TETRA TECH

April 20, 2015

ISSUED FOR USE
FILE: C32103121-01

West-Can Seal Coating Inc.
2317 – 16 Street, Box 669
Didsbury, AB T0M 0W0

Attention: Mr. Matthew Arnill

Subject: Traffic Impact Assessment for the Re-establishment of an Aggregate Pit in SE 35-32-6-W5M, West of Sundre, Alberta.

West-Can Seal Coating Inc. (West-Can) is proposing to re-establish aggregate production at an existing pit located within SE 35-32-6-W5M, half a mile south of Highway 584 on Range Road 61, in Mountain View County. Tetra Tech EBA Inc. (operating as Tetra Tech) has completed the attached traffic impact assessment for the proposed development on behalf of West-Can.

The intersection of Highway 584 and Range Road 61 is currently a Type I intersection treatment. The existing traffic volume on Highway 584 is 1,430 vehicles per day (vpd) [2015 average annual daily traffic (AADT)] and on Range Road 61 is 460 vpd (2015 AADT). The traffic on Range Road 61 is comprised of ~80% commuting passenger vehicles and 18% truck traffic.

Based on Alberta Transportation's Highway Geometric Design Guide, the existing traffic volumes warrant a Type II intersection treatment; however, the existing intersection treatment is currently operating at a level of service (LoS) A, and will continue to operate at LoS A for the 20 year horizon with an annual background traffic growth of 2.5%. Overall, there are no safety issues identified at the existing intersection and there was only one recorded collision over the past seven years. The intersection sight distance exceeds 500 metres and is sufficient for all classes of vehicles.

West-Can is forecasting to generate an estimated 11 truck trips per day and a maximum of 8 commuter trips per day on Range Road 61. Combined with the background traffic, the intersection will continue to operate at a LoS A in both 2015 and at the 2035 horizon. As the existing intersection is operating at an acceptable level of service and there are no added operational issues, an intersection treatment upgrade is **not** required as a result of this development.

Respectfully submitted,
Tetra Tech EBA Inc.

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/bvb

Attachments

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TETRA TECH

TRAFFIC IMPACT ASSESSMENT
RE-ESTABLISHMENT OF AGGREGATE PIT IN SE-35-32-6-W5, WEST OF SUNDRE

PRESENTED TO
West-Can Seal Coating Inc.

MARCH 2015
ISSUED FOR REVIEW
FILE: C32103121-01

This "Issued for Review" report is provided solely for the purpose of client review and presents our findings and recommendations to date. Our findings and recommendations are provided only through an "Issued for Use" report, which will be issued subsequent to this review. You should not rely on the interim recommendations made herein. Once our report is issued for use, the "Issued for Review" document should be either returned to Tetra Tech EBA Inc. (operating as Tetra Tech) or destroyed.

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EXECUTIVE SUMMARY

West-Can Seal Coating Ltd. (West-Can) is proposing to re-establish aggregate production at an existing pit located within SE 35-32-6-W5M, half a mile south of Highway 584 on Range Road 61, in Mountain View County, as shown on Figure 1 of the attachments. Tetra Tech EBA Inc. (operating as Tetra Tech) has been retained by West-Can to provide engineering services for completion of a traffic impact assessment (TIA).

Highway 584 is a two-lane undivided highway running predominantly tangent in an east-west direction with 1,430 vehicles per day (vpd) [2015 average annual daily traffic (AADT)]. South of Highway 584, Range Road 61 is tangent north/south paved road and has a traffic volume of 460 vpd. The existing intersection is currently a Type 1 layout as defined by Alberta Transportation with 15 m radii turning tapers in all 4 quadrants.

The aggregate pit is expected to produce an average of 75,000 tonnes per year for commercial sales within Alberta. West-Can indicated that the pit will be in operation April 1 to November 15, 6 days a week with a 70% tractor trailer to 30% tandem truck split. It is therefore expected that on average 4 tandem trucks and 7 tractor trailer trucks will be generated by the pit daily, spaced regularly throughout the day, with a maximum of 8 staff commuting to the pit during peak hours, at times of gravel crushing. Ninety percent of the traffic generated by the pit will use northbound Range Road 61 to eastbound Highway 584, with inbound trips in reverse order.

The existing (2015) traffic volume warrants a Type II intersection treatment. The growth of this background traffic to 2035 does not require any additional improvements beyond a Type II treatment, which will operate at a level of service A.

West-Can is expected to generate 19 trips per day [38 vpd average summer daily traffic (ASDT)], which equates to 8% of the existing traffic volume on the south leg. This volume is negligible to the operation of the intersection.

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LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of West-Can Seal Coating Inc. and their agents. Tetra Tech EBA Inc. (operating as Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than West-Can Seal Coating Inc., or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in Tetra Tech EBA Inc.'s Services Agreement.

1.0 INTRODUCTION

West-Can Seal Coating Inc. (West-Can) is proposing to re-establish aggregate operations at an existing aggregate pit location at SE 35-32-6-W5M, within Mountain View County. The aggregate pit is located approximately 6 km west of the Town of Sundre and is accessed from Highway 584 and Range Road 61. West-Can is planning on producing an average of 75,000 tonnes of aggregate per year for general commercial use and sales.

Tetra Tech EBA Inc. (operating as Tetra Tech) has been retained by West-Can to complete a traffic impact assessment (TIA) to assist with the development permit application for the proposed aggregate pit. This TIA identifies existing intersection deficiencies based on the traffic, geometric and collision data from available published sources, and visual observations. It examines the site access, possible impacts and expected changes in traffic volumes and composition, during the operational stages of the aggregate pit.

2.0 OBJECTIVES

The primary objective of this study is to assess the impact of the traffic generated by the proposed aggregate pit at the intersection of Highway 584 and Range Road 61. This has been achieved through the completion of the following subobjectives:

- Identify the areas of traffic impact and expected changes in traffic volumes, composition and type within the study area.
- Perform a volume and capacity analysis at the intersection of interest.
- Provide recommendations and improvement options to address identified deficiencies and impacts from the additional generated traffic.

3.0 METHODOLOGY

The assessment was undertaken through the completion of the following tasks.

3.1 TASK 1 – DATA COMPILATION, SITE INVESTIGATION, AND TRAFFIC COUNTING

This task involved compiling available traffic, geometric, and collision information from known and reliable sources. It also included travel to the site and visual observations. A turning movement traffic count was also conducted on Wednesday, March 4, 2015, to supplement the traffic information. This traffic count was completed prior to the start of the seasonal 75% axle weight ban presently on Range Road 61.

This task also included confirming details of the proposed pit operations including the origin and destination of truck traffic, personnel, access requirements, and seasonal operations.

3.2 TASK 2 – ANALYSIS

This task included establishing and analyzing the background traffic on the roadway network with respect to safety performance, traffic control, road geometry and operation. Analysis followed procedures contained in the Alberta Transportation (AT) Highway Geometric Design Guide (1999). Detailed volume and capacity analysis using the Highway Capacity Manual (HCM 2010) was conducted using the Synchro 8.0 analysis software.

The analyses included the following:

- Review existing conditions with respect to the adjacent roadway network, safety performance, traffic control, road geometry, and traffic volumes.
- Determine the impact of additional vehicles generated from the re-establishment of the proposed aggregate pit at the Highway 584 and Range Road 61 intersection.
- Identify improvements to mitigate the impacts of the additional vehicles generated from the proposed aggregate pit and the growth in background traffic at the intersection of Highway 584 and Range Road 61.

3.3 TASK 3 – PREPARATION OF REPORT

This task included the documentation of the above tasks and presentation of a summary of the impacts and recommended improvements.

4.0 EXISTING AND FUTURE CONDITIONS

4.1 SITE LOCATION AND ACCESS

The proposed aggregate site is located west of Range Road 61 in SE 35-32-6-W5M, and access by a single driveway approximately 970 m south of Highway 584, as shown on Figure 1. The land surrounding the site is agricultural in nature; however, at least two other aggregate pits are located immediately north of the proposed site, each with direct access to Range Road 61. South of the site, Range Road 61 continues for 2.3 km and services country residences and residential acreage developments before terminating at the Red Deer River. Residents heading north from this area also have opportunity to use Township Road 325 and Range Road 62 as alternate access to Highway 584.

West-Can has indicated that the transportation route from the facility will be north via Range Road 61, and east/west on Highway 584, depending on aggregate delivery location. Due to the highway network, and expected market delivery locations within Calgary, Red Deer or Edmonton, 90% or higher trips are expected to head east on Highway 584, with the return trip being westbound on Highway 584 and southbound on Range Road 61.

4.2 ADJACENT ROADWAYS

West-Can proposed to utilize the following two existing roadways to gain site access:

- Range Road 61
- Highway 584

Therefore, the intersection of these two roads will be reviewed and discussed in the following subsections. Photographs of these roadways are included in the Photographs Section of this report. Geometric data is included in Appendix A.

4.2.1 Range Road 61

Range Road 61 is a two-lane, asphalt surfaced roadway running in a north/south direction. The road extends from the Red Deer River at its south terminus, approximately 3.2 km south of Highway 584 to Bearberry Creek at its north terminus, approximately 1.8 km north of Highway 584. On March 12, Mountain View County has installed a seasonal 75% axle weight road ban between Highway 584 and Township Road 325, and a year round 75% axle

weight road ban south of Township Road 325. The seasonal road ban is in effect between March 12 and June 5. Between the proposed development and Highway 584, Range Road 61 has an existing width between 7.5 m and 8.0 m with a posted speed limit of 80 km/h.

4.2.2 Highway 584

Highway 584 is a Level 3, major two-lane undivided highway, as classified by AT, running predominantly in an east-west direction. Highway 584 provides a connection between Highway 40 and the Town of Sundre, offering access to rural communities and recreational areas within the central region of the province. Within the vicinity of Range Road 61, Highway 584 is a tangent highway with an 8.5 m paved surface (3.5 m lanes and 0.75 m shoulders). The surrounding terrain consists of agricultural lands and rural residences lending itself to the relatively flat highway profile. Highway 584 is posted at 90 km/h.

4.2.3 Intersection of Highway 584 and Range Road 61

Range Road 61 intersects Highway 584 at 90°, with Range Road 61 forming the north and south legs, and Highway 584 forming the east and west legs. Range Road 61 is stop controlled while Highway 584 is free-flow.

The intersection sight distance to the east and west exceeds 500 m and is sufficient for all classes of vehicles.

The intersection treatment currently conforms to a Type 1 intersection, with no existing tapers or turning lanes on Highway 584.

5.0 EXISTING TRAFFIC DATA

On March 4, 2015, Tetra Tech conducted a 12-hour traffic turning movement count at the intersection of Highway 584 and Range Road 61, and factored to standard average annual daily traffic (AADT) volumes. Highway 584 has a traffic volume of 1,430 vehicles per day (vpd) (2015 AADT) and Range Road 61 has a traffic volume of 460 vpd (2015 AADT) on the south leg, and 70 vpd (2015 AADT) on the north leg. The factored turning movement diagrams are included in Appendix B.

AT's historic traffic count data for Highway 584:02, east of Range Road 60 shows an AADT of 1,940 between 2009 and 2012, increasing to 1,960 in 2013; accounting for an annual growth rate of 1.02% relative to 2013.

To project the background traffic growth on Highway 584, an industry standard 2.5% linear growth rate was applied to the 2015 traffic volume.

The background traffic growth on Range Road 61, north and south of Highway 584, is projected with a 1.5% growth rate due to the limited number of existing residential development and surrounding agricultural lands. Furthermore, Range Road 61 terminates at the Red Deer River to the south and Bearberry Creek to the north, limiting residential development directly off this road.

Based on AT's vehicle classification report, Highway 584 has the following traffic compositions:

- Passenger vehicles 80.0%
- Recreational vehicles 2.4%
- Buses 0.4%
- Single unit trucks (SU) 6.7%
- Tractor trailers (TTC) 10.5%

6.0 PROPOSED AGGREGATE PIT PLANS

6.1 TRAFFIC GENERATED FROM THE AGGREGATE PIT

Through discussion with West-Can, the aggregate pit is expected to be in operation over a 20 year design life, with an average of 75,000 tonnes per year of estimated production. Production is expected to be less the initial 5 years as West-Can secures customers and necessary permits.

West-Can provided the following proposed operating details to estimate daily traffic volumes expected for the development:

- The anticipated truck traffic hauling aggregate from the pit will consist of 30% tandem unit loads and 70% tractor trailer loads. Tractor trailers will be primarily used for all long haul deliveries, with tandem trucks used for local deliveries.
- Tandem trucks can hold an average of 28 tonnes of aggregate per load and tractor trailers can hold an average of 40 tonnes per load.
- The annual operation season is from April 1 to November 15, 6 days a week. This represents approximately 203 days of operation per year.
- Ninety percent of site generated traffic will head east on Highway 584 to service customers in the Calgary, Edmonton, and Red Deer markets. The remaining 10% is expected to serve local customers east of Sundre.
- Six staff members will be at the pit during crushing and replenishing operations and two staff at the pit during washing, loading and scaling operations.

Utilizing this information the following was calculated to determine traffic generated by the aggregate pit:

- Using 75,000 tonnes/year over 203 days represents 370 tonnes per day.
- Eight staff are assumed to commute to and from the site during AM and PM peak hour. Using the 90/10 split on Highway 584, it is assumed one vehicle will commute westbound on Highway 584, with seven vehicles commuting eastbound on Highway 584.
- Seventy percent of 370 tonnes per day equates to 259 tonnes being hauled by tractor trailer. At 40 tonnes per load, the trucks generated is 7 trucks per day.
- Thirty percent of 370 tonnes per day equates to 111 tonnes being hauled by tandem truck. At 28 tonnes per load, the trucks generated is 4 trucks per day.

As tandem loads will only be used for local deliveries, it is assumed that two tandem trucks will make two trips per day. Using the 90/10 split in eastbound/westbound travel direction on Highway 584, one of the tandem trucks is expected to travel northbound to westbound. All tractor trailer loads will travel northbound to eastbound to make the longer haul trips. All trucks hauling aggregate are assumed to be spaced regularly throughout the normal working hours of the day, with two of the seven tandem trucks assumed leaving in the AM peak hour.

In summary, the following traffic assignment is assumed to be generated by the aggregate pit:

- AM peak hour – one tandem truck and one staff travelling eastbound-southbound, two tractor trailer loads and seven staff travelling westbound-southbound. One tandem load then exits northbound-westbound and two tractor trailer load exits northbound-eastbound within the same peak hour.
- PM peak hour – all staff exit the pit, with one staff exiting northbound-westbound and seven staff exiting northbound-eastbound.
- Daily truck traffic – a total of eleven truck trips, with four tandem truck trips and seven tractor trailer trips travelling in and out of the pit, two trips to the west and nine to the east.
- Daily commuting traffic – a total of eight trips in and out of the pit, with one trip to the west and seven to the east.
- Total daily traffic is 38 vpd (AADT), with 6 trips to/from the west and 32 trips to/from the east.

A breakdown of the trip distribution generated by the pit can be found in Table 6-1. The analysis in this assessment include 2015 existing conditions, 2015 site generated traffic, the 2035 background traffic growth and the 2035 combined background growth with site generated traffic.

6.2 TRAFFIC DISTRIBUTION AND ASSIGNMENT

West-Can has indicated that the route to transport the aggregate to customers consists of the following:

- North on Range Road 61.
- East or west on Highway 584 (90% of traffic heading east).

6.3 PEAK HOUR VOLUMES

By applying the growth rates as discussed in Section 5.0, a summary of the daily, and peak hour traffic volumes, and turning movements at the Highway 584 and Range Road 61 intersection is presented in Table 6-1.

Table 6-1: Highway 584 and Range Road 61 Traffic Data Summary (Approaching the Intersection)

Horizon Year Peak Hour/AADT	Eastbound Highway 584			Westbound Highway 584			Northbound Range Road 61			Southbound Range Road 61		
	L	T	R	L	T	R	L	T	R	L	T	R
2015 A.M. Background	0	74	0	11	30	0	2	0	37	2	0	0
2015 P.M. Background	0	51	0	26	60	1	0	0	10	1	1	1
2015 AADT Background	530			720			230			30		
2015 A.M. Site Traffic	0	0	2	9	0	0	1	0	2	0	0	0
2015 P.M. Site Traffic	0	0	0	0	0	0	1	0	7	0	0	0
2015 Daily Site Traffic	0	0	3	16	0	0	3	0	16	0	0	0
2015 A.M. Combined	0	74	2	20	30	0	3	0	39	2	0	0
2015 P.M. Combined	0	51	0	26	60	1	1	0	17	1	1	1
2015 AADT Combined	533			736			249			30		

Table 6-1: Highway 584 and Range Road 61 Traffic Data Summary (Approaching the Intersection)

Horizon Year Peak Hour/AADT	Eastbound Highway 584			Westbound Highway 584			Northbound Range Road 61			Southbound Range Road 61		
	L	T	R	L	T	R	L	T	R	L	T	R
2035 A.M. Background Growth	0	111	0	17	45	0	3	0	48	3	0	0
2035 P.M. Background Growth	0	77	0	39	90	2	0	0	13	1	1	1
2035 Background AADT Growth	795			1,080			299			39		
2035 A.M. Combined	0	111	2	26	45	0	4	0	50	3	0	0
2035 P.M. Combined	0	77	0	39	90	2	1	0	20	1	1	1
2035 AADT Combined	798			1,096			318			39		

7.0 SAFETY PERFORMANCE

A review of collision data from AT was completed to identify existing safety performance issues along the road network.

For the five year period (2008 to 2012), one collision was reported. On June 28, 2008, a westbound vehicle collided with left turning vehicle while trying to make a passing maneuver, resulting in minor injuries and property damage. This one collision occurred during clear daylight hours and under dry road conditions and does not indicate any trend or pattern at the intersection.

8.0 TRAFFIC IMPACTS

An intersection analysis was completed at the intersection of Highway 584 and Range Road 61.

8.1 INTERSECTION ANALYSIS – HIGHWAY 584 AND RANGE ROAD 61

8.1.1 Alberta Transportation Highway Geometric Design Guide

This intersection was analyzed according to AT's *Highway Geometric Design Guide*. The existing lane configuration as observed is:

Table 8-1: Existing Intersection Laning and Configuration – Highway 584 and Range Road 61

E-W	N-S	Eastbound			Westbound			Northbound			Southbound			Signal?
		L	T	R	L	T	R	L	T	R	L	T	R	
Hwy 584	Rge Rd 61	-	1	-	-	1	-	-	1	-	-	1	-	N

Note: - means no dedicated left or right turn lane but shares with the adjacent through lane, L means left turn, T means through, R means right turn

Using Figure D-7.4 Traffic Volume Warrant Chart, the 2015 background traffic warrants a Type II intersection treatment. The 2015 combined background and site generated traffic warrants a Type II intersection treatment.

In the 2035 horizon, the daily traffic volumes at this intersection indicate that a detailed intersection analysis is required.

8.1.1.1 Right Turn Lane Warrant (2035 Analysis)

An exclusive right turn lane is warranted when all three of the following conditions are met:

- Main (or through) road AADT is greater than or equal to 1,800.
- Intersecting road AADT is greater than or equal to 900.
- Right turn daily traffic volume is greater than or equal to 360 for the movement in question.

The projected 2035 traffic volumes along Range Road 61, for the horizon years (2015 and 2035) do not warrant a right-turn lane.

8.1.1.2 Left Turn Lane Warrant (2035 Analysis)

The left turn lane warrant has been analyzed using the peak hour estimates for Highway 584 eastbound and westbound volumes, summarized in Table 8-2.

Table 8-2: Left Turn Warrant Inputs – Highway 584 and Range Road 61

Horizon Period	Direction	Vl (veh/hr)	Va (veh/hr)	L	Vo (veh/hr)
2035 Background Traffic	Eastbound a.m.	0	111	0%	62
	Eastbound p.m.	0	77	0%	131
	Westbound a.m.	17	62	27%	111
	Westbound p.m.	39	131	29%	77
2035 Combined Background and Site Generated Traffic	Eastbound a.m.	0	113	0%	71
	Eastbound p.m.	0	77	0%	131
	Westbound a.m.	26	71	36%	113
	Westbound p.m.	39	131	29%	77

Note: Vl – number of left turning vehicles per hour (veh/hr) in the advancing volume; Va – advancing volume; L – proportion of left turns in the advancing volume; Vo – opposing volume

Figure D-7.6-6a/d has been referenced to determine the requirements for an exclusive left turn lane.

8.1.1.3 Warranted Treatment

Table 8-3 summarizes the warranted treatments at the various analysis horizons.

Table 8-3 Warranted Intersection Treatments

Horizon Period	Direction	Warranted Intersection Treatment
2015 (Background)	Eastbound	Type II
	Westbound	Type II
2015 (Background + Site Generated)	Eastbound	Type II
	Westbound	Type II
2035 (Background)	Eastbound	Type II
	Westbound	Type II
2035 (Background + Site Generated)	Eastbound	Type II
	Westbound	Type II

The 2015 and 2035 background traffic warrants a Type II intersection treatment. The additional traffic generated by West-Can has little to no impact on traffic operations. Intersection upgrades are not warranted beyond a Type II treatment. Figures used in this analysis are included in Appendix C.

8.1.2 Highway Capacity Manual 2010

The operation of this intersection was also analyzed using the HCM methodology. For an un-signalized intersection, the methodology gives three indicators for the overall performance of an intersection and for the individual turning movements. The first is the volume to capacity ratio (v/c) where the volume is the number of vehicles wishing to make a certain movement, and capacity is the maximum number of vehicles that can be accommodated in an hour. The capacity takes into account the number of lanes available for the movement, conflicting traffic, and the intersection layout. The higher the v/c ratio, the more congested the intersection becomes. A v/c ratio of greater than 1.0 indicates that more vehicles wish to make a given movement than are able to due to the limited capacity. In theory, a v/c ratio in excess of 1.0 cannot be recorded. The second measure, the average delay per vehicle, is based on the volume and the capacity. The third measure is the level of service (LoS) which is established from the average delay. The larger the average delay, the worse the LoS.

While the HCM methods provide an overall LoS and delay for an unsignalized intersection, it is commonly the left-turning movements from minor roads at such intersections which are the primary focus of interest. With low turning volumes from the minor road and high through volumes on the main road, delays to turning vehicles can become excessive. As delays increase, turning vehicles will attempt to turn during unacceptably short gaps, which can present safety concerns. Table 8-4 shows the relationship between LoS and delay.

Table 8-4: Level of Service vs. Delay

LoS	Delays	Unsignalized Intersection Control Delay/Vehicle (s)
A	Little or no delay	≤ 10.0
B	Short traffic delays	> 10 and ≤ 15
C	Average traffic delays	> 15 and ≤ 25
D	Long traffic delays	> 25 and ≤ 35
E	Very long traffic delays	> 35 and ≤ 50
F	Failure	> 50

The determination of whether intersection improvements should be considered at an un-signalized intersection is typically a function of the LoS for the minor road movements. Where a minor road turn operates at LoS D, E or F, intersection improvements are typically considered (the threshold may vary from jurisdiction to jurisdiction so as a rule of thumb, a LoS C or better is considered to be acceptable).

The intersection of Highway 584 and Range Road 61 was analyzed based on the projected total traffic (i.e., background plus site generated traffic) and the existing intersection treatment using the HCM methodology. A summary of the intersection performance under the different traffic conditions is provided in Table 8-5.

Table 8-5: Intersection Performance – Range Road 61

Horizon Year Period (Background + Site Traffic)	v/c ratio		Northbound		Southbound	
			AM Peak	PM Peak	AM Peak	PM Peak
	AM	PM	LoS / Delay (sec)	LoS / Delay (sec)	LoS / Delay (sec)	LoS / Delay (sec)
2015	0.05	0.02	A / 9.2	A / 8.9	B / 10.2	A / 9.8
2035	0.07	0.03	A / 9.5	A / 9.1	B / 11.0	B / 10.4

Table 8-6: Intersection Performance – Highway 584

Horizon Year Period (Background + Site Traffic)	v/c ratio		Eastbound		Westbound	
			AM Peak	PM Peak	AM Peak	PM Peak
	AM	PM	LoS / Delay (sec)	LoS / Delay (sec)	LoS / Delay (sec)	LoS / Delay (sec)
2015	0.05	0.02	A / 0.0	A / 0.0	A / 7.6	A / 7.6
2035	0.02	0.03	A / 0.0	A / 0.0	A / 7.8	A / 7.7

The existing intersection lane configuration for Range Road 61 is predicted to operate an acceptable LoS B and above, up to and including the year 2035. Highway 584 is predicted to operate at an acceptable LoS A, up to and including the year 2035. Details of the intersection analyses are provided in Appendix D.

9.0 SUMMARY AND CONCLUSIONS

The existing (2015) traffic volume warrants a Type II intersection treatment. The growth of this background traffic to 2035 still warrants a Type II treatment, which will operate at a LoS A.

The West-Can site is expected to generate truck traffic of 11 to trucks per day, and commuter traffic of 8 vehicles per day at its maximum operation. This totals to 19 trips per day [38 vpd average summer daily traffic (ASDT)], which equals to 8% of the existing 2015 south-leg traffic volume. West-Can's traffic is negligible to the operation of the existing intersection.

The intersection of Highway 584 and Range Road 61 is expected to operate at an acceptable LoS for the next 20 years for both the background traffic and site generated traffic.

10.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech EBA Inc.

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FIGURES

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0 5,000m

Scale: 1:100,000 @ 11"x17"

CLIENT

WEST-CAN Gravel Crushing Inc.

TETRA TECH

TRAFFIC IMPACT ASSESSMENT
PROPOSED RE-ESTABLISMENT OF AN AGGREGATE PIT

LOCATION PLAN

PROJECT NO.	DWN	CHD	REV
C32103121	KJ	JP	0

OFFICE: CALGARY

DATE: March 20, 2013

Figure 1

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CLIENT

WEST-CAN Seal Coating Inc.

TETRA TECH

TRAFFIC IMPACT ASSESSMENT
PROPOSED RE-ESTABLISMENT OF AN AGGREGATE PIT

BACKGROUND TRAFFIC - 2015

PROJECT NO.	DSN	CKD	REV
C32103121	KJ	JP	0

OFFICE	DATE
CALGARY	March 20, 2013

Figure 2

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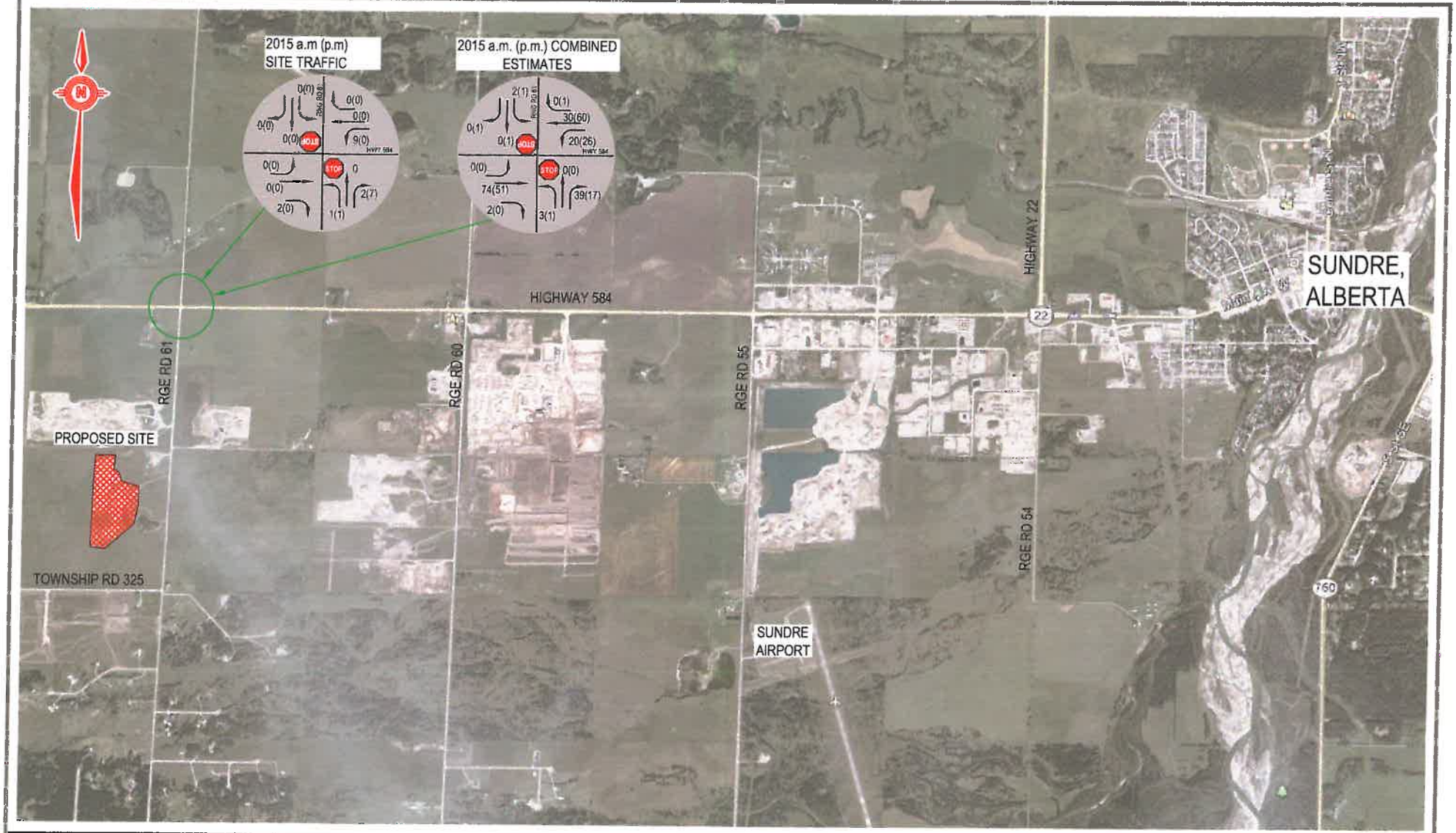


0 5,000m

Scale: 1:100,000 @ 11"x17"

CLIENT

WEST-CAN Gravel Crushing Inc.

TETRA TECH

TRAFFIC IMPACT ASSESSMENT
PROPOSED RE-ESTABLISMENT OF AN AGGREGATE PIT

SITE & COMBINED TRAFFIC - 2015

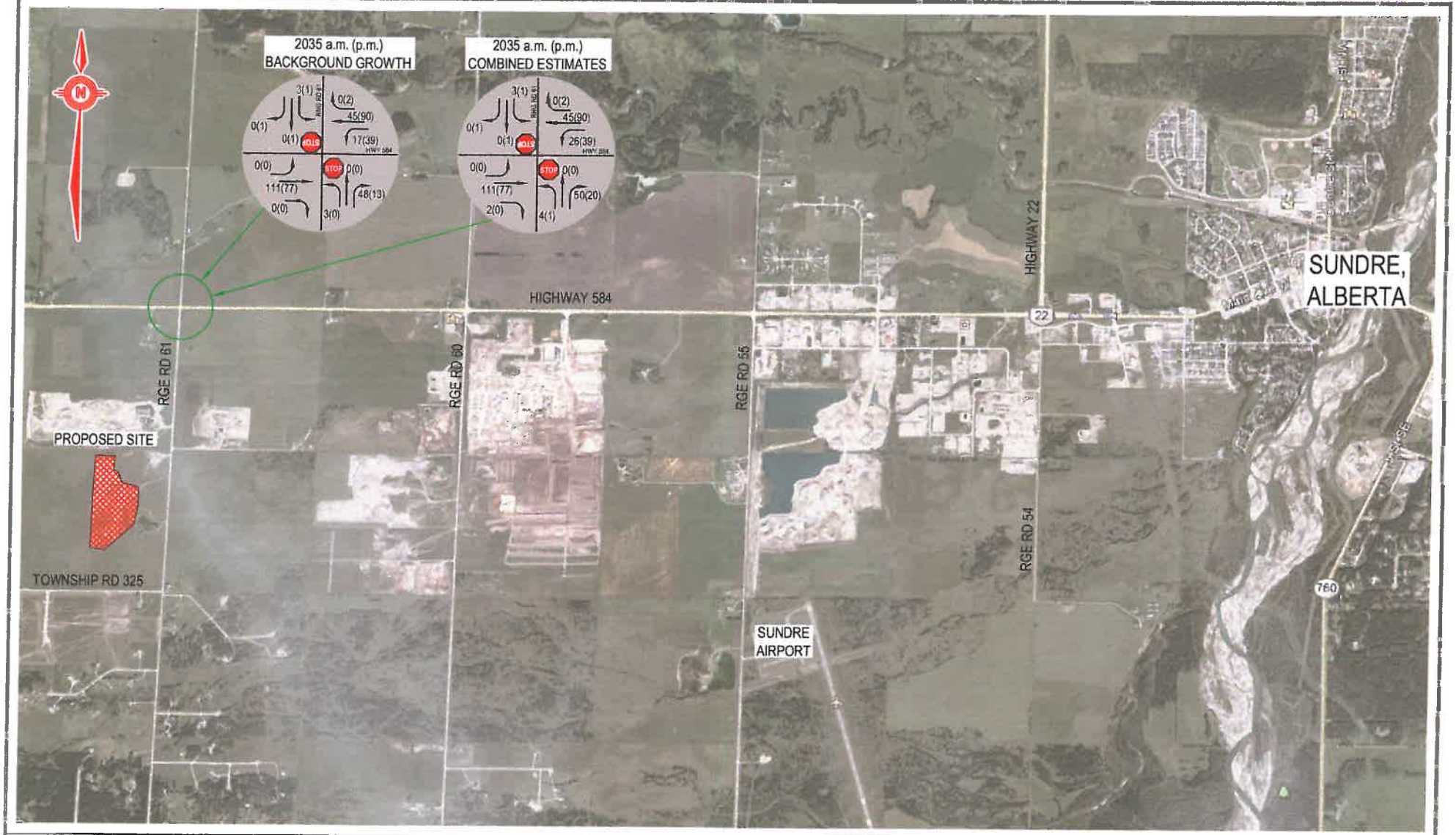
PROJECT NO.	DWN	CKD	REV
C32103121	KJ	JP	0

OFFICE: CALGARY

DATE: March 20, 2013

Figure 3

\\intsites.tetratech.com@SSL\projects\704-C32103121-01\Documents\AutoCad Drawings\Traffic Impact Assessment Figures 1-4.dwg [FIGURE 4] March 27, 2015 - 4:24:11 pm (BY: POLESCHUK, JASON)



0 5,000m

Scale: 1:100,000 @ 11"x17"

CLIENT

WEST-CAN Sand Crushing Inc.

TETRA TECH

TRAFFIC IMPACT ASSESSMENT
PROPOSED RE-ESTABLISMENT OF AN AGGREGATE PIT

BACKGROUND GROWTH & COMBINED TRAFFIC - 2035

PROJECT NO.	DWN	CHD	REV
C32103121	KJ	JP	0

OFFICE	DATE
CALGARY	March 20, 2013

Figure 4

PHOTOGRAPHS

Photo 1: Intersection of Highway 584/Range Road 61 – looking north on Range Road 61

Photo 2: Intersection of Highway 584/Range Road 61 – looking east on Highway 584

Photo 3: South leg of Range Road 61 – looking south from Highway 584

Photo 4: South leg of Range Road 61 – looking south from Highway 584

Photo 5: Highway 584 – looking west from Range Road 61

Photo 6: Intersection of Highway 584/Range Road 61 – looking west

Photo 7: North leg of Range Road 61– looking south towards Highway 584

Photo 8: Highway 584 – looking east from Range Road 61

APPENDIX A

INTERSECTION GEOMETRY

Roadway Summary

Segments included within the Report

LRS	Length
584:02 C1 0.000 - 41.906	41.906
Total	41.906

Length of Roadway (in Km) by Service Class

Service Class	Length
LV 3	41.906

Length of Paved and Gravel Roads (in Km)

Surface	Length
PAVED	33.846
GRAVEL	8.060
Total	41.906

Collision Summary for years 2008-2012

	Total	Non Animal
Collision Rate in C/100MVKM	228.84	78.78
# of Fatal Collisions	1	1
# of Injury Collisions	18	16
# of Property Damage Only Collisions	103	25
Total # of collisions	122	42

Existing Width and Curve Summary

	Typical	Weighted	Max	Min	Total
Existing Width	9.00	9.5	12.00	8.50	
Existing WAADT	432.00	711	2,080.00	180.00	
Growth Rate %	2.1	2.1	2.1	2.1	
Speed	90		90	50	
Horizontal Curve Radius			2,400	28	37
Vertical Curve k (Crest)			430	18	51
Vertical Curve k (Sag)			280	12	52

Paving History

	Typical Year	Average Year	Max Year	Min Year
Last Paved	1988	1991	2002	1988

Intersection Summary Report

LRS	Intersection Site #	Description	Type
584:02 C1 0.000	3001	HIGHWAY 734:12 AND 734:14 AND 584:02	TYPE 1A
584:02 C1 0.492	17061	HIGHWAY 584:02 AND MUNICIPAL ROAD	TYPE 1A
584:02 C1 1.878	17062	HIGHWAY 584:02 AND MUNICIPAL ROAD	TYPE 1A
584:02 C1 3.210	17063	HIGHWAY 584:02 AND MUNICIPAL ROAD	TYPE 1A
584:02 C1 4.052	17064	HIGHWAY 584:02 AND MUNICIPAL ROAD	TYPE 1A
584:02 C1 5.950	17065	HIGHWAY 584:02 AND MUNICIPAL ROAD	AG
584:02 C1 6.399	17066	HIGHWAY 584:02 AND MUNICIPAL ROAD	TYPE 1A
584:02 C1 8.001	17067	HIGHWAY 584:02 AND MUNICIPAL ROAD	AG
584:02 C1 8.285	17068	HIGHWAY 584:02 AND MUNICIPAL ROAD	TYPE 1A
584:02 C1 9.398	17069	HIGHWAY 584:02 AND 584 ROAD	TYPE 1A
584:02 C1 10.943	17070	HIGHWAY 584:02 AND RANGE ROAD 75	AG
584:02 C1 12.532	17071	HIGHWAY 584:02 AND MUNICIPAL ROAD	TYPE 1A
584:02 C1 13.752	17072	HIGHWAY 584:02 AND MUNICIPAL ROAD	AG
584:02 C1 15.541	17073	HIGHWAY 584:02 AND RANGE ROAD 74	TYPE 1A
584:02 C1 15.731	17074	HIGHWAY 584:02 AND TOWNSHIP ROAD 334	AG
584:02 C1 17.225	17075	HIGHWAY 584:02 AND RANGE ROAD 73	AG
584:02 C1 18.336	4526	SECONDARY HIGHWAY 584:02 AND RANGE ROAD 72A	TYPE 1A
584:02 C1 21.736	17076	HIGHWAY 584:02 AND TOWNSHIP ROAD 332	AG
584:02 C1 23.352	25056	HIGHWAY 584:02 AND TOWNSHIP ROAD 331	AG
584:02 C1 24.924	17077	HIGHWAY 584:02 AND RANGE ROAD 72	TYPE 1A
584:02 C1 25.009	17078	HIGHWAY 584:02 AND TOWNSHIP ROAD 330	AG
584:02 C1 26.588	17079	HIGHWAY 584:02 AND RANGE ROAD 71	TYPE 1A
584:02 C1 29.161	24485	HIGHWAY 584:02 AND MUNICIPAL ROAD	TYPE 1A
584:02 C1 30.433	17080	HIGHWAY 584:02 AND RANGE ROAD 65	AG
584:02 C1 32.124	17081	HIGHWAY 584:02 AND RANGE ROAD 64	TYPE 1A
584:02 C1 33.756	4529	HIGHWAY 584:02 AND COAL CAMP ROAD	AG
584:02 C1 35.383	2360	HIGHWAY 584:02 AND RANGE ROAD 60	AG
584:02 C1 37.018	17082	HIGHWAY 584:02 AND RANGE ROAD 61	AG
584:02 C1 38.647	17084	HIGHWAY 584:02 AND RANGE ROAD 60	AG
584:02 C1 39.218	2361	HIGHWAY 584:02 AND SUNPINE FOREST PRODUCTS ACCESS ROAD	TYPE 1A
584:02 C1 40.277	2362	HIGHWAY 584:02 AND RANGE ROAD 55	AG
584:02 C1 40.975	17085	HIGHWAY 584:02 AND WILLOW HILL DRIVE	AG
584:02 C1 41.906	990	HIGHWAY 22:20 AND 27:06 AND 584:02	TYPE 5B

NESS Work Activity Summary

NESS Scheduled Year	PMA Programmed Year	LRS	Length	Int #	Location	Direction	Work
No data found							

PMA Delivery Most Recent Work Activity Summary

PMA Programmed Year	LRS	Length	Int #	Location	Recommended Work Activity Type
	584:02 C1 8.060 - 33.592	25.532		8 Km E of Hwy 734 - 8 Km W of Hwy 22	OVERLAY

Width Sufficiency Report

Report Notes

Number of results found	4
WSI	WIDTH COLLISION COST PER KILOMETER
WSNA	WIDTH NON-ANIMAL COLLISION RATE
WNT	WIDTH TOTAL COLLISION RATE

Width collision data is obtained from the overlapping safety segment

Collision Cost in $/km (M) over 5 years

Collision Rate in C/100MVKM

Collision rate is calculated as (sum total collisions over 5 years * 100 Mil) / (sum of AADT history for the same 5 years * 365.25 * length (km))

Collision cost is calculated as (sum of collisions involving a fatality * $1,345,068) + (sum of collisions involving a serious injury * $100,000) + (sum of collisions involving a minor injury * $100,000) + (sum of the property damage only collisions * $12,000)

Growth Rate in %

					Grade Widening Deltas								HPMA First Rehab					Worst Safety Delta		Year 0				
LRS	Len	Exist Width	Serv Class	# Lanes	Need Year	Sch Year	Pred Width	3R 4R BM	Δ	NC BM	Pred WAADT	Notes	Need Year	Pred Width	3R 4R	WAADT	PL/CL	Type	Δ	Pred Width	3R 4R	WAADT	Growth Rate	Region
584:02 C1 8.060 - 33.590	25.53	9.00	LV 3	2	2053	2053	7	7.4	-0.3	10	866		2018	8.70	7.4	477	PL	WSNA	-52.3	9.00	7.4	432	2.07	3
584:02 C1 33.590 - 35.560	1.97	8.50	LV 3	2	2019	2025	8	9.0	-1.3	11	2,603		2025	7.70	9.0	2,603		WNT	21.2	8.50	8.0	2,080	2.07	3
584:02 C1 35.560 - 36.520	0.96	11.00	LV 3	2	2053	2053	9	10.0	-0.6	12	4,167		2025	10.20	9.0	2,603		WNT	-11.5	11.00	8.0	2,080	2.07	3
584:02 C1 36.520 - 41.906	5.386	8.50	LV 3	2	2019	2025	8	9.0	-1.3	11	2,603		2025	7.70	9.0	2,603		WNT	-45.9	8.50	8.0	2,080	2.07	3

Width Safety Report

Report Notes

Number of results found 5

Collision Cost in $/km (M) over 5 years

Collision Rate in C/100MVKM

Collision rate is calculated as (sum total collisions over 5 years * 100 Mil) / (sum of AADT history for the same 5 years * 365.25 * length (km))

Collision cost is calculated as (sum of collisions involving a fatality * $1,345,068) + (sum of collisions involving a serious injury * $100,000) + (sum of collisions involving a minor injury * $100,000) + (sum of the property damage only collisions * $12,000)

		Existing			Collision Frequency				Total Rate			Non Animal Rate			Collision Cost (M)			Safety	
LRS	Len	WAADT	Width	Paved Y/N	Total	Fatal	Injury	Non Animal	Actual	BM	Δ	Actual	BM	Δ	Actual	BM	Δ	Assess Year	Region
584:02 C1 0.000 - 8.060	8.06	180	12.00	N	4	0	1	3	169.8	167.8	-2.0	127.4	89.5	-37.9	0.017	0.739	0.722	Yes	3
584:02 C1 8.060 - 33.590	25.53	432	9.00	Y	64	1	12	21	347.3	206.1	-141.2	114.0	61.7	-52.3	0.124	0.804	0.680	Yes	3
584:02 C1 33.590 - 35.560	1.97	2,080	8.50	Y	8	0	0	1	103.8	125.0	21.2	13.0	43.9	31.0	0.049	0.990	0.941	No	3
584:02 C1 35.560 - 36.520	0.96	2,080	11.00	Y	4	0	0	0	106.5	95.0	-11.5	0.0	38.3	38.3	0.050	0.375	0.325	Yes	3
584:02 C1 36.520 - 41.906	5.386	2,080	8.50	Y	36	0	4	11	170.9	125.0	-45.9	52.2	43.9	-8.3	0.146	0.990	0.844	Yes	3

Multilane Report

Report Notes

Number of results found	4
4 Lane - Lv 1	7500
4 Lane - Lv 2	9300
4 Lane - Lv 3	11200
4 Lane - Lv 4	11200
6 Lane	31000
8 Lane	50000
Growth Rate in %	
Collision Cost in $/km (M) over 5 years	
Collision Rate in C/100MVKM	

Collision rate is calculated as (sum total collisions over 5 years * 100 Mil) / (sum of AADT history for the same 5 years * 365.25 * length (km))

Collision cost is calculated as (sum of collisions involving a fatality * $1,345,068) + (sum of collisions involving a serious injury * $100,000) + (sum of collisions involving a minor injury * $100,000) + (sum of the property damage only collisions * $12,000)

				WAADT		LOS			NESS Sched		4 lane		6 lane		8 lane			
LRS	Len	Serv Class	# Lanes	Year 0	Year 20	Year 0	Year 20	Growth Rate	1st Work Year	WAADT	Need Year	WAADT	Need Year	WAADT	Need Year	WAADT	Notes	Region
584:02 C1 0.000 - 8.060	8.06	LV 3	2	180	254	A	A	2.07										3
584:02 C1 8.060 - 17.851	9.791	LV 3	2	420	594	A	A	2.07										3
584:02 C1 17.851 - 33.430	15.579	LV 3	2	440	622	A	A	2.07										3
584:02 C1 33.430 - 41.906	8.476	LV 3	2	2,080	2,940	A	B	2.07										3

Pave Gravel Roads Report

Report Notes

Number of results found	1
ASSIGN PAVE GRAVEL MIN AADT	400

Growth Rate in %

Gravel Road collision data is obtained from the overlapping safety segment

Collision Cost in $/km (M) over 5 years

Collision Rate in C/100MVKM

Collision rate is calculated as (sum total collisions over 5 years * 100 Mil) / (sum of AADT history for the same 5 years * 365.25 * length (km))

Collision cost is calculated as (sum of collisions involving a fatality * $1,345,068) + (sum of collisions involving a serious injury * $100,000) + (sum of collisions involving a minor injury * $100,000) + (sum of the property damage only collisions * $12,000)

			WAADT		Growth					
LRS	Length	Service Classification	Year 0	Year 20	Rate	Width	Sched Year	% CM	Notes	Region
584:02 C1 0.000 - 8.060	8.06	LV 3	180	254	2.1	12.0		28.8		3

Alberta Transportation

TIMS Network Expansion Support System (NESS)

TIMS Geometric Report

Lou Mak
2015 Mar 16 14:31

INT #:4529 **LRS: 584:02 C1 33.756**
Location: HIGHWAY 584:02 AND COAL CAMP ROAD

Lv 2 Work Activity Summary | Lv 3 Work Activity Summary

2014 TYPE 2 INTERSECTION IMPROVEMENT

Major Road Details — TMD Ref: 56260

			Veh/day	Growth
Int. Type: AG	Posted Speed: 90	Maj Rd: 584-EB/WB	920	2.1%
Service Class: LV 3	Lit: N Sig: N Div: N Radius:	Min Rd: Rge Rd 63-SB/NB	400	

Collision Frequency				Collision Rate				Collision Cost	
Total	Fatal	Inj	Non-An	Total	BM	Non-An	BM	Cost (in $M)	BM
0	0	0	0	0.0	172.1	0.0	163.3	0.000	0.460

Approach	LT Lane	LT Len	LT BM	RT Lane	RT Len	RT BM	Chan	Yr LT	Vo	Vl	BM	Va	Undiv BM	Pk	Yr RT	RT AADT	Yr Chan
584-EB																20	
584-WB																10	

Yr Signal	TS	Ang. Coll	Yr IC	TS	LT vph	Yr Light.	Day	Night	N/D Col%	Near VC
	4	0					0	0		

INT #:2360 **LRS: 584:02 C1 35.383**
Location: HIGHWAY 584:02 AND RANGE ROAD 60

Lv 2 Work Activity Summary | Lv 3 Work Activity Summary

Major Road Details — TMD Ref:

			Veh/day	Growth
Int. Type: AG	Posted Speed: 90	Maj Rd: 584	2,080	2.1%
Service Class: LV 3	Lit: N Sig: N Div: N Radius:	Min Rd:		

Collision Frequency				Collision Rate				Collision Cost	
Total	Fatal	Inj	Non-An	Total	BM	Non-An	BM	Cost (in $M)	BM
0	0	0	0	0.0	82.9	0.0	75.2	0.000	0.500

Approach	LT Lane	LT Len	LT BM	RT Lane	RT Len	RT BM	Chan	Yr LT	Vo	Vl	BM	Va	Undiv BM	Pk	Yr RT	RT AADT	Yr Chan
584																	
584																	

Yr Signal	TS	Ang. Coll	Yr IC	TS	LT vph	Yr Light.	Day	Night	N/D Col%	Near VC
		0					0	0		

INT #:17082 **LRS: 584:02 C1 37.018**
Location: HIGHWAY 584:02 AND RANGE ROAD 61

Lv 2 Work Activity Summary | Lv 3 Work Activity Summary

Major Road Details — TMD Ref:

			Veh/day	Growth
Int. Type: AG	Posted Speed: 90	Maj Rd: 584	2,080	2.1%
Service Class: LV 3	Lit: N Sig: N Div: N Radius:	Min Rd:		

Collision Frequency				Collision Rate				Collision Cost	
Total	Fatal	Inj	Non-An	Total	BM	Non-An	BM	Cost (in $M)	BM
2	0	1	1	46.8	82.9	23.4	75.2	0.112	0.500

Approach	LT Lane	LT Len	LT BM	RT Lane	RT Len	RT BM	Chan	Yr LT	Vo	Vl	BM	Va	Undiv BM	Pk	Yr RT	RT AADT	Yr Chan
584																	
584																	

Yr Signal	TS	Ang. Coll	Yr IC	TS	LT vph	Yr Light.	Day	Night	N/D Col%	Near VC
		0					1	1	100.00	

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TIMS Network Expansion Support System (NESS)

TIMS Geometric Report

Lou Mak
2015 Mar 16 14:31

					K-Value					Running Speed			Total Collision Rate				
LRS	Len	Existing WAADT	Type	Grad	k	3R4R BM	Δ	NC BM	Δ	Estimated	Design	Δ	H Curve	INT	WA Year	Heavy Truck %	Region
584:02 C1 28.045 - 28.108	0.063	440	CREST		46	35	11	75	-29	85	100	-15				27.8	3
584:02 C1 28.108 - 28.188	0.08		TAN	0.10													3
584:02 C1 28.188 - 28.284	0.096	440	SAG		23	25	-2	50	-27	65	100	-35			2014	27.8	3
584:02 C1 28.284 - 28.286	0.002		TAN	4.40													3
584:02 C1 28.286 - 28.474	0.188	440	CREST		31	35	-4	75	-44	75	100	-25			2014	27.8	3
584:02 C1 28.474 - 28.564	0.09		TAN	-1.90													3
584:02 C1 28.564 - 28.644	0.08	440	SAG		44	25	19	50	-6	95	100	-5				27.8	3
584:02 C1 28.644 - 28.693	0.049		TAN	0.00													3
584:02 C1 28.693 - 28.762	0.069	440	CREST		52	35	17	75	-23	90	100	-10				27.8	3
584:02 C1 28.762 - 28.876	0.114		TAN	-1.40													3
584:02 C1 28.876 - 29.046	0.17		SAG		91												3
584:02 C1 29.046 - 29.130	0.084		TAN	0.50													3
584:02 C1 29.130 - 29.254	0.124	440	CREST		27	35	-8	75	-48	70	100	-30			2014	27.8	3
584:02 C1 29.254 - 29.341	0.087		TAN	-4.00													3
584:02 C1 29.341 - 29.685	0.344	440	SAG		34	25	9	50	-16	80	100	-20				27.8	3
584:02 C1 29.685 - 29.861	0.176		TAN	6.30													3
584:02 C1 29.861 - 30.209	0.348	440	CREST		39	35	4	75	-36	80	100	-20				27.8	3
584:02 C1 30.209 - 30.453	0.244		TAN	-2.60													3
584:02 C1 30.453 - 30.553	0.10	440	SAG		21	25	-4	50	-29	60	100	-40			2014	27.8	3
584:02 C1 30.553 - 30.637	0.084		TAN	2.30													3
584:02 C1 30.637 - 30.800	0.163	440	CREST		18	35	-17	75	-57	65	100	-35			2014	27.8	3
584:02 C1 30.800 - 30.869	0.069		TAN	-7.00													3
584:02 C1 30.869 - 31.519	0.65		SAG		86												3
584:02 C1 31.519 - 31.650	0.131		TAN	0.60													3
584:02 C1 31.650 - 31.830	0.18	440	CREST		23	35	-12	75	-52	70	100	-30			2014	27.8	3
584:02 C1 31.830 - 31.842	0.012		TAN	-7.00													3
584:02 C1 31.842 - 32.025	0.183	440	SAG		27	25	2	50	-23	70	100	-30				27.8	3
584:02 C1 32.025 - 32.333	0.308		TAN	-0.40													3
584:02 C1 32.333 - 32.446	0.113		SAG		82												3
584:02 C1 32.446 - 32.448	0.002		TAN	1.90													3
584:02 C1 32.448 - 32.568	0.12	440	CREST		75	35	40	75	0	100	100	0				27.8	3
584:02 C1 32.568 - 32.736	0.168		TAN	-0.60													3
584:02 C1 32.736 - 32.831	0.095		SAG		89												3
584:02 C1 32.831 - 32.901	0.07		TAN	0.40													3
584:02 C1 32.901 - 33.205	0.304		CREST		157												3
584:02 C1 33.205 - 33.257	0.052		TAN	-1.50													3
584:02 C1 33.257 - 33.733	0.476		SAG		280												3
584:02 C1 33.733 - 33.735	0.002		TAN	0.30													3
584:02 C1 33.735 - 33.852	0.117		CREST		250												3
584:02 C1 33.852 - 34.777	0.925		TAN	-0.40													3
584:02 C1 34.777 - 34.904	0.127		CREST		166												3
584:02 C1 34.904 - 34.906	0.002		TAN	-1.70													3
584:02 C1 34.906 - 35.284	0.378		SAG		184												3
584:02 C1 35.284 - 35.286	0.002		TAN	0.80													3

Alberta Transportation

TIMS Network Expansion Support System (NESS)

TIMS Geometric Report

Lou Mak
2015 Mar 16 14:31

					K-Value					Running Speed			Total Collision Rate				Region
LRS	Len	Existing WAADT	Type	Grad	k	3R4R BM	Δ	NC BM	Δ	Estimated	Design	Δ	H Curve	INT	WA Year	Heavy Truck %	
584:02 C1 35.286 - 36.149	0.863		CREST		210												3
584:02 C1 36.149 - 36.252	0.103		TAN	-3.30													3
584:02 C1 36.252 - 36.475	0.223		SAG		78												3
584:02 C1 36.475 - 41.906	5.431		TAN	-0.40													3

Posted Speed Summary

LRS	Length	Speed Km/Hr
584:02 C1 0.000 - 7.960	7.96	80
584:02 C1 7.960 - 17.742	9.782	90
584:02 C1 17.742 - 18.520	0.778	50
584:02 C1 18.520 - 40.200	21.68	90
584:02 C1 40.200 - 41.906	1.706	80

Collision Summary

Report Notes

For details on individual collisions, see 'Collision Details' section within the Collision Summary worksheet in the Excel version of this report

	Total				Roadway				Intersection			
Event	Fatal	Injury	Property Damage Only	Total	Fatal	Injury	Property Damage Only	Total	Fatal	Injury	Property Damage Only	Total
BACKING	0	0	0	0	0	0	0	0	0	0	0	0
HEAD ON	0	1	0	1	0	0	0	0	0	1	0	1
LEFT TURN - ACROSS PATH	0	1	0	1	0	0	0	0	0	1	0	1
OFF ROAD LEFT	1	5	5	11	1	2	5	8	0	3	0	3
OFF ROAD RIGHT	0	7	11	18	0	6	5	11	0	1	6	7
OTHER	0	0	0	0	0	0	0	0	0	0	0	0
PASSING - LEFT TURN	0	1	0	1	0	0	0	0	0	1	0	1
PASSING - RIGHT TURN	0	0	0	0	0	0	0	0	0	0	0	0
REAR END	0	1	3	4	0	0	1	1	0	1	2	3
RIGHT ANGLE	0	0	3	3	0	0	1	1	0	0	2	2
SIDESWIPE - OPPOSITE DIRECTION	0	0	2	2	0	0	0	0	0	0	2	2
SIDESWIPE SAME DIRECTION	0	0	0	0	0	0	0	0	0	0	0	0
STRUCK OBJECT	0	0	1	1	0	0	1	1	0	0	0	0
UNKNOWN	0	0	0	0	0	0	0	0	0	0	0	0
ANIMAL	0	2	78	80	0	2	71	73	0	0	7	7
TOTAL	1	18	103	122	1	10	84	95	0	8	19	27

Bridge & Small Culvert Summary

			Bridge Data						AIA Data		
LRS	Description	Structure Type	BF #	Suff Rating	Cond. Rating	BEADS Est Replace Year	BEADS Replace Cost	Inspection Date	Location Type	Cond. Rating	Inspection Date
584:02 C1 4.070	TEEPEE POLE CREEK CULVERT ON HIGHWAY 584, 37 KM NW OF SUNDRE	BRIDGE CULV	78221 -1	49.6	44.4	2026	680,000	2013 Jul 11			
584:02 C1 8.053	JAMES RIVER BRIDGE ON HIGHWAY 584, 10 KM NW OF BEARBERRY	MAJOR BRIDGE	78204 -1	51.2	50	2035	1,710,000	2013 Jul 11			
584:02 C1 15.058	BARRY CREEK CULVERT ON PROVINCIAL HIGHWAY 584 NEAR BEARBERRY	BRIDGE CULV	71550 -1	77.8	77.8	2046	530,000	2013 Jul 11			
584:02 C1 15.739	BARRY CREEK CULVERT ON PROVINCIAL HIGHWAY 584 NEAR BEARBERRY	BRIDGE CULV	71549 -2	74	77.8	2047	410,000	2013 Jul 11			
584:02 C1 20.343	BEARBERRY CREEK CULVERT ON HIGHWAY 584, 22 KM W OF SUNDRE	BRIDGE CULV	72884 -1	64.1	55.6	2038	1,260,000	2013 Jul 11			
584:02 C1 21.927	WALTON CREEK BRIDGE ON PROVINCIAL HIGHWAY 584 NEAR SUNDRE	STANDARD BRIDGE	70034 -1	37.9	38.9	2016	540,000	2013 Jul 11			
584:02 C1 25.074	SMITH CREEK CULVERT ON HIGHWAY 584, 17 KM W OF SUNDRE	BRIDGE CULV	74094 -1	50.4	77.8	2049	770,000	2013 Jul 11			
584:02 C1 26.396	BEARBERRY CREEK CULVERT ON PROVINCIAL HIGHWAY 584 NEAR SUNDRE	BRIDGE CULV	13813 -1	53.5	55.6	2026	230,000	2013 Jul 11			

Traffic Growth

Table of ATR's included within the report by location

Hwy	CS	Label	From	To	ATR #
22	20	C1	0.000	16.374	60222050
27	6	C1	0.000	2.310	50270670
584	2	C1	0.000	8.060	60222050
584	2	C1	8.060	17.850	60222050
584	2	C1	17.850	33.430	60222050
584	2	C1	33.430	41.906	60222050
734	12	C1	0.000	43.732	401450
734	14	C1	0.000	48.064	55950210

INT # 17082-1 INT type AT GRADE - TYPE UNKNOWN Region. CENTRAL REGION INT Effective Date: 01-Oct-00

Location: HIGHWAY 584:02 AND RANGE ROAD 61

Classification: LV 3 Signalized: N Last paved yr: 2002 Divided: N

Posted speed: 90 Lit: N Last paved road name: 584 TM number:

NESS Safety Calculations (2008 - 2012)

	Actual	BM	Deltas
Total rate:	46.761	82.9	36.1
Non animal rate:	23.38	75.2	51.8
Collision cost ($ x M):	0.112	0.5	0.388

Total (ani + non ani)		Non-animal	2008	2009	2010	2011	2012
# Daytime:	1	Daytime	1				
# Nightime:	1	Nightime					
		Unknown					

Three Similar Collisions Over Five Yrs Period

(excluding off road and animal collision)

Year:

Prim. evt.:

Collision Frequency Over Last 15 Yrs

severity	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Last 5 yrs
FATAL																0
MAJOR						1										0
MINOR											1					1
PDO			2			1		1	1		1					1
TOTAL	0	0	2	0	0	2	0	1	1	0	2	0	0	0	0	2
TOTAL-non ani.	0	0	2	0	0	2	0	0	0	0	1	0	0	0	0	1

Collision Summary Last 5 Yrs (2008 - 2012)

(Non animal collisions)

Month	Freq	Hour	AM	PM	Weekday	Freq
Jan:		0:			Mon:	
Feb:		1:			Tue:	
Mar:		2:			Wed:	
Apr:		3:			Thu:	
May:		4:			Fri:	
Jun:	1	5:			Sat:	1
Jul:		6:			Sun:	
Aug:		7:			unknown:	
Sep:		8:				
Oct:		9:				
Nov:		10:				
Dec:		11:	1			
unknown:		unknown:				

primary event	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Last 5 yrs
ANIMAL								1	1		1					1
BACKING																0
HEAD ON																0
LEFT TURN:ACROSS PATH																0
OFF ROAD LEFT						1										0
OFF ROAD RIGHT			1													0
OTHER																0
PASSING:LEFT TURN											1					1
PASSING:RIGHT TURN																0
PEDESTRIAN																0
REAR END																0
RIGHT ANGLE						1										0
SIDESWIPE:OPP DIR																0
SIDESWIPE:SAME DIR			1													0
STRUCK OBJECT																0
UNKNOWN																0

*The number of collision in this report are collisions at and near the intersection and is calculated using intersection polygon in TIMS.
* INT ranking can fluctuate from year to year due to the total number of collision over the five years period.
* The cost of PDO collision had increased from $1,000 to $2,000 in 2011

APPENDIX B

TRAFFIC DATA

Turning Movement Summary Diagram

Reference No.: 1000441

Intersection of:
584 & RGE RD 61 35-32-6-500000000

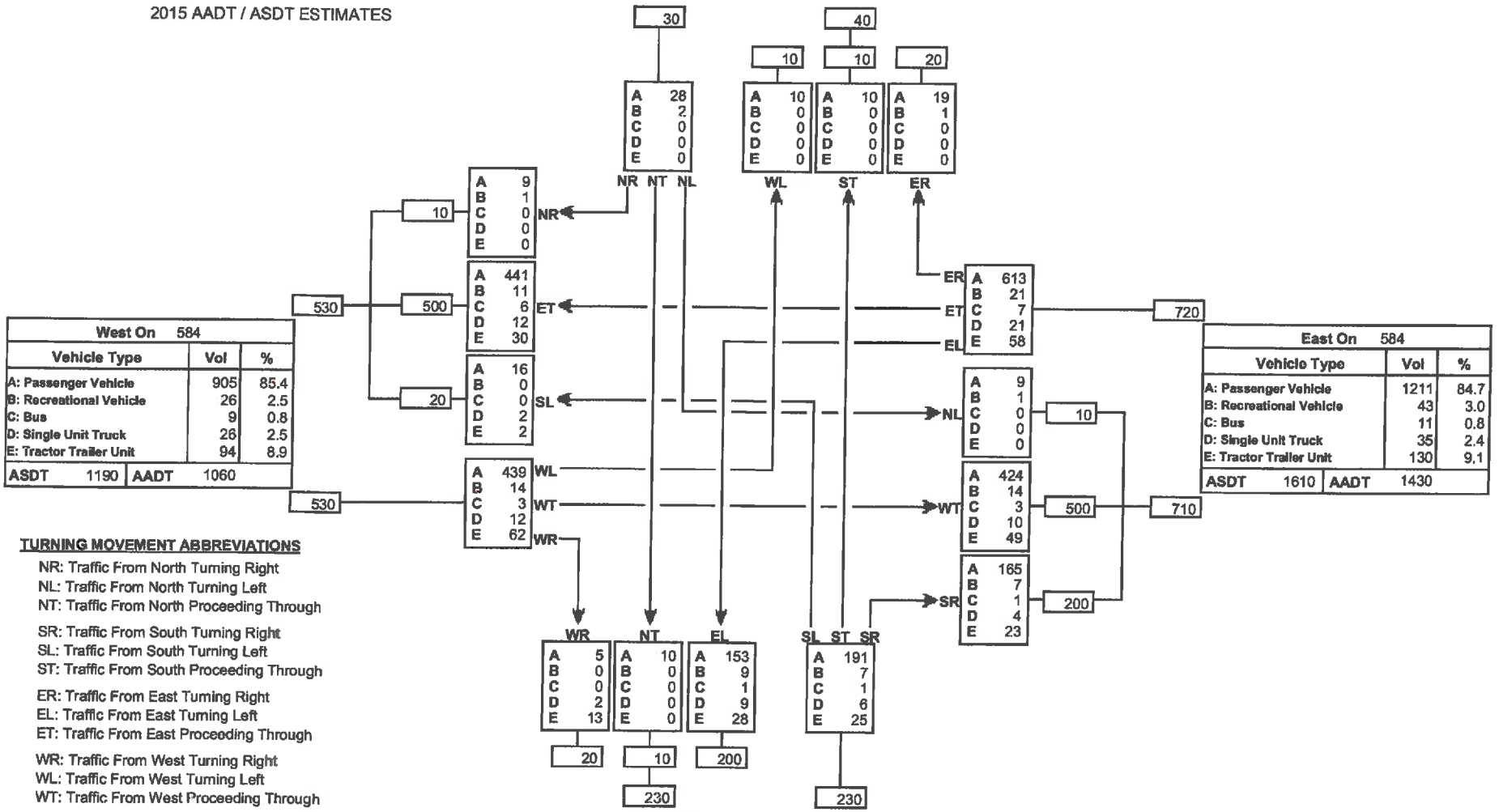
2015 AADT / ASDT ESTIMATES

North On Rge Rd 61		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	67	95.7
B: Recreational Vehicle	3	4.3
C: Bus	0	0.0
D: Single Unit Truck	0	0.0
E: Tractor Trailer Unit	0	0.0
ASDT 80	AADT 70	

West On 584		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	905	85.4
B: Recreational Vehicle	26	2.5
C: Bus	9	0.8
D: Single Unit Truck	26	2.5
E: Tractor Trailer Unit	94	8.9
ASDT 1190	AADT 1060	

East On 584		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	1211	84.7
B: Recreational Vehicle	43	3.0
C: Bus	11	0.8
D: Single Unit Truck	35	2.4
E: Tractor Trailer Unit	130	9.1
ASDT 1610	AADT 1430	

South On Rge Rd 61		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	359	78.0
B: Recreational Vehicle	16	3.5
C: Bus	2	0.4
D: Single Unit Truck	17	3.7
E: Tractor Trailer Unit	66	14.3
ASDT 520	AADT 460	



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic From North Turning Right
NL: Traffic From North Turning Left
NT: Traffic From North Proceeding Through

SR: Traffic From South Turning Right
SL: Traffic From South Turning Left
ST: Traffic From South Proceeding Through

ER: Traffic From East Turning Right
EL: Traffic From East Turning Left
ET: Traffic From East Proceeding Through

WR: Traffic From West Turning Right
WL: Traffic From West Turning Left
WT: Traffic From West Proceeding Through

TURNING MOVEMENT ABBREVIATIONS

AADT: Average Annual Daily Traffic
Average daily traffic expressed as vehicles per day fo
period of January 1 to December 31 (365 days)

ASDT: Average Summer Daily Traffic
Average daily traffic expressed as vehicles per day fo
period of May 1 to September 30 (153 days)

Turning Movement Summary Diagram

Reference No.: 1000441

Intersection of:
584 & RGE RD 61 35-32-6-500000000

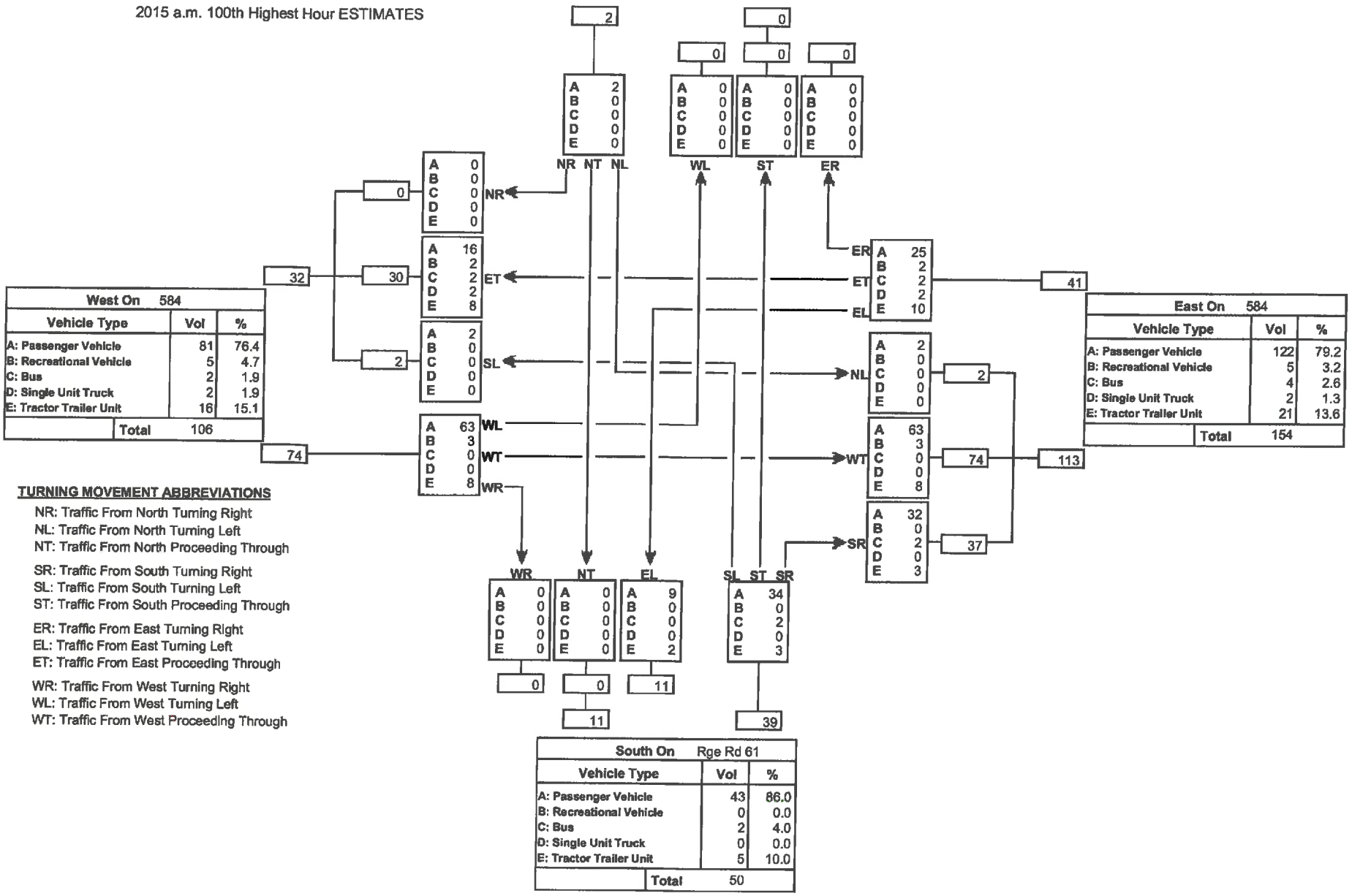
2015 a.m. 100th Highest Hour ESTIMATES

North On Rge Rd 61		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	2	100.0
B: Recreational Vehicle	0	0.0
C: Bus	0	0.0
D: Single Unit Truck	0	0.0
E: Tractor Trailer Unit	0	0.0
Total	2	

West On 584		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	81	76.4
B: Recreational Vehicle	5	4.7
C: Bus	2	1.9
D: Single Unit Truck	2	1.9
E: Tractor Trailer Unit	16	15.1
Total	106	

East On 584		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	122	79.2
B: Recreational Vehicle	5	3.2
C: Bus	4	2.6
D: Single Unit Truck	2	1.3
E: Tractor Trailer Unit	21	13.6
Total	154	

South On Rge Rd 61		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	43	86.0
B: Recreational Vehicle	0	0.0
C: Bus	2	4.0
D: Single Unit Truck	0	0.0
E: Tractor Trailer Unit	5	10.0
Total	50	



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ER: Traffic From East Turning Right
EL: Traffic From East Turning Left
ET: Traffic From East Proceeding Through

WR: Traffic From West Turning Right
WL: Traffic From West Turning Left
WT: Traffic From West Proceeding Through

Turning Movement Summary Diagram

Reference No.: 1000441

Intersection of:
584 & RGE RD 61 35-32-6-500000000

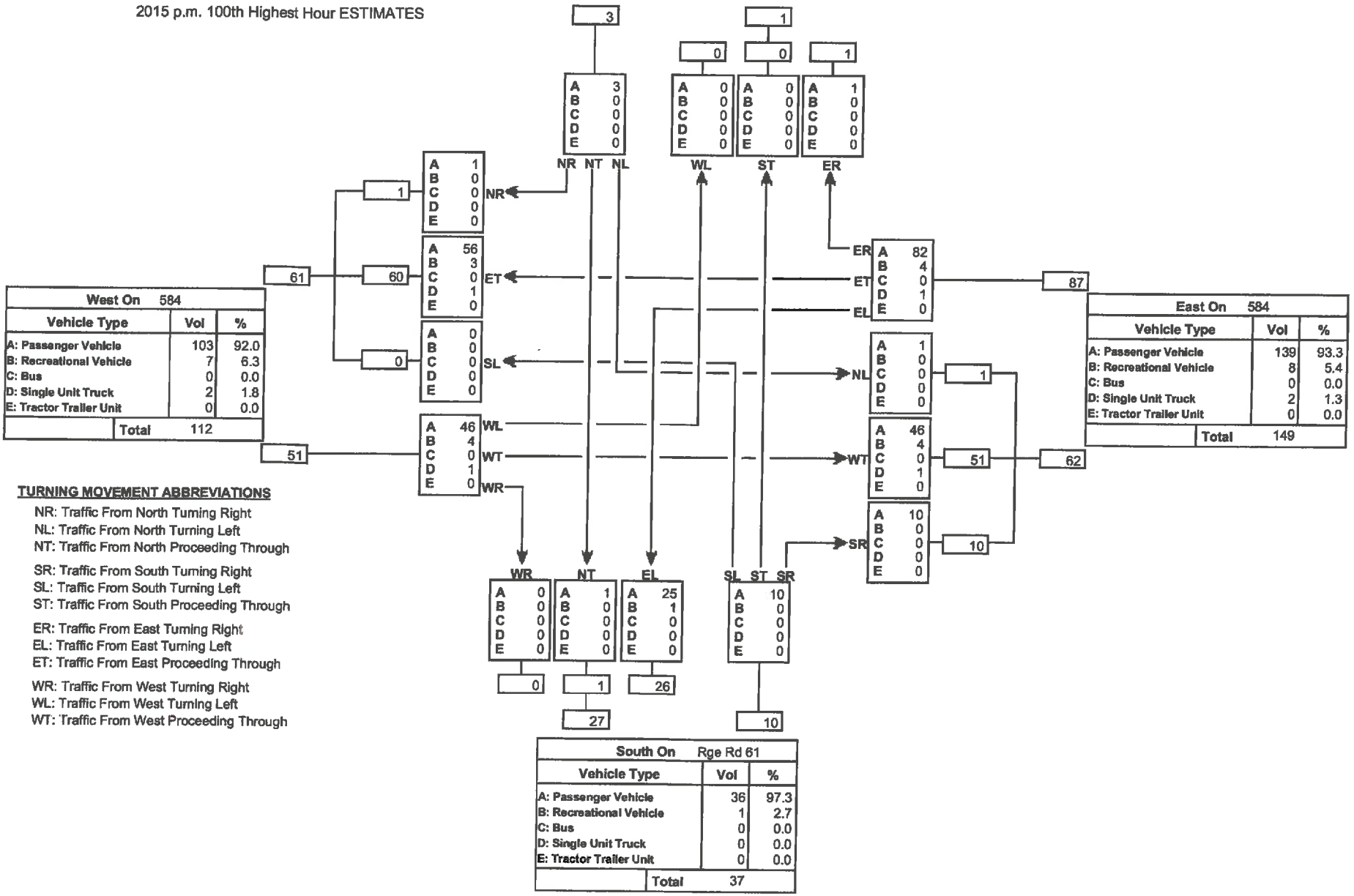
2015 p.m. 100th Highest Hour ESTIMATES

North On Rge Rd 61		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	4	100.0
B: Recreational Vehicle	0	0.0
C: Bus	0	0.0
D: Single Unit Truck	0	0.0
E: Tractor Trailer Unit	0	0.0
Total	4	

West On 584		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	103	92.0
B: Recreational Vehicle	7	6.3
C: Bus	0	0.0
D: Single Unit Truck	2	1.8
E: Tractor Trailer Unit	0	0.0
Total	112	

East On 584		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	139	93.3
B: Recreational Vehicle	8	5.4
C: Bus	0	0.0
D: Single Unit Truck	2	1.3
E: Tractor Trailer Unit	0	0.0
Total	149	

South On Rge Rd 61		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	36	97.3
B: Recreational Vehicle	1	2.7
C: Bus	0	0.0
D: Single Unit Truck	0	0.0
E: Tractor Trailer Unit	0	0.0
Total	37	



TURNING MOVEMENT ABBREVIATIONS

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ST: Traffic From South Proceeding Through

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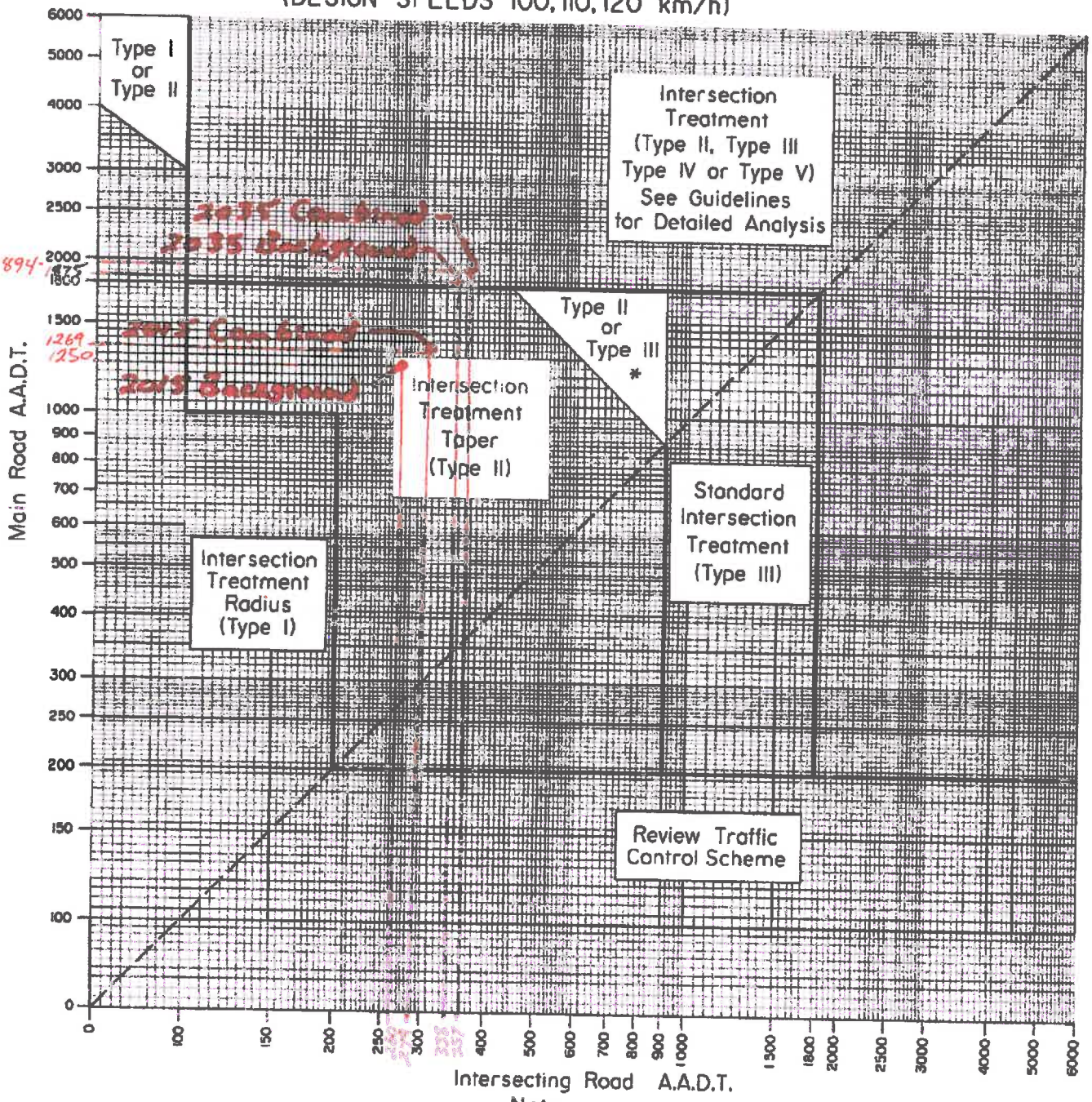
EL: Traffic From East Turning Left
ET: Traffic From East Proceeding Through

WR: Traffic From West Turning Right
WL: Traffic From West Turning Left
WT: Traffic From West Proceeding Through

APPENDIX C

INTERSECTION ANALYSIS – HIGHWAY GEOMETRIC DESIGN GUIDE

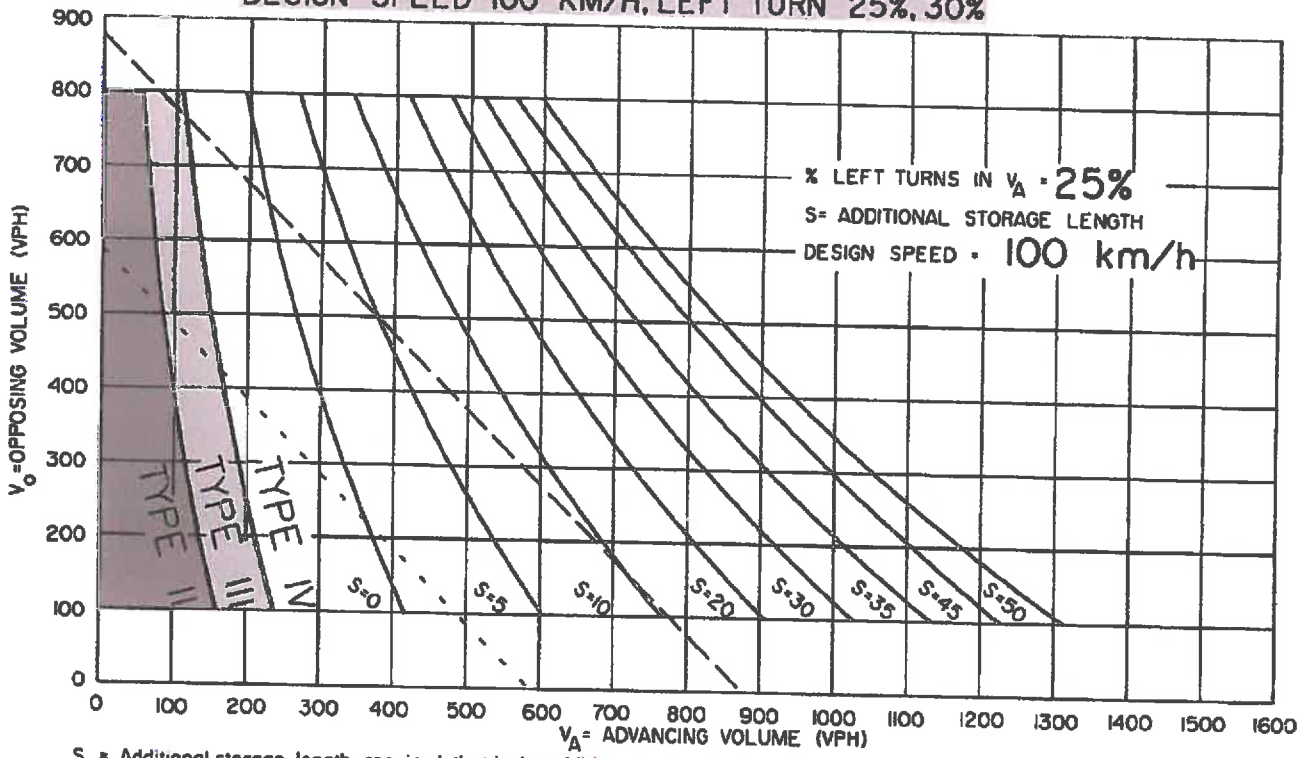
FIGURE D-7.4 TRAFFIC VOLUME WARRANT CHART FOR AT-GRADE INTERSECTION TREATMENT ON TWO-LANE RURAL HIGHWAYS (DESIGN SPEEDS 100, 110, 120 km/h)



Notes:

1. If main road, or intersecting road, is <100 AADT provide Type I Intersection Treatment (15m radius), except as shown for the higher volume main roads on this chart (Type I or II zone) where engineering judgement may be used to select the appropriate treatment.
2. If main road is >4000 AADT Review Access Management
   - — — If Intersecting Road AADT is > Main Road AADT: Review Traffic Control Scheme
3. Use projected traffic volumes for design
   Sloping line is defined by Main Road AADT x Intersecting Road AADT = 800,000

FIGURE D-7.6-6c WARRANTS FOR LEFT TURN TREATMENT AND STORAGE REQUIREMENTS FOR TWO-LANE HIGHWAYS DESIGN SPEED 100 KM/H, LEFT TURN 25%, 30%



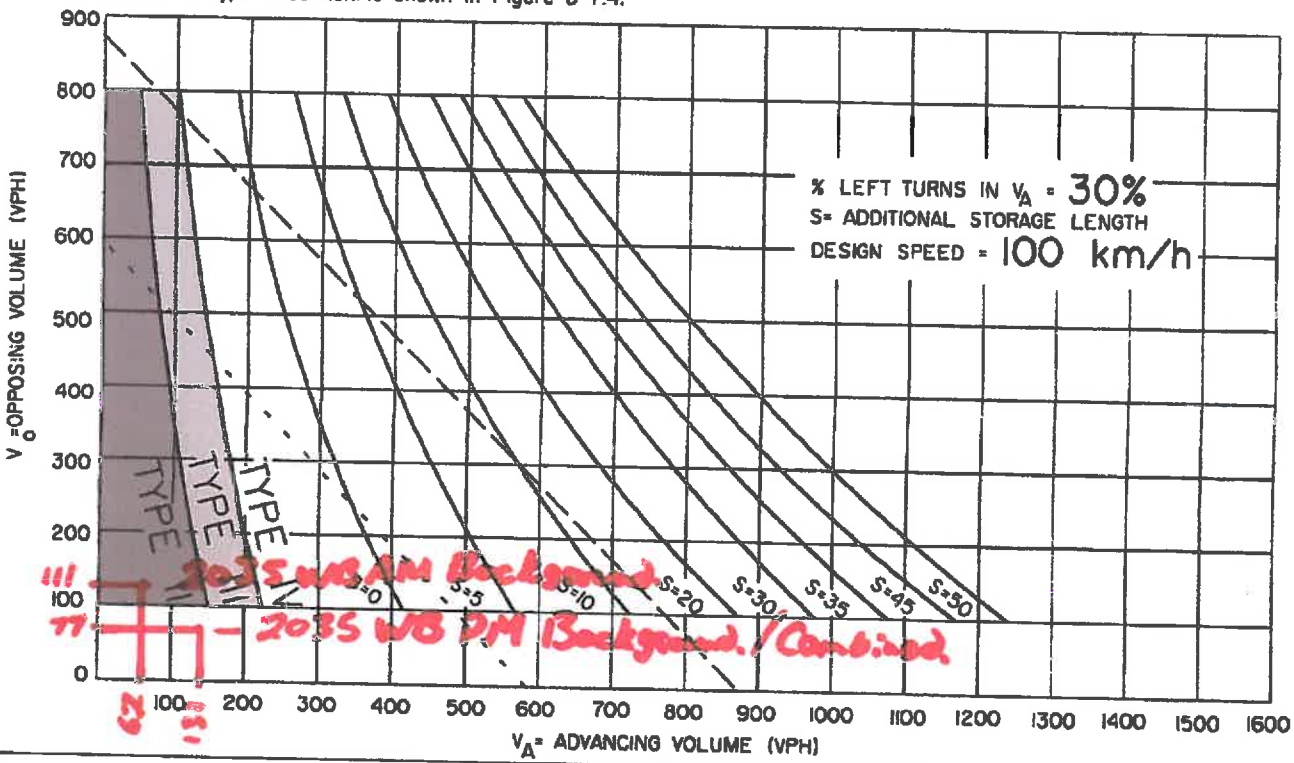
S = Additional storage length required, that is, in addition to what is shown on the appropriate Type IV standard drawing. Designers should check additional storage requirements for trucks, also see Table D.7.6a.

- - - - Traffic signals may be warranted in rural areas, or urban areas, with restricted flow.

—— —— Traffic signals may be warranted in "free flow" urban areas.

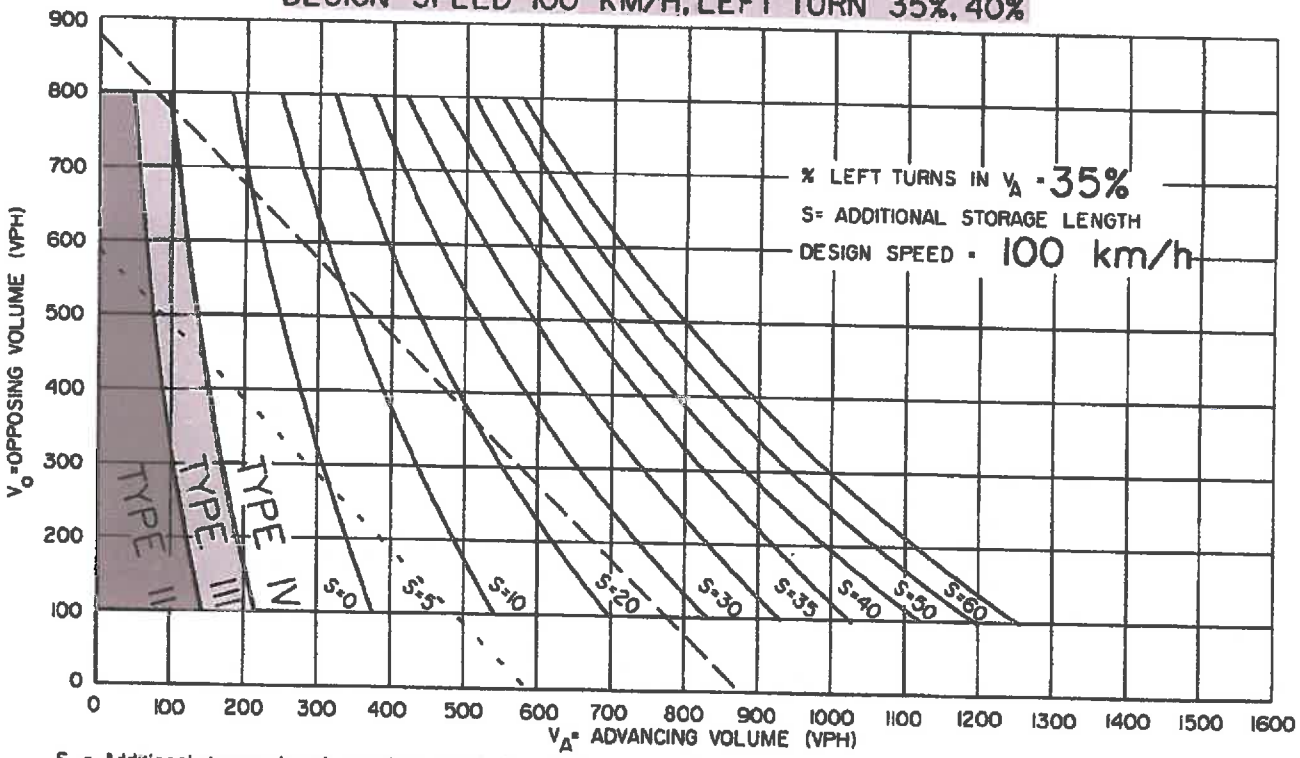
Notes:

1. The traffic signal warrant lines are provided for reference only. For detailed analysis of the requirements for signals, contact Roadway Engineering Branch.
2. Warrant for Type I treatment is shown in Figure D-7.4.



GRAPHICS FILE: debd766a.man

FIGURE D-7.6-6d WARRANTS FOR LEFT TURN TREATMENT AND STORAGE REQUIREMENTS FOR TWO-LANE HIGHWAYS DESIGN SPEED 100 KM/H, LEFT TURN 35%, 40%



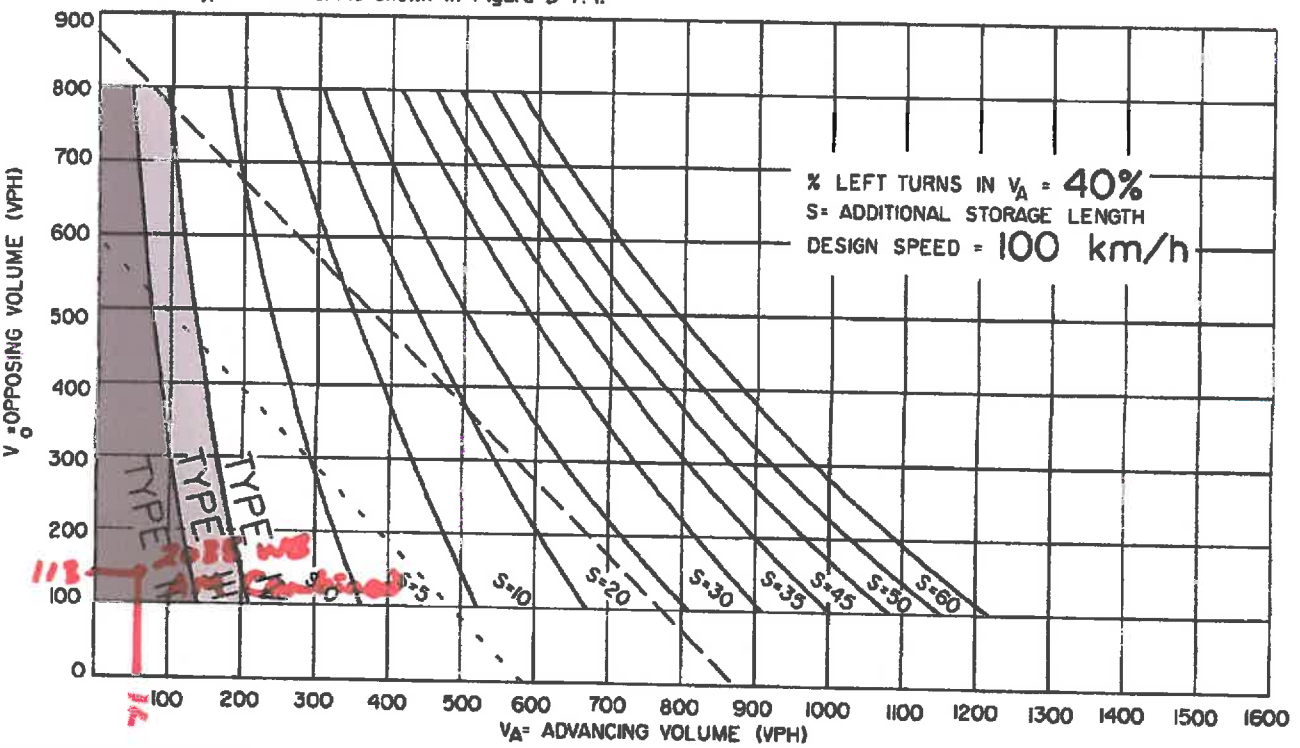
S = Additional storage length required, that is, in addition to what is shown on the appropriate Type IV standard drawing. Designers should check additional storage requirements for trucks, also see Table D.7.6a.

- - - - Traffic signals may be warranted in rural areas, or urban areas, with restricted flow.

— — — Traffic signals may be warranted in "free flow" urban areas.

Notes:

1. The traffic signal warrant lines are provided for reference only. For detailed analysis of the requirements for signals, contact Roadway Engineering Branch.
2. Warrant for Type I treatment is shown in Figure D-7.4.



GRAPHICS FILE: dabd766a.mdn

APPENDIX D

INTERSECTION ANALYSIS – HIGHWAY CAPACITY MANUAL 2010 METHODOLOGY

Lanes, Volumes, Timings
3: RR 61 & H584

3/17/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	74	0	11	30	0	2	0	37	2	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	30.0			30.0			30.0			30.0		
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								0.871				
Flt Protected				0.950				0.998			0.950	
Satd. Flow (prot)	0	1503	0	1428	1503	0	0	1307	0	0	1428	0
Flt Permitted				0.950				0.998			0.950	
Satd. Flow (perm)	0	1503	0	1428	1503	0	0	1307	0	0	1428	0
Link Speed (k/h)		110			110			90			90	
Link Distance (m)		2815.6			2937.2			4020.6			1402.4	
Travel Time (s)		92.1			96.1			160.8			56.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	80	0	12	33	0	2	0	40	2	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	80	0	12	33	0	0	42	0	0	2	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)		3.5			3.5			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	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 17.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	74	0	11	30	0	2	0	37	2	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Median Width		3.5			3.5			0.0			0.0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	25	25	25	25	25	25	25	25	25	25	25	25
Mvmt Flow	0	80	0	12	33	0	2	0	40	2	0	0
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	33	0	0	80	0	0	137	137	80	158	137	33
Stage 1	-	-	-	-	-	-	80	80	-	57	57	-
Stage 2	-	-	-	-	-	-	57	57	-	101	80	-
Follow-up Headway	2.425	-	-	2.425	-	-	3.725	4.225	3.525	3.725	4.225	3.525
Pot Capacity-1 Maneuver	1442	-	-	1384	-	-	784	713	920	759	713	978
Stage 1	-	-	-	-	-	-	874	786	-	900	804	-
Stage 2	-	-	-	-	-	-	900	804	-	852	786	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1442	-	-	1384	-	-	779	707	920	721	707	978
Mov Capacity-2 Maneuver	-	-	-	-	-	-	779	707	-	721	707	-
Stage 1	-	-	-	-	-	-	874	786	-	900	797	-
Stage 2	-	-	-	-	-	-	892	797	-	815	786	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2	9.1	10
HCM LOS	-	-	A	B

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Cap, veh/h	912	1442	-	-	1384	-	-	721
HCM Control Delay, s	9.1	0	-	-	7.624	-	-	10
HCM Lane V/C Ratio	0.05	-	-	-	0.01	-	-	0.00
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th-tile Q, veh	0.1	0.0	-	-	0.0	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lanes, Volumes, Timings
3: RR 61 & H584

3/17/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↰	↑			↕			↕	
Volume (vph)	0	51	0	26	60	1	0	0	10	1	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	30.0			30.0			30.0			30.0		
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					0.998			0.865			0.955	
Flt Protected				0.950							0.984	
Satd. Flow (prot)	0	1503	0	1428	1500	0	0	1300	0	0	1413	0
Flt Permitted				0.950							0.984	
Satd. Flow (perm)	0	1503	0	1428	1500	0	0	1300	0	0	1413	0
Link Speed (k/h)		110			110			90			90	
Link Distance (m)		2815.6			2937.2			4020.6			1402.4	
Travel Time (s)		92.1			96.1			160.8			56.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	55	0	28	65	1	0	0	11	1	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	55	0	28	66	0	0	11	0	0	3	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)		3.5			3.5			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	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	51	0	26	60	1	0	0	10	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Median Width		3.5			3.5			0.0			0.0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	25	25	25	25	25	25	25	25	25	25	25	25
Mvmt Flow	0	55	0	28	65	1	0	0	11	1	1	1
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	66	0	0	55	0	0	178	178	55	183	177	66
Stage 1	-	-	-	-	-	-	55	55	-	122	122	-
Stage 2	-	-	-	-	-	-	123	123	-	61	55	-
Follow-up Headway	2.425	-	-	2.425	-	-	3.725	4.225	3.525	3.725	4.225	3.525
Pot Capacity-1 Maneuver	1401	-	-	1415	-	-	736	676	951	730	677	937
Stage 1	-	-	-	-	-	-	902	806	-	830	753	-
Stage 2	-	-	-	-	-	-	829	752	-	896	806	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1401	-	-	1415	-	-	723	663	951	711	664	937
Mov Capacity-2 Maneuver	-	-	-	-	-	-	723	663	-	711	664	-
Stage 1	-	-	-	-	-	-	902	806	-	830	738	-
Stage 2	-	-	-	-	-	-	810	737	-	886	806	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.3	8.8	9.8
HCM LOS	-	-	A	A

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Cap, veh/h	951	1401	-	-	1415	-	-	754
HCM Control Delay, s	8.8	0	-	-	7.596	-	-	9.8
HCM Lane V/C Ratio	0.01	-	-	-	0.02	-	-	0.00
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th-tile Q, veh	0.0	0.0	-	-	0.1	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lanes, Volumes, Timings
3: RR 61 & H584

3/27/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	74	2	20	30	0	3	0	39	2	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	30.0			30.0			30.0			30.0		
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		0.997						0.874				
Flt Protected				0.950				0.997			0.950	
Satd. Flow (prot)	0	1499	0	1428	1503	0	0	1310	0	0	1428	0
Flt Permitted				0.950				0.997			0.950	
Satd. Flow (perm)	0	1499	0	1428	1503	0	0	1310	0	0	1428	0
Link Speed (k/h)		110			110			90			90	
Link Distance (m)		2815.6			2937.2			4020.6			1402.4	
Travel Time (s)		92.1			96.1			160.8			56.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	80	2	22	33	0	3	0	42	2	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	82	0	22	33	0	0	45	0	0	2	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)		3.5			3.5			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	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 17.8% ICU Level of Service A
Analysis Period (min) 15

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	74	2	20	30	0	3	0	39	2	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	25	25	25	25	25	25	25	25	25	25	25	25
Mvmt Flow	0	80	2	22	33	0	3	0	42	2	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	33	0	0	83	0	0	158	158	82	179	159	33
Stage 1	-	-	-	-	-	-	82	82	-	76	76	-
Stage 2	-	-	-	-	-	-	76	76	-	103	83	-
Critical Hdwy	4.35	-	-	4.35	-	-	7.35	6.75	6.45	7.35	6.75	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.35	5.75	-	6.35	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.35	5.75	-	6.35	5.75	-
Follow-up Hdwy	2.425	-	-	2.425	-	-	3.725	4.225	3.525	3.725	4.225	3.525
Pot Cap-1 Maneuver	1442	-	-	1381	-	-	759	694	918	735	693	978
Stage 1	-	-	-	-	-	-	872	784	-	879	789	-
Stage 2	-	-	-	-	-	-	879	789	-	850	783	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1442	-	-	1381	-	-	750	683	918	693	682	978
Mov Cap-2 Maneuver	-	-	-	-	-	-	750	683	-	693	682	-
Stage 1	-	-	-	-	-	-	872	784	-	879	776	-
Stage 2	-	-	-	-	-	-	865	776	-	811	783	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	3.1	9.2	10.2
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	904	1442	-	-	1381	-	-	693
HCM Lane V/C Ratio	0.051	-	-	-	0.016	-	-	0.003
HCM Control Delay (s)	9.2	0	-	-	7.6	-	-	10.2
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0

Lanes, Volumes, Timings
3: RR 61 & H584

3/27/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	51	0	26	60	1	1	0	17	1	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	30.0			30.0			30.0			30.0		
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					0.998			0.872			0.955	
Flt Protected				0.950				0.997			0.984	
Satd. Flow (prot)	0	1503	0	1428	1500	0	0	1307	0	0	1413	0
Flt Permitted				0.950				0.997			0.984	
Satd. Flow (perm)	0	1503	0	1428	1500	0	0	1307	0	0	1413	0
Link Speed (k/h)		110			110			90			90	
Link Distance (m)		2815.6			2937.2			4020.6			1402.4	
Travel Time (s)		92.1			96.1			160.8			56.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	55	0	28	65	1	1	0	18	1	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	55	0	28	66	0	0	19	0	0	3	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)		3.5			3.5			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	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 18.1% ICU Level of Service A
Analysis Period (min) 15

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	51	0	26	60	1	1	0	17	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	25	25	25	25	25	25	25	25	25	25	25	25
Mvmt Flow	0	55	0	28	65	1	1	0	18	1	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	66	0	0	55	0	0	178	178	55	187	177	66
Stage 1	-	-	-	-	-	-	55	55	-	122	122	-
Stage 2	-	-	-	-	-	-	123	123	-	65	55	-
Critical Hdwy	4.35	-	-	4.35	-	-	7.35	6.75	6.45	7.35	6.75	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.35	5.75	-	6.35	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.35	5.75	-	6.35	5.75	-
Follow-up Hdwy	2.425	-	-	2.425	-	-	3.725	4.225	3.525	3.725	4.225	3.525
Pot Cap-1 Maneuver	1401	-	-	1415	-	-	736	676	951	726	677	937
Stage 1	-	-	-	-	-	-	902	806	-	830	753	-
Stage 2	-	-	-	-	-	-	829	752	-	891	806	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1401	-	-	1415	-	-	723	663	951	701	664	937
Mov Cap-2 Maneuver	-	-	-	-	-	-	723	663	-	701	664	-
Stage 1	-	-	-	-	-	-	902	806	-	830	738	-
Stage 2	-	-	-	-	-	-	810	737	-	874	806	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.3	8.9	9.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	935	1401	-	-	1415	-	-	750
HCM Lane V/C Ratio	0.021	-	-	-	0.02	-	-	0.004
HCM Control Delay (s)	8.9	0	-	-	7.6	-	-	9.8
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0

Lanes, Volumes, Timings
3: RR 61 & H584

3/17/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	111	0	17	45	0	3	0	48	3	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	30.0			30.0			30.0			30.0		
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								0.872				
Flt Protected				0.950				0.997			0.950	
Satd. Flow (prot)	0	1503	0	1428	1503	0	0	1307	0	0	1428	0
Flt Permitted				0.950				0.997			0.950	
Satd. Flow (perm)	0	1503	0	1428	1503	0	0	1307	0	0	1428	0
Link Speed (k/h)		110			110			90			90	
Link Distance (m)		2815.6			2937.2			4020.6			1402.4	
Travel Time (s)		92.1			96.1			160.8			56.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	121	0	18	49	0	3	0	52	3	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	121	0	18	49	0	0	55	0	0	3	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)		3.5			3.5			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	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 17.6% ICU Level of Service A
Analysis Period (min) 15

Intersection	
Intersection Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	111	0	17	45	0	3	0	46	3	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Median Width		3.5			3.5			0.0			0.0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	25	25	25	25	25	25	25	25	25	25	25	25
Mvmt Flow	0	121	0	18	49	0	3	0	52	3	0	0
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	49	0	0	121	0	0	207	207	121	233	207	49
Stage 1	-	-	-	-	-	-	121	121	-	86	86	-
Stage 2	-	-	-	-	-	-	86	86	-	147	121	-
Follow-up Headway	2.425	-	-	2.425	-	-	3.725	4.225	3.525	3.725	4.225	3.525
Pot Capacity-1 Maneuver	1422	-	-	1336	-	-	704	651	872	676	651	958
Stage 1	-	-	-	-	-	-	831	753	-	868	781	-
Stage 2	-	-	-	-	-	-	868	781	-	804	753	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1422	-	-	1336	-	-	697	642	872	629	642	958
Mov Capacity-2 Maneuver	-	-	-	-	-	-	697	642	-	629	642	-
Stage 1	-	-	-	-	-	-	831	753	-	868	770	-
Stage 2	-	-	-	-	-	-	856	770	-	756	753	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.1	9.5	10.8
HCM LOS	-	-	A	B

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Cap, veh/h	859	1422	-	-	1336	-	-	629
HCM Control Delay, s	9.5	0	-	-	7.732	-	-	10.8
HCM Lane V/C Ratio	0.07	-	-	-	0.01	-	-	0.01
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th-tile Q, veh	0.2	0.0	-	-	0.0	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	77	0	39	90	2	0	0	13	1	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	30.0			30.0			30.0			30.0		
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					0.997			0.865			0.955	
Flt Protected				0.950							0.984	
Satd. Flow (prot)	0	1503	0	1428	1499	0	0	1300	0	0	1413	0
Flt Permitted				0.950							0.984	
Satd. Flow (perm)	0	1503	0	1428	1499	0	0	1300	0	0	1413	0
Link Speed (k/h)		110			110			90			90	
Link Distance (m)		2815.6			2937.2			4020.6			1402.4	
Travel Time (s)		92.1			96.1			160.8			56.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	84	0	42	98	2	0	0	14	1	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	84	0	42	100	0	0	14	0	0	3	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)		3.5			3.5			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	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 18.8% ICU Level of Service A
Analysis Period (min) 15

Intersection	
Intersection Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	77	0	39	90	2	0	0	13	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	None	None	None	None	None	None	None	None	None	None	None	None
Storage Length	0.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Median Width		3.5			3.5			0.0			0.0	
Grade, %		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	25	25	25	25	25	25	25	25	25	25	25	25
Mvmt Flow	0	84	0	42	98	2	0	0	14	1	1	1
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Major/Minor	Major 1			Major 2			Minor 1			Minor 2		
Conflicting Flow All	100	0	0	84	0	0	269	269	84	275	268	99
Stage 1	-	-	-	-	-	-	84	84	-	184	184	-
Stage 2	-	-	-	-	-	-	185	185	-	91	84	-
Follow-up Headway	2.425	-	-	2.425	-	-	3.725	4.225	3.525	3.725	4.225	3.525
Pot Capacity-1 Maneuver	1360	-	-	1380	-	-	639	600	915	633	601	897
Stage 1	-	-	-	-	-	-	870	782	-	767	706	-
Stage 2	-	-	-	-	-	-	766	705	-	862	782	-
Time blocked-Platoon, %	0	-	-	0	-	-	0	0	0	0	0	0
Mov Capacity-1 Maneuver	1360	-	-	1380	-	-	623	582	915	609	583	897
Mov Capacity-2 Maneuver	-	-	-	-	-	-	623	582	-	609	583	-
Stage 1	-	-	-	-	-	-	870	782	-	767	685	-
Stage 2	-	-	-	-	-	-	741	684	-	849	782	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.3	9	10.4
HCM LOS	-	-	A	B

Minor Lane / Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Cap, veh/h	915	1360	-	-	1380	-	-	671
HCM Control Delay, s	9	0	-	-	7.691	-	-	10.4
HCM Lane V/C Ratio	0.01	-	-	-	0.03	-	-	0.01
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th-tile Q, veh	0.0	0.0	-	-	0.1	-	-	0.0

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Lanes, Volumes, Timings
3: RR 61 & H584

3/27/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	111	2	26	45	0	4	0	50	3	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	30.0			30.0			30.0			30.0		
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		0.998						0.874				
Flt Protected				0.950				0.997			0.950	
Satd. Flow (prot)	0	1500	0	1428	1503	0	0	1310	0	0	1428	0
Flt Permitted				0.950				0.997			0.950	
Satd. Flow (perm)	0	1500	0	1428	1503	0	0	1310	0	0	1428	0
Link Speed (k/h)		110			110			90			90	
Link Distance (m)		2815.6			2937.2			4020.6			1402.4	
Travel Time (s)		92.1			96.1			160.8			56.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	121	2	28	49	0	4	0	54	3	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	123	0	28	49	0	0	58	0	0	3	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)		3.5			3.5			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	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	111	2	26	45	0	4	0	50	3	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	25	25	25	25	25	25	25	25	25	25	25	25
Mvmt Flow	0	121	2	28	49	0	4	0	54	3	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	49	0	0	123	0	0	227	227	122	254	228	49
Stage 1	-	-	-	-	-	-	122	122	-	105	105	-
Stage 2	-	-	-	-	-	-	105	105	-	149	123	-
Critical Hdwy	4.35	-	-	4.35	-	-	7.35	6.75	6.45	7.35	6.75	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.35	5.75	-	6.35	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.35	5.75	-	6.35	5.75	-
Follow-up Hdwy	2.425	-	-	2.425	-	-	3.725	4.225	3.525	3.725	4.225	3.525
Pot Cap-1 Maneuver	1422	-	-	1333	-	-	682	634	871	654	633	958
Stage 1	-	-	-	-	-	-	830	753	-	847	766	-
Stage 2	-	-	-	-	-	-	847	766	-	802	752	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1422	-	-	1333	-	-	671	621	871	603	620	958
Mov Cap-2 Maneuver	-	-	-	-	-	-	671	621	-	603	620	-
Stage 1	-	-	-	-	-	-	830	753	-	847	750	-
Stage 2	-	-	-	-	-	-	829	750	-	752	752	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.8	9.5	11
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	852	1422	-	-	1333	-	-	603
HCM Lane V/C Ratio	0.069	-	-	-	0.021	-	-	0.005
HCM Control Delay (s)	9.5	0	-	-	7.8	-	-	11
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0

Lanes, Volumes, Timings
3: RR 61 & H584

3/27/2015

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	77	0	39	90	2	1	0	20	1	1	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	0.0		0.0	20.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	30.0			30.0			30.0			30.0		
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					0.997			0.871			0.955	
Flt Protected				0.950				0.998			0.984	
Satd. Flow (prot)	0	1503	0	1428	1499	0	0	1307	0	0	1413	0
Flt Permitted				0.950				0.998			0.984	
Satd. Flow (perm)	0	1503	0	1428	1499	0	0	1307	0	0	1413	0
Link Speed (k/h)		110			110			90			90	
Link Distance (m)		2815.6			2937.2			4020.6			1402.4	
Travel Time (s)		92.1			96.1			160.8			56.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	84	0	42	98	2	1	0	22	1	1	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	84	0	42	100	0	0	23	0	0	3	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)		3.5			3.5			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	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	77	0	39	90	2	1	0	20	1	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	200	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	25	25	25	25	25	25	25	25	25	25	25	25
Mvmt Flow	0	84	0	42	98	2	1	0	22	1	1	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	100	0	0	84	0	0	269	269	84	279	268	99
Stage 1	-	-	-	-	-	-	84	84	-	184	184	-
Stage 2	-	-	-	-	-	-	185	185	-	95	84	-
Critical Hdwy	4.35	-	-	4.35	-	-	7.35	6.75	6.45	7.35	6.75	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.35	5.75	-	6.35	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.35	5.75	-	6.35	5.75	-
Follow-up Hdwy	2.425	-	-	2.425	-	-	3.725	4.225	3.525	3.725	4.225	3.525
Pot Cap-1 Maneuver	1360	-	-	1380	-	-	639	600	915	629	601	897
Stage 1	-	-	-	-	-	-	870	782	-	767	706	-
Stage 2	-	-	-	-	-	-	766	705	-	858	782	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1360	-	-	1380	-	-	623	582	915	600	583	897
Mov Cap-2 Maneuver	-	-	-	-	-	-	623	582	-	600	583	-
Stage 1	-	-	-	-	-	-	870	782	-	767	685	-
Stage 2	-	-	-	-	-	-	741	684	-	838	782	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.3	9.1	10.4
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	895	1360	-	-	1380	-	-	667
HCM Lane V/C Ratio	0.026	-	-	-	0.031	-	-	0.005
HCM Control Delay (s)	9.1	0	-	-	7.7	-	-	10.4
HCM Lane LOS	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	0