

City of Thunder Bay
TRANSPORTATION MASTER PLAN

Background Report D:
**COMPLETE
STREETS**

April 2019

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Appendix A – Examples of Complete Streets Policy

1 Background

1.1 What are Complete Streets?

Complete Streets are streets that are designed for all people, all ages, all abilities, and consider all modes of transportation. A Complete Streets philosophy ensures that transportation planners and engineers consistently design, construct, operate, and maintain the street network for all road users.

The Complete Streets philosophy includes four important principles:

- Roads should be designed with substantial consideration for the safety and comfort of all road users – all ages, all abilities, and all modes of transportation.
- All phases of the project should be conducted through the Complete Streets lens – planning, design, engineering, construction, operation, and maintenance.
- Planning for walking, cycling, and transit should be an integral part of the planning and design process, not an afterthought.
- Complete Streets are adaptable and context-appropriate – Though all streets should be designed to meet the basic needs of all road users, facilities should be appropriate to the context of that street.

Complete Streets can include elements such as wide sidewalks, pedestrian-scale lighting, street trees, furniture, bicycle lanes or trails, transit-only lanes, vehicle lanes, car parking, bicycle parking, transit facilities, and accessory uses such as sidewalk cafes.

1.2 The Complete Streets Approach

1.2.1 Planning and Design Approach

Consideration for Complete Streets will be integrated into the City's routine processes, guidelines, and standards for transportation projects. Complete Streets principles will be applied proactively, rather than as a nice-to-have or as an afterthought. Every transportation project should be seen as a catalyst for potential improvements.

Transportation projects strive first to accommodate the basic needs of all users. They endeavour second to further improve conditions wherever possible within the scope of a transportation project, and with a balanced consideration of relevant plans and policies.

The challenge lies in that the City currently delivers many different types of transportation projects, where various departments are responsible for delivery of different phases of the project development. The Complete Streets approach

must be integrated through all departments to ensure its implementation is followed at all project phases.

In order to address this challenge, goals should be identified at project initiation to foster multi-modal and context-sensitive solutions. Key constraints should be recognized early in the process, including right-of-way ownership, major utility conflicts, and long-term maintainability. Further, projects will anticipate opportunities to incrementally achieve Complete Streets and networks over time, and in future phases of projects. Each project must be budgeted appropriately for implementation of the Complete Streets approach.

1.2.2 Context-Sensitive Approach

Complete Streets are delivered in an adaptable and context-sensitive approach based on the needs of the local community and the intended function of the street.

Though a Complete Streets policy should be applied to all road projects, including new road, retrofit, and rehabilitation projects, not all streets will receive the same treatment or the same Complete Streets elements. The existing and intended function of the street, as well as the community vision of the corridor, will be considered and evaluated in the selection and design of Complete Streets elements for that corridor.

Adopting a Complete Streets policy is not about every street accommodating every mode to the highest level of service, but to make streets as complete as possible given the context and constraints of the corridor. Different street typologies will emerge depending on the objectives of each individual project.

Because of that, it is important to plan for Complete Streets in the context of the larger transportation network. Each mode of travel should have a broad network of connected, safe, and comfortable corridors. A prioritization framework by mode is presented in Section 4.

1.3 Complete Streets in Thunder Bay

Complete Streets are not a new concept in Thunder Bay, though no formal policy exists. Thunder Bay has already been re-building and retrofitting existing roads into Complete Streets for the past decade. Prominent examples include, but are not limited to, Golf Links Road, Balmoral Street, Valley Street, and Court Street.

Exhibit 1.1: Golf Links Rd before and after rebuild.



Imagery: Google, Map data: Google

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Golf Links Road was a 2-lane road with no sidewalks, and no cycling facilities until the City rebuilt it as a Complete Street by incorporating a multiuse trail, sidewalk, street trees, and transit amenities, while increasing capacity for vehicles.

Portions of Balmoral Street have received upgrades, which involved improving the road surface for drivers, the addition of multi-use trails (including intersection treatments) on both sides, and improved transit amenities. Further segments of Balmoral Street are due for similar upgrades. The City has successfully converted Balmoral into a Complete Street.

Meanwhile, Valley Street was widened to four travel lanes, but also added painted bike lanes and a sidewalk on the north side (to complement the existing south sidewalk). Transit shelters were also improved with concrete mobility pads.

Most recently, two blocks of Court Street were rebuilt through a Complete Streets lens. A raised cycle track was added on both sides, sidewalk gaps were filled, a parking lane was defined, and transit stops have been improved.

These four examples show overwhelmingly that Thunder Bay has the will and capacity to build Complete Streets, it just needs a more formalized policy and procedure moving forward to maintain the momentum that was created by these excellent examples.

Exhibit 1.2: Balmoral Ave before and after rebuild



Imagery: Google, Map data: Google

Exhibit 1.3: Court St before and after rebuild.



Imagery: Google, Map data: Google

2 Why Does Thunder Bay Need a Complete Streets Policy?

Adopting and implementing a Complete Streets policy is an integral action towards realizing the vision of the Transportation Master Plan:

In 2038, the City of Thunder Bay will have an integrated and seamless transportation system that offers inclusive mobility for individuals and families, supports a healthy, vibrant, and prosperous community and is delivered in a responsible and accountable manner.

Complete Streets address all three objectives contained within the Vision. They will provide inclusive mobility by considering the needs of all road users, regardless of age, ability, or chosen mode of travel. They will support healthy, vibrant and prosperous communities by promoting the Clean, Green, and Beautiful mandate, encouraging active transportation, and supporting economic activity. Complete Streets will also be delivered in a responsible and accountable manner by making better use of the existing public assets, improving operational efficiency, and providing improvements in a cost-effective manner.

2.1 References in Existing Policy

The concept of Complete Streets has been cited in several previous policy documents, including the Draft 2018 Official Plan, the 2012 Image Route Guidelines and Detailed Streetscape Designs, EarthCare Sustainability Plan 2014-2020 and the 2015-2018 Corporate Strategic Plan (Becoming Our Best).

2.1.1 2018 Official Plan

The City's 2018 Official Plan contains clear language that states that "[r]oads under the City's jurisdiction will incorporate a Complete Streets approach and be designed to balance the needs and priorities of the various users and uses within the right-of-way."

The 2018 Official Plan also clarifies the intent of the deemed right-of-way to accommodate the "safe and efficient movement of pedestrians of all ages and abilities, cyclists, transit vehicles and users, goods and services vehicles, emergency vehicles, and motorists." References to additional uses within the right-of-way such as utilities and services, trees and landscaping, snow and stormwater management, wayfinding, and street furniture are also noted.

The OP also outlines policies that can be considered to ensure streets are safe and inviting for users while recognizing the function of the roadways and requirements for traffic movement. These include:

- Reducing speeds through traffic calming measures where appropriate;
- Providing sidewalks and crossing opportunities for pedestrians;

- Integrating a multi-use trail system for cyclists, pedestrians and alternative transportation modes; and
- Considering bicycle facilities for all new roads and road widening projects.

2.1.2 2012 Image Route Guidelines and Detailed Streetscape Designs

Perhaps the City's first step towards the concept of Complete Streets was the designation of the Image Routes. These are major corridors intended to be showpieces in terms of landscaping and design, and intended to reflect the unique history context found within Thunder Bay and Northwestern Ontario.

While the streetscaping guidelines tended to focus on landscaping, street furniture, and other design elements, the report discusses the need for "creating a new balance" within the City's transportation system. The report discusses the importance of streets as public spaces and how their design and functions "communicate the values of the City." Further, references are made to integrating safe and comfortable facilities for all road user and uses.

The report explicitly refers to the concept of Complete Streets as the basis for the new balance approach.

2.1.3 EarthCare Sustainability Plan 2014-2020

The EarthCare Sustainability Plan also makes reference to the Complete Streets philosophy as a recommended action for corporations as it relates to sustainable land use planning. The recommendation focused on the integration of active transportation and Complete Streets principles with the land use planning process and new developments, to "establish and maintain linkages between neighbourhoods, with emphasis on walking and bicycling pathways, as part of the City's Active Transportation Plan and relating to the concept of "Complete Streets"

2.1.4 2015-2018 Corporate Strategic Plan (Becoming Our Best)

Finally, the latest iteration of the Corporate Strategic Plan includes the integration of Complete Streets as a key strategy towards clean and beautiful streets and spaces along with the corresponding action that the City is to develop a Transportation Master Plan that includes a Complete Streets component. The Plan also recommends implementing the Image Route guidelines on Red River Road and Memorial Avenue, which is closely related to the Complete Streets concept.

2.2 Benefits of Complete Streets

Planning, building, and operating roads with a Complete Streets approach has many benefits over the business-as-usual road design process. These include:

- **Safety** – By explicitly considering the needs of vulnerable road users in the initial design process, Complete Streets can maximize the safety and comfort of all road users.
- **Healthy communities** – Complete Streets can improve public health outcomes as a preventative health strategy by promoting and encouraging the use of transit, walking, and cycling as alternative ways to get around.
- **Attractive communities** – Implementing Complete Streets can advance the goals of the Clean, Green, & Beautiful policy and help build well-rounded communities.
- **Cost-effective** – By retrofitting streets using the Complete Streets approach, the City can make better use of existing public resources.
- **Supportive of the local economy** – Research has shown that Complete Streets are a factor in increased sales at local businesses and decreased empty storefronts as they can draw more customers and encourage people to linger as streets become places that are vibrant and active.
- **Environmentally-friendly** – By providing the option to safely walk or cycle, Complete Streets can lessen the reliance on personal vehicles and help to decrease overall transportation emissions, as well as being a crucial step towards mitigating the impacts of climate change. Additionally, the inclusion of street trees can help clean the air locally and reduce the urban heat island effect, as well as providing shade and beauty for road users.
- **Efficient** – By rebalancing the roadway to cater to the right balance of transportation modes, Complete Streets are able to move more people more efficiently.

By adopting a strong Complete Streets policy, and implementing the policy across its road design and rehabilitation program and related processes, the City of Thunder Bay will be in the best possible position to capitalize on the benefits outlined above.

3 Policy Development and Best Practice

3.1 Elements of a Complete Streets Policy

A comprehensive Complete Streets policy should be applicable to all the processes related to new and existing streets, including their planning, design, operation and maintenance. It should accommodate users of all ages and abilities, and all modes – walking, cycling, transit, and driving. The policy should also accommodate key transportation network functions such as goods movement and emergency vehicle access.

The following has been adapted for Thunder Bay from the National (U.S.) Complete Streets Coalition's *Elements of an Ideal Complete Streets Policy* and the Complete Streets for Canada's *Ten Elements of a Complete Streets Policy*.

1. The policy must **set a strong vision** specific to the local context and objectives, while the strength of the language chosen sets the tone by creating a stronger commitment to implementation. The use of words such as *shall*, *must*, or *will* should be used in the policy to ensure its consistent application.
2. The policy must specify that **all users and all modes** are to be considered in street design, as well as users of all abilities.
3. The policy must apply to **all projects** including new streets and retrofits and **all phases** of each project, including planning, design, construction, operation, and maintenance.
4. The policy must emphasize the need for **a network for all modes of travel**. This helps balance the needs of all road users, as not all streets can perfectly accommodate every use, networks can be overlaid where a strong cycling grid complements a network of transit streets, and another network of streets that focus on vehicular movements.
5. The policy must refer to **design standards and criteria** as the basis for implementation of the Complete Streets network. This may include standalone design guidelines or updating existing design specifications to include all road users.
6. The policy must clearly acknowledge that **community context** is important in determining which Complete Streets elements are implemented in individual projects, and projects will be sensitive to the areas in which they are being planned and built for.
7. The policy must address how to work together with **other jurisdictions and agencies** that are responsible for building the streets within the City including private developers.

8. The policy must articulate allowable **exceptions** and a process in which other exceptions to the policy are granted, whether it be a new or existing committee or high-level department head.
9. The policy must include defined **performance measures** specific to each mode of transportation, such as mode share, kilometres of bicycle lanes, etc.
10. The policy must include an effective **implementation plan** made up of clear and concise steps to turn the policy into practice.

3.2 Examples of Complete Streets Policy

The following are examples of strong and effective Complete Streets policy documents based upon the ten essential elements listed above and their applicability to Thunder Bay's unique context. Each policy document listed below can be found in Appendix A.

3.2.1 Minneapolis, Minnesota

Minneapolis provides a useful example, being the nearest large city to Thunder Bay, and having to contend with the same winter weather challenges as Thunder Bay. Minneapolis created a Complete Streets policy in May 2016 and implemented it as an update to Access Minneapolis, the city's 10-year Transportation Action Plan. The policy has set a clear vision to change the way their streets are planned, built, operated, and maintained and has taken an aggressive approach by explicitly prioritizing pedestrians and cyclists. This modal priority framework approach then informs the rest of the policy and, in turn, the processes that go into their road projects. The policy includes all ten elements listed above.

3.2.2 Missoula, Montana

Missoula's Complete Streets policy is clear and concise and was ranked as the number one new Complete Streets policy in the United States in 2016 by the National Coalition for Complete Streets with a perfect score of 100.

The policy includes all ten elements listed above as well as an aggressive timeline to implement the active transportation elements on all existing streets.

3.2.3 Waterloo, Ontario

The City of Waterloo included a comprehensive Complete Streets policy within its 2011 Transportation Master Plan that establishes the principles of Complete Streets as the basis for all future transportation projects and articulates how the policy interacts with the complementary pre-existing City policies.

The policy includes a detailed implementation plan, including restructuring existing City procedures, rewriting City standards and guidelines, retraining staff, and creating a working group to oversee implementation.

4 Street Typology Recommendations

A street typology is a method of categorizing streets that goes beyond functional road classification to account for the land-use context and the existing and desired uses of the street as public space. The typology provides additional guidance to establish a modal hierarchy, which then determines the key design features of the street. Most streets will serve most modes. However, some streets may prioritize some modes over others so that enhancements beyond the minimum accommodation are provided. The purpose of developing a street typology is to ensure that streets can meet the minimum needs of all users while encouraging primary users by enhancing safety and comfort. An overlay of all the typologies should create a transportation network that balances the needs of all road users.

The street typology for Thunder Bay is determined by:

- The context, which takes into account the adjacent area's predominant land-use pattern (e.g. residential, commercial, industrial, etc.) and the network context. The network context is determined by the role of the street in the overall transportation network, as defined in the TMP. The network context identifies the planned functions of the street (e.g. future transit corridors, designated truck routes, pedestrian greenways, etc.); and
- The functional classification as defined in the OP and physical width of the road right-of-way.

When these characteristics are paired, street typologies will emerge. These can then be used to establish the modal hierarchy and key design features of the street.

4.1 Modal Hierarchy

While the aim of all streets is to provide safe accommodation for all modes, some modes may be prioritized, i.e., enhanced beyond basic accommodation, based on the street typology and modal hierarchy. It will not be possible to achieve the highest level of service for every mode within the same corridor in the vast majority of implementations. Some streets may not have a distinct modal hierarchy, and as such, should accommodate all users by providing appropriate facilities for motorized and non-motorized modes.

Additional guidance for streets that have a distinct modal priority is provided below.

- **Provincial Highways** prioritize the through movement of vehicles and typically prohibit cycling and walking. Highways through cities can create significant barriers for local access. The current intersections along the Thunder Bay Expressway provide crossing opportunities for pedestrians and cyclists but the proposed future interchanges with free-flow vehicular traffic movements will be disadvantageous to pedestrians and cyclists.

- **Designated Truck Routes** are expressways and arterial roads that make up the truck route network. These streets will prioritize truck movements and other motorized modes. With the presence of trucks, separated space for pedestrians and cyclists will be necessary for safety and comfort of users of all ages and abilities.
- **Transit Corridors** are typically arterial roads that prioritize transit due to the presence of higher frequency routes or a high volume of transit services. The second priority modes for transit corridors should be walking or cycling to improve access to transit.
- **Cycling Route Corridors** are streets that make up the designated cycling network in the Active Transportation Plan. They can include a range of cycling facilities on arterial, collector, or local roads. The second priority mode on primary cycling corridors depends on the street typology (i.e., pedestrians would have priority on local roads in primarily residential areas). Where the right-of-way width does not allow for both parking and separated cycling facilities on arterials, on-street parking should be restricted. Where traffic volumes and speeds are low on local roads, a cycling corridor may consist of a shared lane with way-finding, traffic calming and traffic operations enhancing cycling.
- **Pedestrian Priority Corridors** are typically arterial roads that function as main streets with mixed commercial and residential uses as well as corridors serving major pedestrian destinations. The City's Image Routes are included in the Pedestrian Priority Corridors. These include streetscape improvements that may include lighting, plantings and furnishings contributing to the public realm, and street-oriented buildings built to the lot-line creating active fronts.
- **Neighbourhood Greenways** are typically local or collector roads that pedestrians and cyclists find desirable due to the lower vehicular volumes and speeds. Neighbourhood Greenways may have on-street parking and traffic calming.

The following table is meant to act as a guide used as a first step in the design process when determining how to balance the needs of each mode and which mode(s) should be prioritized based on the context and road classification.

Exhibit 4.1: Priority of Modes by Context

CONTEXT OR CRITERIA	WALKING	CYCLING	TRANSIT	DRIVING	GOODS MOVEMENT
Network Context					
Designated Truck Route	Low	Low	Med	High	High
Transit Corridor	High	Med	High	Med	Med
Cycling Route	High	High	Med	Med	Low
Pedestrian Priority Corridor	High	Med	High	Med	Med
Neighbourhood Greenway	High	High	Med	Med	Low
Road Classification					
Expressway	Low	Low	Med	High	High
Major arterial	Low	Low	High	High	High
Minor arterial	Med	Med	High	High	Med
Rural arterial	Low	Med	Low	High	Med
Collector	High	High	High	Med	Low
Local industrial	Med	Med	Med	Med	High
Local residential	High	High	Low	Med	Low

4.2 Multimodal Level of Service

In order to achieve Complete Streets, it is necessary for performance to be measured by how well it meets the mobility needs of all users. Adopting a multimodal level of service (MMLOS) is a new method of measuring the performance of roads in Thunder Bay, to shift the priority from moving vehicles to moving people and goods safely and efficiently. While the safety needs of all road users should be the minimum requirement of all roads, different streets will prioritize users based on the context.

A summary of MMLOS performance measures are provided below. A separate background report provides more information on MMLOS.

Recommended measures of MMLOS for each mode include:

- Walking: consider sidewalk and boulevard widths, traffic volume and speed, presence of on-street parking as it affects level of comfort
- Cycling: consider level of traffic stress (type of cycling facility, number of travel lanes, operating speed, commercial driveway frequency, unsignalized intersection operating speeds and widths)

- Transit Users: consider transit amenities, pedestrian connections and crossing opportunities
- Transit Vehicles, Trucks: intersection volume-to-capacity ratio, curb lane widths, and corner radii
- Automobile: intersection volume-to-capacity ratio

5 Complete Streets Design Elements

There is no one universal design standard for Complete Streets. Some jurisdictions have developed design manuals applicable to their own context and other jurisdictions have developed design standards of individual elements, i.e. pedestrian or cycling facilities.

Common resources for guidance on the design of Complete Streets elements and pedestrian and cycling facilities include:

- Ontario Traffic Manual (OTM) Book 15, Pedestrian Crossings (2016) and OTM Book 18, Cycling Facilities (2014, update pending). The OTM Books provide information and guidance to promote uniformity of treatment in the design, application and operation of traffic control devices and systems across Ontario. Book 15 and Book 18 provide guidance specifically on pedestrian and cycling facilities.
- Geometric Design Guide for Canadian Roads, Transportation Association of Canada (2017). The recent release of the updated *Geometric Design Guide* includes guidance on cross-sectional elements and two chapters dedicated to bicycle and pedestrian planning and design.
- Canadian Guide to Neighbourhood Traffic Calming, Transportation Association of Canada (1998). A common reference for guidance on traffic calming elements such as curb extensions, refuge islands, and other devices that slow traffic.
- Urban Bikeway Design Guide, National Association of City Transportation Officials (NACTO) (2011). NACTO developed this guide as part of their Cities for Cycling initiative to provide cities with state-of-the-practice solutions to create complete streets that are safe and enjoyable for cyclists. It includes descriptions, benefits, applications, design guidance, renderings, images and case studies for bike lanes, cycle tracks (segregated bike lanes), intersections, bicycle signals, and signing and marking.
- Urban Street Design Guide, NACTO (2013). This guide provides direction for improving street design for inclusive, multi-modal urban environments.

The tables below provide a summary of typical roadway and boulevard design elements of Complete Streets.

Exhibit 5.1: Roadway Design Elements

Roadway Elements	Description
Travel Lane	Vehicle lanes are typically narrower as narrow lanes promote slower speeds and increase safety and comfort for all road users. Typical widths can range from 3.3 m to 3.5 m. Transit routes and truck routes are important considerations for lane widths.
Parking Lane	Parking lanes should be protected by curb extensions at intersections, and are typically 2.2 to 3.0 m wide. Parking lanes are effective buffers between boulevard uses and traffic.
Loading Area	Loading areas can be designated as an alternative to parking spaces where a reasonably high number of deliveries are to be expected (i.e. commercial areas, downtown cores). Delivery drivers are more likely to use designated loading areas, reducing the likelihood of blocking travel lanes, cycling lanes, or pedestrian facilities..
Painted Bike Lane	Painted bike lanes are appropriate for slower and lower volume streets. Bike lanes should be a minimum of 1.5 m wide with 1.8 m as the desired minimum width.
Buffered Bike Lane	Buffered bike lanes provide an extra level of separation between the cyclist and vehicular traffic. OTM Book 18 ¹ provides guidance on the selection of a shared, designated or separated cycling facility based on traffic speed, volumes and other factors. A painted buffer is typically 0.5 to 1.5 m and the combined width of the bike lane and buffer should be 2.1 to 3.0 m.
Protected Bike Lane	Protected bike lanes are at the same level as the roadway, but provide physical separation from vehicular traffic. OTM Book 18 ¹ provides guidance on the selection of a shared, designated or separated cycling facility based on a variety of factors. Bollards, curbs, planters, flexi-posts, or parking could be used to separate the bike lane. If on-street parking is used as the means of separation, it is important to provide a buffer that will keep cyclists from riding within the door zone of the parked vehicles.
Contraflow Bike Lane	Contraflow bike lanes allow cyclists to travel in both directions along one-way streets. Contraflow bike lanes are at least 2.0 m wide and separated from oncoming traffic with a yellow line. They can also be buffered with flexi-posts, bollards, etc., to offer additional protection.

¹ Ontario Traffic Manual Book 18, Cycling Facilities, December 2013.

Roadway Elements	Description
Median	Painted or landscaped medians can provide opportunities for streetscaping as well as the provision of pedestrian refuge islands at crossing locations. OTM Book 15 ² provides guidance on raised median refuges.
Two-Way Left Turn Lane	A two-way left turn median lane can improve traffic flow by eliminating delays caused by left-turning vehicles blocking one lane of through traffic. A two-way left turn lane is typically 3.0 to 3.5 m wide.
Paved Shoulder	For roads with rural cross-sections, a paved shoulder provides space outside of vehicular travel lanes for cyclists or pedestrians. OTM Book 18 ³ suggests desired widths of 1.5 m to 2.0 m based on the daily traffic volume for roadways where bicycle volumes are at least 25 per day (existing or expected). Rural roads with daily volumes of 700 vehicles or less do not require paved shoulders.

Exhibit 5.2: Boulevard Design Elements

Boulevard Elements	Description
Sidewalk	Sidewalks should be provided on both sides of the streets for Pedestrian Priority Corridors, Transit Route corridors and Neighbourhood Greenways along collector or arterial roads. For Neighbourhood Greenways along local roads continuous sidewalk should be provided on one side as a minimum. Sidewalks should be at least 1.8 m wide and be buffered by boulevard space where possible when directly adjacent to higher speed traffic. Bike lanes, parked cars, and a planting or furnishing zone can also act as effective buffers. Curb extensions should be provided at crossings where appropriate.
Cycle Track	Cycle tracks are located at the boulevard level but are separate from the sidewalk. Unidirectional cycle tracks should be at least 1.5 m wide, while bi-directional cycle tracks should be at least 3.0 m wide. OTM Book 18 ³ provides detailed guidance on cycle track design and treatments at intersections.
Multi-use Path	A multi-use path may be appropriate where there are moderate volumes of pedestrians and a desire to provide safe accommodation to cyclists. Multi-use paths are bi-directional for cyclists and pedestrians and should be at least 3.0 m wide. Intersection treatments are critical for multi-use paths. OTM Book 18 ³ provides detailed guidance on multi-use path design and treatments at intersections.

² Ontario Traffic Manual Book 15, Pedestrian Crossing Facilities, June 2016

³ Ontario Traffic Manual Book 18, Cycling Facilities, December 2013

Boulevard Elements	Description
Transit Amenity	Transit amenities should be within the planting and furnishing zone of the boulevard and can include mobility pads, shelters, seating, etc. Transit amenities should not obstruct the pedestrian clearway.
Planting and Furnishing	The planting and furnishing zone is typically located between the sidewalk and the roadway and is not included in the width of the sidewalk. It can include furnishing items such as benches, garbage receptacles, wayfinding signage, and streetlights, as well as landscape features such as trees, planter boxes, etc.
Edge Zone	The edge zone typically contains the raised curb and gutter and defines the transition between the street and boulevard levels. The edge zone can be widened in cases where cycling infrastructure at boulevard level is directly adjacent to parked cars.

Complete Streets are intended to be delivered in an adaptable and context-sensitive manner based on the needs of the local community and the function of the street. Not all streets will receive the same treatment or the same Complete Streets elements. The existing and intended function of the street, the community vision of the corridor, and physical and financial limitations must be considered in selecting appropriate roadway and boulevard design elements for the corridor.

6 Cost Implications

Complete Streets are a long-term investment in sustainable and healthy communities and have the ability to produce long-term savings in health care and transportation operations costs, as well as improved road safety for all users. While these represent a net positive for the City as a whole, cost benefits are not easily captured and recovered within the transportation capital budget.

The Complete Streets approach begins with smart planning and design. By considering all road users at an early stage, designers and engineers have the greatest opportunity to create design solutions that achieve the City's transportation objectives in the most cost-effective manner. The incremental cost of considering all modes upfront is less than the cost to later rebuild or upgrade for specific modes.

Most Complete Streets projects will incur incremental cost increases for accommodating pedestrians and cyclists over a traditional road project where these have been ignored. Based on previous projects, these additional costs can be expected to be in the 15 to 25% range. On rural routes, wider paved shoulders are more expensive to initially construct, depending on the shoulder width and depth of base, but provide a longer roadway service life and reduced maintenance costs compared to gravel shoulders.

Where substantial public realm and streetscape improvements are desired, such as the City's Image Routes, it has been found that significantly greater investment is required, in the order of 30%.

In new development areas, the City can leverage developer contributions to construct infrastructure that balances the needs for all users. To implement Complete Streets through retrofits in established areas requires an opportunistic approach where the concept of Complete Streets is embedded in all projects and procedures related to streets – from projects as large as road reconstructions, resurfacing and rehabilitation to procedures as routine as traffic signal operations and maintenance activities. For example, necessary projects like road resurfacing can be leveraged to reconfigure travel lanes or add bike lanes. Over time, a network of Complete Streets for all users is achieved.

Another cost consideration for Complete Streets is maintenance. Road maintenance plays a significant role in improving the safety of the transportation network and improving mobility for users of all ages and abilities.

Thunder Bay currently has winter control standards for sidewalks and multi-use trails. Consideration should be made to provide winter maintenance of bike lanes when user thresholds are met. New road maintenance standards were legislated in 2018 per Ontario Regulation 239/02 to recognize the importance of regular maintenance of sidewalks and cycling facilities and also included inspection and standards for encroachments on areas adjacent to sidewalks. With the 2018 updates to the regulation and the addition of infrastructure to support all modes, maintenance costs are expected to increase.

7 Proposed Policy

The implementation of Complete Streets is understood to be iterative and the expected outcome of the Complete Streets policy should be to meet the long-term vision of the transportation network.

7.1 Purpose and Vision

Policy Statement:

The City of Thunder Bay aims to implement a network of streets that are safe, comfortable, and functional for all road users, regardless of their chosen mode of transportation, their age, or their ability by adopting and implementing this Complete Streets policy.

Implementation Actions:

- Adopt the Complete Streets policy.
- Create a Complete Streets Committee to oversee the implementation of this policy, including representatives from relevant departments.

7.2 Applicability

Policy Statement:

The Complete Streets policy shall apply to all new road construction projects and all road rehabilitation or reconstruction projects, including corridors and intersections, under the jurisdiction of the City of Thunder Bay.

Planning, design, construction, operation, and maintenance will all be carried out according to Complete Street principles. The planning and design process will start with the assumption that all modes will be accommodated in each project. While not all projects will be able to accommodate each mode to the highest level of service, where constraints exist, planners and designers will need to demonstrate that the proposed design provided due consideration for all modes within the community context and intended function of the street.

Exceptions shall only be granted if a) accommodation is not necessary on corridors where non-motorized use is prohibited, such as the Thunder Bay Expressway, b) the cost of accommodation is disproportionate to the need or probable use, or c) there is a documented absence of current or future need. All exceptions shall only be granted by the City Engineer.

Where jurisdiction is held by or shared with other levels of government or other agencies, all efforts shall be made to work with partner agencies to implement the Complete Streets principles on all projects. Additionally, private developers shall adhere to this policy in the construction or re-construction of public streets.

Implementation Actions:

- Based on best practices, develop and adopt Complete Streets typologies based on the road classification, local context, adjacent built form, and desired function, and develop typical cross-sections for each typology.
- Update Maintenance Standards with consideration to changes in O. Reg. 239/02.
- Update existing policies to ensure that Complete Streets principles are applied to all road projects, including new and reconstructed roads and road maintenance. Develop a specific process to apply the Complete Streets principles to road retrofit projects.
- Update traffic management policies during road construction to accommodate all modes of transportation with safe detours.
- Develop a process for the City Engineer to review exception requests.
- Offer workshops for staff to train and educate those involved in all phases of road design, construction, engineering, operation, and maintenance on the principles of Complete Streets.

7.3 Network Approach and Community Context

Policy Statement:

The City of Thunder Bay shall develop and maintain integrated networks of transportation facilities that prioritize each group of street users (goods movement, driving, transit, cycling, walking and other modes of active transportation). While every corridor will not be able to accommodate every mode, it is integral that each mode is supported within its own connected and robust network.

The specific elements of Complete Streets to be implemented will be based on the local context for each individual project and intended function, and projected use of the street, while keeping the network approach in mind.

Implementation Actions:

- Develop a Complete Streets Checklist that shall be undertaken in the planning and design phases of each project to ensure that Complete Streets principles are applied.

7.4 Implementation and Performance Measurement

Policy Statement:

Implementation of Complete Streets will be ongoing and applicable to all city process related to streets, including planning, design, operations and maintenance projects and activities.

Performance shall be measured by multimodal level of service as well as using mode-specific measures such as linear-kilometres of bicycle facilities added, linear-kilometres of pedestrian facilities added, and mode share changes to walking, cycling, transit, and driving.

Implementation Actions:

- Update manuals, policies, procedures, and plans to include Complete Streets principles in a timely manner so that the implementation of Complete Streets becomes part of the routine delivery of City transportation projects.
- Establish baseline data and determine which performance indicators are to be used.
- Adopt a Multimodal Level of Service approach to evaluating existing streets and establishing level of service targets.

Appendix A – Examples of Complete Streets Policies

COMPLETE STREETS POLICY

The City of Minneapolis is committed to building a complete and integrated public right-of-way to ensure that everyone can travel safely and comfortably along and across a street regardless of whether they are walking, biking, taking transit, or driving. This Complete Streets policy will inform decision-making throughout all phases of transportation projects and initiatives. The overarching policy purpose is the establishment of a modal priority framework that prioritizes public right-of-way use in the following order: walking, biking or taking transit, and driving motor vehicles.

1. Purpose and Vision

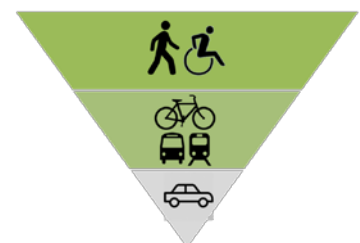
In the 20th century, transportation planning and infrastructure investments in Minneapolis – as in most US cities – became skewed towards providing more efficient movement for motorized travel. Minneapolis is committed to rebalancing its transportation network by clearly prioritizing walking, taking transit, and biking over driving motorized vehicles, in a manner that provides for acceptable levels of service for all modes. This approach is consistent with – and builds on – guidance that Minneapolis has already established in its transportation policy plan, *Access Minneapolis*¹, its Comprehensive Plan (*the Minneapolis Plan for Sustainable Growth*), and many other adopted policies.

By implementing this Complete Streets policy:

- Transportation in Minneapolis will occur via complete, integrated, efficient, safe, comfortable and well-maintained networks for all modes; and,
- Transportation-related decisions will align with the *Minneapolis Comprehensive Plan for Sustainable Growth*, which states: “Minneapolis will build, maintain, and enhance access to multi-modal transportation options for residents and businesses through a balanced system of transportation modes that supports the City’s land use vision, reduces adverse transportation impacts, decreases the overall dependency on automobiles, and reflects the City’s pivotal role as the center of the regional transportation network”; and,
- The health of Minneapolis residents, workers, and visitors will be improved through walking and biking; and,
- The environment, both in terms of local air and water quality and in terms of global impacts like climate change, will be positively impacted by the City’s transportation-related decision-making; and,
- The local economy will be supported and strengthened through the provision of safe, efficient transportation options and vibrant public spaces; and,
- City streets and sidewalks – our largest public space – will foster livable, walkable, bicycle-friendly, green neighborhoods by including healthy trees, plants, permeable surfaces, and design features that help define the character of a street while providing added benefits of shade, summer cooling, reduced energy consumption, and improved water quality; and,
- Minneapolis will create an integrated transportation network that provides all residents access to employment, education, and other needs for daily living, regardless of their age, access to, or ability to operate a motorized vehicle.
- Ensure private development contributes to the objective of this policy.

2. Policy Framework

The City establishes a modal priority framework that prioritizes people as they walk, bicycle, and take transit over people when they drive. The modal priority framework will inform City transportation related decision-making. Minneapolis offers modal options through networks of interconnected routes, but there will be City streets that do not have specific accommodations for all modes, e.g., residential streets without freight vehicles, car-free streets, trails, interstate



¹ Access Minneapolis encompasses the City’s Bicycle Master Plan and Pedestrian Master Plan, amongst others.

routes that prohibit walking and bicycling, streets without transit routes, or streets without dedicated bicycle facilities.

City right-of-way, in addition to serving a transportation role, is the largest and most important public space in the City. To truly serve the highest-priority modes, streets must be vital, healthy *places*, which include healthy trees, plants, permeable surfaces, public art, and other design features. These elements help define the character of a street, provide shade and cooling, reduce energy consumption, absorb and cleanse stormwater runoff, support car and bicycle sharing, and provide data to facilitate trip planning, parking, and transfers between modes of transportation. The importance of these elements is most important along streets with higher traffic volumes, by helping offset the localized impacts of through traffic on adjacent neighborhoods.

Although not identified specifically, emergency service providers are unique users of the transportation system and require special consideration to allow for reasonable and efficient access to destinations in all parts of the City. Similarly, the movement of commercial goods and services will continue to be a high priority for the City, with an understanding that larger vehicles may present challenges within constrained urban environments.

This modal priority framework is established for the following reasons:

- All trips begin or end with walking (with or without mobility device), regardless of the primary mode(s) of travel.
- Transit extends the range of travel for people when they walk or bicycle, provides greater efficiencies and operational benefits than motor vehicles, and is accessible to those unable to walk, bicycle, or drive.
- Bicycling extends the range of higher-speed non-motorized travel, while serving commuting, delivery, social, and other purposes.
- Safety of the most vulnerable street users must be the highest priority, because they are the most at risk.
- The priority modes have an important set of benefits that motor vehicle travel lacks, including health, the environment, land use patterns, economic development, and congestion reduction.
- The City's highest-priority modes have historically encountered underinvestment and rebalancing our transportation networks necessitates addressing the needs of those uses.
- Transportation investments influence travel choices, such that greater investment in high-quality pedestrian, bicycle, and transit facilities facilitate less reliance upon motor vehicles.
- Motor-centric priorities and investments incentivize greater motorized vehicle usage, accelerate congestion, elevate parking demand, and increase pollution.
- The policy will enhance the safety, convenience, comfort, and efficiency of travel for people of all ages and abilities.

3. Implementation

City transportation-related decisions will follow the Complete Streets policy. This includes all types and phases of projects, including programming, planning, design, construction, operation and maintenance. Implementation of Complete Streets will encompass all elements within the public right-of-way, including landscaping, transit shelters, lighting, signs, traffic lights, parking meters, bicycle parking, and furniture. The process by which the Complete Streets policy is applied will be scaled appropriately for each individual project or initiative, including private developments that influence the public right-of-way. This process will coincide with completion of the Complete Streets project delivery checklist, which is intended to document the implementation of the policy.

Individual routine maintenance activities (including but not limited to sweeping, mowing, pothole repair, sign replacement, etc.) must reflect the Complete Streets policy's modal priority framework, but will not be required to go through a Complete Streets policy process. However, the overall planning for such activities will reflect the City's modal priority framework that prioritizes people as they walk, bicycle, and take transit.

Complete Streets Policy

The City will continue to engage partner agencies, schools, businesses, neighborhood associations, and developers in a cooperative manner throughout implementation of the Complete Streets policy process. Application of the policy shall apply to all public and private projects and initiatives that interact with and impact the public right-of-way. Multimodal performance metrics will be established to track the progress towards achieving the City's vision of Complete Streets. Periodic evaluations will be necessary to assess each metric's effectiveness, establish benchmarks, and determine if new or refined metrics are needed.

Programming

The City's long-range Capital Improvement Program will be informed by the modal priority framework that prioritizes people as they walk, take transit, and bicycle. This includes prioritizing projects that will significantly improve the pedestrian, bicycle, and transit networks.

Planning

The planning phase consists primarily of coordination amongst City staff and external agencies, as well as the completion of a Complete Streets checklist. The Complete Streets checklist is part of a Project Rationale and Overview, which provides City staff with a tool to document activities and decision-making from planning through final design.

The City incorporates a context-based approach that will be informed by the modal priority framework. Designs will be based upon project-specific objectives and context sensitive design solutions supported by the modal priority, street typology and place types², documented modal needs, multimodal metrics, issues, opportunities, functionality, environmental or social factors, right-of-way impacts, and input from stakeholders and the community.

This approach will include review of relevant adopted City plans (i.e., *Minneapolis Comprehensive Plan for Sustainable growth*, *Access Minneapolis*, and the *Pedestrian and Bicycle Master Plans*, etc.) and seek to provide a transportation system that offers people numerous modal options through networks of interconnected routes within and through the City and continue to seek opportunities to address and/or eliminate gaps, barriers, or connectivity in the non-motorized transportation networks.

During the planning phase City staff will work with other City departments, external agencies, City advisory committees, and elected officials as necessary to identify an equitable engagement and outreach approach in a manner that is scaled appropriately and defines specific goals. The City will continue to explore new and innovative public engagement approaches that promote greater engagement from stakeholders, when appropriate and accessible.

Design

The design of the public right-of-way will follow recognized design standards, best practices and guidelines to achieve the vision of Complete Streets, including *Design Guidelines for Streets and Sidewalks (Access Minneapolis)*, *NACTO Urban Street Design Guide*, *AASHTO, ITE*, and, *MnDOT Local State-Aid Route Standards*. The City will continue to explore flexible and innovative designs, and continue to evaluate the latest design standards and innovative concepts, seeking guidance from established best practices. Where standards established by other units of government, such as *MnDOT Local State-Aid Route Standards*, conflict with the City's Complete Streets

² Access Minneapolis provides context-based geometric designs and treatments that reflect adjoining land uses and functionality to reinforce modal priorities, activation of the public realm, stormwater management, and corridor greening.

vision, the City will seek design exceptions and variances. The City will continue to examine existing standards and work to influence established standards to be more in alignment with the City's Complete Streets vision.

Design of the public right-of-way will be informed and guided by the City's street typologies and place types. The City supports opportunities to incorporate sustainable alternatives and placemaking elements within the public right-of-way, which may include landscaping, green spaces, public art, or stormwater management elements. When designing a street, the City will consider and evaluate metrics for all modes within the right-of-way. The City will work to identify context-based multimodal metrics that prioritize the safety, convenience, and comfort of the prioritized travel modes.

Construction

Impacts to pedestrians, bicyclists and transit users will be limited to the extent possible during construction. Safe, convenient, and connected detours will be established for people as they walk, take transit, and bicycle when those networks are temporarily interrupted by construction work. Construction will impact trees and green space as little as possible, to preserve and protect this important green infrastructure. The City will continue to explore innovative construction methods to increase the safety, convenience, and utility of pedestrian, bicycle and transit facilities.

Operation

The operation of the public right-of-way is a significant opportunity to implement the City's modal priority framework that prioritizes people as they walk, bicycle, and take transit. The timing of traffic signals will reflect this modal priority framework, such that signal timing plans will incorporate multimodal metrics. Ongoing monitoring and evaluation of the operation of the public right-of-way should support safe, comfortable, and convenient travel for people that choose to walk, bicycle, take transit, or drive a vehicle.

From time to time a street may be closed temporarily to automotive traffic, to accommodate community events or activities, such as Open Streets, which support the implementation the City's Complete Streets vision. The City will work with residents to accommodate events that build community and improve the pedestrian and bicycle user-experience (e.g., National Night Out, paint-the-pavement projects, etc.).

Maintenance

The modal priorities of the Complete Streets policy shall be used when planning, prioritizing, and budgeting maintenance activities. These activities would include, but are not limited to, snow and ice control, street cleaning, pavement repair, pavement marking, etc.

4. Exemptions

All transportation projects and initiatives are subject to the Complete Streets policy and related process. When adopted City plans and goals call for facilities following the modal priority framework and a proposed project does not include those facilities in accordance with the modal priority framework, an exemption will be required from the City Council based upon the following list:

- Cost of a new facility for a particular mode is excessively disproportionate to need or probable future use.
- Documented lack of current or future need (i.e., higher-quality parallel routes in close proximity).
- Constraints related to physical space, emergency vehicle clearance, or right-of-way acquisition.
- Mode is prohibited by law from using the street.

COMPLETE STREETS

WORKING DRAFT

MISSOULA POLICY

WORKING DRAFT

I. Purpose.

The purpose of the policy statement below is to ensure that all users of our transportation system are able to travel safely on all streets and roadways within the public right-of-way in Missoula.

Throughout the country, there is ample, and growing, precedent. Complete Streets policies have been adopted by at least five states legislatively, and by at least 36 localities – of which 13 are by local law (resolutions or ordinances). Further, Sen. Tom Harkin has introduced S. 2686, called the "Complete Streets Act of 2008," and Rep. Doris Matsui has introduced H.R. 5951, the "Safe and Complete Streets Act of 2008," both in the United States Congress.

It is the desire of the City of Missoula to formalize a commitment to the principles of complete streets.

II. Policy.

All roadways in the city of Missoula shall be designed, constructed, and/or upgraded to:

1. assure the safety of all users of all ages and of all abilities: pedestrians, bicyclists, transit users, and motorists; and
2. meet the needs of all users both along roadway corridors and crossing the corridors.

III. Implementation.

This policy will apply to the scoping, design, and construction of projects. Project development will include:

1. remediation of deficient or non-existent sidewalks;
2. remediation of deficient roadways; and
3. new roadway construction.

Current design standards are embodied in current subdivision regulations, Article 3-2 and 3-3, and apply to new roadway construction. By adoption of this policy, these standards will apply to every new and existing roadway in the City of Missoula.

Current design standards will be reviewed by the Public Works Department to assure that they reflect the best available design standards and guidelines, and effectively implement the Policy above stated.

In adopting this policy, the City of Missoula recognizes that the need to apply the policy to all existing streets within the City of Missoula to ensure that all streets are complete streets. Accordingly, by 2020, the City of Missoula will:

1. complete construction of all sidewalks, curbs, and gutters on existing streets with the City of Missoula;
2. establish bike lanes on all existing collector and arterials with the City of Missoula;

3. complete connections to existing bicycle-pedestrian paths;
4. install curb cuts at the end of every sidewalk block in the city; and
5. provide bus pullouts on every street where deemed appropriate by public works officials.

Exceptions may be made when:

- The project involves a roadway on which non-motorized use is prohibited by law. In this case, an effort shall be made to accommodate pedestrians and bicyclists elsewhere.
- The cost of building complete facilities would be excessively disproportionate to the need or probable use.
- There is documentation that there is an absence of use by all except motorized users now and in the future.

Any exception to applying this policy to a specific roadway project must be approved by the Director of Public Works, with written documentation of the reason for the exception. The Director of Public Works should consult with appropriate city boards before approving an exception.

An annual report will be made to the City Council by the City Administration showing progress made in implementing this policy.

Approved by the Bicycle Pedestrian Advisory Board as a working draft, June 9, 2008. Further work on this document is planned over the next several months.

11. COMPLETE STREETS POLICY

“Complete Streets” are designed, operated and maintained to enable safe access for all users. Pedestrians, cyclists, transit riders and motorists of all ages and abilities must be able to safely move along and across a complete street. For the City of Waterloo, a Complete Streets policy can assist the City in implementing the vision for the TMP to:

“Develop a coordinated and integrated transportation system that provides realistic alternative travel options to the auto thereby creating a City that is truly accessible to all.”

11.1 Complementary City Policies

In addition to implementing the TMP vision, a Complete Streets policy is complementary to following City policies and master plans:

- *Official Plan (Plan It!)*
- *Accessibility Plan*
- *Recreation & Leisure Plan*
- *Land-use Zoning & Urban Design Guidelines*
- *Environmental Strategic Plan*
- *Fire Master Plan*

A Complete Streets policy can enable those responsible for the provision of conventional transportation infrastructure and services within the City to effectively integrate transportation into the overall vision and fabric of the City.

A Complete Streets policy is also complementary to the *Pedestrian Charter* approved by City Council in 2008 to create an urban environment in all parts of the City that encourages and supports walking.

As noted in the *Recreation and Leisure Services Plan*, the City of Waterloo trails extend through Uptown Waterloo, parkland, natural areas, woodlands and creek corridors. Started over fifteen years ago, the network of trails has grown to over 120 km in length. There are multi-use trails for hiking, jogging, cycling and roller blading; low-impact trails for foot traffic only. The importance of trail corridors and networks in supporting active transportation is discussed in Section 6 of this TMP. A Complete Streets policy is complemented by and integrates with a network of Linked Trail Greenways or Open Space Corridors that focus on the development of trails in corridors other than those defined by streets.

11.2 Importance of Complete Streets

The importance of Complete Streets lies in the function of streets and roadways within the community fabric. Access to adjacent lands, whether they are residential, employment, commercial, institutional or recreational is oriented to the streets. Streets are meeting places for social and business interaction through access and mobility. Unlike corridors that solely serve rail, air, water, utilities, recreation, or natural areas, streets integrate many elements of our society and therefore need to provide access to the broad range of citizens within that society.

A Complete Streets policy is intended to shift the City of Waterloo from the decades-long focus of providing streets to move cars, to providing streets where people can interact and move about

whether they are on foot, on a bicycle, on a new or alternative form of transportation³, in a bus or in a car. Every street needs to accommodate pedestrians at a basic level with the provision of sidewalks, walkways or “safe space”.

There is even a need for safe crossings of freeways to be provided for pedestrians. The needs of pedestrians with cognitive, mobility or visual impairments must be incorporated into the design of those pedestrian facilities.

As the volume of motor vehicles, their speed and size increase, cyclists need separate space or alternative corridors. An efficient transit system will focus on a network of compatible streets and land-uses. Efficient truck routes are also required to ensure goods movement to and within the City. And our car-dominated culture necessitates the provision of streets for motorists. All of those users needs must be provided for within the context of localized culture and physical form.

A Complete Streets policy can empower and direct citizens, elected officials, government agencies, employers, businesses, developers, bureaucrats, planners, architects and engineers. It requires a change in policies and practices to ensure that the entire right-of-way is routinely planned, designed, constructed, operated, and maintained to enable safe access for all users that are appropriate for local context and needs.

11.3 Recommended Complete Streets Policy Foundation

In creating a coordinated and integrated transportation system that provides realistic alternative travel options to the auto, and in recognizing the benefits of walking and cycling to our health, community and environment, it is recommended that the City of Waterloo adopt a Complete Streets policy to plan, design, operate and maintain streets to enable all users of all ages and abilities – pedestrians, cyclists, transit riders and motorists – to safely move along and across City streets. The principle of Complete Streets supports compact, sustainable development. It is intended to be applied comprehensively but with flexibility to reflect local context. The Complete Streets policy:

- Incorporates the principle of Complete Streets into all transportation projects except where cyclists and pedestrians are prohibited by law, or there is a demonstrated absence of need. Safe crossings of facilities that prohibit use by pedestrians and cyclists are still required. All exceptions must be justified and approved at a senior staff level, i.e. City Engineer, Director of Transportation or their delegate.
- Integrates Complete Streets with a complementary Linked Greenways or Trail Corridors policy that supports active transportation in a variety of non-street corridors such as parkland, natural areas, woodlands, river and creek corridors, stormwater management facilities, utility corridors, transit and rail corridors, etc.
- Incorporates the principle of Complete Streets into all aspects of the City’s responsibilities for streets including:

Planning and Design:

- o Planning of streets and street networks City-wide, in secondary plans and plans of subdivision;
- o Design of street networks, corridors, intersections, site-specific improvements and traffic calming;

³ In Ontario, the following types of new and alternative forms of transportation are allowed to operate on streets: Limited Speed Motorcycle, Motor-Assisted Bicycle (moped), Motor Tricycle, Bicycle, Electric Bicycle (e-bike), Personal Mobility Device (motorized wheelchair, medical scooter preferably on sidewalks), Low-Speed Vehicle and Seagway Human Transporter/Personal Transporter.

- o Design of new construction, reconstruction, retrofit and resurfacing roadway projects.

Maintenance and Operations:

- o Construction within or adjacent street rights-of-way including maintaining pedestrian and cyclist access and mobility through construction zones and in traffic management plans
Operation of streets and intersections, including signage, pavement markings, traffic control and illumination;
- o Maintenance of streets and alternatives for pedestrians and cyclists, i.e. trails, including seasonal and repair work. Seasonal includes maintaining the surface free of disabling debris, water, snow, and ice. Repair includes attention to spot repairs, hazards and overall wear or deterioration.

Communications:

- o Public consultation and communications;
- o Advisory committee responsibilities and function;
- o Review of roadways within the City under the jurisdiction of the Ministry of Transportation, Ontario (MTO), or the Regional Municipality of Waterloo (RMOW);
- o Collaboration with the RMOW on travel demand management (TDM) initiatives.

Asset Management:

- o Audits of streets and alternatives for pedestrians and cyclists, i.e. trails;
 - o Annual reviews of the development and implementation of the sidewalk, trails and bikeway network;
 - o Establishment of performance standards that reflect the safety, convenience and needs of all users;
 - o Data collection procedures and analysis that benchmark and track how well streets are serving all users.
- Implement the Complete Streets principle including:
 - o **Restructure** City procedures associated with the above responsibilities, where required, including budgetary and funding models;
 - o **Rewrite** any City standards and guidelines, and refer to design standards, guidelines and practices that encompass all users, drawing on the latest demonstrated, beneficial initiatives;
 - o **Retrain** staff including planners, architects, landscape architects and engineers to understand and incorporate the needs of all users in their daily work; and
 - o **Create a working group** of staff lead by a senior staff member to oversee the implementation, restructuring and retraining.

11.4 Complementary Policies

There are a number of needs, concerns, issues and deficiencies related to the Complete Streets principle, in particular with respect to pedestrians and cyclists. The following complementary policy themes are recommended to be examined in detail and considered for implementation within the short-term, including:

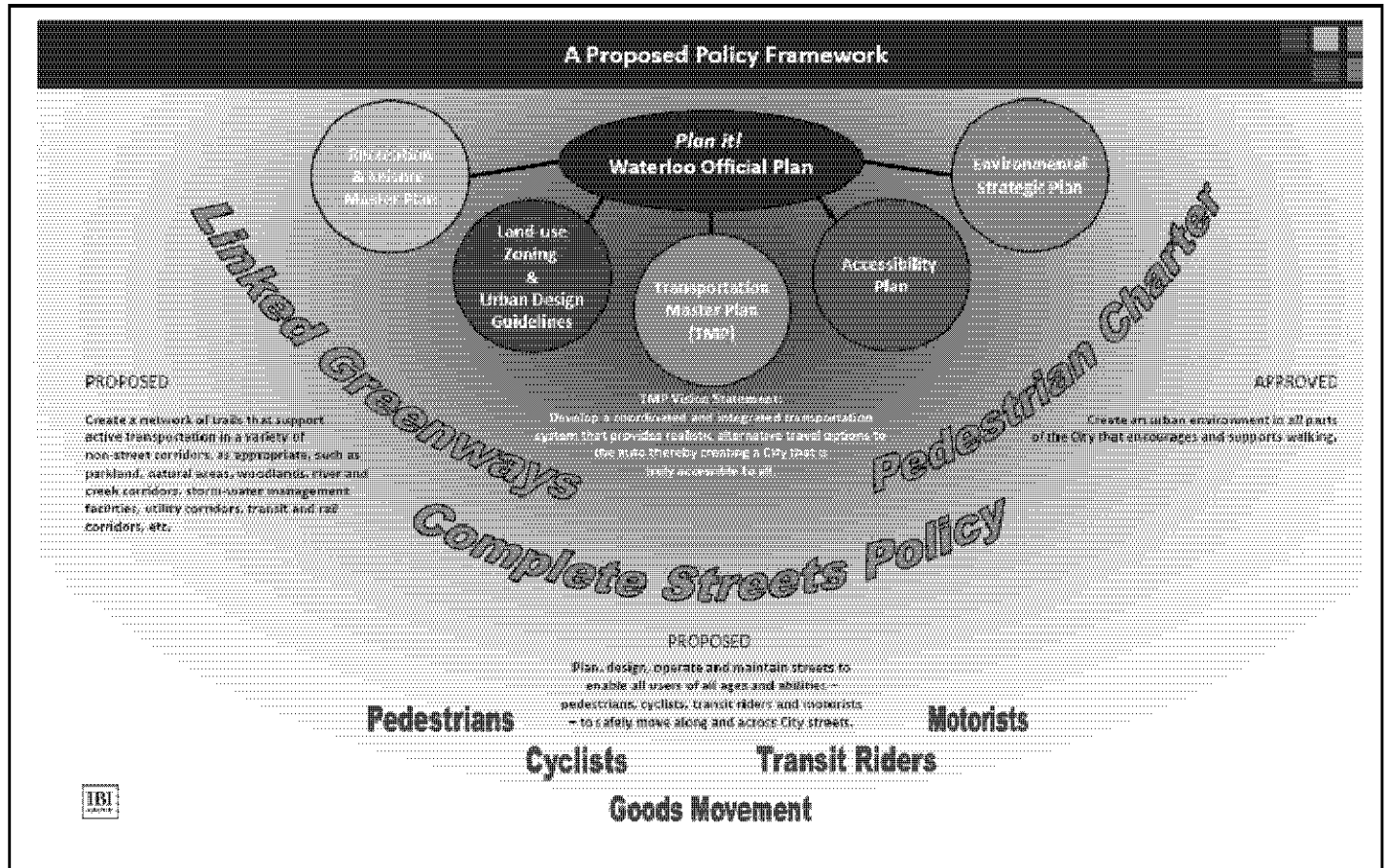
- On-road bikeway and trail implementation process that recognizes the importance of the network in meeting the principles of the TMP if opposition arises. Any route that does not proceed would require justification of why not, mitigation considered and alternative routes approved at a senior staff level, i.e. City Engineer, Director of Transportation or delegate;
- Bicycle and pedestrian-friendly sites;
- End-of-trip facilities (bicycle parking by-law and showers / change facilities);
- Trail and sidewalk maintenance in winter (see Section 17);
- Active and Safes Route to School collaboration;
- Hazard reporting for all users;
- Advisory Committee (technical committee or subcommittee to TTAC);
- RMOW trail, bike and walking portal collaboration;
- Sidewalk retrofit prioritization program;
- Collaborate with RMOW and adjacent municipalities on a signage strategy for bikeways and trails;
- Walking, cycling and trail audit programs to identify and program upgrades so that the active transportation infrastructure is fully integrated and maintained;
- Collaborate with the Region of Waterloo on implementing Transportation Demand Management policies and programs (see Section 16);
- Intersection and traffic control policy that considers the needs of all street users to cross intersections and designated crosswalks (see Section 14); and
- Parking policies and practices that support all road users.

The Complete Streets policy framework developed specifically for the City of Waterloo is illustrated on Exhibit 11.1.

Walking, Cycling and Trail audits—sample checklist:

- ☒ Signage—regulatory, warning and information
- ☒ Pavement markings
- ☒ Sidewalk present, material, width, slope, grade, driveways treatments, etc.
- ☒ Trail width, slope, grade, curves, sight distance, materials, etc.
- ☒ Accessibility features—ramps (location, orientation, grade, landing), detectable warnings, audible signals, protruding objects, etc.
- ☒ Surface condition, potholes, cracks, tripping hazards, etc.
- ☒ Vegetation / plantings—maintenance required
- ☒ Sidewalk clutter
- ☒ Street crossing present, type of traffic control, traffic volume / speed / gaps, physical features
- ☒ Drainage issues—erosion, ponding, debris, culvert required / damaged, etc.
- ☒ Lighting
- ☒ Security issues
- ☒ Bicycle parking—rack type / condition, location, spacing, lighting, shelter

Exhibit 11-1: Complete Streets Policy Framework



11.5 Complete Street Case Studies

To illustrate the potential for success of a Complete Street policy in achieving the City of Waterloo's "accessible for all" goal, reference can be made to the impacts of similar policies in similar cities. Some case studies, such as those on Montreal, Vancouver or Chicago show Complete Streets success in large metropolitan areas. More relevant to the City of Waterloo are the Complete Street impacts in Boulder, Colorado summarized as follows:

CASE STUDY: GO Boulder, Colorado, USA

Population: 101,000; Platinum Bicycle-friendly City since 2004

The City's 1989 original Transportation Master Plan called for shifting away from single occupant vehicle (SOV) trips, reconciling two conflicting goals of "safe and convenient mobility and access" and "minimizing auto congestion, air pollution and noise" that make Boulder a great place to live. The 1996 update set an objective of "no long term growth in vehicle traffic", committing to enhance the City's ten major arterials to make them work for buses, bikes and pedestrians. The 2003 update focused on four policy areas: regional connections, expanded transportation demand management (TDM), multi-modal corridors, and funding necessary to achieve the plan's goals. The 2008 update recommended the **Complete Streets Investment Program** that identifies a strategic set of the highest priority investments for the community through 2025.

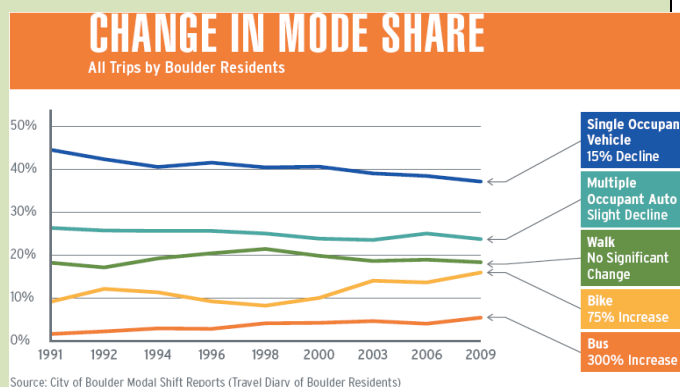
How is Boulder doing?

SOV Mode Share—From 1990 to 2010, decreased from ~45% to ~37% for all trips; however the rate of decrease needs to double from 0.4% to 0.8% per year to meet the 2025 target of 25%

Change in mode share—Since 1990, transit and bicycling have increased while walking remains stable.

Vehicle miles travelled—As of 2009, the VMT has levels are holding at 1994 levels

Congestion—In 2009, less than 20% of the City's intersection were heavily congested (level of service E or F)



Evolution of Transit: Most transit services in Boulder are operated by the RTD (region's transit agency); however, the City partnered with a non-profit to create a Community Transit Network (HOP, SKIP, JUMP, BOUND, DASH, STAMPEDE and BOLT) and introduced the Eco Pass in early 1990s to make transit more convenient and attractive. The Eco Pass targets audiences such as employees, students and neighbourhoods, offering a discounted pass if purchased in groups, and a taxi Guaranteed Ride Home for employees.

Human Powered Action: Boulder has a robust bicycle network—83 km of paved multi-use pathways with 76 underpasses, 59 km of roads with bike lanes, 14 km of paved shoulders, 69 km of roads with designated bike routes, and 16 km of soft surface trails. About 85% of Boulder's arterial streets accommodate cyclists, and all local and regional buses are equipped with bike racks. The City has almost 500 km of roads and almost 250 km of bicycle facilities! Two bike corrals installed in the downtown have resulted in a 58% increase in bicycles parked in the area from 2007 to 2010. Programs include Walk & Bike Month, Winter Bike to Work Day, personal bike routing on the internet, and a public bike system. Two maintenance crews are mobilized at the same time when the snow falls: one for roads and one for the pathway system. It takes about 8 hours to clear the entire pathway system with two trucks and a special plow.

Major streets are barriers to pedestrians. The City has a goal of providing safe pedestrian crossings of major streets every 200 m. A sidewalk repair program has been in place since 1993. A sidewalk missing links program is funded \$75,000 annually.

Since 1993, the City and the school board have funded a transportation co-ordinator working on Safe Routes to School efforts. Infrastructure and programming for this has received \$1.56 M in federal funds since 2005.

Completing the Streets: Out of the 2003 TMP update came the strategy of systematically transforming the major streets

to better accommodate all modes and integrate adjacent land uses. Corridor transformation ranges from larger-scale transit improvements to smaller details such as wider sidewalks and innovative signage.

Complete Streets also focuses on individualized travel planning, and increased Eco Pass pick-up and the Driven to Drive Less campaigns. There are 450 volunteer employee transportation co-ordinators at 230 businesses representing 25,000 employees. New developments with significant traffic impacts are required to develop and implement a TDM plan. Only 1/3^d of employees in the downtown arrive by car.

Partnering for the Bigger Picture: Boulder has a growth boundary articulated in the land-use plan, with growth occurring through redevelopment and increasing density. This has allowed infrastructure funds to focus on enhancing rather than expanding the transportation system.

Transportation Revenue: A 0.6% local sales tax dedicated to transportation was approved by voters in 1967. Federal funding tied to larger infrastructure programs is the next largest source.

Will Boulder think creatively about its future transportation? The City is already reconsidering the use of transportation space. A potential future “repurposing” of streets, i.e. low-cost approaches to convert traditional auto space for other modes to support vibrant community life in these public spaces, is being thought about with community input and partners.

Transportation to Sustain a Community: A report on progress, City of Boulder, Transportation Division, Boulder, Colorado, http://www.bouldercolorado.gov/files/Transportation/Transportation/trans_report_on_progress_2009_decrease.pdf, December 2010