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**SCHEDULE 15-2  
DESIGN AND CONSTRUCTION**

**PART 6 DESIGN AND CONSTRUCTION REQUIREMENTS – URBAN DESIGN,  
LANDSCAPE ARCHITECTURE AND CONNECTIVITY  
REQUIREMENTS**

**ARTICLE 1 INTRODUCTION**

**1.1 Introduction**

- (a) The work under this Part 6 identifies the requirements for the integration of the Stations, sidewalks, MUPs, work on NCC lands and City lands that shall be developed to enhance the public realm.
- (b) The Site plans shall be developed in conjunction with the Stations, Civil and Guideway and Federal Land requirements to provide a comprehensive solution for the alignment.

**1.2 Overview**

- (a) The Project includes the design and construction of the site development for the proposed Stations, Park and Ride facilities, MUPs, PPUDO, bike rack and storage areas, sidewalks, and landscape restoration of lands affected by the construction of the Expanded Trillium Line.
- (b) Project Co shall complete the design and construction of the Site works for the alignment and Stations including all the plazas, pathways, MUPs, street furniture and planting.
- (c) Project Co shall obtain all the necessary approvals for the construction of the Site works. Refer to Schedule 17 - Environmental Obligations and Schedule 15-2, Part 2, Article 5 – Drainage and Stormwater Management Design Criteria for coordination with final Site works.
- (d) Project Co shall submit, in accordance with Schedule 10 – Review Procedure, the Site plans for:
  - (i) 13 Stations, and the New Walkley Yard;
  - (ii) Protection of, and enhancement to, the connectivity for the Stations, and the adjacent community;
  - (iii) Modification to, and additional development of, the Park and Ride facilities;
  - (iv) MUPs adjacent to the Track alignment, with connections to existing Facilities, as indicated within this Part 6;
  - (v) Development of Tree Mitigation Report(s) and Tree Compensation Drawing(s);

- (vi) Development of the mitigation plan for the SWM requirements;
- (vii) Miscellaneous mitigation works as identified within this Part 6;
- (viii) Design and construction of PPU DO and connecting sidewalks and MUPs to Stations and Bus Platforms;
- (ix) Design and construction of new bicycle racks and storage areas; and
- (x) Restoration of lands required for the construction of the Expanded Trillium Line, including the construction staging areas.

## ARTICLE 2 DESIGN CRITERIA

### 2.1 Introduction

- (a) This article presents the design criteria for the landscape architecture and urban design that shall be integrated into the design of the Project, including the standards for streetscape elements, bicycle facilities, Park and Ride facilities, fencing, pedestrian and cycling access to the Stations, planting and tree compensation.

### 2.2 Reference Documents

- (a) Order of Precedence
- (i) All Project urban design and landscape Works shall comply with the criteria contained within this Article and the Applicable Law, guidelines or practices applicable to the Project, including but not limited to the following Reference Documents. In the event of a conflict between the criteria, commitments or requirements contained within one document when compared with another, the more stringent shall apply. The order of precedence for this portion of the Project Agreement shall be as follows:
- A. The criteria in this Article;
  - B. OBC;
  - C. COADS;
  - D. AODA;
  - E. OTM (Books 1 through to 12, and 18);
  - F. City of Ottawa Construction Specifications, Drawings and Details;
  - G. Other relevant City Operation Policy, Procedures and Guidelines;
  - H. OPSS and OPSD;
  - I. TAC Guidelines for Understanding Use and Implementation of Accessible Pedestrian Signals; and,
  - J. Canadian Standards for Nursery Stock, most recent edition.

### 2.3 Scope of Work

- (a) The general scope of work shall include:

- (i) Public realm: Station entry plazas, Site furnishings, pedestrian lighting, sidewalks and MUP connections from the community to the Station Plaza entry, PPUDOs, bike facilities, plant material, and miscellaneous items to complete the Work;
- (ii) The MUPs along the alignment and providing community connections;
- (iii) Park and Rides: the parking lot configuration, pedestrian requirements, lighting, plant material and coordination with Site plan requirements;
- (iv) Any restoration and rehabilitation of the lands disturbed by the construction of the Project; and,
- (v) All other works identified within this Part 6.

#### **2.4 Urban Design and Landscape Architectural Design**

- (a) Project Co shall ensure that designs meet COADS and AODA standards for all Works surrounding bus waiting areas, sidewalks, entrances and pathways to the Station entry. Safe, efficient and accessible pedestrian circulation shall be given the highest priority in Station design.
- (b) Project Co shall ensure that there is a consistent use of standard landscape elements including fencing, paving, plant material and other items identified in this Article utilized throughout the alignment and proposed Stations.
- (c) Project Co shall ensure that urban development and landscape treatments compliment the adjacent land use. Pedestrian and cycling links shall be protected and connections to the adjacent communities provided.
- (d) Refer to Article 3 – Connectivity Requirements, of this Part 6 and Article 4 – Site Specific Desired Outcomes, of this Part 6 for additional requirements.
- (e) Project Co shall utilize native plant material wherever feasible.
- (f) Where appropriate, Project Co shall preserve and incorporate existing landforms and vegetation into urban design. Designs shall be achieved with the intent to minimize impacts to the surrounding environment.
- (g) Project Co shall ensure that the landscape design of each Station shall have standard and common finishes. All Stations shall express the local character and qualities of their communities and planning context and assist in wayfinding/Station identification. Station entrances shall be easily identifiable and be designed to discourage loitering and to maximize safety/observation.
- (h) Project Co shall design and construct the urban design elements and landscaping in accordance with CPTED principles.

- (i) Project Co shall design and construct all Emergency egress points to accommodate snow removal and clearing operations. Project Co shall provide a turnaround for the snow clearing equipment as per Schedule 15-2, Part 2, Article 1 – Introduction.

## 2.5 Park and Ride Facilities

- (a) Project Co shall ensure that the design and construction of Park and Ride facilities adhere to City standards, including the following:
  - (i) There shall be a minimum of [REDACTED]% landscape treatment within the parking lot. This landscape treatment may contain a combination of paved walking surfaces, dry SWM facilities, street trees and sod. Wet ponds shall not be considered part of the 15% landscape requirements;
  - (ii) The alignment of the stalls shall be parallel to the Station Platform, with the drive aisles perpendicular to the Station Platform and Station Plaza;
  - (iii) The accessible parking spaces shall be designed according to COADS and located immediately adjacent to the Station entry;
  - (iv) Refer to Schedule 15-2, Part 4, Article 2.6 – Functional Requirements for additional park and ride requirements;
  - (v) There shall be a main drive aisle, with sidewalks on either side, perpendicular from the Station to the furthest limit of the parking lot. This main drive aisle shall have shade trees adjacent to the sidewalk, with a maximum of 7m on centre spacing.
  - (vi) There shall be a continuous sidewalk connecting the Park and Ride facility to the Station Plaza. Where the pedestrian route crosses a traffic lane(s), a painted crosswalk demarcating the pedestrian route shall be provided.
  - (vii) The parking lot shall be divided into parking cells, aligned with drive aisle access, and a maximum of 200 parking spaces per cell.
  - (viii) The cells shall be defined with parking islands at the end of each row of parking spaces.
  - (ix) In each cell, the islands closest to the Station shall have a minimum of two deciduous trees, with a minimum width of 3m, and a surface treatment capable of allowing the precipitation to infiltrate to the soil.
  - (x) In each cell, the islands furthest from the Station shall have a minimum width of 2.4m, paved walking surface, and TWSI to current City standards.
  - (xi) The pedestrian route between the islands shall be delineated on the roadway surface.

- (xii) The pedestrian sidewalk shall be immediately adjacent to the parking lot, and offset a minimum of 2.4m from any MUP. There shall be a landscape buffer between the sidewalk and MUP, and shall include shade trees, with a maximum of 7m on centre.
- (xiii) Supplemental lighting for the sidewalk shall be provided as required to provide lighting levels to meet the Schedule 15-2, Part 4, Article 6 - Electrical Design Criteria.

## **2.6 Landscape Plans**

- (a) Project Co shall submit Landscape Plans in accordance with Schedule 10 – Review Procedure for the following:
  - (i) Station, Facilities and Site Specific Drawing Requirements:
    - A. Layout drawings, dimensioning all landscape items, including snow storage locations;
    - B. Grading drawings, indicating the drainage in accordance with the criteria of Schedule 15-2, Part 2, Article 5 – Drainage and Stormwater Management Design Criteria and shall include the finished elevations of all built elements from the edge of the Station façade to the original surface, edge of roadway curb, or limits of adjacent landscape not disturbed by the construction;
    - C. Fencing plans, indicating all fence locations, Maintenance and access gates, bridge fences, heights, and connections to existing and proposed features;
    - D. Planting plans;
    - E. Details indicating all construction requirements for the landscape items; and,
    - F. All coordination Site works, including civil, electrical, architectural, existing and proposed above and below services, and existing vegetation, Structures and miscellaneous works to provide a complete illustration of the proposed Site with the adjacent lands.
  - (ii) Proposed MUP and Connectivity Requirements:
    - A. Layout and grading, including cross-slopes for all proposed pathways, MUPs and sidewalks, bridges, Culverts, lighting and wayfinding signage, roadway crossings, beyond the individual Stations and connections into the existing pedestrian and cycling system.

- B. All coordination Site works, including civil, electrical, architectural, fencing, existing and proposed above and below services, stormwater management criteria, and existing vegetation, Structures and miscellaneous works to provide a complete illustration of the proposed Site with the adjacent lands.
- (iii) Tree Mitigation Report(s) and a Tree Compensation Plans(s)
- A. Project Co shall submit the complete package of Mitigation Report(s) and Tree Compensation Plan(s) for review prior to commencement of work. Segmentation of the works shall not be permitted.
  - B. The City shall complete a tree survey of the alignment of the Airport Link. This tree survey can be utilized by Project Co to develop the Tree Mitigation Plan for the corridor.
- (iv) Tree Mitigation Plan(s) shall include:
- A. Survey of all existing trees, including species, caliper, and evaluation within the limits of construction;
  - B. Survey of all existing trees, including species, caliper and evaluation within 6m of the limits of construction on City, Federal, or private lands;
    - i. Project Co shall make all reasonable efforts to obtain the required property consents. Project Co shall notify the City if they are not successful in obtaining access, and the City will:
      - 1 Obtain the consent; or,
      - 2 Waive the requirement to survey trees outside of the limits of construction on City, Federal, or private lands.
  - C. Identify all SAR Butternut trees, and SAR bat maternity roost trees, methodology of protection wherever feasible, where removal is required, provide mitigation and/or compensation as per Schedule 17 – Environmental Obligations and as identified in any SARA permitting requirements; and,
  - D. Methodology for the review, and approval, of any trees identified for protection during the initial planning, and subsequently identified for potential removal due to construction conflicts.
- (v) Tree Compensation Plan(s) shall include:

- A. Limits of construction as per Schedule 15.2, Part 1, Article 4 – Design and Construction, and Tree Protection Fence(s) as required to protect all existing trees identified to remain.
  - B. Location, species, quantity and size of proposed trees for the compensation for all the existing tree removals. Project Co shall be required to provide a minimum of tree replacement at the equivalent to 0.25:1. Additional requirements, if necessary will be the responsibility of the City.
  - C. Identification of proposed butternut plantings, as per Schedule 17 – Environmental Obligations.
- (b) Restoration Drawings
- (i) Project Co shall provide restoration drawings for all lands affected by the construction of the Works, including temporary construction facilities.
  - (ii) The restoration drawings shall include all other lands affected by the construction, not identified above and shall identify:
    - A. Existing structures and facilities to be removed, including all permanent and temporary roads and facilities.
    - B. Grading and layout of all pathways, roadways, sidewalks, lighting, and miscellaneous Site works; and
    - C. Final landscape treatment, including seeding, sodding, plant material, and miscellaneous items to restore the Site.

## **2.7 Urban Design and Landscape Elements**

- (a) Project Co shall design and construct sidewalks, pathways and plaza pavement in accordance with the following:
  - (i) Each Station shall have an entry plaza, across the façade of all Passenger entry points to the Station, large enough to accommodate the peak flow identified.
  - (ii) The Station Plaza shall extend from the front face of the Station to the adjacent roadway, and encompass any existing sidewalks.
  - (iii) There shall be a minimum of 3m clear from the front façade of the Entry or Ticket Machines to any intersecting MUP.
  - (iv) A cast in place concrete paving shall be used to construct primary sidewalks and plaza spaces. Sidewalks and plazas shall meet the requirements of COADS, have a minimum width of 3m, unless specified elsewhere in this Part, and shall be

capable of withstanding heavy duty commercial use including access by Emergency and Maintenance Vehicles as per City standards.

- (v) Contrasting pavers and textures delineating thresholds and pedestrian routes to meet the COADS, AODA and CAN/CSA B651 shall be provided at all Stations and bus platforms. This shall commence at the limit of the Station Entry Plaza and be continuous through to the Station and shall extend to any bus shelters located within, or adjacent to the Station Plaza. The pavers and textures shall be consistent with the materials utilized within the Station and bus platforms.
- (vi) Sidewalks and MUPs shall be designed in accordance with the applicable existing and recreational networks of the surrounding community and shall adhere to City of Ottawa Construction Specifications, Drawings and Details for MUPs. Within Federal Lands, MUPs and pathways shall adhere to NCC standards. Design and selection of construction materials and layout alignment shall be consistent with specific Site context and associated landscape type.
- (vii) Sidewalks and MUPs shall be reconstructed to their full width. Patching shall not be permitted.
- (viii) All existing recreational pathways, MUPs and sidewalks shall remain open to public use during construction. Refer to Article 3 – Connectivity Requirements, of this Part 6.
- (ix) The primary sidewalks and secondary pathways shall meet the requirements of the AODA and COADS, and shall not exceed a grade of 5% with a minimum landing distance of 6m at the bottom of each slope prior to a horizontal alignment shift. Cross slopes shall not exceed 2%. The primary sidewalks and secondary MUPs shall be designed to maintain positive drainage, as per Schedule 15-2, Part 2, Article 5 - Drainage and Stormwater Management Design Criteria.
- (x) Depressed curbs shall be provided at all sidewalk roadway interfaces and shall be in proximity to bicycle parking areas to facilitate safe access from roadway to sidewalk.
- (xi) Pedestrian crosswalks with vehicular traffic, including cycle lanes shall include TWSI as per City of Ottawa Construction Specifications, Drawings and Details.
- (xii) PPUDOs shall be installed with a continuous pedestrian sidewalk to the Station as delineated in Article 4 – Site Specific Desired Outcomes of this Part 6.
- (xiii) Paving materials shall be as follows:
  - A. Concrete Paving: shall be to 35 MPa, with a magnesium float finish, caulked expansion joints and saw cut control joints. There shall be no tooled edges; and,

- B. Project Co shall design and construct new work to provide smooth, safe and seamless transition of materials, where the construction of sidewalks, pathways, MUPs and Station Plazas adjoins existing installations.
- (xiv) Project Co shall delineate the intersections between the bus and LRT Passengers accessing the System from the cyclists and MUP users with the following:
- A. Where a cycle track or MUP intersects with a Station Plaza, the concrete paving of the entry Station Plaza shall extend across the cycling/MUP facility.
  - B. Where a bus stop occurs on a Roadway, the concrete paving from the bus waiting area shall extend across any MUP or segregated cycling facility. The minimum length of the concrete paving shall be 9.0m.
  - C. Three double soldier course bands of interlocking paving, minimum 600mm on centre spacing shall be installed as warning indicators on the cycle track or MUP in the asphalt paving.
- (b) Site Furnishing
- (i) Quantities of Site Furnishings shall be as per Article 4-2, Site Furnishings, of this Part 6.
  - (ii) Site furniture shall be in the family of complementary Site furnishings, benches, bicycle racks, waste receptacles, and lighting, from the Confederation Line, that provide an unobstructed view of the underside of the furniture, coordinated with the interior Station furniture, and sustainable in terms of its recycled content and long-term durability. Site furnishings shall be strategically placed along sidewalks, Station Plaza spaces and Platform areas to maximize their use and not encumber pedestrian movement. All furniture shall be fastened to the surface with non-corrosive fastenings to reduce vandalism and to protect for future replacement requirements. All furniture and landscape features shall be coordinated with light standards, CCTV and other elements to reduce vandalism. Site furnishes utilized on the Confederation Line include:
    - A. 3-Stream Recycling Container Car-180 by Canaan Site Furnishings;
    - B. Narrow U-stand, stainless steel Bicycle Rack MBR-500 DB, by Maglin; and
    - C. Ipe wood slats, powder coated cast aluminum sides, Bench, MLB 100-W-A, by Maglin; and
    - D. KicK – K4 Small Scale Luminaire, Light Standard, by Architectural Area Lighting.

- (iii) The Site furniture shall be located to provide clear access and visibility to any Site wayfinding signage, so that it does not obstruct views for CCTV and with sufficient offset to restrict unauthorized access.
  - (iv) Waste/recycle receptacle units shall be provided and shall be easily accessible for Maintenance and trash pick-up. Waste/recycle receptacles shall be installed outside of all Stations and at the bus Platform areas. A minimum of one waste/recycle receptacle unit shall be required per Station entrance and shall be located such that it does not obstruct pedestrian traffic flow.
  - (v) Benches shall be strategically placed at key gathering and waiting zones, be highly visible (CPTED) and clear of any pedestrian traffic. Benches shall be designed according to AODA and COADs standards.
  - (vi) New Bicycle Racks shall be provided in accordance with the quantities noted in this Article. Bicycle racks shall be located within the Station Plaza a maximum of 9m from the Station entry. A minimum of 80% of bicycle racks shall be sheltered. Clear access from the MUP to the bicycle parking shall be provided and additional area to accommodate dismounting and mounting of the bicycle beyond the width of the MUP. There shall be sufficient space to double the bicycle parking within the plaza or the adjacent turf, without the requirement for additional grading/retaining walls or elimination of streetscape elements. Expansion locations shall be identified on the Landscape Plans.
- (c) Access Control
- (i) Fencing barriers at all Stations shall be provided to prevent public access to the Tracks and Fare Paid Zones. Fences shall also serve as dividers separating pedestrians and cyclists at specific areas and prevent customers from crossing the bus roadways.
  - (ii) Landscape handrails shall be designed to meet the OBC and the AODA and shall be integrated with the design of the stairways and ramps to meet the above codes. All handrails and fastenings shall be stainless steel, exterior grade.
  - (iii) Bollards shall be provided to control vehicular and cycling activities adjacent to the Stations. Bollards shall be designed to facilitate replacement as required.
  - (iv) All bollards shall have reflective tape.
- (d) Fencing
- (i) The alignment shall be fenced to restrict access to the Track, and shall meet the following criteria:
    - A. General:

- i. Shall be within the Lands identified for the alignment and Stations;
  - ii. Shall be continuous along the alignment and Stations and connect to vertical walls and abutments at Stations and Bridges;
  - iii. Shall be a minimum of 1.8m high chain link fence except at Structures over the alignment;
  - iv. The height shall be measured from the publicly accessible side;
  - v. Shall be offset a minimum of 1.2m from any Structures or built elements that would assist in facilitating public access to the Track or Fare Paid Zones; and,
  - vi. Shall be offset a minimum of 600mm from the base of any landform.
- B. Station fencing:
- i. Shall encompass the Fare Paid Zone, as required, to restrict access to the entry points at all Stations.
  - ii. Shall encompass the bus Stations to accommodate for unrestricted Passenger flow between the Train and the bus; and,
  - iii. Shall have one set of two lockable gates, each a minimum 1.8m in width, situated between any bus Station and Train Station to accommodate Passenger movements during Train Station closure.
- C. NCC/Federal Lands:
- i. In addition to all requirements of this Clause 2.7(d)(i), all fencing, within, or adjacent to, NCC or Federal Lands, shall be black vinyl coated chain link fencing, with black powder coated posts.
- D. Track alignment fencing shall;
- i. extend continuously along the Track throughout the alignment;
  - ii. Project Co shall inspect the alignment, install new fencing as required and repair any damaged sections of the fence to meet the Requirements of this Article;
  - iii. be located within the Lands;
  - iv. have lockable service gates, as required for service and Emergency vehicle access, as per Schedule 15-2, Part 1, Article 2 – Physical Layout;

- v. each service gate shall be a minimum of 1.8m in width, with a lock box fixed to the adjacent fence fabric, for Emergency access; and,
- vi. service gates that have a 1.8m wide paved pathway from the nearest MUP, roadway or service access road. There shall be sufficient paved surface to accommodate the turnaround of snow clearing equipment Schedule 15-2, Part 2, Article 1 - Introduction.

E. Bridge Structure Fencing:

- i. Project Co shall provide Guideway protection fencing on all new and existing Bridge Structures that span the alignment and have pedestrian or cyclist movements. The minimum height from the adjacent pedestrian accessible spaces shall be 2.4m clear as measured from the walking surface or accessible ledge of parapet wall, for all proposed and existing Bridge Structures over the alignment;
  - 1 It shall be acceptable to include the height of a non-climbable parapet wall when measuring the required 2.4m height.
  - 2 Project Co shall provide a transition zone of fencing from the 2.4m height to the required Bridge guardrail height. The length of the transition zone shall be no less than 3.5m.
- ii. Shall be non-climbable;
- iii. Shall extend the full length of the Bridge structure and parapet walls where the Bridge spans only the alignment;
  - 1 Where Bridge Structures span the Guideway and other elements including roadways, parks, and streams, the full height fencing is required to extend across the Track limit to a distance of 6.0m beyond the most adjacent Track centre; and,
  - 2 From the location identified in Clause 1 above (6.0m beyond the most adjacent Track centre), Project Co shall provide a transition zone of fencing.
- iv. Shall be designed to be integrated within the structural requirements of the Bridge;
- v. Shall have vertical pickets, 100mm on centre, with 150mm extending above the top horizontal member, and 100mm below the bottom horizontal member;

- vi. Shall have a steel mesh, maximum 25mm openings, attached to the alignment side of the pickets, and extend from the bottom to top rail; and,
  - vii. Shall have a black vinyl coated finish for all elements.
  - viii. Project Co may propose alternative decorative designs for the vertical picket and rail design described above. Acceptance of any design not conforming to this section shall be at the sole discretion of the City.
- F. Airport Station and elevated Guideway fencing:
- i. Project Co shall provide fencing on the elevated Structure adjacent to the operating airfield meeting OPSD-900.01 Chain Link Fence for Airside Installations; and,
  - ii. For the purpose of this Project, the ground line identified in OPSD-900.01M shall equal the height of the Station Platform.
- (e) Bridge Guardrails
- (i) Bridge Guardrails shall be designed to accommodate the requirements for raised cycling facilities at the back of roadway curb. Refer to Schedule 15-2, Part 2, Article 4 – Structural Design and Requirements;
- (f) Site Lighting
- (i) All Station Plazas, sidewalks, Platforms and other areas external and immediately adjacent to Stations that are accessible to the public shall be lit with an LED light source to provide improved safety and security, and meet the requirements of Schedule 15-2, Part 4, Article 6 – Electrical Design Criteria.
  - (ii) All pedestrian lighting shall be LED, downcast and have full cut-off to minimize light pollution. Additional shielding or cut-off fixture shall be provided adjacent to residential communities.
  - (iii) All direct pathway connections from the adjacent street to the front entry Station Plaza shall be lit, and provide a continuous light level with the front entry Station Plaza, and as indicated in this Part.
  - (iv) All pathway lights shall have a 4.3m height pole.
- (g) Signage
- (i) All signage, including temporary construction staging, shall be bilingual.

- (ii) Refer to Schedule 15-2, Part 7 - Traffic and Transit Management and Construction Access for construction staging signage requirements.
  - (iii) Permanent bilingual wayfinding signage shall be provided throughout the corridor, and directing the community along the MUPs and sidewalks to the individual Stations.
  - (iv) At each Station, wayfinding signage shall be provided at the interface between the Station Plaza and MUP providing direction to the adjacent Station.
  - (v) Directional wayfinding signage shall also be provided at each MUP junction indicating the next Station in either direction.
  - (vi) Bilingual wayfinding signage shall indicate the following:
    - A. Station Name; and,
    - B. Approximate distance to Station.
  - (vii) Wayfinding signage graphics shall meet and match the existing signage on the pathway system. The content and location of the signage shall be approved by the City.
  - (viii) The location of the wayfinding signage shall take precedence over the location of street furniture, plant material or other items which may restrict clear access to the view the signage.
  - (ix) Project Co shall coordinate with the NCC for the wayfinding and regulatory signage located within federal lands.
  - (x) Project Co shall develop, design and install at least 10 interpretive panels along the Expanded Trillium Line MUPs or at the Expanded Trillium Line Stations which describes the heritage history and character of the former CPR rail line in accordance with Schedule 17 - Environmental Obligations. The interpretive panels, including their locations, shall be developed in consultation with the City's Heritage staff and federal stakeholders. A report detailing the research to support the text and graphics for interpretive panels including the design drawings shall be submitted to the City for review and approval in accordance with Schedule 10 - Review Procedure. The [REDACTED], shall form the basis of the research for the report.
- (h) Existing Plant Material
- (i) Existing plant material shall be protected where feasible and as per the Tree Mitigation Plan(s).

- (ii) Provide an Existing Tree Protection/Monitoring Plan, developed by a Licensed Arborist, which defines the methodology for the protection and Maintenance of the existing trees.
  - (iii) Protect plant material during construction as per City and NCC specifications and standards. Ensure protective fencing is inspected and repaired as required.
  - (iv) Any plant material required to be removed for the construction of the Project shall be replaced to the City standards for trees, and one to one replacement for shrubs and perennials.
  - (v) Any existing trees identified for protection, and proposed for removal during construction, shall be reviewed, and approved by the City prior to removal.
- (i) Proposed Planting
- (i) Planting outside of Stations shall be used to define spaces, provide shade and reduce wind speed on Platforms to help direct customers safely between public streets and Station entrances and assist in deterring pedestrian crossings through restricted access areas. Plant material shall be designed to be harmonious with the architecture and scale of the Station and coordinated with sight line locations for security cameras and Station lighting, in particular with respect to anticipated vegetation growth.
  - (ii) Planting shall adhere to CPTED requirements.
  - (iii) Street trees shall be integrated into the pedestrian plazas adjacent to the Stations to provide shade and comfort to the pedestrians. Where the trees are integrated within a paved plaza surface, a structural support system or a root control system below the paved surfaces shall be integrated into the overall design to provide a sufficient root growth to sustain growth.
  - (iv) Quality and source shall comply with the CNLA metric guide referring to size, development and rootball of plant material. Measure plants when branches are in their natural position. Use trees and shrubs of No.1 Grade. All plant material shall be hardy to the local urban conditions and native to the Ottawa area where possible. All plant material shall meet the requirements of “Canadian Standards for Nursery Stock.”
  - (v) Plant material shall be hardy to the urban conditions, winter Maintenance requirements and be designed to be low-Maintenance both in the short and long term. Plant material shall be salt tolerant when used in areas adjacent to bus facilities and in areas identified for snow storage. Local native species shall be selected wherever feasible. Supplemental watering to assist in establishment of the plant material shall be required. A long term potable water irrigation system shall not be permitted.

- (vi) The plant material palette shall include a variety of plant material to provide seasonal variety and colour.

**Minimum Planting Criteria for Station and Guideway Landscapes**

<b>Plant Material</b>	<b>Size</b>	<b>Spacing</b>
Deciduous Trees – large	70mm cal.	5.0ms
Deciduous Trees – medium	45mm cal.	4.0m
Coniferous Trees	1.5m ht	3.0m
Coniferous Shrubs	45cm spread	900mm
Deciduous Shrubs	45cm ht	900mm

- (j) Topsoil
  - (i) All in-situ topsoil stripped for construction requirements shall be removed off-Site unless there is sufficient room to stockpile topsoil at no greater height than 1.2m. Stockpiled topsoil shall only be used in areas of seeding adjacent to the alignment.
  - (ii) All topsoil shall be fertile, friable, natural sandy loam containing not less than 4% of organic matter for sandy loams, with an acidity value ranging from pH 6.0 to pH 7.5 and capable of sustaining vigorous plant growth. It shall be free of stems or roots, stones and clods more than 50mm diameter or other extraneous matter. Topsoil shall be screened. Topsoil shall not be supplied in a frozen state.
- (k) Sod
  - (i) All turf areas within 9m of pedestrian pathways, entry plazas and paved public spaces, shall be sodded, unless otherwise specified in this Article.
  - (ii) Nursery Sod: quality and source shall comply with standards outlined in ‘Canadian Standards for Nursery Stock’, most recent addition.
  - (iii) Project Co shall scarify the existing subgrade a minimum of 150mm, and apply a minimum of 150mm of topsoil prior to installation of sod.
- (l) Seed
  - (i) The limits of construction and staging areas for some Stations and sections of the Track are expected to extend beyond the limits of sodding indicated above. Any disturbed areas extending beyond the limits identified for sod above shall be rehabilitated as per Schedule 15-2, Part 1, Article 4 – Design and Construction. A review of the adjacent land uses and Site development shall be completed for these locations and the most appropriate groundcover shall be selected.
  - (ii) Seed: to meet the requirements of the City specifications, unless otherwise noted in this Article.

- (iii) Project Co shall scarify the existing subgrade 150mm, and apply a minimum of 150mm of topsoil prior to installation of seed.
- (m) Earth Borrow
  - (i) All in-situ non-contaminated overburden, and topsoil not appropriate for reuse as topsoil, stripped for the construction requirements, may be utilized as earth borrow backfill within the Lands;
  - (ii) All stripped overburden may be stockpiled; and,
  - (iii) Imported earth borrow shall consist of material as defined by OPSS 212.

## **2.8 Natural Channel Restoration**

- (a) Project Co shall refer to Schedule 15-2, Part 2, Article 5 - Drainage and Stormwater Management Design Criteria, for the SWM requirements for the channel design.
- (b) Project Co shall design all watercourse embankments that are to be reinstated in accordance with the following:
  - (i) Maximum of 3:1 slopes;
  - (ii) Any slopes greater than 3:1 shall be constructed with a retaining wall made of natural materials, such as armour stone rock wall, wood revetments, root wads, or other measures. The retaining walls shall be made of natural materials, such as armour stone rock wall, wood revetments, root wads, or other measures. All built features shall meet the flow analysis and Design Criteria to ensure the slope stability, with the following minimums:
    - A. Use biodegradable materials to anchor the logs and root wads to the embankment.
  - (iii) Rip rap or gabion baskets shall not be permitted;
  - (iv) On all outside bends of the creek, Project Co shall reinforce the channel embankment with root wads. The reinforcement shall protect the embankment for the 2 year flows and be a minimum 0.75m height, or as per the detailed design analysis, completed as per Schedule 15-2, Part 2, Article 5 - Drainage and Stormwater Management Design Criteria;
  - (v) All slopes shall be vegetated with native species woody plant material;
  - (vi) Project Co shall ensure the stabilization of the final planting beds during the establishment of the plant material to control wash-outs and sediment movement into the watercourse;

- (vii) The vegetation shall be a blend of 90% trees and 10% shrubs, and shall be of an appropriate species for the location on the embankment. Project Co shall identify species that are tolerant for locations within the seasonal flooding, 10 year flood, 100 year flood and upland planting;
- (viii) The trees shall consist of a blend of the following:
  - A. 25% Coniferous Trees;
  - B. 70% Reforestation Trees; and,
  - C. 5% Caliper Deciduous Trees;
- (ix) The shrubs shall include:
  - A. 70% shrubs; and,
  - B. 30% live stakes.
- (x) Meet the following planting criteria:

**Minimum Planting Criteria for Restoration Landscapes**

<b>Plant Material</b>	<b>Size</b>	<b>Spacing</b>
Caliper Deciduous Trees	60mm cal.	5.0m
Reforestation Trees	20mm cal	3.0m
Coniferous Trees	900mm	2.4m
Deciduous Shrubs	45cm ht	600mm
Live Stake Planting (Deciduous)	90cm length	100mm

- A. Any live stakes shall consist of native species, rhizome spreaders, and be tolerant of the Site specific conditions at the creek edge.

**2.9 LID SWM Landscapes**

- (a) Refer to Schedule 15-2, Part 2, Article 5 - Drainage and Stormwater Management Design Criteria for the SWM requirements.
- (b) All surface drainage swales shall be landscaped to the following criteria:
  - (i) Flat-bottomed swales;
  - (ii) Varying side slopes, with a maximum slope of 3:1 and a minimum slope of 8:1;
  - (iii) Establish a ground cover that accommodates the periodic wetting;

- (iv) All bioswales adjacent to areas of vehicular traffic shall be protected by a raised concrete curb, with curb cuts to accommodate surface drainage; and,
- (v) All plant material utilized within the bioswales shall be salt tolerant.

### **2.10 Existing Tree Protection**

- (a) Project Co shall submit a Tree Mitigation Report, in accordance with Schedule 10 – Review Procedure and Article 2.6 of this Part 6, to delineate existing trees impacted by the Work. These drawings shall be reviewed, and appropriate agency approval received, prior to commencement of Work.
- (b) All tree protection shall be installed prior to the commencement of any Works.
- (c) Project Co shall develop a construction plan that minimizes the removals and impacts on the adjacent trees to be protected.

### **2.11 Tree Compensation**

- (a) Based upon the required removals to accommodate the construction requirements, Project Co shall complete the Tree Compensation Plan(s), and submit as consolidated package and in accordance with Schedule 10 – Review Procedure.
- (b) The Tree Mitigation Plan shall be prepared by a Licensed Arborist in conjunction with the Landscape Architect.
- (c) The Tree Compensation Plan(s) shall be based upon the following criteria:
  - (i) For every deciduous tree, between 100mm and 500mm caliper, Project Co shall replace with 2 - 70mm caliper trees; and,
  - (ii) For every coniferous tree, Project Co shall replace with 2 – 1.8m tree.
- (d) Project Co shall develop the Tree Compensation Plan(s) in conjunction with the overall planting plan for the Project, including Stations and Guideway to ensure sufficient compensation for the required removals.
- (e) The Tree Compensation Plan(s) shall conform to City standards and approved species list.
- (f) Existing trees (including crown, trunk and root system) in proximity or vulnerable to damage by the Work, shall be protected during all stages of Work. No material, construction equipment or vehicles shall be stored under the drip-line of trees at any time. Trees shall be protected and watered regularly as required by standard horticultural practice during the Construction Period.

### **2.12 Site Restoration**

- (a) Project Co shall complete the following:
- (i) Removal of all temporary and permanent roadway works, including granular bases;
  - (ii) Scarification of compacted subgrade a minimum of 150mm prior to the placement of topsoil for planting, seeding or sodding; and,
  - (iii) Regrading and shaping of the Site to reinstate the original contours and drainage patterns. In areas where the roadway will be removed, the regrading shall eliminate the engineered roadway grades and profile.

## ARTICLE 3 CONNECTIVITY REQUIREMENTS

### 3.1 General Requirements

- (a) Existing pathways, sidewalks and MUPs within the City and NCC lands are critical community connections that shall be maintained throughout construction, unless specifically identified and agreed to for closure or removal.
- (b) Project Co shall develop a TTMP to identify any potential safety concerns for pedestrians and cyclists during construction and measures for protection, as per Schedule 15-2, Part 7, Article 7 – Traffic and Transit Management Plan.
- (c) Project Co shall implement any required measures to alleviate these potential safety concerns and ensure the community connections identified in this Part 6 and Schedule 15-2, Part 7 – Traffic and Transit Management and Construction Access, are maintained. Sidewalks and pathways shall be installed as required to provide connection between the adjacent communities to the Station and as indicated elsewhere in Schedule 15-2, Part 4 – Stations and this Part 6.

### 3.2 Connectivity Elements

- (a) Project Co shall ensure that design and selection of construction materials and layout alignment shall be consistent with specific Site context and associated landscape type.
- (b) Project Co shall design and construct these pathways and MUP's with a minimum width of 3.0m unless specified otherwise in this Article shall be a paved surface capable of commercial use, including access by Maintenance Vehicles and Emergency vehicles and shall not be used for calculating the requirements for loading or unloading of the buses.
- (c) Project Co shall design and construct routes utilized by cyclists, including MUP's, shall be continuous, dismount and walk solutions shall be approved and installed, at the discretion of the City.
- (d) Project Co shall include a TWSI, located at vehicular intersections, or where a sidewalk crosses a cycle track, for all pathways and MUP's.
- (e) Project Co shall provide a 200mm delineator strip between a cycle track and sidewalk, where there is insufficient width to provide a 0.9m landscape strip.
- (f) Project Co shall design and construct a sodded clearance strip on each side of a MUP, as per Article 2 - Design Criteria, of this Part 6, except in the following conditions;
  - (i) Where MUPs are located beneath a Bridge, provide 0.6m paved shoulder on each side of MUP;
  - (ii) Where MUP traverses an open paved plaza, provide pavement markings, change in paving colors or change in hard surface material to identify the route of the

- MUP. This shall include a minimum of four bands of interlocking pavers in a double soldier course, centred 0.6m prior to the MUP traversing the plaza;
- (iii) Where a MUP traverses the Station Plaza, there shall be a minimum of 3m offset from the Station entry; and,
  - (iv) Where a MUP is adjacent to an existing or a proposed vertical constructed surface or element such as a building, guardrail, retaining wall, fence, etc., a 0.6m “buffer” space shall be provided from the existing constructed surface in addition to the width of the MUP, with the same asphalt surfacing and base material.
- (g) Project Co shall design and construct the MUPs and sidewalks at Stations to ensure crossing locations to minimize the potential conflict between cyclists and pedestrians. This may include “T” intersections, small walls, planters or other design elements.
  - (h) Project Co shall install bollards at all roadway intersections to restrict vehicular access to the MUP. These bollards shall be collapsible, to accommodate service vehicles.
  - (i) Project Co shall provide reflective tape on all bollards.
  - (j) Project Co shall design and construct depressed curbs at all sidewalk roadway interfaces and they shall be in proximity to bicycle parking areas to facilitate safe access from roadway to sidewalk.

### **3.3 Accommodation of Pedestrians and Cyclists During Construction**

- (a) All trails, pathways and MUPs shall remain open throughout construction unless specifically identified. Where Project Co requires a temporary closure, less than seven days in duration, a temporary granular pathway may be installed. Where the trail, sidewalk, pathway or MUP is required to be closed for longer than seven days, Project Co shall provide an alternate route, with a minimum of a paved asphalt surface for the duration of the original closure.
- (b) Project Co shall provide an alternate route that minimizes any detours for the pedestrians and cyclists, and is a maximum of 20% additional length.
- (c) Proposed temporary closure or re-routing of pedestrian and cycling routes shall be submitted in accordance with Schedule 10 – Review Procedure, and shall conform to the TMPP and as required by City of Ottawa Special Provision D-005 and as documented in COADS. Project Co shall include a Pedestrian Access Plan/Construction Site Pedestrian Control Plan in the TTMP submissions per Schedule 15-2, Part 7, Article 7 - Traffic and Transit Management Plan.
- (d) Multiple subsequent closures of less than seven days, shall not be permitted, and an alternate route shall be provided and shall include:
  - (i) Smooth paved surface to provide Universal Design requirements;

- (ii) Curb cuts as required to provide barrier-free routes from pathways and sidewalks to roadway crossings;
  - (iii) A minimum clear width of 1.8m for sidewalks;
  - (iv) A minimum width of 3m for MUP; and,
  - (v) Temporary routes shall be lit to the same level as the original route.
- (e) All existing pedestrian walkways and cycling facilities shall be maintained to the City standards at all times, during the Construction Period. Project Co shall be responsible for all design, approvals, construction and Maintenance, including cleaning, of the pedestrian walkways and cycling facilities for the duration of time the detour is in service.
- (f) Project Co shall not close any MUP or sidewalk identified to remain open during construction, and the TTMP shall identify all measures to ensure the safety of pedestrians and cyclists. Project Co shall modify the TTMP as required to accommodate the pedestrian and cyclists.
- (g) The Site pedestrian control design shall include all temporary bilingual pedestrian signing, directional signing, Maintenance of sidewalk, relocation and any other delineation to provide safe environment for pedestrians and cyclists.

### **3.4 Roadway Crossings**

- (a) General
- (i) Project Co shall be responsible for liaising and coordinating with the City with regard to all modifications that may be required at municipal traffic signals both during and after completion of the design and construction. Proposed modifications shall be supported by traffic engineering analysis and meet the City traffic signal requirements and standards.
  - (ii) Project Co shall design and install pedestrian and cycling crosswalks at each signalized intersection.
  - (iii) Project Co shall complete a traffic study to finalize the configuration and review with the City with respect to the type of controlled crossing device to be implemented (pedestrian signal, full traffic signal, or PXO Type B, C or D). Project Co shall implement the type of controlled crossing device selected by the City at each intersection.
  - (iv) Project Co shall design and install PXO as indicated in Article 4 of this Part 6.
  - (v) Project Co shall coordinate the work of this article with Schedule 15-2, Part 2 - Civil and Guideway and Schedule 15-2, Part 7 – Traffic and Transit Management and Construction Access.

### **3.5 Pavement Marking and Signing**

(a) General

- (i) Project Co shall provide all signing and Pavement marking in accordance with the criteria contained in this Article, the requirements of OPSS, the applicable Reference Documents and as per Schedule 15-2, Part 7, Article 1 - General Traffic and Transit Management Requirements.
- (ii) All temporary signage shall be installed as per Schedule 15-2, Part 7, Article 1 – General Traffic and Transit Management Requirements.

(b) Temporary Signing

- (i) Project Co shall be responsible for the design, supply, installation, relocation, Maintenance, and removal of all temporary signage and pavement markings, including warning, guide, advisory and directional signs as per Schedule 15-2, Part 7, Article 1 – General Traffic and Transit Management Requirements.

### **3.6 Winter Maintenance**

- (a) Project Co shall design the Station Plazas, pedestrian emergency egress, PPUDO, Park and Rides, pedestrian and MUP to accommodate winter Maintenance, including providing a route for equipment to manoeuvre along the corridor. This shall include locations to stockpile snow along the pathways as required, with sufficient space for equipment turn around including a minimum of 5m x 5m at all egress points at the building façades;
- (b) Project Co shall indicate the snow storage locations on the layout drawings and fencing drawings;
- (c) Any snow storage locations shall be located on unencumbered City lands and outside of any ROW;
- (d) Any allocated snow storage locations shall be offset from the existing and proposed Site features, bioswales and plant material; and,
- (e) Any snow storage locations shall ensure the drainage pattern is integrated within the overall SWM plan.

## ARTICLE 4 SITE SPECIFIC DESIRED OUTCOMES

### 4.1 Station Specific Desired Outcomes

- (a) Bayview Station
- (i) Realign existing MUP's to the north of the Station as required to maintain maximum gradient of 5% and tie into existing MUP network.
  - (ii) Relocate north-south MUP, on the east side of the alignment to maintain a minimum width of 4m, excluding offset from any built structures and tie into existing MUP north and south of Station Platform. Regrade between the MUP and the adjacent features to maintain a maximum of 3:1 for slopes.
  - (iii) Integrate the secure fence with the perimeter wind screens around the Station, extending from the proposed limits of the Platform on the east side to the limits of the Platform on the west side to restrict access to the Station.
  - (iv) Provide shrub planting on slopes at north east corner of Station and tree planting as per quantities in Clause 4.3 of this Part 6.
  - (v) On the west side of the Station, extend the existing Station Plaza south to include the entry to the pedestrian Bridge, as per Schedule 15-2, Part 4, Clause 3.2 (f), and connection to the MUP west of the Station Entry with an approximate size of 200m<sup>2</sup>.
- (b) Gladstone Station
- (i) Provide Station Plaza between Gladstone Avenue and Station entrance with a minimum size of 500m<sup>2</sup>, extending from the Fare Paid Zone to Gladstone Avenue to the south, and the MUP to the east.
  - (ii) The Station Plaza design shall be developed as a pedestrian space, and to deter cycle movements.
  - (iii) Project Co shall provide a bus shelter at the western limit of the Station Plaza.
  - (iv) Provide all bicycle parking to the east of the plaza, adjacent to the MUP.
  - (v) Realign the parking on the west side of the Station, within the city lands, to accommodate a 2m Emergency exit path from the Station Platform to Gladstone Avenue.
  - (vi) Provide sufficient space at the north end of the Emergency exit path to accommodate Maintenance Vehicle turning requirements.

- (vii) Provide a minimum of 1m offset between Emergency exit and realigned parking, and install traffic barrier to restrict vehicles from accessing or blocking Emergency exit pathway.
- (viii) Reinstate planting disturbed by construction to match existing between Gladstone Station and existing Trillium MUP.
- (ix) Provide pedestrian and cyclist activated signalized crosswalk/crossride at MUP crossing of Gladstone Avenue.
- (c) Carling Station
  - (i) There are no specific requirements for this Station.
- (d) [REDACTED]
  - (i) Replace the existing underpass with a 9m wide underpass south of the Station that aligns with the existing east-west pathway.
  - (ii) On the west side of the underpass:
    - A. Extend the paving on the west side to the full width of the underpass to the pathways connecting to Campus Avenue;
    - B. Provide a MUP leading north to connect to the existing Station entry; and,
    - C. Provide 4.5m wide stairs, with bike ramp, and a concrete sidewalk between the underpass and the raised concrete crosswalk to the south of the underpass.
  - (iii) On the east side of the underpass, provide a concrete plaza to transition from the underpass to the existing pathway connection to the Station entry.
  - (iv) Provide bicycle parking in equal quantities on both the east and west side of Station.
  - (v) Provide new planting to match existing.
- (e) Mooney's Bay Station
  - (i) There are no specific requirements for this Station.
- (f) Walkley Station
  - (i) Provide Station Plaza at the Station entry with an unobstructed width of 9m, to allow Passenger access to paid fare entry location.

- (ii) Provide the bicycle parking at the Station Plaza, offset from the Passenger access route to the paid fare entry.
  - (iii) Reconfigure traffic lanes and widen sidewalk on the south side of Walkley Road to provide 3.6m wide sidewalk between Walkley Station and existing Transitway Station.
  - (iv) Provide crosswalk/crossride at off-ramp from Transitway and Airport Parkway to facilitate connection between Transitway Station and Walkley Station.
  - (v) Reconstruct and widen the existing pathway from Walkley Road into a lit MUP on the east side of the Station with a minimum width of 4m and extend the MUP to the parking lot south of the Station as required to meet AODA and COADS. Install trees a minimum of 6m on centre to provide shade along the MUP.
  - (vi) Provide access from the Emergency exit to the MUP, with sufficient space to accommodate snow and Maintenance vehicle access and turn around.
- (g) Greenboro Station
- (i) Provide a MUP connection from Bank Street to the Station entry plaza.
  - (ii) Provide Crossride/Crosswalk at Bank and Johnston Road.
- (h) South Keys Station
- (i) Provide a Station Plaza on the east side of Station entry that is framed by the traffic lanes to the north and the south, of approximately 700m<sup>2</sup>, with approximately 93% concrete paving and 7% soft landscape;
  - (ii) The east Station Plaza shall provide a continuous barrier free access between the roadways and the plaza, with traffic bollards to control vehicular access to the plaza. Provide sufficient collapsible bollards to allow Maintenance vehicles access onto the plaza, from both the north and the south side of the Station Plaza;
  - (iii) Provide four trees in the east Station Plaza paving, and three trees within the planting beds;
  - (iv) Provide grocery cart storage, offset from the roadway, north of the Station entry, for a minimum of forty carts within the east Station Entry Plaza. The grocery cart storage shall be defined by a stainless steel guard, with a minimum of two rails, and a clear width of 2.55m and length of 4.5m;
  - (v) Provide a one way drive isle, 6m width, to accommodate a PPUDO, east of the east Station Plaza.

- (vi) Provide a roadway access, east of the PPUDO lane, aligned with the parking lot traffic lanes south of the Station Plaza;
  - (vii) Between the two aisles, create an island with a shrub planting and one tree, at each end;
  - (viii) Relocate the existing switchgear into the island between the two drive isles;
  - (ix) Extend the existing sidewalk to the east Station Plaza with crosswalks at all vehicular crossings from Daze Avenue;
  - (x) Reconfigure the parking lot east of the drive isle to extend the curb to the existing sidewalk to restrict vehicular traffic into the drive isle, and delete four parking spaces to accommodate vehicular turn movements;
  - (xi) Provide a Station Plaza on the west side of the Station entry that offsets the MUP a minimum of 3m to provide clear sight lines between the passengers and the MUP; and
  - (xii) The proposed Tunnel design, as per Schedule 15-2, Part 4, Clause 3.9 (e) (i), shall be developed to provide a minimum offset of 4m from the front face of the future Tunnel entry to the Roadway on the east side of the Station;
  - (xiii) Provide equal quantities of bicycle parking on both the east and west side of Station.
- (i) Leitrim Station
- (i) Provide a Station Plaza of approximately 450m<sup>2</sup>, with approximately 90% paved areas, and 10% soft landscape.
  - (ii) Provide a secured perimeter enclosing the Train Station and bus Platform, with the lockable gates located between the bus Platform and the Train Station.
  - (iii) Align the MUP on the east side of the bus Station and the Train Station with a crossride/crosswalk at the bus access road to the bus Station. The MUP shall be in addition to the sidewalk requirements for the Park and Ride facility.
  - (iv) Provide a lit MUP along the north side of the Station and Park and Ride facility to Gilligan Road.
  - (v) Provide lit sidewalks and parking lot configuration, as per Article 2 – Design Criteria, of this Part 6.
  - (vi) Provide a crosswalk/crossride and lit MUP connection to Quinn Road.
- (j) Bowesville Station

- (i) Provide a lit 3m wide MUP from the intersection on Earl Armstrong Road on the east side of the entry road to Bowesville Station Entry Plaza;
  - (ii) Provide a signalized intersection including crosswalk/crossride facilities at the junction of Earl Armstrong Road and the MUP;
  - (iii) Provide a secured perimeter enclosing the Train Station and bus Platform, with the lockable gates located between the bus Station and the Train Station, and between the bus Station and the entry plaza;
  - (iv) The Station Plaza shall be of 800m<sup>2</sup> to accommodate the pedestrian and cycling requirements, bicycle parking, Site furniture and soft landscape elements with approximately 60% paved and 40% soft landscape;
  - (v) The Station Plaza shall connect to a pedestrian walkway, a minimum of 6m width, leading from the Park and Ride facility to the Station entry;
  - (vi) Where the MUP abuts the Station Plaza, there shall be three bands of interlocking paving;
  - (vii) Locate the stormwater facilities to the east and west of the Station, to frame the Station and bus Station to direct Passengers to the Fare Paid Zone entry gates;
  - (viii) Provide a sidewalk the intersection from the intersection on Earl Armstrong Road on the west side of entry road to the Station Plaza; and,
  - (ix) Reinstate the existing community gardens as required to accommodate the Earl Armstrong Road construction, and provide a gravel access road from the Park and Ride facility, with curb cut, to the garden, with sufficient space at the gardens to provide a turnaround.
- (k) Uplands Station
- (i) Reconfigure the existing parking lot to provide direct pedestrian access to Station from EY centre entrance, perpendicular to the Station, and with a minimum sidewalk width of 3.6m. The maximum reduction of parking spaces shall be 21.
  - (ii) Provide pedestrian lighting at the backside of the sidewalk connecting the EY Centre to the Station.
  - (iii) Provide crosswalk / crossride across existing drive aisles to south east of Station.
  - (iv) Provide plaza space to the south of the Station a minimum width of 9m and of sufficient size to accommodate bicycle parking, Site furniture and soft landscape elements as required below.

- (v) Provide a pedestrian sidewalk connection, a minimum of 4m between the bus stop and Uplands Station.
  - (vi) Provide a lit MUP from the Station to Uplands Road.
  - (vii) Reinstate the bioswales between the parking lot and the OC Transpo access road to meet the original plant species, spacing and size.
  - (viii) Provide traffic islands in the parking lot with two deciduous trees, species to match existing in parking lot.
- (l) Airport Station
- (i) Protect all existing plant material beyond the limits of the Station and Track structure. Reinstate all disturbed areas outside the overhead structures.
- (m) Limebank Station
- (i) Provide a Station Plaza of approximately 400m<sup>2</sup>, with approximately 90% paved areas, and 10% soft landscape.
  - (ii) Provide a secured perimeter enclosing the Train Station.
  - (iii) Provide a pedestrian connection, a minimum of 6m wide between the eastbound bus stop area and the Station Plaza.
  - (iv) Provide a pedestrian connection, a minimum of 6m wide between the westbound bus stop area and the pedestrian crossing to the Station Plaza.
  - (v) Provide a pedestrian crossing of the east-west connector road at the west end of the bus stop area connecting to the Station plaza.
  - (vi) Provide a PPUDO with three spaces in each direction on Main Street: north of the Station.
  - (vii) Provide 1.8 m wide sidewalks from the Station at the intersection of Main Street and the east-west connector road to the PPUDO's on each side of Main Street.
  - (viii) Provide raised cycle tracks on the north and south side of the east-west connector road.
    - A. Cycle tracks shall transition from street side to behind the bus stops located adjacent to Limebank Station.
    - B. Cycling facility between the Trillium Line ROW and the east-west connector road shall be terminated just east of the Station entrance near the bicycle parking area.

- C. Project Co shall provide a 3.0 wide continuous MUP from the cycle track located on the north side of the east-west connector on the east side of Main Street north to Earl Armstrong Road.
- (ix) Project Co shall provide a 3.0m wide continuous sidewalk on the north side of the east-west connector road from Main Street to collector D.
  - A. Sidewalk shall be separated from the cycle track by a 2.0m wide landscape buffer for the entire length.
    - i. Landscape buffer shall not be required under the Limebank road Structure, however 0.6m separation shall be maintained between the two elements.
- (x) Project Co shall provide a 2.0 m landscape buffer between the Trillium Line ROW fencing and the cycling and pedestrian facilities located on the north and south side of the ROW fencing.

**4.2 Site Furnishings**

- (a) Project Co shall provide the minimum quantities of the following elements for each Station:

<b>Station</b>	<b>PPUDO Parking Spaces</b>	<b>Bicycle Parking Spaces</b>	<b>Accessible Benches</b>	<b>Waste Receptacles</b>
Limebank	6	40	2	2
Bowesville	6	40	8	2
Leitrim	4	20	4	1
South Keys	0	40	1	1
Walkley	0	20	2	1
Mooney’s Bay	n/a	n/a	n/a	n/a
Carleton	0	14	2	0
Carling	n/a	n/a	n/a	n/a
Gladstone	0	20	2	2
Bayview	0	0	0	0
Uplands	0	10	4	1
Airport	0	0	0	0
New Walkley Yard	n/a	20	1	2

**4.3 Site Plantings**

- (a) Project Co shall provide the minimum quantities of plant material for each Station:

<b>Station</b>	<b>Deciduous</b>	<b>Coniferous</b>	<b>Deciduous</b>	<b>Coniferous</b>
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	Trees	Trees	Shrubs	Shrubs
Limebank	20	5	120	30
Bowesville	250	30	400	0
Leitrim	38 + 102 (park+ride)	0	0	0
South Keys	0	0	0	0
Walkley	0	20	0	0
Mooney's Bay	n/a	n/a	n/a	n/a
Carleton	15	0	320	130
Carling	n/a	n/a	n/a	n/a
Gladstone	15	3	140	60
Bayview	21	0	210	90
Uplands	73	0	525	225
Airport	0	0	350	150

#### 4.4 Site Specific Requirements

(a) South Keys Station to Leitrim Road

- (i) Provide a continuous MUP linking the Sawmill Creek Pathway system, on the west side of the alignment, to the main north-south MUP on the east side of the alignment including:
  - A. An underpass at the alignment, to accommodate a direct connection to the MUP to Millstream Way, and a Bridge over Hunt Club Road. See Schedule 15-2, Part 2, Article 4 – Structural Design Criteria and Requirements for information;
  - B. Reconfiguration of the Sawmill Creek MUP to connect to the underpass and the Airport Parkway/Hunt Club Road West intersection, including all drainage, grading and retaining walls;
  - C. A MUP from the main north-south MUP to Millstream Way, including curb cuts on Mac Street; and,
  - D. The MUP connection between Millstream Way, north to the Sawmill Creek Pathway system shall have an asphalt paved surface.
- (ii) Provide a continuous MUP along the east side of the alignment from Hunt Club Road to Leitrim Station.
- (iii) Develop the service access road for the alignment to service as a MUP from Lester Road to the main north-south MUP. Install collapsible bollards at Lester Road to control vehicular movement on the service road and MUP.

- (iv) Provide an at-grade crossing at Lester Road, with a controlled crossing, as per Article 3 of this Part 6, and a minimum of 20m length of asphalt surfaced MUP;
  - (v) South of Millstream Way, the MUP surface shall be stonedust, unless the MUP has a shared use with service access road. Project Co shall provide a surface as required for the service requirements of the alignment
- (b) Leitrim Road to Bowesville Road
- (i) Provide a continuous stonedust surfaced MUP on the east side of the alignment, from Leitrim Road, east of the Leitrim Station, grade separated over Earl Armstrong Road, and south along the alignment to Bowesville Road;
  - (ii) Provide a MUP on the south side of Earl Armstrong Road;
  - (iii) Provide a connection from the MUP adjacent to the alignment to the MUP on the south side of Earl Armstrong Road;
  - (iv) The MUP south of Leitrim shall be constructed on the top of the embankment, minimizing any impact to the existing vegetation and grading;
  - (v) Provide a connection from the MUP to the Osgoode Trail, south of the alignment;
  - (vi) Provide a connection from the MUP adjacent to the alignment to the MUP within High Road ROW;
  - (vii) Maintain the existing gravel MUP north, from the end of High Road, within the existing ROW, to Bowesville Road;
  - (viii) Provide a PXO crossing at the MUP and Bowesville Road, with protected bike crossing locations; and,
  - (ix) Provide a 10m wide structure over the alignment at High Road with the following requirements:
    - A. Centre the MUP, with a stonedust surface, within the Bridge Structure, and extending to the limits of grading to align with the existing gravel walking pathway;
    - B. Provide a minimum of 300mm soil over the structure for a growing media, and seed with a native grass seed mix;
    - C. Reinstate the embankments adjacent to the Structure with a maximum of 3:1, minimum 300mm topsoil and a blend of native shrubs and trees to provide shade cover for small mammals and animals; and,
    - D. Provide a guardrail, as per Clause 2.7 (d) (i) E of this Part 6.

- (c) University Road Pedestrian Bridge over Rideau River (SN018750)
- (i) The University Road Pedestrian Bridge pathway connections shall be designed and constructed to provide universally accessible route from [REDACTED], over the Rideau River Bridge, and connecting to the Rideau River eastern pathway. The existing pathways and MUP's shall be relocated and modified as required to provide a smooth transition between the existing facilities and the proposed MUP.
  - (ii) All handrails and guardrails required beyond the proposed Bridge Structure shall meet the materials, finishes and general design of the Bridge to provide a consistent design element throughout the site. Refer to Schedule 15-2, Part 2, Article 4 – Structural Design Criteria and Requirements for additional information.
  - (iii) Provide a MUP on both the north, and south side of the proposed pedestrian Bridge, with the following criteria:
    - A. Taper the MUP from the Bridge width of 5m, to 3m over a minimum distance of 6m;
    - B. Provide a minimum of 6m approach with a maximum slope of 2%, at the interface with the Bridge Structure;
    - C. Ramps and stairs shall not be permitted as part of the transition between the Bridge and the adjacent grade; and,
    - D. Minimize the impacts on both the north and south of the Rideau River by maximizing the grade of the MUP to meet AODA and COADS.
  - (iv) [REDACTED] requirements:
    - A. The MUP connection between the Bridge and Richcraft Hall shall be standard MUP width and meet the plaza grade;
    - B. The connection to the pathway along the river's edge, shall meet and match the width of the existing width; and,
    - C. Offset the pathway from the University Road on the east side of the Bridge a minimum of 1.2m.
  - (v) Vincent Massey Park lands requirements;
    - A. Maintain the original grade of the MUP for the Rideau River Eastern Pathway under the Rideau River rail Bridge;
    - B. Meet and match the original grade of the MUP to the west of the Bridge within 40m; and,

- C. Taper the MUP at the base of the natural stone wall, commencing approximately 20m west of the abutment to meet and match the width of the existing pathway.
- (vi) The grading from the MUP to the existing terrain shall vary, to ensure a naturalized slope, including:
- A. Maximum of 20% slope;
  - B. A minimum of 600mm shoulder on either side of the MUP prior to commencement of the slope;
  - C. Protection of the critical root zone of the existing trees to be retained; and,
  - D. Maximum of 10% to accommodate the drainage from the Bridge to the Rideau River.
- (vii) Provide a natural stone retaining wall designed by a Professional Engineer, to be sufficient to withstand the river velocity and flow, and stepped to integrate within the overall grading plan, at the following locations;
- A. On the north and south side of the Rideau River as required to maintain the current river edge;
  - B. Along the bottom of the Rideau River rail Bridge embankment to accommodate the MUP connection under the Rideau River rail Bridge; and,
  - C. Provide setbacks in the natural stone retaining wall to allow access to the beach.
- (viii) Provide a natural stone architectural finish on the Bridge abutments. Project Co shall provide three different natural stone options for review and selection by the City;
- A. On the outer faces of all abutment walls.
- (ix) Project Co shall provide the following for the beach on the south side of the Rideau River:
- A. Maintain the existing area of a minimum of 300m<sup>2</sup> of the existing riverwashed granite peagravel beach after completion of the works;
  - B. Provide a sample of the granite peagravel for review;
  - C. Grade the beach to provide a continuous slope from the natural stone retaining wall to the existing river bed;

- D. Reinstatement as required with a minimum of 100mm depth stone;
- (x) Potential Maternal Bat Roosting Trees
- A. There is a potential bat roosting tree that has been identified immediately south of the construction site for the Bridge to be protected throughout construction.
  - B. Provide a natural stone retaining wall as required to protect the maximum amount of the critical root zone for the tree.
- (xi) Project Co shall provide the following for electrical and lighting requirements:
- A. Pedestrian Bridge lighting shall be provided per the requirements as in the Illuminating Engineering Society of North America Lighting Handbook. These requirements include a minimum average horizontal illuminance of 5 lux and a maximum uniformity ratio of 4:1;
  - B. The electrical feed shall be from the existing electrical circuits on [REDACTED] lands;
  - C. Provide a handhole and disconnect cabinet at the junction between the existing [REDACTED] electrical and the extension for the pedestrian Bridge;
  - D. Project Co shall provide integrated rail lighting along full length of pedestrian Bridge;
  - E. Pedestrian lighting shall be LED, 2700 Kelvin Color Temperature, and 6.07 watts/meter;
  - F. Lighting shall be downcast and have full cut-off to minimize light pollution, and ensure no light spill into the Rideau River; and,
  - G. Project Co shall provide conduits, with pull wire and handhole at the end of the construction, on the south side of the Rideau River, to accommodate for future electrical connection for the Confederation Heights connection.
- (xii) Project Co shall reinstate all the disturbed areas with the following:
- A. North side of Rideau River shall be a combination of trees, integrated within the turf areas, with riparian planting along the embankment; and,
  - B. South side of the Rideau River shall be a naturalized landscape, with a meadow grass mix, riparian planting and trees.

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## ARTICLE 5 SITE SPECIFIC TEMPORARY REQUIREMENTS

### 5.1 Station Specific Temporary Requirements

- (a) Project Co shall design and construct the following at Bayview Station and MUP
  - (i) Project Co shall maintain the north-south MUP on the east side of the proposed Station to the main east-west pathway north of the alignment throughout construction.
  - (ii) Relocate the existing MUP on the east side of the proposed Station widening prior to the decommissioning of the existing MUP.
  - (iii) On the south side of Albert Street, an Alternate route shall be the shared construction access road, on the north side of 250 City Centre Avenue. Provide a direct connection to the MUP on the north side of Albert Street.
  - (iv) Provide flagperson on construction access road when road is utilized by construction vehicles to control movements.
- (b) Project Co shall design and construct the following at Gladstone Station and Trillium MUP
  - (i) Maintain the north-south MUP on the east side of the proposed alignment and Station, between Bayview and Gladstone Avenue.
  - (ii) This temporary paved pathway shall be a minimum of 3m, plus 1m clearance on either side and have sufficient configuration to ensure sight lines a minimum of 60m, and clear views from the adjacent lands to the pathway.
  - (iii) Provide MUP connections to Larch and Balsam Streets east of the realigned MUP.
  - (iv) Opaque screening/hoarding shall not be permitted.
  - (v) Provide direct connection to existing MUP on the south side of Gladstone Avenue.
- (c) Project Co shall design and construct the following at Carling Station
  - (i) Maintain the MUP throughout construction.
  - (ii) Flagpersons shall be utilized should Project Co require access across the MUP.
- (d) Project Co shall design and construct the following at Mooney's Bay Station
  - (i) Maintain MUP throughout construction.

- (e) Project Co shall design and construct the following at Walkley Station
  - (i) As per Clause 4.1 (f) (v) of this Part 6, the one existing pathway to the east of the proposed Station, from Walkley Road south to the development lands, shall be rebuilt to City standards for MUP. This pathway shall be permitted to be closed during construction.
- (f) Project Co shall design and construct the following at South Keys Station
  - (i) Project Co shall provide continuous access to the Transitway Station throughout construction. An at-grade crossing of the Transitway shall not be permitted.

## 5.2 Corridor Specific Requirements

- (a) Project Co shall design and construct the following at [REDACTED]
  - (i) A temporary pedestrian connection shall be maintained at the north underpass adjacent to the existing Station until the public opening of the new underpass. This pedestrian connection shall be within 100m north of the existing underpass location.
  - (ii) Clause 3.3(b) of this Part 6 shall not apply for the development of the alternate route, should the south underpass be required to be closed. Project Co shall provide a plan with the proposed route.
- (b) Project Co shall design and construct the following at the Brookfield Pathway/Sawmill Creek Pathway
  - (i) Brookfield and Sawmill Creek MUP have been identified for potential use by Project Co for construction access to the Expanded Trillium Line. These pathways shall be open for use by the community throughout construction, including the use of flagpersons to control movement through the corridor.
- (c) Alignment Corridor, Bowesville Station to Rideau River
  - (i) Where the alignment bisects a natural area, Project Co shall provide environmental passages developed to the following:
    - A. Project Co shall provide a swale under the alignment fence, with a maximum depth of 300mm, at 600m on centre spacing, to accommodate the passage of small mammals;
    - B. Ensure the swales do not direct additional surface drainage towards the alignment, to comply with TVA and Safety Certification Requirements.
    - C. Align the swale on either side of the alignment to facilitate the mammal crossings.

- (d) Project Co shall design and construct the following at the Osgoode Link Pathway
- (i) Project Co shall provide signage at the following entrances to the Osgoode Link Pathway stating that north/south connections on the pathway are not possible due to construction, when construction on the Trillium Line Extension blocks north-south connections on the Pathway:
    - A. Where the Osgoode Link Pathway crosses Rideau Road;
    - B. At the northernmost end of High Road; and,
    - C. Where the Osgoode Link Pathway connects to Leitrim Station.
  - (ii) Project Co shall develop a TTMP for an alternate cycling route due to the trail closure, along Rideau Road to Albion Road, and north, between Albion Road to Hunt Club Road.
  - (iii) Project Co shall provide all signage and pavement marking as required by the TTMP.
- (e) University Road Pedestrian Bridge over Rideau River (SN018750)
- (i) Project Co shall provide a TMPP for the temporary Rideau River Eastern Pathway closure.
  - (ii) The pathway shall remain operational during the peak use periods of July and August of each calendar year. Should Project Co require the use of the staging area and access to the pedestrian Bridge or Rideau River rail Bridge during this period, flagpersons shall be used.
  - (iii) The pathway closure may exceed 20% in overall length when compared to the original MUP.
  - (iv) Project Co shall allow full and continuous public access to Vincent Massey Park.
  - (v) On the west side of the pedestrian Bridge, the pathway closure signs shall commence prior to Heron Road, to redirect the pathway users along Heron Road, to the south side of Riverside Drive, and connecting back to the Rideau River eastern pathway closure at the signalized intersection of Data Centre Road.
  - (vi) On the east side of the Bridge, the pathway closure signs shall commence prior to the intersection of Data Centre Road, to redirect the pathway users to the south side of Riverside Drive.
  - (vii) Project Co shall complete a review of the existing conditions of the sidewalks and paths for the detour, and complete a repair as required to ensure a smooth and continuous surface.

- (viii) When the closure is in effect, the pathway shall be closed from the staging area for the construction to the east side of the Bronson Avenue Bridge.
- (ix) On [REDACTED] lands, the closure of pathway adjacent to the Rideau River shall be coordinated with the closure of the pedestrian underpass immediately north of University Drive. One of the two pathway connections shall be maintained throughout construction.
- (x) Pathway closure signage to be located to the west of Richcraft Hall, at University Drive, and east, at the pedestrian crossing at University Drive.

<b>Location</b>	<b>Deciduous Trees</b>	<b>Coniferous Trees</b>	<b>Deciduous Shrubs</b>	<b>Coniferous Shrubs</b>
South	26	0	400	0
North	4	0	0	50