

City of Ottawa Light Rail Transit System

May 2011



Agenda

- Introduction (Chris Brouwer)
- Design Guidelines/Design Signature (Rick Piccolo)
 - Ottawa Context
 - Architectural Concepts
- Public Art Discussion (Brad Golden)
- Design Guidelines/Design Signature (Rick Piccolo)
 - Common Station Elements
 - Wayfinding and Signage
- Rideau Station (Rick Piccolo, Steve Sunderland)
 - Urban Design
 - Station Design
- LeBreton Station (Rick Piccolo, Steve Sunderland)
 - Urban Design
 - Station Design
- Train Station (Rick Piccolo, Steve Sunderland)
 - Urban Design
 - Station Design
- Discussion

Introduction



Ottawa's Light Rail Transit

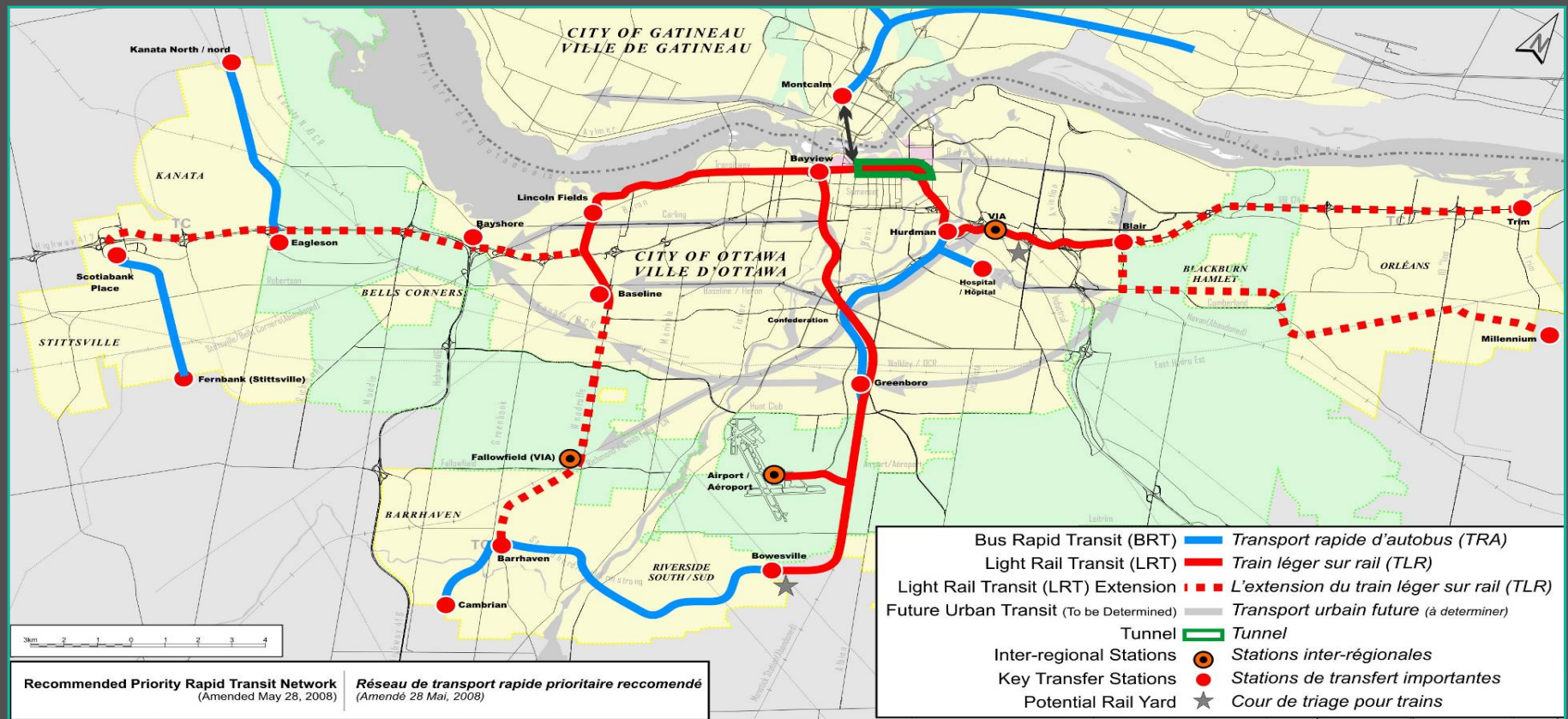


City Advisory Committee Project Update Presentation

May, 2011

City of Ottawa Rail Implementation Office

The Rapid Transit System



The OLRT Project



Light Rail Transit Corridor

Corridor du service de transport en commun par train léger rapide



Tunney's Pasture to Blair Station | Pré Tunney à la station Blair

Transportation Master Plan - Phase I, Increment I | Plan directeur des transports – phase 1, étape 1

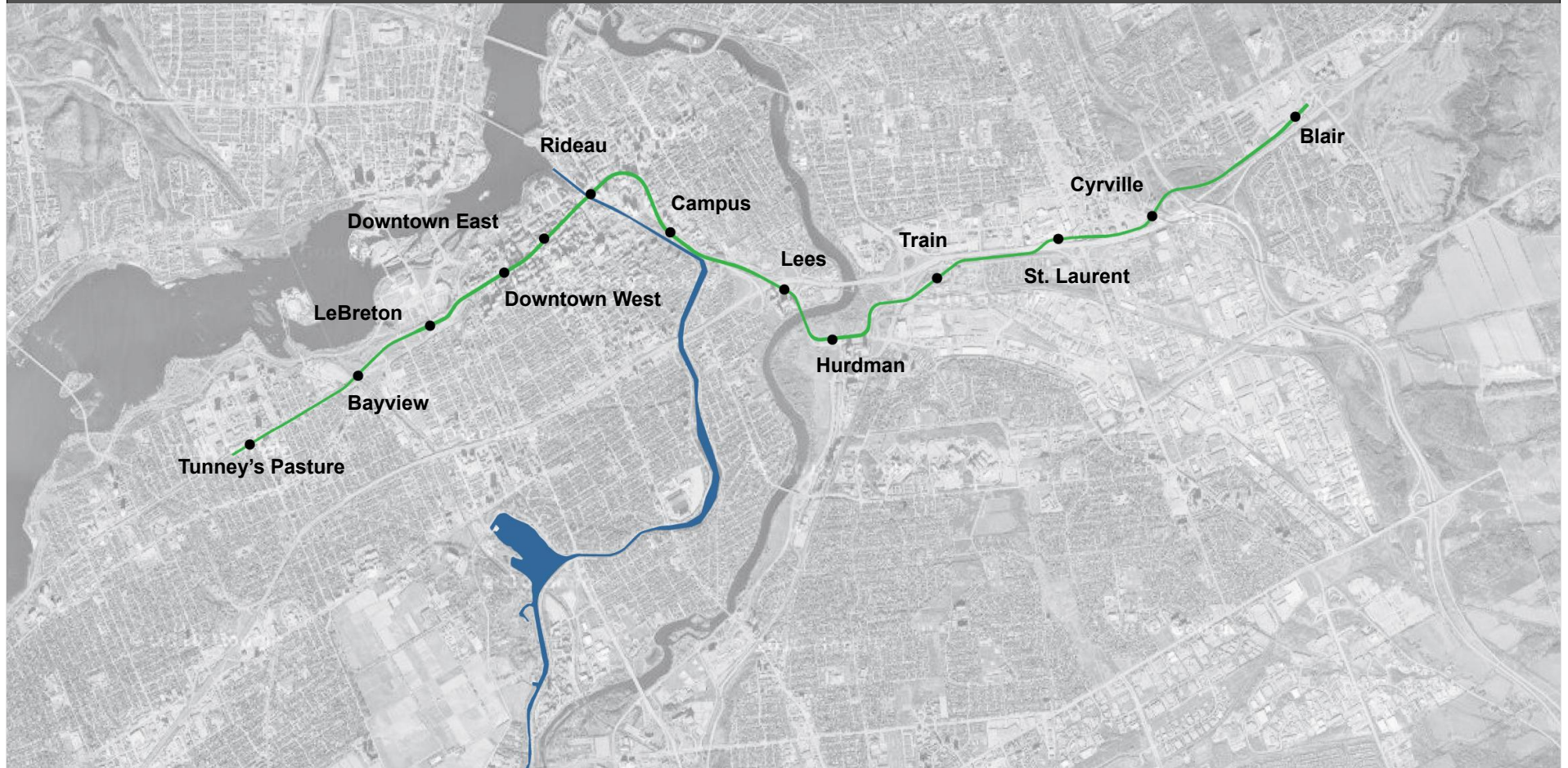
Project Milestones

TIMING	PROJECT ELEMENT
<i>May 2010</i>	<i>Advisory Committee Presentations</i>
<i>Oct. 2010</i>	<i>Commencement of Preliminary Engineering</i>
<i>Dec. 2010</i>	<i>Commencement of Sample Station Designs</i>
<i>Jan. 2011</i>	<i>Commencement of Design Sub-Studies</i>
<i>Feb. 2011</i>	<i>Stakeholder Outreach</i>
<i>May – June 2011</i>	<i>Completion of Draft Station Designs</i>
May 2011	Advisory Committee Presentations
June 2011	Public Open House Meeting
Early 2012	Completion of Preliminary Engineering

Design Guidelines - Ottawa Context



An Opportunity for Connection



Connectivity: The Rideau Canal and OLRT



The Rideau Canal helps to extend this quality into Ottawa as a whole and in the process **‘Connects’ the City**. The LRT has the potential to **connect the city in a different but complementary manner**.

Towards a Regional Architecture in Ottawa

Landscape: A Pleasant Place to be



The physical qualities which define the richness of the built environment surrounding Parliament Hill which could help define the OLRT include the **Landscape**.

Towards a Regional Architecture in Ottawa

Vernacular Form



The physical qualities which define the richness of the built environment surrounding Parliament Hill which could help define the OLRT include **Vernacular Form**. Elements of these forms might be incorporated into the design of the stations.

Towards a Regional Architecture in Ottawa

Material Richness



The physical qualities which define the richness of the built environment surrounding Parliament Hill which could help define the OLRT include Material Richness; such as the use of **Local Stone**.

Design Guidelines – Architectural Concepts



Core Values of Transit Design

Design Excellence – Users of Public Transit deserve the **Highest Level of Design Quality**

- Passenger Comfort
- Safety and Security
- Public Accessibility
- Sustainability
- Station Identity
- Passenger Experience

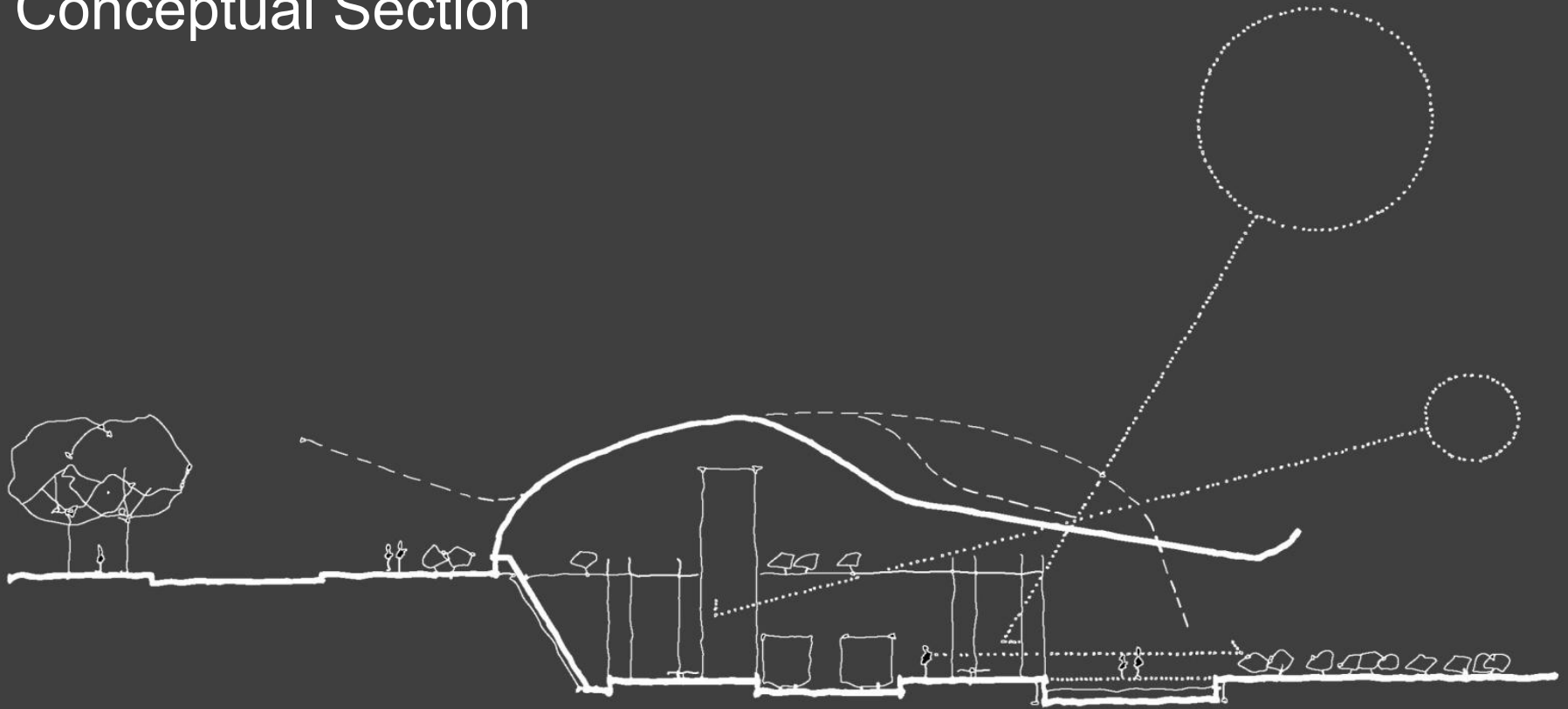


Design Goals

- Ennoble the Transit Experience, Encourage Ridership
- Provide for User Safety and Security
- Enhance User Comfort, Convenience and Accessibility
- Represent Public Values (Sustainable Design)
- Encourage Community Ownership and Pride
- Provide for Transit Oriented Development Opportunities

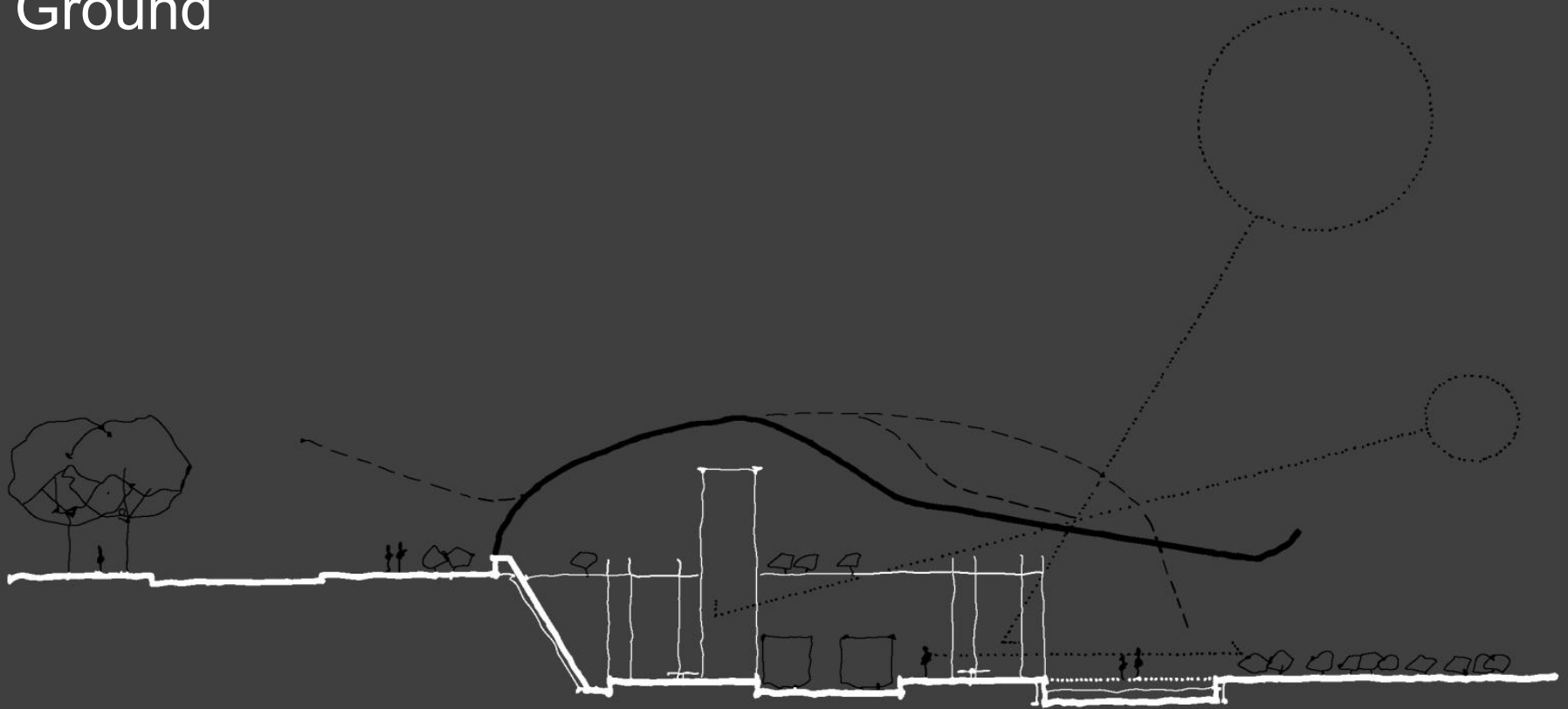


Conceptual Section



On a conceptual level, the architecture of the stations can be described as consisting of the 'Ground', 'Landscape', and 'Enclosure'.

Ground



The 'ground' associated with the stations consists of the walls, retaining walls and walking surfaces which are rooted in and grow out of the topography of each site.

Ground – Rootedness



For the stations with excavated sites, it is desirable to expose the bedrock in strategic locations as opposed to utilizing a more processed material such as concrete.

Ground – Durability



The large volumes of traffic associated with the stations makes it necessary to utilize highly durable materials for the walking surfaces and other surfaces which people come into contact with, if the stations are to age well.

Ground – Snow Melting Technologies



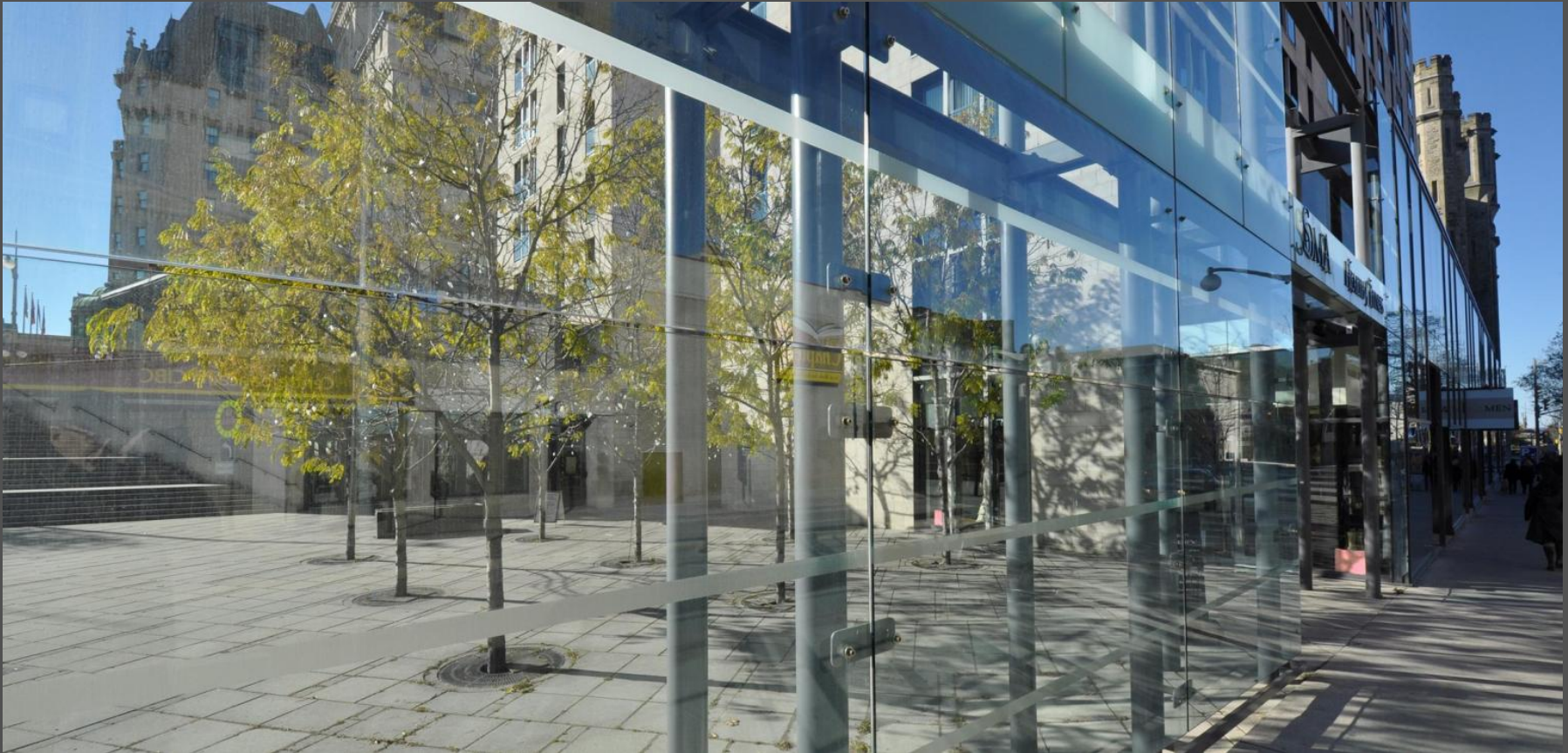
It is possible to melt the snow associated with walking surfaces using sustainable sources of energy such as the recapturing of brake energy or electrical transformer heat and/or ground source heat, in lieu of utilizing salt, sand and snow plows.

Ground – Water



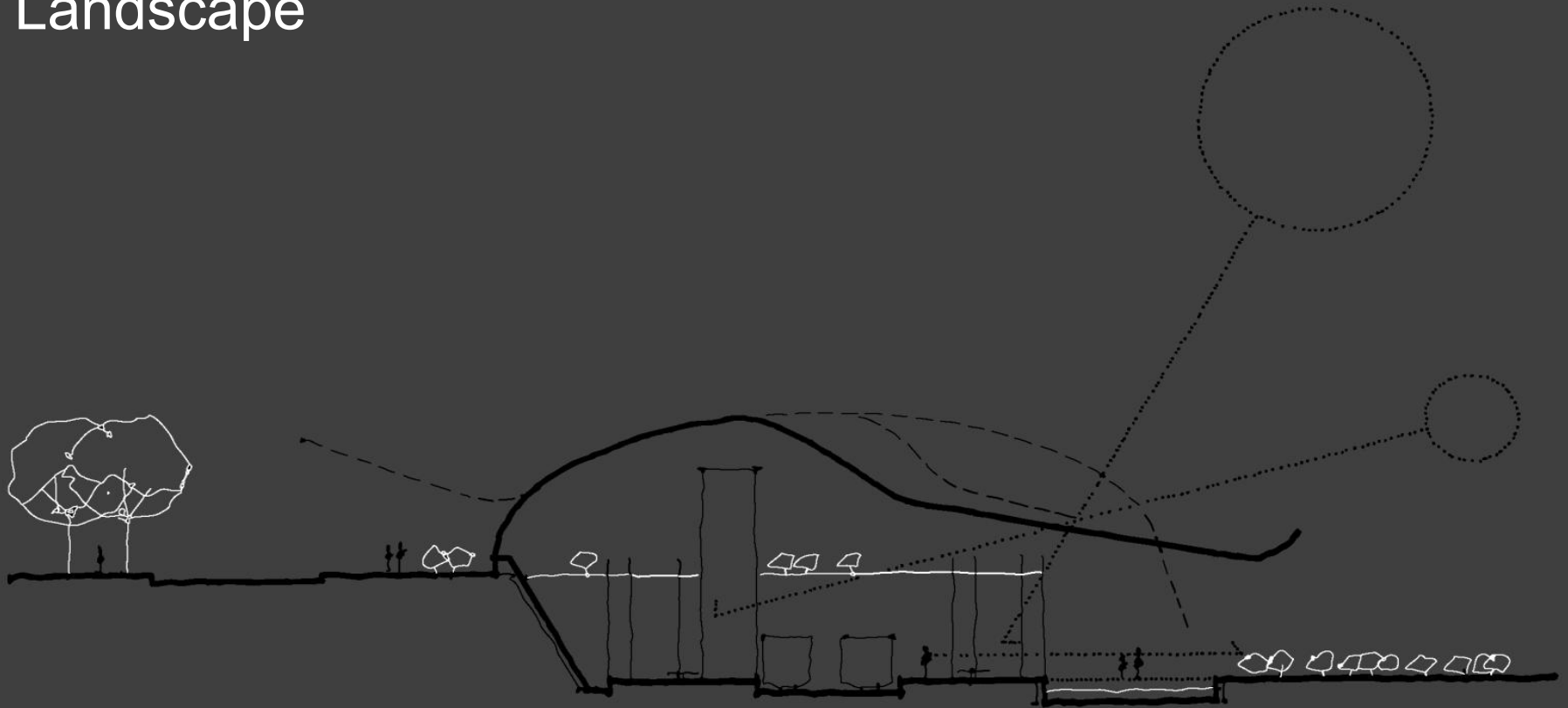
Water is an integral part of the Ottawa landscape. There is the need to manage the large volumes of storm water which will be generated by the hard surfaces associated with the stations.

Ground – Security and Wind



At times it will be necessary to utilize durable ground related screens which provide security and protection from the weather, while maintaining the desired transparency in terms of views and security.

Landscape



The stations will benefit from having an integral relationship with the planted 'landscape'; in terms of providing protection from the summer sun and cold winter winds as well as in terms of the aesthetic value.

Landscape – Aesthetics



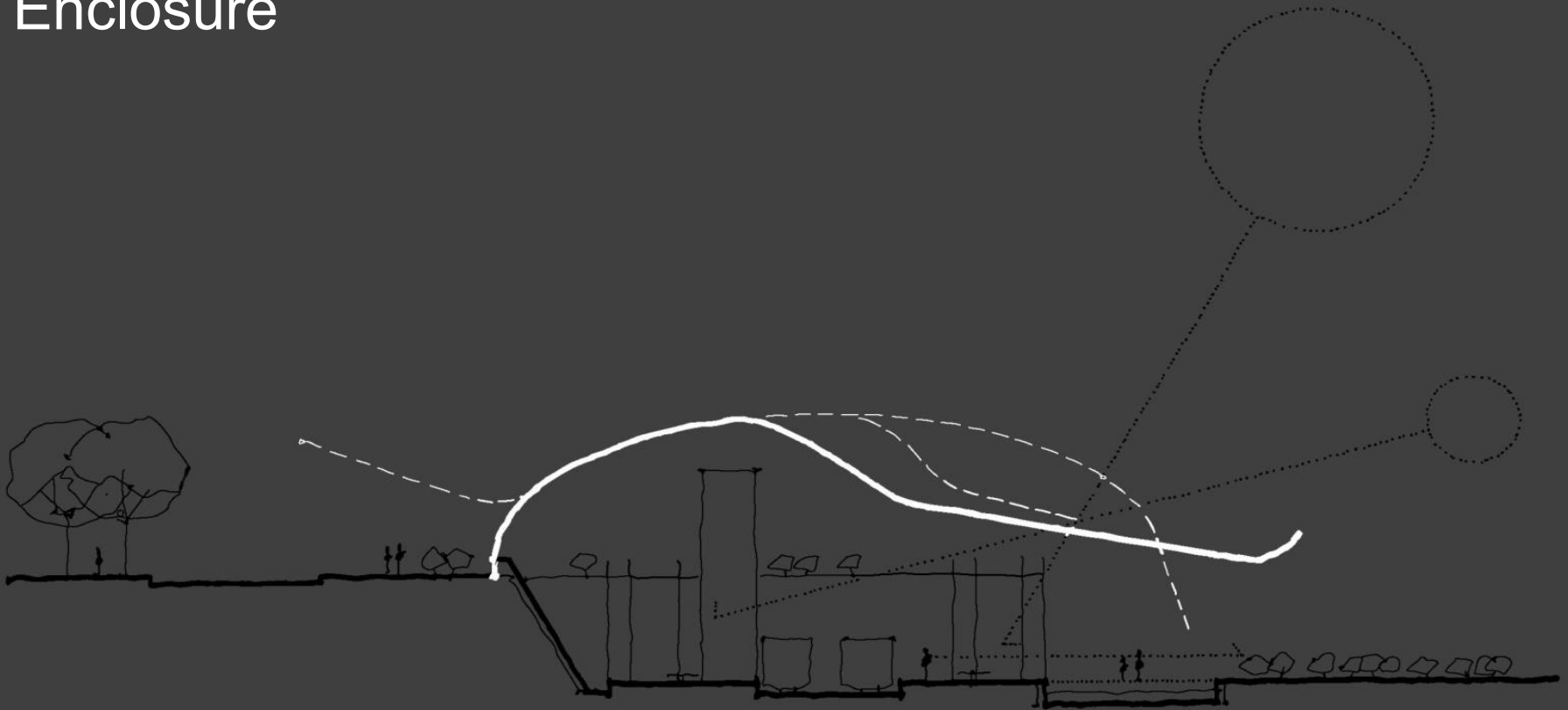
The tendency is for stations to possess a hard sterile quality; due to the employment of 'maintenance free' materials, but this can be transformed if the landscape possesses a more intertwined relationship with the architecture.

Landscape – Experiential Quality



In addition to providing aesthetic enrichment the planted landscape has the potential to help protect pedestrians from the summer sun and winter winds as pedestrians move to and from the stations.

Enclosure



The stations will benefit from having an 'enclosure' which is shaped to mitigate the impact which the Ottawa climate has on pedestrian movement by providing protection from the rain, snow, cold winter winds and the summer sun, while welcoming the warmth of the winter sun and cooling summer breezes.

Enclosure – Materiality – History



The lumber industry formed the economic foundation upon which Ottawa was built.

Enclosure – Materiality



The hard, sterile quality associated with many 'maintenance free' materials can be transformed if warmer materials such as wood are introduced. One of the few surfaces in a station which can be built with wood without compromising the desire for long term durability, is the underside of the roof.

Enclosure – Porch – Station as Community Centre



The enclosure can be shaped to provide porch like spaces which provide a place for a variety of community events which help connect the city such as Farmer's Market.

Public Art Discussion



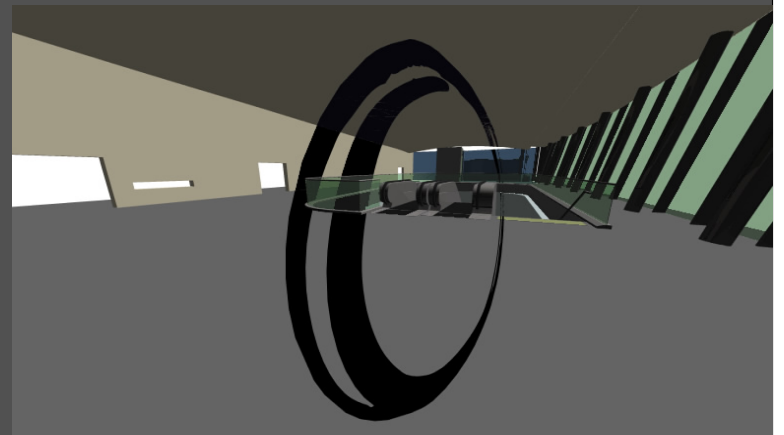
Public Art Programme Objectives

Ensure Artistic excellence vis a vis stakeholder and public interests

Develop stratified approach to public art opportunities

Maximize incremental budget opportunities from architecture and landscape architecture

Design broad, open, fair, transparent procurement process

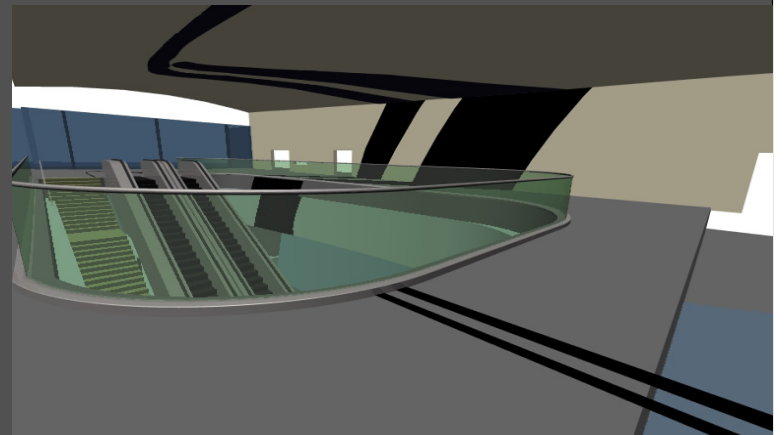


Public Art Programme Objectives

Provide sustainable stewardship framework recognizing maintenance requirements

Draft methodology, recognizing handoff to design/build process

Establish fair and equitable artist / client contract



Stratified Approach

System wide opportunities
Integration with architectural “signature”
Communications based opportunities

Station specific, integrated opportunities
Integration with architecture
Integration with landscape/urban design



Stratified Approach

Station specific free-standing opportunities

Within station

Adjacent to station

Ongoing programming opportunities

Rideau Gallery Station

Electronic Information System

Smartphone Art Guides

Interactive Artworks



Stratified Approach

System wide

Station specific – integrated

Station specific – free-standing

Ongoing programming



Station



Station



Station

Signature Roof

Integration with architectural “signature”

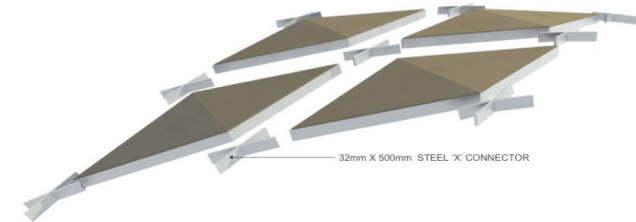
Roof and Wind Screens

Multiple modes of expression

Procurement timing appropriate to design and construction process

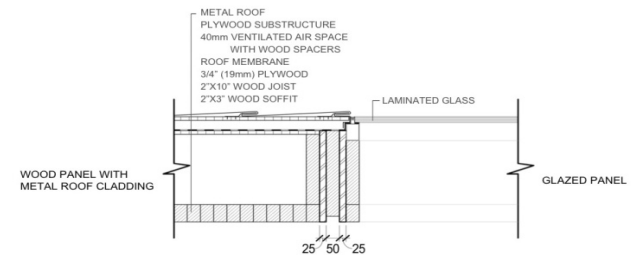
Single procurement generates multiple results

PREFABRICATED PANELS



EXPLODED ASSEMBLY DIAGRAM - 4 PANELS

PREFABRICATED PANELS



SECTION AT PANEL CONNECTION

Site Furnishings

Benches: heat on demand possible

Multiple modes of expression

Procurement timing appropriate to design and construction process

Single procurement generates multiple results



Themed Stations

Station	Theme
Rideau	Gallery
LeBreton	Algonquin
Campus	Innovation
Bayview	Environment
Downtown East	Confederation
Downtown West	Bytown

Themes of Innovation and Environment will be carried out across entire line, not only at single stations

Themed Stations: Rideau - Gallery

Ongoing, curated public display space within Rideau Station

Programming will involve a number of communities and galleries

Additional public art opportunities:

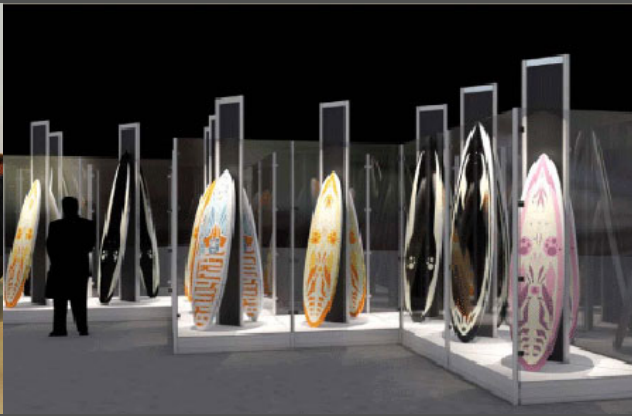
Roof

Escalator Chamber

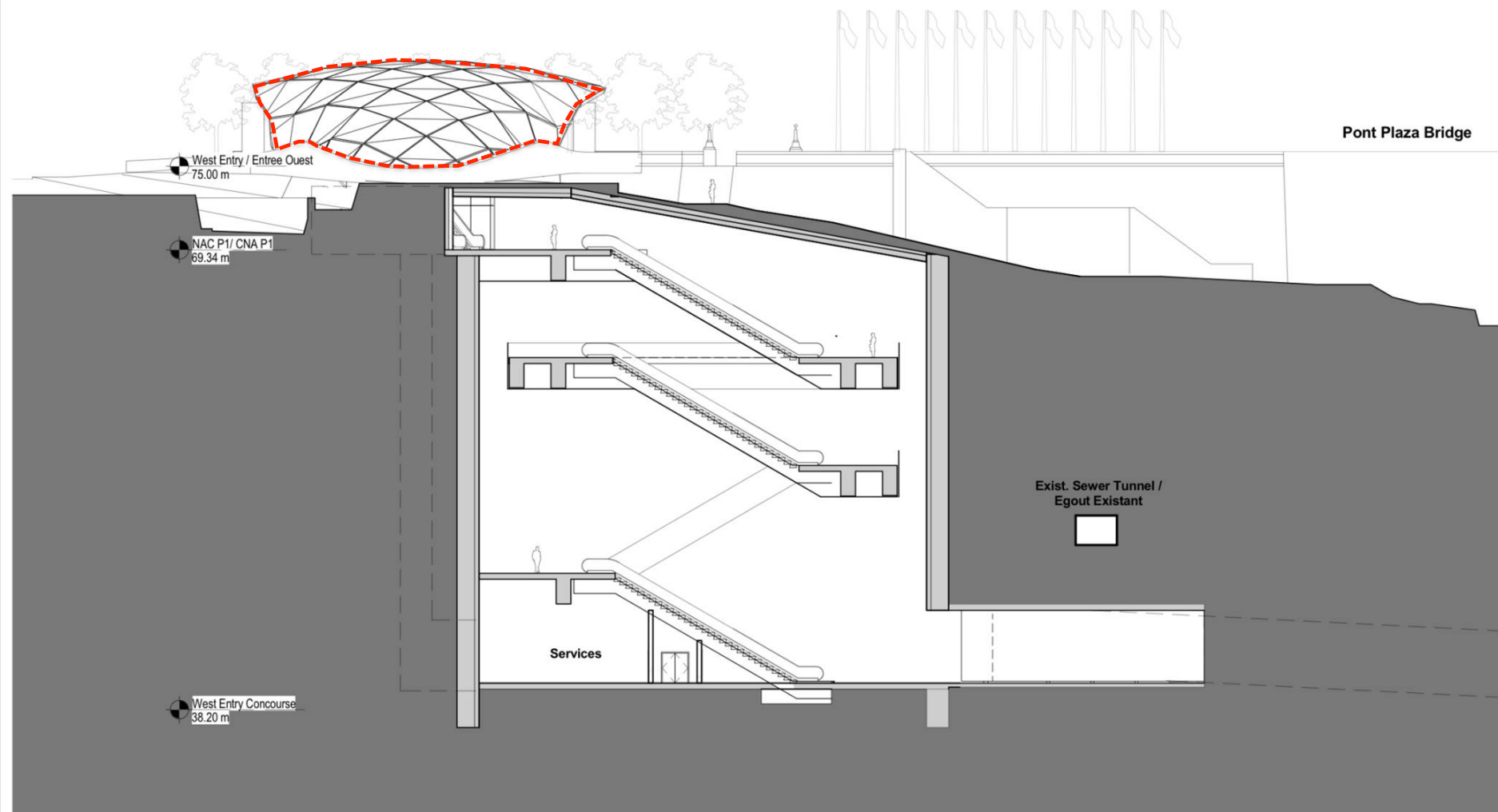
Tunnel to Platform

Air Exhaust Vents



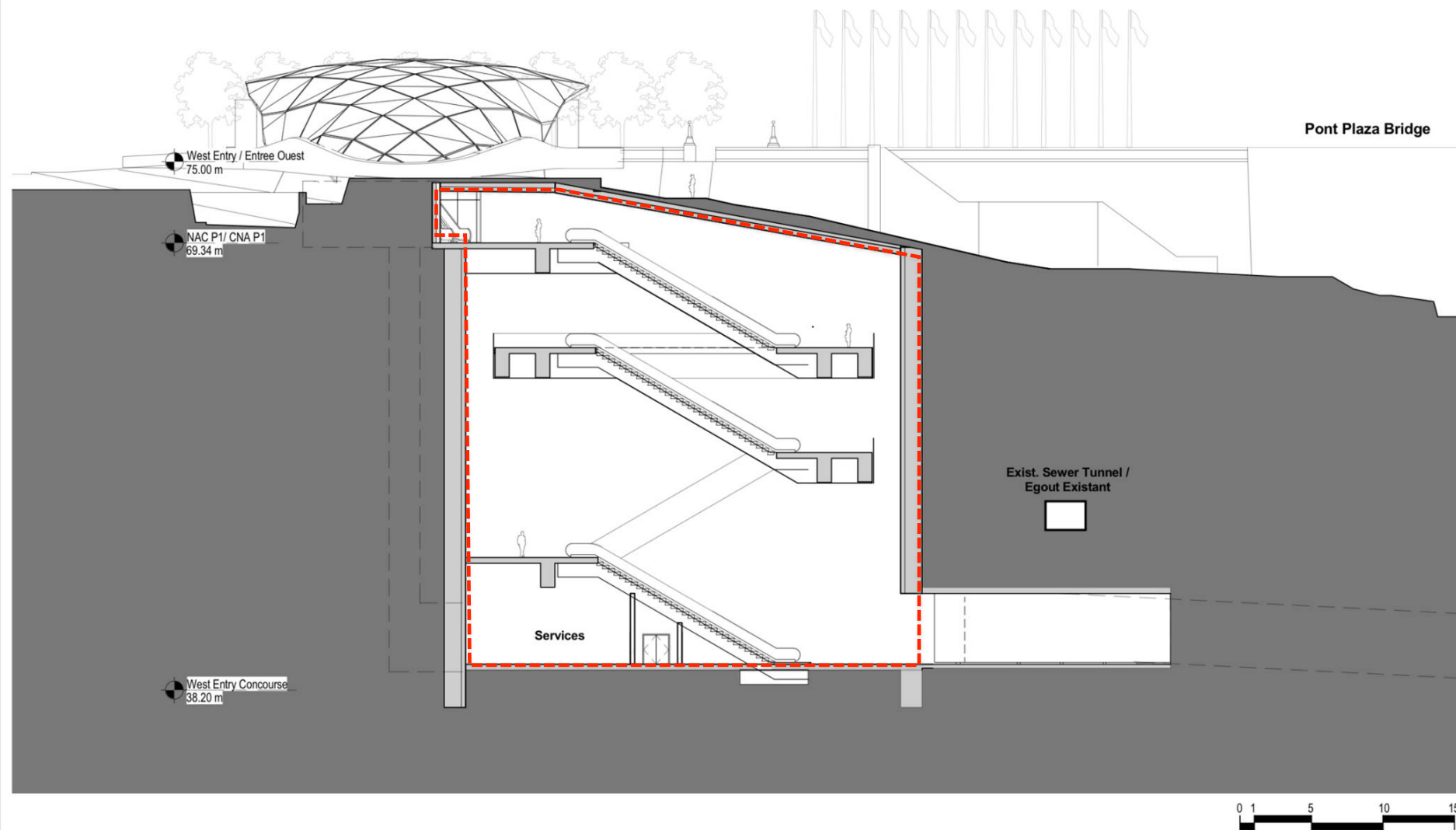


Gallery



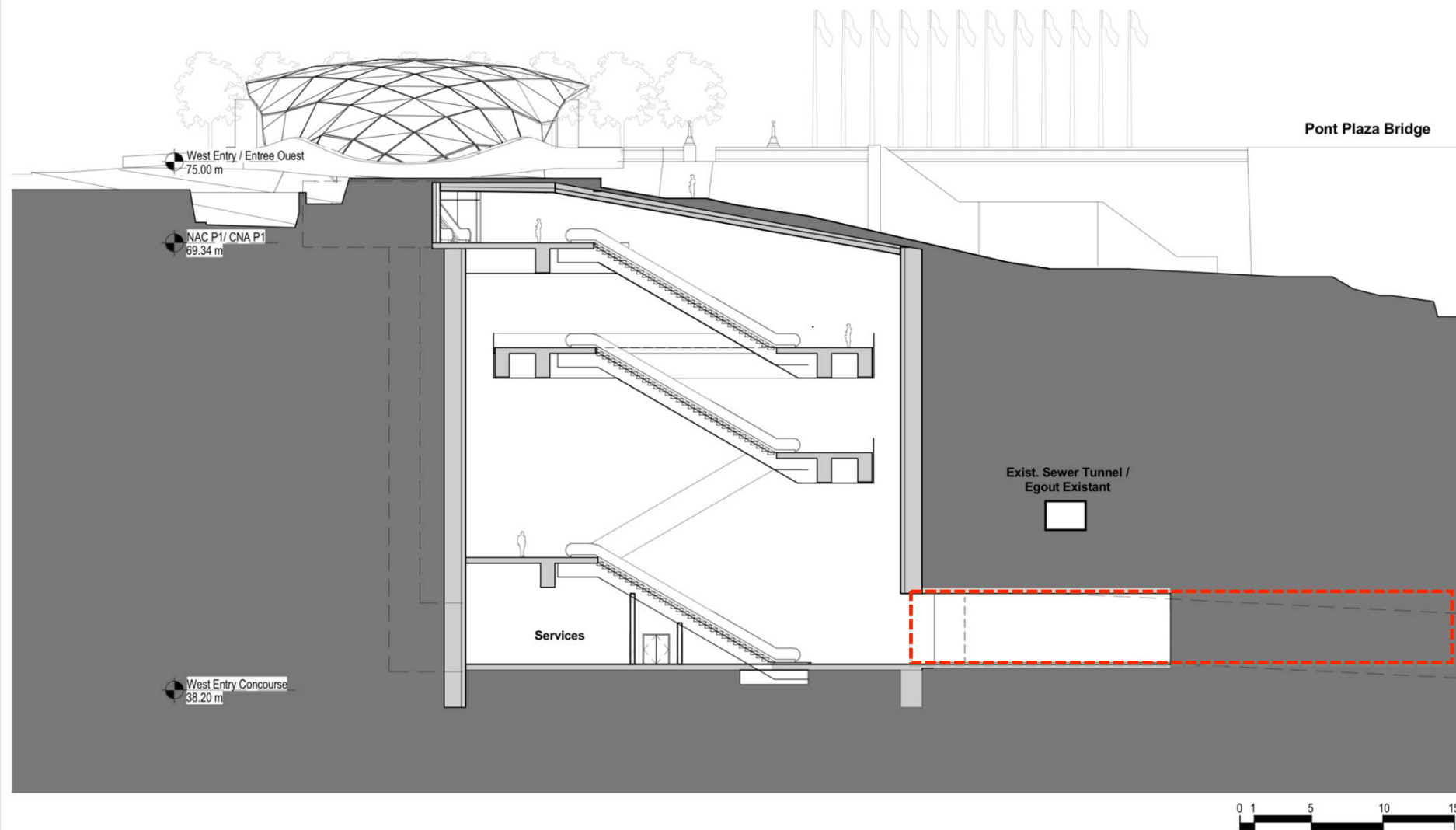


Roof





Escalator Promenade





Tunnel to Platform



Air vents: form and function

Gallery Theme Extension

Ongoing, curated public displays at designated stations



Themed Station: LeBreton - Algonquin

Collaborative, integrated public art opportunity between artist and landscape architect

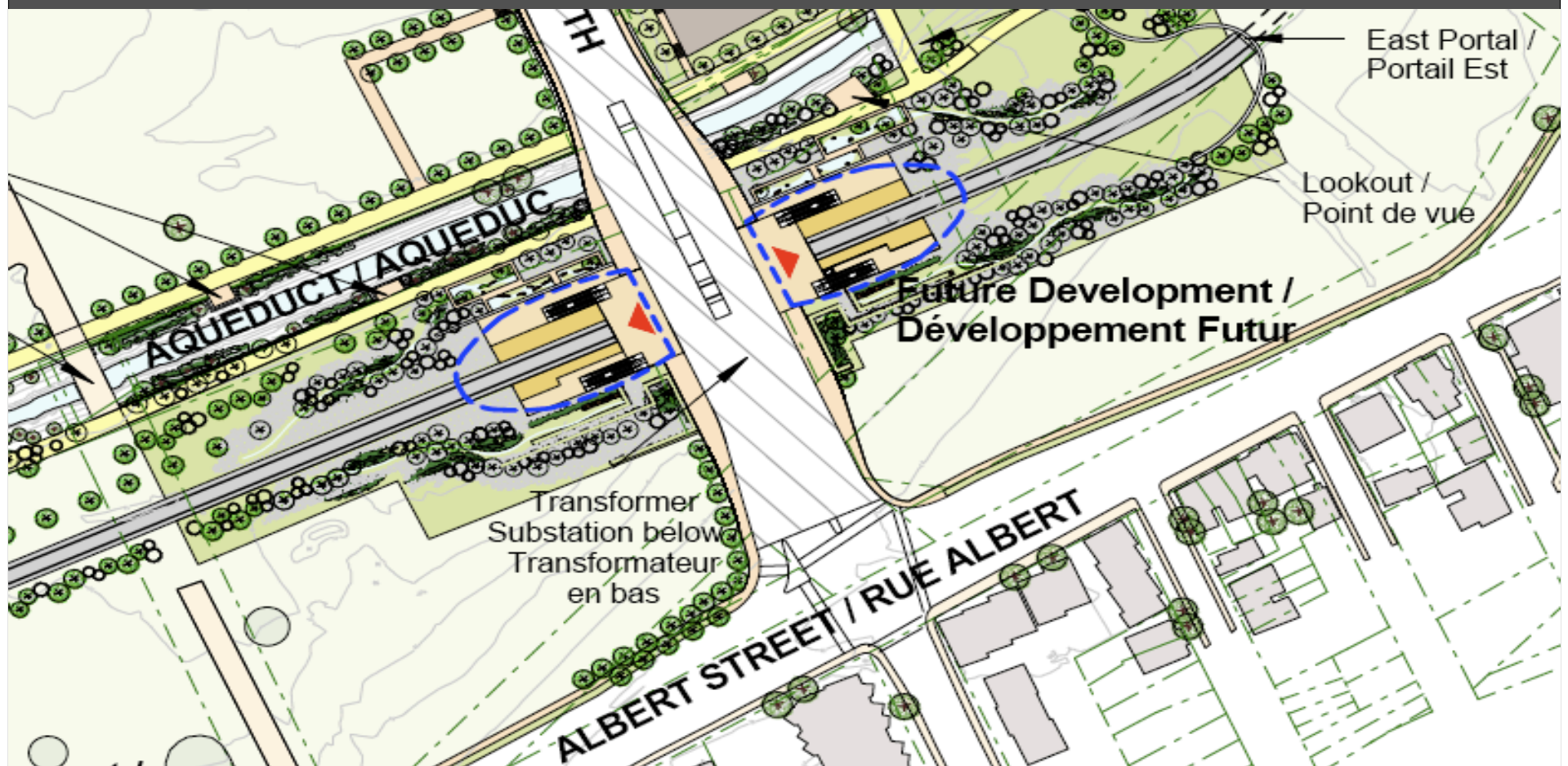
Recognition of environmental stewardship principles

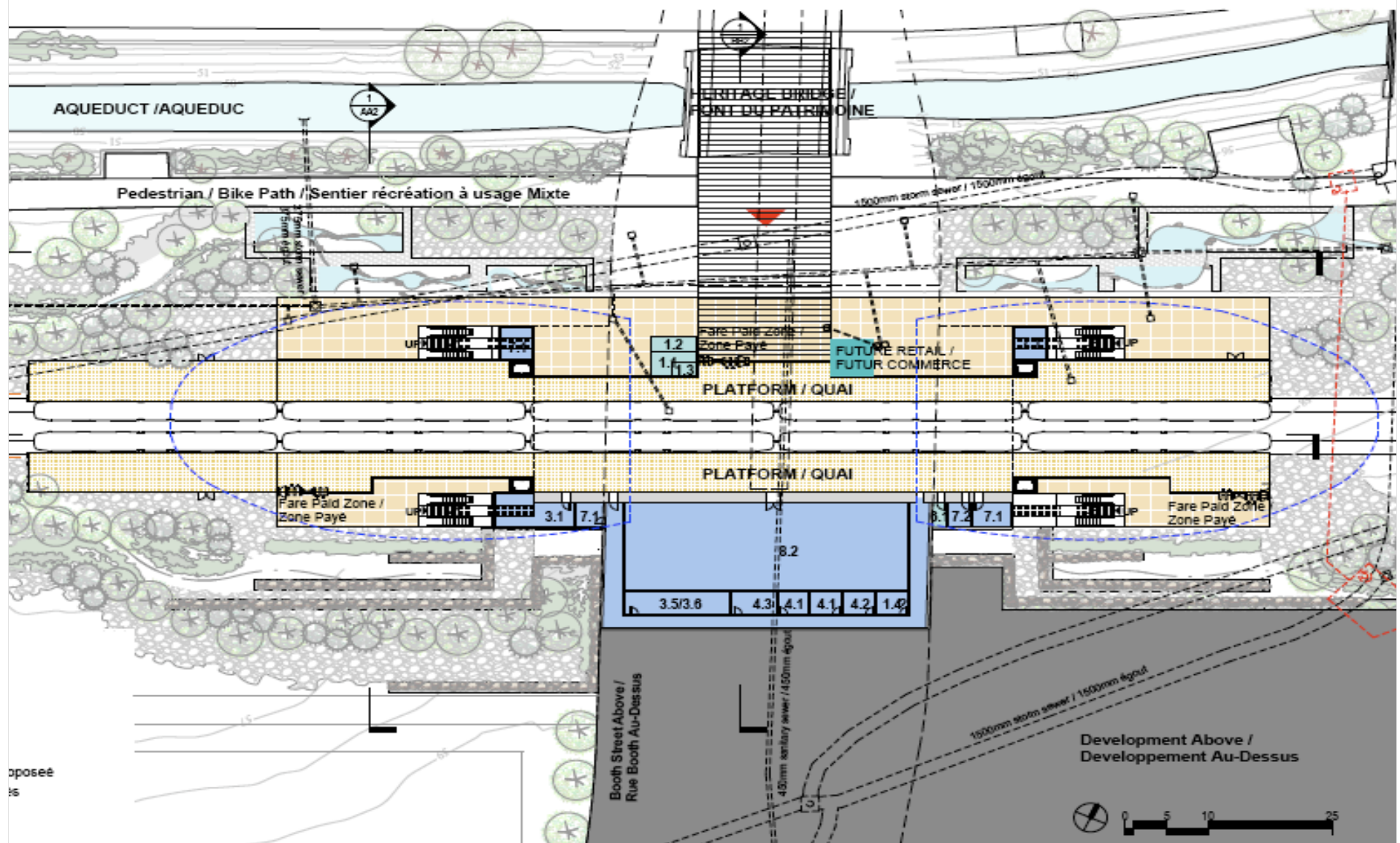
Rainwater, surface water, controlled water: Roof, plaza, canal

Landscape embankment adjacent to canal

Opportunity for direct application of Algonquin art





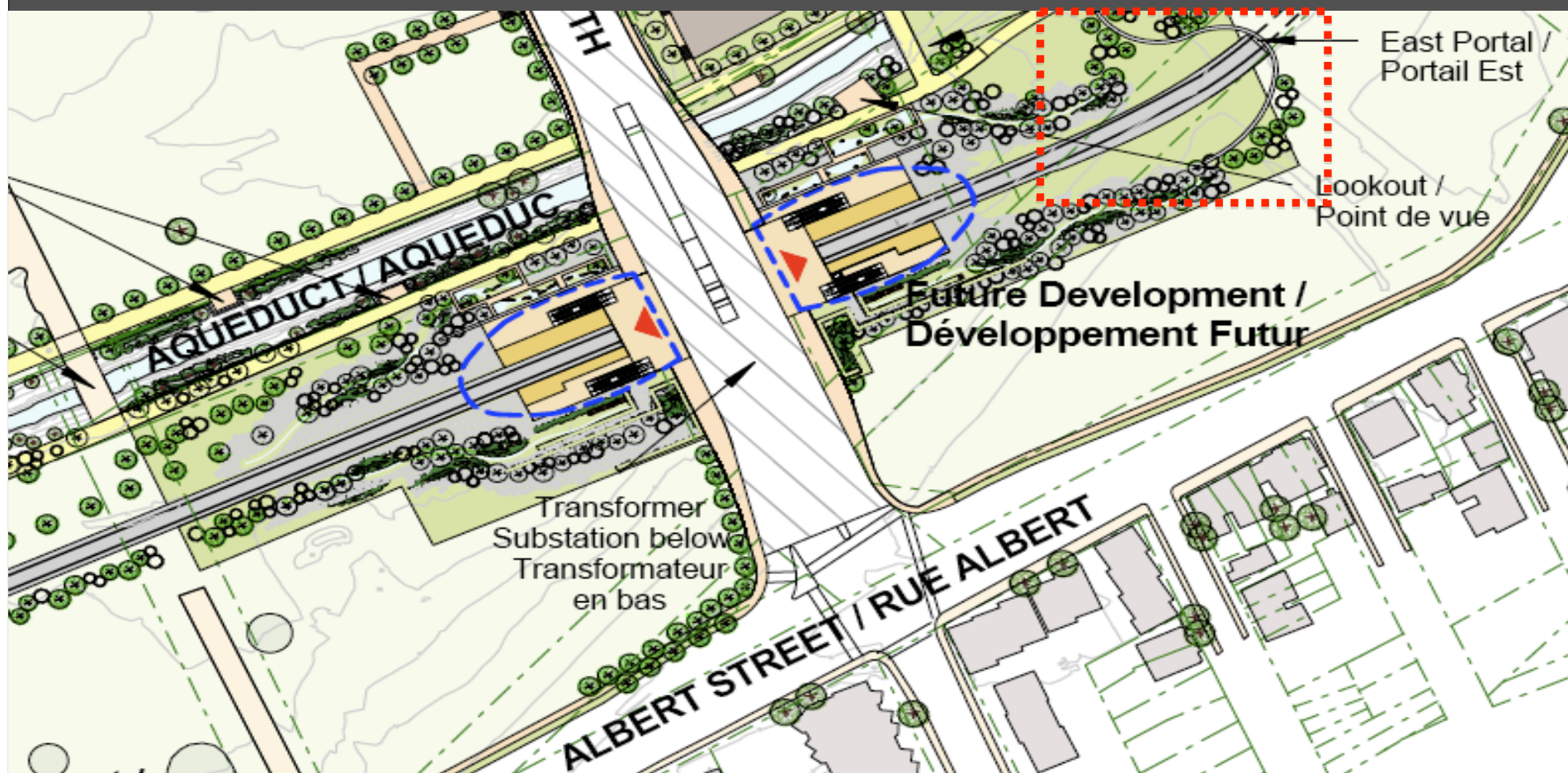




Booth Street Bridge Lantern

Integrated artwork project for proposed lantern
between bridge decks





East Portal

Integrated artwork on tunnel face



Additional Art Opportunities

Construction Hoarding

Rolling Stock

Pass Cards



Budget Development

Assess opportunities identified with Stratified Approach

Assess relative impact of each station vis a vis overall programme

Assess appropriate geographic breadth of RFP for each opportunity



Artist Procurement

National Artist call revised to current approach. Less lead time for artist involvement

More specific determination of opportunities

Broader scope of potential artists

Design broad, open, fair, transparent procurement process

Assess appropriateness of one or two stage competition for each opportunity



Design Guidelines – Common Station Elements



Design Goals: Site Furnishings

Signage, lighting fixtures and amenity items will Assist in wayfinding and will be simple forms so as to complement, and not distract from the Architecture

Will coordinate to create a **family of elements**

Will be integrated **with paving and traffic flow**, both pedestrian and vehicular

Will be **durable, low maintenance** and will reduce heat transfer as necessary



Site Furnishings: Benches

- Rather than being separate entities, seating will be a natural part of the stations' flowing and natural landscape features.
- Walls and space dividers will create seating opportunities by themselves, which will be further enhanced and accentuated by usage of refined yet durable wood and metal seating surfaces.
- Heated Benches may be provided at specific locations. The potential for using recaptured energy, wastes energy from a variety of sources, or ground source heat will be investigated.



Site Furnishings: Bicycle Racks

- Safe and secure bicycle parking is essential to the successful connection of bicycles to the transit system.
- Varying degrees of bicycle parking facilities will be located at all stations, in areas of high visibility and security.
- Short-term bicycle parking will provide a safe and secure spot for locking up your bicycle.
- These facilities will be part of the overall surface and landscaping treatment of the stations and the areas around the stations, and may be part of other structures and features.



Site Furnishings: Litter and Recycling

- Special attention will be paid to the natural inclusion of litter and recycling facilities to ensure that the stations are kept clean and utilized in an environmentally responsible manner.
- Litter and recycling stations will be located in logical and accessible locations to promote responsible disposal, without being obstacles to the natural flow of pedestrian traffic.
- Consideration will be made to ensure an easy and convenient servicing of the receptacles.
- If exposed to the outdoor environment, litter receptacles will have covered openings and will be sturdy and resistant to impact and abuse.



Design Guidelines – Common Station Elements



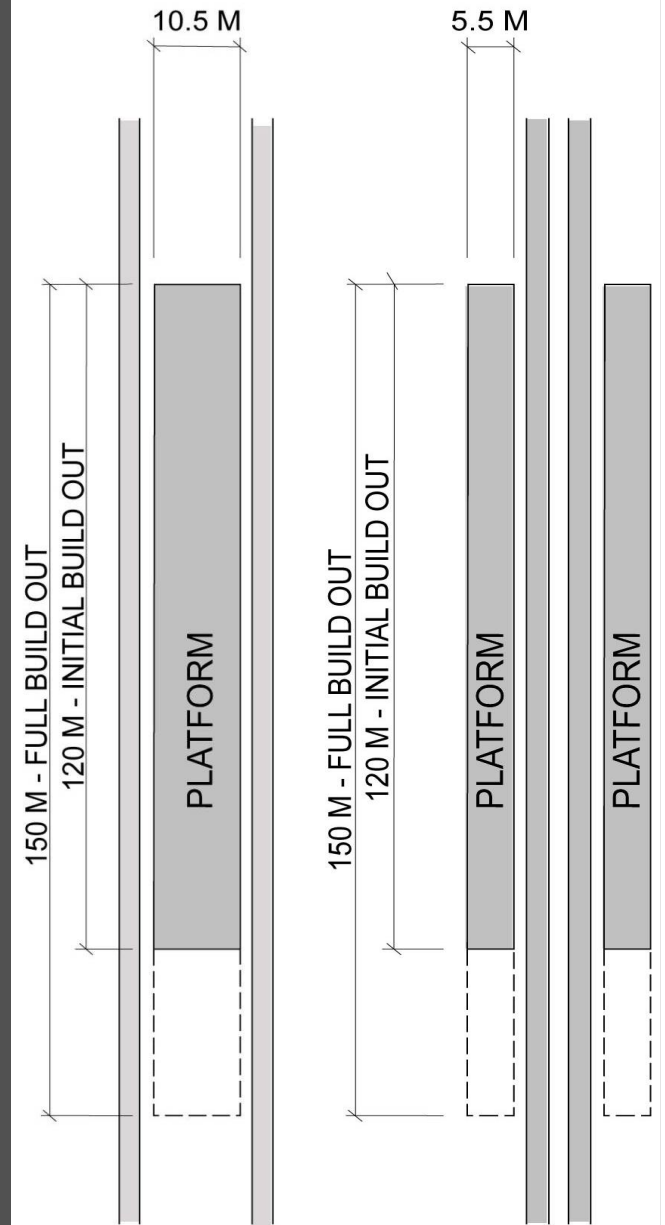
Platform sizes

- Centre-platform stations:

Typically – 10.5m x 120m (Initial construction)
10.5m x 150m (full build out)

- Side-platform stations:

Typically – 5.5m x 120m (Initial construction)
5.5m x 150m (full build out)



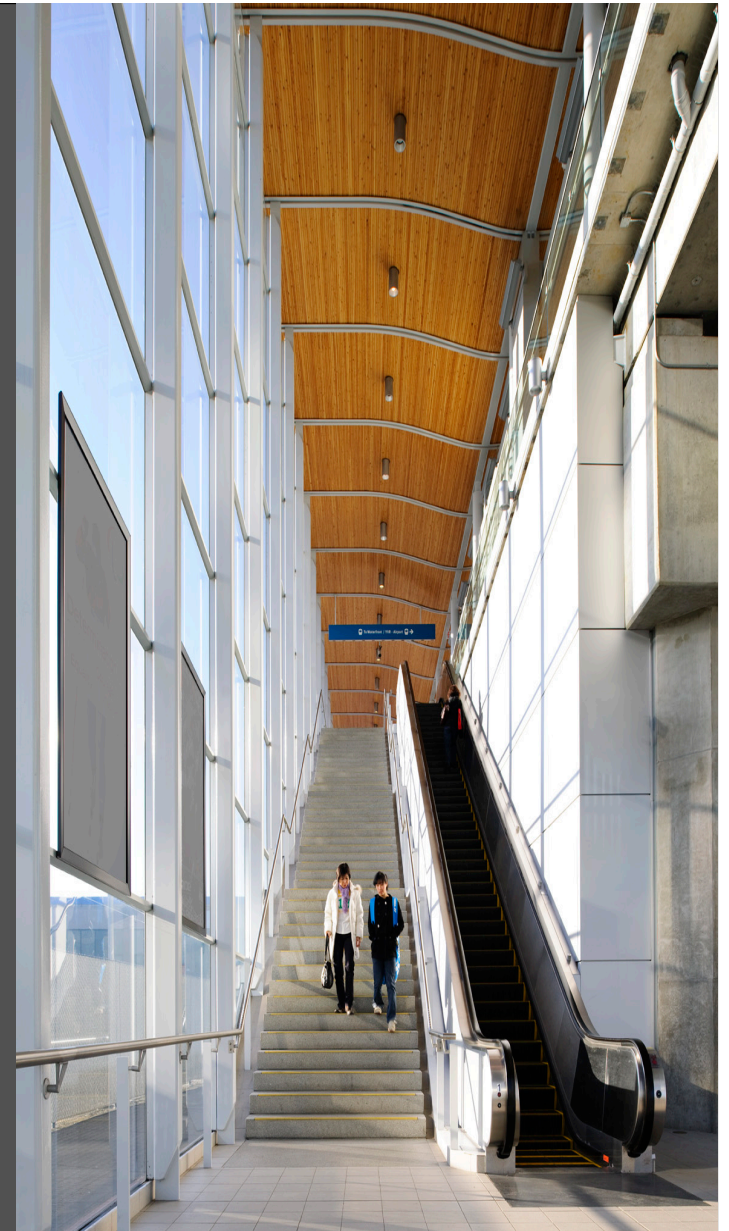
Floor Materials

- Platform: Thick set porcelain tile on cast-in-place concrete
- Platform edge: Premanufactured, fully adjustable tile of molded plastic and polymer cementitious fill
- Grade/Concourse: Thick set porcelain tile on cast-in-place concrete
- Washrooms: Thin set porcelain tile
- Service spaces: Sealed or epoxy sealed concrete as required



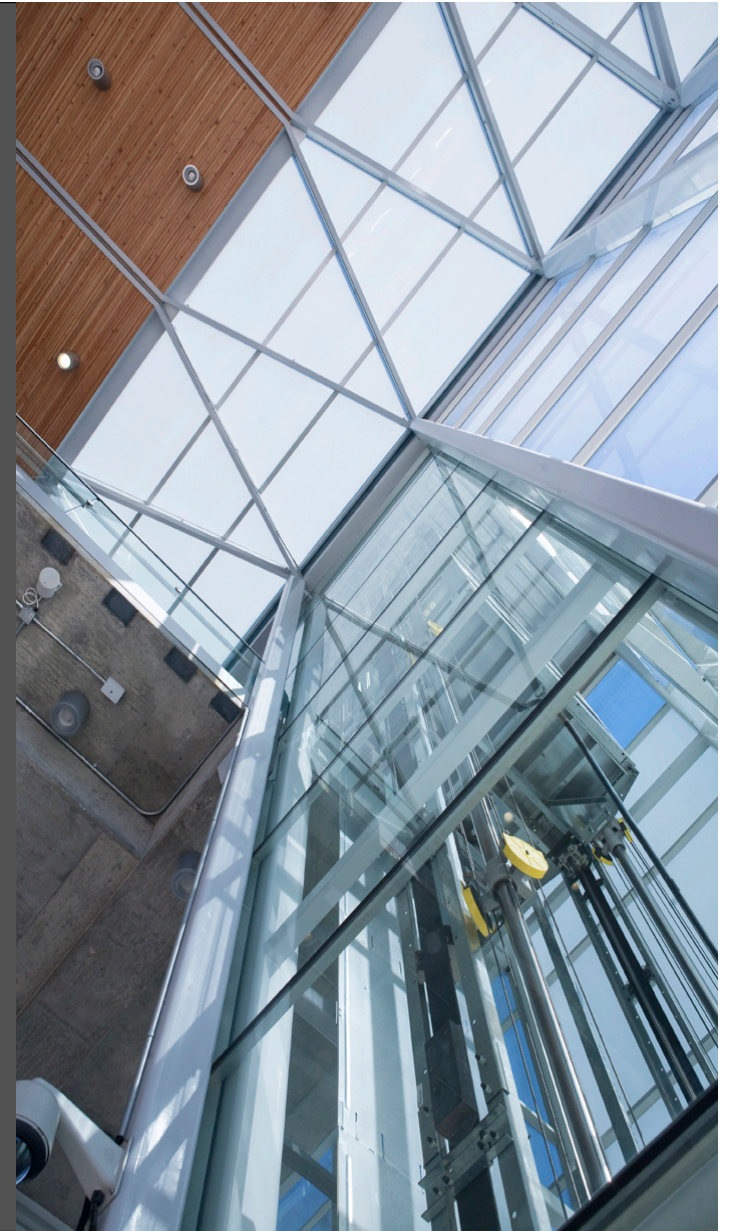
Vertical Circulation

- Stairs: Precast concrete risers on cast-in-place concrete structure
- Stair railing: Stainless steel pipe
- Stair nosing: Inset material of contrasting colour
- Tactile Warning: Thick set porcelain tile on cast-in-place concrete
- Escalators: Aluminum clad on primed steel structure



Vertical Circulation: Elevators

- Elevators: 2-sided glazed, 2 sided metal panel
- Elevator cab: 2-sided glazed, 2 sided metal panel
- Cab floor: Thin-set porcelain tile
- Structural frame: Painted steel structural frame



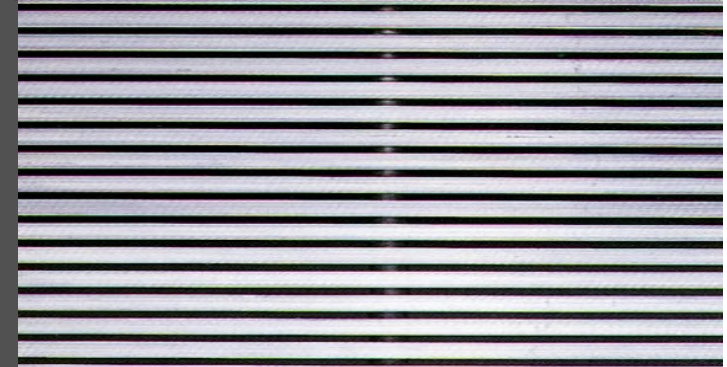
Guardrails/Handrails

- Glazed guardrail: Tempered or laminated glass (as required) with aluminum edge protection inserted into stainless steel clad steel support channel
- Handrail: Stainless steel pipe supported by cast aluminum or stainless steel brackets
- Exit stair guardrail: Painted steel welded wire mesh supported by painted steel angle framing



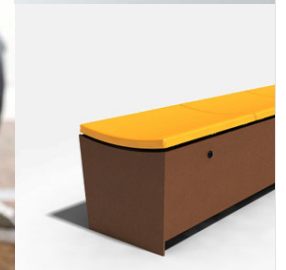
Entry Grilles and Heated Slabs

- Stations entrances will be organized so that as much as possible, dirt, grit, sand, salt and other corrosive materials are prevented as much as possible from being tracked into the station interiors.
- Heated slabs: heated slabs will be provided wherever possible at station entrances in order to both minimize the amount of snow and ice on the ground available to be tracked into the stations, and to improve the slip resistance of the surfaces at the station entrance.
- Entry Grilles: Stainless steel flat bar or extruded aluminum linear grilles complete with evaporative drain pan will be provided in the zone between the heated slab and the station entry to maximize removal of dirt, grit, sand and salt.



On-Demand Heating

- The stations will have no active heating or cooling systems on the platforms
- Specific areas will be designated on the platforms which can provide supplemental heat through user activation, such as motion-sensor activated radiant heaters, or benches and seats which warm upon use.



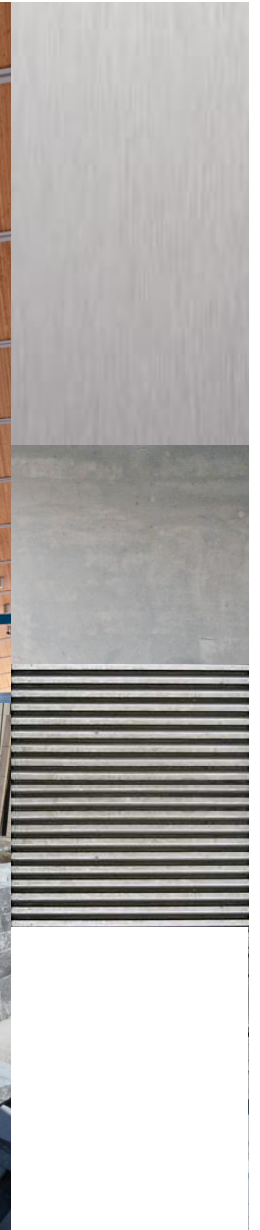
Exterior Materials

- Solid walls: Local stone clad base walls, retaining walls and ground-related features as described in the Conceptual Section. Where appropriate, salvaged stone from the tunnel excavation will be used for these walls.
- Windscreens: Mullion-supported or structurally-glazed clear or fritted glass screens, 2.5 to 3m tall.
- Security Fence: Stainless or painted steel vertical flatbar pickets where required to 1.5 to 2m tall depending upon ground conditions.
- Exposed Concrete: all exposed-to-view concrete to be architectural concrete.
- Metal Panels: preformed anodized aluminum or painted steel cladding panels.
- Metal Louvres: self-draining painted steel or prefinished aluminum louvres complete with bird and insect screens.



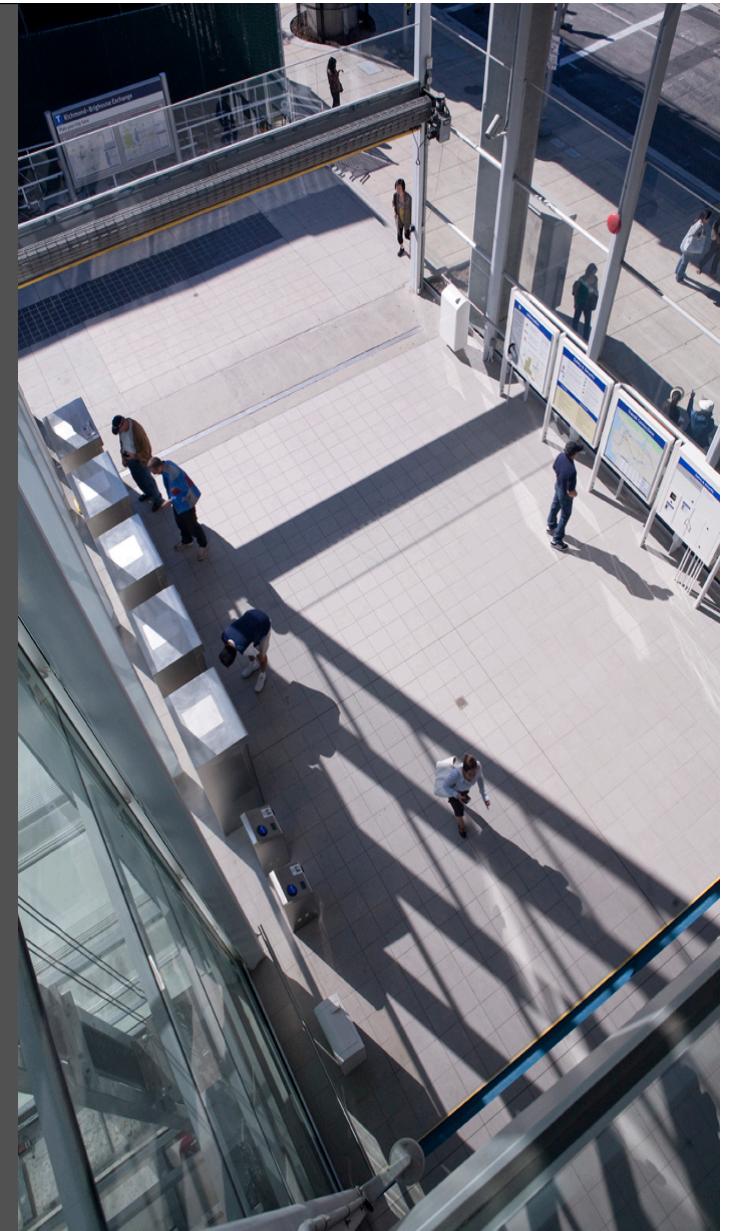
Interior Materials

- Solid walls: Local stone clad base walls, retaining walls and ground-related features as described in the Conceptual Section. Where appropriate, salvaged stone from the tunnel excavation will be used for these walls.
- Wood soffits: Locally-sourced dimensional lumber.
- Structural Steel: all exposed-to-view structural steel will be painted and meet AESS requirements.
- Exposed Concrete: all exposed-to-view concrete to be architectural concrete.
- Metal Panels: preformed anodized aluminum or painted steel cladding panels.
- Metal Louvres: self-draining painted steel or prefinished aluminum louvres complete with bird and insect screens.



Station Entrances

- Open and airy, welcoming places filled with light.
- Clearly organized spaces to eliminate congestion from users passing through, waiting, using the ticketing facilities, or uncertain what to do.
- Clear and concise wayfinding and signage, both for within the station and the station neighbourhood.
- Ticketing machines located conveniently for access, but outside of the main flow of station users.



Wayfinding and Signage



Design Goals: Wayfinding

- The platform enclosure is kept **unobstructed** by structure or services to allow passenger traffic to flow smoothly
- A continuous service beam is integrated with a platform screen door header incorporating **signage and information**
- A **unifying palette** of finishes and forms helps passengers understand the LRT station layout



Wayfinding + Signage Programme: Goals + Objectives

Programme Project Goals:

- Make transit facilities easy to identify and to navigate system-wide
- Use language and visual techniques that people understand
- Comply with accessibility guidelines
- Assist in providing a successful journey for passengers

Wayfinding + Signage Programme: Goals + Objectives

Programme Project Objectives:

- Improve the overall function and aesthetics of the light rail system by providing accessible, attractive, identifiable and understandable signage
- Improve wayfinding for system passengers by providing map, text, and/or pictograph signage for important station and community destinations and features
- Provide plain-language signage and not “over-signed” stations
- Develop project outcomes that inform and meet the timing of the design requirements for station pre-engineering and final designs

Wayfinding + Signage Programme: Goals + Objectives

Sign Design Programme Principles:

- Design a palette of sign types that are complimentary in design, nomenclature, information hierarchy, colour, contrast, typography, size, materials, construction, installation, and application
- Sign types should emphasize and integrate the use of international symbols to support a diverse population's information needs
- Modularity in the various sign panel sizes and consistency in installation method is a primary goal for long term maintenance, efficiency and cost control

Wayfinding + Signage: Purpose

The development of an effective Wayfinding + Signage strategy is critical to the success of the experience all user groups have with the Ottawa LRT system. At its most fundamental level, it will provide:

- Orientation,
- Direction,
- Information, and
- Identification to users at the various stations within the system

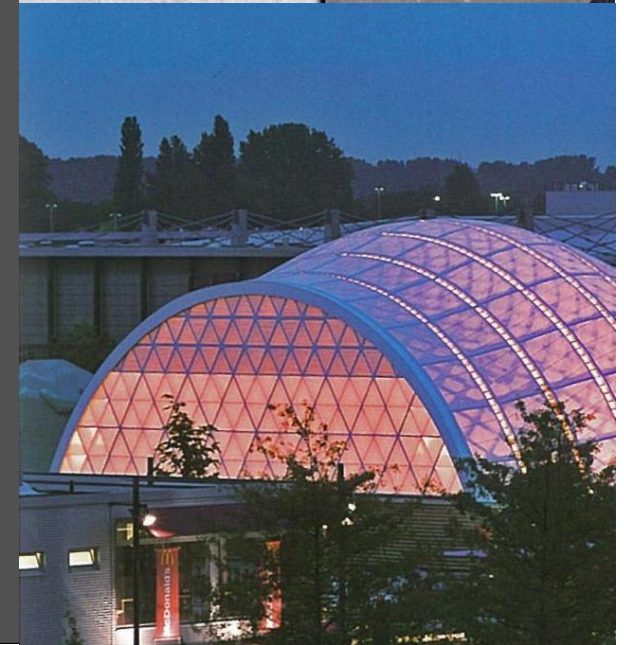
At a higher level, Wayfinding + Signage will serve to knit together and connect the various stations and communities along the line and enhance each of their various experiences.



Wayfinding Strategies

In order to achieve the stated Goals and Objectives, various Wayfinding Strategies will be considered, including:

- Intuitive design
- Cognitive mapping
- Sequencing
- Architectural features, light, colour, sound
- Public Art elements
- Pathways + Motion
- Universal Design



Signage Strategies

Likewise, an effective system of Signage strategies will be developed to aid in overall site and facility navigation. Strategy considerations include:

- Integration with architectural ground, landscape and enclosure system
- Mapping + Technology
- Graphics + Typography
- Nomenclature
- Dual language
- Appropriateness for first-time users
- Universal Design



Wayfinding + Signage: Design Principles

Wayfinding + Signage can add to the richness and vibrancy to the Ottawa LRT system at an individual station level while providing a layer of connectivity system-wide that is both flexible and sustainable over the life of its installation.

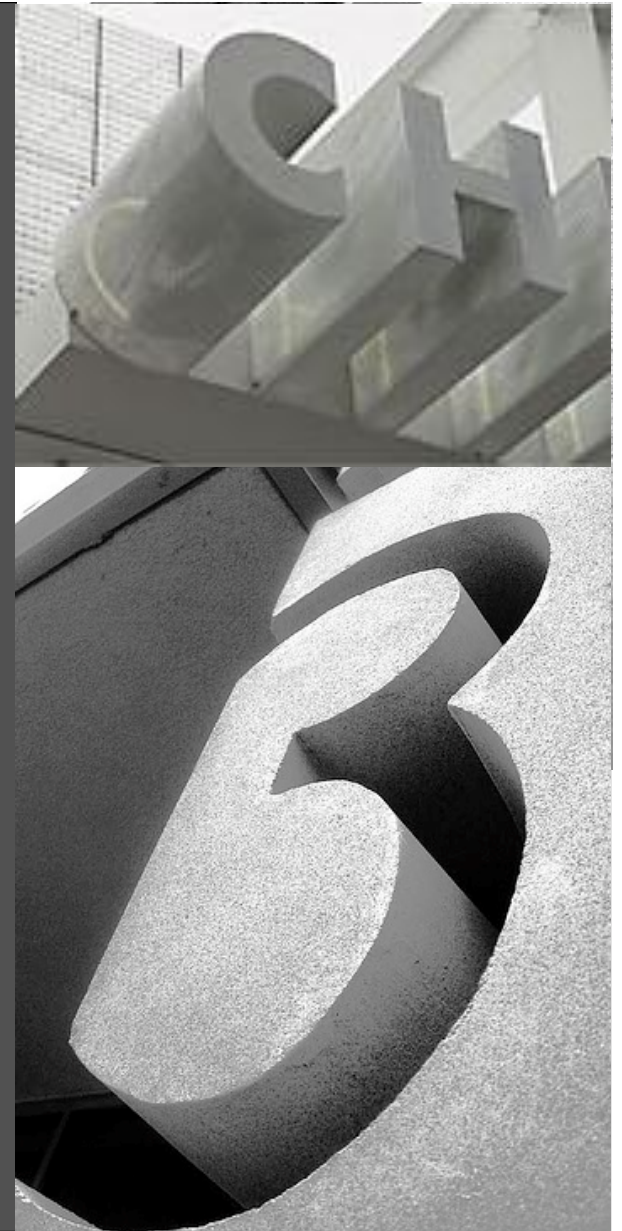
Design Principles will strive to ensure that distinct station or “themed” elements can be integrated into the system, while maintaining system-wide consistency and integration of appropriate brand identity components.



Wayfinding + Signage: Design Principles

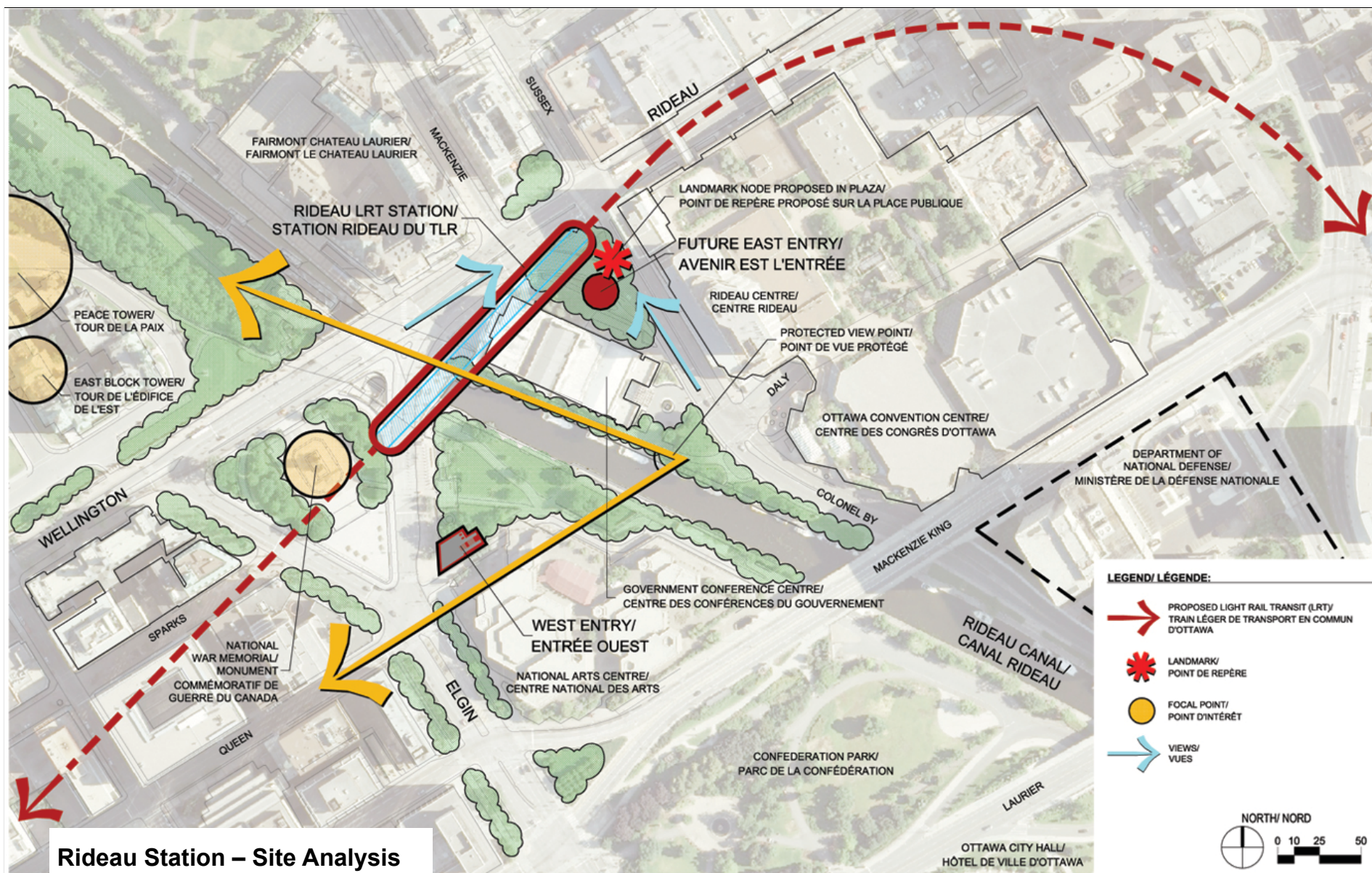
In order to manage both the aesthetic and the pragmatic attributes of the Wayfinding + Signage system, Design Principles will be established to guide the design process. Initial considerations include:

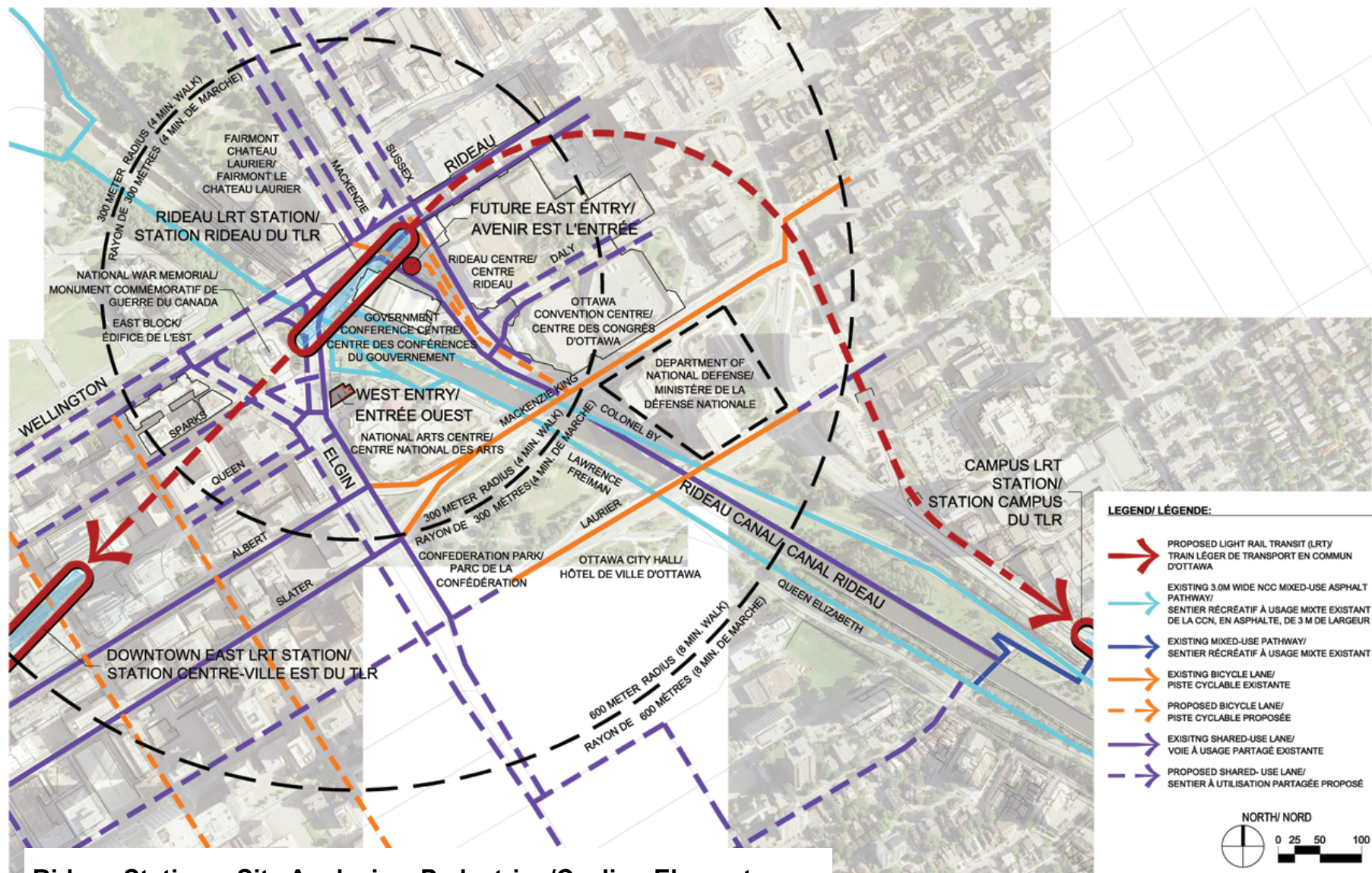
- Minimal sign-type vocabulary
- Complimentary to and integration with architecture, art and landscape features
- Simplicity + elegance
- System-wide solutions
- Continuous vs. fragmented
- Permanent + flexible, flexible + unifying
- Maintenance + security
- Colour as differentiator, cultural reference, directional reinforcement



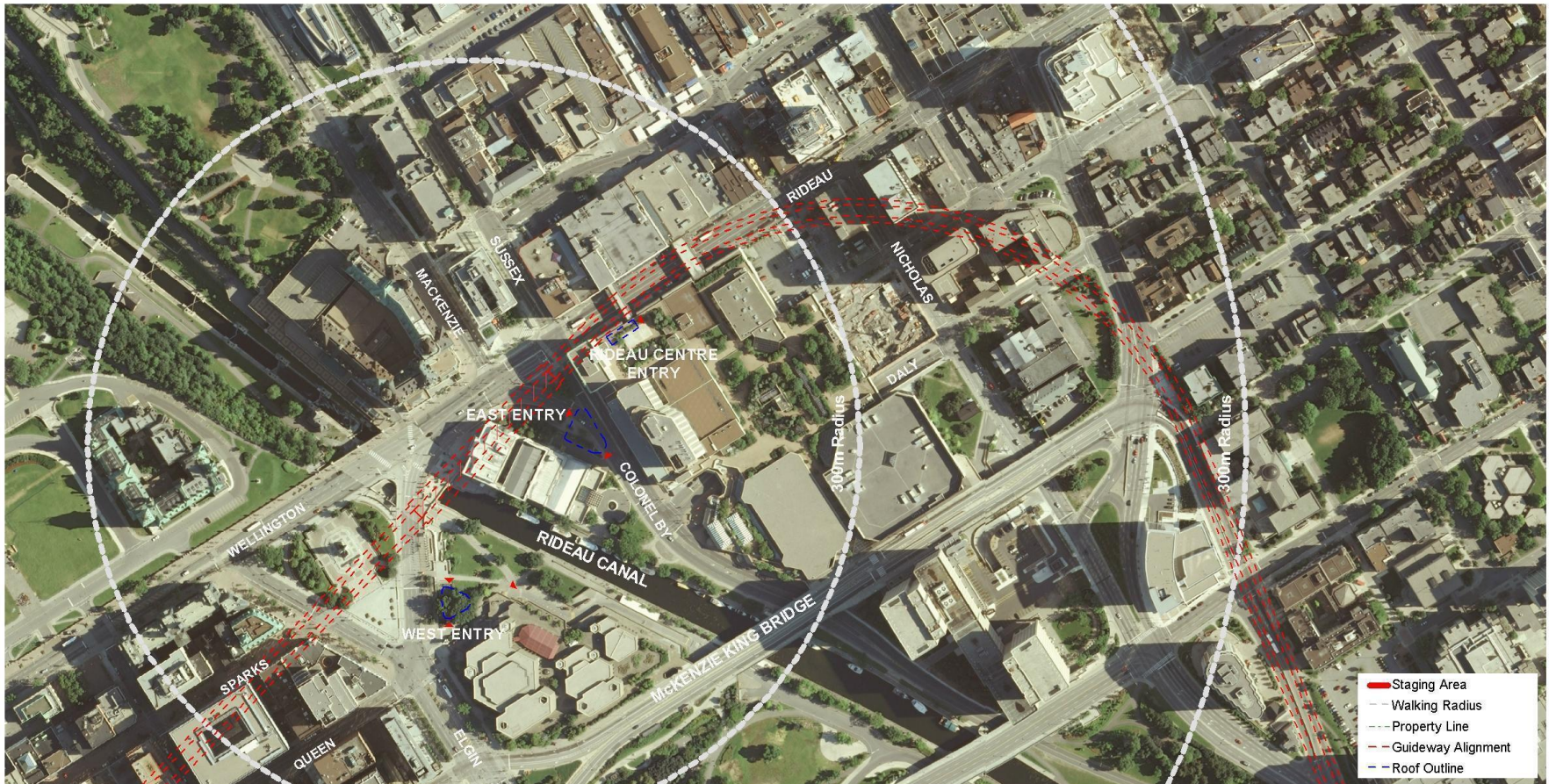
Rideau Station



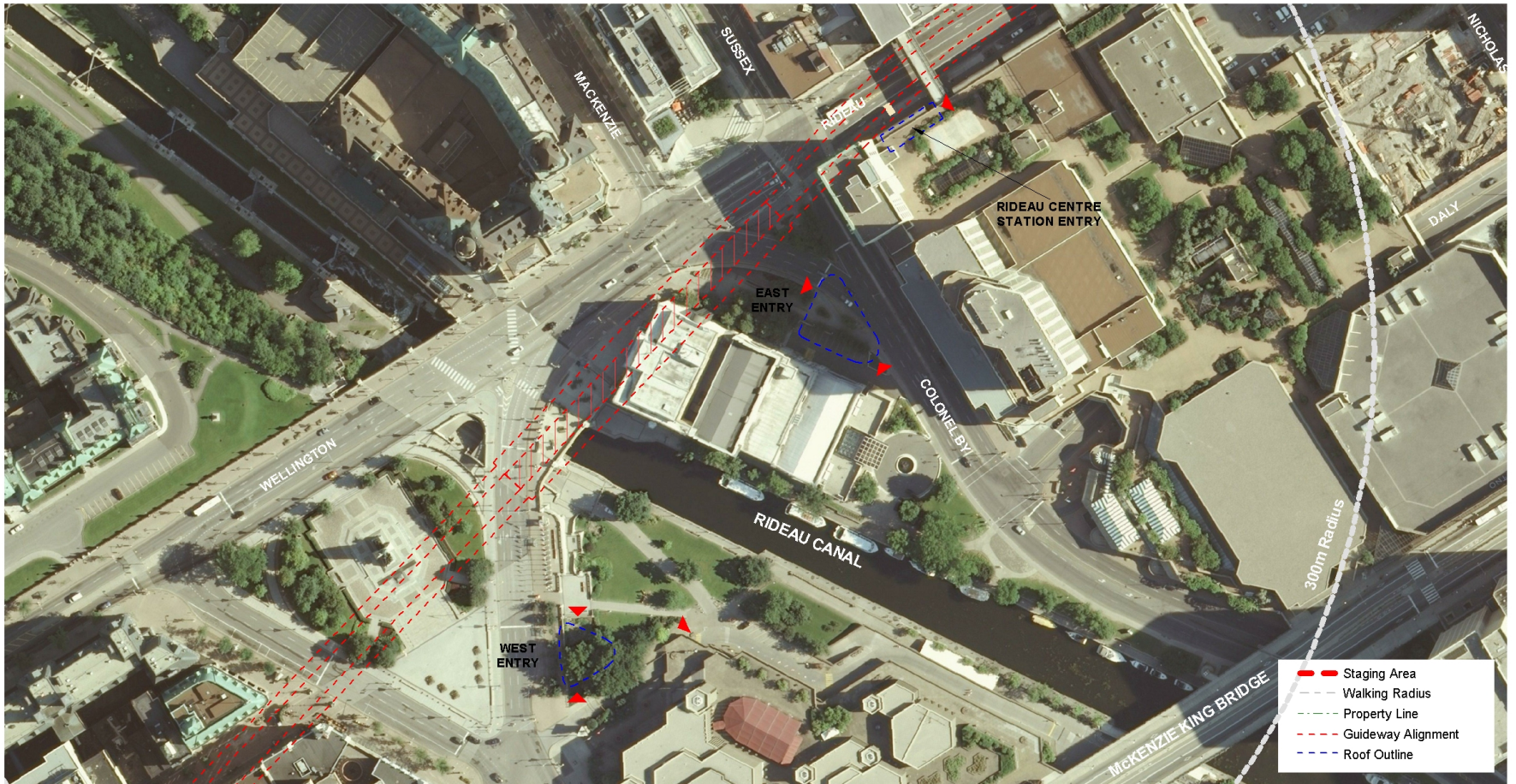




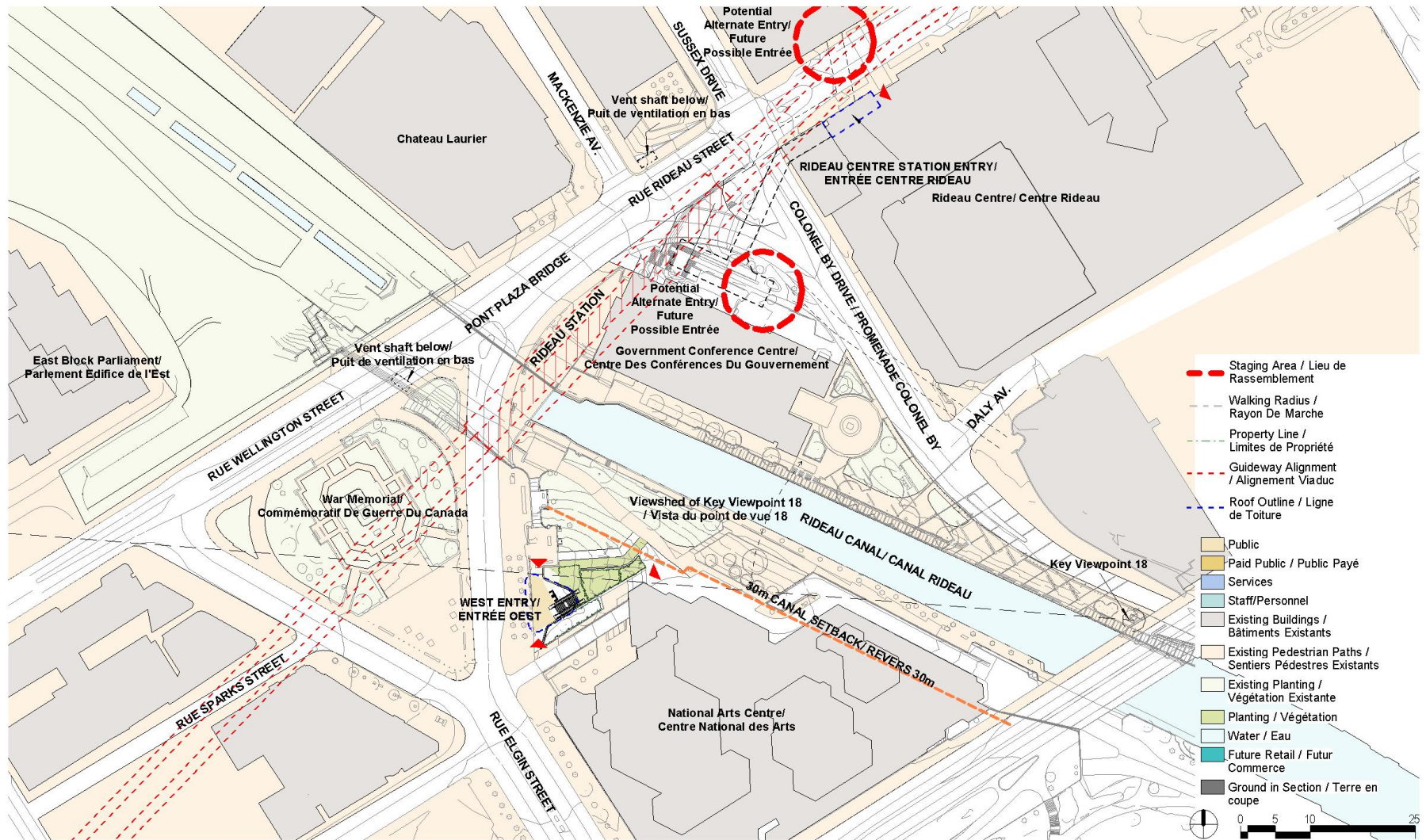
Rideau Station – Site Analysis – Pedestrian/Cycling Elements



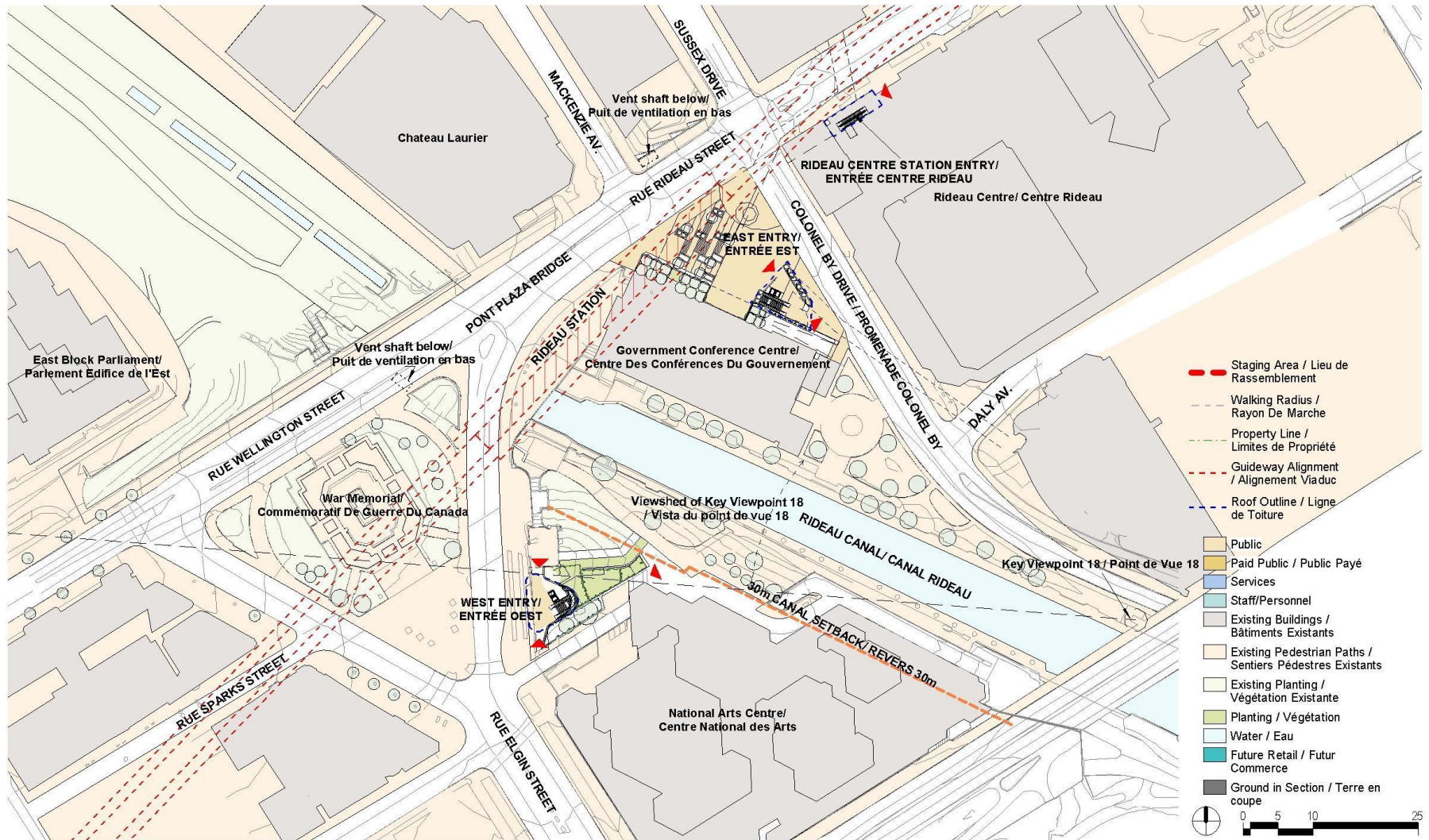
Rideau Station – Site Context



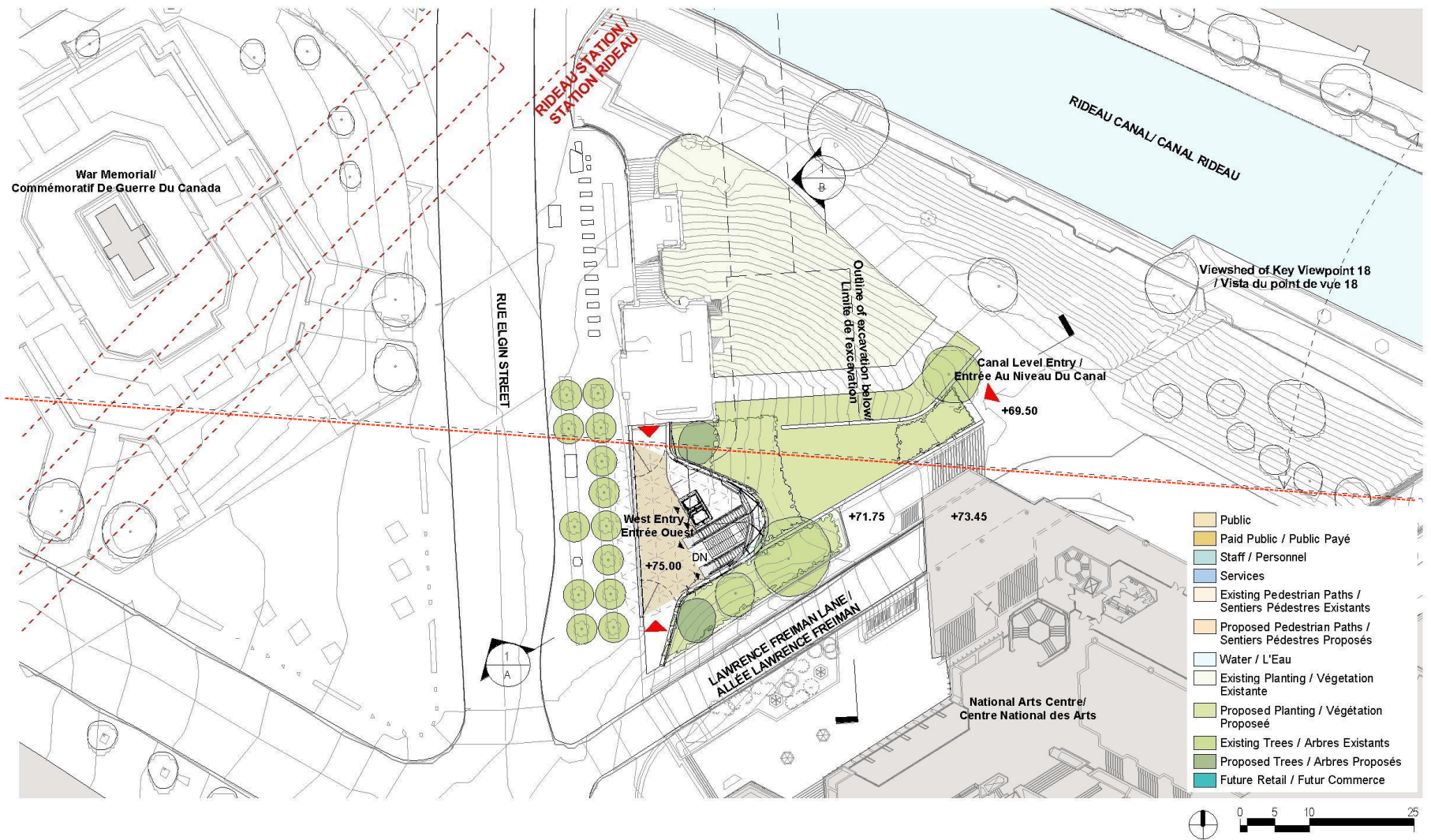
Rideau Station – Site Context – Aerial View



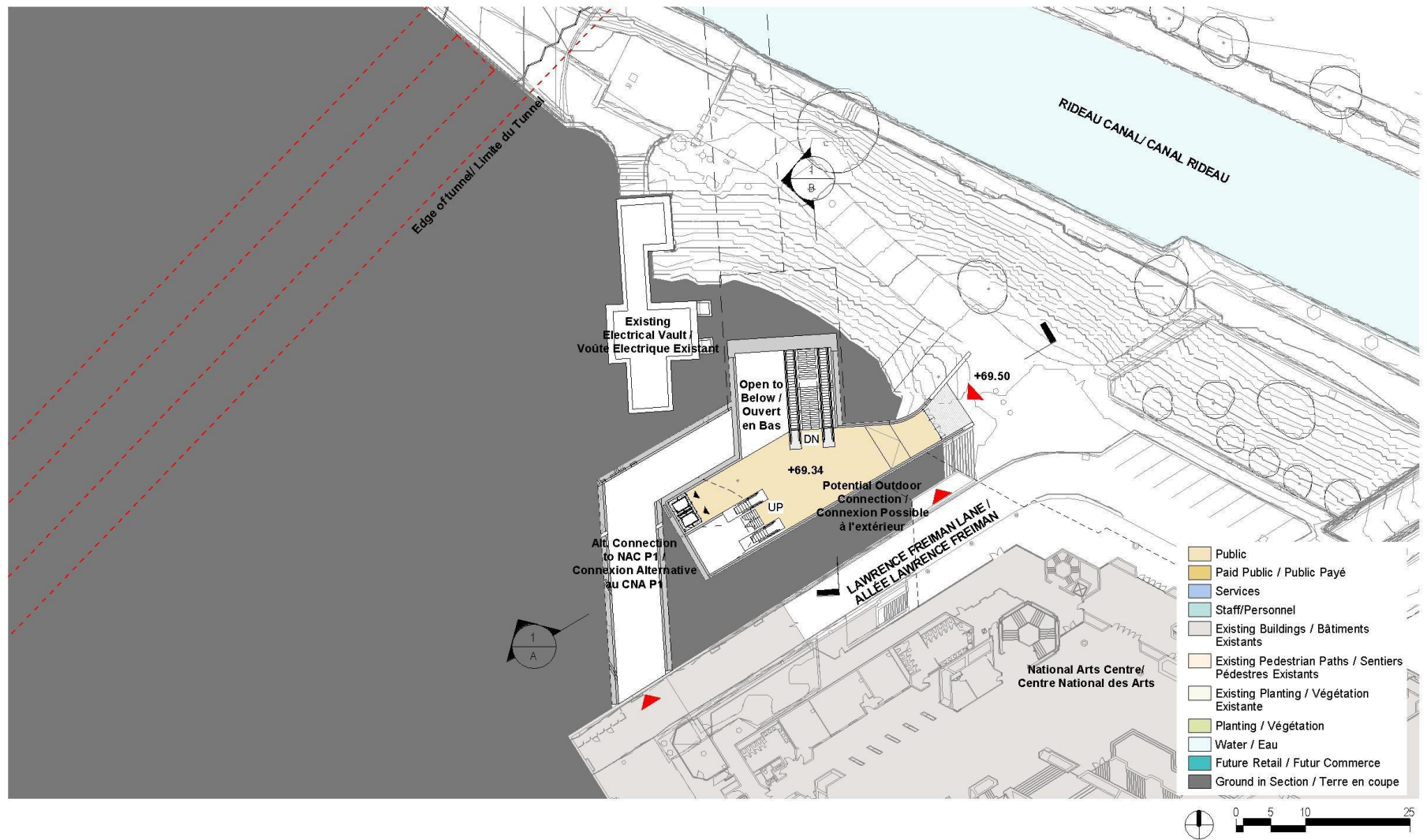
Rideau Station – Site Plan – Initial Build Out



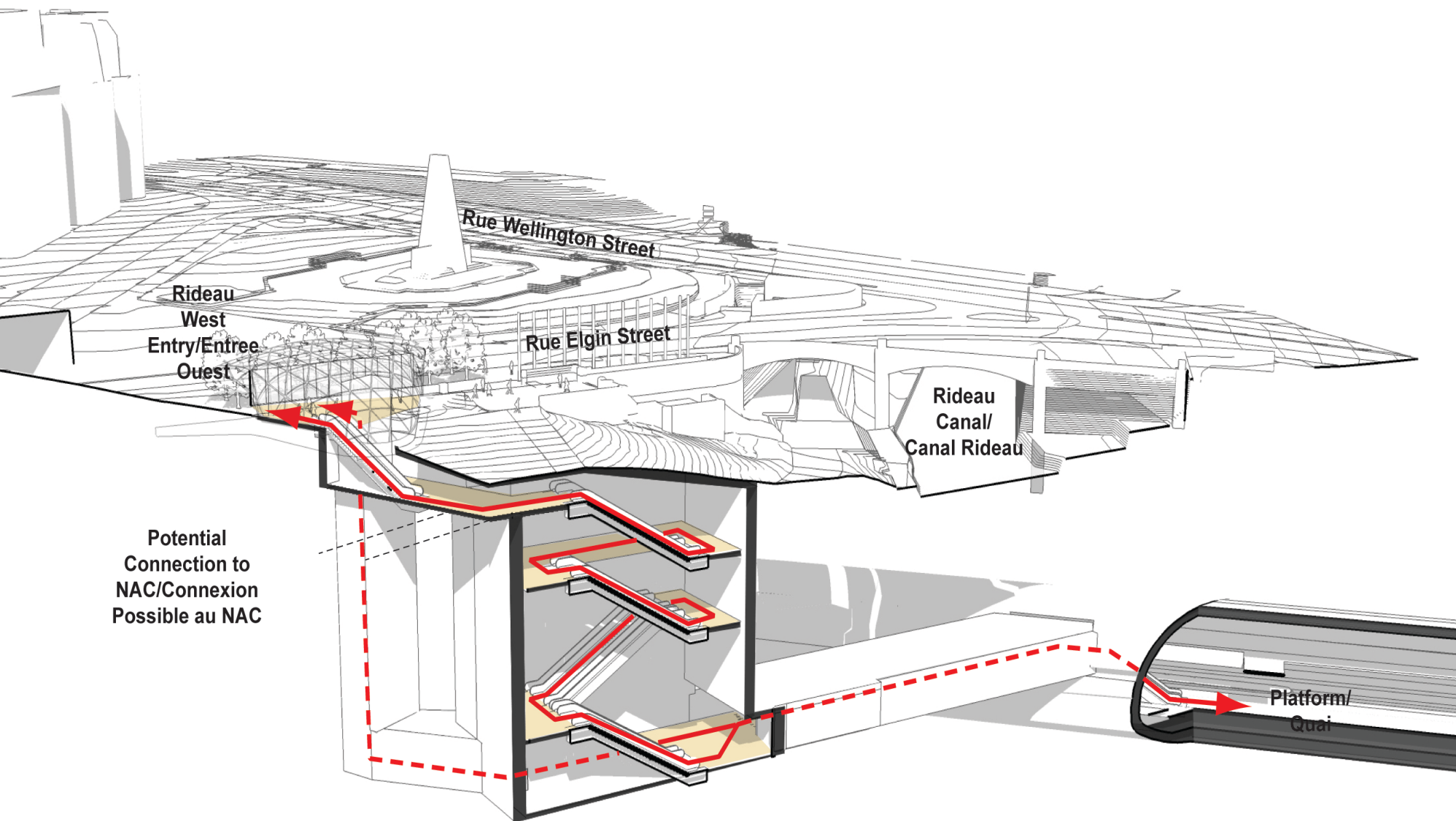
Rideau Station – Site Plan – Full Build Out



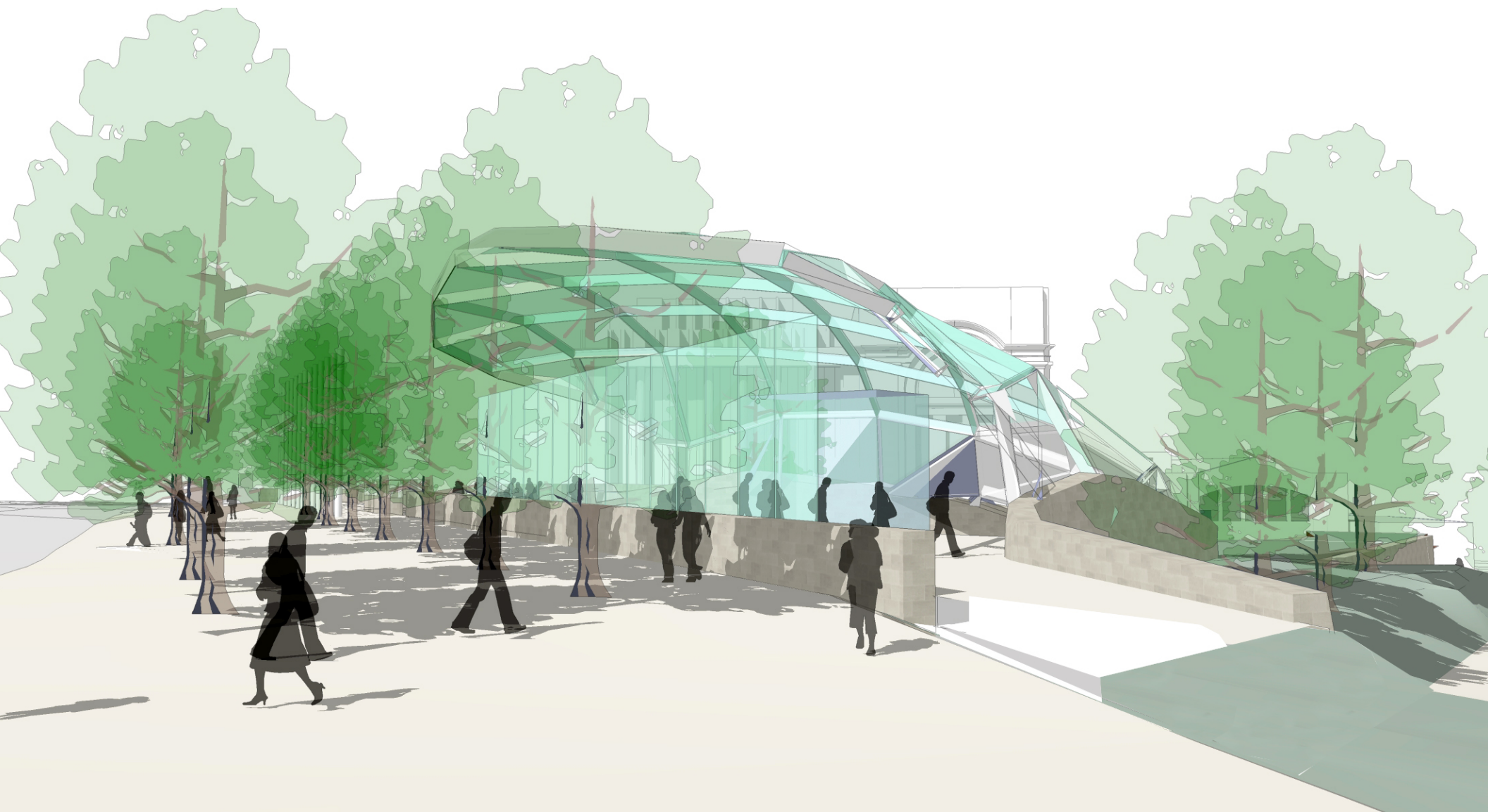
Rideau Station – West Entry Plan



Rideau Station – Mezzanine Level Plan – Canal Entry Level



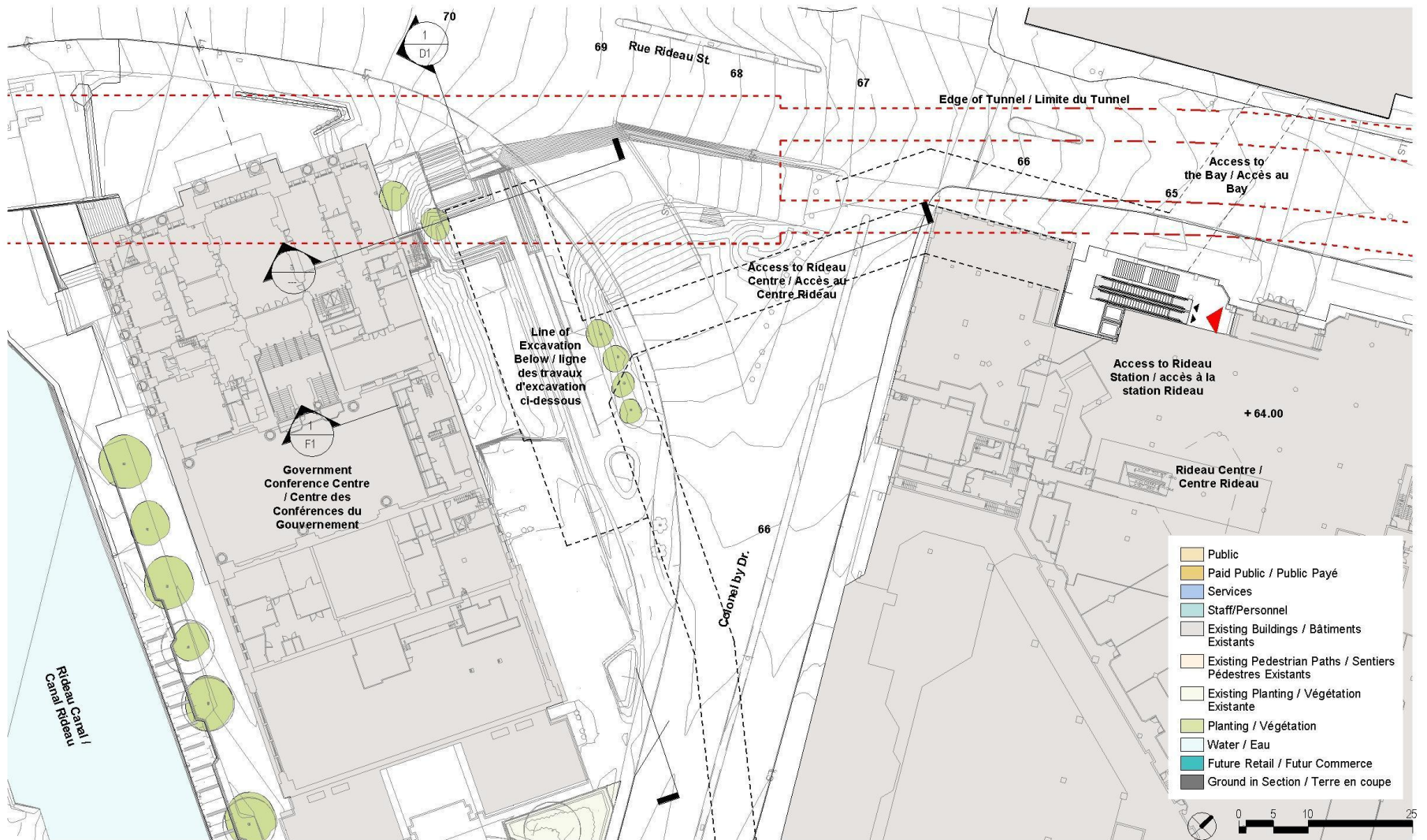
Rideau Station – West Station Entry Axonometric View



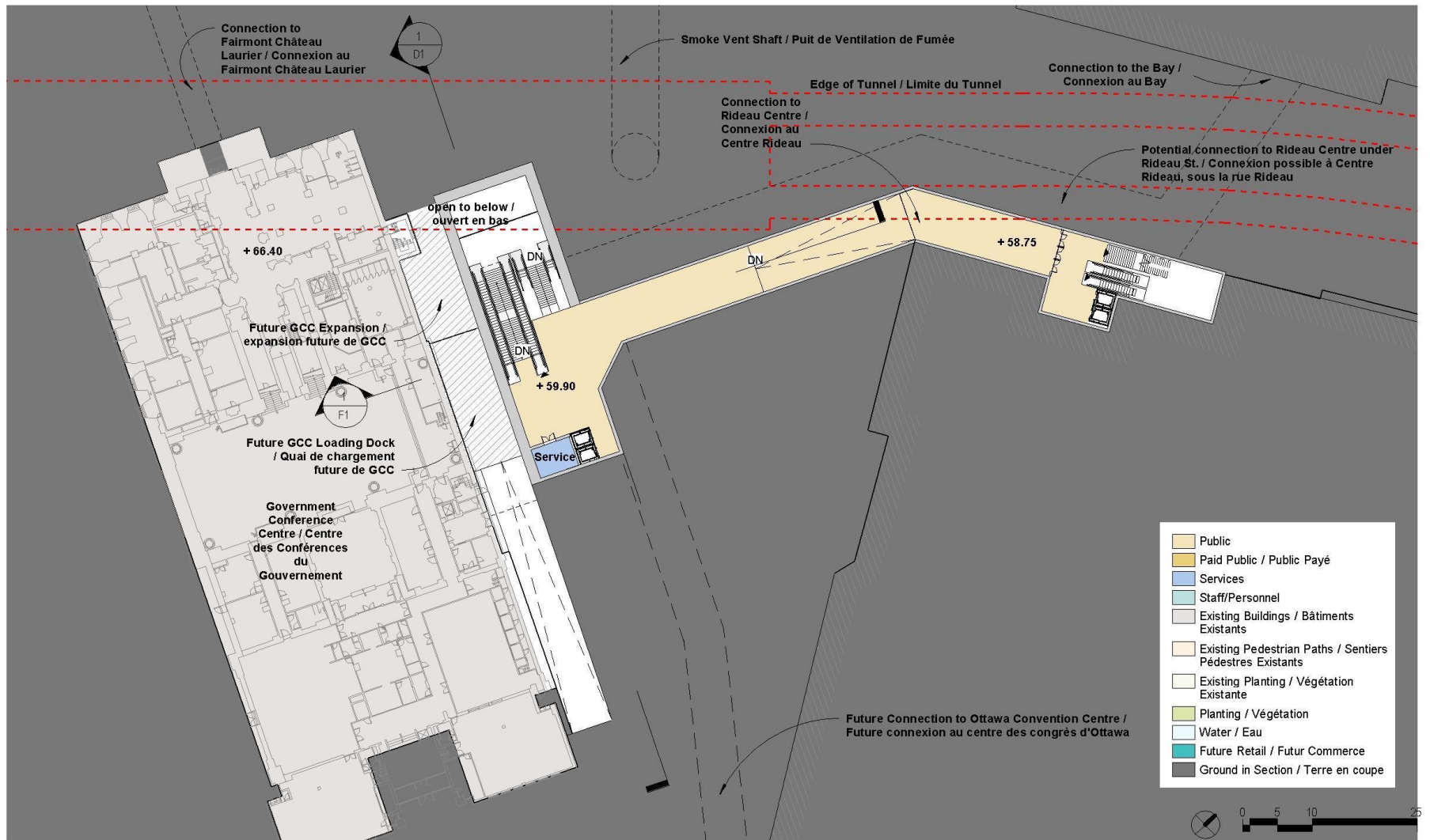
Rideau Station – West Station Entry Street Level View



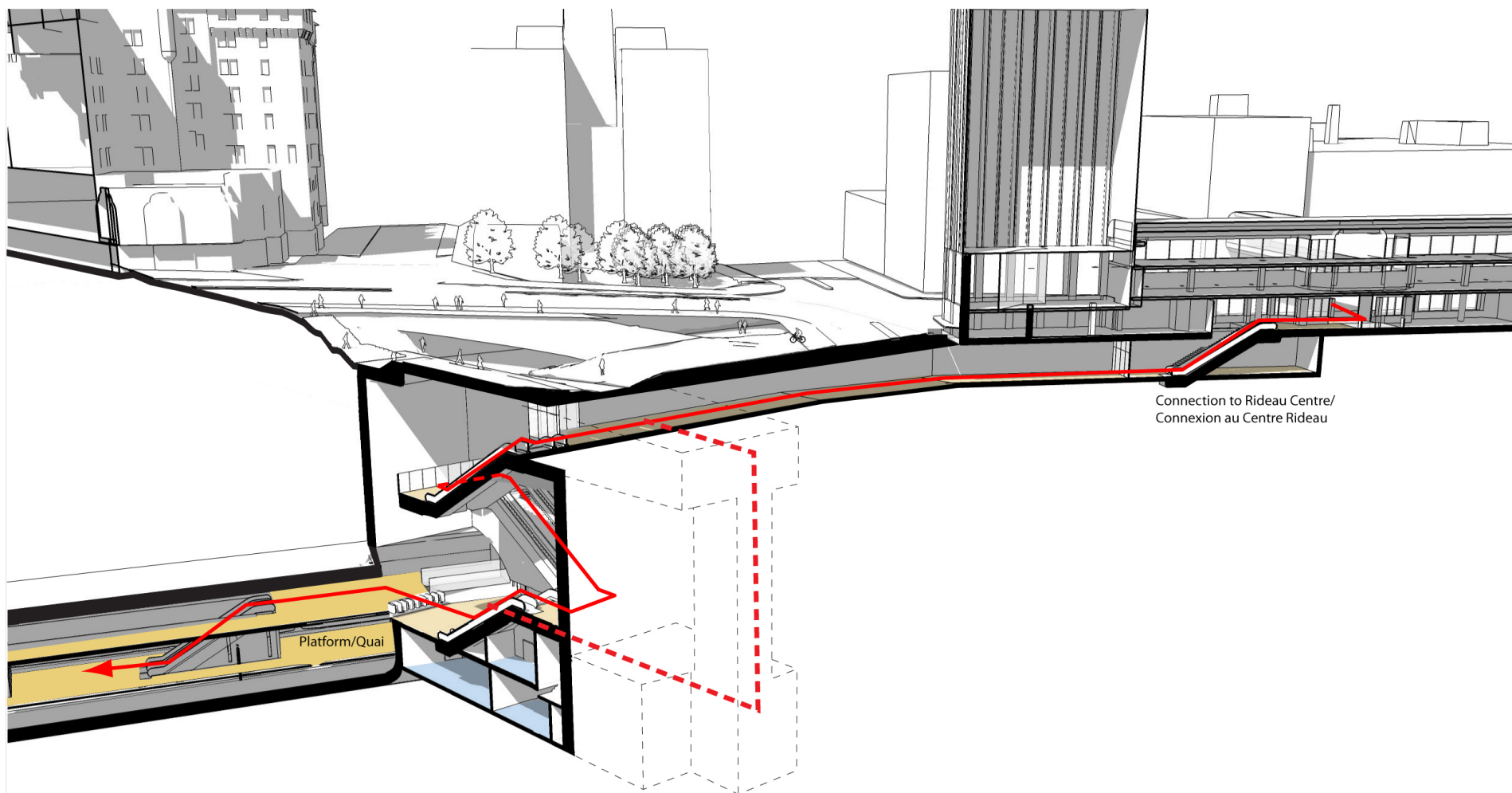
Rideau Station – West Station Canal Level View



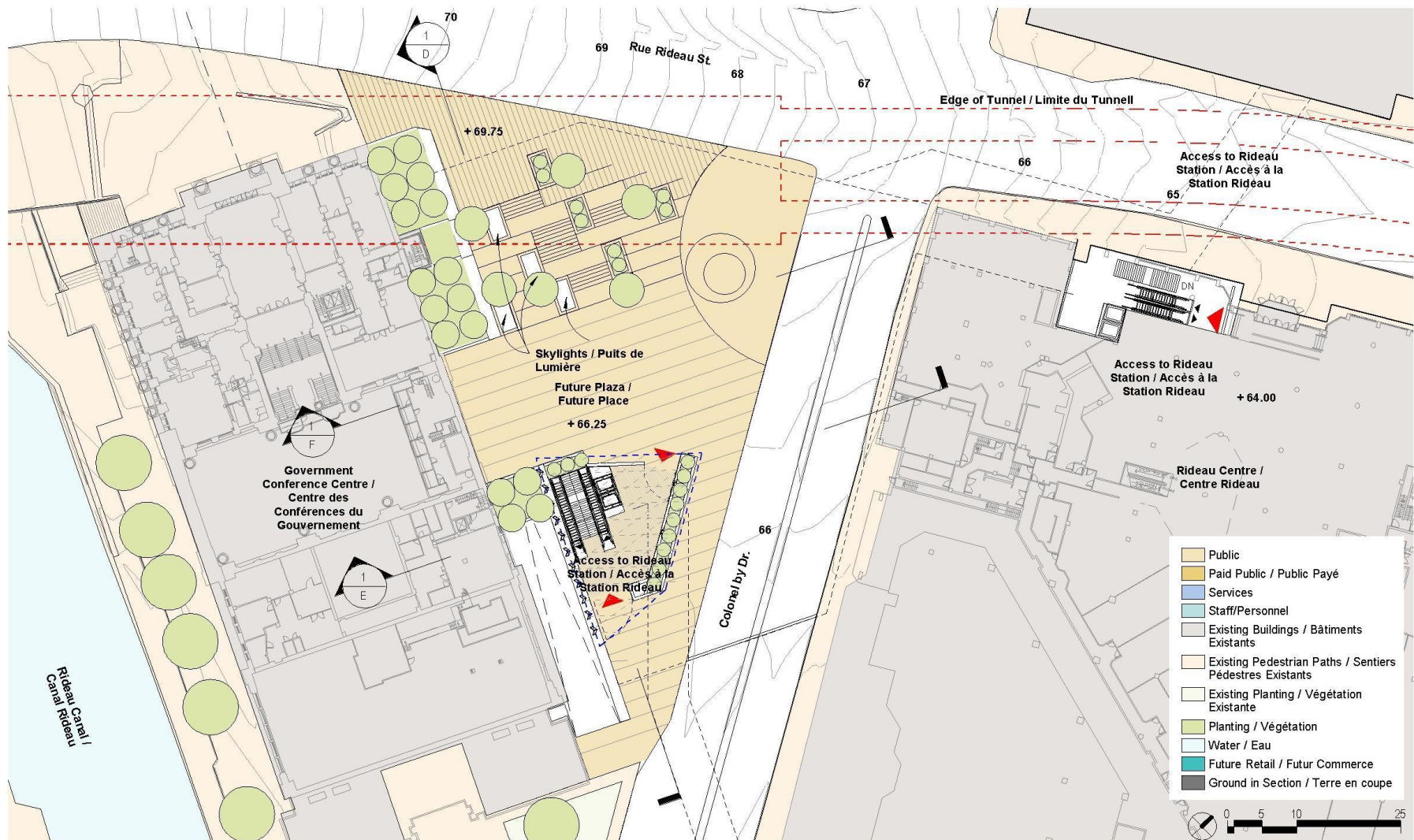
Rideau Station – Rideau Centre Entry Plan



Rideau Station – Rideau Centre Entry Mezzanine Plan

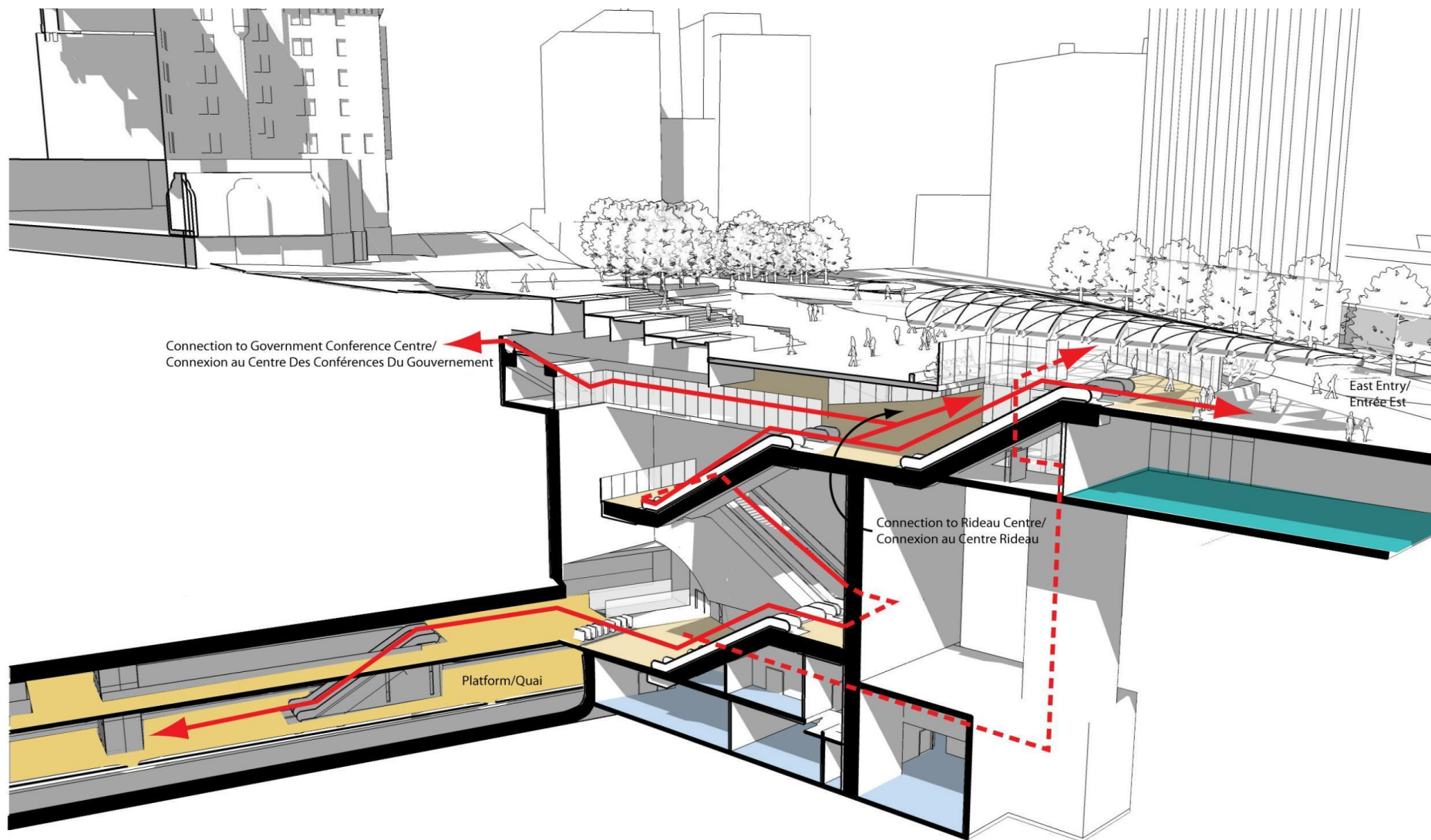


Rideau Station – East Station Entry – Axonometric View

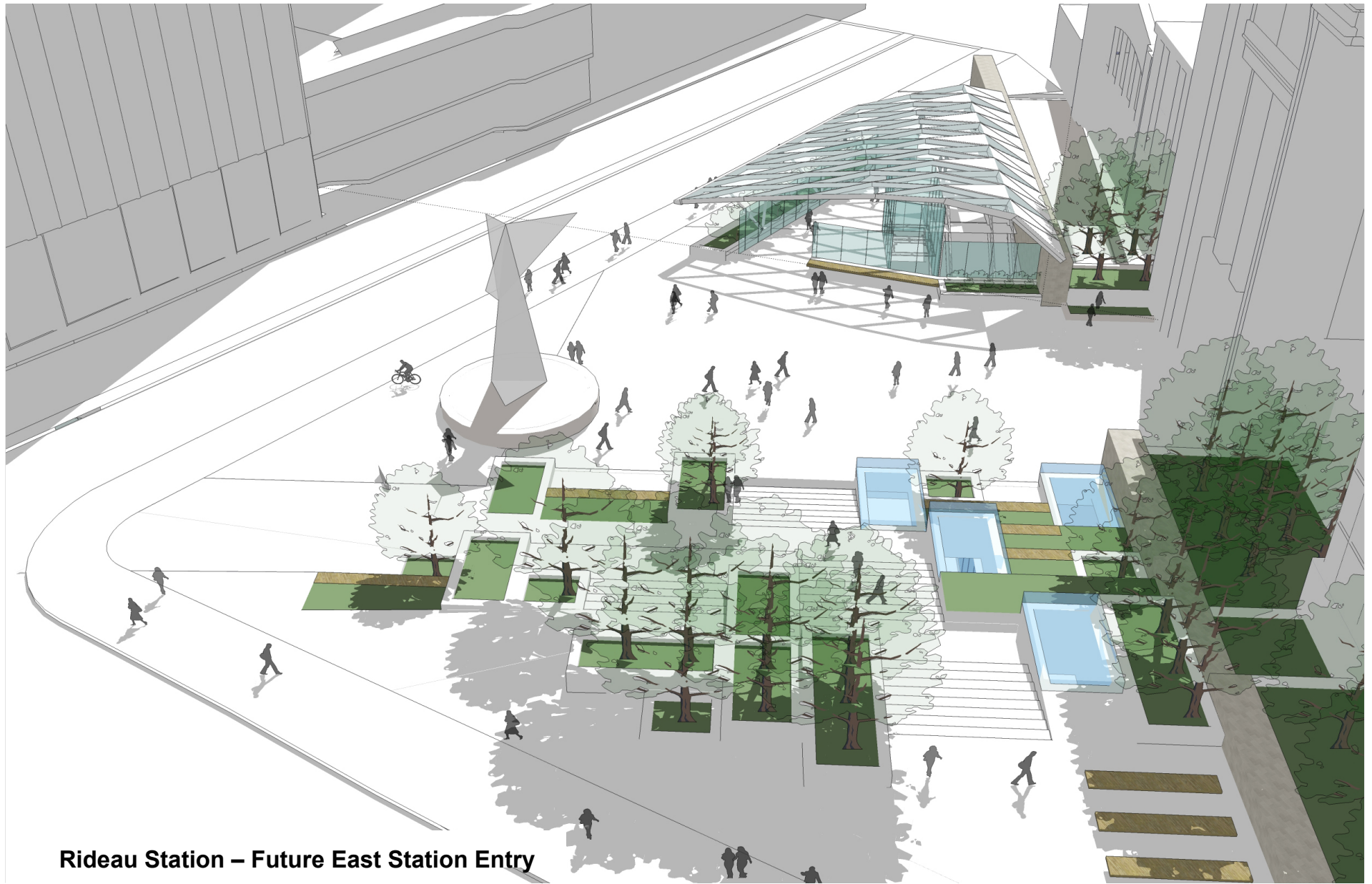


Rideau Station – Future East Entry Plan

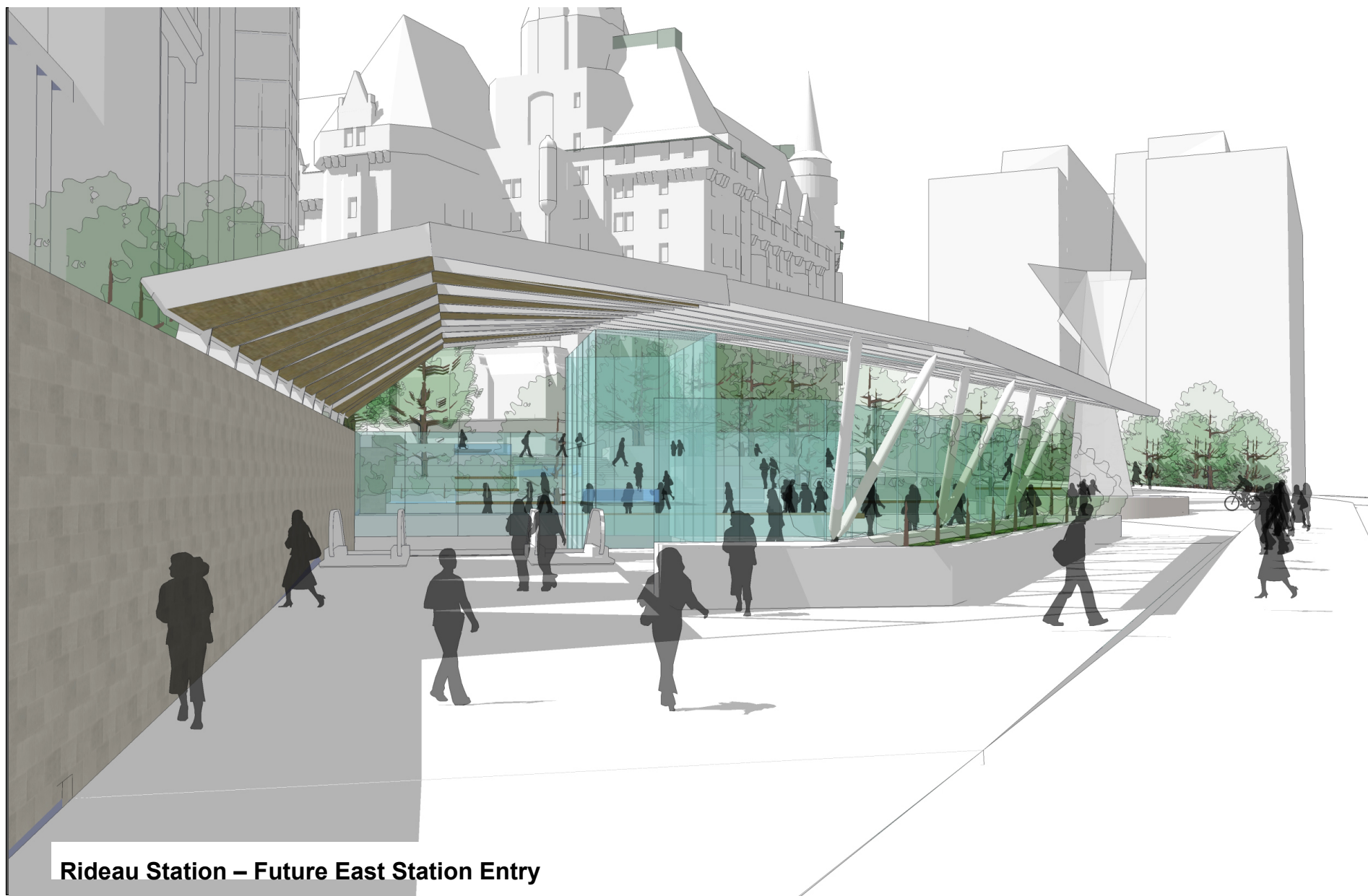




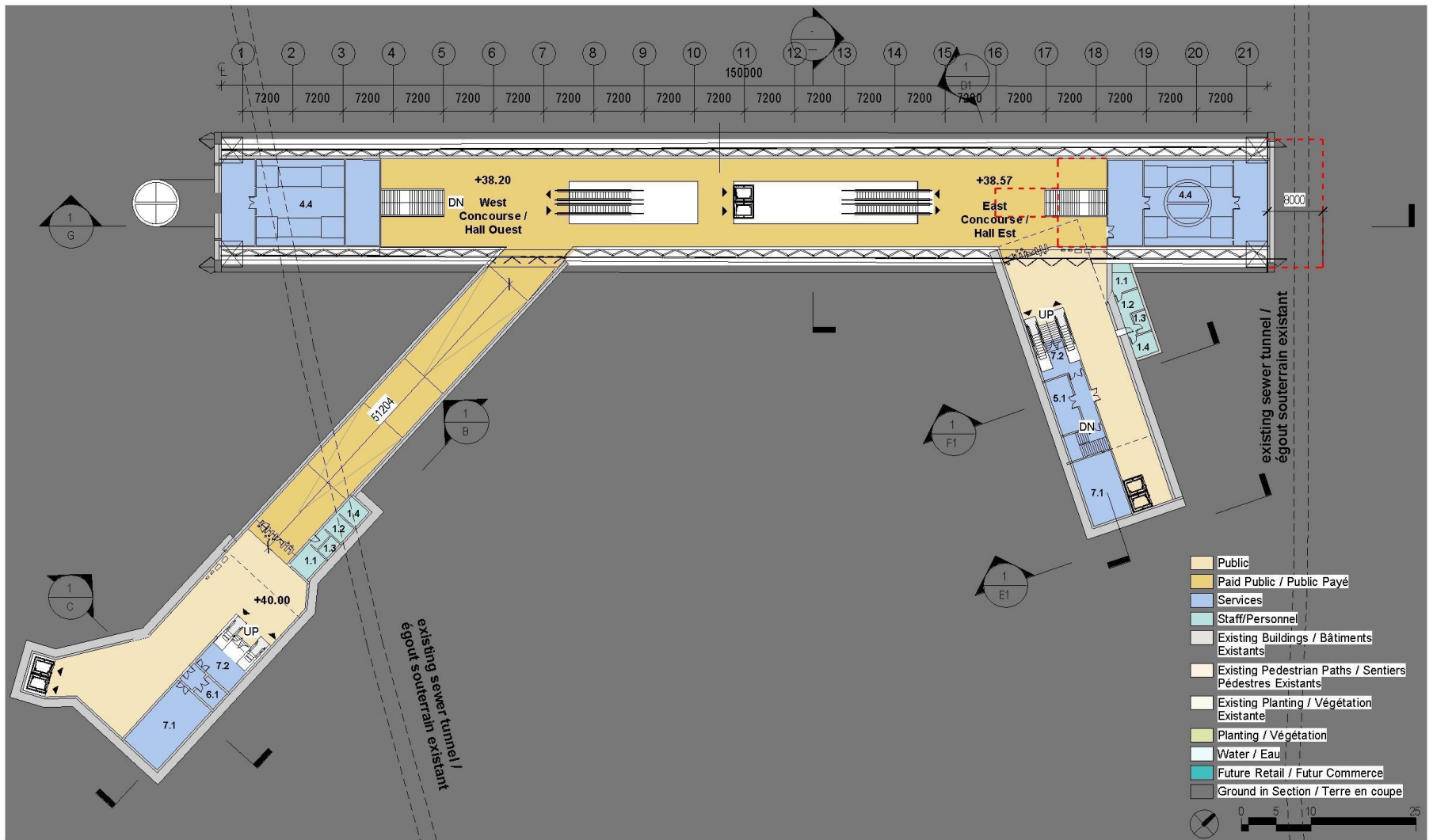
Rideau Station – Future East Station Entry Axonometric View



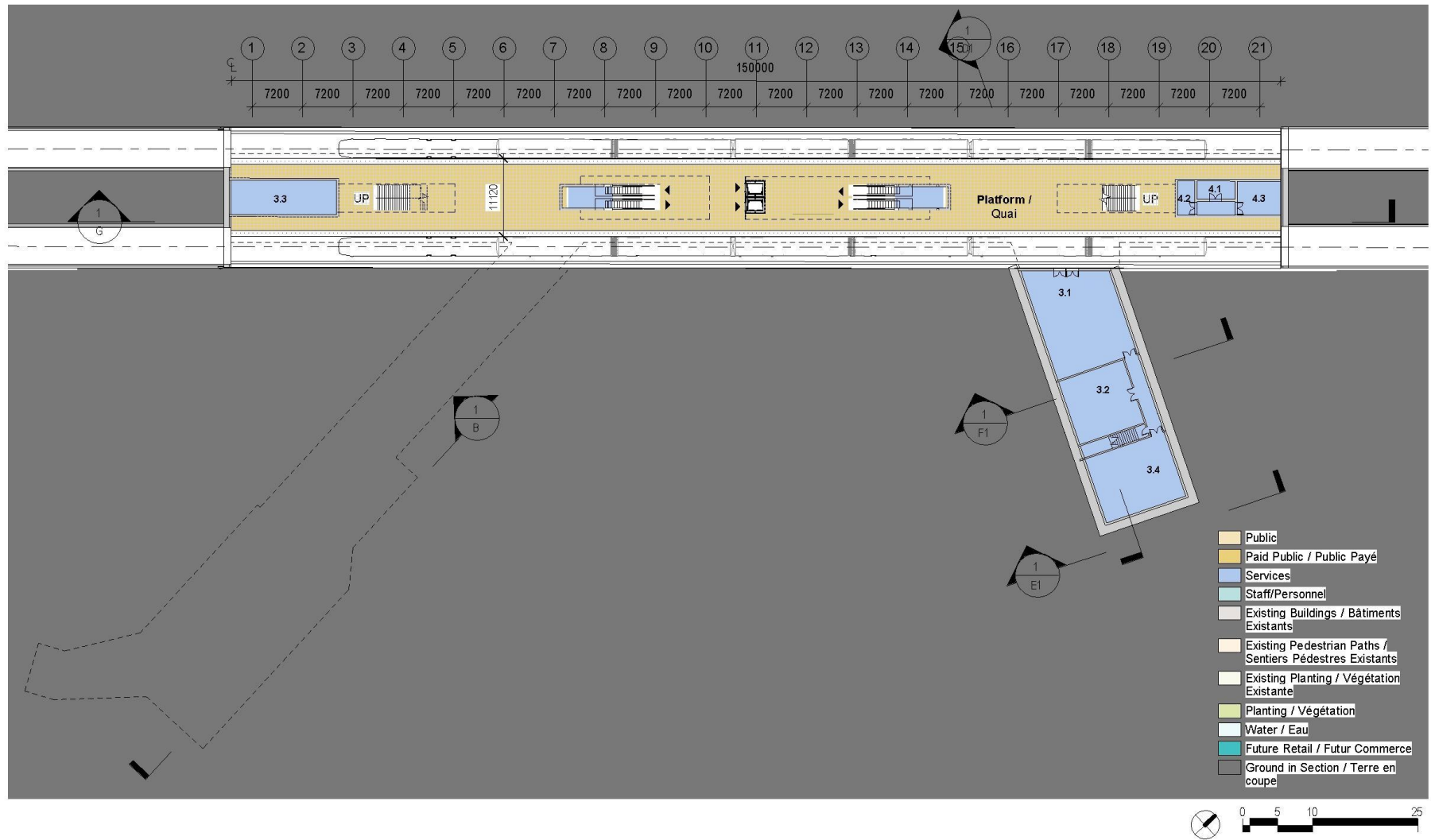
Rideau Station – Future East Station Entry



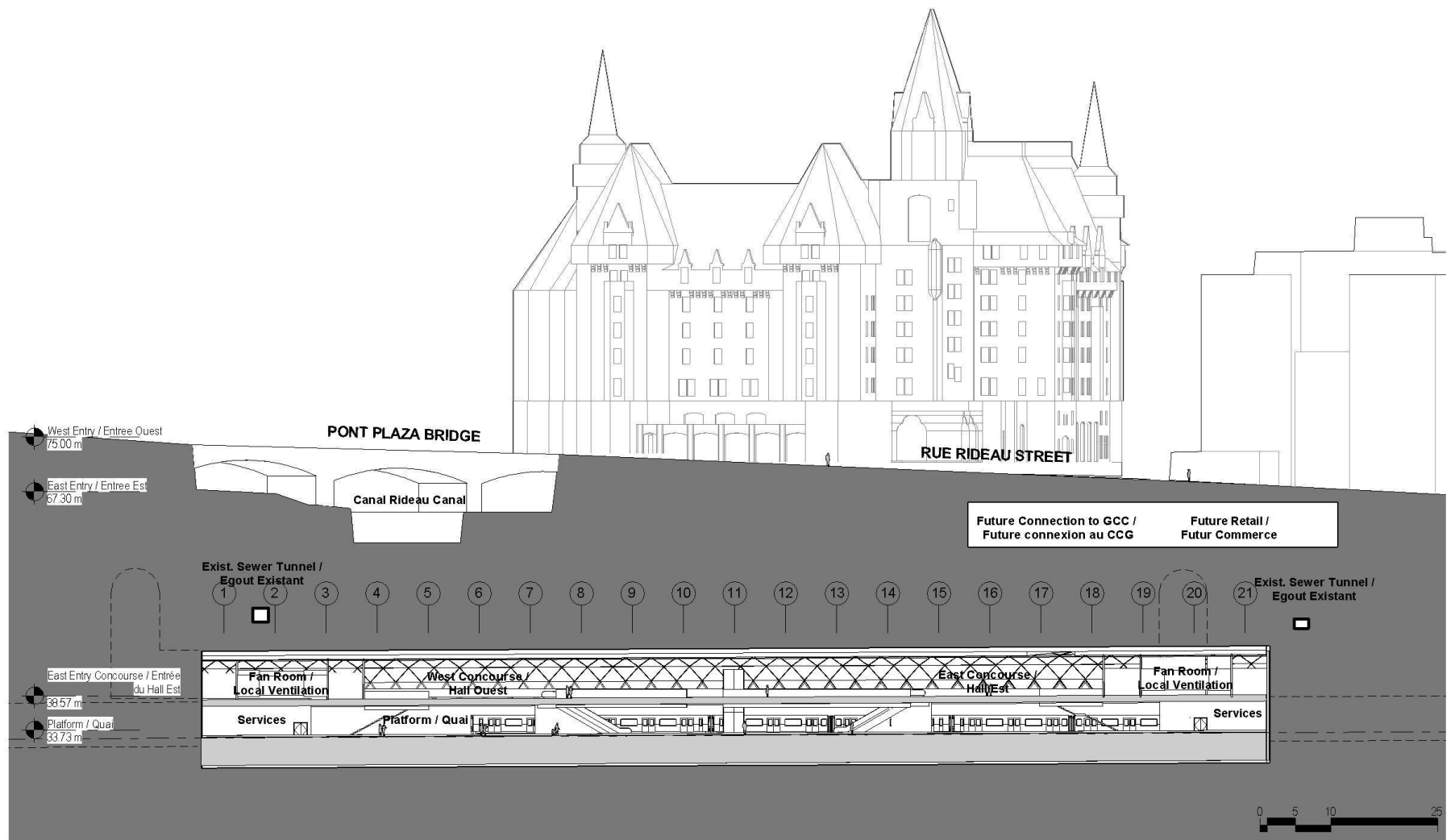
Rideau Station – Future East Station Entry



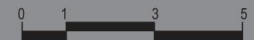
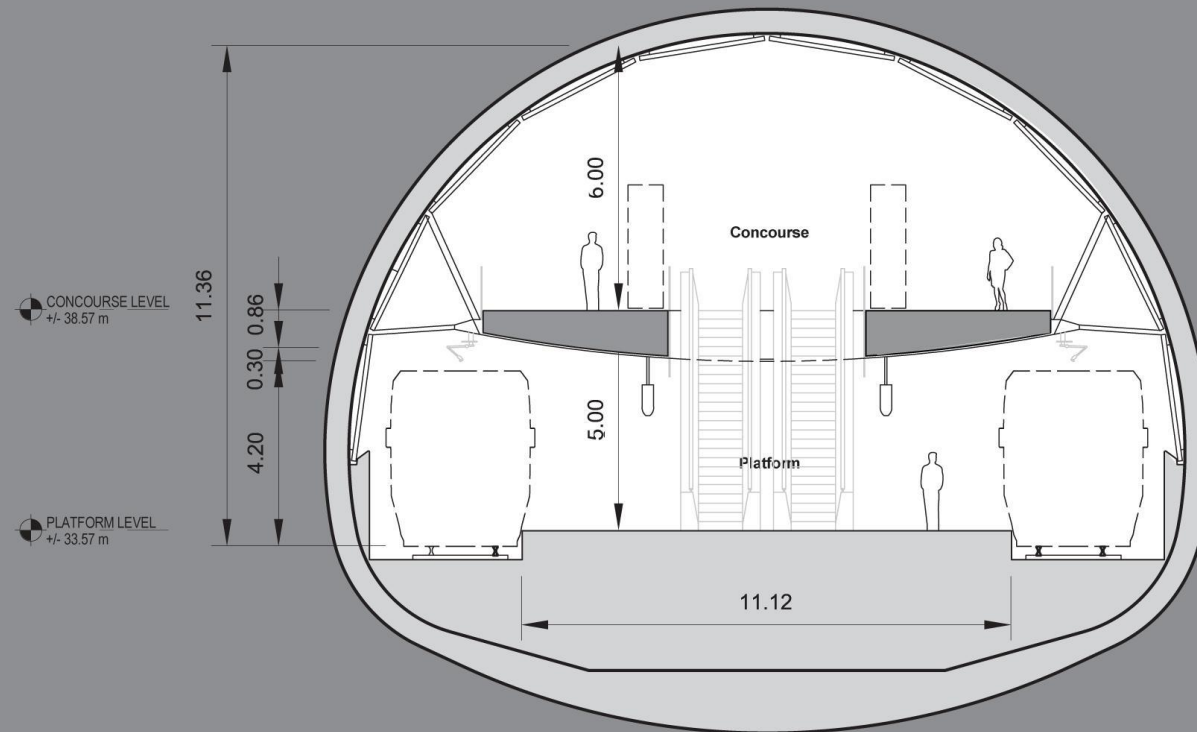
Rideau Station – Concourse Level Plan



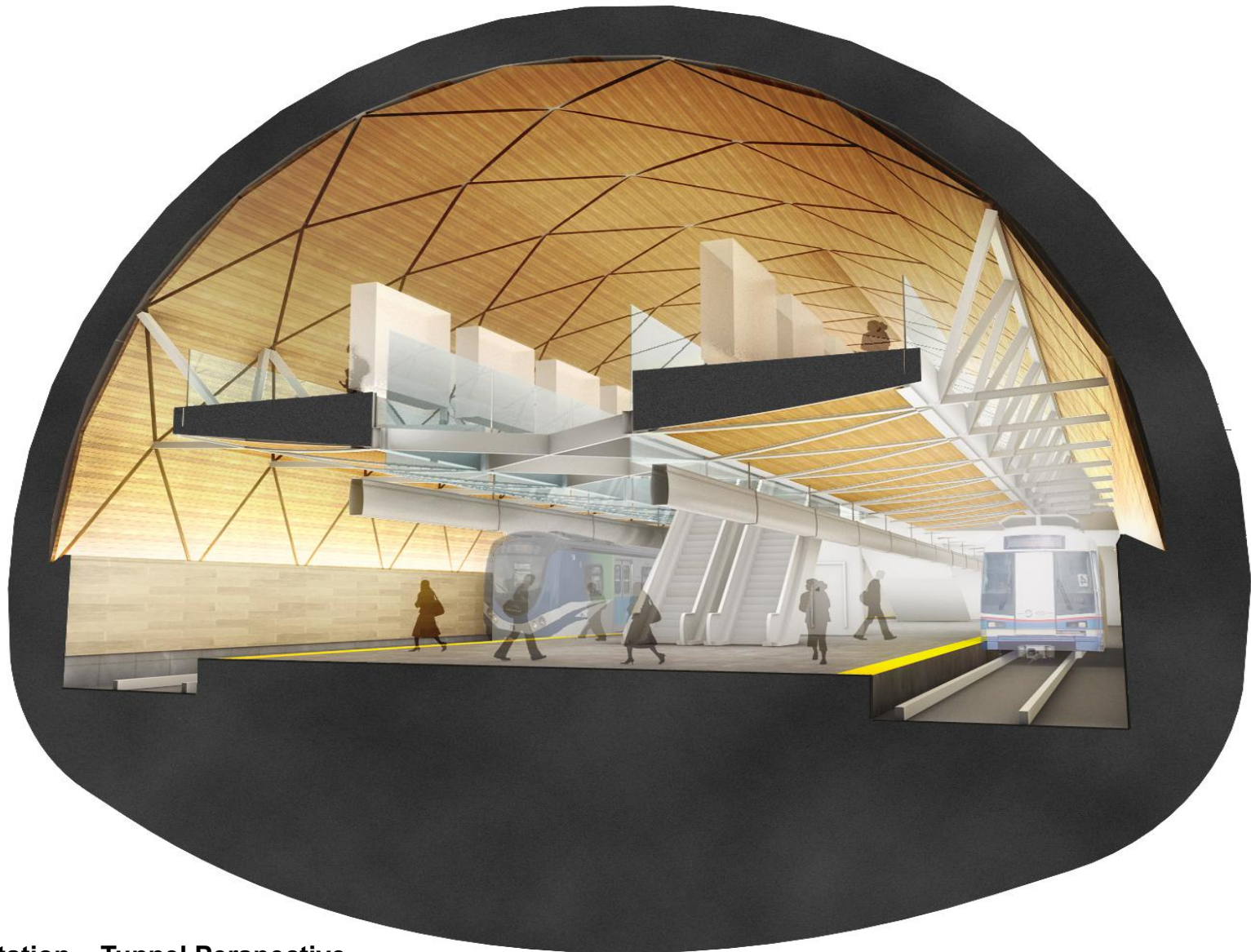
Rideau Station – Platform Level Plan



Rideau Station – Longitudinal Section



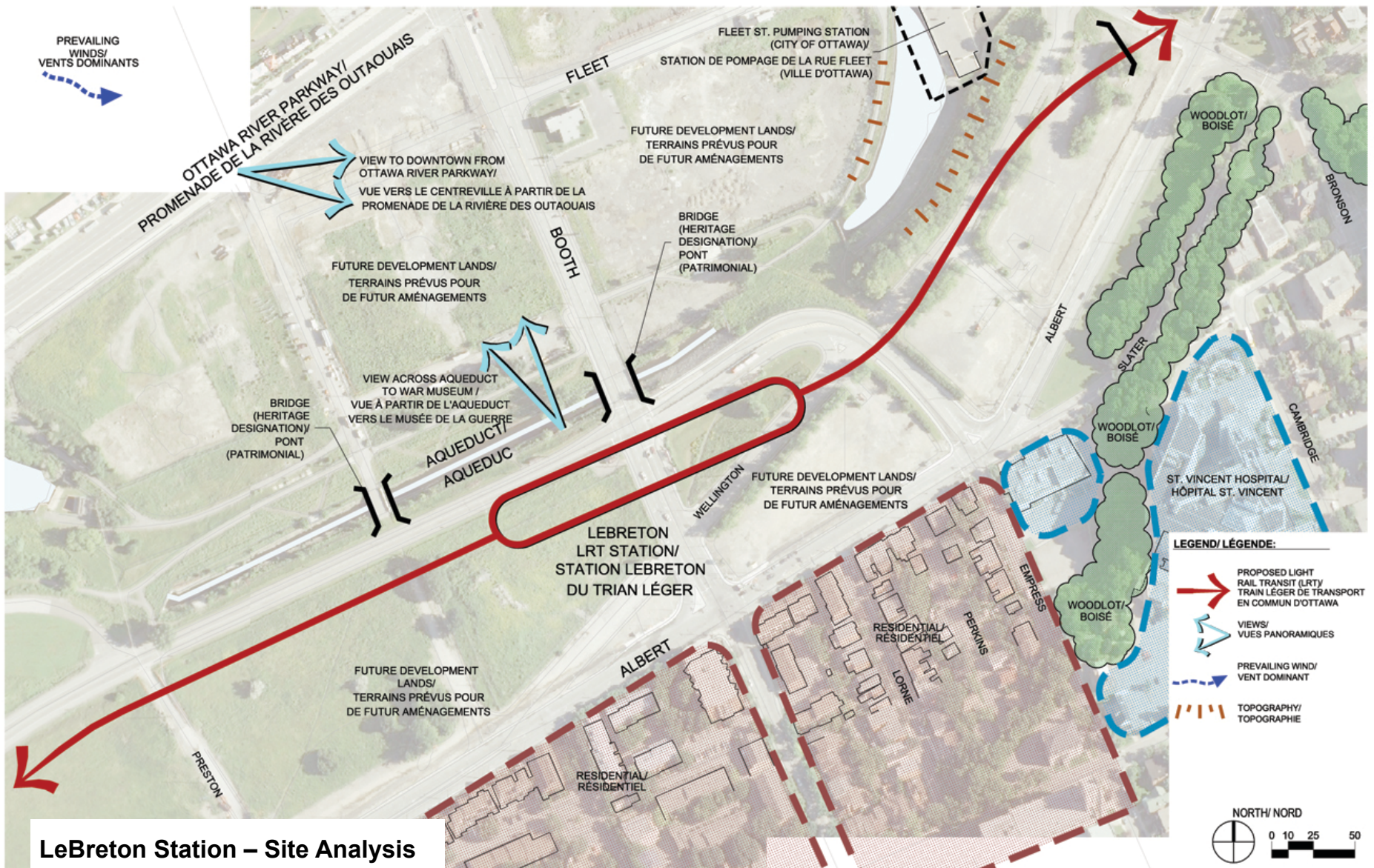
Rideau Station – Tunnel Cross Section



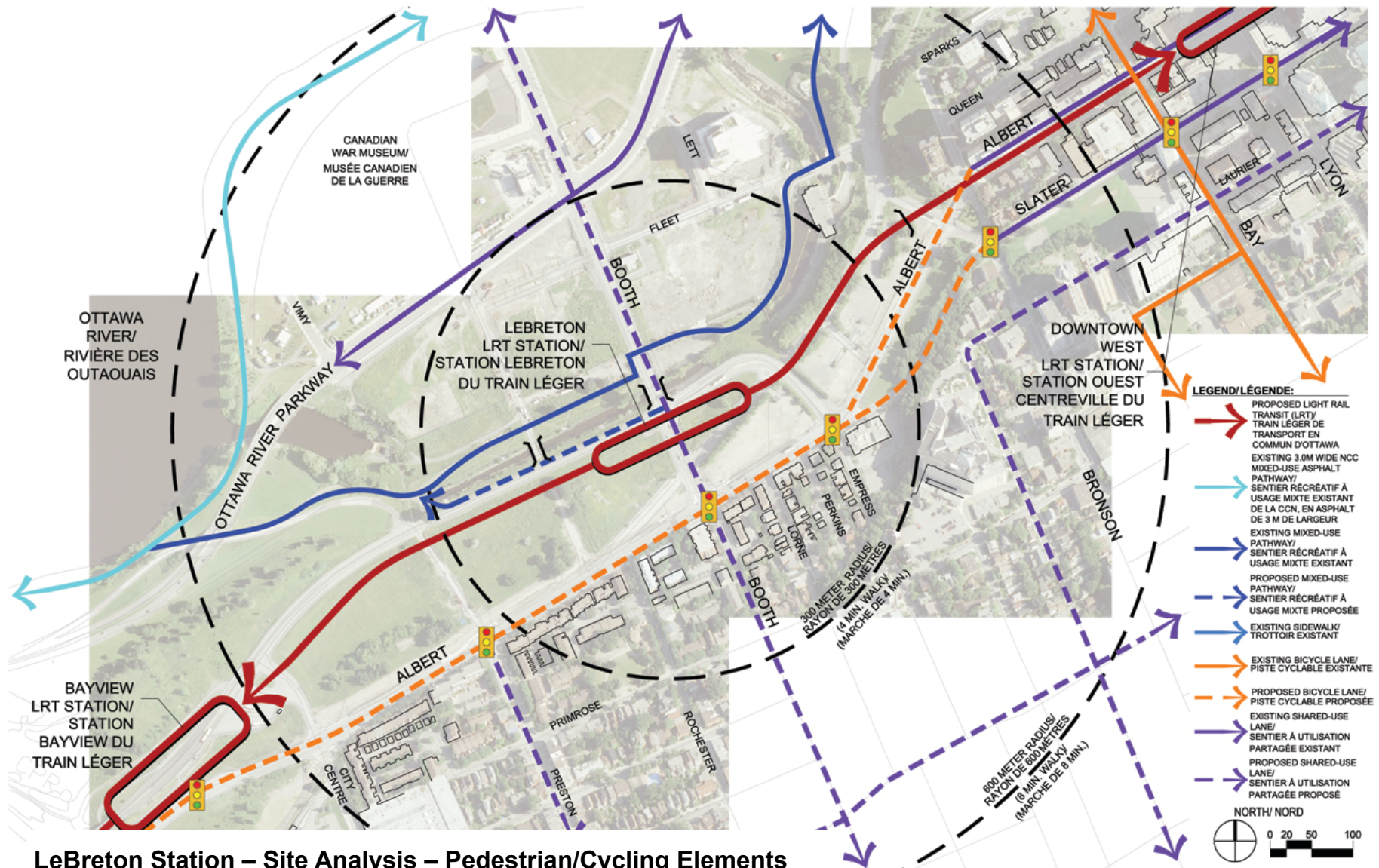
Rideau Station – Tunnel Perspective

LeBreton Station

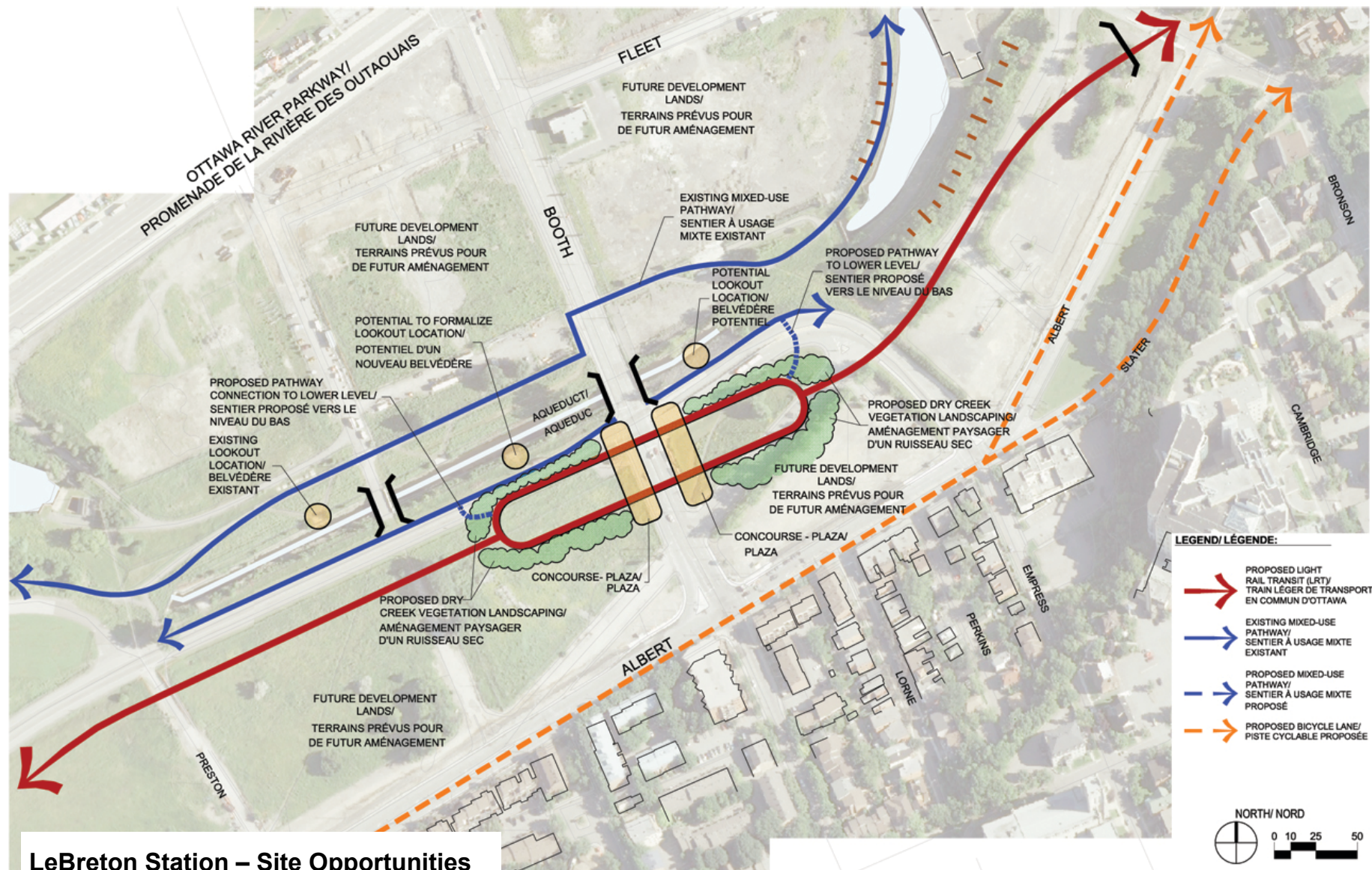


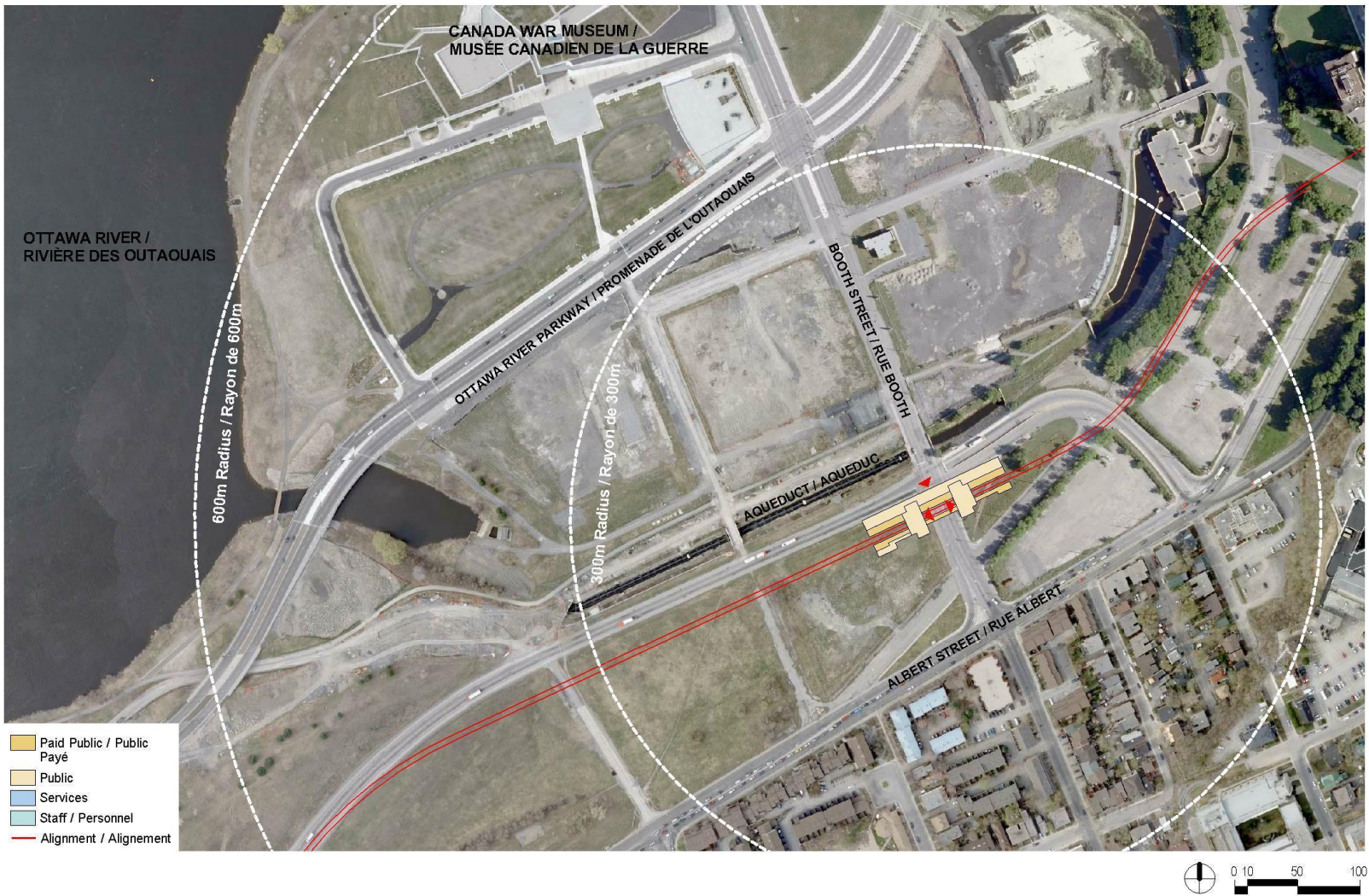


LeBreton Station – Site Analysis

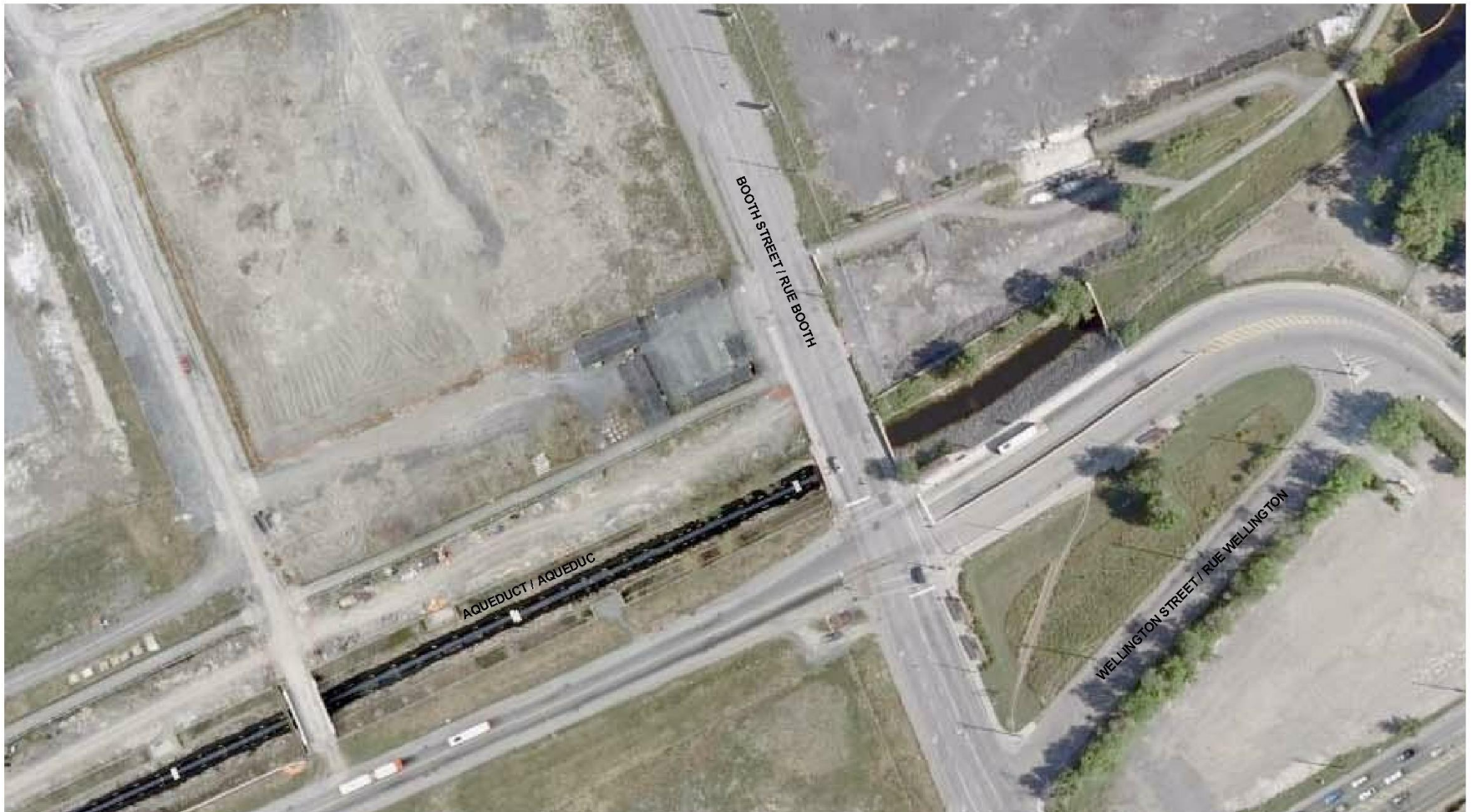


LeBreton Station – Site Analysis – Pedestrian/Cycling Elements

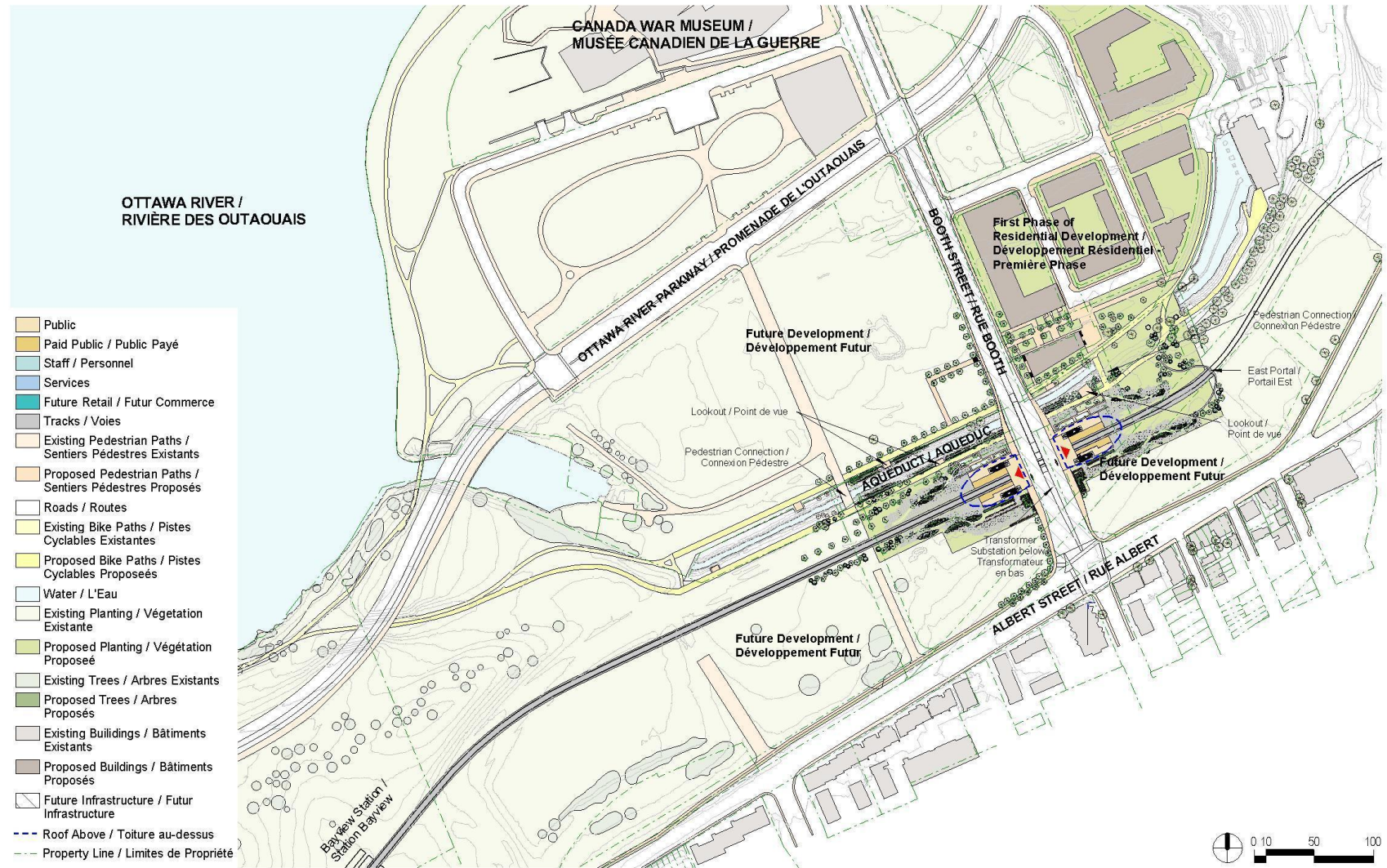




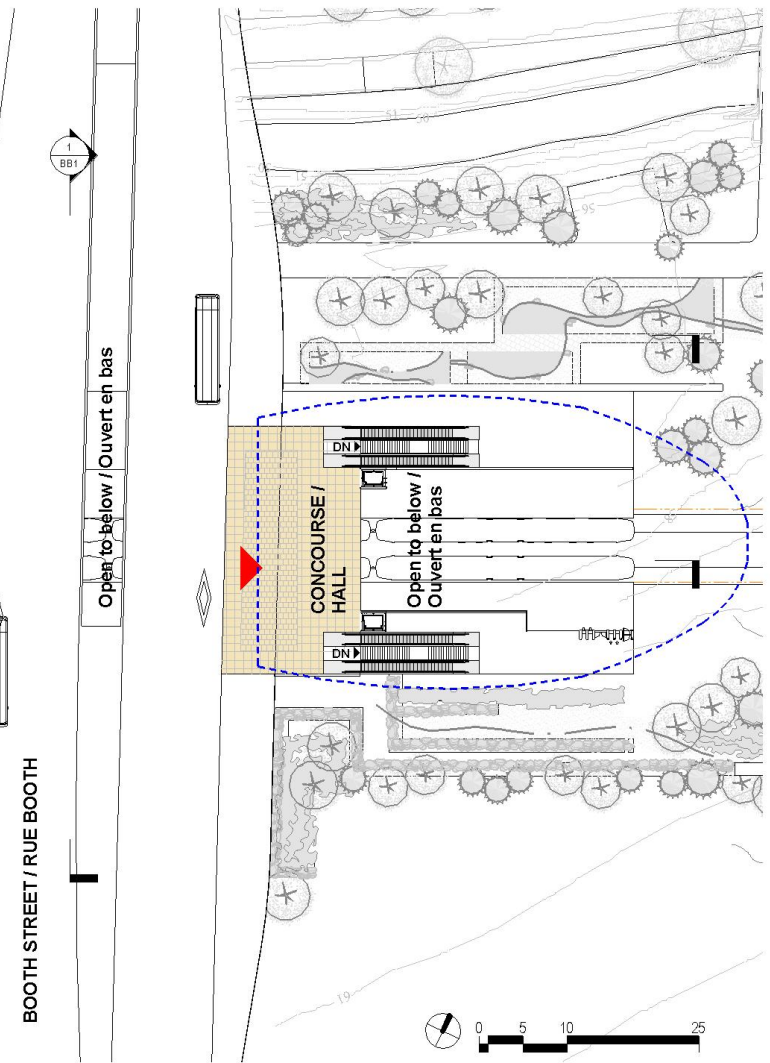
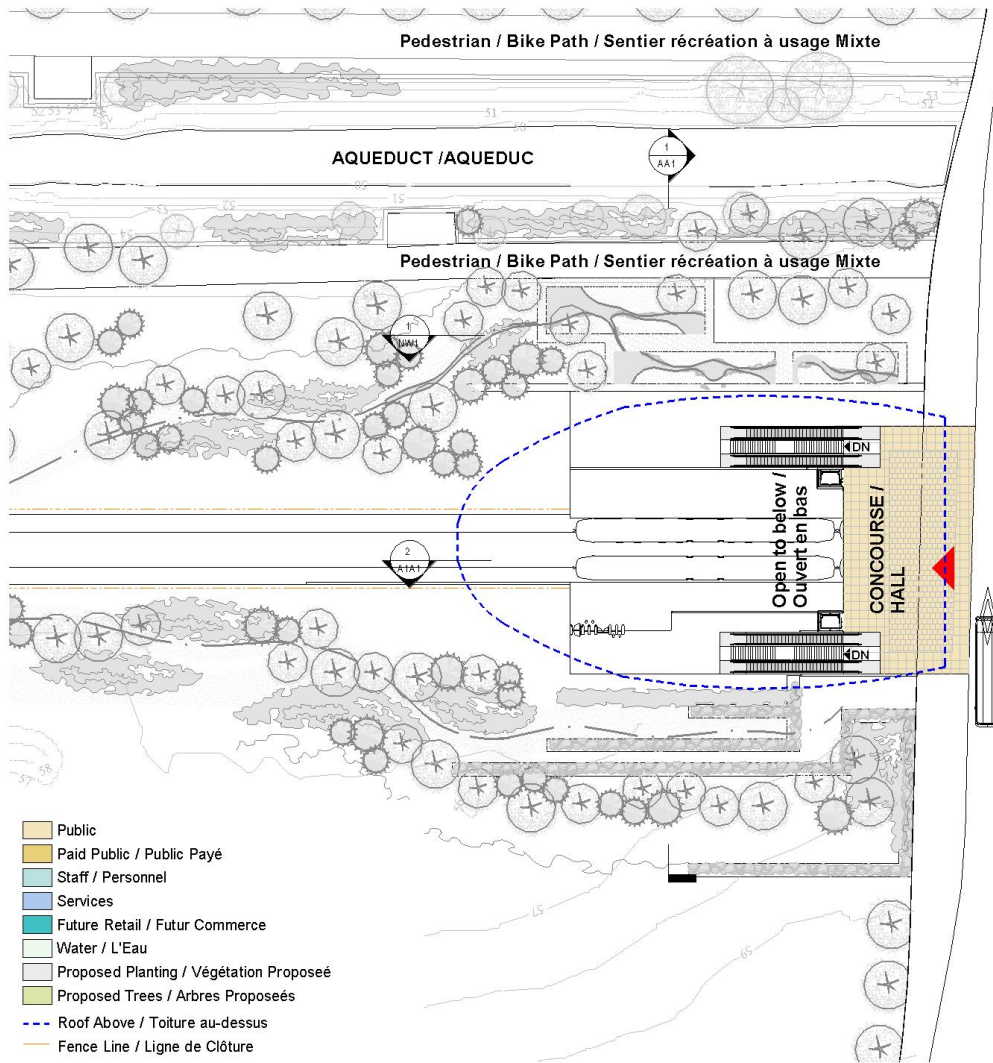
LeBreton Station – Site Context



LeBreton Station – Existing Conditions

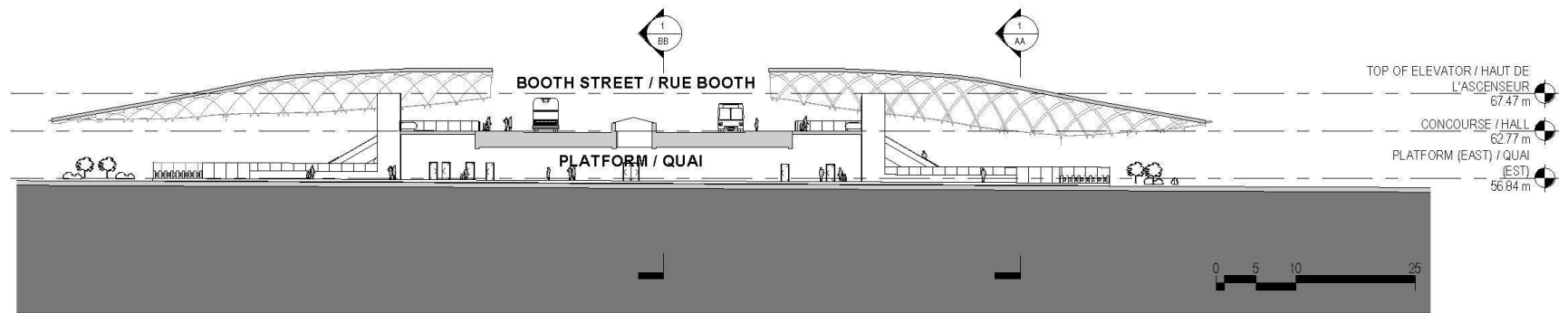


LeBreton Station – Site Context– Initial Build Out

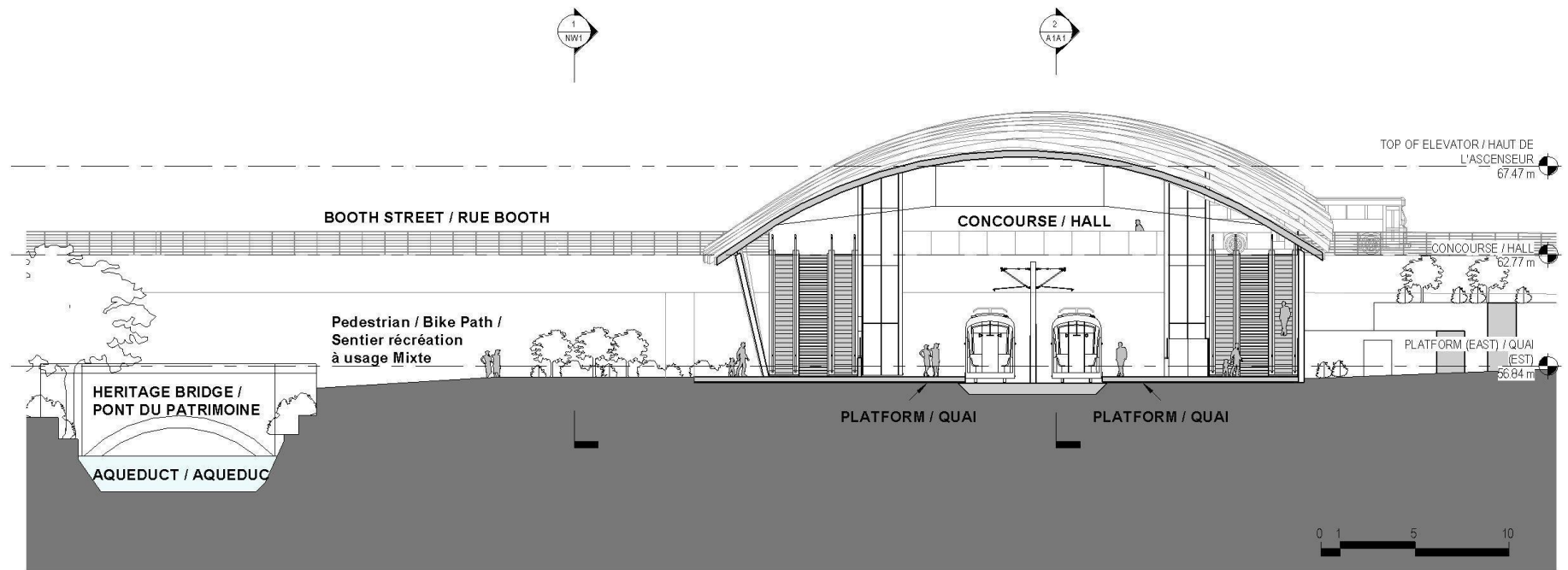


LeBreton Station – Concourse Level – Initial Build Out

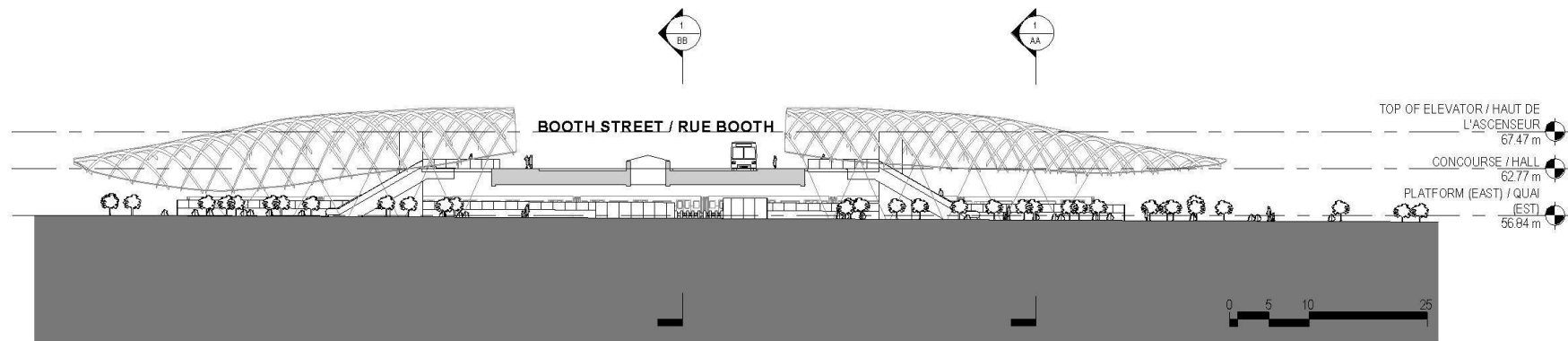




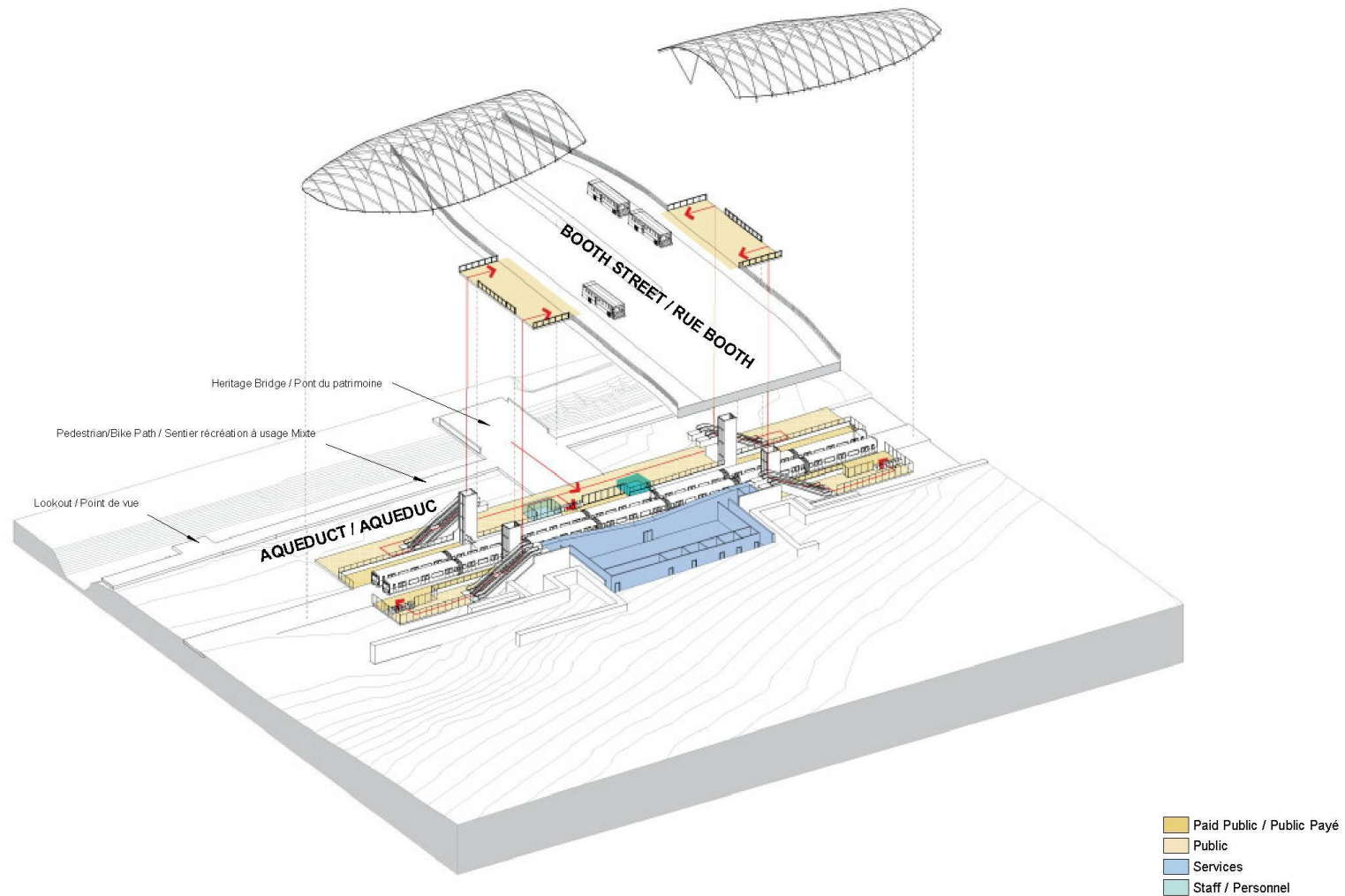
LeBreton Station – Longitudinal Section – Initial Build Out



LeBreton Station – Cross Section – Initial Build Out



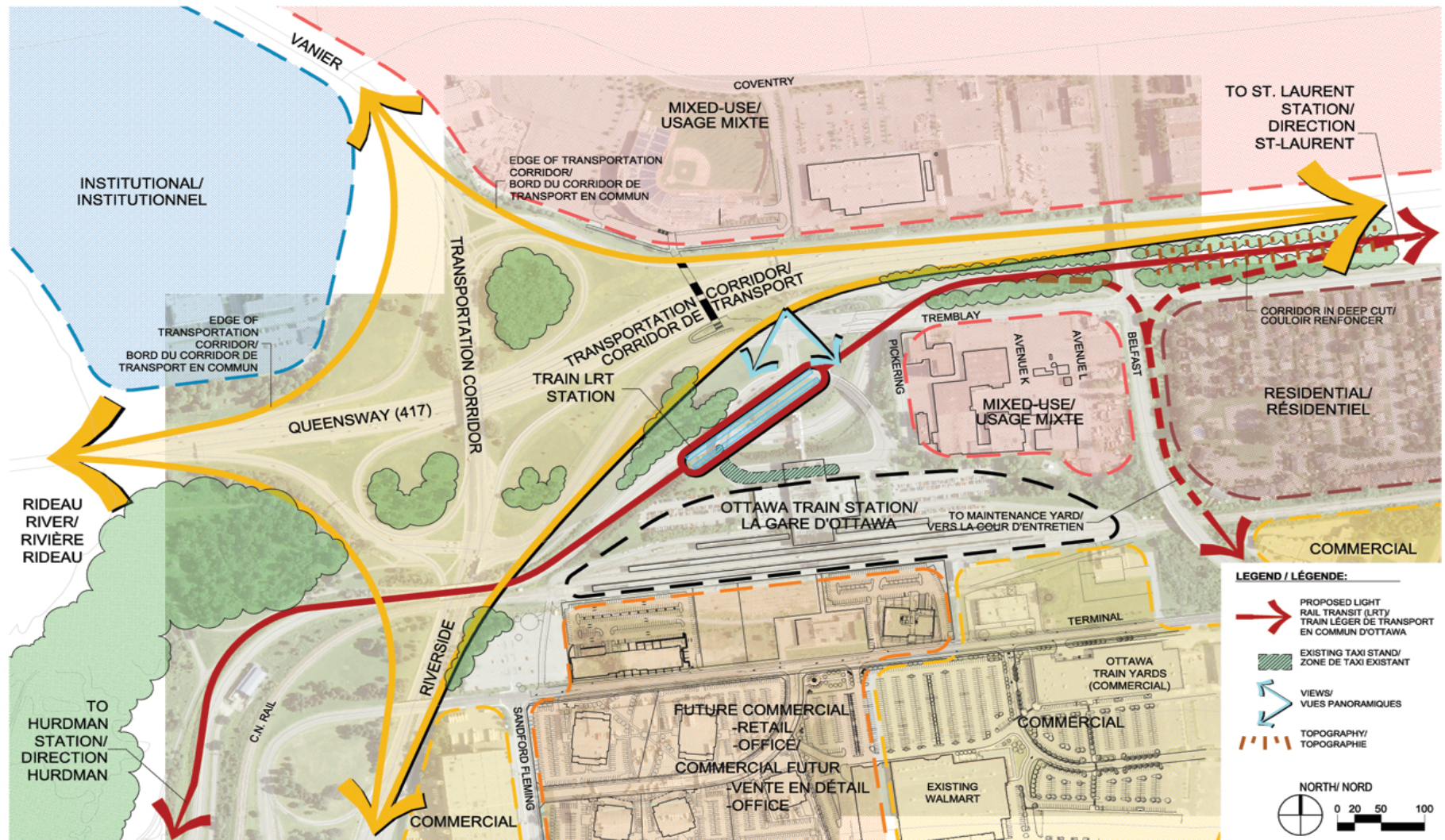
LeBreton Station – Building Elevations – Initial Build Out – North



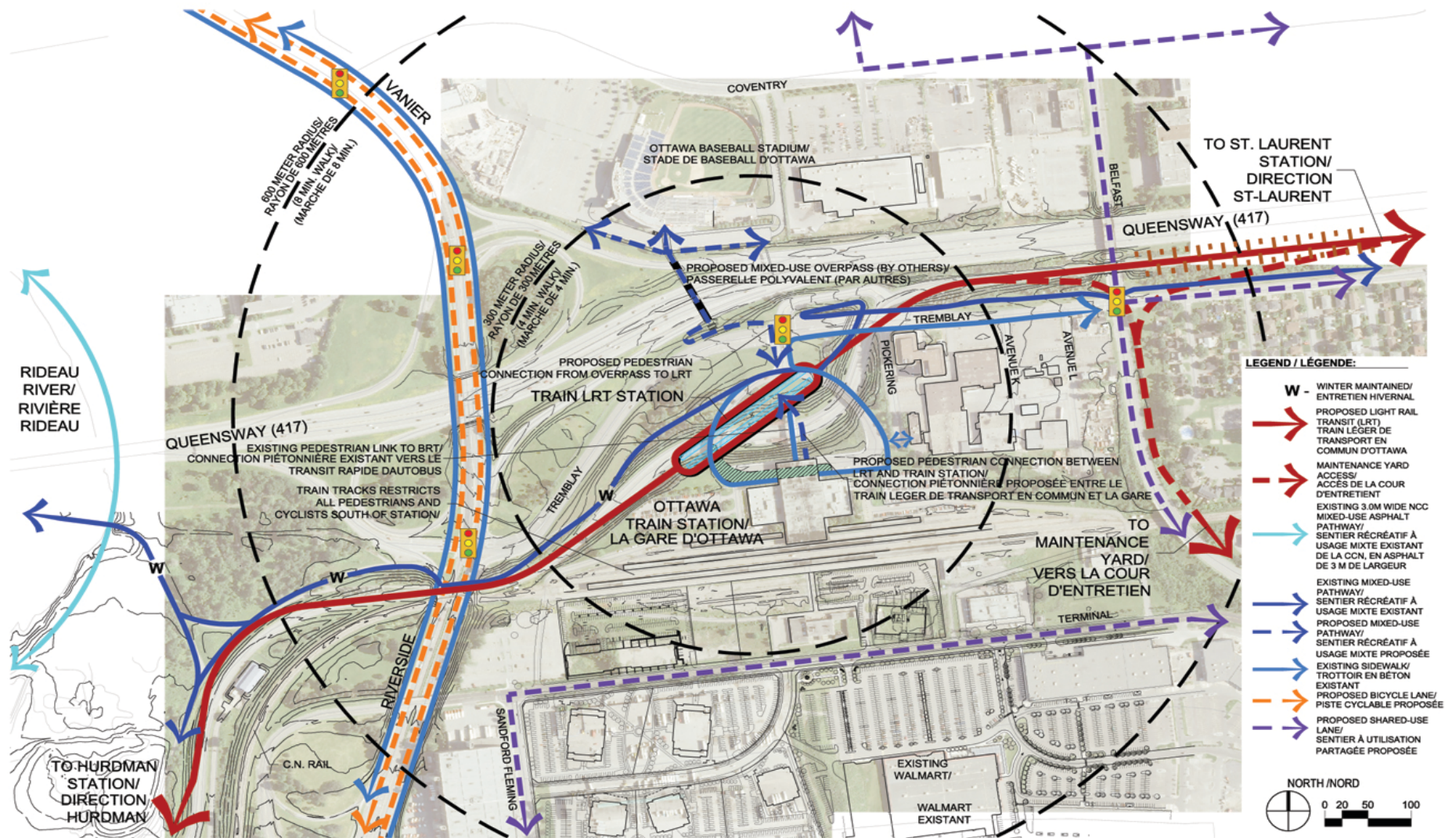
LeBreton Station – Axonometric View – Initial Build Out

Train Station

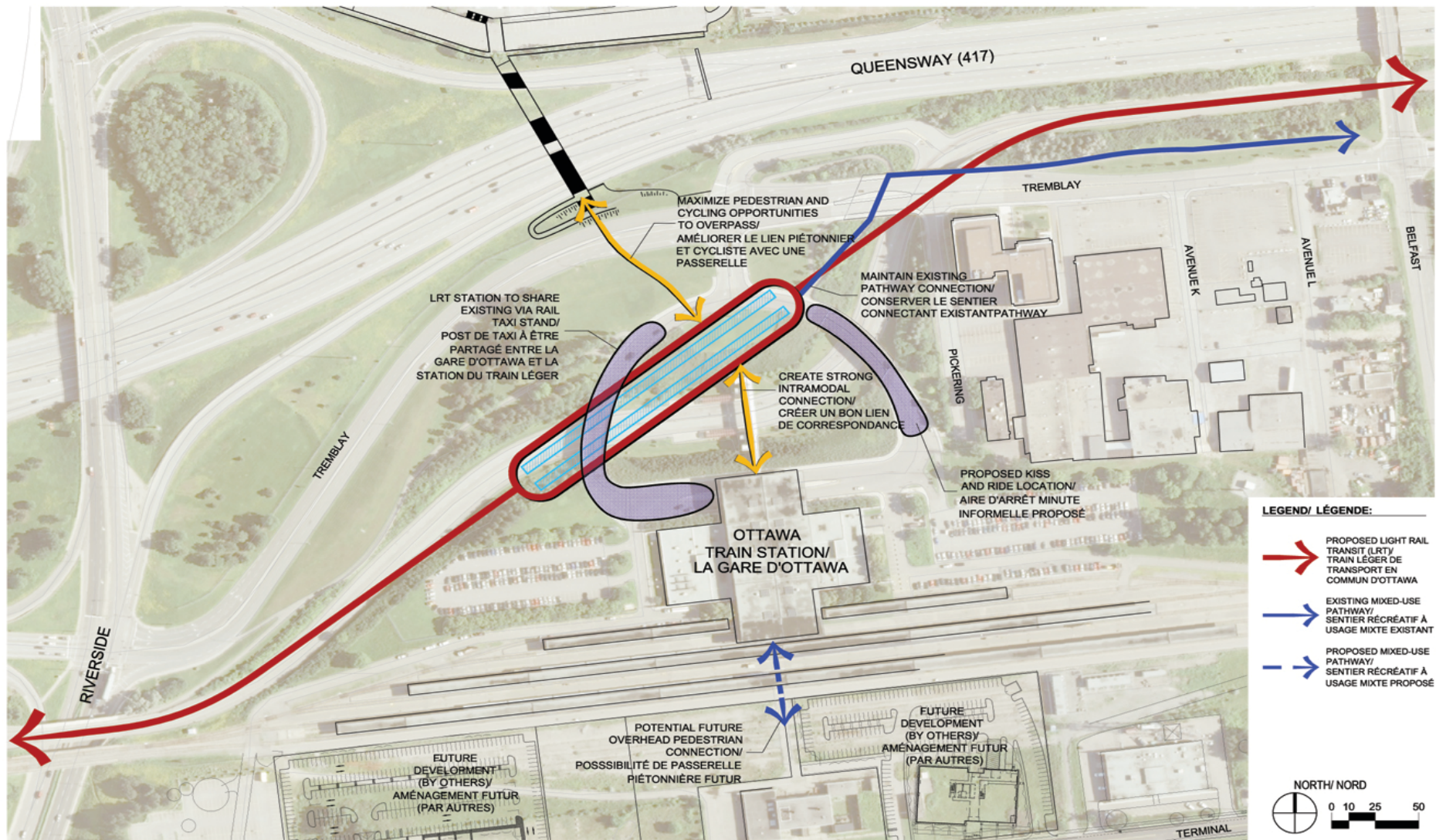




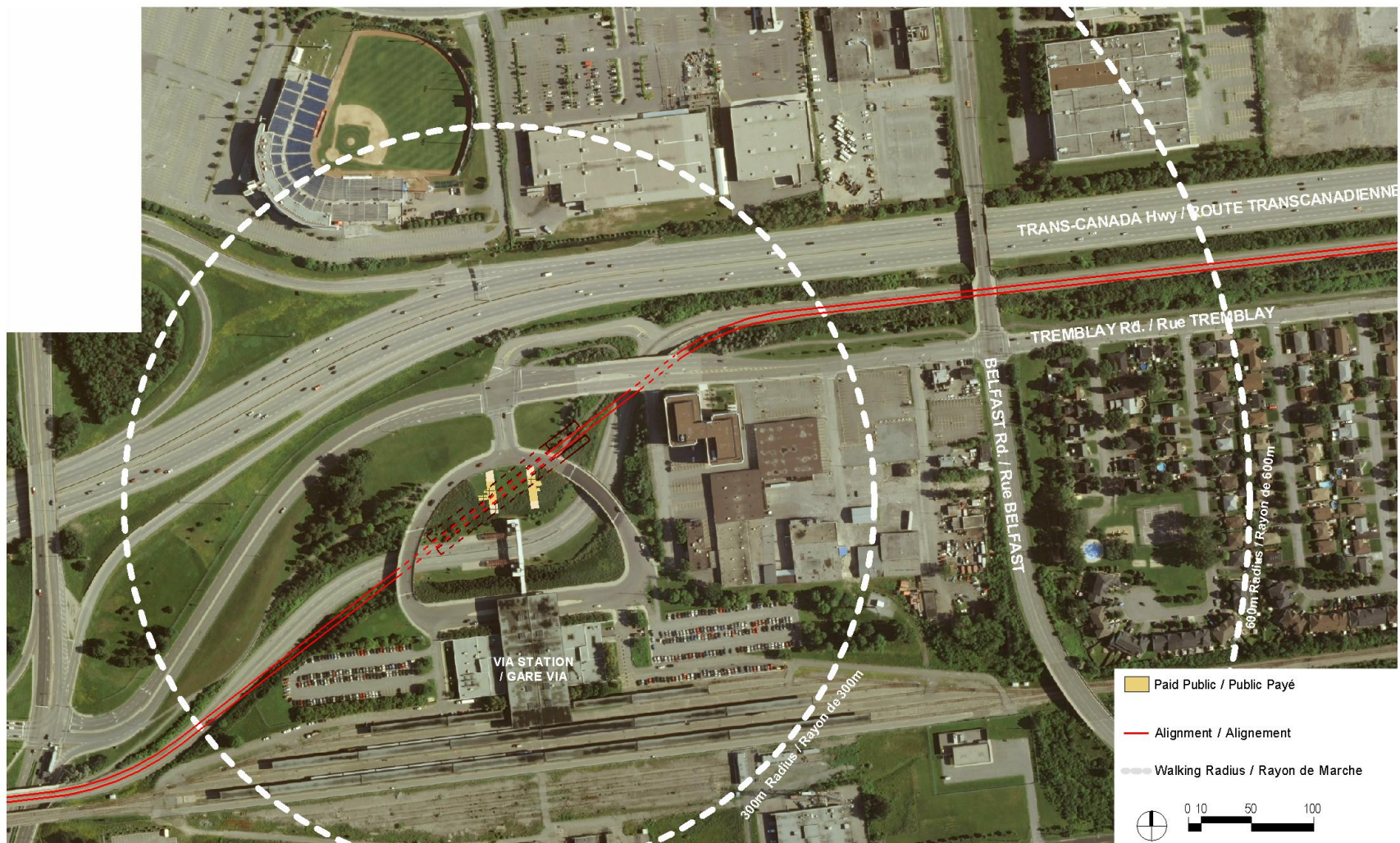
Train Station – Site Analysis



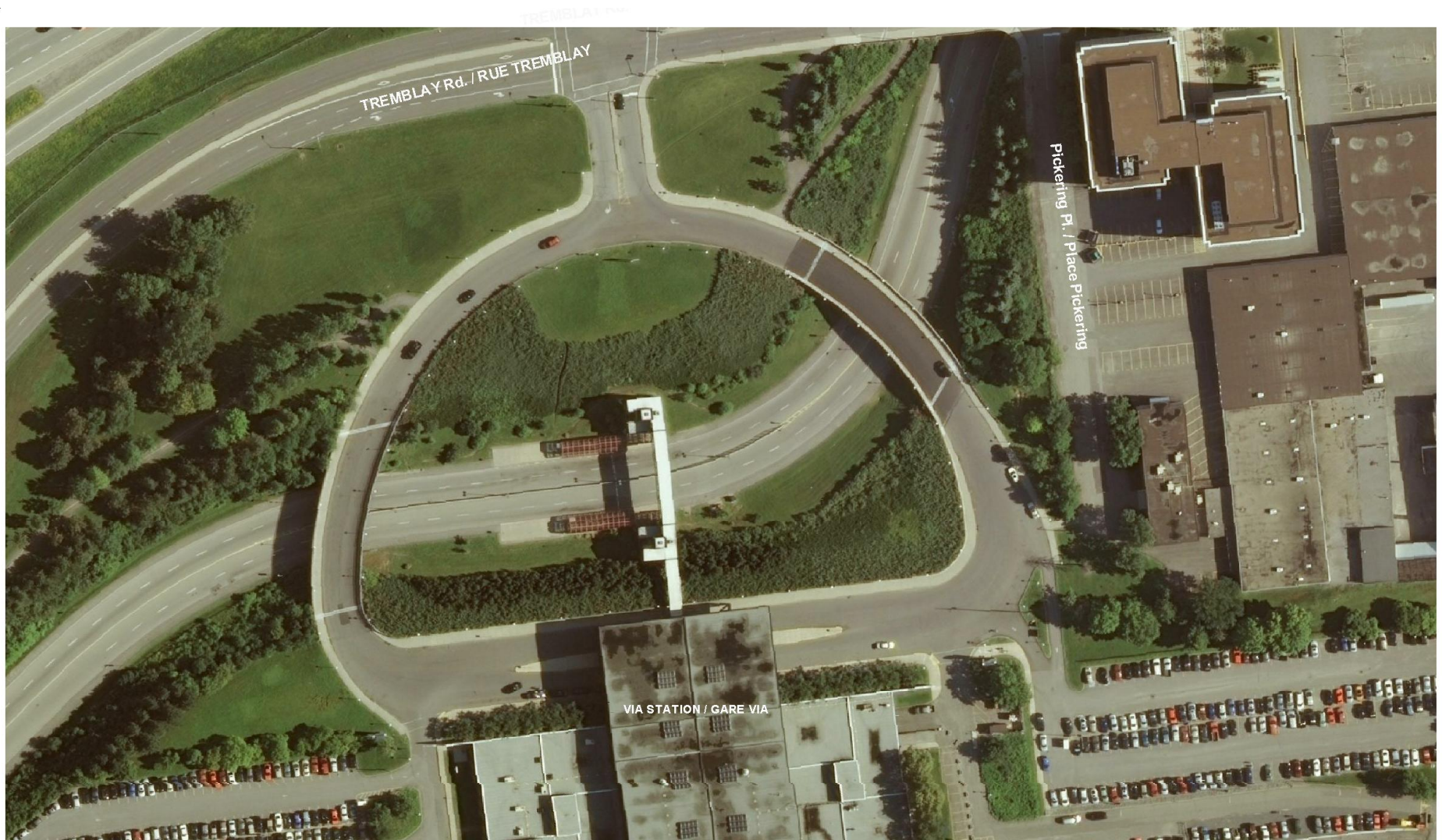
Train Station – Site Analysis – Pedestrian/Cycling Elements



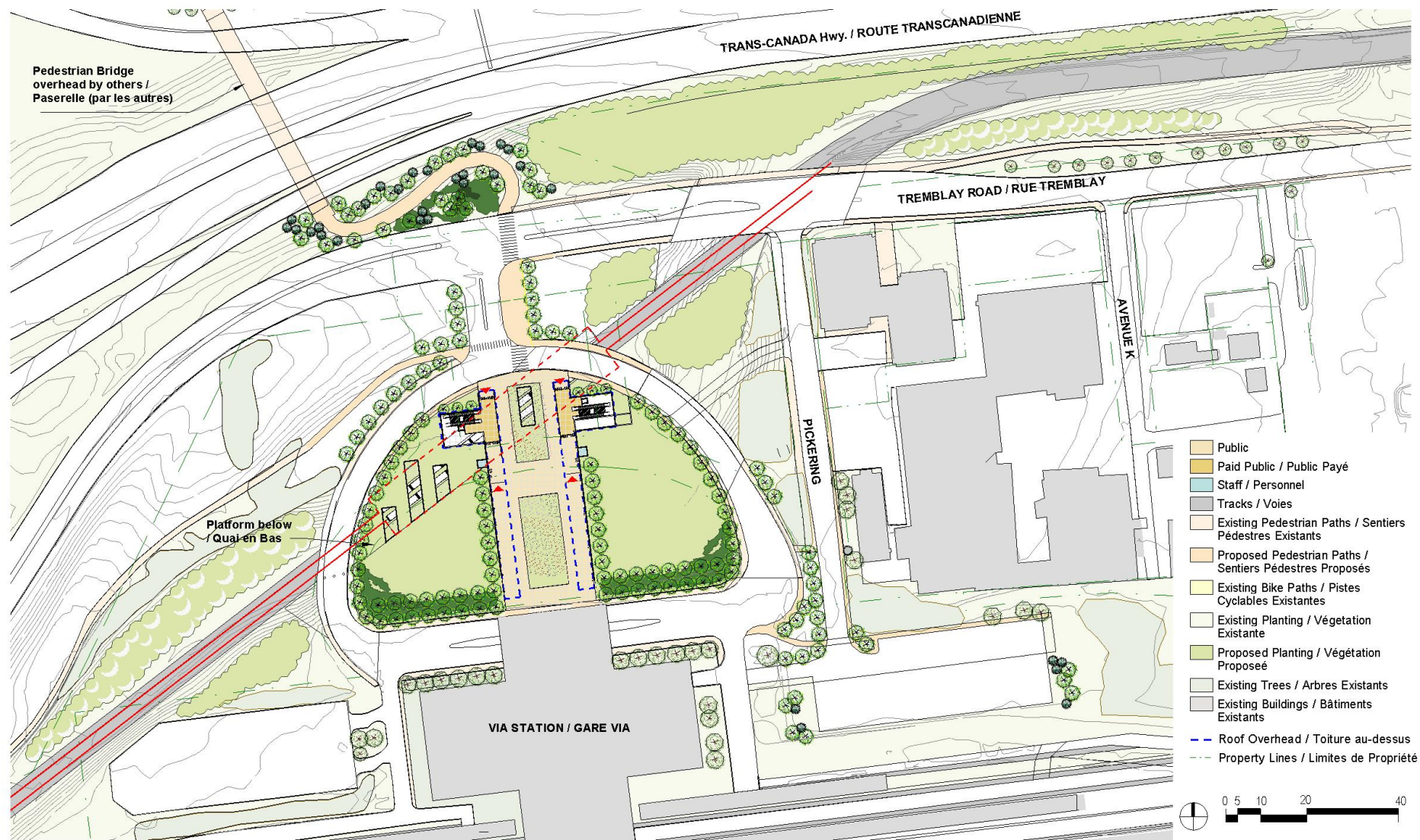
Train Station – Site Opportunities



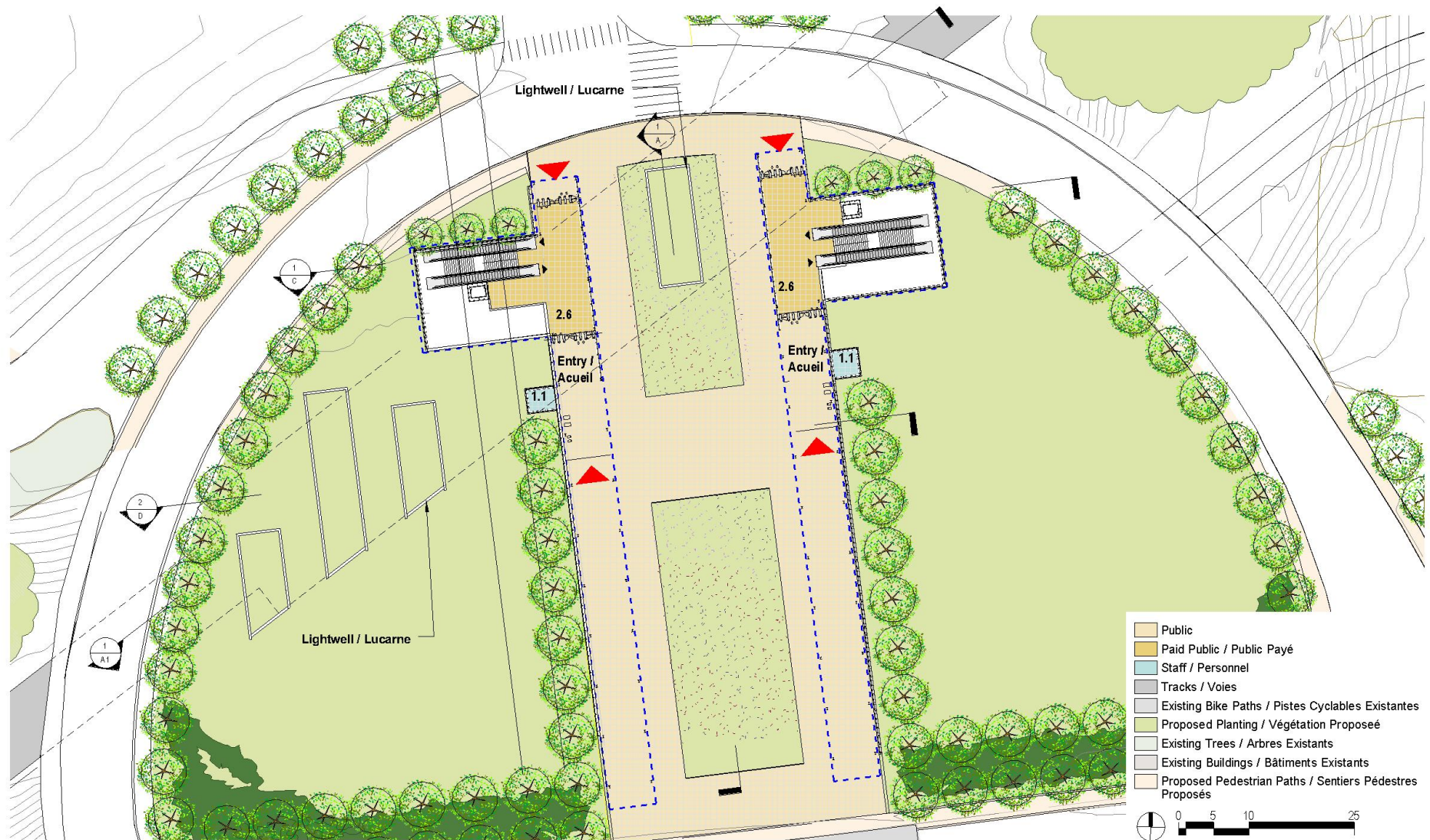
Train Station – Site Context



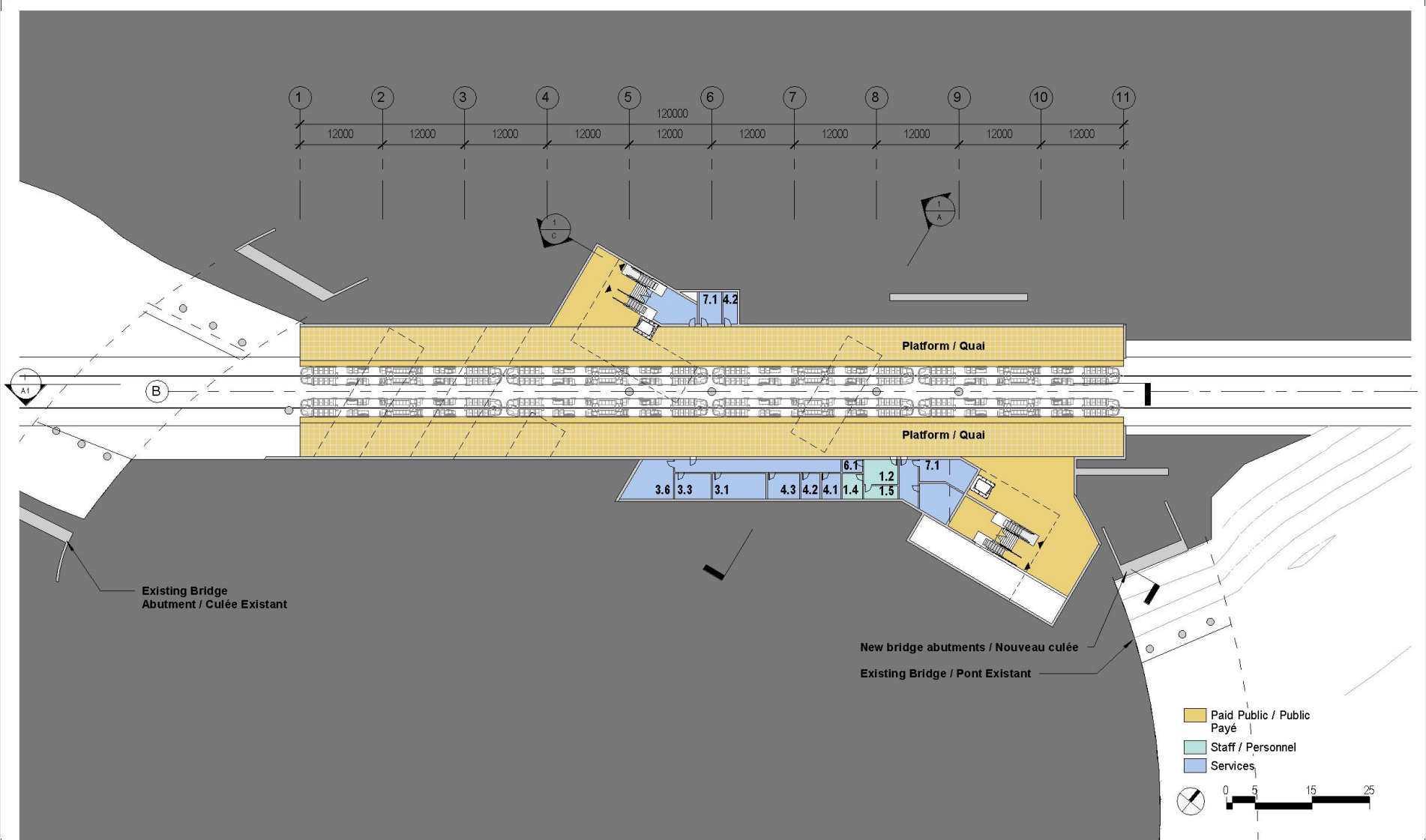
Train Station – Site Context - Existing Conditions



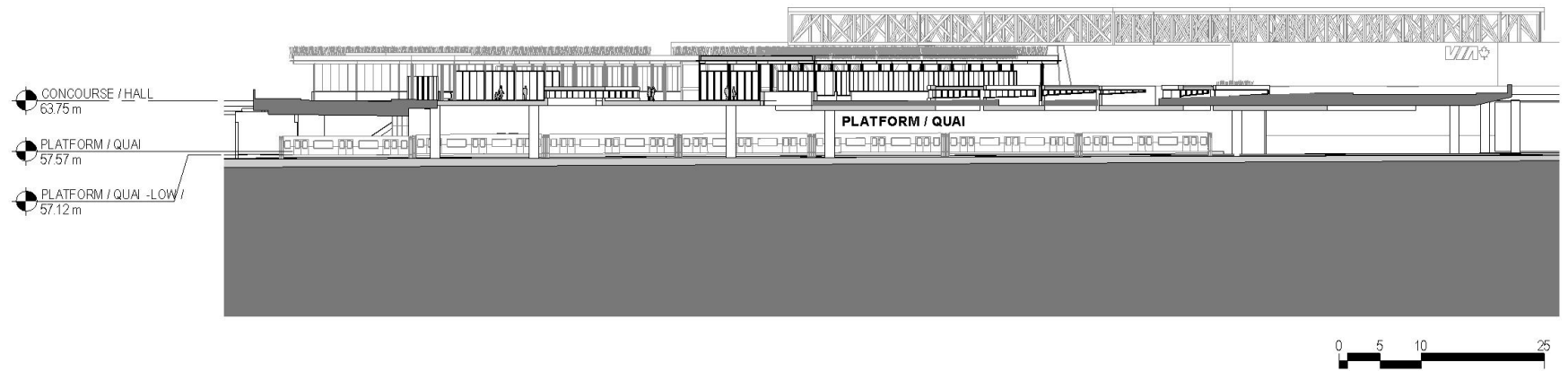
Train Station – Site Context – Initial Build Out



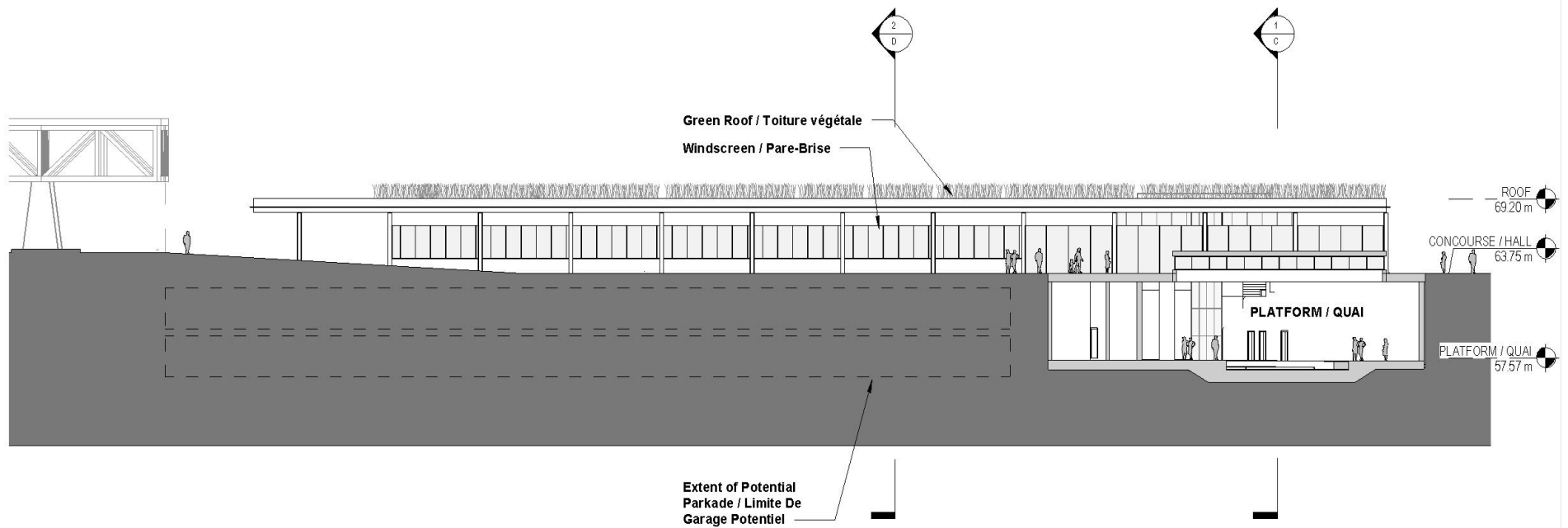
Train Station – Concourse Level – Initial Build Out



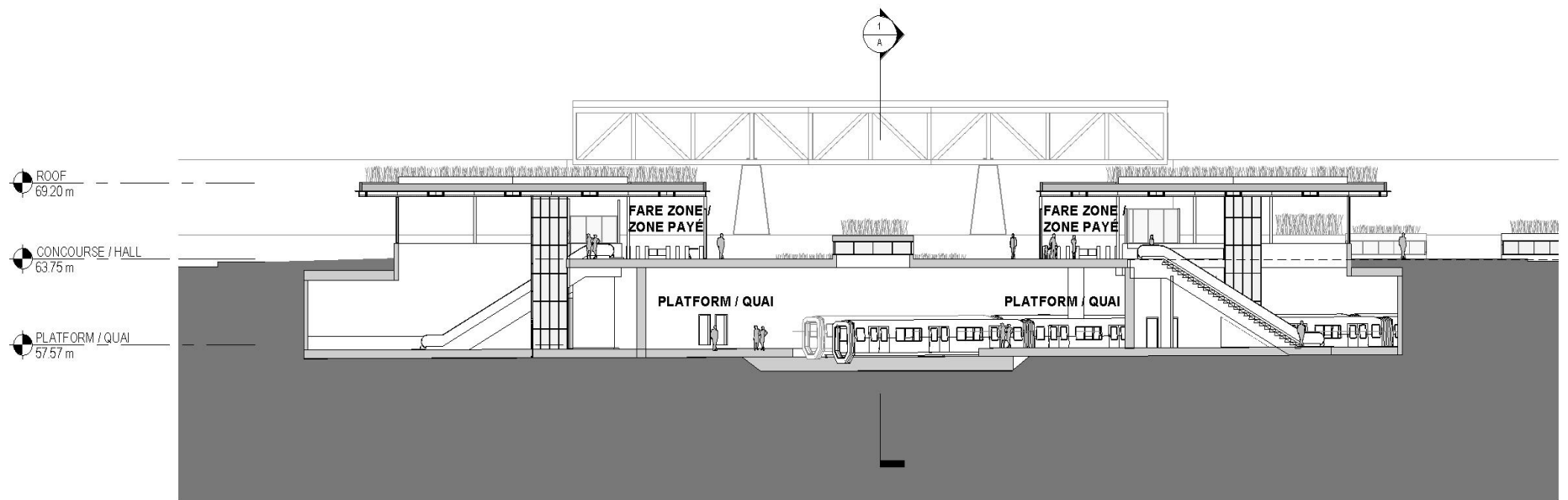
Train Station – Platform Level – Initial Build Out



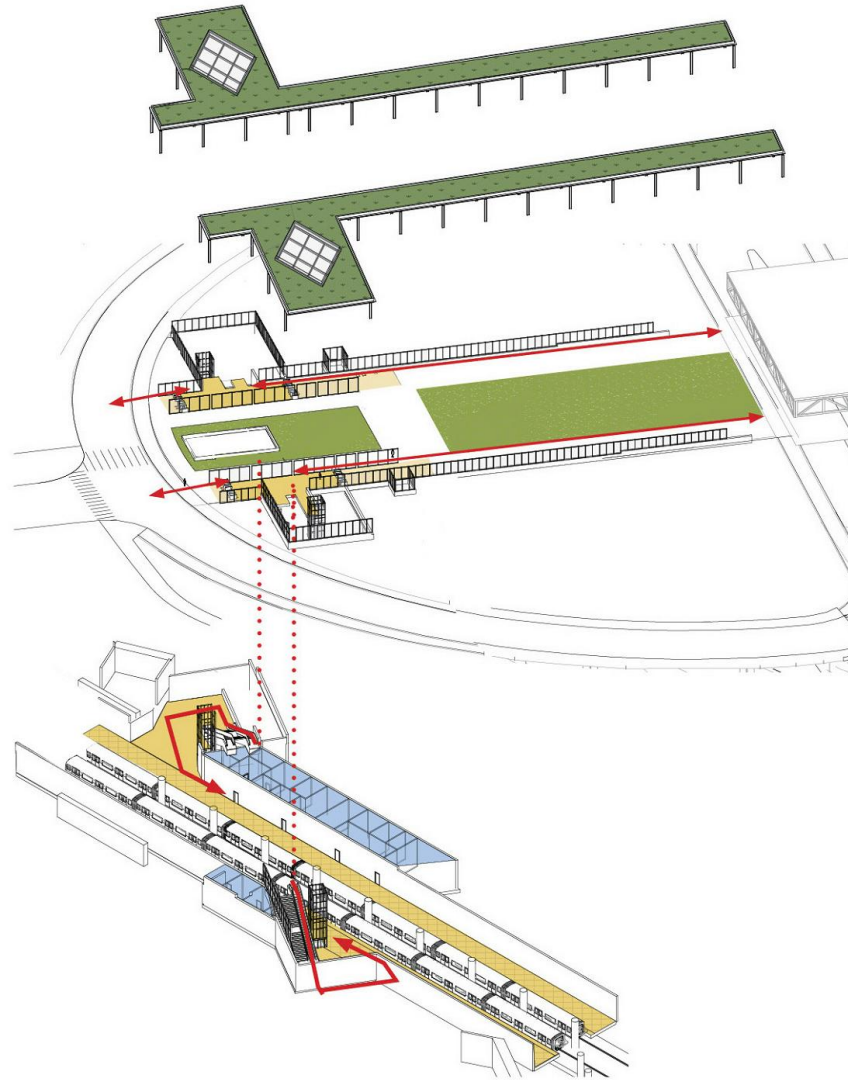
Train Station – Longitudinal Section – Initial Build Out



Train Station – Cross Section – Initial Build Out



Train Station – Cross Section – Initial and Full Build Out



Train Station – Axonometric View – Initial Build Out

Discussion

