DS-04
GO STATION ARCHITECTURE DESIGN STANDARD

Version 1.0

July 2019

THIS SECTION COVERS:

- Station Building Architecture
- Pedestrian Tunnels
- Pedestrian Bridges (Reserved)
- Rail Platform Architecture (Reserved)

Metrolinx Design Standards
Design Standard DS-04
GO Station Architecture Design Standard
Publication Date: July 15, 2019

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PREFACE

PRINCIPLES

While the architectural, landscape and urban design of a Station is a relatively small component of the larger construction and engineering effort of Metrolinx projects, it carries a disproportionate weight of importance because it is the tangible expression and touch point that users will engage with daily as they move throughout the regional network.

The vision for GO Stations is underpinned by three themes: **Connect** people and their communities; **Compress** station buildings to just the essential massing; and **Anticipate** the now, the new, and the next.

Connect

At the regional scale, GO Stations provide opportunities to connect people within the Greater Golden Horseshoe Area (GGHA). These stations also serve a purpose beyond transit node to become catalysts for place making. GO stations provide an opportunity to physically reconnect both sides of the corridor, through below or above grade connections, extending to potential community amenities.

Compress

Build to a Station program with requirements that address future increased service, and place the functions in the right place for the passengers. GO Stations should have a high degree of design consistency and recognition across different types of geographic and urban conditions using a “kit-of-parts”, modular approach to building, and use of consistent details. Building less and building in a consistent and repeatable way will not only lower capital costs, but also provide consistency to customers, serve to lower ongoing operations and maintenance obligations, and strengthened the presence of an integrated network.

Anticipate

GO Stations must be designed to be future-proofed for decades to come. Ticketing methods, headways, station attendant requirements, ridership volumes, passenger's needs and preferences, climate, ride sharing opportunities, non-fare revenue and the surrounding urban context will inevitably change over time. The approach to station building must address the needs of today’s program but be flexible enough to adapt to these variables over time.

The Standards that follow are all in support of this vision for GO Stations.

THE CUSTOMER JOURNEY

The Customer Journey is the sum of experiences that customers go through when interacting with the facility, and the services and amenities offered along their journey. This dictates what is essential for service and should always be consistent.

The Customer Journey, which is the way a customer circulates through GO sites, shall be the primary placement strategy used when laying out the interior programs and site layout.

Customer experience in the built environment is the immediate and sustained interaction between the built environment and the users of the facilities.

Infrastructure supports customer experience by the delivery of a built environment that is **seamless, intuitive, consistent and provides value.**

Along the Customer Journey there are four key types of spaces that customers experience:

Decision Space

Purpose: prioritizing passenger decisions, key customer orientation points

Characteristics: unobstructed lines of movement respecting customer desire lines, clarity of messaging and intuitive design to aid decision making.

Exemplar Space: Self-serve Hub

Circulation Space

Purpose: prioritizing clear connections to program areas that are unobstructed

Characteristics: unobstructed lines of movement respecting customer desire lines

Exemplar Space: Platform Access Area

Opportunity Space

Purpose: emphasis on passenger comfort and amenities

Characteristics: welcoming, comforting, informing, clear site lines

Exemplar Space: Waiting Area

Support Space

Purpose: key point customer interface and service

Characteristics: welcoming, open, pleasant.

Examplar Space: Station Ambassador Office

ELEMENTS OF CONTINUITY FOR GO TRANSIT

The customer journey and the way customers navigate and use the GO Transit service tells us what the elements of continuity are – what is essential to run the service of getting commuters to their destination safely and easily.

At minimum, every commuter goes through six consistent experiences at every station:

1. Arrival – the customer identifies and accesses the station;
2. Transaction – the customer pays a fare;
3. Access – the customer gets to the platform;
4. Platform – the customer boards the train/bus;
5. Travel – the customer rides the train/bus to their destination.
6. Departure – the customer departs through a station or stop;

Within these five experiences, key elements have been identified to ensure that a design identity and personality is conveyed through its consistent application.

The following Elements of Continuity shall be applied at ALL Stations, regardless of the context. These elements are prescriptive in design, and to be seen at every station, in the same way, in the same manner.

Table 1: ELEMENTS OF CONTINUITY

ELEMENTS OF CONTINUITY	Reference
Entry Paving	Reserved
Self-serve Hub	Section 2.4.5
Platforms	Reserved
Signage and Wayfinding	Figures 6, 16 and Metrolinx Wayfinding Design Standard

HOW TO USE THIS DOCUMENT

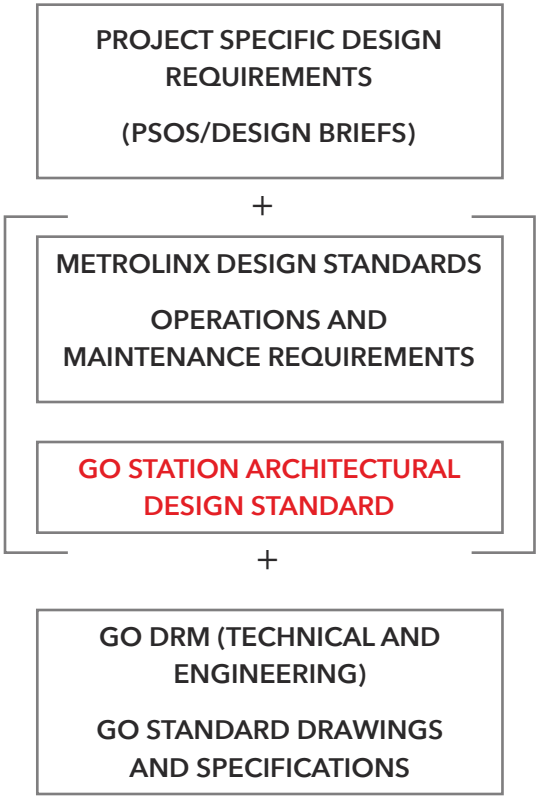
The purpose of this Standard is to bring consistency to Metrolinx's approach to planning, designing and retrofitting GO Stations across the network. This Standard provides design requirements for Station Building and Platform Architectural Design (reserved).

This Standard shall be the repository of Architectural Design Requirements. Technical and Engineering Standards remain within the DRM and GO Standard Drawings and Specifications shall apply.

In addition, the Standards that follow shall also be read in conjunction with project-specific design briefs or project-specific output specifications.

Several "Reserved" sections have been identified throughout the Standard. This Standard is being developed as other standards such as Operations and Maintenance Requirements are being developed. These, along with feedback from other divisions will be reflected in updates to the Standard.

This Standard applies to all line stations except Union Station.



STATION BUILDING

1 OBJECTIVE

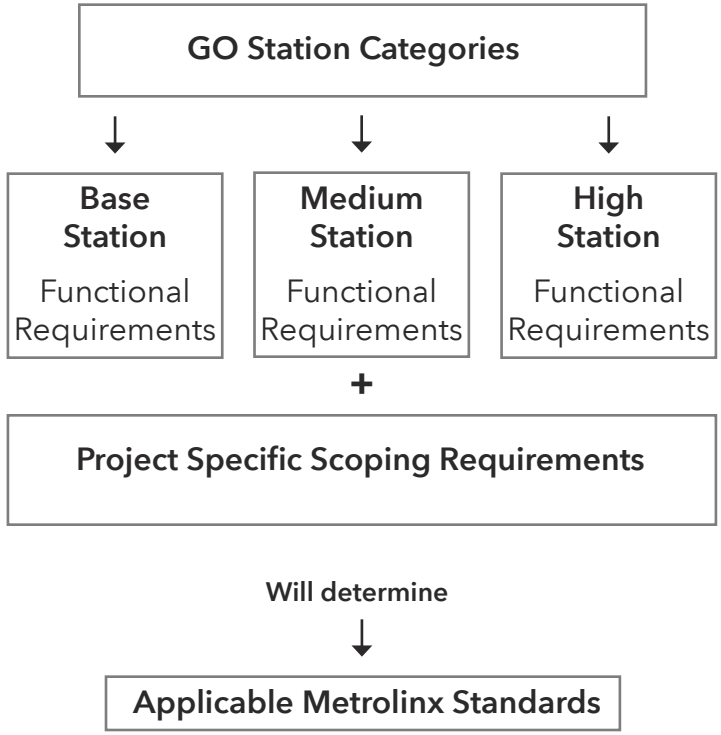
The Station Building is both a destination and a transition space for many passengers on their journey. It provides amenity and a consistent customer experience, while supporting intuitive wayfinding - guiding customers on their journey to and from the platform.

Serving customers across the GGHA, the GO Network traverses rural, suburban and urban contexts. Recognizing that there is not a one-size-fits-all approach, Metrolinx is promoting a flexible, modular approach to Station Building planning and design. This is predicated on the idea of building just what is essential, and in some cases transferring or sharing functions with third party developers. The vision is to develop a system that is scalable, adaptable and can accommodate incremental change without appearing ad-hoc - providing a seamless network.

This standard describes the design requirements of the programmatic building blocks, or “Modules”, and components within those Modules, that when assembled in response to scope and site considerations, will form a Station Building. Determining station by station functional requirements is not the purview of this Standard.

1.1 GO STATION CATEGORIZATION

Throughout these Standards, there will be references made to "GO Station Categorization Framework". This framework establishes a single station categorization structure across Metrolinx to support existing and future station rehabilitation as well as inform the basis of new station amenities. Station categories use latest ridership projections, and combined population and employment densities within 800m of each GO Station. Using this framework, Stations have been categorized as either "Low", "Medium", or "High" ridership and "Low", "Medium", or "High" density. This, along with other considerations, determines whether a Station is a **Base Station**, **Medium Station**, or **High Station**. This will be used as a structure to facilitate discussions on scope development.



2 STATION BUILDING REQUIREMENTS

2.1 GENERAL PRINCIPLES

The Station Building requirements are intended to provide a seamless and consistent experience for customers across the network through all stages of the customer journey. Consistent layouts, adjacencies and relationships provide a high quality customer experience to our customers who can be regular or occasional users;who may be familiar or unfamiliar with GO Transit; who may be in a hurry or not.

2.2 GENERAL REQUIREMENTS

The Station Building shall be designed to:

a) conform to the Metrolinx Design Standards;

b) conform to the principles of Crime Prevention Through Environmental Design (CPTED);

c) have a minimal footprint;

d) facilitate safe and convenient intermodal transfer;

e) maintain a visual connection from the public and staff areas within the Station Building to adjacent transit modes, including but not limited to bus facilities and Passenger Pick Up and Drop Off (PUDO);

f) maintain a visual connection from parking lot, bus loop, or municipal right-of-way to Self-serve Hub, Waiting Area and Station Ambassador Office;

g) promote customer safety and comfort;

h) promote natural daylighting;

i) apply passive means of reducing energy consumption where it does not conflict with other customer service and operational requirements;

j) maximize the use of photocells, motion sensors and controls to activate lighting when necessary, while balancing the perception of safety;

k) maximize transparency at vertical circulation areas;

l) minimize projections above the roof plane;

m) be the most identifiable of all the facilities on the site;

n) incorporate GO Station Key Elements of Continuity as described in this Standard;

o) design all public areas to meet a Level of Service (LOS) C (peak of D) for walking; D (peak of E) for stairs; and D (peak of E) for queuing;

p) conform to Metrolinx Advertising Design Standards to maximize non-fare revenue opportunities through the design and placement of strategic digital and static advertising.

2.3 MODULAR DESIGN APPROACH

2.3.1 GENERAL PRINCIPLES

Not all Stations will require a Station Building. Where a Station Building is required it will include the minimum requirements for a Station to operate, as well as enhanced ridership-driven programming. These requirements, including whether a Station Building is staffed or unstaffed, will be determined by the GO Station Categorization Framework and project-specific scope considerations.

Six basic Station Building Modules have been developed in response to functional criteria. These Modules include: Platform Access, Station Ambassador, Ancillary Areas, Service Areas, Bicycle Storage and Retail. These Modules can be configured in response to the project-specific scope requirements and the GO Station Categorization Framework to form the building blocks of the Station Building.

The Station Building program will be developed from the following Modules and Program Components listed in Table 2 and Illustrated in Figure 1, as determined by the GO Stations Categorization and with the project-specific scope determined for each Station.

Table 2: Modules and Program Components

Modules and Program Components	Specifications:	Module
Platform Access Module	Conform to Section 2.4	**1**
Platform Access Area	Conform to Section 2.4.4	1
Self-serve Hub	Conform to Section 2.4.5	1
Vertical Circulation, Tunnels and Bridges	Conform to Section 2.4.6	1
Station Ambassador Module	Conform to Section 2.5	**2**
Station Ambassador Office and Back of House	Conform to Section 2.5.2	2
Waiting Area	Conform to Section 2.5.3	2
Public Washrooms	Conform to Section 2.5.4	2
Maintenance Room	Conform to Section 2.5.5 and GO DRM	
Third-party Advertising	Conform to Section 2.4.2	2
Ancillary Areas Module	Conform to Section 2.6	**3**
Service Building Module	Conform to Section 2.7	**4**
Bicycle Storage Module	Conform to Section 2.8 and Bike Infrastructure Standard	**5**
Retail	Retail Base Building Requirements. Refer to Standard Drawings & Specifications	**6**

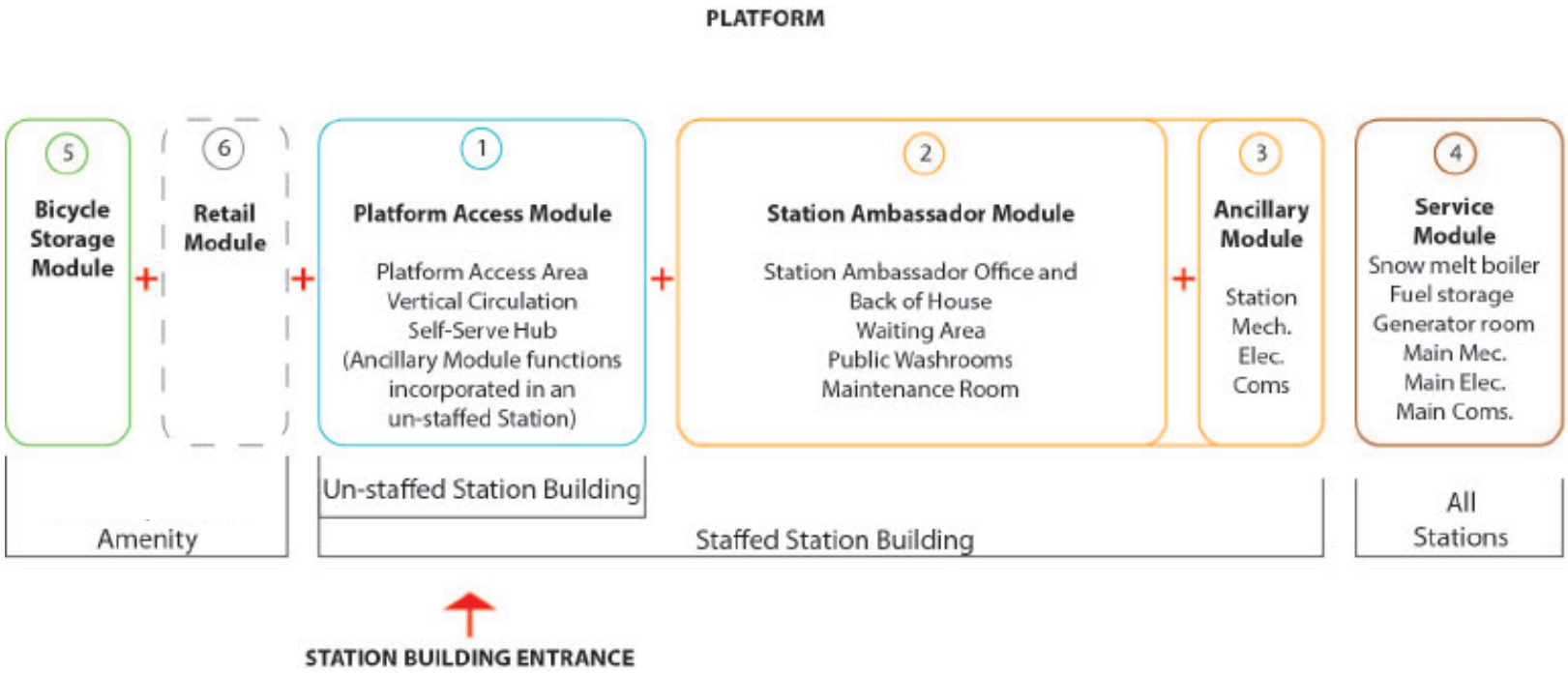


Figure 1: Station Building Modules: Planning diagram illustrating general approach (NOT TO SCALE)

Unstaffed Station

Type A: No Station Building

When an unstaffed Station has side platform access only, (no bridge or tunnel required), the Station may only require ticketing and trip information in the form of an exterior Self-Serve Hub within a Carpool type shelter (refer to GO Standard drawings). Other modules (Service Module, Bike Storage Module) if required will be stand-alone.

Type B: Platform Access Module only (Figures 2 and 3)

When a Station requires platform access via bridge or tunnel, a Platform Access Module, which includes vertical circulation and Self-serve Hub ticketing shall be required. In this case, the functions of the Ancillary Module (supporting Mechanical, Electrical and Communication rooms), shall be distributed within the Platform Access Module. If directed by the scope of services at a station, other modules can be added such as the Bike Storage Module, Retail Module or Service Module.

The Platform Access Module is to be utilized as the Secondary Platform Access if required at a station.

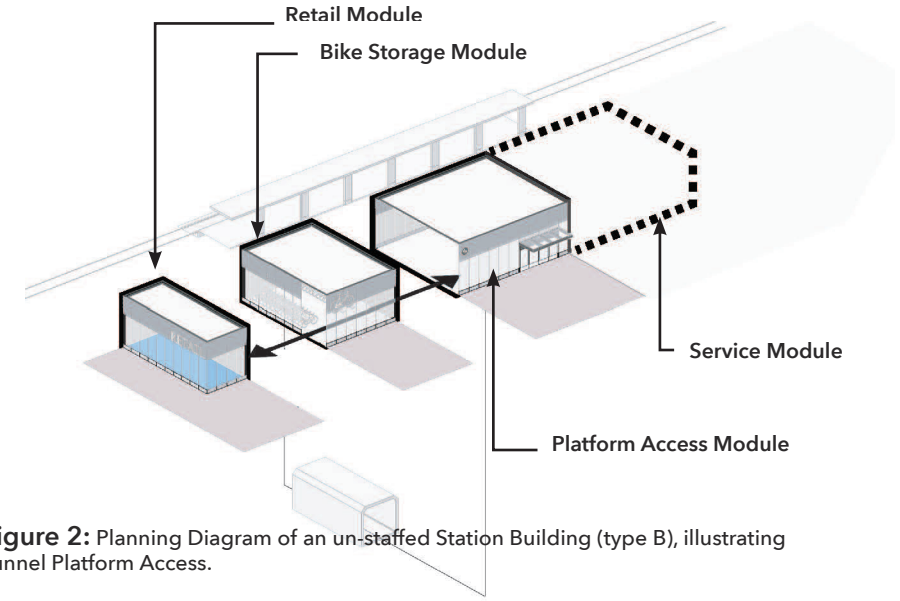


Figure 2: Planning Diagram of an un-staffed Station Building (type B), illustrating Tunnel Platform Access.

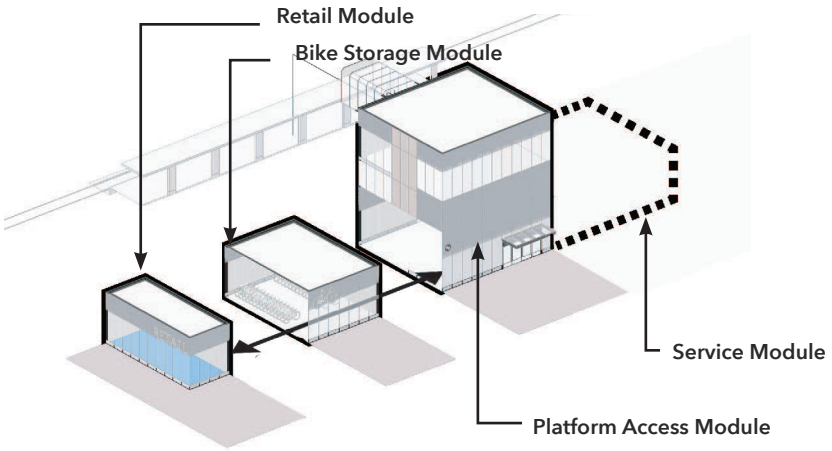


Figure 3: Planning Diagram of un-staffed Station Building (type B), illustrating Bridge Platform Access.

Staffed Station

Where a Station Building is staffed, a Station Ambassador Office, Waiting Area, and Public Washrooms will be added to the program in the form of a Station Ambassador Module. A staffed Station Building will also automatically necessitate the Station Mechanical, Electrical and Communications rooms from the Ancillary Module.

Likewise, if amenities such as Retail or Bicycle Storage are included in the program, these Modules would be added as required. The intention is that if a program expands, Modules could be added as ridership demands and requirements evolve over time. Design provisions to allow this expansion shall be made by all disciplines.

The Service Module (including snow melting equipment, fuel storage and generator, as well as the main Mechanical, Electrical and Communications rooms) shall be required for all Stations.

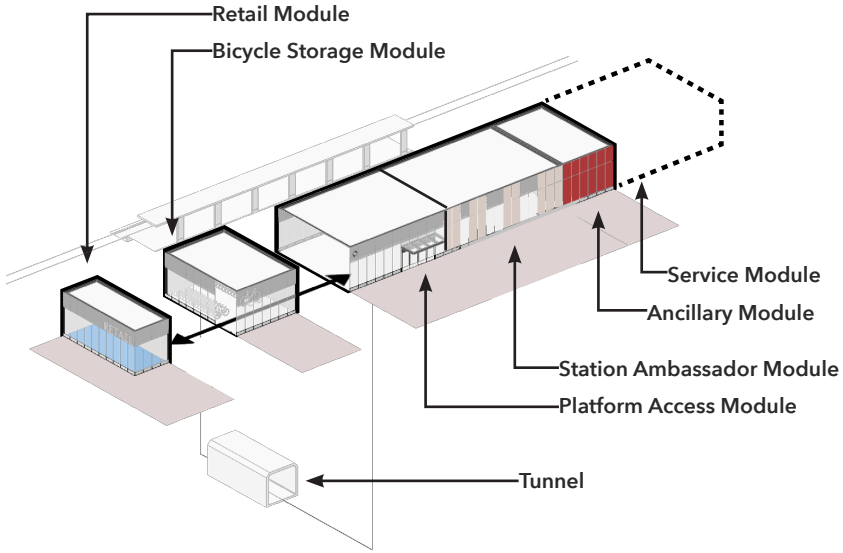


Figure 4: Planning Diagram of a staffed Station Building, illustrating Tunnel Platform Access.

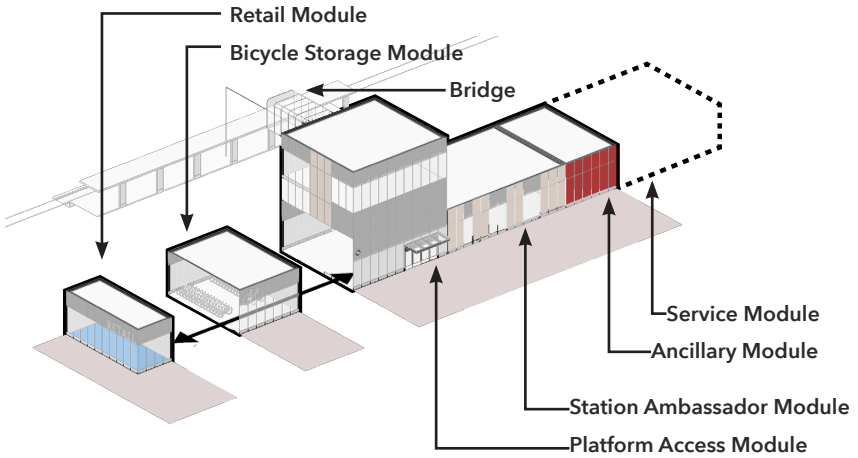


Figure 5: Planning Diagram of a staffed Station Building, illustrating Bridge Platform Access.

2.4 MODULE 1: PLATFORM ACCESS

2.4.1 GENERAL PRINCIPLES

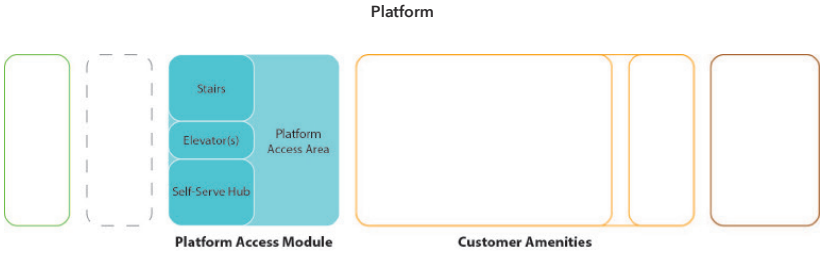
The Platform Access Module is the front door of the Station Building and acts as a vestibule to the customer amenity areas found in the Station Ambassador Module (in a staffed station). As such, the space shall be welcoming, transparent, and provide direct connections to amenities and the Platform through intuitive wayfinding.

The Platform Access Module contains the Platform Access Area (general circulation), the Self-serve Hub (ticketing area), and Vertical Circulation, Tunnels and Bridges to access the Platform.

Customer Experience

a) The relationship between the Platform Access Area, the Self-Serve Hub and Vertical Circulation elements shall always be consistent. Together, these program components shall form a repeatable Platform Access Module that will provide a consistent customer experience for accessing the Platform or Station amenities, getting information or purchasing tickets across the network.

b) While glazing allows the Platform Access Module to benefit from natural daylighting, this shall be balanced with measures such as natural ventilation and glazing treatment to ensure passenger comfort from extreme temperatures. In a Staffed Station, the Platform Access Module shall be designed to maintain interior temperatures close to a maximum 3 degrees above ambient temperature in the summer and 5 degrees above zero in the winter. In an unstaffed Station (Type B), the Platform Access module shall be conditioned.



Architectural Expression

c) The Platform Access Module shall be the most transparent of all the building modules and incorporate a white frit as illustrated in Figure 6 and Figures 45 to 53.

d) The Platform Access Module shall incorporate the Facility Entrance Sign and Facility Marker, as illustrated in Figure 5, over the front door and front elevation respectively. **These signage pieces are key Elements of Continuity for the GO Network**. Further requirements for these signage elements can be found in the Metrolinx Wayfinding Design Standard.

e) The Platform Access Module may be one storey for

Tunnel access, and more than one storey for Bridge access or when negotiating a change in grade. It may also be deeper depending on stair widths and elevator requirements, but the basic relationships between the program components shall remain consistent. These variations are illustrated in Figures 7 to 15.

f) The Platform Access Module shall be provided at Stations in accordance with Figures 5 to10. Where noted, dimensions are prescribed. Where no dimensions are provided, sizing will be determined by passenger flow modeling, occupancy, exiting and code requirements.

g) A storage room with minimum dimensions of 1500 mm x 2500 mm shall be provided within the Platform Access Module for a walk-behind cart (located on Tunnel level or Bridge level as illustrated in Figures 8 to 9)

2.4.2 THIRD PARTY ADVERTISING PLACEMENT

Third Party advertising provides critical non-fare revenue for Metrolinx. For advertising placement in tunnels, refer to Table 7 Pedestrian Tunnel Design Requirements.

General Requirements

a) Advertising placement shall compliment and integrate with other design elements including but not limited to wayfinding signage, benches and waste receptacles.

b) Locate in all public-facing modules, specifically in high-traffic areas and in high-dwell time areas (Waiting Room, Tunnels, Bridges).

c) Consider media walls and 1200mm wide x 1800mm high digital and static boards.

2.4.3 STATION FARE TRANSACTION PROCESSOR (SFTP)

PRESTO Fare Handling System is a smartcard-based fare payment system designed to support the use of one common fare card for fare payment on various participating public transit systems. SFTPs are the "Tap-on/Tap-off" fare devices for customers using their PRESTO cards. The SFTPs shall be placed at platform access points and within the Platform Access Module as well as other points along the customer's journey to the platform.

SFTP Placement Requirements

a) Devices shall be placed along passenger natural flow, at clear and visible locations, and shall be readily accessible by cardholders for fare payment. Ideally, customers shall have the opportunity to pass both the Self-serve hub and/or Station Ambassador office (if part of the Station Building program) prior to payment.

b) Devices shall be placed at locations with direct rail platform access.

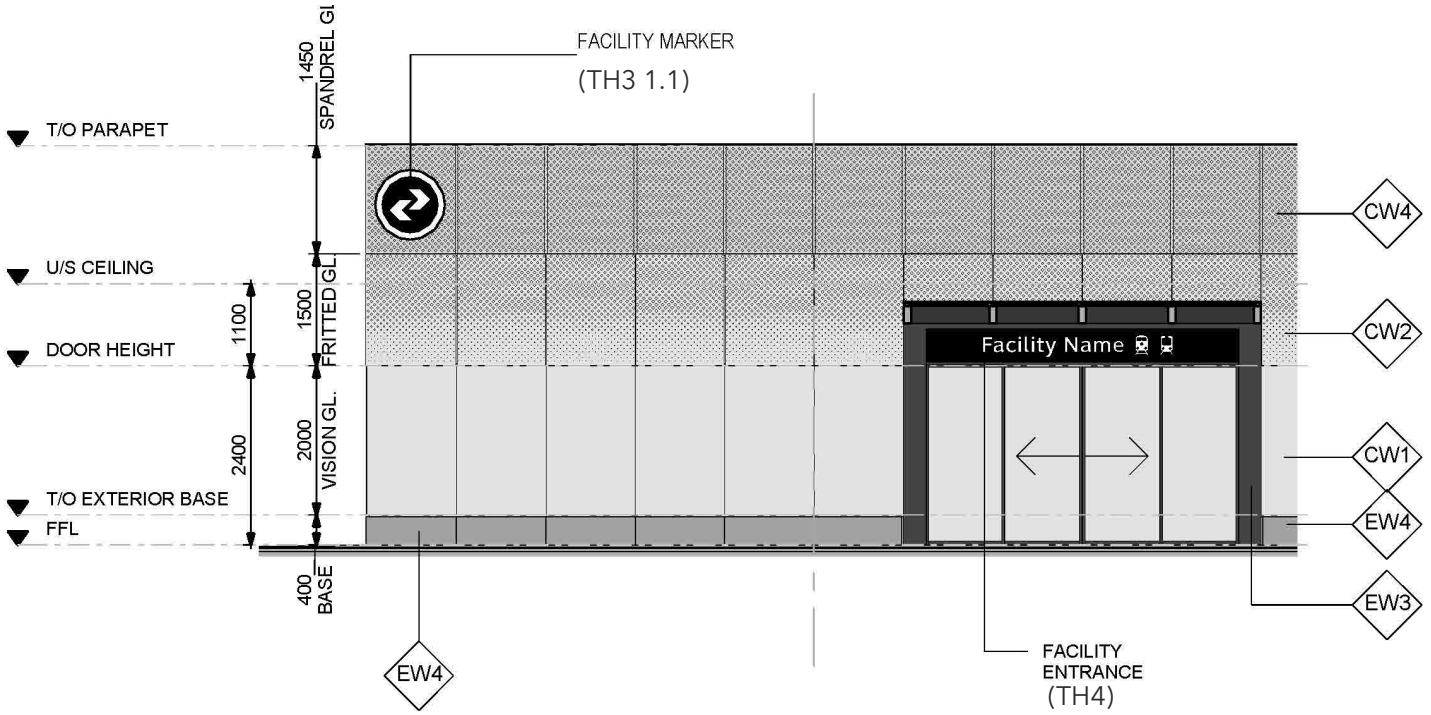


Figure 6: Front Elevation (Station Approach) of Platform Access Module illustrating primary facade components and signage elements of continuity. Signage notations reference the Metrolinx Wayfinding Design Standard.

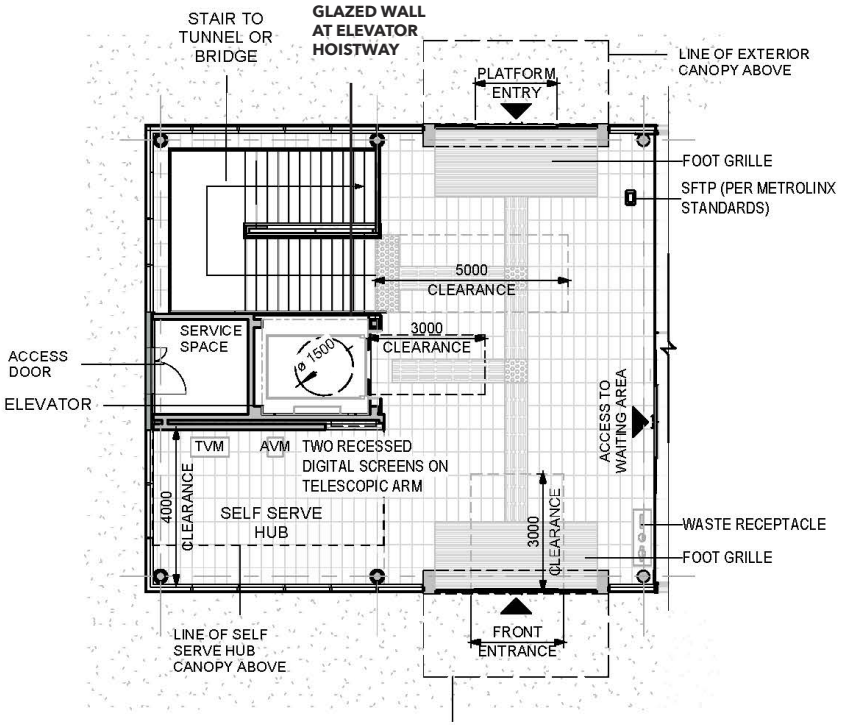


Figure 7: Typical Ground Floor Plan of Platform Access Module when joined to Station Ambassador Module.

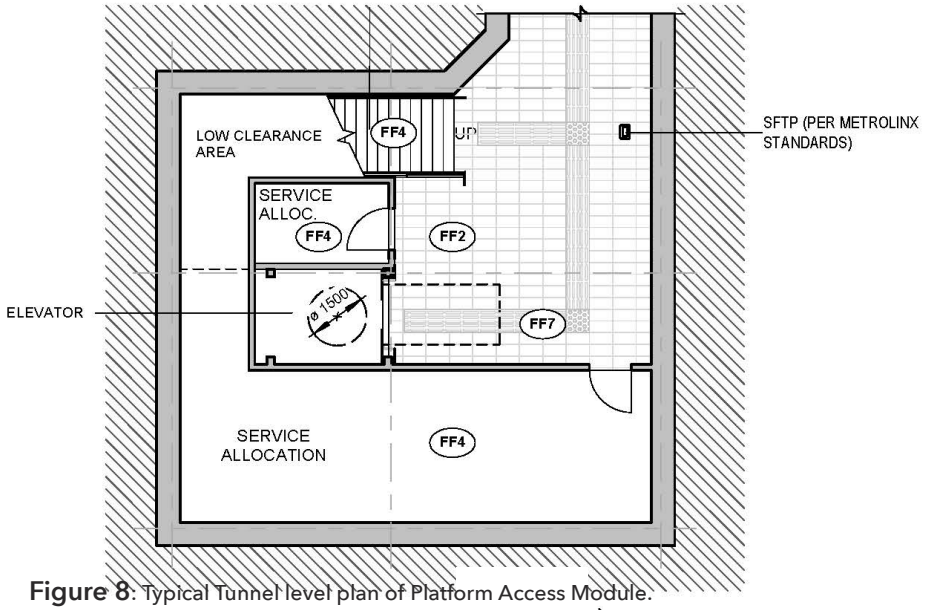


Figure 8: Typical Tunnel level plan of Platform Access Module.

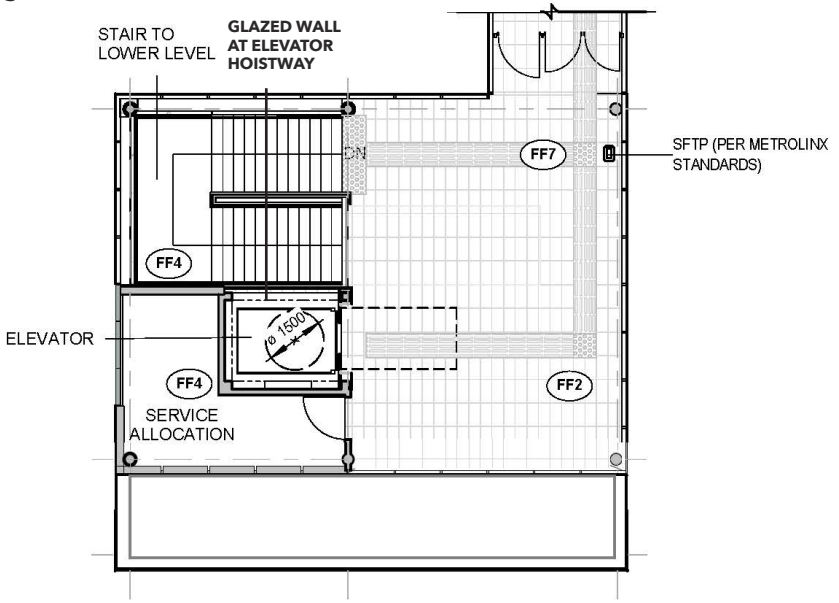


Figure 9: Typical Bridge level of Platform Access Module.

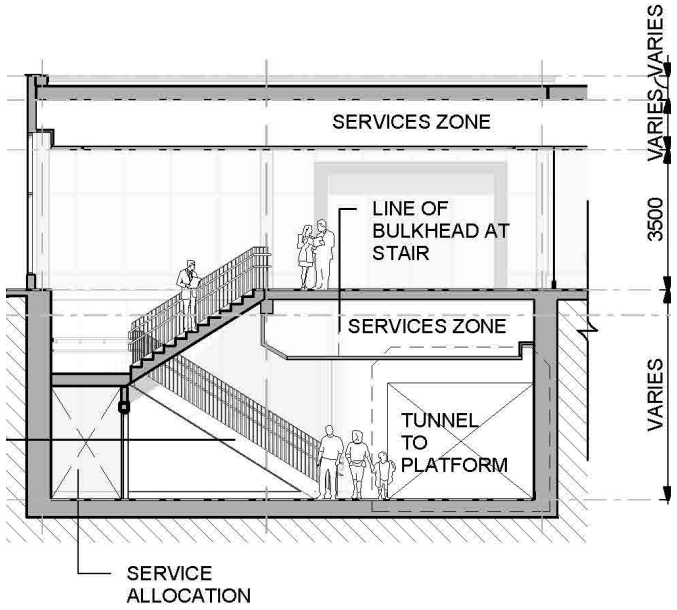


Figure10: Cross Section of Platform Access Module (Tunnel configuration)

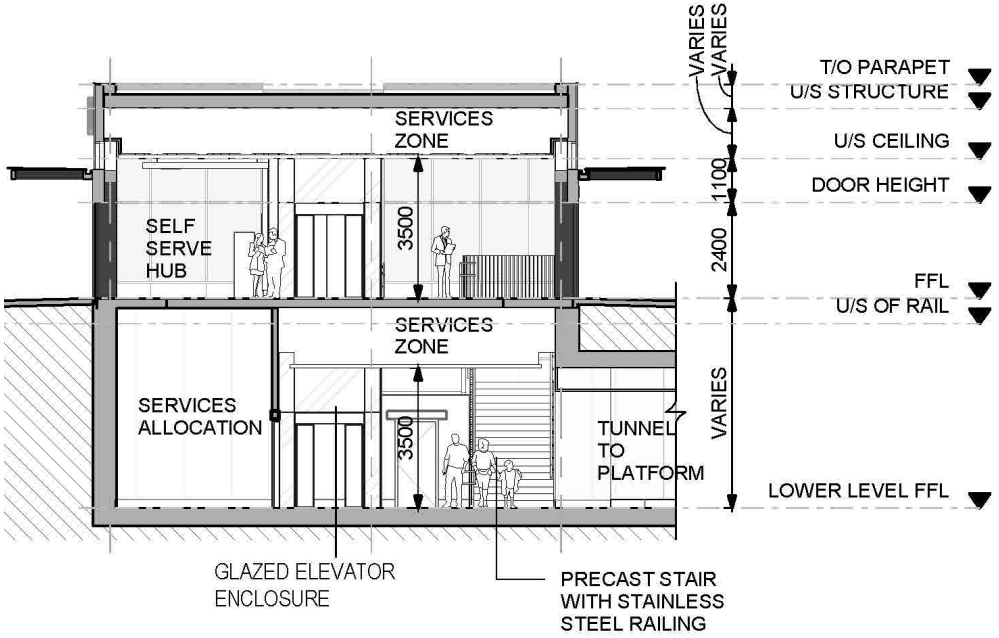


Figure11: Longitudinal Section of Platform Access Module (Tunnel configuration)

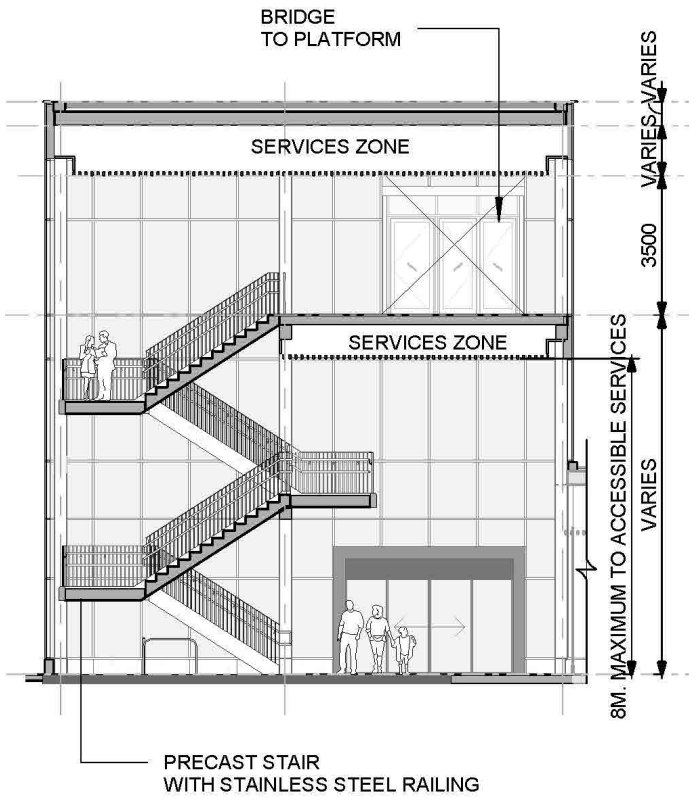


Figure12: Cross Section of Platform Access Module (Bridge configuration)

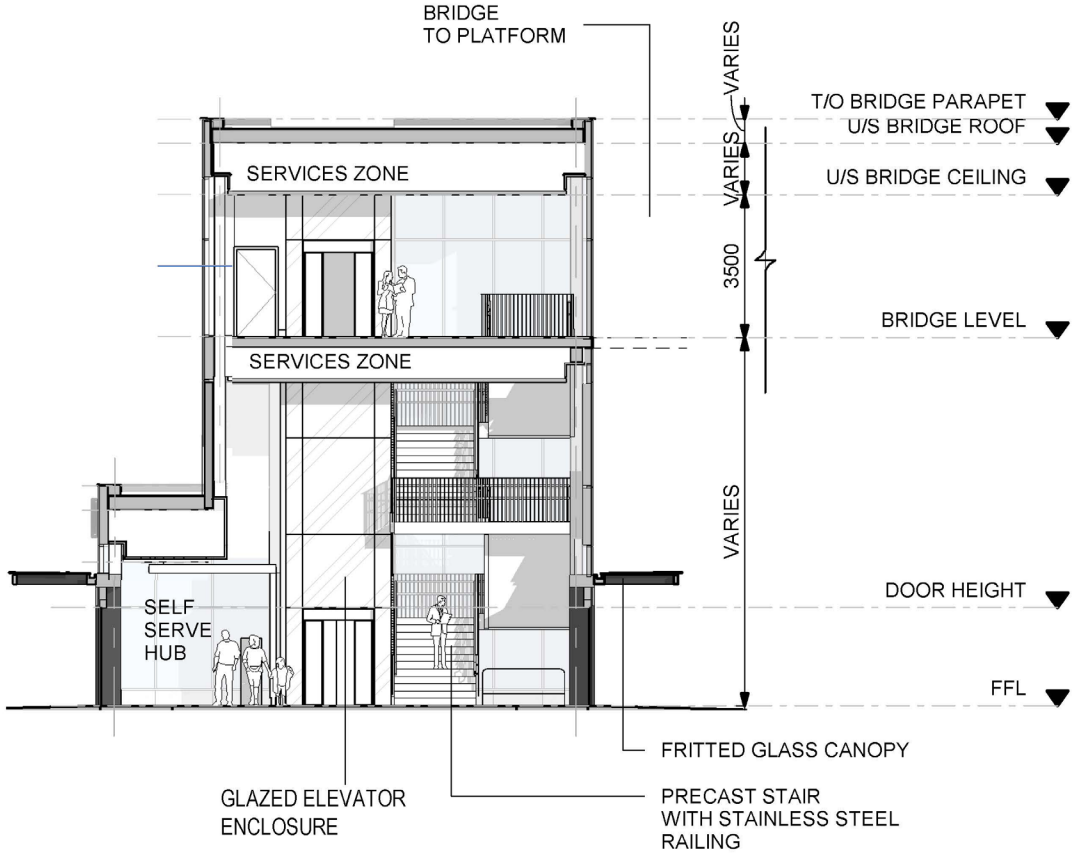


Figure13: Longitudinal Section of Platform Access Module (Bridge configuration)

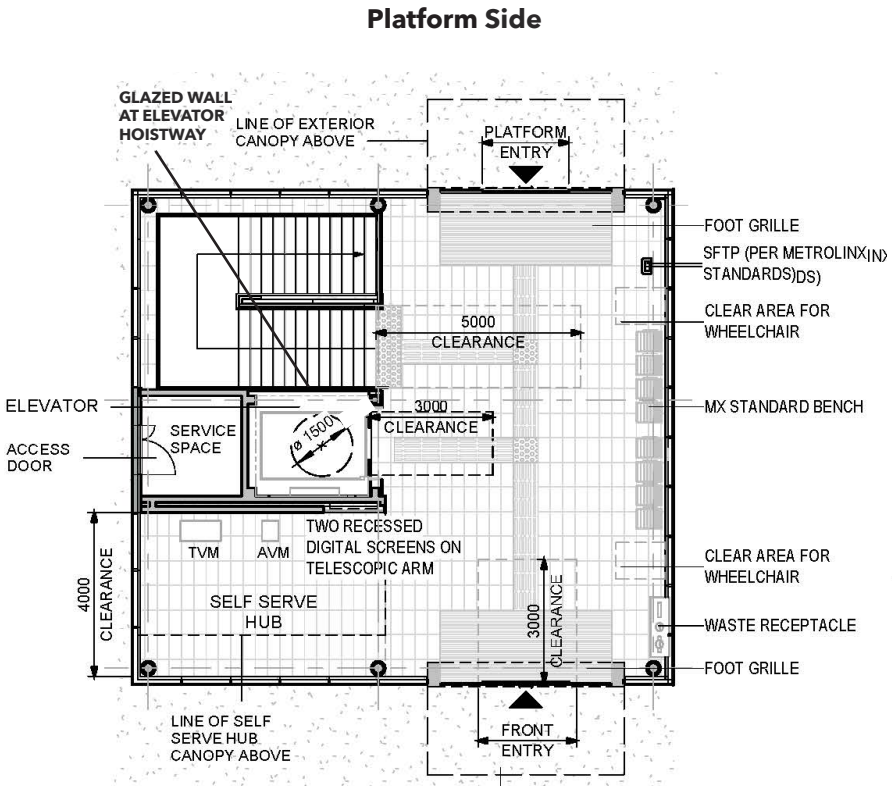


Figure14: Typical plan of Platform Access Module at an un-staffed Station. Courtesy Waiting area included.

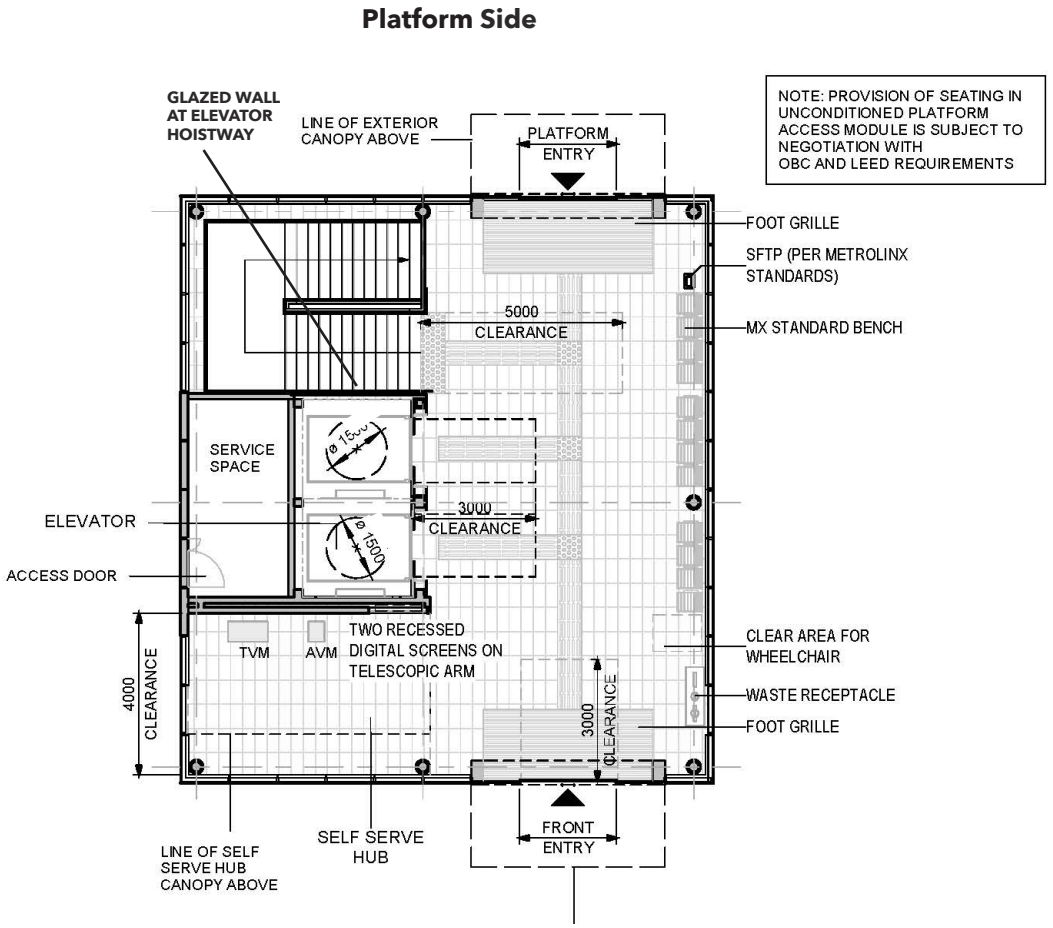


Figure 15: Plan of Platform Access Module at un-staffed Station in a two-elevator scenario. Courtesy Waiting Area included.

2.4.4 PLATFORM ACCESS AREA

The Platform Access Area is the main circulation spine through the Platform Access Module. Along this route, all information directing customers to ticketing, the Platform, and Station amenities shall be provided.

a) In an unstaffed Station, the Platform Access Area may also act as a small waiting area as illustrated in Figures 14 and 15.

b) The Platform Access Area shall conform to the design requirements listed in Table 3.

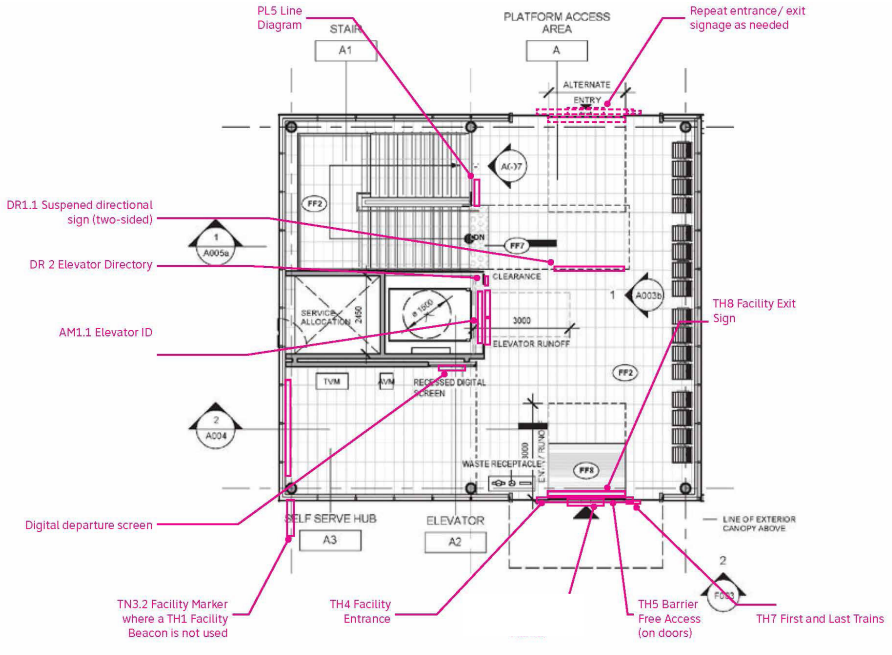


Figure 16: Plan of Platform Access Module showing signage types and locations as described in the Metrolinx Wayfinding Standard.

Table 3: PLATFORM ACCESS AREA REQUIREMENTS

Components	Requirements:
Finishes	• Floor Finish shall be large format medium gray flamed granite tile as per Section 2.10.2 Interior Finishes Schedule. • Ceiling Finish shall be a suspended prefinished continuous linear metal grille ceiling system as per Section 2.10.2 Interior Finishes Schedule. • Tactile Walking Surface Indicators (TWSI) shall be provided as per Universal Design Standard • Interior Recessed Foot Grilles shall be provided at all exterior doors. See 2.10.9
Signage and Wayfinding	• Wayfinding and Signage shall be provided in conformance with Metrolinx Wayfinding Design Standard, Sign Implementation Manual and GO Static Signage Catalogue • Third-party advertising shall compliment and integrate with Signage and Wayfinding
Key Fixtures and Furnishings	• Seating shall be provided in Platform Access Area only where there is no Waiting Area provided in program as per GO Station Categorization Framework and project specific scope and is subject to code and occupancy requirements. Ensure clear area of 1800mm wide x 1200mm deep for wheelchairs located at the end of seating near entrance doors. • Waste receptacles shall be provided in immediate proximity to building entrances and exits as well as seating areas and retail (if applicable)
Lighting Strategy	• Linear light fixtures shall be positioned within suspended prefinished metal ceiling grille as illustrated in Figure 59, Reflected Ceiling Plan • Lighting shall conform to 2.10.11 Building Interior Lighting Fixtures • Lighting shall conform to DRM.
Station Operation and Maintenance Requirements	• All elements requiring maintenance or access shall conform with Station Operation and Maintenance Requirements.
Technical Requirements	• Provide hose bibs in all Service Areas. • Conceal all electrical and data leads to fare devices, CP24 screens, digital screens, public address devices, and CCTV devices.

2.4.5 SELF-SERVE HUB

The Self-Serve Hub is a consistent and highly visible zone within the Platform Access Module that shall contain fare devices such as Ticket Vending Machines (TVMs) and/or Add-Value Machines (AVMs) as well as digital departure screens. **The Self-serve hub is an Element of Continuity across the GO Network.**

Customer Experience

Enabling customers to self-serve fare purchases, the Station Building design shifts program organization and customer movement towards a focus on the platform access area where ticket sales, information, and access to trains are provided.

The intent is to provide a central location for all fare and trip planning information within the Platform Access Module, and within a direct line of sight to the Station Ambassador Office if present.

Architectural Expression

The design of the Self-Serve Hub is based on a highly visible vertical and horizontal plane that wraps and identifies the Self-serve ticketing area. The colour and materials selected shall be thematically linked to the Station Ambassador Office, and shall have the ability to be located in either interior or exterior locations.

The number and type of devices will be determined in accordance with project-specific scope.

In cases where there is no Station Building, the Self-serve Hub may be adapted to become a stand-alone exterior structure wihin a GO Transit Shelter.

The Self-serve Hub shall be provided at Stations in accordance with the GO Station Categorization Framework, project scope, Figures 17 to 22, and Table 4.

Figure 17: View of Self-serve Hub wall within the Platform Access Module

Table 4: Self-serve Hub requirements

Elements	Requirements:
Finishes	• Shall conform to finishes identified Section 2.9.3 Interior Finishes Schedule.
Wayfinding and Signage	• Shall conform to requirements of the Metrolinx Wayfinding Design Standard • Shall conform to placement locations as identified in Figure18 to 22 • Digital Screen shall be placed closest to the path of travel as shown in Figure 22.
Key Fixtures and Furnishings	• Fare devices shall be equally spaced along the length of the wall, with a clearance of 1700mm between devices. • Placement of digital departure screens shall conform to Universal Design Standard • Digital departure screen(s) shall be wall mounted and recessed within Self-serve Hub wall with 25mm gap surrounding screens for access • One (1) waste receptacle shall be provided in proximity to TVM
Lighting Strategy	• Shall conform to Reflected Ceiling Plan, Figure 59 and 2.10.11 Station Building Interior Lighting Fixtures
Station Operations and Maintenance Requirements	• Reserved
Technical Requirements	• Reserved

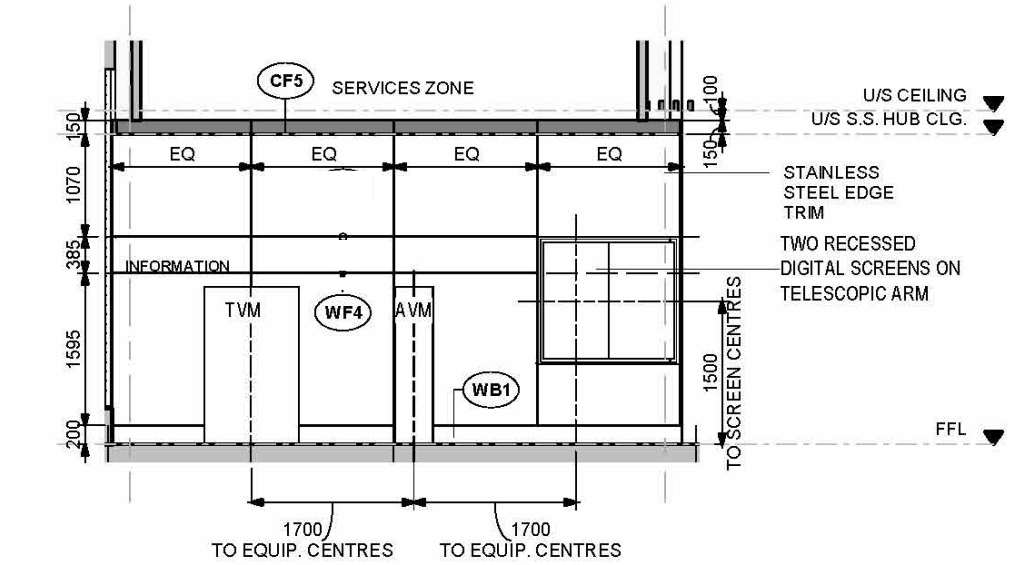


Figure 18: Front elevation of Self-serve Hub wall (All dimensions are noted in mm).

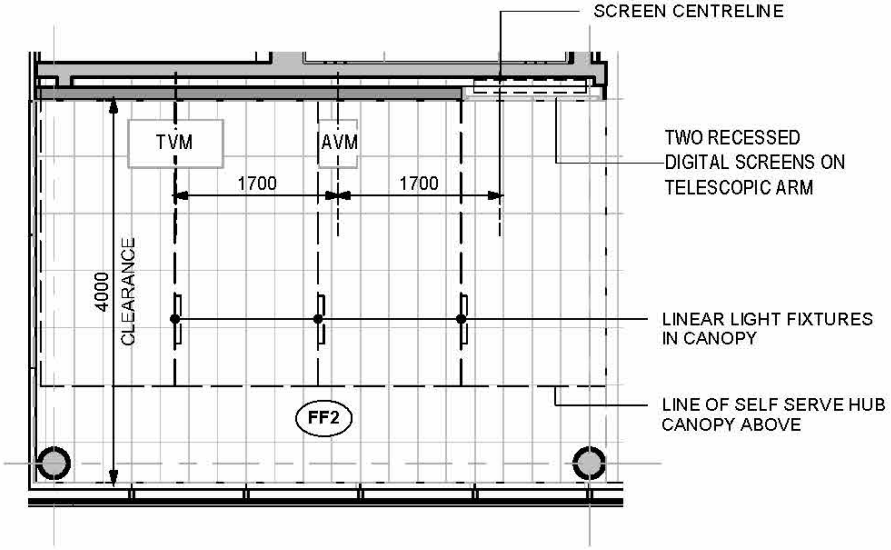


Figure 19: Plan of Self-serve Hub area (All dimensions are noted in mm).

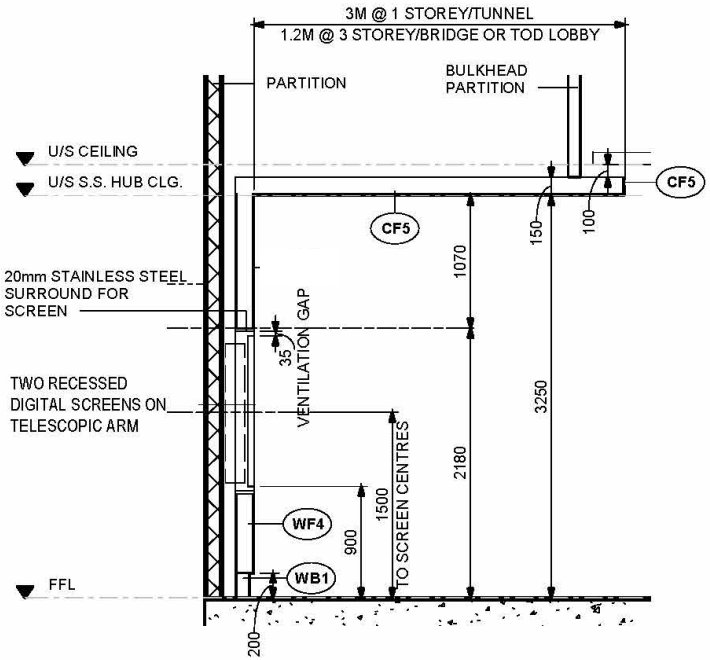


Figure 20: Section of Self-serve Hub area

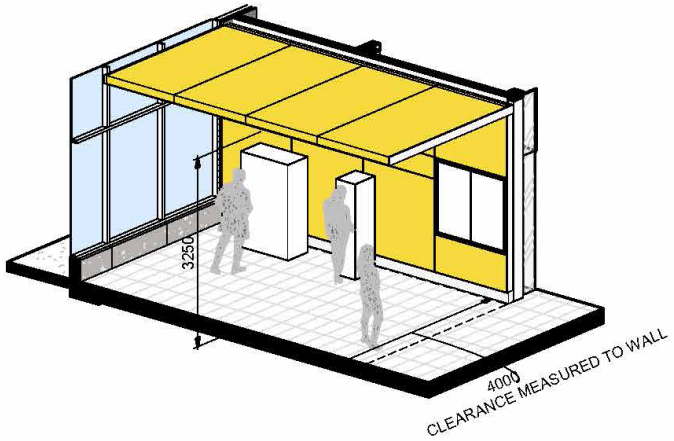


Figure 22: View of Self-serve Hub area illustrating critical dimensions

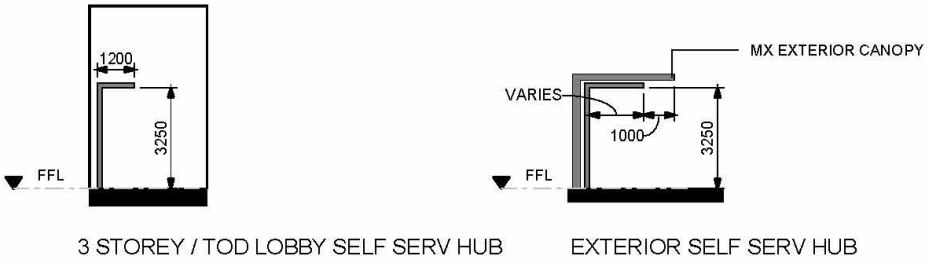


Figure 21: Section of Self-serve Hub area in a 3 Storey building or in an exterior situation

2.4.6 VERTICAL CIRCULATION, TUNNELS AND BRIDGES

Vertical Circulation elements, as well as Tunnels and Bridges provide a network of barrier-free pedestrian connections to the Platform and can potentially serve as community connection points on either side of the tracks Vertical Circulation elements include stairs and elevators, and with Tunnels and Bridges form an integral part of the Platform Access Module.

Customer Experience

Tunnels and bridges are Elements of Continuity across the GO Network and provide different benefits to the customer experience and constructibility.

Tunnels provide a shorter vertical travel distance to a platform.

Bridges can provide greater CPTED alignment with transparent enclosure and provide greater operational resiliency to severe weather conditions, particularly heavy rainfall and resulting flooding. Bridges also have the potential for providing greater access to daylight while crossing the corridor as compared to Tunnels. However, this abundant exposure to daylighting needs to be tempered with reducing heat gain and thermal loss during summer and winter months respectively.

Vertical Circulation, Tunnels and Bridges shall be provided at Stations in accordance with Tables 5 to 8 as well as Figures 23 to 29.

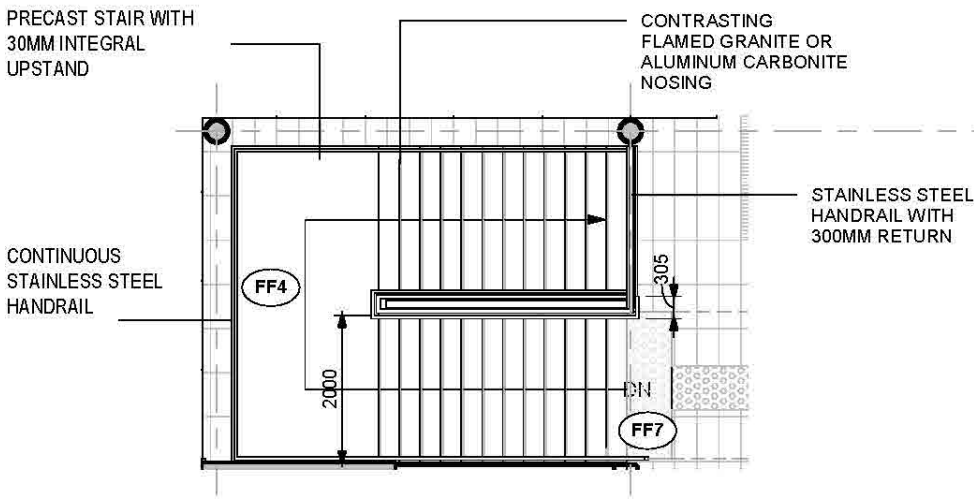


Figure 23: Illustration of a precast stair in Platform Access Module with tunnel access

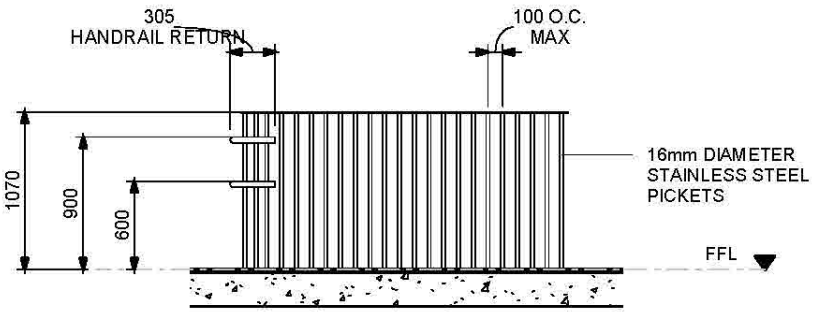


Figure 24: Illustration of stair railing in Platform Access Module

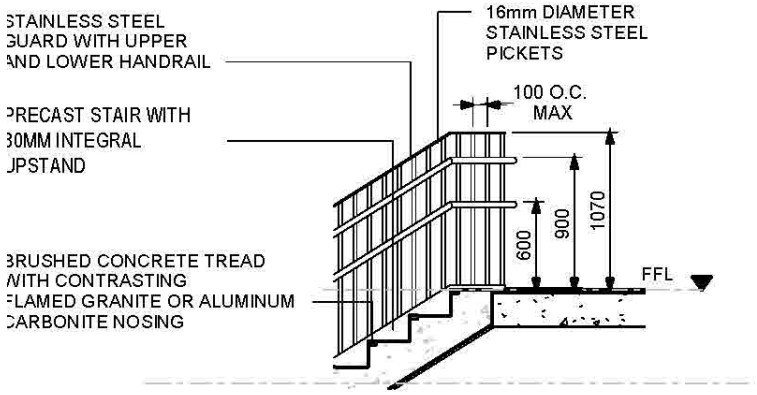


Figure 25: Illustration of stair railing in Platform Access Module

Table 5: Stair Design Requirements

Elements	Requirements:
Guidance for usage	• Shall be straight-run stairs on Platforms • Shall be return-run at Platform Access Module

General	• Shall conform to Universal Design Standard
	• Shall be designed to:
	  • be easy to find
	  • be clearly identified with wayfinding and signage as per the Metrolinx Wayfinding Design Standard
	  • be located near the major circulation routes
	  • be offset from the direct route of travel so that they are not a hazard
	  • have uniform riser heights and tread depths
	• All stairs shall be precast reinforced concrete as per Figure 16
	• Floor elevation shall be set to provide positive slope from the doors to the platform
	• Vertical and horizontal wiring conduits shall be concealed and integrated with the structure

Lighting	• Shall conform to GO DRM lighting levels • Shall be provided in a continuous LED strip located within the handrail • Where stair runs are stacked, LED strip lighting shall be embedded into the bottom of the upper run to light the lower run of stairs. • Lighting in the stairwell shall be installed at easily maintainable heights requiring no more than a small step ladder. This includes the area over the stairs. • Reference Station Operation & Maintenance Requirements.
Photo-luminescent strips	• Shall be located on walls accessing tunnel level only • Shall be surface mounted at 300mm above stair nosing and landings • Shall be installed continuously along the entire length of stairwell wall transitioning in a continuous manner at tunnel level
Handrails	• Material, anchorage and fittings shall be stainless steel, brush finish, Type 316.
Guardrails	• Stainless steel guardrails shall be provided behind the window walls of stair and elevator wells • Space for window washing shall be provided between columns/guardrails and glazing
Tactile Attention Indicators	• Shall be provided at top of stairs • Shall have a depth of 610 mm commencing one tread depth from the edge

Table 6: Elevator Design Requirements (The following are additional requirements to the DRM requirements)

Elements	Requirements:
General	• Shall conform to GO Master Elevator Performance Specification • Shall conform to the Universal Design Standard • Shall conform to GO Standard Drawings for the Elevator Cab button configuration • Shall be designed with a minimal overrun and no visible rooftop projections • Shall be flow-through configuration on Platforms • Elevator shaft, car enclosure and entrance doors shall be constructed with the maximum amount of glazing possible.
Floor Grille	• Shall be constructed from stainless steel and designed for clean out by one person, unaided
Elevator Numbering convention	• Elevators north of the tracks shall be assigned numbers first, if not applicable, east side of track shall be first • Elevator groups serving a parking structure shall be numbered in one sequence

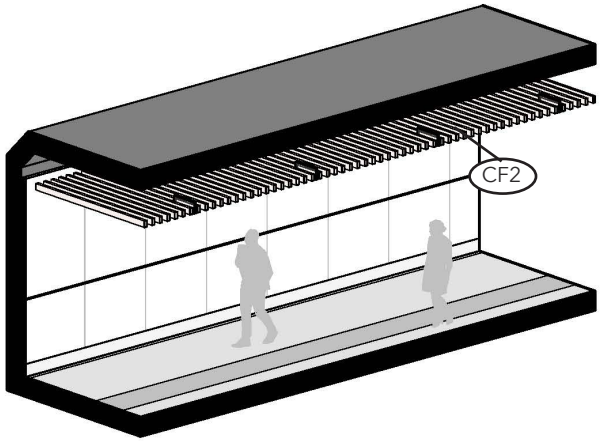


Figure26: Illustration of tunnel showing ceiling raceway and wall finish

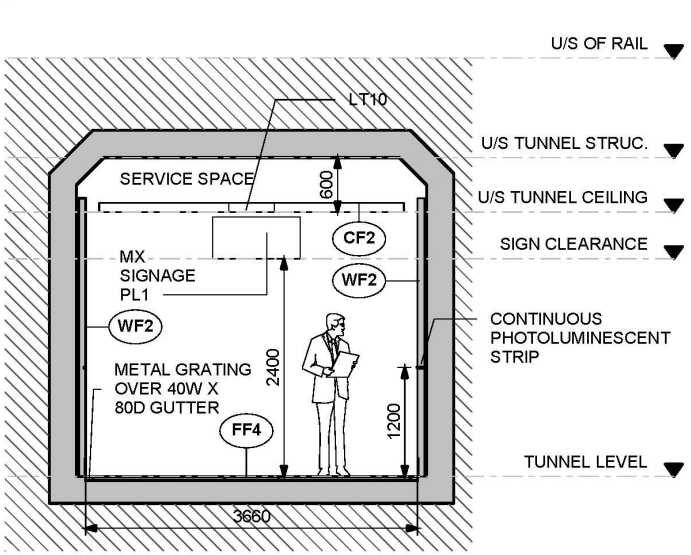


Figure 27: Tunnel cross section (Reference DRM Figure D-10 for construction profile of Tunnel.)

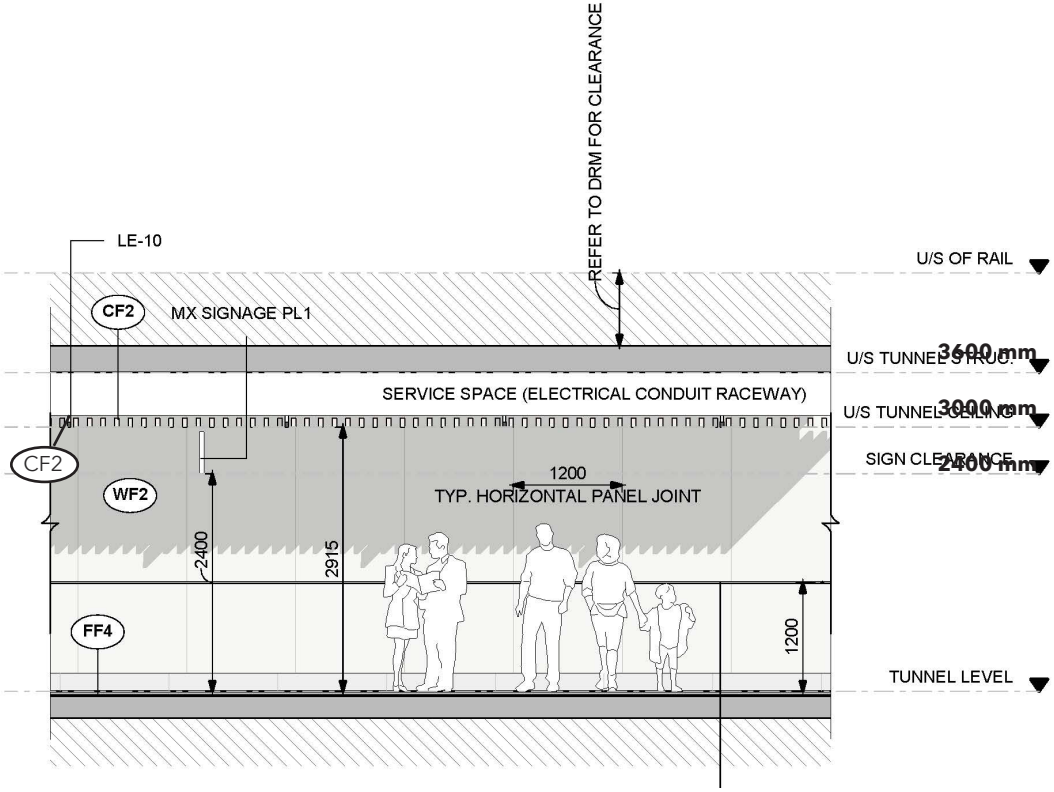


Figure 28: Tunnel longitudinal section

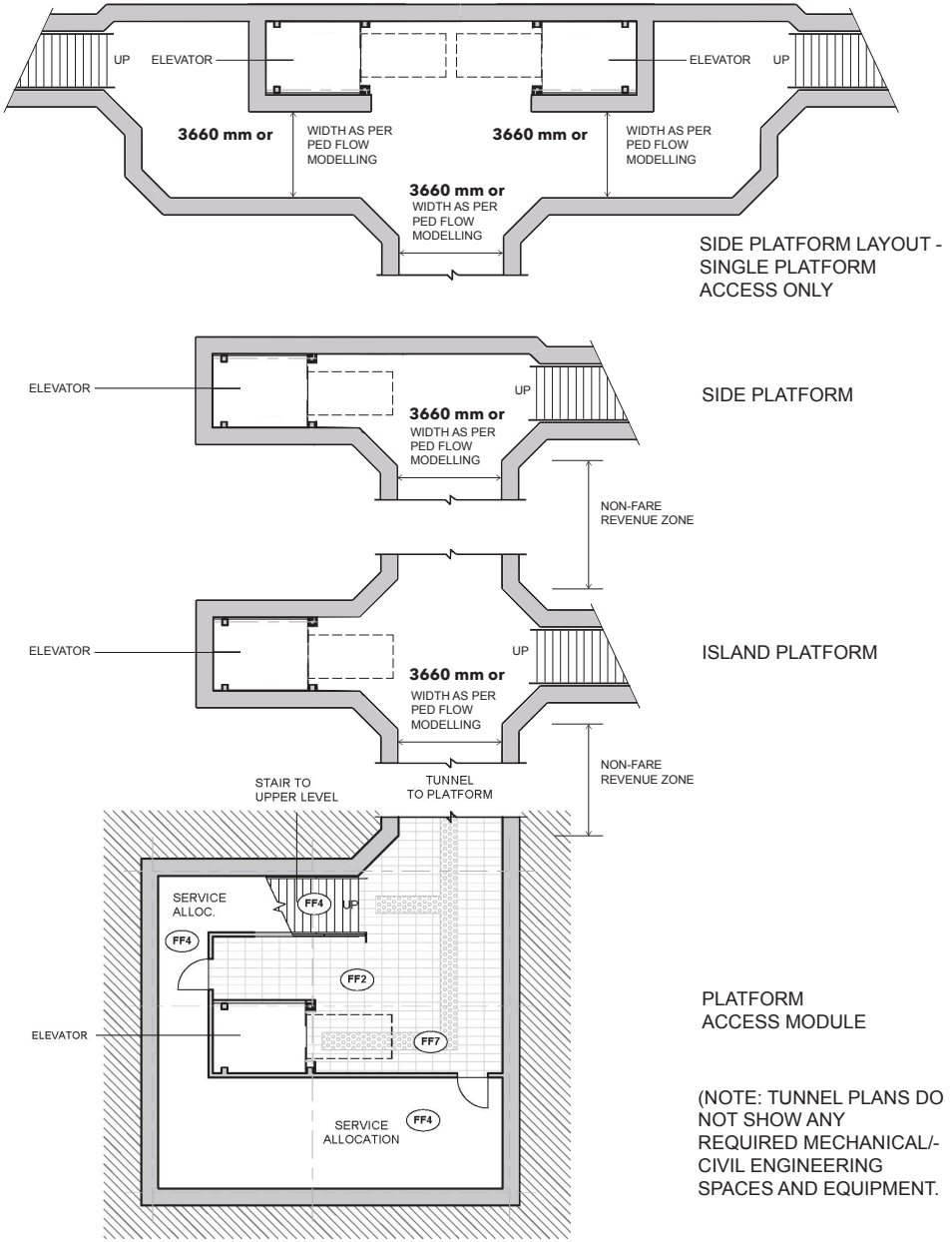


Figure 29: Typical tunnel configurations for Island and side platforms

Table 7: Pedestrian Tunnel Design Requirements

Elements	Requirements:

General Tunnel Design Requirements	• Shall be linked to the Platform Access Module.
	• Shall have a minimum clear interior width of 3660mm.
	• Inside the precast design there shall be ENT or PVC raceways placed to feed boxes in the ceiling for mounting speakers, cameras, antennas (cell and WI-FI coverage), exit signs, fire alarm systems, digital signs, advertising and all electrical and IT elements.
	• The precast and cast-in-place concrete areas shall have a coordinated design so that the chases and cavities are continuous and linked to connections at Platform Access Modules and at rail platforms in a concealed fashion, not visible to customers. The design shall include a method of mounting the raceways to the ceiling in a clean organized manner.
	• Location of raceways and crossovers shall be co-ordinated.
	• If the tunnel is capable of being extended, the design shall include an easy way of extending the chases in the future.
	• Digital signage shall require both power and communications.
	• The tunnels shall include at a minimum: elevators, pump rooms and (if not on the platform) HUB rooms for electrical and communications distribution.
	• Power and communication raceways shall be separate (they cannot be mixed). Each shall have at minimum a hand well or manhole feeding and/or exiting the tunnel and at each 90 degree turn.
	• Ceiling finish shall be Metal Panel Ceiling system (CF2) as per Interior Finishes Schedule
	• Floors shall include tactile guiding indicator as per Universal Standard, and finished with concrete (FF4) as per Interior Finishes Schedule
	• Tunnels shall be designed to:
	  • be compatible with CCTV requirements
	  • prevent CCTV field view from being obscured by overhead signs
	  • have a minimum 2.7m clear headroom, inclusive of floor finish
	  • have a minimum slope of 0.30% for drainage
	  • include side-gutters 40mm deep by 80mm wide
	  • not locate drains, pits or other obstructions at the bottom of stairs or in front of service doors and elevator doors
	  • include pump rooms with pits
	• Corners shall be 45 degree angled (300mm x 300mm minimum corner cuts at 45 degrees) or approved alternate if required for safety and passenger flow.
	• Convex mirror units shall be provided at internal 90 degree corners and angled wall corners at directional changes
	• Shall have a hose bib every 30 meters or less along the length of the tunnel.

Elements	Specifications:

Tunnel Chase Requirements	• Conduit and raceways shall be located in the ceiling and walls of the tunnel
	• Ceiling finish shall be Metal Panel Ceiling system (CF2) as per Interior Finishes Schedule
	• Chases shall be provided for interconnection of raceways to the platform canopy,
	• The chase cavities;
	  • shall be continuous above door, stair and elevator openings as well as tunnel interconnections.
	  • covering shall be easily removable cover pans with similar material as the t=Tunnel flooring.
	  • cover pans shall require a special tool to remove them and a covered opening to place the tool in to remove the pan.
	  • below the floor shall be equipped with a drainage system.
	• Vertical chases (for raceways) shall be cast-in-place in tunnel transitions to stairways and elevators.
	• The chase shall have pull, junction and receptacle boxes. There shall also be allowance for drivers and boxes.
	• Refer to Raceway For Electrical Systems Specification for additional information

Tunnel Lighting Requirements	• The recessed mounted lighting shall be continuous for the whole length of the tunnel and be easily maintained and replaced • The lighting fixture shall be vandal resistant and be power washable • The lighting in the tunnel shall have occupancy sensors.

Tunnel Wall Requirements	• A 250mm cavity shall be provided along both sides of the tunnel walls, behind the panels. This shall accommodate the depth of the digital signage and advertising (non-fare revenue zone) plus mounting space for services.
	• Walls of tunnels shall be clad with porcelain tile wall system (WF2), per Interior Finishes Schedule, right up to and including the Stairs
	• Photo-luminescent Strips shall be:
	  • provided along both sides of Tunnel walls;
	  • integrated within wall panel system; and
	  • installed continuously along entire length of tunnel, transitioning in a continuous manner to all stairwells.
	• The wall panels shall allow for easy access to the supporting structure behind (e.g. hinged or removable panels). These panels shall not be easily opened by the public and shall require a tool to open and lock them in place.
	• If water piping is required in the chase, it shall be located at the bottom of the cavity.

Elements	Requirements:
Advertising Placement in Tunnels	• Advertising in tunnels shall not be located on floors of tunnel • Advertising Panels shall not project into the 3660 clear minimum with of the tunnel • Advertising Panels shall be equally spaced along the tunnel wall, and hung an equal distance from tunnel floor to ceiling • Electrical and communication connections shall be provided at a minimum of 1.5m horizontal spacing along tunnel walls • Communication racks and infrastructure required to support the content management system shall be provided within a separate Third-party Communications Room within the Services Module. • Electrical and data cables shall be accessible from behind • All final advertising placements shall be at the discretion of Metrolinx
Enhanced Tunnels	• Reserved
Station Operations and Maintenance Requirements	• Ensure dedicated access to sump pits and ensure sump pit access doors/covers are not located in public paths of travel.
Technical Requirements	• SFTPs shall not be placed within the Tunnel area • Tunnels shall not contain digital departure screens • Tunnel design shall maximize passenger flow

Table 8: Pedestrian Bridges and Overpass (Reserved)

Elements	Requirements:

2.5 MODULE 2: STATION AMBASSADOR

2.5.1 GENERAL PRINCIPLES

The Station Ambassador Office is designed to provide the station staff a place to do their work. It is their "home base" complete with all required equipment. This Office shall be identifiable to the customer as a place to receive information and assistance when needed.

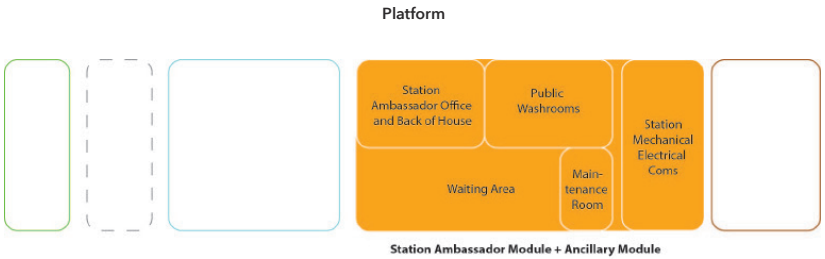
Customer Experience

When a station is staffed, a Station Ambassador (formerly Station Attendant) will be on duty to provide face to face assistance to customers. A staffed station will also mean additional ridership-driven amenity including a Station Ambassador Office, an indoor Waiting Area and Public Washrooms. Together, these key program elements will form a Station Ambassador Module that will provide a consistent customer experience in accessing the station amenities. The entire Station Ambassador Module shall be a conditioned space.

Functional Design Requirements

The GO Station Categorization Framework will set the size of the station. This will result in one of two types of Station Ambassador Modules being assigned to a station; Large or Small (as illustrated in Figures 31 and 32).

The relationship between the Station Ambassador Office, the Waiting Area, the Public Washrooms and the Maintenance Room (in either Large or Small modules) shall always be consistent.



Station Ambassador Module + Ancillary Module

Sliding entrance doors to the Station Ambassador Module shall be lockable.

The Station Ambassador module shall have less glazing area than the Platform Access module, and as such, have a higher percentage of overall solid cladding as illustrated in Figure 30.

Where there is no Station Ambassador as part of the Station program, there will be no Station Ambassador module required.

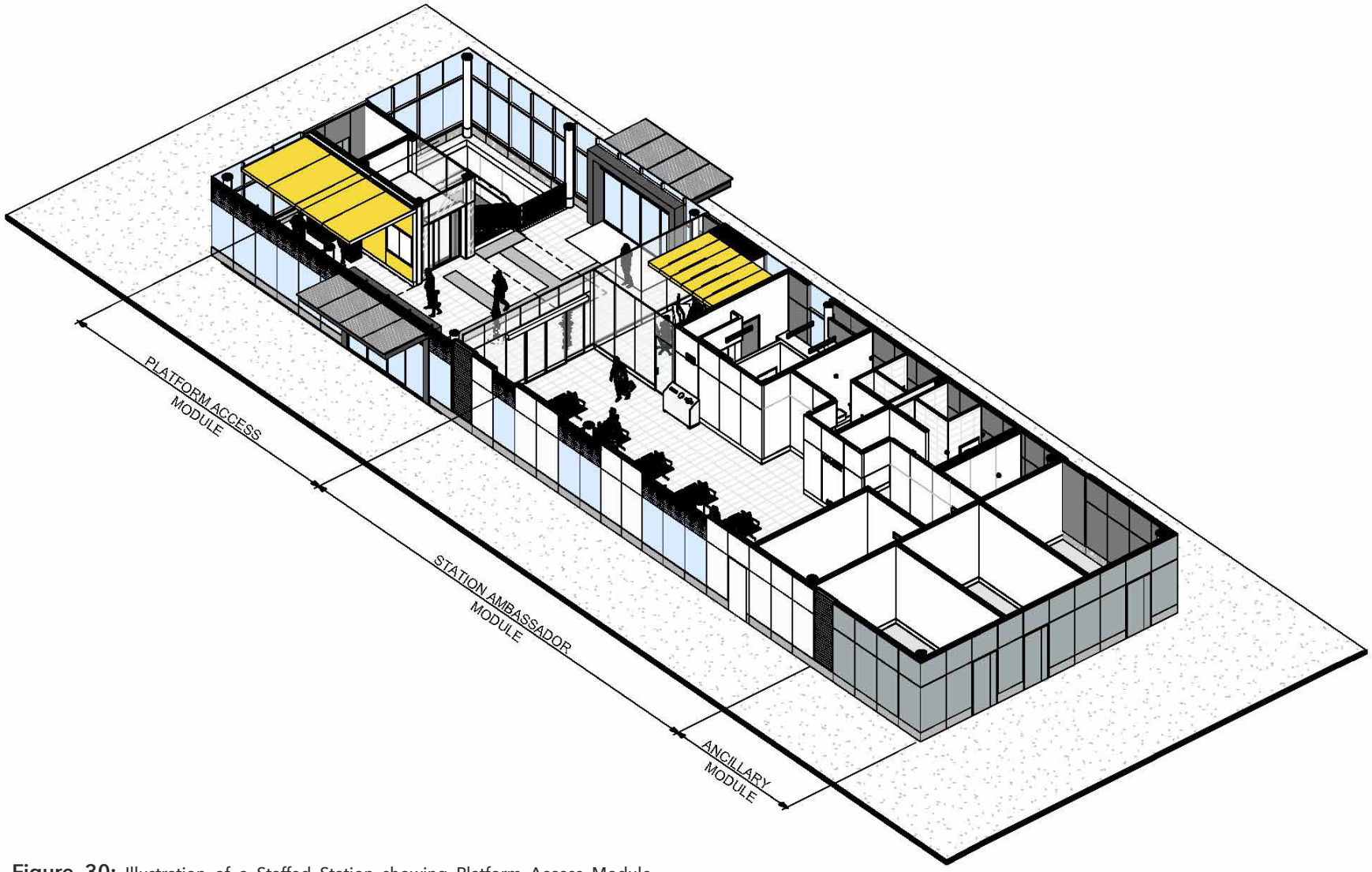


Figure 30: Illustration of a Staffed Station showing Platform Access Module, Station Ambassador Module, and Ancillary Module.

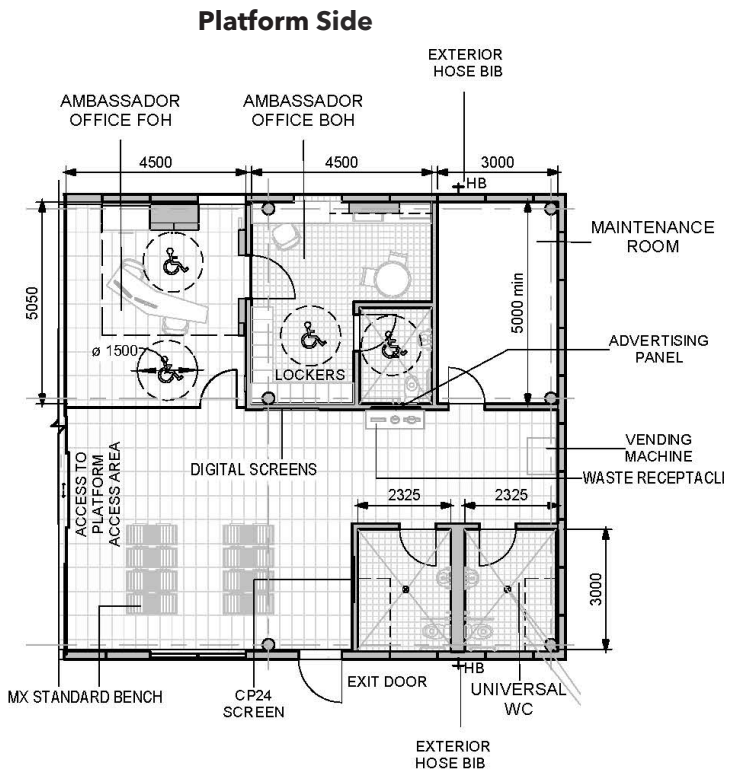


Figure 31: Plan of Station Ambassador module (small)

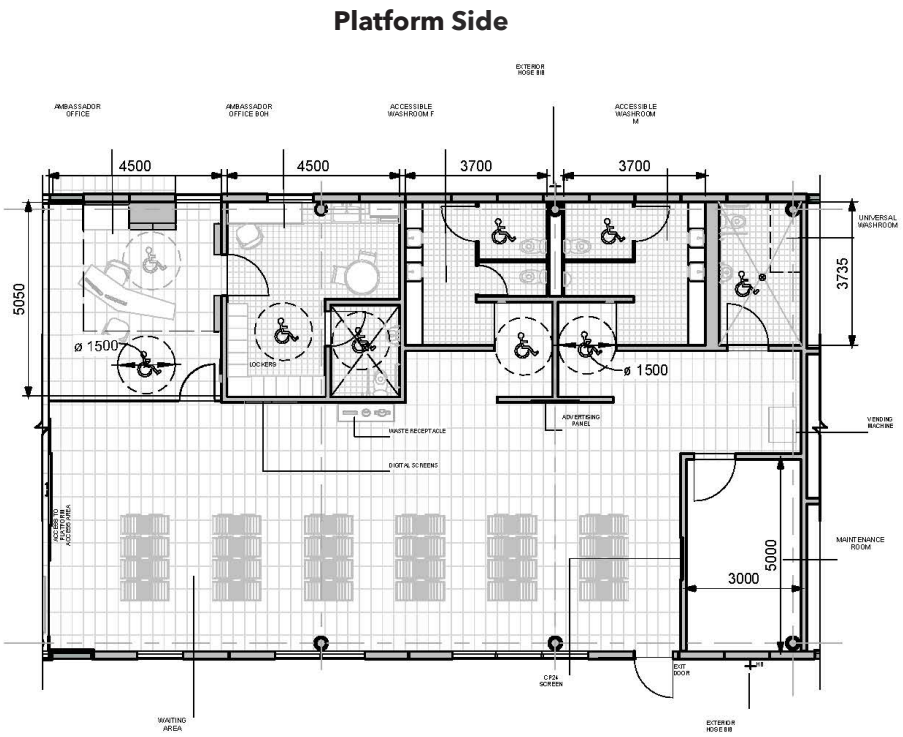


Figure 32: Plan of Station Ambassador module (large)

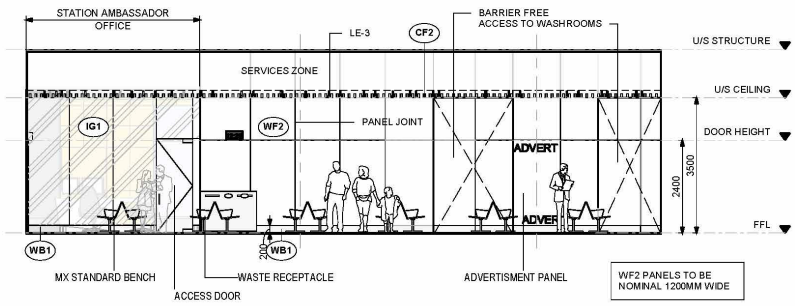


Figure 33: Section of Station Ambassador module (large)

2.5.2 STATION AMBASSADOR OFFICE AND BACK OF HOUSE

The Station Ambassador Office and the Self-serve Hub support Metrolinx's "Self-serve Fare Strategy" and shall be thematically linked through colour, materiality and form, including a highly visible folded plane that wraps and identifies the Station Ambassador's desk.

Customer Experience

The Station Ambassador Office shall be identifiable by the customer as a place to receive information and include a customer-facing area and back of house area.

Functional Design Requirements

It shall be a conditioned space that has visibility to the Self-serve Hub and shall be in close proximity to the Waiting Area and Platform Access Area.

The Station Ambassador office shall provide the Station Ambassador with direct views out to the Platform, the Self-serve Hub, and the Waiting Area.

In retrofit situations, the Station Ambassador Office will use the space formally devoted to Service Counters.

The Station Ambassador Office is an Element of Continuity across the GO network.

The Station Ambassador Office shall be provided at Stations in accordance with Table 9 and Figures 34-38.

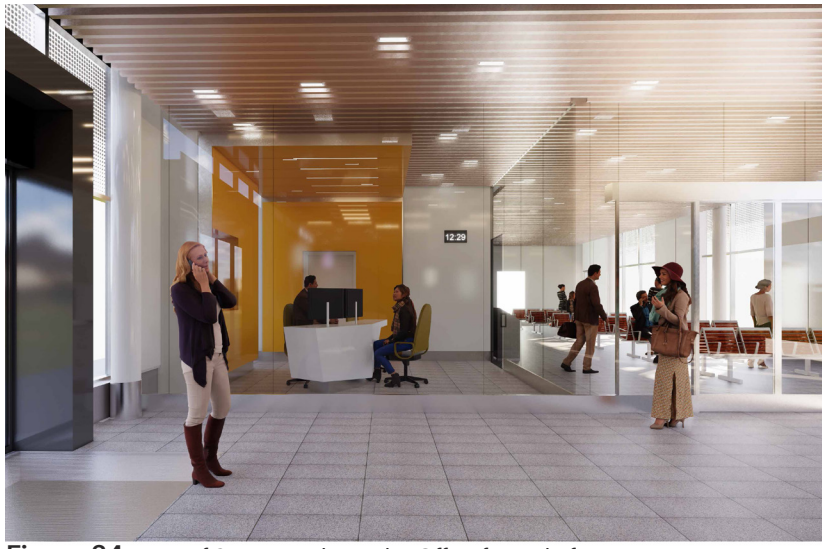


Figure 34: View of Station Ambassador Office from Platform Access Area

Table 9: Station Ambassador Office and Back of House Requirements

Elements	Requirements:

Design Requirements, Station Ambassador Office	• The Station Ambassador Office shall be designed to:
	  • provide a Barrier-free work environment
	  • be 4500mm wide x 5050mm deep
	  • have a finished ceiling height minimum of 3600mm and maximum of 4000mm;
	  • maintain visual connection to the Platform, the Self-serve Hub and the Waiting Area
	  • include one desk for the Station Ambassador to assist customers
	• Floor finish shall be FF2, as per 2.9.3 Interior Finishes Schedule
	• Ceiling finish shall be a suspended prefinished continuous linear metal grille ceiling system that incorporates linear light fixtures between grilles
	• Back wall shall include millwork for:
	  • customer information products and office supply storage,
	  • location for printer, and
	  • charging docks for a minimum of four (4) mobile devices
	• Computer station shall include:
	  • CPU storage under the desk
	  • Docking station with two (2) monitors
	• A panic button shall be provided on the underside of the desk at workstation location
	• Provide two (2) chairs for staff and one (1) chair for customer use
	• Provide digital network clock and PA phone

Design Requirements, Station Ambassador Back of House	• The Station Ambassador Back of House shall be designed to:
	  • provide a Barrier-free work environment
	  • be 4500mm wide x 5050mm deep
	  • have a finished ceiling height minimum of 3600mm and maximum of 4000mm;
	• Shall include a kitchenette with sink, microwave and under counter refrigerator
	• Shall include a lunch area with table and seating for two
	• Shall include a small workstation and safe (safe is only required at large Hub stations).
	• Shall accommodate 12 lockers (each locker is 1800mm high, 375mm wide, and 525mm deep)
	• Shall include (1) Barrier-free Washroom with compliant hand sink, toilet, paper towel dispenser, coat hook, toilet paper dispenser, garbage bin and mirror.

Elements	Requirements:
Feature Elements	• A highly visible folded plane shall wrap and identify the Station Ambassador office and be thematically linked to the Self-serve Hub in materiality, colour and form. • A feature desk for the Station Ambassador shall be provided with space for 2 seated work stations, and a transaction surface for Station Ambassadors to engage with and assist passengers (further details on the Station Ambassador desk to be developed) • A millwork credenza shall be located behind the desk and integrated with the feature ceiling element, and shall contain space for the storage of office supplied and a printer niche.
Lighting Strategy	• Shall conform to 2.10.11 Interior Lighting Fixtures
Station Operations and Maintenance Requirements	• Door to Station Ambassador Office shall be lockable with 'fob' access. • All millwork to be lockable. • Provide non-freeze exterior hose bibs on each exterior wall.
Technical Requirements	• Power to supply the feature desk shall come from below

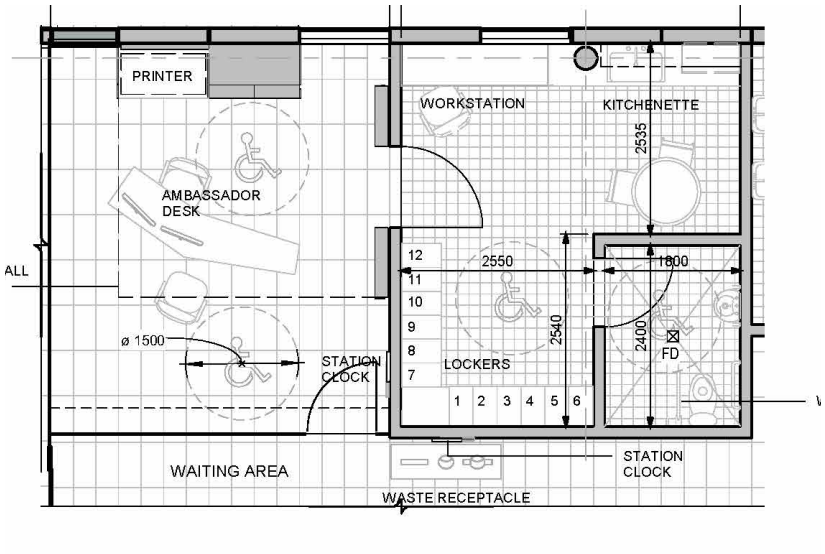


Figure 35: Plan of Station Ambassador Office and Back of House

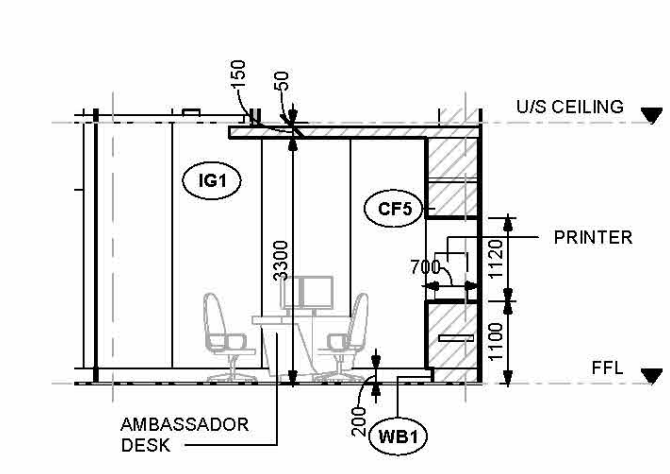


Figure 37: Cross section of Station Ambassador Office

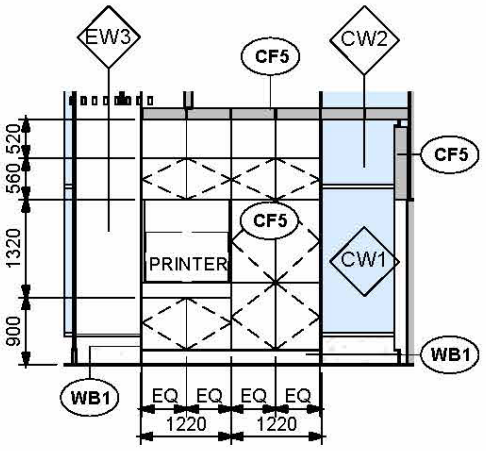


Figure 36: Section elevation of Station Ambassador Office showing millwork cabinet

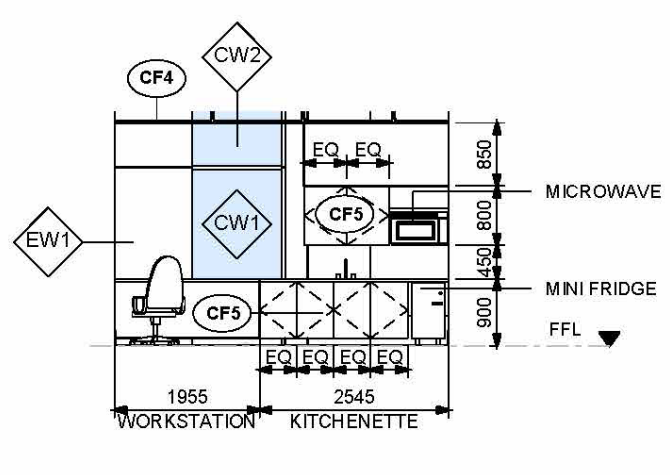


Figure 38: Section elevation of Station Ambassador Office and Back of House space showing kitchenette and work station.

2.5.3 WAITING AREA

The Waiting Area is a conditioned space that provides amenity to those waiting for pick up, departure, or require assistance from the Station Ambassador. The size of the Waiting Area will vary in response to the GO Station Categorization and project scope, resulting in either a large or small waiting area.

Customer Experience

The Waiting Area provides customer service and comfort with immediate proximity and maximized line of sight to amenities such as public washrooms , bus loop and PUDO.

Functional Design Requirements

The Waiting Area shall be provided at Stations in accordance with Table 10 and Figures 31 to 32 and Figure 39.

Figure 39: View of Waiting Area

Table 10: Waiting Area Requirements

Elements	Requirements:

Design Requirements	• The Waiting room shall be designed to:
	  • be a conditioned space;
	  • have a finished ceiling height minimum of 3600mm and maximum of 4000mm;
	  • separate circulation path from seating zone;
	  • ensure accessible seating requirements, as outlined in the Universal Design Standard, are met by providing a clear area designated for wheeled mobility aids (WMAs), outside of the circulation path;
	  • maintain visual connections from standing and seated positions to passenger pick-up and drop-off (PUDO), Public Washrooms and Station Ambassador Office; and
	  • include free-standing furnishing as per GO Standard benches and waste receptacles
	• Recessed Foot Grilles shall be provided at all exterior doors. Comply with Section 2.10.9.
	• Floor finish shall conform to Interior Finishes Schedule
	• Ceiling finish shall be a suspended prefinished continuous linear metal grille ceiling system that incorporates linear light fixtures between grilles, as per Interior Finishes Schedule
	• One (1) Charging station (power receptacle with USB plug-in) shall be provided for every (4) four seats
	• One (1) Waste receptacle shall be provided in immediate proximity to seating area.
	• One (1) water fountain and water bottle filling station shall be provided within the Waiting Area

Feature Elements	• Seating shall be delineated as a distinct seating zone • Wayfinding and signage shall be provided in conformance with Metrolinx Wayfinding Design Standard, Sign Implementation Manual, and GO Static Signage Catalogue; • Fixtures and Furnishings shall be provided as per Fixtures and Furnishings Section 2.4.2
Lighting Strategy	• Linear light fixtures shall be provided in waiting area • Lighting shall conform to 2.10.11 Interior Lighting Fixtures Schedule.
Station Operations and Maintenance Requirements	• Reserved
Technical Requirements	• Reserved

2.5.4 PUBLIC WASHROOMS

Public Washrooms are a key customer amenity within all Stations that are staffed. They shall be designed to serve all customers and to meet requirements found within the Universal Design Standard.

Customer Experience

Public Washrooms are associated with the Waiting Area and shall be highly visible, durable and easy to maintain.

Functional Design Requirements

Public Washrooms shall be provided at Stations in accordance with the GO Station Categorization, Universal Design Standard, and the DRM, and shall conform to Table 11 and Figures 31 to 32.

Table 11: Public Washroom Requirements

Elements	Requirements:
Design Requirements	• Entrances into male and female washrooms shall be door-less • All plumbing fixtures shall be located on interior walls • One standard infant change table shall be provided in each washroom • Floor drains shall not be located in pedestrian or wheelchair paths • Universal and accessible washrooms shall be provided in accordance with Universal Design Standard • In multi-use public washrooms and maintenance facilities, toilet partitions shall be embossed and ceiling hung • Toilets and urinals shall be wall hung with touch-less flush valve. • Sinks shall be wall hung and barrier free • Tilt mirrors shall be barrier free and have stainless steel frames • 1 electric hand dryer shall be provided for every 2 lavatories. Locate close to sinks to minimize dripping on floors. • Where only one lavatory is in room, 1 electric hand dryer shall be provided • Toilet paper dispenser shall be surface mounted, multi-roll vertical type, lockable, and commercial grade • Waste receptacles shall be wall-mounted, stainless steel, vertical type with a capacity of 20L minimum, commercial grade • Soap dispensers shall be wall mounted, commercial grade, touch-less. • One coat hook at barrier-free height shall be provided per washroom or washroom stall.
Lighting Strategy	• Linear LED lighting shall be provided in the ceiling cove at the back wall of washroom stalls to create a soft, uniform glow in the space • Recessed LED fixtures shall be provided for the rest of the washroom area • Perimeter ceiling cove and linear lighting shall be provided along the wall within the female/make washroom stalls • Lighting shall conform to 2.10.11 Interior Lighting Fixtures Schedule.
Station Operations and Maintenance Requirements	• Wall tile shall extend the full height of the walls • Measures shall be taken to ensure wall tiles are protected from damage at corners
Technical Requirements	• Reserved

2.5.5 MAINTENANCE ROOM

The Maintenance Room is critical to successful operations and maintenance within the Station Building.

The Maintenance Room is required at Staffed Stations within the Station Ambassador Module and shall be in close proximity to the Public Washrooms.

In an unstaffed Station, the maintenance room shall be incorporated within the Service Allocation areas.

The Maintenance Room design shall conform to the requirements of Table 12 and Figures 31 to 32.

Table 12: Maintenance Room Requirements

Elements	Requirements

Maintenance Room(s)	• Shall be 15m2
	• Shall be provided with direct access to building interior
	• Shall be dedicated space for maintenance equipment and storage only, and shall not contain items such as meters, water tanks or other intrusions
	• Door to Maintenance Room shall be:
	  • an in-swinging door
	  • extra wide heavy duty hollow metal double door with a single 915mm leaf and a second 305mm latching section, for a total opening of 1220mm.
	  • provided with a minimum of four (4) butt hinges per door
	• Lighting shall be provided in accordance with Section 2.10.11
	• Shall accommodate space for a mop bucket (610 mm x 460 mm x 460 mm)
	• Shall accommodate space for a walk-behind-Scrubber (1370 mm x 610 mm x 1140 mm)
	• Fixtures and furnishings shall include:
	  • 4-6 power receptacles with 208V and 110V supply and 60-amp service
	  • Floor-mounted slop sink (610 mm x 610 mm x 250 mm) with easy access clean out for slop sink P trap
	  • Faucets and floor drains
	  • Wall-mounted water purification system
	  • Hot water tank or wall-mounted tankless hot water heater
	  • Exhaust fan
	  • Open shelving and mop hooks
	  • Wall mounted hose rack
	  • Wall mounted hangers for 3 brooms
	  • Four staff lockers, full height with vented louvres at base
	  • One or Two lockable metal storage cabinets (910 mm x 460 mm x 1830 mm)
	  • Two lockers (1800 mm x w 375 mm x d 525 mm)
	  • One small table and chair
	  • Key fob access

2.6 MODULE 3: ANCILLARY AREAS

Ancillary spaces house critical back of house infrastructure necessary for the operations of the Station Building. This include the Mechanical Room, Electrical Room, and Communications Room.

The relationship between the Mechanical Room, Electrical Room and Communications Room shall always be consistent. Together, these ancillary areas form a repeatable yet adaptable Ancillary Module that will provide for consistent operations across the GO Network.

Additional Mechanical, Electrical and Communication spaces required for the Site and Platform shall be provided within the Service module.

The Station Building shall accommodate the following Ancillary Areas in accordance with Table 13 and Figures 30, 44 and 45.

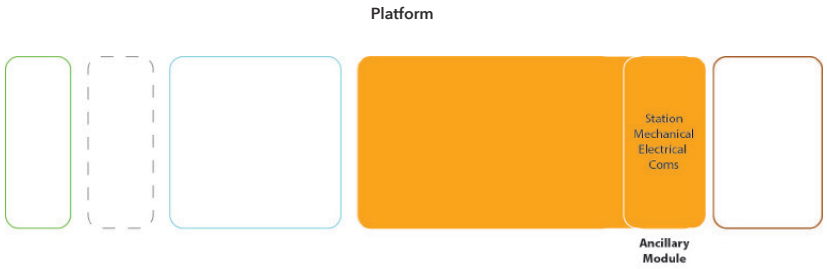


Table 13: Ancillary Area design requirements

Ancillary space	Requirements	Module

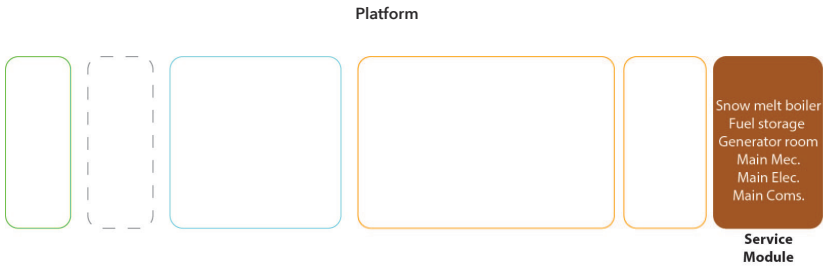
Mechanical Room(s)	• Shall conform to GO DRM Mechanical section
	• Shall have direct access at grade through double doors
	• Fixtures and furnishings shall include:
	  • Power receptacles
	  • Floor drains
	  • Spare and additional filters, etc.
	  • Storage shelves and/or cabinets
	  • Eye-wash station
	  • Exterior non-freeze hose bib.
		3

Electrical Room(s)	• Shall conform to GO DRM Electrical section • Shall have direct access from building exterior for after-hour access • Shall provide spare wall space for future equipment due to additions or renovations	3
Communication Room(s)	• Shall conform to GO DRM Communication section • Shall have direct access from building exterior for after-hour access • Shall be located in proximity to electrical room	3
Station Operations and Maintenance Requirements	• Reserved	
Technical Requirements	• Reserved	

2.7 MODULE 4: SERVICE BUILDING

Service functions include critical back of house functions required for a Station to operate. The functions included within the Service module will vary depending on the particular station requirements, but can include fuel storage, a back up generator room, snow melt equipment, as well as the main Mechanical, Electrical and Communications rooms that service the Station Site. It is required in both Staffed and Unstaffed Station Buildings.

Service areas shall be consolidated where possible to reduce the amount of rooms or need for separate structures. Though a discreet module, it shall be seamlessly integrated into the overall building composition. Where Service Areas are not located adjacent to the Station Building, they shall be positioned to avoid dominating public paths of travel and be designed in accordance with CPTED principles.



Customer Experience

Where the Service Building faces a main road or entrance, additional care shall be taken to address this facade.

Table 14: Service Area access and location requirements

Service space	Requirements	Module
Class 3 Hydronic Snow Melt System (where applicable)	• Conform to GO DRM • Shall be consolidated with other Service spaces to minimize the amount of building on site • Shall have direct access at grade	4
Emergency Generator	• Shall conform to GO DRM • Shall have direct access at grade	4
Diesel Storage	• Shall conform to GO DRM	4
Main Mechanical	• Shall conform to GO DRM	4
Main Electrical	• Shall conform to GO DRM	4
Main Communications	• Shall conform to GO DRM	4
Station Operations and Maintenance Requirements	• Reserved	
Technical Requirements	• Reserved	

2.8 MODULE 5: BICYCLE STORAGE

The Bicycle Storage Module is an amenity intended for the secure storage of bicycles. Though a discreet module, the Bicycle Storage Module shall be seamlessly integrated into the overall building composition. Refer to the Bike Infrastructure Standard for additional requirements.

The design of the Bike Storage Module shall locate opportunities for third-party advertising as per Metrolinx Advertising Design Standards. Bike storage requirements are outlined in the Bike Infrastructure Standard and the Station Access Plan.

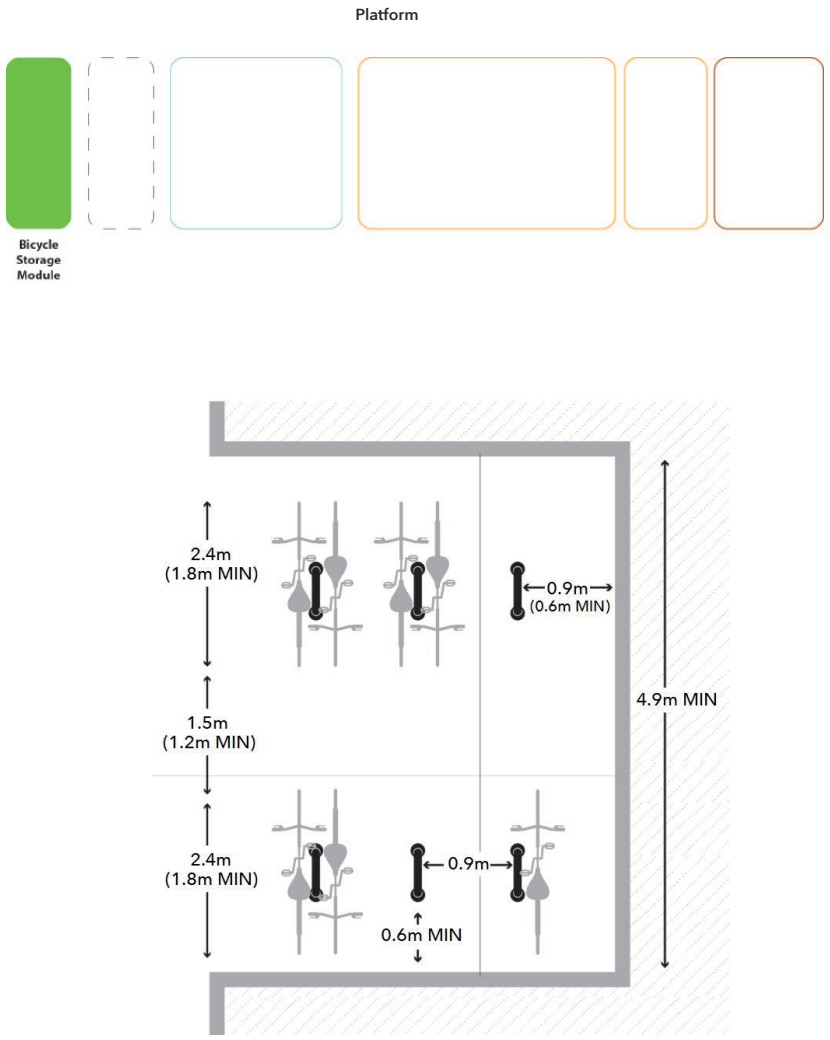


Figure 40: Illustration from Bike Infrastructure Standard: Minimum spacing requirements for installation of Inverted-U and Ring & Post bike racks

2.9 BUILDING ENVELOPE AND MASSING

The building envelope of the Station shall be a composition of a mostly transparent Platform Access Module contrasted with a more solid approach to cladding the exterior of the remaining building modules. The overall massing of the building will be largely determined by platform access requirements. Where Platforms are accessed by Bridges or where Station Buildings navigate a change in grade, the massing of the Platform Access Module will be taller. Where Platforms are access by Tunnels, or in Side Platform conditions, the Platform Access Module shall be a single storey.

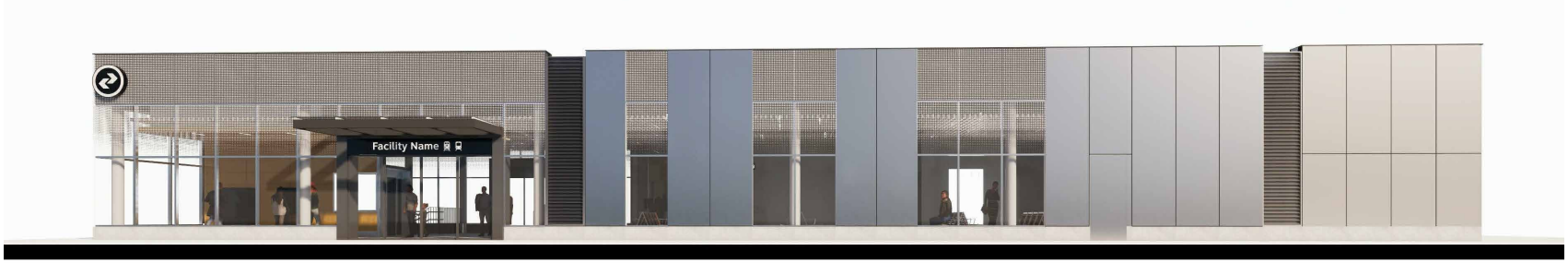


Figure 41: Rendering of a typical staffed station building (Plaza Elevation)

Table 15: Building Envelope details and requirements

Element	Key Detail or Requirements
Wall Base	• Shall be architectural concrete • Top of base shall be 400 mm above finish floor
Cladding	• A modular rhythm shall be expressed in the joints and panel sizes as illustrated in Figure 44. Panel width to be 1200 mm or close there to. Joints to be 12mm maximum width between panels. • Building envelope of Platform Access Module shall be no more than 40% clear glazing, excluding areas of glazing with ceramic frit. • Exterior cladding façade panels shall be vertically oriented with minimal horizontal breaks • Expression of the parapet cap shall be minimized to 150 mm
Louvres	• Shall be flush with façade cladding • Shall be understated and use architectural style louvres only with the minimum allowable free area per mechanical requirements. • Materials shall be consistent with overall façade material approach. Refer to DRM.
Columns	• Where there is a curtain wall, columns shall be expressed, round sections, set back from wall base 100mm • Shall be painted with 400 mm high stainless steel sleeve at base. Stainess steel to be type 316
Glazing	• Shall be cap-less, structural silicon glazed curtainwall system • Circular frit shall be provided on façade in accordance with Figure 33 and Exterior Finishes Schedule. • Curtain wall mullions shall be shop painted white • No glazing units shall be larger than 1200mm x 2000mm
Entry and Platform Access Doors	• Shall be sliding and meet O.B.C. requirements for an exit.
Roof	• Surfaces other than vegetation or solar PV panels shall have a high albedo with an SRI of at least 39 at installation, in accordance with the Sustainable Design Standard • No penetration of pipes, stacks, intakes and outlets shall be visible when viewed from grade • All penetrations shall be concealed within metal enclosures • Roof design shall incorporate access for installation, cleaning, inspection and maintenance without jeopardizing the safety of train operations or station users. Consideration shall be given to roof access hatches, permanent maintenance walkways, roof top fall protection systems
General	• Joints between the same material shall be minimized. • Joints between different materials shall be expressed as a reveal or shadow line

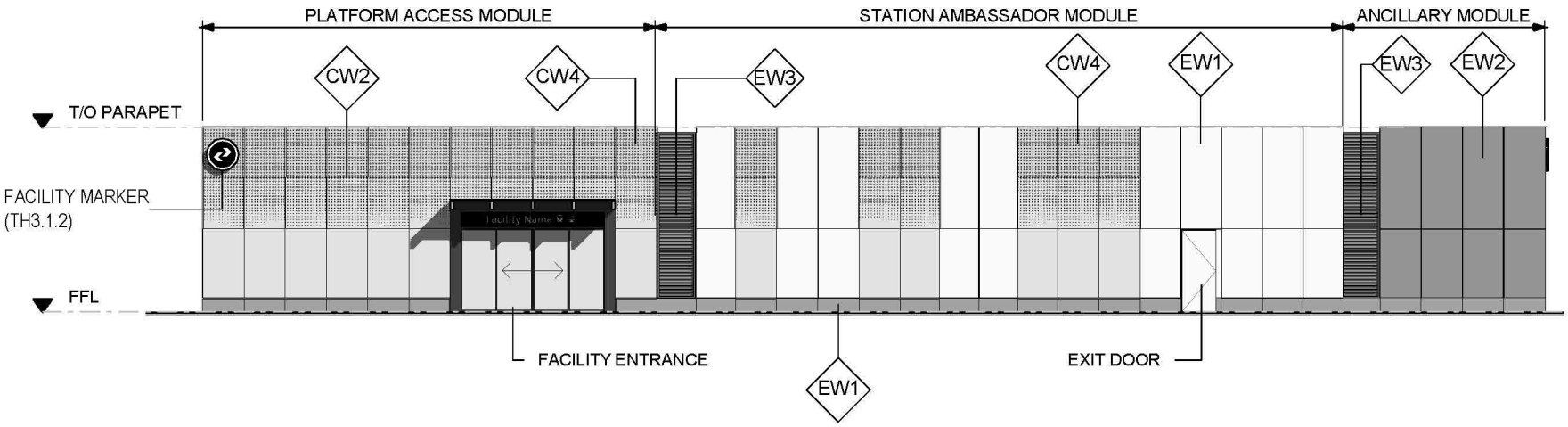


Figure 42: Staffed Station building (Tunnel platform access) Plaza Elevation, showing exterior finishes, Platform Access, Station Ambassador and Ancillary Modules

Figure 43: Staffed Station building (Tunnel platform access) Plaza Elevation rendering showing Platform Access, Station Ambassador and Ancillary Modules

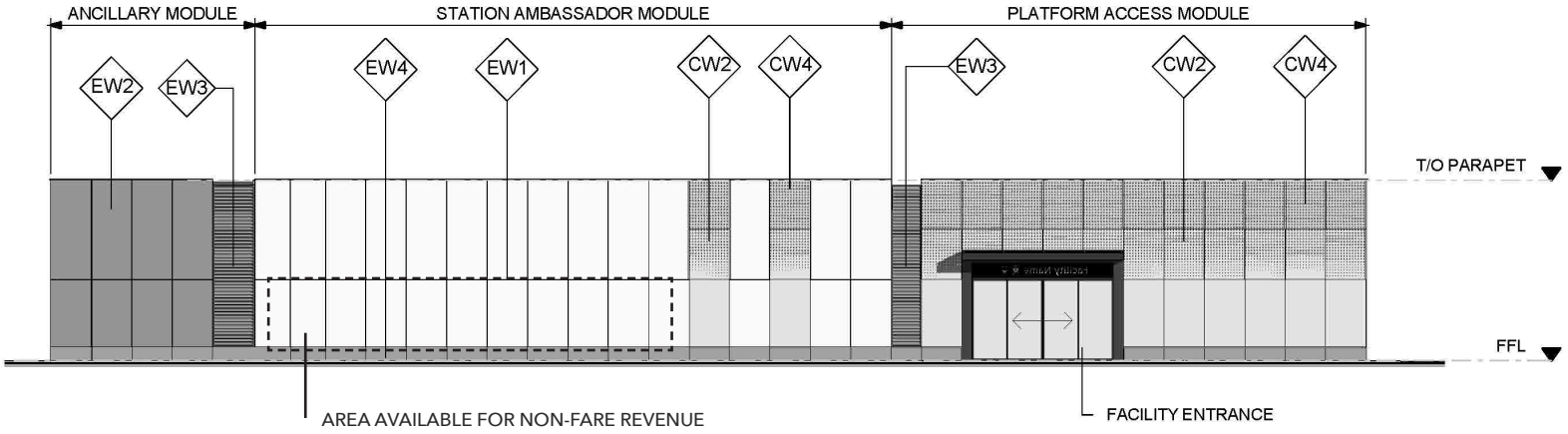


Figure 44: Staffed Station building with Tunnel platform access. Platform Elevation.

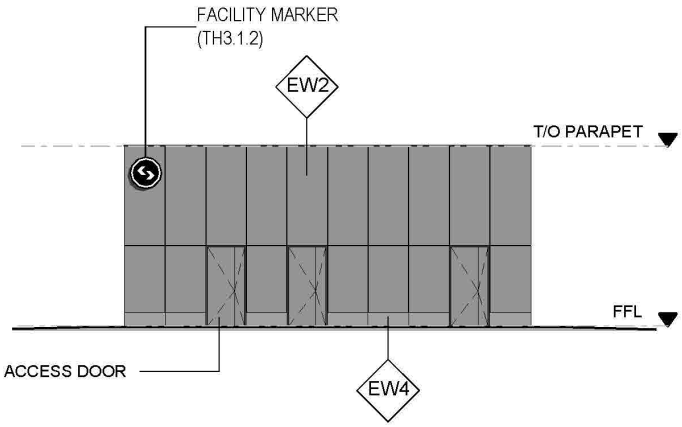


Figure 45: Ancillary Module side elevation

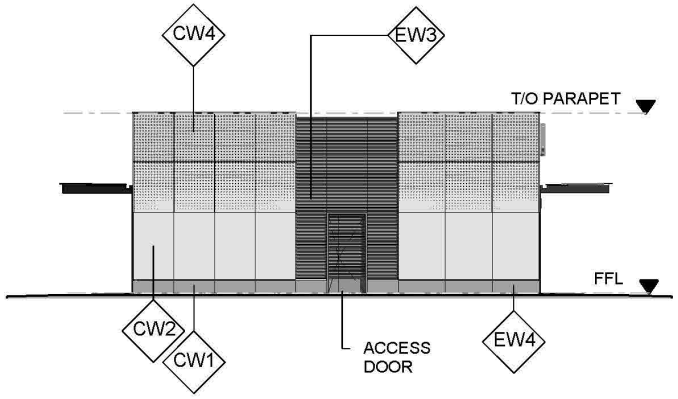


Figure 46: Platform Access Module with Tunnel platform access, side elevation

Figure 47: Staffed Station building with bridge platform access. Rendering showing Platform Access, Station Ambassador and Ancillary Modules

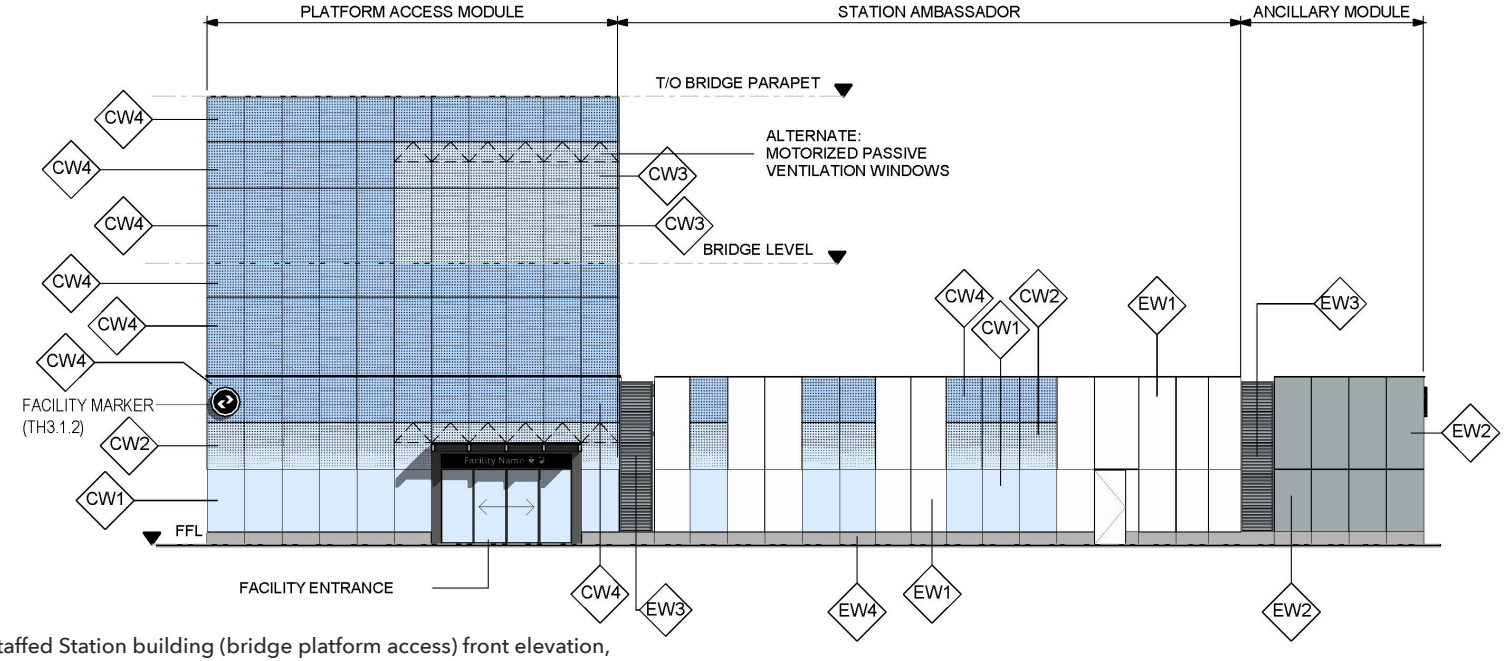


Figure 48: Staffed Station building (bridge platform access) front elevation, showing exterior finishes, Platform Access, Station Ambassador and Ancillary Modules

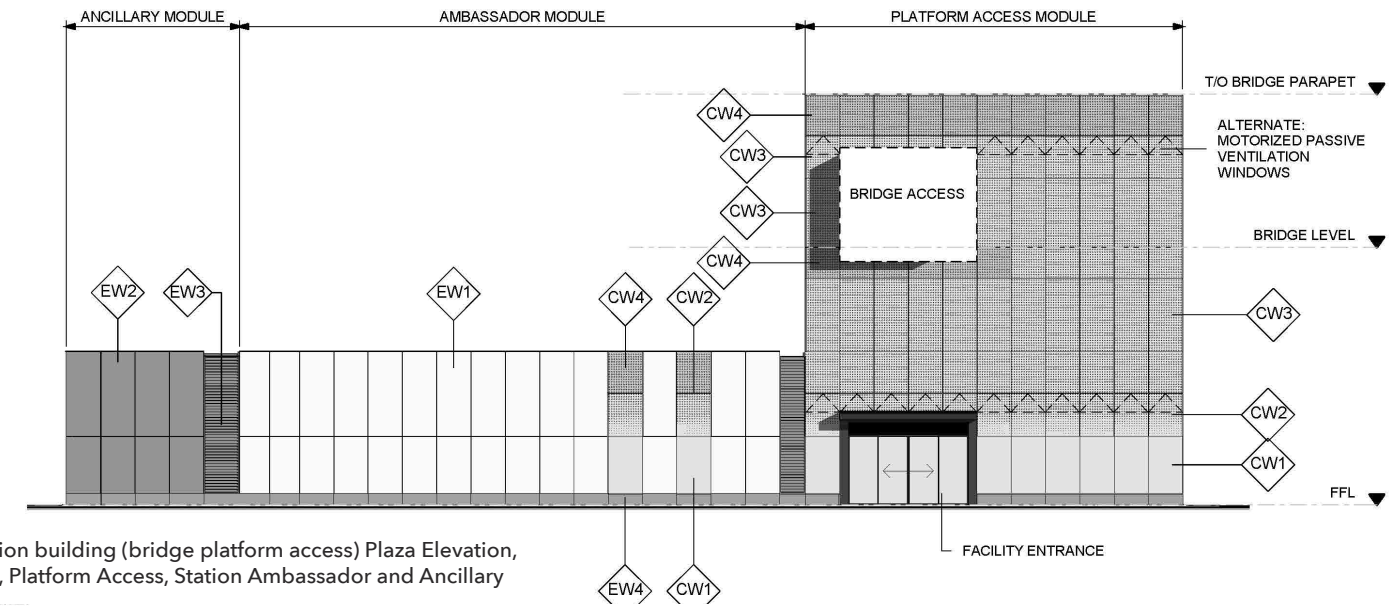


Figure 49: Staffed Station building (bridge platform access) Plaza Elevation, showing exterior finishes, Platform Access, Station Ambassador and Ancillary Modules

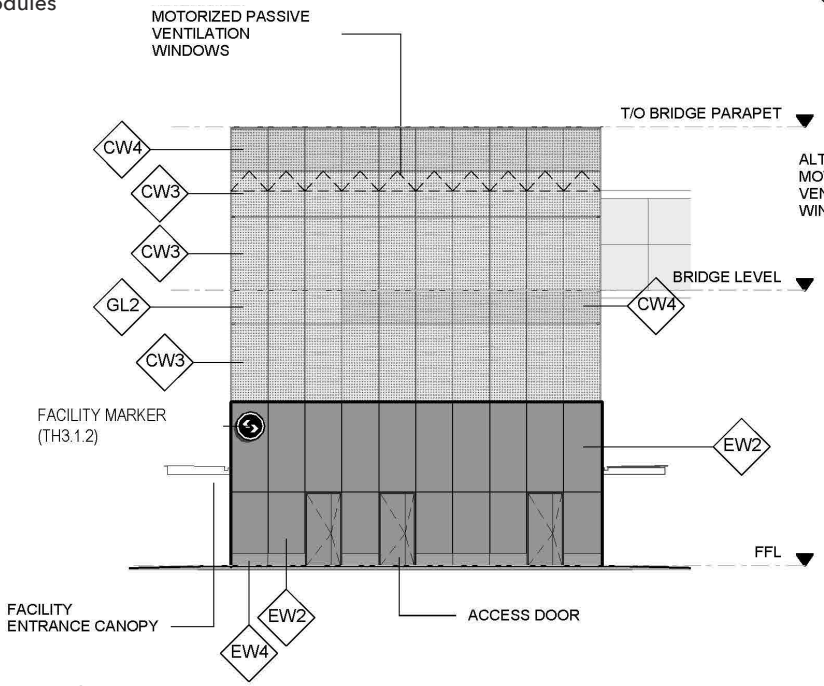


Figure 50: Staffed Station building (bridge platform access) side elevation of Ancillary Module

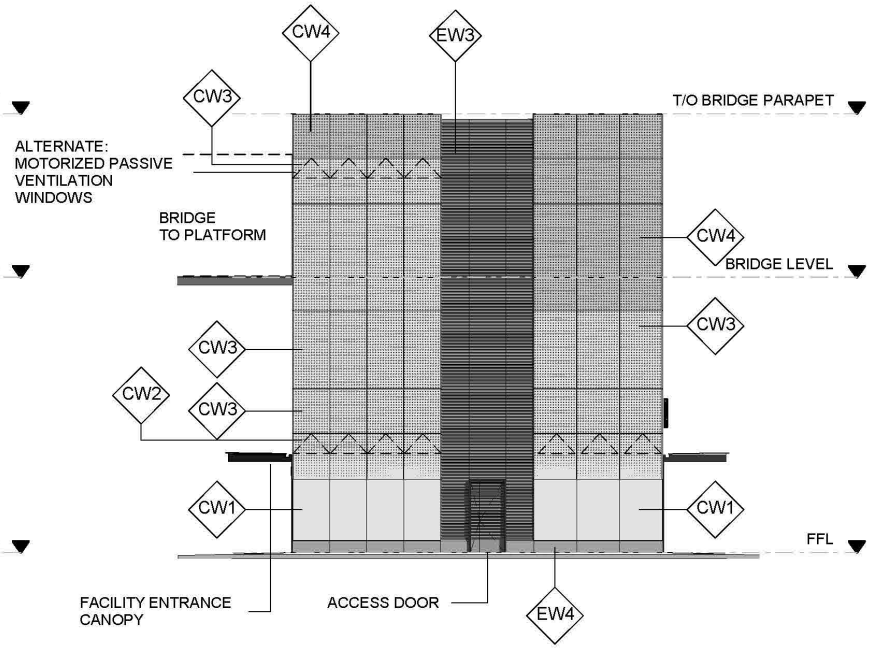


Figure 51: Staffed Station building (bridge platform access) side elevation of Platform Access Module

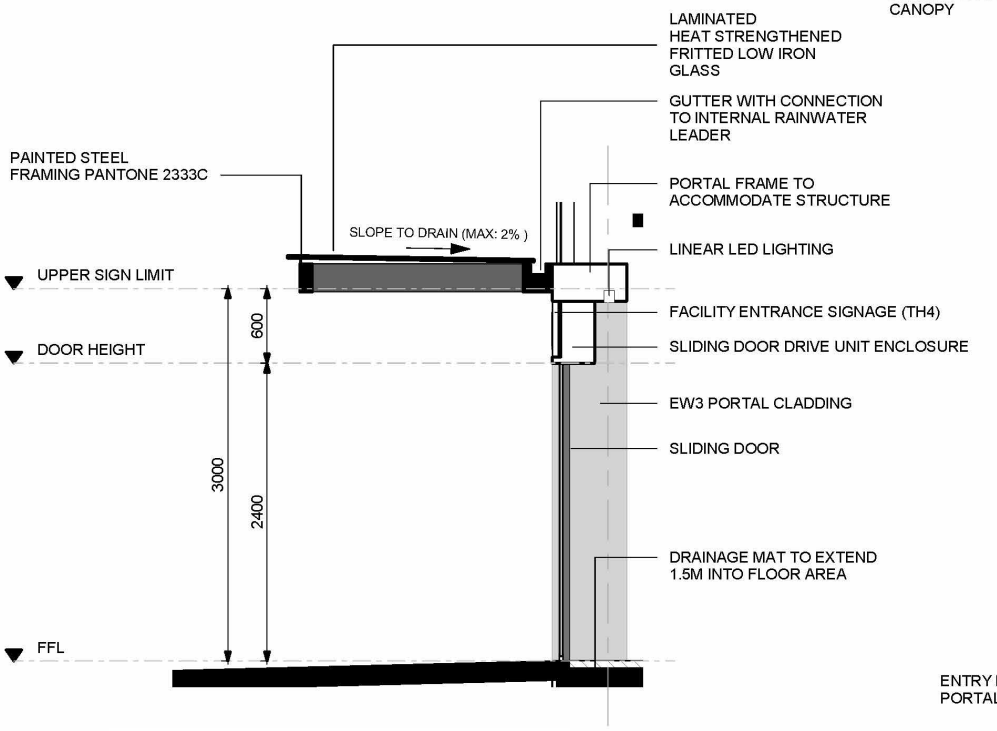


Figure 52: Section through entrance canopy. NOTE: Rain water leader from canopy to be housed within portal frame. Provide access panels in portal frame fro clean-out.

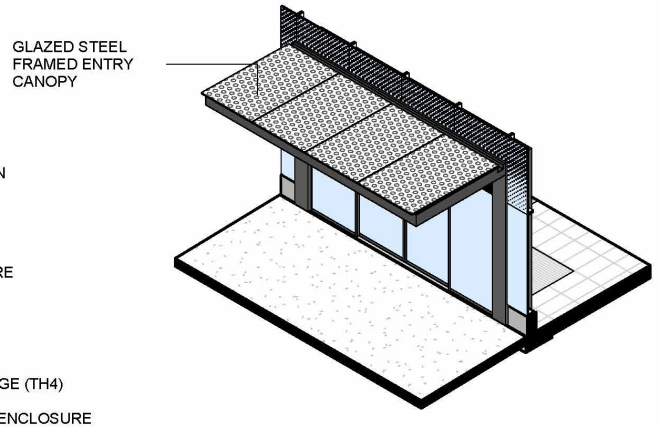


Figure 53: View of entrance canopy

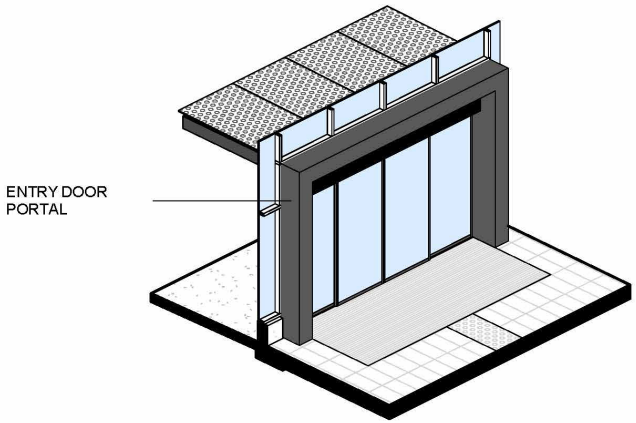


Figure 54: View of entrance canopy

2.9.1 ARCHITECTURAL DATUMS

Architectural datums are a means to establish a consistent reference framework for key building elements such as doors, windows, or ceiling heights. Establishing datums regularizes the relationship between key building elements and creates standardized dimensions resulting in a well-ordered façade. This supports the "kit-of-parts" approach and lowers ongoing and operations and maintenance requirements.

Key Datums within the building and on the façade shall be established in accordance with Table 16 and Figures 6 and 55.

Table 16: Key Exterior Architectural Datums

Element	Key Dimensions
Wall Base	• 400 mm from Finished Floor Level
Door/Portal Datum	• 2400 mm from Finished Floor Level
Underside of Entrance Canopy	• 3000 mm from Finished Floor
Vision Glazing	• From 400mm to 2400mm above Finished Floor
Fritted Glazing (100% Fritt to 0% Fritt)	• From 2400mm to 3900mm above Finished Floor
Spandrel Glazing	• From 3900mm to 5350mm above Finished Floor

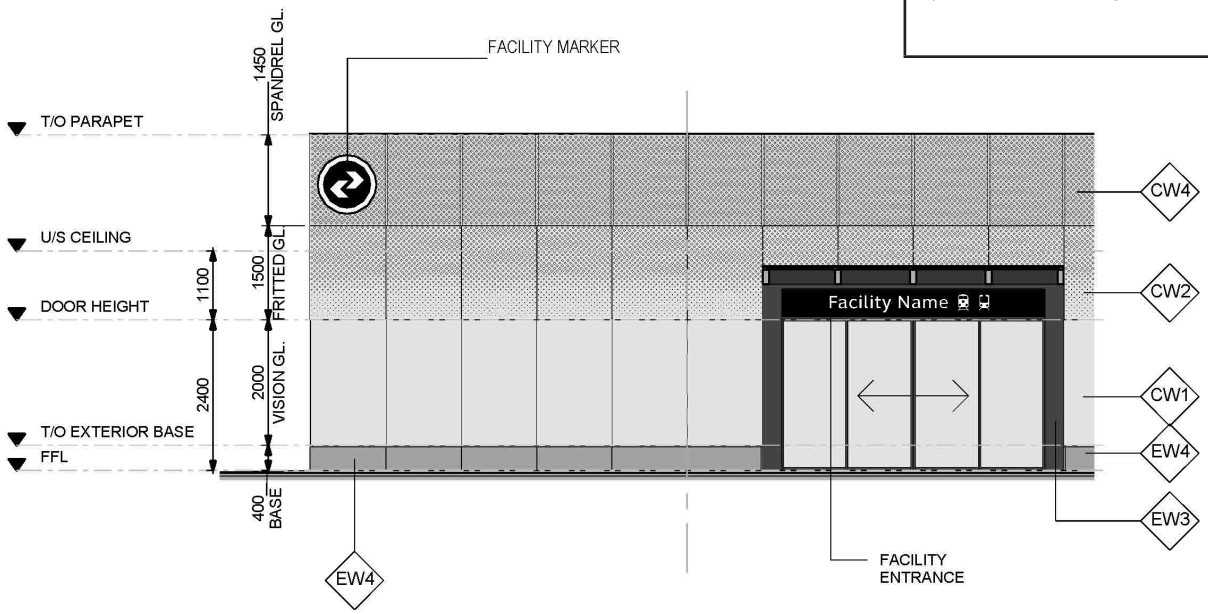


Figure 55: Platform Access showing Network Identifier (Facility Marker) and Facility Name (Facility Entrance) location

2.10.1 FIXTURE AND FURNISHING

Fixtures and furnishings provide information, convenience, and comfort to GO passengers. They shall be located with clear visibility to encourage intuitive wayfinding, passenger safety, and passive surveillance of adjacent environments.

Customer Experience

Fixtures and furnishings shall be designed to facilitate convenient access to services and information along the passenger's journey

Functional Design Requirements

Detailed specification sheets for Fixtures and Furnishings can be found in the GO standard suite of performance specifications.

Fixtures and furnishings shall be provided in accordance with the following requirements and locations identified in Table 17.

Fixtures and Furnishing shall be designed to:

a) Conform to the Universal Design Standard

b) Ensure clearance is provided for barrier-free paths and approach;

c) Provide queuing areas that will not interfere with pedestrian/passenger traffic;

d) Ensure that each seating area provides a clear space for side approach and side transfer to a seat as per Universal Design Standard;

e) Be clustered where possible to clearly identify points of passenger service, information and efficiently utilize station infrastructure;

f) Provide installation tolerances and operational requirements to facilitate ease of ongoing site operations and maintenance;

g) Ensure longevity using robust design and durable materials;

h) Fare handling devices shall be placed to avoid work within the Dynamic Clearance Envelope on/or beside Railway Track; and

i) Material performance and durability shall conform with CSA-S478 "Guideline on Durability in Buildings"

Table 17: Fixtures and Furnishings locations

Fixture or Furnishing	Location:
Accessible Seating	• Shall be provided as per the Universal Design Standard • Seating areas reserved for customers who use wheelchairs shall be provided with direct line of sight to amenities such as bus loop and PUDO and free from waste receptacles or fare devices.
Automated External Defibrillator	• Station Building interior (Waiting Area)
Benches	• Rail Platform, in Shelters - 1 grouping for every two rail cars • Rail Platform, standalone - 1 grouping for every two rail cars • Bus Platform, in Shelters - 1 grouping for every two bus bays • Bus Platform, standalone - 1 grouping for every two bus bays • Station Building interior (Waiting Area) • Transit Plaza (integrated with Raised Planters) • Park and Ride lots - in shelters • Refer GO Standard Cut sheet for bench selection and order form
Shelters	• Rail Platform - 1 for every two rail cars • Bus Platform - 1 for every two bus bays • Park and Ride lots • Remote/PUDO • On Street • Refer to GO Standard Drawings and Specifications
Two-way Intercom	• as per DRM
Charging Stations (cellphone, laptop)	• Along the wall adjacent to seating in Station Building interior (Waiting Area or Platform Access Area)
Waste Receptacles	• Station Building interior (Waiting area) • Platform Access areas • Bus Platform • Rail Platform • Park and Ride lots • Washrooms • Service Counter/Station Ambassador Office

Wi-Fi	• Station building interior • Rail platform
Vending Machines	• To be determined by project scope
Digital Signs	• Bus Platforms Entrances • Rail Platform Entrances • Station Buildings interior • Bus Platforms • Rail Platforms • Refer to DRM and Wayfinding Design Standard
Infotainment/CP 24	• Station Building Interior (Waiting Area)
Network Clock	• Station Building Interior (Station Ambassador Office)
Newspaper boxes	• Bus Platform • Station Building exterior
Static Sign Display Case	• As per Sign Implementation Manual • Station Building exterior • Park and Ride lots • Remote/Ancillary parking lots • Refer to DRM and Wayfinding Design Standard
PRESTO–Station Fare Transaction Processor (SFTP)	• As per project scope • Platform Access locations • Bus Terminal locations require SPOSs only (TVMs/AVMs)
Presto–Add Value Machine (AVM)	• Self-serve Hub • Platform Access Locations (to be verified by project scope)

Ticket Vending Machine (TVM)	• Self-serve Hub • Platform Access Module (outside of Station Building) • Bus Platform • Parking Structure • Park and Ride lot
Bollards	• Station Site exterior • Maintenance Facilities • Parking Garages • Service Buildings
Garbage Enclosure	• Station/Terminal Site exterior • Bus Maintenance Facilities
Salt Bin	• Rail Platform • Bus Platform
Advertising Boards (Digital/ Static)	• Station Ambassador Module, interior and exterior (Platform-facing elevation only). • Pedestrian Tunnels and Bridges • Bike Storage Module

2.10.2 INTERIOR FINISHES SCHEDULE

Table 18: Finishes Schedule

ID	Name	Description
Floors		
FF1	Floor Finish 1	(Reserved)
FF2	Floor Finish 2	Large format non slip 300mm x 600mm x20mm flamed granite floor tiles - Medium gray "Fortaleza"
FF3	Floor Finish 3	Small format non slip porcelain tile . Colour: slate gray
FF4	Floor Finish 4	Sealed concrete
FF5	Floor Finish 5	Epoxy on concrete w/integral 100mm epoxy cove base
FF6	Floor Finish 6	Detectable platform edge tile
FF7	Floor Finish 7	Tactile guiding indicator
FF8	Floor Finish 8	Recessed stainless steel floor entry grille - drained
Walls		
WF1	Wall Finish 1	Painted gypsum wall board- white
WF2	Wall Finish 2	Large format porcelain panel -max 2.5m x 1.2m x 3mm. Colour: Pantone Cool Grey 1 CP
WF3	Wall Finish 3	Small format porcelain wall tile. Colour Pantone P1-1 C
WF4	Wall Finish 4	13mm heat strengthened, laminated low iron glass, bevelled glass, back painted and mechanically fastened to painted out substrate. Colour: Pantone 2009 CP
Interior Glazing		
IG1	Interior Glazing System1	20mm tempered low iron structural glazing c/w 20mm stainless steel shoe & recessed deflection head channel
Wall Base		
WB1	Wall Base 1	16 gauge stainless steel on 2 layers 16mm treated plywood
WB2	Wall Base 2	20mm Honed Granite. Medium Grey "Foraleza"
WB3	Wall Base 3	Porcelain tile wall base. Colour slate grey.
WB4	Wall Base 4	Epoxy cove base
WB5	Wall Base 5	100mm Rubber Base - colour black
Ceilings		
~~CF1~~		Not used
CF2	Ceiling Finish 2	Suspended prefinished metal ceiling grille - Colour: Pantone 9285 U
CF3	Ceiling Finish 3	Painted gypsum wall board - white
CF4	Ceiling Finish 4	Suspended 600x600mm acoustic ceiling tile system - white
CF5	Ceiling Finish 5	High Gloss Lacquered Panel (Exterior Grade Solid Surfacing for exterior conditions). Colour: Pantone 2019 CP
Millwork		
MF1	Millwork Finish 1	Solid Surfacing. Colour: Pantone 9285 U
MF2	Millwork Finish 2	Plastic Laminate. Colour: Slate Grey

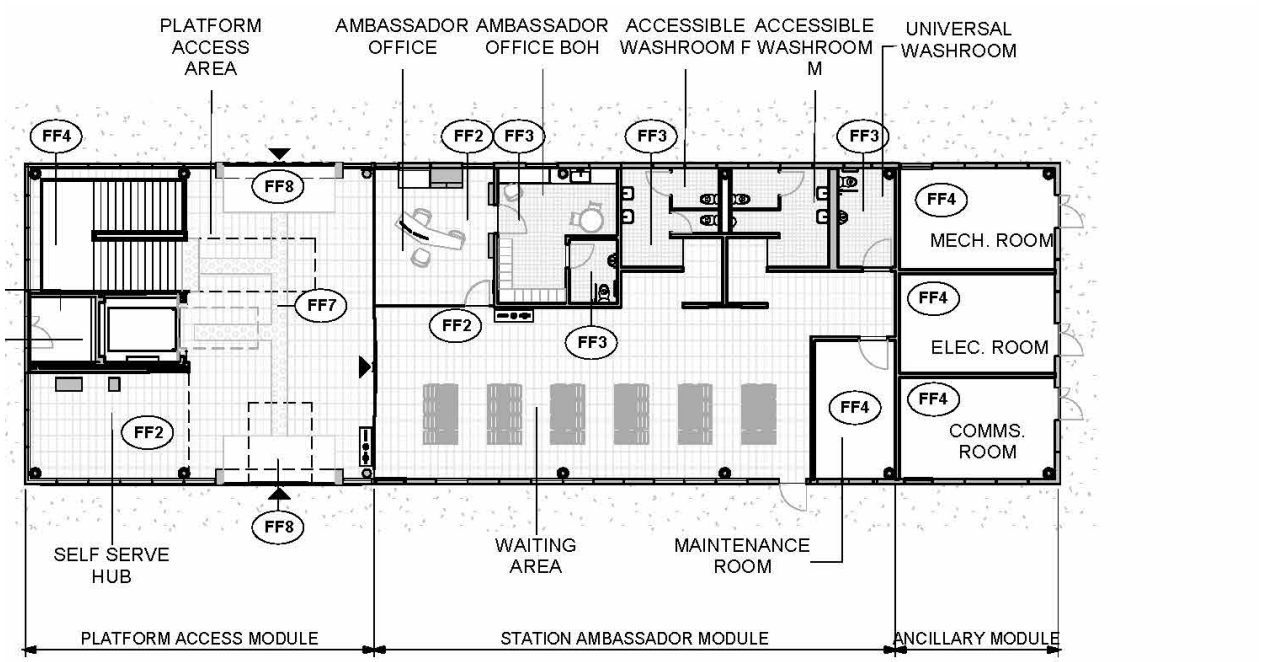


Figure 56: Interior Finishes Plan

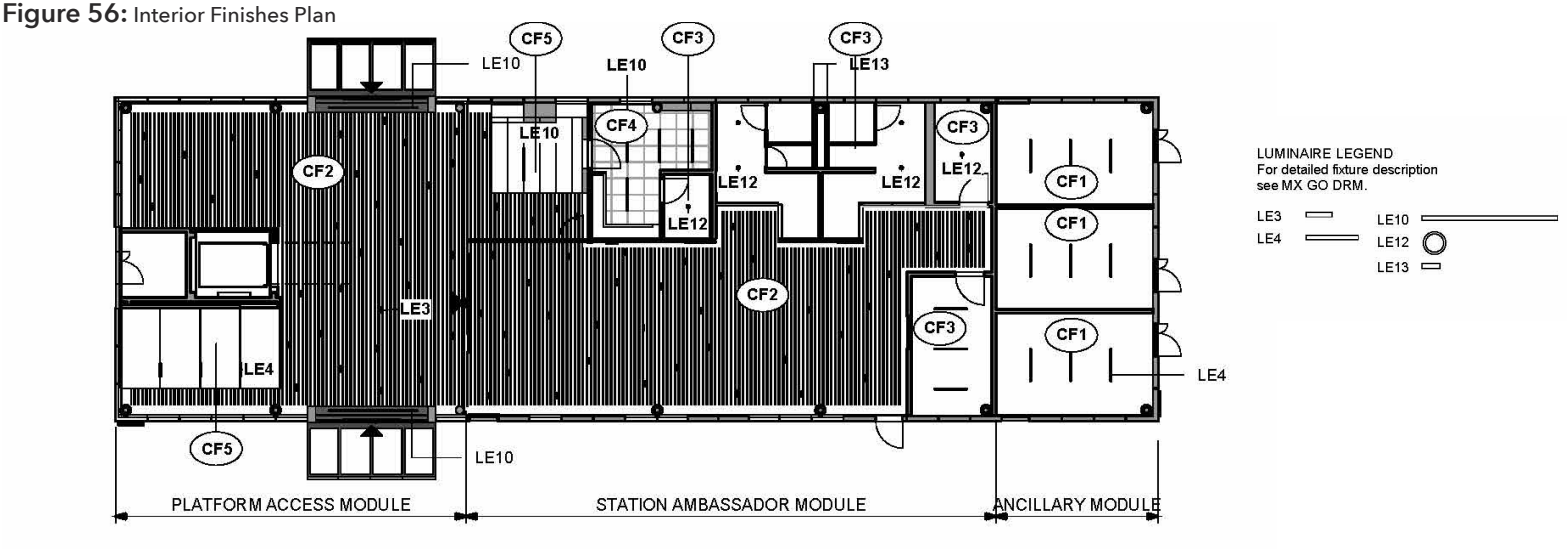


Figure 57: Reflected Ceiling Plan

2.10.3 EXTERIOR FINISHES SCHEDULE

Table19: Interior Finishes Schedule

ID	Name	Description
Exterior Glazed Curtain Wall Systems		
CW1	Curtain Wall System 1 - Vision Glass	4 Sided SSG Thermally Broken Curtain Wall - Double-glazed units, Vision Glass Low E coating on the #3 Surface
CW2	Curtain Wall System 2 - Gradient Fritted Vision Glass	Same as CW1 w/gradient ceramic frit on #2 surface, 20% to 80%
CW3	Curtain Wall System 3 - 80% Fritted Vision Glass	Same as CW1 w/80% ceramic frit on #2 surface
CW4	Curtain Wall System 4 - Insulated Fritted Glazed Spandrel Panel	Same as CW1 w/80% ceramic frit on #2 surface, back painted white on #4 surface
Exterior Wall Systems		
EW1	Prefinished Aluminum Panel System 1	Prefinished aluminum panel, rain-screen assembly with concealled fasteners. Colour: Pantone 20-0082 TPM Lacquer
EW2	Prefinished Aluminum Panel System 2	Prefinished aluminum panel, rain-screen assembly with concealled fasteners. Colour Pantone 2333 C
EW3	Prefinished Aluminum Louvre System 3	Prefinished aluminum architectural louvre. Colour Pantone 2333 C
EW4	Exterior Wall Base	Sandblasted Architectural Precast Concrete.
Roofing		
R1	Insulated Membrane Roofing System 1	Insulated, low solar reflectance (SR) roofing.

2.10.4 FINISH GENERAL REQUIREMENTS

Finishes shall be provided in accordance with the following requirements and locations identified in Tables 18 and 19 and Figures 44 to 53.

Table 20: Finishes General Requirements

Element	Requirements:
Safety	• Materials shall be selected so as to reduce the risk of hazard to patrons and maintenance staff • Proper fasteners and adequate bond strength shall be used to minimize hazards from dislodgement due to temperature change, vibration, wind, seismic forces, aging, or other causes, such as vandalism
Sustainability	• Material selection shall comply with Appendix B of the DRM for compulsory LEED Prerequisites and GO Transit Mandatory credits. • Shall conform to the Metrolinx Sustainable Design Standard

Durability and Performance	• Materials with excellent wear, strength, and weathering qualities shall be used, with due regard to both initial replacement costs and required maintenance
	• Waste during construction and regular operations to be diverted from landfill back to the manufacturing process and reused wherever possible
	• Materials shall maintain their good appearance throughout their useful life and shall have a minimum twenty-five (25) year performance capability
	• For ceiling and canopy finishes/systems and their application, materials shall allow for commissioning, adjustment, and future retrofitting of subsystems such as CCTV and public address systems
	• Materials shall also be:
	  • Easily maintainable and repairable
	  • Of high quality and installed at high levels of workmanship
	  • Selected with consideration to the total acoustic environment, so as to minimize reverberation while meeting other design and performance criteria
	  • Selected with respect to costs by balancing initial material costs against long-term maintenance costs
	  • Easily replaced/repaired, such as by including a wear surface separate from the structural slab to facilitate replacement when a floor is in a heavy wear area
	  • Chosen, where appropriate, with reference to the potential need for access to service ducts, etc.
	  • Shall be chemically inert, acid and alkali-resistant, dense, non-porous and non-staining
	• All materials shall be able to withstand corrosion and uphold its intended use and function, and maintain its appearance (no rusting or fading in colour)

Element	Requirement:
Maintenance and Cleaning	• Materials selected shall have matching replacement stock available for the expected life of the material • Shall be selected for ease of cleaning, repair, or replacement • Shall resist soiling and be cleanable with commonly used equipment and environmentally benign cleaning agents • Platform enclosures, tunnels, and walking surfaces shall utilize materials that are not damaged by pressure washing • Access to windows for cleaning shall not be obstructed except where absolutely necessary (required structural member, etc.) • Windows above ground level shall be placed such that they can be accessed from below using a lift, and accessing windows for cleaning shall not require getting into traffic or onto tracks
Unit Size	• Units shall be large enough to reduce the number of joints yet small enough to facilitate replacement if damaged • Standardized grids shall be designed wherever possible to accommodate for standardized glazing for windscreens and vertical elements of shelters
Installation and Application	• Materials shall be detailed and specified to be installed in accordance with industry standards and manufacturers printed directions for long life, low maintenance, and compliance with warranty requirements • All materials shall be installed using tested and proven methods, in accordance with established trade standards • All materials, hardware, and fasteners shall be able to withstand the anticipated pressures of ground-borne vibration, as well as air pressure changes generated by wind and by the passage of the GO Transit vehicle • All materials shall be secured in a manner which deters and prevents tampering and vandalism • Installation of materials shall generally facilitate their removal without affecting the integrity of adjacent materials
Colour, Pattern, Tonal Contrast and Texture	• Shall conform to Universal Design Standard • Highly pattered walking surfaces shall be avoided • Integral and applied colours shall be selected which resist undue fading in the environment in which they are used • Textures shall not conflict with those used in the information and guidance system • Materials with staining and colour shall have through-colour properties and non-fading characteristics • Finishing of steel shall be appropriate to the location of the material, i.e. exterior vs. interior • All interior finish steel (such as handrails) shall be stainless steel unless otherwise noted • All exterior finish steel shall be stainless steel or galvanized • Anchors and fasteners as required shall match with fixture • Finishing of steel in the field shall be kept to a minimum by designing structures that can be shop fabricated in sections, primed, and finished in the shop, and bolted together on site • Designers shall minimize field welding and touch up galvanizing • Any galvanized metals to receive a paint finish shall be factory primed and painted • Field painting on site shall not be permitted

Element	Requirement:
High Contact Zone	• Shall include areas within normal passenger reach and extends from the floor, up to 2.5 m above the floor • Ceilings less than 3.8 m shall also be treated as High Contact Zones • The selection of materials for use in this zone shall reflect outstanding durability, especially in and around passenger circulation routes or public amenities • Finishing materials used in the lowermost 500 mm of this zone must be unaffected by salt and slush, and shall be capable of being quickly and easily cleaned • Edges of finishing materials shall be reinforced where vulnerable to damage, this shall include platform edges, stair nosings, outside corners and projecting sills • Paint applied to walls, ceiling, etc. shall be graffiti-resistant • Hardware and fastenings in this zone shall particularly discourage tampering
Low Contact Zone	• This zone is less susceptible to public contact and extends up from 2.5 m above the finished floor • Materials in the Low Contact Zone are subject to less convenient service access, and are still vulnerable to vandalism, dirt, and grime
Bird Control	• Comply with requirements within the City of Toronto TGS (Toronto Green Standards).

2.10.5 FLOORS

Table 21: Floor Finishes and Design Requirements

Element	Requirements:
Design	• Joints shall be coordinated with structural grids and thresholds • Floors shall be virtually flush with exterior surroundings across door openings to create a visually continuous surface
Slip resistance	• Floors shall be non-slip and shall retain their slip resistance under both wet and dry conditions
Thresholds	• Shall be beveled to accommodate different floor materials
Sprinklered Floor Areas and those containing plumbing fixtures or water lines or are subject to weather penetration	• Shall be sloped and drained • Maximum slopes shall conform to Universal Design Standard
Gutters	• Shall discharge directly into drains

Tactile Attention Surface Indicators (TWSI)	• TWSI shall be designed to conform to the Universal Design Standard requirements for configuration and location.
	• For retrofit application:
	  • tile shall be cut at dual substrate. Seal and install as per manufacturer's instructions;
	  • Sealant at joint between cut tiles shall match colour of tile;
	  • Tile shall be applied to platform surface only; and
	  • Wall cap tiles are not permitted.

Floor drains	• Shall be screened and capped flush with finished floor.

2.10.6 WALLS

Table 22: Wall Finishes and Design Requirements

Element	Requirements:
Finish	• Shall be smooth, non-glossy, and non-abrasive
Wall bases	• Shall be provided at 150 mm up from the finished floor • Electrical boxes and other wall-mounted equipment shall not project into this base • The bases of floor-anchored equipment shall be continuous, matching adjacent wall base details • Thresholds shall be flush with the finished floor. • Thresholds higher than 10 mm from the finished floor shall be beveled to a 30° angle
Electrical room walls	• Major electrical panels, inverters and the UPS unit is floor mounted and transformers are generally exterior located. • Walls shall be concrete block with latex eggshell enamel painted finish.
Mechanical room walls	• Walls shall be concrete block with latex eggshell enamel painted finish.
Office walls	• Drywall, latex eggshell enamel painted or to suit
Maintenance Building walls	• Shall be painted with a vinyl base
Steel columns	• Shall be painted
Tunnel walls	• Shall be porcelain tile wall system as per Interior Finishes Schedule
Walls in platform access areas	• Stairwells, elevator shafts, etc. shall have concrete walls with a smooth architectural finish

2.10.7 DOORS

Table 23: Door Finishes and Design Requirements

Element	Requirements:
Colour	• Shall conform to the Universal Design Standard • Shall be contrasted with surrounding wall colors, this includes fire exit doors, fire hose cabinets, and fire extinguishers
Public entrance doors	• Shall be sliding doors • Shall be thermally-broken clear anodized aluminum in black anodized aluminum thermal-break frames
Door frames (Interior)	• Shall be painted to match the anodized window frames
Door frames (Exterior)	• Bottoms shall be foamed closed. • Frames shall be dipped 600 mm into a silicone type clear sealant, and caulked at the base with clear silicone • Colour shall match adjacent cladding
Entrance door hardware	• Shall include mullions and a horizontal push bar • Shall act as an 'exit' as per Ontario Building Code requirements. • Shall have 'fob' access capability • Shall have door cylinder locking functionality.
Door Guards	• Power-assisted doors where they open into a barrier free route of travel shall be provided with cane-detectable guardrails or other barriers at right angles to the wall containing the door
Controls for power assisted doors	• Shall conform to the Universal Design Standard • Controls for automatic doors shall consist of vertical push bars 914mm in height and 152mm in width, providing an activation area along the entire span of the vertical bar. • Bottom edge of controls for automatic doors shall be mounted 200mm max above the floor and located at least 600mm clear from the door in the open position. • Controls for automatic doors shall be mounted at least 1000mm away from any adjacent inside corner and return wall.
Hinges	• Shall not be piano type • Exterior doors shall have restriction to opening beyond 90 degrees.

Public Area Doors	• With exception of washroom, Bike Storage Module, Back-of-house door and service room doors, all doors shall be either fully or partially transparent. • Multi use Washroom doors and single use washroom doors shall be undercut only. • Thermally broken frames and doors with heavy duty stainless steel mortise hinges and reinforced as required for closers and doorstops, holders and backseats. • Sump pump access hatch doors shall be stainless steel, textured No. 4 finish, or equal.
Non-public Area Doors	• Where washroom doors have an air transfer grille, dimensions shall be determined by the H.V.A.C. Consultant.

2.10.8 WINDOWS

Table 24: Window Finishes and Design Requirements

Element	Requirements:
Frames	• Shall be white, this includes fire exit doors, fire hose cabinets, and fire extinguishers
Glazing	• Shall be clear fully tempered, laminated, insulating glass • Shall be Low E glass
Glazing Thickness	• To suit windloads and air pressure changes generated by high-speed trains and vibration, glazing shall be: • Minimum 6 mm thickness for buildings, • 10 mm thickness for standard shelter, • Engineered to suit site conditions for Platform access glazing.
Distraction Pattern	• Required on any glazing that extends to the ground and there is no 600mm curb or object, such as a railing, behind • Pattern to be prescribed by Metrolinx
Sashes	• Shall be 600 mm minimum above grade for all elevator and stair enclosures and anodized to match fixed glass frames
Finish	• Solid laminate (solid surfacing polymer) interior sills, sloped away from windows

2.10.9 FOOT GRILLES

Table 25: Foot Grille Finishes and Design Requirements

Element	Requirements:
Location	• Foot grilles inside public doors shall be recessed flush with the finished floor and the recess
Maintenance	• Foot grilles shall be fabric type, closely spaced so as not to trap high heels, and shall have stainless steel or aluminum frames • The pans shall be removable for cleaning • Shall connect directly to sanitary line.

2.10.10 SPECIALTY ITEMS

Table 26: Specialty Items Finishes and Design Requirements

Element	Requirements:
Grilles and Covers; outlet plates; screens, signs, light standard or shelter column electrical access covers, hose bibs, soap dispensers, coat hooks, etc.	• Shall be flush-mounted using a vandal resistant security system, tamper resistant screws shall be used for smaller items
Roof Access Ladder	• Shall be located in Maintenance Room and service space behind elevator
Special Event Lights	• Outlets shall be provided in walls, switches and covers for these fittings and fixtures attached to walls and ceilings

2.10.11 INTERIOR LIGHTING FIXTURES

Table 27: Luminaire LE-3

Luminaire LE-3
Location: Platform Access Area, Waiting Area
Requirements
• Shall be suspended between the perimeter of the metal grille ceiling system and the finished ceiling in front of the Station Ambassador Office and along the length of the main wall • Linear Pendant to be used along the length of walls of the Service Area, Waiting Area and Retail Area
Product Description
• Extruded aluminum profile combined with die-cast end caps,aluminum body and heat sink • Linear Pendant to be damp location IP20 • Linear Pendant finish: metallic

Table 28: Luminaire LE-4

Luminaire LE-4
Location: Self-serve Hub
Requirements
• Suspended and flush between the panels of the ceiling system
Product Description
• Extruded aluminum profile combined with die-cast end caps,aluminum body and heat sink • Linear Pendant must be damp location IP20 • Linear Pendant finish: metallic grey

Table 29: Luminaire LE-10

Luminaire LE-10
Location: Station Ambassador Office and Back of House
Requirements
• Located in the Service Staff Support Areas • Surface mounted direct linear LED luminaire system is used for the staff support room
Product Description
• Multi-source linear modular lighting system • Linear luminaire made of extruded aluminum profile combined with die-cast end caps • Snap-in frosted diffuser lens • Finish to linear LED luminaire: metallic grey

Table 30: Luminaire LE-12

Luminaire LE-12
Location: Washrooms (Public and Staff)
Requirements
• Provides general lighting to the Public Washrooms • Use fixture LE-13 for washroom stalls • Recessed adjustable LED fixture
Product Description
• Adjustable round LED module integrated with a gray finish square trim • Die cast aluminum optical assembly and frame with black steel housing • Vacuum plated metallized PC reflector available in 29° • Optical assembly adjustable 30° in all axes • Optical accessories options (Frosted lens/ Louver/Visor) • Recessed fixture must be rated IP67

Table 31: Luminaire LE-13

Luminaire LE-13
Location: Washrooms, above stalls
Requirements
• Located above the stalls in the public washrooms • Use of linear led lighting in cove to create a soft uniform glow in the space • The cove shall be used in the stalls • Light levels must have minimum 50 lux horizontal and 30 lux vertical.
Product Description
• LED recessed linear perimeter slot system with reflectors • LED slot system must be suitable for damp locations