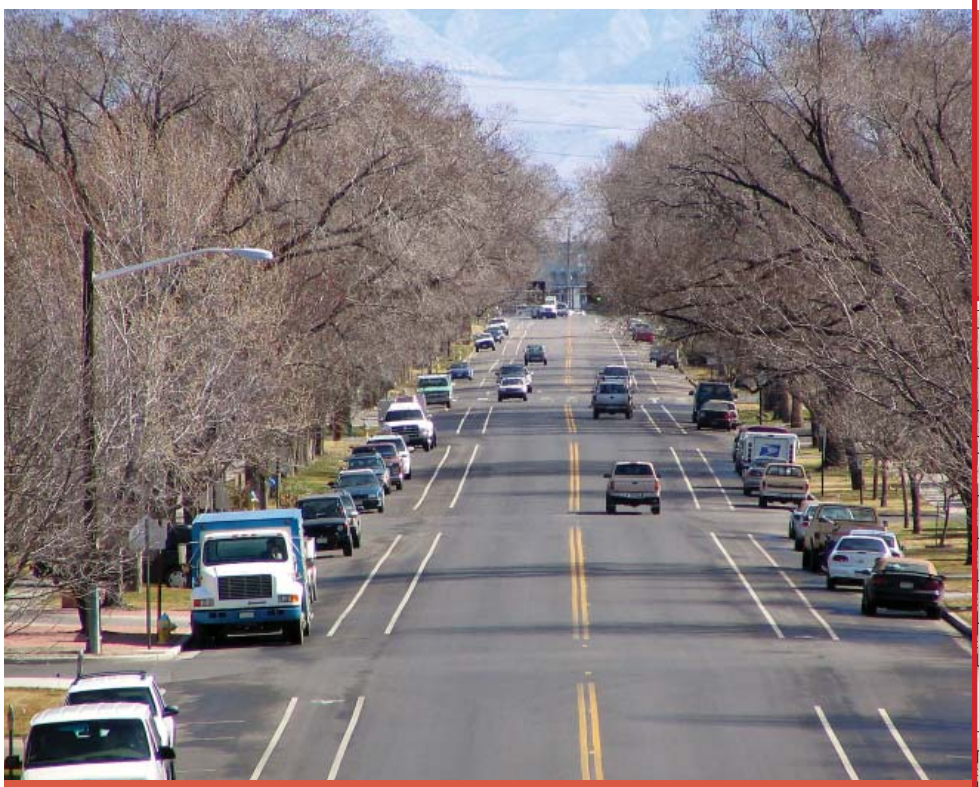
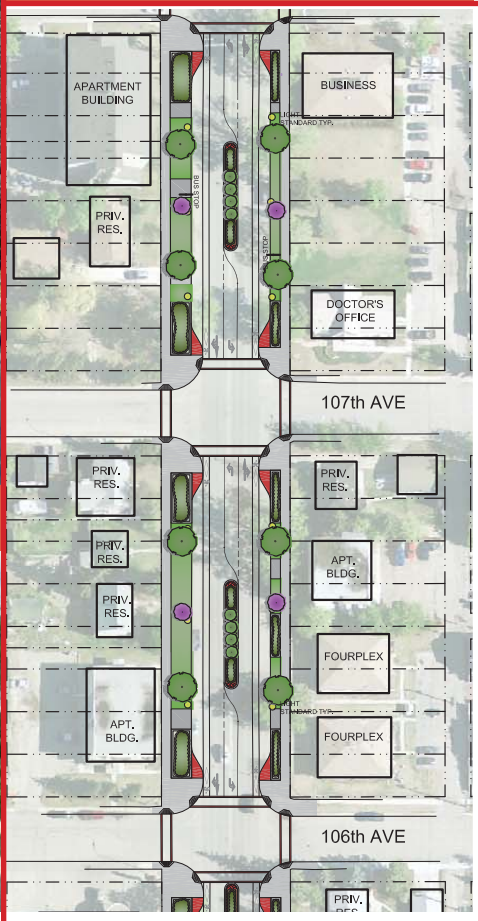


CITY OF GRANDE PRAIRIE

102nd STREET REDESIGN FEASIBILITY STUDY



November, 2010

CITY OF GRANDE PRAIRIE ALBERTA

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The preparation of this Feasibility Study was carried out with assistance from the Green Municipal Fund, a Fund financed by the Government of Canada and administered by the Federation of Canadian Municipalities. Nothwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.

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November 2010

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TABLE OF CONTENTS

LIST OF FIGURES

1.0 PROJECT BACKGROUND

The 102nd Street Redesign Feasibility Study was undertaken to provide City Council, City Administration, and the community of Grande Prairie an opportunity to develop a detailed design strategy for the enhancement of this key roadway.

In 2008, City Council adopted the South Avondale Area Redevelopment Plan, which 102nd Street was a key part of. This Plan identifies a long-term vision for the rejuvenation of this neighbourhood, both from improvements to public space and to development on privately-owned land. A key element of the Plan was the vision of 102nd Street as a vibrant, mixed-use corridor, redeveloped under the 'Complete Streets' model. More information on this approach can be found below.

The Feasibility Study project's central aims were to transform this corridor from its current form to a streetscape that would support both pedestrian and bicycle activity, encourage increased public transit use, reduce the dependency on the vehicle, and promote a vibrant community in a central, higher density neighbourhood in close proximity to the city centre. Specifically, the scope of work for the project included the following:

- To review the existing 102nd Street streetscape, traffic, and parking patterns to determine how to best modify them to create a Complete Street environment;
- To explore other aspects of the road right-of-way which may result in reduced environmental impact, including, but not limited to, improved stormwater infrastructure and updating to LED street lights;
- To review the South Avondale Area Redevelopment Plan to identify the vision for that area with respect to 102nd Street, proposed land uses for the area, and redevelopment policies;
- Developing five concept options, presenting different alignment and programming elements for consideration by the City;
- To meet with residents of the South Avondale neighbourhood to gather their input into the design concept;
- To prepare a conceptual design for the redevelopment of 102nd Street between 102nd Avenue and 108th Avenue. The conceptual design was to contain specific objectives and policies to address the following:
    - pedestrian amenities (sidewalks, benches, lighting, etc.);
    - cyclist amenities;
    - transit user amenities;
    - streetscape;

  - » street furniture aesthetics and placement;
  - » tree planting/landscaping opportunities;
  - » drive aisles (number, width, etc.);
  - » on-street parking (provision of, design, etc.);
  - » opportunities for medians;
  - » crosswalk demarcations;
  - » street lights (aesthetics, type, etc.);
  - » winter city climate; and
  - » snow removal;
- » To assist the City in preparing a budget for the work outlined in the conceptual plan; and
- » To conduct an open house presentation of the concept to the City and Council.

In February 2010, the City retained Urban Systems Ltd. and our partner sub-consultant, Stewart Weir, to undertake the 102nd Street Redesign Feasibility Study.

1.1 Acknowledgements

The project team worked with City staff and other stakeholders to develop the new vision for 102nd Street, and would like to thank the following individuals for their input and contributions:

- » Joe Johnson, Planner/Project Manager - City of Grande Prairie Development Services
- » Michael MacIntyre, Planning Manager - City of Grande Prairie Development Services
- » Kristine Donnelly, Engineer - City of Grande Prairie Engineering Services
- » Mark Baker, Technician - City of Grande Prairie Engineering Services
- » Lindsey Juniper, Parks Planner - City of Grande Prairie Parks Operations
- » Norman Kyle - Aquatera
- » David Biltek - Downtown Business Association
- » Those who participated in the public input survey
- » Participants at the open house and open house survey respondents

The opportunities for success of projects such as the 102nd Street study are limited without input and comment from stakeholders and those living in an area. We hope all of the participants see some impact from their involvement and feel a positive change has been achieved for this key corridor.

On behalf of the City, the project team would also like to acknowledge the financial grant support of the Federation of Canadian Municipalities (FCM) for this project. Funding for the project work was provided under the FCM's Green Municipal Fund - Grants for Feasibility Studies and Field Tests program.

1.2 Project Boundary/Context

The 102nd Street corridor forms the major spine to the South Avondale community. The concept of 102nd Street as a major thoroughfare dates back to survey planning work undertaken a century before. In 1910, an area east of the Bear Creek system was surveyed as a new town site, and construction began. The original plan for the area identified 102nd Street as the main north-south corridor for the community, while 102nd Avenue was to be the main east-west corridor. The original survey plan identified 102nd Street as 'Main Street', and 102nd Avenue was listed as 'First Avenue'. With the concept of these two streets acting as major roadways, both were built with very wide rights-of-way compared to other streets and avenues in the immediate area. Over time, however, commercial development concentrated nearer to the intersection of 100th Street and 100th Avenue, and this formed the origin of the present-day downtown. The area around 102nd Street became more focused on residential uses as a result, and evolved to also provide a number of institutional uses for those living nearby. 102nd Street has been known as 'Carriage Lane' and 'The Boulevard' in the past, and until 1948, also featured a tree-lined median in the middle of the street.

As shown on Figure 1, the Study area boundary extends along 102nd Street, beginning at the south side of 102nd Avenue, and extending to the north side of 108th Avenue. The project is limited to consideration of the public road right-of-way of 102nd Street, extending from property line to property line on each side of the street. No improvements to privately-owned lands are contemplated as part of the Study.

At present, 102nd Street is designated as a collector street. It is a key north-south connection into the downtown area of the city, and extends northwards to the Highway 43 bypass. The roadway currently has a maximum speed limit of 50 km/h, and there is a maximum 30 km/h zone between 102nd Avenue and 105th Avenue. It is not a designated truck or dangerous goods route. This roadway has a second-level priority for snow removal, as outlined by the City's Snow Removal and Ice Control Policy. It is also a designated transit route - Route 2 (High Schools/ Countryside) offers full-day service, with a northbound and southbound stop on either side of the street.

N.T.S.

Figure 1 - Project Boundary

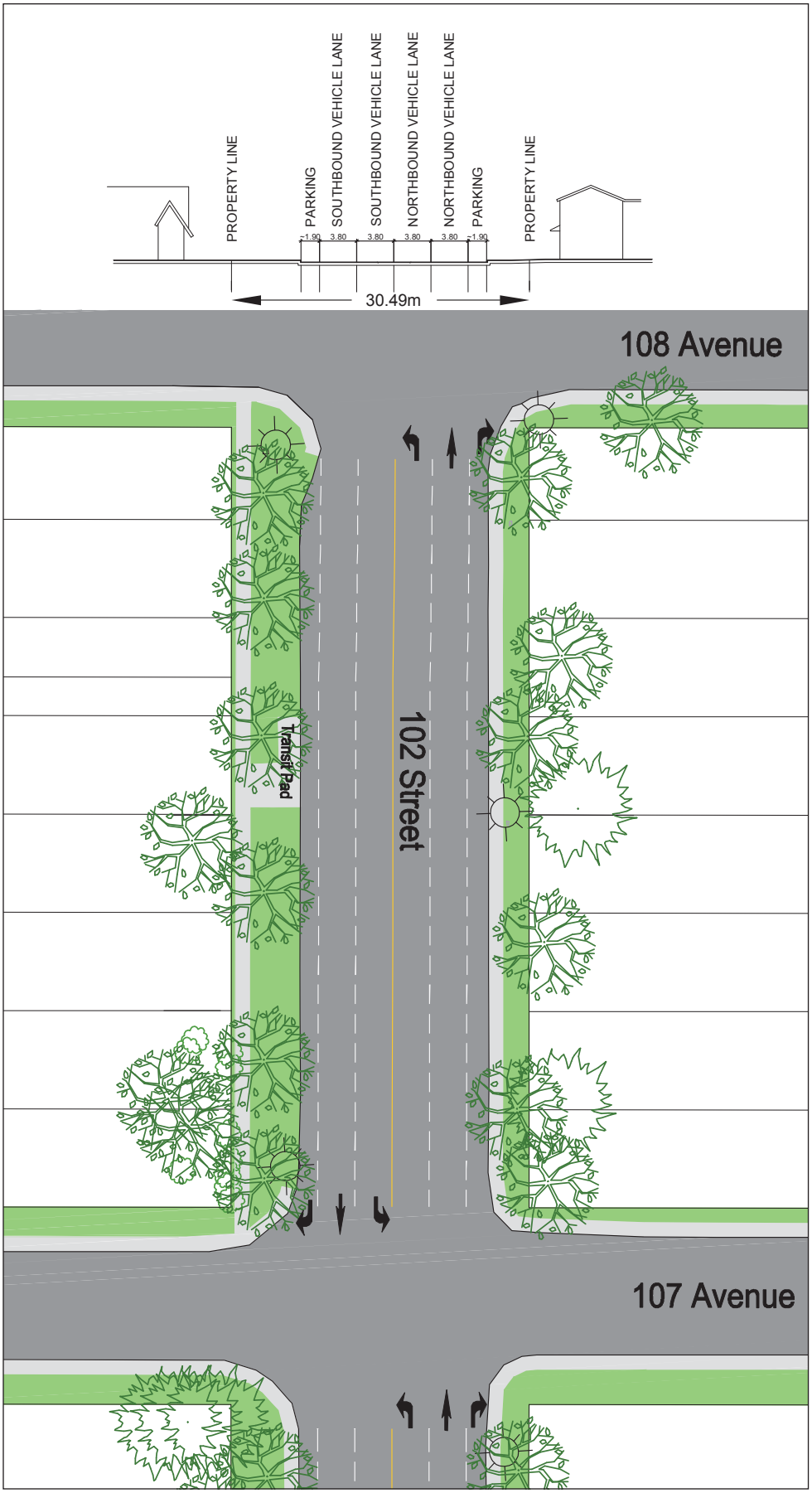

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Figure 2 - Existing Conditions

107th Avenue to 108th Avenue

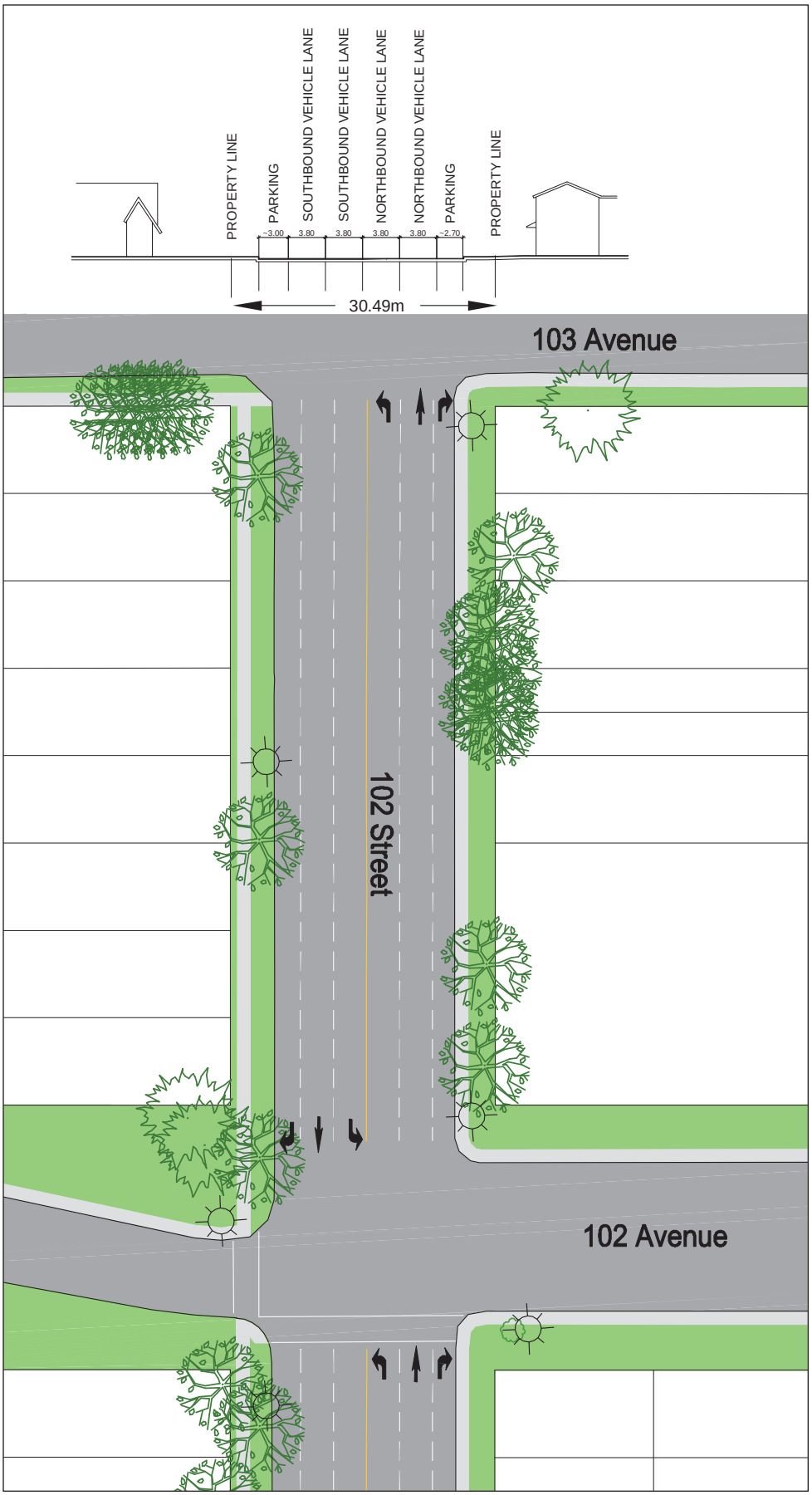

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Figure 3 - Existing Conditions

102nd Avenue to 103nd Avenue

The current cross-section of the roadway accommodates four travel lanes - two northbound lanes and two southbound lanes. Parallel parking for vehicles is available on either side of the street, apart from the two transit stops. An existing mono sidewalk (immediately adjacent to the curb line) extends on the east side of the street through the Study area. On the west side of the street, a separate sidewalk treatment exists, with some tree planting within the boulevard adjacent to the parking lanes. The intersection of 102nd Street and 108th Avenue is fully signalized; the remainder of the intersections along 102nd Street with the east-west avenues are unsignalized, with stop signs for east-west traffic on the avenues. A dedicated pedestrian crosswalk is located at the south side of 104th Avenue where it intersects with 102nd Street. (Figures 2 and 3 show the current cross-section of the roadway for reference.)

The 102nd Street corridor is intersected in several locations by east-west avenues, extending from 102nd Avenue to the south, to 108th Avenue to the north. All of the intersections with 102nd Street are at grade. These east-west connections provide certain levels of access from 102nd Street to Muskoseepi Park, Bear Creek, and the Bear Creek Reservoir to the west, all popular local open space amenities. The 102nd Street corridor also provides access to a number of recreation facilities in these areas, including:

- skateboard park;
- Bear Creek Outdoor Pool;
- Muskoseepi Park Pavilion;
- Muskoseepi Amphitheatre;
- Grande Prairie Museum;
- lawn bowling and horseshoe pitches;
- mini golf;
- children's playlot;
- tennis courts; and
- basketball court.

Also within the Park are a number of asphalt trails and connecting sidewalks that provide different means of access into the area. The main entrance into Muskoseepi Park off 102nd Street at 102nd Avenue provides a direct sidewalk connection into the Park and its facilities and trails. There is also a formal trailhead into the Park area at the west end of 107th Avenue, west of 103rd Street. There are a number of informal access points to the Park and trails network from 106th Avenue, 105th Avenue, and 103rd Avenue. The trails network in the Park also provides direct pedestrian access to Grande Prairie Regional College, approximately one kilometer to the west, near the Bear Creek Reservoir.

The 102nd Street corridor also provides direct pedestrian and vehicular access to 100th Street, a major arterial roadway and commercial corridor, and the main vehicular access point into the downtown area. In addition, 102nd Street provides a direct connection to the downtown area (Central Business District), which begins at 102nd Avenue.

In terms of land use, the portions of the South Avondale community in proximity to 102nd Street are primarily residential in nature. Development on the east side of the street is mainly single detached residential, with some medium density infill. Many of the single detached dwellings have driveway access to 102nd Street, despite the presence of a rear lane that extends through the Study area. The west side of the street includes a range of uses, ranging from single detached residential, medium density residential infill, commercial uses, and institutional uses, such as St. Josephs's Church and Hillcrest School. The main entrance to Muskoseepi Park is located on the west side of 102nd Street at 102nd Avenue. The balance of the South Avondale neighbourhood is residential in nature, with a blend of single detached, semi-detached, four-plexes, and low rise apartment developments. Most of the higher density residential developments were built in the 1970s and 1980s, dramatically altering the formerly low-scale, single family character of the area.

1.3 Existing Document Review

South Avondale Area Redevelopment Plan

The South Avondale Area Redevelopment Plan (ARP) was approved by City Council on June 16, 2008. The City's Municipal Development Plan identified South Avondale as one of five neighbourhoods in the city where a need for an overall plan guiding redevelopment was needed. Over its history, the South Avondale community has experienced varying levels of redevelopment and infill, particularly since the early 1980s. Given the neighbourhood's central location in the city, and proximity to the downtown and amenities such as Muskoseepi Park, ongoing redevelopment in the area was expected to continue. The ARP provides policies and guidelines for redevelopment, ensuring increased compatibility with existing developments, both residential and commercial, and maintaining the opportunity for revitalization of the neighbourhood through new development and investment.

Overall, the ARP contemplates the South Avondale neighbourhood being redeveloped as a mixed-use, higher density area. Areas to the east of 102nd Street are identified for a range of lower and medium density residential, public service, and commercial uses. Lands to the west of 102nd Street are identified for lower and medium density housing, institutional, and open space (Muskoseepi Park) uses. The central focus of the future land use concept of the ARP, however, is on 102nd Street itself. This corridor has been identified as a future mixed-use

node, aiming to create a vibrant, pedestrian-friendly, residential and commercial environment along the street. The ARP proposes developments along 102nd Street that provide commercial space on the lower levels of buildings, with residential uses located in the upper floors. Buildings on 102nd Street have a maximum height allowance of four storeys, although a maximum of five storeys is permitted south of 105th Avenue.

The ARP includes a separate Appendix which provides direction on how to transform 102nd Street into a 'Complete Street'. More discussion on the concept of Complete Streets can be found in Section 1.4 of this report. Generally speaking, this model aims to accommodate a variety of transportation modes, including pedestrians, cyclists, and public transit to reduce the dominance of the vehicle, and bring a more human scale to a street. In conjunction with mobility elements, physical improvements such as tree planting and other vegetation, benches, public art, and pedestrian-scale lighting are also used to help make a street more inviting.

Land Use Bylaw

The City's Land Use Bylaw also includes a separate section of regulations and guidelines that outline the requirements for new developments in the South Avondale neighbourhood. These are addressed in Schedule G - South Avondale Area Redevelopment Plan Overlay of the Bylaw. The Overlay outlines general requirements, establishes allowable uses, and identifies architectural controls, both required and recommended, for various types of development.

Transportation Master Plan

During the course of this study, Urban Systems learned of a new Transportation Master Plan (TMP) that has been started this year with the City and a private consultant. Though the study area for the 102nd Street area would be considered small in the scheme of Grande Prairie as a whole, the TMP would be an excellent opportunity to apply many of the "Complete Street" initiatives of this study to other areas in the city. We encourage an emphasis on multi modal transportation through the TMP, and a commitment from the City to a reduction in the use of single occupant vehicles. This may be achieved through various transportation demand management policies, and investments in facilities and programming for the green transportation modes.

May 2009 101st Avenue Traffic Study re Couplet

The Traffic Study Report for the 101st Avenue Couplet From 96th Street to 104th Street was completed for the City of Grande Prairie in May 2009 as part of the detailed design of 101st Avenue. The Study focuses on traffic movement in the

downtown area and the conversion of 101st Avenue from a two way street to a one way street, which will form the westbound leg of the proposed downtown couplet. In section 5.4 of this report, we will discuss the 101st Avenue Couplet in more detail, and explain the implications of its interface with the 102nd Street Redevelopment.

Muskoseepi Park Master Plan

The Muskoseepi Park Master Plan was approved by Council in November 2009. The Plan was created to provide a strategic direction for the future development and preservation of the Park, and outline guidelines to assist in project-level implementation. The Plan undertook an analysis of the existing Park area, identified several goals and opportunities, developed a master plan concept, and outlined an implementation program. The intent is that the Plan will serve as a guide for ongoing development, management of the natural assets in the area, and assist in developing new programming for its various subcomponents.

Portions of the Park complex are adjacent to the South Avondale area, in particular, a component in the Master Plan referred to as the Centennial Park sub-area. The main entrance to Muskoseepi Park is taken off 102nd Street at 102nd Avenue. The proposed Centennial Park element is seen as the future central core and hub of activity of the overall Muskoseepi Park system. The main area of activity in the proposed Centennial Park is referred to as the Commons, which is located near the 102nd Avenue entrance, therefore having the most relevance to 102nd Street. The proposed Commons area is intended to accommodate programming for historical interpretation, sports, recreation, and cultural activities. The Master Plan identifies a need for enhanced connections into and out of this area, better integrating it with the surrounding neighbourhoods, and facilitating access. Opportunities exist to develop these improved connections at 102nd Avenue, 103rd Avenue, 105th Avenue, and 106th Avenue, which will facilitate better connection to 102nd Street.

1.4 What is a 'Complete Street'

As stated in the South Avondale ARP, a Complete Street is a street where people desire to be, and as much as it is designed to provide mobility, it is also a destination. The mixed land use concept proposed for the 102nd Street area in the South Avondale Plan is based on the Complete Street model, and will complement the street by providing the context for a people-oriented, mixed-use, multi-modal transportation corridor. In essence, a Complete Street is designed to accommodate pedestrians, vehicles, and other modes of transportation equally.

A Complete Street accommodates all modes of travel, and gives the green transportation modes - bicycle, pedestrian-oriented, and transit - as much priority

as the vehicle. Wide sidewalks, bicycle lanes, narrow drive aisles, bus stops, and reduced parking are all common characteristics of a Complete Street format.

Every transit trip starts and ends with pedestrian movements, and as such, strategically-placed bus stops with sidewalk access are essential to a Complete Street. Wide sidewalks encourage pedestrian activity and provide walkabilty through the corridor. They also allow provide additional space that may be used for sidewalk cafés, public plazas, and ground floor commercial uses. Bicycle lanes in the corridor allow for separation of vehicles and cyclists, as well as cyclists and pedestrians, and provide a safer street for all the modes of travel. Narrow drive aisles present a sense of discomfort to vehicle drivers, which encourages them to slow down and, as a result, creates a safer atmosphere for the non-motorized users of the street.

Another commonly-used approach of facilitating a Complete Street model is through the use of a 'road diet'. This approach generally looks to reduce the physical width of a roadway by minimizing drive aisle widths, reducing the number of travel lanes in each direction, widening adjacent sidewalks, adding a boulevard or median in the centre of the roadway, and introducing other traffic-calming measures such as curb flares or enhanced pedestrian crossing islands.

The South Avondale Plan provides direction to consider elements of a Complete Street in the redesign of 102nd Street. Recommendations for this street in this regard include, but are not limited to, the following:

- reduce the number of lanes from four to two;
- introduce a tree-lined median in the centre of the road;
- bicycle lanes;
- universal accessibility features (for mobility-impaired individuals);
- wider sidewalks;
- sidewalks/bicycle path with parking in-between the path and the flow of traffic, rather than the bicycle path between the flow of traffic and parked cars;
- pedestrian bulbs and the exploration of the need for pedestrian crossing lights;
- plant trees in the boulevard adjacent to the sidewalk;
- enhance the public transit stops;
- pedestrian-scale lighting;
- public art; and
- street furniture.

2.0 DESIGN PROCESS

2.1 Project Start up Meetings

Urban Systems met with City staff for a start-up meeting on March 15, 2010, and further connected with the City for two more project initiation meetings following this initial discussion. The purpose of these sessions was to get high-level input from the City departments prior to moving forward with the concept development.

The first meeting included Joe Johnson (Development Services) and Lindsey Juniper (Parks Department). The discussion focused on plantings, irrigation, street furniture, existing banner and signage programs, lighting, enhanced access to Muskoseepi Park, and event usage.

The second meeting included Joe Johnson and Mark Baker (Transportation Engineering). This discussion focused on the existing design of 102nd Street north of the study area, snow storage, stormwater challenges and/or existing anecdotal issues, existing deep utilities, and the accommodation of on-street parking.

The third meeting included Joe Johnson and Norman Kyle (Aquatera). The discussion focused on the existing deep utilities, garbage pickup routes and alternatives, and current standards.

2.2 Project Start Up / Urban Systems Team Session

The initial phase of the project included an Urban Systems team start-up meeting. At this stage, roles and tasks for the team members were defined, and the direction that was received from the City about the goals of the project was discussed and confirmed.

2.3 Background Research and Information Review

The project team completed much of the background research for the site during the proposal stage of the project. However, prior to beginning concept development, the initial document review was supplemented with a more detailed assessment of the South Avondale ARP, the Land Use Bylaw, and some preliminary transportation analysis work. A site visit to the study area was also completed by the project team, allowing an “on-the-ground” view of current conditions of the corridor.

2.4 Site Survey

Stewart Weir Ltd. completed the site survey, which included a complete inventory of the existing street furniture, signage, curb lines, sidewalks, driveways, transit stops, and property lines. They forwarded the information to Urban Systems, which was used for the next stage of base plan preparation.

2.5 Base Plan Preparation

A base plan was prepared using the survey data provided by Stewart Weir, and the legal information and air photo provided by City staff. Included in the base plan information were the as-built details for the north leg of the 102nd Street redevelopment (to the by-pass road), which shows the tie in at 108th Avenue, where the Feasibility Study project connects.

2.6 Public Input Survey

Urban Systems developed a public input survey, for circulation by the City within the South Avondale Plan area. The survey was intended to gather additional information from owners and residents in the area regarding issues and challenges with the existing conditions of 102nd Street. The results of this survey were used to help develop some of the guiding principles for the street redesign concepts.

2.7 Evaluate Existing Conditions

In the evaluation of existing conditions, the project team outlined key pedestrian connections, school locations, infrastructure, transportation data, and land use, referencing City plans and other studies that had some bearing on the 102nd Street corridor.

The transportation analysis included the retrieval of traffic count data from the City for the 102nd Street corridor. The City provided 2009 count data for the 108th Avenue intersection, and 2010 count data for the 102nd Avenue intersection. The project team completed a basic analysis of the City's existing count information, as well as an analysis for the 20 year horizon. More details are included in the Transportation Assessment section of this report.

Though the current land use along the corridor is important to note, the project team moved forward with the 102nd Street redesign with the notion that the corridor concept will be host to a mixture of street-level commercial and higher density residential land uses, rather than the existing uses, which are primarily low density residential. This direction is clearly articulated in the South Avondale ARP.

2.8 Workshop and Developing Guiding Principles

On May 19, 2010, Urban Systems met with City staff and other stakeholders, including the Downtown Business Association and Aquatera. The purpose of this session was to develop the guiding principles for the 102nd Street concept, and to discuss some of the project's key opportunities and constraints. The results that were received from the public input questionnaire were also discussed, which helped inform what was seen as working well in the area, in addition to issues and opportunities.

It was during this workshop that Urban Systems became aware of the proposed 101st Avenue Couplet project that is currently being undertaken by the City. At this time, the City provided more information about the proposed couplet, including the 101st Avenue Couplet Traffic Study Report, which was prepared in May 2009. Information regarding the couplet project was considered in the preparation of the draft concepts for the 102nd Street corridor.

2.9 Develop Concept Options

Based on the project's guiding principles, Urban Systems developed five different concept options for the 102nd Street corridor. These options all provided key pedestrian, bicycle, and motor vehicle rights-of-way, each in a different format. In all of the options, the drive lane widths were significantly reduced from the existing road cross-section, and more priority was given to pedestrians and cyclists, taking direction from the South Avondale Plan, the Complete Streets model, and input received from the stakeholder workshop and the public survey. These options are presented in Section 6.0 of this report.

2.10 Evaluate Options

Following the submission of concepts to the City, an evaluation was conducted to determine the most feasible option for 102nd Street. Comments received from the City were applied to develop a draft concept plan, which will be the guiding element in future development.

2.11 Draft Concept Plan

With comments received from the City, Urban System compiled one draft concept plan to be circulated for comments from the City, public, and Council. This draft concept is presented in Section 7.0 of this report. The final concept plan is to be created after consultation with these stakeholders.

2.12 Draft Report

Urban Systems prepared a draft report for submission to the City on October 8, 2010 for internal review and circulation. This report outlined findings to date including the Draft Concept Plan, the Preliminary Cost Estimate, and recognized milestones to date.

2.13 Draft Report / Draft Concept Review

A review was conducted by the City to address any items in the report or concept plan that needed remedy prior to the Public Open House. Requested changes were made in preparation for the presentation to the public and for the final report submission.

2.14 Public Open House

An Open House was scheduled to gain public opinion on the proposed initiatives in the Feasibility Study. A detailed summary of the Open House and the surveys received from the attendees can be found in section 9.0 Public Open House.

2.15 Final Report / Concept Submission

This report marks the final submission required as determined in the work plan proposed by Urban Systems.

2.16 Next Steps

Council Presentation and Final Adoption

The work program, as submitted by Urban Systems, defines a Council presentation as the final deliverable to conclude this study. It has recently been determined a presentation to the Public Works committee, who reports to Council, may be more applicable. A presentation to this committee has been scheduled for November 2010.

3.0 PUBLIC INPUT SURVEY SUMMARY

In order to obtain some perspective on what issues the surrounding neighbourhood felt should be addressed by the Study, Urban Systems developed a public input survey for the residents of the South Avondale area, with respect to existing conditions and future possibilities along 102nd Street. The survey posed a variety of questions with respect to the following categories:

- General Demographics;
- Transportation;
- Amenities;
- Aesthetics;
- Safety; and
- Maintenance.

The discussion below summarizes the key findings from each of the survey categories that relate directly to the 102nd Street design concept. A copy of the original survey document that was sent out to property owners and residents in the area is included in Appendix A.

In general, the transportation accessibility ratings for 102nd Street were positive for all modes, other than cycling. Only one-third of the respondents currently access the street by bicycle, and only half of that group currently finds that the street is easy to access by bicycle. However, 60% of respondents would cycle to their destinations, if designated bike lanes existed in the 102nd Street corridor. 80% of respondents rarely or never park on 102nd Street, and the same number of respondents feel that traffic congestion on the street is not a problem.

Respondents currently use a variety of amenities near 102nd Street, but predominantly, the Church, local businesses, and Muskoseepi Park are the major destinations. Responses encouraged introducing more local businesses along the corridor in the future to provide services to those living in the immediate area.

Approximately 40% of the responses indicate that the current appearance of the street is unsatisfactory. Trees, plants, street furniture, lighting, and wider sidewalks were all popular choices to improve the street's aesthetics, and additional suggestions include local art and improvements to building façades.

64% of respondents think that 102nd Street is safe, and over half of respondents feel that the crosswalk conditions are unsafe. The majority of the survey comments regarding safety are related to the existing crosswalks and pedestrian safety issues. Suggestions for improvement include flashing crosswalk signage and more visible crosswalks.

Survey respondents had no major issues with the current level of maintenance along 102nd Street, which was generally viewed as satisfactory.

(www.pedbikeimages.org)

4.0 GUIDING PRINCIPLES

Derived from elements of the original Request for Proposal, conversations with the City and information received in the workshop, these guiding principles will define the built form and programming elements for the 102nd Street corridor. The guiding principles are essentially a recipe list of items that will be followed and applied to the Concept Options and the Final Concept Plan. The final concept plan will aim to achieve new development of the highest quality in terms of the public space, while having a positive influence on the private realm, with a seamless transition. The South Avondale neighbourhood, framed by 102nd Street, is truly unique in character, and any new development must be sympathetically designed to ensure that it builds upon its distinctiveness and sense of place within the city.

It is important that these guiding principles should not only be applied to 102nd Street, but also be transferable to other areas of the community as well. With this in mind, the strategies for transportation planning, downtown gateways, neighbouring greenspace, and associated residential, insitutional, and commercial functions shall be applicable to similar areas throughout the city.

The guiding principles are broadly based on the elements of economics and environmental and social sustainability, with direct relevance to urban design. A total of eight over-arching principles were dictated through a process of filtering current guidelines, public questionnaire input, and staff and business association participation, in combination with urban design aesthetics for creating safe, vibrant, meaningful, and authentic places.

4.1 Accessibility

addressing the needs of all in society

This addresses the recognition and respect necessary to design public spaces using universal design principles. 102nd Street is used by people with a wide range of mobility methods. Thus, it is important to establish a level of design for surface treatments, furnishings, grading, wayfinding, and ease of use that would enable these different users to successfully navigate the streetscape. Curb let downs, comfortable bus stops and wide, unobstructed sidewalks allow for these variety of uses. The concept design focused its intent on making life easier for all users, whether resident, visitor, and passer-by, or those tasked with maintaining the built landscape.

4.2 Safety

embracing tested standards of CPTED

Personal and property safety elements are necessary for creating a desirable environment that will attract and retain people within the streetscape at a comfort level not usually associated with city living. Establishing the need for a landscape that promotes walking, positive human interaction, and places of refuge was determined early on in the site programming. The Crime Prevention Through Environmental Design (CPTED) principles of having a public space that can accommodate lots of people (walking, biking, in cars, at transit stops, waiting at cross-walks, or just casual observers looking into the site from their adjoining residence) was important. Respecting and enhancing sightlines and view corridors along, across, and into the site was vital. The establishment of options and safe choices as places to access, whether necessary or perceived, was a key component. The safety guiding principle went well beyond functionality, and needed to be demonstrated at every opportunity.

4.3 Aesthetics

a materials palette that defines the neighbourhood

(www.pedbikeimages.org)

The necessity for arranging a coordinated set of landscape elements that were obviously matched and yet collectively differentiated this neighbourhood from any adjoining neighbourhood was identified as an important element. The palette of surfaces, colours, scale, and design needed to be coordinated to achieve a consistent appearance and feel. In this way, a bench or seating wall will relate to its matching waste receptacle that in turn could be paired to a bollard or bicycle rack. Soft landscape elements, such as street trees, needed to be paired to flowering shrubs in order to complement each other.

4.4 Winter City Design

a new design criteria as distinct as the community's location

The need to incorporate winter design elements into the streetscape in a fashion that embraces the winter by accommodating the challenges it presents was an obvious component, given Grande Prairie's northern location. The need for strong colour elements, such as colored LED streetlighting, to brighten features along a busy commuter route could be employed as a means to achieve this. The opportunity to enhance snow-melt from windrowed and stockpiled snow along boulevard spaces, so that the winter season could appear to be shortened, is a possible option. Winter city design can provide the ability for breaking up prevailing winds with street tree plantings within spaced areas to make the winter environment more pleasant for the pedestrian. Accommodating snow storage within the public right-of-way temporarily before maintenance removal occurs is another practical consideration of the local climate.

4.5 Amenities

those special elements that set the street's programming beyond a transportation route

Finding space for functional elements that increases the usability of the street is a vital part of attracting pedestrians and other users. This goes beyond the standard practical elements of overhead lighting, utility elements (hydrants, valves, signage), and garbage pick-up locations. Amenities reinforce the programming for a space. As such, associated with the bicycle route, places for bicycle racks and lockers should be provided; in order to encourage transit use into and out of the neighbourhood, there needs to be well-designed transit stops (with shelters, maps, timetables); the provision of seating nodes (with benches, information kiosks, and recycling) where residents and visitors can rest and enjoy the space promotes the key interaction between people that helps to create an engaging place; and gateway features (with public art, signage, structural elements) delineating the entrances into the parks, commercial districts, and the downtown help define the neighbourhood's place in the wider community.

4.6 Maintenance

the practical long-term viability of the space to be maintained to a standard equivalent to that achieved at construction

There are a series of maintenance regimes that all open spaces require, whether at the daily, weekly, seasonal, or annual interval, in order to perpetuate the investment made and achieve the safety of the site in the long term. To maintain the integrity of the designed streetscape, a clear maintenance strategy must be determined to define the maintenance responsibilities of boulevards, medians, and open space and whom is charged with carrying out the tasks. The existing By-Law C-504, outlining Boulevards, Flankages, Utility Lots and Street and Lane Trees within the City of Grande Prairie must be reviewed and altered to accommodate these maintenance responsibilities. The site must be maintainable by the City public works crews, its contractors, utility companies that share the right-of-way, and also by the adjoining property owners. The ability to practically tackle the boulevard grass cutting, garbage pick-up, snow removal, or tree limb pruning all dictate the degree of investment necessary at the construction onset, with a mind to not install features that will be impractical to maintain over time. The practical design elements that share the public realm need continual access in order to ensure this neighbourhood and those adjoining, that rely on these infrastructure pieces, can be cared for. As such, man-hole grouting, hydrant flushing, and utility kiosks access need to be accommodated without compromising the functionality of the street. Other maintenance such as snow removal, sanding and de-icing, or line painting and sweeping are on-going functions needed along a transportation corridor, and the materials used in construction must be able to withstand continual wear.

4.7 Transportation
functionality first

102nd Street must function as a street first and backbone to the neighbourhood second. The functionality of conveying vehicles (cars, trucks, busses, and bicycles) along, across, and within (parking) the street is necessary to maintain this route as a continued vital part of the city's larger network and entrance into the downtown core. Built into the principle of conveyance must be turning circles, design speeds, multi-modal accommodation, and parking. The whole corridor must function smoothly and safely as a hierarchy of programming from pedestrians to cyclists to vehicle drivers. Intermittent elements such as emergency vehicles, transit routing, and garbage or mail pick-up need to be practically accommodated within the regular passage movements. It needs to be recognized that this stretch of road performs much more than a local neighbourhood function of residential and commercial access. It is the route to the downtown to the south or the Highway 43 bypass to the north, that also feed users into the area from the broader community.

4.8 Interface
adjoining uses

This street has some interesting local neighbourhood programming elements to which it must relate to and respect through its design. While the neighbourhood will be affected in a positive fashion from the investments made within the public road right-of-way, investments should also be made annually within the private realm to help support the vitality of the entire corridor. The existing church, school, park, neighbourhood commercial, and residential uses currently relate well to the street. However, the long term intent for the neighbourhood articulated in the South Avondale Plan will see further interface elements introduced as increased density and mixed-use (low-rise apartments, home-based businesses, boutique type stores, and other street-level retail) as the neighbourhood continues its evolution.

(www.pedbikeimages.org)

5.0 TRANSPORTATION ASSESSMENT

102nd Street, between 108th Avenue and 102nd Avenue is a four lane roadway with parking and narrow sidewalks on each side of the road. The current street cross section varies slightly from the north to south ends of the study area. Figure 2, shows the cross section dimensions near 108th Avenue, and Figure 3 shows the cross section dimensions near 102nd Avenue.

The main goal of the transportation analysis for this redesign feasibility study was to investigate whether the existing paved roadway width may be reduced from the existing four lanes with parking, based on current and future capacity requirements. At the concept stage, detailed analysis is not required; therefore, this study has focused on the intersections of 102nd Avenue and 108th Avenue, and the capacity of 102nd Street between the two ends of the study area.

5.1 Existing Conditions on 102nd Street

The City of Grande Prairie provided Urban Systems with traffic counts for the intersections of 102nd Street and 108th Avenue, and 102nd Street and 102nd Avenue. The traffic data consists of pedestrian and vehicle volumes; there is no existing information about cyclist or transit volumes along 102nd Street. We have assumed that the existing conditions at 102nd Avenue and 108th Avenue provide a good representation of how the other intersections along 102nd Street, within the study area, currently operate.

At 102nd Street and 102nd Avenue, pedestrian volumes were at their peak in the noon hour, at which time 40 people were counted walking through the intersection. At 102nd Street and 108th Avenue, pedestrian volumes peaked in the afternoon between 3:15 and 4:00 PM, which is likely related to the end of the school day. At this time, 118 pedestrians moved through the intersection. At the same intersection, in the noon hour, there were 100 pedestrians counted. This existing pedestrian data shows that there is a significant demand for safe and accessible pedestrian facilities and crossings within the 102nd Street corridor.

Daily vehicle traffic volumes through the 102nd Street study area range from 7,650 vehicles per day (vpd) at the 108th Avenue intersection to 8,500 vpd at the 102nd Avenue intersection. These daily vehicle volumes are indicative of a 2-lane collector-level roadway.

Urban Systems further analyzed the existing traffic conditions at both intersections in Synchro V7.0 for the AM and PM peak hours at the 102nd Avenue and 108th Avenue intersections with 102nd Street. Synchro software uses the methods of the 2000 Highway Capacity Manual (Transportation Research Board) for the analysis of unsignalized and signalized intersections.

The following is an explanation of average delay ranges and operational performance levels for vehicle traffic at signalized intersections. Levels of Service (LOS) A and B represent good operational conditions, with average delays less than 20 seconds. Levels of Service C and D represent fair operating conditions, with average delays between 20 and 55 seconds. Level of Service E represents poor operating conditions, with average delays between 55 and 80 seconds. Level of Service F represents very poor operating conditions, or failure, with average delays in excess of 80 seconds.

At 108th Avenue and 102nd Street, the signalized intersection performs at a Level of Service B with one northbound lane and one southbound lane on 102nd Street. At 102nd Avenue and 102nd Street, the east/west stop-controlled intersection performs at a LOS A with one northbound and one southbound lane on 102nd Street. These results indicate that the vehicle capacity of 102nd Street may be reduced to two lanes, which allows for a large portion of the existing cross section width to be allocated to cycling and pedestrian facilities. The full Synchro reports may be found in Appendix B.

5.2 Future Conditions on 102nd Street

Due to the nature of the 102nd Street redesign project, and the focus on creating a Complete Street environment, which will encourage more pedestrian and cyclist activity, we can assume that pedestrian and bicycle traffic will increase substantially over the next 20 years. However, it is difficult to quantify the growth because of the absence of historical data for pedestrian and cyclist activity for 102nd Street.

However, there is a significant amount of historical data available for vehicle traffic on 102nd Street. The study used a growth rate of 1.4% for vehicles at the 102nd Avenue and 102nd Street intersection, and 2.0% for vehicles at the 108th Avenue and 102nd Street intersection. The 1.4% rate is derived from Alberta Transportation's historical highway data on Highway 40 near the intersection of Highway 43, as Highway 40 is a north/south road and parallel to 102nd Street. The 2.0% rate is derived from Alberta Transportation's historical highway data on Highway 43, east and west of 106th Street, which connects to 108th Avenue.

It is understood that assuming historical vehicle traffic growth rates for a street that is being progressively retrofitted to be less accommodating to vehicles is not ideal. However, we have used these growth rates to illustrate that 102nd Street will continue to operate acceptably with two vehicle lanes, even if vehicle traffic continues to increase based on the historic rates.

By the year 2030, it was calculated that there could be approximately 11,000 vpd using the 102nd Street corridor. This is within the acceptable threshold for urban collector roadways, which is 12,000 vpd. In addition, the intersections at 108th Avenue and 102nd Avenue both operate at a LOS C, or better, in both peak hours, with a two lane cross section on 102nd Street.

Though the intersection analyses indicate that there are no left turn lanes required along 102nd Street, the City of Grande Prairie has requested that the future concept for the street incorporate left turn lanes at all of the intersections. This feature will require a three lane cross section through the study area, and serve to increase the vehicle capacity at the study area intersections, while providing for additional pedestrian and cyclist space and amenities.

5.3 Interface with Road Improvements to the North

To the north of the project area, on 102nd Street between 108th Avenue and 113th Avenue, a number of streetscape and roadway improvements have taken place. Changes under this development include the addition of pedestrian bulb out crossings, the use of decorative concrete paving, a standard sidewalk aesthetic, and the decreased road width for travelling traffic. Many of these improvements can be directly related to Complete Streets initiatives, and are therefore relevant elements to continue through the project area southward.

A key item of improvement to the north worth noting is the reduction of travel lanes from four to two and the allocation of parallel parking lanes in both the northbound and southbound direction. The analysis conducted on the project area also supports this reduction of travel lanes, making this a viable option for the project area as well.

Along with this decrease of travel lanes, commuter bike lanes have also been installed between the vehicular travel lanes and the parallel parking in both the northbound and southbound directions. To promote a cohesive transition, it is encouraged that these elements be repeated in the project area to the south.

5.4 Interface with 101st Avenue Couplet to the South

The City is currently undertaking the detailed design of the 101st Avenue Couplet, from 96th Street to 104th Street, through its downtown area. A one-way couplet is a pair of one-way streets that function as a single higher-capacity street. Couplets are usually separated by a single city block; however, in this case, there will be two blocks between the one-way streets. The downtown's existing couplet is made up of 99th Avenue and 100th Avenue; 101st Avenue will replace 100th Avenue as the north leg of the couplet. 100th Avenue, which is currently a one-way westbound roadway, may be turned into a two-way road as part of this exercise, pending further review by the City.

Urban Systems became aware of the 101st Avenue Couplet project in May 2010, due to the project's proximity to the 102nd Street study area. The 102nd Street study ends less than half a block north of the proposed 101st Avenue Couplet. Though a couplet already exists in the downtown, the new proposed couplet will encroach north and be designed as a higher priority vehicle thoroughfare, with large traffic circles at its east and west ends. As part of our due diligence, in redesigning 102nd Street as a Complete Street, we would like to highlight the somewhat contradictory principles behind the 101st Avenue Couplet and the 102nd Street Redesign projects.

Existing couplet - Edmonton, AB

The advantage that one-way couplets have over a two-way street network is a higher vehicle carrying capacity. One-way streets can accommodate more vehicle capacity because there are fewer conflicting vehicle movements, and offer the potential to have more efficiently timed traffic signals, with one less direction of vehicle flow. However, as the number of one-way streets in an area increases, so does the number of vehicle miles travelled, due to the inability of drivers to directly reach their desired destinations.

One-way couplets are intended to move vehicles through an area as quickly and efficiently as possible, rather than to accommodate people who wish to stay within an area. A one-way street network is typically only efficient for the familiar driver, who knows an area well. Unfamiliar drivers, or new visitors, can become confused by such systems, and may find it difficult to find the location they are looking for. One-way systems increase the efficiency of vehicle thoroughfares; however, this occurs at the expense of pedestrians and cyclists. In many cases, even motorists can be inconvenienced by a one-way street network when their destination is within the one-way grid.

In downtown areas, economic vitality has been shown to decrease with the implementation of one-way streets. Generally, economic vitality is based on businesses' abilities to draw on customers, which is directly related to access, visibility, ease of navigation, and a welcoming urban environment. One-way streets can work against these needs by hindering access opportunities, reducing

exposure - as businesses are only available to people driving in one direction - and providing an environment that is typically less welcoming to pedestrians, cyclists, and other non-vehicular modes of transportation.

The goals of the 102nd Street project, on the other hand, are to enhance the pedestrian and cyclist environment along this corridor, reduce the number of vehicle lanes, and create a destination where people go to live, work, do business, and play. In a Complete Street model, the focus is on accommodating non-vehicular modes of transportation, to the betterment of the pedestrian. It can be suggested that the opposite is true with respect to the impetus of a one-way network such as the 101st Avenue Couplet project. The one-way street network that is proposed for the downtown area will act predominantly as a vehicle thoroughfare, serving to increase vehicle capacity, while creating an environment that could be more restrictive to cyclists and pedestrians.

For the 102nd Street project to be a success, the City will need to strategically tie 102nd Street into the couplet network in the downtown area, which may pose some challenges, given the very different philosophies behind each approach. Though the 99th Avenue and 101st Avenue couplet will become a vehicle-dominated east-west corridor, the City can provide ample right-of-way to pedestrians and cyclists in the north-south directions on 102nd Street through the downtown, such that the Complete Street characteristics of 102nd Street do not dead end at 101st Avenue.

Urban Systems respects the decision of the City to undertake the enhanced couplet project, and we do understand the desire to accommodate the traffic volumes that are experienced through the downtown area in an east-west and west-east direction on a daily basis. However, we did wish to identify the key differences in principles between the two approaches, to make the City aware of possible design challenges in transitioning from one system to the other.

6.0 CONCEPT OPTIONS

As guided by feedback from the Public Input Survey and from meetings with the City and other stakeholders, five concepts were presented as options for review. It was encouraged that each concept be viewed as a sum of parts, as opposed to a whole strategy that must be implemented. With this approach, pieces from every concept could possibly be chosen to create the final design that would then be implemented along 102nd Street. Those concepts are presented in the pages to follow.

CONCEPT A

6.1 Concept A

With a “road diet” exercise already completed on 102nd Street to the north of the project boundary, this concept was an archetype reproduction of the construction detail created in that area. The focus of this proposed concept was to have narrower sidewalks than the other sidewalks, medians with raised concrete planters, and dedicated left turning lanes. Parallel street parking is found on both sides of the street, along with two way bicycle lanes. Crosswalks are simple here: coloured pavement at the corners and painted line crossings. The street trees in this concept vary from large shade trees to ornamental trees.

Existing driveway and bus stop treatments along 102nd Street between 108th Avenue and 113th Avenue

Crosswalk treatments

Median planters

Pedestrian bulb outs with decorative concrete

Cyclist uses designated bike lanes

N.T.S.

CONCEPT A

6.2 Concept B

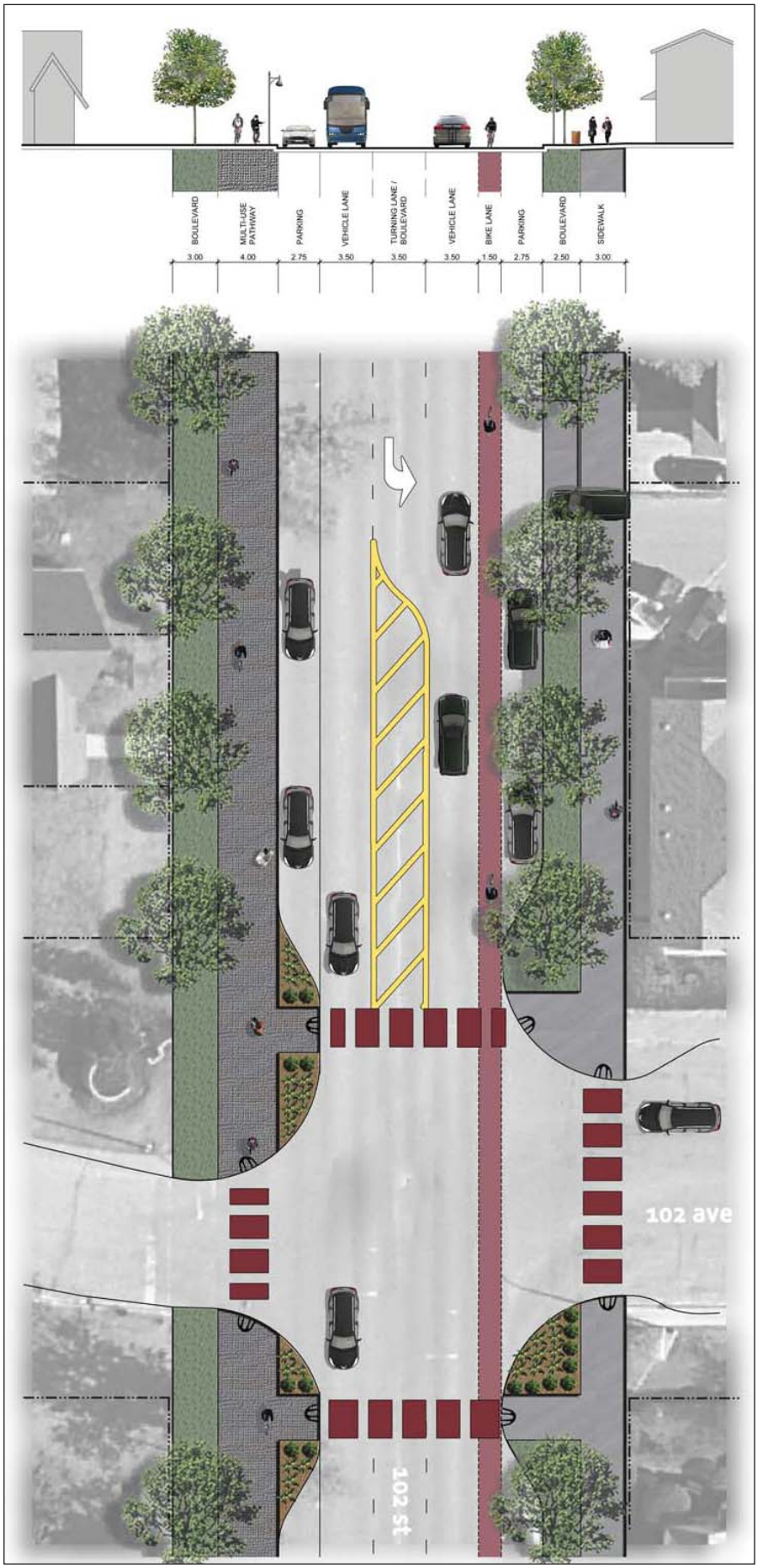
This concept took advantage of the large right-of-way to provide wider pedestrian walks on either side of 102nd Street. On the west side of the street, a proposed multi-use pathway mimics that which occurs on 102nd Street north. The sidewalk on the east is wider as well to encourage pedestrian use. No raised medians are provided here - the central lane is painted. Parallel parking is provided on both sides of the street, but only one bicycle lane is offered in this scenario. Crosswalks are identified with planted curb flares and painted crossings. A monoculture is proposed for the street trees.

Multi-use asphalt trail

Stormwater management - swale plantings

Painted line medians

Designated bus stops with shelters



N.T.S.

CONCEPT B

6.3 Concept C

To emulate the experience of a European promenade, this concept is defined by a wide, coloured pavement walk that would accommodate outdoor patios adjacent to retail amenities. Central median planters are proposed, along with pedestrian refuge bulbs (central safety zones where pedestrians can pause to watch for traffic coming as they cross the street). Important gateways, such as the entry into Muskoseepi Park, would be demarcated with paving patterns and visual cues to notify users of gateway significance. Raised planters would be installed at seating height to limit the amount of "catalogue" furniture needed along the sidewalk. Parallel parking is provided on one side of the street, with one bicycle lane.

Seating wall planters adjacent to pedestrian promenade

Pedestrian refuge medians

Multi-use, wide promenade accommodates open air dining

Pedestrian promenade adjacent to seating wall planters and designated parking/bike lanes

Wide sidewalks provide access to a variety of street-front retail

N.T.S.

CONCEPT C

6.4 Concept D

A traditional approach to pedestrian traffic is taken with proposed standard sidewalk widths in this example. Bicycle traffic is approached slightly differently by moving the two-way bicycle lanes from the road and shifting them into a pedestrian realm, protected by boulevards on either side. Bicycle parking is proposed to occur in the widest boulevard, at popular amenities as needed (church, multi-family housing, school, etc.). A narrow, curb-level median is proposed to run down the central lane, with wider vehicle traffic widths on either side (4.5m). Parallel parking is proposed on the east side of 102nd Street. The pedestrian crossings are prominent through the use of large planting areas and painted crossings.

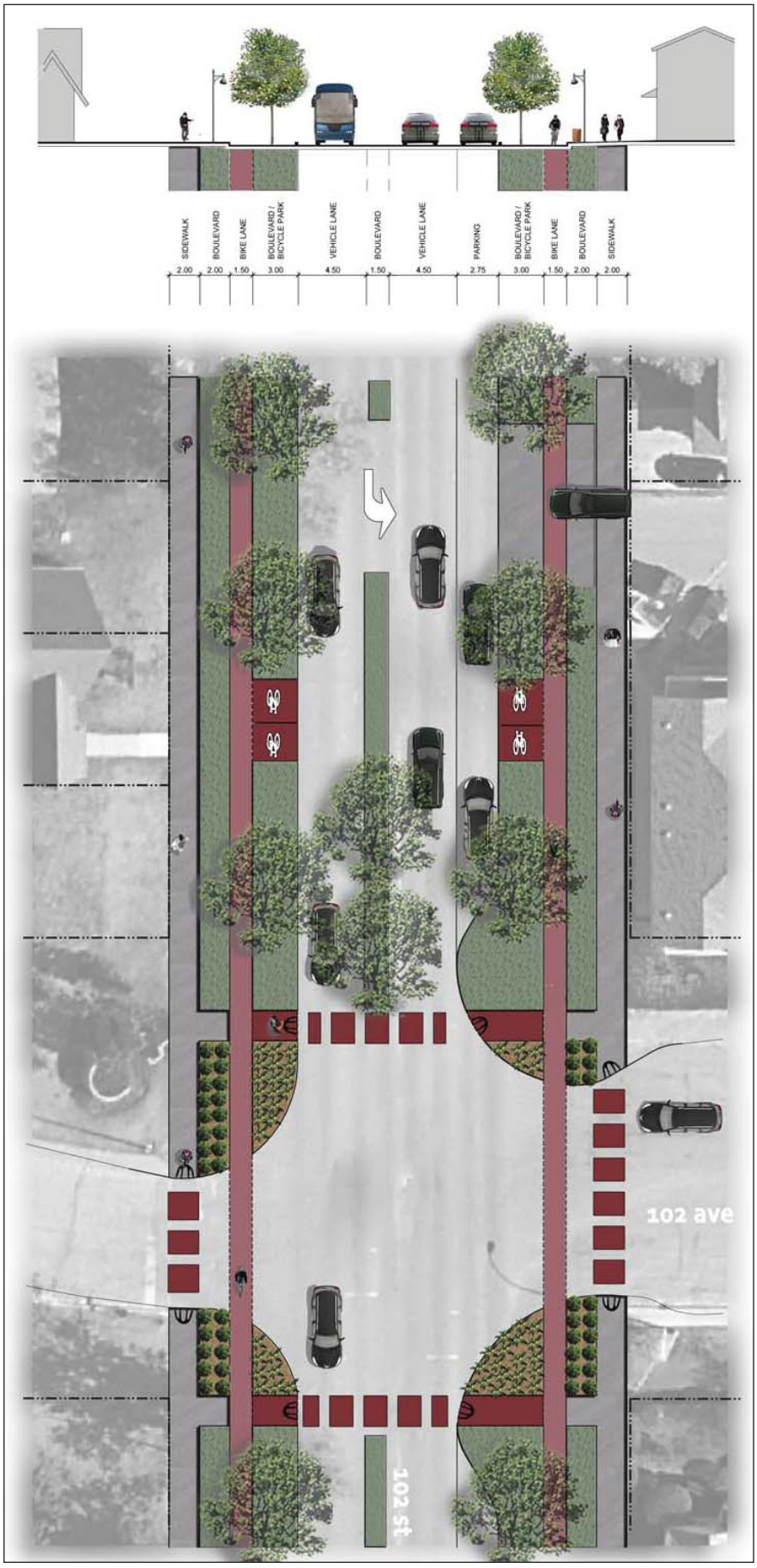
Bicycle parking adjacent to bicycle lanes and sidewalks

Paving treatments address safe pedestrian crossings

Separate bicycle lane

Designated safe crossings

Separate bicycle/pedestrian corridor through use of boulevards



N.T.S.

CONCEPT D

6.5 Concept E

The idea of bicycle traffic as a separate use is continued through this design. Here, two way bicycle lanes are proposed as an extension to the pedestrian walkways, demarcated with coloured paving or a grade change. Bicycle parking is provided at key amenities in the boulevards, easily accessed from the separate bicycle lanes. Vehicular traffic is accommodated with parallel parking on both sides of 102nd Street and a central turning lane that alternates with a central planted median. The median offers "pedestrian refuge" at the pedestrian crossings and curb level plantings throughout. Painted crossings are proposed here as well.

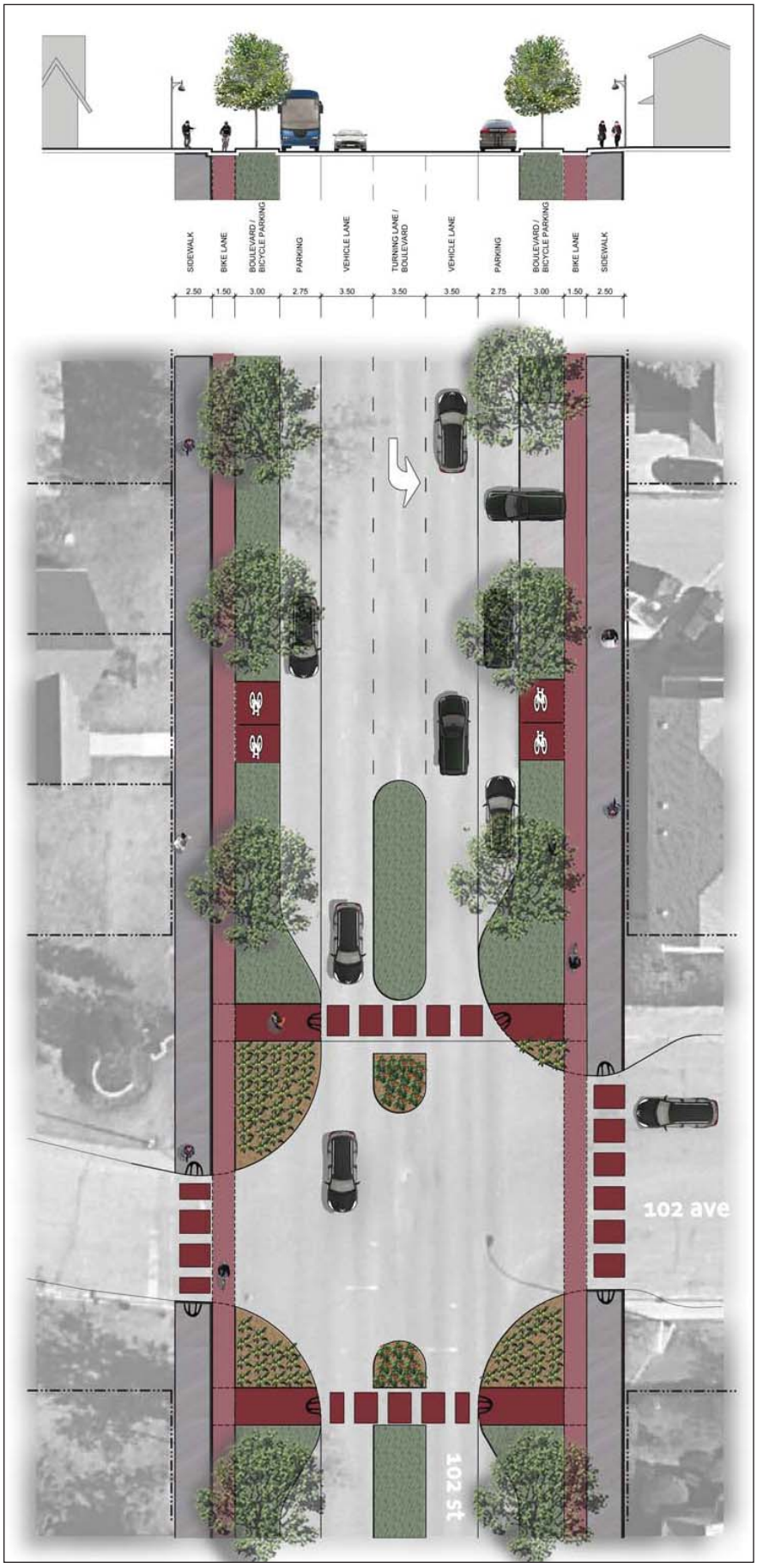
Designated pedestrian/bicycle zone

Off-street bicycle parking

Bicycle lane and pedestrian walks separate from vehicles

Separate bicycle lane determined through pavement treatment and grade change

Pedestrian refuge crossings through use of median plantings



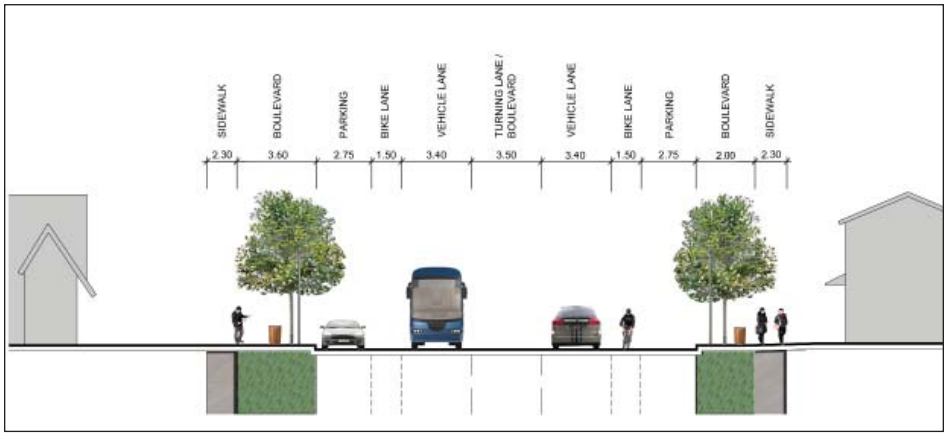
N.T.S.

CONCEPT E

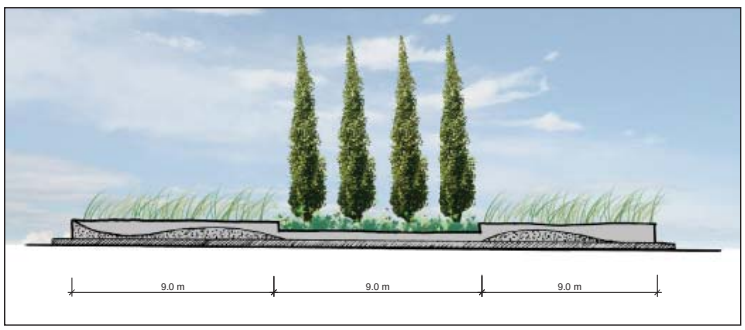
7.0 FINAL CONCEPT PLAN

This concept plan is a compilation of elements, as chosen by the City, from the five concept options. Special consideration has been given to tie-ins with existing improvements to the north of the project area and future developments to the south. With the north portion of 102nd Street already constructed, it was important to ensure a seamless continuity in design and aesthetics, while incorporating elements that would identify a user with "downtown". Comments received at the Public Open House determined the need for an ongoing assessment of the north construction area to determine the success of the "Complete Streets" elements. Further recommendations to the possible construction of this proposed plan can be found in 10.0 Recommendations.

This design was deemed "Draft" until after the Public Open House, at which time public and municipal comments were considered and updated into this "Final Concept Plan".



102nd Street typical section

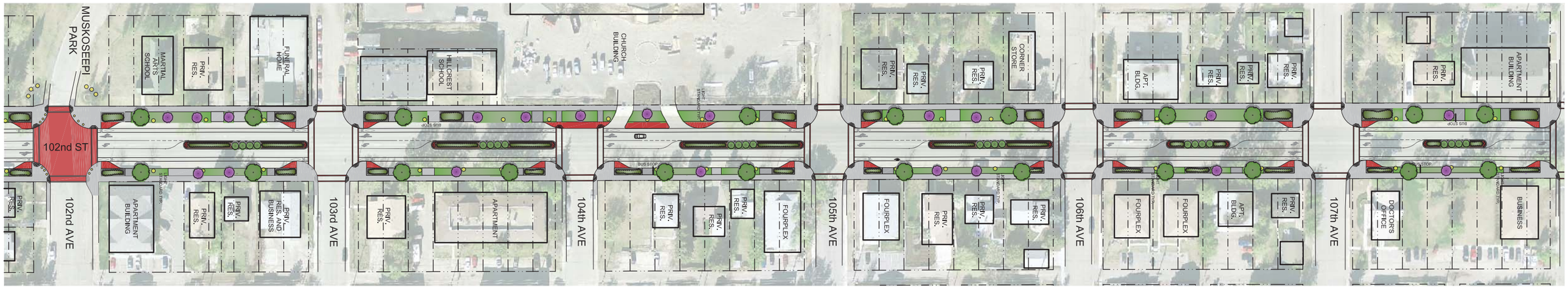


102nd Street typical median elevation

102nd Avenue gateway - existing conditions

102nd Avenue proposed gateway - day view

102nd Avenue proposed gateway - night view



N.T.S.

Final Concept Plan

7.1 Materials Palette

102nd Street

Hardscape

EXISTING CONDITIONS


PROPOSED


Seating wall planters


Decorative median planter


Coloured concrete


Decorative median planter


Coloured sidewalk

Lighting

EXISTING CONDITIONS


PROPOSED



Winter interest


Pedestrian lighting


Decorative bollards

Site Furniture

EXISTING CONDITIONS



PROPOSED

Stainless bicycle rack

Steel waste receptacle

Stainless ash receptacle

Seating wall planters

Bus Stops

EXISTING CONDITIONS

PROPOSED


Enclosed Shelter

Plant Materials

TREES

Schubert chokecherry

Black spruce

Pin cherry

Columnar aspen

Trembling aspen

Brandon elm

Mountain ash

White spruce

SHRUBS

Dwarf mugo pine

False spirea

Spreading juniper

High bush cranberry

Miniglobe honeysuckle

Wild rose

Red osier dogwood

Golden current

SHRUBS - CONTINUED


Arctic willow


Pygmy caragana


Potentilla


Russian almond

GRASSES


Blue grama grass


Tufted hair grass


June grass


Reed grass


Ribbon grass

Gateway Intersection - 102nd Avenue

Coloured intersection

Coloured crosswalks

Native planting

Decorative lighting

Decorative bollards

Seating wall planters

Entry feature

8.0 PRELIMINARY COST ESTIMATE

	Unit	Est. Qty.	Unit Price	Price
Removals				
Asphalt Removal	m²	12700	$10.00	$127,000.00
Concrete Removal	m²	4000	$15.00	$60,000.00
Excavation to subgrade	m²	16700	$10.00	$167,000.00
			Subtotal	**$354,000**
Roadworks				
150mm Subgrade Preparation	m²	12700	$300.00	$3,810,000.00
350mm Gravel (20mm)	m²	12700	$35.00	$444,500.00
75mm Asphalt Paving	m²	12700	$40.00	$508,000.00
35mm Asphalt Paving @ FAC	m²	12700	$22.00	$279,400.00
Pavement Marking	ls	1	$8,000.00	$8,000.00
			Subtotal	**$5,049,900**
Concrete Works				
Sidewalk c/w bus stops and bike parking	m²	4500	$115.00	$517,500.00
Private Driveways	m²	200	$115.00	$23,000.00
Curb & Gutter	lm	2000	$110.00	$220,000.00
Decorative Concrete	m²	600	$200.00	$120,000.00
Curb Ramps	m²	110	$200.00	$22,000.00
			Subtotal	**$902,500**
Deep Utilities				
Catchbasin Adjustment	ea.	10	$500.00	$5,000.00
Storm Manhole, Adjust Existing	ea.	10	$1,000.00	$10,000.00
Sanitary Manhole, Adjust Existing	ea.	10	$1,000.00	$10,000.00
Water Hydrants, Supply & Install	ea.	5	$7,500.00	$37,500.00
Adjust Existing Water Valve Boxes	ea.	15	$500.00	$7,500.00
			Subtotal	**$70,000**
Landscaping				
Hard Landscaping - Raised Planters	ea.	21	$8,500.00	$178,500.00
Soft Landscaping	m²	2000	$60.00	$120,000.00
			Subtotal	**$298,500**
Street Furniture				
Street Signs	ea.	17	$750.00	$12,750.00
Benches	ea.	20	$1,500.00	$30,000.00
Waste Receptacles	ea.	20	$1,500.00	$30,000.00
Lighting	ea.	40	$2,000.00	$80,000.00
			Subtotal	**$152,750**

Gateway Intersection

Decorative Pavement	m²	570	$200.00	$114,000.00
Entry Feature	ls	1	$50,000.00	$50,000.00
Lighting	ls	1	$12,000.00	$12,000.00
Soft Landscaping	ls	1	$15,000.00	$15,000.00
Hard Landscaping	ls	1	$35,000.00	$35,000.00
			Subtotal	**$226,000**

SUMMARY	
Removals	$354,000
Roadworks	$5,049,900
Concrete Works	$902,500
Deep Utilities	$70,000
Landscaping	$298,500
Street Furniture	$152,750
Gateway Intersection	$226,000
TOTAL	**$7,053,650**
Additional Expenses	
25% Contingency	$2,468,778
15% Engineering	$1,058,048
5% GST	$352,683

Note:

This is a preliminary estimate which indicates the approximate magnitude of cost of the proposed project. This overall cost estimate may be derived from lump sum or unit costs associated with other recent similar projects.

This concept is not for tender or construction- detailed design and engineering is required.

Geotechnical investigation of underlying soils and road structure has not been conducted and is recommended prior to construction.

As part of the detailed engineering for the next phase of this project, a utilities assessment is required. Only costs for minimal deep utility adjustments have been shown- shallow utilities and retrofits/ replacements have not been calculated.

8.1 Construction Phasing Strategy

PHASE 1

Gateway Intersection *(Muskoseepi Park Entrance 102nd Street/ 102nd Avenue)*

	Costs
Decorative Pavement	$114,000
Entry Feature	$50,000
Lighting	$12,000
Soft Landscaping	$15,000
Hard Landscaping	$35,000
TOTAL PHASE 1	**$226,000**

PHASE 2

102nd to 104th Avenue

Removals	$118,000
Roadworks	$1,683,300
Concrete Works	$300,833
Deep Utilities	$23,333
Landscaping	$99,500
Street Furniture	$50,917
TOTAL PHASE 2	**$2,275,883**

PHASE 3

104nd to 106th Avenue

Removals	$118,000
Roadworks	$1,683,300
Concrete Works	$300,833
Deep Utilities	$23,333
Landscaping	$99,500
Street Furniture	$50,917
TOTAL PHASE 3	**$2,275,883**

PHASE 4
106nd to 108th Avenue

Removals	$118,000
Roadworks	$1,683,300
Concrete Works	$300,833
Deep Utilities	$23,333
Landscaping	$99,500
Street Furniture	$50,917
TOTAL PHASE 4	**$2,275,883**

CONSTRUCTION TOTAL	**$7,053,650**
Additional Expenses	
25% Contingency	$1,763,413
15% Engineering	$1,058,048
5% GST	$352,683

Note:

Shown phasing assumes additional assessments and steps have been conducted. See Section 10.0 Recommendations/Phasing for further phasing strategies.

9.0 PUBLIC OPEN HOUSE

A Public Open House was held on October 21, 2010 to present the project to the public and garner feedback on the proposed initiatives. Several panels were presented, including:

1. Project Context
2. South Avondale Area Redevelopment Plan
3. What is a “Complete Street?”
4. Guiding Principles
5. Draft Concept Plan
6. Materials Palette
7. What Happens Next?

Complete panel boards can be found in Appendix C. Throughout the evening, Urban Systems representatives and City of Grande Prairie staff walked attendees through the panels and discussed the elements of the proposed project and the intention behind the “Complete Streets” initiative.

A genuine interest has been expressed by respondents to improve upon the existing function of 102nd Street, though some reservations were raised. The capacity for the City to maintain the proposed improvements throughout the year, along with cost of construction seem to be the main concerns for those in favour of the proposed plan as well as those against.

With many of the design elements for this project directly reflecting those constructed to the north, some residents had concerns about the function of 102nd Street after the changes are applied consistently from 113th Avenue to 102nd Avenue.

The construction to the north has sparked some debate amongst residents, especially when the flow of traffic is discussed. So far, the reduction of vehicular lanes has been viewed as an unwarranted change to some who live along 102nd Street. Residents who currently have driveways along 102nd Street especially voiced concern over access and safety.

9.1 Open House Survey Results

Those who attended the open house were asked to fill out an exit survey, consisting of eight open ended questions; one question for each of the Guiding Principles (Section 4.0):

- Accessibility
- Safety
- Aesthetics
- Winter City Design
- Amenities
- Maintenance
- Transportation
- Interface (Adjoining uses)

The following outlines a breakdown of the comments received for each "Guiding Principle" that was discussed in the Public Open House Exit Survey. The survey can be found in Appendix D. Where percentages do not add up to 100%, it can be assumed inconclusive responses, or undecided responses were recorded.

Accessibility

The general opinion (73%) of open house attendees was that the proposed concept plan does succeed at providing equal access to pedestrians, motorists, cyclists, transit users and those with reduced mobility. The accessibility initiatives with the most support included wider sidewalks, safe crossings, covered bus shelters and bike lanes. Most attendees who supported these features had reservations on the safety of such elements in conjunction with vehicle users. Many were concerned about the drivers in Grande Prairie not being able to adapt to the proposed initiatives (one attendee cited an incident where drivers were driving on sidewalks to navigate around the slower traffic). One comment proposed the inclusion of cyclist lights to direct bicycle traffic to improve safety.

Those who did not believe the concept achieved equal accessibility (33%) felt the flow of traffic would be disrupted by the removal and narrowing of drive lanes. Other comments included concern with private driveways access via left hand turn. Also expressed were that the medians and bulb outs would be a hazard for drivers and the concern there would not be enough pedestrians to make use of the proposed elements. The bypass to the north was discussed, with concern this initiative would go against the reasoning behind the 102nd Street bypass connection completed not too long ago.

Safety

66% of respondents supported the proposed safety initiatives and 27% did not. Of those in support, elements such as bulb out crosswalks, separate bike lanes, accessible bus stops and easy access to key amenities such as schools and park were cited as particularly useful. Other suggestions to improve safety included the proposal of lit crosswalks at key intersections and the placement of bike lanes adjacent to sidewalks instead of next to vehicular lanes. Of those in support, several respondents raised concern about maintaining on street parking for commercial and residential access.

Those not in support of the proposed safety features (27%) cited lack of pedestrians as the main reason for maintaining 102nd Street as is. Many respondents were concerned the "truck culture" in Grande Prairie would render streetscape improvements unnecessary as the bulk of users would prefer to drive. Some attendees believed the concept would be hazardous to both motorists and cyclists.

Aesthetics

The proposed aesthetic improvements were met with acceptance from 60% of attendees, with 27% not in support of the improvements and 13% undecided. The most supported elements included trees, planters and coloured concrete. Of those in support, several did not approve of the continued use of the median planters that have been installed to the north of the project area. Many suggested the median space should have been used for snow storage instead.

Of those against the aesthetic changes, the comments were focussed on the displeasure in spending municipal funds on non essential features. Coloured sidewalks were viewed as too expensive and the medians were not viewed as attractive elements. Most respondents against the proposed changes did not feel the aesthetic improvements were practical with the winter season being lengthy and the transient population not supporting community minded initiatives.

Winter City Design

46% of attendees felt the proposed concept was successful in designing for a winter city. 33% felt the concept was unsuccessful and 20% were indecisive. For those supporting the winter city design elements, caution was expressed at the opportunity for light pollution with winter lighting and the potential for maintenance conflicts during snow removal months. Other comments received from those in support of the winter design features included the proposal of more evergreen trees and proper snow storage.

Those deeming the concept unsuccessful for winter city design cited snow removal as the main concern. The potential for damage caused by winter maintenance equipment, medians posing hazards in the winter, and perceived tax increases for winter snow removal were other concerns expressed by this group.

Amenities

The majority of open house attendees (60%) agreed the proposed plan had provided the necessary amenities for 102nd Street. Some supported items included bus shelters, bike parking, seating nodes, and improved 'gateway' status into Muskoseepi Park. Bus shelters and benches were the amenity most debated by these supporters. Vandalism and abuse of such amenities were reasons residents did not support these structures.

Those not in favour of the amenities (27%) cited many of the same cautions - vandalism and safety concerns surrounding bus shelters were the most discussed topics. Other comments discussed the proposed amenities as being unnecessary as there are "no activities" along 102nd Street. Some discontent over the reduction of vehicular lanes was discussed as well.

Maintenance

The assessment of existing levels of maintenance varied considerably. The following is a breakdown of maintenance ratings.

1% - Very Good
27% - Good
27% - Satisfactory
27% - Poor
18% - Undecided

Current maintenance ratings varied, although the majority did acknowledge a satisfactory level of maintenance for street clearing in the winter (all wanted it to stay the same or improve). Sidewalk clearing in winter was not as favourably received - many respondents were concerned that the sidewalks are not currently being maintained in the winter. Several commercial owners had concerns the same snow removal standards did not apply to private residents.

The proposed concept incited several remarks on the perceived increase to taxes with an increase of sidewalks to maintain. Also, many respondents were concerned the City would not be able to maintain the proposed improvements. Some wished to see "tax dollars" spent on maintenance of roads, such as pothole

repair. Most respondents were concerned about the improvements and how they would affect snow removal along 102nd Street.

When asked whether they would be willing to maintain areas adjacent to their properties, most respondents answered the question as “Not Applicable”; although 27% agreed they would be willing to continue some sort of maintenance adjacent to their properties, along with the work the City would be responsible for.

Transportation

53% of respondents believed the proposed plan successfully accommodated for a variety of transportation methods, with 27% believing the plan is unsuccessful and 20% undecided. Those favouring the concept approve of the bike lanes and shortened pedestrian crossings, although several comments called for the lanes to be placed away from traffic.

Those not in favour of the transportation changes proposed felt the project to be a misguided use of funding and a safety issue between bikes and vehicles. Many residents have shown confusion at the extension of 102nd Street to the bypass, followed by the decrease in lanes along 102nd Street between 113th Avenue and 108th Avenue.

Interface

Many respondents had concerns with how the project would tie into adjacent uses. Those who believed the proposed plan was successful in interface (46%) supported the shift to allow other methods of transportation - pedestrians, cyclists, transit, etc. Those who felt the plan was not successful (40%) had concerns about the cost of the improvements and the possibility for traffic congestion due to the decrease in vehicular lanes. Most not in favour of the project would prefer to have the four lanes remain. Some comments reflected a belief the proposed project is for “big cities” and Grande Prairie is proposing too many changes for a small city. The main proposal from this group was to spend “tax dollars” on pothole repair, sidewalk repair and ongoing infrastructure upkeep.

9.2 Application of Public Open House Findings

A summary of recommendations, many derived from comments received at the Open House, can be found in 10.0 Recommendations.

10.0 RECOMMENDATIONS

The following recommendations have been determined from discussions with the City of Grande Prairie, residents, and business owners. These recommendations are meant to guide the project process for 102nd Street and should be reviewed regularly as the project progresses.

10.1 North Improvements Assessment

(102nd Street between 108th Avenue and 113th Avenue)

The City has approved the Final Concept Plan for this project as an extension of the elements constructed to the north of the project area, between 108th Avenue and 113th Avenue. While it is advisable to continue the alignment of vehicular lanes, sidewalks and bike lanes to encourage a cohesive transition between the two project areas, caution must be exercised.

As the construction to the north has just completed, a monitoring practice must be in place to ensure the proposed improvements are benefiting users of 102nd Street and not increasing the potential for hazards. As such, the following review practices are proposed. Should any conflicts be identified during the evaluation period, such conflicts must be remedied in the detail design of this project area.

Items to consider:
Median safety, Pedestrian safety, Cyclist safety, Vehicle use patterns, Safe transitions to the north of 113th Avenue, Maintenance

Recommendations

- Monitor the northern development area in the next few years to assess the levels of success.
- Complete a traffic, pedestrian, cyclist and transit user count at key intersections and bus stops in the winter and summer to review the success of the multi-modal model. Compare data to numbers collected prior to construction.
- Evaluate the use habits of motorists in response to the new single vehicular lane model (i.e. Is illegal use of sidewalks occurring? Are drivers becoming impatient at intersections? Are pedestrians being threatened by oncoming motorists?).
- Review the safety of central medians. Evaluate lines of visibility for vehicles in relation to pedestrian crossings; Address possible vehicle/median conflicts in the winter.
- Review the success of bulb outs - assess winter damage and conflicts between pedestrians, cyclists and motorists.
- Investigate cyclist and vehicle conflicts - review driver understanding of cyclist lane.
- Appraise maintenance practices, such as snow removal and sidewalk clearing, tree watering and mowing.

10.2 Phasing

To successfully implement the proposed initiatives to the project area, a number of items must be in place. Assessment of the development between 108th Avenue and 113th Avenue must be complete, funds for development must be available, maintenance practices must be adjusted and implemented and users of 102nd Street must become familiar with the improvements.

As such, a phasing plan is recommended to encourage the gradual implementation of the project over time.

Possible Phases of Development:

1. Assessment of north development area
2. Utility upgrade assessment
3. Parking requirement assessment
4. Utility Upgrades
5. Detail design of Muskoseepi Park Entrance and project area streetscape improvements, adjustments to design elements to reflect north development assessment
6. Construction of Muskoseepi Park Entrance at 102nd Street and 102nd Avenue
7. Construction of project area streetscape improvements - block by block
8. Gradually decommission private front drive entries (those where access poses safety risk to pedestrians and where resident has both rear and front access)

Recommendations

- » Initiate the improvements to the intersection at 102nd Street and 102nd Avenue (Muskoseepi Park Entrance) as part of Phase 1 of construction to identify the access as a gateway and gain public support .
- » Each phase of construction must be completed in entirety prior to the winter months to avoid damage during the winter; Construction zones must not remain over the winter.
- » A transparent construction schedule should be released to the public to provide notification of possible disruptions.

Items to consider: Construction schedule, Timely completion of phases, Muskoseepi as segway to 102nd Street improvements

10.3 Public Education and Consultation

The Public Open House (9.0 Public Open House) had residents review the proposed initiatives for 102nd Street and provide comments on how successful they believed the concept was. Some feedback received suggested a level of confusion as to the reasoning behind the project and the relationship to the needs of the City of Grande Prairie. Therefore, a committed public education initiative must be enforced to endure residents have a cohesive understanding of the project and future projects of a similar nature. Alternately, to encourage ongoing public support, the City must ensure goals are made and completed with a consistent method of reasoning and construction.

Items to consider:
Public opinion and trust, Education for new initiatives, Long term goals and implementation practices

Recommendations

- If alternative methods of transportation, such as transit, cycling and walking are to be promoted, residents must be educated on the etiquette of doing such activities, as well as the etiquette of driving amongst such activities. (i.e. Bike lane understanding, crosswalk rules, etc.).
- Once a city initiative has been determined, it is important it is implemented with a long term view- residents will not support projects that directly contradict projects completed in recent years.
- When conducting public consultation, informed opinions of residents must be considered and, where possible, implemented in detail design.

10.4 Maintenance

Maintenance has been regularly brought up throughout this feasibility study. For a change to be accepted in a community, a regular schedule of upkeep must be initiated to prove the worth of the project to residents. If the City is to allow new initiatives to fall into disrepair, there will be little public support for future proposals.

Public opinion of the existing levels of maintenance varies. In several instances, residents have expressed satisfaction with road clearing in the winter, but dissatisfaction with sidewalk and bus stop clearing. Some summer maintenance regimes, such as tree maintenance, were viewed as unsuccessful, due to the abundance of unsightly plant materials. (See 9.1 Public Input Survey; 9.0 Public Open House)

Recommendations

- Review existing Bylaw C-504, outlining Boulevards, Flankages, Utility Lots and Street and Lane Trees; Bylaw C-1166 Part 4 Snow/ Ice Clearing; and Policy 606, Snow Removal and Ice Control to assess current private, commercial and municipal responsibilities and the success in enforcing them.
- If existing responsibilities are not being carried out, a bylaw enforcement strategy must be remedied prior to any additional improvements to 102nd Street.

Items to consider:
Snow removal, Garbage pick up, Plant care, Private vs. public responsibilities, Timely vandalism response

10.5 Transportation Needs

The success of such initiatives as "Complete Streets" depends on the convenience and ease at which users can access their favorite destinations. While 102nd Street has been identified as a street for future multi use development, it is important such improvements are not initiated in isolation to the rest of Grande Prairie. Key destinations and connections to the project area must be considered as a whole for this proposed initiative to be a success. Additionally, City initiatives must maintain a consistent goal from project to project to ensure residents understand the long term vision for Grande Prairie.

Recommendations

- Review transportation requirements for pedestrians, cyclists, motorists and transit users on a city-wide scale.
- As part of a Transportation Master Plan/connections assessment, identify key destinations throughout the City and create a long term plan for a hierarchy of transportations modes to access such destinations.
- Assess existing 101st Avenue Couplet Expansion project for conflicting methodology to this and other City projects. Investigate other alternatives to expansion project, where possible. (See 5.4 Interface with 101st Avenue Couplet to the South).
- Implement elements of the plan over time to gradually encourage multi-modal transportation methods.

Items to consider:
City-wide transportation planning (cyclists, pedestrians, motorists, transit users), Consistent City project goals

10.6 Winter City Design

Northern city climates affect the habits of residents and the amenities required to provide comfort and interest during the winter months. Program elements must be designed with winter city function in mind.

Recommendations

- Offer pedestrian level lighting to enhance spaces during winter months. (Use energy efficient products, such as LED lights).
- Any lighting proposed must consider light pollution. Lighting strategies should be concentrated in popular areas to decrease the spread of light pollution. Down casting products are encouraged where possible.
- Winter activities are encouraged to be programmed throughout the project area, with convenient access and proper maintenance to promote use.
- The continued use of evergreens is proposed to provide winter color.
- Bus shelters are encouraged for all bus stops to provide comfort to users. Vandalism and damage to these shelters must be addressed promptly.
- Develop city-wide Winter City Design Guidelines and associate these with future updates to the Subdivision Servicing Bylaw.

102 Street Redesign Project

City of Grande Prairie

Public Input Survey

Available from April 23, 2010 - May 10, 2010

SUBMISSION DEADLINE: May 10, 2010

Submit your survey to one of the following:

Mail: Development Services, City of Grande Prairie
3rd Floor, City Hall, 10205 98 Street
Grande Prairie, AB T8V 6V3

Email: jjohnson@cityofgp.com

Fax: (780)-538-0746

Prepared by Urban Systems Ltd.

102 Street Redesign Project

City of Grande Prairie

Public Input Survey

Introduction

The City of Grande Prairie, along with consulting partner Urban Systems Ltd. is reviewing the future design possibilities for 102 Street, from 102 Avenue to 108 Avenue. This study is in response to a recent initiative by the City to promote vibrant, community based streets through an approach known as *"Complete Streets"* (*www.completestreets.org*). The review and redesign of 102 Street is directly related to the South Avondale Area Redevelopment Plan, a study completed by the City to review and preserve a viable city core.

Your input is needed to help us determine the future needs of 102 Street. By providing your comments, you will play a key role in designing your city.

102 Street Redesign Project Area

Goals and considerations of this project:

- Pedestrian amenities
- Cyclist amenities
- Transit User amenities
- Streetscape
- Street Furniture aesthetics and placement
- Tree Planting/ Landscaping opportunities
- Drive Aisles
- On street parking
- Opportunities for medians
- Crosswalk demarcations
- Street lights
- Winter City Climate
- Snow removal

Demographics

1. Please indicate your age within the following age groups (Choose one):

   - ◯ Under 16
   - ◯ 16-24
   - ◯ 25-35
   - ◯ 26-49
   - ◯ 50-65
   - ◯ Over 65

2. How far do you live from the study area? (Choose one)

   - ◯ Less than one kilometer
   - ◯ 2-5 kilometres
   - ◯ Over 5 kilometres

3. Including yourself, how many people live in your household in the following age ranges? (Choose all that apply)

   a) Under 16 _____
   b) 16-24 _____
   c) 25-35 _____
   d) 26-49 _____
   e) 50-65 _____
   f) Over 65 _____

4. Please indicate your current employment status (Choose one):

   - ◯ Working full time, including self employment
   - ◯ Working part time, including self employment
   - ◯ Homemaker/stay at home parent
   - ◯ Student
   - ◯ Retired
   - ◯ Not employed

Transportation

5. Choose your primary modes of transportation along 102 Street. (Choose all that apply) Rate the level of accessibility for each method of transportation you use.

Transportation Method	Accessibility Rating**				
☐ Walk	○Very Good	○Good	○Poor	○Very Poor	○Not Applicable
☐ Bike	○Very Good	○Good	○Poor	○Very Poor	○Not Applicable
☐ Mobility Aid*	○Very Good	○Good	○Poor	○Very Poor	○Not Applicable
☐ Personal Vehicle	○Very Good	○Good	○Poor	○Very Poor	○Not Applicable
☐ Public Transit	○Very Good	○Good	○Poor	○Very Poor	○Not Applicable
☐ Other_____	○Very Good	○Good	○Poor	○Very Poor	○Not Applicable

*Mobility Aid: wheelchair, walker, motorized scooter, etc.

***Accessibility Rating Descriptions*

Very Good= It is easy to use this transportation method along 102 Street.
Good= It is moderately easy to use this transportation method along 102 Street.
Poor= It is difficult to use this transportation method along 102 Street.
Very poor= I cannot use this transportation method along 102 Street.

6. Please provide your suggestions to improve the accessibility of 102 Street, if any:

7. Indicate the reasons you access 102 Street. (Choose all that apply)

- ☐ I live there
- ☐ I work there
- ☐ I access the school/church
- ☐ I travel through the area to get to a recreational area
- ☐ Other_____

8. How frequently do you use the on street parking facilities for 102 Street? (Choose one)

- ○ Often (more than once a week)
- ○ Sometimes (weekly)
- ○ Rarely (1-2 times a month)
- ○ Never

9. Do you think traffic congestion is a problem on 102 Street?

- ○ Yes
- ○ No

10. Is public transit convenient on 102 Street? (Choose one)

- ○ Yes – It is easy to access transit from my home to my desired destination along 102 Street.
- ○ No - It is difficult to take transit from my home to my desired destination along 102 Street.
- ○ No opinion - I do not take transit/have never tried.
- ○ Not sure

11. If public transit was more accessible, would you use it instead of a personal vehicle? (Choose all that apply)

- ☐ Yes - if the bus stops were located close to my home and my desired destination.
- ☐ Yes - if the bus schedule was flexible and met my needs.
- ☐ No - I prefer to use my personal vehicle.
- ☐ Other_____

12. If designated bike lanes existed on 102 Street, would you cycle to your desired destination along 102 Street?

- ○ Yes
- ○ No

Amenities

13. What amenities do you currently use along 102 Street? (Choose all that apply)

- ☐ Church
- ☐ School
- ☐ Local Businesses
- ☐ Park
- ☐ Other_____
- ☐ None of the above- 102 Street does not have the amenities I need.
- ☐ Not applicable

14. Please list the amenities you would use if they were available along 102 Street.

Aesthetics

15. What is your general opinion of the appearance of the existing 102 Street?

- ○ Very Good. The street looks good and should stay the same.
- ○ Good. The street looks okay and needs some slight improvements.
- ○ Poor. The street is unsatisfactory and needs a lot of work.
- ○ No opinion.

16. What items do you think would improve the look of 102 Street? (Choose all that apply)

- ☐ Trees
- ☐ Other plantings
- ☐ Furniture (benches, garbage/recycling receptacles, bicycle racks, etc.)
- ☐ Lighting
- ☐ Wider sidewalks
- ☐ Nothing/ No opinion
- ☐ Other_____

Safety

17. How would you rate the existing level of safety along 102 Street?

- ○ Very Good- I always feel safe.
- ○ Good- I feel safe most of the time.
- ○ Poor- I feel unsafe most of the time.
- ○ Very Poor- I feel unsafe all of the time.

18. How would you rate the existing level of safety when using **crosswalks** along 102 Street?

- ○ Very Good- I always feel safe.
- ○ Good- I feel safe most of the time.
- ○ Poor- I feel unsafe most of the time.
- ○ Very Poor- I feel unsafe all of the time.
- ○ Not Applicable- I do not use the pedestrian crosswalks.

19. What features along 102 Street would you describe as unsafe, if any?

20. Please provide your suggestions on how to improve the safety along 102 Street, if applicable.

Maintenance

21. Please indicate your satisfaction with the current level of maintenance along 102 Street for the following:

a)	Public Garbage Removal:	◯ Very Good	◯ Good	◯ Satisfactory	◯ Poor
b)	Snow Removal:	◯ Very Good	◯ Good	◯ Satisfactory	◯ Poor
c)	Sidewalk Clearing:	◯ Very Good	◯ Good	◯ Satisfactory	◯ Poor
d)	Street Cleaning:	◯ Very Good	◯ Good	◯ Satisfactory	◯ Poor

22. Please provide your suggestions on how to improve maintenance along 102 Street, if applicable.

General Comments

Thank you for your comments- we appreciate your time. Should you have any further questions in regards to the 102 Street Redesign Project, please contact:

Joe Johnson, Planner
Development Services, City of Grande Prairie
3rd Floor, City Hall, 10205 98 Street, Grande Prairie, AB T8V 6V3
jjohnson@cityofgp.com
(780) 538-0419

SUBMIT FORM

HCM Unsignalized Intersection Capacity Analysis
2: 102 Ave & 102 Street

9/25/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	4	1	2	35	3	35	12	327	37	13	348	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	1	2	38	3	38	13	355	40	14	378	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	850	830	380	813	812	376	383			396		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	850	830	380	813	812	376	383			396		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	100	87	99	94	99			99		
cM capacity (veh/h)	258	298	667	290	306	671	1176			1163		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	8	79	409	397
Volume Left	4	38	13	14
Volume Right	2	38	40	4
cSH	320	400	1176	1163
Volume to Capacity	0.02	0.20	0.01	0.01
Queue Length 95th (m)	0.6	5.5	0.3	0.3
Control Delay (s)	16.5	16.2	0.4	0.4
Lane LOS	C	C	A	A
Approach Delay (s)	16.5	16.2	0.4	0.4
Approach LOS	C	C		

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	35.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Existing
AM Peak

Synchro 7 - Report
Page 1

Lanes, Volumes, Timings
7: 108 Ave & 102 Street

9/25/2010

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	93	48	64	199	122	85	154	59	60	211	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.956			0.957			0.973			0.987	
Flt Protected		0.998			0.992			0.986			0.990	
Satd. Flow (prot)	0	1797	0	0	1788	0	0	1807	0	0	1840	0
Flt Permitted		0.980			0.926			0.852			0.886	
Satd. Flow (perm)	0	1765	0	0	1669	0	0	1561	0	0	1647	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			51			25			11	
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		263.5			248.5			676.3			100.7	
Travel Time (s)		19.8			18.6			50.7			7.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	101	52	70	216	133	92	167	64	65	229	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	160	0	0	419	0	0	323	0	0	326	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	31.0	31.0	0.0	31.0	31.0	0.0	29.0	29.0	0.0	29.0	29.0	0.0
Total Split (%)	51.7%	51.7%	0.0%	51.7%	51.7%	0.0%	48.3%	48.3%	0.0%	48.3%	48.3%	0.0%
Maximum Green (s)	27.0	27.0		27.0	27.0		25.0	25.0		25.0	25.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		13.8			13.8			13.1			13.1	
Actuated g/C Ratio		0.39			0.39			0.37			0.37	

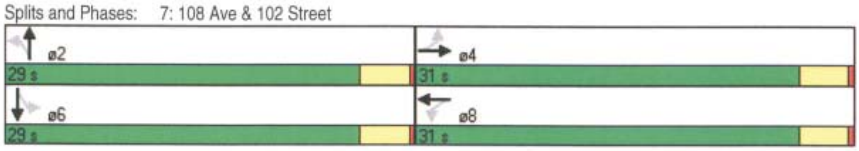
Lanes, Volumes, Timings
7: 108 Ave & 102 Street

9/25/2010

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.22			0.62			0.55			0.53	
Control Delay		6.5			12.5			13.1			13.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		6.5			12.5			13.1			13.1	
LOS		A			B			B			B	
Approach Delay		6.5			12.5			13.1			13.1	
Approach LOS		A			B			B			B	
Queue Length 50th (m)		3.4			13.9			11.6			12.2	
Queue Length 95th (m)		14.4			45.5			39.5			40.2	
Internal Link Dist (m)		239.5			224.5			652.3			76.7	
Turn Bay Length (m)												
Base Capacity (vph)		1416			1339			1180			1241	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.11			0.31			0.27			0.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 35.6			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 64.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: 108 Ave & 102 Street



HCM Unsignalized Intersection Capacity Analysis
2: 102 Ave & 102 Street

9/25/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	6	29	38	7	31	29	313	38	15	421	14
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	7	32	41	8	34	32	340	41	16	458	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	959	942	465	957	929	361	473			382		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	959	942	465	957	929	361	473			382		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	97	95	81	97	95	97			99		
cM capacity (veh/h)	213	252	597	213	256	684	1089			1177		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	52	83	413	489
Volume Left	14	41	32	16
Volume Right	32	34	41	15
cSH	359	303	1089	1177
Volume to Capacity	0.15	0.27	0.03	0.01
Queue Length 95th (m)	3.8	8.2	0.7	0.3
Control Delay (s)	16.7	21.3	0.9	0.4
Lane LOS	C	C	A	A
Approach Delay (s)	16.7	21.3	0.9	0.4
Approach LOS	C	C		

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
7: 108 Ave & 102 Street

9/25/2010

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	192	89	97	149	48	55	172	88	88	255	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.960			0.978			0.962			0.992	
Flt Protected		0.997			0.984			0.991			0.988	
Satd. Flow (prot)	0	1803	0	0	1813	0	0	1796	0	0	1846	0
Flt Permitted		0.973			0.827			0.888			0.861	
Satd. Flow (perm)	0	1759	0	0	1523	0	0	1609	0	0	1609	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			19			44			8	
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		263.5			248.5			676.3			100.7	
Travel Time (s)		19.8			18.6			50.7			7.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	209	97	105	162	52	60	187	96	96	277	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	324	0	0	319	0	0	343	0	0	398	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	28.0	28.0	0.0	28.0	28.0	0.0	32.0	32.0	0.0	32.0	32.0	0.0
Total Split (%)	46.7%	46.7%	0.0%	46.7%	46.7%	0.0%	53.3%	53.3%	0.0%	53.3%	53.3%	0.0%
Maximum Green (s)	24.0	24.0		24.0	24.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		13.4			13.4			14.9			14.9	
Actuated g/C Ratio		0.36			0.36			0.40			0.40	

Existing
PM Peak

Synchro 7 - Report
Page 1

Lanes, Volumes, Timings
7: 108 Ave & 102 Street

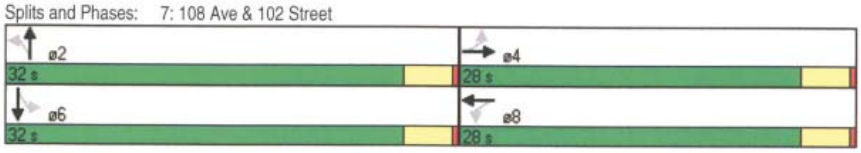
9/25/2010

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.49			0.57			0.51			0.61	
Control Delay		11.5			14.3			10.8			13.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.5			14.3			10.8			13.8	
LOS		B			B			B			B	
Approach Delay		11.5			14.3			10.8			13.8	
Approach LOS		B			B			B			B	
Queue Length 50th (m)		11.3			12.6			11.3			15.8	
Queue Length 95th (m)		37.2			41.4			37.1			48.7	
Internal Link Dist (m)		239.5			224.5			652.3			76.7	
Turn Bay Length (m)												
Base Capacity (vph)		1254			1080			1280			1272	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.26			0.30			0.27			0.31	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 37
Natural Cycle: 40
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 12.6 — Intersection LOS: B
Intersection Capacity Utilization 72.3% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 7: 108 Ave & 102 Street



HCM Unsignalized Intersection Capacity Analysis
2: 102 Ave & 102 Street

9/23/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (veh/h)	5	1	3	45	4	32	15	419	47	17	445	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	1	3	49	4	35	16	455	51	18	484	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1074	1062	486	1041	1040	481	489			507		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1074	1062	486	1041	1040	481	489			507		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	99	99	76	98	94	98			98		
cM capacity (veh/h)	179	216	581	201	223	585	1074			1058		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	10	88	523	508
Volume Left	5	49	16	18
Volume Right	3	35	51	5
cSH	238	273	1074	1058
Volume to Capacity	0.04	0.32	0.02	0.02
Queue Length 95th (m)	1.0	10.2	0.4	0.4
Control Delay (s)	20.8	24.3	0.4	0.5
Lane LOS	C	C	A	A
Approach Delay (s)	20.8	24.3	0.4	0.5
Approach LOS	C	C		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
7: 108 Ave & 102 Street

9/23/2010

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	131	67	89	278	170	119	216	82	84	295	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.956			0.957			0.973			0.987	
Flt Protected		0.998			0.992			0.986			0.990	
Satd. Flow (prot)	0	1797	0	0	1788	0	0	1807	0	0	1840	0
Flt Permitted		0.974			0.909			0.766			0.856	
Satd. Flow (perm)	0	1754	0	0	1638	0	0	1404	0	0	1591	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			49			26			12	
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		263.5			248.5			676.3			100.7	
Travel Time (s)		19.8			18.6			50.7			7.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	142	73	97	302	185	129	235	89	91	321	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	225	0	0	584	0	0	453	0	0	457	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	30.0	30.0	0.0	30.0	30.0	0.0	30.0	30.0	0.0	30.0	30.0	0.0
Total Split (%)	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%
Maximum Green (s)	26.0	26.0		26.0	26.0		26.0	26.0		26.0	26.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		20.8			20.8			20.0			20.0	
Actuated g/C Ratio		0.42			0.42			0.41			0.41	

Lanes, Volumes, Timings
7: 108 Ave & 102 Street

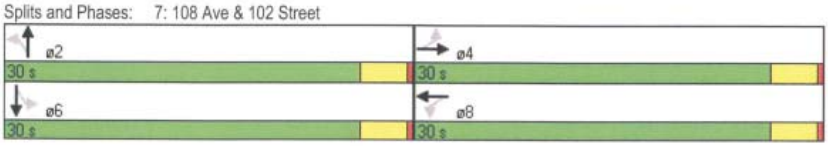
9/23/2010

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.29			0.81			0.78			0.70	
Control Delay		9.2			23.6			23.7			19.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.2			23.6			23.7			19.3	
LOS		A			C			C			B	
Approach Delay		9.2			23.6			23.7			19.3	
Approach LOS		A			C			C			B	
Queue Length 50th (m)		10.0			42.0			33.8			33.7	
Queue Length 95th (m)		23.5			#99.8			#79.0			64.7	
Internal Link Dist (m)		239.5			224.5			652.3			76.7	
Turn Bay Length (m)												
Base Capacity (vph)		1010			944			802			901	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.22			0.62			0.56			0.51	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 49.3
Natural Cycle: 45
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 20.6 Intersection LOS: C
Intersection Capacity Utilization 86.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: 108 Ave & 102 Street



HCM Unsignalized Intersection Capacity Analysis
2: 102 Ave & 102 Street

9/23/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	8	37	49	9	40	37	401	49	19	539	18
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	9	40	53	10	43	40	436	53	21	586	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1228	1207	596	1224	1190	462	605			489		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1228	1207	596	1224	1190	462	605			489		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	86	95	92	60	94	93	96			98		
cM capacity (veh/h)	131	172	504	132	176	599	973			1074		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	67	107	529	626
Volume Left	18	53	40	21
Volume Right	40	43	53	20
cSH	249	200	973	1074
Volume to Capacity	0.27	0.53	0.04	0.02
Queue Length 95th (m)	8.1	21.0	1.0	0.4
Control Delay (s)	24.8	41.9	1.1	0.5
Lane LOS	C	E	A	A
Approach Delay (s)	24.8	41.9	1.1	0.5
Approach LOS	C	E		

Intersection Summary				
Average Delay	5.3			
Intersection Capacity Utilization	56.9%	ICU Level of Service	B	
Analysis Period (min)	15			

Lanes, Volumes, Timings
7: 108 Ave & 102 Street

9/23/2010

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	268	125	136	209	67	77	241	124	124	356	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.959			0.978			0.962			0.991	
Flt Protected		0.997			0.984			0.991			0.988	
Satd. Flow (prot)	0	1801	0	0	1813	0	0	1796	0	0	1844	0
Flt Permitted		0.964			0.691			0.852			0.784	
Satd. Flow (perm)	0	1741	0	0	1273	0	0	1544	0	0	1463	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			19			44			8	
Link Speed (k/h)		48			48			48			48	
Link Distance (m)		263.5			248.5			676.3			100.7	
Travel Time (s)		19.8			18.6			50.7			7.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	291	136	148	227	73	84	262	135	135	387	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	453	0	0	448	0	0	481	0	0	558	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	28.0	28.0	0.0	28.0	28.0	0.0	32.0	32.0	0.0	32.0	32.0	0.0
Total Split (%)	46.7%	46.7%	0.0%	46.7%	46.7%	0.0%	53.3%	53.3%	0.0%	53.3%	53.3%	0.0%
Maximum Green (s)	24.0	24.0		24.0	24.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		22.1			22.1			24.0			24.0	
Actuated g/C Ratio		0.41			0.41			0.44			0.44	

2030
PM Peak

Synchro 7 - Report
Page 1

Lanes, Volumes, Timings
7: 108 Ave & 102 Street

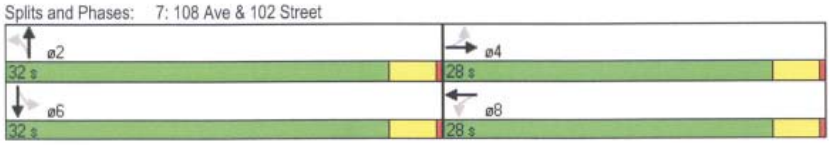
9/23/2010

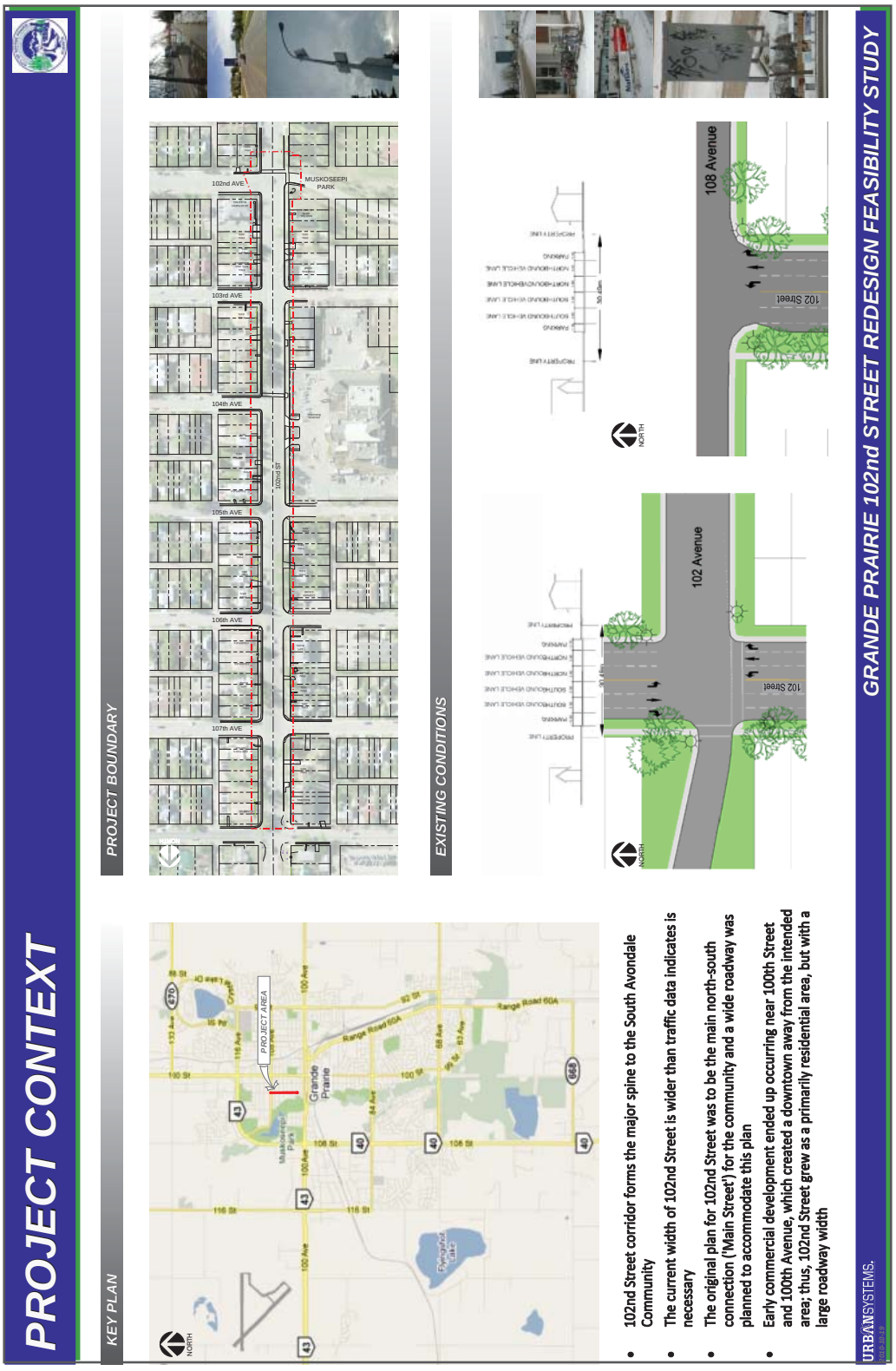
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.62			0.85			0.68			0.86	
Control Delay		16.8			33.4			16.9			29.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		16.8			33.4			16.9			29.4	
LOS		B			C			B			C	
Approach Delay		16.8			33.4			16.9			29.4	
Approach LOS		B			C			B			C	
Queue Length 50th (m)		34.4			41.7			34.0			48.7	
Queue Length 95th (m)		60.8			#90.9			62.2			#101.8	
Internal Link Dist (m)		239.5			224.5			652.3			76.7	
Turn Bay Length (m)												
Base Capacity (vph)		817			591			841			782	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.55			0.76			0.57			0.71	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 54.3
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 24.3 Intersection LOS: C
Intersection Capacity Utilization 97.5% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

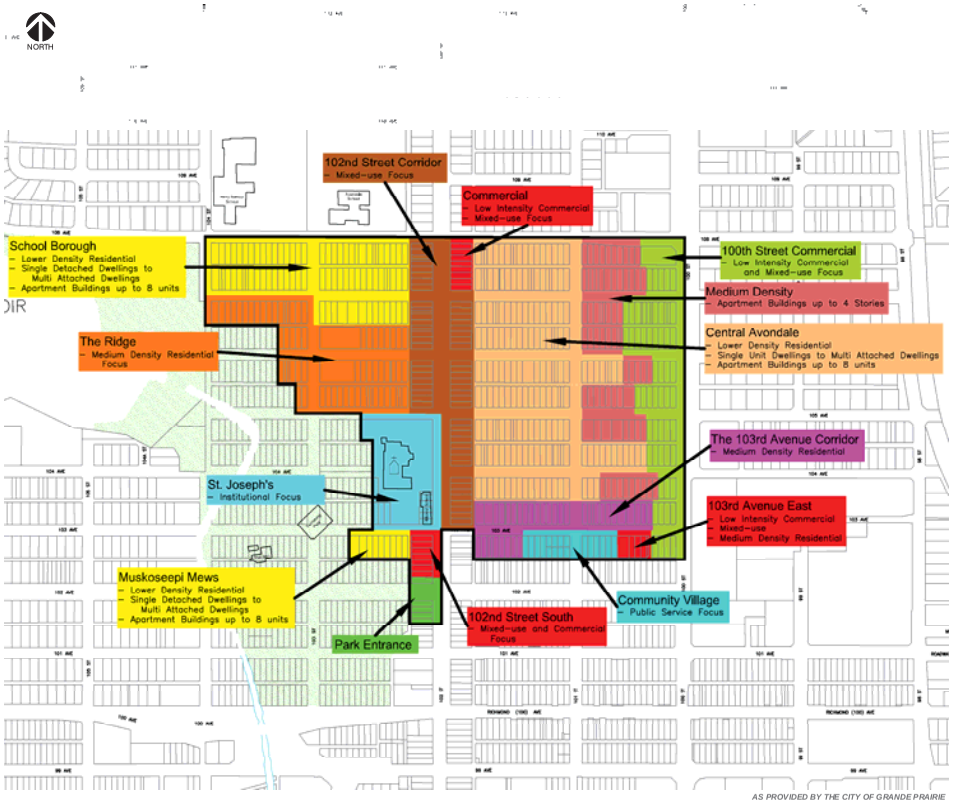
Splits and Phases: 7: 108 Ave & 102 Street




PROJECT CONTEXT
KEY PLAN
PROJECT AREA
Grande Prairie
Range Road 60A
100 St
108 St
116 St
100 Ave
84 Ave
NORTH
PROJECT BOUNDARY
102nd AVE
103rd AVE
104th AVE
105th AVE
106th AVE
107th AVE
102nd ST
MUSKOSEEPI PARK
EXISTING CONDITIONS
102 Avenue
102 Street
108 Avenue
102 Street
NORTH
NORTH
GRANDE PRAIRIE 102nd STREET REDESIGN FEASIBILITY STUDY
102nd Street corridor forms the major spine to the South Avondale Community
The current width of 102nd Street is wider than traffic data indicates is necessary
The original plan for 102nd Street was to be the main north-south connection ("Main Street") for the community and a wide roadway was planned to accommodate this plan
Early commercial development ended up occurring near 100th Street and 100th Avenue, which created a downtown away from the intended area; thus, 102nd Street grew as a primarily residential area, but with a large roadway width
URBANSYSTEMS.

SOUTH AVONDALE AREA REDEVELOPMENT PLAN

- Approved by the City on June 16, 2008
- Identifies South Avondale as one of five neighbourhoods needing future development plan
- Proximity to downtown and Muskoseepi Park encourages redevelopment and new business opportunities
- Plan indicates encouragement of revitalization and redevelopment over time, similar to that already occurring in this area (ie. Small businesses, higher density, etc.)



AS PROVIDED BY THE CITY OF GRANDE PRAIRIE

WHAT IS A "COMPLETE STREET" ?

Street design that is inclusive of all modes of transportation, encouraging conditions for business and new development. The result: revitalization of a community

PEDESTRIAN FRIENDLY

- Easily navigable sidewalks
- Retail available from sidewalk
- Short distances from transit stops to desired locations
- Safe Crosswalks

CYCLISTS

- A different type of transportation method to add diversity to street
- Encourages users from other neighbourhoods to access local business and amenities
- Environmental alternative to vehicle use
- Safe lanes for cyclists only- gets bikes out of traffic

TRANSIT

- Proper shelters and stops promote transit use instead of vehicle
- Decreases single user vehicles and parking
- Brings users to local amenities from other neighbourhoods
- Provides freedom and independence to those with reduced mobility and lower income demographic

SAFE CROSSINGS

- "Bulb out" crossings decrease the crossing distance for pedestrians
- Increased safety encourages more pedestrian use
- Ramps at every intersection offer access to those with reduced mobility
- Well marked crossings alert drivers to possible crosswalk users

GUIDING PRINCIPLES

ACCESSIBILITY

- Access available to all demographics: youth, seniors, families, those with reduced mobility, those with lower incomes

AMENITIES

- Improved amenities to encourage a variety of users
- Bike parking provides convenience and retail access to cyclists
- Seating nodes offer rest areas for pedestrians
- Transit shelters create comfort for those commuting by bus
- Wayfinding signage to direct pedestrians and cyclists to areas of interest
- "Gateway" treatment defines the entrance to Muskoseepi Park

SAFETY

- Crossings designed to accommodate pedestrians- shorter crossing distances, marked intersections
- Improved lighting and aesthetics encourages sense of safety

MAINTENANCE

- 102nd Street to be designed to allow for an achievable maintenance schedule
- Strategies for snow removal, garbage removal, grass cutting, watering, street cleaning, sidewalk clearing, and general upkeep to be assessed

AESTHETICS

- Improved street plantings, consistent design elements, coloured pavement treatments and proposed street lighting

TRANSPORTATION

- Draft Concept Plan is proposed to encourage all modes of transportation equally- pedestrian, transit, cyclist and vehicle user
- To equalize these uses, items such as bike lanes, accessible crosswalks and improved transit stops have been proposed

WINTER CITY DESIGN

- Promotes pedestrians and cyclists even during winter months
- Cleared bicycle lanes
- Feature lighting to add winter interest
- Evergreen trees for winter color

INTERFACE

- For the concept to be a success, existing uses, such as schools, churches, private businesses and residences must be accommodated
- Future developed must also be considered and be allowed to grow naturally over time

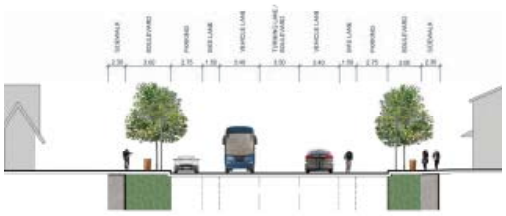
DRAFT CONCEPT PLAN

DRAFT CONCEPT PLAN

- Promotion of multiple levels of transportation: pedestrians, transit uses and cyclists through a decreased emphasis on vehicular use
- Continuous, consistent sidewalks promote pedestrians on both sides of 102 avenue.
- Pavement treatments continue the aesthetic improvements to the north (between 108 avenue and 113 avenue)
- Proposed lighting to provide interest in winter months
- Median planters break up existing expanse of asphalt
- Wider boulevards and proposed tree plantings aim to improve the aesthetic quality of 102ndStreet
- Improvements to the Muskoseepi Park entrance at 102nd avenue identify the intersection as an important gateway, encouraging use and the connection to downtown

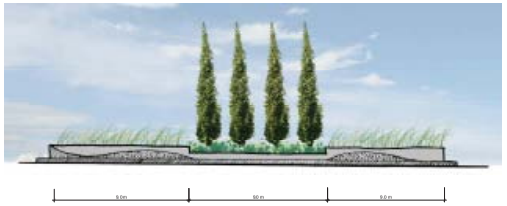
Draft Concept Plan created for discussion purposes only- none of the items proposed herein have been approved for construction at this time

102nd STREET TYPICAL SECTION

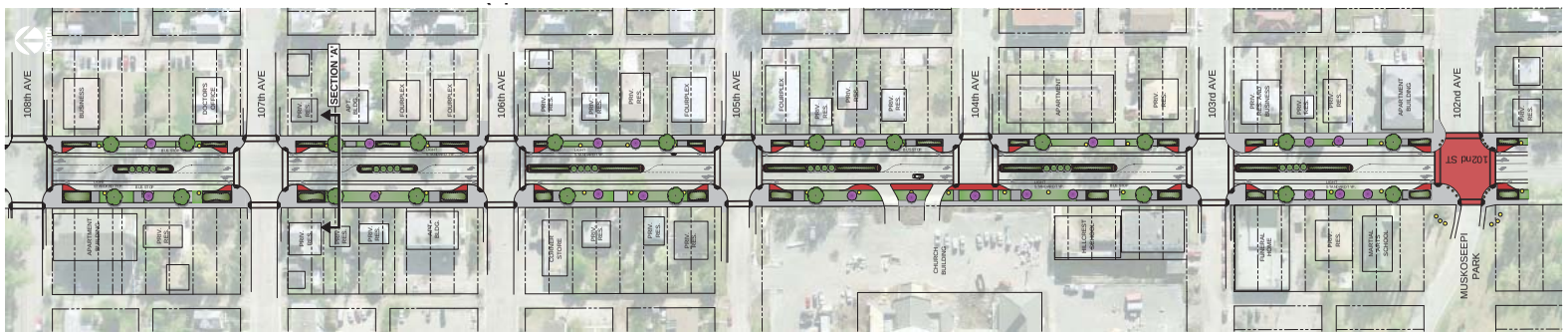


SECTION 'A'

102nd STREET TYPICAL MEDIAN ELEVATION



CONCEPT PLAN



MATERIALS PALETTE

GATEWAY INTERSECTION 102nd AVE

EXISTING VIEW

DAY VIEW

NIGHT VIEW

Colored Intersection | Colored Crosswalks | Native Planting | Decorative Lighting | Decorative Bollards | Seating Wall Planters | Entry Feature

HARDSCAPE

EXISTING

PROPOSED

Seating Wall Planters | Colored Concrete | Colored Crosswalk | Decorative Median Planter

LIGHTING

EXISTING

PROPOSED

Winter Interest | Pedestrian Lighting | Decorative Bollards

SITE FURNITURE

EXISTING

PROPOSED

Stainless Bike Rack | Steel Waste Receptacle | Stainless Ash Receptacle | Seating Wall Planters

BUS STOPS

EXISTING

PROPOSED

Enclosed Shelter

PLANT MATERIALS

TREES

Schubert Chokecherry | Black Spruce | Pin Cherry | Columnar Aspen | Trembling Aspen | Brandon Elm | Mountain Ash | White Spruce

SHRUBS

Dwarf Mugo Pine | False Spirea | Spreading Juniper | High Bush Cranberry | Mongolian Honeysuckle | Wild Rose | Red Osier Dogwood | Golden Current | Artic Willow | Pygmy Caragana | Potentilla | Russian Almond

GRASSES

Blue Grama Grass | Tufted Hair Grass | June Grass | Reed Grass | Ribbon Grass

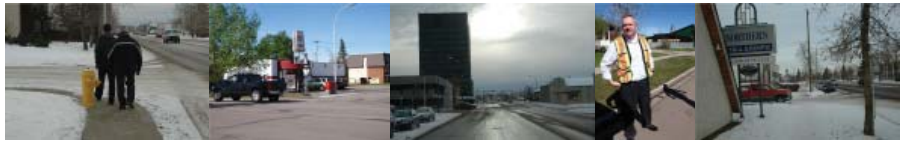
WHAT HAPPENS NEXT?

PROCESS COMPLETED TO DATE

- Project start up and familiarization with Consultant and City
- Background research and information review of existing City documents for relevance to study area
- Site assessment of 102nd Street between 102nd Avenue and 108 Avenue
- Public Input Survey ((May 2010)
- Guiding Principles workshop with Consultant and City
- Draft Concept Plan and Report submission to City for review and discussion
- Public Open House

NEXT STEPS

- Compile public input from open house
- Update Draft Concept Plan and Report to reflect comments received at Open House
- Submit to City for review
- Present to Council for review and acceptance
- Submit to Federation of Canadian Municipalities for Green Municipal Fund Grant Application
- Use as guiding document for future design and construction initiatives along 102nd Street



Open House Survey
Grande Prairie 102nd Street Feasibility Study
October 21, 2010

Grande Prairie 102nd Street Feasibility Study

Open House Survey

The City of Grande Prairie, along with consulting partner Urban Systems Ltd. is reviewing the future design possibilities for 102 Street, from 102 Avenue to 108 Avenue. This study is in response to a recent initiative by the City to promote vibrant, community based streets through an approach known as *"Complete Streets" (www.completestreets.org)*. The review and redesign of 102 Street is directly related to the South Avondale Area Redevelopment Plan, a study completed by the City to review and preserve a viable city core.

Your input is needed to help us determine the future needs in this project area along 102 Street. By providing your comments, you will play a key role in designing your city.

102 Street Feasibility Study Project Area

The **Guiding Principles** for this study are:

- Accessibility
- Safety
- Aesthetics
- Winter City Design
- Amenities
- Maintenance
- Transportation
- Interface (Adjoining uses)

There are eight questions to this survey, which will take approximately fifteen minutes to complete.

Prepared by URBAN SYSTEMS.

Question 1: ACCESSIBILITY

The draft concept plan aims to provide equal access to pedestrians, motorists, cyclists and transit users, as well as those with reduced mobility.

a) Do you think the concept plan achieves this goal? **YES** **NO**

b) If 'yes' please provide comments on the accessibility items you support

_____

_____

_____

c) If 'no' please provide comments on the accessibility items needing improvement

_____

_____

_____

Question 2: SAFETY

Safety of users along 102nd Street is a priority for this project. Proposed improvements include street lighting, shorter crosswalk distances and less emphasis on personal vehicles.

a) Do you support the safety measures proposed along 102nd Street? **YES** **NO**

b) If 'yes' please provide comments on the safety improvements you support

_____

_____

_____

c) If 'no' please provide comments on the accessibility items needing improvement

_____

_____

_____

Question 3: AESTHETICS

Part of this proposed concept is to improve the looks of 102nd street. Items such as tree plantings, planters, street lights and colored crosswalks have been proposed.

a) Do you think the concept plan will improve the aesthetics along 102nd Street? **YES** **NO**

b) If 'yes' please provide comments on upgrades you support:

_____

_____

_____

c) If 'no' please provide comments on upgrades that need improvement:

_____

_____

_____

Question 4: WINTER CITY DESIGN

Climate is an important consideration for the planning Grande Prairie. The draft concept plan proposes winter city design initiatives such as feature lighting, street snow storage opportunities, evergreen trees for winter color and cleared bike lanes.

a) Do you think the proposed concept plan succeeds in designing for a winter climate?
YES **NO**

b) If 'yes' please provide comments on design elements you support:

_____

_____

_____

c) If 'no' please provide comments on the design elements that need improvement:

_____

_____

_____

Question 5: AMENITIES

The concept plan identifies amenities that will promote the use of 102nd Street for a variety of activities. Some items proposed include: bike parking areas, seating nodes, transit shelters, signage, and improved park access.

a) Do you think the proposed concept has provided the necessary amenities for 102nd street?

YES NO

b) If 'yes' please provide comments on the amenities you support:

_____

_____

_____

c) If 'no' please provide comments on the amenities that need improvement:

_____

_____

_____

Question 6: MAINTENANCE

Maintenance includes snow removal, grass cutting, watering, street cleaning, sidewalk clearing, garbage removal and general upkeep of a prescribed area. Improvement to maintenance along 102nd street will involve City review of existing bylaws.

a) What is your opinion of the current level of maintenance along 102nd street? (Check one)
   __Very Good
   __Good
   __Satisfactory
   __Poor

b) Are there any maintenance improvements you would suggest?

_____

_____

_____

c) If you are an owner, would you be willing to maintain areas adjacent to your property to achieve some of these maintenance improvements?

YES NO NOT APPLICABLE

Question 7: TRANSPORTATION

The current method to access 102nd street is primarily by personal vehicle. The concept plan proposes increased use by cyclists, transit users and pedestrians while continuing to offer vehicle access. Some elements proposed to encourage other uses include bike lanes, accessible crosswalks, and transit shelters.

a) Do you think the concept has successfully planned for a variety of transportation methods along 102nd Street? **YES** **NO**

b) If 'yes' please provide comments on the transportation initiatives you support:

_____

_____

_____

c) If 'no' please provide comments on the transportation initiatives that need improvement:

_____

_____

_____

Question 8: INTERFACE (Adjoining uses)

A number of uses exist in the project area, such as schools, church, private businesses and residences. The proposed plan intends to allow these existing uses to continue to thrive, while allowing for future uses to grow naturally.

a) Do you think the concept has successfully allowed for the current and future uses in the project area? **YES** **NO**

b) If 'yes' please provide comments on the initiatives that you support:

_____

_____

_____

c) If 'no' please provide comments on the initiatives that need improvement:

_____

_____

_____

THANK YOU!

Thank you for your input. If you would like to be involved in future input sessions such as this Open House, please provide your email address below:

_____

If you would like more information, please contact:

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