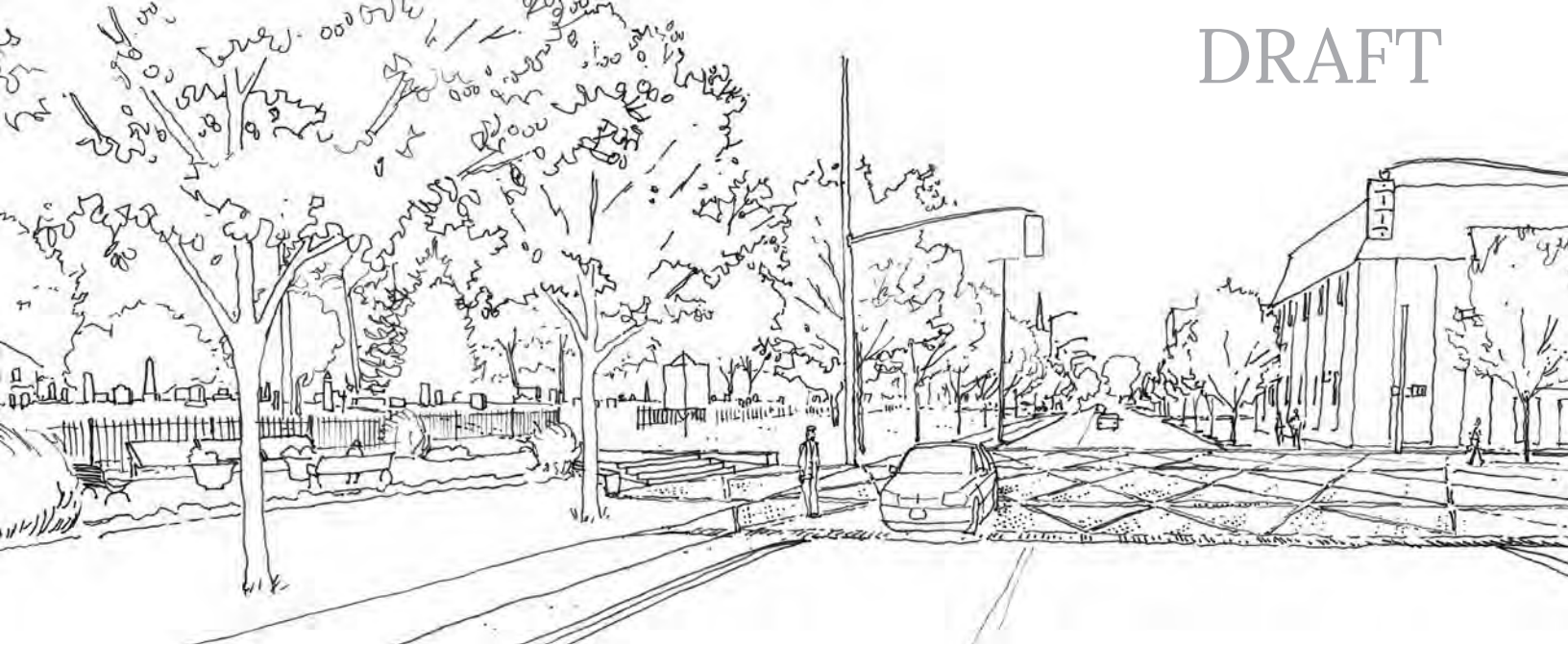


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# FREDERICTON CITY CENTRE STREET DESIGN MANUAL

**Fredericton**  
The Planning Partnership



FEBRUARY 2018







**FREDERICTON  
CITY CENTRE  
STREET  
DESIGN  
MANUAL**

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# 1.0 INTRODUCTION

## 1.1 WHAT IS A STREET?

Streets are public spaces that serve many functions. At the most basic level, streets provide transportation infrastructure to provide access to property and move people and goods from place to place. Streets, however, are much more than just arteries intended for motor vehicles. Streets are the most prevalent collection of public spaces in an urban area. Street corridors contain roads, sidewalks, and infrastructure for cycling and public transit. At and beneath the surface, our street systems contain complex collections of servicing infrastructure including water, sanitary sewer, storm sewer, electricity, natural gas, and telecommunications systems. Streets also accommodate biological systems that are important for human health and well-being. Trees and landscaping are as vital a component of the public infrastructure as those systems designed for transportation and urban servicing.

Streets are the fundamental building blocks of public space in cities. In addition to servicing various functions, they also define the way in which people experience the city. Streets are important corridors for human interaction in social settings. Streets provide an outdoor public room for people to engage in the sights, smells, and sounds of the city.

Great streets sustain us but also nourish us. Great streets meet basic human needs but also enrich lives. Well designed streets provide the services that are a pre-condition to living in high density but also establish the character and experience of urban living. Creating great urban streets requires deliberate thinking and careful planning. They are complicated spaces intended to satisfy a diversity of needs. The streets of Fredericton's City Centre have historically assumed a unique form. This document establishes practices that will maintain those essential historical elements of Fredericton's great streets while providing critical guidance on street investment and reinvestment to take maximum advantage of downtown Fredericton's very bright future.



## 1.2 PURPOSE OF THE STREET DESIGN MANUAL

Fredericton's City Centre is undergoing rapid change and evolution. Development pressure in the core is the most intense it has been in decades. The citizens of Fredericton have made it clear that growth and development in the City Centre is desirable but that the unique elements that define Fredericton's core need to be sustained and enhanced.

This Street Design Manual provides guidance on public investment and reinvestment on, above, and below our downtown streets. The document seeks to organize the use of the limited space in street rights-of-way to maximum advantage, balancing the needs of infrastructure and servicing with design that enhances the human experience of our linear public spaces.

The City of Fredericton is an active partner in the development of downtown Fredericton. The City plays the primary role in providing the appropriate street infrastructure that will help grow the downtown and make it an even more desirable place for people to be. Through planning and public investment, the City may sometimes take a lead role in making investments that are intended to leverage future growth and development or enhance the human experience and quality of life in the City Centre. In other scenarios, new private development may alter the character of the City Centre. This may necessitate post-development street-side investment to support changes to the downtown environment.

The Street Design Manual provides specific best practice and guidance on how street corridors are to be developed in Fredericton's City Centre. It is not a stand alone document. Imagine Fredericton sets out the vision for the community as a whole and manages Fredericton's transition from big town to small city in a period of rapid population growth and development.

The Street Design Manual is a deliverable that was identified by the Fredericton City Centre Plan which outlines the more detailed vision for downtown Fredericton. Both Imagine Fredericton and the City Centre Plan set the context for the more specific guidance provided by this Street Design Manual.

Successful implementation of the Street Design Manual requires collaboration and cooperation between a number of City departments and divisions as well as other utility providers and private land owners. The Design Manual establishes a system to be used when investment or reinvestment in streets is contemplated, balancing infrastructure and transportation requirements with human and aesthetic considerations. As a rule, the Growth and Community Services Department will assume the lead role in the collaborative process to conceptually design changes to downtown streets and interpret this manual. The Engineering and Operations Department will assume the leadership role while still collaborating with other City departments in the preparation of construction drawings and facilitating the construction process.

This Street Design Manual sets out design performance standards for all streets in the City Centre to ensure that they are great pedestrian spaces that are welcoming, comfortable for walking, beautiful in experience, and work together to create a legible whole – a memorable identity for the City Centre.



There are three primary goals of the Street Design Manual.

**1** To provide a coordinated vision over the long term for every street in the City Centre, guiding everything from major reconstruction, to utility work, to minor repairs. Every public works project, no matter how small, is an opportunity to enhance public infrastructure. A coordinated, predictable approach will establish a legible, harmonious image for City Centre streets that can be implemented at different times by different people. It applies across a full range of pedestrian infrastructure, including paving, lighting, furniture, benches and crosswalks.

**2** To define measurable performance standards for pedestrian and street tree infrastructure. In order to create streets that are comfortable for walking, pedestrian clearways must be adequate. The clearway is space that is paved, flat, and clear of obstructions. Benches, waste receptacles, bike rings, and lighting must be appropriately spaced to be convenient and accessible. Street trees must have adequate growing conditions both above and especially below grade.

**3** To establish a unique character for the City Centre, to ensure streets are beautiful, that trees thrive, and that materials, colours, and textures are compatible with the historic nature of the City Centre as well as its dynamic future.

Planning, urban design, economic development and engineering objectives need to be carefully considered and coordinated to meet the overarching goals of the City Centre Plan, which set out a vision of “transformation and enrichment of Fredericton’s downtown.” Streets are opportunities to serve multiple functions reflecting community priorities.

### 1.3 CONNECTION TO THE FREDERICTON CITY CENTRE PLAN

In 2015, the City of Fredericton adopted a new City Centre Plan. The plan was a pro-active response to increasing development pressure in the downtown in a period of strong overall population growth in both the City and region. Downtown Fredericton has benefitted from strong neighbourhood level planning for a number of years. The new City Centre Plan is based on a compelling vision and key strategies that emerged from a period of extensive public consultation. The Plan recommends new planning policy and regulation focussing on both the public realm and the built form.

Specific to the public realm, Downtown Fredericton's street infrastructure is generally at end of life. Last enhanced in the 1980's, downtown streets were improved with a relatively uniform set of investments that improved the public realm through decorative street lighting, some burying of electrical utilities, and some decorative sidewalk materials. Generally, the last iteration of downtown improvements did begin to assign more priority to pedestrians, urban design, and the quality of the public realm while still placing significant emphasis on the needs of motor vehicles.

The primary purpose of the Street Design Manual is to set out a comprehensive approach to the revitalization of street infrastructure in downtown Fredericton as the previous generation of infrastructure is renewed. The Manual adopts a more character-driven and targeted approach to infrastructure development. Instead of a "one size fits all" approach to downtown streets, a hierarchy of streets is developed that is more targeted to the intended function of each section of street. The Manual is therefore a more context sensitive approach. Minimal investment is identified for areas that are not identified for substantial change and they will retain a softer character with boulevards and more landscape elements. In the portions of the downtown where people gather most and where development pressure is highest, the Design Manual recommends strategic enhancements that provide a high quality street environment in a more urban form reflecting its intended function.

### 1.4 USE OF THE MANUAL

The Fredericton City Centre Street Design Manual sets out the overall vision for streets in the City Centre, the relationship and hierarchy among them, and detailed design guidelines on a street by street and block by block basis. The Street Design Manual supports and should be read in conjunction with the Fredericton City Centre Plan and the Garrison District Master Plan. A companion document, the Fredericton City Centre Built Form Design Guidelines, sets out performance standards for development on private land. All of these documents work together to guide the character and evolution of the City Centre.

Applying the standards in this Street Design Manual requires careful thought. The City Centre is not homogenous. There are many unique moments that have evolved organically over time, that have become special places requiring recognition and celebration in the design of the streetscape. The Manual should be applied in a context sensitive way as the City Centre continues to evolve and change. Nuanced design should be applied where streetscape treatments transition from one to another. Applying these standards uniformly along a street, without recognition of the street's varying context, is artificial and could result in a sterile and monotonous streetscape.

This Manual is not meant as a construction document. The next step is Design Development: the interpretation of these standards from a design and engineering viewpoint to create a detailed plan for the blocks where investment is proposed. Design Development is the prelude to construction drawings. Design Development will account for current conditions including land use, buildings, building entrances, laneways, connecting trails and sidewalks, lighting, utility locations, existing trees, and local soil volumes, among other factors. Design Development should be done for a minimum of 1 block (both sides of the street) for any planned work within the right of way, no matter how small, and longer as appropriate.



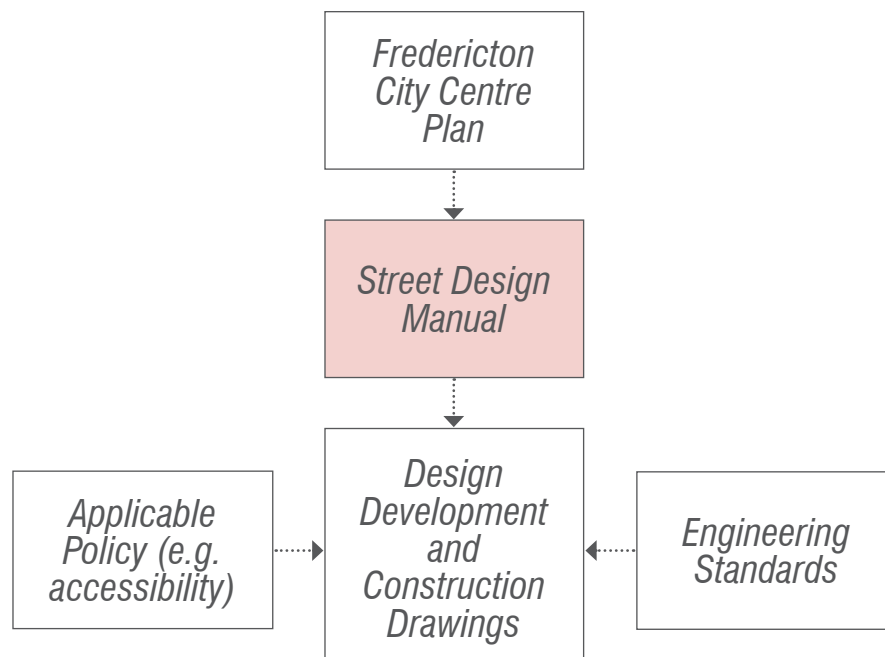
*The standards should be applied in a context sensitive way as the City Centre continues to evolve and change.*

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In applying the Street Design Manual to streets in the City Centre over time, it will be important to interpret these standards with flexibility. The design recommendations are not exact specifications but templates to guide intent. Current conditions will not last indefinitely, and it may be necessary to revisit which templates are appropriate. As the City Centre evolves, businesses will change, land uses will change, and new buildings will be built. Whole blocks or entire districts may be different. It will therefore be important to understand how those changes impact the overall goals of the Manual and respond accordingly.

The principal document (pages 1-28, this document) of the Fredericton City Centre Street Design Manual provides overall direction and key details of the streetscape strategy. The Appendix (pages 29-62, separate document) provides further details on planting, paving, furnishing and lighting, demonstration specifications for each street type, and a glossary.

This Street Design Manual acts in much the same way as the Built Form Design Guidelines to specify design objectives and performance standards for detailed design at the implementation (construction) stage. In the case of the Built Form Design Guidelines, the applicant does the design development, with the City acting as the review and approval agency. Here, the City itself undertakes the Design Development and the Street Design Manual establishes the criteria that guide the design.





## COMPONENTS OF A STREET





*“A COMPLETE STREET IS DESIGNED FOR ALL AGES, ABILITIES, AND MODES OF TRAVEL. ON COMPLETE STREETS, SAFE AND COMFORTABLE ACCESS FOR PEDESTRIANS, BICYCLES, TRANSIT USERS, AND PEOPLE WITH DISABILITIES IS NOT AN AFTERTHOUGHT, BUT AN INTEGRAL PLANNING FEATURE”*

– COMPLETE STREETS FOR CANADA

## 1.5 **STREETSCAPE 101**

### What is a Streetscape?

The streetscape is the “landscape” we see along a street. It is an outdoor public room, extending from one building face to the other, along the length of the street. The streetscape includes all the elements in that outdoor room: building facades, trees, lighting, furnishings, signs, sidewalks, crosswalks, bike lanes, vehicle lanes, parking and utilities. Because streets form a connected grid pattern, streetscapes are a series of connected outdoor public spaces that permeate Fredericton City Centre. The design and organization of the components of the streetscape is essential to creating great streetscapes and a great City Centre.

Beyond streetscape appearance, great streets are about people. Streets that are active and have lots of people walking and socializing are great streets. Achieving this depends on support for the Fredericton City Centre Plan, ensuring there is density in the core of the city, and a full range and mix of land uses: residential, shopping, offices, entertainment, institutional, parks, and services. This creates an environment where people are coming, going, and lingering at all times of the day and year.

## WHAT MAKES A GREAT STREET?

Though great streets will look different across and within cities, they share common elements and goals. Great streets emphasize placemaking by adding a human dimension to City Centre streets: cultivating unique shopping, working, living, and socializing experiences and allowing for passive enjoyment of the street as a destination.



## GREAT STREETS ARE...

### CONTEXT SENSITIVE

Great streets are responsive to their unique setting and can be implemented on many scales. They are designed with the understanding that each street is different in terms of location, size, and function.

### ACCESSIBLE

Streets must address the unique needs and safety of all road users, regardless of ability, age, or mode of transportation. They facilitate mobility and access to social opportunities.

### ENVIRONMENTALLY SUSTAINABLE

Comprehensive street design makes walking an easier choice, and encourages cycling and transit use. This promotes health benefits and yields reductions in energy consumption and air pollution.

### PEDESTRIAN-FOCUSED

Street design influences pedestrian activity. When focus is placed on enhancing the pedestrian experience through traffic calming, seating, special lighting and paving, wide sidewalks, and public art, the street becomes a place where people want to walk and pause rather than drive through, with a focus on attractiveness at ground level.

### FLEXIBLE

Streets should be designed to accommodate multiple uses and activities year-round. Infrastructure should be versatile and responsive to the needs of stakeholders including festivals and special events. Design should incorporate resilient and durable materials that can withstand harsh winters as well as support all modes of transportation and outdoor activity year-round.



Great streets yield significant social benefits because they facilitate placemaking by identifying streets as public places and implementing design interventions that increase social capital and sense of community. A street is more than a people-mover. It is the fundamental unit of public space in cities. Designing streets comprehensively is a paradigm shift in traditional thinking about streets and their role in the community. This thinking has emerged across North America and Europe as best practice for cultivating social, economic, and environmental benefits to their communities.

## OBJECTIVES OF COMPREHENSIVE STREET DESIGN

### ESTABLISH CONSISTENT DESIGN QUALITY

A strong identity is important for the City Centre. Comprehensive streetscape design and a family of streetscape elements can help cultivate sense of place by establishing a consistent, attractive image, which is critical to downtown revitalization.



Kitchener ON

### STIMULATE PRIVATE INVESTMENT

Streetscape improvements play a strategic role in economic development and have the capacity to alter patterns of economic activity. Investment in the streetscape demonstrates that the City is taking a leadership role in City Centre revitalization.



Portland OR

### CULTIVATE VIBRANT STREET LIFE

Streetscape design should encourage people to consider downtown streets as places to go and spend time. Studies show people consider busy spaces safer and more inviting than more sparsely populated areas.



Niagara-on-the-Lake ON

### ENCOURAGE MODAL SHIFT

Street design should encourage active transportation and public transit to help residents live healthier, happier, and more sustainably.



Copenhagen - Denmark



## 1.6 CITY CENTRE STREETScape OBJECTIVES

The City Centre is a complex and layered environment. The Fredericton City Centre Street Design Manual elaborates on the Streetscape Hierarchy outlined by the City Centre Plan, which defines a series of typologies for downtown streets based on their role, function and intended character. The Street Design Manual further articulates the hierarchy by responding to the following key objectives.

### *Establishing Gateways*



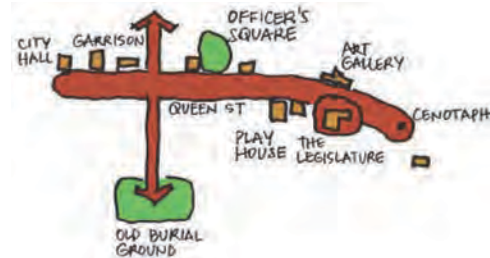
The eastern gateway to the City Centre is unique in Canada and needs no enhancement. Approaching along Waterloo Row, the passage under the Bill Thorpe walking bridge is the first in a sequence of experiences defining this gateway. It is followed by the view of the Christ Church Cathedral and then the Provincial Centotaph. Views are enhanced by the Riverfront Trail landscape. This sequence should be preserved in its current character.

The western gateway to the City Centre needs to be defined. A new roundabout at Smythe Street and Woodstock Road, with a significant public art element, can create a memorable gateway from the west. This can be reinforced by establishing a generous, landscaped linear promenade along the Smythe Street Green that in the long term connects to the Riverfront Trail, as well as integrating trail connections from other parts of the city.

The northern gateway to the City Centre needs enhancement. The approach over the Westmorland Street bridge provides a scenic view of the downtown. This can be augmented with public art of a significant scale, an improved Riverfront Trail, and in the long term, the implementation of the Riverfront Promenade along Sainte Anne's Point Drive.

From the south, the Old Burial Ground creates a strongly defined gateway for active transportation. There are minor gateways to the City Centre from the Town Plat in the south, at Brunswick Street, that can be created through small-scale streetscape moments.

### *Emphasizing Cultural Heritage*



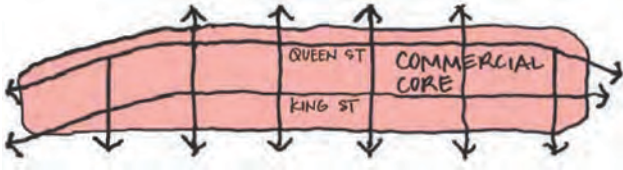
Fredericton is blessed with municipally, provincially and nationally significant cultural heritage resources. Many of these resources are located along Queen Street, which is the traditional “heart” of downtown and the primary shopping street. Queen Street, between City Hall and the Legislature, is assigned the highest streetscape priority.

In addition, Carleton Street is assigned the highest priority, because it links the Old Burial Ground, Queen Street, the Garrison District, and the Riverfront Trail. It will be a Shared Street, a new, pedestrian-oriented and visually memorable street typology that is hoped to catalyze transformative change in the City Centre in its new role as the principal north-south spine of the downtown.

The Garrison District will have its own unique character, as outlined by Garrison District Master Plan. These unique features will be carried to the street edges, where they influence the standards in this document.

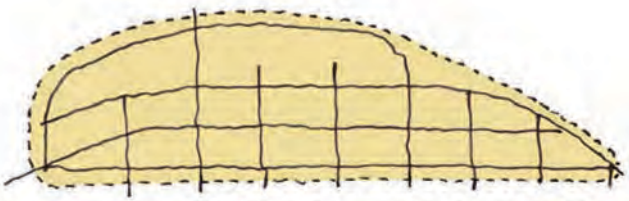
Green, treed streets are part of the defining identity of Fredericton. Existing green streets around the edges of the City Centre, with heritage house form buildings and stately street trees along them, will be enhanced by reinstating the green character along their length. Every effort will be made to ensure all City Centre streets are planted with trees that can fulfil their potential and create continuous green corridors.

## Reinforcing the Commercial Core



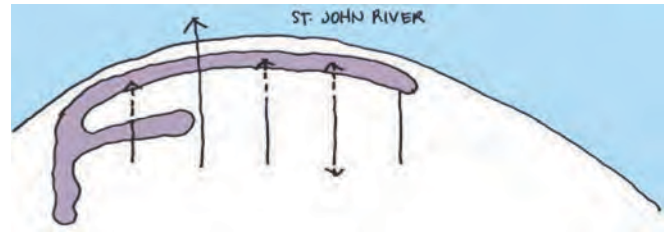
King Street, and the north-south streets between Queen and Brunswick Streets, will have an enhanced streetscape priority. These streets, along with Queen Street, define the urban character of the City Centre – the “downtown” – and it is important to establish a distinct identity and pedestrian priority in this area. These streets will have a strong, consistent, visual appearance that clearly establish the City Centre as the heart of Fredericton and a distinctive destination.

## Establishing an Identity for All Streets



A coordinated family of streetscape approaches involving paving materials, trees, street furniture, lighting, and other design elements, will be guided by a comprehensive master plan. The goal is the creation of a legible, cohesive and coordinated visual image that is not the same everywhere, but responds to its context to emphasize the City Centre’s amazing economic and cultural assets. It will be consistently applied over time so that the entire City Centre has a distinct sense of place.

## Anticipating the Future



The City Centre Plan establishes the goal of reconnecting the urban fabric with the Saint John River and fronting the river with new buildings. Saint Anne’s Point Drive will become a Riverside Promenade that prioritizes pedestrians. In this Street Design Manual, it is identified with an interim treatment appropriate to its role today. The timing of the street improvements will be tied to the transformation itself, including any required flood mitigation measures and the construction of new buildings. Similarly, Queen Street west of Westmorland Street, and Smythe Street, may grow into an enhanced treatment in the future, as the City Centre matures and grows with private sector investment. In fact, the guidelines in this Manual should be re-examined with any significant change to the urban fabric of the City Centre.

## 1.7 STREET HIERARCHY

Different streets in the City Centre have different roles and functions. The Street Hierarchy plan groups streets into five categories. The allocation of streets and blocks in the hierarchy is calibrated to reflect their existing use and planned function in the City Centre Plan. A simplified five-order categorization helps to establish a simple, cohesive and legible pedestrian experience across the City Centre, where the streetscape character of each category reflects the surrounding land use.

The highest level of streetscape attention will focus on the City Centre's most important streets: Queen Street, a Landmark Street, and Carleton Street, a Shared Street. Each street is a spine, and together they create a strong nucleus at the heart of the City Centre's street hierarchy. They are the focus of the hierarchy because they have (or are planned to have) the highest pedestrian activity, and link some of the key sites, buildings, and uses in the City Centre. Moving away from this nucleus the streets change in character, gradually reducing in intensity. These other streets will follow the same visual language but to a lesser degree. All streets will use the same family of street furniture to create visual consistency across the hierarchy.

There are two components to the Street Hierarchy, a Standard Treatment and Optional Enhancements.

### STANDARD TREATMENT

The Standard Treatment establishes the required streetscape elements, on a street by street basis, to create a successful and attractive public realm in the City Centre's streets.

### OPTIONAL ENHANCEMENTS

Optional Enhancements are recommended improvements to support the City Centre Plan but for budgetary or timing purposes may not be appropriate for implementation in the near term. Optional Enhancements may be implemented in response to development, either to spur and attract the kind of uses anticipated by the City Centre Plan, or, to acknowledge and respond to development that has occurred.

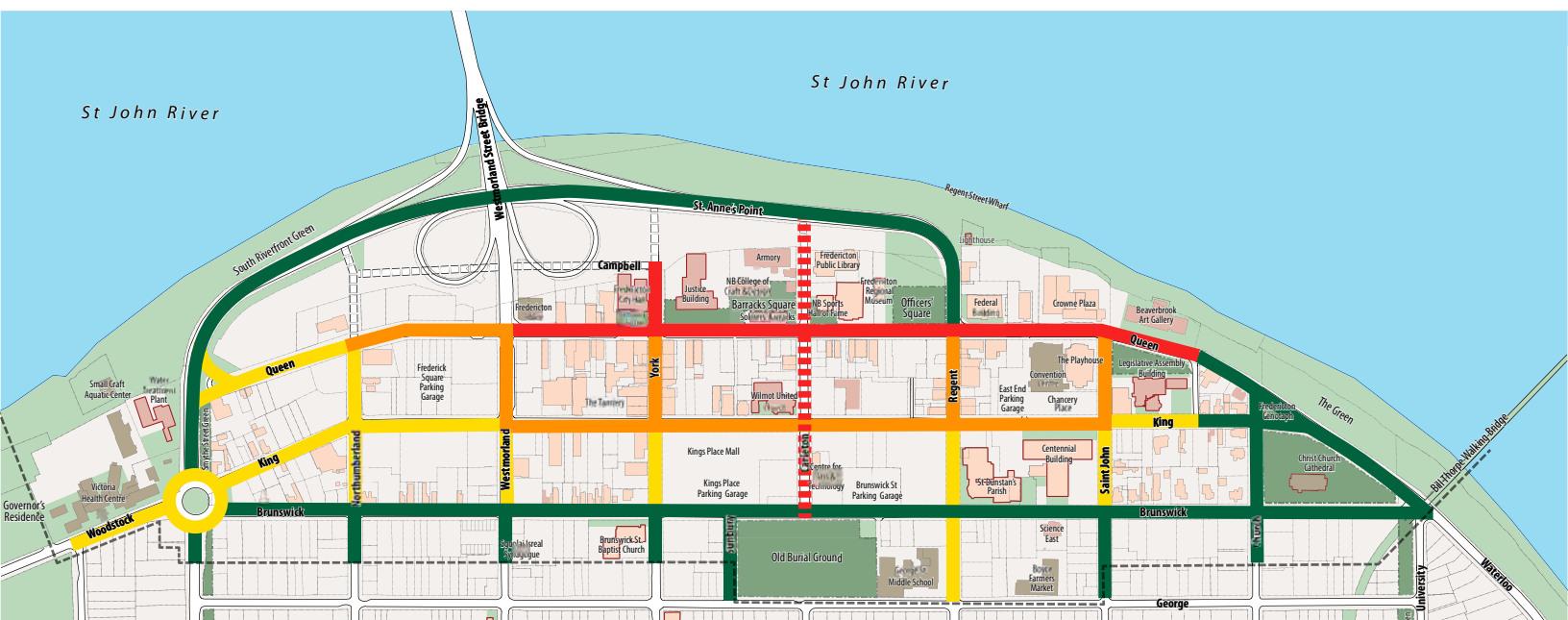


# 2.0 STANDARD TREATMENT

Each category of street in the Street Hierarchy is detailed below. These represent typical standards applied along the street, however, the Detailed Design process may result in variation to accommodate context specific design. Appropriate variation along streets is encouraged, as it avoids homogeneity and creates a distinct sense of place. For further detail and typical design drawings, refer to the Appendix.

## STREET HIERARCHY

- Landmark Street
- - - - Shared Street
- High Street
- Downtown Commercial
- Boulevard



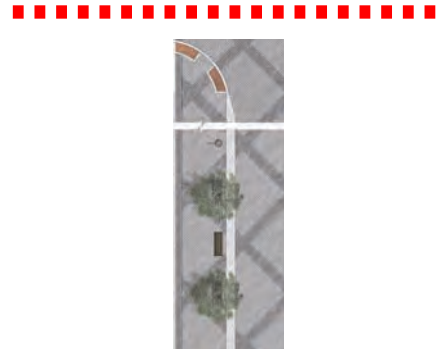
## STREET TYPES BY STREET HIERARCHY

The following pages outline the intended character and design of individual street types in the City Centre. Typical treatments for mid-block and intersection locations are defined, with information on elements of pedestrian and planting infrastructure. Specific treatments will be confirmed at the Design Development stage, and may include variation based on planting condition (tree grate, open planting bed, softscape).

### LANDMARK STREET



### SHARED STREET



### HIGH STREET



### DOWNTOWN COMMERCIAL STREET



### BOULEVARD STREET



## 2.1 LANDMARK STREET

Landmark Streets, together with Shared Streets, are the special streets of the City Centre that warrant the highest level of design and quality. Queen Street, as a Landmark Street, is the pre-eminent retail and civic institutional street in Fredericton, and is of great importance for both residents of and visitors to Fredericton. It plays a fundamental role in defining the character of the City Centre as a whole. It is the central east-west “spine” through the downtown.

### Landmark Street Defining Characteristics:

- Minimum 2.1m pedestrian clearway
- Continuous unit paving across the boulevard, from curb to property line or building edge, defined by a soldier course with darker colour
- 1.6m wide landscape/furniture zone behind curb
- Edges of paving field at property line defined by a darker colour soldier course
- Street trees typically located in hardscape with tree grates (to extend useable pedestrian space and facilitate on-street parking access), and in grass area behind sidewalks where possible
- Tree location and spacing shall have regard for the visibility and success of adjacent retail
- Street furniture is frequent to provide pedestrian amenity. Some benches may be permanent
- Street lighting provided by new pole top fixtures on existing cast iron (pedestrian scaled) standards, with 110V outlet for seasonal displays
- Potentially unique street furniture and paving defining the Garrison District
- It is a long term goal to provide underground hydro services where possible





## 2.2 SHARED STREET

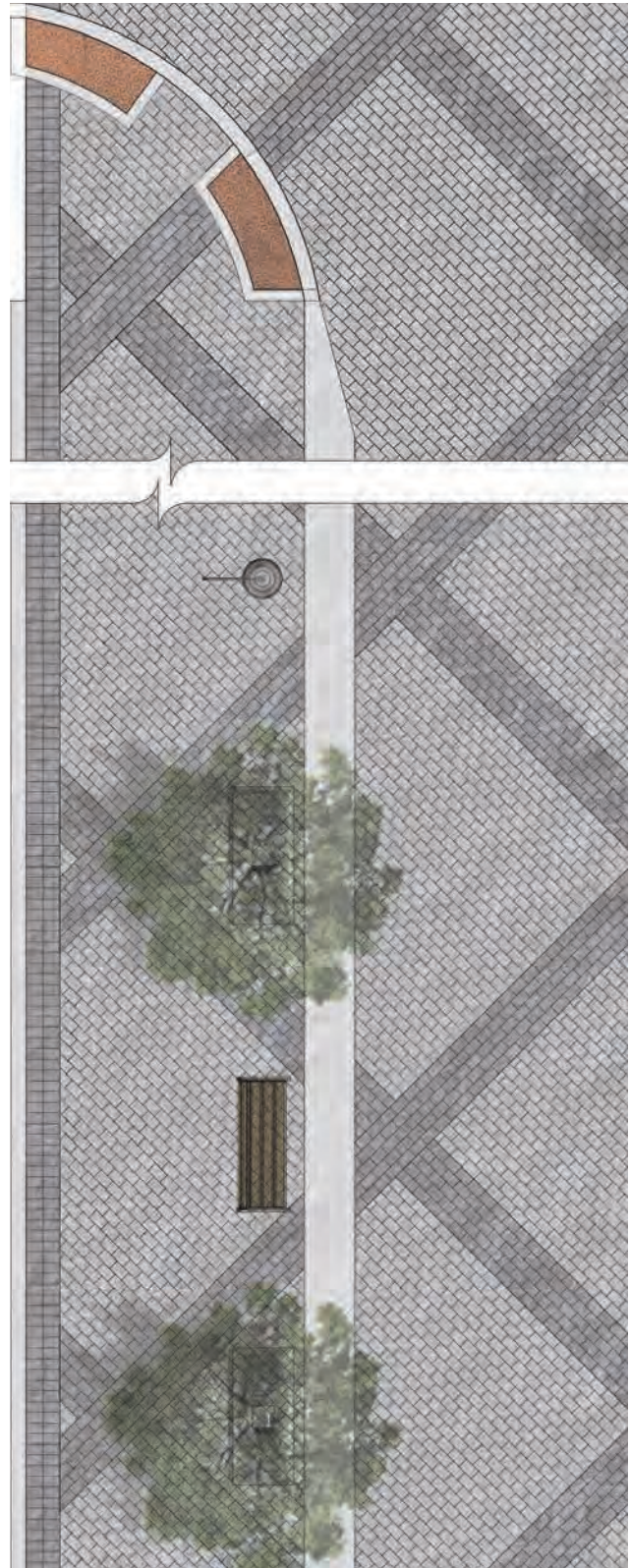
Shared Streets, together with Landmark Streets, are the special streets of the City Centre that warrant the highest level of design and quality. Carleton Street, as a Shared Street, is a new model of street prioritizing pedestrian movement and comfort while permitting vehicular and cycling use. It is the central north-south “spine” through the downtown.

### Shared Street Defining Characteristics:

- Minimum 2.1m pedestrian clearway
- Continuous unit paving across the entire street including the roadway, with broad ‘X’ pattern derived from historic Union Jack and City of Fredericton tartan
- Shallow or roll curb detail separating shared driving area from pedestrian-only area
- Street trees located in hardscape with tree grates. Spacing to be determined based on programming/ event needs and adjacent retail
- Street furniture is frequent to provide pedestrian amenity. Some benches may be permanent
- Street lighting provided by new pendant fixtures on new standards (tall poles), with 110V outlet for seasonal displays
- It is a medium term goal to provide underground hydro services where possible

### What is a Shared Street?

Shared Streets prioritize pedestrians through design techniques such as continuous unit paving across the entire right of way, and raising the driving surface to the same level as the sidewalk, to create a space that is a hybrid of a street and a plaza. Traffic movement is low-speed and continuous-flow, encouraging eye contact and informal negotiation between users. Designs relates to the urban context, civic activities and pedestrian desire lines around them. Clear gateways emphasize the transition between the roadway, with its predominant movement function, and the Shared Street, with a mixed placemaking and movement function.



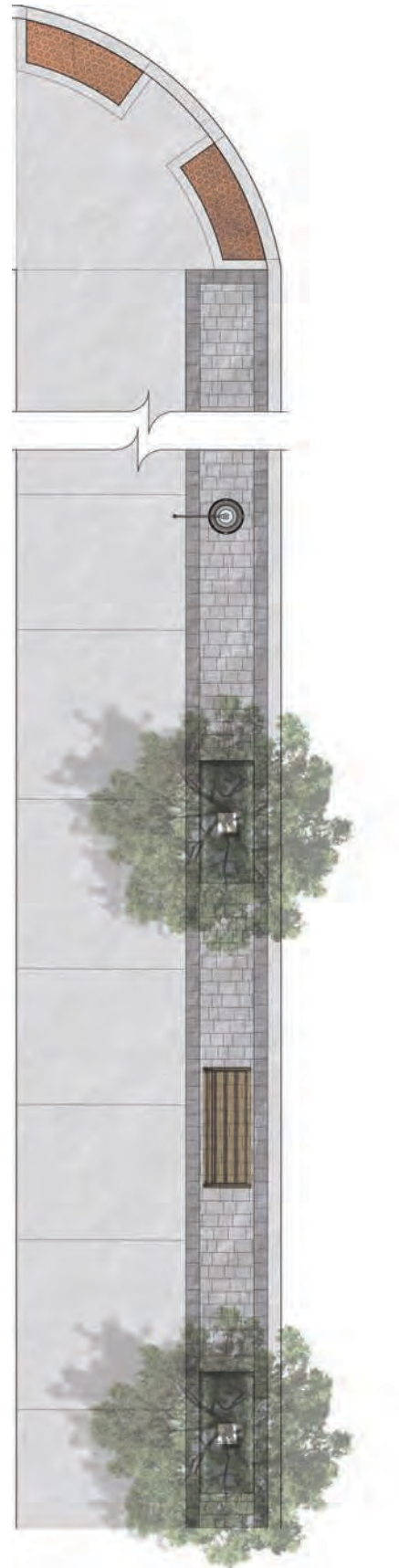
The timing of full implementation of Carleton Street will depend on a number of factors, including the development of adjacent land uses, future programming needs, and potentially public transit.

## 2.3 HIGH STREET

High Streets are located throughout the primary retail areas of the downtown with direct linkages to Landmark/Shared Streets, and include King Street and the north-south streets linking King Street and Queen Street. Collectively, High Streets and Landmark/Shared Streets define the Commercial Core of the City Centre. High Streets are compatible in character with the Landmark/Shared Streets by utilizing similar themes in design, materials, furniture, and lighting.

### High Street Defining Characteristics:

- Minimum 2.1m pedestrian clearway
- Wide band of unit paving in the boulevard, 1.6m in width, behind the curb defining the landscape/furniture zone
- Edges of paving band defined by a darker colour soldier course
- Poured in place concrete to be saw cut in rectangular sections between the paving band and property line or building face
- Street trees located in hardscape with tree grates in areas of very high pedestrian volumes and/or on-street parking, or in open planting beds where lower pedestrian volumes exist
- Tree location and spacing shall have regard for the visibility and success of adjacent retail
- Street furniture is frequent to provide pedestrian amenity, but less than Landmark/Shared Streets. Some benches may be permanent
- Street lighting provided by new pole top fixtures on existing cast iron (pedestrian scaled) standards, with 110V outlet for seasonal displays (Pendants on Regent & Westmorland)
- It is a long term goal to provide underground hydro services where possible



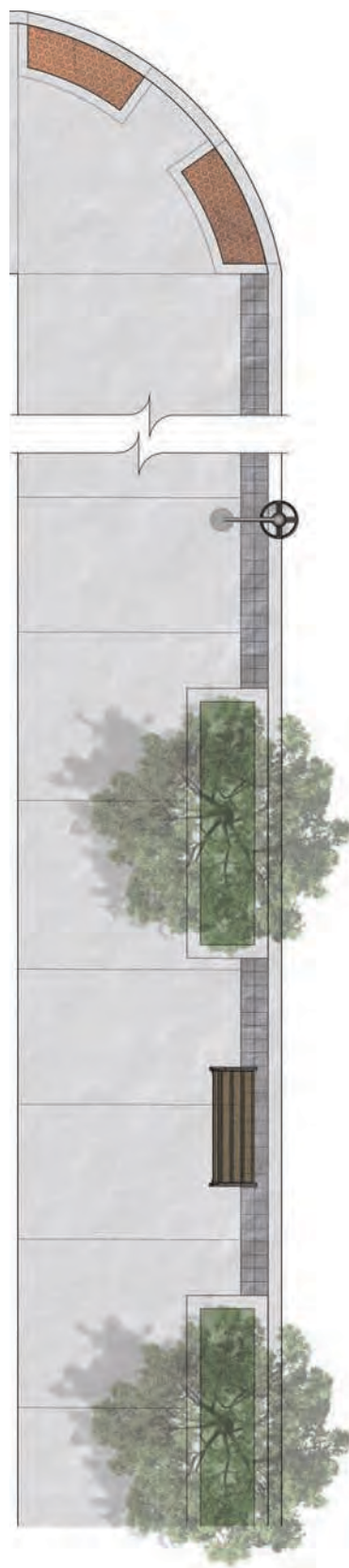


## 2.4 DOWNTOWN COMMERCIAL STREET

Downtown Commercial Streets are important in reinforcing the special identity of the City Centre within the context of the overall city. Compatible in character with Landmark/Shared Streets and High Streets, Downtown Commercial Streets help define the image of the City Centre as a special destination and establish a transition from the Town Plat to the heart of the downtown area. They are located around the periphery of the commercial core.

### Downtown Commercial Defining Characteristics:

- Minimum 2.1m pedestrian clearway
- 1.6m wide landscape/furniture zone behind curb
- Narrow band of unit paving in the boulevard, 0.4m in width, behind the curb
- Poured in place concrete to be saw cut in rectangular sections between the paving band and property line or building face
- Street trees typically located in open planting beds, or in grass areas behind sidewalk where possible. Trees may be in grates where on-street parking is provided
- Street furniture spacing is moderate but still provides pedestrian amenity. Benches may be seasonal
- Street lighting provided by new pendant fixtures on new standards (tall poles) or on existing aluminum pole top fixtures
- Hydro services provided on poles above ground





## 2.5 BOULEVARD

Boulevard Streets have a strong “green” feeling created by grass boulevards located behind the curb, and that currently have, or have the potential for, tall mature street trees. They often are faced by house-form buildings with strong heritage characteristics. Boulevard Streets are located around the periphery of the City Centre, and many are at the transition from the Town Plat to the City Centre. The character of these streets will emphasize their cultural heritage value to the City of Fredericton by reinforcing their historic character. In places, this will mean the removal of paving located at the curb edge to reinstate the grass boulevard and new tree planting. This will reduce the amount of hardscaping within the right of way, and foster traffic calming by visually enclosing the streetscape. They will be planted to achieve a closed canopy over the street in the long term.

While Sainte Anne’s Point Drive does not have the same historic roots as the other streets in this category, it will also function as a Boulevard Street until it transitions to a Riverside Promenade as envisioned in the City Centre Plan.

### **Boulevard Defining Characteristics (typical):**

- Minimum 1.5m pedestrian clearway, 2.1m preferred where possible without harmful impacts on existing or proposed trees
- Poured in place concrete sidewalk surface to be saw cut in rectangular sections located between the grass boulevard and the property line
- Grass boulevard located behind the curb with tall street tree planting, width varies
- Street trees located within grass boulevard between curb and sidewalk, and in grass behind sidewalk where possible
- Least amount of street furniture, may be in association with adjacent streets or bump-outs
- Street lighting provided by new pendant fixtures on new standards (tall poles) where feasible and owned by the City, or by standard fixtures provided by NB Power (Brunswick Street)
- Hydro services provided on poles above ground

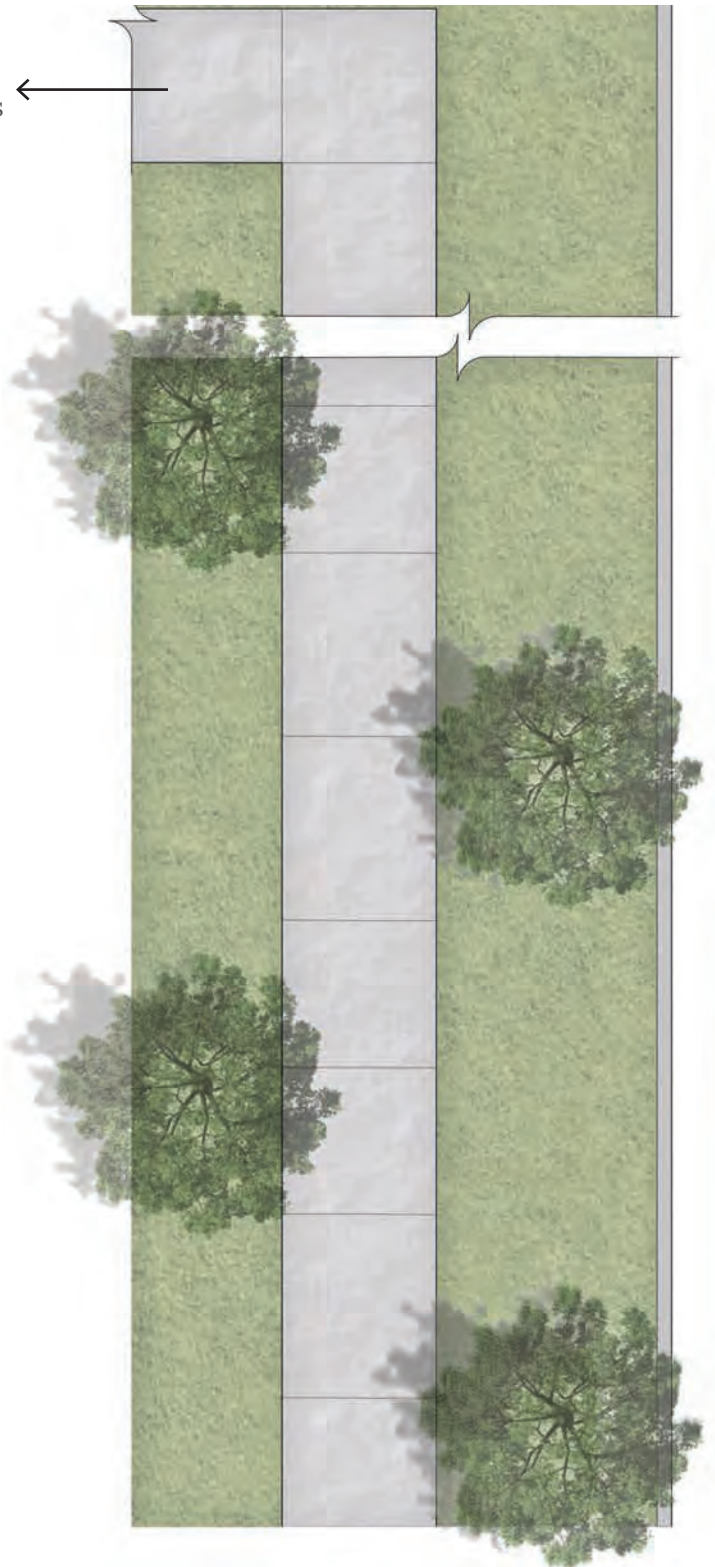


Pedestrian linkages as appropriate to adjacent walkways, parking areas or destinations

#### Sainte Anne's Point Drive Defining Characteristics:

- 2.1m sidewalk along the south side, with grass boulevard between sidewalk and curb. No sidewalk along Officer's Square frontage on Sainte Anne's Point Drive.
- No sidewalk along the north side. Pedestrians will use the Riverfront Trail
- Grass on north side of the street and in the central median
- Double row of trees framing sidewalk on south side of the street, no trees in median or north side of the street to maintain views of river
- No street furniture
- Street lighting provided by new pendant fixtures on new standards (tall poles) where feasible and owned by the City, or by standard fixtures provided by NB Power
- Any future hydro services provided underground

These characteristics of Sainte Anne's Point Drive can be considered an interim condition. The street will need to be comprehensively re-examined when it urbanizes.



# 3.0 OPTIONAL ENHANCEMENTS

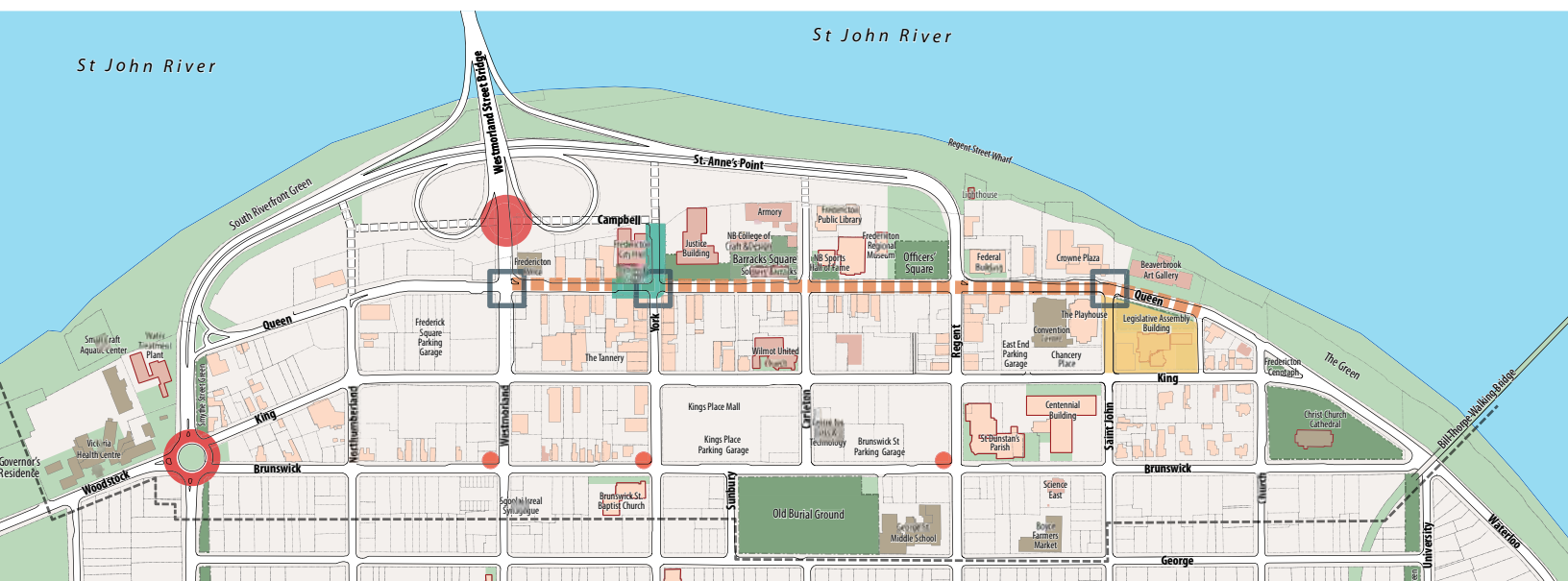
Optional Enhancements are recommended improvements to support the City Centre Plan but for budgetary or timing purposes may not be appropriate for implementation in the near term. Optional Enhancements may be implemented in response to development, either to spur and attract the kind of uses anticipated by the City Centre Plan, or, to acknowledge and respond to development that has occurred.

There are several special locations within the City Centre that warrant the highest level of streetscaping, because of their role and/or heritage value. These include gateways, other potential shared street and

plaza areas adjacent to significant institutions, the Legislative Assembly Block, and enhancements for Queen and Carleton Streets. In these areas a site-specific design that celebrates their unique characteristics and elevates them above the Standard Treatment will create memorable and truly unique moments in the City that can benefit residents, attract visitors and enhance private sector investment. These Optional Enhancement areas are described below.

## OPTIONAL ENHANCEMENTS

- Phoenix Square
- Legislative Assembly
- Queen Street Intersections
- Curb Bump Outs
- Queen Street Mountable Parking and/or Unit Paved Road
- Victoria Circle
- Westmorland Gateway



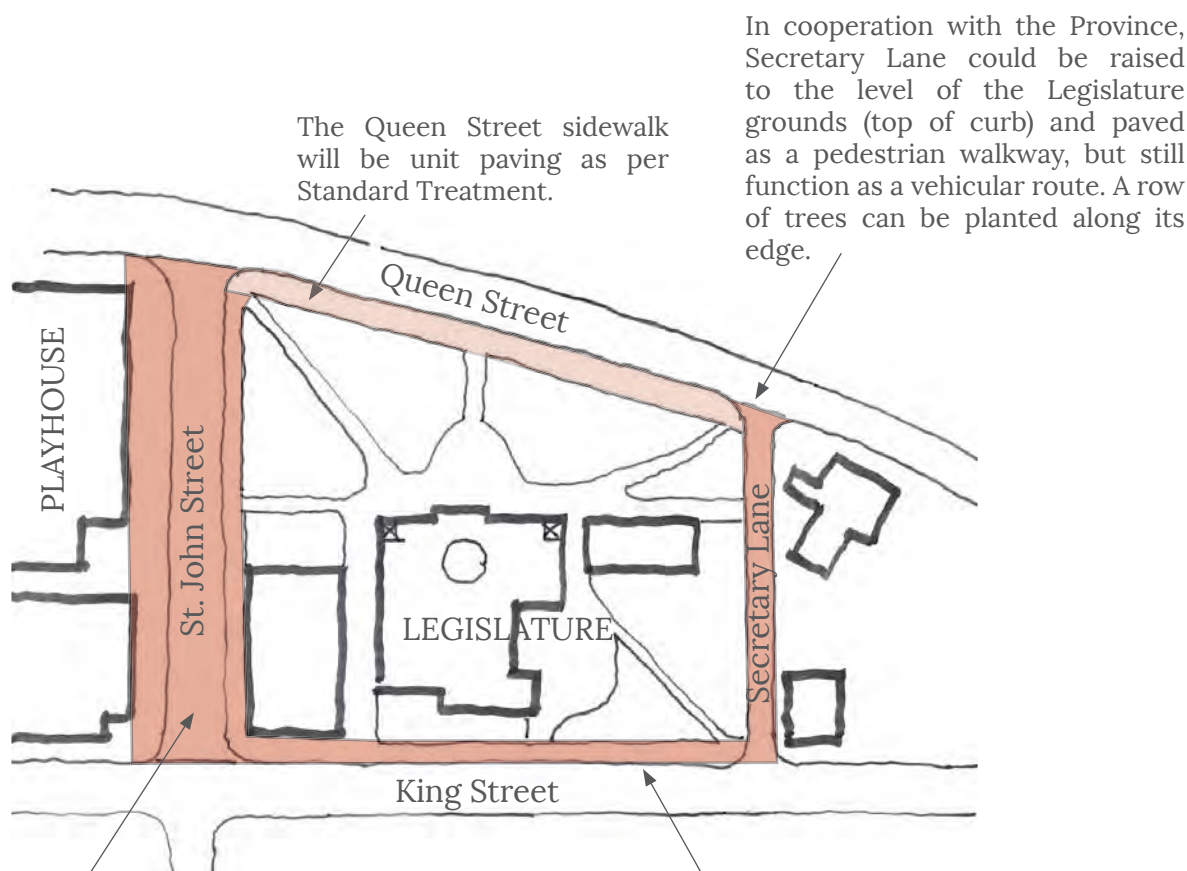


### 3.1 LEGISLATIVE ASSEMBLY BLOCK

The Legislature is an important Provincial building and a remarkable heritage building in the City of Fredericton. While the streetscape along Queen Street will be enhanced to Landmark Street standard, extending the Landmark treatment to all four sides of the block will create an appropriate frame celebrating this unique public space and building.

Design techniques to consider can include:

- unit paving for sidewalks on all four sides of the block;
- additional tree planting around the perimeter to reinforce street edges;
- special treatments for Secretary Lane; and
- a Shared Street treatment along St. John Street, in response to a renovated and expanded Playhouse, that celebrates the institutions on each side.

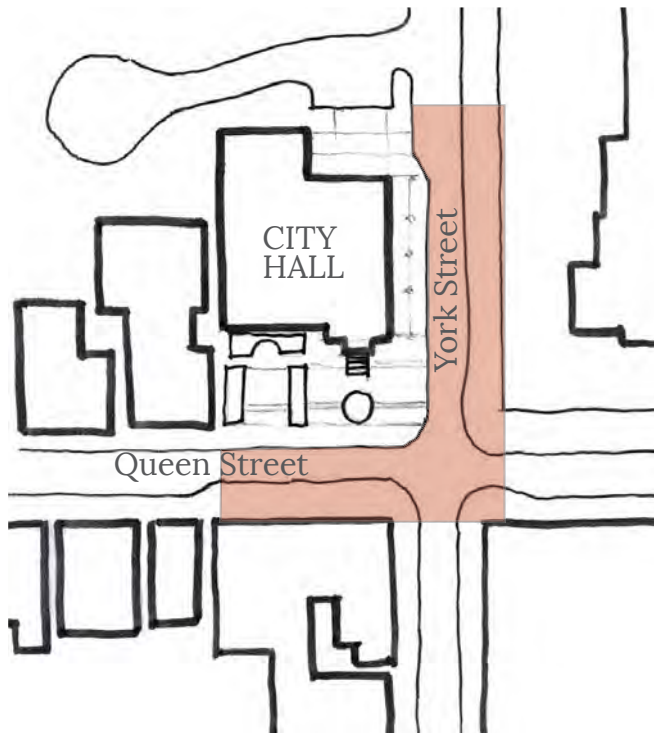


A Shared Street along this block of St. John Street could utilize similar design themes to Carleton Street, while responding to its unique context and role.

The King Street Sidewalk can be enhanced with unit paving.

### 3.2 PHOENIX SQUARE

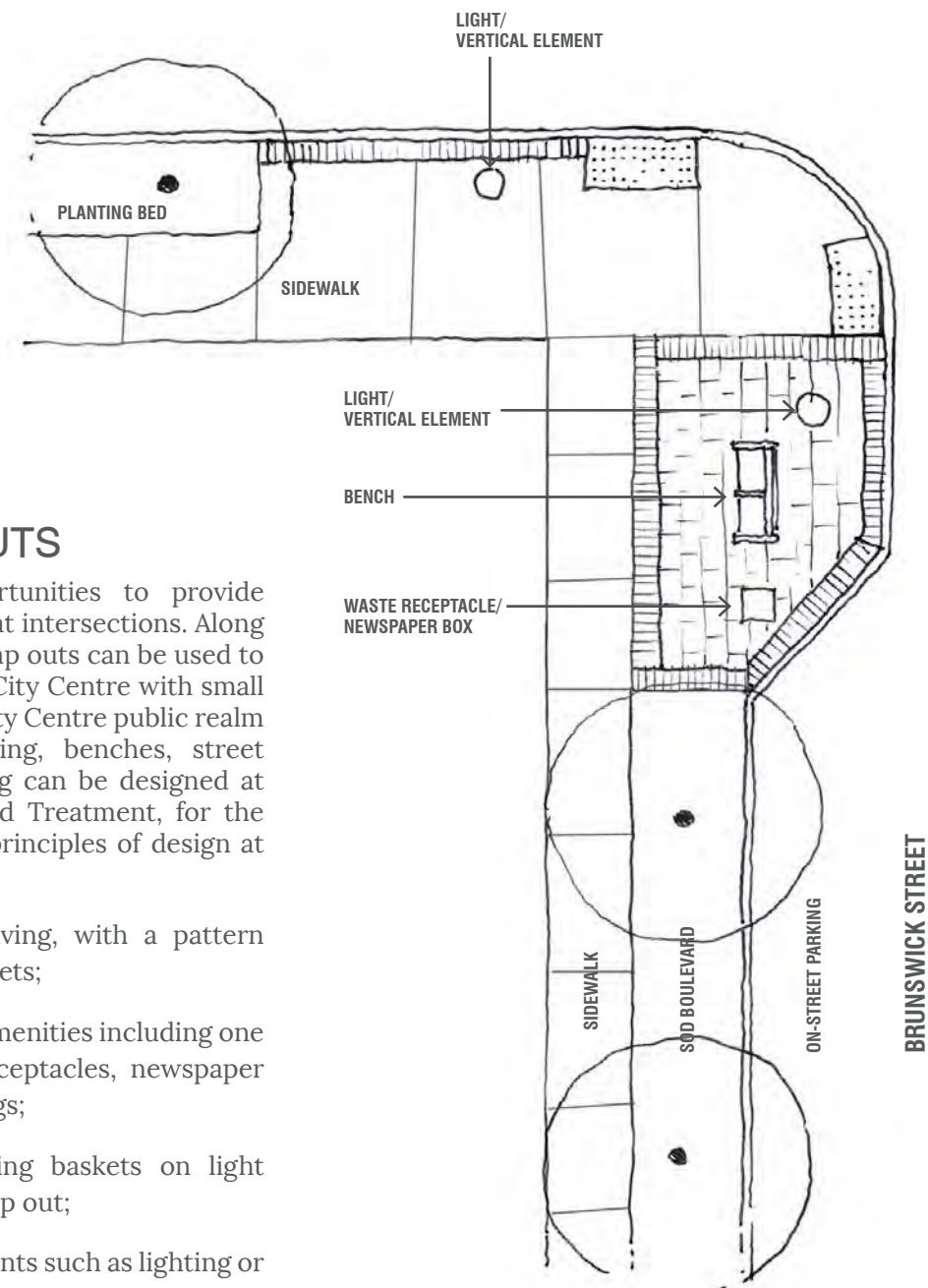
It has always been the intent to create an expansive Phoenix Square that encompasses the adjacent streets: Queen Street at the front of City Hall and York Street at the side of City Hall. To accomplish this, the paving in Phoenix Square can extend across the driving surface and the opposite pedestrian boulevards on Queen Street and York Street. This visually extends the square, and during special events the roads can be closed and the entire space used for activities.



## 3.3 CURB BUMP OUTS

Curb bump outs are opportunities to provide enhanced pedestrian amenity at intersections. Along Brunswick Street, planned bump outs can be used to create minor gateways to the City Centre with small seating areas. The palette of City Centre public realm elements including unit paving, benches, street furniture, planting and lighting can be designed at the equivalent of the Standard Treatment, for the extent of the bump out. Key principles of design at bump outs include:

- provide continuous unit paving, with a pattern consistent with adjacent streets;
- provide pedestrian/cyclist amenities including one or more benches, waste receptacles, newspaper boxes, mail boxes or bike rings;
- provide banners and hanging baskets on light standards at or near the bump out;
- consider other vertical elements such as lighting or public art to mark the gateway;
- ensure there are direct linkages with all adjacent sidewalks and building entrances, and that pedestrian clearways are maintained; and
- in some cases it may be appropriate to provide enhanced soft landscaping.

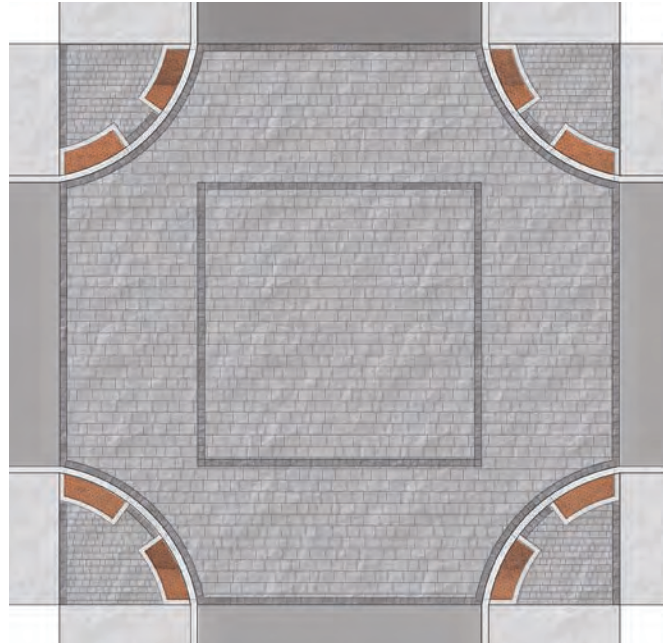


*Demonstration of a minor gateway at the northwest corner of Brunswick Street and a north-south street.*



### 3.4 QUEEN STREET INTERSECTIONS

To reinforce Queen Street's preeminent role in the City Centre as a Landmark Street, the roadway surface of key intersections can be paved with unit paving. This emphasizes pedestrian priority by clearly demarcating crosswalks, and signals drivers to slow down. It creates a series of gateways to the heart of the City Centre.



### 3.5 QUEEN STREET FLEX PARKING ZONE

A Flex Parking Zone is on-street parking that is raised to the level of the sidewalk and paved with the same materials as the sidewalk (unit paving). A roll curb or other mountable transition provides access to the parking space for vehicles. Bollards and other street furniture separates the parking spaces from the sidewalk. Paving bands or lane marking can also help delineate parking and sidewalk zones. The Flex Parking Zone can be used for pedestrian circulation in the summer (not used for parking), when patios and cafes occupy the sidewalk adjacent to the building. The decorative paving treatment enhances the streetscape and visually narrows the roadway.



Examples of on-street parallel parking with a unit paved surface at sidewalk level, with a mountable curb.

## 3.6 VICTORIA CIRCLE

It is understood that a roundabout at the Woodstock/ Brunswick/ Smythe Street intersection is planned, which can improve pedestrian crossing routes and shorten crossing times. This location has been identified in the City Centre Plan as a major gateway to the City Centre. There is an opportunity to use the land in the centre of the roundabout, as well as the boulevards surrounding it, to help create a sense of gateway. It will require the application of the principles of this Manual to create a site specific design.

From a public realm perspective, the creation of a sense of gateway may focus on a public art and landscape approach to create a distinct visual landmark, rather than paving and street furniture. Ultimately, the gateway at this location will need to integrate built form that frames this space.

## 3.7 CHURCH STREET SHARED STREET

The City Centre Plan promotes a Shared Street along Church Street between Brunswick Street and Queen Street. This has the potential to establish a linkage between the Christ Church Cathedral and the properties to the west, as well as complement the gateway characteristics of this area. A Shared Street would need to carefully preserve the existing character of the area, and especially the trees. A Shared Street would need to be initiated and funded by private development or a third party.

## 3.8 QUEEN STREET ROADWAY PAVING

Continuous unit paving across the entire roadway (driving) surface can visually unify Queen Street as a special place from the Legislature to Westmorland Street. It reinforces Queen Street's role as a Landmark Street, sets the surrounding heritage buildings into an appropriate context, and creates a unique environment for the adjacent retail and institutional uses.



### 3.9 CYCLING

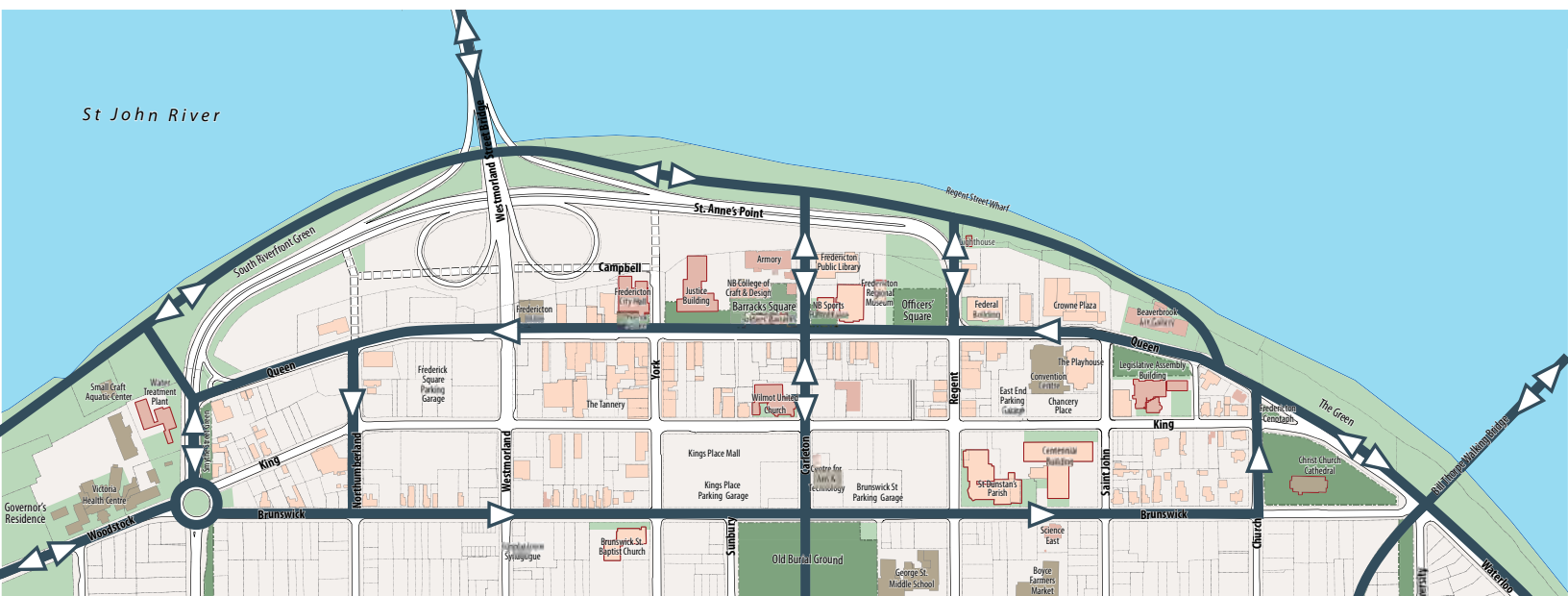
Cycling is medium term priority of the City Centre Plan. A cycling culture continues to develop in Fredericton, and provision of cycling infrastructure in the City Centre is an excellent way to encourage it. To promote cycling, a comprehensive network of infrastructure, and most importantly, dedicated cycling tracks, must be provided that link all neighbourhoods and destinations in Fredericton. The City Centre is an important component of this network.

In the City Centre, space allocation along the street must favor pedestrians. Therefore space for cycling is allocated to the roadway. The City Centre Plan suggests that on-street bike lanes be provided along Queen Street (one way westbound) and Brunswick Street (one way eastbound), as well as Northumberland Street and Carleton Street, which can be supplemented with a connection on Church Street. These would connect to existing or potential future trails to the larger city.

Cycling must be planned comprehensively with all other elements of the public realm in the City Centre. Cycling infrastructure affects the streetscape including sidewalks, furniture, parking and vehicle movements. Cycling infrastructure should complement, and never be at the expense of, the pedestrian realm. In particular, bike lanes on Queen Street must be sensitive to the sidewalks, patios, trees, parallel parking, and unique streetscape environment that exists. Adjustments to the roadway or travel lanes should not compromise the quality of the pedestrian experience.

Pilot projects are useful in assessing need and effectiveness prior to providing permanent infrastructure. This can include temporary bike racks near major institutional and employment uses, retail, and open spaces in the City Centre. Bike lanes can be painted on existing asphalt roadways, and connecting links provided to the Riverfront Trail.

### POTENTIAL CYCLING NETWORK





## CYCLING INFRASTRUCTURE

Key elements of cycling infrastructure are dedicated lanes for movement, and bicycle storage. There are many types of each.

Bike lanes



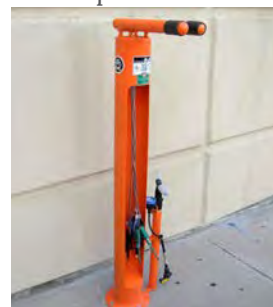
Bike box



Lane separators



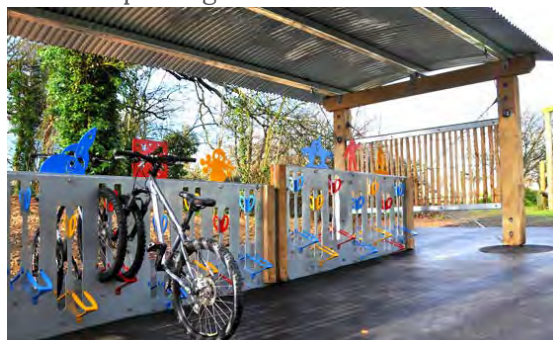
Bike repair station



Signs



Covered parking



Bike rings





DRAFT



# APPENDIX

## FREDERICTON CITY CENTRE

# STREET DESIGN MANUAL

**Fredericton**  
The **Planning** Partnership



FEBRUARY 2018







**FREDERICTON  
CITY CENTRE  
STREET  
DESIGN  
MANUAL  
APPENDIX**

Note pages 1-28 are contained in the Fredericton City Centre Street Design Manual principal document.

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B Paving Strategy .....37

C Coordinated Furniture and  
Lighting Strategy ..... 39

D Street Types.....50

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## PLANTING STANDARDS

Trees are an important component of the City Centre. Frederictonians identify treed streets as a defining characteristic of the City. Trees perform infrastructural roles including stormwater management through root uptake and respiration, urban heat island attenuation through shading, provision of habitat for avian and insect populations, and increase resiliency in the face of climate change. Trees beautify the environment, provide psychological benefits and promote physical health in people. The economic value of a tree increases exponentially with age, with a cumulative value of \$160,000+ per tree. Over 50 years one tree will produce \$31,250 of oxygen, \$37,500 of recycled water, and \$31,500 worth of erosion control (US Forest Service, ISA, 2013). It is therefore a fundamental principle of this Street Design Manual to create tree lined streets.

Streets in the City Centre are the most complicated in the City. Streets carry pedestrian traffic and provide amenities such as seating and café space. They carry bicycle and vehicular traffic. Street furniture, signs, poles and other above ground utilities are frequent, and underground utilities utilize space across the entire right of way. Trees must be thought of and included in these essential functions and allocated sufficient space to perform their function. Trees cannot be an afterthought.

There are many factors that contribute to successful trees, but foremost is their soil conditions: sufficient soil volume, quality soils that are not compacted, and access to air and water. These conditions are currently not being met for most recently planted trees in the City Centre. Under this Street Design Manual, every effort will be made to provide sufficient soil volumes and appropriate growing conditions for trees. This will mean careful consideration of every tree location and the application of new engineering practices that prioritize soil volumes, quality soils, and access to water and aeration. In some cases, this will mean the provision of soil cells, specialized modular structures designed to bear the weight of paving and above ground infrastructure in order to provide large, non-compacted soil volumes under the sidewalk.

This approach to the growing requirements of trees is intended to ensure that tree life expectancy cycles are considered in increments of 50 to 100 years. That is, even the fastest growing and shortest lived trees

will thrive for 50 years, and the slower growing and longer lived trees will have an opportunity to last a century.

The overall goal is to appropriately balance street trees with the other elements of public infrastructure in a fiscally responsible manner. This increased consideration of tree requirements will be a key component of the Design Development process. Design Development shall be guided by the following general targets.

### *Soil*

The biomass of urban trees that we see above grade, which includes the trunk, branches and leaf volume, is approximately equal to the biomass below ground, which includes the root network. Therefore, soil volume for canopy trees should be 30 cubic metres per tree, or 20 cubic metres per tree if soil volumes are shared. Soil volume should be within 1.4m of the surface. Volumes less than 14 cubic metres will not support a long-term functional tree (James Urban, Making Space for Roots: Tree Planting Options in Urban Areas, 2009. <http://www.isa-arbor.com/myaccount/myeducation/resources/ceu-april10.pdf>).

Tree roots are opportunistic, in that they will fill the available space. This means that soil volumes can be provided in long, linear, connected trench beneath the sidewalk surface, which works well with the available Landscape/Furnishing Zone available on most City Centre Streets (i.e. the soil volume shape can be different from the canopy shape).

It is recognized that 30m<sup>3</sup> of soil volume will not be achievable in all locations. 20m<sup>3</sup> of soil volume will still support a large tree, though at a lesser growth potential. At reduced soil volumes, different types of trees need to be considered. This Appendix provides guidelines for appropriate tree species matched to planting typologies, including soil volumes. There will be very few instances where trees are not possible. Consider enhanced lighting, furniture and paving treatments at these locations to compensate.

Irrigation systems are not generally recommended, however, it is critical to the long term health of trees to provide weekly watering during the first two years



following transplant when feeder root establishment occurs. This should be accompanied by appropriate fertilization.

Soil pH levels are important for nutrient uptake and appropriate levels vary depending on species (Soil Management for Urban Trees - Best Management Practices, 2014). Soil Organic Matter content should be 3-10% (Soil Management for Urban Trees - Best Management Practices, 2014). Soil can be amended at time of planting with micorrhizal inoculant.

Roots require air and therefore soil must be well drained. Soil should drain within 24 hours of rainfall events. A Draw Down test must be used to check drainage during construction, prior to tree installation, to confirm adequate drainage. Appropriate mitigation is required if soil does not drain. It is too late to do this after construction is complete.

### *Planting Details*

Temporary tree guards can be used after tree transplant to protect trees from snow removal operations, bikes, and vandalism. Tree guards should be removed after approximately 5 years or when the tree reaches 30cm diameter at breast height. Tree guards should not touch the tree or constrain growth in any fashion. Tree grates and paving details must allow adequate space for future trunk flare. Trees should be planted with the trunk flare above finished grade (top of rootball should be planted 2 to 4 cm above grade to allow for settlement), and ensure the trunk is plumb. Specimens should be Balled in Burlap.

### *Planting Typology*

In areas of high pedestrian volumes, restricted space, and/or on-street parking, tree grates are recommended (trees in hardscape). These areas are primarily focused on the retail heart of the City Centre. Structural soil cells can achieve required soil volumes by allowing uncompacted soils to extend under the sidewalk surface, areas that would otherwise be unavailable to tree roots. These engineered techniques transfer the weight of the sidewalk, street furniture and vehicles around the soil volumes trees require. Structural soil cells have significant benefits both for the long term health of the urban forest, and for increasing growth rate and reducing 1-5 year stunting. Structural soil cells are recommended for all Landmark and Shared Streets.

Open planting beds are appropriate for streets with less pedestrian traffic. This provides space for multiple trees to be co-located within a consolidated soil volume. Open planting beds with flush curb edges allow storm water to irrigate the soil area.

Both open planting beds and tree grates are recommended to include a continuous soil trench under the sidewalk to maximize soil volume. This Street Design Manual provides minimum soil volumes necessary to support each tree by type. The soil volumes are cumulative. Each additional tree sharing the same connected subsurface soil volume requires a corresponding increase in total soil volume available.

Wherever possible, street trees are recommended to be located in grass areas behind the sidewalk, including, if necessary, being located outside of the right of way. Here, the larger areas of softscape and corresponding larger soil volumes provide the best opportunity for trees to achieve their full potential. There are excellent examples of this condition in the City Centre where trees thrive, such as along Queen Street in the Garrison District, and in front of institutional buildings such as churches and the Legislature.

Existing trees that are well established, in good health and contribute to the streetscape should be preserved wherever possible.

### *Location and Spacing*

A goal of the City Centre is for trees to act as an urban forest system performing infrastructural benefits. This is significantly enhanced when canopies of individual trees connect. Tree spacing is recommended at 10 to 15 metres on centre, depending on species growth rate expectations.

Most trees within the street right of way will be located in the Landscape/Furnishing Zone. Exact locations within this zone will need to carefully consider the soil volume, adjacent entrances, common walls shared between ground level uses, and summer shading/winter heat gain, balanced with the general goal of maintaining a regular rhythm of trees along blocks.

### *The Urban Forest System*

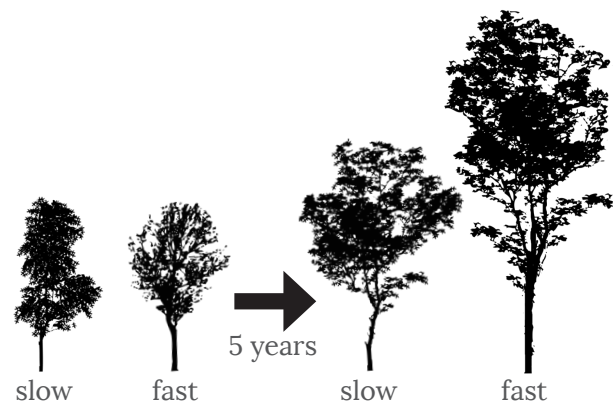
There are many considerations when selecting appropriate trees for specific streets or locations in the City Centre. This Street Design Manual focuses on the urban forest as a system and promotes the principle of biodiversity and growth rate stratification when selecting tree species. Tree selection will be approved by the City Forester.

Biodiversity is founded on ecological principles with a host of benefits, but of particular importance is the establishment of resiliency. ISA best practices promote species selection based on the following guidelines:

- no more than 30% from the same family;
- no more than 20% from the same genus; and
- no more than 10% from the same species.

The purpose of this allocation is to prevent the same kind of monoculture that devastated the trees of urban streets including the American Chestnut, American Elm, and Ash trees. Many species today are under threat from pests and diseases (for example, Asian Long Horned Beetle), and diversity will help to ensure City Centre streets are more resilient and remain green. While these percentages are a goal of the urban forest system, it will be difficult to achieve in the City Centre, where there are fewer trees to choose from of sufficient hardiness and adaptation to urban conditions.

Growth rate stratification is based on the fact that different species grow at different rates and have different life expectancies. Generally, fast growing species are shorter lived than slow growing species. By mixing both types along streets, it ensures that a green canopy is achieved as quickly as possible, and that it remains green, because when the fast growing species reach the end of their lives, the slower growing species will have reached their mature size.



### GROWING CONDITIONS FOR TREES

The large street trees on Fredericton's many older streets are a result of historic circumstances. They were planted at a time, often a century ago, when engineering standards were not as well developed. This gave the trees decades in which to establish themselves, growing extensive root networks that take advantage of many permeable surfaces, cracks in the sidewalks, gaps in infrastructure, and less-compacted natural soils. In more recent times, the environment for new trees is not conducive to prolonged health. Contemporary engineering practices promote rigorous compaction of subsurface fills, primarily crushed rock, which roots cannot penetrate. The quantity of soil available for roots is constrained to the pit they are placed in, and roots cannot grow beyond their pits to find other sources of water and nutrients.

This problem is shared by many downtowns around the world: trees that don't grow, die young, and require constant replacement. It is environmentally irresponsible to plant trees that will only survive for a short time. Tree longevity must be planned for. For downtowns committed to re-greening their streets with large, thriving trees that live for decades, new thinking is emerging. Progressive engineering is finding ways to create large soil volumes under the sidewalk for the benefit of trees, and utilities are routed appropriately through or around these soil volumes.

Tree Selection

Limits of built form and right of ways establish a public realm that acts as a corridor that will allow for the establishment of urban forestry. It is the desire of the City of Fredericton for these trees to have the following merits:

- Have the potential to be canopy trees (i.e. large trees with wide spreading canopies);
- Promote a form that minimizes pedestrian/vehicular conflicts while maximizing shading;
- Have the ability to develop aggressively enough that growth is measured annually;
- Perform an infrastructural role (i.e. attenuate stormwater; ecological amplification);
- Have seasonal appeal (i.e. heralding spring with flowers and autumn with vivid leaf tones); and
- Promote biodiversity (i.e. species themed to typologies and streets).

Tree selection, including replacement of individual specimens, should be considered within the context of the street and block context, with the goal of meeting the above principles and promoting elegance and uniformity in the broader system.

PLANTING TYPOLOGIES

PLANTING TYPOLOGY	ASSOCIATED SOIL TYPOLOGY
A. Tree in hardscape (i.e. with tree grates)	Structural soil cells, possibly with less soil volume
B. Tree in open planting bed	High soil volume with structural soil bridging
C. Tree in softscape (parks and lawns adjacent to the right of way, some sodded boulevards	High soil volume with rich loamy organics

SOIL VOLUME CALCULATIONS

Soil volume calculations shall consider only the soil available within the first 1.4m of soil depth. Below this, there are significant diminishing returns, as tree roots do not benefit from any additional soil depth.

TREE BAGS

Tree bags store water and release it slowly to the soil over a period of 4-24 hours (for example, Treegator Bag). They contribute to tree establishment and healthy growth following transplant, a critical time for new trees. During its first two years, a newly transplanted tree must re-establish the absorbing mass of feeder roots from its root ball. Tree bags should be provided for each new tree during the year of planting and the following growing season, but removed over winter. The tree bag must be filled regularly, typically once per week, and twice per week during periods of drought. Nitrogen, phosphorus, potassium and trace nutrients are also critical to trees during this time and can be delivered by the tree bags.



## LARGE TREES

SPECIES	PLANTING TYPOLOGY	SOIL VOLUME
Bur Oak ( <i>Quercus macrocarpa</i> )	A, B, C	> 30 cubic metres
Red Oak ( <i>Quercus rubra</i> )	A, B, C	> 30 cubic metres
Swamp White Oak ( <i>Quercus bicolor</i> )	A, B, C	> 30 cubic metres
Sugar Maple ( <i>Acer saccharum</i> )	C	> 30 cubic metres

## MEDIUM TREES

SPECIES	PLANTING TYPOLOGY	SOIL VOLUME
Hawthorn Species ( <i>Crateagus</i> sp.)	B, C	> 10 cubic metres
Miyabe's Maple ( <i>Acer miyabei</i> )	B, C	> 10 cubic metres
Hedge Maple ( <i>Acer campestre</i> )	B, C	> 10 cubic metres
Amur Maple ( <i>Acer ginnala</i> )	B, C	> 10 cubic metres

## LARGE - MEDIUM TREES

SPECIES	PLANTING TYPOLOGY	SOIL VOLUME
D.E.D. Res. White Elm ( <i>Ulmus americana</i> D.E.D. Res.)	A, B, C	> 20 cubic metres
Siberian Elm* ( <i>Ulmus Pumula</i> )	C	> 20 cubic metres
Red Maple ( <i>Acer rubrum</i> )	B, C	> 20 cubic metres
Silver Maple ( <i>Acer saccharinum</i> )	A, B, C	> 20 cubic metres
Freeman Maple ( <i>Acer x freemanii</i> )	A, B, C	> 20 cubic metres
Honey Locust ( <i>Gleditsia triacanthos</i> )	A, B, C	> 20 cubic metres
Common Hackberry ( <i>Celtis occidentalis</i> )	A, B, C	> 20 cubic metres
Honey Locust ( <i>Gleditsia triacanthos</i> )	A, B, C	> 20 cubic metres
Common Hackberry ( <i>Celtis occidentalis</i> )	A, B, C	> 20 cubic metres

## SMALL TREES

SPECIES	PLANTING TYPOLOGY	SOIL VOLUME
Serviceberry Species ( <i>Amelanchier</i> sp.)	B, C	> 5 cubic metres
Weigela Species ( <i>Weigela</i> sp.)	C	> 5 cubic metres
Hazel Species ( <i>Hamamelis</i> sp.)	C	> 5 cubic metres
Ninebark Species ( <i>Physocarpus</i> sp.)	B, C	> 5 cubic metres
Lilac Species ( <i>Syringa</i> sp.)	B, C	> 5 cubic metres
Viburnum Species ( <i>Viburnum</i> sp.)	B, C	> 5 cubic metres
Dogwood Species ( <i>Cornus</i> sp.)	B, C	> 5 cubic metres

\*Species prone to sudden branch drop

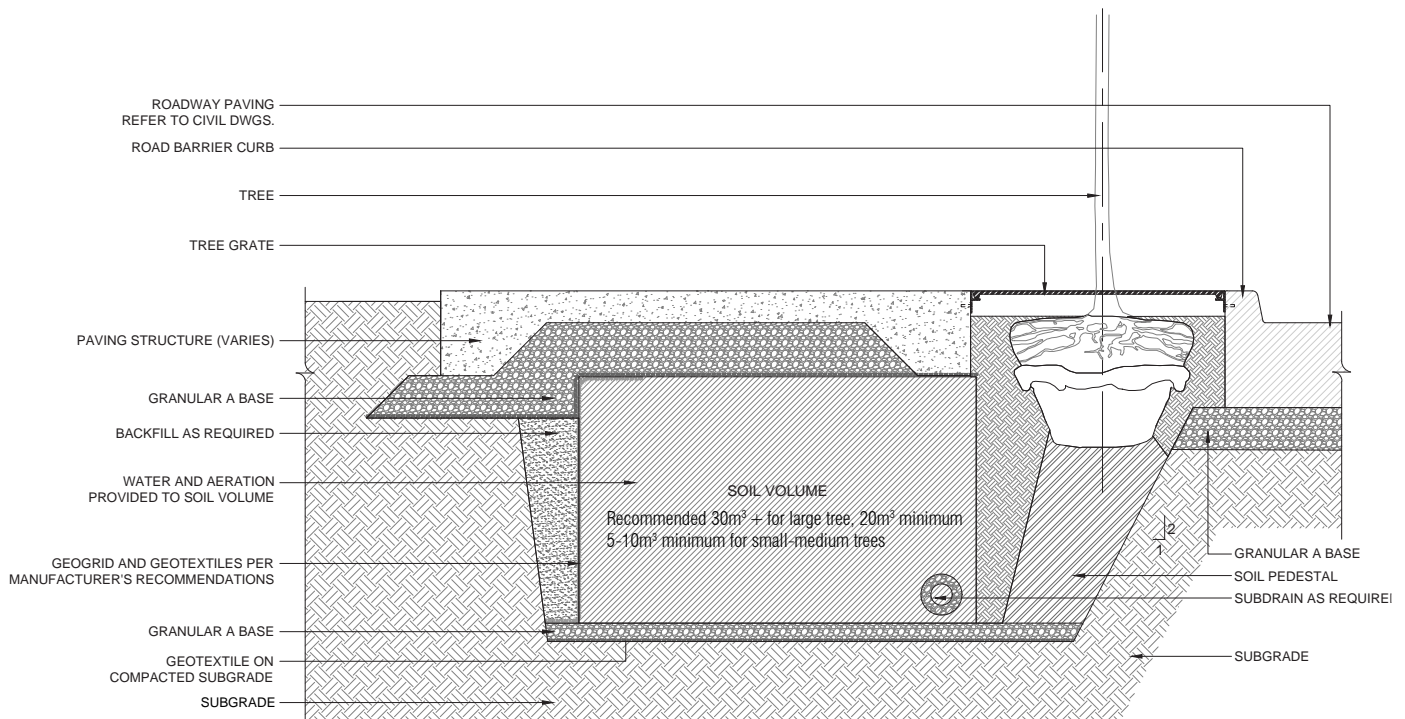
## A

### STREET TREE TYPOLOGY A TREES IN HARDSCAPE

High volume pedestrian areas  
Areas with restricted space

#### PLANTING GOAL

Trees planted in hardscape will need to be the most resilient species deployed in the city. All species used in this landscape typology must have drought tolerance, and have the ability to withstand significant impact to soil bulk density from compaction. Additionally, these species must be shade tolerant species, as the application of this typology will often be on narrow streets with increased building heights, increasing the likelihood of the trees spending time in the shade. These species may have spring and fall seasonal display, but will act primarily as a green armature for the downtown streets. They will be fast growing trees that are high branching with broad arching canopies.



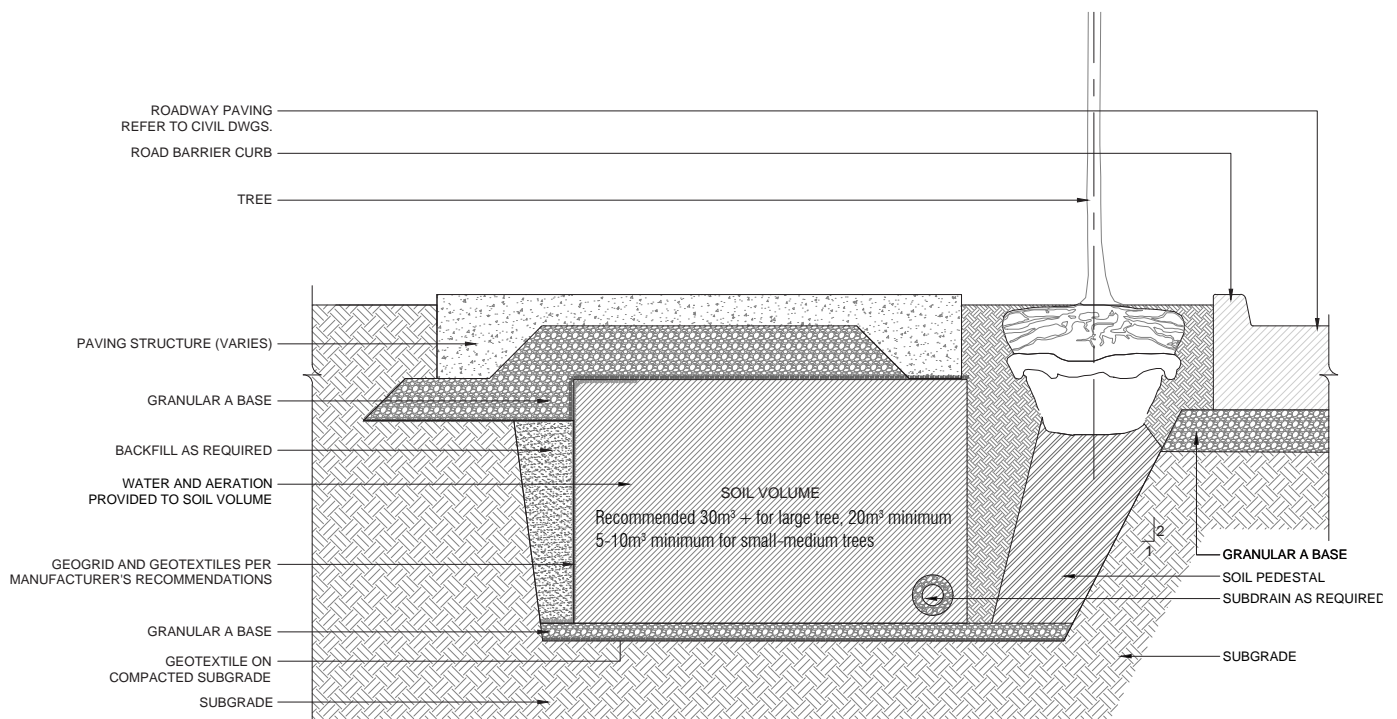
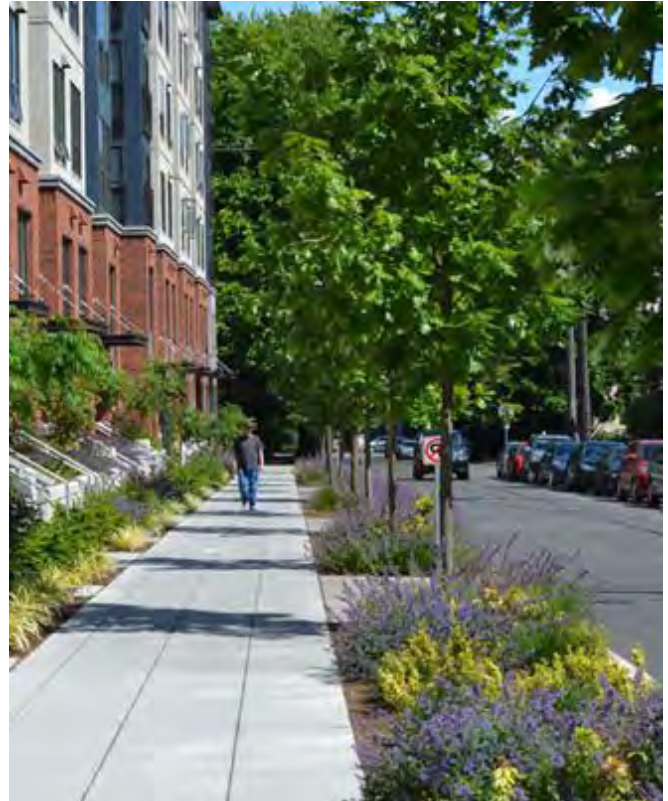
## B

STREET TREE TYPOLOGY B  
TREES IN OPEN PLANTING  
BED

Moderate volume pedestrian areas  
No adjacent softscape

## PLANTING GOAL

This condition will be urban, and where the pedestrian realm widens, there will be opportunity to utilize this additional space for impressive forestry and horticultural treatments. In these scenarios, it is envisioned that the ground plane is opened in the form of open, flush planting beds to relieve some of the pressure on the developing tree, and encourage more water and nutrients to become available to the tree. This will allow the City to increase biodiversity to achieve a greater level of resiliency in the downtown core. Tree species in this condition should include a greater variety in typology and include species with special seasonal and horticultural interest. They should include both fast and slower growing species.



SECTION - B



## C

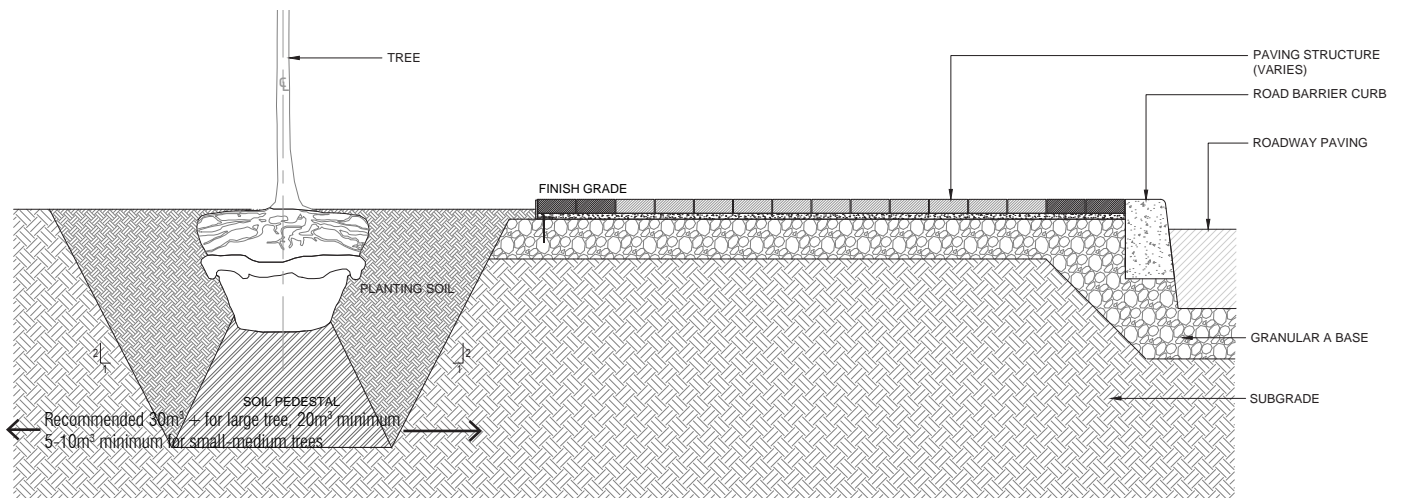
STREET TREE TYPOLOGY C  
TREES IN SOFTSCAPE

Sod/landscape areas directly adjacent to sidewalks

High soil volume with rich loamy organics

## PLANTING GOAL

This landscape typology will be the one that truly establishes the City of Fredericton's commitment to bold horticultural displays, seasonal gardens, and unique parks and gardens. It is envisioned that the City can do something special in these spaces, to promote the City of Fredericton as the horticultural and garden capital of Eastern Canada. These streets and more open garden spaces should be thought of as landscapes to achieve something new and different. Tree species in these conditions should include the most diverse range and include trees of special interest that are not typically found on the City's streets. These trees will add species diversity in the downtown core and include trees with unique characteristics and special seasonal interest.



## PAVING STRATEGY

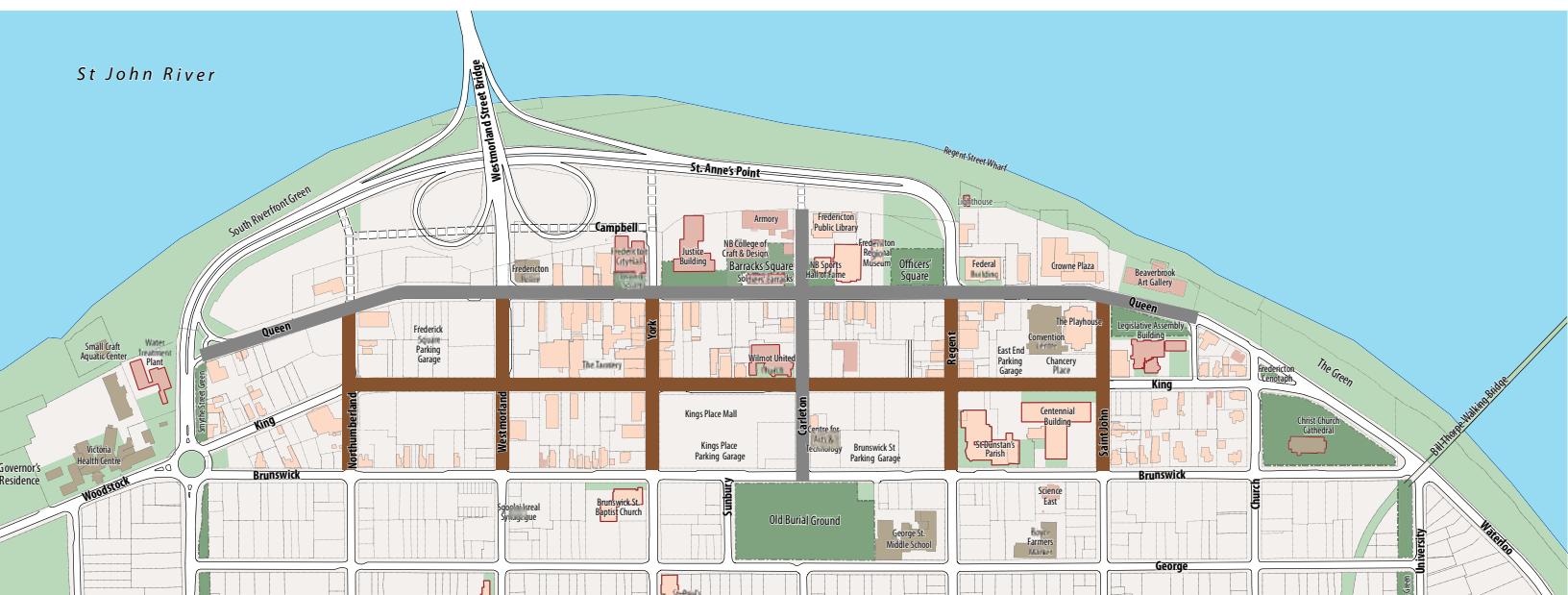
The Paving Strategy defines the sidewalk treatment for the City Centre. It is a hierarchical system based on a street's location, built form and land use adjacencies, and proximity to the heart of the downtown.

The primary paving materials are poured in place concrete and decorative unit paving. Unit paving shall have a consistent visual appearance throughout the City Centre, including on Landmark/Shared, High, and Downtown Commercial Streets, with the exception of the recently completed, special paving for Phoenix Square. No matter what the paving material, a minimum 2.1m wide pedestrian clearway shall be provided that is paved, flat, and clear of any obstructions including trees, street furniture, signs, and spill-out retail space. Boulevards may have a 1.5m clearway where wider sidewalks would disrupt existing trees, or constrain planned tree planting.

The Landmark/Shared Streets will use grey unit paving to emphasize their special role in the City Centre, and in particular to be compatible with the many heritage buildings along Queen Street. Other streets will use brown unit paving.

## PAVING COLOURS

- Grey Unit Paving
- Brown Unit Paving



## PAVING STRATEGY EXAMPLES



1. Unit paved sidewalk for Landmark Streets



4. Concrete sidewalk with narrow unit paver band for Downtown Commercial Streets



2. Unit paved sidewalk with rolled curb and unit paved road for Shared Streets



5. Typical concrete sidewalk for Boulevards



3. Concrete sidewalk with wide unit paver band for High Streets



## COORDINATED LIGHTING AND FURNISHING STRATEGY

A consistent, coordinated visual theme will be established throughout the City Centre, based on principles of simplicity and repetition, and a visual language that is compatible with Fredericton's heritage. Materials are matte black powder coated metal with wood accents in streamlined, contemporary forms, and are to be robust and durable. All vertical metal elements, including sign posts, traffic control signals, lights, parking meters, benches, and waste receptacles, should be matte black in finish to help visually unify the City Centre.

All furniture, tree grates and light fixtures should be consistent with this Manual throughout the entire City Centre, on all streets. This can be augmented seasonally by planters, flower baskets, banners, and holiday and event lighting.

While an increased level of pedestrian amenity and comfort is desired, furniture placement should not create visual clutter. All furniture should be placed within the landscape/furniture zone and have minimum spacing of 1.5m between elements. Waste receptacles should be limited to two per intersection and one mid-block. Bike rings should be consolidated in groups in the furnishing zone and individual rings should be spaced 2.5m apart.

Signs should be consolidated to the extent possible and utilize light pole and signal standards wherever possible. Street name plates should be consistent with the City as a whole, for consistency and ease of navigation. The City can work with a Furniture Supplier to select an appropriate Message Board for posting of bills.

Over the course of time it would be beneficial to the streetscape image to bury hydro lines. The City shall examine the feasibility of this in light of budget constraints. Major streetscape reconstruction, for example the Shared Street treatment for Carleton

Street, or large private sector redevelopment, may afford the opportunity to bury wires.

The Street Design Manual seeks to improve the overall consistency of lighting in the downtown, by ensuring that all streets have a regular rhythm of light poles to illuminate sidewalks and roadways, spaced approximately 18 to 20 metres apart.

The City has a large supply of attractive, durable cast iron pedestrian scaled light poles that have a long service life remaining. These can be re-topped with energy efficient LED lights. These are suitable along the main retail streets of King Street and Queen Street, as well as York Street and St. John Street, and other key pedestrian areas or heritage locations. Supplementary intersection lighting, where necessary, will be provided on signal poles.

The lighting strategy for the balance of the City Centre will be further refined. It is anticipated that remaining streets including Regent Street, Northumberland Street, Westmorland Street, Carleton Street, Church Street and Victoria Circle, will have new standards with pendant style LED lights. Brunswick Street will be primarily standard cobra lighting, except from York to Saint John Streets, where new LED pendant lights can be used.

The goal is to provide all primary light fixtures in the same style family (with some exceptions, such as pole-top supplementary intersection lighting). Light standards will have the ability to support banners and seasonal planting.

**LIGHTING**

Street Lights: Philips Lumec MetroScape Pendant LED Luminaire, or Philips Lumec MetroScape Post-Top LED Luminaire on existing cast iron poles. Fixtures to include 110V outlets.

**PENDANT**

[POLE: MODEL SPR5, BACK]  
POLE TO BE CONFIRMED

[BASE: MODEL LBC 4C, BACK]

**POST TOP**

[EXISTING CAST IRON STANDARDS]

**STREET FURNITURE**

All street furniture must be set back from the curb by 600 mm. Bike rings: Maglin MBR150 series black. Garbage bins: Maglin MRC1402 series black metal with powder coated panels. Benches: Maglin MLB870 series IPE with black arms.

**STANDARD GARBAGE BINS, BIKE RINGS AND BENCHES****EXAMPLE OF MESSAGE BOARD**

## TREE GRATES

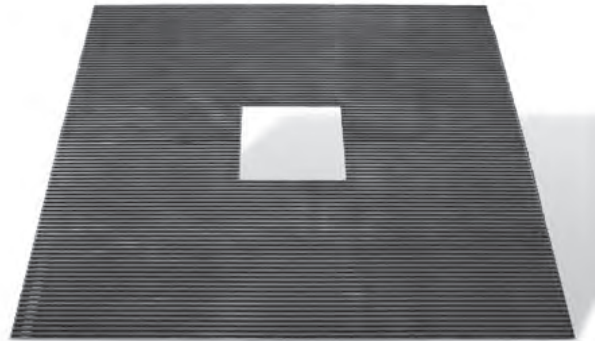
Most of the tree grates used in the City Centre will be black finish with a simple, rectilinear pattern with narrow spacing enhancing walkability and preventing clogging from debris, litter and leaves. This pattern is suitable to both heritage and contemporary contexts. The black finish is consistent with the other street furniture and poles in the City Centre.

The finish and orientation of the pattern can be varied with location in the City Centre. Along Shared Streets, the pattern can be oriented at a 45 degree angle, visually reinforcing the 45 degree paving pattern. In the Garrison District, the surface can have a natural or reddish finish, reinforcing the heritage character of the area.

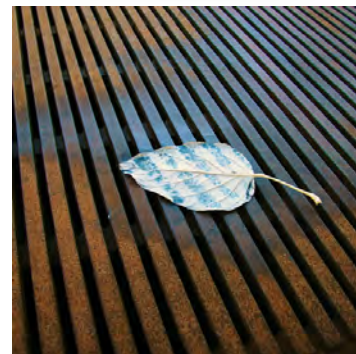
It is also appropriate to provide unique, artist-designed tree grates in the City Centre, particularly on Landmark/Shared streets. This builds on Fredericton's tradition of unique utility covers (manhole covers). Design objectives for these grates include:

- be durable and functional, considering accessibility and public safety foremost;
- provide a sufficient collar opening to accommodate the full growth of the tree;
- be compatible with the intended streetscape character of the City Centre;
- reference historically or contextually relevant events and characteristics of Fredericton; and
- promote business improvement and tourism.

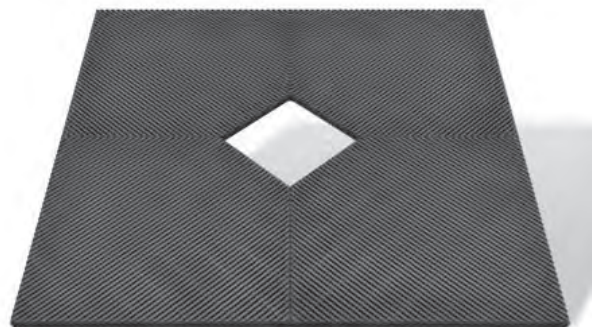
### Urban Accessories – Jamison Series



Tree grate in the City Centre:  
banding, black finish



Tree grate in Garrison District:  
banding, natural finish

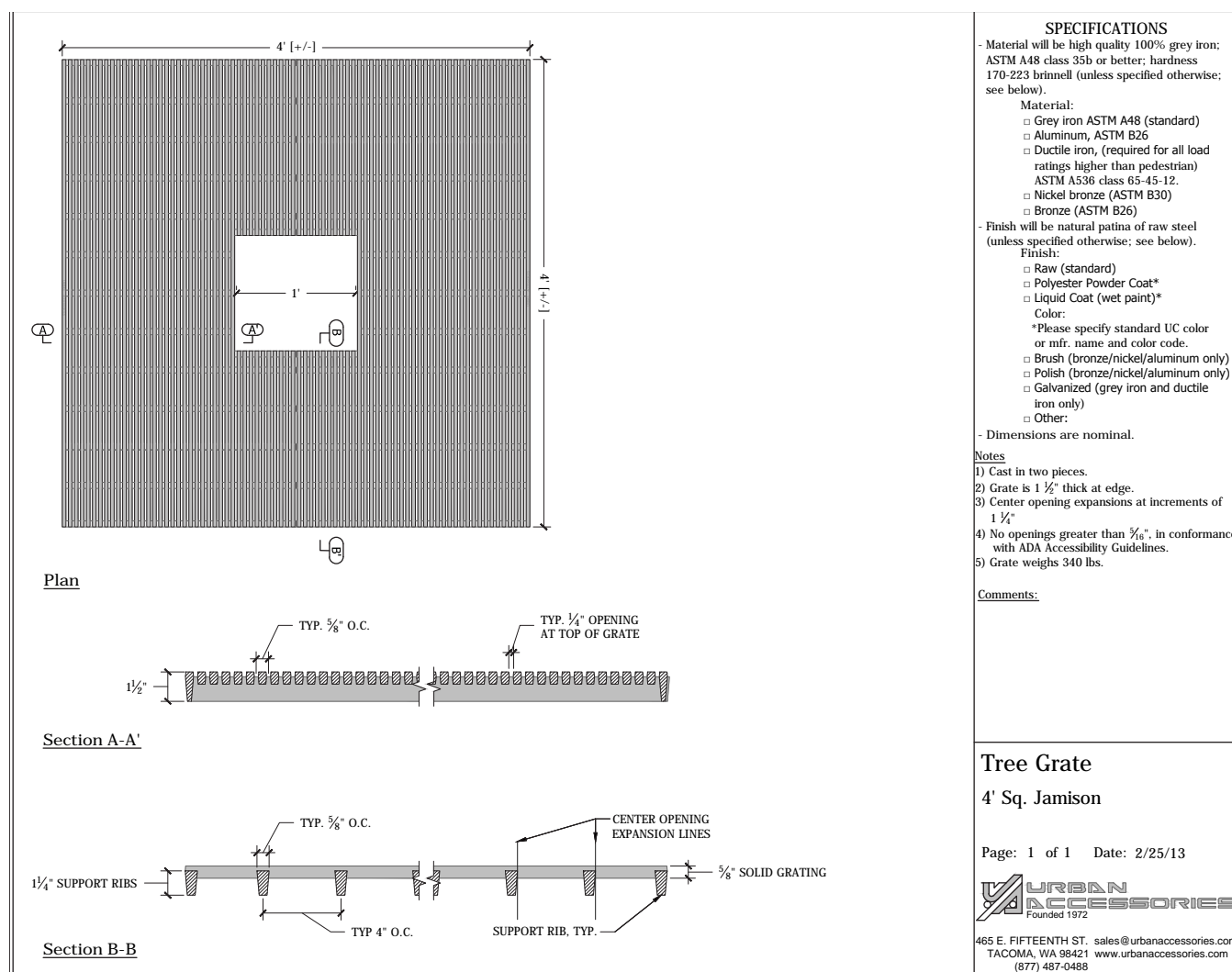


Tree grate on Shared Streets:  
45 degree angle, black finish

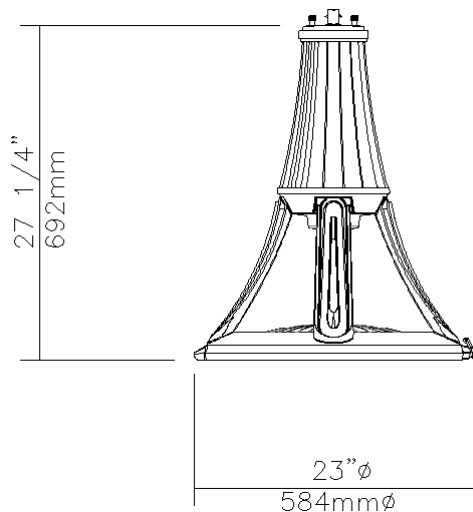


## FURNITURE CUT SHEETS

## TREE GRATE



Note: size of tree grate does not reflect soil volume.



EPA: 1.9 sq ft / weight: 52 lb (23.6 kg)  
 Note: 3D image may not represent color or option selected.  
 Logos above include link, click to access.

Qty	1	Luminaire	MSR-80W48LED4K-T-LE3F-VOLT-COLT
-----	---	-----------	---------------------------------

#### Description of Components:

**Guard:** In a round shape, this guard is made of four cast aluminum 356 decorative arms welded to the housing and to the access-mechanism.

**Housing:** In a round shape, this housing is made of cast 356 aluminum, c/w a watertight grommet, mechanically assembled to the bracket with four bolts 3/8-16 UNC. This suspension system permits for a full rotation of the luminaire in 90 degree increments. The housing is complete with a watertight access cap mechanically secured with two captive Allen head screws, giving access to the driver. Rated IP66.

**Access-Mechanism:** Made of cast aluminum 356 technical ring with latch and hinge. The mechanism shall offer tool-free access to the Light engine.

**Light Engine: LEDgine** composed of 4 main components: **Heat Sink / LED Module / Optical System / Driver**  
 Electrical components are RoHS compliant.

**Heat Sink:** Made of cast aluminum optimising the LEDs efficiency and life. Product does not use any cooling device with moving parts (only passive cooling device).

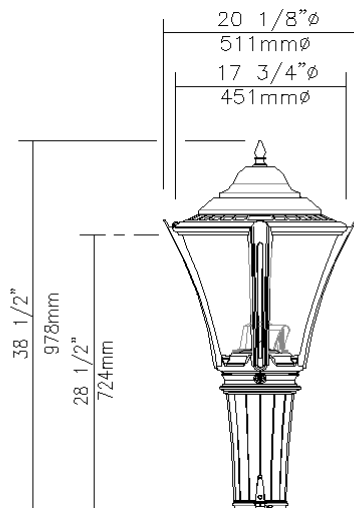
**Lens:** Made of soda-lime tempered glass lens, mechanically assembled and sealed onto the ring of the access mechanism.

**LED Module:** LED type Philips Lumileds LUXEON T. Composed of 48 high-performance white LEDs. Color temperature as per ANSI/NEMA bin Neutral White, 4000 Kelvin nominal (3985K +/- 275K or 3710K to 4260K), CRI 70 Min. 75 Typical.

**Optical System:** (LE3F), IES type III (asymmetrical). Composed of high-performance optical polymer refractor lenses to

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**PHILIPS**  
**LUMEC**



EPA: 1.962 sq ft / weight: 31.08 lb (14.1 kg)  
 Note: 3D image may not represent color or option selected.  
 Logos above include link, click to access.

Qty	1	Luminaire	MPTR-80W48LED4K-T-LE3-VOLT-PH8-COLTX
-----	---	-----------	--------------------------------------

#### Description of Components:

**Finial:** Decorative cast 356 aluminum, mechanically assembled.

**Hood:** Made of die cast A360.1 Aluminum alloy 0.100 (2.5mm) minimum thickness, mechanically assembled to the cast aluminum heat sink.

**Guard:** In a round shape with 4 arms and a built-in mechanical ring, this guard is a one-piece die cast A360 Aluminum alloy 0.100 (2.5mm) minimum thickness, mechanically assembled to the fitter.

**Access-Mechanism:** A die cast A360.1 Aluminum alloy 0.100 (2.5mm) minimum thickness technical ring with latch and hinge.

**Light Engine: LEDgine** composed of 4 main components: **Heat Sink / LED Module / Optical System / Driver**  
 Electrical components are RoHS compliant. Maximum ambient operating temperature up to 40C(104F) degrees.

**Heat Sink:** Made of cast aluminum optimising the LEDs efficiency and life. Product does not use any cooling device with moving parts (only passive cooling device).

**Lens:** Made of soda-lime tempered glass lens, mechanically assembled and sealed onto the ring of the access mechanism.

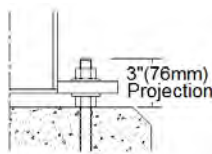
**LED Module:** LED type Philips Lumileds LUXEON T. Composed of 48 high-performance white LEDs. Color temperature as per ANSI/NEMA bin Neutral White, 4000 Kelvin nominal (3985K +/- 275K or 3710K to 4260K), CRI 70 Min. 75 Typical.

**Optical System:** (LE3), IES type III (asymmetrical). Composed of high-performance optical polymer refractor lenses to

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**PHILIPS**  
**LUMEC**



**Base & Bolts Information**

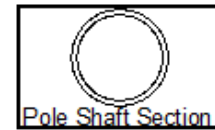
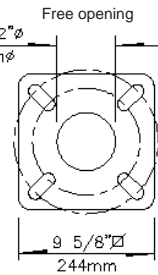
**Comes with** 4 steel anchor bolts, 3/4" X 17" + 3" J Type Bolts, 8 nuts and 8 washers. Important: Do not obstruct space between anchor plate and concrete base.

**Anchor Plate**

-Bolt Circle:  
8 1/2" (216mm)

- Thickness:  
5/8" (16mm)

- NOTE:  
Bolt Circle Allowed:  
6 3/4" to 10 1/2"  
171mm to 267mm



Qty 1 Pole **SPR4V-15-BAS30(2)-CAP1-LBC1-PSS16-COLTX**

**Description of Components:**

**Pole Shaft:** Shall be made from a 4" (102mm) round high tensile carbon steel tubing, having a 0.250" (6.4mm) wall thickness, welded to both the bottom and top of the anchor plate.

**Maintenance Opening:** The pole shall have a 2" x 4 1/2" (51mm x 114mm) maintenance opening centered 20" (508mm) from the bottom of the anchor plate, complete with a weatherproof aluminum cover and a copper ground lug.

**Base Cover:** Two piece round base cover made from cast 356 aluminum, mechanically fastened with stainless steel screws.

**Pole Options:** (BA) single position, upper and lower arms (2), fixed standard type banner arm, made of steel tubing, 1 1/16" (27mm) outside diameter, mechanically assembled to the pole, complete with a standard cast aluminum decorative ball.

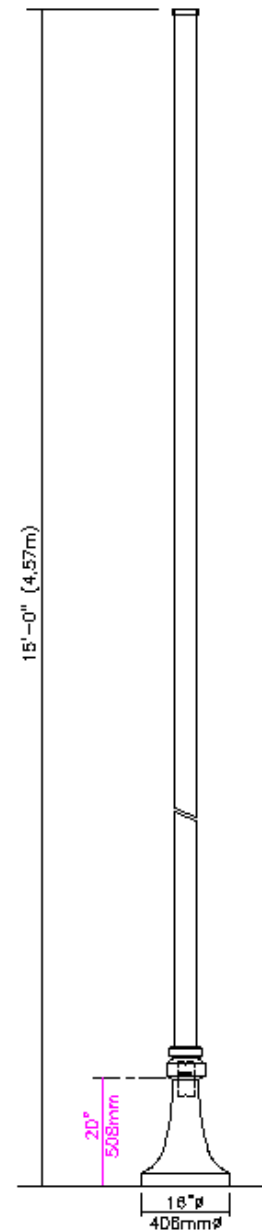
**(CAP1) Pole Cap**

(PS) Single plant support, Fixed standard type, made of steel tubing, 1 1/16" (27mm) outside diameter, mechanically assembled to the pole, complete with standard cast aluminum decorative ball.

**Note:** A tenon will be provided when the luminaire or bracket does not fit directly on pole shaft. Tenon not shown on the drawing.

**IMPORTANT:** Philips Lumec strongly recommends the installation of the complete lighting assembly with all of its accessories upon the anchoring of the pole. This will ensure that the structural integrity of the product is maintained throughout its lifetime.

**Pole Weight:** 148 lbs (67.3 kg)



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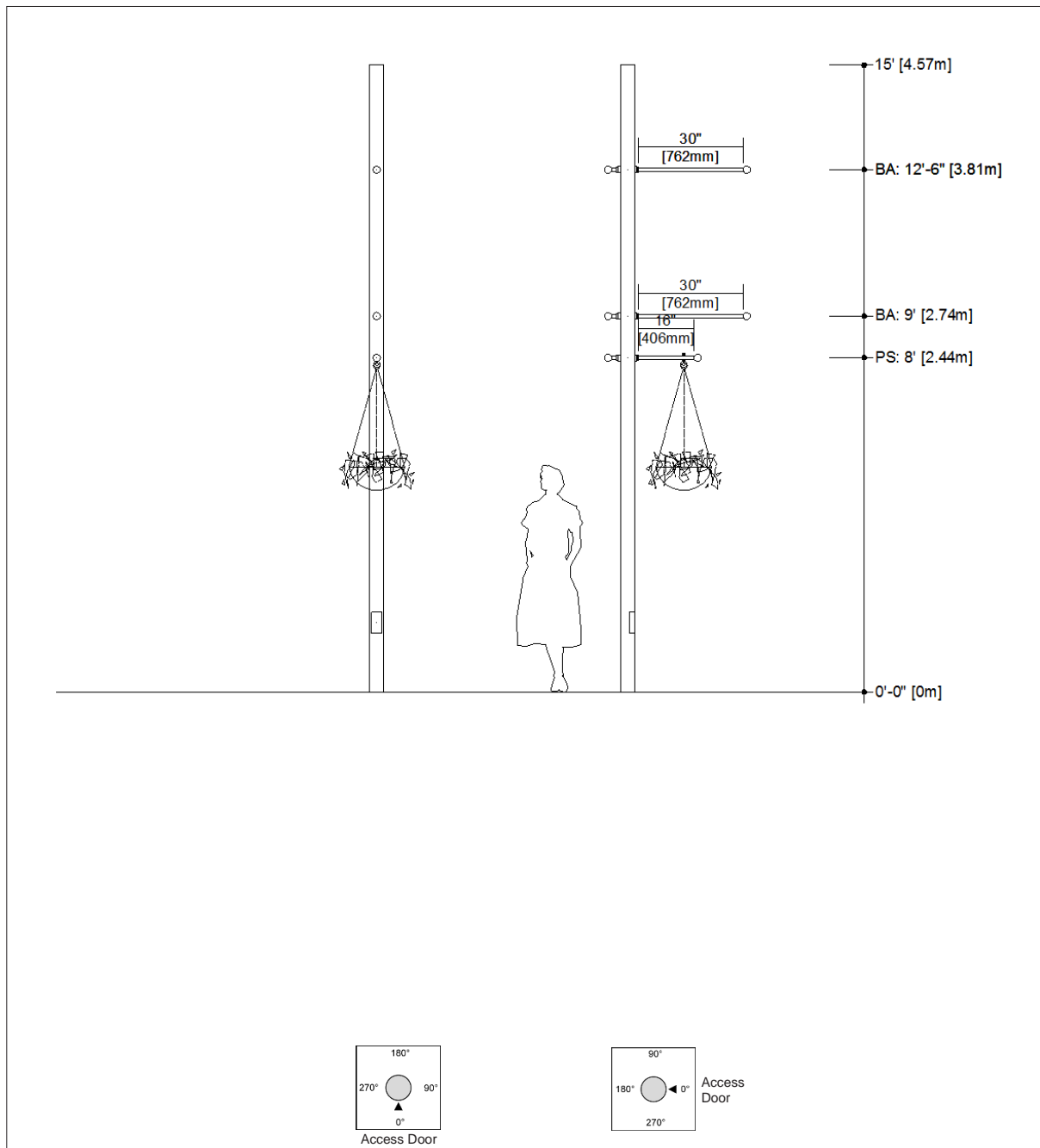
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Pole to be confirmed at Detailed Design stage.

**PHILIPS  
LUMEC**

**Parametric Options Illustration**

(schematic pole shown, for actual pole representation please refer to previous pages)



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**PHILIPS**  
**LUMEC**

## BENCHES


**MAGLIN**<sup>TM\*</sup>

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 F 877-260-9393  
 WWW.MAGLIN.COM  
 SALES@MAGLIN.COM

## MLB870-W

**MATERIALS:** Bench ends are made from solid cast aluminum. The seat employs Ipe wood slats.

**FINISH:** The Maglin Powdercoat System provides a durable finish on all metal surfaces. Wood slats are treated with penetrating sealers.

**INSTALLATION:** The bench is delivered pre-assembled. Holes (0.5") are provided in each foot for securing to base.

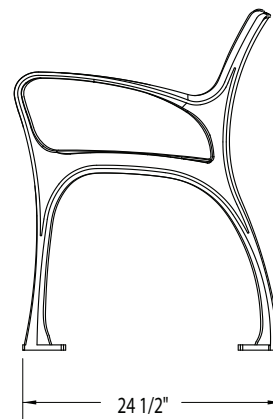
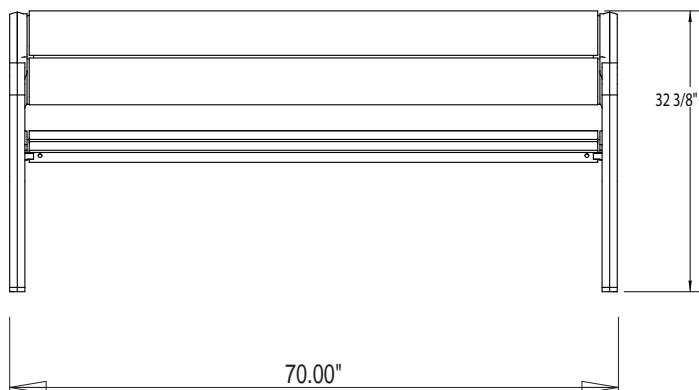
**TO SPECIFY:** Select MLB870-W  
 Choose:  
 - Powdercoat Color

**OPTIONS:**  
 - Center Arm  
 - Plaque  
 - Skate Deterrent

**COMPLEMENTARY PRODUCTS:**  
 - MLB970B-W  
 - MLWR970  
 - MTB970 Series  
 - MRC970 Series



**DIMENSIONS:** Height: 32.38" (82.2 cm)  
 Length: 70.00" (177.8 cm)  
 Depth: 24.50" (62.2 cm)  
 Weight: 135lbs (61kg)



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 -Details and specifications may vary due to continuing improvements of our products.



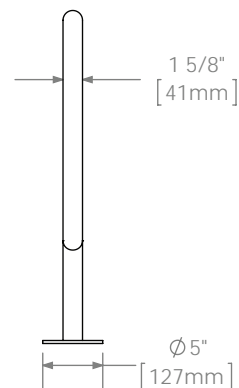
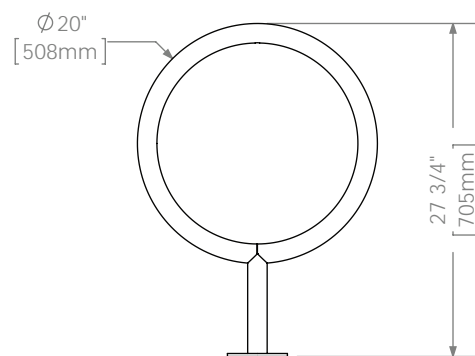
**MBR150-S****BIKE RINGS**

**MATERIALS:** The bike rack is constructed using H.S. steel tube and an aluminum top casting.

**FINISH:** All steel components are protected with E-Coat rust proofing.  
The Maglin Powdercoat System provides a durable finish on all metal surfaces.

**INSTALLATION:** The bike rack is delivered pre-assembled.

**TO SPECIFY:** Select MBR150-S  
Choose:  
- Powdercoat Color  
- Galvanized Finish  
- Surface Mount (MBR150-S-G)

**DIMENSIONS:**

Height: 27.75" (70.5cm)  
Diameter: 20" (50.8cm)  
Weight: 12.04lbs (5.5kg)



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**MRC1402****WASTE RECEPTACLE**

**MATERIALS:** The recycling station frame is made using recycled aluminum. Sustainable components such as HDPE plastic, high density paper composite (HDPC) or Steel are used for the sides and door panels. Two- 23 gallon commercial grade plastic liners and a stainless steel top are provided.

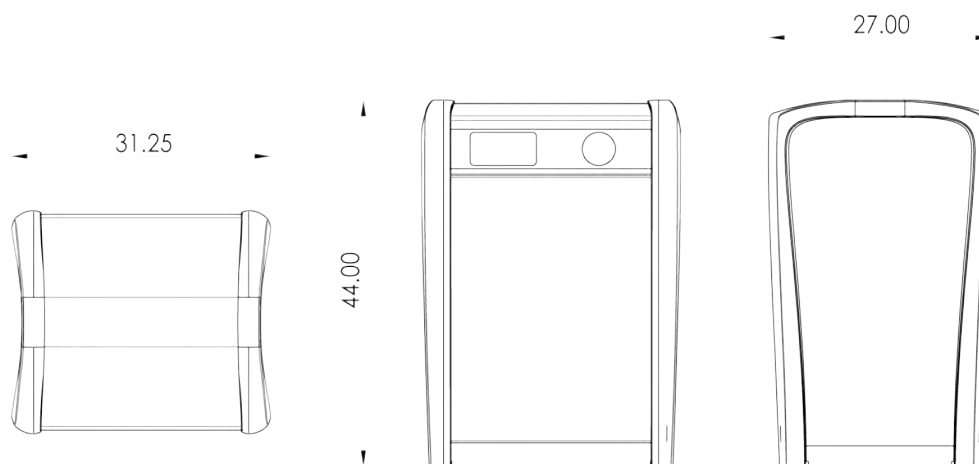
**FINISH:** All steel components are protected with E-Coat rust proofing.  
The Maglin Powdercoat System provides a durable finish on all metal surfaces.

**INSTALLATION:** The recycling station is delivered pre-assembled. Holes (0.5") are provided in each mounting foot for securing to base.

**TO SPECIFY:** Select MRC1402  
Choose:

- Side/Door panels
  - HDPC
    - MRC1402-PCC (Charcoal)
    - MRC1402-PCS (Sandstone)
  - HDPE Plastic
    - MRC1402-PGY (Grey)
    - MRC1402-PBK (Black)
    - MRC1402-PBN (Brown)
  - Steel
    - MRC1402-MS
- Powdercoat color
- Faceplate colour (Black or Green)

**OPTIONS:** - Vinyl Graphics  
\*Vinyl graphics not recommended on Fine Textured powdercoat.

**DIMENSIONS:**

Height: 44" (111.8cm)  
Weight: 110lbs (49.9kg)  
Liner Capacity: 2 x 23 Gallons  
2 x 87 Litres



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## STREET TYPES

The following “cut sheets” outline the intended character and design of individual street types in the City Centre. They define typical treatments for mid-block and intersection locations, as well as providing detailed direction on elements of pedestrian and planting infrastructure. Specific treatments will be confirmed at the Design Development stage, and may include variation based on planting condition (tree grate, open planting bed, softscape).

### LANDMARK STREETS

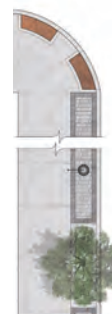
### SHARED STREETS



### HIGH STREETS



OR



TREE GRATE

OPEN PLANTING BED

### DOWNTOWN COMMERCIAL STREETS



OR



OPEN PLANTING BED

TREE GRATE

### BOULEVARDS

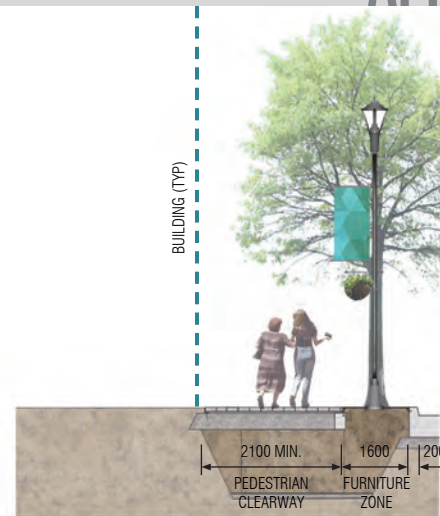




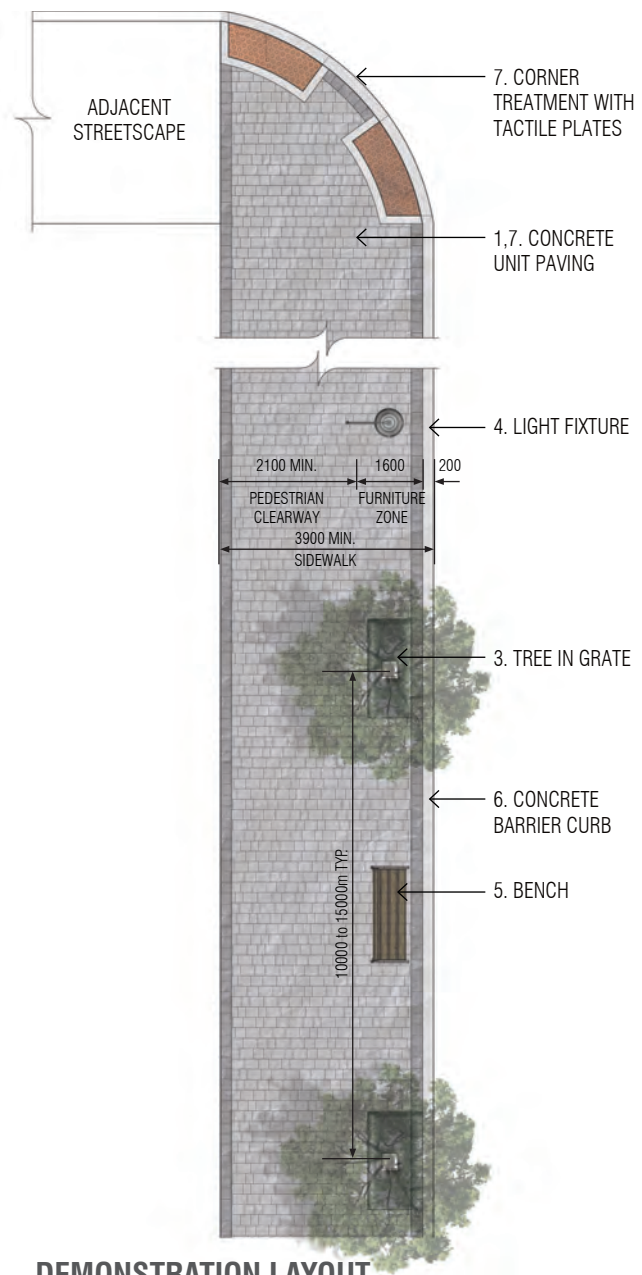
## LANDMARK STREET

### STREETSCAPE LAYOUT

1. The pedestrian clearway should be a minimum of 2.1m. Easements and building setbacks might be required to achieve minimum pedestrian clearway and a 1.6m landscape/furniture zone. The paving field is Unilock Beacon Hill Flagstone, granite fusion with a smooth finish and defined by Unilock beacon hill midnight charcoal solidier course with a flagstone finish. Sidewalk pavers minimum 80mm thick.
2. Trees should be spaced approximately 10.0m to 15.0m on centre. Selected tree species should follow the planting strategy and be approved by City Forester.
3. 1.2x1.8m black tree grates, Jamison by Urban Accessories or approved equal.
4. Street lights should be spaced 18.0 to 20.0m on centre. All lights within the landscape/furnishing zone must be 600mm from back of curb. Light standards accommodate banners and baskets that promote the City's Cultural Heritage. Refer to Lighting and Furniture Strategy.
5. All benches, bike rings, garbage bins and seasonal planters to be located within the landscape/furnishing zone be 600mm from back of curb. Furniture elements should be spaced at a minimum of 1.5m. Refer to Lighting and Furniture Strategy.
6. 200mm wide city standard concrete barrier curb.
7. The paving field extends to the curb cut and incorporates tactile plates at each pedestrian crosswalk location. Length and width must comply with Universal Design standards. (Neenah Foundry plates or approved equal).



DEMONSTRATION SECTION LAYOUT



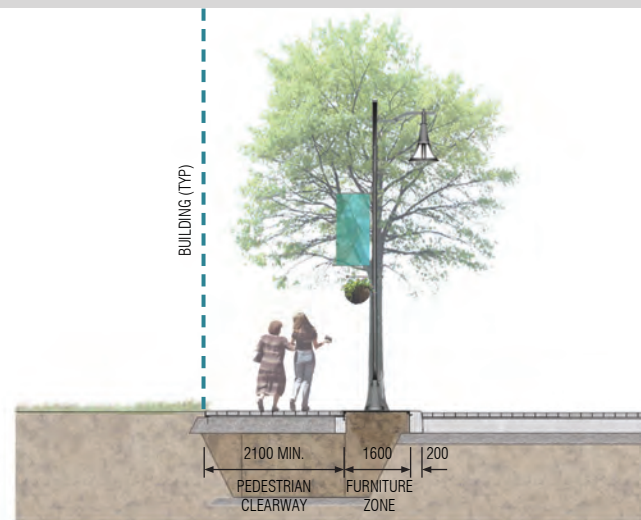
DEMONSTRATION LAYOUT

## SHARED STREET

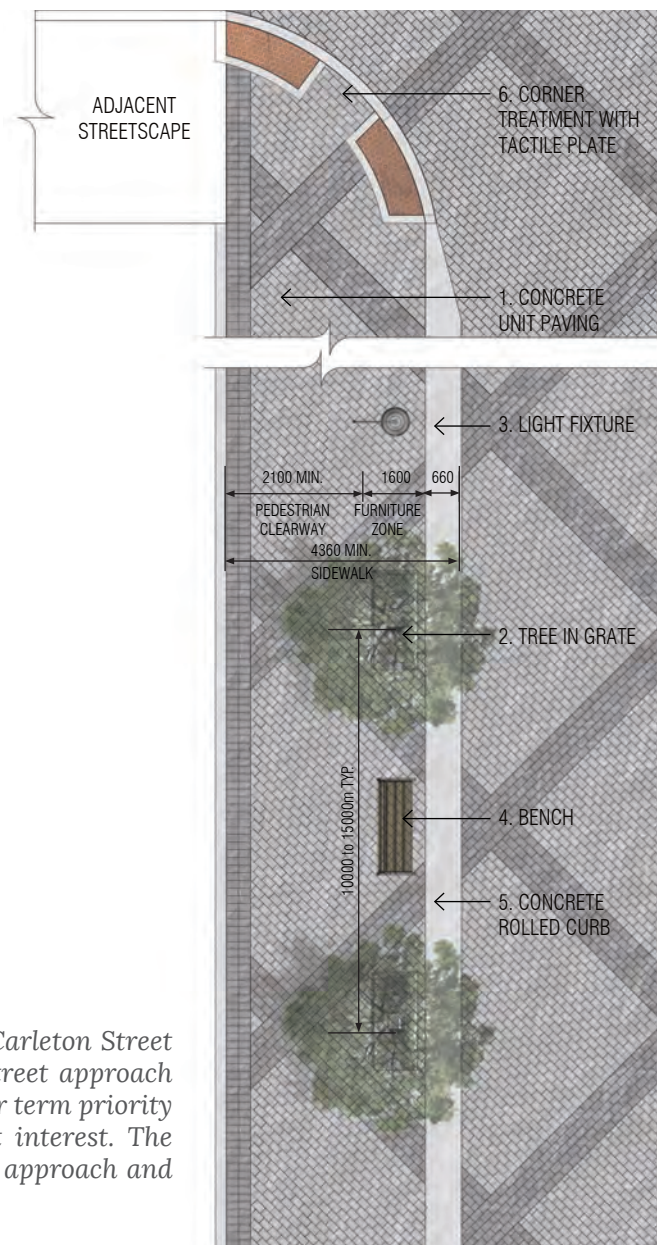
### STREETSCAPE LAYOUT

1. The pedestrian clearway should be a minimum of 2.1m. Easements and building setbacks might be required to achieve minimum pedestrian clearway and a 1.6m landscape/furniture zone. Paleotec concrete unit pavers by Permacon are used in the sidewalk and street and extends to building face as continuous pattern. Colour: Light Grey and Rockland Black, Pattern: Running bond. Roadway and sidewalk pavers minimum 100mm thick for visual consistency.
2. Some trees or tree groupings within the right of way are desirable, but may depend on use and programming needs. Trees should be evenly spaced approximately 10.0m to 15.0m on centre and located to coordinate with the graphic pattern. Trees in 1.2x1.2m tree grates or larger. (Jamison tree grate, black, angle detail by Urban Accessories or approved equal.) Selected tree species should follow the planting strategy and be approved by City Forester.
3. Street lights should be spaced 18.0 to 20.0m on centre. All lights to be located within the landscape/furnishing zone must be 600mm from back of curb. Light standards accommodate banners and baskets that promotes the City's Cultural Heritage. Refer to Lighting and Furniture Strategy.
4. All benches, bike rings, garbage bins and seasonal planters to be located within the landscape/furnishing zone be 600mm from back of curb. Furniture elements should be spaced at a minimum of 1.5m. Refer to Lighting and Furniture Strategy.
5. 660mm wide concrete rolled curb and catch basins.
6. The paving field extends to the curb cut and across the intersection and incorporates tactile plates at each pedestrian crosswalk location. Length and width must comply with Universal Design standards. (Neenah Foundry plates or approved equal).

The Shared Street treatment has been implemented on Carleton Street north of Queen Street. The completion of the Shared Street approach south of Queen Street to the Old Burial Ground is a longer term priority and will relate to adjacent private sector development interest. The Shared Street treatment does not lend itself to a phased approach and should be constructed to its finished state at the outset.



DEMONSTRATION SECTION LAYOUT

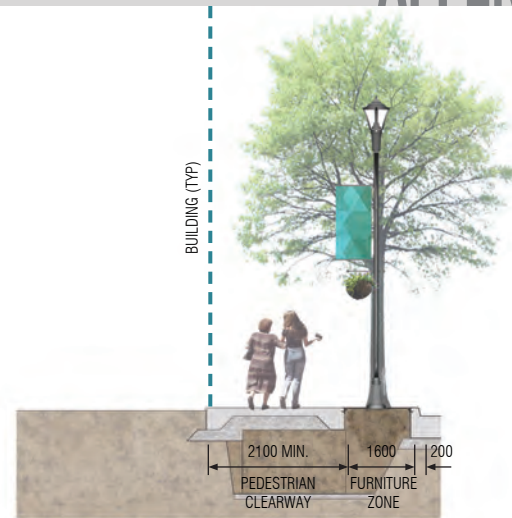


DEMONSTRATION LAYOUT

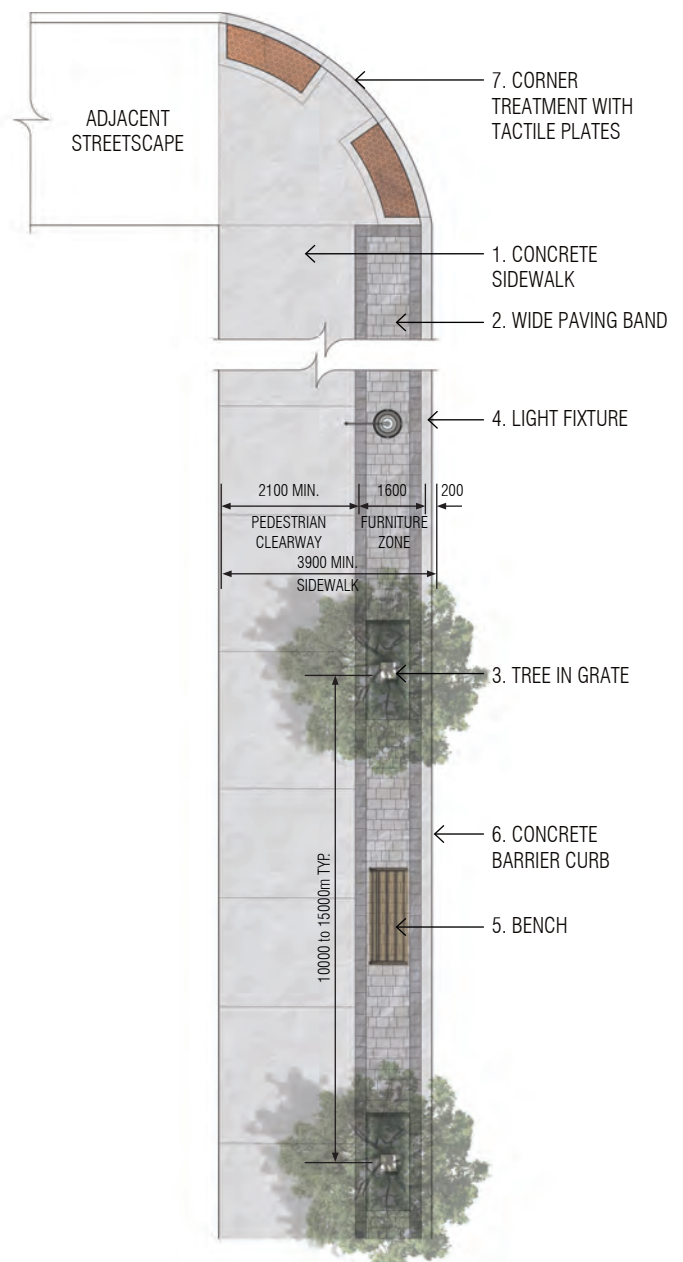
## HIGH STREET

### STREETSCAPE LAYOUT

1. The pedestrian clearway should be a minimum of 2.1m and is defined by a typical concrete sidewalk and may include the paving band. Easements and building setbacks might be required to achieve minimum pedestrian clearway and a 1.6m landscape/furniture zone.
2. The landscape furniture zone is defined by a paving band of Unilock Beacon Hill Flagstone midnight charcoal with a flagstone finish with soldier course. Sidewalk pavers minimum 80mm thick.
3. Trees should be spaced approximately 10.0m to 15.0m on centre. Selected tree species should follow the planting strategy and be approved by City Forester. 1.2x1.8m black tree grates, Jamison by Urban Accessories.
4. Street lights should be spaced 18.0 to 20.0m on centre. All lights to be located within the landscape/furnishing zone must be 600mm from back of curb. Light standards accommodate banners and baskets that promote the City's Cultural Heritage. Refer to Lighting and Furniture Strategy.
5. All benches, bike rings, garbage bins and seasonal planters to be located within the landscape/furnishing zone be 600mm from back of curb. Furniture elements should be spaced at a minimum of 1.5m. Refer to Lighting and Furniture Strategy.
6. 200mm wide city standard concrete barrier curb.
7. All corners are poured in place concrete and incorporate tactile plates at each pedestrian crosswalk location. Length and width must comply with Universal Design standards. (Neenah Foundry plates or approved equal).



DEMONSTRATION SECTION LAYOUT



TYPICAL DEMONSTRATION LAYOUT

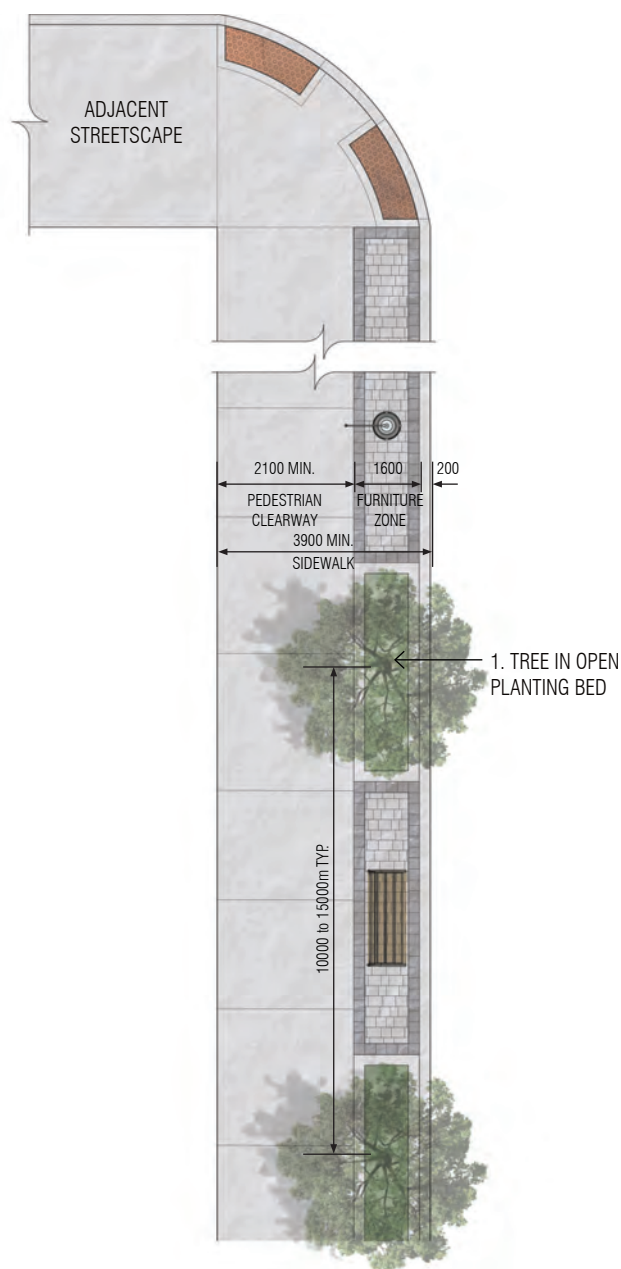
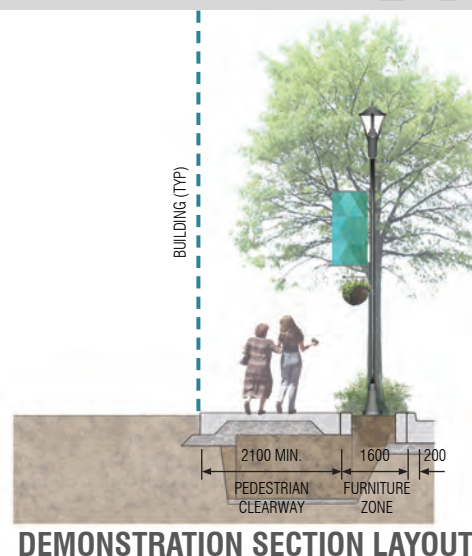


## HIGH STREET ALTERNATIVE

### TREES IN OPEN PLANTING BEDS

#### STREETSCAPE LAYOUT

1. Flush planting beds for street trees and low permanent plantings. The planting beds should be at least 3.0m long and spaced 4.0m apart. A 200mm wide flush concrete curb defines the edge. Plantings include one canopy tree, centered, framed by low plantings (max. height 600mm). Selected tree species should follow the planting strategy and be approved by City Forester.

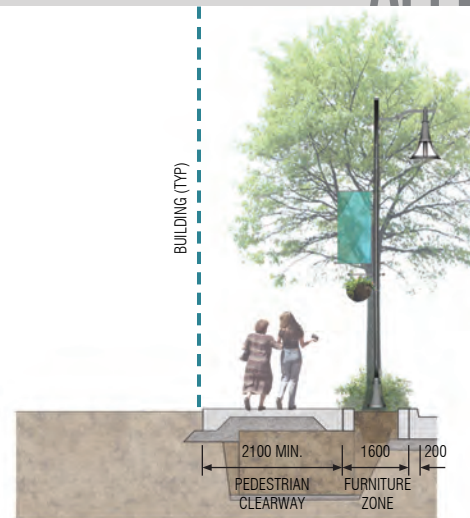




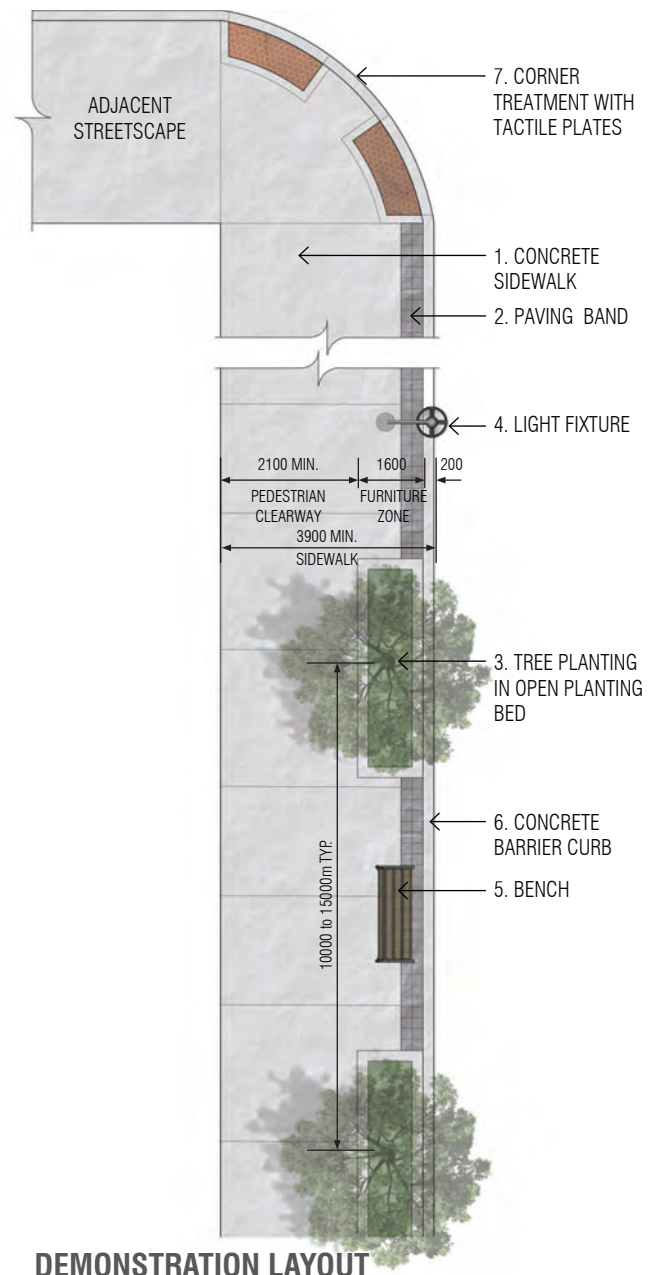
## DOWNTOWN COMMERCIAL STREET

### STREETSCAPE LAYOUT

1. The pedestrian clearway should be a minimum of 2.1m and is defined by a concrete sidewalk. Easements and building setbacks might be required to achieve minimum pedestrian clearway and a 1.6m landscape/furniture zone.
2. A 400x400mm concrete unit paver band of Unilock Beacon Hill Flagstone midnight charcoal with a flagstone finish runs parallel against back of curb. Sidewalk pavers minimum 80mm thick.
3. The landscape/furniture zone should be 1.6m wide and accommodate flush planting beds for street trees and low permanent plantings. The planting beds should be at least 3.0m long and spaced 4.0m apart. A 200mm wide flush concrete curb is used to define the open planting bed edge. Plantings include one canopy tree, centered, framed by low plantings (max. height 600mm). Trees should be spaced approximately 10.0m to 15.0m on centre. Selected tree species should follow the planting strategy and be approved by City Forester.
4. Street lights should be spaced approximately 18.0 to 20.0m on centre. All lights to be located within the landscape/furnishing zone must be 600mm from back of curb. Light standards accommodate banners and baskets that promotes the City's Cultural Heritage. Refer to Lighting Strategy.
5. All benches, bike rings, garbage bins and seasonal planters to be located within the landscape/furnishing zone be 600mm from back of curb. Furniture elements should be spaced at a minimum of 1.5m. Refer to Furniture Strategy.
6. 200mm wide city standard concrete barrier curb.
7. All corners are to be poured in place concrete and incorporate tactile plates at each pedestrian crosswalk location. Length and width must comply with Universal Design standards. (Neenah Foundry plates or approved equal).



DEMONSTRATION SECTION LAYOUT



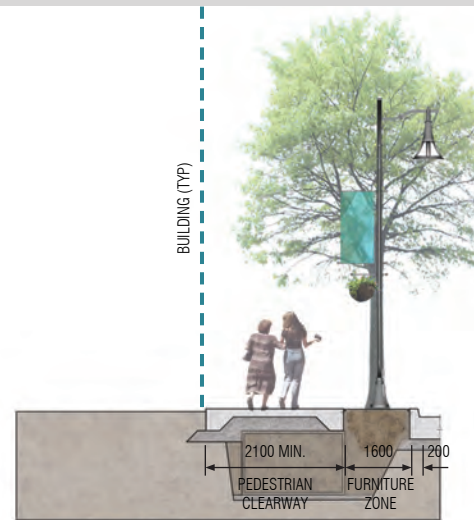
DEMONSTRATION LAYOUT

## DOWNTOWN COMMERCIAL STREET ALTERNATIVE

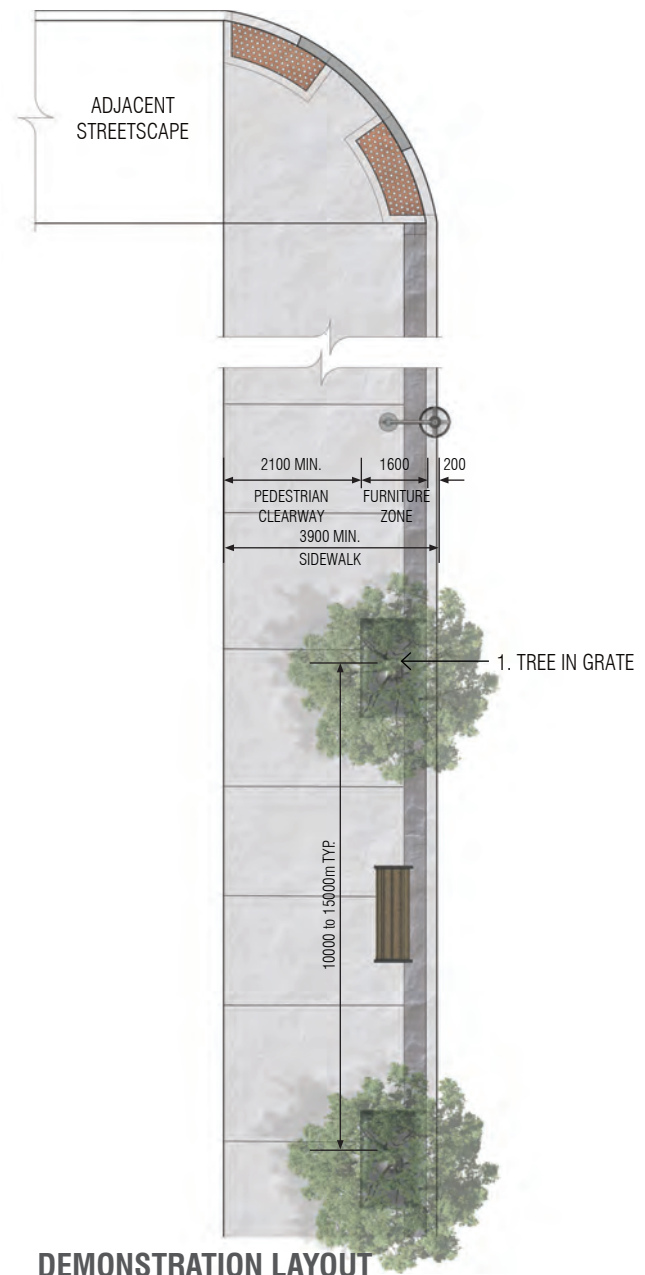
### TREES IN GRATES

#### STREETSCAPE LAYOUT

1. 1.2x1.8m black tree grates, Jamison by Urban Accessories.



DEMONSTRATION SECTION LAYOUT



DEMONSTRATION LAYOUT

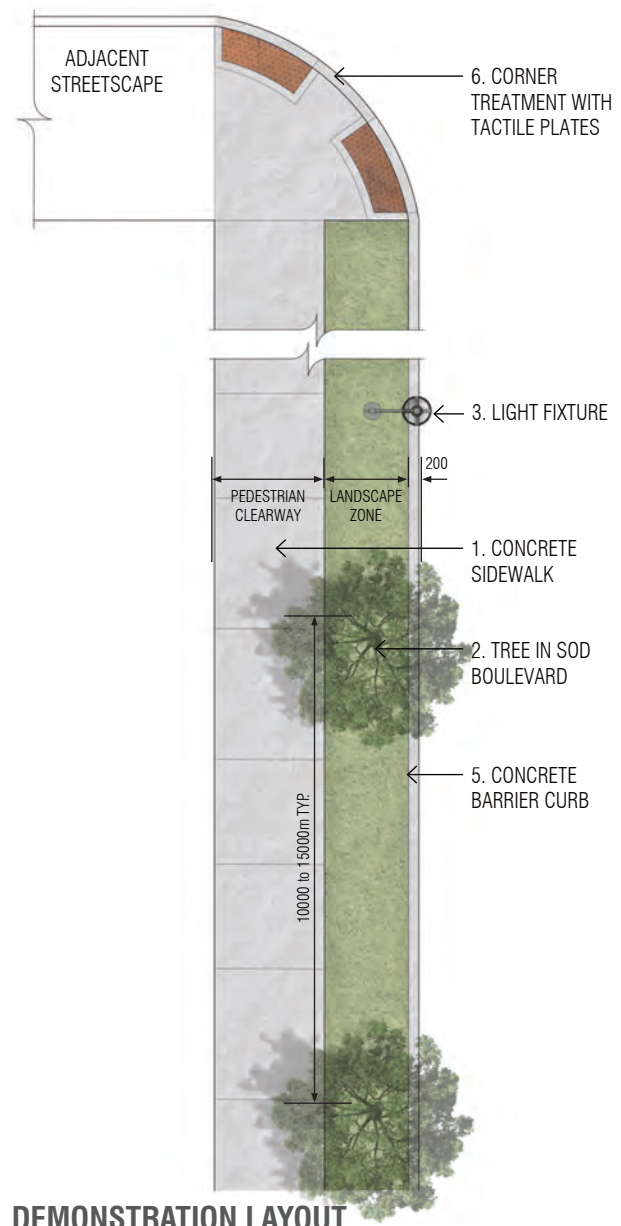
## BOULEVARD

### STREETSCAPE LAYOUT

1. A 2.1m wide pedestrian clearway is preferred, and is defined by a concrete sidewalk. Minimum sidewalk width is 1.5m in locations where the wider sidewalk could negatively impact existing mature street trees or planned tree locations.
2. The landscape/furniture zone should be a minimum 1.6m wide sod boulevard in back of curb. Trees should be spaced approximately 10.0m to 15.0m on centre. Preserve existing trees wherever possible. Selected new tree species should follow the planting strategy and be approved by City Forester.
3. Street lights should be spaced approximately 18.0 to 20.0m on centre (or by others). All lights to be located within the sod boulevard must be 600mm from back of curb. City light standards accommodate banners and baskets that promotes the City's Cultural Heritage. Refer to Furniture and Lighting Strategy.
4. Any benches, bike rings, garbage bins and seasonal planters to be located within the landscape/furnishing zone be 600mm from back of curb and placed on concrete pad. Furniture elements should be spaced at a minimum of 1.5m. Refer to Furniture and Lighting Strategy.
5. 200mm wide city standard concrete barrier curb.
6. All corners are to be poured in place concrete and incorporate tactile plates at each pedestrian crosswalk location. Length and width must comply with Universal Design standards. (Neenah Foundry plates or approved equal).



DEMONSTRATION SECTION LAYOUT



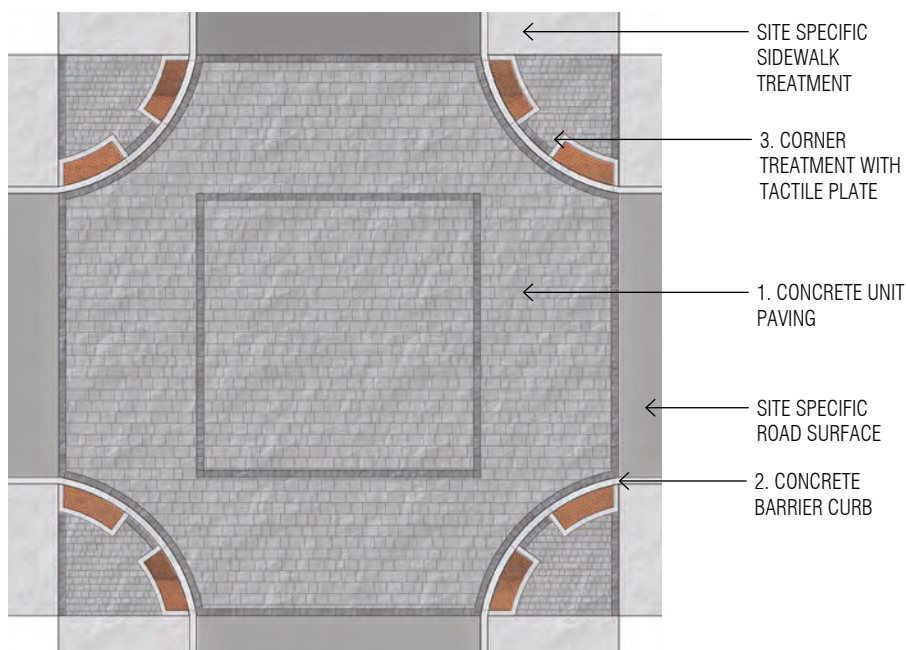
DEMONSTRATION LAYOUT

## SPECIAL INTERSECTION DEMONSTRATION PLAN

### STREETSCAPE LAYOUT

1. The road is surfaced with a Permacon Paleotec concrete unit paver. The paving field is Light Grey colour with a Running bond pattern. The pedestrian crosswalk is defined by a 400mm wide soldier course, coloured Rockland Black. Roadway pavers minimum 1000mm thick.
2. 200mm wide city standard concrete barrier curb.
3. All corners are to be poured in place concrete and incorporate tactile plates at all pedestrian crossing locations. Length and width must comply with Universal Design standards. (Neenah Foundry radial plates or approved equal).

### TYPICAL DEMONSTRATION LAYOUT





## GLOSSARY

### Accessible Band

A linear strip of hard surface that enhances accessibility, often for the purpose of guiding or warning. Examples include textured and high-contrast paving at curb edges, street corners, and transit stops.

### Barrier Curb

A typical curb, with a vertical profile, that separates the sidewalk at a higher level from the driving surface at a lower level.

### Bike Lane

A part of the right of way visually and physically dedicated to cyclists. Often a part of the asphalt roadway surface and delineated with painted lines and markings.

### Boulevard

The space between the curb and the edge of the right of way, which typically includes the sidewalk, street trees and street furniture. The boulevard can also refer to a non-hard-surface zone beside the curb in which street trees are located, as in a grass boulevard. In this document Boulevard (capital B) is one of the five street types in the City Centre.

### Bump Out

An extension of the curb at intersections, widening the boulevard, or pedestrian area, and reducing the asphalt, or roadway area. Used to shorten crossing distances for pedestrians and enhance sidewalk amenities.

### Canopy Tree

A tree of sufficient size and shape to provide a sense of enclosure or ceiling above the pedestrian level.

### Complete Street

A street that is designed and maintained equitably for all users, regardless of mode of travel. Compared to many existing streets, complete streets place a higher emphasis on pedestrian priority, and less on vehicular speed, volume, and convenience. They are inclusive of transit and cycling. They recognize the role of streets as public spaces by providing amenities such as street trees, weather protection, seating, gathering areas, transit shelters, bicycle infrastructure, retail spill-out, and wayfinding.

### Clearway

A minimum width of sidewalk that is free of any obstructions (including street trees, furniture, and change of grade). Clearways in the City Centre should be wider because of higher pedestrian volumes.

### Continuous Soil Trench

A continuous, long, linear zone below the sidewalk surface that provides a connected rooting volume for multiple street trees, increasing the total soil volume available to those trees.

### Curb Bump Out (or Bump Out)

A widened boulevard or sidewalk zone, with a corresponding reduction in driving surface. Bump outs are often employed at intersections, where an on-street parking lane is physically terminated by a curb bump out.

### Curb Cut

A depression in the curb, providing a graded transition from the level of the sidewalk to the level of the driving surface. Curb cuts are located at intersections, where pedestrians cross the road, and also at driveway entrances that cross the sidewalk.

### Flush Curb

A flat curb. It is not really a curb, but a band of paving, at the same level as the sidewalk and road, that provides a visual identification of the driving surface and sidewalk zones. Typically used in shared streets.

### Frontage Zone

The space in front of buildings, adjacent to the sidewalk, and not within the pedestrian clearway, that can be utilized for retail display, patios, or other temporary uses providing pedestrian amenity.

### Furnishing

Benches, bike lock rings, bollards, lighting, transit shelters, signs and other amenities and equipment located along streets that provide an aesthetic and/or utility function.

### Hardscape

Elements of the landscape that are hard and permanent, usually referring to paving inclusive of asphalt, concrete and unit pavers. Can also refer to other hard elements such as concrete seat walls.

### On-street

As in on-street parking or bike lanes. Provided on the roadway portion of the street.

### Paving Band

A linear strip of special paving, set within or beside a field of plainer paving (typically concrete). Paving bands are often used along the edge of the curb, beside the sidewalk, to identify special streets or conditions.

### Paving Field

In an area of hard-surfaced paving, the paving field refers to the predominant materials and treatment of that area.

### Pedestrian Amenity

Allocation of space or provision of pedestrian scale infrastructure that provides comfort, beauty, or increased functionality for people on foot. Examples include wide sidewalks, decorative paving, benches, street trees providing shade, weather protection, and wayfinding cues.

### Pedestrian Priority

Allocation of space, resources, and operational practices that favour pedestrians first, over vehicles and cyclists. Pedestrian priority design techniques are employed where walking and gathering are the primary mode of travel or use of space, or where it is desired.

### Public Realm

The outdoor, publicly accessible streets, parks, plazas and other open spaces that are free for everyone to use, walk through, view and enjoy (even if privately owned).

### Planting Bed

On urban streets, a planting bed is an unpaved area used for tree, shrub and ground cover planting. Planting beds may accommodate more than a single tree.

### Roadway

The driving surface within the Right of Way. The roadway can include vehicular travel and turn lanes, bus lanes, bike lanes, and on-street parking. Usually defined by curbs on both sides and paved in asphalt.

### Right of Way

Land in public ownership used for streets, usually including sidewalks, street trees, furniture, and roadway.

### Street

Synonymous with Right of Way.

### Roll Curb

An S-shaped curb, typically separating a lower driving surface from the higher sidewalk surface. It provides the ability for vehicles and bicycles to mount the curb.

## Shared Street

A pedestrian priority street, shared by all other travel modes. Shared streets encourage pedestrians to walk across the entire right of way, not just within traditional sidewalk zones. Shared streets have reduced or absent of traffic control devices. The speed of vehicular traffic movement is substantially reduced, which encourages users of the space to negotiate through passage. This is achieved through design changes such as flush curbs, surface treatments, materials, textures, lighting and the use of minimum radii and lane widths, together with features which introduce intrigue, interest, uncertainty and promote an intelligent response to risk among pedestrians, cyclists and drivers. Design emphasis is placed on a high quality pedestrian and cycling environment.

## Soil Cell

A modular unit, used below grade to create soil volume for tree roots. Soil cells are a lightweight framework, usually of plastic, for carrying the weight of paving and vehicles above grade. Soil cells are mostly void space. Soil cells significantly reduce soil compaction, and therefore promote healthier trees. Soil cells can help with stormwater management.

## Soil Volume

The quantity of quality soil available for tree roots. The relationship between volume of rooting medium and size of tree is fundamental.

## Soldier Course

A row of unit paving that is at right angles to the direction of the paving field. Often used for decorative purposes.

## Streetscape

The streetscape is an outdoor public room that extends from building face to building face extending along the street. The streetscape includes all the elements within that space, including the facades, trees, lighting, furnishing, sidewalks, bike lanes, vehicle lanes, parking and crosswalks. The design and organization of all these elements have a role to play in creating great streetscapes.

## Structural Soils

A granular/soil medium that can be compacted to support paving above, while providing some opportunity for tree roots to penetrate. Typically, granular mediums under paving are compacted to the point where tree roots cannot penetrate. Tree pits surrounded by paving and compacted granular do not have sufficient soil volume to permit significant tree growth.

## Structural Soil Bridging

The use of structural soils to connect tree pits, soil trenches or planting beds. Tree roots are able to penetrate through the structural soils to reach other root zones, thereby increasing the total soil volume accessible to all trees.

## Tactile Plate

A flat metal insert in the paving, with a pattern of raised, flat bumps, located in the sidewalk at intersections, that alerts pedestrians with visual impairments that they are about to step onto the road.

## Tree Grate

A metal grille, flush with surrounding paving, installed over a tree pit, and allowing the trunk of the tree to pass through. Tree grates help prevent soil compaction at the base of the tree while permitting water and air exchange to the soil.

### Wayfinding

Clear spatial orientation so that people have the ability to know where they are, and how to get to their destination, with ease. Wayfinding cues include the overt such as maps, signs, directions, symbols and other information systems, as well as environmental cues such as direct sight lines, landmarks, logical relationships, patterns, and imaginability in the built environment.

### Universal Design

Configuring space to be accessible to people of all ages and abilities. Universal design seeks to eliminate barriers to use, for example curbs that prevent the elderly, handicapped, or people with strollers from accessing space.