TOWN OF PEACE RIVER
BYLAW 2104

BEING A BYLAW OF THE TOWN OF PEACE RIVER IN THE PROVINCE OF ALBERTA TO REPEAL AND REPLACE BYLAWS 1915 AND BYLAW 1992

WHEREAS, pursuant to the authority conferred by the *Municipal Government Act*, R.S.A 2000 c. M-26 and amendments thereto; and

WHEREAS, Section 633 enables Council to adopt an area structure plan to provide a framework for the future subdivision and development of lands within the municipality; and

WHEREAS the Council of the Town of Peace River has adopted Bylaw 1915 and its amending Bylaw 1992, being the Citadel Park Area Structure Plan; and

WHEREAS the Council of the Town of Peace River deems it advisable to repeal and replace the said Bylaws with the Upper West Peace Area Structure Plan;

NOW THEREFORE, the Council of the Town of Peace River, in the Province of Alberta, duly assembled, enacts as follows:

TITLE

1. This Bylaw may be cited as the "Upper West Peace North Area Structure Plan".

SEVERABILITY

2. If any portion of this Bylaw is declared invalid by a court of competent jurisdiction, then the invalid portion shall be severed.

SCHEDULES

3. This Bylaw contains Schedule "A", which forms a part of this Bylaw.

REPEAL

4. Bylaw No. 1915 and its amendments, as amended, are hereby repealed.

EFFECTIVE DATE

5. This Bylaw shall come into force and have effect on the date of third and final reading.

READ a first time this 12 day of July, 2021.

READ a second time this 9 day of August, 2021.

READ a third and final time this 9 day of August, 2021.

SIGNED by the Mayor and Chief Administrative Officer this 11 day of August, 2021.

T. Tarpey

Thomas Tarpey
Mayor

ACTING CAO

Christopher J. Parker
Chief Administrative Officer

TOWN OF
PEACE RIVER
ALBERTA

UPPER WEST PEACE NORTH AREA STRUCTURE PLAN

Schedule “A” Bylaw No. 2104

Prepared by:

Town of Peace River Planning and Development Department
with assistance from Beairsto and Associates Engineering & Survey.

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Figures

1 Introduction

1.1 Purpose

.1 The purpose of this area structure plan (ASP) is to facilitate the realignment of municipal water and sewer infrastructure away from the top of bank of the Peace River, and to facilitate the development of the lands immediately west of the Shaftesbury Trail into a mix of residential and commercial development.

1.2 Background & History

.1 The land has a history of gravel pit and residential development proposals. A portion of the south west corner of the site was previously developed as a gravel pit (Figure 1) and included a concrete plant in the 1960s. This use ceased sometime between prior to 1980 and the mid 1990s. During the gravel pit operations, industrial camps were occasionally located on the property, housing workers for construction projects.

FIGURE 1 PLAN AREA

.2 Prior to 1980, the property was designated Agricultural-Urban Reserve District. The property was re-designated as Residential-Mobile Home Park District by Land Use Bylaw No. 1082 on March 24, 1980. This districting was maintained in the subsequent Land Use Bylaw No. 1550. In 1994, the landowner installed water and sewer mains for the future development of a mobile home park. This work was undertaken without the oversite of the Town, no as-built drawings exist, and the

infrastructure is not sufficient to support fire hydrant flows. This infrastructure has been abandoned in place.

.3 In 2003 the property was designated Residential-Village Estate District by Land Use Bylaw No. 1731. This is the current districting applied to the site. Subsequently a number of area structure plans have been developed to provide for the future developed of the lands:

.1 Bylaw No. 1758 was adopted in 2004 (repealed in 2008) providing for the development of primarily low-density residential neighbourhood;

.2 Bylaw No. 1819 was adopted in 2008 (repealed in 2012), providing for the development of a high-density residential neighbourhood;

.3 Bylaw No. 1915 was adopted in 2012, providing for the development of a mixture of high, medium and low-density residential development. In addition, the plan included a commercial lot for the development of neighbourhood commercial uses; and

.4 Bylaw No. 1992 was adopted in 2016, and amended Bylaw 1915, providing for the development of a medium and low-density residential neighbourhood.

.4 This area structure plan will repeal and replace Bylaw No. 1915 and No. 1992.

1.3 Statutory Framework

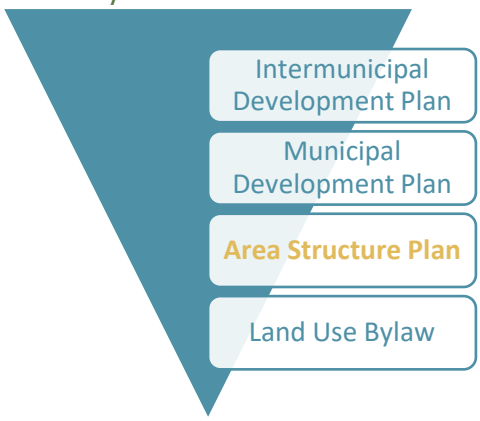


FIGURE 2 HIERARCHY OF PLANS AS ESTABLISHED BY THE MUNICIPAL GOVERNMENT ACT

.1 This area structure plan is a site-specific plan document that directs future development on NE-30-83-21-W5M within the Town of Peace River (the Town). The Plan establishes future land use categories for the subject lands, allowing the lands to proceed to future subdivision and development. This Plan is prepared in accordance with the requirements of s.633 of the Municipal Government Act (MGA) and the direction established by the Land Use Policies. It replaces the previous Citadel Area Structure Plan Bylaw No. 1915 and Bylaw No. 1992.

.2. This ASP area is not within any intermunicipal development plan area between the Town and its neighbouring municipalities [1] and as such is not influenced by any policies therein. However, the adoption of this ASP necessitates a corresponding amendment to the Municipal Development Plan (MDP), in order to ensure that the hierarchy of plans (Figure 2) is adhered to. The current MDP identifies the entirety ASP lands as residential, which is inconsistent with the future land use concept outlined further into this document.

[1] Pursuant to Town of Peace River Bylaw Nos. 2046, 2047, 2048.

.3 The MDP directs that all ASPs shall include the following information:

MDP Direction	Corresponding Section of ASP
→ an examination of existing land uses and physical features, including vegetation, wetlands, watercourses and topographic information;	Site Analysis
→ measures for the protection of significant natural areas;	Lands East of the Shaftesbury Trail
→ a detailed land use plan illustrating all industrial and commercial areas by type and location, and residential areas by location, type and density;	Future land use concept
→ a summary of land use areas, and population and student generation;	Population Forecast
→ surface drainage patterns including catchment areas and sub-basins, storm pond and outfall locations, and proposed trunk mains;	Development Concept – Servicing
→ arterial, collector and local road alignments, and the identification of truck routes and dangerous goods routes;	Development Concept – Servicing
→ the location and alignment of proposed sanitary sewer, storm drainage, and water distribution systems;	Development Concept – Servicing
→ the area and location of school sites and community recreation facilities;	Not applicable – this ASP does not contemplate locating school or community recreation facilities with the plan area.
→ the location of all proposed neighbourhood parks, linear open space, trails and walkways, and their integration with the Town's overall pedestrian trail system;	Development – Servicing - Transportation
→ proposed transit routes;	Not applicable– this ASP does not contemplate transit routes serving the plan area.
→ proposed land use districting as provided under the LUB;	Development Concept – Land Use Districts
→ subdivision phasing plan based on the logical extension of infrastructure;	Development Concept – Phasing
→ energy and water conservation measures;	Not applicable
→ all supporting documentation as may required by the Town, including environmental assessments, geotechnical investigations, traffic impact assessments, biophysical reviews, and similar reports.	Appendices – A traffic impact assessment appended to this plan. A Stormwater Management Detailed Design Report will be required with the subdivision application.

1.4 Interpretation

.1 This ASP includes specific policy statements identified by "**POLICY**" that provide clear direction for future decisions. Within the policy statements this ASP contains the operative terms 'shall', 'must', 'will', 'should', and 'may'. The interpretation of these terms is outlined below:

- .1 Shall or Must or Will – are directive terms that indicates that the policy is mandatory and must be complied with, without discretion, by Administration, the developer, and the Development Authority;
- .2 Should – is a directive term that provides direction to abide by the outlined policy the majority of the time, however there may be unique circumstances where a variance to the policy is appropriate and desired. When the policy is directed to the applicant, the onus is on the applicant to justify why the prescribed policy is not required; and
- .3 May – is discretionary, meaning the policy in question can be enforced if the Town chooses to do so, dependent on the circumstances of the site and/or application.

1.5 Consultation and Referrals

.1 Prior to the finalization of the plan, an open house was held to provide an opportunity for adjacent land owners and the greater community to provide comment. Notification of the open house was provided to all landowners within the Upper West Peace and Pines neighbourhoods, as well as any other immediately adjacent lands, and on Town website and social media in accordance with the Town's Advertising Bylaw No 2034.

.2 Consistent with s.636 of the Municipal Government Act, the draft ASP was referred for comment to:

Referral organization	**Feedback Received (Yes/No)**
Peace River School Division	No
Holy Family Regional Catholic School Division	No
Alberta Transportation	Yes, feedback integrated into document.
Alberta Environment and Parks	Yes, no concerns noted, or changes recommended.
Alberta Culture, Multiculturalism and Status of Women	Yes, *Historic Resources Act* Approval with Conditions received (attached as an appendix to this document).

.3 This ASP area is not within any intermunicipal development plan area[2] between the Town and its neighbouring municipalities and as such, was not circulated to the neighbouring municipalities.

[2] Pursuant to Town of Peace River Bylaw Nos. 2046, 2047, 2048.

2 Site Analysis

2.1 Location of Site

.1 The area structure plan lands are located in the Town of Peace River and are legally known as:

.1 *"All that portion of fractional northeast quarter Section 30, Township 83, Range 21, West of the 5th Meridian which lies west of the left bank of the Peace River and south and east of the Northern Alberta Railway as shown on the Site Location Plan."*

.2 The ASP lands are 16.86 hectares (41.66 acres). This land area includes the lands immediately east of the Shaftesbury Trail (Figure 1). The area of the ASP lands west of the Shaftesbury Trail only, is 13.92 hectares (34.37 acres).

2.2 Natural Features

.1 As shown on Figure 3, the eastern lower part of the subject area is generally flat, between 340 metres and 342 metres above mean sea level (AMSL), but slopes to an upper terrace, generally between 350 metres and 354 metres AMSL, towards the western edge of the subject property. An old gravel pit forms a significant depression in the south, central area of the parcel, where the lowest point is 336 metres AMSL. The parcel is partially treed, with areas of grasses, low shrubs and exposed aggregate.

.2 The old gravel pit site within the ASP lands provides good drainage to the area. There are no existing wetlands or aquifers[3]. The subject land is adjacent to the Peace River.

2.3 Historic Features

.1 The plan area is identified as have a Historical Resource Value of 5(p) by the Listing of Historic Resources[4], meaning that there is a high potential for the area to contain a palaeontological historic resource. A Historic Resources Impact Assessment may be required prior to development on some of the lands, in accordance with the Historical Resources Act prior to the subdivision of the plan area.

2.4 Development Features

.1 The land has been used for some time as an informal recreational vehicle park. There is a single detached dwelling and associated accessory buildings in the north west area of the parcel. No other permanent development exists on the site (Figure 3). Access to the subject parcel is provided by the Shaftesbury Trail (Hwy 684) to the east and two local roads, 90th street to the north-west and 89th Street, to the south. There are no existing utility rights-of-way through the property. Based on an abandoned wells search, there are no abandoned wells within the property[5] .

. 2 Adjacent land uses include:

.1 The Upper West Peace residential neighbourhood and the Misery Mountain Ski Hill to the south;

.2 The Shaftesbury Trail (Highway 684) and the Peace River to the east;

.3 The Shaftesbury Trail (Highway 684), vacant land and the CN Rail yard to the north;

[3] Alberta Merged Wetland Inventory. Search conducted on September 9, 2020 at https://geodiscover.alberta.ca/geoportal/#searchPanel

[4] Alberta Listing of Historic Resources. Search conducted on December 29, 2020 at Listing of Historic Resources (arcgis.com)

[5] Search conducted on January 20, 2020 at https://geodiscover.alberta.ca/geoportal/#searchPanel

.4 The Pines residential neighbourhood and the CN Rail line to the north west. The rail line is greater than 30 metres away from the ASP area (Figure 3); and

.5 Industrial lands and residential lands to the west.

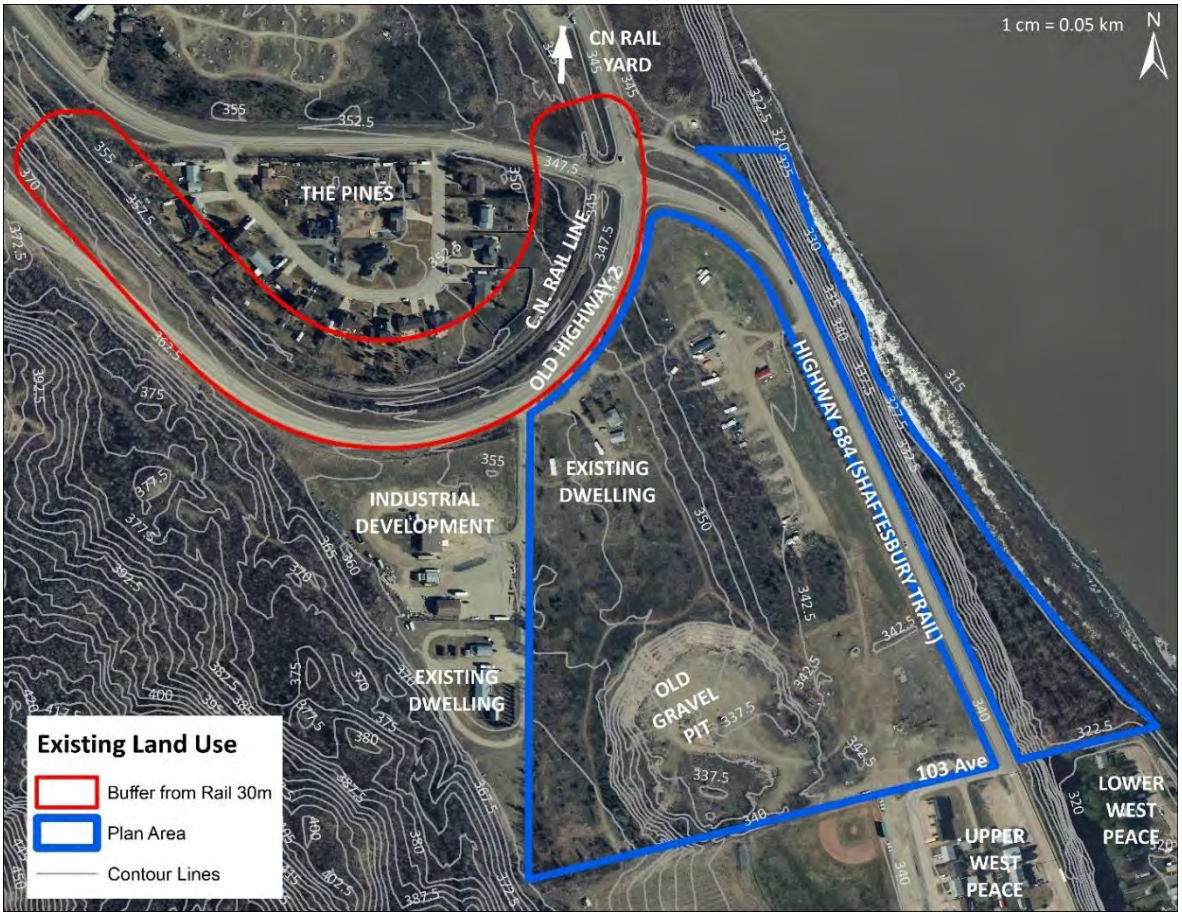


FIGURE 3 EXISTING LAND USE AND TOPOGRAPHY

3 Development Concept

3.1 Vision

.1 The Upper West Peace North ASP provides a flexible direction that facilitates the further build out of the Upper West Peace neighbourhood in the Town of Peace River. It provides opportunities for commercial and residential development.

3.2 Goals

.1 The following are the designated goals of this ASP:

.1 To facilitate the development of the land immediately adjacent to the Shaftesbury Trail;

.2 To facilitate the realignment of municipal utilities currently aligned along the Shaftesbury Trail;

.3 To develop an active transportation[6] segment through the plan area;

.4 To extend 89th Street to provide access through the development area, while protecting the integrity of the highway system.

.5 To protect environmentally sensitive lands from development, through the environmental reserve designation.

FIGURE 4 FUTURE LAND USE CONCEPT

[6] Active Transportation includes any human-powered travel such as walking, cycling, running, using a nonmechanized wheelchair, or skateboarding. Active transportation has a variety of benefits, including economic, social, health, and environmental. www.center4activeliving.ca

TABLE 1 LAND USE STATISTICS

	Area (Ha and Acres)	% of Gross Area[7]	Number of Lots
Total Gross Area			
Future Development Land	8.18 Ha (20.00 ac)	49	2
Environmental Reserve	2.97 Ha (7.34 ac)	18	1
Gross Developable Area			
Municipal Reserve	0	0	0
Public Utility Lot	0.13 Ha (0.31 ac)	0	1
Road Right-of-Way	1.95 Ha (4.82 ac)	12	n/a
Residential Lands	0.63 Ha (1.55 ac)	3	1
Horizontal Mixed Use	3.03 Ha (7.49 ac)	18	3

3.3 Development Lands

.1 The 3.65 hectares of ASP lands proposed to be immediately available for subdivision and development are separated into four developable lots (Figure 3). Three of the four lots are 1.01 hectares in area and the last lot is 0.63 hectares in area.

.2 The future land use of the area is proposed to be flexible, in order to most adequately adapt to the needs and market of the future. Specifically, the future land use is proposed to be an extension of the existing residential neighbourhood, or new commercial to serve the surrounding residential neighbourhoods and the highway traffic travelling along the Shaftesbury Trail, or a sensitive combination of both.

.3 Prior to a specific development proposal establishing the desired use of each lot being known, the appropriate districting for the horizontal mixed-use lands is the Agricultural Urban Reserve (AU-R) District.

.4 **POLICY:** Subject to the *Historical Resources Act* Approval with Conditions No. 4835-21-0010-001 (Appendix X), developments the areas outlined in the approval must be submitted in a new Historic Resources Application prior to the onset of development activities for review by Alberta Culture, Multiculturalism and Status of Women.

.5 Commercial Development

.1 Commercial development within the Upper West Peace ASP may include a broad range of retail stores including both cannabis and liquor, professional offices, personal services, and restaurants or pubs. Appropriate districting for commercial lands within this area is the Neighbourhood Commercial District.

.2 **POLICY:** The Town of Peace River should consider amending the land use bylaw to allow for cannabis retail within the Neighbourhood Commercial District (C-N).

.6 Residential Development

1. Lots 1 and 2, if developed with residential development, are anticipated to be a low-rise apartment building and a bare land condominium development with semi-detached or row

[7] Numbers may not add up to 100% due to rounding.

dwellings. Lot 4 is also anticipated to be developed with residential dwellings in a semi-detached or row dwelling configuration and may be a bare land condominium development.

2. Appropriate districting for residential lands within this area provides for wide range of residential dwellings and a medium overall density. Within the current land use bylaw, the Residential 2 (R-2A) District or Residential 4-A (R-4A) District are appropriate.

.7 Future Development

.1 Block 32, Lot 1 and Lot 2, 8.18 hectares of land will be kept in a natural state until this plan is amended to provide direction for future land use. Appropriate districting for the future development lands within this area is the Agricultural Urban Reserve (AU-R) District.

.2 **POLICY 3.2.** Further development of the Future Development area, beyond a naturalized area with minimal site amenities shall necessitate a subsequent amendment to the area structure plan.

.8 Population

.1 The population forecast assumes that Lot 3 will be a commercial development and that Lot 4 will be a residential development. The population forecast provides for Lots 1 and 2 being developed as either residential or commercial. The maximum forecasted population of the area is 296 residents, if lots 1, 2 and 4 are all developed as residential. The minimum forecasted population of the area is 50 residents, if only lot 4 is developed as residential.

TABLE 2 POPULATION FORECAST

		Units /ha	Area (ha)	Units	Population	End Use
Block 31	**Lot 1**	30	1.01	30	84	Commercial or residential
	Lot 2	90	1.01	60 to 90	108 to 162	Commercial or residential
	Lot 3	n/a	1.01	0	0	Commercial or residential
	Lot 4	30	0.63	18	50	Residential
			Total	**18 (low) to 138 (high)**	**50 to 296**	

.2 For the purposes of forecasting the number of persons that will reside in the planning area a factor of 2.8 persons per unit has been used for single family and semi-detached dwellings, 1.8 persons per unit for apartments has been used. These factors were used due to the nature and type of residential development proposed for the planning area.

3.4 Lands East of the Shaftesbury Trial

.1 The lands east of the Shaftesbury Trail, a total of 2.97 hectares will be designated environmental reserve (ER) consistent with section 664 of the MGA. The land in question will remain in its natural state but may also assist in controlling storm runoff for the balance of the Upper West Peace North area, pursuant to section 676(1) of the MGA.

.2 This approach is consistent with the Town's Municipal Development Plan, which directs that: *"10.2.1 Through the subdivision process, the Town shall require that lands deemed to be unsuitable for development (e.g. steep slopes, lands subject to flooding, wetlands, or natural drainage courses) be dedicated as Environmental Reserve (ER) in accordance with the Act."*

3.5 Servicing

.1 Transportation

.1 An extension of 89th Street provides access through the development lands. This road connects to 90 Street/Old Highway 2 at a new Type 2 intersection. A new access off the Shaftesbury Trail (102nd Avenue) also provides access into the lands from the east. This new access is approximately 118 metres from the existing 103rd Avenue access. These two intersections will be in too close a proximity and as such, the existing 103rd Avenue intersection with the Shaftesbury Trail (Hwy 684) is proposed to be closed (Figure 5). This closure will extend approximately 27 metres, maintaining the access to the existing laneway serving the homes between 103rd and 105th Avenues. An additional, existing intersection, to the north of the proposed 102nd Avenue will also be closed.

.2 Existing intersections and a portion of 88th Street will also be closed so that there will only be one intersection at, 89th Street, onto old Highway 2/90th Street from the ASP area (Figure 4). A new 101st Avenue will connect 89th Street to the existing 88th Street and provide access to the two existing lots west of the ASP plan area. This road is expected maintain the roadway at approximately the same elevation as the current condition of the lands and therefore will have a slope between 4.6 and 5.0 %.

FIGURE 5 PROPOSED ROAD AND INTERSECTION CLOSURES

.3 The Town is currently in the initial stages of considering a substantially reworked trail network within Upper West Peace area. This is prompted by concerns for the long-term geotechnical stability of the trail that currently runs along the eastern side of the Shaftesbury Trail from the entrance to Lower West Peace to 90th street. A new trail alignment is proposed along 89th Street, including through the ASP lands (Figure 6). This trail segment may be developed by the Town prior to the develop of the subdivision, or as a part of the development of the lands, when 89th Street is developed. A sidewalk is also proposed along the east side of 89th Street through the ASP lands. Figure 6 and 7 shows both the trail and sidewalk. The trail should connect to pedestrian infrastructure along the Misery Mountain Chalet area, as shown the Mountain Base Chalet Enhancements concept provided in the Appendices of this plan.

.4 **POLICY:** A sidewalk shall be provided along the east side of 89th Street.

.5 **POLICY:** The future amendment to this plan providing for the development of the Future Development area of the Future Land Use concept (Figure 3) should require that the sidewalk network be extended along 101st Avenue if the trail network along 89th Street does not provide pedestrian access to all developed parcels and the proposed development is residential, commercial or public.

.6 **POLICY:** Transportation routes through the ASP area shall provide facilities for active transportation modes that provide or improve connections with the overall network.

FIGURE 6 CONCEPTUAL TRANSPORTATION NETWORK

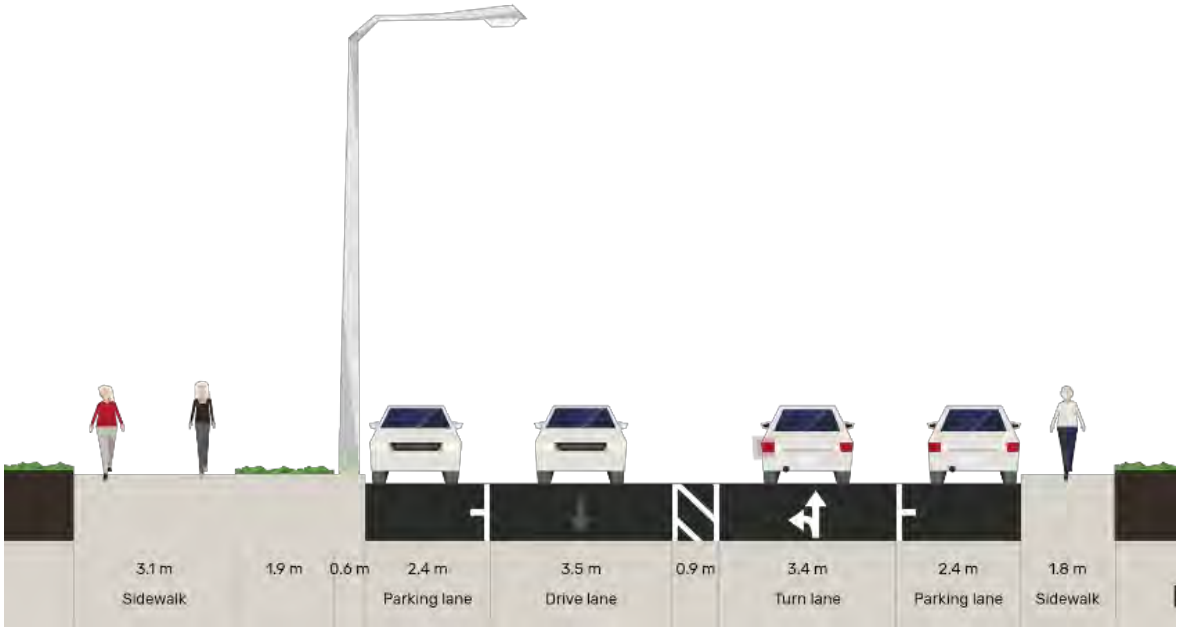


FIGURE 7 CONCEPTUAL 20M CROSS SECTION FOR 89 STREET THROUGH THE ASP AREA.
Developed with Streetmix.

.2 Stormwater Management System

.1 The storm water catchment basin affecting the plan area includes the northern portion of the eastern face of Misery Mountain, the lands immediately west of the plan area and the plan area itself. This approximate stormwater catchment basin is identified in Figure 8. The complete development of the plan area, including the Future Development Lands, will require the installation of a storm water network. A conceptual version of this network is identified in Figure 8 and described below. A detailed, finalized and approved storm water plan must be prepared prior to subdivision.

.2 In concept the stormwater runoff within the Plan Area west of Highway 684, and any offsite lands that currently discharge into the Plan Area, will be directed into a stormwater pond through a network of stormwater pipe infrastructure and overland ditches and swales. The stormwater pond is conceptually located in the southwest part of the plan area, utilizing the existing gravel pit. Geotechnical investigation for potential site suitability including identifying potential pond liners must be completed as part of the detailed design.

.3 The pre-development flow levels exiting the plan area at the time of approval of this ASP are inclusive of pre-development flows from the off-site catchment area. The stormwater management system is intended to maintain the pre-development flow levels post-development of the ASP lands. As such, the stormwater management plan will be engineered and constructed solely for the benefit of the ASP lands and the pre-development flow levels from the off-site lands. No provision will be required in development of the ASP lands in terms of engineering or construction for accommodation of drainage of the off-site lands if changes are made to the pre-development flow levels from these lands by either natural causes or development. If changes in flow levels from the off-site lands occurs for any reason, these off-site landowners will be solely responsible for any and all costs associated with the additional drainage loads and leave the ASP landowner protected from costs.

.4 The discharge from the stormwater pond is anticipated to be located at the south east end of the pond with the intention that the discharge rate be restricted to pre-development flows. The stormwater pond discharge is proposed to occur through a pipe network located along the south end of the plan area directed easterly and ultimately discharging into the Peace River. The potential of utilizing the existing stormwater outfall just south of the proposed discharge location should be considered within the detailed design. Storm infrastructure must be contained within easements or road Right-Of-Ways (ROW's). The ROW's to specifically contain the proposed discharge network from the Stormwater Pond to the Peace River, will require finalization prior to any subdivision within the Plan Area.

.5 Storm water management system will be designed according to Alberta Environment's predevelopment and post development storm water flow policy for new developments and will adhere to the Town of Peace River storm water standards and specifications. A conceptual storm water management plan indicated a preliminary storm water pond volume of 3200 cubic meters. However, a preliminary discussion with Alberta Environment indicated that upon review of the submission of the storm water management report Alberta Environment may consider just the storm water quality rather than storm water quantity, since the Peace River has the capacity to receive the storm water volume from the development site. This would considerably reduce the size of storm water pond as a siltation pond only would be required. In this case the main concern would be the erosion control for the storm water runoff down the escarpment to the river. This can easily be accommodated with several different design solutions dealing with erosion control, such as a drop manhole structure to reduce the velocity of the storm water runoff. The treatment / control structure would be designed to provide removal of sedimentation as per the guidelines (i.e. 85% TSS removal).

.6 It may be necessary to adjust the location of the inlet and discharge easements, or interim discharges as a result of the completion of the detailed design. Adjustments to the pond, discharge locations, or interim infrastructure should not be considered a major change to the ASP and should not require an amendment to the plan.

.7 Agreements with various agencies will be required for the proposed outfall to be constructed and drain into the Peace River, or potential upgrades to the existing outfall. The necessary agreements should be identified as part of the approval process for the detailed design. The implementation of the detailed design and installation of the associated infrastructure will be development driven. At time of construction the Developer or their agents will be responsible to obtain the necessary agreements and approvals to carry out the construction process.

.8 **POLICY:** A suitable storm drainage system including the construction of a storm management pond, if required, will be developed for the plan area.

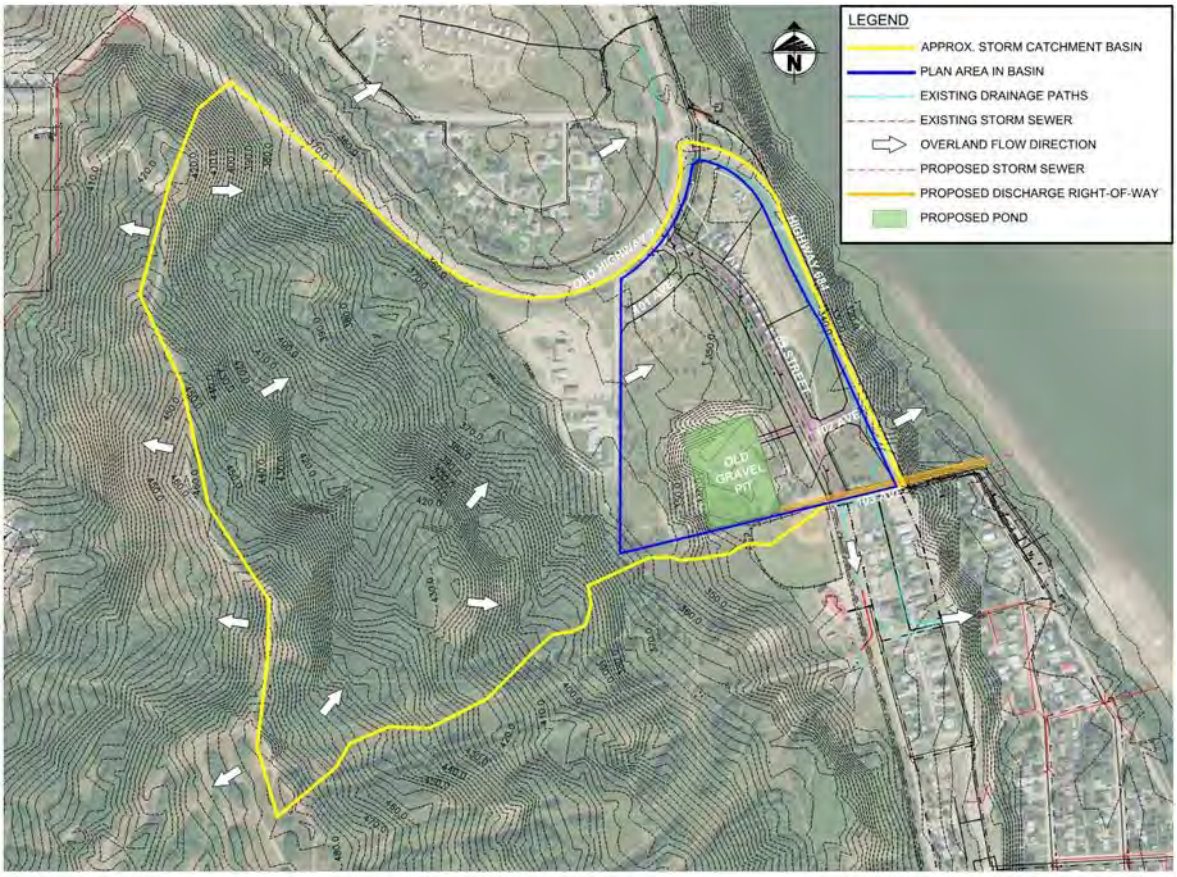


FIGURE 8 CONCEPTUAL STORM WATER NETWORK

.9 **POLICY:** Subdivision or development of the lands within the plan area must be preceded by a Storm Water Management Plan Design Report that identifies in detail the stormwater management requirements within the Plan Area, including requirements for a storm management pond type, location and size. The Design Report is the responsibility of the Developer and must be prepared by a qualified professional and be consistent with the Water Act and Environmental Protection and Enhancement Act, controlling the storm runoff from the development area, as part of the subdivision application.

.10 **POLICY:** Development of the plan area will be required to follow the design specification identified within the Storm Water Management Plan Design Report.

.11 **POLICY:** A storm water pond, regardless of type (wet or dry), may be constructed within the Future Development Area of this plan without an amendment to the plan.

.12 **POLICY:** The storm water retention pond shall be designated as a public utility lot at the time of registration of the subdivision for the planning area.

.13 **POLICY:** The subdivision and development of the Lots 1-4 of Block 31, designated Horizontal Mixed Use and Residential in the Future Land Use Concept, may occur prior to implementation of the proposed storm water pond and discharge provided that the development of these lots prior to the installation of the complete storm water network is

addressed within the Storm Water Management Plan Design Report, to identify any to identify any interim or permanent infrastructure required to ensure that discharge rates and locations are consistent with the Water Act and Environmental Protection and Enhancement Act.

.3 Water Distribution System

.1 Potable water will be provided to the plan area via a water distribution main that will run northwesterly within 89th Street and then north through the 12.15 meter public utility lot that is contained within the most northerly proposed lot in the plan area. The preliminary design alignment is identified in Figure 9. Both the water and sanitary mains servicing the area are expected to be running in parallel and the 12.15 meter utility right of way is needed for constructability and alignment considerations for existing infrastructure. The water main is to be 300mm in diameter and will have sufficient capacity to service Lots 1 to 4. The proposed water system is expected to have the capacity to service the Future Development Area, however this must be confirmed or additional capacity provided in the design of the future water distribution when the ASP is amended to provide for further development. All water mains within the development are expected to have a depth of bury of 3-4 meters.

FIGURE 9 CONCEPTUAL SERVICING CONCEPT

.2 In order to ensure the 300mm water distribution trunk main proposed through the subject lands is not subjected to outages due to future development, provisions will be incorporated

into the design to allow for ease of future connections. A total of five isolation valves with 150mm service stubs and one isolation valve with a 250mm main line stub will be included during the initial construction of the water distribution trunk main. Four of the 150mm service stubs will be provided for future lot development on the east side of 89th Street, and one on the very north of the west side of 89th Street. The 250mm main line stub will extend into the anticipated location of the future 101st Street. As part of the detailed design component for the area, the developer will need to ensure that water modelling be completed in order to identify that sufficient fire flows are being provided to the hydrants and that the water distribution system has the capacity to provide their proposed facilities with the flow rate required. The hydrant locations will also need to be determined during this part of the process. The developer will be responsible for installing water services for their proposed lot as part of their future development.

.3 All components of the proposed system installed within public land, once installed and through the warranty period, would become the Town of Peace River infrastructure and the municipality would be responsible for the upkeep and maintenance.

.4 Sanitary Sewer System

.1 A low pressure sanitary forcemain will transition to a gravity system at a manhole at the south boundary of the development. From this manhole, a traditional gravity collection system is proposed for the development. The gravity collection header will run northwesterly within 89th Street and then north through the 12.15 meter utility right of way in parallel with the watermain. The preliminary design alignment is identified in Figure 9. The depth of the collection header is expected to be between 3 to 4 meters to allow for the tie-in of local sanitary service lines for each lot, these services to be the responsibility of the developer as part of their future development. Standard manholes will be installed along the gravity collection system every 120 meter and at every bend. As part of the detailed design component for the area, the developer will need to ensure that the sanitary system provided has the capacity to service their proposed facilities.

.5 Shallow Utilities

.1 Franchise utilities (including gas, power, streetlights and telecommunications services) will be extended into the undeveloped portion of the Plan area from existing services within adjacent neighbourhood. Extension of these services will be established in detail at the development stage.

TABLE 3 INFRASTRUCTURE PROVISION SUMMARY

	Meters (m)
Transportation Network	
Roads	**735**
Sidewalk	**555**
Trails	**555**
Utility Infrastructure	
Water	**580**
Wastewater	**580**
Storm water	**1045**

.2 Block 31, Lots 1 to 4 and Block 32, Lot 1 will have the ability to connect to the water and

sanitary mains located in the adjacent 89th Street. At time of development, services to each of the proposed lots will need to be installed prior to the installation of the roadway. The commercial lots will need to be serviced with a minimum of 150mm service lines while the residential lots are to contain a minimum of 40mm service lines. The developer will be required to carry out the necessary turbidity, pressure, chlorination and bacteriological testing for all water infrastructures within the Area Structure Plan boundary at the time of the construction. As part of a future subdivision or development, the mains will need to be extended through 101 Avenue.

.3 **POLICY:** A subsequent amendment to this plan providing for the further subdivision and development of the Future Development area should provide for the development of public utilities within 101st Avenue for the purpose of providing services to Block 32, Lot 2 and the lands to the west of the plan area.

3.6 Phasing

.1 The development of the plan area is expected to occur in 3 phases, as shown in Figure 10. Phase 1 includes the subdivision and development of Lots 3 and 4 of Block 31. Phase 1 transportation network development includes the closure of 103rd Avenue and access No. 1 (as shown in Figure 5) and development of a 102nd Avenue, with associated intersection improvements as outlined in the Traffic Impact Assessment (Appendix 5.4),and the southern portion of 89th Street, which provides access to Lot 3 and 4. The designation of the Public Utility Lot and Environmental Reserve will also occur in Phase 1. Phase 2 will include the subdivision and development of Lots 1 and 2 of Block 31, as well the closure of 88th Street and the development of 101st Avenue and the northern portion of 89th Street with associated intersection improvements as outlined in the Traffic Impact Assessment (Appendix 5.4). Phase 3 is the Future Development lands, which will require an ASP amendment prior to further subdivision and development.

.2 **POLICY:** During Phase 1, 89th Street shall be developed to provide adequate access to the Lot 3 to the satisfaction of the Development Authority, not less than fifty percent of the frontage of the lot.

.3 **POLICY:** A temporary turnaround at the north end of 89th Street shall be provided during Phase 1.

FIGURE 10 ASP PHASING

4 Implementation

4.1 Right-of-Way Agreement

.1 Utility right-of-way agreements, entered into by the Town and the landowner upon adoption of this plan, will provide for the construction and placement of municipal water main and sanitary sewer main infrastructure through the plan area. The right-of-way will also provide for the development of a trail segment through the plan area, prior to the development of the land.

.2 **POLICY:** Further utility rights-of-way shall be required, if they are necessary to provide for the storm water management through the plan area.

4.2 Land Use Bylaw

.1 The further implementation of this area structure plan requires an amendment to the land use bylaw prior to the application for subdivision.

.2 **POLICY:** Immediately upon adoption of this plan and a corresponding amendment to the Municipal Development Plan, the Town should amend the land use district applied to the ASP lands to the Agricultural Urban Reserve (AU-R) District of the land use bylaw.

.3 **POLICY:** Subject to an application by the developer, prior to subdivision, the Town of Peace River should amend the district applied to the development land pursuant to the land use bylaw, consistent with the Future Land Use Concept of this ASP.

4.3 Road Closure

.1 **POLICY:** The Developer shall apply for two road closures, consistent with this plan, concurrent with the first subdivision application.

.2 **POLICY:** The Town should adopt the road closure bylaw after the subdivision is endorsed by the Subdivision Authority.

.3 **POLICY:** The Town may retain the 88th Street road closure land, to provide a buffer between the industrial lands to the west and the ASP area or may sell the land to either adjacent parcel for consolidation with an adjacent parcel.

.4 **POLICY:** The Town shall retain the 103rd Avenue road closure land, to provide a pedestrian area for pedestrians crossing from the trail on the opposite side of the Shaftesbury Trail into the Upper West Peace neighbourhood.

4.4 Subdivision

.1 **POLICY:** The developer must provide a Storm Water Management Plan Design Report, prepared by a qualified professional and consistent with the *Water Act* and *Environmental Protection and Enhancement Act*, controlling the storm runoff from the development area, as part of the subdivision application.

.2 **POLICY:** The developer of the plan area must enter into a development agreement with the Town of Peace River consistent with section 601(5) of the MGA as a condition of subdivision

to provide for the connection to municipal services, the construction of the transportation network, and the installation of associated utilities and infrastructure.

.3 **POLICY:** The Town shall register the development agreement by means of a caveat under the *Land Titles Act* on the Certificate of Title(s) of the property(ies) until the terms of the development agreement have been met.

.4 **POLICY:** Off-site levies will be owing at subdivision to pursuant to Bylaw No. 2044 the Off-site Levy Bylaw as amended or replaced. Notwithstanding Policy 9.1.1 to 9.1.3 of Off-Site Levy Policy P-61-06-D, the Town will enter into a Deferral Agreement at the developer's discretion, consistent with the Off-Site Levy Deferment and Installment Payment policies of Policy P-61-06-D as amended or replaced.

.5 **POLICY:** Parcels 1 to 4 may be further subdivided to facilitate commercial or residential development as prescribed in this plan, provided the total number of accesses from 89th Street to the parcels does not exceed the limits on size and separation of accesses established by the land use bylaw.

.6 **POLICY:** A minimum of 1 access must be provided for each original parcel from 89th Street.

.7 **POLICY:** Any subdivision of land which occurs after the adoption of this plan should be judged to be in conformity with this ASP provided that:

- The overall land use pattern does not change;
- The amount of land devoted to each major land use is not altered;
- The overall density of the plan does not change significantly;
- The overall road pattern and status of roads is maintained; and
- The overall utility pattern is maintained.

Minor variations in parcel sizes and lot line locations will not require an update to this plan. A subdivision submitted in accordance with this ASP will not be recirculated to commenting agencies already having the opportunity to comment prior to approval.

.8 **POLICY:** The Subdivision Authority should not approve a subdivision application prior to the road closure bylaw receiving approval from the Minister of Transportation.

.9 **POLICY:** Any geotechnical information obtained by the Town as part of the installation of infrastructure for which the Town is the owner may be made available to developers upon request.

.10 **POLICY:** It will be the responsibility of the developer to obtain new geotechnical information as part of their detailed design process. The geotechnical investigation must provide supportive information in regard to slope stability for any proposed infrastructure, suggested roadway structure inclusive of geotextile materials, testing frequency requirements, erosion control materials, storm water pond liners, and any other geotechnical concerns.

4.5 Reserves

.1 Pursuant to section 661 and section 666 of the MGA, the Town may require municipal reserves of up to 10% of the lands being developed or money-in-lieu of the reserve land. The

Municipal Development Plan directs that *"11.3.1 As a condition of subdivision, the Town shall require that ten percent (10%) of the developable lands be dedicated as municipal reserve as provided for under the Act."* Further, the MDP states *"11.3.2. …reserve requirements may be deferred regardless of the nature of the proposed subdivision if required to assemble larger school or recreation sites in accordance with an approved ASP, or if the amount owing is, in the opinion of the Town too small to be effectively allocated in parcel form;"*

.2 The developable lands pursuant to this plan is 5.61 Ha, which would require 0.561 Ha of municipal reserve land. However, within the development area no land is required for municipal reserve purposes and therefore the municipal reserve requirements will be deferred to the balance of the land.

.3 **POLICY:** All municipal reserve land requirements shall be deferred to the balance of the land (8.18 hectares) through caveat at the time of subdivision approval.

4.6 Development

.1 **POLICY:** Off-site levies will be owing at development to pursuant to Bylaw No. 2044 the Off-site Levy Bylaw as amended or replaced if they have not been previously paid at the time of subdivision. Notwithstanding Policy 9.1.1 to 9.1.3 of Off-Site Levy Policy P-61-06-D, the Town will enter into a Deferral Agreement at the developer's discretion, consistent with the Off-Site Levy Deferment and Installment Payment policies of Policy P-61-06-D as amended or replaced.

.2 **POLICY:** A site-specific development agreement may be required during the development of each parcel. The Town shall register any development agreement by means of a caveat on the Certificate of Title of the property until the terms of the development agreement have been met.

.1 Development Site Design Policies

.1 **POLICY:** The development of each site must aim to enhance the human-scale of the Upper West Peace Area and must be oriented to 98th Street as the primary frontage.

Specifically, for all development:

.1 Buildings should consider incorporating patios and other elements that take advantage of the views;

.2 Where landscaping or tree planting is used to provide screening, the proposal should ensure adequate screening year-round with a mix of vegetation types;

.3 In exceptional circumstances where mechanical units are not located on a roof, they shall be screened from view and integrated into the overall design of the building;

.4 Screening requirements should take into account potential topographical or elevation differences on a particular site; and

.5 Outdoor storage is not permitted on parcels adjacent to internal or external roadways, environmental protection areas or the stormwater pond.

For Commercial and Multi-Unit Residential Development:

.6 Any development should site the principal building as near to the primary frontage property line, along 89th Street, as possible;

.7 All buildings should be massed to provide a strong presence with adjacent roadways;

.8 The roofline of commercial buildings must be a minimum of 4.5 metres in height. Roofs must be consistent with section .17 below and any change in height of the roofline be to a minimum of 6 metres from grade.

.9 The development of multi-unit residential or commercial development shall provide a buffer, in the form of a fence or landscaping or both between parcels to minimize or eliminate, where possible, any overlook, parking, loading areas, service areas or light encroachment onto the adjacent residential properties;

.10 Pedestrian-scale lighting, raised crosswalks, street furniture, urban trees and gardens and other human-scale aspects should be incorporated into the design of multi-building commercial developments;

.11 Pedestrian infrastructure must connect the Future Pedestrian Network to the entrance of any commercial or multi-unit residential development;

.12 A minimum of 30% of masonry, timber, brick or cultured stone accents is strongly encouraged on the primary frontage of buildings;

.13 A minimum of 20% of masonry, timber, brick or cultured stone accents is strongly encouraged on side and rear elevations of buildings;

.14 Consistent with 8 above, where the rear or side façade of buildings faces adjacent roadways, the design of the buildings should incorporate architectural elements that create visual interest and portray the appearance of a building frontage. This may include frosted “faux” windows;

.15 Long monotonous facades should be broken up by a variation in form and massing where possible to maintain pedestrian visual interest;

.16 In the case of comprehensive multi-building commercial or mixed-use or residential developments, elements that create a shared identity among the different buildings should be included in the site design;

.17 Rooflines for large structures should be broken up and varied by providing changes in the height of a portion of the roof, change in form, or other articulations; and

.18 Pedestrian-scale lighting should be incorporated into the overall development, and activate pedestrian corridors and gathering spaces, and aid in wayfinding.

For residential development other than Apartments:

.19 Where a lane provides access to the lot, there shall be no access from the street; and

.2 An example of an acceptable form of commercial development is provided in the Appendices.

5 Appendices

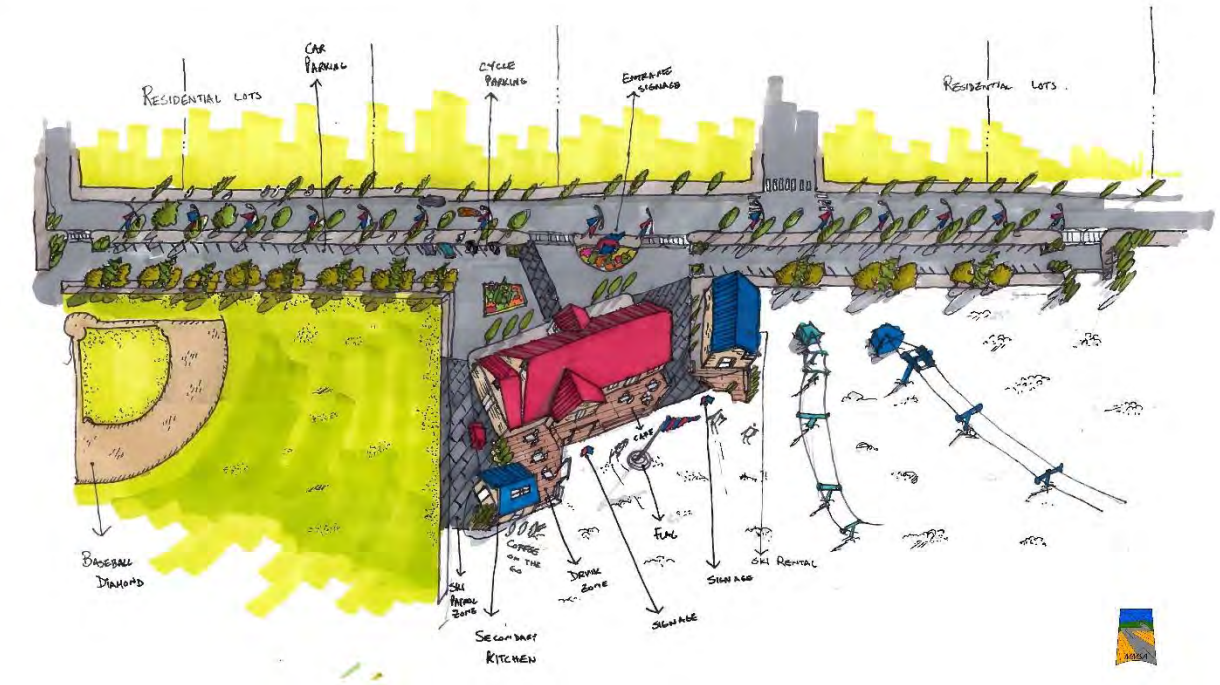
5.1 Land Use Districts

TABLE 4 CURRENT EXISTING AND PERMITTED USES WITHIN DISTRICTS THAT MAY BE APPLIED TO ASP DEVELOMPENT LANDS

Neighbourhood Commercial District	Residential 2-A District
accessory building or structure eating or drinking establishment liquor store convenience store park or playground parking facility personal service facility retail store office complex	accessory building or structure duplex park or playground residential support home type 1 semi-detached dwelling single detached dwelling
amusement facility indoor participant recreation services gas bar moved in building public use residential accommodation located above a commercial or business establishment sign stripping, filling, excavation and grading	apartment bed and breakfast child care facility dwelling group garage/garden suite group care facility home occupation modular home moved in building public use religious use facility residential support home type 2 row dwelling secondary suite sign stripping, filling, excavation and grading

5.2 Misery Mountain Ski Hill Parking Lot Enhancements

Mountain Base Chalet Enhancements
Misery Mountain



5.3 Example of Design Form

FRONT ELEVATION

SIDE ELEVATION

REAR ELEVATION

5.4 Traffic Impact Assessment

Beairsto & Associates

ENGINEERING & SURVEY

Upper West Peace North

Residential / Commercial Development

N.E. ¼ SEC. 30, TWP. 83, RGE.21, W.5M.

Traffic Impact Assessment Report

Submitted To:
Town of Peace River

REPORT
Submission Date:
June 17, 2021

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DISCLAMER

This design report was prepared for the Town of Peace River for review, revision, and acceptance. All evaluations and recommendations are made based on the information available to Beairsto & Associates Engineering Ltd. at the time of preparation. If any changes or additional information should become available, the recommendations may be altered or modified in writing by the undersigned. Beairsto & Associates Engineering Ltd. is not responsible for any damages suffered from a third party which makes use of this report.

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1.0 INTRODUCTION

1.1 General

The purpose of this report is to review the traffic impacts that may arise due to the adjusted land use located within the Upper West Peace North Area. The report is supplemental to the Traffic Impact Assessment Citadel Park completed by D&A Paulichuk Consulting Ltd. in October 2017. Since this report has been completed, changes have been made to the proposed land use zoning and traffic patterns. This report covers an analysis of the operational and capacity characteristics of the Highway 684 (Shaftesbury Trail) to the internal road network.

The proposed development is located within the Town of Peace River. Refer to Exhibit 1: Location Plan.

1.2 Development Information

The proposed development consists of mixed use of low and medium density residential and commercial development located along Highway 684 (Shaftesbury Trail). Future development land consists of 8.18 ha and half of that space with be developed into a park space. In total 13.91 hectares of gross area that will be developed as illustrated on Exhibit 2: Development Concept.

1.3 Existing and Proposed Road Network

The development site is encompassed by Highway 684 to the west, Old Highway 2 to the north and by 103 Avenue to the south. The existing 88 Street residential access will be closed and a new access will be provided at the proposed intersection of 89 Street and Old Highway 2. The existing access to the residential area at Highway 684 and 103 Avenue will be closed. A new access from Highway 684 will be provided to the proposed development and existing residential area at 102 Avenue.

Existing Highway 684 is a paved two lane road with a posted speed limit of 60 km/hr. Old Highway 2 is a two lane paved roadway with a posted speed limit of 50 km/hr. The existing road network is illustrated on Exhibit 3: Existing and Internal Road Network.

1.4 Methodology

Below is a summary of the methodology that was used:

1. Gathered existing traffic information for the adjacent roadways.

2. Calculated and distributed the potential traffic generated from the proposed development to the adjacent roadways.

3. Calculated traffic growth over the development timeline.

4. Completed an analysis of the required highway treatment based on Alberta Transportation requirement for the connection to Highway 684.

5. Modeled and completed of a level of service and capacity analysis for the road network using Synchro and SimTraffic.

2.0 TRIP GENERATION AND TRIP DISTRIBUTION

2.1 Existing and Background Traffic

To gather information with regards to the existing traffic conditions, BASE completed a traffic count at the intersection of Highway 684 and Old Highway 2 on December 2, 2020. Please note that these volumes of traffic have been affected due to Covid 19 and may appear lower then the anticipated counts.

2.2 Development Trip Generation

For the proposed land development, the Town of Peace River supplied the updated Upper West Peace North Area Structure Plan. From this report it was indicated that the gross area of developable land is 13.91 Hectares. From here the trip generation for the subject area was calculated using trip rates from the Trip Generation Manual published by the Institute of Transportation Engineer (ITE), 7 Edition. The existing 3 residences along Highway 2 and existing residences located on Highway 684 are included in the development of trip generation. Table 1: Development Trip Generation contains a summary of the Trip Generation. It is expected that the proposed facility will generate approximately 1247 Two-Way trips per day.

Table 1: AADT Trip Generation

Phase	Lot / Block	Area (ha)	Area (ac)	1000Sq. Feet Floor Area	Dwelling Units	ITE Code	Ave Rate Trips/Unit	Average Two Way Trips	% Enter Trips	% Exit Trips	Enter Trips	Exit Trips
1	Lot 3 Block 31	1.00		5.5	-	814	44.32	243	50%	50%	122	122
	Lot 4 Block 31	0.63		3.5	18.0	230	2.50	45	50%	50%	23	23
	Total							**288**			**144**	**144**
2	Lot 1 Block 31	1.05		5.8	30.0	221	6.59	198	50%	50%	99	99
	Lot 2 Block 31	1.00		5.3	90.0	221	6.59	593	50%	50%	297	297
	Total							**791**			**395**	**395**
3	Future Development	9.02	22.3			411	1.59	35	50%	50%	18	18
	Total							**35**			**18**	**18**
Existing Residences		4.09			3.0	210	9.57	29	50%	50%	14	14
		0.41			7.0	221	6.59	46	50%	50%	23	23
		0.83			6.0	210	9.57	57	50%	50%	29	29
	Total							**132**			**66**	**66**
Total								**1247**			**623**	**623**

- **ITE Code 210 – Single – Family Detached Housing**
- **ITE Code 221 – Low-Rise Apartments**
- **ITE Code 230 – Residential Condominium / Townhouse**
- **ITE Code 411 – City Park**
- **ITE Code 814 – Specialty Retail Center**

Table 2: AM Trip Generation

Phase	Lot / Block	Area (ha)	Area (ac)	1000Sq. Feet Floor Area	Dwelling Units	ITE Code	Ave Rate Trips/Unit	Average Two Way Trips	% Enter Trips	% Exit Trips	Enter Trips	Exit Trips
1	Lot 3 Block 31	1.00		5.5	-	814	6.84	38	48%	52%	18	20
	Lot 4 Block 31	0.63		3.5	18.0	230	0.19	3	16%	84%	1	3
	Total							**41**			**19**	**22**
2	Lot 1 Block 31	1.05		5.8	30.0	221	0.51	15	20%	80%	3	12
	Lot 2 Block 31	1.00		5.2	90.0	221	0.51	46	20%	80%	9	37
	Total							**61**			**12**	**49**
3	Future Development	9.02	22.3			411	-	-	-	-	-	-
Existing Residences		4.09			3.0	210	2.08	6	30%	70%	2	4
		0.41			7.0	221	0.51	4	20%	80%	1	3
		0.83			6.0	210	2.08	12	30%	70%	4	9
	Total							**22**			**6**	**16**
Total								**125**			**37**	**87**

Table 3: PM Trip Generation

Phase	Lot / Block	Area (ha)	Area (ac)	1000Sq. Feet Floor Area	Dwelling Units	ITE Code	Ave Rate Trips/Unit	Average Two Way Trips	% Enter Trips	% Exit Trips	Enter Trips	Exit Trips
1	Lot 3 Block 31	1.00		5.5	-	814	5.02	28	56%	44%	15	12
	Lot 4 Block 31	0.63		3.5	18.0	230	0.24	4	67%	33%	3	1
	Total							**32**			**18**	**14**
2	Lot 1 Block 31	1.05		5.8	30.0	221	0.62	19	64%	36%	12	7
	Lot 2 Block 31	1.00		5.3	90.0	221	0.62	56	64%	36%	36	20
	Total							**74**			**48**	**27**
3	Future Development	9.02	22.3			411	-	-	-	-	-	-
Existing Residences		4.09			3.0	210	2.73	8	66%	34%	5	3
		0.41			7.0	221	0.62	4	64%	36%	3	2
		0.83			6.0	210	2.73	16	66%	34%	11	6
	Total							**29**			**19**	**10**
Total								**135**			**85**	**50**

2.3 Trip Distribution and Assignment

Once the trip generation was completed, the trip distribution was determined. Trip distribution establishes the volume of traffic using each access to the development and the anticipated turning movement at the access. To complete the trip distribution certain assumptions were required. These assumptions were based on a review of the region and potential destinations.

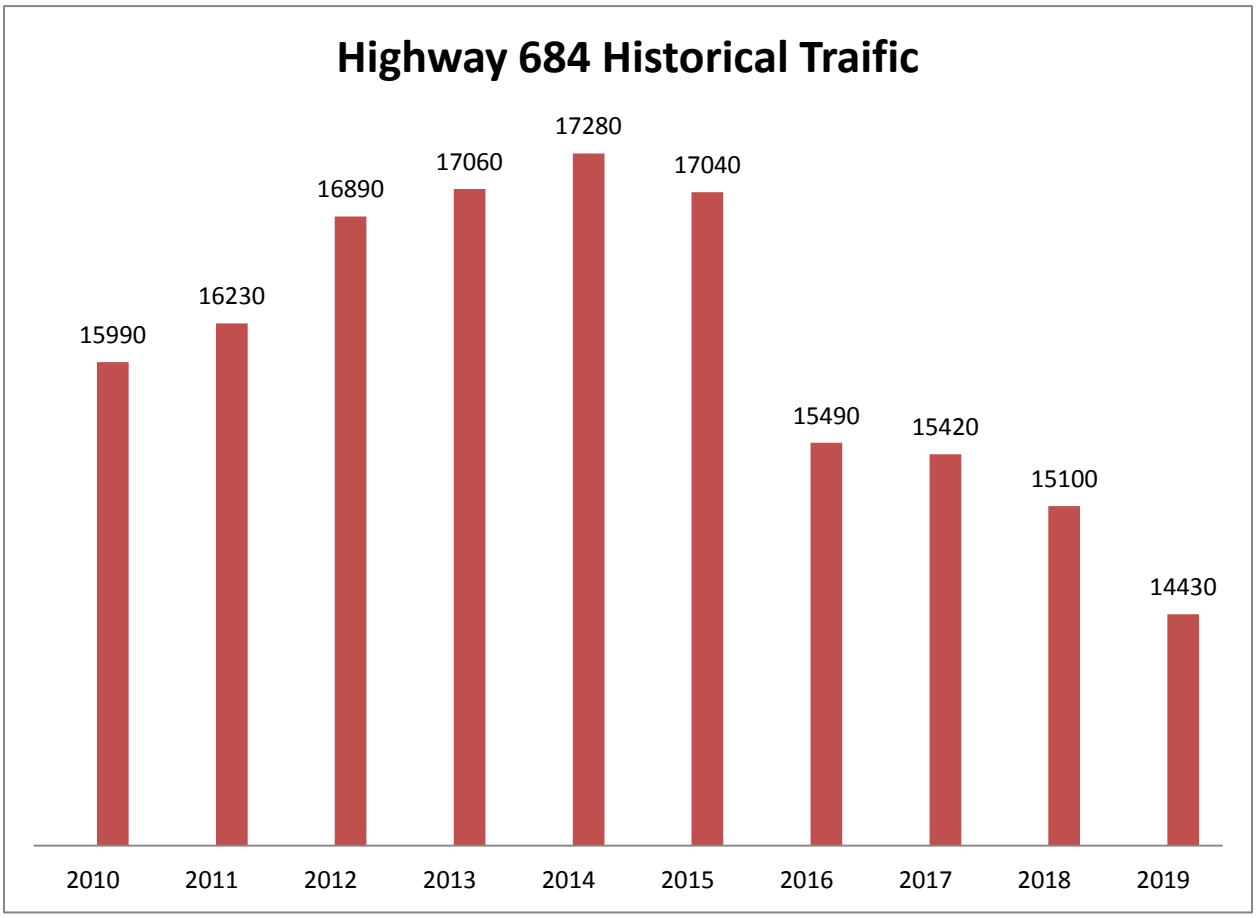
Below is a summary of the basis of the trip distribution based on the existing conditions of the intersection.

- The intersection of Highway 684 and Old Highway 2 will have 5% of the traffic heading north, 20 %of the traffic heading west, 45% of the traffic will head east and 30 % of the traffic will head south.
- For the intersection of 89 Street and Old Highway 2, 30% of the traffic will be heading west and 25 % of the traffic will be heading east
- For the intersections of 102 Avenue and Highway 684, 45% of the traffic will be heading southeast on Highway 684.

2.4 Traffic Growth

It has been assumed that the development will gradually reach full build out over the next 10 years and as such the analysis has been completed for the development at ultimate build out in 2030. In addition, the analysis has also included traffic conditions for an additional 20 years to year 2050.

Due to the time frame it is important to include the traffic growth for the background traffic. Utilizing the traffic information obtained from the Alberta Transportation's website, an average growth rate was determined over the past 10 years. A similar intersection, in characteristics to the subject intersection, was selected to determine the growth rate. Graph 1: Secondary Highway 684 Historical Traffic illustrates the Growth Rate.



Graph 1: Highway 684 Historical Traffic

As shown in the above graph, the annual traffic growth rate on Highway 684 in the vicinity of the study intersections has been inconsistent. The average growth rate over the past 10 years is approximately -1.1% From the graph we can see that there has been a steady decline in the total number of vehicles moving through the intersection movements since 2016. For the purpose of this analysis, a 2.5% annual traffic growth rate was utilized to predict the traffic in 2030 and 2050.

2.5 Trip Generation and Distribution Summary

Exhibit 4 to 6: Trip Generation and Distribution indicates the proposed turning movements, determined from the trip generation and distribution described in the previous sections. Refer to Appendix B: Trip Generation and Distribution Data for all trip generation and distribution details.

3.0 SITE ACCESS ANALYSIS

3.1 Alberta Transportation Intersection Assessment

Turning movements from Local Roads such as proposed 89 Street access and 102 Avenue, to main roads create hazards and tend to reduce the capacity of the roadway. The Left and Right Turn Warrants provided in the Highway Geometric Design Guide offers a means to determine a recommended intersection layout to reduce the turning movement impacts on the roadway. These Warrants were completed for the intersections of 89 Street and Old Highway 2, Old Highway 2 and Highway 684, and 102 Avenue and Highway 684.

3.1.1 Old Highway 2 and 89 Street

This intersection provides access to the existing residences along with access to the proposed residential developments. Based on the available information, the current configuration is a Type IIa. Refer to Exhibit 3 for the existing intersection configuration. The table below summarizes the warrant results.

Table 4: Left Turning Warrant (Old Highway 2 and 89 Street)

Old Highway 2 / 89 Street					
Westbound Scenario	**VL**	**Va**	**VL/Va**	**Vo**	**Left Turn Warrant**
2030 AM	3	54	6	77	None
2030 PM	14	59	23	186	Type II
2050 AM	3	83	4	186	Type II
2050 PM	14	81	17	288	Type II

Table 5: Right Turning Warrant (Old Highway 2 and 89 Street)

Old Highway 2 / 89 Street Connection				
Scenario	**Main Road AADT (≥1800)**	**Local Road AADT (≥ 900)**	**Right Turn Traffic (≥ 360)**	**Right Turn Warrant**
2030	1815	326	191	Not Required
2050	2874	326	191	Not Required

The current configuration of the intersection located at 88 Street and Old Highway 2 is a Type I intersection with no auxiliary lanes. As shown on Table 4 & 5, Left turn is warranted at full development. No Right turns are warranted, which is consistent with the proposed Type IIa geometry. When the new access is constructed at 89 Street, Type IIa intersection configuration should be followed.

3.1.2 Highway 684 (Shaftesbury Trail) and Old Highway 2

Using the projected traffic, the Warrants indicate if a left or right turn bay is required for the intersection treatment. The current configuration of the intersection of Highway 684 and Old Highway 2 is a Type I intersection with no auxiliary lanes. Refer to Exhibit 3 for the existing intersection configuration. The table below summarizes the warrant results.

Table 6: Left Turning Warrant (Highway 684 and Old Highway 2)

Highway 684 (Shaftesbury Trail) / Old Highway 2					
Westbound Scenario	**VL**	**Va**	**VL/Va**	**Vo**	**Left Turn Warrant**
Background AM	32	174	18	84	-
Background PM	18	89	20	23	-
2030 AM	41	227	18	33	-
2030 PM	23	116	20	125	Type II
2050 AM	67	369	18	52	-
2050 PM	38	189	20	193	Type II

Table 7: Right Turning Warrant (Highway 684 and Old Highway 2)

Old Highway 2 / Highway 684 (Shaftesbury Trail) Connection				
Scenario	**Main Road AADT (≥1800)**	**Local Road AADT (≥ 900)**	**Right Turn Traffic (≥ 360)**	**Right Turn Warrant**
Background	1850	990	570	Required
2030	2501	1423	730	Required
2050	4013	2232	1196	Required

As shown on Table 6, it indicates that a left turn is warranted for the PM turn movement at full development in 2030. Table 7 also indicated that a right turn warranted right away. The existing intersection is a Type I intersection. Therefore, the intersection should be upgraded to a Type II with a dedicated left turn lane and a right hand turn lane. Refer to Exhibit 7 for the proposed intersection configuration.

3.1.3 Highway 684 (Shaftesbury Trail) and 102 Avenue

This intersection will provide access to the proposed residential developments and the proposed commercial development. Refer to Exhibit 3 for the existing intersection configuration. The table below summarizes the warrant results.

Table 8: Left Turning Warrant (Highway 684 and 102 Avenue)

Highway 684 (Shaftesbury Trail) / 102 Avenue					
Northbound Scenario	**VL**	**Va**	**VL/Va**	**Vo**	**Left Turn Warrant**
2030 AM	21	243	9	54	-
2030 PM	43	157	28	227	Type II
2050 AM	21	386	5	86	-
2050 PM	43	230	19	363	Type II

Table 9: Left Turning Warrant (Highway 684 and 102 Avenue)

Highway 684 / 102 Avenue Connection				
Scenario	**Main Road AADT (≥1800)**	**Local Road AADT (≥ 900)**	**Right Turn Traffic (≥ 360)**	**Right Turn Warrant**
2030	3591	364	101	Not Required
2050	5368	364	101	Not Required

The configuration of the new intersection at 102 Avenue should be a Type IIa intersection. Based on Tables 7 and 8, a left turn is warranted and no right turns are required.

3.2 Level of Service and Capacity Analysis

To accurately predict future traffic turning movements, the computer-modeling program Synchro (Version 6) along with SimTraffic (Version 6) were used. Synchro implements both the Intersection Capacity Utilization (2003 Edition) and the Highway Capacity Manual (HMC2000) to analyze and predict traffic turning movements. Using the Synchro model, SimTraffic creates a simulation of the traffic situations. This visual feature helps identify traffic movement deficiencies, some of which may not be represented in the tabular format. These programs are used by numerous traffic engineers, consulting firms and municipalities. The Level of Service (LOS) and capacity analysis was completed for the full development (2030) and a 20 year long term horizon (2050) of those two intersections using the framework for the collector roadways and highways. Reports from Synchro (Version 6) and SimTraffic (Version 6) can be found in Appendix D: Synchro and SimTraffic Reports.

3.2.1 Highway 684 and Old Highway 2

The configuration for this intersection was determined in the previous section was used for the model (Type II). The model results have been summarized in Table 10: LOS and Capacity Analysis (Highway 684 and Old Highway 2).

Table 10: LOS and Capacity Analysis (Highway 684 and Old Highway 2)

2030 Model Results											
Leg	Control Type	Movement	# of Lanes	AM Peak Hour				PM Peak Hour			
				Volume (vph)	LOS	v/c ratio	95th % Queue	Volume (vph)	LOS	v/c ratio	95th % Queue
EB	None	Left	1	1	A	0	0	2	A	0	0
		Through		25				40			
		Right		7				10			
WB	None	Left	1	40	A	0.12	0.7	67	A	0.19	1.2
		Through	1	185				301			
		Right		0				0			
NB	Stop	Left	1	39	B	0.01	2.4	57	A	0.19	5.4
		Through		11				17			
		Right	1	27				44			
SB	Stop	Left	1	1	B	0.04	0.3	5	A	0.03	0.8
		Through		3				4			
		Right		3				4			
2050 Model Results											
EB	None	Left	1	6	A	0	0.1	10	A	0.01	0.2
		Through		93				159			
		Right		8				18			
WB	None	Left	1	23	A	0.06	0.4	38	A	0.1	0.7
		Through	1	91				151			
		Right		0				0			
NB	Stop	Left	1	36	B	0.14	3.8	69	B	0.25	7.9
		Through		4				7			
		Right	1	119				195			
SB	Stop	Left	1	0	A	0.03	0.7	1	B	0.07	1.7
		Through		4				8			
		Right		20				34			

Analysis showed that this intersection will operate well at the acceptable level of service with a Type II configuration with a dedicated right hand turn lane and a dedicated left hand turn lane for the 2030 and 2050 scenario.

4.0 RECOMMENDATION AND CONCLUSION

Below is a list of recommendations and conclusions:

- Alberta Transportation Left and Right Turn Warrant analysis:
  - The intersection at Old Highway 2 and 89 Street will require a Type IIa intersection treatment with a left hand turning lane into the development.
  - The intersection at Highway 684 and Old Highway 2 will require a Type II intersection treatment with both a right and left turning lanes.
  - The intersection at Highway 684 and 102 Avenue will need a Type IIa intersection with a left hand turning lane into the development.

- Syncro/SimTraffic level of service analysis
  - All intersections provide an acceptable level of service at full build out and with the projected growth into 2050.

- Illumination Warrant Analysis
  - The existing intersection at Highway 684 and Old Highway 2 is currently illuminated and should remain illuminated.
  - The intersections at Old Highway 2 and 89 Street and Highway 684 and 102 Avenue does not require illumination at full build out or for 2050.

- Final engineering design and construction shall be accordance with the latest Town of Peace River and Alberta Transportation Construction Guidelines.

Trip generation and distribution should be confirmed prior to the construction of any upgrades to the regional network. This will ensure the upgrades are warranted and the extents of the upgrades are still required. Furthermore, if additional development begins within the adjacent lands all assumptions and recommendation within this report will require confirmation and updating.

5.0 CLOSING

This document entitled “Upper West Peace North, Traffic Impact Assessment Report” was prepared by Beairsto & Associates Engineering Ltd.

June 17, 2021

Written By
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Date

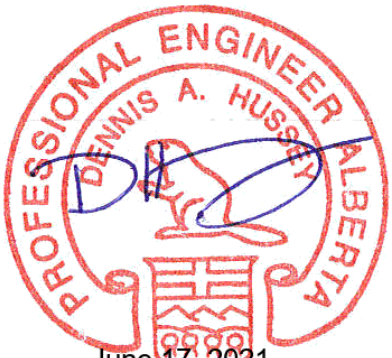
June 17, 2021

Reviewed By
Dennis Hussey, P.Eng.
Vice President of Engineering
dennish@baseng.ca

Date

Beairsto & Associates Engineering Ltd.

Permit # P243



Seal

END OF REPORT

Beairsto & Associates
ENGINEERING & SURVEY

EXHIBITS

Beairsto & Associates
ENGINEERING & SURVEY

10940 - 92 Avenue
Grande Prairie, AB T8V 6B5
P: 780 532 4919 **F:** 780 532 4739

Exhibit 1 - LOCATION PLAN

Legend

Plan Area Boundary

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TOWN OF PEACE RIVER ALBERTA

UPPER WEST PEACE NORTH AREA
TRAFFIC IMPACT ANALYSIS

Location:
NE 30-83-21-5

Scale: 1:20,000

December, 2020

Beairsto & Associates
ENGINEERING & SURVEY

10940 - 92 Avenue
Grande Prairie, AB T8V 6B5
P: 780 532 4919 **F:** 780 532 4739

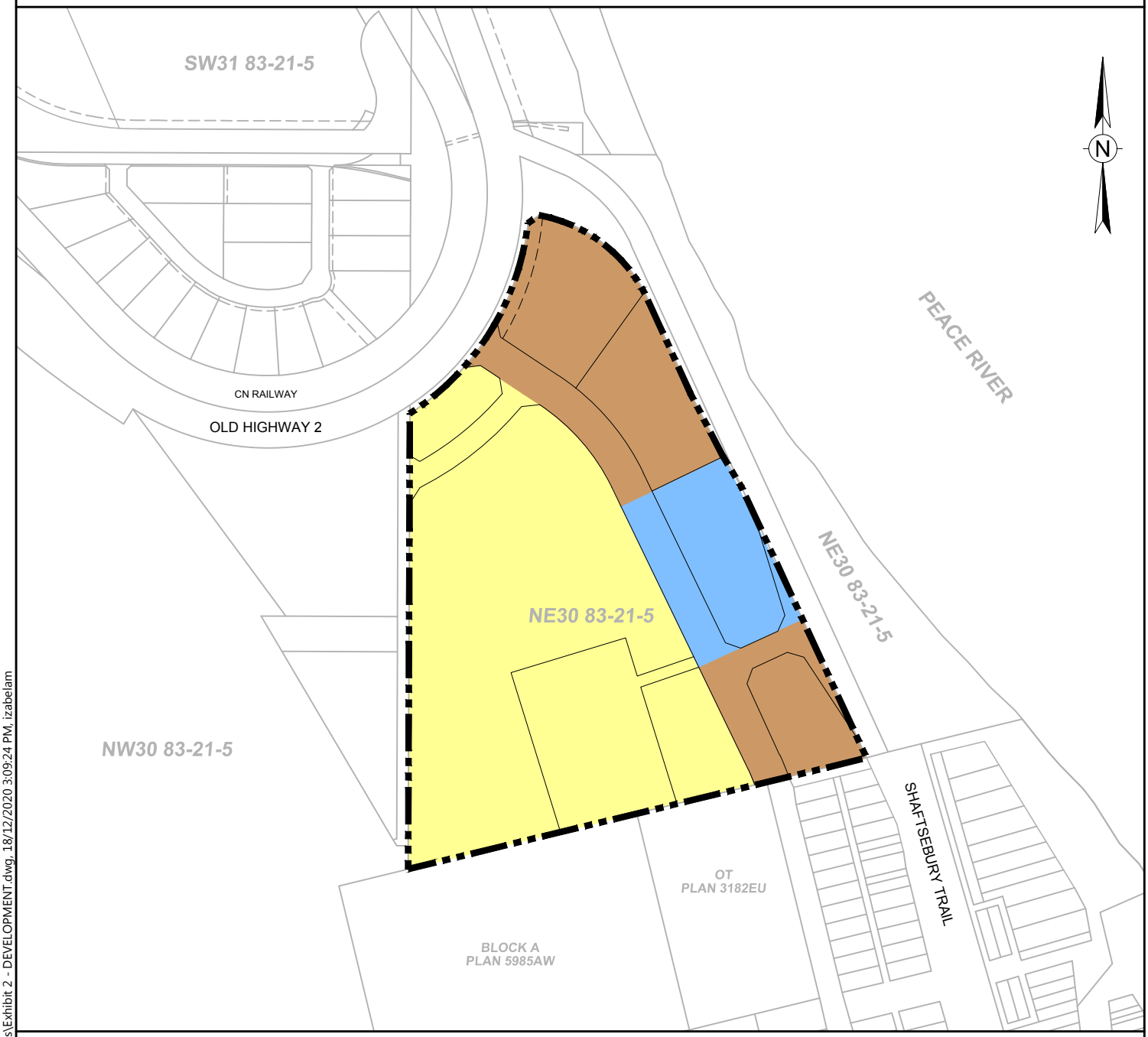

Exhibit 2 - DEVELOPMENT CONCEPT AND PROPOSED ZONING

Legend

- Plan Area Boundary
- Commercial
- Residential
- Future Phases

TOWN OF PEACE RIVER ALBERTA

UPPER WEST PEACE NORTH AREA
TRAFFIC IMPACT ANALYSIS

Location: NE 30-83-21-5

Scale: 1:5,000

December, 2020

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10940 - 92 Avenue
Grande Prairie, AB T8V 6B5
P: 780 532 4919 **F:** 780 532 4739

Exhibit 3 - EXISTING AND INTERNAL ROAD NETWORK

Legend

- Plan Area Boundary
- Highway
- Local Road
- Proposed Roads
- Access Location
- Access Closure

TOWN OF PEACE RIVER ALBERTA

UPPER WEST PEACE NORTH AREA
TRAFFIC IMPACT ANALYSIS

Location:
NE 30-83-21-5

Scale: 1:5,000

December, 2020

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10940 - 92 Avenue
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P: 780 532 4919 **F:** 780 532 4739

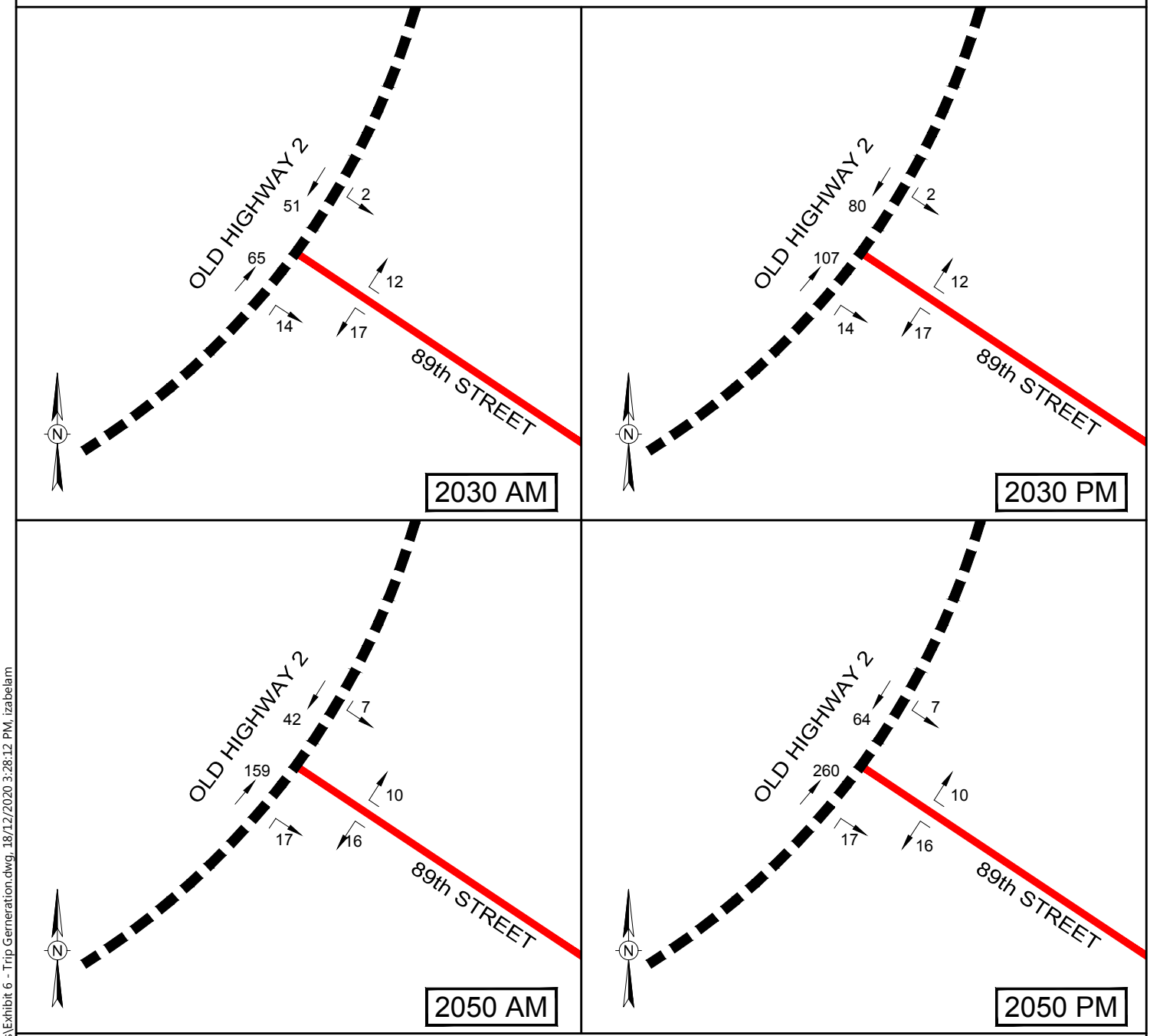

Exhibit 4 - TRIP GENERATION & DISTRIBUTION

Legend

Highway

Proposed Service Road

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TOWN OF PEACE RIVER ALBERTA

UPPER WEST PEACE NORTH AREA
TRAFFIC IMPACT ANALYSIS

Location:
NE 30-83-21-5

Scale: 1:3000

December, 2020

Beairsto & Associates
ENGINEERING & SURVEY

10940 - 92 Avenue
Grande Prairie, AB T8V 6B5
P: 780 532 4919 **F:** 780 532 4739

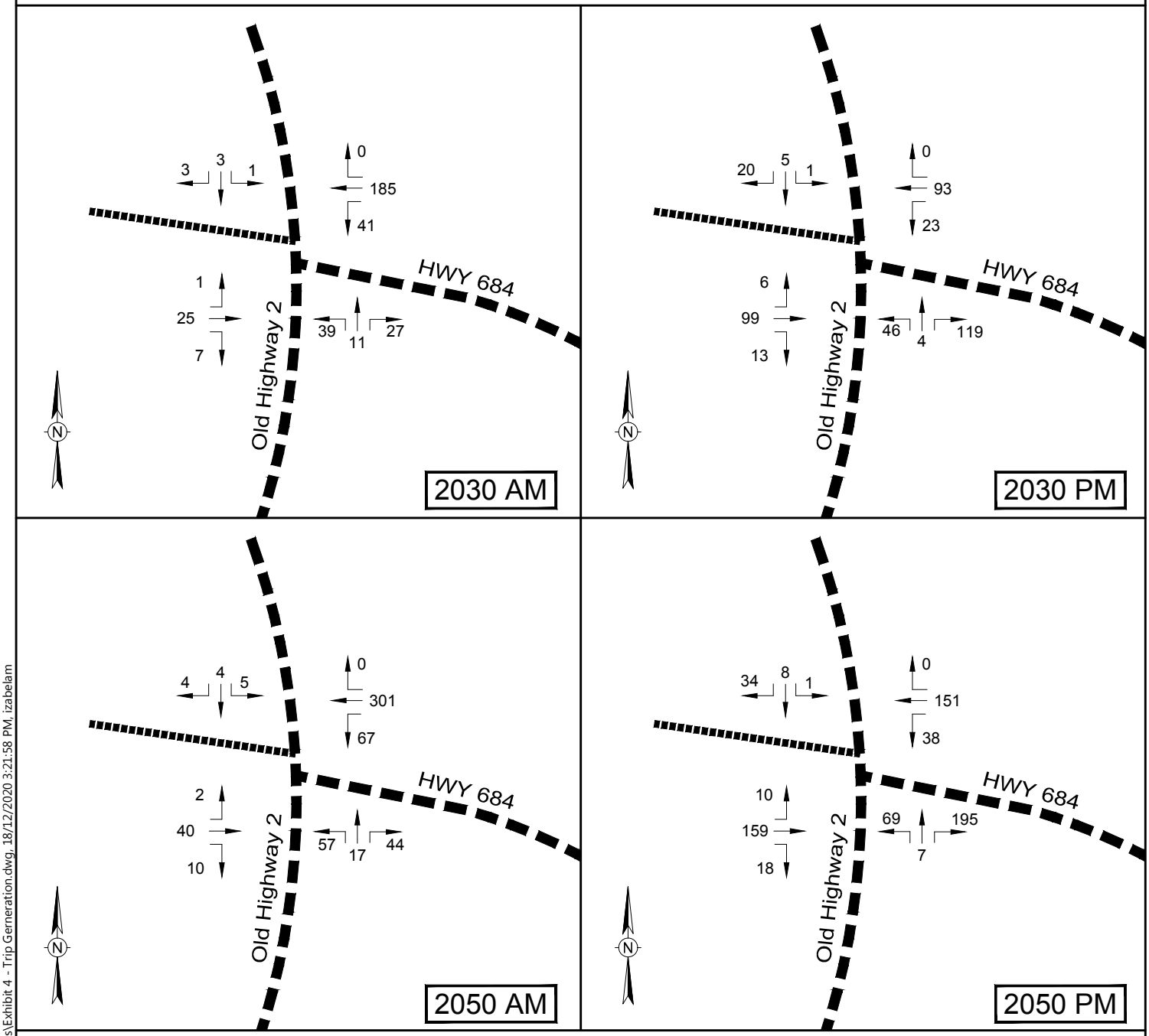

Exhibit 5 - TRIP GENERATION & DISTRIBUTION

Legend

Highway

Local Road

TOWN OF PEACE RIVER ALBERTA

UPPER WEST PEACE NORTH AREA
TRAFFIC IMPACT ANALYSIS

Location:
NE 30-83-21-5

Scale: 1:3000

December, 2020

Beairsto & Associates
ENGINEERING & SURVEY

10940 - 92 Avenue
Grande Prairie, AB T8V 6B5
P: 780 532 4919 **F:** 780 532 4739

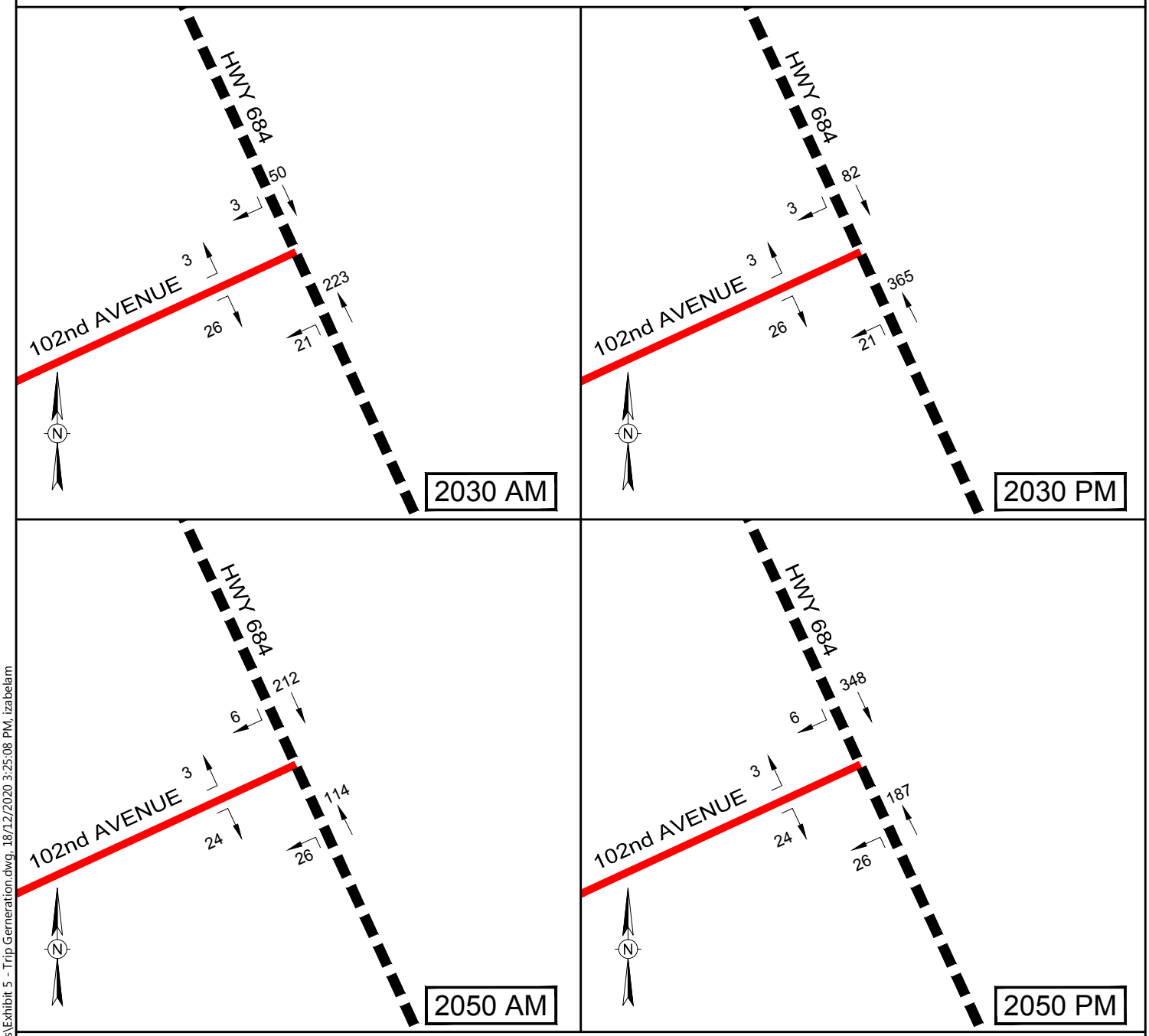

Exhibit 6 - TRIP GENERATION & DISTRIBUTION

Legend

- Highway
- Proposed Service Road

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TOWN OF PEACE RIVER ALBERTA

UPPER WEST PEACE NORTH AREA
TRAFFIC IMPACT ANALYSIS

Location:
NE 30-83-21-5

Scale: 1:3000

December, 2020

Beairsto & Associates
ENGINEERING & SURVEY

10940 - 92 Avenue
Grande Prairie, AB T8V 6B5
P: 780 532 4919 **F:** 780 532 4739

Exhibit 7 - PROPOSED TYPE II INTERSECTION TREATMENT

Legend

- Plan Area Boundary
- Highway
- Local Road
- Proposed Roads
- Access Location
- Access Closure

TOWN OF PEACE RIVER ALBERTA

UPPER WEST PEACE NORTH AREA TRAFFIC IMPACT ANALYSIS

Location: NE 30-83-21-5

Scale: 1:1,250

January, 2021

Beairsto & Associates
ENGINEERING & SURVEY

10940 - 92 Avenue
Grande Prairie, AB T8V 6B5
P: 780 532 4919 **F:** 780 532 4739

Exhibit 8 - Type IIa Intersection Treatment - 102 Avenue

Legend

- Plan Area Boundary
- Highway
- Local Road
- Proposed Roads
- Access Location
- Access Closure

TOWN OF PEACE RIVER ALBERTA

UPPER WEST PEACE NORTH AREA
TRAFFIC IMPACT ANALYSIS

Location:
NE 30-83-21-5

Scale: 1:1,250

January, 2021

Beairsto & Associates
ENGINEERING & SURVEY

APPENDIX A

TRAFFIC COUNTS & BACKGROUND TRIP INFORMATION

Intersection Peak Hour

16:30 - 17:30

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	0	3	16	18	71	0	28	3	93	5	73	6	316
Factor	0.00	0.38	0.80	0.75	0.89	0.00	0.54	0.75	0.83	0.25	0.91	0.38	0.82
Approach Factor	0.68			0.89			0.74			0.84			

Peak Hour Vehicle Summary

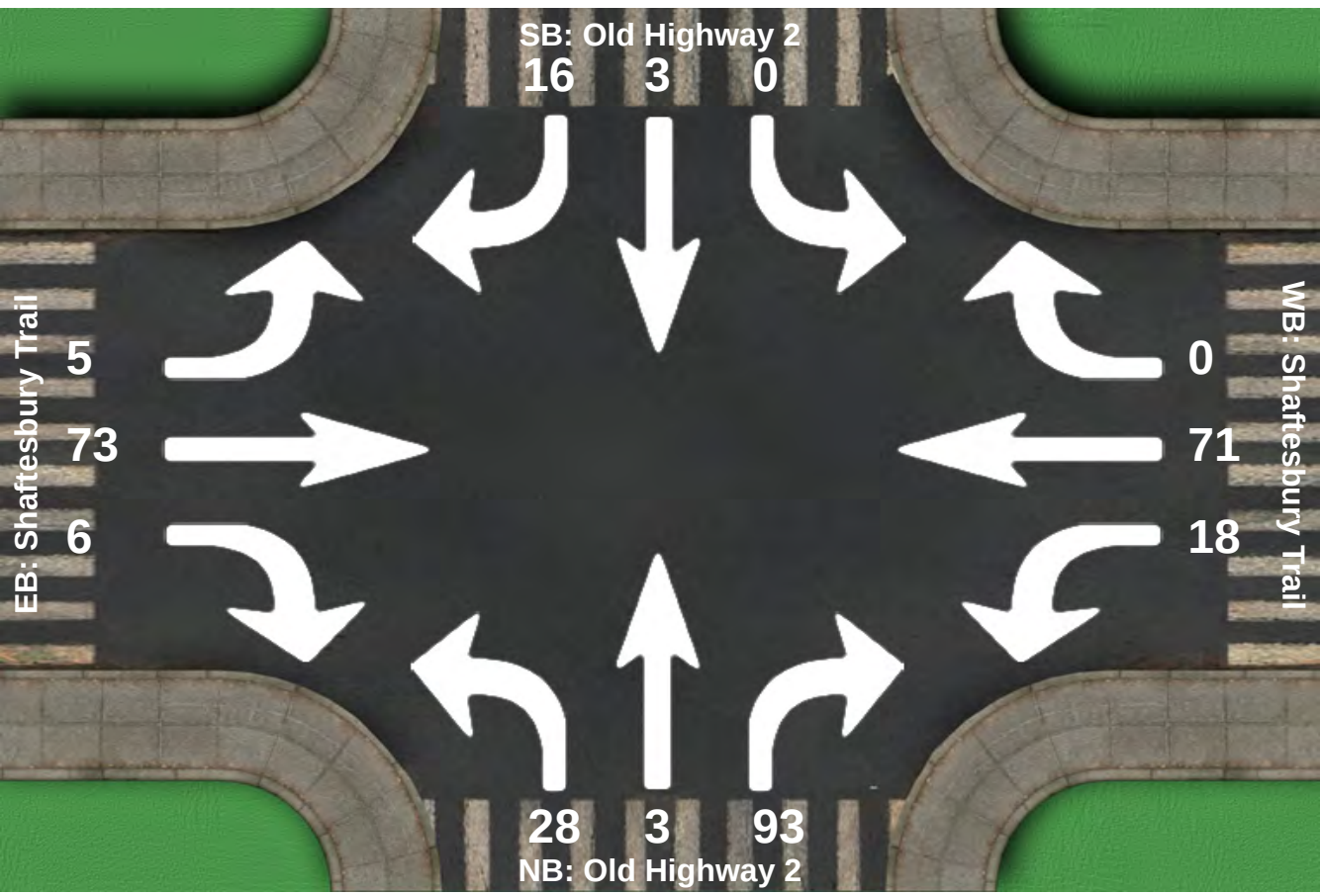
Vehicle	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Car	0	3	14	17	71	0	26	3	93	5	73	6	311
Truck	0	0	2	1	0	0	2	0	0	0	0	0	5

Peak Hour Pedestrians

	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Peak Hour

Location: Old Highway 2 at Shaftesbury Trail , Peace River
GPS Coordinates: Lat=56.235881, Lon=-117.299022
Date: 2020-12-02
Day of week: Wednesday
Weather:
Analyst: Trevor Frankie



Intersection Peak Hour

16:30 - 17:30

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	0	3	16	18	71	0	28	3	93	5	73	6	316
Factor	0.00	0.38	0.80	0.75	0.89	0.00	0.54	0.75	0.83	0.25	0.91	0.38	0.82
Approach Factor	0.68			0.89			0.74			0.84			

Turn Count Summary

Location: Old Highway 2 at Shaftesbury Trail , Peace River
GPS Coordinates: Lat=56.235881, Lon=-117.299022
Date: 2020-12-02
Day of week: Wednesday
Weather:
Analyst: Trevor Frankie

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	0	0	1	2	13	0	5	2	3	0	8	0	34
07:15	0	0	0	3	22	0	2	3	1	0	3	0	34
07:30	0	0	0	7	22	0	3	2	3	0	8	2	47
07:45	0	0	0	10	28	0	3	7	6	1	3	1	59
08:00	0	0	1	7	42	0	6	0	4	0	1	1	62
08:15	0	2	0	6	50	0	9	0	5	0	8	1	81
08:30	0	0	1	9	22	0	4	1	6	0	6	1	50
08:45	0	0	1	5	17	0	5	1	3	0	9	2	43
09:00	0	0	3	2	7	1	5	1	10	0	8	0	37
09:15	0	0	1	3	12	0	5	0	7	0	2	0	30
09:30	0	0	1	7	10	0	2	0	6	0	5	2	33
09:45	0	0	1	3	17	0	4	1	5	1	9	1	42
10:00	0	0	0	6	14	0	4	0	7	0	5	1	37
10:15	1	0	0	3	10	0	3	1	7	0	4	1	30
10:30	0	0	1	1	9	0	5	1	8	0	2	2	29
10:45	0	0	4	2	13	0	3	0	5	0	3	2	32
11:00	0	0	0	2	11	0	3	1	4	0	5	0	26
11:15	1	0	0	3	16	0	3	0	7	2	9	1	42
11:30	0	3	2	2	16	0	5	1	5	0	11	3	48
11:45	0	1	0	3	13	1	4	2	8	0	11	1	44
12:00	0	1	2	1	18	1	11	0	10	0	17	0	61
12:15	0	0	1	5	14	0	5	1	11	0	7	0	44
12:30	0	0	0	4	15	0	10	1	9	0	11	1	51
12:45	0	0	2	4	17	0	4	2	7	0	3	3	42
13:00	0	1	0	6	13	0	7	1	8	2	6	1	45
13:15	0	0	0	8	16	0	5	0	8	0	9	0	46
13:30	0	0	0	4	16	0	6	0	12	0	10	2	50
13:45	0	1	0	7	11	0	2	0	7	0	8	2	38
14:00	0	0	2	1	9	0	5	1	12	1	9	5	45
14:15	0	0	1	6	11	0	8	0	12	1	15	3	57
14:30	0	0	0	5	15	0	2	1	5	2	5	1	36
14:45	0	0	0	7	13	0	7	0	7	4	10	2	50
15:00	0	0	3	6	16	0	6	1	4	0	12	0	48
15:15	0	0	5	4	16	0	0	3	10	0	13	0	51
15:30	0	0	0	5	11	0	6	3	12	0	16	1	54
15:45	0	1	11	3	9	0	7	2	10	0	19	1	63
16:00	1	1	1	5	18	0	5	2	18	6	8	1	66
16:15	0	0	1	6	14	0	7	0	18	1	16	1	64
16:30	0	2	5	6	19	0	13	1	28	0	18	4	96
16:45	0	0	5	5	17	0	7	1	21	0	16	0	72
17:00	0	0	5	4	20	0	3	1	22	0	20	1	76
17:15	0	1	1	3	15	0	5	0	22	5	19	1	72
17:30	0	0	2	3	17	0	10	1	18	1	27	1	80
17:45	0	0	2	2	9	0	9	0	13	1	13	1	50
18:00	0	0	0	2	16	1	4	0	22	1	15	1	62
18:15	0	0	4	2	19	0	1	0	17	0	9	1	53
18:30	0	1	2	2	9	0	1	0	8	0	10	0	33
18:45	0	0	0	3	13	0	2	0	10	0	10	3	41

Car traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	0	0	1	2	13	0	5	2	3	0	8	0	34
07:15	0	0	0	3	22	0	2	3	1	0	3	0	34
07:30	0	0	0	7	21	0	3	2	3	0	8	2	46
07:45	0	0	0	10	28	0	3	6	5	1	3	1	57
08:00	0	0	1	7	40	0	3	0	4	0	1	1	57
08:15	0	2	0	6	48	0	6	0	5	0	7	1	75
08:30	0	0	1	9	22	0	3	1	6	0	6	1	49
08:45	0	0	1	5	16	0	3	1	3	0	8	2	39
09:00	0	0	2	2	7	1	4	0	10	0	7	0	33
09:15	0	0	0	2	12	0	5	0	7	0	2	0	28
09:30	0	0	1	7	10	0	2	0	6	0	5	2	33
09:45	0	0	1	3	17	0	3	1	4	1	9	1	40
10:00	0	0	0	6	13	0	2	0	6	0	5	1	33
10:15	1	0	0	3	10	0	2	1	6	0	4	1	28
10:30	0	0	1	1	9	0	5	1	8	0	2	2	29
10:45	0	0	3	2	13	0	2	0	5	0	3	2	30
11:00	0	0	0	2	11	0	3	1	4	0	4	0	25
11:15	1	0	0	3	16	0	3	0	7	1	9	1	41
11:30	0	3	1	2	16	0	5	1	5	0	11	3	47
11:45	0	1	0	3	13	1	3	2	7	0	11	1	42
12:00	0	1	2	1	17	0	11	0	10	0	17	0	59
12:15	0	0	0	5	14	0	5	1	11	0	7	0	43
12:30	0	0	0	4	14	0	10	1	9	0	11	1	50
12:45	0	0	2	4	17	0	3	2	7	0	3	3	41
13:00	0	1	0	6	10	0	5	1	8	2	6	1	40
13:15	0	0	0	8	16	0	5	0	8	0	9	0	46
13:30	0	0	0	4	16	0	5	0	12	0	9	2	48
13:45	0	1	0	7	11	0	2	0	7	0	8	2	38
14:00	0	0	2	1	9	0	4	0	12	1	9	5	43
14:15	0	0	1	6	10	0	7	0	12	1	15	3	55
14:30	0	0	0	5	15	0	2	1	5	2	5	1	36
14:45	0	0	0	6	13	0	7	0	7	3	8	2	46
15:00	0	0	3	6	15	0	5	1	4	0	12	0	46
15:15	0	0	5	4	15	0	0	2	10	0	13	0	49
15:30	0	0	0	5	11	0	6	2	12	0	16	1	53
15:45	0	1	11	3	9	0	5	2	10	0	15	1	57
16:00	1	1	1	5	18	0	5	2	18	6	8	1	66
16:15	0	0	1	6	14	0	7	0	17	1	16	1	63
16:30	0	2	3	5	19	0	12	1	28	0	18	4	92
16:45	0	0	5	5	17	0	6	1	21	0	16	0	71
17:00	0	0	5	4	20	0	3	1	22	0	20	1	76
17:15	0	1	1	3	15	0	5	0	22	5	19	1	72
17:30	0	0	2	3	17	0	9	1	18	1	27	1	79
17:45	0	0	2	2	9	0	9	0	13	1	13	1	50
18:00	0	0	0	2	16	1	4	0	22	1	15	1	62
18:15	0	0	4	2	19	0	1	0	17	0	9	1	53
18:30	0	1	2	2	9	0	1	0	8	0	10	0	33
18:45	0	0	0	3	13	0	2	0	10	0	10	3	41

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	1	0	0	0	0	0	0	0	1
07:45	0	0	0	0	0	0	0	1	1	0	0	0	2
08:00	0	0	0	0	2	0	3	0	0	0	0	0	5
08:15	0	0	0	0	2	0	3	0	0	0	1	0	6
08:30	0	0	0	0	0	0	1	0	0	0	0	0	1
08:45	0	0	0	0	1	0	2	0	0	0	1	0	4
09:00	0	0	1	0	0	0	1	1	0	0	1	0	4
09:15	0	0	1	1	0	0	0	0	0	0	0	0	2
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	1	0	1	0	0	0	2
10:00	0	0	0	0	1	0	2	0	1	0	0	0	4
10:15	0	0	0	0	0	0	1	0	1	0	0	0	2
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	1	0	0	0	1	0	0	0	0	0	2
11:00	0	0	0	0	0	0	0	0	0	0	1	0	1
11:15	0	0	0	0	0	0	0	0	0	1	0	0	1
11:30	0	0	1	0	0	0	0	0	0	0	0	0	1
11:45	0	0	0	0	0	0	1	0	1	0	0	0	2
12:00	0	0	0	0	1	1	0	0	0	0	0	0	2
12:15	0	0	1	0	0	0	0	0	0	0	0	0	1
12:30	0	0	0	0	1	0	0	0	0	0	0	0	1
12:45	0	0	0	0	0	0	1	0	0	0	0	0	1
13:00	0	0	0	0	3	0	2	0	0	0	0	0	5
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	1	0	0	0	1	0	2
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	1	1	0	0	0	0	2
14:15	0	0	0	0	1	0	1	0	0	0	0	0	2
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	1	0	0	0	0	0	1	2	0	4
15:00	0	0	0	0	1	0	1	0	0	0	0	0	2
15:15	0	0	0	0	1	0	0	1	0	0	0	0	2
15:30	0	0	0	0	0	0	0	1	0	0	0	0	1
15:45	0	0	0	0	0	0	2	0	0	0	4	0	6
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	1	0	0	0	1
16:30	0	0	2	1	0	0	1	0	0	0	0	0	4
16:45	0	0	0	0	0	0	1	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	1	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0

Pedestrian volumes

Interval starts	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	1	1	0	0	0	1
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	1	1	1
17:45	0	0	0	0	0	0	0	1	1	0	0	0	1
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0

Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

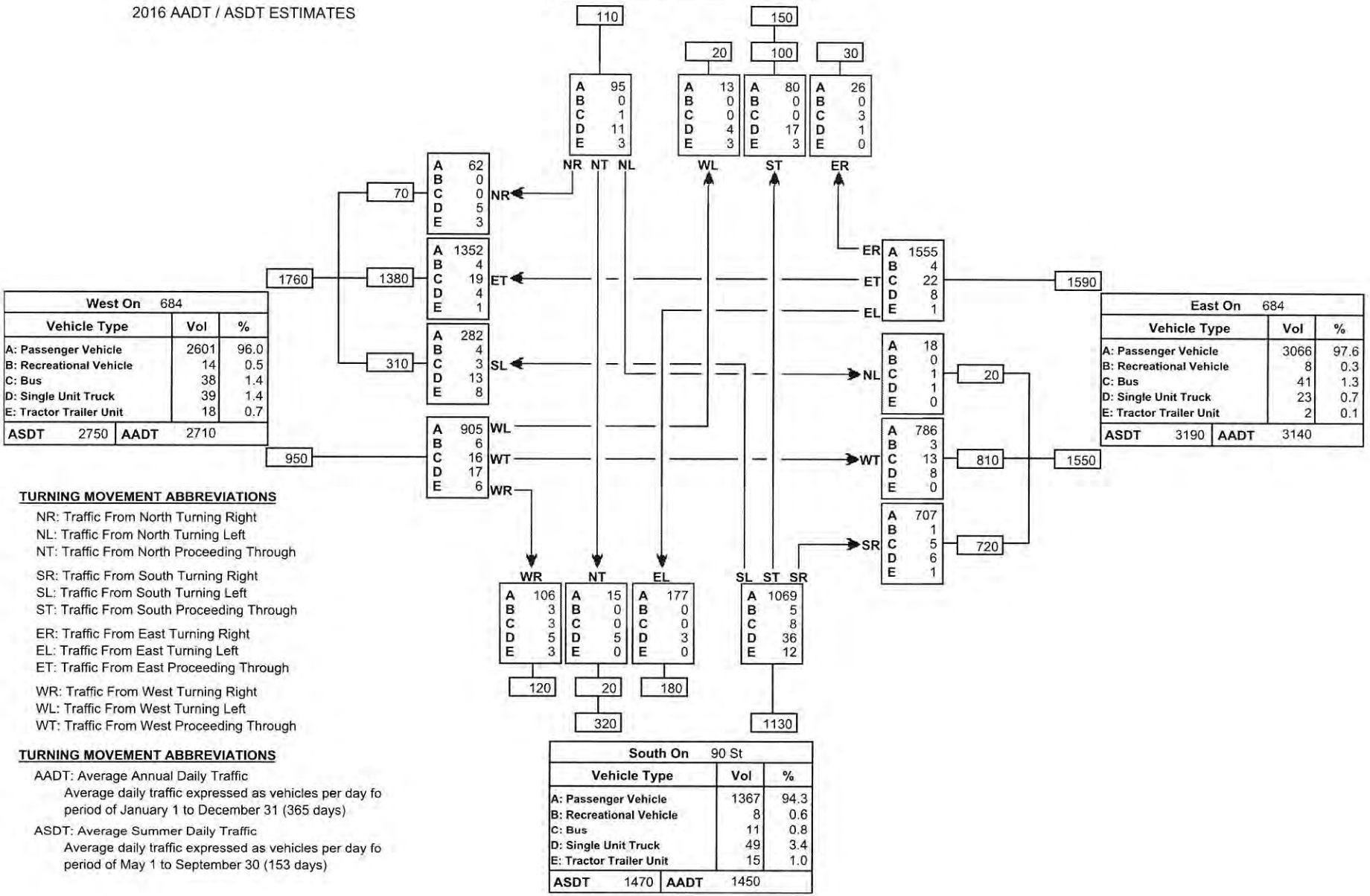
2016 AADT / ASDT ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	214	82.3
B: Recreational Vehicle	0	0.0
C: Bus	4	1.5
D: Single Unit Truck	33	12.7
E: Tractor Trailer Unit	9	3.5
ASDT 260	**AADT** 260	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	2601	96.0
B: Recreational Vehicle	14	0.5
C: Bus	38	1.4
D: Single Unit Truck	39	1.4
E: Tractor Trailer Unit	18	0.7
ASDT 2750	**AADT** 2710	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	3066	97.6
B: Recreational Vehicle	8	0.3
C: Bus	41	1.3
D: Single Unit Truck	23	0.7
E: Tractor Trailer Unit	2	0.1
ASDT 3190	**AADT** 3140	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	1367	94.3
B: Recreational Vehicle	8	0.6
C: Bus	11	0.8
D: Single Unit Truck	49	3.4
E: Tractor Trailer Unit	15	1.0
ASDT 1470	**AADT** 1450	



TURNING MOVEMENT ABBREVIATIONS

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

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

TURNING MOVEMENT ABBREVIATIONS

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

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

Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

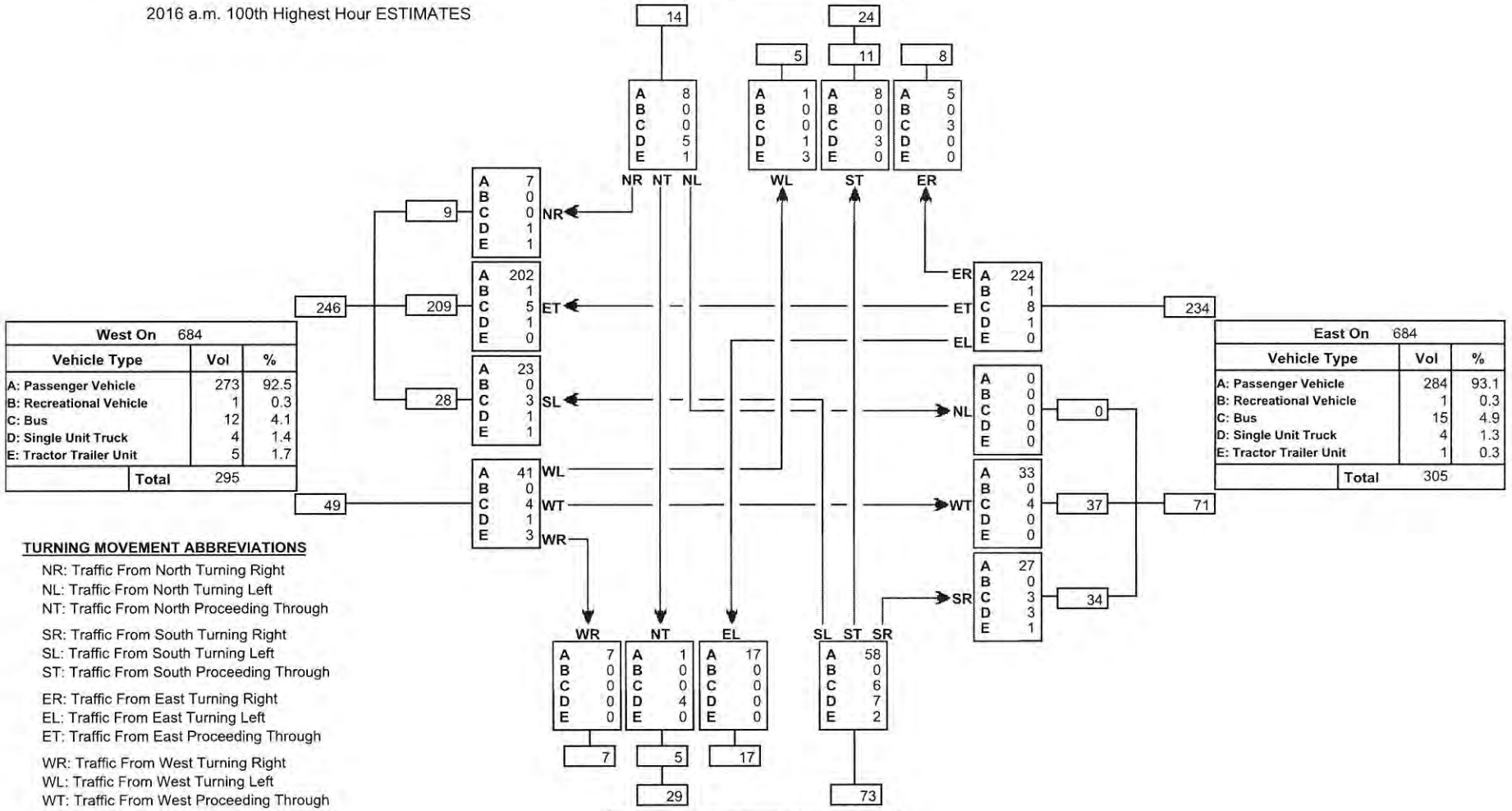
2016 a.m. 100th Highest Hour ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	22	57.9
B: Recreational Vehicle	0	0.0
C: Bus	3	7.9
D: Single Unit Truck	9	23.7
E: Tractor Trailer Unit	4	10.5
Total	38	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	273	92.5
B: Recreational Vehicle	1	0.3
C: Bus	12	4.1
D: Single Unit Truck	4	1.4
E: Tractor Trailer Unit	5	1.7
Total	295	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	284	93.1
B: Recreational Vehicle	1	0.3
C: Bus	15	4.9
D: Single Unit Truck	4	1.3
E: Tractor Trailer Unit	1	0.3
Total	305	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	83	81.4
B: Recreational Vehicle	0	0.0
C: Bus	6	5.9
D: Single Unit Truck	11	10.8
E: Tractor Trailer Unit	2	2.0
Total	102	



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WT: Traffic From West Proceeding Through

Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

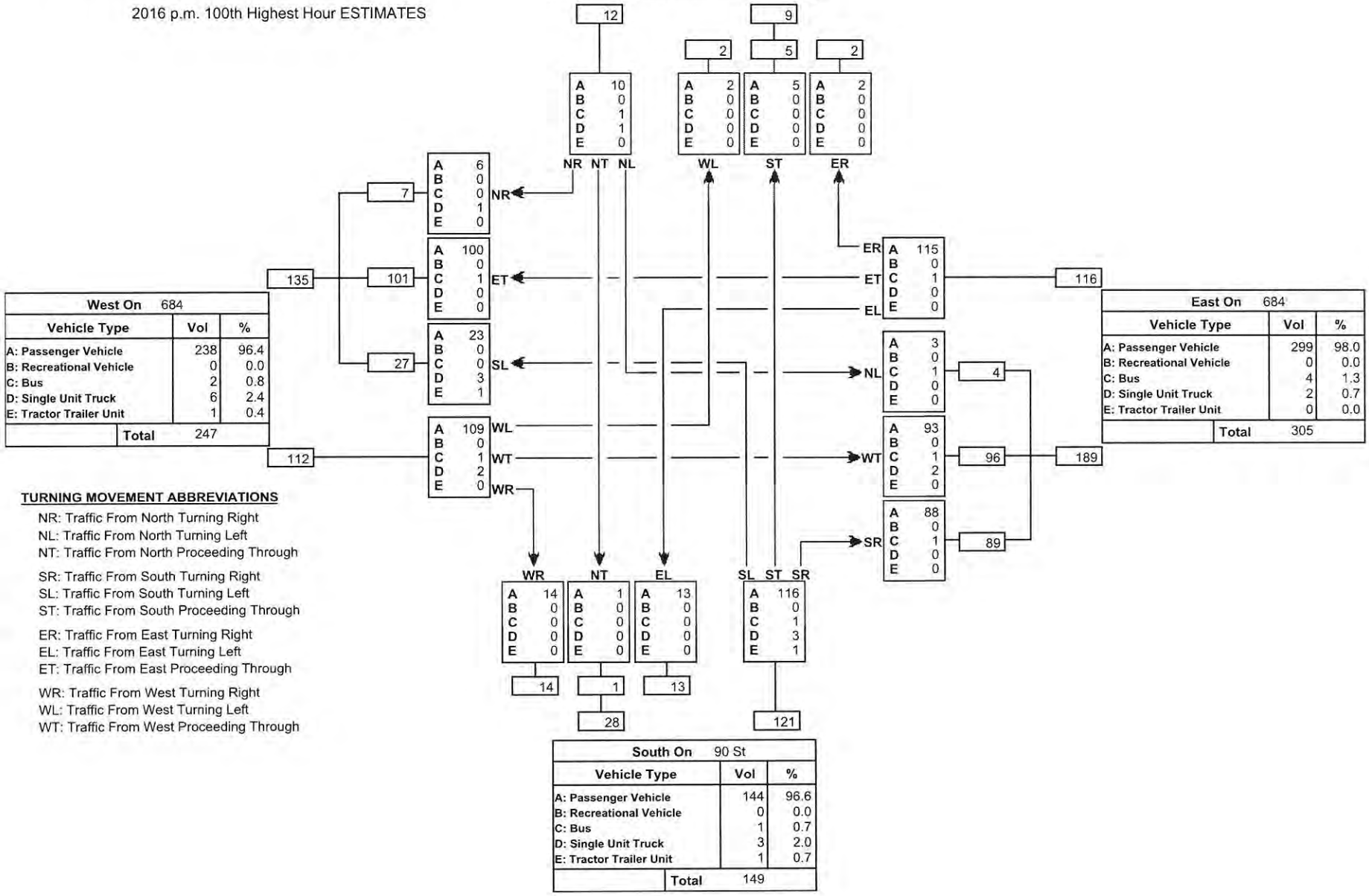
2016 p.m. 100th Highest Hour ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	19	90.5
B: Recreational Vehicle	0	0.0
C: Bus	1	4.8
D: Single Unit Truck	1	4.8
E: Tractor Trailer Unit	0	0.0
Total	21	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	238	96.4
B: Recreational Vehicle	0	0.0
C: Bus	2	0.8
D: Single Unit Truck	6	2.4
E: Tractor Trailer Unit	1	0.4
Total	247	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	299	98.0
B: Recreational Vehicle	0	0.0
C: Bus	4	1.3
D: Single Unit Truck	2	0.7
E: Tractor Trailer Unit	0	0.0
Total	305	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	144	96.6
B: Recreational Vehicle	0	0.0
C: Bus	1	0.7
D: Single Unit Truck	3	2.0
E: Tractor Trailer Unit	1	0.7
Total	149	



TURNING MOVEMENT ABBREVIATIONS

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ET: Traffic From East Proceeding Through

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

Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

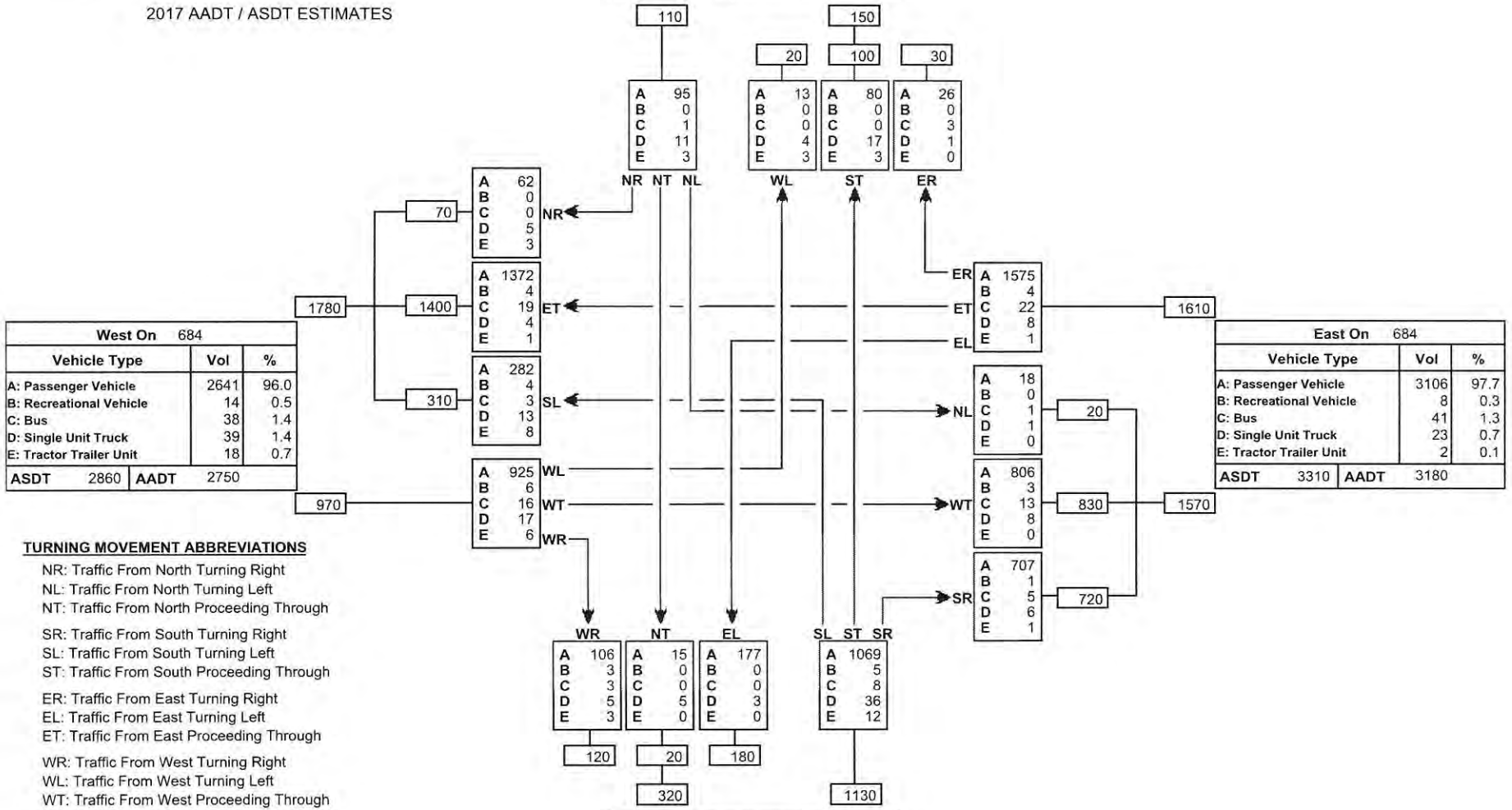
2017 AADT / ASDT ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	214	82.3
B: Recreational Vehicle	0	0.0
C: Bus	4	1.5
D: Single Unit Truck	33	12.7
E: Tractor Trailer Unit	9	3.5
ASDT 270	**AADT** 260	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	2641	96.0
B: Recreational Vehicle	14	0.5
C: Bus	38	1.4
D: Single Unit Truck	39	1.4
E: Tractor Trailer Unit	18	0.7
ASDT 2860	**AADT** 2750	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	3106	97.7
B: Recreational Vehicle	8	0.3
C: Bus	41	1.3
D: Single Unit Truck	23	0.7
E: Tractor Trailer Unit	2	0.1
ASDT 3310	**AADT** 3180	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	1367	94.3
B: Recreational Vehicle	8	0.6
C: Bus	11	0.8
D: Single Unit Truck	49	3.4
E: Tractor Trailer Unit	15	1.0
ASDT 1510	**AADT** 1450	



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

TURNING MOVEMENT ABBREVIATIONS

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

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

Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

2017 a.m. 100th Highest Hour ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	22	57.9
B: Recreational Vehicle	0	0.0
C: Bus	3	7.9
D: Single Unit Truck	9	23.7
E: Tractor Trailer Unit	4	10.5
Total	38	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	279	92.7
B: Recreational Vehicle	1	0.3
C: Bus	12	4.0
D: Single Unit Truck	4	1.3
E: Tractor Trailer Unit	5	1.7
Total	301	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	291	93.3
B: Recreational Vehicle	1	0.3
C: Bus	15	4.8
D: Single Unit Truck	4	1.3
E: Tractor Trailer Unit	1	0.3
Total	312	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	84	81.6
B: Recreational Vehicle	0	0.0
C: Bus	6	5.8
D: Single Unit Truck	11	10.7
E: Tractor Trailer Unit	2	1.9
Total	103	

TURNING MOVEMENT ABBREVIATIONS

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Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

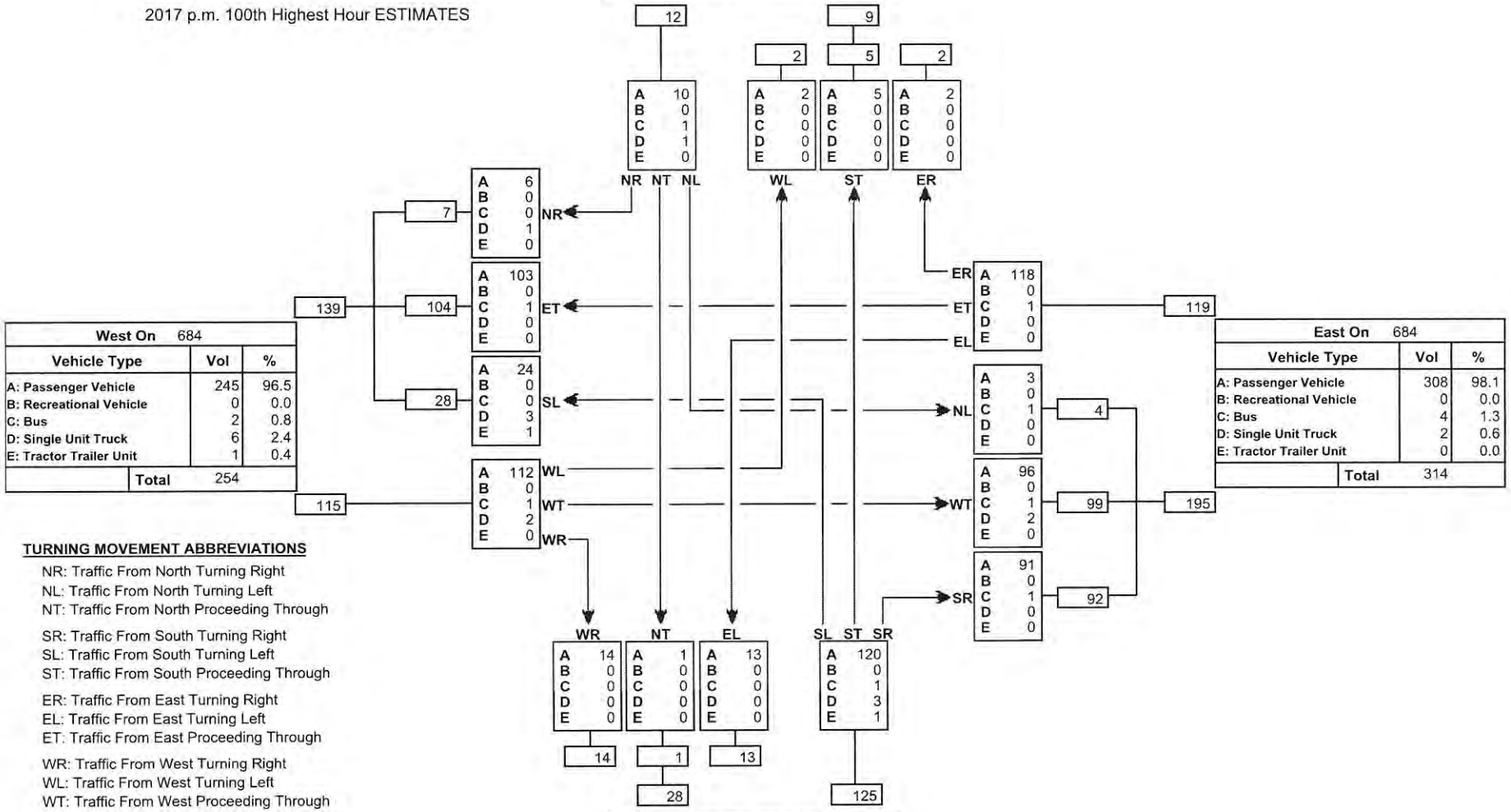
2017 p.m. 100th Highest Hour ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	19	90.5
B: Recreational Vehicle	0	0.0
C: Bus	1	4.8
D: Single Unit Truck	1	4.8
E: Tractor Trailer Unit	0	0.0
Total	21	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	245	96.5
B: Recreational Vehicle	0	0.0
C: Bus	2	0.8
D: Single Unit Truck	6	2.4
E: Tractor Trailer Unit	1	0.4
Total	254	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	308	98.1
B: Recreational Vehicle	0	0.0
C: Bus	4	1.3
D: Single Unit Truck	2	0.6
E: Tractor Trailer Unit	0	0.0
Total	314	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	148	96.7
B: Recreational Vehicle	0	0.0
C: Bus	1	0.7
D: Single Unit Truck	3	2.0
E: Tractor Trailer Unit	1	0.7
Total	153	



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Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

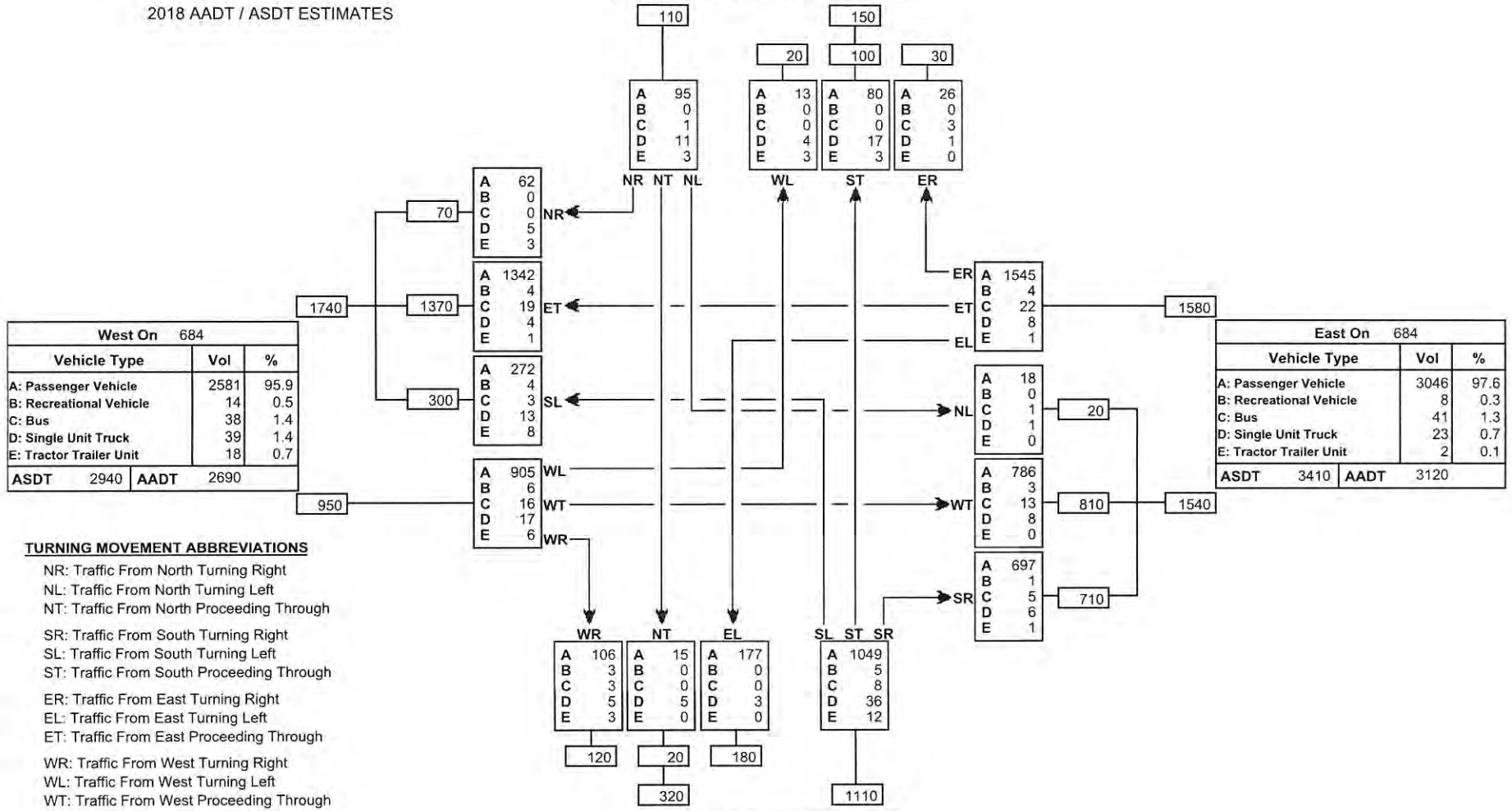
2018 AADT / ASDT ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	214	82.3
B: Recreational Vehicle	0	0.0
C: Bus	4	1.5
D: Single Unit Truck	33	12.7
E: Tractor Trailer Unit	9	3.5
ASDT 280	**AADT** 260	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	2581	95.9
B: Recreational Vehicle	14	0.5
C: Bus	38	1.4
D: Single Unit Truck	39	1.4
E: Tractor Trailer Unit	18	0.7
ASDT 2940	**AADT** 2690	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	3046	97.6
B: Recreational Vehicle	8	0.3
C: Bus	41	1.3
D: Single Unit Truck	23	0.7
E: Tractor Trailer Unit	2	0.1
ASDT 3410	**AADT** 3120	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	1347	94.2
B: Recreational Vehicle	8	0.6
C: Bus	11	0.8
D: Single Unit Truck	49	3.4
E: Tractor Trailer Unit	15	1.0
ASDT 1560	**AADT** 1430	



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TURNING MOVEMENT ABBREVIATIONS

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Turning Movement Summary Diagram

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Intersection of:
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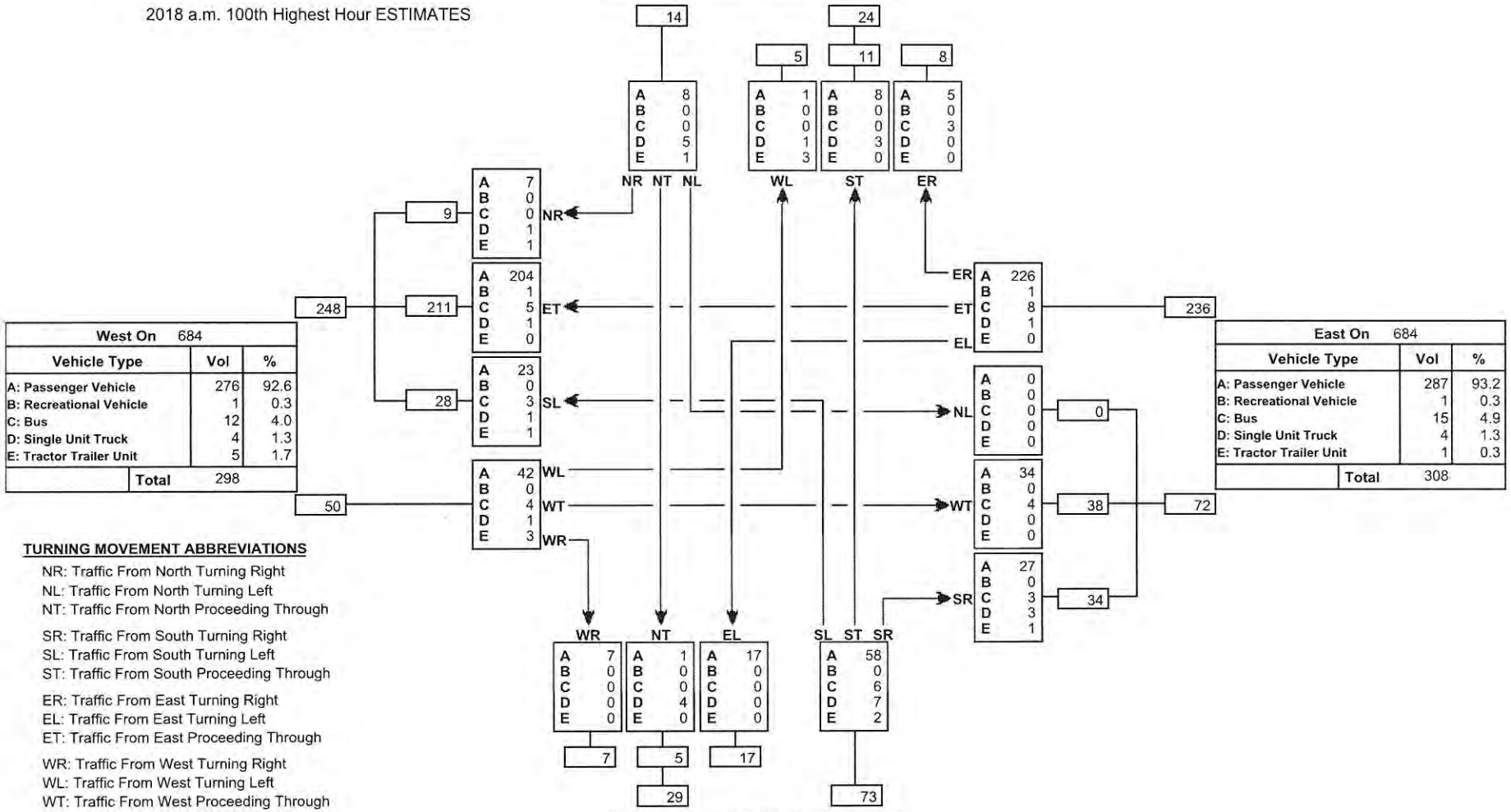
2018 a.m. 100th Highest Hour ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	22	57.9
B: Recreational Vehicle	0	0.0
C: Bus	3	7.9
D: Single Unit Truck	9	23.7
E: Tractor Trailer Unit	4	10.5
Total	38	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	276	92.6
B: Recreational Vehicle	1	0.3
C: Bus	12	4.0
D: Single Unit Truck	4	1.3
E: Tractor Trailer Unit	5	1.7
Total	298	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	287	93.2
B: Recreational Vehicle	1	0.3
C: Bus	15	4.9
D: Single Unit Truck	4	1.3
E: Tractor Trailer Unit	1	0.3
Total	308	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	83	81.4
B: Recreational Vehicle	0	0.0
C: Bus	6	5.9
D: Single Unit Truck	11	10.8
E: Tractor Trailer Unit	2	2.0
Total	102	



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Turning Movement Summary Diagram

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Intersection of:
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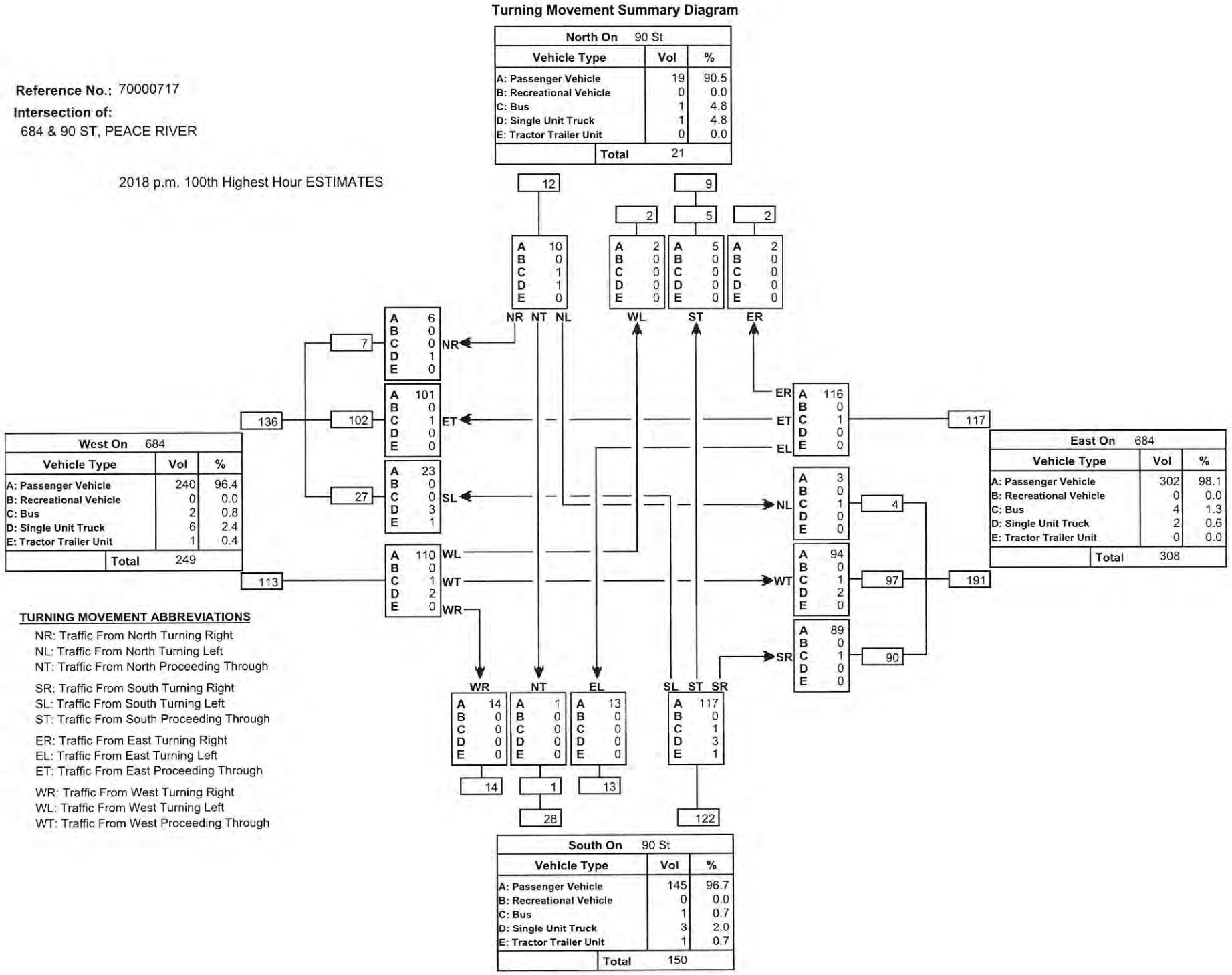
2018 p.m. 100th Highest Hour ESTIMATES



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Turning Movement Summary Diagram

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Intersection of:
684 & 90 ST, PEACE RIVER

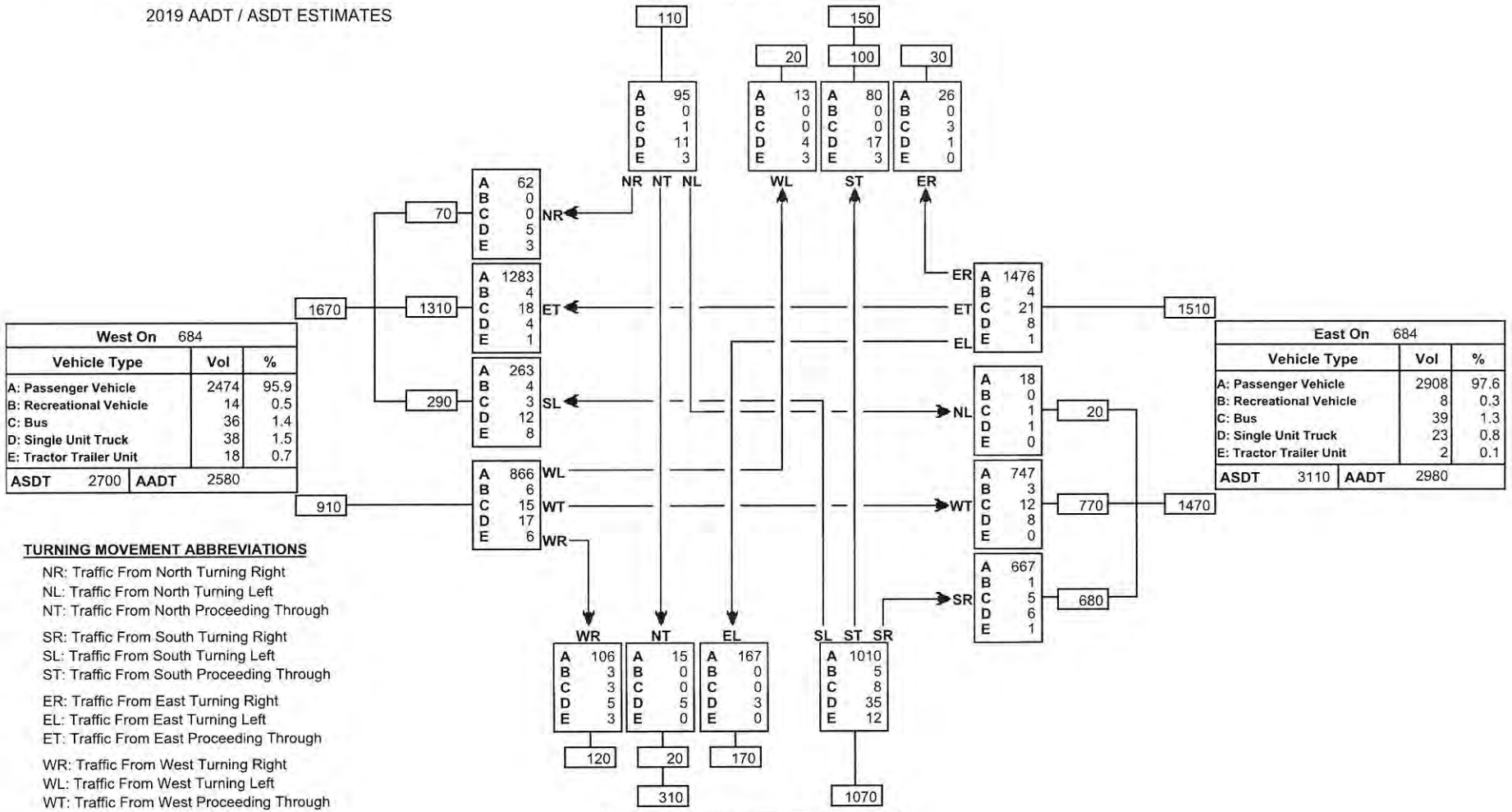
2019 AADT / ASDT ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	214	82.3
B: Recreational Vehicle	0	0.0
C: Bus	4	1.5
D: Single Unit Truck	33	12.7
E: Tractor Trailer Unit	9	3.5
ASDT 270	**AADT** 260	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	2474	95.9
B: Recreational Vehicle	14	0.5
C: Bus	36	1.4
D: Single Unit Truck	38	1.5
E: Tractor Trailer Unit	18	0.7
ASDT 2700	**AADT** 2580	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	2908	97.6
B: Recreational Vehicle	8	0.3
C: Bus	39	1.3
D: Single Unit Truck	23	0.8
E: Tractor Trailer Unit	2	0.1
ASDT 3110	**AADT** 2980	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	1298	94.1
B: Recreational Vehicle	8	0.6
C: Bus	11	0.8
D: Single Unit Truck	48	3.5
E: Tractor Trailer Unit	15	1.1
ASDT 1440	**AADT** 1380	



TURNING MOVEMENT ABBREVIATIONS

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

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

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

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

TURNING MOVEMENT ABBREVIATIONS

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

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

Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

2019 a.m. 100th Highest Hour ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	21	56.8
B: Recreational Vehicle	0	0.0
C: Bus	3	8.1
D: Single Unit Truck	9	24.3
E: Tractor Trailer Unit	4	10.8
Total	37	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	256	92.1
B: Recreational Vehicle	1	0.4
C: Bus	12	4.3
D: Single Unit Truck	4	1.4
E: Tractor Trailer Unit	5	1.8
Total	278	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	268	92.7
B: Recreational Vehicle	1	0.3
C: Bus	15	5.2
D: Single Unit Truck	4	1.4
E: Tractor Trailer Unit	1	0.3
Total	289	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	77	80.2
B: Recreational Vehicle	0	0.0
C: Bus	6	6.3
D: Single Unit Truck	11	11.5
E: Tractor Trailer Unit	2	2.1
Total	96	

TURNING MOVEMENT ABBREVIATIONS

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

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

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

Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

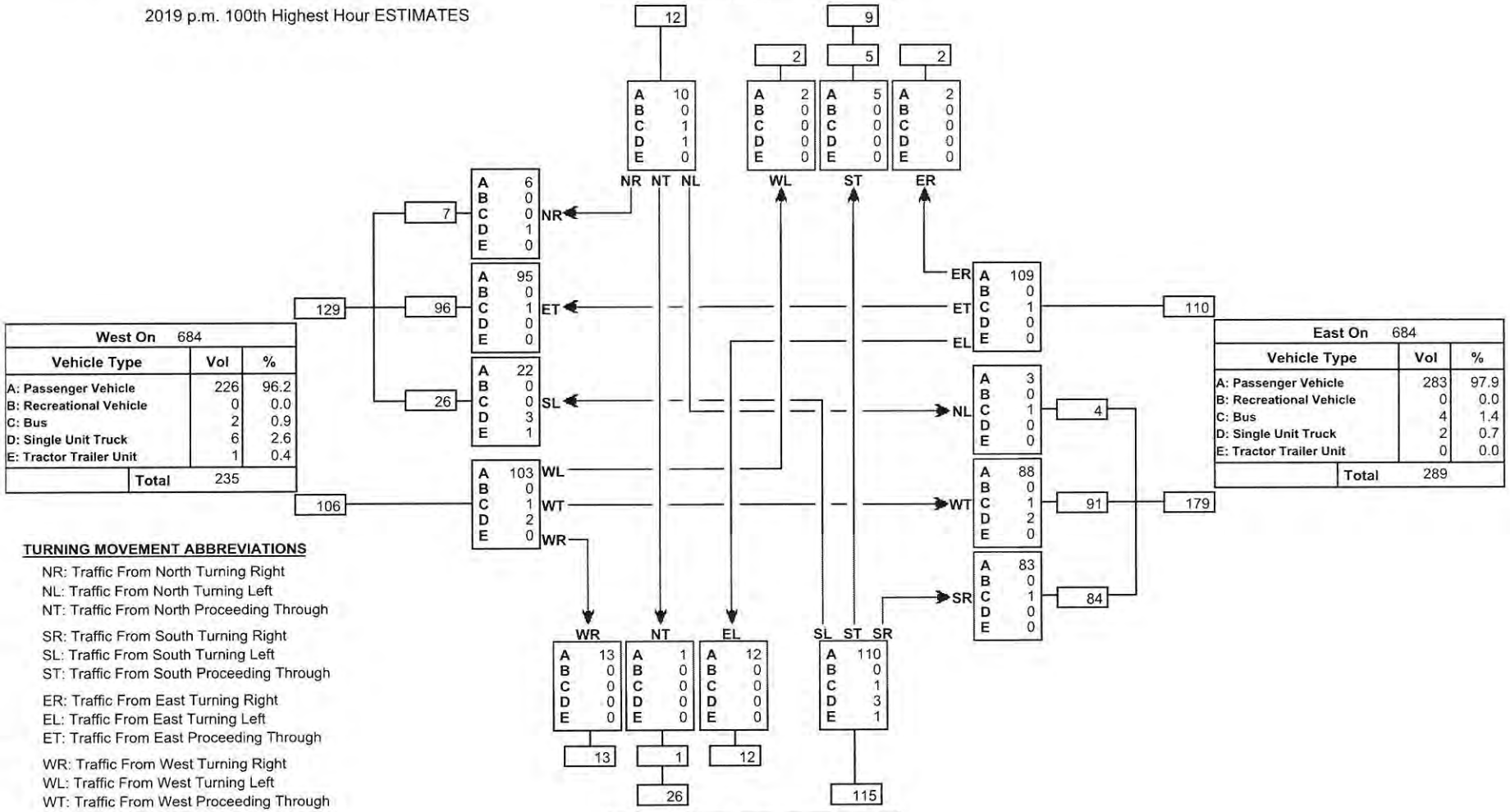
2019 p.m. 100th Highest Hour ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	19	90.5
B: Recreational Vehicle	0	0.0
C: Bus	1	4.8
D: Single Unit Truck	1	4.8
E: Tractor Trailer Unit	0	0.0
Total	21	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	226	96.2
B: Recreational Vehicle	0	0.0
C: Bus	2	0.9
D: Single Unit Truck	6	2.6
E: Tractor Trailer Unit	1	0.4
Total	235	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	283	97.9
B: Recreational Vehicle	0	0.0
C: Bus	4	1.4
D: Single Unit Truck	2	0.7
E: Tractor Trailer Unit	0	0.0
Total	289	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	136	96.5
B: Recreational Vehicle	0	0.0
C: Bus	1	0.7
D: Single Unit Truck	3	2.1
E: Tractor Trailer Unit	1	0.7
Total	141	



TURNING MOVEMENT ABBREVIATIONS

NR: Traffic From North Turning Right
NL: Traffic From North Turning Left
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SL: Traffic From South Turning Left
ST: Traffic From South Proceeding Through

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

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

Beairsto & Associates
ENGINEERING & SURVEY

APPENDIX A

TRAFFIC COUNTS & BACKGROUND TRIP INFORMATION

Turn Count Summary

Location: Old Highway 2 at Shaftesbury Trail , Peace River
GPS Coordinates: Lat=56.235881, Lon=-117.299022
Date: 2020-12-02
Day of week: Wednesday
Weather:
Analyst: Trevor Frankie

Total vehicle traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	0	0	1	2	13	0	5	2	3	0	8	0	34
07:15	0	0	0	3	22	0	2	3	1	0	3	0	34
07:30	0	0	0	7	22	0	3	2	3	0	8	2	47
07:45	0	0	0	10	28	0	3	7	6	1	3	1	59
08:00	0	0	1	7	42	0	6	0	4	0	1	1	62
08:15	0	2	0	6	50	0	9	0	5	0	8	1	81
08:30	0	0	1	9	22	0	4	1	6	0	6	1	50
08:45	0	0	1	5	17	0	5	1	3	0	9	2	43
09:00	0	0	3	2	7	1	5	1	10	0	8	0	37
09:15	0	0	1	3	12	0	5	0	7	0	2	0	30
09:30	0	0	1	7	10	0	2	0	6	0	5	2	33
09:45	0	0	1	3	17	0	4	1	5	1	9	1	42
10:00	0	0	0	6	14	0	4	0	7	0	5	1	37
10:15	1	0	0	3	10	0	3	1	7	0	4	1	30
10:30	0	0	1	1	9	0	5	1	8	0	2	2	29
10:45	0	0	4	2	13	0	3	0	5	0	3	2	32
11:00	0	0	0	2	11	0	3	1	4	0	5	0	26
11:15	1	0	0	3	16	0	3	0	7	2	9	1	42
11:30	0	3	2	2	16	0	5	1	5	0	11	3	48
11:45	0	1	0	3	13	1	4	2	8	0	11	1	44
12:00	0	1	2	1	18	1	11	0	10	0	17	0	61
12:15	0	0	1	5	14	0	5	1	11	0	7	0	44
12:30	0	0	0	4	15	0	10	1	9	0	11	1	51
12:45	0	0	2	4	17	0	4	2	7	0	3	3	42
13:00	0	1	0	6	13	0	7	1	8	2	6	1	45
13:15	0	0	0	8	16	0	5	0	8	0	9	0	46
13:30	0	0	0	4	16	0	6	0	12	0	10	2	50
13:45	0	1	0	7	11	0	2	0	7	0	8	2	38
14:00	0	0	2	1	9	0	5	1	12	1	9	5	45
14:15	0	0	1	6	11	0	8	0	12	1	15	3	57
14:30	0	0	0	5	15	0	2	1	5	2	5	1	36
14:45	0	0	0	7	13	0	7	0	7	4	10	2	50
15:00	0	0	3	6	16	0	6	1	4	0	12	0	48
15:15	0	0	5	4	16	0	0	3	10	0	13	0	51
15:30	0	0	0	5	11	0	6	3	12	0	16	1	54
15:45	0	1	11	3	9	0	7	2	10	0	19	1	63
16:00	1	1	1	5	18	0	5	2	18	6	8	1	66
16:15	0	0	1	6	14	0	7	0	18	1	16	1	64
16:30	0	2	5	6	19	0	13	1	28	0	18	4	96
16:45	0	0	5	5	17	0	7	1	21	0	16	0	72
17:00	0	0	5	4	20	0	3	1	22	0	20	1	76
17:15	0	1	1	3	15	0	5	0	22	5	19	1	72
17:30	0	0	2	3	17	0	10	1	18	1	27	1	80
17:45	0	0	2	2	9	0	9	0	13	1	13	1	50
18:00	0	0	0	2	16	1	4	0	22	1	15	1	62
18:15	0	0	4	2	19	0	1	0	17	0	9	1	53
18:30	0	1	2	2	9	0	1	0	8	0	10	0	33
18:45	0	0	0	3	13	0	2	0	10	0	10	3	41

Car traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	0	0	1	2	13	0	5	2	3	0	8	0	34
07:15	0	0	0	3	22	0	2	3	1	0	3	0	34
07:30	0	0	0	7	21	0	3	2	3	0	8	2	46
07:45	0	0	0	10	28	0	3	6	5	1	3	1	57
08:00	0	0	1	7	40	0	3	0	4	0	1	1	57
08:15	0	2	0	6	48	0	6	0	5	0	7	1	75
08:30	0	0	1	9	22	0	3	1	6	0	6	1	49
08:45	0	0	1	5	16	0	3	1	3	0	8	2	39
09:00	0	0	2	2	7	1	4	0	10	0	7	0	33
09:15	0	0	0	2	12	0	5	0	7	0	2	0	28
09:30	0	0	1	7	10	0	2	0	6	0	5	2	33
09:45	0	0	1	3	17	0	3	1	4	1	9	1	40
10:00	0	0	0	6	13	0	2	0	6	0	5	1	33
10:15	1	0	0	3	10	0	2	1	6	0	4	1	28
10:30	0	0	1	1	9	0	5	1	8	0	2	2	29
10:45	0	0	3	2	13	0	2	0	5	0	3	2	30
11:00	0	0	0	2	11	0	3	1	4	0	4	0	25
11:15	1	0	0	3	16	0	3	0	7	1	9	1	41
11:30	0	3	1	2	16	0	5	1	5	0	11	3	47
11:45	0	1	0	3	13	1	3	2	7	0	11	1	42
12:00	0	1	2	1	17	0	11	0	10	0	17	0	59
12:15	0	0	0	5	14	0	5	1	11	0	7	0	43
12:30	0	0	0	4	14	0	10	1	9	0	11	1	50
12:45	0	0	2	4	17	0	3	2	7	0	3	3	41
13:00	0	1	0	6	10	0	5	1	8	2	6	1	40
13:15	0	0	0	8	16	0	5	0	8	0	9	0	46
13:30	0	0	0	4	16	0	5	0	12	0	9	2	48
13:45	0	1	0	7	11	0	2	0	7	0	8	2	38
14:00	0	0	2	1	9	0	4	0	12	1	9	5	43
14:15	0	0	1	6	10	0	7	0	12	1	15	3	55
14:30	0	0	0	5	15	0	2	1	5	2	5	1	36
14:45	0	0	0	6	13	0	7	0	7	3	8	2	46
15:00	0	0	3	6	15	0	5	1	4	0	12	0	46
15:15	0	0	5	4	15	0	0	2	10	0	13	0	49
15:30	0	0	0	5	11	0	6	2	12	0	16	1	53
15:45	0	1	11	3	9	0	5	2	10	0	15	1	57
16:00	1	1	1	5	18	0	5	2	18	6	8	1	66
16:15	0	0	1	6	14	0	7	0	17	1	16	1	63
16:30	0	2	3	5	19	0	12	1	28	0	18	4	92
16:45	0	0	5	5	17	0	6	1	21	0	16	0	71
17:00	0	0	5	4	20	0	3	1	22	0	20	1	76
17:15	0	1	1	3	15	0	5	0	22	5	19	1	72
17:30	0	0	2	3	17	0	9	1	18	1	27	1	79
17:45	0	0	2	2	9	0	9	0	13	1	13	1	50
18:00	0	0	0	2	16	1	4	0	22	1	15	1	62
18:15	0	0	4	2	19	0	1	0	17	0	9	1	53
18:30	0	1	2	2	9	0	1	0	8	0	10	0	33
18:45	0	0	0	3	13	0	2	0	10	0	10	3	41

Truck traffic

Interval starts	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	1	0	0	0	0	0	0	0	1
07:45	0	0	0	0	0	0	0	1	1	0	0	0	2
08:00	0	0	0	0	2	0	3	0	0	0	0	0	5
08:15	0	0	0	0	2	0	3	0	0	0	1	0	6
08:30	0	0	0	0	0	0	1	0	0	0	0	0	1
08:45	0	0	0	0	1	0	2	0	0	0	1	0	4
09:00	0	0	1	0	0	0	1	1	0	0	1	0	4
09:15	0	0	1	1	0	0	0	0	0	0	0	0	2
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	1	0	1	0	0	0	2
10:00	0	0	0	0	1	0	2	0	1	0	0	0	4
10:15	0	0	0	0	0	0	1	0	1	0	0	0	2
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	1	0	0	0	1	0	0	0	0	0	2
11:00	0	0	0	0	0	0	0	0	0	0	1	0	1
11:15	0	0	0	0	0	0	0	0	0	1	0	0	1
11:30	0	0	1	0	0	0	0	0	0	0	0	0	1
11:45	0	0	0	0	0	0	1	0	1	0	0	0	2
12:00	0	0	0	0	1	1	0	0	0	0	0	0	2
12:15	0	0	1	0	0	0	0	0	0	0	0	0	1
12:30	0	0	0	0	1	0	0	0	0	0	0	0	1
12:45	0	0	0	0	0	0	1	0	0	0	0	0	1
13:00	0	0	0	0	3	0	2	0	0	0	0	0	5
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	1	0	0	0	1	0	2
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	1	1	0	0	0	0	2
14:15	0	0	0	0	1	0	1	0	0	0	0	0	2
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	1	0	0	0	0	0	1	2	0	4
15:00	0	0	0	0	1	0	1	0	0	0	0	0	2
15:15	0	0	0	0	1	0	0	1	0	0	0	0	2
15:30	0	0	0	0	0	0	0	1	0	0	0	0	1
15:45	0	0	0	0	0	0	2	0	0	0	4	0	6
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	1	0	0	0	1
16:30	0	0	2	1	0	0	1	0	0	0	0	0	4
16:45	0	0	0	0	0	0	1	0	0	0	0	0	1
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	1	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0

Pedestrian volumes

Interval starts	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	1	1	0	0	0	1
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	1	1	1
17:45	0	0	0	0	0	0	0	1	1	0	0	0	1
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Peak Hour

16:30 - 17:30

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	0	3	16	18	71	0	28	3	93	5	73	6	316
Factor	0.00	0.38	0.80	0.75	0.89	0.00	0.54	0.75	0.83	0.25	0.91	0.38	0.82
Approach Factor	0.68			0.89			0.74			0.84			

Peak Hour Vehicle Summary

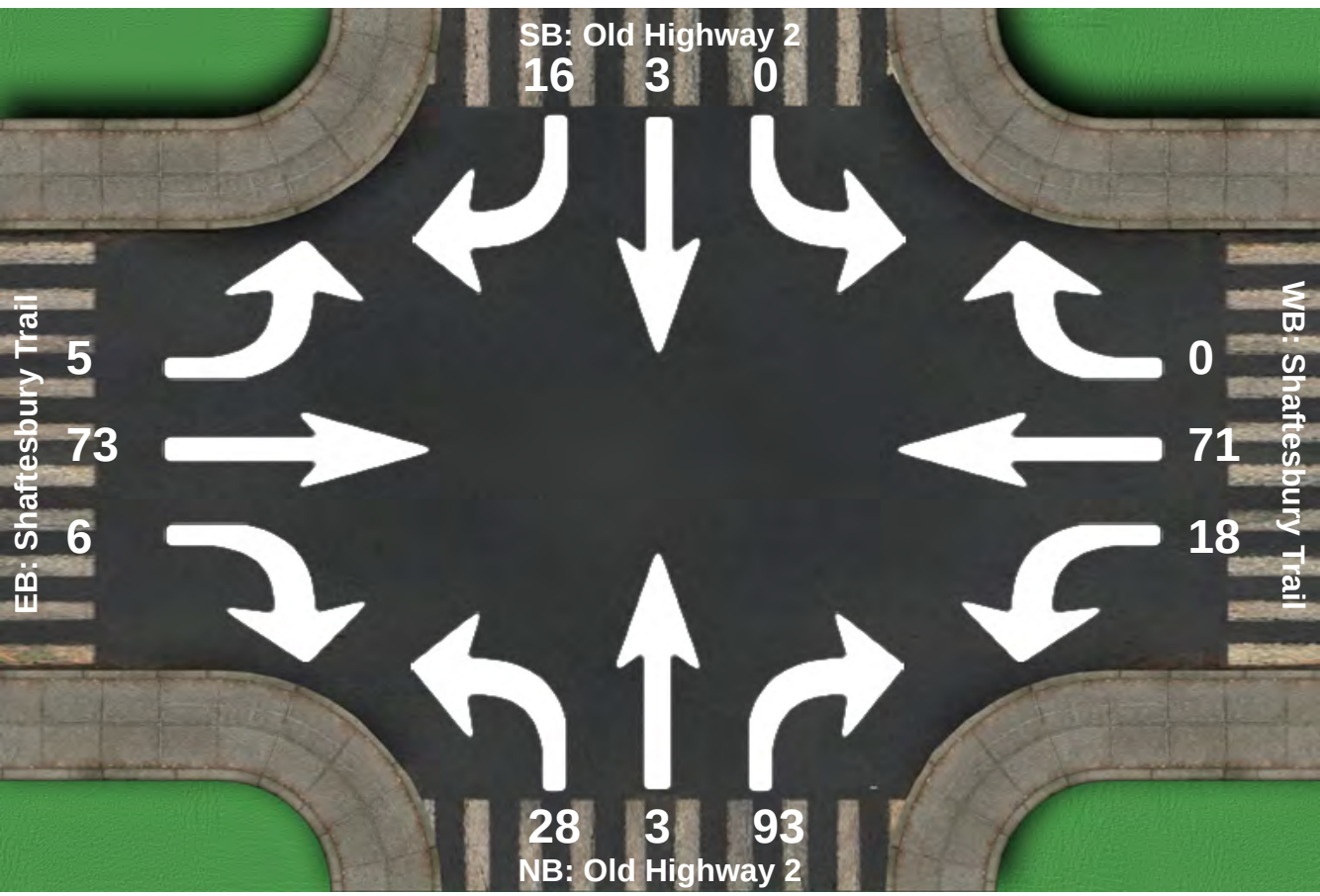
Vehicle	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Car	0	3	14	17	71	0	26	3	93	5	73	6	311
Truck	0	0	2	1	0	0	2	0	0	0	0	0	5

Peak Hour Pedestrians

	NE			NW			SW			SE			Total
	Left	Right	Total	Left	Right	Total	Left	Right	Total	Left	Right	Total	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Peak Hour

Location: Old Highway 2 at Shaftesbury Trail , Peace River
GPS Coordinates: Lat=56.235881, Lon=-117.299022
Date: 2020-12-02
Day of week: Wednesday
Weather:
Analyst: Trevor Frankie



Intersection Peak Hour

16:30 - 17:30

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	0	3	16	18	71	0	28	3	93	5	73	6	316
Factor	0.00	0.38	0.80	0.75	0.89	0.00	0.54	0.75	0.83	0.25	0.91	0.38	0.82
Approach Factor	0.68			0.89			0.74			0.84			

Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

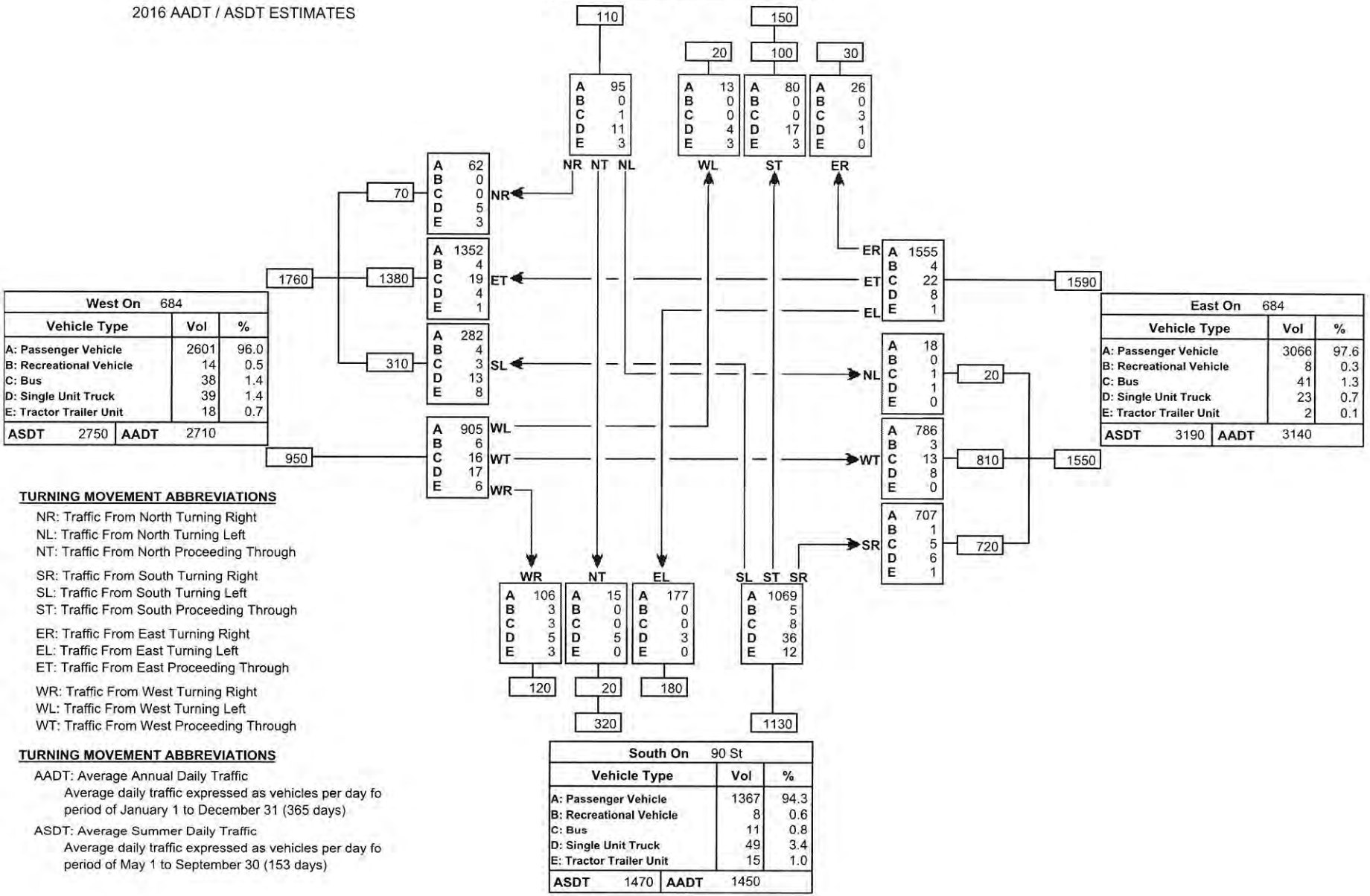
2016 AADT / ASDT ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	214	82.3
B: Recreational Vehicle	0	0.0
C: Bus	4	1.5
D: Single Unit Truck	33	12.7
E: Tractor Trailer Unit	9	3.5
ASDT 260	**AADT** 260	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	2601	96.0
B: Recreational Vehicle	14	0.5
C: Bus	38	1.4
D: Single Unit Truck	39	1.4
E: Tractor Trailer Unit	18	0.7
ASDT 2750	**AADT** 2710	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	3066	97.6
B: Recreational Vehicle	8	0.3
C: Bus	41	1.3
D: Single Unit Truck	23	0.7
E: Tractor Trailer Unit	2	0.1
ASDT 3190	**AADT** 3140	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	1367	94.3
B: Recreational Vehicle	8	0.6
C: Bus	11	0.8
D: Single Unit Truck	49	3.4
E: Tractor Trailer Unit	15	1.0
ASDT 1470	**AADT** 1450	



TURNING MOVEMENT ABBREVIATIONS

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

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WL: Traffic From West Turning Left
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TURNING MOVEMENT ABBREVIATIONS

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

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

Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

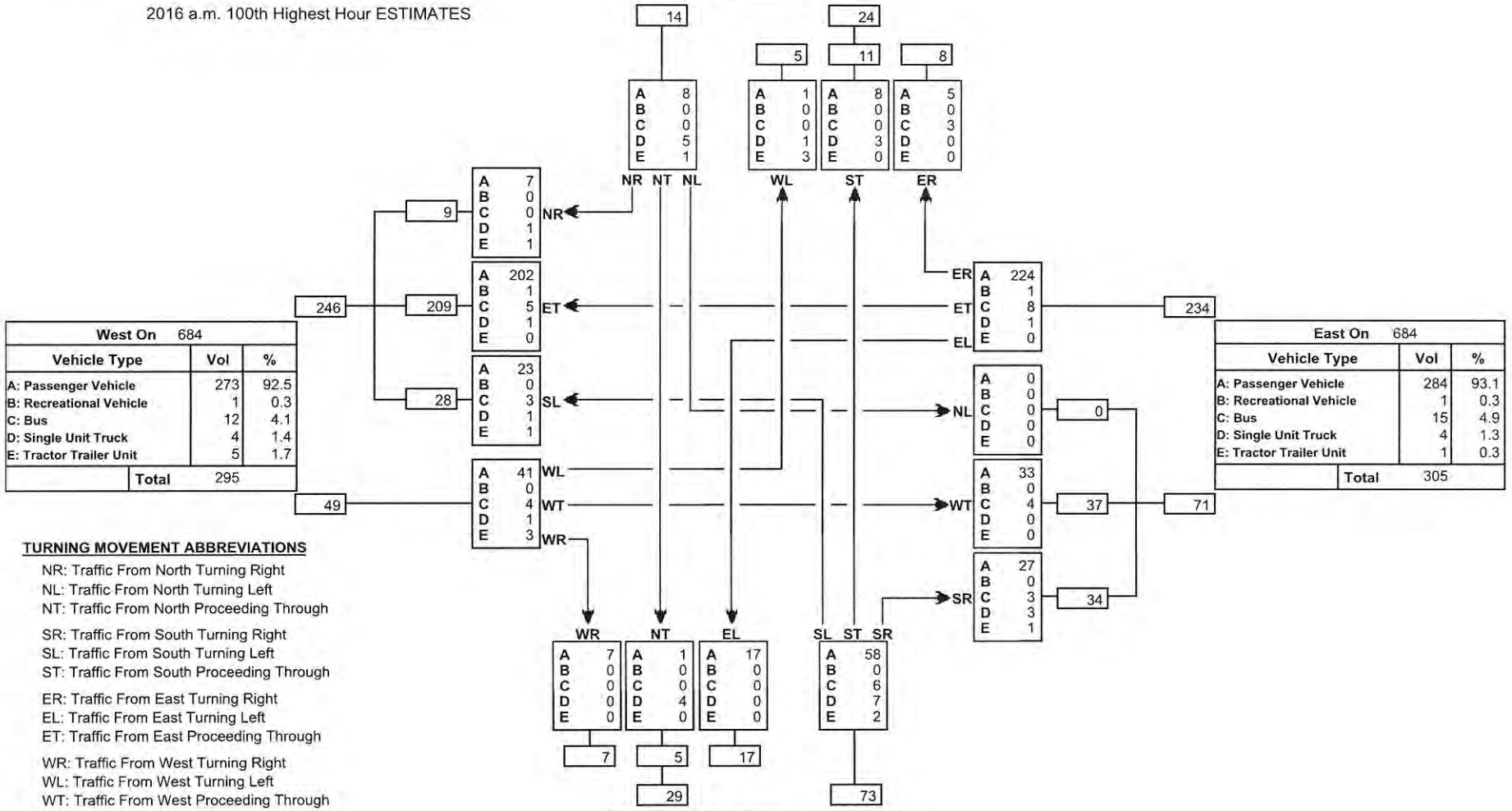
2016 a.m. 100th Highest Hour ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	22	57.9
B: Recreational Vehicle	0	0.0
C: Bus	3	7.9
D: Single Unit Truck	9	23.7
E: Tractor Trailer Unit	4	10.5
Total	38	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	273	92.5
B: Recreational Vehicle	1	0.3
C: Bus	12	4.1
D: Single Unit Truck	4	1.4
E: Tractor Trailer Unit	5	1.7
Total	295	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	284	93.1
B: Recreational Vehicle	1	0.3
C: Bus	15	4.9
D: Single Unit Truck	4	1.3
E: Tractor Trailer Unit	1	0.3
Total	305	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	83	81.4
B: Recreational Vehicle	0	0.0
C: Bus	6	5.9
D: Single Unit Truck	11	10.8
E: Tractor Trailer Unit	2	2.0
Total	102	



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Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

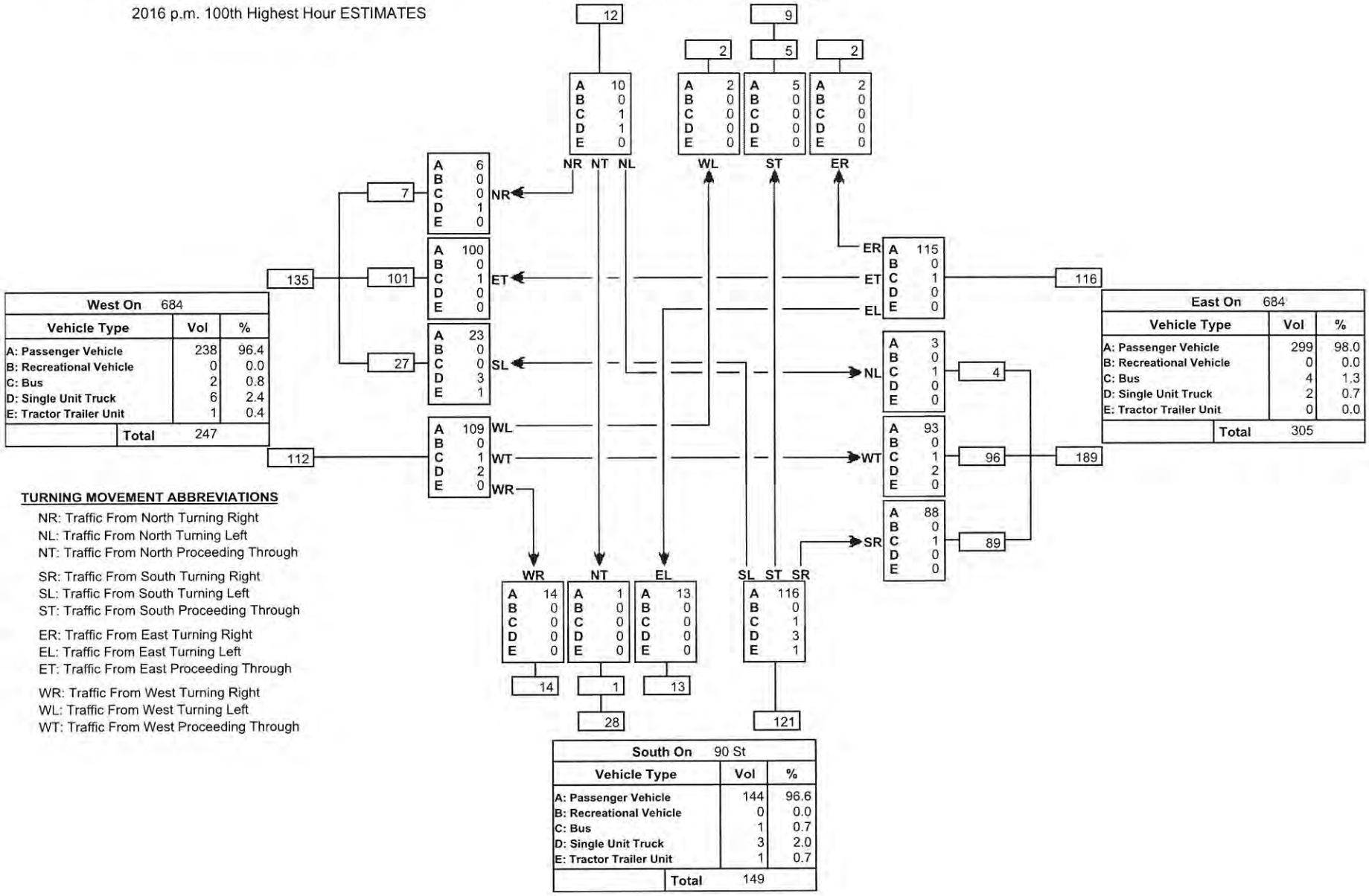
2016 p.m. 100th Highest Hour ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	19	90.5
B: Recreational Vehicle	0	0.0
C: Bus	1	4.8
D: Single Unit Truck	1	4.8
E: Tractor Trailer Unit	0	0.0
Total	21	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	238	96.4
B: Recreational Vehicle	0	0.0
C: Bus	2	0.8
D: Single Unit Truck	6	2.4
E: Tractor Trailer Unit	1	0.4
Total	247	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	299	98.0
B: Recreational Vehicle	0	0.0
C: Bus	4	1.3
D: Single Unit Truck	2	0.7
E: Tractor Trailer Unit	0	0.0
Total	305	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	144	96.6
B: Recreational Vehicle	0	0.0
C: Bus	1	0.7
D: Single Unit Truck	3	2.0
E: Tractor Trailer Unit	1	0.7
Total	149	



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Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

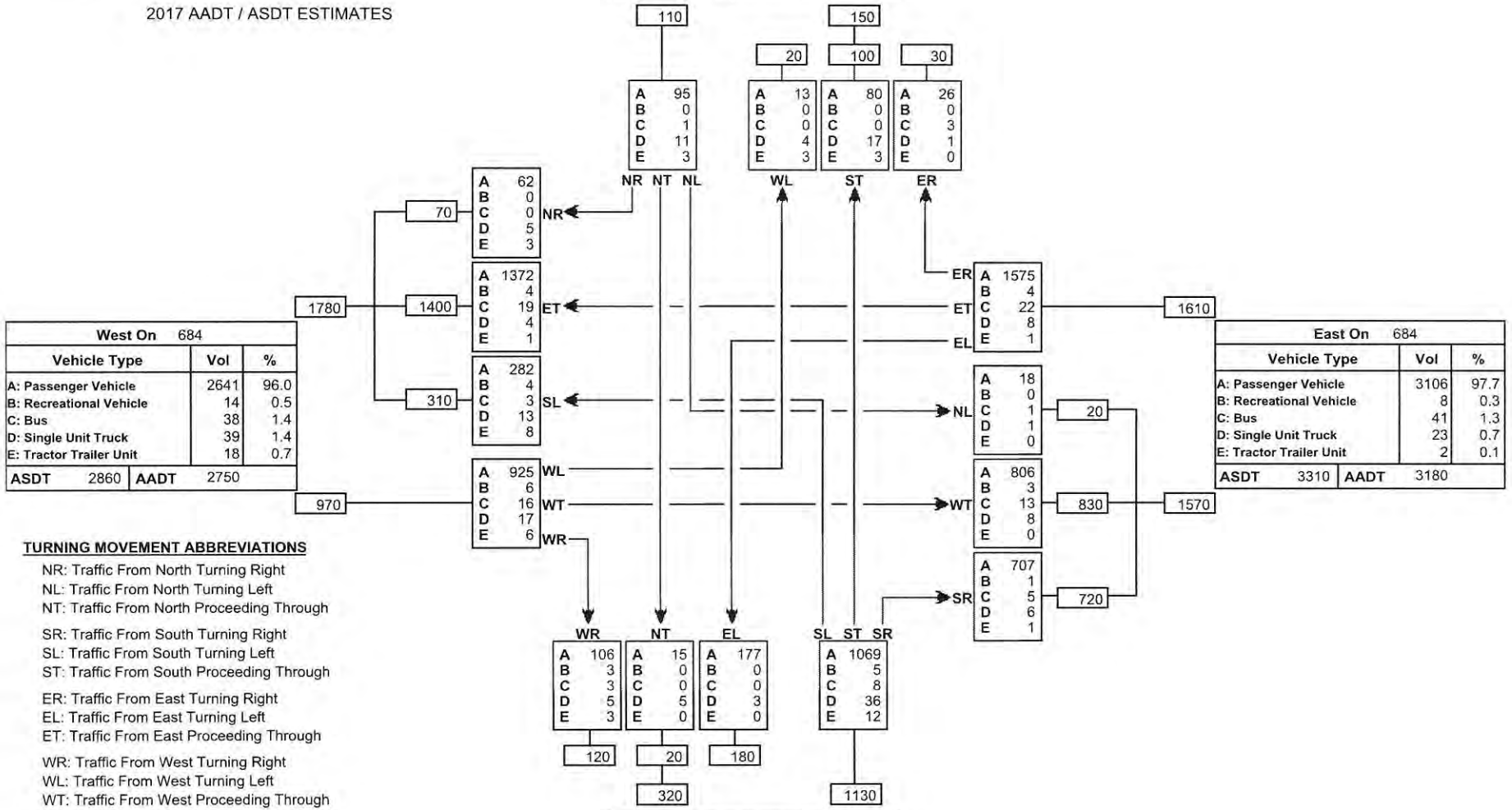
2017 AADT / ASDT ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	214	82.3
B: Recreational Vehicle	0	0.0
C: Bus	4	1.5
D: Single Unit Truck	33	12.7
E: Tractor Trailer Unit	9	3.5
ASDT 270	**AADT** 260	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	2641	96.0
B: Recreational Vehicle	14	0.5
C: Bus	38	1.4
D: Single Unit Truck	39	1.4
E: Tractor Trailer Unit	18	0.7
ASDT 2860	**AADT** 2750	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	3106	97.7
B: Recreational Vehicle	8	0.3
C: Bus	41	1.3
D: Single Unit Truck	23	0.7
E: Tractor Trailer Unit	2	0.1
ASDT 3310	**AADT** 3180	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	1367	94.3
B: Recreational Vehicle	8	0.6
C: Bus	11	0.8
D: Single Unit Truck	49	3.4
E: Tractor Trailer Unit	15	1.0
ASDT 1510	**AADT** 1450	



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TURNING MOVEMENT ABBREVIATIONS

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

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

Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

2017 a.m. 100th Highest Hour ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	22	57.9
B: Recreational Vehicle	0	0.0
C: Bus	3	7.9
D: Single Unit Truck	9	23.7
E: Tractor Trailer Unit	4	10.5
Total	38	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	279	92.7
B: Recreational Vehicle	1	0.3
C: Bus	12	4.0
D: Single Unit Truck	4	1.3
E: Tractor Trailer Unit	5	1.7
Total	301	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	291	93.3
B: Recreational Vehicle	1	0.3
C: Bus	15	4.8
D: Single Unit Truck	4	1.3
E: Tractor Trailer Unit	1	0.3
Total	312	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	84	81.6
B: Recreational Vehicle	0	0.0
C: Bus	6	5.8
D: Single Unit Truck	11	10.7
E: Tractor Trailer Unit	2	1.9
Total	103	

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Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

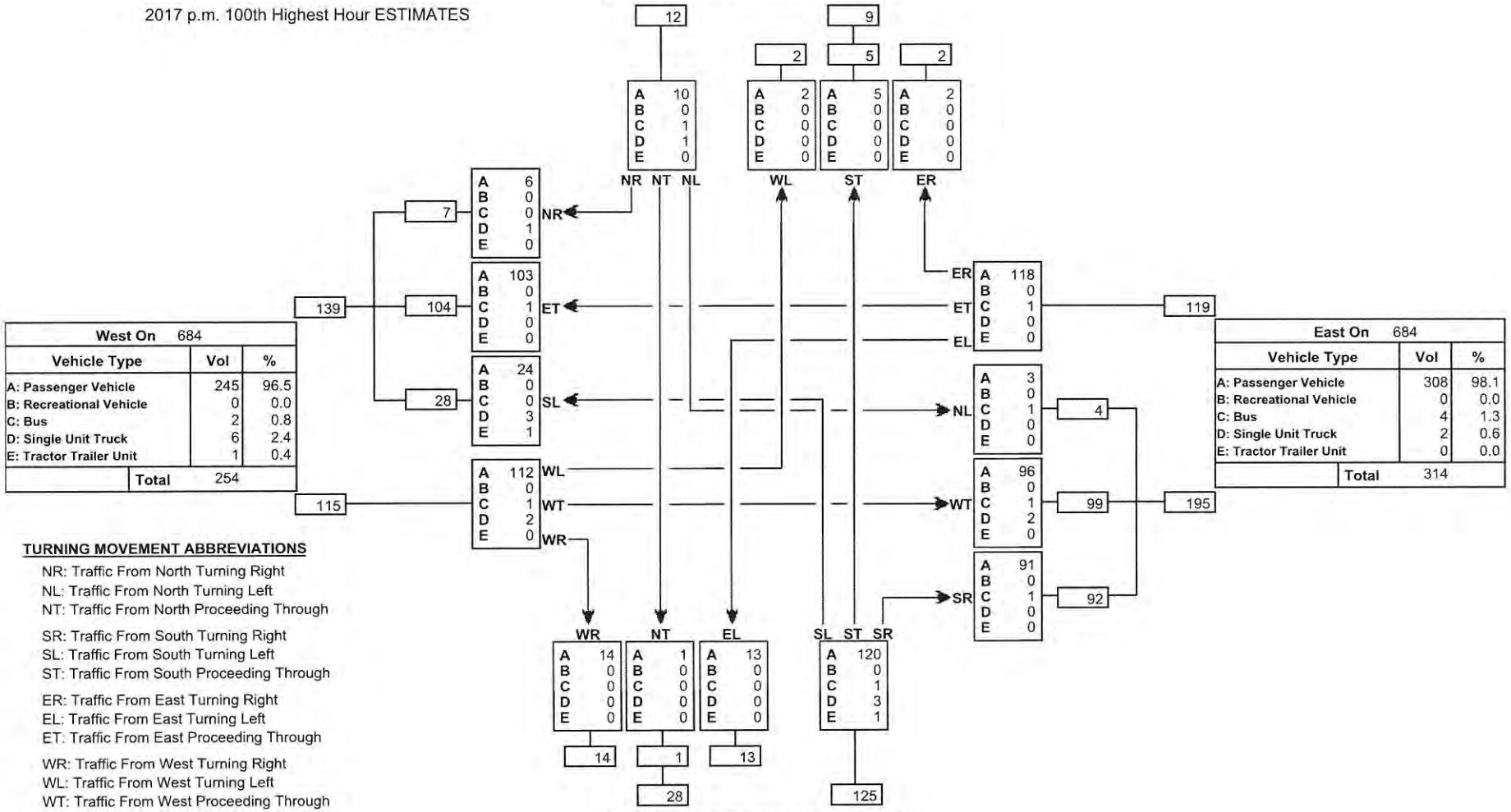
2017 p.m. 100th Highest Hour ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	19	90.5
B: Recreational Vehicle	0	0.0
C: Bus	1	4.8
D: Single Unit Truck	1	4.8
E: Tractor Trailer Unit	0	0.0
Total	21	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	245	96.5
B: Recreational Vehicle	0	0.0
C: Bus	2	0.8
D: Single Unit Truck	6	2.4
E: Tractor Trailer Unit	1	0.4
Total	254	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	308	98.1
B: Recreational Vehicle	0	0.0
C: Bus	4	1.3
D: Single Unit Truck	2	0.6
E: Tractor Trailer Unit	0	0.0
Total	314	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	148	96.7
B: Recreational Vehicle	0	0.0
C: Bus	1	0.7
D: Single Unit Truck	3	2.0
E: Tractor Trailer Unit	1	0.7
Total	153	



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Turning Movement Summary Diagram

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Intersection of:
684 & 90 ST, PEACE RIVER

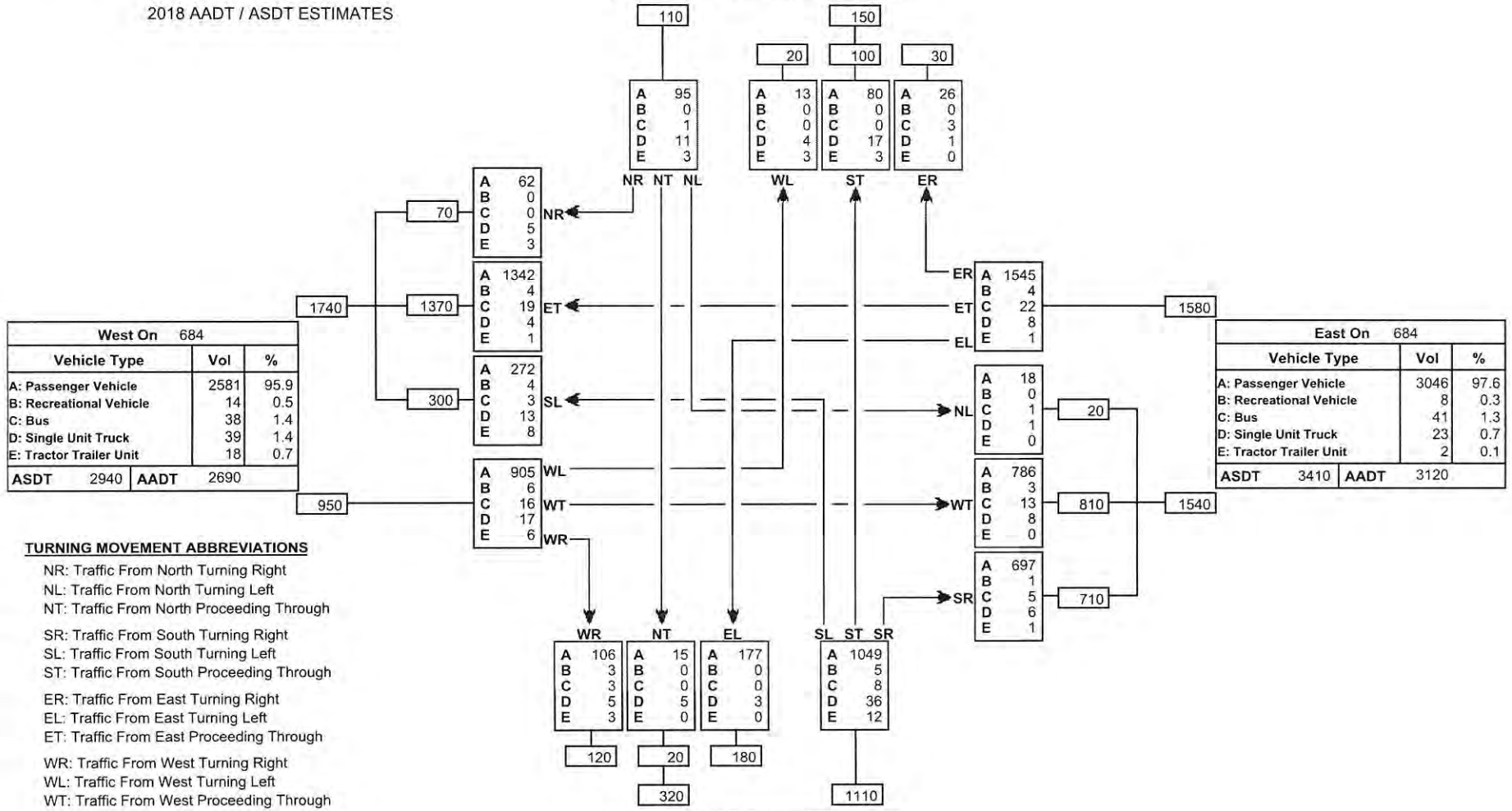
2018 AADT / ASDT ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	214	82.3
B: Recreational Vehicle	0	0.0
C: Bus	4	1.5
D: Single Unit Truck	33	12.7
E: Tractor Trailer Unit	9	3.5
ASDT 280	**AADT** 260	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	2581	95.9
B: Recreational Vehicle	14	0.5
C: Bus	38	1.4
D: Single Unit Truck	39	1.4
E: Tractor Trailer Unit	18	0.7
ASDT 2940	**AADT** 2690	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	3046	97.6
B: Recreational Vehicle	8	0.3
C: Bus	41	1.3
D: Single Unit Truck	23	0.7
E: Tractor Trailer Unit	2	0.1
ASDT 3410	**AADT** 3120	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	1347	94.2
B: Recreational Vehicle	8	0.6
C: Bus	11	0.8
D: Single Unit Truck	49	3.4
E: Tractor Trailer Unit	15	1.0
ASDT 1560	**AADT** 1430	



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TURNING MOVEMENT ABBREVIATIONS

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Turning Movement Summary Diagram

Reference No.: 70000717

Intersection of:
684 & 90 ST, PEACE RIVER

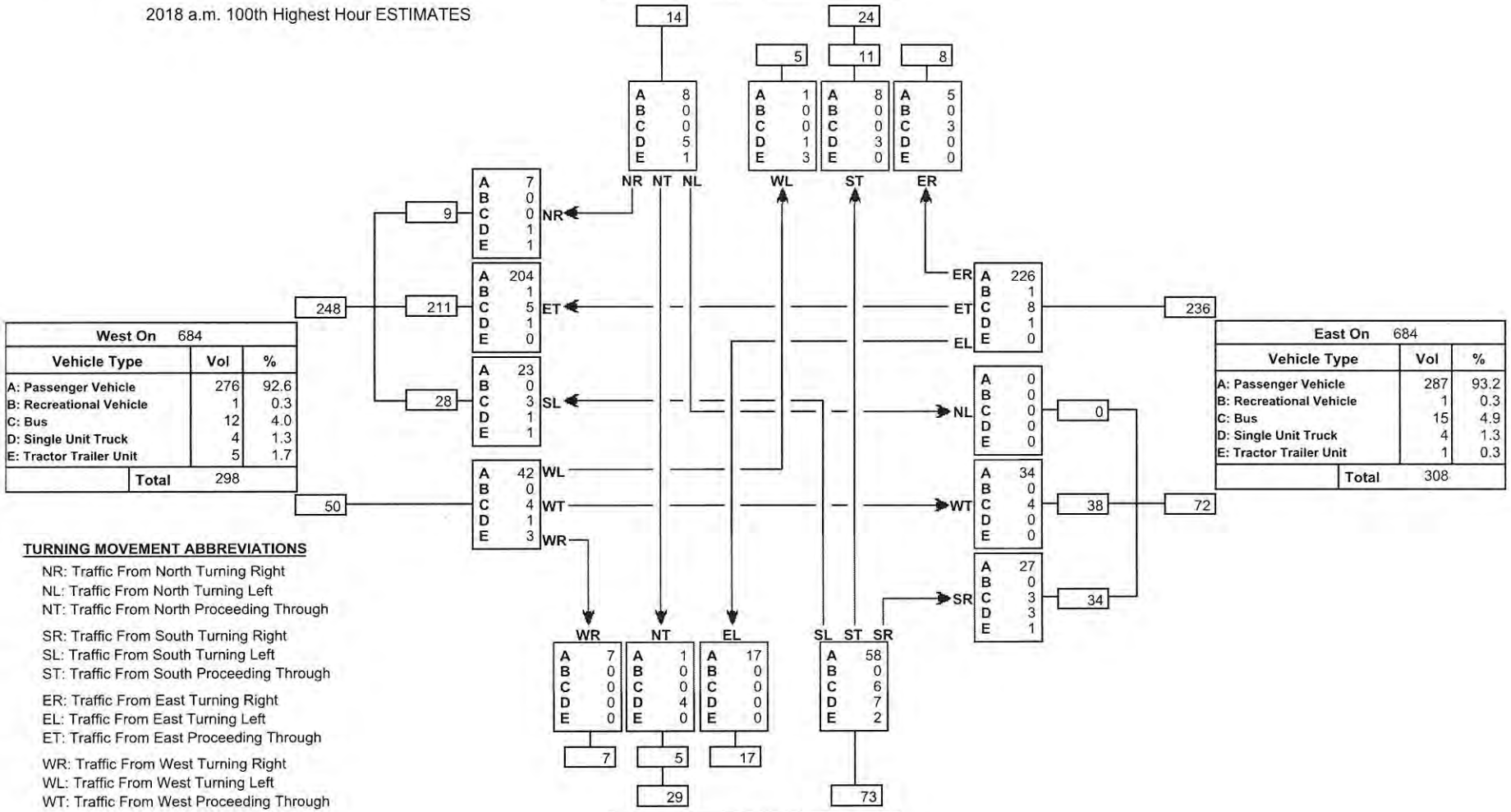
2018 a.m. 100th Highest Hour ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	22	57.9
B: Recreational Vehicle	0	0.0
C: Bus	3	7.9
D: Single Unit Truck	9	23.7
E: Tractor Trailer Unit	4	10.5
Total	38	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	276	92.6
B: Recreational Vehicle	1	0.3
C: Bus	12	4.0
D: Single Unit Truck	4	1.3
E: Tractor Trailer Unit	5	1.7
Total	298	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	287	93.2
B: Recreational Vehicle	1	0.3
C: Bus	15	4.9
D: Single Unit Truck	4	1.3
E: Tractor Trailer Unit	1	0.3
Total	308	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	83	81.4
B: Recreational Vehicle	0	0.0
C: Bus	6	5.9
D: Single Unit Truck	11	10.8
E: Tractor Trailer Unit	2	2.0
Total	102	



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Turning Movement Summary Diagram

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Intersection of:
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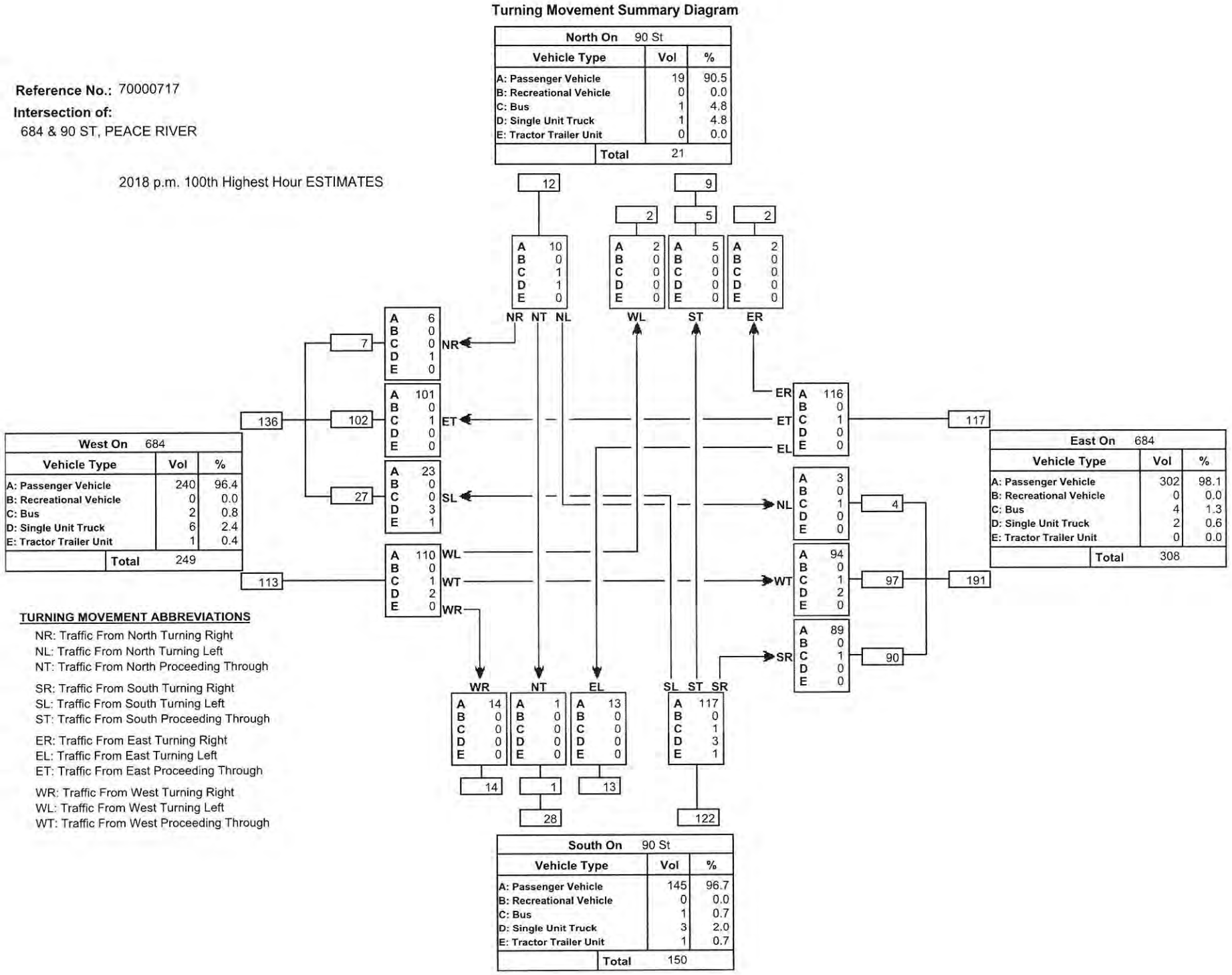
2018 p.m. 100th Highest Hour ESTIMATES



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Turning Movement Summary Diagram

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Intersection of:
684 & 90 ST, PEACE RIVER

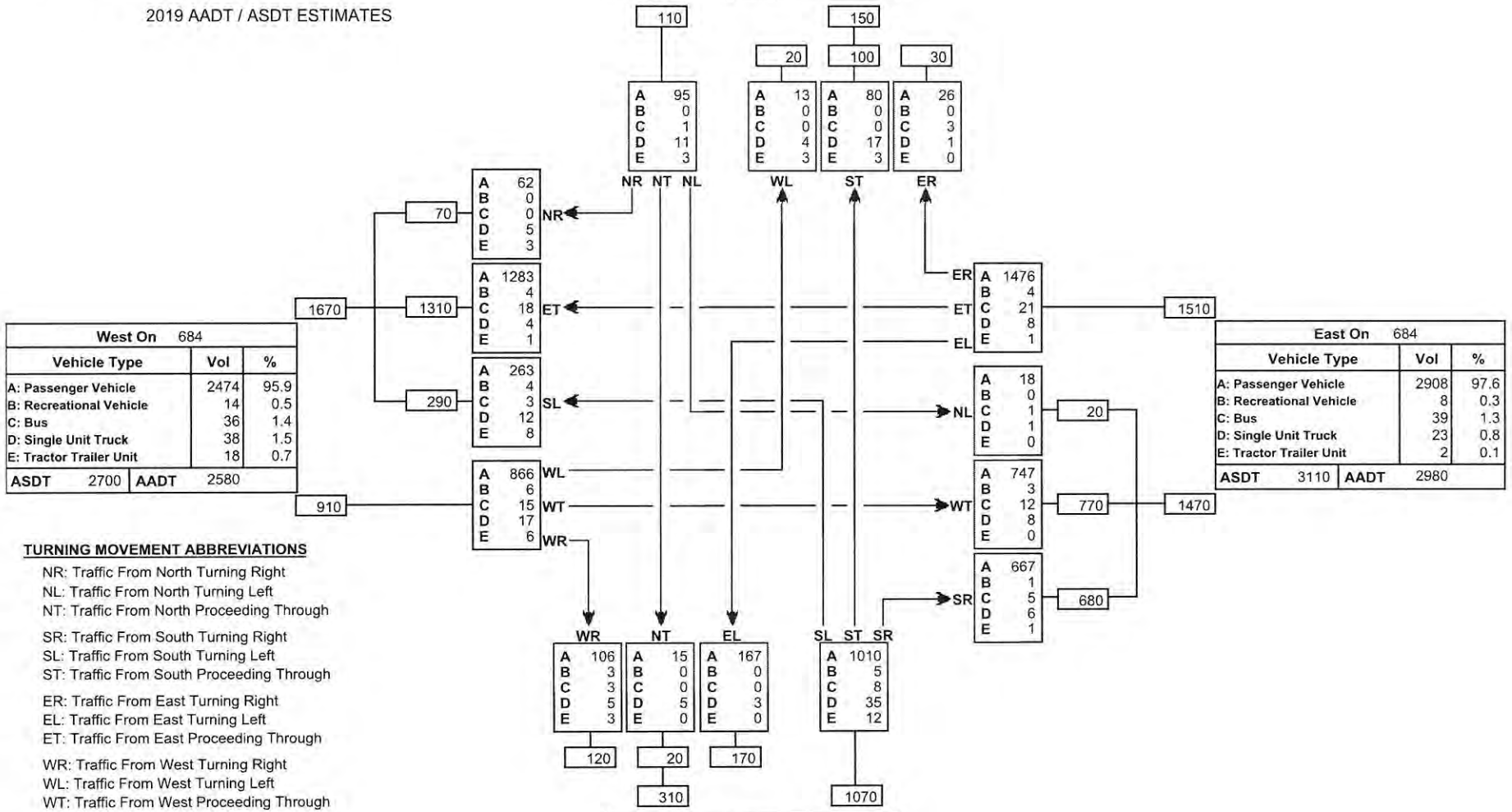
2019 AADT / ASDT ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	214	82.3
B: Recreational Vehicle	0	0.0
C: Bus	4	1.5
D: Single Unit Truck	33	12.7
E: Tractor Trailer Unit	9	3.5
ASDT 270	**AADT** 260	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	2474	95.9
B: Recreational Vehicle	14	0.5
C: Bus	36	1.4
D: Single Unit Truck	38	1.5
E: Tractor Trailer Unit	18	0.7
ASDT 2700	**AADT** 2580	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	2908	97.6
B: Recreational Vehicle	8	0.3
C: Bus	39	1.3
D: Single Unit Truck	23	0.8
E: Tractor Trailer Unit	2	0.1
ASDT 3110	**AADT** 2980	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	1298	94.1
B: Recreational Vehicle	8	0.6
C: Bus	11	0.8
D: Single Unit Truck	48	3.5
E: Tractor Trailer Unit	15	1.1
ASDT 1440	**AADT** 1380	



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Turning Movement Summary Diagram

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Intersection of:
684 & 90 ST, PEACE RIVER

2019 a.m. 100th Highest Hour ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	21	56.8
B: Recreational Vehicle	0	0.0
C: Bus	3	8.1
D: Single Unit Truck	9	24.3
E: Tractor Trailer Unit	4	10.8
Total	37	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	256	92.1
B: Recreational Vehicle	1	0.4
C: Bus	12	4.3
D: Single Unit Truck	4	1.4
E: Tractor Trailer Unit	5	1.8
Total	278	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	268	92.7
B: Recreational Vehicle	1	0.3
C: Bus	15	5.2
D: Single Unit Truck	4	1.4
E: Tractor Trailer Unit	1	0.3
Total	289	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	77	80.2
B: Recreational Vehicle	0	0.0
C: Bus	6	6.3
D: Single Unit Truck	11	11.5
E: Tractor Trailer Unit	2	2.1
Total	96	

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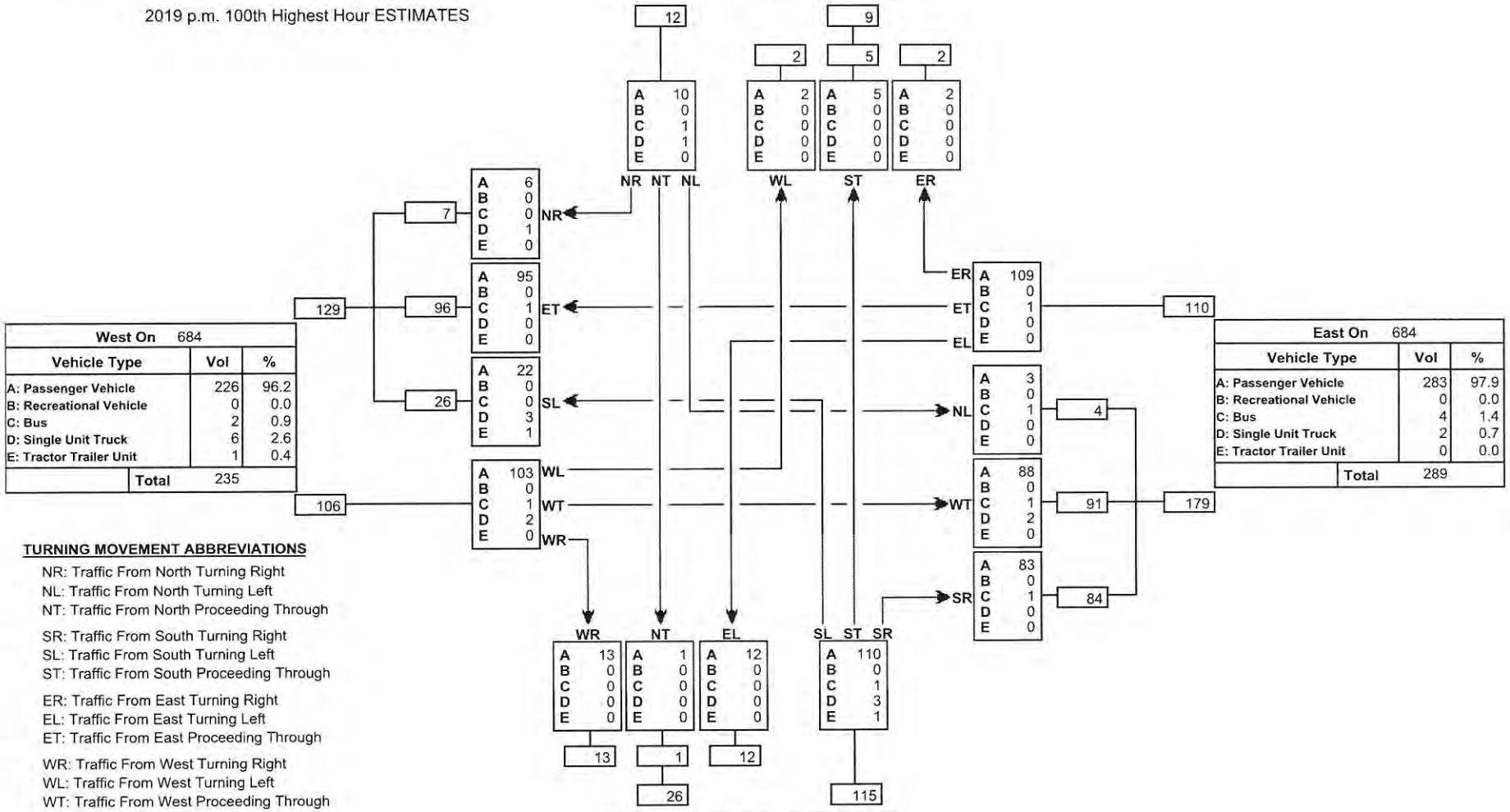
2019 p.m. 100th Highest Hour ESTIMATES

North On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	19	90.5
B: Recreational Vehicle	0	0.0
C: Bus	1	4.8
D: Single Unit Truck	1	4.8
E: Tractor Trailer Unit	0	0.0
Total	21	

West On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	226	96.2
B: Recreational Vehicle	0	0.0
C: Bus	2	0.9
D: Single Unit Truck	6	2.6
E: Tractor Trailer Unit	1	0.4
Total	235	

East On 684		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	283	97.9
B: Recreational Vehicle	0	0.0
C: Bus	4	1.4
D: Single Unit Truck	2	0.7
E: Tractor Trailer Unit	0	0.0
Total	289	

South On 90 St		
Vehicle Type	**Vol**	**%**
A: Passenger Vehicle	136	96.5
B: Recreational Vehicle	0	0.0
C: Bus	1	0.7
D: Single Unit Truck	3	2.1
E: Tractor Trailer Unit	1	0.7
Total	141	



TURNING MOVEMENT ABBREVIATIONS

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

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

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

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

Beairsto & Associates
ENGINEERING & SURVEY

APPENDIX B

TRIP GENERATION AND DISTRIBUTION DATA

Trip Generation Worksheet

Upper West Peace North

AADT Trip Generation

Phase	Lot / Block	Area (ha)	Area (ac)	1000Sq. Feet Floor Area	Dwelling Units	ITE Code	Ave Rate Trips/Unit	Average Two Way Trips	% Enter Trips	% Exit Trips	Enter Trips	Exit Trips
1	Lot 3 Block 31	1.00		5.5	-	814	44.32	243	50%	50%	122	122
	Lot 4 Block 31	0.63		3.5	18.0	230	2.50	45	50%	50%	23	23
	Total							**288**			**144**	**144**
2	Lot 1 Block 31	1.05		5.8	30.0	221	6.59	198	50%	50%	99	99
	Lot 2 Block 31	1.00		5.3	90.0	221	6.59	593	50%	50%	297	297
	Total							**791**			**395**	**395**
3	Future Development	9.02	22.3			411	1.59	35	50%	50%	18	18
	Total							**35**			**18**	**18**
Existing Residences		4.09			3.0	210	9.57	29	50%	50%	14	14
		0.41			7.0	221	6.59	46	50%	50%	23	23
		0.83			6.0	210	9.57	57	50%	50%	29	29
	Total							**132**			**66**	**66**
Total								**1247**			**623**	**623**

Beairsto and Associates Engineering Ltd.

Trip Generation Worksheet

Upper West Peace North
AM Trip Generation

Phase	Lot / Block	Area (ha)	Area (ac)	1000Sq. Feet Floor Area	Dwelling Units	ITE Code	Ave Rate Trips/Unit	Average Two Way Trips	% Enter Trips	% Exit Trips	Enter Trips	Exit Trips
1	Lot 3 Block 31	1.00		5.5	-	814	6.84	38	48%	52%	18	20
	Lot 4 Block 31	0.63		3.5	18.0	230	0.19	3	16%	84%	1	3
	Total							**41**			**19**	**22**
2	Lot 1 Block 31	1.05		5.8	30.0	221	0.51	15	20%	80%	3	12
	Lot 2 Block 31	1.00		5.2	90.0	221	0.51	46	20%	80%	9	37
	Total							**61**			**12**	**49**
3	Future Development	9.02	22.3			411	-	-	-	-	-	-
Existing Residences		4.09			3.0	210	2.08	6	30%	70%	2	4
		0.41			7.0	221	0.51	4	20%	80%	1	3
		0.83			6.0	210	2.08	12	30%	70%	4	9
	Total							**22**			**6**	**16**
Total								**125**			**37**	**87**

Beairsto and Associates Engineering Ltd.

Trip Generation Worksheet

Upper West Peace North

PM Trip Generation

Phase	Lot / Block	Area (ha)	Area (ac)	1000Sq. Feet Floor Area	Dwelling Units	ITE Code	Ave Rate Trips/Unit	Average Two Way Trips	% Enter Trips	% Exit Trips	Enter Trips	Exit Trips
1	Lot 3 Block 31	1.00		5.5	-	814	5.02	28	56%	44%	15	12
	Lot 4 Block 31	0.63		3.5	18.0	230	0.24	4	67%	33%	3	1
	Total							**32**			**18**	**14**
2	Lot 1 Block 31	1.05		5.8	30.0	221	0.62	19	64%	36%	12	7
	Lot 2 Block 31	1.00		5.3	90.0	221	0.62	56	64%	36%	36	20
	Total							**74**			**48**	**27**
3	Future Development	9.02	22.3			411	-	-	-	-	-	-
Existing Residences		4.09			3.0	210	2.73	8	66%	34%	5	3
		0.41			7.0	221	0.62	4	64%	36%	3	2
		0.83			6.0	210	2.73	16	66%	34%	11	6
	Total							**29**			**19**	**10**
Total								**135**			**85**	**50**

Beairsto and Associates Engineering Ltd.

Old Highway 2 @ Secondary Hwy 684
2020 Traffic

	Old Hwy 2 From North			Shaftesbury Trail From East			Old Hwy 2 From South			Shaftesbury Trail From West		
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
AM Peak Hour	2	2	0	0	142	32	21	8	22	4	18	1
PM Peak Hour	16	3	0	0	71	18	93	3	28	6	73	5
AADT	90	25	0	0	1065	250	570	55	250	50	455	30

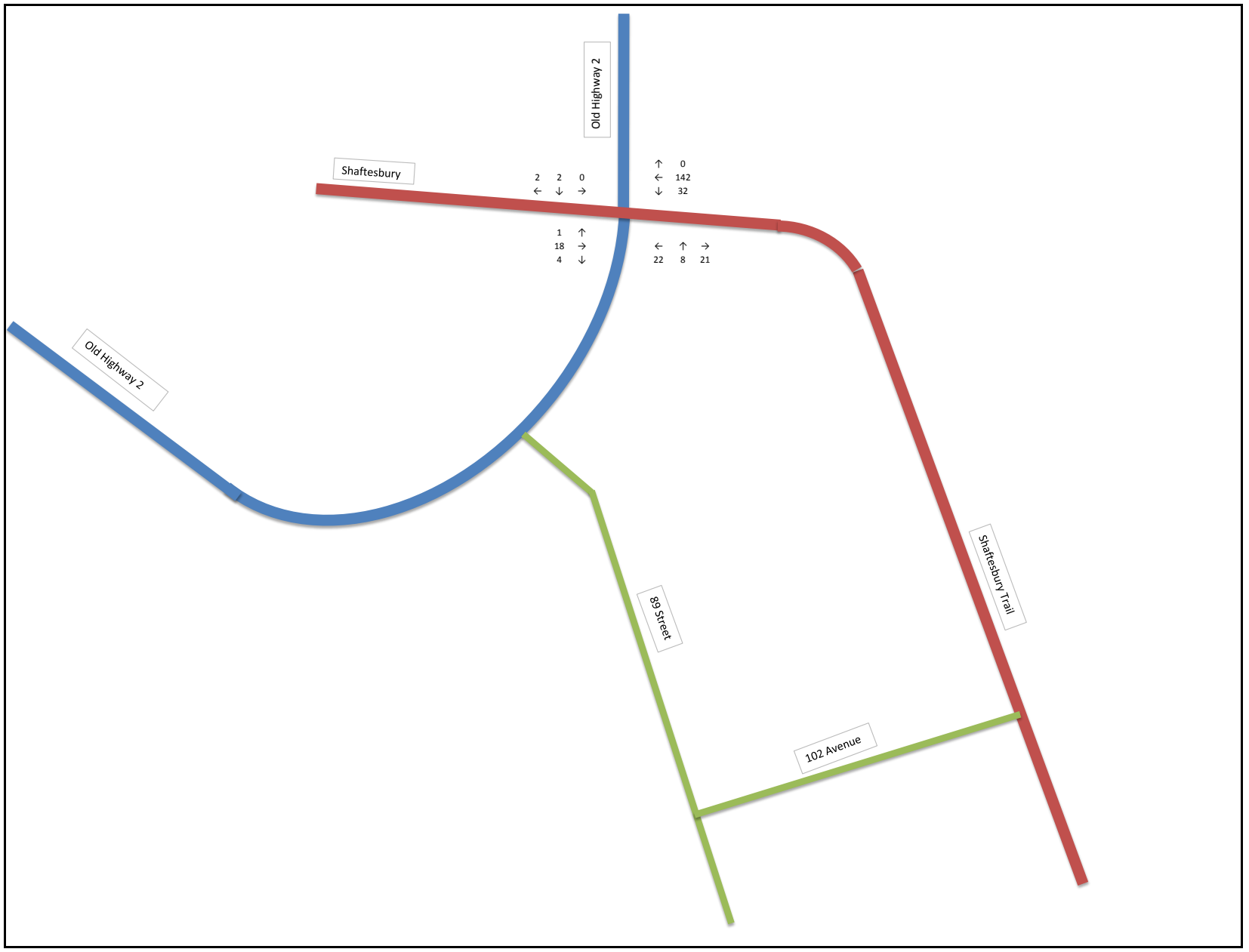
Old Highway 2 @ Secondary Hwy 684
Projected 2030 Traffic (2.5% Growth)

	Old Hwy 2 From North			Shaftesbury Trail From East			Old Hwy 2 From South			Shaftesbury Trail From West		
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
AM Peak Hour	3	3	0	0	182	41	27	10	28	5	23	1
PM Peak Hour	20	4	0	0	91	23	119	4	36	8	93	6
AADT	115	32	0	0	1363	320	730	70	320	64	582	38

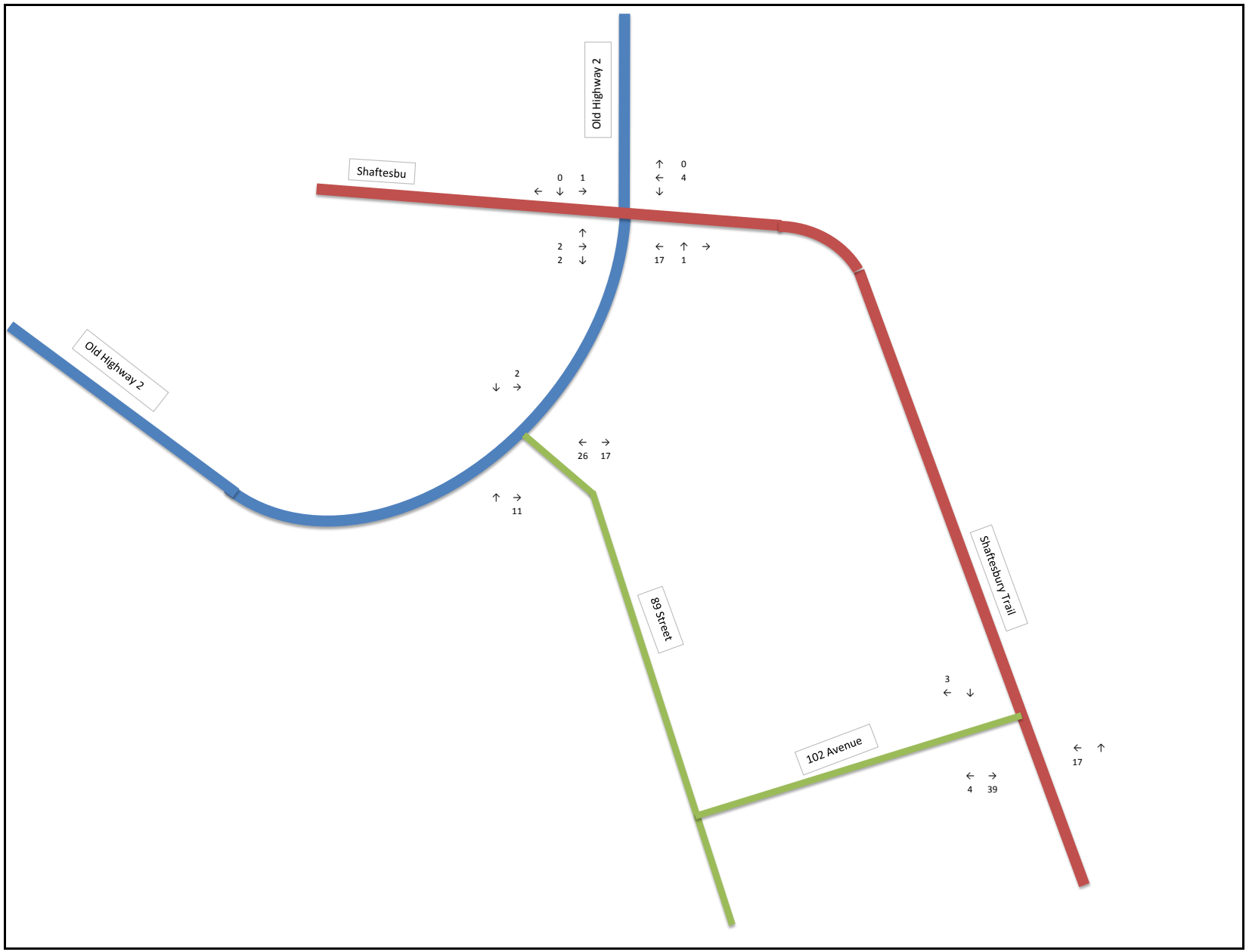
Old Highway 2 @ Secondary Hwy 684
Projected 2050 Traffic (2.5% Growth)

	Old Hwy 2 From North			Shaftesbury Trail From East			Old Hwy 2 From South			Shaftesbury Trail From West		
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
AM Peak Hour	4	4	0	0	298	67	44	17	46	8	38	2
PM Peak Hour	34	6	0	0	149	38	195	6	59	13	153	10
AADT	189	52	0	0	2234	524	1196	115	524	105	954	63

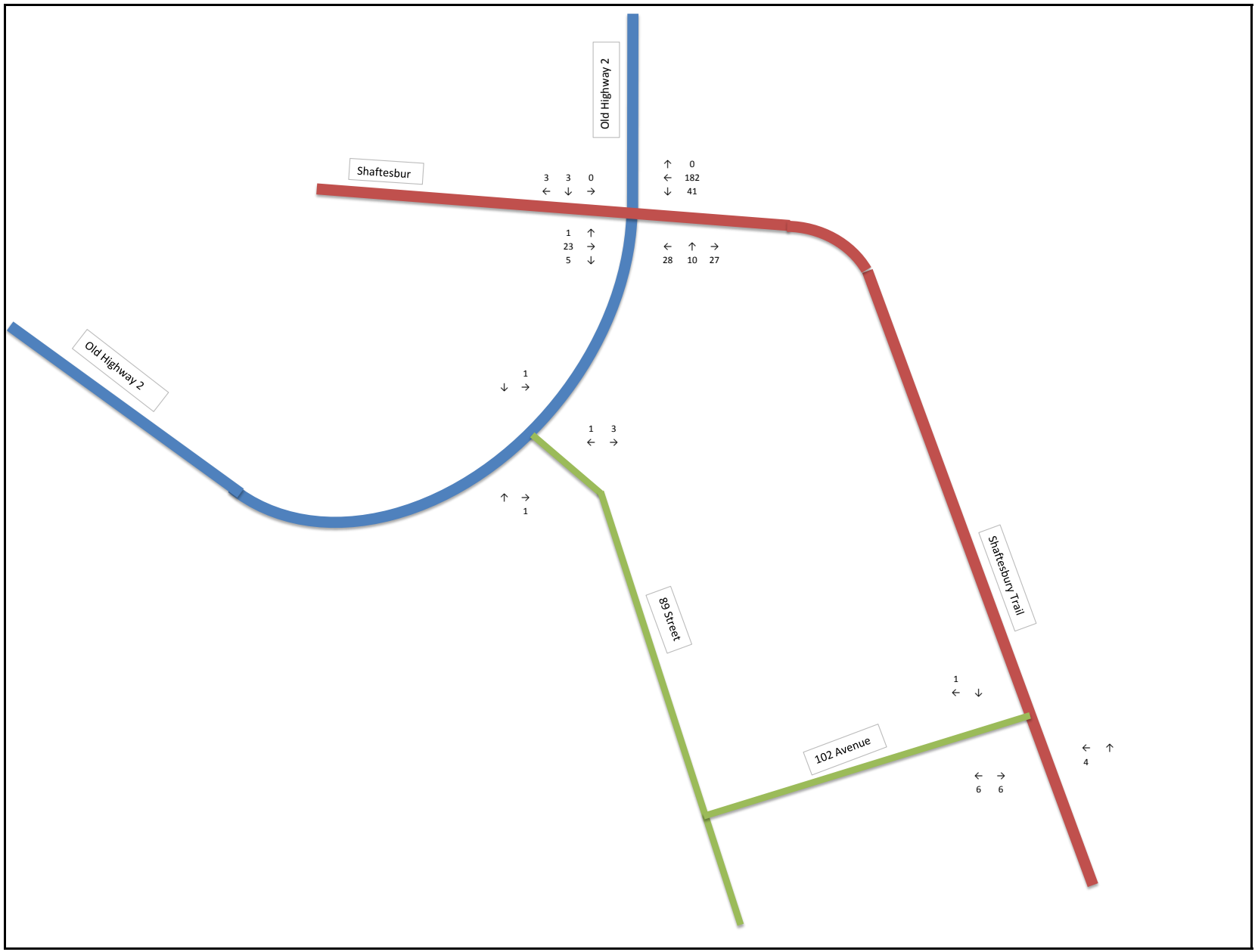
2020 AM Background Traffic



AM Development Traffic



2030 AM Background Traffic



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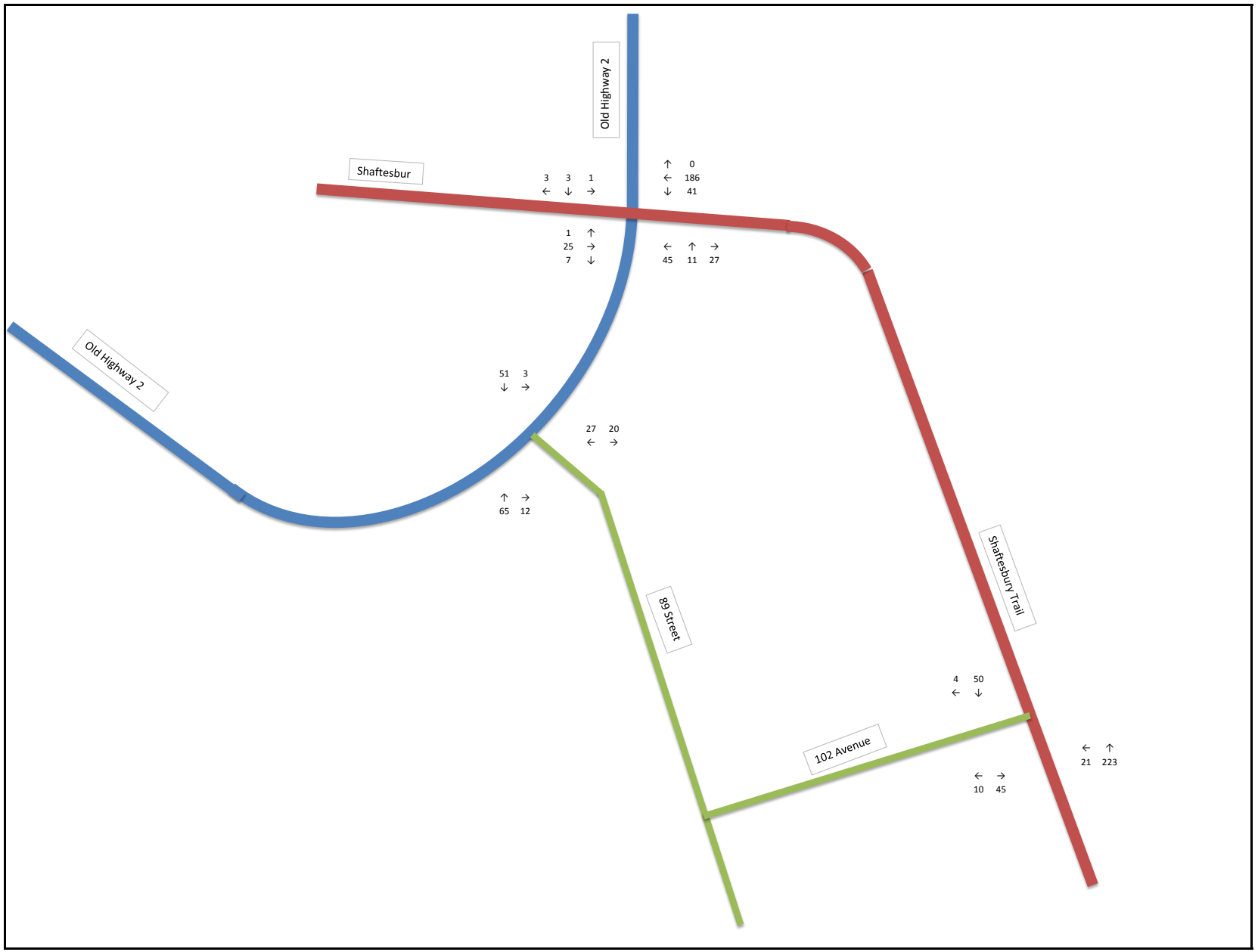

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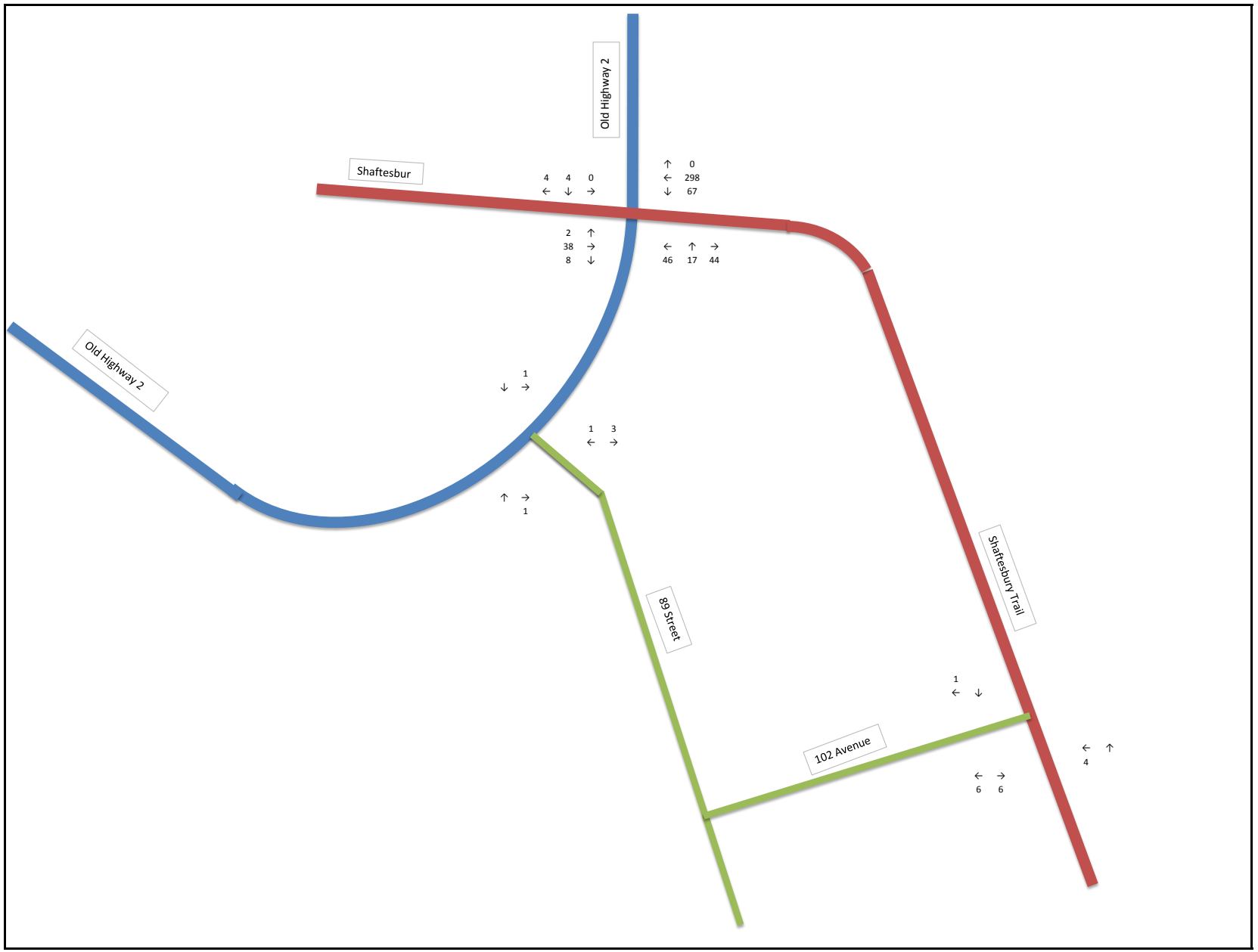

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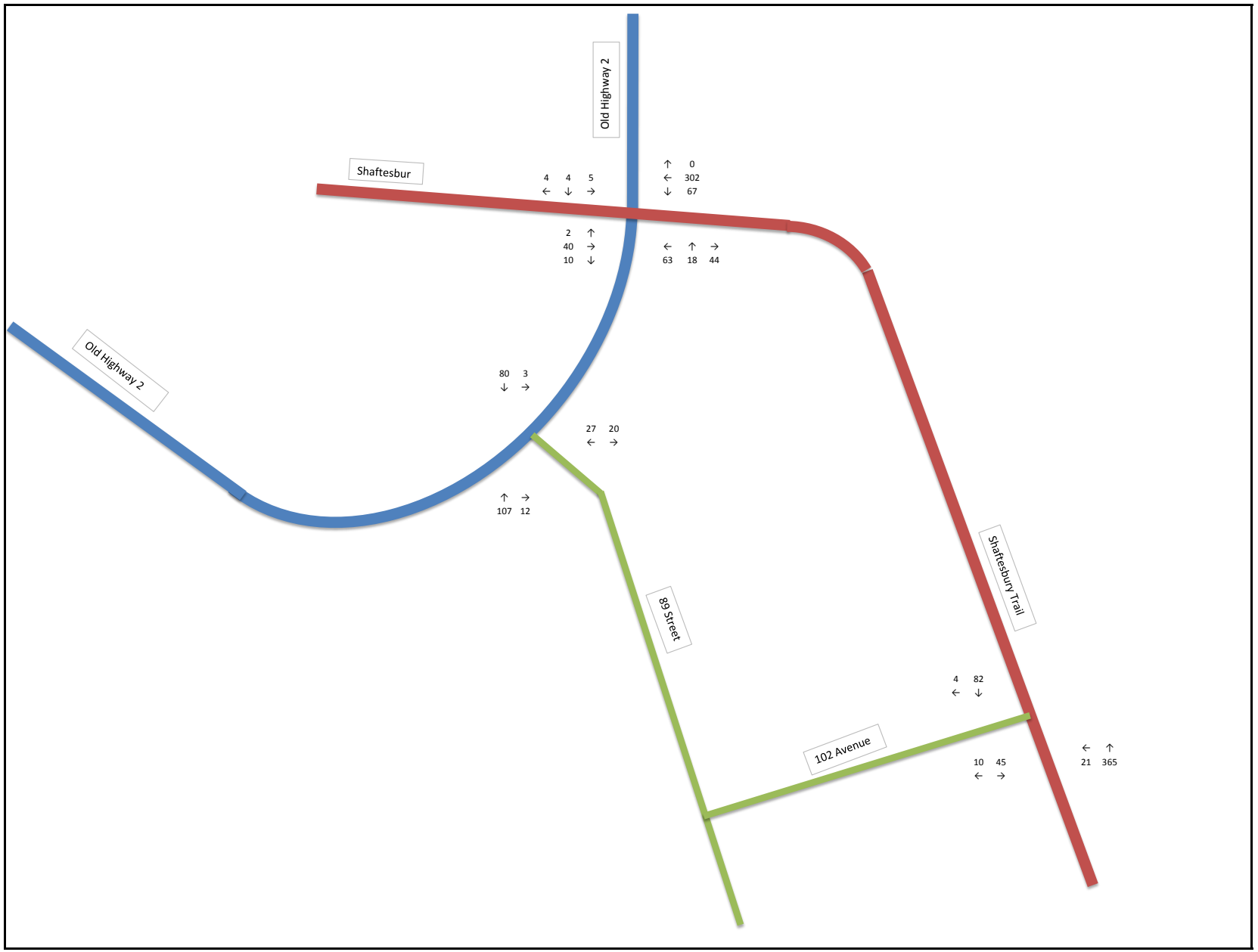
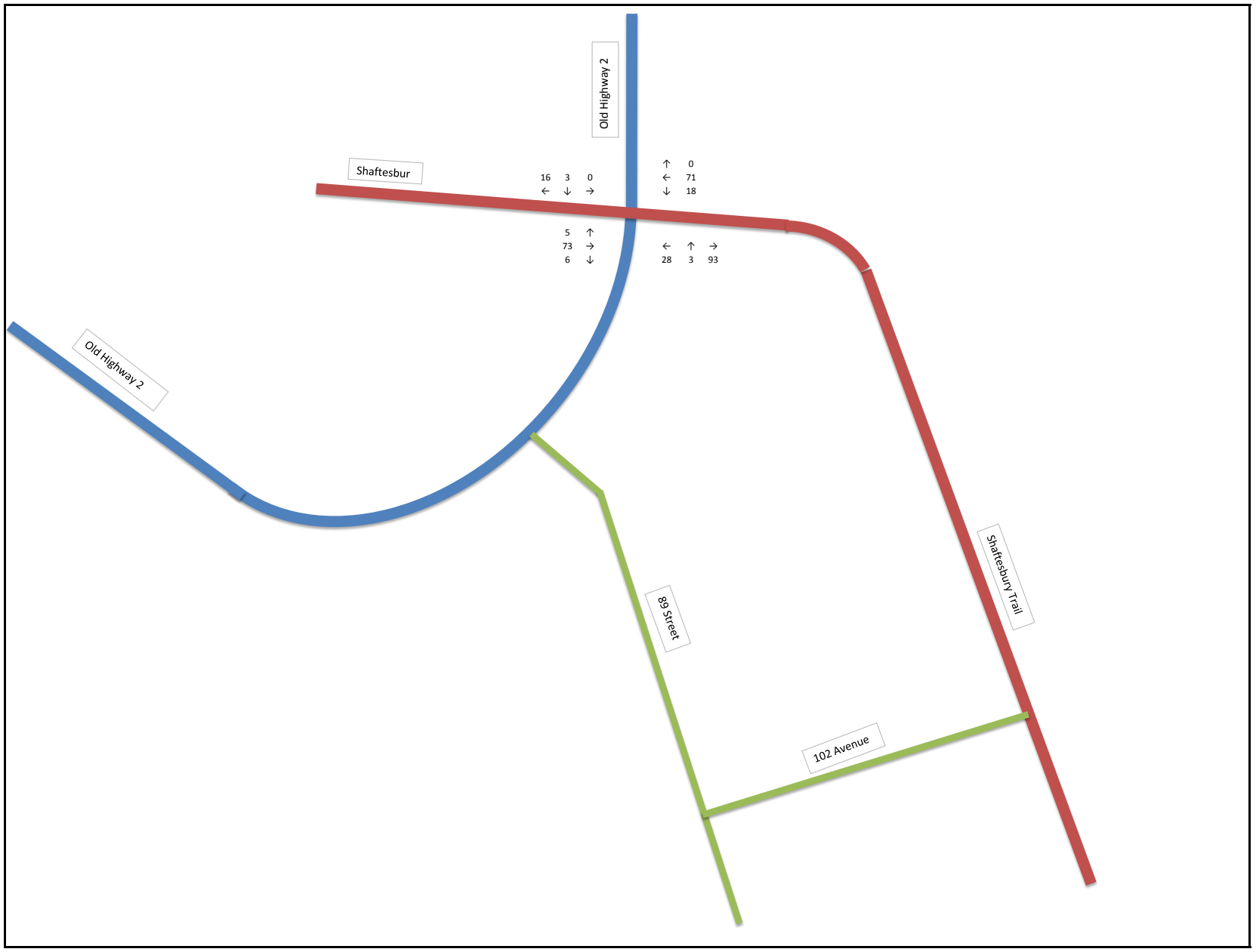
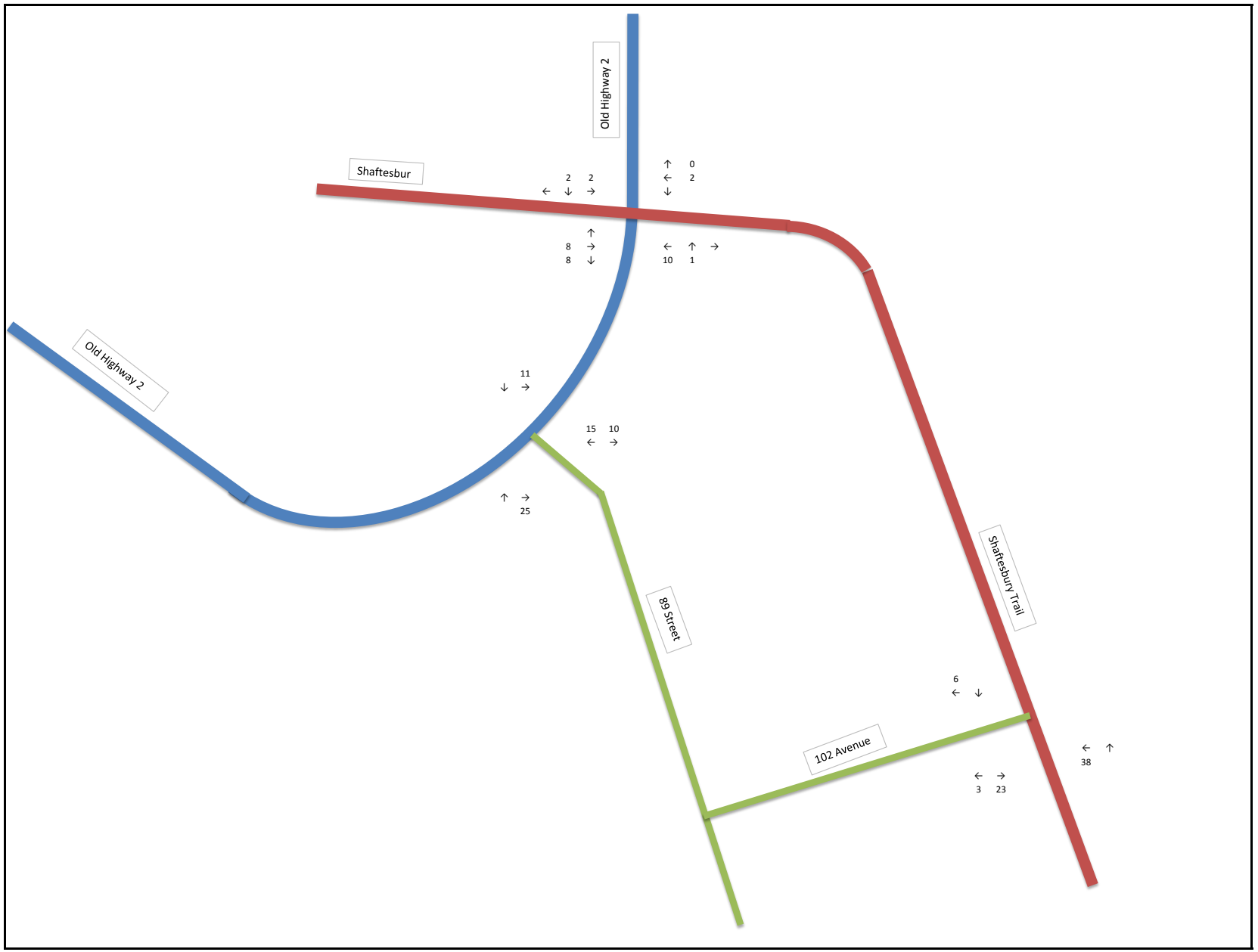


2020 PM Background Traffic



PM Development Traffic



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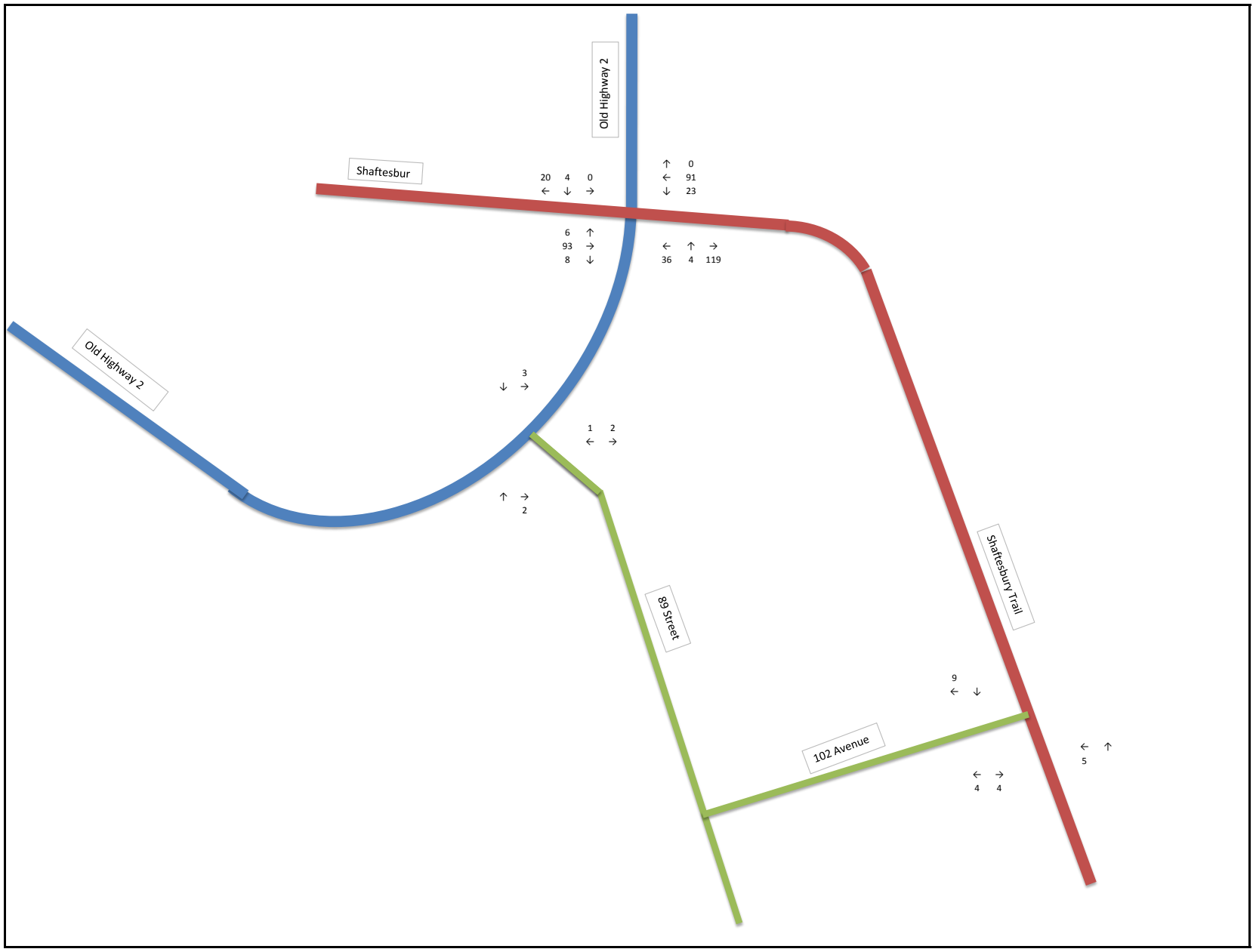

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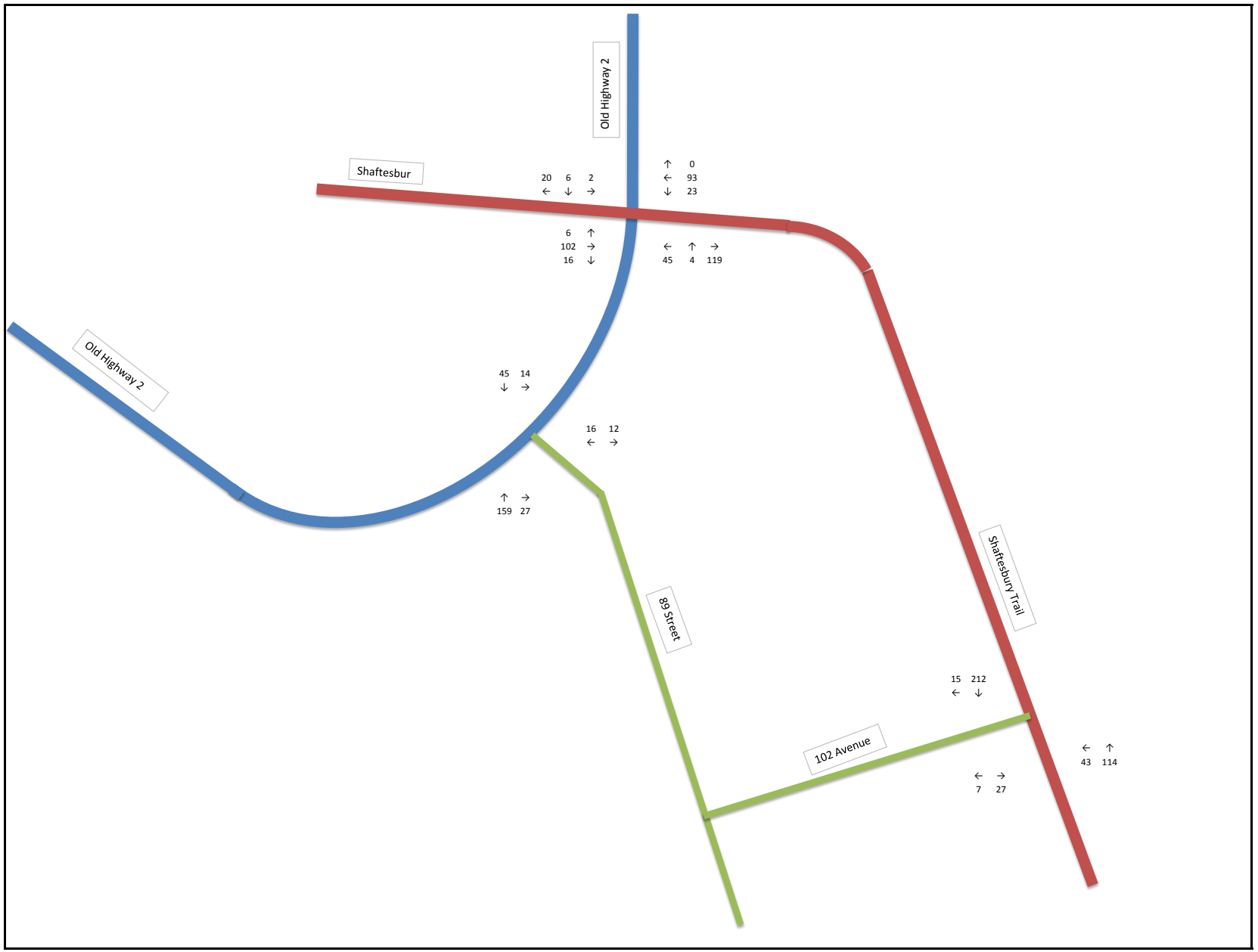

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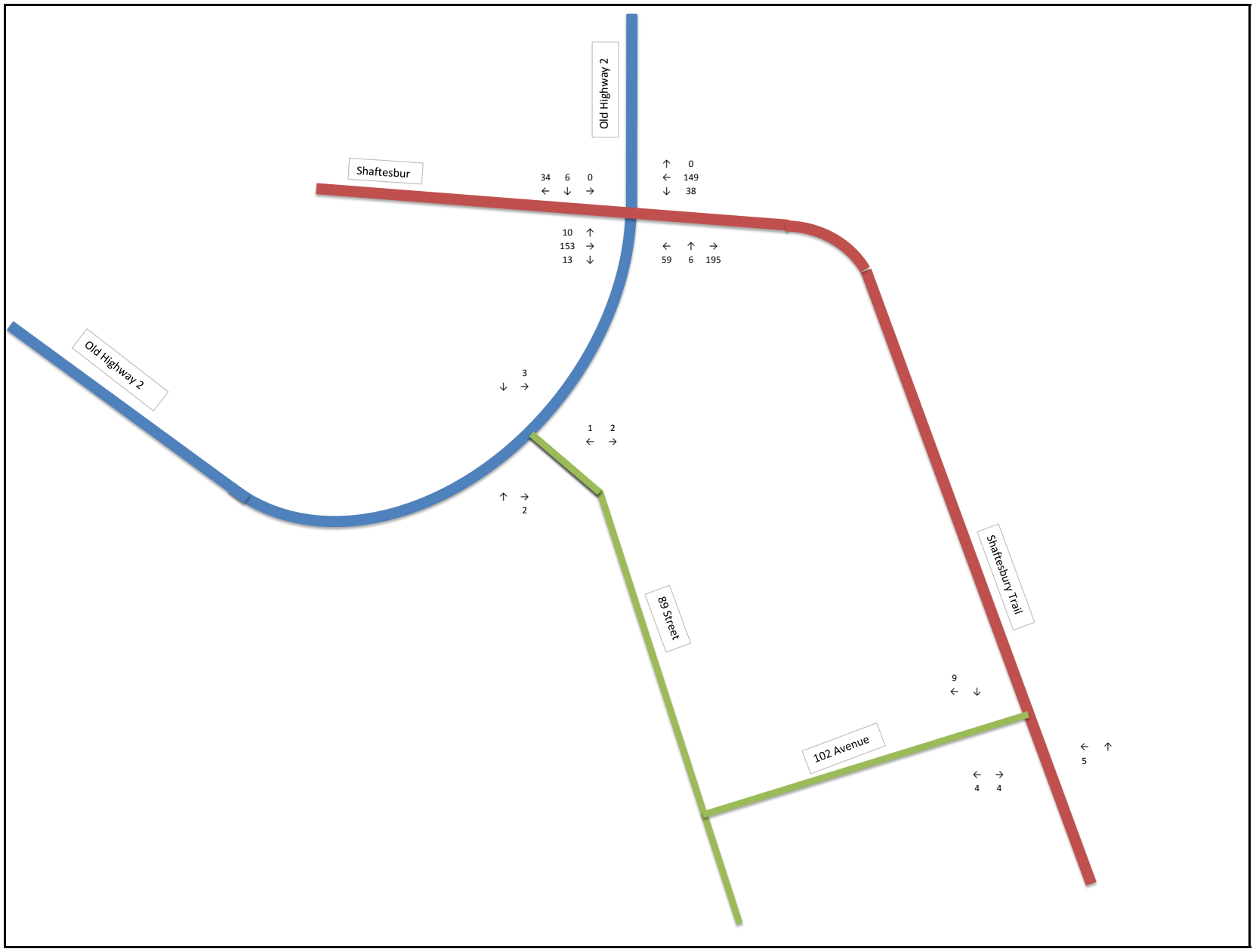

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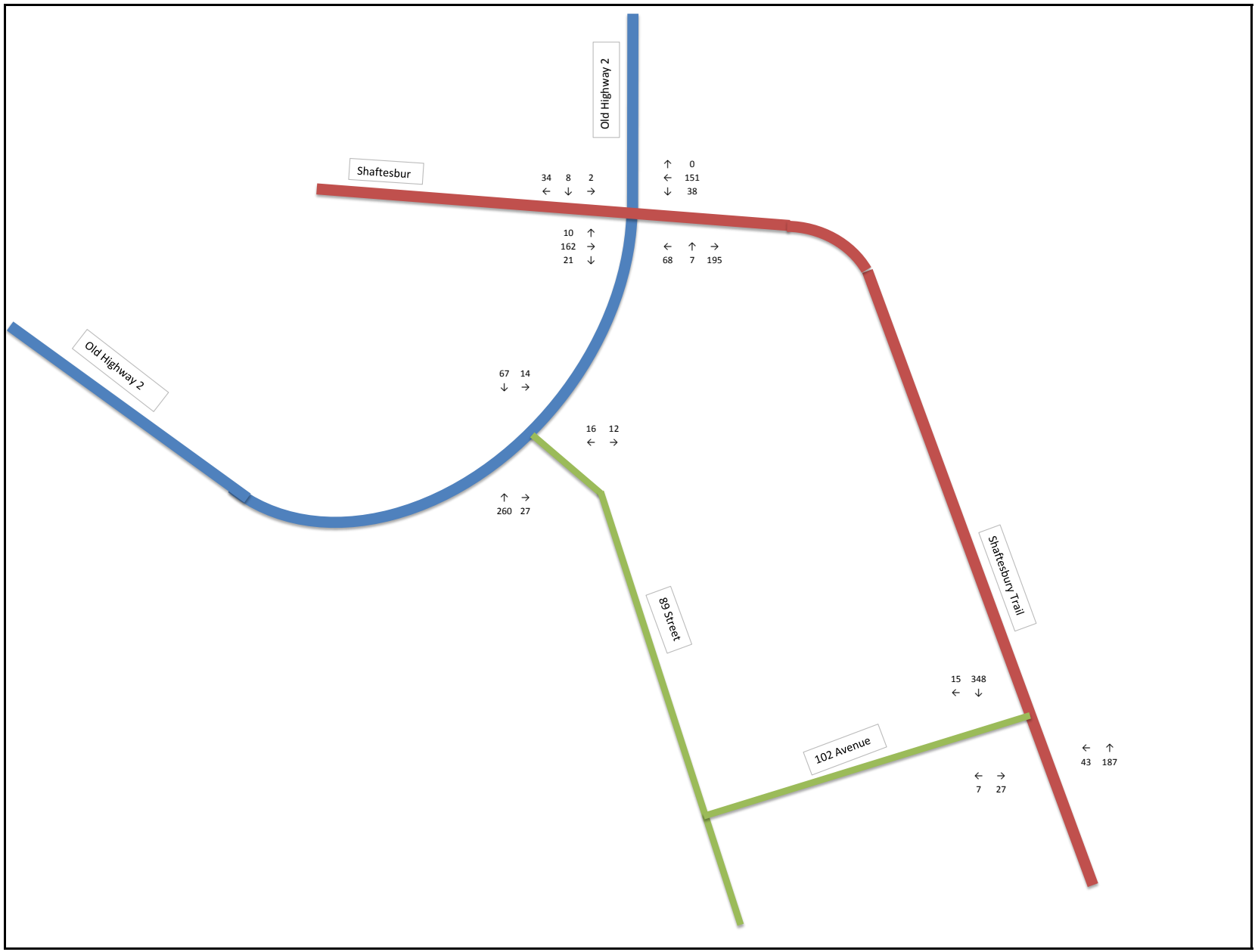
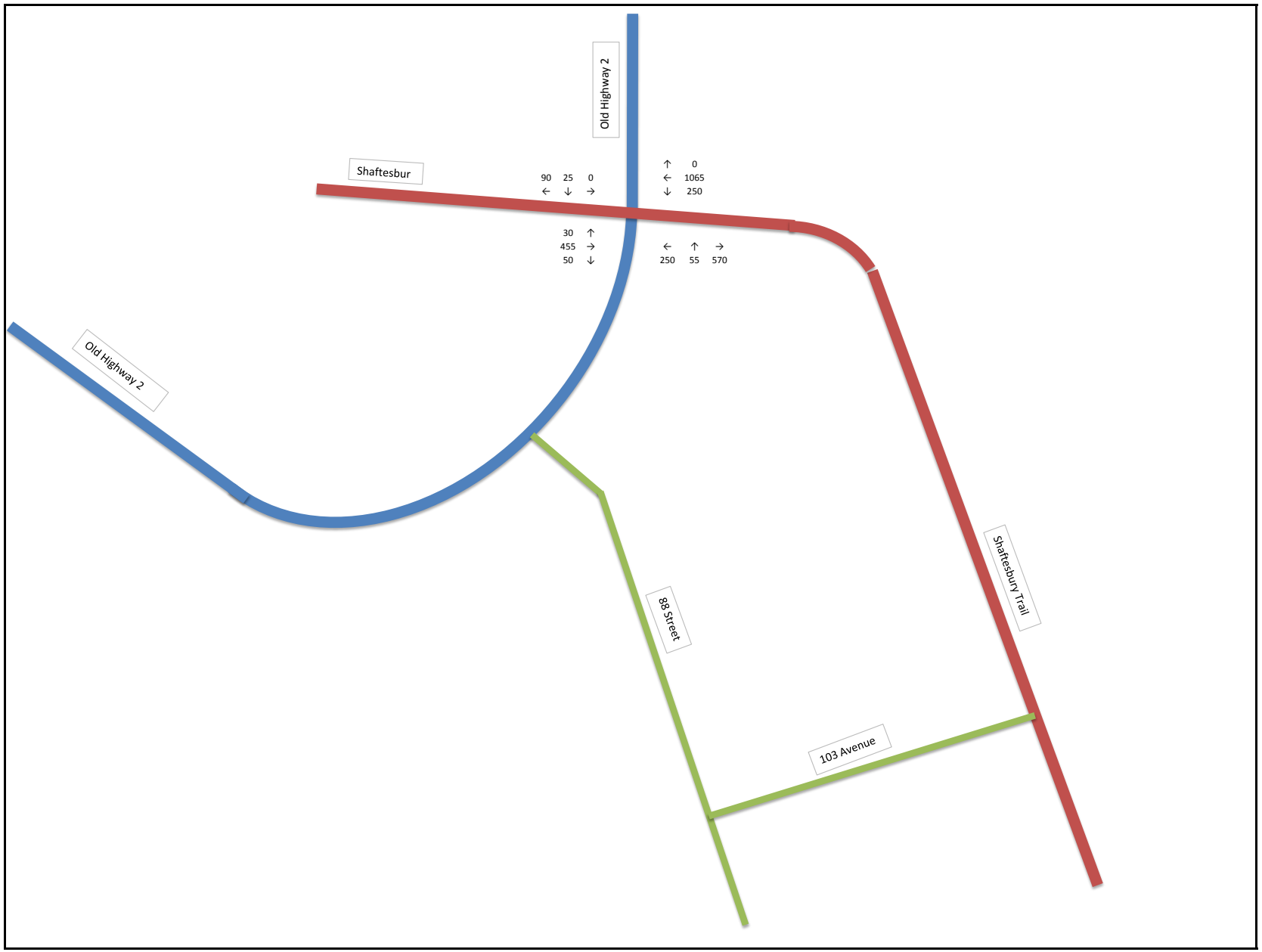
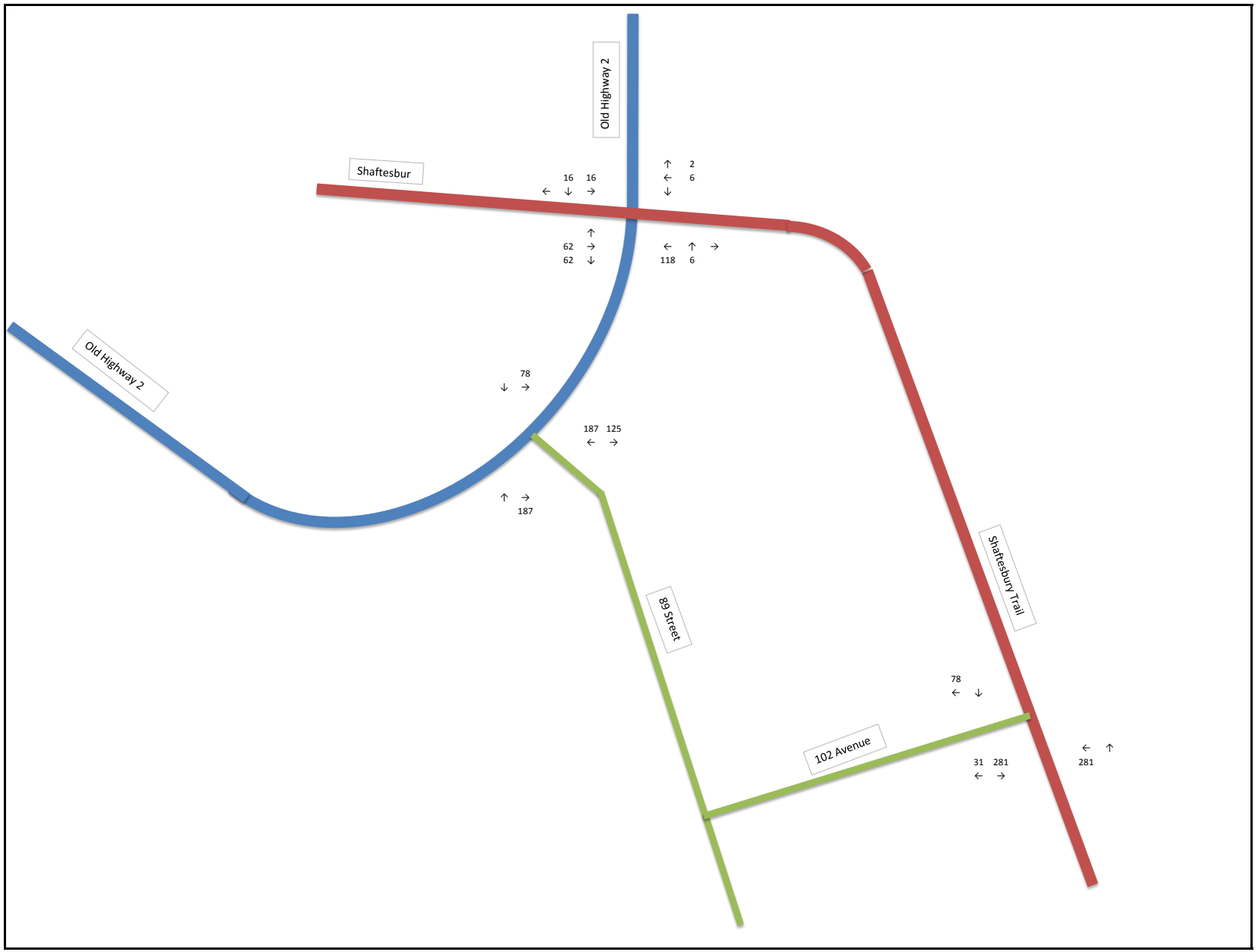


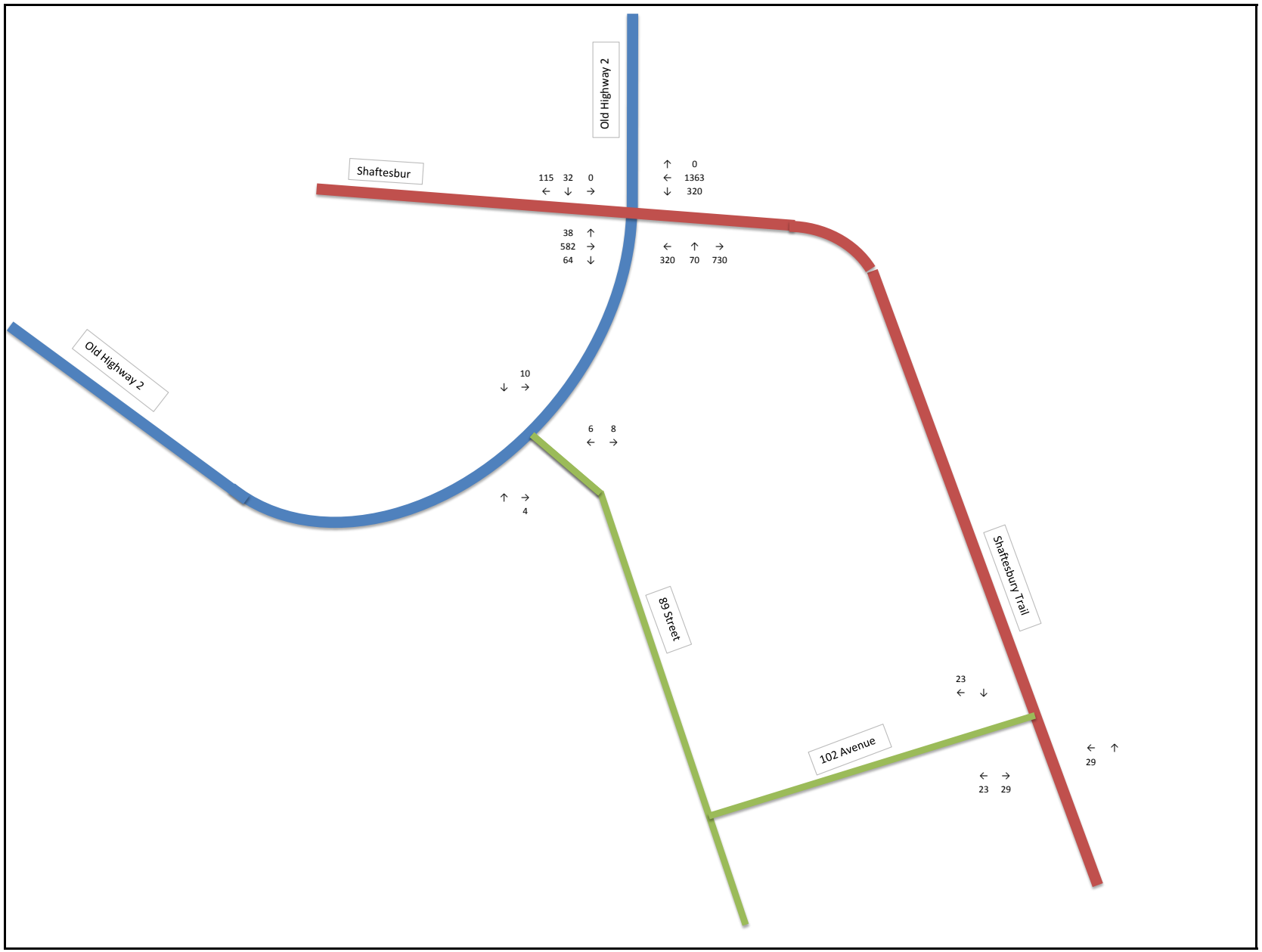
2020 Background AADT



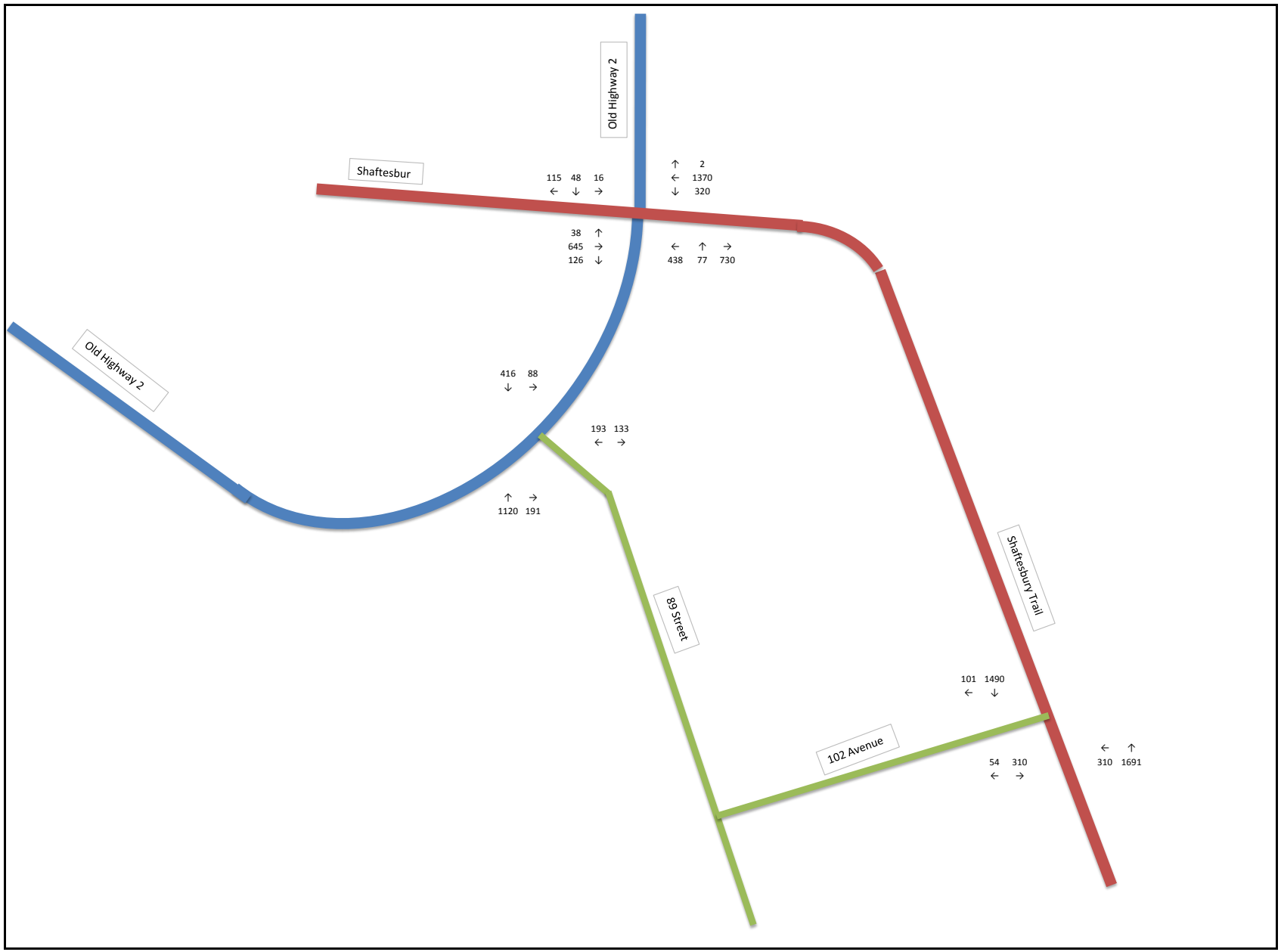
AADT Development Traffic



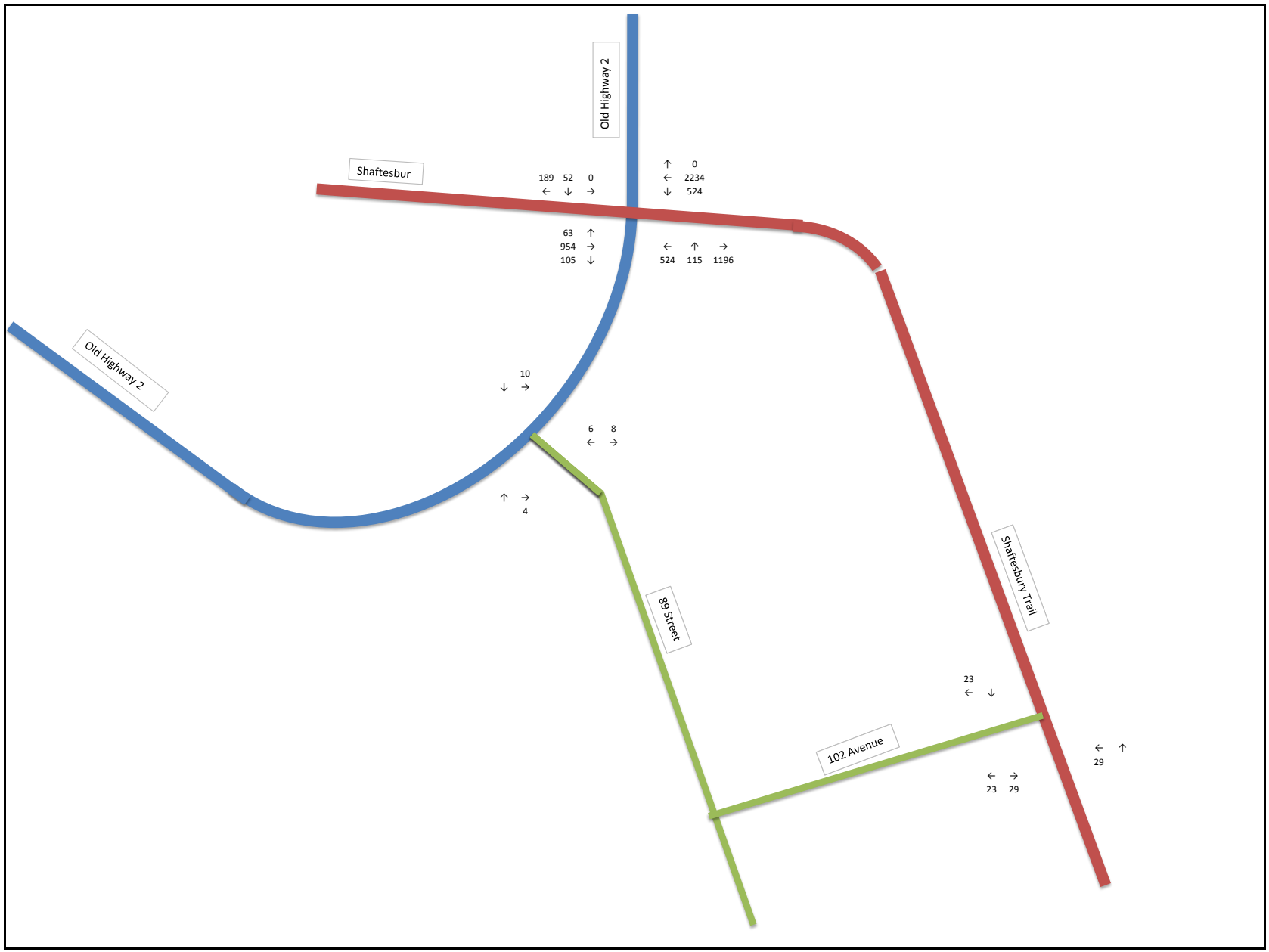
2030 Background AADT



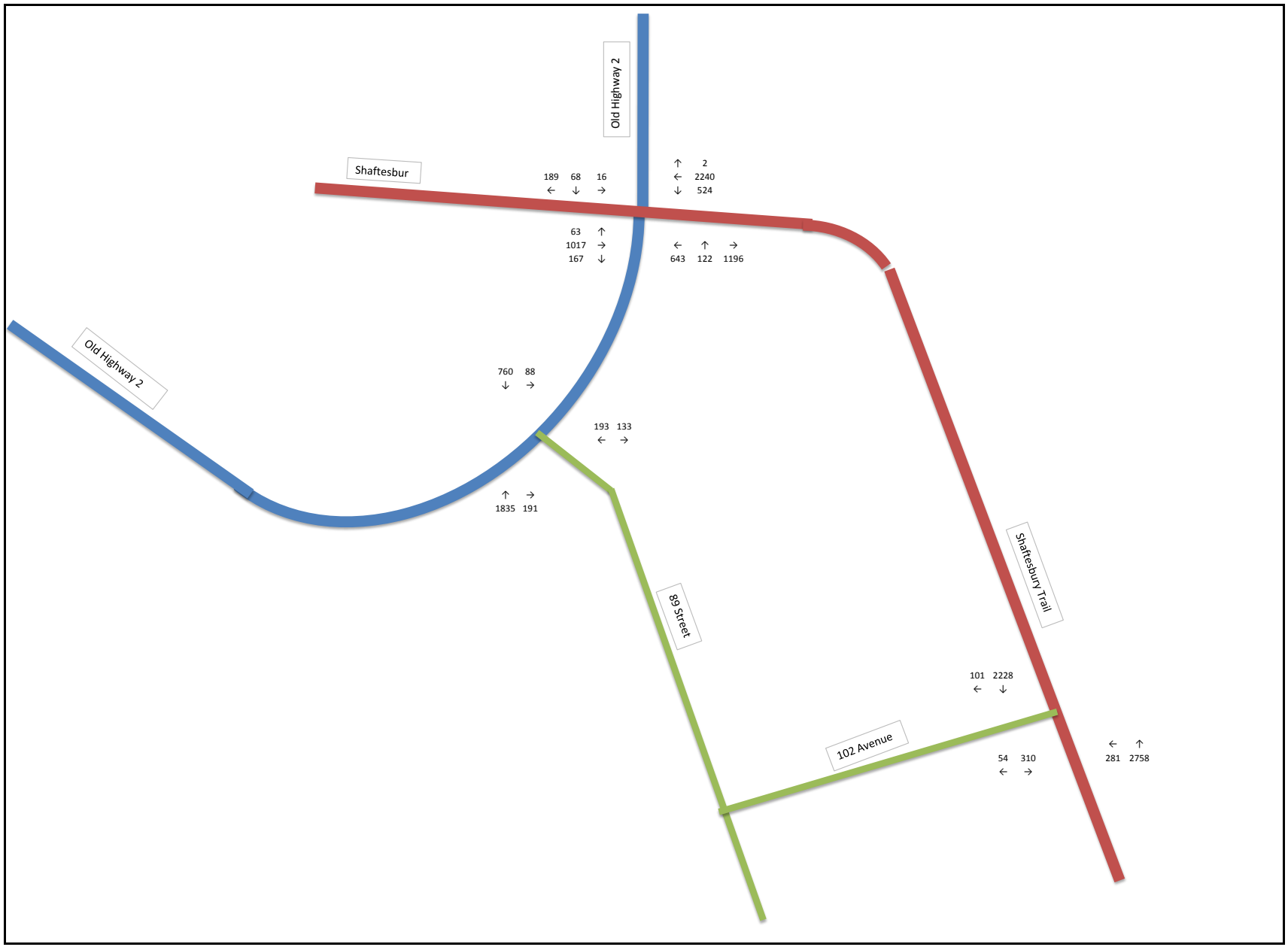
2030 AADT Total Traffic



2050 Background AADT



2050 AADT Total Traffic



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APPENDIX C

ALBERTA TRANSPORTATION TURNING WARRANTS

Turning Warrants Worksheet

Left Turn Warrants

Highway 684 (Shaftesbury Trail) / Old Highway 2					
Westbound Scenario	**VL**	**Va**	**VL/Va**	**Vo**	**Left Turn Warrant**
Background AM	32	174	18	84	-
Background PM	18	89	20	23	-
2030 AM	41	227	18	33	-
2030 PM	23	116	20	125	Type II
2050 AM	67	369	18	52	-
2050 PM	38	189	20	193	Type II

Old Highway 2 / Highway 684 (Shaftesbury Trail)					
Northbound Scenario	**VL**	**Va**	**VL/Va**	**Vo**	**Left Turn Warrant**
Background AM	22	51	43	4	-
Background PM	28	124	23	19	-
2030 AM	45	83	54	6	-
2030 PM	45	169	27	29	-
2050 AM	63	124	50	14	-
2050 PM	68	270	25	44	-

Highway 684 (Shaftesbury Trail) / 102 Avenue					
Northbound Scenario	**VL**	**Va**	**VL/Va**	**Vo**	**Left Turn Warrant**
2030 AM	21	243	9	54	-
2030 PM	43	157	28	227	Type II
2050 AM	21	386	5	86	-
2050 PM	43	230	19	363	Type II

Old Highway 2 / 89 Street					
Westbound Scenario	**VL**	**Va**	**VL/Va**	**Vo**	**Left Turn Warrant**
2030 AM	3	54	6	77	None
2030 PM	14	59	23	186	Type II
2050 AM	3	83	4	186	Type II
2050 PM	14	81	17	288	Type II

Turning Warrants Worksheet

Right Turn Warrants

Old Highway 2 / Highway 684 (Shaftesbury Trail) Connection				
Scenario	**Main Road**	**Local Road**	**Right Turn**	**Right Turn**
Background	1850	990	570	Required
2030	2501	1423	730	Required
2050	4013	2232	1196	Required

Right Turn Warrants

Highway 684 / 102 Avenue Connection				
Scenario	**Main Road**	**Local Road**	**Right Turn**	**Right Turn**
2030	3591	364	101	Not Required
2050	5368	364	101	Not Required

Right Turn Warrants

Old Highway 2 / 89 Street Connection				
Scenario	**Main Road**	**Local Road**	**Right Turn**	**Right Turn**
2030	1815	326	191	Not Required
2050	2874	326	191	Not Required

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APPENDIX D

SYNCHRO & SIMTRAFFIC REPORTS

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	260	17	7	64	16	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	283	18	8	70	17	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			301		377	292
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			301		377	292
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			99		97	99
cM capacity (veh/h)			1243		615	733

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	301	8	70	28
Volume Left	0	8	0	17
Volume Right	18	0	0	11
cSH	1700	1243	1700	656
Volume to Capacity	0.18	0.01	0.04	0.04
Queue Length 95th (m)	0.0	0.1	0.0	1.1
Control Delay (s)	0.0	7.9	0.0	10.7
Lane LOS		A		B
Approach Delay (s)	0.0	0.8		10.7
Approach LOS				B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	24.7%	ICU Level of Service	A
Analysis Period (min)	15		

1: Old Highway 2 & 89 Street Performance by movement

Movement	EBT	EBR	WBT	NBR	All
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0
Delay / Veh (s)	1.3	0.1	0.1	1.9	0.8
Total Stops	0	0	0	2	2
Travel Dist (km)	5.4	1.7	5.3	0.6	13.0
Travel Time (hr)	0.1	0.0	0.1	0.0	0.3
Avg Speed (kph)	47	41	48	38	46
Fuel Used (l)	1.4	0.4	1.6	0.1	3.5
HC Emissions (g)	1	0	1	0	2
CO Emissions (g)	43	9	32	7	92
NOx Emissions (g)	3	1	2	0	6
Vehicles Entered	10	4	8	2	24
Vehicles Exited	11	3	7	2	23
Hourly Exit Rate	66	18	42	12	138
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Total Delay (hr)	0.0
Delay / Veh (s)	2.7
Total Stops	2
Travel Dist (km)	26.9
Travel Time (hr)	0.6
Avg Speed (kph)	47
Fuel Used (l)	5.1
HC Emissions (g)	3
CO Emissions (g)	119
NOx Emissions (g)	9
Vehicles Entered	24
Vehicles Exited	23
Hourly Exit Rate	138
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Old Highway 2 & 89 Street

Movement	NB
Directions Served	LR
Maximum Queue (m)	8.3
Average Queue (m)	1.7
95th Queue (m)	7.2
Link Distance (m)	284.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	65	14	2	51	17	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	71	15	2	55	18	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			86		138	78
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			86		138	78
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		98	99
cM capacity (veh/h)			1492		847	966

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	86	2	55	32
Volume Left	0	2	0	18
Volume Right	15	0	0	13
cSH	1700	1492	1700	892
Volume to Capacity	0.05	0.00	0.03	0.04
Queue Length 95th (m)	0.0	0.0	0.0	0.9
Control Delay (s)	0.0	7.4	0.0	9.2
Lane LOS		A		A
Approach Delay (s)	0.0	0.3		9.2
Approach LOS				A

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	14.3%	ICU Level of Service	A
Analysis Period (min)	15		

1: Old Highway 2 & 89 Street Performance by movement

Movement	EBT	EBR	WBT	NBL	NBR	All
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Delay / Veh (s)	0.6	0.1	1.6	4.0	2.3	1.2
Total Stops	0	0	0	3	3	6
Travel Dist (km)	9.7	1.5	6.7	0.9	1.1	19.9
Travel Time (hr)	0.2	0.0	0.1	0.0	0.0	0.4
Avg Speed (kph)	48	45	46	35	37	45
Fuel Used (l)	2.7	0.2	0.9	0.2	0.2	4.2
HC Emissions (g)	1	0	1	0	0	3
CO Emissions (g)	61	10	35	5	11	123
NOx Emissions (g)	4	1	2	0	1	8
Vehicles Entered	18	3	10	3	4	38
Vehicles Exited	19	3	9	3	3	37
Hourly Exit Rate	114	18	54	18	18	222
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0

Total Network Performance

Total Delay (hr)	0.0
Delay / Veh (s)	4.5
Total Stops	6
Travel Dist (km)	45.2
Travel Time (hr)	1.0
Avg Speed (kph)	46
Fuel Used (l)	6.9
HC Emissions (g)	4
CO Emissions (g)	172
NOx Emissions (g)	12
Vehicles Entered	38
Vehicles Exited	38
Hourly Exit Rate	228
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Old Highway 2 & 89 Street

Movement	NB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	6.9
95th Queue (m)	12.6
Link Distance (m)	284.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	159	17	2	41	16	10
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	173	18	2	45	17	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			191		231	182
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			191		231	182
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		98	99
cM capacity (veh/h)			1364		749	845

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	191	2	45	28
Volume Left	0	2	0	17
Volume Right	18	0	0	11
cSH	1700	1364	1700	784
Volume to Capacity	0.11	0.00	0.03	0.04
Queue Length 95th (m)	0.0	0.0	0.0	0.9
Control Delay (s)	0.0	7.6	0.0	9.8
Lane LOS		A		A
Approach Delay (s)	0.0	0.4		9.8
Approach LOS				A

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	19.4%	ICU Level of Service	A
Analysis Period (min)	15		

1: Old Highway 2 & 89 Street Performance by movement

Movement	EBT	EBR	WBT	NBL	NBR	All
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0
Delay / Veh (s)	0.5	0.1	0.5	4.0	2.5	1.1
Total Stops	0	0	0	4	4	8
Travel Dist (km)	9.3	2.1	5.7	0.9	1.4	19.3
Travel Time (hr)	0.2	0.0	0.1	0.0	0.0	0.4
Avg Speed (kph)	47	44	49	35	37	46
Fuel Used (l)	2.0	1.0	0.7	0.2	0.4	4.2
HC Emissions (g)	1	0	1	0	0	3
CO Emissions (g)	60	13	23	11	15	122
NOx Emissions (g)	4	1	2	1	1	9
Vehicles Entered	18	4	8	3	5	38
Vehicles Exited	17	4	8	4	4	37
Hourly Exit Rate	102	24	48	24	24	222
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0

Total Network Performance

Total Delay (hr)	0.0
Delay / Veh (s)	2.6
Total Stops	8
Travel Dist (km)	43.8
Travel Time (hr)	0.9
Avg Speed (kph)	47
Fuel Used (l)	7.7
HC Emissions (g)	4
CO Emissions (g)	178
NOx Emissions (g)	13
Vehicles Entered	38
Vehicles Exited	39
Hourly Exit Rate	234
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Old Highway 2 & 89 Street

Movement	NB
Directions Served	LR
Maximum Queue (m)	15.0
Average Queue (m)	9.9
95th Queue (m)	14.2
Link Distance (m)	284.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	107	14	2	80	17	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	116	15	2	87	18	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			132		215	124
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			132		215	124
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			100		98	99
cM capacity (veh/h)			1435		765	911

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	132	2	87	32
Volume Left	0	2	0	18
Volume Right	15	0	0	13
cSH	1700	1435	1700	819
Volume to Capacity	0.08	0.00	0.05	0.04
Queue Length 95th (m)	0.0	0.0	0.0	1.0
Control Delay (s)	0.0	7.5	0.0	9.6
Lane LOS		A		A
Approach Delay (s)	0.0	0.2		9.6
Approach LOS				A

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	16.5%	ICU Level of Service	A
Analysis Period (min)	15		

1: Old Highway 2 & 89 Street Performance by movement

Movement	EBT	EBR	WBT	NBL	NBR	All
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.1
Delay / Veh (s)	2.8	4.7	3.0	3.6	3.0	3.0
Total Stops	0	0	0	4	1	5
Travel Dist (km)	20.3	1.5	10.3	1.1	0.5	33.8
Travel Time (hr)	0.5	0.0	0.2	0.0	0.0	0.8
Avg Speed (kph)	44	41	44	38	35	43
Fuel Used (l)	4.6	0.2	2.6	0.2	0.9	8.6
HC Emissions (g)	3	0	1	0	0	4
CO Emissions (g)	113	8	49	14	3	187
NOx Emissions (g)	8	1	4	1	1	14
Vehicles Entered	39	3	15	4	2	63
Vehicles Exited	40	3	14	4	1	62
Hourly Exit Rate	240	18	84	24	6	372
Denied Entry Before	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0

Total Network Performance

Total Delay (hr)	0.1
Delay / Veh (s)	8.3
Total Stops	5
Travel Dist (km)	73.7
Travel Time (hr)	1.7
Avg Speed (kph)	44
Fuel Used (l)	13.7
HC Emissions (g)	7
CO Emissions (g)	273
NOx Emissions (g)	21
Vehicles Entered	63
Vehicles Exited	57
Hourly Exit Rate	342
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Old Highway 2 & 89 Street

Movement	NB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	5.3
95th Queue (m)	12.4
Link Distance (m)	284.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	10	159	18	38	151	0	69	7	195	1	8	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	173	20	41	164	0	75	8	212	1	9	37
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	164			192			492	451	183	667	461	164
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	164			192			492	451	183	667	461	164
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.1	3.3
p0 queue free %	99			97			83	98	75	100	98	96
cM capacity (veh/h)	1396			1363			442	480	845	265	467	873

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	203	41	164	83	212	47
Volume Left	11	41	0	75	0	1
Volume Right	20	0	0	0	212	37
cSH	1396	1363	1700	445	845	718
Volume to Capacity	0.01	0.03	0.10	0.19	0.25	0.07
Queue Length 95th (m)	0.2	0.7	0.0	5.4	7.9	1.7
Control Delay (s)	0.5	7.7	0.0	14.9	10.7	10.4
Lane LOS	A	A		B	B	B
Approach Delay (s)	0.5	1.6		11.9		10.4
Approach LOS				B		B

Intersection Summary				
Average Delay	5.9			
Intersection Capacity Utilization	35.4%	ICU Level of Service		A
Analysis Period (min)	15			

1: Highway 684 & Old Highway 2 Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	All
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Delay / Veh (s)	0.1	0.1	6.3	1.6	8.8	9.5	3.0	6.7	3.0
Total Stops	0	0	0	0	6	1	6	1	14
Travel Dist (km)	2.7	0.5	6.3	24.8	1.7	0.3	1.7	0.8	39.0
Travel Time (hr)	0.0	0.0	0.1	0.5	0.1	0.0	0.0	0.0	0.8
Avg Speed (kph)	60	41	48	52	32	27	34	50	49
Fuel Used (l)	0.5	0.1	0.9	5.5	0.3	0.3	1.2	0.1	8.9
HC Emissions (g)	0	0	1	3	0	0	0	0	6
CO Emissions (g)	32	2	40	184	16	1	13	5	293
NOx Emissions (g)	2	0	2	12	1	0	1	0	19
Vehicles Entered	5	1	9	35	6	1	6	1	64
Vehicles Exited	6	1	7	34	6	1	6	1	62
Hourly Exit Rate	36	6	42	204	36	6	36	6	372
Denied Entry Before	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0

Total Network Performance

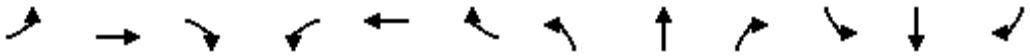
Total Delay (hr)	0.1
Delay / Veh (s)	4.2
Total Stops	14
Travel Dist (km)	72.5
Travel Time (hr)	1.4
Avg Speed (kph)	51
Fuel Used (l)	15.5
HC Emissions (g)	9
CO Emissions (g)	403
NOx Emissions (g)	27
Vehicles Entered	64
Vehicles Exited	63
Hourly Exit Rate	378
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Highway 684 & Old Highway 2

Movement	NB	NB	SB
Directions Served	LT	R	LTR
Maximum Queue (m)	21.1	14.9	9.0
Average Queue (m)	11.1	9.5	1.8
95th Queue (m)	19.4	18.5	7.7
Link Distance (m)	284.2	284.2	831.2
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Nework Summary

Network wide Queuing Penalty: 0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	25	7	41	185	0	39	11	27	1	3	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	27	8	45	201	0	42	12	29	1	3	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	201			35			328	323	31	359	327	201
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	201			35			328	323	31	359	327	201
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.1	3.3
p0 queue free %	100			97			93	98	97	100	99	100
cM capacity (veh/h)	1353			1557			600	572	1026	552	561	832

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	36	45	201	54	29	8
Volume Left	1	45	0	42	0	1
Volume Right	8	0	0	0	29	3
cSH	1353	1557	1700	594	1026	651
Volume to Capacity	0.00	0.03	0.12	0.09	0.03	0.01
Queue Length 95th (m)	0.0	0.7	0.0	2.4	0.7	0.3
Control Delay (s)	0.2	7.4	0.0	11.7	8.6	10.6
Lane LOS	A	A		B	A	B
Approach Delay (s)	0.2	1.3		10.6		10.6
Approach LOS				B		B

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	25.8%	ICU Level of Service	A	
Analysis Period (min)	15			

1: Highway 684 & Old Highway 2 Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBR	SBT	SBR	All
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Delay / Veh (s)	1.4	0.1	6.5	1.9	5.3	3.9	6.1	2.5	3.0
Total Stops	0	0	0	0	4	18	1	3	26
Travel Dist (km)	7.2	1.0	3.7	10.0	1.1	4.9	0.8	2.5	31.3
Travel Time (hr)	0.1	0.0	0.1	0.2	0.0	0.1	0.0	0.1	0.7
Avg Speed (kph)	51	50	50	53	33	35	47	45	47
Fuel Used (l)	2.8	0.2	0.6	1.4	1.5	1.0	0.1	0.3	7.9
HC Emissions (g)	1	0	1	1	0	1	0	0	5
CO Emissions (g)	59	10	27	64	8	56	4	11	238
NOx Emissions (g)	4	0	2	4	1	3	0	1	16
Vehicles Entered	14	2	6	14	4	16	1	3	60
Vehicles Exited	15	2	5	14	4	18	1	3	62
Hourly Exit Rate	90	12	30	84	24	108	6	18	372
Denied Entry Before	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0

Total Network Performance

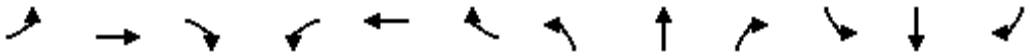
Total Delay (hr)	0.1
Delay / Veh (s)	4.9
Total Stops	26
Travel Dist (km)	70.7
Travel Time (hr)	1.4
Avg Speed (kph)	50
Fuel Used (l)	15.7
HC Emissions (g)	9
CO Emissions (g)	443
NOx Emissions (g)	29
Vehicles Entered	60
Vehicles Exited	64
Hourly Exit Rate	384
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Highway 684 & Old Highway 2

Movement	NB	NB	SB
Directions Served	LT	R	LTR
Maximum Queue (m)	13.7	16.6	9.1
Average Queue (m)	8.0	11.3	5.0
95th Queue (m)	15.3	17.4	11.9
Link Distance (m)	284.2	284.2	831.2
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Nework Summary

Network wide Queuing Penalty: 0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	6	93	8	23	91	0	36	4	119	0	4	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	101	9	25	99	0	39	4	129	0	4	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	99			110			291	267	105	399	272	99
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	99			110			291	267	105	399	272	99
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.1	3.3
p0 queue free %	100			98			94	99	86	100	99	98
cM capacity (veh/h)	1475			1462			626	620	933	469	608	949

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	116	25	99	43	129	26
Volume Left	7	25	0	39	0	0
Volume Right	9	0	0	0	129	22
cSH	1475	1462	1700	625	933	868
Volume to Capacity	0.00	0.02	0.06	0.07	0.14	0.03
Queue Length 95th (m)	0.1	0.4	0.0	1.8	3.8	0.7
Control Delay (s)	0.5	7.5	0.0	11.2	9.5	9.3
Lane LOS	A	A		B	A	A
Approach Delay (s)	0.5	1.5		9.9		9.3
Approach LOS				A		A

Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	26.4%	ICU Level of Service		A
Analysis Period (min)	15			

1: Highway 684 & Old Highway 2 Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	All
Total Delay (hr)	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Delay / Veh (s)	0.6	0.1	6.9	4.1	7.6	9.3	2.7	11.6	12.1	2.8	4.7
Total Stops	0	0	2	0	8	5	9	2	2	2	30
Travel Dist (km)	4.0	1.0	7.4	43.1	2.1	1.4	2.6	1.7	1.7	1.7	66.6
Travel Time (hr)	0.1	0.0	0.2	0.8	0.1	0.0	0.1	0.0	0.0	0.0	1.4
Avg Speed (kph)	60	55	48	52	31	32	36	42	35	36	48
Fuel Used (l)	0.7	0.2	1.1	10.3	0.4	0.6	2.3	0.2	0.2	0.2	16.2
HC Emissions (g)	1	0	1	6	0	0	1	0	0	0	10
CO Emissions (g)	53	29	41	308	13	16	30	7	3	3	503
NOx Emissions (g)	3	1	3	21	1	1	3	0	0	0	34
Vehicles Entered	7	2	10	61	7	5	9	2	2	2	107
Vehicles Exited	8	2	11	58	8	5	9	2	2	2	107
Hourly Exit Rate	48	12	66	348	48	30	54	12	12	12	642
Denied Entry Before	0	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0	0

Total Network Performance

Total Delay (hr)	0.2
Delay / Veh (s)	7.5
Total Stops	30
Travel Dist (km)	124.7
Travel Time (hr)	2.5
Avg Speed (kph)	50
Fuel Used (l)	26.4
HC Emissions (g)	16
CO Emissions (g)	751
NOx Emissions (g)	50
Vehicles Entered	107
Vehicles Exited	102
Hourly Exit Rate	612
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Highway 684 & Old Highway 2

Movement	WB	NB	NB	SB
Directions Served	L	LT	R	LTR
Maximum Queue (m)	7.0	21.1	14.9	16.2
Average Queue (m)	2.8	12.1	7.6	9.8
95th Queue (m)	8.4	20.4	18.6	19.5
Link Distance (m)		284.2	284.2	831.2
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	50.0			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Nework Summary

Network wide Queuing Penalty: 0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	2	40	10	67	301	0	57	17	44	5	4	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	43	11	73	327	0	62	18	48	5	4	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	327			54			533	526	49	583	532	327
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	327			54			533	526	49	583	532	327
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.1	3.3
p0 queue free %	100			95			86	96	95	99	99	99
cM capacity (veh/h)	1216			1532			430	430	1003	372	421	707

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	57	73	327	80	48	14
Volume Left	2	73	0	62	0	5
Volume Right	11	0	0	0	48	4
cSH	1216	1532	1700	430	1003	454
Volume to Capacity	0.00	0.05	0.19	0.19	0.05	0.03
Queue Length 95th (m)	0.0	1.2	0.0	5.4	1.2	0.8
Control Delay (s)	0.3	7.5	0.0	15.3	8.8	13.2
Lane LOS	A	A		C	A	B
Approach Delay (s)	0.3	1.4		12.9		13.2
Approach LOS				B		B

Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	30.0%	ICU Level of Service	A	
Analysis Period (min)	15			

1: Highway 684 & Old Highway 2 Performance by movement

Movement	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT	SBR	All
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1
Delay / Veh (s)	1.2	0.1	5.6	2.8	5.7	4.9	5.0	8.6	4.9	3.9
Total Stops	0	0	1	0	7	4	37	1	6	56
Travel Dist (km)	8.8	1.8	5.0	21.2	2.5	1.1	10.3	0.8	4.3	55.9
Travel Time (hr)	0.2	0.0	0.1	0.4	0.1	0.0	0.3	0.0	0.1	1.3
Avg Speed (kph)	52	54	47	51	35	33	33	33	41	44
Fuel Used (l)	3.0	0.3	2.1	3.0	1.3	0.2	2.7	0.1	0.5	13.2
HC Emissions (g)	2	0	1	2	1	0	2	0	0	9
CO Emissions (g)	86	21	24	124	39	7	108	1	14	424
NOx Emissions (g)	6	1	3	8	3	1	8	0	1	29
Vehicles Entered	17	3	7	30	9	4	36	1	5	112
Vehicles Exited	18	4	8	29	8	4	37	1	6	115
Hourly Exit Rate	108	24	48	174	48	24	222	6	36	690
Denied Entry Before	0	0	0	0	0	0	0	0	0	0
Denied Entry After	0	0	0	0	0	0	0	0	0	0

Total Network Performance

Total Delay (hr)	0.2
Delay / Veh (s)	6.4
Total Stops	56
Travel Dist (km)	126.6
Travel Time (hr)	2.7
Avg Speed (kph)	48
Fuel Used (l)	29.8
HC Emissions (g)	17
CO Emissions (g)	819
NOx Emissions (g)	55
Vehicles Entered	112
Vehicles Exited	118
Hourly Exit Rate	708
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Highway 684 & Old Highway 2

Movement	WB	NB	NB	SB
Directions Served	L	LT	R	LTR
Maximum Queue (m)	6.3	14.6	22.4	15.6
Average Queue (m)	1.3	10.0	16.8	8.3
95th Queue (m)	5.4	13.8	24.7	16.5
Link Distance (m)		284.2	284.2	831.2
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	50.0			
Storage Blk Time (%)				
Queuing Penalty (veh)				

Nework Summary

Network wide Queuing Penalty: 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	348	6	26	187	3	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	378	7	28	203	3	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			385		641	382
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			385		641	382
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			98		99	96
cM capacity (veh/h)			1157		424	653

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	385	28	203	29
Volume Left	0	28	0	3
Volume Right	7	0	0	26
cSH	1700	1157	1700	616
Volume to Capacity	0.23	0.02	0.12	0.05
Queue Length 95th (m)	0.0	0.6	0.0	1.2
Control Delay (s)	0.0	8.2	0.0	11.1
Lane LOS		A		B
Approach Delay (s)	0.0	1.0		11.1
Approach LOS				B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

1: Highway 684 & 102 Avenue Performance by movement

Movement	EBT	WBL	WBT	NBR	All
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0
Delay / Veh (s)	0.5	2.1	3.3	3.5	3.0
Total Stops	0	0	0	13	13
Travel Dist (km)	3.4	3.6	24.0	3.7	34.6
Travel Time (hr)	0.1	0.1	0.5	0.1	0.7
Avg Speed (kph)	52	55	53	35	50
Fuel Used (l)	1.8	0.6	4.8	0.7	7.9
HC Emissions (g)	1	1	3	1	5
CO Emissions (g)	26	50	149	43	267
NOx Emissions (g)	2	3	10	3	17
Vehicles Entered	6	5	34	14	59
Vehicles Exited	6	5	32	13	56
Hourly Exit Rate	36	30	192	78	336
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Total Delay (hr)	0.1
Delay / Veh (s)	5.7
Total Stops	13
Travel Dist (km)	67.3
Travel Time (hr)	1.3
Avg Speed (kph)	51
Fuel Used (l)	11.6
HC Emissions (g)	8
CO Emissions (g)	413
NOx Emissions (g)	25
Vehicles Entered	59
Vehicles Exited	58
Hourly Exit Rate	348
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Highway 684 & 102 Avenue

Movement	NB
Directions Served	LR
Maximum Queue (m)	9.5
Average Queue (m)	8.9
95th Queue (m)	9.8
Link Distance (m)	284.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	50	3	21	223	3	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	3	23	242	3	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			58		344	56
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			58		344	56
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			99		99	97
cM capacity (veh/h)			1528		637	994

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	58	23	242	32
Volume Left	0	23	0	3
Volume Right	3	0	0	28
cSH	1700	1528	1700	939
Volume to Capacity	0.03	0.01	0.14	0.03
Queue Length 95th (m)	0.0	0.4	0.0	0.8
Control Delay (s)	0.0	7.4	0.0	9.0
Lane LOS		A		A
Approach Delay (s)	0.0	0.6		9.0
Approach LOS				A

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

1: Highway 684 & 102 Avenue Performance by movement

Movement	EBT	WBL	WBT	NBR	All
Total Delay (hr)	0.0	0.0	0.0	0.0	0.0
Delay / Veh (s)	0.8	3.1	2.5	3.2	1.9
Total Stops	0	0	0	7	7
Travel Dist (km)	15.6	3.6	17.7	1.7	38.6
Travel Time (hr)	0.3	0.1	0.3	0.1	0.8
Avg Speed (kph)	52	51	53	32	51
Fuel Used (l)	8.3	0.5	3.8	1.6	14.3
HC Emissions (g)	2	0	2	0	6
CO Emissions (g)	124	24	125	10	282
NOx Emissions (g)	10	1	8	2	21
Vehicles Entered	29	5	24	7	65
Vehicles Exited	31	5	25	7	68
Hourly Exit Rate	186	30	150	42	408
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Total Delay (hr)	0.1
Delay / Veh (s)	4.8
Total Stops	7
Travel Dist (km)	80.5
Travel Time (hr)	1.6
Avg Speed (kph)	52
Fuel Used (l)	21.6
HC Emissions (g)	9
CO Emissions (g)	374
NOx Emissions (g)	29
Vehicles Entered	65
Vehicles Exited	70
Hourly Exit Rate	420
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Highway 684 & 102 Avenue

Movement	NB
Directions Served	LR
Maximum Queue (m)	15.0
Average Queue (m)	11.3
95th Queue (m)	16.3
Link Distance (m)	284.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	212	3	26	114	3	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	230	3	28	124	3	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			234		412	232
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			234		412	232
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			98		99	96
cM capacity (veh/h)			1316		577	792

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	234	28	124	32
Volume Left	0	28	0	3
Volume Right	3	0	0	28
cSH	1700	1316	1700	763
Volume to Capacity	0.14	0.02	0.07	0.04
Queue Length 95th (m)	0.0	0.5	0.0	1.0
Control Delay (s)	0.0	7.8	0.0	9.9
Lane LOS		A		A
Approach Delay (s)	0.0	1.4		9.9
Approach LOS				A

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	28.0%	ICU Level of Service	A
Analysis Period (min)	15		

1: Highway 684 & 102 Avenue Performance by movement

Movement	EBT	WBL	WBT	NBR	All
Total Delay (hr)	0.0	0.0	0.1	0.0	0.1
Delay / Veh (s)	0.1	5.9	4.3	3.8	3.7
Total Stops	0	0	0	11	11
Travel Dist (km)	5.9	3.2	41.6	3.1	53.8
Travel Time (hr)	0.1	0.1	0.8	0.1	1.1
Avg Speed (kph)	51	52	51	35	50
Fuel Used (l)	1.5	0.5	12.9	1.9	16.8
HC Emissions (g)	1	1	6	1	8
CO Emissions (g)	48	30	258	38	373
NOx Emissions (g)	3	2	21	3	28
Vehicles Entered	12	5	58	11	86
Vehicles Exited	11	4	57	11	83
Hourly Exit Rate	66	24	342	66	498
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Total Delay (hr)	0.2
Delay / Veh (s)	6.7
Total Stops	11
Travel Dist (km)	101.0
Travel Time (hr)	2.0
Avg Speed (kph)	52
Fuel Used (l)	24.4
HC Emissions (g)	12
CO Emissions (g)	539
NOx Emissions (g)	39
Vehicles Entered	86
Vehicles Exited	84
Hourly Exit Rate	504
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Highway 684 & 102 Avenue

Movement	NB
Directions Served	LR
Maximum Queue (m)	16.1
Average Queue (m)	11.0
95th Queue (m)	17.2
Link Distance (m)	284.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	82	3	21	365	3	26
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	89	3	23	397	3	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			92		533	91
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			92		533	91
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			98		99	97
cM capacity (veh/h)			1483		494	951

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	92	23	397	32
Volume Left	0	23	0	3
Volume Right	3	0	0	28
cSH	1700	1483	1700	868
Volume to Capacity	0.05	0.02	0.23	0.04
Queue Length 95th (m)	0.0	0.4	0.0	0.9
Control Delay (s)	0.0	7.5	0.0	9.3
Lane LOS		A		A
Approach Delay (s)	0.0	0.4		9.3
Approach LOS				A

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	29.2%	ICU Level of Service	A
Analysis Period (min)	15		

1: Highway 684 & 102 Avenue Performance by movement

Movement	EBT	WBL	WBT	NBR	All
Total Delay (hr)	0.0	0.0	0.0	0.0	0.1
Delay / Veh (s)	2.1	2.2	2.1	4.3	2.1
Total Stops	0	0	0	3	3
Travel Dist (km)	39.7	2.9	27.5	0.9	70.9
Travel Time (hr)	0.8	0.1	0.5	0.0	1.4
Avg Speed (kph)	52	53	53	34	52
Fuel Used (l)	15.0	0.4	7.3	0.2	22.9
HC Emissions (g)	7	0	4	0	11
CO Emissions (g)	376	23	193	6	598
NOx Emissions (g)	26	1	13	0	40
Vehicles Entered	74	4	38	3	119
Vehicles Exited	76	4	39	2	121
Hourly Exit Rate	456	24	234	12	726
Denied Entry Before	0	0	0	0	0
Denied Entry After	0	0	0	0	0

Total Network Performance

Total Delay (hr)	0.2
Delay / Veh (s)	6.7
Total Stops	3
Travel Dist (km)	150.3
Travel Time (hr)	2.8
Avg Speed (kph)	53
Fuel Used (l)	32.4
HC Emissions (g)	17
CO Emissions (g)	757
NOx Emissions (g)	52
Vehicles Entered	119
Vehicles Exited	121
Hourly Exit Rate	726
Denied Entry Before	0
Denied Entry After	0

Intersection: 1: Highway 684 & 102 Avenue

Movement	NB
Directions Served	LR
Maximum Queue (m)	9.2
Average Queue (m)	5.1
95th Queue (m)	12.1
Link Distance (m)	284.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Nework Summary

Network wide Queuing Penalty: 0

Beairsto & Associates
ENGINEERING & SURVEY

APPENDIX E

ILLUMINATION WARRANTS

Illumination of Isolated Rural Intersections
LIGHTING WARRANT SPREADSHEET

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

Please enter information in the cells with yellow background

INTERSECTION CHARACTERISTICS

Secondary Highway 684	Main Road
Old Highway 2	Minor Road
Town of Peace River	City/Town

Date December 17, 2020
Other 2030 Traffic

GEOMETRIC FACTORS

	Value	Rating	Weight	Comments	Check	Score
Channelization Rating	Descriptive	3		Refer to Table 1(A) to determine rating value	OK	
Presence of raised channelization? (Y / N)	N				OK	
Highest operating speed on raised, channelized approach (km/h)	60		5		OK	
Channelization Factor					OK	15
Approach Sight Distance on most constrained approach (%)	100	0	10	Relative to the recommended minimum sight distance	OK	0
Posted Speed limit (in 10's of km/h)	60				OK	
Radius of Horizontal Curve (m)	T			Enter "T" for tangent (no horizontal curve at the intersection)	OK	
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =	D	0				
Horizontal Curvature Factor		0	5		OK	0
Angle of Intersection (10's of Degrees)	90	0	5		OK	0
Downhill Approach Grade (x.x%)	1.0	0	3	Rounded to nearest tenth of a percent	OK	0
Number of Intersection Legs	4	2	3	Number of legs = 3 or more	OK	6
				Geometric Factors Subtotal		**21**

OPERATIONAL FACTORS

Is the intersection signalized ? (Y/ N)	N			Calculate the Signalization Warrant Factor		
AADT on Major Road (2-way)	2487	2	10	Either Use the two AADT inputs **OR** the Descriptive Signalization	OK	20
AADT on Minor Road (2-way)	1408	2	20	Warrant (Unused values should be set to Zero) Refer to Table	OK	40
Signalization Warrant	Descriptive	0	30	1(B) for description and rating values for signalization warrant.	OK	0
					OK	
Night-Time Hourly Pedestrian Volume	0	0	10	Refer to Table 1(B), note #2, to account for children and seniors	OK	0
Intersecting Roadway Classification	Descriptive	1	5	Refer to Table 1(B) for ratings.	OK	5
Operating Speed or Posted Speed on Major Road (km/h)	60	1	5	Refer to Table 1(B), note #3	OK	5
Operating Speed on Minor Road (km/h)	50	0	5	Refer to Table 1(B), note #3	OK	0
				Operational Factors Subtotal		**70**

ENVIRONMENTAL FACTOR

Lighted Developments within 150 m radius of intersection	1	1	5	Maximum of 4 quadrants	OK	5
				Environmental Factor Subtotal		**5**

COLLISION HISTORY

Average Annual night-time collision frequency due to inadequate lighting (collisions/yr, rounded to nearest whole #)	1.0	1	15	Enter **either** the annual frequency (See Table 1(C), note #4)	OK	15
OR				**OR** the number of collisions / MEV		
Collision Rate over last 3 years, due to inadequate lighting (/MEV)	0	0	0	(Unused values should be set to Zero)	OK	0
Is the average ratio of **all** night to day collisions >= 1.5 (Y/N)	Y	4			OK	
					OK	
				Collision History Subtotal		**15**

Check Intersection Signalization:
Intersection is not Signalized

LIGHTING IS NOT WARRANTED

SUMMARY

Geometric Factors Subtotal	21
Operational Factor Subtotal	70
Environmental Factor Subtotal	5
Collision History Subtotal	15
TOTAL POINTS	**111**

Illumination of Isolated Rural Intersections
LIGHTING WARRANT SPREADSHEET

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

Please enter information in the cells with yellow background

INTERSECTION CHARACTERISTICS

Secondary Highway 684	Main Road
Old Highway 2	Minor Road
Town of Peace River	City/Town

Date December 17, 2020
Other 2050 Traffic

GEOMETRIC FACTORS

	Value	Rating	Weight	Comments	Check	Score
Channelization Rating	Descriptive	3		Refer to Table 1(A) to determine rating value	OK	
Presence of raised channelization? (Y / N)	N				OK	
Highest operating speed on raised, channelized approach (km/h)	60		5		OK	
Channelization Factor					OK	15
Approach Sight Distance on most constrained approach (%)	100	0	10	Relative to the recommended minimum sight distance	OK	0
Posted Speed limit (in 10's of km/h)	60				OK	
Radius of Horizontal Curve (m)	T			Enter "T" for tangent (no horizontal curve at the intersection)	OK	
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =	D	0				
Horizontal Curvature Factor		0	5		OK	0
Angle of Intersection (10's of Degrees)	90	0	5		OK	0
Downhill Approach Grade (x.x%)	1.0	0	3	Rounded to nearest tenth of a percent	OK	0
Number of Intersection Legs	4	2	3	Number of legs = 3 or more	OK	6
				Geometric Factors Subtotal		**21**

OPERATIONAL FACTORS

Is the intersection signalized ? (Y/ N)	N			Calculate the Signalization Warrant Factor		
AADT on Major Road (2-way)	4000	3	10	Either Use the two AADT inputs **OR** the Descriptive Signalization	OK	30
AADT on Minor Road (2-way)	2218	4	20	Warrant (Unused values should be set to Zero) Refer to Table	OK	80
Signalization Warrant	Descriptive	0	30	1(B) for description and rating values for signalization warrant.	OK	0
					OK	
Night-Time Hourly Pedestrian Volume	0	0	10	Refer to Table 1(B), note #2, to account for children and seniors	OK	0
Intersecting Roadway Classification	Descriptive	1	5	Refer to Table 1(B) for ratings.	OK	5
Operating Speed or Posted Speed on Major Road (km/h)	60	1	5	Refer to Table 1(B), note #3	OK	5
Operating Speed on Minor Road (km/h)	50	0	5	Refer to Table 1(B), note #3	OK	0
				Operational Factors Subtotal		**120**

ENVIRONMENTAL FACTOR

Lighted Developments within 150 m radius of intersection	1	1	5	Maximum of 4 quadrants	OK	5
				Environmental Factor Subtotal		**5**

COLLISION HISTORY

Average Annual night-time collision frequency due to inadequate lighting (collisions/yr, rounded to nearest whole #)	1.0	1	15	Enter **either** the annual frequency (See Table 1(C), note #4)	OK	15
OR				**OR** the number of collisions / MEV		
Collision Rate over last 3 years, due to inadequate lighting (/MEV)	0	0	0	(Unused values should be set to Zero)	OK	0
Is the average ratio of **all** night to day collisions >= 1.5 (Y/N)	Y	4			OK	
					OK	
				Collision History Subtotal		**15**

Check Intersection Signalization:
Intersection is not Signalized

ILLUMINATION WARRANTED
DELINEATION LIGHTING TO ILLUMINATE PEDESTRIANS OR CROSS STREET TRAFFIC

SUMMARY

Geometric Factors Subtotal	21
Operational Factor Subtotal	120
Environmental Factor Subtotal	5
Collision History Subtotal	15
TOTAL POINTS	**161**

Illumination of Isolated Rural Intersections
LIGHTING WARRANT SPREADSHEET

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

Please enter information in the cells with yellow background

INTERSECTION CHARACTERISTICS

Secondary Highway 684	Main Road
102 Avenue	Minor Road
Town of Peace River	City/Town

Date June 7, 2021
Other 2030 Traffic

GEOMETRIC FACTORS

	Value	Rating	Weight	Comments	Check	Score
Channelization Rating	Descriptive	3		Refer to Table 1(A) to determine rating value	OK	
Presence of raised channelization? (Y / N)	N				OK	
Highest operating speed on raised, channelized approach (km/h)	50		5		OK	
Channelization Factor					OK	15
Approach Sight Distance on most constrained approach (%)	100	0	10	Relative to the recommended minimum sight distance	OK	0
Posted Speed limit (in 10's of km/h)	60				OK	
Radius of Horizontal Curve (m)	T			Enter "T" for tangent (no horizontal curve at the intersection)	OK	
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =	D	0				
Horizontal Curvature Factor		0	5		OK	0
Angle of Intersection (10's of Degrees)	90	0	5		OK	0
Downhill Approach Grade (x.x%)	1.0	0	3	Rounded to nearest tenth of a percent	OK	0
Number of Intersection Legs	3	1	3	Number of legs = 3 or more	OK	3
				Geometric Factors Subtotal		**18**

OPERATIONAL FACTORS

Is the intersection signalized ? (Y/ N)	N			Calculate the Signalization Warrant Factor		
AADT on Major Road (2-way)	3592	3	10	Either Use the two AADT inputs **OR** the Descriptive Signalization Warrant (Unused values should be set to Zero) Refer to Table 1(B) for description and rating values for signalization warrant.	OK	30
AADT on Minor Road (2-way)	281	0	20		OK	0
Signalization Warrant	Descriptive	0	30		OK	0
					OK	
Night-Time Hourly Pedestrian Volume	0	0	10	Refer to Table 1(B), note #2, to account for children and seniors	OK	0
Intersecting Roadway Classification	Descriptive	1	5	Refer to Table 1(B) for ratings.	OK	5
Operating Speed or Posted Speed on Major Road (km/h)	60	1	5	Refer to Table 1(B), note #3	OK	5
Operating Speed on Minor Road (km/h)	50	0	5	Refer to Table 1(B), note #3	OK	0
				Operational Factors Subtotal		**40**

ENVIRONMENTAL FACTOR

Lighted Developments within 150 m radius of intersection	1	1	5	Maximum of 4 quadrants	OK	5
				Environmental Factor Subtotal		**5**

COLLISION HISTORY

Average Annual night-time collision frequency due to inadequate lighting (collisions/yr, rounded to nearest whole #)	1.0	1	15	Enter **either** the annual frequency (See Table 1(C), note #4)	OK	15
OR				**OR** the number of collisions / MEV		
Collision Rate over last 3 years, due to inadequate lighting (/MEV)	0	0	0	(Unused values should be set to Zero)	OK	0
Is the average ratio of **all** night to day collisions >= 1.5 (Y/N)	Y	4			OK	
					OK	
				Collision History Subtotal		**15**

Check Intersection Signalization:
Intersection is not Signalized

LIGHTING IS NOT WARRANTED

SUMMARY

Geometric Factors Subtotal	18
Operational Factor Subtotal	40
Environmental Factor Subtotal	5
Collision History Subtotal	15
TOTAL POINTS	**78**

Illumination of Isolated Rural Intersections
LIGHTING WARRANT SPREADSHEET

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

Please enter information in the cells with yellow background

INTERSECTION CHARACTERISTICS

Secondary Highway 684	Main Road
102 Avenue	Minor Road
Town of Peace River	City/Town

Date June 7, 2021
Other 2050 Traffic

GEOMETRIC FACTORS

	Value	Rating	Weight	Comments	Check	Score
Channelization Rating	Descriptive	3		Refer to Table 1(A) to determine rating value	OK	
Presence of raised channelization? (Y / N)	N				OK	
Highest operating speed on raised, channelized approach (km/h)	50		5		OK	
Channelization Factor					OK	15
Approach Sight Distance on most constrained approach (%)	100	0	10	Relative to the recommended minimum sight distance	OK	0
Posted Speed limit (in 10's of km/h)	60				OK	
Radius of Horizontal Curve (m)	T			Enter "T" for tangent (no horizontal curve at the intersection)	OK	
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =	D	0				
Horizontal Curvature Factor		0	5		OK	0
Angle of Intersection (10's of Degrees)	90	0	5		OK	0
Downhill Approach Grade (x.x%)	1.0	0	3	Rounded to nearest tenth of a percent	OK	0
Number of Intersection Legs	3	1	3	Number of legs = 3 or more	OK	3
				Geometric Factors Subtotal		**18**

OPERATIONAL FACTORS

Is the intersection signalized ? (Y/ N)	N			Calculate the Signalization Warrant Factor		
AADT on Major Road (2-way)	5368	4	10	Either Use the two AADT inputs **OR** the Descriptive Signalization Warrant (Unused values should be set to Zero) Refer to Table 1(B) for description and rating values for signalization warrant.	OK	40
AADT on Minor Road (2-way)	364	0	20		OK	0
Signalization Warrant	Descriptive	0	30		OK	0
					OK	
Night-Time Hourly Pedestrian Volume	0	0	10	Refer to Table 1(B), note #2, to account for children and seniors	OK	0
Intersecting Roadway Classification	Descriptive	1	5	Refer to Table 1(B) for ratings.	OK	5
Operating Speed or Posted Speed on Major Road (km/h)	60	1	5	Refer to Table 1(B), note #3	OK	5
Operating Speed on Minor Road (km/h)	50	0	5	Refer to Table 1(B), note #3	OK	0
				Operational Factors Subtotal		**50**

ENVIRONMENTAL FACTOR

Lighted Developments within 150 m radius of intersection	1	1	5	Maximum of 4 quadrants	OK	5
				Environmental Factor Subtotal		**5**

COLLISION HISTORY

Average Annual night-time collision frequency due to inadequate lighting (collisions/yr, rounded to nearest whole #)	1.0	1	15	Enter **either** the annual frequency (See Table 1(C), note #4)	OK	15
OR				**OR** the number of collisions / MEV		
Collision Rate over last 3 years, due to inadequate lighting (/MEV)	0	0	0	(Unused values should be set to Zero)	OK	0
Is the average ratio of **all** night to day collisions >= 1.5 (Y/N)	Y	4			OK	
					OK	
				Collision History Subtotal		**15**

Check Intersection Signalization:
Intersection is not Signalized

LIGHTING IS NOT WARRANTED

SUMMARY

Geometric Factors Subtotal	18
Operational Factor Subtotal	50
Environmental Factor Subtotal	5
Collision History Subtotal	15
TOTAL POINTS	**88**

Illumination of Isolated Rural Intersections
LIGHTING WARRANT SPREADSHEET

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

Please enter information in the cells with yellow background

INTERSECTION CHARACTERISTICS

Secondary Highway 684	Main Road	**Date**	June 7, 2021
89 Street	Minor Road	**Other**	2030 Traffic
Town of Peace River	City/Town		

GEOMETRIC FACTORS

	Value	Rating	Weight	Comments	Check	Score
Channelization Rating	Descriptive	3		Refer to Table 1(A) to determine rating value	OK	
Presence of raised channelization? (Y / N)	N				OK	
Highest operating speed on raised, channelized approach (km/h)	50		5		OK	
Channelization Factor					OK	15
Approach Sight Distance on most constrained approach (%)	100	0	10	Relative to the recommended minimum sight distance	OK	0
Posted Speed limit (in 10's of km/h)	50				OK	
Radius of Horizontal Curve (m)	T			Enter "T" for tangent (no horizontal curve at the intersection)	OK	
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =	D	0				
Horizontal Curvature Factor		0	5		OK	0
Angle of Intersection (10's of Degrees)	90	0	5		OK	0
Downhill Approach Grade (x.x%)	1.0	0	3	Rounded to nearest tenth of a percent	OK	0
Number of Intersection Legs	3	1	3	Number of legs = 3 or more	OK	3
				Geometric Factors Subtotal		**18**

OPERATIONAL FACTORS

Is the intersection signalized ? (Y/ N)	N			Calculate the Signalization Warrant Factor		
AADT on Major Road (2-way)	1815	1	10	Either Use the two AADT inputs **OR** the Descriptive Signalization Warrant (Unused values should be set to Zero) Refer to Table 1(B) for description and rating values for signalization warrant.	OK	10
AADT on Minor Road (2-way)	326	0	20		OK	0
Signalization Warrant	Descriptive	0	30		OK	0
					OK	
Night-Time Hourly Pedestrian Volume	0	0	10	Refer to Table 1(B), note #2, to account for children and seniors	OK	0
Intersecting Roadway Classification	Descriptive	1	5	Refer to Table 1(B) for ratings.	OK	5
Operating Speed or Posted Speed on Major Road (km/h)	60	1	5	Refer to Table 1(B), note #3	OK	5
Operating Speed on Minor Road (km/h)	50	0	5	Refer to Table 1(B), note #3	OK	0
				Operational Factors Subtotal		**20**

ENVIRONMENTAL FACTOR

Lighted Developments within 150 m radius of intersection	1	1	5	Maximum of 4 quadrants	OK	5
				Environmental Factor Subtotal		**5**

COLLISION HISTORY

Average Annual night-time collision frequency due to inadequate lighting (collisions/yr, rounded to nearest whole #)	1.0	1	15	Enter **either** the annual frequency (See Table 1(C), note #4)	OK	15
OR				**OR** the number of collisions / MEV		
Collision Rate over last 3 years, due to inadequate lighting (/MEV)	0	0	0	(Unused values should be set to Zero)	OK	0
Is the average ratio of **all** night to day collisions >= 1.5 (Y/N)	Y	4			OK	
					OK	
				Collision History Subtotal		**15**

Check Intersection Signalization:
Intersection is not Signalized

LIGHTING IS NOT WARRANTED

SUMMARY

Geometric Factors Subtotal	18
Operational Factor Subtotal	20
Environmental Factor Subtotal	5
Collision History Subtotal	15
TOTAL POINTS	**58**

Illumination of Isolated Rural Intersections
LIGHTING WARRANT SPREADSHEET

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

Please enter information in the cells with yellow background

INTERSECTION CHARACTERISTICS

Secondary Highway 684	Main Road	**Date**	June 7, 2021
89 Street	Minor Road	**Other**	2050 Traffic
Town of Peace River	City/Town		

GEOMETRIC FACTORS

	Value	Rating	Weight	Comments	Check	Score
Channelization Rating	Descriptive	3		Refer to Table 1(A) to determine rating value	OK	
Presence of raised channelization? (Y / N)	N				OK	
Highest operating speed on raised, channelized approach (km/h)	50		5		OK	
Channelization Factor					OK	15
Approach Sight Distance on most constrained approach (%)	100	0	10	Relative to the recommended minimum sight distance	OK	0
Posted Speed limit (in 10's of km/h)	50				OK	
Radius of Horizontal Curve (m)	T			Enter "T" for tangent (no horizontal curve at the intersection)	OK	
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =		0				
Posted Speed Category =	D	0				
Horizontal Curvature Factor		0	5		OK	0
Angle of Intersection (10's of Degrees)	90	0	5		OK	0
Downhill Approach Grade (x.x%)	1.0	0	3	Rounded to nearest tenth of a percent	OK	0
Number of Intersection Legs	3	1	3	Number of legs = 3 or more	OK	3
				Geometric Factors Subtotal		**18**

OPERATIONAL FACTORS

Is the intersection signalized ? (Y/ N)	N			Calculate the Signalization Warrant Factor		
AADT on Major Road (2-way)	2874	2	10	Either Use the two AADT inputs **OR** the Descriptive Signalization	OK	20
AADT on Minor Road (2-way)	326	0	20	Warrant (Unused values should be set to Zero) Refer to Table	OK	0
Signalization Warrant	Descriptive	0	30	1(B) for description and rating values for signalization warrant.	OK	0
					OK	
Night-Time Hourly Pedestrian Volume	0	0	10	Refer to Table 1(B), note #2, to account for children and seniors	OK	0
Intersecting Roadway Classification	Descriptive	1	5	Refer to Table 1(B) for ratings.	OK	5
Operating Speed or Posted Speed on Major Road (km/h)	60	1	5	Refer to Table 1(B), note #3	OK	5
Operating Speed on Minor Road (km/h)	50	0	5	Refer to Table 1(B), note #3	OK	0
				Operational Factors Subtotal		**30**

ENVIRONMENTAL FACTOR

Lighted Developments within 150 m radius of intersection	1	1	5	Maximum of 4 quadrants	OK	5
				Environmental Factor Subtotal		**5**

COLLISION HISTORY

Average Annual night-time collision frequency due to inadequate lighting (collisions/yr, rounded to nearest whole #)	1.0	1	15	Enter **either** the annual frequency (See Table 1(C), note #4)	OK	15
OR				**OR** the number of collisions / MEV		
Collision Rate over last 3 years, due to inadequate lighting (/MEV)	0	0	0	(Unused values should be set to Zero)	OK	0
Is the average ratio of **all** night to day collisions >= 1.5 (Y/N)	Y	4			OK	
					OK	
				Collision History Subtotal		**15**

Check Intersection Signalization:
Intersection is not Signalized

LIGHTING IS NOT WARRANTED

SUMMARY

Geometric Factors Subtotal	18
Operational Factor Subtotal	30
Environmental Factor Subtotal	5
Collision History Subtotal	15
TOTAL POINTS	**68**

From:	TRANS Development Peace River
To:	Alisha Mody
Cc:	Mary Crowley; Danny Jung
Subject:	RE: Referral to AT - Town of Peace River Area Structure Plan
Date:	July 8, 2021 9:10:59 AM
Attachments:	image002.png image003.png UWP Area Structure Plan June 2021.pdf

Good Morning Alisha,

The Department has reviewed the updated UWPN Area Structure Plan and TIA and has the following comments.

- Prior to any approvals for the proposed intersection improvements, the Department will require a review of engineered drawings to ensure that what is proposed is both safe and functional.
- The illumination warrants conducted used the incorrect intersection type. "Rural intersection" was used in place of "Urban intersection". As per the AT Highway Lighting Guide, full lighting is always warranted at "urban intersections". The existing lighting at Highway 684 and 102 Ave is not to standard and will be required to be upgraded at the time of the intersection improvement.

Our other concerns have been addressed in the revised documents.

Thank you,

Marlene Cobick
Development and Planning Technologist – Peace Region
Alberta Transportation - Government of Alberta
Peace River, Alberta
Tel 780-624-6372
Cell 780-618-8168
Marlene.Cobick@gov.ab.ca
511 Alberta - Alberta's Official Road Reports Go to 511.alberta.ca and follow @511Alberta
A little appreciation goes a long way. Thank someone today with an ecard!

Alberta Government

Classification: Protected A

From: Alisha Mody <amody@peaceriver.ca>
Sent: Thursday, June 17, 2021 5:42 PM
To: TRANS Development Peace River <TRANSDevelopmentPeaceRiver@gov.ab.ca>
Cc: Mary Crowley <Mary.Crowley@gov.ab.ca>
Subject: RE: Referral to AT - Town of Peace River Area Structure Plan
Importance: High

care.

Hello Marlene and Mary,

Attached is the updated UWPN Area Structure Plan and TIA (the TIA is an appendix to the plan) for your review.

Please let me know if you have any concerns or questions, or if the TIA satisfies the Department.

I am hoping to bring this forward to Council for first reading in July 12, if there are no issues. Can you let me know if there are any concerns by July 6?

Thank you,

Alisha Mody RPP, MCIP | Manager of Planning and Development
Town of Peace River
P (780) 624.2574 Ext. 1027
Facebook | Twitter | Instagram | Online
We're refreshing the Land Use Bylaw! ***Find project information on our website!***

From: TRANS Development Peace River <TRANSDevelopmentPeaceRiver@gov.ab.ca>
Sent: March 30, 2021 4:36 PM
To: Alisha Mody <amody@peaceriver.ca>
Cc: Mary Crowley <Mary.Crowley@gov.ab.ca>
Subject: RE: Referral to AT - Town of Peace River Area Structure Plan

Hi Alisha

As per our conversation the Department would like to see how the Type 2A intersection will fit into the highway. If you could show that that type of intersection will fit into the allotted area as well as show how the offset highway will work. How will the Developer mitigate issues with the skew.

I think that you have sufficiently answered the rest of the Departments questions.

Thanks

Marlene Cobick
Development and Planning Technologist – Peace Region
Alberta Transportation - Government of Alberta
Peace River, Alberta
Tel 780-624-6372
Cell 780-618-8168
Fax 780-624-2440
Marlene.Cobick@gov.ab.ca
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A little appreciation goes a long way. Thank someone today with an ecard!

Alberta Government

5.5 Historical Resources Act Approval

Alberta

HRA Number: 4835-21-0010-001
March 17, 2021

Historical Resources Act Approval with Conditions

Proponent: Citadel Park Developments Ltd.
Box 5312, Devon, AB T9G 1Y1
Contact: Randy Wyton

Agent: Town of Peace River
Contact: Alisha Mody

Project Name: **Upper West Peace North ASP**

Project Components: Area Structure Plan / Outline Plan

Application Purpose: Requesting HRA Approval / Requirements

Historical Resources Act approval is granted for the activities described in this application and its attached plan(s)/sketch(es) subject to the following conditions.

David Link
Assistant Deputy Minister
Heritage Division
Alberta Culture, Multiculturalism
and Status of Women

SCHEDULE OF CONDITIONS

ARCHAEOLOGICAL RESOURCES

Historical Resources Act approval is granted in relation to archaeological resources, subject to the conditions outlined below.

1. There are no archaeological concerns with future development activities in the highway 684 right-of-way, the western edge of the ASP footprint and the area associated with the abandoned gravel pit, given extensive previous land disturbance and low archaeological potential.

SCHEDULE OF CONDITIONS (continued)

2. Remaining portions of the Area Structure Plan, including the southern half of Block 1 Lot 5ER, portions of Block 31 Lot 1, Block 31 Lot 2, Block 31, Lot 3 Block 31 Lot 4, the southern half of 89 Street, 102 Avenue, Block 32 Lot 1, 101 Avenue and the northern half of Block 32, Lot 2 (as shown on Figure 4 of the Area Structure Plan document dated January 2021), exhibit high potential to contain archaeological resources. Planned developments in these areas must be submitted for review by Alberta Culture, Multiculturalism and Status of Women before unconditional approval can be granted. Details of proposed developments must be submitted in a new Historic Resources Application(s) prior to the onset of development activities. The applications should be accompanied by GIS shapefiles.

   Depending on the nature and location of specific project components, a Historic Resources Impact Assessment for archaeological resources may be required prior to development proceeding in these areas
3. A map illustrating the areas of concern is attached for inclusion in future planning documents.

PALAEONTOLOGICAL RESOURCES

Historical Resources Act approval is granted in relation to palaeontological resources, subject to the conditions outlined below.

1. The lands within the proposed Area Structure Plan exhibit a high potential for palaeontological resources. *Historical Resources Act* approval is granted conditionally on the understanding that detailed development plans will be submitted for review by Alberta Culture, Multiculturalism and Status of Women before unconditional approval is granted. These plans must be submitted in a new Historic Resources Application(s) prior to the onset of development activities. The applications should be accompanied by GIS shapefiles. Further *Historical Resources Act* requirements may be issued at that time.

ABORIGINAL TRADITIONAL USE SITES

There are no *Historical Resources Act* requirements associated with Aboriginal traditional use sites of a historic resource nature; however, the proponent must comply with Standard Requirements under the Historical Resources Act: Reporting the Discovery of Historic Resources, which are applicable to all land surface disturbance activities in the Province.

HISTORIC STRUCTURES

There are no *Historical Resources Act* requirements associated with historic structures; however, the proponent must comply with Standard Requirements under the *Historical Resources Act*: Reporting the Discovery of Historic Resources, which are applicable to all land surface disturbance activities in the Province.

PROVINCIALLY DESIGNATED HISTORIC RESOURCES

There are no *Historical Resources Act* requirements associated with Provincially Designated Historic Resources; however, the proponent must comply with Standard Requirements under the *Historical Resources Act*: Reporting the Discovery of Historic Resources, which are applicable to all land surface disturbance activities in the Province.

Lands Affected: All New Lands

SCHEDULE OF CONDITIONS (continued)

Proposed Development Area:

MER	RGE	TWP	SEC	LSD List
5	21	83	30	9-10,14-16

Documents Attached:

Document Name	Document Type
ASP	Illustrative Material
Figure 4 Future Land Use Concept	Review
Map with LiDAR contours and high potential zones	Review

NORTH

1:3,000

0 50 100

Meters

This document contains sensitive information about historic resources and is to be used in planning the proposed project only. It is not to be shared for any other purpose.

Map with LiDAR contours 4835-21-0010-001

TWP-83 RGE-21 MER-5

- Current footprint
- High potential zone
- 1 m contour