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To:	**Shepard Development Corporation**	Date:	**November 13, 2020**
Attention:	**Shawn Belecki**	Project No.:	**27699**
Cc:	**IDEA Group Inc. (Glenn Makwich)**		
Reference:	**Transportation Impact Assessment for Shepard Industrial ASP**		
From:	**Michael Ge, P.Eng., PTOE, MPlan, M.Sc., Andrew Ko, EIT, Alex Ho, P.Eng., PTOE**		

1.0 Study Objective and Scope

ISL Engineering was retained by Shepard Development Corporation to provide transportation consulting services and a traffic impact assessment for the proposed Shepard Industrial Area Structure Plan (ASP) in Rocky View County (RVC). Situated east of Calgary and south of Chestermere, the ASP area is bounded by an abandoned CPR right-of-way to the north, Range Road 282 (RR 282) to the east, the CPR mainline (Brooks Subdivision) tracks to the south, and Range Road 284 (RR 284) to the west, as shown in Figure 1.1. Central corridors within the ASP area will include 114 Avenue (running east-west and connecting to Stoney Trail) and Range Road 283 / Rainbow Road (RR 283, running north-south and connecting to Glenmore Trail). Also shown in Figure 1.1 are the anticipated stages of development. The initial stages are in the southwest quadrant of the ASP area, with subsequent stages in the southeast, northwest and northeast quadrants.

For Phase 1 of the TIA, a preliminary assessment of the development concept was conducted to confirm the feasibility of the development. The goal for the short-term and interim scenario analysis is to confirm the scale of the proposed development that can be accommodated by the existing transportation network and the short / interim improvements. The full TIA will be conducted in the future phase for the full build-out / 20-year horizon once the ASP concept is further refined.

Note: As the purpose of this TIA is to determine the scale of accommodated development, the resultant short-term and interim areas of development is a percentage of development in all quadrants of the ASP areas, and do not follow the staging plan (each development stage is focused on one quadrant of the ASP area). At the Conceptual Scheme when more details of staging are known, the short and interim analysis will be updated to reflect the staging of the development.

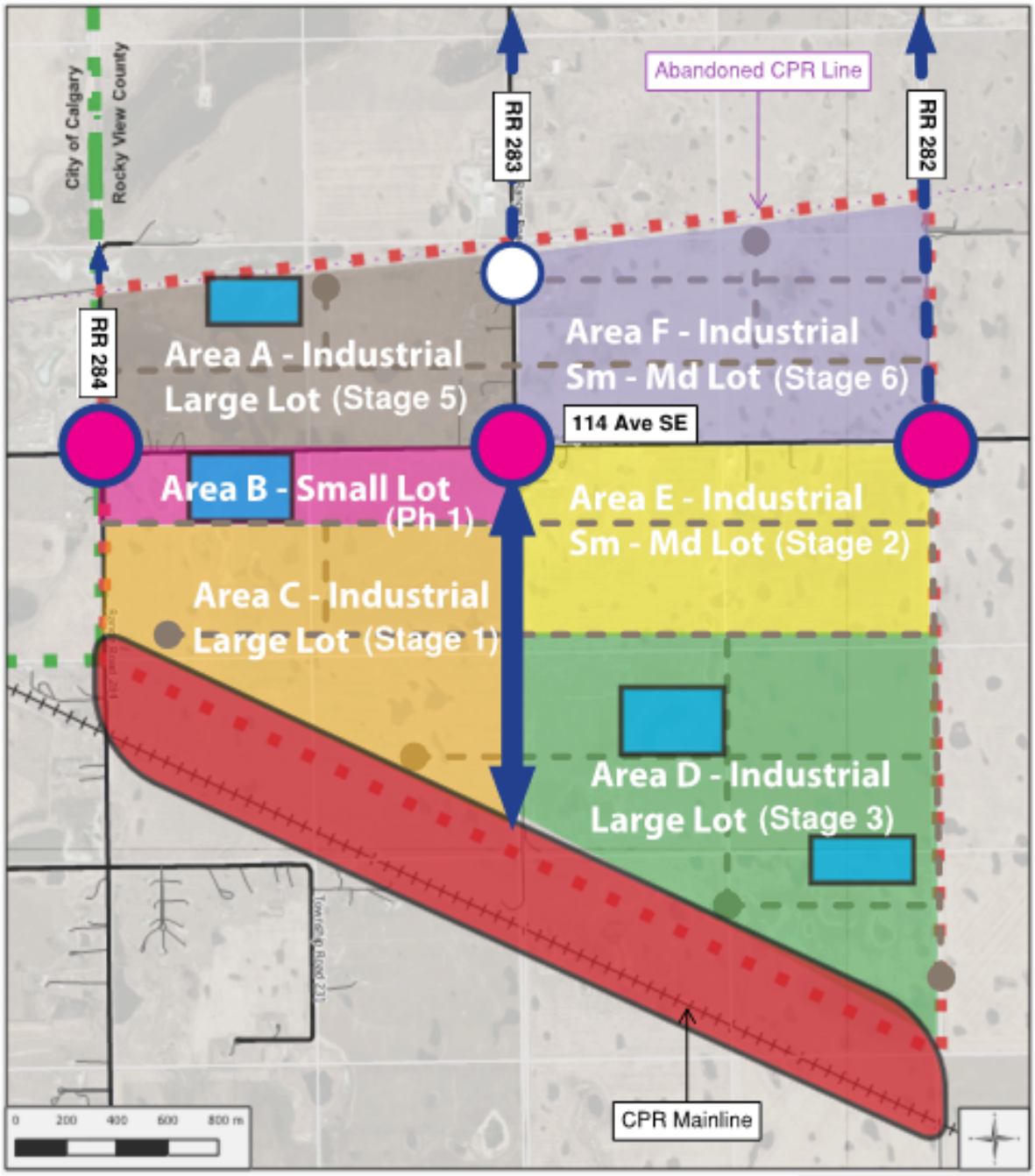
The Phase 1 scope of work is summarized below:

- Identify background traffic growth and traffic volumes at the study horizons
- Complete trip generation and assignment of the projected short-term (5-year) and interim (15-year) horizons of the prospective ASP
- Review the existing transportation network at the short-term and interim horizons, using projected traffic volumes
- Review internal and external roadway network and classification requirements
- Conduct left turn, right turn, signal, illumination and railway crossing warrants
- Document study findings for use in refinement of the ASP concept

The detailed scope of work for Phase 1 was confirmed with Rocky View County on October 7, 2020 and included in Appendix A. The scope for future phases of the TIA will be confirmed with RVC at a later date. As the site is just

over 1.6 km away from the nearest provincial highway, we understand that formal Alberta Transportation (AT) review and approval is not required for the ASP, however correspondence with AT may be warranted if the final TIA does include recommendations for improvements on provincial highways (such as new traffic signals). This will also be confirmed in future phases.

Figure 1.1: Site Plan



2.0 Traffic Volumes

2.1 Background Traffic

Available background traffic volumes were collected from the Alberta Transportation (AT) website for the following intersections and interchange junctions: Glenmore Tr / RR 283, Glenmore Tr / Stoney Tr, and Stoney Tr / 114 Ave. Existing traffic volumes were collected by ISL at the 114 Ave / RR 284 and 114 Ave / RR 283 intersections on Tuesday, September 29, 2020 and Thursday, October 1, 2020, respectively. As these intersection volumes were collected during the COVID-19 pandemic, they may not reflect the normal traffic conditions pre-COVID. Therefore, a traffic volume adjustment factor was considered.

Due to the lack of Automated Traffic Counter (ATR) on 114 Avenue, the ATR data from the nearby Highway 22X was used. Upon comparison of the 2019 and 2020 September counts in the AM and PM peaks, it was noted that the traffic counts in 2020 were higher than in 2019, and it was concluded that traffic volumes have largely resumed to normal conditions in September 2020.

To verify this finding, traffic volumes on 114 Avenue east of RR 284 were also compared between 2017 and 2020, where the 2017 counts were collected from The City of Calgary and the 2020 counts were collected by ISL. Upon comparison, similar traffic volume patterns are noted, which likely supports the conclusion that traffic volumes have largely resumed to pre-COVID levels.

As a final reference point, ISL notes that as part of a recent verbal update to The City of Calgary's Standing Policy Committee on Transportation and Transit, The City's noted that their ongoing monitoring has shown City-wide traffic to have returned to about 90-95% of pre-pandemic levels. (Report "TT2020-1176 Mobility Trends in Calgary, COVID-19 Transportation System Monitoring", October 21, 2020).

Based on the above review, and to be conservative, adjustment factors of 1.00 (AM) and 1.08 (PM) were applied to the ISL traffic counts (refer to Table 2.1).

Table 2.1: Traffic Volume Conversion Factors

Peak Period	Highway 22X East of 104 St SE			114 Ave East of RR 284		
	2019	2020	Factor	2017	2020	Factor
AM (7-9am)	1210	1216	**1.00**	160	164	0.98
PM (4-6pm)	1400	1541	0.91	238	220	**1.08**

The existing background traffic volumes for the AM and PM peak hours for the study intersections are shown in Figure 2.1. Similarly, using the historical Highway 22X ATR counts (2013-2019), the annual linear growth rate was calculated as 2.0%, which will be applied to the existing traffic volumes to calculate the short-term (5-year) and interim (15-year) horizon traffic volumes, shown in Figure 2.2 and Figure 2.3, respectively. It is noted that the figures are not to scale and are presented to only show the traffic volumes.

Figure 2.1: Existing AM and PM Background Traffic Volumes

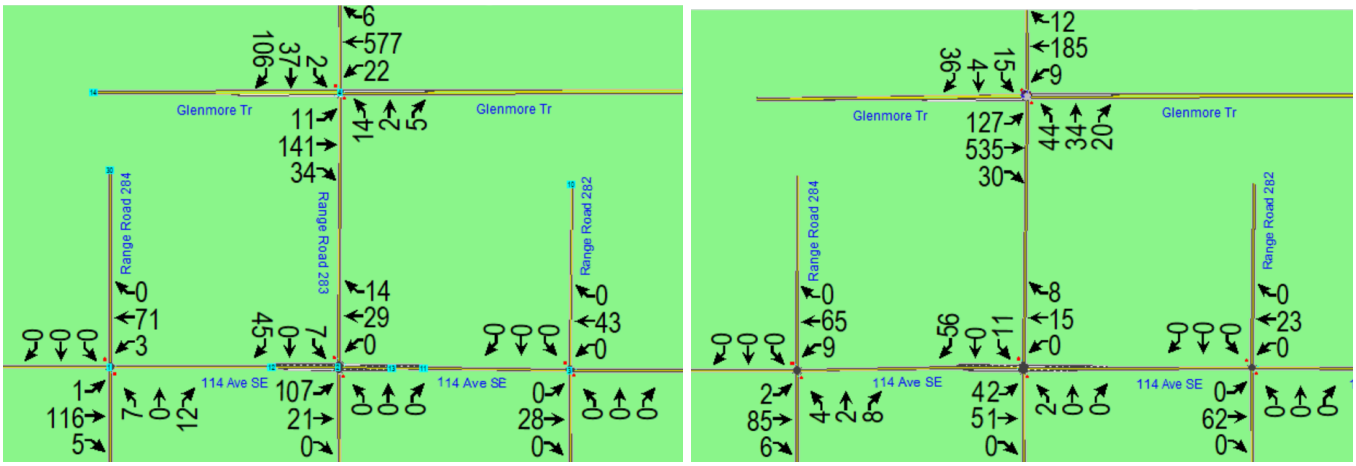


Figure 2.2: Short Term (5-year) AM and PM Background Traffic Volumes

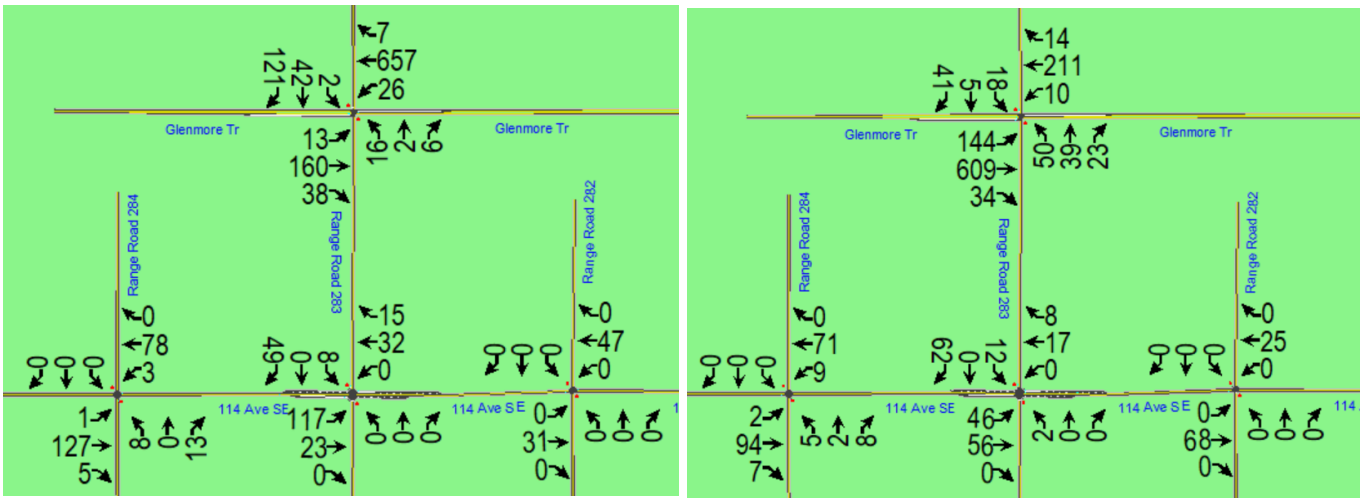
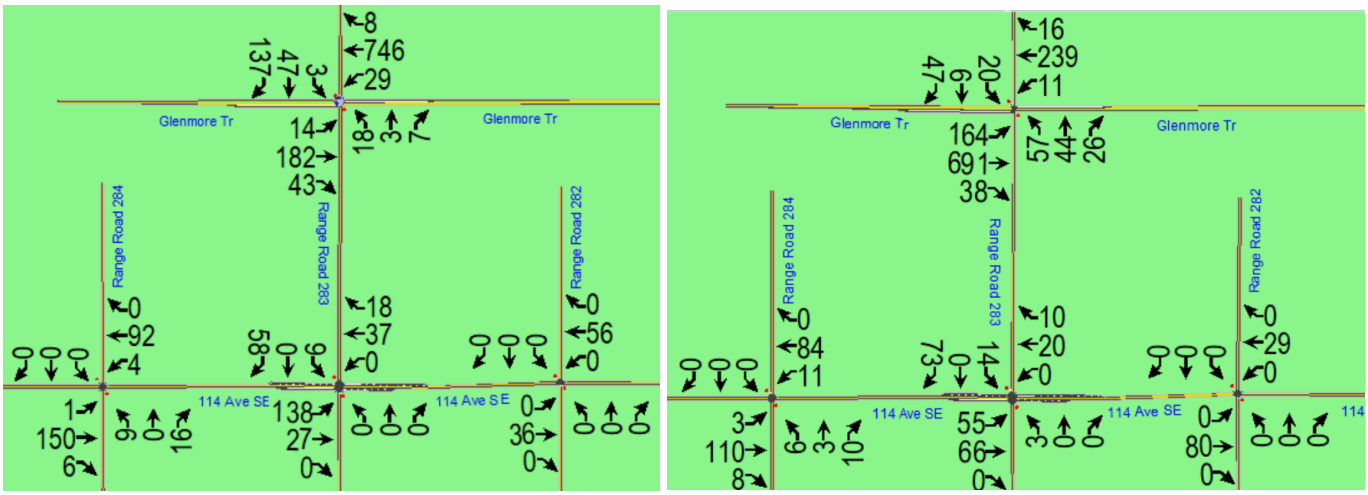


Figure 2.3: Interim (15-year) AM and PM Background Traffic Volumes



2.2 Development Traffic

Trip generation was calculated for the potential ASP development using the ITE (Institute of Transportation Engineers) Trip Generation Manual, 10th Edition. It is noted that in Area B, a neighbourhood level commercial centre is assumed, primarily to serve the daytime employees in the industrial area. The following land use categories are used:

- Industrial Large Lot (Areas A, C, D): Industrial Park (ITE Code 130)
- Industrial Small / Small – Medium Lot (Areas B, E, F): General Light Industrial (ITE Code 110)
- Neighbourhood Commercial (Area B): Shopping Centre (ITE Code 820)

For the trip generation calculation, 70% developable land with a 0.2 Floor-Area-Ratio (FAR) is assumed for the commercial and industrial uses. To be conservative and in recognition of the site's relatively remote location within the Calgary region, no internal trip or sustainable mode share is assumed. It is recognized that at the ASP level, the exact commercial and industrial land uses are unknown; therefore, it is recommended that a TIA update be considered at the Conceptual Scheme stage of each proposed subdivision, to confirm if land use aligns with the overall assumptions used at the ASP level.

With a 20% and 50% build-out potential assumed for the short-term and interim horizons, respectively, the trip generation for all three study horizons is summarized in Table 2.2. The generated trips were then distributed and assigned to different roadways in the study area using the existing travel patterns shown in Table 2.3. It is noted that in the short and interim, it was assumed that Range Road 282 and Range Road 284 will remain disconnected between 114 Ave and Glenmore Trail; Range Road 283 will remain to have connectivity to Glenmore Tr. The short term and interim build-out traffic assignments are shown in Figure 2.4 and Figure 2.5, respectively.

Table 2.2: Trip Generations for the Proposed Development Full Build-Out

Development Area	AM Peak			PM Peak		
	Trips	In	Out	Trips	In	Out
A - Large Lot	669	542	127	669	140	528
B - Small Lot	506	445	61	456	59	396
B - Commercial	90	56	34	127	61	66
C - Large Lot	771	625	147	771	162	609
D - Large Lot	1,145	927	218	1,145	240	904
E - Small/Medium Lot	1,255	1,104	151	1,129	147	983
F - Small/Medium Lot	1,424	1,253	171	1,281	167	1,115
Full Build Out (20-Year)	**5,860**	**4,952**	**908**	**5,578**	**976**	**4,602**
Short-Term (5-Year) 20%	**1,172**	**990**	**182**	**1,116**	**195**	**920**
Interim (15-Year) 50%	**2,930**	**2,476**	**454**	**2,789**	**488**	**2,301**

Table 2.3: Trip Distributions for Traffic

Distribution	AM Peak		Pm Peak	
	In %	Out %	In %	Out %
114 Ave West	5%	5%	7%	4%
Stoney North	18%	47%	44%	18%
Stoney South	32%	6%	12%	19%
RR 284 South	8%	3%	7%	8%
114 Ave East	18%	12%	11%	31%
Glenmore West	1%	16%	9%	1%
RR 283 North	3%	1%	2%	4%
Glenmore East	14%	9%	7%	15%
Total	100%	100%	100%	100%

Figure 2.4: Short Term Build-Out Development Traffic Assignments (AM and PM)

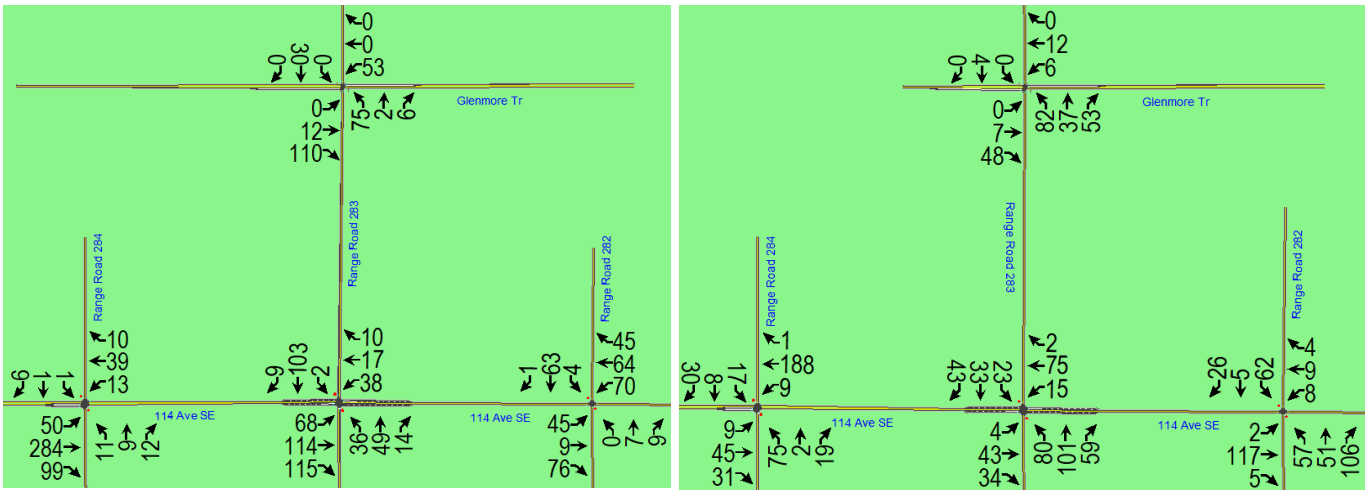
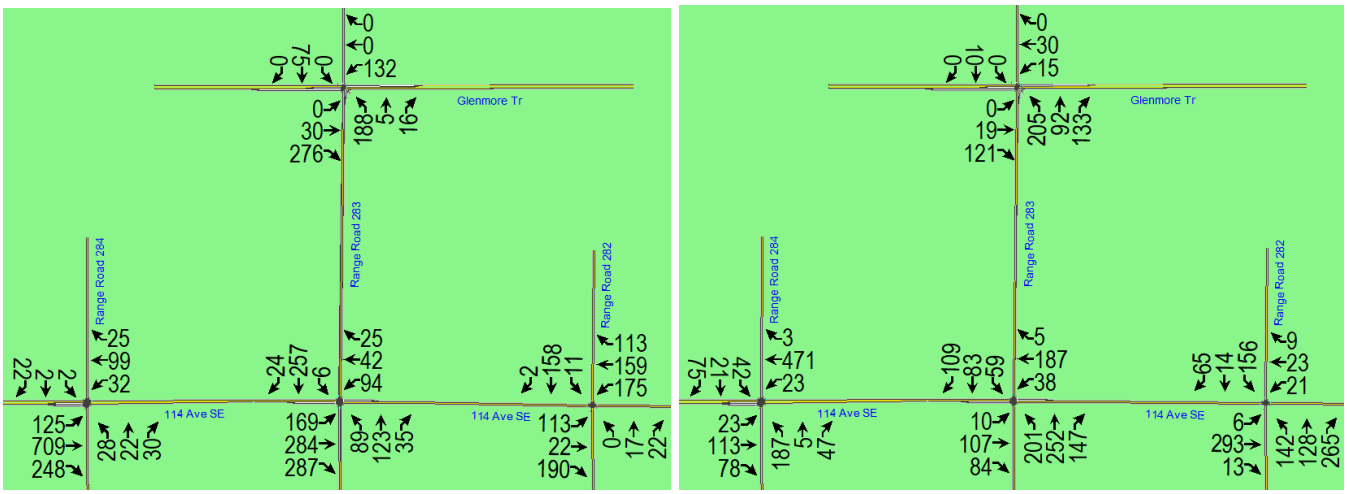


Figure 2.5: Interim Build-Out Development Traffic Assignments (AM and PM)



2.3 Combined Traffic

The proposed development traffic volumes of the short-term (5-year) and interim (15-year) horizons are added to the background traffic volumes with 1.90% annual growth for the traffic operations analysis. Assuming a 20% and 50% development potential for the short-term and interim horizons, the combined traffic volumes for both horizons are shown in Figure 2.6 and Figure 2.7, respectively.

Figure 2.6: Combined AM and PM Peak Traffic Volumes for Short-Term (5-Year) Horizon

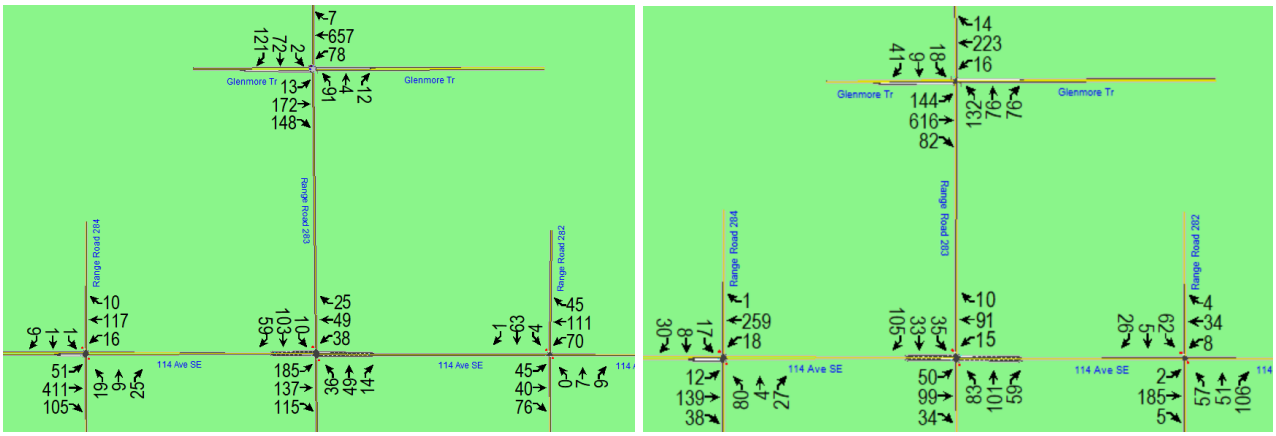
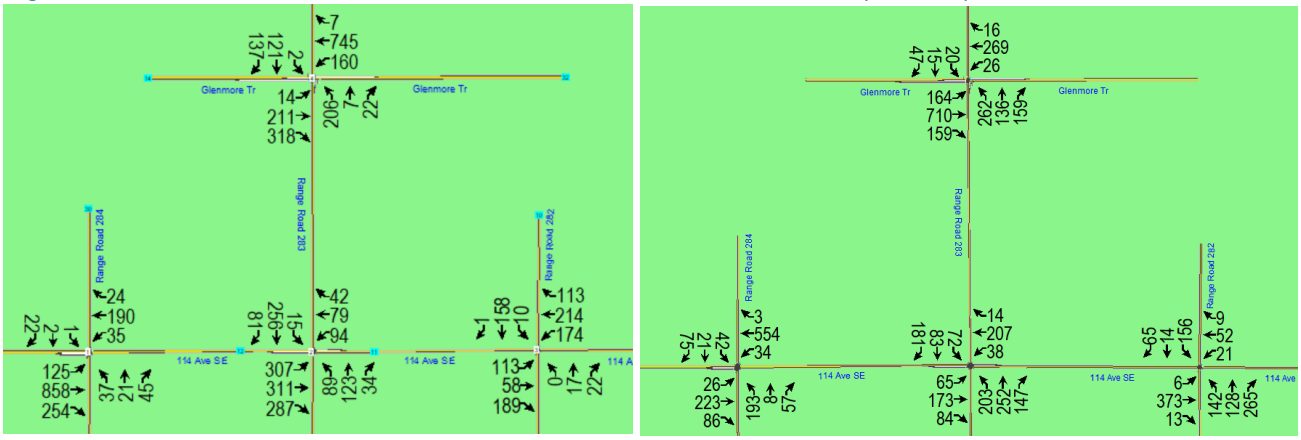


Figure 2.7: Combined AM and PM Peak Traffic Volumes for Interim (15-Year) Horizon



3.0 Traffic Analysis

3.1 Synchro Analysis

The Synchro 9.0 computer analysis package was used to analyze the operational characteristic of the intersections. A Level of Operating Service (LOS) A represents the highest level of service or generally “free flowing conditions” while a LOS F generally represents a “breakdown” or “gridlock” condition in vehicular flow. There are varying degrees of delay and congestion introduced at the intersection LOS B, C, D, and E levels. LOS D is representative of “normal” peak hour congestion, while LOS E is representation of an intersection nearing its capacity. Typically, LOS D or better is considered the accepted standard for peak hour operations. LOS criteria for intersections are based on average delay per vehicle and are summarized in Table 3.1.

Table 3.1: LOS Criteria

LOS		A	B	C	D	E	F
Delay, sec/veh	Signalized	< 10	10 – 20	20 – 35	35 – 55	55 – 80	> 80
	Unsignalized	< 10	10 – 15	15 – 25	25 – 35	35 – 50	> 50

Synchro also calculates each movement’s volume to capacity (v/c) ratio. A v/c ratio of 1.0 represents an intersection or movement at full capacity with no ability to facilitate extra vehicles. Typically, a v/c ratio of 0.90 or better for all intersection movements is the accepted standard for peak hour operations in urban areas, with v/c 1.0 accepted where limited to certain movements.

Finally, Synchro also calculates the 95th percentile vehicle queue length for each intersection movement, which provides the criteria for left and right turn storage requirements. This queue length is exceeded 5% of the time, which is accepted practice for normal peak hour operation.

For the study horizons, the following intersections were analyzed:

- 114 Ave / RR 282
- 114 Ave / RR 283
- 114 Ave / RR 284
- Glenmore Tr / RR 283 (a service interchange is planned in the future by AT)
- Glenmore Tr / Stoney Tr (a systems interchange is planned in the future by AT)

3.2 Short-Term (5-Year) Traffic Analysis

3.2.1 Background

The short-term (5-year) background traffic operation was analyzed in Synchro. The analysis indicates that the existing Glenmore Trail / RR 283 and the Glenmore Trail / Stoney Trail interchange junctions operate beyond the criteria threshold (LOS D or better, v/c of 0.90 or better), as shown in Table 3.2.

The northbound movement on the existing unsignalized Glenmore Trail / RR 283 intersection operates at LOS F and signalization is required in the background scenario, without any addition traffic from the subjected ASP. The signal was required per the signal warrant in Section 4.1. For the remaining analysis of this study, a signalized intersection is assumed at this intersection. It is noted that an interchange is planned by AT in the future. While timing of the interchange is unknown, it is likely well beyond the analysis horizons of this development.

Several movements at the Stoney Trail / Glenmore Trail east junction operate above capacity in the background scenario, without the proposed development. There are plans for the interchange to be upgraded to a systems interchange (free-flow for all movements), however the timing of the upgrade is unknown. In the short-term (5-year) Synchro analyses, Stoney Trail / Glenmore Trail interchange will be analyzed with the existing interchange.

Table 3.2: Synchro Results for Short-Term (5-Year) Background AM and PM Peaks

Intersection			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Glenmore Tr / Range Road 283 (Unsignalized)	AM	v/c	0.01	0.01	0.02	0.02	0.42	0.42	0.17	0.17	0.17	0.49	0.49	0.49
		LOS	A	A	A	A	A	A	D	D	D	C	C	C
		Queue (m)	0	0	0	0	0	0	4	4	4	20	20	20
	PM	v/c	0.11	0.11	0.02	0.01	0.14	0.14	0.72	0.72	0.72	0.27	0.27	0.27
		LOS	A	A	A	A	A	A	**F**	**F**	**F**	C	C	C
		Queue (m)	3	3	0	0	0	0	33	33	33	8	8	8
Stoney Tr / Glenmore Tr West (Signalized)	AM	v/c	-	0.34	-	0.34	0.48	-	-	-	-	-	-	-
		LOS	-	A	-	C	A	-	-	-	-	-	-	-
		Queue (m)	-	28	-	20	4	-	-	-	-	-	-	-
	PM	v/c	-	0.89	-	0.85	0.16	-	-	-	-	-	-	-
		LOS	-	B	-	D	A	-	-	-	-	-	-	-
		Queue (m)	-	158	-	77	0	-	-	-	-	-	-	-
Stoney Tr / Glenmore Tr East (Signalized)	AM	v/c	0.52	0.21	-	-	0.58	-	-	-	-	-	-	-
		LOS	B	A	-	-	A	-	-	-	-	-	-	-
		Queue (m)	21	0	-	-	43	-	-	-	-	-	-	-
	PM	v/c	**1.03**	0.29	-	-	**0.92**	-	-	-	-	-	-	-
		LOS	D	A	-	-	D	-	-	-	-	-	-	-
		Queue (m)	**294**	0	-	-	97	-	-	-	-	-	-	-

3.2.2 Post Development

The short-term (5-year) combined traffic operation was analyzed in Synchro and the Synchro results are summarized in Table 3.3. The Synchro analysis shows that with 20% build-out of the proposed development, all study intersections operate within criteria with the exception of the following intersections:

- Stoney Tr / Glenmore Tr East Interchange Junction: Similar to the background scenario, the same movements operate at above capacity by about the same degree. The operations (LOS, v/c, queue) of these movements are very similar to the background scenario, with no substantive impact by the proposed ASP.
- Glenmore Tr / RR 283: signalization (from background scenario)
- 114 Ave / RR 284: both left-turn and right-turn bays are warranted
- 114 Ave / RR 283: only a left-turn bay is warranted
- Please refer to Section 4 for further details on the signal, left turn and right turn warrant analysis

The Synchro outputs with the above improvements are included in Appendix B. With the exception of Stoney Tr / Glenmore Tr, all intersections operate well.

Table 3.3: Synchro Results for Short-Term (5-Year) Combined AM and PM Peaks

Intersection			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
114 Ave / Range Road 284 (N-S Stop Control)	AM	v/c	0.04	0.26	0.07	0.02	0.02	0.02	0.13	0.13	0.13	0.02	0.02	0.02
		LOS	A	A	A	A	A	A	B	B	B	B	B	B
		Queue (m)	1	0	0	0	0	0	4	4	4	0	0	0
	PM	v/c	0.01	0.09	0.02	0.01	0.01	0.01	0.23	0.23	0.23	0.10	0.10	0.10
		LOS	A	A	A	A	A	A	B	B	B	B	B	B
		Queue (m)	0	0	0	0	0	0	7	7	7	3	3	3
114 Ave / Range Road 283 (N-S Stop Control)	AM	v/c	0.13	0.16	0.16	0.03	0.03	0.02	0.44	0.44	0.44	0.51	0.51	0.51
		LOS	A	A	A	A	A	A	D	D	D	D	D	D
		Queue (m)	3	0	0	1	1	0	16	16	16	21	21	21
	PM	v/c	0.04	0.08	0.08	0.01	0.01	0.01	0.48	0.48	0.48	0.28	0.28	0.28
		LOS	A	A	A	A	A	A	C	C	C	B	B	B
		Queue (m)	1	0	0	0	0	0	20	20	20	9	9	9
114 Ave / Range Road 282 (N-S Stop Control)	AM	v/c	0.03	0.03	0.03	0.05	0.05	0.05	0.03	0.03	0.03	0.17	0.17	0.17
		LOS	A	A	A	A	A	A	B	B	B	B	B	B
		Queue (m)	1	1	1	1	1	1	1	1	1	5	5	5
	PM	v/c	0.00	0.00	0.00	0.01	0.01	0.01	0.31	0.31	0.31	0.18	0.18	0.18
		LOS	A	A	A	A	A	A	B	B	B	B	B	B
		Queue (m)	0	0	0	0	0	0	10	10	10	5	5	5
Glenmore Tr / Range Road 283 (Signalized)	AM	v/c	0.06	0.37	0.37	0.16	0.75	0.75	0.37	0.37	0.37	0.42	0.42	0.42
		LOS	A	A	A	A	B	B	B	B	B	A	A	A
		Queue (m)	2	20	20	8	74	74	20	20	20	19	19	19
	PM	v/c	0.27	0.80	0.80	0.09	0.27	0.27	0.66	0.66	0.66	0.16	0.16	0.16
		LOS	A	B	B	A	A	A	C	C	C	A	A	A
		Queue (m)	20	110	110	4	27	27	52	52	52	10	10	10
Stoney Tr / Glenmore Tr West (Signalized)	AM	v/c	-	0.35	-	0.34	0.49	-	-	-	-	-	-	-
		LOS	-	A	-	C	A	-	-	-	-	-	-	-
		Queue (m)	-	28	-	20	4	-	-	-	-	-	-	-
	PM	v/c	-	0.90	-	0.85	0.16	-	-	-	-	-	-	-
		LOS	-	B	-	D	A	-	-	-	-	-	-	-
		Queue (m)	-	165	-	77	0	-	-	-	-	-	-	-
Stoney Tr / Glenmore Tr East (Signalized)	AM	v/c	0.53	0.25	-	-	0.60	-	-	-	-	-	-	-
		LOS	B	A	-	-	A	-	-	-	-	-	-	-
		Queue (m)	20	0	-	-	45	-	-	-	-	-	-	-
	PM	v/c	**1.03**	0.31	-	-	**0.93**	-	-	-	-	-	-	-
		LOS	D	A	-	-	E	-	-	-	-	-	-	-
		Queue (m)	**294**	0	-	-	98	-	-	-	-	-	-	-

3.3 Interim (15-Year) Traffic Analysis

3.3.1 Background

The interim background Synchro analysis was undertaken using the short-term post development lane configurations. Similar to the 5-year background horizon, the Stoney Tr / Glenmore Tr interchange operates at above capacity (see Table 3.4). Due to traffic growth, many movements operate at LOS F with higher v/c ratios and long queues. This indicates that a systems interchange is likely required around this horizon, due to the continued background traffic growth. As mentioned in the 5-year horizon, the interchange will be upgraded to a system interchange in the future, however, the timing of the upgrade is unknown. Hence, for the interim (15-year) Synchro analyses, Stoney Trail / Glenmore Trail interchange will be analyzed using the existing interchange.

Table 3.4: Synchro Results for Short-Term (15-Year) Background AM and PM Peaks

Intersection			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Stoney Tr / Glenmore Tr West (Signalized)	AM	v/c	-	0.40	-	0.41	0.56	-	-	-	-	-	-	-
		LOS	-	A	-	C	A	-	-	-	-	-	-	-
		Queue (m)	-	30	-	21	7	-	-	-	-	-	-	-
	PM	v/c	-	**1.00**	-	**1.03**	0.19	-	-	-	-	-	-	-
		LOS	-	C	-	**F**	A	-	-	-	-	-	-	-
		Queue (m)	-	**267**	-	113	0	-	-	-	-	-	-	-
Stoney Tr / Glenmore Tr East (Signalized)	AM	v/c	0.69	0.25	-	-	0.67	-	-	-	-	-	-	-
		LOS	B	A	-	-	B	-	-	-	-	-	-	-
		Queue (m)	38	0	-	-	49	-	-	-	-	-	-	-
	PM	v/c	**1.17**	0.34	-	-	**1.05**	-	-	-	-	-	-	-
		LOS	**F**	A	-	-	**F**	-	-	-	-	-	-	-
		Queue (m)	**550**	0	-	-	**174**	-	-	-	-	-	-	-

3.3.2 Post Development

The interim (15-year) combined traffic operation was analyzed in Synchro in the short-term post development lane configurations and the results are summarized in Table 3.5.

Similar to the background condition, the same movements still operate at above capacity at the Stoney Tr / Glenmore Tr interchange, to the same degree as the background case. The operations (LOS, v/c, queue) of the failing movements do not vary substantially from the background scenario. At Glenmore Tr / RR 283, an additional eastbound left turn lane is required to be added. At the three 114 Avenue intersections, signalization is required.

With the exception of the Stoney Tr / Glenmore Tr interchange, the Synchro analysis concluded that with 50% build-out of the proposed development, all study intersections can operate within criteria, with smaller-scale improvements such as the installation of traffic signals and minor intersection lane re-configurations. Specifically, none of the analyzed corridors would warrant full twinning in this scenario.

Table 3.5: Synchro Results for Interim (15-Year) Combined AM and PM Peaks

Intersection			EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
114 Ave / Range Road 284 (Signalized)	AM	v/c	0.18	0.83	0.26	0.31	0.31	0.31	0.30	0.30	0.30	0.07	0.07	0.07
		LOS	A	B	A	A	A	A	B	B	B	B	B	B
		Queue (m)	9	92	5	16	16	16	18	18	18	6	6	6
	PM	v/c	0.07	0.25	0.11	0.69	0.69	0.69	0.70	0.70	0.70	0.32	0.32	0.32
		LOS	A	A	A	B	B	B	C	C	C	A	A	A
		Queue (m)	3	16	4	57	57	57	41	41	41	13	13	13
114 Ave / Range Road 283 (Signalized)	AM	v/c	0.54	0.70	0.70	0.40	0.16	0.16	0.68	0.68	0.68	0.68	0.68	0.68
		LOS	B	B	B	C	A	A	C	C	C	B	B	B
		Queue	37	62	62	15	10	10	40	40	40	47	47	47
	PM	v/c	0.21	0.46	0.46	0.13	0.39	0.39	0.87	0.87	0.87	0.45	0.45	0.45
		LOS	B	B	B	B	B	B	C	C	C	A	A	A
		Queue (m)	15	41	41	10	39	39	119	119	119	31	31	31
114 Ave / Range Road 282 (Signalized)	AM	v/c	0.49	0.49	0.49	0.70	0.70	0.70	0.10	0.10	0.10	0.40	0.40	0.40
		LOS	A	A	A	B	B	B	B	B	B	B	B	B
		Queue (m)	19	19	19	50	50	50	7	7	7	30	30	30
	PM	v/c	0.56	0.56	0.56	0.13	0.13	0.13	0.84	0.84	0.84	0.63	0.63	0.63
		LOS	B	B	B	B	B	B	C	C	C	B	B	B
		Queue (m)	64	64	64	14	14	14	67	67	67	32	32	32
Glenmore Tr / Range Road 283 (Signalized)	AM	v/c	0.15	0.25	0.36	0.32	0.90	0.90	0.64	0.64	0.04	0.40	0.40	0.40
		LOS	B	B	A	B	C	C	C	C	A	B	B	B
		Queue (m)	5	32	12	28	180	180	50	50	5	39	39	39
	PM	v/c	0.37	0.85	0.20	0.21	0.34	0.34	0.80	0.80	0.26	0.15	0.15	0.15
		LOS	B	C	A	B	B	B	C	C	A	A	A	A
		Queue (m)	30	161	9	8	43	43	97	97	21	11	11	11
Stoney Tr / Glenmore Tr West (Signalized)	AM	v/c	-	0.41	-	0.41	0.58	-	-	-	-	-	-	-
		LOS	-	A	-	C	A	-	-	-	-	-	-	-
		Queue (m)	-	31	-	20	8	-	-	-	-	-	-	-
	PM	v/c	-	**1.02**	-	**1.03**	0.20	-	-	-	-	-	-	-
		LOS	-	D	-	**F**	A	-	-	-	-	-	-	-
		Queue (m)	-	**276**	-	113	0	-	-	-	-	-	-	-
Stoney Tr / Glenmore Tr East (Signalized)	AM	v/c	0.70	0.34	-	-	0.71	-	-	-	-	-	-	-
		LOS	B	A	-	-	B	-	-	-	-	-	-	-
		Queue (m)	42	0	-	-	54	-	-	-	-	-	-	-
	PM	v/c	**1.18**	0.38	-	-	**1.05**	-	-	-	-	-	-	-
		LOS	**F**	A	-	-	**F**	-	-	-	-	-	-	-
		Queue (m)	**553**	0	-	-	**177**	-	-	-	-	-	-	-

3.4 Internal Road Network Classification

With the full buildout of the proposed development area and in the surrounding greenfield areas, it is expected that 114 Avenue will be ultimately upgraded to a 4-lane arterial roadway. As Range Road 282 and Range Road 284 primarily provide access to adjacent industrial development, they are anticipated to be 2-lane industrial collector roadways. As Range Road 283 provides development access and also serves as a key north-south connection to Glenmore Trail, it is expected to be a 4-lane regional arterial roadway. It is noted that the road network classifications are based on traffic volumes in the short-term and interim horizons, and the actual roadway classifications need to be confirmed in the full buildout scenario with detailed traffic analysis, which will be conducted in the future phase of this TIA.

4.0 Warrant Analysis in Short-Term (5-Year) Horizon

The intersection warrant analyses were conducted for the following study intersections at the short-term horizon. As all intersections are signalized in the interim horizon, no warrant analysis was conducted in the interim horizons. The warrant sheets are included in Appendix C.

- 114 Ave / RR 282
- 114 Ave / RR 283
- 114 Ave / RR 284
- Glenmore Tr / RR 283

4.1 Signal Warrant

Traffic signal warrant analysis was conducted using the Transportation Association of Canada (TAC) Traffic Signal and Pedestrian Signal Head Warrant Matrix. This matrix considers the geometry, operating parameters, demographics, as well as pedestrian and vehicular volumes at an intersection.

The signal warrant analysis results show that none of the three intersections on 114 Ave are warranted for traffic signal with the warrant results are summarized below:

- 114 Ave / RR 282: not warranted in both background and post development
- 114 Ave / RR 283: not warranted in both background and post development
- 114 Ave / RR 284: not warranted in both background and post development
- Glenmore Tr / RR 283: warranted in background (without ASP development)

4.2 Left-Turn Warrant

The Alberta Transportation Highway Design Guide Chapter D At-Grade Intersections was used for the left-turn warrant analysis. The warrant considers several factors, including traffic volumes and design speed. Figure D-7.6 series were used as the design speed is 80 kph. Currently westbound Glenmore Tr / RR 283 has a left-turn lane and 114 Avenue / RR 283 has a Type III left-turn lane. As signalization at Glenmore Trail / RR 283 is warranted, the left turn warrant does not apply to signalized intersection.

It is noted that due to the industrial nature of the proposed land use, higher left-turn traffic is expected in the AM peak, so the warrant analysis is conducted using the AM peak hour traffic volumes. The results show that in the short-term horizon, a left-turn lane is warranted at eastbound 114 Ave / RR 284 and eastbound 114 Avenue / RR 283. The left-turn warrant analysis results are summarized in Table 4.1.

Table 4.1: Left-Turn Warrant Analysis Summary

Movement	% LT	Speed (kph)	Figure	Advancing Volume	Opposing Volume	Intersection Treatment	Warrant
114 Ave EB at RR 284	10%	80	D-7.6-4A	566	143	Type IV	Yes
114 Ave WB at RR 284	10%	80	D-7.6-4A	143	566	Type III	No
114 Ave EB at RR 283	40%	80	D-7.6-4D	436	111	Type IV	Yes
114 Ave WB at RR 283	35%	80	D-7.6-4D	111	436	Type III	No
114 Ave EB at RR 282	30%	80	D-7.6-4C	161	226	Type III	No
114 Ave WB at RR 282	30%	80	D-7.6-4C	226	161	Type III	No

4.3 Right-Turn Warrant

The Alberta Transportation Highway Design Guide Chapter D At-Grade Intersections was used for the right-turn warrant analysis. The warrant considers several factors, including through road AADT, intersecting road AADT, and right turn daily traffic volumes for the movement under evaluation. Currently eastbound Glenmore Tr / Rainbow Rd has a right-turn lane. As signalization at Glenmore Trail / RR 283 is warranted, the right turn warrant does not apply to signalized intersection.

The warrant analysis shows that right-turn lane is only warranted for eastbound 114 Ave / RR 284. The warrant analysis results are summarized in Table 4.2.

Table 4.2: Right-Turn Warrant Results Summary

Movement	Main Road AADT	Minor Road AADT	RT Daily Volume	Warrant
114 Ave EB at RR 284	5,576	1,760	381	Yes
114 Ave WB at RR 284	5,576	1,760	12	No
114 Ave EB at RR 283	4,616	3,346	336	No
114 Ave WB at RR 283	4,616	3,346	101	No
114 Ave EB at RR 282	3,990	2,326	52	No
114 Ave WB at RR 282	3,990	2,326	36	No

4.4 Illumination Warrant

The Transportation Association of Canada (TAC) Illumination of Isolated Rural Intersections 2001 was used to conduct the illumination warrant. The warrant considers several factors, including geometric, operational, environmental and collision history factors, with the critical factors identified as traffic volumes, night-time collisions that may be attributed to the lack of illumination, and the extent of raised channelization. The warrant states that illumination is always warranted if the intersection is signalized. If an intersection is unsignalized, for a warrant score of 120 and over, the intersection can be warranted for full illumination (240 or over) or partial / delineation illumination (120 or over but below 240).

It is recognized that the latest 3-year collision data (2015-2017) for Glenmore Tr / RR 283 was collected from AT TIMS (Transportation Infrastructure Management System) and no night-time collision was found. At the time of the report completion in October 2020, collision records for the three intersections on 114 Avenue were not yet received from Alberta Transportation, so no night-time collisions were assumed. Once collision records are received, if needed, the warrant analysis and the technical memorandum will be revised accordingly.

As Glenmore Trail / RR 283 is assumed to be signalized in the short-term horizon, the intersection is warranted for full illumination. The three intersections on 114 Avenue were found to be warranted for delineation illumination, primarily contributing to the operational factors due to higher traffic volumes and roadway characteristics, including speed. The warrant results are summarized in Table 4.3.

Table 4.3: Illumination Warrant Results Summary

Illumination Warrant	Geometric	Operational	Environmental	Collision History	Total	Warrant	Type
114 Ave / RR 284	6	125	15	0	146	Yes	Delineation
114 Ave / RR 283	6	135	20	0	161	Yes	Delineation
114 Ave / RR 282	6	135	10	0	151	Yes	Delineation
Glenmore Tr / RR 283	-	-	-	-	-	Yes	Full

4.5 Railway Crossing Warrant

Section 9, Part C of Transport Canada Grade Crossings Standard (January 1, 2019) has several criteria to determine the warrants for a warning system with or without gates, which includes the forecast cross-product of the average annual daily railway movements and the average annual daily traffic of vehicles on the road that cross through the grade crossing, railway operating speed, number of tracks, etc.

In the ASP area, there is one at-grade CP railway crossing located on Range Road 284, south of 114 Avenue. According to the Transport Canada Open Data – Grade Crossings Inventory (Data Last Modified: September 10, 2020), there are 17 trains crossing on a daily basis on the single railway track with a maximum railway speed of 55 mph (89 kph). The crossing is currently protected with Active – Flashing Light Units, Bells & Gates (FLBG). According to the standard, a warning system with gates is warranted at the location due to the railway design speed exceeding 81 kph (50 mph), showing that that the existing warning system meets the current warrant requirements and no upgrade is required.

5.0 Conclusions and Recommendations

The study findings of the transportation review and impact assessment are summarized below:

- Short-Term (5-Year) Background:
  - All intersections operate within criteria except for Glenmore Trail / Range Road 283 and the Stoney Trail / Glenmore Trail Interchange East Junction. It is noted the improvements are required without any traffic from the subjected ASP
  - Glenmore Trail / Range Road 283: signalization is required
  - Stoney Trail / Glenmore Trail Interchange: A systems interchange is planned, however the timing of the upgrade is unknown
- Short-Term (5-Year) Combined:
  - 20% buildout with trip generation of 1,172 and 1,116 trips in the AM and PM peaks, respectively
  - Stoney Tr / Glenmore Tr East Interchange Junction: the same movements as the background scenario operate at above capacity, with no substantial effect by the proposed ASP
  - Glenmore Trail / Range Road 283: no additional upgrades required on top of the signalization as required in the background condition
  - 114 Ave / RR 284: eastbound left-turn and right-turn lanes warranted, delineation illumination
  - 114 Ave / RR 283: eastbound left-turn lane warranted, delineation illumination
  - 114 Ave / RR 282: delineation illumination
- Interim (15-Year) Background:
  - Stoney Tr / Glenmore Tr East Interchange Junction: existing interchange significantly over capacity. This illustrates the need for the planned systems interchange to support overall regional growth
- Interim (15-Year) Combined:
  - 50% buildout with trip generation of 2,930 and 2,789 trips in the AM and PM peaks, respectively
  - Stoney Tr / Glenmore Tr East Interchange Junction: the same movements as the background scenario operate at above capacity at the existing interchange, with no substantial effect by the proposed ASP
  - Glenmore Trail / Range Road 283: add an additional eastbound left turn lane
  - 114 Ave / RR 284, 114 Ave / RR 283, 114 Ave / RR 282: signalization
- Preliminary Roadway Classifications (to be confirmed in future phase): 114 Avenue (4-lane regional arterial), Range Road 282 (2-lane industrial collector), Range Road 284 (2-lane industrial collector), Range Road 283 (4-lane regional arterial)
- Railway crossing on Range Road 284 south of 114 Avenue: Flashing Light Units, Bells & Gates (FLBG) crossing is warranted. No upgrade required as the FLBG warrant is currently met

APPENDIX A
Scope of Work

4015 7 Street SE, Calgary, AB T2G 2Y9 T: 403.254.0544 F: 403.254.9186

October 7, 2020
Our Reference: 27699

Rocky View County

Attention: Nathan Madigan, 403-520-3989, nmadigan@rockyview.ca

Dear Sir:

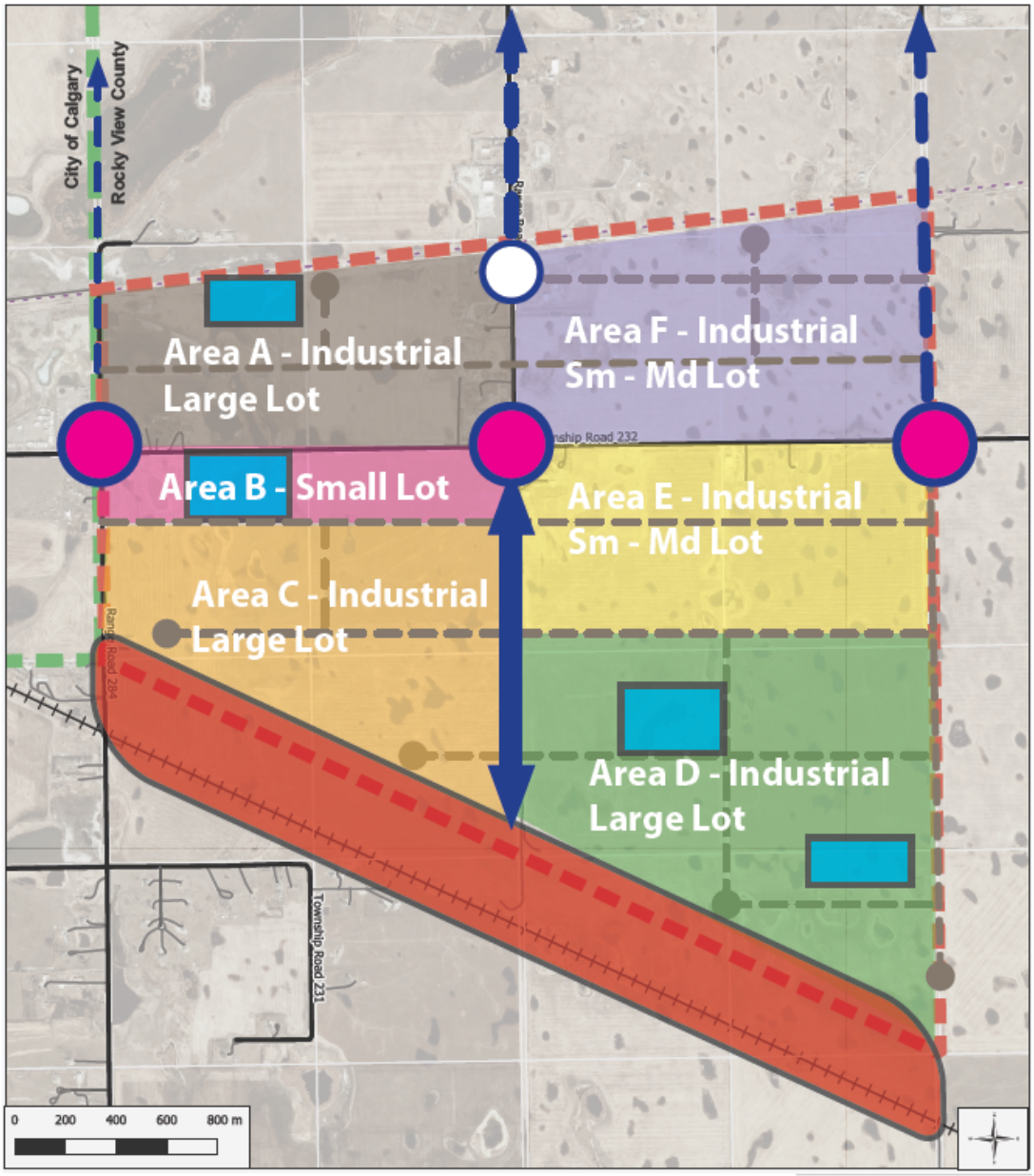
Reference: Rocky View County Shepard Industrial ASP Phase 1 TIA Scope Confirmation

ISL Engineering is providing transportation consulting services – traffic impact assessment – to IDEA Group with their preparation of the Shepard Industrial Area Structure Plan (ASP) in Rocky View County. The ASP area is bounded by the abandoned CP right-of-way to the north, Range Road 282 to the east, CP tracks to the south, and Range Road 284 to the west. The site plan is attached.

In Phase 1 of the TIA, we will conduct preliminary assessment with the development concept to confirm the initial development. The goal for the short-term and interim scenario analysis is to confirm the scale of proposed development that can be accommodated by the existing transportation network. The full TIA will be conducted in the future phase for the full build-out / 20-year horizon once the ASP concept is further refined and the scope for future phases will be confirmed with RVC at a later date upon completion of Phase 1 work.

Phase 1 Scope of work includes:

- Manual AM and PM peak hour traffic counts at 114 Ave / RR 284 and 114 Ave / RR 283
- Obtain existing traffic counts at Glenmore Tr / Rainbow Rd, Glenmore Tr / Stoney Tr and Stoney Tr / 114 Ave from Alberta Transportation (AT) website
- Apply traffic adjustment factor to pre-COVID condition using available historic traffic data on Hwy 22X
- Apply growth rate to the existing traffic to determine the short-term and interim background traffic using available historic traffic data on Hwy 22X
- Trip generation using ITE Trip Generation Manual, 10th Edition. The large lots will be based on the heavy industrial rate and the small / medium lots will be based on the light industrial rate. The industrial lots are assumed to be 30% non-developable and a FAR of 0.2. In Area B, a neighbourhood level commercial centre is also assumed. A 30% non-developable area and FAR of 0.20 is assumed; the ITE shopping centre rate will be used.
- Trip distribution and assignment using existing traffic patterns
- Add short-term and interim development traffic to the respective background traffic
- Synchro analysis for the short-term (5-year) and interim horizon (15-year) on 114 Ave at RR 282, RR 283 and RR 284 and on Glenmore Tr at Rainbow Rd and Stoney Tr to determine any upgrades required to the existing road network (note Glenmore Tr / Stoney Tr will be upgraded to free-flow system interchange in the future)
- Conduct Left turn, right turn, signal and illumination warrants for 114 Ave / RR 283, 114 Ave / RR 282, and Glenmore Tr / RR 283
- Determine internal road classification
- RR 284 CP rail crossing warrant to determine any upgrades required to the rail crossing
- Draft and final TIA memo based on review comments from RVC



Development Concept

Shepard
Industrial ASP

IDEA MVH Urban Planning & Design Inc.

APPENDIX B
Synchro Outputs

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	160	38	26	657	7	16	2	6	2	42	121
Future Volume (Veh/h)	13	160	38	26	657	7	16	2	6	2	42	121
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	14	170	40	28	699	7	17	2	6	2	45	129
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	706			210			1104	960	170	964	996	702
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	706			210			1104	960	170	964	996	702
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			85	99	99	99	81	71
cM capacity (veh/h)	892			1361			110	247	874	226	235	438

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	184	40	28	706	25	176
Volume Left	14	0	28	0	17	2
Volume Right	0	40	0	7	6	129
cSH	892	1700	1361	1700	148	356
Volume to Capacity	0.02	0.02	0.02	0.42	0.17	0.49
Queue Length 95th (m)	0.4	0.0	0.5	0.0	4.5	20.0
Control Delay (s)	0.8	0.0	7.7	0.0	34.2	24.6
Lane LOS	A		A		D	C
Approach Delay (s)	0.7		0.3		34.2	24.6
Approach LOS					D	C

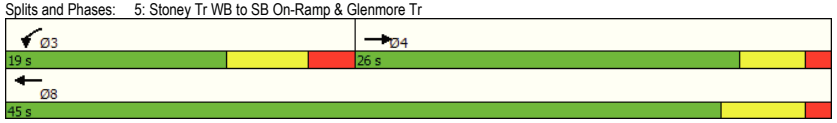
Intersection Summary					
Average Delay	4.8				
Intersection Capacity Utilization	59.3%	ICU Level of Service		B	
Analysis Period (min)	15				

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	669	0	128	1565	0	0
Future Volume (vph)	669	0	128	1565	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)		0.0	190.0		0.0	0.0
Storage Lanes		0	1		0	0
Taper Length (m)			25.0		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	3484	0	1742	3484	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	3484	0	1742	3484	0	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	70			70	50	
Link Distance (m)	583.7			705.9	340.9	
Travel Time (s)	30.0			36.3	24.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	712	0	136	1665	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	712	0	136	1665	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)		25	30		30	25
Turn Type	NA		Prot	NA		
Protected Phases	4		3	8		
Permitted Phases						
Detector Phase	4		3	8		
Switch Phase						
Minimum Initial (s)	20.0		10.0	20.0		
Minimum Split (s)	25.0		17.0	26.0		
Total Split (s)	26.0		19.0	45.0		
Total Split (%)	57.8%		42.2%	100.0%		
Maximum Green (s)	21.0		12.0	39.0		
Yellow Time (s)	3.5		4.5	4.5		
All-Red Time (s)	1.5		2.5	1.5		
Lost Time Adjust (s)	0.0		0.0	0.0		
Total Lost Time (s)	5.0		7.0	6.0		
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0		
Recall Mode	None		None	None		
Act Effct Green (s)	27.0		10.4	45.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.60		0.23	1.00		
v/c Ratio	0.34		0.34	0.48		
Control Delay	7.1		22.3	0.9		
Queue Delay	0.0		0.0	0.0		
Total Delay	7.1		22.3	0.9		
LOS	A		C	A		
Approach Delay	7.1			2.5		
Approach LOS	A			A		
Queue Length 50th (m)	15.9		9.7	1.8		
Queue Length 95th (m)	27.7		m19.6	3.6		
Internal Link Dist (m)	559.7			681.9	316.9	
Turn Bay Length (m)			190.0			
Base Capacity (vph)	2088		464	3484		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.34		0.29	0.48		

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 3.8		Intersection LOS: A	
Intersection Capacity Utilization 54.5%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Stoney Tr WB to SB On-Ramp & Glenmore Tr

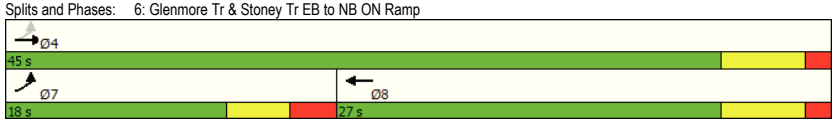


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	306	698	954	0	0	0
Future Volume (vph)	306	698	954	0	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)	248.0			200.0	0.0	0.0
Storage Lanes	1			0	0	0
Taper Length (m)	25.0				25.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1742	3484	3484	0	0	0
Flt Permitted	0.190					
Satd. Flow (perm)	348	3484	3484	0	0	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		70	50		50	
Link Distance (m)		705.9	205.6		302.6	
Travel Time (s)		36.3	14.8		21.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	326	743	1015	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	326	743	1015	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30			25	30	25
Turn Type	pm+pt	NA	NA			
Protected Phases	7	4	8			
Permitted Phases	4					
Detector Phase	7	4	8			
Switch Phase						
Minimum Initial (s)	10.0	20.0	20.0			
Minimum Split (s)	16.0	26.0	26.0			
Total Split (s)	18.0	45.0	27.0			
Total Split (%)	40.0%	100.0%	60.0%			
Maximum Green (s)	12.0	39.0	21.0			
Yellow Time (s)	3.5	4.5	4.5			
All-Red Time (s)	2.5	1.5	1.5			
Lost Time Adjust (s)	0.0	0.0	0.0			
Total Lost Time (s)	6.0	6.0	6.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	None	None	None			
Act Effct Green (s)	39.0	45.0	22.7			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Actuated g/C Ratio	0.87	1.00	0.50			
v/c Ratio	0.52	0.21	0.58			
Control Delay	10.6	0.1	9.6			
Queue Delay	0.0	0.0	0.0			
Total Delay	10.6	0.1	9.6			
LOS	B	A	A			
Approach Delay		3.3	9.6			
Approach LOS		A	A			
Queue Length 50th (m)	0.0	0.0	25.5			
Queue Length 95th (m)	20.8	0.0	42.6			
Internal Link Dist (m)		681.9	181.6		278.6	
Turn Bay Length (m)	248.0					
Base Capacity (vph)	673	3484	1754			
Starvation Cap Reductn	0	0	0			
Spillback Cap Reductn	0	0	0			
Storage Cap Reductn	0	0	0			
Reduced v/c Ratio	0.48	0.21	0.58			

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 6.4		Intersection LOS: A	
Intersection Capacity Utilization 54.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6: Glenmore Tr & Stoney Tr EB to NB ON Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	609	34	10	211	14	50	39	23	18	5	41
Future Volume (Veh/h)	144	609	34	10	211	14	50	39	23	18	5	41
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	152	641	36	11	222	15	53	41	24	19	5	43
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	237			677			1234	1204	641	1241	1232	230
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	237			677			1234	1204	641	1241	1232	230
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			99			59	75	95	82	97	95
cM capacity (veh/h)	1330			915			128	161	475	105	155	810

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	793	36	11	237	118	67
Volume Left	152	0	11	0	53	19
Volume Right	0	36	0	15	24	43
cSH	1330	1700	915	1700	164	252
Volume to Capacity	0.11	0.02	0.01	0.14	0.72	0.27
Queue Length 95th (m)	2.9	0.0	0.3	0.0	33.2	7.9
Control Delay (s)	2.7	0.0	9.0	0.0	69.0	24.4
Lane LOS	A		A		F	C
Approach Delay (s)	2.6		0.4		69.0	24.4
Approach LOS					F	C

Intersection Summary					
Average Delay		9.5			
Intersection Capacity Utilization		73.8%	ICU Level of Service		D
Analysis Period (min)		15			

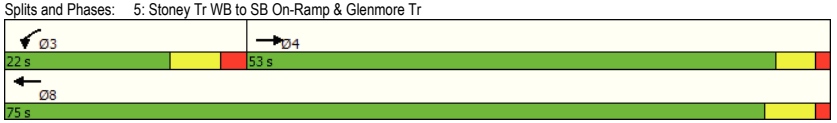
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1904	0	273	535	0	0
Future Volume (vph)	1904	0	273	535	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)		0.0	190.0		0.0	0.0
Storage Lanes		0	1		0	0
Taper Length (m)			25.0		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	3484	0	1742	3484	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	3484	0	1742	3484	0	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	70			70	50	
Link Distance (m)	583.7			705.9	340.9	
Travel Time (s)	30.0			36.3	24.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2004	0	287	563	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2004	0	287	563	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)		25	30		30	25
Turn Type	NA		Prot	NA		
Protected Phases	4		3	8		
Permitted Phases						
Detector Phase	4		3	8		
Switch Phase						
Minimum Initial (s)	20.0		10.0	20.0		
Minimum Split (s)	25.0		17.0	26.0		
Total Split (s)	53.0		22.0	75.0		
Total Split (%)	70.7%		29.3%	100.0%		
Maximum Green (s)	48.0		15.0	69.0		
Yellow Time (s)	3.5		4.5	4.5		
All-Red Time (s)	1.5		2.5	1.5		
Lost Time Adjust (s)	0.0		0.0	0.0		
Total Lost Time (s)	5.0		7.0	6.0		
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0		
Recall Mode	None		None	None		
Act Effct Green (s)	48.5		14.5	75.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.65		0.19	1.00		
v/c Ratio	0.89		0.85	0.16		
Control Delay	18.0		53.9	0.1		
Queue Delay	0.0		0.0	0.0		
Total Delay	18.0		53.9	0.1		
LOS	B		D	A		
Approach Delay	18.0			18.3		
Approach LOS	B			B		
Queue Length 50th (m)	110.3		39.2	0.0		
Queue Length 95th (m)	#157.7		#77.4	0.0		
Internal Link Dist (m)	559.7			681.9	316.9	
Turn Bay Length (m)			190.0			
Base Capacity (vph)	2253		349	3484		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.89		0.82	0.16		

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 18.1 Intersection LOS: B
Intersection Capacity Utilization 96.3% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Stoney Tr WB to SB On-Ramp & Glenmore Tr



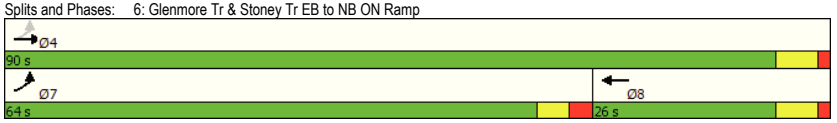
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1179	960	677	0	0	0
Future Volume (vph)	1179	960	677	0	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)	248.0			200.0	0.0	0.0
Storage Lanes	1			0	0	0
Taper Length (m)	25.0				25.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1742	3484	3484	0	0	0
Flt Permitted	0.154					
Satd. Flow (perm)	282	3484	3484	0	0	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		70	50		50	
Link Distance (m)		705.9	205.6		302.6	
Travel Time (s)		36.3	14.8		21.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1241	1011	713	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1241	1011	713	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30			25	30	25
Turn Type	pm+pt	NA	NA			
Protected Phases	7	4	8			
Permitted Phases	4					
Detector Phase	7	4	8			
Switch Phase						
Minimum Initial (s)	10.0	20.0	20.0			
Minimum Split (s)	16.0	26.0	26.0			
Total Split (s)	64.0	90.0	26.0			
Total Split (%)	71.1%	100.0%	28.9%			
Maximum Green (s)	58.0	84.0	20.0			
Yellow Time (s)	3.5	4.5	4.5			
All-Red Time (s)	2.5	1.5	1.5			
Lost Time Adjust (s)	0.0	0.0	0.0			
Total Lost Time (s)	6.0	6.0	6.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	None	None	None			
Act Effct Green (s)	84.0	90.0	20.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Actuated g/C Ratio	0.93	1.00	0.22			
v/c Ratio	1.03	0.29	0.92			
Control Delay	49.3	0.2	53.4			
Queue Delay	0.0	0.0	0.0			
Total Delay	49.3	0.2	53.4			
LOS	D	A	D			
Approach Delay		27.2	53.4			
Approach LOS		C	D			
Queue Length 50th (m)	~217.0	0.0	63.7			
Queue Length 95th (m)	#293.6	0.0	#96.5			
Internal Link Dist (m)		681.9	181.6		278.6	
Turn Bay Length (m)	248.0					
Base Capacity (vph)	1204	3484	774			
Starvation Cap Reductn	0	0	0			
Spillback Cap Reductn	0	0	0			
Storage Cap Reductn	0	0	0			
Reduced v/c Ratio	1.03	0.29	0.92			

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 33.5 Intersection LOS: C
Intersection Capacity Utilization 96.3% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Glenmore Tr & Stoney Tr EB to NB ON Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	411	105	16	117	10	19	9	25	1	1	9
Future Volume (Veh/h)	51	411	105	16	117	10	19	9	25	1	1	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	54	437	112	17	124	11	20	10	27	1	1	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	135			549			719	714	437	740	820	130
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	135			549			719	714	437	740	820	130
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			98			94	97	96	100	100	99
cM capacity (veh/h)	1449			1021			325	338	620	298	293	920

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	NB 1	SB 1
Volume Total	54	437	112	152	57	12
Volume Left	54	0	0	17	20	1
Volume Right	0	0	112	11	27	10
cSH	1449	1700	1700	1021	423	681
Volume to Capacity	0.04	0.26	0.07	0.02	0.13	0.02
Queue Length 95th (m)	0.9	0.0	0.0	0.4	3.5	0.4
Control Delay (s)	7.6	0.0	0.0	1.1	14.8	10.4
Lane LOS	A			A	B	B
Approach Delay (s)	0.7			1.1	14.8	10.4
Approach LOS					B	B

Intersection Summary					
Average Delay	1.9				
Intersection Capacity Utilization	37.1%	ICU Level of Service		A	
Analysis Period (min)	15				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	137	115	38	49	25	36	49	14	10	103	59
Future Volume (Veh/h)	185	137	115	38	49	25	36	49	14	10	103	59
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	197	146	122	40	52	27	38	52	15	11	110	63
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	79			268			851	760	207	713	794	52
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	79			268			851	760	207	713	794	52
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			97			76	82	98	96	59	94
cM capacity (veh/h)	1519			1296			159	283	833	258	270	1016

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	197	268	92	27	105	184
Volume Left	197	0	40	0	38	11
Volume Right	0	122	0	27	15	63
cSH	1519	1700	1296	1700	239	360
Volume to Capacity	0.13	0.16	0.03	0.02	0.44	0.51
Queue Length 95th (m)	3.4	0.0	0.7	0.0	15.9	21.2
Control Delay (s)	7.7	0.0	3.6	0.0	31.4	25.0
Lane LOS	A		A		D	D
Approach Delay (s)	3.3		2.8		31.4	25.0
Approach LOS					D	D

Intersection Summary					
Average Delay	11.2				
Intersection Capacity Utilization	47.7%	ICU Level of Service		A	
Analysis Period (min)	15				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	40	76	70	111	45	0	7	9	4	63	1
Future Volume (Veh/h)	45	40	76	70	111	45	0	7	9	4	63	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	48	43	81	74	118	48	0	7	10	4	67	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	166			124			504	494	84	483	510	142
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	166			124			504	494	84	483	510	142
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			95			100	98	99	99	84	100
cM capacity (veh/h)	1412			1463			394	437	976	452	428	906

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	172	240	17	72
Volume Left	48	74	0	4
Volume Right	81	48	10	1
cSH	1412	1463	647	432
Volume to Capacity	0.03	0.05	0.03	0.17
Queue Length 95th (m)	0.8	1.2	0.6	4.5
Control Delay (s)	2.3	2.6	10.7	15.0
Lane LOS	A	A	B	B
Approach Delay (s)	2.3	2.6	10.7	15.0
Approach LOS			B	B

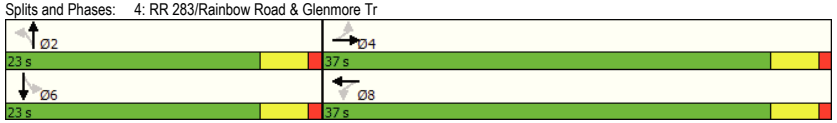
Intersection Summary					
Average Delay			4.6		
Intersection Capacity Utilization			31.1%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	172	148	78	657	7	91	4	12	2	72	121
Future Volume (vph)	13	172	148	78	657	7	91	4	12	2	72	121
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	120.0		180.0	150.0		300.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.931			0.999			0.985			0.916	
Flt Protected	0.950			0.950				0.959				
Satd. Flow (prot)	1742	1707	0	1742	1832	0	0	1732	0	0	1680	0
Flt Permitted	0.252			0.556				0.691			0.997	
Satd. Flow (perm)	462	1707	0	1020	1832	0	0	1248	0	0	1675	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		112			1			11			129	
Link Speed (k/h)		80			80			80			50	
Link Distance (m)		260.2			642.3			3223.7			388.3	
Travel Time (s)		11.7			28.9			145.1			28.0	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	14	183	157	83	699	7	97	4	13	2	77	129
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	340	0	83	706	0	0	114	0	0	208	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30		25	30		25	30		25	30		25
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	37.0	37.0		37.0	37.0		23.0	23.0		23.0	23.0	
Total Split (%)	61.7%	61.7%		61.7%	61.7%		38.3%	38.3%		38.3%	38.3%	
Maximum Green (s)	32.5	32.5		32.5	32.5		18.5	18.5		18.5	18.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	20.0	20.0		20.0	20.0			9.4			9.4	
Actuated g/C Ratio	0.51	0.51		0.51	0.51			0.24			0.24	
v/c Ratio	0.06	0.37		0.16	0.75			0.37			0.42	
Control Delay	5.7	5.0		6.0	13.6			17.4			9.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	5.7	5.0		6.0	13.6			17.4			9.6	
LOS	A	A		A	B			B			A	
Approach Delay		5.0			12.8			17.4			9.6	
Approach LOS		A			B			B			A	
Queue Length 50th (m)	0.4	6.6		2.3	29.0			5.4			4.0	
Queue Length 95th (m)	2.5	20.5		8.4	74.3			19.8			19.9	
Internal Link Dist (m)		236.2			618.3			3199.7			364.3	
Turn Bay Length (m)	120.0			150.0								
Base Capacity (vph)	384	1439		848	1524			644			920	
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	0.04	0.24		0.10	0.46			0.18			0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 39.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 10.8		Intersection LOS: B	
Intersection Capacity Utilization 72.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 4: RR 283/Rainbow Road & Glenmore Tr

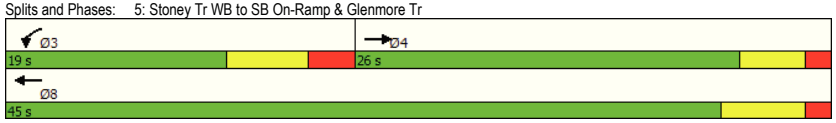


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	679	0	128	1594	0	0
Future Volume (vph)	679	0	128	1594	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)		0.0	190.0		0.0	0.0
Storage Lanes		0	1		0	0
Taper Length (m)			25.0		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	3484	0	1742	3484	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	3484	0	1742	3484	0	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	70			70	50	
Link Distance (m)	583.7			705.9	340.9	
Travel Time (s)	30.0			36.3	24.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	722	0	136	1696	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	722	0	136	1696	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)		25	30		30	25
Turn Type	NA		Prot	NA		
Protected Phases	4		3	8		
Permitted Phases						
Detector Phase	4		3	8		
Switch Phase						
Minimum Initial (s)	20.0		10.0	20.0		
Minimum Split (s)	25.0		17.0	26.0		
Total Split (s)	26.0		19.0	45.0		
Total Split (%)	57.8%		42.2%	100.0%		
Maximum Green (s)	21.0		12.0	39.0		
Yellow Time (s)	3.5		4.5	4.5		
All-Red Time (s)	1.5		2.5	1.5		
Lost Time Adjust (s)	0.0		0.0	0.0		
Total Lost Time (s)	5.0		7.0	6.0		
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0		
Recall Mode	None		None	None		
Act Effct Green (s)	27.0		10.4	45.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.60		0.23	1.00		
v/c Ratio	0.35		0.34	0.49		
Control Delay	7.2		22.5	1.0		
Queue Delay	0.0		0.0	0.0		
Total Delay	7.2		22.5	1.0		
LOS	A		C	A		
Approach Delay	7.2			2.6		
Approach LOS	A			A		
Queue Length 50th (m)	16.2		9.8	2.1		
Queue Length 95th (m)	28.3		m19.6	4.1		
Internal Link Dist (m)	559.7			681.9	316.9	
Turn Bay Length (m)			190.0			
Base Capacity (vph)	2088		464	3484		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.35		0.29	0.49		

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 3.9		Intersection LOS: A	
Intersection Capacity Utilization 55.3%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 5: Stoney Tr WB to SB On-Ramp & Glenmore Tr

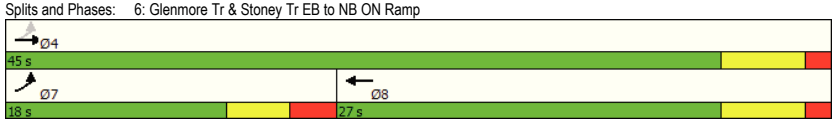


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	306	820	983	0	0	0
Future Volume (vph)	306	820	983	0	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)	248.0			200.0	0.0	0.0
Storage Lanes	1			0	0	0
Taper Length (m)	25.0				25.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1742	3484	3484	0	0	0
Flt Permitted	0.179					
Satd. Flow (perm)	328	3484	3484	0	0	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		70	50		50	
Link Distance (m)		705.9	205.6		302.6	
Travel Time (s)		36.3	14.8		21.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	326	872	1046	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	326	872	1046	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30			25	30	25
Turn Type	pm+pt	NA	NA			
Protected Phases	7	4	8			
Permitted Phases	4					
Detector Phase	7	4	8			
Switch Phase						
Minimum Initial (s)	10.0	20.0	20.0			
Minimum Split (s)	16.0	26.0	26.0			
Total Split (s)	18.0	45.0	27.0			
Total Split (%)	40.0%	100.0%	60.0%			
Maximum Green (s)	12.0	39.0	21.0			
Yellow Time (s)	3.5	4.5	4.5			
All-Red Time (s)	2.5	1.5	1.5			
Lost Time Adjust (s)	0.0	0.0	0.0			
Total Lost Time (s)	6.0	6.0	6.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	None	None	None			
Act Effct Green (s)	39.0	45.0	22.6			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Actuated g/C Ratio	0.87	1.00	0.50			
v/c Ratio	0.53	0.25	0.60			
Control Delay	10.7	0.2	9.9			
Queue Delay	0.0	0.0	0.0			
Total Delay	10.7	0.2	9.9			
LOS	B	A	A			
Approach Delay		3.0	9.9			
Approach LOS		A	A			
Queue Length 50th (m)	6.4	0.0	26.6			
Queue Length 95th (m)	19.5	0.0	45.3			
Internal Link Dist (m)		681.9	181.6		278.6	
Turn Bay Length (m)	248.0					
Base Capacity (vph)	661	3484	1749			
Starvation Cap Reductn	0	0	0			
Spillback Cap Reductn	0	0	0			
Storage Cap Reductn	0	0	0			
Reduced v/c Ratio	0.49	0.25	0.60			

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 6.2		Intersection LOS: A	
Intersection Capacity Utilization 55.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: Glenmore Tr & Stoney Tr EB to NB ON Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	139	38	18	259	1	80	4	27	17	8	30
Future Volume (Veh/h)	12	139	38	18	259	1	80	4	27	17	8	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	13	146	40	19	273	1	84	4	28	18	8	32
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	274			186			520	484	146	514	524	274
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	274			186			520	484	146	514	524	274
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			81	99	97	96	98	96
cM capacity (veh/h)	1289			1388			433	471	901	446	448	765

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	NB 1	SB 1
Volume Total	13	146	40	293	116	58
Volume Left	13	0	0	19	84	18
Volume Right	0	0	40	1	28	32
cSH	1289	1700	1700	1388	497	579
Volume to Capacity	0.01	0.09	0.02	0.01	0.23	0.10
Queue Length 95th (m)	0.2	0.0	0.0	0.3	6.8	2.5
Control Delay (s)	7.8	0.0	0.0	0.6	14.4	11.9
Lane LOS	A			A	B	B
Approach Delay (s)	0.5			0.6	14.4	11.9
Approach LOS					B	B

Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	45.7%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	99	34	15	91	10	83	101	59	35	33	105
Future Volume (Veh/h)	50	99	34	15	91	10	83	101	59	35	33	105
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	53	104	36	16	96	11	87	106	62	37	35	111
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	107			140			484	367	122	453	374	96
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	107			140			484	367	122	453	374	96
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			99			78	80	93	91	93	88
cM capacity (veh/h)	1484			1443			399	536	929	395	531	960

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	53	140	112	11	255	183
Volume Left	53	0	16	0	87	37
Volume Right	0	36	0	11	62	111
cSH	1484	1700	1443	1700	529	665
Volume to Capacity	0.04	0.08	0.01	0.01	0.48	0.28
Queue Length 95th (m)	0.8	0.0	0.3	0.0	19.8	8.5
Control Delay (s)	7.5	0.0	1.2	0.0	18.0	12.5
Lane LOS	A		A		C	B
Approach Delay (s)	2.1		1.0		18.0	12.5
Approach LOS					C	B

Intersection Summary					
Average Delay	9.8				
Intersection Capacity Utilization	46.5%	ICU Level of Service		A	
Analysis Period (min)	15				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	185	5	8	34	4	57	51	106	62	5	26
Future Volume (Veh/h)	2	185	5	8	34	4	57	51	106	62	5	26
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	195	5	8	36	4	60	54	112	65	5	27
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	40			200			285	258	198	394	258	38
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	40			200			285	258	198	394	258	38
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			91	92	87	86	99	97
cM capacity (veh/h)	1570			1372			642	642	844	456	642	1034

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	202	48	226	97
Volume Left	2	8	60	65
Volume Right	5	4	112	27
cSH	1570	1372	728	550
Volume to Capacity	0.00	0.01	0.31	0.18
Queue Length 95th (m)	0.0	0.1	10.0	4.8
Control Delay (s)	0.1	1.3	12.1	12.9
Lane LOS	A	A	B	B
Approach Delay (s)	0.1	1.3	12.1	12.9
Approach LOS			B	B

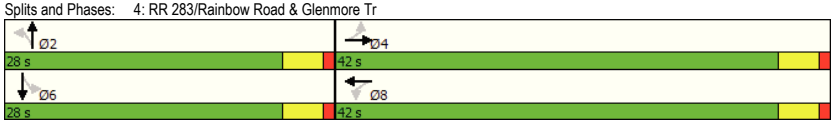
Intersection Summary					
Average Delay	7.1				
Intersection Capacity Utilization	29.8%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	616	82	16	223	14	132	76	76	18	9	41
Future Volume (vph)	144	616	82	16	223	14	132	76	76	18	9	41
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	120.0		180.0	150.0		300.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.991			0.964			0.918	
Flt Protected	0.950			0.950				0.977			0.987	
Satd. Flow (prot)	1742	1801	0	1742	1817	0	0	1727	0	0	1662	0
Flt Permitted	0.604			0.201				0.816			0.885	
Satd. Flow (perm)	1108	1801	0	369	1817	0	0	1443	0	0	1490	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			7			28			43	
Link Speed (k/h)		80			80			80			50	
Link Distance (m)		260.2			642.3			3223.7			304.3	
Travel Time (s)		11.7			28.9			145.1			21.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	152	648	86	17	235	15	139	80	80	19	9	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	734	0	17	250	0	0	299	0	0	71	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30		25	30		25	30		25	30		25
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	42.0	42.0		42.0	42.0		28.0	28.0		28.0	28.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	37.5	37.5		37.5	37.5		23.5	23.5		23.5	23.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	25.8	25.8		25.8	25.8			15.5			15.5	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.30			0.30	
v/c Ratio	0.27	0.80		0.09	0.27			0.66			0.15	
Control Delay	9.4	18.8		8.9	8.3			23.3			9.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	9.4	18.8		8.9	8.3			23.3			9.3	
LOS	A	B		A	A			C			A	
Approach Delay		17.2			8.4			23.3			9.3	
Approach LOS		B			A			C			A	
Queue Length 50th (m)	6.8	46.6		0.7	10.8			20.5			1.8	
Queue Length 95th (m)	19.7	110.1		3.9	27.5			52.5			10.2	
Internal Link Dist (m)		236.2			618.3			3199.7			280.3	
Turn Bay Length (m)	120.0			150.0								
Base Capacity (vph)	838	1366		279	1376			742			772	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.18	0.54		0.06	0.18			0.40			0.09	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 51.2			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 76.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: RR 283/Rainbow Road & Glenmore Tr



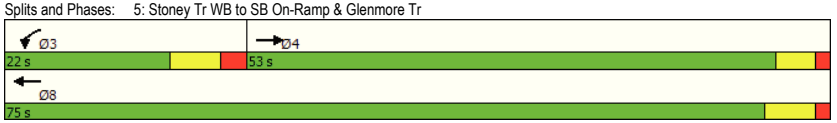
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1922	0	273	545	0	0
Future Volume (vph)	1922	0	273	545	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)		0.0	190.0		0.0	0.0
Storage Lanes		0	1		0	0
Taper Length (m)			25.0		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	3484	0	1742	3484	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	3484	0	1742	3484	0	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	70			70	50	
Link Distance (m)	583.7			705.9	340.9	
Travel Time (s)	30.0			36.3	24.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2023	0	287	574	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2023	0	287	574	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)		25	30		30	25
Turn Type	NA		Prot	NA		
Protected Phases	4		3	8		
Permitted Phases						
Detector Phase	4		3	8		
Switch Phase						
Minimum Initial (s)	20.0		10.0	20.0		
Minimum Split (s)	25.0		17.0	26.0		
Total Split (s)	53.0		22.0	75.0		
Total Split (%)	70.7%		29.3%	100.0%		
Maximum Green (s)	48.0		15.0	69.0		
Yellow Time (s)	3.5		4.5	4.5		
All-Red Time (s)	1.5		2.5	1.5		
Lost Time Adjust (s)	0.0		0.0	0.0		
Total Lost Time (s)	5.0		7.0	6.0		
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0		
Recall Mode	None		None	None		
Act Effct Green (s)	48.5		14.5	75.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.65		0.19	1.00		
v/c Ratio	0.90		0.85	0.16		
Control Delay	18.5		54.2	0.1		
Queue Delay	0.0		0.0	0.0		
Total Delay	18.5		54.2	0.1		
LOS	B		D	A		
Approach Delay	18.5			18.2		
Approach LOS	B			B		
Queue Length 50th (m)	112.5		39.2	0.0		
Queue Length 95th (m)	#165.3		#77.4	0.0		
Internal Link Dist (m)	559.7			681.9	316.9	
Turn Bay Length (m)			190.0			
Base Capacity (vph)	2253		348	3484		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.90		0.82	0.16		

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 18.4 Intersection LOS: B
Intersection Capacity Utilization 96.6% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Stoney Tr WB to SB On-Ramp & Glenmore Tr



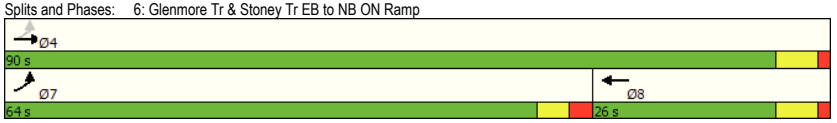
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1179	1016	686	0	0	0
Future Volume (vph)	1179	1016	686	0	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)	248.0			200.0	0.0	0.0
Storage Lanes	1			0	0	0
Taper Length (m)	25.0				25.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1742	3484	3484	0	0	0
Flt Permitted	0.154					
Satd. Flow (perm)	282	3484	3484	0	0	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		70	50		50	
Link Distance (m)		705.9	205.6		302.6	
Travel Time (s)		36.3	14.8		21.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1241	1069	722	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1241	1069	722	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30			25	30	25
Turn Type	pm+pt	NA	NA			
Protected Phases	7	4	8			
Permitted Phases	4					
Detector Phase	7	4	8			
Switch Phase						
Minimum Initial (s)	10.0	20.0	20.0			
Minimum Split (s)	16.0	26.0	26.0			
Total Split (s)	64.0	90.0	26.0			
Total Split (%)	71.1%	100.0%	28.9%			
Maximum Green (s)	58.0	84.0	20.0			
Yellow Time (s)	3.5	4.5	4.5			
All-Red Time (s)	2.5	1.5	1.5			
Lost Time Adjust (s)	0.0	0.0	0.0			
Total Lost Time (s)	6.0	6.0	6.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	None	None	None			
Act Effct Green (s)	84.0	90.0	20.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Actuated g/C Ratio	0.93	1.00	0.22			
v/c Ratio	1.03	0.31	0.93			
Control Delay	49.3	0.2	55.1			
Queue Delay	0.0	0.0	0.0			
Total Delay	49.3	0.2	55.1			
LOS	D	A	E			
Approach Delay		26.6	55.1			
Approach LOS		C	E			
Queue Length 50th (m)	~217.0	0.0	64.7			
Queue Length 95th (m)	#293.6	0.0	#98.4			
Internal Link Dist (m)		681.9	181.6		278.6	
Turn Bay Length (m)	248.0					
Base Capacity (vph)	1204	3484	774			
Starvation Cap Reductn	0	0	0			
Spillback Cap Reductn	0	0	0			
Storage Cap Reductn	0	0	0			
Reduced v/c Ratio	1.03	0.31	0.93			

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 33.4 Intersection LOS: C
Intersection Capacity Utilization 96.6% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Glenmore Tr & Stoney Tr EB to NB ON Ramp



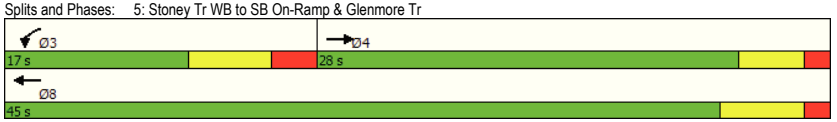
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	788	0	151	1842	0	0
Future Volume (vph)	788	0	151	1842	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)		0.0	190.0		0.0	0.0
Storage Lanes		0	1		0	0
Taper Length (m)			25.0		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	3484	0	1742	3484	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	3484	0	1742	3484	0	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	70			70	50	
Link Distance (m)	583.7			705.9	340.9	
Travel Time (s)	30.0			36.3	24.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	838	0	161	1960	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	838	0	161	1960	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)		25	30		30	25
Turn Type	NA		Prot	NA		
Protected Phases	4		3	8		
Permitted Phases						
Detector Phase	4		3	8		
Switch Phase						
Minimum Initial (s)	20.0		10.0	20.0		
Minimum Split (s)	25.0		17.0	26.0		
Total Split (s)	28.0		17.0	45.0		
Total Split (%)	62.2%		37.8%	100.0%		
Maximum Green (s)	23.0		10.0	39.0		
Yellow Time (s)	3.5		4.5	4.5		
All-Red Time (s)	1.5		2.5	1.5		
Lost Time Adjust (s)	0.0		0.0	0.0		
Total Lost Time (s)	5.0		7.0	6.0		
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0		
Recall Mode	None		None	None		
Act Effct Green (s)	27.2		10.2	45.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.60		0.23	1.00		
v/c Ratio	0.40		0.41	0.56		
Control Delay	7.2		24.2	1.4		
Queue Delay	0.0		0.0	0.0		
Total Delay	7.2		24.2	1.4		
LOS	A		C	A		
Approach Delay	7.2			3.2		
Approach LOS	A			A		
Queue Length 50th (m)	19.6		12.6	4.4		
Queue Length 95th (m)	30.0		m21.4	7.1		
Internal Link Dist (m)	559.7			681.9	316.9	
Turn Bay Length (m)			190.0			
Base Capacity (vph)	2121		393	3484		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.40		0.41	0.56		

Intersection Summary

Area Type: Other
Cycle Length: 45
Actuated Cycle Length: 45
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 4.3 Intersection LOS: A
Intersection Capacity Utilization 62.4% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Stoney Tr WB to SB On-Ramp & Glenmore Tr



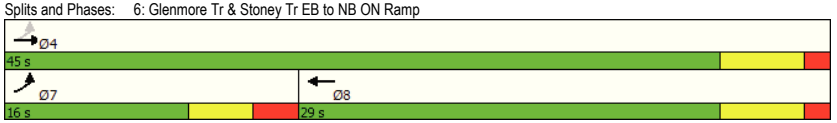
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	360	822	1123	0	0	0
Future Volume (vph)	360	822	1123	0	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)	248.0			200.0	0.0	0.0
Storage Lanes	1			0	0	0
Taper Length (m)	25.0				25.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1742	3484	3484	0	0	0
Flt Permitted	0.140					
Satd. Flow (perm)	257	3484	3484	0	0	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		70	50		50	
Link Distance (m)		705.9	205.6		302.6	
Travel Time (s)		36.3	14.8		21.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	383	874	1195	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	383	874	1195	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30			25	30	25
Turn Type	pm+pt	NA	NA			
Protected Phases	7	4	8			
Permitted Phases	4					
Detector Phase	7	4	8			
Switch Phase						
Minimum Initial (s)	10.0	20.0	20.0			
Minimum Split (s)	16.0	26.0	26.0			
Total Split (s)	16.0	45.0	29.0			
Total Split (%)	35.6%	100.0%	64.4%			
Maximum Green (s)	10.0	39.0	23.0			
Yellow Time (s)	3.5	4.5	4.5			
All-Red Time (s)	2.5	1.5	1.5			
Lost Time Adjust (s)	0.0	0.0	0.0			
Total Lost Time (s)	6.0	6.0	6.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	None	None	None			
Act Effct Green (s)	39.0	45.0	23.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Actuated g/C Ratio	0.87	1.00	0.51			
v/c Ratio	0.69	0.25	0.67			
Control Delay	19.6	0.2	10.5			
Queue Delay	0.0	0.0	0.0			
Total Delay	19.6	0.2	10.5			
LOS	B	A	B			
Approach Delay		6.1	10.5			
Approach LOS		A	B			
Queue Length 50th (m)	11.5	0.0	32.3			
Queue Length 95th (m)	#38.1	0.0	49.0			
Internal Link Dist (m)		681.9	181.6		278.6	
Turn Bay Length (m)	248.0					
Base Capacity (vph)	552	3484	1780			
Starvation Cap Reductn	0	0	0			
Spillback Cap Reductn	0	0	0			
Storage Cap Reductn	0	0	0			
Reduced v/c Ratio	0.69	0.25	0.67			

Intersection Summary

Area Type: Other
Cycle Length: 45
Actuated Cycle Length: 45
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 8.3 Intersection LOS: A
Intersection Capacity Utilization 62.4% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Glenmore Tr & Stoney Tr EB to NB ON Ramp



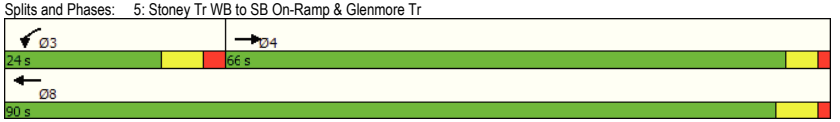
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2241	0	321	630	0	0
Future Volume (vph)	2241	0	321	630	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)		0.0	190.0		0.0	0.0
Storage Lanes		0	1		0	0
Taper Length (m)			25.0		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	3484	0	1742	3484	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	3484	0	1742	3484	0	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	70			70	50	
Link Distance (m)	583.7			705.9	340.9	
Travel Time (s)	30.0			36.3	24.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2359	0	338	663	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2359	0	338	663	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)		25	30		30	25
Turn Type	NA		Prot	NA		
Protected Phases	4		3	8		
Permitted Phases						
Detector Phase	4		3	8		
Switch Phase						
Minimum Initial (s)	20.0		10.0	20.0		
Minimum Split (s)	25.0		17.0	26.0		
Total Split (s)	66.0		24.0	90.0		
Total Split (%)	73.3%		26.7%	100.0%		
Maximum Green (s)	61.0		17.0	84.0		
Yellow Time (s)	3.5		4.5	4.5		
All-Red Time (s)	1.5		2.5	1.5		
Lost Time Adjust (s)	0.0		0.0	0.0		
Total Lost Time (s)	5.0		7.0	6.0		
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0		
Recall Mode	None		None	None		
Act Effct Green (s)	61.0		17.0	90.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.68		0.19	1.00		
v/c Ratio	1.00		1.03	0.19		
Control Delay	34.0		95.0	0.1		
Queue Delay	0.0		0.0	0.0		
Total Delay	34.0		95.0	0.1		
LOS	C		F	A		
Approach Delay	34.0			32.1		
Approach LOS	C			C		
Queue Length 50th (m)	187.0		~63.0	0.0		
Queue Length 95th (m)	#267.2		#113.2	0.0		
Internal Link Dist (m)	559.7			681.9	316.9	
Turn Bay Length (m)			190.0			
Base Capacity (vph)	2361		329	3484		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	1.00		1.03	0.19		

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 33.4 Intersection LOS: C
Intersection Capacity Utilization 111.6% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Stoney Tr WB to SB On-Ramp & Glenmore Tr



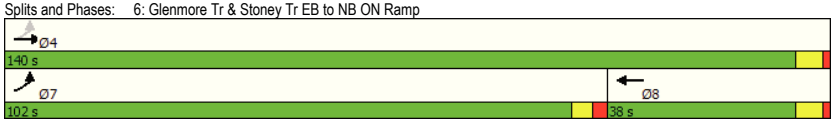
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1388	1131	797	0	0	0
Future Volume (vph)	1388	1131	797	0	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)	248.0			200.0	0.0	0.0
Storage Lanes	1			0	0	0
Taper Length (m)	25.0				25.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1742	3484	3484	0	0	0
Flt Permitted	0.105					
Satd. Flow (perm)	193	3484	3484	0	0	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		70	50		50	
Link Distance (m)		705.9	205.6		302.6	
Travel Time (s)		36.3	14.8		21.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1461	1191	839	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1461	1191	839	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30			25	30	25
Turn Type	pm+pt	NA	NA			
Protected Phases	7	4	8			
Permitted Phases	4					
Detector Phase	7	4	8			
Switch Phase						
Minimum Initial (s)	10.0	20.0	20.0			
Minimum Split (s)	16.0	26.0	26.0			
Total Split (s)	102.0	140.0	38.0			
Total Split (%)	72.9%	100.0%	27.1%			
Maximum Green (s)	96.0	134.0	32.0			
Yellow Time (s)	3.5	4.5	4.5			
All-Red Time (s)	2.5	1.5	1.5			
Lost Time Adjust (s)	0.0	0.0	0.0			
Total Lost Time (s)	6.0	6.0	6.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	None	None	None			
Act Effct Green (s)	134.0	140.0	32.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Actuated g/C Ratio	0.96	1.00	0.23			
v/c Ratio	1.17	0.34	1.05			
Control Delay	107.7	0.3	98.3			
Queue Delay	0.0	0.0	0.0			
Total Delay	107.7	0.3	98.3			
LOS	F	A	F			
Approach Delay		59.5	98.3			
Approach LOS		E	F			
Queue Length 50th (m)	~467.4	0.0	~133.2			
Queue Length 95th (m)	#549.6	0.0	#173.7			
Internal Link Dist (m)		681.9	181.6		278.6	
Turn Bay Length (m)	248.0					
Base Capacity (vph)	1246	3484	796			
Starvation Cap Reductn	0	0	0			
Spillback Cap Reductn	0	0	0			
Storage Cap Reductn	0	0	0			
Reduced v/c Ratio	1.17	0.34	1.05			

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.17
Intersection Signal Delay: 68.8 Intersection LOS: E
Intersection Capacity Utilization 111.6% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Glenmore Tr & Stoney Tr EB to NB ON Ramp

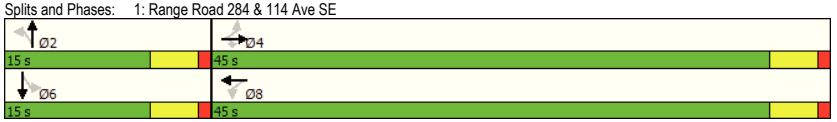


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	858	254	35	190	24	37	21	45	1	2	22
Future Volume (vph)	125	858	254	35	190	24	37	21	45	1	2	22
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	60.0		60.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	0		0	0		0	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.987			0.941			0.881	
Flt Protected	0.950				0.993			0.982			0.998	
Satd. Flow (prot)	1742	1834	1559	0	1797	0	0	1695	0	0	1612	0
Flt Permitted	0.651				0.782			0.887			0.990	
Satd. Flow (perm)	1194	1834	1559	0	1415	0	0	1531	0	0	1599	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			270		20			48			23	
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		867.7			1445.7			351.5			364.6	
Travel Time (s)		39.0			65.1			25.3			26.3	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	133	913	270	37	202	26	39	22	48	1	2	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	133	913	270	0	265	0	0	109	0	0	26	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.5	24.5	24.5	24.5	24.5		14.5	14.5		14.5	14.5	
Total Split (s)	45.0	45.0	45.0	45.0	45.0		15.0	15.0		15.0	15.0	
Total Split (%)	75.0%	75.0%	75.0%	75.0%	75.0%		25.0%	25.0%		25.0%	25.0%	
Maximum Green (s)	40.5	40.5	40.5	40.5	40.5		10.5	10.5		10.5	10.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0			0.0			0.0	
Total Lost Time (s)	4.5	4.5	4.5		4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Act Effct Green (s)	29.8	29.8	29.8		29.8			10.4			10.4	
Actuated g/C Ratio	0.60	0.60	0.60		0.60			0.21			0.21	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.18	0.83	0.26		0.31			0.30			0.07	
Control Delay	4.6	14.9	1.2		5.0			15.4			11.3	
Queue Delay	0.0	0.0	0.0		0.0			0.0			0.0	
Total Delay	4.6	14.9	1.2		5.0			15.4			11.3	
LOS	A	B	A		A			B			B	
Approach Delay		11.0			5.0			15.4			11.3	
Approach LOS		B			A			B			B	
Queue Length 50th (m)	4.1	50.0	0.0		8.2			4.4			0.2	
Queue Length 95th (m)	9.1	92.1	5.1		16.2			17.6			5.6	
Internal Link Dist (m)		843.7			1421.7			327.5			340.6	
Turn Bay Length (m)	60.0		60.0									
Base Capacity (vph)	996	1530	1345		1183			371			367	
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	0.13	0.60	0.20		0.22			0.29			0.07	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 49.4			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 10.4		Intersection LOS: B	
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Range Road 284 & 114 Ave SE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	307	311	287	94	79	42	89	123	34	15	256	81
Future Volume (vph)	307	311	287	94	79	42	89	123	34	15	256	81
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	0.0		90.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.928			0.948			0.981			0.969	
Flt Protected	0.950			0.950				0.982			0.998	
Satd. Flow (prot)	1742	1702	0	1742	1739	0	0	1767	0	0	1773	0
Flt Permitted	0.674			0.274				0.696			0.980	
Satd. Flow (perm)	1236	1702	0	502	1739	0	0	1252	0	0	1741	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		130			45			17			32	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		182.4			157.5			492.4			3223.7	
Travel Time (s)		8.2			7.1			22.2			145.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	327	331	305	100	84	45	95	131	36	16	272	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	327	636	0	100	129	0	0	262	0	0	374	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		14.5	14.5		14.5	14.5	
Total Split (s)	29.0	29.0		29.0	29.0		21.0	21.0		21.0	21.0	
Total Split (%)	58.0%	58.0%		58.0%	58.0%		42.0%	42.0%		42.0%	42.0%	
Maximum Green (s)	24.5	24.5		24.5	24.5		16.5	16.5		16.5	16.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)	21.8	21.8		21.8	21.8			13.3			13.3	
Actuated g/C Ratio	0.49	0.49		0.49	0.49			0.30			0.30	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.54	0.70		0.40	0.15			0.68			0.68	
Control Delay	12.4	12.5		14.1	5.3			23.1			19.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	12.4	12.5		14.1	5.3			23.1			19.9	
LOS	B	B		B	A			C			B	
Approach Delay		12.5			9.2			23.1			19.9	
Approach LOS		B			A			C			B	
Queue Length 50th (m)	15.4	25.2		4.3	3.0			14.8			20.7	
Queue Length 95th (m)	37.1	62.2		15.6	10.1			#39.9			47.1	
Internal Link Dist (m)		158.4			133.5			468.4			3199.7	
Turn Bay Length (m)												
Base Capacity (vph)	692	1010		280	993			482			676	
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	0.47	0.63		0.36	0.13			0.54			0.55	

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 44.3
Natural Cycle: 45
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 15.1 Intersection LOS: B
Intersection Capacity Utilization 100.1% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Range Road 283/RR 283 & 114 Ave SE

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	58	189	174	214	113	0	17	22	10	158	1
Future Volume (vph)	113	58	189	174	214	113	0	17	22	10	158	1
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.929			0.970			0.924			0.999	
Flt Protected		0.985			0.983						0.997	
Satd. Flow (prot)	0	1678	0	0	1749	0	0	1695	0	0	1827	0
Flt Permitted		0.762			0.768						0.984	
Satd. Flow (perm)	0	1298	0	0	1366	0	0	1695	0	0	1803	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		185			49			23				
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		1465.4			481.9			451.0			344.1	
Travel Time (s)		65.9			21.7			32.5			24.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	120	62	201	185	228	120	0	18	23	11	168	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	383	0	0	533	0	0	41	0	0	180	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			1.6			4.8	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30		25	30		25	30		25	30		25
Turn Type	Perm	NA		Perm	NA			NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		14.5	14.5		14.5	14.5	
Total Split (s)	38.0	38.0		38.0	38.0		17.0	17.0		17.0	17.0	
Total Split (%)	69.1%	69.1%		69.1%	69.1%		30.9%	30.9%		30.9%	30.9%	
Maximum Green (s)	33.5	33.5		33.5	33.5		12.5	12.5		12.5	12.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		23.4			23.4			10.8			10.8	
Actuated g/C Ratio		0.54			0.54			0.25			0.25	
v/c Ratio		0.49			0.70			0.09			0.40	
Control Delay		5.4			12.4			10.4			18.2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.4			12.4			10.4			18.2	
LOS		A			B			B			B	
Approach Delay		5.4			12.4			10.4			18.2	
Approach LOS		A			B			B			B	
Queue Length 50th (m)		6.4			20.8			0.9			9.7	
Queue Length 95th (m)		19.1			50.5			7.3			30.3	
Internal Link Dist (m)		1441.4			457.9			427.0			320.1	
Turn Bay Length (m)												
Base Capacity (vph)		1061			1085			513			529	
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		0.36			0.49			0.08			0.34	

Intersection Summary

Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 43.3			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 10.9		Intersection LOS: B	
Intersection Capacity Utilization 62.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Range Road 282/RR 282 & 114 Ave SE

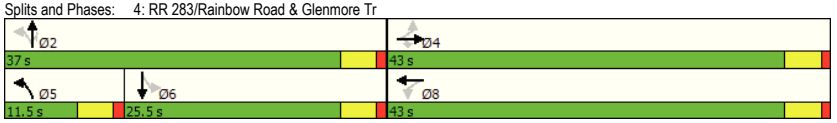
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	211	318	160	745	7	206	7	22	2	121	137
Future Volume (vph)	14	211	318	160	745	7	206	7	22	2	121	137
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	60.0		180.0	150.0		300.0	0.0		10.0	0.0		0.0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999				0.850		0.929	
Flt Protected	0.950			0.950				0.954				
Satd. Flow (prot)	1742	1834	1559	1742	1832	0	0	1750	1559	0	1704	0
Flt Permitted	0.117			0.607				0.502			0.999	
Satd. Flow (perm)	215	1834	1559	1113	1832	0	0	921	1559	0	1702	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			338		1				20		68	
Link Speed (k/h)		80			80			80			50	
Link Distance (m)		417.9			642.3			3223.7			432.1	
Travel Time (s)		18.8			28.9			145.1			31.1	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	15	224	338	170	793	7	219	7	23	2	129	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	224	338	170	800	0	0	226	23	0	277	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30		25	30		25	30		25	30		25
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		7.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	24.5	24.5	24.5	24.5	24.5		11.5	14.5	14.5	14.5	14.5	
Total Split (s)	43.0	43.0	43.0	43.0	43.0		11.5	37.0	37.0	25.5	25.5	
Total Split (%)	53.8%	53.8%	53.8%	53.8%	53.8%		14.4%	46.3%	46.3%	31.9%	31.9%	
Maximum Green (s)	38.5	38.5	38.5	38.5	38.5		7.0	32.5	32.5	21.0	21.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min	Min	Min	Min	
Act Effct Green (s)	34.1	34.1	34.1	34.1	34.1			27.0	27.0		27.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.48			0.38	0.38		0.38	
v/c Ratio	0.15	0.25	0.36	0.32	0.90			0.64	0.04		0.40	
Control Delay	15.9	12.7	2.8	14.4	33.7			28.5	7.4		14.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay	15.9	12.7	2.8	14.4	33.7			28.5	7.4		14.2	
LOS	B	B	A	B	C			C	A		B	
Approach Delay		7.0			30.4			26.5			14.2	
Approach LOS		A			C			C			B	
Queue Length 50th (m)	1.2	19.1	0.0	15.0	106.4			26.3	0.3		20.9	
Queue Length 95th (m)	5.2	32.4	12.3	28.5	#180.7			50.2	4.4		39.1	
Internal Link Dist (m)		393.9			618.3			3199.7			408.1	
Turn Bay Length (m)	60.0		180.0	150.0					10.0			
Base Capacity (vph)	123	1055	1040	640	1055			447	767		746	
Starvation Cap Reductn	0	0	0	0	0			0	0		0	
Spillback Cap Reductn	0	0	0	0	0			0	0		0	
Storage Cap Reductn	0	0	0	0	0			0	0		0	
Reduced v/c Ratio	0.12	0.21	0.33	0.27	0.76			0.51	0.03		0.37	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 70.6
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 21.2 — Intersection LOS: C
Intersection Capacity Utilization 99.7% — ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: RR 283/Rainbow Road & Glenmore Tr



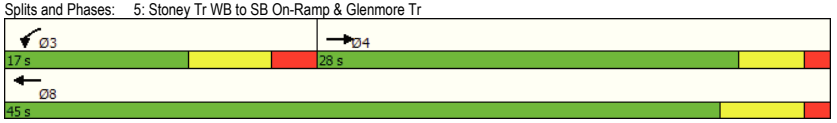
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	812	0	151	1914	0	0
Future Volume (vph)	812	0	151	1914	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)		0.0	190.0		0.0	0.0
Storage Lanes		0	1		0	0
Taper Length (m)			25.0		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	3484	0	1742	3484	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	3484	0	1742	3484	0	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	70			70	50	
Link Distance (m)	583.7			705.9	340.9	
Travel Time (s)	30.0			36.3	24.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	864	0	161	2036	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	864	0	161	2036	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)		25	30		30	25
Turn Type	NA		Prot	NA		
Protected Phases	4		3	8		
Permitted Phases						
Detector Phase	4		3	8		
Switch Phase						
Minimum Initial (s)	20.0		10.0	20.0		
Minimum Split (s)	25.0		17.0	26.0		
Total Split (s)	28.0		17.0	45.0		
Total Split (%)	62.2%		37.8%	100.0%		
Maximum Green (s)	23.0		10.0	39.0		
Yellow Time (s)	3.5		4.5	4.5		
All-Red Time (s)	1.5		2.5	1.5		
Lost Time Adjust (s)	0.0		0.0	0.0		
Total Lost Time (s)	5.0		7.0	6.0		
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0		
Recall Mode	None		None	None		
Act Effct Green (s)	27.2		10.2	45.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.60		0.23	1.00		
v/c Ratio	0.41		0.41	0.58		
Control Delay	7.3		24.4	1.6		
Queue Delay	0.0		0.0	0.0		
Total Delay	7.3		24.4	1.6		
LOS	A		C	A		
Approach Delay	7.3			3.3		
Approach LOS	A			A		
Queue Length 50th (m)	20.4		13.4	5.4		
Queue Length 95th (m)	31.1		m20.8	8.5		
Internal Link Dist (m)	559.7			681.9	316.9	
Turn Bay Length (m)			190.0			
Base Capacity (vph)	2121		393	3484		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	0.41		0.41	0.58		

Intersection Summary

Area Type: Other
Cycle Length: 45
Actuated Cycle Length: 45
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.58
Intersection Signal Delay: 4.4 Intersection LOS: A
Intersection Capacity Utilization 64.4% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Stoney Tr WB to SB On-Ramp & Glenmore Tr



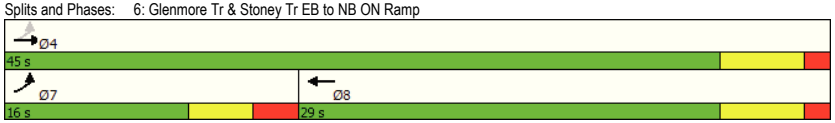
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	360	1127	1195	0	0	0
Future Volume (vph)	360	1127	1195	0	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)	248.0			200.0	0.0	0.0
Storage Lanes	1			0	0	0
Taper Length (m)	25.0				25.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1742	3484	3484	0	0	0
Flt Permitted	0.138					
Satd. Flow (perm)	253	3484	3484	0	0	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		70	50		50	
Link Distance (m)		705.9	205.6		302.6	
Travel Time (s)		36.3	14.8		21.8	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	383	1199	1271	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	383	1199	1271	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30			25	30	25
Turn Type	pm+pt	NA	NA			
Protected Phases	7	4	8			
Permitted Phases	4					
Detector Phase	7	4	8			
Switch Phase						
Minimum Initial (s)	10.0	20.0	20.0			
Minimum Split (s)	16.0	26.0	26.0			
Total Split (s)	16.0	45.0	29.0			
Total Split (%)	35.6%	100.0%	64.4%			
Maximum Green (s)	10.0	39.0	23.0			
Yellow Time (s)	3.5	4.5	4.5			
All-Red Time (s)	2.5	1.5	1.5			
Lost Time Adjust (s)	0.0	0.0	0.0			
Total Lost Time (s)	6.0	6.0	6.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	None	None	None			
Act Effct Green (s)	39.0	45.0	23.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Actuated g/C Ratio	0.87	1.00	0.51			
v/c Ratio	0.70	0.34	0.71			
Control Delay	18.8	0.3	11.3			
Queue Delay	0.0	0.0	0.0			
Total Delay	18.8	0.3	11.3			
LOS	B	A	B			
Approach Delay		4.7	11.3			
Approach LOS		A	B			
Queue Length 50th (m)	8.2	0.0	35.6			
Queue Length 95th (m)	#41.3	0.0	53.6			
Internal Link Dist (m)		681.9	181.6		278.6	
Turn Bay Length (m)	248.0					
Base Capacity (vph)	550	3484	1780			
Starvation Cap Reductn	0	0	0			
Spillback Cap Reductn	0	0	0			
Storage Cap Reductn	0	0	0			
Reduced v/c Ratio	0.70	0.34	0.71			

Intersection Summary

Area Type: Other
Cycle Length: 45
Actuated Cycle Length: 45
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 7.7 Intersection LOS: A
Intersection Capacity Utilization 64.4% 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: 6: Glenmore Tr & Stoney Tr EB to NB ON Ramp



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	223	86	34	554	3	193	8	57	42	21	75
Future Volume (vph)	26	223	86	34	554	3	193	8	57	42	21	75
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	60.0		60.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	0		0	0		0	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999			0.970			0.926	
Flt Protected	0.950				0.997			0.964			0.985	
Satd. Flow (prot)	1742	1834	1559	0	1827	0	0	1715	0	0	1673	0
Flt Permitted	0.418				0.975			0.767			0.869	
Satd. Flow (perm)	767	1834	1559	0	1786	0	0	1364	0	0	1476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			91		1			21			79	
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		867.7			1445.7			351.5			364.6	
Travel Time (s)		39.0			65.1			25.3			26.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	27	235	91	36	583	3	203	8	60	44	22	79
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	235	91	0	622	0	0	271	0	0	145	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.5	24.5	24.5	24.5	24.5		14.5	14.5		14.5	14.5	
Total Split (s)	45.0	45.0	45.0	45.0	45.0		15.0	15.0		15.0	15.0	
Total Split (%)	75.0%	75.0%	75.0%	75.0%	75.0%		25.0%	25.0%		25.0%	25.0%	
Maximum Green (s)	40.5	40.5	40.5	40.5	40.5		10.5	10.5		10.5	10.5	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0			0.0			0.0	
Total Lost Time (s)	4.5	4.5	4.5		4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Min		Min	Min	
Act Effct Green (s)	21.6	21.6	21.6		21.6			10.5			10.5	
Actuated g/C Ratio	0.52	0.52	0.52		0.52			0.25			0.25	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.07	0.24	0.11		0.66			0.74			0.33	
Control Delay	5.1	6.0	1.7		11.2			31.1			10.0	
Queue Delay	0.0	0.0	0.0		0.0			0.0			0.0	
Total Delay	5.1	6.0	1.7		11.2			31.1			10.0	
LOS	A	A	A		B			C			A	
Approach Delay		4.8			11.2			31.1			10.0	
Approach LOS		A			B			C			A	
Queue Length 50th (m)	0.8	7.7	0.0		27.2			14.9			3.4	
Queue Length 95th (m)	3.0	15.1	3.5		49.9			#53.2			15.5	
Internal Link Dist (m)		843.7			1421.7			327.5			340.6	
Turn Bay Length (m)	60.0		60.0									
Base Capacity (vph)	745	1781	1516		1734			364			436	
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	0.04	0.13	0.06		0.36			0.74			0.33	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 41.2
Natural Cycle: 40
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 13.3 Intersection LOS: B
Intersection Capacity Utilization 81.6% 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: 1: Range Road 284 & 114 Ave SE

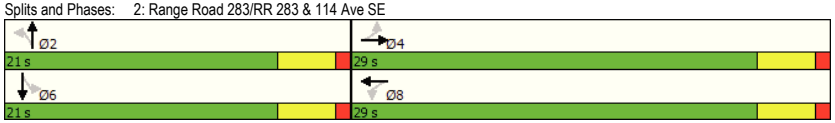
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	173	84	38	207	14	203	252	147	72	83	181
Future Volume (vph)	65	173	84	38	207	14	203	252	147	72	83	181
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	0.0		90.0	0.0		60.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	0		0	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.951			0.990			0.967			0.927	
Flt Protected	0.950			0.950				0.983			0.989	
Satd. Flow (prot)	1742	1744	0	1742	1816	0	0	1743	0	0	1681	0
Flt Permitted	0.613			0.575				0.766			0.825	
Satd. Flow (perm)	1124	1744	0	1054	1816	0	0	1358	0	0	1403	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		68			10			35			126	
Link Speed (k/h)		80			80			80			80	
Link Distance (m)		182.4			157.5			492.4			3223.7	
Travel Time (s)		8.2			7.1			22.2			145.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	182	88	40	218	15	214	265	155	76	87	191
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	270	0	40	233	0	0	634	0	0	354	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		14.5	14.5		14.5	14.5	
Total Split (s)	29.0	29.0		29.0	29.0		21.0	21.0		21.0	21.0	
Total Split (%)	58.0%	58.0%		58.0%	58.0%		42.0%	42.0%		42.0%	42.0%	
Maximum Green (s)	24.5	24.5		24.5	24.5		16.5	16.5		16.5	16.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)	21.0	21.0		21.0	21.0			20.4			20.4	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.49			0.49	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.12	0.30		0.08	0.25			0.93			0.47	
Control Delay	8.4	7.3		8.0	8.6			44.2			10.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	8.4	7.3		8.0	8.6			44.2			10.2	
LOS	A	A		A	A			D			B	
Approach Delay		7.5			8.5			44.2			10.2	
Approach LOS		A			A			D			B	
Queue Length 50th (m)	3.0	9.4		1.7	10.5			~64.9			13.3	
Queue Length 95th (m)	8.3	20.8		5.6	21.2			#114.2			33.2	
Internal Link Dist (m)		158.4			133.5			468.4			3199.7	
Turn Bay Length (m)												
Base Capacity (vph)	694	1103		651	1125			683			752	
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	0.10	0.24		0.06	0.21			0.93			0.47	

Intersection Summary

Area Type: Other
Cycle Length: 50
Actuated Cycle Length: 41.6
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 22.8 Intersection LOS: C
Intersection Capacity Utilization 100.3% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Range Road 283/RR 283 & 114 Ave SE



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	373	13	21	52	9	142	128	265	156	14	65
Future Volume (vph)	6	373	13	21	52	9	142	128	265	156	14	65
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.986			0.933			0.963	
Flt Protected		0.999			0.987			0.987			0.968	
Satd. Flow (prot)	0	1823	0	0	1785	0	0	1689	0	0	1710	0
Flt Permitted		0.997			0.883			0.857			0.457	
Satd. Flow (perm)	0	1819	0	0	1597	0	0	1466	0	0	807	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			9			83			32	
Link Speed (k/h)		80			80			50			50	
Link Distance (m)		1465.4			481.9			451.0			344.1	
Travel Time (s)		65.9			21.7			32.5			24.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	393	14	22	55	9	149	135	279	164	15	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	413	0	0	86	0	0	563	0	0	247	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			1.6			4.8	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30		25	30		25	30		25	30		25
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		14.5	14.5		14.5	14.5	
Total Split (s)	38.0	38.0		38.0	38.0		17.0	17.0		17.0	17.0	
Total Split (%)	69.1%	69.1%		69.1%	69.1%		30.9%	30.9%		30.9%	30.9%	
Maximum Green (s)	33.5	33.5		33.5	33.5		12.5	12.5		12.5	12.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		20.0			20.0			12.5			12.5	
Actuated g/C Ratio		0.48			0.48			0.30			0.30	
v/c Ratio		0.47			0.11			1.13			0.93	
Control Delay		9.3			5.9			99.6			60.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.3			5.9			99.6			60.9	
LOS		A			A			F			E	
Approach Delay		9.3			5.9			99.6			60.9	
Approach LOS		A			A			F			E	
Queue Length 50th (m)		17.2			2.6			~45.1			14.5	
Queue Length 95th (m)		33.0			7.3			#90.3			#48.1	
Internal Link Dist (m)		1441.4			457.9			427.0			320.1	
Turn Bay Length (m)												
Base Capacity (vph)		1469			1290			499			265	
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		0.28			0.07			1.13			0.93	

Intersection Summary

Area Type: Other
Cycle Length: 55
Actuated Cycle Length: 41.5
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.13
Intersection Signal Delay: 57.7 Intersection LOS: E
Intersection Capacity Utilization 60.5% ICU Level of Service B
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Range Road 282/RR 282 & 114 Ave SE

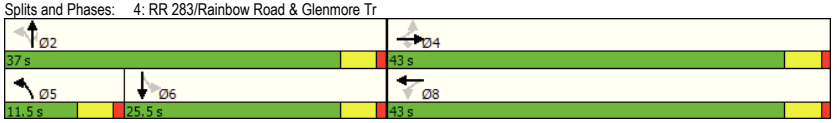
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	710	159	26	269	16	262	136	159	20	15	47
Future Volume (vph)	164	710	159	26	269	16	262	136	159	20	15	47
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m)	60.0		180.0	150.0		300.0	0.0		10.0	0.0		0.0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (m)	25.0			25.0			25.0			25.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.991				0.850		0.923	
Flt Protected	0.950			0.950				0.968			0.988	
Satd. Flow (prot)	1742	1834	1559	1742	1817	0	0	1775	1559	0	1672	0
Flt Permitted	0.533			0.143				0.750			0.881	
Satd. Flow (perm)	977	1834	1559	262	1817	0	0	1375	1559	0	1491	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			167		5				70		49	
Link Speed (k/h)		80			80			80			50	
Link Distance (m)		417.9			642.3			3223.7			432.1	
Travel Time (s)		18.8			28.9			145.1			31.1	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	173	747	167	27	283	17	276	143	167	21	16	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	173	747	167	27	300	0	0	419	167	0	86	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30		25	30		25	30		25	30		25
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		7.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	24.5	24.5	24.5	24.5	24.5		11.5	14.5	14.5	14.5	14.5	
Total Split (s)	43.0	43.0	43.0	43.0	43.0		11.5	37.0	37.0	25.5	25.5	
Total Split (%)	53.8%	53.8%	53.8%	53.8%	53.8%		14.4%	46.3%	46.3%	31.9%	31.9%	
Maximum Green (s)	38.5	38.5	38.5	38.5	38.5		7.0	32.5	32.5	21.0	21.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5			4.5	4.5		4.5	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Min	Min	Min	Min	
Act Effct Green (s)	32.5	32.5	32.5	32.5	32.5			26.0	26.0		26.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.48			0.38	0.38		0.38	
v/c Ratio	0.37	0.85	0.20	0.22	0.34			0.80	0.26		0.14	
Control Delay	15.4	28.3	2.8	17.3	13.1			32.7	10.7		8.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay	15.4	28.3	2.8	17.3	13.1			32.7	10.7		8.5	
LOS	B	C	A	B	B			C	B		A	
Approach Delay		22.3			13.5			26.5			8.5	
Approach LOS		C			B			C			A	
Queue Length 50th (m)	14.8	88.7	0.0	2.1	24.8			52.1	9.0		3.3	
Queue Length 95th (m)	30.4	#161.4	9.1	8.0	43.2			#96.9	21.2		11.5	
Internal Link Dist (m)		393.9			618.3			3199.7			408.1	
Turn Bay Length (m)	60.0		180.0	150.0					10.0			
Base Capacity (vph)	586	1099	1001	157	1092			696	823		644	
Starvation Cap Reductn	0	0	0	0	0			0	0		0	
Spillback Cap Reductn	0	0	0	0	0			0	0		0	
Storage Cap Reductn	0	0	0	0	0			0	0		0	
Reduced v/c Ratio	0.30	0.68	0.17	0.17	0.27			0.60	0.20		0.13	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 68
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 21.5 — Intersection LOS: C
Intersection Capacity Utilization 95.2% — ICU Level of Service F
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: RR 283/Rainbow Road & Glenmore Tr



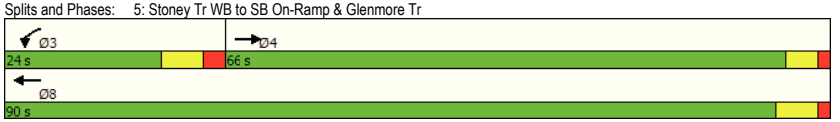
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	2285	0	321	653	0	0
Future Volume (vph)	2285	0	321	653	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)		0.0	190.0		0.0	0.0
Storage Lanes		0	1		0	0
Taper Length (m)			25.0		25.0	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	3484	0	1742	3484	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	3484	0	1742	3484	0	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						
Link Speed (k/h)	70			70	50	
Link Distance (m)	583.7			705.9	340.9	
Travel Time (s)	30.0			36.3	24.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2405	0	338	687	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2405	0	338	687	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)		25	30		30	25
Turn Type	NA		Prot	NA		
Protected Phases	4		3	8		
Permitted Phases						
Detector Phase	4		3	8		
Switch Phase						
Minimum Initial (s)	20.0		10.0	20.0		
Minimum Split (s)	25.0		17.0	26.0		
Total Split (s)	66.0		24.0	90.0		
Total Split (%)	73.3%		26.7%	100.0%		
Maximum Green (s)	61.0		17.0	84.0		
Yellow Time (s)	3.5		4.5	4.5		
All-Red Time (s)	1.5		2.5	1.5		
Lost Time Adjust (s)	0.0		0.0	0.0		
Total Lost Time (s)	5.0		7.0	6.0		
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0		3.0	3.0		
Recall Mode	None		None	None		
Act Effct Green (s)	61.0		17.0	90.0		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Actuated g/C Ratio	0.68		0.19	1.00		
v/c Ratio	1.02		1.03	0.20		
Control Delay	39.3		95.0	0.1		
Queue Delay	0.0		0.0	0.0		
Total Delay	39.3		95.0	0.1		
LOS	D		F	A		
Approach Delay	39.3			31.4		
Approach LOS	D			C		
Queue Length 50th (m)	~211.0		~63.0	0.0		
Queue Length 95th (m)	#276.0		#113.2	0.0		
Internal Link Dist (m)	559.7			681.9	316.9	
Turn Bay Length (m)			190.0			
Base Capacity (vph)	2361		329	3484		
Starvation Cap Reductn	0		0	0		
Spillback Cap Reductn	0		0	0		
Storage Cap Reductn	0		0	0		
Reduced v/c Ratio	1.02		1.03	0.20		

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 37.0 Intersection LOS: D
Intersection Capacity Utilization 112.3% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Stoney Tr WB to SB On-Ramp & Glenmore Tr



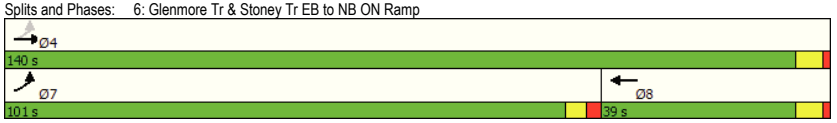
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1388	1269	820	0	0	0
Future Volume (vph)	1388	1269	820	0	0	0
Ideal Flow (vphpl)	1850	1850	1850	1850	1850	1850
Storage Length (m)	248.0			200.0	0.0	0.0
Storage Lanes	1			0	0	0
Taper Length (m)	25.0				25.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1742	3484	3484	0	0	0
Flt Permitted	0.103					
Satd. Flow (perm)	189	3484	3484	0	0	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						
Link Speed (k/h)		70	50		50	
Link Distance (m)		705.9	205.6		302.6	
Travel Time (s)		36.3	14.8		21.8	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1461	1336	863	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1461	1336	863	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		0.0	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30			25	30	25
Turn Type	pm+pt	NA	NA			
Protected Phases	7	4	8			
Permitted Phases	4					
Detector Phase	7	4	8			
Switch Phase						
Minimum Initial (s)	10.0	20.0	20.0			
Minimum Split (s)	16.0	26.0	26.0			
Total Split (s)	101.0	140.0	39.0			
Total Split (%)	72.1%	100.0%	27.9%			
Maximum Green (s)	95.0	134.0	33.0			
Yellow Time (s)	3.5	4.5	4.5			
All-Red Time (s)	2.5	1.5	1.5			
Lost Time Adjust (s)	0.0	0.0	0.0			
Total Lost Time (s)	6.0	6.0	6.0			
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	None	None	None			
Act Effct Green (s)	134.0	140.0	33.0			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Actuated g/C Ratio	0.96	1.00	0.24			
v/c Ratio	1.18	0.38	1.05			
Control Delay	113.0	0.3	96.6			
Queue Delay	0.0	0.0	0.0			
Total Delay	113.0	0.3	96.6			
LOS	F	A	F			
Approach Delay		59.2	96.6			
Approach LOS		E	F			
Queue Length 50th (m)	~470.9	0.0	~136.7			
Queue Length 95th (m)	#553.1	0.0	#177.2			
Internal Link Dist (m)		681.9	181.6		278.6	
Turn Bay Length (m)	248.0					
Base Capacity (vph)	1234	3484	821			
Starvation Cap Reductn	0	0	0			
Spillback Cap Reductn	0	0	0			
Storage Cap Reductn	0	0	0			
Reduced v/c Ratio	1.18	0.38	1.05			

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2: and 6:, Start of Green
Natural Cycle: 140
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.18
Intersection Signal Delay: 68.0 Intersection LOS: E
Intersection Capacity Utilization 112.3% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Glenmore Tr & Stoney Tr EB to NB ON Ramp



APPENDIX C
Warrant Analyses

Illumination of Isolated Rural Intersections
LIGHTING WARRANT SPREADSHEET

This spreadsheet is to be used in conjunction with *Illumination of Isolated Rural Intersections*, Transportation Association of Canada, February 2001.

Please enter information in the cells with yellow background

INTERSECTION CHARACTERISTICS

114 Avenue	Main Road
Range Road 282	Minor Road
Rocky View County	City/Town

Date October 26, 2020
Other Short-Term Combined Scenario

GEOMETRIC FACTORS

	Value	Rating	Weight	Comments	Check	Score
Channelization Rating	Descriptive	0		Refer to Table 1(A) to determine rating value	OK	
Presence of raised channelization? (Y / N)	N				OK	
Highest operating speed on raised, channelized approach (km/h)	80		5		OK	
Channelization Factor					OK	0
Approach Sight Distance on most constrained approach (%)	100	0	10	Relative to the recommended minimum sight distance	OK	0
Posted Speed limit (in 10's of km/h)	80				OK	
Radius of Horizontal Curve (m)	T			Enter "T" for tangent (no horizontal curve at the intersection)	OK	
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =	C	0				
Posted Speed Category =		0				
Horizontal Curvature Factor		0	5		OK	0
Angle of Intersection (10's of Degrees)	90	0	5		OK	0
Downhill Approach Grade (x.x%)	0.0	0	3	Rounded to nearest tenth of a percent	OK	0
Number of Intersection Legs	4	2	3	Number of legs = 3 or more	OK	6
				Geometric Factors Subtotal		**6**

OPERATIONAL FACTORS

Is the intersection signalized ? (Y/ N)	N			Calculate the Signalization Warrant Factor		
AADT on Major Road (2-way)	3990	3	10	Either Use the two AADT inputs **OR** the Descriptive Signalization Warrant (Unused values should be set to Zero) Refer to Table 1(B) for description and rating values for signalization warrant.	OK	30
AADT on Minor Road (2-way)	2326	4	20		OK	80
Signalization Warrant	Descriptive	0	30		OK	0
					OK	
Night-Time Hourly Pedestrian Volume	0	0	10	Refer to Table 1(B), note #2, to account for children and seniors	OK	0
Intersecting Roadway Classification	Descriptive	2	5	Refer to Table 1(B) for ratings.	OK	10
Operating Speed or Posted Speed on Major Road (km/h)	80	3	5	Refer to Table 1(B), note #3	OK	15
Operating Speed on Minor Road (km/h)	50	0	5	Refer to Table 1(B), note #3	OK	0
				Operational Factors Subtotal		**135**

ENVIRONMENTAL FACTOR

Lighted Developments within 150 m radius of intersection	2	2	5	Maximum of 4 quadrants	OK	10
				Environmental Factor Subtotal		**10**

COLLISION HISTORY

Average Annual night-time collision frequency due to inadequate lighting (collisions/yr, rounded to nearest whole #)	0.0	0	0	Enter **either** the annual frequency (See Table 1(C), note #4)	OK	0
OR				**OR** the number of collisions / MEV		
Collision Rate over last 3 years, due to inadequate lighting (/MEV)	0	0	0	(Unused values should be set to Zero)	OK	0
Is the average ratio of **all** night to day collisions >= 1.5 (Y/N)	N	0			OK	
					OK	
				Collision History Subtotal		**0**

Check Intersection Signalization:
Intersection is not Signalized

ILLUMINATION WARRANTED
DELINEATION LIGHTING TO ILLUMINATE PEDESTRIANS OR CROSS STREET TRAFFIC

SUMMARY

Geometric Factors Subtotal	6
Operational Factor Subtotal	135
Environmental Factor Subtotal	10
Collision History Subtotal	0
TOTAL POINTS	**151**

Illumination of Isolated Rural Intersections
LIGHTING WARRANT SPREADSHEET

This spreadsheet is to be used in conjunction with *Illumination of Isolated Rural Intersections*, Transportation Association of Canada, February 2001.

Please enter information in the cells with yellow background

INTERSECTION CHARACTERISTICS

114 Avenue	Main Road
Range Road 283	Minor Road
Rocky View County	City/Town

Date October 26, 2020
Other Short-Term Combined Scenario

GEOMETRIC FACTORS

	Value	Rating	Weight	Comments	Check	Score
Channelization Rating	Descriptive	0		Refer to Table 1(A) to determine rating value	OK	
Presence of raised channelization? (Y / N)	N				OK	
Highest operating speed on raised, channelized approach (km/h)	80		5		OK	
Channelization Factor					OK	0
Approach Sight Distance on most constrained approach (%)	100	0	10	Relative to the recommended minimum sight distance	OK	0
Posted Speed limit (in 10's of km/h)	80				OK	
Radius of Horizontal Curve (m)	T			Enter "T" for tangent (no horizontal curve at the intersection)	OK	
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =	C	0				
Posted Speed Category =		0				
Horizontal Curvature Factor		0	5		OK	0
Angle of Intersection (10's of Degrees)	90	0	5		OK	0
Downhill Approach Grade (x.x%)	0.0	0	3	Rounded to nearest tenth of a percent	OK	0
Number of Intersection Legs	4	2	3	Number of legs = 3 or more	OK	6
					Geometric Factors Subtotal	**6**

OPERATIONAL FACTORS

Is the intersection signalized ? (Y/ N)	N			Calculate the Signalization Warrant Factor		
AADT on Major Road (2-way)	4616	3	10	Either Use the two AADT inputs **OR** the Descriptive Signalization Warrant (Unused values should be set to Zero) Refer to Table 1(B) for description and rating values for signalization warrant.	OK	30
AADT on Minor Road (2-way)	3346	4	20		OK	80
Signalization Warrant	Descriptive	0	30		OK	0
					OK	
Night-Time Hourly Pedestrian Volume	0	0	10	Refer to Table 1(B), note #2, to account for children and seniors	OK	0
Intersecting Roadway Classification	Descriptive	2	5	Refer to Table 1(B) for ratings.	OK	10
Operating Speed or Posted Speed on Major Road (km/h)	80	3	5	Refer to Table 1(B), note #3	OK	15
Operating Speed on Minor Road (km/h)	50	0	5	Refer to Table 1(B), note #3	OK	0
					Operational Factors Subtotal	**135**

ENVIRONMENTAL FACTOR

Lighted Developments within 150 m radius of intersection	4	4	5	Maximum of 4 quadrants	OK	20
					Environmental Factor Subtotal	**20**

COLLISION HISTORY

Average Annual night-time collision frequency due to inadequate lighting (collisions/yr, rounded to nearest whole #)	0.0	0	0	Enter **either** the annual frequency (See Table 1(C), note #4)	OK	0
OR				**OR** the number of collisions / MEV		
Collision Rate over last 3 years, due to inadequate lighting (/MEV)	0	0	0	(Unused values should be set to Zero)	OK	0
Is the average ratio of **all** night to day collisions >= 1.5 (Y/N)	N	0			OK	
					OK	
					Collision History Subtotal	**0**

Check Intersection Signalization:
Intersection is not Signalized

ILLUMINATION WARRANTED
DELINEATION LIGHTING TO ILLUMINATE PEDESTRIANS OR CROSS STREET TRAFFIC

SUMMARY

Geometric Factors Subtotal	6
Operational Factor Subtotal	135
Environmental Factor Subtotal	20
Collision History Subtotal	0
TOTAL POINTS	**161**

Illumination of Isolated Rural Intersections
LIGHTING WARRANT SPREADSHEET

This spreadsheet is to be used in conjunction with *Illumination of Isolated Rural Intersections*, Transportation Association of Canada, February 2001.

Please enter information in the cells with yellow background

INTERSECTION CHARACTERISTICS

114 Avenue	Main Road
Range Road 284	Minor Road
Rocky View County	City/Town

Date October 26, 2020
Other Short-Term Combined Scenario

GEOMETRIC FACTORS

	Value	Rating	Weight	Comments	Check	Score
Channelization Rating	Descriptive	0		Refer to Table 1(A) to determine rating value	OK	
Presence of raised channelization? (Y / N)	N				OK	
Highest operating speed on raised, channelized approach (km/h)	80		5		OK	
Channelization Factor					OK	0
Approach Sight Distance on most constrained approach (%)	100	0	10	Relative to the recommended minimum sight distance	OK	0
Posted Speed limit (in 10's of km/h)	80				OK	
Radius of Horizontal Curve (m)	T			Enter "T" for tangent (no horizontal curve at the intersection)	OK	
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =	C	0				
Posted Speed Category =		0				
Horizontal Curvature Factor		0	5		OK	0
Angle of Intersection (10's of Degrees)	90	0	5		OK	0
Downhill Approach Grade (x.x%)	0.0	0	3	Rounded to nearest tenth of a percent	OK	0
Number of Intersection Legs	4	2	3	Number of legs = 3 or more	OK	6
				Geometric Factors Subtotal		**6**

OPERATIONAL FACTORS

Is the intersection signalized ? (Y/ N)	N			Calculate the Signalization Warrant Factor		
AADT on Major Road (2-way)	5576	4	10	Either Use the two AADT inputs **OR** the Descriptive Signalization Warrant (Unused values should be set to Zero) Refer to Table 1(B) for description and rating values for signalization warrant.	OK	40
AADT on Minor Road (2-way)	1760	3	20		OK	60
Signalization Warrant	Descriptive	0	30		OK	0
					OK	
Night-Time Hourly Pedestrian Volume	0	0	10	Refer to Table 1(B), note #2, to account for children and seniors	OK	0
Intersecting Roadway Classification	Descriptive	2	5	Refer to Table 1(B) for ratings.	OK	10
Operating Speed or Posted Speed on Major Road (km/h)	80	3	5	Refer to Table 1(B), note #3	OK	15
Operating Speed on Minor Road (km/h)	50	0	5	Refer to Table 1(B), note #3	OK	0
				Operational Factors Subtotal		**125**

ENVIRONMENTAL FACTOR

Lighted Developments within 150 m radius of intersection	3	3	5	Maximum of 4 quadrants	OK	15
				Environmental Factor Subtotal		**15**

COLLISION HISTORY

Average Annual night-time collision frequency due to inadequate lighting (collisions/yr, rounded to nearest whole #)	0.0	0	0	Enter **either** the annual frequency (See Table 1(C), note #4)	OK	0
OR				**OR** the number of collisions / MEV		
Collision Rate over last 3 years, due to inadequate lighting (/MEV)	0	0	0	(Unused values should be set to Zero)	OK	0
Is the average ratio of **all** night to day collisions >= 1.5 (Y/N)	N	0			OK	
					OK	
				Collision History Subtotal		**0**

Check Intersection Signalization:
Intersection is not Signalized

ILLUMINATION WARRANTED
DELINEATION LIGHTING TO ILLUMINATE PEDESTRIANS OR CROSS STREET TRAFFIC

SUMMARY

Geometric Factors Subtotal	6
Operational Factor Subtotal	125
Environmental Factor Subtotal	15
Collision History Subtotal	0
TOTAL POINTS	**146**

Rocky View County - Traffic Signal & Pedestrian Signal Head Warrant Analysis

Main Street (name)	114 Ave SE	Direction (EW or NS)	EW	Road Authority:	Rocky View County
Side Street (name)	RR 282	Direction (EW or NS)	NS	City:	Rocky View County
Quadrant / Int #		Comments	Short Term Combined (AM + PM) x 2.65 was used to estimate the 6 hour peak hour traffic	Analysis Date:	2020 Oct 26, Mon
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET			Count Date:	-
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT Channelization (y/n)	UpStream Signal (m)	# of Thru Lanes	LT Phase Type	RTOR Allowed (y/n)	Actuated Thru Phase
114 Ave SE	WB				1					1			
114 Ave SE	EB				1					1			
RR 282	NB				1					1			
RR 282	SB				1					1			

Saturation Flow Rates (if not default) (vphpl)		Default Saturation Flow Rates (vphpl)
Left Turn		1,650
Through		1,800
Right Turn		1,500

Are the RR 282 NB right turns significantly impeded by through movements? (y/n)	n	
Are the RR 282 SB right turns significantly impeded by through movements? (y/n)	n	
Are the 114 Ave SE WB right turns significantly impeded by through movements? (y/n)	n	
Are the 114 Ave SE EB right turns significantly impeded by through movements? (y/n)	n	

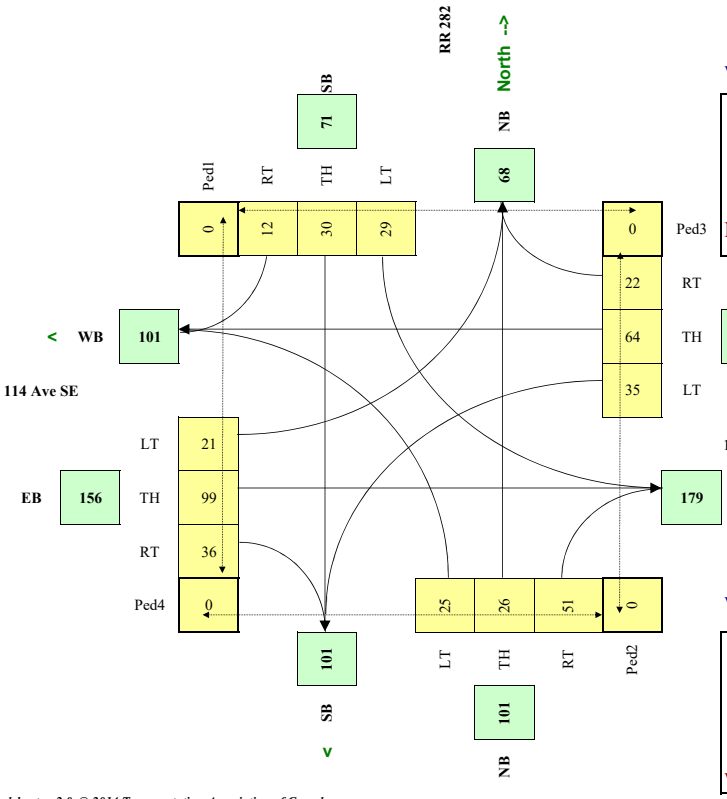
Demographics		
Elem. School/Mobility Challenged	(y/n)	N
Senior's Complex	(y/n)	N
Pathway to School	(y/n)	N
Metro Area Population	(#)	39,407
Central Business District	(y/n)	N

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
114 Ave SE	EW	80	10.0%	N	
RR 282	NS	80	10.0%	N	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
press 'Set Peak Hours' Button to set the peak hour periods																
	150	154	304	176	182	70	207	384	129	126	595	215	0	0	0	0
Total (6-hour peak)	150	154	304	176	182	70	207	384	129	126	595	215	0	0	0	0
Average (6-hour peak)	25	26	51	29	30	12	35	64	22	21	99	36	0	0	0	0
Actual Pedestrian Crossing Distance (m)																

Average 6-hour Peak Turning Movements



$W_{SIG} = [C_{bt}(X_{v-v}) / K_1 + (F (X_{v-p}) L) / K_2] \times C_i$

W =	29	29	0
		Veh	*Ped*

NOT Warranted

RESET SHEET

$W_{PED} = [F ((Xped_m)d_m/K_2) + (Xped_s)d_s/K_3)]$

W = 0

Warranted - Complex Intersection

Rocky View County - Traffic Signal & Pedestrian Signal Head Warrant Analysis

Main Street (name)	114 Ave SE	Direction (EW or NS)	EW	Road Authority:	Rocky View County
Side Street (name)	RR 283	Direction (EW or NS)	NS	City:	Rocky View County
Quadrant / Int #		Comments	Short Term Combined (AM + PM) x 2.65 was used to estimate the 6 hour peak hour traffic	Analysis Date:	2020 Oct 26, Mon
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET			Count Date:	-
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT Channelization (y/n)	UpStream Signal (m)	# of Thru Lanes	LT Phase Type	RTOR Allowed (y/n)	Actuated Thru Phase
114 Ave SE	WB		1				1			1			
114 Ave SE	EB	1				1				1			
RR 283	NB				1					1			
RR 283	SB				1					1			

Saturation Flow Rates (if not default) (vphpl)		Default Saturation Flow Rates (vphpl)
Left Turn		1,650
Through		1,800
Right Turn		1,500

Are the RR 283 NB right turns significantly impeded by through movements? (y/n)	n	
Are the RR 283 SB right turns significantly impeded by through movements? (y/n)	n	
Are the 114 Ave SE EB right turns significantly impeded by through movements? (y/n)	n	

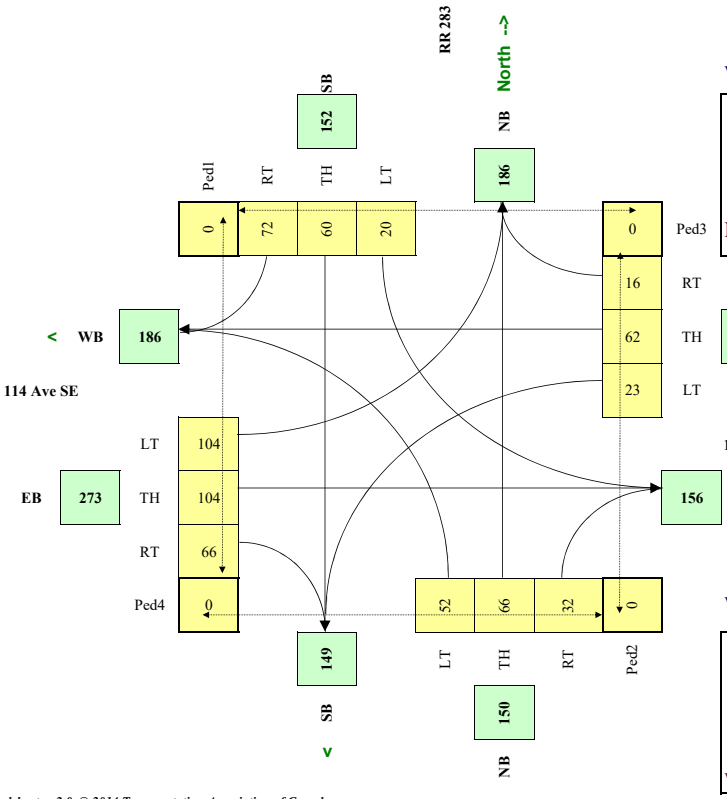
Demographics		
Elem. School/Mobility Challenged	(y/n)	N
Senior's Complex	(y/n)	N
Pathway to School	(y/n)	N
Metro Area Population	(#)	39,407
Central Business District	(y/n)	N

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
114 Ave SE	EW	80	10.0%	N	
RR 283	NS	80	10.0%	N	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
press 'Set Peak Hours' Button to set the peak hour periods																
	313	398	192	120	359	434	140	371	93	624	623	393	0	0	0	0
Total (6-hour peak)	313	398	192	120	359	434	140	371	93	624	623	393	0	0	0	0
Average (6-hour peak)	52	66	32	20	60	72	23	62	16	104	104	66	0	0	0	0
													Actual Pedestrian Crossing Distance (m)			

Average 6-hour Peak Turning Movements



$W_{SIG} = [C_{bt}(X_{v\text{-}v}) / K_1 + (F (X_{v\text{-}p}) L) / K_2] \times C_i$

W =	62	62	0
		Veh	*Ped*

NOT Warranted

RESET SHEET

$W_{PED} = [F ((Xped_m)d_m/K_2) + (Xped_s)d_s/K_3)]$

W = 0

Warranted - Complex Intersection

Rocky View County - Traffic Signal & Pedestrian Signal Head Warrant Analysis

Main Street (name)	114 Ave SE	Direction (EW or NS)	EW	Road Authority:	Rocky View County
Side Street (name)	RR 284	Direction (EW or NS)	NS	City:	Rocky View County
Quadrant / Int #		Comments	Short Term Combined (AM + PM) x 2.65 was used to estimate the 6 hour peak hour traffic	Analysis Date:	2020 Oct 26, Mon
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET			Count Date:	-
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT Channelization (y/n)	UpStream Signal (m)	# of Thru Lanes	LT Phase Type	RTOR Allowed (y/n)	Actuated Thru Phase
114 Ave SE	WB				1					1			
114 Ave SE	EB	1		1			1			1			
RR 284	NB				1					1			
RR 284	SB				1					1			

Saturation Flow Rates (if not default) (vphpl)		Default Saturation Flow Rates (vphpl)
Left Turn		1,650
Through		1,800
Right Turn		1,500

Are the RR 284 NB right turns significantly impeded by through movements? (y/n)	y
Are the RR 284 SB right turns significantly impeded by through movements? (y/n)	n
Are the 114 Ave SE WB right turns significantly impeded by through movements? (y/n)	n
	n

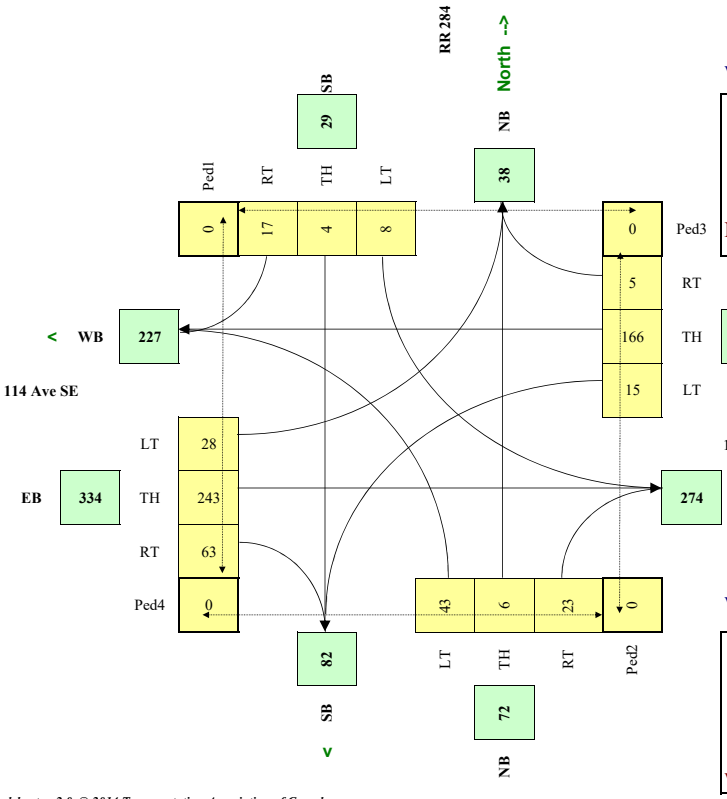
Demographics		
Elem. School/Mobility Challenged	(y/n)	N
Senior's Complex	(y/n)	N
Pathway to School	(y/n)	N
Metro Area Population	(#)	39,407
Central Business District	(y/n)	N

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
114 Ave SE	EW	80	10.0%	N	
RR 284	NS	80	10.0%	N	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
press 'Set Peak Hours' Button to set the peak hour periods																
	261	34	139	46	24	103	91	998	29	166	1457	378	0	0	0	0
Total (6-hour peak)	261	34	139	46	24	103	91	998	29	166	1,457	378	0	0	0	0
Average (6-hour peak)	43	6	23	8	4	17	15	166	5	28	243	63	0	0	0	0
													Actual Pedestrian Crossing Distance (m)			

Average 6-hour Peak Turning Movements



$W_{SIG} = [C_{bt}(X_{v\text{-}v}) / K_1 + (F (X_{v\text{-}p}) L) / K_2] \times C_i$

W =	33	33	0
		Veh	*Ped*

Not Warranted - Vs<75

RESET SHEET

$W_{PED} = [F ((Xped_m)d_m/K_2) + (Xped_s)d_s/K_3)]$

W = 0

Warranted - Complex Intersection

Alberta Transportation - Traffic Signal & Pedestrian Signal Head Warrant Analysis

Main Street (name)	Glenmore Trail	Direction (EW or NS)	EW	Road Authority:	Alberta Transportation
Side Street (name)	RR 283	Direction (EW or NS)	NS	City:	Rocky View County
Quadrant / Int #		Comments	Short Term Background (AM + PM) x 2.65 was used to estimate the 6 hour peak hour traffic	Analysis Date:	2020 Oct 22, Thu
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET			Count Date:	-
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT Channelization (y/n)	UpStream Signal (m)	# of Thru Lanes	LT Phase Type	RTOR Allowed (y/n)	Actuated Thru Phase
Glenmore Trail	WB	1				1				1			
Glenmore Trail	EB		1				1			1			
RR 283	NB				1					1			
RR 283	SB				1					1			

Saturation Flow Rates (if not default) (vphpl)		Default Saturation Flow Rates (vphpl)
Left Turn		1,650
Through		1,800
Right Turn		1,500

Are the RR 283 NB right turns significantly impeded by through movements? (y/n)	Y	
Are the RR 283 SB right turns significantly impeded by through movements? (y/n)	Y	
Are the Glenmore Trail WB right turns significantly impeded by through movements? (y/n)	N	

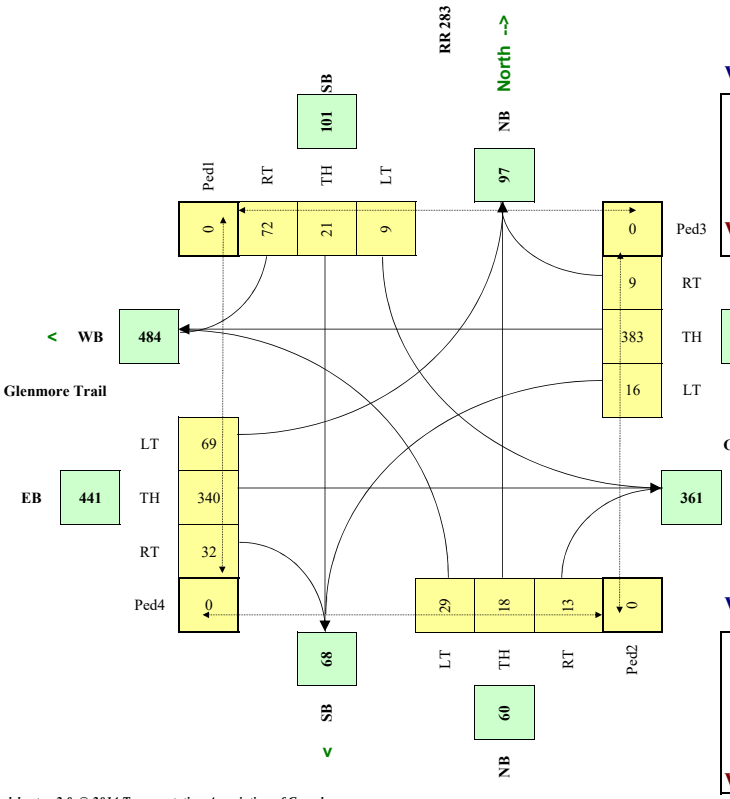
Demographics		
Elem. School/Mobility Challenged	(y/n)	N
Senior's Complex	(y/n)	N
Pathway to School	(y/n)	N
Metro Area Population	(#)	39,407
Central Business District	(y/n)	N

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Glenmore Trail	EW	80	16.0%	N	
RR 283	NS	80	12.0%	N	

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
press 'Set Peak Hours' Button to set the peak hour periods																
	176	109	75	53	124	429	94	2299	55	416	2037	191	0	0	0	0
Total (6-hour peak)	176	109	75	53	124	429	94	2,299	55	416	2,037	191	0	0	0	0
Average (6-hour peak)	29	18	13	9	21	72	16	383	9	69	340	32	0	0	0	0
													Actual Pedestrian Crossing Distance (m)			

Average 6-hour Peak Turning Movements



$W_{SIG} = [C_{bt}(X_{v\text{-}v}) / K_1 + (F (X_{v\text{-}p}) L) / K_2] \times C_i$

W = 101 101 0

Veh *Ped*

Warranted

RESET SHEET

$W_{PED} = [F ((Xped_m)d_m/K_2) + (Xped_s)d_s/K_3)]$

W = 0

Warranted - Complex Intersection