

STREET DESIGN & FURNITURE STANDARDS FOR THE HAMILTON LRT CORRIDOR

January 3, 2025

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1 Policy implementation and financial considerations

1.1 Policy implementation

The **Street Design and Furniture Standards for the Hamilton LRT Corridor** are providing a set of design objectives and standards for preferred street furniture choices within the future public realm along the LRT Corridor right of way. The document is an independent chapter and update to the **City of Hamilton Co-ordinated Street Furniture Guidelines** (August 2015), building on best practices and principles highlighted within. Section 2.5.3 (Transit Corridors) in the guidelines acknowledges that: "Street furniture that is part of Hamilton's transit system can be uniquely differentiated with a recognizable brand identity to improve the image of transit and provide a better experience for the transit passengers, as the transit network evolves in the future. It is important that this brand differentiation be consistent along the line, particularly where higher order services, including express bus are provided. Street furniture set(s) may be designed specifically to brand the line or differentiated level of service."

Along with the guidelines document, the standards support the implementation of the **Complete Streets Design Manual** (July 2022) and respond to recommendation from Council, associated with the Council approved **Complete Streets Design Manual (PED21020(a)/PW21002(a)) (City Wide)** staff report, to update roadway design manuals and guidelines to reflect the manual.

Recommendation wording for this staff report states: "(...)(a) That the Complete Streets Design Manual attached as Appendix "A" to Report PED21020(a)/PW21002(a) be approved as the basis for planning and designing City streets; (b) That staff be directed to update roadway design manuals and guidelines to reflect Complete Streets Design Manual, including, but not limited to, the Construction and Materials Specifications Manual, Traffic Signal and Pavement Marking Designs Drawings, and other documents identified by staff; (...)"

1.2 Financial considerations

The LRT Project Office will negotiate the capital cost with Metrolinx through the implementation of the LRT project. Maintenance costs, which involve repair and replacement of street furniture, will be the responsibility of the asset owners. Any incremental maintenance costs associated with these standards post LRT construction, compared to the existing pre-LRT conditions, will be subject to council approval. The LRT Project Office or asset owner will seek council approvals on the maintenance budget through the budgeting process at a later time, closer to the project's substantial completion. It is anticipated that the maintenance costs will be bundled with other City financial obligations for the overall operations and maintenance of the LRT system.

2 Introduction

The intent of this document is to identify preferred solutions for public realm elements along the LRT Corridor, focusing on harmonization of design, scale, materials, and location, to enhance it and establish it as an identifiable streetscape in Hamilton. It also provides references to established City policies, guidelines, and standards.

Solutions and standards summarized in the document refer to best practices for the design and placement of streetscape elements, aiming to:

- Establish a consistent and cohesive stylistic theme across the Corridor
- Address aspects of functionality, aesthetic value, flexibility in layout and placement, availability for sourcing, and durability
- Promote equitable and inclusionary design by ensuring the ease of pedestrian movement and accessibility through the design and placement of furniture, landscaping, and surface treatment
- Enhance the safety of City streets
- Promote and enhance Hamilton's civic identity
- Promote climate mitigation and adaptation through design choices that address climate impacts

Specific objectives and design principles for street amenities and furniture are defined in Section 6.3.

3 City of Hamilton – Reference Criteria, Guidelines, and Standards for Streetscaping

3.1 General streetscape design in the ROW

The **Complete Streets Design Manual** (July 2022) establishes a set of criteria and best practices for street design in the City of Hamilton, based on ‘Complete Streets’ principles. They are intended to identify the preferred dimensions and organization of space in the ROW, prioritizing pedestrian accessibility and comfort.

3.2 Street furniture placement

The **City of Hamilton Co-Ordinated Street Furniture Guidelines** (August 2015) provides direction regarding appropriate placement of street furniture and organization of the pedestrian realm within the streetscape; it also identifies preliminary street furniture selection criteria.

3.3 Tree, groundcover planting, and other street landscaping requirements

Tree and groundcover selection and planting standards, as well as other street landscaping requirements, are available in the City’s **Forestry and Horticulture - Design and Preservation Manual for Assets on Public Property** (December 2024).

3.4 City accessibility standards

Please refer to AODA (Accessibility for Ontarians with Disabilities) standards and to the **City of Hamilton Barrier-Free Design Guidelines** (2006). Sidewalk features are to be installed according to the specifications listed in the City of Hamilton Std. RD124.01 – RD 124.03.

3.5 Urban Braille design

Information regarding principles, installation, design criteria and guidelines for the City’s Urban Braille System are available on the City’s Website. Please refer to City of Hamilton Std. RD 124.03 for technical details and consult with staff regarding updates to this standard and its application.

3.6 Parking pay stations

The City has specific walk-up parking machine placement and sizing requirements, which may impact streetscape design in those locations where on-street parking will be provided.

The minimum area required for a parking pay station is 0.6 metre x 0.6 metre, with accessible access. The clear space in front of the machine should be minimum 1.2 metres x 1.2 metres in size (1.5 metres preferred); the clear space may be the sidewalk area.

4 Streetscape design in the LRT Corridor

4.1 Typical streetscape design (pedestrian realm)

The pedestrian realm – or pedestrian zone - is that part of the street that provides physical space for pedestrian use, including sidewalks and, most often, street trees and other amenities. A quality pedestrian realm is a significant component of a vibrant and attractive urban environment, inviting and fostering pedestrian activity and supporting civic character and identity.

Generally, this space is perceived as a seamless area, stretching between the curb face and the building face, regardless of the threshold between public and private land. It should generally be designed as an integrated, seamless space, taking advantage of the combined public and private open area to accommodate pedestrian movement, pedestrian access to adjacent uses, spill-over patios, street furniture, street trees and green areas, as well as buffer elements between traffic, pedestrians, and buildings. However, for the purpose of this document, the pedestrian realm referred to is that part of the public ROW between the curb face and the edge of the ROW, which is subject to public investment, design, and construction.

The pedestrian realm within an urban streetscape is typically organized in four zones: the buffer zone, the street tree / furniture zone, the walkway zone, and the frontage zone (as outlined in the City's Complete Streets Design Manual). Depending on context, zones may be combined or defined less formally. Clear definitions and further information are available in the Complete Streets Design Manual document.

The **walkway zone** shall be treated with Urban Braille design and surface treatment along the entire corridor. Special pavement shall be considered for the buffer zone, the street tree/furniture zone, and the frontage zone in special design areas; quality concrete surfacing with brushed finish can be used instead in typical contexts.

Street furniture may be incorporated in the **buffer zone** (which can accommodate signs, poles, landscaping, bollards, and snow storage), the **street tree / furniture zone** (typically designed to include landscape beds, street tree plantings, benches, special light elements, waste receptacles, etc.), and/or the **frontage zone** (which could also accommodate a series of elements of furniture such as benches or bike locks). The buffer zone and the street tree/furniture zone may often be combined, to maximize opportunities for landscaping.



Figure 1 - Illustration of pedestrian zones. Source: City of Hamilton Complete Streets Design Manual

4.2 Green infrastructure in streetscape design

The **Complete Streets Design Manual** call for prioritization of low impact stormwater management features along streetscapes, where practicable, to mitigate urban heat island effect, improve biodiversity and air quality, and to facilitate stormwater management. Providing green areas in the urban landscape will complement sustainable and active transportation by improving comfort and safety for people walking, cycling, or waiting for transit.

See Section 6.2 (Landscaping) for further details.

4.3 Types of streetscapes in the LRT Corridor

Below is a general classification of streetscapes in the LRT Corridor, based on their capacity to accommodate different components of the pedestrian zone or realm.

4.3.1 Substandard Width Pedestrian Zone (under 3.0m)

This profile includes a curbed sidewalk, a buffer zone at the curb, and a frontage zone along the building edge, or a combination of these.

Design elements: This type of streetscape will often be too narrow to include more than the typical concrete sidewalk pavement with Urban Braille treatment. The buffer zone could incorporate special pavement or texture, as well as safety bollards, where needed. Special pavement may be considered for the frontage zone.

4.3.2 Constrained Width Pedestrian Zone (3.0m to 4.75m)

This condition will generally include a sidewalk with a buffer zone, and potentially a reduced street tree/furniture zone and/or frontage zone along the building edge.

Design elements: Special features such as decorative pavement, bollards, signage, and pedestrian scale light poles may be included in the buffer zone. The frontage zone may be treated with decorative pavement and, where space allows it, elements of street furniture (ex. benches, waste receptacles, lighting elements and bike locks).

The allocation of elements in the buffer zone and street tree/furniture zone design should be approached creatively, to maximize opportunities for street tree plantings in open beds. For example, snow storage and features such as signage or other elements without significant underground structure may be integrated with open planting beds. Hybrid tree planting solutions with a combination of open bed and slab covered soil trench (and/or potentially soil cells) may accommodate bike racks or other light-anchored features on the concrete slab. Layering underground infrastructure under tree planting trenches or soil cells should also be considered where feasible, to facilitate landscaping opportunities along the corridor.

4.3.3 Preferred Minimum Width Pedestrian Zone (equal or greater than 4.75m)

A standard pedestrian realm profile will have a sidewalk framed by a curb-side buffer zone, a furniture/street tree zone, and a functional frontage zone (or spill-over zone) along the building edge.

Design elements: Special pavement, bollards, signage, pedestrian scale light poles, special light fixtures, can be placed in the buffer zone, depending on context, at the direction of City staff. The frontage zone can incorporate special pavement and street furniture compatible with the context and complementary to the core line of furniture.

The furniture/street tree zones permit different surface treatments; the inclusion of street trees in open soil beds should be prioritized. Alternatives to open soil planting beds are noted in Section 6.2. Layering underground infrastructure under tree planting trenches or soil cells should also be considered where feasible, to facilitate landscaping opportunities along the corridor. Where layering is not feasible and street tree planting solutions cannot be accommodated, this zone shall be furnished with benches, waste receptacles, bike locks, etc., as appropriate.

5 Typical street furniture placement and site-specific streetscape design

5.1 Typical locations for street furniture placement

Pedestrian crosswalks, bus stops, important destinations (such as grocery stores, institutional uses like schools or community centres, parks, or parkettes, and longer stretches of commercial frontages), will incur higher pedestrian volumes and should be the target areas for bench, waste container, and bike parking locations. These areas should also be provided with adequate pedestrian lighting for safe after-hours use.

General:

- The 5 minute walk – or ‘the pedestrian shed’ - is generally considered to be the typical distance people are willing to walk before opting to drive. The distance translates generally to about 400m (or the length of 3-4 street blocks). Priority should be given to installing benches within this distance span along the corridor to provide periodic comfort zones and to encourage pedestrian activity.
- Benches should be placed away from the main walkway and buffered from the vehicular lane, preferably in association with a planting bed or near building faces (see further distance separation criteria in the **City of Hamilton Co-ordinated Street Furniture Guidelines**).
- Bench use will depend on adequate microclimate conditions of wind, shade, and sun and should be placed in locations where these conditions are met or can be achieved on site.

Pedestrian crosswalks:

- A configuration including a bench and waste bin should be considered on each side of the street, near pedestrian crosswalks, where medium pedestrian activity is expected.

Bus stops:

- Benches should be installed at bus stops without integrated seating or those bus stops with higher user volumes. If the context has significant pedestrian activity due to adjacent commercial or institutional uses, a waste bin and bike parking should also be included.

Important pedestrian destinations (such as grocery stores, institutional uses like schools or community centers, parks, or parkettes, and longer stretches of commercial frontages):

- Active street frontages should include at least one bench, waste bin, and bike parking configurations, near important primary entrances, in the frontage zone, or in the street tree and furniture zone.
- Where this type of frontage encompasses the majority of a block, more elements in this configuration could be included, pending availability of space in the frontage zone or the street tree/street furniture zone. Their spacing and placement should be coordinated with the location of existing or future landscape or tree planting beds and should prioritize proximity to uses encouraging pedestrian stationary activities (for ex. near cafes, restaurants, public institutions, green amenity).

5.2 Special design features for BIA areas

Local BIAs and other special character areas (such as designated historic districts) may wish to customize the look of their street frontage, to emphasize their presence along the City's streetscapes.

Variations to standard street furniture models – as established through this document and other City standards, specifications, or criteria – are discouraged, to ensure consistent streetscape design along the LRT corridor. Customized enhancements may be achieved with special add-on elements (such as signage, decorative banners), public art features, or enhanced landscaping (pending on availability of space) and shall build on landscape and surface treatments based on recommendations in this document and/or existing City requirements, standards, and criteria, to retain compatibility with the corridor identity.

5.3 Standards for the International Village and Gore Park (BIAs)

General design standards for the International Village and Gore Park areas are provided by **The Gore Standard: Hardscape Design** (2019). The application of this standard may include variations in color and pattern of the decorative pavement, subject to detailed corridor design.

Other minor variations from this standard may be expected in respect to special streetscape elements – such as landscape features, street furniture – which shall be informed by best practices and standards outlined in this document. The design of pedestrianized side streets or parkettes in this area, where applicable, may introduce unique configuration of space, unique landscape solutions, and elements of public art, subject to City requirements and criteria.

Note: Detailed design of this corridor segment is in progress, pending development of the LRT concept. This section may be updated at that time.



Figure 2 - Gore Park - Street Furniture

5.4 Other locations with special streetscape design

The following sites will also be considered for special streetscape design:

- McMaster University
- Jackson Square
- Eastgate Square
- Other potential sites and parkettes, as the Corridor design develops and generates areas with wider streetscape segments and contextual significance (for example near parks, bus hubs, LRT stops, important pedestrian routes or special community destinations).

Design for these areas shall refer to the core line of furniture and surface treatments, to retain consistency with the corridor streetscape character. Additional or alternative compatible street furniture, landscaping features, pavement elements, as well as public art, are encouraged and

supported. Shade elements, such as awnings, canopies, trellises, or other types of similar installations should be used in those areas with limited tree canopy and expected higher pedestrian traffic.

6 Elements of streetscaping

6.1 Pavement

6.1.1 Typical concrete pavement

The standard default treatment for hard surfaced elements in the pedestrian realm – buffer zones, walkways, and frontage zones - shall be concrete. Special Urban Braille treatment will be used for walkways.

A light color palette should be used, where applicable, to minimize impacts of solar radiation.

6.1.2 Decorative pavement

Placement:

- Decorative pavers shall be considered for the buffer zone, furnishing zone, and frontage zone, where applicable. They shall be installed on a concrete substrate, for durability.
- Where the streetscape is designed with a ‘shared street’ or ‘curb-less street’ profile prioritizing pedestrians the entire ROW – excluding the Urban Braille sidewalk – shall be surfaced with durable decorative pavement.
- Accent paver strips with different colors or textures should be employed to delineate special zones in the pedestrian realm or the ROW (for ‘shared street’ segments), where this distinction is useful. For example, furnishing zone areas, special landscape areas, or, in the case of ‘shared street’ design, transitions from sidewalks to roadway space or to parking areas can be delineated with accent strips to help visually organize the space for multiple users.
- Accent paver areas with different colors or textures could be used as an alternative method to accent paver strips, to highlight or define such special zones.

Type, color, material:

- Typical details, including materials, size, colors, application, and construction, are provided in “The Gore Standard: Hardscape Design”.
- As a general guideline special pavement materials or treatments shall be durable and safe for pedestrian use.

6.2 Landscaping

6.2.1 General guidelines for planting beds

All planting beds shall have sufficient soil depths for the plant material specified as well as a sub-drain connected to the storm sewer. Native planting and species shall be given preference and comply with the approved lists of plant species identified in the City's **Forestry and Horticulture - Design and Preservation Manual for Assets on Public Property** (December 2024). Raised curbs/edges or low decorative rail/fence shall be used to protect planting and soils from damages caused by snow clearing, de-icing salts and high pedestrian activity. Where feasible, incorporate seating wall edges and wall-mounted benches to the planting beds to provide additional seating opportunities. Please note design standards for curbed beds in the specifications appendix to the manual mentioned above.

Consider the use of Low Impact Development (LID) storm water management facilities wherever practicable. Surface facilities such as Bioswales and Rain Gardens are better suited where adequate space is allocated to planting areas in the street tree/furnishing zone. Constrained areas are better served with below-grade facilities utilizing soil cell systems.

6.2.2 Street trees

Street trees are a priority component of the pedestrian realm. A range of street tree planting conditions are supported, depending on their suitability to context and availability of space (above and underground) in the boulevard:

- Street tree plantings in open beds (soil trenches);
- Street trees in hybrid systems (open beds combined with soil cell systems); and
- Street trees in closed systems (soil-cell systems).

Tree plantings in open beds or hybrid systems are preferred as these systems generally provide better tree growing conditions.

For specific standards and guidelines regarding street trees, including preferred species, supported planting solutions, required soil volumes, etc., please see the City's **Forestry and Horticulture - Design and Preservation Manual for Assets on Public Property**.

6.2.3 Decorative plant material for open beds or planters

Open beds or planters shall incorporate low-maintenance, year-round coverage plant material, resistant to salt and with a clean appearance. The selection of plant material can consist in sod, or a selection of ground-cover species, perennial grasses, and shrubs.

For preferred species and planting standards, please see the City's **Forestry and Horticulture - Design and Preservation Manual for Assets on Public Property**.

6.3 Street furniture (Objectives, Principles, and Theme)

Objectives:

Street furniture shall be of superior design, well sited, maintained, functional, accessible, and safe. It shall help build and support Hamilton's civic identity and establish a sense of visual continuity along the LRT Corridor.

Principles:

- Modularity and flexibility – Street elements shall allow for different placement and configuration opportunities, to respond to different contexts and their spatial parameters. Some parts of furniture elements should be customizable to support special conditions or character in different areas.
- Style/design coordination across family of elements – Visual continuity and consistency in style and design are important to creating a special identity for the LRT Corridor. The design, details, materials and colors should be simple, elegant, and timeless, to respond to the variety of Hamilton architecture and be compatible with other styles and design themes. The family of street furniture should be chosen to allow additional or optional elements, to adapt to context.
- Accessibility – The selection of elements should prioritize inclusionary and equitable design, to accommodate people with disabilities or impairments and support usage across ages (from children to the elderly). Furniture placement shall provide for clearances which accommodate free pedestrian, wheelchair, or scooter movement and shall ensure safe movement for the visually impaired by having bases that are cane detectable.
- Safety – Elements must use safe design and details to prevent injury. Their placement shall address aspects related to visibility, sightlines, accessibility, and ingress/egress.

- Durability and ease of maintenance – Materials and finishes shall have a proven ability to withstand severe environmental conditions and vandalism. Assembly and installation shall ensure stability of use in high traffic environments. Repair and replacement (sourcing) must be easy to avoid long term gaps in the streetscape.

Design theme and character:

The Gore Park area has been rehabilitated in recent years and equipped with a series of elements of furniture based on Victorian design, intended to emphasize the historic character of the area.

Street furniture choices for the LRT Corridor shall be characterized by a streamlined and practical style, drawing from historic design themes, in terms of color and general design outline, while simple in terms of detailing. The intent is to ensure streetscape elements will remain visually and functionally compatible with the diverse architectural context and civic infrastructure along the Corridor, as it evolves.

7 Street Furniture Catalogue

The street furniture catalogue identifies a preferred selection of types and models of street furniture meeting criteria noted in Section 6.3 and currently available from vendors with local or regional contacts. The selection covers several categories, from benches to light poles, to support consistent public realm development in a wide range of street configurations along the LRT corridor, pending final LRT design.

Where special circumstances - such as sourcing issues, context-specific conditions requiring different installation or finish solutions, or other factors aiming to optimize access and maintenance - require alternative options, similar models or alternative specifications for the same model may be considered from the same or other vendors. When working with a vendor, continue to look for technological advances and solutions sensitive to aspects of climate change.

Alternative choices in specifications or models shall address the objectives, principles, and design theme mentioned in Section 6.3, in this document. They will be reviewed and approved by the Heritage and Urban Design department.

7.1 Benches

Below are bench types selected for the LRT Corridor. The selection includes backed and backless options, with or without arms, to reflect different conditions in the streetscape, as well as different accessibility needs. The options are largely drawn from the same model range, for design consistency.

Note the **City of Hamilton Co-Ordinated Street Furniture Guidelines** for direction on appropriate placement and spacing in relation to other elements in the streetscape and accessibility objectives. Also see the **Forestry and Horticulture - Design and Preservation Manual for Assets on Public Property** specifications appendix for wall-mounted bench solutions (associated with planter walls).

7.1.1 '900 Series – 970' Backed bench by Maglin (Black finish)

Specifications:

- Models: MBE-0970-00062 (Black)
- Material: Cast aluminum ends; Orange peel texture high density polyethylene seat and back (Black)

- Installation: Surface mounted
- Finish: Black powder coat for aluminum ends; Anti-graffiti finish



Figure 3 - 900 Series Backed Maglin Bench

7.1.2 '900 Series – 970' Armless bench by Maglin (Black finish)

The armless bench – from the same style series as the 970 Maglin bench - should be used in tandem with the typical bench with arms, in locations close to green amenity or parks, to provide an accessible seating alternative for those using mobility aids.

Specifications:

- Models: MBE-0970-00109 (Black)
- Material: Cast aluminum ends; Orange peel texture high density polyethylene seat and back (Black)
- Installation: Surface mounted
- Finish: Black powder coat for aluminum ends; Anti-graffiti finish



Figure 4 - Series 900 Armless Bench by Maglin

7.1.3 '900 Series – 970' Backless Bench by Maglin (Black finish)

The backless bench – from the same style series as the 970 Maglin bench – is available in custom 1219mm (4ft, custom) and 1524mm (5ft) lengths and should be used where conditions may be adequate for seating but too constrained for typical bench placement. They may be placed in the frontage zone, in association with principal building entrances, or in the street tree and furniture zone, book-ending planting zones and planters, or combined with other elements of furniture (like streetlights and waste bins).

Note: Cut sheets for the 1219mm (4ft) model is included in the appendices. Cut sheet for a custom 1524mm (5ft) bench can be provided by the vendor by request.

Specifications:

- Model: MMP-0970-00048 for the Black, 1219mm (4ft) model
- Material: Cast aluminum ends; Orange peel texture high density polyethylene seat and back (Black)
- Installation: Surface mounted

- Finish: Black powder coat for aluminum ends; Anti-graffiti finish



Figure 5 - Backless Bench by Maglin (900 Series)

7.1.4 'Galet' Backless Concrete Seat, by Ed's Concrete

A backless concrete seat will be a versatile feature for small parkettes along the corridor, acting as a stable landscape element or an informal seating solution for one or more users.

Specifications:

- Model: Galet I through III
- Manufacturer: Ed's Concrete
- Material: Concrete
- Size: Varies, at 457 mm (18') high
- Finish:
 - Anti-graffiti coating APP-HDN
 - Anti-slip sandblast finish

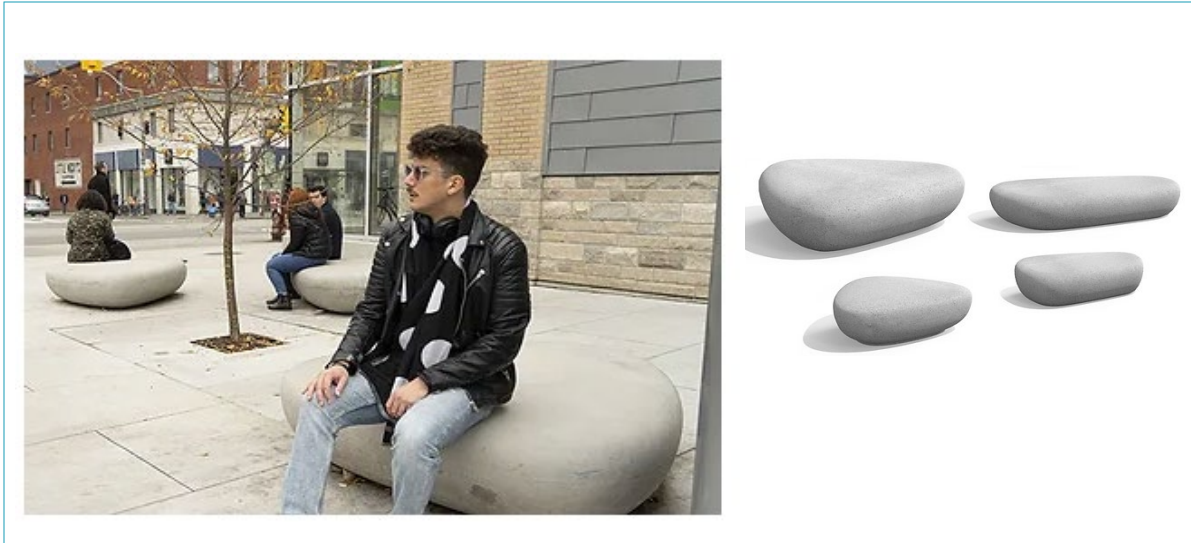


Figure 6 - Galet Bench by Ed's Concrete

7.1.5 Wall-mounted benches

See the **Forestry and Horticulture - Design and Preservation Manual for Assets on Public Property** specifications appendix for wall-mounted bench solutions and raised curb planting bed design for streetscapes. These features should be selected in consultation with the Horticulture and Forestry group.

7.2 Bollards

Bollards should be installed as a semi-permeable physical barrier and safety feature along the edge of those areas where pedestrian pathways are adjacent to vehicular movement and are not separated by a vertical curb, or other buffers.

Bollards may be high or low-impact resistant. The document specifies low-impact resistant models. For areas with high-speed or high-volume vehicular traffic engineered crash-rated bollards may be required. They should be selected based on specific safety requirements and should be similar in terms of design and color (as feasible) with the models listed in this catalogue.

Typical locations and conditions for bollard placement:

- Depressed curb streetscapes or shared-space type of plazas/parkettes where some vehicular movement or parking is still permitted (such as the International Village segment)
- Typical 1m to 1.5m spacing between elements. Diverse applications may require different spacing configurations.
- Lighted bollards may be spread at larger intervals among regular bollards or placed individually in locations where additional pedestrian lighting is needed.

The models listed below provided two installation options – base plate mounted or in-ground threaded rod (anchor), to allow removal and replacement in case of damage.

For those scenarios where regular removal of the bollards is desirable, such as multi-functional parking areas or parkettes where loading or service access is required, special removable bollards should be considered. Reliance Foundry provides bollards with lid-covered receivers or slide-in receivers; products may be selected and sourced from the vendor, subject to consultation with future asset owners.

Flexible physical barrier solutions at parks entrances should be selected in consultation with the Parks and Cemeteries group, in Public Works.

7.2.1 Lighted or Nonlighted Bollard ‘The Silhouette’ by StressCrete

The model, from Stresscrete is provided in two options, lighted, or nonlighted, for a base-plate type of installation.

Specifications:

- Material: Heavy wall round extruded aluminum; 1066 mm (42") height
- Mounting options: Base Plate Mounted
- Lighting options: Lighted or Non-Lighted, as directed by City staff
- Optical Systems Options: LED
- Finish: KingCoat Black powder coat

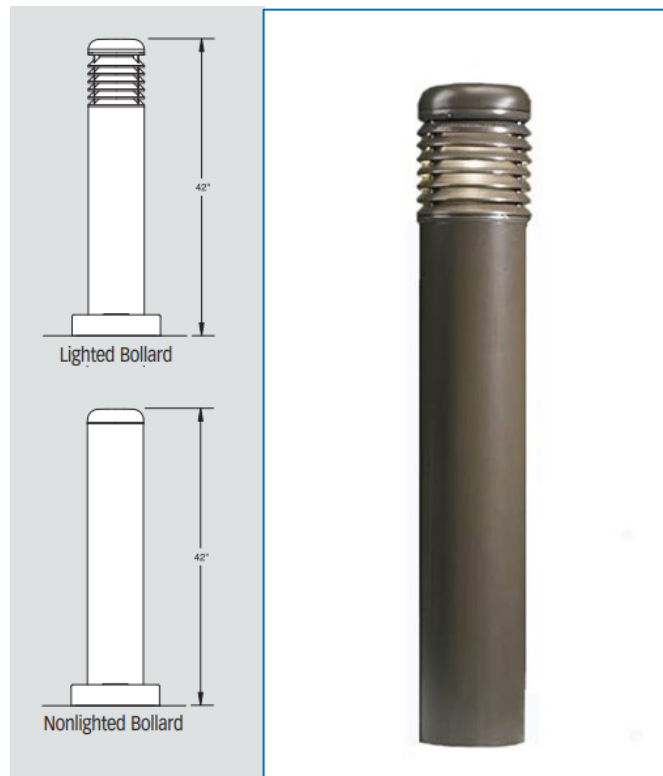


Figure 7 – Lighted or Nonlighted Bollard 'The Silhouette' by StressCrete

7.2.2 Alternative - Series 500 Bollard by Maglin (black powder coat)

The alternative model from Maglin provides in-ground installation, with a threaded rod set into concrete. Bollard is screwed onto rod and may be replaced.

Specifications:

- Model: MBO-0500-00004, Base Type 2
- Material: 114mm (4 ½") diameter, 867mm (34 ½") height, H.S. steel tube
- Finish: E-Coat rust proofing, black powder coat finish

- Installation: Base Type – B2 Threaded rod is set into concrete. Bollard is screwed onto rod and tightened.
- Weight: 14.8kg (32.66 lbs)



Figure 8 - Series 500 Maglin Bollard (shown in silver, proposed in black finish)

7.3 Waste containers

Waste receptacles should be placed as needed, in areas with higher pedestrian traffic, near accessible public or commercial entrances, close to public benches and bus stops, and near pedestrian crosswalks.

Waste container solutions for areas overseen by the Parks and Cemeteries group in Public Works should be selected in consultation with the group's staff.

7.3.1 '600 Series - 650' Waste Container by Maglin (Black finish)

Specifications:

- Model: MTR-0650-00011 Legacy # MLWR650-32-M-LBK
- Material: Steel sheet metal / No pattern
- Other: Delivered pre-assembled.
- Installation: Holes (0.5") are provided in each mounting foot for securing to base. (See installation cut sheet in the appendix.)
- Size: 606.4mm (23 7/8") width, 1049.3mm (41 5/16") height
- Finish: E-Coat rust proofing, black powder coat, anti-graffiti finish
- Liner: 121.1 liter (32 gal) black plastic bin. If available, liner with handles is preferred.
- Weight: 69 kg (151.6 lbs)



Figure 9 – 600 Series - 650 Waste Container by Maglin

7.4 Bicycle parking

The following models are recommended for typical or place-specific placement.

Several Hamilton Bike Share parking hubs are currently installed along the LRT Corridor and should be replaced per specifications (for bike racks, signage) specific to the program. (Hamilton Bike Share Inc. is the local not-for-profit organization that operates the City of Hamilton's bike share system.) This catalogue does not include rack models for this program.

7.4.1 Galvanized Hammer Hoop by NorthStar Technical

The galvanized Hammer Hoop is currently used City wide and shall be chosen for typical applications within the LRT Corridor streetscape. Please consult City staff for updates on the program and model in use.

Specifications:

- Material: Steel
- Finish: Galvanized
- Installation: Surface mount
- Size: 708 mm (27 7/8") height, 304 mm (12") diameter

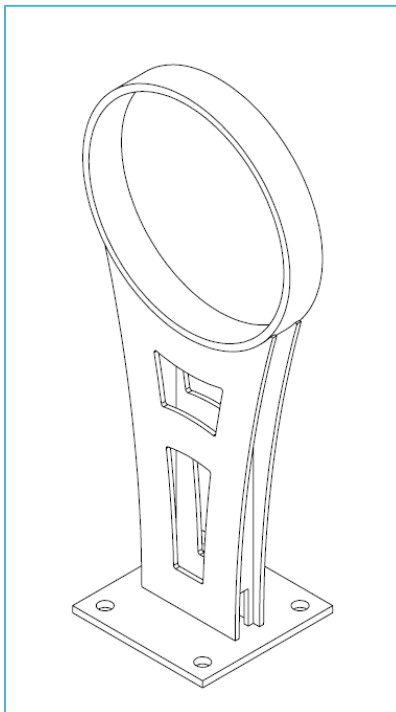


Figure 10 - Hammer Hoop Bike Rack

7.4.2 Alternative – ‘Iconic’ Bike Rack 2300 Series by Maglin

An alternative bike rack model like the ‘Iconic’ model from Maglin, or similar, may be introduced in small plazas, pedestrianized side streets, or parkettes, as a special feature. This model may also be considered for typical streetscape applications, pending updates to the City’s bicycle parking program.

Specifications:

- Model: MBR-2300-00001
- Material/configuration: Cast Aluminum, 2 Bike Configuration
- Finish: Black powder coat
- Installation: Surface mount
- Size: 67.3cmx52cmx5.1cm (HxLxW)
- Weight: 8kg



Figure 11 - Iconic Bike Rack by Maglin

7.5 Tree Grates

Tree grate selection should generally be used in tandem with soil cells, to facilitate adequate tree planting soil volumes, in areas where the pedestrian zone dimensions do not support open tree planting beds. Tree grate selection will depend on context and width of street tree/furniture zone. For constrained conditions, a narrower rectangular grate will maximize surface environmental exposure. A wider model should be considered in other conditions.

7.5.1 'Starburst-2' Tree Grate by Ironsmith (Black finish)

The tree grate selection should reflect criteria in the **Forestry and Horticulture - Design and Preservation Manual for Assets on Public Property** standards and specifications appendix.

Specifications:

- Materials: Cast from 100% recycled gray iron
- Slot opening: Maximum 3/8" slots for pedestrian safety
- Size: A range of sizes available
 - Preferred - square 1524mm (60"), and
 - For constrained areas - rectangular 1220mm (48") x 1828mm (72")
- Tree opening:
 - Grates must be ordered with expandable rings.
 - For new trees - 457.2mm (18"), and
 - For later transition to maturing trees – 711.2mm (28").
- Finish: Black polyurethane paint over zinc undercoat

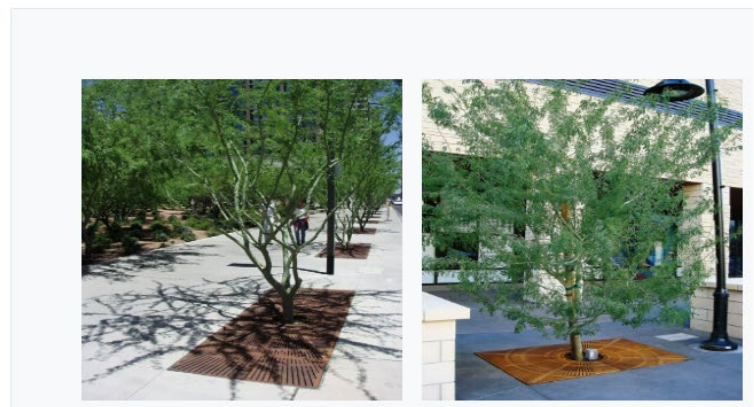
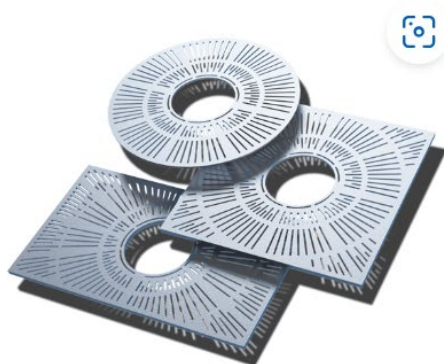


Figure 12 - Parkway Tree Grate by Ironsmith

7.6 Tree Guards

7.6.1 'M6' Tree Guard by Ironsmith (Black finish)

Tree guards are only required where significant vandalism may occur and need not be considered outside of those scenarios. The tree guard should match the tree grate selection, for shape and opening. It should be used for small to medium sized trees, to protect their growth.

Specifications:

- Material: Steel
- Structure: Tree guard, welded steel construction, in halves for greater rigidity and quick labor-saving assembly, with grate attaching hardware.
- Size: 1524mm (60") high
- Opening: Customized opening of 457.2mm (18"), to match tree grate opening.
- Finish: Black polyurethane paint



Figure 13 - M6 Tree Guard by Ironsmith

7.7 Planters

Planters provide an alternative to open planting beds or other tree planting solutions for those areas where there is limited or no space for appropriate soil volumes underground, in areas with higher pedestrian and commercial activity. They also act as physical barriers, acting as space organizers in open areas with different uses (such as small plazas, parkettes or pedestrianized streets), or as a safety buffer between pedestrians and vehicles.

Planting conditions, including soil types and plant selection should reflect criteria in the **Forestry and Horticulture - Design and Preservation Manual for Assets on Public Property** and its standards and specifications appendix. The appendix also includes planting bed design and construction standards, including construction details for curbed beds and decorative rail or fencing features.

7.7.1 'Square Series' Concrete Planters from Ed's Concrete

Specifications:

- Material: Concrete
- Recommended size:
 - 610 x 1219 x 610mm (24x48x24") for perennial type plant material
 - 1067 x 1067 x 762mm (42x42x30") for small decorative trees
- Drainage: Planter includes 1.25" drainage holes
- General planting conditions: Min 9" clear stone fill at base
- Color and finish: Standard grey smooth precast concrete



Figure 14 - 'Square Series' Concrete Planters from Ed's Concrete

7.7.2 '1500 Series' Planters by Maglin (Black finish)

This alternative metal planter provides a smaller and lighter option for small tree/large shrub plantings. It could be placed in pedestrianized areas, parkettes, or used as a temporary, moveable amenity feature.

Specifications:

- Model: MPL-1500-00011
- Material: Formed steel with a polyurethane/polyurea waterproof interior coating
- Recommended size:
 - 762 x 762 x 762 mm (30x30x30")
- Drainage: Removable plug in the base
- Color and finish: E-Coat rust proofing; Black powder coat; Anti-graffiti finish.



Figure 15 - '1500 Series' Metal Planter by Maglin

7.8 Poles, luminaires, and arms

7.8.1 'The Canterbury' Pole by StressCrete

Poles should be included in the street tree/street furniture zone in association with luminaires, banner arms, and/or, flower basket arms, in those areas where additional pedestrian lighting is required for safe use, or in other areas where poles are needed for signage and/or decorative arms. The recommended model, or similar, should replace existing pole models along the corridor, pending LRT final design and reconstruction.

Note: Any electrical plugs should be located high up the pole so that they are not tampered with should seasonal lights be considered.

Specifications:

- Material: Spun concrete
- Pole height: 3048mm (12 ft) to 9144mm (30 ft)
- Footing options: Direct buried
- Finish: Etched Eclipse Black with anti-graffiti coat



Figure 16 - The Canterbury Pole (Spun Concrete) by StressCrete

7.8.2 Luminaire 'Eclipse' K551 by StressCrete (Vertical)

The 'StressCrete' model, or similar, is recommended for areas with narrow horizontal clearance, such as alleyways, or in other areas such as pedestrianized side streets and street-adjacent parkettes where more dispersed lighting over seating areas is desirable.

Specifications:

- Material: Heavy duty aluminum casting with vented finial
- Size: 813mm (32 3/16") height, 689mm (27 3/8") width
- Finish: Black powder coat



Figure 17 - Luminaire Eclipse by StressCrete

7.8.3 Alternative - Luminaire 'Moderne' K728 Jr by StressCrete

This option will fit more spacious areas, streetscapes, and other locations where focused lighting on the pedestrian path is desirable. The luminaire should be used with the StressCrete KA94 'The Bronte' Arm.

Specifications:

- Material: Heavy cast aluminum housing
- Size: 603mm (23 3/4") high

- Finish: KingCoat Black powder coat
- Light option: LED

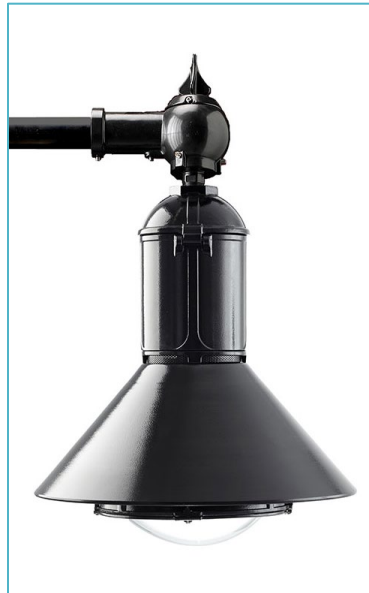


Figure 18 - Luminaire 'Moderne' K728 by StressCrete

7.8.4 Decorative 'The Bronte' Arm for Luminaire and Banner by StressCrete

The long arm will support a luminaire and the short arm incorporates hooks for hanging banners.

Specifications:

- Model: KA94
- Material: Aluminum
- Mounting type: Side
- Arm lengths: 1829mm (72") (recommended) and 2438mm (96")
- Weight: 9.5-12.2 kg (21-27 lbs)
- Finish: Black powder coat

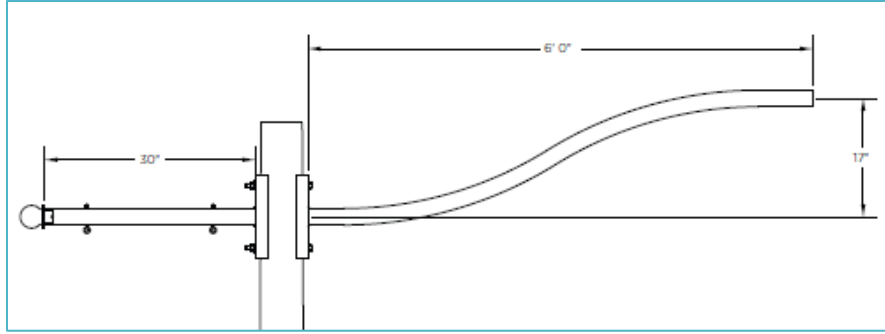


Figure 19 - Decorative 'The Bronte' Arm for Luminaire and Banner or Planter by StressCrete

7.8.5 Flower Basket Arm by Stresscrete

Specifications:

- Model: K64FPH-S
- Material: Cast aluminum
- Finish: Textured black paint
- Maximum plant basket weight: 22.67 (50 lbs) wet



Figure 20 - Decorative Flower Basket Arm by Stresscrete