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City of Grande Prairie

Final Report

100 Avenue (96 to 84 Street)
Functional Planning Study

March 2013

Corporate Authorization

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PROFESSIONAL ENGINEER ALBERTA
DAN ZEGGELAAR

March 11, 2013
Dan Zeggelaar, P.Eng.

PERMIT TO PRACTICE
ISL Engineering and Land Services Ltd.
Signature
Date March 11, 2013
PERMIT NUMBER: P 4741
The Association of Professional Engineers and Geoscientists of Alberta

Table of Contents

Exhibits **following page**

1.0 Background

1.1 Study Area

The functional study area includes 100 Avenue from 96 Street to 84 Street. The study area is shown in Exhibit 1.1.

1.2 Study Area Description

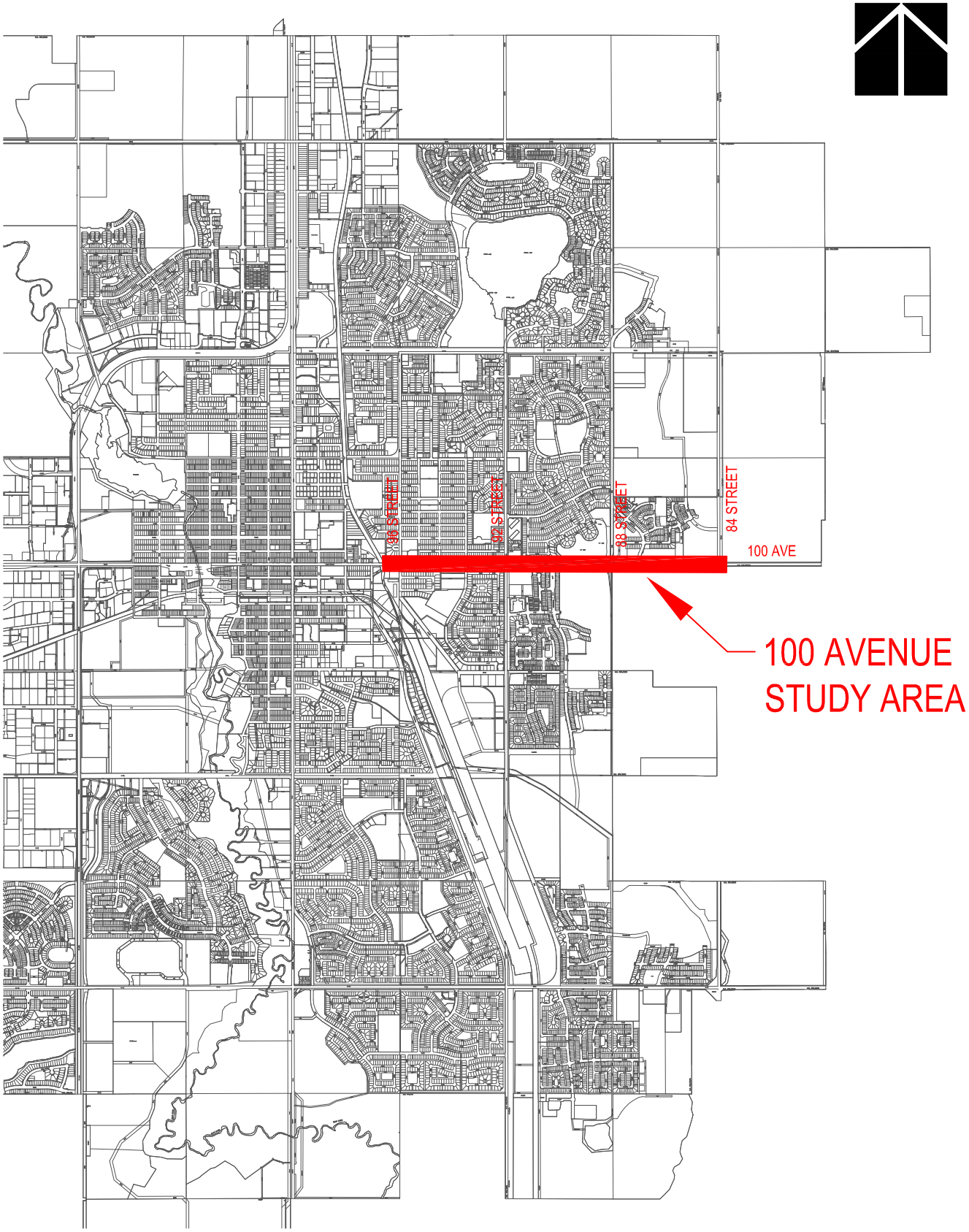
100 Avenue at 96 Street is a 2 lane undivided arterial up to 92 Street, with a two way left turning center lane between 96 and 93 Street and parking permitted on both sides of the street. This area of 100 Avenue is relatively older compared to the rest of the City with many of the homes maintaining previously established front driveways. Traffic volumes have increased substantially along this roadway since the adjacent properties were developed. The current cross-section is not sufficient to accommodate current traffic volumes, therefore additional lanes are needed to create capacity. This is consistent with the City's 2012 - 2014 capital plan as funding has been approved for this section of roadway. Detailed plans however have not yet been determined.

Beyond 92 Street, 100 Avenue is a 4 lane divided arterial up to 88 Street where it tapers to a 2 lane undivided cross-section up to the study limit at 84 Street. The existing 2 lane section is shown as a 4 lane roadway in the City's current Transportation Master Plan (TMP) at the 90,000 population horizon. The TMP did specify an exact timeline for construction.

1.3 Study Purpose

The purpose of this functional study is to determine the ultimate roadway alignment and cross section for widening to a four lane cross-section, including timelines for construction. Other issues related to future roadway widening include:

- Storm water management
- Right of Way Requirements
- Overview of Potential Environment Impacts
- Opinion of Probable Costs
- Noise Attenuation
- Utilities
- Access Management
- Wetland Crossing
- Traffic Control and Staging
- Pedestrian Access/Connectivity



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FUNCTIONAL PLANNING STUDY
100 AVE - 84 STR. to 96 STR.

EXHIBIT 1.1

NTS

SEPTEMBER, 2012

2.0 Design Criteria

2.1 Design Requirements

In terms of roadway design the following elements were assumed as design requirements:

- Number of Lanes
  - 4 Lanes
- Intersection Geometry
  - Sufficient Turn Bay Lengths to Accommodate Future Traffic Volumes
- Trail Connectivity
  - Trails on one side
  - Sidewalks on the other
- Access Management
  - Ensure access issues are addressed
  - Ensure needs for access to businesses and residences are met
- Design Speed
  - 70 km/hr
- Posted Speed
  - 50 km/hr (92 – 96 Street)
  - 60 km/hr (84 – 92 Street)
- Traffic Operations
  - LOS D or better – Further Discussed in Section 3.0
- Construction Staging Requirements
  - 65,000 Population Horizon
  - 78,000 Population Horizon
  - 90,000 Population Horizon
- Overall Roadway Alignment
  - Including right of way requirements
- Stormwater, Environment and Utility Constraints

Each of the elements listed were applied to the roadway design. Typical cross sections are shown in the following section.

2.2 Typical Cross Section

2.2.1 100 Avenue, 96 Street to 93 Street

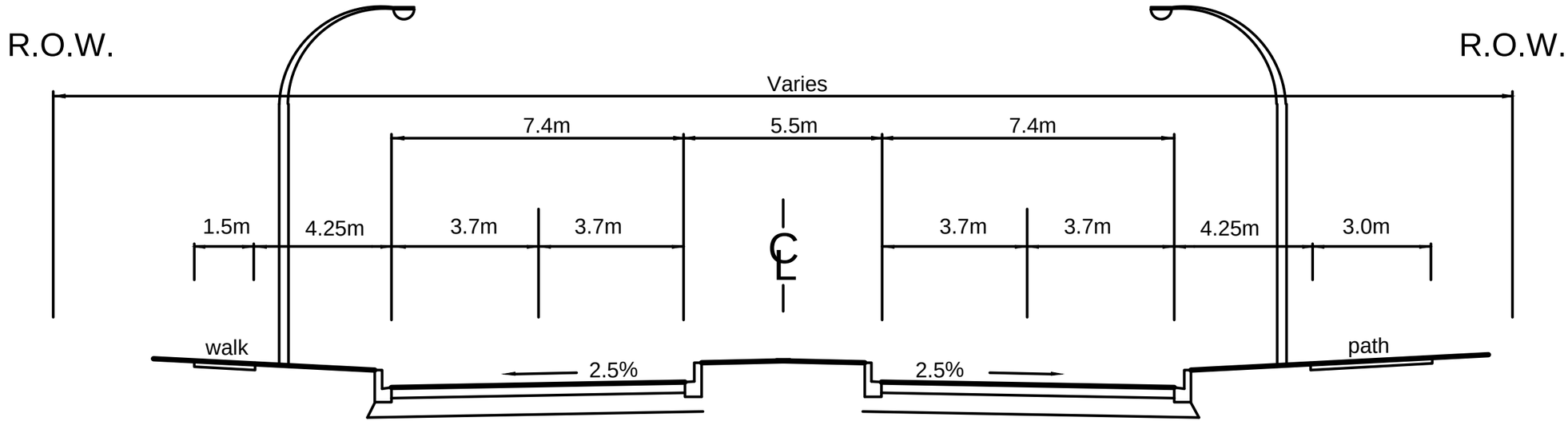
Along this section of 100 Avenue the existing road ROW is minimal at 25.5 m, which does not allow for implementation of the typical cross section. As a result of this, two options were evaluated and are discussed in section 4.0.

2.2.2 100 Avenue, 93 Street to 90 Street

This section of roadway is currently 4 lanes and is sufficient to accommodate future traffic volumes, with only minor changes to the geometry at the intersection (this is discussed in section 3.0).

2.2.3 100 Avenue, 90 Street to 84 Street

East of 90 St, where 100 Avenue narrows from 4 to 2 lanes the cross section applied was based on the cross section assumed when the Outline Plans for the adjacent lands were developed. This section was chosen because the previous road widening taken by the City and that it would be difficult to obtain more due to existing development and wetlands. This cross section is shown in Exhibit 2.1.



TYPICAL CROSS SECTION
100 AVENUE

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City of Grande Prairie

100 Avenue Functional Plan

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TYPICAL CROSS SECTION
100 Avenue
92 STREET - 84 STREET

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3.0 Traffic Analysis

3.1 Analysis Criteria

Operational analyses were performed using Synchro 7. This software is used to evaluate the performance of intersections on the roadway network using the Highway Capacity Manual (HCM) techniques. Using the HCM methodology, intersection performance is categorized by its "Level of Service", or LOS. There are six levels of service as follows:

- LOS A represents the highest level of service, or generally "free flowing conditions"
- LOS F generally represents a "breakdown" or "gridlock" condition in vehicular flow. At signalised intersections drivers will experience waits of two or more cycles.
- Levels of service B, C, D and E are intermediate levels of performance between each extreme
- LOS D reflects "normal" peak hour congestion, generally accepted criterion for design analysis.
- LOS E reflects an intersection or movement experiencing congestion and high delays. It may be accepted for certain movements only (such as low volume or low v/c ratio movements). Typically, LOS D or better is the accepted standard for peak hour operations of all movements at an intersection.

Table 3.1 shows average delay per vehicle values that correspond with the six service levels.

Table 3.1: LOS Criteria for Signalized and Unsignalized Intersections

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

Synchro also calculates volume to capacity (v/c) ratio. A v/c ratio of 1.0 represents an intersection or movement at full capacity with no ability to accommodate additional traffic. Typically, a v/c ratio of 0.85 or lower for all intersection movements is the accepted standard for peak hour operations. Finally, Synchro also calculates the 95th percentile vehicle queue length for each intersection movement. This allows the determination of left and right turn storage requirements. Use of the 95th percentile vehicle queue length criterion is accepted practice for normal peak hour operation; it means that the queue length is exceeded 5% of the time.

3.2 Design Volumes

Design volumes were based on the Transportation Master Plan (TMP) Traffic model. The traffic model was created based on the existing, 2009 overall roadway network grown to the 90, 000 population horizon accounting for growth areas throughout the City. The growth assumptions applied in the TMP model are shown in Appendix A. The traffic volumes at each intersection are provided in Appendix B.

PM peak hour traffic volumes from the 90,000 population horizon in the TMP were considered as the design volumes. 100 Avenue traffic volumes, from 96 St. to 92 St., were adjusted to account for traffic volumes estimated in the 2006 TIA for the CN property located on the south west corner of 100 Avenue and 96 Street. This development generates a significant amount of northbound left turning traffic at the intersection of 100 Avenue and 96 Street. No further traffic studies within either of the two study corridors were noted at the time of this study. Therefore, no further adjustments to the TMP generated traffic volumes were required.

3.3 Traffic Analysis

The traffic volumes from the TMP were applied to the ultimate roadway alignment, assuming basic intersection geometry at the intersections and upgrading as required to add capacity. The intersection LOS and max v/c ratio is reported at each intersection along with forecasted intersection improvements. This is provided in Table 3.2, below. Detailed Synchro reports can be found in Appendix C.

Table 3.2: Intersection LOS, Max v/c, Additional Intersection Improvements

Intersection	LOS	Max v/c	Traffic Control		Additional Intersection Improvements (Beyond 4 Lane Divided)
			Existing	Ultimate	
100 Avenue					
96 Street	C	0.81	TS	TS	Dual NBLT, Extension of EBRT and LT, Addition of SBRT
95 Street	US	0.61	US	US	EBLT Lane
94 Street	US	0.80	US	US	EB and WBLT Lane
93 Street	A	0.75	US	TS	NBLT and SBLT Lane
92 Street*	C	0.75	TS	TS	Convert Left NBT to shared NBT/L
90 Street	B	0.70	US	TS	WBLT and EBRT
Landing Drive	US	0.22	US	US	EBLT
84 Street	A	0.33	US	TS	EBLT and EBRT

Note: US – Unsignalized, TS – Signalized
*Offset signal timing plans will be required to accommodate NBT/NBLT

3.4 Construction Timelines

Staging construction allows the City to accommodate future traffic growth without needing to entirely fund upgrades to the ultimate alignment. It is expected that prior to upgrading to 4 lane divided the road network will experience traffic problems at the intersections as opposed to between intersections. Therefore, additional lanes or upgrades to traffic signals at the intersections may be appropriate measures to accommodate future traffic volumes. Installing traffic signals and/or additional lanes will provide additional capacity and defer the need to install the ultimate geometric improvements. It should be noted that any additional lanes recommended should be installed to match the ultimate roadway alignment to minimize throw away costs.

Intersection improvements will be required when traffic volumes exceed the capacity of the existing traffic control under the existing intersection configuration. To estimate this each intersection was analyzed using Synchro assuming existing geometric and traffic control conditions and determining the approximate critical point for when upgrades are required. Shown in Table 3.3, below, are the approximate timeline when upgrades are required based on a percentage of ultimate traffic volumes. Detailed Synchro reports are provided in Appendix D.

Table 3.3: Staging Alternatives, Timelines

Intersection		Capacity (% of Ultimate)	Critical Point	Related Improvement	Population Horizon
N/S Road	E/W Road				
90 Street	100 Avenue	0.75	Traffic Control	Add Traffic Signals	78 K
92 Street	100 Avenue	0.90	Northbound Lane	Add Shared Thru/LT	78 – 90 K
93 Street	100 Avenue	0.50	Traffic Control	Add Traffic Signals	< 65 K
96 Street	100 Avenue	0.75	Northbound LT	Add LT Lane	75 K
		0.75	Southbound RT	Add Right Turn Lane	75 K

As shown in Table 3.3 upgrades at the intersections, prior to the 90,000 population horizon, are required to accommodate future traffic volumes without constructing the ultimate geometry. It should be noted that the method of analysis is approximate and should be used with caution. However, this provides a reasonable basis for planning and budgeting purposes. The specific date for construction would need to be determined through continual monitoring.

It should be noted that extension of the eastbound right and left turns at 100 Avenue and 96 Street was previously communicated to the City. With upgraded signal timing and coordination settings this may not be required. However, the City should protect for the road right of way for these to ensure they are available if required.

3.4.1 Construction Timelines Summary

The following timelines for construction are recommended, shown in Table 3.4, below.

Table 3.4: 100 Avenue Recommended Construction Timelines

Segment			**Recommended Upgrade**	**Estimated Timeline**
96 St	**to**	**92 St**	Peak Hour Parking Ban, North and South Sides of Road	2013
96 St	**to**	**92 St**	24 Hour Parking Ban, North and South Side of Road	65,000 Population
92 St	**to**	**90 St**	Maintain Existing	
90 St	**to**	**84 St**	Upgrade to 4 Lane Divided	Beyond 90,000
Intersection			**Recommended Upgrade**	**Estimated Timeline**
96 St	**&**	**100 Ave**	Add second northbound left turn, Extend eastbound left and right turn lanes Add southbound right turn lane	78,000 Population 65,000 Population 78,000 Population
93 St	**&**	**100 Ave**	Traffic Signals	2014
92 St	**&**	**100 Ave**	Create second northbound left turn lane using through lane (shared lane)	65,000 Population
90 St	**&**	**100 Ave**	Traffic Signals	78,000 Population
84 St	**&**	**100 Ave**	Traffic Signals	90,000 Population

Shown in Table 3.4, above, are the recommended construction timelines for 100 Avenue. Implementing a peak hour parking ban is required in the immediate future, with a 24 hour ban required at the 65,000 population horizon. The 24 hour ban may be required prior to the 65,000 population horizon due to safety concerns that may arise as a result of implementing a peak hour parking ban.

The intersection of 96 Street will require significant geometric improvements to accommodate future traffic volumes. Heavy traffic volumes from the south turning left and from the north turning right create a need for additional lanes. The east bound right and

left turn lanes should also be extended in the near future. These lanes are currently overflowing during the PM peak hour.

At the intersection of 92 Street and 100 Avenue, for the second shared left/through lane to properly operate the signals should be timed so that north/south movements are staggered. This is required due to left turn interlock between NBL and SBL turning vehicles.

3.5 Recommended Changes to Capital Plan (TMP)

It is recommended that the City revise their 5 and 10 year capital plan provided in their TMP to reflect the staging information provided in this report. These changes would include:

Table 3.5: Recommended Changes to Current City Capital Plan (TMP)

Intersection		Current Plan	Recommended Improvements	Recommend Changes to Current TMP Capital Plan
N/S Road	E/W Road			
90 Street	100 Avenue	No Plan	Traffic Signals	Add to 10 Year Plan
92 Street	100 Avenue	No Plan	Add NBLT Lane	Add to 10 Year Plan
93 Street	100 Avenue	2014 (City Budget)	Traffic Signals	Immediate Follow Up

The recommendations in Table 3.5 are given as a result of the staging analysis for this functional study.

4.0 100 Avenue Options (96 Street to 93 Street)

As discussed in section 1.2, 100 Avenue starting at 96 Street is a two lane undivided arterial up to 92 Street, with a two way left turning center lane between 96 and 93 Street and parking permitted on both sides of the street. This area of 100 Avenue is relatively older compared to the rest of the City with many of the homes maintaining front driveways. Traffic volumes have increased substantially as the city has grown substantially since these homes were built. Therefore, the current cross-section may not be appropriate and improvements may be needed. This is consistent with the City's current 3 year capital program as funding is allocated to upgrade this section of roadway to 4 lanes.

The existing cross section of 100 Avenue is approximately 25.5 m compared to 46.8 m typically required for a new four lane arterial roadway abutting a residential development, as shown in Exhibit 2.1. This is approximately 21.3 m less than what would be required to improve this roadway to current standards. Therefore, the amount of space available for improving this section of 100 Avenue from two lanes to four lanes is limited. To upgrade this roadway to today's standard would require approximately 10.6 m of land on each side of the roadway. This strategy however, is not recommended as it would be cost prohibitive and would negatively impact the adjacent property owners. Therefore, upgrading this roadway using the existing available right of way was considered as the best approach.

Using the right of way available two options were generated to upgrade this section from two lanes to four lanes. The proposed cross-sections of both are shown in Exhibits 4.1 and 4.2. The two options have been named option "A" and option "B". Highlights of the two options are shown in the table below:

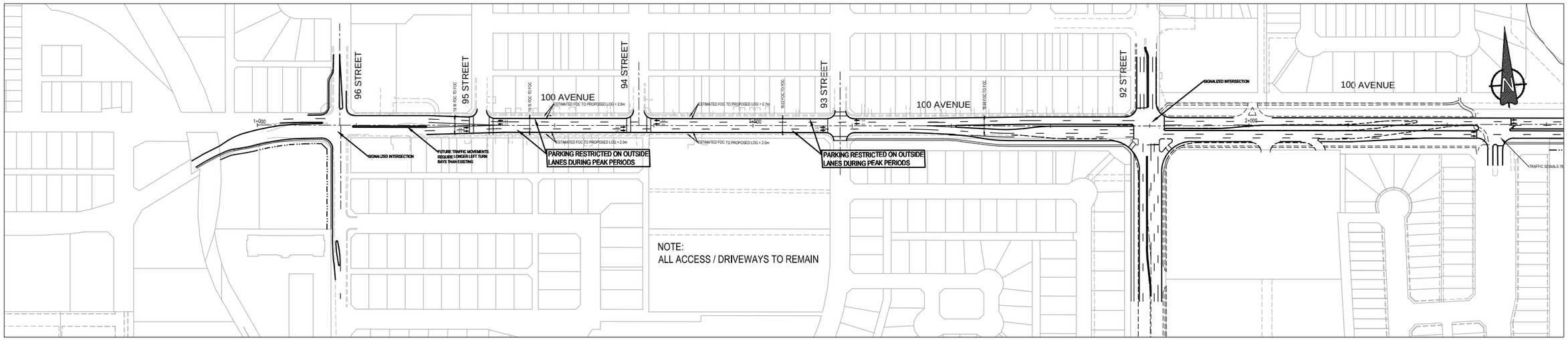
Table 4.1: Option A and B, Comparison

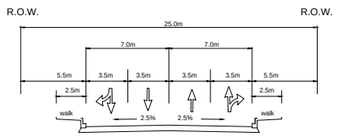
Option A	Option B
Roadway Narrowing Required	Fits within existing roadway
Construction Required	Construction not required
Boulevard is widened	Boulevard is maintained as is
Left turns are made from the through lane	Left turns are made from the center (shared lane)
Park restrictions (7 am – 9 pm & 4 pm – 6pm)	Park restrictions (7 am – 9 pm & 4 pm – 6pm)

As shown in Table 4.1 the primary difference between the two options is the construction requirement. Option A requires roadway narrowing which results in adding space to the boulevard area which could be used to increase the width of the sidewalk. Option B does not require any construction as the boulevard area will be maintained as is. Although the boulevard is not being widened there is approximately 1 m of space between the edge of the sidewalk and the property line that could be used as sidewalk widening if required. Both options require a peak hour parking ban. This is typical in larger City's where traffic volumes increase in the downtown and right of way becomes limited. Ultimately, this will be a 24 hour parking ban.

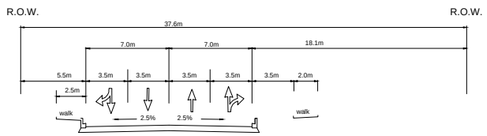
4.1 Recommended Option

Option B is being recommended as it addresses the current traffic demands for this section of roadway and can be completed at a lower cost than option A. It is also recommended that the existing sidewalk on the south side be widened to improve pedestrian mobility. Peak hour parking sign installation shall be done as per the Manual

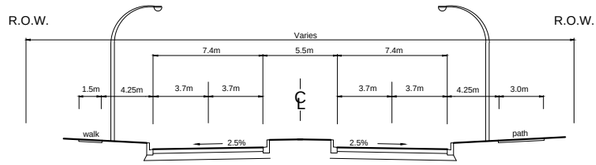




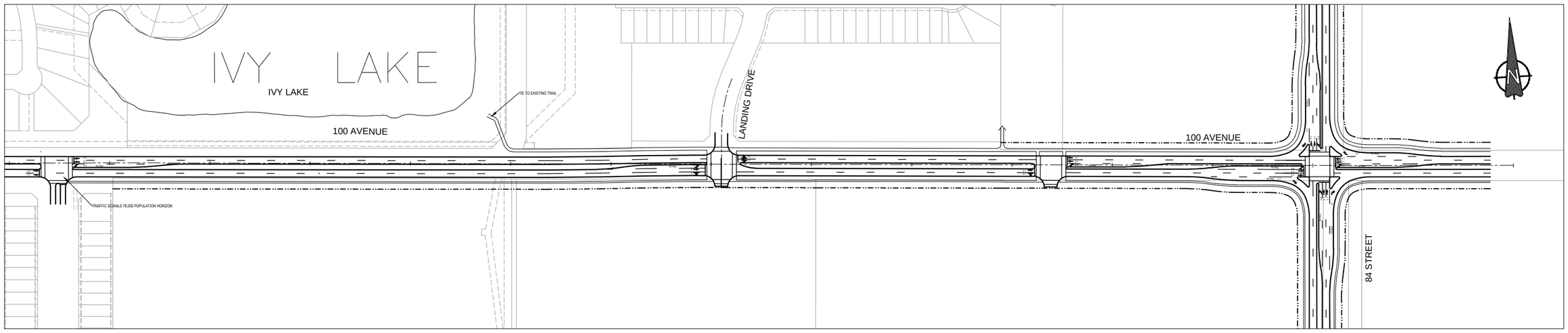
TYPICAL CROSS SECTION
100 AVENUE
93 St. - 96 St.
Option A



TYPICAL CROSS SECTION
100 AVENUE
92 St. - 93 St.
Option A



RECOMMENDED TYPICAL CROSS SECTION
100 AVENUE (93 STREET - 84 STREET)



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100 Avenue Functional Plan

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PLAN & PROFILE
100 Avenue
OPTION A

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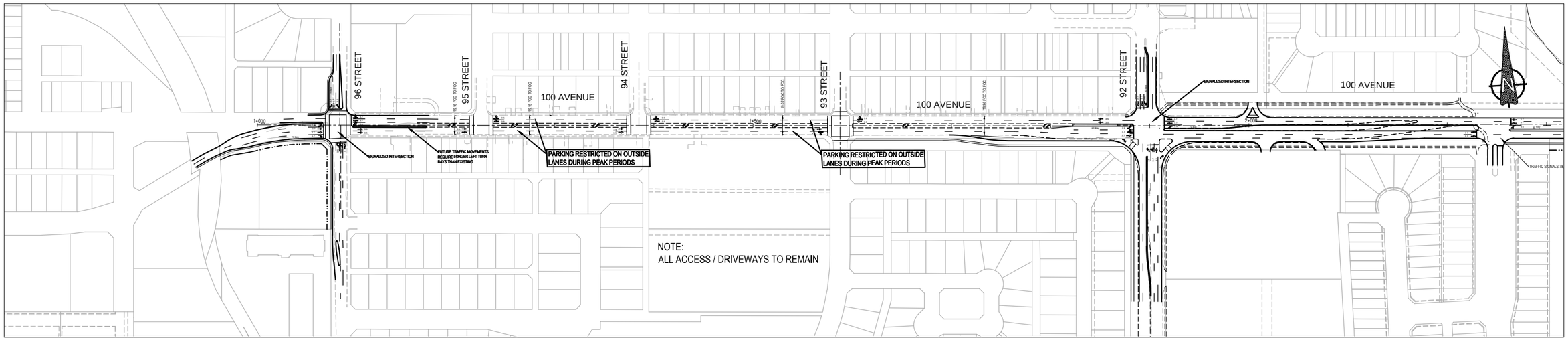

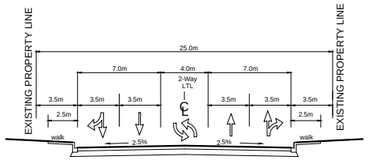

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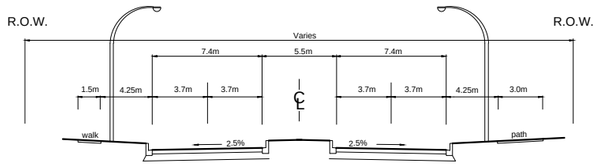
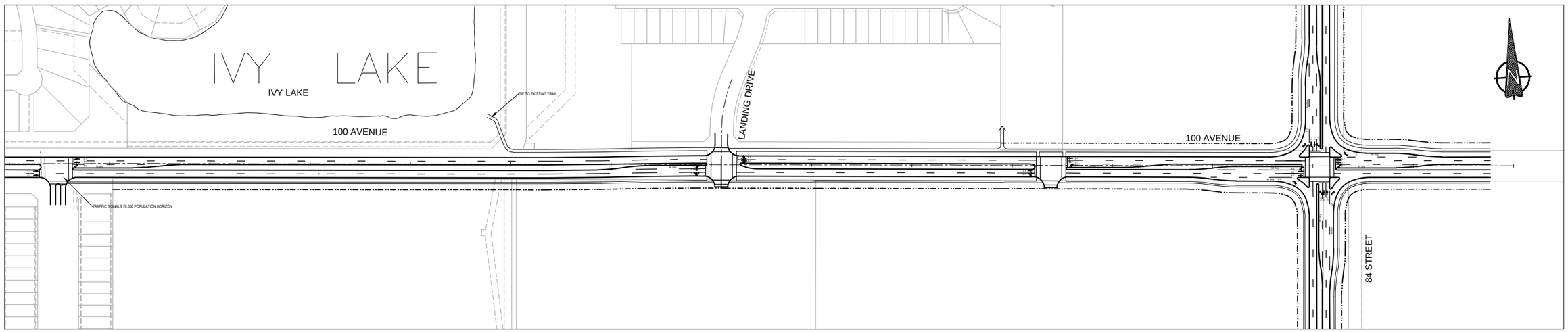
93 St. - 96 St.
Option B



RECOMMENDED TYPICAL CROSS SECTION
100 AVENUE (93 STREET - 84 STREET)



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100 Avenue Functional Plan

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PLAN & PROFILE
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OPTION B

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of Uniform Traffic Control Devices for Canada. As an option the City may install warning signs upstream of the parking ban area indicating that parking is permitted during off peak hours. This will communicate with drivers that the lane may be obstructed during off peak hours and that it may be best to use the left driving lane. Otherwise, the City could monitor the impact of the changes to determine if this or other warning devices are required.

It should be noted that if these properties that access 100 Avenue (96 – 92 Street) are to be redeveloped the access should be moved to the rear lane.

5.0 Other Relevant Information

5.1 Utilities

Exhibit 5.1 to 5.4 show the existing utilities found in each section of roadway. The plans should be used with there may be other utilities not located. The utilities shown are:

- Water
- Sanitary
- Storm Water
- ATCO Gas
- ATCO Pipelines
- Telus

Other utilities which may exist but not shown include (not limited to):

- Eastlink
- Traffic Signal Cabling
- Third Party Fiber Optics Line

It is recommended that at the time of detailed design and prior to construction the locations of all utilities be confirmed, as required.

The most sensitive utility is the high pressure gas line owned by Atco Pipelines. This high pressure gas line runs parallel to 92 Street. At detailed design it should be determined if this utility requires any realignment or lowering. In the case there is any relocating required ATCO Pipeline should be given advance notification.

It should be noted that the utility plans were circulated amongst the relevant utility companies and no comments/requests were received. It is recommended that the City follow up with utility companies as required to determine future needs as the information becomes available.

5.2 Stormwater Management

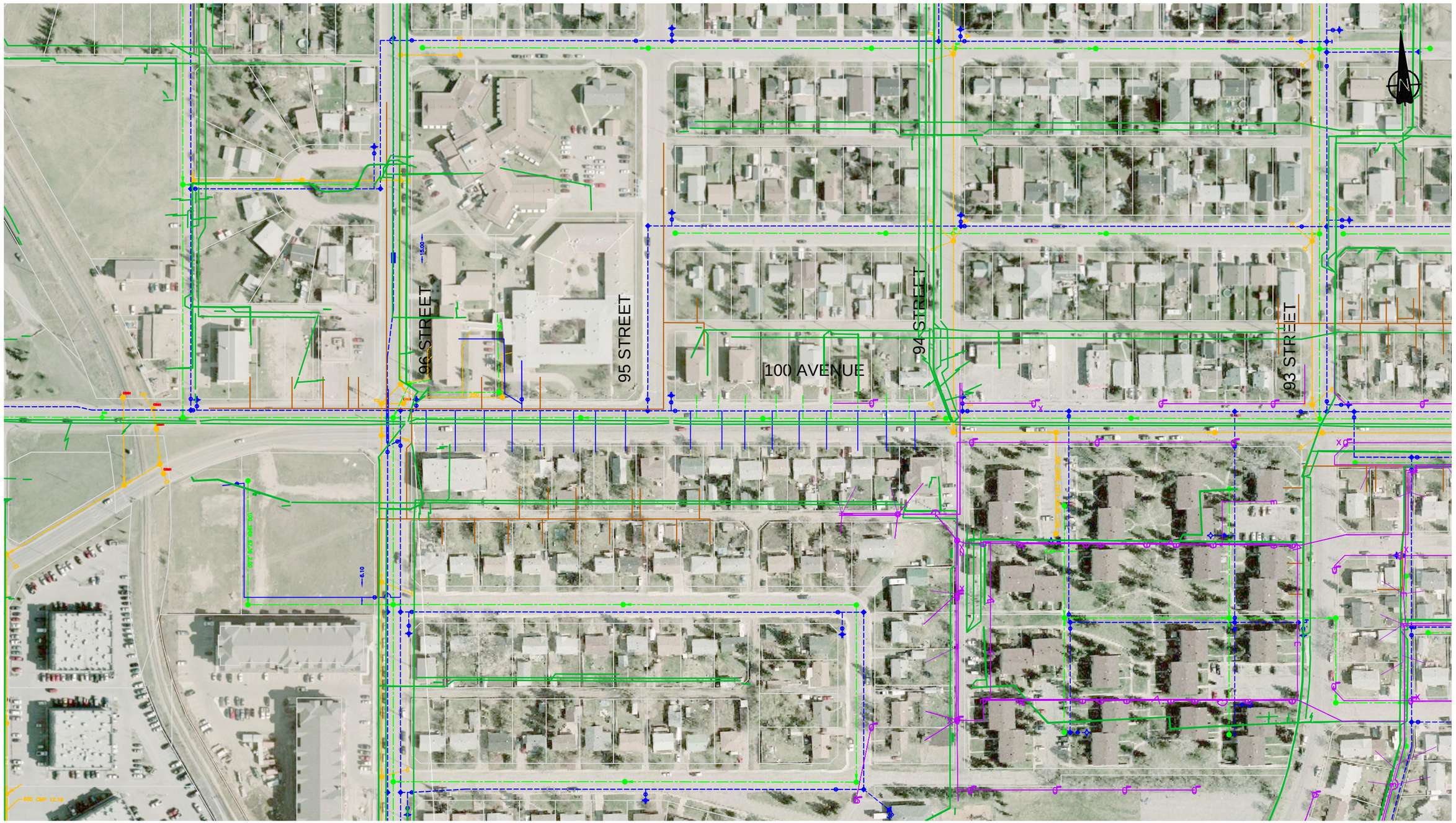
Much of the existing roadways are a mix of two lane rural sections, with some four lane urban sections. Stormwater management considerations for the proposed development include:

- Flow conveyance,
- Water quality treatment, and
- Spill containment.

5.2.1 Flow Conveyance

Flow conveyance considerations involve the following:

- Provision of a convenience drainage system that can collect and convey surface runoff from the proposed development corridor to an adequate outlet during a small design flood event (the 1:5 year) without surface ponding – a storm sewer system;
- Provision of a major drainage system that can collect and convey surface runoff from the proposed development corridor to an adequate outlet during a large design flood event (the 1:100 year) in a manner that provides:
    - Public safety – limited maximum surface ponding depths and conveyance velocities
    - Minimal risk of property damage – flooding of adjacent properties or



LEGEND

- POWER
- GAS
- TELEPHONE
- SANITARY
- STORM
- WATER

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100 Avenue Functional Plan

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UTILITIES
100 Avenue

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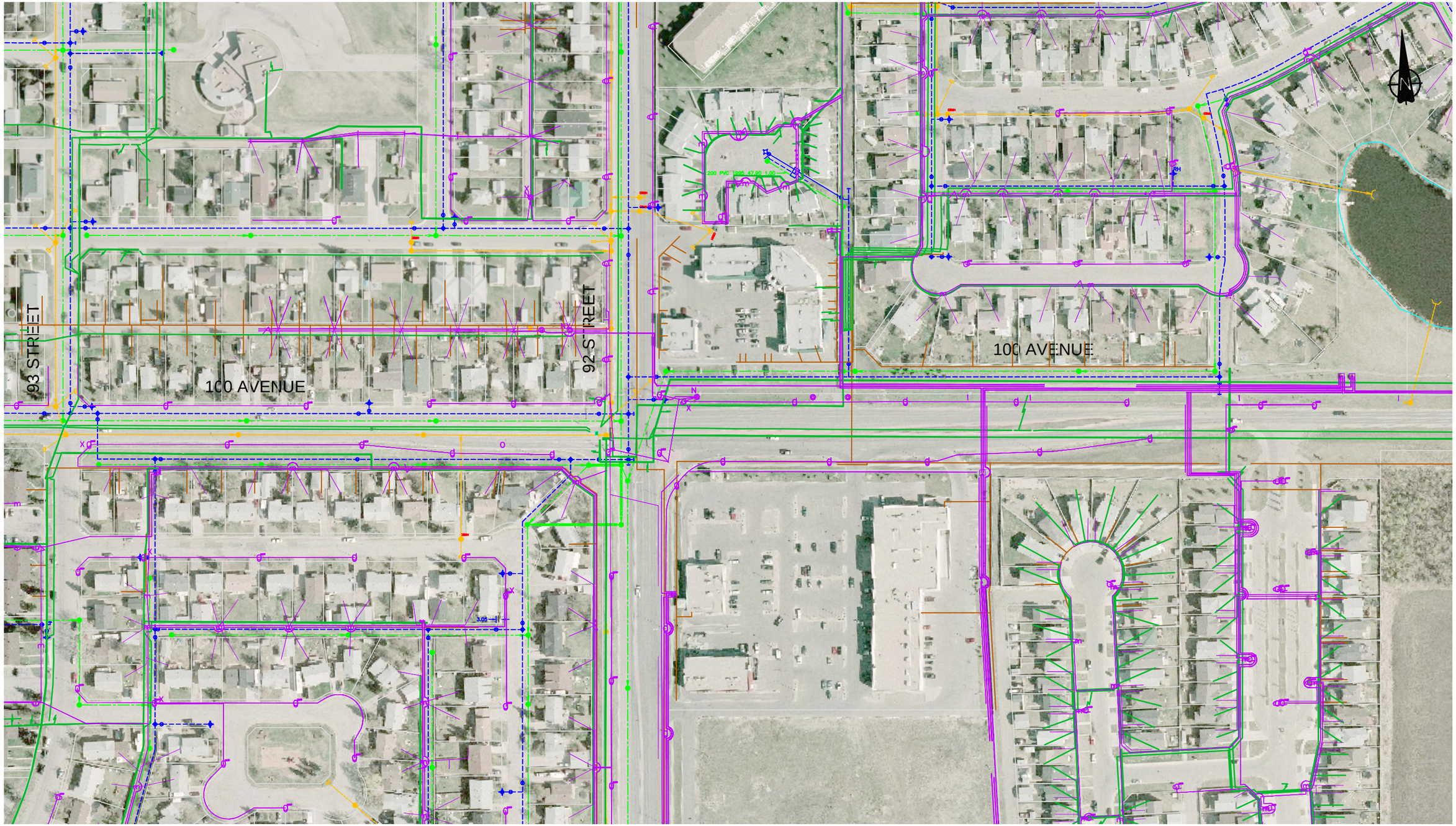

LEGEND

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100 Avenue Functional Plan

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UTILITIES
100 Avenue

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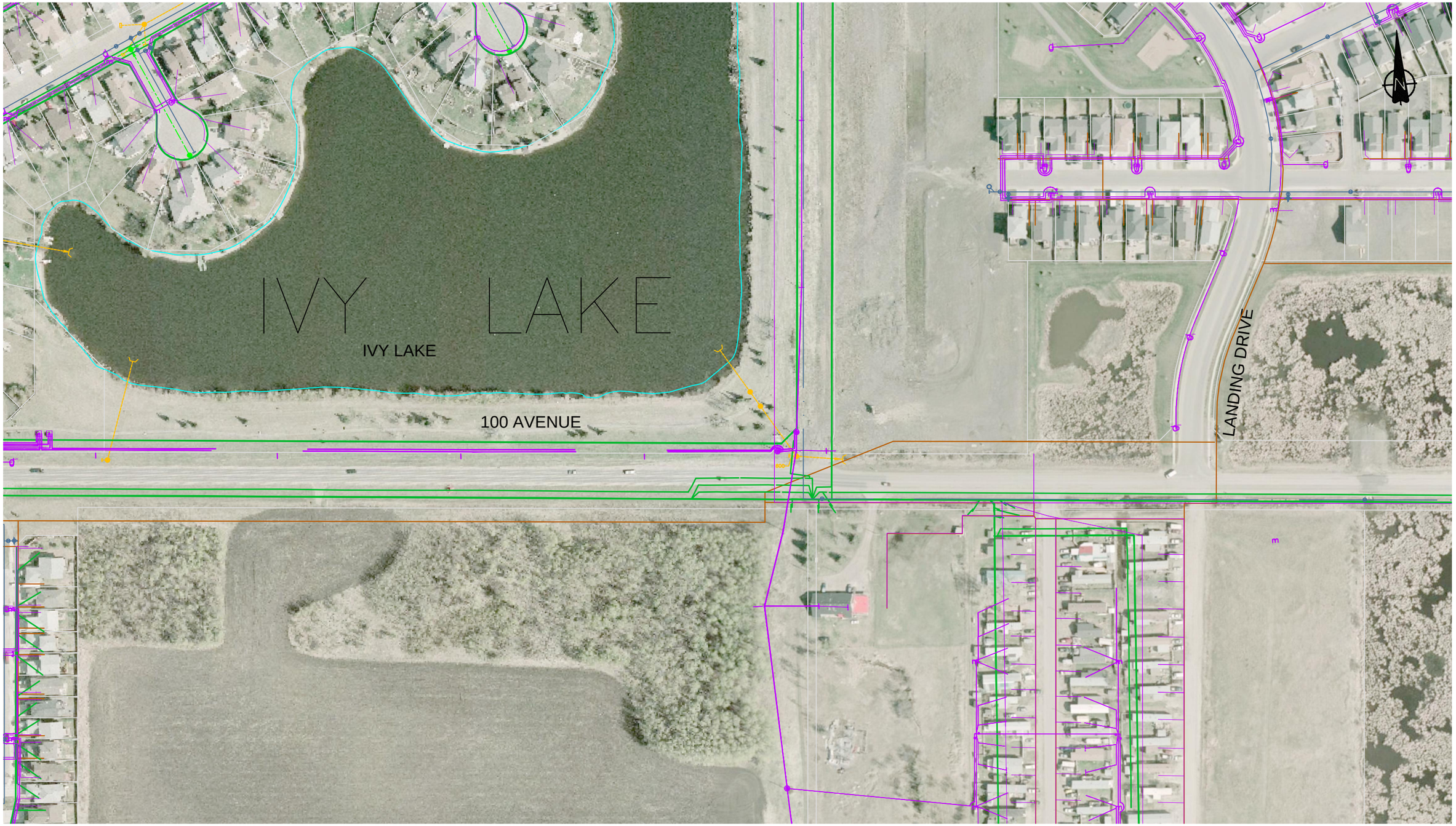

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100 Avenue Functional Plan

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UTILITIES
100 Avenue

Drawing No. 5.3

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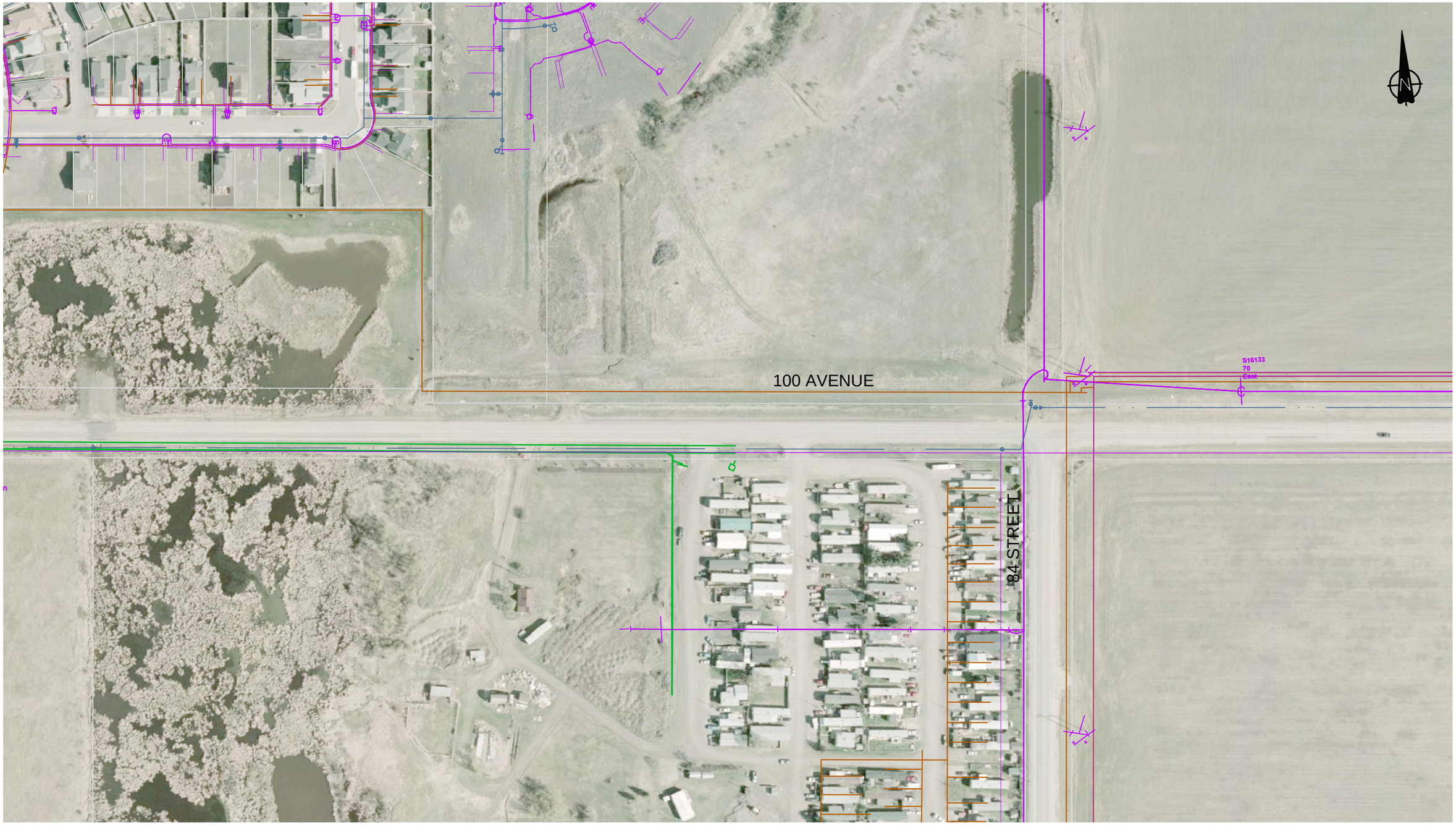

LEGEND

POWER
GAS
TELEPHONE
SANITARY
STORM
WATER

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REVISIONS

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ISL Engineering and Land Services

City of Grande Prairie

100 Avenue Functional Plan

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UTILITIES
100 Avenue

Drawing No. 5.4

Sheet No. / Revision No.

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vehicles
- Efficient, positive surface drainage to the minor system for events up to 1:5 year; and;

- Assurance that the downstream receiving system has capacity to receive runoff quantities expected from the proposed development, and if not, measures to control discharges from the site to acceptable levels.

5.2.2 Water Quality Treatment and Spill Containment

Water quality treatment considerations involve treatment measures to ensure that the site runoff can achieve the following goals/requirements of new developments and redevelopments set out by Alberta Environment & Water (AEW) to ensure protection of natural ecosystems from the impacts of urbanization:

- 85% removal of particles 75 microns and larger on an annual basis.

Spill containment considerations involve the provision of measures towards increasing opportunities to contain spills such that they can be recovered before impacting downstream natural ecosystems.

5.2.3 Existing Drainage

The 100 Avenue project corridor generally slopes east. Existing corridor drainage along 100 Avenue beyond 90 Street is through roadway ditch systems. Much of the adjacent lands that slope towards the project corridors are developed or are developing, and have contained their runoff such that runoff from adjacent lands generally does not contribute to the project corridors. North of 100 Avenue a ditch system runs south, crossing 100 Avenue just east of Landing Drive. This ditch continues south through natural wetlands and discharges into Woody Channel, which subsequently drains into Bear River.

This ditch system has been constructed with enough capacity to convey runoff from major events. It is also vegetated with check dams, and as a result, can be considered a stormwater management Best Management Practice (BMP) for the provision of water quality treatment through the processes of settlement, filtration and plant uptake. Also as a result, this ditch system is considered integral components of the municipal drainage systems in the City, with Bear River considered a natural ecosystem to be protected. Further information on Woody Channel can be found in the following report:

- Woody Channel Study – Resources Road to 68 Avenue, Beairsto, Lehners, Ketchum Engineering, November, 2006

The entire project corridor along 100 Avenue currently drains into the ditch east of Landing Drive. Running east, the approximate ground elevation drops from 662.5 m at 96 Street to 661.0 m at 92 Street to 655.0 m at the ditch crossing east of Landing Drive, for a distance of about 1.9 km (overall grade = 0.4%). Running west, the approximate ground elevation drops from 660.0 m at 84 Street to 655.0 m at the ditch east of Landing Drive, for a distance of about 0.5 km (overall grade = 1.0%).

5.2.3 Proposed Drainage

5.2.3.1 Minor (Storm Sewer) Drainage System

Storm sewer systems are to be installed within the project corridors for the provision of storm water conveyance and drainage. The storm sewers and contributing catch basin systems are to be designed to convey all site runoff from the proposed roadway redevelopment and corridor area. Catch basins are to be located within the curb/gutter systems along the proposed roadway, spaced as per City requirements, and located at low spots within the road system to ensure positive drainage. Pipes are to be designed

with slopes, diameters and material types that provide adequate cleansing velocities and flow conveyance capacities. The overall grades of the existing corridors, identified above, suggest that a pipe system can be designed at grades that will allow cleansing velocities and conveyance capacities to be achieved.

The storm sewer system along the 100 Avenue project corridor is to discharge into the ditch that crosses 100 Avenue east of Landing Drive.

5.2.3.2 Major (Overland) Drainage System

Runoff flows in excess of the design capacity of the catch basin and storm sewer system (> 1:5 year) will remain on the surface. These flows, up to the 1:100 year design event, are to be routed overland parallel to the proposed storm sewer systems and discharge to the same outlets. The roadways are to be graded to achieve an effective surface drainage system, considering the following:

- Maintaining a minimum roadway slope of 0.5% to achieve efficient, positive drainage to the storm sewer system;
- Achieving a maximum surface ponding depth of 0.3 m during the 1:100 year design event; and
- Maintaining an overall minimum slope of a cascading roadway system towards the outlets of 0.3%.

5.2.3.3 Ditch Outlet Systems

The capacities of the ditch system to accept the additional flows expected from this redevelopment appear to be adequate, but should be confirmed at design stage. Should any capacity constraints be determined at design stage to be inadequate to accept the increased flows, at a minimum, the following options should be investigated as a means of mitigating the peak flow discharges to within ditch capacities:

- Route roadway corridor runoff through linear bioswale system located adjacent to the roadways within the road right-of-ways, where flows have an opportunity to infiltrate through bio engineered soils, thus receiving water quality treatment and reducing peak flow discharges – underdrain systems within the bioswales would ensure positive drainage into the storm sewer system; and
- Inline pipe storage within the furthest downstream portions of the proposed storm sewer network, with controlled release rates and/or control structures.

5.2.3.4 Water Quality Treatment and Spill Containment

For this project it is proposed that the provincial water quality treatment goals and adequate spill containment features be provided in the existing downstream municipal ditch systems, including Woody Channel, without any additional on-site measures beyond the solids containment features provided by typical catch basin installations.

5.3 Environmental Overview

Environmental considerations along 100 Avenue corridor include tree stands, natural wetlands and storm water management.

5.3.1 Tree stands

Notable tree stands are located on the south side of 100 Avenue, immediately south of Ivy Lake and on the north side of 100 Avenue, east of 92 Street. Any tree clearing should occur outside the April 15 to July 31 window, unless the area is checked for bird nests by a qualified professional.

5.3.2 Natural Wetlands

Naturally occurring wetlands are present along the project corridors. A large wetland complex is located at the eastern project limits, straddling 100 Avenue and Landing Drive. This wetland will be impacted by the road upgrades.

Any wetland impact requires Water Act Approval from Alberta Environment and Water (AEW) and a Wetland Assessment and Compensation Report. Wetland assessment should be done during the summer months to accurately assess the wetland vegetation, condition and wildlife use. Compensation can take the form of wetland creation – through construction of naturalized storm water management facilities – or through a Wetland Restoration Agency, such as Duck Unlimited Canada. Compensation is typically at a 3:1 ratio, meaning if 1 ha of wetland is impacted by the project, then 3 ha must be provided as compensation.

5.3.3 Storm Water Management

Any changes to existing storm water management facilities (SWMF), such as adding additional drainage area, requires a notice to AEW that the existing SWMF can handle the additional input. The notice must include an assessment by a Professional Engineer that the SWMF meets the applicable guidelines.

5.4 Noise Attenuation

It is recommended that the roadways be monitored before and after construction to determine if noise attenuation is required based on the City's relevant noise attenuation policy. It should be noted that the berm recommended for sections of residential abutting 92 Street may be some noise attenuation affects.

5.5 Opinion of Probable Costs

Cost estimates were based on costs estimates outlined in the City's Transportation System Levy Bylaw, C-1197. The cost estimates are approximate and shown in the table below. Contingency and engineering are included in the costs.

Table 5.1: Opinion of Probable Costs

100 Avenue					
West of 96 Street, Extent 4 Laning	55	m	$1,460	per m	$80,300
96 Street Intersection Upgrade	1		$155,000	each	$155,000
Pavement markings, 96 St. to E of 93 St. and Signs	611	m	$44	per m	$26,884
93 Street Traffic Signal	1		$345,000	each	$345,000
90 Street to 84 Street - Rural to Urban	1591	m	$2,453	per m	$3,902,723
90 Street Traffic Signal	1		$345,000	each	$345,000
84 Street Traffic Signal	1		$345,000	each	$345,000
Total					**$5,199,907**
Grand Total					**$5,199,199**

It should be noted that the per meter cost for the upgrade from rural to urban from 90 Street to 84 Street do not include cost due to wet land impacts.

6.0 Recommended Plan/Profiles

6.1 100 Avenue, 96 Street to 84 Street

Shown on exhibits 6.1 to 6.4 are the recommended plan and profiles for 100 Avenue. The plans show ultimate alignment which will be built out as per recommended staging plans.

6.1.1 Pedestrian Connectivity

As per design requirements pedestrian connectivity is required along 100 Avenue. To satisfy this requirement a 3.0 m trail and a 1.5 m sidewalk is maintained throughout the recommended plans. The trail would be on one side of the road and a sidewalk on the other.

6.1.1.1 Pedestrian Trail and Walk

The 100 Avenue right of way between 96 St and 93 Street is approximately 25 m. As discussed in section 4.1 the recommended option is to maintain this right of way as-is with the creation of parking bans on either side to provide an addition through lane to accommodate traffic volumes. Within the 25 m right of way there is approximately 3.5 m of space available to widen the existing 1.5 m walk. Therefore it is recommended that the walk be widened.

Beyond 93 Street a trail is recommended on the south side of 100 Avenue, connecting to the 92 Street Trail at the intersection of 92 Street and 100 Avenue. This trail crosses to the north side of 100 Avenue, east of 92 Street, connecting to the Ivy Lake trail at 90 Street. The trail continues from the Ivy Lake trail (west of Landing Drive) to 84 Street on the north side of the roadway. The trail currently only extends to 88 Street.

A pedestrian sidewalk is recommended on the side of the road opposite the trail. This results in a 3.0m trail on the north side and a 1.5m trail on the south side.

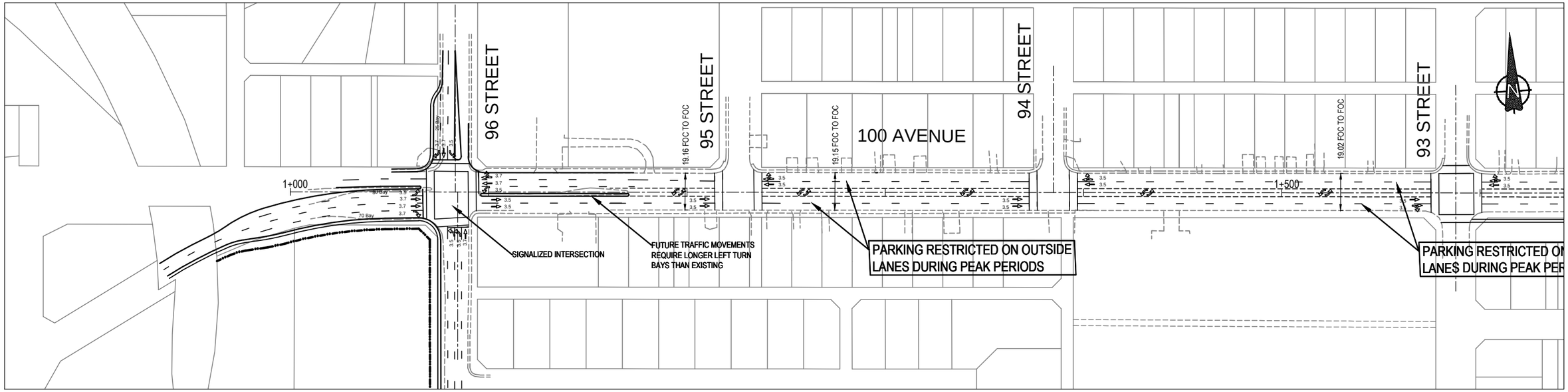
6.1.2 Access Management

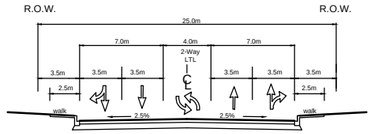
Driveways between 96 Street and 92 Street are maintained given the recommended options discussed in section 4.1. Access to these driveways will be via a center two way left turning lane. These driveways have been maintained due to access issues to the properties and complexity relating to closing them. In the future the City should complete a comprehensive access management plan for this area and or a redevelopment plan. These plans should address the future locations of access to the properties.

Beyond 92 Street access to adjacent properties is at the intersections, with the exception of the right in/out to the property on the NE corner of the intersection of 100 Avenue and 92 Street. The intersection spacing for the intersection beyond 92 Street is shown in the table below.

Table 6.1: Intersection Spacing, 100 Avenue, 92 Street to 84 Street

Intersection	Spacing to Nearest Intersection			
	Intersection	West	Intersection	East
90 Street	92 Street	320 m	Landing Drive	640 m
Landing Drive	90 Street	640 m	86 Street	310 m
86 Street	Landing Drive	310 m	84 Street	270 m





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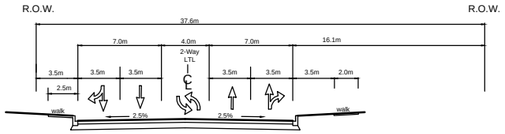
100 AVENUE
93 St. - 96 St.
Option B



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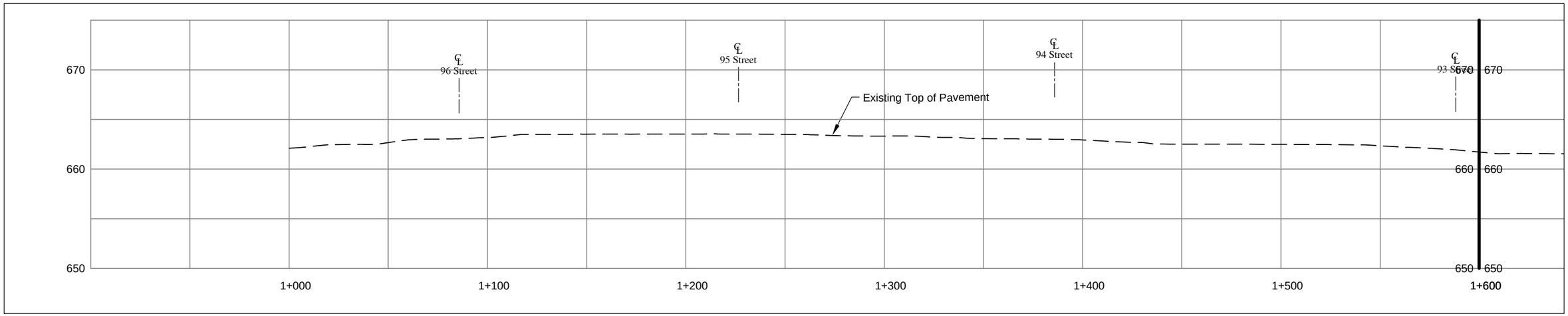
92 St. - 93 St.
Option B



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City of Grande Prairie

100 Avenue Functional Plan

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PLAN & PROFILE
100 Avenue
STA. 1+000 to 1+600
OPTION B

Drawing No. 6.1

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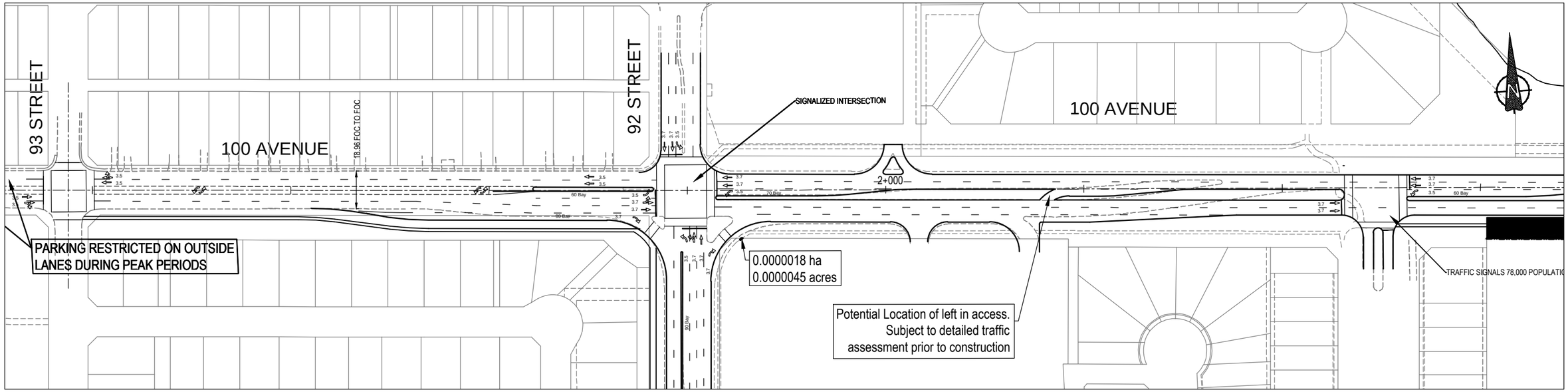

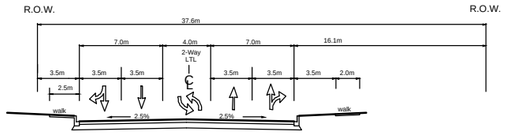

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92 St. - 93 St.
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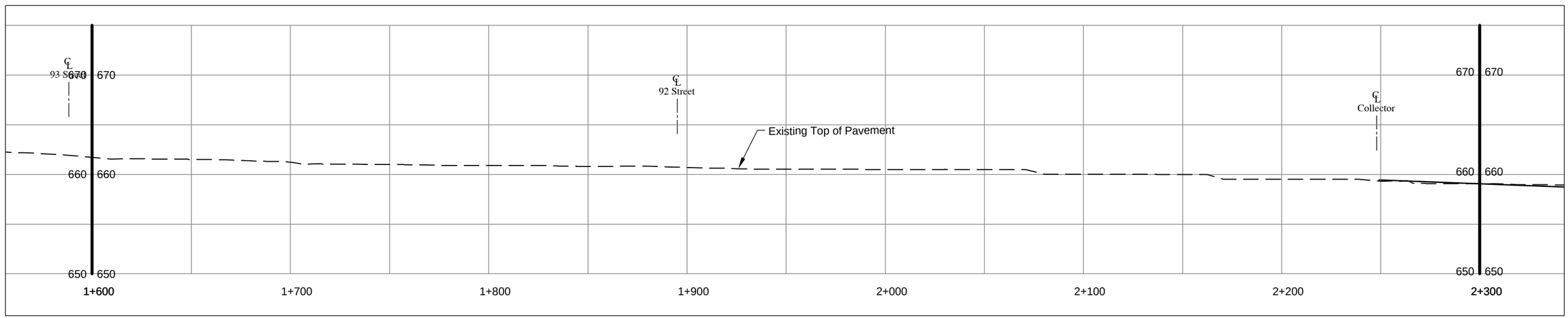

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100 Avenue Functional Plan

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PLAN & PROFILE
100 Avenue
STA. 1+600 to 2+300
OPTION B

Drawing No. 6.2
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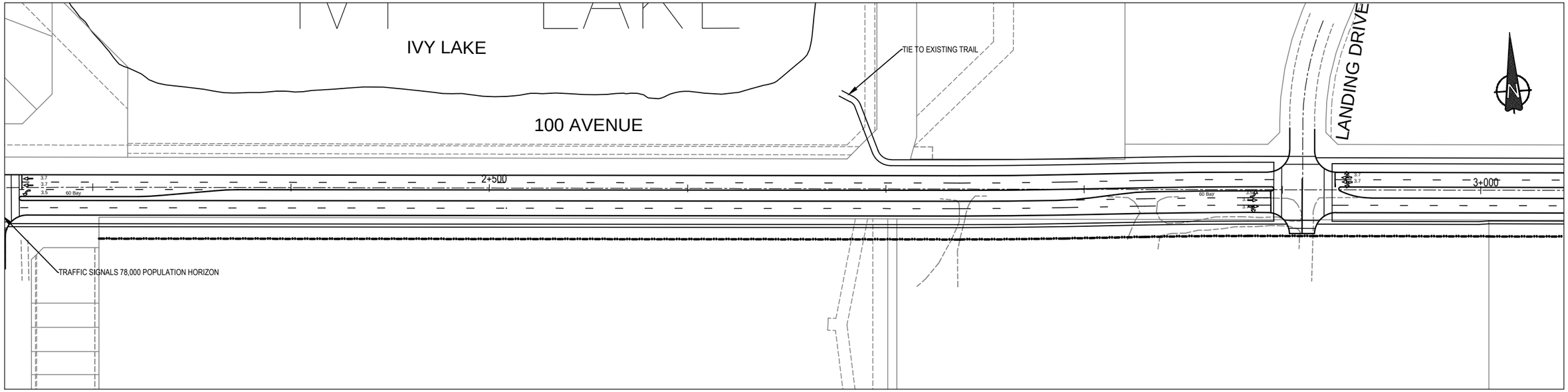

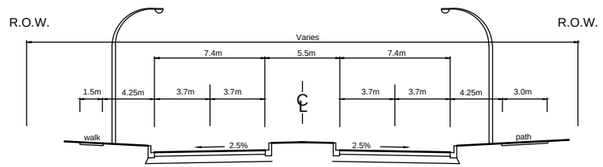

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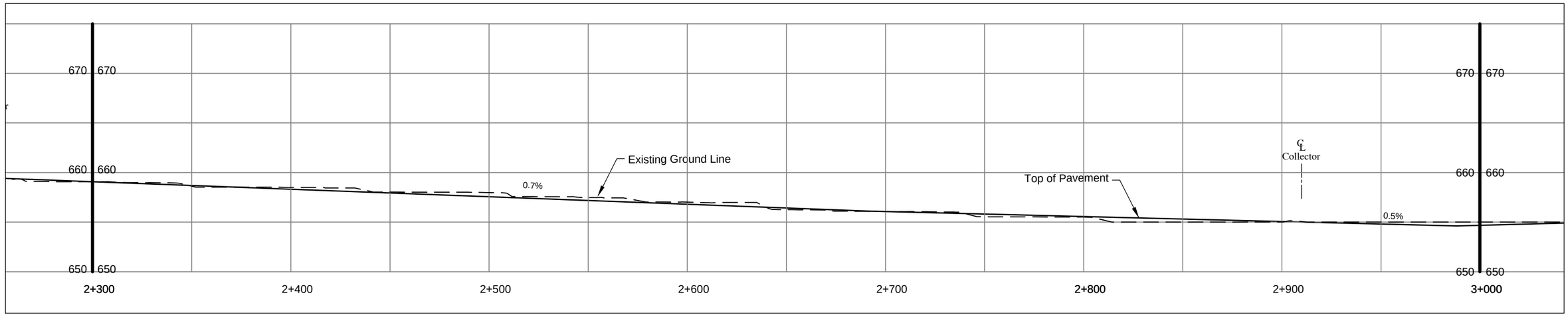

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ISL Engineering and Land Services

City of Grande Prairie

100 Avenue Functional Plan

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PLAN & PROFILE
100 Avenue
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OPTION B

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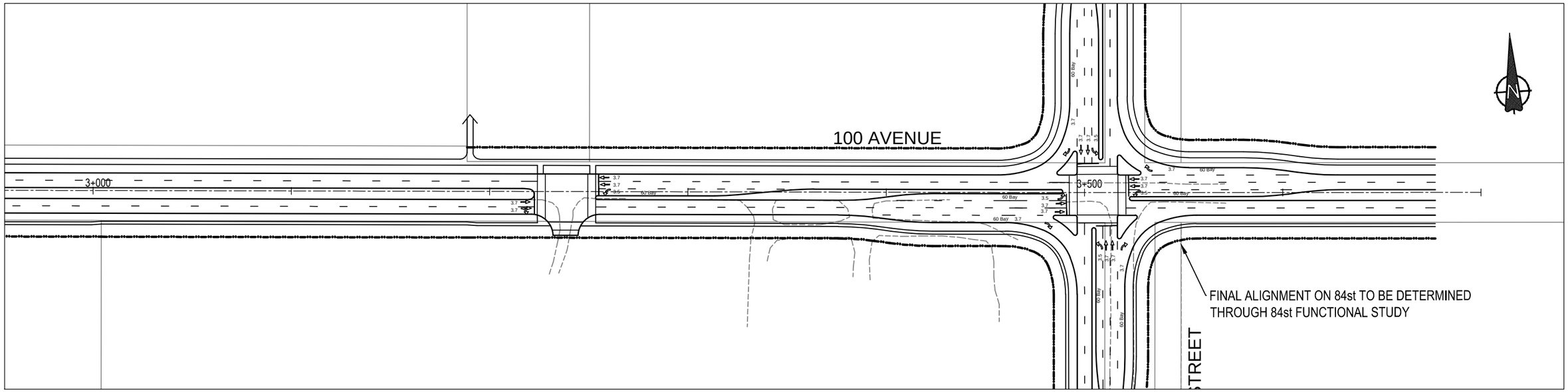

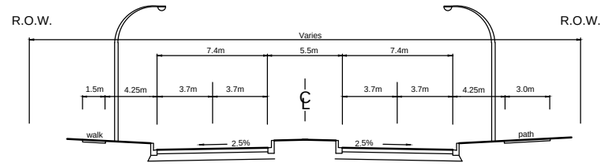

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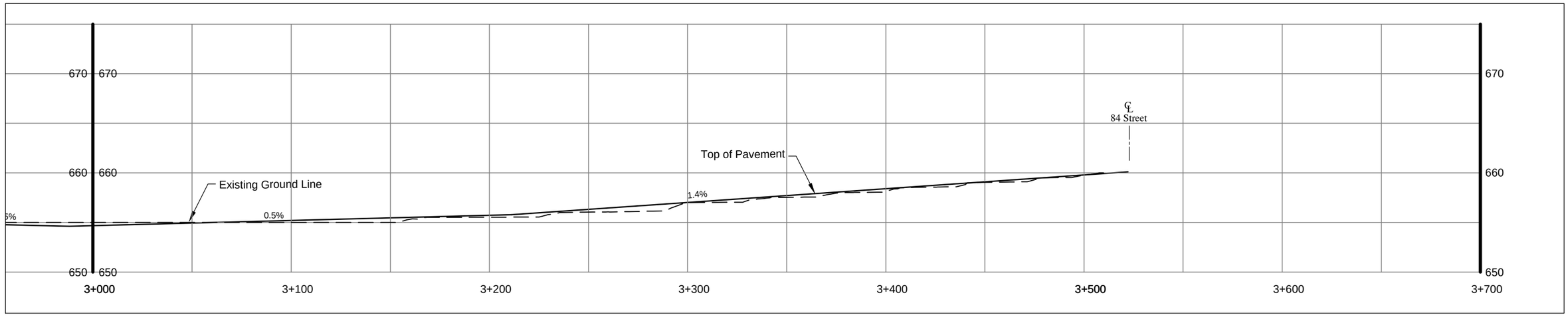

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100 Avenue Functional Plan

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PLAN & PROFILE
100 Avenue
STA. 3+000 to 3+700
OPTION B

Drawing No. 6.4

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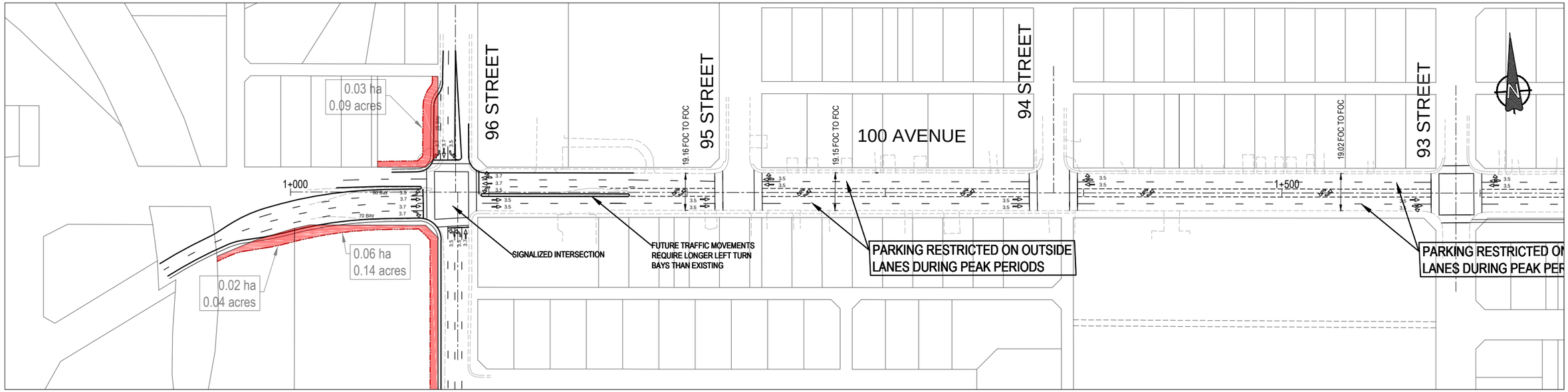
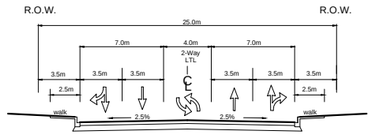
6.1.3 Wet Pond

As shown in Exhibit 6.4, additional property is required on south the side of 100 Avenue, east of Landing Drive to accommodate future road widening. As this is a sensitive environment area, it is recommended that the City inquire with Alberta Environment as to the requirements prior to detailed design.

6.1.4 Right-of-Way Requirements

The right-of-way requirements are shown in Exhibits 6.5 to 6.8. They show the land needed for widening.





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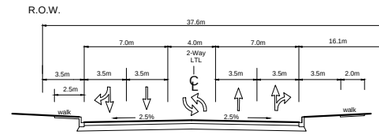
Option B



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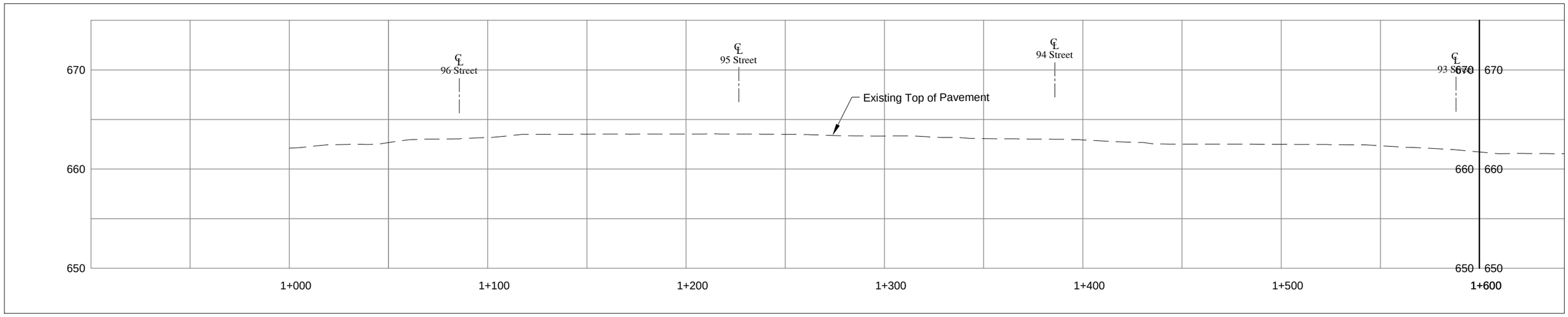

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City of Grande Prairie

100 Avenue Functional Plan

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RIGHT-OF-WAY REQUIREMENTS
100 Avenue
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OPTION B

Drawing No. 6.5

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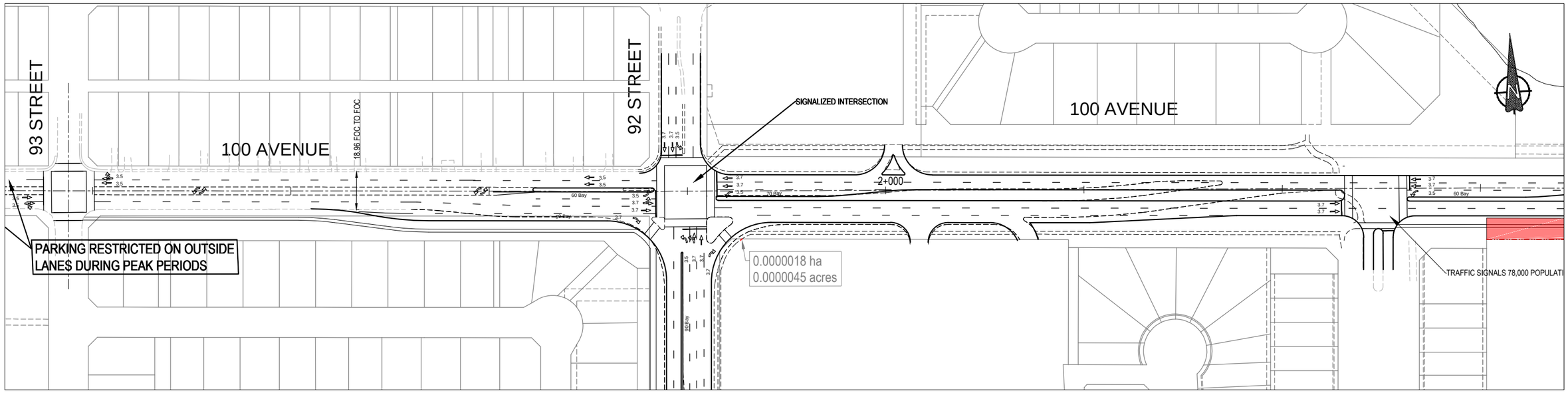

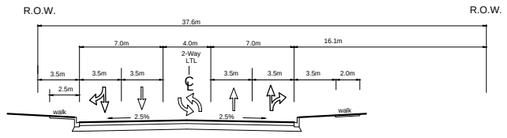

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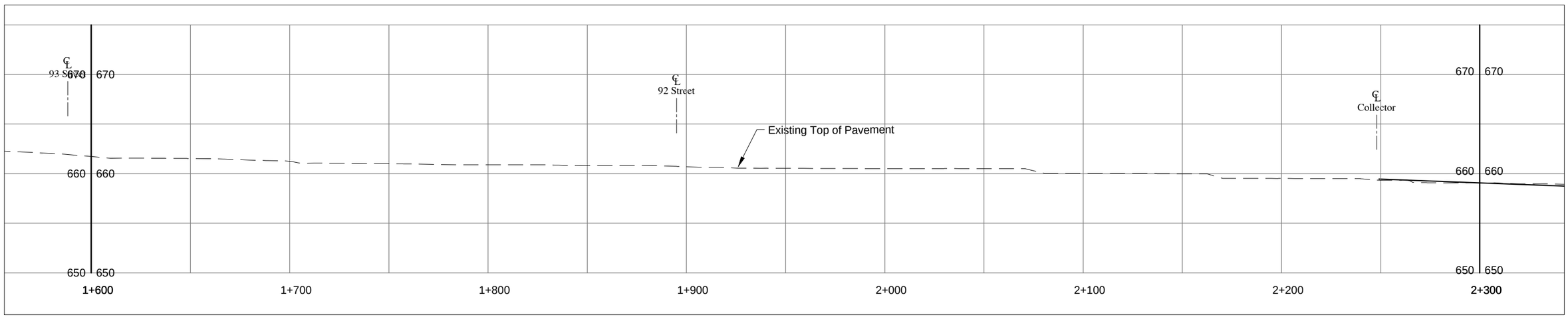

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City of Grande Prairie

100 Avenue Functional Plan

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RIGHT-OF-WAY REQUIREMENTS
100 Avenue
STA. 1+600 to 2+300
OPTION B

Drawing No. 6.6
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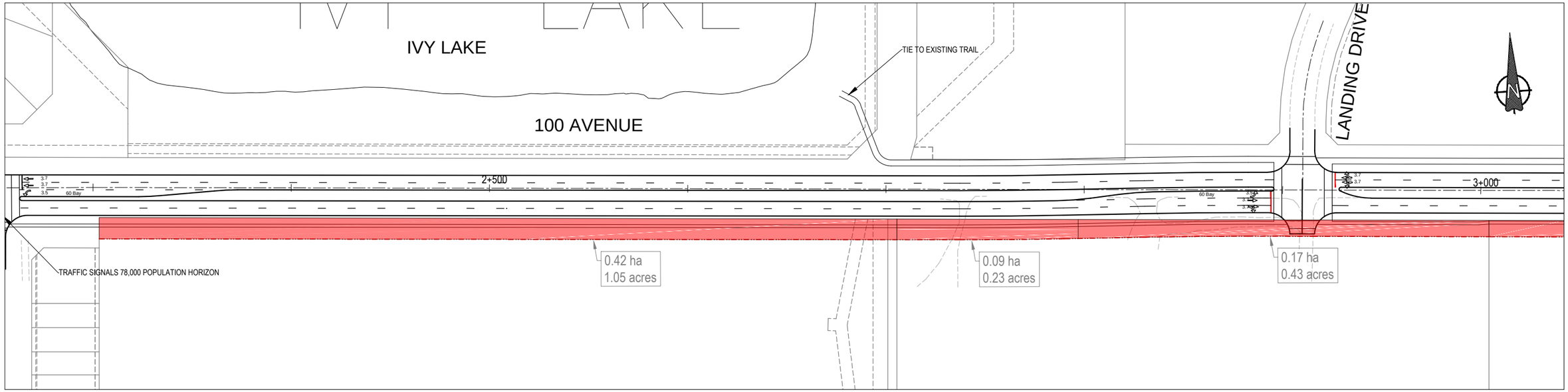

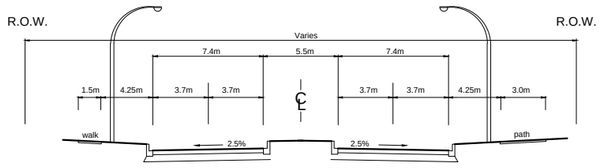

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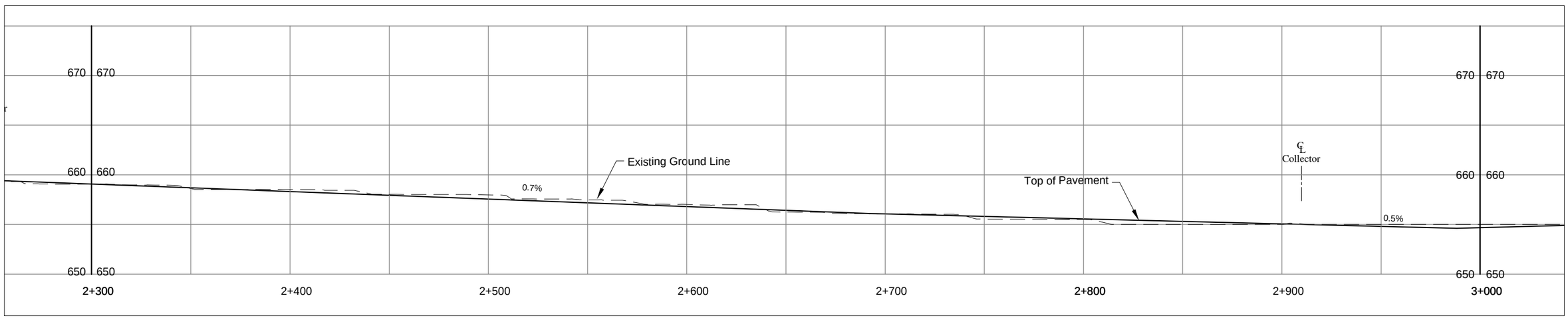

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100 Avenue Functional Plan

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RIGHT-OF-WAY REQUIREMENTS
100 Avenue
STA. 2+300 to 3+000
OPTION B

Drawing No. 6.7

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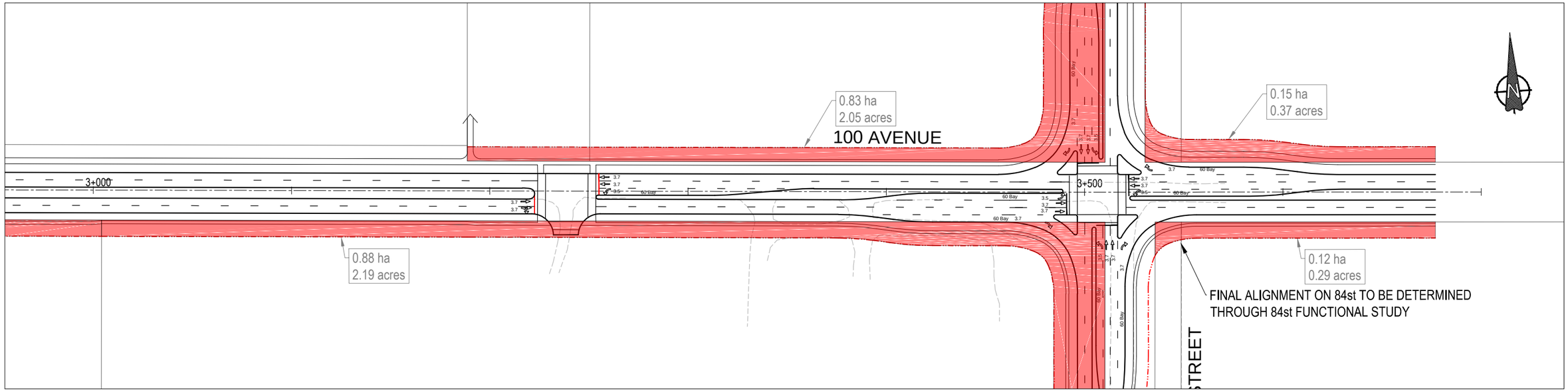
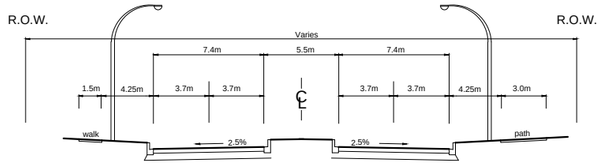
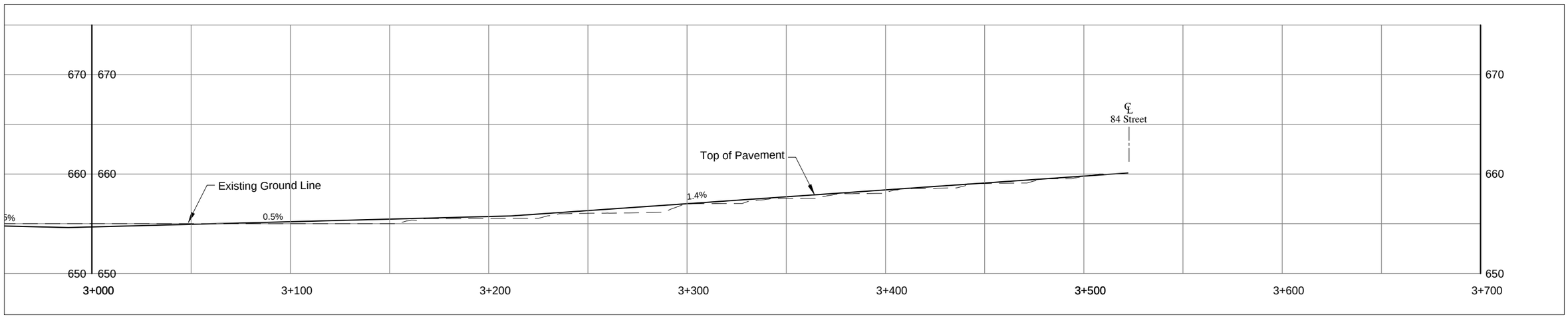




TYPICAL CROSS SECTION
100 AVENUE



No.	DESCRIPTION	BY	DATE
6			
5			
4			
3			
2			
1			

REVISIONS

P.Eng.

Permit

Scale
HORZ 1:1000 0 10 20 30 40m
VERT. 1:200 0 2 4 6 8m

ISL Engineering and Land Services

City of Grande Prairie

100 Avenue Functional Plan

Drawn: | Design Checked: | Date:
Designed: | Discipline Review: | Date:

RIGHT-OF-WAY REQUIREMENTS
100 Avenue
STA. 3+000 to 3+700

OPTION B

Drawing No. 6.8

Sheet No.

Revision No.

Ralph Schmanke / Oct. 16, 12 / J:\12800\12834_GP_100Ave_FP\02_drafting\02a_project\12834_PP_Plane_NEW.dwg

7.0 Public Input Summary

The public input program for this project consisted of two input opportunities, one on February 15, 2012, for reaction to the preliminary ultimate stage plans, and a second on May 08, 2012 to attain input to the finalized staging and ultimate plans. A stakeholder meeting prior to the public open house on each date was held. All sessions were held at the Muskoseepi Park Pavilion. A more detailed report on the public input program, including letter received is provided in Appendix E. The 92 Street Functional Study Open House was held in conjunction and some questions may relate to the 92 Street project.

7.1 Initial Open House

The meeting was held from 3:00 p.m. to 6:30 p.m. on February 15, 2012, hosted by members of the consultant team and City of Grande Prairie staff. An overview of the ultimate stage plans was presented by the consultant team. Along with the overview of the ultimate stage plans were two options for the 100 Avenue section from 96 Street to 93 Street. Attendees had the opportunity to compare these two options on the comment form.

Twenty two landowners signed the registration sheet for the meeting and the total attendance was approximately 25. Four comment forms were completed and returned at the open house. One attendee submitted comments via email in the two weeks following the open house.

Overall, Option B was favoured by those who filled out a comment form. Although the total number of forms filled out was low, the general feeling was that option B was more favourable through discussions with the Attendees.

7.2 Second Open House

The second open house was held from 4:00 to 6:30 p.m. on May 8, 2012. Representatives from ISL Engineering and Land Services and the City of Grande Prairie staffed the event. An overview of the ultimate stage plans, including proposed construction staging as well as the 100 Avenue recommended options were displayed at this open house.

15 people signed in for the open house and total attendance was about 40. Seven comment forms were completed and returned at the open house. Nine comment forms were submitted via fax and two letters were received via email in the two weeks following the open house.

The changes to 100 Avenue (96 to 93 Street, option B) were not received well by those who attended the meeting. Many of the residents were concerned with the loss in parking along 100 Avenue as recommended. At the initial open house none of these concerns were noted as many of the attendees were in favour of the changes.

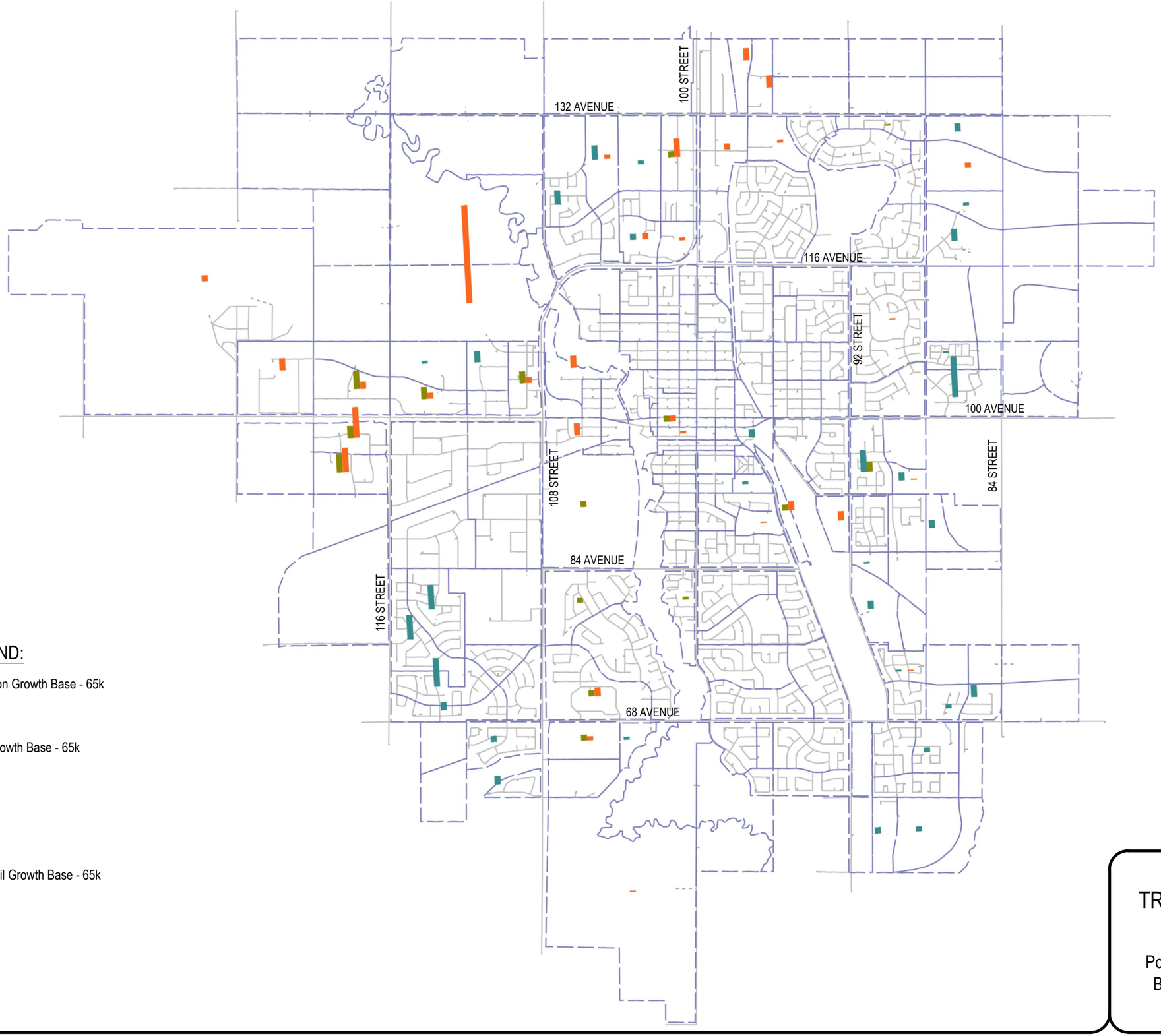
Other concerns included:

- Construct 84 Street as this will provide a better route to drive to and from work and would reduce the amount of traffic on 92 Street.
- Extend 84 Avenue across the rail yard.
- Upgrading 100 Avenue to 4 lanes will increase traffic speeds.
- Where will the Aquatera garbage bins go if the curb lane is turned into a driving lane. Aquatera confirmed buns could be left on the sidewalk.
- Why was 88 Street closed. This put a lot of traffic on to Crystal Lake Drive.
- How will emergency services be affected by the 101 Avenue intersection closure.

Appendix A

TMP Growth Maps

Exhibit 3.3



LEGEND:

Population Growth Base - 65k
1000
500
0

Retail Growth Base - 65k
1000
500
250
0

Non-retail Growth Base - 65k
1000
500
250
0

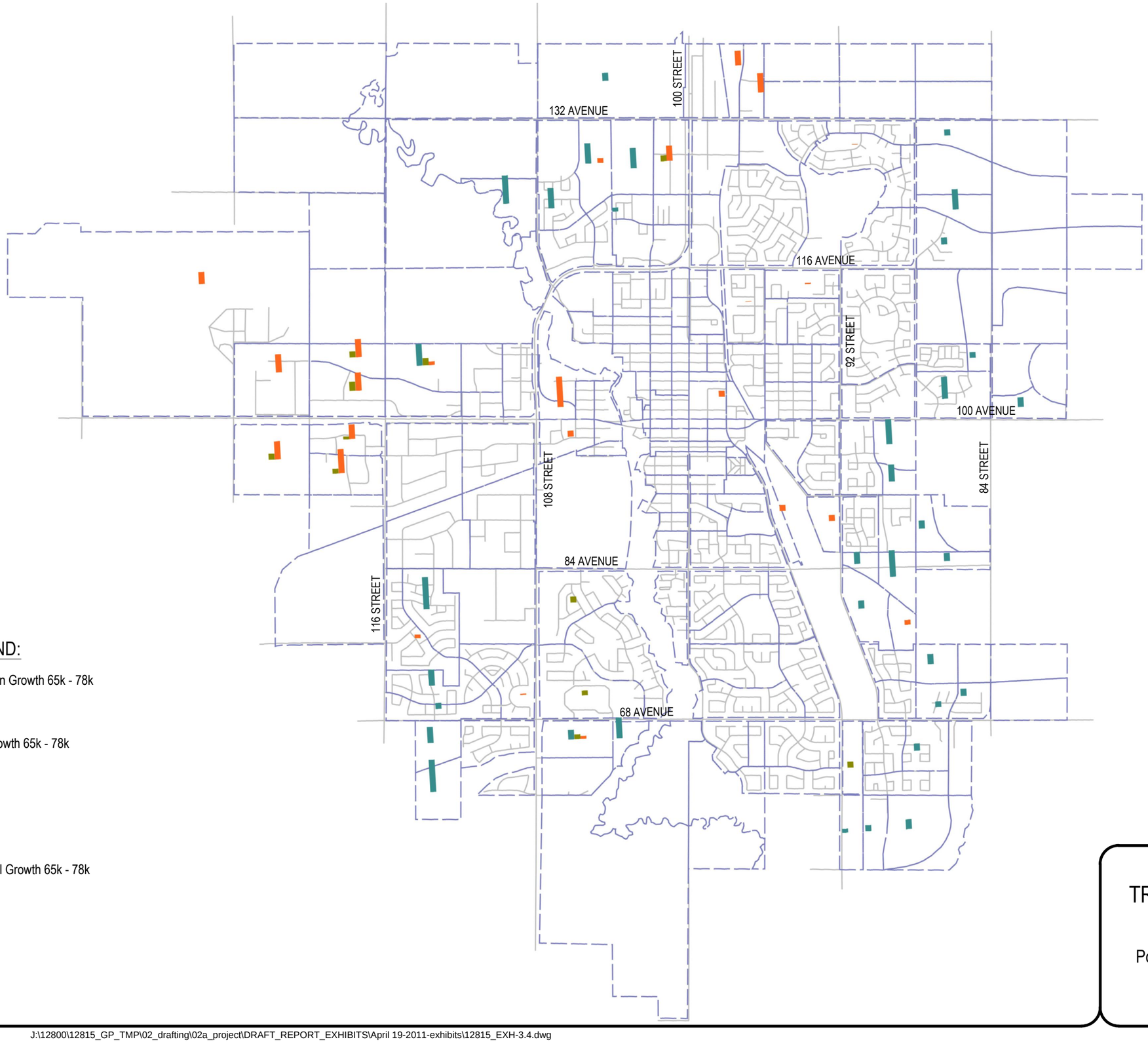
ISL Engineering and Land Services

CITY of GRANDE PRAIRIE TRANSPORTATION MASTER PLAN

Population and Employment Growth Locations
Base Year (2010) to 65k Population Horizon

Theresec April 20, 2011 J:\12800\12815_GP_TMP\02_drafting\02a_project\DRAFT_REPORT_EXHIBITS\April 19-2011-exhibits\12815_EXH-3.3.dwg

Exhibit 3.4



LEGEND:

Population Growth 65k - 78k

1000
500
0

Retail Growth 65k - 78k

1000
500
250
0

Non-retail Growth 65k - 78k

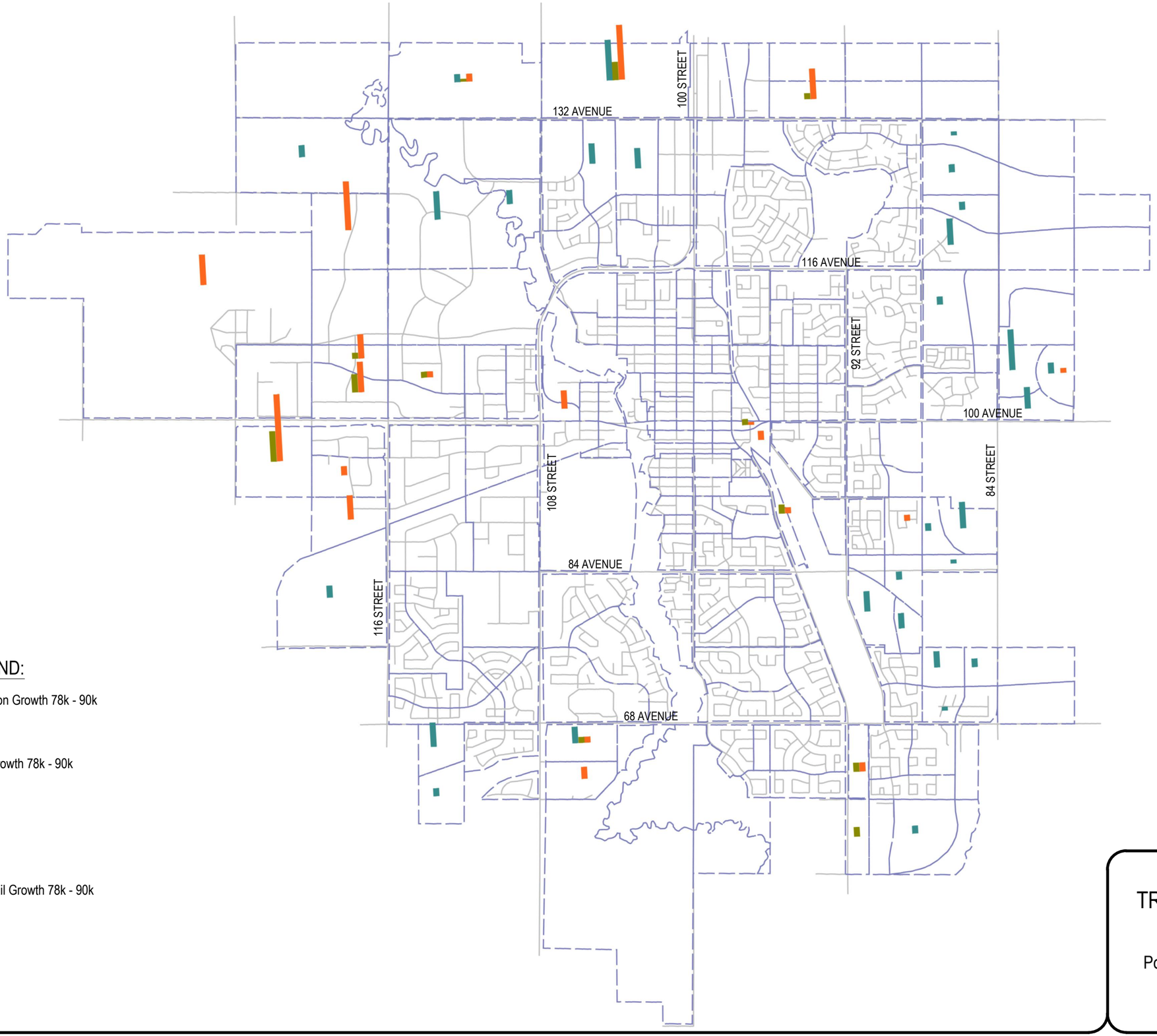
1000
500
250
0

ISL Engineering and Land Services

CITY of GRANDE PRAIRIE TRANSPORTATION MASTER PLAN

Population and Employment Growth Locations
65k to 78k Population Horizons

Exhibit 3.5



LEGEND:

Population Growth 78k - 90k
1000
500
0

Retail Growth 78k - 90k
1000
500
250
0

Non-retail Growth 78k - 90k
1000
500
250
0

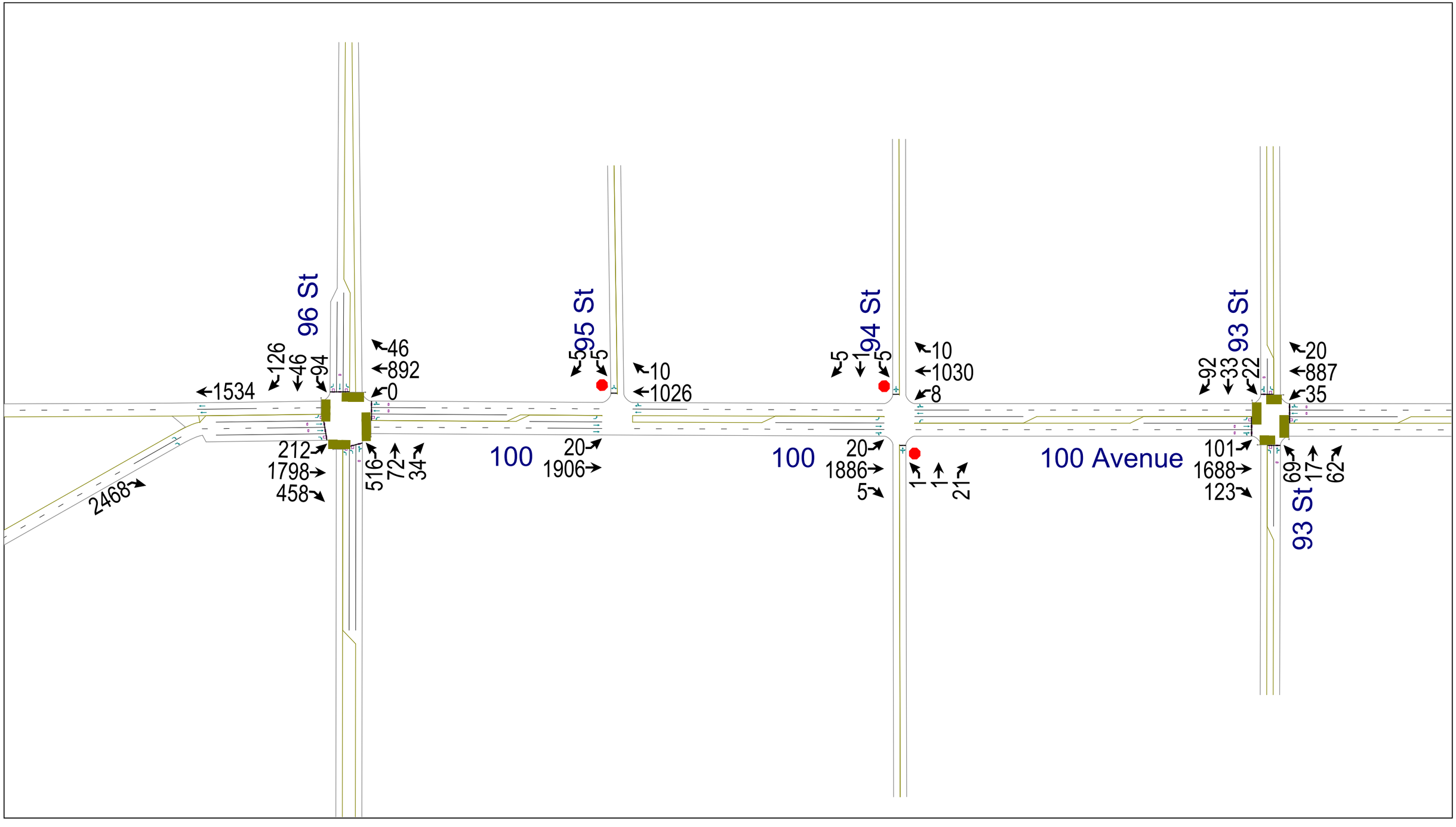
ISL Engineering and Land Services

CITY of GRANDE PRAIRIE TRANSPORTATION MASTER PLAN

Population and Employment Growth Locations
78k to 90k Population Horizons

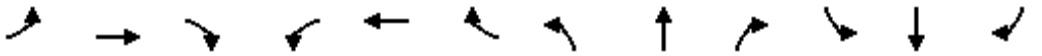
Appendix B

TMP Traffic Volumes


96 St
95 St
94 St
93 St
100
100
100 Avenue
93 St
1534
126
46
94
46
892
0
5
5
10
1026
5
1
5
10
1030
8
92
33
22
20
887
35
2468
212
1798
458
516
72
34
20
1906
20
1886
5
1
1
21
101
1688
123
69
17
62

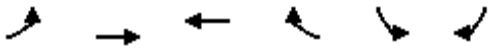
Appendix C

Synchro Reports



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	212	1798	458	0	892	46	516	72	34	94	46	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00		0.95		0.97	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85		0.99		1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583		3513		3433	1773		1770	1863	1583
Flt Permitted	0.19	1.00	1.00		1.00		0.50	1.00		0.68	1.00	1.00
Satd. Flow (perm)	356	3539	1583		3513		1793	1773		1272	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	1954	498	0	970	50	561	78	37	102	50	137
RTOR Reduction (vph)	0	0	117	0	2	0	0	14	0	0	0	127
Lane Group Flow (vph)	230	1954	381	0	1018	0	561	101	0	102	50	10
Turn Type	pm+pt		Perm	Perm			pm+pt			pm+pt		Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		6
Actuated Green, G (s)	84.1	84.1	84.1		68.3		30.7	19.7		15.7	8.7	8.7
Effective Green, g (s)	84.1	84.1	84.1		68.3		30.7	19.7		15.7	8.7	8.7
Actuated g/C Ratio	0.68	0.68	0.68		0.56		0.25	0.16		0.13	0.07	0.07
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	380	2424	1084		1954		689	284		191	132	112
v/s Ratio Prot	0.06	c0.55			0.29		c0.12	0.06		0.03	0.03	
v/s Ratio Perm	0.36		0.24				c0.08			0.04		0.01
v/c Ratio	0.61	0.81	0.35		0.52		0.81	0.35		0.53	0.38	0.09
Uniform Delay, d1	10.9	13.6	8.0		17.0		41.4	45.9		49.6	54.5	53.3
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.7	3.0	0.9		1.0		7.3	0.8		2.9	1.8	0.3
Delay (s)	13.6	16.6	8.9		18.0		48.7	46.7		52.4	56.3	53.7
Level of Service	B	B	A		B		D	D		D	E	D
Approach Delay (s)		14.9			18.0			48.3			53.7	
Approach LOS		B			B			D			D	

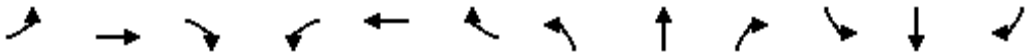
Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	122.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	20	1906	1026	10	5	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	2072	1115	11	5	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		147	363			
pX, platoon unblocked	0.98				0.55	0.98
vC, conflicting volume	1126				2200	563
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1083				1357	508
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				93	99
cM capacity (veh/h)	625				74	499

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	22	1036	1036	743	383	11
Volume Left	22	0	0	0	0	5
Volume Right	0	0	0	0	11	5
cSH	625	1700	1700	1700	1700	129
Volume to Capacity	0.03	0.61	0.61	0.44	0.23	0.08
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	2.2
Control Delay (s)	11.0	0.0	0.0	0.0	0.0	35.4
Lane LOS	B					E
Approach Delay (s)	0.1			0.0		35.4
Approach LOS						E

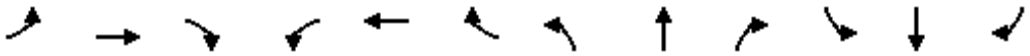
Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	1886	5	8	1030	10	1	1	21	5	1	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	2050	5	9	1120	11	1	1	23	5	1	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		304			205							
pX, platoon unblocked	0.92			0.48			0.53	0.53	0.48	0.53	0.53	0.92
vC, conflicting volume	1130			2055			2679	3244	1028	2234	3241	565
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	963			1049			1685	2760	0	838	2755	347
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			97			96	89	96	95	89	99
cM capacity (veh/h)	652			319			28	9	525	113	10	596

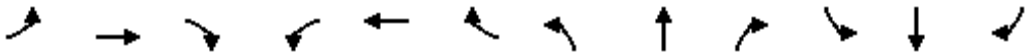
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	22	1367	689	9	746	384	25	12
Volume Left	22	0	0	9	0	0	1	5
Volume Right	0	0	5	0	0	11	23	5
cSH	652	1700	1700	319	1700	1700	127	70
Volume to Capacity	0.03	0.80	0.41	0.03	0.44	0.23	0.20	0.17
Queue Length 95th (m)	0.8	0.0	0.0	0.7	0.0	0.0	5.6	4.6
Control Delay (s)	10.7	0.0	0.0	16.6	0.0	0.0	40.2	66.7
Lane LOS	B			C			E	F
Approach Delay (s)	0.1			0.1			40.2	66.7
Approach LOS							E	F

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	62.3%	ICU Level of Service		B
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	1688	123	35	887	20	69	17	62	22	33	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.88		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3503		1770	3527		1770	1643		1770	1657	
Flt Permitted	0.27	1.00		0.06	1.00		0.33	1.00		0.70	1.00	
Satd. Flow (perm)	496	3503		116	3527		606	1643		1307	1657	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	1835	134	38	964	22	75	18	67	24	36	100
RTOR Reduction (vph)	0	4	0	0	1	0	0	19	0	0	91	0
Lane Group Flow (vph)	110	1965	0	38	985	0	75	66	0	24	45	0
Turn Type	Perm			Perm			pm+pt			Perm		
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	66.5	66.5		66.5	66.5		15.5	15.5		8.3	8.3	
Effective Green, g (s)	66.5	66.5		66.5	66.5		15.5	15.5		8.3	8.3	
Actuated g/C Ratio	0.74	0.74		0.74	0.74		0.17	0.17		0.09	0.09	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	366	2588		86	2606		146	283		121	153	
v/s Ratio Prot		c0.56			0.28		c0.02	0.04			0.03	
v/s Ratio Perm	0.22			0.33			c0.07			0.02		
v/c Ratio	0.30	0.76		0.44	0.38		0.51	0.23		0.20	0.30	
Uniform Delay, d1	3.9	7.0		4.6	4.3		32.6	32.1		37.8	38.1	
Progression Factor	1.00	1.00		0.73	0.39		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	2.1		12.4	0.3		3.0	0.4		0.8	1.1	
Delay (s)	6.0	9.1		15.7	2.0		35.7	32.5		38.6	39.2	
Level of Service	A	A		B	A		D	C		D	D	
Approach Delay (s)		9.0			2.5			34.0			39.1	
Approach LOS		A			A			C			D	

Intersection Summary			
HCM Average Control Delay	9.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	78.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

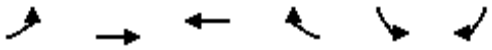


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	886	626	19	390	12	390	388	9	106	683	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1610	3336	1583	1770	3437	
Flt Permitted	0.24	1.00	1.00	0.30	1.00	1.00	0.13	0.53	1.00	0.40	1.00	
Satd. Flow (perm)	448	3539	1583	554	3539	1583	220	1797	1583	752	3437	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	283	963	680	21	424	13	424	422	10	115	742	176
RTOR Reduction (vph)	0	0	237	0	0	11	0	0	5	0	21	0
Lane Group Flow (vph)	283	963	443	21	424	2	220	626	5	115	897	0
Turn Type	pm+pt		Perm	Perm		Perm	pm+pt		Perm	Perm		
Protected Phases	5	2			6		3	8			4	
Permitted Phases	2		2	6		6	8		8	4		
Actuated Green, G (s)	34.1	34.1	34.1	16.0	16.0	16.0	47.9	47.9	47.9	32.3	32.3	
Effective Green, g (s)	34.1	34.1	34.1	16.0	16.0	16.0	47.9	47.9	47.9	32.3	32.3	
Actuated g/C Ratio	0.38	0.38	0.38	0.18	0.18	0.18	0.53	0.53	0.53	0.36	0.36	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	377	1341	600	98	629	281	296	1155	843	270	1234	
v/s Ratio Prot	0.12	0.27			0.12		c0.10	0.07			0.26	
v/s Ratio Perm	c0.17		c0.28	0.04		0.00	c0.30	0.22	0.00	0.15		
v/c Ratio	0.75	0.72	0.74	0.21	0.67	0.01	0.74	0.54	0.01	0.43	0.73	
Uniform Delay, d1	21.5	23.8	24.1	31.6	34.6	30.5	15.7	13.8	9.9	21.8	25.0	
Progression Factor	0.76	0.72	0.75	1.00	1.00	1.00	1.11	1.39	1.61	0.77	0.75	
Incremental Delay, d2	5.6	1.3	3.2	1.1	2.9	0.0	9.4	0.5	0.0	1.0	2.0	
Delay (s)	22.0	18.4	21.2	32.7	37.4	30.5	26.8	19.7	15.9	17.8	20.9	
Level of Service	C	B	C	C	D	C	C	B	B	B	C	
Approach Delay (s)		19.9			37.0			21.5			20.6	
Approach LOS		B			D			C			C	

Intersection Summary			
HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	645	357	131	313	108	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	4.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frt	0.95		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3350		1770	3539	1770	1583
Flt Permitted	1.00		0.20	1.00	0.95	1.00
Satd. Flow (perm)	3350		363	3539	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	701	388	142	340	117	66
RTOR Reduction (vph)	153	0	0	0	0	42
Lane Group Flow (vph)	936	0	142	340	117	24
Turn Type			pm+pt			Perm
Protected Phases	4		3	8	2	
Permitted Phases			8			2
Actuated Green, G (s)	16.5		23.7	23.7	18.3	18.3
Effective Green, g (s)	16.5		23.7	23.7	18.3	18.3
Actuated g/C Ratio	0.33		0.47	0.47	0.37	0.37
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1106		262	1677	648	579
v/s Ratio Prot	c0.28		c0.03	0.10	c0.07	
v/s Ratio Perm			0.22			0.02
v/c Ratio	0.85		0.54	0.20	0.18	0.04
Uniform Delay, d1	15.6		17.3	7.7	10.8	10.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	6.1		2.3	0.1	0.6	0.1
Delay (s)	21.7		19.6	7.7	11.4	10.3
Level of Service	C		B	A	B	B
Approach Delay (s)	21.7			11.2	11.0	
Approach LOS	C			B	B	

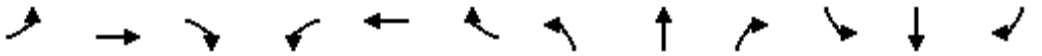
Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	50.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	237	469	351	26	13	92
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	258	510	382	28	14	100
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	410				1166	205
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	410				1166	205
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	78				90	88
cM capacity (veh/h)	1146				145	802

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	258	255	255	254	155	114
Volume Left	258	0	0	0	0	14
Volume Right	0	0	0	0	28	100
cSH	1146	1700	1700	1700	1700	514
Volume to Capacity	0.22	0.15	0.15	0.15	0.09	0.22
Queue Length 95th (m)	6.9	0.0	0.0	0.0	0.0	6.7
Control Delay (s)	9.1	0.0	0.0	0.0	0.0	14.0
Lane LOS	A					B
Approach Delay (s)	3.0			0.0		14.0
Approach LOS						B

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	144	303	35	53	174	112	33	135	57	246	255	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.63	1.00	1.00	0.55	1.00	1.00	0.58	1.00	1.00	0.66	1.00	1.00
Satd. Flow (perm)	1179	3539	1583	1030	3539	1583	1083	3539	1583	1227	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	157	329	38	58	189	122	36	147	62	267	277	185
RTOR Reduction (vph)	0	0	23	0	0	73	0	0	37	0	0	111
Lane Group Flow (vph)	157	329	15	58	189	49	36	147	25	267	277	74
Turn Type	Perm		Perm	Perm		Perm	Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Effective Green, g (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Grp Cap (vph)	472	1416	633	412	1416	633	433	1416	633	491	1416	633
v/s Ratio Prot		0.09			0.05			0.04			0.08	
v/s Ratio Perm	c0.13		0.01	0.06		0.03	0.03		0.02	c0.22		0.05
v/c Ratio	0.33	0.23	0.02	0.14	0.13	0.08	0.08	0.10	0.04	0.54	0.20	0.12
Uniform Delay, d1	8.3	7.9	7.3	7.6	7.6	7.4	7.4	7.5	7.3	9.2	7.8	7.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.4	0.1	0.7	0.2	0.2	0.4	0.1	0.1	4.3	0.3	0.4
Delay (s)	10.2	8.3	7.3	8.3	7.8	7.7	7.8	7.7	7.4	13.5	8.1	7.9
Level of Service	B	A	A	A	A	A	A	A	A	B	A	A
Approach Delay (s)		8.8			7.8			7.6			10.0	
Approach LOS		A			A			A			B	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

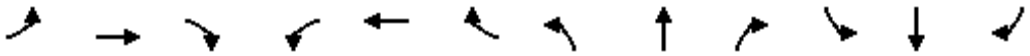
Appendix D

Synchro Reports Staging Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	212	1798	458	0	892	46	516	72	34	94	46	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.95	1.00		0.95		1.00	1.00			1.00	
Frt	1.00	1.00	0.85		0.99		1.00	0.95			0.94	
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3539	1583		3513		1770	1773			1714	
Flt Permitted	0.22	1.00	1.00		1.00		0.39	1.00			0.85	
Satd. Flow (perm)	408	3539	1583		3513		729	1773			1478	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
Adj. Flow (vph)	173	1466	373	0	727	38	421	59	28	77	38	103
RTOR Reduction (vph)	0	0	165	0	4	0	0	15	0	0	34	0
Lane Group Flow (vph)	173	1466	208	0	761	0	421	72	0	0	184	0
Turn Type	pm+pt		Perm	Perm			pm+pt			pm+pt		
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	52.1	52.1	52.1		39.0		37.8	37.8			14.2	
Effective Green, g (s)	52.1	52.1	52.1		39.0		37.8	37.8			14.2	
Actuated g/C Ratio	0.53	0.53	0.53		0.40		0.39	0.39			0.15	
Clearance Time (s)	4.0	4.0	4.0		4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	344	1883	842		1399		490	685			214	
v/s Ratio Prot	0.05	c0.41			0.22		c0.17	0.04				
v/s Ratio Perm	0.22		0.13				c0.16				0.12	
v/c Ratio	0.50	0.78	0.25		0.54		0.86	0.10			0.86	
Uniform Delay, d1	13.9	18.3	12.3		22.6		25.4	19.2			40.9	
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00			1.00	
Incremental Delay, d2	1.2	3.3	0.7		1.5		14.0	0.1			27.2	
Delay (s)	15.0	21.5	13.0		24.1		39.3	19.3			68.1	
Level of Service	B	C	B		C		D	B			E	
Approach Delay (s)		19.4			24.1			35.9			68.1	
Approach LOS		B			C			D			E	

Intersection Summary			
HCM Average Control Delay	25.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	97.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	101	1688	123	35	887	20	69	17	62	22	33	92
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	55	917	67	19	482	11	38	9	34	12	18	50
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	493			984			1640	1592	951	1591	1620	488
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	493			984			1640	1592	951	1591	1620	488
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			97			37	91	89	82	81	91
cM capacity (veh/h)	1071			702			59	99	315	68	95	580

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	55	984	19	493	38	43	12	68
Volume Left	55	0	19	0	38	0	12	0
Volume Right	0	67	0	11	0	34	0	50
cSH	1071	1700	702	1700	59	214	68	247
Volume to Capacity	0.05	0.58	0.03	0.29	0.63	0.20	0.18	0.27
Queue Length 95th (m)	1.3	0.0	0.7	0.0	21.1	5.8	4.7	8.7
Control Delay (s)	8.5	0.0	10.3	0.0	139.2	25.9	69.2	25.0
Lane LOS	A		B		F	D	F	C
Approach Delay (s)	0.5		0.4		78.7		31.6	
Approach LOS					F		D	

Intersection Summary				
Average Delay	5.6			
Intersection Capacity Utilization	63.4%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	886	626	19	390	12	390	388	9	106	683	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3539	1583	1770	3438	
Flt Permitted	0.34	1.00	1.00	0.28	1.00	1.00	0.17	1.00	1.00	0.53	1.00	
Satd. Flow (perm)	635	3539	1583	525	3539	1583	323	3539	1583	981	3438	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Adj. Flow (vph)	254	867	612	19	382	12	382	380	9	104	668	158
RTOR Reduction (vph)	0	0	270	0	0	9	0	0	4	0	32	0
Lane Group Flow (vph)	254	867	342	19	382	3	382	380	5	104	794	0
Turn Type	pm+pt		Perm	Perm		Perm	pm+pt		Perm	Perm		
Protected Phases	5	2			6		3	8			4	
Permitted Phases	2		2	6		6	8		8	4		
Actuated Green, G (s)	22.2	22.2	22.2	14.2	14.2	14.2	34.8	34.8	34.8	19.1	19.1	
Effective Green, g (s)	22.2	22.2	22.2	14.2	14.2	14.2	34.8	34.8	34.8	19.1	19.1	
Actuated g/C Ratio	0.34	0.34	0.34	0.22	0.22	0.22	0.54	0.54	0.54	0.29	0.29	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	287	1209	541	115	773	346	433	1895	848	288	1010	
v/s Ratio Prot	c0.05	0.24			0.11		c0.16	0.11			0.23	
v/s Ratio Perm	c0.25		0.22	0.04		0.00	c0.31		0.00	0.11		
v/c Ratio	0.89	0.72	0.63	0.17	0.49	0.01	0.88	0.20	0.01	0.36	0.79	
Uniform Delay, d1	19.9	18.7	18.0	20.6	22.3	19.9	13.9	7.9	7.0	18.1	21.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	26.0	2.1	2.4	0.7	0.5	0.0	18.6	0.2	0.0	0.8	4.1	
Delay (s)	45.9	20.7	20.4	21.3	22.8	19.9	32.6	8.1	7.0	18.9	25.2	
Level of Service	D	C	C	C	C	B	C	A	A	B	C	
Approach Delay (s)		24.3			22.6			20.2			24.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	645	357	131	313	108	61
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	561	310	114	272	94	53
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						2
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			871		1216	716
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			871		1216	716
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			85		45	88
cM capacity (veh/h)			774		171	430

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	871	386	147
Volume Left	0	114	94
Volume Right	310	0	53
cSH	1700	774	267
Volume to Capacity	0.51	0.15	0.55
Queue Length 95th (m)	0.0	4.1	24.4
Control Delay (s)	0.0	4.4	36.8
Lane LOS		A	E
Approach Delay (s)	0.0	4.4	36.8
Approach LOS			E

Intersection Summary			
Average Delay		5.1	
Intersection Capacity Utilization		78.3%	ICU Level of Service D
Analysis Period (min)		15	

Appendix E

Open House Reports

100 Avenue & 92 Street
Functional Planning Studies
February 15, 2012 Public Open House
Summary

The open house for the 100 Avenue and 92 Street Functional Planning Studies was held on February 15, 2012 from 4 to 6:30 p.m. Representatives from ISL Engineering and Land Services and the City of Grande Prairie staffed the event.

22 people signed in for the open house and total attendance was 25. Four comment forms were completed and returned at the open house. One attendee submitted comments via email in the two weeks following the open house.

Results Summary

1. Please use the space below to provide any comments you have on the plan for 92 Street.

- 76 Avenue intersection should be shifted North.
- Right in right out between 68 Ave and 72 Ave is missing.

2. Please rate the 100 Avenue alternatives under consideration, west of 92 Street.

	Excellent	Good	Fair	Poor	Unknown
Option A			**1**		
Option B	**1**	**2**			

Please use the space below to provide any comments you have about the alignment options.

- Least amount of cost (I understand)
- Makes far more sense to get rid of the parking lanes and will save the City money not having to re-do the cross-section of the road in 'A'.

3. Please use the space below to provide any comment you have on the 100 Ave plan east of 92 Street.

- Really like to idea of the four lanes for this area. Right now the two lanes are narrow; there is no street lighting or sidewalks next to the roadway. Driving this street at night with pedestrians walking along the road is very dangerous.

4. Do you have any additional comments about the plans or the study that you would like to share? Please specify below.

- No comments received

5. ABOUT YOU

- Resident – 3
- Developer - 1
- I only live in Grande Prairie – 2
- I live and work in Grande Prairie - 3

6. After reviewing the information presented, please use a checkmark to indicate your level of satisfaction regarding the following:

a) The clarity of information provided about the alignment alternatives.
- Very satisfied – 2 responses
- Generally satisfied – 1 responses
- Dissatisfied – 0 responses

b) The adequacy of information provided about the alignment alternatives.
- Very satisfied – 3 responses
- Generally satisfied – 0 responses
- Dissatisfied – 0 responses

c) The project team's response to my questions.
- Very satisfied – 3 responses
- Generally satisfied – 0 responses
- Dissatisfied – 0 responses

Other comments received via email:
- Safety
    - Before lane changes the company truck had 2 side mirrors smashed off within 2 weeks.
    - Dangerous to signal and pull over to get into driveway as majority of traffic waits to change lanes until they are right behind you. When this occurs a line up forms that is blind to the vehicle stopped with signals on.
    - Almost as dangerous to get out of driveway for those who back out.
    - Any visitors are forced to park on the road. Where do they go if they stay for more than few hours that run into restricted times like during holidays.
    - Children walk on lawns instead of sidewalk due to its close proximity to the fast moving traffic on their way to and from school.
    - 2 vehicles were written off in December by hit-and-run even though they were parked during permitted hours at 9 p.m. Posted signs prohibit parking from 07:00 – 09:00 and 16:00 – 18:00.
- Functionality
    - Some neighbours are forced to park on their front lawn due to posted time restrictions and fear of having their vehicles involved in a collision. They have a motorhome already parked in the back of the house so there is no room for any more vehicles.
    - Other neighbours have taken out the back fence and park in the yard so they have a safe place to park even though they have a driveway in the front.
    - Majority of residents have driveways already in place at the front of their homes.
    - Can the concrete median be removed to make the second southbound land and restore the service lane?
    - Can the lane designation be returned to previous state?

There is only one lane entering the southbound roadway from the north and the east directions at the intersection of 104 Ave and 92 Street. I have already had to replace one vehicle due to the current lane designations and have no desire to do so again within the next four months that it will take the City Council to make their decision on the course of action needed. The thing about current parking time restrictions is that we, as working people ourselves, are leaving and coming home during those hours. It is very common to have traffic skidding to a stop, laying on the horn, and/or making obscene

gestures behind us when we are trying to get into our driveway in the morning and afternoon peak times.

100 Avenue & 92 Street
Functional Planning Studies
May 8, 2012 Public Open House
Summary

The open house for the 100 Avenue and 92 Street Functional Planning Studies was held on May 8, 2012 from 4 to 6:30 p.m. Representatives from ISL Engineering and Land Services and the City of Grande Prairie staffed the event.

15 people signed in for the open house and total attendance was about 40. Seven comment forms were completed and returned at the open house. Nine comment forms were submitted via fax and two letters were received via email in the two weeks following the open house.

Results Summary

1. Do you support the plan for 92 Street? (Please check one)

- ☐ Yes
- ☐ Yes, with modifications (please specify below). – 2 Response
- ☐ No (please specify below). -11 Responses

Comments:

- We have a hard time getting out of our driveway now.
- Do not need the walk on the west side on 92 st. widened. It will only encourage cars and motorcycles to drive on it. Leave it as it is for pedestrians.
- We just bought a unit at Ivy Lake Villas and did not know anything about this. We deserve proper access to both left and right coming out of the complex. We are taxpayers and should have been told about this meeting.
- Traffic will not flow well. I teach at hillside and traffic is already busy enough this will cause more traffic in school area. Safety issues for condo owners on 92 St. How would emergency get in quickly? Will businesses at subway…greatly be affected?
- I think there is a better solution to make that turn a safer one for both pedestrians and drivers such as pedestrian lights and 4 way stops etc.
- By closing off the access to my condo complex traffic will build up in residential area. Emergency vehicles will have a difficult time getting in. Only access out would be going through the strip mall.
- 4 lane fine –blocking the left hand turn out of Ivy Lake Plaza and Ivy Lake Villas absolutely no! Instead of blocking it, put in a pedestrian light. Do you know how absolutely messed up this is going to be for us all? There are 25 families in here.
- Absolutely not. I live in Ivy Lake Villas and that would be the biggest inconvenience to my life. I work at Mother Teresa School and need to turn left every morning for work.
- I live in area off 92 Ave and would have to turn the wrong way every morning to take my son to day care. We have only one entrance to our town houses and we would have to drive blocks out of way every time we left home or came home if this plan was to go through.
- The proposed plan will significantly decrease my ability to access my own home and cause potential safety risk should evacuation of our properties be necessary. This will substantially reduce my homes value.
- Blocking access (left turn) to Ivy Lake Villas will make this complex very difficult to find and the most inconvenient to get to in all GP. Bad idea!

- The proposed meridian at 92 St and 101 Ave intersection be modified for the intersection to remain all directional. To allow east bound traffic stopping at the plaza an access to continue east via 100 Ave. To allow the required emergency vehicles, delivery trucks, the neighbouring residents and other traffic from the north, north east and north west access to and from the plaza and adjacent Ivy Lake residential condo development.
- This plan would effect two rentals of ours, Access to and from these homes will restrict our tenants and us, This plan does not work for the neighbourhood and will be very inconvenient for traffic.

2. Do you support the plan for 100 Avenue? (Please check one)

- Yes -1 Response
- Yes, with modifications (please specify below). – 1 Response
- No (please specify below). – 9 Responses

Comments:

- This is residential. Where in GP is there 4 lanes in residential. City going to buy all the houses. Our house would not be worth anything with no parking. We are our rights to live in a safe place. We do pay taxes as everyone. We want the same treatment.
- Due to age of lots and placement of houses taking the parking lane would cause inadequate parking for residence. This idea was proposed and voted against a few years ago and being revisited with still no solutions for residents.
- I need the parking space in front of my house. The speed on any lane against the curb needs to be restricted. Maybe speed bumps on it. Can the parking restriction be only in the morning on the westbound lane.
- I have a disability as it is and if I should have work being done on my home and have to move my car, I can't park it two or three blocks away then walk. I also say what about our company my mom is a older lady that has to use a cane as it is. She will not be able to walk any distance. We have a hard time getting out of our driveway as it is. Widening 100 Ave will only make it harder. Where would we put out garbage? There are too many people hit at the crosswalk by Eastside kitchen as it is and to many accidents also! I say make it ony way all the way, is better than 4 lane.
- For the plan to be acceptable the alley behind (south) of 100 Ave should be paved.
- We were not advised.
- How would home owners get into homes quickly? Again emergency access.
- I think you should ask the people that live there.
- Decreases access to the businesses at that location
- This is a busy road and lots of children cross this road coming from school. I am concerned about safety and access for homes on 100th.

3. Do you have any additional comments about the plans or the study that you would like to share Please specify below.

Comments:

- I live on 94 st and 100 Ave. Please conside the people who have to live with the traffic. 4 lanes will cause drivers to speed more. Walking on these sidewalks with traffic next to you –get splashed- the seniors walking will be unsafe. The crosswalk at 94 going to school will be unsafe. Where will our garbage cans go with 4 lanes.

- Please get 84 street built and paved so commuters have a better route to drive to and from work and avoid driving through residential areas where safety is an issue. This would reduce traffic on 92 street and 100 avenue and would reduce the need for expansion at the intersection. Make the above road and measure the results before making large changes at the major intersections. This will give people an alternative route when major road construction happens at these intersections. Also, add a rail crossing somewhere between 68th and 100 -84 Ave would be very beneficial!
- The letters (two identical) received in the mail stated this was the last and final. Yet, we never received a previous letter about any other meeting. There needs to be some sort of solution for residents as many are the original homes and residents of this city.
- We need lights at 111 Ave. now. There are only 2 exits from Crystal heights West. Very much traffic in peak hours, including school delivery and school pick up hours. No chance of a left turn or through traffic. Why was 88 Ave on the South end closed? (A surveyed road) and put into residential. Ruined a north-south traffic route. Senseless.
- How are ambulances and fire going to get to us on time? We live along this route. Surely you would know how much this would affect the 25 families living here not to mention the loss of business for the stored next door!
- Sync your lights at safety city with 100 ave lights so traffic flows especially during rush hours. Right now there is no flow esp at 5:30.
- I am a tax payer in this community and was not informed of this plan. Why wasn't I? This affects me and my home directly…I was happy to have one of the committee members of my condo association to make me aware of this or I would have been oblivious to this idea.
- Why were the residents of Ivy Lake Villas not notified? We are 26 tax paying units. Lights need to be synchronized. Was not informed of the City's plans?
- I am very upset. I have lived and paid taxes at Ivy Lake Villas for 14 years –yet not invited to the 2 meetings already held? You can take my tax dollars just fine –but the simple courtesy of an invite ignored? Why do you expect the stores at Ivy Lake Plaza to supply our only left hand turn?
- As a resident in Ivy Lake Villas I was not approached by any city workers about this plan. I am extremely upset about this.
- If this road way is blocked off, fire trucks, RCMP, Ambulance would have to drive a few blocks to make a loop to come back to Ivy Villas at 9140-101 Ave. This would be more than an inconvenience it would be a nightmare for everyone. It would be uncalled for to add 10-15 minutes to everyone's drive because the road way was blocked off. It would be a shame for someone to die or house burn down because the help had to turn blocks out of their way to loop back to the right place all because the entrance was blocked.
- As a taxpayer who is directly affected by this decision I should have been made aware of the meeting's that discusses this proposal but was not in any way notified.
- Was not informed of the meeting until after it too place.
- I am not in favor of closing the access in to 101 Ave –Ivy Lake Villa's. This is going to impede traffic flow out of the complex. I have no desire to drive through the parking lot of the shopping area to be able to go downtown. This is going to adversely affect our property.
- These plans are not accommodating to these neighbourhoods.

4. ABOUT YOU

- Resident – 16
- I represent a Resident - 1
- I only live in Grande Prairie – 3
- I live and work in Grande Prairie – 13
- I only work in Grande Prairie - 1

5. Please respond to the items below with a checkmark to indicate your level of satisfaction regarding the information and feedback opportunities as part of this project:

a) The clarity of information provided about the alignment alternatives.
- Very satisfied –0 responses
- Generally satisfied –4 responses
- Dissatisfied – 6 responses

b) The adequacy of information provided about the alignment alternatives.
- Very satisfied – 0 responses
- Generally satisfied – 4 responses
- Dissatisfied – 7 responses

c) The project team's response to my questions.
- Very satisfied – 0 responses
- Generally satisfied – 3 responses
- Dissatisfied – 7 responses

Other comments received via email:
- Safety
- Functionality

I am an owner and resident of one of the condos in the Ivy Lake Villa complex at 9140-101 ave; I would like to express my serious reservations about the proposed changes to traffic flow in and around the intersection of 101 ave and 92 street.
It is my understanding that the proposed changes to increase the effectiveness of the intersection of 100 ave and 92 street would include the elimination of any left turn options at 101 ave and 92 street; I am opposed to this change for the following reasons:

1) Emergency vehicles response time, particularly ambulance service from the existing station at Wapiti road and 108 street would be slowed as these vehicles would now be forced to travel south to 100 ave and then east to 92 ave followed by north on 92 street to reach my home.
2) Traffic congestion in the short distance between 100 ave and 101 ave with vehicles attempting to make safe lane changes after turning left off of 100 ave and turning right on 101 ave to enter either the Ivy Lake Villas or the shopping centre would be considerable. The possibility of collisions in that area would be increased.
3) Increased traffic flow through the uncontrolled shopping centre for vehicles attempting to travel either south or west would pose a threat to the safety of pedestrians in the shopping centre parking lot.
4) Restricting access to my home would have a negative effect on my property value.

I do understand that some sacrifices do have to be made to allow for our growing community, however the changes proposed put too much of the burden on a very small group of individuals, namely the owners and residents of the Ivy Lake Villas.
I welcome the opportunity to discuss this matter with any one of you at any time;

Re : 100 Avenue & 92 Street Functional Planning Studies

Ivy Lake Villas is a 25 unit condominium complex which is situated along 92 street at 101 Avenue. The main egress from our complex is on 92 Street, from which we can go North or South. As this section of 92 street is already 4 lanes, we do not understand the need to block off the left turn for us.

If it is blocked off the only way out of our complex would be a north turn on 92 street.

In order for us to go south, we would have to go all the way through the Ivy Lake Plaza shopping center, the turn west onto 100 street and then turn south on 92 street at the lights. In order for us to go east, we would have to again go through the shopping center, turn west onto 100 street, then south on 92 street at the lights, turn into the Creekside shopping center, go all the way through the shopping center and exit onto 100 avenue from the Shopper's egress.

Coming home will be a completely other issue. The only way for us to get to our homes is if we ensure that we are travelling east or west on 100 avenue and turn north on 92 street.

We do not believe that there is another residential area in Grande Prairie to which travel is going to be more chaotic.

However, the convenience of getting in and out of our complex is not our most serious concern. Valuable time will be wasted by ambulance and fire trucks trying to get into our complex and loss of life could very well occur.

We have 25 unit owners as well as Unit 26 (being the common area) for which taxes are paid to the City of Grande Prairie.

None of us received any notice of the meetings held in February and on May 8. We learned of these meetings from the owner of Ivy Lake Plaza shopping center on May 9 and are all quite distressed with our own concerns. Although, we can certainly see why the merchants in this plaza are upset, as their business sales will plummet.

Were the rest of the property owners on both sides of 92 street informed ? Is your survey going to reach everyone affected ?

Would you please guarantee to us that we will be notified on any further meetings on this matter ?

THE OWNERS CONDOMINIUM PLAN 9523475
O/A IVY LAKE VILLAS
113, 9140 – 101 Avenue, Grande Prairie, AB, T8X 1K6

May 14, 2012

Becky Machnee
ISL Engineering and Land Services
7909 – 51 Avenue
Edmonton, AB T6E 5L9

Dear Ms. Machnee,

Re : 100 Avenue & 92 Street Functional Planning Studies

Ivy Lake Villas is a 25 unit condominium complex which is situated along 92 street at 101 Avenue. The main egress from our complex is on 92 Street, from which we can go North or South. As this section of 92 street is already 4 lanes, we do not understand the need to block off the left turn for us.

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Were the rest of the property owners on both sides of 92 street informed ? Is your survey going to reach everyone affected ?

Would you please guarantee to us that we will be notified on any further meetings on this matter ?

Yours truly,

L. M. LeBlanc
Secretary / Treasurer
Ivy Lake Villas

780-539-6177 day
780-518-5046 cell
780-513-8331 home

May 9-12

The Owners' Condominium Plan 0020400 / Ivy Lake Plaza
Grande Prairie Alberta

Mr. Norman Kyle R.E.T., P.L. (Eng.)
Senior Transportation Analyst, Engineering Services
City Of Grande Prairie

RE: 100 Avenue & 92 Street
Functional Planning Studies

Dear Mr. Kyle;

Thank you for taking time out of your busy schedule to meet with us this afternoon on such short notice. It was a pleasure to meet you and discuss the above subject.

We are writing this letter to voice our concerns regarding the proposed plan to construct a concrete meridian on 92 street between 100 and 104 avenues. This proposed meridian will affect all of the 21 business outlets located in Ivy Lake Plaza in an extremely negative way, cutting off a main North to South artery from our place of business. It will create great financial hardships to each business outlet in the Plaza; due to the loss of major traffic. All Southbound traffic on 92nd street, coming from the North, will lose complete ability to access the plaza. All Eastbound customers wishing to leave the plaza will no longer have a reasonable route to return East as the direct result of the meridian obstructing the left turn onto 92nd street.

The impact of the meridian to the local residents and the plaza would be substantial; greatly reducing the functionality of the plaza for its services to all East, North, North-East and North-West residential areas. The plaza was zoned to service these neighboring residential areas. Undoubtedly the largest percentage of the plaza's business, from residential areas and traffic, comes from two places; being East using 100th avenue and North, North-East and North-West using 92nd street, therefore requiring the intersection at 92nd street and 101st avenue as a corridor for these areas to access and exit the plaza's services.

The condo owners located behind the Plaza will also find it difficult to only turn right at the junction due to the meridian, those going north will be fine but those wishing to go south or west will have to go north to 108 avenue before they can turn west. We see them taking a shorter route through the Plaza parking lot than turning onto 100 avenue and going west or turning south at the first set of traffic lights. This increase in traffic through the Plaza parking lot will create a SAFETY problem for those patrons walking from their car to the business of their choice.

In conclusion we do not support the plan for 92nd street as currently proposed. The businesses of Ivy Lake Plaza will only be able to service the surrounding residential areas and remain financially viable if the proposed plan for 92 street does not include implementing a meridian closing the intersection of 92nd street and 101st avenue. We ask for your consideration regarding this matter.

The Owners' Condominium Plan 0020400 / Ivy Lake Plaza

Gary Menzies Jack Mah Jake Mah Les Dzwonkiewicz

Chamber of Commerce
GRANDE PRAIRIE & DISTRICT

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11330-106 St.
Grande Prairie, AB

P 780.532.5340
F 780.532.2926
E Info@gpchamber.com

City of Grande Prairie
100 Avenue & 92 Street Functional Plan
Open house feedback

May 14th 2012

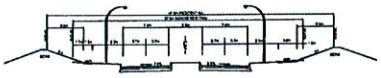
100 Avenue Functional Plan

After reviewing the drawings supplied to the Chamber by the City Engineering department. We would like to request one addition. We feel a left turn entrance off of 100 Avenue into the Cobblestone Shopping Centre should be added to the plan. This would provide better access to the Shopping Centre and reduce left turn traffic at corner of 92 street and 100 avenue.

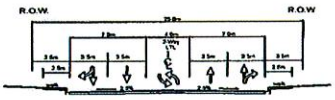
92 Street Functional Plan

After reviewing the drawings supplied to the Chamber by the City Engineering department. We would like to see the following change to the plan;

- Removal of assess to the industrial lots on the west of 92 Street. The Chamber would like to recommend that this proposed Road cross section between 92 Avenue & Park Road (84 Avenue) be changed to a Preferred road cross section that has a center left turn lane for the section between 92 and 84 avenue. See below. This change would provide better access to the industrial lots that normally require larger vehicle assess.



Proposed



Preferred

Thank you for the opportunity to present feed back from our members. We appreciate the future planning of our infrastructure needs and the opportunities that can be created by this forward thinking.
If you have any questions regarding our submission please feel free to contact me at the above contact info.

Dan Pearcy, CEO
Grande Prairie & District Chamber of Commerce

Connecting Business. **Creating Opportunity.**