



Carleton
UNIVERSITY

BrookMcIlroy/



Carleton University Outdoor Space Master Plan

October, 2020



Carleton University is located within the traditional and unceded territory of the Algonquin Nation.

The Outdoor Space Master Plan committee acknowledges and honours the people who have lived on this land for thousands of years.

Acknowledgments

The Outdoor Space Master Plan was completed under the direction of the Carleton University Project Committee and the Brook McIlroy Project Team.

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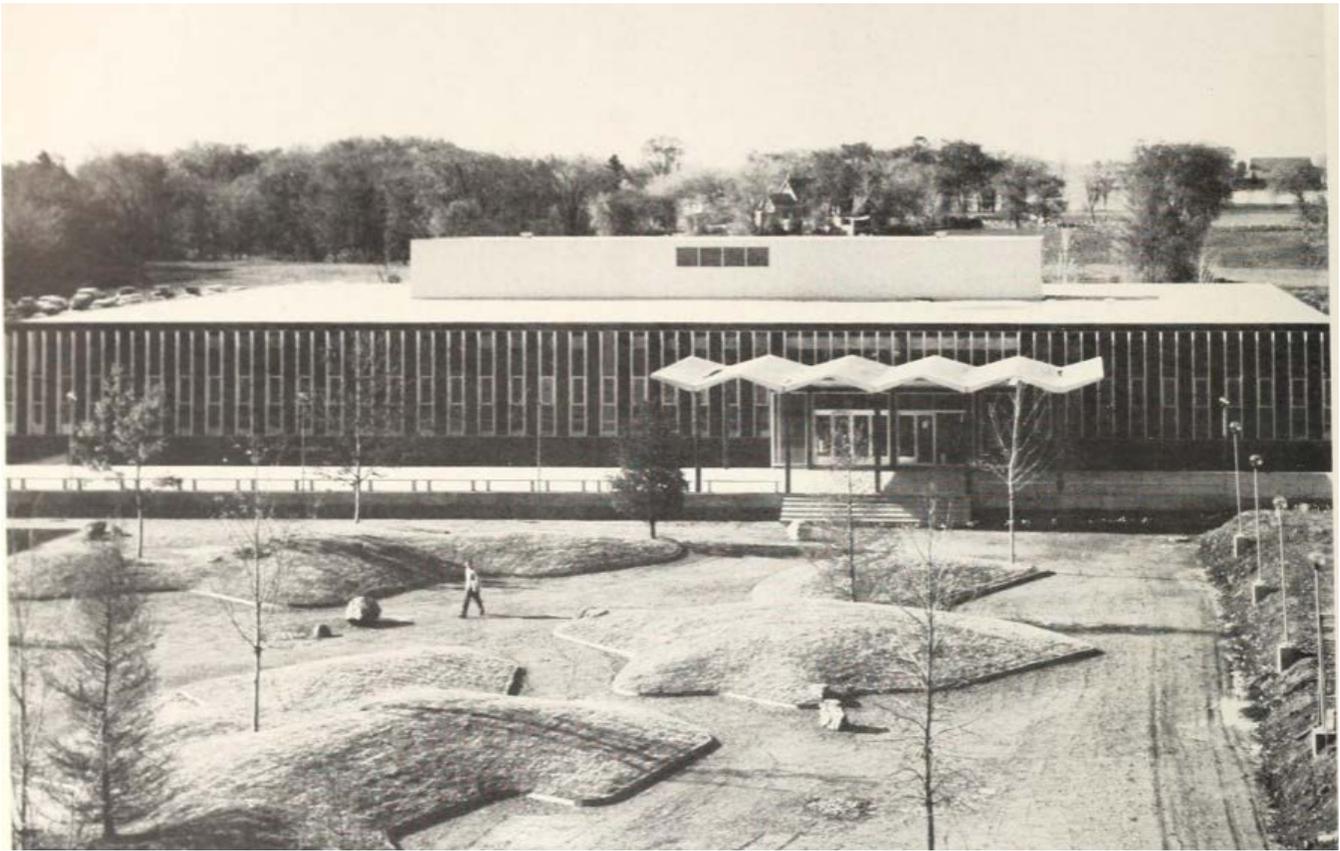
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Introduction

Executive Summary

Document Organization

Vision and Guiding Principles



The MacOdrum Library overlooking the Main Quad, 1958
Source: Carleton University Library Historical Photographs, Library Special Collections fonds

1.1 Executive Summary

Carleton University has prepared the Outdoor Space Master Plan (the OSMP) to promote the university's extraordinary landscape setting as a catalyst for learning and sustainability as it prioritizes regenerative campus design goals. The university is centrally located in Ottawa on 153 acres between the Rideau River and Rideau Canal, and adjacent to the Dominion Arboretum and the Central Experimental Farm. The Rideau River rapids, as well as the major topographical shifts at the southern campus, mark the Gloucester Fault, one of Ottawa's major fault lines. At the Rideau River, the fault exposes the Ottawa Limestone that the campus is built on and has become a guiding theme for developing a noble and robust material and design language for the OSMP.

The university's initial construction in the mid- to late-1950s consisted of the MacOdrum Library, the Tory Building and Paterson Hall forming the first formal campus quadrangle, still existing today as an important outdoor space. Over the past sixty years the university has expanded to almost fifty buildings which will have an opportunity to be better physically and visually connected through the performance standards and design guidelines contained in the OSMP. The Carleton University OSMP is a guide for campus open space revitalization, as it aspires to high standards towards establishing contemporary and innovative design practices. As new building, open space, transportation and

transit projects are undertaken, the OSMP will direct future development on campus towards an integrated campus vision that balances usability with performance, and cost effectiveness with sequestered carbon and net zero design goals. The Carleton University Outdoor Space Master Plan was undertaken between November, 2019 and October, 2020, and is founded on ongoing engagement with Carleton's students, faculty and staff. The OSMP augments the directions of Carleton University Master Plan Update, 2016, and the Transportation Strategy, 2019 and provides detailed design recommendations for campus open spaces, paths and streets.

The OSMP aims to reinforce the network of quads and outdoor spaces that connect to at-grade building uses and social spaces, and further connect to the intricate network of pathways, multi-use streets and campus-wide transit as they promote seamless mobility. An upgrade to the Main Quad and the creation of a Campus Avenue Quad between the Health Sciences Building and the new Sprott Business School, will provide a new sequence of arrival for the campus community on foot, bicycle, bus and the

O-Train. The new Campus Avenue Quad will formalize a former parking lot into a new contemporary campus meeting place that will support year round events and spill-out activities from surrounding buildings, including University Centre. Renovations and improvements are also proposed for Alumni Park, the O-Train Station Area, and the Paterson Amphitheater, which is envisioned as an Indigenous Learning Place.

In addition to these key places, the OSMP addresses a hierarchy of other landscape character areas that connect campus waterfront edges, internal courtyards and gardens anticipated for formal and informal use. Detailed guidelines are also provided to inform the furnishings, fixtures, vegetation, and finishes of outdoor spaces on campus, to provide a clear campus identity, and bring a strong sense of place to the university. As a university in a winter City, the OSMP recommends measures to ensure the campus is beautiful and active in all seasons. Living on campus is a key part of student's development and Carleton is committed to supporting the diversity of students that live on campus from all over the world.



1.2 Document Organization

The OSMP is divided into seven sections that each provide specific analysis or guidance relative to outdoor spaces on campus.

Section 1: Introduction includes an executive summary of the document, provides an outline of the document’s organization, and reviews the vision and guiding principles developed in the initial stages of the OSMP.

Section 2: Context and Analysis describes the existing university context, summarizes consultation undertaken as part of the OSMP process, and reviews and analyzes opportunities and constraints for outdoor space development on campus.

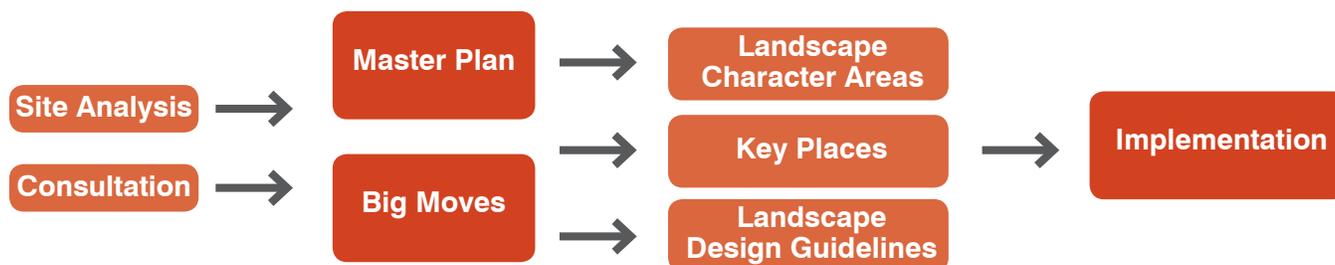
Section 3: The Outdoor Space Master Plan summarizes the key improvements as recommended within the OSMP, and outlines the “Big Moves” intended to drive design decision making in the design of outdoor spaces.

Section 4: Landscape Character Areas creates a framework and guidelines for describes the network a network of streets, paths, and interstitial spaces that knit together the campus fabric.

Section 5: Landscape Design Guidelines outlines the preferred materials, furnishings, and design considerations for the redevelopment of outdoor spaces on campus

Section 6: Key Areas describes improvements to a number of important areas on campus.

Section 7: Implementation reviews how the OSMP may be implemented throughout the course of the next five to ten years, and provides costing and maintenance considerations.



Document Structure



The open space near the Rideau River is a key campus asset

1.3 Vision and Guiding Principles

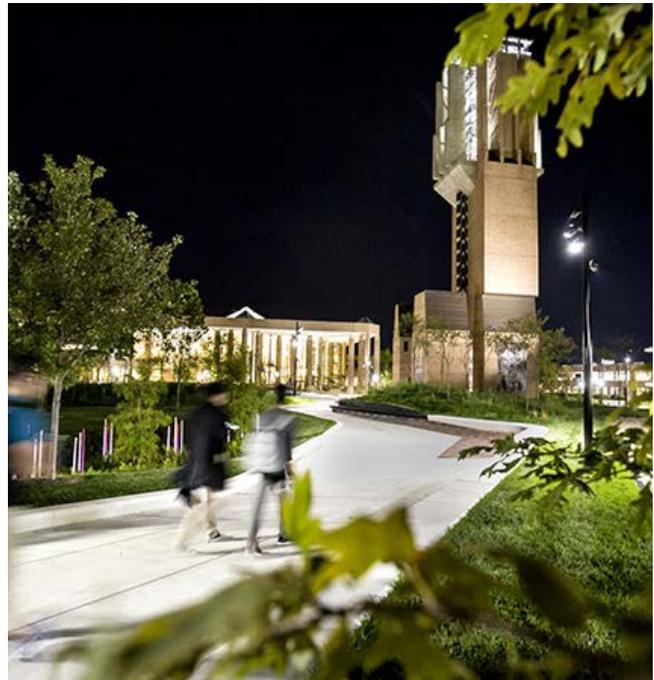
Overview

The following Vision and Guiding Principles have guided the development of the OSMP, and should be considered in the development of future outdoor spaces on campus. The Vision and Guiding Principles were developed through findings of initial consultation with students, staff, and faculty. The consultation efforts as part of the OSMP are further described in Section Two of the document.

Vision

The Outdoor Space Master Plan will strengthen outdoor spaces by reflecting the natural and cultural history of the place, enhancing outdoor learning environments, and creating beautiful, useful and comfortable year-round outdoor spaces.

Guiding Principles



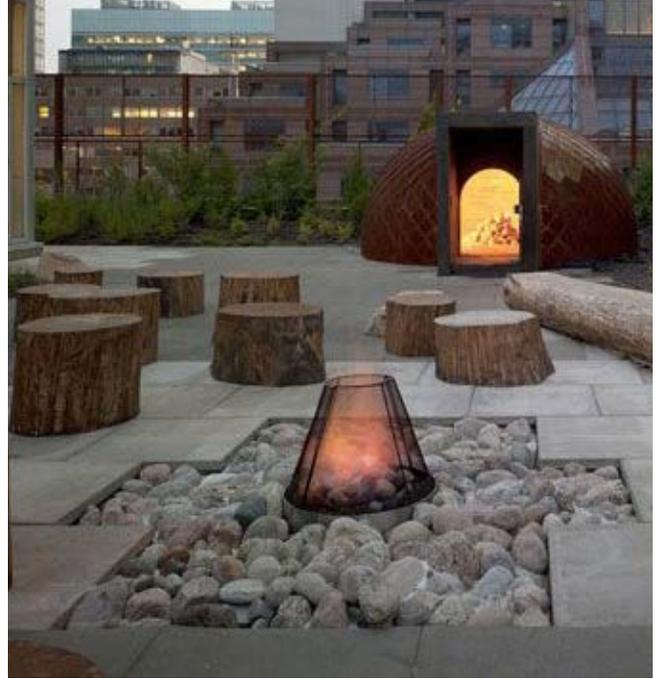
Create a unified, easily navigable, accessible and safe network of outdoor spaces

The outdoor campus will consist of a well defined network of key open spaces, streets, pathways, and intimate spaces that feel secure and inclusive of all students, staff, faculty, and visitors. The campus will be universally accessible, allowing ease of movement and enjoyment of spaces for people of all ages and abilities. Legible and clear wayfinding, a consistent materials palette and a hierarchy of pathways will create a cohesive look and feel that provides the university a strong sense of place.



Prioritize sustainability by considering urban ecology, embodied carbon, and low impact development

Biodiversity, sustainable management strategies, and smart material choices will guide the design and renovation of campus landscapes. Partnerships with faculties on campus, as well as with the Sustainability Office, can facilitate implementation as well as experimentation with sustainable technologies.



Incorporate Indigenous perspectives and acknowledge the campus location on the traditional and unceded territory of the Algonquin Nation

Wherever possible and wherever appropriate, Indigenous perspectives will be considered in the design, of outdoor elements on campus. Respectful and meaningful consultation must be held with Indigenous people on and off campus in the design of these elements.



Promote outdoor learning

The Carleton Campus will be a living laboratory that supports outdoor learning in a variety of ways. Outdoor spaces will support research and curriculum, and also provide space for teaching and learning. Interpretive elements will tell the story of the spaces, communicating the people, the natural systems, and the technology behind the university.



Leverage nature to improve health, wellness and quality of life on campus

Health and well-being is important in all stages of life. The Campus will support quality of life by providing safe spaces that allow students, staff, faculty, and visitors to restore, recharge, and reinvigorate themselves through active and passive recreation.



Celebrate the natural heritage of campus as a place between two waterways with a unique geological history

Carleton is located in a unique and specific place that straddles both the natural and built history of the Ottawa region. Access to the Rideau River and to the Rideau Canal will be improved through safe street crossings and rehabilitated pathways. The character of the Rideau River will be brought into the interior campus through tree plantings, and through inclusion of stone elements such as rocky outcrops and limestone features.



Design for a four-season campus and enhance the winter landscape

The majority of people on campus experience it through the winter months. Improvements to lighting, art, and programming will aim to bring delight to the winter landscape. Practical improvements to snow clearing and maintenance regimes will assist people moving through the campus after snowfall and ice events.



ASSISTANCE

2 Context & Analysis

Context

Guiding Documents

Consultation

Site Analysis



The O-Train Bridge across the Rideau River

2.1 Context

While Carleton's presence in Ottawa dates to the early 1940s, building began on the current Rideau River campus in 1957. Since then, the campus has grown steadily on the over sixty-two hectare site. The Carleton campus is host to over 30,000 students, plus over 3,000 staff and faculty members.

The Carleton University campus is bounded along its western and northern edges by the Rideau Canal, and along its southern edge by the Rideau River. Bronson Avenue forms the eastern border of the Campus. Road access to the campus includes the intersection at University Drive and Bronson Ave as well as access points along Colonel By Dr. The Campus can also be accessed by pedestrians from the west at the Hartwell Locks.

Adjacent land uses to the east of campus are generally residential. The university is also located near a number of open spaces, including Vincent Massey Park to the south, the Central Experimental Farm to the west and Brewer Park to the east.

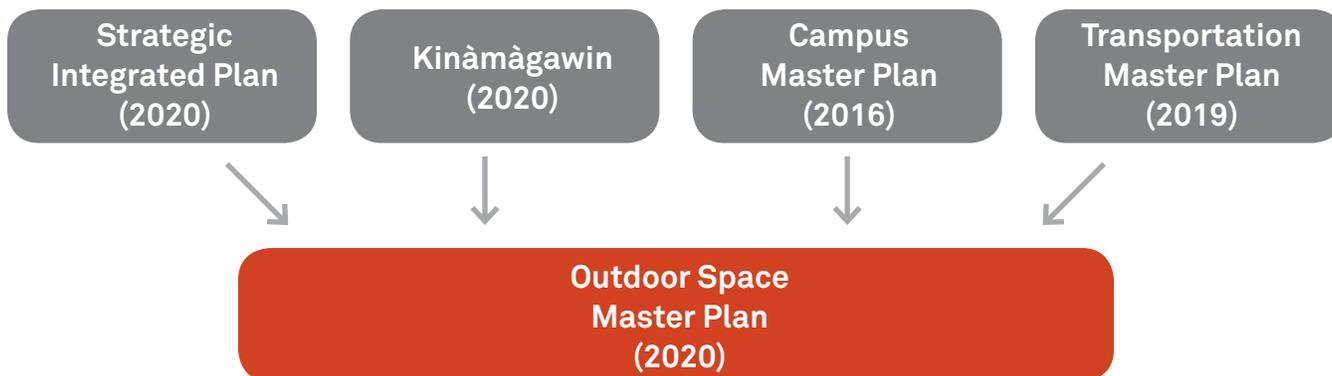
The university has a number of development projects completed, underway, or planned for completion within the next five years.

These include:

- ARISE Building – Constructed and fully occupied
- Health and Sciences Building - Constructed and currently at 50% occupancy
- Nicol Building - Under construction
- Engineering Building – Planned for Construction (assumed after 2021)
- New Fieldhouse on P12 (assumed after 2021)
- Residential Building on part of P6 – Planned for Construction (assumed after 2021)
- New Bus Only Access off Bronson at Raven Rd
- Right-in/Right-out access at Stadium way (completed)
- Conversion of the Northern section of Library Road to a pedestrian promenade

2.2 Guiding Documents

The university has undertaken a number of studies and plans to help guide its future growth. The following text describes studies whose goals and objectives relate directly to the OSMP, specifically, the Strategic Integrated Plan, Kinàmàgawin, the Campus Master Plan, and the Transportation Plan.



Strategic Integrated Plan

The Strategic Integrated Plan is a high-level document intended to guide Carleton's collective plans for the future, as well as more detailed planning within faculties, departments, and administrative teams. The 2020 Strategic Integrated Plan was approved by Carleton's Senate on May 29, and by the Board of Governors on June 2, 2020.

The Strategic Integrated Plan proposes three key directions, which are tied metaphorically to the Rideau Canal, the surrounding community, the Rideau River, and respectively:

- Share Knowledge. Shape the Future
- Serve Ottawa. Serve the World
- Strive for Wellness. Strive for Sustainability.

Each direction includes specific goals and associated pathways to achieving each goal. Pathways relating to the OSMP include:

- Strengthen our physical and reputational presence within Ottawa
- Build and promote programming, infrastructure projects and spaces that embrace a commitment to social, physical, cultural and environmental wellness
- Deeply embed sustainability considerations into research, teaching, learning and organizational operations
- Learn from and alongside Indigenous Peoples as we deepen our understanding of the land and adapt to a changing environment
- Embed a culture of accessibility in organizational excellence, programming and services

Kinàmàgawin

Kinàmàgawin is a document intended to guide Carleton's institutional response to the recommendations of the Truth and Reconciliation commission.

Kinàmàgawin proposes 41 Calls to Action for the university, the following of which are relevant to the OSMP:

- Designation of appropriate spaces for ceremonies and cultural activities, managed by the Centre for Indigenous Initiatives, for the benefit of Indigenous students, faculty and staff
- Opportunities for Indigenous students to participate in land-based learning
- Further enhancing the visibility of Indigenous peoples, cultures, and ways of knowing on campus
- Incorporation of environmental sustainability as a fundamental institutional value to guide its current operations and future development

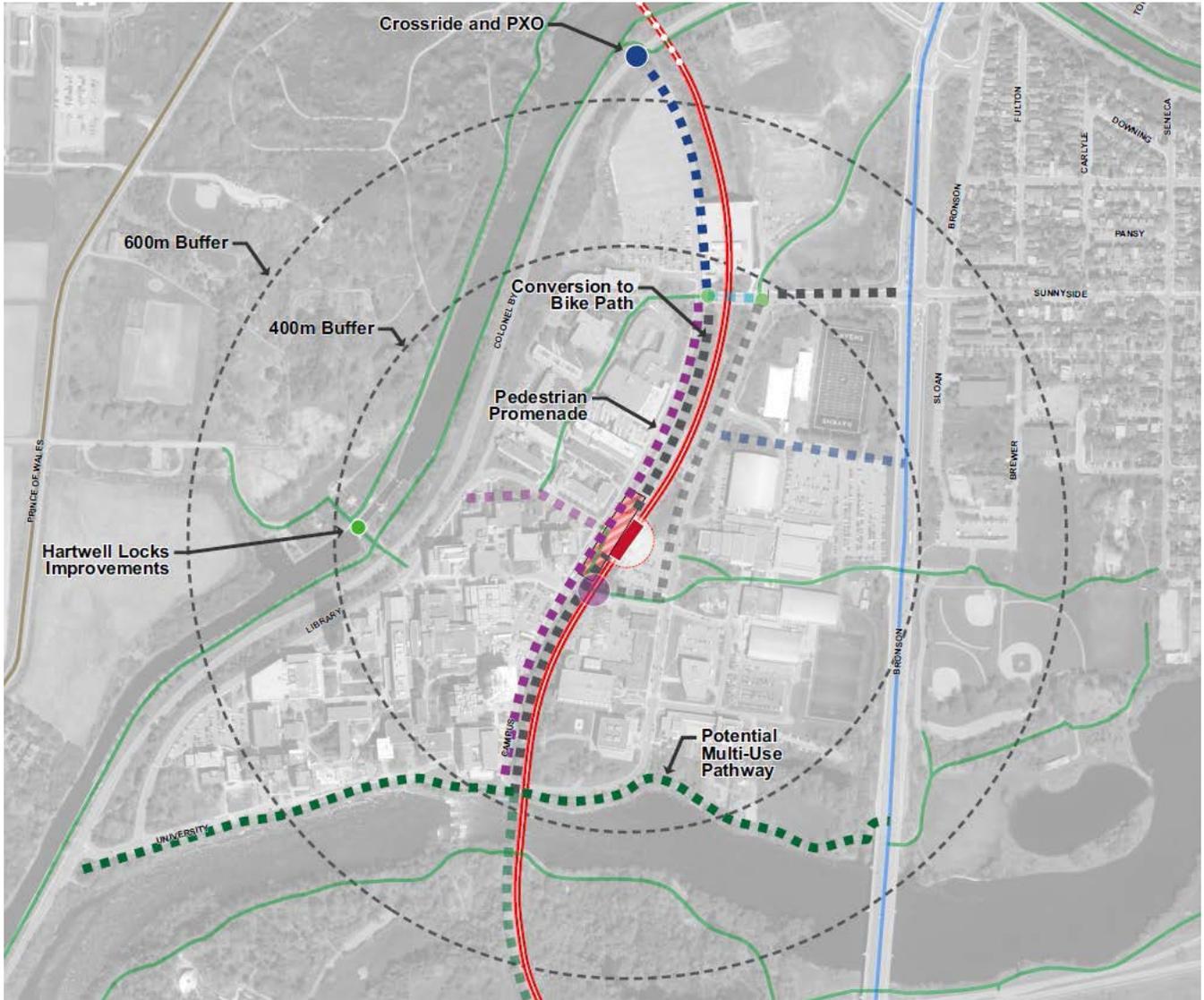
Campus Master Plan (2016)

The 2016 Campus Master Plan (CMP) sets the vision for future expansion of the Carleton campus. The CMP highlights building sites, and provides guidance on open spaces and transportation. The directions and guidance included in the OSMP are intended to provide more detailed design and implementation based upon the recommendations included in the CMP.

Directions from the Campus Master Plan relating to the OSMP include:

- Providing a high quality network of streets and paths that prioritize pedestrians and cyclists
- Support an active campus for all four seasons
- Reinforce connections to campus surroundings
- Facilitate access to the Rideau River
- A hierarchy of open spaces typologies that include Main Quads, Secondary Quads, Residence Open Spaces, Forecourts and Gardens, and Naturalized Areas and Buffers
- A framework for development of the North Campus
- An Entry Quad on the existing P2 Lot and adjacent addition to University Centre
- Closure of North Library Road to create a pedestrian/cycle promenade
- Proposed Pedestrian Bridge across the Rideau River





- LRT Route
- LRT Station
- Proposed Pedestrian/Cycling Facility
- Proposed Multi-use Pathway
- Proposed Complete Street
- Bi-directional Bike Path
- Uni-directional Bike Lanes
- Existing Multi-use Pathway
- Existing Cycling Lanes
- Existing Paved Shoulders

Transportation Plan - Long Term Pedestrian and Cycle Improvements

Transportation Plan (2019)

The Transportation Plan was finalized in 2019, and addresses transportation challenges and opportunities the university expects to undertake in the next five years.

The Transportation Plan builds on recommendations of the CMP, while providing specific implementation guidance for active travel, accessibility, parking, road networks, and transit.

Directions in the Transportation Plan relating to the OSMP include:

- Proposed roundabout at Campus Avenue and University Drive intersection
- New right-in right-out entrance and exit at Stadium Drive and Bronson Ave
- New bus only access at Raven Road and Bronson Ave
- Proposed Bus Transit Hub at P4 Parking Lot location
- Extension of Campus Ave north to Colonel By Drive
- Proposed bi-directional bike paths along University Drive
- Improvements to the pedestrian crossing at Colonel By Drive and Hartwell Locks
- Conversion of Campus Ave to a pedestrian and cycle promenade
- Proposed Multi-Use Pathway along Rideau River Edge



2.3 Consultation

Consultation was held throughout the OSMP process to provide opportunity for the community to share their vision for the future of the outdoor spaces on campus and well as provide feedback on types of outdoor space improvements that they would like to see on campus. The sessions enabled participants to provide their feedback and communicate their personal knowledge and expertise for the project team to incorporate into the OSMP.

Four types of Engagement Tools were utilized throughout the project. The Project Team held:

- Pop-up Campus Community Consultations;
- User Group Meetings,
- Community Open Houses, and
- an Online Survey.

The Pop-Up Consultations, User Group Meetings, and Community Open House were held on campus to engage with participants from different parts of the Carleton Community, including students, campus groups, faculty members, staff, and visitors.

The Online Survey was conducted to reach additional participants over an extended period of time. In addition to the online survey, an email address was created for students, staff, and faculty to provide input throughout the process.

More than 200 people directly participated in the consultation activities, and many more were reached with the OSMP public messaging.

Pop Up Consultation

The project team held pop-up consultation events in Phase 1 (January, 2020) and Phase 2 (March, 2020) of the project. The pop-up events took place in University Centre as well as the Residence Commons. Pop-Up Consultation was focused on increasing awareness of the project, providing information on the project's progress, and gaining consensus on the Vision and Guiding principles of the OSMP.

Pop-up consultation provided flexible opportunities for one-on-one conversations with individuals on campus with site- and topic-specific knowledge, including geology, accessibility, and sustainability.

User Group Meetings

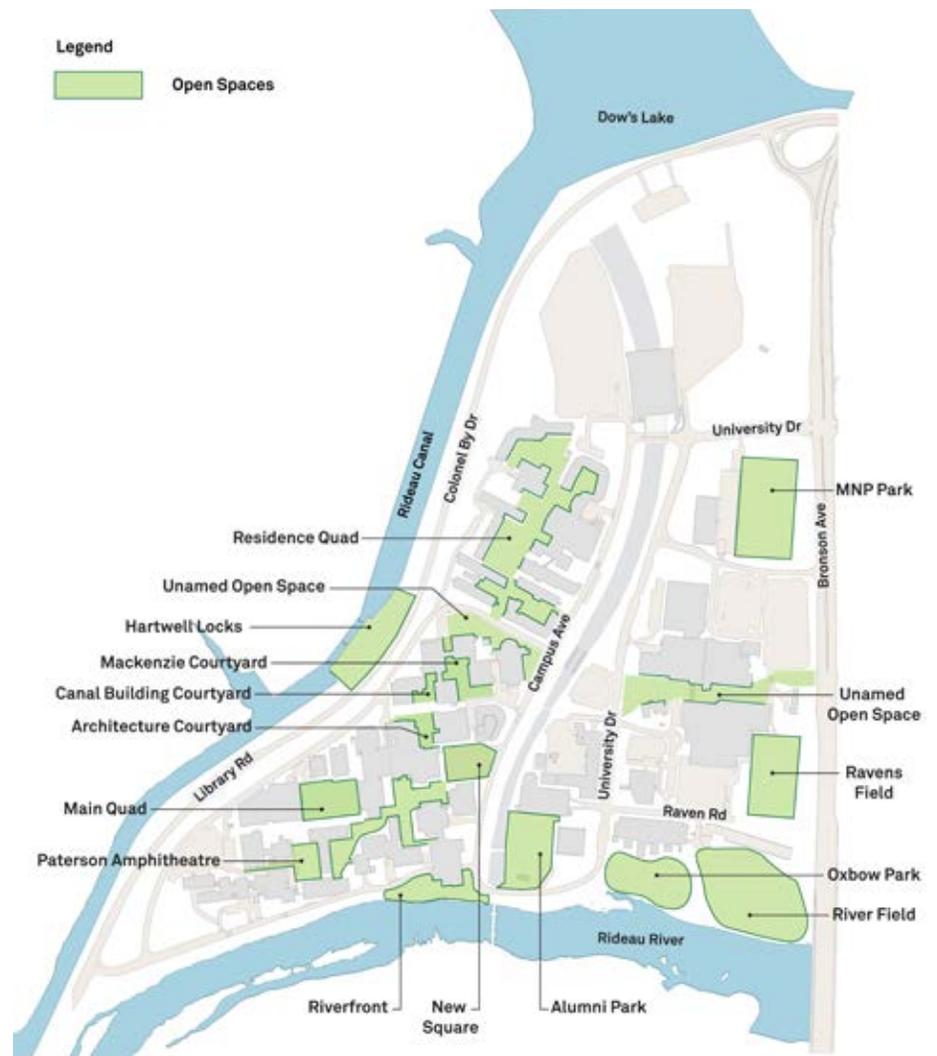
User Group Meetings were held in order to discuss specific topics with groups of knowledge holders on campus. User Group Meetings were held through all phases of the project.

User Group meetings included focused workshops with staff from Facilities Management and Planning that discussed maintenance, furnishings and material considerations, meetings with Indigenous stakeholders on campus, and workshops with students in the Faculty of Architecture.

Indigenous Consultation

Consultation with members of Carleton's Indigenous community took place throughout the OSMP Process. These consultation events included workshops with the Carleton University Indigenous Strategic Initiatives Committee in the first phase of the project, and multiple meetings with the Carleton University Indigenous Education Council in the second and third phases of the project.

The Outdoor Space Master Plan, and specifically, the design for the Indigenous Learning Place (ILP), also rely on consultation previously undertaken in 2016 by Carleton faculty, staff and students. This consultation, which was focused on the creation of an Indigenous Learning Place at the Paterson Amphitheatre included members of the Indigenous community at Carleton, as well as members of the Algonguiquin communities of Pikwakanagan, Kitigan Zibi, and the Tungasuvvingat Inuit. The Indigenous Learning Place Consultation Report provides a summary of the consultations, a number of suggestions for physical characteristics of the ILP, and considerations for the design and implementation of the Indigenous Learning Place. The full Indigenous Learning Place Consultation Report can be found in Appendix A.



Open Space Inventory

2.4 Site Analysis

The character of Carleton’s campus and its outdoor spaces has been shaped by both natural and human forces. The following site analysis explores the existing campus, and highlights opportunities and constraints that inform the future development of open spaces at the university.

Open Space Inventory

Carleton has a number of existing outdoor spaces and key areas. As the campus has developed over time, many sites that were once open spaces or parking lots have been developed as buildings. Because of the incremental approach to campus development, the campus lacks a cohesive palette of outdoor materials and furnishings.

Open spaces that have been recently renovated include the Mackenzie Courtyard, as well as the Residence Quad pathway.



Paterson Amphitheatre



Architecture Courtyard



Mackenzie Courtyard



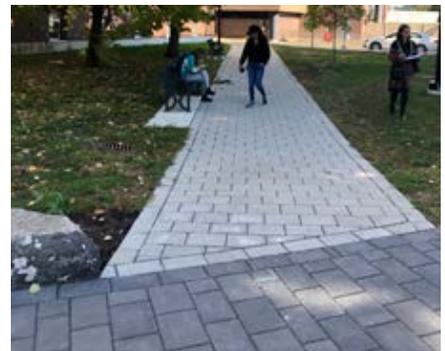
Main Quad



Residence Quad



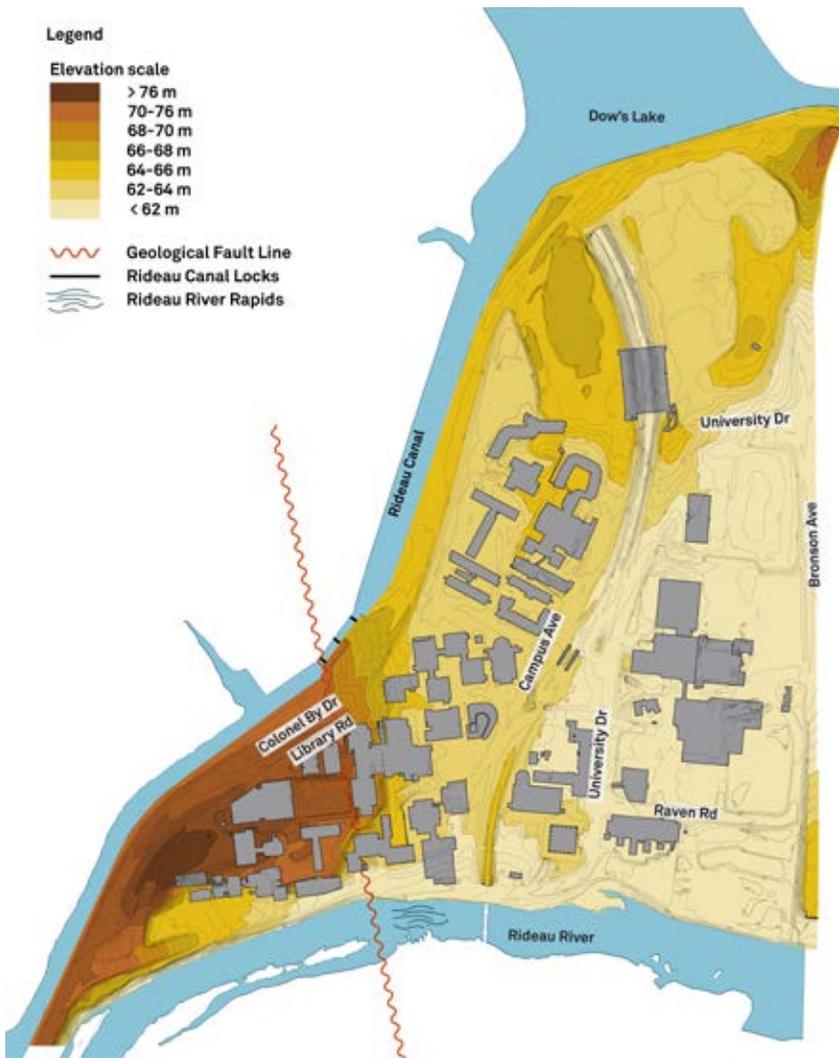
Alumni Park



Above: Various paving and landscape structure materials found on campus

Materials

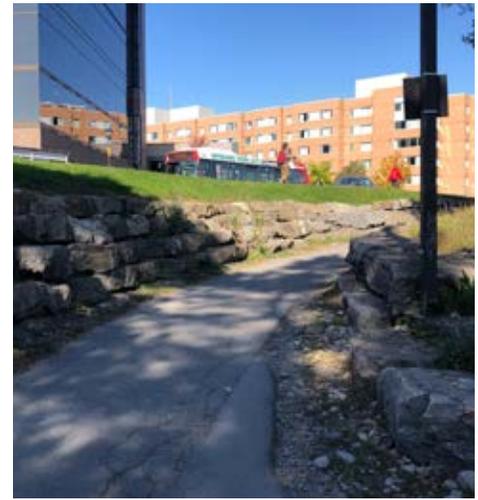
Open spaces on campus utilize a wide variety of paving and plant materials. The above photos inventory some of the hard surfacing materials found on campus.



Elevation and Geological Features

Topography

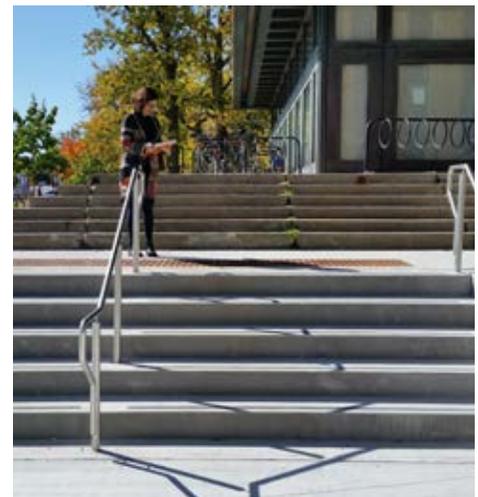
Carleton is located along a geological fault line, which contributes to the varied topography on campus, and was the reason for the construction of the Hartwell Locks. The varied topography can lead to accessibility challenges for pedestrians, but also creates opportunities for unique views and landforms.



Ramp to O-Train Tunnel



A large grade change exists between the southern University Drive and the interior campus



Stairs at the Loeb Building



Eastern O-Train Station



Library Road (North)



Campus Avenue Bus Station



Planned Transportation Improvements

Transportation

The diagram above shows a summary of recommendations from the Transportation Plan that relate to outdoor spaces on campus. The Transportation Plan suggests two pedestrian/cycling promenades on campus

A network of streets run through campus that typically border buildings, with the exception of University Drive. A pathway system runs through the interior campus, however it can be difficult to navigate at times due to grade changes, and the need to pass through buildings to continue along the path.



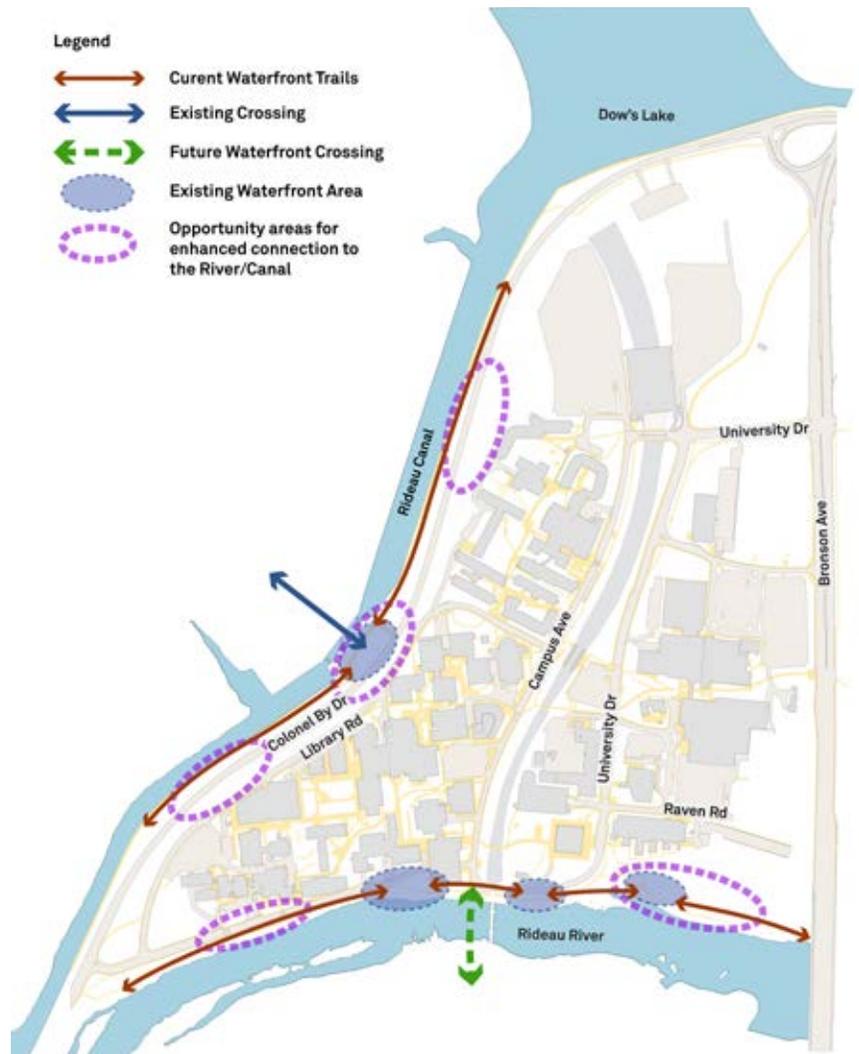
Rideau River at University Drive



Seating along the Rideau River



Crossing at the Hartwell Locks



Waterfront Opportunities

Waterfront

Carleton is set between two waterways, but has limited and underdeveloped access to these unique features. The diagram above highlights opportunities to better connect the campus to the Rideau River and the Rideau Canal.

Opportunities to connect to the Rideau Canal present a challenge as the land is not owned by the university.



3

The Outdoor Space Master Plan

Master Plan Overview

Big Moves

3.1 Master Plan Overview

The Outdoor Space Master Plan aims to provide a connected and cohesive network of beautiful, usable open spaces on the Carleton campus. The Master Plan consists of three major components: Key Areas, Landscape Character Areas, and Landscape Design Guidelines.

Key Areas on campus consist of the major outdoor gathering spaces on campus, and are supported by a network of Landscape Character areas which form the backdrop of the university. The Landscape Design Guidelines provide guidance on materials selection, furnishings, and features to be included in both the Key Areas and the Landscape Character Areas.

Design of all spaces on campus should be viewed through the lens of the ‘Big Moves,’ which area intended to provide design inspiration, and communicate a sense of place that is unique to the Carleton campus.

Key Projects

- (A)** Campus Avenue Quad
- (B)** Main Quad Improvements
- (C)** Indigenous Learning Place
- (D)** Alumni Park Improvements
- (E)** O-Train Station Area
- (F)** University Drive Gateway

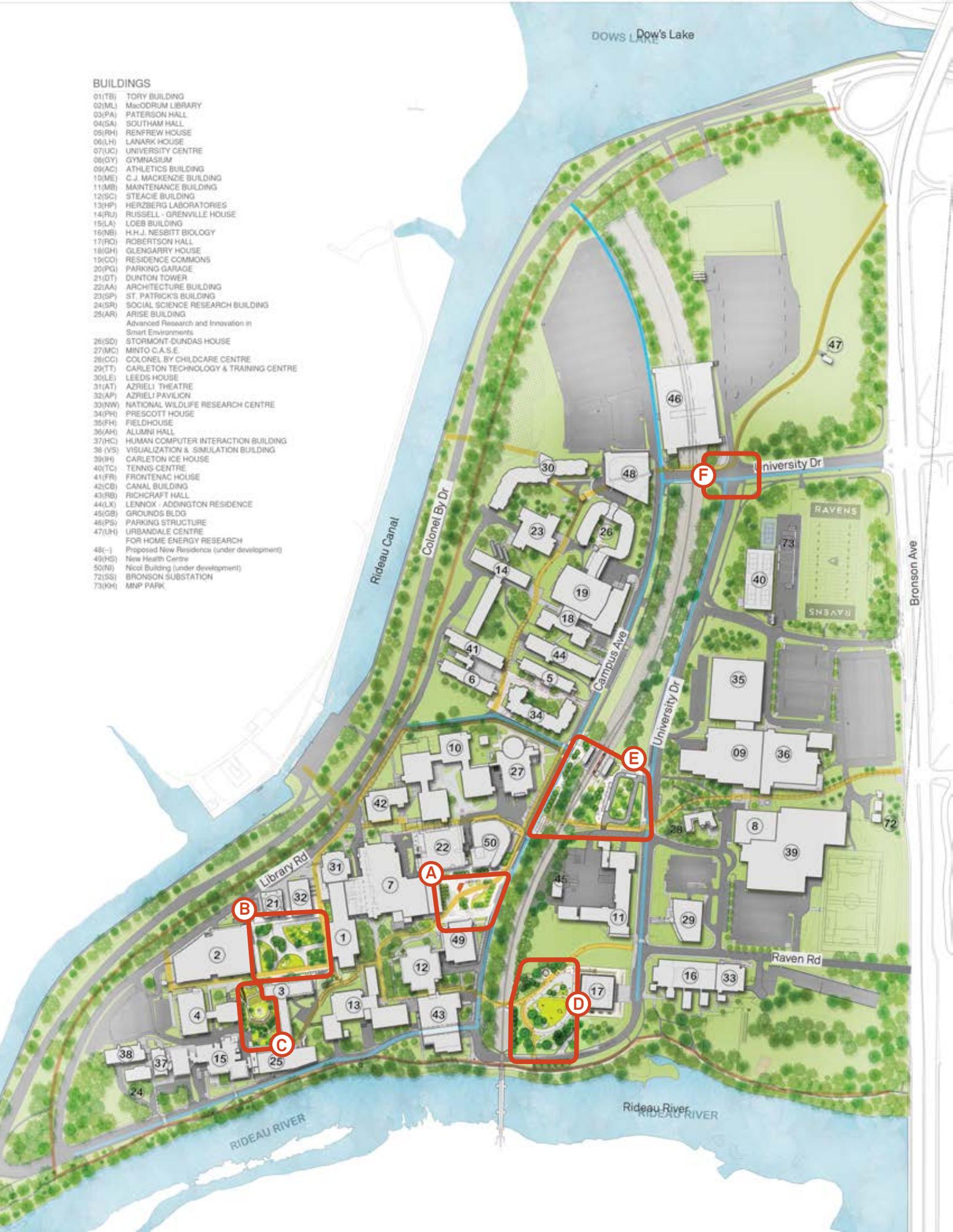
Landscape Character Areas

-  Streetscapes
-  Major Pathways

DOW'S LAKE

BUILDINGS

- 01(TB) TORY BUILDING
- 02(ML) MacODRUM LIBRARY
- 03(PA) PATERSON HALL
- 04(SA) SOUTHAM HALL
- 05(RH) RENFREW HOUSE
- 06(LH) LANARK HOUSE
- 07(UC) UNIVERSITY CENTRE
- 08(OY) GYMNASIUM
- 09(AC) ATHLETICS BUILDING
- 10(ME) C. J. MACKENZIE BUILDING
- 11(MB) MAINTENANCE BUILDING
- 12(SC) STEACIE BUILDING
- 13(HF) HERZBERG LABORATORIES
- 14(RU) RUSSELL - GRENVILLE HOUSE
- 15(LA) LDEB BUILDING
- 16(NB) H.H.J. NESBITT BIOLOGY
- 17(RO) ROBERTSON HALL
- 18(GH) GLENGARRY HOUSE
- 19(CO) RESIDENCE COMMONS
- 20(PG) PARKING GARAGE
- 21(DT) DUNTON TOWER
- 22(AA) ARCHITECTURE BUILDING
- 23(SP) ST. PATRICKS BUILDING
- 24(SR) SOCIAL SCIENCE RESEARCH BUILDING
- 25(AR) ARISE BUILDING
Advanced Research and Innovation in Smart Environments
- 26(SD) STORMONT-DUNDAS HOUSE
- 27(MC) MINTO C.A.S.E.
- 28(CC) COLONEL BY CHILDCARE CENTRE
- 29(TT) CARLETON TECHNOLOGY & TRAINING CENTRE
- 30(LE) LEEDS HOUSE
- 31(AT) AZRIELI THEATRE
- 32(AP) AZRIELI PAVILION
- 33(NW) NATIONAL WILDLIFE RESEARCH CENTRE
- 34(PH) PRESCOTT HOUSE
- 35(FH) FIELDHOUSE
- 36(AF) ALUMNI HALL
- 37(HC) HUMAN COMPUTER INTERACTION BUILDING
- 38(VS) VISUALIZATION & SIMULATION BUILDING
- 39(IH) CARLETON ICE HOUSE
- 40(TC) TENNIS CENTRE
- 41(FR) FRONTENAC HOUSE
- 42(CB) CANAL BUILDING
- 43(RB) RICHCRAFT HALL
- 44(LV) LENNOX - ADDINGTON RESIDENCE
- 45(GB) GROUNDS BLDG
- 46(PS) PARKING STRUCTURE
- 47(UH) URBANDALE CENTRE
- 48(-) FOR HOME ENERGY RESEARCH
Proposed New Residence (under development)
- 49(HS) New Health Centre
- 50(NI) Nicel Building (under development)
- 72(SS) BRONSON SUBSTATION
- 73(KK) MNP PARK



Bronson Ave

RIDEAU RIVER

RIDEAU RIVER

Raven Rd

University Dr

University Dr

Campus Ave

Colonel By Dr

Library Rd



Large rocky outcrops are one way outdoor spaces can reflect geology

3.2 The Big Moves

The Big Moves will help create a high quality public realm that reflects Carleton's location on the Rideau River and Rideau Canal, as well as its presence as a leading post-secondary institution in Canada's capital. The themes expressed in the Big Moves are intended to inform and inspire the design and programming of outdoor spaces on campus, creating a strong sense of place at the university.

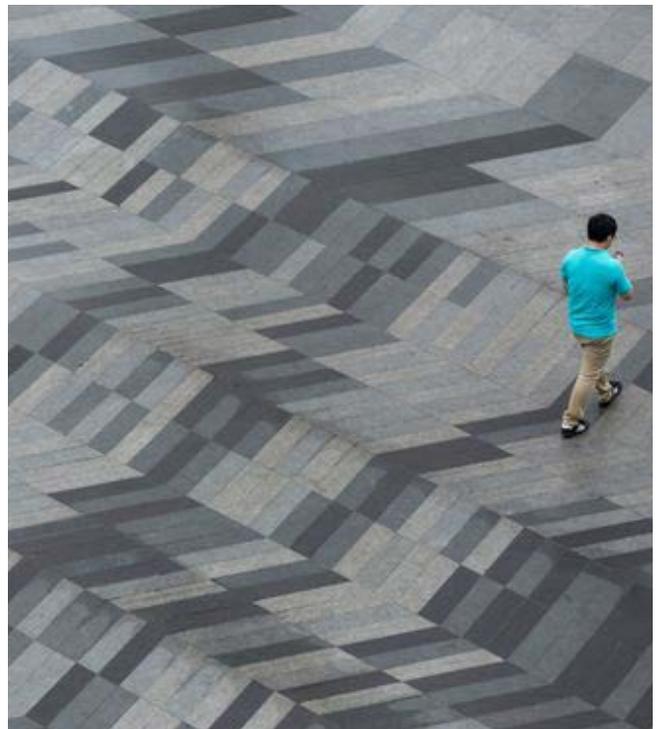
The Big Moves were developed based on feedback heard from the campus community throughout consultation, as well as site analysis and best practices in landscape architectural design.



Reflect the Geology

Outdoor spaces should create a sense of place through the incorporation of local natural materials and patterns that reflect the geological history of the site and the region. Design elements that reflect geology include:

- A paving pattern and colour palette that speaks to the fault line and geological makeup of the campus
- Including large quarried boulders as a design feature
- Using locally quarried natural stone for paving, walls, and other site features



Paving patterns and materials can reflect the underlying materials in the landscape



Embed a Cultural Narrative

Outdoor spaces should express that the campus is located on traditional, unceded Algonquin territory; be welcoming to all people, and respect multicultural nature of the campus community. Design elements that embed a cultural narrative might include:

- Using Algonquin and other Indigenous language and storytelling in signs, furnishings, informational markers, and other site elements
- Creating gardens that include traditional medicines and provide information on their significance
- Spaces for ceremony, gathering, and outdoor learning
- Providing opportunities for public art as ways of showcasing Indigenous artists and commemorating historical Indigenous figures



Climate Positive Design

Construction of outdoor spaces should seek to maximize the sequestration of carbon over time, and minimize the embodied carbon inputs. Design elements that contribute to climate positive design might include:

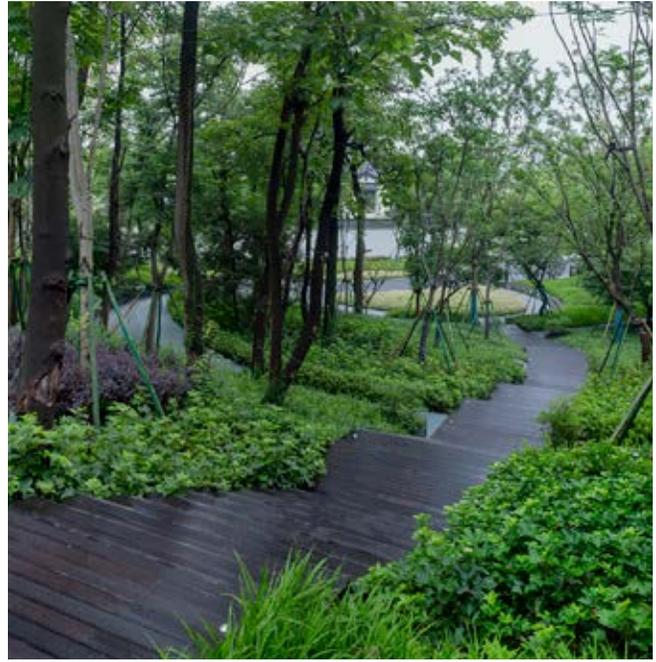
- Utilizing online carbon calculation tools (eg: Pathfinder) to calculate carbon inputs and sequestration capacity and aim to reach “Climate Positive” status as quickly as possible
- Converting areas of unused lawn and concrete to tree, shrub and perennial planting to sequester carbon
- Substituting asphalt and concrete with stabilized crushed stone paving where appropriate
- Using wood instead of concrete for seating elements
- Providing a tree replacement ratio and enhancing the existing tree canopy
- Re-using and recycling site construction materials



Embrace the Waterways

Carleton's location along two waterways should be emphasized and enhanced through improved access to the Rideau River and Rideau Canal. Landscapes should draw inspiration from the Rideau River and Rideau Canal. Examples of design elements that embrace the waterways include:

- Enhancing and protecting views to the waterways from outdoor spaces on campus
- Emphasizing existing connections and developing new pathways to the River and Rideau Canal
- Prioritizing low impact stormwater management methods such as rain gardens and bioswales for stormwater
- Including naturalized planting that draws inspiration from the riparian edge of the Rideau River



Relax and Recharge Nodes

Shinrin-yoku ("forest bathing") is a concept developed in Japan that recognizes the importance of time outdoors to improve mental health and wellness. There is a large amount of evidence surrounding the health benefits of spending time outdoors and many studies about this concept consistently show that exposure to trees, the sky, and birdsong can reduce stress, rejuvenate the mind, and boost creativity.

A network of Relax & Recharge Nodes across campus offer the opportunity to take time out, slow down and connect with the outdoors. The nodes may include:

- Densely planted native trees and shrubs to create a sheltered, forest-like environment in which to experience rejuvenating benefits to the mind, body and spirit
- Comfortable seating that encourages relaxation and a focus on trees, plants, birds and insects



4 Landscape Character Areas

Overview

Pathways

Streetscapes

Cultural Markers

Gateways

Naturalized Planting Areas

Fire Circles

Legend

- Streetscapes
- Major Pathways
- River Path
- Naturalized Planting Areas
- Fire Circles
- Major Gateways
- Minor Gateways



Landscape Character Areas

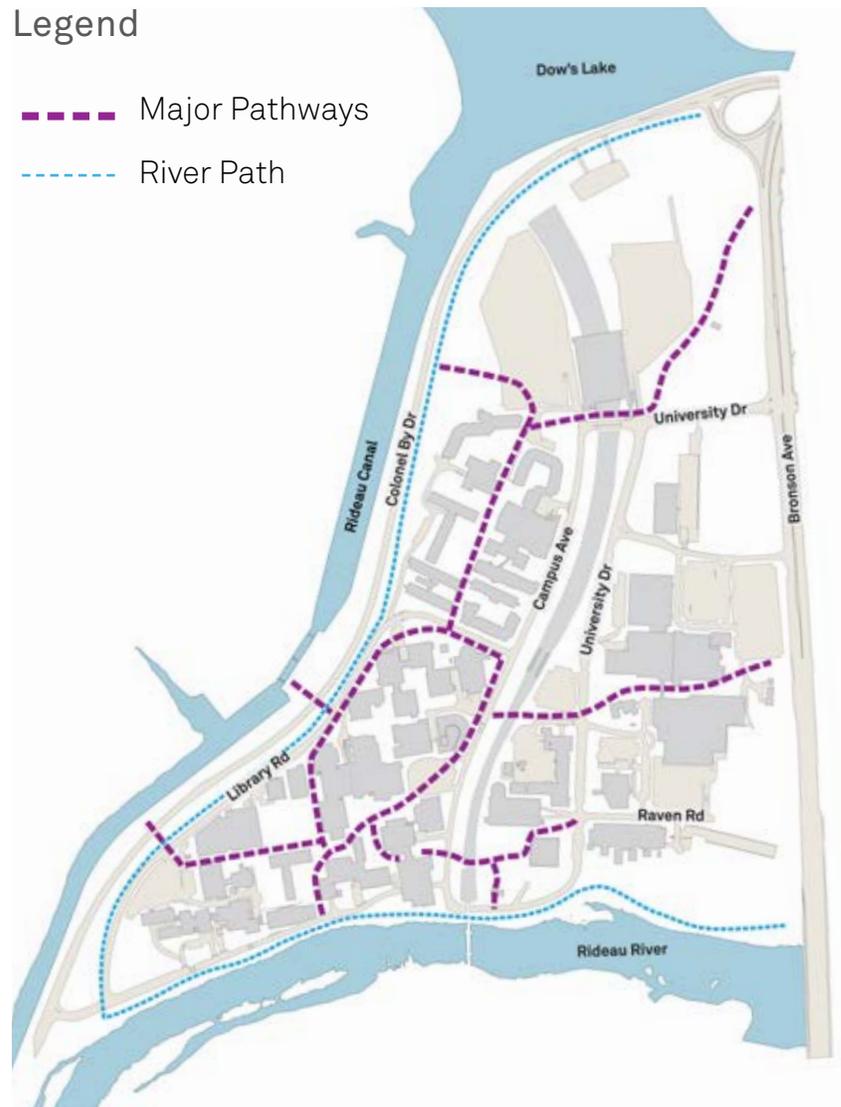
4.1 Overview

Carleton University is knit together by a network of streets, paths, and interstitial spaces which can be categorized into a series of landscape character areas. The guidance set out for the character areas is intended to provide a cohesive look and feel to outdoor spaces on campus, while providing specific guidance based on the role each character area has in the larger system of spaces.



Legend

- - - - - Major Pathways
- - - - - River Path

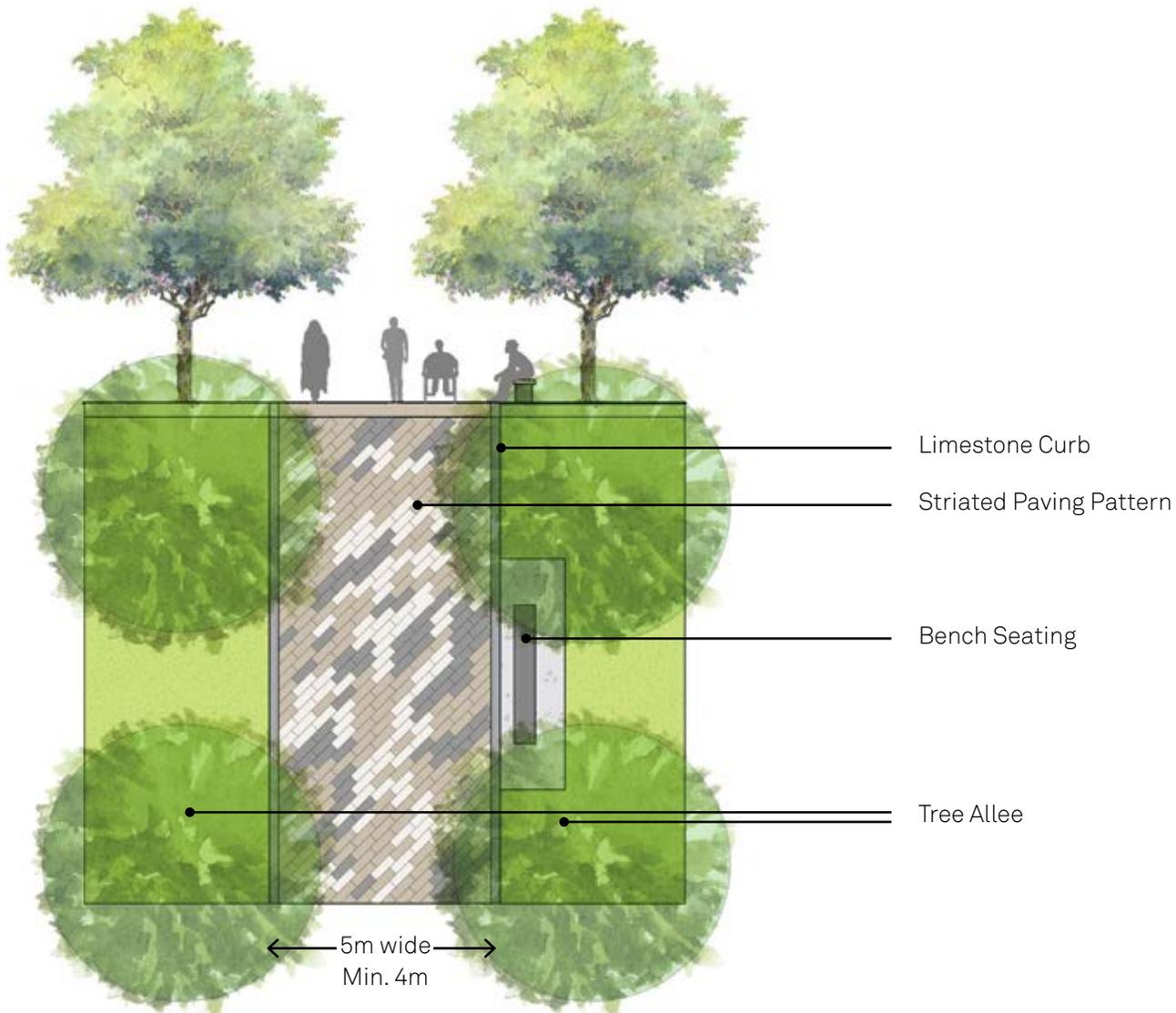


Major Pathways and River Paths

4.2 Pathways

Pathways serve an important role in the overall network of outdoor spaces on campus, as they are one of the primary means that students, staff, faculty, and visitors move through the campus.

Pathways should have a cohesive and complimentary palette of paving materials, as described in the following section.

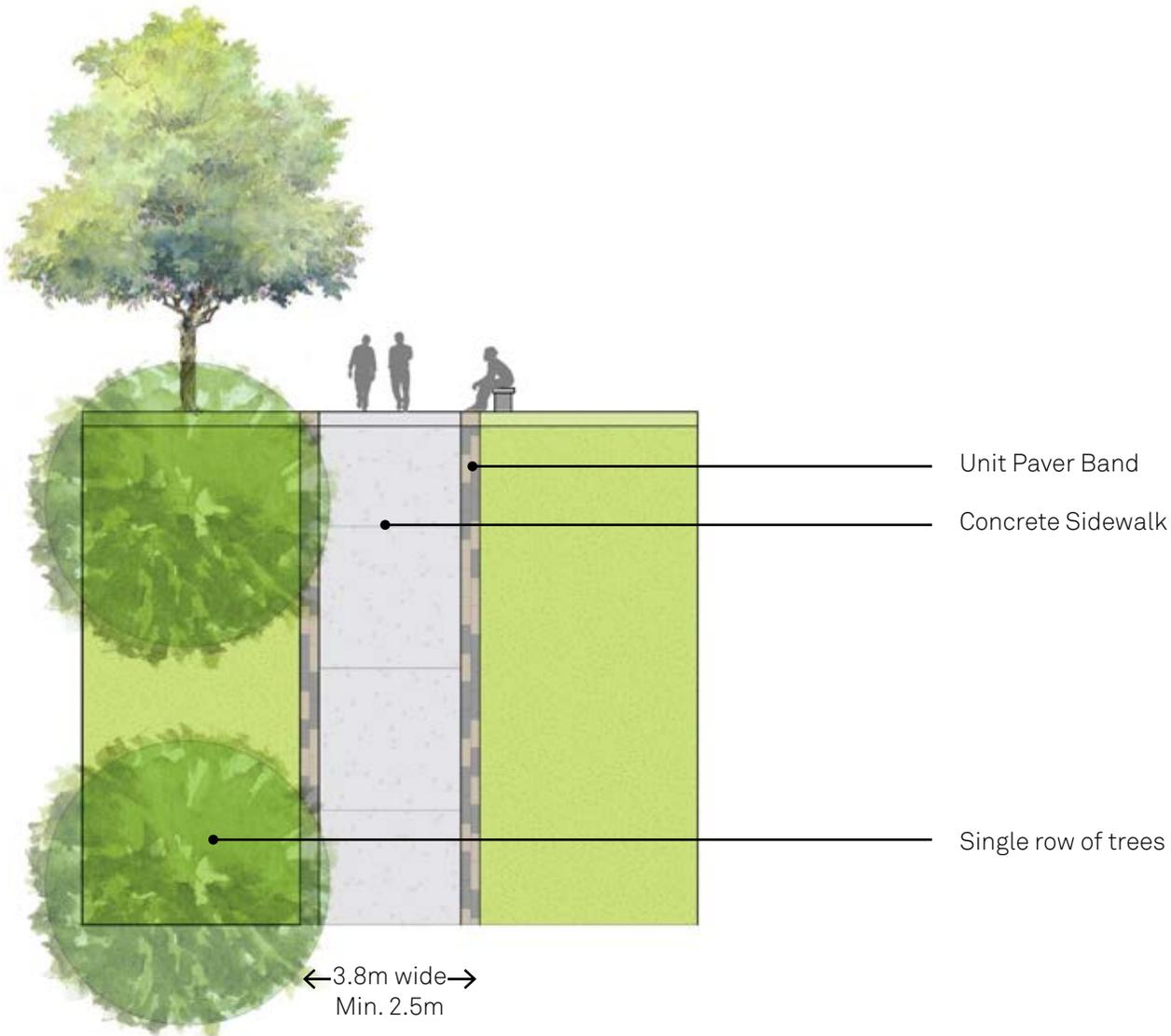


Major Pathway System

Major pathways are high-use pathways that are considered the “arterials” of the pathway system. As main pathways through campus, they should have the highest quality design standards, and facilitate and prioritize the large numbers of people walking and biking through them.

Design Guidance:

- Major pathways should be constructed with high quality unit paving in a striated pattern as per the Landscape Design Guidelines (See Section 5.1, pg. 68)
- Major pathways should be flanked on both sides by either concrete or limestone curbs
- Where possible, major pathways should be flanked by a row of trees on each side of the pathway, creating an allee
- Major pathways should be a aim to be five meters wide, and should be a minimum of four meters wide.
- Uniform lighting and frequent seating opportunities should be provided along major pathways to ensure safe and accessible outdoor spaces

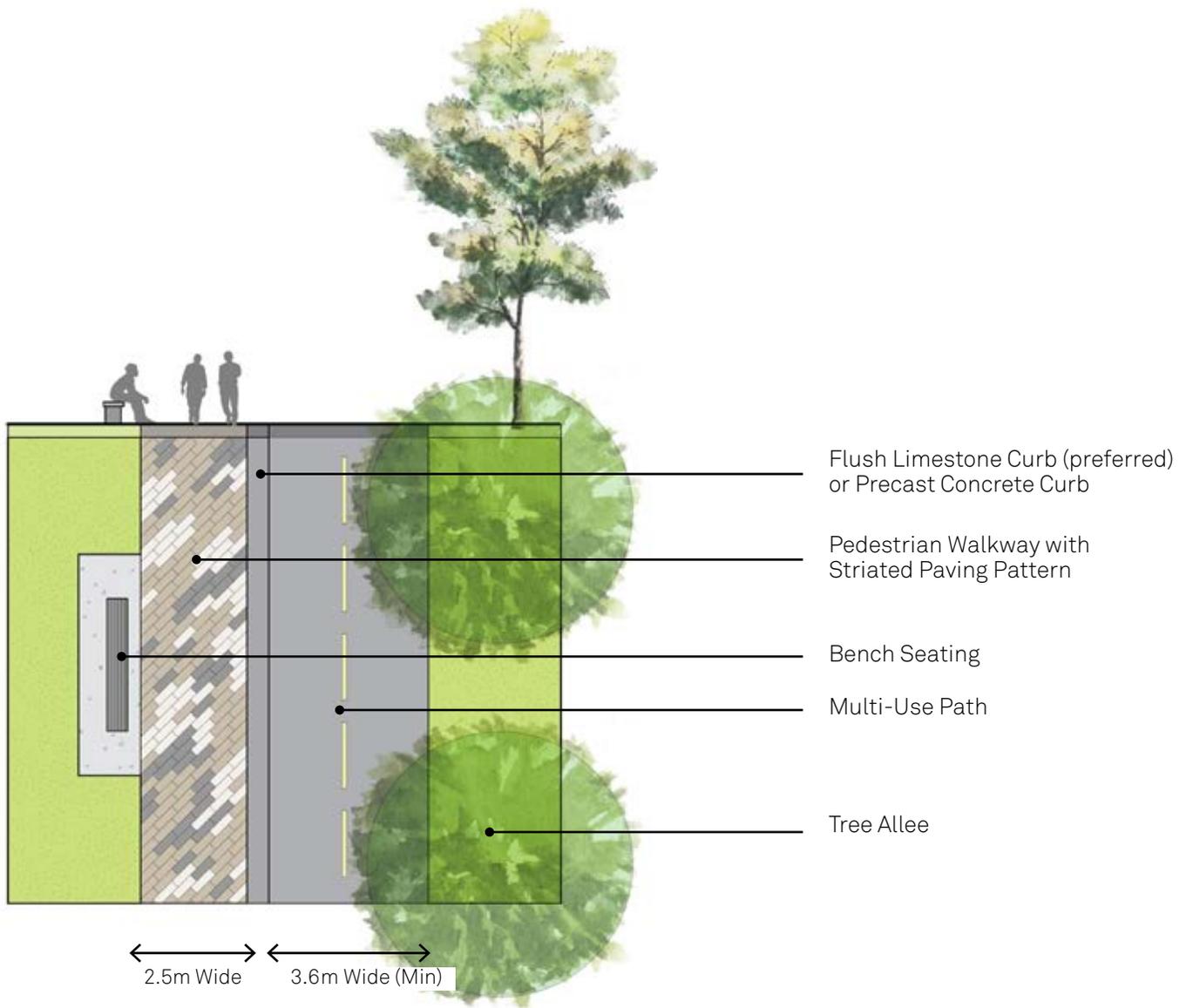


Minor Pathway System

Minor pathways are paths that host a smaller quantity of foot traffic than major pathways. Minor pathways may include access and egress from secondary exits and entrances from buildings, secondary paths within open spaces, or pathways to and from parking areas.

Design Guidance:

- Major pathways should be a aim to be 3 meters wide, and should be a minimum of 2.5 meters wide.
- Minor pathways should be constructed of cast-in-place concrete, and flanked with a band of two unit pavers as per the Landscape Design Guidelines (See Section 5.1, pg. 68)
- Lighting and seating should be provided where appropriate
- Where possible, minor pathways should be flanked by trees on one or both sides



River Path

The River Path is the pathway along the Rideau River, as well as a proposed pathway between Colonel By Drive and Library Road. The River Path consists of a pedestrian walkway paired with a bi-directional multi-use path.

Design Guidance:

- Pedestrian sections of the Rideau River path should be constructed of striated unit pavers or concrete as per the Landscape Design Guidelines (See Section 5.1, pg. 68)
- Multi-use path sections should be constructed of asphalt
- A flush limestone or concrete curb should separate the pedestrian section and the multi-use path
- Minor pathways should be constructed of concrete, and flanked with a band of two unit pavers as per the Landscape Design Guidelines
- Multi-use path sections should be a minimum of 3.6 meters wide
- Pedestrian sections should be a minimum of 2.5 meters wide
- Where possible, minor pathways should be flanked by trees on one side
- Uniform lighting and seating should be provided at even intervals along the River Path



Western O-Train Station

4.3 Streetscapes

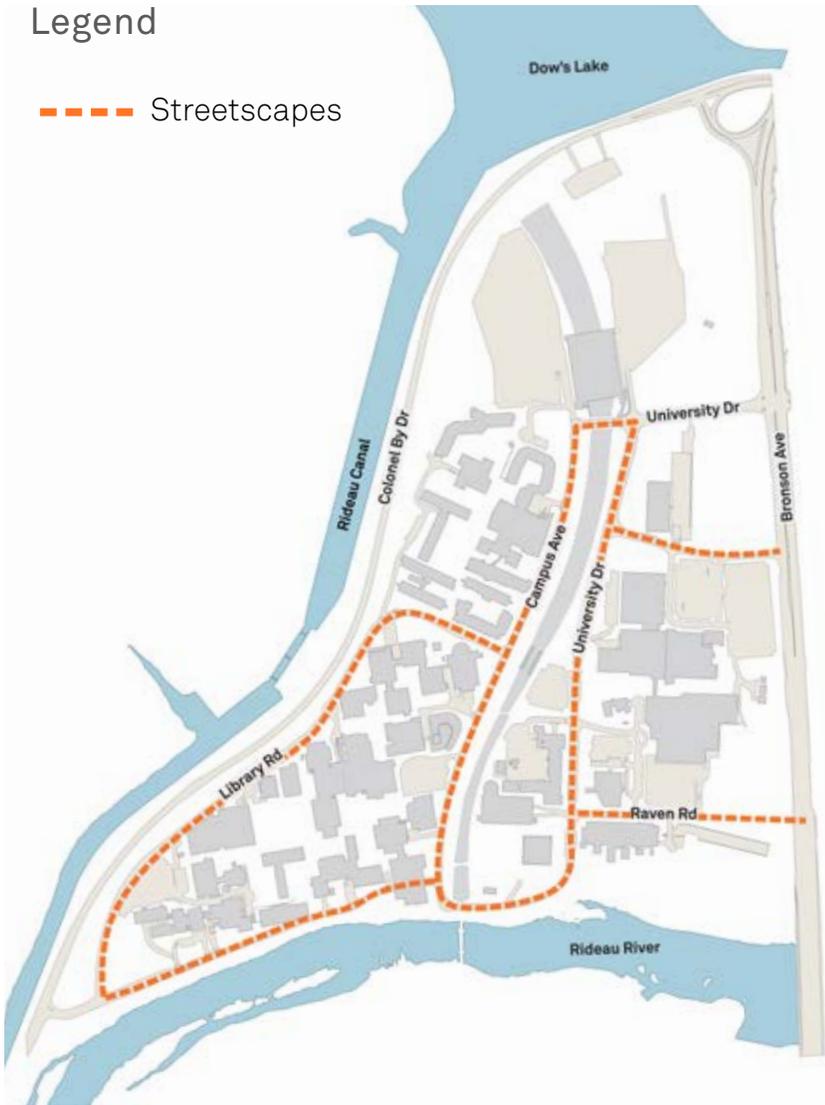
Streetscapes significantly contribute to how pedestrians and cyclists experience the Carleton campus. Streetscapes should be comfortable and beautiful places that prioritize pedestrian safety and are easy to navigate. As such, all streets should have clear delineation of pedestrian, cyclist, and vehicular areas. Tree planting along streetscapes, and the inclusion of low-impact development in the form of bioswales should be encouraged wherever possible.

The Transportation Plan (2019) outlines a number of improvements to streets throughout the campus, including Campus Avenue, University Drive, and Library Road. The following guidelines build on the recommendations of the Transportation Plan and provide high level design guidance for streets on campus.

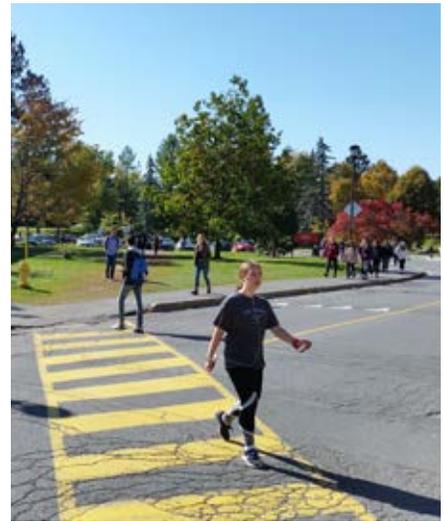
The street sections provided are conceptual, and further design of transportation elements such as bi-directional bike lanes and pedestrian/cycle only pathways requires further functional design.

Legend

----- Streetscapes



Campus Streetscapes



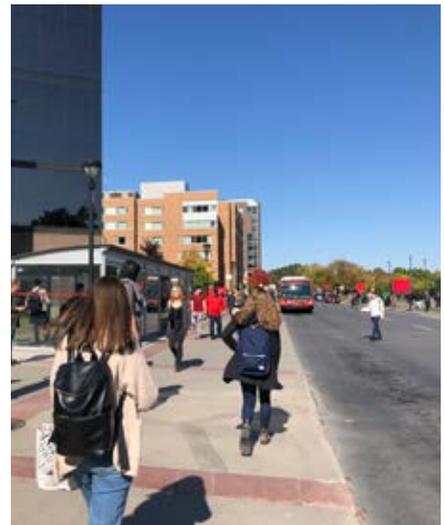
Library Road (North)



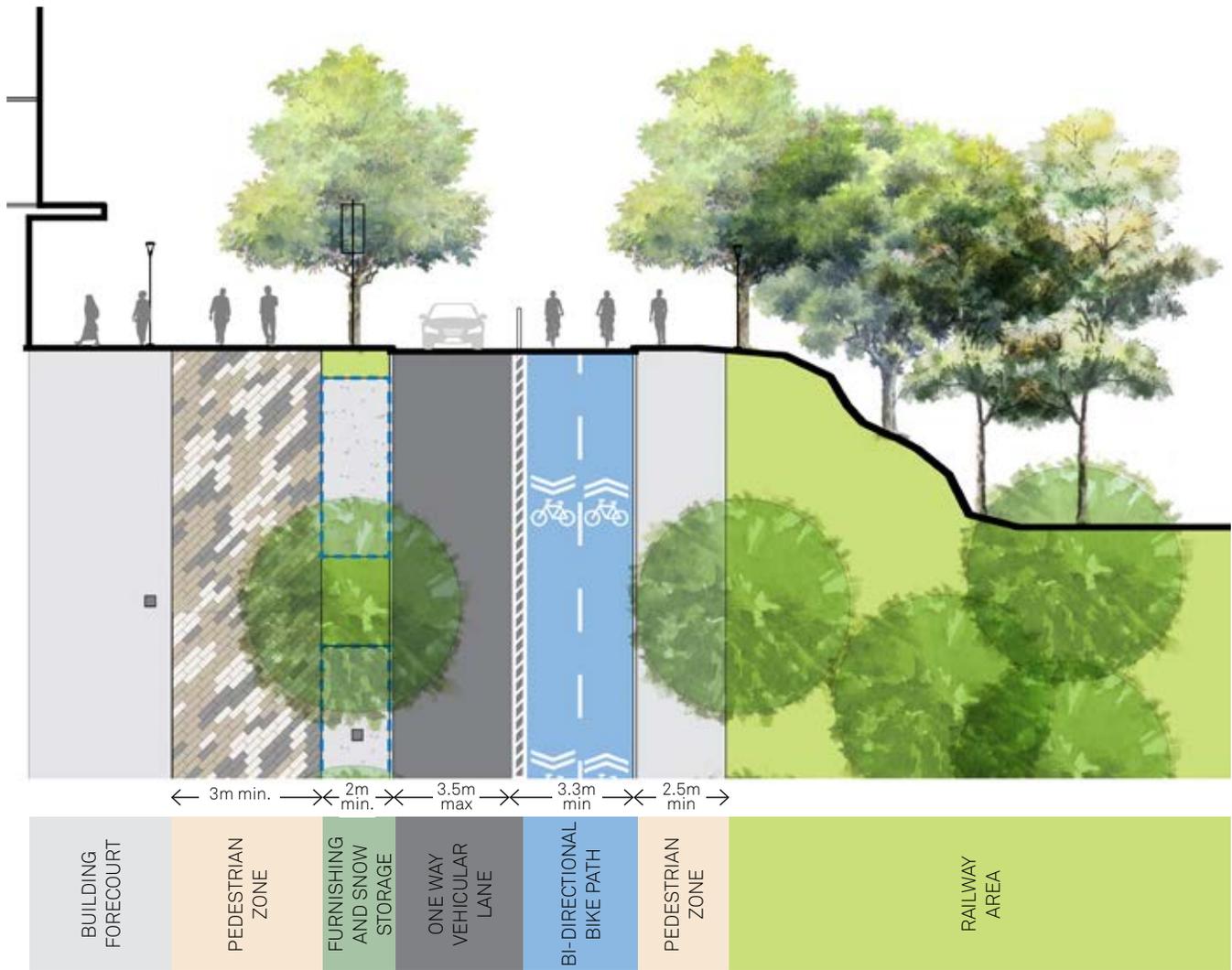
Library Road (West)



University Drive

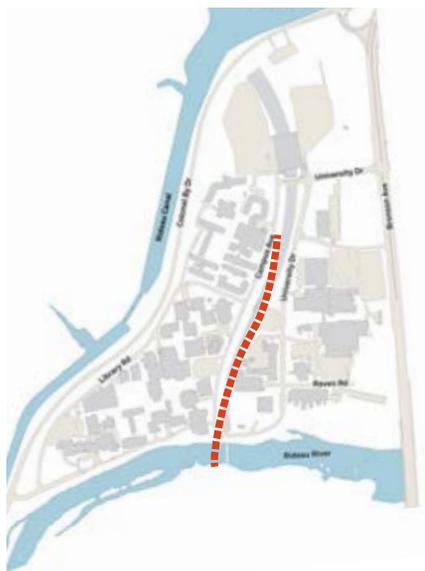


Campus Avenue

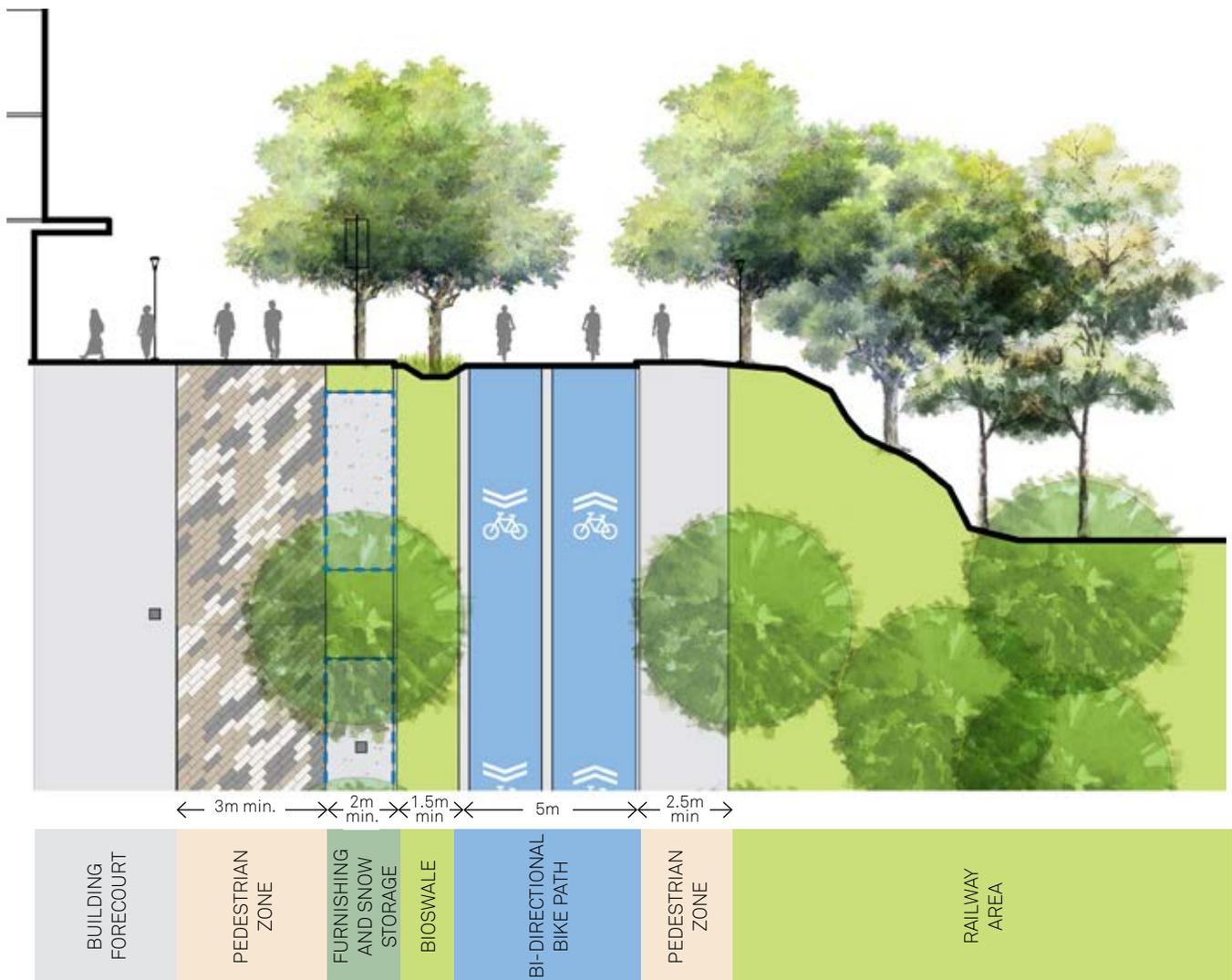


Campus Avenue - Medium Term Scenario using existing curbs and stormwater infrastructure

Campus Avenue



Campus Avenue is one of the main vehicular, pedestrian, and cyclist thoroughfares on campus. Many students, staff and faculty enter the academic campus, as well as residential campus through Campus Avenue. The Transportation Plan (2019) proposes that Campus Avenue transform into a pedestrian and cycling promenade in the long term. The sections above show both medium- and long-term visions for Campus Avenue based on this guidance. The Design Guidance proposed applies to both the medium- and long-term scenarios



Campus Avenue - Long Term Scenario, Full Reecreconstruction

Design Guidance:

- Sidewalks along the western edge of Campus Avenue should include a consistent 3 meter wide (minimum) path of travel, flanked by an adjacent snow clearing, street tree and furnishing zone
- Sidewalks on the western side of the street should feature a striated unit paving pattern as per the Landscape Design Guidelines. Where unit paving is not feasible, concrete should be used, and the street tree and furnishing zone should feature the striated unit paving pattern.
- Street trees should be planted in either open pits or using soil cells to ensure maximum room for root growth
- The furnishing zone should include waste receptacles, seating, lighting and posts for banners and pageantry
- The snow storage areas should be mechanically removed frequently to avoid buildup
- The bi-directional bike path should be a minimum of 3 meters wide with each lane equaling a minimum of 1.5 meters wide. The long term bike path should be 5 meters wide
- A 0.5 meter wide buffer with flexi-bollards should be provided where the bi-directional bike path abuts vehicular travel.



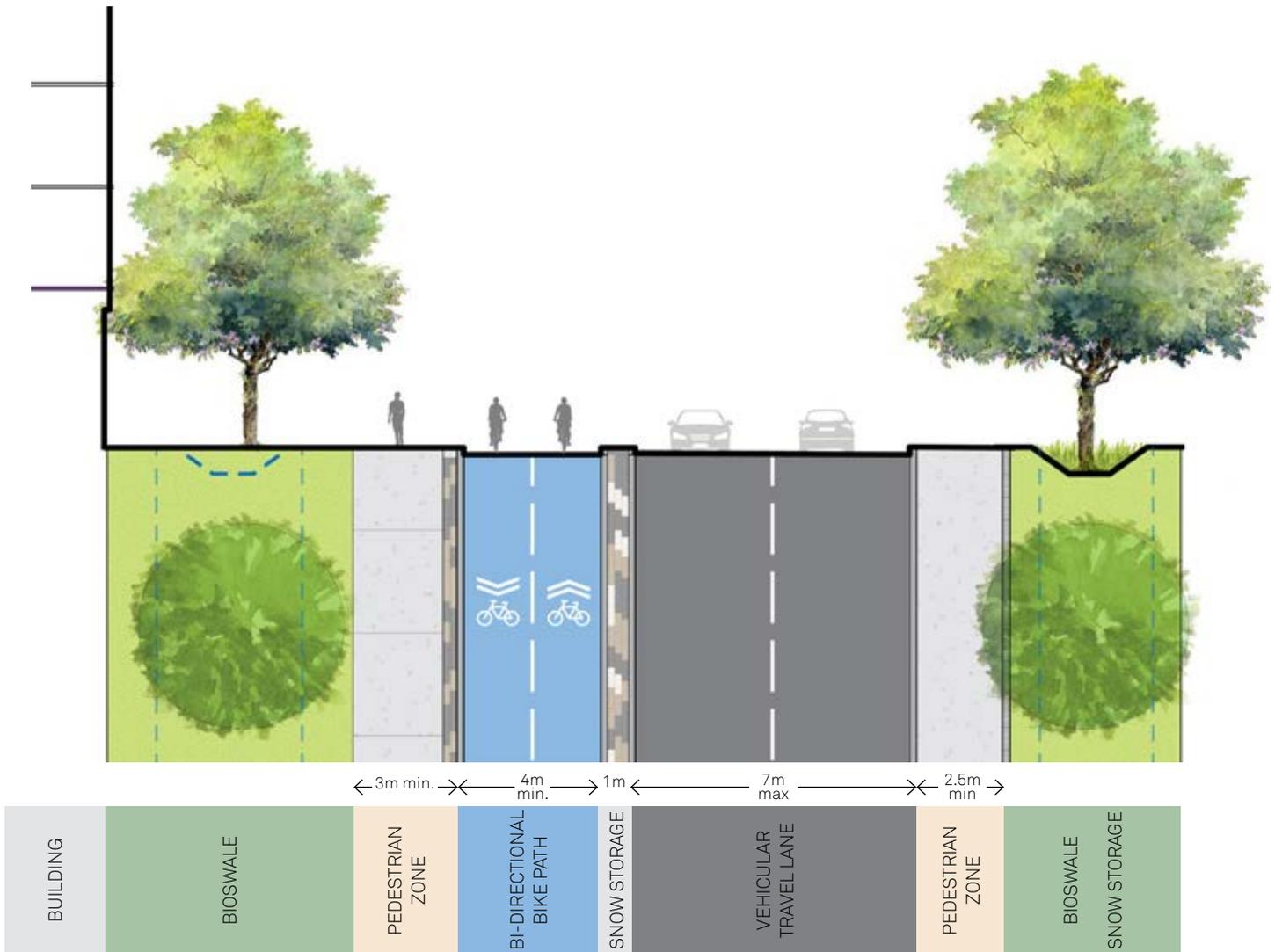
Existing Condition, University Drive

University Drive (East)

University Drive is a two lane, two-way street that includes a significant amount of on-street parking. Buildings accessed directly along University Drive include Robertson Hall, the Maintenance Building, the Nesbitt Biology Building, and the Technology and Training Centre. Typically, a wide landscape boulevard exists between the sidewalk and buildings on University Drive.

The Transportation Plan proposes a bi-directional bike path along University Drive. The proposed scenario reduces on-street parking to accommodate two lanes





University Drive (Eastern Section)

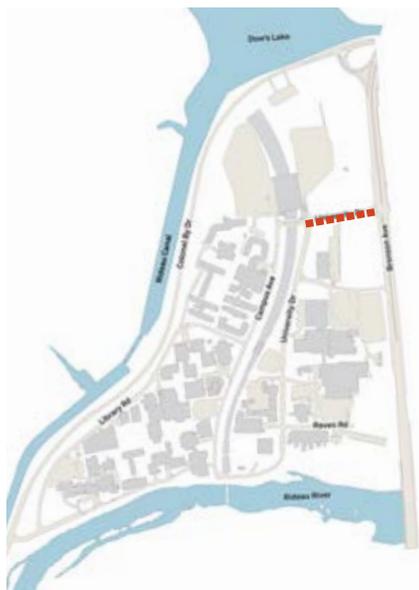
of vehicular travel, in addition to the bi-directional bike path. Additional pedestrian improvements should consider bioswales along the wide boulevards, in addition to naturalized planting areas where there is ample room.

Design Guidance:

- Sidewalks should be a minimum of 2.5 meters wide.
- Sidewalks should feature a cast in place concrete with a banded unit paving pattern, as per the Landscape Design Guidelines.
- Stormwater management features such as bioswales and rain gardens should be included in the boulevard between the sidewalk and the building
- A lateral trench drain connection should connect roadway stormwater to the bioswale
- The bi-directional bike path should be a minimum of 4.0 meters wide.
- An 0.5 meter wide raised barrier featuring unit pavers should be provided between the bi-directional bike path and vehicular travel lanes



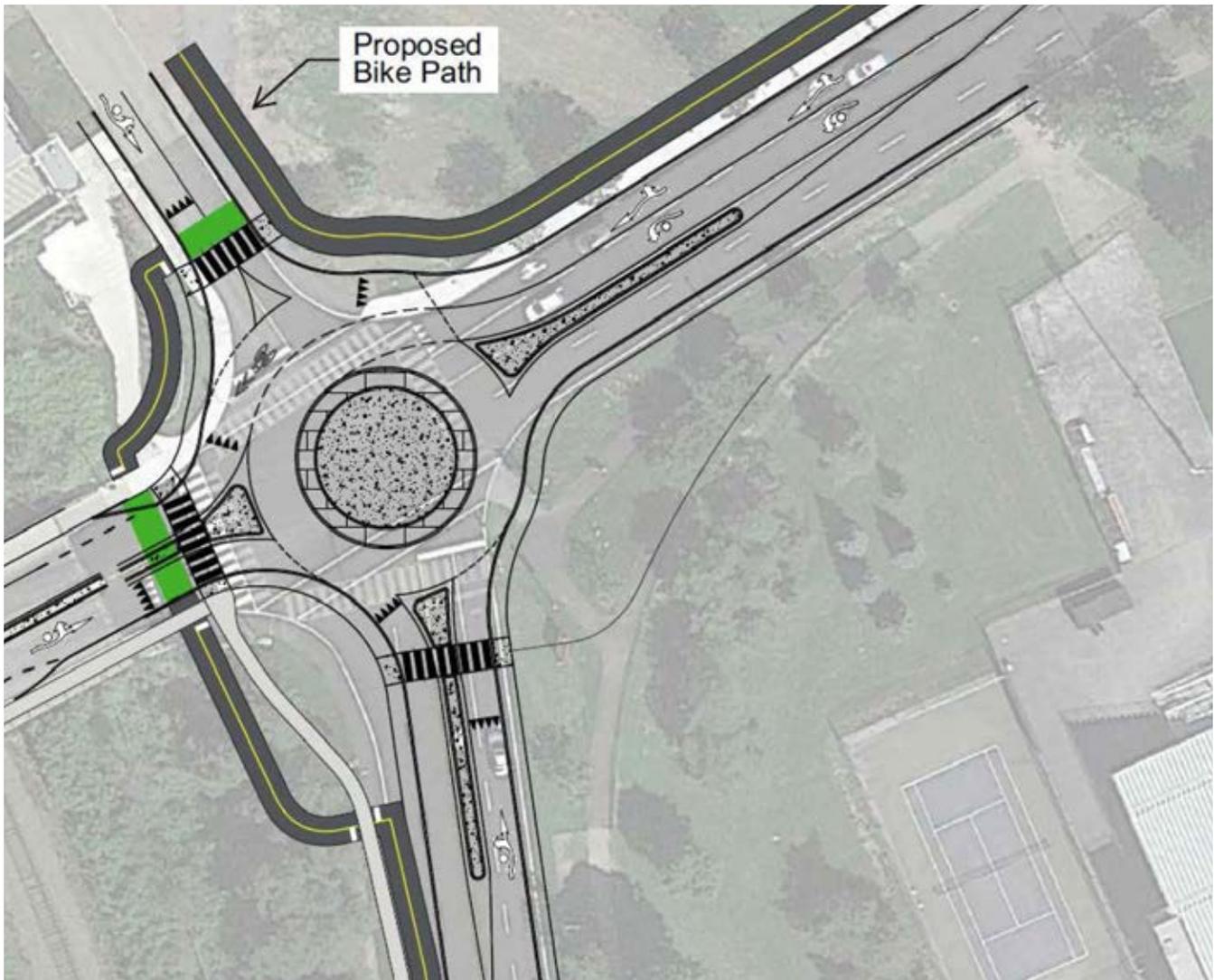
Example of a bioswale stormwater management feature



University Drive Gateway

The Transportation Plan recommends providing a roundabout to assist in managing traffic impacts at the University Drive and Campus Avenue North intersection.

The roundabout will serve as an important entry gateway to the University, and should incorporate entry signage, lighting, and stormwater management elements such as bioswales.



University Drive Gateway (from 2019 Transportation Plan)

Design Guidance:

- The roundabout should be developed as a stormwater management element (ie. a bioswale or LID feature)
- Servicing including stormwater connections and electrical connections should be provided to the roundabout
- The roundabout should incorporating paving and plant materials as per the Landscape Design Guidelines
- The Gateway element at the roundabout should be well lit and considered a Major Gateway feature
- Sidewalks

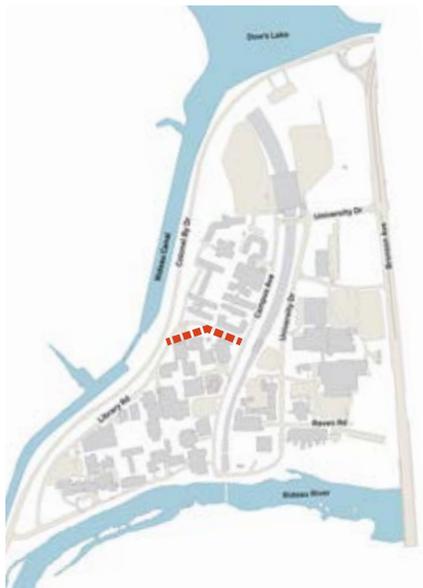


Existing Condition, Library Road (North)

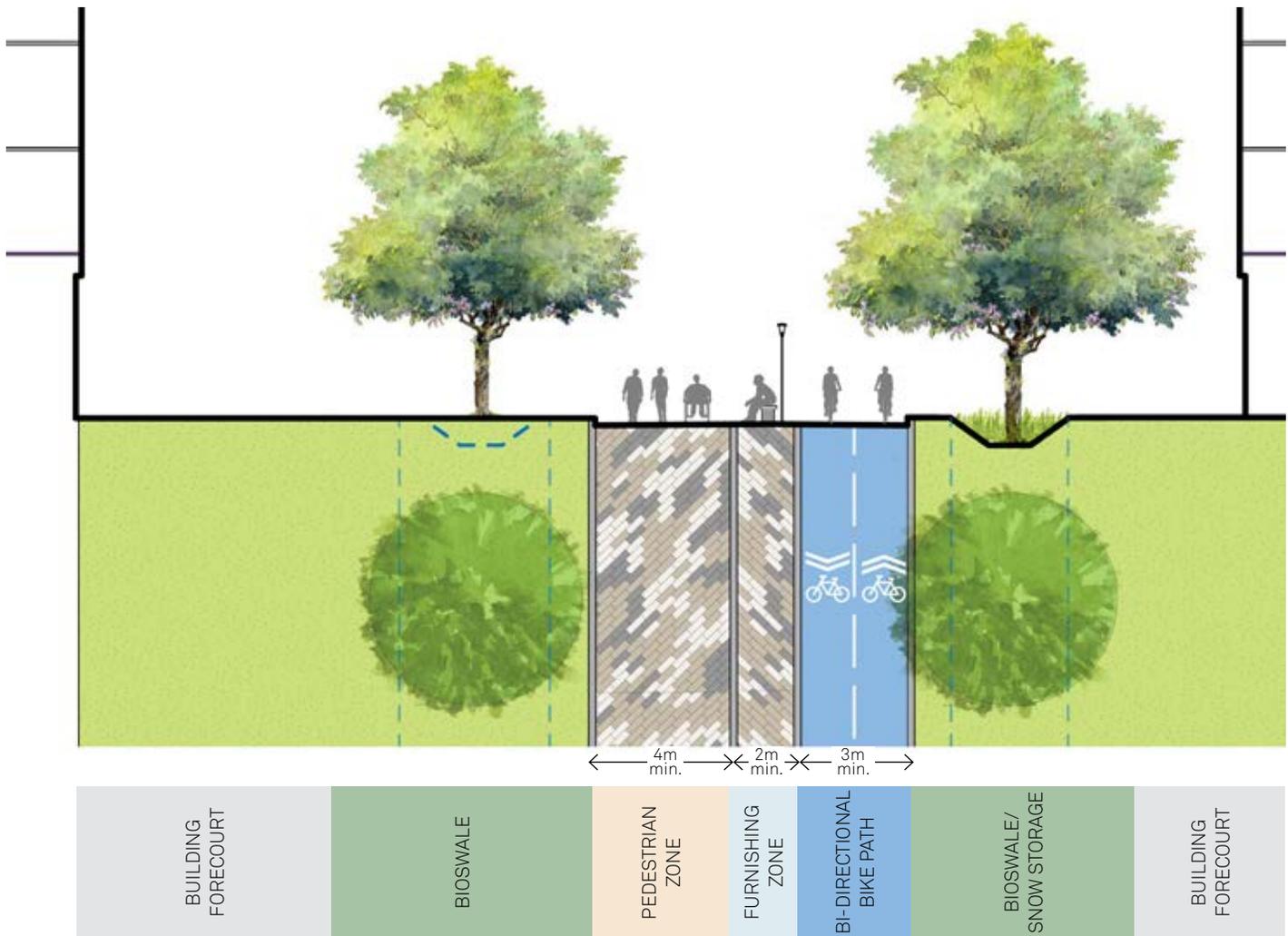
Library Road (North)

Both the Campus Master Plan and the Transportation Plan propose the transformation of Library Road North into a pedestrian and cycle promenade to accommodate East-West movement across the campus and towards the O-Train Station.

The pedestrianized section of Library Road must accommodate emergency vehicle access, and provide clear delineation between pedestrian, furnishing, and bike path zones. Further functional study may be required to determine the form of vehicular access to the residence servicing areas from the western portion of Library Road.

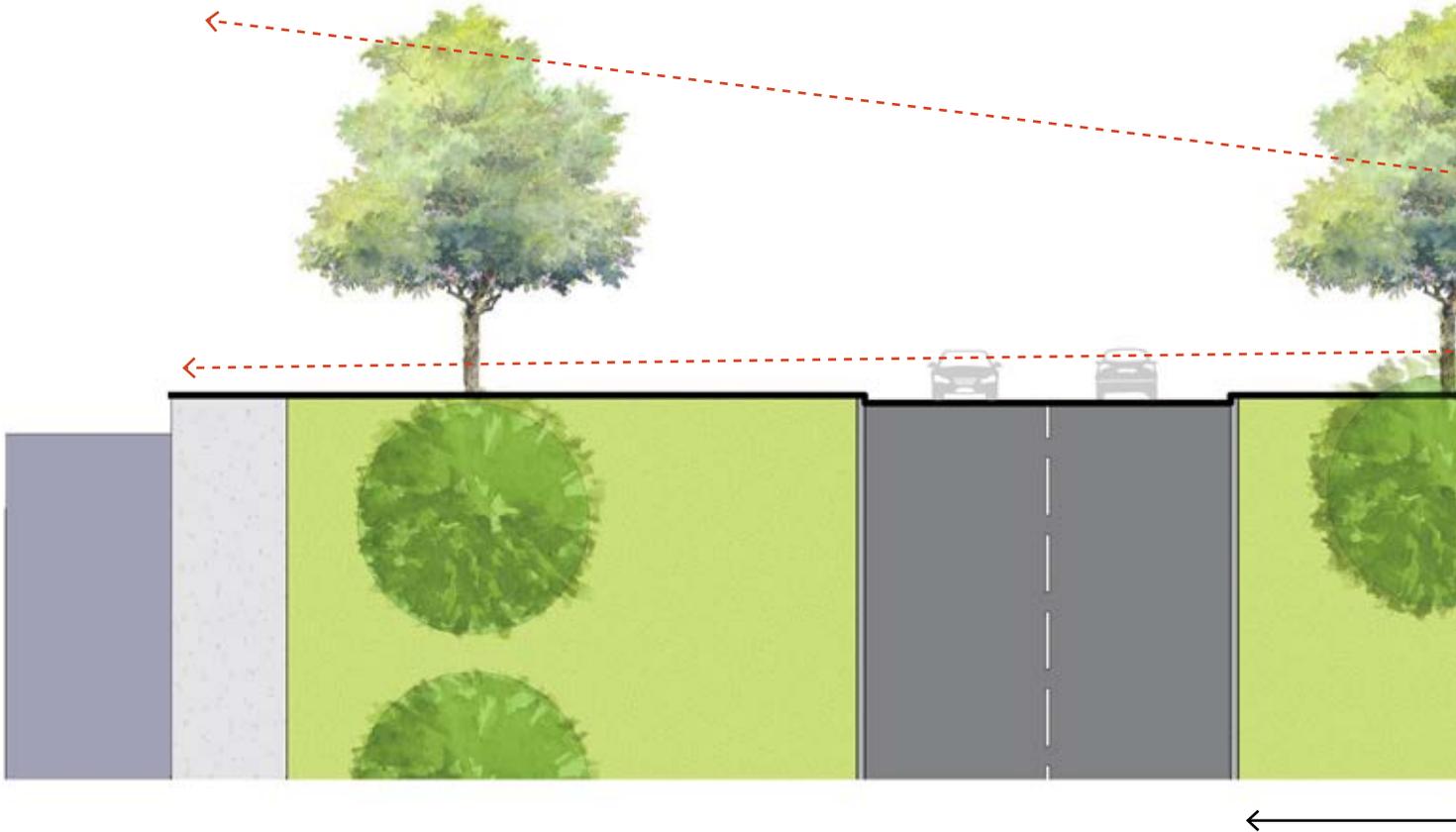


Library Road (Northern Section)



Design Guidance:

- The pedestrian pathway should be a minimum of 4.0 meters wide
- The pedestrian pathway should feature a striated unit paving pattern as per the Landscape Design Guidelines
- A minimum 2.0 meter wide furnishing zone should be provided between the pedestrian pathway and the bi-directional bike path
- The bi-directional bike path should be a minimum of 3.0 meters wide with each lane equaling a minimum of 1.5 meters wide
- Stormwater management features such as bioswales and rain gardens should be included in the boulevards between the pedestrian/cycle path and the buildings



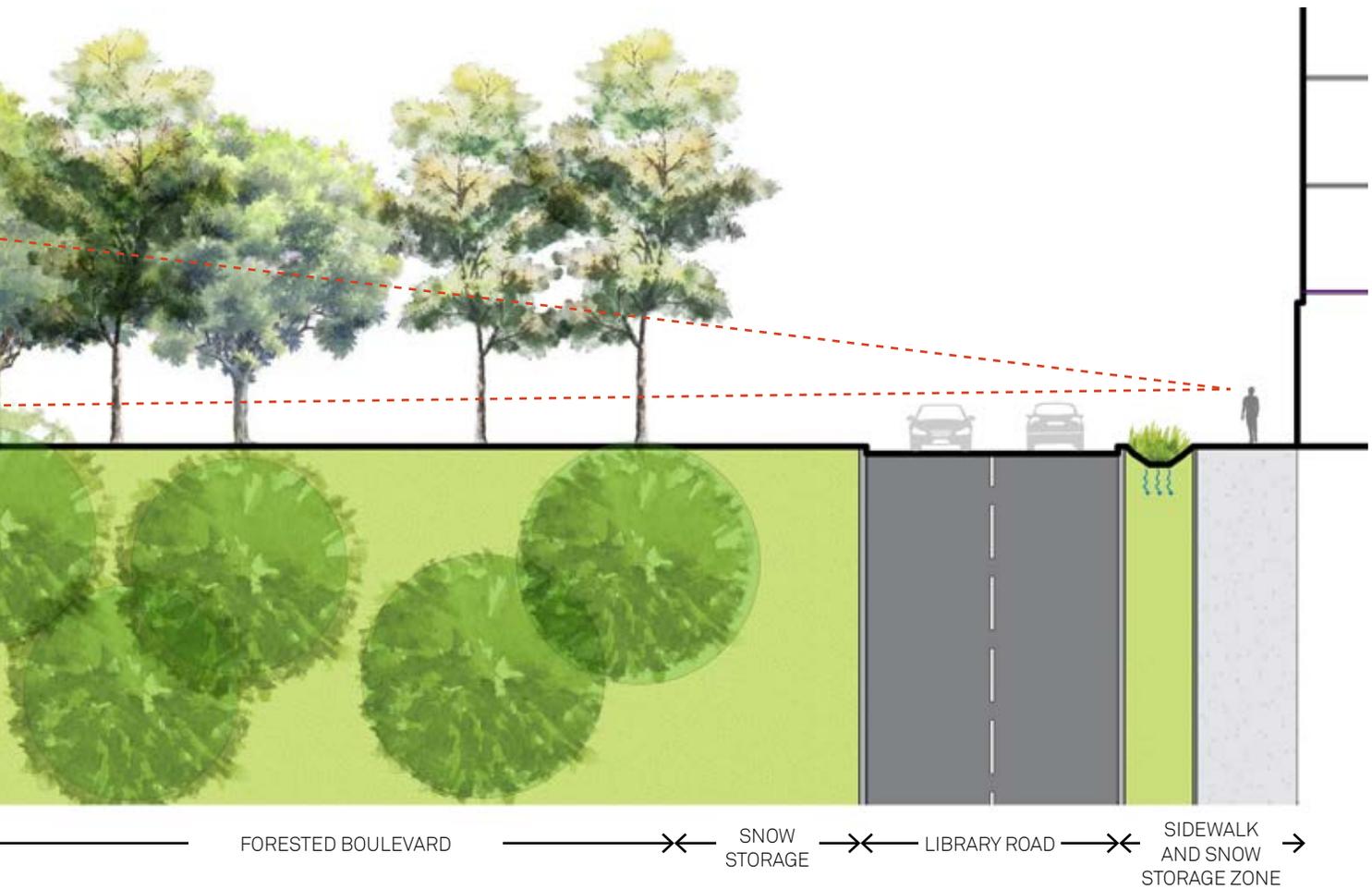
Library Road (West)

The section of Library Road on the western side of campus generally serves as a lower trafficked vehicular access route for loading and parking areas. As buildings along this portion of Library Road typically face inward towards the east, pedestrian facilities are minimal.

Future development of the western portion of Library Road should include a 'road diet', with narrower vehicular travel lanes to accommodate improved pedestrian and stormwater management facilities. Additionally, opportunities for sightlines to the Rideau Canal should be explored.



Library Road (Western Section)



Design Guidance:

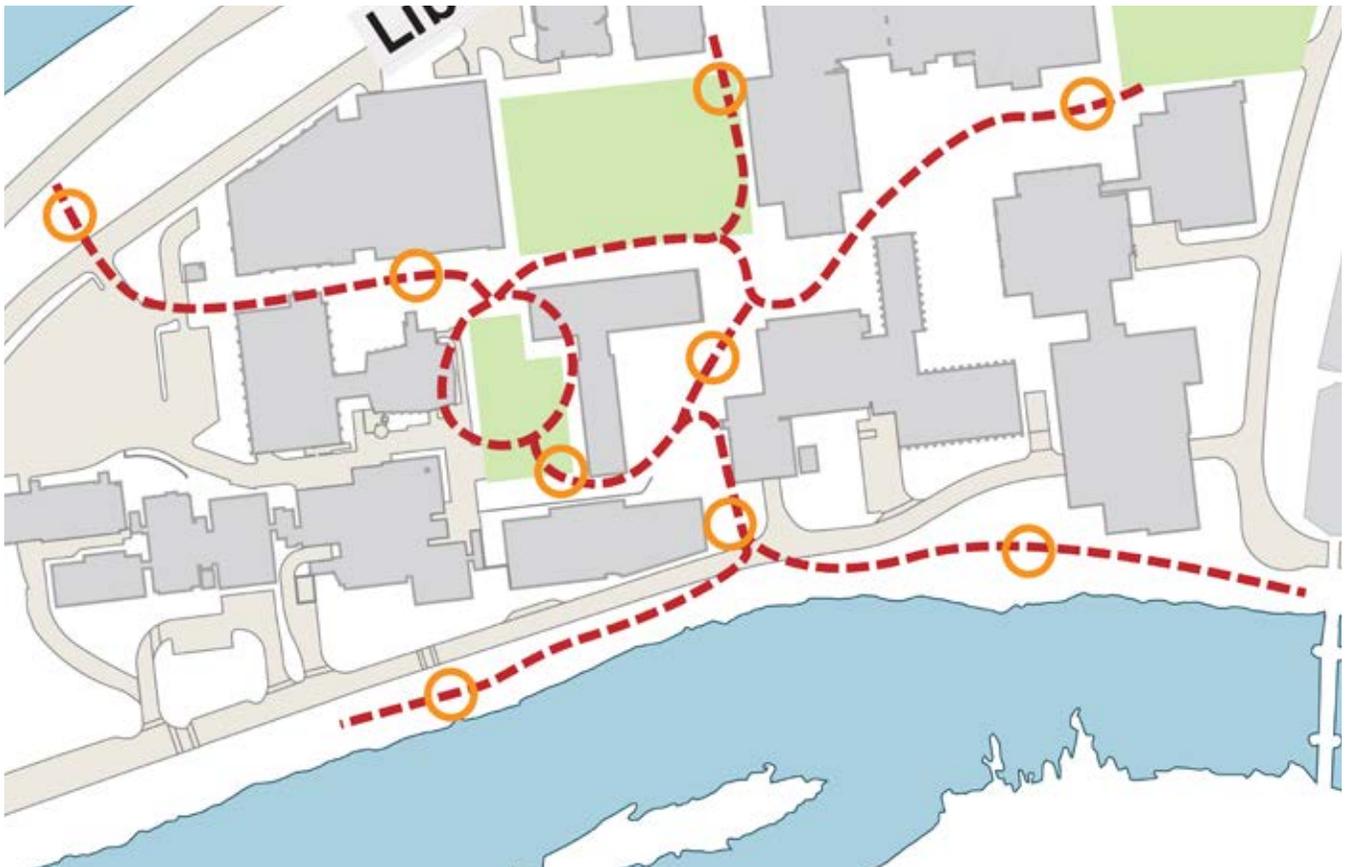
- Sidewalks should be a minimum of 2.5 meters wide
- Vehicular travel lanes should be reduced to a maximum of 3.5 meters
- A snow storage zone should be provided between the edge of the roadway and the sidewalk
- Strategic tree clearing (based on health and sight lines) of the forested boulevard should provide views to Colonel By Drive and the Rideau Canal



Indigenous Cultural Markers at Humber College



Public Art as cultural markers



Legend

- Cultural Marker 'Trail'
- Cultural Marker Location

Cultural Marker Locations

4.4 Cultural Markers

Cultural Markers are interpretive architectural elements that are intended to communicate a historic or cultural narrative. Cultural markers are an example of how Indigenous narratives and place making can be integrated in the design of outdoor spaces on campus. Design suggestions from internal Indigenous stakeholders included:

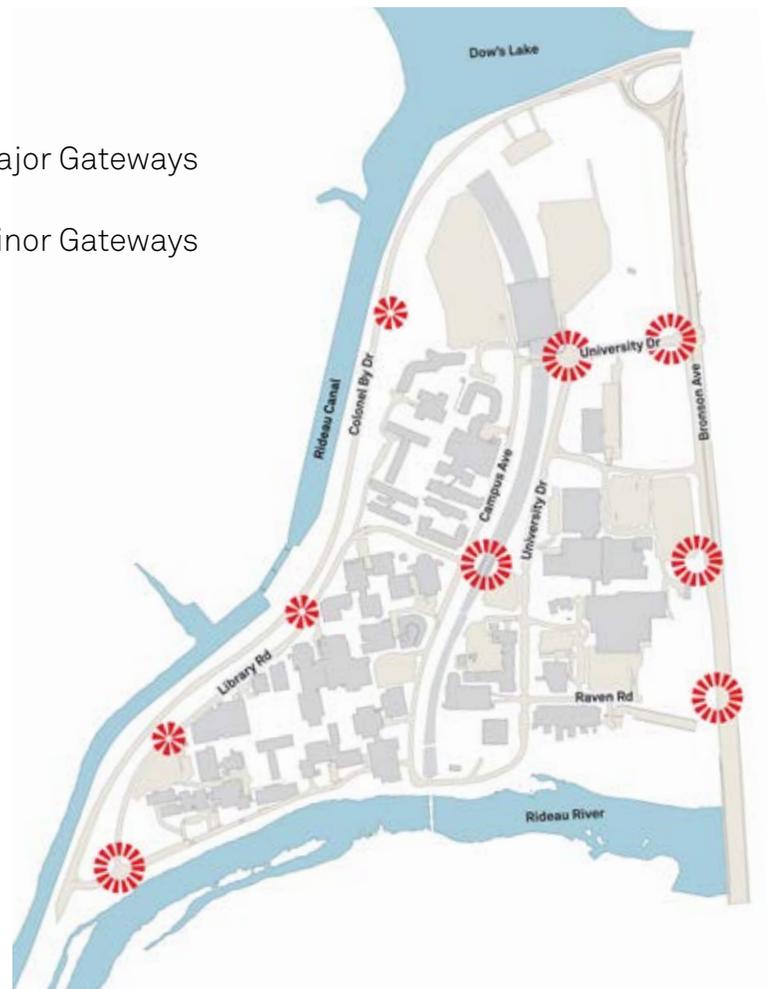
- Use of Algonquin language
- Animating elements such as wind and water
- Exploring the Anishinaabe concept of Mino-bimaadiziwin – living a Good Life
- Acknowledgment that the campus is located on unceded Algonquin territory

Design Guidance:

- Cultural markers should be located adjacent to Major Pathways, radiating out from the Indigenous Learning Place. The Cultural Markers will lead people in to this important space on campus.
- The design of cultural markers should be undertaken by Indigenous designers, in consultation with internal and external Indigenous stakeholders
- The design of the cultural markers should be completed along side the design of the Indigenous Learning Place (see Section 6, pg. 106)

Legend

-  Major Gateways
-  Minor Gateways



Gateway Locations

4.5 Gateways

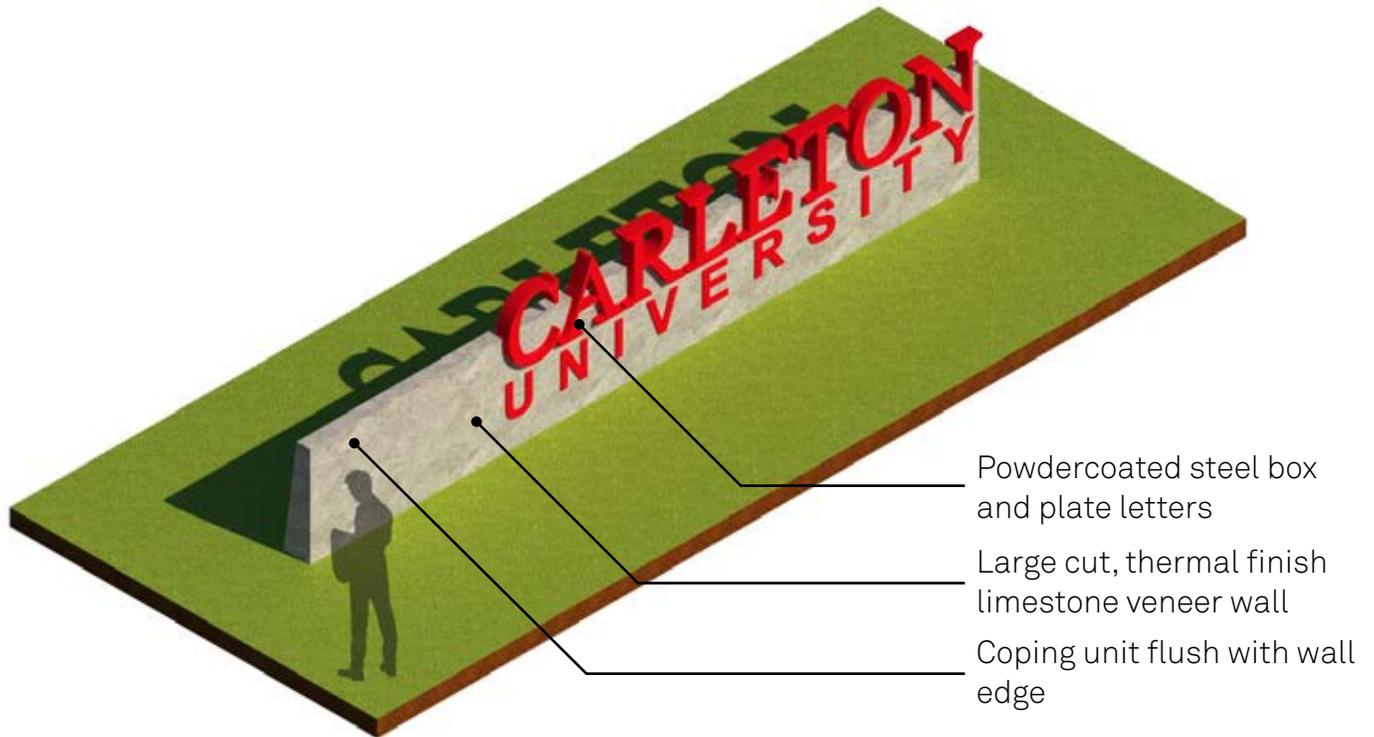
Gateways signify key entrances to the campus. These entrances provide the opportunity to signal arrival to the university, establish a strong identity and sense of place, and enhance wayfinding and orientation on campus.

Major gateways are large features at main entrances to campus, while minor gateways are smaller in scale and are intended to be experienced by pedestrians and cyclists.

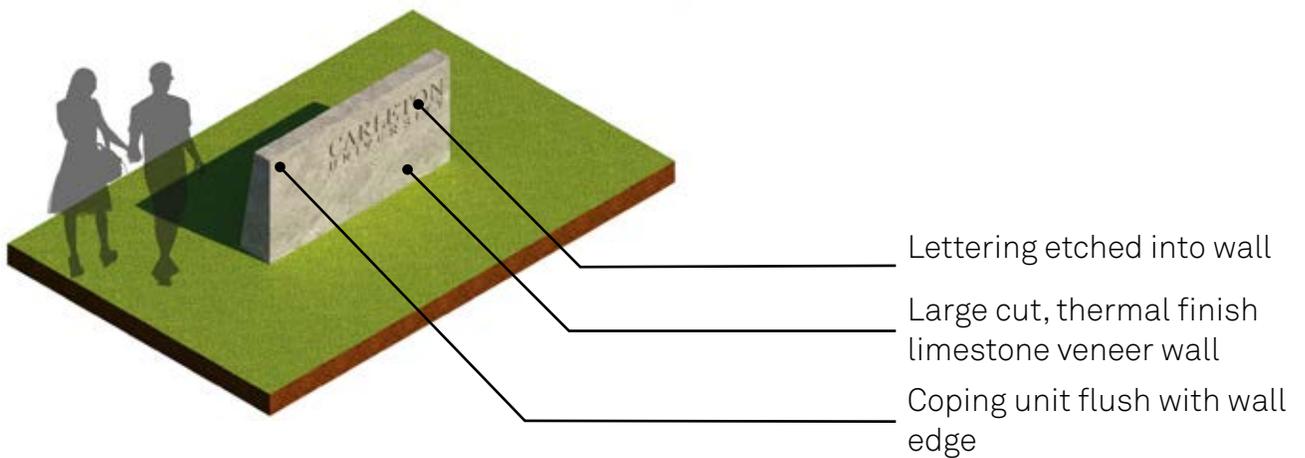
Design Guidance:

- Gateways should feature high-quality materials, such as natural stone and powder coated steel
- Gateways should be accompanied by naturalized plantings that feature native perennial plants
- Plantings should not obstruct lettering on gateways
- Gateways should consider use of Algonquin language, subject to consultation with Indigenous stakeholders

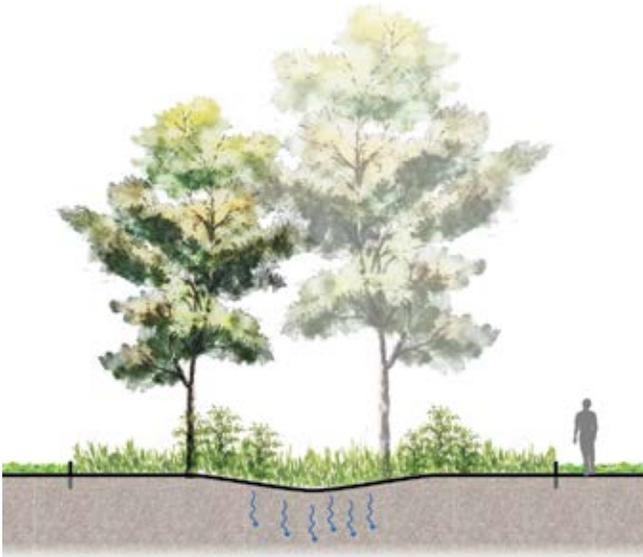
Major Gateway



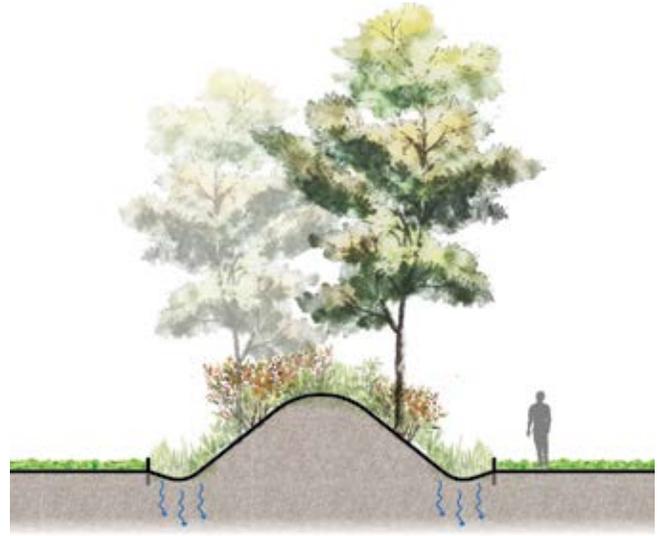
Minor Gateway



Naturalized Bioswale Typologies

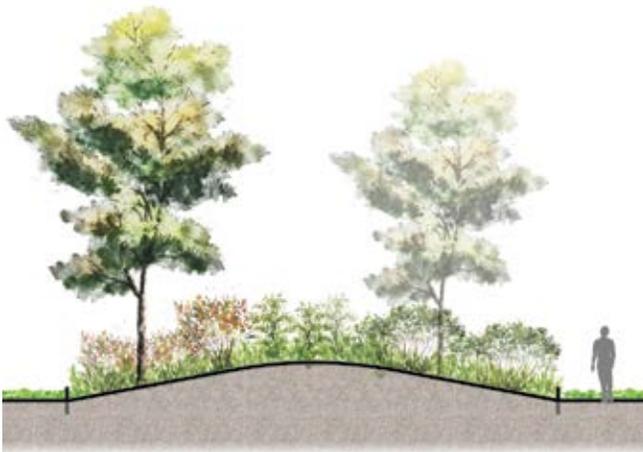


Bioswale



Bermed Bioswale

Naturalized Planting Bed Typologies



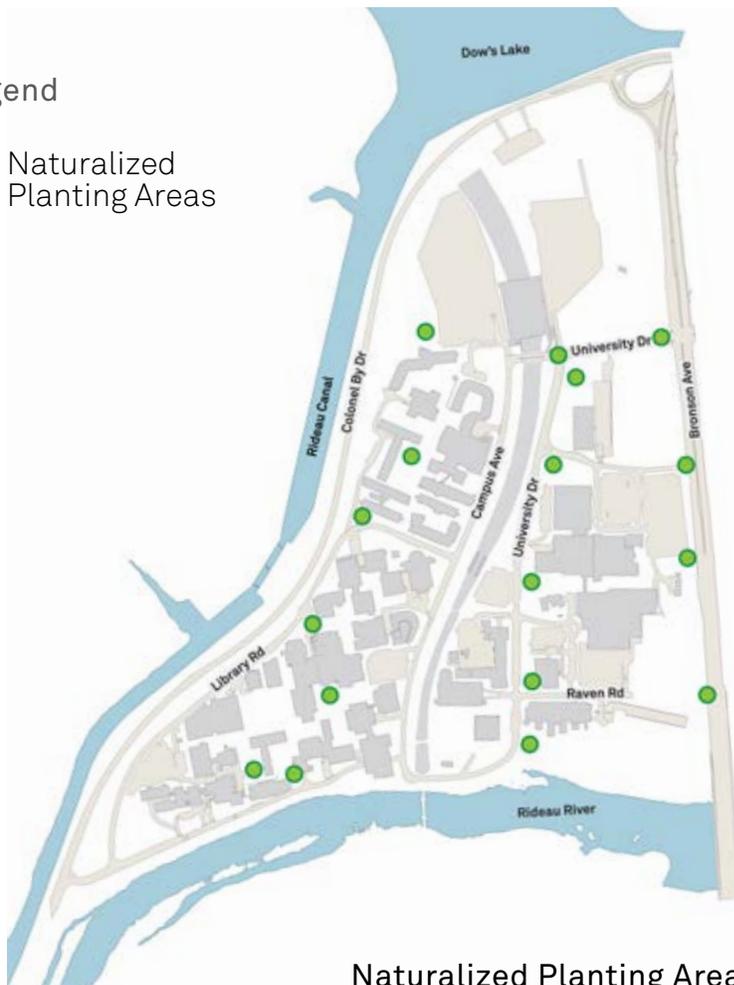
Low Berm



Level

Legend

- Naturalized Planting Areas



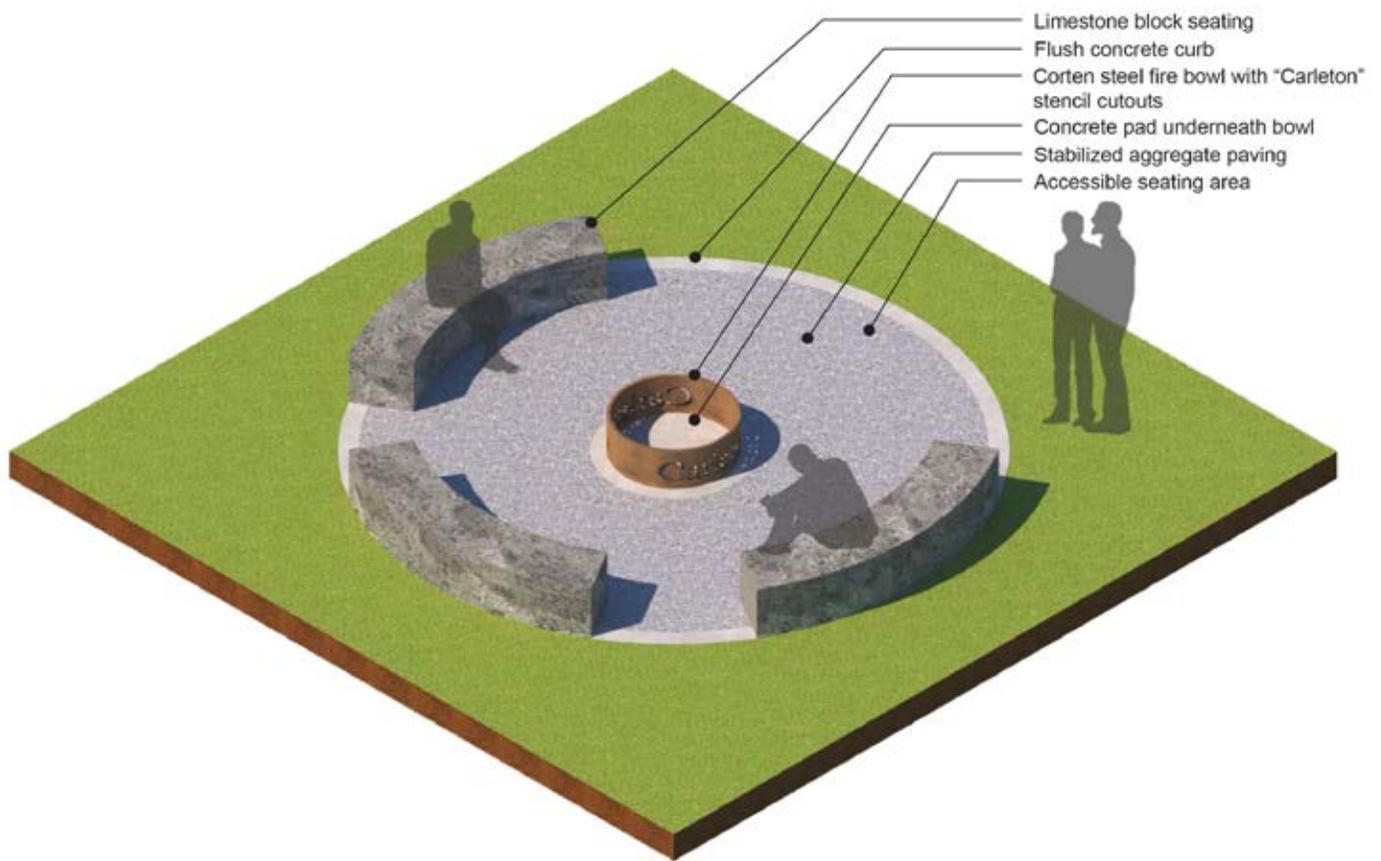
4.6 Naturalized Planting Areas

Naturalized planting areas are locations on campus where large areas of lawn should be converted to more dense plantings of native grass, shrub, and tree species. They are intended to promote biodiversity, reduce maintenance regimes, and bring the character of the Rideau River up to the campus.

Naturalized planting areas should explore a variety of topographical configurations, and, where possible, include stormwater management features such as bioswales or rain gardens.

Design Guidance:

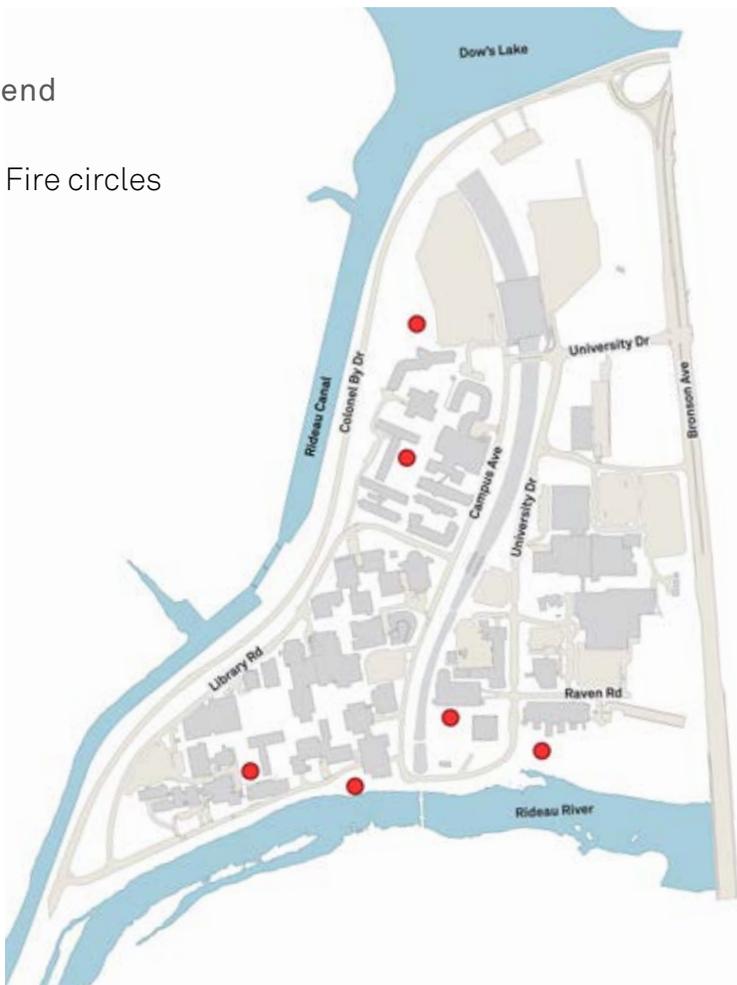
- Naturalized planting areas should include recommended plant species as per the Landscape Design Guidelines
- Selection of shrubs and tree species should consider safety and sight lines, on a site specific basis
- Where suitable, opportunities for medicine gardens, or productive landscapes should be explored in partnership with student groups, faculty and/or staff.
- Opportunities for education should be explored through the planting and maintenance of naturalized planting areas



Fire Circles

Legend

- Fire circles



Fire Circles

4.7 Fire Circles

Fire circles provide an opportunity to connect with the elements and spend time outdoors in colder weather. They are located in locations where there is space for gathering in small groups, and where university staff can monitor their use.

Additional consideration may also be given to screened natural gas fire units throughout campus, that can provide continuous warmth and require less oversight by university staff.

Design Guidance:

- Fire circles should be located in areas with clear sight lines
- Accessible seating options, including areas for wheelchairs should be provided
- Where appropriate, a locked cover for the fire pit should be used to manage access
- Storage areas for materials should be provided near fire pits, and integrated with the design of the fire circles where possible



5

Landscape Design Guidelines

Paving Materials

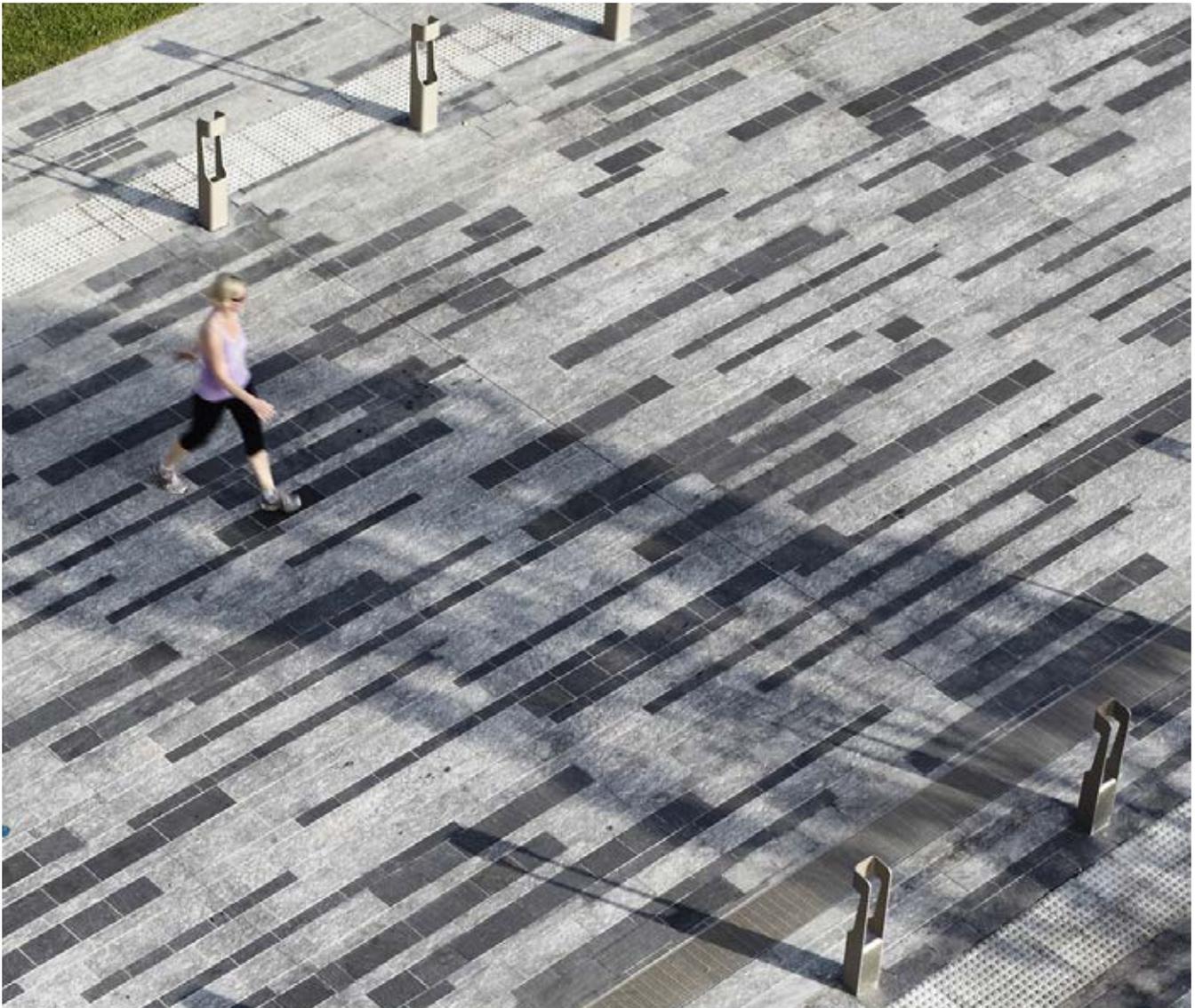
Planting

Furnishings and Fixtures

Landscape Structures

Safety and Accessibility

Stormwater Management



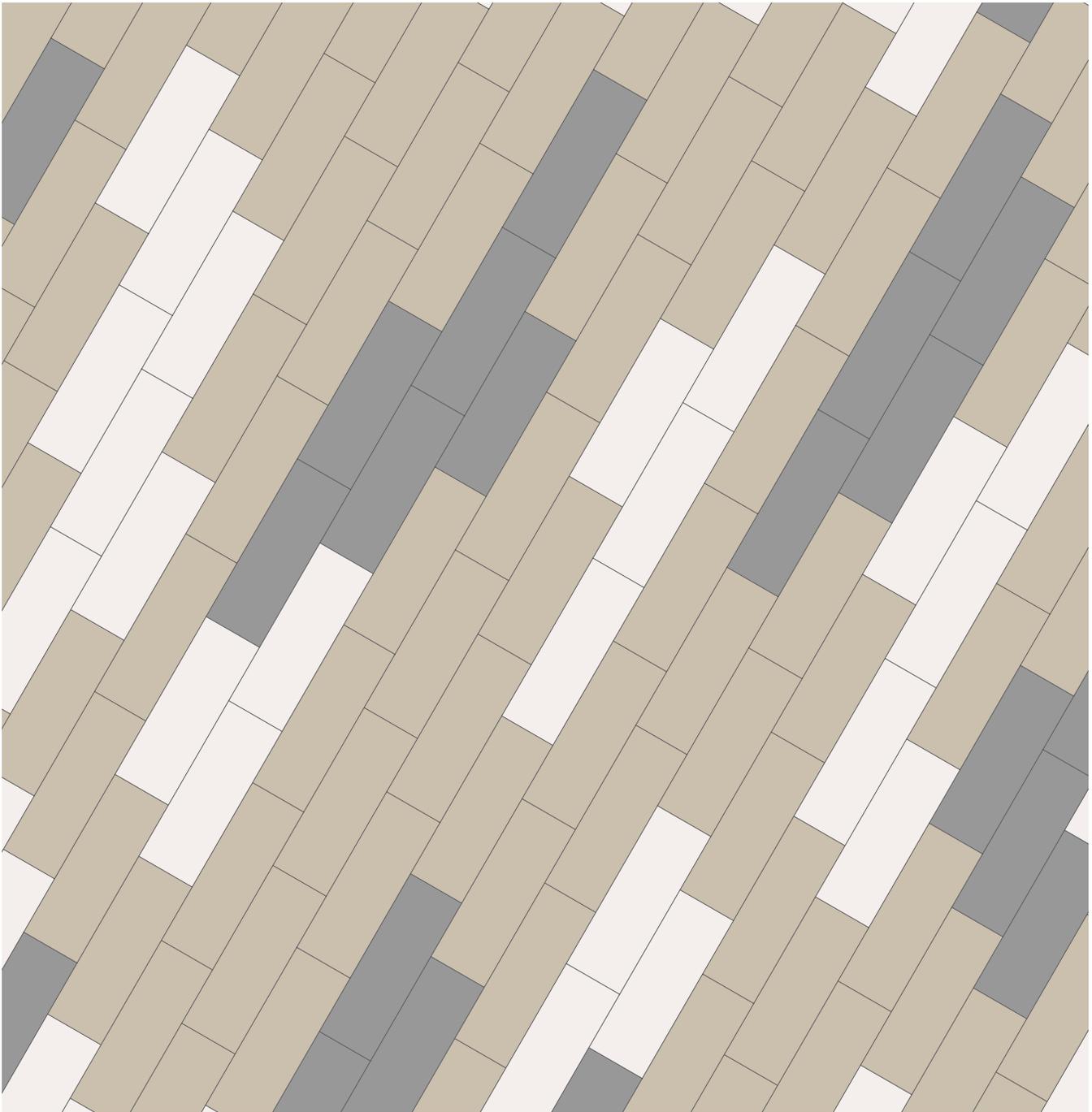
5.1 Paving Materials

A cohesive palette of paving materials will assist in creating a unified network of open spaces, while contributing to the campus identity.

The new signature Carleton University unit paving pattern celebrates the underlying geology of the site. It evokes the striation and overlapping limestone formations that are characteristic of the region. Rendered as a unit paving pattern, the geological theme

uses a dominant buff colour interspersed with blocks of light and dark greys to form the striated pattern.

Facilities should develop a long-term plan to slowly replace all legacy paving materials with the new standards presented here. Over time, a unified palette of paving materials will significantly improve the look and feel of the campus to help it feel like one unified place.



The new Carleton signature unit paving pattern expresses the striated patterns of the geological formations that underly campus

Unit Paving

In key areas of the campus, as well as on Major and Minor Pathways, unit paving is recommended to enhance the pedestrian experience. For building forecourts and courtyards, alternative rectangular unit pavers may be used, and should be coordinated with architectural finishes to create a unified exterior environment.

General Information

Manufacture:

Promenade Plank Paver by Unilock

Size:

60 cm x 20 cm x 10 cm

Colours:

Sandstone
Steel Grey Blend
Opal



Sandstone



Opal



Steel Grey Blend

Large Plaza Areas and Major Pathways

Pattern:

One-third unit offset laid at 60 degree angle with striated bands of colour

Colour Mix:

60% Sandstone
20% Steel Grey Blend
20% Opal

Installation notes:

On a concrete base with a steel plate edger

Minor Pathways

Pattern:

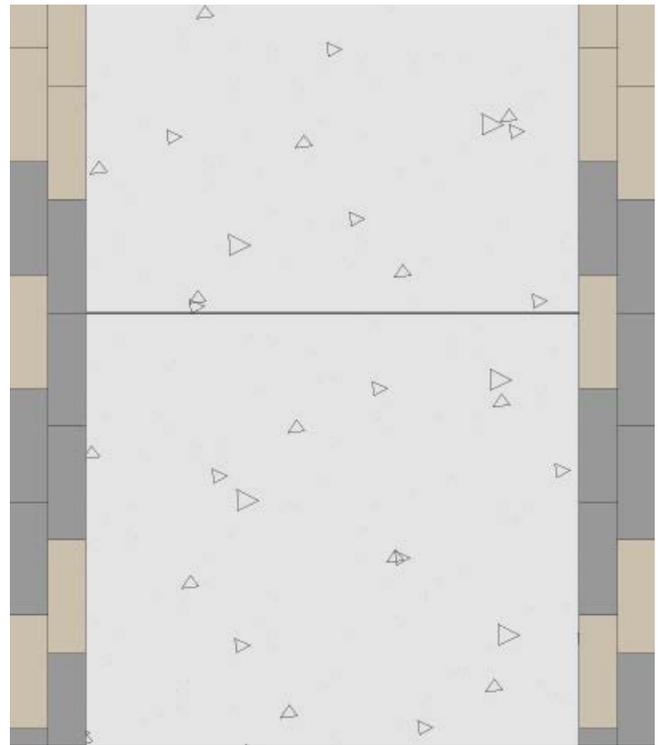
Two unit band. One-third unit offset with random colour pattern

Colour Mix:

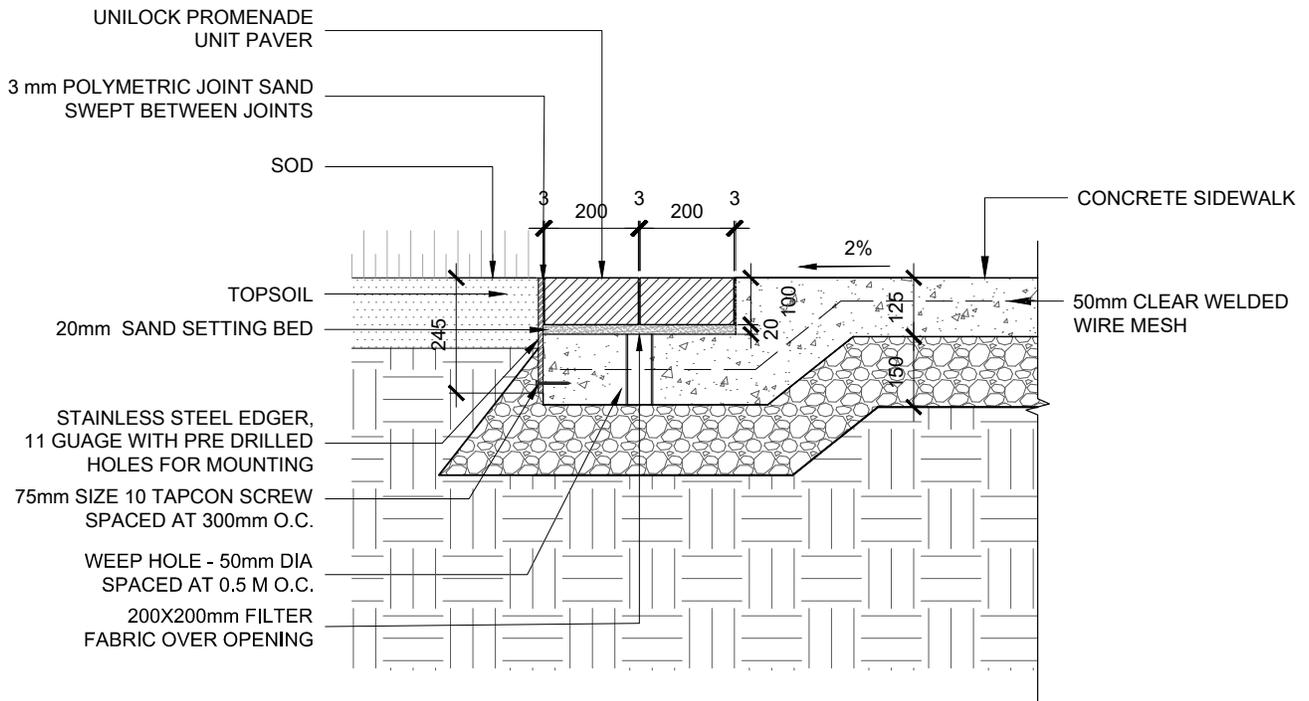
50% Sandstone
50% Steel Grey Blend

Installation notes:

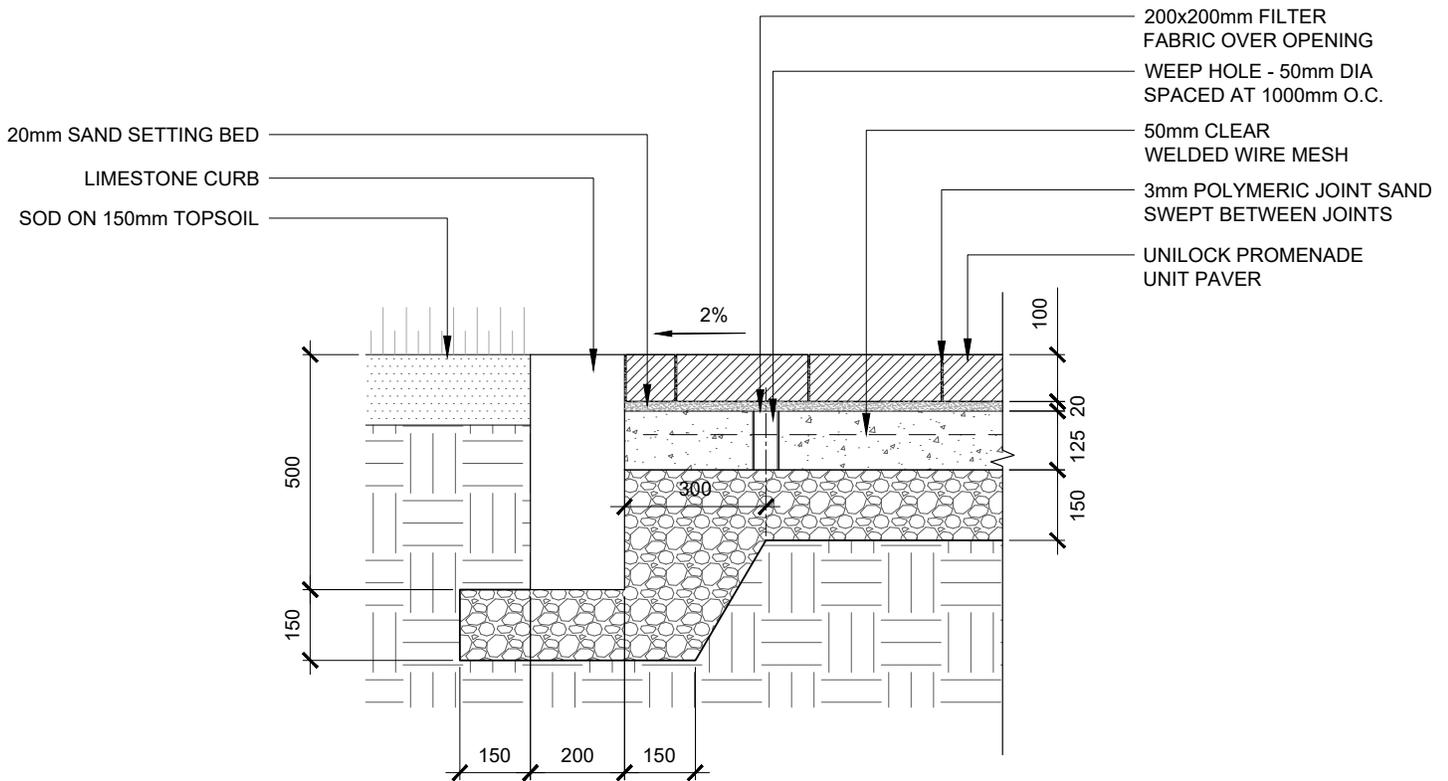
Unit pavers set on a concrete base, downturned from walkway, with a steel plate edger



Two-unit Band



Detail: Unit Paver Edge at Sod. Not to Scale



Detail: Unit Paver Walkway with Limestone Edge. Not to Scale

Concrete

Cast in place concrete should be used alongside unit pavers and stabilized decomposed granite in the design of key open spaces on campus. Concrete is the preferred material for the construction of roadways and vehicular access routes.

Material:

Cast in place concrete

Colour:

Natural light grey colour, SRI 29 or higher

Finish:

Light broom finish

Joints:

3/8" saw-cut joints

"Snap-cap" type expansion joints with colour matched caulking



Cast in place concrete

Stabilized Decomposed Granite

Stabilized decomposed granite should be used alongside concrete and unit pavers in the design of key open spaces on campus. Stabilized aggregate is an important tool to reduce the carbon footprint and embedded energy involved in landscape construction.

Material:

Decomposed granite, blended with a stabilizing binder (such as organic-lock.com or similar)

Colour:

Natural light grey colour, natural medium grey colour, or natural buff colour.



Stabilized decomposed granite

Asphalt

Asphalt paving should only be used in the construction of roadways and multi-use pathways.

Material:

Asphaltic concrete pavement

Colour:

Standard colour



Asphalt multi-use path

Limestone Edging

Where unit pavers, stabilized decomposed granite, or asphalt meet another pavement, or where unit pavers abut a planting bed or sod, a limestone edge should be used as a restraint.

Material:

St Vincent Limestone

Colour:

Medium grey

Finish:

Thermal finish

Installation notes:

Edging should be set in a concrete base to provide stability and protect against frost heave



Natural stone edging

Metal Edging

Where paved areas abut a planting bed, or where unit pavers, stabilized decomposed granite, or asphalt abut sod, a metal edge should be used as a restraint.

Material:

Stainless steel or aluminum

Colour:

Raw/Unfinished



Aluminum edging



Perennial planting areas can bring a natural character to the campus

5.2 Planting

Trees and planting beds to the character of the Carleton campus, and can also contribute to stormwater management, sequester carbon, restore habitat, and improve mental health and well-being.

The campus tree canopy and vegetation currently consists of a mix of native and introduced species, most of which were planted intentionally and managed

traditionally. A detailed inventory and assessment of tree health is currently underway.

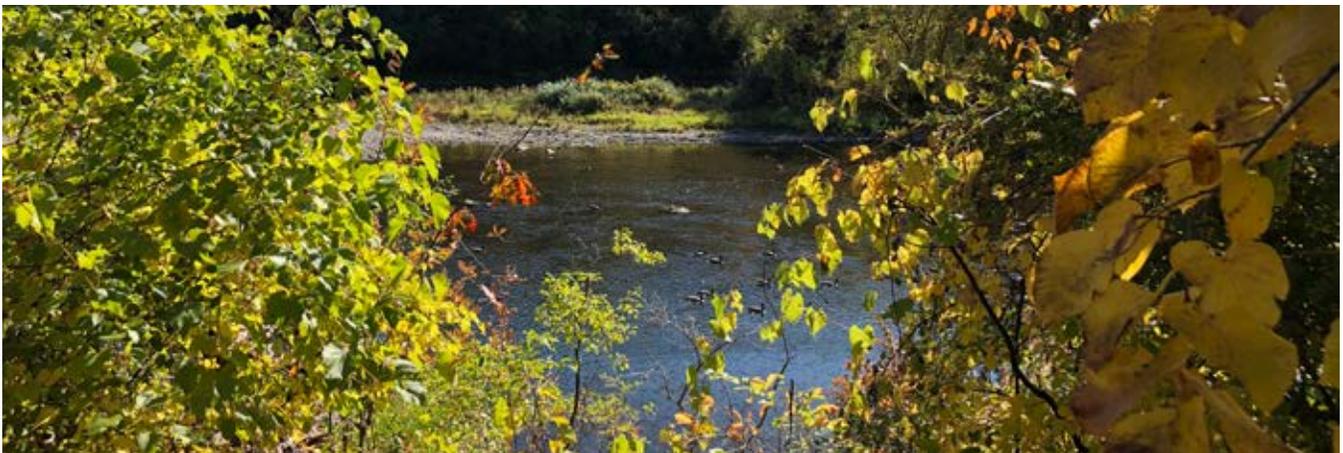
The following section provides guidance on maintenance and management of vegetation on campus, overall plant selection criteria, and preferred species to be used in campus landscaping.

Maintenance and Management

- Utilize the Tree Health Assessment to determine removal and replacement of trees that are in poor health
- Removed trees should be replaced at a 1:1 ratio, where every 100mm of caliper is replaced by one tree. For example, a 400mm caliper tree should be replaced by four 100mm caliper trees, or eight 50mm caliper trees (both replacement scenarios totaling 400mm)
- Update and maintain the Tree Health Assessment on a yearly basis
- Diversify the age class and species diversity of vegetation on campus
- Require an arborist report prior to the design of new facilities and infrastructure
- Ensure that tree protection zones are used during construction of new facilities and infrastructure
- Enhance vegetative restoration and biodiversity through the implementation of Naturalized Planting Areas
- Protect and preserve remaining ecosystem fragments, specifically those along the Rideau River edge
- Limit the use of sod to areas with specific programmatic requirements (ie. athletics and quads)

Plant Selection

- Establish diverse plant communities native to the Mixedwood Plains and Ontario Shield ecological regions
- Consider seasonality - including fall foliage display, winter colour, and spring blooms where appropriate
- Tree planting should avoid mono-cultures of the same species
- Where appropriate, provide drought tolerant plants that require minimal to no irrigation beyond the establishment period
- Select plants that promote biodiversity and increase animal and insect habitat
- Consider use of traditional medicinal plants in appropriate locations on campus, in partnership with Indigenous campus stakeholders



Vegetated edges along the Rideau River



White Pine - *Pinus strobus*



Witch Hazel - *Hamamelis virginiana*

Trees

Acceptable Species:

Deciduous

Alternate-leaved Dogwood - *Cornus alternifolia*
 Serviceberry - *Amelanchier* spp.
 Bur Oak - *Quercus macrocarpa*
 Red Oak - *Quercus rubra*
 Basswood - *Tilia americana*
 Hackberry - *Celtis occidentalis*
 Red Maple - *Acer rubrum*
 Silver Maple - *Acer saccharinum*
 Sugar Maple - *Acer saccharum*
 Ironwood - *Ostrya virginiana*
 White Birch - *Betula papyrifera*

Coniferous

White Pine - *Pinus strobus*
 White Spruce - *Picea glauca*
 White Cedar - *Thuja occidentalis*
 Balsam Fir - *Abies balsamea*
 Tamarack - *Larix laricina*

Shrubs

Acceptable Species:

Red-Osier Dogwood - *Cornus serica*
 Grey Dogwood - *Cornus racemosa*
 Common Elderberry - *Sambucus nigra*
 Highbush Cranberry - *Viburnum trilobum*
 Nannyberry - *Viburnum lentago*
 Witch Hazel - *Hamamelis virginiana*
 Common Ninebark - *Physocarpus opulifolius*
 Eastern Redbud - *Cercis canadensis*
 Northern bush honeysuckle - *Diervilla lonicera*
 Flowering Raspberry - *Rubus odoratus*
 Shrubby Cinquefoil - *Potentilla fruticosa*
 Staghorn Sumac - *Rhus typhina*
 Common Juniper - *Juniperus communis*



Wild Bergamot - *Monarda fistulosa*



Mayapple - *Podophyllum peltatum*

Perennials and Wildflowers

Acceptable Species:

Wild Columbine - *Aquilegia canadensis*
 Swamp Milkweed - *Cornus racemosa*
 Flat-topped Aster - *Doellingeria umbellata*
 Purple Coneflower - *Echinacea purpurea*
 Wild Rose - *R. carolina*
 Jackman Clematis - *Clematis x jackmanii*
 Virgin's bower - *Clematis virginiana*
 Blue Flag - *Iris versicolor*
 Canada Anemone - *Anemone canadensis*
 Cardinal Flower - *Lobelia cardinalis*
 Common Milkweed - *Asclepias syriaca*
 Zigzag Goldenrod - *Solidago flexicaulis*
 Wild Bergamot - *Monarda fistulosa*
 White Trillium - *Trillium grandiflorum*

Groundcover and Grasses

Acceptable Species:

Wild Strawberry - *Fragaria virginiana*
 Wild Ginger - *Asarum canadense*
 Wintergreen - *Gaultheria procumbens*
 Mayapple - *Podophyllum peltatum*
 Bunchberry - *Cornus canadensis*
 Running Euonymous - *Euonymus obovatus*
 Wild Geranium - *Geranium maculatum*
 Bearberry - *Arctostaphylos uva-ursi*
 Big Bluestem - *Andropogon gerardii*
 Indian Grass - *Sorghastrum nutans*
 Switchgrass - *Panicum virgatum*



Furnishings can extend the use of outdoor spaces

5.3 Furnishings and Fixtures

Outdoor furnishings, including seating, bike racks, waste and recycling receptacles, and lighting address user needs on campus and allow for people to enjoy and inhabit outdoor spaces for extended periods of time.

Outdoor furnishings should be provided at consistent intervals throughout the Carleton campus, as well as clustered in key areas, adjacent to building entrances and exists, and along Major Pathways. Specific guidance for placement of furnishings and fixtures is provided throughout this section.

Bench Seating

Bench seating should be installed at key areas on campus, and along Major Pathways and the Rideau River Path. On Major Pathways and along the Rideau River Path, benches and associated rest areas should be spaced no more than 30 meters apart to maximize the usability of paths and accommodate people with reduced stamina.

Manufacture:

Maglin 900 Series - 970 Backless Bench
Maglin 900 Series - 970 Backed Bench

Size:

70"

Material:

Thermally modified ash or metal

Finish:

Black or Red (RAL 3002)



Maglin 970 Backless Bench



Maglin 970 Series Backed Bench

Cafe Seating

Moveable cafe style seating should be provided in building forecourts or courtyards, or in key areas associated with a specific building. Where appropriate, tables may be surface mounted, or chairs may be tethered to tables.

Manufacture:

1700 Series - Foro Standard Chair by Maglin
Model # FRC1700-MSF-M1
1700 Series - Foro Round Table by Maglin
Model # FRT1700-RD-M1-FS-30

Size:

Chairs: Standard
Table: 30" or 36" option

Material:

Metal

Finish:

Black, White (RAL 9016), or Red (RAL 3002)



Maglin Foro Chair and Table

Picnic Tables

Picnic tables should be located in the Residence Commons, the Main Quad, and along the Rideau River Pathway. Wherever possible, picnic tables should be mounted to the ground. Picnic table configuration should provide wheelchair accommodation wherever possible.

General Information:

Manufacture:

1500 Series - Lexicon Straight Seat by Maglin
1500 Series - Lexicon Table by Maglin

Size:

4 foot or 6 foot

Material:

Thermally modified ash, Powdercoated steel

Steel Finish:

Black, white, or red (RAL 3002)



Combination of four and six foot tables



Maglin Lexicon - four foot seat and table

Bike Racks

Bike racks should be provided near building entrances, bus transit and O-Train stops, outdoor athletics facilities and within or adjacent to large outdoor spaces on campus.

Bike racks should be installed in groups, and should be embedded in-ground into concrete paving wherever possible.

Manufacture:

500 Series U Rack by Maglin - MBR500-S

Size:

35" high by 19.25" wide

Material/Finish:

Galvanized steel



Maglin 500 Series U Rack

Bike Racks - High Density

High Density bike racks should be provided in areas where significant amounts of bike parking are required.

High Density Racks require bi-directional access in order to maximize capacity.

Manufacture:

High Density Rack by Greenspoke
Model 850440 - 5 Bikes
Model 850450 - 7 Bikes

Size:

Model 850440 - 28.36" high by 44" wide
Model 850450 - 28.36" high by 57.75" wide

Material/Finish:

Powdercoated Black Steel



Greenspoke High Density Rack

Bike Repair Stations

Bike Repair Stations should be provided adjacent to buildings and open spaces that are convenient for bike riders, are well lit, provide good surveillance, and provide ample room for repairs.

Manufacture:

Repair Station with Integrated Pump by Greenspoke

Size:

Model 850440 - 58" high by 21.6" wide

Material/Finish:

Powdercoated Red Steel



Greenspoke Repair Station



Greenspoke 4-Post Bike Shelter

Bike Shelters

Bike shelters encourage biking in varied weather conditions, and provide clear, identifiable spaces for bike storage. Bike shelters should be located in areas where high density bike parking is required.

Manufacture:

4-Post Bike Shelter by Greenspoke

Size:

7' high by 16' wide

Material/Finish:

Powdercoated Black Steel

Litter Receptacles

Litter receptacles should be provided near building entrances, transit stops, picnic tables, and in outdoor spaces where people gather. A “smart” litter receptacle is recommended, which can monitor fill levels to optimize collection routing, thereby reducing carbon emissions.

Manufacture:

Victor Stanley Sage Dual Receptacle with Relay sensor

Material:

Solid steel panels

Finish:

Black



Victor Stanley - Sage Dual Receptacle

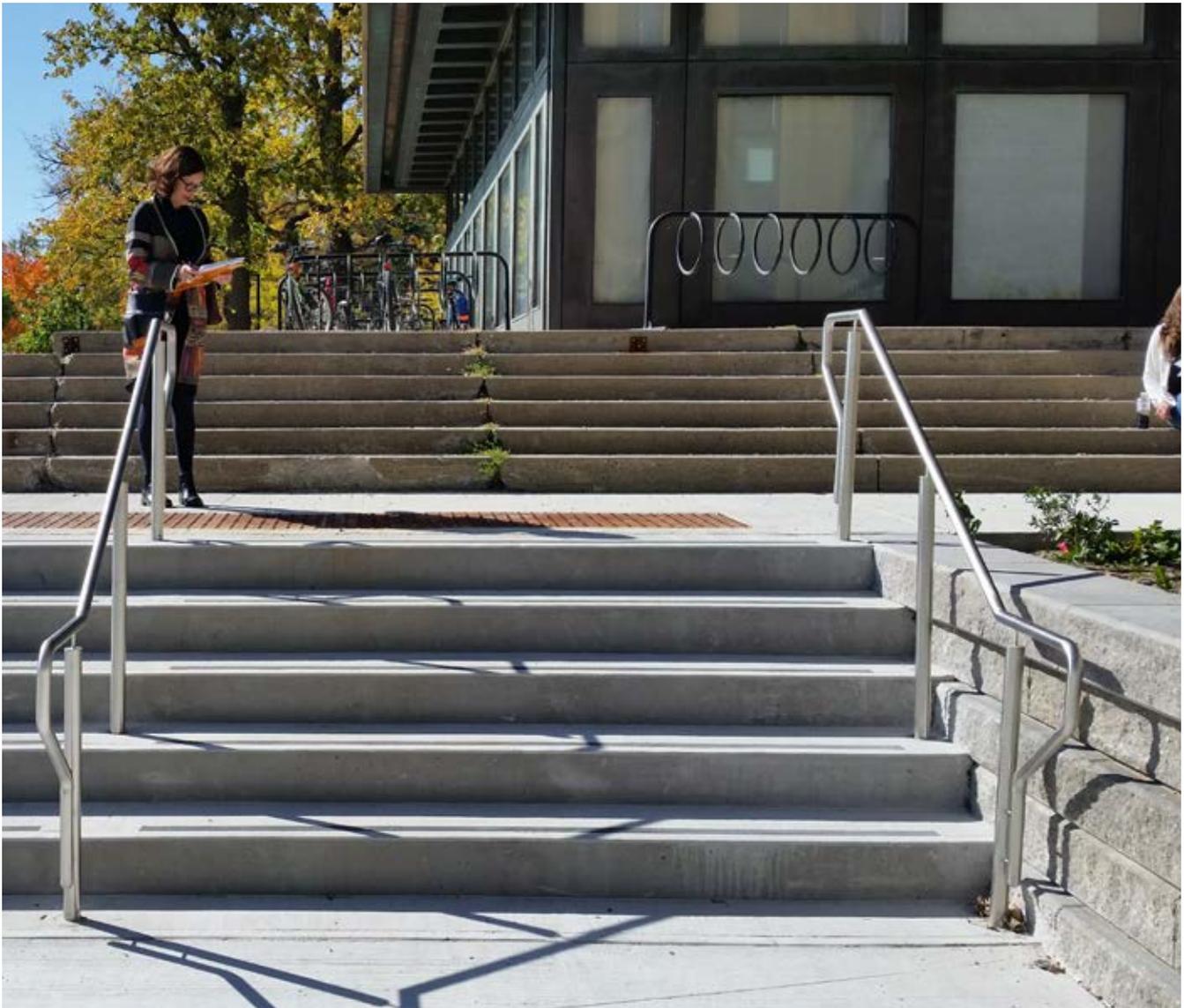
Lighting

Ample lighting should be provided across campus to promote safe and accessible spaces.

The university has developed detailed specifications for exterior lighting, which should be followed in the construction of any outdoor space on campus. Guidance can be found in the Carleton University Facilities Design Guidelines, Division 16-Electrical section.



Phillips Urbanscape Light Post Top



Concrete stairs outside the Loeb Building

5.4 Landscape Structures

Landscape structures at Carleton University have been developed over time, and reflect a wide variety of design styles. In some instances, the structures were designed relative to the construction of a particular building or landscape architectural composition.

Neutral, simple, and durable landscape structures which reflect the mid-century modern history of the Campus are recommended.

Seat and Retaining Walls

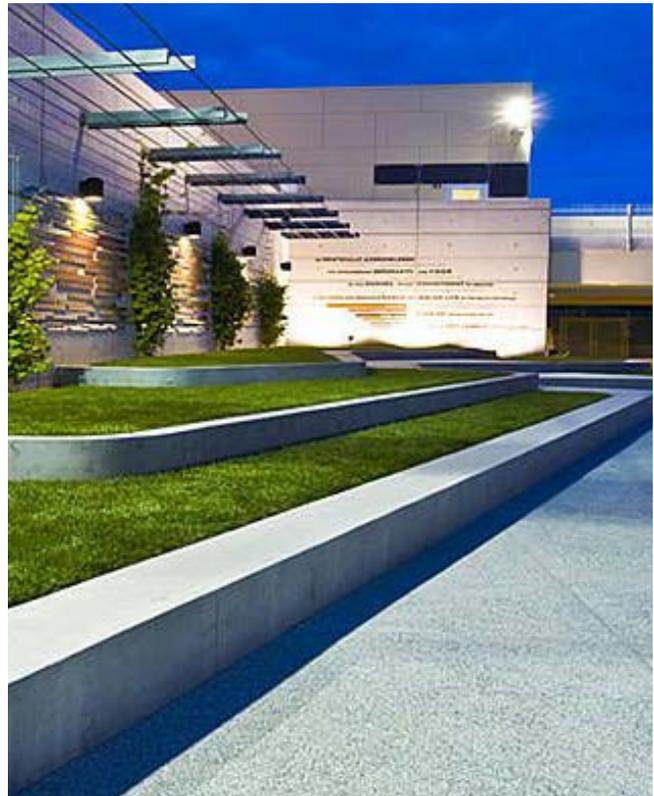
Concrete and limestone are recommended to provide a clean, cohesive feel to site structures across campus, while still allowing for flexibility based on context and use.

Concrete Seat and Retaining Walls

- Concrete seat walls are encouraged to create informal meeting places at locations where people may gather, such as building entrances
- Seat walls should be a minimum of 450mm in width, and be 450mm-600mm high
- Concrete retaining wall height, thickness, reinforcing, and footing should be determined by the design engineer
- Concrete seat and retaining walls should have a light natural grey colour
- Concrete retaining walls should have a light sandblast finish with patched form holes

Limestone Retaining Walls

- Limestone retaining walls should be installed in high profile, high trafficked areas of campus where design and finish quality is encouraged
- Limestone retaining walls should use a medium to dark grey limestone veneer. St. Vincent limestone is recommended.
- Where applicable, a cap flush with the walls edge should be provided
- A coursed ashlar cladding pattern with narrow joints (2-5mm) should be used
- Limestone shall have a thermal or bush hammered finish on all visible faces



Concrete retaining wall



Limestone veneer retaining wall

Stairs and Ramps

Wherever possible, the design of outdoor spaces should strive for universal accessibility that does not require the use of stair or ramps, however, this is sometimes not possible. Wherever stairs are used, ramps should also be provided. AODA Standards, as well as Ottawa Accessible Design Guidelines should be used in the design of stairs and ramps on campus.

Cast-In-Place Concrete Stairs

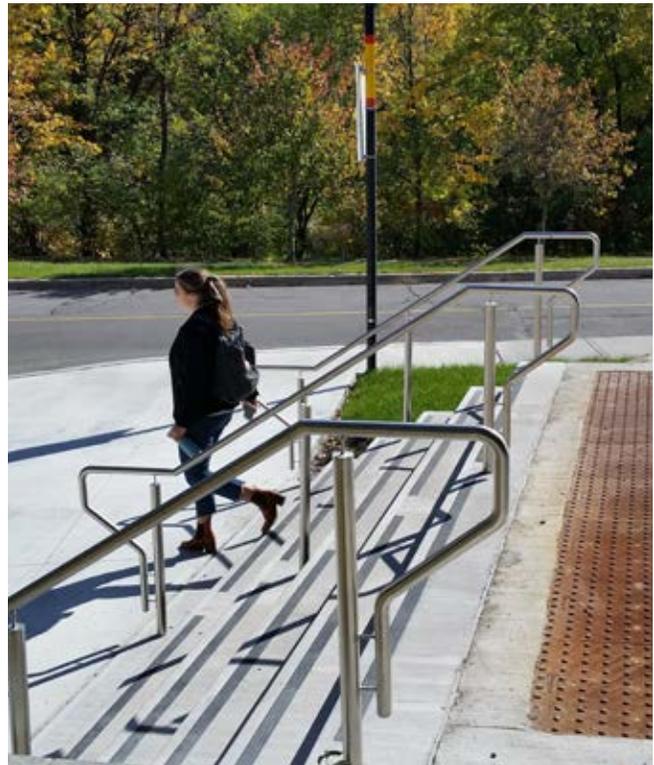
- Concrete stairs should use a slip-resistant, light broom finish
- Stairs shall conform to AODA and Canada Building Code Requirements
- Concrete should be light grey with an SRI of 29 or higher
- Concrete stairs should have a minimum 350mm wide stair tread and a maximum 150mm high stair riser

Cast-In-Place Concrete Ramps

- Concrete ramps should use a slip-resistant, light broom finish
- Stairs shall conform to AODA, Canada Building Code Requirements, and Ottawa Accessible Design Guidelines
- Concrete should be light grey with an SRI of 29 or higher

Galvanized Steel Stairs

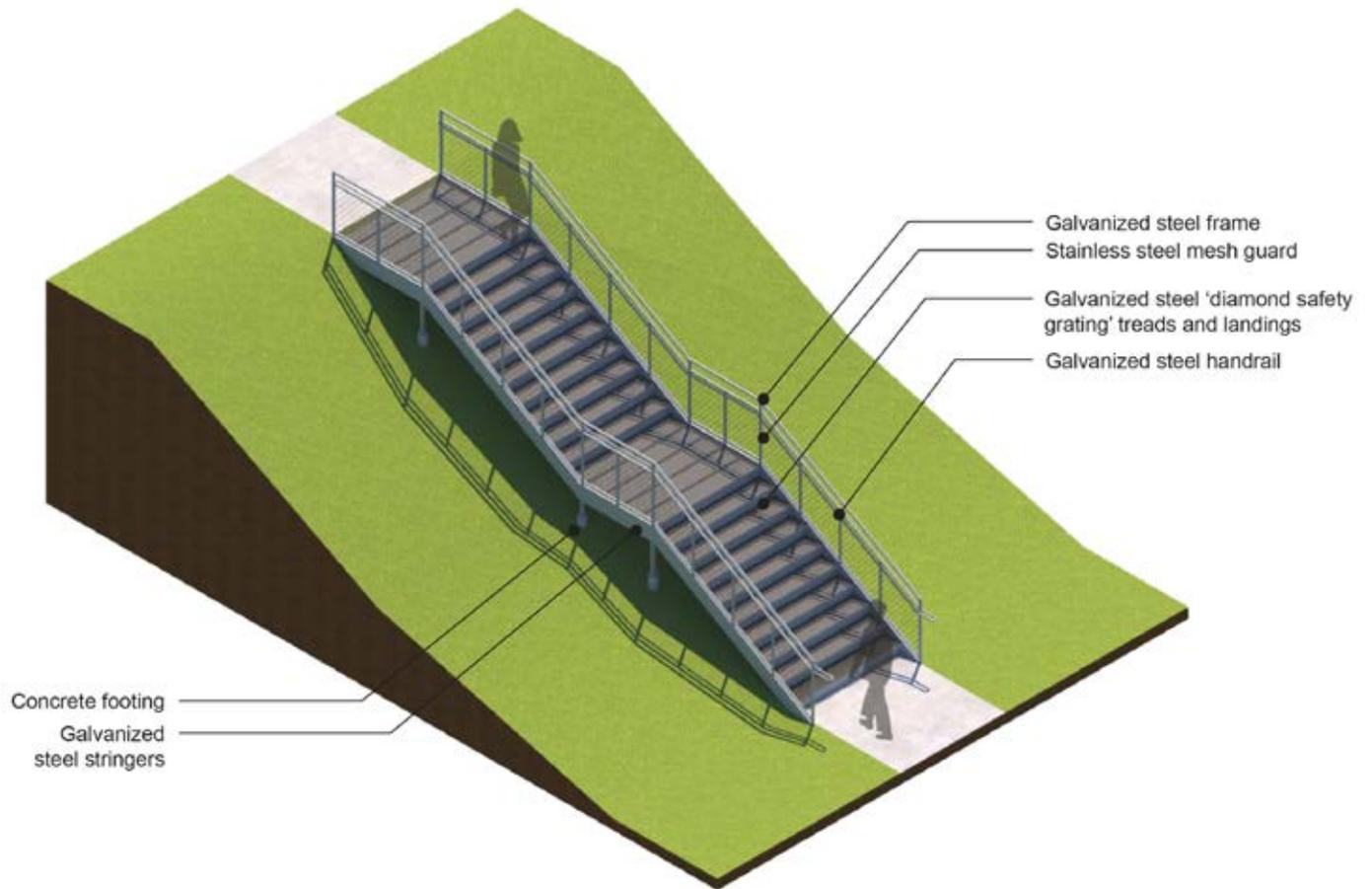
- Galvanized steel stairs should be used in applications near the Rideau River, or where winter accessibility may be a concern.
- Galvanized steel stair should use galvanized steel stringers and concrete footings
- Stainless steel wire mesh guard railings should be used on galvanized frame stairs
- Galvanized diamond grating should be used for winter grip and ease of maintenance



Concrete Stairs near the Loeb Building



Ramp leading towards the Main Quad

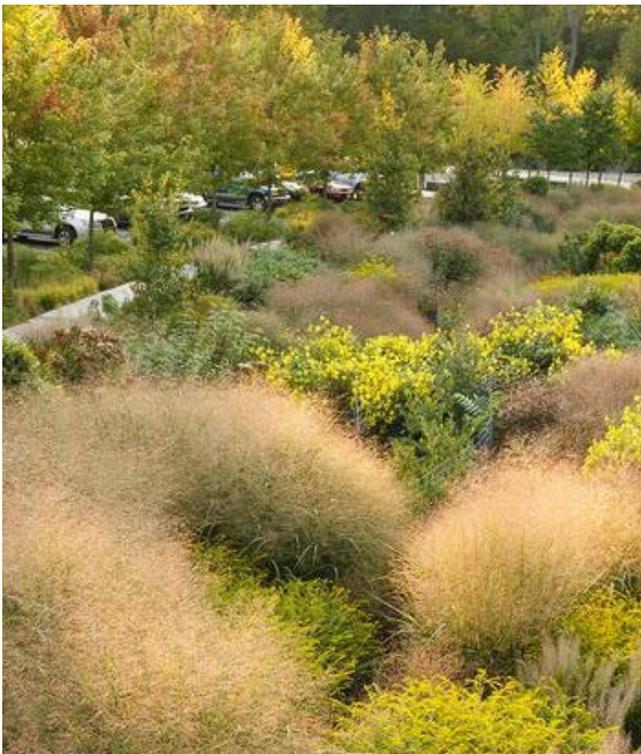


Galvanized Steel Stairs

5.5 Stormwater Management

Traditional collection and conveyance through underground stormwater pipes is currently the most common form of stormwater management on campus, and can increase the variety and amount of pollutants carried into waterways. Low Impact Development is an alternative form of stormwater management that mimics natural processes in order to protect water quality and associated aquatic habitat.

Low Impact Development strategies include bioretention facilities such as rain gardens and bioswales, green roofs, and permeable pavement. The following guidelines propose a number of Low Impact Development techniques to manage stormwater in open spaces on campus, and should be considered in tandem with water management for the construction of new buildings.



Rain garden and bioswales at a parking lot

Goals and Guidance

- Reduce impervious surfaces where possible and maintain vegetative ground cover
- Design stormwater management facilities to be functionally efficient and aesthetically pleasing amenities
- Reduce potable water use for irrigation, and where possible, select drought tolerant plant species
- Snow storage areas and impervious surfaces should be graded to drain towards permeable and semi-permeable surfaces.
- Permeable paving should be used where possible in forecourts and courtyards, and in parking areas where feasible
- Bioretention areas should be incorporated into pathway edges, parking lot design, and other paved areas. They should contain native and salt tolerant plant species that can thrive in a wet environment
- Where possible, provide aquatic buffers along the Rideau River to manage sediment and nutrient runoff
- Partner with the Faculty of Engineering to develop research and curriculum based learning opportunities
- Include educational signage to increase awareness of stormwater management efforts and techniques



The tunnels under the railway tracks should be well lit to promote clear sightlines and surveillance

5.6 Safety and Accessibility

Carleton University must strive to be a safe and accessible environment for all students, staff, faculty and visitors. The planning and design of outdoor spaces can assist in promoting safe and accessible spaces through a variety of techniques that impact individual behavior. The university currently provides a ‘safe route’ system on campus that includes emergency alert stations throughout outdoor areas on campus.

Goals and Design Guidance

- Undertake a wayfinding strategy that identifies and defines major routes on campus and includes outdoor, pedestrian focused signage
- Undertake an accessibility audit that notes non-compliant site features and facilities, and includes an action plan for implementation
- Provide clear and well lit pedestrian areas and public spaces
- Ensure clear delineation of pedestrian, cycle and vehicular routes, with preference given to pedestrian safety
- Provide clear emergency access routes
- Ensure that maintenance regimes include pruning of trees and shrubs for clear sight lines
- Provide prompt maintenance responses to damaged or vandalized site elements
- Encourage well used outdoor spaces with active programming to encourage gathering
- Design exterior spaces utilizing Crime Prevention Through Environmental Design (CPTED) strategies



6

Key Projects

Campus Avenue Quad

Alumni Park

O-Train Station Area

Indigenous Learning Place

Main Quad



6.1 Campus Avenue Quad

The renovation of Campus Avenue Quad should create a flexible, multi-purpose gathering space that can host large events, small gatherings, and day to day use.

Campus Avenue Quad should be considered a primary “front yard” to the campus, and have a welcoming feel. Flexible, cafe style seating as well as built in seating such as platforms and benches should be provided to create a variety of comfortable seating options to study, eat, or gather with friends.

There should be a mix of both green and paved areas in the space.

Year-round programming and events should be considered, as well as activation through food trucks or a permanent food vendor.

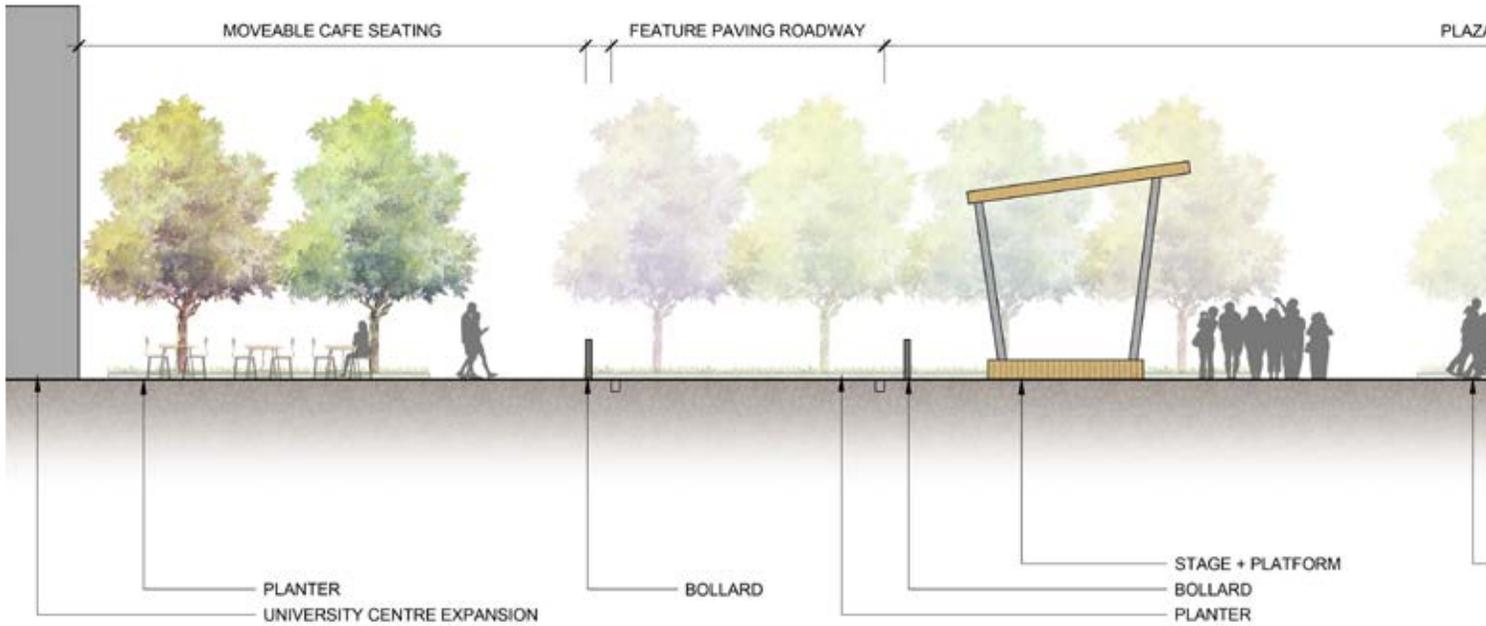
Emergency vehicle access for University Centre, as well as accessible parking spaces must be accommodated.



Campus Avenue Quad, Concept Plan



- | | |
|---|----------------------------|
| ① Sloped Green | ⑦ Entry Bosque |
| ② Seating Platforms | ⑧ Emergency Vehicle Access |
| ③ Flexible Gathering Area
(dashed line denotes 10'x20' tent) | ⑨ Pick-Up/Drop-Off Parking |
| ④ Stage | ⑩ Food Truck Area |
| ⑤ Naturalized Planting Bed and
Bioswale | ⑪ Mast Lighting |
| ⑥ Accessible Parking | ⑫ Access Control Signage |



East-West Section through Campus Avenue Quad

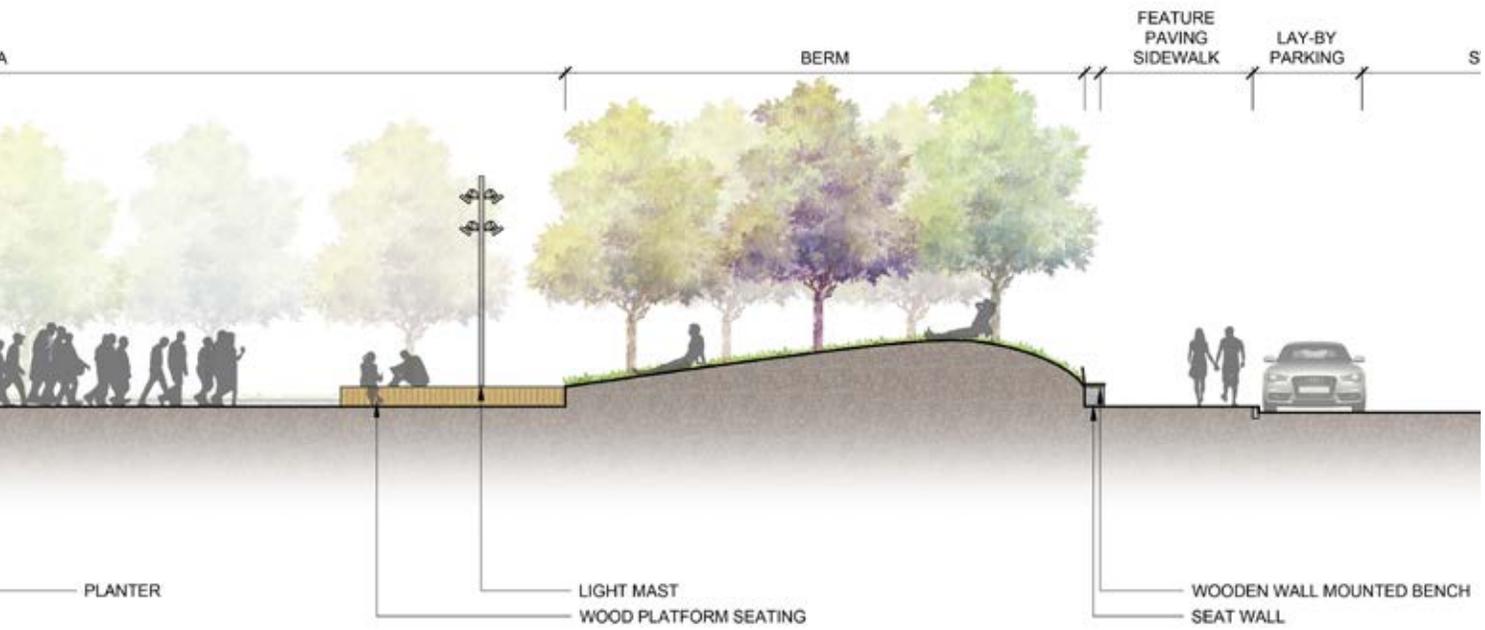


The entry bosque provides shade, creating a pleasant place to sit and eat outside of UC



The stage can be used as a shade structure

Campus Avenue Quad



11

Mast lighting can provide effects and winter activation



2

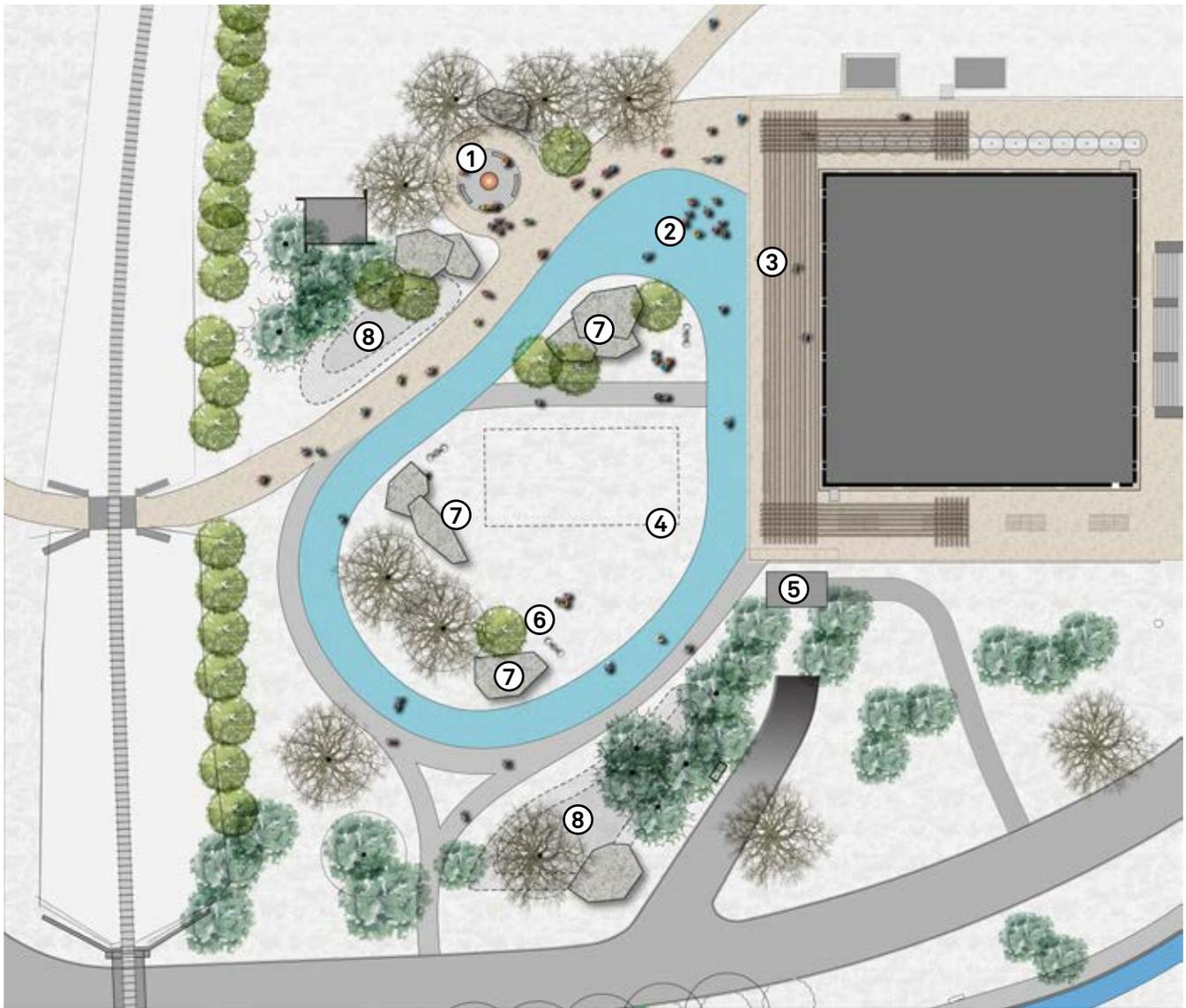
Seating platforms about berms and naturalized planting areas



Campus Avenue Square

Campus Avenue Quad





Alumni Park - Winter Concept Plan

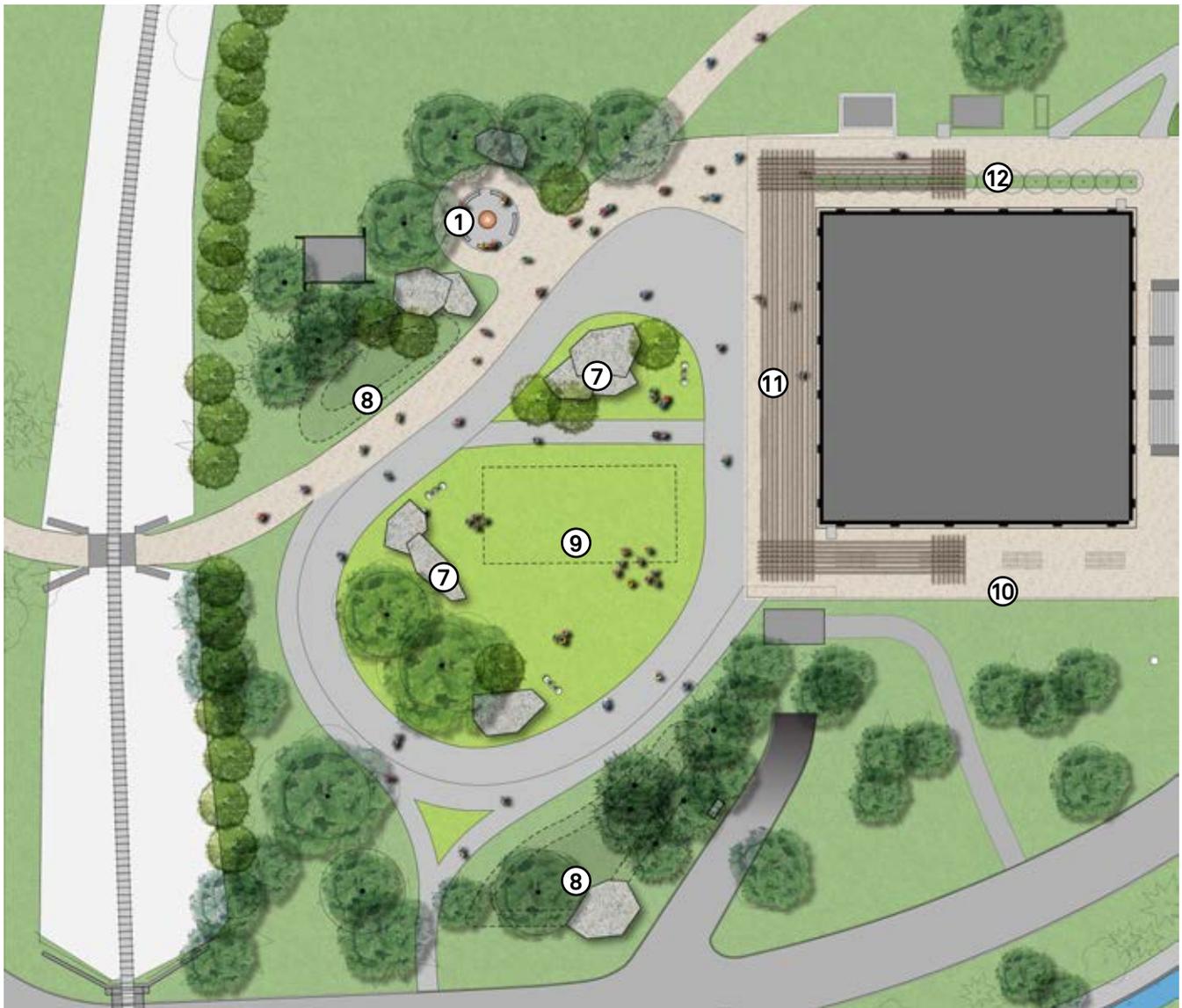
6.2 Alumni Park

Improvements to Alumni Park intend to provide active use of the space actively in all seasons. A proposed skating trail provides winter programming, while the park can be used for large events and as more passive open space in the spring, summer, and fall.

A number of existing features are recommended to be removed, including the fountain, whose removal was recommended in the 2016 Campus Master Plan, as well as

the arbour. The removal of these features will provide clear and cohesive site organization. Removal of the arbour will also open up views toward the Rideau River.

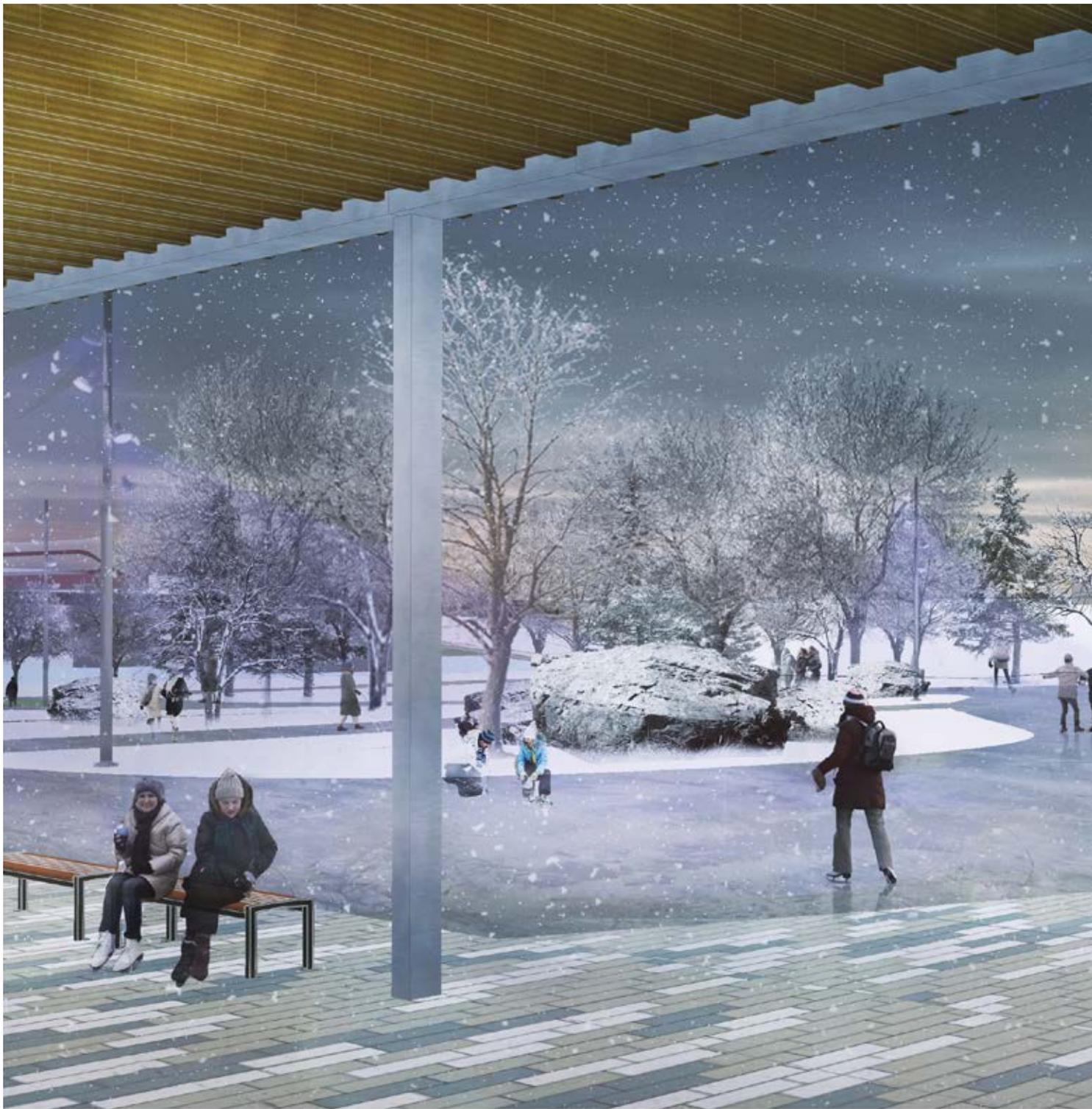
The existing podium space around Robertson Hall is suggested to be renovated to include upgraded unit paving, an architectural pergola to provide shelter for a skate changing area, picnic tables, bench seating, and raised planters.



Alumni Park - Summer Concept Plan

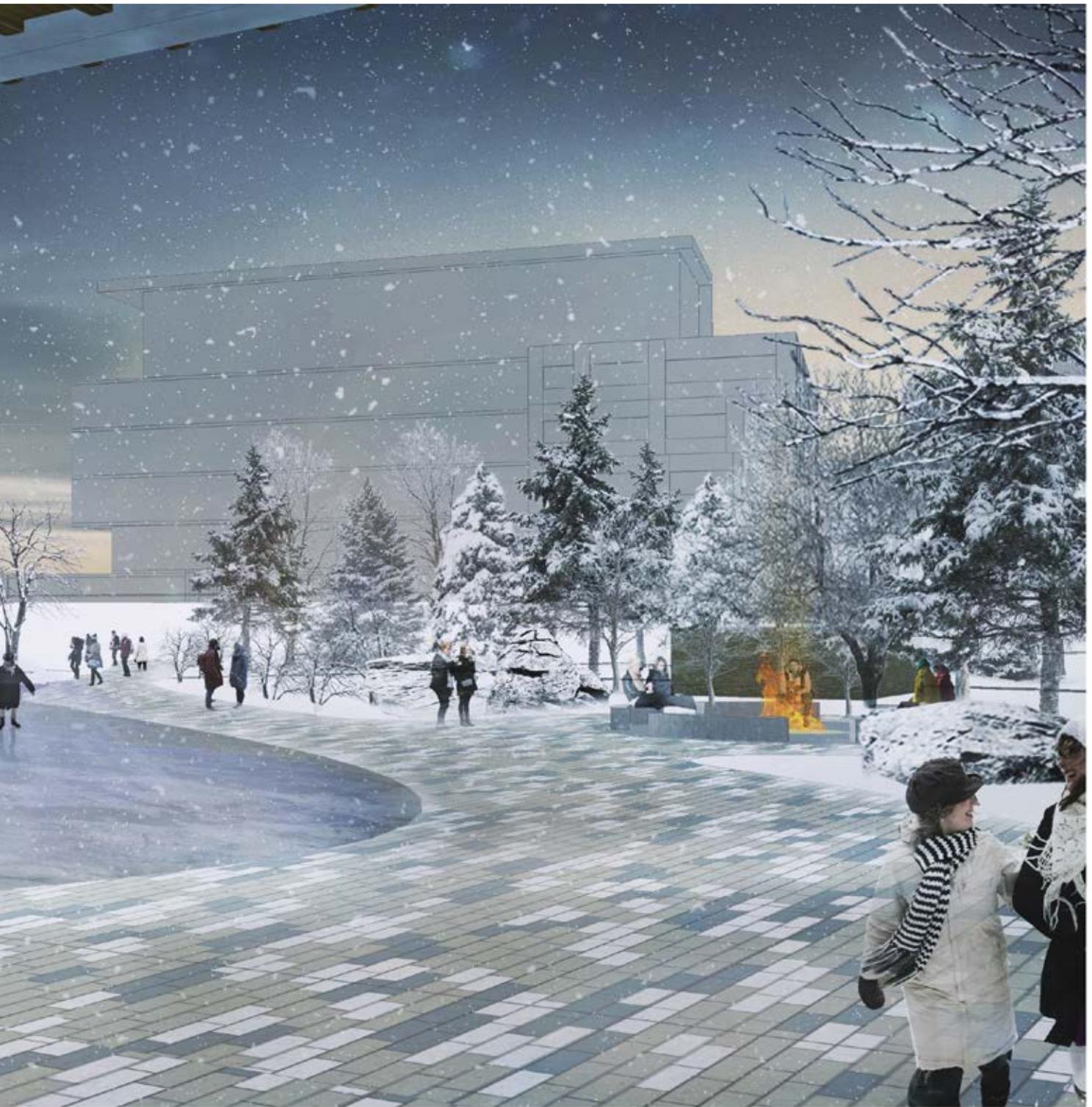


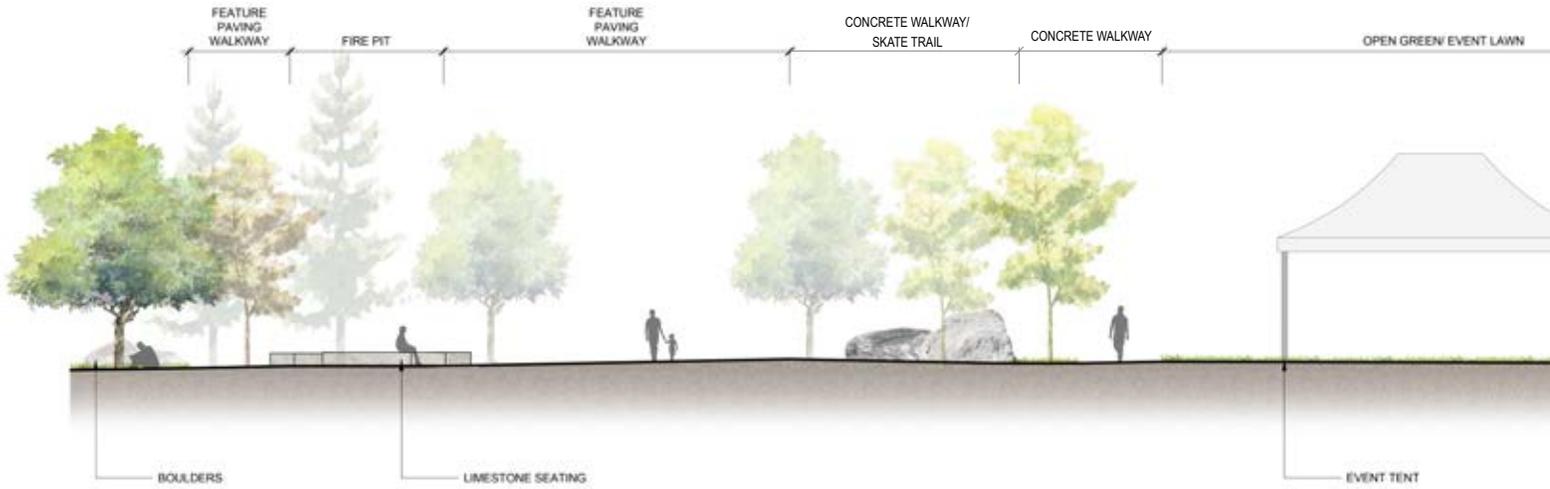
- | | |
|-----------------------------------|--|
| ① Fire Pit and Seating | ⑦ Rocky Outcrop |
| ② Skating Trail | ⑧ Bioswale |
| ③ Skate Change Seating | ⑨ Events Area
(dashed line denotes 50'x100' tent) |
| ④ Snow Storage | ⑩ Picnic Tables |
| ⑤ Mechanical & Resurfacers Garage | ⑪ Pergola |
| ⑥ Mast Lighting | ⑫ Raised Planter |



Alumni Park in the Winter

Alumni Park





North-South Section



②

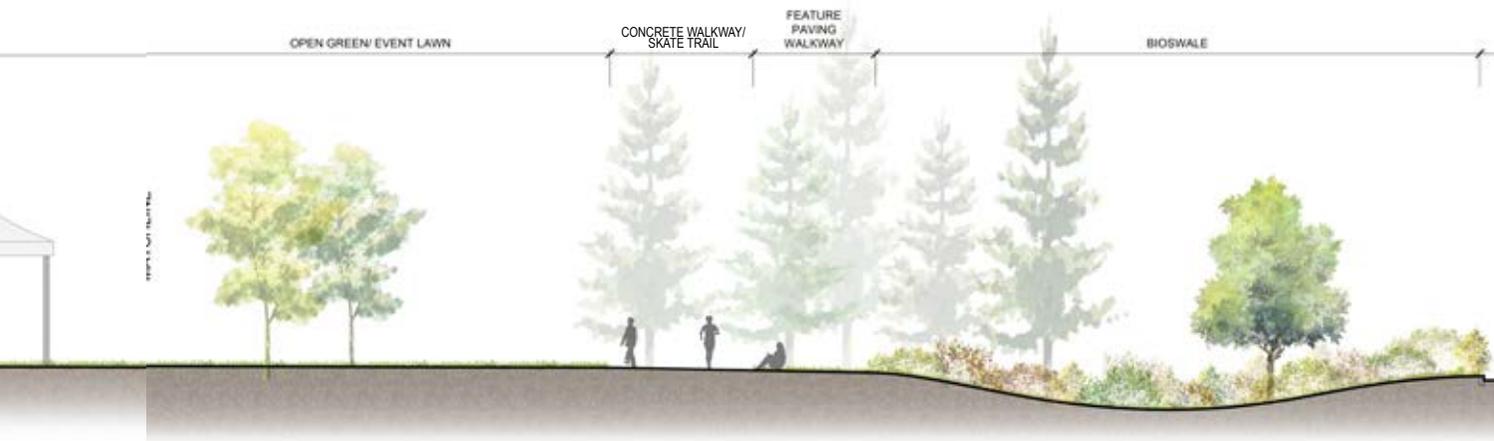
Skating Trail



⑦

Rocky outcrops

Alumni Park



Pergola



Event Area

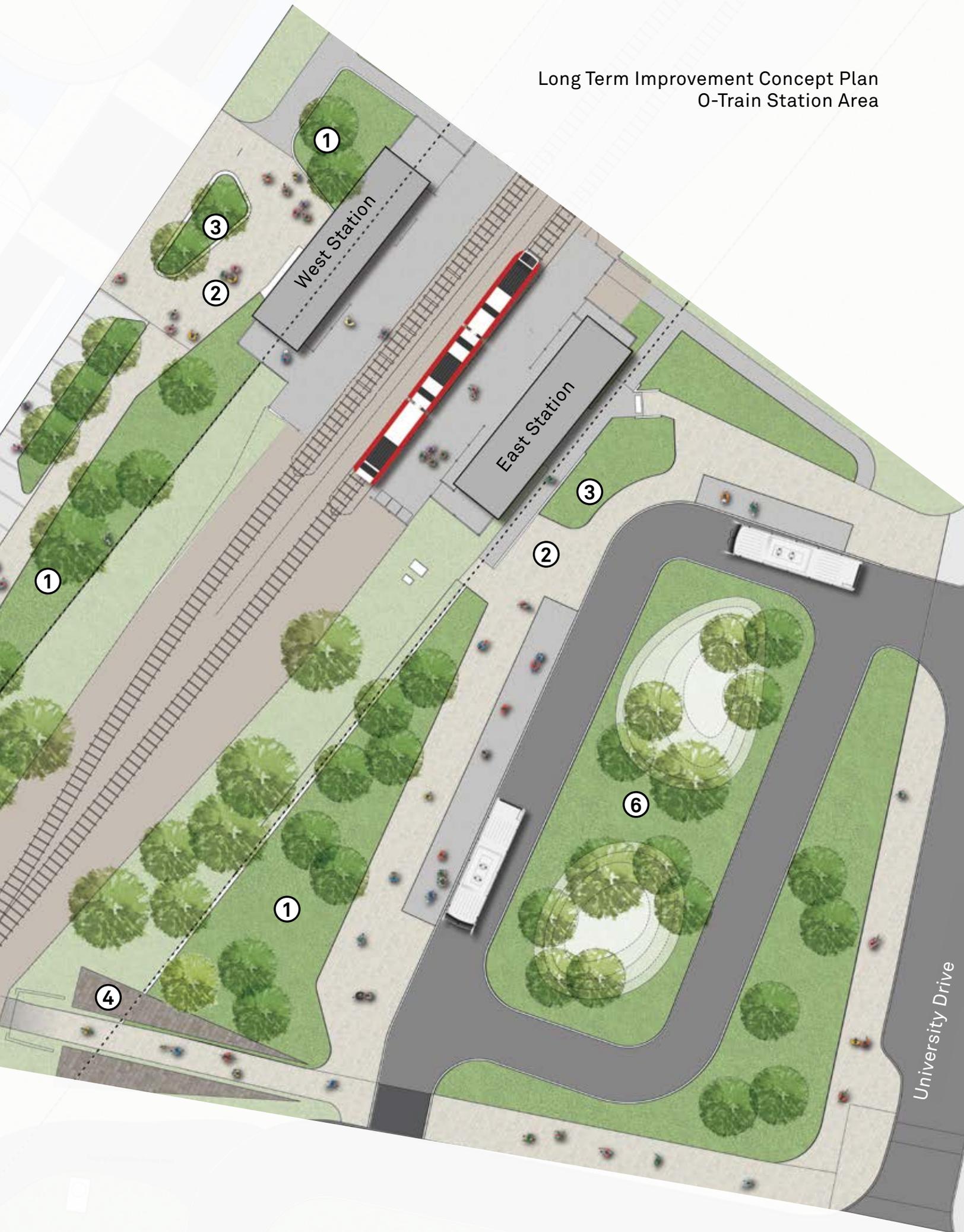
6.3 O-Train Station Area

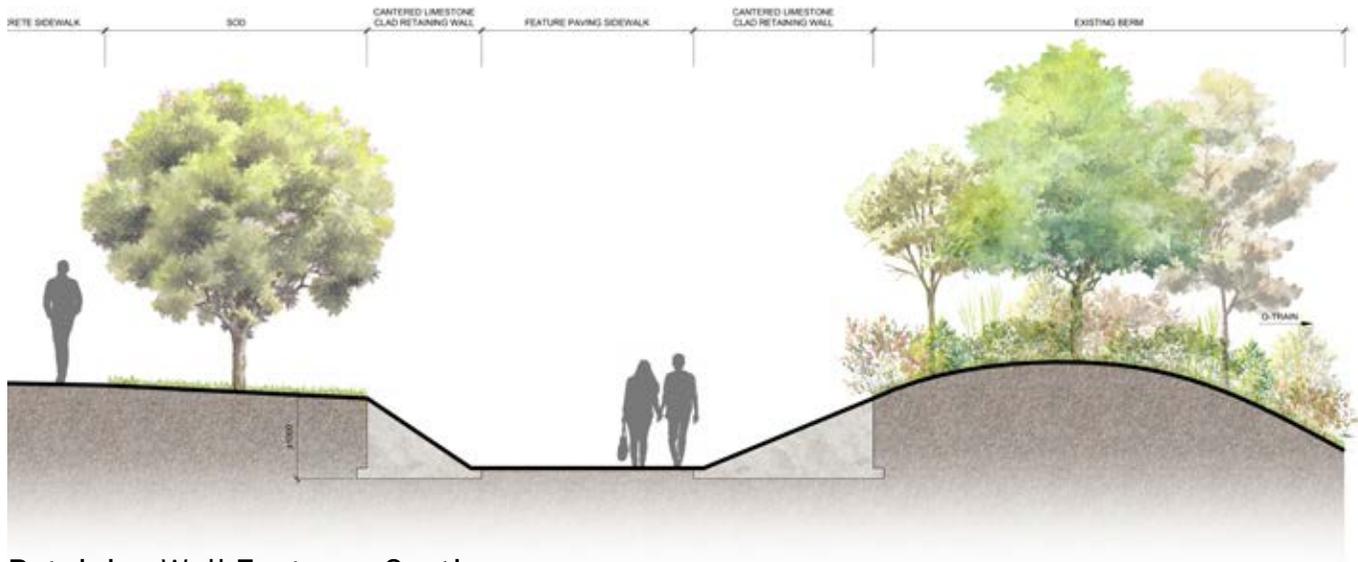
The O-Train Station Area is an important gateway to the university, and as such, should feature high quality landscape treatments and wayfinding features. Priority should be given to ensuring clear, safe, and accessible pedestrian movement through the O-Train Station Area. Pedestrian walkways should be well lit, and tree plantings and naturalized planting areas should not interfere with sightlines. Bicycle parking should be provided near both the East and the West Station Areas.

The scenario shown in the adjacent image includes implementation of the Bus Loop, as recommended by the Transportation Plan. Additional information on short-term strategies is given on the following pages.



Long Term Improvement Concept Plan
O-Train Station Area



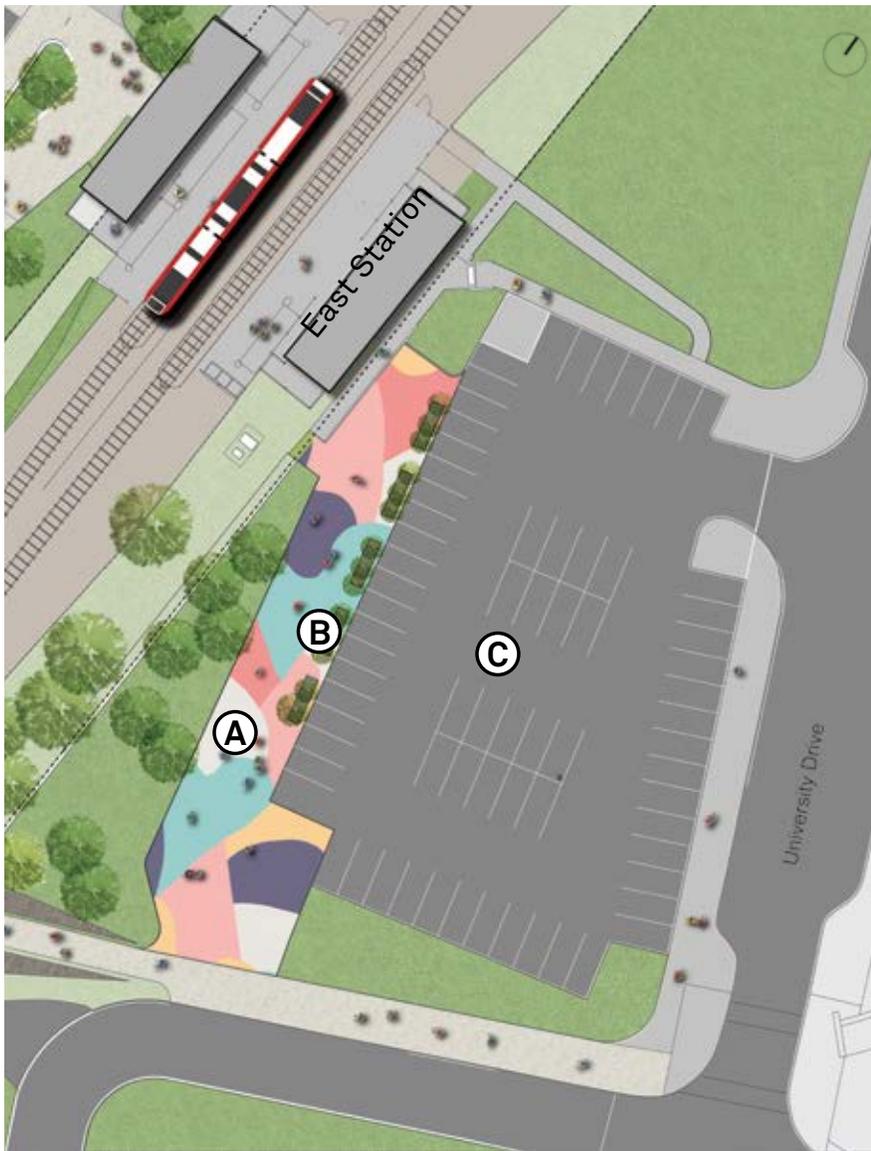


Retaining Wall Feature - Section



The retaining wall feature may include etched interpretive elements

O-Train Station Area



Short Term East Station Scenario



Painted walkway feature



Moveable planters

Short Term Improvements to O-Train Station Area

Currently, pedestrian passage from the East O-Train Station is limited to a narrow sidewalk, and people moving to and from the station often pass through the parking lot, causing safety concerns. It is also an unpleasant way to arrive on campus.

By re-configuring the parking lot layout, additional space can be given for pedestrian movement. This space can be demarcated quickly and cost-effectively by painting the asphalt and using planters as barriers.

- Ⓐ Painted Walkway
- Ⓑ Planters
- Ⓒ Reconfigured Parking Lot (Previously 93 Spaces, now 86 Spaces)



A contemporary mural designed by Cape Dorset teen Parr Etidloie

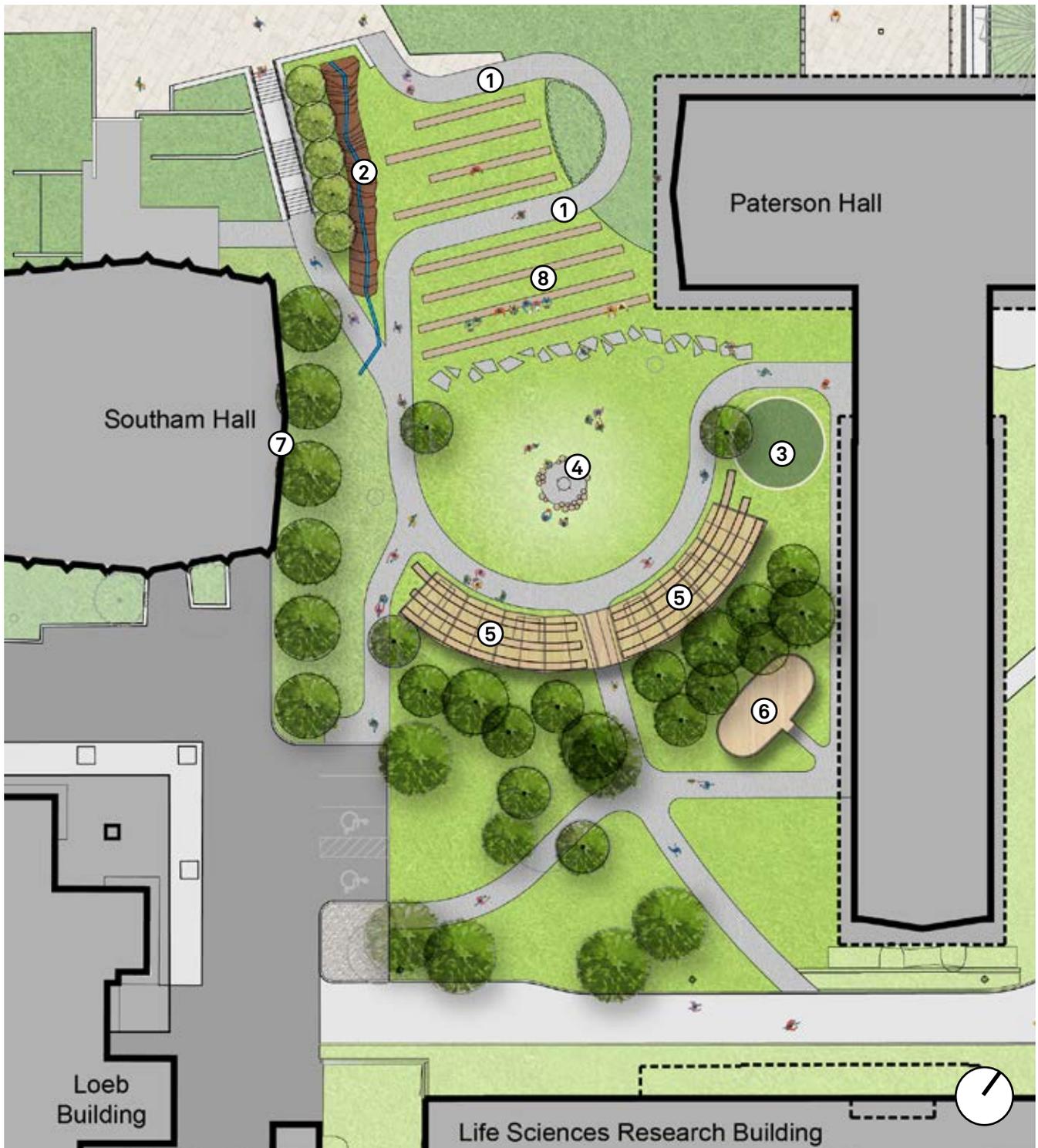
6.4 Indigenous Learning Place

In 2016, a committee was formed at the university to create an Indigenous Learning Place at the location of the outdoor amphitheater adjacent to Paterson Hall. The committee undertook extensive consultation to develop programming and design concepts for the site. This consultation included six on-campus forums, as well as visits to the communities of Pikwakanagan, Tungasuvvingat, and Kitigan Zibi. A summary of this consultation can be found in Appendix A.

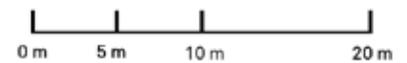
The design of the Indigenous Learning Place was developed by Brook McIlroy's Indigenous Design Studio based on the consultation findings from the Indigenous Learning Place committee, as well as consultation with Indigenous stakeholders on campus as part of the OSMP process.

The Indigenous Learning Place is envisaged to be a flexible space that can accommodate both large groups, as well as smaller gatherings, and outdoor teaching and learning. Shade canopy and associated seating should be provided in addition to a structure that can be used year round. A fire circle should be provided, and integrated with design features that allow for tobacco or smudging ceremonies. Elements such as water, as well as medicinal plants should be included in the design of the space.

Further detailed design of the Indigenous Learning Place should be undertaken by Indigenous designers, in partnership and consultation with Carleton's Indigenous stakeholders and Algonquin communities.



Indigenous Learning Place, Concept Plan



- | | |
|--------------------|-----------------------|
| ① Accessible Ramp | ⑤ Canopy and Seating |
| ② Water Feature | ⑥ Enclosed Lodge |
| ③ Medicine Gardens | ⑦ Mural |
| ④ Fire Circle | ⑧ Refurbished seating |



The lodge should be a fully enclosed structure that can be used year round for teaching and gathering



The design of the lodge may be based on the traditional Pikogan structure

Indigenous Learning Place



Seating under the canopy structure should be refurbished, and could include storage areas for fire supplies



Seating under the canopy structure should be refurbished, and could include storage areas for fire supplies



Integrated seating and lawns will help promote informal gathering

6.5 Main Quad

The Main Quad is one of the most well used outdoor spaces on campus. Its central location and proximity to highly used buildings make it an important and iconic space for the campus, deserving of high quality design, construction, and finishes.

Renovations of the Main Quad should focus on making the space universally accessible, incorporating ramped entry from each side of the space. Informal gathering should be encouraged through ample seating in addition to lawns. Picnic tables, in addition to seat walls should be included to accommodate studying, reading, eating, and pausing outdoors.

To manage maintenance and improve accessibility, heated sidewalks should be considered. Stormwater management facilities should be considered in relation to heated sidewalks, and are recommended to be included as part of Naturalized Planting Areas.

Consideration should be given to locations of existing sculptures within the Main Quad. Additionally, Cultural Markers should be included and considered alongside sculpture locations so that locations are appropriate and relate to one another and the larger context.



Main Quad, Concept Plan

0 m 5 m 10 m 20 m



- | | |
|--|--|
| ① Limestone Curb and Seat-Wall | ⑥ Sculpture Area |
| ② Ramped Access | ⑦ Lounge Chairs |
| ③ Stabilized Crushed Granite Edged and Concrete Walkways | ⑧ Cultural Markers |
| ④ Seating Lawn | ⑨ Event Area
(dashed line denotes 20'x40' tent) |
| ⑤ Naturalized Planting Area and Bioswale | ⑩ New ramp to lower level |



Main Quad in the fall

Main Quad





Wall & Curb Locations

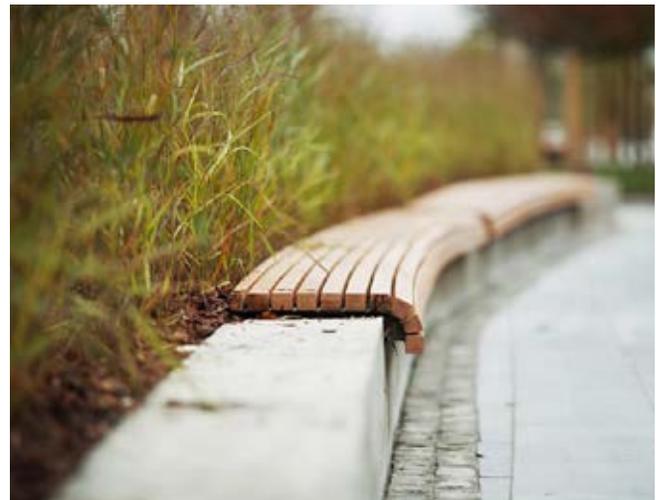
The transition between wall and curb heights should be smooth, not abrupt.

Legend

- Seat Wall
- Curb flush with grade

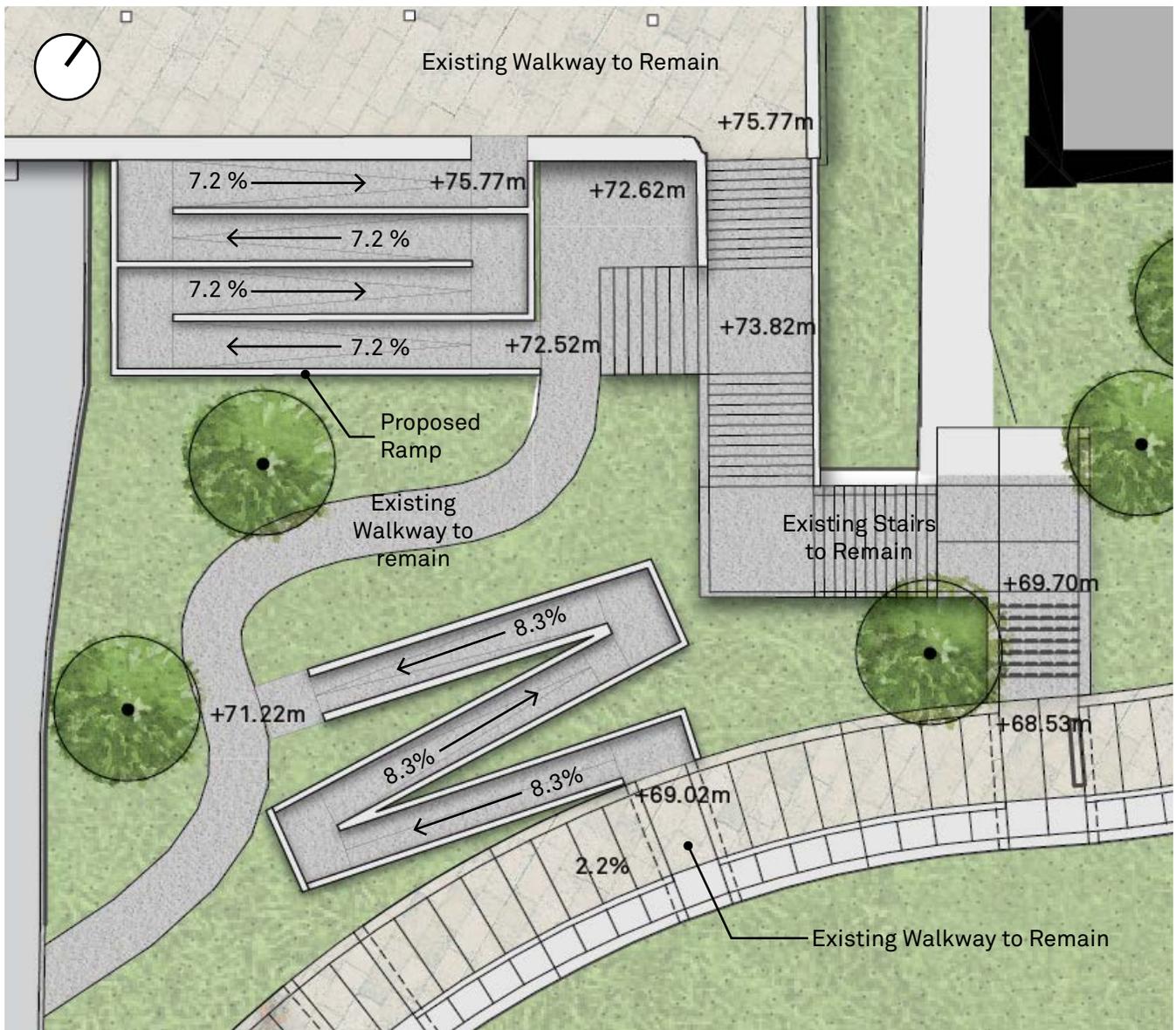


Banded curb, flush with grade

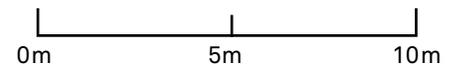


Seat wall with wood bench top

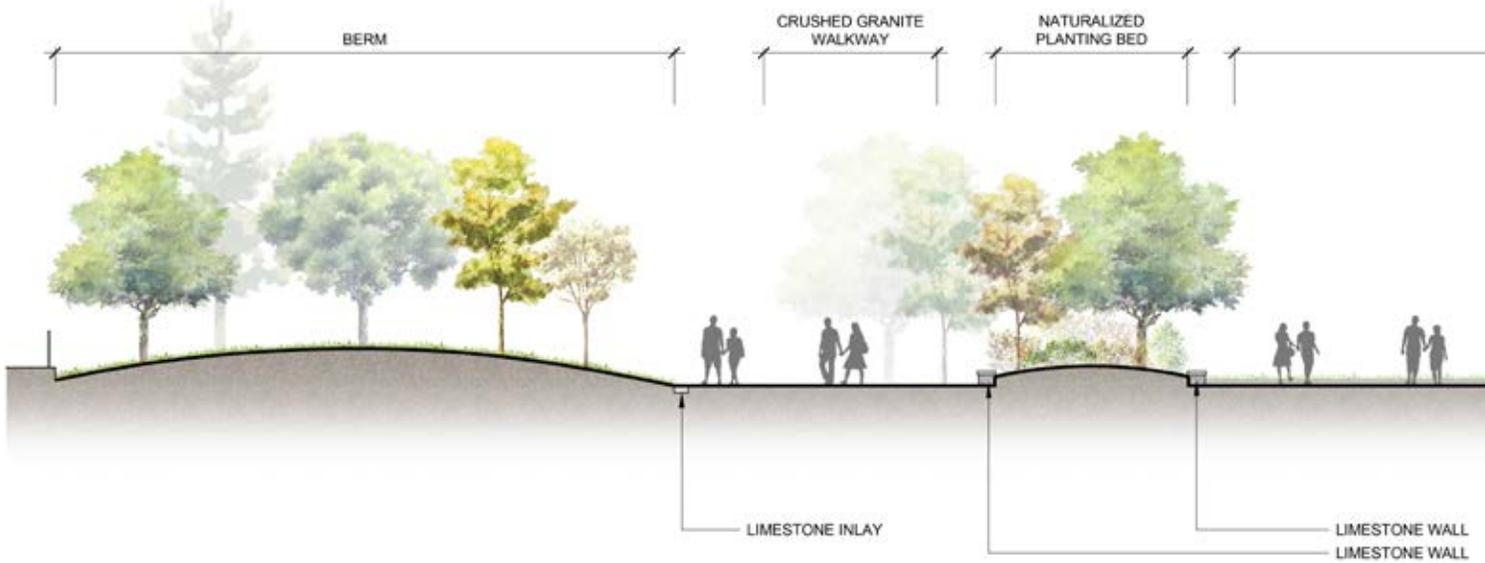
Main Quad



Main Quad, South Accessibility Improvements



The above plan shows a schematic concept for accessibility improvements at the southern outdoor entry to the Main Quad. Additional study will be required to ensure ramped access does not interfere with tunnel structures or utilities.



East - West Section of Main Quad

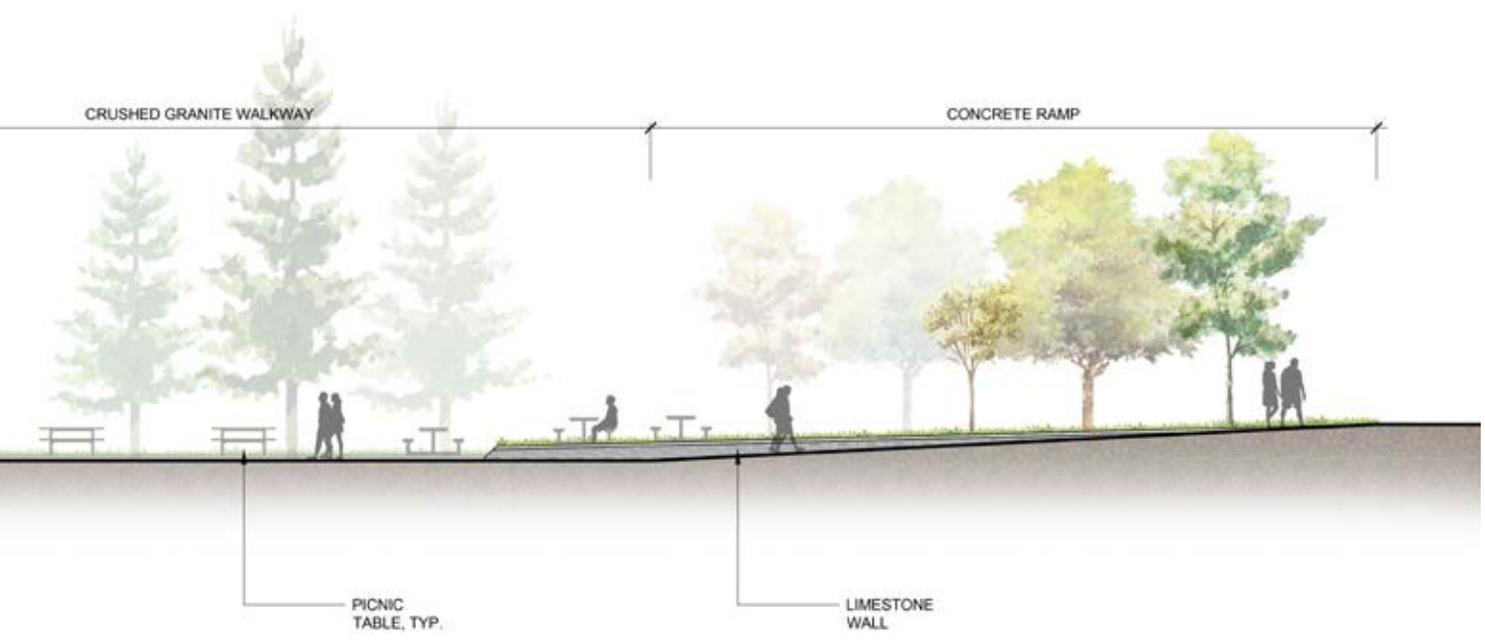


Ramped Access



Naturalized Planting Area with Seat Wall

Main Quad



Cultural Markers



Seating lawn



7

Implementation

Operations and Maintenance

Priorities and Phasing

Order of Magnitude Costing



7.1 Maintenance & Operations

Design and maintenance are not mutually exclusive and need to be viewed in the context of each other when planning and implementing landscapes on campus. All campus landscapes require design that is appropriate to the anticipated level of maintenance. Design is necessary to ensure the landscape goals are being met and that a visually cohesive and environmentally diverse campus setting is achieved. A critical aspect to design of the campus landscape relates to the understanding of the physical and fiscal realities necessary to ensure a 'successful' end product that meets the needs of faculty, staff and students.

Campus landscapes require regular maintenance to preserve the character and

function for the many future classes, visitors and faculty that will use them. Maintenance is imperative to achieve the Outdoor Space Master Plan Vision, to: "...strengthen outdoor spaces by reflecting the natural and cultural history of the place, enhancing outdoor learning environments, and creating beautiful, useful and comfortable year-round outdoor spaces."

Maintenance procedures and intervals will vary greatly based on the character of the space, the planting regime and materials. Below are a series of considerations for the design and maintenance of landscape at Carleton.

Resilient Plant Communities

Using plants in the right combinations increases the aesthetics and reduces maintenance. Beneficial plant communities create areas with year round interest. These groupings reduce disease, increase drought tolerance, and attract beneficial insects. Finally, resilient communities of plants reduce weeds by filling voids that monocultures often create.

Guidelines:

- Consider plant groupings with distinct levels: low, mid and high.
- Avoid monocultures in general, planting in groups mimics nature and allows plants to thrive at different times of year and microclimates.
- Plant variety reduces over all reliance on a single plant species to achieve success and reduces maintenance necessary by allowing plants to grow more naturally.

Utilize Plant Assessment Schedules

Creating schedules for assessing specific species, plant types, and areas on campus documents problems and patterns. Recognizing these issues and documenting it creates an opportunity to minimize the use of unsuitable plants and reduce overall maintenance by creating a preventative care program.

Guidelines:

- Create a database for plant and bed evaluations at different times of the year
- Record treatments and interventions in a database that is accessible to all maintenance and planning staff.
- Regular assessment / standardized assessment alerts staff to problems before they become serious and / or costly.
- Use an adaptive management approach to landscape maintenance, reviewing and monitoring the landscape to inform future management requirements rather than taking a blanket approach to campus maintenance.

Planting Soils

Improving soils is one of the most efficient methods for reducing plant maintenance and ensuring overall landscape health. Additionally, well structured soils drain better and support a local wildlife.

Guidelines:

- Test soil on a regular schedule for nutrients, organic matter, pH, CEC, physical composition, biologics and structure.
- Compare results to create a realistic treatment program.
- Replace soil surrounding building projects with uncompacted local topsoil mix and require compaction testing after completion. Refer to the Canadian Landscape Standard for soil depth requirements and placement standards.
- Incorporate organic fertilizers and amendments.
- Develop a campus composting program and use produced compost fertilize planting areas
- Avoid placing organic compost/mulch in areas that contribute to stormwater runoff thereby reducing phosphorus loading potential.

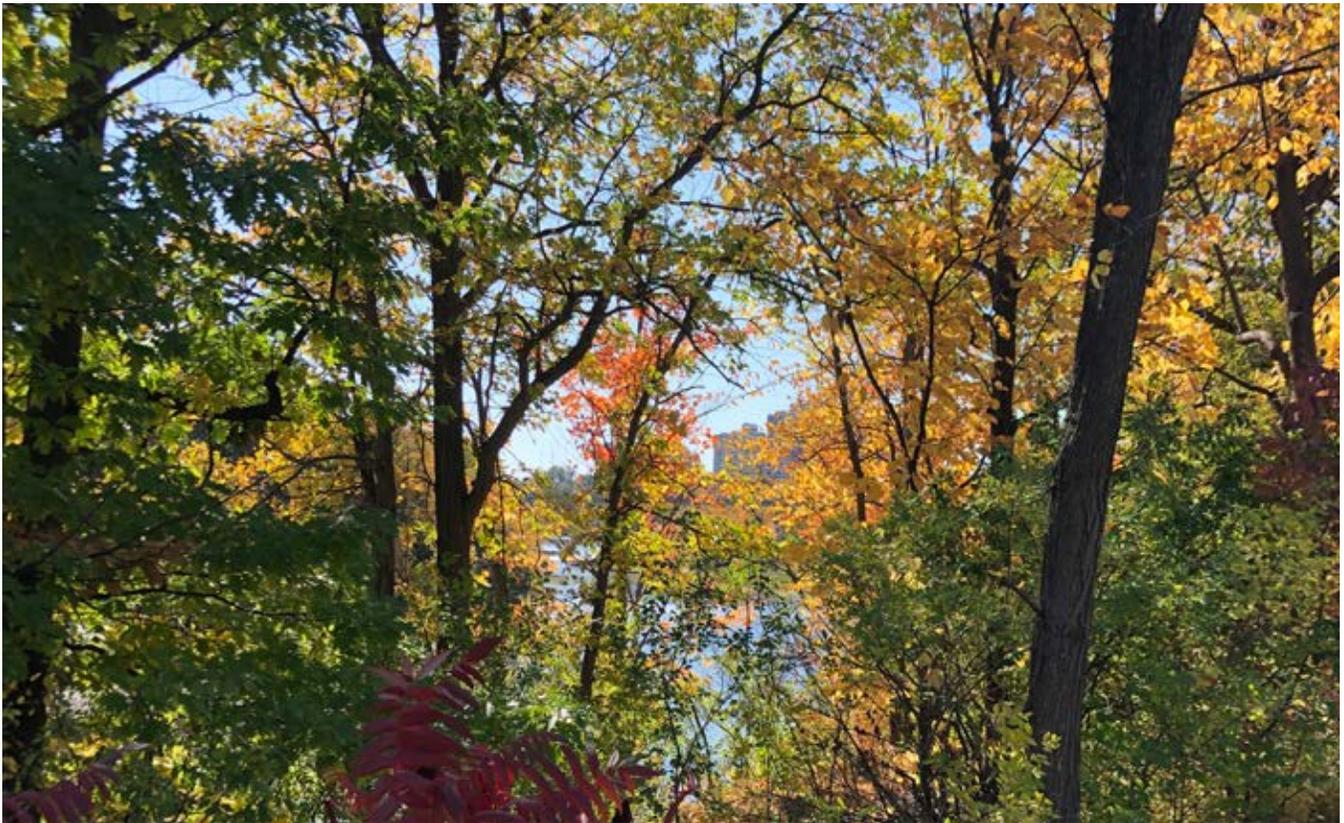
Reduce Inputs to Turf Management

Turf grass is an important planting regime that is used throughout campus. It serves as a space for gathering and for recreation. Unfortunately, to maintain turf at a high level requires significant inputs.

By using the following recommendations, maintenance of turf areas can be more targeted, reducing the chemical used and the time invested.

Guidelines:

- Refer to the Canadian Landscape Standard guide for maintenance frequency based on associated landscape typology.
- Mow lawns at increased height to promote deeper root systems for drought tolerance.
- Aerate soil with hollow tine aerator on a regular schedule to reduce soil compaction and increase infiltration.
- Use mulching mowers to return clippings to turf for added nutrients.
- Use compost as a soil amendment to increase beneficial fungi and bacteria within the profile.
- Use low-mow turf and other lawn alternatives where appropriate to reduce inputs.



Preserve Natural Areas

Natural areas around campus are one of the biggest assets. Maintenance systems should be designed and employed to preserve these areas.

Guidelines:

- Maintenance in these sensitive areas should avoid heavy equipment and chemical treatments when possible.
- Programs should be systematic and gradual to avoid major disruption to plant and animal communities.
- Collaborate with the Rideau Valley Conservation Authority to develop an adaptive management approach to manage naturalized areas on and adjacent to campus

Sustainable Maintenance Vehicles

Maintenance vehicles are critical to moving staff around campus to observe and maintain campus landscapes.

Guidelines:

- Transition fleet to electric vehicles to eliminate emissions from internal combustion engines and dramatically lower carbon footprint of campus maintenance activities
- Install centralized charging infrastructure to support an electric fleet
- Conduct a study to optimize maintenance vehicle fleet size, frequency of trips, and routing around campus



Snow and Ice Removal

Snow makes campus a magical place in the winter and also provides benefits to plants and animals. However, removing it from pedestrian walkways and vehicular areas requires significant resources and time. Additionally, using salt for deicing causes significant environmental hazard to soils, groundwater, and surface water like lakes and rivers.

Guidelines:

- Begin to replace plain rock salt and calcium chloride with environmentally friendly deicers
- Transition snow plow/removal fleet to electric vehicles to eliminate emissions from internal combustion engines and dramatically lower carbon footprint of campus maintenance activities
- Install centralized charging infrastructure to support an electric fleet
- Conduct a study to optimize fleet size, frequency of trips, and routing around campus
- Heated walkways can be used in key, major pathways
- Consider heated walkways during the redevelopment of Alumni Park, at the O-train Station and bus loop, and in the New Campus Square
- Design snow storage areas in all projects to minimize impacts to vegetation and reduce runoff

Water and Irrigation Management

Campus landscapes are generally sustained through extensive irrigation systems that are operated and maintained by Facilities department. The university should move to a new model for irrigation that minimizes water usage and considers both stormwater management and irrigation together. Stormwater should be treated as a resource - not a waste product - and should be captured, detained and used for irrigation whenever possible.

Guidelines:

- A campus irrigation plan should be prepared to inventory and analyze the existing campus irrigation network and suggest optimizations. The irrigation plan must be coordinated with a comprehensive stormwater management plans for campus that focuses on alternative uses for stormwater.
- Install new irrigation systems and base flow on the natural precipitation rates
- Utilize low-flow drip irrigation systems wherever possible
- Install exclusively RainBird equipment (controllers, valves, heads, nozzles, drip, etc.) for all new irrigation systems.
- Over time, replace all existing controllers with the latest model of RainBird controllers and valves to provide equipment consistency across campus
- All new controllers should have the ability to run cycle and soak programs for naturalization areas, slopes, clay soils, or newly seeded areas
- Install flow meters to record and monitor water use
- Irrigation systems should consider including soil probes and rain shutoff/ rain sensors to prevent overwatering
- For naturalization focused planting beds, only provide irrigation during times of drought as native shrubs and perennials are adapted to survive without automatic irrigation after establishment
- Irrigation zone design should be based on like water needs separation between planting beds and turf areas, and sun exposure. Be sure to run zones for less time more often rather than less often for longer duration.
- Consider rainfall collection systems to supply irrigation. New buildings should include rainwater storage cisterns to supply irrigation.
- Develop a detailed irrigation policy and operations manual to inform design and operations of campus irrigation systems

Integrated Pest Management

Pests from insects to bacteria to rodents can destroy a landscape. Even the most resilient plant communities are susceptible to stress and may become vulnerable to pest infestations.

Using an Integrated Pest Management (IPM) plan can reduce the pest damage without the using methods that are harmful to people and the environment. This strategy reduces the economic, health, and environmental risks associated with pest management.

- Use a combined approach that includes biological, cultural, physical and chemical tools to minimize pest related issues.
- Establish a campus program of documenting and reporting chemical applications.
- Use assessment schedules to recognize problems before they become serious.
- Promote healthy growth through fertilization and cultural practices, such as proper plant spacing and density, that naturally reduce stress and the susceptibility of planting by minimizing the conditions in which pests need to live.
- Use chemical applications as last resort and minimize spray areas.

Invasive Removal Strategy

Invasive plants cause damage to landscapes, reduce plant diversity and outcompete native plants. Overall, invasives reduce ecological value of areas and harm/diminish plant and animal habitat.

- Maintain a list of potential and confirmed invasive species. Create identification keys and removal recommendations for staff.
- Train Grounds staff members in native plant identification, establishment, and management practices
- Create multi-year plans to reduce and eliminate invasive plants.
- Use a combination of physical and chemical methods to eliminate invasive plants from campus landscapes and natural areas.
- Engage academic programs and community groups to help remove invasive species seasonally, before plants flower or go to seed.
- Determine best methods for disposal.

7.2 Priorities and Phasing

The implementation of the Outdoor Space Master Plan will occur incrementally over a relatively long period of time. It is difficult to provide a definitive prioritization of projects or elements in this report as ultimately, the university's evolving capital planning process and development plans will provide direction on what outdoor spaces are renewed and when.

The goal of this Master Plan is to create a common look and feel across campus, so it is imperative that the university's development planning process incorporate the recommendations contained in this report. It is also critically important that future design consultants be given a copy of this report when designing new buildings to ensure the landscapes associated with new buildings are properly integrated.

Of the key areas that have been developed in this Master Plan, the Indigenous Learning Place is the highest priority so should be considered first. Priorities for other focus areas and iterative landscape upgrades will be determined by staff during the capital planning process and/or as funding becomes available.

7.3 Order of Magnitude Costing

Indigenous Learning Place

Preliminary Order of Magnitude Costing

Prepared By: Brook McIlroy Inc.

October 12, 2020

ITEM	EST. QTY.	Unit	Unit Cost	Total
Site Preparation				
Site Hoarding and Tree Protection Removals	400	m	\$25	\$10,000
Rough Grading and Fine Grading	2000	sq m	\$15	\$30,000
	500	sq m	\$10	\$5,000
Hard Landscaping				
Precast Concrete Unit Pavers (Pedestrian)	555	sq m	\$220	\$122,100
Flagstone Paving	1	estimate	\$6,000	\$6,000
Limestone Curb	220	m	\$200	\$44,000
Concrete Curb	18	m	\$130	\$2,340
Concrete Retaining Wall	40	m	\$1,200	\$48,000
Concrete Stair Restoration - New Railings	1	estimate	\$50,000	\$50,000
Soft Landscaping				
Turf	815	sq m	\$10	\$8,150
Trees (70mm cal.)	11	each	\$800	\$8,800
Medicine Garden	40	sq m	\$250	\$10,000
Planting Bed (Shrubs, Perennials, Soil and Mulch)	205	sq m	\$190	\$38,950
Site Furnishings				
Log Seating	1	estimate	\$2,500	\$2,500
Custom Platform Seating (under canopy)	1	estimate	\$65,000	\$65,000
Replace Wood tops on Existing Amphitheatre Seats	1	estimate	\$15,000	\$15,000
Bike Parking	1	estimate	\$5,000	\$5,000
Miscellaneous				
Water Feature	1	estimate	\$120,000	\$120,000
Mural Wall	1	estimate	\$25,000	\$25,000
Fire Pit	1	estimate	\$5,000	\$5,000
Lodge	1	estimate	\$700,000	\$700,000
Amphitheatre Canopy	1	estimate	\$500,000	\$500,000
Site Servicing				
Electrical Site Servicing	1	estimate	\$15,000	\$15,000
Lighting	1	estimate	\$40,000	\$40,000
SWM Infrastructure	1	estimate	\$80,000	\$80,000
Sub-total				\$1,955,840
Soft Cost - 15%				\$286,626
Mobilization/Demobilization - 5%				\$97,792
Contractor Overhead, Markup and Bonding - 15%				\$293,376
Contingency - 20%				\$391,168
TOTAL (excluding HST)				\$3,024,802

Notes

* taxes not included

Main Quad

Preliminary Order of Magnitude Costing

Prepared By: Brook Mclroy Inc.

October 12, 2020

ITEM	EST. QTY.	Unit	Unit Cost	Total
Site Preparation				
Site Hoarding and Tree Protection Removals	480	m	\$25	\$12,000
Rough Grading and Fine Grading	4450	sq m	\$15	\$66,750
	4450	sq m	\$10	\$44,500
Hard Landscaping				
Precast Concrete Unit Pavers (Pedestrian)	1490	sq m	\$220	\$327,800
Concrete Paving (Pedestrian)	1150	sq m	\$110	\$126,500
Limestone Curb	60	m	\$200	\$12,000
Concrete Seat Wall, 450 mm	120	m	\$1,200	\$144,000
Concrete Seat Wall, Sloped	120	m	\$800	\$96,000
Limestone Coping on Concrete Seat Wall	96	sq m	\$350	\$33,600
Limestone Cladding on Concrete Seat Wall	81	face sq m	\$2,000	\$162,000
New Stairs, Ramps, and Railings	3	estimate	\$12,000	\$36,000
Retaining Wall at Ramp Edges (2m each side)	4	per ramp	\$1,000	\$4,000
Soft Landscaping				
Turf	1,715	sq m	\$10	\$17,150
Trees (70mm cal.)	12	each	\$800	\$9,600
Planting Bed (Shrubs, Perennials, Soil and Mulch)	200	sq m	\$190	\$38,000
Bioswale Planting Bed	120	sq m	\$150	\$18,000
Bioswale Soil Media	120	sq m	\$120	\$14,400
Site Furnishings				
Bench (Mounted to Concrete Wall)	10	each	\$1,200	\$12,000
16 ft Picnic Table - including concrete base	3	each	\$18,000	\$54,000
6 ft Picnic Table	5	each	\$8,000	\$40,000
Lounge Chair	3	each	\$2,000	\$6,000
Site Servicing				
Hydronic Snow Melt System	1,150	sq m	\$300	\$345,000
Electrical Site Servicing	1	estimate	\$25,000	\$25,000
Mechanical	1	estimate	\$40,000	\$40,000
Lighting	1	estimate	\$80,000	\$80,000
SWM Infrastructure	1	estimate	\$200,000	\$200,000
Sub-total				\$1,964,300
Soft Cost - 15%				\$226,988
Mobilization/Demobilization - 5%				\$98,215
Contractor Overhead, Markup and Bonding - 15%				\$294,645
Contingency - 20%				\$392,860
TOTAL (excluding HST)				\$2,977,008

Notes

* taxes not included

*does not include new ramps on south side of quad

Campus Avenue Quad

Preliminary Order of Magnitude Costing

Prepared By: Brook Mclroy Inc.

October 12, 2020

ITEM	EST. QTY.	Unit	Unit Cost	Total
Site Preparation				
Site Hoarding and Tree Protection	260	m	\$25	\$6,500
Removals	3880	sq m	\$15	\$58,200
Rough Grading and Fine Grading	3880	sq m	\$10	\$38,800
Hard Landscaping				
Precast Concrete Unit Pavers on Concrete Base	970	sq m	\$300	\$291,000
Precast Concrete Unit Pavers on Granular Base	1420	sq m	\$220	\$312,400
Concrete Paving (Vehicular)	165	sq m	\$110	\$18,150
Concrete Curb	425	m	\$130	\$55,250
Concrete Seat Wall	115	m	\$1,200	\$138,000
Soft Landscaping				
Turf	220	sq m	\$10	\$2,200
Trees (70mm cal.)	21	each	\$800	\$16,800
Trees (70mm cal.) in Soil Cell w 30cu.m. soil/tree	13	each	\$25,000	\$325,000
Planting Bed (Shrubs, Perennials, Soil and Mulch)	60	sq m	\$190	\$11,400
Bioswale Planting Bed	105	sq m	\$150	\$15,750
Bioswale Soil Media	105	sq m	\$120	\$12,600
Site Furnishings				
Bench (Mounted to Concrete Wall)	10	each	\$1,200	\$12,000
Platform Seating	80	sq m	\$1,000	\$80,000
Café Seating (one table and two chairs, unmounted)	10	each	\$2,000	\$20,000
Bollards	15	each	\$1,500	\$22,500
Bike Parking	1	estimate	\$15,000	\$15,000
Miscellaneous				
Stage	1	estimate	\$350,000	\$350,000
Detectable Warning Surfaces	1	estimate	\$5,000	\$5,000
Signage	1	estimate	\$70,000	\$70,000
Site Servicing				
Electrical Site Servicing	1	estimate	\$40,000	\$40,000
Mast Lighting	3	each	\$15,000	\$45,000
Mast Lighting Footings	3	each	\$2,500	\$7,500
Lighting (additional to masts)	1	estimate	\$50,000	\$50,000
SWM Infrastructure	1	estimate	\$120,000	\$120,000
Sub-total				\$2,139,050
Soft Cost - 15%				\$320,858
Mobilization/Demobilization - 5%				\$106,953
Contractor Overhead, Markup and Bonding - 15%				\$320,858
Contingency - 20%				\$427,810
TOTAL (excluding HST)				\$3,315,528

Notes

* taxes not included

*excludes layby and improvements to Campus Avenue

Alumni Park

Preliminary Order of Magnitude Costing

Prepared By: Brook McIlroy Inc.

October 12, 2020

ITEM	EST. QTY.	Unit	Unit Cost	Total
Site Preparation				
Site Hoarding and Tree Protection	700	m	\$25	\$17,500
Removals	2150	sq m	\$15	\$32,250
Rough Grading and Fine Grading	6350	sq m	\$10	\$63,500
Hard Landscaping				
Concrete Paving (Pedestrian)	1500	sq m	\$110	\$165,000
Precast Concrete Unit Pavers on Concrete Base	2320	sq m	\$300	\$696,000
Crushed Granite Paving	50	sq m	\$105	\$5,250
Asphalt Paving (Vehicular)	120	sq m	\$100	\$12,000
Concrete Planter	90	m	\$500	\$45,000
Soft Landscaping				
Turf	2,655	sq m	\$10	\$26,550
Trees (70mm cal.) - Includes tree planting along railway	48	each	\$800	\$38,400
Planting Bed (Shrubs, Perennials, Soil and Mulch)	60	sq m	\$190	\$11,400
Bioswale Planting Bed	510	sq m	\$150	\$76,500
Bioswale Soil Media	510	sq m	\$120	\$61,200
Site Furnishings				
16 ft Picnic Table	4	each	\$18,000	\$72,000
Bench Seating	4	each	\$2,000	\$8,000
Armourstone Fire Pit Seating	15	m	\$2,000	\$30,000
Fire Pit	1	estimate	\$15,000	\$15,000
Rocky Outcrops	10	estimate	\$150,000	\$150,000
Miscellaneous				
Pergola	1	estimate	\$200,000	\$200,000
Skate Trail Infrastructure (Chiller, Piping, Concrete Slab, Rubber Mats, Resurfacers/Chiller Garage)	1	estimate	\$2,500,000	\$2,500,000
Site Servicing				
Hydronic Snow Melt System	1,100	sq m	\$300	\$330,000
Electrical Site Servicing	1	estimate	\$40,000	\$40,000
Mechanical	1	estimate	\$60,000	\$60,000
Mast Lighting	3	each	\$25,000	\$75,000
Mast Lighting Footings	3	each	\$2,500	\$7,500
Site Lighting	1	estimate	\$50,000	\$50,000
SWM Infrastructure	1	estimate	\$100,000	\$100,000
Sub-total				\$4,888,050
Soft Cost - 15%				\$733,208
Mobilization/Demobilization - 5%				\$244,403
Contractor Overhead, Markup and Bonding - 15%				\$733,208
Contingency - 20%				\$977,610
TOTAL (excluding HST)				\$7,576,478

Notes

* taxes not included

* does not include northern sidewalk



Appendix

A - Indigenous Learning Place Consultation Report



Carleton
UNIVERSITY

BrookMcIlroy/

