

FINAL REPORT

PREPARED FOR THE CITY OF FORT ST. JOHN



Transportation Master Plan



What moves you?

October 26, 2015 | 1958.0346.01



City of Fort St. John Transportation Master Plan

Final Report

Client: City of Fort St. John
10631 - 100 Street
Fort St. John, BC V1J 3Z5

Attention: Victor Shopland, General Manager of Integrated Services

Prepared by: Urban Systems Ltd.
10808 – 100th Street
Fort St. John, BC V1J 3Z6
Phone: (250) 785-9697

Prepared by: James Donnelly, P.Eng., PTOE
Senior Transportation Engineer

Reviewed by: Kristin Bayet, P. Eng.
Project Engineer

Date issued: October 26, 2015

Project No.: 1958.0346.01

This report was prepared by Urban Systems Ltd. for the account of the City of Fort St. John. The material reflects Urban Systems Ltd.'s best judgement in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Urban Systems Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1.0 INTRODUCTION	3
1.1 Purpose of the Plan	4
1.2 Features of the Plan	5
1.3 Study Approach	7
1.4 Consultation & Public Involvement	8
2.0 COMMUNITY & POLICY CONTEXT	9
2.1 Community Profile	9
2.2 Policy Context.....	11
2.3 Existing Travel Behaviour	13
2.4 Existing Road Network	15
2.5 Existing Transit & Passenger Volumes.....	20
2.6 Existing Active Transportation (Bicycle and Pedestrian) Networks.....	23
2.7 Summary of Stakeholder Feedback (Current and Future Challenges).....	25
3.0 DEVELOPING THE TRANSPORTATION MASTER PLAN.....	26
3.1 Transportation Plan Vision & Goals	26
3.2 Future Conditions	26
3.3 Economic Growth & Future Land Use	27
3.4 2035 Traffic Volumes.....	31
3.5 Summary of Stakeholder Feedback (Future Conditions and Possibilities)	32
3.6 Transportation Hierarchy	33
4.0 PARKING	35
4.1 Areas of Concern.....	35
4.2 Recommendations for Consideration.....	37
4.3 Parking Next Steps	43
5.0 SPECIAL TRANSPORTATION ISSUES	44
5.1 Lanes.....	44
5.2 Signage	44
5.3 Truck, Dangerous Goods, and Bypass Routes.....	45
5.4 Road Cross Sections	47
6.0 TRANSPORTATION MASTER PLAN.....	52

6.1	Pedestrian Plan	52
6.2	Bicycle and Trails Plan	57
6.3	Road Network Plan	64
6.4	Transit Strategy	71
6.5	Implementation Plan	74

APPENDICES

Appendix A	Existing Conditions Package
Appendix B	Future Conditions Package
Appendix C	Summary of Stakeholder Feedback
Appendix D	Transportation Master Plan Network Plans
Appendix E	Transportation Master Plan Cross Sections
Appendix F	Detailed Implementation Breakdown

EXECUTIVE SUMMARY

The purpose of the Transportation master Plan (TMP) is to prepare a long-term plan to guide the development of transportation infrastructure to support other goals and objectives of the City related to health, environment, economy, and social sustainability. The TMP will guide the development of all modes of transportation in a network that can effectively and efficiently serve a growing community over the next 20 years. Many of the ideas outlined build on and reinforce transportation planning goals from previous City plans, policy documents, and work such as the Official Community Plan, Energize Downtown Plan, Metroquest Vision, and other strategic documents. These documents have placed an increased emphasis on sustainability, livability, and improved transportation options.

As part of the TMP process, a vision for transportation and specific goals were developed and endorsed by City Council. The following statement was used to guide the development of the TMP:

“The City of Fort St. John will provide an efficient multi-modal transportation network that enhances our quality of life by supporting environmental, economic, and social sustainability to make our community vibrant, safe, and accessible.

Through the implementation of the following goals, it will:

1. Provide an **effective transportation network** that connects the community and surrounding areas and allows for the efficient movement of people and goods between residential, commercial, institutional and industrial neighbourhoods.
2. **Enhance mobility options** by providing attractive, inclusive, healthy and environmentally responsible transportation choices.
3. **Give priority to the safety and health** of users when planning, designing and operating transportation systems and networks for all seasons.
4. **Integrate transportation and land use** planning to help minimize the need for new transportation infrastructure, build walkable communities and foster a vibrant downtown.
5. **Inform and educate** the public on transportation issues and networks.”

The process for developing the TMP included public consultation and direct engagement with an advisory group of stakeholders through a series of workshops. The study was undertaken in phases where Phases 1 and 2 initiated the project and took stock of existing conditions and challenges with respect to Transportation; Phases 3 and 4 explored the future possibilities for travel in the city and identified potential solutions; and finally Phase 5 completed the plan and documented the findings and recommendations into specific modal plans.

Modal plans were prepared for each of the key transportation modes: Pedestrian, Bicycle and Trails, Road Network, and Transit. The highlights of the specific recommendations and strategies of the TMP for each of the key modal plans are summarized below:

Pedestrian Plan:

- ▶ Enhance sidewalk coverage focusing on the downtown, school zones, and recreation and park areas
- ▶ Add supportive pedestrian facilities and amenities such as wider 2.0m sidewalks, setback sidewalks,

lighting, seating, trees, etc.

- ▶ Improve crossings and accessibility features

Bicycle & Trails Plan:

- ▶ Develop & expand the bicycle network making use of facilities such as multi-use trails, dedicated bicycle routes, and shared travel lanes
- ▶ Use signage, pavement markings, and signals to improve safety at crossings
- ▶ Add more bicycle parking

Road Network Plan:

- ▶ Network connectivity and circulation improvements include specific projects to improve mobility and traffic flow around the community
- ▶ Intersection operation and safety improvements for many key intersections to maintain an acceptable level of service under growing traffic conditions
- ▶ Road network classification system update to better capture the different road functions and adjacent land uses, including changes in the downtown core

Transit Strategy:

- ▶ Continue regular service reviews with BC Transit
- ▶ Improve the transit centre located downtown as part of the Energize Downtown program
- ▶ Enhance pedestrian and cycling infrastructure, especially in the vicinity of transit routes, which in turn supports transit use

Specific network improvements were identified based on the above key modal recommendations. These specific projects and improvements are summarized in a detailed project list with preliminary cost estimates in the TMP Implementation Plan (Section 6.5). Improvements have been grouped in categories that are generally related to growth, downtown, or bicycle and pedestrian network improvements.

Beyond the plans and strategies developed for the key modes (pedestrian, cycling, roads, and transit); the TMP also identified a number of unique transportation issues for consideration. These included topics such as the use and development of back lanes, signage throughout the city, modifications to the Dangerous Goods/Truck Routes, and the development of new typical road cross sections. A standalone Parking Policy Strategy Framework was also prepared to identify the City's key parking-related challenges and to present a variety of options aimed at improving parking within the city. The full framework accompanies this TMP as a strategy to provide the City with options for improving parking from planning, bylaw, and public works perspective, needs and activity levels.

The TMP is a living document that should evolve and be updated over time. As mentioned, the TMP helps inform other plans and documents, but in turn it can also be updated as a result of new information and direction provided by future City plans, policies and decisions. At a minimum, given the rapid growth in the Peace region, the plan should be reviewed and updated every 5 years so that it can remain current and up to date.

1.0 INTRODUCTION

Fort St. John is a vibrant and historic community situated in northeastern British Columbia within the Northern Peace Region. With a population of approximately 22,000 residents, Fort St. John is a growing community, which has become the employment, business, and service hub for many surrounding communities. The city has a strong economy that is primarily focused around the energy sector, specifically oil and gas extraction, which supports a predominantly young labour force both within the community and the surrounding region. As such, Fort St. John is one of the youngest communities in BC.

Population growth is expected to continue in the Fort St. John, with an additional 8,000 to 10,000 residents anticipated to live in the community over the next 10 years. It is expected that local growth, combined with population growth in surrounding communities, will place significant pressures on the City's transportation system in the coming years.



The Transportation Master Plan (TMP) seeks to address existing challenges in addition to growth-related challenges and shape long-term investments in transportation infrastructure and programs. The 2015 TMP provides the City with updated and relevant guidance on priorities for development of a multi-modal transportation system, which serves Fort St. John residents and businesses into the future.

The benefits of long-term transportation planning goes far beyond the provision of roads, transit infrastructure, bicycle routes, trails, and pedestrian facilities. Transportation can be regarded as a foundational element to achieving community goals and objectives related to health, environment, economy, and social sustainability. This Plan sets out to guide the City to achieve larger community aspirations, including supporting the Downtown Revitalisation, providing alternatives to the automobile, promoting a healthy population and environment, and ensuring a vital economy, while also supporting regional people and goods movement.



Ultimately, the TMP aims to build from previously completed studies. In recent years, a number of planning, policy, and bylaw initiatives occurred; this includes the Downtown Revitalisation Plan, Official Community Plan, and the Subdivision and Development Servicing Bylaw 2120. These documents have placed an increased emphasis on sustainability, livability, and improved transportation options.

The TMP ultimately intends to shift the City's transportation system to be more safe, equitable, efficient and accessible; to promote a healthier community; and to provide improved mobility options for residents and visitors of all ages and abilities.

1.1 Purpose of the Plan

Given the current growth of Fort St. John and its vision to be a community focused on nature, business, and families, the City of Fort St. John has identified the need to plan for the City's long-term transportation needs.

The purpose of a TMP is to prepare a long-term plan to guide the development of transportation infrastructure to support other goals and objectives of the City, including the economic growth of the community. The TMP will guide the development of all modes of transportation in a network that can effectively and efficiently serve a growing community over the next 20 years.



The TMP is used as a basis for adopting safe, innovative, sustainable approaches to all modes of transportation, as a guide to future development, as a basis for partnership discussions with other agencies, and as a basis for preparing long-term Capital Plans for funding and construction of the recommended improvements. These recommendations will support the City in applying for grants and other funds, and in negotiating development conditions with the private sector. The TMP also forms the basis for the City to develop capital work programs and budgets.

Through this process, the City of Fort St. John's transportation network will become a platform for building vibrant neighbourhoods, creating enjoyable streets and trails, and supporting economic development opportunities.

The Transportation Master Plan will be used to inform and shape staff and City Council decisions on transportation and land use matters. Ultimately, the Plan is the City of Fort St John's commitment to:

- ▶ Provide the leadership needed to support a sustainable future;
- ▶ Work in partnership with businesses, educational institutions, community organizations, transportation providers, and municipal and regional governments;
- ▶ Invest in sustainable transportation modes that are consistent with the directions and priorities of the plan;
- ▶ Integrate with other decisions as identified through other plans, policies and initiatives; and
- ▶ Communicate clearly to the residents of and businesses in Fort St. John the transportation priorities for the City.

For the Transportation Master Plan to be successful, the City will need to work with both public and private sector partners. In the established parts of the community, the Plan will be used as a guide to work with residents, businesses, and institutions on transportation improvements to enhance mobility choices and to support quality of life in Fort St. John. For new developments and growth areas, the Transportation Master Plan will be used to shape land use and transportation choices to reduce future vehicle travel demand and encourage more sustainable travel choices. The Plan will be unique to Fort St. John and be sensitive to realities of a northern community, a resource based economy, and the community’s aspirations.

1.2 Features of the Plan

The TMP presents a comprehensive review of all aspects of the transportation system and is intended to produce a clear vision of the multi-modal transportation system to serve the community over the next 20 years. The framework of the Plan is developed around the long-term directions for walking, cycling, transit, and the roadway network serving the city, as briefly highlighted below;

1.2.1 Pedestrian Plan

Walking is the most fundamental form of transportation, it can be the primary means by which people choose to get around the city or simply form part of their trip via a different mode. Attractive pedestrian facilities also contribute toward the Fort St. John as a vibrant city. Active streets where people are moving around in different areas of the community in safe and comfortable areas and spending leisure time in public spaces along the streets will serve to strengthen the sense of community within the city. The TMP looks to build from the existing infrastructure provided to make walking in the city an integral part of the transportation system. The Plan outlines the provision of sidewalks that will address gaps in the most critical pedestrian areas and it identifies important corridors and crossing locations that will reduce barriers to walking and ultimately enhance the walking experience within the city.



Survey Snapshot!

103 people responded to the question “How do you want to move?” (Check all that apply)

- ▶ 51% Biking
- ▶ 48% Walking
- ▶ 33% Driving
- ▶ 26% Bus
- ▶ 5% Taxi

1.2.2 Bicycle and Trails Plan

Cycling in the city and the surrounding region for leisure, social, work, school and other trip purposes is increasing. A safe and comfortable bicycle network with suitable facilities and programs will serve to enhance the experience for cyclists and potentially attract a large population of people to use active transportation modes within the city. The TMP identifies existing and proposed bicycle facilities in the city to serve the core areas where people are most likely to bike and it establishes a complete and connected network to create greater accessibility and greater utilization for existing infrastructure within the community.



1.2.3 Road Network Plan

The city's roadway structure consists of the road network of arterials, collectors and local streets that serve localized trips, while also providing connections to the provincial highway system for regional trips. The TMP identifies the primary corridors within the network that will influence travel within the city, and outlines the long-term network improvements needed to support forecast growth based on local and regional traffic. The TMP also outlines minor changes to the roadway classification system based on planned network improvements. In planning for future transportation requirements, the TMP identifies typical roadway classifications for future corridors to be designed for new infrastructure and for retrofitting existing infrastructure.



1.2.4 Transit Strategy

The transit system in Fort St. John is largely planned and managed by BC Transit, and operated by Diversified Transportation Ltd. Transit ridership in the city should continue to increase with improving transit-oriented land use patterns in the downtown, growing commercial hubs, and continued investments in walking and bicycle facilities. The TMP builds on BC Transit's planning and provides recommendations that will support the development of efficient and convenient services that compliment other transportation modes within the city.



1.2.5 Parking

Throughout the development of the TMP scope of work and initial conversations with the community, stakeholders, staff, and council, parking was a frequently cited topic for further discussion. Generally, parking related challenges are perceived to be a significant concern in the city.

1.2.6 Special Transportation Issues

Beyond the plans and strategies developed for the key modes (pedestrian, cycling, roads, and transit); the TMP identified a number of unique transportation issues for consideration. These include topics such as the use and development of back lanes, signage throughout the city, modifications to the dangerous goods/truck routes, and the development of new typical road cross sections. These issues were reviewed and are documented in the “Special Transportation Issues” section.

1.2.7 Implementation Plan

A key component of the TMP is a realistic implementation plan that proposes the projects and funding requirements to successfully achieve the TMP. Building from the vision, goals, policies and plans developed in the TMP, the implementation plan details the particular projects and improvements required to complete the plan. This will include the identification of individual project segments, their attributes, and planning level cost estimates. The intent is that the implementation plan will be a resource to support the development of the City’s capital program where other infrastructure investments will be incorporated and to guide development requirements throughout the city.

1.3 Study Approach

The primary approach to undertaking the TMP was to work with a selected Stakeholder Advisory Group (SAG) to develop a plan that is actively used in the City’s daily life of planning, designing, approving, building, and maintaining transportation facilities. The TMP must be simple to understand, affordable to implement, and practical for its constituents to use. Policies and procedures to finance and construct the facilities must be clearly understood by the community so that they will support the plan. The TMP process ensured that the policies in the Official Community Plan (OCP), as well as those developed through the City’s current Downtown Planning process carry through to the TMP, and that the TMP meets the needs of its key stakeholders.

The study was undertaken in five major phases where Phases 1 and 2 initiated the project and took stock of existing conditions and challenges with respect to Transportation; Phases 3 and 4 explored the future possibilities for travel in the city and identified potential solutions; and finally Phase 5 completed the plan and documented the findings and recommendations.

Phase 1

- ▶ Council Meeting #1 (July 14, 2014)
- ▶ Project Start-up

Phase 2

- ▶ Stakeholder Advisory Group – Workshop #1 (October 7, 2014)
- ▶ Document Existing Transportation Conditions

Phase 3

- ▶ Council Meeting #2 (November 24, 2014)
- ▶ Develop Vision, Goals and Objectives
- ▶ Forecast Future Transportation Conditions
- ▶ Stakeholder Advisory Group – Workshop #2 (December 16, 2014)
- ▶ PlaceSpeak Community Consultation (ongoing through to project completion)

- ▶ High on Ice Booth – Community Consultation

Phase 4

- ▶ Review Special Transportation Issues
- ▶ Undertake Parking Policy Strategy

Phase 5

- ▶ Prepare Draft Transportation Plan
- ▶ Stakeholder Advisory Group – Workshop #3 (April 9, 2015)
- ▶ PlaceSpeak Distribution of Draft TMP
- ▶ Council Meeting #3 (May 25, 2015)
- ▶ Council Meeting #4 (Aug 24, 2015)

1.4 Consultation & Public Involvement

The Plan was developed with the participation of the residents of Fort St. John and surrounding area to ensure that it addresses current transportation issues, and reflects the values and interests of residents and key stakeholders. Throughout the course of developing the Plan, there were several opportunities for public input through various forums including presence at community events, a survey, open presentations to Council, and online engagement. The consultation and engagement activities are summarized below:

Stakeholder Advisory Group – At the onset of the project, a SAG was formed with representatives from many agencies and organizations, including School District 60, Ministry of Transportation and Infrastructure (MOTI), Fort St. John Chamber of Commerce, a local driver training school, tourism board, youth advisory committee, the Blizzard bicycle club, seniors association, and trucking association, along with City staff. Three meetings were held with the SAG: October 1, 2014, December 16, 2014 and April 9, 2015.

Survey – A survey was created as part of the development of the TMP. The survey was made available electronically on the City’s Facebook website and PlaceSpeak website, and also in paper format at the annual High on Ice Festival, which was held over the weekend of February 6-9, 2015. The survey asked residents to



identify their methods of movement, transportation challenges and opportunities and the importance of a variety of transportation options. 115 survey responses were received.

Workshops with Council and City staff – Periodic presentations were held with Council and City staff from several departments throughout the study process to discuss issues, identify possibilities and provide direction for the TMP.

Promotion – The TMP was promoted through a variety of methods. Posters were placed around the city and information on the TMP process was provided on the City’s website, Facebook page and at the High on Ice Festival. In addition, the City also posed numerous questions on its Facebook page, to which many people responded. The City also utilized a PlaceSpeak website for the TMP. This website provided a forum for discussion and the ability to provide information on meetings, the survey and other relevant documents to the public.

2.0 COMMUNITY & POLICY CONTEXT

Fort St. John is strategically situated within the Peace River Regional District, providing a centralized hub for regional industries and surrounding communities within the area. Due to its geographical position, Fort St. John has become a major thoroughfare for regional traffic, particularly for traffic along the Alaska Highway.

Understanding the community’s current demographics, as well as the existing transportation features is an essential element in developing a long-range plan. An inventory of the existing transportation infrastructure; how it is being used, and where deficiencies in the system limit mobility, will help in developing a plan for the future. Based on previously completed studies, available and newly collected data, and corresponding analysis, the community profile of Fort St. John is provided below.

2.1 Community Profile

The scale, mixture, density and form of land uses influences travel demands as well as how people choose to travel. This section of the Plan describes the demography and land use characteristics of Fort St. John and the travel characteristics that exist today. These patterns influence not only the demands on the transportation system, but shape the improvements that will support more sustainable modes of travel.

Demographic Profile

Demographics play a key role in influencing transportation choices and travel patterns. Overall, Fort St. John is experiencing population trends similar to many surrounding municipalities including smaller households, more people living alone, families with fewer children, and older residents moving into seniors housing. The overarching demographic trends that will continue to shape the way transportation behaviours and trends take place in Fort St. John are described below.

- ▶ Over the last two decades, Fort St. John has experienced population growth in the range of 1.5% annually according to Census statistics. Given the potential development of the Site C dam on the Peace River and

the Province's LNG strategy, recent City reports are projecting growth rates of 2.2%¹ to the year 2036. This growth is equivalent to a population increase from about 22,000 residents in 2014 to over 35,000 residents by 2036.

There exists a significant shadow population within and outside of the City's boundaries which places various demands on Fort St. John. This shadow population draws on a variety of City services, ranging from recreation to policing, water supply, land for temporary housing, transportation facilities and many others. Key contributors to the shadow population include:

- ▶ Permanent residents in the Peace River Regional District (PRRD) Electoral Areas adjacent to the city (Electoral Areas B and C)
 - ▶ Permanent residents in the District of Taylor
 - ▶ Temporary residents accommodated in work camps located in the PRRD
 - ▶ Temporary residents lodged in rental accommodations or hotels within City boundaries
- ▶ The median age of Fort St. John residents in the 2011 Census was 30.6, up slightly from 29.8 in the 2006 Census. In 2011, the percentage of the population aged 65 and over in Fort St. John was 6.5%, compared with a national percentage of 14.8%. The percentage of the working age population (15 to 64) was 72.3% and the percentage of children aged 0 to 14 was 21.1%. In comparison, the national percentages were 68.5% for the population aged 15 to 64 and 16.7% for the population aged 0 to 14.
- ▶ In Fort St. John, over 60% of Census families were married couples, while 23.5% were common-law couples and 15.9% were lone-parent families.
- ▶ In 2014, the City expanded its boundaries to help ensure that it had land available to accommodate the future growth that is projected. Future population growth in the immediate future is expected to occur in the northwest quadrant of the city including the newly incorporated lands. Population growth is also expected to occur in the northeast quadrant of the city in the Greenridge Heights area and in the southeast quadrant of the city in the North Point development.
- ▶ Residential growth will see a wide mix of housing types, including single family, duplex and multi-family developments. Of paramount importance to the City is ensuring that new housing options are available and affordable for young families and supported by a variety of transportation options to easily get around the city.

¹ G.P. Rollo & Associates, "Energize Downtown Plan"

Land Use and Neighbourhood Profile

The City of Fort St. John is the largest municipality in the PRRD and the largest BC municipality north of Prince George. It contains a young population and a diverse range of land uses.

Today, the city's commercial and retail land uses are mainly located north of the Alaska Highway. The key commercial and retail uses are found in the downtown core (100 Street and 100 Avenue), further east and west along 100th Avenue, and around the Totem Mall area. Light industrial land uses are mainly located in the area south of the Alaska Highway. Heavy industrial uses are found in the southeastern quadrant of the city, south of 100th Avenue, where there is direct access to rail and the truck/bypass routes.

Light industrial outside of the City's municipal boundary is occurring south of the city, along 100 Street, in the PRRD.

High density residential developments are being constructed north of 100th Avenue and west of 108th Street. In addition, high density developments are also being constructed near the downtown on 102nd Avenue, and in the southeast area of the city. The northeast and northwest quadrants, in general, are characterised by low density residential uses, including single family homes and duplexes

2.2 Policy Context

This TMP builds upon the directions and commitments of several key community policy documents in which the City has made significant advancements and commitments towards multi-modal transportation. In particular, several relevant plans and strategies have been developed that guide local planning and development activities and provide direction on transportation and mobility. Many of these documents allude to a hierarchy of street users, and give priority to walking, cycling, and public transit before private vehicles, and use this hierarchy to guide policy goals. These influential documents are briefly highlighted below.

Official Community Plan

The City of Fort St. John Official Community Plan Bylaw No. 2076, 2011 is a very important tool at the community level to integrate local land use and transportation planning. The OCP contains transportation policies aimed at developing an efficient, safe and accessible community, increasing the diversity of transportation options in the city, promoting active transportation options, strengthening the pedestrian environment, and clearly identifying future transportation routes. Objectives within the OCP include ensuring that there are paved roads in all areas of the city, the pedestrian environments is strengthened, accessibility to those with mobility challenges is increased, transit ridership is increased, and a consistent neighbourhood character and feel is developed.

The content in the OCP, as it relates to transportation, can be summarized in the following word graphic:



Energize Downtown Plan

The City is nearing completion of a downtown planning process titled Energize Downtown. The desire of this plan is to redefine the downtown core by attracting and encouraging specific forms of development backed by municipal investment in public assets that meets the desired form, character, and high quality design for a winter city. The Downtown Action Plan supports a multi-modal transportation system that enables travel choices to create a city core that is safe and friendly for people of all ages and mobility levels – regardless of the type of transportation mode.

The vision for downtown Fort St. John is premised on significant changes to the existing transportation infrastructure, most notably reducing vehicle volumes and intensity along 100th Street and 100th Avenue, the City’s high retail streets, while creating alternative route options for traffic that would otherwise not pass through the downtown.

Other Municipal Plans and Bylaws

In addition to the OCP, the City also has a number of bylaws in place which speak to various transportation elements within the city in various capacities, all guided by the direction set out in the OCP. These bylaws include the Zoning Bylaw, Traffic Bylaw, Noise Bylaw and Subdivision and Development Servicing Bylaw.

Regional Level Plans

The PRRD is currently in the process of updating the North Peace Fringe Area Official Community Plan. This plan covers the area outside of Fort St. John. It is anticipated that the plan will discuss growth management to enhance livability and sustainability, and the integration of land use and transportation.

Provincial Level Plans

At a provincial level, there are several plans and strategies that provide high-level direction for the TMP in terms of growth, land use management, and transportation planning. This includes the Climate Action Plan (2008) which sets targets for BC to reduce its GHG emissions by 33% from 2007 levels by 2020 and by 50% by 2050. Similarly, the provincial Climate Action Charter (2007), developed in partnership with the Union of BC Municipalities (UBCM), is a commitment by local governments to measure and report on their community’s GHG emissions profile and work toward creating compact, more energy efficient communities. Similarly, transportation-specific initiatives at the provincial level have included the Provincial Transit Plan (2008) which seeks to increase transit ridership in British Columbia.

2.3 Existing Travel Behaviour

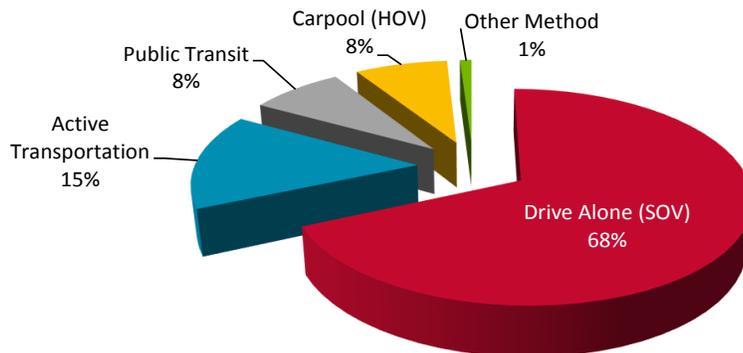
Data collected from the 2011 Canada Census provides a profile of travel behaviour for residents of For St. John, as shown in **Figure 2.1**. This data represents the commuter trips to work that residents commonly take within the community. The vast majority of Fort St. John’s workers drive alone in single occupant vehicles (SOV). Another 8% share a ride, in carpools or high-occupancy vehicles (HOV). About 15% of the workers either walk or cycle to work, while approximately 8% use public transit. Although travel behaviour may be somewhat different for other trip purposes such as trips to school, shopping, business, social and recreational purposes, it is highly likely that the SOV mode of travel dominates for all trip purposes.

Survey Snapshot!

126 people responded to the question “What moves you right now?” (Check all that apply)

- ▶ 88% Drive by myself in a personal vehicle
- ▶ 55% Walking
- ▶ 40% Drive with others in a personal vehicle
- ▶ 32% Cycling
- ▶ 17% Drive by myself in a company vehicle

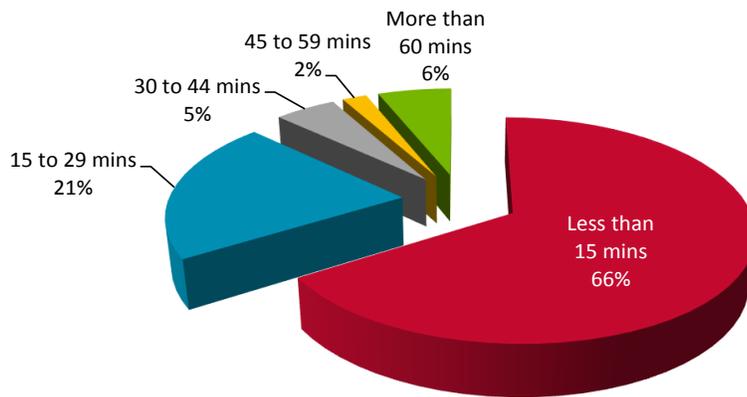
Figure 2.1: Fort St John 2011 Work Trip Travel Behaviour – Mode Type



Statistics Canada, 2011 National Household Survey, Statistics Canada Catalogue no. 99-012-X2011031

In addition to the mode types, the approximately travel times of commuters was also surveyed. **Figure 2.2**, illustrates the average travel time Fort St. John commuters travel to and from work. Given Fort St. John’s size, approximately 66% of commuters travel less than 15 minutes to work, while 21% travel between 15 to 29 minutes. The remaining 13% travel more than 30 minutes to get to work. It is likely that trips greater than 15 minutes correspond to travel beyond the City’s boundary.

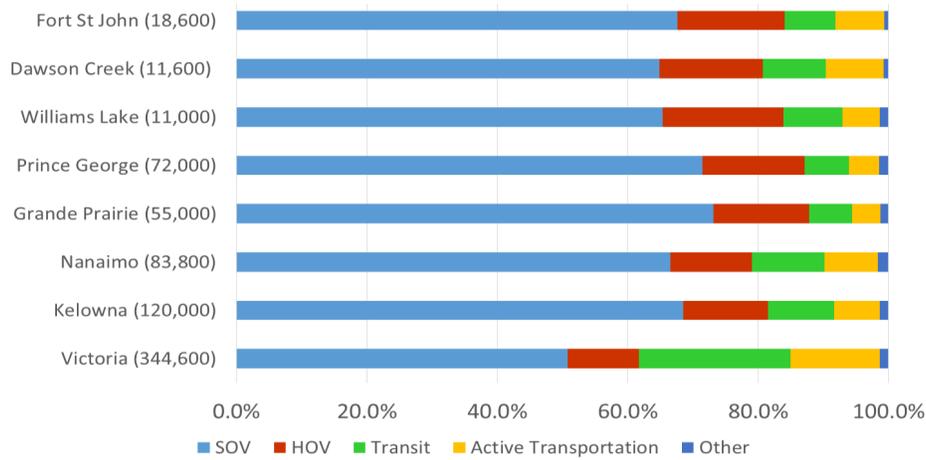
Figure 2.2: Fort St John 2011 Work Trip Travel Behaviour – Travel Time



Statistics Canada, 2011 National Household Survey, Statistics Canada Catalogue no. 99-012-X2011031

Fort St. John’s transportation mode splits ranks modestly against other municipalities in the region and the Province, as demonstrated in **Figure 2.3**. Active transportation modes within the city rank well with other northern communities. As the city grows, with active transportation planning, it is expected that a greater variety of opportunities will become available to support a wider range of transportation modes, such as improved transit and active transportation corridors, similar to those seen in larger communities within British Columbia.

Figure 2.3: Travel Behaviour Comparison

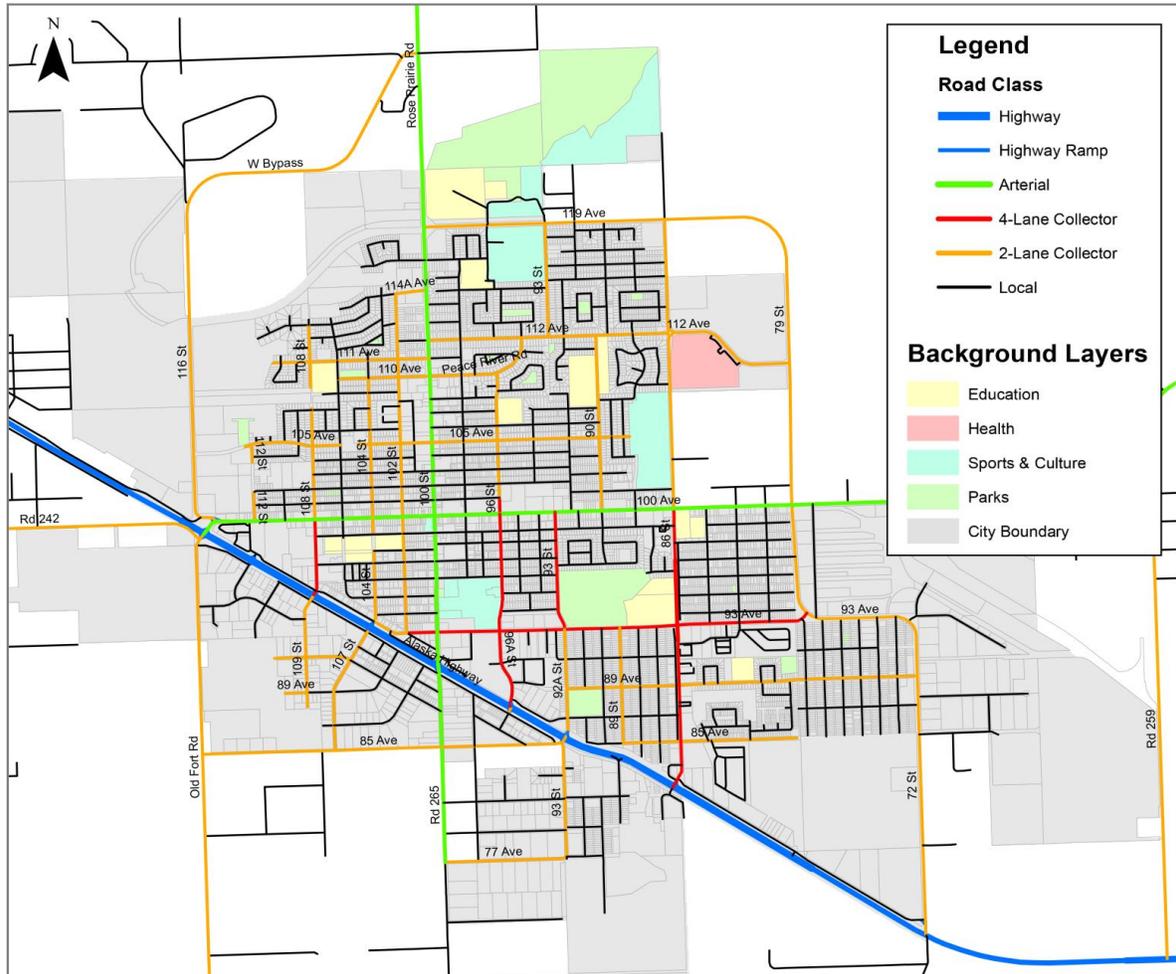


Statistics Canada, 2011 National Household Survey, Statistics Canada

2.4 Existing Road Network

Maintaining a safe and efficient street network to support all modes is one of the key elements to enhancing mobility and quality of life in the city. The city’s road network has a distinct grid structure, with development historically dictating network improvements. As outlined within the Official Community Plan, a hierarchal road classification structure has been adopted within the city’s road network including Arterials, Major and Minor Collectors, and Local Roadways. As defined within the 2011 Official Community Plan, the Existing Major Road Network Plan within Fort St. John is illustrated in **Figure 2.4**. For each of the Roadway classifications and primary corridors within the city’s road network, the following key descriptions have been identified:

Figure 2.4: Existing Road Network Plan



Highway 97, also referred to as the Alaska Highway, was constructed in 1942 and operates as the primary Regional Arterial, connecting Fort St. John with the surrounding communities of Dawson Creek and Fort Nelson. The highway is British Columbia’s primary north-south corridor extending from the US border at Osoyoos to the Yukon Territory and beyond to the Alaskan border. Within Fort St. John the highway is classified as a rural arterial undivided four-lane (RAU4) roadway with isolated raised medians at intersections.

The highway is owned and operated by the British Columbia Ministry of Transportation and Infrastructure. There are a number of signalized and unsignalized intersections along the Highway 97 corridor through Fort St. John providing full and limited highway access. Spacing of the intersections is approximately 400 metres. The angled alignment of the highway compared to city roads causes geometric and traffic flows issues at many of the intersections. Daily volumes along the corridor vary greatly, with a large seasonal variation. A significant portion

of highway traffic does not originate from Fort St. John and can seem to be regionally based within the Peace River Regional District.

Arterial Roads in Fort St. John accommodate medium to high traffic demands for local and regional trips. Arterial corridors are designed to connect neighbourhoods to one another and the community to regional thoroughfares. Their intent is to serve a mobility-focused function and they are typically designed to minimize direct access to developments in order to safeguard traffic flow.

Within Fort St. John's network, the arterial classified roadways are currently 100th Street and 100th Avenue. Both 100th Street and 100th Avenue form the main routes through Fort St. John's downtown area, servicing the majority of collector and local roadways within the city. Traffic volumes on these arterial roads range from approximately 3,000 to 15,000 vehicles per day. Traffic flow along these arterial roadways is restricted by multiple signalized intersections throughout either corridor. Furthermore, numerous developments that access directly onto either roadway also cause constraints for the free flow of traffic.

Collector Roads serve a dual purpose; servicing both traffic mobility and land service. All types of collector roadways carry traffic with the intent of providing a connection between the local and major roadways.

Major Collectors, within in Fort St. John are typically four lane roadways that may include auxiliary lanes at intersections. Direct access to adjacent properties is minimized with adequate separation from intersections.

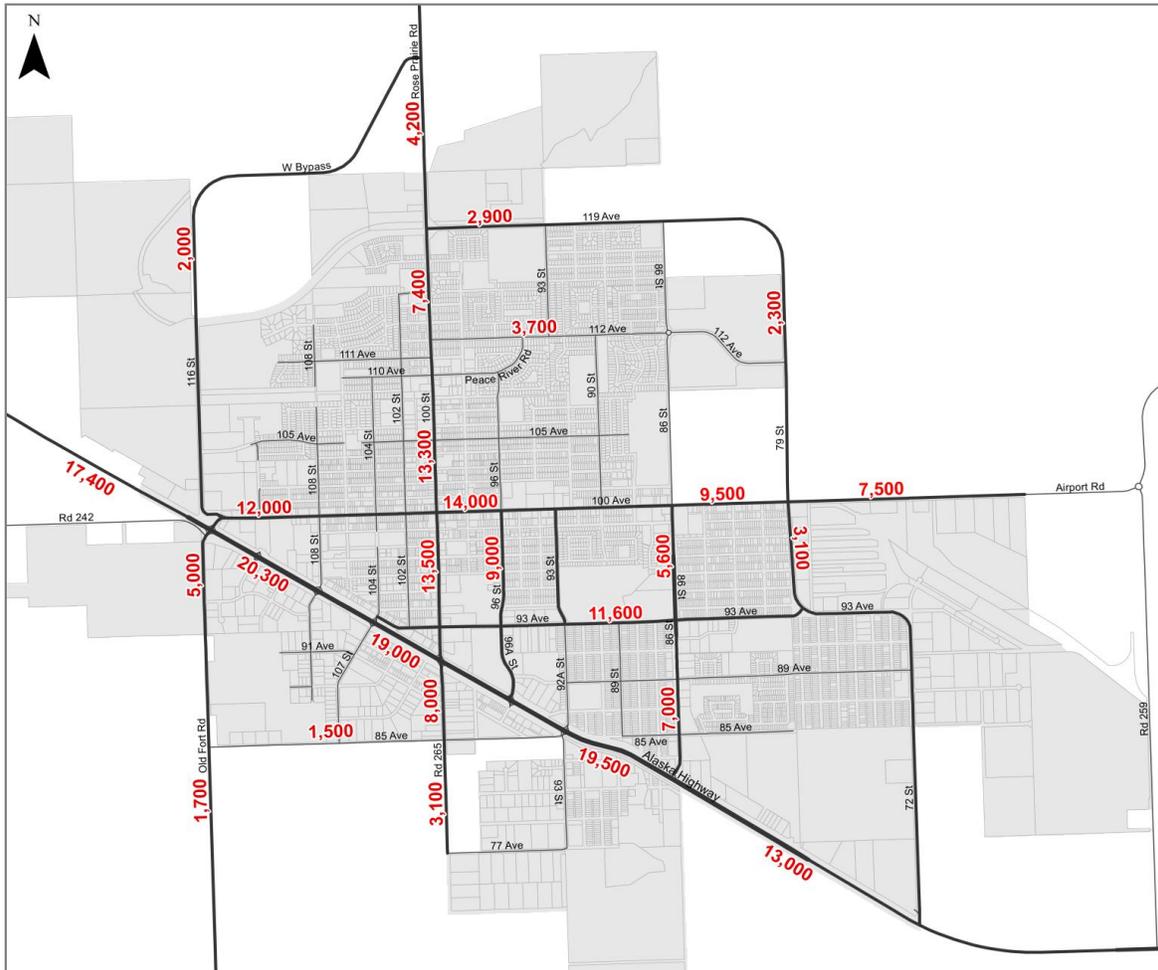
Minor Collectors are meant to primarily service traffic and land service functions by carrying traffic from local roads to connect with major roads. Within Fort St. John, minor collectors are typically located within residential areas where the roadway serves as a key connection between major roads, while also servicing adjacent properties.

Local Streets provide direct property access and connect to either collector or arterial roads. Within Fort St. John there are numerous existing local roadways, providing access to residential, commercial and industrial land uses.

Permitted truck routes within the city are primarily confined to the Highway, and the East and West Bypass Roads, as well as industrial areas. Additional temporary routes are also allocated within the city, based on yearly construction projects.

Annual Average Daily Traffic (AADT) volumes for the primary corridors within the city's network are illustrated in **Figure 2.5**.

Figure 2.5: Existing Estimated Annual Average Daily Traffic (AADT) Volumes

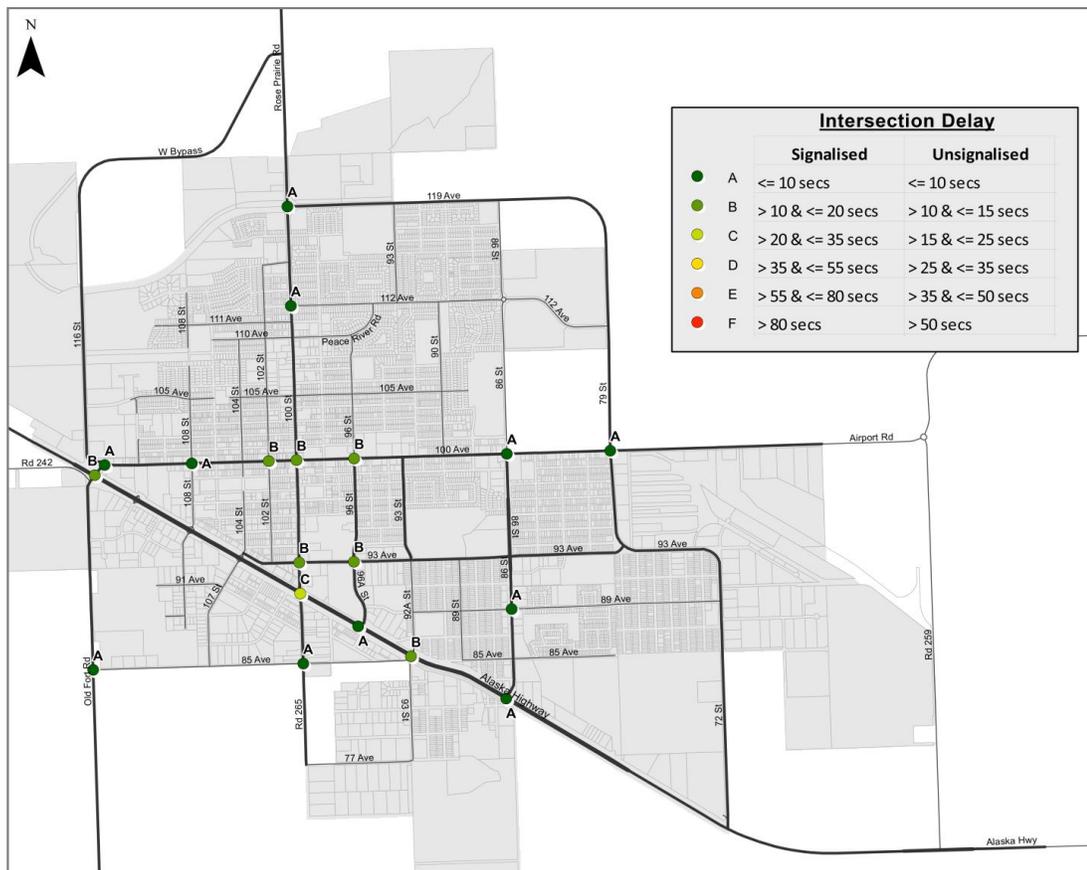


In order to better identify and define the need for improved or new transportation facilities and services, it is important to first understand the travel characteristics of vehicle travel throughout the city. Using various data sources, the following key facts can be summarized for the current travel patterns within the city.

- Traffic Volumes:** Existing traffic patterns within the city demonstrate that 100th Street and 100th Avenue are the major thoroughfares through the city, dissecting the downtown core and accommodating the highest traffic volumes. The highest volumes along these primary corridors occur within the vicinity of Highway 97, while high traffic areas occur around the commercial areas, adjacent to the highway, primarily serviced by the major collector roadways, including 93rd Avenue and 96th Street. Adversely, further to the north of the city, the primary corridors serving the residential portion of the city serve far fewer vehicles, with much of the northern segments of the East and West Bypass roads being under-utilized.

- Congestion and Delay:** The overall performance of an urban roadway is typically measured by the delays experienced at major intersections, also referred to as the Level of Service (LOS). In most urban areas, signalized intersections are the source of most delays experienced on the roadway network. The level of service is a measure of vehicle delay where LOS A suggests that there is no delay and LOS F indicates that there is significant delay and the intersection is experiencing significant queuing. A LOS C or better is generally used as the target for planning purposes. As illustrated in **Figure 2.6**, all major intersections in the city are currently operating at an overall LOS C or better.

Figure 2.6: Existing Intersection Performance (PM Peak Hour)



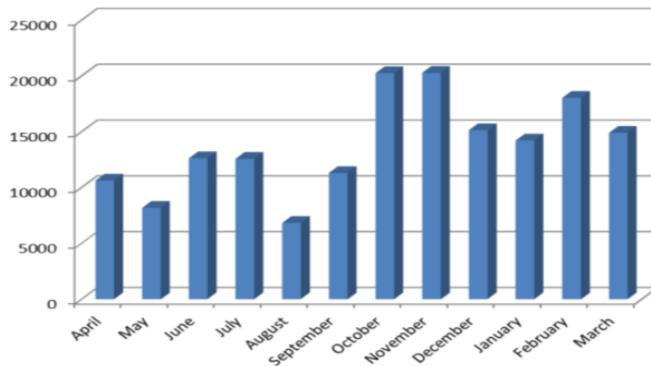
- Intersection Safety:** There have been approximately 1,800 intersection collisions recorded in Fort St. John within the period from January 1, 2008 until December 31, 2012. In an urban area, the majority of collisions tend to occur at intersections and intersection safety can be a function of the geometry and operations of an intersection. The top collision prone locations in the city are summarized below in **Figure 2.7**.

4 (Southeast) and 5 (Southwest) operate with a single morning and evening weekday service only when school is in session.

The door-to-door custom transit service is organized through the HandyDART program. This program provides transportation services for those with disabilities who are unable to access conventional transit services. The service operates with one vehicle servicing Fort St. John and providing limited service to residents in the nearby District of Taylor and Peace River Regional District area of Charlie Lake.

The existing transit service within Fort St. John has an annual ridership of approximately 132,000 averaging 11.8 rides per hour¹. Annual ridership within the city has remained relatively steady since 2010, when the transit exchange was reconfigured to the downtown Cultural Centre. The HandyDART service had an annual ridership of approximately 23,000 averaging 3.7 rides per hour. Registration for the custom HandyDART service in Fort St. John has grown since its commencement in 1998. The service currently has 680 registered clients (2011/12).

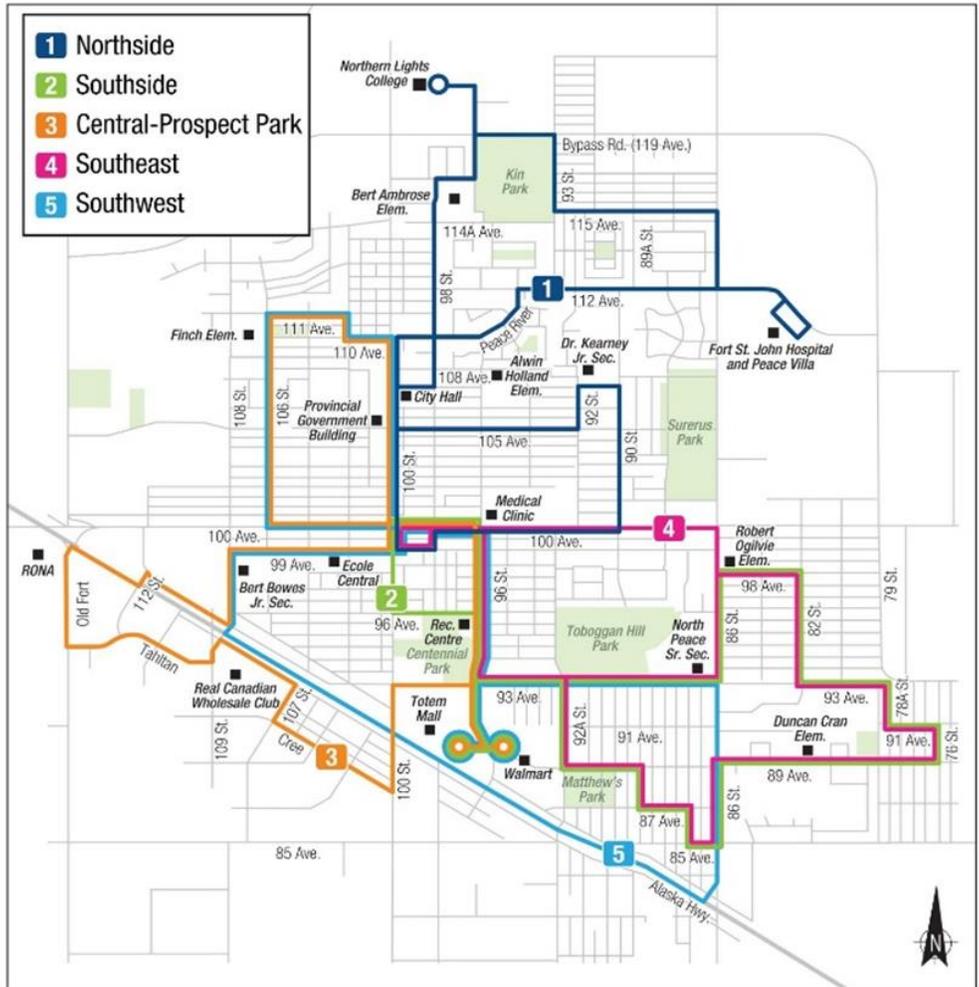
Figure 2.8: 2011-12 Ridership per Month



A BC Transit Review² evaluated the performance of both the conventional and custom transit systems based on the comparison of similar services within surrounding cities and municipalities in the region. The comparison found that the conventional service performed poorly against other systems such as Prince Rupert, Nelson, Cranbrook, and Dawson Creek, with a cost recovery of 6.8%. Adversely, the custom service performed extremely well in comparison to other similar services.

² BC Transit 'Fort St. John Transit Service Review', May 2013

Figure 2.9: Fort St. John BC Transit Map



2.6 Existing Active Transportation (Bicycle and Pedestrian) Networks

A complete Active Transportation network within a community is one that safely and effectively accommodates pedestrians, bicycles, and transit usage through facilities that provide connectivity from major destinations to where people live, work, shop, learn, and play.

The City currently does not have a defined active transportation plan. While pedestrians enjoy high connectivity throughout the downtown and surrounding residential neighbourhoods, gaps remain in the walking network. Although the city’s existing trail network extends throughout the city, opportunities exist to better connect the network into other active transportation corridors with the community.

Fort St. John currently has a sidewalk and trail network within many areas of the community. The city’s pedestrian and bicycle network is currently serviced by a variety of sidewalks, boulevards, multi-use pathways, and trails. Most residential areas within the city are serviced by sidewalks on at least one side of the street, with the majority of community open space, parkland, and schools connected within this network in some form. The pedestrian network also includes let-downs at the majority of city blocks, to accommodate all accessibility types within the community.

The City also maintains a number of recreational trails including within Fish Creek Community Forest and Toboggan Hill Park. The majority of these trails are maintained year round, while some are only accessible during the summer months.

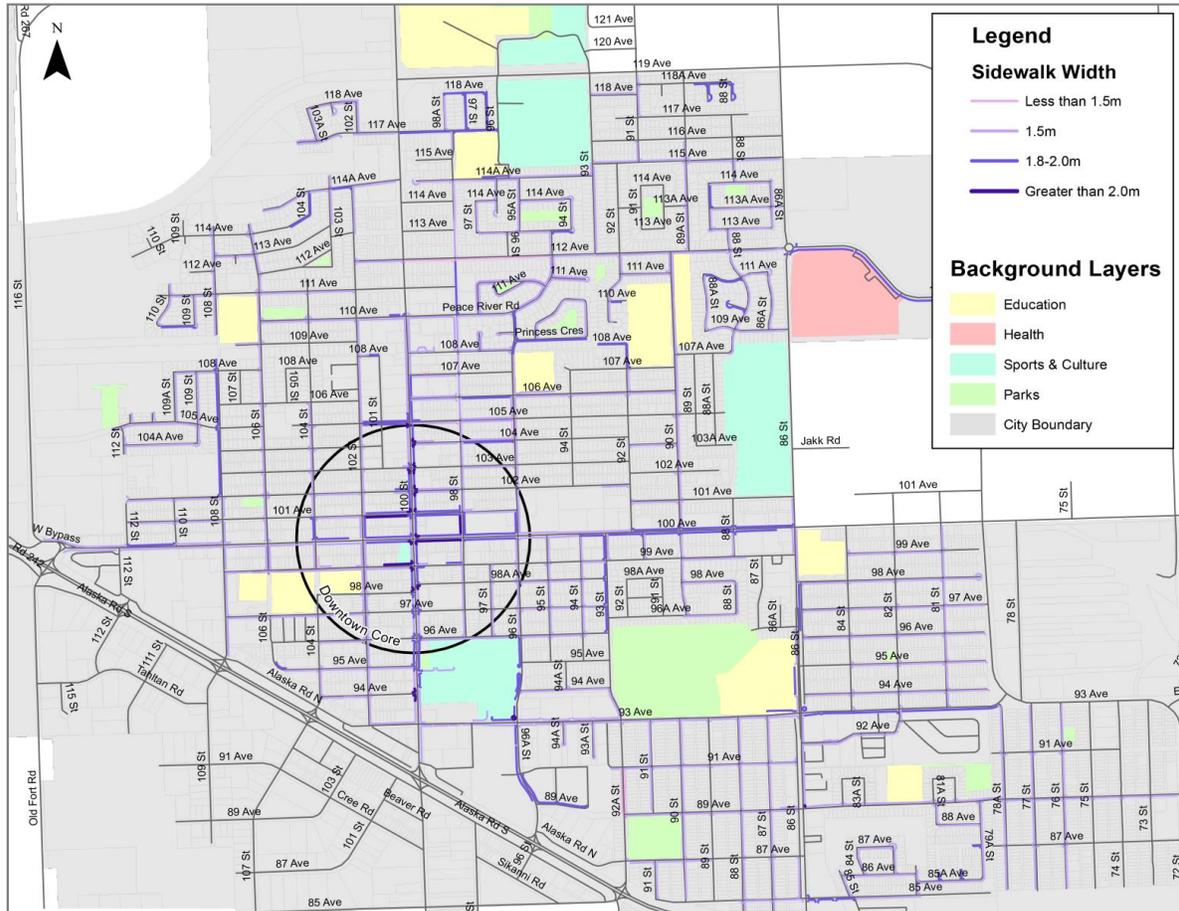
In 2010, the City of Fort St. John completed a GIS inventory of all sidewalks within city limits that comprised all paved and unpaved sidewalks, as illustrated in **Figure 2.10**.

Survey Snapshot!

102 people responded to the question “What opportunities exist to improve how we move around?” (Check all that apply). The top 3 opportunities:

- ▶ **25% More sidewalks and safer sidewalks**
- ▶ **24% More trails with enhanced features**
- ▶ **22% More bike lanes**

Figure 2.10: Existing Sidewalks within Fort St. John



2.7 Summary of Stakeholder Feedback (Current and Future Challenges)

On October 7, 2014 a Transportation Master Plan workshop was held with the Stakeholder Advisory Group (SAG). The SAG was a representative group of community residents and organizations that advised the project team throughout the completion of the Transportation Master Plan. Following a presentation of background information the SAG was asked the following questions in two separate break-out sessions:

Challenges and Issues:

- ▶ What are the transportation challenges in FSJ today?
- ▶ What challenges do you see in the future?

Opportunities:

- ▶ How would you like to get around FSJ in the future?
- ▶ What are the opportunities to improve how we move around FSJ in the future? (ideas)

Based on their experience and familiarity the following specific issues were identified by the SAG members. This is a sample of responses and a more comprehensive summary is provided in **Appendix C**.

Table 2.1: SAG Feedback (Current and Future Challenges)

Roads	Parking	Accessibility/Active Transportation	Community Growth
<ul style="list-style-type: none"> ▶ Poor condition of roads ▶ High volume of large truck traffic in city (creates noise and dirty streets) ▶ Need attention to 112th Ave as it is becoming an arterial road 	<ul style="list-style-type: none"> ▶ School traffic and parking (buses, pedestrians, cars) ▶ On-street parking challenges: <ul style="list-style-type: none"> – Fast food establishments on frontage roads – Snow clearing – Drive-thrus – Wrong way parking 	<ul style="list-style-type: none"> ▶ Sidewalks (too narrow for wheelchairs and strollers) ▶ Cycling is difficult and unsafe (bikes on sidewalks) ▶ Trails need to be upgraded and expanded like roads ▶ Winter use and maintenance 	<ul style="list-style-type: none"> ▶ More transit options (smaller buses, wheel chair taxis) ▶ Boundary in 20 Years? <ul style="list-style-type: none"> – Charlie Lake – Clairmont – Grandhaven ▶ Population is projected to double in 10 years

3.0 DEVELOPING THE TRANSPORTATION MASTER PLAN

In order to develop an effective and useful Transportation Master Plan, it is critical to understand the community's vision for transportation over the next 20 years and the forecasted conditions expected in that timeframe. Based on the input of stakeholders, staff, and Council, a vision for transportation and specific goals were created. This vision and five goals were used to guide the development of the TMP.

In addition, the directions set by the vision and goals were informed by the technical analysis of future growth, development and transportation conditions expected in the next 20 years. With this information the challenges expected in the future were identified and this information was used to develop the key transportation plan recommendations and findings.

3.1 Transportation Plan Vision & Goals

The City of Fort St. John will provide an efficient multi-modal transportation network that enhances our quality of life by supporting environmental, economic, and social sustainability to make our community vibrant, safe, and accessible.

Through the implementation of the following goals, it will:

1. Provide an **effective transportation network** that connects the community and surrounding areas and allows for the efficient movement of people and goods between residential, commercial, institutional and industrial neighbourhoods.
2. **Enhance mobility options** by providing attractive, inclusive, healthy and environmentally responsible transportation choices.
3. **Give priority to the safety and health** of users when planning, designing and operating transportation systems and networks for all seasons.
4. **Integrate transportation and land use** planning to help minimize the need for new transportation infrastructure, build walkable communities and foster a vibrant downtown.
5. **Inform and educate** the public on transportation issues and networks.

3.2 Future Conditions

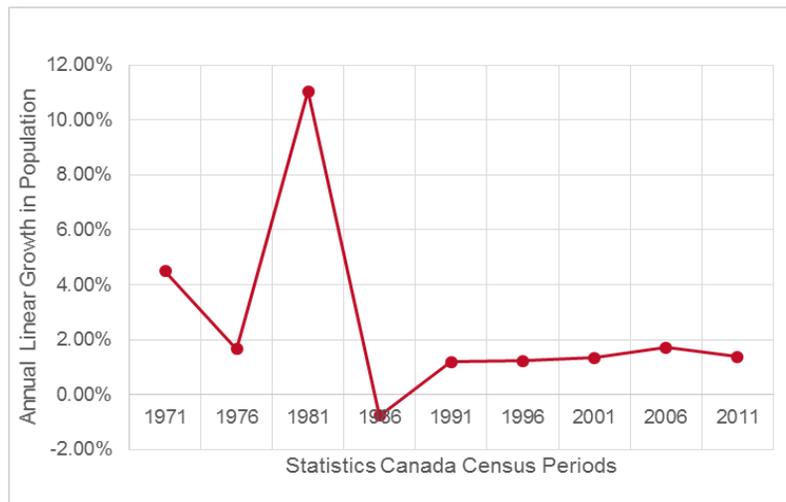
The future planning horizon for assessing future transportation conditions was determined in the first meeting with the SAG to be a 20 year forecast. This period of time is short enough to provide planning flexibility while also allowing for existing data to be forecast with a reasonable level of confidence. Since this study began in 2014 and will be completed in 2015, the TMP horizon year was selected as 2034/2035 (herein referred to as 2035).

With the 2035 horizon year selected, available historical data for traffic volumes and population growth was reviewed to determine reasonable growth rates for assessing future conditions. A temporary traffic count station (Road 238 – 43-020NS) located on Highway 97 0.6 kilometres north of Road 238 between Taylor and Fort St. John

provided the most comparable growth data for two-way traffic volumes. Data at this station was available in mid-August in both 2005 and 2011. Using a linear growth rate equation, an annual growth rate of 1.94%, rounded to 2.0%, was calculated between these two periods.

For growth within the city, all available historic traffic data was reviewed but two comparable data points could not be determined to calculate a growth rate. Without traffic data to calculate a background traffic growth rate within the city, population growth data was reviewed, as shown in **Figure 3.1**. Over the last five census periods, the City has seen a steady population growth between a minimum of 1.20% and 1.71%, averaging 1.37% on an annual linear basis. Given this information, and, with consideration that traffic growth from future development is calculated separately (discussed later in Section 2.2.1), a 1.0% annual linear growth rate was established to account for growth in background traffic volumes.

Figure 3.1: Fort St. John Historical Population Growth³



3.3 Economic Growth & Future Land Use

Future traffic demands by the 2035 horizon year will depend on a number of factors including population growth and growth in the local and natural resource economies. Projecting the growth of a community’s population is an inexact science and many factors are beyond the City’s influence. Historic growth patterns can provide some context for future growth. Over the last two decades, Fort St. John has experienced population growth in the range of 1.5% annually according to Census of Canada Statistics.

³ Statistics Canada, Prepared by BC Stats (May, 2012). British Columbia Municipal Census Populations 1921 to 2011. Retrieved from <http://www.bcstats.gov.bc.ca/StatisticsBySubject/Census/MunicipalPopulations>

A range of future development growth in residential, commercial, and industrial land uses is accounted for in the 2035 traffic volumes. A number of sources were used to compile trip generation estimates for development growth including:

Planned Future Developments:

- ▶ Garrison Landing, Development Plan, July 2012
- ▶ Grandhaven Airport, Sanitary Service Phasing Plan, May 2014, IDEA Group
- ▶ North Point Subdivision, Neighbourhood Structure Plan, May 2014, Focus Corporation
- ▶ Sunset Ridge, Land Use Plan, August 2011, Focus Corporation
- ▶ Surerus Subdivision, Sanitary Layout Concept, June 2010, Focus Corporation
- ▶ Westridge Subdivision, NSP Land Use Plan, April 2014, Focus Corporation
- ▶ 265 Road Subdivision, Proposed Site Layout, May 2014, Press Developments (*Note: Proposal is located outside municipal boundary and included here for future planning purposes*)

Forecast Future Developments:

Zone 1

- ▶ 1368 Residential Units, Single Family Homes (assumed)
- ▶ 268 Residential Units, Townhomes/condos (assumed)

Zone 2

- ▶ 1527 Residential Units, Single Family Homes (assumed)

Zone 3

- ▶ 800 Residential Units, Single Family Homes (assumed)

Zone 4

- ▶ 221.4 Acres, General Light Industrial (assumed)

Using all of the above sources, Urban developed trip generation estimates using the Institute of Transportation Engineers Trip Generation Manual 8th Edition. **Table 3.1** summarizes the development generated traffic for both AM and PM peak hour periods by land use and by zone area within the city. A detailed breakdown of the trip generation calculations is provided in Appendix A along with a graphic illustrating the locations and zone areas of the future developments.

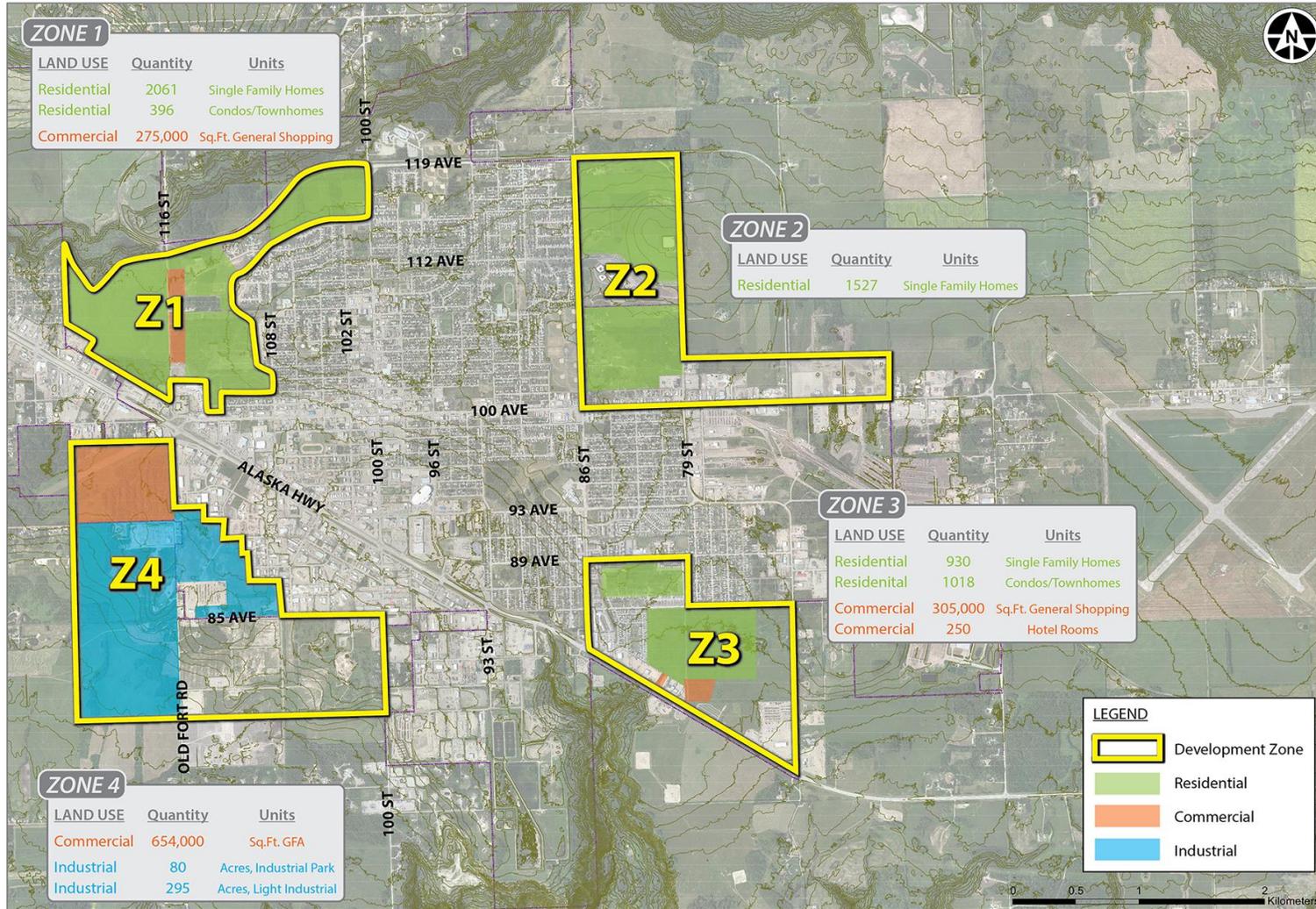
Table 3.1: Future Development Generated Trips

Zone	Land Use	Quantity	ITE Land Use (Units)	Total Trips Generated	
				AM	PM
Zone 1	Residential	2061	Single Family Homes	1546	2082
	Residential	396	Condos/Townhomes	174	211
	Commercial	275,000	Sq.Ft. Shopping Centre	181	675
Zone 2	Residential	1527	Single Family Homes	1145	1542
Zone 3	Residential	930	Single Family Homes	698	939
	Residential	1018	Condos/Townhomes	448	529
	Commercial	305,000	Sq.Ft. Shopping Centre	201	751
	Commercial	250	Hotel Rooms	140	142
Zone 4	Commercial	654,000	Sq.Ft. Shopping Centre	71	133
	Industrial	80	Acres, Industrial Park	503	502
	Industrial	295	Acres, Light Industrial	2213	2139
Total Future Development Trips				7320	9645

The location of future residential neighbourhoods and employment in Fort St. John will have an impact on where transportation issues and improvements are made in the future. Future development projections by area are shown in **Figure 3.2** to illustrate where people may reside in 2035. Most residential development could occur in the northwest and northeast quadrants of the city on either side of the West Bypass and East Bypass roads. Some residential development is expected to occur in the east part of the city just north of the Alaska Highway. These locations were best estimates of future land use conditions that were available in November of 2014 and it is possible that development patterns will change as property owners and developers bring their products to market.

Similarly, the location of future commercial and employment land uses are shown on the same **Figure 3.2** to illustrate where the main shopping and employment areas are likely to develop. Retail and service sector development will continue to occur along Alaska Highway and around the West Bypass Road. There are large parcels of land south of Alaska Highway that are available for industrial and business park land uses. The Site 'C' BC Hydro Dam excavation site is located in this area; however, the long term impacts of the site on traffic is expected to be relatively minor.

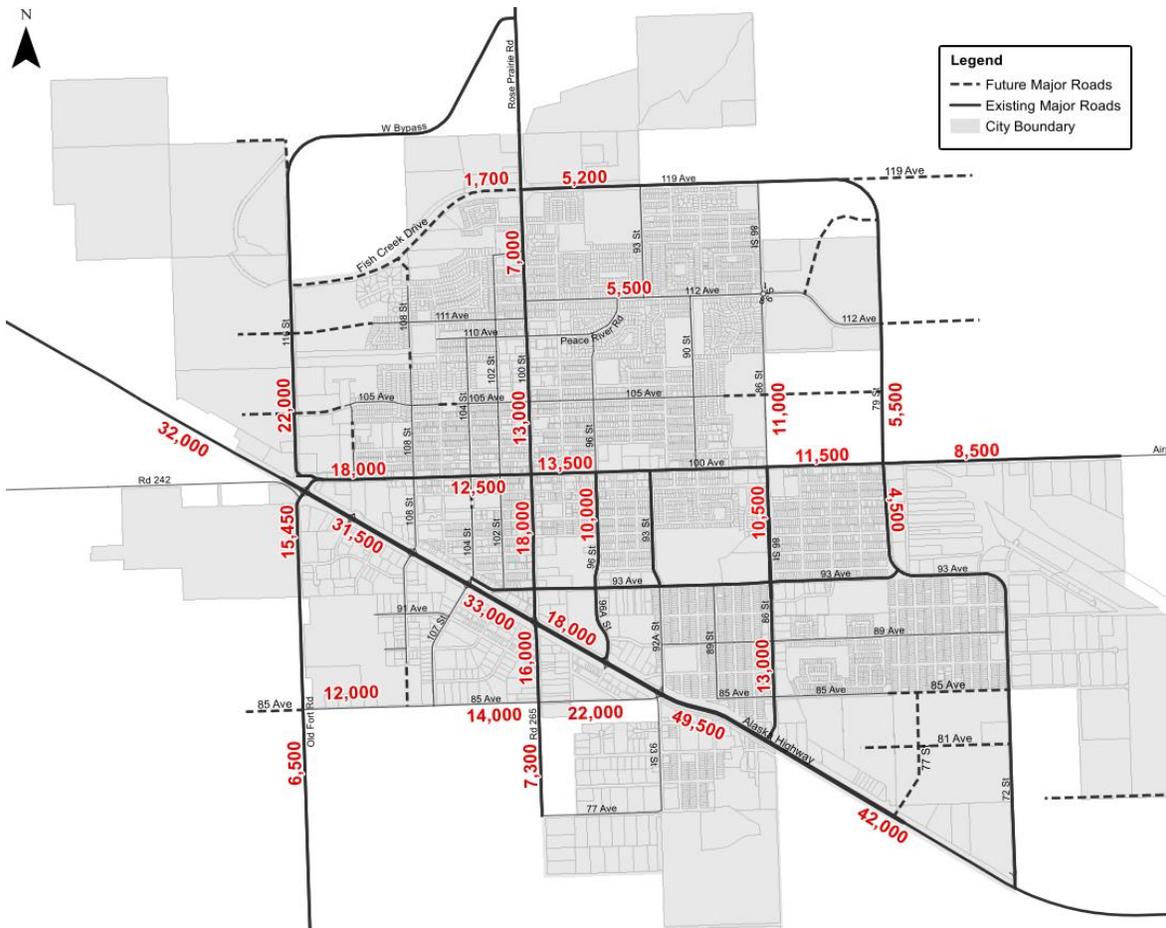
Figure 3.2: Project Land Use Growth by 2035



3.4 2035 Traffic Volumes

The average peak hour traffic volumes that were used to establish the existing conditions assessment were projected for the 20-year horizon to 2035 using a combination of background growth information, population forecasts, and expected future developments. Background growth rates were analyzed from available temporary and permanent count station traffic data along the Highway 97 corridor and from historical population growth data available through Census Canada Statistics. The population and employment developments illustrated on **Figure 3.2** were assessed using standard trip generation rates (obtained from the Institute of Transportation Engineers) to calculate an estimate of traffic growth at point locations across the network. The average daily traffic volumes for 2035, factored up from the peak hour volumes, are shown in **Figure 3.3**. The average weekday volumes for each link assume the recommended list of road connection improvements will be constructed by 2035.

Figure 3.3: Future 2035 Average Daily Traffic Volumes



3.5 Summary of Stakeholder Feedback (Future Conditions and Possibilities)

When exploring future road networks, the SAG feedback can be classified into two categories: bypass roads and roads currently under Ministry of Transportation and Infrastructure (MOTI) jurisdiction; and, roads currently within the municipal boundaries. Additional comments significantly referenced active transportation modes including walking and biking.

3.5.1 Bypass Roads / MOTI

Stakeholders spoke about defining and creating new bypass roads to restrict the movements of large transport traffic and dangerous goods traffic through the city. They recognize that residential development is approaching the current bypass roads, that residents are using bypass roads, and cited safety concerns. Opinions were shared that bypass roads should have an increased speed limit – such as 70 km/hr. Due to geographic conditions, it was recognized that in some locations it will be difficult to create bypass roads around the circumference of future city boundaries.

Safety concerns were also noted along Highway 97 including the safety of highway access, the number of collisions, poor geometric design, and a desire for more signalized intersections (96A St, 86 St, East Bypass Rd, Swanson Lumber Rd).

3.5.2 Municipal Roads

Stakeholders spoke about extending roads to make the network more connected (105 Ave, 104 St, 108 St, and Elevator Road) and about upgrading some existing 2-lane collectors to 4-lane collectors (100 St, 92A St).

There were specific locations identified for future signalized intersections (86 St/85 Ave, 100 St/117 Ave, 100 St/112 Ave). One particular idea was shared regarding adding a 4-way signalized intersection at 93 St/100 Ave on the condition of acquiring land if/when BC Hydro moves with the road north of 100 Ave connecting to 92 St.

The group desired to see traffic changes to the existing system, including adding more east-west routes, slowing down traffic on 112 Ave, rerouting traffic around downtown, slowing downtown traffic movements, and reclassifying roads to achieve desired objectives. The large maps marked up in group outbreak sessions capture the SAG visions of the future road network.

Stakeholders also spoke about providing better signage – especially for unique traffic movements such as 96A St southbound towards Highway 97, and for hospital emergency routes.

3.5.3 Future Active Transportation Network Themes

The feedback from the SAG was positive about the current trail network where it exists, but cited many examples of where trail connectivity needs to be improved – particularly to connect with schools, parks, and other trails. The large maps marked up in group outbreak sessions provided meaningful insight into how people use the current trail network and gaps in the network. Broader visions for the trail network include extending it to Charlie Lake, to the airport, and along the Alaska Highway.

There was a desire to make cycling a more attractive option by defining bike lanes on existing road networks that receive less traffic, removing parking lanes to support cycling, and connecting the downtown with neighbourhoods and the trail network.

The idea of utilizing lanes to support the trail network within the city was welcomed, but group members specified they must be paved and lighted for safety.

3.6 Transportation Hierarchy

The transportation system serves a wide variety of trip purposes, vehicle types, mobility uses and factors that are unique to each community. Few transportation systems are effective at accommodating the variety of public transportation needs with “one size fits all” designs. Thus, many communities implement a transportation hierarchy of infrastructure that is related to trip distance, desired speed, traffic demands, and compatibility with other modes and adjacent land uses. While a typical transportation hierarchy was primarily focused on facilitating private vehicle movements, it has become an important planning tool for facilitating walking, cycling, and public transit modes. For road facilities, the commonly known hierarchy is split into four groups:

- ▶ Highways
- ▶ Arterials
- ▶ Collectors
- ▶ Locals

For vehicular traffic, the four basic groups are divided into the eight following classifications:

- ▶ **Highways** are primarily focused on mobility and facilitate high speeds and capacities to move people over long distances quickly. Access to the highway is controlled at widely spaced intersections with the priority given to highway movements. Access to private driveways is fully restricted. Intersections may be either grade separated, signalized, or two-way stop controlled on the minor leg approaches.
- ▶ **Major Arterials** facilitate trips over city-wide distances with moderate speeds with four through-lane capacities. Access is provided at regular intersection intervals with the priority on the arterial movement. Access to private driveways is limited. Intersections are typically controlled with signals, roundabouts, and two-way stop controlled intersections.
- ▶ **Minor Arterials** also facilitate trips over city-wide distances with moderate speeds with two through-lane capacities. Access is provided at regular intersection intervals with the priority on the arterial movement. Access to private driveways is limited. Intersections are typically controlled with signals, roundabouts, and two-way stop controlled intersections.
- ▶ **Major Collectors** provide both high capacity mobility and access functions with connections onto local road and arterial roadways. Access is provided to some private driveways where turning capacity and safety conditions are acceptable. Intersections with arterial and collector roads are typically controlled with signals and roundabouts. Intersections with local roads and lanes typically use two-way stop control on the minor leg approaches.

- ▶ **Downtown Major Collectors** provide both mobility and access functions within the context of the downtown area. Access is provided at closely spaced intersections and lanes and speeds are lower than on other collector routes. Parallel parking is permitted for access to adjacent businesses and services in the downtown area. Intersections are typically controlled with signals and two-way stop control with priority given to the downtown major collector classification.
- ▶ **Minor Collectors** provide both mobility and access functions with connections onto local road and arterial roadways with moderate capacity. Access is provided to private driveways and lanes. Intersections with arterial and collector roads are typically controlled with signals, roundabouts, and stop control. Intersections with local roads and lanes typically use two-way stop control on the minor leg approaches.
- ▶ **Downtown Minor Collectors** provide mobility and access functions within the context of the downtown area with a lower capacity and speed for motorized vehicles. A distinguishing feature of this classification is the provision of on-street dedicated bicycle lanes. Access is provided to private driveways and lanes. Intersections with arterial and collector roads are typically controlled with signals. Intersections with local roads and lanes typically use two-way stop control on minor leg approaches.
- ▶ **Locals** provide low capacities at low speeds and are frequently shared with bikes and pedestrians. At intersections, locals have the lowest priority to roads of higher classification or volumes. Where locals intersect with locals of similar traffic demand, all-way stop control and traffic circles may be used.

For cyclists and pedestrians, the four hierarchical classifications are:

- ▶ **Multi-Use Trails** can provide moderate to high speeds and high capacities to move cyclists and pedestrians long distances across the city. Multi-use trails maintain the priority at intersections with dedicated bicycle lanes and shared travel lanes. Signalized intersection crossings should include dedicated bicycle signal heads and appropriate phasing.
- ▶ **Dedicated Bicycle Lanes** provide moderate to high speeds with moderate capacities to move cyclists over medium-distance trips with connections to local roads, shared travel lane routes, and multi-use trails.
- ▶ **Shared Travel Lanes** provide marked routes with low to moderate speeds and capacities. Shared travel lanes are typically provided on local classified roads to provide connections to schools, parks, and homes. Shared travel lanes often include the use of “Sharrows” pavement markings to indicate the shared route in addition to various signage.
- ▶ **Sidewalks** are facilities separated from the roadway for pedestrian use only. They may vary in width to provide increased capacity in high traffic areas like the downtown and are typically provided around schools and parks and along desired pedestrian routes.

4.0 PARKING

One of the key components of Fort St. John's TMP is parking and the best way for the City to approach and thereby address some of its parking-related challenges. As part of developing the TMP, a Parking Policy Strategy Framework was prepared to identify the City's key parking-related challenges and to present a variety of options aimed at improving parking within the city. The full framework is a standalone document that is available under separate cover. A detailed summary of the framework has been included in this section of the TMP. The framework offers a strategy to provide the City with options for improving parking from planning, bylaw, and public works perspectives, needs and activity levels.

4.1 Areas of Concern

From conversations with City staff from several departments, a number of key areas of concern were identified with respect to parking. From issues surrounding the parking of large vehicles to accessible parking, the key areas of concern are briefly described as follows.

Large Vehicle Parking and Movement

Large vehicle parking poses a concern to the City for a number of reasons. The OCP and Zoning Bylaw respectively have limited policies and regulations in place regarding large vehicle parking and movement. The last revision of the City's truck route was completed in 2001 and the movement of large vehicles throughout the city has changed since then. Furthermore, there is a lack of awareness and knowledge by large vehicle operators of the truck routes themselves and a lack of enforcement to ensure operators keep their trucks on designated routes.

While large vehicles are regulated by provincial Motor Vehicle Act and are subject to the Commercial Vehicle Safety and Enforcement (CVSE) regulations, the CVSE typically focuses on trucks weighing more than 11,795 kg which includes dump trucks, tractor trailer units, etc. The City's challenges generally pertain to those vehicles within the lower weight category of 5,000 to 11,795 kg as these vehicles can be driven by users who do not fall under the more stringent regulations that apply to heavy commercial trucks.

Residential Area Parking

The City has expressed a number of concerns associated with parking that occurs in varying degrees and differs by residential neighbourhoods. These concerns include enforcement of residential parking requirements, limited sidewalk accessibility due to overhanging vehicle body parts (e.g. mirrors), trailer parking, and duration of on-street parking.

One of the City's most significant concerns relates to enforcing residential parking requirements. The renting of individual rooms in all dwelling types is becoming increasingly common and each renter often has their own vehicle(s) to park, including both personal and/or work vehicles. The densification of residential neighbourhoods has also been cited as contributing to an increase in the number of vehicles parking on-street, making residential streets challenge to navigate at certain times of day.

Operations, Maintenance, and Emergency Vehicle Access

Complementing the City's concerns with parking in residential areas are challenges associated with on-street parking on garbage day and during snow clearing and street sweeping activities, and in particular, how to make these activities occur more effectively and efficiently. Furthermore, in the winter months, the parcel size of new developments and the accompanying driveways has limited the potential space for snow storage. The common occurrence of illegally oversized driveways has caused maintenance issues by significantly reducing green space available for snow storage.

Challenges also exist in summer months as the City attempts to sweep streets and must repeatedly go around vehicles parked on the streets. The City's garbage contractor needs to manually move garbage containers to a location where they can be accessed with the machine. Finally, on-street parking can often make it challenging for emergency or utility vehicles to access neighbourhoods or homes any time of year.

Parking Options

Parking options within the city include on-street parking with and without parking meters, privately owned parking lots, and public (City) owned official and unofficial parking lots. In addition, the notion of shared parking is gaining more momentum, in particular for those properties that only see peak use during key days or times of the week, but is not being used a great deal yet.

Parking Signage

In 2014, a Sign and Road Marking Review was undertaken by Opus for the Insurance Corporation of British Columbia (ICBC) and the City. One component of this review included parking signage. Parking signs were found to be of varying sizes, mounted at varying heights, and sometimes signed with incorrect arrows. Further, the study found locations where yellow paint was used on curbs to delineate parking restrictions; however, the regulatory parking signs were missing which limits the ability to enforce parking restrictions.

Accessible Parking

The City's Zoning Bylaw provides requirements for accessible parking, which includes provisions for accessible parking, dimensions, identification, and proximity to main entrances. While the bylaw appears to work well with respect to new developments, concerns exist for existing developments, particularly in the downtown.

While some guidelines are provided through provincial legislation with respect to accessible parking spaces and wheelchair letdowns, each municipality that was reviewed appears to take a slightly different approach in how they specifically addressed accessible parking within their community.

The Mayor's Accessibility Advisory Committee has brought forward to the City a number of recommendations associated with wheelchair letdowns and accessible parking within the city. In particular the recommendations brought forward by the Committee relate to improving accessibility parking in the downtown core.

4.2 Recommendations for Consideration

As part of the development of the Parking Policy Strategy Framework, the policies and regulations for a number of communities were reviewed. The review found that parking policies and regulations vary a great deal between municipalities. Thus, the recommendations provided in the framework should be considered by the City as options for improvement.

Overarching Recommendations

The majority of the parking plans from other municipalities that were reviewed were simple and well organized, and contained well-articulated policies related to parking and transportation demand management. In addition, they had minimal duplication and contradiction between related bylaws, transportation plans, and respective OCPs.

To best address the wide range of the City's parking concerns, a number of parking management tools can be applied in different areas of the city. The parking recommendations set forth in the Parking Policy Strategy Framework are intended to manage the city's supply of on and off-street parking regardless of land use, and encourage the use of sustainable transportation alternatives. With this in mind, the following overarching recommendations are presented for the City's consideration:

- ▶ In order to change people's attitudes towards parking, a fundamental shift must be made in how we approach parking, from the highest level, in this case the City's OCP, and implemented throughout and enforced through all subsequent bylaws and policies. It is suggested that the City amend the OCP to address parking and transportation demand management and thereby increase active transportation within the city by including, but not limited to, policies that:
 - ▶ Support and promote integrated land use planning and transportation demand management measures and initiatives that result in changes to transportation modes, trip reductions, single occupancy vehicle use reductions and a shift in travel behavior;
 - ▶ Implement a cycling network, connecting the city's largest destinations over the short term;
 - ▶ Work with private employers and developers to encourage and create incentives for walking, cycling, rideshare, and transit commuting and reduce parking demand;
 - ▶ Ensure compatibility of transportation corridors and facilities with adjacent land uses and the overall character and image of the community;
 - ▶ Support the strategic location of off-street parking facilities to promote pedestrian use, particularly within the city centre, the Totem Mall/Wal-Mart area, and other strategic hubs;
 - ▶ Identify and encourage opportunities to develop shared parking (private or public);
 - ▶ Consider policies that permit cash-in-lieu payments for off-street parking provisions in order to support capital projects, in appropriate locations, that provide new centralized parking facilities and transit infrastructure;
 - ▶ Provide sufficient enforcement to ensure on-street parking regulations are effective;
 - ▶ Enhance information available on the City's website in regards to available parking areas city-wide, parking restricted areas, and parking regulations and procedures (i.e. operations and maintenance requirements).

- ▶ In light of potential amendments to the OCP as suggested above, the City should review its Zoning Bylaw to ensure that the bylaw remains consistent with an amended OCP. In addition to this, the City may wish to also consider implementing the following in its Zoning Bylaw:
 - ▶ A section addressing large vehicle parking. This could include regulations on size, dimensions, locations where large vehicles are permitted, private and public parking facilities, timing, level of service (i.e. are these lots acceptable with gravel, or should they be hard-surfaced), access, identifying zones where they may be permitted in, and what types of vehicles are permitted;
 - ▶ Consider including commercial or large vehicle parking (either with or without dangerous goods) as a permitted use within certain zones;
 - ▶ Review and update the Zoning Bylaw to consider reductions in parking requirements where:
 - geographic location, residential and employment density, housing type, land use mix, transit accessibility, walkability, and other factors support non-auto mode choice or lower parking demand; and
 - activities and circumstances of land uses, structures or buildings that include the provision of permanent on-site alternative travel supports and active transportation infrastructure, including such things as short-term and long-term bicycle parking facilities, ridesharing, payroll transit passes and other automobile trip reduction measures.
 - ▶ Expand upon when/where/how reduced off-street parking requirements may be addressed:
 - Consider expanding a reduction in off-street parking requirements in the downtown, in conjunction with multi-family, or in key commercial areas; and
 - Consider permitting more sharing of parking lots for different uses needing them at different times on different days.
 - ▶ Consider reviewing parking requirements for dwelling units to one based on a “per bedroom” basis;
 - ▶ Consider limiting parking to the sidewalk side of the street based on road surface width, land use or zoning to promote traffic flow in key areas;
 - ▶ Incorporate bicycle parking requirements to require bicycle parking in office, commercial, and medium-high density residential developments, and require higher levels of bicycle parking in key areas;
 - ▶ Lead by example by having the City provide bicycle parking in key areas of the city, such as Centennial Park, the North Peace Leisure Pool and, Rotary Skateboard Park;
- ▶ To ensure consistency with the OCP, and to better implement the direction set forth in it, the City should consider developing a modern, user-friendly, easy to understand and comprehensive Traffic Bylaw that addresses both essential elements that need to be contained within a traffic bylaw, and customizable elements applicable to Fort St. John.
- ▶ Ensure that amendments made to any of the above bylaws are appropriate and work in conjunction with the direction set out in the City’s Subdivision and Development Servicing Bylaw.

Large Vehicle Parking and Movement

Many northern municipalities are developing guides to better address and facilitate large vehicle parking and movement in and around their jurisdictions. The City of Fort St. John is one that would benefit from amending both its Zoning and Traffic Bylaws to specifically address large vehicle parking and movement. It is recommended that amendments to these bylaws be developed with the input and assistance of Commercial Vehicle Safety and Enforcement (CVSE) staff in defining the most appropriate ways for the City to implement and enforce large vehicle parking and movement within the city. Further, any regulations in the recommended Zoning and Traffic Bylaw amendments should complement the regulations set out in the Motor Vehicle Act.

To ensure that the direction set forth in these bylaws serves the overall parking and transportation demand management objectives of the City, and are enforceable, it is recommended that the City:

- ▶ Obtain the input and assistance of CVSE staff, particularly in providing guidance as to how best manage and enforce large vehicle parking within residential neighbourhoods. For example, should these large vehicles be regulated by length, weight, height, width, etc.? What is enforceable through the Motor Vehicle Act, what falls under the jurisdiction of the CVSE, and what is feasible and defensible for the City to use to enforce within its jurisdiction?
- ▶ Ensure that any regulations set out, either in the Zoning Bylaw or Traffic Bylaw, complement that set out in the Motor Vehicle Act and are enforceable by City staff.
- ▶ Consider developing, in conjunction with the appropriate agencies, regulations that address:
 - ▶ Trucks based on the dimensions of flat decks;
 - ▶ Presence of pickers or cranes, as such vehicles automatically have stabilizers and/or additional framing which significantly increases the weight of a vehicle;
 - ▶ Van body sizes;
 - ▶ Tool body sizes, of which width is typically of most concern;
 - ▶ Flat-deck trailers, whether they have goose necks, lowboys, or highboys;
 - ▶ Enclosed commercial trailers; and
 - ▶ Vehicles prohibited from moving with pickers or cranes un-stowed.

Residential Area Parking

A number of compounding concerns have arisen with respect to parking on residential streets throughout neighbourhoods across the city. The following recommendations for both the Zoning and Traffic Bylaws may be considered by the City in future amendments to both bylaws.

Zoning Bylaw

To address concerns around parking provisions, the City may want to consider having clearly set out parking requirements for different areas of the community versus having blanket parking requirements based on zoning. In small-lot subdivisions and higher density neighbourhoods, the City may consider maximizing on-street parking through the narrowing/combining of driveways, use of laneways, or other measures. With respect to trailer and

RV parking, the City should consider the types of land uses that may permit this type of parking and define the location and setbacks on permitted properties for trailer and RV parking.

Traffic Bylaw

The Traffic Bylaw is intended to provide regulations for on-street parking in residential areas. Future amendments to the bylaw may consider limiting (by season) or prohibiting trailer and RV parking or storage on the street. Considerations may also be made to limiting or prohibiting vehicle components such as mirrors, truck boxes, hitches, etc. from overhanging onto sidewalks. Limiting parking on residential roads based on vehicle width rather than weight may be easier to enforce and such a regulation could address the concerns around overhanging vehicle components.

Operations, Maintenance, and Emergency Vehicle Access

As part of the modernization of the City's Traffic Bylaw, the City may wish to incorporate and expand upon regulations regarding on-street parking on garbage day, during street sweeping and snow clearing activities, or associated with enabling emergency vehicle access.

There are a variety of methods that the City could use to increase the ease and efficiency with which it conducts its operations and maintenance (O&M), and to increase the ease of emergency vehicle access. This may include prohibiting parking during different times of the day on garbage and recycling collection days or restricting parking to one side of the road. Parking may be restricted when snow clearing or sweeping activities are scheduled to occur; however, this needs to be done in conjunction with other City departments and with a well-executed communications strategy.

It appears that the biggest challenge with respect to current City O&M activities is that there is no well-communicated method to these activities. Developing a well-thought out process, and communicating and executing it well could alleviate some of the pressures that the City faces with respect to O&M challenges and would enable the City to be better able to enforce regulations.

Parking Options

Parking options are used to guide and implement the parking management strategies in different neighbourhoods and land uses within a municipality and there exists a variety of parking options and payment mechanisms. Time restrictions are the first tool to be used to manage parking, usually through appropriate signage. If time restriction are not enough to achieve 85% occupancy (100% of parking spaces occupied 85% of the time), then parking pricing is the next tool to be applied. Generally, long-stay parking is located adjacent to land uses with little short-stay parking demand, such as vacant land, warehouses, and other uses that generate little parking turnover.

Payment Mechanisms

Two themes were identified with respect to payment mechanisms for parking. First, monthly and annual parking passes provide little incentive to use other transportation modes, even on an occasional basis. Secondly, resistance to parking pricing is usually a result of inconvenient pricing methods and may be a result of:

- ▶ Payment in specific denominations;
- ▶ Motorists may not park for as long as they have paid;

- ▶ Some payment systems cannot handle multiple price structures;
- ▶ Some systems are confusing or slow;
- ▶ Some have high equipment or enforcement costs; and/or
- ▶ Some systems seem arbitrary or excessive.

Generally, newer electronic systems are more convenient, accurate, flexible, and cost effective, and address some of the above noted issues. To facilitate these systems, the City may wish to explore the use of parking technologies, such as centralized kiosks or other parking meter technologies in high demand areas that make it easy for users to pay (i.e. multiple payment methods, remote payment for extending parking). This can also include the use of electronic signs outside any public parking lots to indicate parking availability.

The City may wish to consider allocating the highest parking restrictions and pricing to parking spaces with greatest demand to ensure availability, promote turnover, and improve access to businesses. Where and when demand is lower, parking rates and/or restrictions can be reduced or removed. Furthermore, the City should communicate that money collected from parking payment mechanisms is put towards further improving parking facilities for all users.

Parking Cash-in Lieu

Parking cash-in-lieu allows developers to provide fewer on-site parking stalls in exchange for contributing money to a municipally-managed parking cash-in-lieu fund. Parking cash-in-lieu supports the redevelopment of existing buildings and empty lots too small to accommodate higher-density developments while at the same time, facilitating the construction of usually much-needed off-site shared parking facilities. Parking cash-in lieu rates charges vary, and policies should be very clear in specifying how the money collected will be used. Typically, cash-in lieu funds are put towards the purchase of additional lands (for parking), the construction of new parking facilities and the maintenance and operation of existing shared parking facilities. While parking cash-in-lieu is often used, it does have some disadvantages, most notably:

- ▶ Discrepancies between funds available and the actual costs required to build parking capacity;
- ▶ Cash flow of the fund;
- ▶ It may be difficult to use for smaller infill or change of use applications;
- ▶ Often, a development contributor may not see immediate, direct benefits from the parking facility due to the delay in the placement and/or development of the facility; and
- ▶ Parking cash-in-lieu programs require municipal government involvement in the parking business, which usually requires additional resources to successfully implement and manage the program.

The City should consider ensuring that it is collecting the appropriate parking cash-in-lieu funds, that the reserve fund is being built up, and that communication efforts are made to educate the contributors to the fund and the community where and when these funds will be used, and for what improvements and infrastructure, either parking related or those that encourage alternative modes of transportation.

The City may also wish to consider a reduced parking cash-in lieu charge in the downtown. This could help facilitate the redevelopment of the downtown and encourage small business owners to establish in this area by not being cost-prohibitive if they are unable to provide sufficient parking in an already established area.

Minimum/Maximum Parking Requirements

Some communities use both minimum and maximum parking requirements, as both have uses where they are particularly suited to. For example, minimum parking requirements could be tailored to high density areas located near good transit facilities or situated with mixed land uses, as this would reduce the parking demands otherwise anticipated with generic parking information. Further, demographics play a role in parking demand. For example, low income residents generally have lower levels of car ownership and therefore, developments in these areas may not require the same level of parking as elsewhere. Similar conclusions could be drawn based on the age of occupants.

Maximum parking areas, however, could be used in areas where developers typically provide an oversupply of parking for different market/perception reasons. They could also be used where there is a desire to balance land utilization and discourage over-development of surface parking facilities. Lastly, maximum parking areas could be located where transit facilities exist to encourage increased use in a municipality's transit system.

Generally, parking maximums can be easily incorporated into land use policies for commercial and residential land uses. The city may wish to consider using these in specific areas and for new developments, particularly in key commercial areas and multi-family developments.

Parking Signage

As indicated, a Sign and Road Marking Review was undertaken for the Insurance Corporation of British Columbia (ICBC) and the City in 2014. One of the recommendations brought forward in the 2014 study was that the City should eliminate painting curbs yellow, due to the fact that with the long winters, these paint markings were often buried under snow and ice and thus not visible. This recommendation could be applied to most curb markings, whether it is white painted curbs for loading zones or blue painted curbs for accessible parking stalls and accesses.

To compensate for the potential elimination of curb markings associated with parking, the City may wish to consider implementing an improved signage/wayfinding program to locate parking facilities, thereby reducing the amount of time drivers spend searching for parking. Further, a recommendation of the TMP is that a comprehensive review of regulatory parking signage be undertaken with a focus on means to improve parking signage within Fort St. John.

Accessible Parking

There are a multitude of strategic directions that could work towards alleviating some of the accessible parking concerns expressed by the Mayor's Accessibility Advisory Committee. Accessible parking should be designed in a manner that is safe and convenient for both wheelchairs and pedestrians. This includes recognizing seasonal considerations that can result in ice and wet parking facilities.

To achieve the desired accessible parking objectives in the downtown area, the City may need to amend its Zoning Bylaw and/or Subdivision and Development Servicing Bylaw. Some options to consider include the following:

- ▶ Allowing individuals with a disabled parking pass to park on-street in designated loading zones in accordance to existing time limits for the remainder of the street.
- ▶ Implementing different time limits for accessible parking spaces, if desired.
- ▶ Designating stalls adjacent to wheelchair letdowns and curb cuts as accessible parking spaces.
- ▶ Regulating specific signage for accessible stalls to ensure consistency and visibility.
- ▶ Ensuring that payment systems are easy to use and located in close possible proximity to accessible parking spaces.
- ▶ Consider establishing additional wheelchair letdowns in the middle of blocks.
- ▶ Trying to accommodate existing establishments that lack the ability to provide proper on-site accessible parking.

4.3 Parking Next Steps

The City will see the most dramatic improvements by undertaking a comprehensive approach that is guided by overarching policies in the OCP and then implemented through the Zoning, Traffic and other regulatory bylaws (as applicable). However, this must be supported with a comprehensive implementation approach by the City, including enforcement, following through on collections, inter-departmental collaboration and a clear, multi-media communications plan to educate the public on changes to parking within the city. In addition, any parking policies/bylaws that are implemented need to have regular reviews in place to address changes. Ideally, a system that ensures these reviews occur on a regular basis, such as in conjunction with an OCP or Zoning bylaw amendment, or the development of a major subdivision, works best.

To facilitate reviewing and determining which of the many recommendations presented above would work best in Fort St. John, it is recommended that a task force be developed consisting of impacted City departments (planning and engineering, bylaw enforcement and public works). The purpose of this task force is to ensure that the recommendations presented are reviewed by all members to work out any challenges that could arise prior to their implementation. In addition, it is recommended that a well-planned communications strategy be developed to clearly communicate bylaw amendments (what is changing and why), and how this will impact residents and visitors to the city.

The recommendations presented above are generally in sequential order, beginning with amending the City's overall policy document, its OCP and then working down through the various bylaws. It is recognized that some of the recommendations will require additional investigations to be undertaken. Depending on the expediency of some of these investigations, the City may require multiple amendments to a given bylaw to achieve the desired results.

5.0 SPECIAL TRANSPORTATION ISSUES

Beyond the plans and strategies developed for the key modes (pedestrian, cycling, roads, and transit); the TMP identified a number of unique transportation issues for consideration. These include topics such as the use and development of back lanes, signage throughout the city, modifications to the Dangerous Goods/Truck Routes, and the development of new typical road cross sections. These issues have been reviewed and documented in this section.

5.1 Lanes

Most of Fort St. John was constructed on a grid-network with lanes. Currently, lanes are mostly gravel surfaces and not maintained by the City.

Lanes can be an asset to the transportation network and not a burden to the City if addressed correctly. The City should consider the following policies:

- ▶ Maximize the use of lanes in the downtown core for access to parking and for off-street deliveries. This policy reduces the number of accesses to the collector roads to maintain a safer and enhanced pedestrian environment. The reduced number of accesses creates well defined and predictable traffic movements (e.g. between avenues a user can expect vehicles accessing a lane).
- ▶ Require hard surfacing in lanes complete with storm infrastructure as developments proceed that require the use of lanes. This facilitates better drainage, less road maintenance, and a predictable surface for the user.
- ▶ Where appropriate, consider using lanes for active transportation by enhancing them with a paved trail surface complete with lighting.
- ▶ Determine the level of service for each lane based on lane utilization and land use (e.g. a high density residential unit that has an increased use of lanes to access a parking facility may be warranted an increased level of service). A blanket-policy for lanes does not need to be applied.
- ▶ For lanes with an increased use and a limited available width, define them as one-way routes.
- ▶ Lanes in residential areas are used by some residents to access garages or rear parking areas. An increased level of service for residential lanes may result in relieving on-street parking issues.

5.2 Signage

We acknowledge that the City had a sign study completed by Gallop/Varley in November 2012 and that there are sign and wayfinding recommendations from that study. We recommend that the City considers that report when addressing signage. Further, the Sign and Road Marking Review completed by ICBC identifies a range of signage and pavement marking improvements across all key roadway corridors in the city. The study's

accompanying field book provides clear guidance on how to properly update and install signs and markings as per nationally accepted standards and guidelines.

As a general policy, signs should:

- ▶ Have a consistent colour, size, text, and formatting;
- ▶ Be larger for roads at higher design speeds; and,
- ▶ Include user designed signage for pedestrians, cyclists, and automobiles.

For signs to be most effective, they must be used consistently throughout the city. For example, marked crosswalks or school zones should display consistent messages. Inconsistent signage can deter people from following the intended direction.

Important crosswalks should be marked with signs in addition to paint lines to account for winter months when snow and ice may obstruct the paint markings.

The City currently has permanent maps located in parks or along the trail network to provide users information about the active transportation network. These permanent maps should be reviewed and revised as the active transportation network expands and improves. These signs should be installed at major nodes or intersections of the active transportation network.

As the road network changes as part of the TMP, signage should be utilized to inform and guide people to use the network in such a way to meet the desired transportation outcomes.

5.3 Truck, Dangerous Goods, and Bypass Routes

5.3.1 Trucks & Dangerous Goods

The City's truck route map is contained within the current Traffic Bylaw No. 720, 1979 amended under Bylaw No. 1585, 2001. The bylaw defines a "truck" as any vehicle that has a licensed gross vehicle weight (GVW) of greater than 11,500 kg (approximately 26,300 lbs) with the exception of trucks providing unique services as defined in the bylaw.

The truck routes around the city consist primarily of Alaska Highway 97, the East Bypass Road, and the West Bypass Road. Within the city's road network, the truck routes extend into the southern industrial area and into the area just north of Alaska Highway bounded by 100th Street, 96th Avenue, and 108th Street. Official "Dangerous Goods Routes" are not currently defined in any City bylaws. Highway 97 through the city is a MOTI highway and is considered a dangerous goods route.

A reoccurring concern raised by the SAG, City Council and the community was the use of bypass roads to efficiently and safely move traffic through and around the city. In terms of truck traffic, especially those vehicles potentially carrying dangerous goods, the desire for an alternative truck route(s) to the East and West Bypass Roads was expressed to avoid this type of traffic in close proximity to current and future residential areas. The 271 Road was identified as a potential route during SAG workshops that could be used instead; however, this road is outside of the current and likely the future 20 year city boundary.

Changing truck routes and potentially limiting dangerous goods and/or truck traffic on some of the current city bypass roads could impact access routes for local business such as those in the light industrial areas adjacent to the East Bypass Road. MOTI is also affected because some of these roads fall under their jurisdiction and new alternate routes may need to be specifically identified in conjunction with MOTI. Further consideration of this topic and consultation with MOTI is recommended at this point. The *Transportation of Dangerous Goods Act* defines and regulates dangerous goods. This legislation has provisions for a municipality to “make bylaws with respect to highways under its direction control and management” and to “prohibit the carrying of dangerous goods on the highways specified in the bylaw”. These bylaws must be approved by the minister. It is also recommended that if changes are made, that the City improve communications of existing and future truck routes and Dangerous Goods Routes in order to raise awareness of the routes with all users.

5.3.2 Bypass Routes

Concerns were also raised during the TMP consultation process about the future functionality of bypass routes to move traffic. There was a lot of discussion with the SAG and City staff on this topic and what may be required in the future as the community grows. It was recognized that Fort St. John is positioned with geographical constraints (Fish Creek, the Beatton River, the Bouffieux Coulee, and the Peace River) that limits the cost effective addition of completely new bypass road options.

It is important to plan for the evolution of the current bypass routes and identify future bypass roads or main arterial and collector roads that will be needed to safely and effectively convey local and regional traffic as growth occurs. For the current bypass roads, the TMP project list and network map (discussed in Section 6 of this report) specifically identify 4-laning the West Bypass Road as a project in the 20 year horizon of the plan. This was identified to accommodate traffic from potential growth in the north-west quadrant of the city. The remainder of the bypass roads are classified as Arterial roads on the network map and any development that occurs in proximity to these roads should be planned keeping this classification in mind. This means limiting intersections and accesses to support a higher speed, through traffic function. Provision for 4-laning, acceleration/deceleration lanes and left hand turning lanes should be considered as growth occurs and traffic increases. The 50 km/h speed limit could also be reviewed for the East Bypass Road with a more specific safety audit/speed review in conjunction with MOTI for this corridor to see if a 70 km/h speed limit could be reinstated (and any safety upgrades required to do so).

In terms of future bypass roads, the TMP does not specifically identify a need in terms of traffic volumes to add additional routes around the city within the horizon of the plan. This is based on assumptions and the best information available on anticipated population growth and development patterns. This could change if growth occurs more rapidly, boundaries expand, or patterns of development change to different areas of the city. The road network map does show some arrows on the periphery of the city to the northeast and west identifying possibly future arterial and collectors that generally show where future routes should be. The TMP is a living document that should be updated and expanded as more information becomes available and planning occurs for a longer term time horizon. It may be prudent for the City to work with MOTI and the PRRD to plan for future long term major road corridors on the periphery of the city beyond the horizon of the TMP so that these corridors can be protected.

5.4 Road Cross Sections

The desire for new road right-of-way cross sections are founded on meeting the needs and desires of the community and to align with current transportation best practices that respect all modes of transportation.

The approach taken to create new road right-of-way cross sections began by looking at other similar winter cities and exploring options applied by each city and noting desirable design elements. There are examples of Canadian winter cities that recently undertook a complete streets design process and created new cross sections with an emphasis placed on winter city design based on thoughtful research.

Some design criteria used to create new cross sections are:

- ▶ Creating the cross sections based on land use and multi-modal transportation needs;
- ▶ Ensuring that all multi-modal transportation options are both functional and desirable;
- ▶ Designing for winter cities with consideration for snow clearing and snow storage;
- ▶ Focusing on 'getting the surface right' first, then focusing on the placement of underground utilities;
- ▶ Using rollover curb with monolithic sidewalk only for local, low density residential roads;
- ▶ Using barrier curb on all other areas to limit driveway locations, contain vehicles to the street, and separating the sidewalk to:
 - ▶ Avoid differences in the curb and sidewalk height as they are poured separately and shifting occurs;
 - ▶ Reduce the gravel base structure required ;
 - ▶ Create a more desirable pedestrian realm by adding separation from the road; and
 - ▶ Provide space for snow storage.
- ▶ Adding design space for street trees and streetlights;
- ▶ Ensuring consistent lane width standards were applied;
- ▶ Using 2.0m wide sidewalks (vs. the previous 1.5m) as a minimum width; and
- ▶ Integrating sidewalks, trails, bike lanes, and sharrow lanes where appropriate for multi-modal inclusiveness;

The road cross sections that have been developed are primarily intended for application for new greenfield development, but can be applied to retrofits of existing roads. A wide variety of cross section have been developed to provide flexibility in choosing a section that is best suited for a particular area or application. The intention is that this will allow City staff to work with land developers to select the most appropriate cross section to meet the transportation needs of new areas. For upgrades to existing roads within the city, it may be impractical to apply all elements of the new cross sections due to existing circumstances. That said the TMP will identify "new" proposed cross-sections for many existing streets, in this case the intent is that the functional elements of the proposed cross section will be applied while being sensitive to existing context. When choosing a right-of-way cross section for the upgrade of an existing road, the principles of the new cross sections should be applied by City staff and the designers with thoughtful consideration to existing land use, available right-of-way, intended use, and respect for all modes of transportation.

A summary of all proposed typical cross-sections is provided in **Table 5.1**. Illustrations of each cross-section can be found in **Appendix E**. A description of the key elements that make up each cross-section and the design criteria used is summarized in the following sections.

5.4.1 Right-of- Way (ROW):

Local Roadways: Consistent with the existing subdivision and development servicing bylaw, a 20m ROW for all local residential, and local industrial roadways is proposed, with the exception of lanes. Laneways are proposed at 6.0m, consistent with existing laneways (that do not include deep utilities);

Collector Roadways: Minor collectors, including residential, commercial, and industrial roadways, are proposed with a 22m ROW; this is an increase from the existing two lane (typical) collector that have a 20m ROW. However, the proposed ROW is consistent with the existing two lane (alternative) collectors. Major collectors proposed with a 25m ROW are consistent with the existing four lane (typical) collectors.

Arterial Roadways: Arterial (typical) sections currently have an allocation of a 25m ROW, as detailed in the existing subdivision and development servicing bylaw. New minor and major ROW are both proposed with a ROW of 26m; consistent with the existing downtown (typical) commercial ROW. A unique arterial (Bypass) section has been proposed maintaining the existing 65m ROW.

Downtown Roadways: Consistent with the downtown (typical) commercial ROW, downtown collectors have been maintained with a 26m ROW; downtown locals have been designated a 20m ROW.

5.4.2 Design Speeds:

A variety of design speeds are recommended for various road classifications. Design speeds should be confirmed for specific road segments based not only on the classification, but also on adjacent land uses and other factors. For the most part, design speeds should align with the intended posted speed for the roadway.

Local Roadways: 30 – 50 km/h

Collector Roadways: 50 km/h

Arterial Roadways: 50 – 70 km/h

5.4.3 Travel Lanes:

Local Roadway: The function of the local classification roadways are proposed to accommodate on-street parking, bike travel and motorist travel within a single shared lane, creating a collective low speed environment. Lane widths are from 4.5m to 5.5m and maintain and increase the existing road widths for local roadways to 9m to 11m pavement.

Collector/ Arterial Roadways: A 3.5m lane width for collector roadways and a 3.6m lane width for arterial roadways is proposed for dedicated travel lanes; with 4.3m lane width for shared bike and travel lanes in accordance with TAC Geometric Design Guide for Canadian Roads, 1999 and the TAC Bikeway Traffic Control Guidelines for Canada, 2012.

Downtown Roadways: Similar to collectors, a 3.5m lane width is proposed for dedicated travel lanes, and a 4.3m width is proposed for shared lanes. In addition, a 4.0m two-way-turn-lane (TWTL) has also been proposed for downtown major collectors.

5.4.4 Parking Lanes:

Local Roadway: Shared parking is proposed for all local streets, with lane widths varying between 4.5m to 5.5m. Parking lane widths are referenced to the face-of-curb.

Collector/ Downtown Roadways: 2.5m parking lanes are proposed for all collectors and downtown roadways. Given the function of arterial roadways, parking has not been proposed along any arterial roadway cross-sections. On-street parking widths are intentionally smaller than a 3.0m off-street parking stall as the boulevard and on-street space can be used to facilitate door openings.

5.4.5 Sidewalks/ Multi-Use Trail Width & Boulevards Width:

Local Roadways: A 2.0m sidewalk has been proposed abutting curbs where rollover curbing is proposed, creating a combined structure. Adversely, where barrier curbing is proposed sidewalks are offset back from the curb, with a 2.0m boulevard separation. This separation enables a greater segregation for pedestrians from the roadway, while also enabling an area for snow storage, and street trees within the boulevard. No sidewalks are proposed for local industrial cross-sections.

Collector/ Arterial Roadways: Pedestrian facilities are proposed along both roadsides for all cross-sections, with the exception of industrial collector roadways. All sidewalks are proposed with a 2.0m width and multi-use trails are proposed with a 3.0m width. Where possible 2.0m boulevards have been accommodated between curbs and sidewalks, however, where space is limited a 1.5m boulevard has been proposed i.e. major collectors, residential (2 parking lanes) collectors, and commercial arterials.

Downtown Roadways: Given the high pedestrian demand within the downtown core area, paved boulevards are proposed for major downtown cross-sections from curb to property line on either roadside.

5.4.6 Bike Facilities:

Local Roadways: Shared travel lanes are proposed for all local roadways, with those designated as bike routes signed with appropriate signage and sharrows.

Collector Roadways: Designated bike routes have either been classified as primary or secondary bike routes, utilizing dedicated 1.5m on-street bike lanes (with a 0.5m buffer provided between the bike lane and vehicle travel lane) or shared 4.3m travel lanes with sharrow paint-markings respectively. All other collector roadways accommodate cyclists either with shared 4.3m travel lanes or separated multi-use trails.

Bike facilities are not designated along any arterial roadways. Separated multi-use trails are used to accommodate cyclists along these routes. Although not promoted, 4.3m shared lanes and 1.8m paved shoulders can be used to accommodate cyclists along these arterial corridors.

5.4.7 Additional Elements:

Snow Storage: Snow storage is accommodated within either the boulevards or road shoulders for the majority of cross-sections proposed. For cross-sections without boulevards or road shoulders proposed (i.e. downtown cross-sections) short term snow storage is proposed within parking lanes or within the centre turn lanes. Haul-off of snow will likely be required.

Street Trees: A minimum 2.0m allowance has been provided for the accommodation of street trees landscaping within the boulevard areas to help provide space for healthy growth. As well as for their aesthetic and environmental value, street trees are used as a traffic calming measure.

Table 5.1: Fort St. John’s Transportation Master Plan – Roadway Cross-Section Summary Elements

Classification	Sub-Type	ID	ROW (m)	Pavement (m)	Median (m)	# of Lanes	Lane Width (m)	Parking (m)	Bike	Curb	Sidewalk	Boulevard (m)
LOCAL	Lane	L1	6	-	-	Shared	6	-	Shared	-	-	-
	Low Density - Single Family	L2	20	9	-	2	4.5	Shared	Shared	Rollover	1 side (2m)	Back of s/w
	Low Density - Duplex	L3	20	11	-	2	5.5	Shared	Shared	Rollover	1 side (2m)	Back of s/w
	Med-High Density	L4	20	11	-	2	5.5	Shared	Shared	Barrier	Both (2m)	Back of s/w
	Industrial	L5	20	11	-	2	5.5	Shared	Shared	Barrier	-	Back of curb
COLLECTOR	Residential (Trail & 1 Parking Lane)	C1	22	9.5	-	2	3.5	1 side	Trail	Barrier	1 side (2m)	Back of curb (2m)
	Residential (Trail & 2 Parking Lanes)	C2	22	12	-	2	3.5	Both	Trail	Barrier	1 side (2m)	Back of curb (1.5m)
	Residential (Shared & 1 Parking Lane)	C3	22	11.1	-	2	4.3	1 side	Shared	Barrier	Both (2m)	Back of curb (2m)
	Residential (Shared & 2 Parking lanes)	C4	22	13.6	-	2	4.3	Both	Shared	Barrier	Both (2m)	Back of curb (1.5m)
	Residential (Bike Route)	C5	22	11	-	2	3.5	-	Both	Barrier	Both (2m)	Back of curb (2m)
	Commercial	C6	22	13.6	-	2	4.3	Both	Shared	Barrier	Both (2m)	Back of curb (2m)
	Industrial (1 Parking Lane)	C7	22	11.1	-	2	4.3	1 side	Shared	Barrier	Both (2m)	Back of curb (2m)
	Industrial (2 Parking Lanes)	C8	22	13.6	-	2	4.3	Both	Shared	Barrier	Both (2m)	Back of curb (2m)
	Major	C9	25	17	2	4	4.3/3.2	-	Shared	Barrier	Both (2m)	Back of curb (2m)
ARTERIAL	Minor	A1	26	10.8	-	2	3.6	-	Trail	Barrier	1 side (2m)	Back of curb (3.2m)
	Bypass	A2	65	10.8	-	2	3.6	-	Trail	Barrier	Trail	Back of curb (3m)
	Commercial	A3	26	17.8	2	4	4.3/3.6	-	Shared	Barrier	Both (2m)	Back of curb (1.5m)
DOWNTOWN	Local	DT1	20	13.6	-	2	4.3	Both	Shared	Barrier	Both (3.2m)	-
	Collector	DT2	26	17.6	-	2+1	4.3	Both	Shared	Barrier	Both (4.2m)	-

6.0 TRANSPORTATION MASTER PLAN

The review of existing conditions, consultation with stakeholders, input of staff and Council, the TMP goals and vision, and the future forecasts culminate in the development of the TMP plans and strategies. Here the specific recommendations and strategies for each of the key modal plans (Pedestrian, Bicycle and Trails, Road Network, and Transit) are documented along with a summary of the specific projects and improvements that make up the TMP Implementation Plan.

6.1 Pedestrian Plan

Just like any mode of transportation, many people will choose to walk if it is a comfortable and convenient way to travel. Walking can be an attractive alternative to driving for short trips, especially where destinations are close and connections between them are provided. Walking is the most fundamental form of transportation and forms part of almost every trip within the city, whether that trip is made by car, transit, or bicycle. In addition, there are many benefits to promoting walking and active transportation as residents that choose these modes obtain more exercise, which can help combat health issues such as obesity, diabetes, and cardiovascular diseases.

Fort St. John has the advantage of having a relatively compact downtown core with many services and amenities within walking distance of neighbourhoods and civic destinations. However, challenges that must be overcome to get more people to walk in the city include addressing gaps in the provision of sidewalks, uncomfortable walking environments, lack of lighting, unsafe crossings, obstructions (parked vehicles) and winter city challenges with snow removal. In industrial and commercial areas (i.e. South of Highway 97), traveling on foot can be unappealing, as auto-oriented development, long distances, and heavy vehicle traffic can make walking uncomfortable and inconvenient.

The Pedestrian Plan guides the City in completing key elements of the pedestrian network that will support and encourage walking in areas with high and/or potential walking demand. In order to address Fort St. John's current pedestrian challenges while promoting active transportation throughout all areas of the community, strategically oriented development is required, focusing on key areas rather than dispersing improvements throughout the community. In this regard, one of the key strategies of the Pedestrian Plan is to enhance the walkability of areas with high pedestrian demand, such as the downtown core, commercial areas, recreational areas, and around schools. Within these areas the main focus is about providing a connected network that provides convenient, safe, and integrated travel options for users.

In addition to the main connectivity focus of the Pedestrian Plan, a range of treatments are also identified to enhance walkability, including streetscape improvements (i.e. landscaped boulevards, street trees, lighting, and other pedestrian amenities), as well as enhanced crossings and accessibility.

Directions of the TMP Pedestrian Plan:

- ▶ Enhancing Sidewalk Coverage within Strategic Areas
- ▶ Supportive Pedestrian Facilities
- ▶ Crossings & Accessibility

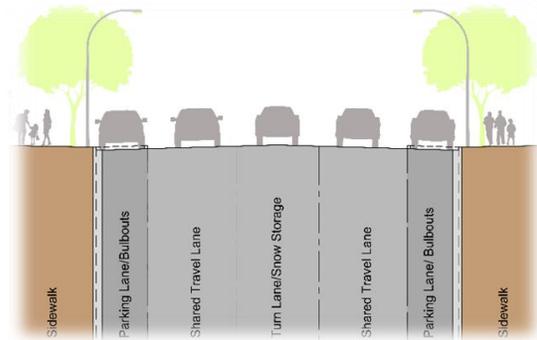
The features of the Pedestrian Plan are detailed as follows:

6.1.1 Enhancing Sidewalk Coverage

A key item identified within the TMP process was the need to address gaps in the sidewalk network, as fragmented sidewalks can discourage walking, even for short trips. Bringing the city’s sidewalk network up to standard would require significant financial resources. In light of this, the TMP Pedestrian Plan focuses sidewalk coverage improvements in areas with the highest pedestrian demand and potential. These areas have been identified within Fort St. John as the **Downtown Core**, **School Zones**, and **Recreational Areas**. Other areas such as near transit stops are also areas to focus on.

Each of the high pedestrian activity areas in the city are described below along with associated sidewalk coverage recommendations. While recommendations for these focused areas should be addressed individually, standard sidewalk coverage should apply to the relevant roadway classification and the typical roadway cross-sections detailed in **Appendix E**. The strategic areas that should be focused on are described as follows:

- ▶ **Downtown Fort St. John:** With the proposed Energize Downtown Plan, there exists a significant opportunity to create a pedestrian-oriented core, where walking has the potential to become the primary mode of transportation for short trips within the area. The downtown supports a diverse range of land uses and higher density development, which means people can walk between several locations for a variety of needs, such as work, shopping or personal business. As per the plan, the primary corridors of 100th Avenue and 100th Street are proposed to be reconfigured, reducing the road width from four to three lanes of traffic and increasing the width of the paved boulevard along either roadside between blocks. Further, curb extensions and let-down facilities should be provided at every major intersection.



Other roadways within the downtown core are proposed to be reclassified as either downtown local or downtown minor collector roadways. All proposed roadway classifications within the downtown area include sidewalk facilities on both sides of the roadway.

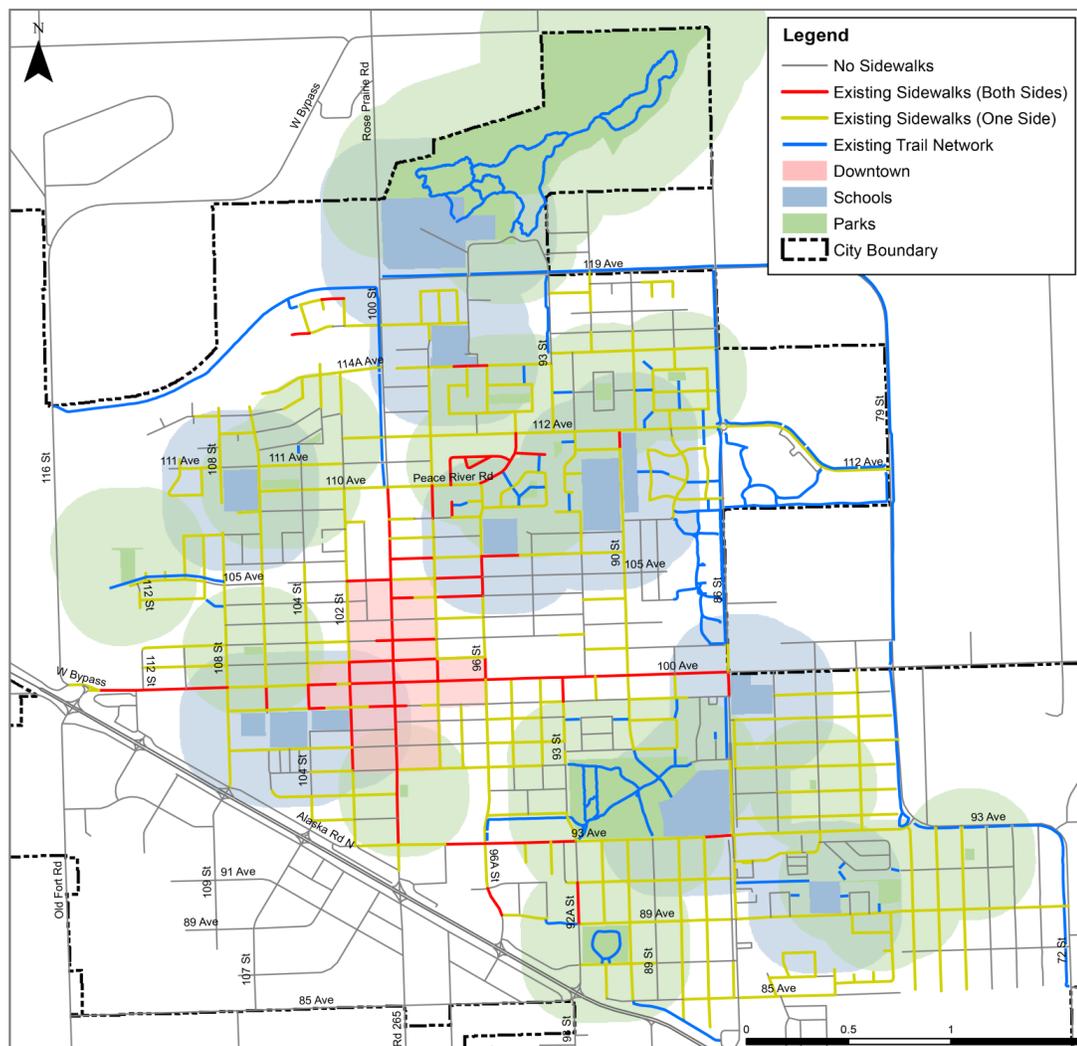
- ▶ **Schools Zones:** Schools typically attract and generate a high number of walking trips, especially at peak times. Good sidewalk coverage in the immediate area around schools should be provided to encourage youth, children, and parents to walk to and from school.

Recognizing this priority for sidewalk provisions, sidewalk projects within 300 metres of any school or institutional related centre should be addressed first prior to areas outside of the 300 metre buffer. As proposed within the roadway cross-sections (**Appendix E**), all public roadways have provisions for sidewalk or pedestrian facilities (i.e. multi-use trail), with different roadway classifications defining whether sidewalks are proposed along one side or both sides of a given segment.

The prioritization of sidewalks may extend beyond the 300m school area buffer where special circumstances dictate a need for sidewalk improvements. Recognizing that many students walk more than 300 metres between schools, homes, and businesses, it is important to complete the sidewalk networks around these school precincts over the long term.

- ▶ **Recreational Areas:** Parks and recreational facilities are also areas of high pedestrian activity. Providing connected sidewalks in the vicinity of these facilities will potentially create a greater mode shift towards active modes of transportation, while facilitating greater access to these areas for the greater community to enjoy. Similar to school precincts, priority should also be given to sidewalks and pedestrian facilities located within the vicinity of all parks and recreational areas.

Figure 6.1: Pedestrian Plan Strategic Areas



6.1.2 Supportive Pedestrian Facilities

In addition to sidewalks, there are a number of urban design features that can make the downtown and other high activity areas more walkable and attractive. Urban design features that can enhance and improve pedestrian infrastructure and crossings include pavers, planters, benches, and banners. Other features to enhance the walking environment can include street trees, café seating, curb extensions, accessible bus stops, and street lighting. These features and amenities are becoming increasingly common in other mid-size city centres.

Urban design features are recommended primarily in the downtown where improvements can benefit many people and enhance the experience of walking in the city's core. However, urban design components may be used in other key areas around schools, commercial areas, and recreational areas to improve the walking experience. It is important to provide urban design features around key activity areas on public right-of-way's, and to work with developers to provide amenities in the interface with private properties.

Provisions of supportive urban design features in the city's high activity pedestrian locations are described below:

- ▶ **Enhance Sidewalk Clear Width:** To make walking more comfortable for all, particularly in high activity areas, a minimum width of 2.0m has been adopted along all roadways, from local to major arterial roadways. A sidewalk clear width of 2.0 m significantly improves pedestrian accessibility by providing sufficient width for an individual in a wheelchair to pass another pedestrian. Further, 2.0 metre sidewalk widths can comfortably accommodate many pedestrians, making for a more pleasant walking experience, and medical scooter and stroller traffic can be better accommodated within this sidewalk width. It is also important that the placement of features such as bus stop amenities, garbage cans, bicycle racks, and planters does not reduce sidewalk clear width to maintain accessibility. Within the downtown area and within more urbanized environments, sidewalks and paved boulevard areas greater than 2.0m in width are proposed to accommodate higher volumes of pedestrian traffic.
- ▶ **Boulevard Placement:** Ideally placed between the sidewalk and the roadway, boulevards create a buffer between pedestrians and moving vehicles which can make the walking experience more pleasant. Boulevards also create a place for snow storage, street lights, poles and furniture.

A minimum 2.0m boulevard between the back of curb and sidewalk should be incorporated as part of all new roadway and retrofit construction, with the exception of:

- ▶ Local residential streets with low density development;
- ▶ Boulevards placed on property side of sidewalks; and
- ▶ Major roadways where the right-of-way is restricted allowances can be made to reduce the boulevard to 1.5m.

Providing and maintaining an adequate area for the accommodation of snow is essential to maintaining a functional roadway as well as minimizing the number of roads that require snow to be hauled away.

- ▶ **Street Furniture:** Pedestrian amenities can improve the attractiveness and comfort of walking in high activity areas, including the provision of litter and recycling bins, planters, banners, and street furniture. These amenities should be located outside of the travelled portion of the sidewalk and are essential to

making “people-focused places” and creating environments that are comfortable and interesting for pedestrians. In addition, street trees can be incorporated into sidewalk zones with high pedestrian demand and where parking does not provide a buffer between the road and sidewalks. Street trees not only play a role in supporting pedestrian comfort and safety, but also add a ‘green’ aesthetic element to the streetscape and help to reduce the urban heat island effect.

- ▶ **Sidewalk Maintenance:** To keep walking on sidewalks a desirable transportation option, sidewalk maintenance is required during all seasons of the year. Sidewalks should be clear from snow and ice in the winter, and clear from gravel in the spring. The City does not have to take responsibility for the clearing and maintenance of all sidewalks; the maintenance can be directed to the adjacent landowner through the use of bylaws and enforcement. It is typical for communities to require adjacent landowners to take responsibility of their fronting sidewalk and issue fines to non-compliant properties.

6.1.3 Crossings and Accessibility

Accessible, safe, and visible crossings are an important part of a quality walking environment Fort St. John, especially given the large portion of heavy vehicle traffic that exists. For vulnerable road users such as youth, children and seniors, it is important that crossings be designed to support safety and comfort within the pedestrian network so that residents and visitors of all ages and abilities feel confident walking in the city. The City of Fort St. John has already installed curb extensions and letdowns at many of its signalized intersections within the downtown, and has also signalized some pedestrian crossings at intersections near schools. Building on the existing infrastructure, a range of crossing and accessibility treatments should be considered citywide, with more extensive treatments in high activity and strategic areas. Particular focus should also be given to major roadway corridors where pedestrian crossings are considerably restricted.

The foundation for the provision of crossing and accessibility treatments in high pedestrian areas are described briefly below;

- ▶ **Curb Letdowns:** Providing an accessible crossing location that accommodate for all mobility types. Curb letdowns should be aligned directly with cross-walks where possible.
- ▶ **Narrow Crossings:** Providing curb extensions and median islands, which benefit pedestrians by improving visibility and reducing crossing distances. Curb extensions/ bulb-outs can be implemented by extending the sidewalk across the curbside parking lane.
- ▶ **Accessible Pedestrian Signals:** At signalized intersections for areas with high pedestrian activity to assist pedestrians with disabilities, accessible signals can provide a higher degree of confidence to pedestrians crossing major streets and generally receive positive support among all age groups. Accessible signals communicate when to walk or not walk in non-visual formats, such as through audible tones, speech messages, or vibrating surfaces. The use of braille on pedestrian signals can also enhance the accessibility of intersection crossings.
- ▶ **Countdown Timers:** At key intersections to provide timing information to all users.
- ▶ **Tactile Strips:** To let pedestrians with physical or cognitive disabilities know of intersection approaches;

- ▶ **Extended Pedestrian Phases:** Allowing more time for pedestrians to cross the street, which can be particularly beneficial to seniors (and children) who may take longer to cross streets.
- ▶ **Marked Crossings:** Enhancing the visibility and safety of crossing pedestrians, where warranted.
- ▶ **Enhanced Pedestrian Crossings:** Providing special crosswalks and pedestrian half signals, where warranted.

6.2 Bicycle and Trails Plan

Cycling is an important mobility option within any city for both commuting and recreational purposes. Fort St. John has the advantage of being a relatively compact community, with the majority of the city also being relatively flat. In addition, through the consultation and engagement process, strong support for a safe and effective bicycle network has been received. The TMP utilizes these attributes in developing a comprehensive bicycle network that can make cycling a more convenient and attractive option, especially for short-distance trips.

The City of Fort St. John has been proactive in developing its bicycle and trail network for active transportation users with a focus on building its network of multi-use trails; particularly around the peripheral Bypass Roads. Currently on-street bicycle travel is confined to shared travel lane use only, where bicycles and vehicles travel within a single lane, often along roads with high traffic volumes and speeds. These existing routes pose a mental barrier for cyclists that are often not comfortable travelling alongside traffic and likely discourage many from cycling within the city.

The Bicycle and Trail Network Plan focuses on developing and defining the network beyond that of the existing multi-use trail system and providing various standards of designated and shared bicycle facilities throughout the city. Providing both on-street and off-street facilities, such as dedicated bicycle lanes and multi-use trail bikeways that better connect cyclists between neighbourhoods, the downtown, and other high demand areas can position cycling as a more convenient and attractive choice, particularly for short local trips. Ultimately, the Bicycle Network Plan provides a safe network that has the potential to support a greater capacity of cyclists, potentially creating a greater mode shift for people’s day-to-day needs in Fort St. John.

While developing the network is fundamental to ensure cycling is a more attractive travel option in the city of Fort St. John, the Bicycle Plan also seeks to provide certain safety and operational elements, such as crossing treatments and bicycle parking.

Directions of the TMP Bicycle and Trail Plan:

- ▶ **Bicycle Network Facilities**
- ▶ **Develop and Expand the Network**
- ▶ **Improved Crossings**
- ▶ **Bicycle Parking**

6.2.1 Bicycle Network Facilities

The recommended bicycle network for Fort St. John consists primarily of new north-south and east-west routes that connect neighbourhoods in all main residential and commercial areas of the city. The bicycle network consists

of three different facilities that will support and encourage cycling across a variety of residential, institutional, commercial, and employment based land uses. Multi-use trails provide the highest level of service in terms of amenities, capacity, and connectivity. Dedicated bicycle routes serve to collect bicycle traffic from shared travel routes and local roads and provide connections with multi-use trails and the downtown core. Shared travel routes provide low speed local access to properties and destinations. A description of the recommended bicycle network facilities is provided below.

Multi-Use Trails

Multi-use trails offer a number of benefits to both cyclists and pedestrians, one advantage of which is that they are typically designed with separation from the vehicular roadway. Multi-use trails can accommodate higher user volumes over longer distances to connect key areas of the city and are effective at providing links across perceived infrastructure barriers. The recommended pathway width is 3.0 metres and while different materials may be experimented with, asphalt is typically used for the running surface. Further, a number of design features including interface materials, wayfinding signage, markings, bicycle parking, and other amenities can be incorporated into the pathway near high activity areas to make the multi-use trail routes more appealing in both visual and functional aspects.

Dedicated Bicycle Routes

The provision of dedicated bicycle routes within Fort St. John has historically been limited to a network of disconnected pathways and trails that are typically located through and around parks and the perimeter of the city. Dedicated bicycle routes are ideally suited to connecting multi-use trails with shared travel routes and local roadways. In addition, dedicated bicycle routes are easier to implement than multi-use trails for roads with limited right-of-way's.

The dedicated bicycle route form recommended in this TMP provides a marked 1.5 metre on-street cycle lane on each side of the road for use only by cyclists. While cycle lanes are commonly implemented with a single white line to distinguish the cycle lane from the roadway, these types of lanes are often perceived as less safe by beginner-type cyclists as they leave little room for error. Therefore, recommended bicycle routes include a marked 0.5 metre buffer space to provide a visual separation between the cycle lane and the roadway. A number of other treatments can be used to enhance the buffer including bendable bollards, portable planters, and raised concrete medians. Since snow clearing is conducted throughout the majority of the winter season, temporary fixtures may be considered during the summer months to enhance the buffer space between the cycle lane and the roadway. Separated trails could also be considered for some dedicated bicycle routes if space permit.

Shared Travel Lanes

Shared travel lanes are recommended mainly on local roads and provide connections between local roads with dedicated bicycle routes and multi-use trails. Both motorized vehicles and bicycles may use the shared travel lane, which must provide a minimum 4.3 metre width. Shared travel lanes should be distinguished with appropriate 'Share the Road' signage and pavement markings indicated the lane is shared with cyclists.

6.2.2 Develop and Expand the Network

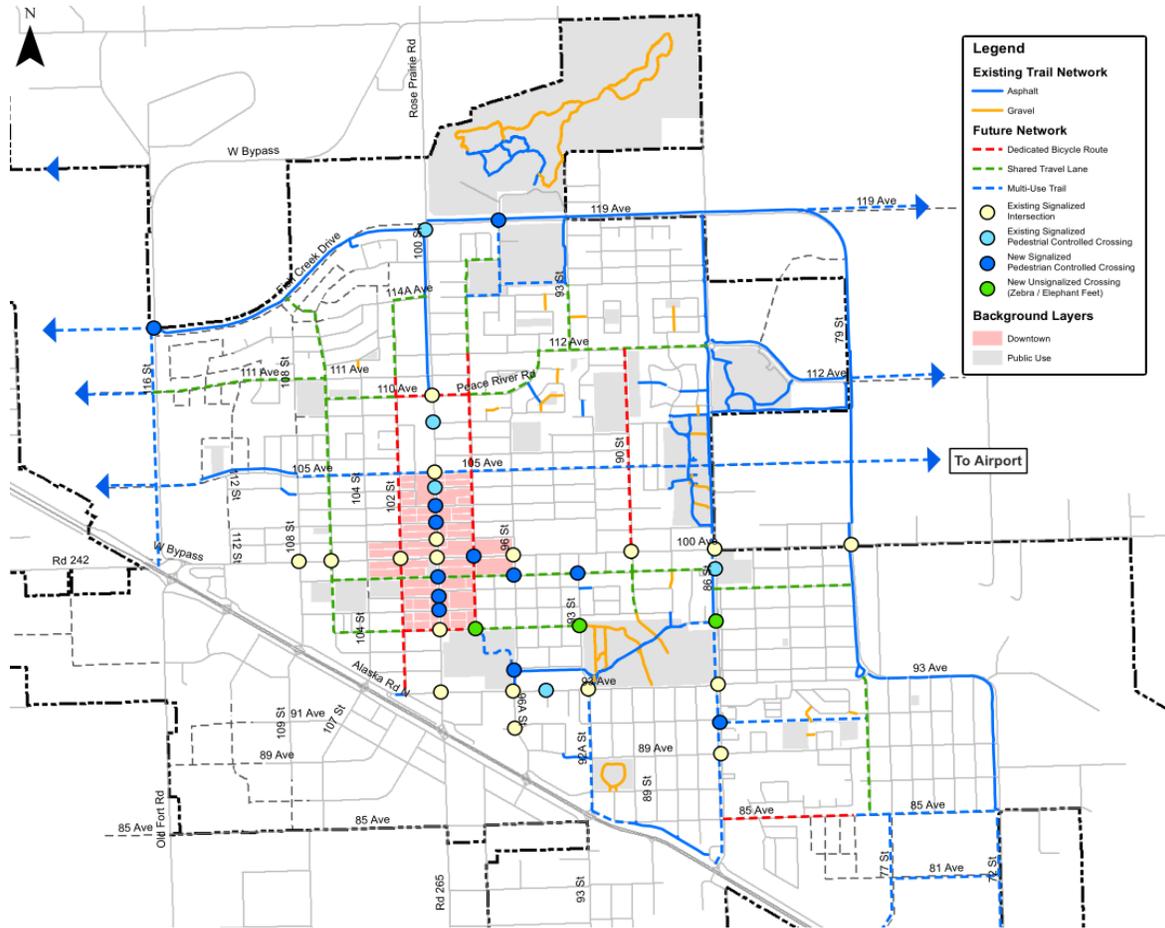
The recommended bicycle network will build off of the existing facilities, which predominantly consist of multi-use trails along the West and East Bypass Roads, 86th Street, and 100th Street. A number of connectivity improvements including new routes are identified and discussed as follows. The general routes have been identified on the Bicycle Network Map in **Figure 6.2**, with the exact facility type defined for some routes. The preferred bicycle facility type (multi-use trail, dedicated bicycle lane, or shared travel lane) will need to be reviewed in greater detail and selected for each future project or route at the preliminary design stage when better information is available for items such as right of way constraints, exact desired function and safety.

105th Ave Multi-Use Trail

105th Avenue is an existing east-west collector roadway that runs through both residential neighbourhoods and the commercial retail areas on 100th Street. Currently, 105th Avenue extends from 112th Street to 88A Street with a gap between 106th Street and 104th Street. While the existing corridor does not provide active transportation design elements, it is well-positioned to become an active transportation route as a significant portion of homes, parks, and schools are located within a 300 metre radius of the corridor.

A new multi-use trail is recommended for 105th Avenue with the vision that it will operate as a continuous east-west route for both active transportation and motorized vehicle users. While 105th Avenue will extend from 112th Street to 116th Street (West Bypass Road) as land is developed, a new segment of 105th Avenue is recommended to bridge the gap between 106th Street and 104th Street. Where possible, the recommended multi-use trail should be designed with separation from the roadway to provide a safe and accessible route for users of all ages and skill levels. It will provide connections with the recommended downtown bicycle network and with other key bicycle routes, as shown on the Bicycle Network Map in **Figure 6.2**.

Figure 6.2: Bicycle and Trail Network Plan



Downtown Bicycle Network

As with the majority of roads in Fort St. John, there are currently little to no provisions for cycling facilities on roads in the downtown area of the city. A number of destinations are located in the downtown, including retail businesses, restaurants, the library, hotels, and services that are accessed on a daily basis by residents living in the surrounding residential neighbourhoods. The city’s existing neighbourhoods are located at most about 3 kilometres outside of the downtown, a distance that can be reasonably travelled on bicycle within 20 minutes by an average cyclist. Given these conditions and the central location of the downtown, the Bicycle and Trail Network Plan recommends a number of dedicated bicycle routes. These routes may be good options for dedicated on-street bicycle lanes. Alternatively, multi-use trails may be considered if right of way space permits.

Both 98th Street and 102nd Street are recommended as the key north-south bicycle routes. Both roadways have relatively low traffic volumes and few business frontages to consider in the route design. The dedicated bicycle route on 98th Street will extend from 112th Avenue to 96th Avenue to provide easy access to businesses on the east

side of 100th Street. Similarly, the dedicated bicycle route on 102nd Street will extend from 111th Avenue to Alaska Road North to provide easy access to businesses on the west side of 100th Street.

Building on these two north-south bicycle corridors, a set of four east-west connections are recommended to provide access across 100th Street. A dedicated bicycle route is recommended on 110th Avenue between 102nd Street and 98th Street that will provide a critical connection with the multi-use pathway that already exists on 100th Street. In addition, a second dedicated bicycle route is recommended on 96th Avenue between 102nd Street and 98th Street to provide an east-west connection in the southern area of the downtown. Lastly, 102nd Street and 98th Street dedicated bicycle routes will connect with the recommended 105th Avenue multi-use trail corridor and the shared travel route on 99th Avenue.

86th Street Multi-Use Trail

An existing multi-use trail extends along 86th Street from the West Bypass Road (119th Avenue) southwards until it reaches 96th Avenue. The existing trail serves as an important active transportation spine connecting with schools, the new hospital, Surerus Park and Toboggan Hill Park. However, the pathway does not currently connect with residential neighbourhoods south of 93rd Avenue that would benefit from improved bicycle accessibility.

A recommendation of the Bicycle Network Plan is to extend the multi-use trail from its current end point at 96th Avenue to the Alaska Highway. It is proposed that the design of the multi-use trail take advantage of the frontage road and boulevard space that runs parallel to 86th Street from 93rd Avenue to 85th Avenue if possible.

90th Street Dedicated Bicycle Route

90th Street is a relatively short and unique north-south road that connects schools and parks among primarily residential land uses. There are currently no bicycle facilities provided along this road even though it connects to Toboggan Hill Park, North Peace Secondary School, Dr. Kearney Middle School, and the Christian Life Church and School Centre.

Since 90th Street intersects with the recommended 105th Avenue multi-use trail, and given the existing connections to these schools and parks, 90th Street is ideally suited for bicycle route improvements. Developing 90th Street as a bicycle route is recommended to encourage more children, youth, and adults living in the adjacent neighbourhoods to bicycle to and from these destinations.

West Bypass Multi-Use Trail

While the city's existing internal bicycle network is limited, the multi-use trail provided along the West Bypass Road is extensive. Currently, the multi-use trail starts at 116th Street and travels eastward onto 119th Avenue and continues down 79th Street all the way to 85th Avenue. The trail is unique in that it provides a continuous pathway for cyclists and pedestrians to travel from the far eastern side of the city to its western side. However, the segment of West Bypass Road on 116th Street from the Alaska Highway to the trail's starting point was identified as a missing segment in the Bicycle and Trail Network Plan.

It is expected that as the northwest area of the city grows, the demand for bicycle route connections will increase. Thus, the Bicycle Network Plan recommends completing this missing piece of multi-use trail, which will provide

connections on the 111th Avenue shared travel lane route and the 105th Avenue multi-use trail corridor. It is anticipated that portions of this connection will be completed by developers in the near future as Westridge and Sunset Ridge are built out. Any missing portions should be connected by the City.

Other Shared Travel Routes

In addition to the bicycle routes identified above, a number of shared travel lanes are recommended on local and collector roads across the city. These shared travel lanes are meant to guide users to the dedicated bicycle lane routes and multi-use trails to get to destinations across the city. Further, the shared travel lanes are recommended to be marked and signed to increase the visibility of cycling routes at a minimal cost.

6.2.3 Improved Crossings

Experienced and new cyclists can be deterred from cycling or from using a certain route because of unsafe intersections and crossings. Crossing treatments assist cyclists in crossing major roads and minimize potential conflicts with vehicles. It is critical that safe crossings are provided where bicycle routes, multi-use trails, and major roadways intersect (i.e. on 100th Street, 100th Avenue, 86th Street, and 119th Avenue). **Figure 6.2** identifies where some of these critical junctions are and where signalized and unsignalized crossing improvements should be provided. Intersection treatments that should be considered within the bicycle network include:

Signalized Pedestrian/ Bicycle Crossings:

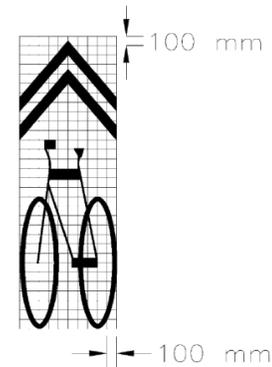
- ▶ 86th Street/91st Avenue;
- ▶ 93rd Street/ 99th Avenue;
- ▶ 96th Street/ 119th Avenue;
- ▶ 116th Street/ Future West Bypass Connector;
- ▶ 96th Street/ 99th Avenue;
- ▶ 96th Street/ 94th Avenue;
- ▶ 100th Street/ 99th Avenue; and
- ▶ 100th Street/ 98th – 98A Avenue.

Unsignalized Pedestrian Crossings:

- ▶ 86th Street/ 96th Avenue;
- ▶ 98th Street/ 96th Avenue; and
- ▶ 93rd Street/ 96th Avenue.

Providing appropriate signage and pavement markings at all signalized and unsignalized bicycle crossings is an important consideration to ensure the safe and adequate operation of the crossing. Bicycle pavement markings may be provided through intersections to guide cyclists through these locations and to alert motorists to the presence of a bicycle route through the intersection. Pavement markings that may be considered at intersection crossing locations include:

- ▶ **Elephant’s Feet Bicycle Crossing Lines:** used to define a cyclist crossing area typically where a multi-use trail intersects a roadway;
- ▶ **Bicycle Symbols and Diamond Pavement Stencils:** used in conjunction with shared and designated lane symbols, these symbols should be placed in advance and following each intersection; and
- ▶ **Stop Lines:** used in conjunction with stop sign and other requirements to stop for both bicycles and motor vehicles.



In addition, appropriate signage for both cyclists and drivers beyond the minimum requirements at crossing locations should also be considered for all bicycle crossing locations. Given the various treatments that are proposed, advanced warning, regulatory, and guidance signs should also be considered to reflect the site specific concerns.

6.2.4 Bicycle Parking

The fear of bicycle theft or vandalism is a significant deterrent to cycling, and it is important to provide safe and secure on-street bicycle parking at key locations throughout the city. Improving the availability of bicycle parking is relatively inexpensive and can be seen as a positive ‘quick win’ solution for the bicycle network.

A mix of both short and long-term bicycle parking facilities should be considered. For example, bicycle racks and on-street bicycle corrals are often suitable for areas that typically have short-term visits including shopping areas, community and recreation centres, and parks. Longer-term bicycle parking options, such as bicycle shelters, cages, or lockers, are more suitable for employment and visitor destinations such as the Northern Lights College/ UNBC and the Fort St. John transit exchange. In addition, the Official Community Plan includes provisions for reducing residential parking requirements by 10% if bike parking is provided.

Additional and/or improved bicycle parking is recommended in the following areas:

- ▶ **Commercial and institutional land uses;** including elementary, middle and secondary schools, tertiary institutions, and the Totem Mall;
- ▶ **Civic and leisure facilities;** including the North Peace Leisure Pool and the North Peace Cultural Centre;
- ▶ **The Downtown core;** and
- ▶ **Parks and open space areas;** including Fish Creek Community Forest, Surerus Park and Toboggan Hill Park.

Creating safe and secure places for users to park their bikes will encourage the use of cycling as a more attractive mode of transportation. When compared to the capital and operational investments associated with on-street vehicle parking, it is a small investment to finance bike parking facilities. The locations described above include sites within the public and private realms. Within the public realm, the City should work to implement bicycle parking within the right-of-way where possible. This can take place primarily on sidewalks while ensuring that sufficient sidewalk clear width is provided for pedestrians. With the limited bike parking facilities available in the downtown core, and aligning with objectives of the Energize Downtown Plan, the City may also want to consider

subsidizing bike parking to interested businesses. Private businesses should also be encouraged to offer bike parking for use by staff and customers.

6.3 Road Network Plan

Providing a safe and accessible community that offers a diversity of transportation options are key elements of the City’s transportation vision and the recommended road network plan. In the next ten years, the city expects to see an additional 8,000 to 10,000 people move to Fort St. John. While the City is making great strides to improve the transportation system’s mode share through improved bicycle and trail facilities, the population increase will continue to put higher traffic demands on the road network. Thus, the Road Network Plan is an important component of the TMP for properly managing the movement of vehicles now and into the future.

The improvements explored and identified in this Road Network Plan are separated into four strategic directions focused on improving network connectivity and efficiency through a combination of improvements. These road improvement directions must also support the community’s transportation needs outlined in the Pedestrian Plan, Bicycle and Trail Plan, and Transit Plan for the benefit of a broad range of transportation users.

6.3.1 Road Network Plan Directions

Road network improvements within the TMP are grouped into four primary categories:

- ▶ **Network Connectivity and Circulation Improvements** were identified to improve mobility and accessibility between key destinations within the city. Improvements identified in the TMP include new road connections to provide more east-west route options and improvements aimed at enhancing traffic circulation.
- ▶ **Intersection Operation and Safety Improvements** were identified for many of the study intersections to maintain acceptable levels of service under growing traffic conditions.
- ▶ **Road Network Classification System Update** includes some minor and major modifications to the city’s classification system to better capture the different road functions and adjacent land uses. Modifications are proposed for the downtown and circulatory roads to prevent through traffic through the downtown core and to improve the efficiency of underutilized roadways.

**Directions of the TMP
Road Network Plan:**

- ▶ Network Connectivity and Circulation Improvements
- ▶ Intersection Operation and Safety Improvements
- ▶ Road Network Classification System Update

6.3.2 Network Connectivity and Circulation Improvements

A number of major and minor network improvements were identified across the road network system that will improve mobility options and accessibility for road users.

100th Street and 100th Avenue in the Downtown

100th Street and 100th Avenue are existing arterial roads that intersect each other in the city's downtown core. Within the downtown, both roads have a similar four-lane cross-section with parking lanes on both sides of each road. Historically, these roads provided the primary north-south and east-west routes for travelling across the city and were widened to accommodate increasing traffic demands. However, the expansion of these two roads led to a downtown core that is overly focused on vehicles and lacks the character and pedestrian environment that other inviting downtowns offer.

Nowadays, there are more options for people to travel across the city without using either of these roads including the East and West Bypass Roads, 93rd Avenue, 112th Avenue, 96th Street, and others. The TMP and Energize Downtown planning studies listened to the community's feedback about the current state of the downtown and a common theme heard was a desire to increase its vibrancy through better public spaces, safer streets, and improved parking options.

Since a significant amount of public space in the downtown is currently allocated to 100th Street and 100th Avenue paved surfaces, a main recommendation of the TMP is to retrofit both roadways to a new three-lane cross-section with one through lane in each direction and a centre left turn lane. Parallel parking would still remain on both sides of the street and the additional room gained by narrowing the paved road width would be reallocated to wider sidewalks with space potentially for outdoor cafés, street furniture, and other public amenities.

An important consideration of the downtown revitalization is that a reduction in the roadway capacity is likely to result in more delays for through traffic. Further, the traffic patterns on parallel streets, including 102nd Street, 98th Street, 99th Avenue, and 101st Avenue could change significantly if a designated route is not provided, which could lead to unintended consequences. Thus, in developing the TMP, the 97th Avenue corridor was identified as a good candidate for an east-west downtown bypass route.

97th Avenue currently extends from 108th Street over to 93rd Street and provides a number of linkages up to 100th Avenue. Since 97th Avenue was originally intended to serve a local road function, retrofit improvements are recommended including signal improvements to make this bypass corridor more attractive for east-west through traffic. This route was identified as it avoids much of the established residential areas north of 100th Avenue and is close enough to 100th Avenue to function as a bypass route.

In addition, the roadway gap on 104th Street from 97th Avenue to 99th Avenue is recommended to be completed and will provide another linkage to support the 97th Avenue bypass route around the downtown area. Lastly, the recommended improvements for the 105th Avenue corridor will provide an alternate east-west route that will help ease through traffic along 100th Avenue through the downtown.

105th Avenue Corridor

105th Avenue is an existing east-west collector roadway with a two-lane cross-section and is located in the northern residential part of the city. Currently, 105th Avenue extends from 112th Street to 88A Street with a gap between 106th Street and 104th Street. The corridor will extend from 112th Street and connect with 116th Street (West Bypass Road) as land is developed in the near future. 105th Avenue is a unique corridor as it has the potential to extend continuously from the most western part of the city to the most eastern part. Presently, 100th Avenue is the only continuous east-west corridor aside from the Alaska Highway that provides this type of connection.

The future conditions traffic analysis found that as the city population grows, and subsequently the traffic demand grows, there will be a greater need for more east-west corridors to disperse traffic. In addition, the future residential and commercial developments planned in the northwest quadrant of the city (west of 116th Street) will require east-west connections for efficient access to destinations across the city. The 105th Avenue corridor is ideally positioned to address this need for more east-west routes.

Improvements are recommended for 105th Avenue to support another city wide east-west route. Two new road connections between 106th Street and 104th Street, and between 88A Street and 86th Street are recommended to make the corridor fully continuous. In addition, the corridor travels through residential and downtown commercial areas and traffic speeds should be moderated through upgrades to the roadway design.

A key component of these upgrades is a new multi-use trail that is recommended along the entire 105th Avenue corridor, as identified in the Bicycle and Trail Network Plan. These improvements will result in a new city wide complete streets corridor that can accommodate pedestrians, cyclists, passenger vehicles, and transit vehicles. The proposed cross-section will retain on-street parking and considerations should be made to ensure traffic speeds and safety are retained given the residential nature of the corridor. As an interim step, the multi-use pathway connections could be made prior to and independent of the new road connections on 105th Avenue (between 106th Street and 104th Street as well as between 88A Street and 86th Street).

“Fish Creek Drive” Arterial Connector

The current West Bypass Road extends along 116th Street north from 100th Avenue and connects at Rose Prairie Road, approximately 1.2 km north of the East Bypass Road and 100th Street intersection. As the East Bypass Road was developed, the City secured the right-of-way along the railway tracks adjacent to Fish Creek for a future direct connection between the East and West Bypass Roads. This right-of-way currently contains one of the city’s popular multi-use trails and some sanitary sewer infrastructure. However, the right-of-way is extremely wide, so there is still space available for a road without compromising the trail and adjacent trees significantly. This arterial connection (coined as “Fish Creek Drive”) would form the last piece of the city’s horseshoe-shaped ring road, which is bounded by the Alaska Highway. Additionally, this connection would help to ease the traffic flows on the 100th Avenue, 105th Avenue, 111th Avenue and 112th Avenue by providing another alternate east-west corridor for traffic.

As the northwest quadrant of the city develops to the east and west sides of 116th Street, with new residential neighbourhoods and commercial shopping destinations, the need for Fish Creek Drive will likely become greater over time. Further, both the 116th Street and 100th Avenue intersection, and the 100th Avenue and Alaska Highway

intersection are experiencing reducing performance levels that will worsen as development-related traffic increases.

While the future location of the Fish Creek Drive is expected to increase overall network connectivity and improve route options, the feedback from the TMP stakeholders and community indicated this connection is a low priority given the low usage of the existing East Bypass Road versus the high capital cost of constructing a new road connection. Thus, the TMP recommends that Fish Creek Drive only be considered for construction when there is a greater need for it based on traffic demands and community readiness.

112th Avenue Corridor

112th Avenue is an east-west minor collector road that extends from 102nd Street at its most western end to the 79th Street East Bypass Road. 112th Avenue is a unique collector roadway in the city as its design lends itself more to a local road classification with the number of single family home driveways present. However, the recent extension of 112th Avenue to 79th Street to connect with the new Fort St. John hospital partially contributed to increased traffic volumes along this mostly residential roadway and to the minor collector classification of 112th Avenue.

Despite the classification of 112th Avenue as a minor collector, the approximately 10.5 metre wide roadway currently carries two travel lanes with parallel parking permitted on both sides of the road. Most of the adjacent single family homes are setback from the roadway with large driveways to accommodate vehicles off-street; however, there are occurrences when people park their vehicles on-street across from each other that severely limit the function and safety of the two travel lanes. To address the issue of traffic safety and road function, a recommendation of the TMP is to limit parking to one side of the road with shared travel lanes using the C3 collector cross-section. These changes will provide the opportunity for the City to mark a centerline which will provide road users with better defined travel lanes and will remove conflicts with parked on-street vehicles.

108th Street Connection

108th Street is both a minor and major collector roadway within Fort St. John and provides an important north-south connection between the southern industrial area and the residential area in the northwest part of the city. However, a gap in the roadway exists between 108th Avenue and 111th Avenue that requires road users detour onto 106th Street to reach areas of new development in the northwest part of the Fort St. John. As the City seeks to improve network connectivity and circulation, a recommendation of this TMP is to connect this missing segment of 108th Street.

100th Street Four-Laning

As previously mentioned, 100th Street is a key corridor in the city for transportation mobility and connectivity to adjacent land uses. While much of 100th Street is four-laned, the segment between 110th Avenue and the 119th Avenue North Bypass Road has only two travel lanes. While the future of 100th Street in the downtown area between 96th Avenue and 105th Avenue is recommended for a reduction to three travel lanes, it is expected that Fort St. John's traffic patterns will shift away from the downtown to the bypass roads and linking connections. This two-lane segment of 100th Street is one of those connections that is expected to experience increasing volumes due to traffic pattern shifts and from future development expansion in the northwest quadrant. Thus, a

recommendation of this TMP is the four-laning of 100th Street between 110th Avenue and the 119th Avenue North Bypass Road to satisfy the future traffic demands along this part of the corridor.

116th Street Four-Laning

116th Street is a key north-south route that intersection 100th Avenue at its most southern end and continues northwards to Rose Prairie Road in the Peace River Regional District. The corridor is classified as an arterial roadway and currently provides a capacity of two travel lanes. By the 2035 horizon year, the average annual daily traffic volume along 116th Street is estimated to increase from 2,000 to 22,000 vehicles due to the significant residential and commercial development expected to occur in the northwest area of the city. Under this anticipated growth scenario, the traffic analysis completed for the future conditions indicated that four-laning will be required to accommodate the traffic demands along 116th Street. The eventual four-laning of 116th Street will need to be studied carefully in combination with the proposed West Bypass Road connection and the reconfiguration improvements identified for the intersections of 100th Avenue / Alaska Highway and 100th Avenue / 116th Street (detailed in the following section). Accesses for new adjacent developments and facilities should be limited and intersections carefully planned along this corridor to protect the arterial traffic function and for safety. Two new schools are proposed immediately adjacent to this segment of 116th Street. Vehicle access, parking, and pedestrian traffic around these schools needs to be carefully planned.

6.3.3 Intersection Operation and Safety Improvements

The City of Fort St. John maintains several intersections across the road network varying in size, function, intersection control, and a variety of other characteristics. Twenty key intersections located across the network were studied using traffic capacity analysis software for the development of this TMP. While the majority of study intersections are currently operating at acceptable performance levels, the future analysis for 2035 found that performance levels are expected to worsen under background and development driven growth. The main locations for intersection improvements are described as follows.

100th Avenue, 116th Street, and Alaska Highway Intersections

The intersection of 100th Avenue with Alaska Highway and the intersection of 116th Street (West Bypass Road) with 100th Avenue will pose a unique challenge for the city's road network. Currently, the two intersections are closely spaced and provide limited storage for queuing given the tight geometry where 116th Street intersects with 100th Avenue. While 100th Avenue currently conveys more traffic than 116th Street towards Alaska Highway, the traffic generated by future residential and commercial development in the city's northwest quadrant is expected to potentially reverse that relation by 2035. By 2035, both intersections are predicted to operate with levels of service 'F' in both the AM and PM peak hours.

A number of improvements to the intersection laning, configuration, phasing, and road alignment were tested using traffic capacity analysis software to determine the general extent of improvements that would be required by 2035 to achieve acceptable levels of service at both intersections. One scenario where acceptable levels were achieved in the traffic model involved reconfiguring the two intersections to have 116th Street (West Bypass Road) intersect with Alaska Highway and 100th Avenue intersect with 116th Street. Further, a number of dual left turn

lanes and added right turn lanes were required in addition to coordinating both intersections. These test improvements were conceptual and a further study focusing on this location is recommended.

Downtown Intersections

The revitalization of the downtown core including 100th Street and 100th Avenue will require improvements to intersections in the downtown along these two roads. While there may be opportunities to maintain the existing signal infrastructure at some intersections, the driving purpose of the revitalization is to improve the pedestrian environment and use of public space. Further, the signal infrastructure and phasing should change to reflect the proposed three-lane cross-section which will include dedicated left turn bays at intersections.

Highway Intersections

The intersections of 100th Street, 92A Street and 86th Street with Alaska Highway are expected to experience degrading levels of service towards 2035, as based on the traffic capacity analysis undertaken in this TMP. Improvements at these intersections will need to be determined in collaboration with the Ministry of Transportation and Infrastructure who has jurisdictional authority over the Highway corridor.

Other City Intersections

The remaining key intersections will require a mix of minor and major improvements. The following intersections are expected to require minor improvements, which generally consist of slight changes to approach laning and phasing updates:

- ▶ 100th Avenue and 96th Street
- ▶ 108th Street and Alaska Highway
- ▶ 86th Street and 100th Avenue
- ▶ Old Fort Road and 85th Avenue

The following intersections are expected to require major improvements, which generally consist of signalization, more complex laning changes, and/or unique site constraints:

- ▶ 100th Street and 112th Avenue
- ▶ 79th Street and 100th Avenue
- ▶ 85th Avenue and 100th Street
- ▶ 97th Avenue and 100 Street
- ▶ West Bypass Road Connector and 100th Street Intersection (future)

6.3.4 Road Network Classification System Update

The roadway network within Fort St. John serves a number of trip purposes and provides access to a variety of land uses and neighbourhood areas. A good classification system should classify roadways in a hierarchical order by levels of access and mobility that is reflected in the design and function of each roadway. The previous road network classification categorized roads by local, minor collector, major collector, and arterial classifications. In many ways, the existing classification system was appropriate to encourage low traffic volumes on local streets and high volumes on collector and arterial streets. However, the integration between some of the city's higher order roads and the adjacent land uses, including 100th Street and 100th Avenue in the Downtown, provided less than ideal results.

The recommended roadway classification system, shown in **Table 5.1** and **Figure 6.3**, places a greater emphasis on aligning the function of each roadway with the adjacent land use to support a greater sense of place and character throughout the city. Many of the minor and major collector roadways maintained their classification as their design, length, speed, and location support their purpose of providing mobility across the city and access to lower and higher order roads. Further, a few previously classified collector roadways are upgraded to Arterial road classifications as they already provide continuous mobility-focused corridors with few access points. The specific roadways and their recommended classifications are summarized as follows:

- ▶ **Provincial Highways** are under the Ministry of Transportation and Infrastructure jurisdiction and serve interregional and provincial travel. The Alaska Highway runs through the south end of Fort St. John and provides access at key intersections. The posted speed within the city is 70 km/hr and parking is prohibited along the Highway. The Alaska Highway also serves as a dangerous goods route.
- ▶ **Arterial Roads** are designed to provide higher speed routes for long distances across the city for medium to high capacities. Access is provided at regularly spaced intersections and private driveways are limited. The recommended arterial roads include:

Arterial Roads

- | | |
|----------------------------|--|
| ▶ 100 th Street | ▶ West Bypass Road Connector |
| ▶ 100 th Avenue | ▶ 86 th Street |
| ▶ 93 rd Avenue | ▶ East Bypass Road (79 th Street) |
| ▶ West Bypass Road | ▶ Old Fort Road |

- ▶ **Collector Roads** provide both mobility and access functions and are designed for medium distance and speed routes. Collectors provide both medium to high capacity and provide access to private driveways. On-street is provided where permitted. The recommended collector roads include:

Major Collector Roads

- ▶ 108th Street
- ▶ 100th Street
- ▶ 100th Avenue
- ▶ 96th/96A Street
- ▶ 93rd Street

Minor Collector Roads

- | | |
|----------------------------|---------------------------|
| ▶ 112 th Avenue | ▶ 97 th Avenue |
| ▶ 112 th Street | ▶ 96 th Avenue |
| ▶ 111 th Avenue | ▶ 93 rd Street |
| ▶ 108 th Street | ▶ 92A Street |
| ▶ 105 th Avenue | ▶ 90 th Street |
| ▶ 104 th Street | ▶ 89 th Avenue |
| ▶ 102 nd Street | ▶ 85 th Avenue |
| ▶ 98 th Street | ▶ 77 Avenue |

Downtown Major Collector Roads

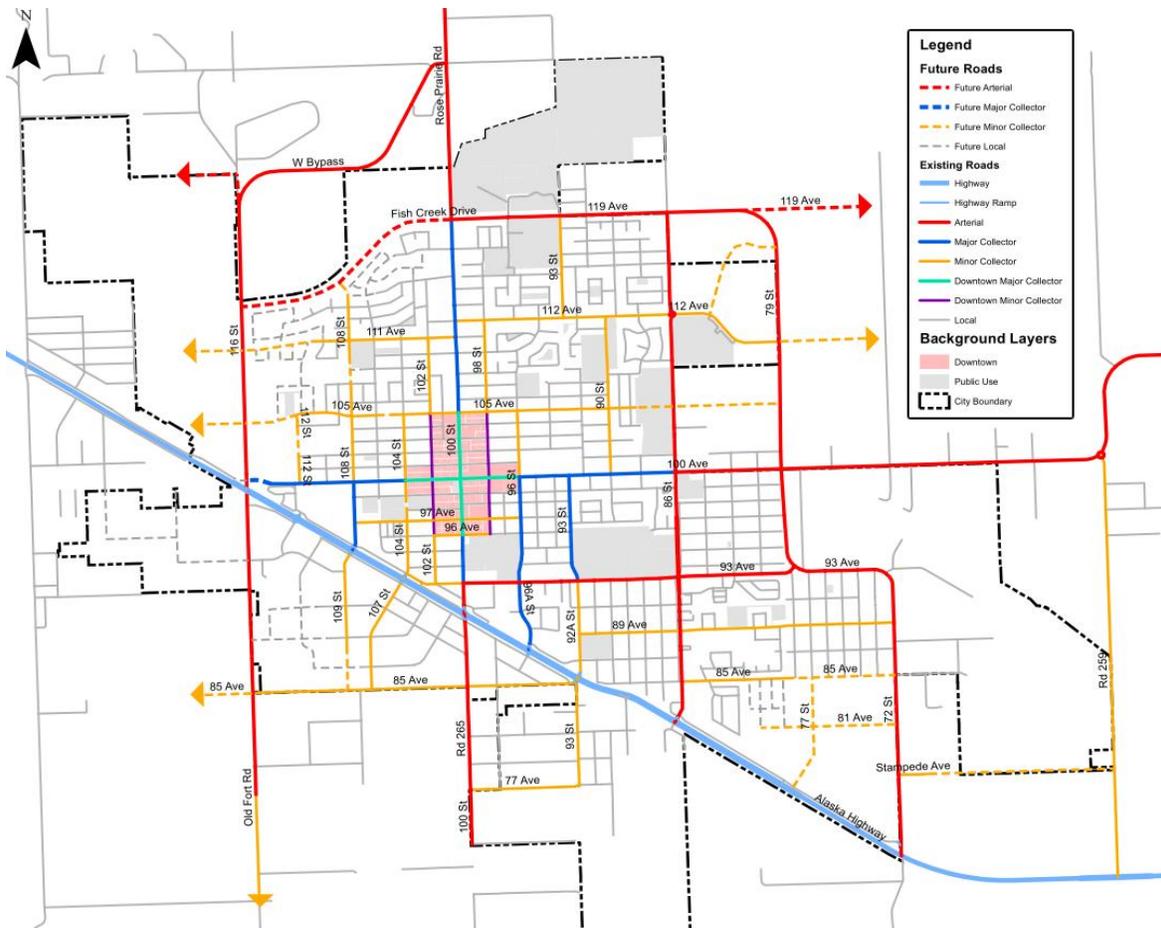
- ▶ 100th Street
- ▶ 100th Avenue

Downtown Minor Collector Roads

- ▶ 102nd Street
- ▶ 98th Street

- ▶ **Local Roads** are primarily designed to provide access to private properties and allow neighbourhood residents access the collector and arterial road system. Parking is permitted on most local roads; however, transit service is normally provided on local roads.

Figure 6.3: Road Network Classification Plan



6.4 Transit Strategy

While public transit is used for a relatively small proportion of daily trips (approx. 8% of daily trips to work/school), for many people transit is a critical service. For those with limited or no reliable access to personal vehicles, transit may be the only practical mode of travel through the city. In addition, public transit is a more efficient travel mode in terms of road space requirements and people moving capacity. In this way increased transit offers benefits in terms of reduced congestion, reduced requirements for roadway infrastructure and equitable access to the transportation system.

Five conventional transit routes, managed by BC Transit and operated by Diversified Transportation Ltd service key nodes within the city, the routes service the vast majority of the city, with Routes 1 (Northside), 2 (Southside), and 3 (Central-Prospect Park) operating on a half hourly to hourly schedule. While, Routes 4 (Southeast), and 5 (Southwest) operate with a single morning and evening weekday service only when school is in session. Based on community and stakeholder feedback the most common requests have been for:

- ▶ More frequent service
- ▶ Longer hours of operation

As transit service in Fort St. John is managed by BC Transit, changes and enhancements to service, routes, and operations should be coordinated with BC Transit. The most recent service review was completed in 2013 (*Fort St. John Transit Service Review – May 2013*). This document made a number of recommendations including proposed routing, funding, and implementation steps. It is recommended that the City and BC Transit continue to review transit service in the city and conduct regular reviews of transit service (i.e. every 5 years).

In addition to on-going service reviews a number of proposed directions are recommended that the City can implement as part of the TMP and its Transit Strategy. These include:

- ▶ Improved Transit Centre
- ▶ Supportive Pedestrian Infrastructure

6.4.1 Improved Transit Centre

Currently there is only one principle transit centre, located east of North Peace Cultural Centre on 100th Street. This transit centre acts as the distribution and connection hub for all five bus routes. It allows transit users to switch buses if they require a combination of two bus routes to reach their destination. It is located in a desirable location at the centre of the city. Current infrastructure at this location is one standard bus shelter and a distance of approximately 32 metres reserved for bus parking along the curb line.

To better promote the use of transit to the community, the transit centre could be improved as part of enhancements to the North Peace Cultural Centre as identified in the Energize Downtown - Phase 2 Summary Report prepared by Modus. If enhancements were completed as per the recommendations and the right-turn exit from the Cultural Centre parking lot is removed, it would enable the full length of the curb (approximately 63 m) to be reserved for bus parking. Improvements to define the area as a transit hub could be applied to showcase the availability of transit and make waiting for transit more desirable. With increased business and programs forecasted to occur in the downtown core, an enhanced transit centre aligns with recommendations for increased pedestrian activity, less vehicles, and less traffic congestion in the downtown core.

Principles of making transit centres desirable places include:

- ▶ Safety;
- ▶ Protection from the elements (wind, rain, snow, sun);
- ▶ Seating;
- ▶ Lighting;

- ▶ Heating (in the colder seasons);
- ▶ Garbage collection; and
- ▶ Transit information (bus route maps, bus arrival times).

Better integration of the transit centre with the public lobby of the North Peace Cultural Centre could be explored to heighten the appeal of transit to the community and bring more people into the Cultural Centre. Viewing windows or real time displays could be added so users can visually track the arrival of buses.

Due to the size of Fort St. John, the current transit routes, and current ridership, we don't anticipate a need for a second transit centre.

6.4.2 Supportive Pedestrian Infrastructure

Transit is dependent on and complimented by pedestrian infrastructure. As all transit trips incorporate a walking trip, high quality pedestrian infrastructure is an important element of an effective and attractive transit system. Consistent with and in addition to the improvements to active transportation infrastructure documented in the Pedestrian and Roadway Plans of the TMP the following recommendations are made:

- ▶ Prioritize the implementation of sidewalks and crosswalks near transit routes;
- ▶ Ensure adequate bus stop and bus shelters along transit routes;
- ▶ Ensure that bus stops and crossings along transit routes are fully accessible, including the provision of sidewalk let downs;
- ▶ Ensure the provision of transit amenities and infrastructure (i.e. sidewalks, crossings, bus stops, and bus shelters) as part of new developments; and
- ▶ Provide signage and wayfinding to indicate transit routes and schedules as well as to direct transit users to common destinations.

6.4.3 Supportive Community Initiatives

The City, in partnership with BC Transit, can implement a number of programs and strategies aimed at improving the level of familiarity with the benefits of regular transit use in the city. The continued and successful implementation of these strategies can be expected to increase ridership and demand over time providing the opportunity for enhanced service. The *"Fort St. John Transit Service Review – May 2013"* report provides recommendations for supportive community initiatives that include:

- ▶ Introduce employee transit incentive programs;
- ▶ Introduce a "Transit Day" where city and elected officials ride the buses and greet the customers;
- ▶ Consider different fare options to encourage ridership; and
- ▶ Pursue the U-Pass program with Northern Lights College to encourage more students to use the transit system.

6.5 Implementation Plan

Implementation of the guiding directions set out in preceding sections of this TMP needs to be carried out through a number of means to help ensure the visions and goals of the TMP are realized. Some of the items discussed in the TMP relate to higher level policies and planning that should be reinforced and implemented in other City planning documents and bylaws such as the OCP, Subdivision and Development Servicing Bylaw, Traffic Bylaw, and Zoning Bylaw. The principles, recommendations and strategies of the TMP also need to be kept in mind and applied whenever new developments are being planned or capital projects are proposed and implemented. The TMP for Fort St. John also requires strategic investments to be made in the capital projects program over the next 20 years.

A fundamental component of the TMP is the development of a realistic capital implementation plan that proposes the projects and associated funding requirements to successfully achieve the proposed network improvements identified within the combined multi-modal transportation network. In addition to applying the vision, goals, policies and plans developed in the TMP, the capital implementation plan details the particular projects and improvements required to complete the plan. This includes the identification of individual project segments, their attributes, and planning level cost estimates.

This information will ultimately assist the City in preparing annual budgets to allocate resources and to develop partnerships and funding opportunities that become available over time. The intent is that the implementation plan will be a resource to support the development of the City's Capital Program where other infrastructure investments will be incorporated and to guide development requirements throughout the city. TMP projects and needs are only one possible input to the capital planning process. There are many other competing infrastructure investments such as rehabilitation and replacement of existing roads and other utilities that will influence, overlap with and change the City's ultimate long term capital plans and priorities for investment in transportation. Actual project implementation and prioritization will also be influenced by the pace and changes in projected growth and development as well as more detailed planning on some of the projects. The final decision on implementing the TMP projects is part of City capital planning and annual budget approval.

Potential financing and funding sources for TMP projects are also discussed below. As part of the implementation plan, a monitoring strategy has also been developed to help ensure that the TMP is implemented as intended, and to determine whether the plan is achieving its outlined vision and goals. This monitoring program will also enable City staff to justify continued expenditures and allocation of resources to implement initiatives of the TMP.

6.5.1 Project Cost Estimates & Project List

Preliminary cost estimates were prepared for each transportation project identified in the Transportation Master Plan. Generalized cost estimating procedures were used and do not include allowances for right of way and property acquisition. Contingency allowances are included in each project estimate to account for engineering costs and costs for unknown constructability constraints. These estimates are high level Class D estimates meant to provide an order of magnitude for the long-term plan that will allow the City to evaluate its allocation of resources and to begin funding discussions with other partners including the Peace River Regional District, BC Ministry of Transportation and Infrastructure, local developers, private industries and other provincial levels of

government. These estimates should not be used for short term capital planning. As the timeline for implementation of specific projects approach, the scope of work and estimates should be refined to provide more accurate budget numbers.

A summary of the Transportation Master Plan projects and preliminary cost estimates is detailed within **Table 6.1**. The projects have been divided into three general categories: growth related projects, projects generally related to the Energize Downtown revitalization process, and bicycle network projects.

Each category of projects has different drivers and serves a different general purpose. There may be some overlap between categories. For example, a growth related project such as 105th Avenue also helps to provide an alternate east-west route to ease traffic in the downtown.

Growth related projects include “retrofit” improvements that propose changes to existing pedestrian, bicycle, and road networks as well as “new connection” projects that propose completely new road or trail connections. Growth related projects are intended to help manage the increasing traffic volumes associated with Fort St. John’s increasing population.

The downtown projects are generally related to helping support the Energize Downtown process by generating a more vibrant and pedestrian friendly downtown. These projects include modifying the form and function of the major downtown corridors (100th Street & 100th Avenue). Also included are improvements to the roads (and new connections) surrounding the downtown to increase capacity for routes bypassing the downtown.

The bicycle network category includes bicycle and multi-use trail projects that serve to improve the bicycle and pedestrian networks.

The projects are also displayed graphically on Figure D-4 in Appendix D. A more detailed breakdown of the project list can be found in Appendix F.

Table 6.1: Implementation Plan - Project List

Project Name	Project Extents	Improvement Type	Transportation Mode	Roadway Classification	Intersection Improvements	Cross-Section	Project Cost
GROWTH PROJECTS							
105 Avenue Minor Collector & MUT Upgrade	88 Street to 108 Street	New Road Link	Active	Minor Collector	-	C2	\$3,780,000
108 Street Connector	108 Avenue to 109 Avenue	New Road Link	Roads / Active	Minor Collector	-	C3	\$540,000
100 Street Four-Laning Upgrade	110 Avenue to 119 Avenue	Four Laning Upgrade	Roads	Major Collector	Two Moderate Improvements	C9	\$11,240,000
105 Avenue Connector	88a Street to 86 Street	New Road Link	Roads / Active	Minor Collector	-	C2	\$1,310,000
116 Street Arterial Four-Laning Upgrade	Alaska Highway 97 to Road 267	Four Laning Upgrade	Roads	Arterial	Two Major Improvements	A1	\$10,080,000
Fish Creek Drive Connector	100 Street to 116 Street	New Road Link	Roads	Arterial	Two Moderate Improvements	A2	\$9,610,000
Other Intersection Improvements	Various	Retrofits	Roads	Various	One Minor, Five Moderate, and Two Major Improvements	Various	\$4,650,000
TOTAL GROWTH PROJECTS							\$41,210,000
DOWNTOWN PROJECTS							
Downtown Area Bike Route Network	Downtown Area	New Links / Retrofits	Active	Various	-	Various	\$3,900,000
Downtown Revitalization - 100 Street	97 Avenue to 105 Avenue	Energize Downtown Plan	Roads / Active	Downtown Collector	-	DT2	\$6,040,000
97 Avenue Minor Collector Upgrade	96 Street to 108 Street	Retrofit	Roads	Minor Collector	One Minor Improvement	C3	\$1,850,000
Downtown Revitalization - 100 Avenue	96 Street to 104 Street	Energize Downtown Plan	Roads / Active	Downtown Collector	One Minor & Three Moderate Improvements	DT2	\$7,110,000
104 Street Minor Collector Connector	95 Avenue to 99 Avenue	New Road Link / Retrofit	Roads / Active	Minor Collector	-	C3	\$2,400,000
TOTAL DOWNTOWN PROJECTS							\$21,300,000
BICYCLE & TRAIL PROJECTS							
86 Street Upgrades with Multi-Use Trail	Alaska Highway 97 to 96 Avenue	New MUT Link	Active	Arterial	-	A4	\$2,560,000
92A Street with Multi-Use Trail Upgrade	Alaska Highway 97 to 93 Avenue	New MUT Link	Active	Minor Collector	-	C1	\$1,290,000
90 Street Bike Route	100 Avenue to 112 Avenue	Retrofit	Active	Minor Collector	-	C5	\$820,000
85 Avenue Bike Route	86 Street to 79A Street	Retrofit	Active	Minor Collector	-	C5	\$610,000
116 Street Multi-Use Trail	Alaska Highway 97 to Road 267	New MUT Link	Active	Arterial	-	A1	\$260,000
TOTAL BICYCLE & TRAIL PROJECTS							\$5,540,000
GRAND TOTAL							\$68,050,000

Costs for Other Continuous Improvements

In addition to the capital costs estimated for the projects and other intersection improvements, an annual allowance for other continuous improvements has been included. This could include items such as construction of new sidewalks and lighting in existing areas of the city, shared travel lane or bike route signage and pavement marking, supportive pedestrian facilities like street trees, crossing treatments, and accessibility features, transit stop and transit centre improvements, and other miscellaneous improvements. Many of these types of improvements can be incorporated into larger capital projects as part of retrofit road reconstruction projects, new subdivision construction, or downtown revitalization projects. For existing areas of the community where larger projects are not planned, it’s important to develop a more detailed approach for implementation and budget accordingly so that these aspects of the TMP can be implemented across the community.

An annual allowance was specifically estimated for sidewalks improvements as shown in **Table 6.2**. For other potential improvements, a small allowance has been included. The intention of this allowance is to provide a starting point for planning and allocating funding towards a number of these smaller, yet still important measures and recommendations that have been identified in each of the modal plans in the TMP. This allowance should be reviewed and adjusted annually to reflect the desired scope of work for particular projects. The allowance for sidewalk improvements was determined based on previous annual capital costs. This allowance is for approximately one block or 200 to 250 metres of new sidewalk per year. The allowance is intended to provide a starting point for sidewalk improvement budgeting and should be adjusted to reflect the actual extents of projects desired to be completed in any given year. These improvements should be focused on the priority areas identified on the pedestrian network map (**Figure D-3**) provided in **Appendix D**.

Table 6.2: Implementation Plan - Other Improvements

Improvement Type	Annual Capital Cost Estimate
Pedestrian Sidewalk Improvements	\$ 300,000
Miscellaneous Improvements	\$ 50,000
Total of Other Annual Capital Improvements	\$ 350,000

6.5.2 FINANCING & FUNDING SOURCES

As the desire and need to implement the identified projects of the TMP arise, there exist different financing tools that the City can utilize to offset the total cost of capital projects. The principles that are applied when considering financing tools are:

1. The services required by growth are paid for by growth (e.g. new roads, wider roads); and
2. Enhancements to the community are paid for by the greater community (e.g. trails and sidewalks at places where there were none).

Below is a snapshot of relevant financing tools that could be applied to assist in the implementation of projects within the TMP:

Sources of Capital

▶ Grants

Senior government grants are a source of capital to offset the City's portion of capital investment. Some of the projects identified are large in scale, serve the broader community, and can promote economic development. Others projects are enhancements to the transportation network that encourage active transportation, cycling, and healthy living. There are reoccurring grants that align with these principles.

▶ Borrowing (Short Term or Long Term)

Local governments can borrow funds on a short or long term basis. Short term borrowing may not exceed a five year period and a maximum of \$50 per capita for all capital projects combined that a local government may borrow at any one time. Short term borrowing must be approved by bylaw but does not require elector assent. Long-term borrowing is used to front-end the cost of all types of new infrastructure. It requires a loan authorization bylaw and has a maximum term of 30 years.

Cost Recovery

▶ Development Cost Charges (DCC'S)

DCCs are designed to assist local governments in recovering expenditures on growth-related infrastructure. They can be used to finance the provision, construction, alteration or expansion of highways (roadways) and can be applied where there is a need to expand the existing capacity to accommodate growth.

DCCs are one-time charges levied against residential, commercial, industrial and institutional developments that impose a capital cost burden on the local government. As the City is undergoing a DCC update process in the near future, TMP projects should be considered for DCC eligibility.

▶ Specified Area / Local Area Service (LAS)

A local government may, by bylaw, undertake any service for the special benefit of a specified area of the municipality. The cost of the service provided must be borne by the property owners within the specified area, and/or the users of the service. The cost of the service is usually financed through borrowing and then recovered from property owners over time through either a tax or other fees or charges.

Developer Build Agreements

▶ Latecomer Charges

A latecomer charge is a charge imposed on properties which connect to, or use, excess or extended services. A local government may require that the owner of land that is to be subdivided or developed provide excess or extended services, which are facilities or infrastructure that services properties other than the land being developed.

Latecomer charges are intended to have the developer front-end the expenditure. However, the cost of providing the excess or extended services can be financed by either the local government itself, or the owner of the land being developed. The party that front-ends the costs is entitled to compensation from latecomers who benefit from the excess or extended service. The compensation paid is the latecomer charge.

Latecomer charges can only be collected for a maximum of ten years from the date on which the excess or extended services are completed.

► **Development Works Agreement**

A development works agreement (DWA) is an agreement between a municipality and a developer for the provision of off-site infrastructure (including highway) highway facilities to a new development area of the community.

A DWA can hold either the municipality or the developer responsible for providing (and financing) the works, however the intent is that the works be provided by the developer, usually as a condition of development approval. The property owners in the affected area must pay the charge associated with a DWA before development can occur.

Partnerships

Partnerships are an appropriate funding strategy for various public agencies and private organizations to cost share on projects that pose a mutual benefit to each party. Projects that dissect various levels of governments in achieving common goals for the community position the City well to take advantage of potential partnership opportunities. The Ministry of Transportation and Infrastructure is an obvious partner on regional projects such as Highway 97. BC Transit and the Insurance Corporation of British Columbia (ICBC) are also notable agencies that have the potential to provide partnership opportunities for various projects within the community.

In addition many of the roads and trails around the peripherals of Fort St. John will require partnerships with neighbouring jurisdictions.

6.5.3 Monitoring Strategy

A monitoring strategy is essential to ensure that the TMP is implemented as intended, and to determine whether the plan is achieving its established visions and goals. A monitoring program will also enable City staff to justify continued expenditures and allocation of resources to implement prioritized initiatives of the TMP. Given the long-term vision of the TMP, monitoring also provides a means of identifying changing conditions within the community.

As outlined within the TMP, the vision of the plan is to provide an efficient multi-modal transportation network that enhances the quality of life for residents by supporting environmental, economic, and social sustainability to make the community vibrant, safe, and accessible. The initiatives and projects identified within the TMP and this Implementation Plan go beyond transportation issues and help to support the overarching goals and objectives of the City of Fort St. John's Official Community Plan (OCP), assisting in achieving the community's broader goals

within the community. As part of these broader impacts, the monitoring strategy can focus on the effects of network improvements throughout all aspects of the community.

The monitoring program is recommended to evaluate the progress on the TMP in terms of the following attributes:

1. **Meaningful.** The monitoring strategy should yield meaningful results and point to the success in achieving the broader vision, goals and targets of the Transportation Plan.
2. **Measurable.** The monitoring program needs to establish criteria that are readily measurable and for which data or information can be readily obtained.
3. **Manageable.** The monitoring program needs to take into account the resource limitations of the City of Fort St. John and is intended to identify measures where information is accessible or data is simple to collect.

With the consideration of the above attributes the monitoring program is recommended to focus on two main components: first, the **degree of progress** in implementing the plan, and secondly, the **outcomes of the plan**, as summarized below:

▶ **Progress Implementing the Plan**

- ▶ Number of completed projects identified in the TMP:
 - Sidewalks Improvements (# projects)
 - Bicycle Route Improvements (# projects)
 - Road Network Improvements (# projects)
 - Transit Improvements (# projects)
- ▶ Annual investment levels:
 - Walking (\$ and % of City's total transportation capital investments)
 - Cycling (\$ and % of City's total transportation capital investments)
 - Street Network (\$ and % of City's total transportation capital investments)
 - Transit (\$ and % of City's total transportation capital investments)
- ▶ Network development:
 - Sidewalk network (km of new/retrofitted facilities)
 - Bicycle Network (km of new facilities)
 - Road Network (km of new/retrofitted facilities)

▶ **Outcomes Achieved from the Plan**

- ▶ Mode Share of Work Trips:
 - Transit (%)
 - Walking (%)
 - Cycling (%)
- ▶ Performance Level of Services:
 - Road Network Performance (LOS)

- Road Safety Performance (ICBC Collision Data)
- Transit (annual transit service hours)
- ▶ Infrastructure Enhancement:
 - Walking (% of sidewalk coverage within strategic area)
 - Cycling (% of Bike Network Plan complete)
- ▶ Proximity of Network to Community:
 - Walking (% of road network with sidewalks)
 - Cycling (% of community with local access to bicycle routes)

It is recommended that the City monitors progress in each of these areas every 1-2 years, based on data availability. Incremental targets can be established by the City, however, given the long-term vision of the TMP, priorities for capital investment may vary. Monitoring progress and outcomes is a starting point for this new plan that will provide a baseline of information. This information can be used when the TMP is updated and revisited in the future to track progress and help to decide if more specific targets need to be set and associated implementation strategies refined. It is important that the monitoring strategy emphasizes the overarching vision and goals of the TMP and the benefits to the community rather than the prioritization of individual projects.

6.5.4 Closing

The Transportation Master Plan is intended to be a high level transportation planning tool. Many of the ideas outlined build on and reinforce transportation planning goals from previous City plans, policy documents, and work such as the Official Community Plan, Energize Downtown Plan, Metroquest Vision, Vision 2020, Today and Tomorrow: Our Strategic Plan, and the Community Energy and Emissions Plan (CEEP). Moving forward with implementing the TMP is important for a number of reasons:

- ▶ To support other City initiatives such as future updates to the OCP, Zoning Bylaw, Subdivision & Development Servicing Bylaw, and Energize Downtown Process;
- ▶ To guide and support project selection for expanding Development Cost Charges (DCC's) to include transportation;
- ▶ To inform and support staff and City Council decisions on transportation and land use matters for existing areas and new developments;
- ▶ To promote a healthy and active community;
- ▶ To help the City to work in partnership with local businesses, organizations, institutions, and municipal, regional, and provincial governments in making informed future transportation decisions; and
- ▶ To assist the City with preparing annual budgets and developing Capital Plans.

The TMP is a living document that should evolve and be updated over time. As mentioned, the TMP helps inform other plans and documents, but in turn it can also be updated as a result of new information and direction provided by future City plans, policies and decisions. At a minimum, given the rapid growth in the Peace region, the plan should be reviewed and updated every 5 years so that it can remain current and up to date.

APPENDIX A

Existing Conditions Package

**Transportation
Masterplan
Existing Roads**

- Legend**
- Road Class**
-  Highway
 -  Highway Ramp
 -  Arterial
 -  4-Lane Collector
 -  2-Lane Collector
 -  Local
- Background Layers**
-  Education
 -  Health
 -  Sports & Culture
 -  Parks
 -  City Boundary

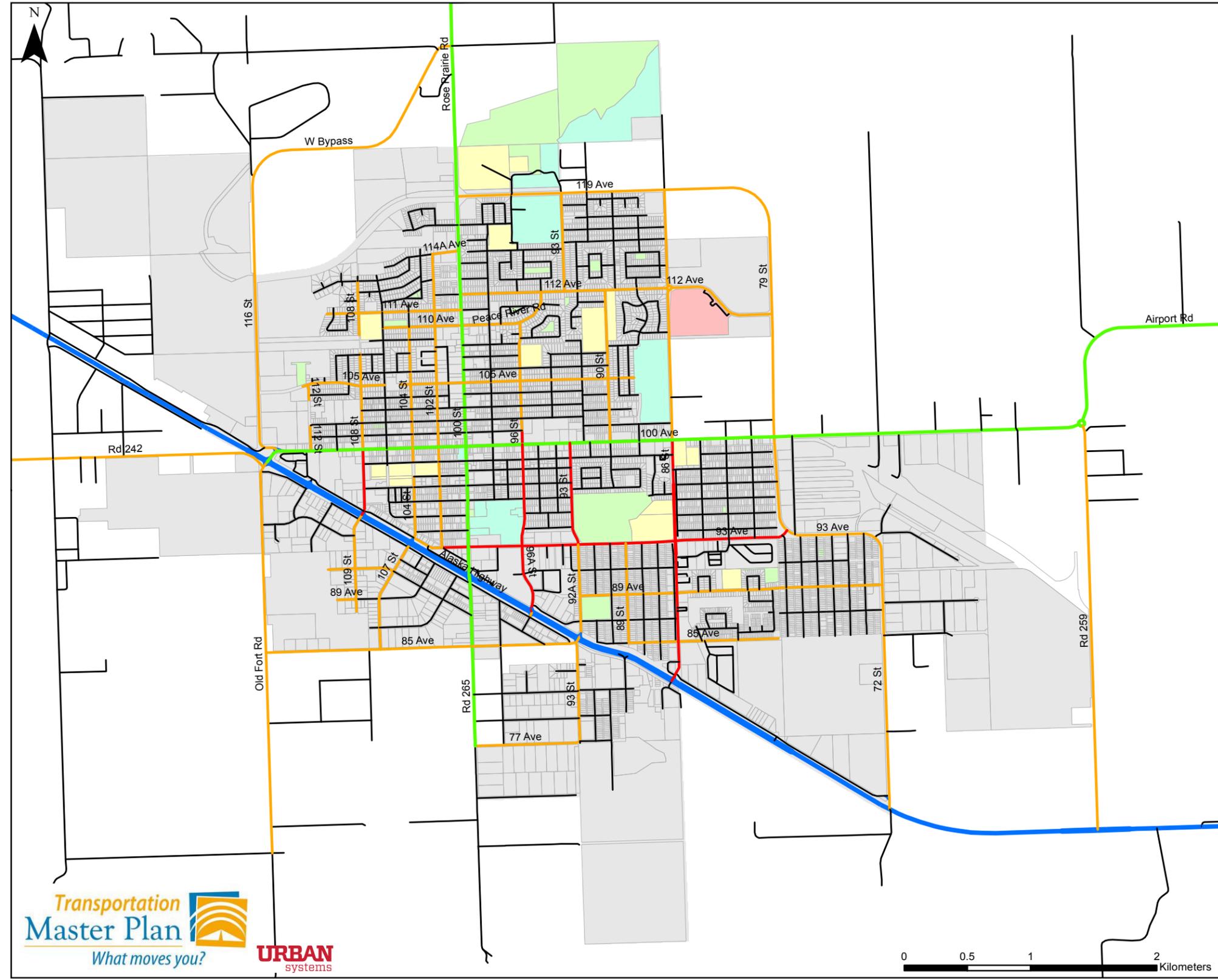


FIGURE A-1

THE ACCURACY & COMPLETENESS OF INFORMATION SHOWN ON THIS DRAWING IS NOT GUARANTEED. IT WILL BE THE RESPONSIBILITY OF THE USER OF THE INFORMATION SHOWN ON THIS DRAWING TO LOCATE & ESTABLISH THE PRECISE LOCATION OF ALL EXISTING INFORMATION WHETHER SHOWN OR NOT.

Source: City of Fort St. John, January 2013

**Transportation
Masterplan**
Average Daily
Traffic Volumes

Legend
City Boundary

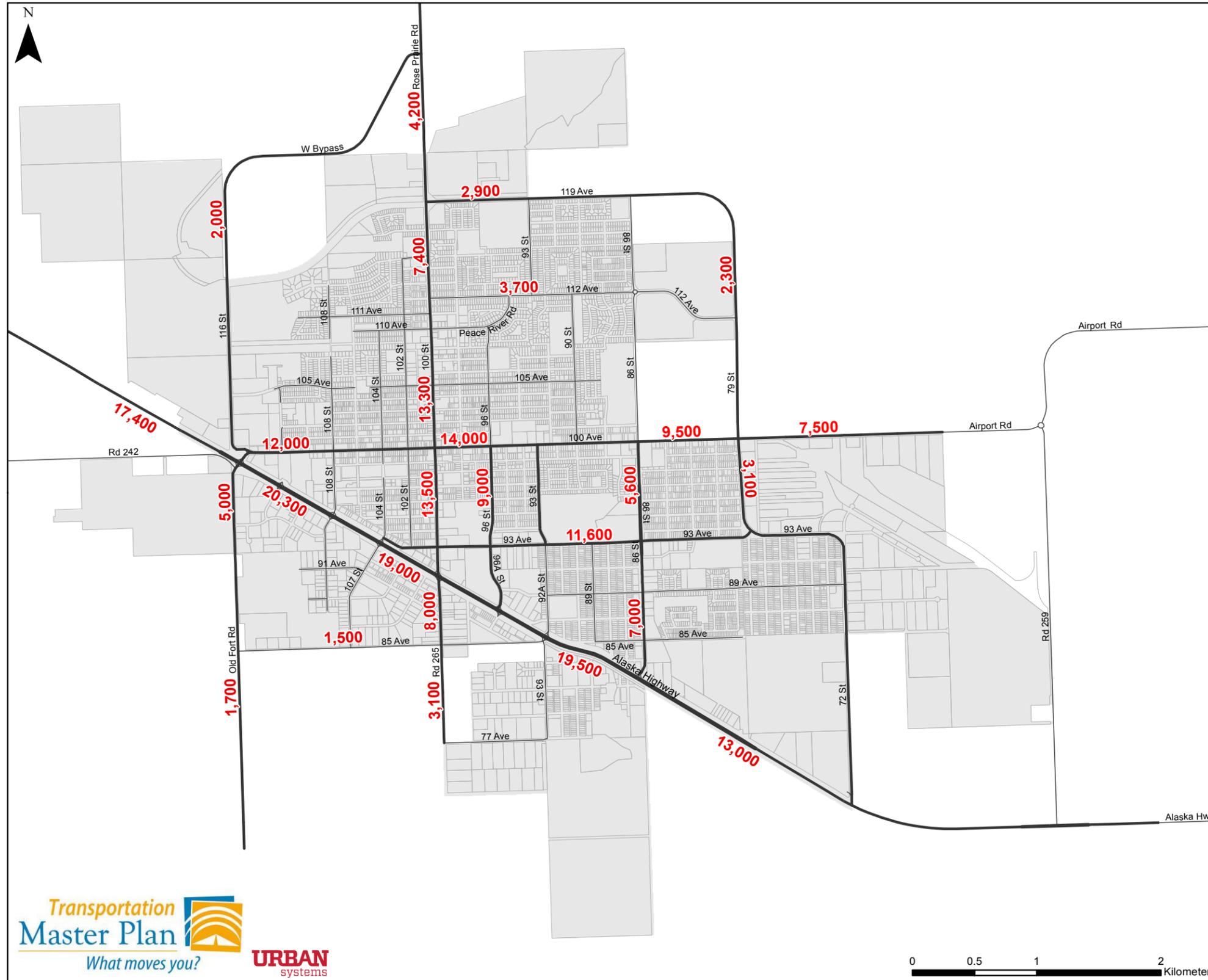


FIGURE A-2

THE ACCURACY & COMPLETENESS OF INFORMATION SHOWN ON THIS DRAWING IS NOT GUARANTEED. IT WILL BE THE RESPONSIBILITY OF THE USER OF THE INFORMATION SHOWN ON THIS DRAWING TO LOCATE & ESTABLISH THE PRECISE LOCATION OF ALL EXISTING INFORMATION WHETHER SHOWN OR NOT.

Source: City of Fort St. John & ICBC (2014)

Transportation Masterplan
Intersection Mobility Performance

Legend
City Boundary

Intersection Mobility Performance (PM Peak Hour)

Intersection Delay		
	Signalised	Unsignalised
● A	<= 10 secs	<= 10 secs
● B	> 10 & <= 20 secs	> 10 & <= 15 secs
● C	> 20 & <= 35 secs	> 15 & <= 25 secs
● D	> 35 & <= 55 secs	> 25 & <= 35 secs
● E	> 55 & <= 80 secs	> 35 & <= 50 secs
● F	> 80 secs	> 50 secs

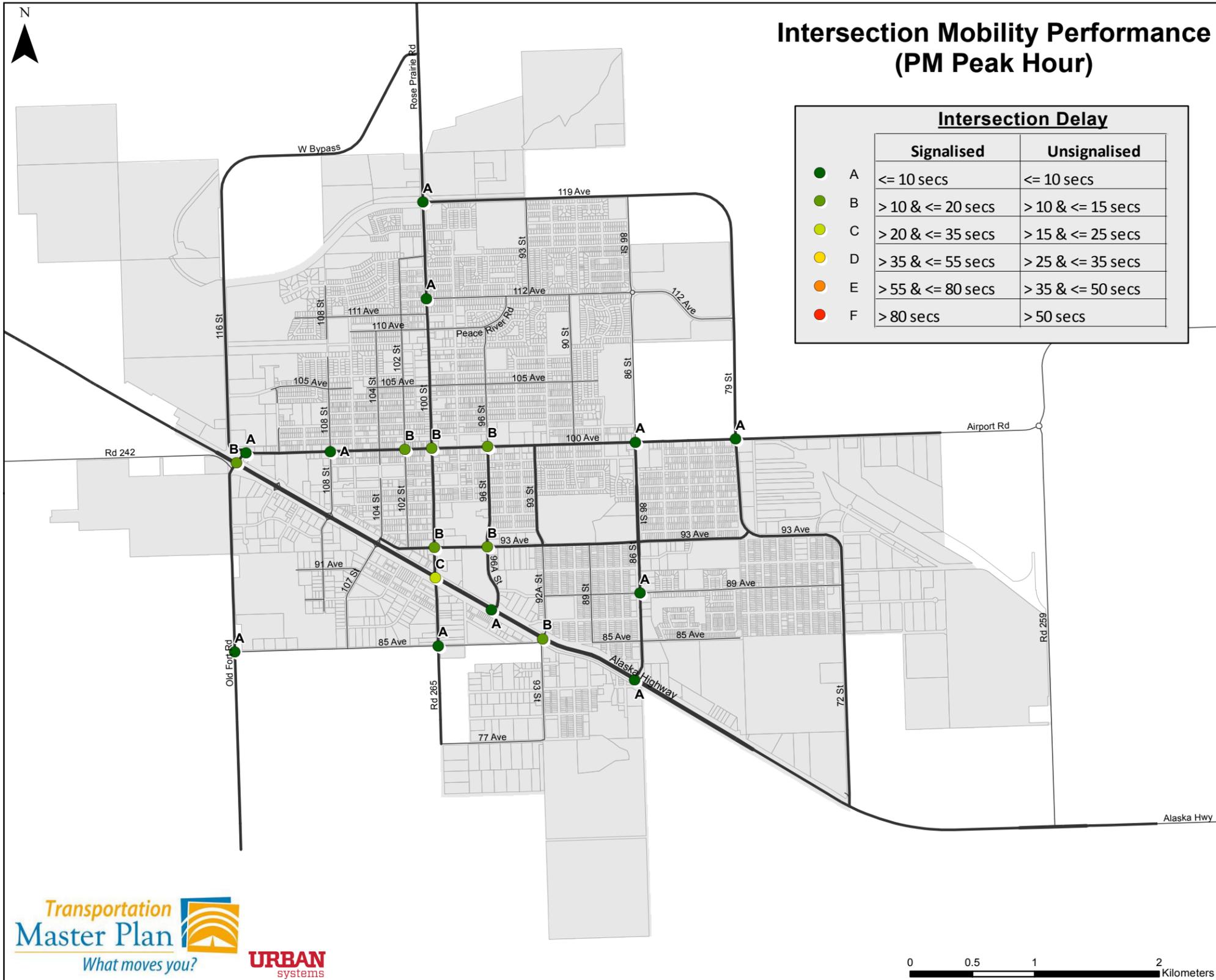


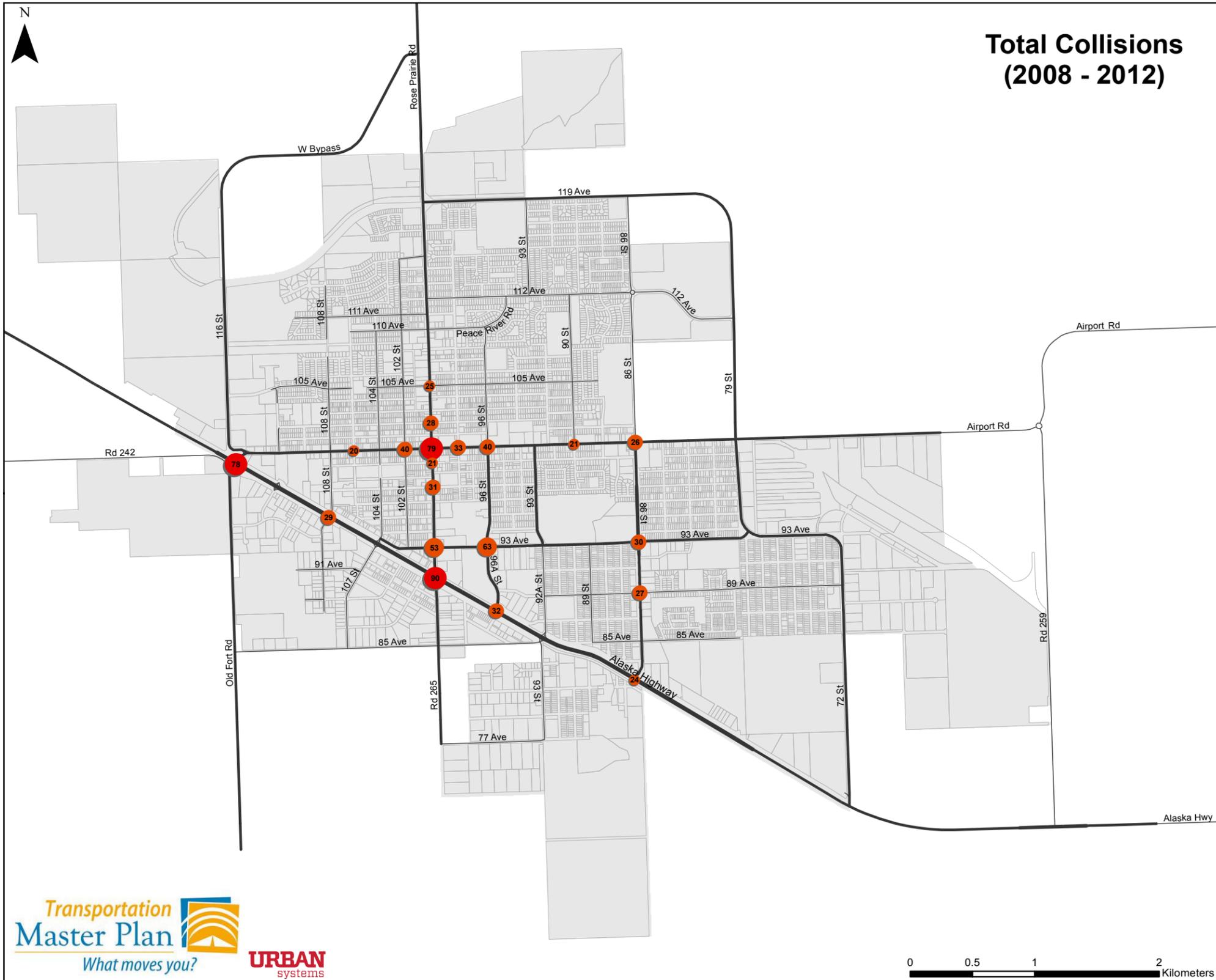
FIGURE A-3

THE ACCURACY & COMPLETENESS OF INFORMATION SHOWN ON THIS DRAWING IS NOT GUARANTEED. IT WILL BE THE RESPONSIBILITY OF THE USER OF THE INFORMATION SHOWN ON THIS DRAWING TO LOCATE & ESTABLISH THE PRECISE LOCATION OF ALL EXISTING INFORMATION WHETHER SHOWN OR NOT.

Source: City of Fort St. John & ICBC (2014)

**Transportation
Masterplan
Collision Data**

Legend
City Boundary



**Total Collisions
(2008 - 2012)**

FIGURE A-4

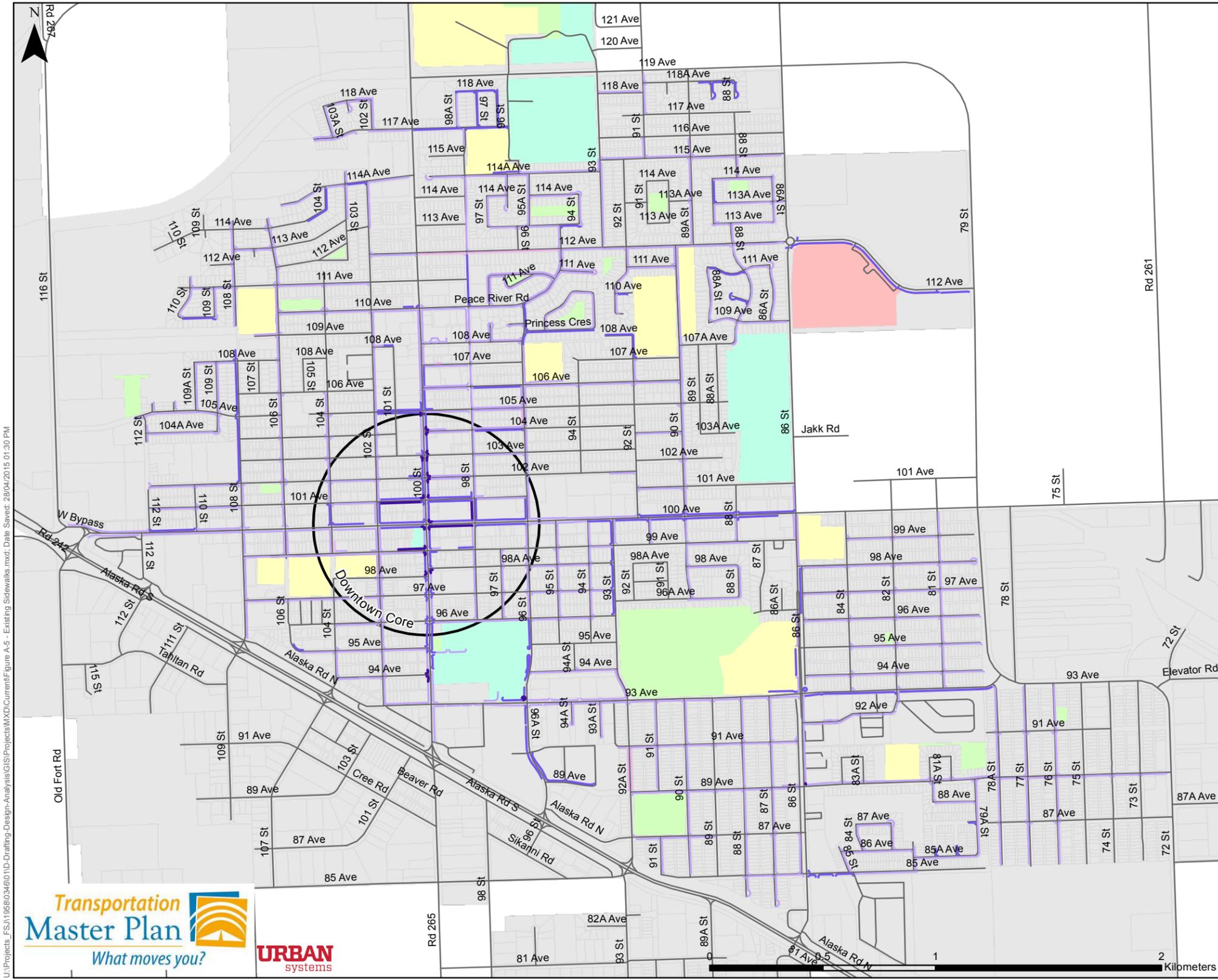
THE ACCURACY & COMPLETENESS OF INFORMATION SHOWN ON THIS DRAWING IS NOT GUARANTEED. IT WILL BE THE RESPONSIBILITY OF THE USER OF THE INFORMATION SHOWN ON THIS DRAWING TO LOCATE & ESTABLISH THE PRECISE LOCATION OF ALL EXISTING INFORMATION WHETHER SHOWN OR NOT.

Source: City of Fort St. John & ICBC (2014)

Transportation Masterplan

Existing Sidewalks

- Legend**
- Sidewalk Width**
- Less than 1.5m
 - 1.5m
 - 1.8-2.0m
 - Greater than 2.0m
- Background Layers**
- Education
 - Health
 - Sports & Culture
 - Parks
 - City Boundary



U:\Projects_FSJ\195680346\010-Drafting-Design-Analysis\GIS\Projects\MapX\Current\Figure A-5 - Existing Sidewalks.mxd; Date Saved: 26/04/2015 01:30 PM

Source: City of Fort St. John, January 2013

FIGURE A-5

THE ACCURACY & COMPLETENESS OF INFORMATION SHOWN ON THIS DRAWING IS NOT GUARANTEED. IT WILL BE THE RESPONSIBILITY OF THE USER OF THE INFORMATION SHOWN ON THIS DRAWING TO LOCATE & ESTABLISH THE PRECISE LOCATION OF ALL EXISTING INFORMATION WHETHER SHOWN OR NOT.

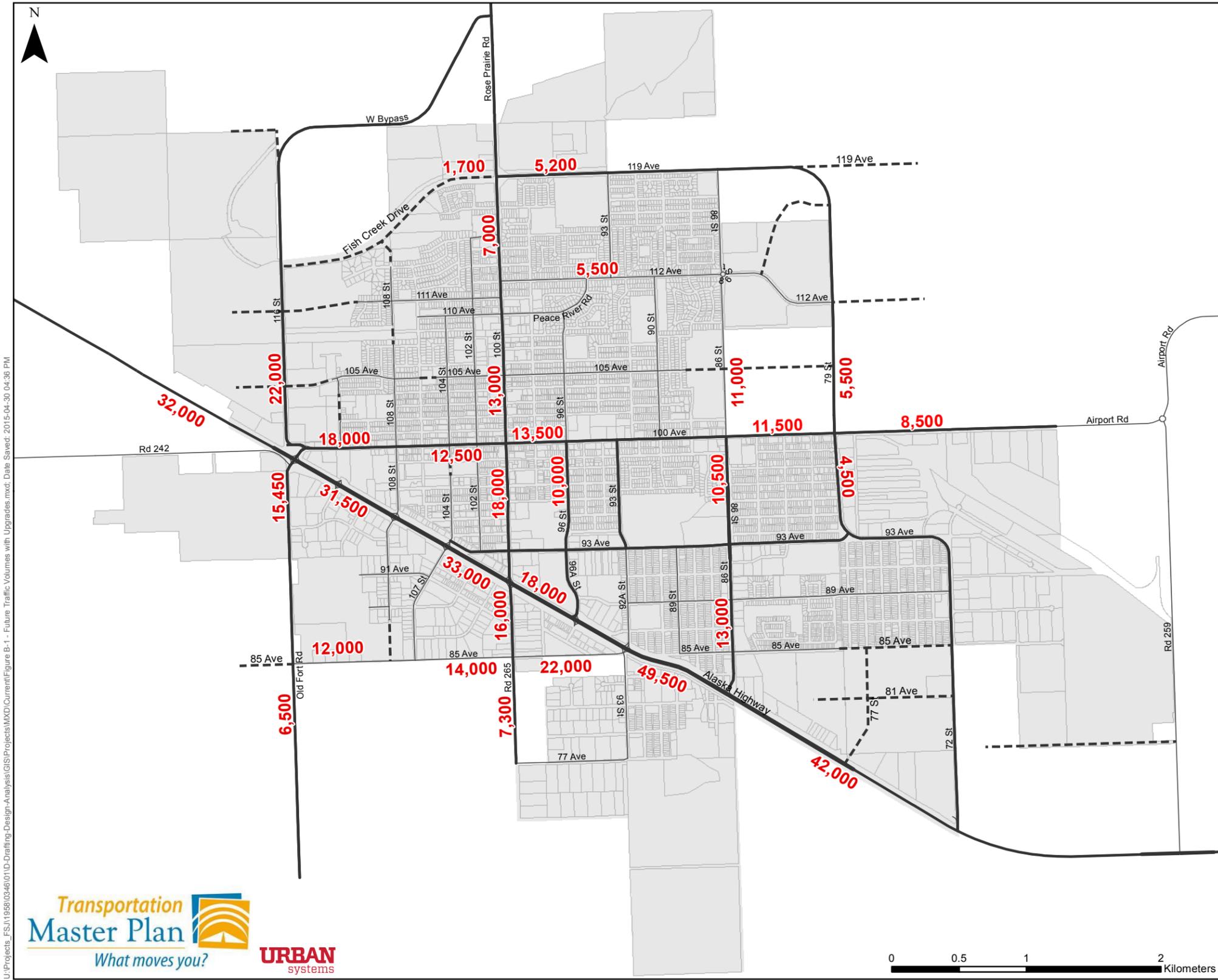
APPENDIX B

Future Conditions Package

Transportation Masterplan
2034 Forecasted Average Daily Traffic Volumes with Future Network Improvements

Legend

- - - Future Major Roads
- Existing Major Roads
- City Boundary



U:\Projects_FSU\1958\0346\01\0-Drafting-Design-Analysis\GIS\Projects\Map\Current\Figure B-1 - Future Traffic Volumes with Upgrades.mxd; Date Saved: 2015-04-30 04:36 PM

Source: City of Fort St. John & ICBC (2014)

FIGURE B-1

THE ACCURACY & COMPLETENESS OF INFORMATION SHOWN ON THIS DRAWING IS NOT GUARANTEED. IT WILL BE THE RESPONSIBILITY OF THE USER OF THE INFORMATION SHOWN ON THIS DRAWING TO LOCATE & ESTABLISH THE PRECISE LOCATION OF ALL EXISTING INFORMATION WHETHER SHOWN OR NOT.

APPENDIX C

Summary of Stakeholder Feedback

City of Fort St. John – Transportation Master Plan

CHALLENGES		IDEAS	
Current	Future	Current	Future
<p>ROADS</p> <ul style="list-style-type: none"> • Poor condition of roads • Higher speeds resulting from paved roads • 100th Ave and 100th Street – difficult crossing 4 lanes of traffic • High volume of large truck traffic in city (creates noise and dirty streets) • Lighting and intersections along highway • Access to the Alaska Highway • Little use of bypass routes (using 100th Ave/ 100th St instead) <ul style="list-style-type: none"> – How will it work in 20 years? Same speed (50 km/hr)? • Highway traffic through town should be moved south 	<p>ROADS</p> <ul style="list-style-type: none"> • Expand boundary / bypass to the east to encompass developed areas and associated traffic patterns • Bypass / dangerous goods route adjacent to residential and new development • East Bypass Road is becoming a residential road • West Bypass Road will be impacted by residential development (i.e., Sunset Ridge, new boundary) • Need attention to 112th Ave as it is becoming an arterial road • External population + overall traffic (i.e., Charlie Lake) 	<p>ROADS</p> <ul style="list-style-type: none"> • Put some order to the street grid • Improved access at A&W intersection • Highway intersections are dangerous for pedestrian crossing • Highway 97 improvements <ul style="list-style-type: none"> – Intersection spacing – Left turns • 100th St / 112th Ave & 100th St / Hwy 97 should have left turn access • Should 100th St be moving traffic through town or rather be a main street for residents? Why is traveling through town the fastest route? • Reign TMP back to 10 years, because growth is so rapid 	<p>ROADS</p> <ul style="list-style-type: none"> • HOV lanes • New truck routes (ring roads) outside of the city <ul style="list-style-type: none"> – Disaster routes for highway • Charging stations for electric and hybrid vehicles • Reduce / slow traffic in downtown to make it more walkable • Highway bypass • 100th Ave out to Airport (East Bypass Rd) – make it 4 lanes instead of 2 • Improve access to Greenridge Heights • Traffic calming / enforcement
<p>PARKING</p> <ul style="list-style-type: none"> • School traffic and parking (buses, pedestrians, cars) <ul style="list-style-type: none"> – Parking work trucks in residential areas creates mud and noise 	<p>PARKING</p> <ul style="list-style-type: none"> • More high school kids with vehicles 	<p>PARKING</p> <ul style="list-style-type: none"> • Truck parking <ul style="list-style-type: none"> – Overnight – Hotel truck parking – shuttle service • Trucks not parking on roads 	<p>PARKING</p> <ul style="list-style-type: none"> • Parking nodes to park with connection to active transportation • Use of S/W as parking or snow storage

City of Fort St. John – Transportation Master Plan

CHALLENGES		IDEAS	
Current	Future	Current	Future
<ul style="list-style-type: none"> – Parking on both sides of the road results in low visibility – On-street parking challenges: – Fast food establishments on frontage roads – Snow clearing – Drive-thrus – Wrong way parking – Downtown parking 		<p>because of RV in driveway</p>	<ul style="list-style-type: none"> • Parkade downtown; larger parking lots • Encourage underground parking
<p>COMMUNITY DEVELOPMENT</p> <ul style="list-style-type: none"> • Need organizations to be thinking ahead to the population they serve now and in the future • No signage for cyclists • Demographics • How do people get around? Many come with attitudes and habits from other cities • Gasoline alley development will continue 	<p>COMMUNITY DEVELOPMENT</p> <ul style="list-style-type: none"> • Future accurate population projections • GHG Emissions • Climate change <ul style="list-style-type: none"> – Forces we cannot control • Boundary in 20 Years? <ul style="list-style-type: none"> – Charlie Lake – Clairmont – Grandhaven • Population is projected to double in 10 years 	<p>COMMUNITY DEVELOPMENT</p> <ul style="list-style-type: none"> • Family-friendly community (safe, active, connected) • City’s 8 year building plan completed in 3 years – what does this mean for any 20 year plan (including the TMP)? • How do we change our mental perception? <ul style="list-style-type: none"> – Physical infrastructure changes • Make living, working, and getting around the city more enjoyable 	<p>COMMUNITY DEVELOPMENT</p> <ul style="list-style-type: none"> • Signage, way-finding, lane markings – help people use the roads safely • City integration with PRRD (seamless boundary) • A green city <ul style="list-style-type: none"> – Idle free – Visually pleasant • Need revisions to bylaws to support vision • Schools built for walking, not driving • Downtown movements <ul style="list-style-type: none"> – Mixed use, geometry

City of Fort St. John – Transportation Master Plan

CHALLENGES		IDEAS	
Current	Future	Current	Future
<p>ACCESSIBILITY</p> <ul style="list-style-type: none"> • Sidewalks (too narrow for wheelchairs and strollers) • 100th Ave east – no sidewalk beyond 86th St • Inconsistent and inadequate lighting on trails • Location of pedestrian crossing buttons is difficult to access 	<p>ACCESSIBILITY</p> <ul style="list-style-type: none"> • Accessibility for all individuals throughout all seasons 	<p>ACCESSIBILITY</p>	<p>ACCESSIBILITY</p> <ul style="list-style-type: none"> • Accessible transportation 24/7 (especially to the airport)
<p>MULTI MODAL</p> <ul style="list-style-type: none"> • More transit options (smaller buses, wheel chair taxis) • Sharing trails with dogs / cyclists • Cycling is difficult and unsafe (bikes on sidewalks) 	<p>MULTI MODAL</p> <ul style="list-style-type: none"> • Promote alternate transportation as attractive/ change in mentality • Trails need to be upgraded and expanded like roads 	<p>MULTI MODAL</p> <ul style="list-style-type: none"> • Active transportation is faster than transit. Promote: • 10,000 step campaign • Walk to work • Needs to be planned • Bus routes (considerable areas are not serviced) • GPS application for bus transportation information • Expansion of walking trails and bike trails to include Charlie Lake, airport • Pedestrian connections (no dead ends and safe) 	<p>MULTI MODAL</p> <ul style="list-style-type: none"> • More transit options (evening transit for Lido, Cultural Centre, events) • Needs to be more user friendly • Connect to Charlie Lake / Taylor • Later hours • Multi-modal transportation options (walking, driving, bus / taxi, bike) • Enclosed / covered walkways downtown • Sky trains – in 50 years • Cycling safety, bike parking • Car / bike sharing

APPENDIX D

Transportation Master Plan Network Plans



FORT ST. JOHN
The Energetic City
**Transportation
 Masterplan**
 Future Road
 Network Classification

Legend

Future Roads

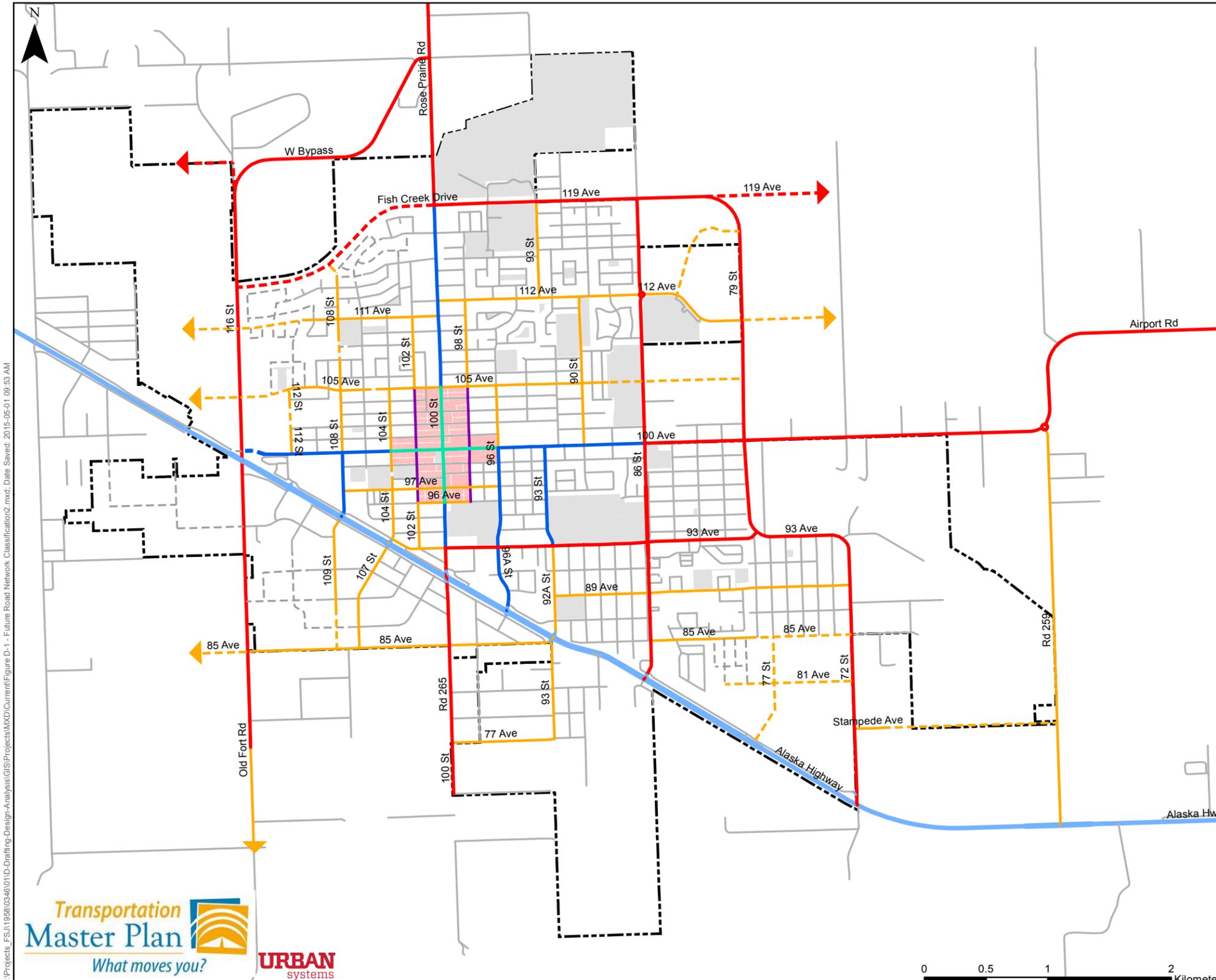
- - - Future Arterial
- - - Future Major Collector
- - - Future Minor Collector
- - - Future Local

Existing Roads

- Highway
- Highway Ramp
- Arterial
- Major Collector
- Minor Collector
- Downtown Major Collector
- Downtown Minor Collector
- Local

Background Layers

- Downtown
- Public Use
- City Boundary



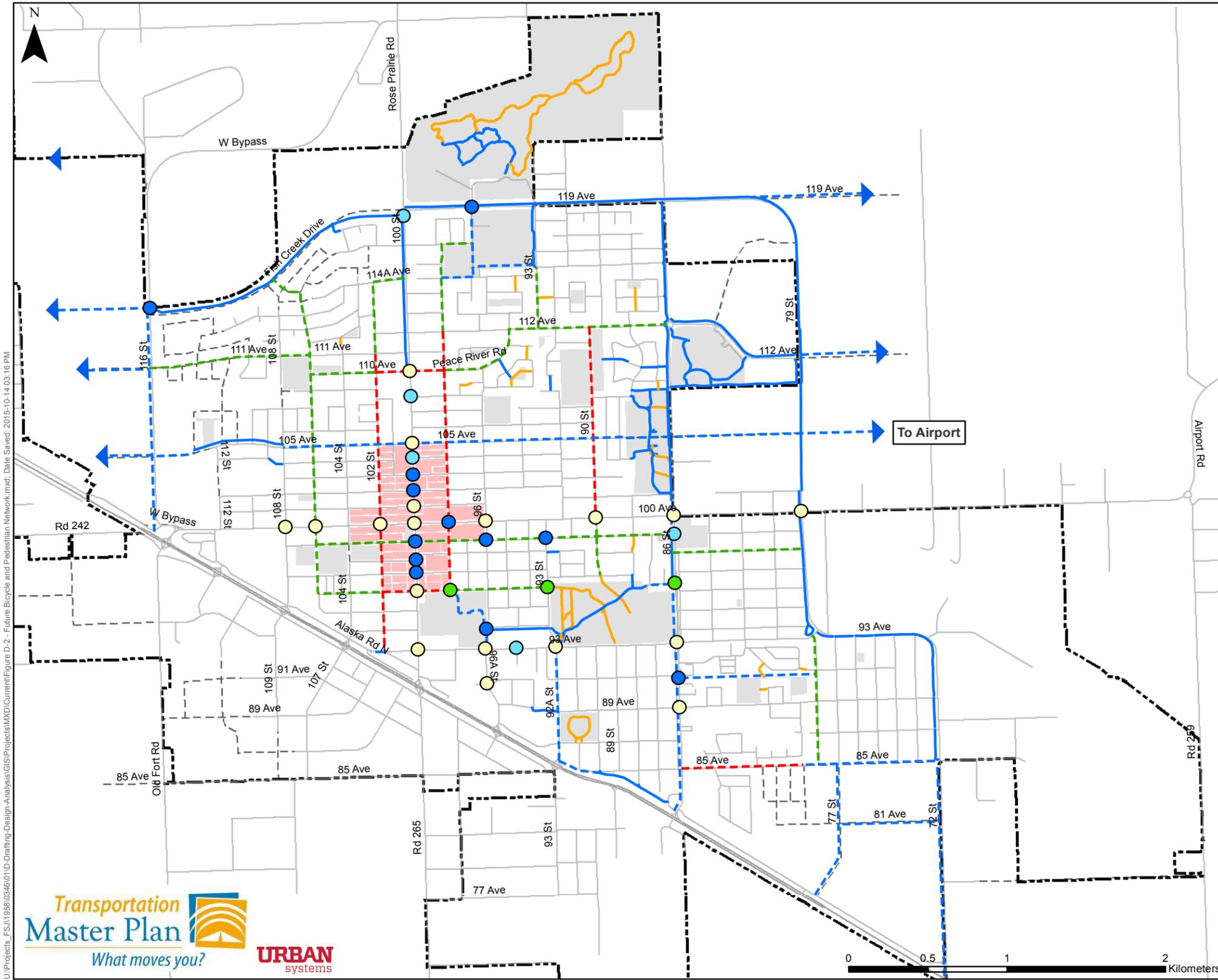
U:\Projects_FSU\1958\0346\01\01-Drafting-Design-Analysis\GIS\Projects\MXD\Current\Figure D-1 - Future Road Network Classification2.mxd; Date Saved: 2015-05-01 09:53 AM

FIGURE D-1

THE ACCURACY & COMPLETENESS OF INFORMATION SHOWN ON THIS DRAWING IS NOT GUARANTEED. IT WILL BE THE RESPONSIBILITY OF THE USER OF THE INFORMATION SHOWN ON THIS DRAWING TO LOCATE & ESTABLISH THE PRECISE LOCATION OF ALL EXISTING INFORMATION WHETHER SHOWN OR NOT.

Source: City of Fort St. John, January 2013

Transportation Masterplan
Future Bicycle and Pedestrian Network



- Legend**
- Existing Trail Network**
- Asphalt
 - Gravel
- Future Network**
- Dedicated Bicycle Route
 - Shared Travel Lane
 - Multi-Use Trail
- Intersections and Crossings**
- Existing Signalized Intersection
 - Existing Signalized Pedestrian Controlled Crossing
 - New Signalized Pedestrian Controlled Crossing
 - New Unsignalized Crossing (Zebra / Elephant Feet)
- Background Layers**
- Downtown
 - Public Use

U:\Projects_FSJ\1958\03\46\01\0-Drafting-Design-Analysis\GIS\Projects\MD\Current\Figure D-2 - Future Bicycle and Pedestrian Network.mxd; Date Saved: 2015-10-14 03:16 PM



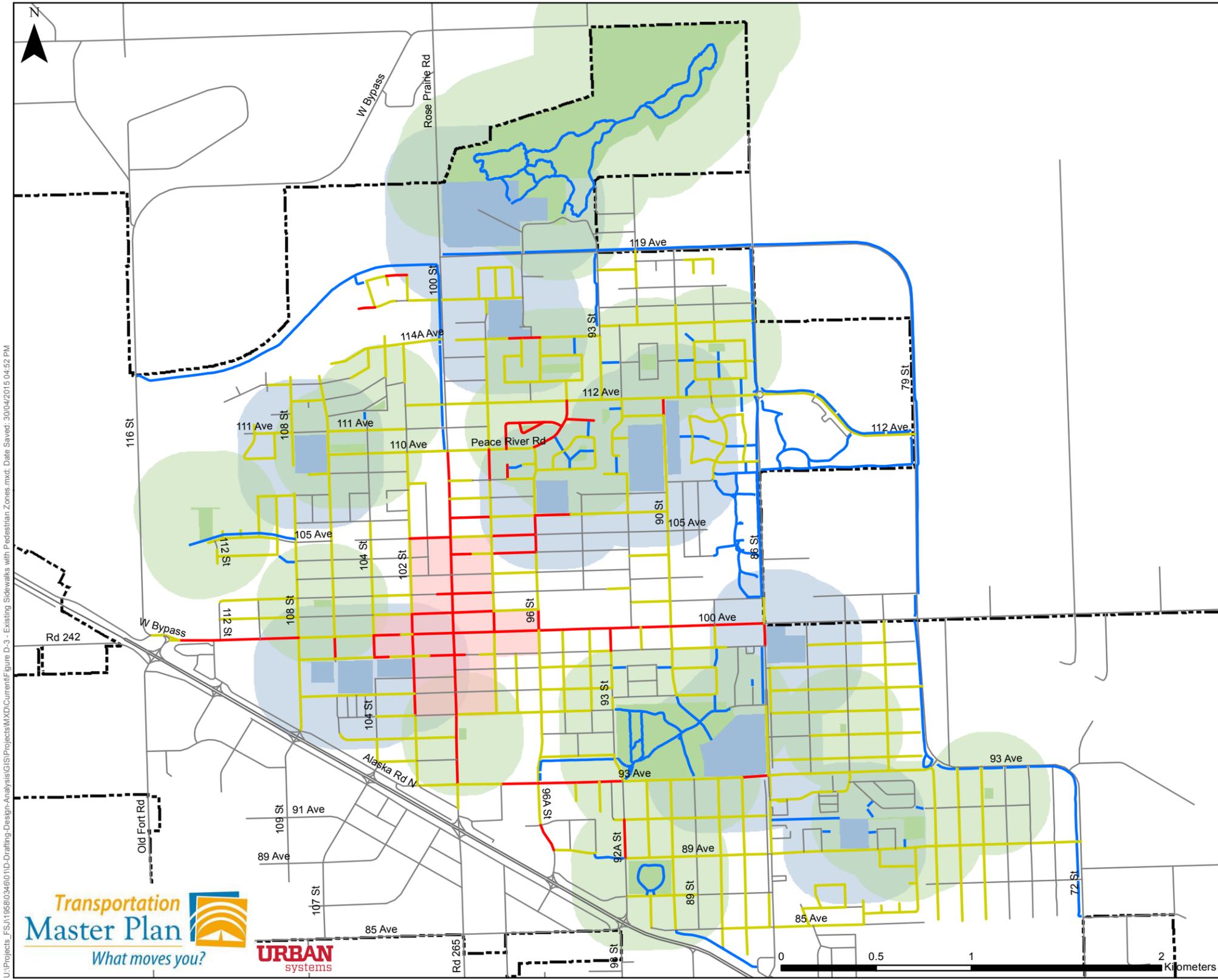
Source: City of Fort St. John, January 2013

FIGURE D-2

THE ACCURACY & COMPLETENESS OF INFORMATION SHOWN ON THIS DRAWING IS NOT GUARANTEED. IT WILL BE THE RESPONSIBILITY OF THE USER OF THE INFORMATION SHOWN ON THIS DRAWING TO LOCATE & ESTABLISH THE PRECISE LOCATION OF ALL EXISTING INFORMATION WHETHER SHOWN OR NOT.

Transportation Masterplan
Existing Sidewalks with Strategic Pedestrian Zones

- Legend**
-  No Sidewalks
 -  Existing Sidewalks (Both Sides)
 -  Existing Sidewalks (One Side)
 -  Existing Trail Network
 -  Downtown
 -  Schools
 -  Parks
 -  City Boundary



L:\Projects_FSJ\192680346\010-Drafting-Design-Analysis\GIS\Projects\Map\Current\Figure D-3 - Existing Sidewalks with Pedestrian Zones.mxd, Date Saved: 30/04/2015 04:52 PM

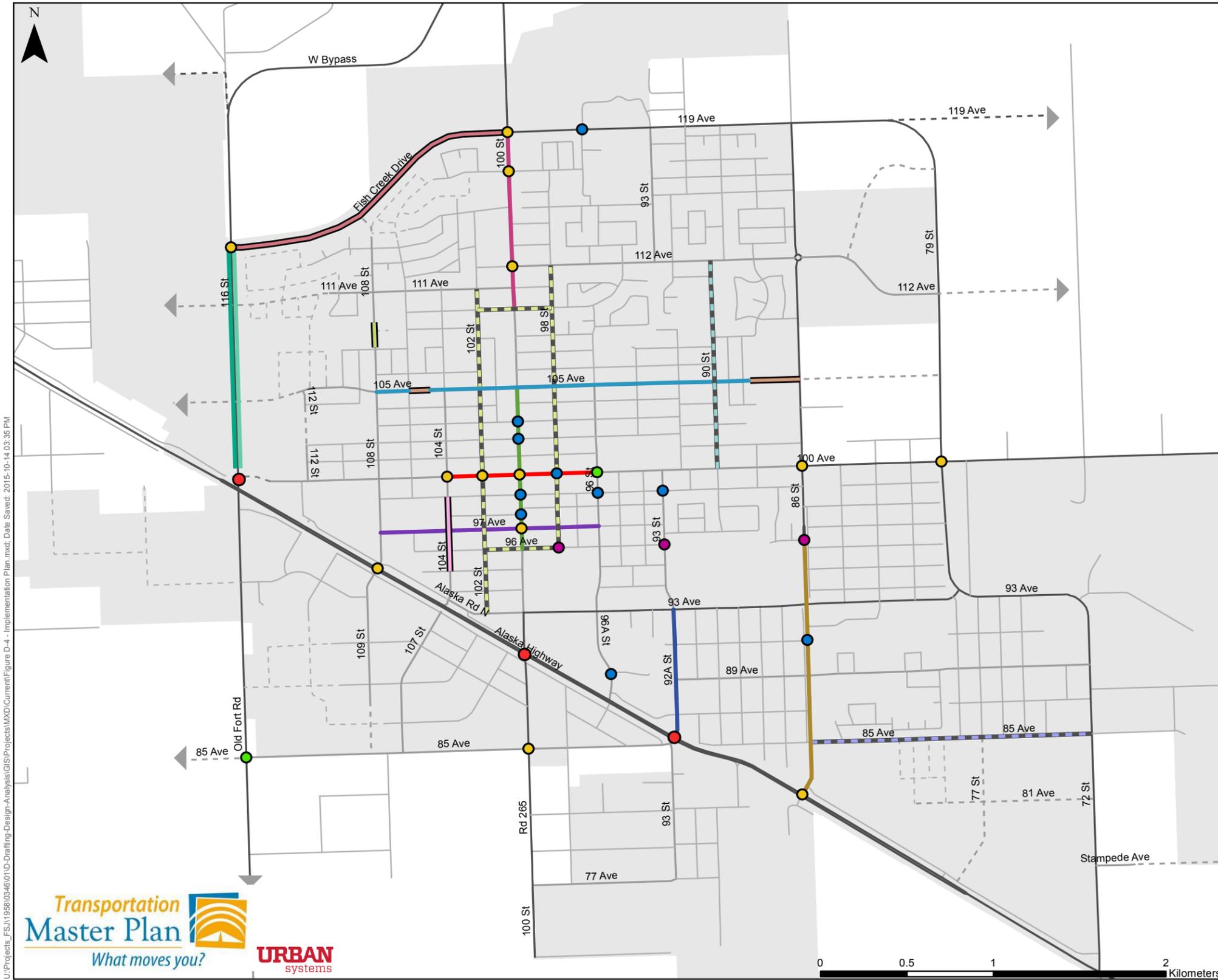
Source: City of Fort St. John, January 2013

FIGURE D-3

THE ACCURACY & COMPLETENESS OF INFORMATION SHOWN ON THIS DRAWING IS NOT GUARANTEED. IT WILL BE THE RESPONSIBILITY OF THE USER OF THE INFORMATION SHOWN ON THIS DRAWING TO LOCATE & ESTABLISH THE PRECISE LOCATION OF ALL EXISTING INFORMATION WHETHER SHOWN OR NOT.

Transportation Masterplan Implementation Plan Projects

- Legend**
- Growth Projects**
- 105 Avenue Minor Collector & MUT Upgrade
 - 108 Street Connector
 - 100 Street Four-Laning Upgrade
 - 105 Avenue Connector
 - 116 Street Four-Lane Upgrade
 - 116 Street MUT
 - Fish Creek Drive Connector
- Downtown Projects**
- Downtown Area Bike Route Network
 - Downtown Revitalization - 100 Street
 - 97 Avenue Minor Collector Upgrade
 - Downtown Revitalization - 100 Avenue
 - 104 Street Minor Collector Connector
- Bicycle & Trail Projects**
- 86 Street Upgrades with MUT
 - 90 Street Bike Route
 - 92A Street Upgrades with MUT
 - 85 Avenue Bike Routes
- Intersection Projects**
- Major Improvement
 - Moderate Improvement
 - Minor Improvement
 - New Signalized Pedestrian Controlled Crossing
 - New Unsignalized Pedestrian Crossing
- Future Roads
 — Highway
 — Arterial
 — Collector
 — Local
 City Boundary



U:\Projects_FSJ\195810346\010-Drafting-Design-Analysis\GIS\Projects\MXD\Current\Figure D-4 - Implementation Plan.mxd; Date Saved: 2015-10-14 03:35 PM

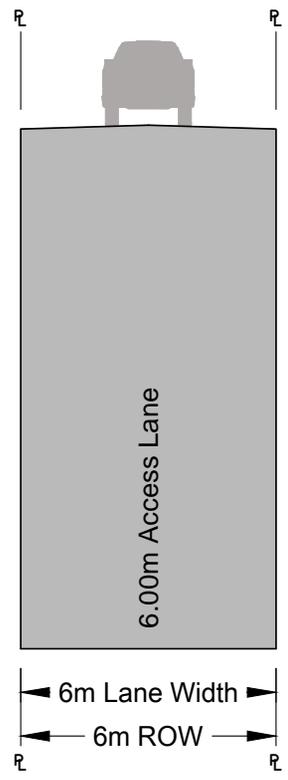
FIGURE D-4

THE ACCURACY & COMPLETENESS OF INFORMATION SHOWN ON THIS DRAWING IS NOT GUARANTEED. IT WILL BE THE RESPONSIBILITY OF THE USER OF THE INFORMATION SHOWN ON THIS DRAWING TO LOCATE & ESTABLISH THE PRECISE LOCATION OF ALL EXISTING INFORMATION WHETHER SHOWN OR NOT.

Source: City of Fort St. John, January 2013

APPENDIX E

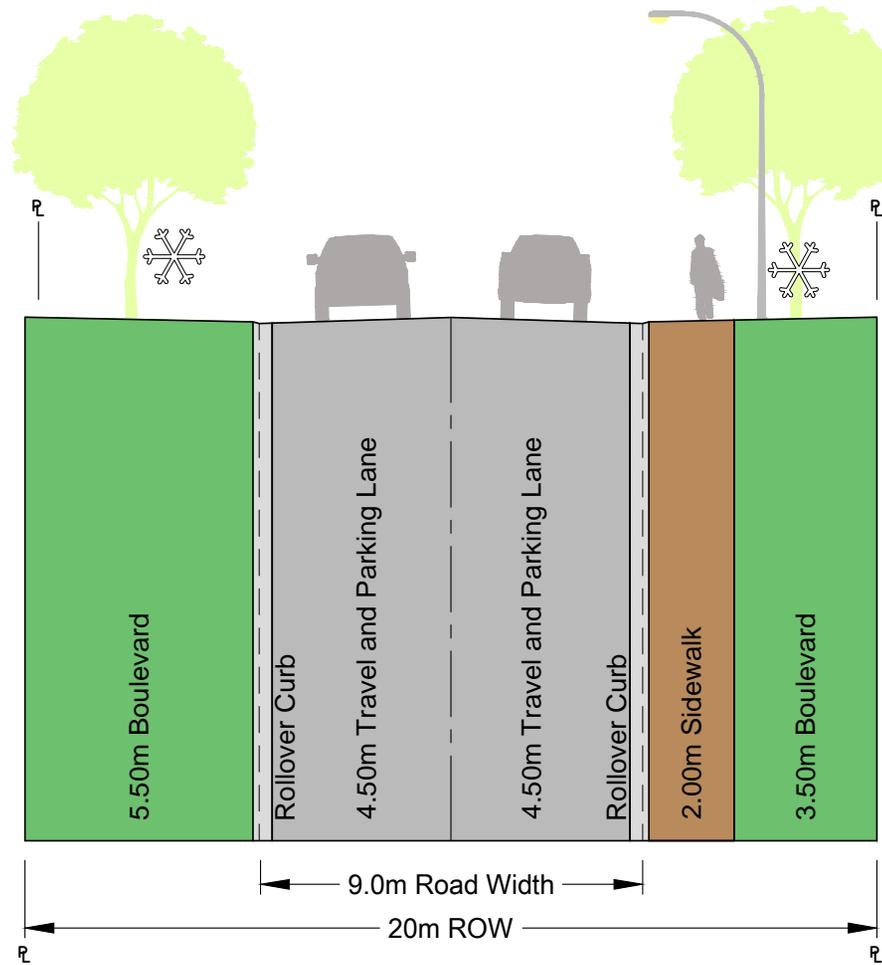
Transportation Master Plan Cross Sections



Examples:
Downtown Lanes

Notes:
May have reverse crown to
facilitate drainage.

DATE 2015-10-16	Local Lane	L1
--------------------	---------------	-----------

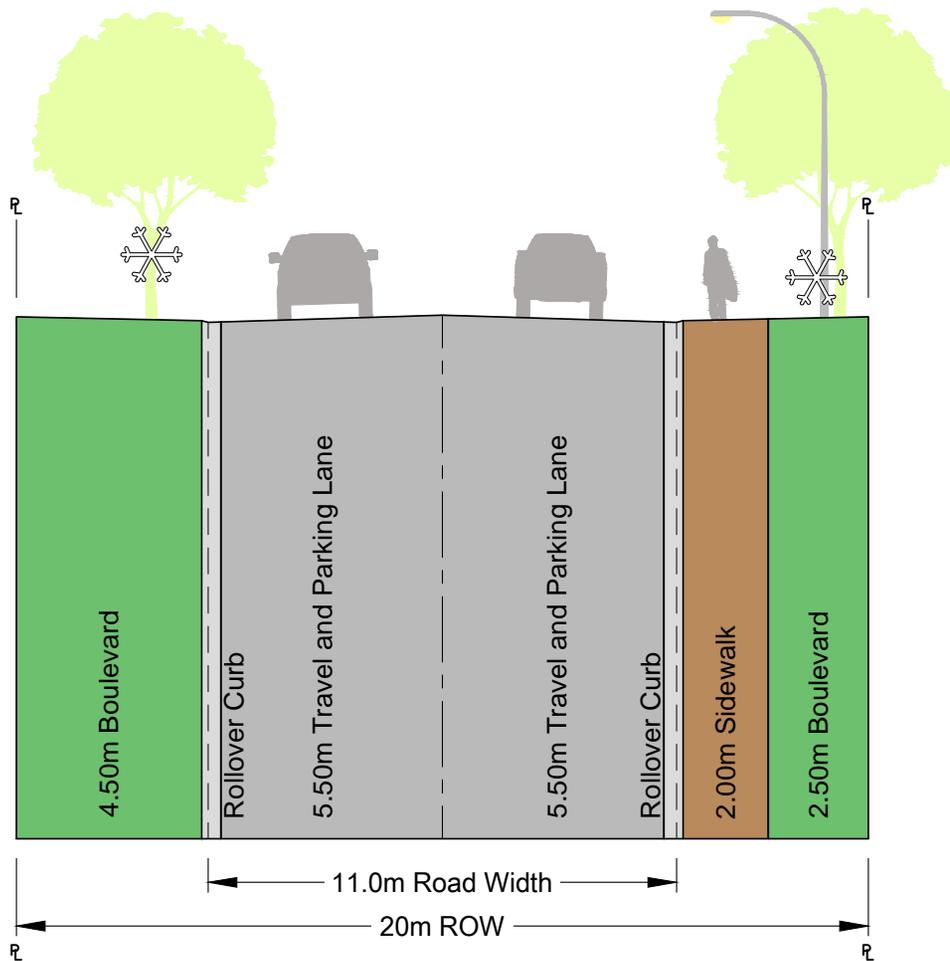


Examples:
Available for future subdivisions.

DATE
2015-10-16

Local
Low Density - Single Family

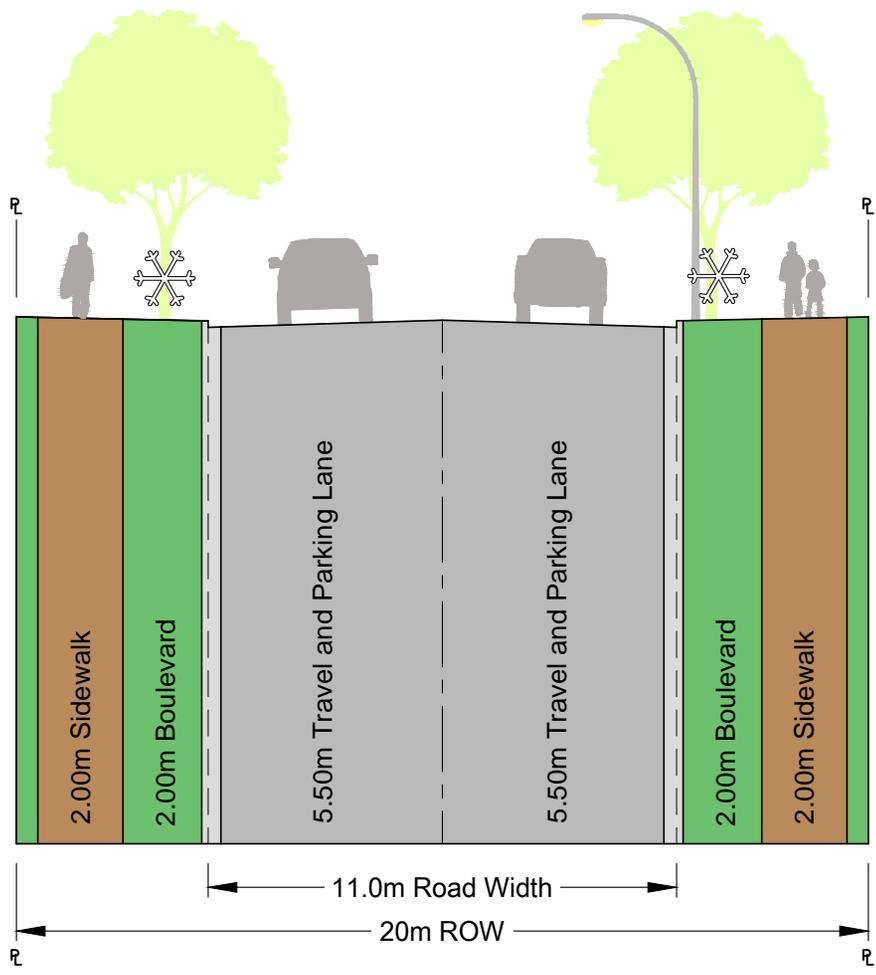
L2



Examples:
Available for future subdivisions.

Notes:
If rows of duplexes, consider
sidewalk on both sides.

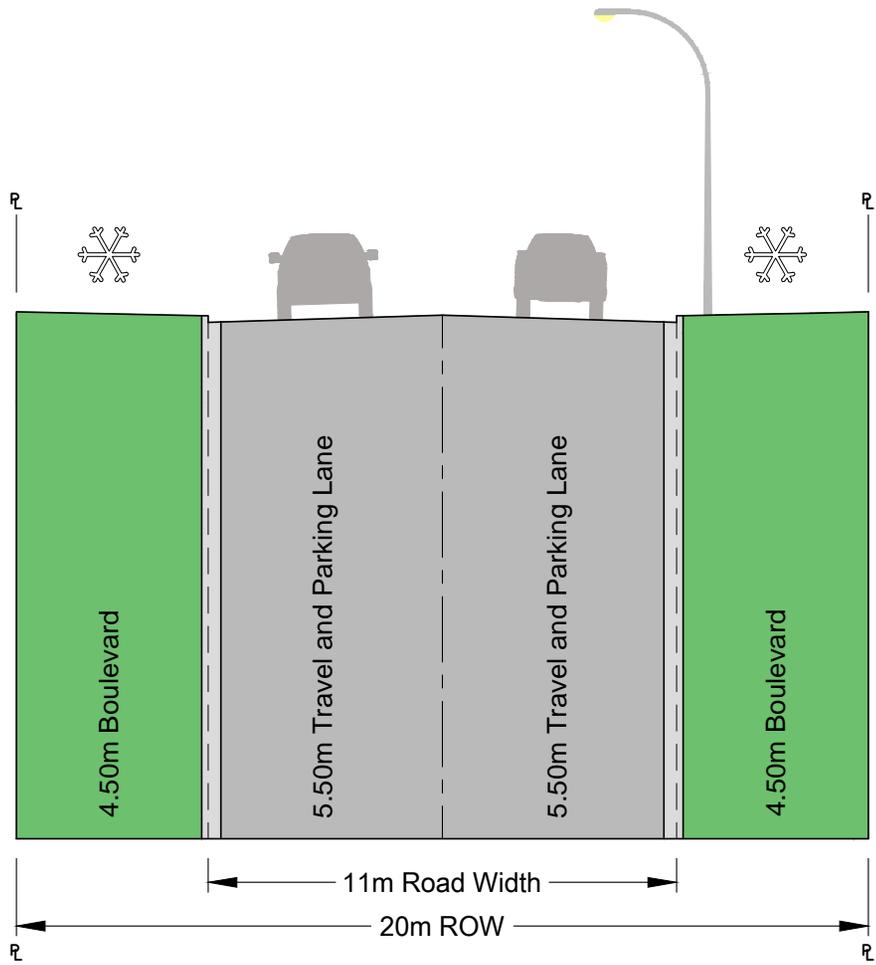
DATE 2015-10-16	Local Low Density - Duplex	L3
--------------------	--------------------------------------	-----------



Examples:
North Point high density area.

<p>DATE 2015-10-16</p>	<p>Local Med-High Density</p>	<p>L4</p>
----------------------------	-----------------------------------	------------------

U:\projects_fsj\1958\0346\011d-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, L4, 2015/10/16 09:42 am rjohnson

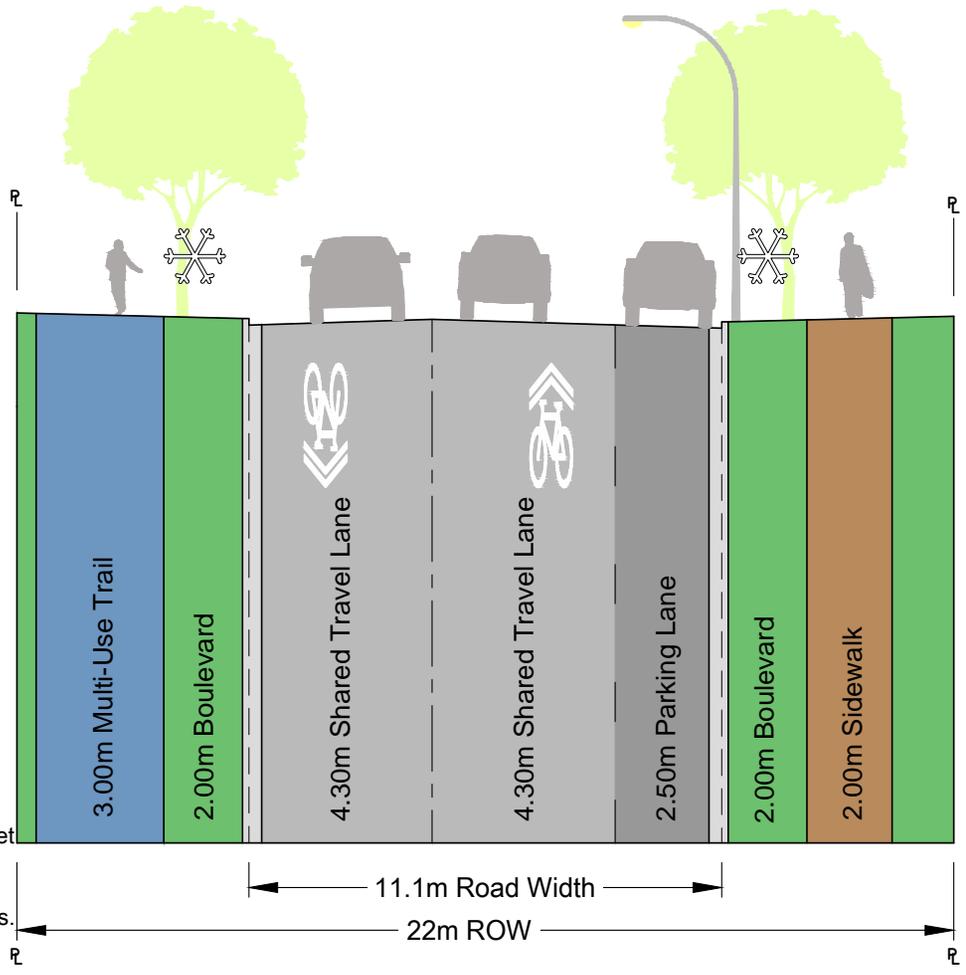


Examples:
Surerus Subdivision

DATE
2015-10-16

Local
Industrial

L5



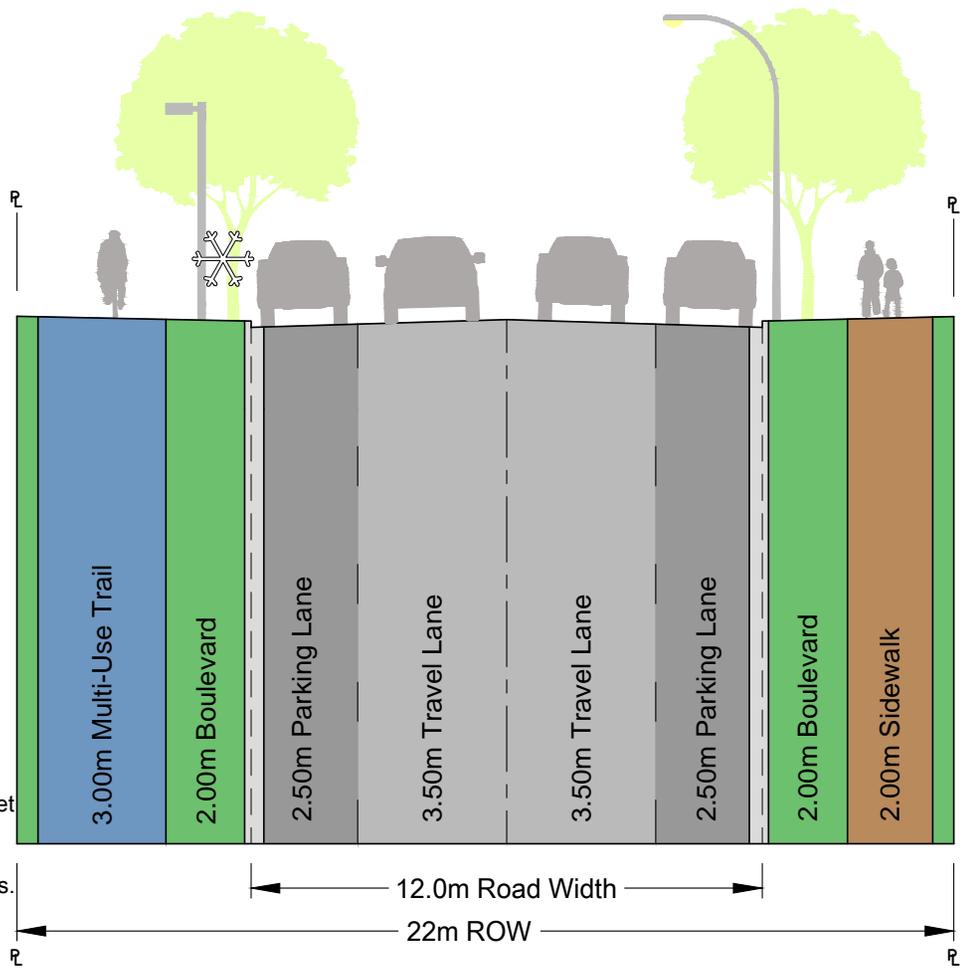
Examples:
 Similarities to 105 Ave in Sunset
 Ridge.

Available for future subdivisions.

Notes:
 Use one parking lane where
 there are few frontages onto
 collector and lower densities.

DATE 2015-10-16	Collector Residential Collector (Trail & 1 Parking Lane)	C1
--------------------	--	-----------

U:\projects_tsj\1958\0346\011d-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, C1, 2015/10/16 09:42 am njohnson



Examples:
105 Ave (116 St - 86 St)

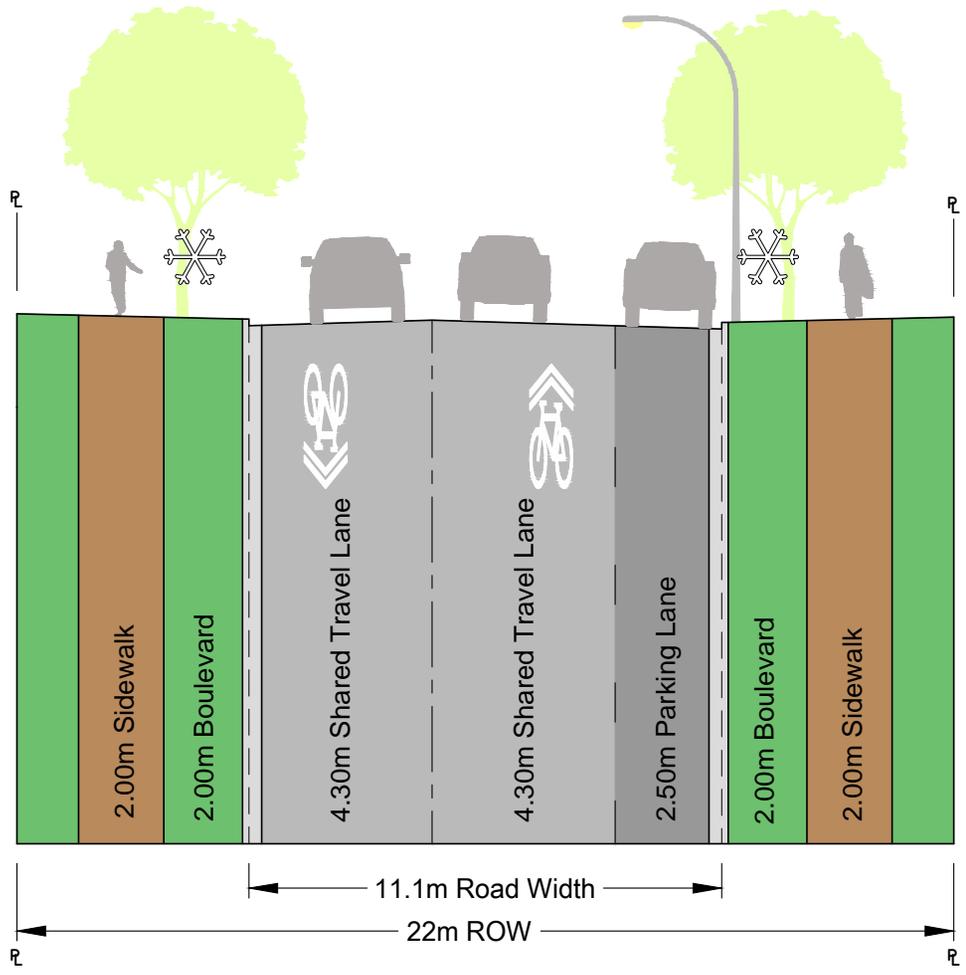
Similarities to 105 Ave in Sunset Ridge.

Available for future subdivisions.

Notes:
Use two parking lanes where there are increased frontages onto collector or increased density.

DATE 2015-10-16	Collector Residential Collector (Trail & 2 Parking Lanes)	C2
--------------------	---	-----------

U:\projects_fsj\1958\0346\011d-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, C2, 2015/10/16 09:42 am njohnson

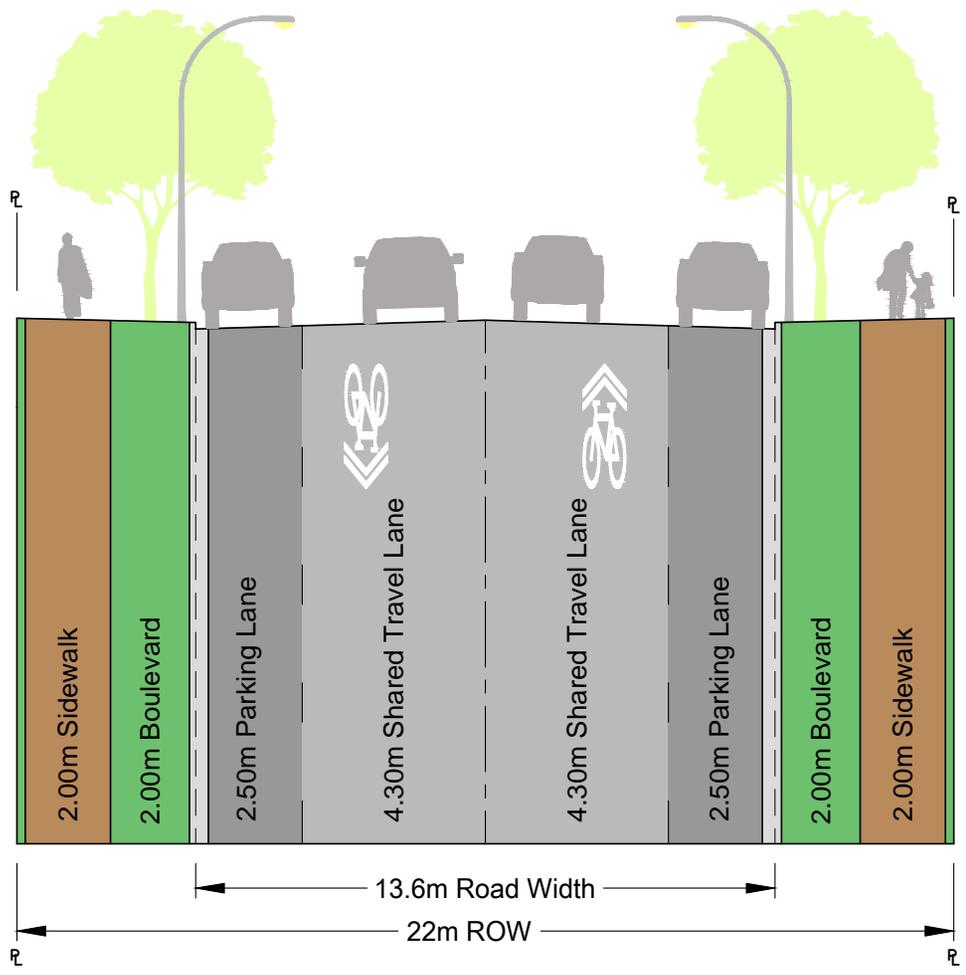


- Examples:
 104 St (100 Ave - 105 Ave)
 108 St (100 Ave - Future Bypass Connector)
 112 St (100 Ave to 105 Ave)
 112 Ave (100 St - 86 St)
 97 Ave (108 St - 96 St)
 89 Ave (92A St - 72 St)
 111 Ave (116 Ave - 100 Ave)

Notes:
 Sharrow symbols only placed on roads with designated shared travel lanes as per bicycle network map.

DATE 2015-10-16	Collector Residential and Mixed Use Collector (Shared & 1 Parking Lane)	C3
--------------------	---	-----------

U:\projects_fsj\1958\0346\01\1d-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, C3, 2015/10/16 09:42 am njohnson

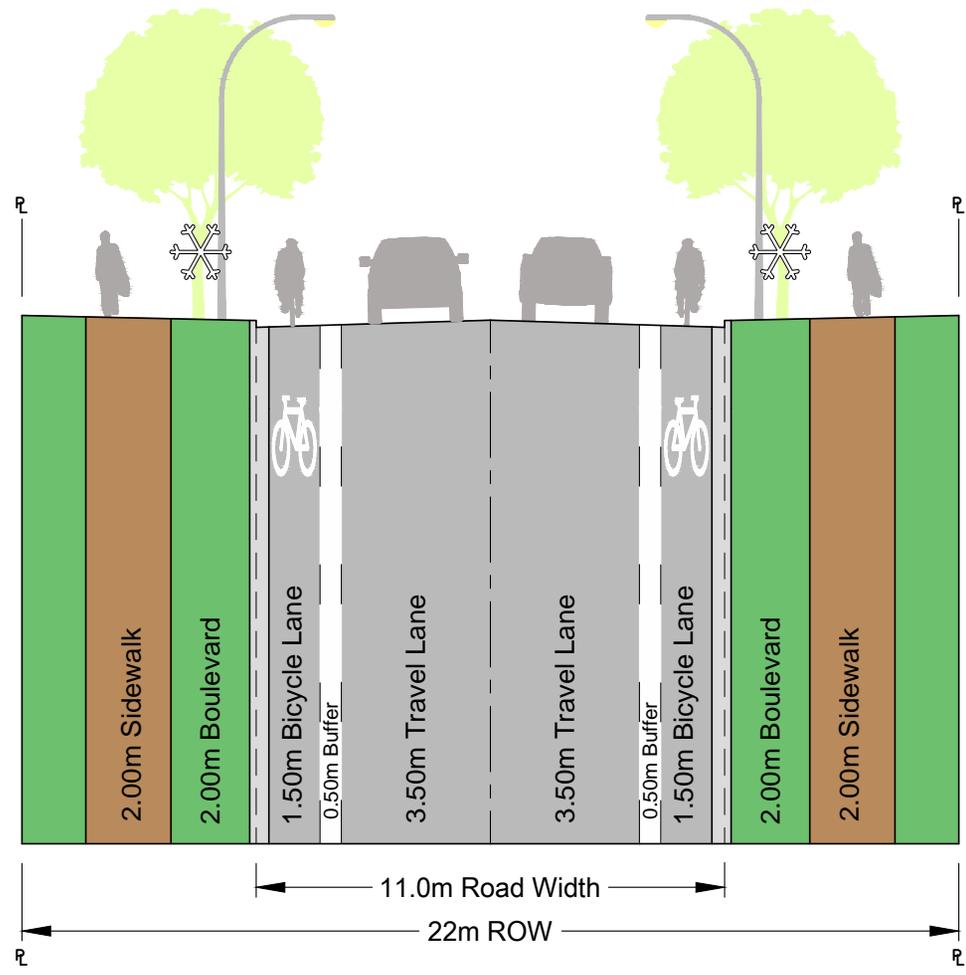


Examples:
 92A St (Hwy 97 - 93 Ave)
 96 St (100 Ave - 105 Ave)

Notes:
 Sharrow symbols only placed
 on roads with designated
 shared travel lanes as per
 bicycle network map.

DATE 2015-10-16	Collector Residential Collector (Shared & 2 Parking Lanes)	C4
--------------------	--	-----------

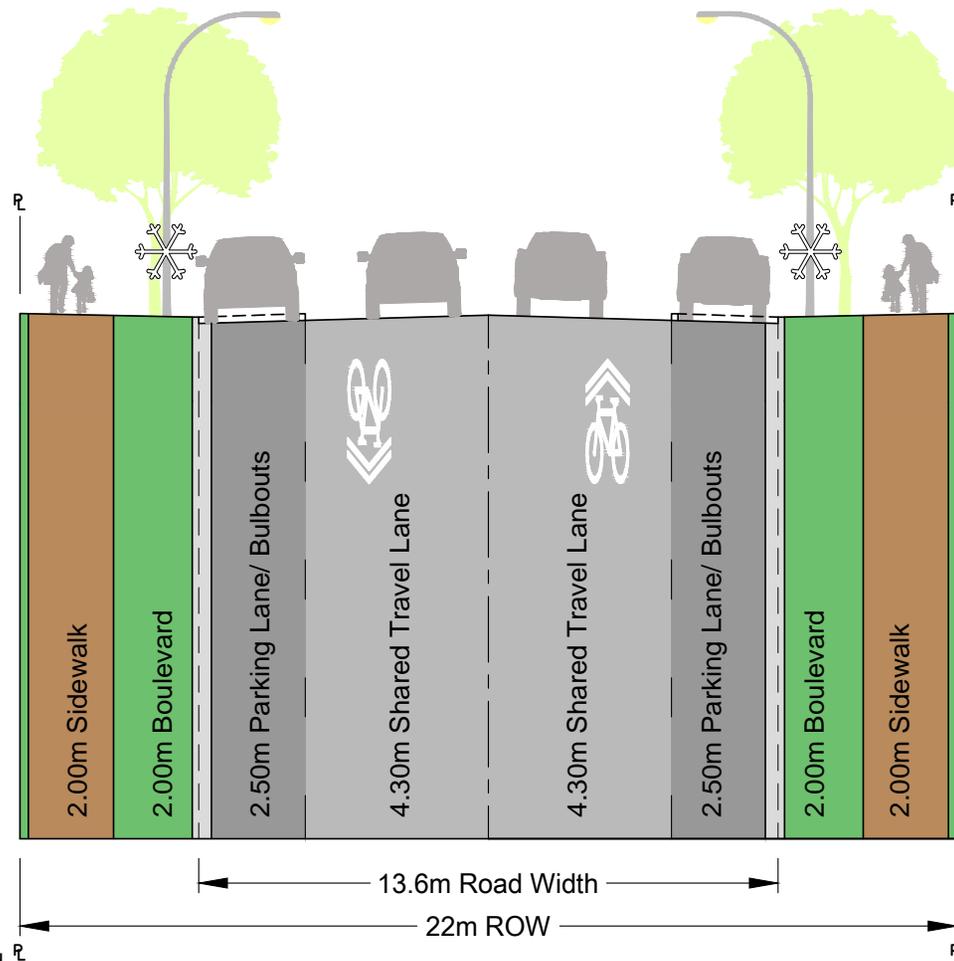
U:\projects_fsj\1958\0348\011d-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, C4, 2015/10/16 09:42 am njohnson



Examples:
 102 St (96 Ave - 114A Ave)
 98 St (96 Ave - 119 Ave)

DATE 2015-10-16	Collector Residential Collector (Bike Route)	C5
--------------------	--	-----------

U:\projects_fsj\1958\0346\01\id-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, C5, 2015/10/16 09:42 am njohnson

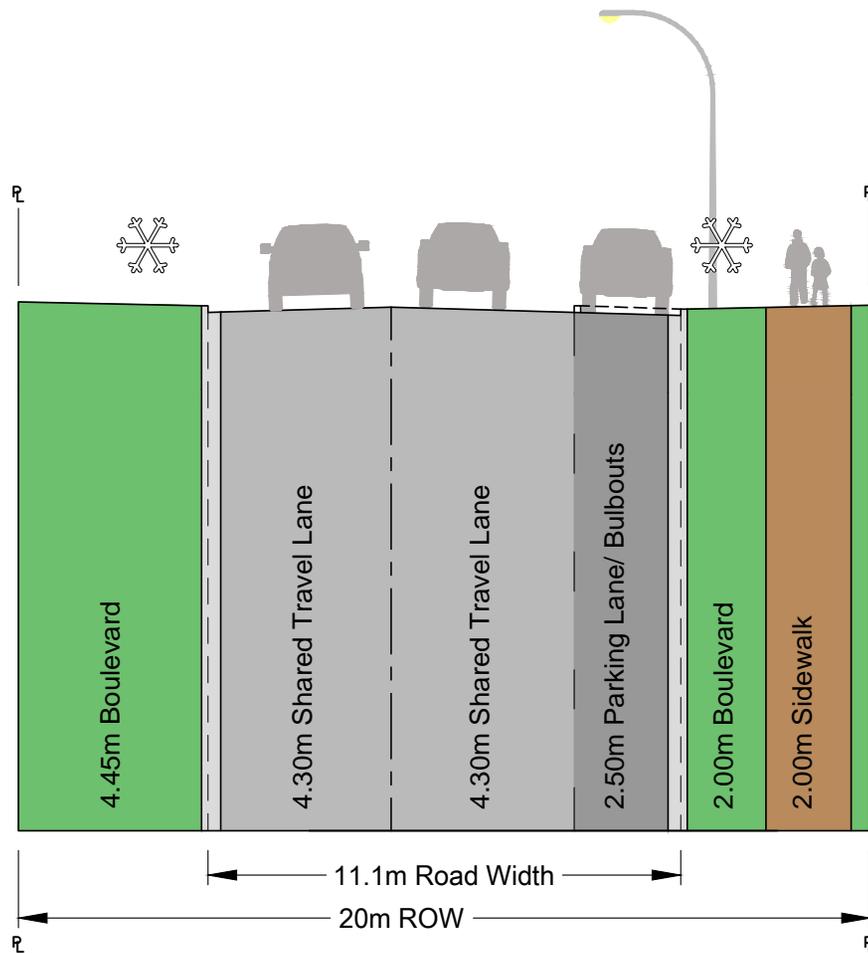


Examples:
 104 St (Hwy 97 - 100 Ave)
 102 St (93 Ave - 96 Ave)

Notes:
 Sharrow symbols only placed
 on roads with designated
 shared travel lanes as per
 bicycle network map.

DATE 2015-10-16	Collector Commercial Collector	C6
--------------------	-----------------------------------	----

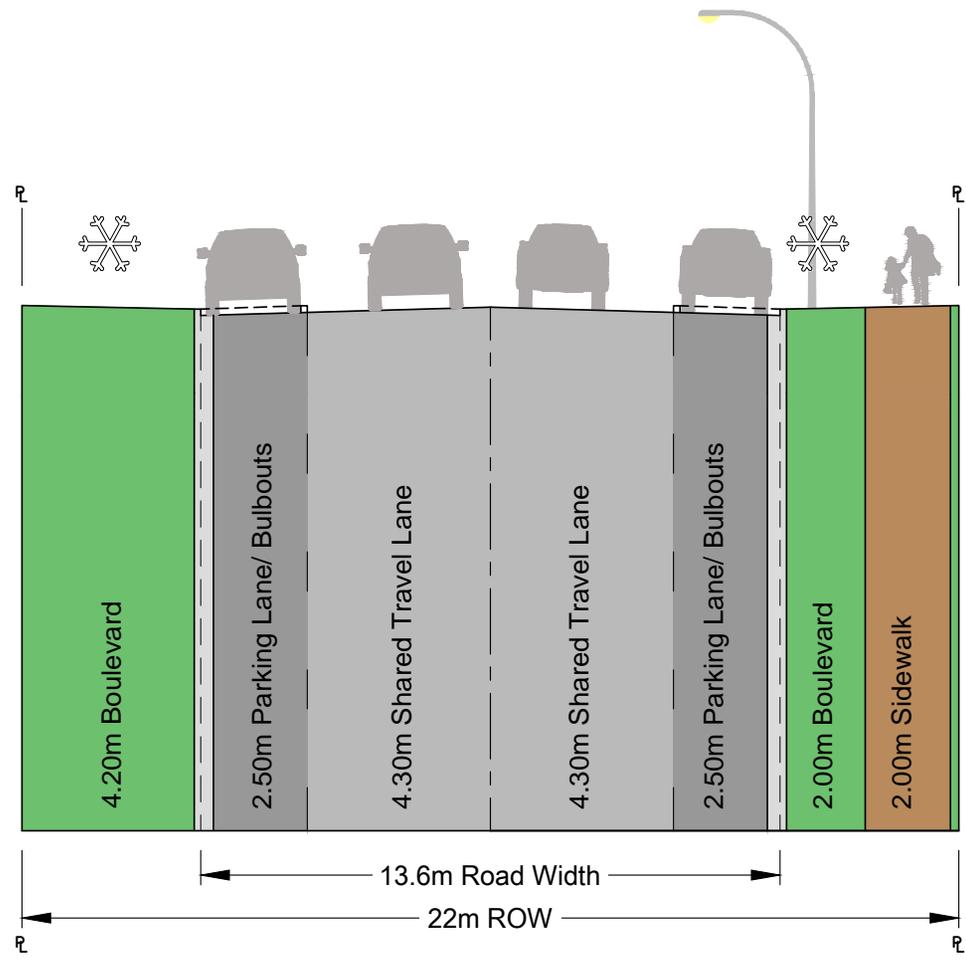
U:\projects_fsj\1958\0346\011d-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, C6, 2015/10/16 09:42 am njohnson



Examples:
 107 St (Hwy 97 - 85 Ave)
 93 St (Hwy 97 - 77 Ave)
 77 Ave (100 St - 93 St)

DATE 2015-10-16	Collector Industrial	C7
--------------------	--------------------------------	-----------

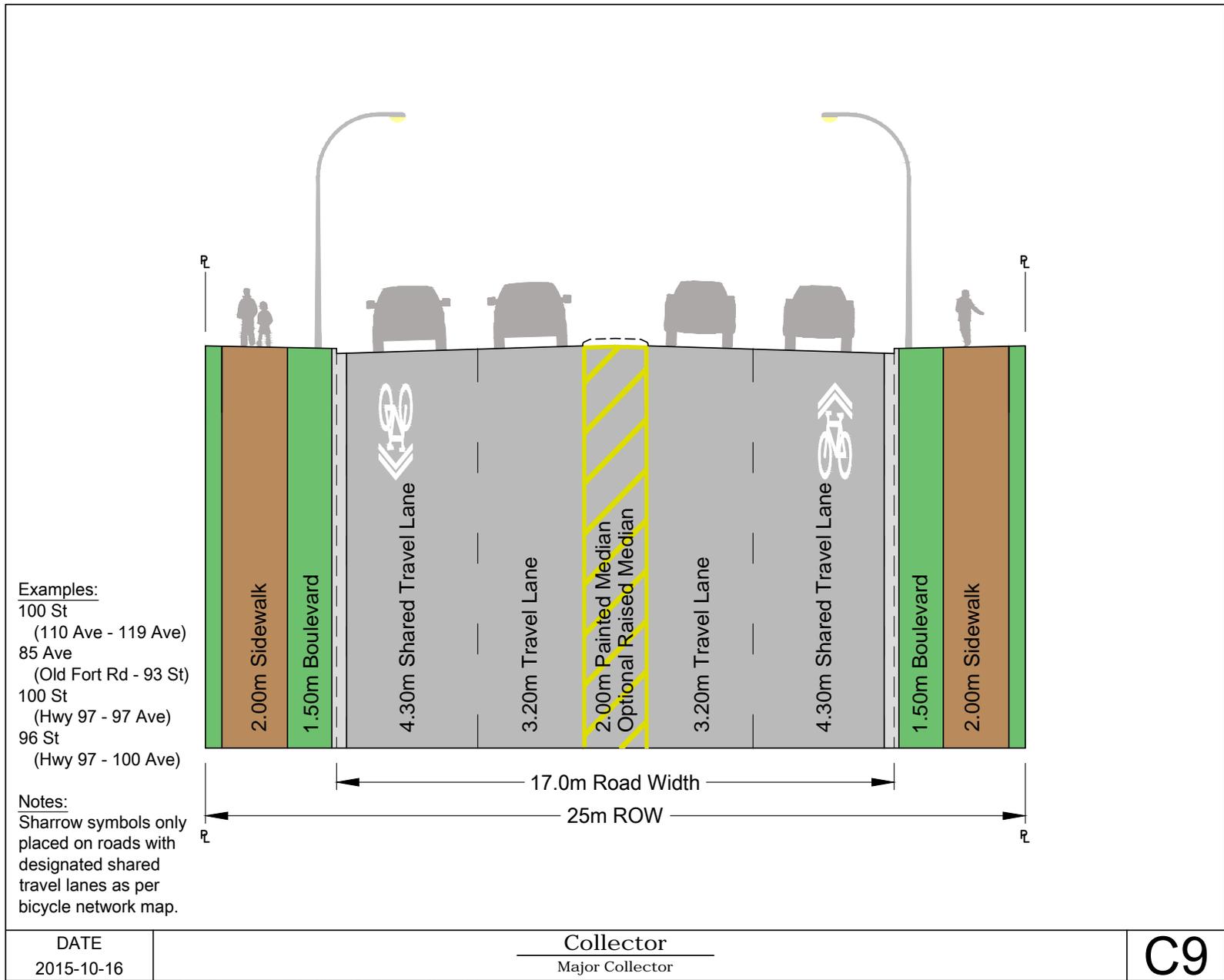
U:\projects_fsj\1958\0346\011c-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, C7, 2015/10/16 09:42 am njohnson



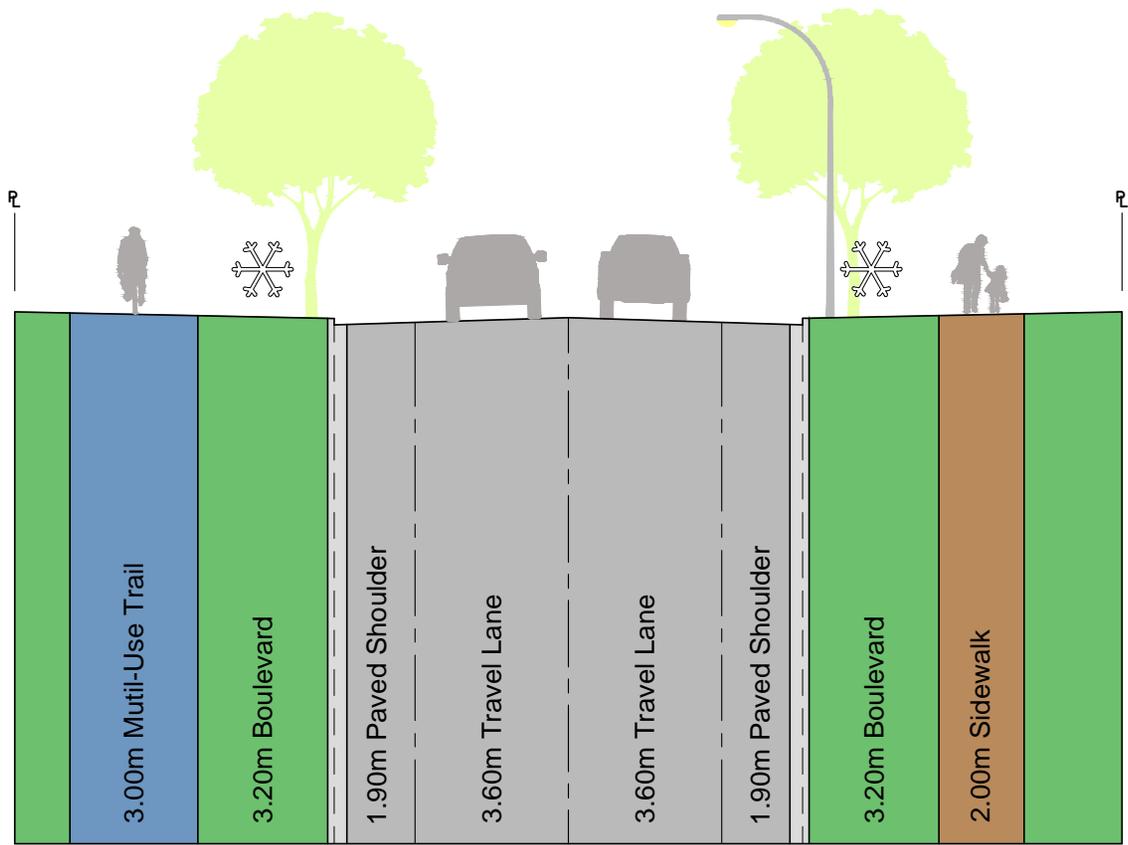
Examples:
109 St (Hwy 97 - 85 Ave)

<p>DATE 2015-10-16</p>	<p style="text-align: center;">Collector Industrial</p>	<p style="text-align: center; font-size: 2em;">C8</p>
----------------------------	---	---

U:\projects_fsj\1958\0346\011d-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, C8, 2015/10/16 09:42 am njohnson



U:\projects_fsj\1958\0346\011d-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, C9, 2015/10/16 09:42 am njohnson



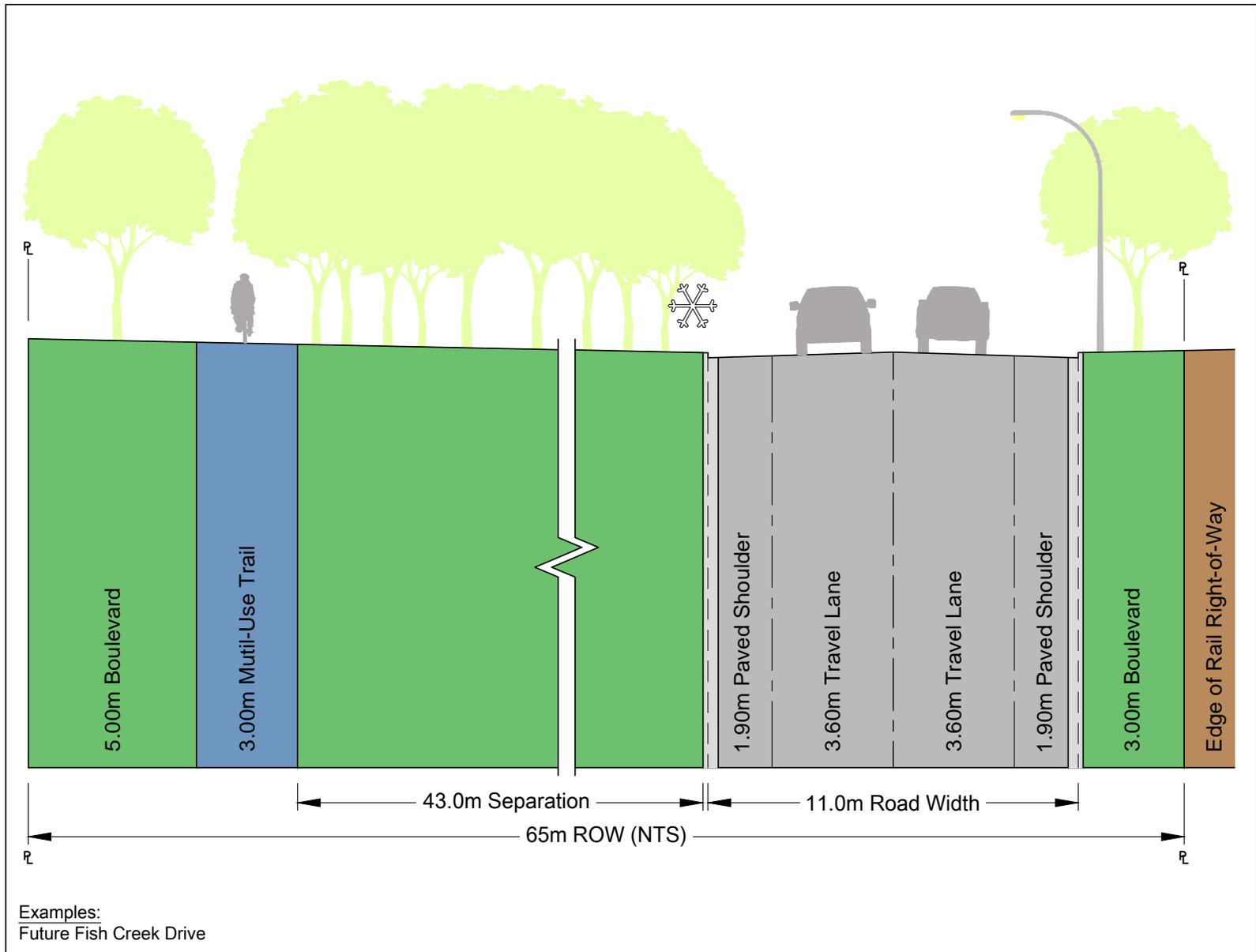
Examples:
 119 Ave
 (100 St - 79 St)
 79 St
 (100 Ave - 119 Ave)
 86 St
 (100 Ave - 119 Ave)
 E. Bypass Rd
 (Hwy 97 - 100 Ave)

11.0m Road Width

26m ROW

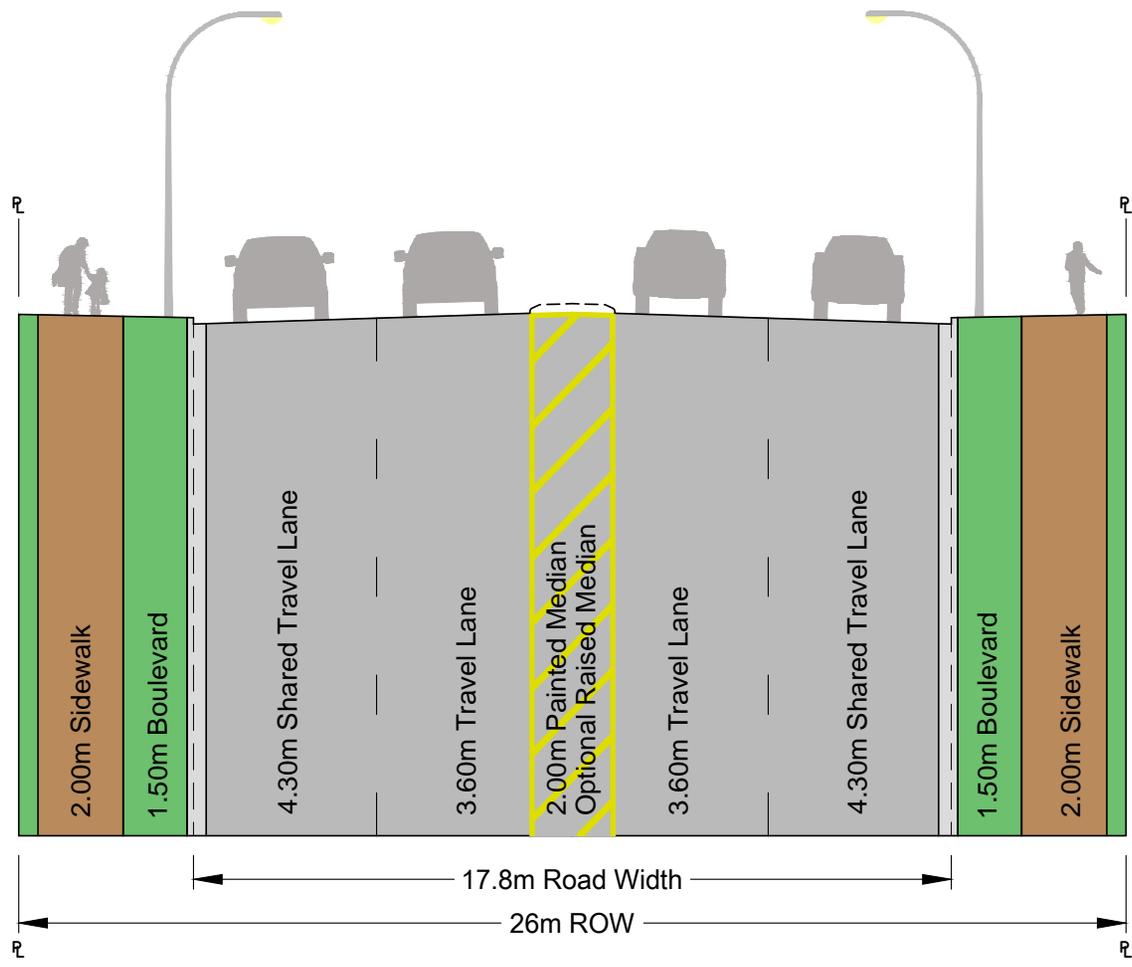
DATE 2015-10-16	<u>Arterial</u> Minor Arterial (Typical)	A1
--------------------	---	-----------

U:\projects_tsj\1958\0346\011d-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, A1, 2015/10/16 09:42 am njohnson



DATE 2015-10-16	Arterial Major Arterial (Fish Creek Drive)	A2
--------------------	--	-----------

U:\projects_fsj\1958\0346\011d-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, A2, 2015/10/16 09:42 am njohnson



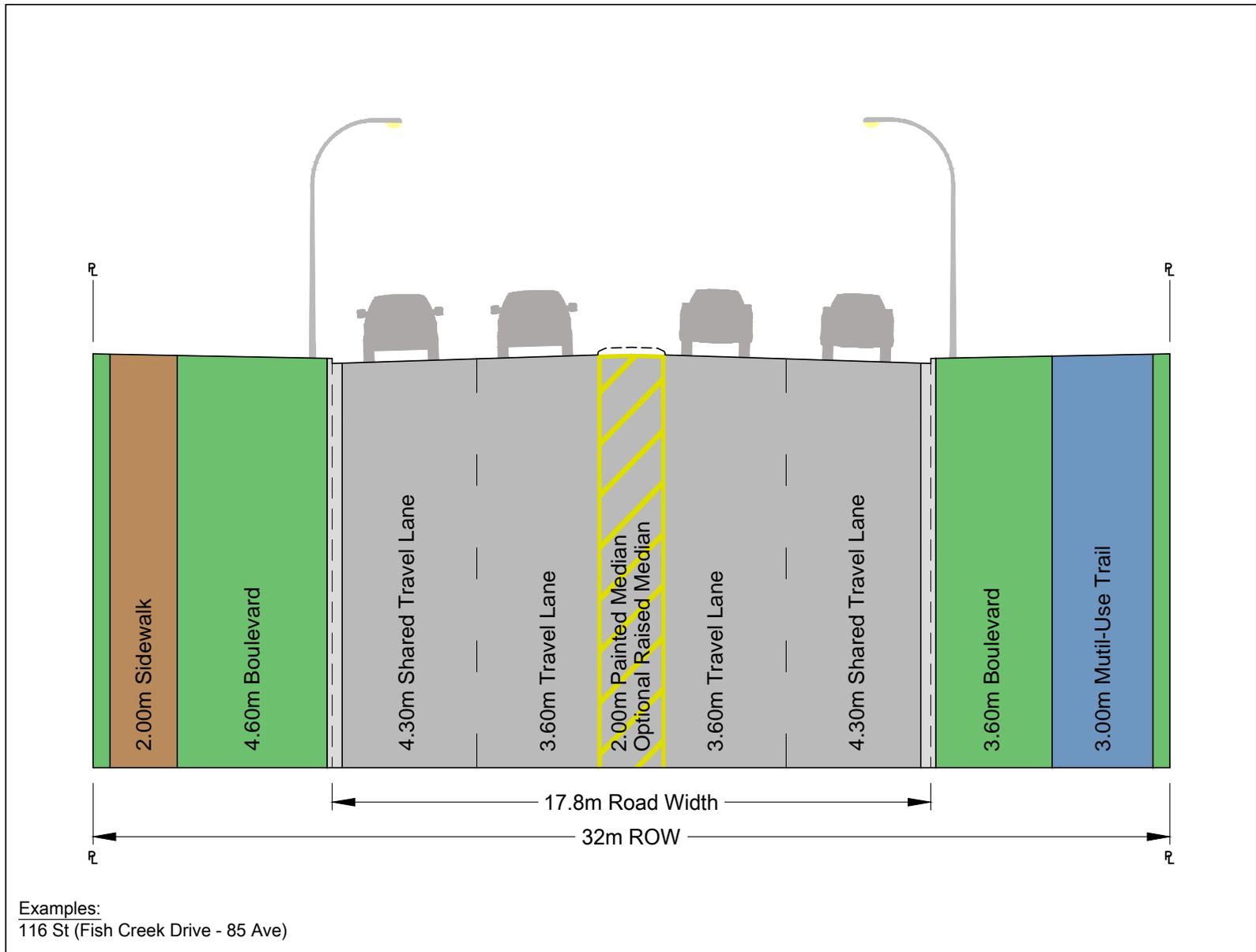
- Examples:
- 93 Ave
(100 St - 79 St)
 - 100 St
(85 Ave - 93 Ave)
 - 86 St
(Hwy 97 - 100 Ave)
 - 100 Ave
(86 St - Rd 259)

DATE
2015-10-16

Arterial
Commercial Arterial

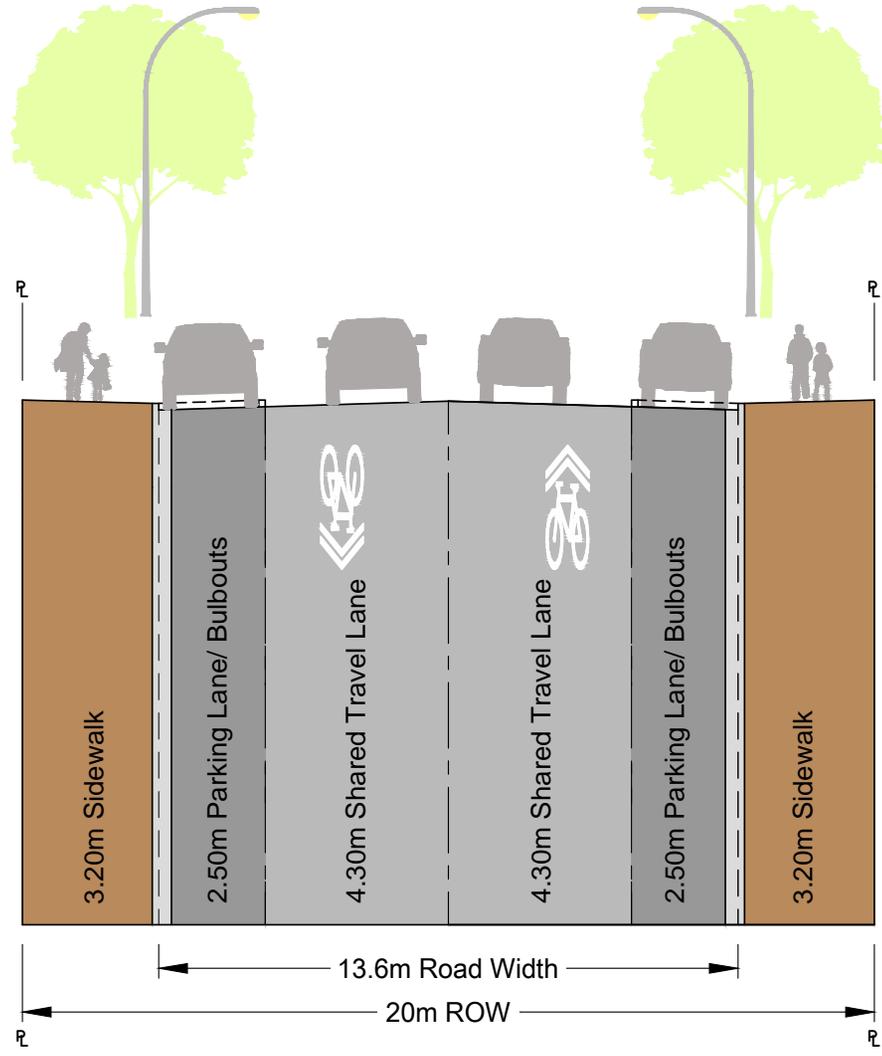
A3

U:\projects_fsj\1958\0346\011c-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, A3, 2015/10/16 09:42 am njohnson



DATE 2015-10-16	Arterial Major Arterial	A4
--------------------	-----------------------------------	-----------

U:\projects_tsj\1958\0348\011d-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, A4, 2015/10/16 09:43 am njohnson

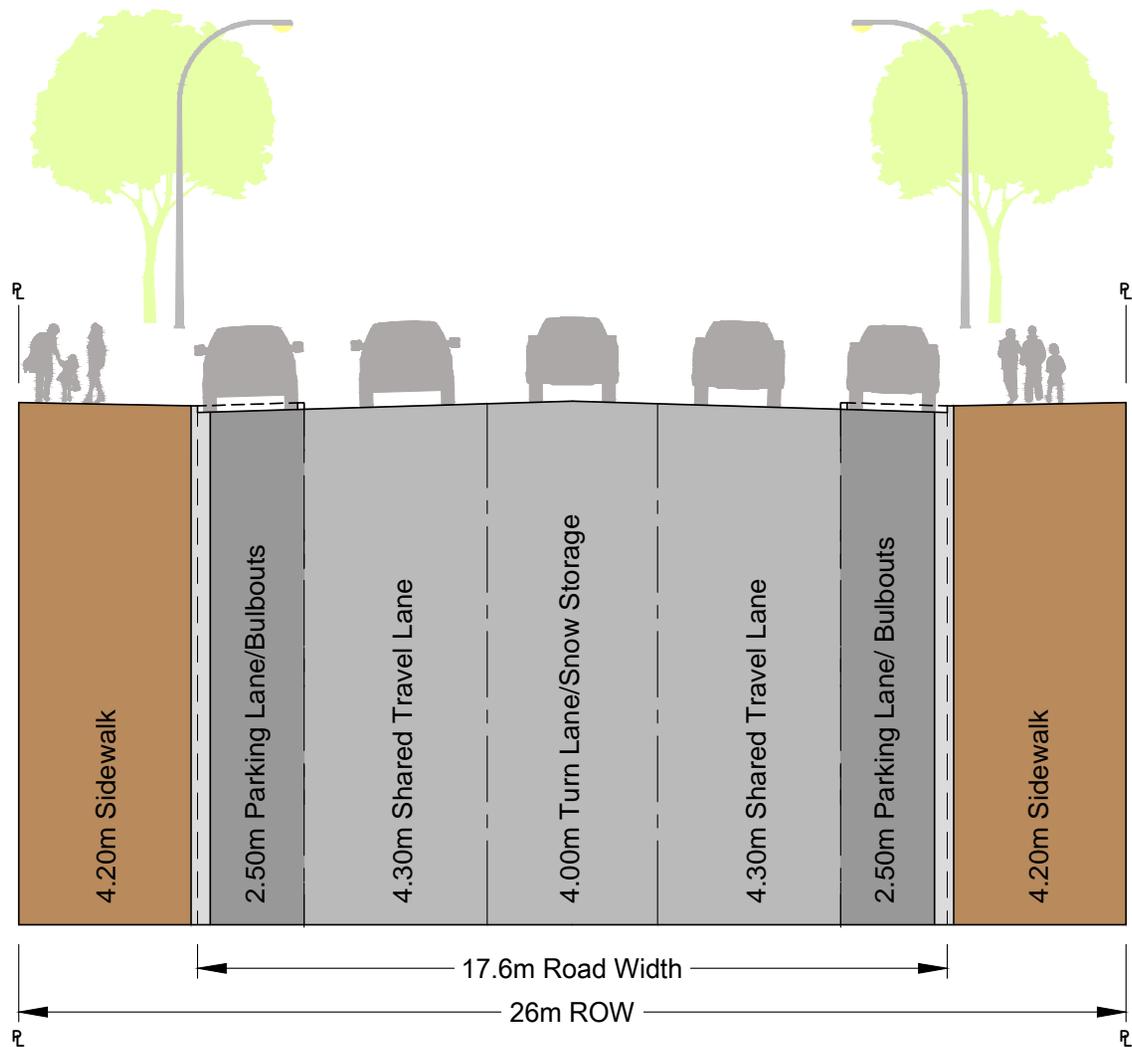


Examples:
 101 Ave (102 St - 98 St)
 102 Ave (102 St - 98 St)
 103 Ave (102 St - 98 St)

Notes:
 Sharrow symbols only placed
 on roads with designated
 shared travel lanes as per
 bicycle network map.

DATE 2015-10-16	Downtown Local	DT1
--------------------	-------------------	-----

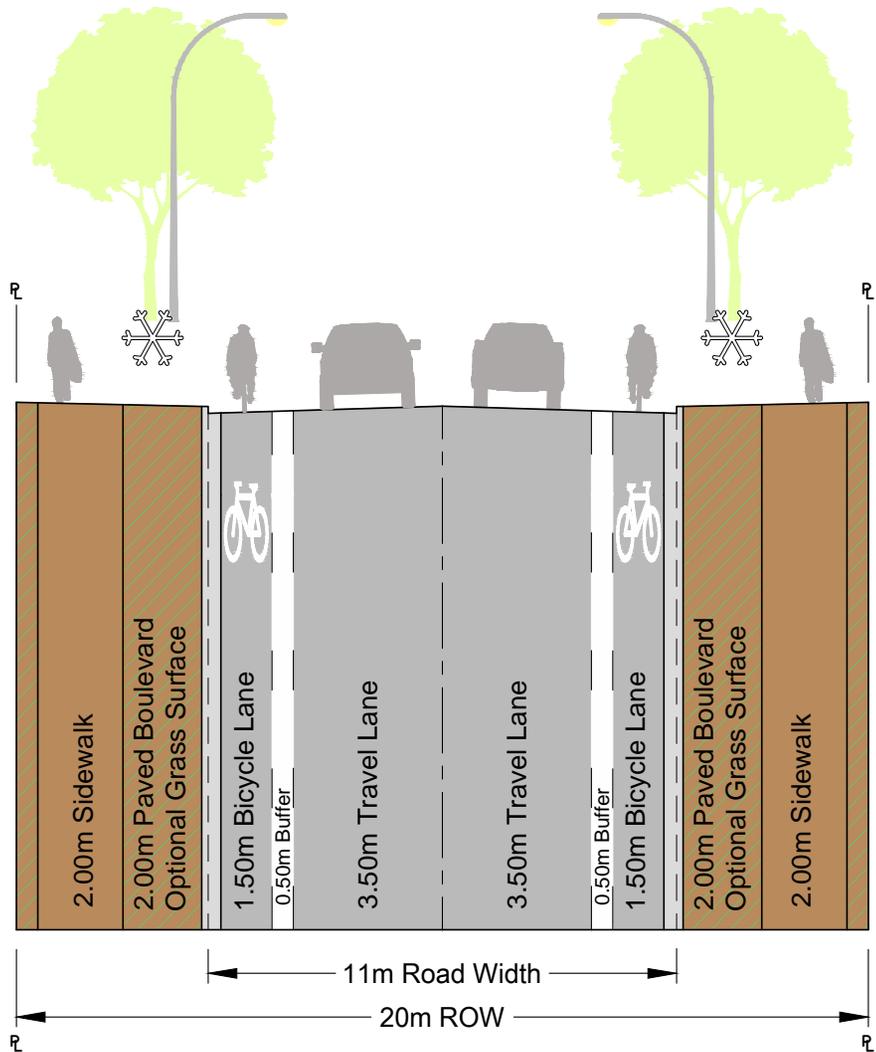
U:\projects_fsj\1958\0346\011d-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, DT1, 2015/10/16 09:43 am rjohnson



Examples:
 100 St (96 Ave - 105 Ave)
 100 Ave (104 St - 96 St)

DATE 2015-10-16	Downtown Major Collector	DT2
--------------------	------------------------------------	-----

U:\projects_fsj\1958\0348\011c-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, DT2, 2015/10/16 09:43 am rjohnson



Examples:
 102 St (96 Ave - 105 Ave)
 98 St (96 Ave - 105 Ave)

DATE 2015-10-16	Downtown Minor Collector	DT3
--------------------	-----------------------------	-----

U:\projects_fsj\1958\0346\01\id-drafting-design-analysis\CADD\CURRENT\DESIGN\DES-1958034601-Road Sections.dwg, DT3, 2015/10/16 09:43 am rjohnson

APPENDIX F

Detailed Implementation Breakdown

TRANSPORTATION MASTER PLAN - PROJECT LIST					
Project	Segment (S) or Intersection (I)	Improvement Type	Location	Cross-Section	Cost Estimate
GROWTH PROJECTS					
105 Ave Minor Collector & MUT	Segment	Retrofit	105 Avenue from 100 Street to 98 Street	C1	\$ 120,000
	Segment	Retrofit	105 Avenue from 102 Street to 100 Street	C2	\$ 140,000
	Segment	Retrofit	105 Avenue from 104 Street to 102 Street	C1	\$ 320,000
	Segment	New Road	105 Avenue from 106 Street to 104 Street	C2	\$ 880,000
	Segment	Retrofit	105 Avenue from 108 Street to 106 Street	C1	\$ 330,000
	Segment	Retrofit	105 Avenue from 96 Street to 88 Street	C1	\$ 1,740,000
	Segment	Retrofit	105 Avenue from 98 Street to 96 Street	C1	\$ 250,000
108 Street Connector (108 Ave to 109 Ave)	Segment	New Road	108 Street from 108 Avenue to 109 Avenue	C3	\$ 540,000
100 Street Upgrade (110 Ave to 119 Ave)	Segment	Retrofit	100 Street from 110 Avenue to 119 Avenue	C9	\$ 10,200,000
	Intersection	Moderate Improvement	100 Street and 112 Avenue Intersection	-	\$ 520,000
105 Ave Connector (88 St. to 86 St.)	Intersection	Moderate Improvement	100 Street and 117 Avenue Intersection	-	\$ 520,000
	Segment	New Road	105 Avenue from 88a Avenue to 86 Street	C2	\$ 1,310,000
116 Street Arterial Four-Laning Upgrade	Intersection	Major Improvement	100 Avenue and Alaska Highway 97 Intersection	-	\$ 950,000
	Intersection	Major Improvement	116 Street and 100 Avenue Intersection	-	\$ 950,000
	Segment	Retrofit	116 Street from 100 Avenue to North Bypass Road	A1	\$ 8,180,000
Fish Creek Drive Arterial Connector	Intersection	Moderate Improvement	North Bypass Road and 100 Street Intersection	-	\$ 520,000
	Intersection	Moderate Improvement	North Bypass Road and 116 Street Intersection	-	\$ 520,000
	Segment	New Road	North Bypass Road from 116 Street to 100 Street	A2	\$ 8,570,000
Other Intersection Improvements	Intersection	Minor Improvement	Old Fort Road and 85 Avenue Intersection	-	\$ 50,000
	Intersection	Moderate Improvement	108 Street and Alaska Highway 97 Intersection	-	\$ 520,000
	Intersection	Moderate Improvement	79 Street and 100 Avenue Intersection	-	\$ 520,000
	Intersection	Moderate Improvement	85 Avenue and 100 Street Intersection	-	\$ 520,000
	Intersection	Moderate Improvement	86 Street and 100 Avenue Intersection	-	\$ 520,000
	Intersection	Moderate Improvement	86 Street and Alaska Highway 97 Intersection	-	\$ 520,000
	Intersection	Major Improvement	100 Street and Alaska Highway 97 Intersection	-	\$ 950,000
	Intersection	Major Improvement	85 Avenue and Alaska Highway 97 Intersection	-	\$ 950,000
	Intersection	Unsignalized Ped. Crossing	86 Street and 96 Avenue Intersection	-	\$ 1,000
	Intersection	Signalized Ped. Crossing	96 Street and 119 Avenue Intersection	-	\$ 100,000
Total Growth Projects					\$ 41,210,000
DOWNTOWN PROJECTS					
Downtown Area Bike Route Network	Segment	Retrofit	102 Street from 100 Avenue to 101 Avenue	DT3	\$ 50,000
	Segment	Retrofit	102 Street from 101 Avenue to 105 Avenue	DT3	\$ 240,000
	Segment	Retrofit	102 Street from 105 Avenue to 110 Avenue	C5	\$ 490,000
	Segment	Retrofit	102 Street from 110 Avenue to 111 Avenue	C5	\$ 210,000
	Segment	Retrofit	102 Street from 96 Avenue to 100 Avenue	DT3	\$ 260,000
	Segment	Retrofit	102 Street from 96 Avenue to 93 Avenue	C5	\$ 420,000
	Segment	Retrofit	96 Avenue from 100 Street to 98 Street	C5	\$ 150,000
	Segment	Retrofit	96 Avenue from 102 Street to 100 Street	C5	\$ 340,000
	Intersection	Unsignalized Ped. Crossing	93 Street and 96 Avenue Intersection	-	\$ 1,000
	Intersection	Signalized Ped. Crossing	93 Street and 99 Avenue Intersection	-	\$ 100,000
	Intersection	Unsignalized Ped. Crossing	96 Avenue and 98 Street Intersection	-	\$ 1,000
	Segment	Retrofit	98 Street from 100 Avenue to 101 Avenue	DT3	\$ 90,000
	Segment	Retrofit	98 Street from 101 Avenue to 105 Avenue	DT3	\$ 480,000
	Intersection	Signalized Ped. Crossing	96 Street and 94 Avenue Intersection	-	\$ 100,000
	Segment	Retrofit	98 Street from 105 Avenue to 108 Avenue	C5	\$ 440,000
	Segment	Retrofit	98 Street from 108 Avenue to 110 Avenue	C5	\$ 100,000
	Segment	Retrofit	98 Street from 110 Avenue to 112 Avenue	C5	\$ 160,000
Segment	Retrofit	98 Street from 96 Avenue to 100 Avenue	DT3	\$ 270,000	
Downtown Revitalization - 100 Street	Intersection	Signalized Ped. Crossing	100 Street and 102 Avenue Intersection	-	\$ 100,000
	Intersection	Signalized Ped. Crossing	100 Street and 103 Avenue Intersection	-	\$ 100,000
	Intersection	Signalized Ped. Crossing	100 Street and 98 Avenue Intersection	-	\$ 100,000
	Intersection	Signalized Ped. Crossing	100 Street and 99 Avenue Intersection	-	\$ 100,000
	Segment	Retrofit	100 Street from 97 Avenue to 105 Avenue	DT2	\$ 5,640,000
97 Avenue Minor Collector	Segment	Retrofit	97 Avenue from 102 Street to 100 Avenue	C3	\$ 390,000
	Segment	Retrofit	97 Avenue from 108 Street to 102 Street	C3	\$ 490,000
	Intersection	Moderate Improvement	97 Avenue and 100 Street Intersection	-	\$ 520,000
	Segment	Retrofit	97 Avenue from 98 Street to 96 Street	C3	\$ 450,000
Downtown Revitalization - 100 Avenue	Intersection	Moderate Improvement	100 Avenue and 100 Street Intersection	-	\$ 520,000
	Intersection	Moderate Improvement	100 Avenue and 102 Street Intersection	-	\$ 520,000
	Intersection	Moderate Improvement	100 Avenue and 104 Street Intersection	-	\$ 520,000
	Intersection	Minor Improvement	100 Avenue and 96 Street Intersection	-	\$ 50,000
	Intersection	Signalized Ped. Crossing	100 Avenue and 98 Street Intersection	-	\$ 100,000
	Segment	Retrofit	100 Avenue from 104 Street to 96 Street	DT2	\$ 5,400,000
104 Street Minor Collector Connector	Segment	Retrofit	104 Street from 95 Avenue to 99 Avenue	C4	\$ 2,400,000
Total Downtown Projects					\$ 21,300,000
BICYCLE & TRAIL PROJECTS					
86 Street Upgrades with Multi-Use Trail	Segment	Retrofit	86 Street from 89 Avenue to 93 Avenue	A4	\$ 560,000
	Segment	Retrofit	86 Street from 96 Avenue to 93 Avenue	A4	\$ 420,000
	Segment	Retrofit	86 Street from Alaska Highway to 89 Avenue	A4	\$ 1,480,000
	Intersection	Signalized Ped. Crossing	86 Street and 91 Avenue Intersection	-	\$ 100,000
92A Street with Multi-Use Trail Upgrade	Segment	Retrofit	92A Street from Alaska Highway to 93 Avenue	C1	\$ 1,290,000
90 Street Bike Route	Segment	Retrofit	90 Street from 100 Avenue to 112 Avenue	C5	\$ 820,000
116 Street Multi-Use Trail	Segment	New Trail	116 Street from 100 Avenue to North Bypass Road	A1	\$ 260,000
85 Avenue Bike Route	Segment	Retrofit	85 Avenue from 86 Street to 79A Street	C5	\$ 610,000
Total Bicycle & Trail Projects					\$ 5,540,000
TOTAL ALL PROJECTS					\$ 68,050,000