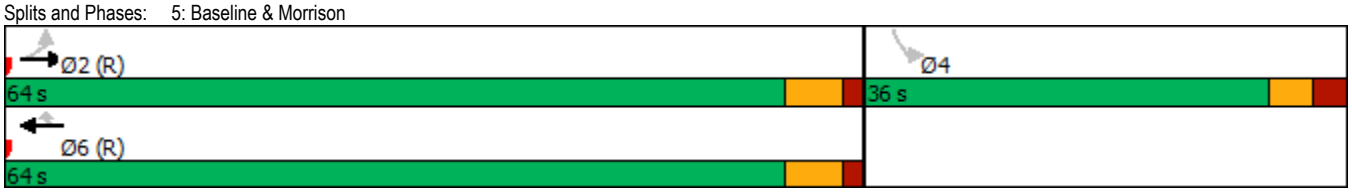
Splits and Phases: 4: Monterey & Baseline



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	51	899	1348	63	51	117
Future Volume (vph)	51	899	1348	63	51	117
Satd. Flow (prot)	1695	3390	3390	1517	1568	0
Flt Permitted	0.168				0.985	
Satd. Flow (perm)	299	3390	3390	1435	1563	0
Satd. Flow (RTOR)				63	45	
Lane Group Flow (vph)	51	899	1348	63	168	0
Turn Type	Perm	NA	NA	Perm	Perm	
Protected Phases		2	6			
Permitted Phases	2			6	4	
Detector Phase	2	2	6	6	4	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	30.4	30.4	30.4	30.4	36.5	
Total Split (s)	64.0	64.0	64.0	64.0	36.0	
Total Split (%)	64.0%	64.0%	64.0%	64.0%	36.0%	
Yellow Time (s)	4.2	4.2	4.2	4.2	3.3	
All-Red Time (s)	1.7	1.7	1.7	1.7	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	5.9	5.9	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	72.1	72.1	72.1	72.1	16.0	
Actuated g/C Ratio	0.72	0.72	0.72	0.72	0.16	
v/c Ratio	0.24	0.37	0.55	0.06	0.58	
Control Delay	16.4	10.3	8.8	2.2	34.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	16.4	10.3	8.8	2.2	34.9	
LOS	B	B	A	A	C	
Approach Delay		10.6	8.5		34.9	
Approach LOS		B	A		C	
Queue Length 50th (m)	2.7	28.1	48.0	0.0	22.8	
Queue Length 95th (m)	21.6	109.3	112.4	5.1	35.3	
Internal Link Dist (m)		384.9	355.9		174.0	
Turn Bay Length (m)	55.0			160.0		
Base Capacity (vph)	215	2442	2442	1051	500	
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	0.24	0.37	0.55	0.06	0.34	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 11 (11%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 11.1	Intersection LOS: B
Intersection Capacity Utilization 69.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Baseline & Morrison



Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	37	147	0	81	139
Future Vol, veh/h	0	37	147	0	81	139
Conflicting Peds, #/hr	0	0	0	25	25	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	37	147	0	81	139

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	473	172	0	0	172	0
Stage 1	172	-	-	-	-	-
Stage 2	301	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	550	872	-	-	1405	-
Stage 1	858	-	-	-	-	-
Stage 2	751	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	504	854	-	-	1375	-
Mov Cap-2 Maneuver	504	-	-	-	-	-
Stage 1	840	-	-	-	-	-
Stage 2	703	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	2.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	854	1375	-
HCM Lane V/C Ratio	-	-	0.043	0.059	-
HCM Control Delay (s)	-	-	9.4	7.8	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.2	-

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	132	0	25	114
Future Vol, veh/h	0	15	132	0	25	114
Conflicting Peds, #/hr	0	0	0	15	15	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	15	132	0	25	114

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	311	147	0	0	147	0
Stage 1	147	-	-	-	-	-
Stage 2	164	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	681	900	-	-	1435	-
Stage 1	880	-	-	-	-	-
Stage 2	865	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	659	889	-	-	1417	-
Mov Cap-2 Maneuver	659	-	-	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	849	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	1.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	889	1417	-
HCM Lane V/C Ratio	-	-	0.017	0.018	-
HCM Control Delay (s)	-	-	9.1	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	767	36	0	1248	0	64
Future Vol, veh/h	767	36	0	1248	0	64
Conflicting Peds, #/hr	0	25	25	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	767	36	0	1248	0	64

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	828	0	-	427
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	799	-	0	576
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	782	-	-	564
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

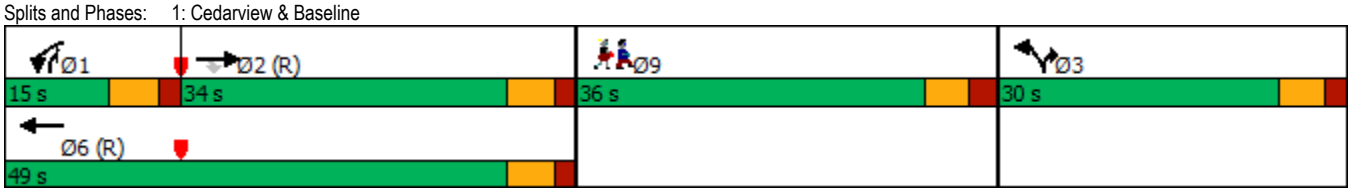
Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	564	-	-	782	-
HCM Lane V/C Ratio	0.113	-	-	-	-
HCM Control Delay (s)	12.2	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1282	54	90	504	169	476	
Future Volume (vph)	1282	54	90	504	169	476	
Satd. Flow (prot)	3390	1517	1695	3390	1695	1517	
Flt Permitted			0.950		0.950		
Satd. Flow (perm)	3390	1434	1687	3390	1683	1517	
Satd. Flow (RTOR)		36				476	
Lane Group Flow (vph)	1282	54	90	504	169	476	
Turn Type	NA	Perm	Prot	NA	Prot	pt+ov	
Protected Phases	2		1	6	3	3 1	9
Permitted Phases		2					
Detector Phase	2	2	1	6	3	3 1	
Switch Phase							
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0		10.0
Minimum Split (s)	27.4	27.4	11.2	27.4	16.0		36.0
Total Split (s)	34.0	34.0	15.0	49.0	30.0		36.0
Total Split (%)	29.6%	29.6%	13.0%	42.6%	26.1%		31%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.0		3.7
All-Red Time (s)	1.9	1.9	1.9	1.9	2.0		2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.0		
Lead/Lag	Lag	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes				
Recall Mode	C-Min	C-Min	None	C-Min	None		None
Act Effct Green (s)	67.9	67.9	11.8	85.9	17.0	35.0	
Actuated g/C Ratio	0.59	0.59	0.10	0.75	0.15	0.30	
v/c Ratio	0.64	0.06	0.52	0.20	0.68	0.60	
Control Delay	18.9	6.6	58.6	5.0	59.1	5.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	18.9	6.6	58.6	5.0	59.1	5.7	
LOS	B	A	E	A	E	A	
Approach Delay	18.4			13.1	19.7		
Approach LOS	B			B	B		
Queue Length 50th (m)	93.3	1.6	19.5	15.0	36.6	0.0	
Queue Length 95th (m)	146.9	8.6	34.4	26.0	55.4	19.6	
Internal Link Dist (m)	136.9			418.5	239.0		
Turn Bay Length (m)			100.0			30.0	
Base Capacity (vph)	2002	861	178	2531	353	781	
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	0.64	0.06	0.51	0.20	0.48	0.61	

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 30 (26%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 115	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 17.5	Intersection LOS: B
Intersection Capacity Utilization 79.1%	ICU Level of Service D
Analysis Period (min) 15	

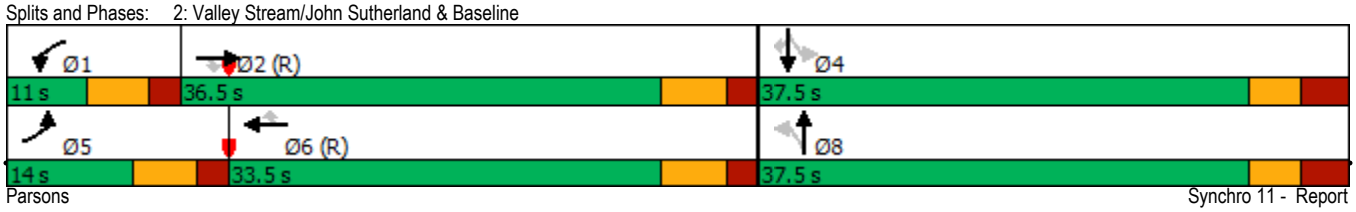
Splits and Phases: 1: Cedarview & Baseline



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	1620	15	12	506	106	34	2	15	55	4	40
Future Volume (vph)	103	1620	15	12	506	106	34	2	15	55	4	40
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	0	1646	0	0	1704	1517
Flt Permitted	0.950			0.950				0.763			0.703	
Satd. Flow (perm)	1681	3390	1454	1692	3390	1453	0	1291	0	0	1241	1486
Satd. Flow (RTOR)			122			122		15				118
Lane Group Flow (vph)	103	1620	15	12	506	106	0	51	0	0	59	40
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		4
Detector Phase	5	2	2	1	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.0	32.2	32.2	11.0	32.2	32.2	37.5	37.5		37.5	37.5	37.5
Total Split (s)	14.0	36.5	36.5	11.0	33.5	33.5	37.5	37.5		37.5	37.5	37.5
Total Split (%)	16.5%	42.9%	42.9%	12.9%	39.4%	39.4%	44.1%	44.1%		44.1%	44.1%	44.1%
Yellow Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	6.0	6.2	6.2	6.0	6.2	6.2		6.5			6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	None
Act Effct Green (s)	9.4	60.3	60.3	5.7	49.6	49.6		14.4			14.4	14.4
Actuated g/C Ratio	0.11	0.71	0.71	0.07	0.58	0.58		0.17			0.17	0.17
v/c Ratio	0.55	0.67	0.01	0.11	0.26	0.12		0.22			0.28	0.11
Control Delay	48.2	14.8	0.0	39.6	13.7	3.4		22.8			31.5	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	48.2	14.8	0.0	39.6	13.7	3.4		22.8			31.5	0.7
LOS	D	B	A	D	B	A		C			C	A
Approach Delay		16.6			12.5			22.8			19.1	
Approach LOS		B			B			C			B	
Queue Length 50th (m)	15.8	57.6	0.0	1.9	22.2	0.0		5.4			9.0	0.0
Queue Length 95th (m)	#38.1	#223.6	0.0	7.1	48.1	8.3		10.9			14.3	0.0
Internal Link Dist (m)		418.5			413.1			206.5			123.4	
Turn Bay Length (m)	50.0		140.0	50.0		50.0						40.0
Base Capacity (vph)	193	2404	1066	113	1978	898		480			452	616
Starvation Cap Reductn	0	0	0	0	0	0		0			0	0
Spillback Cap Reductn	0	0	0	0	0	0		0			0	0
Storage Cap Reductn	0	0	0	0	0	0		0			0	0
Reduced v/c Ratio	0.53	0.67	0.01	0.11	0.26	0.12		0.11			0.13	0.06

Intersection Summary	
Cycle Length: 85	
Actuated Cycle Length: 85	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 105	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 15.8	Intersection LOS: B
Intersection Capacity Utilization 83.4%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

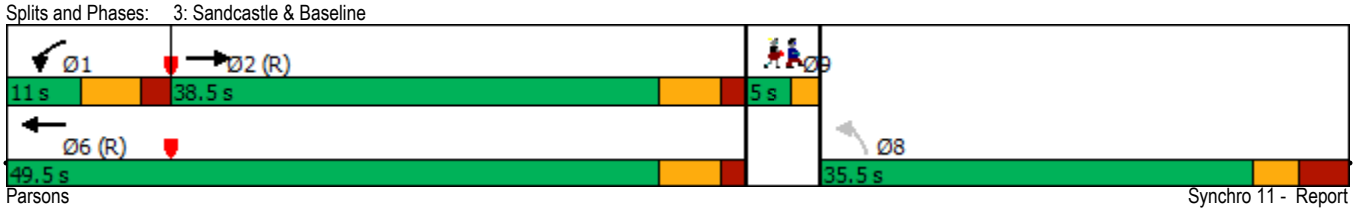
Splits and Phases: 2: Valley Stream/John Sutherland & Baseline



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	1690	16	65	554	49	121	
Future Volume (vph)	1690	16	65	554	49	121	
Satd. Flow (prot)	3384	0	1695	3390	1467	0	
Flt Permitted			0.950		0.986		
Satd. Flow (perm)	3384	0	1685	3390	1453	0	
Satd. Flow (RTOR)	1				121		
Lane Group Flow (vph)	1706	0	65	554	170	0	
Turn Type	NA		Prot	NA	Perm		
Protected Phases	2		1	6			9
Permitted Phases					8		
Detector Phase	2		1	6	8		
Switch Phase							
Minimum Initial (s)	10.0		5.0	10.0	10.0		1.0
Minimum Split (s)	23.9		11.0	23.9	35.5		5.0
Total Split (s)	38.5		11.0	49.5	35.5		5.0
Total Split (%)	42.8%		12.2%	55.0%	39.4%		6%
Yellow Time (s)	4.2		4.0	4.2	3.0		2.0
All-Red Time (s)	1.7		2.0	1.7	3.5		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.9		6.0	5.9	6.5		
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	C-Min		None	C-Min	None		None
Act Effct Green (s)	51.3		9.2	64.1	12.5		
Actuated g/C Ratio	0.57		0.10	0.71	0.14		
v/c Ratio	0.89		0.38	0.23	0.56		
Control Delay	26.9		45.2	8.4	18.9		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	26.9		45.2	8.4	18.9		
LOS	C		D	A	B		
Approach Delay	26.9			12.2	18.9		
Approach LOS	C			B	B		
Queue Length 50th (m)	121.7		12.0	11.1	7.9		
Queue Length 95th (m)	#249.8		25.4	48.6	23.4		
Internal Link Dist (m)	413.1			132.4	26.3		
Turn Bay Length (m)			70.0				
Base Capacity (vph)	1927		173	2413	550		
Starvation Cap Reductn	0		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.89		0.38	0.23	0.31		

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
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.	

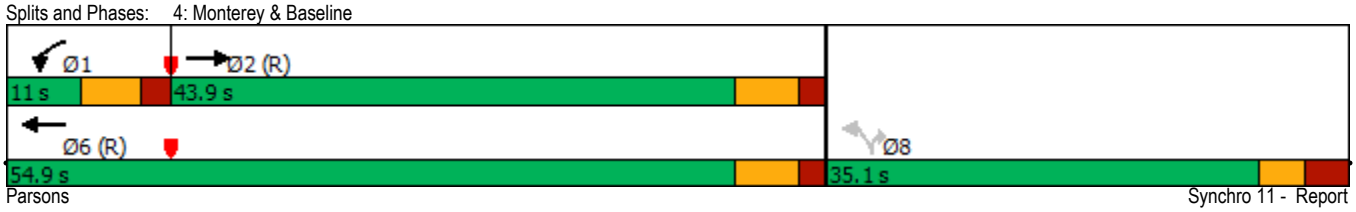
Splits and Phases: 3: Sandcastle & Baseline

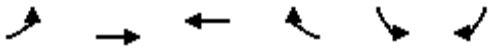


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1659	28	49	712	25	84
Future Volume (vph)	1659	28	49	712	25	84
Satd. Flow (prot)	3380	0	1695	3390	1695	1517
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3380	0	1691	3390	1679	1485
Satd. Flow (RTOR)	2					84
Lane Group Flow (vph)	1687	0	49	712	25	84
Turn Type	NA		Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases					8	8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		5.0	10.0	10.0	10.0
Minimum Split (s)	34.1		11.0	34.1	35.1	35.1
Total Split (s)	43.9		11.0	54.9	35.1	35.1
Total Split (%)	48.8%		12.2%	61.0%	39.0%	39.0%
Yellow Time (s)	4.2		4.0	4.2	3.0	3.0
All-Red Time (s)	1.9		2.0	1.9	3.1	3.1
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1		6.0	6.1	6.1	6.1
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Min		None	C-Min	None	None
Act Effct Green (s)	60.4		7.0	68.4	13.8	13.8
Actuated g/C Ratio	0.67		0.08	0.76	0.15	0.15
v/c Ratio	0.74		0.37	0.28	0.10	0.28
Control Delay	11.5		56.6	3.3	30.1	8.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	11.5		56.6	3.3	30.1	8.8
LOS	B		E	A	C	A
Approach Delay	11.5			6.8	13.7	
Approach LOS	B			A	B	
Queue Length 50th (m)	24.5		9.2	5.3	4.0	0.0
Queue Length 95th (m)	#217.9		#23.8	23.6	8.4	9.4
Internal Link Dist (m)	103.0			384.9	183.4	
Turn Bay Length (m)			55.0		30.0	
Base Capacity (vph)	2267		131	2577	541	535
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	0.74		0.37	0.28	0.05	0.16

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 105	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 10.2	Intersection LOS: B
Intersection Capacity Utilization 72.4%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 4: Monterey & Baseline



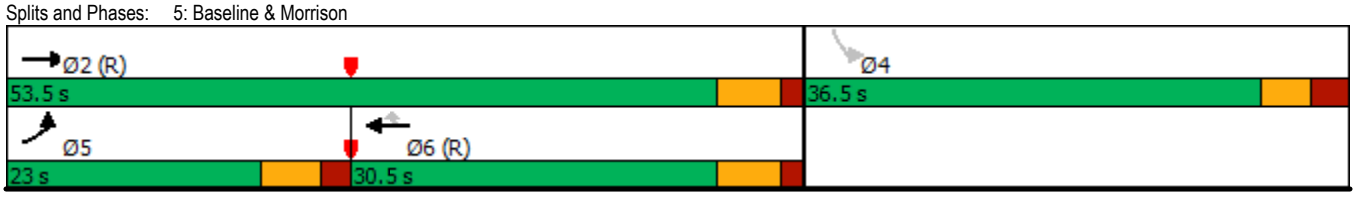


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	241	1557	573	74	69	37
Future Volume (vph)	241	1557	573	74	69	37
Satd. Flow (prot)	1695	3390	3390	1517	1634	0
Flt Permitted	0.950				0.968	
Satd. Flow (perm)	1681	3390	3390	1438	1625	0
Satd. Flow (RTOR)				74	32	
Lane Group Flow (vph)	241	1557	573	74	106	0
Turn Type	Prot	NA	NA	Perm	Perm	
Protected Phases	5	2	6			
Permitted Phases				6	4	
Detector Phase	5	2	6	6	4	
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.0	30.4	30.4	30.4	36.5	
Total Split (s)	23.0	53.5	30.5	30.5	36.5	
Total Split (%)	25.6%	59.4%	33.9%	33.9%	40.6%	
Yellow Time (s)	4.0	4.2	4.2	4.2	3.3	
All-Red Time (s)	2.0	1.7	1.7	1.7	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	5.9	5.9	5.9	6.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	16.9	68.2	44.1	44.1	14.3	
Actuated g/C Ratio	0.19	0.76	0.49	0.49	0.16	
v/c Ratio	0.76	0.61	0.35	0.10	0.37	
Control Delay	37.3	19.7	18.2	6.1	25.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.3	19.7	18.2	6.1	25.7	
LOS	D	B	B	A	C	
Approach Delay		22.0	16.8		25.7	
Approach LOS		C	B		C	
Queue Length 50th (m)	32.8	126.5	30.8	0.0	12.1	
Queue Length 95th (m)	m61.7	162.7	62.5	9.7	20.2	
Internal Link Dist (m)		384.9	355.9		174.0	
Turn Bay Length (m)	55.0			160.0		
Base Capacity (vph)	342	2568	1660	741	571	
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	0.70	0.61	0.35	0.10	0.19	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 20.9	Intersection LOS: C
Intersection Capacity Utilization 68.4%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 5: Baseline & Morrison



Intersection	
Int Delay, s/veh	3.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	60	82	0	54	63
Future Vol, veh/h	0	60	82	0	54	63
Conflicting Peds, #/hr	0	0	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	60	82	0	54	63

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	273	102	0	0	102	0
Stage 1	102	-	-	-	-	-
Stage 2	171	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	716	953	-	-	1490	-
Stage 1	922	-	-	-	-	-
Stage 2	859	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	677	937	-	-	1465	-
Mov Cap-2 Maneuver	677	-	-	-	-	-
Stage 1	906	-	-	-	-	-
Stage 2	826	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	3.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	937	1465	-
HCM Lane V/C Ratio	-	-	0.064	0.037	-
HCM Control Delay (s)	-	-	9.1	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	2.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	22	60	0	16	47
Future Vol, veh/h	0	22	60	0	16	47
Conflicting Peds, #/hr	0	0	0	15	15	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	60	0	16	47

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	154	75	0	0	75	0
Stage 1	75	-	-	-	-	-
Stage 2	79	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	838	986	-	-	1524	-
Stage 1	948	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	818	973	-	-	1505	-
Mov Cap-2 Maneuver	818	-	-	-	-	-
Stage 1	936	-	-	-	-	-
Stage 2	934	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	1.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	973	1505	-
HCM Lane V/C Ratio	-	-	0.023	0.011	-
HCM Control Delay (s)	-	-	8.8	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1660	15	0	660	0	70
Future Vol, veh/h	1660	15	0	660	0	70
Conflicting Peds, #/hr	0	25	25	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1660	15	0	660	0	70

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1700	0	-	863
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	371	-	0	298
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	363	-	-	292
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

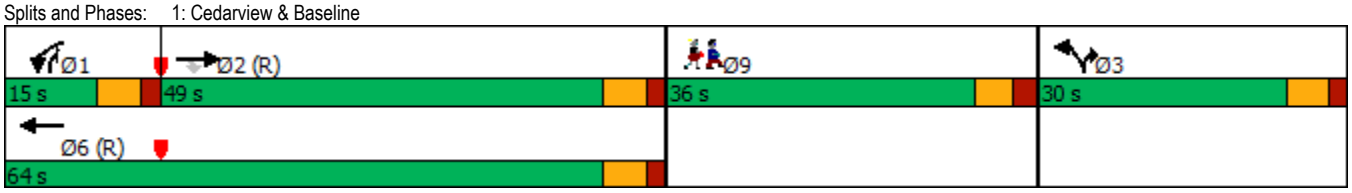
Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	292	-	-	363	-
HCM Lane V/C Ratio	0.24	-	-	-	-
HCM Control Delay (s)	21.2	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.9	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	684	180	356	978	122	165	
Future Volume (vph)	684	180	356	978	122	165	
Satd. Flow (prot)	3390	1517	1695	3390	1695	1517	
Flt Permitted			0.950		0.950		
Satd. Flow (perm)	3390	1424	1675	3390	1668	1517	
Satd. Flow (RTOR)		180				165	
Lane Group Flow (vph)	684	180	356	978	122	165	
Turn Type	NA	Perm	Prot	NA	Prot	pt+ov	
Protected Phases	2		1	6	3	3 1	9
Permitted Phases		2					
Detector Phase	2	2	1	6	3	3 1	
Switch Phase							
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0		10.0
Minimum Split (s)	27.4	27.4	11.2	27.4	16.0		36.0
Total Split (s)	49.0	49.0	15.0	64.0	30.0		36.0
Total Split (%)	37.7%	37.7%	11.5%	49.2%	23.1%		28%
Yellow Time (s)	4.2	4.2	4.2	4.2	4.0		3.7
All-Red Time (s)	1.9	1.9	1.9	1.9	2.0		2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.0		
Lead/Lag	Lag	Lag	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes				
Recall Mode	C-Min	C-Min	None	C-Min	None		None
Act Effct Green (s)	45.0	45.0	51.9	103.1	14.8	72.9	
Actuated g/C Ratio	0.35	0.35	0.40	0.79	0.11	0.56	
v/c Ratio	0.58	0.30	0.53	0.36	0.63	0.18	
Control Delay	36.0	4.6	37.2	4.6	69.0	3.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	36.0	4.6	37.2	4.6	69.0	3.1	
LOS	D	A	D	A	E	A	
Approach Delay	29.4			13.3	31.1		
Approach LOS	C			B	C		
Queue Length 50th (m)	69.5	0.0	74.0	31.6	30.4	0.0	
Queue Length 95th (m)	84.0	13.5	117.7	49.4	48.5	11.2	
Internal Link Dist (m)	136.9			418.5	239.0		
Turn Bay Length (m)			100.0			30.0	
Base Capacity (vph)	1282	650	677	2687	312	918	
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	0.53	0.28	0.53	0.36	0.39	0.18	

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 30 (23%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 105	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 21.0	Intersection LOS: C
Intersection Capacity Utilization 64.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Cedarview & Baseline



Lanes, Volumes, Timings
2: Valley Stream/John Sutherland & Baseline

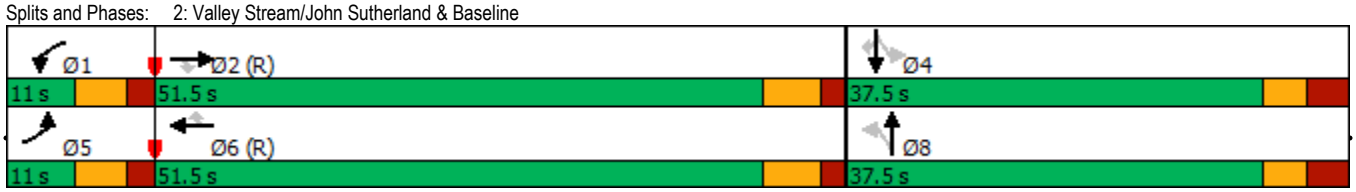
Projected 2035 PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	710	46	17	1177	66	26	3	19	89	6	125
Future Volume (vph)	40	710	46	17	1177	66	26	3	19	89	6	125
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	0	1625	0	0	1704	1517
Flt Permitted	0.950			0.950				0.799			0.705	
Satd. Flow (perm)	1686	3390	1452	1683	3390	1437	0	1324	0	0	1237	1477
Satd. Flow (RTOR)			104			104		19				125
Lane Group Flow (vph)	40	710	46	17	1177	66	0	48	0	0	95	125
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8			4		4
Detector Phase	5	2	2	1	6	6	8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.0	32.2	32.2	11.0	32.2	32.2	37.5	37.5		37.5	37.5	37.5
Total Split (s)	11.0	51.5	51.5	11.0	51.5	51.5	37.5	37.5		37.5	37.5	37.5
Total Split (%)	11.0%	51.5%	51.5%	11.0%	51.5%	51.5%	37.5%	37.5%		37.5%	37.5%	37.5%
Yellow Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	3.3	3.3		3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	3.2	3.2		3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	6.0	6.2	6.2	6.0	6.2	6.2		6.5			6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	None
Act Effct Green (s)	6.8	66.5	66.5	6.0	63.3	63.3		16.0			16.0	16.0
Actuated g/C Ratio	0.07	0.66	0.66	0.06	0.63	0.63		0.16			0.16	0.16
v/c Ratio	0.35	0.32	0.05	0.17	0.55	0.07		0.21			0.48	0.37
Control Delay	53.5	10.0	0.1	68.6	8.9	0.7		24.1			44.2	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	53.5	10.0	0.1	68.6	8.9	0.7		24.1			44.2	8.6
LOS	D	A	A	E	A	A		C			D	A
Approach Delay		11.6			9.3			24.1			24.0	
Approach LOS		B			A			C			C	
Queue Length 50th (m)	7.5	19.6	0.0	3.5	100.6	0.0		5.1			17.6	0.0
Queue Length 95th (m)	#20.1	63.8	0.0	m7.2	72.1	0.7		12.1			26.6	12.3
Internal Link Dist (m)		418.5			413.1			206.5			123.4	
Turn Bay Length (m)	50.0		140.0	50.0		50.0						40.0
Base Capacity (vph)	115	2252	999	101	2147	948		423			383	544
Starvation Cap Reductn	0	0	0	0	0	0		0			0	0
Spillback Cap Reductn	0	0	0	0	0	0		0			0	0
Storage Cap Reductn	0	0	0	0	0	0		0			0	0
Reduced v/c Ratio	0.35	0.32	0.05	0.17	0.55	0.07		0.11			0.25	0.23

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 11.8 Intersection LOS: B
Intersection Capacity Utilization 83.2% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

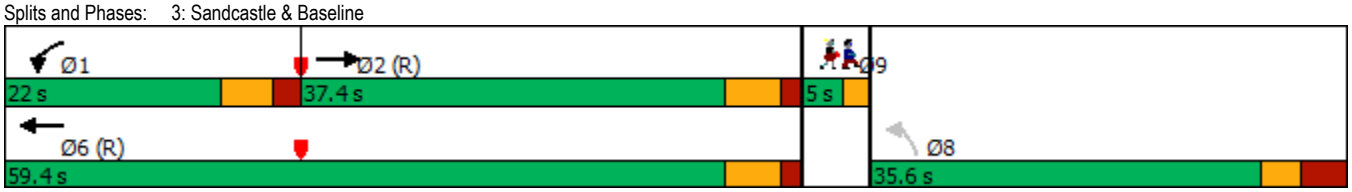
Splits and Phases: 2: Valley Stream/John Sutherland & Baseline



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø9
Lane Configurations							
Traffic Volume (vph)	773	24	140	1226	45	74	
Future Volume (vph)	773	24	140	1226	45	74	
Satd. Flow (prot)	3363	0	1695	3390	1484	0	
Flt Permitted			0.950		0.981		
Satd. Flow (perm)	3363	0	1656	3390	1464	0	
Satd. Flow (RTOR)	3				74		
Lane Group Flow (vph)	797	0	140	1226	119	0	
Turn Type	NA		Prot	NA	Perm		
Protected Phases	2		1	6			9
Permitted Phases					8		
Detector Phase	2		1	6	8		
Switch Phase							
Minimum Initial (s)	10.0		5.0	10.0	10.0		1.0
Minimum Split (s)	23.9		11.0	23.9	35.5		5.0
Total Split (s)	37.4		22.0	59.4	35.6		5.0
Total Split (%)	37.4%		22.0%	59.4%	35.6%		5%
Yellow Time (s)	4.2		4.0	4.2	3.0		2.0
All-Red Time (s)	1.7		2.0	1.7	3.5		0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.9		6.0	5.9	6.5		
Lead/Lag	Lag		Lead				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	C-Min		None	C-Min	None		None
Act Effct Green (s)	54.7		13.5	74.2	12.4		
Actuated g/C Ratio	0.55		0.14	0.74	0.12		
v/c Ratio	0.43		0.61	0.49	0.48		
Control Delay	17.2		59.6	9.0	23.6		
Queue Delay	0.0		0.0	0.0	0.0		
Total Delay	17.2		59.6	9.0	23.6		
LOS	B		E	A	C		
Approach Delay	17.2			14.2	23.6		
Approach LOS	B			B	C		
Queue Length 50th (m)	33.8		29.4	53.1	8.2		
Queue Length 95th (m)	76.0		48.5	66.8	22.2		
Internal Link Dist (m)	413.1			132.4	26.3		
Turn Bay Length (m)			70.0				
Base Capacity (vph)	1841		280	2515	478		
Starvation Cap Reductn	0		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.43		0.50	0.49	0.25		

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 15.7	Intersection LOS: B
Intersection Capacity Utilization 63.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Sandcastle & Baseline

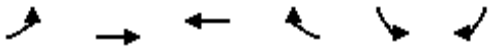


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	869	35	85	1287	28	79
Future Volume (vph)	869	35	85	1287	28	79
Satd. Flow (prot)	3363	0	1695	3390	1695	1517
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3363	0	1682	3390	1678	1475
Satd. Flow (RTOR)	5					79
Lane Group Flow (vph)	904	0	85	1287	28	79
Turn Type	NA		Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases					8	8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	10.0		5.0	10.0	10.0	10.0
Minimum Split (s)	34.1		11.0	34.1	35.1	35.1
Total Split (s)	48.9		16.0	64.9	35.1	35.1
Total Split (%)	48.9%		16.0%	64.9%	35.1%	35.1%
Yellow Time (s)	4.2		4.0	4.2	3.0	3.0
All-Red Time (s)	1.9		2.0	1.9	3.1	3.1
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1		6.0	6.1	6.1	6.1
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Min		None	C-Min	None	None
Act Effct Green (s)	65.1		9.8	78.4	13.8	13.8
Actuated g/C Ratio	0.65		0.10	0.78	0.14	0.14
v/c Ratio	0.41		0.52	0.48	0.12	0.29
Control Delay	7.5		44.3	9.8	35.6	10.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	7.5		44.3	9.8	35.6	10.2
LOS	A		D	A	D	B
Approach Delay	7.5			11.9	16.9	
Approach LOS	A			B	B	
Queue Length 50th (m)	17.4		16.0	46.4	5.1	0.0
Queue Length 95th (m)	30.6		m27.2	95.8	10.3	10.3
Internal Link Dist (m)	103.0			384.9	183.4	
Turn Bay Length (m)			55.0		30.0	
Base Capacity (vph)	2202		182	2659	486	483
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	0.41		0.47	0.48	0.06	0.16

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.52	
Intersection Signal Delay: 10.5	Intersection LOS: B
Intersection Capacity Utilization 62.3%	ICU Level of Service B
Analysis Period (min) 15	

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

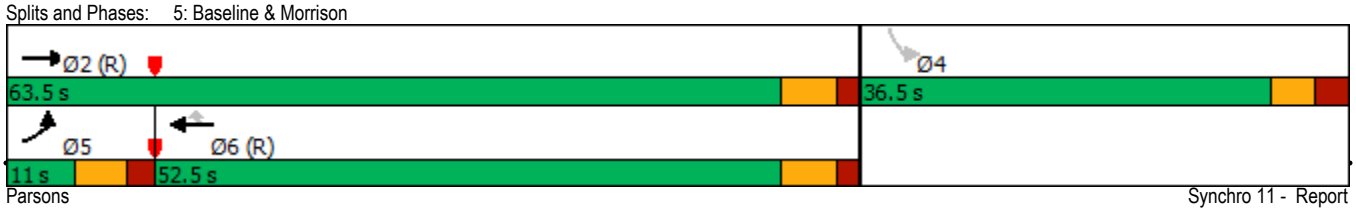
Splits and Phases: 4: Monterey & Baseline



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	51	943	1415	63	51	117
Future Volume (vph)	51	943	1415	63	51	117
Satd. Flow (prot)	1695	3390	3390	1517	1568	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1688	3390	3390	1434	1563	0
Satd. Flow (RTOR)				63	117	
Lane Group Flow (vph)	51	943	1415	63	168	0
Turn Type	Prot	NA	NA	Perm	Perm	
Protected Phases	5	2	6			
Permitted Phases				6	4	
Detector Phase	5	2	6	6	4	
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.0	30.4	30.4	30.4	36.5	
Total Split (s)	11.0	63.5	52.5	52.5	36.5	
Total Split (%)	11.0%	63.5%	52.5%	52.5%	36.5%	
Yellow Time (s)	4.0	4.2	4.2	4.2	3.3	
All-Red Time (s)	2.0	1.7	1.7	1.7	2.7	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.0	5.9	5.9	5.9	6.0	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	7.5	73.8	62.7	62.7	14.3	
Actuated g/C Ratio	0.08	0.74	0.63	0.63	0.14	
v/c Ratio	0.40	0.38	0.67	0.07	0.52	
Control Delay	62.8	4.1	16.5	3.7	18.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	62.8	4.1	16.5	3.7	18.3	
LOS	E	A	B	A	B	
Approach Delay		7.1	15.9		18.3	
Approach LOS		A	B		B	
Queue Length 50th (m)	10.5	3.3	82.7	0.0	9.4	
Queue Length 95th (m)	#26.3	38.1	#166.2	6.7	22.5	
Internal Link Dist (m)		384.9	355.9		174.0	
Turn Bay Length (m)	55.0			160.0		
Base Capacity (vph)	126	2500	2124	922	558	
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	0.40	0.38	0.67	0.07	0.30	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 12.8	Intersection LOS: B
Intersection Capacity Utilization 69.8%	ICU Level of Service C
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 5: Baseline & Morrison



Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	37	147	0	81	139
Future Vol, veh/h	0	37	147	0	81	139
Conflicting Peds, #/hr	0	0	0	25	25	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	37	147	0	81	139

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	473	172	0	0	172	0
Stage 1	172	-	-	-	-	-
Stage 2	301	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	550	872	-	-	1405	-
Stage 1	858	-	-	-	-	-
Stage 2	751	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	504	854	-	-	1375	-
Mov Cap-2 Maneuver	504	-	-	-	-	-
Stage 1	840	-	-	-	-	-
Stage 2	703	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	2.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	854	1375	-
HCM Lane V/C Ratio	-	-	0.043	0.059	-
HCM Control Delay (s)	-	-	9.4	7.8	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.2	-

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	15	132	0	25	114
Future Vol, veh/h	0	15	132	0	25	114
Conflicting Peds, #/hr	0	0	0	15	15	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	15	132	0	25	114

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	311	147	0	0	147	0
Stage 1	147	-	-	-	-	-
Stage 2	164	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	681	900	-	-	1435	-
Stage 1	880	-	-	-	-	-
Stage 2	865	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	659	889	-	-	1417	-
Mov Cap-2 Maneuver	659	-	-	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	849	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	1.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	889	1417	-
HCM Lane V/C Ratio	-	-	0.017	0.018	-
HCM Control Delay (s)	-	-	9.1	7.6	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	806	36	0	1308	0	64
Future Vol, veh/h	806	36	0	1308	0	64
Conflicting Peds, #/hr	0	25	25	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	45	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	806	36	0	1308	0	64

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	867	0	-	446
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	772	-	0	560
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	756	-	-	548
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	548	-	-	756	-
HCM Lane V/C Ratio	0.117	-	-	-	-
HCM Control Delay (s)	12.4	-	-	0	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0	-