APPENDIX F: HIGH-ORDER PEDESTRIAN CONNECTION

HAMILTON LRT LIGHT RAIL TRANSIT

High-Order Pedestrian Connection Streetscape Design Report

February 2017

CONTENTS

01

VISION, AND APPROACH

This document includes a Streetscape Design Strategy to advance the design of the High-Order Pedestrian Connection, with the aim to support key City of Hamilton objectives associated with the development of streetscapes that reflect a vibrant, sustainable, and pedestrian oriented environment.

1.1 DOCUMENT STRUCTURE

This document includes three chapters:

Chapter One outlines a vision, and approach, to guide the streetscape and urban design of the High-Order Pedestrian Connection.

Chapter Two includes objectives, conceptual directions and requirements for the design of the High-Order Pedestrian Connection.

Chapter Three includes landscape and streetscape design requirements associated with the conceptual directions for the design of the High-Order Pedestrian Connection.

1.2 RELATIONSHIP TO OTHER DOCUMENTS

This document is intended to articulate a vision, design strategy, and recommended requirements to advance key City of Hamilton objectives related to the streetscape design of the High-Order Pedestrian Connection.

This document is also intended to reflect key objectives embedded in the Project Agreement (PA). It has been structured to be read in conjunction with associated streetscape requirements in the PA, and the associated reference concept design.

All terms in this document that are defined in the Project Agreement and are not otherwise defined in the document shall have the meaning ascribed to such terms in the Project Agreement.

1.3 VISION

"Complete streets create a balance between the movement of pedestrians, cyclists, transit, and vehicles."
Metrolinx Mobility Hub Guidelines

The vision for a pedestrian oriented street requires providing space and amenities to encourage walking, cycling and transit. The goal is to create a safe, attractive and comfortable environment for walking which connects to transit facilities and other key destinations. The design aims to support the needs of busy urban areas, quiet residential neighbourhoods, and other unique places along the corridor.

1.4 APPROACH

The Strategy aims to provide a coordinated approach to embed key City of Hamilton priorities and objectives in the overall streetscape and urban design of the HIgh-Order Pedestrian Connection. For instance, the Strategy aims to:

1. Shape improved pedestrian connections to LRT stops and the Hamilton GO Centre and other key destinations, addressing safety, wayfinding, and more convenient circulation and road crossings;

2. Enlarge and enhance the pedestrian streetscape, through wider sidewalks, pedestrian-oriented lighting, street trees, plantings and furnishings;

3. Physically integrate transit infrastructure with the existing and planned built environment;

4. Provide hard and soft landscaping, with connections to adjacent parks and related public spaces;

5. Identify potential public spaces and development opportunities;

6. Minimize street clutter.

02

HIGH-ORDER PEDESTRIAN CONNECTION

2.1 INTRODUCTION

The High-Order Pedestrian Connection is intended to facilitate a safe, convenient, and comfortable connection between the B-Line LRT to the Hamilton GO Centre. In so doing, the pedestrian connection shall establish a high quality civic corridor, in contribution to broader city-building objectives for the downtown.

2.2 CORRIDOR SELECTION CRITERIA

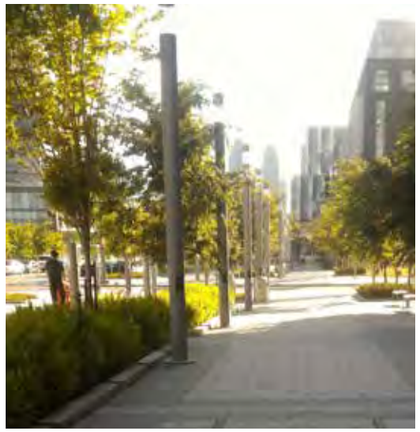
Hughson Street was selected as the preferred corridor to make the pedestrian connection between the B Line LRT and the Hamilton GO Rail Station. The other candidate routes included James Street, and McNab Street. The evaluation was guided by the following criteria:

- **Short Walking Distance from the LRT to the GO Rail Station:** As measured from the westbound LRT platform, to the Station building entrance at Hughson and Hunter Sts.
- **Wide Pedestrian Walking Zone:** average width of clear sidewalk as measured along the journey between the LRT platform and GO rail station entrance.
- **Weather Protection Opportunity:** Hughson Street provides opportunities to plan for awnings or canopies affixed to existing buildings, along the pedestrian journey.
- **Safe Pedestrian Crossings:** Hughson Street provides a safe walking environment, with relatively few crossings of busy roads, relative to other parallel streets in the area.
- **Few Unsignalized Crossings:** Most intersections along Hughson Street are signalized, which supports greater pedestrian safety, relative to unsignalized crossings.
- **Development / Frontage Potential:** Measured as the linear length of vacant blocks along the route, where future development may occur.
- **Plantings and Furnishings Zone:** Areas where there are existing trees and/or furnishings, and where it is reasonable to accommodate them in future, without unduly impacting the available walking area.
- **Intuitive Wayfinding:** Without the aid of signage, this route provides clear view corridors that allow pedestrians to see the transit destination, at either end of the route.
- **Minimizing Traffic Impacts:** Relative to other route options, Hughson Street minmizes potential impacts to vehicle oriented traffic operations.

DESIGN OBJECTIVES:

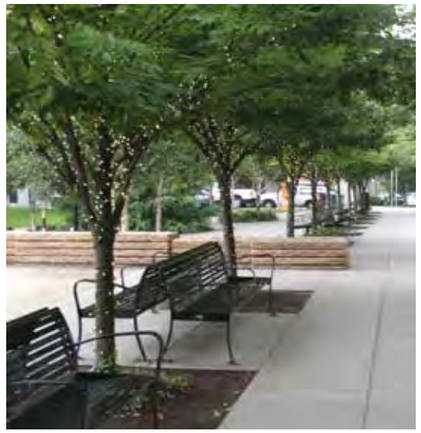
The following objectives have informed and guided the design of the High-Order Pedestrian Connection:

2.3 DESIGN OBJECTIVES FOR THE HIGH-ORDER PEDESTRIAN CONNECTION



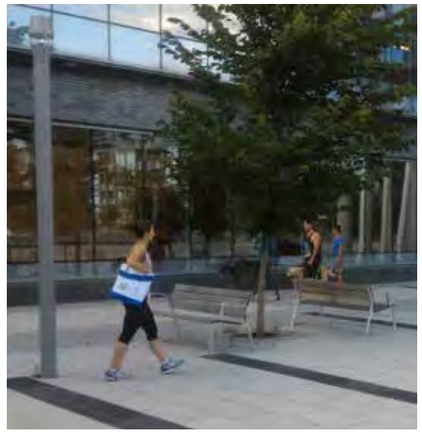
DESIGN EXCELLENCE:

Shape an attractive, functional design for the streetscape connection that is grounded in best practices. A design that inspires greater pedestrian use and enjoyment.



CONVENIENT:

Plan for seamless and efficient pedestrian connections between the Hunter Street GO Station and LRT, as well as other destinations in the Downtown Core.



COMFORTABLE:

Provide amenities such as lighting, weather protection, plantings and seating, to improve the pedestrian experience.

SAFETY AND SECURITY:

Support clearly defined, well-lit, safe pedestrian routes, crossings, and related components of the public realm.

INTUITIVE:

Support intuitive wayfinding between transit destinations.

EXISTING CONDITION: LOOKING SOUTH ON HUGHSON STREET TO THE HAMILTON GO CENTRE

EXISTING CONDITION: LOOKING NORTH TO HUGHSON STREET FROM THE HAMILTON GO CENTRE

2.4
DESIGN CONCEPT

2.4.1 INTRODUCTION

The High-Order Pedestrian Connection has been designed to reflect the objectives noted on page 13, in a manner that provides an attractive, intuitive, and convenient experience for pedestrians connecting from the B-Line to the Hamilton GO Centre.

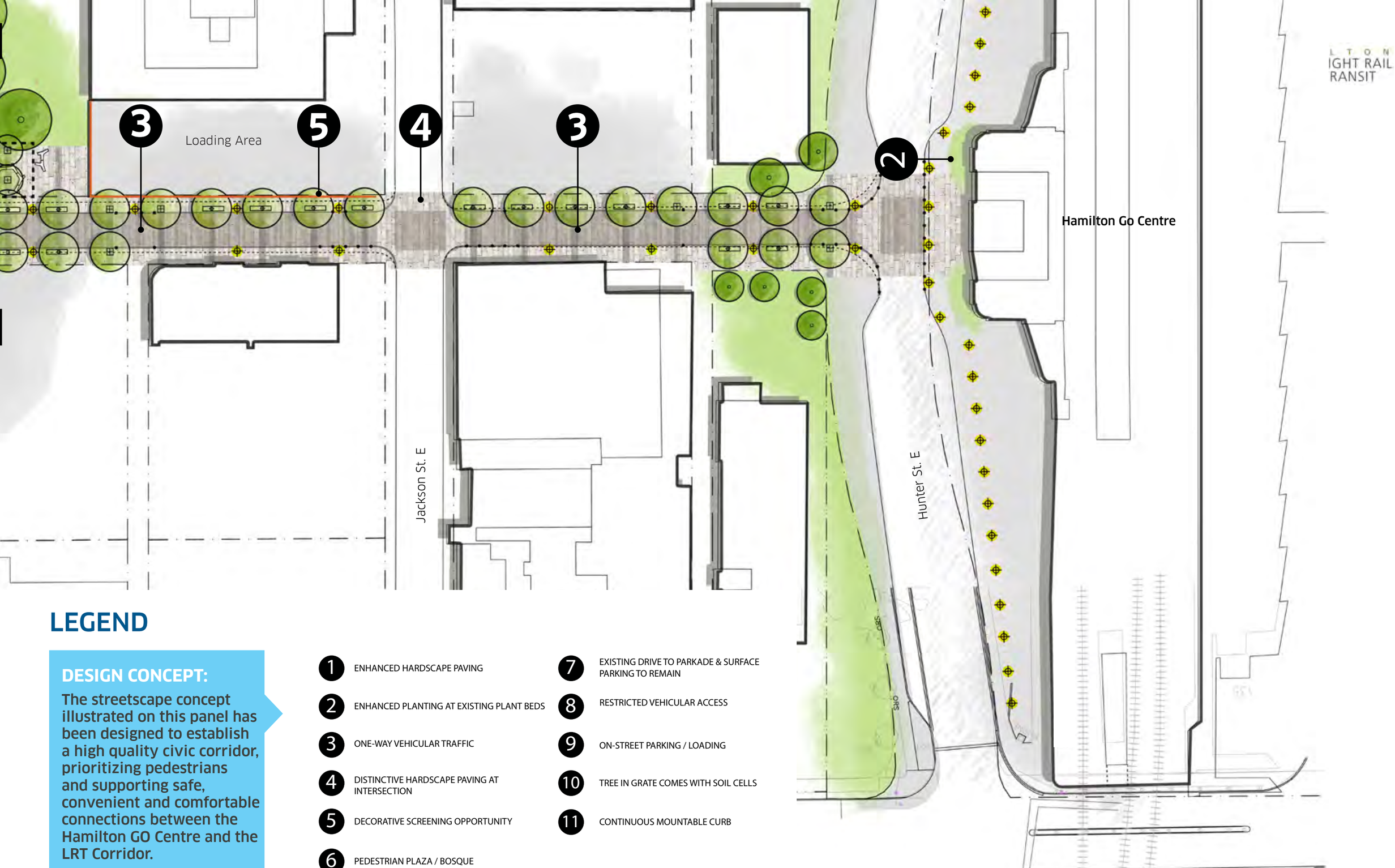
The conceptual design aims to reinforce the City's aspiration to enhance the public realm in the downtown by strengthening pedestrian connections to adjoining streets, neighbourhoods and destinations, and by providing an streetscape design context that supports the broader revitalization of neighbouring properties.

To do so, the conceptual design:

(1) deploys plantings, hardscapes, furnishings, lighting and other components in a seamless and coordinated manner, using an intuitive palette and recognizable rhythm to enhance the journey;

(2) redesign of the right-of-way to prioritize pedestrians, through visual and tactile cues, such as the removal of curbs and installation of unit paving to evoke pedestrian-oriented civic spaces, rather than vehicle-oriented roadways.

(3) Unique and memorable places to enhance the pedestrian experience, such as a new public plaza adjacent to Prince's Square, and a graphic patterned civic wall.

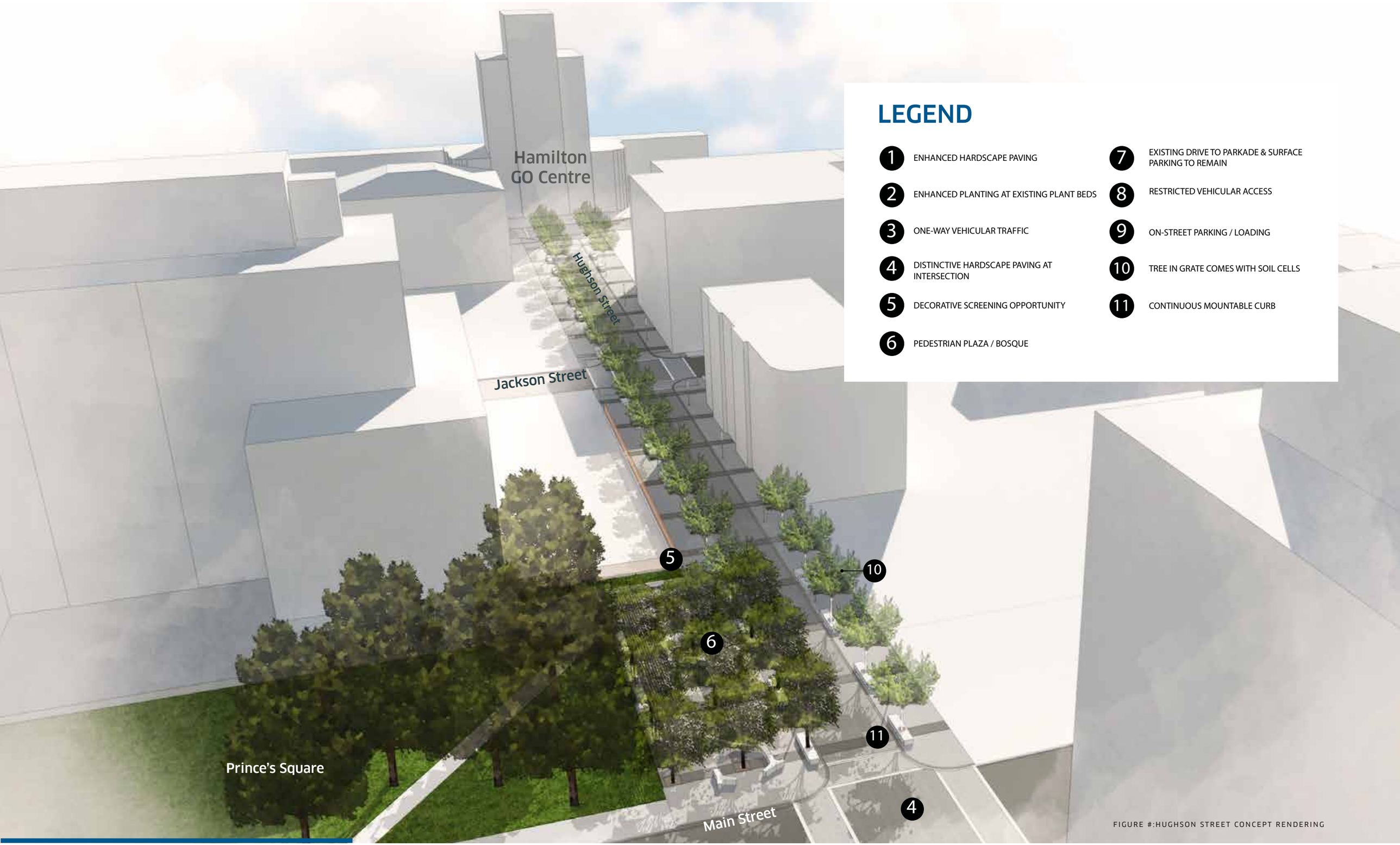


LEGEND

DESIGN CONCEPT:

The streetscape concept illustrated on this panel has been designed to establish a high quality civic corridor, prioritizing pedestrians and supporting safe, convenient and comfortable connections between the Hamilton GO Centre and the LRT Corridor.

1. ENHANCED HARDSCAPE PAVING
2. ENHANCED PLANTING AT EXISTING PLANT BEDS
3. ONE-WAY VEHICULAR TRAFFIC
4. DISTINCTIVE HARDSCAPE PAVING AT INTERSECTION
5. DECORATIVE SCREENING OPPORTUNITY
6. PEDESTRIAN PLAZA / BOSQUE
7. EXISTING DRIVE TO PARKADE & SURFACE PARKING TO REMAIN
8. RESTRICTED VEHICULAR ACCESS
9. ON-STREET PARKING / LOADING
10. TREE IN GRATE COMES WITH SOIL CELLS
11. CONTINUOUS MOUNTABLE CURB



LEGEND

1. ENHANCED HARDSCAPE PAVING
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10. TREE IN GRATE COMES WITH SOIL CELLS
11. CONTINUOUS MOUNTABLE CURB

FIGURE #:HUGHSON STREET CONCEPT RENDERING

FIGURE 2.4.1.CONCEPTUAL VIEW: LOOKING SOUTH TO THE HAMILTON GO CENTRE

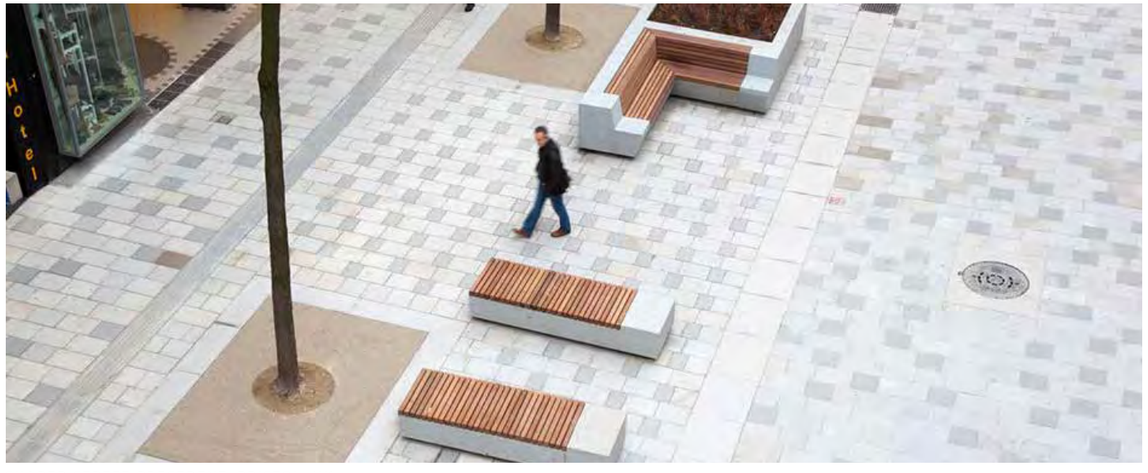
2.4.2 SHARED STREET (WOONERF)

The concept adopts a 'shared street' approach to the design of the right-of-way. A shared street removes the curb and adds distinctive surface treatments such as pavers to reconfigure the look, feel, and operation of the space. The aim is to remove barriers that traditionally separate users, while prioritizing space and operations for pedestrians, with secondary priority to cyclists, and finally vehicles. To do so, the concept adopts the following strategies:

- Removal of the curb and associated re-grading of the right-of-way to support adequate drainage to (re)located catch basins while achieving a seamless look-and-feel to the streetscape;
- Reduced vehicle posted speed limit;
- Continuous palette of hardscapes from property line to property line, using colour and texture to denote zones and assist pedestrians with visual impairments;
- Deployment of bollards, signage and other visual and tactile cues, particularly in the vicinity of intersections, to reduce vehicle speeds and delineate the spaces where vehicles are not permitted.

FIGURE 2.4.2: A - A' CONCEPTUAL HUGHSON STREET CROSS SECTION: LOOKING NORTH

SHARED STREET PRECEDENT. TORONTO.



SHARED STREET PRECEDENT, BRISTOL, UK.

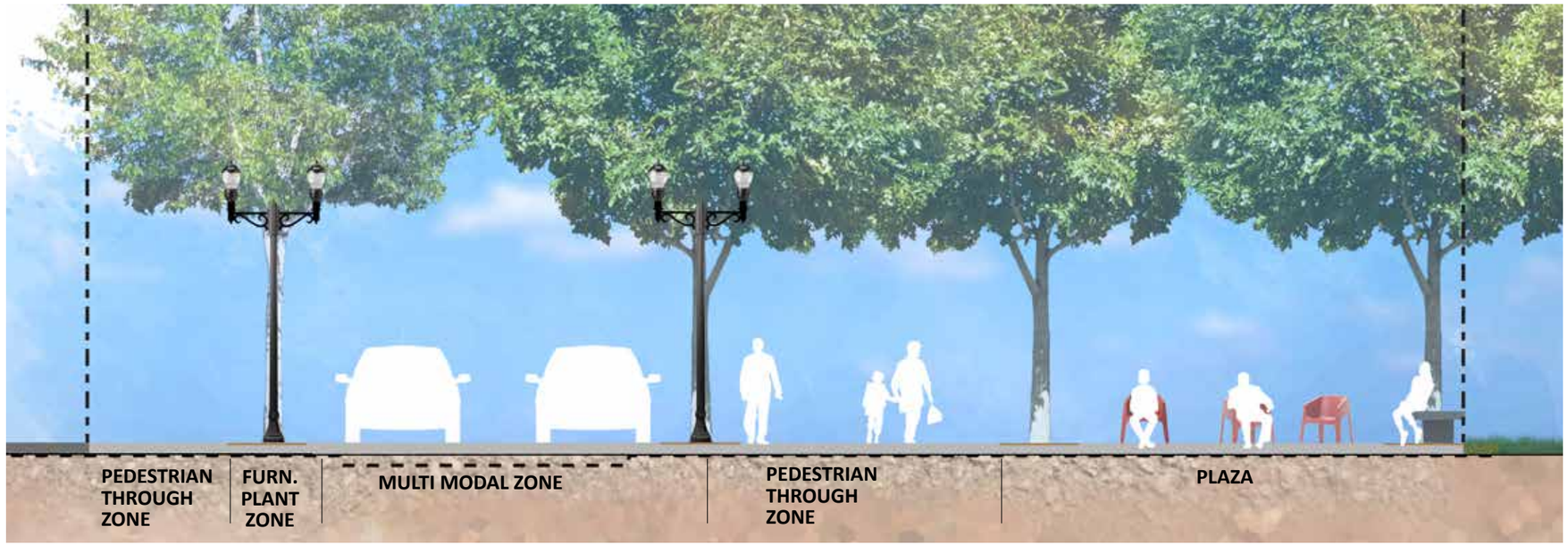
SHARED STREET PRECEDENT.

2.4.3 PRINCE'S PLAZA

The concept includes a design for a small public plaza, adjoining Prince's Square at Main Street and Hughson Street. The plaza creates a pleasant and attractive setting with complementary amenities for pedestrians, midway along the journey between the B-Line LRT and the Hamilton GO Centre.

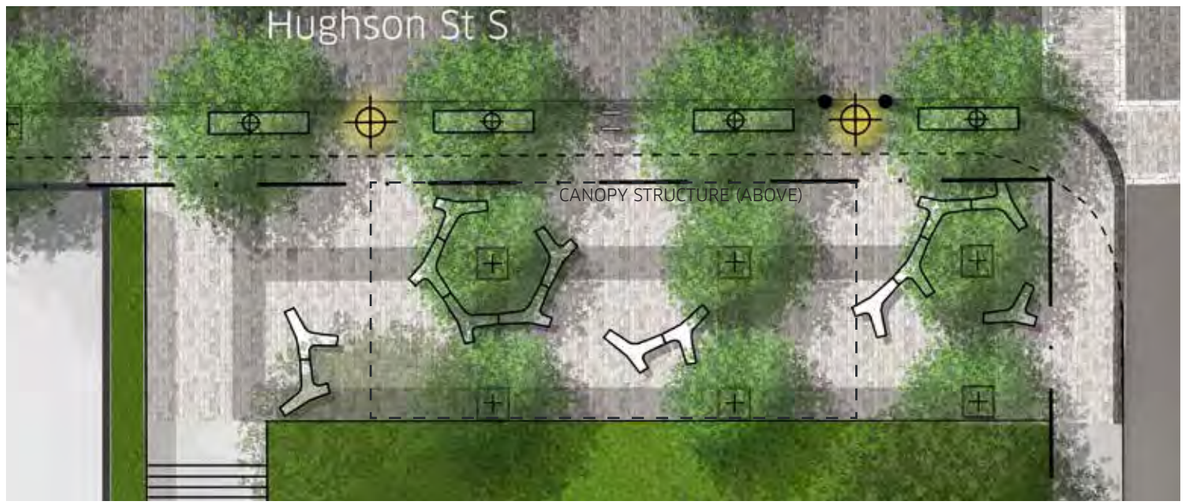
Specifically, the design includes the following components:

- Street trees, arranged in a 'bosque', with tree grates (figures 2.4.3.4, #) and (Section 2.4.3.1);
- Custom bench seating, arranged playfully, to encourage conversation (figure 2.4.3.3), and (Section 2.4.3.1);
- Shrub plantings, in a bed at the base of a feature wall (figure 2.4.3.2), and (Section 2.4.3.1);
- Graphic feature wall, to provide an attractive screen to the adjacent loading bay (figure 2.4.3.2);
- Canopy structure with the option to provide lighting, and/or weather protection for pedestrians (figures 2.4.3.4, 2.4.3.5, 2.4.3.6).



'FIGURE 2.4.3.1: A - A' CONCEPTUAL HUGHSON STREET CROSS SECTION: LOOKING NORTH

FIGURE 2.4.3.2: PRECEDENT FOR DECORATIVE SCREENING OPPORTUNITY



'FIGURE 2.4.3.3: PRINCE'S SQUARE - CONCEPT PLAN

CANOPY STRUCTURE OPTIONS

The concept includes two options for a canopy structure to improve the comfort, and illumination of the Plaza.

Option One (Figure 2.4.3.3 and 2.4.3.4) includes a slender, pre-finished metal structural frame, designed to support hanging baskets, and / or suspended light fixtures, in a manner that does not conflict with the branches of adjacent trees. The extent of the canopy structure is shown in plan (Figure 2.4.3.3).

Option Two (Figure #) reduces the extent of the structure to cover just the eastern edge of the Plaza. The structure would include a roof structure with a wood soffit, to provide some weather protection over the bench seating. The roof structure would also include concealed electrical conduits to support illumination.

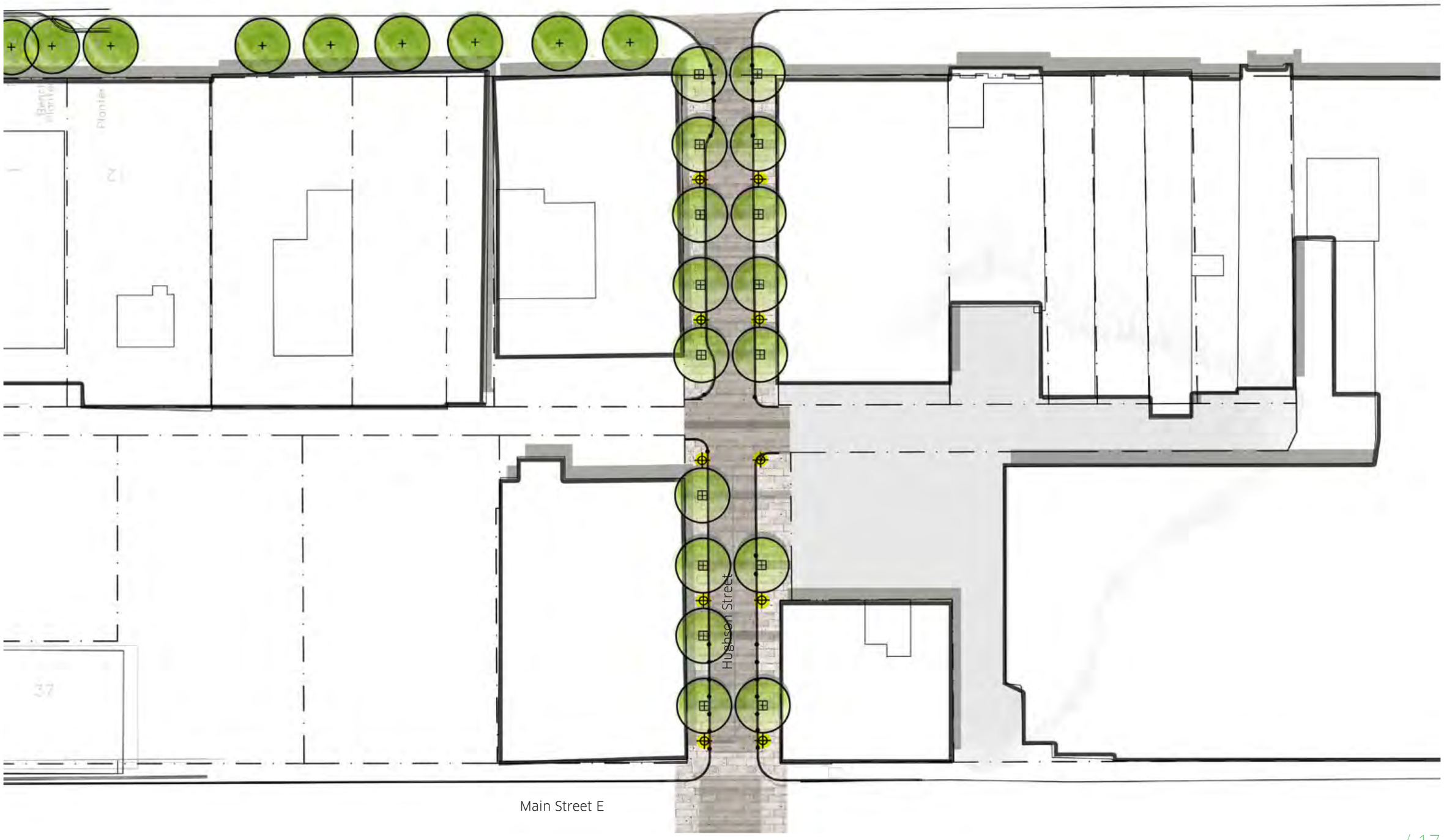
'FIGURE 2.4.3.4: PRINCE'S SQUARE PUBLIC PLAZA: CANOPY STRUCTURE RENDERING

'FIGURE 2.4.3.5: PRINCE'S SQUARE PUBLIC PLAZA: ALTERNATE CANOPY STRUCTURE OPTION, WITH SEATING, WEATHER PROTECTION

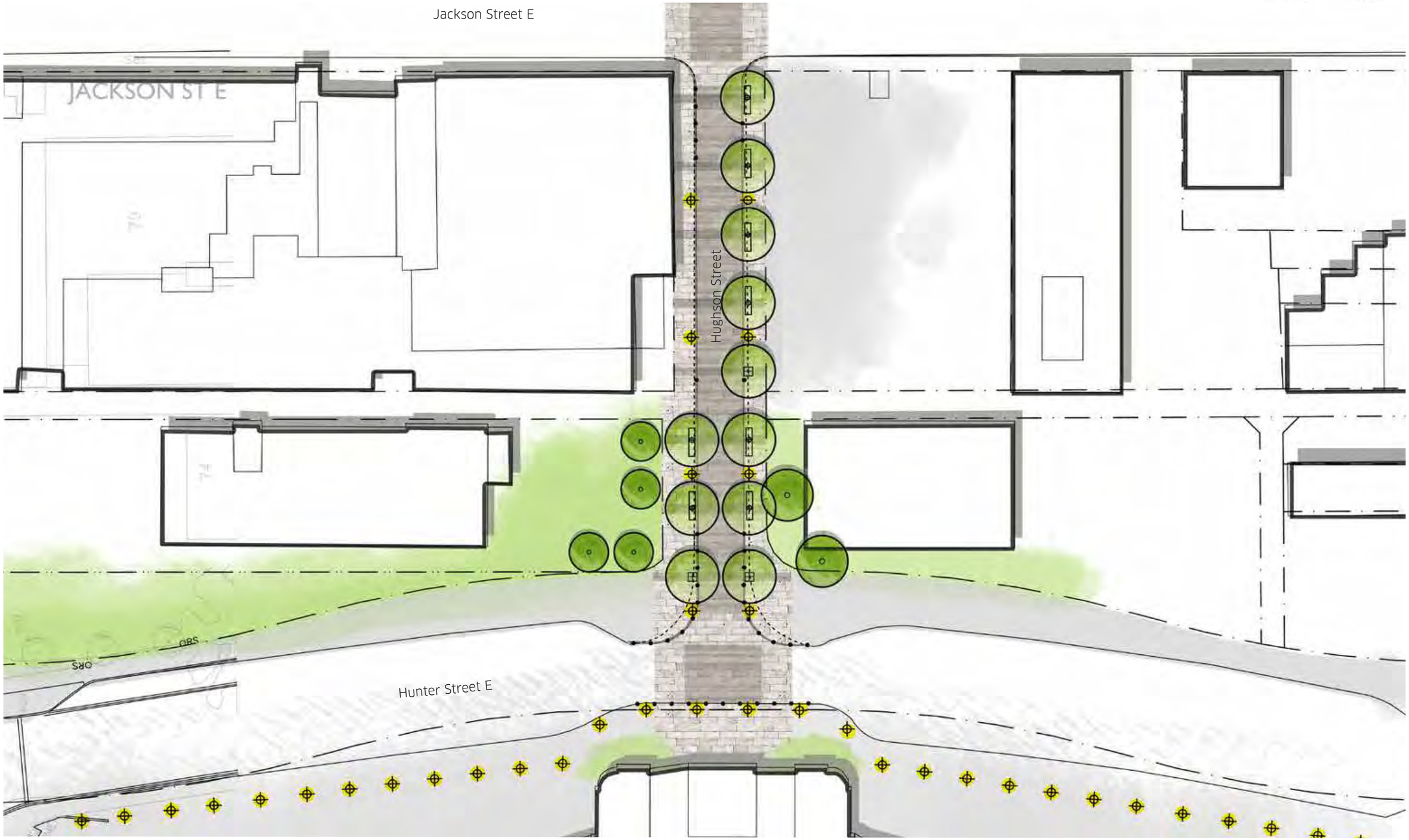
'FIGURE 2.4.3.6: PRINCE'S SQUARE PUBLIC PLAZA: CANOPY STRUCTURE CONCEPT

'FIGURE 2.4.3.7: PRINCE'S SQUARE PUBLIC PLAZA: LOOKING SOUTH TO THE HAMILTON GO CENTRE


JAMES
King Street East
James Street
Hughson Street


King Street
Hughson Street
Main Street E


Main Street E
Prince's Plaza
Prince's Square
(existing)
loading
Hughson Street
Jackson Street E


Jackson Street E
JACKSON ST E
Hughson Street
Hunter Street E

03

LANDSCAPE DESIGN REQUIREMENTS

3.1 INTRODUCTION

This chapter addresses detailed landscape design requirements associated with the conceptual design for the High-Order Pedestrian Connection.

3.2 GENERAL DESIGN REQUIREMENTS

3.2.1 SCOPE

1. The following is the general scope of landscaping and urban design works which Project Co shall perform:
   a. Provision of landscaping and urban design works for new streetscape and public realm within the municipal Right-Of-Way and identified areas of Prince's Square, to be maintained by the Municipality. This includes:
      - Public Realm, Streetscapes, pedestrian amenities and street furnishings;
      - rebuilding of the roadway where curbs are relocated that may include intersection improvements and crossings;
      - landscaping and tree planting and restoration of affected plant materials located within public or private open space; and
      - Integration with Adjacent Development.

3.2.2 GENERAL URBAN DESIGN GUIDELINES

1. Design of the High-Order Pedestrian Connection shall be consistent with the Design Excellence Principles + Requirements, found in Appendix A to Part 1 of Schedule 15-2, for relevant requirements:
   a. Urban design shall be safe, clean and welcoming;
   b. Design shall address long-term sustainability of the system and include features to reduce environmental impacts and promote energy efficiency, while balancing the need for long-term maintenance and operations; and
   c. The design of at-grade elements shall be integrated with James Street Stop Facilities design and reinforce a unique sense of place within the James Street Stop area while contributing to the overall branding and positive image of the transit corridor.

3.3 PLANTINGS

3.3.1 INTRODUCTION

Plantings are integral to the quality and functional performance of the High-Order Pedestrian Connection. The following requirements support plantings that provide: shade; visual interest; a healthy and sustainable natural setting; and a physical structure and frame to define the streetscape.

TABLE 3.3.2.1 Spatial Requirements for Plantings

Furnishings & Planting Zone Width	Planting Options	Notes
>2.5m	Shrubs, Trees (Tables 3.3.3.1, 3.3.3.2)	Street Trees, (Table 3.3.3.3)
2.0-2.49m	Shrubs, Trees (Tables 3.3.3.1, 3.3.3.2)	Street Trees, (Table 3.3.3.3)
1-2.0m	Shrubs (Table 3.3.3.2	Shrubs (Table 3.3.3.2)

3.3.2 GENERAL REQUIREMENTS

1. These planting requirements shall apply to new and replacement plantings to be located along the corridor and within the Project Area of the High-Order Pedestrian Connection.
2. Perennials are permitted to be planted.
3. Landscape design shall conform to the requirements of AODA-Bes and Metrolinx Accessibility Design Guidelines.
4. Plantings within the Furnishings & Plantings Zone shall comply with Table 4.621
5. Plant material shall not obstruct pedestrian, cyclists, and Road Vehicles sightlines, signage and wayfinding or site lighting, and shall not be planted in close proximity to overhead lines and wires.
6. A diverse mix of plant materials shall be clustered to provide year-round shade, texture, shape, colour and seasonal variation.
7. Plant material shall:
   a. Be hardy to the urban conditions and winter maintenance requirements;
   b. low-maintenance, both in the short and long-term;
   c. include at least 50% species that are native to the region;
   d. meet the requirements of Canadian Standards for Nursery Stock;
   e. comply with Canadian Nursery Landscape Association guidelines related to size, development and root ball of plant material.
   f. be planted so as not to obstruct access to maintenance devices;
   g. to provide at least one metre clearance to buildings/structures, for access for structural inspections.

FIGURE 4.6.3: STREET TREE DIVERSITY

3.3.3 STREET TREE REQUIREMENTS

1. New and replacement Project Trees shall be selected from Table 3.6.3.1.
2. New and replacement Project trees shall comply with Table 3.6.3.2.
3. Street trees shall be spaced at least 8m apart.
4. Minimum planting criteria for street tree planting shall be in accordance with the City of Hamilton Street Tree Planting Policy – New Developments, as well as other applicable policies and City by-laws. As referenced in Table 7.5-2: Minimum Planting Criteria for Stops and Facilities.
5. All deciduous trees shall have a minimum branch clearance of 1800 mm from finished grade, or have an upright branching habit.
6. Street Tree species shall be consistent for each block and shall alternate between each Roadway traffic intersetion. See Figure 3.6.3.
7. Provide tree grates for all Project trees.
8. Tree grates shall:
    a. Be constructed of interlocking stone, rubber mats or steel grating;
    b. Be flush with the final surface grade;
    c. Allow at least 1.5 square metres of clear space for air and moisture to reach tree roots and limit compaction of the soil around the tree;
    d. Provide adequately sized openings in the grate to support pedestrian safety; and
    e. Provide adequate space between the opening of the grate and the tree trunk.
9. Project trees for the High-Order Pedestrian Connection shall comply with Table 3.3.3.3.

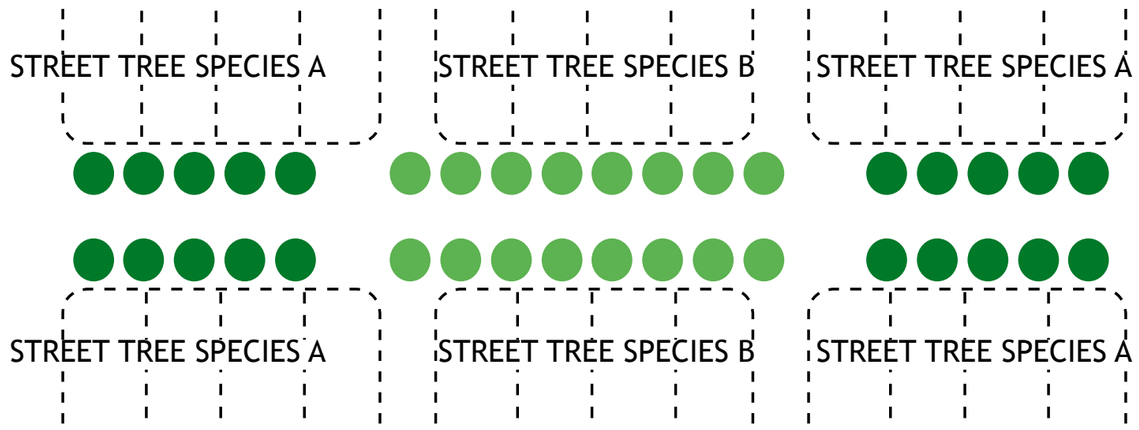


TABLE 3.3.3.1 TREE SPECIES SELECTION FOR FURNISHINGS & PLANTINGS ZONE

Botanical Name	Common Name
Celtis occidentalis	Prairie Sentinel Hackberry
Ginkgo biloba 'Princeton sentry'	Princeton Sentry Ginkgo
Tilia Americana 'Sentry'	Sentry Linden

TABLE 3.3.3.2 Minimum Planting Criteria

Planting Material	Size	Min. Spacing (m)
Deciduous Trees - Large	70 mm caliper	10
Deciduous Trees - Medium	45 mm caliper	8
Coniferous Trees	1.5 m height	4
Coniferous Shrubs	45 cm spread	4
Deciduous Shrubs	45 cm height	4

TABLE 3.3.3.3
High-Order Pedestrian Connection Planting Requirements

Block Face / Location	Min Number of Trees
Hughson Street	
Hamilton GO Centre	
Hunter to Jackson (east side)	8
Hunter to Jackson (west side)	3
Jackson to Main (east side + Prince's Square)	16
Jackson to Main (west side)	5
Main to King (east side)	7
Main to King (west side)	9
King Street	
Hughson to James (south side)	9

SPRING


BUR OAK


HARDY RUBBER TREE


PRAIRIE SENTINEL HACKBERRY


LONDON PLANE TREE


PRINCETON SENTRY


SENTRY LINDEN

AUTUMN


BUR OAK


HARDY RUBBER TREE


PRAIRIE SENTINEL HACKBERRY


LONDON PLANE TREE


PRINCETON SENTRY


SENTRY LINDEN

FIGURE 3.3.3.1: STREET TREES


KARL FOERSTER REED GRASS


SNOWBERRY


BEARDED IRIS


BLUE FESCUE


COMPACT CRANBERRY


SILVER MOUND ARTEMISIA


DAYLILY


BLUE OAT GRASS


ARNOLD RED HONEYSUCKLE

FIGURE 3.3.3.2: PERENNIALS AND GROUNDCOVER

3.3.4 SHRUB REQUIREMENTS

1. Plant shrubs are to be planted in the Furnishings and Plantings Zone, and in planters.
2. Select plants and shrubs to maintain a one metre maintenance area, clear of branches when the shrubs reach their ultimate natural growth. The one metre maintenance zone shall include:
   a. 600mm kill strip,
   b. 200mm wide curb and
   c. 200 mm of planting bed.
3. All shrubs and perennial plantings for landscape areas shall be selected from Table 3.3.4.
4. Maximum mature height of shrubs and perennials shall be 1.2m.
5. Shrubs, perennials and ornamental grasses shall be planted in mass groupings within continuous beds. Multiple rows of each species shall be provided, rather than single rows.
6. Plant perennials in smaller areas as accent plantings. Select perennials that are self seeded and hardy to withstand road salt and harsh road conditions.
7. Plant shrubs no closer than 5m from a street intersection.
8. Minimum plant spacing shall be in accordance with the City of Hamilton policies.
9. All planting beds shall include a ##mm minimum high:
   a. granite or continuous poured concrete curb; or
   b. precast concrete or natural stone retaining wall system.

TABLE 3.3.4 PLANTINGS		PROPOSED PLANTING ZONES			
Botanical Name	Common Name	Typical Urban Streetscape Zone	Enhanced Urban Streetscape Zone	Typical Greenscape Zone	Enhanced Greenscape Zone
SHRUBS					
Amelanchier alnifolia ‘Regent’	Serviceberry			✓	✓
Hydrangea paniculata	Hydrangea	✓	✓	✓	✓
Juniperus	Juniper	✓	✓		
Lonicera tatarica ‘Arnold red’	Arnold Red Honeysuckle			✓	✓
Taxus sp.	Dense Yew	✓	✓	✓	✓
SMALL TO MEDIUM TREES					
Celtis occidentalis	Prairie Sentinel Hackberry	✓	✓	✓	✓
Eucommia ulmoides	Hardy Rubber Tree			✓	✓
Ginkgo biloba ‘Princeton sentry’	Princeton Sentry Ginkgo	✓	✓		
Plantanus x acerfolia	London Plane Tree	✓	✓	✓	✓
Quercus Macrocarpa	Bur Oak			✓	✓
Tilia Americana ‘Sentry’	Sentry Linden	✓	✓	✓	✓
PERENNIALS AND GROUNDCOVER					
Calamagrostis ‘Karl Foerster stricta’	Karl Foerster Reed Grass		✓	✓	✓
Festuca glauca	Blue Fescue		✓	✓	✓
Helictotrichon sempervirens	Blue Oat Grass		✓	✓	✓
Hemerocallis	Daylily		✓	✓	✓
Iris germanica	Bearded Iris		✓	✓	✓
Miscanthus sinensi	Maiden Grass		✓	✓	✓
Silver Mound Artemisia	Wormwood		✓		
Symphoricarpos	Snowberry		✓	✓	✓
Viburnum trilobum	Compact Cranberry		✓	✓	✓

FIGURE 3.3.3.5: STRUCTURAL SOIL CELLS PROVIDING INCREASED SOIL VOLUMES FOR TREE GROWTH. ILLUSTRATION: CITY GREEN.

FIGURE 3.3.3.6: STRUCTURAL SOIL CELLS IN A CONTINUOUS TRENCH.

3.3.5 SOIL REQUIREMENTS

.1 SOIL VOLUME REQUIREMENTS FOR TREES

1. All Street Trees shall be planted in a minimum 2m wide and 450mm deep planting trench.
    a. Trench shall be continuous along the entire row of trees except where interrupted by sidewalks, driveways, utilities or Roadway accesses.
    b. Tree planting trench shall extend a minimum of 4m beyond the last tree in the row.
2. Individually planted trees shall include at least 21 cubic metres of soil.
3. A grouping of 2 or more trees in a soil bed shall include at least 16 cubic metres of soil per tree.
4. The use of structural soils, meaning engineered granular soils compacted to support heavy loading, shall not be permitted.
5. Structural Soil Cells are permitted to be used as a means to achieve the minimum soil volumes where support for heavy loading is required.

.2 STRUCTURAL SOIL CELLS

Urban space is a difficult environment for tree growth. Hard paved surroundings limit access to rainwater irrigation and the engineering requirenments for hard landscapes are completely the opposite of what the tree needs to grow into.

Modular Silva/Strata cell systems with healthy soil help provide optimal conditions for trees root systems while still protecting the built environment.

Cells are filled with high-quality, uncompacted soil to grow trees and manage the rate, quality and volume of stormwater. The modular system can be easily sized to accommodate the needs of any site without compromising effectiveness or site design.

Silva/Strata cells integrate the tree and soil with stormwater management, utilizing the proven capacity of soils to act as an underground bioretention system. Through soil filtration, bioremedation and evapotranspiration, Cell system treats stormwater directly on-site, restoring ecosystem services and saving money while protecting one of our most valuable resources.

1. Figures ## and## illustrate typical tree planting in continuous pit using Silva or Strata cell system.
2. Provide a detailed technical maintenance and operations plan for all Structural Soil Cell systems and components within the Infrastructure.
3. Structural Soil Cell system components shall:
    a. have been manufactured and on the market for a minimum of ten (10) years;
    b. have a minimum twenty (20) year manufacturer's warranty on system and components:
        - Warranty shall be issued in the City's name by the manufacturer;
    c. include inlets, including sediment basins for Structural Soil Cells used as Stormwater Management Facilities;
    d. include an under-drainage system and outlets for Structural Soil Cells used as Stormwater Management Facilities or for tree trenches;
    e. be integrated into the Structural Soil Cell system design and be integrated with the streetscape design requirements for Structural Soil Cell maintenance structures, such as access locations and sediment catch basins;
    f. be designed for freeze and thaw cycle, if used for Stormwater Management Facilities; and mitigate buildup of road salts and walkway de-icing agents within planting soils if system is being used for Stormwater Management Facilities.
4. Coordination and written agreements with Utility Companies shall be required if franchise Utilities cross through or are located within Structural Soil Cells.
5. All Structural Soil Cells shall be registered as buried Utilities with the Utility provider having jurisdiction.

.3 PERENNIAL AND SHRUB PLANTING BED SOIL

1. All shrub and perennial planting beds shall be constructed with City of Hamilton standard "No. 1 Mix" topsoil mixture.
2. All perennial and shrub planting beds shall be constructed with a minimum planting soil depth of 450mm.
3. Provide endo / ecto mycorrhiza for all shrubs and perennials as per supplier's instructions.

FIGURE20: TABLE OF RECOMMENDED PLANTINGS

3.4 HARDSURFACES

3.4.1 INTRODUCTION:

Surface paving treatments within the public right of way can enhance wayfinding, contribute to system identity, and aid in pedestrian flow. Surface treatments can also act as an important component of barrier-free design by assisting vision-impaired individuals in navigating the transit corridor.

The design approach deploys a palette of hardscapes that is durable, high quality, and composed of complementary colours, patterns and textures. A key objective is to integrate the look and feel of sidewalks and crosswalks with the street, to feel like one integrated, pedestrian oriented space.

PAVING MATERIAL TYPES FOR HARD SURFACES

Typical

Cast-in-Place Concrete:

FIGURE 1: BROOM FINISH-NATURAL COLOUR
BROOM FINISHED, NATURAL COLOUR CONCRETE (CITY OF HAMILTON STANDARD)

STAMPED, SAW CUT SCORING, INTEGRALLY COLOURED CAST-IN PLACE CONCRETE

CONCRETE PERMEABLE PAVING.

POURED CONCRETE PAVING.

Enhanced

Cast-in-Place Concrete:

STAMPED, SAW CUT SCORING, INTEGRALLY COLOURED CAST-IN PLACE CONCRETE

TINED FINISHED, SAW CUT SCORING, INTEGRALLY COLOURED CAST-IN-PLACE CONCRETE

BROOM FINISHED, SAW CUT SCORING, INTEGRALLY COLOURED CAST-IN-PLACE CONCRETE

SANDBLAST FINISHED, SAW CUT SCORING, INTEGRALLY COLOURED CAST-IN-PLACE CONCRETE

FIGURE 2: BROOM FINISH, EARTH TONE, INTEGRALLY COLOURED

FIGURE 3: SANDBLAST, EARTH TONE, INTEGRALLY COLOURED

FIGURE 4: BROOM FINISH, EARTH TONE, INTEGRALLY COLOURED

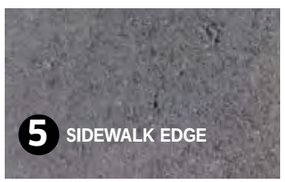
Precast Concrete Paving Stone:

MANUFACTURER: UNILOCK
PRODUCT: SERIES 3000
COLOUR: BLACK GRANITE OR SIMILAR

MANUFACTURER: UNILOCK
PRODUCT: UMBRIANO
COLOUR: GRANADA WHITE OR SIMILAR

MANUFACTURER: UNILOCK
PRODUCT: UMBRIANO
COLOUR: FRENCH GREY OR SIMILAR

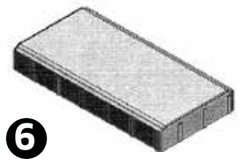
MANUFACTURER: UNILOCK
PRODUCT: SERIES 3000
COLOUR: GLACIER OR SIMILAR



MANUFACTURER: UNILOCK
PRODUCT: UMBRIANO
COLOUR: MIDNIGHT SKY OR SIMILAR

Grooved Pedestrian Ramp at Intersections

MFR: UNILOCK
PRODUCT: UMBRIANO - CNIB GROOVED DIRECTIONAL PAVING SLAB
COLOUR: GRANADA WHITE OR SIMILAR



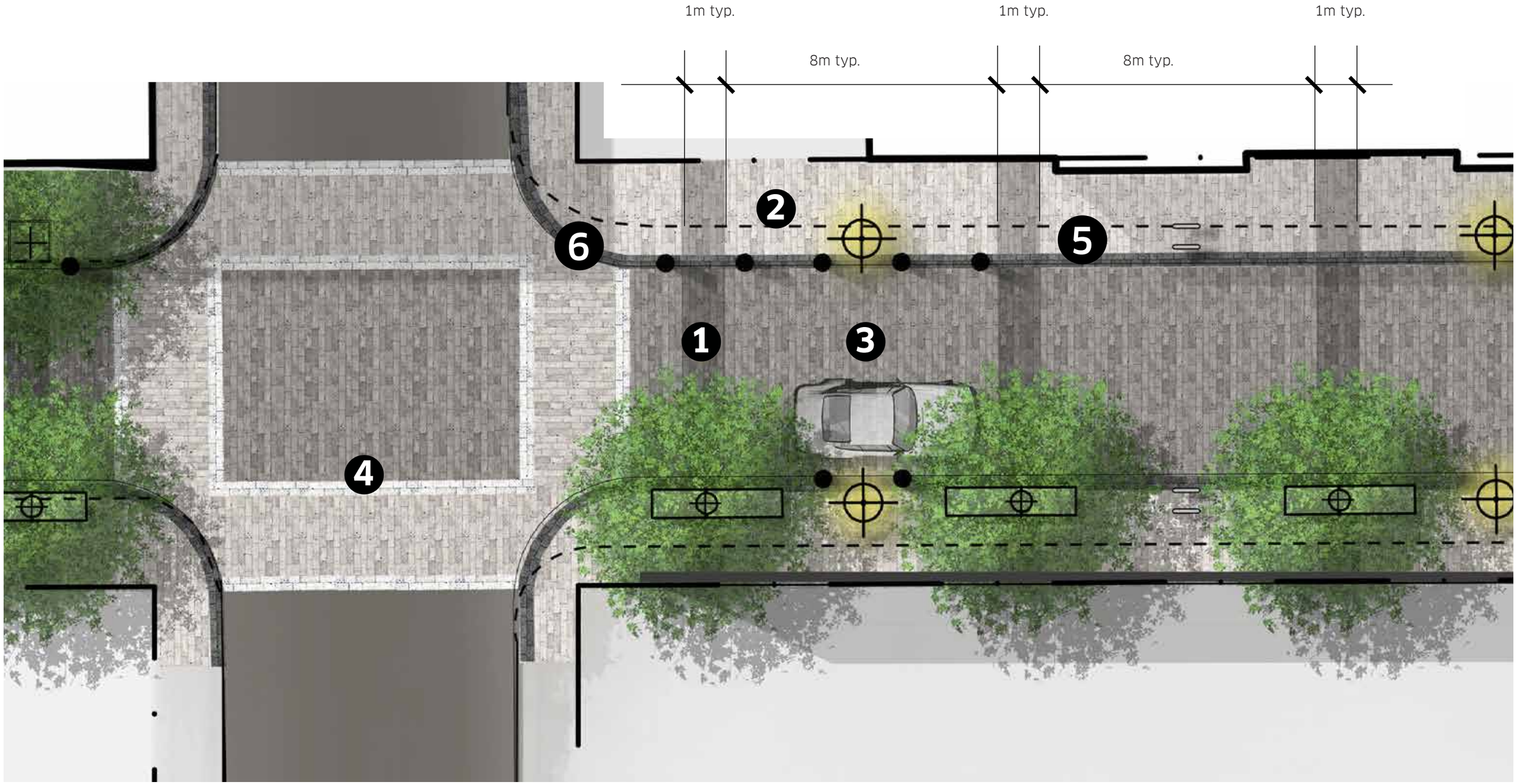


FIGURE 3.4.1.1: PAVING DEMONSTRATION PLAN AT HUGHSON STREET.

3.5 FURNISHINGS

3.5.1 INTRODUCTION:

Furnishings serve an important role in the design of the street, contributing amenities that improve the pedestrian experience, support safety, and add visual appeal to the street.

3.5.2 REQUIREMENTS

The following requirements shall apply:

1. Street furnishings shall meet applicable City of Hamilton design standards or requirements;
2. Street furnishings are to be located within the Furnishings Zone, unless indicated otherwise in this document;
3. Street furnishings include:
    a. Benches;
    b. illuminated bollards;
    c. waste and recycling receptacles;
    d. bike racks;
    e. tree grates / paving;
    f. canopy structure;
    g. decorative screen.
4. Benches and Waste and Recycling Receptacles shall be made from safe, non-toxic, sustainable materials and located or situated to ensure night visibility.
5. Tree grates/paving shall be provided for all Project Street Trees.
6. Quantity of furnishings for Pedestrian Priority Zones shall comply with Table 4.8.2.
7. Outside of Pedestrian Priority Zones, typical Urban and Greenscape zones shall have minimum 1 bench and 1 waste receptacle per block.
8. Enhanced Urban and Greenway zone should have minimum 2 benches and 2 waste receptacles per block. In busy and priority destinations along the Corridor, such as Pedestrian Areas, transit stops and areas of visits and views, number of benches could be raised.
9. Benches to be set back from back of curb edge a minimum of 600mm.
10. Bike racks to be installed in view of, and close proximity to LRT Stop platforms.

AMENITY ZONES

1. Amenity zones delineate space within the streetscape to locate site furnishings in an organized manner, minimizing the amount of ‘clutter’ and ensuring that furnishings do not obstruct walking areas, or key sightlines across intersections. Amenity Zones are located adjacent to the sidewalk, as noted in Figure ## above.
    a. Elements within the Amenity Zone include:
        - Bicycle racks,
        - Benches,
        - Waste and recycling receptacles,
        - Plantings,
        - Newspaper boxes.

KEY PLAN

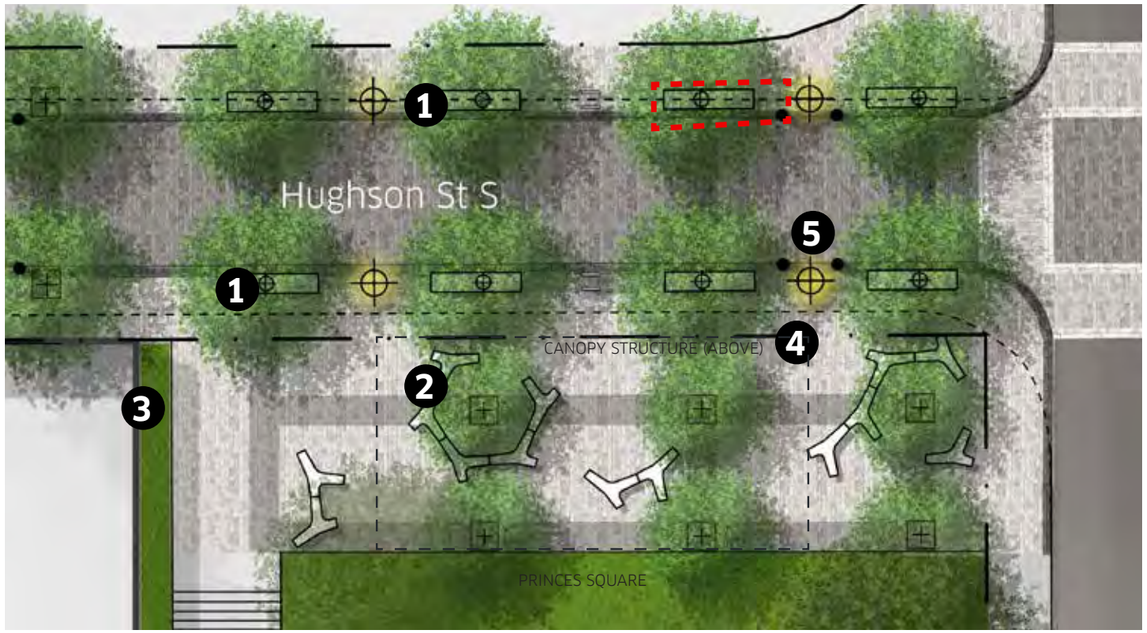
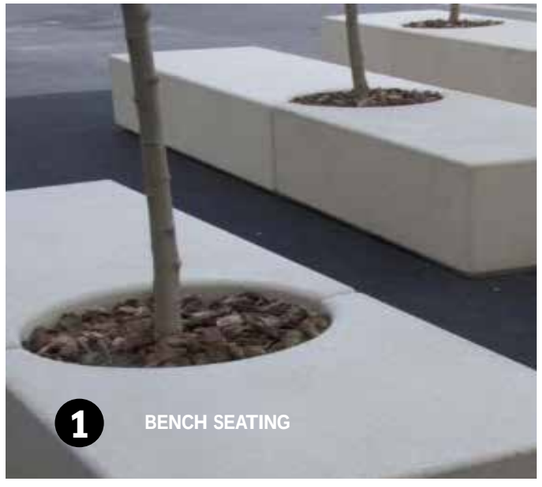


TABLE 3.5.2 Furnishings Requirements

Block Face / Location	Min Number of Benches	Min Number of Waste Receptacles	Min Number of Bollards	Min Number of Bike Racks
Hughson Street				
Hamilton GO Centre Plaza	1	1		2
Hunter to Jackson (east side)	10	2	6	2
Hunter to Jackson (west side)	5	2	6	2
Jackson to Main (east side + Princes Square)	8	2	6	2
Jackson to Main (west side)	8	2	6	2
Main to King (east side)	8	2	6	2
Main to King (west side)	8	2	6	2
King Street				
Hughson to James (south side)	2	1		1
Hughson to James (north side)	2	1		1


1
BENCH SEATING


3
DECORATIVE SCREENING
OPPORTUNITY


6
WASTE RECEPTACLE


5
LIT BOLLARD


2
BENCH SEATING


3
DECORATIVE SCREENING
OPPORTUNITY


4
PLAZA CANOPY

3.6 LIGHTING

3.6.1 INTRODUCTION:

Pedestrian lighting plays a number of important roles along the Corridor, including: providing visual continuity along the length of the street; highlighting the character and identity of the corridor, and neighbourhood; contributing to a safe environment; and providing a distinctive design feature to enhance the pedestrian experience. For instance, lighting can highlight iconic buildings and distinctive public squares and plazas. The design of light standards and fixtures can contribute to the vision for a distinctive corridor identity. The design of energy efficient lighting is also an important opportunity to reduce energy use and carbon emissions.

3.6.2 REQUIREMENTS:

1. Pedestrian-oriented light poles shall be between 4.0 - 6.0 metres in height.
2. Pedestrian lighting should be installed for the extent of the High-Order Pedestrian Connection Area, on Hughson Street.
3. Fixtures should be consolidated with other street elements. For instance, by mounting pedestrian lights on the roadway light pole, or a separate pole located within the streetscape Furnishings Zone.
4. Where shared-use poles are used, all pedestrian lighting shall:
    a. be provided with poles that are consistent in shape, colour and texture with the applicable shared use pole; with pedestrian light poles having a constant diameter not exceeding 150 mm; and
    b. include LED luminaires, lighting control cabinets, lighting controller bases, photo cells, receptacles, and surge suppression that comply with City of Hamilton Standards.
5. Maintain uniform spacing and luminance where lighting is provided on both sides of the Roadway.
6. Install pedestrian light standards between 18m to 20m;
7. Install pedestrian light standards as indicated on the High-Order Pedestrian Streetscape Drawings.