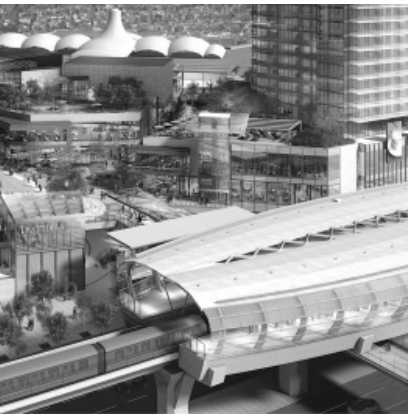


TRANSIT ORIENTED COMMUNITIES

DESIGN GUIDELINES FOR SUBWAY STATIONS INTEGRATED WITHIN DEVELOPMENT

Version 1.1 | Feb 2022

Infrastructure Ontario

METROLINX

PREFACE

In April 2019, the Metrolinx and Infrastructure Ontario Boards agreed to advance Transit Oriented Communities (TOC) together.

The TOC program, draws from the unique talents and expertise of both organizations, demonstrating the broader values of the collaborative partnership between Infrastructure Ontario and Metrolinx.

These two organizations are natural partners to bring a sharper commercial and strategic analysis focus to TOC. Metrolinx provides its extensive knowledge as a transit operator and experience in land-use and transit planning. Infrastructure Ontario provides experience and leadership in negotiating complex commercial and real estate transactions as well as a considerable track record and success in building partnerships with the private sector.

The following Design Guidelines document is the result of interactions with specialists from both agencies and varied stakeholders who brought international experiences and expertise, as well as municipal and urban planners. These interactions helped to provide a comprehensive understanding of the benefits of TOC for urban communities and residents. These guidelines are a living document, and one which will change and improve with ongoing engagement to better inform best practices and policies from the broader marketplace.

We hope that the guidance contained within this document helps inspire our industry partners and the communities themselves as we start along the path toward great Transit Oriented Communities. We invite you to read this document, discuss it with partners, engage with our team and join us in this ambitious community-building initiative.

Thank you,

TRANSIT ORIENTED COMMUNITIES

DESIGN GUIDELINES FOR SUBWAY STATIONS INTEGRATED WITHIN DEVELOPMENT

Infrastructure Ontario METROLINX

CONTENTS

1 INTRODUCTION TO TOC

1.1 THE TOC VISION

Transit Oriented Communities (TOC) is envisioned to be a dense, mixed-use development that is connected and walkable. TOC catalyzes complete communities through best practices in urban planning and design.

Figure 1: King's Cross, London

Courtesy of https://www.tripsavvy.com/

1.2 OVERVIEW

Defining Transit Oriented Communities

TOC is designed to increase transit ridership and reduce traffic congestion. TOC increases housing supply, improves access to jobs and creates complete communities. TOC provides positive value capture for the Province to maximize transit investment while reducing the burden on taxpayers.

These TOC Subway Design Guidelines are intended as a marketing tool to engage the building industry in building integrated transit-oriented projects through partnerships and collaboration with the public sector.

As a technical tool, the Guidelines are intended to provide important information and design guidance to private partners on technical matters related to the integration of buildings and subway infrastructure components. At a high-level, the document illustrates technical methods, typologies and key interface considerations requiring coordination.

For further information about TOC FAQ, refer to Appendix B.

Figure 2: Chatswood Transport Interchange, Sydney
Courtesy of Reddit.com

Province of Ontario's Priority Transit Projects

TOC is part of the government's plan to build new, sustainable transit. TOC will enhance Ontario's "New Subway Transit Plan for the GTA" by placing more housing and jobs near or at transit stations along the routes of the Province's four priority subway projects including the Ontario Line, the Yonge North Subway Extension, the Scarborough Subway Extension, and the Eglinton Crosstown West Extension.

The community development program for these priority subway projects will be accelerated as we work to build transit faster.

By working with third-parties to integrate transit and housing, TOC will make commuting easier and faster. TOC will also reduce traffic congestion, reduce emissions and build integrated, accessible communities that will benefit future and current residents.

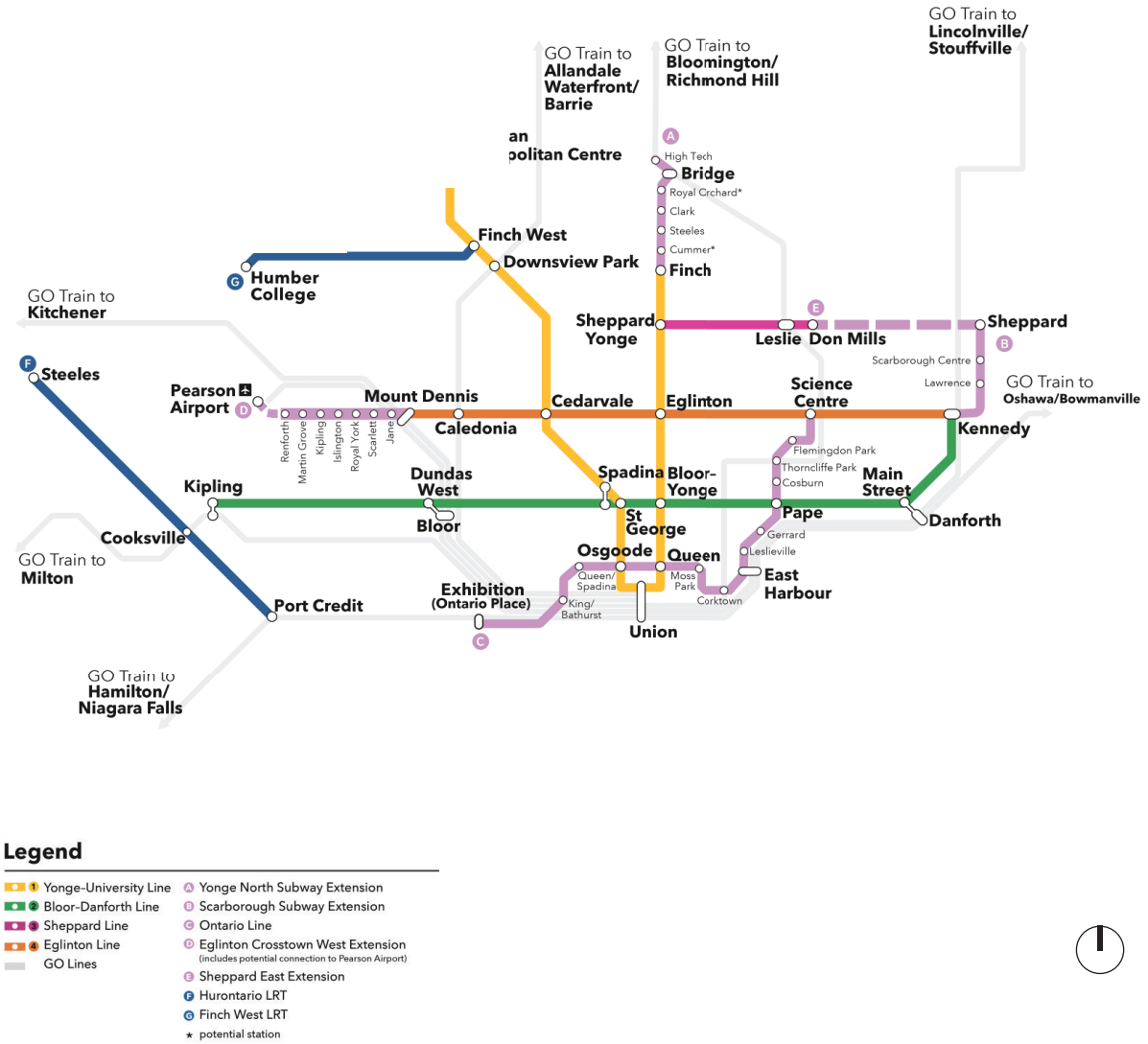


Figure 3: Province of Ontario's Priority Transit Projects

Courtesy of Metrolinx

Capitalizing on Benefits

There are several benefits to participating in the Province's TOC program. It allows station projects to capitalize on footfall traffic and harness potential ridership to generate wide-spread economic development opportunity while supporting urban mobility. Building in proximity to transit promotes synergies, it maximizes the potential for a broader mix of land uses, places of employment, housing, retail, including local attractions and access to other destinations. TOC allows the private sector to take advantage of building compact and complete communities, bringing people, jobs, business and amenities within steps of one another.

Benefits to the Community

Rethinking the relationship between transit, housing, and commercial space to create vibrant, complete communities centered around transit stations is what TOC is all about. In providing improved mobility through new transit stations, TOC supports strong ridership, reduced traffic and congestion, and stimulates economic growth and jobs both in the local community and beyond. As a more sustainable form of development and mode of travel, TOC helps to support the environment in its reduction of greenhouse gas emissions. It promotes healthy lifestyles as highly walkable and accessible places, and is about creating 'place' and added value captured through amenities and services that are within close reach and proximity of one another, including housing and jobs. As inclusive, mixed-use development, TOC enhances cities and achieves an important policy objective of the Province in building complete communities.

Figure 4: Maple Leaf Square, Toronto
Courtesy of https://strata.ca

Safety by Design

TOC embodies principles of good urban planning and design and promotes safe, inclusive and comfortable environments for all.

Metrolinx, embeds safety as an underlying objective by approaching the delivery of its transit projects through a customer experience lens. The integration of development with subway infrastructure creates highly desirable, safe and inclusive places to live, work, play and travel to by transit.

Want to know more?

To inquire or discuss TOC opportunities related to the "Province of Ontario's Priority Transit Projects", contact *Infrastructure Ontario* at **TOC@infrastructureontario.ca.** For TOC on GO Rail and Light Rail Transit Stations, please visit ***the GO Transit TOC program*** for more details.

Figure 5: Subway Station Architecture Design Standard
Courtesy of Metrolinx

1.2.1 SCOPE AND PURPOSE OF THIS DOCUMENT

This document provides design guidelines around strategic coordination and technical interface between development and subway stations.

It places an emphasis on integration considerations, highlighting areas of interface between the tangible aspects of development and subway infrastructure components that require strategic planning, coordinated design and careful integration.

The guidance in this document provide design guidance on subway stations integrated with development. The typologies in this document are introduced as a graphic device to support the guidelines and to explain, at a high level, the integration of station and development. The guidelines and the typologies together, anticipate a range of strategic and technical scenarios across various subway lines.

These guidelines outline the opportunities and constraints that arise from these subway lines, their development sites and the synergies with their immediate context.

The guidelines outline the conceptual considerations for the seamless integration of the station and the development.

These guidelines provide a design reference framework, analogous to a 'checklist', incorporating recognized best practices and principles with illustrations and precedents to assist in the development of concepts and schematic designs early in the negotiating and planning stages.

The Guidelines are not intended to address Major Transit Station Areas (MTSAs). They are also not intended to replace any infrastructure, customer service, commercial and operational standards or specific requirements developed by Metrolinx that will apply to subway infrastructure.

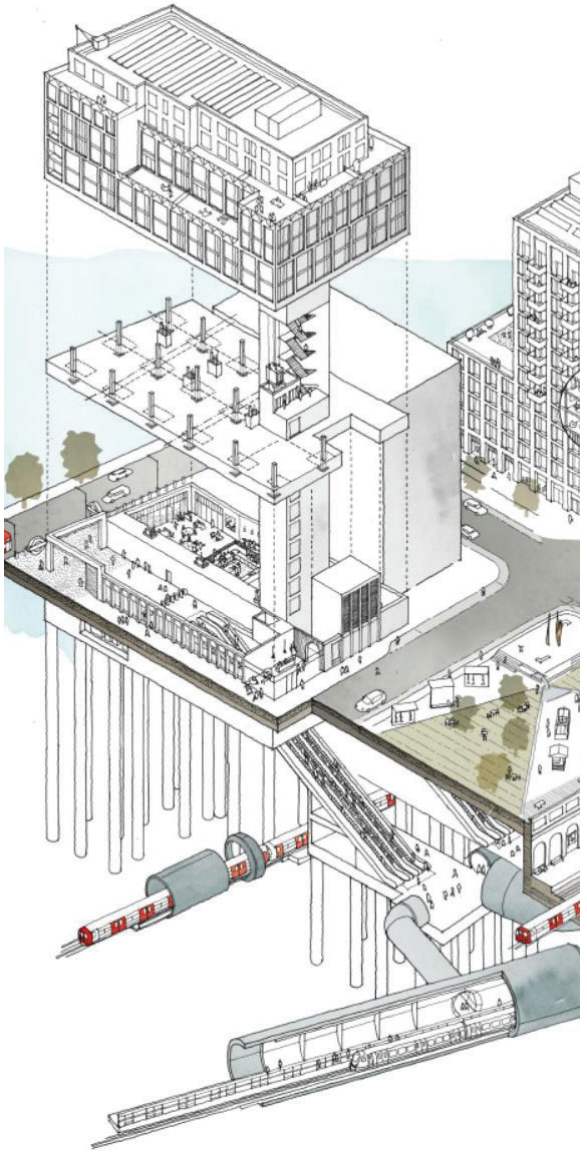


Figure 6: Tottenham Court Road Station, London
Courtesy of Hawkins Brown

1.2.2 HOW TO USE THIS DOCUMENT

This document is not intended to provide design direction. This document does not offer guidance on built -form of development or other non-transit related buildings.

This is a pre-design stage document that outlines strategic considerations to maximize the benefits of the TOC program. This document signals areas that need strategic coordination and technical interface between involved parties in the design of the integrated station environment.

Illustrations throughout the document have been selected to demonstrate the design intent of specific strategies related to TOC integration. It is important to note that images are not intended to be an endorsement of, or representation of depicted densities for TOC development sites across any of the four priority transit project lines as these will be dealt with on a site specific basis.

1.2.3 DOCUMENT UPDATES

The content in the Guidelines is based on information known at the time of the document's preparation and publication. The content may be amended, modified or updated on an as-needed basis to elaborate on design guidance and/or to provide additional clarity on the intent of design and technical matters. Updates may include the incorporation of new information based on best practises and lessons learned from technical developments. There may be extenuating circumstances or contextual conditions in which certain elements of the design guidance may not apply. Where proposals depart from the guidance or contemplate alternative approaches, the expectation is that all proposals continue to uphold and meet all Metrolinx and IO requirements and design standards, without any sacrifice to achieving good design quality and long-term operational performance.

Figure 7: Tottenham Court Station, London
Courtesy of https://twitter.com/aotulondon

1.3 THE ADVANTAGE

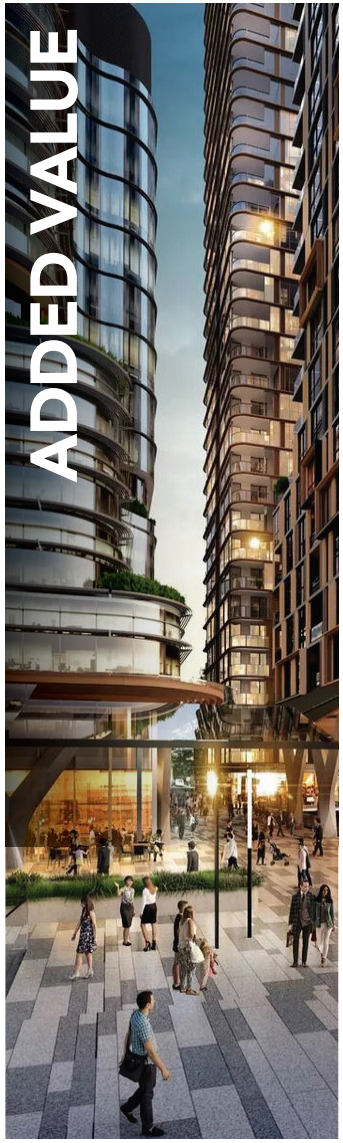
TOC is compact, highly connected and pedestrian-oriented. These communities are conceived to promote active transportation. TOC is part of the government's plan to build new and sustainable transit.

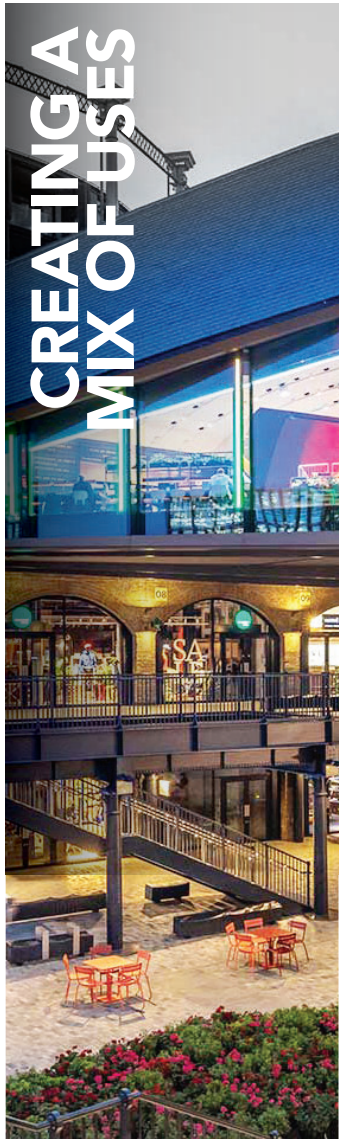
The TOC program is designed to help build communities that are centered around transit stations to increase ridership thereby reducing traffic congestion and to increase housing supply and jobs. This all combines to create complete communities based on good urban design and planning principles.

The key advantages of partnering in the development of TOC are described in this section.

Figure 8: Metrotown SkyTrain Station, Burnaby
Courtesy of https://canada.constructconnect.com

1.3 THE ADVANTAGE





BUILDING COMPLETE COMMUNITIES

The TOC program is about rethinking the relationship between transit, housing, and commercial spaces to create vibrant, complete communities that support ridership, reduce traffic congestion, and stimulate economic growth.

Figure 9: Metrotown SkyTrain Station, Burnaby
Courtesy of https://www.buzzbuzzhome.com

ADDED VALUE

The added pedestrian flow from subway ridership brings added value to the development retail strategies. TOC creates long-term economic and employment opportunities.

Figure 10: St.Leonard's Station, Sydney
Courtesy of https://www.architectureau.com

CREATING A MIX OF USES

The TOC creates the opportunity for synergies between office, residential, retail, and cultural uses and their associated public spaces. Businesses, retailers and residents, all benefit from the synergies that TOC provides.

Figure 11: King's Cross, London
Courtesy of https://www.ft.com

A VIBRANT PUBLIC REALM

High quality public realm is integral to the TOC program and benefits both residents and visitors. The TOC connects people to jobs and housing through seamless walkable public realm. Walkable multimodal hubs will become the new heart of these mixed-use communities.

Figure 12: Marine Gateway, Vancouver
Courtesy of https://warringtonpci.com/

PROMINENCE

TOC is higher density and clearly identifiable. It integrates infrastructure and acts as a catalyst for sustainable growth. Every TOC development is planned to be a landmark.

Figure 13: Maple Leaf Square, Toronto
Courtesy of https://www.trevorfontaine.com

1.4 THE CONTEXT

1.4.1 THE REGIONAL TRANSIT NETWORK

The vision for transit in the Greater Golden Horseshoe Area (GGHA) is to deliver a One Network Experience (ONE), supported and reinforced by appropriate architectural, interior, landscape and urban design solutions across the network. The objective of the ONE is to deliver a seamless customer journey, from planning, booking, payment and access, to use, transfer and arrival at a final destination.

Metrolinx is planning, designing and building projects that will shape the regional transit network of the future. Everyone in the region is a potential customer. A positive experience for all customers will:

a) Support increased cross-boundary travel and transfer connections.

b) Enable easier and seamless first and last-mile options.

c) Support a shift in primary trip purpose from commuting to regional travel.

d) Ultimately build ridership and revenue across the network.

While GO Expansion will be the backbone of an integrated transit network, Metrolinx is responsible for extensive subway, light rail and bus programs. It is essential that consistent and adequate consideration is given to the entire end-to-end customer journey to create a highly functional system with a connected customer experience.

Understanding and thoughtfully addressing the customer experience across the many touch points of the transit journey forms the foundation of this holistic design process, which includes the station context at the heart of the TOC.

Given the heavy capital investment in transit infrastructure intended to serve and drive economic development in the GGHA for the foreseeable future, it is imperative that all involved in the design process embrace a future-thinking mindset in the creation of solutions that are adaptable, enduring and responsive to the evolving needs of the customer and the future of mobility.

A number of Design Principles (Seamless, Intuitive, Inclusive, Safe, Reliable, and Thoughtful) form the overarching values that inform and guide the development of the Metrolinx Design Standards as they strive to integrate the physical, digital and human aspects of the end-to-end customer journey.

Refer to the Metrolinx Subway Design Standards for a full explanation of the principles.

1.4.2 PRIORITY SUBWAY PROJECTS

The Province of Ontario has committed to a multi billion-dollar expansion of the transit network across the GGHA.

The Government of Ontario will collaborate with the private sector and municipal partners to deliver new, modern subways and TOC for the benefit of all individuals, families and businesses in the GTA at the lower cost to the taxpayer.

TOC is a higher density, mixed-use development that is connected, next to or within a short walk of transit stations and stops. Benefits of TOC include:

- Increasing transit ridership and reducing traffic congestion.
- Increasing housing supply, including affordable housing and jobs.
- Catalyzing complete communities based on good planning principles.
- Offsetting the cost of station construction which would save tax payers money.
- Stimulating the economy through major projects for years after COVID-19.

As part of this historic opportunity, Metrolinx and Infrastructure Ontario (IO) are working together, using their combined expertise in commercial transactions, transit delivery and land development, to deliver TOC at new transit stations.

The Province's priority subway projects include– the Ontario Line; the Yonge North Subway Extension; the Scarborough Subway Extension; and the Eglinton Crosstown West Extension. This community development program for the priority subway projects will be accelerated, thanks to the work under way to build transit faster.

The guidelines established in this document apply to all development integrated with stations for all new subway lines and extensions announced as part of the four priority subway projects by the Province of Ontario. Further information and illustrations of the priority subway projects are provided in Appendix "A".

Figure 14: Toronto Subway, Ontario
Courtesy of https://totimes.ca

1.4.3 TOC PARTNERS

To support the implementation of the TOC Subways Program, 'Transit Oriented Communities: Design Guidelines for Subway Stations Integrated with Development' has been created for a number of audiences. This document offers guidance to private partners, architects, planners, engineers, municipalities and other agencies involved in decision making around land-use, development, and transit infrastructure integration in the creation of complete communities.

Realizing TOC objectives requires the formation of new partnerships between the community, the private partners, the public sector agencies, Infrastructure Ontario and Metrolinx.

PROVINCE OF ONTARIO

Infrastructure Ontario (IO):

IO exists to create value out of the public assets of the Province. The work of IO is grounded in the idea that public-private partnerships create value for taxpayers. IO is working in partnership with Metrolinx to deliver the TOC program.

Metrolinx:

Metrolinx's Design Division is responsible for development, review, implementation and monitoring of the design standards for all customer facing infrastructure. Metrolinx applies an Integrated Design Review (IDR) process to provide a holistic approach to delivering an elevated and consistent customer experience.

MUNICIPALITIES: Successful negotiations between the Province and municipal governments have yielded landmark agreements to ensure the successful delivery of the government's historic "Province of Ontario's Priority Transit Projects".

The Ministry of Transportation and Ministry of Infrastructure will play key roles in TOC implementation, working together and with partner Municipalities.

PROJECT CO: Project Co is a company or entity that enters into the Project Agreement with Metrolinx and/or Infrastructure Ontario.

PRIVATE PARTNERS: The TOC program will leverage the experience of best in class development partners to make it easier and faster for our customers to get to the places that matter the most – bringing jobs, destinations, and housing closer to transit.

PUBLIC ENGAGEMENT

Public input will be an important component of every future community. The Province will be engaging with each local community to gather feedback on the proposed plans to ensure they meet the needs of the community they will serve.

1.4.4 COORDINATION WITH METROLINX

Infrastructure Ontario will lead the implementation of the Subways TOC program, noting that partners in TOC will also be required to interact with Metrolinx. This includes consultation with subject matter experts within Metrolinx to satisfy a range of requirements and conditions respecting integrated development and transit infrastructure.

Although this document will serve to provide an important reference tool for shaping proposals early in

the planning and design stages, the expectation of Metrolinx and Infrastructure Ontario, is that development proposals will adhere to the more detailed requirements and set of standards to be applied. This includes "DS09 – Subway Station Architecture Design Standard" and others shown in section 1.4.5.

In addition, other documents and requirements will come into play bearing on TOC, including the Metrolinx Asset Protection Package (MAPP).

In its review of TOC related development applications, it should be noted that Metrolinx reserves the right to review the proponent's development application during the municipal planning process as well as the Corridor Development Permit Process.

TOC proponents should consult GO Transit's Adjacent Development Guidelines, including confirmation of other key requirements with Metrolinx.

Figure 15: Subway Station Architecture Design Standard
Courtesy of Metrolinx

1.4.5 RELATIONSHIP TO OTHER DESIGN REQUIREMENTS AND STANDARDS

This document is a bridge between other existing design requirements and standards developed for subways by the Province, IO, Metrolinx, and Municipal guidance.

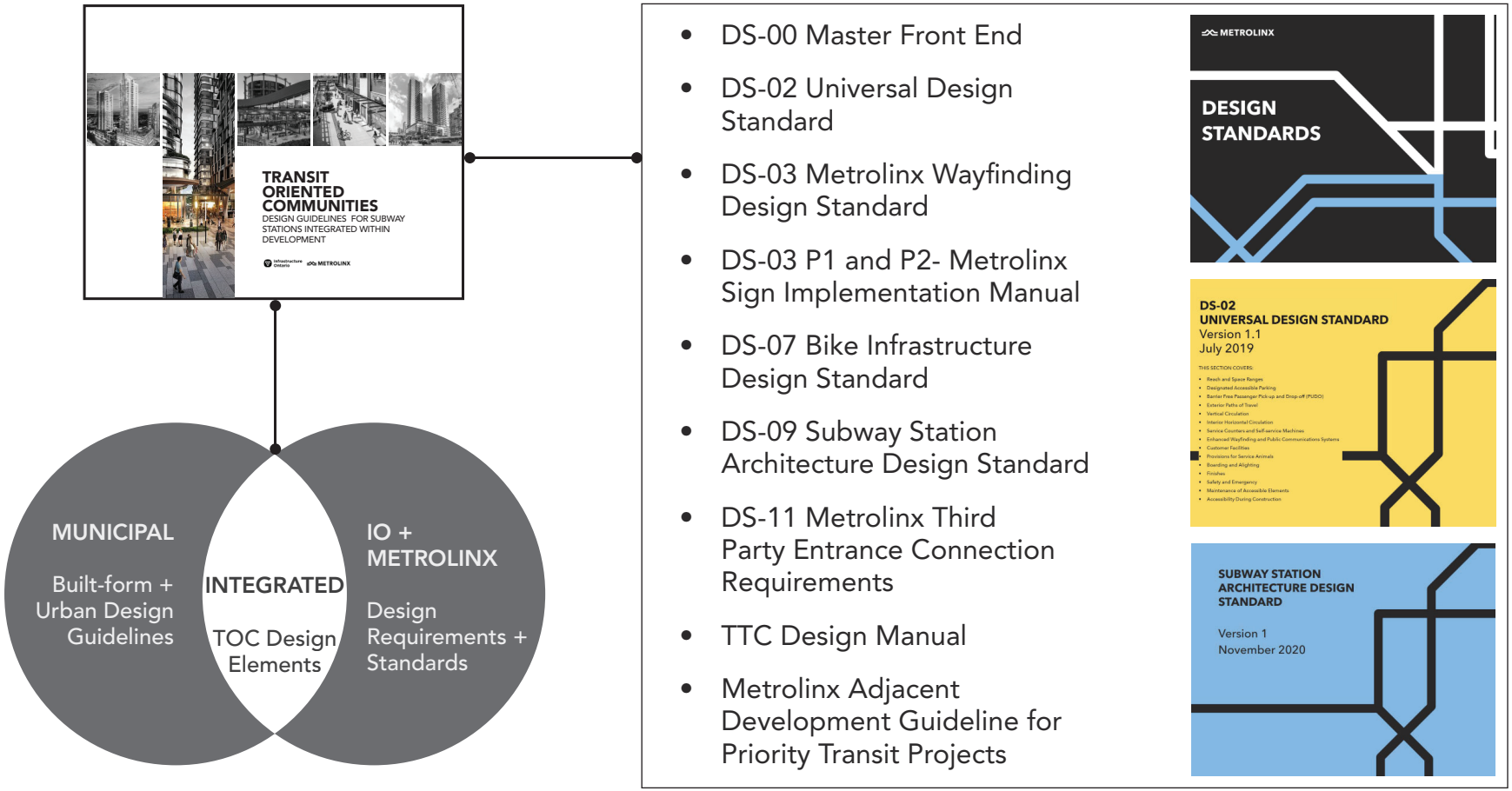


Figure 16: Relationship to other Design Standards

2 UNDERSTANDING TOC INTEGRATION

Section 2 provides high level guidelines for all Subways integrated with development. It should be understood within the full suite of Metrolinx Standards as listed in section 1.4.5.

2.1 DESIGNING FOR FLEXIBILITY, ADAPTABILITY AND INNOVATION

New subway lines and line extensions will traverse through a number of existing and emerging communities. There is not a one-size fits all approach to development integration with subway infrastructure. Metrolinx promotes a flexible, modular approach to station planning and design.

The TOC program vision is to develop an integrated mobility network across the region that is scalable to meet ridership growth and adaptable to meet community changes.

The TOC approach is to design for flexibility, adaptability and innovation.

Figure 17: Tottenham Court Station, London
Courtesy of https://art.tfl.gov.uk

2.2 UNDERSTANDING INTEGRATION

TOC requires collaboration among all partners to achieve mutually beneficial outcomes.

Integration between housing and transit subway infrastructure presents a number of unique technical challenges and opportunities. Each TOC will require tailored responses that speak to the unique circumstances of their location and urban context. TOC processes must be developed for coordination with other public infrastructure projects, construction delivery methods, and phasing approaches.

TOC development challenges are explored in this document using two graphic devices: the matrix and the cube. Two distinct categories of challenges are explored:

- Strategic Coordination
- Technical Interface

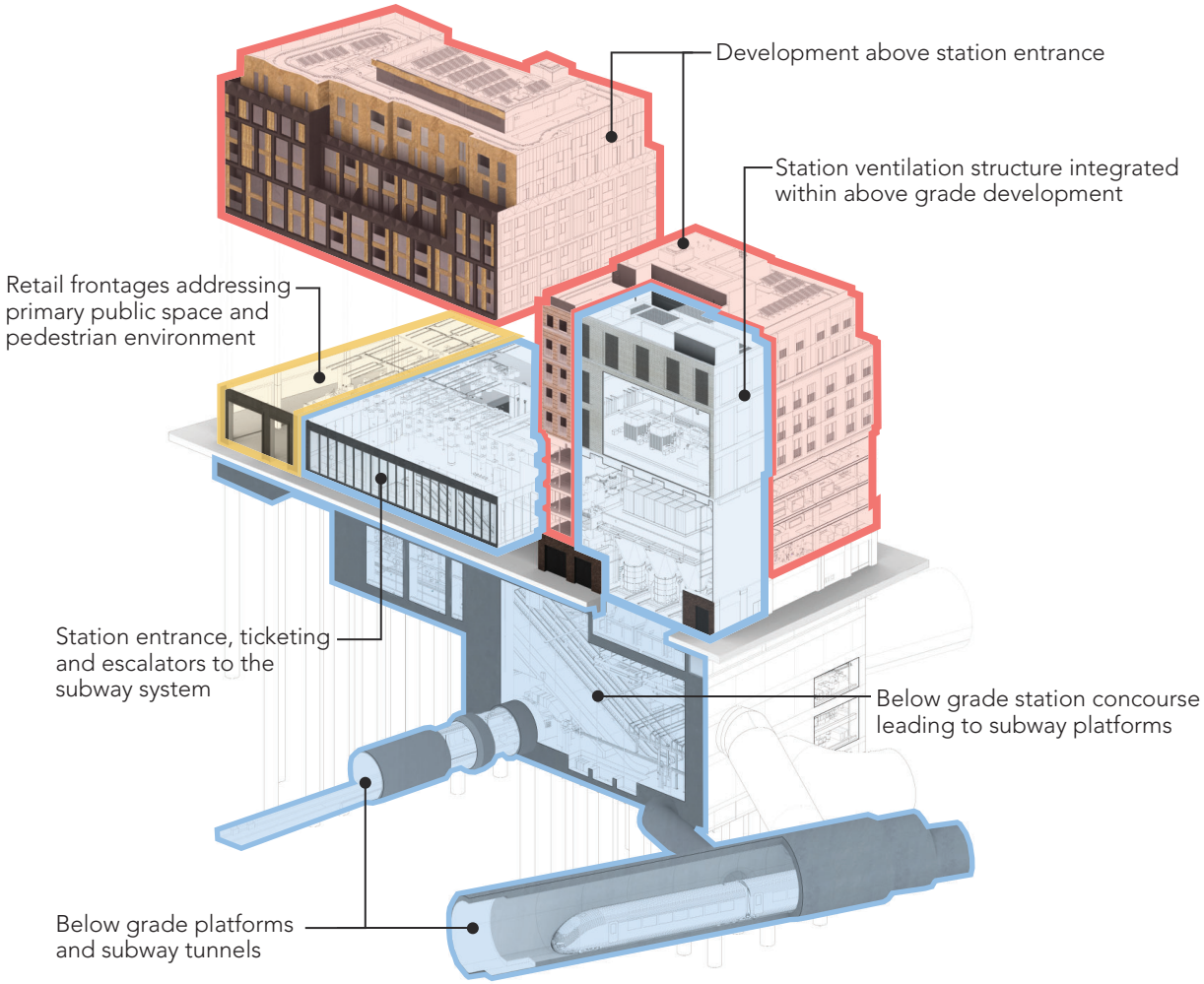


Figure 18: Understanding TOC Integration
Courtesy of Hawkins Brown

2.2.1 INTENSIFICATION AT TRANSIT STATIONS

The urban structure shown in Figure 19 below, is the result intensification around subway stations. The density supports ridership and the ridership supports density, they are directly correlated and mutually beneficial.

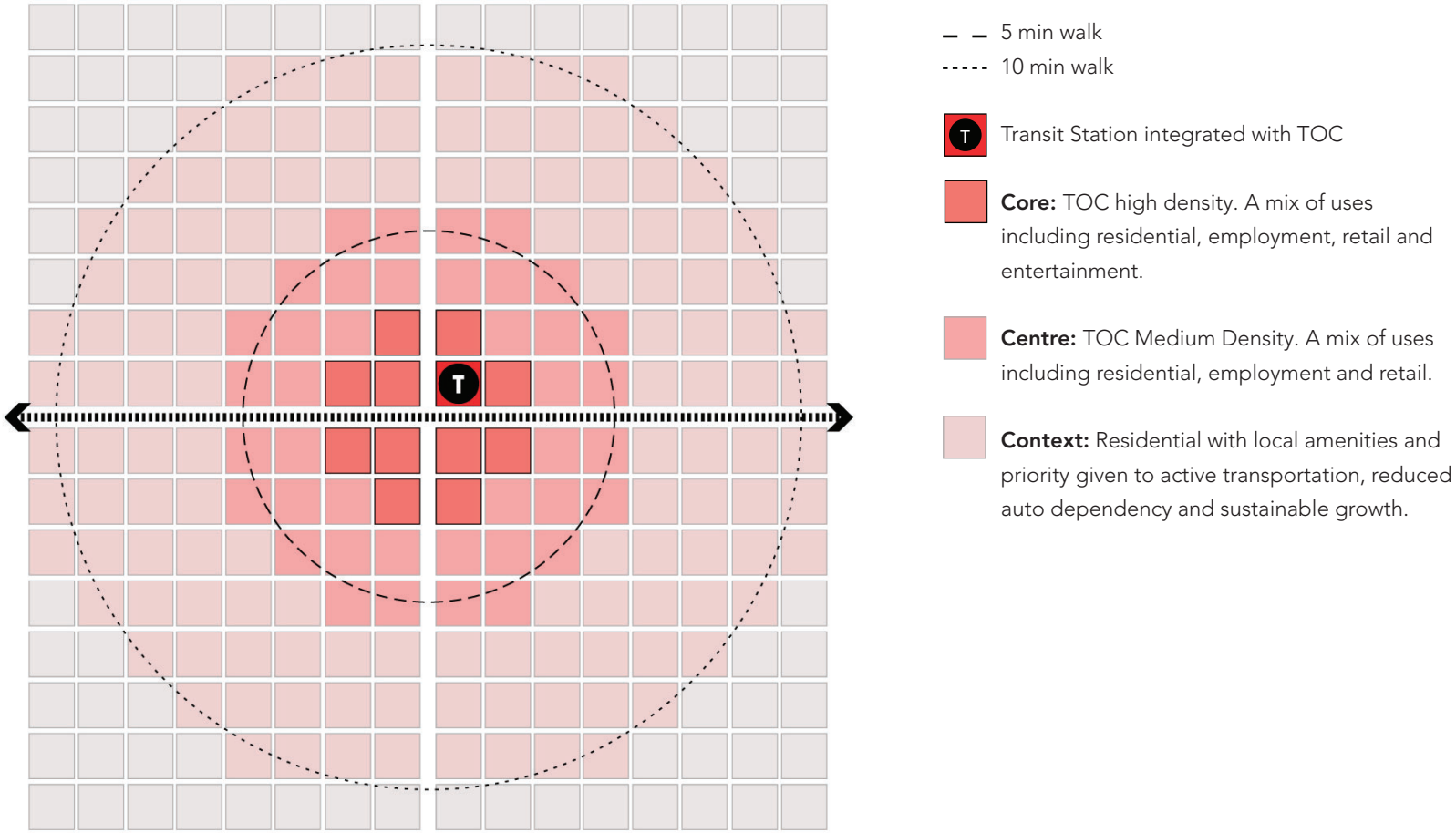


Figure 19: Intensification at Transit Stations

2.2.2 SETTING THE CONTEXT

1

Connectivity

Design a porous fine grain neighbourhood to provide routing options and to ensure intuitive wayfinding to the station.

2

Design for Density

Encourage increased ridership by increasing density closer to the station.

3

Mixed Use

Create planning strategies that encourage a mix of uses that include residential, employment, retail and commercial to create creating complete communities and connect people to their destinations.

4

Walkability

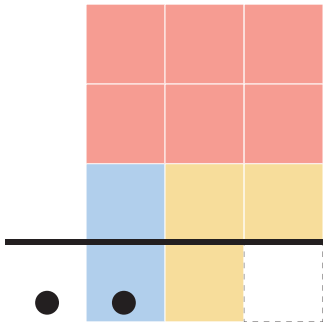
Ensure emphasis on continuous street frontages with animated ground floors and complimentary uses that support the customer journey to the station.

Development
Station
Retail

Figure 20: Setting the Context

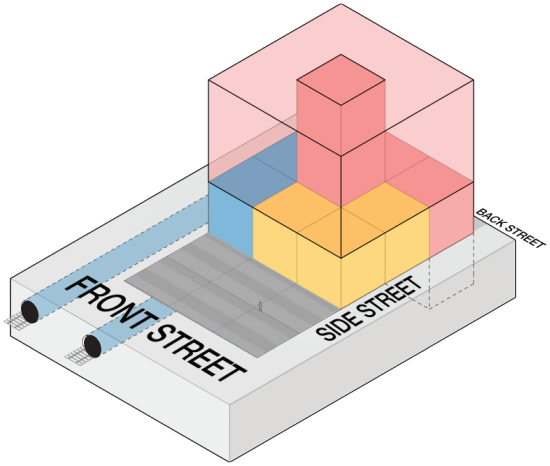
2.2.3 COMPONENTS

The TOC matrix, the TOC cube and the TOC Precedent are deployed in this section to illustrate urban design and planning and design best practices at a strategic level. They are intended as a device to aid in the pre-design stage of TOC development.



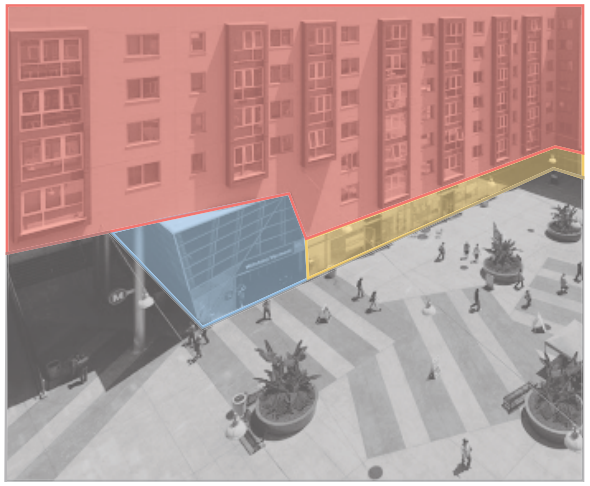
Matrix

The matrix is used as a device to explain architectural development options in the two dimensions that sections provide.



Cube

The cube is used as a device to explain architectural and site development options in the three dimensions that the axonometric provides.



Precedent

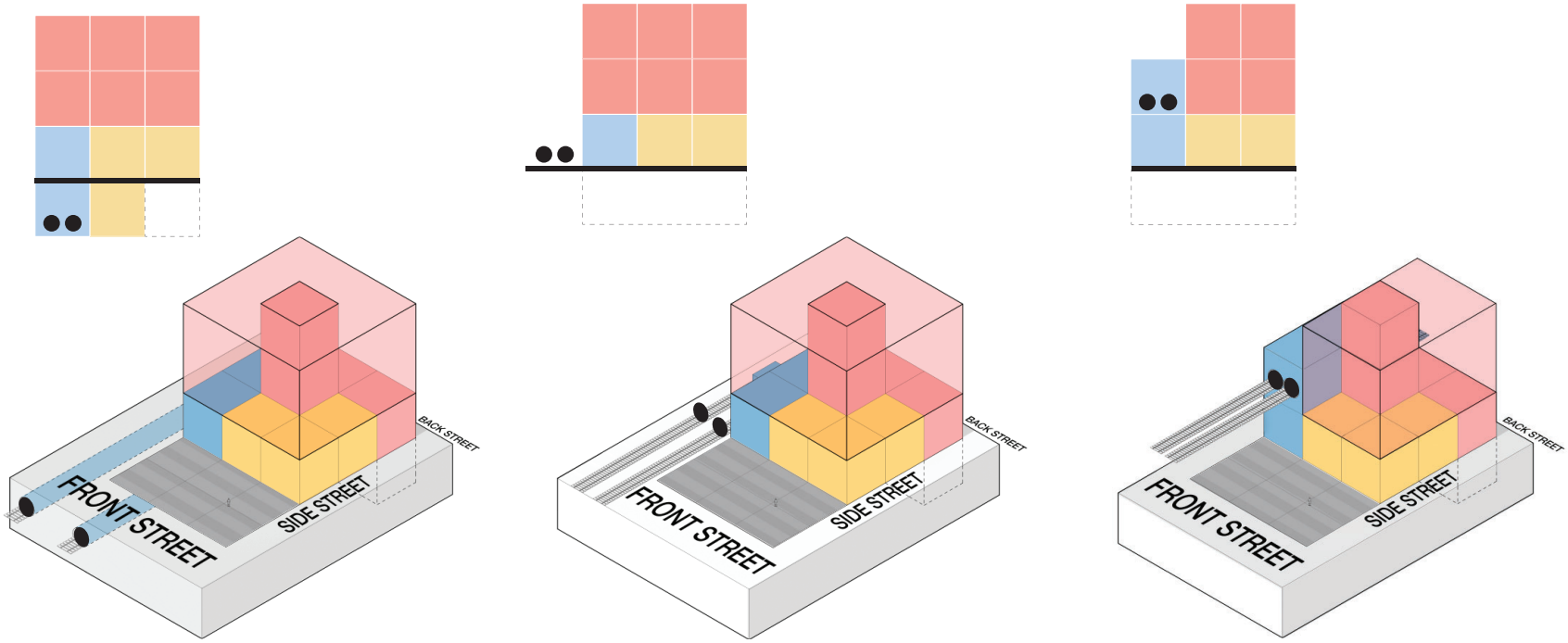
The precedent is used as a device to bring the matrix and cube to life and to ground them in a real life example.

Development
Station
Retail
Public Realm
Below Grade Parking

Figure 21: Components

2.2.4 STATION TYPOLOGIES

There are three basic station typologies to consider and they are illustrated here.



Below Grade Station Typology

At Grade Station Typology

Elevated Station Typology

Development
Station
Retail
Public Realm
Below Grade Parking

Figure 22: The Matrix and the Cube

3 STRATEGIC COORDINATION

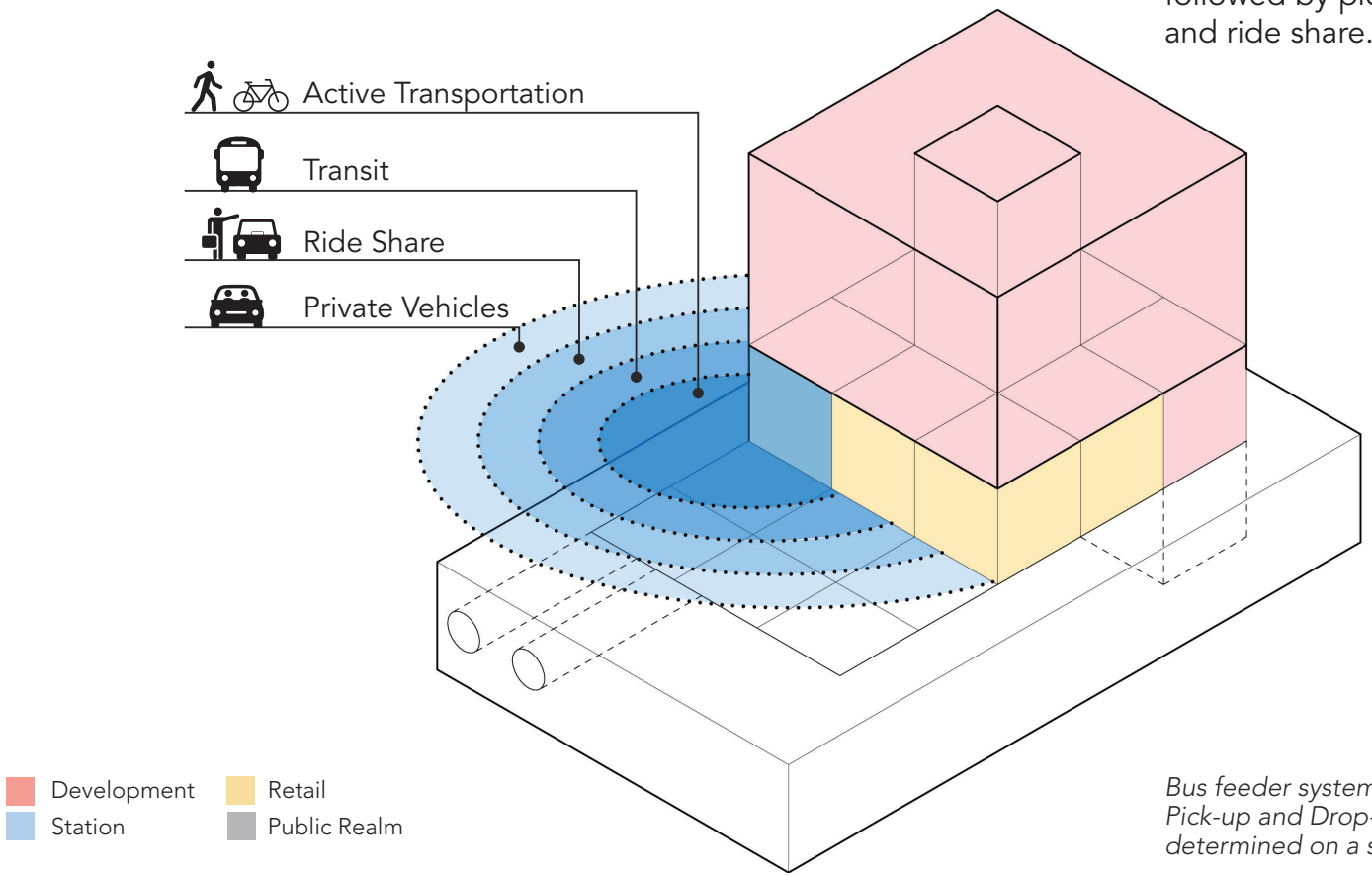
The following 7 strategic considerations offer key early integration considerations for TOC development. This section offers strategies to balance the public sector need for certainty with the private sector desire for innovation.

3.1 HIERARCHY OF ACCESS

GOAL: Intuitive wayfinding and prioritizing transit users.

STRATEGY: Provide safe and seamless access for active transportation. Anticipate the interface with other forms of mobility through site design.

GUIDANCE: Design the TOC public realm in general and the subway station entrance in specific to support the preferred hierarchy of access that prioritizes active transportation followed by pick up/drop off, transit and ride share.



Bus feeder system integration, Passenger Pick-up and Drop-off, Ride share system to be determined on a site by site basis.

Figure 23: Hierarchy of Access

3.1 HIERARCHY OF ACCESS

PRECEDENTS: Below are examples of Station Entrances with clear hierarchy of access within the public realm.

Figure 24: Delft City Hall and Train Station, Delft
Courtesy of https://www.architonic.com

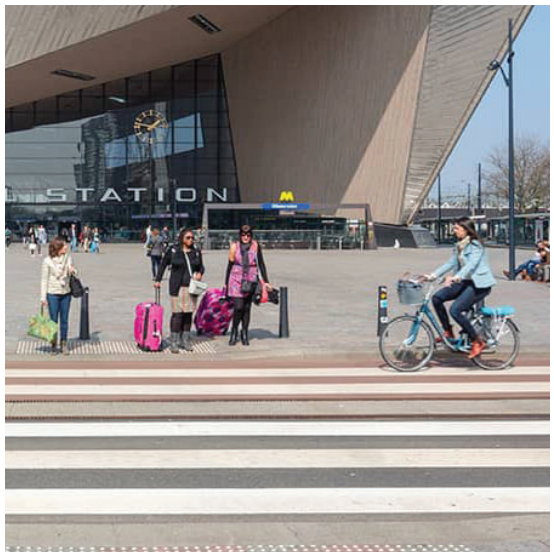


Figure 25: Rotterdam Centraal Station, Rotterdam
Courtesy of https://www.idealwork.com

Figure 26: Maple Leaf Square, Toronto
Courtesy of https://www.architonic.com

3.2 OPTIMIZING THE GROUND FLOOR STRATEGY

GOAL: Maximize active frontages.

STRATEGY: Set priorities for ground floor uses.

GUIDANCE: Program ground floor uses in coordination with the location of the station entrance and provide amenities to support the customer experience.

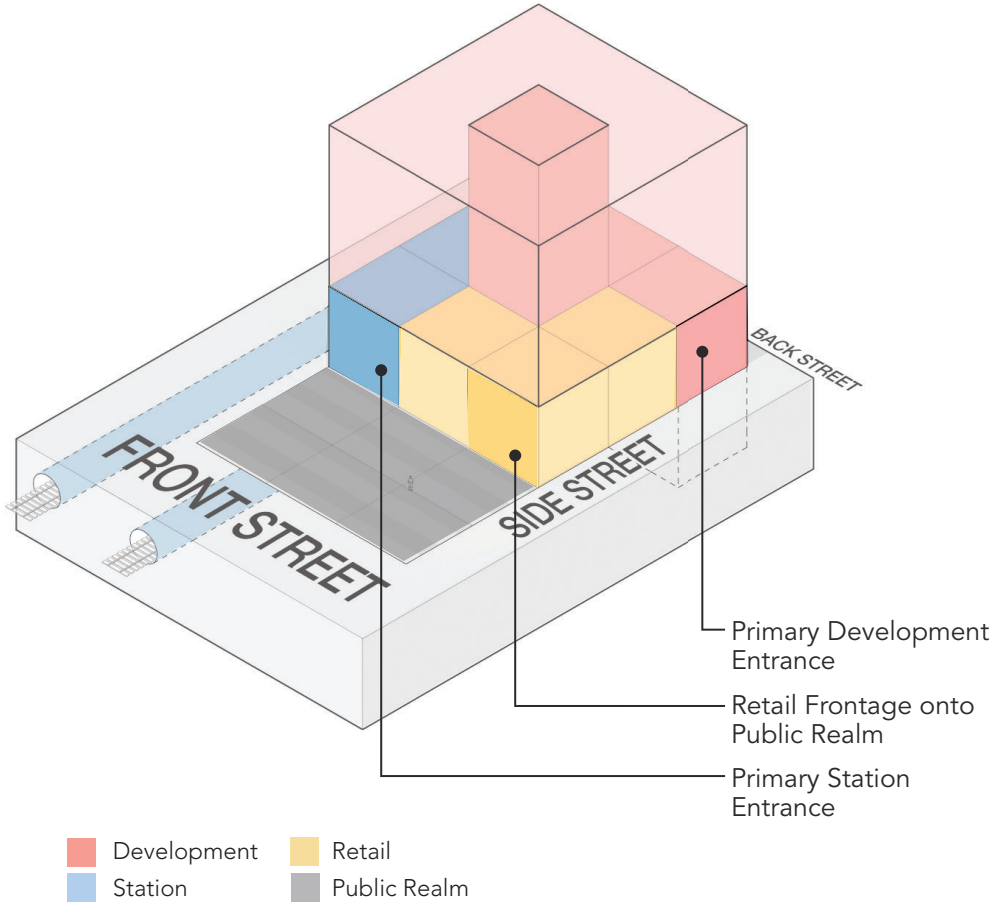


Figure 27: Frontages and Access

The precedent image is illustrative only and shows the specific attributes of optimizing the ground floor strategy.

3.3 SERVICE ACCESS

GOAL: Minimize service bay and locate access frontage away from principal pedestrian environment.

STRATEGY: Protect for transit service and access integration through overall design considerations.

GUIDANCE: Integrate and consolidate service accesses and bays away from the front street and customer journey to maximize the quality of the development opportunity, without sacrificing transit operations.

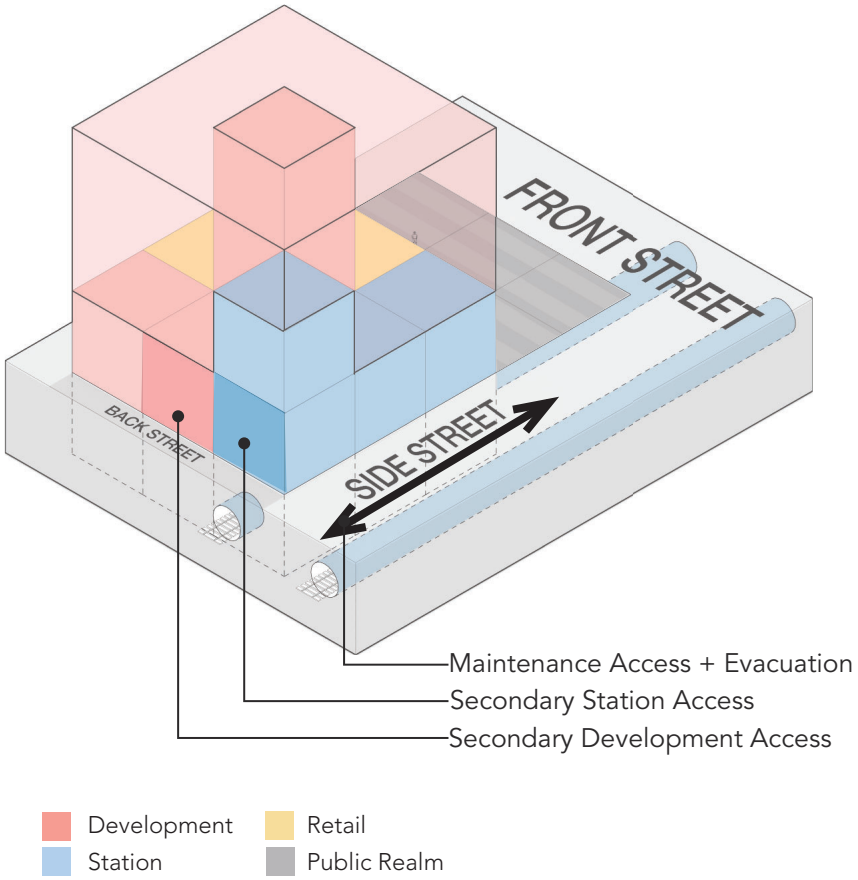


Figure 28: Frontages and Access

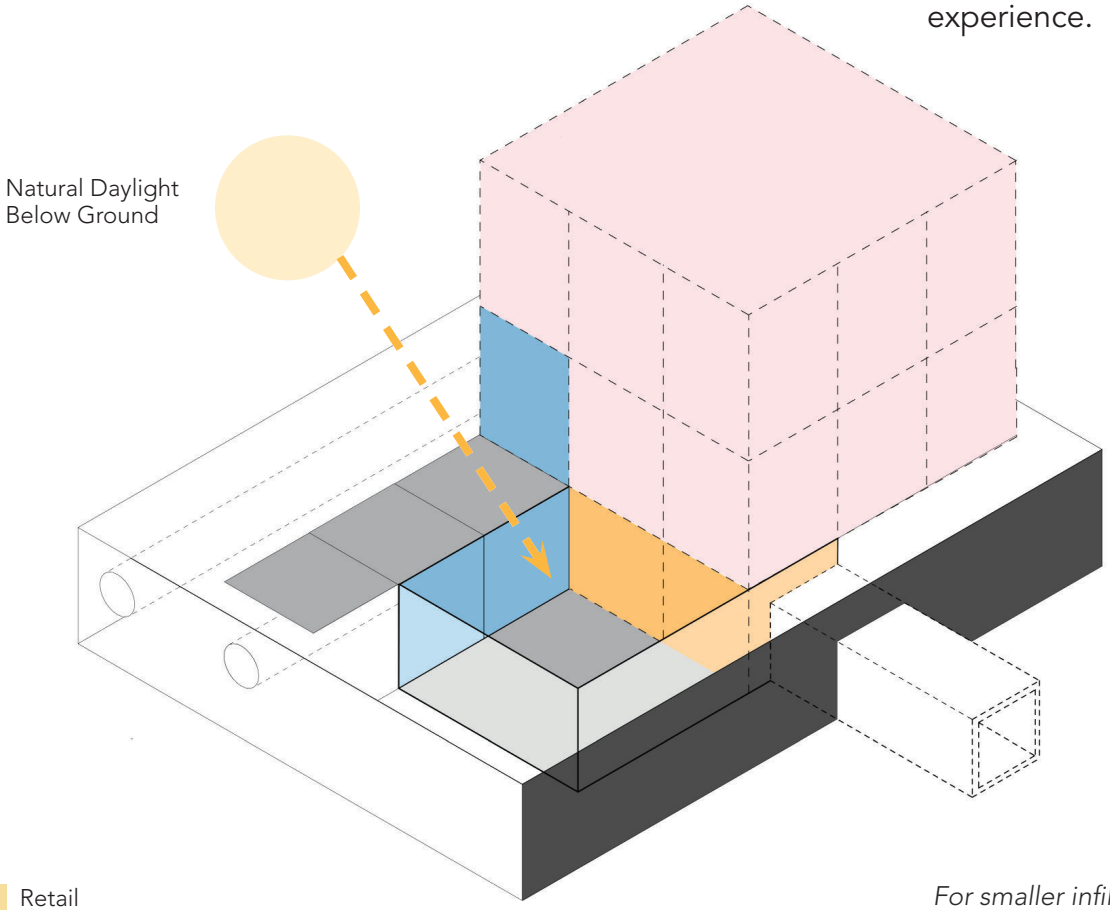
The precedent image is illustrative only and shows the specific attributes of keeping both transit and development service access to the back street.

3.4 BELOW GRADE EXPERIENCE

GOAL: Maximize daylight below grade to improve wayfinding and quality of customer experience.

STRATEGY: Strategic site TOC integration with below grade network of paths and connections.

GUIDANCE: Prioritize below grade daylighting for intuitive wayfinding, wellness and enhanced below grade experience.



For smaller infill locations consider double height station headhouses and materiality to facilitate natural light.

Figure 29: Below grade interface customer journey

3.4 BELOW GRADE EXPERIENCE (Continued)

PRECEDENTS: Below are three successful examples of introduction of daylighting.

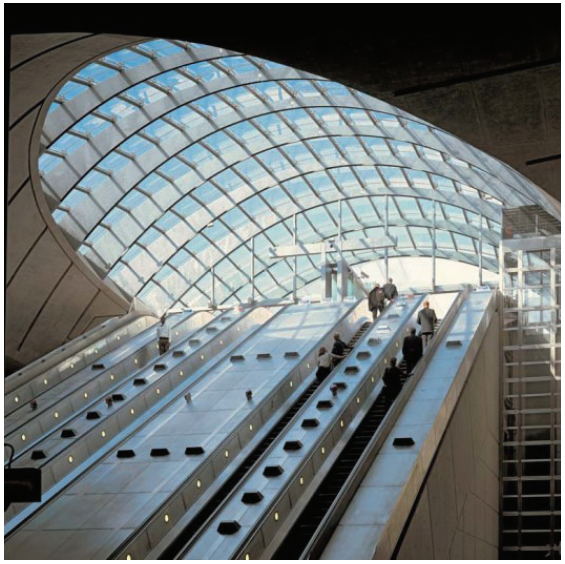


Figure 30: Canary Wharf, London
Courtesy of https://www.cool-cities.com

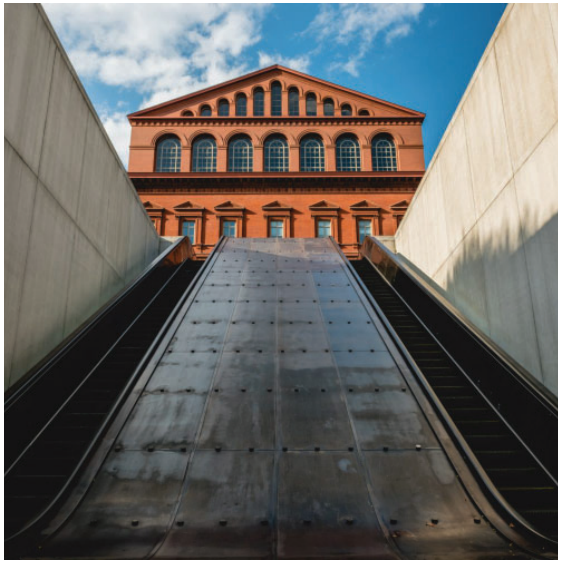


Figure 31: Judiciary Square Station, Washington DC
Courtesy of https://dcist.com

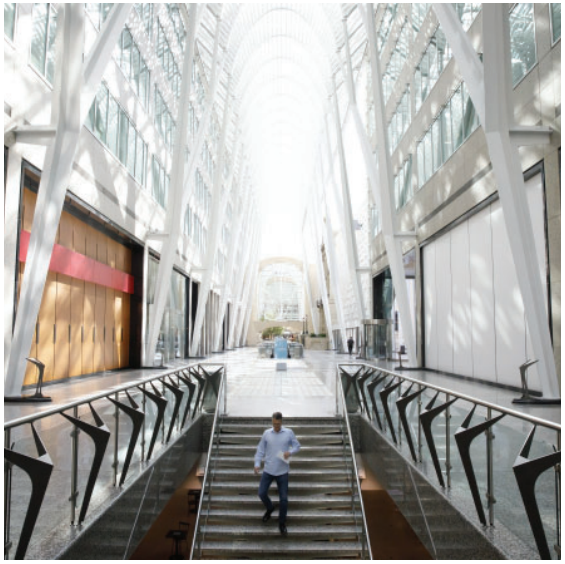


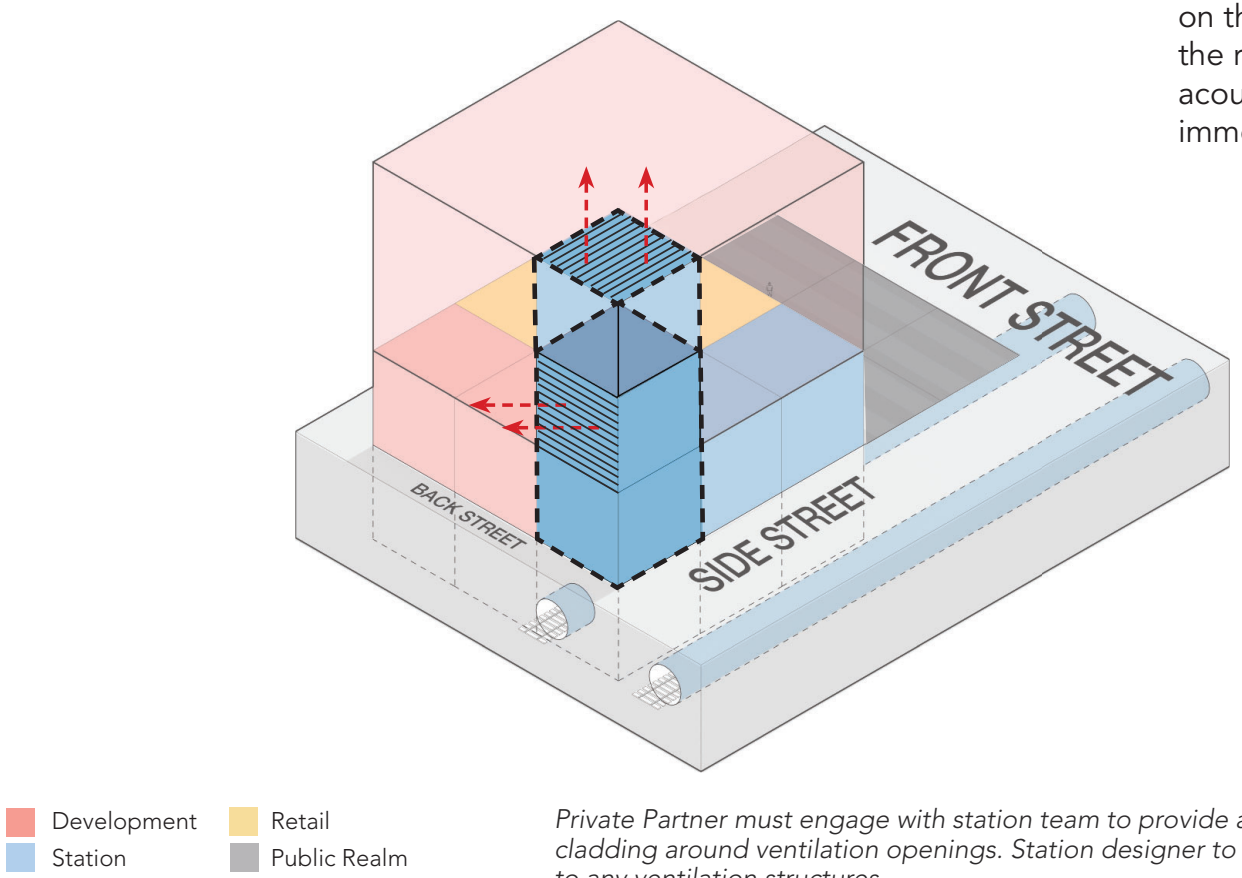
Figure 32: Brookfield Place, Toronto
Courtesy of https://www.bloomberg.com

3.5 VENTILATION STRUCTURE INTEGRATED WITH FACADE

GOAL: Sensitively integrate all ventilation facades away from the pedestrian environment.

STRATEGY: Early consideration to coordinate, consolidation and integration of all ventilation requirements between retail, station and development.

GUIDANCE: The TOC preference is to consolidate ventilation shaft openings on the development facade, away from the public realm. When ventilation opening cannot be placed on the facade, it can be placed at the roof level. Noise attenuation and acoustic isolation to be appropriate to immediate context.



Private Partner must engage with station team to provide adequate free opening of any facade cladding around ventilation openings. Station designer to provide adequate acoustic attenuation to any ventilation structures.

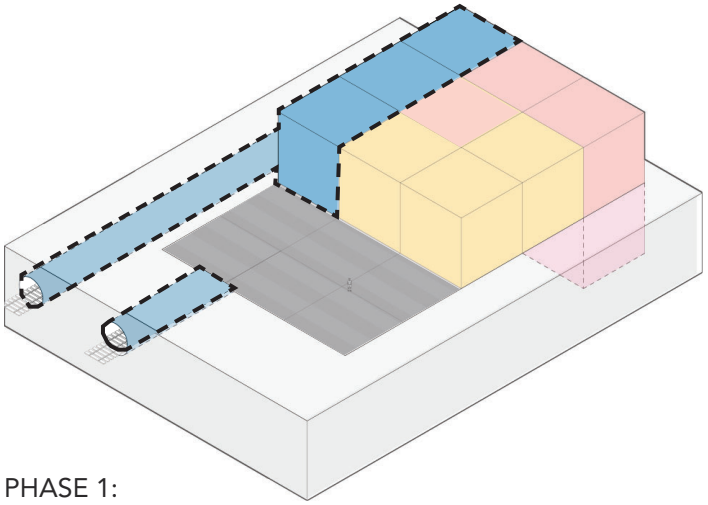
Figure 33: Ventilation Shaft Integration

3.6 PHASING OPPORTUNITIES

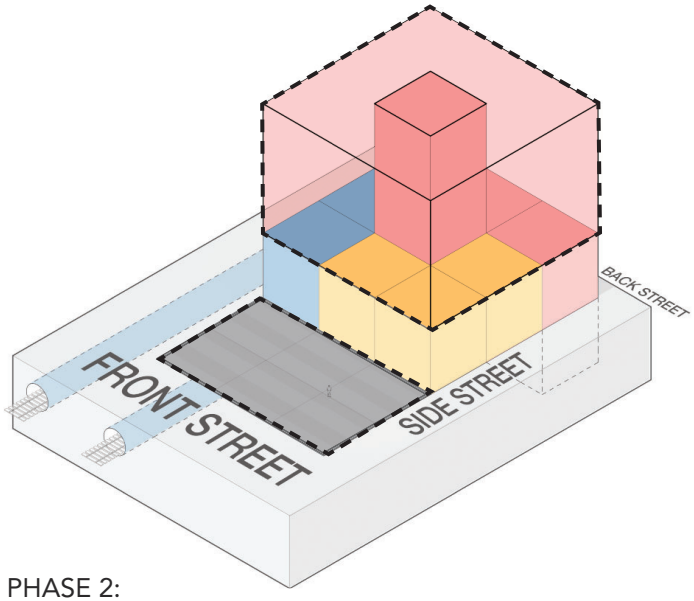
GOAL: Ensure uninterrupted customer journey between phase 1 station build-out and phase 2 development build-out.

STRATEGY: Early co-ordination between Project Co and private partner.

GUIDANCE: The design of the customer journey and the complete customer experience should be prioirtized during phasing.



PHASE 1:
Transit build-out by Project Co



PHASE 2:
TOC build-out by private partner

Development
Station
Retail
Public Realm

Figure 34: Phasing

As part of early co-ordination between project co and private partner, consider the implications of phasing as listed in sections 3 and 4. In particular, during phasing ensure that seamless access to station is protected. Negotiation of the phasing processes shall be determined on a site by site basis. Phasing is beyond the scope of this document.

3.6 PHASING OPPORTUNITIES (Continued)

PRECEDENTS: Below are examples of project phasing.

PHASE 1: Transit build-out by Project Co

PHASE 2: TOC build-out by private partner

Development
Retail
Station

Figure 35: Tottenham Court Road Station, London
Courtesy of https://www.streetsensation.co.uk and https://anonw.com

3.6 PHASING OPPORTUNITIES (Continued)

PRECEDENTS: Below are examples of project phasing.

PHASE 1: Transit build-out by Project Co

PHASE 2: TOC build-out by private partner

Development
Station

Figure 36: Perth Bus Port, Perth, Australia
Courtesy of https://limelitesales.com.au and http://www.urbanalyst.com

3.7 BUS TERMINAL INTEGRATION

GOAL: Seamless integration between different modes of travel within the TOC.

STRATEGY: Anticipating the interface with the urban context, the development, the public realm and other forms of mobility through site design.

GUIDANCE: Ensure optimal integration of transit needs and operations with the development to maximize TOC opportunities.

The key drivers for bus terminal integration are: operational efficiency, customer experience and maximize TOC development. This section is designed to encourage strategic debate on a site by site basis to achieve the optimal site design.

The following provides high level guidance for bus terminal integration with the TOC:

a) Ensure a **safe and comfortable customer experience** between subways and buses including providing adequate platforms and layover spaces.

b) Prioritize **walkability** between the development site, subways and buses. Ensure transfer walking distances between Bus and other modes are as short as possible.

Figure 37: Marine Gateway, Vancouver
Courtesy of www.marinegateway.com

3.7 BUS TERMINAL INTEGRATION (Continued)

c) Configure bus terminals to ensure **seamless transfer between** the bus bays, the development site and subway station.

d) Design **intuitive wayfinding** into the public realm for ease of navigation between the development site, the bus terminal, the subway and other modes of travel.

e) The bus terminal, the subway station and the development should **respond to the site context** by integrating with the broader transportation and open space network and block pattern.

f) Ensure a **clear and logical integration between different programs and functions** within the TOC. Where possible, the bus dwell area should be separated from the customer journey.

g) Ensure **clear understanding** between Project Co and private partner around phasing and scoping related to the bus terminal integration and bus pick-up and drop-off within the public realm.

h) Ensure **operational continuity** of subways, buses and other modes of travel during the development phasing, overbuild construction and future maintenance.

Figure 38: Adelaide Central Bus Station, Australia
Courtesy of www.belmonde.com.au/commercial/

Figure 39: King's Cross, London
Courtesy of www.civictrustawards.org.uk/winners/kings-cross-square

3.7 BUS TERMINAL INTEGRATION (Continued)

Below are three Bus Terminal Typologies in plan view that range within a continuum from fully integrated with the development to fully integrated with the plaza. In all cases, the plaza is the centre of the TOC.

Typology 1: Development built over internal bus dwell and stop areas.

Typology 2: Development built over the bus dwell area.

Typology 3: Development built adjacent to the bus dwell and stop areas.

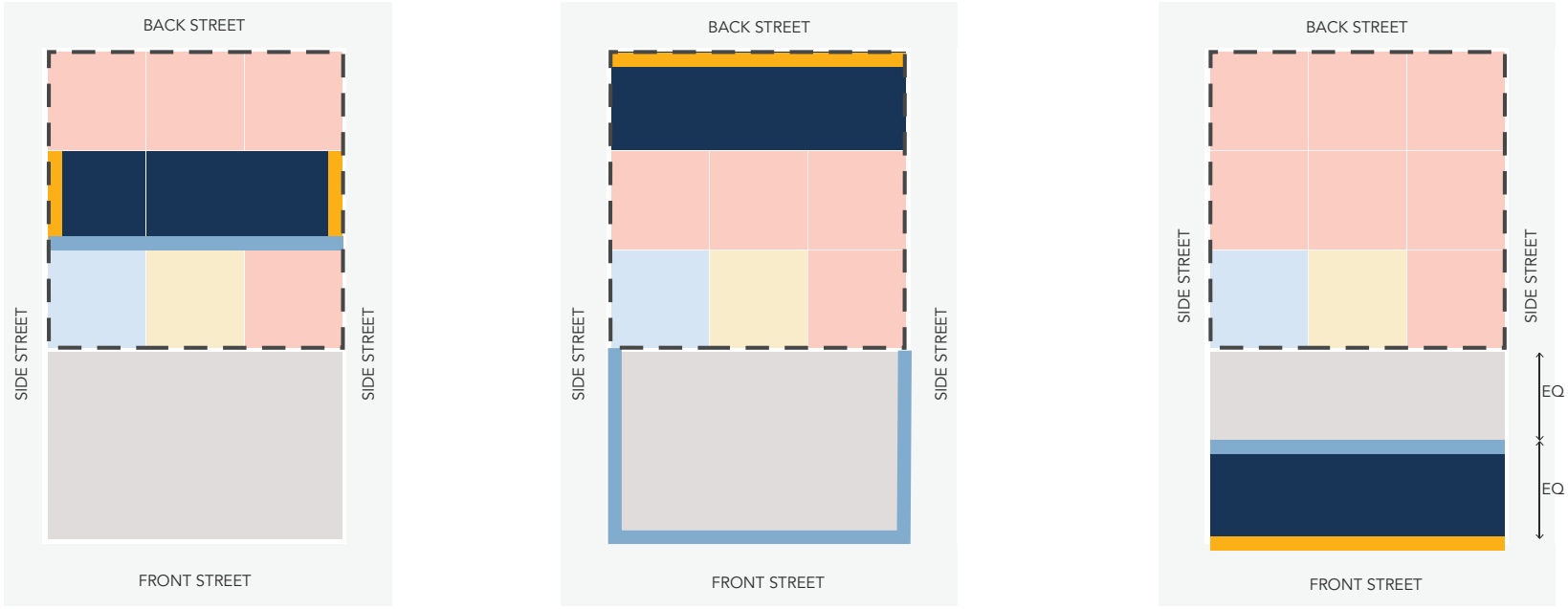


Figure 40: Bus Terminal Typologies in Plan View

**All three typologies demonstrate opportunities to share the bus stop area with the Passenger Pick-up and Drop-off, ride share, and autonomous vehicles.*

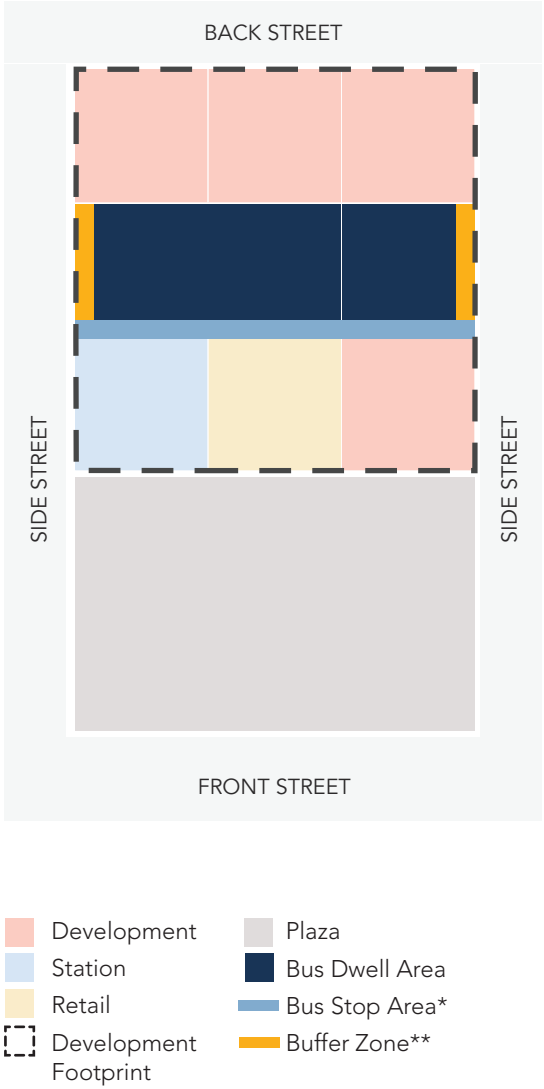
***A buffer zone is a pedestrian first space. It is characterized by comfortable seating, good lighting and where possible a strong tree canopy.*

3.7 BUS TERMINAL INTEGRATION (Continued)

BUS TERMINAL TYPOLOGY 1: Development built over internal bus dwell and stop areas.

Considerations:

- Development footprint is compact.
- Development ground floor area is reduced.
- Future proofing and adaptability may be a challenge.
- Secondary station entrance potentially needed.
- A clear, safe and integrated wayfinding strategy between the subway station and the bus terminal.
- Acoustic, vibration and ventilation separation between bus terminal and development.



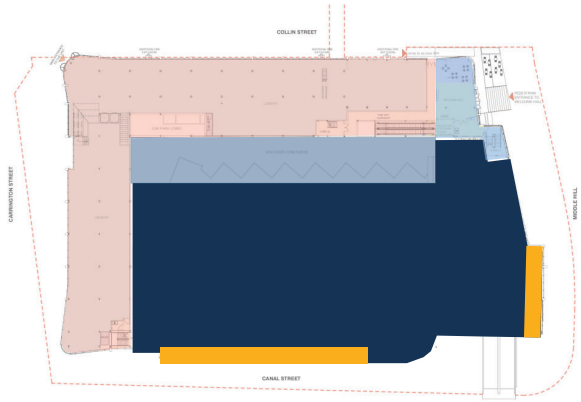


Figure 41: Broadmarsh Bus Station, Nottingham
Courtesy of https://www.constructionenquirer.com

3.7 BUS TERMINAL INTEGRATION (Continued)

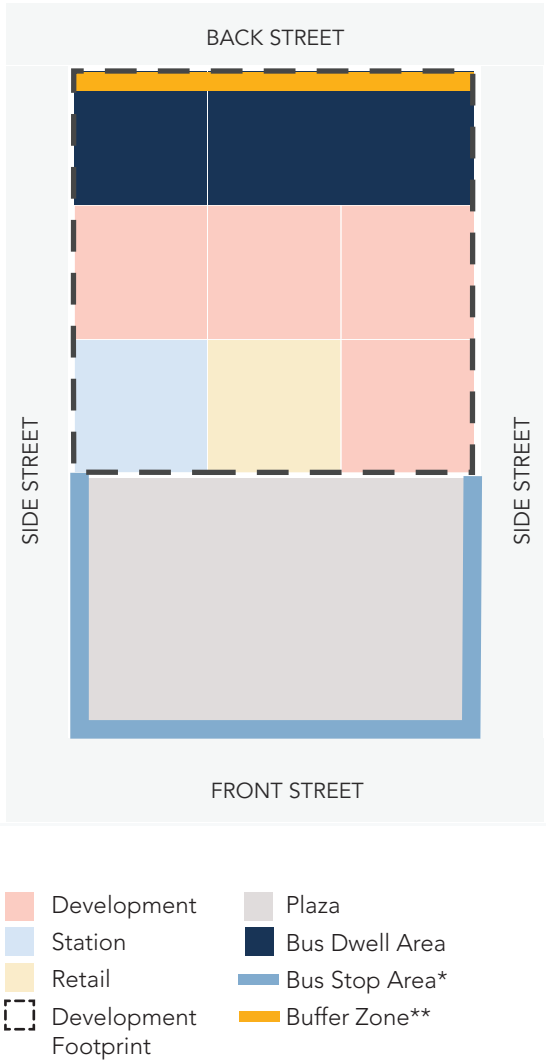
Figure 42: Union Station Bus terminal, Toronto
Courtesy of Metrolinx, https://urbantoronto.ca and https://dailyhive.com

3.7 BUS TERMINAL INTEGRATION (Continued)

BUS TERMINAL TYPOLOGY 2: Development built over the bus dwell area.

Considerations:

- Plaza curbside future-proofed for rideshare and other mobility innovations.
- Acoustic, vibration and ventilation separation between bus terminal and development.
- Operational uncoupling of bus dwell time and bus stop area needs operator buy-in.



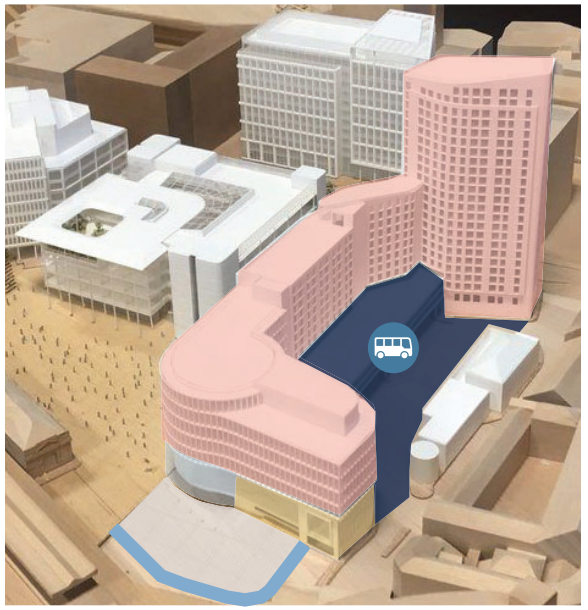


Figure 43: Cardiff Central Bus Terminal, Wales
Courtesy of https://www.bbc.com and https://www.walesonline.co.uk

3.7 BUS TERMINAL INTEGRATION (Continued)

Figure 44: George Brown Bus Station, Toronto
Courtesy of https://live.staticflickr.com and https://archello.com

3.7 BUS TERMINAL INTEGRATION (Continued)

BUS TERMINAL TYPOLOGY 3: Development built adjacent to the bus dwell and stop areas.

Considerations:

- Plaza curbside future-proofed for rideshare and other mobility innovations.
- Early negotiation with bus operator to integrate bus terminal with plaza.

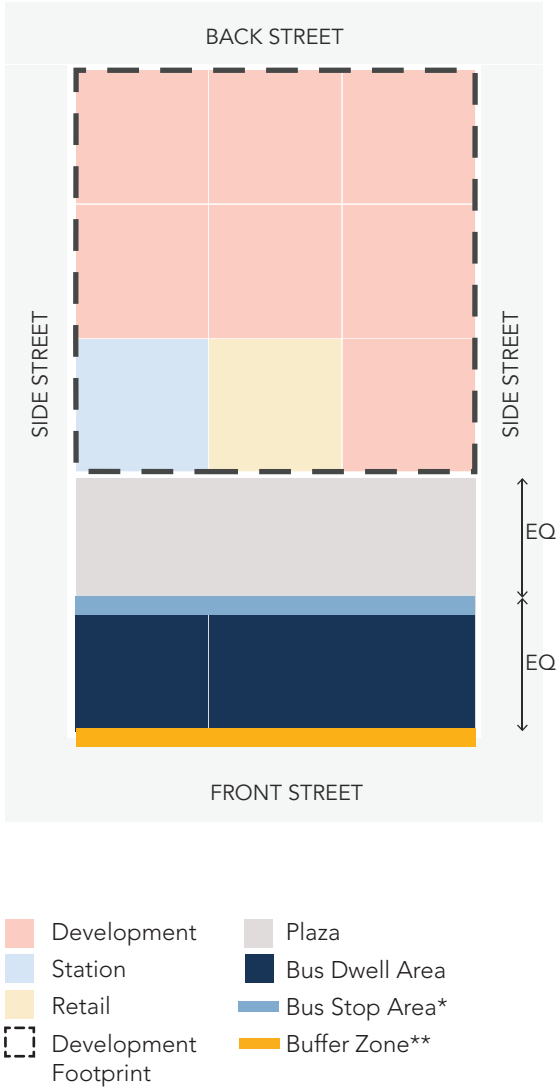


Figure 45: Stratford Station, London
Courtesy of Adobe Stock

3.7 BUS TERMINAL INTEGRATION (Continued)

Figure 46: VMC Bus Terminal, Vaughan
Courtesy of https://www.claudecormier.com

4 TECHNICAL INTERFACE

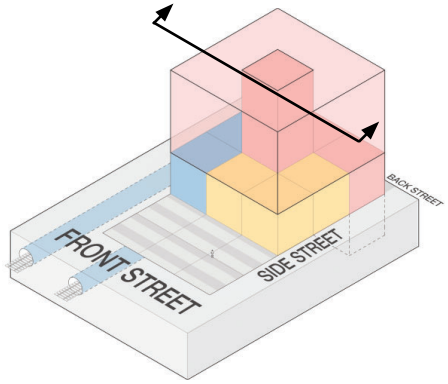
The following diagrams map out the horizontal and vertical interface points between public and private development.

4.1 ABOVE GROUND TRANSFER STRUCTURE

GOAL: Optimize structural approach in accordance with the phasing of each project.

STRATEGY: Establish the phasing to inform structural approach. In all cases and deliver an infrastructure protection zone between station and development.

GUIDANCE: Determine the best structural approach on a project by project basis. Considerations include programmatic goals, scale, complexity of built-form and project life-cycle.



Foundation Design Section Reference Line

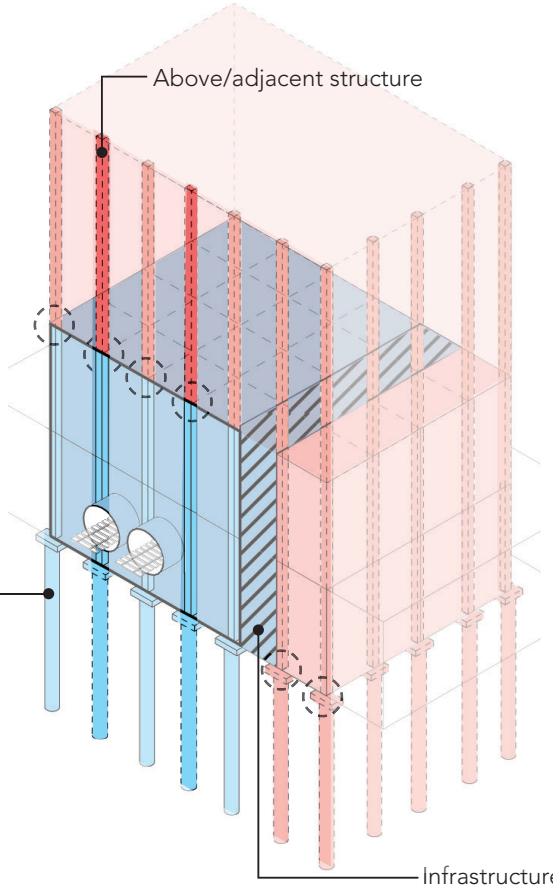


Figure 47: Continuous Structural Grid

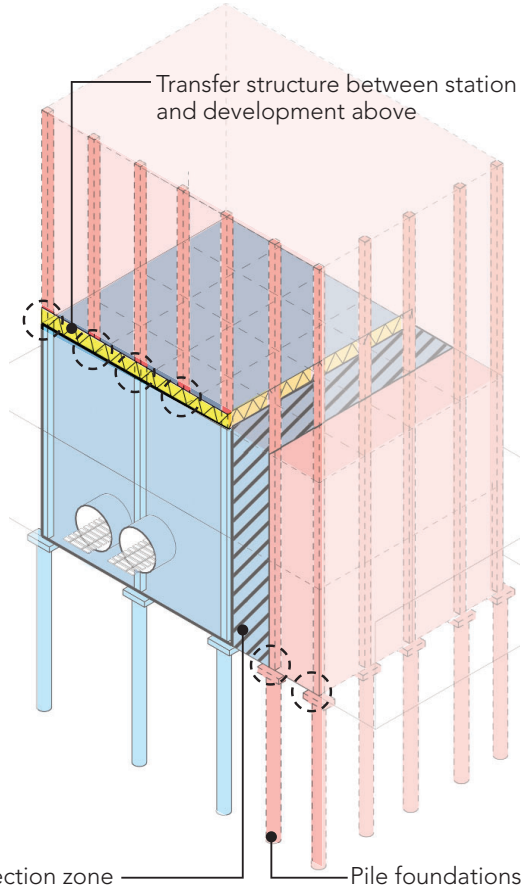


Figure 48: Transfer Slab

4.2 ACOUSTIC AND VIBRATION ISOLATION

GOAL: Optimize acoustic and vibration isolation.

STRATEGY: Establish an acoustic and vibration isolation approach on a project by project basis.

GUIDANCE: Work with a structural engineer and an acoustic engineer during the early design stages to establish requirements below and above grade.

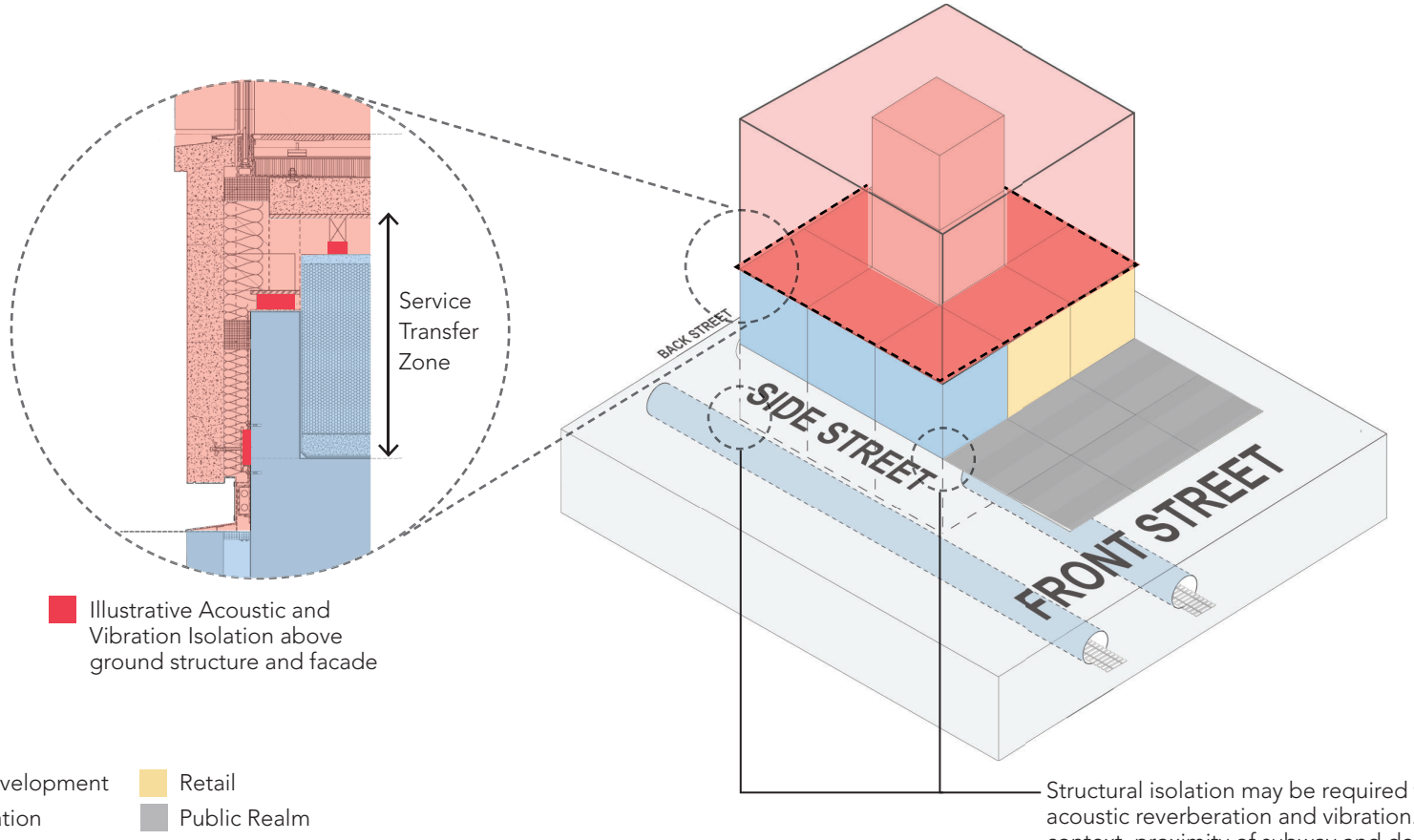


Figure 49: Acoustic and Vibration Isolation

4.3 SERVICE ZONE

GOAL: Ensure all development services are entirely independent of station demise.

STRATEGY: Establish a service approach as per figure below, on a project by project basis.

GUIDANCE: Service penetration from development above into the station must be avoided to ensure continuous operation of the station infrastructure is maintained.

Early design coordination with the full design team is necessary to offset services in appropriate locations and avoid compromising the station demise. Service transfer zones can be used to offset services above the station demise.

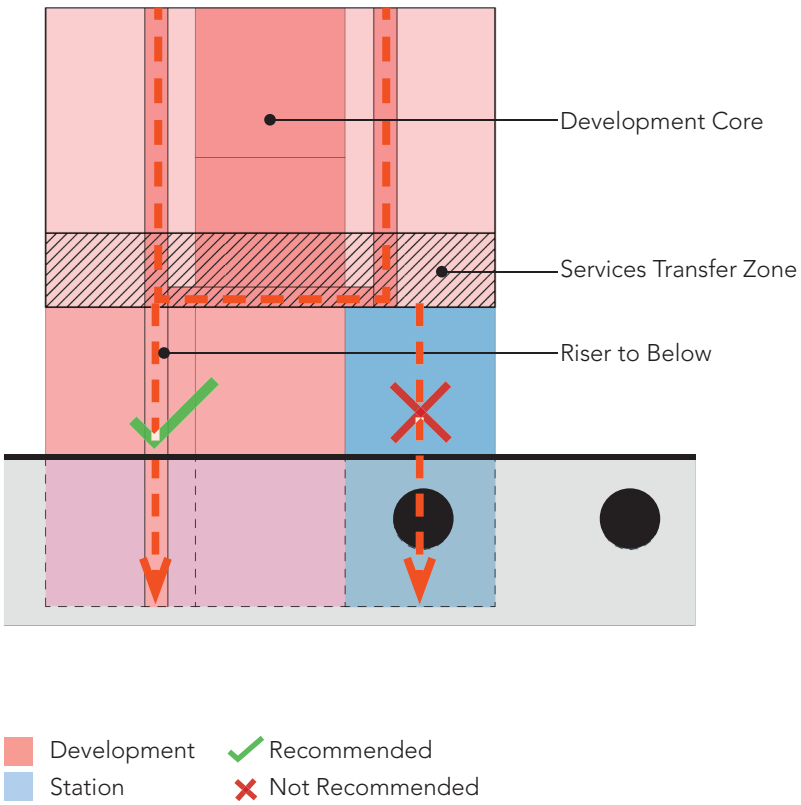


Figure 50: Service Zone Cross Section

5 TOC DESIGN GUIDANCE

5.1 PRINCIPLES AND DESIGN GUIDANCE

The following provides a summary of the principles to support the Province of Ontario's urban planning and design goals for TOC.

This section provides high level guidelines for TOC Subway Stations integrated with development. For additional details refer to DS 09 Subway Station Architecture Design Standard and other standards listed in section 1.4.5.

The principles and design guidance in this section are divided into the following categories:

- Connectivity
- Design for Density
- Mixed Use
- Walkability

Figure 51: Customer Journey, 2 Queen Street East Station, Toronto
Courtesy of https://www.brookfieldproperties.com, https://www.wzmh.com/, https://www.flickr.com and https://www.yelp.ca

5.2 CONNECTIVITY

A well-designed TOC is characterized by walkable blocks, complete streets, and multi-modal connectivity.

5.2.1 PLANNING AND DESIGN

a) Provide urban scaled streets and blocks in larger development sites that direct pedestrians and customers towards the transit station.

b) Design a porous fine grain neighbourhood to provide routing options and support the customer journey to the station.

c) Respond to the site context by integrating the development with the broader block pattern, and transportation and open space network.

d) Ensure a safe and comfortable customer journey between development, retail, subway stations and all other modes of travel.

e) Ensure intuitive station access through permeable street design that connects TOC to adjacent neighbourhoods.

f) Design bus terminals, parking facilities, and Passenger Pick-up and Drop-off to integrate with the TOC program.

g) Ensure a clear and logical separation between the customer journey and the servicing of the site.

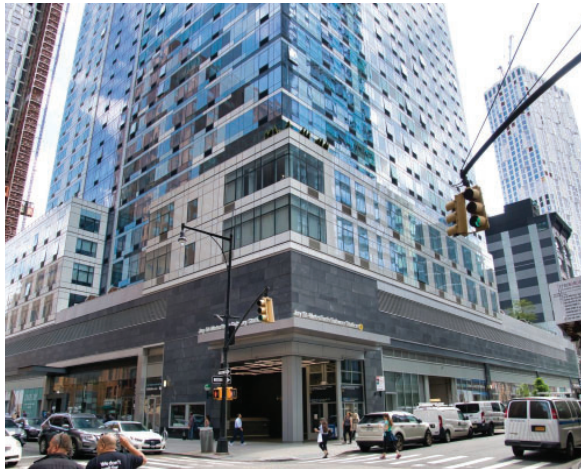


Figure 52: Jay St Metro Tech Station, New York
Courtesy of Nicolas Janberg and structurae

Figure 53: Yonge and Eglinton Street, Toronto
Courtesy of https://trnto.com

5.2 CONNECTIVITY (Continued)

5.2.2 WAYFINDING

a) Design the public realm to support intuitive wayfinding. Ensure that the interior-exterior interface is designed to optimize wayfinding and the customer experience. Incorporate visually simple, intuitive, and easy to navigate spaces and provide signage as defined by the Metrolinx Wayfinding standard.

5.2.3 SIDEWALKS

a) Ensure that the direct sidewalk connections from the public realm to transit entrances are accessible, safe, and comfortable.

b) Construct sidewalks from high quality, low maintenance, resilient and durable materials with non-slip surfaces.

c) Design sidewalks to avoid use of stairs and ramps.

5.2.4 CYCLING

a) Clearly delineate bicycle paths to ensure safety for cyclists and other users.

b) Design active transportation infrastructure to avoid conflicts at high activity zones such as station entries and retail areas.

c) Provide secured storage for bicycles near cycling paths.

Figure 54: Exhibition Road, London
Courtesy of https://www.dezeen.com

Figure 55: Bike Lane, Toronto
Courtesy of https://www.thestar.com

5.3 DESIGN FOR DENSITY

The foundation of TOC is the development of density as close to the subway station as possible. The new TOC density may help achieve a *15-Minute City* which supports lower carbon lifestyles.

5.3.1 PLANNING

a) Design TOC to integrate with the local urban density and site context.

b) When a development block is adjacent to surface transit, ensure that it provides generous sidewalks with waiting areas and space for transit shelters.

c) When a development block is adjacent to surface transit ensure that a direct path of travel is provided between the station entrance and the surface transit stop, without compromising pedestrian, customer, or cyclist safety.

5.3.2 WAYFINDING

a) Transit facility wayfinding and customer information shall be provided beyond the immediate transit station environment to direct passengers to and from surrounding streets, bicycle routes and nearby destinations.

5.3.3 TRANSIT ENTRANCES

a) Design transit entrances to have a direct frontage onto the street.

b) Coordinate transit entrances with all other transit service requirements, including but not limited to stops, platforms, bulb-outs and turning radii where applicable.

c) Optimize sightlines and visibility of transit entrances and reduce their perceived distance.

Figure 56: One Bryant Park, New York
Courtesy of https://inhabitat.com

Figure 57: VMC Bus Terminal, Vaughan
Courtesy of https://level-photo.ca/

5.3 DESIGN FOR DENSITY (Continued)

5.3.4 SHARED TRANSIT ENTRANCES

a) Design external entrances serving both development and transit facilities to:

- **i.** Include transit signage, and branding into an overall wayfinding strategy.
- **ii.** Meet the pedestrian flow modeling requirements associated with the combined current and future capacity needs of the development and the station.
- **iii.** Provide prominence and legibility to the transit entrance, relative to the scale of the development.
- **iv.** Be clearly visible from the public realm.
- **v.** Provide overhead protection from the elements.

b) Design internal entrances within development providing direct access to transit stations to:

- **i.** Meet the pedestrian flow modeling requirements associated with the capacity needs of the station, as set out by Metrolinx.
- **ii.** Provide prominence and legibility to the transit entrance, incorporating transit identifier and brand elements.

c) Design all internal circulation routes that provide access to transit station entrances to:

- **i.** Be generous in size and meet pedestrian flow modeling requirements associated with transit users as well as patrons, visitors, and customers of the development.
- **ii.** Be direct and universally accessible.
- **iii.** Incorporate transit identifier and brand elements into an overall wayfinding strategy.

Figure 58: Wellesley Station, Toronto
Courtesy of https://www.ttc.ca

Figure 59: Canadian Opera Company, Toronto
Courtesy of https://10tation.com

5.4 MIXED USE

The two key attributes of a successful TOC are transit accessibility and quick access to a diverse mix of uses including retail, residential, employment, institutional and entertainment.

5.4.1 PLANNING

a) Create planning strategies that encourage an appropriate mix of uses including residential, employment, retail and commercial uses.

b) Development strategies should include the integration of built and natural heritage.

5.4.2 OPEN SPACE

a) Design the transit plaza to establish a presence not only for the station, but also for the entire TOC.

b) Locate and design the transit plaza to position it as a central social amenity within the community.

c) Transit plazas should be informed by:

- **i.** Foot traffic and capacities associated with the station location.
- **ii.** The scale, density, land-use mix, and built-form qualities associated with the development together with the station facility.
- **iii.** Site conditions, topographical attributes, and local community context.
- **iv.** Transportation, civic nodes, neighbouring destinations and attractions.
- **v.** Potential or anticipated programming and activities.

Figure 60: King's Cross, London
Courtesy of https://www.bam.co.uk

Figure 61: Metrotown SkyTrain Station, Burnaby
Courtesy of https://www.buzzbuzzhome.com

5.4 MIXED USE (Continued)

d) Develop transit supportive open spaces that combine with the station environment. Design open spaces such that:

- **i.** A clear hierarchy of movement favouring active transportation.
- **ii.** They function as an extension of the internal station environment providing comfort and safety as part of the overall customer experience.
- **iii.** They are generous in size, serve transit entrances, and provide quick access to platforms.
- **iv.** They fully integrate with surrounding developments and buildings.
- **v.** They have weather protected waiting areas.
- **vi.** They act as a key decision-making point for customers moving between various modes of transport, mobility and destination points.
- **vii.** They complement the customer journey and adjacent uses.
- **viii.** They project a welcoming image that promotes and reinforces the transit focus of the site, the local context, and allows customers to pause before and after travelling.
- **ix.** They contribute to place making.
- **x.** They accommodate potential programming and activities.
- **xi.** Third party (non-transit) branding elements are well coordinated and do not detract from the transit branding.
- **xii.** They provide site furnishings, including but not limited to seating, bollards, pedestrian-scale lighting, and waste receptacles.

Figure 62: Maple Leaf Square, Toronto
Courtesy of https://condoessentials.com

Figure 63: Jay St Metro Tech Station, New York
Courtesy of Nicolas Janberg and structurae

5.4 MIXED USE (Continued)

5.4.3 WAYFINDING

a) Design the TOC open spaces to be transit identifiers and to contain transit operator branded elements that lead to the station entrance.

b) Design TOC open spaces to provide a strong sense of arrival, orientation and intuitive wayfinding for transit users.

5.4.4 SERVICE ACCESS

a) Co-ordinate the service and emergency access strategy for the station and development to ensure a consistent approach.

b) Design loading, servicing, other vehicular related functions and utilities to be separated from the customer journey.

c) Provide dedicated service zones for frequent access and shared service zones for occasional access.

d) Ensure uninterrupted operation of transit functions.

e) Integrate servicing zones into the building mass.

f) Provide service doors to conceal service areas from the street.

g) Minimize the size and number of service openings.

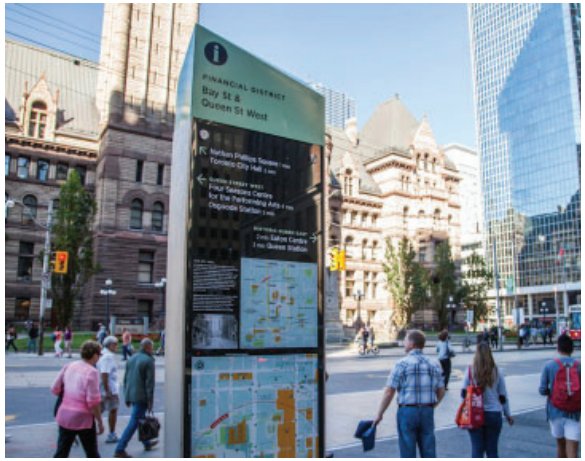


Figure 64: Wayfinding Signage, Toronto
Courtesy of https://www.futuresystems-inc.com

Figure 65: Service Access, Marine Gateway, Vancouver
Courtesy of https://www.cbc.ca

5.5 WALKABILITY

Walkability is the cornerstone of the TOC program. Transit supportive development directs urban growth to areas that are well-served by transit, in doing so they create vibrant communities that include housing, jobs, shopping and services all within walking distance.

5.5.1 PLANNING

a) Ensure that ground floor uses benefit from public plazas and walking areas that are characterized by continuous active frontages.

b) Prioritize walkability between the development site, retail, subway stations and other modes of travel.

5.5.2 CONNECTIONS

a) Ensure seamless pedestrian connections at the interface of transit and development, including below grade connections such as tunnels, passageways, and corridors.

b) Ensure seamless pedestrian connections between floor levels and at thresholds between transit stations and developments.

c) Ensure seamless pedestrian connections at the transition with other transport services and modes of travel.

d) Design transit station entrances to be clearly visible and illuminated.

e) Design transit station entrances to coordinate with sidewalks, inter-modal connections, and street frontages.

f) Design transit station entrances to have clear sight lines from inside and outside the station.

g) Incorporate a high-quality material palette, that spans the transition between interior and exterior areas of the transit entrance in a cohesive manner.

h) Optimize transit entrances to accommodate passenger capacities and pedestrian flow associated with the transit station.

i) Integrate universal design features into transit entrances to support equitable customer experiences for all.

j) Design transit station entrances to be on primary or secondary streets and never on tertiary streets.

k) Ensure that the design of pedestrian connections include both indoor and outdoor waiting areas that are comfortable year-round.

Figure 66: Domain, Austin
Courtesy of Stantec

5.5 WALKABILITY (Continued)

5.5.3 ILLUMINATION

a) Ensure consistent levels of illumination throughout interior and exterior station environments.

b) Design development integrated with subway stations to optimize access to natural daylight at transit facility entrances, public waiting areas, adjacent exterior spaces, interior passageways and below-grade connections between transit and development.

Figure 67: Marine Gateway, Vancouver
Courtesy of https://www.pci-group.com

Figure 68: Canary Wharf, London
Courtesy of https://www.cool-cities.com

Figure 69: South Penn Square Station, Philadelphia
Courtesy of https://www.architectmagazine.com

Figure 70: Zug Train Station, Zurich
Courtesy of https://www.abicht-gruppe.ch

A

APPENDIX A

Transit Oriented Communities Design Guidelines for Subway Stations Integrated within Development

PRIORITY SUBWAY PROJECTS

ONTARIO LINE

SCARBOROUGH SUBWAY EXTENSION

YONGE STREET SUBWAY EXTENSION

EGLINTON CROSSTOWN WEST EXTENSION

PRIORITY SUBWAY PROJECTS

The Province's priority subway projects include– the Ontario Line; the Yonge North Subway Extension; the Scarborough Subway Extension; and the Eglinton Crosstown West Extension.

The following pages provide further information on each priority subway project.

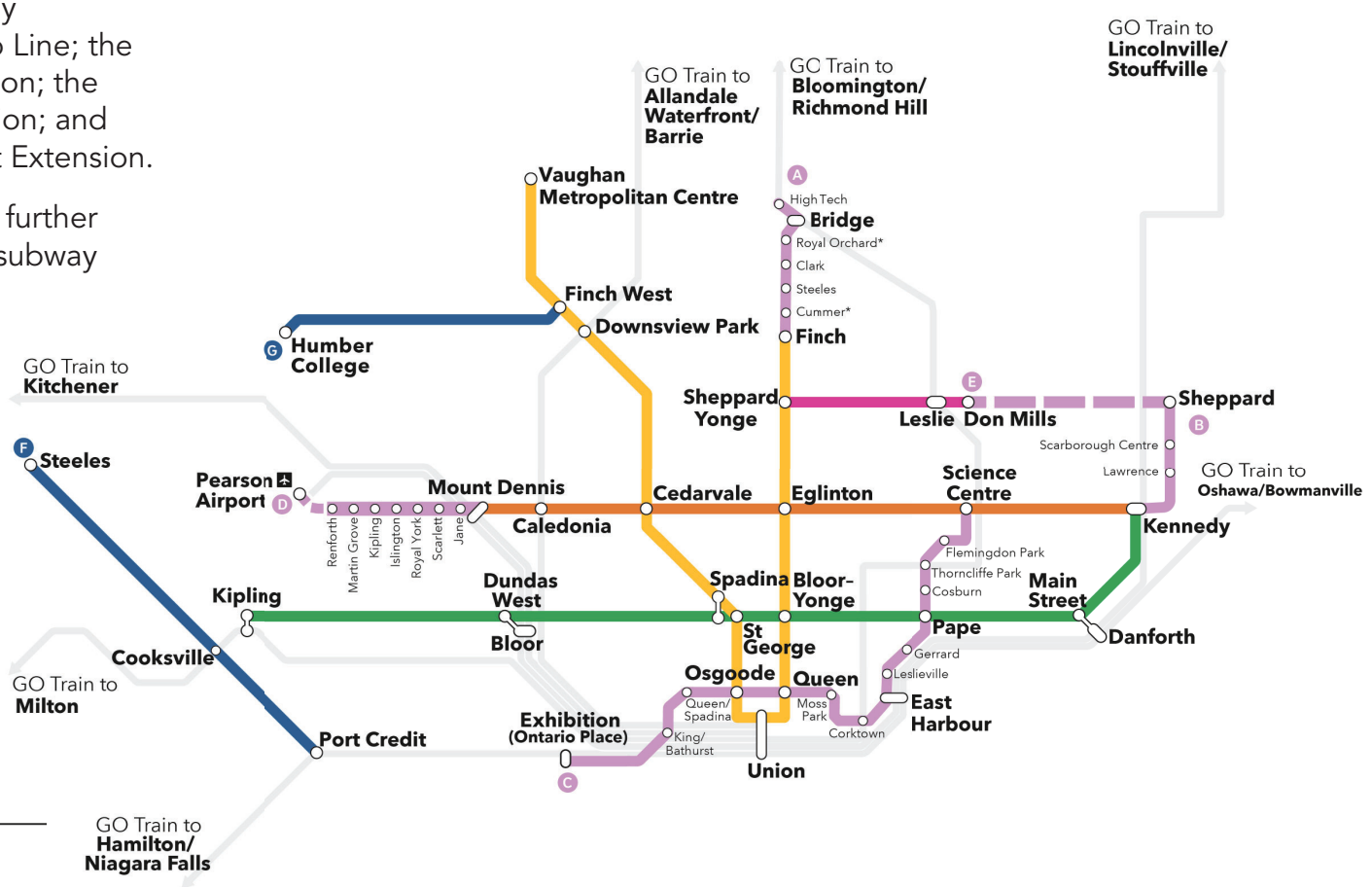


Figure A1: Province of Ontario's Priority Transit Projects
Courtesy of Metrolinx

ONTARIO LINE

With fifteen potential stations between Ontario Place and Ontario Science Centre and links to GO Transit and TTC Lines 1 and 2, the Ontario Line will open up significant access to transit for all city residents to use providing better service for all communities.

The Ontario Line will likely deliver up to 40 trains per hour, as frequently as every 90 seconds, providing shorter wait times for customers and faster daily commutes. With faster travel times and more options to move, the line will bring key benefits with time savings and reduced crowding at the forefront.

Figure A2: Ontario Line
Courtesy of Metrolinx

SCARBOROUGH SUBWAY EXTENSION

Metrolinx and Infrastructure Ontario are working together to deliver the Scarborough Subway Extension, a 7.8-kilometre extension of Line 2 from Kennedy Station to McCowan Road/ Sheppard Avenue.

The Scarborough Subway Extension will reduce travel times and improve access to jobs, schools and other destinations. The three-stop extension will extend the TTC's Line 2 subway service nearly eight kilometres further into Scarborough, providing a seamless connection to and from the downtown core. Stations are proposed at Lawrence Avenue and McCowan Road, Scarborough Centre, and Sheppard Avenue and McCowan Road.

The extension will connect to a number of other transit systems to make it easier to travel within the city and beyond. Kennedy Station will provide connections to GO Transit and the Eglinton Crosstown LRT, and the proposed station at Scarborough Centre will connect to GO and Durham Region transit bus services. There will also be local TTC bus connections at every stop along the extension. The estimated completion date for the extension is 2029-30.

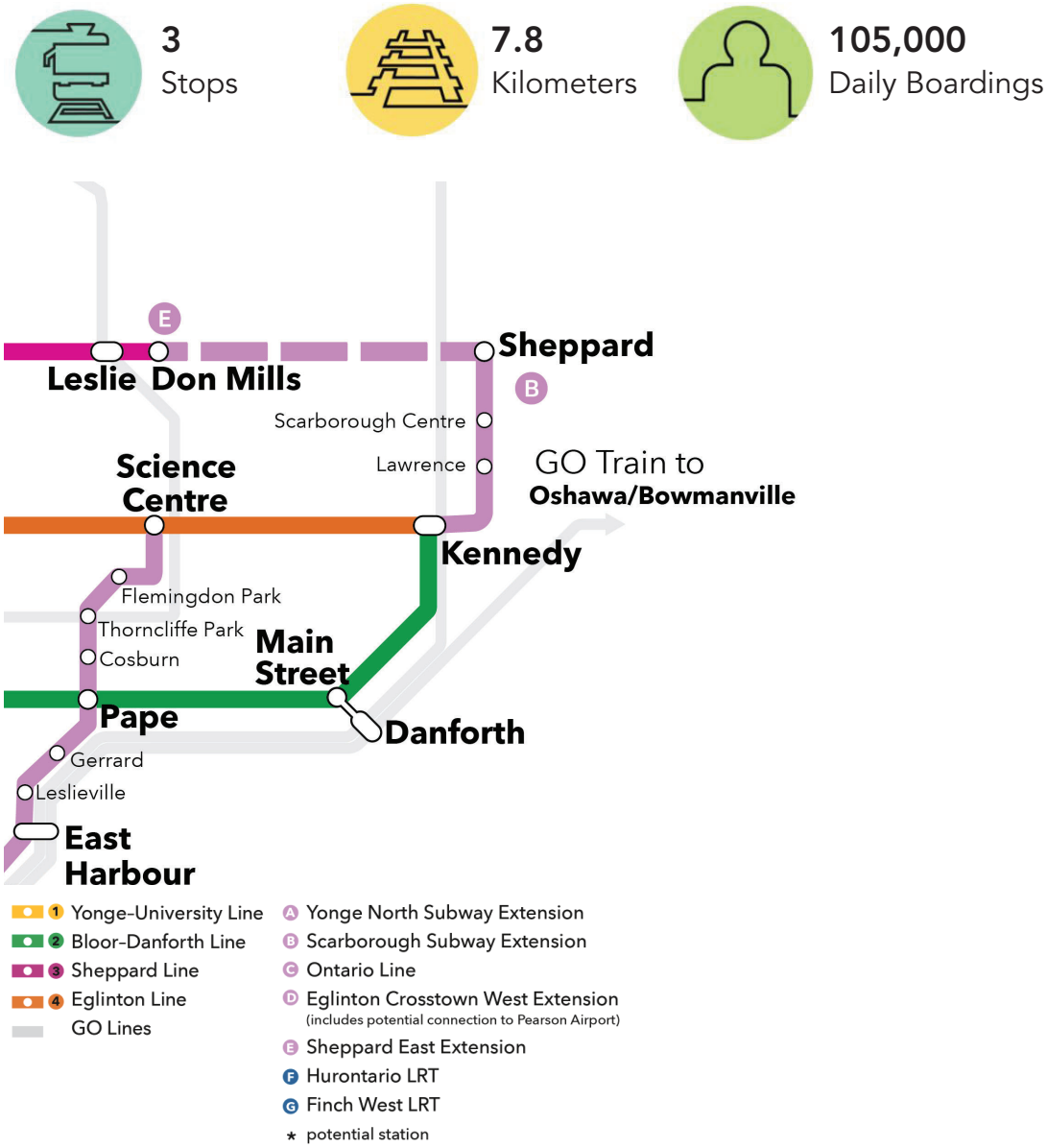


Figure A3: Scarborough Extension
Courtesy of Metrolinx

YONGE NORTH SUBWAY EXTENSION

As proposed, the Yonge North Subway Extension would extend the TTC's Line 1 subway service 7.4 kilometres from Finch Station into Richmond Hill. Metrolinx and Infrastructure Ontario are working together to deliver the project, which will strengthen the regional transit system by once again extending subway service outside of Toronto into York Region. The target completion date is 2029-30.

The extension would provide seamless travel for those travelling between York Region and Toronto while reducing travel times, managing traffic congestion and getting more people moving. Most recent plans propose up to six stations, including transit hubs at Richmond Hill Centre and Steeles Avenue that will connect to local bus services.

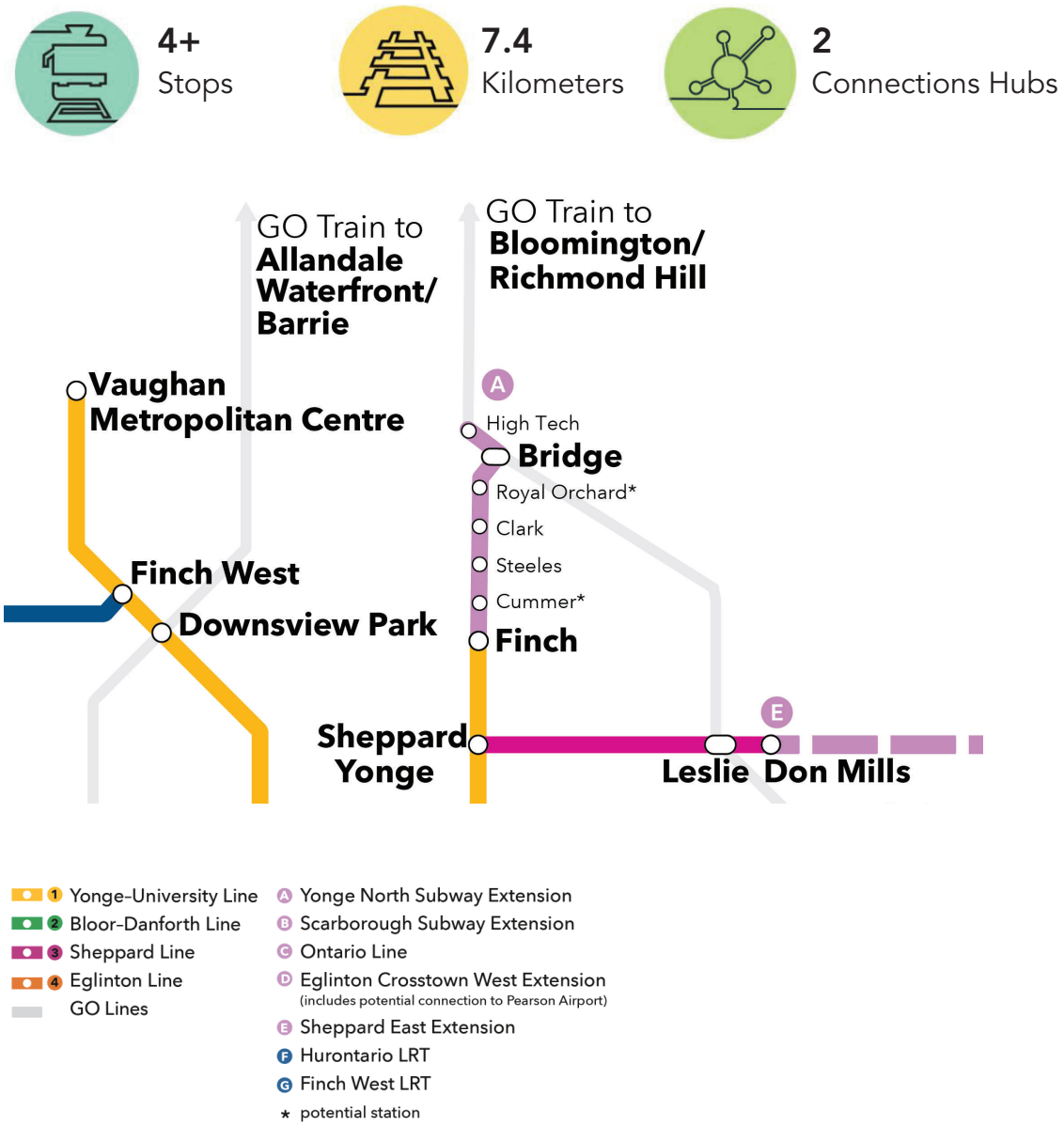


Figure A4: Yonge Street Subway Extension
Courtesy of Metrolinx

EGLINTON CROSSTOWN WEST EXTENSION

The proposed extension of the Eglinton Crosstown LRT will run 9.2 kilometres from the future Mount Dennis LRT station to Renforth Drive and will operate mainly underground, helping to reduce travel times and improve access to jobs, schools and other destinations throughout the Greater Toronto Area.

The proposed extension will offer convenient links to other destinations throughout the region – UP Express and Kitchener Line GO Train service at Mount Dennis, TTC bus services at all transit stops in Toronto, and MiWay and GO Bus services via the Mississauga Transitway at Renforth Drive.

Metrolinx and Infrastructure Ontario are working together to deliver the project, which is estimated to be complete by 2030-31. Plans are also being explored with the Greater Toronto Airports Authority to extend the line another 4.7 kilometres to Pearson International Airport.

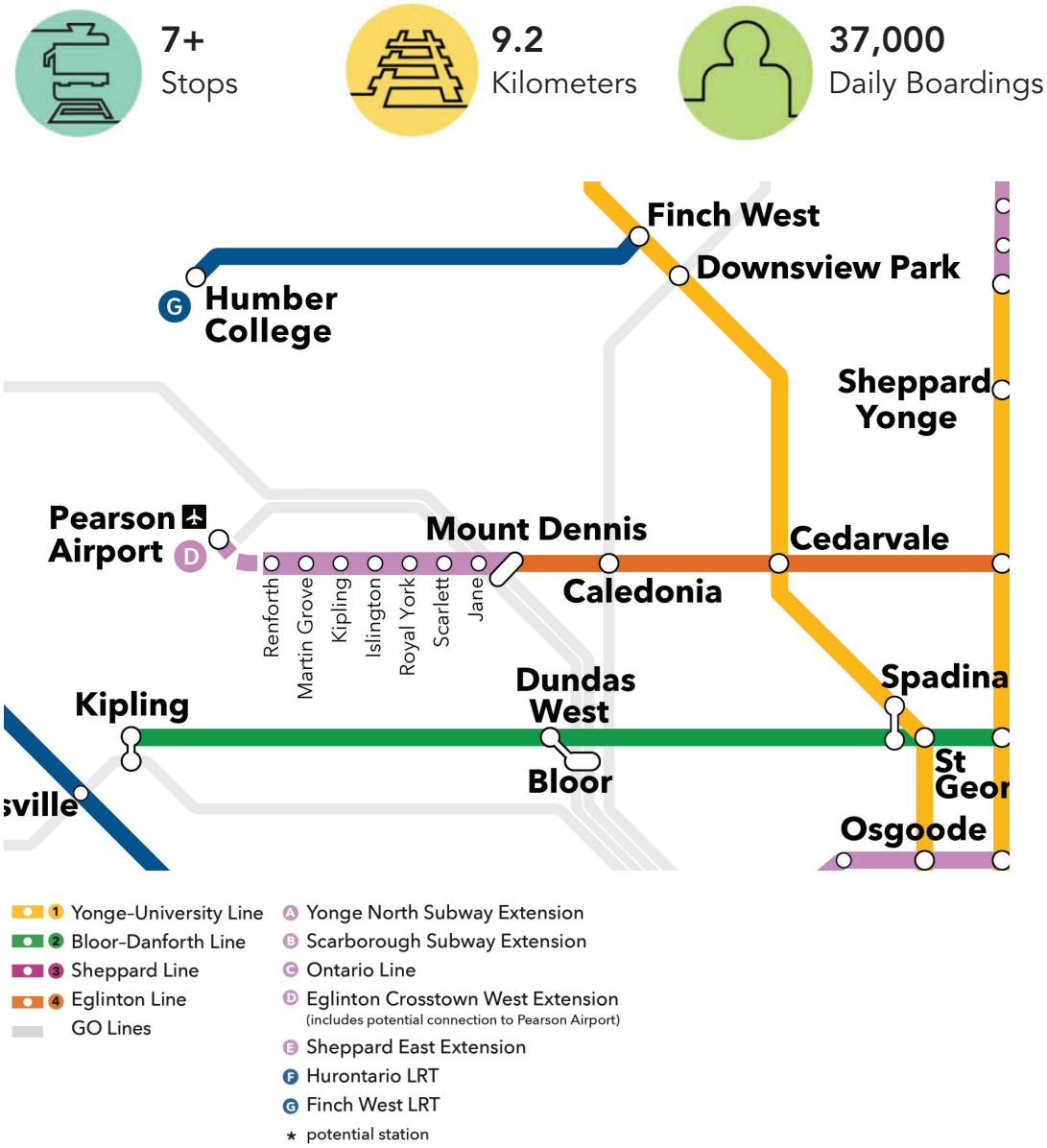


Figure A5: Eglinton Crosstown West Extension
Courtesy of Metrolinx

B

APPENDIX B

Transit Oriented Communities Design Guidelines for Subway Stations Integrated within Development

FREQUENTLY ASKED QUESTIONS

FREQUENTLY ASKED QUESTIONS

1. What are Transit Oriented Communities?

The Province of Ontario is pursuing a "Transit Oriented Communities" (TOC) program to build vibrant, higher density, mixed-use communities that are connected to transit stations.

For the Subway project, the TOC program will be implemented at new subway stations, by partnering with third-party development partners to build new communities integrated with subway stations on the:

- Ontario Line
- Yonge North Subway Extension
- Scarborough Subway Extension
- Eglinton Crosstown West Extension

Benefits of TOC include:

- Increasing transit ridership and reducing traffic congestion.
- Increasing housing supply (including affordable housing) and jobs.
- Catalyzing complete communities based on good planning principles
- Offsetting the cost of station construction which would save taxpayers' money.
- Stimulating the economy through major projects for years after COVID-19.

2. What is the purpose of the TOC Guidelines?

The TOC Design Guidelines have a dual purpose:

As a marketing tool, they are intended to engage the building industry in building integrated transit oriented projects through partnerships and collaboration with the public sector.

As a technical tool, the Guidelines are intended to provide important information and design guidance to private partners on technical matters related to the integration of buildings and subway infrastructure components. At a high-level, the document illustrates technical methods, typologies and key interface considerations requiring coordination.

3. What are the Guidelines not intended to do/be?

All TOC sites are acquired permanently by the province for the dual purpose of transit construction and later TOC, and are based on technical/project requirements, land use planning considerations and economic viability.

The Guidelines are intended to provide insight, awareness, and highlight the technical complexities of integration between development and subways infrastructure with an emphasis on coordination of key components. The Guidelines do not speak to the design of development, buildings or the shaping of

built-form associated directly with the development as the province will look to the municipalities to influence. Notwithstanding, depending on the station, matters pertaining to streetscape may require some level of coordination between involved parties and Metrolinx to assist with requirements for intuitive wayfinding, denoting/design of transit entrances, and to support the customer journey to the station, etc.

The Guidelines are not intended to address Major Transit Station Areas (MTSAs). They are also not intended to replace any infrastructure, customer service, commercial and operational standards or specific requirements developed by Metrolinx that will apply to subway infrastructure but do provide a high-level checklist for private partners to refer to.

4. What is relationship between these Guidelines, Subway Design Standards and other Metrolinx requirements?

The Guidelines function as a high-level technical framework (similar to a 'check-list') intended to work with the more detailed standards and specific requirements set out by Metrolinx. The document is consistent with the approach undertaken by other transit agencies and jurisdictions for Transit Oriented Communities (TOC)/ Transit Oriented Development (TOD) programs operating internationally.

5. What is the relationship between these Guidelines and municipal development/public realm design standards?

The Guidelines function as a 'bridge' that links Metrolinx requirements and standards with municipal development policies, urban design guidance and municipal streetscape standards. They focus on the more technical aspects of integration between buildings and subway infrastructure components. Note, the Guidelines do not replace the Authorities Having Jurisdiction guidelines, standards etc.

6. Who is the intended audience?

The Guidelines are intended for the development industry as partners in the TOC program who will help deliver on the province's four priority transit projects.

7. How will the Guidelines be used?

The Guidelines will be used to help private partners inform and guide development of design concepts during the early planning and negotiating stages, noting that they are intended to work with other detailed standards and requirements for transit infrastructure set out by Metrolinx.

8. Who has been engaged in preparing these Guidelines?

Internal stakeholders, external stakeholders and municipal partners have been engaged including the Metrolinx Customer Experience Standards Committee, Subway Program Technical Advisors, and the development industry.

9. What is the municipalities' role in the Guidelines?

The province recognizes municipalities as critical partners in the successful delivery of TOC developments. The province, the City of Toronto and York Region have MOUs on TOC that establish shared provincial-municipal objectives, consistent with the objectives of the TOC Program and commits to seek and receive public input through an engagement process. Per the MOU, the province (through Infrastructure Ontario) will spearhead negotiations with third parties related to prospective TOC and act as the single commercial interface with the third parties at TOC sites.

The province and municipalities are working collaboratively to operationalize MOUs and are creating a TOC intake process to review and seek stakeholder/public input on future development of TOC sites. It is through the TOC intake process that all commentary on TOC site redevelopment will be received and is distinct from the normal processes surrounding land acquisition for the transit project. TOC plans will be brought though the intake process in sequence as planning work matures on each site.

10. How do the Guidelines interface with the public realm?

The Guidelines are architecture focused but illustrate key ideas and concepts related to coordination of ground floor uses in buildings prioritizing transit entrances, access through common spaces and the relationship to retail, service/loading and other points of access. In this way, the Guidelines acknowledge the important interface and coordination that is needed between development, subway infrastructure and the customer journey through a TOC lens.

11. Where can the Guidelines be found?

The Guidelines will be made public on the Infrastructure Ontario and Metrolinx websites (Transit Oriented Communities) once they are completed and approved.


Infrastructure
Ontario


METROLINX