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1.0 Introduction

1.1 Background

The 2002 Grande Prairie Transportation Master Plan (TMP) defined 116 Street as a major north-south arterial route along the west side of the City of Grande Prairie. It connects south to Highway 668 (Correction Line Road) and north into the County of Grande Prairie for many kilometres north of the City Limits. The TMP also designates 116 Street as a truck route from the extension of the Highway 43 south to 84 Avenue up to the 59,000 population horizon and after 59,000, extended south to Highway 668. Up to the 59,000 horizon, 116 Street is also designated as a Dangerous Good Route (DGR) from the north to 100 Avenue. Beyond 59,000, 116 Street may no longer function as a DGR if the new Highway 43 routing west of the Airport is implemented. Currently, 116 Street is a truck route from 132 Avenue to 84 Avenue, with 50% road bans in early spring on the existing rural section from 132 Avenue to 100 Avenue.

Long term requirements along 116 Street are for a cross-section ranging from 4 lane urban divided to 6 lane urban divided arterial.

A major consideration for future development and implementation of improvements on 116 Street is the future routing of Highway 43. Highway 43 presently approaches Grande Prairie from the east, interchanges with Highway 2 and then follows 100 Street south to 116 Avenue. At 116 Avenue, Highway 43 follows the present "bypass" route to 100 Avenue where it turns west and proceeds west along 100 Avenue. Alberta Transportation (TRANS) is presently studying future rerouting of Highway 43 from the Highway 2 (4 Mile Corner) Interchange to realign with present Highway 43 west of the Airport, including an interchange at Highway 43 and 116 Street. The TMP suggested an interim Highway 43 routing (alternate truck route) along 116 Street to remove highway oriented traffic and trucks from the present bypass. The suggestion was to extend Highway 43 about 3 km west of the Highway 43/Highway 2 Interchange to 116 Street and reroute Highway 43 south along 116 Street to 100 Avenue. This could significantly delay the need to construct the much longer route for Highway 43 west of the Airport. If this occurs, the need to maintain a high standard of access control and design along 116

Street is reinforced. In addition, a high standard facility will likely be required in the initial stage of improvement of 116 Street.

There are numerous development plans and Area Structure Plans along 116 Street which are contributing to the priority for undertaking a functional planning study for 116 Street. Setting of access control standards and protection of adequate right of way are important considerations at this time which will provide the City with the necessary tools to ensure that long term plans and standards can be implemented and operational efficiency can be preserved over the life of the project.

As a result, the 116 Street Functional Planning Study was initiated, the major objectives of which are to:

- define a suitably high level of access control
- establish right of way needs to accommodate ultimate development of 116 Street
- identify the roadway requirements to accommodate the long range traffic volumes anticipated
- define roadway staging required and associated construction costs to handle 40,000, 46,000, 59,000 and 75,000 population horizon traffic forecasts
- accommodate an interim routing of Highway 43 if this routing becomes feasible due to a suitable City / Alberta Transportation agreement.

1.2 Study Management

This study was guided by a Technical Review Committee. This Committee met four times during the study to provide direction to the ISL Project Team. This Committee was composed of:

- the Chairman and one other member from the City
- two members from the County of Grande Prairie
- one member from Alberta Transportation.

2.0 Land Use

For detailed proposed land uses along 116 Street, the reader should refer to the appropriate Area Structure Plans. Along 116 Street, the only urban land uses presently in place are at the Richmond Industrial Park which is located on the east side of 116 Street from 84 Avenue to 100 Avenue and a portion of Westpointe, a residential development located south of 84 Avenue and east of 116 Street. The remainder of the land adjacent to 116 Street is presently rural in nature. Proposed future land uses are as follows:

- 68 Avenue to 84 Avenue - residential on both sides
- 84 Avenue to 100 Avenue - west side will be industrial with some commercial along 100 Avenue (Centre West ASP)
- 100 Avenue to 110 Avenue - commercial along both sides of 116 Street and along 100 Avenue. Further removed from 116 Street, there is residential to the east and industrial to the west of 116 Street (West Highway 43 ASP)
- 110 Avenue to 116 Avenue - industrial to the west of 116 Street and commercial to the east (Northwest ASP)
- 116 Avenue to 124 Avenue - industrial west of 116 Street and residential, with commercial (under review) adjacent to 116 Street on the east side (Northwest ASP)
- 124 Avenue to 132 Avenue - likely agricultural, at least in the foreseeable future to the west and residential to the east (Northwest and Hidden Valley ASP's).

The timing of these various land use developments will greatly impact the extent of and timing for required improvements along 116 Street.

Flexibility must be built into the roadway programming process as these developments come online. Priorities for improvements will shift as these developments proceed. The plans presented in this report are based on the land development sequence assumed for the TMP. Any deviations from that sequence will result in changes in timing and capacity of facilities required in response to that growth.

3.0 Traffic Forecasts and Analysis

3.1 Traffic Forecasts

No original traffic forecasts were undertaken for this study. The traffic forecasts for the 2002 TMP were completed in 2001 and were judged to be adequate as the basis for preparation of staged functional plans for 116 Street. As indicated in Section 2, changes in land use plans and scheduling of the developments in Grande Prairie as a whole and in the vicinity of 116 Street will impact these forecasts and the road plans required to accommodate the forecast traffic. An important consideration in the development of functional plans is to provide flexibility to program these modifications as they occur over time.

3.1.1 2002 Traffic Counts

Exhibit 3.1 shows the p.m. peak hour traffic counts at major intersections along 116 Street which were performed in 2002. The count at 68 Avenue was completed a couple months after the 68 Avenue connection between 100 Street and 108 Street was opened to traffic so it accounts for the resulting traffic diversion further west to 116 Street.

The current major traffic volumes occur at the presently signalized intersection of 116 Street and 100 Avenue. There are heavy left turns in the p.m. peak hour of 210 vph from east to south and 280 vph from south to west. There are existing left turn lanes for each of these movements.

At 116 Street / 84 Avenue there is a heavy left turn volume of 230 vph from north to east and right turn from east to north of 180 vph in the p.m. peak. Volumes at 68 Avenue and at 132 Avenue intersections are very light.

3.1.2 40,000 Traffic Forecasts

The forecasts for the 40,000 horizon are illustrated on Exhibit 3.2. Volumes have increased at 132 Avenue but are still relatively light. North - south through traffic has increased at the 100 Avenue intersection.

At the 84 Avenue intersection left turns from north to east and return right turns increase to 350 vph and 260 vph respectively.

3.1.3 46,000 Traffic Forecasts

At this stage, it is anticipated that an upgraded (paved) connection of 68 Avenue from 108 Street to 116 Street will be completed and result in a p.m. peak hour volume of about a 150 vph right turn from east to north.

At 84 Avenue the from north to east left turn increases to 390 vph. Also at 100 Avenue, the from south to west left turn is about 360 vph.

The 110 Avenue intersection is anticipated to be open by this horizon. Turning movements are not expected to be significant at this stage. North-south through movements increase to the 150 vph range in each direction through the 132 Avenue intersection.

3.1.4 59,000 Traffic Forecasts

Exhibit 3.4 illustrates the forecasts for the 59,000 horizon. Traffic increases significantly over the period from 46,000 to 59,000 population.

At 68 Avenue, 250 vph turn right from east to north in the p.m. peak hour and 180 vph turn left from north to east. At 84 Avenue, there are 500 - 600 vph north - south through movements in each direction and 420 vph turning left from north to east.

At 100 Avenue, there are 430 vph turning left from south to west and 220 vph from east to south. There are right turns of 320 vph from west to south and 260 from south to east.

At 132 Avenue, there are turning movements of 130 to 160 vph turning from south to east and return.

3.2 Capacity Requirements

3.2.1 40,000 Horizon

At this horizon, the road needs will not increase greatly from present. Four laning of 116 Street is not yet required to retain LOS D between 84 Avenue and 100 Avenue. The major thrust at this stage is to provide flared intersections at 76 Avenue, 84 Avenue, turns in to Richmond Industrial Park, and 104 Avenue to accommodate left turns from the north

to the east on 116 Street, while allowing southbound traffic to proceed unimpeded by the turning traffic.

As traffic builds on this arterial, an important consideration will be provision of an improved surface treatment to reduce road surface maintenance requirements and reduce dust. This consideration is more of a judgement call as to when the negative impacts of dust and adverse road surface conditions outweigh the costs of pavement.

3.2.2 46,000 Horizon

The major requirement at this stage is the need for 4 lanes divided from 84 Avenue to north of 104 Avenue, along with left turn lanes from north to east at virtually all cross avenues in this section, and two approach lanes on these avenues to accommodate left turns on to 116 Street while through and right turns take place. From 100 Avenue to 104 Avenue a full complement of left turn and right turn lanes are required from 116 Street.

At 68 Avenue, a separate left turn lane from north to east is required along with a complementing right turn lane for the east to north movement. At 76 Avenue, a similar arrangement is required.

If 72 Avenue is constructed by this stage, a left turn lane from north to east should be provided.

No further capacity improvements are anticipated north of 104 Avenue at this horizon.

3.2.3 59,000 Horizon

At this stage, 4 laning of 116 Street is required from 84 Avenue to south of 68 Avenue and from 100 Avenue north to about 116 Avenue. These improvements should be accompanied by left turn lanes off of 116 Street at all intersections and right turn channelization at intersections with all arterials.

A double left turn lane from south to west will be required at the 100 Avenue intersection.

3.2.4 Ultimate Requirements

The TMP analyzed the arterial road network requirements to the 75,000 population horizon. The results of that analysis indicated a need for 6 through lanes (3 in each

direction) between 84 Avenue and about 116 Avenue and completion of 4 lanes north of 116 Avenue to north of 132 Avenue. At 124 and 132 Avenue intersections, left turn lanes are required on all four legs of each intersection along with channelized right turn lanes.

4.0 Background Information

4.1 Geotechnical Overview

The full report for the geotechnical overview conducted by AMEC Earth and Environmental is presented in Appendix A.

Field reconnaissance was carried out by AMEC personnel in October, 2002. The overview considered prevalent soils conditions, major restraints to road construction and the necessary bridge crossing information to support the bridge planning task.

There are meandering oxbows of the Bear River in the north section of the project. In this area, about a metre of soft soil is anticipated with glacio lacustrine clay with glacial till below the clay layer. Minimum sideslopes of 4:1 in this area will be adequate with 3:1 or flatter in the upland areas. It is anticipated that the City's pavement design will be adequate for the soils conditions.

At the bridge crossing location on 132 Avenue just east of 116 Street, the design parameters for friction piles were provided. Driven timber or steel piles will be adequate. The soil conditions do not have a high sulfate content so it has a moderate corrosion potential.

4.2 Utilities

Exhibit 4.1 through 4.3 show the utilities and pipeline locations which will be encountered along 116 Street. There may be some facilities which have not been identified so this should not be taken as an exhaustive list. These are listed by owner, in the following table. Chainages shown are approximate.

Utility / Pipeline Location		
Owner	Location Chainage	Crossing Details

Owner	Location Chainage	Crossing Details
1. Existing Facilities		
ATCO Gas	0+515	48 mm gasline
	1+020	26 mm
	1+ 375	26 mm
	0+515 to 2+130	26/48 mm - parallels on east side
	2+145	26 mm
	4+600	88 mm
	4+600	60 mm
	6+115	26 mm
	7+025	219 mm
ATCO Power	South of 68 Ave to 0+435	parallel to 116 St on west side
	0+435 to 0+510	crosses 116 St on diagonal
	0+510 to 2+675	parallels on east side
	2+840	
	2+840 to 5+380	parallels on west side
	3+480	
	3+790	
	3+805	
	3+945	
	4+575	
	4+600	
	5+380 to project limit	parallels on east side
Aquatera (water)	2+155	200 mm waterline
	2+450	200 mm
	2+815	200 mm
	3+355	200 mm
	2+155 to 3+495	250 mm - parallels on east side
City of Grande Prairie (storm)	2+140	diameter unknown
	2+475	
	2+335 to 2+475	parallels west side
	2+825	
	2+825 to 2+870	parallels on west side
	3+070	
	3+360	
	3+310 to 3+580	parallels on west side
Aquatera (sanitary)	3+580	
	2+240 to 2+600	200 mm - parallels on east side
	2+475	250 mm
	2+705 to 3+325	200 mm - parallels on east side
	3+065	250 mm
2. Proposed Mains		

Owner	Location Chainage	Crossing Details
ATCO Gas	South of 68 Ave	parallel to 116 St
	At 97 Ave	crossing on S. Side of 97 Ave
Aquatera (sanitary)	South of 68 Ave to 100 Ave	parallel to 116 St

With the profile through the area from south of 84 Avenue to north of 104 Avenue being at grade or slightly above, there should be no requirements for relocation of any utilities, other than power lines. At the preliminary design stage, there will likely be a need to expose any utilities whose depth of cover is unknown, and any need to protect the facilities should be determined at that time.

4.3 Drainage

The full report on the stormwater management along 116 Street is provided in Appendix B.

The road drainage plans make use of the City's Master Drainage Plan (2001) recommendations for stormwater retention ponds for storage of the runoff from 116 Street. Generally if the roadway construction precedes the development of the retention pond, a temporary pond in this location will have to be constructed to handle the road runoff. If the pond has been built at the time of road construction, the storage requirements due to the ultimate stage of 116 Street are as indicated. The following table outlines the road section, pond location and storage requirements due to additional stormwater generated by 116 Street.

Storm pond locations and storage requirements associated with the additional road work on 116 Street are illustrated on Exhibits 4.1 through 4.3.

116 Street Storm Water Requirements

<u>Section</u>	<u>Pond Location</u>	<u>Storage Requirements</u>
1. North of 132 Avenue to 360 m. South of 124 Avenue	300 m South of 132 Avenue, 400 m East of 116 Street	1,800 m ³
2. 360 m South of 124 Avenue to 110 Avenue	Northwest quadrant 116 Street/ 110 Avenue intersection	1,900 m ³
3. 110 Avenue to 100 Avenue	Northwest quadrant 116 Street/ 100 Avenue intersection	1,600 m ³
4. 100 Avenue to 76 Avenue	Area of intersection 116 Street/ 95 Avenue	4,100 m ³
5. 76 Avenue to South of 68 Avenue	Northeast quadrant 116 Street/ 68 Avenue intersection	1,600 m ³

5.0 Design Standards

A major consideration in choice of design standards for 116 Street, is the possibility that 116 Street may serve as an interim routing for Highway 43 around Grande Prairie until the proposed bypass alignment west of the Airport is constructed. If this occurs, the section from 132 Avenue to 104 Avenue should be designed to at least a 90km/h design speed. A 70 km/h design speed south of 104 Avenue is recommended. Posted speed limits could then be 10 km/h lower than the design speed. If TRANS decides to build the full bypass route initially, the design speed from 132 Avenue to 100 Avenue could be somewhat reduced as 116 Street would not have a highway function. The design on 116 Street north of 100 Avenue, should be reviewed if TRANS decides to utilize the 116 Street route as the route has been planned as an urban street. Some standards for this section are not adequate for a Provincial 90 km/h design standards, namely provision of shoulders, median width, curb type (mountable), acceleration / deceleration distances at intersections and standard intersection layouts in rural applications.

Important design parameters should then be as follows:

	90 km/h (TRANS)	70 km/h (TAC)
• min. horizontal curve radius	340 m	190 m
• superelevation rate	0.06 m/m	0.06 m/m
• minimum vertical curve - crest	K55	K 16 - 23
- sag	K40	K 20 - 25
- sag (lighted)	K 21	K 10 - 12
• lane width	3.7 m	3.7 m
• design vehicle	WB 21	WB 21
• deceleration distance for intersections	150	110

Typical cross-sections for 4 lane and 6 lane divided, urban roadways are illustrated on Exhibits 5.1 and 5.2. These cross-sections also show typical locations for the various underground utilities along 116 Street. Each cross-section shows overall dimensions with and without noise berms / fences. It should be noted that from 84 Avenue to north of 100 Avenue, the typical section shown for the ultimate 6 lane facility requires an

additional northbound maneuvering lane to accommodate access to and from the businesses fronting on to 116 Street. Similarly at the 4 lane stage this section of 116 Street has an additional northbound maneuvering lane. At the design stage, 3 centre curves should be utilized for right turning traffic at major intersections.

Turning bay lengths have been determined on the basis of the forecasts and capacity requirements based on traffic volumes forecast for the Transportation Master Plan (2002). These volumes were based on land uses and rate of growth for particular areas of the City which were known at that time (2000). At the design stage, road requirements should be checked against the best traffic information available at that time and geometric features should then be designed on the basis of more current design year forecasts.

At the north end of the project, where 116 Street is in close proximity to the Bear River, the 100 year design flow elevation has been estimated at 657.86. This figure should also be further verified at the design stage on the basis of more detailed surveys, analysis and runoff data that would be gathered at that time.

It should be noted that the intersections at 100 Avenue and 84 Avenue have been planned to handle turning log trucks and the unique design issues attributable to the long loads and particularly long rear overhang concerns for turning log trucks. At time of design, these intersections' design should be carefully checked to ensure that they are adequate for the tracking of the log trucks, and to ensure that no conflicts occur between the wide "swing out" of the overhanging logs with other traffic or with road appurtenances such as signs, street lights, hydrants, etc.

100 Avenue is also planned to accommodate long combination vehicles for the movements from west to north and return if 116 Street is designated as the routing for Highway 43. Long combination vehicles (WB 36, with 38 m maximum length) will be allowed on Highway 43 when twinning is completed between Edmonton and Grande Prairie.

6.0 Functional Plans / Profiles

6.1 Ultimate Plans / Profiles

6.1.1 South of 68 Avenue to South of 84 Avenue

The plans/profiles for this portion of 116 Street are shown on Exhibit 6.1. All exhibits are located at the end of this section. South of 68 Avenue, the new roadway is shifted east on the existing 116 Street right of way so the new road will clear the power lines west of 116 Street in this area. North of 68 Avenue, 116 Street is shifted to the west so that all widening of the required right of way takes place west of the Westpointe subdivision and the Richmond Industrial Park north of 84 Avenue.

The following summarizes the estimated construction costs for the project by stage. Costs do not include property or major stormwater facilities and are based on 2003 unit costs.

• Stage 1	-	\$10.5 million
• Stage 2	-	\$5.5 million
• Stage 3	-	\$4.5 million
• Ultimate Stage	-	\$7.2 million
• Total Cost	-	\$27.7 million

From the south, 116 Street climbs at 1.0 to 2.0% grades to north of 68 Avenue. At about 0+600 the 1.0% grade transitions by a K32 vertical curve to a 2.55% grade, climbing to about 0+900, north of which grades of about 0.5% are utilized.

Ultimate requirements anticipated are a 4 lane divided road with a 5.5 m raised median. The typical 4 lane section with noise berms will be used as this will likely be a truck route and there are residential developments anticipated on both sides of 116 Street.

Intersections are provided at 68 Avenue which is a 4 lane divided arterial road, 72 Avenue, and 76 Avenue both of which are 2 lane collectors which are widened at 116 Street to provide 2 outbound lanes on the approaches to 116 Street. This cross street

design provides for through and right turning traffic to divert around stopped left turning traffic at the intersection.

The 116 Street / 68 Avenue intersection has a single left turn lane for the from north to east movement with accompanying right turn lane for the return from east to north movement. 68 Avenue will be a 4 lane divided roadway with a left turn lane from east to south and a right turn lane at 116 Street for the return from south to east movement.

At 72 Avenue, a left turn lane is provided on the north approach. At 76 Avenue, left turn lanes are provided on the north and south approaches.

It is anticipated that 68 Avenue will require traffic signals fairly early in its design life. At 72 and 76 Avenues, signal needs will have to be monitored as development proceeds and traffic volumes increase.

In this area there is an existing major powerline which crosses from the west to east side of 116 Street in the 68 Avenue intersection area. Arrangements have been made to relocate the powerline to an underground location on the road cross-section as illustrated on the typical sections. There is an ATCO gas line located near the east property line. There are several local gas line crossings in this area.

About a 45 m total right of way is required in this area. Additional property of 20 - 25 m is required. Right of way required by parcel for this section is illustrated on Exhibit 6.16.

In this section the bikeway (3.0 m wide) is located on the east side of 116 Street and a sidewalk is provided on the west side.

6.1.2 South of 84 Avenue to North of 95 Avenue

On Exhibit 6.2, an ultimate 6 lane cross-section north of 84 Avenue is achieved by road widening to the west of the existing right of way. This section is on a tangential alignment. The road profile is virtually flat, with a slight downgrade of 0.5% to the north.

The cross-section is 4 lane divided south of 84 Avenue, transitioning through the 84 Avenue intersection to 6 lane divided. North of 84 Avenue, an additional northbound maneuvering lane is provided for right turn in and right turn out access to the businesses fronting on the east side of 116 Street in Richmond Industrial Park.

The 116 Street / 84 Avenue intersection provides for left turn lanes for each approach. The northbound lane is a single lane slotted design while the southbound provides for a double lane slotted design if required in the future. This will be an important intersection for trucks turning from north to east as the truck route will be diverted from 116 Street to 108 Street along 84 Avenue in the interim stages of development of 116 Street. Channelized right turn lanes are provided on all approaches. This intersection has been developed to accommodate log trucks with a 9 m overhang as trucks from the west or north could use 116 Street and 84 Avenue to access Canfor or other forestry plants. At the design stage, care should be taken to ensure that the unique tracking of the truck units and that “swing out” of the log overhang can be accommodated to ensure that other traffic and road appurtenances are not in conflict.

89 Avenue tees into 116 Street from the east. A left turn lane is provided on the north approach. 89 Avenue is locally widened to 2 lanes westbound as well to provide room for local right turning lanes to be unimpeded by left turning traffic.

At 95 Avenue, there are left turn lanes on 116 Street for both north and south approaches. 95 Avenue is widened locally at the intersection to 4 lanes to provide for more efficient turns (right and left) from both approaches to 116 Street.

West of 116 Street, all access to 116 Street will be provided by means of the internal street network, and hence accessing the major roads shown which intersect with 116 Street. It is expected that signals will be required at 84 Avenue and likely at 95 Avenue as the area develops west 116 Street. There should be sufficient gaps in traffic on 116 Street for traffic wanting to turn left on 89 Avenue on to 116 Street.

There are a number of municipal services both parallel to and crossing 116 Street in this area. There are also power and gas lines which will have to be accommodated. Approximate locations are shown on Exhibits 4.1 through 4.3.

About 46 m total right of way is required along 116 Street. About 11 to 25 m will be required in addition to present right of way as shown on Exhibit 6.16.

From 84 Avenue to the north, no sidewalk is provided (there is none presently) on the east side of 116 Street. A bikeway is located on the west side of 116 Street.

6.1.3 South of 97 Avenue to North of 104 Avenue

Exhibit 6.3 illustrates this section of 116 Street. North of 100 Avenue (present Highway 43), 116 Street diverts to the east to be centred on the existing 116 Street right of way north of 104 Avenue. The 6 lane divided cross-section is carried throughout this section of 116 Street. The northbound maneuvering lane is terminated at 100 Avenue. The profile through this area is virtually flat with 0.5% grades utilized to provide for adequate longitudinal urban drainage.

An intersection is provided at 97 Avenue, having 4 lanes locally on 97 Avenue at the approaches to 116 Street. Channelized right turns are provided on the west approach. On 116 Street, left turn lanes are provided on the north and south approaches. The southbound left turn lane is restricted to about 50 m due to proximity to the access to Costco.

On the west side of 116 Street, a right in / right out is provided at about 3+470 to provide additional access to Centre West Business Park, as recommended in the Traffic Impact Assessment for this development. A short southbound right turn lane is provided on 116 Street at this location.

An all-directional access to Costco is provided at about 3+550. Exiting Costco, two lanes serving right turns to the north and left turns to the south are provided. A 60 m left turn bay is provided for movements from the north in to Costco. The present north access to Costco will be closed while the south access will remain open as a right-in/right-out.

The busiest intersection on 116 Street will be at 100 Avenue (presently Highway 43). Double slotted left turn lanes are provided on the north and south approaches. Channelized right turn lanes are provided in all 4 quadrants of the intersection. There are existing left turn lanes on the 100 Avenue approaches to the intersection. This intersection must also be designed to accommodate log trucks with a 9 m overhang for the from west to south and north to east movements. The from west to north and return north to west movements have been laid out to accommodate long combination vehicles for the potential Highway 43 routing along 116 Street north of 100 Avenue. At the design stage, these provisions should be carefully checked to ensure that the design is adequate for these unique truck configurations and loads.

Both slotted left turn lanes are about 70 - 80 m in length. The existing service road intersection just south of 100 Avenue will be closed to improve intersection operations at this major intersection.

An intersection at 102 Avenue is provided about 200 m north of 100 Avenue. Slotted single left turn lanes are provided on both approaches to the intersection on 116 Street. These left turn lanes are about 50 m long on the south approach and 80 m on the north. On east and west approaches, widening is provided for 2 lanes to accommodate left turning and through/right turn movements.

Another collector intersection is provided for the West Highway 43 development at 104 Avenue, located about 230 m north of 102 Avenue. Left turn lanes about 80 m in length are provided on the north and south approaches to the intersection. Again, on east and west approaches to 116 Street, 2 lanes are provided to separate left turning traffic from through and right turning traffic.

In this section from the south to 100 Avenue, there are a number of municipal services paralleling and crossing 116 Street. There is a present power line along the west side of existing 116 Street that will have to be accommodated underground (Exhibit 4.2) throughout this area. There are about four (4) existing power line crossings on 116 Street north of 100 Avenue and a gas line crossing.

South of 100 Avenue, additional right of way ranging from 11 m to 21 m is required on the west side of 116 Street. North of 100 Avenue, about 12 to 28 m is required on the west side and 4 to 12 m east of 116 Street as shown on Exhibit 6.17.

Through this section, a bikeway is provided on the west side of the roadway and from 100 Avenue to the north, a sidewalk is provided on the east side.

6.1.4 Service Road Access

With the recommended closure of the east-west service road at 116 Street, alternative access from the west is recommended by means of an eastbound right in / right out from 100 Avenue to the service road east of 116 Street at 115 Street. This layout is shown on Exhibit 6.4. The intersection is channelized to separate right in traffic from right out traffic on to 100 Avenue from the service road and 115 Street and to discourage wrong way

movements on to 100 Avenue. This layout is capable of accommodating the WB21 design vehicle.

6.1.5 South of 110 Avenue to North of 116 Avenue

The layout for this portion of 116 Street is illustrated on Exhibit 6.5. The horizontal alignment is centred on the existing rural road right of way (20 m). The vertical alignment is virtually flat with 0.5% grades to accommodate urban drainage. At the north end of this section the profile begins its descent into the Bear River Valley by means of a K76 vertical curve.

The cross-section in the ultimate stage is 6 lanes divided north to 116 Avenue. Due to the planned industrial or commercial uses in this area, no provision for noise berms will be necessary. Total right of way required will be a minimum of about 44 m. At 116 Avenue the cross-section changes to 4 lane divided. In this section about 36 m of minimum right of way will be required.

At the 110 Avenue intersection left turn bays are provided for both northbound and southbound traffic. Channelized right turns are provided for the from west to south and north to west (with right turn lane) movements. 110 Avenue will be the future access to the Airport so this intersection will need to accommodate heavy traffic movements and may require signals in the future. An additional lane westbound on 110 Avenue on the east approach provides a lane for left turning traffic from east to south. A right turn lane is provided for the from north to west movement.

116 Avenue is a future arterial road serving the area north of the Airport and east of 116 Street. Left turn bays are provided for all four approaches. Each are about 100 m in length. Channelized right turns are provided in all four quadrants. This intersection is expected to require a traffic signal as soon as traffic develops to meet signalization warrants.

The existing power line is located on the west side of 116 Street south of 110 Avenue to 116 Avenue where it diverts to the east side. This line will require relocation or replacement with underground service.

As shown in Exhibit 6.17, 11 to 14 m of right of way is required on both sides of 116 Street.

In this area, the bikeway is provided from 110 Avenue to 116 Avenue on the west side of 116 Street and the sidewalk on the east side. North of 116 Avenue, these two facilities switch sides to serve the residential uses east of 116 Street.

6.1.6 North of 116 Avenue to North of 132 Avenue

This portion of 116 Street is shown on Exhibit 6.6. In this area the road diverts slightly to the west to align the northbound lanes on the existing right of way and adding the additional two lanes to the west. This will provide improved clearance from the Bear River structure on 132 Avenue, immediately east of 116 Street. The 4 lane divided section is retained. The vertical alignment descends to the north into the Bear River Valley by means of about a 2.5% downgrade. Once in the valley at about 6+300, the profile is quite flat, retaining enough grade for urban drainage. The profile has been set to clear the 100 year flood elevation of 657.9. At the design stage, when improved streambed information is available, a more precise flood level can be determined and the profile adjusted accordingly at that time.

124 Avenue will be a collector serving the Northwest ASP east of 116 Street which tees into 116 Street. An additional lane is provided for a westbound left turn on 124 Avenue. A left turn lane on 116 Street is provided to serve turns from north to east at this intersection. As the area develops, warrants for signalization should be routinely checked.

132 Avenue will be a major through arterial (4 lane divided) in north Grande Prairie. Left turn lanes will be required on all 4 approaches along with channelized right turn lanes for all right turn movements. Signals will be required at this intersection.

In this area, the existing ATCO power line remains on the east side of 116 Street. There is a local gas line crossing about 80m south of 124 Avenue. There is a more major ATCO gas pipeline crossing just north of the 132 Avenue intersection.

About a 45 m right of way will be required for the urban cross-section, which will require noise mitigation for adjacent residential land areas. The cross-section provides for a bikeway on the east side and sidewalk on the west. This arrangement was developed based on proposed residential land use on the east side of 116 Street north of 116 Avenue. If commercial uses fronting onto 116 Street are approved, the need for noise

attenuation should be reviewed, and placement of the bikeway should be considered on the west side of 116 Street from 116 Avenue to 132 Avenue.

As shown on Exhibit 6.18, east of 116 Street a strip of right of way from 5 to 14m wide will be required and 7 to 23m wide west of 116 Street.

6.2 Stage I (40,000) Plans

The Stage I plans are shown on Exhibits 6.7, 6.8, and 6.9 at the end of this section. These exhibits illustrate road improvements required along 116 Street when the 40,000 population horizon is reached. From a capacity standpoint, no major upgrading is required. The plans suggest a number of improvements to be considered for improved traffic operations, to improve the road for short term traffic growth, or to provide a paved surface to reduce roughness, dust and associated inconvenience and safety concerns. For the most part, paving could be provided in response to citizen complaints as they arise. However, if Alberta Transportation, the County of Grande Prairie #1, and the City agree to route Highway 43 along 116 Street as an interim stage for the eventual diversion of the highway west of the airport, the upgrading north of 100 Avenue could be accelerated with a mutually agreed upon cross-section and design speed. The plans illustrate an “urban” rather than a “highway” layout.

The 2 lane sections will utilize 2 lanes of ultimate pavement with a 2m shoulder with rural ditch drainage. No lighting, bikeways or sidewalks will be utilized in the rural sections.

Generally, the plans recommend extension of paving from south of 76 Avenue to 132 Avenue. Paving north of 100 Avenue should be undertaken in response to traffic demands or major problems in maintaining a reasonable surface condition and dust levels on 116 Street.

During Stage 1, flaring of the intersections along 116 Street would be achieved by locally widening the roadway to provide for turn lane(s) and through lanes through the intersection. This widening would be accompanied by painting of local medians to achieve the widening for the additional lane (or lanes) required at the intersection. This is more of a rural type application. If the widening is expected to be in service for a long period of time or there are operational problems due to the painted widening, the painted medians could be replaced with raised medians. Construction costs for Stage 1 are estimated at \$10.5 million.

It should be noted that log haul can be allowed on 116 Street at this stage as the intersections at 100 Avenue and at 84 Avenue have been laid out to accommodate turning log haul trucks.

The following improvements are required in Stage I:

- Flaring of intersections is recommended at the following intersections mainly to allow through traffic to divert around left turning traffic:
 - 76 Avenue (access to Westpointe) to protect southbound left turns
 - 84 Avenue to protect southbound left and northbound right turns on 116 Street
 - 89, 95, and 97 Avenue to protect southbound left turning traffic.
- between 84 Avenue and 100 Avenue, the separate northbound maneuvering lane for right in / right out movements to businesses along 116 Street. This results in the requirement to widen the railway crossing by one lane width.
- from south of 100 Avenue to south of 97 Avenue, 2 lanes southbound to provide for left turn lanes from north to east into Costco, right turns in at the right in / right out at Centre West Business Park, and for left turns from north to east at 97 Avenue
- relocation of the tourist pullout on 100 Avenue eastbound, closure of the service road intersection with 116 Street and provide the right in / right out on 100 Avenue eastbound to access the east-west service road and 115 Street east of Costco
- provide for a left turn lane at 100 Avenue for both the northbound and southbound traffic on 116 Street. Provide for right turn lanes for both the northbound and southbound traffic on 116 Street. Provide for right turn lanes for movements from west to south and from east to north. The channelization of the two right turns from west to south and north to west should await Stage 2 if at time of construction it appears that upgrading of 116 Street in this area to a 4 lane divided section will closely follow Stage I improvements.
- protected left turn lanes on 116 Street for both northbound and southbound traffic at 102 Avenue, similarly at 104 Avenue
- intersection flaring to protect left turns on northbound and southbound approaches on 110 Avenue

- at 116 Avenue, diversion lanes (flaring) for southbound through traffic around left turns
- at 132 Avenue, left turn lanes for eastbound and westbound traffic and for northbound and southbound traffic.

It is not anticipated that signalization will be required in areas where no further land developments are proceeding in this near term period. However with the anticipated early development of Centre West Business Park and West Highway 43, the intersection at 97 Avenue should be signalized by the 40,000 horizon and 102 Avenue and 104 Avenue intersections should be monitored regularly to define when signal warrants are met.

6.3 Stage 2 (46,000) Plans

The Stage 2 plans are illustrated on Exhibit 6.10 through 6.12. Construction costs for Stage 2 are estimated at \$5.5 million.

From south of 68 Avenue to 76 Avenue a paved 2 lane rural roadway should be constructed (Exhibit 6.10). Flared intersections are provided at 68 Avenue and 72 Avenue for protection of left turns on the north approaches.

South of 84 Avenue (Exhibit 6.10), 116 Street is widened to provide a 4 lane divided cross-section to the north through the Richmond Industrial Park. Slotted single lane left turn bays are provided on both 84 Avenue approaches. Channelized right turn lanes are provided for the from south to east and east to north movements. The intersection can accommodate log haul trucks. At the 89 Avenue intersection, a left turn bay is provided on the north approach. Left turn bays are provided on both north and south approaches at 95 Avenue. The northbound maneuvering lane is retained at this stage to enable right in / right out movements for the businesses fronting onto 116 Street.

The railway crossing will need to be widened and the signals modified at a cost of about \$400,000, included in the above noted \$5.5 million Stage 2 costs. Right-of-way requirements through the RailNet property are shown on Exhibit 6.16 at the end of this section.

The staging strategy in this section is to retain the east edge of pavement on the northbound lanes. A 9.2 m median width is constructed which allows the ultimate 6 lane

stage construction by means of adding the third lane northbound in the median, reducing the median to the standard 5.5 m width. The third lane southbound will then be provided by widening 116 Street to the west by 3.7 m to attain the 6 lane cross-section.

On Exhibit 6.11, the 97 Avenue intersection provides for a left turn bay on both north and south approaches. The access to Costco also has about a 50 m long left turn lane on the north approach.

The 100 Avenue intersection will now provide 4 through lanes on all 4 legs of the intersection. Slotted, single lane left turns (about 100 m long) are provided on both approaches along 116 Street. Left turn lanes are presently provided on both 100 Avenue approaches. At time of construction of these improvements, it would be wise to check the adequacy of all right and left turn bays on 100 Avenue and lengthen them if required. All right turns are channelized with right turn lanes. This intersection is laid out to accommodate log haul trucks turning from north to east, west to south and long combination vehicles turning from north to west and from west to north.

At 102 Avenue, left turn bays are provided on the north and south approaches, and similarly at 104 Avenue. North of 104 Avenue, 116 Street tapers back to the 2 lane rural cross-section implemented in Stage I. This cross-section is retained north to 132 Avenue in this stage.

6.4 Stage 3 (59,000) Plans

On Exhibit 6.13, the improvements required by the 59,000 horizon are shown for 116 Street from south of 68 Avenue to 84 Avenue. This portion is upgraded from a 2 lane rural roadway to a 4 lane urban divided arterial. Construction costs for Stage 3 are estimated at \$4.5 million.

South of 68 Avenue, 116 Street transitions from the 4 lane cross-section to a 2 lane. At the 68 Avenue intersection a left turn bay is provided on the north approach. Channelized right turns are provided for the from east to north right turn movement.

At 72 Avenue and 76 Avenue, left turn lanes are provided for the north approaches. If 72 Avenue connects west of 116 Street to service significant developments by this time, left turn bays should also be provided for the south approaches as shown on 76 Avenue.

No major changes are anticipated from 84 Avenue to 104 Avenue. No changes to the railway crossing are required though warrants for crossing arms (gates) should be monitored regularly after 116 Street is widened to 4 lanes in this area.

On Exhibits 6.14 and 6.15 the 4 lane divided section is required at this stage from 104 Avenue north to 116 Avenue, north of which the cross-section tapers to 2 lanes. In this section, ultimate 6 laning will be achieved by widening to the outside of the present 4 lane cross-section.

At 110 Avenue, left turn lanes are provided on both north and south approaches. A right turn lane from north to west is provided, with channelization for this right turn as well as from west to south. At 116 Avenue, left and right turn lanes are provided on all four approaches. All four right turn treatments include provision of channelization islands.

North of 116 Avenue, the 2 lane undivided cross-section is anticipated to be sufficient.

6.5 Right of Way Plans

Exhibits 6.16 to 6.18 show the right of way plans for this project. Dimensions and areas of property required by parcel are indicated. These plans can be utilized by the City to acquire the land required to construct the ultimate development of 116 Street as developments occur.

7.0 Bridge Planning

7.1 132 Avenue Bridge Over Bear Creek (BF 13766)

7.1.1 Background

The existing three span Bear Creek Bridge (BF 13766) on 132 Avenue needs to be reconstructed in the near future due to deterioration. The latest BIM report updated July 22, 2002, indicated that the bridge has a remaining life of only five years based on a three rating of all the categories shown on the form.

This report deals with the replacement of the existing bridge with a new wider SSC girder bridge or metal box culvert. A grade raise above the existing deck elevation is required for all alternatives.

7.1.2 Existing Conditions

The existing 132 Avenue / Bear Creek Bridge built in 1965 consists of a three span precast concrete girder superstructure supported on a treated timber substructure. The spans are each 8.5 m in length. The clear roadway width of the existing bridge is 6.4 m consisting of two through lanes. There are "No Truck Traffic" signs at the bridge, but it appears that trucks are using the bridge.

Alberta Transportation generally expects timber substructures to last 40 years on average, and not more than 50 years. The bridge has a life expectancy of approximately 5 years according to the 2002 BIM report. Although some remedial work has been undertaken to the substructure since the inspection, the estimated 5 years life expectancy still looks reasonable.

The 116 Street / 132 Avenue intersection is located approximately 6 m to the west of the existing bridge. The bridge does not presently accommodate any intersection treatment, whereas the replacement structure will require tapers on the bridge in the ultimate stage.

The inspection report is summarized below.

Summary of the July 22, 2002 BIM Inspection Report

• Road Classification (current only)	RLU - 207 - 80
• Detour length, if road closed	10 km
• Allowable loading	28 t CSI, 49 t CS2, 67t CS3
• Estimated AADT	108 in 2001
• Approach Road (Gen. rating)	3 rating
• Superstructure	3 rating
• Substructure	3 rating
• Channel (slope protection placed)	3 rating
• Structural Condition rating	33%
• Last Sufficiency rating	40.4%
• Expected remaining life of structure	5 years

7.1.3 Geotechnical Assessment by AMEC Earth & Environmental Limited

A field reconnaissance was performed on October 17, 2002, to review site characteristics from a geotechnical perspective. The topography in the study area was characterized by level to gently rolling terrain, with a low lying area in the region of Bear Creek. The area surrounding the present road is primarily agricultural. Embankment slopes are generally grass covered and estimated to be in the 3.5H:IV to 4H:IV slope range.

AMEC geotechnical project information in the City to the south and east of this site indicates that the soils in this area should consist of glacio-lacustrine clay deposits overlying glacial till. The clays are expected to be medium to high plasticity, stiff to hard consistency and to extend to several metres in depth.

Two bore holes were drilled near Bear Creek bridge crossing on October 19, 2002. The bore holes encountered a layer of clay fill 0.1 to 0.6 m thick overlying a lacustrine clay deposit that extended to the termination depth of the bore holes at approximately 12 m. The bore hole data showed that stiff to very stiff clay extends beyond the 12 m depth at the bridge.

AMEC recommends that for this planning study that permanent cut and fill slopes be 3H:IV or flatter for enhanced long term stability performance. However, since the existing structure across Bear Creek at this crossing was constructed with 2:1 headslopes, the use of reinforced 2:1 headslopes for the new structure has been utilized for this planning

study. In addition, rip rap will be placed on the headslopes to avoid erosion problems at high flows.

The above is a brief summary of AMEC's findings. Their report (File No. EG08910), dated February 2003, is appended to this study as Appendix "A".

7.1.4 Hydrotechnical

From a hydrotechnical perspective, the 1984 Bear Creek Watershed Study that was undertaken by Alberta Environment Planning Division indicates an estimated Q100 at 106 m³/s. For the purposes of this planning study, the assessment of alternative structures for this site is based on this Q100 discharge. A catastrophic flood event occurred in 1972 that had an estimated discharge of 178 m³/s. This flood was considered to be well over a 100 year event and will be used to check the opening of the proposed replacement structures associated with this study.

Preliminary highwater levels were obtained by utilizing Alberta Transportation's Hydroculv 1.2 computer program. The highwater levels for the 1:100 year design discharge are shown on the attached preliminary structure outline drawings, Exhibits 7.1, 7.2, and 7.3, located at the end of this section and are based on a preliminary streambed slope established from contour plans. From a hydrotechnical perspective, the three span scc girder bridge has a slight advantage over the other two alternatives due to the larger opening created by the 2:1 headslopes.

7.1.5 Roadway Planning Considerations

132 Avenue is considered a vital link in the City of Grande Prairie's transportation system. The proposal is to upgrade the existing two lane facility within the next 5 years as per Stage I requirements. At the proposed Bear Creek crossing, a left turn lane in addition to the two lanes will be required. Therefore, the proposed Bear Creek structure will need to accommodate a three lane facility without shoulders in the initial stage.

In anticipation of future development, 132 Avenue will become a four lane facility at the proposed bridge with a clear roadway width of approximately 25 m plus which includes a raised median, a turning lane, 1.0 m shoulders, a 2.5 m sidewalk and variable tapers on either side. At this stage, which is envisaged to be beyond the 20 year period, the proposed 116 Street / 132 Avenue intersection will also be impacting the width of the proposed bridge with the turning lane tapers.

A 2.5 m sidewalk on one side of the new structure should be considered in both initial and ultimate stages.

7.1.6 Construction Staging

In Stage I, traffic will need to be accommodated by constructing a temporary detour around the site during construction. Closing down 132 Avenue to traffic during this period should also be examined, but is not likely acceptable due to the volume of traffic using this route. The Stage I structure regardless of type should not be impacted by the intersection design. The proposed Stage I structure width consists of a 2 lane facility with a left turning lane and a 2.5 m sidewalk. In the ultimate stage, the Stage I structure is expanded to accommodate an additional 2 lanes, a raised median and intersection turning tapers. It is envisaged that a 2.5 m sidewalk will likely still be required at the ultimate stage. During the future reconstruction, traffic could be handled on the Stage 1 structure.

7.1.7 Alternative Solutions / Assessment

The existing bridge was constructed in 1965, which makes it 38 years old. The existing precast girders and timber substructure show extensive deterioration. The latest BIM updated July 22, 2002 indicates an estimated remaining life of 5 years. The alternative of widening the existing bridge to accommodate the proposed three lane Stage I facility is therefore not considered to be a viable option.

Three structure alternatives were investigated for the proposed Stage I and ultimate roadway requirements, as shown on Exhibits 7.1, 7.2 and 7.3 located at the end of this section of the report and are as follows:

- construct a three span SCC girder bridge in Stage I and widen to accommodate the ultimate stage.
- construct a metal box culvert in Stage I and lengthen to accommodate the ultimate stage.
- construct a single span SCC girder bridge with retaining wall abutments in Stage I and widen to accommodate the ultimate stage.

A Three Span Precast SCC Girder Bridge (Exhibit 7.1)

A 37 m out to out length of structure would be required at this site to accommodate the hydrotechnical requirements, as shown on the preliminary structure outline drawing located at the end of this section of the report. The west end of the structure will encroach on the intersection design features in the ultimate stage which is not desirable from a cost and geometric perspective. A 3 span arrangement will reduce the structure depth and allow use of an SCC girder. The 3 span structure will not require a pier to be constructed in the river, thereby minimizing environmental impacts.

Metal Box (Exhibit 7.2)

Preliminary indications are that a 12.3 m span is required at this site to accommodate a design flow of approximately 106 m³/s. It is envisaged that piling will be required under the concrete footings. The metal box (open bottom) option has an advantage over a three span scc bridge in the ultimate stage due to less impact from the intersection design features. More detail work will be required to confirm the viability of this alternative. The preliminary cost of the metal box could be in the order of 10% to 20% less than for a three span bridge, however, this is dependent on the geotechnical requirements at this site.

A Single Span SCC Bridge with Retaining Wall Abutments (Exhibit 7.3)

A 16 m SCC girder length would be required to span the channel and a portion of the retaining wall abutments on either side. Similar to the metal box option, this alternative also has merit since it has less impact from the intersection which is located immediately to the west of the crossing. The type of retaining wall will likely determine the overall feasibility of this alternative. The Stage I preliminary structure costs are anticipated to be in the same order of magnitude or slightly less than calculated for the three span Stage I alternative. However, there will be a significant cost savings in the ultimate stage from a structure perspective due to a reduced intersectional treatment area.

7.1.8 Estimated Structure Costs

Preliminary structure cost estimates in 2003 dollars were generated for the three span SCC girder superstructure arrangement. This three span bridge alternative appears to meet all the hydrotechnical and gradeline requirements for this site. The cost for the three span bridge alternative is typically in the order of 10% to 20% higher than the metal box, however, they are considered to be in the right ball park for budgetary purposes. Estimated costs for both stages include provisions for a 2.5 m sidewalk.

Stage I - Reconstruction of the Existing Structure		Estimated Cost (2003 \$)
• Construct new 3 lane structure (3 lanes plus sidewalk)		\$1.20 M
• Remove existing bridge		\$0.05 M
• Traffic accommodation		\$0.05 M
Total		\$1.30 M *
Ultimate Stage - Widening Structure to accommodate the Ultimate Roadway Cross-section		
Widen structure by approximately 19 m		\$1.95 M
Traffic accommodation		\$0.05 M
Total		\$2.00 M *

* Cost estimates are based on very preliminary information and are subject to change as more accurate information is obtained.

7.1.9 Conclusions

1. The existing bridge has an estimated remaining life of 5 years according to the latest BIM inspection undertaken in 2002. Therefore, widening of the existing structure is not considered to be viable option.
2. A grade raise at the Bear Creek crossing due to an increase in structure depth can be accommodated since both 116 Street and 132 Avenue will be reconstructed. At this stage, a grade raise in the order of 1.8 m should be considered to accommodate the worst case scenario with respect to the structure options being assessed.
3. The metal box appears to be the most cost-effective structure option at this time, however, this is based on a very preliminary analysis of the geotechnical conditions.
4. A single span SCC girder superstructure with retaining wall abutments may also be cost effective for a long term solution, and should be assessed in further detail during the preliminary engineering phase of the project.
5. A three span SCC girder superstructure would meet all the requirements at this site, however, may not be as cost effective as the other two options in the ultimate stage.

6. Provisions for a 2.5 m sidewalk on this structure will be required in both Stage I and the Ultimate Stage.
7. The crossing could be very sensitive from a fish habitat perspective. Contact with representatives from DFO should be made at an early date during the preliminary phase of the project. NWPA and Code of Practice approval will also be required.

7.2 Recommendations

1. It is recommended that the existing structure be reconstructed instead of widened to accommodate the roadway requirements for Stage I.
2. It is recommended that all three structure alternatives, a metal box, a single span with retaining walls and a three span structure be further assessed at the preliminary engineering phase of this project. The metal box alternative would be our first choice at this site depending on geotechnical suitability, staging accommodation and cost savings associated with the installation which will not be fully evaluated until the design stage. At this phase, contact with the Coast Guard and DFO should be made prior to finalizing the optimum solution for this site.
3. It is recommended that a grade raise of at least 1.8 m above the existing bridge deck be accommodated at this stage of the project to ensure all three alternatives are viable as the project is further developed.
4. For budgetary purposes, the preliminary cost for a three span structure alternative should be used.

8.0 Public Input

The public input program for this project consisted of two input opportunities, one on December 5, 2002, for reaction to the preliminary ultimate stage plans, and a second on March 25, 2003 to attain input to the finalized staging and ultimate plans. A stakeholder meeting in the morning and public open house in the late afternoon/evening on each date were held. All sessions but the December 5th open house, were held at the Muskoseepi Pavilion. A more detailed report on the public input program is provided in Appendix C.

8.1 Input to Preliminary Plans

8.1.1 Stakeholder Meeting

The meeting was held at 10:00 a.m. on December 5, 2002, 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. Twenty landowners signed the registration sheet for the meeting. There were a number of concerns respecting financing of the project including developer and Alberta Transportation contributions to the arterial road costs.

Ten comment sheets were returned, all but two respondents were in favor of the project. Concerns included standard of maintenance on the current graveled sections of 116 Street, access into Costco including need for traffic signals, present congestion from 84 Avenue to 100 Avenue, truck route noise and safety impacts, current dust concerns, private access to 116 Street, need for upgrading of 84 Avenue between 116 Street and 108 Street, need for fair and equitable compensation for right of way, amount of right of way required, and truck route should be located further west of 116 Street.

8.1.2 Open House

The open house was held from 4:00 to 8:00 p.m., on December 5, 2002 in conjunction with Alberta Transportation's open house for the Highway 43 bypass route at Harry Balfour High School. More than 180 people attended the joint open house, 18 of which expressed interest only in the 116 Street project. The open house was staffed by 3 personnel from the City and 4 members of the consultant team.

Concerns expressed by the participants included need for priority for 116 Street improvements, mixture of commercial/industrial and residential uses, need to improve access control from 100 Avenue to 104 Avenue (eliminate service road, 102 Avenue intersections), need for County participation in the plan, possible log truck turning problems, noise mitigation needs, utility corridor required for power lines, need to improve 132 Avenue connection from 100 Street to 116 Street, timing required to move utilities prior to road construction, need to upgrade present graveled sections of 116 Street, need to extend 116 Street improvements south from 68 Avenue to Correction Line Road (work with County), need for C.G. & E. chip trucks to turn left from 116 Street on to 89 Avenue (from north to east).

8.2 Input to Finalized Plans

8.2.1 Stakeholder Meeting

This meeting was held at the Muskoseepi Pavilion at 10:00 a.m. on March 25, 2003. About 20 people attended, with 14 signing the register. Again the meeting was staffed by members of the City and consultant staffs. Invited participants included adjacent landowners, businesses, community representatives and provincial agencies. An explanation of the staging and ultimate plans was provided. Land requirements, were generally outlined. Total right of way required is about 40 acres.

Progress on Alberta Transportation's planning for the Highway 43 bypass was reported, currently three alignments are being considered.

Concerns expressed by the participants included land access from 116 Street, impacts on property taxes, impact of development proposals on the road system, costs to the landowner for road right of way, belief the roads are oversized, felt the planners minds were made up, need for airport access and concern about future traffic operations north on 116 Street.

8.2.2 Open House

About 18 people registered for the open house, though it was estimated that about 25 people attended. The open house was manned by City and consultant staffs.

Comments included need for closure of service road access to 116 Street at 100 Avenue, need to sign travelers to services along the service road, layout of service road slip ramp at 115 Street needs improvement, and need for snow storage in the road cross-section.

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Appendix A

Geotechnical Overview Report

Appendix B

Drainage Report

Appendix C

Public Input Report