Final Report



Town of Raymond

Transportation Master Plan

March 2009



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Town of Raymond

Transportation Master Plan March 2009



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Date March 24,2009

PERMIT NUMBER: P 3979

The Association of Professional Engineers, Geologists and Geophysicists of Alberta

Executive Summary

1 INTRODUCTION

The Town of Raymond is located approximately 34 km south of Alberta's fourth largest city, Lethbridge, in the County of Warner. Over the past couple of years, the Town has experienced a large population growth, from 3200 residents in 2005 to 3363 residents in 2007. As a result of the growth, the Town has some immediate and future transportation needs that are required to address urgent development concerns.

Associated Engineering (AE) was retained by the Town of Raymond to develop the Transportation Master Plan (TMP) for the Town. The plan will address immediate and long term transportation issues indicated by the Town and establish a transportation road network plan for the future expansion of Raymond. These immediate and long term issues are listed below.

1.1 Immediate Concerns

- Definition of road network where new development is occurring within the existing Town boundary
- Signalization requirements at the intersections of Highway 52 (200 N) and 200 W, Highway 52 and Highway 845 (Broadway), Broadway and 100 N, Broadway and Church Avenue, and 100 N and 200 W
- Establish a unit cost estimate for construction of newly proposed roadways within the existing Town boundary
- Pedestrian safety at the school site located along Highway 52.

1.2 Long Term Concerns

- Definition of road network for future expansion of the Town boundary
- Future requirement for extending 400 W from Highway 52 to 400 S
- Future requirement for extending 300 S from 100 W to Broadway.

The TMP was completed using the following methodology:

- Data collection and review
- Establish time horizons for completing the capacity analysis
- Develop the functional classification (Road Network Plan) for the existing and future road networks
- Determine the study intersections for completing the capacity analysis
- Generate background, site and total traffic forecasts for the established time horizons



- Distribute and assign traffic forecasts to the study intersections on the existing/future road network for the established time horizons
- Analyze the capacity of the study intersections within the Town boundaries for the established time horizons
- Complete a traffic signal warrant for the intersection of Highway 52 and Broadway
- Develop a unit cost estimate for construction of new roadway
- Report documentation.

The capacity analyses were completed using the afternoon (pm) peak hour traffic volumes and was completed for three different time horizons, which include:

- Existing (2008) horizon
- Future short-term (2018) horizon
- Future long-term (2028) horizon.

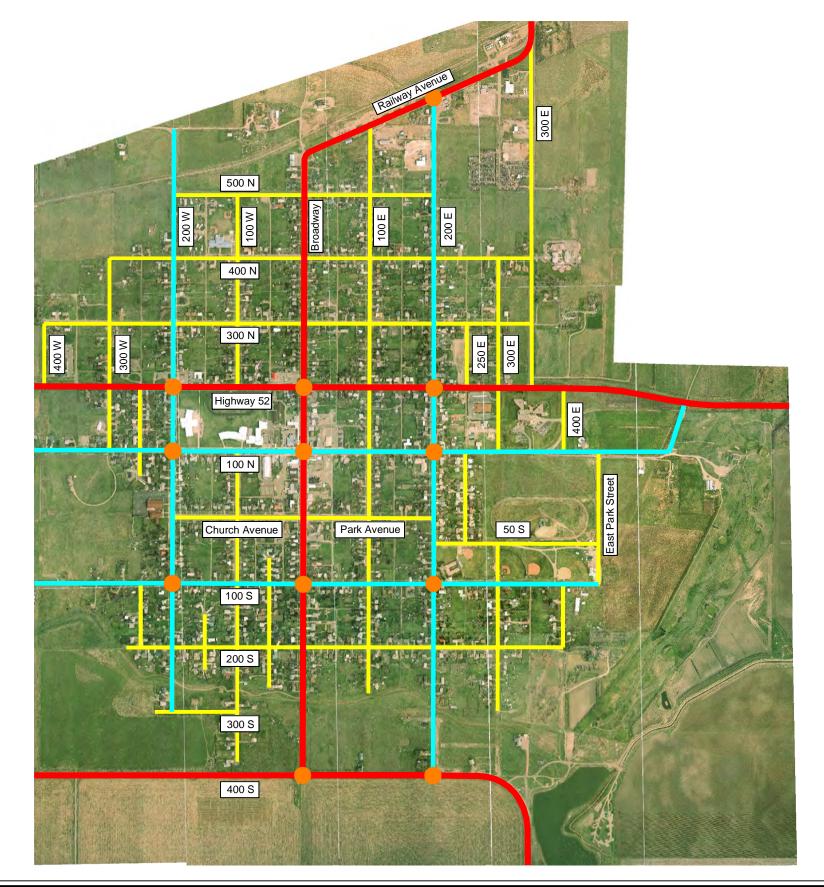
2 ANALYSIS

With consideration for the existing land use and the proposed developments indicated by the Town, AE established the road network for all the time horizons. The roadway networks were then classified into the following road classifications with consideration for function and connectivity: public lanes (alleys), local streets, collector streets and arterial streets. Figure E-1, E-2 and E-3 present the road network plan and road classifications for the 2008, 2018 and 2028 horizons respectively.

The road network plans show the study intersections that were assessed in the capacity analysis for each time horizon. For the purpose of the traffic assessment a minimum overall intersection LOS C and a minimum LOS D for each movement at an intersection was required. The level of service definitions for an unsignalized intersection is included in Appendix C.

Existing traffic volumes for the 2008 horizon were derived by applying a calculated growth rate of 1.6% to traffic data obtained from either Alberta Transportation (AT) or from traffic counts conducted by the Town. Traffic volumes for the future 2018 and 2028 horizon were obtained by applying the 1.6% growth rate to the 2008 volumes and combining with anticipated development traffic. The development traffic was estimated using a three-step process which involved trip generation, trip distribution and trip assignment.

Table E-1 presents an overview of the capacity analysis results completed on the existing 2008 traffic volumes and the 2018 and 2028 background and development traffic volumes, for the pm peak hour. A detailed summary has been included in Appendix D of the report.



LEGEND				
Arterial				
	Collector			
	Local			
	Proposed Arterial			
	Proposed Collector			
	Proposed Loca (
	Study Intersection			

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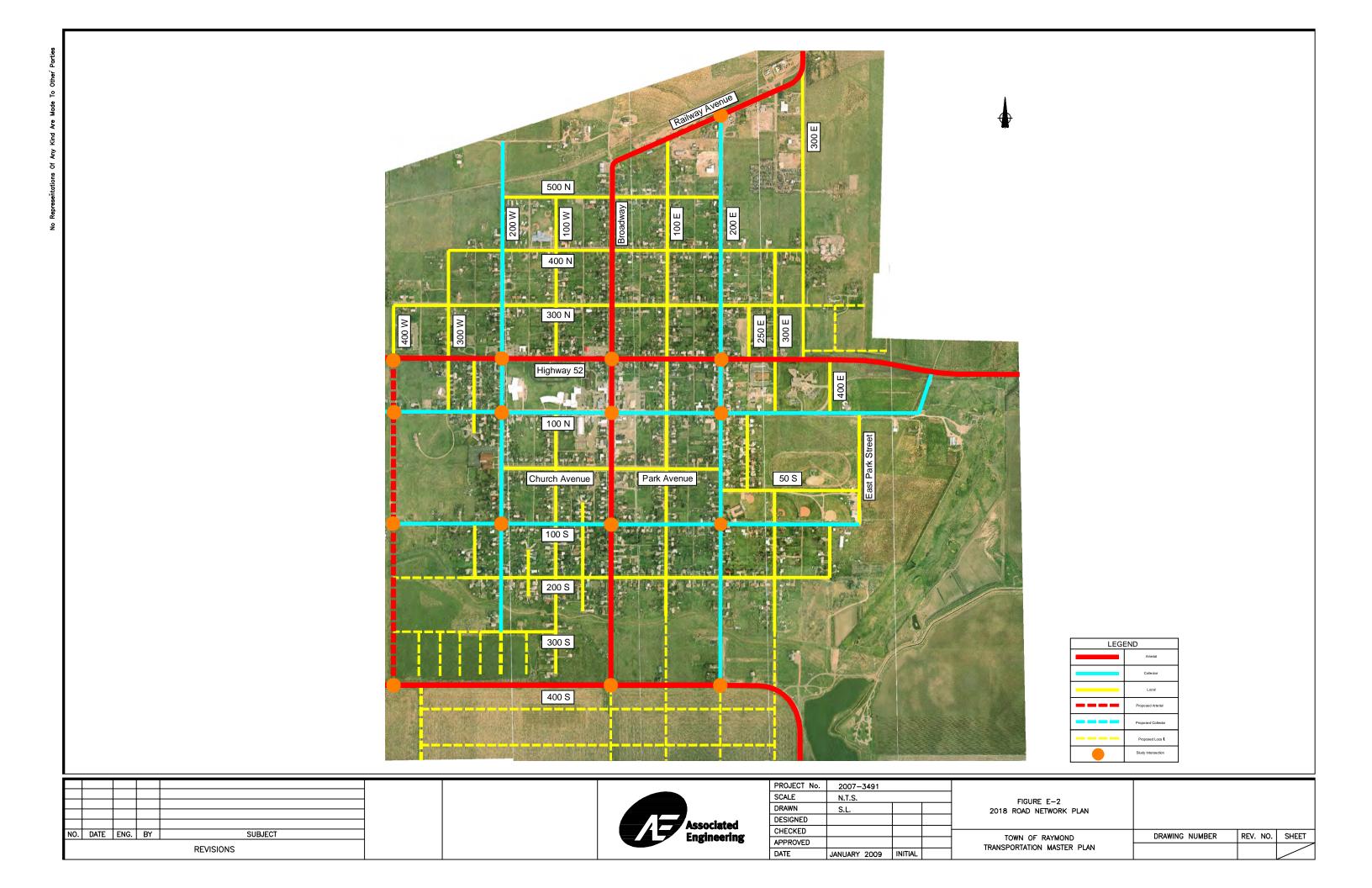
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FIGURE E-1 2008 ROAD NETWORK PLAN

TOWN OF RAYMOND	DRAWING NUMBER
TRANSPORTATION MASTER PLAN	



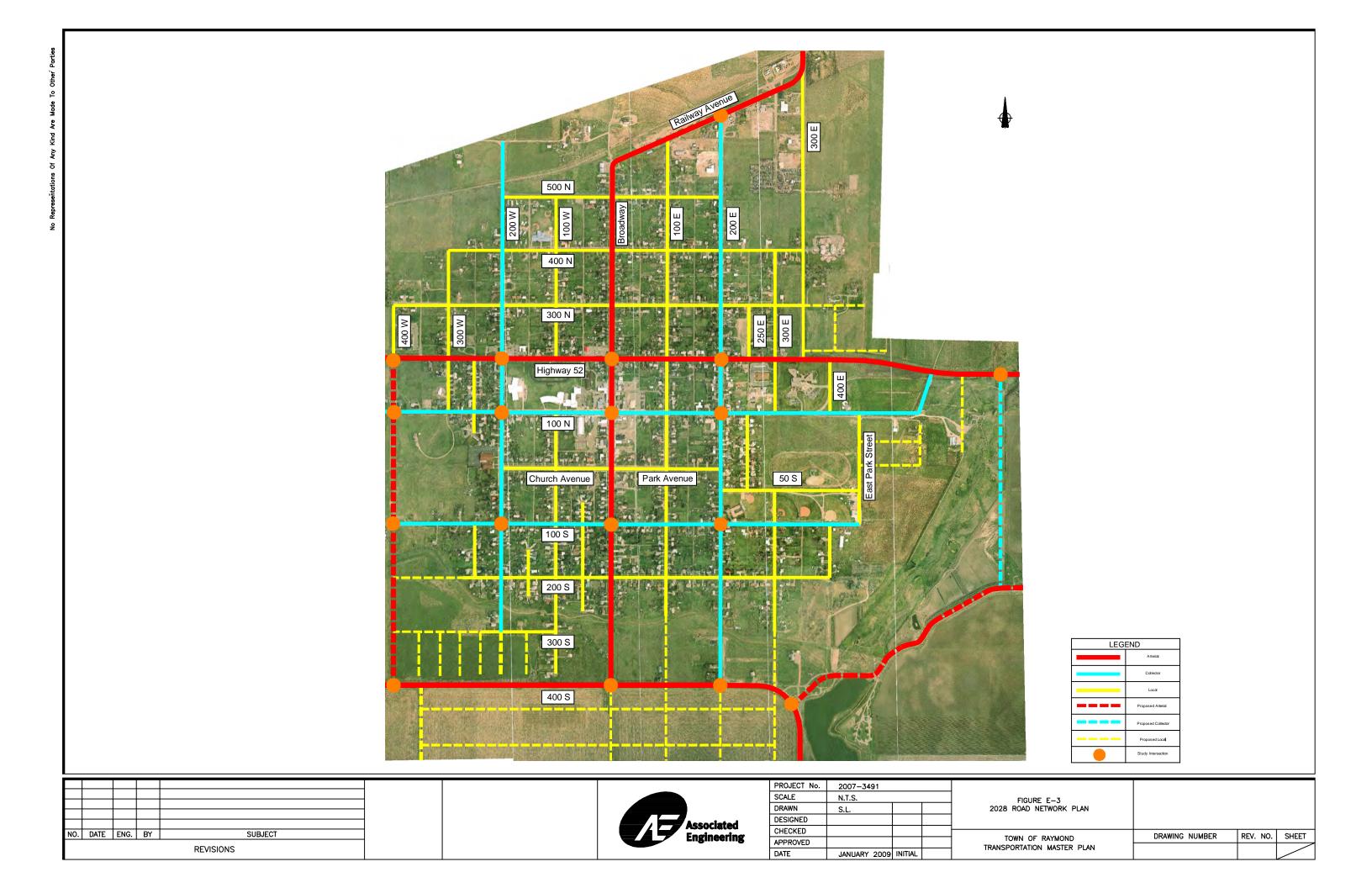


Table E-1
Capacity Analysis Results – All Horizons, PM Peak Hour

Intersection	2008 Existing Traffic		2018 (Background & Development Traffic)			2028 (Background & Development Traffic)			
	SOT	Max V/C Ratio	Delay (s)	SOT	Max V/C Ratio	Delay (s)	SOT	Max V/C Ratio	Delay (s)
Railway Avenue & 200 E	А	0.04	3.6	Α	0.11	4.1	А	0.20	4.5
Highway 52 & 400 W		n/a		Α	0.03	1.5	А	0.05	1.4
Highway 52 & 200 W	А	0.18	6.0	А	0.36	7.0	А	0.70	13.0
Highway 52 & Broadway	А	0.20	6.3	А	0.41	8.7	D	1.37	81.0
Highway 52 & 200 E	А	0.10	6.0	Α	0.23	7.0	А	0.52	8.5
Highway 52 & Development #10 Access		n/a			n/a		А	0.09	1.9
100 N & 400 W		n/a		А	0.02	1.9	А	0.02	1.9
100 N & 200 W	А	0.09	7.6	А	0.15	8.0	А	0.22	8.6
100 N & Broadway	Α	0.09	3.7	Α	0.16	3.6	В	0.28	4.3
100 N & 200 E	A	0.07	7.4	А	0.16	7.9	A	0.23	8.5
100 S & 400 W		n/a		А	0.07	6.0	А	0.09	6.0
100 S & 200 W	А	0.05	7.1	Α	0.08	7.4	А	0.13	7.7



Intersection	2008 Existing Traffic		2018 (Background & Development Traffic)			2028 (Background & Development Traffic)			
intersection	SOT	Max V/C Ratio	Delay (s)	SOT	Max V/C Ratio	Delay (s)	SOT	Max V/C Ratio	Delay (s)
100 S & Broadway	А	0.06	4.7	А	0.10	3.7	А	0.16	4.0
100 S & 200 E	А	0.05	7.2	А	0.13	7.5	А	0.19	8.0
400 S & 400 W		n/a		А	0.02	1.8	А	0.03	1.3
400 S & Broadway	А	0.02	4.6	А	0.08	4.4	А	0.15	3.9
400 S & 200 E	А	0.01	5.3	А	0.02	6.0	А	0.07	3.1
400 S & Development #10 Access		n/a			n/a		А	0.00	-

2.1 Existing 2008 Traffic

All the 2008 study intersections operate well above the minimum LOS threshold required. Every intersection operates at an overall intersection LOS A and all movements across the entire road network operate at LOS B or higher.

2.2 2018 Background and Development Traffic

Even with additional traffic on the 2018 road network, all the study intersections operate well above the minimum LOS required with an overall intersection LOS A and all movements across the 2018 road network operate at LOS C or higher.

2.3 2028 Background and Development Traffic

With the exception of Highway 52 and Broadway, all the study intersections continue to operate above the minimum LOS required despite the additional traffic. Highway 52 and Broadway operates at an overall intersection LOS D. This exceeds the minimum LOS threshold and indicates that improvements are required at the intersection.

Most intersection movements operate at LOS D or higher, except at Highway 52 and 200 W, and Highway 52 and Broadway. Movements at these intersections experience LOS E and LOS F respectively.

3 RECOMMENDED IMPROVEMENTS

The 2018 road network indicated in Figure E-2 is sufficient to accommodate the traffic volumes anticipated for that horizon. Therefore, no roadway improvements are required above and beyond the road network presented.

During the 2028 horizon, a separate northbound right turn lane is required at Highway 52 and 200 W, and a change in traffic control to a four-way stop-control is required at Highway 52 and Broadway. The provision of a northbound right-turn lane at Highway 52 and 200 W will improve the LOS on the northbound approach to LOS D from LOS E and changing the traffic control to a four-way stop control at Highway 52 and 200 W will improve the intersection so that all movements operate at LOS D or higher.

One of the immediate transportation issues identified by the Town was the need for signalization at the intersections of Highway 52 and 200 W, Highway 52 and Broadway, Broadway and 100 N, Broadway and Church Avenue, and 100 N and 200 W. To evaluate the need to provide signalization at the intersections, the traffic signal warrant from the Manual on Uniform Traffic Control Devices (MUTCD) was completed. Table E-1 presents the results of the signal warrant for the different time horizons.



Table E-2
Traffic Signal Warrant Results

Intersection	Existing 2008 Traffic	2018 (Background & Development Traffic)	2028 (Background & Development Traffic)
Highway 52 and	-4.69	6.62	23.68
200 W	(Not warranted)	(Not warranted)	(Not warranted)
Highway 52 and	0.59	14.39	36.15
Broadway	(Not warranted)	(Not warranted)	(Not warranted)
Broadway and	-6.51	5.23	14.80
100 N	(Not warranted)	(Not warranted)	(Not warranted)
Broadway and Church Avenue	-4.72 (Not warranted)	n/a	n/a
100 N and 200 W	-10.81	-5.55	0.82
	(Not warranted)	(Not warranted)	(Not warranted)

The results of the signal warrants indicate that the traffic volumes at the above intersections do not warrant signalization in the 2008, 2018 or 2028 time horizons.

AE recommends that the extension of 400 W, as shown in Figure E-2 and E-3, be implemented. 400 W is located at the Town's west end and would serve as an important link to the future developments planned within the Town. Many of the proposed developments are located in the south end, near 400 S. The extension of 400 W to connect with 400 S would provide an alternative north-south route to these developments, reducing the trips that must pass through the Town and through the residential communities. Inherently, the 400 S extension could become a vital link by providing a more direct, quicker route for commuters heading to the new developments.

AE does not recommend the extension of 300 S between 100 W and Broadway. The results for the capacity analysis indicate that the surrounding intersections continue to operate well even without the extension; therefore, AE does not recommend that the Town implement the 300 S extension. The extension of 300 S should be evaluated again in the future should the traffic patterns within the area change.

4 SCHOOL SAFETY

To improve the pedestrian safety at the study intersections within the school zone, regular communications between school zones officials, City officials, parents, law enforcement officials and school transportation personnel are required.

5 COST ESTIMATE

Table E-3 presents the cost estimate for the new road construction in the 2018 and 2028 horizons. These prices reflect 2008 costs.

Table E-3 Cost Estimate

Construction Item	2018 Horizon	2028 Horizon
Arterial Roadway	\$ 1,316,929.58	\$1,098,223.53
Collector Roadway	\$ 0.00	\$ 856,989.81
Local Roadway	\$ 6,331,514.97	\$ 865,287.15
Contingency	\$ 1,147,266.68	\$ 423,075.07
Engineering Cost	\$ 1,319,356.69	\$ 486,536.34
GST	\$ 505,753.40	\$ 186,505.60
Total	\$10,620,821.32	\$3,916,617.51



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1

Introduction

1.1 BACKGROUND

The Town of Raymond is located approximately 34 km south of Alberta's fourth largest city, Lethbridge, in the County of Warner. Over the past couple of years, the Town has experienced a large population growth, from 3200 residents in 2005 to 3363 residents in 2007. The Town's growth has identified the need to update the existing Municipal Development Plan (MDP). The MDP establishes a framework and direction for a Town's future land development and redevelopment decisions. The updated MDP will account for a future population horizon of approximately 15000. A Transportation Master Plan (TMP) is typically completed to complement the MDP by addressing the transportation needs of the proposed developments discussed in the MDP.

Associated Engineering (AE) was retained to develop the Transportation Master Plan (TMP) for the Town. The updated MDP was not available to complete the TMP study; therefore, the Town provided AE with an explicit list of the future developments anticipated within the existing and future Town boundaries. The TMP was limited to immediate and long term transportation issues indicated by the Town and does not represent a comprehensive analysis of transportation issues and future development directions.

1.2 STUDY OBJECTIVE

The main objective for the study was to develop a TMP which clearly defines the Town's transportation road network within the existing and future Town boundaries. The TMP will act as a coordination tool for the Town to ensure that new developments within the Town will not compromise the functionality of the road network.

As part of the study, AE will address the immediate and long term transportation issues indicated by the Town. These immediate and long term issues are listed below:

1.2.1 Immediate Concerns

- Definition of road network where new development is occurring within the existing Town boundary
- Signalization requirements at the intersections of Highway 52 (200 N) and 200 W, Highway 52 and Highway 845 (Broadway), Broadway and 100 N, Broadway and Church Avenue, and 100 N and 200 W
- Establish a unit cost estimate for construction of newly proposed roadways within the existing Town boundary
- Pedestrian safety at the school site located along Highway 52.

1.2.2 Long Term Concerns



- Definition of road network for future expansion of the Town boundary
- Future requirement for extending 400 W from Highway 52 to 400 S
- Future requirement for extending 300 S from 100 W to Broadway.

1.3 STUDY METHODOLOGY

The TMP was completed using the following methodology:

- Data collection and review
- Establish time horizons for completing the capacity analysis
- Develop the functional classification (road network plan) for the existing and future road networks
- Determine the study intersections for completing the capacity analysis
- Generate background, site and total traffic forecasts for the established time horizons
- Distribute and assign traffic forecasts to the study intersections on the existing/future road network for the established time horizons
- Analyze the capacity of the study intersections within the Town boundaries for the established time horizons
- Complete a traffic signal warrant for the intersection of Highway 52 and Broadway
- Develop a unit cost estimate for construction of new roadway
- Report documentation.

1.4 ANALYSIS HORIZONS

At the project initiation meeting, it was established that the afternoon (pm) peak hour traffic volumes would be used for completing the capacity analyses. The pm peak hour volumes represent the worst-case traffic scenario within the Town. The capacity analysis was completed for three different time horizons, which include:

- Existing (2008) horizon
- Future short-term (2018) horizon
- Future long-term (2028) horizon.

2

Existing Conditions

2.1 LAND USE

Figure 2-1 presents the existing land use zones for the Town of Raymond, obtained from the Oldman River Region Urban GIS project. The existing zoning does not account for future growth objectives and development potential. The major land use characteristics of Raymond are listed below.

- Predominantly residential land use
- Central business district, with commercial land use, located along Broadway between Highway 52 and Church/Park Avenue
- General industrial land use located in the north around the railway track and in the Town's northeast corner
- Public and institutional land use located throughout the Town, with a large area located south of Highway 52 between 200 W and Broadway
- Large park located in the west bounded to the north by 100 N, to the south by 100 S, to the west by 200 E and to the east by East Park Street E. Additional park space provided along the south edge of Town in the form of a pathway along the canal right-of-way.

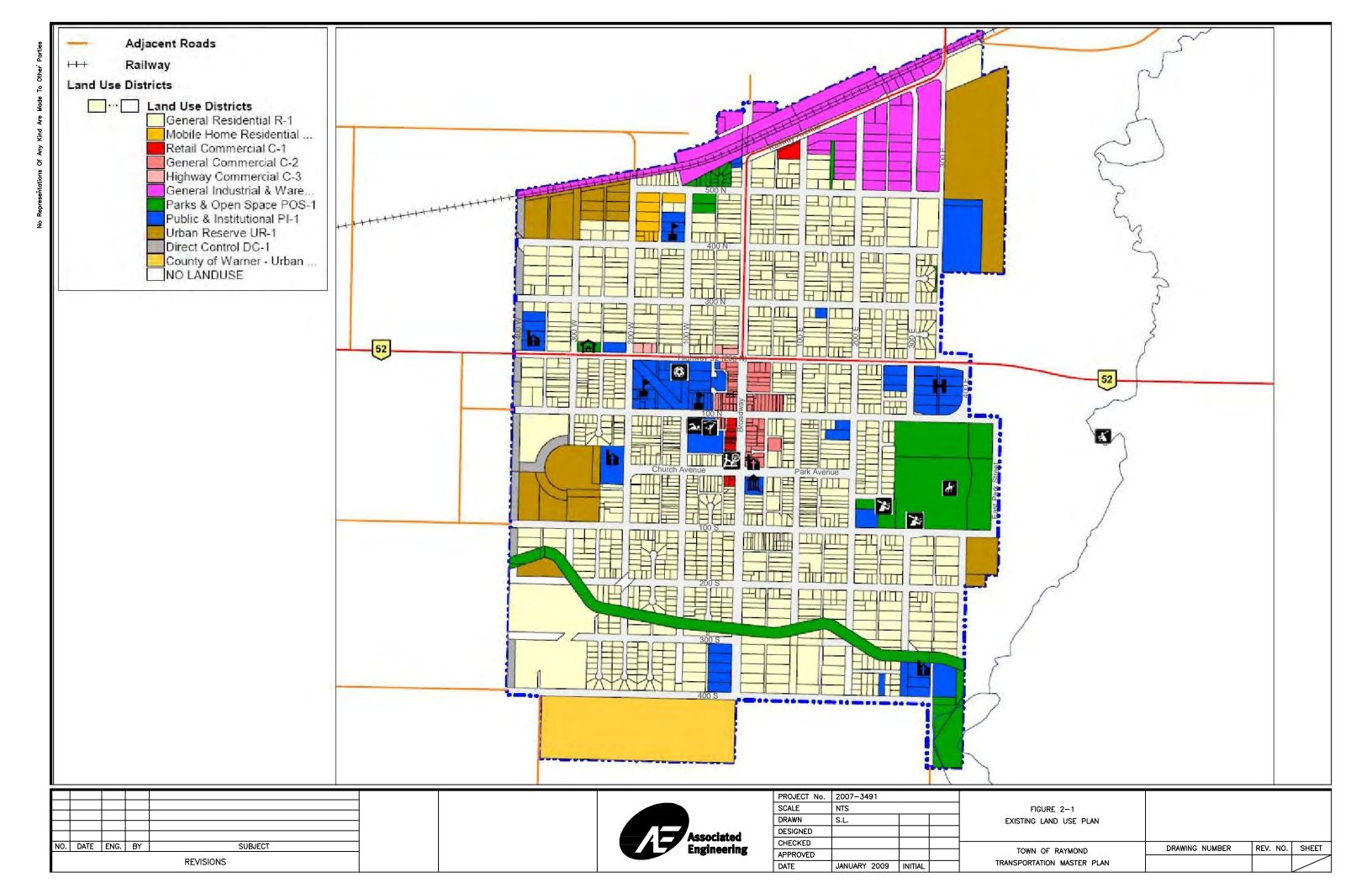
2.2 ROAD NETWORK

The Town of Raymond does not currently have a road network plan which indicates the classification of the Town's roadways; however, there are established street classification categories. Table 2-1 presents the Town's street classification categories obtained from the Municipal Standards.

Table 2-1
Raymond Municipal Standards – Street Classification

Street Classification
Local Residential
Minor Collector – Residential
Major Collector – Residential
Industrial
Lane





The Transportation Association of Canada (TAC) Urban Supplement to the Geometric Design Guide for Canadian Roads has six roadway classifications for urban streets. These road classifications, ranked in order from lowest to highest capacity, are described further below as per the TAC.

2.2.1 Public Lanes (Alleys)

Provide lane access typically at the rear of abutting properties. Direct access is normally allowed to all properties. Public lanes are not intended to carry any through traffic.

2.2.2 Local Streets

Provide land access and occur in most developed areas, giving rise to local residential streets, local commercial streets and local industrial streets.

2.2.3 Collector Streets

Provide both land access and mobility within residential, commercial and industrial areas.

2.2.4 Arterial Streets

Separated into major and minor arterials. Major arterial streets typically interconnect the major development areas in the urban setting including the central business district, large industrial centres, major residential communities, large shopping centres and other major activity centres. Minor arterials typically interconnect residential, shopping, employment and recreational activity areas at the community level.

2.2.5 Expressways

Carry large volumes of all types of vehicles at medium to high speeds, at a slightly higher level of service than major arterials. Some intersections with major streets are grade separated to provide free flow conditions.

2.2.6 Freeway

Carry large volumes of all types of vehicles at high speed with higher level of service than major arterial. Most intersections are grade separated to provide free-flow conditions.

To facilitate planning for future roadway expansion, AE deemed it necessary to update the Town's street classifications to more closely reflect the TAC guidelines. With consideration for the Town context, AE determined that the applicable road classifications within the Town of Raymond include public lanes, local streets, collector streets and arterial streets. The arterial road classification was introduced to reflect the important function of Highway 52 and Broadway (Highway 845) in connecting the Central Business District with other parts of the Town and in connecting the Town



with adjacent municipalities. The expressway and freeway road classifications were not included since the Town's traffic volumes would not warrant the provision of these facilities.

The characteristics of each road classification are detailed in Table 2-2 below.

Table 2-2
TAC Urban Road Classifications

	Locals	Collectors	Arterials
Traffic Service Function	Traffic movement secondary consideration	Traffic movement and land use access of equal importance	Traffic movement major/primary consideration
Land Service/Access	Land access primary function	Traffic movement and land use access of equal importance	Some/rigid access control
Traffic Volume (Vehicle per day)	<1000 (residential) <3000 (indust./comm.)	<8000 (residential) 1000 - 12000 (indust./comm.)	5000 - 20000 (minor) 10000 - 30000 (major)
Flow Characteristics	Interrupted flow	Interrupted flow	Uninterrupted flow except at signals and crosswalks
Design Speed (km/h)	30 - 50	30 - 50 50 - 80	
Average Running Speed (km/h, Offpeak)	20 - 40	30 - 70	40 - 60 (minor) 50 - 90 (major)
Vehicle Type	Passenger and all service vehicles (residential) All types (indust./comm.)	Passenger and all service vehicles (residential) All types (indust./comm.)	All types
Desirable Connections	Public lanes, locals, collectors	Locals, collectors, arterials	Collectors, arterials, expressways, freeways
Transit Service	Generally avoided	Permitted	Express and local buses permitted

	Locals	Collectors	Arterials
Accommodation of Cyclists	No restrictions or special facilities	No restrictions or special facilities	Lane widening or separate facilities desirable
Accommodations of Pedestrians	Sidewalks normally on one side or both sides	Sidewalks provided both sides	Sidewalks may be provided, separation from traffic lanes preferred
Parking	No restrictions or restrictions one side only	Few restrictions other than peak hour	Peak hour restrictions
Minimum Intersection Spacing (m)	60	60	200 (minor) 400 (major)
Right-of-way Width (m)	15 - 22	20 - 24	20 - 45

The posted speed limit for each road classification is typically set at or below the design speed.

AE reviewed the existing road network with primary consideration for function and connectivity. Figure 2-2 presents the road network plan with the road classification for the existing road network within Raymond. The intersections between the collector and arterial roads were identified in the figure and will be analyzed to assess the intersection capacity for completion of the Master Plan. The major roadways identified in the road network plan are listed below.

Arterial Roadways:

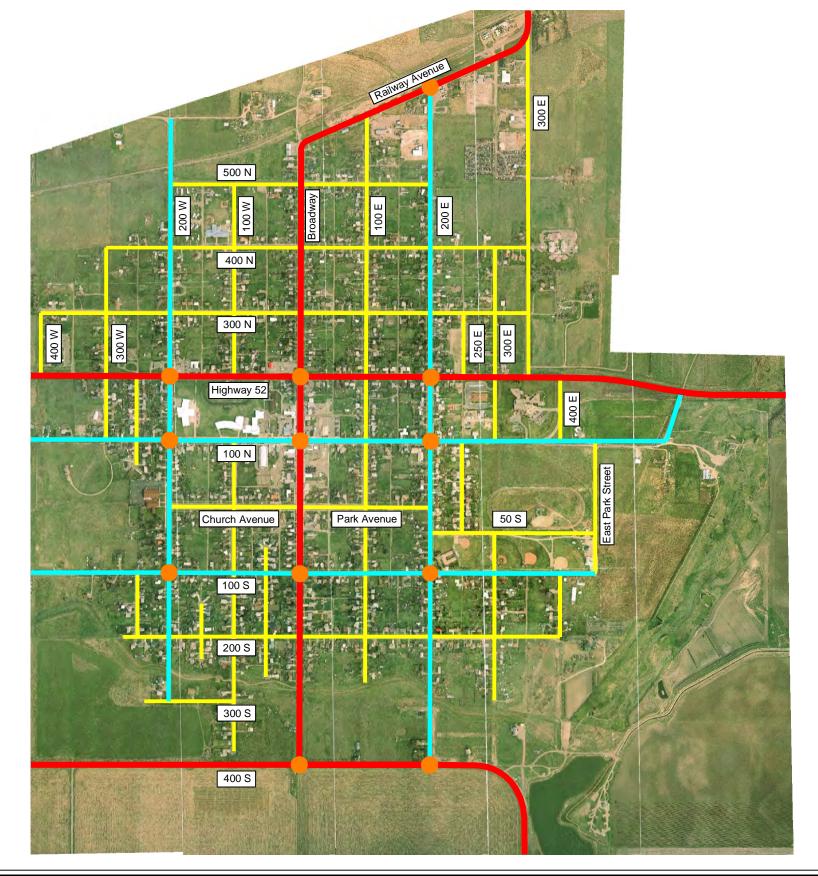
- Highway 52 (200 N)
- Broadway (Highway 845)
- 400 S.

Collector Roadways:

- 100 N
- 100 S
- 200 W
- 200 E.

The remaining roadways in the existing road network were classified as local roadways.





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FIGURE 2-2								
2008	ROAD	NETWORK	PLAN					

TOWN OF RAYMOND	DRAWING NUMBER	REV. NO.	SHEET
TRANSPORTATION MASTER PLAN			

Local

Proposed Arterial

Proposed Collector

Proposed Loca (

Study Intersection

LEGEND

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3

Future Conditions

3.1 LAND USE

Figure 3-1 presents the future land annexation planned by the Town of Raymond in the 2018 and 2028 horizons. The Town plans to annex two land parcels by 2018; one 52 acre parcel located south of 400 S at SE 8-6-60-4 and one 21 acre parcel located east of 400 E and north of Highway 52. An additional 580 acre parcel will be annexed east of the Town by 2028 at NW 9-6-20-4, NE 9-6-20-4, SW 9 6 20-4 and SE 9-6-20-4. In November 2008, the annexation application for these lands was submitted by the Town of Raymond to the Municipal Government Board.

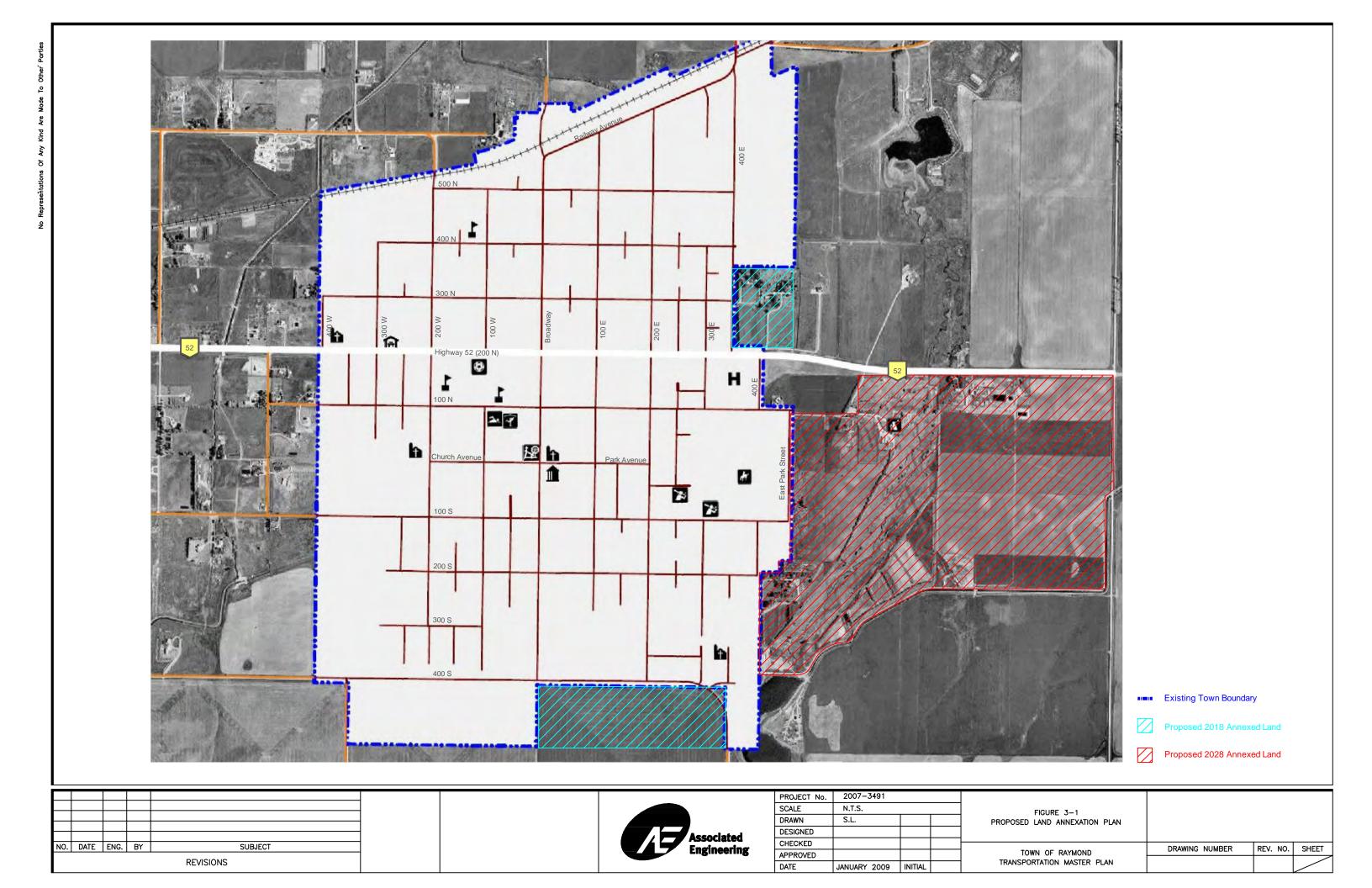
Figures 3-2 and 3-3 present the anticipated developments indicated by the Town for the 2018 and 2028 horizons respectively. These developments are discussed in detail below. It should be noted that the developments discussed in the following sections do not represent the actual development potential of the land area. Subsequently this could affect the road network recommendations presented in this report. As part of the Town's development application process, it is recommended that a traffic impact assessment be required for all future developments within the Town boundaries in order to determine the traffic impacts on the road network.

3.1.1 2018 Developments

Eight major developments are anticipated by the 2018 horizon. The developments have been numbered arbitrarily and discussed below.

- Development #1: 60-lot, single-family residential development located east of 400 W between 200 S and 300 S
- Development #2: 66-lot, single-family residential development located east of 400 W between 300 S and 400 S
- Development #3: 16-home, single-family residential development located south of 400 S and east of Range Road 205
- Development #4: 85-bed institutional facility for senior citizens located west of Broadway between 300 S and 400 S
- Development #5: 60-unit, single-family residential development located east of Broadway between 300 S and 400 S
- Development #6: 114-lot, single-family residential development located south of 400 S and west of Development #3
- Development #7: ball park and soccer field in the existing park space located south of 100
 S between 200 E and East Park Street
- **Development #8:** 47-lot, single-family residential development located east of 400 E and north of Highway 52.





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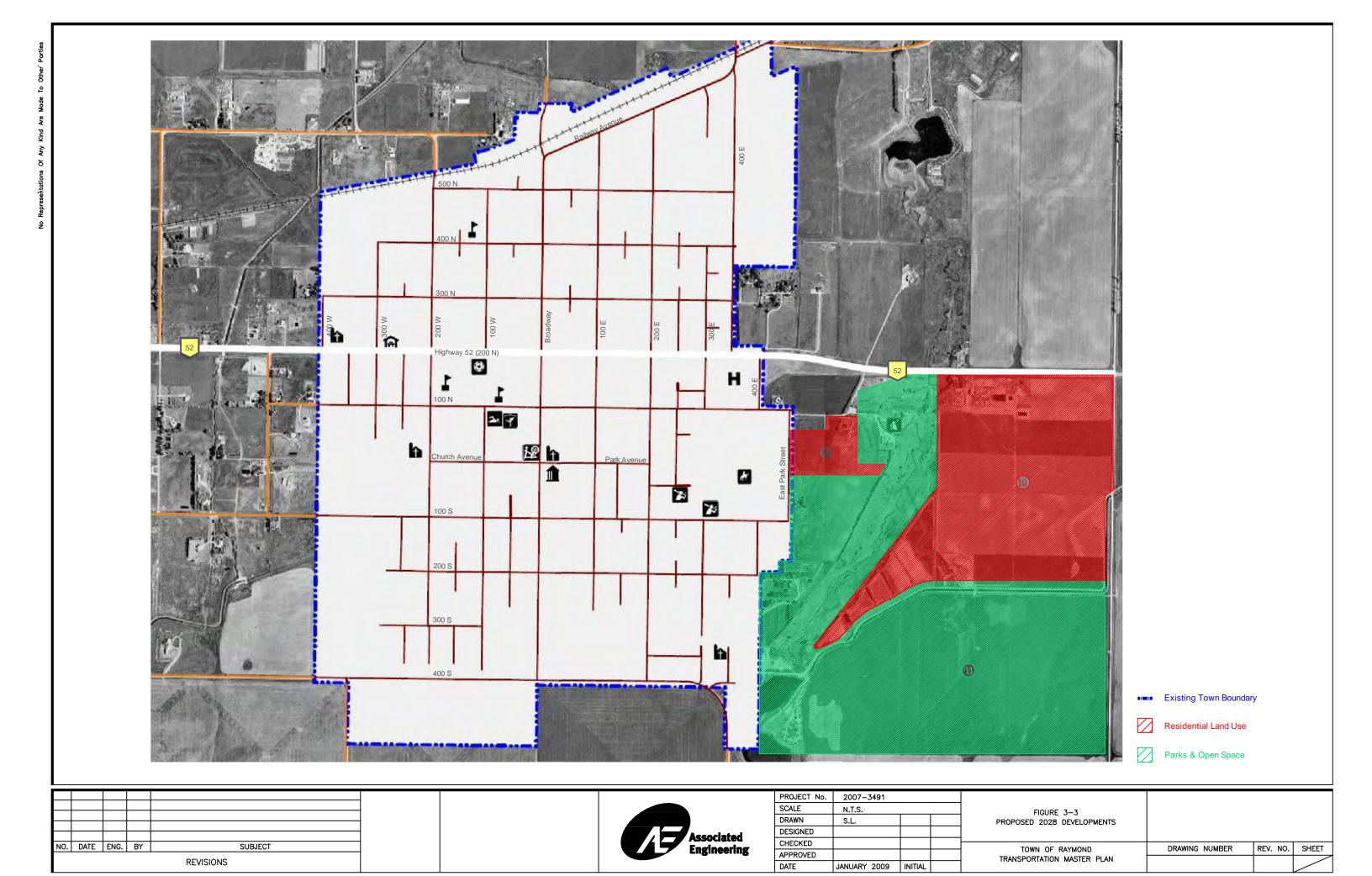
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TOWN OF RAYMOND
TRANSPORTATION MASTER PLAN



3.1.2 2028 Developments

Three additional developments are anticipated by the 2028 horizon, which include:

- Development #9: 51-lot, single family residential development located east of East Park Street between 100 S and Park Avenue
- Development #10: 265-lot, single family residential development located south of Highway 52 and west of Range Road 203
- Development #11: 100-acre golf course located south of Highway 52 between Development #9 and #10.

3.2 ROAD NETWORK

To accommodate the anticipated developments discussed in Section 3.1, additional links to the existing road network were assumed. The following links were assumed for the 2018 and 2028 time horizons.

3.2.1 2018 Horizon

- Extension of 400 W from Highway 52 to 400 S
- Extension of 200 and 300 S to connect with the proposed 400 W
- Construction of local roadways into the proposed Development #3
- Extension of Broadway, 100 E, 200 E, and 300 E, south of 400 S into the proposed Development #6
- Construction of local roadways into the proposed Development #8.

3.2.2 2028 Horizon

- Two accesses onto East Park Street from the proposed Development #9
- One access onto Highway 52 from Development #10, to be located approximately midway between 400 E and Range Road 203
- One access onto Highway 52 from Development #11, to be located west of the access to Development #10.

The future 2018 and 2028 road networks were reviewed with primary consideration for function and connectivity and classified according to the road classifications established in Section 2.2. Similar to the existing road network, the intersections between the collector and arterial roads were identified. These intersections will be assessed to determine the intersection capacity during the future time horizons.

Figures 3-4 and 3-5 present the future road network plan and classification for the 2018 and 2028 time horizons. These road networks were used for completing the capacity analysis in the 2018 and 2028 time horizons. The major roadways remain the same between the two future horizons;



however, in 2028 two additional roadways are added. The following summarizes the major roadways in the two horizons.

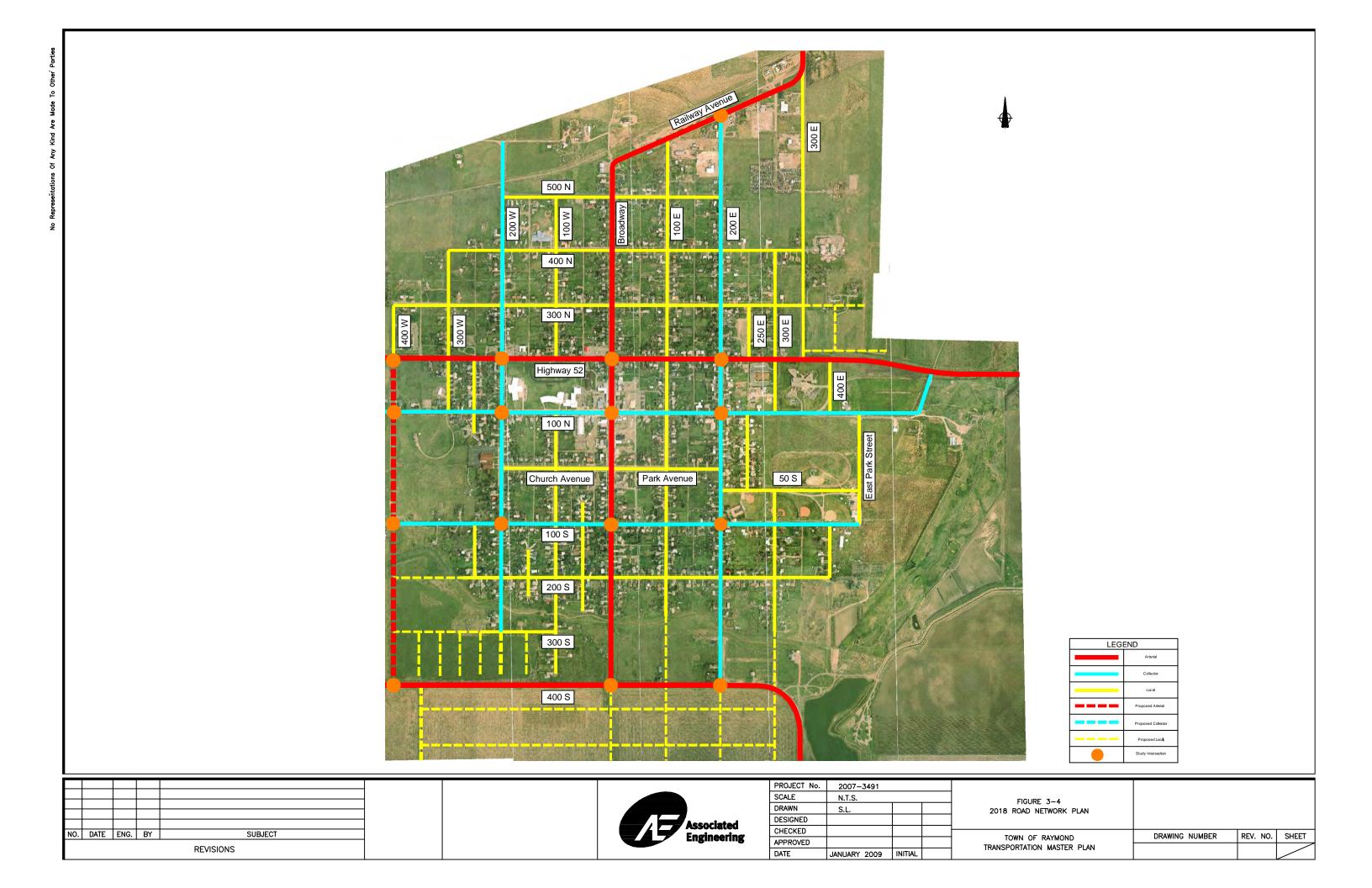
Arterial Roadways:

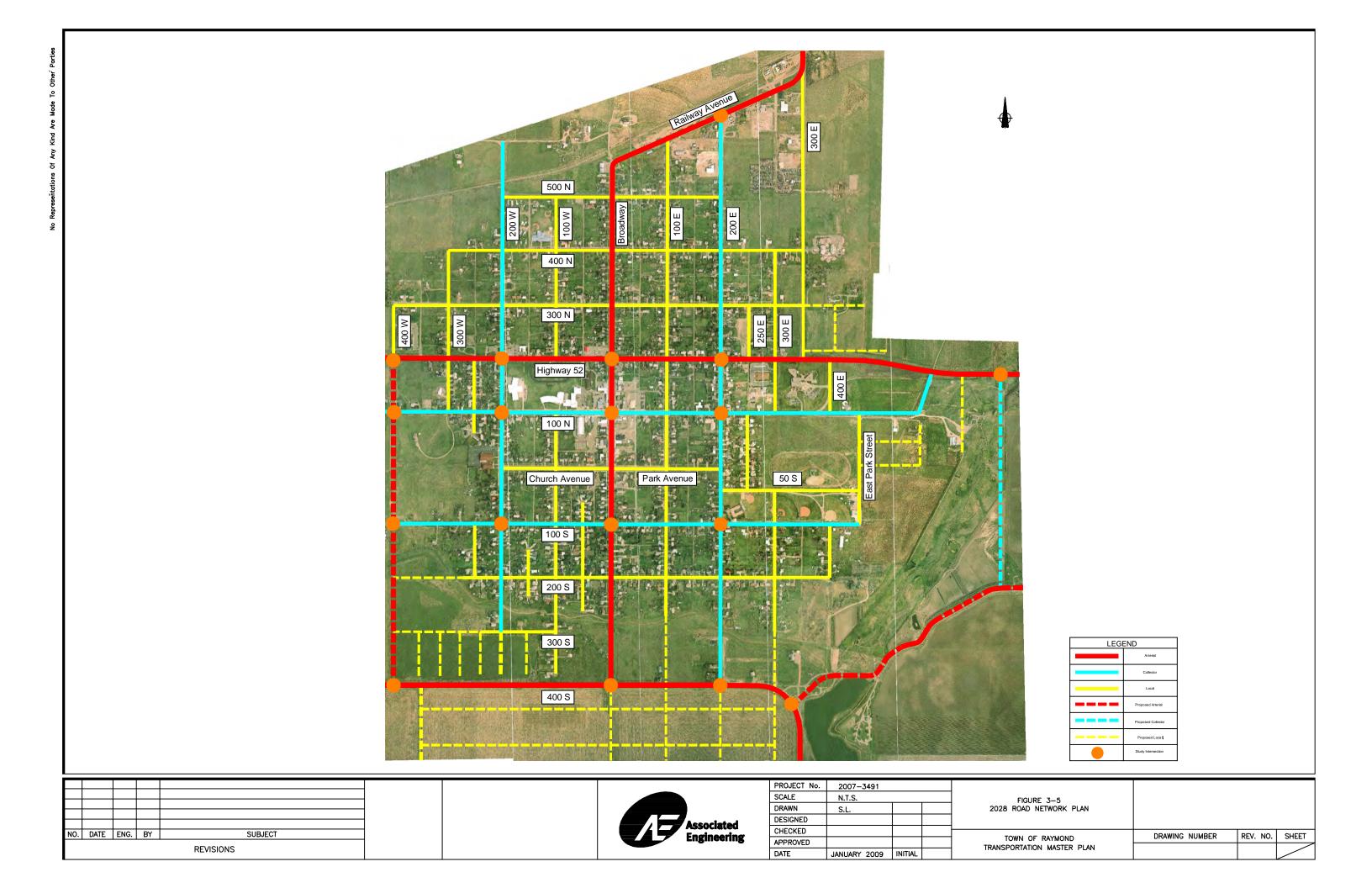
- Highway 52 (200 N)
- Broadway (Highway 845)
- 400 S
- 400 W
- South access to Development #10 via extension of 400 S.

Collector Roadways:

- 100 N
- 100 S
- 200 W
- 200 E
- Access to Development #10 off Highway 52.

The remaining roadways in the existing road network were classified as local roadways.





4

Background Traffic

4.1 2008 HORIZON

Traffic data for the Town of Raymond was obtained from two sources, Alberta Transportation and traffic counts conducted by the Town. Both sets of traffic data have been included in Appendix A. The information obtained from Alberta Transportation included:

- 2006 turning movement volumes for Highway 52 and Highway 5
- 2006 turning movement volumes for Highway 52 and Highway 844
- 2006 turning movement volumes for Highway 52 and Highway 845
- 2006 turning movement volumes for Highway 52 and Highway 846
- 2006 turning movement volumes for Highway 845 and Local Road 32
- Traffic volume history (1997 2006) for Highway 52.

Traffic counts were conducted by the Town at several intersections along Highway 52, 100 N and Church Avenue in April 2008. The counts were completed to obtain traffic information near the school site for the pedestrian safety study. Traffic counts were completed for the following intersections:

- Highway 52 and 200 W
- Highway 52 and 100 W
- 100 N and 200 W
- 100 N and 100 W
- 100 N and Broadway
- Church Avenue and 200 W
- Church Avenue and 100 W
- Church Avenue and Broadway.

Traffic count data was compiled onto a spreadsheet and the highest hourly volumes in the afternoon was used to represent the afternoon (pm) peak hour volumes.

2008 turning movement volumes at the study intersections were obtained in the following manner:

- Compile 2006 AT turning movement volumes for the applicable study intersections
- Determine and apply an annual growth rate to the applicable study intersections to grow traffic volumes to the 2008 horizon
- Include traffic data obtained from the traffic counts for the applicable study intersections
- At intersections where traffic information was not available from either source, existing travel patterns at the other intersections were used to estimate the turning movements.



The traffic volume history along Highway 52 was analyzed to determine the annual growth rate and applied to the 2006 turning movement counts obtained from Alberta Transportation. Table 4-1 presents the growth rate calculations performed on the data provided for the intersection.

Table 4-1
Annual Growth Rate Calculation along Highway 52

Year/ AADT	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Average
East of Hwy 5	1830	1750	1640	1870	1570	1540	1560	1530	1490	1600	
Growth Rate		-4.37%	-6.29%	14.02%	-16.04%	-1.91%	1.30%	-1.92%	-2.61%	7.38%	-1.2%
West of Hwy 844	2010	1930	1440	1650	1390	1350	1390	1660	1600	1710	
Growth Rate		-3.98%	-25.39%	14.58%	-15.76%	-2.88%	2.96%	19.42%	-3.61%	6.88%	-0.9%
East of Hwy 844	2000	1920	1490	1710	1440	1400	1440	1690	1630	1740	
Growth Rate		-4.00%	-22.40%	14.77%	-15.79%	-2.78%	2.86%	17.36%	-3.55%	6.75%	-0.8%
West of Hwy 845		2290	2160	2470	2080	2590	2670	2670	2560	2740	
Growth Rate			-5.68%	14.35%	-15.79%	24.52%	3.09%	0.00%	-4.12%	7.03%	2.9%
East of Hwy 845		1660	1550	1760	1490	1560	1600	1600	1540	1660	
Growth Rate			-6.63%	13.55%	-15.34%	4.70%	2.56%	0.00%	-3.75%	7.79%	0.4%
West of Hwy 846	650	650	660	700	650	630	640	640	640	680	
Growth Rate		0.00%	1.54%	6.06%	-7.14%	-3.08%	1.59%	0.00%	0.00%	6.25%	0.6%

A negative growth rate was observed west of the Town of Raymond and a positive growth rate was observed east of the Town. To capture the worst-case scenario, the growth rates outside the Town were not considered and the average growth rate west and east of Highway 845 was used. This resulted in a rate of 1.6%. The 1.6% was applied to the turning movement counts obtained from Alberta Transportation.

Figure 4-1 presents the traffic volumes for the 2008 pm peak hour derived using the methodology detailed above.

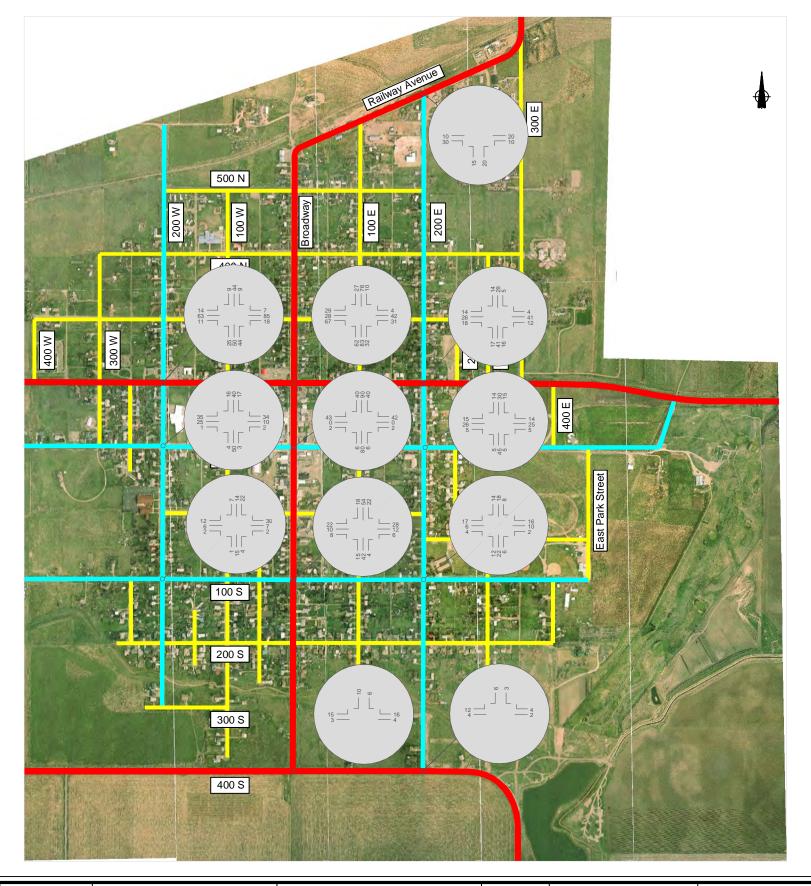
4.2 2018 HORIZON

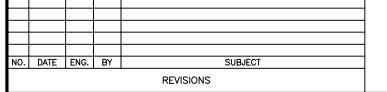
To obtain the 2018 background traffic volumes, the 2008 traffic presented in Figure 4-1 was grown using the 1.6% growth rate. The growth rate was applied over a 10 year period, assuming non-compounded growth. Figure 4-2 presents the background traffic volumes for the 2018 pm peak hour at the study intersections indicated in Figure 3-4.

4.3 2028 HORIZON

To obtain the 2028 background traffic volumes, the 2018 background traffic volume was combined with the anticipated traffic volumes generated by the 2018 developments and grown using the 1.6% growth rate. The traffic volumes generated by the future developments are discussed in detail in Section 5. Similar to the 2018 horizon, the 1.6% growth rate was applied over a 10 year period assuming non-compounded growth. Figure 4-3 presents the background traffic volumes for the 2028 pm peak hour at the study intersections indicated in Figure 3-5.









PROJECT No.	2007-3491		
SCALE	N.T.S.		
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APPROVED			
DATE	JANUARY 2009	INITIAL	

FIGURE 4-1
EXISTING TRAFFIC VOLUMES
2008 PM PEAK HOUR

TOWN OF RAYMOND	DRAWING NUMBER	REV. NO.	SHEET
TRANSPORTATION MASTER PLAN			

This Drawing Is For The Use Of The Client And Project Indicated No Representations Of Any Kind Are Made To Other Parties

This Drawing Is For The Use Of The Client And Project Indicated No Representations Of Any Kind Are Made To Other Parties

5

Development Traffic

A three-step process was undertaken to determine the traffic volumes generated by the future developments proposed in the 2018 and 2028 horizons. The steps included:

- Trip Generation: Estimate of the number of trips generated to/from the development sites during the pm peak hour.
- Trip Distribution: Estimate of the origin of trips to the development sites and destinations of the trips from the development sites.
- Trip Assignment: Selecting the routes used by trips to/from the development sites and assignment of the traffic volumes to the study intersections identified in Figure 3-4 and 3-5.

5.1 TRIP GENERATION

The ITE Trip Generation (7th Edition) handbook was referenced to determine the appropriate trip rates to apply in order to estimate the trips generated to/from the proposed developments. Tables 5-1 and 5-2 summarize the trip generation procedure undertaken to estimate the site trips in the 2018 and 2028 time horizon respectively.

5.2 TRIP DISTRIBUTION

Assumptions were made to establish the origin for trips ending at the proposed developments and the destination for trips starting at the proposed developments. Discussions with the Town served as the basis for the trip distribution assumptions. The following trip distribution assumptions were used in both the 2018 and 2028 horizons.

- Trips to residential developments (except for the institutional facility): origin for trips to the
 development sites from outside of Town, consisting of commuter trips returning home from
 Lethbridge in the afternoon peak. Destination for trips from the development sites assumed to be
 throughout Raymond.
- Trips to the institutional facility, ball diamond/soccer field and golf course: both the origin and destination was assumed to be throughout Raymond.

5.3 TRIP ASSIGNMENT

The development trips were assigned onto the 2018 and 2028 road network with consideration for the logical routes, on the basis of convenience and travel time, which would be taken by commuters between the origin and destinations. To capture worst-case traffic scenarios at the study intersections, the development trips were primarily assigned to the major roadways indicated on Figures 3-4 and 3-5.



Figures 5-1 and 5-2 present the traffic volumes generated by the development sites for the 2018 and 2028 time horizons.

Table 5-1
Trip Generation for Proposed Developments – 2018 Horizon

<u> </u>			Independent	Variable				Trips	
Development #	Description	Land Use Description	Unit	# of Units	Assumption	ITE % Entering/ % Exiting	Total	Enter	Exit
1	60 lot residential (400 E and 200 S)	Single-Family Detached Housing (210)	Dwelling Unit	60	One dwelling unit/lot	63/37	68	43	25
2	66 lot residential (400 E and 300 S)	Single-Family Detached Housing (210)	Dwelling Unit	66	One dwelling unit/lot	63/37	74	47	27
3	16 Houses on 15 Acres (S of 400 S)	Single-Family Detached Housing (210)	Dwelling Unit	16	-	63/37	21	13	8
4	85 bed institutional facility (Broadway)	Assisted Living (254)	Occupied Beds	85	Assume all bed occupied	36/64	36	13	23
5	60 unit residential (Between Broadway and 100 E)	Single-Family Detached Housing (210)	Dwelling Unit	60	-	63/37	68	43	25
6	Residential Subdivision (114 lots)	Single-Family Detached Housing (210)	Dwelling Unit	114	One dwelling unit/lot	63/37	121	76	45
7	Ball Diamond/Soccer Field	City Park	Acres	11.1	Average rate used	50/50	15	8	8
8	Residential – 47 lots (400 E)	Single-Family Detached Housing (210)	Dwelling Unit	47	-	63/37	55	35	20

Table 5-2
Trip Generation for Proposed Developments - 2028 Horizon

ıt #			Indepen Variat				Trips		
Development	Description	Land Use Description	Unit	# of Units	Assumption	ITE % Entering/ % Exiting	Total	Enter	Exit
9	Residential subdivision - Residential	Single-Family Detached Housing (210)	Dwelling Unit	51	One dwelling unit/lot	63/37	59	37	22
10	Residential subdivision - Residential	Single-Family Detached Housing (210)	Dwelling Unit	265	One dwelling unit/lot	63/37	258	163	95
11	Golf course	Golf Course (430)	Acres	100	-	34/66	108	37	71



REVISIONS

SCALE	N.T.S.		
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DATE	JANUARY 2009	INITIAL	

REV. NO. SHEET TRANSPORTATION MASTER PLAN

FINAL REPORT



Total Traffic

The total traffic was generated by combining the background traffic volumes with the site generated traffic volumes from the developments for common time horizons.

Figures 6-1 and 6-2 present the pm total traffic volumes for the 2018 and 2028 time horizons respectively.



7

Traffic Analysis

The Synchro 7.0 traffic analysis program based on the Highway Capacity Manual (HCM) was used to complete the capacity analysis of the study intersections during the pm peak hour. Synchro 7.0 applies the methodology established by the HCM to output a level of service for a study intersection, given the lane configuration, vehicular volumes, heavy vehicle percentages, etc. For the capacity analysis the following assumptions were made:

- Posted speed limit: 50 km/h throughout Town, 30 km/h near school sites
- Heavy vehicle percentage: heavy vehicle percentage were derived from Alberta Transportation turning movements and from Town of Raymond traffic counts where applicable, otherwise 2% was assumed
- Traffic control: existing traffic control provided from Town in Appendix B
- Lane width: 4.8 m assumed (maximum allowed by Synchro)
- Default values from Synchro were used for the remaining parameters.

The operational capability of the study intersections were assessed using capacity, which is a measure of the sustainable flow rate at which vehicles can be expected to transverse a point. The critical measures used in the assessment were:

- Volume to capacity (v/c) ratio provides the amount of congestion for each turning movement and for each lane group for signalized intersections. A v/c value over 1 indicates that the movement or lane group is over capacity.
- Control delay is the amount of delay a vehicle experiences in seconds.
- Level of service (LOS) is a qualitative measure describing operational conditions within a traffic stream and is based on service measures such as delay and congestion.

For the purpose of the traffic assessment a minimum overall intersection LOS C and a minimum LOS D for each movement at an intersection was required. The level of service definitions for an unsignalized intersection is included in Appendix C.

The detailed results of the Synchro capacity analysis for the Transportation Master Plan is provided in Appendix D and discussed below.

7.1 EXISTING 2008 TRAFFIC

The study intersections were assessed under the existing (2008) horizon to determine how the intersections currently operate. The results of the 2008 analysis will serve as a benchmark for future horizons and assist in pinpointing the timeframe for when intersection improvements are required.



All the 2008 study intersections operate well above the minimum LOS threshold required. Every intersection operates at an overall intersection LOS A and all movements across the entire road network operate at LOS B or higher. The results of the individual intersections are detailed below.

7.1.1 Railway Avenue and 200 E

Railway Avenue and 200 E operates well at an overall intersection LOS A with low delays (max v/c ratio = 0.04, delays = 3.6 seconds). All movements at the intersection operate at LOS A with a v/c ratio of 0.04 or less and delays of 8.8 seconds or less.

7.1.2 Highway 52 and 200 W

Highway 52 and 200 W operates well at an overall intersection LOS A with low delays (max v/c ratio = 0.18, delays = 6.0 seconds). Movements on the eastbound and westbound movements operate under free-flow conditions at LOS A and with low delays (v/c ratios = 0.01, delays = 1.3 seconds or less). The northbound and southbound movements are stop controlled and operate at LOS B with longer delays than the eastbound and westbound movements (v/c ratios = 0.18 or less, delays = 11.2 seconds or less).

7.1.3 Highway 52 and Broadway

Highway 52 and Broadway operates well at an overall intersection LOS A with low delays (max v/c ratio = 0.20, delays = 6.3 seconds). Movements on the eastbound and westbound movements are stop controlled and operate at LOS B with low delays (v/c ratios = 0.20 or less, delays = 13.7 seconds or less). Movements on the northbound and southbound approaches are free-flow and operate at LOS A with low delays (v/c ratios = 0.05 or less, delays = 2.9 seconds or less).

7.1.4 Highway 52 and 200 E

Highway 52 and 200 E operates well at an overall intersection LOS A and with delays (max v/c ratio = 0.10, delays = 6.0 seconds). The eastbound, westbound and southbound movements all operate with LOS A while the northbound movements operate at LOS B. All movements operate with v/c ratios of 0.10 or less and delays of 10.1 seconds or less.

7.1.5 100 N and 200 W

100 N and 200 W operates well at an overall intersection LOS A with low delays (max v/c ratio = 0.09, delays = 7.6 seconds). All movements operate at LOS A and with low delays (v/c ratios = 0.09 or less, delays = 7.7 seconds or less).

7.1.6 100 N and Broadway

100 N and Broadway operates well at an overall intersection LOS A with low delays (max v/c ratio = 0.09, delays = 3.7 seconds). The westbound, northbound and southbound movements operate at

LOS A while the eastbound movements operate at LOS B. All movements operate with a v/c ratio of 0.09 or less and delays of 12.0 seconds or less.

7.1.7 100 N and 200 E

100 N and 200 E operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.07, delays = 7.4 seconds). All movements at the intersection operate at LOS A and with a v/c ratio of 0.07 or less and delays of 7.5 seconds or less.

7.1.8 100 S and 200 W

100 S and 200 W operates well at an overall intersection LOS A with low delays (max v/c ratio = 0.05, delay = 7.1 seconds). All movements at the intersection operate at LOS A with low delays (v/c ratios = 0.05 or less, delays = 7.3 seconds or less).

7.1.9 100 S and Broadway

100 S and Broadway operates well at an overall intersection LOS A with low delays (max v/c ratio = 0.06, delays = 4.7 seconds). Movements on the westbound, northbound and southbound approaches operate at LOS A with v/c ratios of 0.06 or less and delays of 9.5 seconds or less. Movements on the eastbound approach operate at LOS B with a v/c ratio of 0.06 and delays of 10.3 seconds.

7.1.10 100 S and 200 E

100 S and 200 E operates well at an overall intersection LOS A with low delays (max v/c ratio = 0.05, delays = 7.2 seconds). All movements at the intersection operate at LOS A and with v/c ratios of 0.05 or less and delays of 7.3 seconds or less.

7.1.11 400 S and Broadway

400 S and Broadway operates at with an overall intersection LOS A with low delays (max v/c ratio = 0.02, delays = 4.6 seconds). All movements at the intersection operate at LOS A with extremely low delays (v/c ratios = 0.02 or less, delays = 8.6 seconds or less).

7.1.12 400 S and 200 E

400 S and 200 E operates well at an overall intersection LOS A with low delays (max v/c ratio = 0.01, delays = 5.3 seconds). All movements at the intersection operate at LOS A with extremely low delays (v/c ratios = 0.01 or less, delays = 8.5 seconds or less).

Table 7-1 summarizes the Synchro capacity results for the existing 2008 traffic volumes, during the pm peak hour. The table only captures the overall intersection results; results for the individual intersection movements can be found in Appendix D.



Table 7-1
Existing 2008 Traffic Volumes – PM Peak Hour

Intersection	LOS	Max V/C Ratio	Delay (s)
Railway Ave & 200 E	А	0.04	3.6
Highway 52 & 400 W		n/a	
Highway 52 & 200 W	А	0.18	6.0
Highway 52 & Broadway	А	0.20	6.3
Highway 52 & 200 E	А	0.10	6.0
Highway 52 & Development #10 Access		n/a	
100 N & 400 W		n/a	
100 N & 200 W	А	0.09	7.6
100 N & Broadway	А	0.09	3.7
100 N & 200 E	А	0.07	7.4
100 S & 400 W		n/a	
100 S & 200 W	А	0.05	7.1
100 S & Broadway	А	0.06	4.7
100 S & 200 E	А	0.05	7.2
400 S & 400 W		n/a	
400 S & Broadway	А	0.02	4.6
400 S & 200 E	А	0.01	5.3
400 S & Development #10 Access		n/a	

7.2 2018 BACKGROUND AND DEVELOPMENT TRAFFIC

An assessment of the study intersections with the 2018 background and development traffic volumes was completed to evaluate how the intersections would operate under the 2018 time horizon.

Even with additional traffic on the 2018 road network, all the study intersections operate well above the minimum LOS required with an overall intersection LOS C and all movements across the 2018 road network operate at LOS D or higher. Two intersections operate with movements at LOS C; this includes Highway 52 at Broadway and 100 N at Broadway, which are both located in the central business district. The results of the individual intersections are detailed below.

7.2.1 Railway Avenue and 200 E

Railway Avenue and 200 E is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.11, delays = 4.1 seconds). All movements at the intersection is expected to operate at LOS A and with v/c ratios of 0.11 or less and delays of 9.3 seconds or less.

7.2.2 Highway 52 and 400 W

In 2018, Highway 52 and 400 W is upgraded from a T-intersection to a four-legged intersection. Highway 52 and 400 W is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.03, delays = 1.5 seconds). The northbound and southbound movements are expected to operate at LOS B with v/c ratios of 0.03 and delays of 10.7 seconds or less. The eastbound and westbound movements are expected to operate at LOS A with v/c ratios of 0.01 and delays of 0.7 seconds or less.

7.2.3 Highway 52 and 200 W

Highway 52 and 200 W is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.36, delays = 7.0 seconds). The movement LOS remain unchanged from the 2008 horizon despite the additional traffic in the 2018 horizon. However, the v/c ratios and delays experience a slight increase and are at 0.36 or less and 14.9 seconds or less, respectively.

7.2.4 Highway 52 and Broadway

Highway 52 and Broadway is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.41, delays = 8.7 seconds). The westbound movement is expected to experiences a decrease in LOS from LOS B in the 2008 horizon to LOS C in the 2018 horizon. For the remaining intersection movements, the movement LOS remain unchanged from the analysis completed for the 2008 horizon; however the v/c ratio and delays are expected to increase slightly to 0.41 or less and 14.7 or less, respectively.



7.2.5 Highway 52 and 200 E

Highway 52 and 200 E is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.23, delays = 7.0 seconds). The southbound movement is expected to experience a slight decrease in LOS from LOS A in 2008 to LOS B in 2018. The v/c ratio is 0.09 and the delay is 10.7 seconds for this approach. The eastbound, westbound and northbound movements continue to operate at the same LOS as in 2008, but with slight increases in the v/c ratios and delays.

7.2.6 100 N and 400 W

100 N and 400 W is a new intersection in the 2018 horizon. 100 N and 400 W is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.02, delays = 1.9 seconds). All movements at the intersection are expected to operate at LOS A and with v/c ratios of 0.02 or less and delays of 8.6 seconds or less.

7.2.7 100 N and 200 W

100 N and 200 W is expected to operate well at an overall intersection LOS A and low delays (max v/c ratio = 0.15, delays = 8.0 seconds). All movement LOS remain unchanged from the 2008 horizon. The intersection movements are expected to experience slight increase in the v/c ratio and delays.

7.2.8 100 N and Broadway

100 N and Broadway is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.16, delays = 3.6 seconds). The eastbound movement is expected to experience a decrease in LOS from LOS B in the 2008 horizon to LOS C in the 2018 horizon. The remaining movements continue to operate at the same LOS with only slight increases in the v/c ratios and delays.

7.2.9 100 N and 200 E

100 N and 200 E is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.16, delays = 7.9 seconds). All movements are expected to operate at LOS A with very slight increase in the v/c ratios and delays from the 2008 horizon.

7.2.10 100 S and 400 W

100 S and 400 W is a new intersection in the 2018 horizon. 100 S and 400 W is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.07, delays = 6.0 seconds). All movements at the intersection are expected to operate at LOS A and with v/c ratios of 0.07 or less and delays of 9.5 seconds or less.

7.2.11 100 S and 200 W

100 S and 200 W is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.08, delay = 7.4 seconds). All movements at the intersection are expected to operate at LOS A and with low delays (v/c ratios = 0.08 or less, delays = 7.5 seconds or less).

7.2.12 100 S and Broadway

100 S and Broadway is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.10, delays = 3.7 seconds). The westbound movement is expected to experience a slight decrease in LOS from LOS A in the 2008 horizon to LOS B in the 2018 horizon. The LOS for other movements are expected to remain unchanged despite slight increase in the v/c ratio and delays.

7.2.13 100 S and 200 E

100 S and 200 E is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.13, delays = 7.5 seconds). All movements at the intersection are expected to operate at LOS A and with v/c ratios of 0.13 or less and delays of 7.8 seconds or less.

7.2.14 400 S and 400 W

400 S and 400 W is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.02, delays = 1.8 seconds). All movements at the intersection are expected to operate at LOS A and with v/c ratios of 0.02 or less and delays 2.0 seconds or less.

7.2.15 100 S and Broadway

400 S and Broadway is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.08, delays = 4.4 seconds). All movements at the intersection are expected to operate at LOS A with low delays (v/c ratios = 0.08 or less, delays = 9.9 seconds or less).

7.2.16 400 S and 200 E

400 S and 200 E is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.02, delays = 6.0 seconds). All movements at the intersection are expected to operate at LOS A and with v/c ratios of 0.02 or less and delays of 8.7 seconds or less.

Table 7-2 summarizes the Synchro capacity results for the 2018 background and development traffic volumes, during the pm peak hour. The table only captures the overall intersection results; results for the individual intersection movements can be found in Appendix D.



Table 7-2
2018 Background and Development Traffic Volumes – PM Peak Hour

	Max V/C		
Intersection	LOS	Ratio	Delay (s)
Railway Avenue & 200 E	А	0.11	4.1
Highway 52 & 400 W	А	0.03	1.5
Highway 52 & 400 W	А	0.36	7.0
Highway 52 & Broadway	А	0.41	8.7
Highway 52 & 200 E	А	0.23	7.0
Highway 52 & Development #10 Access		n/a	
100 N & 400 W	А	0.02	1.9
100 N & 200 W	А	0.15	8.0
100 N & Broadway	А	0.16	3.6
100 N & 200 E	А	0.16	7.9
100 S & 400 W	А	0.07	6.0
100 S & 200 W	А	0.08	7.4
100 S & Broadway	А	0.10	3.7
100 S & 200 E	А	0.13	7.5
400 S & 400 W	А	0.02	1.8
400 S & Broadway	А	0.08	4.4
400 S & 200 E	А	0.02	6.0
400 S & Development #10 Access		n/a	

7.3 2028 BACKGROUND AND DEVELOPMENT TRAFFIC

Similar to the 2018 horizon, an assessment of the study intersections with the background and development traffic volumes was completed to evaluate how the intersections would operate under the 2028 horizon.

With the exception of Highway 52 and Broadway, all the study intersections are expected to operate above the minimum LOS required despite the additional traffic. Highway 52 and Broadway is expected to operate at an overall intersection LOS D. This exceeds the minimum LOS threshold and indicates that improvements are required at the intersection.

Most intersection movements are expected to operate at LOS D or higher, except at Highway 52 and 200 W and Highway 52 and Broadway. Movements at these intersection are expected to experience LOS E and LOS F respectively.

7.3.1 Railway Avenue and 200 E

Railway Avenue and 200 E is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.20, delays = 4.5 seconds). The LOS for the northbound movements is expected to decrease from LOS A in the 2018 horizon to LOS B in the 2028 horizon. Movements on the eastbound and westbound approaches continue to operate at LOS A with v/c ratios of 0.11 or less and delays of 2.2 seconds or less.

7.3.2 Highway 52 and 400 W

Highway 52 and 400 W is expected to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.05, delays = 1.4 seconds). The movement LOS remain unchanged from the 2018 analysis; however the v/c ratio and delays do increase slightly.

7.3.3 Highway 52 and 400 W

Highway 52 and 200 W is expected to operate at an overall intersection LOS A with low delays (max v/c ratio = 0.70, delays = 13.0 seconds). In 2028, the northbound movement is expected to deteriorate to LOS E with a v/c ratio of 0.72 and delay of 35.0 seconds, and the southbound movement is expected to deteriorate to LOS C with a v/c ratio of 0.37 and delays of 23.7 seconds. The poor LOS on the northbound movement can be linked to the high right-turn proportion and the delay experienced behind stopped vehicles waiting for gaps to execute a left-turn or through movement. The movement LOS remain unchanged for the remaining movements aside from slight increase in the v/c ratio and delays.

The provision of a separate right-turn lane for the northbound approach would reduce the delay experienced by the northbound movements.



7.3.4 Highway 52 and Broadway

In the 2028 horizon Highway 52 and Broadway is expected to operate at an overall intersection LOS D with a maximum v/c ratio of 1.37 and delays of 81.0 seconds. The intersection LOS is expected to exceed the minimum LOS required and the v/c ratio. The higher v/c ratio indicates that the intersection is expected to operate above capacity. The poor overall intersection LOS can be attributed to the eastbound and westbound movements. These movements are expected to operate at LOS F with v/c ratios exceeding 1.00 and delays as high as 252.2 seconds. The northbound and southbound movements continue to operate at LOS A, with v/c ratios of 0.07 or less and delays of 2.5 seconds or less.

As mentioned in Section 7.4, changing the traffic control at this intersection to a four-way stop control would improve the LOS for the eastbound and westbound approaches. A four way stop control would help to balance out the delay across all intersection approaches and improve the overall operation of the entire intersection. The results of the individual intersections are detailed below.

7.3.5 Highway 52 and 200 E

Highway 52 and 200 E is expected to operate at an overall intersection LOS A with low delays (max v/c ratio = 0.52, delays = 8.5 seconds). The northbound and southbound movements are expected to experience a slight decrease in LOS from LOS B in the 2018 horizon to LOS in the 2028 horizon. The eastbound and westbound movements continue to operate at LOS A, with v/c ratios of 0.04 or less and delays of 2.0 seconds or less.

7.3.6 Highway 52 and Development #10 Access

Highway 52 and the access to Development #10 is a new intersection in the 2028 horizon. The intersection is expected to operate at an overall intersection LOS A with a maximum v/c ratio of 0.09 and delay of 1.9 seconds. All the intersection movements are expected to operate at LOS A with v/c ratios of 0.09 or less and delays under 9.6 seconds.

7.3.7 100 N and 400 W

100 N and 400 W continues to operate at an overall intersection LOS A with a maximum v/c ratio of 0.02 and delay of 1.9 seconds. All movements at the intersection are expected to operate at LOS A with low delays (v/c ratios = 0.02 or less, delays = 8.7 seconds or less).

7.3.8 100 N and 200 W

100 N and 200 W continues to operate well with an overall intersection LOS A and low delays (max v/c ratio = 0.22, delays = 8.6 seconds). All movements at the intersection are expected to operate at LOS A with low delays (v/c ratios = 0.22 or less, delays = 8.8 seconds or less).

7.3.9 100 N and Broadway

100 N and Broadway is expected to operatesat an overall intersection LOS B with low delays (max v/c ratio = 0.28, delays = 4.3 seconds). The eastbound and westbound movements are expected to operate at LOS C and LOS B respectively and with v/c ratios of 0.28 or less and delays of 22.9 seconds or less. Both the northbound and southbound movements are expected tooperate at LOS A. The v/c ratios and delays for these approaches are at 0.05 or less and 1.7 seconds or less.

7.3.10 100 N and 200 E

100 N and 200 E continues to operate well st an overall intersection LOS A with low delays (max v/c ratio = 0.11, delays = 8.4 seconds). All movements continue to operate at LOS A with very slight increases in the v/c ratios and delays.

7.3.11 100 S and 400 W

100 S and 400 W continues to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.09, delays = 6.0 seconds). All the intersection movements are expected to operate at LOS A with v/c ratios of 0.09 or less and delays of 9.7 seconds or less.

7.3.12 100 S and 200 W

100 S and 200 W continues to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.13, delay = 7.7 seconds). All movements at the intersection continue to operate at LOS A with low delays (v/c ratios = 0.13 or less, delays = 7.8 seconds or less).

7.3.13 100 S and Broadway

100 S and Broadway continues to operate at an overall intersection LOS A with low delays (max v/c ratio = 0.16, delays = 4.0 seconds). In the 2028 horizon, the eastbound movement is expected to decrease to LOS C. The LOS for the other movements remains unchanged despite slight increases in the v/c ratio and delays.

7.3.14 100 S and 200 E

100 S and 200 E continues to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.19, delays = 8.0 seconds). All movements at the intersection continue to operate at LOS A and with v/c ratios of 0.19 or less and delays of 8.2 seconds or less.



7.3.15 400 S and 400 W

400 S and 400 W continues to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.03, delays = 1.3 seconds). All movements at the intersection continue to operate at LOS A and with v/c ratios of 0.03 or less and delays 1.4 seconds or less.

7.3.16 400 S and Broadway

400 S and Broadway continues to operate well at an overall intersection LOS A with low delays (max v/c ratio = 0.15, delays = 3.9 seconds). The eastbound and westbound movements are expected to operate at LOS A with v/c ratios of 0.07 and delays of 2.8 seconds or less. The southbound movement is expected to operate at LOS B with a v/c ratio of 0.15 and delays of 11.1 seconds..

7.3.17 400 S and 200 E

400 S and 200 E continues to operates well at an overall intersection LOS A with low delays (max v/c ratio = 0.07, delays = 3.1 seconds). All movements at the intersection continue to operate at LOS A and with v/c ratios of 0.07 or less and delays of 9.8 seconds or less.

7.3.18 400 S and Development #10 Access

400 S and the access to Development #10 continues to operate at an overall intersection LOS A with a maximum v/c ratio of 0.00 and delays of 0.0 seconds.

Table 7-3 summarizes the Synchro capacity results for the 2028 background and development traffic volumes, during the pm peak hour. The table only captures the overall intersection results; results for the individual intersection movements can be found in Appendix D.

Table 7-3
2028 Background and Development Traffic Volumes – PM Peak Hour

Intersection	LOS	Max V/C Ratio	Delay (s)
Railway Ave & 200 E	А	0.20	4.5
Highway 52 & 400 W	А	0.05	1.4
Highway 52 & 200 W	А	0.70	13.0
Highway 52 & Broadway	D	1.37	81.0
Highway 52 & 200 E	А	0.52	8.5
Highway 52 & Development #10 Access	А	0.09	1.9
100 N & 400 W	А	0.02	1.9
100 N & 200 W	А	0.22	8.6
100 N & Broadway	В	0.28	4.3
100 N & 200 E	А	0.23	8.5
100 S & 400 W	А	0.09	6.0
100 S & 200 W	А	0.13	7.7
100 S & Broadway	А	0.16	4.0
100 S & 200 E	А	0.19	8.0
400 S & 400 W	А	0.03	1.3
400 S & Broadway	А	0.15	3.9
400 S & 200 E	А	0.07	3.1
400 S & Development #10 Access	А	0.00	-



8

Recommended Improvements

8.1 2018 HORIZON

The results of the traffic analysis indicate that the road network assumed for the 2018 horizon is sufficient to accommodate the total traffic volumes anticipated for that horizon. Therefore, no roadway improvements are required above and beyond the provision of the links indicated in Section 3.2 for the 2018 horizon.

8.2 2028 HORIZON

The results of the traffic analysis indicate that two intersections are expected to operate poorly in the 2028 horizon and require intersection improvements.

Highway 52 and 200 W requires a separate northbound right-turn lane. When a northbound right-turn lane is provided, the northbound movement is expected to operate at LOS D with a v/c ratio of 0.59 and delays of 25.0 seconds. This is a significant improvement from the LOS E with v/c ratio of 0.79 and delays of 35.0 seconds experienced without the turn lane.

Highway 52 and Broadway requires a change in traffic control from a two-way stop-control to a four-way stop-control. With the provision of a four-way stop-control, all the intersection movements are expected to operate at LOS D or higher, and with v/c ratios of 0.82 or less and delays under 32.5 seconds or less. This is a significant improvement from the two-way stop control condition, where the eastbound and westbound movements were failing and operating above capacity (highest v/c ratio = 1.37 and longest delays = 252.2 seconds).

The detailed results of the capacity analyses with the intersection improvements have been included in Appendix D.





Transportation Issues

9.1 TRAFFIC SIGNALIZATION

One of the immediate transportation issue identified by the Town was the need for signalization at the intersections of Highway 52 and 200 W, Highway 52 and Broadway, Broadway and 100 N, Broadway and Church Avenue, and 100 N and 200 W. For the four major intersections identified in the road network plans, traffic signal warrants were completed for all three time horizons. Traffic signal warrants were only completed in the 2008 horizon for Broadway and Church Avenue since it was not identified as a major roadway. The traffic signal warrant calculation was completed to provide the Town with insight into whether the signal is warranted currently.

To evaluate the need to provide signalization at the intersection, the traffic signal warrant from the Manual on Uniform Traffic Control Devices (MUTCD) was completed. The MUTCD traffic signal warrant is a point based system that assigns priority points to an intersection based on factors such as its collision history, geometry and pedestrian and vehicle volumes. The total priority points assigned to an intersection indicate the priority to install a traffic signal. Typically, a traffic signal is warranted at an intersection when a total priority point equal or in excess of 100 is assigned.

The traffic signal warrants have been included in Appendix E. For the 2008 time frame, the traffic signal warrants were completed using the existing traffic. For the 2018 and 2028 horizons, traffic signal warrants were completed using background and development traffic. Collision data was obtained from AT for Highway 52 through the Town. The data indicated that there was one collision within the last five years at the study intersection.

The following data/assumptions were used for the signal warrant calculations:

- Traffic Volumes: volumes as per Figures 4-1, 4-2, 4-3, 6-1 and 6-2.
- Pedestrian volumes: As per the traffic counts provided by the Town. Pedestrian volumes were not available for Highway 52 and Broadway; therefore zero pedestrian volumes were assumed. No growth was assumed for the pedestrian volumes for the future horizons.

The results of the traffic signal warrants are summarized in Table 9-1 below for the different time horizons.



Table 9-1
Traffic Signal Warrant Results

Intersection	Existing 2008 Traffic	2018 (Background & Development Traffic)	2028 (Background & Development Traffic)
Highway 52 and 200 W	-4.69	6.62	23.68
	(Not warranted)	(Not warranted)	(Not warranted)
Highway 52 and Broadway	0.59	14.39	36.15
	(Not warranted)	(Not warranted)	(Not warranted)
Broadway and 100 N	-6.51	5.23	14.80
	(Not warranted)	(Not warranted)	(Not warranted)
Broadway and Church Avenue	-4.72 (Not warranted)	n/a	n/a
100 N and 200 W	-10.81	-5.55	0.82
	(Not warranted)	(Not warranted)	(Not warranted)

The results of the signal warrants indicate that the traffic volumes at the above intersections do not warrant signalization in the 2008, 2018 or 2028 time horizons. As mentioned in Section 8.0, capacity issues with the intersection of Highway 52 and Broadway can be removed by changing the traffic control to a four-way stop control.

9.2 **EXTENSION OF 400 W AND 300 S**

Two long-term transportation issues identified by the Town were the extension of 400 W from Highway 52 to 400 S and the extension of 300 S from 100 W to Broadway.

AE recommends that the extension of 400 W, as shown in Figures 3-4 and 3-5, be implemented. 400 W is located at the Town's west end and would serve as an important link to the future developments planned within the Town. Many of the proposed developments are located in the south end, near 400 S. The extension of 400 W to connect with 400 S would provide an alternative north-south route to these developments, reducing the trips that must pass through the Town and through the residential communities. Inherently, the 400 S extension could become a vital link by providing a more direct, quicker route for commuters heading to the new developments.

The capacity analysis completed for the 2018 and 2028 horizons were completed under the assumption that the extension of 300 S was not implemented. The results indicate that the surrounding intersections continue to operate well even without the extension; therefore, AE does not recommend that the Town

implement the 300 S extension. The extension of 300 S should be evaluated again in the future should the traffic patterns within the area change.



1 Cost Estimate

A preliminary cost estimate of the new road construction required for the 2018 and 2028 horizons was completed using typical roadway cross-sections and pavement structures detailed in the Town of Raymond Engineering Standards (2006). The Major Collector Residential cross-section (Drawing TN-02) was assumed for both the new Arterial and Collector Road classifications and the Local Residential cross-section (Drawing TN-01) was assumed for the Local Road classification. The pavement structure for the residential roadway, comprising of 75 mm Asphaltic Concrete and 200 mm Crushed Granular Base, was assumed for all the roadways.

Unit pricing was obtained from the December 2008 AIT unit prices for Southern Alberta. Table 10-1 summarizes the unit prices used.

Table 10-1
AIT Unit Price – Southern Region – December 2008

Construction Item	Unit Price		
Excavation:			
Common Excavation	\$4.19/m ³		
Waste Excavation	\$10.88/m ³		
Subgrade Preparation:			
Subgrade Preparation	\$1.34/m²		
Pavement Structure:			
ACP - 75 mm	\$110.90/t		
GBC - 200 mm	\$23.84/t		
Curb and Gutter	\$270.00/m		
Pavement Marking:			
Centre Line Painting	\$1,041.35/m		



The following assumptions regarding contingency, engineering costs and GST were assumed under both horizons:

- 15% contingency
- 15% Engineering Fee (includes contingency)
- 5% GST.

Table 10-2 presents the cost estimate for the new road construction in the 2018 and 2028 horizons. These prices reflect 2008 costs. A detailed breakdown of the cost estimate has been provided in Appendix F.

Table 10-2 Cost Estimate

Construction Item	2018 Horizon	2028 Horizon
Arterial Roadway	\$ 1,316,929.58	\$1,098,223.53
Collector Roadway	\$ 0.00	\$ 856,989.81
Local Roadway	\$ 6,331,514.97	\$ 865,287.15
Contingency	\$ 1,147,266.68	\$ 423,075.07
Engineering Cost	\$ 1,319,356.69	\$ 486,536.34
GST	\$ 505,753.40	\$ 186,505.60
Total	\$10,620,821.32	\$3,916,617.51

11

School Safety

One of the immediate issues that the Town needs to address is the school zone pedestrian safety. The Town is concerned about the traffic operations along 100 N, specifically the section with all three schools. The block is comprised by Highway 52 to the north, Broadway to the east, 100 N to the south and 200 W to the west and contains an elementary and a junior high school. Between 8:00 am and 9:00 am and 2:00 pm and 3:00 pm, all boundary roads experience increased traffic and pedestrian volumes. The increased traffic and pedestrian volumes can be attributed to the student drop off/pick up and walking activities. The Town's immediate concern is to improve the school zone traffic operations and reduce the pedestrian/vehicular conflicts along the boundary road intersections.

In order to analyze the traffic operations along the boundary road intersections, turning movement counts and video surveillance at the following intersections were collected:

- Highway 52/200 W
- 100 S/200 W
- 100 S/Broadway
- Highway 52/Broadway.

Traffic analysis at the above noted intersections were conducted for the 2008, 2018 and 2028 horizon and the results are illustrated in Sections 7 through 7.5 of this report. The capacity analysis results indicate that all boundary road intersections are expected to operate at excellent levels of service with low delays under the 2008, 2018 and 2028 horizon years.

Signal warrant analysis at the above noted intersections were conducted and are illustrated in Section 9 of this report. The warrant analysis indicates that traffic volumes including pedestrians at the above noted intersections do not warrant signalization in the 2008, 2018 or 2028 time horizons.

Video surveillance provided by the Town was reviewed and following points were observed:

- The beginning of the school zone was clearly indicated, according to the MUTCDC.
- The school zone was marked with the School Area sign (WC-1), according to the MUTCDC.
- In addition to the appropriate area warning signs, the school zone was marked with a sign denoting reduced speed limit and a sign denoting the end of the school zone, according to the MUTCDC.
- A RB-1 (Maximum Speed sign) below the WC-1 (Fluorescent yellow in colour), displaying the reduced speed limit was provided at the school zone, in accordance with the MUTCDC.



- RB-1 (Maximum Speed sign) at the end of the zone, reinstating the original speed limit was provided, in accordance with the MUTCDC.
- End school zone sign, yellow in colour was used on local roads in residential areas, in accordance with the MUTCDC.
- Pavement markings were not used to supplement the traffic signs with in the School area, in accordance with the MUTCDC guidelines.
- No speed transition zone is required and provided further upstream of the existing school zone, as the posted speed limit is less than 70 km/h.
- Although crossing guards were operational at 100 S/Broadway intersection during the am peak
 hour of the school zone, they were not effective. It was observed that the crossing guards were
 standing at the northwest corner of 100 S/Broadway intersection, while pedestrians were crossing
 the intersection without their guidance.
- Driver behaviour at 100 S/Broadway intersection was unacceptable. During the video surveillance
 review it was found that many drivers didn't stop at all or come to a complete stop at the stop
 control while clearing the intersection. Moreover it was observed that many drivers did not wait at
 the stop controlled intersection for the pedestrians to clear the intersection.

In order to improve the pedestrian safety and reduce the potential pedestrian/vehicular conflict points at the study intersections mentioned above, the following recommendations have been proposed:

- The study intersections are currently operating at excellent levels of service as far as the traffic operations are concerned.
- The intersections are not warranted for signalization in the 2008, 2018 or 2028 time horizons.
- Zebra pavement markings should be used to supplement the traffic signs and add emphasis to the
 crosswalk. The details of the pavement markings through the school zone should be implemented
 in accordance with the pavement marking schemes described in the MUTCDC.
- Promote driver awareness of the school zones by providing traffic signs and pavement markings.
- Educate students on pedestrian safety at the school zone crossing.
- Appoint adult crossing guards at the study intersections and/or at roadway segments to monitor young children crossing the intersections during the peak hours of the school zone.

- Alternatively retrain the school safety patrol. School safety patrol members should be selected from the upper grade levels. Patrol members can be trained in traffic operations and pedestrian safety by RCMP.
- Encourage parents to be involved in discussing hazards, obstacles and crossing behaviours.
- Encourage teachers to help children to be aware of the vehicle/pedestrian conflicts and practice the correct crossing behaviours as a school activity.
- Educate the area drivers about the school zones and traffic operations.
- Enforce the study intersections with the help of RCMP officers during the peak hours of the school zone to stop erratic manoeuvres and/or to punish aggressive drivers.

Regular communications between school officials, law enforcement, parents, City Officials and school transportation personnel are critical to promote safe operations with in the school zones.



12

Recommendations and Conclusions

This report documents the analysis undertaken to complete the Transportation Master Plan for the Town of Raymond. At the project initiation meeting, the Town provided AE with a list of immediate and long-term transportation issues that need to be addressed along with plans for the future expansion of the Town in terms of land annexation and developments. AE's main objective for the study was to develop a TMP which clearly defines the Town's transportation road network within the existing and future Town boundaries.

Figures 2-2, 3-4 and 3-5 present the Road Network Plans developed by AE for the Town of Raymond in the existing (2008) and future (2018 and 2028) time horizons. The road network plans outline the major roadways and their classifications in each time horizon and were developed with consideration for the land use, the function and connectivity of the roadways.

The road network plans also identify the major intersections within the Town. These intersections were assessed in terms of operational capacity for the different horizons. The results of the capacity analysis indicate that the existing road network, with the extension of 400 W from Highway 52 to 400 S, can accommodate the total traffic (background traffic and development traffic) in the 2008 and 2018 time horizons. During the 2028 horizon intersection improvements are required; in the form of a separate northbound right turn lane at Highway 52 and 200 W and a four-way stop control at Highway 52 and Broadway. The capacity analysis also revealed that the road network operates well without the extension of 300 S, confirming that this extension is not required.

Traffic signal warrants were undertaken to determine the need for traffic signals at the intersections of Highway 52 and 200 W, Highway 52 and Broadway, Broadway and 100 N, Broadway and Church Avenue, and 100 N and 200 W. The traffic signal warrants indicate that traffic signals are not warranted at the intersections in the existing or future horizons.

To improve the pedestrian safety at the study intersections within the school zone, regular communications between school zones officials, City officials, parents, law enforcement officials and school transportation personnel are required.

The cost estimate for the new road construction is \$11 million (approx.) in the 2018 horizon year and \$4 million (approx.) in the 2028 horizon year, respectively.



FINAL REPORT



Appendix A - Traffic Counts



Town of Raymond: Summary of Traffic Counts Project No: 2007-3491 Date Created: April 24, 2008 Date Revised: January 2009

Location: Date:

Church Ave & 200 W Thursday, April 10, 2008

				Eastbound	pun						Westbound	pu						Northbound	pu						Southbound	pur		
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7:00 - 7:15 am							2	0	0	e	0	0	0	1	0	0	2	0	0	0	1	1	0	,	0	0	0	0
7:15 - 7:30 am			Ī				0	,-	0	0	0	1	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
7:30 - 7:45 am							1	0	0	0	0	2	0	0	0	0	e	0	0	0	0	0	0	63	0	0	0	0
7:45 - 8:00 am							-	0	-	0	0	63	o	0	0	0	6	0	0	0	0	2	0	2	0	0	0	0
8:00 - 8:15 am							6	0	0	0	O	2	0	0	0	0	12	,	0	0	0	2	0	9	0	0	0	0
8:15 - 8:30 am	9						67	4	0	0	0	9	0	8	0	0	19	0	2	0	0	6	0	17	0	0	0	0
8:30 - 8:45 am							1	0	0	0	0		0	0	0	0	2	0	1	0	0	2	0	7	0	0	.0	0
8:45 - 9:00 am							-	-	0	0	0	-	0	0	0	0	63		0	0	0	3	0	3	0	0	0	1
9:00 - 9:15 am							1	0	0	0	0	4	0	2	0	0	2	0	1	1	0	2	0	2	0	0	0	0
9:15 - 9:30 am							0	1	0	0	0	2	0	0	0	0	4	0	0	0	0	,-	0	3	0	0	0	0
9:30 - 9:45 am							6	0	0	0	0	2	0	2	0	0	3	0	0	0	0	3	0	5	0	0	0	8
9:45 - 10:00 am							,	-	0	0	0	0	0	0	0	0	3	0	4	0	0	3	0	1	0	0	0	0
Total	0	0	0	0	0	0	23	80	-	3	0	24	0	13	0	0	102	2	11			28	0	50	0	0	0	4
Peak	0	0	0	0	0	0	14	4		0	0	12	0	8	0	0	42	+	9	0	0	15	0	32	0	0	0	0
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Thick December ######	-					Touck	Truck Percentage 5,88%	5 88%					Truck P	Truck Percentage 2.04%	2.04%					Truck P.	Truck Percentage	0.00%						

Wednesday, April 9, 2008

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3:45 - 4:00 pm				-		. 2	60	0	0	0	un	7 0	0	0	6	0	2	-	9	7	0	œ	_	0 0	
4:00 - 4:15 -m						0	4	0	0	0	2	1 0	0	0	8	0	0	0	5	89	0	œ	-	0 0	
4:15 - 4:30 pm						0	,-	0	0	0	9	0 0	0	0	9	0	0	0	0	+	0	1	_	0	
4:30 - 4:45 pm		7				0	3	0	0	0	1	9 0	0	0	2	0	2	0	0	8	0	100		0 0	
4:45 - 5:00 pm						2	-	0	0	0	m	0 0	0	0	4	0	1	0	0	0	0	in	_	0 0	0 0 0
5:00 - 5:15 pm				h		0	2	0	0	0	9	1 1	0	0	3	0	2	0	1	3	0	9		0 0	
5:15 - 5:30 pm		Ī	Ī			7	6	0	0	0	ın	0 0	0	0	. 4	0	2	0	3	1	0	60		0 0	0 0 0
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6:30 - 6:45 pm		ľ				2	+	0	0	0	2	1 0	0	0	1	0	1	0	0	0	0	m		0 0	0 0 0
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	0	0	0	0	0 0	34	34	0	0	0	11	1 56	0	0	113		23		21	88		136	1		-
	0	0	0	0	0	0 14	6	0	0	0	19	0 36	0	0	29		7	-	10	23	0	52	_	2 0	2 0 0
Peak Hour Total	0				Ÿ	Peak Hour To	otal 28					Peak Hour Total	3					Peak Hour Total		11					
Peak Hour (Truck)	0				g.	Peak Hour (Truck)	0 (X				4	Peak Hour (Truck)	-				Δ.	Peak Hour (Truck)		7					
mortan	Total Countries distant				F	Sales Descenden	1000 C					Totale December	1000 Z W				,	Salah Das	Total Darandana	70UO 0					

Town of Raymond: Summary of Traffic Counts
Project No: 2007-2481
Date Created: April 24, 2008
Date Revised: January 2009

Location: Date:

Church Avenue & 100 W Thursday, April 10, 2008

			Fast	Fastbound	3				S	Westbound	p					Non	Northbound				ļ		Sou	Southbound		
	Left	-	Straight	-	Right		Left		Straight		Right		-	Heil	-	Straight	1	Right		-	Left		Straight	1	Right	
Perlod	PC Truck PC Truck	uck P	C In	à		ruck Pedestrian	PC Truck		PC T	Truck	PC Tr	Truck Pedestrian		PC T	Truck	PC Truck		Tr.	PC Truck Pedestrian		PC T	Truck	PC Truck		Truc	PC Truck Pedestrian
7:00-7:15 am	0	0 2	0	0 0	0	0	0	0	2	0	0	0	0	0	0	0	0	0 1 0	0 0		0	0	0	0	0 0	0
7:15 - 7:30 am	0	0	-	0 0	0	0	0	0	0	0	-	0	0	0	0	0	0	0 0	0 0		0	0	0	0	0	-
7-30 - 7-45 am	0	0	9	0 0	0		0	0	0	0	0	0	0	0	0	2	0	1	0 0		0	0	1	0	0	0
7-45 - 8-00 am	F	0	0	0 0	-	100	-	0	-	0	0	0	2		0		0	0 0	0 0		0	0	0	2	1	0
8:00 - 8:15 am	-	-	3 0	H	-	4	0	0	-	0	0	0	m		0	,-	1	0 0	0 0		1	+	19	2	0	5
8:15 - 8:30 am	10	0 7	1	2	0	4	0	0	==	0	2	0	4	0	0	15	0) .	0 0		2	0	60	0		Ť
8:30 - 8:45 am	2	0 3	-	0	-	0	0	0	0	0	-	0	-	0	0	0	3	1	0 0		2	0	1		0	0
8:45 - 9:00 am	0	0 5		0	0	0	0	0	2	1	0	0	-	0	0	-	0	2 (0 0		0	0	1	0	0	0
9:00 - 9:15 am	0	0		0 1	0		0	0	4	0	0	0		0	0	1-1	0	1 1	1 1	12	0	0	1	0	0	0
9-15-9-30 am	c	0	2	0	-		0	0	en	0	0	0	0	+	0		0	0	0 0		0	0	0	0	0 0	0
9:30 - 9:45 am	0	+	H	0 0	H	0	0	0	2	0	2	0	0	-	0	2	0	0	1		1	0	0	0	0 0	0
9:45 - 10:00 am	2	9 0	9	0 0	0	1	2	0	+	0	2	0	0	0	0	0	0	0 0	1 1		0	0		0	0	0
Total	6	0 37	7	2		13	m	0	27	1	8	0	20	4	0	24	4	9	0 3		9	-	11	4	3 2	2
Peak	7	0 1	18 0	0 2	1	00	0	0	14	-	69	0	14		0	17	4	4 0	0 0		9	1	63	2	-	9
Peak Hour Total	28				P	Peak Hour Total	18					Peak Ho	Peak Hour Total	26					Peak Hour Total	Total	18					
Peak Hour (Truck)	4				Pea	Peak Hour (Truck)					ď	Peak Hour (Truck)	r (Truck)	4				Pe	Peak Hour (Truck)	nck)	4					
Truck Percentage 3,57%	3.57%				T	Truck Percentage 5,56%	5,56%				1	ruck Per	Truck Percentage 15,38%	5.38%				-	Truck Percentage	stage 22	22.22%					

2008
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Dale.

			EL.	Eastbound					N.	Westbound	0					NOTHINGHIN	23					5	Supporting.		
	Left	-	Straight	10	Right		Left		Straight	76	Right		_	Left	S	Straight	Right	E		Left	1	Straight	_	Right	
Period	PC 7	PC Truck PC Truck	PC Te	uck P		uck Pedestrian	PC	Truck	PC Tr	Truck P	PC Truck	ok Pedestrian	an PC	Truck	PC N	Truck	PC	Truck Pedestrian	destrian	PC	Truck	PC Truck	_		ck Pedestrian
2:00 - 2:15 pm	-	0	4	0	0 0	2		0	10	0	0 0	1	0	0	2	0	2	0	0		0	-	0		-
2-15-2:30 pm	0	0	2	0	0 0	+	0	0	w	0	0 7	0	0	0	e	0	2	0	0	2	0	2	0	0	0
2-30-2-45 nm	0	H	-	0	0 0	4	0	0	2	0	0 0	. 2	0	0	0	0	-	0	0	1	0	1	0	1 0	4
2-45 - 3-00 pm		0	H	0 0	0 0	,	0	0	100	0	1 0	0		0		0	0	0		.2	0	0	0	0 0	0
3:00 - 3:15 om	-	+		-	0	0	-	0	2	0	0			0	4	0	-	0	0	2	0	2	0	2 0	1
3:15 - 3:30 pm	0	0	+	-	0	d)	0	0	7	0	1	7	0	0	2	0	2	0	0	2	0	3	0	4 0	3
3:30 - 3:45 pm	0	0	11	0	0 0	14		0	9	0	0	8	0	0	2	0	0	0	1	3	0	17	0	2 0	2
3.45 - 4:00 pm	0	-	9	0	0 0	2	0	0	63	0	2 0	2	0	0	-	0	2	0	0	3	0	3	0	0 0	2
4:00-4:15-m	0	0	H		0	10	0	7	0	0	0 1 0	0	0	0	0	0	1.10	0	4	3	0	-	0	1 0	673
4:15 - 4:30 pm	0		2	-	0	0		0	60	0	2 0	0	0	0	2	0	1	0	2		0	2	0	0 0	10
4:30 - 4:45 om	0	0	63	0	0	0	2	0	4	0	0	0	0	0	1	0	3	0	0		0	-	0	0	2
4:45 - 5:00 pm	0	0	-	0	0	2		0	2	0	2 0	-	-	0	2	0	2	0	0	0	0	2	0	0 0	1
5:00 - 5:15 pm	0	0	-	0	0 0	0	-	0	6	0	0	0	0	0	4	0	0	0	0	0	0	4	0	0 0	0
5-15 - 5:30 cm	0			0	0	0		0	9	0	1	0	0	0	-	0	0	0	2	0	0		0	0 0	0
5:30 - 5:45 cm	0	H	-	0	0	0	2	0	63	0	1	0	+	0	6	0	0	0	0	2	0	0	0	1	_
5.45 - 6:00 nm	0	H	+	0	0	0	0	0	5	0	2 0	0	0	0	0	0	-	0	0	-	0	10	0	2 0	0
8-00-6-15 pm		+	-	0 2	-	0	-	0	69	0	3		0	0	2	0	+	0	0		0	,-	0	0	0
6:15 - 6:30 am	0	-	H	H	0	0	0	0	2	0	0 0	0	2	0	+	0		0	0	0	0	0	0	1	0
6:30 - 6:45 pm	0	0	2	0	0 0	0	0	0	(1)	0	0 0	0	ca	0	+	0	0	0	0	0	0	0	0	1	0
8:45 - 7:00 pm	0	-	-	0	0	0	0	0	-	0	1 0	3	0	0	7	0	0	0	0	1	0	+	0	0 0	-
Total	4	t	-	0	1	37	12	7	88	0 2	26 0	26	ch	0	35	0	20	0	10	26	0	31	0	15 0	
Peak	-	-	H	0	0 0	22	2	0	17	0	7 0	18	-	0	ch .	0	9	0	1	10	0	7	0	8 0	00
Peak Hour Total	53				Pe	eak Hour Total	26				ď.	Peak Hour Total	lal 15					Peak H	Peak Hour Total	28					
Peak Hour (Truck)	1				Peak	Peak Hour (Truck) 0	0				Pea	Peak Hour (Truck)	0 (x					Peak Hour (Truck)		0					
The state of the s	*****						-							,					The last of the la	2000					

Town of Raymond: Summary of Traffic Counts Project No: 2007-3491
Date Created: April 24, 2008
Date Revised: January 2009

Location: Date:

Church Avenue & Broadway Tuesday, April 8, 2008

		nan	П																
		Pedestrian	0	0	0	0	2	0	0	1	4	0	1	0	150	3			
	Right	Truck	0	0	2	*	0	0	3	4	1	2	0	3	13	*			
pune	RB	PC		5	10	0	2	2	7	2	9	4	2	7	29	10			
Southbound	Straight	Truck	0	0	0	1	7		2	- 2	2	- E-	1	0	14	đi			
,	Stra	Od	e	ω	7	9	10	13	6	16	11	12	11	1	108	48			
	H	Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	Left	DC	0	0	2	1	1	5	1	2	1	4	0	5	20	a	80	13	6.25%
		Truck Pedestrian	0	0	0		0	-	0	0	0	2	1	0	5	1	Peak Hour Total	Peak Hour (Truck)	Truck Percentage 15.25%
ľ	7	nox F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Peak	Peak Ho	Truck P
pu	Right	PC 1	0	0	0	0	0	0	2	2	0		0		49	4			1
Northbound	140		2	2	0	0	2	1	0	2	-	0	-	2	13	2			
Z	Straight	PC Truck	15	21	13	18	19	27	17	12	16	14	7	20	199	75			
		Truck	0	0	0	0	2	Ţ	0	40	-	÷	0	1	7	4			
	Left	PC .	0	0	1	1	0	60	0	0	0	0	0	0	10	m	16	cn	34687
		PC Truck Pedestrian	-	0	0	12	1	0	-	0	+	0	+	0	w	2	Peak Hour Total	Peak Hour (Truck)	Truck Percentage 9.89%
	-	uck P	0	0	0	0	0	0	0	0	0	0	0	-	-	0	Peak H	eak Ho	ruck Pe
P	Right	DC Tr		0	2		1 1	8	-	5	1	(2)	2		32	21		ă.	-
Westbound	75	Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
W	Straight	PC T	-	0	0	2	0	9	-	0	0	0	2	10	17	1			
	-	Truck	0	0	0	0	0	0	0	0	0	0	0			0			
	Left	PC T	1	1	0	0	0	0	0	- 1	0	0	0	60	9	-	29	0	9600
_	-		-			-	_				_		-		-			(K)	age 0.0
		Pedestr		4	0	0	**	2	2	*-	2	2	2	2	0)	6	Peak Hour Total	our (Tr	Percent
	to	Truck Pedestrian	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Peak	Peak Hour (Truck)	Truck Percentage 0.00%
pur	Righ	1	+	-	+	0	0	-	0	+	0	0		-	1	2			
Eastbound	tho	Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	Straight	PC	0	1	0	+	0	en	60	2	+	0	0	-	12	80			
l		Truck	0	0	0	0	0	0	0	0	0	2	-	0	63	0			
	Left	PC Truck PC Truck PC	-	2		2	4	o	(*)	0	-	1	-	9	31	16	26	0	9,000,0
		Period	7:00 - 7:15 am	7:15 - 7:30 am	7:30 - 7:45 am	7:45 - 8:00 am	8:00 - 8:15 am	8:15 - 8:30 am	8:30 - 8:45 am	8:45 - 9:00 am	9:00 - 9:15 am	9:15 - 9:30 am	9:30 - 9:45 am	9:45 - 10:00 am	Total	Peak	Peak Hour Total 26	Peak Hour (Truck)	Truck Percentage 0,00%

2008
April 3.
Thursday.

	THE PERSON NAMED IN	PC Truck Pedestrian	0 1	0 4	0 2	1	0 1	1 4	0 24	0 10	0 2	2 4	0 6	2 4	0 5	2 1	0 2	7 0	0 0	0 1	0 0	0 4	9 79	1 40			
pun	Right	DC	1 4	0	10	4	on	10	9		10	9	12	ın	7	2	6	ш	0	4	0	1	133	30			
Southbound	ght	PC Truck	2	63	0	0	- E	0	2	+	0	2	+		+	1	2	1	63	1	4	0	23	9			
S	Straight	DC	13	chi	15	11	15	18	23	27	39	24	34	23	36	25	21	23	21	11	14	23	431	107			
ı	1	Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0			
	Left	PC	*	*	12	2	9	9	14	7	9	2	5	a)	9	5	7	sp.	9	2	5	(1)	118	35	176	4	
		Truck Pedestrian	3	0	2	2	2	7	1	9	2	0	3	1	0	0	1	2	0	0	0	0	40	24	Peak Hour Total	Peak Hour (Truck)	
	+2	nuck P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Peak	eak Ho	1
pu	Right	PC T	0	0	1	0	60	1	3	3	+	4	+	2	63		-4	0	1	0	0		23	8		4	
Northbound	HD.	Truck	0	1	0	0	0	1	0	0	0	0			0	0	-	0	0	2	0	0	1	+			
Z	Straight	PC 1	20	12	3	14	14	21	21	15	18	60	13	25	25	19	20	22	19	o	12	13	339	75			
	-	Truck	0	0	0	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	ļ	0			
	Left	PC	0	-		0	0	,	2	2	m	2	0	0	4	1	2	2	2	4	0	0	27	8	92	٠	
		Pedestrian	1	0	0	2	7	2	2	0	9	e	7	*	0	0	0	9	0	0	1	0	38	10.	Peak Hour Total	Peak Hour (Truck)	
	14	Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Peak	Peak Ho	
pur	Right	PC 1	7	0	4	60	4	(2)	(7)	ø	4	-	2	1	4	67	63	10	2	60	2	1	99	16			
Westbound	oht	PC Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	Straight	PC	0	69	1	÷	2	2	-	-		42	0	63	2	0	4	19	19	2	0	63	35	10			
	42	Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	Left	PC	÷	0	0	0	0	1	0	*	2	1	4	÷	2	0	2	0	÷	2	0	0	18	1	28	0	
		nck Pedestrian	1	2	(2)	1	0	15	16	9	2	24	3	e	+	0	63	2	מו	m	0	0	7.9	39	Peak Hour Total	Peak Hour (Truck)	
	E	Thek	0	0	0	0	0	0	0	0	0	0	0	o	0	0	0	0	0	0	0	0	0	0	Peak	Peak H	
pun	Rig	PC .		2	+	-	-	62	-	7	2	7	2	2	1	9	17	49	2	0	0	,	39	10			
Eastbound	ight	PC Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	Straight	_	2	3	+	2	63	9	5	¥	.0	2	1		7	2	0	2	2	400		63	48	13			
	Left	PC Truck		- 1	0	0	0	0	0	0	1	0	0	0	-	0	0	0	0	0	0	0	4				
	-	PC	1	2	-	7	63	10	7	6	1	10	2	1	9	4	2	2	4	2	4	3	104	33	62	-	
		Period	2:00 - 2:15 pm	2:15 - 2:30 pm	2:30- 2:45 pm	2:45 - 3:00 pm	3:00 - 3:15 pm	3:15-3:30 pm	3:30 - 3:45 pm	3:45 - 4:00 pm	4:00 - 4:15 -m	4:15 - 4:30 pm	4:30 - 4:45 pm	4:45 - 5:00 pm	5:00 - 5:15 pm	5:15 - 5:30 pm	5:30 - 5:45 pm	5:45 - 6:00 pm	6:00 - 6:15 pm	6:15 - 6:30 pm	6:30 - 6:45 pm	5:45 - 7:00 pm	Total	Peak	Peak Hour Total	Peak Hour (Truck)	

Town of Raymond: Summary of Traffic Counts
Project No: 2007-3491
Date Created: April 24, 2008
Date Revised: April 25, 2008

100 N & 200 W Wednesday, April 9, 2008 Location: Dafe;

				Eastbour	nud		-			We	Westbound	77					ž	Northbound	D					Southbound	pun		
	Left	4:	Straight	sight.	Rich	75		Left	1	Straight	4	Right			Left		Straight	草	Right		1	Hell	Str	Straight	Right		
Period	PC	PC Truck PC Truck	PC	Truck	PC	Truck Pe	Truck Pedestrian	PC 1	Truck	PC Truck		C In	uck Ped	PC Truck Pedestrian	PC .	Truck	PC 1	nck	C In	PC Truck PC Truck PC Truck Pedestrian	PC,	Truck	PC PC	Truck	PC 1	PC Truck PC Truck PC Truck Pedestrian	estriar
7:00 - 7:15 am	0	0		0	0	0	0	0	0		0	0 0	0	0	0	0	2	0	0	1 1	٠	0	2	0	0	0	_
7:15 - 7:30 am		0	0	0	0	0	0	0	0	0	0	1 0	0	0	0	0	2	0	0	0 0	٠	0	+	0	0	0	0
7:30 - 7:45 am	0	0	0	0	0	0	0	-	0	-	0	2	-	0	0	0		0	0	1	1	0	0	0	0	0	0
7:45 - 8:00 am	0	0	0	-	0	0	0	0	0	0	0	1 0	0		,-	0	11	0	0	0 0	4	1	3	0	0	0	Į.
8:00 - 8:15 am	0	0	0	0	2	0		(1)	0		0	10 2	2	2	2	0	6	0	1 1	7 (7	1	un	1.4	0	0	5
8:15 - 8:30 am	2	-	63	1	2	-	7	16	0	0	0 3	32 4		12	0	0	13	0	2 (1 1	18	1	10	0	2	0	23
8:30 - 8:45 am	0	0	1	0	2	0	0	(1)	0	1.1	0	5 0	0	+	-	0	4	0	0	0 0	5	2	19	1	2	0	2
8:45 - 9:00 am	0	0	-	0	0	0	0	0	0	2	. 0	1		0	0	0	2	0	0	0 0	3	0	2	0	0	0	0
9:00 - 9:15 am	0	0	0	0	2	0	0	÷	0	m	0	2 1		0	2	0	en	-	3 (0 0	-	0	9	0	0	0	0
9:15 - 9:30 am		0	*	0	0	0	,	2	0	0	0	0	0	0	0	0	3	0) 0	0 0	7	0	1	1.1	0	0	2
9:30 - 9:45 am	0	0	0	0	0	0	0	0	0	-	0	2	- 3	0	(2)	0	3	0	1	0	1	0	3	0	0	0	2
9:45 - 10:00 am	0	0	+	0		0	0	,-	0	0	0	3 0	- 0	0	1	0	2	+	2 0	0 0	2	0	2	0	0	0	(0)
Total	4	-	60	2	6	-	6	27	0	10	0 7	70 9	ch	16	10	0	09	2	12	1	48	S	46	3	4	0	39
Peak	2	-	4	2	9		001	22	0	2	0 5	58 6	9	16	4	0	42	0	9	5 5	35	2	26	2	4	0	31
Peak Hour Total 16 Peak Hour (Touck) 4 Truck Percentage 25,00%	16 4 25,00%					Peak Hou Peak Hou Truck Pe	Peak Hour Total Peak Hour (Truck) Truck Percentage 6	88 6 6.82%				T Pe	Peak Hour (Truck) Truck Percentage		52 0 0,00%				a P	Peak Hour (Truck) 7 Truck Percentage 9,86%	71 17 18 7 7 (8 9.869)						

2000	No.	200
	×	5
	200000	100000

Period P			Eas	Eastbound					W	Westbound	y					Northbound	punce				Ì	Š	Southbound	po		-
+	Left		Straight	-	Right		Left		Straight	N.	Right			Left	(S)	Straight	Right	H		Hell	-	Straight	this .	Right		
-	PC Truck	-	PC Truck PC	e P		Truck Pedestrian	PC	Truck	PC Tr	Truck	SC To	PC Truck Pedestrian		PC Truck	н I	PC Truck	_	Truck	PC Truck Pedestrian	PC 1	Truck	PC	Truck	PC Tr	PC Truck Pedestrian	destria
	0	0	0	-	0	0	2	0	3	0	4	0 0	7.1	1 0	2	0	1	0	0	4	0	89	0	0 0		m
	0	1	2 0	2	0	0	6	0	4	0	2	0 0	84.	0 0	63	0	0	0	0	-1	0	2	۵	0	0	2
2:30-2:45 pm	-	0	0	1	0	0	2	0	2	- 0	17			3 0	9	1	3	1	1	2	4	4	-	0	0	4
	0		2 0	0	0	0		0	+	0	9	1 0		0 0	4	0	2	0	0	2	0	2	0	0	0	69
3:00 - 3:15 pm	0	0	1 0	-	0	0	63	0	2	0	7	2 2	100	0 0	2	0	5	0	-1	3	0	63	0	0	0	-
	0	0	0 0	3	0 8	0	13	0	2	0	15	5 33	m	2 0	8	-	- 1	0	2	11	0	14	0	3	0	53
3:30 - 3:45 pm	2	0	2 0	2	0 2	4	60	0	4	0	*	0 30	0	2 0	13	0		0	2	9	+	16	2	2 (0	11
-	0	0	2 0	4	0	1	4	0	2	0	4	-		3 0	7	0	62	0	1	2	0	14	-	0	0	0
4:00 - 4:15 -m	2	0	0	0	0	- 1	1	0	9	0	2	0 0		2 0	10	0	1	0	19	4	0	5	0	1		4
	0	0	2 0	-	0	0	0	0	100	0	8	1	ria l	0 0	11	0		0	0	2	2	6			0	es
-	2	0	2 0		0	0	2	٥	4	0	3	0 1		2 0	*	0		0	(7)	4	,	2	0	2	0	0
		÷	-	2	0	7		0	+	0	89	1 0		0	14	0	2	0	m	1	0	14	0	0	0	ō
	0	0	4 0		0	0	3	0	2	0	3	1 0	200	0	60	0	2	0	0	1.4	0	1.	0	1	0	
5:15 - 5:30 pm	-	0	3	0	Ċ	0	0	0	(r)	0	4	0 0		1 0	7	0	2	0	2	2	0	1	0	1	0	7
5:30 - 5:45 pm	-	-	2 0	2	0		0	0	4	0	2	0 0		3 0	2	0	0	0	0	9	0	9	0	0	0	63
5:45 - 6:00 pm	-	H	4	-	0	0	0	0	4	0	5	0 0		1	40	0		0	5	4	0	5	0	0	0	2
-	0	0	0		0	0	2	0	0	0	2	0		9	**			0	0	1	0	ú	0	0	0	63
1	0	0	0 0	2	0 0	0	- 1	0	1	0	2	0 0		2 0	4	-	0	0	0	*	0	4	0	0	0	o
-	0	0	0		0	-	-	0	4	0	2	0 0	100	0 0	6	0	2	. 0		3	0	5	0	0	0	7
	0	0	1 0	2	0	0	9	0	2	0	9	0 0		0 4	6	0	2	0	.1	9	0	8	0	0	0	1
-	12	2 3	35 0	31	1 0	12	48	0	54	0	97	9 73		36 0	135	4	31	4	28	99	2	143	9	11	0	84
	H	t	0 4	6	0	9	21	0	14	0	25 (6 64	H	0 6	38	-	9	0	- 11	23	+	69	63	9	0	44
Peak Hour Total	20				Pead	Peak Hour Total	8 u				a	Peak Hour Total	E.	55 ÷				Peak H	Peak Hour (Truck)	4 4						
Torck Bernantage 0.00%	1044				- In	Tork Percentage 9 09%	2 00%				F	Truck Percentage 1,85%	alane 1.8	26.50				Truck	Truck Percentage 4,88%	4.88%						

Town of Raymond: Summary of Traffic Counts
Project No: 2007-3491
Date Greated: April 24, 2008
Date Revised: April 25, 2008

Location: Date;

100 N & 100 W Wednesday, April 9, 2008

		PC Truck Pedestrian	,	-	0	80	26	14	en	0	. 0		2	0	29	51	
	F	Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
p	Right	PC	0	0	0	۵	0	0	0	0	0	0	0	0	0	0	
Southbound	H.	PC Truck	0	0	0	0	0	0	0	0	0	. 0	0	0	0	0	
S	Straight	PC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	ľ	Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Left	PC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10//\IG#
		PC Truck Pedestrian	0	0	0	0	2	3	1	2	0	0	0	0	9	9	Peak Hour Trotal 0 Peak Hour (Truck) 0 Truck Percentage #DIV/0
	-	nick P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Peak Heak Ho
pu	Right	PC IT	0		- 1	0	2	2	4	0	3	(*)	4	0	20	8	α, -
Northbound	2		0	0	0	0	0	0	0	0	0	0	0	0	0	0	
N	Straight	PC Truck	0	0	0	0	0	0	0	0	0	0	0	o	0	0	
	1	Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Left	PC	0	0	0	1	3	14	3	0	0	,,	0	,-	23	21	29 0 0.00%
	-	Pedestrian		Ü			2		0						0	1 2	
		Pede	0	0	0		15	45	10	62	60	_	,	(C)	96	77	Peak Hour Total Peak Hour (Truck) Truck Percentage
	Right	Truck	0	0	0	0	0	0	0	0	0	0	o	0	0	0	Peak Truc
punoc	R	DG V	0	0	0	0	0		-	0	0	0	0	0	2	2	
Westbound	Straight	Truck	0	0	0	0	4	-	0	0	0	0	0	0	2	9	
	S	O PC	0	**	10	0	17	38	13	1	12	4	9	2	97	99	
	Left	Truck	0	0	0	0	0	0	0	0	-	0	0	0	-	0	
		PC	٥	0	-	0	-	9	1	2	100	0	-	2	47	8	5 5
		Pedestrian	0	0	0	0	0	800	4	-	0	0	0		14	12	Peak Hour Total 81 Peak Hour (Truck) 5 Truck Percentage 6.17%
	芸	Puck	0	0	0	-	0	0	0	0	0	0	0	0	-	-	Peak P Peak F Truck
pun	Right	0.	0	0	0	2	0	0	4		0	0	0	0	4	m	-
Eastbound	ight	Truck	0	0	0	-	-	0	1	0	0	0	0	0	67	m	
77	Straight	DG.			2	ıs	ID.	17	4	0	4	4	3	15	52	32	
l	#	PC Truck PC Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Left	PC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39 4 10.26%
		Period	7:00 - 7:15 am	7:15-7:30 am	7:30 - 7:45 am	7:45 - 8:00 am	8:00 - 8:15 am	8:15 - 8:30 am	8:30 - 8:45 am	8:45 - 9:00 am	9:00 - 9:15 am	9:15 - 9:30 am	9-30 - 9-45 am	9:45 - 10:00 am	Total	Peak	Peak Hour Total 39 Peak Hour (Truck) 4 Truck Percentage 10.26%

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			ű	Eastbound	9		-		1	n noneau	2	-	1	1	ľ	2	- Andrews			1		-	Continoning			
	Left	-	Straight	E	Right		Le	Left	Straight		Right			Left				Right	7	1	9	-	Straight	_	2	T
Period	PC	Truck	PC Truck		PC Tru	uck Pedestnan	an PC	Truck	PC .	Truck	PC T	ruck P.	PC Truck Pedestrian	PC II	Inck	PC Tn	Truck P	T T	PC Truck Pedestrian		1	_	PC Truck	-	2	×
2:00 - 2:15 pm	0	0	8	0	+	0 0	20	0	2	0	0	0	7	1	0	0	0	4 0	0 2	0	0	0	0	0	0	-
2:15 - 2:30 pm	0	0	63	0	1 0	1	0	0	80	0	0	0	9	0	0	0	0	9	0 2	0	0	0	0	0	0	\dashv
2:30-2:45 pm	0	0		0	+	0	m	,	00	+	0	0	3		0	0	0	2 0	1 0	0	0	0	0	0	0	\rightarrow
2:45 - 3:00 pm	0	0	63	0	2 0	6	2	0	11	1	0	0	2		0	0	0	4 1	4	0	0	0	0	0	0	-
3:00 - 3:15 pm	0	0	-	-	0	0 0	2	0	15	10	0	0	2	3	0	0 0	0	2 0	1 1	0	0	0	0	0	0	_
3:15 - 3:30 pm	0	0	16	0	9	22	9	0	21	0	0	0	7.1	2		0	1 1	1 1	8	0	0	0	0	0	0	_
3:30 - 3:45 pm	0	0	a	0	1	0	en	0	00	0	-	0	8	-	0	0	0	7 5	1 0	0	0	0	0	0	0	
3:45 - 4:00 pm	+	0	-	0	0	0 0	10	0	10	0	0	0	2	-	-	0	0	4 0	0 2	0	0	0	0	0	0	
4:00-4:15-m	0	0	ı,	0	0	0 0	4	0	37	0	0	0	0		0	0	0	1 1	0 0	0	0	0	0	0	0	
4:15 - 4:30 pm	0	0	50	2	0	0	0	0	9	0	0	0		2	0	0		4 0	0 2	0	0	0	0	0	0	
4:30 - 4:45 pm	0	0	4	-	2 0	1	10	0	9	0	0	0		,	0	0	0	1 0	1 - 1	0	0	0	0	0	0	
4:45 - 5:00 pm	0	0	9	-	0	1 1	100	0	aı	0	0	0	9	17	0	0	0	0 0	1	0	D)	0	0	0	0	
-5:15 pm	0	0	01	0	0 0	0 0	7	0	80	0	0	0	3	0	0	0	0	2 0	3	D	0	0	0	0	0	
5:15 - 5:30 pm	0	0	100	-	0 0	0	4	0	2	0	0	0	2	0	0	0	0	2 0	0 0	0	0	0	0	0	0	
5:30 - 5:45 pm	0	0	63	0	0	0	0	0	9	0	0	0	0	0	0	0	0	1	0 4	0	0	0	D	0	0	
5:45 - 6:00 pm	0	0	00	0	0	0	0	o	83	0	0	0	3	2	0	0	0	2 0	0 5	0	0	0	0	0	0	
-6:15 pm	0	0	(2)	D	0 0		10	0	4	0	0	0	20	1	0	0	0	2 1	1 0	0	0	0	0	0	0	
6:15 - 6:30 pm	0	0	+	0	0 0	0	-	0	60	0	0	0	4		0	0	0	0 0	0 0	0	0	0	0	0	0	
6:30 - 6:45 pm	0	0	63	0	2 0	0 0	2	0	4	0	0	0	0	+	0	0	0	0 0	1 0	0	0	0	0	0	0	
6:45 - 7:00 pm	0	0			1 0	0 0	-	0	6	0	0	0	0	4	0	0	0	0	0 0	0	0	0	0	0	0	
Total	+	0	110	60	17	35	32	-	159	1	-	0	125	26	2	0	9 0	52	39	0	0	0	0	0	0	
Peak	+		H	0	7 6	22	19	0	54	2	-	0	98	1	2	0	0	21 0	0 12	0	0	0	0	0	0	
Peak Hour Total	40				4	Peak Hour Total	19 76 let					Peak F	Peak Hour Total	30				ī	Peak Hour Total	otal						
Peak Hour (Truck)	0				Pe	Peak Hour (Truck) 5	× (×				a.	Peak Ho	Peak Hour (Truck)	2				P	Peak Hour (Truck	à.						
-												1)		Service Line	Take.					

Town of Raymond: Summary of Traffic Counts
Project No: 2007-3491
Date Greated: April 24, 2008
Date Revised: January 2009

Location: Date:

100 N & Broadway Thursday, April 3, 2008

			ш	Eastbound	P					Westbound	pur					-	Northbound	pu					S	Southbound	7	
	left.		Straight	二	Right	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	97	Left	Stra	Straight	Right	per per		Left	4	Straight	THE.	Right			Left		Straight	14	Right	
Perlod	DC .	Truck	PC T	ruck	PC IT	PC Truck PC Truck PC Truck Pedestri	strian PC	Truck		PC Truck	PC Truck	Truck	Pedestrian	DC	Truck	PC Truck		PC T	Truck Pe	Pedestrian	PC Truck		PC IT	Truck P	C Truc	PC Truck Pedestrian
7:00 - 7:15 am	0	0	2	0	0	1 1 0	2	0	2	0	2	0	0	0	0	13	0	0	0	0	2	0	. 5	1	3 0	0
7:15 - 7:30 am	0	0		0	2	1 0	0	0	0	-	9	0	0	0	0	28		4	0	0	6	0	13	0	2 0	0
7:30 - 7:45 am	2	0	0	0	0	1 0	60	0	4-	0	m	0	0	,	0	19	0	-	0	0	60	0	7	0	0	0
7:45 - 8:00 am	4	0	0	0	0	1 1	0	0	m	0	4	+	0	2	0	17		(1)	0	-	2		15	0	6 2	0
B:00 - 8:15 am	4		4	0	63	0 3	69	0	9	0	1	0	10	7	-	22	0	63	0	4	4	0	27	0	18 4	17
8;15 - 8:30 am	1	-	2	0	63	1	ໝ	0	6	0	60	0	0	14	0	23	0	-	0	0	2	0	21	0 2	27 1	15
8:30 - 8:45 am	3	0		0	2	0 2		0			9	0	2		0	23	0	2	0	2	6	-	13	-	12 2	2
8:45 - 9:00 am	60	0	0	1	2	1	4	0		0	s.	+	0	m	0	17	*		0	*	0	0	19	0	0	0
9:00 - 9:15 am		-	2	0	2	0 0	2	0	2	0	14		0	63	0	14	0	63	0	0		-	15	1 1	10 0	0
9:15 - 9:30 am		2	0	0		2	4	0	2	0	1	0	0	60	0	15	,-	0	0	0	2	0	12	2	3 2	က
9:30 - 9:45 am	4	0	0	0	2	0 2	6	0	-	0	ın		1	63	0	17		4	0	0	10	0	19	1	4	1
9:45 - 10:00 am	2	0	,-	0	,	0 3	o	0	2	-	49	0	1	1	0	18	2	-	0	0	4	a	18	1	0	6
Total	31	ı,	13	-	18	4 18	38	0	30	9	20	4	7	43	,-	228	1	23	0	00	37	m	183	7 10	100 12	41
Peak	- 12	2	7		10	2 0	13	0	17	-	21	,	2	30		85	+	7	0	1	15		80	1 6	64 7	34
Peak Hour Total	37					Peak Hour To	Total 53					Peak	Peak Hour Total	124					Peak H	Peak Hour Total	168					
Peak Hour (Truck)	n				a.	Peak Hour (Tru	ruck) 2				-	Peak H	Peak Hour (Truck)	2				۵	eak Hou	Peak Hour (Truck)	g					
Truck Percentage 8 11%	8 11%				5	Truck Percents	ntana 3 77%					Truck	Truck Percentage	161%					nick Pe	Truck Percentage	5 36%					

Wednesday, April 2, 2008

			ω	Eastbound	P				×	Westbound	P					Northbound	puno		7			Sou	Southbound		
	Left		Straight	¥	Right		Left		Straight	T.	Right			Left	S	Straight	Right	th.		Left	(Straight		Right	
Period	PC Truck	_	PC Truck	-	PC Tru	PC Truck Pedestrian	PC	Truck	PC T	Truck	PC Truck	ck Pedestrian	rian PC	Truck	PC N	Truck	DG.	Truck	Pedestrian	PC T	Truck	PC Truck	ok bc	Truck	Pedestrian
2:30- 2:45 pm	1	0	0	0	3	0 3	2	0	5	0	9	11	9	0	24	٦	4	0	4	65	0	8 0	7 7	1	ı
2:45 - 3:00 pm	2	0	2	0	9	0 4	1	0	2	0	7 0	10	2	0	20	۵	4	0	0	7	0	23 0	9 0	0	4
3:00 - 3:15 pm	20	0	m	0	8	0 3	11	0		0	0	7	9	0	28	0	4D	0	-1	80	0	30 0	9	0	ıç
3:15 - 3:30 pm	10	0	2	0	13 0	0 16	7	0	6	0	12 0	18	9	0	23	0	6)	0	+	2	0	29 0	3	0	0
3:30 - 3:45 pm	4	0	4	0	3	9 0	7	0	m	0	0	2	11	0	33	0	2	0	2	9	0	25 0	9	-	12
3:45 - 4:00 pm	O)	0	4	0	9	1 0	8	0	63	0	17 0	8	4	0	32	0	7	0	2	10	0	31	2	0	2
4:00 - 4:15 -m	en	,-	0	0	4	0 3	7	0	2	0	0 6	1 1	m	0	27	0	ф	0	2	1	0	33 0	4	0	9
4:15 - 4:30 pm	80	0	2	0	4	0 2	11	0	4	0	8	4	2	0	35	0	20	0	0	2	0	23 0	9	0	+
4:30 - 4:45 pm	4	,-		0	2 (2 0	6	0	10	0	7	1	un	0	26	-	4	0	4	10	0	33 0	9	0	8
4:45 - 5:00 pm	1	0	7	0	4	5 0	7	0	4	0	10 0	2	eo	0	28	0	7	0	0	m	0	31	3	+	2
5:00 - 5:15 pm	13	2	12	0	3	. 0	13	0	9	0	9	+	4	0	41	0	œ	0	0	12	0	32 0	10	0	2
5,15 - 5:30 pm	2	0	5	0	5	1 0	9	0	7	0	13 0	2 2	4	0	58	+	4	0	2	1	0	40 0	9 0	0	0
5:30 - 5:45 pm	3	0	1	0	4	9 0	6	0	13	0	0	,	4	0	21	0	,	0	0	60	0	25 0	2 2	0	+
5;45 - 6:00 pm	4	0	63	0	3	0 3	ın	0	7	0	5 0	2	un.	0	35	0	u	0	0	10	0	26 0	0 4		0
6:00 - 6:15 pm	4	0	0	0	3	0 1		0	0	0	3	0	0	0	21	0	4	0	2	7	0	21 0	1	0	3
6:15 - 6:30 pm		0	-	0	3	0 0	2	0	2	0	3 0	1		0	28	0	,	0	2	7	0	21 0	1	0	0
6:30 - 6:45 pm	4	0	0	0	2 0	0 2	65	0	1	0	5 0	9	2	0	16	0	4	0	0	9	0	H	0 5	0	1
6:45 - 7:00 pm	3	0	3	0	3 0	0 2	3	0	3	0	0 9	2	2	0	23	0	2	0	2	co.	0	20 02	9	1	-
Total	96	4	41	0	79 0	0 64	115	0	62	0	140 0	9 84	02	0	492	m	85	0	24	132	0 4	476	1 79	10	63
Peak	26	65	16	0	14	6 0	35	0	17	0	36 0	9 0	16	0	124	2	26	0	Q	38	0	136 (0 24	+	12
Peak Hour Total	- 59					Peak Hour Total	88					Peak Hour Total	otal 168	100				Peak	Peak Hour Total	199					
Peak Hour (Truck)	69				Pe	Peak Hour (Truck)	0				Pe	Peak Hour (Truck)	uck) 2					Peak H	Peak Hour (Truck)	-					
Truck Dampulana 5,08%	S, DRW.				E	arck Percentage	0.00%				T	Truck Percentage 1,19%	ans 1 194	.0				Truck	Truck Percentage 0.50%	250%					

Town of Raymond: Summary of Traffic Counts Project No: 2007-3491 Date Created: April 24, 2008 Date Revised: January 2009

Location: Date:

200 N & 200 W Thursday, April 3, 2008

Thirty Straight Right					Fastbound	pun					1	Westbound	pu					Z	Northbound	pu					u)	Southbound	pun		
PC Truck PC		91	40	15.	aicht		inht		le l		Strai	aht	Righ			Left		Straic	T.	Right			Left	1	Strail	ight	Rio	100	
1	Period		Truc	PC PC	Truck		Truck	Pedestrian		ruck	22	X	PC 7	y y			-	PC 1	×		ruck Pe	destrian		Truck	PC	Truck		Truck	Pedestrian
4 0 13 2 2 1 1 1 1 1 0 0 0 0 0	7:00-7:15 am	1	0	13				0	2	0	5	0	0	0	0	69	0	-	0	-	0	1	2	0	2	0	1	0	0
1	7:15-7:30 am	4	0	t		2	-	1	-	0	11	,	0	0	0	4	0	2	0		0	0		0	u)	0		0	0
2	7:30 - 7:45 am	0	0	7		m	0	0	-	0	80	2	+	-	0	2	0	-	0	+	0	0	+	0	·	0	.0	0	.0
3	7.45 - 8:00 am	2	0	13	2	-	0	3	89	0	9	63	2	0	0	2	2	2	0	1	0	0	0	0	4	0	4	0	-
1	8:00 - 8:15 am	60	0	14	H	3	-	0	10	0	o	2	**	0	16	8	0	16	0	8	0	3	-	0	15	0	2	0	es
1	8:15 - 8:30 am	,	0	+	H	3	0	0	13	0	a	1	-	0	13	2	0	27	0		0	0	1	0	20	0	2	0	2
2	8:30 - 8:45 am	-	0			0		0	un	0	10		0	0	+	4		1	0		0	0	0	0	7	.0	3	0	0
1 0 8 5 4 0 0 2 0 10 0 2 0 0 0 0 0 0 0	8:45 - 9:00 am	2	0			2		0	4	0	on	4	2	0	0	1		4	0	3	0	0	-	0	2	0	4	,	0
1 0 12 0 2 2 0 0 1 0 6 3 0 0 0 0 0 2 0 1 0 0 3 0 4 0 0 0 0 0 0 0 0	9:00 - 9:15 am		0	60	-	4	0	0	2	0	10	0	2	0	0	2	0	9	0	2	0	0	2	0	-	0	2	1	0
1	9-15-9-30 am		0	-	0	2	2	0	-	0	9	60	0	0	0	2	0	2	0	+	0	0	60	o	4	0	2	0	0
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16 0 145 17 28 9 4 48 0 99 19 10 1 31 6 74 0 56 1 4 13 0 65 0 7 0 54 4 9 3 3 3 6 0 34 7 4 0 30 11 3 52 0 44 0 3 2 0 48 0 7 0 54 4 9 3 3 3 3 5 0 34 7 4 0 11 3 52 0 44 0 3 2 0 48 0 8 1 1 2 2 3 3 3 3 3 3 3 3	9:45 - 10:00 am		0	-	+		-	0	0	0	10	2		0	-	2	0	ın	0	63	1	0	0	0	,	0	2	0	1
7 0 54 4 9 3 3 36 0 34 7 4 0 30 11 3 52 0 44 0 3 2 0 48 77 Peak Hour Total 81 Peak Hour Total 110 Peak Hour Total 59 7 Peak Hour Total 7 Peak Hour (Truck) 7 Peak Hour (Truck) 3 Peak Hour (Truck) 0 9 GHS 1 Truck Percentage 854% 1 Truck Percentage 1 Truck Percentage 1 Truck Percentage 2 Truck Percentage 1 Truck Percentage	Total	499	H	t	_	28	H	4	48	0	66	19	10	-	31	31	9	74	0	28		4	13	0	65	0	24	2	7
77 Peak Hour Total 81 Peak Hour Total Feak Hour Total 7 Peak Hour (Truck) 7 Peak Hour (Truck) 7 Peak Hour (Truck) 3 Peak Hour (Truck) 9 9 7 Truck Percentage 8.54% Truck Percentage 173% Truck Percentage	Peak	7	+	\vdash	_	6	-	es	36	0	35	7	4	0	30	11	3	52	0	44	0	63	2	0	48	o	11	0	ø
7 Peak Hour (Truck) 7 Peak Hour (Truck) 3 Peak Hour (Truck) 9 peak Hour (Truck) 5 Truck Percentage 273% Truck Percentage 273% Truck Percentage 273%	Peak Hour Total	177					Peal	k Hour Total	20					Peak H	four Total	110					Peak H	our Total	59						
9 09% Truck Percentage Truck Percentage Truck Percentage Truck Percentage	Peak Hour (Truck)	1					Peak	sour (Truck)	7				, de	Peak How	ur (Truck)	m				Δ.	Bak Hou	T (Truck)	0						
	Truck Percentane	1660 6					Truck		8.64%					Truck Pe	arcentage 2	2,73%				-	Fruck Pe	rcentage	0.00%						

Thursday, April 10, 2008

Date.

			ű	Eastbound	-	1				Westbound	DIN.					INC	Normooning					0	South to the	2	
	Left	-	Straight	ti.	Right		1	Left	Str	Straight	Right	25		Left				Right						Right	
Period	PC	Truck	PC Truck	_	PC In	PC Truck Pedestrian	an PC	Truck	8	Truck	PC .	Truck P	Pedestrian	8	Truck	5	Truck PC	Truc	Truck Pedestrian	8	Truck	DG.	Truck	PC Truck	uck Pedestrian
2:00 - 2:15 pm	0	2	7	2	2 0	0 0	3	0	- 6		,-	0	0	5		2	0 2	-	0	0	2	,	0	+	A
2:15 - 2:30 pm	0	0	12	+	4	0	0	0	4	89	0	0	0	60	0	0	0	0	0	4	0	2	-	3	0
2:30- 2:45 pm	2	0	12	v	9	0 1	4	0	+	2	7	1	0	1	0	2	2 8	2	0	2			0	4	0
2-45 - 3-00 pm	era		15	0	2	0 0		0	12	,	623	0	0	1	0	4	1 0	0	0	0	0	2	m	2	0
3:00 - 3:15 pm	0	0	52	60		0 0	2	0	14	9	-	0	0	2	0	20	1	0	0	2	1	14		2 0	0
3:15 - 3:30 pm	63		12	,	2 0	0 0	Ф	0	22	4	0	0	36	4	1	18	2 17	0	4	2	1	18		2	3
30 - 3:45 pm	2		-11	2		0 2	60	0	-11	2	+	0	17 1	12	1	13	3 11	-	0	2	0	8	e	-	4
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4:00 - 4:15 -m	63	0	11	-	3	0 0	4	40	18	2	1	0		2	0	1	0	0	0	1	0	a	0	2	1
4:15 - 4:30 pm		+	18	7	6	0 1	1	0	16	1	2	0	0	2	,	9	1 5	0	0	0	,-	4	0	-	
4:30 - 4:45 pm		0	10	9	2	0 0	62	0	20	52	4	0	0	2	0	4	3	0	0	0	0	2	0		0
4:45 - 5:00 pm		0	17		4	0	2	0	15	2	15	0	0	4	0	1	0 7	0	0	0	0	00	0	2	-
5:00 - 5:15 pm		0	12	2	60	2 0	2	0	24	2	2	0	4	2		3	9 0	0	0	60	0		0	1	
5:15 - 5:30 pm	7	0	10	2	2	0 0	00	0	12	0	3	0	0	2	0	63	0 2	0	0	-	0	ın	0	2	0
5:30 - 5:45 pm	-	0	13	0		0	*	0	12	1	2	0	+	3	0	2	0 1	0	0	2	0	+	0	3	0
5:45 - 6:00 pm	0	0	18	0	10	0 0	4	0	18	0	2	0	1	5	1	3	0 4	0	0	2	0	2	0	+	0
6:00 - 6:15 pm	-	0	13	-	-	0	60	0	14	4	2	0	0	4	0	4	1 0	0	0	67	0	4	0	0	0
6:15 - 6:30 pm	3	0	22	0		0	2	0	10	0	63	0	- 1	3		0	0 4	-	0	2	·	6	0	2	0
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Total	36	1	274	33	70	3	99	2	286	35	48	1	88	67	-10	101	10 104	9	4	38	7	98	=		3
Peak	31	8	55	100	11	0 4	17		22	8	7	0	99	21	4	45	5 43	-	4	80	-	40	4	80	10
Peak Hour Total	88					Peak Hour To	Total 110				-	Peak	Peak Hour Total	119				ď	Peak Hour Total	al 62					
Peak Hour (Truck)	1				ď.	Peak Hour (Truck)						Peak Ho		9				Ped	Peak Hour (Truck)						
-	1002 00				1		10010					1	The Contract of the Park	10000				-	Terminal Paradana	70000					

Town of Raymond: Summary of Traffic Counts
Project No: 2007-3491
Date Created: April 24, 2008
Date Revised: January 2009

Location: Date:

200 N & 100 W Tuesday, April B, 2008

				Eastbound	pun					W	Westbound	D		7			No	Northbound	P					S	Southbound	pur		
	le l	Left	Straight	tho	Right	其		Left	-	Straight	14	Right).):		Left		Straight	aht	Right	1		Left	- 3	Straight	ght	Right		
Period	DG.	Truck	PC Truck PC Truck	Truck	ū.	J-	nuck. Pedestrian	PC Truck		PC Truck		E O	ruck Pe	PC Truck Pedestrian	PC	Truck	PC Truck		PC 1	ruck P	Truck Pedestrian	bc	Truck	PC Truck		PC T	nck P	Truck Pedestrian
7:00 - 7:15 am	0	0	13	2	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
7:15 - 7:30 am	0	0	16	4	0	0	0	0	0	14	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
7:30 - 7:45 am	0	0	16	2	0	0	0	0	0	21	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
7:45 - 8:00 am	0	0	20	4	0	0	m	0	0	15	1	0	0	0	0	0	0	0	0	0	- 2	,	0	.0	0	2	0	0
8:00 - 8:15 am		0	15	10	0	0	14	0	0	23	5	0	0	- 1	0	0	0	0	0	0	9	0	0	0	0	1	0	-
8,15 - 8,30 am	m	0	35	-	0	0	24	0	0	24	10	6	0	0	0	0	0	0	0	0	15		0	0	0	9	1	0
8:30 - 8:45 am	-	0	31	5	0	0	-	0	0	22	9	0	0	0	0	0	0	0	0	0	0	1	0	0	0	+	0	0
8:45 - 9:00 am	0	0	26	-	0	0	0	0	0	19	*	0	0	0	0	0	0	0	0	0	0	1	0	0	0	-	0	0
9:00 - 9:15 am	0	0	12	4	0	0	0	0	0	7.7	62	0	0	0	0	0	0	0	0	0	0	2	0	0	0	+	0	0
9:15 - 9:30 am	+	0	13	2	0	0		0	0	22	2		0	0	0	0	0	0	0	0	0	. 1	0	0	0	+	2	0
9:30 - 9:45 am	0	0	15	4	0	0	0	0	0	8	2	0	0	1	0	0	0	0	0	0	0		0	0	0	0	1	0
9:45 - 10:00 am		0	23	2	0	0.	0	0	0	20	65		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Total	1	0	240	36	0	0	43	0	0	218	35	2	0	2	0	0	0	0	0	0	16	10	0	0	0	14	4	-
Peak	2	0	107	12	0	0	39	0	0	88	00	3	0	1	0	0	0	0	0	0	13	m	0	0	0	on.		-
Peak Hour Total 124 Peak Hour (Truck) 12	124					Peak H	Peak Hour Total Peak Hour (Truck)	60 82				a.	Peak Hot		0 0					Peak Hou	Peak Hour (Truck) 1 Total Benefitted 7 50%	13						
Truck Percentage 9.58%	9.68%					INCK P	ruck Percentage 15,51%	0,010,01					DCX PE	I NCK Percentage #	1000					I INCH L	afigurania	0.000						

90
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Apn
Thursday,
Date:

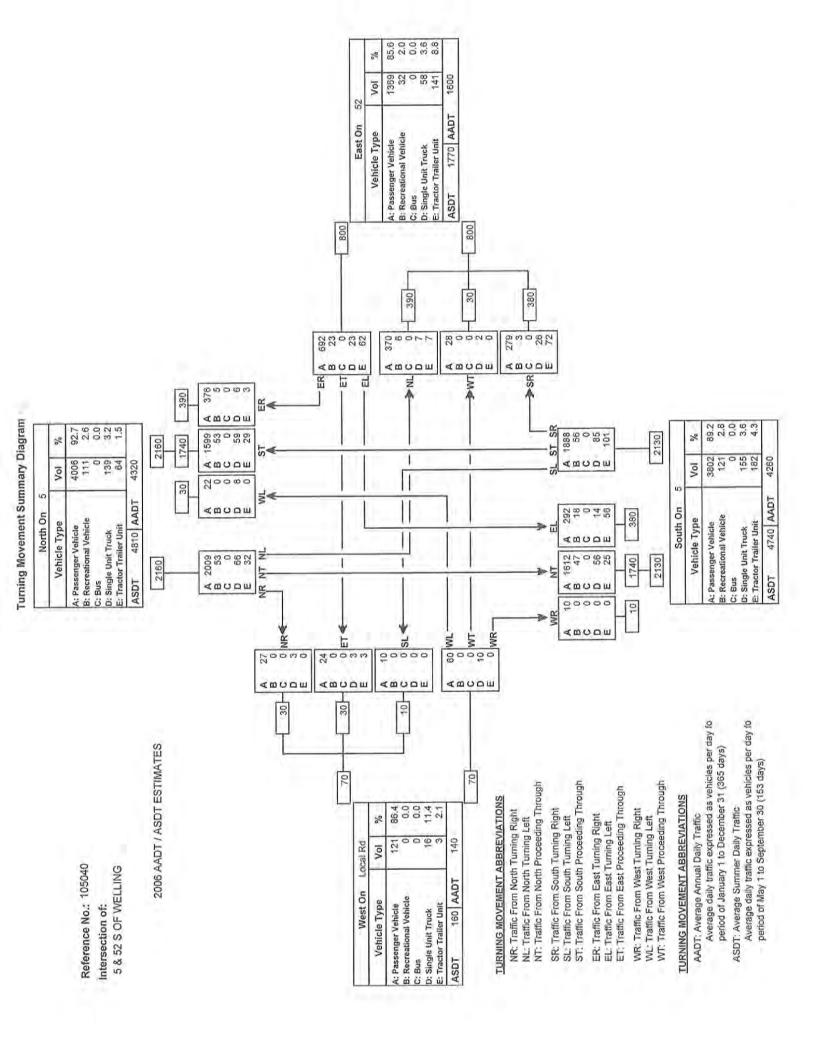
			4	Eastbound	pu			I		Westbound	pur					No	DONOGUTION	-1		1		1	200	Sanoan Sanoan		
	Left	#	Straight	其	Right			Left	St	Straight	Right	#		Left		Straight		Right			a)		put		Right	
Period	PC	Truck	PC	ruck	PC Tru	PC Truck PC Truck Pc Truck Pedestrian	nian PC	Truck	PC	Truck	PC 1	Truck	Pedestrian	PC	Truck	PC Truck	_	PC Truck	uck Pede	Pedestrian	PC Tr	Truck	PC Truck	-	PC Truck	Pedestrian
2:00 - 2:15 pm	0	0	19	-	0	3	0	0	31	2	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
2:15 - 2:30 pm	7	0	17	00	0 0	0	0	0	117	2	2	0	0	0	0	0	0	0	0	0	0	0	0 0	2	0	0
2:30-2:45 pm	0	0	130	2	0 0	0 0	0	0	17	3		0	0	0	0	0	0	0	0	0	1	0	0 0	7	0	0
2:45 - 3:00 pm	0	0	23	2	0 0	0 0	0	0	20		-	0	0	0	0	0.	0	0 0	. 0		0	0	0 0	-	0	0
3:00 - 3:15 pm	,	0	23	0	0	0	0	0	21	2	0	0	0	0	0	0	0	0 0	0	0	0	0	0 0	1	0	0
3:15 - 3:30 pm	62	0	17	2	0	21	0	D	27	2	63	0	4	0	0	0	0	0	2	20	0	0	0 0	4	0	0
3:30 - 3:45 pm	2	۲	1	0	0	15	0	0	27	0	-	0	-	0	0	0	0	0	1	16	4	0	0	5	0	2
3:45 - 4:00 pm	2	0	27	2	0	1	0	0	23	0	5	0	0	0	0	0	0	0	0	0		0	0 0	0	0	0
4:00 - 4:15 -m	100	+	32	2	0 0	0	0	0	13		-	0	0	0	0	0	0	0	0	0	+	0	0 0	3	0	0
4:15 - 4:30 pm	0	H	26	(7)	0 0	1	0	0	16	2	6	0	0	0	0	0	0	0 1 0	0	-	0	0	0 0	0	0	0
4'30 - 4'45 pm	0	0	25	2	0	0	0	0	B	2	2	0	2	0	0	0	0	0	0	0	3	0	0 0	1	0	0
4:45 - 5:00 pm	4	H	25	67	0	5	0	0	30	,		0	2	0	0	0	0	0 0	0	7	2	0	0 0	1	0	0
5:00 - 5:15 pm		0	36	-	0 0	1	0	0	31	2	m	0	0	0	0	0	0	0				0	0 0	0	0	a
5:15 - 5:30 pm	0	0	28	4	0 0	0 0	0	0	28	0	m	0	0	0	0	0	0	0	0	0	0	0	0 0	2	0	0
5:30 - 5:45 pm	0	1	26	0	0	9	0	0	33	0	2	0	1	0	0	0	0	0	0	0	2	0	0 0	1	0	0
5:45 - 6:00 pm	0	-	77	0	0		0	0	24	m	2	0	0	0	0	0	0	0	0	0	+	0	0 0	2 2	0	0
6:00 - 6:15 pm	0	1	22	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0		1	0	0	3	0	0
6:15 - 6:30 pm	0	1	22	0	0 0	0 0	0	0	24	67		0	0	0	0	0	0	0	. 0		0	0	0	-	0	0
6:30 - 6:45 pm	0	0	15	0	0 0	0 0	0	0	24	+	0	0	0	0	0	0	0	0	0	9	0	. 0	0	0 0	0	0
6:45 - 7:00 pm	3	0	83	0	0	9	0	0	24	0	1	0	1	0	0	0	0	0	0	1		0	0	. 0	0	0
Total	18	0	478	27	0 0	35	0	0	489	27	33	0	11	0	0	0	0	0	0 5	58	19	0	0	-	0	2
Peak	8	0	106	0	0	37	0	0	90	6	10	0	20	0	0	0	0	0	0	36	9	0	0	0 12	0	2
Peak Hour Total	120				L.	Peak Hour Total	otal 103					Peak	Peak Hour Total	0				3	Peak Hour Total	rTotal	18					
Peak Hour (Truck)					Pe	Peak Hour (Truck)	uck) 3				40	Peak H	Peak Hour (Truck)	0				ď	Peak Hour (Truck)	Truck)	0					
A												-		THE PARTY AND ADDRESS OF					The Party of the P	di managana	A Annex					

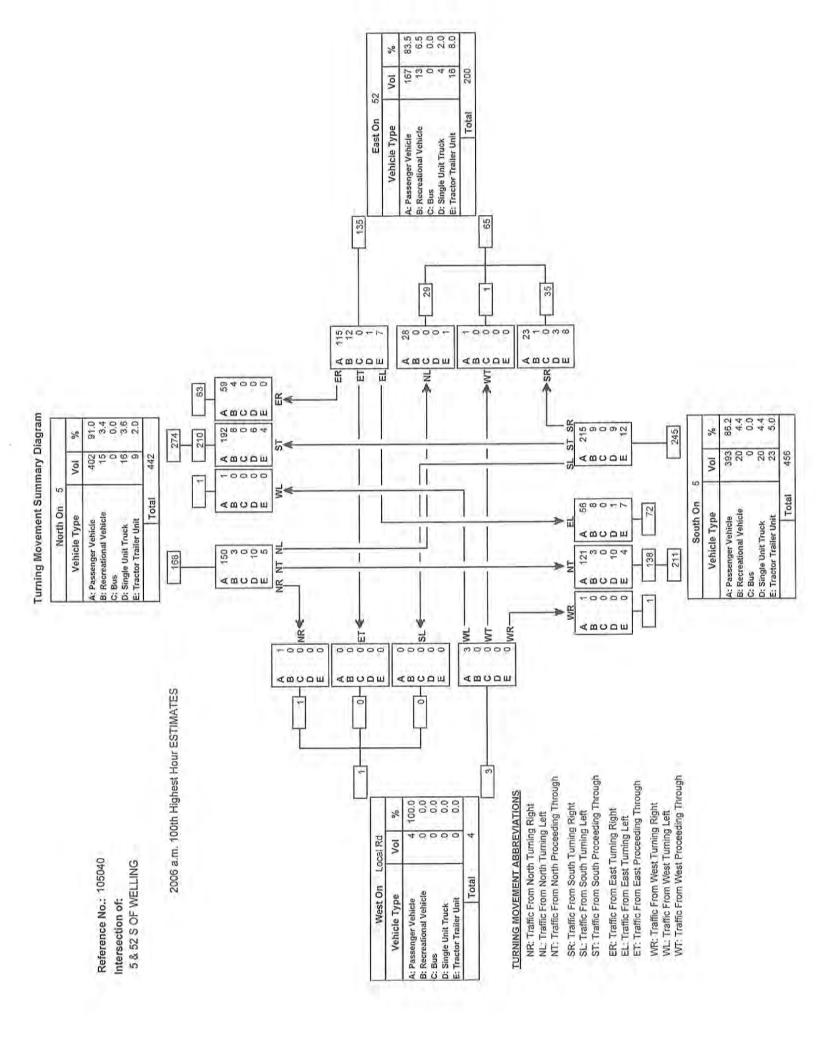
ALBERTA HIGHWAYS 1 TO 986 TRAFFIC VOLUME HISTORY 1997 - 2006

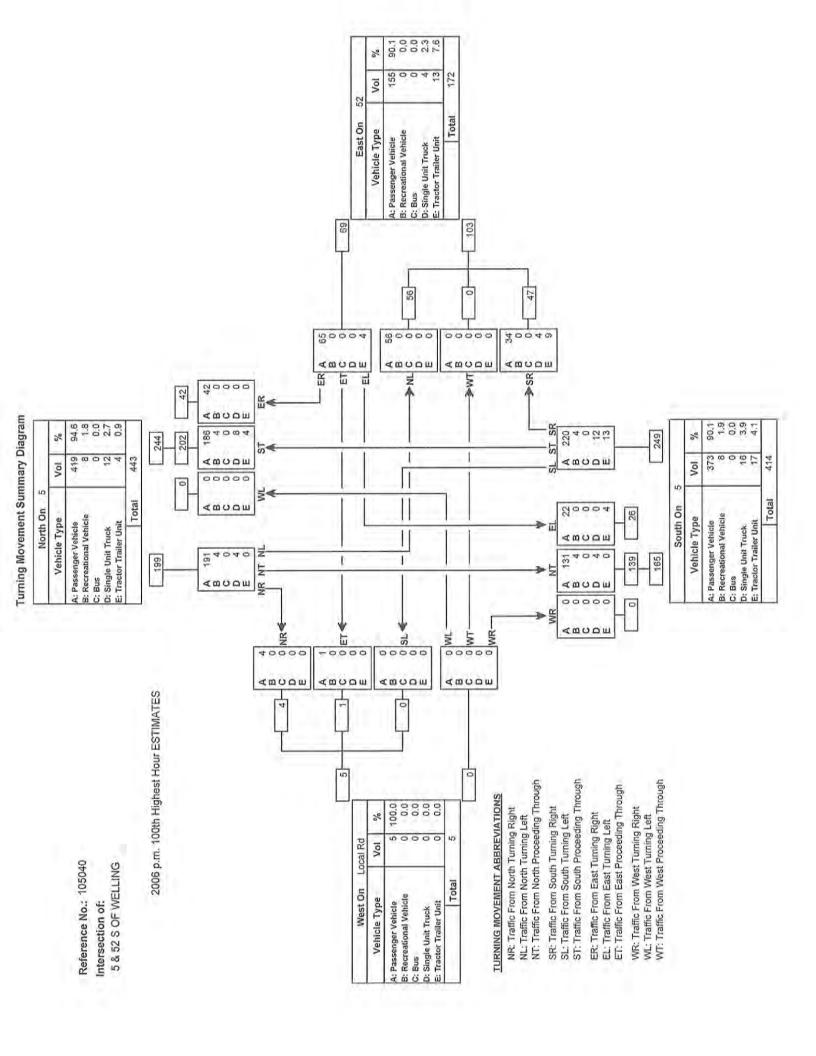
Alberta Infrastructure and Transportation Program Management Branch Network Planning and Performance

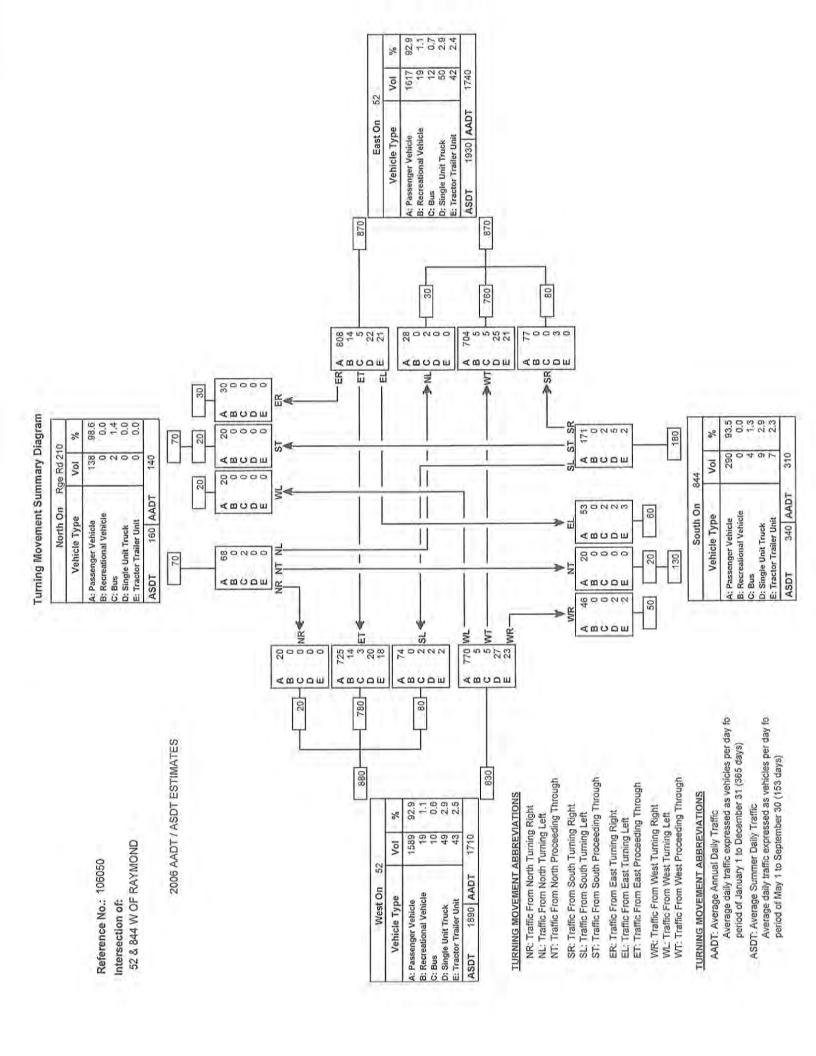
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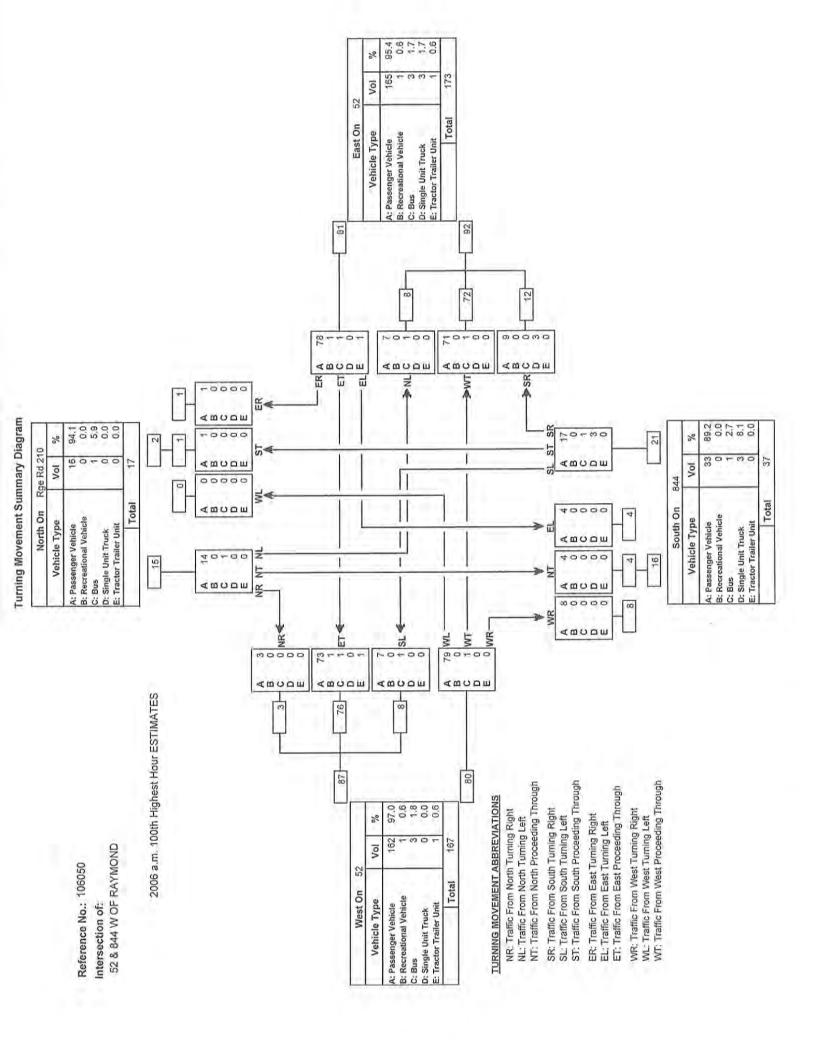
roduced	09-W	lar-Zu	roduced: 09-Mar-2007 By ComerStone Solutions Inc.	1997	1998	1888	2000	2001	2002	2003	2004	2005	2006	9
Hwy	S	TCS	Muni From	AADT	AADT	ASDT								
49	10	00	SmkR S OF GUY ACC RD 35-75-21-500000000						1410	1390	1420	1480	1610	1720
49	10		SMKR 2.7 KM N OF 2A & 49 GUY	1180	1210	1240	1250	1340	1360	1360	1380	1430	1560	1670
49	10	00	SMKR NOF 2AS OF GUY	1180	1140	1110	1120	1240	1370	1350	1380	1430	1560	1670
64	12	4	SMKR SOFZASOF GUY	1080	1110	1080	1090	1200	1340	1370	1440	1460	1620	1690
49	2	A	Smir NOF 676 S OF GUY	1060	1080	1060	1060	1200	1320	1340	1410	1430	1660	1730
67	1,0	00	SmkR S OF 676 S OF GUY	1080	1100	1080	1080	1210	1340	1360	1430	1450	1620	1690
49	1 5	00	Grave 1 1 KM N OF 49 & 669 VALLEYVIEW	1660	1710	1680	1750	1890	1980	1990	2080	2100	2330	2430
2 0	1 5	0 00		1680	1720	1680	1810	1950	1950	1980	2080	2100	2330	2430
2 0	1 0	5	Gray S OF 669 NF OF VALL PYVIEW	2380	2460	2400	2740	2850	2800	2860	2960	2730	3030	3160
49	1 2	1 0		3410	3520	3470	3480	3570	3680	3740	3930	4000	4240	4420
2 4	2 0	4 4		099	99	780	760	730	700	720	710	720	740	810
3 6	4 0	* *		710	720	760	740	700	999	680	700	710	730	800
3 5	1 0	*		220	550	280	260	530	510	530	250	570	280	650
3 2	4 0	* 4		1850	1680	1590	1810	1520	1530	1580	1560	1490	1600	1770
2 5	4 6	r ×		1830	1750	1640	1870	1570	1540	1560	1530	1490	1600	1770
2 2	4 0	1 4		2010	1930	1440	1650	1390	1350	1390	1660	1600	1710	1890
70	4 0	1 0		2000	1920	1490	1710	1440	1400	1440	1690	1630	1740	1930
70	4 0	0 0			2290	2160	2470	2080	2590	2670	2670		2740	3030
70	4 0	0 5			1680	1550	1760	1490	1560	1600	1600		1660	1840
25	2	12		CED	050	000	2007	RED	630	640	640		680	750
25	N	12		000	000	200	200	200	3 6	000	950		360	WW.
52	7	16	Warn E OF 846 S OF STIRLING	370	370	380	400	340	330	230	250		200	36
52	7	16	Warn WOF 4 SE OF STIRLING	350	320	370	390	330	320	330	330			38
83	4	4	CINV E OF 22 N OF ROCKY MTN HOUSE	360	370	370	370	370	380	380	390			490
23	4	4	Pnka W OF LOCAL RD 29-42-5-500001100		250	260	260	260	270	270				390
23	4	4			250	260	260	260	270	270				390
2	4	4		250	250	250	270	270	280	280				400
8	V	00		250	250	250	300	300	310	310	370	390		450
3 8		00			440	440	440	440	480	480	200			620
3 6	7	5			260	560	260	560	280	580	009	029	020	740
3 8		200		850	870	870	800	820	830	830	830	920		1050
3 8		4 4		1460	1500	1500	1360	1400	1410	1410	1410	1520	1520	1740
3 %	. 4	2 4					2430	2490	2490	2460	2450	2950	3010	3200
3 6							2910	2990	2990	2960	2950	3370		3680
3 8	7	2 4					3290	3370	3360	3340	3330	3390		3700
3 8	7	4					4930	5040	5030	4970	4940	5240		5730
3 2	7	2 6		2070	5180	5220	5150	5270	5290	5120	5230	5430	2280	2940
3 2	*	2 4		2550	2610	2600	2560	2750	2740	2700	2680	3 2820	2900	3100
3 8		4		1330	1350	1360	1370	1450	1390	1470	1520	1590	1640	1750
3 8	0 4			1330	1360	1470	1440	1450	1380	1490	1550	1590	1640	1750
3 6	9 40	4		1410	1430	1550	1370	1430	1370	1450	1500			1730
2	4	4		1440	1460	1580	Ĩ	1430		1450		7		1710
3 8	ο (c	4		1440	1460	1580		1360	1370				1600	1710
3 8	200	00		1140	1160	1250	1090	1250		1260	1300	1370		1640
3		,												

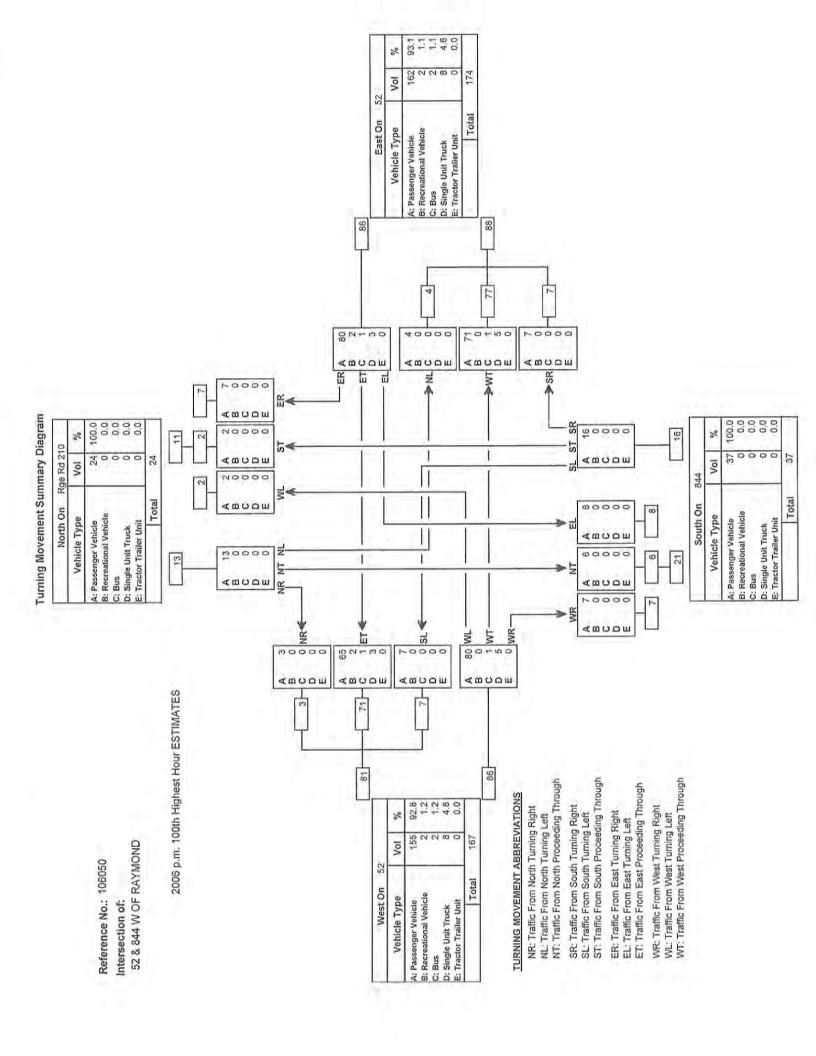


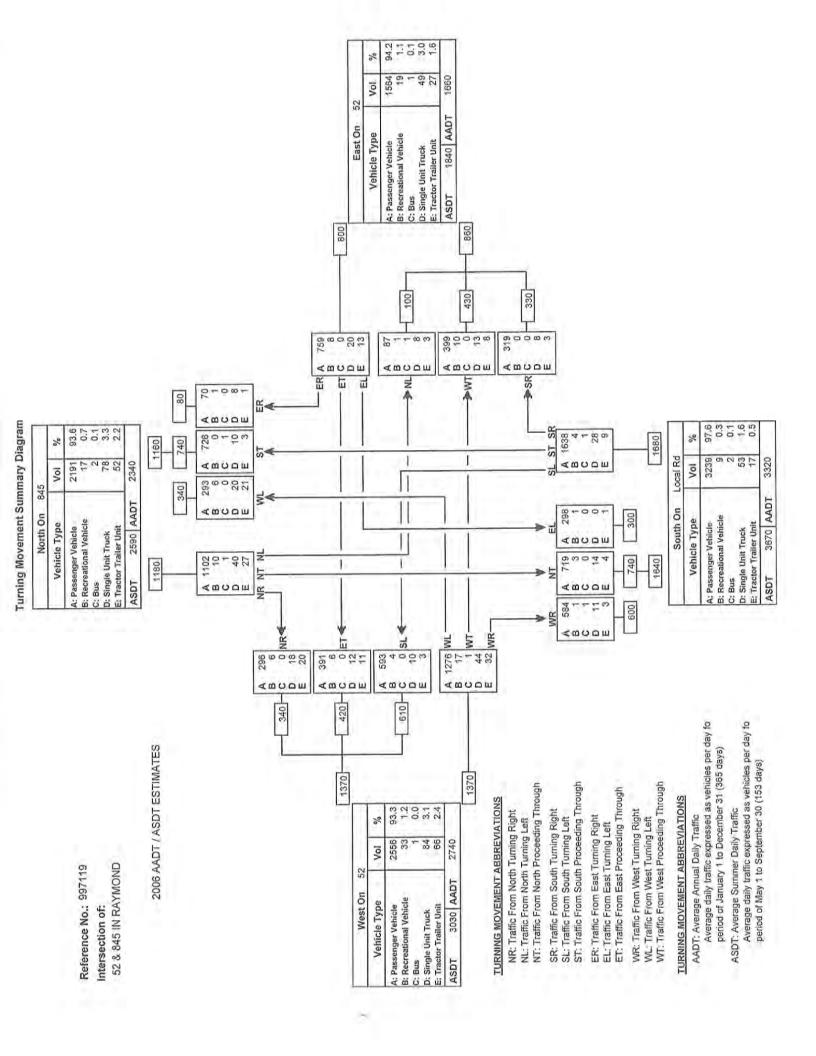


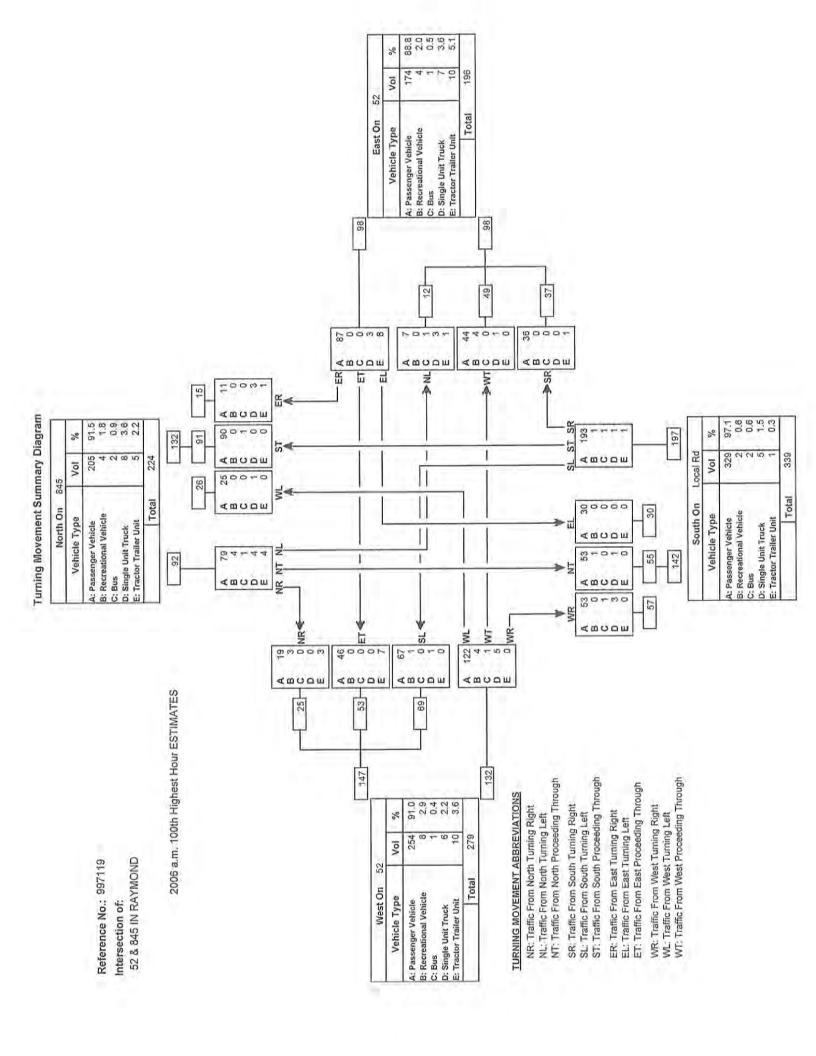


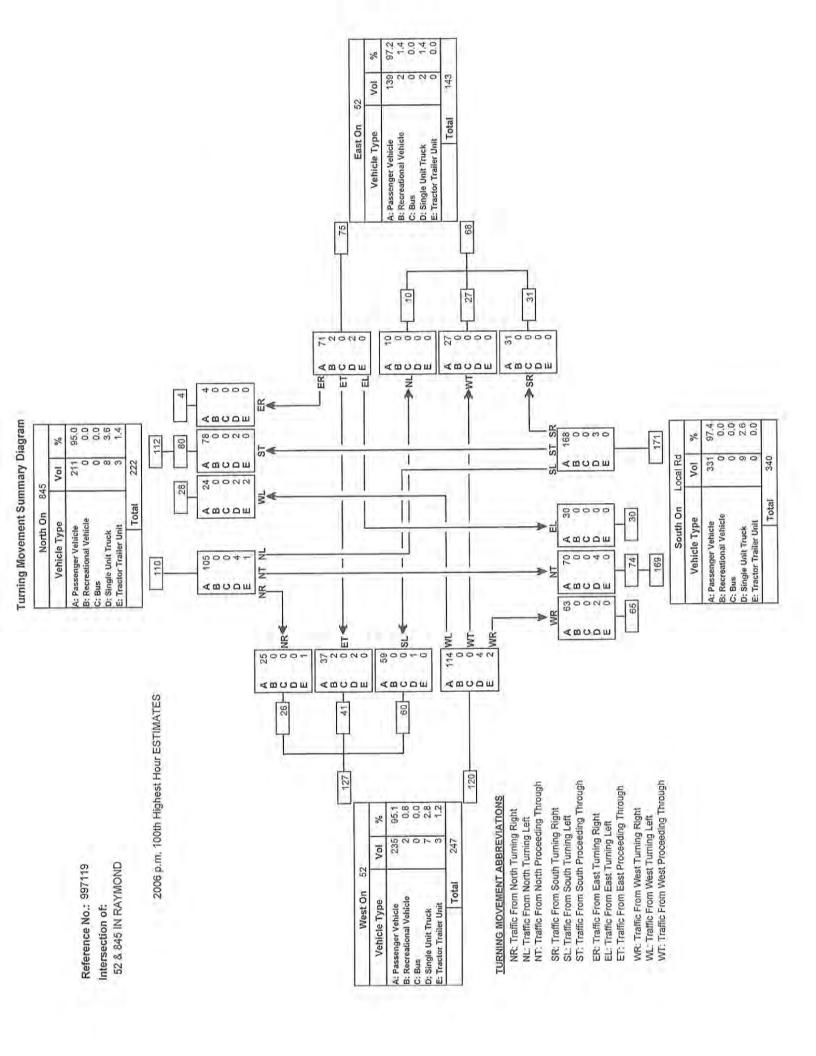


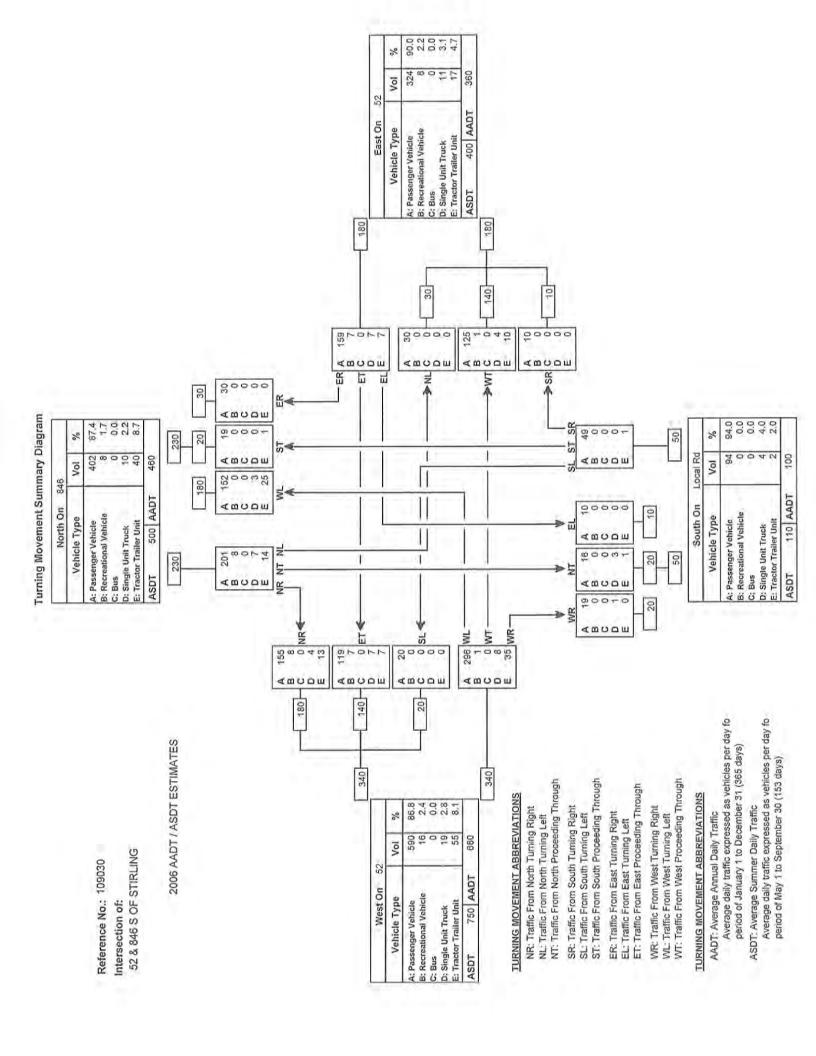


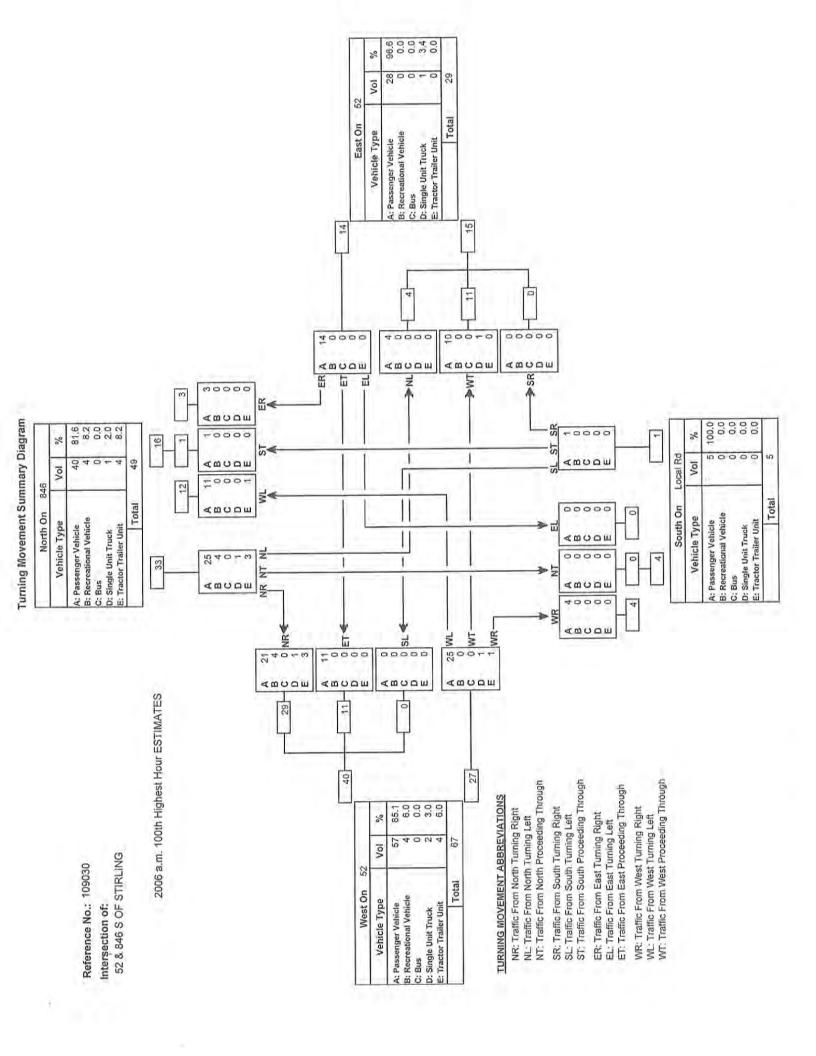


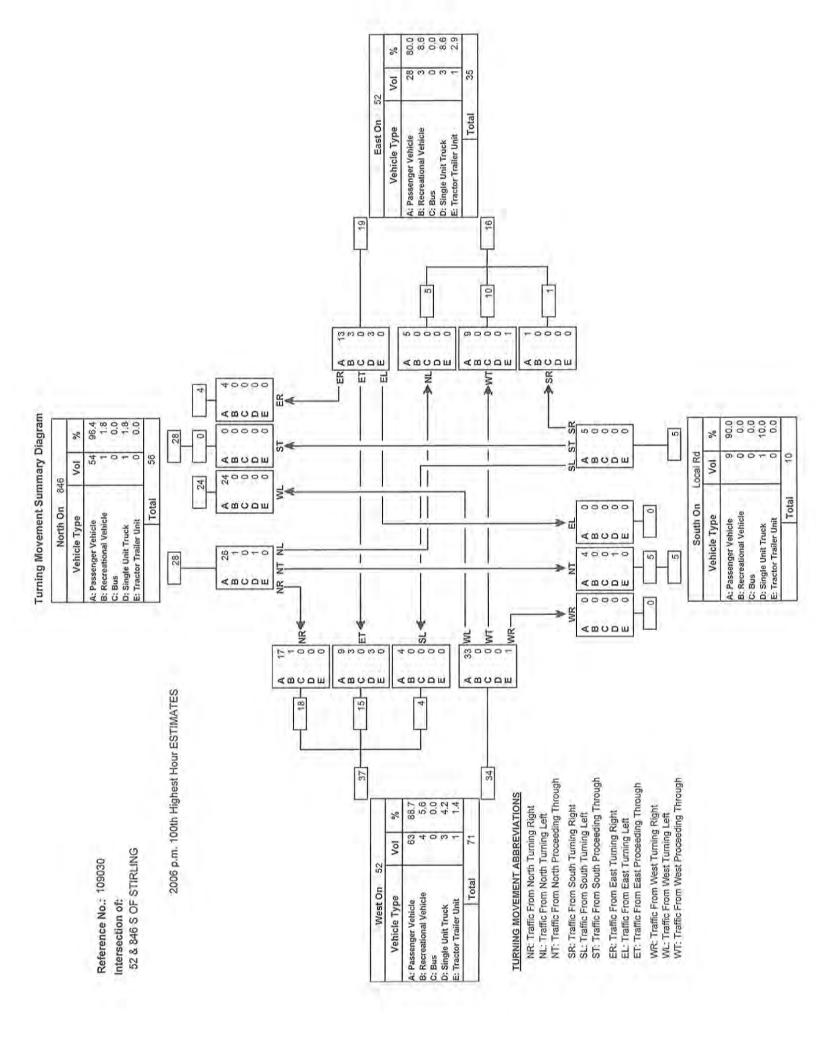


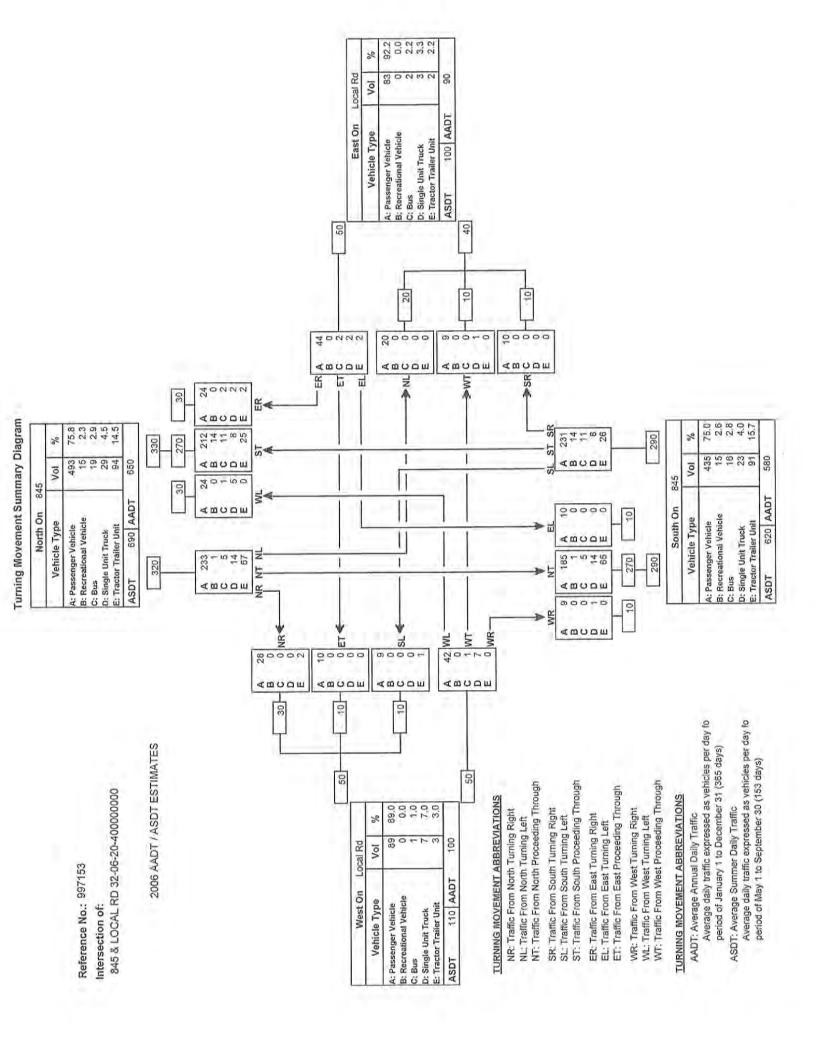


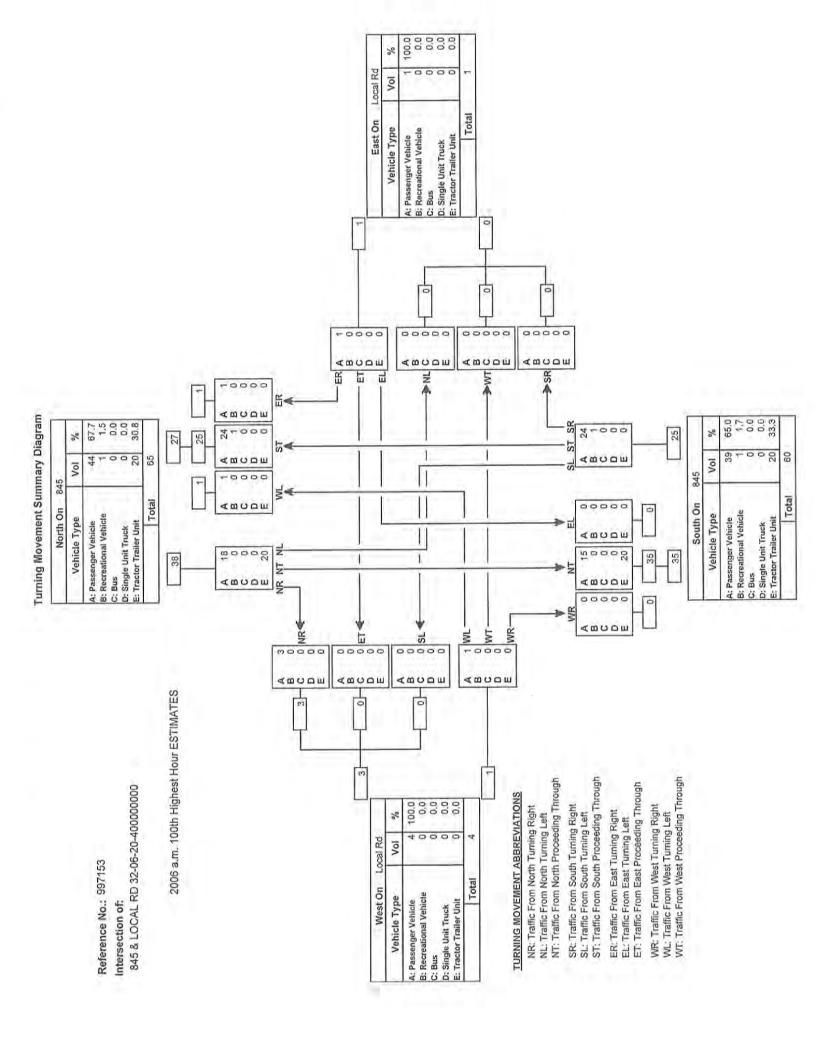


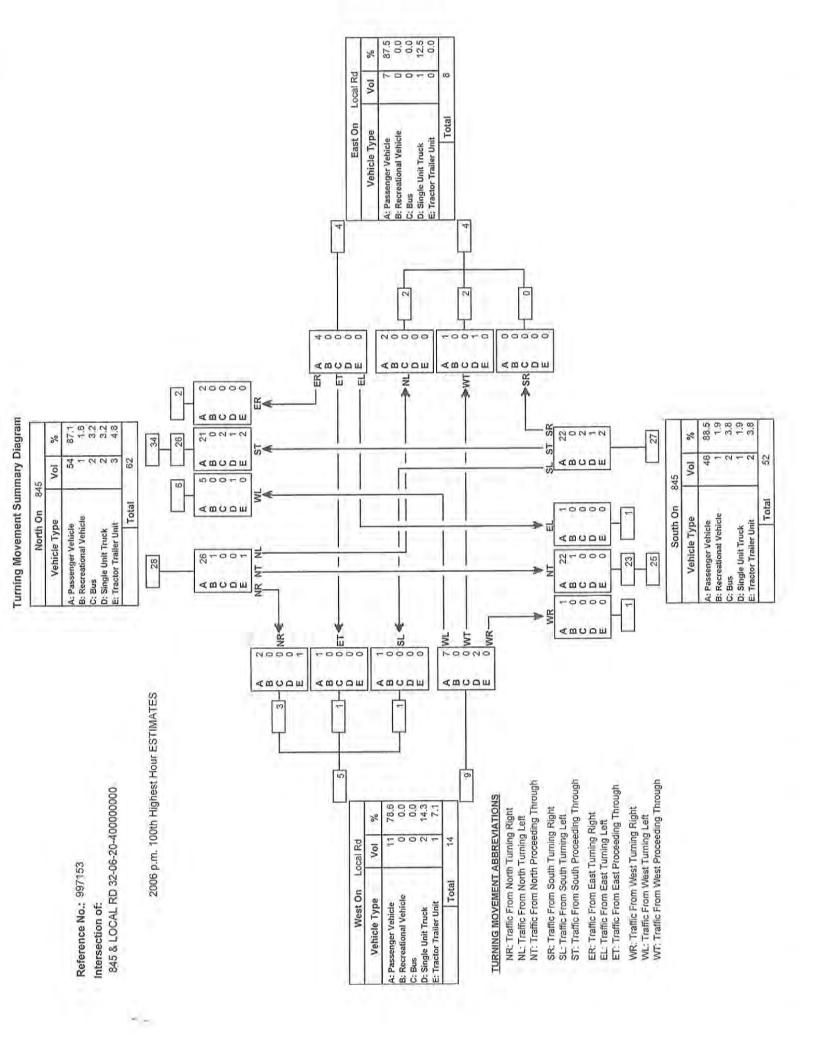












B Appendix B Existing Traffic Controls



N-S Street	E-W Street	Traffic Control	Controlled Direction
Hwy 5	Hwy 52 (200N)	n/a	n/a
Hwy 844	Hwy 52 (200N)	-	-
•	1 Ave S (100 S)	-	-
	4 Ave S (400 S)	Stop	e-w (WB only)
1 St W (400 W)	1 Ave S (100 S)	n/a	n/a
· ·	2 Ave S (200 S)	n/a	n/a
	3 Ave S (300 S)	n/a	n/a
	4 Ave S (400 S)	n/a	n/a
RR 205	4 Ave S (400 S)	-	-
3 St W (300 W)	Hwy 52 (200N)	Stop	e-w
(/	1 Ave N (100 N)	Yield	n-s (SB only)
2 St W (200 W)	4 Ave N (400 N)	Yield	e-w
	3 Ave N (300 N)	Yield	e-w
	Hwy 52 (200N)	Stop	n-s
	1 Ave N (100 N)	Stop	all
	Church Ave	Yield	e-w (WB only)
	1 Ave S (100 S)	Stop	all
	2 Ave S (200 S)	Stop	n-s
	3 Ave S (300 S)	- -	-
	4 Ave S (400 S)	-	<u> </u>
1 St W (100 W)	Hwy 52 (200N)	Stop	n-s (SB only)
1 3(10 (100 10)	1 Ave N (100 N)	Stop	n-s (NB only)
	Church Ave	Stop	` ,,
		Yield	n-s
	1 Ave S (100 S)		n-s
	2 Ave S (200 S)	Yield	n-s
	3 Ave S (300 S)	Yield	e-w (EB only)
Broadway	Hwy 845 (Railway Avenue)	Stop	n-s (SB only)
	4 Ave N (400 N)	Stop	e-w
	3 Ave N (300 N)	Stop	e-w
	Hwy 52 (200N)	Stop	e-w
	1 Ave N (100 N)	Stop	e-w
	Park Ave	Stop	e-w (EB only)
	1 Ave S (100 S)	Stop	e-w
	2 Ave S (200 S)	Stop	e-w
	4 Ave S (400 S)	Yield	n-s (SB only)
1 St E (100 E)	4 Ave N (400 N)	Yield	e-w
	3 Ave N (300 N)	Yield	e-w
	Hwy 52 (200N)	Stop	n-s
	1 Ave N (100 N)	Yield	n-s
	Park Ave	Yield	n-s
	1 Ave S (100 S)	Yield	
	1 Ave S (100 S) 2 Ave S (200 S)	Yield Yield	n-s n-s n-s
2 St E (200 E)	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845	Yield	n-s n-s
2 St E (200 E)	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N)	Yield Yield Stop Stop	n-s n-s n-s
2 St E (200 E)	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845	Yield Yield Stop	n-s n-s n-s n-s (NB only)
2 St E (200 E)	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N)	Yield Yield Stop Stop	n-s n-s n-s n-s (NB only) all
2 St E (200 E)	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N) 3 Ave N (300 N)	Yield Yield Stop Stop Yield	n-s n-s n-s n-s (NB only) all e-w n-s all
2 St E (200 E)	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N)	Yield Yield Stop Stop Yield Stop Yield Stop	n-s n-s n-s n-s n-s (NB only) all e-w n-s
2 St E (200 E)	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N)	Yield Yield Stop Stop Yield Stop Yield Stop Stop	n-s n-s n-s n-s (NB only) all e-w n-s all
2 St E (200 E)	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N) Park Ave	Yield Yield Stop Stop Yield Stop Stop Stop Stop Stop Stop Stop	n-s n-s n-s n-s (NB only) all e-w n-s all e-w (EB only)
2 St E (200 E)	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N) Park Ave 1 Ave S (100 S)	Yield Yield Stop Stop Yield Stop Stop Stop Stop Stop Stop Stop Stop	n-s n-s n-s n-s (NB only) all e-w n-s all e-w (EB only) all
	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N) Park Ave 1 Ave S (100 S) 2 Ave S (200 S)	Yield Yield Stop Stop Yield Stop Stop Stop Stop Stop Stop Stop Stop	n-s n-s n-s n-s (NB only) all e-w n-s all e-w (EB only) all all
	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N) Park Ave 1 Ave S (100 S) 2 Ave S (200 S) 4 Ave S (400 S)	Yield Yield Stop Stop Yield Stop Stop Stop Stop Stop Stop Stop Stop	n-s n-s n-s n-s (NB only) all e-w n-s all e-w (EB only) all all
	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N) Park Ave 1 Ave S (100 S) 2 Ave S (200 S) 4 Ave S (400 S) Township Rd. 70 Hwy 845	Yield Yield Stop Stop Yield Stop Stop Stop Stop Stop Stop Stop Stop	n-s n-s n-s n-s (NB only) all e-w n-s all e-w (EB only) all all n-s (SB only)
	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N) Park Ave 1 Ave S (100 S) 2 Ave S (200 S) 4 Ave S (400 S) Township Rd. 70 Hwy 845 4 Ave N (400 N)	Yield Yield Stop Stop Yield Stop Stop Stop Stop Stop Stop Stop Stop	n-s n-s n-s n-s n-s (NB only) all e-w n-s all e-w (EB only) all all n-s (SB only) - n-s (NB only)
	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N) Park Ave 1 Ave S (100 S) 2 Ave S (200 S) 4 Ave S (400 S) Township Rd. 70 Hwy 845 4 Ave N (400 N) 3 Ave N (300 N)	Yield Yield Stop Stop Yield Stop Stop Stop Stop Stop Stop Stop Stop	n-s n-s n-s n-s n-s n-s (NB only) all e-w n-s all e-w (EB only) all all n-s (SB only) - n-s (NB only) - e-w (EB only)
	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N) Park Ave 1 Ave S (100 S) 2 Ave S (200 S) 4 Ave S (400 S) Township Rd. 70 Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N)	Yield Yield Stop Stop Yield Stop Stop Stop Stop Stop Stop Stop Stop	n-s n-s n-s n-s n-s (NB only) all e-w n-s all e-w (EB only) all all n-s (SB only) - n-s (NB only) - e-w (EB only) - n-s (NB only) - e-w (EB only) n-s
	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N) Park Ave 1 Ave S (100 S) 2 Ave S (200 S) 4 Ave S (400 S) Township Rd. 70 Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N)	Yield Yield Stop Stop Yield Stop Stop Stop Stop Stop Stop Stop Stop	n-s n-s n-s n-s n-s n-s (NB only) all e-w n-s all e-w (EB only) all all n-s (SB only) - n-s (NB only) - e-w (EB only) n-s (SB only) n-s n-s (SB only)
2 St E (200 E) 3 St E (300 E)	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N) Park Ave 1 Ave S (100 S) 2 Ave S (200 S) 4 Ave S (400 S) Township Rd. 70 Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N) 1 Ave N (100 N)	Yield Yield Stop Stop Yield Stop Stop Stop Stop Stop Stop Stop Stop	n-s n-s n-s n-s n-s (NB only) all e-w n-s all e-w (EB only) all all n-s (SB only) - n-s (NB only) - e-w (EB only) - n-s (NB only) - e-w (EB only) n-s
	1 Ave S (100 S) 2 Ave S (200 S) Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N) Park Ave 1 Ave S (100 S) 2 Ave S (200 S) 4 Ave S (400 S) Township Rd. 70 Hwy 845 4 Ave N (400 N) 3 Ave N (300 N) Hwy 52 (200N) 1 Ave N (100 N)	Yield Yield Stop Stop Yield Stop Stop Stop Stop Stop Stop Stop Stop	n-s n-s n-s n-s n-s n-s (NB only) all e-w n-s all e-w (EB only) all all n-s (SB only) - n-s (NB only) - e-w (EB only) n-s (SB only) n-s n-s (SB only)



Appendix C - Level of Service Definitions for Unsignalized Intersections



LEVEL OF SERVICE DEFINITIONS AT UNSIGNALIZED INTERSECTIONS $^{(2)}$

The level of service criteria for unsignalized intersections are given in the table below. As used here, total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation.

Level of Service	Features	Average Total Delay (sec/veh)
A	Little or no traffic delay occurs. Approaches appear open, turning movements are easily made, and drivers have freedom of operation.	≤ 10
В	Short traffic delays occur. Many drivers begin to feel somewhat restricted in terms of freedom of operation.	> 10 and ≤ 15
С	Average traffic delays occur. Operations are generally stable, but drivers emerging from the minor street may experience difficulty in completing their movement. This may occasionally impact on the stability of flow on the major street.	> 15 and ≤ 25
D	Long traffic delays occur. Motorists emerging from the minor street experience significant restriction and frustration. Drivers on the major street will experience congestion and delay as drivers emerging from the minor street interfere with the major through movements.	> 25 and ≤ 35
Е	Very long traffic delays occur. Operations approach the capacity of the intersection.	$> 35 \text{ and} \le 50$
F	Saturation occurs, with vehicle demand exceeding the available capacity. Very long traffic delays occur.	> 50

⁽¹⁾ Highway Capacity Manual 2000.



Appendix D - Synchro Capacity Analysis Results



- ASSUMED NETWORK -

						2008 Bac	kground			2018 Background			2018	Total			2028 Ba	ckground			2028	Total	
Intersection	Intersection	Movement	Configuration	Traffic Control		S	N/C	(8)		s vic	8		S	V/C	(8)		S	N/C	®		S	V/C	8
	Approach				Volume	TOS	ă	Delay	Volume	LOS	elay	Volume	2	ă	Delay	Volume	TOS	ă	Delay	Volume	TOS	fax	Delay
	Overall			_		A	0.04	3.6	_	A 0.05	3.6	_	Δ	0.11	4.1	_	A	0.14	4.2	_	A	0.20	4.5
	Overan	Left			-	-	-	-	-	A -	-	-	-	-	-	-	-	-	-	-	-	-	-
	Eastbound	Through	TR	Free	10	A	0.03	0.0	12	A 0.03	0.0	68	Α	0.07	0.0	84	A	0.08	0.0	122	A	0.11	0.0
		Right			30	A	0.03	0.0	37	A 0.03	0.0	37	A	0.07	0.0	45	A	0.08	0.0	45	A	0.11	0.0
Railway Ave & 200 E	Westbound	Left Through	LT	Free	10 20	A A	0.01	0.1 2.5	12 25	A 0.01 A 0.01	0.1 2.4	12 27	A A	0.01	0.1 2.3	15 33	A A	0.01	0.1 2.4	15 39	A A	0.01	0.1 2.2
	**Cstboulid	Right	LI	rice	-	- A	- 0.01		- 23	A 0.01	2.4	-	- A	0.01	- 2.3	- 33	- A	0.01		- 39	- A	0.01	
		Left			15	A	0.04	8.8	18	A 0.05	8.9	18	A	0.11	9.3	23	A	0.14	9.6	23	В	0.20	10.2
	Northbound	Through	LR	Stop	÷	-	-	-	-	Α -	-	-	-	-	-	-	-	-	÷	-	-	-	-
	Overall	Right	-	_	20	A	0.04	8.8	25	A 0.05 A 0.03	8.9 2.0	78	A A	0.11	9.3 1.5	95	A A	0.14	9.6 1.5	133	B A	0.20	10.2
	Overali	Left	-	-					10	A 0.03	0.1	10	A	0.03	0.1	12	A	0.04	0.1	12	A	0.03	0.1
	Eastbound	Through	LTR	Free					100	A 0.01	0.7	185	A	0.01	0.4	228	A	0.01	0.4	347	A	0.01	0.3
		Right							10	A 0.01	0.7	54	A	0.01	0.4	66	A	0.01	0.4	66	A	0.01	0.3
		Left		_					10	A 0.01	0.1	10	A	0.01	0.1	12	A	0.01	0.1	12	A	0.01	0.1
Highway 52 & 400 W	Westbound	Through Right	LTR	Free		N/			100	A 0.01 A 0.01	0.7	100 10	A A	0.01	0.7	123 12	A A	0.01	0.7	123 12	A A	0.01	0.8
1161Way 52 00 400 W		Left				14/	•		10	A 0.01	9.8	10	B	0.03	10.7	12	B	0.01	11.5	12	B	0.01	12.9
	Northbound	Through	LTR	Stop					0		-	0	-	-	-	0	-	-	-	0	-	-	-
		Right							10	A 0.03	9.8	10	В	0.03	10.7	12	В	0.04	11.5	12	В	0.05	12.9
	Southbound	Left Through	LTR	Stop					10	A 0.03	9.8	10 0	В	0.03	10.4	12 0	В	0.04	11.0	12 0	В	0.05	12.0
	Southbound	Right	LIK	Зюр					10	A 0.03	9.8	10	В	0.03	10.4	12	В	0.04	11.0	12	В	0.05	12.0
	Overall	-	-	-	-	A	0.18	6.0	-	A 0.24	6.5	-	A	0.36	7.0	-	A	0.50	8.7	-	A	0.70	13.0
		Left			14	A	0.01	0.1	17	A 0.01	0.1	17	A	0.01	0.1	21	A	0.02	0.1	21	A	0.02	0.2
	Eastbound	Through	LTR	Free	63	A	0.01	1.3	77	A 0.01 A 0.01	1.3	162 14	A	0.01	0.8	200	A	0.02	0.8	319 17	A	0.02	0.6
		Right Left			11	A A	0.01	0.1	14 22	A 0.01 A 0.02	0.1	23	A A	0.01	0.8	17 27	A A	0.02	0.8	46	A A	0.02	0.6
	Westbound	Through	LTR	Free	85	A	0.01	1.3	105	A 0.02	1.3	105	A	0.02	1.4	129	A	0.02	1.4	129	A	0.04	2.1
Highway 52 & 200 W		Right			7	A	0.01	1.3	9	A 0.02	1.3	9	A	0.02	1.4	11	A	0.02	1.4	31	A	0.04	2.1
		Left	LTR	0.	25	В	0.18	11.1	31	B 0.24	12.1	31 103	В	0.36	14.9 14.9	38	С	0.50	19.2	38 142	E	0.72	35.0 35.0
	Northbound	Through Right	LIK	Stop	50 44	B B	0.18	11.1	62 54	B 0.24 B 0.24	12.1	103 54	B B	0.36	14.9	126 67	C	0.50	19.2 19.2	73	E E	0.72	35.0
		Left			9	В	0.10	11.2	11	B 0.14	12.1	11	В	0.16	13.4	14	C	0.24	15.8	20	C	0.72	23.7
	Southbound	Through	LTR	Stop	44	В	0.10	11.2	54	B 0.14	12.1	55	В	0.16	13.4	68	C	0.24	15.8	68	C	0.37	23.7
		Right			9	В	0.10	11.2	- 11	B 0.14	12.1	11	В	0.16	13.4	14	C	0.24	15.8	14	C	0.37	23.7
	Overall	Left	-	-	29	A B	0.20	6.3	36	A 0.27 B 0.27	7.1	36	A B	0.41	8.7 14.7	44	B C	0.59	12.6 13.4	44	D	1.37	81.0 97.2
	Eastbound	Through	LTR	Stop	28	В	0.20	11.6	34	B 0.27	13.1	52	В	0.41	14.7	65	C	0.59	13.4	196	F	1.08	97.2
		Right		· ·	67	В	0.20	11.6	82	B 0.27	13.1	149	В	0.41	14.7	184	C	0.59	13.4	184	F	1.08	97.2
		Left		_	31	В	0.17	13.7	38	C 0.24	16.1	48	C	0.34	21.5	56	E	0.56	11.1	79	F	1.37	252.2
Highway 52 & Broadway	Westbound	Through Right	LTR	Stop	42	B B	0.17	13.7	52	C 0.24 C 0.24	16.1 16.1	52	C	0.34	21.5 21.5	64	E E	0.56	11.1	103 26	F	1.37	252.2 252.2
ing.iway 52 oc Bioadway		Left			62	A	0.05	0.4	76	A 0.06	0.5	76	A	0.06	0.5	94	A	0.07	15.5	94	A	0.07	0.7
	Northbound	Through	LTR	Free	83	A	0.05	2.9	102	A 0.06	3.0	156	A	0.06	2.5	192	A	0.07	15.5	210	A	0.07	2.5
		Right			32	A	0.05	2.9	39	A 0.06	3.0	39	A	0.06	2.5	48	A	0.07	15.5	55	A	0.07	2.5
	Southbound	Left Through	LTR	Free	10 76	A A	0.01	0.1	12 93	A 0.01 A 0.01	0.1	12 95	A A	0.01	0.1	15 117	A A	0.01	11.3	21 117	A A	0.02	0.2
	Soumbound	Right	LIK	1100	27	A	0.01	0.7	33	A 0.01	0.7	33	A	0.01	0.7	41	A	0.01	11.3	41	A	0.02	1.1
	Overall	-			-	A	0.10	6.0	-	A 0.13	6.2	-	A	0.23	7.0	-	A	0.30	7.6	-	A	0.52	8.5
		Left	I mn		14	A	0.01	0.1	17	A 0.01	0.1	17	A	0.01	0.1	21	A	0.02	0.1	21	A	0.02	0.1
	Eastbound	Through Right	LTR	Free	26 18	A A	0.01	1.8	32 22	A 0.01 A 0.01	1.8	50 22	A A	0.01	1.5	61 27	A A	0.02	1.5	201 27	A A	0.02	0.8
		Left			12	A	0.01	0.1	15	A 0.01	0.1	25	A	0.01	0.1	30	A	0.02	0.2	50	A	0.02	0.8
	Westbound	Through	LTR	Free	41	A	0.01	1.6	50	A 0.01	1.6	60	A	0.02	2.2	74	A	0.02	2.2	153	A	0.04	2.0
Highway 52 & 200 E		Right			4	A	0.01	1.6	5	A 0.01	1.6	5	A	0.02	2.2	6	A	0.02	2.2	26	A	0.04	2.0
	Northbound	Left Through	LTR	Stop	17 41	B B	0.10	10.1	21 50	B 0.13 B 0.13	10.5	21 103	B	0.23	11.9 11.9	26 127	B B	0.30	13.2	26 145	C	0.52	22.3
	Dimodililori	Right	LIK	зюр	16	В	0.10	10.1	20	B 0.13	10.5	20	В	0.23	11.9	24	В	0.30	13.2	30	C	0.52	22.3
		Left			5	A	0.07	9.9	6	B 0.08	10.2	6	В	0.09	10.7	8	В	0.12	11.3	14	C	0.21	16.3
	Southbound	Through	LTR	Stop	29	A	0.07	9.9	36	B 0.08	10.2	37	В	0.09	10.7	45	В	0.12	11.3	45	C	0.21	16.3
		Right			14	A	0.07	9.9	17	B 0.08	10.2	17	В	0.09	10.7	21	В	0.12	11.3	21	C	0.21	16.3

- ASSUMED NETWORK -

						2008 Bac	ckground			2018 Bac	ckground			2018	Total			2028 Ba	ckground			2028	Total	
Intersection	Intersection Approach	Movement	Configuration	Traffic Control	Volume	ros	ax V/C	slay (s)	Volume	ros	ax V/C	elay (s)	Volume	SOT	ax V/C	elay (s)	Volume	ros	ax V/C	elay (s)	Volume	ros	ax V/C	elay (s)
	01					_	Ÿ	Ď		_	Ÿ	De			Ÿ	Ď		_	Σ	ğ			Σ	1.9
	Overall	Left	-	-													-	A	0.03	0.0	-	A	0.09	1.9
	Eastbound	Through	TR	Free													53	A	0.03	0.0	53	A	0.09	0.0
III-1 62 6 D1		Right															0	-	-	-	82	A	0.09	0.0
Highway 52 & Development #10 Access	Westbound	Left Through	LT	Free		N/	A			N/	A			N	/A		0 57	A	0.00	0.0	0 57	Ā	0.00	0.0
		Right															-	-	-	-	-	-	-	-
		Left															0	-	-	-	48	A	0.06	9.6
	Northbound	Through Right	LR	Stop													0	-	-	-	0	-	-	
	Overall	- Kight	-	-					-	A	0.02	3.7	-	A	0.02	1.9	-	A	0.02	1.9	-	A	0.02	1.9
		Left							5	A	0.02	8.6	5	A	0.02	8.6	6	A	0.02	8.7	6	A	0.02	8.7
	Westbound	Through Right	LR	Stop					10	- A	0.02	8.6	10	- A	0.02	8.6	12	- A	0.02	8.7	12	A	0.02	8.7
400 N 0 400 W		Left							-	- A	- 0.02	- 0.0	-	- A	- 0.02	- 0.0	- 12	- A	- 0.02	- 0.7	- 12	- A	- 0.02	- 0.7
100 N & 400 W	Northbound	Through	TR	Free		N/	A		15	A	0.01	0.0	15	A	0.01	0.0	18	A	0.01	0.0	18	A	0.01	0.0
		Right							0	-	0.00	-	0		- 0.00	-	0	-	- 0.00	-	0		- 0.00	-
	Southbound	Left Through	LT	Free					5 10	A -	0.00	0.0	5 54	A A	0.00	0.0	66	A A	0.00	0.0	6 66	A A	0.00	0.0
		Right								A	0.00	2.4	-		-	-	-		-	-			-	-
	Overall	- ·	-	-	-	A	0.09	7.6	- 12	A	0.12	7.8	- 10	A	0.15	8.0	-	A	0.19	8.3	- 50	A	0.22	8.6
	Eastbound	Left Through	LTR	Stop	35 25	A A	0.08	7.7	43 31	A A	0.10	8.0 8.0	43 31	A A	0.10	8.1 8.1	53 38	A A	0.13	8.5 8.5	53 38	A A	0.14	8.6 8.6
	Lastoound	Right	LIK	зюр	1	A	0.08	7.7	1	A	0.10	8.0	1	A	0.10	8.1	2	A	0.13	8.5	2	A	0.14	8.6
		Left		_	2	A	0.06	7.2	2	A	0.07	7.4	3	A	0.07	7.6	4	A	0.10	7.8	4	A	0.10	8.0
100 N & 200 W	Westbound	Through Right	LTR	Stop	10 34	A A	0.06	7.2	12 42	A A	0.07	7.4	12 43	A A	0.07	7.6	15 53	A A	0.10	7.8 7.8	15 54	A A	0.10	8.0 8.0
100 IV & 200 W		Left			4	A	0.07	7.6	5	A	0.07	7.8	5	A	0.07	8.1	6	A	0.10	8.5	6	A	0.10	8.8
	Northbound	Through	LTR	Stop	50	A	0.07	7.6	62	A	0.09	7.8	102	A	0.15	8.1	125	A	0.19	8.5	146	A	0.22	8.8
		Right Left			3 17	A A	0.07	7.6 7.7	4 21	A A	0.09	7.8 7.9	5 22	A A	0.15	8.1 8.0	6 27	A A	0.19	8.5 8.3	6 27	A A	0.22	8.8 8.6
	Southbound	Through	LTR	Stop	40	A	0.09	7.7	49	A	0.12	7.9	49	A	0.12	8.0	61	A	0.15	8.3	80	A	0.18	8.6
		Right		•	15	A	0.09	7.7	20	A	0.12	7.9	20	A	0.12	8.0	24	A	0.15	8.3	24	A	0.18	8.6
	Overall	- Left	-	-	43	A B	0.09	3.7 12.0	53	A B	0.12	4.0 13.4	53	A C	0.16	3.6 16.2	- 65	A C	0.25	20.8	65	B C	0.28	4.3 22.9
	Eastbound	Through	LTR	Stop	0	В .	0.09	12.0	0	В -	0.12	13.4	2.	C	0.16	16.2	2.	C	0.25	20.8	2	C	0.28	22.9
		Right			2	В	0.09	12.0	2	В	0.12	13.4	2	č	0.16	16.2	3	C	0.25	20.8	3	C	0.28	22.9
		Left	1 mp		2	A	0.05	9.0	0	A	0.06	9.2	4	A	0.08	9.9	5	В	0.11	10.4	7 5	B	0.13	11.2
100 N & Broadway	Westbound	Through Right	LTR	Stop	0 42	A	0.05	9.0	52	A	0.06	9.2	54	A A	0.08	9.9 9.9	66	B	0.11	10.4 10.4	68	B B	0.13	11.2 11.2
		Left			6	A	0.00	0.0	7	A	0.01	0.0	7	A	0.01	0.1	9	A	0.01	0.1	9	A	0.01	0.1
	Northbound	Through	LTR	Free	80	A	0.00	0.5	98	A	0.01	0.5	150	A	0.01	0.4	185 12	A A	0.01	0.4	208 12	A	0.01	0.4
		Right Left			6 40	A A	0.00	0.5	49	A A	0.01	0.5	51	A A	0.01	0.4	63	A	0.01	0.4	63	A A	0.01	0.4
	Southbound	Through	LTR	Free	90	A	0.03	1.9	111	A	0.04	2.0	190	A	0.04	1.6	233	A	0.05	1.8	253	A	0.05	1.7
	0	Right			40	A	0.03	1.9	49	A	0.04	2.0	49	A	0.04	1.6	61	A	0.05	1.8	61	A	0.05	1.7
	Overall	Left	-	-	15	A A	0.07	7.4	18	A A	0.09	7.6	18	A A	0.16	7.9 7.9	23	A A	0.20	8.3 8.2	23	A A	0.23	8.5 8.4
	Eastbound	Through	LTR	Stop	26	A	0.06	7.5	32	A	0.07	7.7	38	A	0.08	7.9	47	A	0.11	8.2	47	A	0.11	8.4
		Right Left			5	A	0.06	7.5 7.3	6	A	0.07	7.7 7.5	6	A	0.08	7.9 7.8	8	A	0.11	8.2 8.1	8 11	A	0.11	8.4 8.2
	Westbound	Through	LTR	Stop	25	A A	0.05	7.3	6 31	A A	0.07	7.5	37	A A	0.08	7.8	45	A A	0.10	8.1	45	A A	0.11	8.2
100 N & 200 E		Right			14	A	0.05	7.3	17	A	0.07	7.5	18	A	0.08	7.8	22	A	0.10	8.1	24	A	0.11	8.2
	Marshin	Left	LTD	Circ	5	A	0.07	7.5 7.5	6	A	0.09	7.6	6	A	0.16	8.1	8	A	0.20	8.5	8	A	0.23	8.8
	Northbound	Through Right	LTR	Stop	45 5	A A	0.07	7.5	55 6	A A	0.09	7.6 7.6	107 7	A A	0.16	8.1 8.1	132	A A	0.20	8.5 8.5	154 9	A A	0.23	8.8 8.8
		Left			15	A	0.07	7.4	18	A	0.09	7.6	19	A	0.11	7.8	24	A	0.14	8.2	24	A	0.17	8.4
	Southbound	Through	LTR	Stop	30	A	0.07	7.4	37	A	0.09	7.6	47	A	0.11	7.8	58	A	0.14	8.2	78	A	0.17	8.4
<u> </u>	Overall	Right	-		14	A	0.07	7.4	17	A	0.09	7.6 5.1	17	A	0.11	7.8 6.0	21	A A	0.14	8.2 6.0	21	A A	0.17	8.4 6.0
	Orcian	Left		- 					3	A	0.00	0.0	3	A	0.00	0.0	4	A	0.00	0.0	4	A	0.00	0.0
	Eastbound	Through	LTR	Free					4	A	0.00	2.2	4	A	0.00	0.7	5	A	0.00	0.7	5	A	0.00	0.7
		Right Left							3	A A	0.00	2.2 0.0	26 3	A A	0.00	0.7	32 4	A	0.00	0.7	32 4	A A	0.00	0.7
	Westbound	Through	LTR	Free					4	A	0.00	2.2	4	A	0.00	2.2	5	A	0.00	2.3	5	A	0.00	2.3
100 S & 400 W		Right				N/	Α		3	A	0.00	2.2	3	A	0.00	2.2	4	A	0.00	2.3	4	A	0.00	2.3
	Marshin	Left	LTD	Circ					1	A	0.01	9.0	1	A	0.01	9.1	1	A	0.01	9.2	1 5	A	0.01	9.2
	Northbound	Through Right	LTR	Stop					4	A A	0.01	9.0 9.0	4	A A	0.01	9.1 9.1	1	A A	0.01	9.2	1	A A	0.01	9.2 9.2
		Left							4	A	0.01	8.7	4	A	0.07	9.5	5	A	0.09	9.7	5	A	0.09	9.7
	Southbound	Through	LTR	Stop					2	A	0.01	8.7	46	A	0.07	9.5	57	A	0.09	9.7	57	A	0.09	9.7
1		Right		ı					4	A	0.01	8.7	4	A	0.07	9.5	5	A	0.09	9.7	5	A	0.09	9.7

- ASSUMED NETWORK -

						2008 Bac	kground			2018 Bac	kground			2018	Total			2028 Ba	ckground			2028	Total	
Intersection	Intersection Approach	Movement	Configuration	Traffic Control	Volume	TOS	Max V/C	Delay (s)	Volume	TOS	Max V/C	Delay (s)	Volume	TOS	Max V/C	Delay (s)	Volume	TOS	Max V/C	Delay (s)	Volume	TOS	Max V/C	Delay (s)
	Overall	-	-	-	-	A	0.05	7.1	-	A	0.07	7.2	-	A	0.08	7.4	-	A	0.10	7.5	-	A	0.13	7.7
		Left	, mp	a.	12	A	0.03	7.3	15 7	A	0.03	7.4	15 7	A	0.03	7.5	18	A	0.04	7.6	18	A	0.04	7.7
	Eastbound	Through Right	LTR	Stop	6	A A	0.03	7.3	2	A A	0.03	7.4	2	A	0.03	7.5 7.5	9	A A	0.04	7.6 7.6	9	A	0.04	7.7
		Left			2	A	0.03	6.8	2	A	0.05	6.9	2	A	0.05	7.0	3	A	0.07	7.2	3	A	0.07	7.3
	Westbound	Through	LTR	Stop	7	A	0.04	6.8	9	A	0.05	6.9	9	A	0.05	7.0	11	A	0.07	7.2	11	A	0.07	7.3
100 S & 200 W		Right			30	A	0.04	6.8	37	A	0.05	6.9	37	A	0.05	7.0	45	A	0.07	7.2	45	A	0.07	7.3
	Northbound	Left Through	LTR	Stop	1 15	A A	0.02	7.1 7.1	1 18	A A	0.03	7.2 7.2	1 59	A A	0.08	7.5 7.5	73	A A	0.10	7.6 7.6	94	A A	0.13	7.8 7.8
	Northbound	Right	LIK	Зюр	4	A	0.02	7.1	5	A	0.03	7.2	5	A	0.08	7.5	6	A	0.10	7.6	6	A	0.13	7.8
		Left			22	A	0.05	7.3	27	A	0.07	7.4	27	A	0.07	7.5	33	A	0.08	7.6	33	A	0.11	7.8
	Southbound	Through	LTR	Stop	14	A	0.05	7.3	17	A	0.07	7.4	18	A	0.07	7.5	22	A	0.08	7.6	42	A	0.11	7.8
	OII	Right			7	A	0.05	7.3	9	A	0.07	7.4	9	A	0.07	7.5	11	A	0.08	7.6	11	A	0.11	7.8 4.0
	Overall	Left	-	-	22	A B	0.06	4.7 10.3	27	A B	0.08	4.8 10.8	27	A B	0.10	3.7 12.3	33	A B	0.14	4.0 13.9	33	A C	0.16	15.3
	Eastbound	Through	LTR	Stop	10	В	0.06	10.3	12	В	0.08	10.8	12	В	0.10	12.3	15	В	0.14	13.9	15	C	0.16	15.3
		Right			8	В	0.06	10.3	10	В	0.08	10.8	10	В	0.10	12.3	12	В	0.14	13.9	12	C	0.16	15.3
	Washana	Left	LTD	Cton	6 12	A A	0.06	9.5 9.5	7	A	0.07	9.7 9.7	7	B	0.09	10.5 10.5	9	В	0.12	11.3	9	B	0.13	11.9 11.9
100 S & Broadway	Westbound	Through Right	LTR	Stop	12 28	A A	0.06	9.5	15 34	A A	0.07	9.7	15 34	B	0.09	10.5	18 42	B B	0.12	11.3	18 42	B	0.13	11.9
100 S & Bloadway		Left			15	A	0.01	0.1	18	A	0.07	0.1	18	A	0.09	0.1	23	A	0.12	0.2	38	A	0.13	0.3
	Northbound	Through	LTR	Free	42	A	0.01	1.9	52	A	0.01	1.9	106	A	0.01	1.2	130	A	0.02	1.3	153	A	0.03	1.7
		Right			4	A	0.01	1.9	5	A	0.01	1.9	5	A	0.01	1.2	6	A	0.02	1.3	6	A	0.03	1.7
	Southbound	Left Through	LTR	Free	22 54	A A	0.02	0.1 1.8	27 66	A A	0.02	0.1 1.8	27 147	A A	0.02	0.2 1.2	33 181	A A	0.03	0.2 1.2	33 203	A A	0.03	0.2 1.2
	Soumbound	Right	LIK	rice	18	A	0.02	1.8	22	A	0.02	1.8	22	A	0.02	1.2	27	A	0.03	1.2	203	A	0.03	1.2
	Overall	-	-	-	-	A	0.05	7.2	-	A	0.06	7.3	-	A	0.13	7.5	-	A	0.16	7.8	-	A	0.19	8.0
		Left			17	A	0.03	7.3	21	A	0.04	7.4	21	A	0.04	7.6	26	A	0.06	7.8	26	A	0.06	7.9
	Eastbound	Through	LTR	Stop	6	A	0.03	7.3	7	A	0.04	7.4	7	A	0.04	7.6	9	A	0.06	7.8	9	A	0.06	7.9
		Right Left			2	A A	0.03	7.3 6.9	5 2	A A	0.04	7.4	5	A A	0.04	7.6 7.2	6	A A	0.06	7.8 7.4	6	A A	0.06	7.9 7.5
	Westbound	Through	LTR	Stop	10	A	0.03	6.9	12	A	0.04	7.0	12	A	0.04	7.2	15	A	0.05	7.4	15	A	0.05	7.5
100 S & 200 E		Right			16	A	0.03	6.9	20	A	0.04	7.0	20	A	0.04	7.2	24	A	0.05	7.4	24	A	0.05	7.5
		Left			12	A	0.05	7.3	15	A	0.06	7.4	15	A	0.13	7.8	18	A	0.16	8.0	18	A	0.19	8.2
	Northbound	Through Right	LTR	Stop	22 6	A A	0.05	7.3 7.3	27	A A	0.06	7.4	80	A	0.13	7.8	98	A A	0.16	8.0 8.0	120	A A	0.19	8.2 8.2
		Left			8	A	0.05	7.1	10	A	0.06	7.2	10	A	0.07	7.4	12	A	0.10	7.6	12	A	0.12	7.8
	Southbound	Through	LTR	Stop	18	A	0.05	7.1	22	A	0.06	7.2	33	A	0.07	7.4	41	A	0.09	7.6	63	A	0.12	7.8
		Right			14	A	0.05	7.1	17	A	0.06	7.2	17	A	0.07	7.4	21	A	0.09	7.6	21	A	0.12	7.8
	Overall	Left	-	-					- 7	A A	0.01	2.0 0.0	30	A	0.02	1.8 0.2	37	A A	0.03	1.9 0.2	37	A A	0.03	1.3 0.2
	Eastbound	Through	LT	Free					7	A	0.00	3.7	85	A	0.02	2.0	105	A	0.03	2.0	186	A	0.03	1.4
400 S & 400 W	Westbound	Through	TR	Free		N/.	A		8	A	0.01	0.0	8	A	0.01	0.0	10	A	0.01	0.0	10	A	0.01	0.0
	Westboulid	Right	1 K	rice					4	A	0.01	0.0	4	A	0.01	0.0	5	A	0.01	0.0	5	A	0.01	0.0
	Southbound	Left Right	LR	Yield					0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-
	Overall	Kigitt -	-	-	-	A	0.02	4.6	-	A	0.02	4.5	-	A	0.08	4.4	-	A	0.10	4.6	-	A	0.15	3.9
	Eastbound	Left	LT	Free	15	A	0.01	0.1	18	A	0.01	0.1	53	A	0.04	0.3	66	A	0.05	0.4	66	A	0.05	0.4
400 0 0 0	Lastoound	Through	LI	Titt	3	A	0.01	6.1	4	A	0.01	6.0	42	A	0.04	4.3	51	A	0.05	4.4	132	A	0.05	2.8
400 S & Broadway	Westbound	Through Right	TR	Free	16	A A	0.01	0.0	5 20	A A	0.02	0.0	5 65	A A	0.04	0.0	6 80	A A	0.05	0.0	6 111	A A	0.07	0.0
		Left		20.11	6	A	0.01	8.6	7	A	0.02	8.6	45	A	0.04	9.9	56	B	0.05	10.3	67	B	0.07	11.1
	Southbound	Right	LR	Yield	10	A	0.02	8.6	12	A	0.02	8.6	12	A	0.08	9.9	15	В	0.10	10.3	26	В	0.15	11.1
	Overall	-	-	-	-	A	0.01	5.3	-	A	0.01	5.3	-	A	0.02	6.0	-	A	0.03	6.0	-	A	0.07	3.1
	Eastbound	Left Through	LT	Free	12	A A	0.01	0.1 5.5	15	A A	0.01	0.1 5.5	15 5	A A	0.01	0.1 5.5	18 6	A A	0.01	0.1 5.5	26 87	A A	0.02	0.1 1.8
400 S & 200 E		Through Through			2	A A	0.01	0.0	2	A A	0.01	0.0	2	A A	0.01	0.0	3	A A	0.01	0.0	34	A	0.02	0.0
-100 D & 200 L	Westbound	Right	TR	Free	4	A	0.00	0.0	5	A	0.00	0.0	6	A	0.01	0.0	7	A	0.01	0.0	23	A	0.04	0.0
	Southbound	Left	LR	Stop	3	A	0.01	8.5	4	A	0.01	8.5	15	A	0.02	8.7	18	A	0.03	8.8	40	A	0.07	9.8
		Right		ыор	6	A	0.01	8.5	7	A	0.01	8.5	7	A	0.02	8.7	9	A	0.03	8.8	9	A	0.07	9.8
	Overall	Left	-	-					l								0	A	0.00	-	81	A	0.00	-
	Westbound	Through	LR	Stop					l								18		-	-	0	-	1	-
400 S & Development #10 Access	Northbound	Through	TR	Free		N/.	A		l	N/.	N/A N/A				10	-	-	-	0	-	-	-		
Access	rvortnbound	Right	1 K	rree					l								0	-	-	-	0	-	-	-
	Southbound	Left	LR	Free					l								0	-	-	-	0	-	-	-
		Right															0		-	-	47	-	-	-

- IMPROVED NETWORK -

						2008 Bac	keround			2018 Ba	ckground			2018	Total			2028 Ba	ckground			2028	3 Total	
	Intersection		l				S S	3			S	<u>®</u>	 		<u>-</u> Q	8			S	3	 		S Total	3
Intersection	Approach	Movement	Configuration	Traffic Control	Volume	TOS	dax V,	Delay (Volume	TOS	dax V,	Oelay (Volume	TOS	dax V.)elay (Volume	TOS	dax V.	Delay (Volume	SOT	dax V.	Delay (
	Overall	-	-	-	-	A	0.04	3.6	-	A	0.05	3.6	-	A	0.11	4.1	-	A	0.14	4.2	-	A	0.20	4.5
		Left			-	-	-	-	-	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Eastbound	Through	TR	Free	10	A	0.03	0.0	12	A	0.03	0.0	68	A	0.07	0.0	84	A	0.08	0.0	122	A	0.11	0.0
		Right			30	A	0.03	0.0	37	A	0.03	0.0	37	A	0.07	0.0	45	A	0.08	0.0	45	A	0.11	0.0
Railway Ave & 200 E		Left			10	A	0.01	0.1	12	A	0.01	0.1	12	A	0.01	0.1	15	A	0.01	0.1	15	A	0.01	0.1
Italiway 1110 to 200 E	Westbound	Through	LT	Free	20	A	0.01	2.5	25	A	0.01	2.4	27	A	0.01	2.3	33	A	0.01	2.4	39	A	0.01	2.2
		Right			-		-	-	-	A	- 0.05	-	-		- 0.11	-	-	-	- 0.14	-	-		- 0.00	- 10.0
	Northbound	Left	LR	Ct	15	A	0.04	8.8	18	A	0.05	8.9	18	A	0.11	9.3	23	A	0.14	9.6	23	В	0.20	10.2
	Northbound	Through Right	LK	Stop	20	A	0.04	8.8	25	A A	0.05	8.9	78	A	0.11	9.3	95	A	0.14	9.6	133	В	0.20	10.2
	Overall	Right	-	_	20	А	0.04	0.0	- 23	A	0.03	2.0	-	A	0.03	1.5	-	A	0.04	1.5	133	A	0.20	1.4
	Ovcian	Left							10	A	0.03	0.1	10	A	0.03	0.1	12	A	0.01	0.1	12	A	0.03	0.1
	Eastbound	Through	LTR	Free	i				100	A	0.01	0.7	185	A	0.01	0.4	228	A	0.01	0.4	347	A	0.01	0.3
		Right			i				10	A	0.01	0.7	54	A	0.01	0.4	66	A	0.01	0.4	66	A	0.01	0.3
		Left			1				10	A	0.01	0.1	10	A	0.01	0.1	12	A	0.01	0.1	12	A	0.01	0.1
	Westbound	Through	LTR	Free					100	A	0.01	0.7	100	A	0.01	0.7	123	A	0.01	0.7	123	A	0.01	0.8
Highway 52 & 400 W		Right			1	N/	A		10	A	0.01	0.7	10	A	0.01	0.7	12	A	0.01	0.7	12	A	0.01	0.8
		Left							10	A	0.03	9.8	10	В	0.03	10.7	12	В	0.04	11.5	12	В	0.05	12.9
	Northbound	Through	LTR	Stop					0	-			0	-	-		0	-			0	-	-	
		Right			l				10 10	A	0.03	9.8	10	B B	0.03	10.7	12	В	0.04	11.5	12	В	0.05	12.9
	Southbound	Left Through	LTR	Stop					0	A	0.03	9.8	10	В	0.03	10.4	12	В	0.04	11.0	12	В	0.05	12.0
	Southoodild	Right	LIK	Зюр	ł				10	A	0.03	9.8	10	В	0.03	10.4	12	В	0.04	11.0	12	В	0.05	12.0
	Overall	Kigitt -	-	-	-	A	0.18	6.0	-	A	0.03	6.5	- 10	A	0.36	7.0	- 12	A	0.50	8.7	- 12	A	0.03	10.2
	Overan	Left			14	A	0.01	0.1	17	A	0.01	0.1	17	A	0.01	0.1	21	A	0.02	0.1	21	A	0.02	0.2
	Eastbound	Through	LTR	Free	63	A	0.01	1.3	77	A	0.01	1.3	162	A	0.01	0.8	200	A	0.02	0.8	319	A	0.02	0.6
		Right			11	A	0.01	1.3	14	A	0.01	1.3	14	A	0.01	0.8	17	A	0.02	0.8	17	A	0.02	0.6
		Left			18	A	0.01	0.1	22	A	0.02	0.1	23	A	0.02	0.2	27	A	0.02	0.2	46	A	0.04	0.4
	Westbound	Through	LTR	Free	85	A	0.01	1.3	105	A	0.02	1.3	105	A	0.02	1.4	129	A	0.02	1.4	129	A	0.04	2.1
Highway 52 & 200 W		Right			7	A	0.01	1.3	9	A	0.02	1.3	9	A	0.02	1.4	11	A	0.02	1.4	31	A	0.04	2.1
		Left			25	В	0.18	11.1	31	В	0.24	12.1	31	В	0.36	14.9	38	C	0.50	19.2	38	D	0.59	25.0
	Northbound	Through	LT	Stop	50 44	B B	0.18	11.1	62 54	B B	0.24	12.1	103 54	B B	0.36	14.9 14.9	126	C	0.50	19.2 19.2	142 73	D D	0.59	25.0 25.0
		Right Left	R		9	В	0.18	11.1	11	В	0.24	12.1	11	В	0.16	13.4	67 14	C	0.30	15.8	20	C	0.39	23.1
	Southbound	Through	LTR	Stop	44	В	0.10	11.2	54	В	0.14	12.1	55	В	0.16	13.4	68	C	0.24	15.8	68	C	0.36	23.1
	boutinoound	Right	LIK	Бюр	9	В	0.10	11.2	11	В	0.14	12.1	11	В	0.16	13.4	14	C	0.24	15.8	14	C	0.36	23.1
	Overall	-	-	-	-	A	0.20	6.3		A	0.27	7.1		A	0.41	8.7		В	0.56	13.5	-	D	0.82	25.1
		Left			29	В	0.20	11.6	36	В	0.27	13.1	36	В	0.41	14.7	44	В	0.49	13.6	44	D	0.82	32.5
	Eastbound	Through	LTR	Stop	28	В	0.20	11.6	34	В	0.27	13.1	52	В	0.41	14.7	65	В	0.49	13.6	196	D	0.82	32.5
		Right			67	В	0.20	11.6	82	В	0.27	13.1	149	В	0.41	14.7	184	В	0.49	13.6	184	D	0.82	32.5
		Left			31	В	0.17	13.7	38	C	0.24	16.1	48	C	0.34	21.5	56	В	0.24	11.1	79	C	0.46	16.2
Highway 52 &	Westbound	Through	LTR	Stop	42	В	0.17	13.7 13.7	52 5	C	0.24	16.1	52	C	0.34	21.5	64	В	0.24	11.1	103	C	0.46	16.2
Broadway		Right Left			62	B A	0.17	0.4	76	C A	0.24	16.1 0.5	5 76	C A	0.34	21.5 0.5	6 94	B C	0.24	11.1 15.5	26 94	D	0.46	16.2 26.5
	Northbound	Through	LTR	Stop	83	A	0.05	2.9	102	A	0.06	3.0	156	A	0.06	2.5	192	C	0.56	15.5	210	D	0.74	26.5
	orunound	Right		отор	32	A	0.05	2.9	39	A	0.06	3.0	39	A	0.06	2.5	48	C	0.56	15.5	55	D	0.74	26.5
		Left			10	A	0.01	0.1	12	A	0.01	0.1	12	A	0.01	0.1	15	В	0.31	11.4	21	C	0.40	15.1
	Southbound	Through	LTR	Stop	76	A	0.01	0.7	93	A	0.01	0.7	95	A	0.01	0.7	117	В	0.31	11.4	117	C	0.40	15.1
		Right			27	A	0.01	0.7	33	A	0.01	0.7	33	A	0.01	0.7	41	В	0.31	11.4	41	С	0.40	15.1
	Overall	-	-	-	-	A	0.10	6.0	-	A	0.13	6.2	-	A	0.23	7.0	-	A	0.30	7.6	-	A	0.52	8.5
	l	Left			14	A	0.01	0.1	17	A	0.01	0.1	17	A	0.01	0.1	21	A	0.02	0.1	21	A	0.02	0.1
	Eastbound	Through	LTR	Free	26	A	0.01	1.8	32	A	0.01	1.8	50	A	0.01	1.5	61	A	0.02	1.5	201	A	0.02	0.8
		Right	l		18	A	0.01	1.8	22	A	0.01	1.8	22	A	0.01	1.5	27	A	0.02	1.5 0.2	27	A	0.02	0.8
	Westbound	Left Through	LTR	Free	12 41	A A	0.01	0.1 1.6	15 50	A A	0.01	0.1 1.6	25 60	A A	0.02	0.1 2.2	30 74	A A	0.02	2.2	50 153	A A	0.04	0.4 2.0
Highway 52 & 200 E	** estoomid	Right	LIK	FICC	41	A	0.01	1.6	5	A	0.01	1.6	5	A	0.02	2.2	6	A	0.02	2.2	26	A	0.04	2.0
111galway 52 oc 200 E		Left			17	B	0.10	10.1	21	B	0.01	10.5	21	B	0.02	11.9	26	B	0.02	13.2	26	C	0.52	22.3
	Northbound	Through	LTR	Stop	41	В	0.10	10.1	50	В	0.13	10.5	103	В	0.23	11.9	127	В	0.30	13.2	145	C	0.52	22.3
		Right			16	В	0.10	10.1	20	В	0.13	10.5	20	В	0.23	11.9	24	В	0.30	13.2	30	Č	0.52	22.3
		Left			5	A	0.07	9.9	6	В	0.08	10.2	6	В	0.09	10.7	8	В	0.12	11.3	14	С	0.21	16.3
	Southbound	Through	LTR	Stop	29	A	0.07	9.9	36	В	0.08	10.2	37	В	0.09	10.7	45	В	0.12	11.3	45	С	0.21	16.3
		Right	I		14	A	0.07	9.9	17	В	0.08	10.2	17	В	0.09	10.7	21	В	0.12	11.3	21	C	0.21	16.3

- IMPROVED NETWORK -

	1					2008 Ba	ckground			2018 Ba	ckground			2018	Total			2028 Ba	ckground			2028	8 Total	
Intersection	Intersection	Movement	Configuration	Traffic Control		S	Č O	(s)		S	v/C	8		S	V/C	8		s	, c	8		×	V/C	(8)
mersection	Approach	Movement	Configuration	Timile Control	Volume	S07	(ax	elay	Volume	207	(ax	elay	Volume	TOS	[ax]	elay	Volume	TOS	[ax]	elay	Volume	TOS	ax	elay
	Overall		-	-			Σ	Q			Σ	Д			Σ	Д		A	0.03	0.0		A	0.09	1.9
	Overan	Left															-	-	-	-	-	-	- 0.07	-
	Eastbound	Through	TR	Free													53	A	0.03	0.0	53	A	0.09	0.0
Highway 52 &		Right															0	-	-	-	82	A	0.09	0.0
Development #10	Westbound	Left Through	LT	Free		N/	/A			N.	/A			N.	'A		57	A	0.00	0.0	0 57	A	0.00	0.0
Access	Westbound	Right	2.	1100													-	-	-	-	-	-	- 0.00	-
		Left															0	-	-	-	48	A	0.06	9.6
	Northbound	Through	LR	Stop													-	-	-	-	-	-	-	-
	Overall	Right								A	0.02	3.7		A	0.02	1.9	0	A	0.02	1.9	0	Ā	0.02	1.9
	Overan	Left							5	A	0.02	8.6	5	A	0.02	8.6	6	A	0.02	8.7	6	A	0.02	8.7
	Westbound	Through	LR	Stop					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Right							10	A	0.02	8.6	10	A	0.02	8.6	12	A	0.02	8.7	12	A	0.02	8.7
100 N & 400 W	Northbound	Left Through	TR	Free		N/	/A		15	A	0.01	0.0	15	A	0.01	0.0	18	A	0.01	0.0	18	A	0.01	0.0
	roranound	Right	- 110	1100					0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-
		Left			l				5	A	0.00	0.0	5	A	0.00	0.0	6	A	0.00	0.0	6	A	0.00	0.0
	Southbound	Through	LT	Free					10	-	- 0.00	-	54	A	0.00	0.6	66	A	0.00	0.6	66	A	0.00	0.6
	Overall	Right		-		A	0.09	7.6	-	A A	0.00 0.12	7.8	-	A	0.15	8.0	-	- A	0.19	8.3	-	- A	0.22	8.6
	Orcian	Left			35	A	0.08	7.7	43	A	0.10	8.0	43	A	0.10	8.1	53	A	0.13	8.5	53	A	0.14	8.6
	Eastbound	Through	LTR	Stop	25	A	0.08	7.7	31	A	0.10	8.0	31	A	0.10	8.1	38	A	0.13	8.5	38	A	0.14	8.6
		Right			1 2	A	0.08	7.7 7.2	1 2	A A	0.10	8.0 7.4	1	A	0.10	7.6	2	A	0.13	8.5 7.8	2	A	0.14	8.6 8.0
	Westbound	Left Through	LTR	Stop	10	A A	0.06	7.2	12	A A	0.07	7.4	12	A A	0.07	7.6	15	A A	0.10	7.8	15	A A	0.10	8.0
100 N & 200 W	Westbound	Right	Lin	Бюр	34	A	0.06	7.2	42	A	0.07	7.4	43	A	0.07	7.6	53	A	0.10	7.8	54	A	0.10	8.0
		Left			4	A	0.07	7.6	5	A	0.09	7.8	5	A	0.15	8.1	6	A	0.19	8.5	6	A	0.22	8.8
	Northbound	Through	LTR	Stop	50	A	0.07	7.6	62	A	0.09	7.8	102	A	0.15	8.1	125	A	0.19	8.5	146	A	0.22	8.8
		Right Left			17	A A	0.07	7.6	4 21	A A	0.09	7.8	5 22	A A	0.15 0.12	8.1	6 27	A A	0.19	8.5 8.3	6 27	A A	0.22	8.8 8.6
	Southbound	Through	LTR	Stop	40	A	0.09	7.7	49	A	0.12	7.9	49	A	0.12	8.0	61	A	0.15	8.3	80	A	0.18	8.6
		Right			15	A	0.09	7.7	20	A	0.12	7.9	20	A	0.12	8.0	24	A	0.15	8.3	24	A	0.18	8.6
	Overall	Left	-	-	43	A B	0.09	3.7 12.0	53	A B	0.12 0.12	4.0 13.4	53	A C	0.16 0.16	3.6 16.2	65	A C	0.25	4.2 20.8	65	B C	0.28	4.3 22.9
	Eastbound	Through	LTR	Stop	0	В	0.09	12.0	0	В	0.12	15.4	2	c	0.16	16.2	2	C	0.25	20.8	2	C	0.28	22.9
	Lantoound	Right	Dik	Бюр	2	В	0.09	12.0	2	В	0.12	13.4	2	c	0.16	16.2	3	C	0.25	20.8	3	C	0.28	22.9
		Left			2	A	0.05	9.0	2	A	0.06	9.2	4	A	0.08	9.9	5	В	0.11	10.4	7	В	0.13	11.2
100 N & Broadway	Westbound	Through	LTR	Stop	0 42	- A	0.05	9.0	0 52	- A	0.06	9.2	2 54	A	0.08	9.9 9.9	2 66	B B	0.11	10.4 10.4	5 68	B B	0.13	11.2 11.2
100 N & Bloadway		Right Left			6	A	0.03	0.0	7	A	0.06	0.0	7	A A	0.08	0.1	9	A	0.11	0.1	9	A	0.13	0.1
	Northbound	Through	LTR	Free	80	A	0.00	0.5	98	A	0.01	0.5	150	A	0.01	0.4	185	A	0.01	0.4	208	A	0.01	0.4
		Right			6	A	0.00	0.5	7	A	0.01	0.5	9	A	0.01	0.4	12	A	0.01	0.4	12	A	0.01	0.4
	Southbound	Left Through	LTR	Free	40 90	A A	0.03	0.2 1.9	49 111	A A	0.04	0.3 2.0	51 190	A A	0.04	0.4 1.6	63 233	A A	0.05	0.5 1.8	63 253	A A	0.05	0.5
	Southbound	Right	LIK	rice	40	A	0.03	1.9	49	A	0.04	2.0	49	A	0.04	1.6	61	A	0.05	1.8	61	A	0.05	1.7
	Overall		-		-	A	0.07	7.4	-	A	0.09	7.6	-	A	0.16	7.9	-	A	0.20	8.3	-	A	0.23	8.5
		Left	1.000		15	A	0.06	7.5	18	A	0.07	7.7	18	A	0.08	7.9	23	A	0.11	8.2	23	A	0.11	8.4
	Eastbound	Through Right	LTR	Stop	26 5	A A	0.06	7.5 7.5	32 6	A A	0.07	7.7	38 6	A A	0.08	7.9 7.9	47 8	A A	0.11	8.2 8.2	47 8	A A	0.11	8.4 8.4
		Left			5	A	0.05	7.3	6	A	0.07	7.5	7	A	0.08	7.8	9	A	0.10	8.1	11	A	0.11	8.2
	Westbound	Through	LTR	Stop	25	A	0.05	7.3	31	A	0.07	7.5	37	A	0.08	7.8	45	A	0.10	8.1	45	A	0.11	8.2
100 N & 200 E		Right			14 5	A	0.05	7.3 7.5	17	A	0.07	7.5	18	A	0.08	7.8	22	A	0.10	8.1	24 8	A	0.11	8.2
	Northbound	Left Through	LTR	Stop	45	A A	0.07	7.5	6 55	A A	0.09	7.6	6 107	A A	0.16	8.1	8 132	A A	0.20	8.5 8.5	154	A A	0.23	8.8 8.8
		Right			5	A	0.07	7.5	6	A	0.09	7.6	7	A	0.16	8.1	9	A	0.20	8.5	9	A	0.23	8.8
		Left			15	A	0.07	7.4	18	A	0.09	7.6	19	A	0.11	7.8	24	A	0.14	8.2	24	A	0.17	8.4
	Southbound	Through Right	LTR	Stop	30 14	A A	0.07	7.4 7.4	37 17	A A	0.09	7.6 7.6	47 17	A A	0.11	7.8 7.8	58 21	A	0.14	8.2 8.2	78 21	A A	0.17	8.4 8.4
	Overall	Kignt	_	-	14	A	0.07	7.4	- 17	A A	0.09	5.1	- 1/	A A	0.11	6.0	- 21	A	0.14	6.0	- 21	A A	0.17	6.0
	Ottium	Left							3	A	0.00	0.0	3	A	0.00	0.0	4	A	0.00	0.0	4	A	0.00	0.0
	Eastbound	Through	LTR	Free					4	A	0.00	2.2	4	A	0.00	0.7	5	A	0.00	0.7	5	A	0.00	0.7
		Right							3	A	0.00	2.2	26	A	0.00	0.7	32	A	0.00	0.7	32	A	0.00	0.7
	Westbound	Left Through	LTR	Free					3	A A	0.00	2.2	3	A A	0.00	2.2	5	A A	0.00	0.0 2.3	4	A A	0.00	2.3
100 S & 400 W	csicound	Right	LIK			N/	/A		3	A	0.00	2.2	3	A	0.00	2.2	4	A	0.00	2.3	4	A	0.00	2.3
		Left							1	A	0.01	9.0	1	A	0.01	9.1	1	A	0.01	9.2	1	A	0.01	9.2
	Northbound	Through	LTR	Stop					4	A	0.01	9.0	4	A	0.01	9.1	5	A	0.01	9.2	5	A	0.01	9.2
		Right Left							4	A A	0.01	9.0 8.7	4	A A	0.01	9.1	1 5	A A	0.01	9.2 9.7	1 5	A A	0.01	9.2 9.7
	Southbound	Through	LTR	Stop					2	A	0.01	8.7	46	A	0.07	9.5	57	A	0.09	9.7	57	A	0.09	9.7
1	1	Right		,	l				4	A	0.01	8.7	4	A	0.07	9.5	5	A	0.09	9.7	5	A	0.09	9.7

- IMPROVED NETWORK -

Ove Eastbo	rsection proach		Configuration	Traffic Control	Volume	SC	× C	8			C	®			0	~							C	
Ove Eastbu 100 S & 200 W	tbound	Through			Volume			5.	** *	S	×			S	>	® ,	** *	S	≶	· ·		S	Σ/Λ	®
Eastbu Westbu	tbound	Through	-			ā	Max	Delay	Volume	27	Max	Delay	Volume	CC	Max	Jelay	Volume	SOT	Max	Delay	Volume	2	Max	Delay
100 S & 200 W		Through		-	-	A	0.05	7.1	-	A	0.07	7.2	-	A	0.08	7.4	-	A	0.10	7.5	-	A	0.13	7.7
100 S & 200 W					12	A	0.03	7.3	15	A	0.03	7.4	15	A	0.03	7.5	18	A	0.04	7.6	18	A	0.04	7.7
100 S & 200 W	stbound		LTR	Stop	6 2	A A	0.03	7.3 7.3	7 2	A A	0.03	7.4	7 2	A A	0.03	7.5 7.5	9	A A	0.04	7.6 7.6	9	A A	0.04	7.7
100 S & 200 W	stbound	Right Left			2	A	0.03	6.8	2	A	0.05	6.9	2	A	0.05	7.0	3	A	0.04	7.0	3	A	0.04	7.3
		Through	LTR	Stop	7	A	0.04	6.8	9	A	0.05	6.9	9	A	0.05	7.0	11	A	0.07	7.2	11	A	0.07	7.3
Northb		Right			30	A	0.04	6.8	37	A	0.05	6.9	37	A	0.05	7.0	45	A	0.07	7.2	45	A	0.07	7.3
	hbound	Left Through	LTR	Stop	15	A A	0.02	7.1 7.1	1 18	A A	0.03	7.2	1 59	A A	0.08	7.5 7.5	73	A A	0.10	7.6 7.6	2 94	A A	0.13	7.8 7.8
· —		Right			4	A	0.02	7.1	5	A	0.03	7.2	5	A	0.08	7.5	6	A	0.10	7.6	6	A	0.13	7.8
		Left			22	A	0.05	7.3	27	A	0.07	7.4	27	A	0.07	7.5	33	A	0.08	7.6	33	A	0.11	7.8
Southb	thbound	Through Right	LTR	Stop	14 7	A A	0.05	7.3 7.3	9	A	0.07	7.4	18	A A	0.07	7.5 7.5	22 11	A	0.08	7.6 7.6	42	A A	0.11	7.8 7.8
Ove	verall	- Nam	-	-	-	A	0.06	4.7	-	A	0.08	4.8	-	A	0.10	3.7	-	A	0.14	4.0	-	A	0.16	4.0
		Left			22	В	0.06	10.3	27	В	0.08	10.8	27	В	0.10	12.3	33	В	0.14	13.9	33	C	0.16	15.3
Eastbo	tbound	Through Right	LTR	Stop	10 8	B B	0.06	10.3 10.3	12 10	B B	0.08	10.8	12 10	B B	0.10	12.3	15 12	B B	0.14	13.9	15 12	C	0.16 0.16	15.3 15.3
		Left			6	A	0.06	9.5	7	A	0.08	9.7	7	В	0.10	10.5	9	В	0.14	11.3	9	В	0.16	11.9
	stbound	Through	LTR	Stop	12	A	0.06	9.5	15	A	0.07	9.7	15	В	0.09	10.5	18	В	0.12	11.3	18	В	0.13	11.9
100 S & Broadway		Right Left			28 15	A	0.06	9.5 0.1	34 18	A	0.07	9.7	34 18	В	0.09	10.5 0.1	42 23	В	0.12	11.3 0.2	42 38	В	0.13	11.9
North	hbound	Through	LTR	Free	42	A A	0.01	1.9	52	A A	0.01	0.1 1.9	106	A A	0.01	1.2	130	A A	0.02	1.3	153	A A	0.03	0.3 1.7
		Right			4	A	0.01	1.9	5	A	0.01	1.9	5	A	0.01	1.2	6	A	0.02	1.3	6	A	0.03	1.7
C41	thbound	Left Through	LTR	Free	22 54	A	0.02	0.1 1.8	27 66	A	0.02	0.1	27 147	A	0.02	0.2	33 181	A	0.03	0.2 1.2	33 203	A	0.03	0.2
Southb	inbound	Right	LIK	Free	18	A A	0.02	1.8	22	A A	0.02	1.8	22	A A	0.02	1.2	27	A A	0.03	1.2	203	A A	0.03	1.2
Ove	verall	- Nam	-	-	-	A	0.05	7.2	-	A	0.06	7.3	-	A	0.13	7.5	-	A	0.16	7.8	-	A	0.19	8.0
		Left			17	A	0.03	7.3	21	A	0.04	7.4	21	A	0.04	7.6	26	A	0.06	7.8	26	A	0.06	7.9
Eastbo	tbound	Through Right	LTR	Stop	6	A A	0.03	7.3 7.3	7 5	A A	0.04	7.4	7	A A	0.04	7.6	6	A A	0.06	7.8 7.8	9	A A	0.06	7.9 7.9
		Left			2	A	0.03	6.9	2	A	0.04	7.0	2	A	0.04	7.0	3	A	0.05	7.4	3	A	0.05	7.5
	stbound	Through	LTR	Stop	10	A	0.03	6.9	12	A	0.04	7.0	12	A	0.04	7.2	15	A	0.05	7.4	15	A	0.05	7.5
100 S & 200 E		Right Left			16 12	A	0.03	6.9 7.3	20 15	A A	0.04	7.0	20 15	A A	0.04	7.2 7.8	24 18	A	0.05	7.4 8.0	24 18	A A	0.05	7.5 8.2
Northb	hbound	Through	LTR	Stop	22	A A	0.05	7.3	27	A	0.06	7.4	80	A	0.13	7.8	98	A A	0.16	8.0	120	A	0.19	8.2
		Right		,	6	A	0.05	7.3	7	A	0.06	7.4	7	A	0.13	7.8	9	A	0.16	8.0	9	A	0.19	8.2
Southb		Left	LTR	Ct	8 18	A	0.05	7.1 7.1	10	A	0.06	7.2	10 33	A	0.07	7.4	12 41	A	0.09	7.6 7.6	12 63	A	0.12	7.8 7.8
Southb	inbound	Through Right	LIK	Stop	14	A A	0.05	7.1	22 17	Α	0.06	7.2	17	A A	0.07	7.4	21	A A	0.09	7.6	21	A A	0.12	7.8
Ove	verall	- Kigit	-	-	14		0.05	7.1	-	A	0.00	2.0	-	A	0.02	1.8	-	A	0.03	1.9	-	A	0.03	1.3
Eastbo	tbound	Left	LT	Free					7	A	0.00	0.0	30	A	0.02	0.2	37	A	0.03	0.2	37	A	0.03	0.2
400 S & 400 W	-	Through Through				N/	/A		7 8	A A	0.00	3.7 0.0	85 8	A A	0.02	2.0 0.0	105 10	A A	0.03	2.0 0.0	186 10	A A	0.03	1.4
Westbe	stbound	Right	TR	Free		14/			4	A	0.01	0.0	4	A	0.01	0.0	5	A	0.01	0.0	5	A	0.01	0.0
Southb	hbound	Left	LR	Yield					0	1	-	-	0		-	v	0	-	-	-	0	-	-	-
		Right			ļ.,	A	0.02	4.6	0	- A	0.02	4.5	0	- A	0.08	4.4	0	- A	0.10	4.6	0	- Λ	0.15	3.9
	verall	Left		-	15	A	0.02	0.1	18	A A	0.02	0.1	53	A A	0.08	0.3	66	A A	0.10	0.4	66	A A	0.15	0.4
Eastbo	tbound	Through	LT	Free	3	A	0.01	6.1	4	A	0.01	6.0	42	A	0.04	4.3	51	A	0.05	4.4	132	A	0.05	2.8
400 S & Broadway Westbe	stbound	Through	TR	Free	4	A	0.01	0.0	5	A	0.02	0.0	5	A	0.04	0.0	6	A	0.05	0.0	6	A	0.07	0.0
 		Right Left		1	16 6	A A	0.01	0.0 8.6	20 7	A A	0.02	0.0 8.6	65 45	A A	0.04	9.9	80 56	A B	0.05	0.0 10.3	111 67	A B	0.07	0.0 11.1
Southb	hbound	Right	LR	Yield	10	A	0.02	8.6	12	A	0.02	8.6	12	A	0.08	9.9	15	В	0.10	10.3	26	В	0.15	11.1
Over	verall		-	-	-	A	0.01	5.3		A	0.01	5.3	-	A	0.02	6.0	-	A	0.03	6.0	-	A	0.07	3.1
Eastbo	tbound	Left Through	LT	Free	12	A A	0.01	0.1 5.5	15	A A	0.01	0.1 5.5	15	A A	0.01	0.1 5.5	18	A A	0.01	0.1 5.5	26 87	A A	0.02	0.1
400 S & 200 E	ali anna d	Through	TD	Post	2	A	0.00	0.0	2	A	0.00	0.0	2	A	0.01	0.0	3	A	0.01	0.0	34	A	0.02	0.0
Westbe	stbound	Right	TR	Free	4	A	0.00	0.0	5	A	0.00	0.0	6	A	0.01	0.0	7	A	0.01	0.0	23	A	0.04	0.0
Southb	thbound	Left	LR	Stop	3	A	0.01	8.5	4 7	A	0.01	8.5	15	A	0.02	8.7	18	A	0.03	8.8	40	A	0.07	9.8
Ove	verall	Right	_	-	6	A	0.01	8.5	/	A	0.01	8.5	7	A	0.02	8.7	9	A A	0.03	8.8	9	A A	0.07	9.8
	stbound	Left	LR	Stop													0	-	-	-	81		-	
400 S & Development Westbe	Dimoon	Through	LK	эюр													18	-	-	-	0	-	-	-
#10 Access Northb	thbound	Through Right	TR	Free		N/	/A			N	/A			N/	A		10	-	-	-	0	-	-	-
	d.b d	Left	I D	P													0	-	-	-	0		-	-
Southb	thbound	Right	LR	Free													0	-	-	-	47		-	



Appendix E - Traffic Signal Warrants



Town of Raymond Project No: Date Revised: 2007-3491 January 14, 2009 Broadway & Church Avenue

Intersection:

I Collisions (Figure B2-1) Pa										Total	-25
II Crossing Gaps, Progression B. Two-Way Street	, Delay and Vehicular Stops										
		Approach			Egress						
			pk to AADT	2008 Pk Hr		pk to AADT	2008 Pk Hr	V _{tew} (or V _{tes})	x P ₂ x	F _{eew} (or F _{ens}) =	Priority Points
	E-W Street - E. of int.	61	0.10	610	28	0.10	280	0.89	2	1.30	2.31
	E-W Street - W. of int.	44	0.10	440	62	0.10	620	1.06	2	1.30	2.76
	N-S Street - N. of int.	126	0.10	1,260	176	0.10	1,760	3.02	2	1.30	7.85
	N-S Street - S. of int.	127	0.10	1,270	92	0.10	920	2.19	2	1.30	5.69
										Total	18.62
III Crossing Gaps, Intersecting B. Through Street Two-Way	y Volumes, and Pedestrian Volui	Approach	pk to AADT	2008 Pk Hr		(V _{aew} +	P _{ew}) X	(V _{ans} +	P _{ns}) X	F _{ow} =	Priority Points
	Approach East	61	1.00	61		0.06	0.49				
	Approach West	44	1.00	44		0.04	0.49				
	Approach North	126	1.00	126				0.13	0.64		
	Approach South	127	1.00	127				0.13	0.64	1.00	1.66
										Total	1.66
								Т		RIORITY POINTS RANTED? (>100)	-4.72 NO

Town of Raymond Project No: Date Revised: 2007-3491 January 14, 2009 Broadway & 100 N Intersecion:

I Collisions (Figure B2-1) Pa										Total	-25
II Crossing Gaps, Progression B. Two-Way Street	, Delay and Vehicular Stops										
		Approach			Egress						
			pk to AADT	2008 Pk Hr	-	pk to AADT	2008 Pk Hr	V _{tew} (or V _{tns)} x	C P ₂ x	F _{eew} (or F _{ens}) =	Priority Points
	E-W Street - E. of int.	46	0.10	460	44	0.10	440	0.90	2	1.30	2.34
	E-W Street - W. of int.	46	0.10	460	45	0.10	450	0.91	2	1.30	2.37
	N-S Street - N. of int.	165	0.10	1,650	170	0.10	1,700	3.35	2	1.30	8.71
	N-S Street - S. of int.	94	0.10	940	92	0.10	920	1.86	2	1.30	4.84
										Total	18.25
III Crossing Gaps, Intersecting B. Through Street Two-Way	Volumes, and Pedestrian V	Approach	pk to AADT	2008 Pk Hr		(V _{aew} +	P _{ew}) X	(V _{ans} +	P _{ns}) X	F _{ow} =	Priority Points
	Approach East	46	1.00	46		0.05	0.15				•
	Approach West	46	1.00	46		0.05	0.15				
	Approach North	165	1.00	165				0.17	0.18		
	Approach South	94	1.00	94				0.09	0.18	1.00	0.24
										Total	0.24
								т		IORITY POINTS RANTED? (>100)	-6.51 NO

Town of Raymond Project No: 2007-3491 Date Revised: January 14, 2009 Broadway & 100 N Intersecion:

I Collisions (Figure B2-1) Pa										Total	-25
II Crossing Gaps, Progression B. Two-Way Street	, Delay and Vehicular Stops										
		Approach			Egress						
			pk to AADT	2008 Pk Hr	-	pk to AADT	2008 Pk Hr	V _{tew} (or V _{tns)}	x P ₂ x	F _{eew} (or F _{ens}) =	Priority Points
	E-W Street - E. of int.	63	0.10	626	60	0.10	601	1.23	2	1.30	3.19
	E-W Street - W. of int.	59	0.10	586	57	0.10	574	1.16	2	1.30	3.01
	N-S Street - N. of int.	257	0.10	2,570	290	0.10	2,901	5.47	2	1.30	14.22
	N-S Street - S. of int.	197	0.10	1,966	167	0.10	1,672	3.64	2	1.30	9.46
										Total	29.89
III Crossing Gaps, Intersecting B. Through Street Two-Way	ງ Volumes, and Pedestrian \	Approach	pk to AADT	2008 Pk Hr		(V _{aew} +	P _{ew}) X	(V _{ans} +	P _{ns}) X	F _{ow} =	Priority Points
	Approach East	63	1.00	63		0.06	0.15				•
	Approach West	59	1.00	59		0.06	0.15				
	Approach North	257	1.00	257				0.26	0.18		
	Approach South	197	1.00	197				0.20	0.18	1.00	0.34
										Total	0.34
								_		IORITY POINTS	5.23

Town of Raymond Project No: 2007-3491 Date Revised: January 14, 2009 Broadway & 100 N Intersecion:

I Collisions (Figure B2-1) Pa										Total	-25
II Crossing Gaps, Progression B. Two-Way Street	n, Delay and Vehicular Stops										
		Approach			Egress						
			pk to AADT	2008 Pk Hr	-	pk to AADT	2008 Pk Hr	V _{tew} (or V _{tns)}	x P ₂ x	F _{eew} (or F _{ens}) =	Priority Points
	E-W Street - E. of int.	77	0.10	770	81	0.10	809	1.58	2	1.30	4.11
	E-W Street - W. of int.	75	0.10	751	71	0.10	705	1.46	2	1.30	3.79
	N-S Street - N. of int.	341	0.10	3,410	377	0.10	3,768	7.18	2	1.30	18.66
	N-S Street - S. of int.	264	0.10	2,638	229	0.10	2,286	4.92	2	1.30	12.80
										Total	39.36
III Crossing Gaps, Intersecting B. Through Street Two-Way	y Volumes, and Pedestrian V										
		Approach	-1.4- AADT	0000 Dk Ll*		Λ/ .	D \V	Λ/ .	D \V	_	Daianita Dainta
			pk to AADT			(V _{aew} +	P _{ew}) X	(V _{ans} +	P _{ns}) X	F _{ow} =	Priority Points
	Approach East	77 75	1.00	77 75		0.08	0.15				
	Approach West Approach North	75 341	1.00 1.00	75 341		0.08	0.15	0.34	0.18		
	Approach South	264	1.00	264				0.34	0.18	1.00	0.44
	Approach South	204	1.00	204				0.20	0.10	Total	0.44
										iotai	V. -T-T
								1	_	RIORITY POINTS RANTED? (>100)	14.80 NO

Town of Raymond Project No: Date Revised: 2007-3491 January 14, 2009 Highway 52 & Broadway Intersection:

I Collisions (Figure B2-1) Pa										Total	-25
II Crossing Gaps, Progression B. Two-Way Street	n, Delay and Vehicular Sto	ps									
		Approach			Egress						
			pk to AADT	2008 Pk Hr	-	pk to AADT	2008 Pk Hr	V _{tew} (or V _{tns)}	C P ₂ X	F _{eew} (or F _{ens}) =	Priority Points
	E-W Street - E. of int.	70	0.10	700	77	0.10	770	1.47	2	1.30	3.82
	E-W Street - W. of int.	131	0.10	1,310	124	0.10	1,240	2.55	2	1.30	6.63
	N-S Street - N. of int.	116	0.10	1,160	113	0.10	1,130	2.29	2	1.30	5.95
	N-S Street - S. of int.	174	0.10	1,740	177	0.10	1,770	3.51	2	1.30	9.13
										Total	25.53
III Crossing Gaps, Intersecting B. Through Street Two-Way	g Volumes, and Pedestria	n Volumes									
		Approach									
		2008 Pk Hr	pk to AADT	2008 Pk Hr		(V _{aew} +	P _{ew}) X	(V _{ans} +	P _{ns}) X	$F_{ow} =$	Priority Points
	Approach East	70	1.00	70		0.07	0.00				
	Approach West	131	1.00	131		0.13	0.00				
	Approach North	116	1.00	116				0.12	0.00		
	Approach South	174	1.00	174				0.17	0.00	1.00	0.06
										Total	0.06
								Т	_	RIORITY POINTS RANTED? (>100)	0.59 NO

Town of Raymond Project No: Date Revised: 2007-3491 January 14, 2009 Highway 52 & Broadway Intersection:

I Collisions (Figure B2-1) Pa										Total	-25
II Crossing Gaps, Progression, D B. Two-Way Street	Delay and Vehicular Sto	ps									
		Approach			Egress						
			pk to AADT	2008 Pk Hr	-	pk to AADT	2008 Pk Hr	V _{tew} (or V _{tns)}	C P ₂ x	F _{eew} (or F _{ens}) =	Priority Points
l E	E-W Street - E. of int.	104	0.10	1,041	105	0.10	1,047	2.09	2	1.30	5.43
E	E-W Street - W. of int.	161	0.10	1,611	238	0.10	2,375	3.99	2	1.30	10.36
N	N-S Street - N. of int.	197	0.10	1,967	141	0.10	1,410	3.38	2	1.30	8.78
N	N-S Street - S. of int.	293	0.10	2,930	272	0.10	2,717	5.65	2	1.30	14.68
										Total	39.26
III Crossing Gaps, Intersecting V B. Through Street Two-Way	olumes, and Pedestriar	n Volumes									
		Approach									
		2008 Pk Hr	pk to AADT	2008 Pk Hr		(V _{aew} +	P _{ew}) X	(V _{ans} +	P _{ns}) X	$F_{ow} =$	Priority Points
	Approach East	104	1.00	104		0.10	0.00				
	Approach West	161	1.00	161		0.16	0.00				
	Approach North	197	1.00	197				0.20	0.00		
A	Approach South	293	1.00	293				0.29	0.00	1.00	0.13
										Total	0.13
								Т	-	IORITY POINTS ANTED? (>100)	14.39 NO

Town of Raymond Project No: Date Revised: 2007-3491 January 14, 2009 Highway 52 & Broadway Intersection:

I Collisions (Figure B2-1) Pa										Total	-25
II Crossing Gaps, Progression, D B. Two-Way Street	Delay and Vehicular Sto	ps									
		Approach			Egress						
			pk to AADT	2008 Pk Hr	-	pk to AADT	2008 Pk Hr	V _{tew} (or V _{tns)} x	P ₂ x	F _{eew} (or F _{ens}) =	Priority Points
l E	E-W Street - E. of int.	272	0.10	2,720	208	0.10	2,078	4.80	2	1.30	12.48
E	E-W Street - W. of int.	237	0.10	2,372	423	0.10	4,231	6.60	2	1.30	17.17
N	N-S Street - N. of int.	280	0.10	2,799	179	0.10	1,794	4.59	2	1.30	11.94
N	N-S Street - S. of int.	380	0.10	3,804	359	0.10	3,592	7.40	2	1.30	19.23
										Total	60.82
III Crossing Gaps, Intersecting V B. Through Street Two-Way	olumes, and Pedestriar	Volumes									
		Approach									
		2008 Pk Hr	pk to AADT	2008 Pk Hr		(V _{aew} +	P _{ew}) X	(V _{ans} +	P _{ns}) X	$F_{ow} =$	Priority Points
	Approach East	272	1.00	272		0.27	0.00				
	Approach West	237	1.00	237		0.24	0.00				
	Approach North	280	1.00	280				0.28	0.00		
A	Approach South	380	1.00	380				0.38	0.00	1.00	0.34
										Total	0.34
								T	_	IORITY POINTS RANTED? (>100)	36.15 NO

Town of Raymond Project No: Date Revised: 2007-3491 January 14, 2009 Highway 52 & 200 W Intersection:

I Collisions (Figure B2-1) Pa										Total	-25
II Crossing Gaps, Progression B. Two-Way Street	n, Delay and Vehicular Sto	ps									
B. Two-way Street											
		Approach			Egress						
		2008 Pk Hr	pk to AADT	2008 Pk Hr	2008 Pk Hr	pk to AADT	2008 Pk Hr	V _{tew} (or V _{tns)} x	P ₂ x	F_{eew} (or F_{ens}) =	Priority Points
	E-W Street - E. of int.	116	0.10	1,160	110	0.10	1,100	2.26	2	1.30	5.88
	E-W Street - W. of int.	119	0.10	1,190	88	0.10	880	2.07	2	1.30	5.38
	N-S Street - N. of int.	71	0.10	710	62	0.10	620	1.33	2	1.30	3.46
	N-S Street - S. of int.	73	0.10	730	119	0.10	1,190	1.92	2	1.30	4.99
										Total	19.71
III Crossing Gaps, Intersecting B. Through Street Two-Way	g Volumes, and Pedestria	Approach	nk to AADT	2000 Dk U-		()/	D. V	0/ 1	D \V	F _	Driority Dointo
	A		pk to AADT			(V _{aew} +	P _{ew}) X	(V _{ans} +	P _{ns}) X	F _{ow} =	Priority Points
	Approach East	116 119	1.00 1.00	116 119		0.12 0.12	0.59 0.59				
	Approach West Approach North	71	1.00	71		0.12	0.59	0.07	0.14		
	Approach South	73	1.00	73				0.07	0.14	1.00	0.60
	Approach Coun	70	1.00	7.5				0.07	0.14	Total	0.60
										. Otal	0.00
								T		IORITY POINTS RANTED? (>100)	-4.69 NO

Town of Raymond Project No: Date Revised: 2007-3491 January 14, 2009 Highway 52 & 200 W Intersection:

I Collisions (Figure B2-1) Pa										Total	-25
II Crossing Gaps, Progression, De B. Two-Way Street	elay and Vehicular Sto	ps									
		Approach			Egress						
			pk to AADT	2008 Pk Hr	-	pk to AADT	2008 Pk Hr	V _{tew} (or V _{tns)} x	P ₂ x	F _{eew} (or F _{ens}) =	Priority Points
E-1	-W Street - E. of int.	228	0.10	2,277	135	0.10	1,353	3.63	2	1.30	9.44
E-	-W Street - W. of int.	146	0.10	1,464	193	0.10	1,932	3.40	2	1.30	8.83
N-	-S Street - N. of int.	128	0.10	1,283	77	0.10	773	2.06	2	1.30	5.35
N-	-S Street - S. of int.	91	0.10	908	187	0.10	1,874	2.78	2	1.30	7.23
										Total	30.84
III Crossing Gaps, Intersecting Vo B. Through Street Two-Way	olumes, and Pedestrian	Volumes									
		Approach									
		2008 Pk Hr	pk to AADT	2008 Pk Hr		(V _{aew} +	P _{ew}) X	(V _{ans} +	P _{ns}) X	$F_{ow} =$	Priority Points
·	pproach East	228	1.00	228		0.23	0.59				
	pproach West	146	1.00	146		0.15	0.59				
·	pproach North	128	1.00	128				0.13	0.14		
Ap	pproach South	91	1.00	91				0.09	0.14	1.00	0.78
										Total	0.78
								T		RIORITY POINTS RANTED? (>100)	6.62 NO

Town of Raymond Project No: Date Revised: 2007-3491 January 14, 2009 Highway 52 & 200 W Intersection:

I Collisions (Figure B2-1) Pa										Total	-25
II Crossing Gaps, Progression B. Two-Way Street	, Delay and Vehicular Sto	pps									
		Approach			Egress						
			pk to AADT	2008 Pk Hr	-	pk to AADT	2008 Pk Hr	V _{tew} (or V _{tns)}	x P ₂ x	F _{eew} (or F _{ens}) =	Priority Points
	E-W Street - E. of int.	411	0.10	4,110	205	0.10	2,054	6.16	2	1.30	16.03
	E-W Street - W. of int.	180	0.10	1,800	357	0.10	3,567	5.37	2	1.30	13.95
	N-S Street - N. of int.	194	0.10	1,938	101	0.10	1,010	2.95	2	1.30	7.67
	N-S Street - S. of int.	131	0.10	1,307	252	0.10	2,525	3.83	2	1.30	9.96
										Total	47.61
III Crossing Gaps, Intersecting B. Through Street Two-Way	Volumes, and Pedestria	n Volumes									
		Approach									
		2008 Pk Hr	pk to AADT	2008 Pk Hr		(V _{aew} +	P _{ew}) X	(V _{ans} +	P _{ns}) X	$F_{ow} =$	Priority Points
	Approach East	411	1.00	411		0.41	0.59				
	Approach West	180	1.00	180		0.18	0.59				
	Approach North	194	1.00	194				0.19	0.14		
	Approach South	131	1.00	131				0.13	0.14	1.00	1.07
										Total	1.07
								7	-	IORITY POINTS ANTED? (>100)	23.68 NO

Town of Raymond Project No: Date Revised: 2007-3491 January 14, 2009 100 N & 200 W Intersection

I Collisions (Figure B2-1) Pa										Total	-25
II Crossing Gaps, Progression B. Two-Way Street	, Delay and Vehicular Stops										
		Approach			Egress						
			pk to AADT	2008 Pk Hr		pk to AADT	2008 Pk Hr	V _{tew} (or V _{tns)} x	C P ₂ X	F _{eew} (or F _{ens}) =	Priority Points
	E-W Street - E. of int.	45	0.10	450	46	0.10	460	0.91	2	1.30	2.37
	E-W Street - W. of int.	30	0.10	300	61	0.10	610	0.91	2	1.30	2.37
	N-S Street - N. of int.	119	0.10	1,190	73	0.10	730	1.92	2	1.30	4.99
	N-S Street - S. of int.	43	0.10	430	57	0.10	570	1.00	2	1.30	2.60
										Total	12.32
III Crossing Gaps, Intersecting B. Through Street Two-Way	Volumes, and Pedestrian V										
		Approach	-late AADT	0000 DL II.		ω.	D \V	01.	D) V	F	Data atta Data ta
	Annuar de Frant		pk to AADT			(V _{aew} +	P _{ew}) X	(V _{ans} +	P _{ns}) X	F _{ow} =	Priority Points
	Approach East	45 30	1.00 1.00	45 30		0.05 0.03	0.70 0.70				
	Approach West Approach North	119	1.00	30 119		0.03	0.70	0.12	0.55		
	Approach South	43	1.00	43				0.12	0.55	1.00	1.86
	Approach Couli	40	1.00	40				0.04	0.00	Total	1.86
								Т		IORITY POINTS ANTED? (>100)	-10.81 NO

Town of Raymond Project No: Date Revised: 2007-3491 January 14, 2009 100 N & 200 W Intersection

l Collisions (Figure B2-1) Pa										Total	-25
II Crossing Gaps, Progression B. Two-Way Street	, Delay and Vehicular Stops										
		Approach			Egress						
			pk to AADT	2008 Pk Hr		pk to AADT	2008 Pk Hr	V _{tew} (or V _{tns)} x	P ₂ x	F _{eew} (or F _{ens}) =	Priority Points
	E-W Street - E. of int.	57	0.10	574	59	0.10	586	1.16	2	1.30	3.01
	E-W Street - W. of int.	37	0.10	369	75	0.10	750	1.12	2	1.30	2.91
	N-S Street - N. of int.	187	0.10	1,874	91	0.10	908	2.78	2	1.30	7.23
	N-S Street - S. of int.	54	0.10	539	111	0.10	1,111	1.65	2	1.30	4.29
										Total	17.45
III Crossing Gaps, Intersecting B. Through Street Two-Way	Volumes, and Pedestrian V	olumes									
		Approach									
		2008 Pk Hr	pk to AADT	2008 Pk Hr		(V _{aew} +	P _{ew}) X	(V _{ans} +	P _{ns}) X	$F_{ow} =$	Priority Points
	Approach East	57	1.00	57		0.06	0.70				
	Approach West	37	1.00	37		0.04	0.70				
	Approach North	187	1.00	187				0.19	0.55		
	Approach South	54	1.00	54				0.05	0.55	1.00	2.00
										Total	2.00
								T		IORITY POINTS ANTED? (>100)	-5.55 NO

Town of Raymond Project No: Date Revised: 2007-3491 January 14, 2009 100 N & 200 W Intersection

I Collisions (Figure B2-1) Pa										Total	-25
II Crossing Gaps, Progression B. Two-Way Street	, Delay and Vehicular Stops										
		Approach			Egress						
			pk to AADT	2008 Pk Hr		pk to AADT	2008 Pk Hr	V _{tew} (or V _{tns)} x	P ₂ x	F _{eew} (or F _{ens}) =	Priority Points
	E-W Street - E. of int.	71	0.10	705	74	0.10	741	1.45	2	1.30	3.76
	E-W Street - W. of int.	45	0.10	454	92	0.10	923	1.38	2	1.30	3.58
	N-S Street - N. of int.	252	0.10	2,525	131	0.10	1,307	3.83	2	1.30	9.96
	N-S Street - S. of int.	86	0.10	863	158	0.10	1,577	2.44	2	1.30	6.34
										Total	23.64
III Crossing Gaps, Intersecting B. Through Street Two-Way	Volumes, and Pedestrian V	olumes									
		Approach									
		2008 Pk Hr	pk to AADT	2008 Pk Hr		(V _{aew} +	P _{ew}) X	(V _{ans} +	P _{ns}) X	F _{ow} =	Priority Points
	Approach East	71	1.00	71		0.07	0.70				
	Approach West	45	1.00	45		0.05	0.70				
	Approach North	252	1.00	252				0.25	0.55		
	Approach South	86	1.00	86				0.09	0.55	1.00	2.18
										Total	2.18
								T		IORITY POINTS ANTED? (>100)	0.82 NO

FINAL REPORT



Appendix F - Cost Estimate



Town of Raymond - Transportation Master Plan Project Number: 2007-3491 Date: January 15, 2009 Cost Estimate - 2018 Horizon

Cost Summary	Cost/	Unit
Excavation:		
Common Excavation	\$4.19	m ³
Common Excavation Loaded to Trucks	\$10.88	m ³
Subgrade preparation:		
Subgrade preparation:	\$1.34	m ²
Pavement Structure:		
ACP - 70 mm	\$110.90	t
GBC - 200 mm	\$23.84	t
Curb & Gutter	\$270.00	m
Pavement Marking:		
Centre Line Painting	\$1,041.35	km

Summary	
Arterial Roadway	\$1,316,929.58
Collector Roadway	\$0.00
Local Roadway	\$6,331,514.97
Roadway Total	\$7,648,444.55
Contingency (15%)	\$1,147,266.68
Total (Roadway & Contingency)	\$8,795,711.24
Engineering Cost (15%, including Contingency)	\$1,319,356.69
Total (Roadway & Contingency & Engg. Cost)	\$10,115,067.92
GST	\$505,753.40
TOTAL	\$10.620.821.32

Assumption: For ASP: 1 m^3 = 2.4 tonne For GBC: 1 m^3 = 2.33 tonne

200 S - Extension to 400 W Length of New Roadway

\$0.00

LOCAL

Quantity Unit 0.30 km 297.00 m

Cost

ARTERI	AL			COL
400 S Access to Development #10 & #11	Quantity	Unit		
Length of New Roadway	1.40	km		
	1,403.00	m	Cost	
Excavation:				Excavation:
Common Excavation	4,545.72	m^3	\$19,046.57	Common Excavation
Waste Excavation	1,010.16	m ³	\$10,990.54	Waste Excavation
Subgrade preparation:				Subgrade preparation:
Subgrade preparation:	16,839.37	m ²	\$22,564.75	Subgrade preparation:
Pavement Structure:				Pavement Structure:
ACP - 75 mm	2,904.88	t	\$322,151.57	ACP - 75 mm
GBC - 200 mm	7,680.17	t	\$183,095.14	GBC - 200 mm
Curb & Gutter	2,806.00	m	\$757,620.00	Curb & Gutter
Pavement Marking:				Pavement Marking:
Centre Line Painting	1.40	km	\$1,461.01	Centre Line Painting
TOTAL			\$1,316,929.58	TOTAL
TOTAL ARTERIAL ROADWAYS			\$1,316,929.58	TOTAL COLLECTOR ROADWAYS

	COLLECTOR			
		Quantity	Unit	
			km	
			m	Cost
Excavation:			_	
Common Excavation		0.00	m ³	\$0.00
Waste Excavation		0.00	m ³	\$0.00
Subgrade preparation:				
Subgrade preparation:		0.00	m ²	\$0.00
Pavement Structure:				
ACP - 75 mm		0.00	t	\$0.00
GBC - 200 mm		0.00	t	\$0.00
Curb & Gutter		0.00	m	\$0.00
Pavement Marking:				
Centre Line Painting		0.00	km	\$0.00
TOTAL				\$0.00

Excavation:	297.00	m	Cost
Common Excavation	691.36	m ³	\$2,896.78
Waste Excavation Subgrade preparation:	134.01	m ³	\$1,457.99
Subgrade preparation: Pavement Structure:	2,822.03	m ²	\$3,781.53
ACP - 75 mm GBC - 200 mm	481.21 1,300.36	t t	\$53,366.33 \$31,000.49
Curb & Gutter Pavement Marking:	594.00	m	\$160,380.00
Centre Line Painting TOTAL	0.30	km	\$309.28
			\$253,192.40
300 S - Extension to 400 W Length of New Roadway	Quantity 0.37	Unit km	
Excavation:	372.00	m	Cost
Common Excavation Waste Excavation	865.94 167.85	m³ m³	\$3,628.30 \$1,826.17
Subgrade preparation:			
Subgrade preparation: Pavement Structure:	3,534.67	m ²	\$4,736.46
ACP - 75 mm GBC - 200 mm	602.73 1,628.73	t t	\$66,842.68 \$38,828.89
Curb & Gutter Pavement Marking:	744.00	m	\$200,880.00
Centre Line Painting TOTAL	0.37	km	\$387.38 \$317,129.87
Cul-de-sacs South of 300 S	Quantity	Unit	
Length of New Roadway	1.05 1,050.00	km m	Cost
Excavation:		m ³	
Common Excavation Waste Excavation	2,444.19 473.76	m ³	\$10,241.16 \$5,154.51
Subgrade preparation: Subgrade preparation:	9,976.89	m ²	\$13,369.03
Pavement Structure: ACP - 75 mm	1,701.25	t	\$188,668.85
GBC - 200 mm	4,597.22	t	\$109,597.68
Curb & Gutter Pavement Marking:	2,100.00	m	\$567,000.00
Centre Line Painting TOTAL	1.05	km	\$1,093.42 \$895,124.64
Local Road along West Limit of Development #3	Quantity	Unit	
Length of New Roadway	0.32 320.00	km m	Cost
Excavation: Common Excavation	744.90	m ³	\$3,121.11
Waste Excavation	144.38	m ³	\$1,570.90
Subgrade preparation: Subgrade preparation:	3,040.58	m^2	\$4,074.37
Pavement Structure: ACP - 75 mm	518.48	t	\$57,499.08
GBC - 200 mm Curb & Gutter	1,401.06 640.00	t m	\$33,401.20 \$172,800.00
Pavement Marking:			
Centre Line Painting TOTAL	0.32	km	\$333.23 \$272,799.89
Broadway - Extension to Development #6	Quantity	Unit	
Length of New Roadway	0.33 327.00	km m	Cost
Excavation: Common Excavation	761.19	m ³	\$3,189.39
Waste Excavation	147.54	m ³	\$1,605.26
Subgrade preparation: Subgrade preparation:	3,107.09	m ²	\$4,163.50
Pavement Structure: ACP - 75 mm	529.82	t	\$58,756.87
GBC - 200 mm Curb & Gutter	1,431.71 654.00	t m	\$34,131.85
Pavement Marking: Centre Line Painting			\$176,580.00
TOTAL	0.33	km	\$340.52 \$278,767.39
100 E - Extension to Development #6	Quantity	Unit	
Length of New Roadway	0.64 641.00	km m	Cost
Excavation: Common Excavation	1,492.12	m ³	\$6,251.98
Waste Excavation Subgrade preparation:	289.22	m ³	\$3,146.70
Subgrade preparation:	6,090.65	${\sf m}^2$	\$8,161.48
Pavement Structure: ACP - 75 mm	1,038.57	t	\$115,177.84
GBC - 200 mm Curb & Gutter	2,806.49 1,282.00	t m	\$66,906.77 \$346,140.00
Pavement Marking: Centre Line Painting	0.64	km	\$667.51
TOTAL	0.04	KIII	\$546,452.28
300 E - Extension to Development #6	Quantity	Unit	
Length of New Roadway	0.59 585.00	km m	Cost
	1 361 76	m ³	\$5,705,79
Common Excavation Waste Excavation	1,361.76 263.95	m³ m³	\$5,705.79 \$2,871.80
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation:			
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation:	263.95	m ³	\$2,871.80
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm	263.95 5,558.55 947.84 2,561.31	m ³ m ² t	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking:	263.95 5,558.55 947.84 2,561.31 1,170.00	m ³ m ² t t m	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter	263.95 5,558.55 947.84 2,561.31	m ³ m ² t	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59	m³ m² t t m Mm	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59	m ³ m ² t t m km	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02	m³ m² t t m km	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway Excavation: Common Excavation Waste Excavation	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02 3,024.00	m³ m² t t m km	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation:	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02 3,024.00 7,039.27	m³ m² t t m km Unit km m m³	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30 Cost \$29,494.53
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02 3,024.00 7,039.27 1,364.43 28,733.44 4,899.61	m ³ m ² t t m km Unit km m m ³ m ³ t	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30 Cost \$29,494.53 \$14,844.99 \$38,502.81
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure:	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02 3,024.00 7,039.27 1,364.43 28,733.44	m ³ m ² t t m km Unit km m m ³ m ³	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30 Cost \$29,494.53 \$14,844.99 \$38,502.81 \$543,366.28 \$315,641.32
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking:	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02 3,024.00 7,039.27 1,364.43 28,733.44 4,899.61 13,239.99 6,048.00	m ³ m ² t t m km m ³ m ³ m ³ t t m m	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30 Cost \$29,494.53 \$14,844.99 \$38,502.81 \$543,366.28 \$315,641.32 \$1,632,960.00
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Parenent Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02 3,024.00 7,039.27 1,364.43 28,733.44 4,899.61 13,239.99	m ³ m ² t t m m m ³ m ³ m ³ t t t t	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30 Cost \$29,494.53 \$14,844.99 \$38,502.81 \$543,366.28 \$315,641.32
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Parenent Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL Roads around Development #8	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02 3,024.00 7,039.27 1,364.43 28,733.44 4,899.61 13,239.99 6,048.00 3.02 Quantity	m³ m² t t m km Unitt km m d t t t km m unitt km m unitt t t m km	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30 Cost \$29,494.53 \$14,844.99 \$38,502.81 \$543,366.28 \$315,641.32 \$1,632,960.00 \$3,149.04
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL Roads around Development #8 Length of New Roadway	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02 3,024.00 7,039.27 1,364.43 28,733.44 4,899.61 13,239.99 6,048.00 3.02	m ³ m ² t t m km Unitt km m m ³ m ³ t t m km	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30 Cost \$29,494.53 \$14,844.99 \$38,502.81 \$543,366.28 \$315,641.32 \$1,632,960.00 \$3,149.04
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL Roads around Development #8 Length of New Roadway	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02 3,024.00 7,039.27 1,364.43 28,733.44 4,899.61 13,239.99 6,048.00 3.02 Quantity 0.81 811.00	m³ m² t t m km Unitt km m³ m³ t t t m km Unitt km m³ m³ m³ m² t t t m km m m km m m m m m m m m m m m	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30 Cost \$29,494.53 \$14,844.99 \$38,502.81 \$543,366.28 \$315,641.32 \$1,632,960.00 \$3,149.04 \$2,577,958.97
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL Roads around Development #8 Length of New Roadway Excavation: Centre Line Painting TOTAL Roads around Development #8 Length of New Roadway Excavation: Common Excavation Waste Excavation Waste Excavation Waste Excavation Waste Excavation	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02 3,024.00 7,039.27 1,364.43 28,733.44 4,899.61 13,239.99 6,048.00 3.02 Quantity 0.81	m³ m² t t m km Unit km m³ m³ t t t m km Unit km km m³ m³ m³ m² t t t m km km	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30 Cost \$29,494.53 \$14,844.99 \$38,502.81 \$543,366.28 \$315,641.32 \$1,632,960.00 \$3,149.04 \$2,577,958.97
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL Roads around Development #8 Length of New Roadway Excavation: Centre Line Painting TOTAL Roads around Development #8 Length of New Roadway Excavation: Common Excavation Waste Excavation Waste Excavation Waste Excavation Waste Excavation	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02 3,024.00 7,039.27 1,364.43 28,733.44 4,899.61 13,239.99 6,048.00 3.02 Quantity 0.81 811.00 1,887.85	m³ m² t t m km Unitt km m³ m³ t t t m km Unitt km m° km km m° km km m° km m° km m° km m° m³ m³ km m° k	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30 Cost \$29,494.53 \$14,844.99 \$38,502.81 \$543,366.28 \$315,641.32 \$1,632,960.00 \$3,149.04 \$2,577,958.97 Cost \$7,910.07
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL Roads around Development #8 Length of New Roadway Excavation: Common Excavation Subgrade preparation: Pavement Marking: Centre Line Painting TOTAL Roads around Development #8 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation:	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02 3,024.00 7,039.27 1,364.43 28,733.44 4,899.61 13,239.99 6,048.00 3.02 Quantity 0.81 811.00 1,887.85 365.92 7,705.96	m ³ m ² t t m km Vunit km m m ³ m ³ t t t m km m m ³ m ³ m ² t t m m m m m ³ m ³ km m m ³ m	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30 Cost \$29,494.53 \$14,844.99 \$38,502.81 \$543,366.28 \$315,641.32 \$1,632,960.00 \$3,149.04 \$2,577,958.97 Cost \$7,910.07 \$3,981.24 \$10,325.99
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway Excavation: Common Excavation Waste Excavation Waste Excavation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL Roads around Development #8 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation: Pavement Marking: Centre Line Painting TOTAL Roads around Development #8 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02 3,024.00 7,039.27 1,364.43 28,733.44 4,899.61 13,239.99 6,048.00 3.02 Quantity 0.81 811.00 1,887.85 365.92 7,705.96 1,314.01 3,550.80	m ³ m ² t t m km km m ³ m ³ m ³ t t t m km m m ³ m ³ t t t m m m m ³ m ³ t t t t m m m m ³ m ³ t t t t t t t t t t t t t t t t t t t	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30 Cost \$29,494.53 \$14,844.99 \$38,502.81 \$543,366.28 \$315,641.32 \$1,632,960.00 \$3,149.04 \$2,577,958.97 Cost \$7,910.07 \$3,981.24 \$10,325.99 \$145,724.22 \$84,651.16
Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL E-W Road within Development #6 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting TOTAL Roads around Development #8 Length of New Roadway Excavation: Common Excavation Subgrade preparation: Pavement Marking: Centre Line Painting TOTAL Roads around Development #8 Length of New Roadway Excavation: Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm	263.95 5,558.55 947.84 2,561.31 1,170.00 0.59 Quantity 3.02 3,024.00 7,039.27 1,364.43 28,733.44 4,899.61 13,239.99 6,048.00 3.02 Quantity 0.81 811.00 1,887.85 365.92 7,705.96 1,314.01	m ³ m ² t t m km	\$2,871.80 \$7,448.46 \$105,115.50 \$61,061.56 \$315,900.00 \$609.19 \$498,712.30 Cost \$29,494.53 \$14,844.99 \$38,502.81 \$543,366.28 \$315,641.32 \$1,632,960.00 \$3,149.04 \$2,577,958.97 Cost \$7,910.07 \$3,981.24 \$10,325.99 \$145,724.22

Town of Raymond - Transportation Master Plan

Project Number: 2007-3491 Date: January 15, 2009 Cost Estimate - 2028 Horizon

Cost Summary	Cost/	Unit	
Excavation:			
Common Excavation	\$4.19	m ₃	
Common Excavation Loaded to Trucks	\$10.88	m³	
Subgrade preparation:			
Subgrade preparation:	\$1.34	m^2	
Pavement Structure:			
ACP - 75 mm	\$110.90	ţ	
GBC - 200 mm	\$23.84	ļ	
Curb & Gutter	\$270.00	m	
Pavement Marking:			
Centre Line Painting	\$1,041.35	km	

	Cost/	Unit	
			Arterial Roadway
ion	\$4.19	m ₃	Collector Roadway
ion Loaded to Trucks	\$10.88	$_{\rm e}$ ш	Local Roadway
			Roadway Total
tion:	\$1.34	m^{z}	Contingency (15%)
			Total (Roadway & Conti
	\$110.90	1	Engineering Cost (15%,
	\$23.84	1	Total (Roadway & Conti
	\$270.00	ш	GST
			TOTAL
3	30 FFO F#	1,00	

Summary	
Arterial Roadway	\$1,098,223.53
Collector Roadway	\$856,989.81
Local Roadway	\$865,287.15
Roadway Total	\$2,820,500.50
Contingency (15%)	\$423,075.07
Total (Roadway & Contingency)	\$3,243,575.57
Engineering Cost (15%, including Contingency)	\$486,536.34
Total (Roadway & Contingency & Engg. Cost)	\$3,730,111.91
GST	\$186,505.60
TOTAL	\$3,916,617.51

For ASP: $1 \text{ m}^3 = 2.4 \text{ tonne}$ For GBC: $1 \text{ m}^3 = 2.33 \text{ tonne}$

Assumption:

COLLECTOR Collector within Development #10 Unit Local Road in Development #50 Collector within Development #10 0.391 km Cost Length of New Roadway Excavation 2.958.12 m³ \$12.394.52 Common Exevation Common Excavation 2.958.12 m³ \$7.152.08 Waste Excavation Subgrade preparation: Subgrade preparation: Common Excavation Subgrade preparation: Subgrade preparation: Subgrade preparation: Subgrade preparation: Subgrade preparation: Subgrade preparation: ACP - 75 mm Subgrade preparation: Subgrade preparation: Subgrade preparation: ACP - 75 mm Subgrade preparation: Subgrade preparation: 4.997.86 t \$119,148.7 GBC - 200 mm Curb & Gutter Control & Gutter Pavement Marking: Control & Gutter Control & Gutter TOTAL TOTAL TOTAL Common Excavation Subgrade preparation: TOTAL Subgrade preparation: Subgrade preparation: Common Excavation Subgrade preparation: ACP - 75 mm	IOIAL	45,910,017.31	_						
Quantity Unit 0.91 km 913.00 m Cost 2,958.12 m³ \$12,394.52 657.36 m³ \$7,152.08 10,958.19 m² \$14,683.98 1,890.35 t \$119,148.87 1,826.00 m \$493,020.00 0.91 km \$950.75 \$856,989.81 \$856,989.81									
Quantity Unit 0.91 km 913.00 m Cost 2,958.12 m³ \$12,394.52 657.36 m³ \$7,152.08 10,958.19 m² \$14,683.98 1,890.35 t \$209,639.62 4,997.86 t \$119,148.87 1,826.00 m \$493,020.00 0.91 km \$950.75 \$856,989.81	COLLECTOR					LOCAL			
0.91 km 913.00 m Cost 2,958.12 m³ \$12,394.52 657.36 m³ \$7,152.08 10,958.19 m² \$14,683.98 1,890.35 t \$209,639.62 4,997.86 t \$119,148.87 1,826.00 m \$493,020.00 0.91 km \$950.75 \$856,989.81		Quantity	Unit		Local Road in Development #9		Quantity	Unit	
913.00 m Cost Exc 2,958.12 m³ \$12,394.52 657.36 m³ \$7,152.08 Sub 10,958.19 m² \$14,683.98 Pav 1,890.35 t \$209,639.62 4,997.86 t \$119,148.87 1,826.00 m \$493,020.00 Pav 0.91 km \$950.75	Collector within Development #10	0.91	Æ		Length of New Roadway		0.68	Ā	
Exc 2,958.12 m³ \$12,394.52 657.36 m³ \$7,152.08 10,958.19 m² \$14,683.98 Pav 1,890.35 t \$209,639.62 4,997.86 t \$119,148.87 1,826.00 m \$493,020.00 Pav 0.91 km \$950.75 \$856,989.81 Acc Exc Exc Exc Pav	Length of New Roadway	913.00	٤	Cost			683.00	٤	Cost
2,958.12 m³ \$12,394.52 657.36 m³ \$7,152.08 Sub 10,958.19 m² \$14,683.98 Pav 1,890.35 t \$209,639.62 4,997.86 t \$119,148.87 1,826.00 m \$493,020.00 Pav 0.91 km \$950.75 \$856,989.81 Acc Exc	Excavation:				Excavation:				
657.36 m³ \$7,152.08 Sub 10,958.19 m² \$14,683.98 Pav 1,890.35 t \$209,639.62 4,997.86 t \$119,148.87 1,826.00 m \$493,020.00 Pav 0.91 km \$950.75 Exc Exc Exc Pav Pav Pav	Common Excavation	2,958.12	E L	\$12,394.52	Common Excavation		1,589.89	m ³	\$6,661.63
Sub 10,958.19 m² \$14,683.98 Pav 1,890.35 t \$209,639.62 4,997.86 t \$119,148.87	Waste Excavation	657.36	"E	\$7,152.08	Waste Excavation		308.17	m ³	\$3,352.89
10,958.19 m² \$14,683.98 Pav 1,890.35 t \$209,639.62 4,997.86 t \$119,148.87 1,826.00 m \$493,020.00 Pav 0.91 km \$950.75	Subgrade preparation:				Subgrade preparation:				
Pav 1,890.35 t \$209,639.62 4,997.86 t \$119,148.87 1,826.00 m \$493,020.00 Pav 0.91 km \$950.75 \$856,989.81 To Enc Exc Pav Pav	Subgrade preparation:	10,958.19	m^2	\$14,683.98	Subgrade preparation:		6,489.73	m^2	\$8,696.24
1,890.35 t \$209,639.62 4,997.86 t \$119,148.87 1,826.00 m \$493,020.00 Pav 0.91 km \$950.75 Exc Exc Sub	Pavement Structure:				Pavement Structure:				
4,997.86 t \$119,148.87 1,826.00 m \$493,020.00 Pav 0.91 km \$950.75	ACP - 75 mm	1,890.35	.	\$209,639.62	ACP - 75 mm		1,106.62	+	\$122,724.59
1,826.00 m \$493,020.00 Pav 0.91 km \$950.75 To \$856,989.81 To Exc	GBC - 200 mm	4,997.86	+	\$119,148.87	GBC - 200 mm		2,990.38	+	\$71,290.68
0.91 km \$950.75 \$856,989.81 TG \$856,989.81 Acc Exc Exc Pav Pav Pav Pav Pav	Curb & Gutter	1,826.00	Ε	\$493,020.00	Curb & Gutter		1,366.00	Ε	\$368,820.00
\$856,989.81 TG \$856,989.81 Acc \$856,989.81 Acc Exc Exc Exc Exc Exc Exc Exc Exc Exc E	Pavement Marking:				Pavement Marking:				
\$856,989.81 Acc \$856,989.81 Acc Exc Exc Exc Exc Pav Pav	Centre Line Painting	0.91	km	\$950.75	Centre Line Painting		0.68	km	\$711.24
\$856,989.81 Acc Exc Exc Sub Sub Pav Pav	TOTAL			\$856,989.81	TOTAL				\$582,257.27
Exc Exc Exc Fxc Fxc Fxc Fxc Fxc Fxc Fxc Fxc Fxc F	TOTAL COLLECTOR ROADWAYS			\$856,989.81	Access to Golf Course		Quantity	Unit	
Excavation: Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting					Length of New Roadway		0.33	Ā	
Excavation: Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting							332.00	Ε	Cost
Common Excavation Waste Excavation Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting					Excavation:				
Waste Excavation Subgrade preparation: Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting					Common Excavation		772.83	m ³	\$3,238.16
Subgrade preparation: Subgrade preparation: Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting					Waste Excavation		149.80	m ³	\$1,629.81
Subgrade preparation: Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting					Subgrade preparation:				
Pavement Structure: ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting					Subgrade preparation:		3,154.60	m^2	\$4,227.16
ACP - 75 mm GBC - 200 mm Curb & Gutter Pavement Marking: Centre Line Painting					Pavement Structure:				
GBC - 200 mm Curb & Gutter Curb & Gutter Pavement Marking: Centre Line Painting					ACP - 75 mm		537.92	+	\$59,655.29
Curb & Gutter Pavement Marking: Centre Line Painting					GBC - 200 mm		1,453.60	+	\$34,653.74
Pavement Marking: Centre Line Painting					Curb & Gutter		664.00	٤	\$179,280.00
Centre Line Painting					Pavement Marking:		(-	1
					Centre Line Painting		0.33	Æ	\$345.73

\$268,650.99 \$152,688.03 \$631,800.00

+ + 5

2,422.46 6,404.70 2,340.00

\$18,817.36

 m^2

14,042.81

Subgrade preparation:
Subgrade preparation:
Pavement Structure:
ACP - 75 mm
GBC - 200 mm

\$1,218.38 \$1,098,223.53

Ā

1.17

Centre Line Painting

Pavement Marking: Curb & Gutter

\$1,098,223.53

TOTAL ARTERIAL ROADWAYS

\$15,883.45

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3,790.80

Common Excavation

Excavation:

Waste Excavation

842.40

Cost

Ε

1.17

Unit Km

Quantity

400 S Access to Development #10 & #11 Length of New Roadway

ARTERIAL

\$9,165.31

\$865,287.15

TOTAL LOCAL ROADWAYS

TOTAL

\$283,029.89