BROADWAY
Subway Project Corporation

Project Booklet

January 2021

IBI DIALOG

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1.0 Architectural Scope

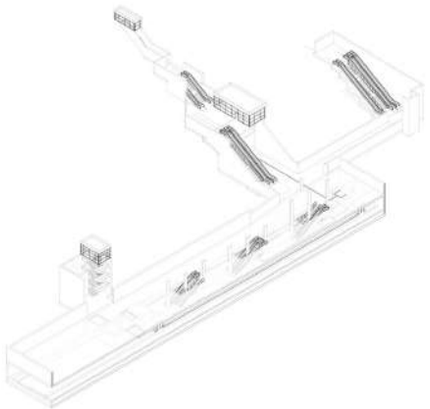
1.1 Background

This project booklet generally describes the functional arrangement of the six underground stations, as well as the overall architectural concepts and specific design details for each of the Broadway Subway's stations. This design report is divided into the following major sections:

- Architectural Scope
- Station Development Principles
- Architecture and Systems Interface
- Key Architectural Elements
- Accessible Design
- CPTED
- Smart Card and Faregates
- Acoustics and Noise Control
- Materials and Finishes
- Wayfinding and Signage
- Public Art
- Reflecting Neighbourhood Character
- Urban Design and Landscape
- Station Specific Criteria

The Architectural Manual criteria establish the space, circulation, levels of service, finishes, station equipment and facilities which are directly related to transit purposes and which meet these purposes in a cost-effective manner.

Repetitive and systemwide use of elements for basic components of the line are used for design consistency and cost, construction and maintenance efficiency. Consistency, economies of scale, safety, maintenance and operational considerations promote the application of a system-wide philosophy to components including station form and structure, system equipment, vertical circulation, finishes, furniture, lighting, signage, wayfinding, hardware, glazing, art, safety and security, noise vibration, accessibility and bicycles.



The principal objectives are to:

- Design for maximum consistency that assists with line wide identification
- Design for the minimum physical impact of the station structures on adjacent communities;
- Integrate each part of the system into the fabric and structure of the existing neighbourhoods in the corridor;
- Coordinate design of each part into all new or planned developments in the corridor and to encourage integrated development.
- Permit station head-house and canopy expression as deemed appropriate for a given location, but to maintain consistency for those components which have been identified for system-wide treatment; and
- Provide a system in a cost-effective manner consistent with patron safety and about daily and long-term maintenance.

1.2 Fixed Facilities Design Approach

1.2.1 General

The architectural design of the Fixed Facilities shall meet the following principal objectives:

- Take into account the recommendations of TransLink's Transit Passenger Facility Design Guidelines;
- Minimize the physical and visual impact of the Fixed Facilities on the adjacent neighbourhoods;
- Optimize security, community ownership, patronage and urban fit of the Fixed Facilities into their neighbourhoods;
- Discourage crime by integrating the Fixed Facilities into the fabric and structure of the existing and the emerging context of the neighborhoods adjacent to the Fixed Facilities in a manner that will support and encourage community activity while maximizing visual sightlines around the station area;
- Integrate the design of each Fixed Facility with all new or planned developments adjacent to the Fixed Facilities, including any new transit facilities;
- Facilitate transit-oriented communities;
- Provide station house and canopy expressions of identity compatible with the scale and architectural character of the individual locations, while maintaining consistency of components which have been identified for systemwide treatment to provide clarity of wayfinding and Evergreen Line use;
- Enable the stations to be constructed in a cost-effective manner without compromising passenger safety and security and about daily and long-term maintenance requirements which allow the functional requirements of stations to be met;
- Make the design of the stations compatible with the functional requirements of the entry halls, vertical circulation and platforms. The design shall arrange these components in a logical manner based on a sequence of passenger activity that is intuitive to passenger use and with station elements arranged to maximize passenger flows and minimize cross traffic and other obstructions to flows;
- Provide station layouts that are coherent and easily intelligible to first-time users of the Evergreen Line. The functional and architectural commonality from station to station is to be maintained for elements that support passenger movement, wayfinding, safety and security;
- To use durable materials and assemblies in the construction of the Fixed Facilities to withstand the high volume and functions associated with stations and commensurate with the design life requirements of these facilities as set out in the contract.
- Preventing moisture from adversely affecting the Fixed Facility components, assemblies, patrons, or adding to the maintenance of these Fixed Facilities. This applies to all moisture related issues, including weather, infiltration, moisture build-up (including conditions in concealed building cavities), mold, mildew, condensation and drainage;
- Wherever possible, select all equipment and components for the stations from manufacturer's commercial grade standard production models, components and accessories.

To maintain visual and functional consistency amongst the stations, designs of the stations shall:

- Provide station specific architectural expression and response to local context for each Station, balanced with a consistent system-wide interface for the Smart Card and Faregates Collection System, system information, passenger amenities, wayfinding signage and safety and emergency facilities;
- Provide consistency of elements and themes present throughout the Evergreen Line;
- Incorporate the use of wood in accordance with the British Columbia Wood First Act, where compatible with the BCBC and practical for durability, vandal resistance and maintenance requirements. For greater certainty, this will require the incorporated wood to meet heavy timber dimensional requirements set out in the BCBC and be:
  - limited to use in ceilings, roofs, and roof-supporting structures;
  - located well above the reach of passengers to protect against vandalism and avoid maintenance problems; and
  - carefully designed and detailed wood finishes from weather exposure;
  - include canopy at grade level that provide weather protection at entry to ensure safety and passenger comfort; and
  - comply with the requirements of contract documents.

1.2.2 Response to Local Context

The station sites are in a variety of urban contexts, including mixed commercial/residential neighbourhoods, commercial shopping centres, cultural recreation/college centres, and industrial areas. Some of the stations are in areas planned for significant change of use and increased development density in the future. The design of each station shall consider both the existing and emerging context of its site as follows:

Station Integrates with Surrounding Community and Context

- each station will reflect the scale and character of the neighbourhood as indicated in the Preliminary Station Design Drawings; and
- each station will allow for the integration of future complementary uses where possible, such as cafes, service retail and community amenity spaces, as appropriate to the site context. In this regard, the Preliminary Station Design Drawings for most stations incorporate the programmatic requirements for service provision for a future Commercial Retail Unit (CRU).

1.3 PCI and InTransitBC Interface Coordination

Station designs shall coordinate the design, construction, operation and maintenance interfaces for Great Northern Way – Emily Carr and South Granville stations with PCI, and Broadway – City Hall Station with InTransitBC as described below.

1.3.1 General Interface Coordination

The following design interfaces will be coordinated between the stations and future developments:

- **Communication:** conduct coordination and development meetings with PCI throughout detailed design of the Great Northern Way – Emily Carr and South Granville stations to identify needs, risks, and goals, and to ensure that both parties are aware of design and schedule impacts.
- **Aesthetics:** station designs shall carefully consider the integration, transparency and durability of station materials, spaces, and passenger movements to create safe and comfortable environments. Station materials shall complement future developments, while providing a sense of place that is recognizable by the station form. Refer to the materials and finishes section of this report for further details.
- **Lifecycle design:** station materials will be robust, durable and easy to maintain. Public spaces are open, transparent and bright to provide a safe environment that invokes civic pride and reduces maintenance costs due by vandalism;
- **Fire/life safety:** station designs address the fire/life implications of future developments or existing integrations. Fire department access and fire/life safety systems at Great Northern Way – Emily Carr and South Granville stations are independent of future developments, while fire/life safety systems at Broadway – City Hall station will be integrated with the existing Canada Line station to act as a single system. Fire separations between the stations and future developments comply with building codes; and,
- **Structural:** station designs will use shoring, structural supports and foundations that can accommodate the structural loads of future integrated developments (including wind and lateral design loads). Coordinate the placement of columns and foundations that intersect the physical spaces of both the stations and the future developments, and document the design decisions on both parties' drawings.

1.3.2 Great Northern Way – Emily Carr Station Interface Coordination

The design, construction, operation and maintenance of Great Northern Way – Emily Carr Station will be coordinated with PCI to address the following interfaces:

- **Head house roof:** head house roof to be flat and to accommodate the loads associated with its use as a deck for the future adjacent development. Provide a two-hour fire-resistance, and include no rooftop equipment, thereby eliminating the need for visual screens. Coordinate mounting points for future guards, balustrades and railings with PCI;

- **Canopy and development columns:** Provide a canopy to enhance station identification and also remains consistent with the line wide system identity. Coordinate the interface between the canopy and future development columns for both aesthetic and construction purposes; and,
- **Structural columns and footings:** Structural columns supporting the future development will bridge and straddle the station entrance and underground station structure. Ensure that the station and future development structures function independently and that all structural loads from the future development are completely separate from the station structure. Construct four foundations in the station to support overbuild loads and to avoid any lateral loads or soil settlement impacts to the station during construction of the future development.

1.3.3 Broadway – City Hall Station Interface Coordination

Coordinate the design, construction, operation and maintenance of the Broadway – City Hall Station with InTransitBC to address the following interfaces:

- **Fire/life safety systems:** The Broadway – City Hall/Canada Line stations will not be physically separated by doors or walls, and therefore coordinate the integration of the following fire/life safety systems with InTransitBC to ensure both stations operate as a single integrated station:
- The fire alarm, public announcement speakers, and fire command centres, including elevator recall and emergency telephone systems;
- The intrusion access control systems, with regard for the operating and service/maintenance hours of each station;
- The tunnel ventilation systems, so that both stations can function during normal and emergency operating scenarios;
- The building automation systems; and,
- The sprinkler, standpipe and water systems.
- **Structural design:** Coordinate the structural design of the new station with InTransitBC to ensure that the new station does not adversely impact the waterproofing or structural integrity of the existing station. This coordination is particularly important in areas where the bored tunnels, Canada Line underpass, or the new station box underlie the existing station; and,
  - Construction access and public safety: Plan and coordinate construction access and phasing with InTransitBC to keep the Canada Line Station operational during construction of the Broadway – City Hall Station.

1.3.4 South Granville Station Interface Coordination

Coordinate the design, construction, operation and maintenance of the South Granville Station with PCI to address the following interfaces:

- **Fire/life safety:** coordinate the design and construction of the station roof and walls with PCI to ensure that they provide the required two-hour fire resistance. Not integrate the station fire alarm system or station fire access with the PCI building;
- **Property identification:** coordinate property easements and demarcations for design and maintenance interfaces with PCI during detailed design of the station; and,
- **Construction access and public safety:** plan and coordinate construction access and phasing of the new station with PCI to keep the PCI building entrance, exits and maintenance ways open during station construction.

2.0 Station Development Principles

2.1 Architectural Design Approach

This section of the manual provides a design overview of the stations and includes descriptions of the base architectural design philosophy and the extent of the Overall Systems Design.

The fundamental premise behind the station design approach is that each station follows an Overall Systems Design rationale; whereby the six underground stations, although different in their configurations and site locations, will share elements of commonality that will make them recognizable as belonging to a common family of stations. Within the stations functional planning, wayfinding and other station components shall present to passengers a consistency that will enable them to comfortably pass through the station in a clear and logical sequence facilitated by intuitive wayfinding.

Overall Alignment

2.2 Architectural Parti

The design team have developed an architectural parti for the Broadway Subway stations that provides an efficient, functional relationship between the service and public areas, eliminates unnecessary space, and minimizes land use, excavation requirements and impacts to adjacent properties.

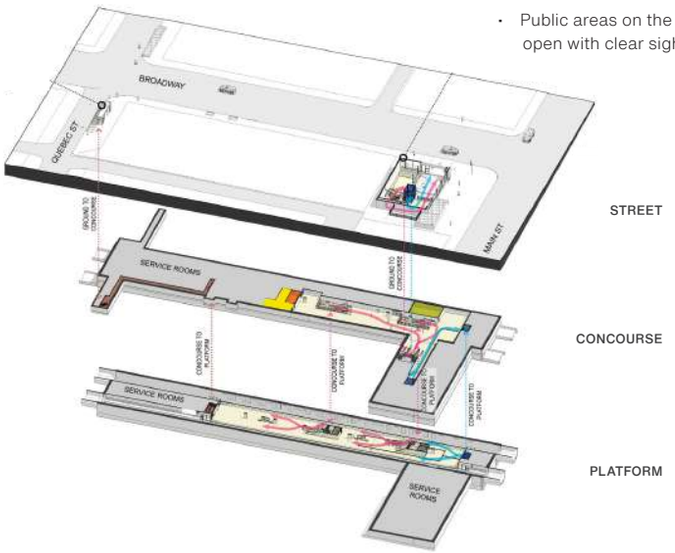
Each station design incorporates the following features:

Above grade: Each station entry hall:

- faces the primary street to create an architectural presence that is inviting and open, with direct access and high visibility;
- Service areas for the automatic assured receptivity unit and ventilation structures are located behind the entry hall resulting in a simple, rectilinear and compact architectural form that maximizes functionality while minimizing the above-grade footprint;

Below grade: Each underground station box optimizes functional efficiencies and station operations by:

- consolidating service rooms, avoiding irregular room shapes and maximizing passenger movements in public passageways;
- On the concourse level, service rooms are located across the concourse from the head house entry to provide more direct public movement and clear wayfinding;
- Public areas on the concourse provide unobstructed two-way movement and natural surveillance by eliminating alcoves.
- On the platform level, service rooms are strategically located under stairs and escalators (which is otherwise unused space) and at the ends of the platform.
- Service rooms for tunnel ventilation equipment and propulsion power substations are located below the head house to allow for more direct intake and exhaust ducts and for at-grade equipment removal.
- Public areas on the platform level are open with clear sight lines.



2.3 Sequence and Organization of Station Spaces

2.3.1 Overall Station Design

The sequence of public spaces in stations from the point of arrival to train boarding is as follows:

- Station Plaza/Entry
- Fareline + Gates
- Vertical Passenger Movements
- Concourse Level
- Platform Level
- Service Areas: the non-public areas of stations

The overall passenger movement principles and general approaches are as described below.

2.3.2 Overall Passenger Movement

STATION OVERALL

Principles	Approaches
Design: Develop a 'family of stations' design that is recognizable from the street, relates to the existing SkyTrain system, ensures safe and efficient passenger flow, and is resilient and sustainable. **Construction:** Ensure efficient construction using rectilinear shapes and easy-to-construct forms. **Maintenance:** Ensure public and service areas are well defined and use durable, easily maintained materials.	• Provide a station-wide, common architectural approach so all stations are part of the same 'family.' • Focus on passenger experience to provide a safe, short, comfortable passage to the trains, and an uplifting environment that emphasizes ease of movement and intuitive wayfinding. • Provide spaces that are animated by light and artwork. • Maximize the life of each station by using resilient and sustainable materials, simple rectilinear forms, and flexible reconfiguration options. • Provide the modular designs by using a common 1.25m planning grid in all stations to simplify construction and maintenance. • Provide common design elements, dimensions and detailing in all stations to simplify construction methods and long-term maintenance.

2.3.3 Station Entry

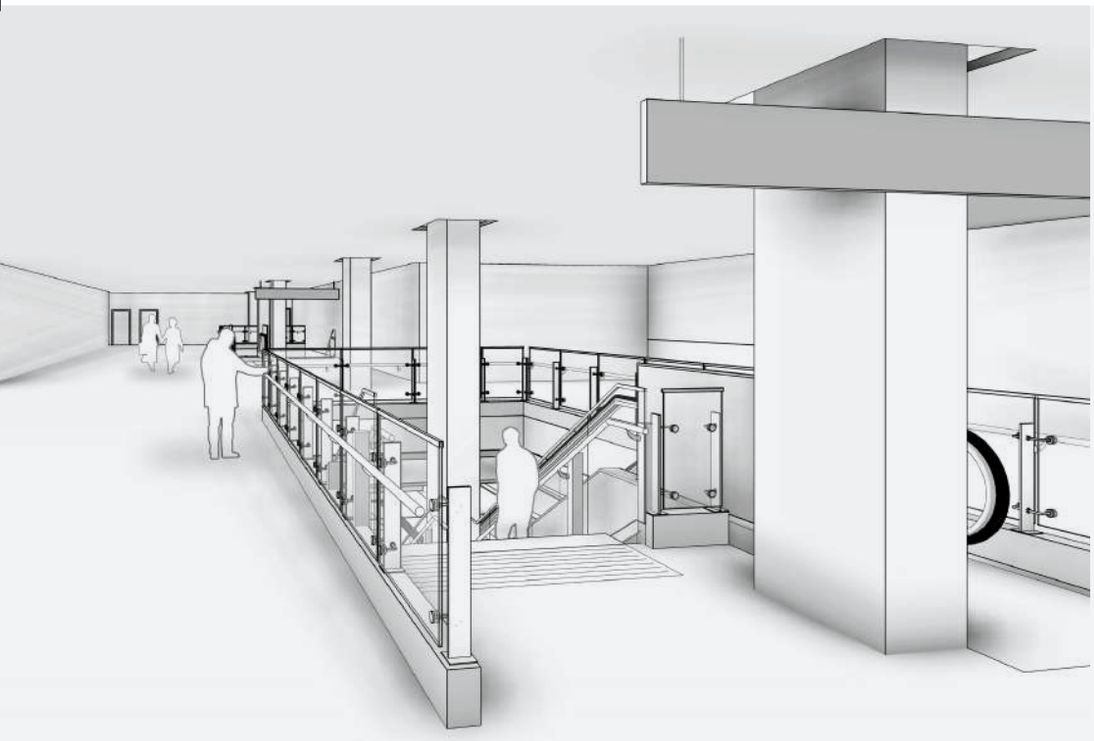
HEAD-HOUSE

Principles	Approaches
Design: Ensure stations are easily identifiable from the street, and ensure services and information required by passengers do not obstruct access to elevators, escalators and stairs. **Construction:** Align systems and communications elements to simplify conduit routing. **Maintenance:** Ensure all stations are secured at night using coiling grilles.	• Provide ticket vending machines and customer assistance panels that are visible from the street and framed by an identifiable lower canopy. • Provide a consistent right-hand flow pattern by locating elements that require some passengers to slow down or stop, such as information signs or ticket vending machines, on the right-hand side of station entrances so they do not restrict other passengers. • Provide an identifiable canopy over each entrance door and an area before entering the stations to park bikes or stand before accessing the doors and faregate area. • Provide coiling grilles at each entrance door to secure the station at night. • Locate service areas, automatic assured receptivity units and ventilation structures at the back of each station to maximize glazing in public areas.

2.3.4 Vertical Passenger Movements

VERTICAL CIRCULATION

Principles	Approaches
Design: Maximize public safety, convenience, and simplify wayfinding. **Construction:** Minimize construction costs by using modular, locally sourced and supported components. **Maintenance:** Minimize maintenance costs by using durable, low-maintenance equipment and materials, and simplifying maintenance procedures.	• Provide elevators glazed with laminated glass wherever far as possible and within constraints allowed. • Maximize sightlines to simplify wayfinding. • Co-locate stairs and escalators that travel in the same direction. • Provide adequate surge areas. • Distribute passengers evenly on platforms. • Avoid 180° return stairs.



2.3.5 Concourse Level

PAID CONCOURSE

Principles	Approaches
Design: Provide adequate areas for passenger movement and for access to public services, such as retail facilities.	• Locate service rooms below the head house and on the opposite side of the concourse from the entrance tunnel to maximize layout efficiency.
Construction: Minimize underground excavation.	• Locate retail facilities and public services facing areas where passengers are moving.
Maintenance: Minimize maintenance costs by using durable, low-maintenance materials and fixtures, and simplifying maintenance procedures.	• Provide short and efficient routes between the entrance and vertical circulation to the platform.

2.3.6 Platform Level

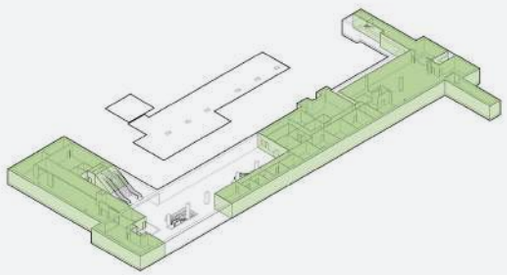
PAID PLATFORM

Principles	Approaches
Design: Maximize visibility of all public areas on the platform.	• Locate furniture and other public amenities in the middle of the platform and eliminate alcoves.
Construction: Provide adequate space for conduits and ducts, and standardized base plates for installing furniture and equipment.	• Install furniture and equipment on embedded base plates. • Enclose service areas below escalators and stairs. • Slope platforms for drainage as required.
Maintenance: Minimize maintenance costs by using durable, low-maintenance materials and fixtures, and by simplifying maintenance procedures.	• Install horizontal conduits and ducts below the platform and vertical runs below stairs and escalators. • Location of blue lights at the end of platforms. • Placement of technical room beyond public access. • Location of TVS shafts off platforms to avoid possible contact with users.

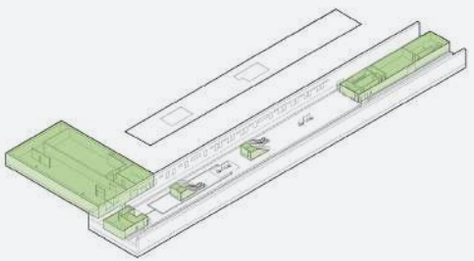
2.3.7 Service Areas

BACK OF HOUSE

Principles	Approaches
Design: Minimize service area floor space without compromising functionality or maintainability. **Construction:** Group together service areas that require common utility conduits or floor loading requirements. **Maintenance:** Provide access for equipment removal and group together service areas so that they are easy to secure and control.	• Locate service areas that contain large, heavy equipment, such as ventilation and propulsion power substation rooms, below the head house with street-level access. • Minimize access to service corridors from public areas. • Minimize ducts and service area footprint by optimizing service room locations.



CONCOURSE



PLATFORM

3.0 Architecture and System Interface

Building elements are integrated into the architectural design that provide an ordered environment that promotes efficiency for all Station functions. The designs of the stations are based on an effective distribution of systems for electrical and mechanical systems, from the guideway to the critical ancillary spaces. A secondary level of distribution of communication and power to end devices in public areas.

Location of pull rooms, horizontal and vertical routings, suspended ceilings and walls are coordinated to conceal systems elements in public areas. Devices are bottom fed through slabs and thickset where applicable for ticketing area. The design achieves integration of key systems interface elements as follows.

Service Shafts: Functional layouts are simple, using the shortest routings with the fewest bends and cable runs possible. Pull rooms at end of stations facilitate transfer of cables from tunnels to station. Mechanical and electrical service shafts are provided and are enclosed, concealing them from the public realm and providing an uncluttered space.

Risers: Mechanical and electrical conduits not integrated into service shafts are, instead, integrated into accessible closets. These closets line up vertically to allow the risers to traverse vertically with minimal bends and floor space.

Fare Collection Equipment: Fare collection equipment in series to provide continuity of conduits and junction boxes. Equipment is spaced proofed for ease of maintenance. Walker ducts and pull boxes are installed near the gates to allow for ease of installation and maintenance.

Concealment from public view: Conduits where possible are either concealed in concrete duct, above ceiling panels, and/or behind wall finishes.

Exposed Conduits: if exposed are provided such that the wood ceiling at entrances the conduits are lined up in main branches and laid out in an orderly fashion to avoid clutter and visual obstruction.

Ceilings: Simple, flat, metal, acoustic ceilings where needed for acoustic purposes and to conceal mechanical and electrical conduits, ducts, cables, and pipes as well as to integrate speakers and CCTV cameras. This will create a clean, uncluttered concourse and platform space. These acoustic ceilings are removable to facilitate maintenance and access to junction boxes for future expansion of advertisements, art or lighting.

Fire Ventilation Systems: Fire ventilation rooms and fans are integrated with back-of-house service spaces away from public access, noise, and nuisance. The vent shafts are routed directly to the exterior without encroaching into the public space.

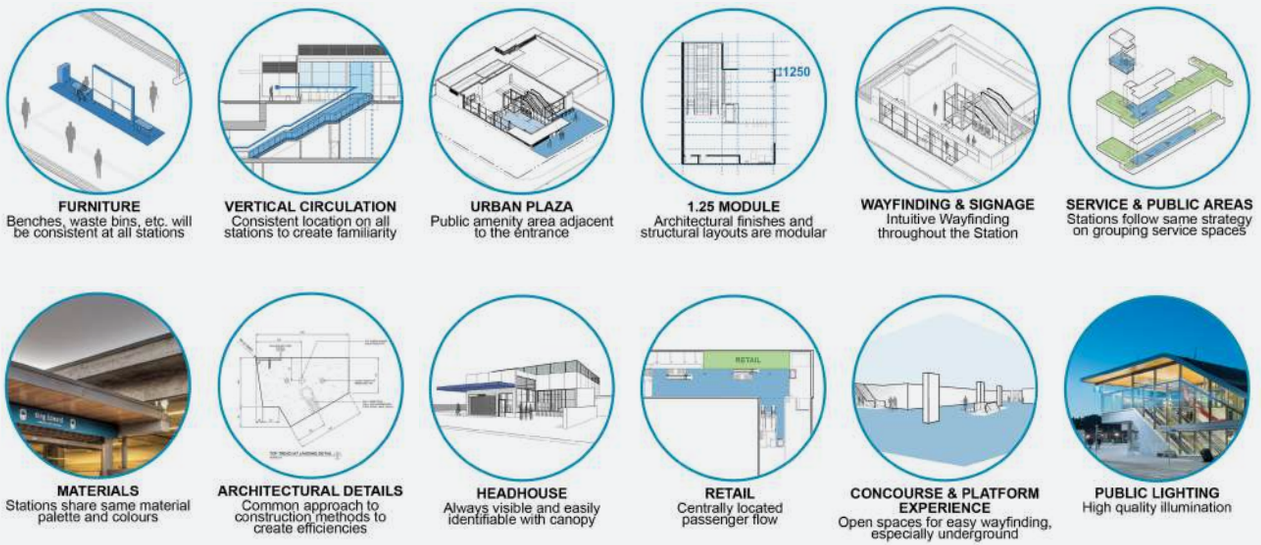
Equipment Removal: Large equipment removal routes and service maintenance procedures are integrated within the service room layout and Station box construction and design. This includes monorail and hoistway layouts and knockout panels, facilitating maintenance and operations.

4.0 Key Architectural Elements

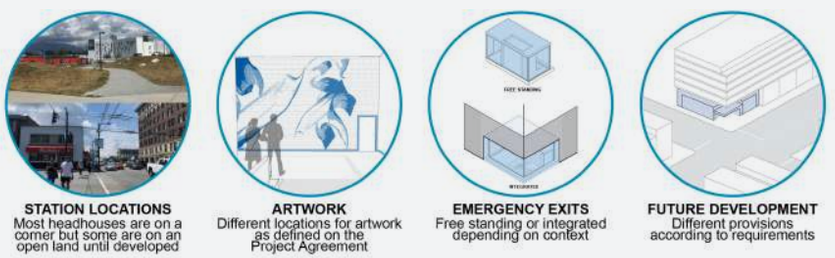
Key architectural elements, including primary form, roof, structural components, organization and circulation of key station elements, and station access;

4.1 Station-Wide Elements

The key architectural elements are described in the following sub-sections. These elements include the recognizable station-wide elements that are common to all stations and the station-specific elements that provide contextual fit, functional commonality and branding for individual stations. Together, these elements provide a kit of parts that provide excellent station functionality and passenger flow, minimize operation and maintenance costs, simplify construction, and deliver the 'family of stations' concept.



Station-Wide Elements



Station-Specific Elements

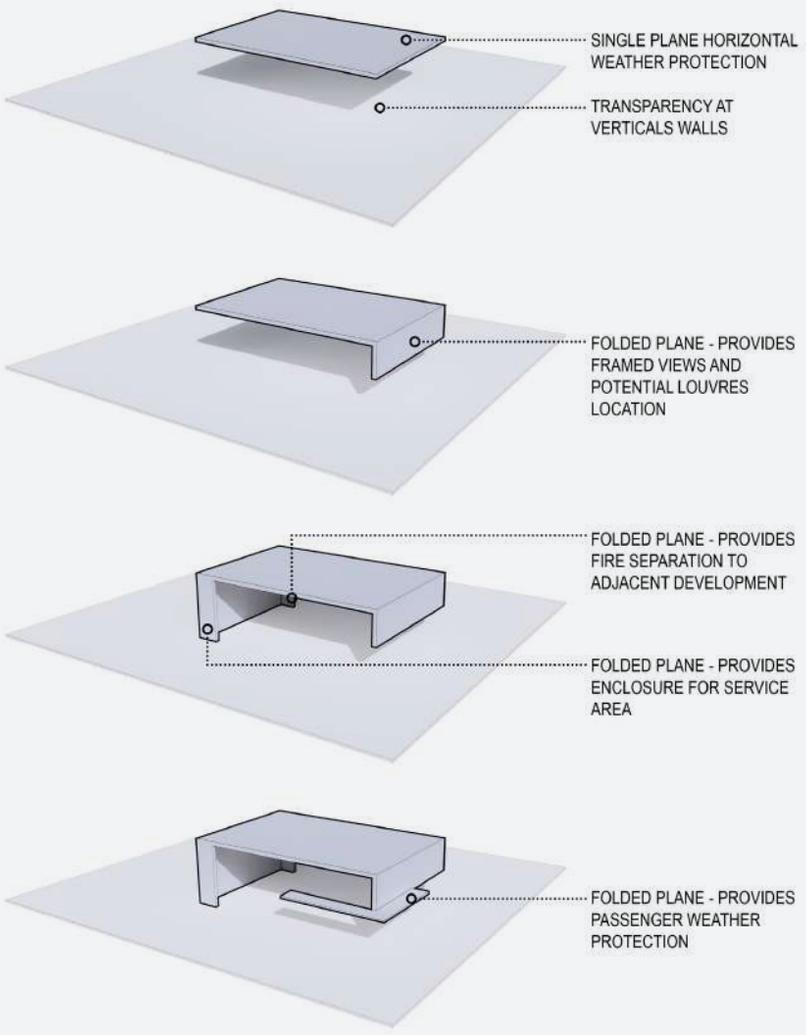
4.2 Form

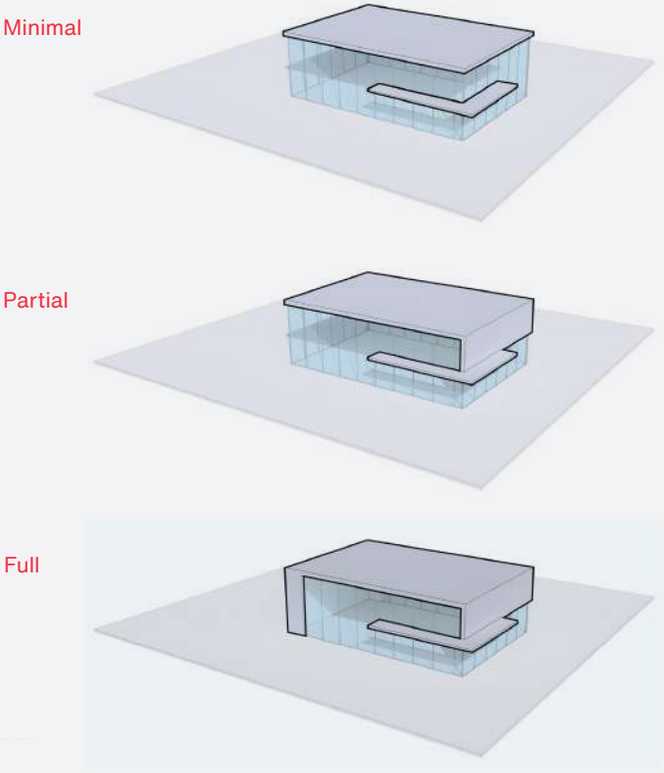
Each station to share a series of consistent, simple forms that are subtly modified to respond to individual contexts. Characteristic forms include:

- Simple rectilinear forms, which provide a clean, timeless quality that is functionally driven and avoids irregular forms or curves. These straightforward forms also simplify design, construction and maintenance
- Folded roofs and walls, whereby the horizontal planar roof elements become vertical wall details. We repeat this throughout the station façades at 2.5m intervals for glazing and concrete, following the 1.25m spacing interval. This simple blending of the roof and wall provides an efficient, identifiable aesthetic that is easy to construct and maintain, and is repeated across the line.

Minimal – Arbutus Station

Full – Mount Pleasant Station





4.3 Roof

Our roof design uses a hybrid system that combines cross-laminated timber with steel components to provide a design that is renewable and sustainable, and that can be prefabricated to decrease construction time and cost. This design builds on the successful use of cross-laminated timber in other recent Vancouver transit projects, and thereby emphasizes a strong aesthetic and structural connection across the transit system. The warmth and natural tone of the wood also provides a welcoming and soothing environment for passengers. The roof structure is designed so the beams do not hang below the cross-laminated timber ceiling. This is an important feature of the design that allows light to travel uninterrupted across the ceiling, illuminating as much of the wood as possible.

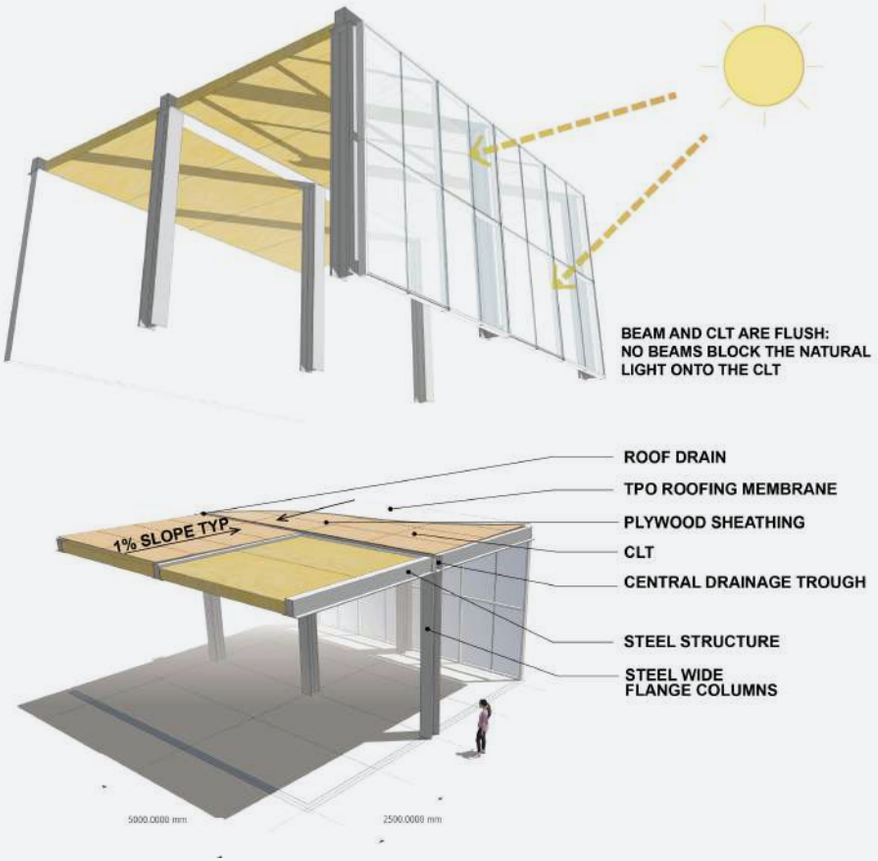
Cross-laminated timber is a light material that provides good thermal insulation, meets two hour fire resistance ratings, and can be clear-coated with a finish that meets flame-spread requirements and requires minimal maintenance over time. We will factory-finish all wood elements. Specific roof design details include:

- Protecting end-grain wood sections with overhangs, and keeping them back from drip lines to avoid moisture damage;
- Placing all soffits out of public reach; and,
- Adding parapets, where required, to provide watertight assemblies, shed rainwater and discourage climbing.

As described under the 'Form' subsection above, our horizontal planar roof elements fold to become vertical wall details for the façade using fibre-cement cladding. This simple architectural gesture provides a high degree of consistency and recognition across all stations. The louvered screens along the edge of the roof conceal the mechanical equipment above from public view. We have omitted these screens along the back or service facades to provide easy access to mechanical equipment on the roof.

Simple Rectilinear Forms provide Clean Timeless Quality

Oak - VGH Station Entrance - Simple Rectilinear Forms



Roof Structure and Finish

*NOTE: A VARIATION OF THE STRUCTURAL SUPPORT (UTILIZATION OF CONCRETE) IS PROVIDED AT GREAT NORTHERN WAY - EMILY CARR STATION. THIS IS TO ADDRESS THE FIRE RATING REQUIREMENTS OF THE ROOF SEPARATION AND COORDINATION WITH FUTURE DEVELOPMENT.

4.4 Structural Components

Our design of above-grade visible structural components includes cross-laminated timber panels with integrated steel beams that are supported by structural steel columns. These components provide a robust and efficient structural system. Their simplicity of composition and assembly provides an uncluttered visual space that highlights important elements of the station, such as the bright and warm-coloured, cross-laminated timber ceiling.

Our design of below-grade visible structural components includes central columns evenly distributed throughout the passenger areas to provide a continuous rhythm while avoiding obstructions of the main movement corridors or surge spaces around elevators, stairs and escalators.

4.5 Service Space in Stations

Service spaces are those areas that are not part of the public domain, and mainly include staff work areas, staff facilities, and systems rooms. The following general principles should be followed:

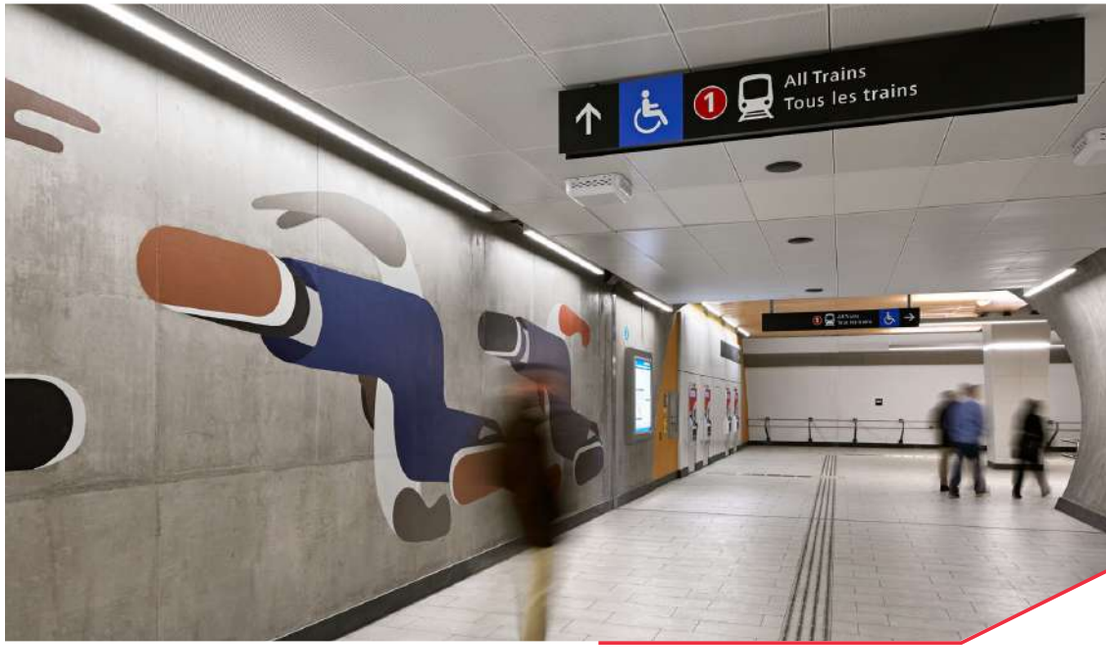
- All service spaces related to the train systems technology should be located together. They may be accessible from the station public spaces or from outside the station building, but access must be secured and controlled;
- All service spaces will have specific access requirements according to the control and security needs and the physical constraints for maintenance;
- Access to service spaces access should be minimized from the platform unless no other alternative access exists.

4.6 Key Features

We have included the following key features in our architectural designs for the Broadway Subway stations to ensure high-quality passenger experiences:

- **Rectilinear forms:** Our orthogonal station layouts simplify passenger navigation and minimize turns;
- **Compact at-grade footprint:** Our efficient head house layouts maximize visibility and passenger movement space while minimizing the at-grade footprint to encourage development in the surrounding areas;
- **Ventilation:** Our head house designs incorporate natural ventilation through louvered openings on walls, open entrance doors (during operating hours), and coiling grille doors (during closed hours). The Mount Pleasant and Oak – VGH stations also integrate the tunnel ventilation shafts into the head houses, unlike at the other station locations, where the tunnel ventilation shafts are separate from the head houses;
- **Public Area:** Our head house layouts include a public amenity area before reaching the station doors to provide space for parking bikes, or pausing away from the passenger flow along the sidewalk without obstructing passengers entering or leaving the station;
- **Clear sightlines:** Our overall station designs provide an environment that is safe, welcoming, and discourages undesirable behaviour by including transparent elevators, large window areas, and open and uncluttered public spaces with clear sightlines and few alcoves;
- **Wayfinding:** Our station designs facilitate simple and direct wayfinding by providing clear sightlines, strategically located signs and tactile pathway markings for accessibility;
- **Signage:** Our station signs will be harmonized with Translink's existing signage standards. Signs will be sized for legibility and integrated into the 1.25m planning grid, lighting and structural elements. Suspended signs will be installed at least 3m above the finished floor level for visibility and continuity;
- **Lighting:** Our station entrances include glazed areas that maximize natural lighting within the station during the day, and become a welcoming beacon at night by highlighting activity inside the station. Light fixtures integrate with the 1.25m planning grid, simplify maintenance, and maximize energy efficiency. The fixtures will be concealed in recessed building elements and overhead signs.
- **Environmental Functionality:** The stations shall be designed to provide reasonable protection from the weather typical of this North West Pacific geographic region. These measures include protection from rain, wind-driven rain, snow and drifting snow. Designs shall provide sufficient overhangs on station roofs to mitigate the effects of wind-driven rain.
- **Right Hand Rule:** Consistent with good transit planning principles, station functional plans have been developed based on supporting the right-hand movement of pedestrian traffic. Cross flow of pedestrian movement is to be avoided as much as possible, although it is recognized that cross flow areas may occur in some areas of all stations
- **Modular Approach:** Stations are organized to fit a basic planning module of 1.25 metres. The planning module has proved itself to work well on other systems in North America.
- **Station components:** Mass timber elements, glazing, roof framing structure, exterior and interior finish materials, etc. are modularized to provide for efficient materials use and help facilitate ease of maintenance within and among stations along the line.

Clear Sightlines, Signage and Tactile Pathway Markings



- **Furniture and Miscellaneous:** All furniture, signs, and other equipment in and around the stations are placed in locations convenient for patrons. The final station designs shall provide an integration of all elements required and used by transit passengers while moving to and from trains, buses and other passenger vehicles.
- **Equipment:** Items such as the Automatic Assured Receptivity Unit (AARU) will be incorporated in such a way as to integrate them into the architectural expression of the station entries or screened when adjacent to the station entry at grade.
- **Mechanical Units:** Integrated within the station architectural expression or screened to limit visibility and impact on passenger experience.
- **Emergency Exits:** Emergency exits minimize property impact, located in safe and secure areas, consider opening day requirements and future potential development integration.
- **Standardized Elements:** In this context standardized refers to the use of the same element or group of elements throughout the system. Standardization has advantages in a transit system when considering:
  - Maintenance because of vandalism;
  - Maintenance because of component deterioration (replacement);
  - Economies possible through system-wide procurement;
  - Flexibility in terms of fine tuning the initial system;
  - Flexibility in terms of periodic upgrading of the system;
  - Retrofitting the system at a future date based on component or material evolution;
  - Spatial and Organizational Principles: The following general principles apply to station design in relation to the four major functional components of entry/ticket area, horizontal circulation, vertical circulation and platform(s):
  - Pathways to emergency exits shall be clearly defined;
  - Public access to the stations must be restricted to designated public entrances only;
  - Connection between major elements should minimize the number of decisions a patron must make at any one point;
  - The connection between major elements should be organized in a clear and logical manner, which reinforces the path from entry to the vehicle and vice versa;
  - Clarity of path is best achieved by providing the most direct path of travel from station entrance to platform.
  - Right hand circulation is provided where possible.
  - Non-emergency exit ways from platform should lead to a single space as this allows for the efficient grouping of fare machines, public service equipment, information aids, etc.

5.0 Accessible Design

5.1 General

Consideration is given to patrons with varying abilities including sight, hearing and mobility in the design of pedestrian circulation and traffic crossing. Tactile pavement markings and sharp visual contrasts shall provide guidance and warning for such patrons. The complete circulation route from private auto or bus drop-off for disabled patrons, to the grade-level elevator landing will be barrier-free to patrons in wheelchairs, appropriate contrasting and tactile supporting signage shall be provided throughout the station.

Elevators are in Direct View and Accessible

6.0 CPTED

6.1 Crime Prevention Through Environmental Design

The Broadway Subway stations incorporate CPTED principles that facilitate natural surveillance, access control and territorial reinforcement. These design principles include:

- **Natural surveillance:** Providing clear, open sightlines from areas adjacent to the station that are enhanced by natural light from glazing on the head house to allow passengers and pedestrians to see and be seen;
- **Clear sight lines:** Providing a compact station layout with minimal visual obstructions to discourage criminal behaviour. This includes avoiding blind spots and hiding places, minimizing 180° passenger movements, and chamfering 90° corners where appropriate, to promote safety and clear sight lines;
- **Lighting:** Providing consistent lighting that minimizes high-spots and shadowed areas, and satisfies the recommended levels specified in the Skytrain Design Manual;
- **Placemaking:** Developing architectural designs that promote wellbeing and safety by creating a sense of pride and ownership that deters criminal behaviour. Our station designs provide open and animated public areas that include colour, artwork and visibility to activities in the station, materials that are easy to clean if vandalized, furniture and landscape elements that are not climbable and do not provide hiding spots, and controlled access to non-public areas;
- **Welcoming design:** Providing wide entrances with open spaces and clear guards and railings to avoid the negative and threatening perceptions created by a fortress mentality;
- **Entrance location:** Providing entrances that are adjacent to a crosswalk on a signalized intersection or within a visible location on the street;
- **Structure:** Providing well-anchored structures with concealed fasteners and tamper-resistant materials to discourage vandalism, skateboarding and garbage foraging (dumpster diving);
- **Secure areas:** Ensuring service areas are physically separated from public spaces and accessed through the minimum number of high-security doors for both security and efficiency;
- **Signage:** Providing intuitive wayfinding as a design priority, supplemented by signs that are legible, easily discernable and lit at night;
- **Concealed services:** Ensuring conduits are either embedded in the structure or installed above the ceiling to prevent vandalism; and,
- **Surge space:** Providing unobstructed, open surge space in ticketing areas, fare lines and pedestrian routes to allow clear and uncongested passenger movement.

7.0 Smart Card and Faregates

7.1 Faregates

Depending upon the station type and configuration the station entry and ticketing area (fare line) may be in one combined area or grade separated and connected by vertical circulation.

Station entries and ticketing area comprise the following basic sub-elements:

- Station plaza/ forecourt leading to entrance;
- Entrance portal with overhead coiling grille for station closure;
- Vertical circulation leading to the ticket area, if required;
- General circulation space with allowance for the associated queuing functions;
- Information panels and telephones;
- Fare Card Vending Machines (CVMs);
- Fare gates, Add Fare Machines (AFMs) and information panel.

The following principles apply to the organization of these elements:

- The entrance portal shall be clearly identifiable from the outside of the station;
- Upon entering, the path to platforms shall be clearly identifiable and simply indicated by signage;
- Access to the vertical circulation elements must be as direct and as straightforward as possible, preferably without having to make 90- or 180-degree turning movements;
- Organization of the entry hall should promote right hand flow movement, and minimize cross flows as much as possible;
- Adequate space for queuing and for the circulation of patrons through the ticketing area in front of fare gate arrays shall be provided.

Entrance Fare Gate is Visible and Direct

8.0 Acoustics and Noise Control

Station designs shall comply with the provisions of Article 20 of the contract documents with respect to noise and vibration design guidelines, criteria and requirements for the stations. The general acoustic design similar to systems design is integrated with the station with the following principles:

- Speakers and audible devices are properly integrated with the ceiling finishes of the station.
- Acoustic insulation and material is integrated with the architectural finishes, for example ceiling panels are perforated with acoustic lining where the acoustic lining is not visible to the public.
- Ensure PA system and audible signals are properly heard from passenger's perspective while traversing the station as well as waiting for trains.
- Ensure speakers are properly coordinated and away from public touch zones to avoid vandalism.

9.0 Materials and Finishes

9.1 Materials

The following are the principles and approaches used with respect to Materials and Finishes. The quality and type of materials used in the stations address the function and design life of the stations.

MATERIALS	
Principles	**Approaches**
Design: Use materials that are light in colour to maximize illumination levels, and avoid colours or patterns that will become obsolete. **Construction:** Use materials that are easy to source and install. **Maintenance:** Use materials that are durable, easy to maintain and easy to repair or replace.	• Use materials that are standardized across all stations, easy to source, durable, easy to maintain and easy to replace. • Minimize the colour palette to avoid obsolescence. • Use 3m high, anti-graffiti coatings on walls in public areas where specified products do not integrate anti grafitti properties. • Use sustainable materials where appropriate, such as cross-laminated timber for entrance roofs.

9.1.1 Primary Materials

The primary materials for each station are drawn from a common palette, inspired by the Millennium Line, to provide the entire family of stations with a cohesive character. These materials include structural steel, anodized aluminum curtain wall, louvers and screens and fibre-cement cladding, and cross-laminated timber panels for the roof structure. Interior materials include metal acoustic panels for ceilings and porcelain tiles for walls and floors.

Our use of neutral-coloured concrete and fibre cement panelling, as well as transparent glazing as primary materials was also inspired by the existing architecture along the Broadway corridor. These 'hard' materials are complemented by using exposed wood in the head houses to provide a sense of warmth.

For the stations integrated with developments, interior finishes are consistent with other stations, and transitions and details with adjacent building developers will be carefully considered and coordinated.

Although all stations are recognizable as a family, each station is also identifiable by the unique characteristics of its context and artwork.

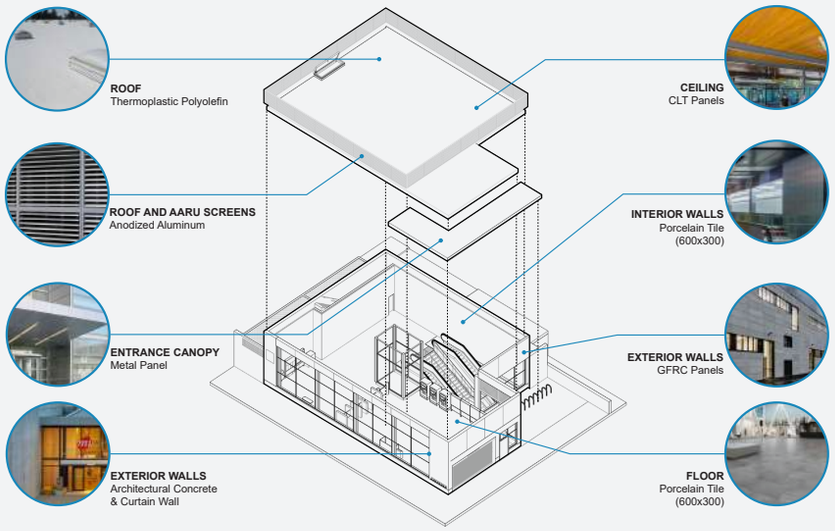
9.1.2 Quality and Type

Station materials and finishes shown in Table 3 are based on:

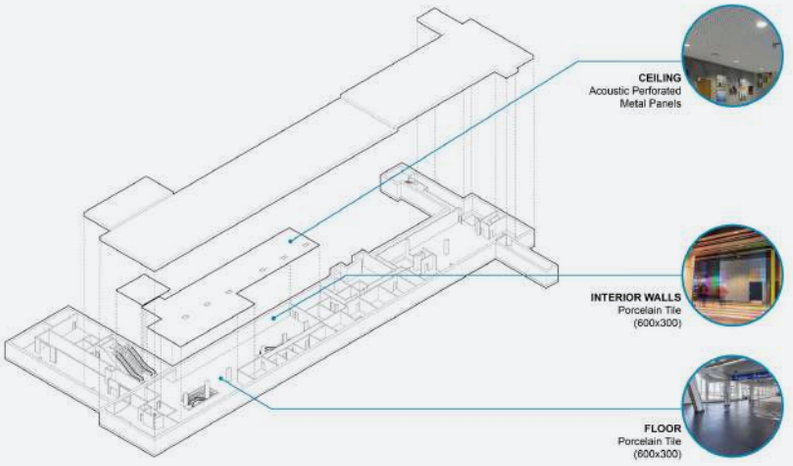
- Maximizing lifespan, durability and passenger experience while minimizing maintenance and replacement costs;
- Using a consistent 1.25m planning grid for finishes in all stations, minimizing installation labour and material waste costs, and ensuring cost-effective component replacements by using interchangeable materials for all stations;
- Using materials such as architectural concrete, structural steel, glazing and wood, consistent with the materials used for the Millennium Line;
- Using sustainable materials such as cross-laminated timber for the head house roof and ceiling, as recommended by the Wood First Act;
- Using a combination of materials that provide a harmonious look and feel while making the stations easy to identify; and,
- Using materials that allow for some customization in size and application that are unique to each station.

Station Materials and Finishes

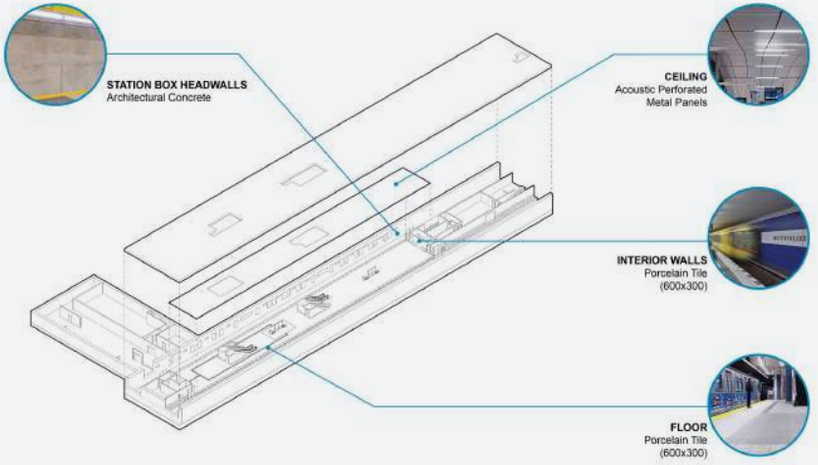
ELEMENT	MATERIAL AND FINISH
	Station Head House
Roof	Thermoplastic polyolefin (note: Station Head-house roof at GNW Station to comply with BSPA)
Entrance canopy	Combination of structural steel with metal cladding
Exterior walls	Curtain wall, fibre-cement cladding and architectural concrete
Interior walls	Porcelain tile (600×300) (note: variation in materiality is required at GNW)
Floors	Porcelain tile (600×300)
Ceilings	Exposed cross-laminated timber wood (note: variation in materiality is required at GNW)
	Concourse and Platform Levels
Walls	Porcelain tile (600×300)
Floors	Porcelain tile (600×300)
Ceilings	Perforated and non-perforated metal acoustic panels
Station box headwalls	Concrete
Stair and escalator soffits	Porcelain tile (600×300)
Interior guards	Glazed with stainless steel supports
Elevator hoistways	Curtain wall where glazed



Grade-Level Materials and Finishes



Concourse-Level Materials and Finishes



Platform-Level Materials and Finishes

10.0 Wayfinding and Signage

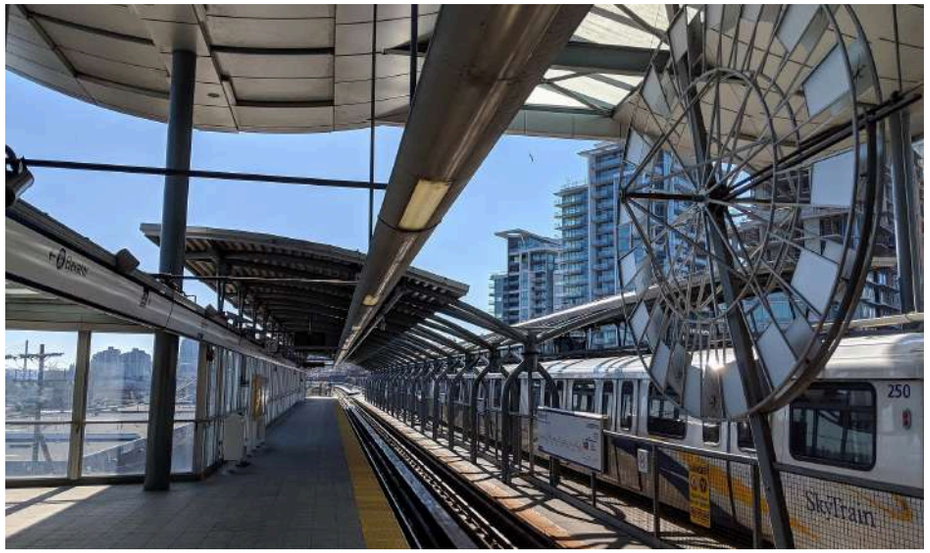
10.1 Organization and Circulation of Key Station Elements

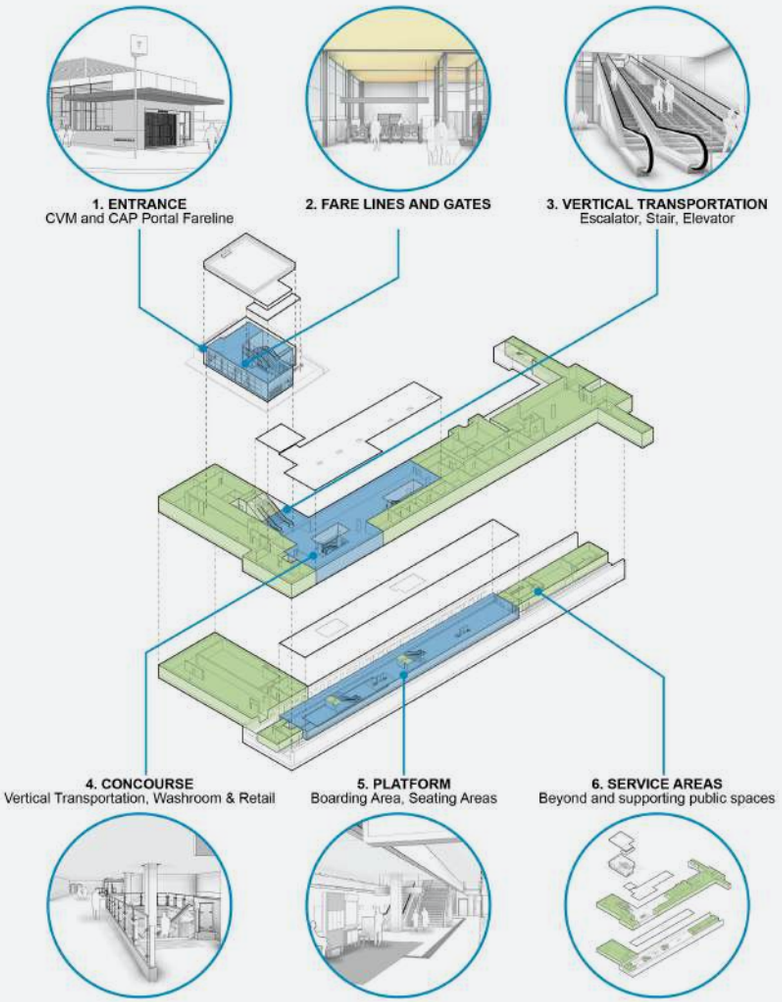
Key station elements shall be organized according to a logical wayfinding sequence. The result is an intuitive and accessible environment that allows passengers to easily locate key station elements or services such as washrooms, retail kiosks, elevators, and fare gates. Signage in key decision areas act as supporting elements, but not as primary wayfinding elements. The station layouts provide short and efficient paths, minimize physical and visual obstacles, and comply with the accessibility standards and guidelines required. Service areas not accessible to the public are grouped together for security and crime prevention reasons.

Key station elements include the following features:

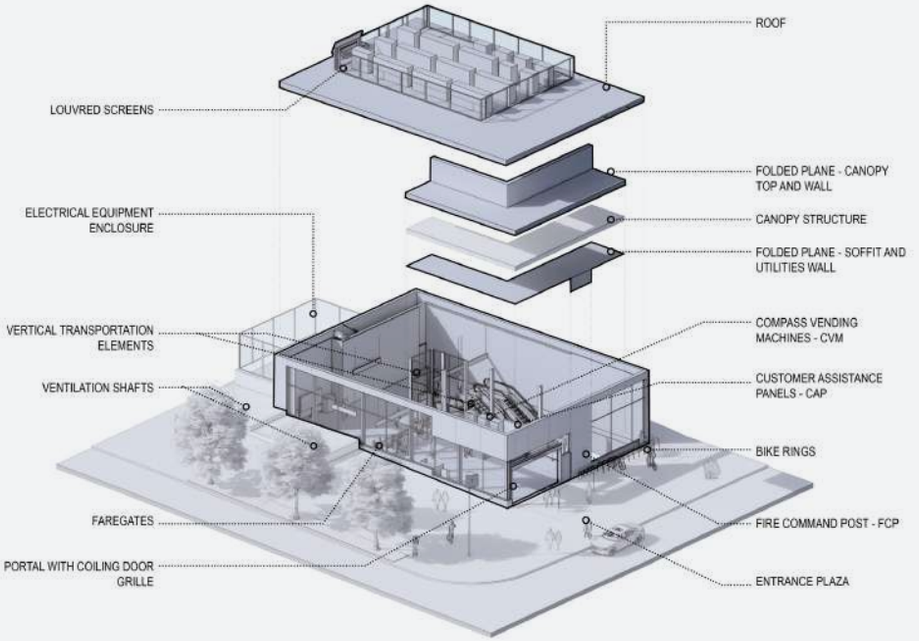
- **Entrance:** Passengers enter the station by passing bike parkade and/or under a pedestrian-scale canopy and arriving in an interior forecourt. This area includes a fire command post, ticket vending machines, and customer assistance panels on the right-hand side of passengers entering the station. Surge and waiting areas in front of the ticket vending machines and customer assistance panels allow unobstructed passage for passengers who enter the station and proceed directly to the fare lines and gates.
- **Fare lines and gates:** Passengers with tickets proceed from the forecourt to the fare lines in front of each fare gate, and then into the station's fare-paid area. Glazing beside the fare lines delivers natural light during the day and a clear view into the station during the night, thereby providing passenger safety and comfort. Clear sight lines between the station entrance and the fare-paid area facilitate safe and easy passenger movement.
- **Vertical transportation:** Once inside the fare-paid area, passengers have ample space to decide whether to use the elevator, escalator or stairs to reach the concourse level. Surge areas in front of the fare gates and vertical transportation elements maintain intuitive passenger flow even during periods of high demand.
- **Concourse:** The concourse level provides a transition between the station entrance and platform levels. Passengers have unobstructed views and movement paths to orient them as they move downward from the station entrance to the concourse and then to the platform. The concourse may also provide passenger services such as washrooms and commercial spaces, depending on the station. All below-grade areas use a simple lighting arrangement that complements the station's rectilinear layout and wayfinding strategy.
- **Platform:** Passengers reach the platform from the concourse using stairs, escalators or an elevator. The stairs and escalators are located so they evenly distribute passengers along the length of the train boarding areas. Passenger seating and information panels are also prominently located in highly visible areas.
- **Service areas:** As shown on page 8, service areas are located away from public areas, at the back of the head house or below the escalators and stairs to keep public areas clear of unnecessary visual or movement obstructions. Conduits and mechanical ducts that cross public areas are incorporated into the ceilings or embedded in the station slabs and walls to eliminate visual obstructions.

Sapperton Station – Art Integration may act as Wayfinding Element





Typical Organization and Circulation of Key Station Elements



Typical Free Standing Head House Layout

A key identifying feature of our stations is the openness of their designs. This amplifies the passenger experience and provides significant climate-control and energy-efficiency benefits.

We have added strategically located louvered openings to provide natural cross-ventilation, reduce solar heat gain and allow air flow from the piston effect of train movements. At night, the openness provides transparency for safety and ambiance, creating stations that act as urban beacons and provide a sense of place along the Broadway corridor.

11.0 Public Art

11.1 General Principles

Art plays an important role in encouraging ridership, improving perceptions of transit, contributing to way finding, enhancing community identity and invoking civic pride. All Broadway Subway stations will feature public artwork or Indigenous artwork, or both. The Province envisions the Broadway Subway Project as an excellent opportunity to support the display of site-specific artworks that are integrated with station architecture, thereby contributing to the creation of vibrant public realm and livable communities. BSP station art should celebrate the transformative power of transit infrastructure in connecting people and building communities, and how it has shaped our city in the past, at present and into the future.

11.2 Art at stations

11.2.1 Public Art

There will be five site-specific, highly integrated public artworks, one at each of these stations: Great Northern Way – Emily Carr, Mount Pleasant, Broadway – City Hall, Oak – VGH, South Granville Station. Each location offers unique public art opportunities, as listed below:

- Public art at Great Northern Way – Emily Carr Station will be an Integrated 2D Artwork. The artwork will be located at the head house glazing at the street level. The public art at this station is designated as a community-engaged public art, with Emily Carr University of Art and Design (ECUAD) being identified as the community partner.
- Public art at Mount Pleasant Station will be located at the entrance level, over the lobby and vertical circulation space. It is inteded to be a Suspended 3D Artwork.
- Public art at Broadway – City Hall Station willbe located at the concourse level. Integrated 2D Artwork and Light and Projection Artwork are being considered for this station. The areas identified for public art installation include portions of the wall surfaces within the concourse and along the vertical circulation.
- Public art at Oak – VGH Station will be located at the entrance level, over the lobby and vertical circulation space. It is intended to be a Suspended 3D Artwork.Public art at South Granville Station occupies the head house level, and can be suspended from the ceiling and/or mounted on the vertical surfaces in the lobby area and along the vertical circulation. The type of artwork being considered includes Integrated 2D, Applied 2D/3D and Suspended 3D Artwork.

The project is seeking to select five artists to deliver public art for the five above-listed Broadway Subway Project stations. A two-stage Province led selection process: Request for Qualifications (Stage One) and a Concept Proposal Presentation (Stage Two), is underway to identify the preferred artists. The Request for Qualifications stage closed on September 24, 2020 and stage two of the process with 15 shortlisted artists commenced in November 2020.

11.2.2 Indigenous Art

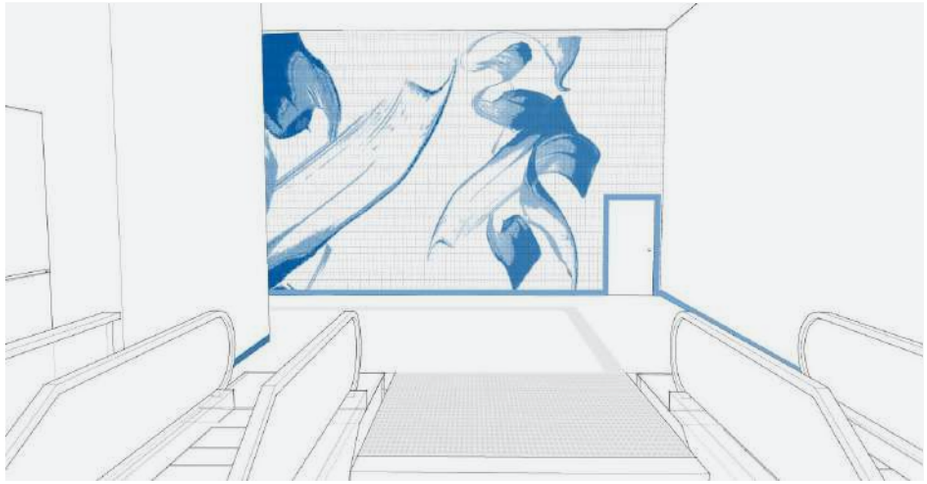
The Broadway Subway Project is located within the asserted traditional territories of the Musqueam Indian Band, Squamish Nation and Tsleil-Waututh Nation. Indigenous art will be featured at Arbutus Station, plus additional stations still to be determined, in consultation with these Indigenous Groups.

Various locations within the station and in the station plaza have been identified for the placement of Indigenous artworks and other commemorative elements recognizing the Indigenous presence from time immemorial, and continued presence and connection to these lands.

11.3 Design Integration

The design of public and Indigenous artwork will follow an integrated design process, working in tandem with the station design team, to ensure that the artworks are displayed with their full artistic potentials as well as complimenting the station architecture. Artworks at the stations will be durable, practical to maintain, and safe for both transit users and operators.

Public Art as part of Passenger Wayfinding and Experience – for example at the top of Vertical Circulation Elements



Victoria Park Subway Station – Art Integrated with Passenger Experience

12.0 Urban Design and Landscape

12.1 Site Considerations

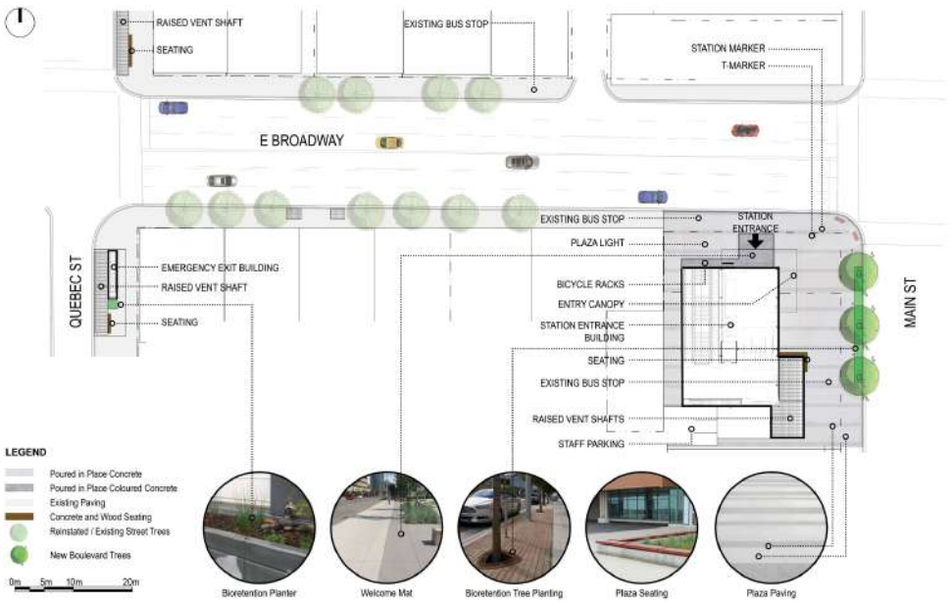
Site conditions for the Broadway Subway stations are considered to seamlessly blend transit service with the urban context. General site considerations include:

- Providing entrance areas that function as nodes where pedestrian and bicycle pathways merge, physically connecting the stations to the neighbourhood and improving the transition between the two;
- Providing sufficient areas for pedestrian movements, orientation, gathering, and socialization, while maintaining safety and security at entrance doors and building edges; and
- Developing landscape designs that complement station architecture and enhance the surrounding neighbourhoods.

12.1.1.A VEHICULAR CIRCULATION

A basic objective of the Broadway Subway Extension Project system is to optimize transfer between rail and bus systems. To implement this objective, the station facilities should be designed to promote safe, convenient and efficient transfer of patrons between bus and rail modes.

Mount Pleasant Station Urban Design Plan



Where applicable, there will be a hierarchy for vehicular modes of access, giving priority to the feeder buses, a second priority to Passenger Pick-Up and Drop-Off (PPUDO) facilities, HandiDART bay, and a third to parking, where applicable. Taxi pick-up and drop-off may be accommodated where space permits. Such service can normally be handled on adjacent streets.

12.1.1.B PEDESTRIAN CIRCULATION

Pedestrian access to stations must be direct, safe and inviting. Curb cuts for wheelchairs and strollers, pedestrian cross-striping, and lighting to articulate the access points will all be considered and must conform to municipal standards. Steps should be avoided at entrances, substituting ramps if required. In all cases, slip-resistant, durable surfaces, crowned and sloped for good drainage, should be utilized.

12.1.1.C BUS PROVISIONS

The design and layout of the Arbutus bus loop has been provided with amenities as follows:

- accommodation of the bus exchange (inclusive of passenger loading and unloading requirements);
- sufficient que length for the bus passenger loading condition;
- a continuous bus shelter canopy (independent to the Station and Station canopy) to cover bus passenger queuing for loading condition; and
- leaning rails within the bus queuing loading condition.

At other stations bus interface provisions shall largely be on-street bus stops. Location of these are indicated on the individual station's Urban Design and Landscape plans and will be coordinated with the City of Vancouver.

12.1.1.D AUTOMOBILE PROVISIONS

Provision for Passenger Pick-up and Drop-Off (PPUDO) are generally located on street as opposed to off-street.

Long-term parking is not part of the transportation interface program for the Line.

12.1.1.E PAVING REQUIREMENTS, WALKS AND CURBS

All vehicular traffic areas will be paved and curbed, and concrete walkways will be provided for pedestrian traffic to stations.

Paving, curb and sidewalk design will conform to the standards of the local municipality.

All pavement structures will be designed individually to accommodate anticipated traffic and load requirements for each station and in all cases will be at least equivalent to pre-construction roadway structures in the area

12.1.1.F SERVICE VEHICLE AND EMERGENCY VEHICLE PARKING

Joint service and emergency vehicle access is required within the station area, either on-street or off-street as deemed appropriate. Generally two vehicle spaces are required.

BCRTC and Transit Police Parking will be provided as required and shown on the station drawings.

Vehicle access is also required for substations incorporated within the station or separate from the station. The service lane width will be 3.5 metres plus 500 mm shying distance to adjacent walls or columns. Two parking stalls are required at each substation for service vehicles.

12.1.1.G GREEN INFRASTRUCTURE REQUIREMENTS

Green infrastructure practices are reviewed and implemented if practical and applicable at site specific conditions. These include reviews at the following areas:

- Surrounding Station sites
- Station Headhouses
- Arbutus Transit Exchange
- Elevated Guideway
- Street right of ways

Additionally specific-site considerations for each of the Broadway Subway stations include:

12.1.1 Great Northern Way – Emily Carr Station

- Ensuring the head house has enough setback to enhance the public plaza and improve integration with the multi-modal path and greenway.

12.1.2 Mount Pleasant Station

- Locating the head house to maximize future development potential;
- Including a public amenity area adjacent to the entrance doors to provide bike parking and a more dynamic urban corner.

12.1.3 Broadway – City Hall Station

- Carefully integrating the head house with existing buildings to minimize disruptions to the existing site.

12.1.4 Oak – VGH Station

- Locating the head house on the perimeter of the site to maximize future development potential;
- Including a public amenity area adjacent to the entrance doors to provide bike parking and a more dynamic urban corner.

12.1.5 South Granville Station

- Integrating the station entrance into the proposed PCI development.

12.1.6 Arbutus Station

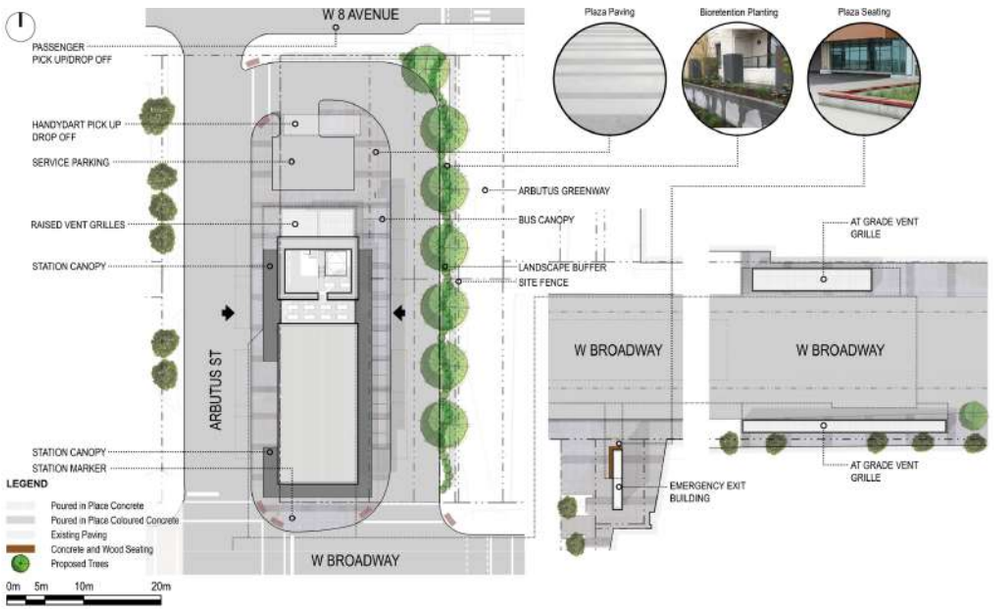
- Moving tunnel ventilation system grates from the sidewalk to the head house roof; and,
- Prioritizing bicycle parkade access and visibility.

12.2 Community Context

The community context of each Broadway Subway station has been considered and incorporated into the architectural approach to each of the stations.

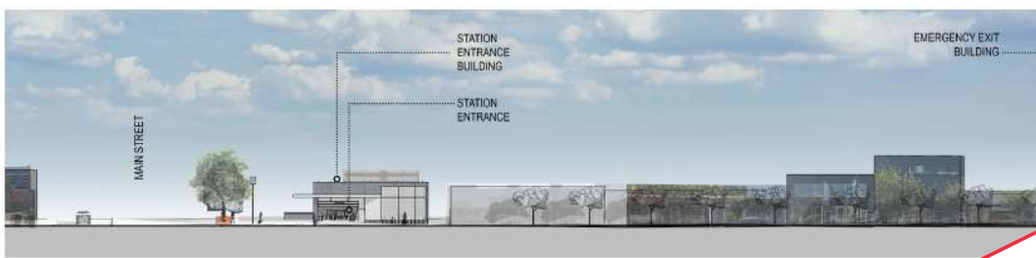
Community context along Broadway and of each station follows:

Arbutus Station Urban Design Plan showing Green Infrastructure Designs. These include Planters for Water Retention of Roof Runoff as part of the Storm Water Drainage System



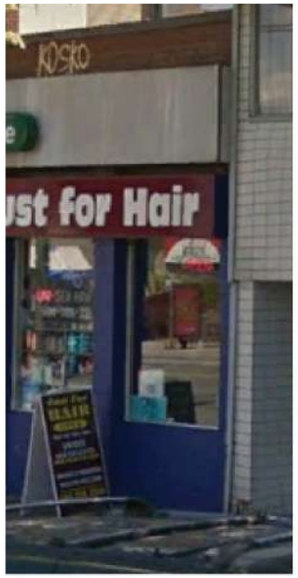
Mount Pleasant Urban Elevations – Station fits into Streetscape

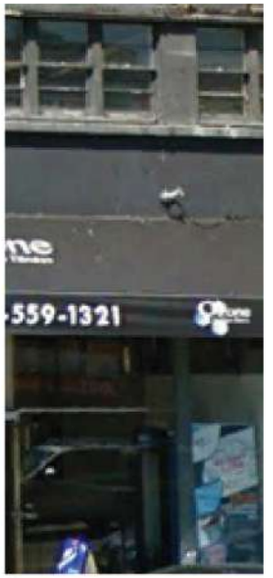
EAST (MAIN STREET) ELEVATION



NORTH (BROADWAY) ELEVATION

Along Broadway – A lot of variety of colours and lots of advertisement boards. Predominantly painted colours in the façades.

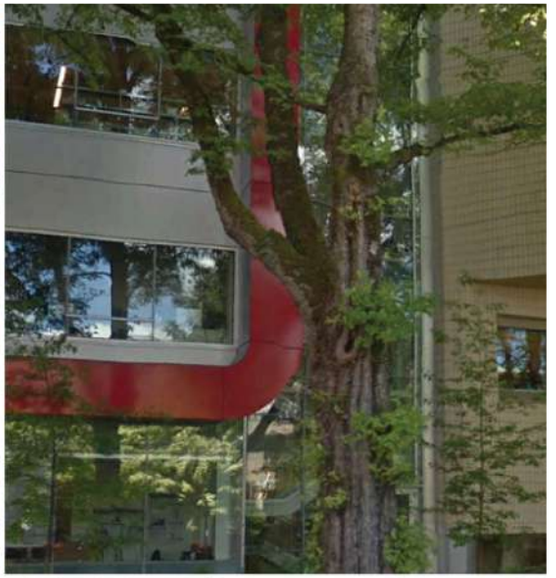




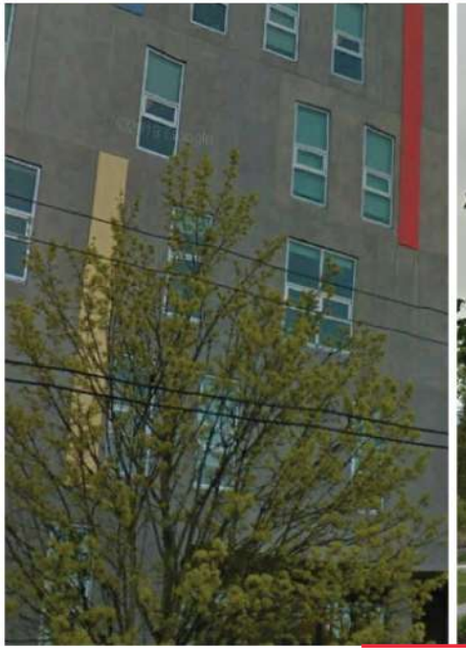
North of Broadway – More residential and facades with more texture.

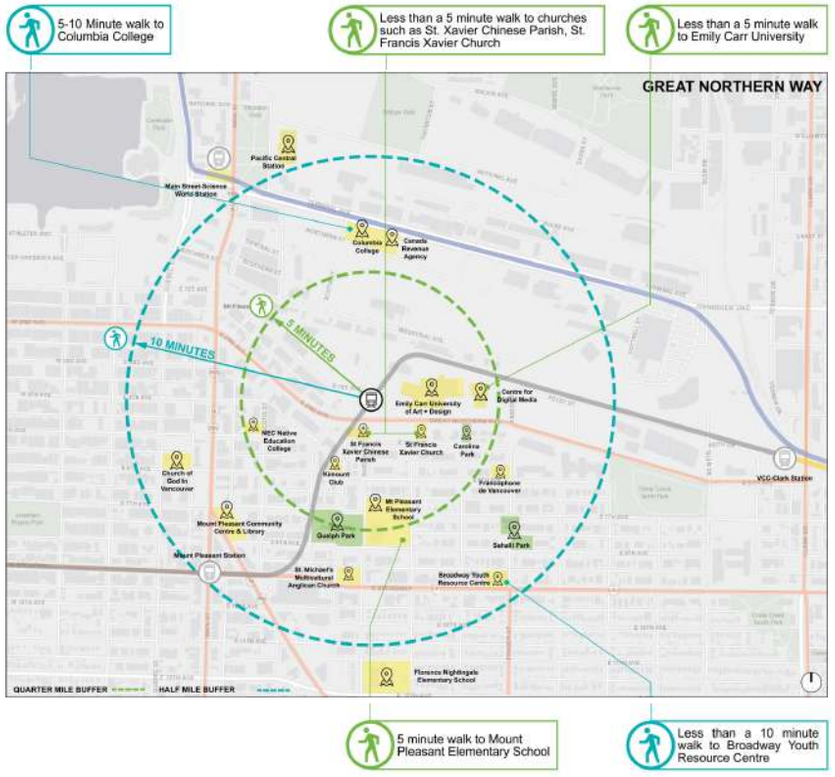
South of Broadway – Institutional-like buildings, with glazing and composite panels. A few brick buildings with some heritage-like language. Also more greenery along this area.









Great Northern Way – Emily Carr Station

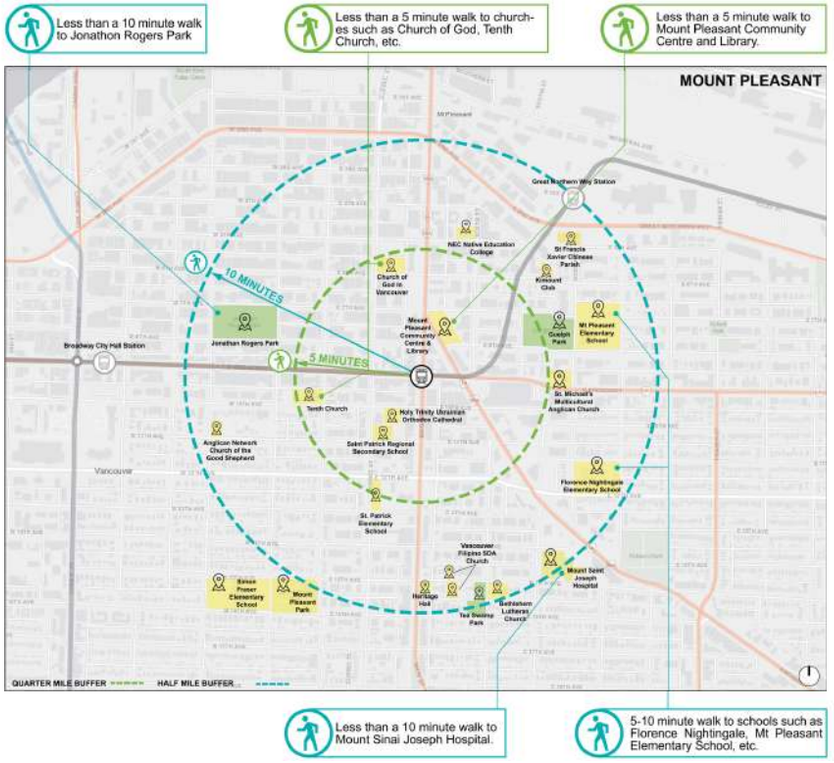
Community Context

This station is located beside Emily Carr University and a 5 to 10-minute walk to Columbia College. Close proximity to these post secondary education facilities will increase pedestrian traffic and encourage new developments in the surrounding area.

Emily Carr University provides student and public amenities including shops, galleries, a library and an aboriginal gathering place. This station serves the artistic community of Mount Pleasant and Vancouver's century-old Strathcona neighbourhood. The surrounding residential areas are a mix of older detached homes and newer low-rise buildings and condominium developments.

Architectural Approach

This standalone station maximizes glazing toward Thornton Street and Great Northern Way to provide a direct connection with the surrounding community.



Mount Pleasant Station

Community Context

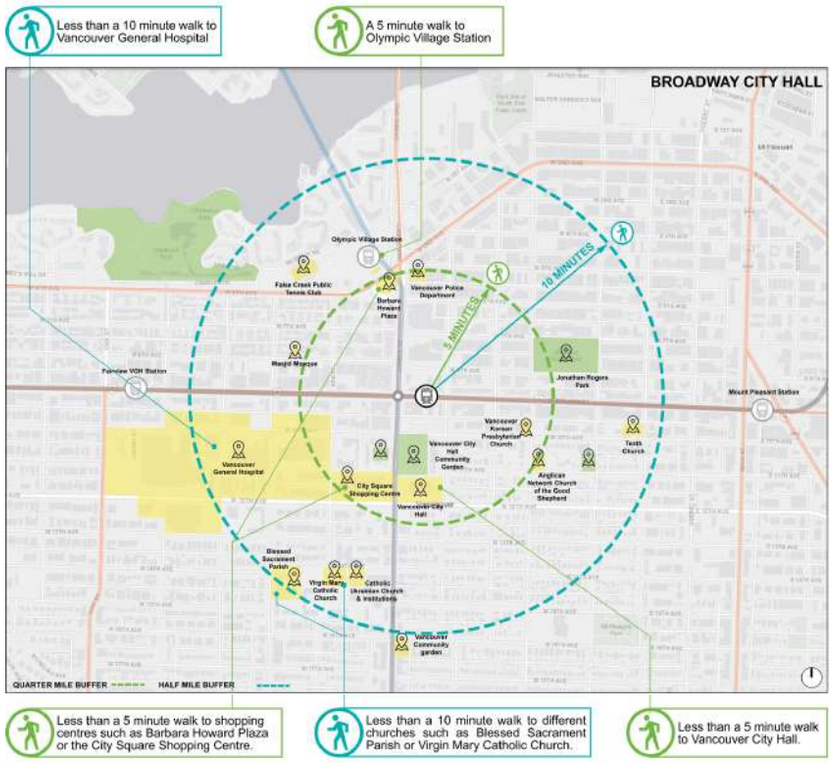
This station serves the neighbourhoods of Mount Pleasant east and west, and the Cambie Corridor Planning Program area (south of 16th Avenue and west of Ontario Street), which is expected to double in density over the next 30 years.

The station provides an interchange with buses on Main Street and Broadway, and is within walking distance of restaurants, boutiques and schools. The surrounding residential areas are a mix of historic, character homes, and new townhome and low-rise building developments.

New work/live and retail developments in the area will support a growing population of young adults and new families who prefer to use transit instead of owning a car. The resulting population growth will result in new stores, schools, bike lanes and dog parks.

Architectural Approach

The station entrance will initially be free-standing, but knock-out panels will provide direct connections to future developments. An forecourt on the corner beside the entrance doors will allow passengers to move efficiently in all directions to other modes of transportation including buses.



Broadway-City Hall Station

Community Context

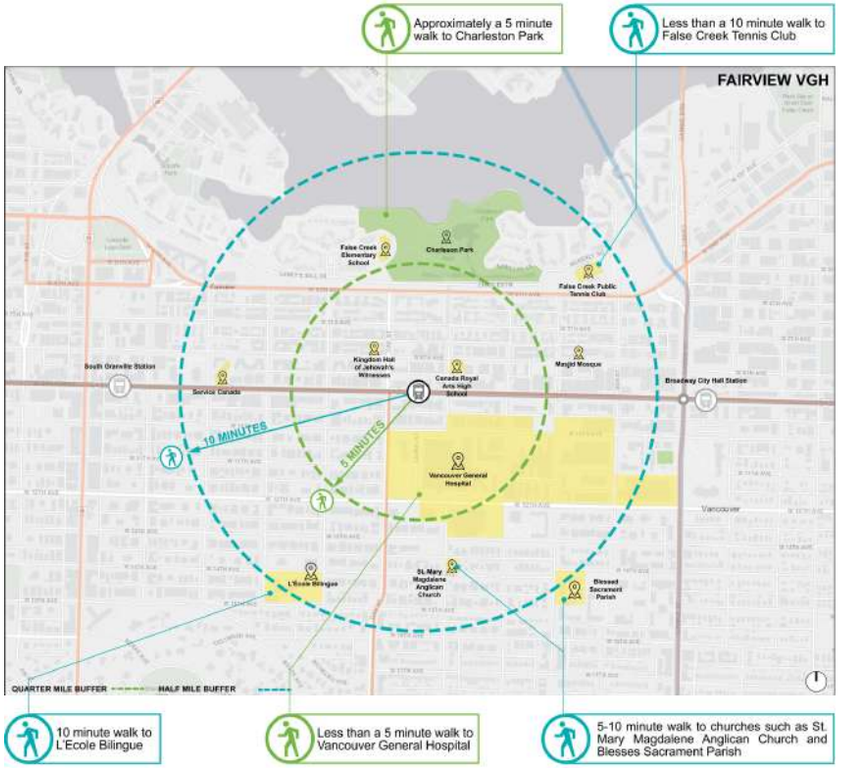
This station serves Vancouver City Hall, Mount Pleasant west and Fairview neighbourhoods. It provides an interchange with the Canada Line between downtown Vancouver and the airport; Broadway, Cambie and Oak Street bus lines; and several bike lanes.

The station is north of the Cambie Corridor Planning Program area, which is expected to double in density over the next 30 years. This station is in one of Vancouver's fastest growing and densifying areas with more multi-family dwellings than any of the other Broadway Subway stations. Former warehouses are being converting to lofts and commercial buildings, displacing industrial uses.

Young families are moving into the area, which is well served with education facilities, and flourishing entertainment and commercial areas.

Architectural Approach

The configuration of this station is designed to minimize impacts on developable lands and provide the flexibility to integrate with future buildings.



Oak-VGH Station

Community Context

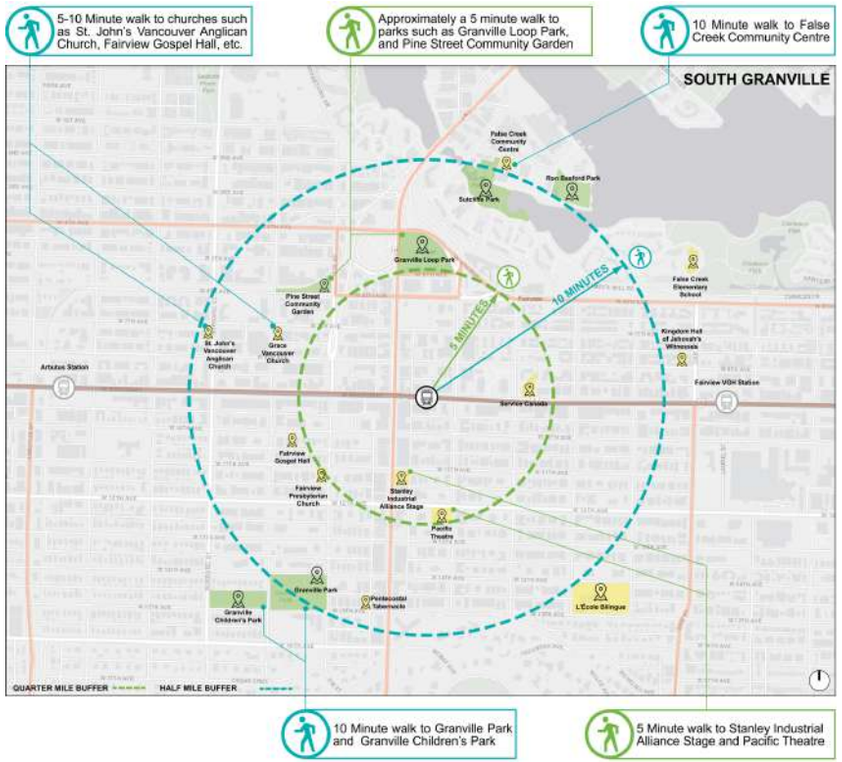
This station serves neighbourhoods on the south side of False Creek and the Cambie Corridor Planning Program area, which is expected to double in density over the next 30 years.

The station provides transit access to Vancouver General Hospital and an interchange with Broadway bus lines. Multi-family developments are replacing single family homes in this area, and former warehouses are being converted to lofts and commercial buildings, displacing industrial use.

This vibrant area combines small-scale commercial and upscale retail businesses with utilitarian shopping areas, technology stores, medical offices and large drug stores.

Architectural Approach

The entrance will have a minimal impact on developable lands, and knock-out panels in the station box will provide future connections to the Vancouver General Hospital and new developments. A public space on the corner beside the entrance doors will allow passengers to move efficiently in all directions to other modes of transportation including buses.



South Granville Station

Community Context

This station serves the Fairview, South Granville and False Creek neighbourhoods.

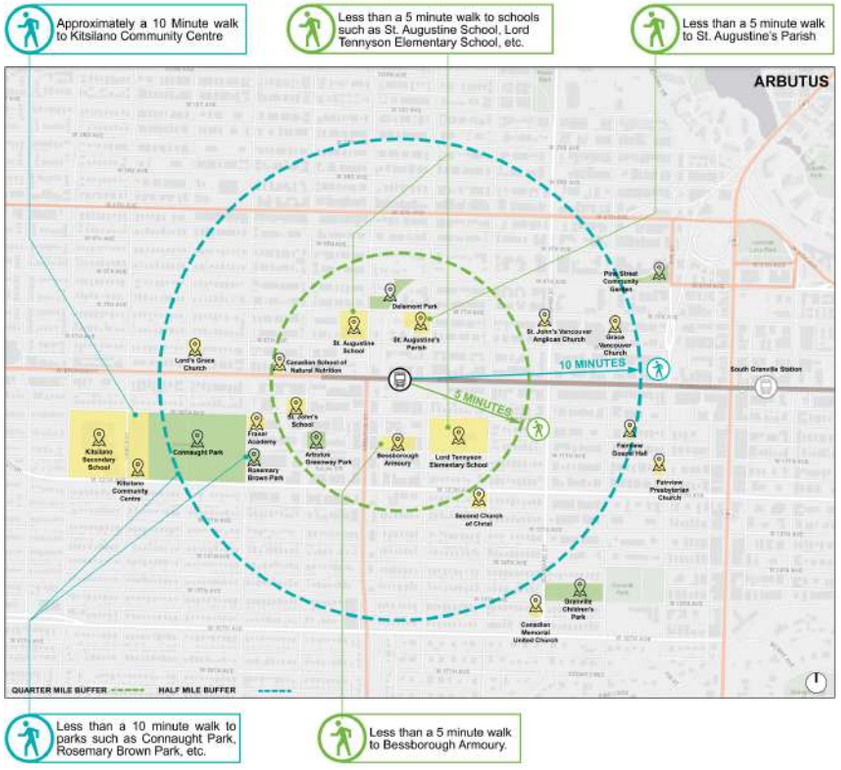
The station provides an interchange with Granville Street bus lines to downtown Vancouver and to Granville Island, one of Vancouver's busiest tourist attractions.

South Granville is an upscale business improvement area.

Multi-family developments are replacing single family homes in this area, and former warehouses are being converted to residential use, displacing the few remaining industrial areas.

Architectural Approach

The station entrance is integrated into an existing building and it provides direct access to the stairs, escalators and elevators. Glazing keeps the entrance visible from the street to make it a safe space for the surrounding community.



Arbutus Station

Community Context

This station serves the Kitsilano neighbourhood, Broadway and West 4th Avenue shopping areas, the Maritime Museum, Vancouver Museum, Vancouver Academy of Music, and H.R. MacMillan Space Centre.

It provides an interchange with Broadway and Arbutus Street bus lines, the 99 B-Line express bus to UBC and Pacific Spirit Regional Park, and the Arbutus Greenway multi-use path.

The surrounding areas include a wide range of housing, including bungalows, heritage homes, low-rise condominiums, and townhouses.

Architectural Approach

Generous glazing provides a full view of activity inside this station. Areas around the station provide convenient access to buses and accommodate pedestrian overflow and increased activity in and around this terminus station.

12.3 Neighbourhood Integration

The Broadway subway stations have been carefully designed in order to complement their current context and integrate with planned future development.

- Building footprints have been minimized in order to optimize adjacent developable land.
- Rectilinear roof forms and simple station shapes facilitate seamless integration with future developement and allow for future use of the roof deck.
- Sufficient setbacks have been provided in order to accommodate columns for future overbuild development, without impacting the streetscape and sidewalk areas.
- Direct connections to the stations have been accommodated through the use of knockout panels
- Entrance building siting has taken into consideration connections to bikeways/ multi-use trails for multi-modal transport.

12.3.1 Neighbourhood Character and Proposed Features

The Broadway corridor is a historic region of Vancouver, composed of low to mid-rise buildings clustered along a busy thoroughfare that runs from East Vancouver to Kitsilano. Our station designs integrate into the present contextual conditions and allow for future developments, and include the following general architectural elements that reflect the character of the Broadway corridor:

Use of wood – The use of wood for both architectural and decorative elements is consistent with historical and current construction along the Broadway corridor;

Canopies – Canopies make the stations recognizable, provide protection from rain and snow, and create casual public spaces that are an important part of pedestrian street life;

Urban scale – The scale of the stations reflects the eclectic mix of building types and styles along the Broadway corridor, resulting from the recent transition from low to mid-rise scales, and old to new styles.

Neighbourhood character and proposed features at each station are as follows:

GREAT NORTHERN WAY – EMILY CARR STATION

Neighbourhood Character

- The surrounding residential areas are a mix of older detached homes and newer low-rise buildings and condominiums developments.
- Nearby secondary education facilities will increase pedestrian traffic and encourage new developments in the surrounding area.

Proposed Features

- The bike parkade is located on the north side of the head house facing Thornton Street and adjacent to the current multi-modal pathway that forms part of Vancouver's Greenway network.
- The head house layout accommodates a significant downslope from south to north by lowering the bike parkade 2.5m below the head house.
- The head house is located on open land but its size and form are governed by the planned integration with the future PCI Lot 7 development on the site
- Rectilinear roof plane to be incorporated into future development
- Allowance of future development columns to span between the station entrance
- Transparent glazing facing Thornton Street to allow visibility and safety for passengers and minimize vandalism
- Interior celiing and wall finishes for the entrance to be coordinated with PCI development

MOUNT PLEASANT STATION

Neighbourhood Character

- The surrounding residential areas are a mix of historic, character homes, and new townhome and low-rise building developments.
- New work/live and retail developments in the area will support a growing population of young adults and new families who prefer to use transit instead of owning a car.

Proposed Features

- The head house is located on a prominent corner of Main Street and Broadway that offers views of both streets through two glazed walls while following setback requirements for future development.
- The canopy that frames the station entrance is lower than the head house roof to reduce the height and scale of the building and make the entrance more inviting.
- The front wall of the station is set back further than the adjacent buildings to comply with City of Vancouver requirements that anticipate future developments and possibly an overbuild.
- The head house layout has been minimized to maximize sidewalk space on Main Street and future developments.
- The architectural form and finishes of the station harmonize with the existing neighbourhood character and scale, while the neutral colour palette and warm wood ceiling promote compatibility with future developments

BROADWAY–CITY HALL STATION

Neighbourhood Character

- This station is in one of Vancouver's fastest growing and densifying areas with more multi-family dwellings than any of the other Broadway Subway stations. Former warehouses are being converted to lofts and commercial buildings, displacing industrial uses.

Proposed Features

- The station entrance is integrated with the existing entrance to the Canada Line with the new elevator head house on the east side of the entrance.
- The new elevator head house maximizes glazing to provide transparency between the street and the existing station. Passengers leaving the station are oriented toward the street before exiting the station.
- The new station will fill the currently undeveloped site between two buildings, and will therefore promote CPTED principles by creating a continuous urban wall with no hiding areas.
- The new elevator head house adapts to the existing context without undermining the importance of the existing station entrance that passengers will continue to use.
- The removable roof structure of the new elevator head house will facilitate its integration with future developments.

OAK–VGH STATION

Neighbourhood Character

- Multi-family developments are replacing single family homes in this area, and former warehouses are being converted to lofts and commercial buildings, displacing industrial use.
- This vibrant area combines small-scale commercial and upscale retail businesses with utilitarian shopping areas, technology stores, medical offices and large drug stores.

Proposed Features

- The head house is located on a prominent corner of Oak Street and Broadway that offers views of both streets through two glazed walls.
- The canopy that frames the station entrance is lower than the head house roof to reduce the height and scale of the building and make the entrance more inviting.
- The front wall of the station is set back further than the adjacent buildings to comply with City of Vancouver requirements that anticipate future developments and possibly an overbuild.
- The head house layout has been minimized to maximize sidewalk space on Oak Street and future developments.
- The architectural form and finishes of the station harmonize with the existing neighbourhood character and scale, while the neutral colour palette and warm wood ceiling promote compatibility with future developments.

SOUTH GRANVILLE

Neighbourhood Character

- South Granville is as upscale business improvement area.
- Multi-family developments are replacing single family homes in this area, and former warehouses are being converted to residential use, displacing the few remaining industrial areas.

Proposed Features

- The head house is being integrated into a new building developed by PCI. PCI will provide exterior finishes on the entire shell structure.
- Integration of the head house into the PCI building maximizes visibility and access from Broadway.
- Interior finishes are consistent with materials and colours in other Broadway Subway stations so the head house can be easily recognized as a Broadway Subway station.
- Passenger amenities are located against the interior walls to maximize the glazing facing Broadway.

ARBUTUS

Neighbourhood Character

- The surrounding residential areas include a wide range of housing, including bungalows, heritage homes, low-rise condominiums, and townhouses.

Proposed Features

- This station is Is located on a prominent corner lot at Arbutus Street and Broadway with no surrounding buildings.
- This is an interim terminal station where passengers will transfer to and from buses through a breezeway entrance on Arbutus Street, away from the busy pedestrian and vehicle traffic along Broadway.
- The bus canopy on the east side of the station follows the architectural style of all Broadway Subway station canopies for easy identification.
- The station entrance and bus facility are visible from the street so passengers can anticipate their path in and out of the station.
- The bike parkade, fire ventilation shafts and service areas are located on the north end to maximize glazing on the south end.
- Rectilinear architectural forms and materials will be compatible with anticipated developments in the surrounding area.
- An emergency exit building across Broadway is minimized and glazed so it can be integrated with a future development.

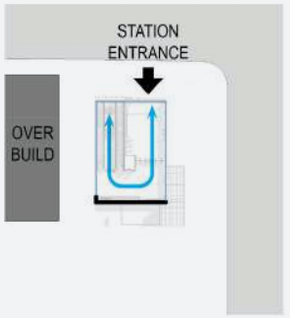
12.4 Station Integration

Some of the Broadway Subway Stations have an existing or planned development they must integrate with, others need to allow for future development possibilities.

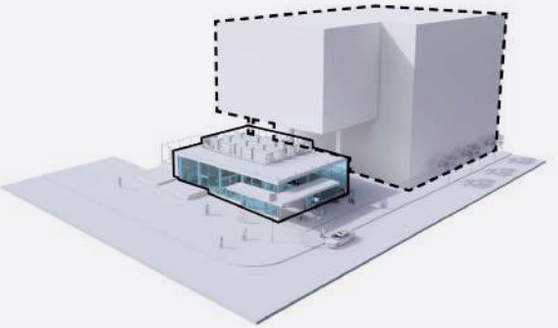
The station specific requirements and approaches used to integrate the stations with their surroundings and/or future developments are described below:

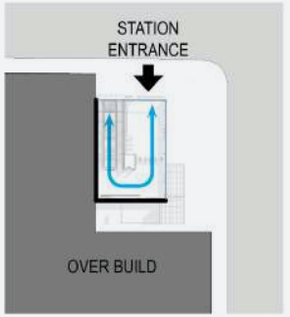
12.4.1 Stations with Current or Planned Development

- **Great Northern Way – Emily Carr Station**
  - The head house must integrate with the subsequent surrounding PCI Lot 7 development.
  - Station design is consistent with each of the other Broadway Subway stations, with the exception of the head house roof structure which will be concrete with metal composite panel as the interior finish to match the PCI building finish.
- **South Granville Station**
  - The station must integrate with the surrounding PCI development and fit within the dimensions provided by PCI, while maintaining building-to-building separation and structural independence.
  - PCI has defined the placement of the concourse connection, which is a defining coordinate the station box.
  - The station box is reduced in length by efficiently positioning the west tunnel ventilation system fans at concourse level and by directing all vent shaft grilles to the sidewalks along Broadway.

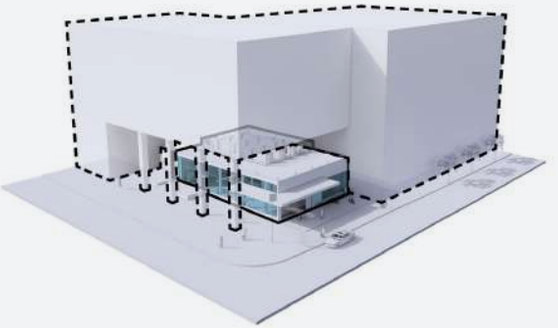


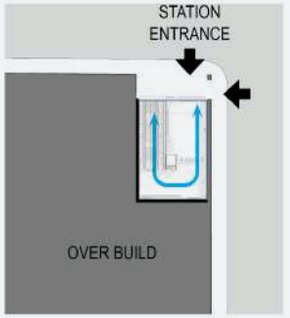
Pavilion
Head House



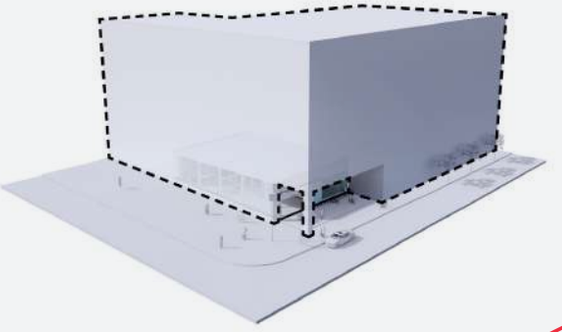


Corner
Head House





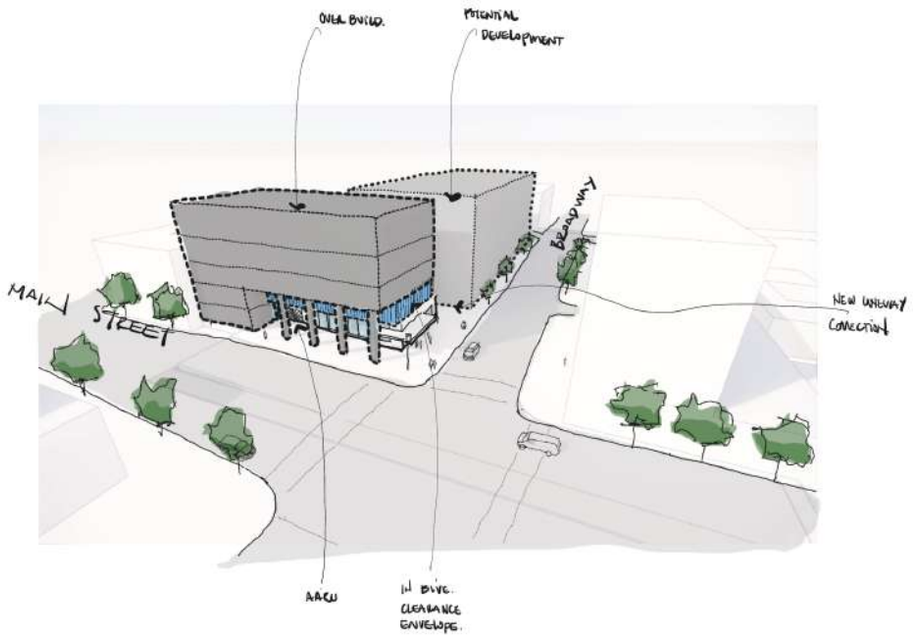
Integrated
Head House

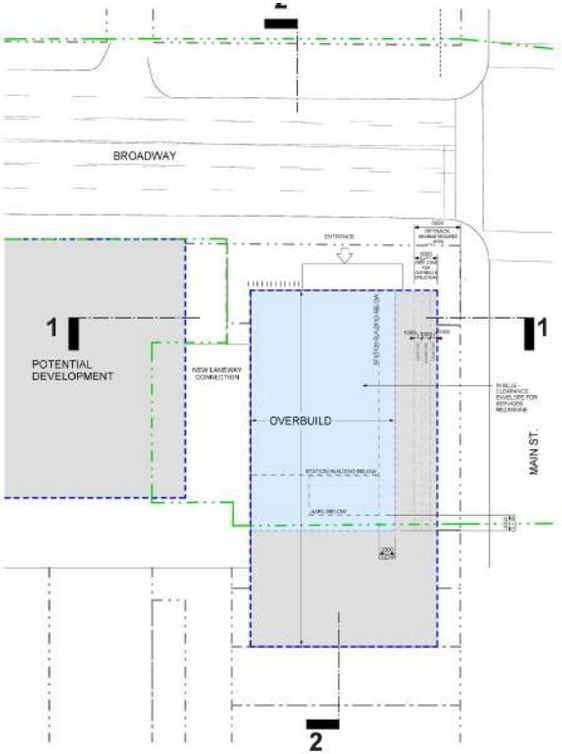


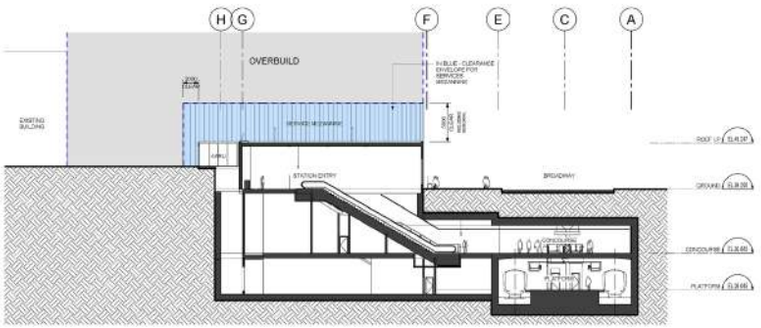
12.4.2 Stations allowing for Future Development

- **Mount Pleasant Station**
  - The head house and all related underground structures are designed in accordance with the setback requirements of the Project Agreement. This includes a six metre setback from the north and east facades as well as a three metre wide clear area directly east of the head house in order to accommodate columns for a future development.
  - The head house layout allows independent driveway access on the west side to service areas at the back and for access to the equipment on the roof.

Sketch of Mount Pleasant Station with Potential Future Overbuild Development





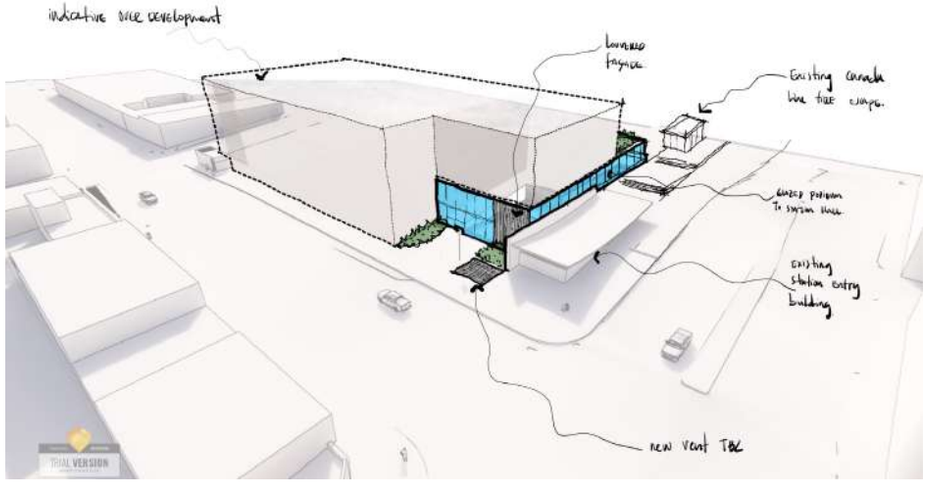


- **Broadway – City Hall Station**

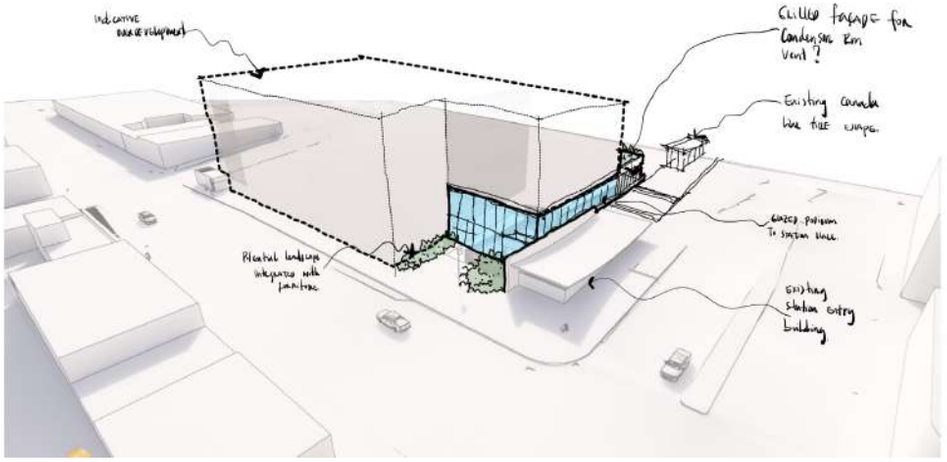
Potential future development is possible by the following options.

- All options include a new elevator lobby with gateline to connect directly with development
- None of the options build over the existing Canada Line entry building
- Option A
  - Development extends over the new station and elevator lobby
  - Western edge of development aligns with new shear wall below ground
  - Condenser room relocated below ground under Broadway southern pedestrian sidewalk
  - Ventilation grills integrated with new façade and flush with sidewalk
- Option B
  - Development extends over the new station and elevator lobby
  - Western edge of development aligns with new shear wall below ground
  - Condenser room relocated at southern end of precinct (adjacent to Canada Line Fire Escape block)
  - Enclosure required to prevent unauthorized access to vent room and station
- Option C
  - Development does not extend above station entry or new elevator lobby
  - Pedestrian connection created to connect visually to City Hall building
  - Condenser room relocated at southern end of precinct (adjacent to Canada Line Fire Escape block)
  - Enclosure required to prevent unauthorized access to vent room and station

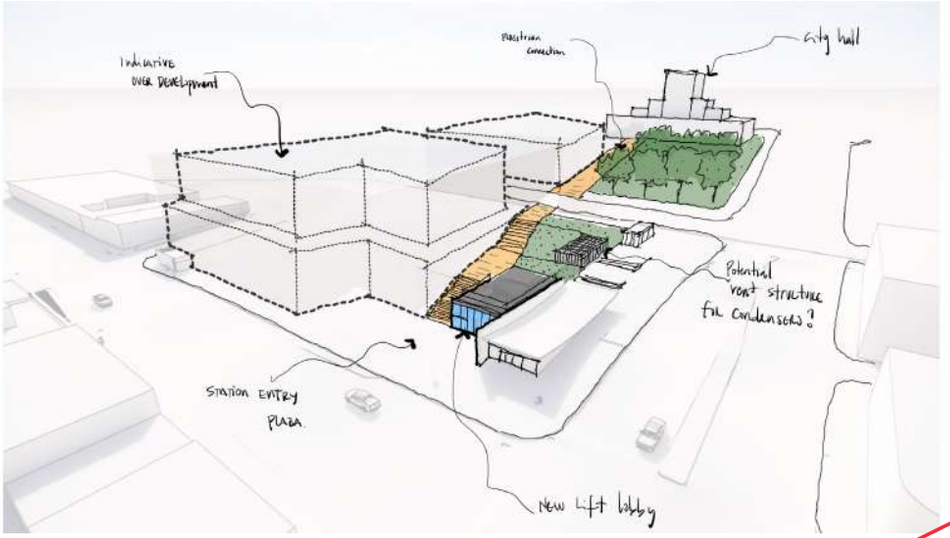
Sketch of Broadway - City Hall Station with Potential Future Overbuild Development Option A



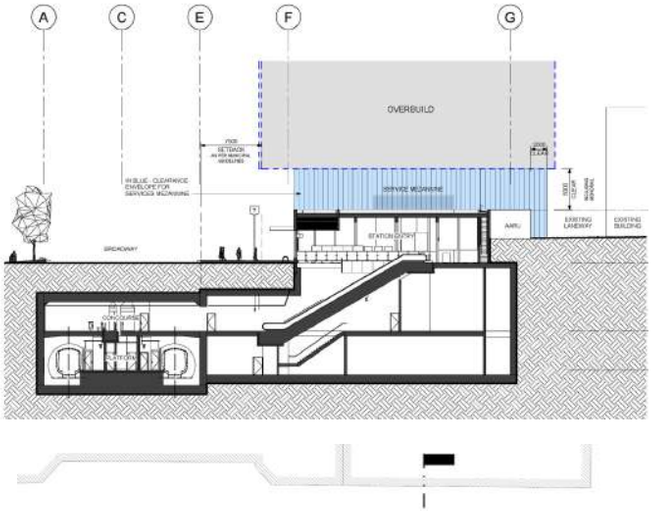
Sketch of Broadway - City Hall Station with Potential Future Overbuild Development Option B



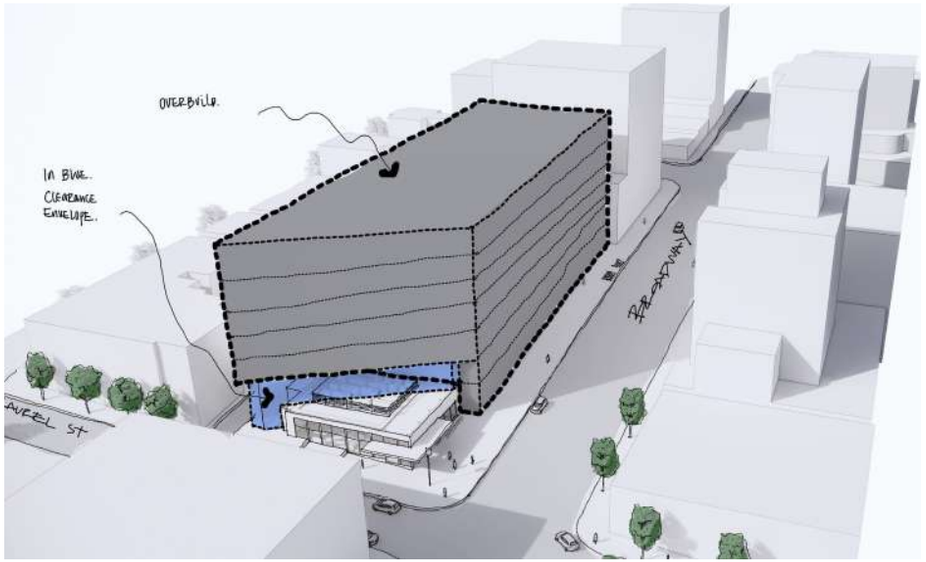
Sketch of Broadway - City Hall Station with Potential Future Overbuild Development Option C

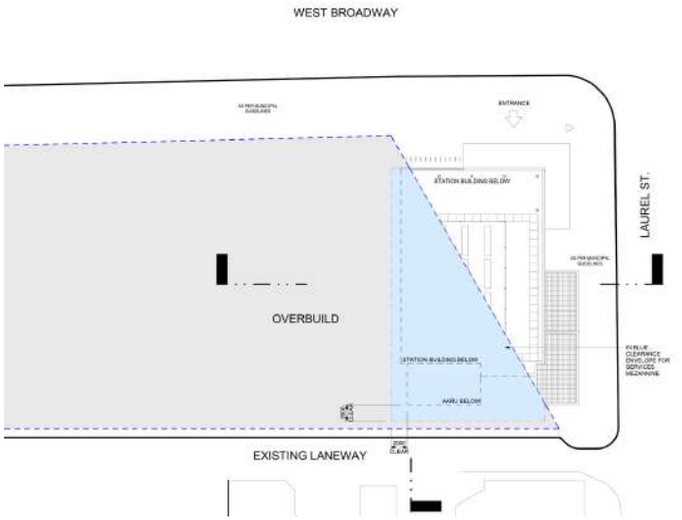


- **Oak - VGH Station**
  - The head house has been setback from the north and east facades in order to accommodate columns for a future development.
  - Future overbuild development is anticipated to run east along Broadway
  - A 5m clearance envelope would be provided above the station.
  - The existing laneway to the south of the head house allows for access to service the equipment on the roof



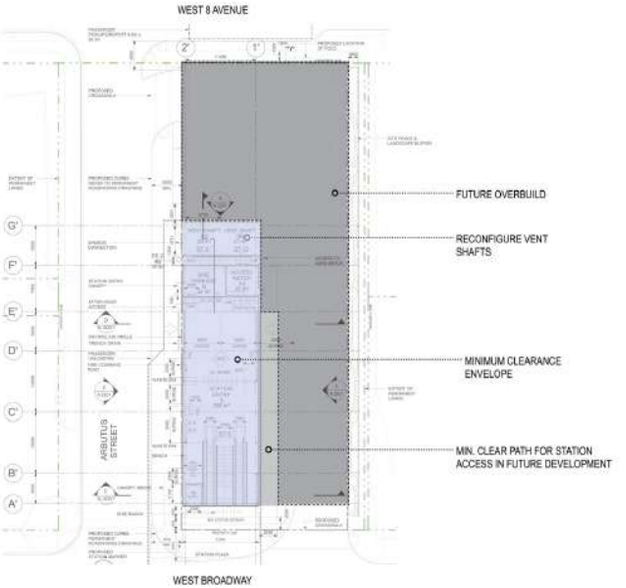
Sketch of Oak – VGH Station with Potential Future Overbuild Development

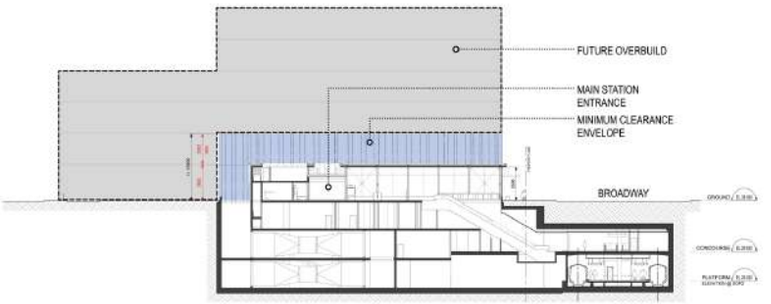




- **Arbutus Station**
  - Various future development strategies have been examined with options for maintaining or removing the bus terminal
  - A 5m clearance envelope would be provided above the station.
  - Vent shaft dampers at the south of the station would be revised and integrated into the face of new build
  - Phase one would maintain the bus terminal, the overbuild would span the bus loop to the south and west.
  - Phase two would remove the bus terminal and extend the development to grade
  - Phase three would allow for partial use of the station roof as amentiy space or built out space

Sketch of Potential Future Overbuild Development for Arbutus Station





13.0 Station Specific Criteria

The following are station specific functional and technical criteria for individual stations

- **Great Northern Way – Emily Carr Station**
  - The station shall be considered a separate building from the PCI building for code compliance and will be constructed as such.
  - Specific code compliance considerations related to building integration will include:
    - Incorporating a two-hour fire-resistance rated firewall at the south wall of the head house as well as developing an alternative solution to the building code to address the equivalent two-hour firewall separation of the roof;
    - Coordinating a suitable means of egress for PCI building occupants that use the station roof.
    - Integrating the station and PCI building fire alarm systems; and,
    - Providing knockout panels between the station head house and PCI building that can be removed without structural modifications.
  - Great Northern Way –Emily Carr Station has separate fire and life safety systems sprinklers, standpipes, and system monitoring and supervision equipment) from PCI's Lot 7 development, but the two fire alarm systems will communicate with each other so that a fire alarm in one building will trigger a trouble signal in the other.
  - As the station head house roof will be used by PCI building occupants, the interconnected fire alarm systems will alert roof occupants when a fire is detected within the station or the PCI building.
- **Broadway – City Hall Station**
  - The Station is a horizontal addition to the existing Canada Line Station; as such, the existing station will require some upgrades to comply with Vancouver Building By-Law, Division B Part 11 provisions or as otherwise addressed by a minor relaxation of the bylaw.
  - Design will provide a single, consistent architectural style that incorporates the new and existing stations and accommodates future developments.
  - Finishes and materials specified to match those used in the Canada Line Station
  - Faregate area and platform sizes expanded at the existing station to accommodate increased numbers of passengers.
  - Added stairs, escalators and elevators connect the lines; the roofs over these areas can be replaced to provide atriums during future City Hall development.
  - Broadway – City Hall Station's fire and life safety systems will integrate directly into the existing systems at the Canada Line platform.
  - Station design shall upgrade sprinklers, and the fire detection and alarm system for both the Canada Line Station and Broadway – City Hall Station as a single, consolidated station.
  - Station design will maintain occupant evacuation provisions of the Canada Line Station throughout Broadway Subway construction.
- **South Granville Station**
  - The Station's fire and life safety systems shall:
    - Act as a separate fire department response location, with independent fire command post and standpipe connections;
    - Communicate with the PCI building's fire alarm system so that a fire alarm in one building will trigger a trouble signal in the other;
    - Have an independent sprinkler system that will likely include some form of water curtain sprinklers at the boundary between the station and PCI building to address the building-to-building fire separation (subject to approval by the City of Vancouver and the authority having jurisdiction);
    - Structurally, the station head house shall be regarded as part of the PCI building, while the remainder of the station will be regarded as a separate structure;
    - Shell space for the head house is sufficiently spaced proofed for occupant evacuation and for the required level of service.

Broadway City Hall Station

Station Entrance may be Fully Integrated into Developments