Boulevard Transportation Group

1355 FISHER ROAD

TRAFFIC IMPACT ASSESSMENT

Nov 8 2010

File: 1173

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1.0 INTRODUCTION

Boulevard Transportation Group was retained by Cowichan Valley Regional District (CVRD) to undertake a traffic impact assessment for the proposed expansion of the recycling centre located at 1355 Fisher Road in Cobble Hill BC. This study reviews the traffic conditions on Fisher Road between Highway 1 and Cobble Hill Road.

1.1 Preliminary Objectives

The preliminary objectives of the study are to:

- Review existing traffic conditions on Fisher Road
- Generate traffic volumes for the proposed recycling centre in the AM, PM, and weekend peak hour
- Review traffic conditions post expansion conditions in the peak hour
- Review sight distances, road geometrics, traffic control and safety along Fisher Road
- Recommend mitigation measures for the proposed recycling centre

1.2 Study Area

The study area for the project is bounded by Highway 1 to the east, Cobble Hill Road to the west, and Fisher Road which runs east to west. The proposed recycle centre is located at 1355 Fisher Road in the Cowichan Valley Regional District (CVRD). See **Figure 1** - Study Area.

2.0 EXISTING CONDITIONS

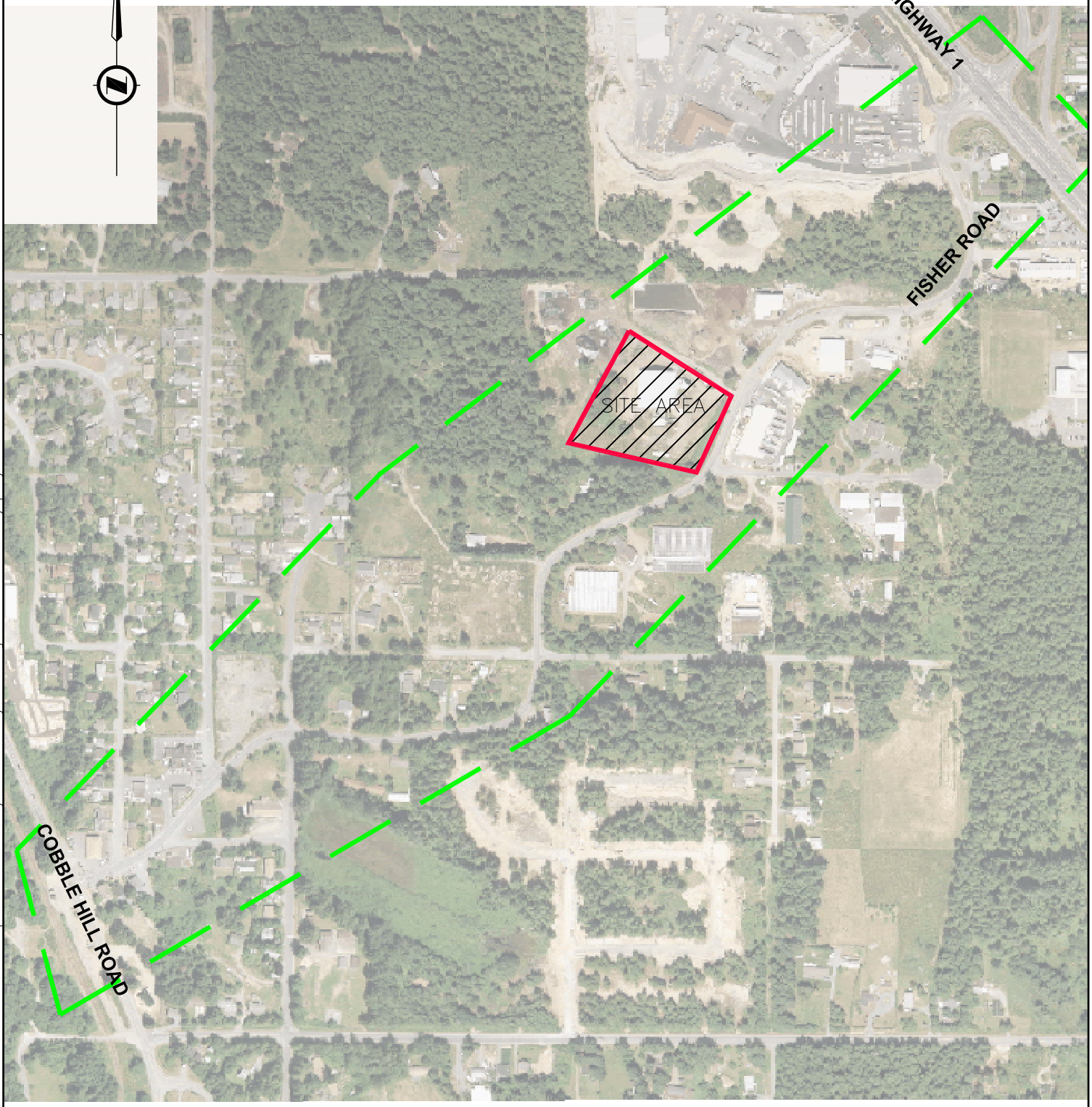
2.1 Land Use

The existing zoning of the development property is I-1 (Light Industrial). The site currently operates as a compost facility.

2.2 Road Network

Fisher Road is a 50 km/h collector road which runs east-west connecting Highway 1 to Cobble Hill Road. Land uses along Fisher Road are a mixture of residential and industrial. Highway 1 is a rural divided arterial highway with a posted speed limit of 90km/h, which runs north-south connecting Victoria and Nanaimo. Cobble Hill Road is a 50km/h collector road which runs north to south connecting Shawnigan Lake and Cobble Hill.

The intersection of Fisher Road/Cobble Hill Road is a two leg intersection with stop control on Fisher Road. The site has access onto Fisher Rd, with stop-control on the access at Fisher Rd.



STUDY AREA

SITE AREA

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

Boulevard Transportation Group

TITLE:

FISHER ROAD RECYCLING

STUDY AREA
COBBLE HILL BC

DESIGNED:	DRAWN: bj	SCALE: nts
DATE: August 26–10	DRAWING NO: 1173_FIG1	REV. 0

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Study Area.dwg
PLOT DATE: ----
PLOTTED BY: Matt

3.0 DATA COLLECTION

Traffic data was collected from a variety of sources in the form of manual counts, 24-hour automated tube counts and Ministry of Transportation downloaded intersection loop counts.

3.1 Manual Counts

Manual traffic counts were conducted at the intersection of Fisher Road/Highway 1, Fisher Road/Cobble Hill Road and Fisher Road/Site Access in February and August 2010 during the PM peak hour (4:00pm-5:00pm). The counts identified the direction of vehicles and the turning movements at each intersection.

The traffic count at the site access was conducted on Wednesday August 25 2010 during the PM peak hour. It was observed that no vehicles entered or exited the site within the hour, despite the site gates being open the entire time. That is not to say that the site generates no trips; rather, the peak occurs on the weekend.

3.2 24-Hour Automated Tube Counts

Fisher Road

A road tube counter was installed between 1335 and 1337 Fisher Road on July 28 and 29, 2010. Traffic volume, speed, and classification were collected in each direction. The counts were analyzed to establish the Average Daily Traffic (ADT), peak hour, 85th percentile speed, and heavy vehicle percentage. The results of the tube count are shown in **Table 1.**

Table 1 – Fisher Rd Automated Tube Counter Results

	Westbound	**Eastbound**	**Total**
Average Daily Traffic	929	989	1,918
Typical Pm Peak (4:15-5:15pm)	77	98	175
85th Percentile Speed (km/h)	51-55km/h	56-60km/h	56-60km/h
Heavy Vehicle Percentage	19%	19%	19%

The main objective of the tube counter was to determine the speed of motorists in the area. It was found that the 85th percentile speed of motorists was 56-60km/h, which exceeds the 50km/h maximum speed limit. Refer to *Appendix B* for a summary of the 24 hour tube count.

Peerless Road Recycling Centre Ladysmith BC

Peerless Road recycling centre in Ladysmith BC is a recycling drop-off depot for residents and commercial use within Ladysmith. The facility exhibits similar characteristics in terms of recycling facilities as the proposed site, however on a larger scale. The facility currently operates Wednesday-Sunday between 9:00-5:00pm.

A 24-hour tube counter was installed at the entrance to the facility between August 4, 2010 and August 11 2010. The data collected was used to determine the traffic volumes and classification of vehicles using the facility by direction. The results of the tube count are shown in **Table 2.**

Table 2 – Automated Tube Counter Results – Peerless Road Recycling Centre

	Westbound	**Eastbound**	**Total**
Average Daily Traffic	156	147	303
Typical Weekday Peak (4:00 – 5:00pm)	12	8	20
Typical Saturday Peak (12:45-1:45pm)	37	35	72
85th Percentile Speed (km/h)	21-25km/h	21-25km/h	21-25km/h
Heavy Vehicle Percentage	7%	7%	7%

The main objective of the tube counter was to determine the number of vehicles using the site and to distinguish different classes of vehicles. Based on the information collected, 85 percent of vehicles are passenger vehicles/small trucks and 15 percent are larger vehicles, including heavy vehicles.

In comparing the Peerless Road count to the manual count taken at the Fisher Rd Recycling access, it can be seen that the Peerless Rd location is much busier than the Fisher Road site (between 4-5pm, there was 20 vehicles at Peerless and none at Fisher Rd). Therefore, as a worst case scenario the volumes collected at Peerless Road will be assigned to the Fisher Road Recycling site for analysis. See *Appendix* B for a summary of the 24 hour tube count.

3.3 Ministry of Transportation Fisher Rd/Highway 1 Intersection Loop Counts

The intersection of Fisher Road/Highway 1 intersection volumes were obtained from the Ministry of Transportation's website for a count done in 2008. The purpose was to obtain AM and weekend peak hour volumes at this intersection and to also compare PM peak hour counts. The results showed that the Ministry's counts in 2008 during the PM peak hour were slightly higher than the manual count

conducted at this intersection by Boulevard Transportation Group in 2010. As a worst case scenario the Ministry's count will be used as the 2010 existing PM peak hour traffic conditions.

The AM and weekend peak hour volumes were taken from the Ministry's count in 2008 of Fisher Road/Highway 1.

4.0 EXISTING TRAFFIC CONDITIONS

4.1 Base Traffic Volumes

As identified in Section 3.3, Fisher Road/Highway 1 traffic volumes were taken from the Ministry count during the AM, PM, and weekend peak hour.

Counts at the intersection of Fisher Rd & Cobble Hill Rd were based on the PM peak hour count taken by Boulevard Transportation Group. To obtain the AM and weekend peak hour counts for this intersection a modification of the PM count was undertaken, whereby the weekend-to-PM peak and AM-to-PM peak hour ratios from the intersection of Hwy 1 & Fisher Rd were established and then applied to the Fisher Rd & Cobble Hill Rd PM peak hour count. At Hwy 1 & Fisher Rd, it was found that the weekend peak volumes were 5.1 percent higher than the PM peak hour, with the weekend peak hour occurring between 10:15am-11:15am on a Saturday. It was also found that the AM peak hour volumes were 22 percent less than the PM peak hour volumes. These ratios were used to establish the AM and weekend peak hour counts at Fisher Rd & Cobble Hill Rd.

The existing site access was counted during the PM peak hour, where no vehicles were observed entering or exiting the site. Nonetheless there are patrons that do use the Fisher Rd site (particularly on the weekend), however the volume is likely much less than the Peerless Rd site. As a means of estimating traffic volumes, the trips entering and exiting the site under existing conditions were assumed to be 50 percent of the Peerless Road Recycling centre site. Peerless Road services residents and commercial patrons and offers more services than the Fisher Road site currently does, and therefore it was estimated that using half the trips entering and exiting would represent a worst case existing weekend peak scenario for Fisher Rd. Trips were assigned to Fisher Rd based on the existing east-west directional percentage split on Fisher Road. See **Figure 2** for 2010 peak hour traffic volumes.

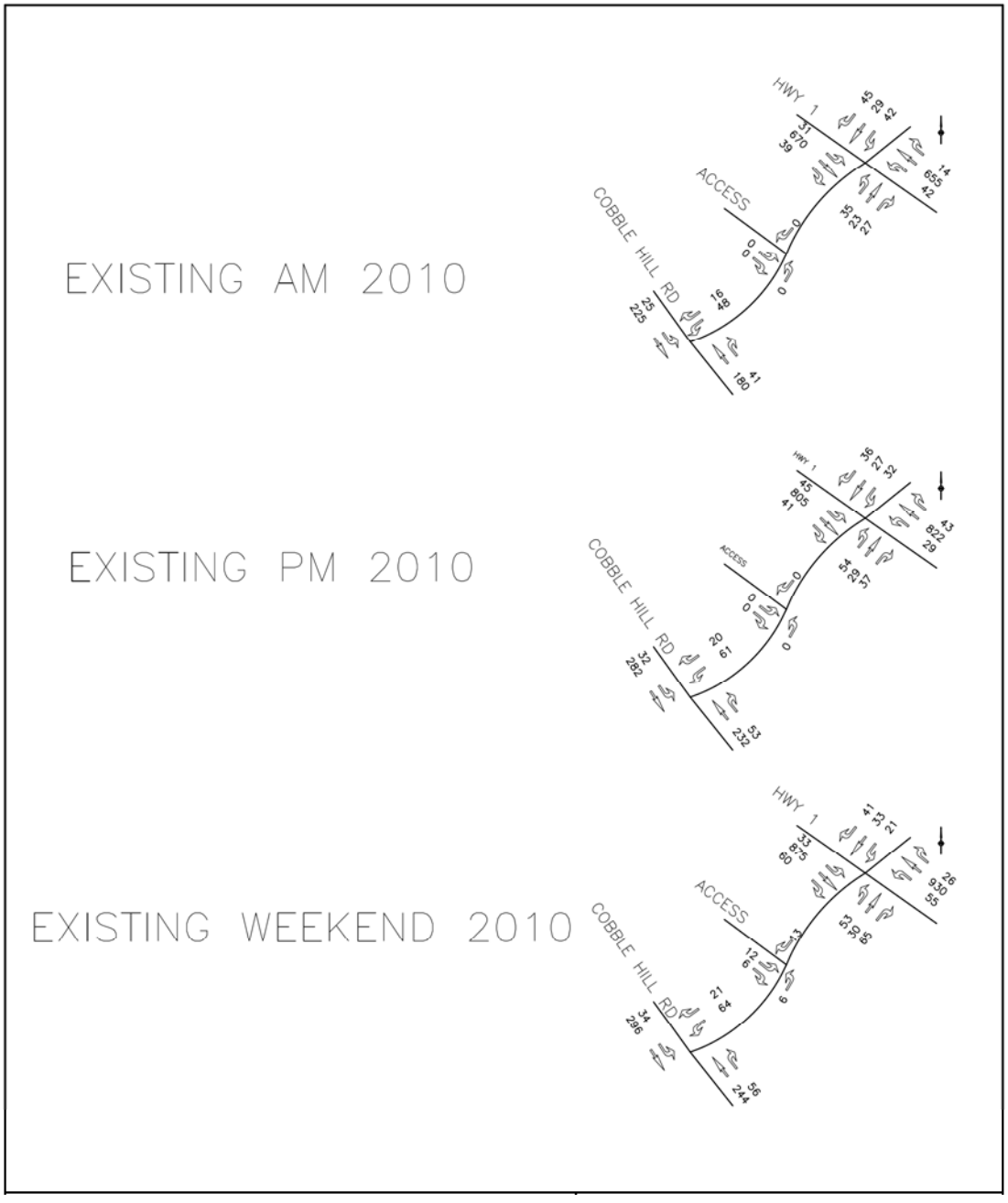


Figure 2 – 2010 Existing Peak Hour Traffic Volumes

4.2 2010 Existing Traffic Conditions

The 2010 Existing traffic conditions were analyzed during the AM, PM and Weekend peak hour. The existing conditions give a base point of comparison for the post-development scenario.

The road geometric data, traffic volumes and traffic control were entered into Synchro software to analyze the 2010 existing traffic conditions for the AM, PM, and weekend peak periods. Synchro software is used because it is able to provide analysis based on the Highway Capacity Manual methodologies and a microsimulation based on driver behaviours and characteristics. The software results are returned in the form of measures of effectiveness, including delays and levels of service (LOS). LOS A is excellent operating conditions while a LOS F is unstable and failing operating conditions. For additional information on levels of service and the corresponding delays see *Appendix A.*

Existing 2010 traffic conditions were estimated for the AM, PM, and weekend peak traffic conditions, with the results shown in **Tables 3, 4, and 5.** Fisher Road/Site Access was only analyzed during the weekend peak hour as no traffic was observed during the PM peak hour and based on the count at Fisher Road/Highway 1 it can be assumed that there would be no traffic during the AM peak hour as well.

Table 3 – 2010 Existing AM Peak Hour Traffic Conditions

Highway 1 / Fisher Rd

Movement	Delay (sec)			LOS			95TH Queue (m)		
	L	T	R	L	T	R	L	T	R
Northbound	4.7	3.5	1.8	A	A	A	4.1	22.8	1.2
Southbound	3.8	3.5	1.3	A	A	A	3.8	23.6	2.0
Eastbound	26.5	24.1	10.0	C	C	A	11.1	7.8	4.6
Westbound	29.5	25.2	8.6	C	C	A	11.0	8.3	3.9

Fisher Road / Cobble Hill Road

Movement	Delay (sec)			LOS			95TH Queue (m)		
	L	T	R	L	T	R	L	T	R
Northbound	-	0.0	0.0	-	A	A	-	0.0	0.0
Southbound	0.2	1.1	-	A	A	-	0.6	0.6	-
Westbound	12.7	-	12.7	B	-	B	4.3	-	4.3

*Note: L = left turn, T = through movement, and R = right turn

Table 4 – 2010 Existing PM Peak Hour Traffic Conditions

Highway 1 / Fisher Rd

Movement	Delay (sec)			LOS			95TH Queue (m)		
	L	T	R	L	T	R	L	T	R
Northbound	4.7	3.7	1.2	A	A	A	3.0	29.2	2.0
Southbound	4.3	3.7	1.2	A	A	A	5.3	28.9	2.0
Eastbound	29.4	24.7	9.4	C	C	A	15.3	9.2	5.2
Westbound	27.8	25.1	9.1	C	C	A	9.0	8.0	3.7

Fisher Road / Cobble Hill Road

Movement	Delay (sec)			LOS			95TH Queue (m)		
	L	T	R	L	T	R	L	T	R
Northbound	-	0.0	0.0	-	A	A	-	0.0	0.0
Southbound	1.2	0.3	-	A	A	-	0.8	0.8	-
Westbound	15.4	-	15.4	C	-	C	7.3	-	7.3

Table 5 – 2010 Existing Weekend Peak Hour Traffic Conditions

Highway 1 / Fisher Rd

Movement	Delay (sec)			LOS			95TH Queue (m)		
	L	T	R	L	T	R	L	T	R
Northbound	7.2	3.9	1.4	A	A	A	5.5	34.3	1.6
Southbound	4.3	3.8	1.1	A	A	A	4.2	32.1	2.3
Eastbound	29.2	24.7	8.6	C	C	A	15.1	9.3	6.2
Westbound	25.9	25.8	8.8	C	C	A	6.7	9.2	3.9

Fisher Road / Cobble Hill Road

Movement	Delay (sec)			LOS			95TH Queue (m)		
	L	T	R	L	T	R	L	T	R
Northbound	-	0.0	0.0	-	A	A	-	0.0	0.0
Southbound	0.4	1.2	-	A	A	-	0.8	0.8	-
Westbound	16.3	-	16.3	C	-	C	8.2	-	8.2

Fisher Road / Site Access

Movement	Delay (sec)			LOS			95TH Queue (m)		
	L	T	R	L	T	R	L	T	R
Eastbound	0.0	0.6	-	A	A	-	0.1	0.1	-
Westbound	-	0.0	0.0	-	A	A	-	0.0	0.0
Southbound	9.4	-	9.4	A	-	A	-	0.6	0.6

*Note: L = left turn, T = through movement, and R = right turn

In all time periods all movements operate at LOS C or better (acceptable to good conditions). Conditions at the access are excellent (LOS A). There are, therefore, no existing traffic capacity concerns at the investigated intersections.

5.0 POST DEVELOPMENT TRAFFIC CONDITIONS

5.1 Land Use and Access

The site is proposing to expand the existing land use to include a recycling centre, which would consist of a building that is 431m² in size (4,650 sq.ft.), and use the existing access.

5.2 Trip Generation

As a worst-case estimate, the post-development volume was assumed to be a full 100 percent Peerless Rd site volume (rather than the existing 50 percent Peerless Rd site assumption for existing conditions).

5.3 Trip Assignment

Development trips were assigned to Fisher Rd based on the existing Fisher Rd directional splits, and were then added to the intersections of Fisher Rd & Hwy 1 and Fisher Rd & Cobble Hill Rd by existing percentage split as well. See **Figure 3** – 2010 Post Development Weekend Traffic Volumes.

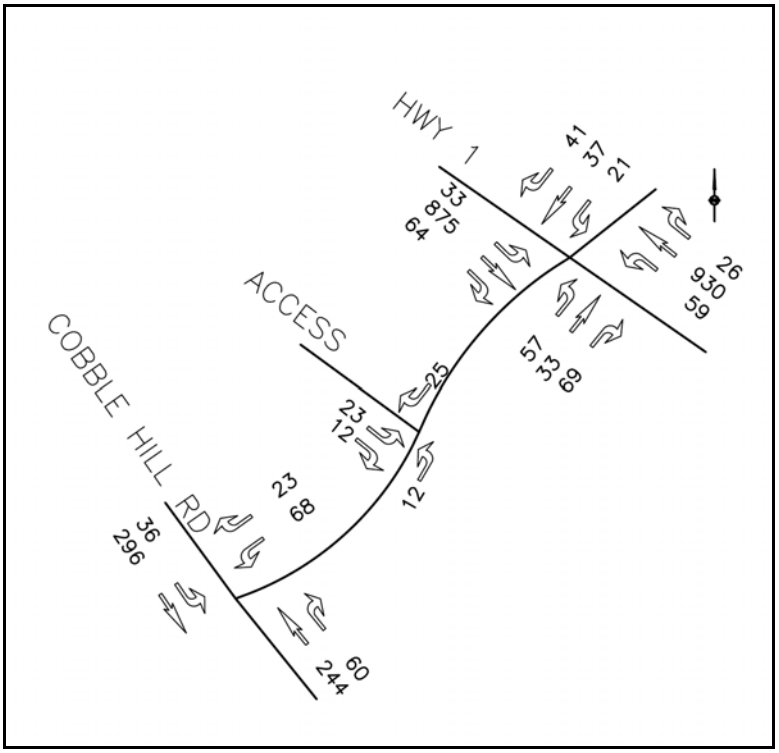


Figure 3 – 2010 Weekend Peak Hr Post Development Traffic Volumes

5.4 2010 Post Development Traffic Conditions

Analysis was undertaken using Synchro software for the post development 2010 peak hour traffic conditions during the weekend peak hour, since it had the most delay of any time period and is the only period where site traffic is contributing to the adjacent street network. The post-development conditions are summarized in **Table 6** – 2010 Post Development Weekend Peak Traffic Conditions.

Table 6 – 2010 Post Development Weekend Peak Hr Traffic Conditions

Highway 1 / Fisher Rd

Movement	Delay (sec)			LOS			95TH Queue (m)		
	L	T	R	L	T	R	L	T	R
Northbound	7.8	4.0	1.5	A	A	A	6.1	35.1	1.6
Southbound	4.4	3.9	1.1	A	A	A	4.3	32.9	2.4
Eastbound	29.6	24.8	8.3	C	C	A	15.8	10.0	6.3
Westbound	25.7	25.9	8.7	C	C	A	6.7	9.9	3.9

Fisher Road / Cobble Hill Road

Movement	Delay (sec)			LOS			95TH Queue (m)		
	L	T	R	L	T	R	L	T	R
Northbound	-	0.0	0.0	-	A	A	-	0.0	0.0
Southbound	0.4	1.3	-	A	A	-	0.9	0.9	-
Westbound	16.7	-	16.7	C	-	C	9.1	-	9.1

Fisher Road / Site Access

Movement	Delay (sec)			LOS			95TH Queue (m)		
	L	T	R	L	T	R	L	T	R
Eastbound	0.1	1.2	-	A	A	-	0.2	0.2	-
Westbound	-	0.0	0.0	-	A	A	-	0.0	0.0
Southbound	9.7	-	9.7	A	-	A	-	1.1	1.1

*Note: L = left turn, T = through movement, and R = right turn

There are no changes in LOS between the 2010 existing traffic conditions and the 2010 post development traffic conditions at any of the intersections in the study area. Therefore there are no traffic capacity concerns associated with the expansion of the Fisher Rd Recycling site to include a recycling centre.

5.5 Weigh Scale Queuing

The site has a weigh-scale, measuring incoming and outbound vehicles. The potential queuing of the recycling operations was estimated to establish whether any queuing concerns may arise. In particular the inbound queue is of interest, since if there are issues the queue could possibly extend back to Fisher

Rd. Note that there are two weigh scales – one inbound, one outbound – and that this will help minimize any potential queuing as the traffic streams will be separated.

In the peak hour there are 37 estimated inbound vehicles, which equates to approximately one vehicle every 96 seconds. Given a conservative weighing time of 30 seconds per vehicle, there is likely to never be a queue of more than one vehicle. Even so, there sufficient storage area for three vehicles, which can accommodate any queuing rush.

5.6 Future 10-Year Horizon Traffic Conditions

A review of the 10-year horizon traffic conditions for the existing and post development conditions were analyzed to investigate any potential future traffic issues in the area. A 2.0 percent per year annual growth rate was applied to the 2010 existing traffic volumes to obtain 2020 background volumes. Site trips were then added to this future background volume to establish future conditions. This was done for the weekend peak hour as this was found to be the worst-case time period. See **Figure 4** for the 2020 post development traffic volumes and **Table 7** for the 2020 post development weekend peak traffic conditions.

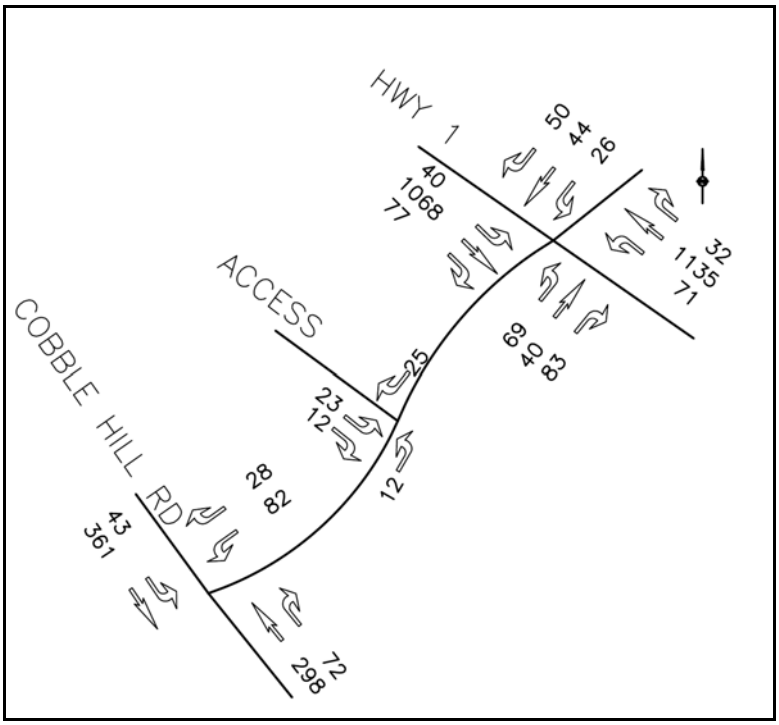


Figure 4: 2020 Weekend Peak Hr Post Development Volumes

Table 7 – 2020 Post Development Weekend Peak Hr Traffic Conditions

Highway 1 / Fisher Rd

Movement	Delay (sec)			LOS			95TH Queue (m)		
	L	T	R	L	T	R	L	T	R
Northbound	19.3	4.9	1.5	B	A	A	9.6	49.8	1.9
Southbound	6.2	4.8	1.1	A	A	A	6.2	46.3	2.8
Eastbound	30.6	24.7	10.1	C	C	B	18.4	11.5	8.4
Westbound	25.8	26.0	8.1	C	C	A	7.7	11.2	3.9

Fisher Road / Cobble Hill Road

Movement	Delay (sec)			LOS			95TH Queue (m)		
	L	T	R	L	T	R	L	T	R
Northbound	-	0.0	0.0	-	A	A	-	0.0	0.0
Southbound	0.5	1.4	-	A	A	-	1.1	1.1	-
Westbound	22.5	-	22.5	C	-	C	15.4	-	15.4

Fisher Road / Site Access

Movement	Delay (sec)			LOS			95TH Queue (m)		
	L	T	R	L	T	R	L	T	R
Eastbound	0.1	1.0	-	A	A	-	0.2	0.2	-
Westbound	-	0.0	0.0	-	A	A	-	0.0	0.0
Southbound	9.9	-	9.9	A	-	A	-	1.2	1.2

*Note: L = left turn, T = through movement, and R = right turn

It was found that even in the 10-year horizon all intersections within the study area will operate at the same LOS as the 2010 background PM peak hour, with the exception of northbound left turns on Hwy 1 at Fisher Rd, which drop to LOS B from LOS A (which is still a good level of service). The addition of the development traffic will not cause any traffic capacity issues to any intersections within the study area in either the 2010 or the 2020 horizon year.

6.0 GEOMETRY AND TRAFFIC CONTROL REVIEW

6.1 Sight Distance

Turning sight distances were reviewed at the site access for exiting site traffic to establish if there are any visibility concerns at the existing access location. Field measurements of the turning sight distance were measured, and are summarized in **Table 8**.

Table 8 - Sight Distances from Site Access on Fisher Road

Guideline	**Distance Measured Sight Distance**	**Sight Distance Required at 50km/h**	**Satisfied?**
Vehicle turning left, looking left	142m	100m	Yes
Vehicle turning left, looking right	120m	123m	No
Vehicle turning right, looking left	142m	123m	Yes

All sight distances are sufficient with the exception of a vehicle turning left looking right at the site. The sight distance measured was 120m and although does not meet the requirement of 123m for a 50km/h road it is very close. The required stopping sight distance for vehicles travelling on Fisher Road is 65m, and is met with 55m to spare. This is the distance required for a driver to stop if an obstruction were to be located along the roadway. Therefore there would be more than enough distance for a driver to turn left from the site and not unduly impede a trailing vehicle. It should also be noted that sight distances were observed to be better at the access to 1355 Fisher Rd than at nearby accesses, and therefore sight distance issues are an issue along several stretches of Fisher Rd and not just the site access.

6.2 Vehicle Speeds on Fisher Rd

Based on the 24-hour tube count installed on Fisher Road it was determined that the 85th percentile speed of vehicles is between 56-60km/h which exceeds the 50km/h speed limit. This could potentially pose some risk for vehicles wishing to enter or exit the site on Fisher Road. However, the stopping sight distance of 85m is met for speeding drivers in advance of the access, and therefore there is sufficient time and distance to avoid collisions between access traffic and speeding Fisher Rd traffic.

6.3 Left Turn Warrant

The BC Ministry of Transportation left turn warrant was investigated to establish the potential need for a left turn lane at the site. Based on Fisher Rd volumes and worst-case site left turn traffic, a left turn

lane is not warranted and is not close to the warrant threshold. Therefore a left turn lane is not required. See Appendix F for the left turn warrant summary.

6.4 Access Turning Movements

6.4.1 Access at 1355 Fisher Rd

A review of truck turning movements at the Fisher Rd Recycling Centre access was conducted, for WB-20 and HSU design vehicles. This review is based on aerial photos without a survey and is therefore investigative only. It is expected that most large trucks to / from the site will be single unit or single unit with trailer (HSU turning characteristics as a worst-case), but that occasionally larger vehicles could potentially access the site. WB-20 vehicles were therefore also investigated, since they have the worst-case turning movement characteristics. The turning template review can be found in Appendix G.

HSU Truck Review

The review found that, for HSU trucks, the existing driveway can accommodate an entering or exiting HSU vehicle but would not allow for passage of another vehicle at the same time. This could be a concern for vehicles passing each other, in particular for an entering right turning vehicle that cannot enter due to an exiting vehicle on the access waiting to turn out of the site.

WB-20 Truck Review

The review found that for left turn entering or exiting WB-20 trucks the entire driveway is required but that the vehicle can otherwise undertake the manoeuvre. Since this would be a rare event this is acceptable, given the low volume of trips to/from the site overall that limit the chance of conflict. For right-turn entering vehicles a WB-20 must cross over the Fisher Rd centreline and even then brush is in the way. Similarly for right-turn exiting WB-20 vehicles they must cross the Fisher Rd centreline.

Discussion

The existing driveway throat width (minimum width of access) is approximately 6.5m to 7.0m. This width is less than the current MoT recommended 9.0m throat width for commercial site accesses (this standard was adopted in 2007). The driveway also does not meet the MoT recommendation of 9.0m radius curves between Fisher Rd and the access. If the driveway throat width were to be widened to 9.0m along with 9.0m curves there would not be any movement issues for HSU vehicles.

With width and radius improvements WB-20 vehicles could be accommodated, albeit by taking up much of the driveway width (essentially it would accommodate WB-20 vehicles to the level that HSU vehicles are accommodated today).

Note that brush and on-street parking along Fisher Rd appear to limit the effective driveway width. Clearing this brush and prohibiting parking adjacent to the access may improve the access conditions sufficiently to alleviate truck turning movement concerns, although the existing power pole may still limit turning area. As such a survey may be required to fully assess the final design requirements. (E.g. potential pole relocation or shifting of access slightly to the west.)

6.4.2 Access at 1345 Fisher Rd

A review of truck turning movements at the Central Landscape Supplies accesses on Fisher Rd was conducted, for WB-20 and HSU design vehicles. There are two accesses to the site and both were reviewed. This review is based on aerial photos without a survey and is therefore investigative only. It is expected that most large trucks to / from the site will be single unit or single unit with trailer (HSU turning characteristics as a worst-case), but that occasionally larger vehicles could potentially access the site. WB-20 vehicles were therefore also investigated, since they have the worst-case turning movement characteristics. The turning template review can be found in Appendix G.

HSU Truck Review

The review found that, for HSU trucks, the existing driveways can accommodate an entering or exiting HSU vehicle, but for right turn in movements there would not be enough width for passage of another vehicle at the same time. (There would, however, be enough room for an exiting passenger vehicle to wait while a left-in HSU vehicle turned.) This could be a concern for vehicles passing each other, in particular for an entering right turning vehicle that cannot enter due to an exiting vehicle on the access waiting to turn out of the site.

WB-20 Truck Review

The review found that for left turn entering or exiting WB-20 trucks the entire driveway is required (both driveways) but that the vehicle can otherwise undertake the manoeuvre. Since this would be a rare event this is acceptable, given the low volume of trips to/from the site overall that limit the chance of conflict. For right-turn entering vehicles a WB-20 must cross over the Fisher Rd centreline, but unlike at 1355 Fisher Rd there would not be any brush or obstacle to impede proceeding. For right-turn exiting WB-20 vehicles, they can exit without crossing the centreline at the west access but must cross the Fisher Rd centreline at the east access.

Discussion

The existing driveway throat width (minimum width of access) is approximately 9.5m for the west access and 12.0m for the east access. These widths meet the MoT recommended 9.0m throat width for commercial site accesses. At both accesses, the exit radius of the west side of each access is at or in excess of the MoT standard of 9.0m. The entry radius is less than 9.0m on the east side of each access, however the 12.0m wide east driveway effectively increases the entry radius at this location. These accesses are therefore typical and appropriate for the Fisher Rd corridor.

7.0 PEDESTRIANS

At present Fisher Rd serves a number of industrial land uses and has no dedicated pedestrian walking area beyond shoulder areas. This is typical for Ministry of Transportation collector roads in rural areas. The number and type of added vehicles associated with the recycling centre will not alter the character of Fisher Rd, nor the character of Cobble Hill Rd (or Hwy 1). Furthermore, peak recycling centre traffic periods are on weekends, and not during main times when pedestrian activity is of greatest concern (before / after school periods, for students walking to/from school). Therefore the site will not have any adverse impacts on pedestrian activities. As with the sight distance review, issues regarding pedestrian safety are pre-existing along the corridor and are not exacerbated with the recycling centre.

8.0 CONCLUSIONS

The following conclusions are made regarding the traffic impacts and mitigation considerations regarding the proposed expansion of the existing recycling centre at 1355 Fisher Road.

In terms of traffic capacity, there are currently no issues along Fisher Road or at key intersections, namely Cobble Hill Rd and at Hwy 1 (LOS C or better). The worst-case time period was found to be the weekend peak hour for both background traffic and site traffic, and therefore this time frame was used as the basis for post-development conditions.

In the post-development period, conditions remain acceptable to good (LOS C or better), even in the 10-year (2020) horizon. Therefore there are no capacity concerns associated with the site. It was also found that no queuing issues are expected in association with the weigh scale operations during peak times.

The sight distance review found that the turning sight distance was slightly deficient for an exiting left-turn vehicle (120m available, 123m required), but as this is just less than the requirement it is effectively acceptable. In particular, the stopping sight distance along Fisher Rd of 65m is met (and

exceeded by 55m), and therefore an exiting vehicle would not introduce a major hazard but may require a trailing eastbound Fisher Rd vehicle to decelerate slightly. Also, the turning sight distances at the access were observed to be greater at the site access than at nearby adjacent accesses, indicating a general sight distance concern along several sections of Fisher Rd, where concerns are worse than at the site access.

It was found that the 85th percentile speed of motorists was between 56-60km/h which exceeds the 50km/h maximum. Nonetheless, the stopping sight distance of 85m is met for speeding vehicles in advance of the access, and therefore there is sufficient time and distance to avoid collisions between access traffic and speeding Fisher Rd traffic.

The left turn warrant review found that a left turn lane on Fisher Rd at the access is not warranted, even in the 2020 horizon year.

The existing recycling centre driveway width (at 1355 Fisher Rd) does not permit large single unit (HSU) trucks to pass one another, but the existing access otherwise allows these vehicles to enter / exit the site. WB-20 vehicles can enter or exit via left turns (although they require the whole access width), while right turning WB-20 vehicles must cross over the Fisher Rd centreline based on present conditions. Improving the access geometry to match the MoT requirement of a 9.0m throat width and a 9.0m radius curve would allow for good HSU operations and improved WB-20 operations. Note that WB-20 vehicle volumes are expected to be very low, and therefore their accommodation via a typical commercial driveway design is acceptable. It also appears that restricting parking along Fisher Rd and clearing brush in the area may sufficiently improve access conditions, although the existing hydro pole could still limit turning area improvements. A detailed survey and design would be required to identify final access geometry requirements. At 1345 Fisher Rd (Central Landscape Design), the access designs are suitable and can appropriately accommodate HSU and WB-20 trucks.

The site will not adversely impact pedestrian safety in the area.

9.0 RECOMMENDATION

It is recommended that parking be prohibited along Fisher Rd adjacent to the access and that brush be cleared in the vicinity of the access, as a means of effectively providing the MoT recommended 9.0m access throat width and 9.0m curve radii. If these measures are insufficient, then a full survey and access design should be considered for improving access geometry.

APPENDIX A

24 Hour Tube Count Results

Road Tube Count Summary Sheet
Fisher Road Cobble Hill
July 28, 2010 to 07/29/2010

Fisher Road Cobble Hill	
Average Daily Traffic (ADT)	1918
Average Weekday Daily Traffic (AWDT)	1918
% Heavy Vehicles	19%
85th percentile speed	56-60 km/h

ADT Summary

Day		EB	WB	Total
Wednesday	07/28/2010	997	929	1926
Thursday	07/29/2010	980	929	1909
ADT		989	929	1918
%		51.6%	48.4%	
AWDT		989	929	1918
%		51.6%	48.4%	

Classification Summary

	Two Way Total	
	# of Veh	%
Passenger Vehicles	7244	75.2%
Buses	517	5.4%
Single Unit Trucks	1179	12.2%
Semi-Trailer Trucks	182	1.9%
Motorcycles	192	2.0%
Unknown Vehicle Type	319	3.3%

Weekday Peak Hour Summary

AM Peak Hour 8:00 to 9:00

Start Time	EB	WB	Total
8:00	17	19	36
8:15	20	9	29
8:30	9	14	23
8:45	16	20	36
Total	62	62	124

PM Peak Hour 16:15 to 17:15

Start Time	EB	WB	Total
16:45	24	18	42
17:00	26	17	43
17:15	30	21	51
17:30	18	21	39
Total	98	77	175

Speed Summary

Two Way Total

Lane		BINS (km/h) 0-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71+	Total
	Total Vehicles	4	19	112	142	113	225	636	1117	1334	901	515	196	59	56	5429
	% of Total	0.1%	0.3%	2.1%	2.6%	2.1%	4.1%	11.7%	20.6%	24.6%	16.6%	9.5%	3.6%	1.1%	1.0%	
	Cumulative %	0.1%	0.4%	2.5%	5.1%	7.2%	11.3%	23.0%	43.6%	68.2%	84.8%	94.3%	97.9%	99.0%	100.0%	

85th Percentile Speed: 56-60 km/h

EB

Lane		BINS (km/h) 0-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71+	Total
	Total Vehicles	1	16	82	42	19	48	182	402	695	591	427	173	52	36	2766
	% of Total	0.0%	0.6%	3.0%	1.5%	0.7%	1.7%	6.6%	14.5%	25.1%	21.4%	15.4%	6.3%	1.9%	1.3%	
	Cumulative %	0.0%	0.6%	3.6%	5.1%	5.8%	7.5%	14.1%	28.6%	53.8%	75.1%	90.6%	96.8%	98.7%	100.0%	

85th Percentile Speed: 56-60 km/h

WB

Lane		BINS (km/h) 0-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71+	Total
	Total Vehicles	3	2	27	98	93	175	440	704	626	302	83	18	3	9	2583
	% of Total	0.1%	0.1%	1.0%	3.8%	3.6%	6.8%	17.0%	27.3%	24.2%	11.7%	3.2%	0.7%	0.1%	0.3%	
	Cumulative %	0.1%	0.2%	1.2%	5.0%	8.6%	15.4%	32.4%	59.7%	83.9%	95.6%	98.8%	99.5%	99.7%	100.0%	

85th Percentile Speed: 51-55 km/h

Road Tube Count Summary Sheet
Peerless Road Recycling Centre
August 5, 2010 to August 10, 2010

Peerless Road Recycling Centre	
Average Daily Traffic (ADT)	303
Average Weekday Daily Traffic (AWDT)	274
% Heavy Vehicles	7%
85th percentile speed	21-25 km/h

ADT Summary

Day		EB	WB	Total
Thursday	08/05/2010	147	166	313
Friday	08/06/2010	142	147	289
Saturday	08/07/2010	130	129	259
Sunday	08/08/2010	170	180	350
Monday	08/09/2010	0	0	0
Tuesday	08/10/2010	0	0	0
ADT		147	156	303
%		48.6%	51.4%	
AWDT		145	157	274
%		52.7%	57.1%	

Classification Summary

	Two Way Total	
	# of Veh	%
Passenger Vehicles	1021	84.3%
Buses	0	0.0%
Single Unit Trucks	73	6.0%
Semi-Trailer Trucks	8	0.7%
Motorcycles	8	0.7%
Unknown Vehicle Type	101	8.3%

Weekday Peak Hour Summary
AM Peak Hour
9:45 to 10:45

Start Time	EB	WB	Total
9:45	4	7	11
10:00	6	9	15
10:15	5	7	12
10:30	7	3	10
Total	22	26	48

Weekend Peak Hour
12:45 to 13:45

Start Time	EB	WB	Total
12:45	6	11	17
13:00	8	7	15
13:15	11	11	22
13:30	10	8	18
Total	35	37	72

Speed Summary

Two Way Total

		BINS (km/h)														
Lane		0-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71+	Total
	Total Vehicles	36	205	446	386	74	14	0	2	0	0	4	0	1	43	1211
	% of Total	3.0%	16.9%	36.8%	31.9%	6.1%	1.2%	0.0%	0.2%	0.0%	0.0%	0.3%	0.0%	0.1%	3.6%	
	Cumulative %	3.0%	19.9%	56.7%	88.6%	94.7%	95.9%	95.9%	96.0%	96.0%	96.0%	96.4%	96.4%	96.4%	100.0%	
	85th Percentile Speed:	21-25 km/h														

EB

		BINS (km/h)														
Lane		0-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71+	Total
	Total Vehicles	9	62	219	218	51	12	0	2	0	0	0	0	1	15	589
	% of Total	1.5%	10.5%	37.2%	37.0%	8.7%	2.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.2%	2.5%	
	Cumulative %	1.5%	12.1%	49.2%	86.2%	94.9%	96.9%	96.9%	97.3%	97.3%	97.3%	97.3%	97.3%	97.5%	100.0%	
	85th Percentile Speed:	21-25 km/h														

WB

		BINS (km/h)														
Lane		0-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71+	Total
	Total Vehicles	27	143	227	168	23	2	0	0	0	0	4	0	0	28	622
	% of Total	4.3%	23.0%	36.5%	27.0%	3.7%	0.3%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	4.5%	
	Cumulative %	4.3%	27.3%	63.8%	90.8%	94.5%	94.9%	94.9%	94.9%	94.9%	94.9%	95.5%	95.5%	95.5%	100.0%	
	85th Percentile Speed:	21-25 km/h														

APPENDIX B

Synchro Background

SYNCHRO MODELLING SOFTWARE DESCRIPTION

The traffic analysis was completed using Synchro and SimTraffic traffic modelling software. Results were measured in delay, level of service (LOS) and 95th percentile queue length. Synchro is based on the Highway Capacity Manual (HCM) methodology. SimTraffic integrates established driver behaviours and characteristics to simulate actual conditions by randomly "seeding" or positioning vehicles travelling throughout the network. The simulation is run five times (five different random seedings of vehicle types, behaviours and arrivals) to obtain statistical significance of the results.

Levels of Service

Traffic operations are typically described in terms of levels of service, which rates the amount of delay per vehicle for each movement and the entire intersection. Levels of service range from LOS A (representing best operations) to LOS E/F (LOS E being poor operations and LOS F being unpredictable/disruptive operations). LOS E/F are generally unacceptable levels of service under normal everyday conditions.

The hierarchy of criteria for grading an intersection or movement not only includes delay times, but also takes into account traffic control type (stop signs or traffic signal). For example, if a vehicle is delayed for 19 seconds at an unsignalized intersection, it is considered to have an average operation, and would therefore be graded as an LOS C. However, at a signalized intersection, a 19 second delay would be considered a good operation and therefore it would be given an LOS B. The table below indicates the range of delay for LOS for signalized and unsignalized intersections.

Table A1: LOS Criteria, by Intersection Traffic Control

Level of Service	**Unsignalized Intersection Average Vehicle Delay (sec/veh)**	**Signalized Intersection Average Vehicle Delay (sec/veh)**
A	Less than 10	Less than 10
B	10 to 15	11 to 20
C	16 to 25	21 to 35
D	26 to 35	36 to 55
E	36 to 50	56 to 80
F	More than 51	More than 81

APPENDIX C

2010 Existing Conditions

Synchro Results

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	48	16	180	41	25	220
Peak Hour Factor	0.80	0.56	0.88	0.88	0.80	0.86
Hourly flow rate (vph)	60	29	205	47	31	256
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	546	228			251	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	546	228			251	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	88	96			98	
cM capacity (veh/h)	482	804			1291	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	89	251	287
Volume Left	60	0	31
Volume Right	29	47	0
cSH	553	1700	1291
Volume to Capacity	0.16	0.15	0.02
Queue Length 95th (m)	4.3	0.0	0.6
Control Delay (s)	12.7	0.0	1.1
Lane LOS	B		A
Approach Delay (s)	12.7	0.0	1.1
Approach LOS	B		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

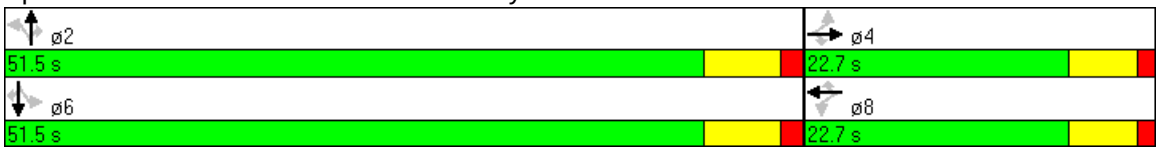
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	1865	1555	1789	1865	1601	1587	3579	1633	1789	3579	1585
Flt Permitted	0.722			0.736			0.350			0.360		
Satd. Flow (perm)	1334	1865	1555	1386	1865	1601	585	3579	1633	678	3579	1585
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			37			71			18			50
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		50			50			90			90	
Link Distance (m)		589.4			342.8			390.7			343.2	
Travel Time (s)		42.4			24.7			15.6			13.7	
Volume (vph)	35	23	27	42	29	45	42	655	14	31	670	39
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.73	0.73	0.55	0.55	0.63	0.50	0.93	0.77	0.87	0.92	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	3%	5%	2%	3%	2%	15%	2%	0%	2%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	44	32	37	76	53	71	84	704	18	36	728	50
Lane Group Flow (vph)	44	32	37	76	53	71	84	704	18	36	728	50
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phases	4	4	4	8	8	8	2	2	2	6	6	6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	12.7	12.7	12.7	26.7	26.7	26.7	26.5	26.5	26.5	26.5	26.5	26.5
Total Split (s)	22.7	22.7	22.7	22.7	22.7	22.7	51.5	51.5	51.5	51.5	51.5	51.5
Total Split (%)	30.6%	30.6%	30.6%	30.6%	30.6%	30.6%	69.4%	69.4%	69.4%	69.4%	69.4%	69.4%
Maximum Green (s)	17.0	17.0	17.0	17.0	17.0	17.0	45.0	45.0	45.0	45.0	45.0	45.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.5	1.5	1.5	1.5	1.5
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	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Walk Time (s)				5.0	5.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0	8.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)				0	0	0	0	0	0	0	0	0
Act Effct Green (s)	12.1	12.1	12.1	12.1	12.1	12.1	60.2	60.2	60.2	60.2	60.2	60.2
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
v/c Ratio	0.22	0.11	0.14	0.37	0.19	0.24	0.19	0.26	0.01	0.07	0.26	0.04
Control Delay	26.5	24.1	10.0	29.5	25.2	8.6	4.7	3.5	1.8	3.8	3.5	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.5	24.1	10.0	29.5	25.2	8.6	4.7	3.5	1.8	3.8	3.5	1.3
LOS	C	C	A	C	C	A	A	A	A	A	A	A
Approach Delay		20.4			20.9			3.6			3.4	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	4.8	3.4	0.0	8.4	5.7	0.0	2.6	12.3	0.0	1.0	12.8	0.0
Queue Length 95th (m)	11.1	7.8	4.6	11.0	8.3	3.9	4.1	22.8	1.2	3.8	23.6	2.0
Internal Link Dist (m)		565.4			318.8			366.7			319.2	
Turn Bay Length (m)												
Base Capacity (vph)	301	421	380	313	421	417	450	2751	1260	521	2751	1230
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.08	0.10	0.24	0.13	0.17	0.19	0.26	0.01	0.07	0.26	0.04

Intersection Summary

Area Type: Other
Cycle Length: 74.2
Actuated Cycle Length: 78.3
Natural Cycle: 55
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.37
Intersection Signal Delay: 6.3 Intersection LOS: A
Intersection Capacity Utilization 50.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: Fisher Road & Hwy 1 Northbound



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	61	20	232	53	32	282
Peak Hour Factor	0.80	0.56	0.88	0.88	0.80	0.86
Hourly flow rate (vph)	76	36	264	60	40	328
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	702	294			324	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	702	294			324	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	80	95			97	
cM capacity (veh/h)	387	738			1214	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	112	324	368
Volume Left	76	0	40
Volume Right	36	60	0
cSH	456	1700	1214
Volume to Capacity	0.25	0.19	0.03
Queue Length 95th (m)	7.3	0.0	0.8
Control Delay (s)	15.4	0.0	1.2
Lane LOS	C		A
Approach Delay (s)	15.4	0.0	1.2
Approach LOS	C		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

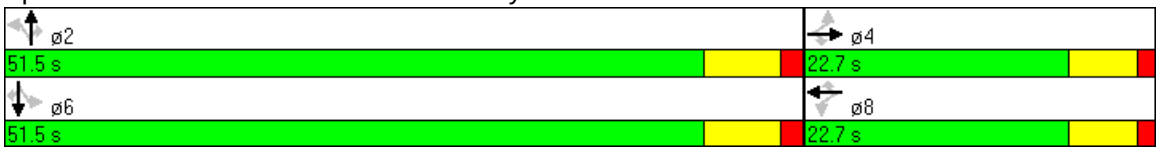
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	1865	1555	1789	1865	1601	1587	3579	1633	1789	3579	1585
Flt Permitted	0.725			0.731			0.289			0.286		
Satd. Flow (perm)	1339	1865	1555	1377	1865	1601	483	3579	1633	539	3579	1585
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			51			57			56			53
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		50			50			90			90	
Link Distance (m)		589.4			342.8			390.7			343.2	
Travel Time (s)		42.4			24.7			15.6			13.7	
Volume (vph)	54	29	37	32	27	36	29	822	43	45	805	41
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.73	0.73	0.55	0.55	0.63	0.50	0.93	0.77	0.87	0.92	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	3%	5%	2%	3%	2%	15%	2%	0%	2%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	68	40	51	58	49	57	58	884	56	52	875	53
Lane Group Flow (vph)	68	40	51	58	49	57	58	884	56	52	875	53
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phases	4	4	4	8	8	8	2	2	2	6	6	6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	12.7	12.7	12.7	26.7	26.7	26.7	26.5	26.5	26.5	26.5	26.5	26.5
Total Split (s)	22.7	22.7	22.7	22.7	22.7	22.7	51.5	51.5	51.5	51.5	51.5	51.5
Total Split (%)	30.6%	30.6%	30.6%	30.6%	30.6%	30.6%	69.4%	69.4%	69.4%	69.4%	69.4%	69.4%
Maximum Green (s)	17.0	17.0	17.0	17.0	17.0	17.0	45.0	45.0	45.0	45.0	45.0	45.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.5	1.5	1.5	1.5	1.5
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	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Walk Time (s)				5.0	5.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0	8.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)				0	0	0	0	0	0	0	0	0
Act Effct Green (s)	11.9	11.9	11.9	11.9	11.9	11.9	60.1	60.1	60.1	60.1	60.1	60.1
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
v/c Ratio	0.35	0.15	0.19	0.29	0.18	0.20	0.16	0.32	0.04	0.13	0.32	0.04
Control Delay	29.4	24.7	9.4	27.8	25.1	9.1	4.7	3.7	1.2	4.3	3.7	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	24.7	9.4	27.8	25.1	9.1	4.7	3.7	1.2	4.3	3.7	1.2
LOS	C	C	A	C	C	A	A	A	A	A	A	A
Approach Delay		21.8			20.5			3.6			3.6	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	7.5	4.3	0.0	6.3	5.3	0.0	1.7	16.0	0.0	1.5	15.8	0.0
Queue Length 95th (m)	15.3	9.2	5.2	9.0	8.0	3.7	3.0	29.2	2.0	5.3	28.9	2.0
Internal Link Dist (m)		565.4			318.8			366.7			319.2	
Turn Bay Length (m)												
Base Capacity (vph)	302	422	391	311	422	406	373	2759	1272	415	2759	1234
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.09	0.13	0.19	0.12	0.14	0.16	0.32	0.04	0.13	0.32	0.04

Intersection Summary

Area Type: Other
Cycle Length: 74.2
Actuated Cycle Length: 78
Natural Cycle: 55
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.35
Intersection Signal Delay: 6.1 Intersection LOS: A
Intersection Capacity Utilization 53.7% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: Fisher Road & Hwy 1 Northbound



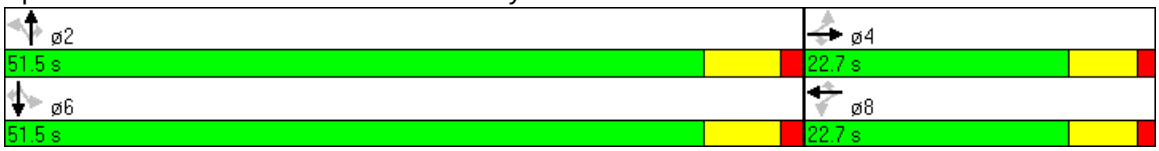
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	1865	1555	1789	1865	1601	1587	3579	1633	1789	3579	1585
Flt Permitted	0.718			0.730			0.261			0.244		
Satd. Flow (perm)	1326	1865	1555	1375	1865	1601	436	3579	1633	460	3579	1585
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			89			65			34			77
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		50			50			90			90	
Link Distance (m)		280.9			342.8			390.7			343.2	
Travel Time (s)		20.2			24.7			15.6			13.7	
Volume (vph)	53	30	65	21	33	41	55	930	26	33	875	60
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.73	0.73	0.55	0.55	0.63	0.50	0.93	0.77	0.87	0.92	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	3%	5%	2%	3%	2%	15%	2%	0%	2%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	66	41	89	38	60	65	110	1000	34	38	951	77
Lane Group Flow (vph)	66	41	89	38	60	65	110	1000	34	38	951	77
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phases	4	4	4	8	8	8	2	2	2	6	6	6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	12.7	12.7	12.7	26.7	26.7	26.7	26.5	26.5	26.5	26.5	26.5	26.5
Total Split (s)	22.7	22.7	22.7	22.7	22.7	22.7	51.5	51.5	51.5	51.5	51.5	51.5
Total Split (%)	30.6%	30.6%	30.6%	30.6%	30.6%	30.6%	69.4%	69.4%	69.4%	69.4%	69.4%	69.4%
Maximum Green (s)	17.0	17.0	17.0	17.0	17.0	17.0	45.0	45.0	45.0	45.0	45.0	45.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.5	1.5	1.5	1.5	1.5
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	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

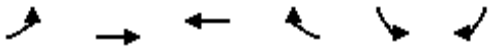
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Walk Time (s)				5.0	5.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0	8.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)				0	0	0	0	0	0	0	0	0
Act Effct Green (s)	11.8	11.8	11.8	11.8	11.8	11.8	59.6	59.6	59.6	59.6	59.6	59.6
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
v/c Ratio	0.34	0.15	0.29	0.19	0.22	0.22	0.33	0.36	0.03	0.11	0.35	0.06
Control Delay	29.2	24.7	8.6	25.9	25.8	8.8	7.2	3.9	1.4	4.3	3.8	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.2	24.7	8.6	25.9	25.8	8.8	7.2	3.9	1.4	4.3	3.8	1.1
LOS	C	C	A	C	C	A	A	A	A	A	A	A
Approach Delay		18.9			19.0			4.2			3.7	
Approach LOS		B			B			A			A	
Queue Length 50th (m)	7.3	4.4	0.0	4.1	6.5	0.0	3.8	18.9	0.0	1.1	17.7	0.0
Queue Length 95th (m)	15.1	9.3	6.2	6.7	9.2	3.9	5.5	34.3	1.6	4.2	32.1	2.3
Internal Link Dist (m)		256.9			318.8			366.7			319.2	
Turn Bay Length (m)												
Base Capacity (vph)	302	425	423	314	425	415	336	2754	1264	354	2754	1237
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.10	0.21	0.12	0.14	0.16	0.33	0.36	0.03	0.11	0.35	0.06

Intersection Summary

Area Type: Other
Cycle Length: 74.2
Actuated Cycle Length: 77.4
Natural Cycle: 60
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.36
Intersection Signal Delay: 6.0 Intersection LOS: A
Intersection Capacity Utilization 62.0% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 3: Fisher Road & Hwy 1 Northbound





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	6	67	100	13	12	6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	73	109	14	13	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)			281			
pX, platoon unblocked						
vC, conflicting volume	123				202	116
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	123				202	116
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	99
cM capacity (veh/h)	1464				783	937

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	79	123	20
Volume Left	7	0	13
Volume Right	0	14	7
cSH	1464	1700	829
Volume to Capacity	0.00	0.07	0.02
Queue Length 95th (m)	0.1	0.0	0.6
Control Delay (s)	0.6	0.0	9.4
Lane LOS	A		A
Approach Delay (s)	0.6	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	18.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	64	21	244	56	34	296
Peak Hour Factor	0.80	0.56	0.88	0.88	0.80	0.86
Hourly flow rate (vph)	80	38	277	64	42	344
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	738	309			341	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	738	309			341	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	78	95			96	
cM capacity (veh/h)	367	724			1196	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	118	341	387
Volume Left	80	0	42
Volume Right	38	64	0
cSH	436	1700	1196
Volume to Capacity	0.27	0.20	0.04
Queue Length 95th (m)	8.2	0.0	0.8
Control Delay (s)	16.3	0.0	1.2
Lane LOS	C		A
Approach Delay (s)	16.3	0.0	1.2
Approach LOS	C		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX D

2010 Post Development

Synchro Results

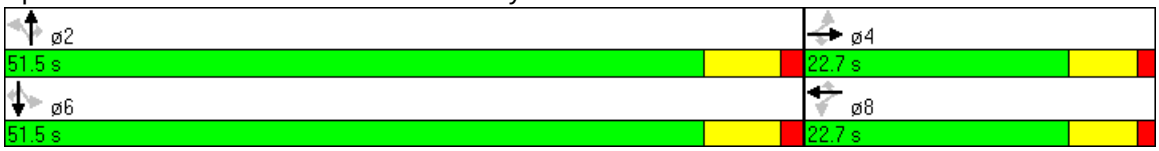
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	1865	1555	1789	1865	1601	1587	3579	1633	1789	3579	1585
Flt Permitted	0.713			0.728			0.261			0.244		
Satd. Flow (perm)	1317	1865	1555	1371	1865	1601	436	3579	1633	460	3579	1585
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			95			65			34			82
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		50			50			90			90	
Link Distance (m)		280.9			342.8			390.7			343.2	
Travel Time (s)		20.2			24.7			15.6			13.7	
Volume (vph)	57	33	69	21	37	41	59	930	26	33	875	64
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.73	0.73	0.55	0.55	0.63	0.50	0.93	0.77	0.87	0.92	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	3%	5%	2%	3%	2%	15%	2%	0%	2%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	71	45	95	38	67	65	118	1000	34	38	951	82
Lane Group Flow (vph)	71	45	95	38	67	65	118	1000	34	38	951	82
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phases	4	4	4	8	8	8	2	2	2	6	6	6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	12.7	12.7	12.7	26.7	26.7	26.7	26.5	26.5	26.5	26.5	26.5	26.5
Total Split (s)	22.7	22.7	22.7	22.7	22.7	22.7	51.5	51.5	51.5	51.5	51.5	51.5
Total Split (%)	30.6%	30.6%	30.6%	30.6%	30.6%	30.6%	69.4%	69.4%	69.4%	69.4%	69.4%	69.4%
Maximum Green (s)	17.0	17.0	17.0	17.0	17.0	17.0	45.0	45.0	45.0	45.0	45.0	45.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.5	1.5	1.5	1.5	1.5
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	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Walk Time (s)				5.0	5.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0	8.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)				0	0	0	0	0	0	0	0	0
Act Effct Green (s)	12.1	12.1	12.1	12.1	12.1	12.1	59.6	59.6	59.6	59.6	59.6	59.6
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.15	0.77	0.77	0.77	0.77	0.77	0.77
v/c Ratio	0.36	0.16	0.30	0.18	0.24	0.22	0.35	0.36	0.03	0.11	0.35	0.07
Control Delay	29.6	24.8	8.3	25.7	25.9	8.7	7.8	4.0	1.5	4.4	3.9	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	24.8	8.3	25.7	25.9	8.7	7.8	4.0	1.5	4.4	3.9	1.1
LOS	C	C	A	C	C	A	A	A	A	A	A	A
Approach Delay		19.0			19.3			4.3			3.7	
Approach LOS		B			B			A			A	
Queue Length 50th (m)	7.9	4.8	0.0	4.1	7.3	0.0	4.3	19.4	0.0	1.1	18.2	0.0
Queue Length 95th (m)	15.8	10.0	6.3	6.7	9.9	3.9	6.1	35.1	1.6	4.3	32.9	2.4
Internal Link Dist (m)		256.9			318.8			366.7			319.2	
Turn Bay Length (m)												
Base Capacity (vph)	300	425	428	313	425	415	334	2745	1260	353	2745	1235
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.11	0.22	0.12	0.16	0.16	0.35	0.36	0.03	0.11	0.35	0.07

Intersection Summary

Area Type: Other
Cycle Length: 74.2
Actuated Cycle Length: 77.7
Natural Cycle: 60
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.36
Intersection Signal Delay: 6.3 Intersection LOS: A
Intersection Capacity Utilization 62.2% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 3: Fisher Road & Hwy 1 Northbound



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	12	67	100	25	23	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	73	109	27	25	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)			281			
pX, platoon unblocked						
vC, conflicting volume	136				221	122
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	136				221	122
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	99
cM capacity (veh/h)	1448				760	929

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	86	136	38
Volume Left	13	0	25
Volume Right	0	27	13
cSH	1448	1700	811
Volume to Capacity	0.01	0.08	0.05
Queue Length 95th (m)	0.2	0.0	1.1
Control Delay (s)	1.2	0.0	9.7
Lane LOS	A		A
Approach Delay (s)	1.2	0.0	9.7
Approach LOS			A

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	23.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	68	23	244	60	36	296
Peak Hour Factor	0.80	0.56	0.88	0.88	0.80	0.86
Hourly flow rate (vph)	85	41	277	68	45	344
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	746	311			345	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	746	311			345	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	77	94			96	
cM capacity (veh/h)	363	722			1192	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	126	345	389
Volume Left	85	0	45
Volume Right	41	68	0
cSH	433	1700	1192
Volume to Capacity	0.29	0.20	0.04
Queue Length 95th (m)	9.1	0.0	0.9
Control Delay (s)	16.7	0.0	1.3
Lane LOS	C		A
Approach Delay (s)	16.7	0.0	1.3
Approach LOS	C		

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX E

2020 Post Development Conditions

Synchro Results

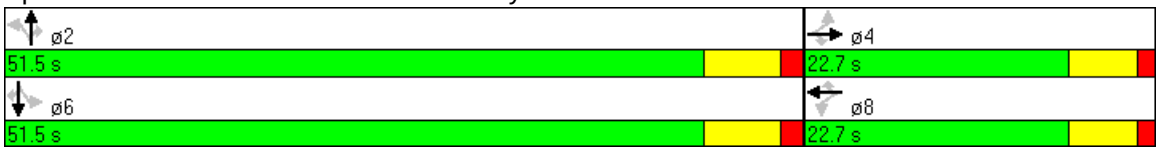
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (m)	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1755	1865	1555	1789	1865	1601	1587	3579	1633	1789	3579	1585
Flt Permitted	0.705			0.721			0.194			0.178		
Satd. Flow (perm)	1302	1865	1555	1358	1865	1601	324	3579	1633	335	3579	1585
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			98			79			42			99
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Link Speed (k/h)		50			50			90			90	
Link Distance (m)		280.9			342.8			390.7			343.2	
Travel Time (s)		20.2			24.7			15.6			13.7	
Volume (vph)	69	40	83	26	44	50	71	1135	32	40	1068	77
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.73	0.73	0.55	0.55	0.63	0.50	0.93	0.77	0.87	0.92	0.78
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	4%	3%	5%	2%	3%	2%	15%	2%	0%	2%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	86	55	114	47	80	79	142	1220	42	46	1161	99
Lane Group Flow (vph)	86	55	114	47	80	79	142	1220	42	46	1161	99
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phases	4	4	4	8	8	8	2	2	2	6	6	6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	20.0	20.0	20.0	20.0	20.0	20.0
Minimum Split (s)	12.7	12.7	12.7	26.7	26.7	26.7	26.5	26.5	26.5	26.5	26.5	26.5
Total Split (s)	22.7	22.7	22.7	22.7	22.7	22.7	51.5	51.5	51.5	51.5	51.5	51.5
Total Split (%)	30.6%	30.6%	30.6%	30.6%	30.6%	30.6%	69.4%	69.4%	69.4%	69.4%	69.4%	69.4%
Maximum Green (s)	17.0	17.0	17.0	17.0	17.0	17.0	45.0	45.0	45.0	45.0	45.0	45.0
Yellow Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0	5.0	5.0	5.0
All-Red Time (s)	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.5	1.5	1.5	1.5	1.5
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	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	Max	Max	Max	Max	Max	Max
Walk Time (s)				5.0	5.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)				16.0	16.0	16.0	8.0	8.0	8.0	8.0	8.0	8.0
Pedestrian Calls (#/hr)				0	0	0	0	0	0	0	0	0
Act Effct Green (s)	13.0	13.0	13.0	13.0	13.0	13.0	59.6	59.6	59.6	59.6	59.6	59.6
Actuated g/C Ratio	0.16	0.16	0.16	0.16	0.16	0.16	0.76	0.76	0.76	0.76	0.76	0.76
v/c Ratio	0.41	0.18	0.34	0.22	0.27	0.25	0.58	0.45	0.03	0.18	0.43	0.08
Control Delay	30.6	24.7	10.1	25.8	26.0	8.1	19.3	4.9	1.5	6.2	4.8	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	24.7	10.1	25.8	26.0	8.1	19.3	4.9	1.5	6.2	4.8	1.1
LOS	C	C	B	C	C	A	B	A	A	A	A	A
Approach Delay		20.2			19.1			6.3			4.5	
Approach LOS		C			B			A			A	
Queue Length 50th (m)	9.6	5.9	1.7	5.1	8.7	0.0	7.2	27.5	0.0	1.5	25.7	0.0
Queue Length 95th (m)	18.4	11.5	8.4	7.7	11.2	3.9	9.6	49.8	1.9	6.2	46.3	2.8
Internal Link Dist (m)		256.9			318.8			366.7			319.2	
Turn Bay Length (m)												
Base Capacity (vph)	297	425	430	309	425	426	246	2716	1249	254	2716	1227
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.13	0.27	0.15	0.19	0.19	0.58	0.45	0.03	0.18	0.43	0.08

Intersection Summary

Area Type: Other
Cycle Length: 74.2
Actuated Cycle Length: 78.5
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.58
Intersection Signal Delay: 7.5 Intersection LOS: A
Intersection Capacity Utilization 68.5% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 3: Fisher Road & Hwy 1 Northbound



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	12	82	122	25	23	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	89	133	27	25	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)			281			
pX, platoon unblocked						
vC, conflicting volume	160				261	146
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	160				261	146
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	99
cM capacity (veh/h)	1419				721	901

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	102	160	38
Volume Left	13	0	25
Volume Right	0	27	13
cSH	1419	1700	774
Volume to Capacity	0.01	0.09	0.05
Queue Length 95th (m)	0.2	0.0	1.2
Control Delay (s)	1.0	0.0	9.9
Lane LOS	A		A
Approach Delay (s)	1.0	0.0	9.9
Approach LOS			A

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	24.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	82	28	298	72	43	361
Peak Hour Factor	0.80	0.56	0.88	0.88	0.80	0.86
Hourly flow rate (vph)	102	50	339	82	54	420
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	907	380			420	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	907	380			420	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	64	92			95	
cM capacity (veh/h)	288	661			1118	

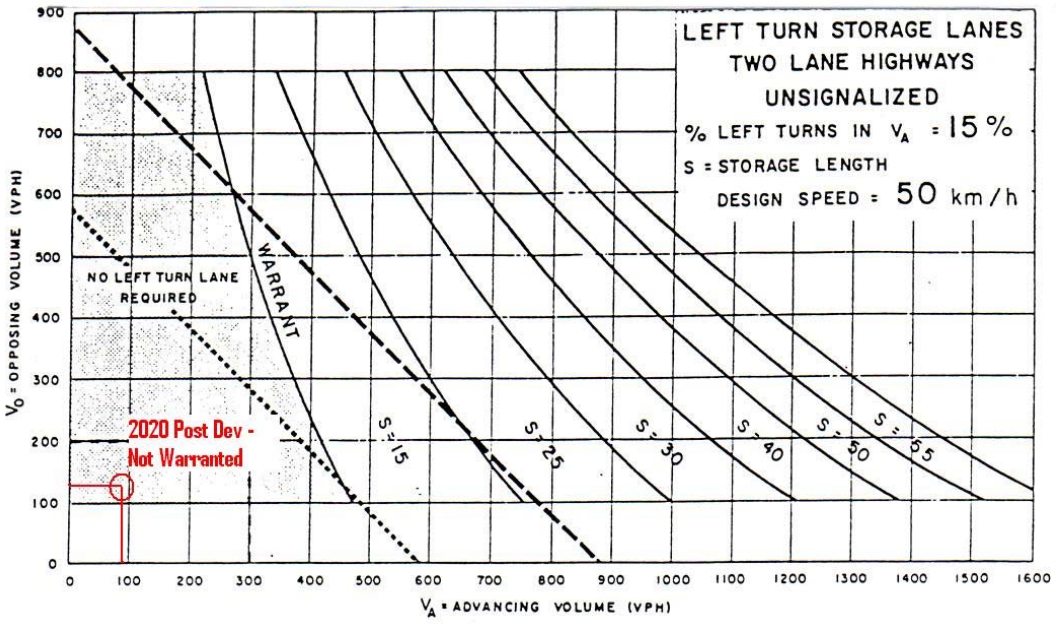
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	152	420	474
Volume Left	102	0	54
Volume Right	50	82	0
cSH	353	1700	1118
Volume to Capacity	0.43	0.25	0.05
Queue Length 95th (m)	16.0	0.0	1.2
Control Delay (s)	22.7	0.0	1.4
Lane LOS	C		A
Approach Delay (s)	22.7	0.0	1.4
Approach LOS	C		

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

APPENDIX F

Left Turn Lane Warrant Analysis

Fisher Rd at the Site Access



APPENDIX G

Truck Turning Movement Review

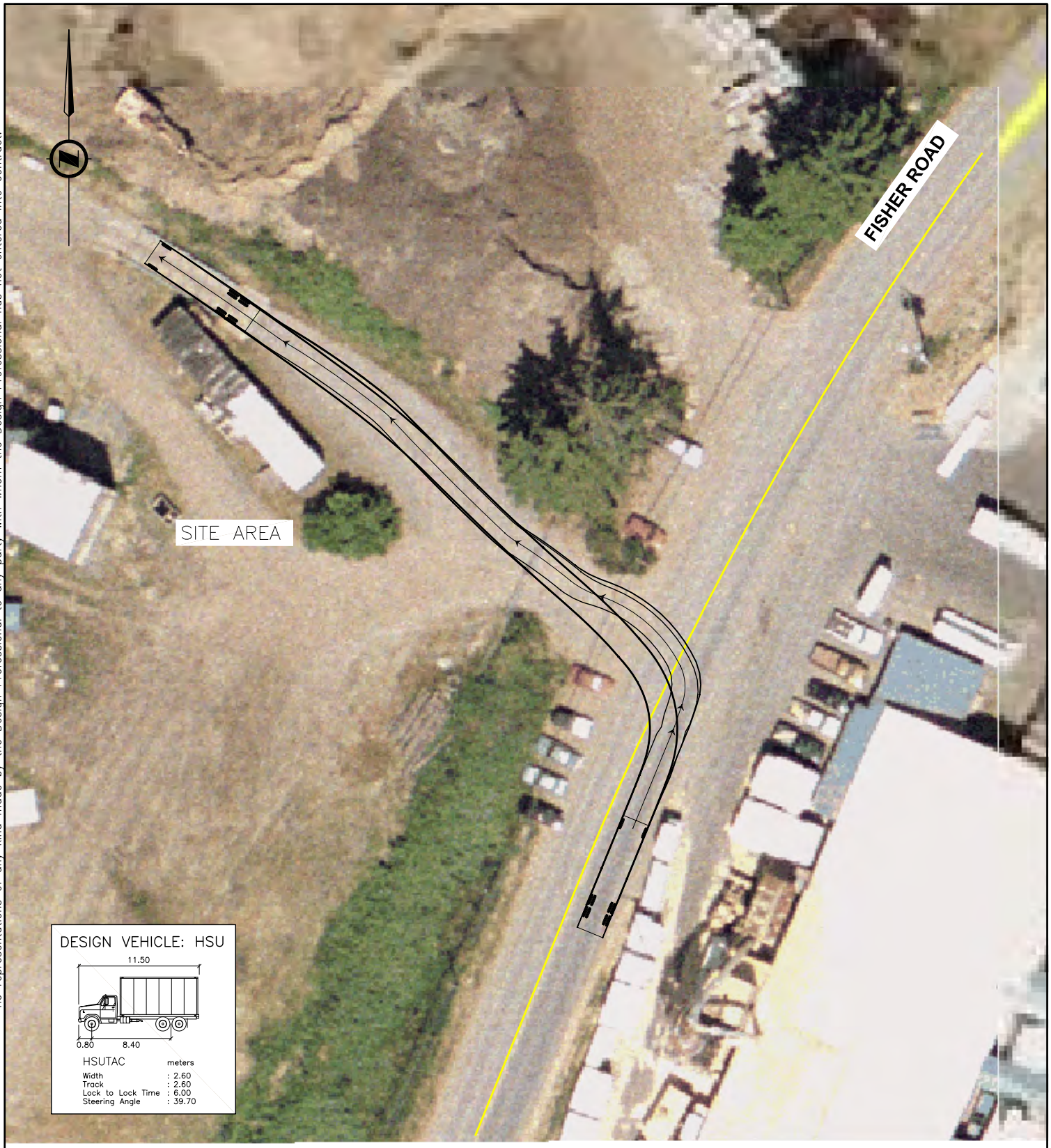


IMAGE SOURCE: CRD NATURAL AREAS ATLAS

Boulevard Transportation Group

TITLE:

FISHER ROAD RECYCLING

HSU VEHICLE TURNING TEMPLATE
LEFT IN

DESIGNED:	MJ	DRAWN:	mjo	SCALE:	1:500
DATE:	SEP 30–10	DRAWING NO:	1173_HSU 3	REV.	0

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Autoturn Review_Sep 23-10.dwg
PLOT DATE: 9/30/2010 12:11 PM
PLOTTED BY: MJ Oh

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Autoturn Review_Sep 23-10.dwg
PLOT DATE: 9/30/2010 11:55 AM
PLOTTED BY: MJ Oh

Boulevard Transportation Group

TITLE:

FISHER ROAD RECYCLING

HSU VEHICLE TURNING TEMPLATE
LEFT OUT

DESIGNED:	DRAWN:	SCALE:
MJ	mjo	1:500
DATE: SEP 30-10	DRAWING NO: 1173_HSU 1	REV. 0

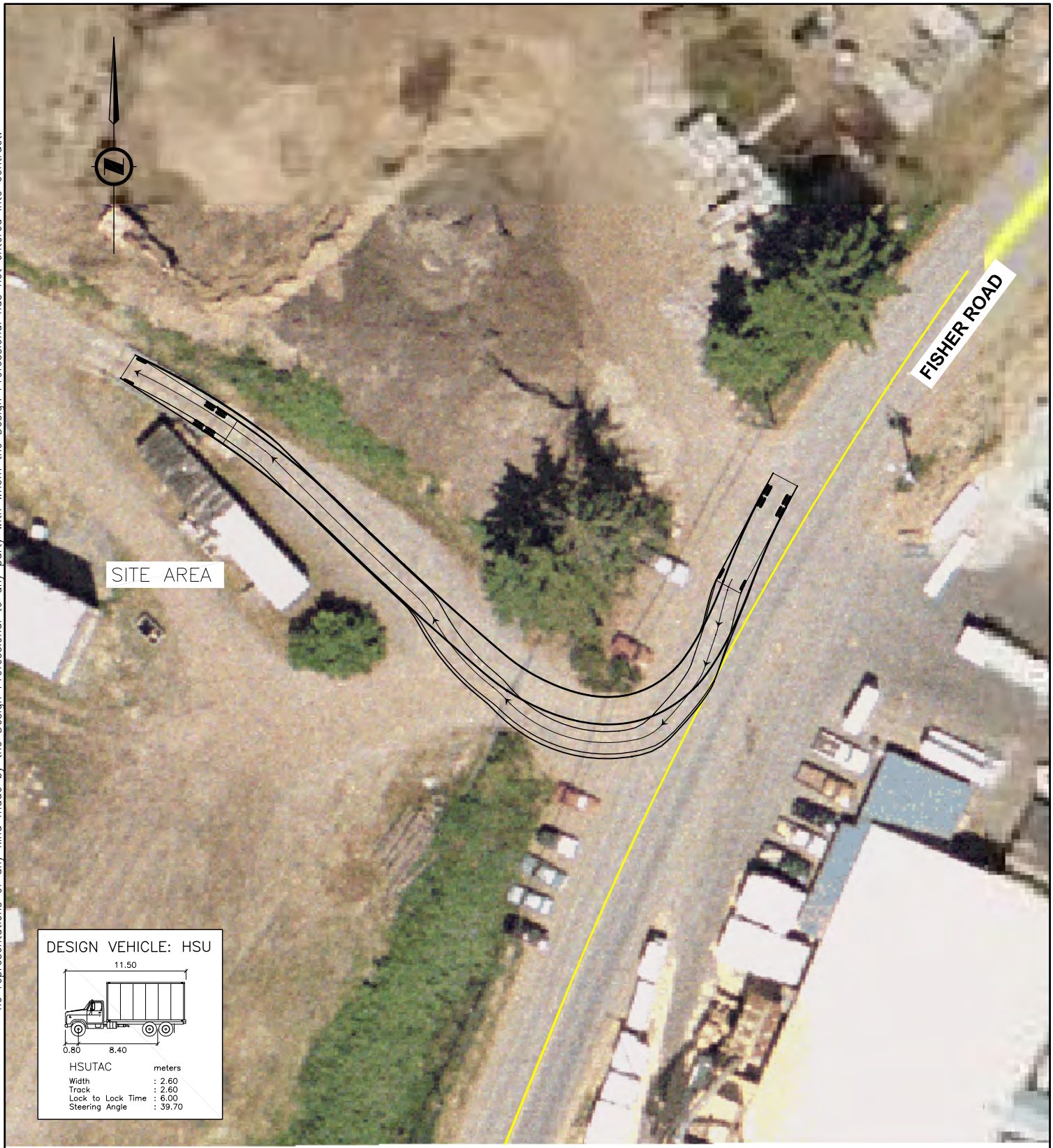


IMAGE SOURCE: CRD NATURAL AREAS ATLAS

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PLOTTED BY: MJ Oh

Boulevard Transportation Group

TITLE:

FISHER ROAD RECYCLING

HSU VEHICLE TURNING TEMPLATE RIGHT IN

DESIGNED:	DRAWN:	SCALE:	
MJ	mjo	1:500	
DATE: SEP 30-10	DRAWING NO: 1173_HSU 4	REV. 0	

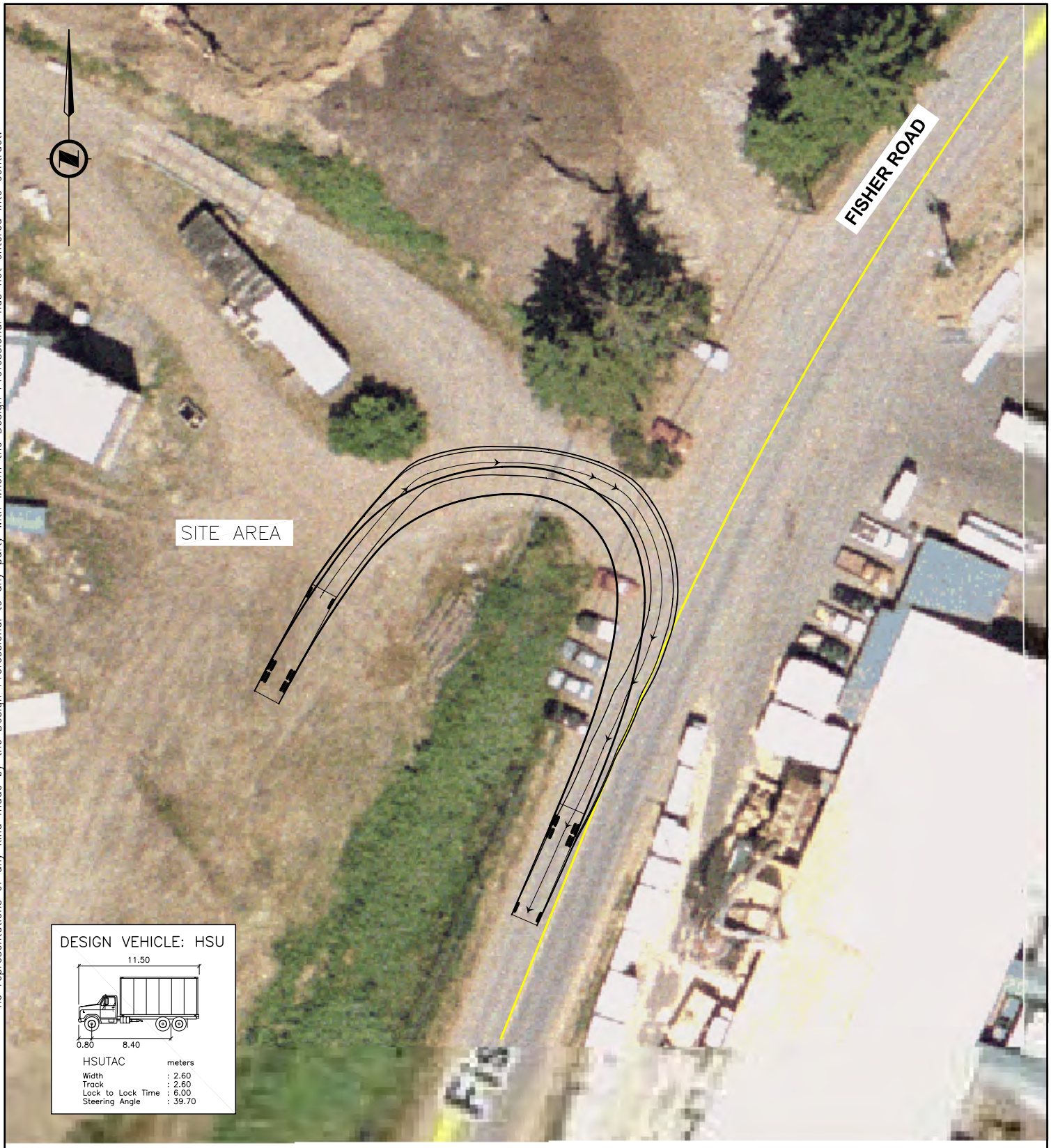


IMAGE SOURCE: CRD NATURAL AREAS ATLAS

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Autoturn Review_Sep 23-10.dwg
PLOT DATE: 9/30/2010 11:56 AM
PLOTTED BY: MJ Oh

Boulevard Transportation Group

TITLE:

FISHER ROAD RECYCLING

HSU VEHICLE TURNING TEMPLATE
RIGHT OUT

DESIGNED: MJ	DRAWN: mjo	SCALE: 1:500
DATE: SEP 30–10	DRAWING NO: 1173_HSU 2	REV. 0

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Vutoturn Review_Sep 23-10.dwg
PLOT DATE: 9/24/2010 1:48 PM
PLOTTED BY: MJ Oh

Boulevard Transportation Group

TITLE:

FISHER ROAD RECYCLING

WB-20 VEHICLE TURNING TEMPLATE LEFT IN

DESIGNED: MJ	DRAWN: mjo	SCALE: 1:500	
DATE: SEP 23-10	DRAWING NO: 1173_WB-20_2	REV. 0	

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Autoturn Review_Sep 23-10.dwg
PLOT DATE: 9/24/2010 12:34 PM
PLOTTED BY: MJ Oh

Boulevard Transportation Group

TITLE:

FISHER ROAD RECYCLING

WB-20 VEHICLE TURNING TEMPLATE LEFT OUT

DESIGNED:	DRAWN:	SCALE:
MJ	mjo	1:500
DATE: SEP 23-10	DRAWING NO: 1173_WB-20_4	REV. 0

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Autoturn Review_Sep 23-10.dwg
PLOT DATE: 9/24/2010 4:51 PM
PLOTTED BY: MJ Oh

Boulevard Transportation Group

TITLE:

FISHER ROAD RECYCLING

WB-20 VEHICLE TURNING TEMPLATE
RIGHT IN 1

DESIGNED:	MJ	DRAWN:	mjo	SCALE:	1:500
DATE:	SEP 23-10	DRAWING NO:	1173_WB-20_1	REV.	0

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Autoturn Review_Sep 23-10.dwg
PLOT DATE: 9/24/2010 4:49 PM
PLOTTED BY: MJ Oh

Boulevard Transportation Group

TITLE:

FISHER ROAD RECYCLING

WB-20 VEHICLE TURNING TEMPLATE RIGHT IN 2

DESIGNED: MJ	DRAWN: mjo	SCALE: 1:500	
DATE: SEP 23-10	DRAWING NO: 1173_WB-20_1B	REV. 0	

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Autoturn Review_Sep 23-10.dwg
PLOT DATE: 9/24/2010 12:40 PM
PLOTTED BY: MJ Oh

Boulevard Transportation Group

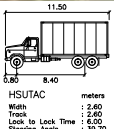
TITLE:

FISHER ROAD RECYCLING

WB-20 VEHICLE TURNING TEMPLATE RIGHT OUT

DESIGNED:	DRAWN:	SCALE:
MJ	mjo	1:500
DATE: SEP 23-10	DRAWING NO: 1173_WB-20_3	REV. 0

DESIGN VEHICLE:



HSUTAC meters

Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.00
Steering Angle	: 39.70

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

Boulevard Transportation Group

TITLE:

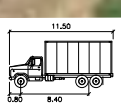
FISHER ROAD RECYCLING

ACCESSES AT 1345 FISHER ROAD
HSU_LEFT IN

DESIGNED:	MJ	DRAWN:	mjo	SCALE:	1:1000
DATE:	NOV 8–10	DRAWING NO:	1173_HSU–1	REV.	0

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Autoturn Review_Nov 4-10.dwg
PLOT DATE: 11/8/2010 10:03 AM
PLOTTED BY: MJ Oh

DESIGN VEHICLE:



HSUTAC

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.00
Steering Angle	: 39.70

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

Boulevard Transportation Group

TITLE:

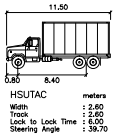
FISHER ROAD RECYCLING

ACCESSES AT 1345 FISHER ROAD
HSU_LEFT OUT

DESIGNED:	MJ	DRAWN:	mjo	SCALE:	1:1000
DATE:	NOV 8–10	DRAWING NO:	1173_HSU–3	REV.	0

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Autoturn Review_Nov 4-10.dwg
PLOT DATE: 11/8/2010 10:04 AM
PLOTTED BY: MJ Oh

DESIGN VEHICLE:



HSUTAC

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.00
Steering Angle	: 39.70

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

Boulevard Transportation Group

TITLE:

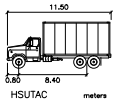
FISHER ROAD RECYCLING

ACCESSES AT 1345 FISHER ROAD
HSU_RIGHT IN

DESIGNED:	MJ	DRAWN:	mjo	SCALE:	1:1000
DATE:	NOV 8–10	DRAWING NO:	1173_HSU–2	REV.	0

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Autoturn Review_Nov 4-10.dwg
PLOT DATE: 11/8/2010 10:04 AM
PLOTTED BY: MJ Oh

DESIGN VEHICLE:



HSUTAC

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.00
Steering Angle	: 39.70

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

Boulevard Transportation Group

TITLE:

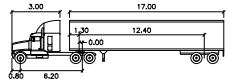
FISHER ROAD RECYCLING

ACCESSES AT 1345 FISHER ROAD
HSU_RIGHT OUT

DESIGNED:	DRAWN:	SCALE:
MJ	mjo	1:1000
DATE: NOV 8–10	DRAWING NO: 1173_HSU–4	REV. 0

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Autoturn Review_Nov 4-10.dwg
PLOT DATE: 11/8/2010 10:04 AM
PLOTTED BY: MJ Oh

DESIGN VEHICLE:



WB-20TAC meters

Tractor Width	: 2.60	Lock to Lock Time	: 6.00
Trailer Width	: 2.60	Steering Angle	: 28.30
Tractor Track	: 2.60	Articulating Angle	: 70.00
Trailer Track	: 2.60		

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

Boulevard Transportation Group

TITLE:

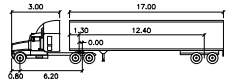
FISHER ROAD RECYCLING

ACCESSES AT 1345 FISHER ROAD
WB-20 LEFT IN

DESIGNED:	MJ	DRAWN:	mjo	SCALE:	1:1000
DATE:	NOV 8-10	DRAWING NO:	1173_WB20-1	REV.	0

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Autoturn Review_Nov 4-10.dwg
PLOT DATE: 11/8/2010 10:06 AM
PLOTTED BY: MJ Oh

DESIGN VEHICLE:



WB–20TAC meters

Tractor Width	: 2.60	Lock to Lock Time	: 6.00
Trailer Width	: 2.60	Steering Angle	: 28.30
Tractor Track	: 2.60	Articulating Angle	: 70.00
Trailer Track	: 2.60		

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

Boulevard Transportation Group

TITLE:

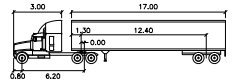
FISHER ROAD RECYCLING

ACCESSES AT 1345 FISHER ROAD
WB–20 LEFT OUT

DESIGNED:	MJ	DRAWN:	mjo	SCALE:	1:1000
DATE:	NOV 8–10	DRAWING NO:	1173_WB20–3	REV.	0

PROJECT: Y:\Project Files\1173 – Fisher Rd Recycling TIA\Drawings\Autoturn Review_Nov 4–10.dwg
PLOT DATE: 11/8/2010 10:07 AM
PLOTTED BY: MJ Oh

DESIGN VEHICLE:



WB–20TAC meters

Tractor Width	: 2.60	Lock to Lock Time	: 6.00
Trailer Width	: 2.60	Steering Angle	: 28.30
Tractor Track	: 2.60	Articulating Angle	: 70.00
Trailer Track	: 2.60		

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

Boulevard Transportation Group

TITLE:

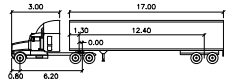
FISHER ROAD RECYCLING

ACCESSES AT 1345 FISHER ROAD
WB–20 RIGHT IN

DESIGNED:	MJ	DRAWN:	mjo	SCALE:	1:1000
DATE:	NOV 8–10	DRAWING NO:	1173_WB20–2	REV.	0

PROJECT: Y:\Project Files\1173 – Fisher Rd Recycling TIA\Drawings\Autoturn Review_Nov 4–10.dwg
PLOT DATE: 11/8/2010 10:07 AM
PLOTTED BY: MJ Oh

DESIGN VEHICLE:



WB–20TAC meters

Tractor Width	: 2.60	Lock to Lock Time	: 6.00
Trailer Width	: 2.60	Steering Angle	: 28.30
Tractor Track	: 2.60	Articulating Angle	: 70.00
Trailer Track	: 2.60		

IMAGE SOURCE: CRD NATURAL AREAS ATLAS

PROJECT: Y:\Project Files\1173 - Fisher Rd Recycling TIA\Drawings\Autoturn Review_Nov 4-10.dwg
PLOT DATE: 11/8/2010 10:08 AM
PLOTTED BY: MJ Oh

Boulevard Transportation Group

TITLE:

FISHER ROAD RECYCLING

ACCESSES AT 1345 FISHER ROAD
WB–20 RIGHT OUT

DESIGNED:	MJ	DRAWN:	mjo	SCALE:	1:1000
DATE:	NOV 8–10	DRAWING NO:	1173_WB20–4	REV.	0