METROLINX

DESIGN STANDARDS

Metrolinx Design Standards
DS-00 FRONT END
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Metrolinx,

an Agency of the Government of Ontario

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1 INTRODUCTION

1.1 PREFACE

This document assembles a compilation of standards and entailing a broad range of design components associated with transit facilities operated by Metrolinx, inclusive of GO Transit and UP Express. These Design Standards build upon a longstanding reputation and 50 years of experience as a commuter transit service.

Metrolinx advocates the value of good design across all its capital projects. It defines design excellence as the interplay of functionality, resiliency, beauty and value. Good design should support corporate objectives regarding schedule, budget, durable construction, and minimized life cycle costs. Well-designed public spaces and facilities should help customers easily navigate an increasingly complex multi-modal network with an expanding number of mobility choices. Good design can create a more comfortable and enjoyable travel experience, improve the function of transit facilities and build loyal ridership.

1.2 OBJECTIVE OF THE STANDARDS

The objective of the design standards is to communicate requirements for transit infrastructure in a clear and concise manner that provides certainty and predictability in design outcomes, ensuring relevant design objectives and expectations are fully met and satisfied by those engaged in the delivery of Metrolinx transit infrastructure. From the customer perspective, the Design Standards act to position outcomes that create a unified language for the visual and experiential design of Metrolinx transit facilities.

The key challenge for Metrolinx is to balance regional transit priorities with local community interests. A "one size fits all" approach will not work in a region as large and diverse as the Greater Golden Horseshoe Area (GGHA). The objective is to provide a consistent experience for our customers and the recognition of the distinct identities and sense of place that characterize many of the communities we serve. As such, the Design Standards outline Elements of Consistency that Metrolinx considers to be essential to the customer experience. Many elements of infrastructure are outside this 'brand' environment and therefore can respond to the project-specific context.

1.3 SCOPE OF THE DESIGN STANDARDS

The Design Standards are a compilation of requirements related to various components and design elements of Metrolinx transit infrastructure with an emphasis on public-facing elements. The Standards cover design elements that are both internal and external to transit station and stop environments, including requirements for universal design, harmonized wayfinding, sustainable design and resiliency, station design among others.

1.4 THE METROLINX TRANSIT LEGACY

GO Transit's current rail corridors were originally established by 19th century railway companies, who built enduring and elaborate railway stations. Some of these stations have been adapted and remain legacy elements on GO Transit

lines. New stations were constructed at stops where none previously existed or where replacements were required for the conversion to commuter service.

GO Transit has a five-decade legacy of providing customer focused commuter rail and bus service in the GGH region. The service includes seven rail lines that extend from Union Station: Lakeshore West Line, Milton Line, Kitchener Line, Barrie Line, Richmond Hill Line, Stouffville Line and Lakeshore East Line. In 1967, GO Transit initiated rail operations on the Lakeshore East and Lakeshore West, providing transit services for commuters traveling to and from Toronto. The name 'Government of Ontario Transit' was shortened to GO Transit.

Increased ridership beginning in the early 1980s has led to service increases, line extensions and bringing GO service into more communities from 1983 and onwards. While there may be some level of design consistency across the line's original GO stations, currently there is wide variety in architectural form and expression across the GO network, a result of incremental introduction of new transit lines and gradual extensions within the lines over the decades.

1800s

Brampton Heritage station built 1880. Distinctive red brick building featuring a slate roof and high arched windows. Interior has a high-quality environment composed of 12-foot ceiling and maple floor.

Georgetown Heritage station built 1855. One-story stone railway station built with a corner tower. It retains its relationship with railway tracks and railway-dependent commerce and industry.

1900s

Milton Line Station. During the 1970's, GO Transit developed a series of stations composed of brown masonry bricks with a dark pitched roof and stations on the Milton line adapted the design and transformed the GO Brand.

2000s

Lisgar GO Station. During the period from 1970 - 2000's, GO Transit expanded the rail network and developed many stations across the GTHA. Above station is one example of station from this era.

1.5 MANDATES FOR EXCELLENCE IN DESIGN

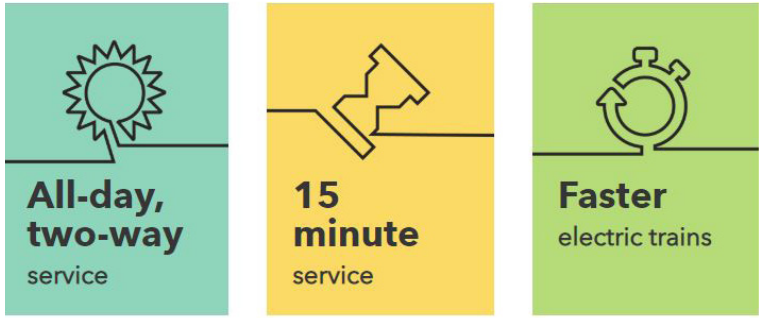
The recent emphasis on design excellence, through a mandate approved by the Metrolinx Board of Directors in 2013, has been a catalyst for progressively improving design of GO facilities in recent years. The current design direction for the GO system, supported by a clear Board mandate, is a more coordinated approach to system elements and components that express the Metrolinx brand.

Recently the principles and guidelines for excellence in design at Metrolinx projects were articulated within the GO Design Excellence Guidelines (GO DEG). With the adaption of the Design Standards; the requirements are now removed from the GO DEG and placed in their appropriate subject document. Moving forward, the GO DEG will be removed from circulation.

1.6 GO EXPANSION

GO Expansion is a transformational initiative to provide faster and more frequent service on the GO Transit rail network with electrification on core segments, including the Union-Pearson Express. GO Expansion is expected to double GO's peak rail service and quadruple its off-peak service. The service will create substantial benefits by providing new travel options that will transform the transportation system across the region. It will be complemented by the addition of new stations and a host of other regional and municipal transit projects throughout the region.

As of 2019, sixty-four GO rail stations currently serve thousands of customers daily throughout the GGH region. Easy access to stations, frequency of service, and quality of customer experience are key factors in convincing pedestrians, cyclists, transit passengers and drivers to use expanded GO rail service.



Everyone in the Greater Golden Horseshoe, from east to west, north to south, will benefit from this expansion of GO service.

1.7 RAPID TRANSIT (LIGHT RAIL TRANSIT, BUS RAPID TRANSIT AND SUBWAYS)

Rapid Transit (RT) includes Light Rail Transit (LRT) and Bus Rapid Transit (BRT) technologies that operate completely or mostly in their own right-of-way, separate from mixed traffic. With strong connections to subways, GO stations, and surface bus routes, RT lines provide an important link in the expanding and intensifying transit network in the GGH.

New Metrolinx ECLRT vehicle

The LRT lines, in particular the Eglinton Crosstown LRT (ECLRT), were among the first Metrolinx projects to benefit from design excellence integration within the procurement, in-market and design implementation phases. The various project-specific Design Excellence Principles and Requirements (DXP+R) documents, which formed a key part of the Project Agreement (PA) and Project Specific Output Specifications (PSOS), served as the first design excellence 'standards.'

LRTs being built, completing or launching their in-market phases (as of 2019) include:

- ECLRT and Finch West LRT, Toronto
- Hurontario LRT, Mississauga and Brampton
- Hamilton LRT, Hamilton

Next Wave projects coming Online include the following BRT projects:

- Dundas Street BRT, Mississauga
- Queen Street BRT, Brampton
- Durham-Scarborough BRT, Durham and Scarborough

Next Wave Subway projects include the following:

- Ontario Line
- Eglinton West
- Scarborough
- Yonge North

Together with GO rail expansion, LRT and BRT projects will be the foundation of the future Frequent Rapid Transit Network (FRTN)

In addition to the projects underway, Metrolinx is increasing the connections across the region to further build out the system with frequent rapid transit to properly meet the expected transportation demands of the Region

2 ADMINISTRATION OF THE DESIGN STANDARDS

THIS SECTION COVERS:

- How to use the Standards
- Standard Development Process
- Updates to Design Standard content
- Structure of the Design Standards
- Terminology and Definitions
- Relationship to other Metrolinx Documents
- Legislative, Codes, and Regulatory

2.1 HOW TO USE THE STANDARDS

Metrolinx requires that all elements of transit infrastructure be designed in a manner that achieves functionality and integrity of transit facilities through standards that uphold design excellence.

Those engaged in the delivery of transit infrastructure are required to adhere to all mandatory requirements and address design guidance and requirements through an appropriate, well-considered design response that reinforces design excellence objectives.

The Design Standards consist of both mandatory requirements and design guidance supplemented by visuals (drawings, sketches, conceptual diagrams and photo precedents) that act to visually articulate design requirements or demonstrate the intent of design requirements. All Design Standards must be applied in their entirety to maintain their integrity.

In select circumstances, deviation from the standard may be considered but will require going through a mandatory process to determine if the deviation is acceptable.

2.2 STANDARD DEVELOPMENT PROCESS

The Design Standards within this document have been developed through a highly collaborative process within Metrolinx through its Standard Development process. The process embodies a cross-functional approach engaging a number of disciplines and stakeholders internal to Metrolinx such as the Capital Projects Group (CPG), Customer Insights (CI), Station Operations and Maintenance (CSD), Planning and Development (P&D) and other divisions within Metrolinx. The goal of standard development is to ensure that all facets of design are given full consideration by those that have a stake in the construction and operation of transit infrastructure. The process is intended to address matters of practicality, user functionality, customer experience, cost, durability, maintenance, operations, sustainability, lifecycle and visual appeal, to name a few.

2.3 UPDATES TO DESIGN STANDARD CONTENT

While the Design Standards content is deemed to be complete, there will be updates by the Metrolinx Design Division with added or new technical information, modifications or changes to standard content including drawing standards and visuals on an as-needed basis. In some cases, RESERVE has been inserted as a placeholder under headings denoting requirements that are either pending or imminent.

2.4 STRUCTURE OF THE DESIGN STANDARDS

The structure Design Standards within this document incorporates a hierarchy of headings, sections and subsections for the purpose of articulating relevant information. In general, the organization of a standard(s) is set out under the following headings:

Standard Cover

Displays the title of the Design Standard and incorporates a bulleted summary of what the standard consists of;

Table of Contents

A numbered, chronological summary of all headings, sections and sub-sections identifying the standard content inclusive of appendices. Depending on the length of the standard, this section may or may not be needed;

Preface

Introduces the Design Standard, explains the relevance of the standard broadly speaking and how it interfaces with Metrolinx transit infrastructure or facilities

Design Standard

The Design Standard section comprises a number of key sub-sections explained below, beginning with a statement that outlines the objective of the standard. Both design requirements and design guidance may exist in combination under the heading of Requirements, but the difference in how they are applied and interpreted is articulated here:

Objective:

Outlines what the Design Standard is setting out to achieve;

Requirements:

Sets out what the Design Standard requires, i.e. a mandatory undertaking, uses 'shall' within the narration.

Guidance:

Sets out what the Design Standard recommends, i.e. a direction to be considered in arriving at an acceptable outcome, uses 'should' within the narration; unless it illustrates a requirement.

Options:

Sets out what the Design Standard allows as an alternative, uses 'may' within the narration.

Design Direction:

Includes drawings, visuals, precedents, photographs, sketches and illustrations that interpret the requirements.

2.5 TERMINOLOGY AND DEFINITIONS

To assist users in the application of Design Standards, terminology and definitions are provided as a consolidated section located in chapters 4.0, and 5.0 of the Design Standards. These have been created to provide interpretation and clarity around the standard requirements in the course of project evaluations, design review and conformance.

2.6 RELATIONSHIP TO OTHER METROLINX DOCUMENTS

While the Design Standards place an emphasis on design and customer-facing elements, they are also intended to work with the GO Transit Design Requirements Manual (DRM) as an important reference tool for consultants, designers, and contractors.

The Design Standards apply to net new construction, retrofits, and state of good repair capital infrastructure programs. It should be noted that neither the Design Requirements Manual nor the Design Standards take precedent over one another. Both documents are mutually supportive, have equal weight and are designed to be applied to Metrolinx projects in a consistent manner.

The Design Standards build on and make reference to a suite of resources that are made available to consultants. These documents shall be read in conjunction with the Design Standards:

- GO Transit Rail Station Access Plan
- GO Transit Brand Guidelines
- GO Transit Static Sign Catalogue
- Mobility Hub Guidelines for the Greater Toronto and Hamilton Area
- Metrolinx Sustainability Strategy
- GTHA Wayfinding Design Reference

2.7 LEGISLATIVE, CODES AND REGULATORY

It is required that consultants design in accordance with all applicable standards, regulations, and codes to the approval of all authorities having jurisdiction.

Where design alternatives will provide substantially equivalent or where conflicts exist between the requirements of this Standard and standards or legislation enacted by the federal or provincial governments, the most stringent requirements shall apply.

Consultants for specific projects shall define codes as applicable and list them in the contract tender documents.

Other codes and regulations, imperative to the business

that must be adhered to include but not limited to:

- Ontarians with Disabilities Act
- Railway Safety Act (RSA)
- Transport Canada Grade Crossing Regulations
- Canadian Road/Railway Grade Crossing Detailed Safety Assessment Field Guide
- Transport Canada RTD-10 Technical Standards Manual; RTD-10 will govern requirements for active warning system
- AREMA (American Railway Engineering and Maintenance of Way Association)Communications and Signals Manual
- Existing Railway Corridors Standard and Specifications for Crossing Warning
- Manual of Uniform Traffic Control Devices for Canada
- Ontario Provincial Standards
- Ontario Building Code
- Occupational Safety and Health Act (OSHA)
- National Fire Protection Association
- Canadian Standards Association (CSA)
- International Standards Organization (ISO)

3 DESIGN AT METROLINX

THIS SECTION COVERS:

- Embedding Design in Transportation Planning and Infrastructure
- Metrolinx Design Objectives
- Transit Branding and Design Identity

3.1 EMBEDDING DESIGN IN TRANSPORTATION PLANNING AND INFRASTRUCTURE

The Regional Transportation Plan identifies that design excellence is routinely integrated in concepts in architecture, urban design and landscape architecture in the development of Metrolinx transit infrastructure projects (e.g., the Eglinton Crosstown LRT). Design excellence transcends aesthetic considerations, knitting the built fabric of transit facilities together to create a seamless transit experience for customers. It incorporates everything from universal design, harmonized wayfinding and signage to fleet interiors that help travellers navigate and find their way through the system. Design excellence also extends itself through a projects lifecycle from planning to design, project execution, operations and maintenance. This includes ensuring that projects fully consider all aspects, including functional, sustainable, environmental and cost-effective means of delivery.

3.2 METROLINX DESIGN OBJECTIVES

Metrolinx understands the value of good design across all its capital projects. We define design excellence as the interplay of functionality, sustainability, resiliency, beauty and value.

Good design supports corporate objectives regarding schedule, budget, durable/adaptable construction, and minimized life cycle costs. It inspires people and communities and help build pride of place.

Design Excellence Diagram

Well-designed public spaces and facilities help customers easily navigate an increasingly complex multi-modal network with an expanding number of mobility choices. Good design can create a more comfortable and enjoyable travel experience, improve passenger flow, and build loyal ridership. The Metrolinx brand identity embodies all of these and the promise of a consistent, high-quality, highly functional transit experience.

The objective of the Design team is to develop and implement a consistent approach to customer experience across transit modes and delivery agents to support a seamless and safe journey.

THE PRINCIPLES OF DESIGN EXCELLENCE

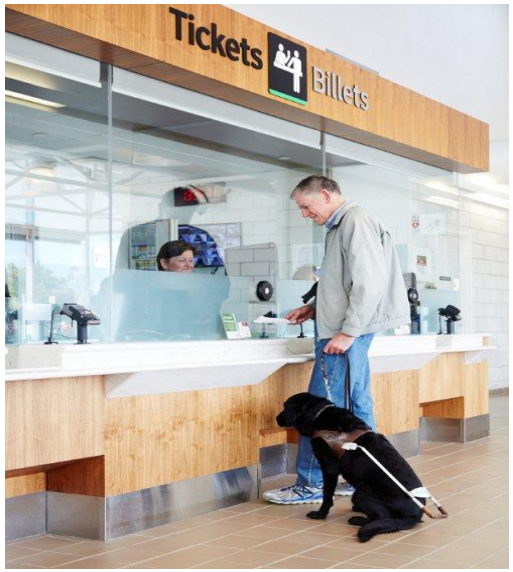
Achieving an excellent, user-focused design is intrinsically linked to how all transit should be planned, designed, and managed. While the architecture, landscape, and urban design expression of both GO Expansion and Rapid Transit projects typically represent a small component of the overall construction, engineering, and logistics costs, they carry a disproportionate weight of importance because it is the tangible expression and touch point that customers and the community will engage with daily as they move throughout the GGH region. At Metrolinx, excellence in design is about ensuring that every capital dollar spent contributes towards achieving multiple objectives and maximizing the customer experience benefits.

The Five Principles that underpin Metrolinx's overall approach to Design Excellence are:

- Design for all users;
- Design for ease of maintenance and operations;
- Design that is consistent and intuitive;
- Design that responds to contextual, local and future conditions; and
- Design that is practical and enduring.

a) Design for all users

Metrolinx facilities serve a variety of users with diverse needs. Considering the widest range and varied needs of customers is an integral part of the design process and ensures a responsive design that is welcoming to customers of all ages and abilities. The application of the highest standards of universal design to the passenger experience will bring consistency to the user experience, increase safety of all our customers, promote ease of movement for all, and meet the needs of the widest variety and number of customers throughout their life span.



Universal Design ensures highest level of customer satisfaction for all users

b) Design for ease of maintenance and operations

Station design must reflect the heavy everyday use of a busy transit system, with materials that are robust, sustainable, enduring, and easy to maintain. Consideration of life-cycle costs, including an emphasis on minimizing energy use, and ease of operations and maintenance is a Metrolinx priority and must be demonstrated in all aspects of specifications, design and detailing. Modular systems and standardized dimensions for construction offer flexibility and ease of installation and replacement. Easy access for maintenance of systems shall be ensured.

c) Design that is consistent and intuitive

The Metrolinx design identity begins with a consistent, legible, high-quality experience for passengers. The look and feel of the GO infrastructure shall be consistent across all customer and public-facing elements. Our brand expresses an understated, elegant and easy-going identity as part of an overall high-functioning transit experience. The specific arrangement and application of consistent design components, or the kit-of-parts, allows for variability in response to a particular site, within the expression of the Metrolinx and GO brand.

GO ridership is expected to grow exponentially will require a robust transit system.

A key objective is to promote uncluttered design to reduce visual distractions. Image from Rotterdam Central Station.

d) Design that responds to contextual, local and future conditions

Good design recognizes what is special about a place. While design elements of consistency are required across the system, stations should also draw inspiration from the unique history and context of the site including unique landscapes, or heritage. Embedded into the station and site design should also be accommodation for future change including changing climatic conditions, development opportunities, socio-economics, customer profiles and behavior and the evolution of mobility service delivery.

e) Design that is practical and enduring

Station design must reflect the heavy everyday use of a busy transit system, with the application of sustainable, recyclable, robust and high-quality materials that will ensure a quality customer experience and protect for operability even through extreme weather events. Creating a sense of order, comfort and security is important in ensuring a straightforward and enjoyable customer experience.

Aurora Yonge Rail Bridge

UP Express at Union Station utilizes robust and durable materials in sophisticated ways that create practical and enduring designs.

3.3 TRANSIT BRANDING AND DESIGN IDENTITY

3.3.1 The Metrolinx Brand

Metrolinx is recognized as the regional transit agency for the GGH. The corporate vision is getting you there better, faster, safer. The experience of effortless travel is what we strive to bring to our customers. We believe that world class transit creates stronger, more prosperous communities. Our promise is to give people the ability to live, work and play where they choose.

3.3.2 Relevance to Public Facing Transit Infrastructure

Design excellence ensures that all capital investments in Metrolinx transit projects strive to deliver on a regionally consistent, seamless and high quality customer experience. This includes a broad spectrum of considerations spanning all facets of site design and architecture, landscape architecture, interior design, industrial design, universal design, and wayfinding.

The Metrolinx design identity begins with a consistent, legible, high-quality experience for passengers. The business identity and brand personality of the various Metrolinx service providers (GO Transit, ECLRT, UP Express, PRESTO) are expressed through the customer journey and select infrastructure elements. These shall be consistent across all customer and public-facing environments. The brand expresses an understated, elegant, and easy-going identity as part of an overall high-functioning transit experience. The specific arrangement and application of consistent design components, or the kit-of-parts, allows for variability in response to a particular site, all within the expression of each of the service provider brands.

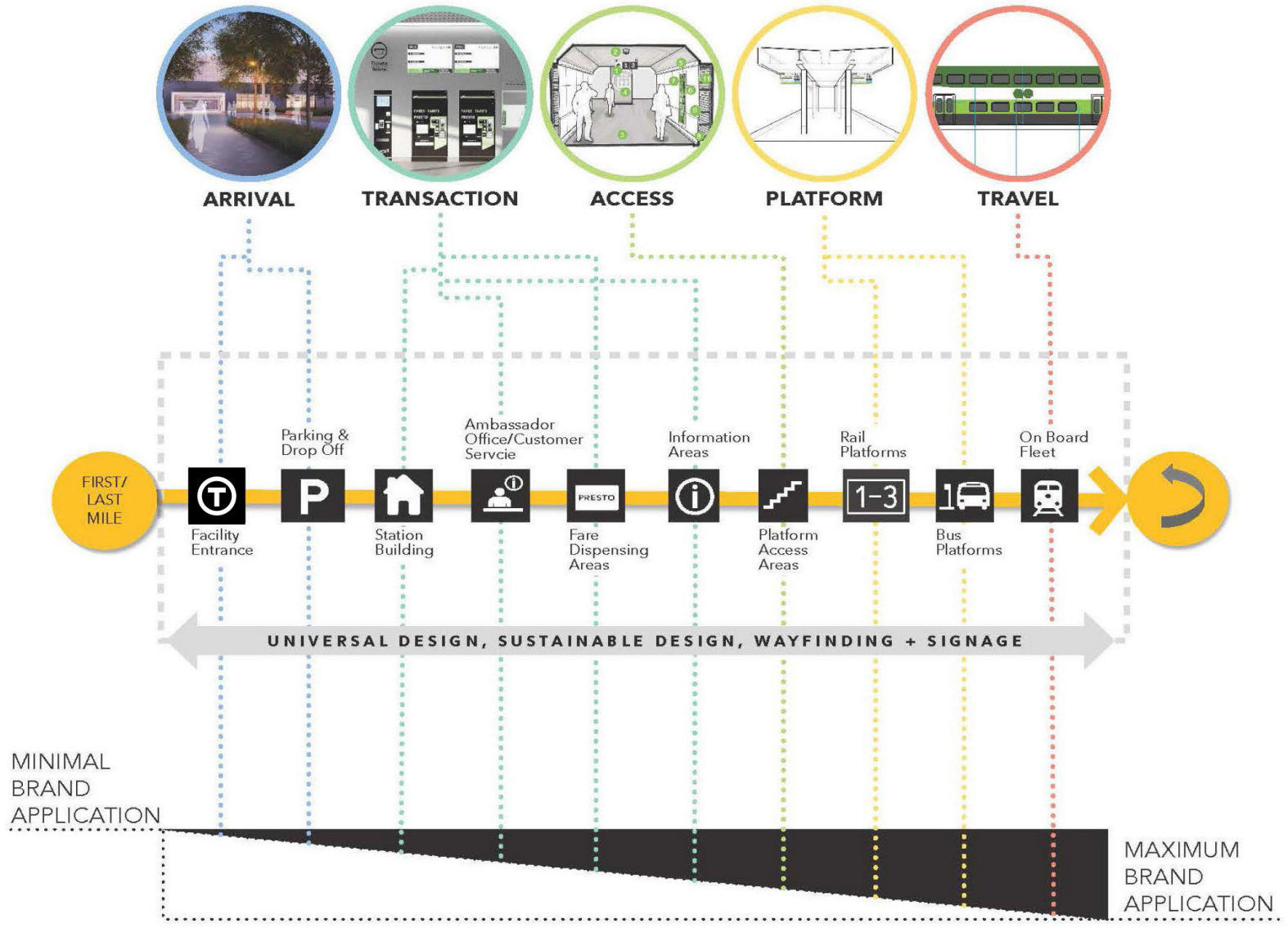
3.3.3 Key Elements of Continuity for GO Transit

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

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

1. Arrival – the customer arrives and identifies the station;
2. Transaction – the customer purchases the fare;
3. Access – the customer proceeds to the platform;
4. Platform – the customer waits for the train/bus;
5. Travel – the customer boards the train/bus to get to their final destination; and
6. Departure – the customer departs through a station or stop;

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



The Design division reflects the needs of the customer journey and the customer experience supporting a seamless and consistent regional experience. The customer journey informs the design standards, project briefs and output specifications

3.4 SAFETY BY DESIGN

Applying methods to minimize occupational hazards early in the design process, with an emphasis on optimizing health and safety throughout the life cycle of a project will be critical in the design and delivery of Metrolinx capital infrastructure. Safety by Design is a concept that encourages construction and/or product designers to identify and mitigate health and safety risks to the greatest extent during the design development phase. Along with quality, programme and cost, safety must be factored into all considerations as it increases the cost-effectiveness of enhancements to occupational safety and health.

As an added layer of safety, Crime Prevention Through Environmental Design (CPTED), also known as defensible space, is defined as a multi-disciplinary approach for reducing crime through urban and environmental design and the management and use of built environments. CPTED strategies aim to reduce victimization, deter offender decisions that precede criminal acts, and build a sense of community among inhabitants so they can gain territorial control of areas and reduce opportunities for crime and fear of crime.

Application of CPTED principles along main streets and TOD centers. Image from Metrolinx Mobility Hub Guidelines.

3.5 DESIGN REVIEW AT METROLINX

3.5.1 Integrated Design Review Process (IDRP)

Background

A robust, collaborative and integrated decision-making process has been developed across subject matter expert teams involved in facilities, to ensure increased alignment and accountability of decision-making. The common objective is to streamline the process and to provide a consistent, quality end-to-end customer experience with long term efficiencies in stations and facilities operations and maintenance, and to support the goal of retaining and increasing ridership and revenue.

3.5.2 Metrolinx Design Review Panel (MDRP)

Initiated and mandated by its Board of Directors, Metrolinx continues to pursue a multi-pronged strategy to integrate design excellence into its capital investments. The goal is to build on the tradition of highly competent technical and functional design by adding to the scope areas of architecture, urban design, and landscape architecture. The approach includes but is not limited to:

- Ensuring appropriate design guidelines are in place to direct consultants, staff, and decision-makers;
- Expansion of the corporate design review process to accommodate the increasing volume of projects; and
- Enlisting design review panelists with a high standard of professional experience in the design of the public realm.

The Metrolinx Design Review Panel (MDRP or Panel) reviews projects and provides recommendations on architecture, urban design and landscape architecture for select Metrolinx capital projects. The purpose of the MDRP is to provide meaningful feedback and direction at key junctures in the design process for Metrolinx projects that meet the following criteria:

- Public facing projects with a construction budget of $10 million or more;
- Projects associated with mobility hubs; and
- Projects being delivered under the Alternative Financing & Procurement (AFP) build program (e.g. GO Transit Expansion, Light Rail Transit, and Bus Rapid Transit).

The MDRP's mandate is to address quality, consistency and integration of all facets of design excellence across Metrolinx capital programs to deliver an elevated and equitable customer experience as well as a legible identity across that spans across the regional transportation network.

Further information on the process and requirements for submissions and presentations can be obtained by contacting the Design Division at Metrolinx.

3.5.3 Project Design Review

Project design review is required at various points throughout the Project Lifecycle. All project design reviews include a formal submissions as well as a minimum of one design presentation meeting. Mandatory project review points include:

a) Project reviews are mandatory, however they shall not relieve the project delivery team and any contracted third party (Technical Advisor, Vendor, Developer, Project Co., Contractor, etc.) from the requirement to comply with these Design Standards as well as all other relevant codes and standards.

b) Any deviations required to these Standards need to be formally requested through the Metrolinx Deviation Process. In no case shall a project review be taken as an approval for any deviation from the Design Standards in absence of a formal deviation request and process.

Metrolinx shall not be responsible for any missed items during project reviews, nor for site dimensions, means and methods of fabrication or construction, staging or constructibility.

4 TERMINOLOGY

TERM	DEFINITION
Access Aisle	Marked transfer space to the side and rear of a car parking space, to allow the safe transfer of passengers to and from vehicles. Provided for car parking spaces designated for customers with disabilities.
Access Reports	Documentation of the provisions for a project, in relation to accessibility. Used to facilitate the approvals process.
Accessibility	In transportation terms, accessibility refers to the ease of reaching destinations for users regardless of personal circumstances. See also Universal Design.
Accessible Path of Travel	The safest and most convenient path for customers with disabilities, providing a continuous unobstructed external and internal path connecting all accessible features and facilities to enable personal barrier free mobility. Not that this is not necessarily always the shortest path – although for inclusion purposes, the travel distance should be as close to alternatives as possible.
Accessible seating	A clear floor area in the seating area where a person using a mobility device can wait.
Accessible Station	A station is accessible when persons with disabilities can safely access the same infrastructure and services as any other customer with a similar level of convenience and customer experience in conformance with Metrolinx Universal Design Standards.
Alcoves	A recess in the wall of a room or space.
Alighting	Exit a train, bus, or other form of transportation.
Amenity	Feature or service which provide convenience and comfort to customers, examples of which include washrooms, parking, CCTV, digital signage, etc.
Area of Refuge	A safe holding space for customers to wait in an emergency if they are unable to evacuate independently. Firefighters are made aware of the existence of an area of refuge via the fire safety plan and they will assist those located there to safely evacuate the building.
Audit Reports	Documentation of an audit, highlighting remedial actions in order of priority.
Audits	Review of existing buildings / facilities / environments to highlight non-compliances and identify ways of improving accessibility and universal design.

TERM	DEFINITION
Automatic Teller Machines (ATM)	An unattended cash machine that dispenses money when a personal coded card is used.
Baby Changing	Rooms containing a bench, allowing parents and carers to change and attend to their children.
Barrier-free	See definition of Accessibility
Bikeways	Paths designated for use by cyclists. Note that whilst we use 'bicycle' and 'bikeway', these routes apply to both two-wheel and other kinds of cycles, including adapted cycles, tandems and electric cycles.
Boarding	Entering a train, bus, or other form of transportation.
Braille	A written language for blind and partially sighted persons. Characters are represented by patterns of raised dots that are felt with the fingertips.
Bus Stop	A place on a bus route where buses can stop to pick-up or Drop-off passengers.
Bus Stop Shelter	A place beside the bus stop, giving temporary protection from weather, whilst customers wait for the bus to arrive.
Cane detectable	Low level vertical surface that can be used by customers who are blind and have low vision who are using canes, to assist with navigation and hazard warning.
Clear Floor Space	Space without obstructions, allowing circulation and maneuvering.
Clear Opening Width	Unobstructed width provided by a door when it opens. This width is measured from the furthest protrusion (normally the door hardware) and the door stop.
Closed Circuit Television (CCTV)	A system that sends television signals to a controlled center, primarily used to prevent crime.
Cognitive Disability	A person with a learning or comprehension requirement. This includes customers with dyslexia, autism and dysphasia.
Contrast	Tonal differentiation between surfaces to assist navigation for partially sighted persons.
Controlled Crossings	A signalized crossing operated by pedestrians via a control button. This activates the traffic signals and in turn instructs motorists for a period of time to allow pedestrians to cross the road.
Corridors	A long passage in a building from which doors lead into rooms.

TERM	DEFINITION
CP24	Canadian English language Category A specialty cable and satellite television
Cross slopes	Gradient across a footpath (perpendicular to the main line of travel) for drainage of surface water.
Crosswalks	An identified point at which pedestrians and cyclists are provided access across a road.
Crutch	A long stick with a crosspiece at the top, used as a support under the armpit by customers with restricted mobility / customers with disabilities.
Curb cut	Term to include both depressed curb and curb ramps.
Curb ramp	Provides step-free access between the pavement and road level, usually at crossings. Consists of one main panel and two flares.
Curbs	The edge between a pavement and a road, consisting of a line of curbstones.
Customer Journey	The full stages of experience that a GO customer undertakes when travelling from the start of their journey to the end.
Customers with restricted mobility	Customers with mobility requirements (not wheelchair users) – e.g. customers who use walking aids.
Delineation	Indication of priority zones for different users, by means of a visual and / or tactile marking.
Depressed curb	A continuous length of curb along a pedestrian route that is lowered to the level of an adjacent roadway. Such curb may be located at vehicle loading/unloading areas or at intersections.
Destination dispatch elevators	Passengers enter the elevator lobby area and select a floor. Based upon the floor they're visiting, they're assigned an elevator car. Considered to be a more efficient system of moving customers, instead of having control buttons within elevator cars.
Digital Signage	Changeable electronic message sign, providing real-time information to passengers (e.g., at bus stops).
Disability	A physical, cognitive, or mental condition that limits a person's movements, senses, or activities.
Distraction Patterns	Visible markings on glazed surfaces. Required to highlight the presence of glazing to partially sighted persons.
Door Closers	A mechanical device that closes a door after someone opens it.
Door Hardware	Door furniture or door hardware refers to any of the items that are attached to a door to enhance its functionality or appearance. This includes door handles and pulls / pushes bars.

TERM	DEFINITION
Door Nib	Clear space to the side of the door on the leading edge (latch side), to allow access to the door hardware.
Door Spring Hinges	Spring hinges return the door to the closed position by means of internal springs.
Double Doors	Two doors of equal width that meet in the middle of the door frame when closed.
Drainage Gratings	Slots in the ground to allow surface water to drain from the walking surface.
Drop-off and Pick-up	Identified areas where vehicles are permitted to stop to Drop-off or to pick-up passengers.
Emergency Call Systems	Alarm, provided within wheelchair accessible toilets, to allow users to call for assistance in an emergency.
Evacuation	Exiting in the case of an emergency – e.g., fire.
Fare Gate	A device that limits access to a space until a fare is paid. A variety of barriers are possible, including turnstiles, swing gates and retractable flaps."
Fare Machines	Passenger operated machines that dispense tickets for travel.
Fareline	The line dividing the fare paid and unpaid areas. In a gated system, this is where the fare gates are installed.
Flares	Sloping side panel of a cut curb.
Forward Approach	Direct access to an amenity or service with the user facing the direction of travel.
Forward Reach	Direct stretch of an arm to touch or grasp something, with the user facing item in question.
GO Master Elevator Performance Specification	Elevator Specification (R04) as found in the GO Standard Drawings and Specifications
GO Standard Drawings and Specifications	A reference tool for consultants, designers, and contractors. The Standard Drawings and Specifications apply to net new construction, retrofits, and state of good repair capital infrastructure programs.
GO Standard Drawings for the Elevator Cab	Elevator Panel Technical Drawing as found in GO Standard Drawings and Specifications
GO Station	The overall physical entity that allows customers to access the GO Network.
GO Station Categorization Framework	Document that designates each line station on the GO Network based on ridership volume and surrounding land-use density.
Grab Bar / Rail	A bar attached to a wall to provide a support for customers who require it.

TERM	DEFINITION
Gradients	An incline along an access route.
Grey Scale	A measure of tonal contrast, which related to the LRV percentages.
Handrails	A rail fixed to posts or a wall to provide support and guidance. Usually provided for stairs, ramps, and elevators.
Hazard	A danger or risk to health or safety.
Horizontal Circulation	Movement in the horizontal plane.
Illuminance	The amount of luminous flux per unit area.
Induction Loop System	Aid for hearing aid users. A loop of cable which generates a magnetic field, picked up by the hearing aid.
Infrastructure	The physical and interconnecting structures supporting the operation of the transportation system. E.g., streets and roads connecting to a transportation facility.
Interchange	The connections and links between different modes of transportation.
International Symbol for Accessibility	A blue square overlaid in white with an image of a person using a wheelchair. Used on signage to indicate the presence of accessible facilities and services.
International Symbol of TTY	A white square overlaid in black with an image of a text telephone. Used on signage to indicate the presence of text telephones.
Islands	A raised area in the middle of a road that provides a safe place for pedestrians to stand and marks a division between two lanes of vehicular traffic.
Joints	Point at which two paving slabs are joined.
Knee Clearance	Recess beneath a surface to accommodate a person's knees. E.g., under a work surface, to allow someone to pull in closer to the work surface.
Landing	Level area providing an opportunity for customers to wait, rest or prepare for their journey. Usually provided at entrances, elevators, stairs and ramps.
Leaf	The door panel is the main part of the door that opens and closes within a fixed frame.
Leaf-and-a-half	Two doors that meet in the middle of the door frame when closed, of unequal widths.
Light Reflectance Value (LRV)	LRV is a measurement of the amount of light reflected from a surface. It is measured by percentage. Pure white has a LRV of 100; pure black has a LRV of 0.
Lobbies	A room providing a space out of which other rooms or corridors lead

TERM	DEFINITION
Long Cane	A cane to provide safety and orientation information to blind and partially sighted persons.
Low-floor Vehicles	A vehicle that has no steps between one or more entrances and part or the entire passenger car.
Lux	The unit of illuminance, equal to one lumen per square meter.
Management	The persons responsible for and controlling the service or facility.
Means of Egress	Includes exits and access to exits and means a continuous path of travel provided for the escape of persons from any point in a building or in a contained open space to, a separate building, an open public thoroughfare, or an exterior open space that is protected from fire exposure from the building and that has access to an open public thoroughfare.
Metrolinx Design Standards	Documents prepared by the Design Division at Metrolinx to set requirements around the design of architecture, landscape, urban design, interior design, wayfinding, and sustainability in support of customer experience, greater operational efficiency and reduced capital costs.
Modules	A strategy for the design of Station Buildings using scalability to address levels of ridership served and services provided.
Motion Sensors	Devices to detect movement by measuring change in speed or vector of an object or objects in the field of view.
Newton (N)	The unit of force, equal to the force that produces an acceleration of one meter per second per second on a mass of one kilogram.
Nosings	The edge of a step, highlighted on both the vertical and horizontal planes.
Open Risers	Stairs designed with open vertical surfaces between treads.
Opening Forces	Effort required accessing a required item – e.g., doors, buttons, and controls.
Operations and Maintenance Requirements	Passenger Operations Facility Maintenance Requirements as prepared by Station Services, Metrolinx
Overpasses	A bridge by which a road or railroad passes over another.
Parallel Approach	Access to a facility or service with the user perpendicular to the direction of travel.
Passenger assistance Intercoms (PAI)	A Two Way communication device which assists customers with inquiries at rail station site to provide an enhanced customer service amenity at our platforms, elevators, parking structures and universal washrooms.

TERM	DEFINITION
Passengers with Restricted Mobility	This includes individuals with disabilities (including, but not exclusive to, customers who use wheelchair or other mobility devices, customers who are blind and have low vision, customers who are deaf, hard of hearing or deafened, and customers who have learning disabilities such as dyslexia); the ageing population; customers who have temporary injuries; customers whose movement may be impaired or encumbered in any way i.e. pregnant women, customers with young children or customers with baggage; customers who are acting as assistants or carers; customers with service dogs.
Passing Places	Space for customers to pass one another (e.g., if moving in opposite directions).
Paving Slabs	A precast concrete paving unit.
Pedestrian Routes	Paths designated for use by pedestrians.
Perch Seating	A seat that allows someone to rest in a standing position.
Personal Emergency Evacuation Plans (PEEPs)	An individual plan tailored to the needs of a customer with disabilities. Defines the procedure for evacuation, including specific routes and any requirements for assistance.
Raised Character / Indication	Tactile information (embossed) to allow blind and partially sighted persons to read using the tips of their fingers.
Raised Vehicle Boarding Areas	Raised areas on a pavement to assist step-free access into a vehicle.
Resting Places	Spaces for customers to rest along their journey, especially over longer routes and walking distances.
Retail	Units to allow third-parties the sale of goods to the public.
Revolving Doors	Doors with partitions that turn about a central axis.
Revolving Gates	Gates with partitions that turn about a central axis.
Risers	Vertical element of a step.
Secondary Platform Access	An location, other than the Station Building, that provides access to rail platform(s) at a GO Station
Self-serve Fare Strategy	
Service Animal	An animal trained to aid or assist customers with disabilities in daily activities.
Shading	See Weather Protection.

TERM	DEFINITION
Side Reach	Stretch of an arm to touch or grasp something, with the user parallel to the item in question.
Slip Resistance	Materials with appropriate characteristics to prevent slippage or skidding.
Slopes	Gradients that are shallower than 1:20, therefore not considered to be ramps.
Station Building	The main public-facing facility on a Station site.
Street Furniture	Objects and pieces of equipment installed on streets and roads.
Tactile Warning Surface Indicators (TWSI)	Detectable underfoot, paving to assist navigation for blind and partially sighted persons.
Tapping Rail	Low level upstand, detectable by a long cane, indicating edge of routes or presence of hazards to persons who are blind and have low vision.
Temporary Street Works	Construction works on streets that require temporary management and warning, to ensure that pedestrians are made aware of the obstruction and to ensure that access is not disrupted.
Ticket Counters	Managed area where tickets can be purchased from a member of staff.
Ticket Machines	See Fare Machine.
Tip-up Seat	Seats that fold up when not in use.
Toe Clearance	Recess beneath a surface to accommodate a wheelchair user's toes and foot plate.
Treads	Horizontal element of a step.
Turning Space	Space required for a wheelchair user to turn through 360 degrees.
Uncontrolled Crossing	A non-signalized crossing. This is reliant on visual communication between a pedestrian and motorist.
Underpasses	A road or pedestrian tunnel passing under another road or a railroad.
Universal Design	Design that is suitable for all users. See also Accessibility.
User Groups	Groups consisting of the end user, who should be consulted as part of the design development, to ensure that the design is fit for purpose.
Vehicle Ramps	Ramps integrated with a vehicle, which can be employed to provide step-free access to and from the vehicle, when required by an individual.

TERM	DEFINITION
Vertical Circulation	Movement in the vertical plane.
Vertical Clearance	Headroom, clear of any obstructions and protrusions.
Vestibules	Series of two or more doors to separate space, usually for privacy or security reasons.
Vision Panels	Panes of glass within a door, to allow customers to see if someone is approaching from the opposite direction. Aim to avoid collision and injury.
Walking Frame	A tool for providing support to maintain balance or stability when walking.
Walking Stick	A stick used for support when walking.
Wash Hand Basin	A basin for washing hands.
Weather Protection	Shading from the natural elements. This may include purpose-built canopies, use of overhanging upper floors of a building, trees and vegetation.

5 ABBREVIATIONS

TERM	ABBREVIATION
ATM	Automatic Teller Machines.
AVM	Added Value Machine
BOH	Back of House
CCTV	Closed Circuit Television
CPTED	Crime Prevention Through Environmental Design
DRM	Design Requirements Manual
DWA	Designated Waiting Area
ENT	Electrical Non-metallic Tubing
EQ	Equal
FD	Floor Drain
FFL	Finish Floor Level
FOH	Front of House
GL	Glass
HVAC	Heating Ventilation and Air Conditioning
LED	Light Emitting Diode
LRV	Light Reflectance Value
MX	Metrolinx
N	Newton
O.C.	On Centre
OBC	Ontario Building Code
PAI	Passenger Assistance Intercom
PEEP	Personal Emergency Evacuation Plans
PUDO	Pick-Up and Drop-Off
PV	Photovoltaic
PVC	Polyvinyl Chloride
SFTP	Self-Fare Transaction Processor
SPOS	Station Point of Sale
SRI	Solar Reflectance Index
SSG	Structural Silicone Glazing
T/O	Top of
TGS	Toronto Green Standards (City of Toronto)
TVM	Ticket Vending Machine
TWSI	Tactile Warning Surface Indicators
U/S	Underside
WC	Washroom
WMA	Wheeled Mobility Aid

APPENDICES

THIS SECTION COVERS:

APPENDIX A: CONSULTANT QUALIFICATIONS AND EXPERIENCE

PURPOSE

a) The consultant qualification requirements below have been developed to assist project delivery teams in procuring the right consultants, to ensure consistent, elevated customer experience, through quality of design and construction of customer-facing infrastructure.

b) These consultant qualification requirements are agnostic of delivery type and cover the Design Division's main interests in the subject areas of:

1. Architectural Design
2. Urban Design
3. Landscape Design
4. Universal Design
5. Sustainable Design
6. Interior Design
7. Industrial Design
8. Signage & Wayfinding Design

APPLICABILITY - WHEN TO USE

c) (These consultant qualification requirements shall be used for all design and/or construction activities that include:

1. An off-corridor infrastructure component; and/or
2. A customer-facing infrastructure component, both on-corridor and off-corridor; and/or
3. A landscape, site planning or urban design component, both on-corridor and off-corridor.

d) These requirements shall be used for all project life cycle phases that are post initial business case (IBC), up to and including commissioning and handover.

1. Exclusion: Planning activities up to IBC are excluded from these requirements. Post-construction activities, unless of significant scope, are also excluded.

e) These requirements shall apply to all delivery methodologies, including third party deliveries, market-driven strategy deliveries, joint developments, alternate finance and procurement (AFP), construction management (CM), design build (DB), design bid build (DBB), and any other procurement types that involve design and/or construction of customer facing

infrastructure.

METHODOLOGY - HOW TO USE:

f) Once project scope is identified, contact the Design Division for agreement on applicable consultant qualification requirements. Refer also to Governance section for further detail.

g) After required positions are decided, the project delivery teams, and/or the teams responsible for third party negotiations shall embed consultant qualification requirements into respective procurements - refer to Applicability - When to use section for applicable procurement types.

h) Procurement evaluation criteria shall be associated with consultant qualification requirements. Evaluation criteria and evaluation details, including who evaluates and at what stage, shall be agreed upon with the Design Division in writing.

GOVERNANCE:

i) Decisions related to Key Personnel, Other Personnel and Additional Other Personnel requirements shall be made by Subject Matter Experts (SMEs) and, in the case of the positions listed below, by the Design Division. Contact the Design Division for further detail.

1. As a general guideline, applicability of the roles and requirements shall be evaluated by the Design Division against multiple criteria including consideration of project scope, project budget, extent and importance of customer-facing infrastructure, complexity of intervention, and public sensitivity of project;
2. Generally, Key Personnel and Other Personnel roles, or a selection thereof, shall apply to all contract types; and
3. Generally, Additional Other Personnel Positions shall apply to contract types that require the establishment of hourly rates (such as emergent contracts or vendors of record). This list is not exhaustive and is being provided as guidance only. Other positions may be required. The Design Division can assist in providing a finer granularity and qualification requirements, as relevant to the specific project.

j) (Project delivery teams and other negotiators shall contact the Design Division early in the procurement process to ensure agreement on a complete list of consultant requirements.

k) Unless agreed in writing ahead of time with the Design Division, evaluation of consultant qualifications for the positions listed within this document shall include the Design Division, both at procurement stage and/or later.

KEY PERSONNEL POSITIONS:

POSITION – LEAD DESIGN ARCHITECT

l) Years of Experience: 15;

m) Professional designation(s): OAA (Member, Ontario Association of Architects) or eligible for temporary license; and

n) Required qualifications and experience:

1. Demonstrated experience in design and construction of public buildings, with three design award-winning constructed architectural projects, including international examples, that are both relevant and similar in scope and complexity to the project identified in this Scope of Work, and that illustrate a design that integrates functional and customer facing elements;

2. Demonstrated experience in playing a leadership role (e.g. design principal, lead designer, or a substantial contributor to the project design) in at least one of the above award-winning constructed projects;

3. Demonstrated experience in design and construction of transit infrastructure or transit network is an asset;

4. Demonstrated experience in design and construction of pedestrian bridges and tunnels is an asset;

5. Relevant design awards include those awards which are peer reviewed by design professionals and awarded competitively by relevant design related organizations including but not limited to:

a) Architecture, Landscape Architecture, Industrial Design and Interior Design professional associations (Federal - RAIC (Royal Architectural Institute of Canada), CSLA (Canadian Society of Landscape Architects); Provincial – OAA (Ontario Association of Architects), OALA (Ontario Association of Landscape Architects), AIBC (Architectural Institute of British Columnbia), AAA (Alberta Association of Architects); International – AIA (American Institute of Architects), RIBA (Royal Institute of British Architects), ASLA (American Society of Landscape Architects), IFLA (International Federation of Landscape Architects); Interior Design – ARIDO (Association of Registered

Interior Designers of Ontario);

b) Heritage Design Awards for Architecture, and Industrial Design;

c) Design Publications (Azure AZ Awards, Canadian Architect Awards of Excellence, MARK, Details, Wallpaper, etc.);

d) Design Organizations (CCA – Canadian Center for Architecture, Design Exchange – DX Awards, Pritzker, etc.);

e) Government and regulatory bodies (Municipal urban design and architecture awards, Governor General's awards and medals);

f) Design Competitions (project specific);

g) Notes:

   1) Awards from external disciplines and trades, such as those from engineering or construction organizations are not considered relevant design awards;

   2) Awards from manufacturing and supplier organizations, such as those awarded by the Canadian Concrete Masonry Producers Association or the Canadian Wood Council are not considered relevant design awards;

   3) Awards from facility-specific organizations or special interest groups such as the International Parking Institutes Awards of Excellence or APTA – American Public Transport Association are not considered relevant design awards;

   4) Awards from manufacturing and supplier organizations, external disciplines and trades, such as those from engineering or construction organizations are not considered relevant design awards;

2. Demonstrated experience designing buildings that are award-winning, sustainable, durable, cost-effective, respect heritage, are integrated into their surroundings, sensitive to the local context, and lead to satisfied clients and users;

3. Demonstrated experience in playing a leadership role in community/municipal stakeholder engagement:

   i. Provide relevant examples of community/ municipal stakeholder engagement processes that led to successful outcomes in terms of key project objectives;

4. Demonstrated experience working with public sector agencies and institutions is an asset;

5. Other demonstrated design experience including architectural or urban design publications;

experience on design review panels, competition juries, industry panels, is an asset;

6. Project Examples demonstrate projects undertaken shall be within the past 10 years. The design portfolio shall include a short design narrative highlighting the design objectives, design process and approach, response to site and context, design response to building program or brief, project design challenges and how they were met, unique design solutions and key features, approach to hierarchy and sequence of public and private space, and overall project significance; and

7. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:

   i. The Lead Design Architect shall be accountable for the comprehensive design of all buildings, customer facing and staff-facing infrastructure elements as well as the site design of the Project, to final commissioning and handover;

   i. Note: The Lead Design Architect shall remain in the role throughout the entire Project.

POSITION – LEAD PROJECT ARCHITECT

o) Years of Experience: 15;

p) Professional designation(s): OAA (Member, Ontario Association of Architects); and

q) Required qualifications and experience:

1. Demonstrated experience in design and construction of public infrastructure, with three design award-winning constructed architectural projects, including international examples, that are both relevant and similar in scope and complexity to the project identified in this Scope of Work, and that illustrate a design that integrates functional and customer facing elements;

   i. Demonstrated experience in playing a leadership role as lead project architect in at least five projects, including the three projects listed above;

   i. Comparable projects to the Scope of Work in the range of CAD $50M or greater in construction costs;

   i. Demonstrated experience in design and construction of transit infrastructure, transit network, pedestrian bridges and tunnels and systems design is an asset;

2. Demonstrated experience designing a critical or material portion of the project including successfully producing required designs that integrate design excellence with the technical, mechanical, customer facing and site design and site integration requirements;

3. Demonstrated experience with various delivery methods and construction contracts;

4. Demonstrated experience designing buildings that are award-winning, sustainable, durable, cost-effective, respect heritage, are integrated into their surroundings, and successfully meet users' needs;
5. Demonstrated experience in community/municipal stakeholder engagement;
6. Demonstrated experience working with public sector agencies and institutions an asset;
7. Other demonstrated design experience including architectural or urban design awards; publications; experience on design review panels, competition juries, industry panels, is an asset;
8. Demonstrated experience in project management; and
9. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:
    a) The Lead Project Architect shall be accountable for implementation of design on the Project, including interdisciplinary coordination on buildings, as well as all customer facing and staff-facing infrastructure; and
    b) The Lead Project Architect shall be accountable for the delivery of the design component through the entire Project, to final commissioning and handover to Metrolinx;
    c) Note: The Lead Project Architect shall remain in the role throughout the entire Project.

POSITION - LANDSCAPE ARCHITECT

a) Years of Experience: 10;

b) Professional designation(s): OALA (Member, Ontario Association of Landscape Architects); and

c) Required qualifications and experience:

1. Demonstrated experience in playing a leadership role (e.g. partner-in-charge, lead landscape designer, or a substantial contributor to the project design) in at least one design award-winning constructed landscape architecture and/or landscape design project that is both relevant and similar in scope and complexity to the project identified in the Scope of Work;
2. Demonstrated experience in developing design, performance specifications, and tender documentation for projects similar in scope and nature to the Scope of Work;
3. Demonstrated experience in design of landscapes that are award-winning, sustainable, durable, cost-effective, respect heritage, and lead to satisfied clients and users;
4. Demonstrated experience with sustainable landscape design, low impact development approaches, and storm water management;

5. Demonstrated experience with specification of low maintenance, drought tolerant and native species;
6. Demonstrated experience with implementing sustainability in parking lot design is considered an asset;
7. Demonstrated Experience working in brownfields (previously developed land with potential contamination);
8. Experience which demonstrates an advanced understanding of urban design principles and experience designing urban landscapes including but not limited to, plazas, streetscapes;
9. Demonstrated Experience, working with local Conservation Authorities;
10. Demonstrated experience in project management;
11. Other demonstrated design experience including landscape architecture or urban design awards; publications; experience on design review panels, competition juries, industry panels is an asset; and
12. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:
    a) The Landscape Architect shall be responsible for
    b) The landscape architecture and landscape design of the Project;
    c) Note: The Landscape Architect shall remain in the role throughout the entire Project.

POSITION - LEED AND SUSTAINABILITY CONSULTANT

a) Years of Experience: 10;

b) Professional designation(s): O.A.A (Member, Ontario Association of Architects) or P.Eng. (Professional Engineer) licensed in the province of Ontario, and LEED AP (LEED Accredited Professional); and

c) Required qualifications and experience:

1. Demonstrated experience related to the design and construction of environmentally sustainable facilities;
   i. Demonstrated experience with sustainable transit facilities is an asset;
2. Demonstrated experience with the provision of Whole Building Energy Simulation and Measurement and Verification, as defined by LEED;
3. Demonstrated experience as the prime sustainability and/or LEED consultant on a minimum of 25 commercial, institutional and/or industrial building Whole Building Energy Simulation engagements; provide project names and locations;
4. Demonstrated experience playing a significant role

in obtaining LEED Gold or better certification for at least two projects;

i. Provide project descriptions, including name, location, type of facility, year of accreditation, major sustainability features, LEED certification level and one photograph;

5. Demonstrated experience working with environmental product declarations and construction material lifecycle ;

6. Demonstratedexperienceontotallifecyclesustainability issues of concrete and cementitious materials, and other construction materials;

7. Demonstratedhandsonexperiencewiththeanalysisof HVAC systems, renewable technologies, building envelope and green mechanical systems;

8. Demonstrated experience with the Envision Sustainable Infrastructure Framework will be considered an asset; and

9. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:

   a) The LEED and Sustainability Consultant shall be responsible for LEED on the Project;

   b) Note: The LEED and Sustainability Consultant shall remain in the role throughout the entire Project.

POSITION – WAYFINDING DESIGN LEAD FOR STATIC AND DIGITAL INFORMATION

a) Years of Experience: 10; and

b) Required qualifications and experience:

   1. Demonstrated experience in playing a leadership role in at least three large-scale transportation, institutional or commercial projects delivering customer-focused information planning, but not limited to the following, for both digital and static signage:

      a) Movement and legibility assessment;

      b) Customer-focused information planning;

      c) Stakeholder consultation

      d) Information placement;

      e) Content planning and scheduling;

      f) Preparation of design briefs and art working oversight;

      g) Technical engineering for signage systems and housing details as per industry standards;

      h) Production-ready specifications; and

      i) Preparation of tender documents.

   2. Demonstrated experience in playing a leadership role in large-scale transportation projects is considered an asset;

3. Demonstrated experience preparing analytical reports and design briefs;
4. Demonstrated experience working with diverse stakeholders; and
    a) Demonstrated experience working with public sector agencies and institutions is considered an asset;
5. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:
    a) The Wayfinding Design Lead shall produce legibility and customer movement assessments, decision sequences, locations of wayfinding tools (including but not limited to signs, maps, digital screens, audio cues), static content and digital messaging schedules, and related accessibility and legibility recommendations; and
    b) The Wayfinding Design Lead shall be responsible for the design and implementation of static and digital signage for the Project;
    c) Note: The Wayfinding Design Lead shall remain in the role throughout the entire Project.

POSITION – HERITAGE ARCHITECT

a) Required for all Contracts/Projects with a Heritage scope/component;

b) Years of Experience: 10;

c) Professional designation(s): OAA (Member, Ontario Association of Architects) or eligible for temporary license;

d) Holds membership in good standing with The Canadian Association of Heritage Professionals; and

e) Required qualifications and experience:

1. Demonstrated experience in playing a leadership role (e.g. partner-in-charge, lead designer, or a substantial contributor to the design) in at least one design award-winning constructed architectural project that is similar in scope and nature to the project identified in the Scope of Work;
    a) Relevant design awards include those awards which are peer reviewed by design professionals and awarded competitively by relevant design related organizations including but not limited to:
        1) Architecture, Landscape Architecture, Industrial Design and Interior Design professional associations (Federal - RAIC (Royal Architectural Institute of Canada),

CSLA (Canadian Society of Landscape Architects); Provincial – OAA (Ontario Association of Architects), OALA (Ontario Association of Landscape Architects), AIBC (Architectural Institute of British Columnbia), AAA (Alberta Association of Architects); International – AIA (American Institute of Architects), RIBA (Royal Institute of British Architects), ASLA (American Society of Landscape Architects), IFLA (International Federation of Landscape Architects); Interior Design – ARIDO (Association of Registered Interior Designers of Ontario);

2) Heritage Design Awards for Architecture, and Industrial Design;

3) Design Publications (Azure AZ Awards, Canadian Architect Awards of Excellence, MARK, Details, Wallpaper, etc.);

4) Design Organizations (CCA – Canadian Center for Architecture, Design Exchange – DX Awards, Pritzker, etc.);

5) Government and regulatory bodies (Municipal urban design and architecture awards, Governor General's awards and medals);

6) Design Competitions (project specific).

7) Notes:

i) Awards from external disciplines and trades, such as those from engineering or construction organizations are not considered relevant design awards;

i) Awards from manufacturing and supplier organizations, such as those awarded by the Canadian Concrete Masonry Producers Association or the Canadian Wood Council are not considered relevant design awards;

i) Awards from facility-specific organizations or special interest groups such as the International Parking Institutes Awards of Excellence or APTA – American Public Transport Association are not considered relevant design awards;

2. Demonstrated experience in designing buildings that are award-winning, sustainable, durable, cost-effective, respect heritage, are integrated into their surroundings, and lead to satisfied clients and users;

3. Demonstrated experience working with heritage buildings and projects which demonstrate applicability of recognized heritage conservation principles and values, including the Standards and Guidelines for the Conservation of Historic Places in Canada;

4. Demonstrated experience working with public sector agencies and institutions is considered an asset;

5. Other demonstrated design experience including architectural or urban design awards; publications; experience on design review panels, competition juries, industry panels is considered an asset; and
6. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:
    g) The Heritage Architect shall be responsible for all heritage-related decisions on the Project;
    h) Note: The Heritage Architect shall remain in the role throughout the entire Project.

POSITION - INDUSTRIAL DESIGNER

a) Required for all Contracts/Projects with significant industrial design scope, including passenger amenities, ticketing devices, furniture, digital signage enclosures, other specific infrastructure elements, and fixtures and fitments;

b) Years of Experience: 10;

c) Professional designation(s): ACIDO (Member, Association of Chartered Industrial Designers of Ontario) or national or international equivalent; and

d) Required qualifications and experience:

1. Demonstrated experience playing a significant role in the design of at least one award-winning constructed industrial design projects similar in scope and nature to the projects identified in the Scope of Work;
2. Demonstrated experience in the following areas of work, including but not limited to: materials, public amenities, ticketing devices, furniture, digital signage enclosures, other specific infrastructure elements, and fixtures and fitments into the overall integration of architectural, interior, universal and sustainable, and urban design of the project;
3. Other demonstrated design experience including industrial design, architecture, or landscape architecture awards; publications; experience on design review panels, competition juries, industry panels is an asset; and
4. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:
    a) The Industrial Designer shall be responsible for the industrial design of the Project;
    b) Note: The Industrial Designer shall remain in the role throughout the entire Project.

POSITION – ENVISION SUSTAINABILITY SPECIALIST

a) Required for all Contracts/Projects with a significant Envision component;

b) Years of Experience: 10;

c) Professional designation(s): ENV SP (Envision Sustainability Professional); and

d) Required qualifications and experience:

1. Demonstrated experience in documentation and project coordination for a project verified by the Institute for Sustainable Infrastructure under the Envision Sustainability Rating System;
2. Experience as the lead ENV SP on a verified project will be considered an asset;
3. Experience in infrastructure planning and design;
4. Experience in consulting engineering; and
5. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:

    a) The Envision Sustainability Specialist shall be responsible for Envision on the Project;

    b) Note: The Envision Sustainability Specialist shall remain in the role throughout the relevant part of the Project.

POSITION - CLIMATE ADAPTATION AND RESILIENCE DESIGN SPECIALIST

a) Required for all Contracts/Projects with a significant climate adaptation and resiliency component;

b) Years of Experience: 10;

c) Professional designation(s): or P.Eng. (Professional Engineer) licensed in the province of Ontario, or equivalent; and

d) Required qualifications and experience:

1. Demonstrated experience with weather and climate data systems, networks and portals for application across the GTHA;
2. Demonstrated experience with climate data, including climate change projections and expertise in applying to infrastructure design;
3. Demonstrated experience identifying and assessing climate change risks and vulnerabilities for infrastructure from various climate parameters such as extreme temperatures, more intense rainfall events, more frequent ice storms, higher wind gusts, increased flooding, and more prolonged periods of drought;
4. Demonstrated experience in embedding relevant infrastructure standards to withstand current and

future climate extremes;

5. Demonstrated experience of national and international best practices for climate change adaptation and resilience in infrastructure design and construction;
6. Demonstrated experience with applying cost-benefit analysis to project components that provide/enhance resilience;
7. Experience related Advanced Public Private Partnerships ("P3") and Alternative Finance and Procurement ("AFP") and/or market driven strategy delivery models will be considered an asset, including demonstrated experience with in applying methods and processes to incorporate climate change language in design of infrastructure elements; and
8. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:
    a) The Climate Adaptation and Resilience Design Specialist shall be responsible for climate adaptation and resiliency of the Project;
    b) Note: The Climate Adaptation and Resilience Design Specialist shall remain in the role throughout the relevant part of the Project.

OTHER PERSONNEL POSITIONS:

POSITION – UNIVERSAL ACCESSIBILITY CONSULTANT

a) Years of Experience: 10

b) Professional designation(s): O.A.A (Member, Ontario Association of Architects); Architectural Technologist; and

c) Required qualifications and experience:

1. Demonstrated experience with the Accessibility for Ontarians with Disabilities Act (AODA) legislation, regulations and standards for compliance;
2. Demonstrated experience in best practices including CSA (Canadian Standards Association) and ISO (International Organization for Standardization) accessibility standards;
3. Demonstrated experience of emerging issues related to accessibility (incl. environmental, customer service);
4. Demonstrated experience in design and implementation of universal design standards exceeding AODA and Ontario Building Code (OBC);
    a) Demonstrated experience shall include but not limited to buildings and sites;
5. Demonstrated experience in consulting

engineering;

6. Demonstrated experience participating in and leading consultations on infrastructure with members of the accessibility community, including the development of accessible formats to support consultation;

7. Demonstrated experience related Advanced Public Private Partnerships ("P3") and Alternative Finance and Procurement ("AFP") models will be considered an asset; and

8. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:

   a) The Universal Accessibility Consultant shall be responsible for universal accessibility of the Project;

   b) Note: The Universal Accessibility Consultant shall remain in the role throughout the entire Project.

POSITION - URBAN DESIGNER

d) Years of Experience: 10;

a) Professional designation(s): MCIP/RPP/OPPI (Member Canadian Institute of Planners/ Registered Professional Planner/ Member, Ontario Professional Planners Institute) or RAIC/OAA (Member, Royal Architectural Institute of Canada/Member, Ontario Association of Architects) or CSLA/OALA (Member, Canadian Society of Landscape Architects/ Member Ontario Association of Landscape Architects); and

b) Required qualifications and experience:

1. Demonstrated experience developing sites, master plans and urban design guidelines that are pedestrian and transit supportive, create an award-winning public realm, respect the local context, and anticipate intensification and future development;

2. Demonstrative experience with current trends and directions in urban design inclusive of public realm/ complete streets, place-making, complete communities, active transportation integration and transit supportive principles;

3. Demonstrated experience thorough understanding of recognized urban design principles, concepts and best practices and its integration with Transit Oriented Development is an asset;

4. Demonstrated experience playing a leadership role in community/municipal stakeholder engagement;

5. Demonstrated exceptional graphic design skills;

6. Demonstrated LEED / Environmental sustainability experience;

7. Demonstrated experience including but not limited to awards, publications, experience on juries, panels, boards; and

8. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:

    a) The Urban Designer shall be responsible for the urban design of the Project;

    b) Note: The Urban Designer shall remain in the role throughout the entire relevant part of Project.

POSITION – PLANNER

a) Years of Experience: 10;

b) Professional designation(s): MCIP/RPP (Member Canadian Institute of Planners/ Registered Professional Planner); and

c) Required qualifications and experience:

1. Demonstrated experience with the relevant planning policy framework, including relevant documents at the provincial level (Provincial Policy Statement), regional level (Growth Plan for the Greater Golden Horseshoe, The Big Move), and local level (Official Plan, Transportation Plan, Zoning By-Laws, etc.);

2. Demonstrated experience with land use planning and regulatory tools and requirements and third party permits and approval processes relating to large development or infrastructure projects in Ontario considered an asset;

3. Demonstrated experience in land use planning analysis;

4. Demonstrate understanding of urban design concepts and best practices;

5. Demonstrate experience with Transit Oriented Development;

6. Demonstrated implementation expertise, including the creation of phasing plans and significant experience with planning and development tools;

7. Demonstrated experience with third party agencies, governments, municipalities and other stakeholders;

8. Demonstrated experience in a transportation/ municipal planning environment will be considered an asset;

9. Demonstrated experience including but not limited to awards, publications, experience on juries, panels, boards; and

10. 1Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:

    a) The Planner shall be responsible for land use on the Project;

    b) Note: The Planner shall remain in the role throughout the relevant part of Project.

POSITION – INTERIOR DESIGNER

a) Years of Experience: 10;

b) Professional designation(s): Member in good standing of at least one of the following NCIDQ (National Council for Interior Design Qualification); ARIDO (Association of Registered Interior Designers of Ontario); IIDA (International Interior Design Association); ASID (American Society of Interior Designers); NCARB (National Council of Architectural Registration Boards); OAA (Ontario Association of Architects) or eligible for temporary licence; and

c) Required qualifications and experience:

1. Demonstrated experience in playing a leadership role (e.g. design principal, senior interior designer, or a substantial contributor to the project design) in at least one design award-winning constructed interior design project both relevant and similar in scope and complexity to the project identified in the Scope of Work;

    a) Relevant design awards include those awards which are peer reviewed by design professionals and awarded competitively by relevant design related organizations including but not limited to:

        1) Interior Design – ARIDO, Interior Design Best of Year Award, IIDA Annual Interior Design Competition;

    b) Architecture, Landscape Architecture, Industrial Design professional associations (Federal - RAIC, CSLA; Provincial – OAA, AIBC, AAA; International – AIA, RIBA, ASLA, IFLA

    c) Design Publications (including Azure AZ Awards, Canadian Architect Awards of Excellence, MARK, Details, Wallpaper);

    d) Notes:

        1) Awards from industry-specific organizations or special interest groups such as the CoreNet are not considered relevant design awards;

2. Demonstrated experience with interior designs that are award-winning, sustainable, durable, cost-effective, respect heritage, are integrated into their surroundings, and successfully meet users' needs;

3. Demonstrated experience working with public sector agencies and institutions including with diverse stakeholders is considered an asset;

4. Demonstrated experience including but not limited to interior design awards; publications; experience on design review panels, competition juries, industry panels; and

5. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and

informed) matrix:

a) The Interior Designer shall be responsible for the interior design of the Project;

b) The Interior Designer shall remain in the role throughout the entire Project.

POSITION – LIGHTING DESIGNER

a) Years of Experience: 10;

b) Professional designation(s): Member in good standing of at least one of the following IALD (International Association of Lighting Designers); IESNA (Illuminating Engineering Society of North America);

c) Certification(s): NCQLP (National Council on Qualifications for the lighting Professions) Lighting Certification; and

d) Required qualifications and experience:

1. Demonstrated experience in developing design, performance specifications, and tender documentation for major projects similar in and complexity to the project identified in the Scope of Work;

2. Must have played a significant role in the design of at least one design award-winning lighting design projects similar in scope and relevant to the Project;

a) Relevant design awards include those awards which are peer reviewed by design professionals and awarded competitively by relevant design related organizations including but not limited to:

1) Lighting Design professional associations (including but not limited to IALD (Instrumental Activities of Daily Living), IES (Illuminating Engineering Society), IESNA (Illuminating Engineering Society of North America);

2) Design Publications (including but not limited to Architectural Lighting Magazine, Mondo, Interior Design, Azure);

3) Design Organizations (including but not limited to ARIDO (Association of Registered Interior Designers of Ontario));

4) Government and regulatory bodies (Municipal urban design and architecture awards, Governor General's awards and medals);

5) Design Competitions (project specific);

6. Notes:

a) Awards from external disciplines and trades, such as those from engineering or construction organizations are not considered relevant design awards;

b) Awards from manufacturing and supplier

organizations are not considered relevant design awards;

3. Demonstrated experience including but not limited to lighting design for major public spaces, heritage buildings, cultural institutions, public facing transit facilities, commercial public spaces and installations of programmable dynamic lighting systems;
4. Demonstrated experience in delivering lighting designs that are award-winning, sustainable, durable, cost-effective, respect heritage, are integrated into their surroundings, and successfully meet users' needs;
5. Demonstrated experience including but not limited to lighting design awards; experience on design review panels, competition juries, industry panels;
6. Demonstrated experience working with transit or public sector agencies and institutions is considered an asset; and
7. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:
    a) The Lighting Designer shall be responsible for the lighting design of the Project;
    b) Note: The Lighting Designer shall remain in the role throughout the entire Project.

POSITION - COST CONSULTANT / QUANTITY SURVEYOR

a) Years of Experience: 10

b) Professional Designation(s): PQS (Professional Quantity Surveyor) or CEC (Construction Estimator Certified); and

c) Required qualifications and experience:

1. Demonstrated experience in cost estimating public sector/institutional /commercial/industrial buildings, civil works, landscape projects, green buildings;
2. Demonstrated experience estimating construction and life-cycle costs; and
3. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:
    a) The Cost Consultant / Quantity Surveyor shall be responsible for the accurate cost estimating of the Project;
    b) The Cost Consultant / Quantity Surveyor shall remain in the role throughout the entire relevant part of Project.

POSITION – CONTRACT ADMINISTRATOR

a) Required for all Contracts/Projects with a construction scope of work;

b) Years of Experience: 10; and

c) Required qualifications and experience:

1. Demonstrated experience with contract administration of site projects including commercial buildings with significant customer-facing elements and site elements;
2. Demonstrated experience with contract administration of buildings with both exterior and interior finishes and components, including significant customer-facing elements;
3. Demonstrated experience with contract administration of finishes, fixtures, equipment and millwork;
4. Demonstrated experience with all phases of building contract administration including Building Occupancy, Substantial Completion, final deficiencies, and commissioning and handover; and
5. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:

a) The Contract Administrator shall be responsible for the contract administration of the customer-facing and staff-facing elements of the Project, including all buildings and the site;

b) Note: The Contract Administrator shall remain in the role throughout the construction, handover and commissioning phases of Project.

POSITION – ART CONSULTANT

a) Required for all Contracts/Projects with public art and/or integrated art;

b) Years of Experience: 10;

c) Required qualifications and experience:

1. Degree from an accredited university in a relevant discipline, which may include fine art, studio art, art history, curatorial practice, design, architecture or landscape architecture;
2. Demonstrated experience managing permanent public art projects with budgets over $250,000 for public and private clients; projects over $1,000,000 and asset;
3. Demonstrated experience with complex projects involving multiple stakeholders, including large construction projects;
4. Demonstrated experience developing and managing tendering process, managing

competitions, providing cost and feasibility analysis;

5. Experience with contract administration;
6. Demonstrated experience managing a team; providing collaborative consultation to client;
7. Demonstrated ability to adhere to schedule;
8. Demonstrated experience including but not limited to publications, awards, or relevant teaching, or participation on an art/design advisory council; and
9. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:
    a) The Art Consultant shall be responsible for public art on the Project;
    b) Note: The Art Consultant shall remain in the role throughout the entire Project.

POSITION – TECHNICAL WRITER

a) Required for all Contracts/Projects with a Specifications/ Requirements/documentation scope of work;

b) Years of Experience: 10;

c) Professional designation(s): CSP (Member, Constructions Specifications Canada); and

d) Required qualifications and experience:

1. Demonstrated experience translating design vision, intent and Reference Concept Designs (RCDs) into language appropriate and highly specific language for the Project Specific Output Specifications (PSOS);
2. Demonstrated experience with writing technical specifications for projects of similar scope and complexity; and
3. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:
    a) The Technical Writer shall be responsible for the technical writing on the Project with a duty to provide neutral specifications;
    b) Note: The Technical Writer shall remain in the role throughout the entire relevant part of Project.

POSITION – FIRE PROTECTION AND BUILDING CODE CONSULTANT

a) Required for all Contracts/Projects with code analysis scope;

b) Years of Experience: 10;

c) Professional designation(s): P.Eng. (Professional Engineer) licensed in the province of Ontario; and

d) Required qualifications and experience:

1. Demonstrated experience in transit/urban/public building and site design on a minimum of five major projects – provide project names, location and brief description;
2. Demonstrated experience in transit design including stations, rail platforms and electrification is considered an asset;
3. Demonstrated experience with smoke studies;
4. Demonstrated experience as a lead code consultant on at least five projects of similar complexity; and
5. 4. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:

a) The Fire Protection and Building Code Consultant shall be responsible for the Code analysis and Code compliance on the Project;

b) Note: The Fire Protection and Building Code Consultant shall remain in the role throughout the entire Project.

POSITION – ELEVATOR CONSULTANT

a) Required for all Contracts/Projects with specialized elevator work and with customized elevator requirements;

b) Years of Experience: 10;

c) Professional designation(s): P.Eng. (Professional Engineer) licenced to practice in the Province of Ontario, or equivalent.; and

d) Required qualifications and experience:

1. Demonstrated experience with complex elevator projects including customized elevator requirements;
2. Demonstrated experience as a lead elevator consultant on at least five projects of similar complexity;
3. Demonstrated experience with all project phases: design, construction and handover;
4. Relevant experience in transit design considered an asset; and
5. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:

a) The Elevator Consultant shall be responsible for all elevators on the Project, through design and

implementation;

b) Note: The Elevator Consultant shall remain in the role throughout the entire Project.

POSITION – ACOUSTICAL CONSULTANT

a) Required for all Contracts/Projects with acoustical analysis scope;

b) Years of Experience: 10;

c) Professional designation(s): P.Eng. (Professional Engineer) lichened to practice in the Province of Ontario, or equivalent.; and

d) Required qualifications and experience:

1. Demonstrated experience with complex acoustical analysis and modeling of interior spaces;
2. Demonstrated experience with noise walls and complex acoustical analysis and modeling of exterior spaces;
3. Demonstrated experience as a lead acoustical consultant on at least five projects of similar complexity;
4. Demonstrated experience with all project phases: design, construction and handover;
5. Relevant experience in transit design considered an asset; and
6. Required responsibilities to be demonstrated in a RACI (responsible, accountable, consulted and informed) matrix:

a) The Acoustical Consultant shall be responsible for acoustical analysis and acoustical requirement design, specification and implementation on the Project;

b) Note: The Acoustical Consultant shall remain in the role throughout the entire Project.

ADDITIONAL OTHER PERSONNEL POSITIONS:

POSITION – ARCHITECT(S)

a) Years of Experience: 10;

b) Professional designation(s): OAA (Member, Ontario Association of Architects); and

c) Required qualifications and experience:

1. Demonstrated experience related to design and construction of transit, commercial and municipal infrastructure, including but not limited to transit stations, parking structures, parking, track, signals, bridges, grade separations, tracks, underground tunnels and rehabilitation of transit facility building projects;
2. Demonstrated experience in design of buildings that are award-winning, sustainable, durable, cost-effective, respect heritage, are integrated into their

surroundings, and successfully meet users' needs;

3. Experience related Advanced Public Private Partnerships ("P3") and Alternative Finance and Procurement ("AFP") models will be considered an asset;
4. Demonstrated experience in project management; and
5. Experience working with public sector agencies and institutions and asset.

POSITION – LANDSCAPE ARCHITECT(S)

a) Years of Experience: 10;

b) Professional designation(s): OALA (Member, Ontario Association of Landscape Architects) or approved provincial or international licencing equivalent; and

c) Required qualifications and experience:

1. Demonstrated experience related to design and construction of transit, commercial and municipal infrastructure, including but not limited to transit stations, parking structures, parking, track, signals, bridges, grade separations, tracks, underground tunnels and rehabilitation of facility building projects;
2. Experience in sustainable landscape design, low impact development approaches, and storm water management;
3. Demonstrated experience in design landscapes that are award-winning, sustainable, durable, cost-effective, and respect heritage;
4. Experience which demonstrates an advanced understanding of urban design principles and experience designing urban landscapes including but not limited to plazas, streetscapes, public and commercial space;
5. Demonstrated experience with sustainable parking lot design is considered an asset;
6. Demonstrated experience in project management; and
7. Experience related to Advanced Public Private Partnerships ("P3") and Alternative Finance and Procurement ("AFP") models will be considered as an asset.

POSITION – HORTICULTURALIST(S)/LANDSCAPE RESTORATION SPECIALIST(S)

a) Years of Experience: 10;

b) Professional designation(s): OALA (Member, Ontario Association of Landscape Architects); and

c) Required qualifications and experience:

1. Demonstrated experience developing design, performance specifications, and tender documentation for projects similar in scope and

nature to the Scope of Work;

2. Demonstrated experience with sustainable landscape design, habitat creation, low impact development approaches, and storm water management;
3. Demonstrated experience with specification of low maintenance, drought tolerant and native species; and
4. Demonstrated experience working in brownfields (previously developed land with potential contamination).

POSITION – LEED AND SUSTAINABILITY CONSULTANT(S)

a) Years of Experience: 10;

b) Professional designation(s): LEED AP BD+C (LEED Accredited Professional with Building Design and Construction Specialty) with Professional designation(s): MCIP/RPP/OAA/P.Eng (Member Canadian Institute of Planners/ Registered Professional Planner/ Member, Ontario Association of Architects/ Professional Engineer licensed to practice in the Province of Ontario), or a university degree in a related discipline (Planning/ Environmental Management/ Environmental Science); and

c) Required qualifications and experience:

1. Demonstrated experience related to the design and construction of environmentally sustainable facilities;
2. Demonstrated experience related to the design and construction of environmentally sustainable transit facilities is an asset;
3. Demonstrated experience with the provision of Whole Building Energy Simulation and Measurement and Verification as required by LEED;
4. Demonstrated experience as the prime LEED and/ or sustainability consultant on a minimum of 15 commercial, institutional and/or industrial building Whole Building Energy Simulation engagements;
5. Must have played a significant role in obtaining LEED NC Gold or better certification for at least two projects;
6. Demonstrated experience in specialized technical total life cycle sustainability issues of concrete and cementitious materials, and other construction materials;
7. Demonstrative experience working with environmental product declarations and construction material lifecycle is considered an asset;
8. Demonstrated hands on experience with the analysis of HVAC systems, renewable technologies, building envelope and green mechanical systems;
9. Demonstrated experience with the Envision

Sustainable Infrastructure Framework is an asset; and

10. Project management experience managing numerous specialist groups and/or sub-consultants.

POSITION - ENERGY MODELLING SPECIALIST

a) Required for all Contracts/Projects with a LEED and/or an energy modelling requirement;

b) Years of Experience: 10;

c) Professional designation(s): BEMP (Building Energy Modeling Professional) or approved equivalent; and

d) Required qualifications and experience:

1. Demonstrated experience and understanding of the construction process and its impact on equipment installation and overall building efficiency;
2. Demonstrated experience carrying out the technical surveys necessary for the realization of the energy simulation models and analysis of building plans in order to extract building energy modeling data;
3. Demonstrated experience conducting statistical comparisons between the energy consumption of various buildings;
4. Membership of the Canada Green Building Council's experienced modeller's list an asset;
5. Demonstrated experience in design will be considered an asset; and
6. Demonstrated experience in consulting engineering will be considered an asset.

POSITION – DAYLIGHTING MODELLER(S)

a) Years of Experience: 5; and

b) Required qualifications and experience

1. Demonstrated experience in daylight modelling to meet LEED requirements with a minimum of 10 projects of similar scope and complexity.

CONSTRUCTION SPECIFICATIONS PRACTITIONER(S)

a) Years of Experience: 15;

b) Professional designation(s): CSP (Member, Constructions Specifications Canada); and

c) Required qualifications and experience:

1. Demonstrated experience as the specifications lead on a minimum of 5 projects of similar scope and complexity.

COMPUTER AIDED DRAWINGS AND 3D MODELLING EXPERT(S)

a) Years of Experience: 5; and

b) Required qualifications and experience:

1. Demonstrated experience as the lead Building Information Modeler (BIM) on at least 5 projects of similar scope and complexity;
2. Demonstrated experience and expertise in AutoCAD, Revit, SketchUp and 3D Studio Max;
3. Demonstrated experience and expertise to create complex digital drawings that are attractive, legible, easily editable, and have well-labelled and organized layers; and
4. Demonstrated experience and expertise to create accurate, photo-realistic 3D images.

GRAPHIC DESIGNER(S)

a) Years of Experience: 5; and

b) Required qualifications and experience:

1. Demonstrated experience and expertise in Adobe Photoshop, Illustrator, and InDesign; and
2. Demonstrated experience and expertise and ability to create complex images, drawings and documents that are including but not limited to being award-winning, legible, easily editable, have well-labelled and organized layers, text and paragraph styles.

COMMUNITY RELATIONS SPECIALIST(S)

a) Years of Experience: 10; and

b) Required qualifications and experience:

1. Demonstrated experience in community outreach initiatives that involve minimizing negative impacts on communities, including during construction and operations;
2. Demonstrated experience with at least 5 corporate social responsibility engagements for clients; and
3. Demonstrated experience in the provision of requirements and assessment criteria to evaluate submittals related to the provision of community economic benefits, employment, training programs and workforce development.

POSITION – FACILITATOR

a) Required for all Projects with public facilitation scope;

b) Years of Experience: 10; and

c) Required qualifications and experience:

1. Demonstrated experience facilitating large group stakeholder meetings, public meetings, and design workshops, with the potential to host and manage the input of a number of stakeholders;
   i. Demonstrated experience documenting the session with key findings;
2. Demonstrated experience with proficiency in consultation planning and a wide range of innovative facilitation techniques and engagement strategies, meeting formats, and means of soliciting meaningful feedback; and
3. Depending on scope, further qualifications and experience requirements may be required.

POSITION – NOISE AND VIBRATION SPECIALIST(S)

a) Years of Experience: 10;

b) Professional designation(s): P. Eng. (Professional Engineer) licensed to practice in the Province of Ontario, or equivalent.; and

c) Required qualifications and experience:

1. Demonstrated project experience in the investigation and evaluation of relevant site condition data in the context of the delivery of large scale, complex development and infrastructure development projects; and

2. Demonstrated project experience as the lead noise and vibration specialist on a minimum of 5 projects of similar scale and complexity.

AUDIO-VISUAL CONSULTANT(S)

a) Years of Experience: 10;

b) Professional designation(s): Industry professional licensed to practice in the Province of Ontario; and

c) Required qualifications and experience:

1. Demonstrated experience with all forms of digital display and display management systems in large scale enterprises;

2. Demonstrated experience in coordination with other relevant disciplines including I&IT, electrical, architectural and/or industrial design; and

3. Demonstrated project experience as the lead audio-visual consultant/ specialist on a minimum of 5 projects of similar scale and complexity.

WIND ENGINEER(S)

a) Years of Experience: 10;

b) Professional designation(s): P.Eng (Professional Engineer) licensed to practice in the Province of Ontario; and

c) Required qualifications and experience:

1. Demonstrated experience as a lead wind engineer in facilities including snow and wind studies;

2. Demonstrated experience as a lead wind engineer in transit facilities including snow and wind studies is an asset; and

3. Demonstrated experience as a lead wind engineer on at least 5 projects of similar complexity.

APPENDIX B: MDRP DESIGN REVIEW CRITERIA AND PROCEDURES

REVIEW CRITERIA

The MDRP will review projects that lie within all Metrolinx programs including Regional Express Rail (RER), Light Rail Transit (LRT), Rapid Transit (RT), and Bus Rapid Transit (BRT), and fall within at least one of the following criteria:

- Projects with a total construction budget of over $10 million (includes any phases and components that separately are under $10 million)

  AND/OR

- Projects with a significant urban design presence The criteria will be determined on a case-by-case basis, but generally the project should go to the MDRP if at least 50% of one façade or project edge is easily visible from major public thoroughfares – for instance, highways, arterial roads/avenues and passenger train routes. This may include new and major rehabilitations to existing surface parking lots and new renovations to any type of existing buildings (station, maintenance, office, etc.). It may also include design for system- or line-wide standard elements, such as design guidelines, benches, bike shelters, catenary poles, and the like

  OR

- Other projects as identified by Metrolinx Senior Management Team (SMT): Additional projects, such as branding guidelines or system-wide architectural guidelines may be presented to the MDRP for feedback if they are deemed to have Design Excellence relevance. Metrolinx SMT may also select projects to go to the MDRP that are outside the scope identified above, as needed. SMT may also exempt projects that fall within the above scope, under exceptional circumstances, as needed.

Where projects fall under the purview of other external design review panels (e.g. Mississauga, Vaughan, Toronto, Waterfront Toronto), the project will only go to one designated Joint Design Review Panel (JDRP) panel that includes Metrolinx, based on discussion between Metrolinx and the other design review panel, on a case-by-case basis.

PRE-SUBMISSION PROCESS AND ADMINISTRATION

At least 10 business days prior to the presentation date, presenters are required to attend a meeting with a draft of their full presentation for review. The draft review will include the Chair and/or a designated alternate, one Metrolinx project manager and/or Director responsible for team that will be presenting at the Design Review Panel. If the presenter is not able to attend in person, they are to send a key project designer, and the presenter must be present via teleconference. If the draft presentation is incomplete or inadequate, the project may be deferred, at the discretion of the Chair of the Metrolinx Design Review Panel.

SUBMISSION PROCESS AND ADMINISTRATION

Presenters are required to submit the final version of the presentation, including all required design documentation, to the MDRP coordinator ten (10) business days prior their scheduled meeting. If a submission is incomplete or late, the project may be deferred, at the discretion of the Chair of the Metrolinx Design Review Panel.

Presenters should submit their presentation ten (10) business days prior to the scheduled meeting to allow for conversion of the document to accessible formats.

The MDRP coordinator is responsible for collecting and distributing materials, and recording and communicating decisions of the MDRP. Final recommendations and minutes of meeting of the MDRP will be distributed within five business days of the MDRP meeting to project leads. The MDRP coordinator is responsible for organizing meetings.

MDRP PRE-FLIGHT MEETING

A minimum of ten business days before the scheduled meeting the Metrolinx project team and their consults should arrange an MDRP Pre-flight Meeting with the Chair of the Metrolinx Design Review Panel and the Design Review Specialist who has been attached to the project. The objective of the pre-flight meeting is to provide guidance and support the project team in preparation for the presentation for the MDRP.

STAGES OF REVIEW

Projects are required to go at least twice to the MDRP – at early design (5-10%) and at schematic design (10-15%). Projects may be asked to return a third or at most a fourth time at the beginning of detailed design (25%-30%) on a case-by-case basis. Alternatively, final review may be handled by staff with the approval of the MDRP and at the discretion of the Senior Manager of Design Excellence.

MDRP DESIGN REVIEW SUBMISSION MATERIALS

SUBMISSION REQUIREMENTS

The following items (at minimum) shall be presented for review by the MDRP and must be provided 10 working days in advance of the meeting:

a) Early Design (5-10%) PowerPoint Presentation

1. A 100-word statement of the design concept
2. Building massing illustrated in three dimensions in context
3. Context site plan illustrating site adjacencies, major intersections, roadways and access points to the site, and municipal networks that can integrate with the site
4. Brief overview of existing conditions site plan, including property lines and easements, and photos
5. Photos of the site from key high traffic locations, such as neighbouring roads and highways, railways, bridges, etc.
6. Proposed site plan concept with surrounding context
7. Diagrams illustrating site circulation and surrounding context circulation – municipal/other transit, pedestrian routes/pathways, accessible parking area, vertical circulation routes, cycling, kiss 'n ride, private vehicle, etc.
8. Clearly and distinctly illustrated site circulation for accessible routes/pathways, including vertical access routes and identify location of Station building accessible entrance(s), travel distance and slopes and grading in relation to roadways and major access points, and municipal networks
9. Describe how site plan concept addresses major access points to reduce conflicts with automobile transportation and provide the most convenient, safe and direct access to pedestrian path systems
10. Building footprint and functional plan with major access points
11. Landscape concept illustrating overarching design intent, areas of paving, planting, amenities, pedestrian and accessible circulation, sustainable landscape design concepts and general character of the landscape
12. Preliminary landscape design grading plan that is coordinated with civil engineering requirements
13. Preliminary sustainability potential analysis (building orientation, stormwater management, etc.)

14. Preliminary concept for mobility management and integration (secure bike parking, EV parking, etc.)
15. Preliminary outline of operations and maintenance considerations
16. Building costs - total and per square meter(break out the building costs from total project costs and any specialized equipment/expenses)
17. 3 high resolution images as jpegs submitted separate from the PowerPoint presentation.

b) Schematic Design (10-15%)

All of the above (early design submission requirements), plus:

1. Demonstration of how the relevant Metrolinx design excellence requirements and guidelines have been interpreted and localized to suit the programmatic and site specific conditions of the project (reference documents include but are not limited to the: GO Transit Design Excellence Guidelines and the individual LRT Design Excellence Principles and Requirements documents).
2. Building Massing Model (computer generated)
3. Site Plan showing surrounding context and landscaping
4. Landscape plan
5. Functional Plan and Building Plan drawing(s) at scale readable on a screen
6. Site and Building Elevation Concept
7. Site and Building Section Concept
8. Beneficial to have circulation/flow and line of sight diagrams highlighting number of decision points to access main station amenities
9. Demonstration of how accessibility and universal design principles are integrated into the design
10. Renderings showing surrounding context and buildings; minimum of three, one showing view at pedestrian level and from other key viewpoints, such as neighbouring roads, highways, railways, bridges, etc. Renderings should incorporate up-to-date imagery of the transit brand (e.g. latest logos, train exterior, etc.) and include depictions of people that reflect the diversity of GTHA transit users (including individuals with disabilities).
11. An eye-level animation or series of renderings demonstrating a typical user experience of the building Shadow study (if the building is more than four storeys tall or is directly next to residential property or public open space)
12. Exterior material and colour sample board (interior materials optional)
13. A Design Brief that includes all above material plus a 500-word description of design approach/concept, including precedent photos where appropriate

14. Pedestrian Level Wind Study – for buildings greater than 20m in height (optional)
15. Three high resolution images as jpegs submitted separate from the PowerPoint presentation
16. Virtual walk-through (animation) showing the customer path of travel including the accessible path of travel
17. Identify location(s) and approach for Integrated Art on identified projects

APPENDIX C: SUBMISSION REQUIREMENTS

For the purposes of the below, Design shall include design excellence, architecture and urban design, universal design, sustainable design, landscape, interior design, signage and wayfinding, and customer infrastructure design.

c) Early Design (Submitted at the 5-10% Completion Stage and aligned with MDRP/JDRP #1 and Preliminary Design Business Case (PDBC))

The objective of this Submission is to demonstrate to Metrolinx a concept plan identifying the major project components, site analysis, functional programming and relationships, spatial planning and requirements, code and zoning constraints and design concept of the project.

d) Schematic Design (Submitted at the 15-20% Completion Stage and aligned with MDRP/JDRP # 2 and with Site Plan Approval)

The objective of this Submission is to demonstrate to Metrolinx:

1. A concept master plan to show relationship between transit facility and development site, for projects delivered through market-driven strategy;
2. A concept plan identifying the major project components, site analysis, functional programming and relationships, spatial planning and requirements, code and zoning constraints and design concept of the project; and
3. That Metrolinx comments have been responded to and addressed in the design.

e) 30% Design (Submitted at the 30% Design Completion Stage)

The objective of this submission is to demonstrate to Metrolinx:

1. That Metrolinx comments have been responded to and addressed in the design;
2. The concept is valid and coordinated through multidisciplinary design input and coordination; and
3. That all requirements set out in the Metrolinx Standards, project-specific requirements and project-specific agreements have been met.

f) 60% Design (Submitted at the 60% Design Completion Stage)

The objective of this submission is to demonstrate to Metrolinx:

1. That Metrolinx comments have been responded to and addressed in the design;
2. The concept is valid and coordinated through multidisciplinary design input and coordination;
3. That all requirements set out in the Metrolinx Standards, project-specific requirements and

project-specific agreements have been met; and

4. To provide Life Cycle Analysis.

g) 90% Design (Submitted at the 90% Design Completion Stage)

The objective of this submission is to demonstrate to Metrolinx:

1. That Metrolinx comments have been responded to and addressed in the design and Life Cycle Analysis;
2. The concept is valid and coordinated through multidisciplinary design input and coordination; and
3. That all requirements set out in the Metrolinx Standards, project-specific requirements and project-specific agreements have been met.

h) 100% Design

The objective of this submission is to demonstrate to Metrolinx:

1. That Metrolinx comments have been responded to and addressed in the design and Life Cycle Analysis;
2. The concept is valid and coordinated through multidisciplinary design input and coordination; and
3. That all requirements set out in the Metrolinx Standards, project-specific requirements and project-specific agreements have been met.

i) Issue for Construction

The objective of this submission is to allow Metrolinx a final review and approval to ensure all comments have been addressed and consolidated in the design drawings and specifications by which the project will be constructed.

j) During Construction

The purpose of submissions during construction is to flag any on-site issues that require a redesign of a certain portion of the project; if project team is proposing an alternative for a finish; or to flag any design changes from that previously included in the contract; and ensure general quality assurance of end product.

k) Handover & Commissioning

Assuring that all systems and components of the project are designed, installed, tested and operate as per Metrolinx requirements, that maintenance and operations staff is trained for optimal operation of the project and all its components, and that required project documentation has been handed over to Metrolinx.

l) Record Drawings and Operations Manuals

Record Drawings and Operations Manuals shall include Design-related content in accordance to industry standards,

including finishes of components and subcomponents, catalogue cut sheets for furnishing, fixtures and equipment, relevant shop drawings, etc. Record drawings should also capture all design changes made to IFC set during construction through RFI, CCOs and changes orders.

m) Warranty Review

Prior to the expiry of the warranty, Design Excellence shall participate in the scheduled site review and shall be circulated a detailed report identifying any deficiency issues with the Work

experienced since occupancy

EARLY DESIGN (SUBMITTED AT THE 5-10% COMPLETION STAGE)

Minimum Submissions Required for Review:

Site Plan

a) Identify locations and connections between all major scope elements including but not limited to: Metrolinx customer circulation routes, municipal/other transit connections, parking lot, Passenger Pick-Up and Drop Off (PUDO), building(s), bus loop, road connections, accessible path(s), pedestrian tunnels, corridor entrance points, platform and track alignments, rail corridor works and associated works on public roads or infrastructure;

b) Preliminary Site Plan, at a minimum, should contain: location plan, North Arrow, major grid line, property lines, building setbacks, key spot elevations, major dimensions, future street widening, curb cuts, and preliminary site statistics: land use, density, setbacks, parking, site and building area, green roof areas if applicable. Site plan to indicate potential opportunities for building expansion and/or future transit connections.

c) Resolve and validate horizontal track profiles, track chainage, track alignment, tie in to existing track and associated signal adjustments;

d) For projects that are part of a market-driven strategy delivery, relationships to private development, including functional adjacencies, entrances and access points, major circulation routes (all modes) and elements of impact and/or influence between private development and Metrolinx customers; and

1. Plan(s) shall be drawn to scale, private development is to be shown and greyed out. Preliminary design concept shall demonstrate that elements fit in the allowable or defined space.

Supporting Design Drawings:

a) Concept master plan to show the relationship between transit facility and development site, for projects delivered through market-driven strategy;

b) Preliminary Functional Layout showing building (s) footprint, providing functional program summary and adjacencies for Metrolinx off-corridor areas; include tunnel(s) and/or bridge(s) as applicable;

c) Preliminary Landscape Concept Plan, at a minimum, illustrating overarching design intent, areas of paving, planting, ecological mitigation and restoration, and amenities;

d) Preliminary Site Elevation and Section illustrating site massing, overall building heights, typical material finishes, dimensions of critical heights for the parapets, openings and functional relationships (min. scale 1:500); and

e) Using right-hand flow principles for passenger circulation provide Preliminary Platform Concept Plan for Bus and Rail for customer-facing elements including accessible path of travel and barrier-free path of travel.

f) Preliminary signage and wayfinding locations at major decision point along path of travel highlighting progressive disclosure planning principles.

g) Submissions shall be provided at a minimum, with a level of detail that demonstrates, representation of the requirements of the Canadian Handbook of Practice for Architects, Second Edition 2009, Chapter 2.3.5, Schematic Design and at a minimum contain the following: North Arrow, grid lines, dimensions,room names, overall areas, surge spaces.

h) **Design Brief:** Outlining the design concept, addressing architectural and urban context, Future Expansion opportunities, code /regulatory and zoning approach and constraints, landscape design, universal design, sustainable design, key customer-facing fixtures, furnishings, amenities, interior and industrial design approach; include precedent photos where appropriate;

i) **Refer to PDBC requirements;**

j) **Supporting Material:**

1. Renderings as required for communicating key aspects of the project, and not less than three, showing surrounding context and buildings;
2. Shadow study and Pedestrian Level Wind Study – for buildings greater than 20m in height;
3. Building Massing Model and conceptual massing study (computer generated, include all buildings/ structures); and
4. Preliminary material considerations for exterior and interior (material and colour sample board).

k) **PowerPoint Presentation:** This review shall typically be by the Metrolinx Design Review Panel (MDRP). For projects which for any reason have been exempted from the MDRP requirements, the Metrolinx Design Review Panel (MDRP) Terms of Reference, MDRP Submission Requirements and MDRP Presentation Accessibility Guidelines shall still a apply – refer to attachments. PowerPoint Presentation comprising of the following items (at minimum) shall be presented:

1. A 100-word statement of the design concept;
2. Preliminary functional program summary and adjacencies for Metrolinx off-corridor areas;
3. Preliminary Metrolinx customer circulation routes (entering site and station to platforms and vice versa);
4. Building massing illustrated in three dimensions in context;
5. Context site plan illustrating site adjacencies, including major intersections, roadways, access points to the site, natural features and municipal networks that can integrate with the site;
6. Brief overview of existing conditions site plan, including property lines and easements, natural features, and photos;
7. Photos of the site from key high traffic locations, such as neighbouring roads and highways, railways, bridges, etc.; Photos of key natural features adjacent to the site;
8. Proposed site plan concept with surrounding context;
9. Diagrams illustrating site circulation and surrounding context circulation – municipal/other transit, accessible routes/pathways, accessible parking area, vertical circulation routes, cycling, kiss 'n ride, private vehicle, including potential for future expansion etc.;
10. Building footprint and functional plan with major access points;
11. Landscape concept illustrating overarching design intent, areas of paving, planting, habitat, amenities, site furniture, bicycle parking, pedestrian and accessible circulation, sustainable and ecological landscape design concepts and general character of the landscape;
12. Preliminary landscape design grading plan that is coordinated with civil engineering requirements;
13. Preliminary sustainability potential analysis, including but not limited to approaches to reducing consumption of natural resources, climate change mitigation, and improving/restoring ecosystem services, such as through building orientation, green infrastructure, storm water management, materials, etc.;
14. Preliminary concept for mobility management and integration (secure bike parking, EV parking, etc.);
15. Preliminary outline of operations and maintenance considerations;
16. Any specialized equipment/expenses; and
17. Three high-resolution images as jpegs submitted

separate from the PowerPoint presentation – refer to Rendering and Visualization Requirements.

Notes:

a) If a Joint Design Review Panel (JDRP) with the applicable municipality applies to the project, then the submission requirements for the relevant JDRP applies.

b) Recommendations coming from a Municipal DRP are not binding of Metrolinx owned facilities.

SCHEMATIC DESIGN (SUBMITTED AT THE 15-20% COMPLETION STAGE)

Minimum Submissions Required for Review:

a) Design drawings: Supporting material and narratives updated to address Metrolinx comments from Design Submission 1, including notes to identify major changes;

b) Further drawing development: Update and provide additional supporting material and narratives as required to demonstrate design progression; additional supporting material shall include:

1. Preliminary Stormwater management report, and traffic study;
2. Preliminary Egress Calculations showing the LOS (Level of Service);
3. Preliminary Fire Separation drawings;
4. Preliminary Demolition drawings; and
5. Preliminary Staging drawings.

c) Municipal Site Plan Approval requirements;

d) Minimum drawing submissions:

1. context plan (scale 1:1000);
2. site plan including station and corridor entry points, and site sections (scale 1:500) including immediate context (roads, buildings, trees, natural features);
3. floor plans and floor finish plans showing fare equipment and surge spaces (scale 1:100 or 1:200);
4. elevations and building sections (scale 1:100 or 1:200);
5. Platform design for customer-facing elements; and
6. Interim submissions as appropriate to request and/or receive feedback.

e) Retail strategy for Metrolinx areas; showing the retail type and associated amenities.

f) Preliminary material selections;

g) PowerPoint Presentation: shall be presented for review. This review shall typically be by the Metrolinx Design

Review Panel (MDRP). For projects which for any reason have been exempted from the MDRP requirements, the Metrolinx Design Review Panel (MDRP) Terms of Reference, MDRP Submission Requirements and MDRP Presentation Accessibility Guidelines shall still a apply – refer to attachments. PowerPoint Presentation comprising of the following items (at minimum) shall be presented:

1. All requirements from the Preliminary Design presentation, updated;
2. Updated functional program summary and adjacencies for Metrolinx off-corridor areas;
3. Updated Metrolinx customer circulation routes (entering site and station to platforms and vice versa);
4. Demonstration of how the relevant Metrolinx design excellence and Design Division requirements and guidelines have been interpreted and localized to suit the programmatic and site specific conditions of the project;
5. Building Massing Model (computer generated);
6. Site Plan showing surrounding context and landscaping;
7. Landscape plan;
8. Functional Plan and Building Plan drawing(s) at scale readable on a screen;
9. Site and Building Elevation Concept;
10. Site and Building Section Concept;
11. Renderings showing surrounding context and buildings; minimum of three, one showing view at pedestrian level and from other key viewpoints, such as neighbouring roads, highways, railways, bridges, etc. Renderings shall incorporate up-to-date imagery of the transit brand (e.g. latest logos, train exterior, etc.) and include depictions of people that reflect the diversity of GTHA transit users (including individuals with disabilities) – refer to Rendering and Visualization Requirements.
12. An eye-level animation or series of renderings demonstrating a typical user experience of the building – refer to Rendering and Visualization Requirements for applicability and requirements;
13. Shadow study (if the building is more than four storeys tall or is directly next to residential property or public open space);
14. Exterior material and colour sample board (interior materials optional);
15. A Design Brief that includes all above material plus a 500-word description of design approach/ concept, including precedent photos where appropriate;

16. Pedestrian Level Wind Study – for buildings greater than 20m in height;
17. 3 high resolution images as JPEG submitted separate from the PowerPoint presentation; and
18. Virtual walk-through (animation) showing the customer path of travel – refer to Rendering and Visualization Requirements for applicability and requirements;
19. Identification of location(s) and approach for Integrated Art on identified projects.
20. For further detail, refer to Metrolinx Design Review Panel (MDRP) Terms of Reference , MDRP Submission Requirements and MDRP Presentation Accessibility Guidelines.

Notes:

1. If a Joint Design Review Panel (JDRP) with the applicable municipality applies to the project, then the submission requirements for the relevant JDRP applies.
2. Recommendations coming from a Municipal DRP are not binding of Metrolinx owned facilities.

30% DESIGN

Minimum Submissions Required for Review:

a) Architectural & Urban Design:

1. Demonstrate a cohesive design that has considered structural, civil, electrical, mechanical, track and other multidisciplinary design input with clear and complete cross-referencing, key-plans and legends for all customer facing elements including but not limited to: buildings, access structures, platforms, interior/exterior spaces, service, support and back of house spaces; as well as potential for future expansion opportunities.
2. Submissions shall be provided at a minimum, with a level of detail that demonstrates, representation of the requirements of the Canadian Handbook of Practice for Architects, Second Edition 2009, Chapter 2.3.7, Construction Documents –Drawings and Chapter 2.3.8 Checklist: Assembling and Writing the Specifications;
3. For projects that are part of a market-driven strategy delivery, relationships to private development shall be illustrated, including functional adjacencies, entrances and access points, major circulation routes (all modes) and elements of impact and/or influence between private development and Metrolinx customers; and
4. Copy of Site Plan Approval, including all comments received and resolved.

b) Architectural and site plans: sections, elevations, sections and details for all customer facing elements

including buildings, access structures, platforms, interior/exterior spaces, service, support and back of house spaces shall be provided with a level of detail that demonstrates, representation of the following at a minimum:

1. Preliminary site and building circulation analysis illustrating all pedestrian, cycling and all vehicular routes – from the public realm interfaces and internal to the site, to the station building/platform access structures, parking and drop off areas, alternative transportation access, bus access, platforms and all customer amenities. This shall include representation of all accessible routes through site and building. Identification of any crash walls, retaining walls, noise walls and fencing, and their impact on customer experience and the public realm;
2. Preliminary site context plan (min. scale 1:1000) showing connection(s) and layout to existing and future privately/third party-owned building elements; urban realm, municipal connections, building sections of each entrance where integrated into a facility developed through a market-driven strategy, indicating all permanent and temporary easements required to construct the entrance(s)/ access(es);
3. Preliminary site plan details (min. scale: 1:200) and site sections (min. scale 1:500) as appropriate;
4. Preliminary building floor plans, roof plans, reflected ceiling plans, sections, exterior elevations (min. scale 1:100);
5. Preliminary interior plans, details and elevations (min. scale 1:50) of all public areas including washrooms indicating proposed finishes and all amenities and elements, including elevators;
6. Preliminary wall sections (min. scale 1:20) as required to demonstrate components of all exterior or shared assemblies;
7. Preliminary signage and wayfinding location plans (1:50 scale) highlighting any special connection hardware and support structure.
8. Preliminary doors, windows, sidelights and interior glazing and details (min. scale 1:20);
9. Preliminary exterior wall details (min. scale 1:10) as required to demonstrate components of exterior assemblies;
10. Preliminary stair plans, sections and details (min. scales 1:50 and 1:10);
11. Preliminary hardware details (min. scale 1:10 and as required); and
12. Drawings to be coordinated with all other disciplines.

c) An architectural written narrative/design brief, that shall include at a minimum the following topics:

1. General urban design, architecture and landscape design approach and strategies for achieving customer experience guiding principles;
2. Properties of heritage interest, if applicable at the site;
3. Analysis of customer path of travel and any critical design or and customer experience issues;
4. A description of the design concept including the functional and technical requirements and how it attains its functional requirement, and meets other requirements set out in the Metrolinx Standards, project-specific requirements and project-specific agreements;
5. Description on approach to meet durability and design life requirements in accordance with Metrolinx Standards, project-specific requirements and project-specific agreements, including discussion of both interior and exterior materials and assemblies;
6. Description on immediate context beyond the site (roads, buildings, trees, utilities, natural habitat);
7. Strategies for the protection of connections to future buildings on the site, including safety, utility and structural requirements for overbuild, to ensure that the Metrolinx station will remain functional throughout the site development;
8. Delineation of ownership, access and maintenance by Metrolinx and any Third Party/Developer; if applicable;
9. Integration with municipal transit, if applicable at the site;
10. Building envelope, exterior and interior finishes;
11. Drawings, schedules, renderings, and other supplementary materials as necessary to illustrate the design; and
12. Any special provisions for construction of the Building Structures.

d) The following supporting material shall be provided at a minimum:

1. Preliminary passenger flow modelling report;
2. Preliminary code analysis addressing buildings, structures, platform and fire/life safety issues;
3. CPTED analysis;
4. Life cycle analysis, including a written narrative describing life cycle approach to all building components, systems and major pieces of equipment, including: building envelope and exterior finishes and interior finishes;
5. Preliminary lighting design concepts (interior and exterior) with selection of lighting equipment and

schedule of fixture light levels at all locations that will be visible to customers or staff;

6. Preliminary catalogue cut sheets for all lighting, mechanical, audio visual, communication, equipment and fixtures, furnishings and equipment (FF&E); that will be visible to customers or staff indicating availability of the product or system from the manufacturer or supplier as well as the types of warranties available; performance criteria; durability and maintenance requirements; availability of various colours, finishes, textures or other features; fabrication and installation requirements; past performance and comparative analysis with similar products in the marketplace;
7. Preliminary interior and exterior material schedules and material sample boards;
8. Preliminary special provisions around handrails, guardrails and vertical circulation (elevators, stairs, ramps, etc.);
9. Preliminary unit space/ room data sheets and room schedules; and
10. Renderings and or an eye-level video walk-throughs showing both exterior and interior conditions (articulate passenger movement from public realm, through development if applicable, to station area, platform access, and platforms (bus and rail), showing proposed integrated finishes, amenities and elements including, furniture, signage and wayfinding, landscape, advertising and fare equipment integration) – refer to Rendering and Visualization Requirements;

e) **Landscape plans:** cross-sections, elevations and details shall be provided with a level of detail that demonstrates representation of the following at a minimum:

1. Preliminary paving and planting plans, cross-sections, details including reference to lighting, materials, furniture and fixtures (scale: 1:200) and other scales as appropriate;
2. Preliminary streetscape plans, cross-sections and details including reference to lighting, materials and furniture (scale: 1:200) and other scales as appropriate;
3. Preliminary planters details (min. scale 1:20) and urban furniture details, as applicable;
4. Preliminary details on any crash walls, retaining walls or noise walls and immediate adjacency;
5. Preliminary planting schedules;
6. Preliminary tree compensation plans; and
7. A written narrative describing the Landscape design concept including the functional and technical requirements and how it attains its functional requirement, and meets other requirements

set out in Metrolinx Standards, project-specific requirements and project-specific agreements.

f) Sustainability:

1. LEED checklist and strategy for achieving each credit;
2. Preliminary sustainability potential analysis , including but not limited to approaches to reducing consumption of natural resources, climate change mitigation, and improving/restoring ecosystem services, such as through building orientation, green infrastructure, materials, storm water management, etc.;
3. Preliminary energy analysis and daylight simulations and modelling;
4. Preliminary climate vulnerability and resilience analysis; and
5. A written narrative that shall include at a minimum the following topics:

A description of the sustainable design concept including the functional and technical requirements and how it attains its functional requirement, and meets other requirements set out in Metrolinx Standards, project-specific requirements and project-specific agreements.

g) Accessibility:

1. Preliminary universal design drawings and narrative describing concept, accessible routes, accessible design elements/features and relevant codes and standards;
2. A description of the universal design/accessible design concept including the functional and technical requirements and how it attains its functional requirement, and meets other requirements set out in Metrolinx Standards, project-specific requirements and project-specific agreements; and
3. Identification of designated passenger waiting areas and accessible multi-modal connections .

h) Structural:

1. Preliminary structural design drawings including framing plans, general arrangement plans, pertinent general notes and standard details;
2. Narrative describing structural concept describing major elements, design criteria and relevant codes and standards; and
3. Identification of crash wall and retaining walls in plan and narrative, and cross-reference with site and architectural plans.

i) Civil including Storm Water, Roads and Traffic:

1. Preliminary civil drawings indicating sizing and location of major civil elements; and

2. Narrative describing concept for civil design describing major elements, design criteria and relevant codes and standards.

j) Utilities including relocations, new and protect in place:

1. Preliminary utility drawings showing locations;
2. Preliminary composite utility drawings; and
3. Narrative/drawings describing approach to utility relocations, new utility services and utility protection requirements.

k) Electrical and Communications Systems:

1. Preliminary electrical and communication systems drawings to demonstrate compliance with the requirements; and
2. Narrative describing concept for electrical and communications design describing major elements, design criteria and relevant codes and standards.

l) Mechanical Systems:

1. Preliminary mechanical design drawings indicating location of major elements are compliance with the requirements; and
2. Narrative describing concept for mechanical design describing major elements, design criteria and relevant codes and standards.

m) Track Work:

1. Preliminary plan and profile drawings outlines horizontal and vertical alignment design; and
2. Narrative describing concept for track design describing major elements, design criteria and relevant codes and standards.

n) Signals and Communications in Rail Corridor:

1. Preliminary signal and communication design drawings indicating location of major elements; and
2. Narrative describing concept for signal and communications design describing major elements, location, design criteria and relevant codes and standards.

o) Signage and Wayfinding:

1. Preliminary design drawings indicating location of major signage and wayfinding elements demonstrating compliance with the requirements;
2. Preliminary signage drawings including plan(s) noting signage locations & signs used, layout, mountings and housing (scales as required) for static and digital signage;
3. Signage graphics and details representing typical and specific signs for each location;
4. Draft signage specifications for static and digital

signage, including mountings and housing; and

5. Narrative describing concept for signage and wayfinding describing major elements, design criteria and relevant codes and standards.

p) Proposed design variations with mitigation plans Electrification including Grounding & Bonding and OCS pole bases, and coordination with Other Works:

1. Preliminary design drawings indicating location of major Electrification elements demonstrating compliance with the requirements;
2. Narrative describing design; and
3. Interface provisions requiring coordination with rail platform structure or other customer-facing or public realm elements.

60 % DESIGN

Minimum Submissions Required for Review:

a) Design drawings: supporting material and narratives updated to address Metrolinx comments from the 60% Design Submission, including notes to identify major changes;

b) Further drawing development: supporting material and narratives as required to demonstrate design progression to completion of design;

c) For each discipline narrative, add a section on Life Cycle Analysis for major components; and

d) The following additional materials:

1. Draft specifications and schedules including door, screen and room finish schedule, wall types and assemblies;
2. Draft catalogue cut sheets of lighting, electrical and I&IT equipment, mechanical diffusers and mechanical equipment visible to customers or to staff (office and washroom areas);
3. Draft catalogue cut sheets for all other Metrolinx owned and maintained

90% DESIGN

Minimum Submissions Required for Review:

a) Design drawings: supporting material and narratives updated to address Metrolinx comments from the 30% Design Submission, including notes to identify major changes;

b) Further drawing development: supporting material and narratives as required to demonstrate design progression;

c) For each discipline narrative, add a section on Life Cycle Analysis for major components; and

d) The following additional materials:

1. Draft specifications and schedules including window, door, glazing and louver schedule;
2. Draft catalogue cut sheets of lighting, electrical and I&IT equipment, mechanical diffusers and mechanical equipment visible to customers or to staff (office and washroom areas);
3. Draft catalogue cut sheets for all other Metrolinx owned and maintained equipment; and
4. Interference drawings for building systems and components (structural, mechanical, electrical, I&IT, audio-visual).

Minimum Submissions Required for Review:

a) **Design drawings:** supporting material and narratives updated to address Metrolinx comments from the 60% Design Submission, including notes to identify major changes;

b) **Further development of drawings:** supporting material and narratives as required to demonstrate design progression; and

c) **Updated Life Cycle Analysis for major components**

d) **The following additional materials:**

1. Specifications and schedules including window, door, glazing and louver schedule;
2. Catalogue cut sheets of lighting, electrical and I&IT equipment, mechanical diffusers and mechanical equipment visible to customers or to staff (office and washroom areas);
3. Catalogue cut sheets for all other Metrolinx owned and maintained equipment; and
4. Interference drawings for building systems and components (structural, mechanical, electrical, I&IT, audio-visual).

100% DESIGN

Minimum Submissions Required for Review:

a) **Design drawings:** supporting material and narratives updated to address Metrolinx comments from the 90% Design Submission, including notes to identify major changes;

b) **Further drawing development:** supporting material and narratives as required to demonstrate completion of design;

c) **For each discipline narrative, add a section on Life Cycle Analysis for major components; and**

d) **Updated Life Cycle Analysis for major components**

e) **The following additional materials:**

1. Specifications and schedules including hardware

schedule;

2. Catalogue cut sheets of lighting, electrical and I&IT equipment, mechanical diffusers and mechanical equipment visible to customers or to staff (office and washroom areas);
3. Catalogue cut sheets for all other Metrolinx owned and maintained equipment; and
4. Interference drawings for building systems and components (structural mechanical, electrical, I&IT, audio-visual).

ISSUED FOR CONSTRUCTION (IFC)

a) Submit for review if 100% Design comments have not been addressed and if there are any customer-facing design-related changes (submit at time of change);

1. All changes made during construction are required to be updated in the record drawing submission.

Minimum Submissions Required:

b) Issue for Construction Drawings; all disciplines, including Staging/Phasing, with seals sealed by an Architect, licensed to practice in the Province of Ontario, respectively by a Professional Engineer, licensed to practice in the Province of Ontario, according to the discipline that is being submitted; include notes to identify major changes.

c) Specifications;

d) Signed design certificates;

e) Summary of all past Metrolinx comments and responses;

f) Architectural submissions: shall be provided at a minimum, with a level of detail that demonstrates, representation of the requirements of the Canadian Handbook of Practice for Architects, Second Edition 2009, Chapter 2.3.7, Construction Documents – Drawings and Chapter 2.3.8 Checklist: Assembling and Writing the Specifications; and

g) Municipal Building Permit: complete with all comments received and resolved.

DURING CONSTRUCTION

The following is required during construction:

a) Notify Design Division of any Design-related issues, deficiencies or changes;

b) Provide the following documentation:

1. All Design-related instructions and changes issued to construction team as amendments to Issue for Construction document, including contemplated change notices, notices of change/change orders and site instructions (or equivalent, if labeled differently);

2. This shall include instructions and changes that impact relationships of private development, if applicable, including functional adjacencies, entrances and access points, major circulation routes (all modes) and other elements of impact and/or influence between private development and Metrolinx customers;
3. All site review reports raising/describing Design-related issues;
4. Photographs of site progress; and
5. Summary of issues and changes.

c) Provide the following submittal during construction:

1. Shop drawings for all Design related elements, components and assemblies, in accordance with industry standards;
2. Samples of all materials used on the project, in accordance with industry standards;
3. Catalogue cut sheets for all fixtures, furnishings and equipment (FF&E);
4. Catalogue cut sheets for all light fixtures;
5. Catalogue cut sheets for all equipment that will be visible to customers or staff (office and washroom areas) – electrical, communications, audio-visual, mechanical, etc; and
6. All mock-ups required to satisfy the Metrolinx Standards, project-specific requirements and project-specific agreements; where mockups are required, they shall be full, working mock-ups that include all power, lighting, utilities, materials and components.

d) Include Design Division in the following reviews and site reviews:

1. All mockup reviews;
2. Site review at 10%, 30%, 60%, 90% and 100% construction milestones;
3. Site reviews for sign-off on all design deficiencies and finish deficiencies; and
4. Reviews/site reviews of any significant design-related issues/deficiencies.

HANDOVER AND COMMISSIONING

The following is required at the end of the project:

a) Final deficiency reviews: shall include the customer experience perspective, including finishes, fittings, equipment and their installation;

b) Design Division sign-off: is required on design and finishes (interior and exterior) and customer facing elements at Handover & Commissioning

c) **Inspection and testing reports:** as defined in the Metrolinx Standards, project-specific requirements and project-specific agreements, including:

1. Commissioning plan for buildings, infrastructure and equipment, which have an impact on GO Transit's Operations;
2. Architectural inspection and testing;
3. Roofing and waterproofing testing;
4. Air quality testing;
5. Air leakage testing;
6. Fire stop and smoke seal field inspection and testing;
7. Testing of building envelope;
8. Tests/inspections for any suspended ceiling systems; and
9. Air quality testing (per LEED Rating requirements).

APPENDIX D: RENDERING AND VISUALIZATION REQUIREMENTS

a) **These requirements shall be used for:**

1. Design Review;
2. Sponsor Office business cases;
3. Senior Management and Board sign-off;
4. Hoardings;
5. Medial releases;
6. Editorial content.

b) **Submission requirements - Renderings:**

A three-dimensional textured model representing the design progression at each submission milestone. The model is to have the various components that encompass the scope of work to produce the renderings and visualizations/ animations, such that:

1. The model shall be photo-realistic, clearly indicating opaque and transparent surfaces, and use material colours, but not actual material textures, for the Preliminary Design, Schematic Design and 30% Design Submittals; and

2. The model shall be photo-realistic, clearly indicating opaque and transparent surfaces with all material

3. Views and camera paths to convey items of customer-experience interest, including but not limited to the design intent, branding, resident experience, pedestrian and cyclist experience, materiality, scale, scope, focal points, capacity, and coordination with any adjacent transit-oriented development, and provincial or municipal public realm projects, where applicable. The renderings shall clearly indicate materiality and lighting strategy and articulate all integrated finishes, amenities, and elements including lighting design. Refer to item 4. Process below for further detail in establishing and confirming camera paths.

4. The following shall be submitted for each rendering:

   a) A separate file, each in an 8”x10”, 600 dpi, RGB, TIFF file format in both horizontal and vertical orientations.

c) **Submission requirements - Animations**: A set of three-dimensional photo-realistic animated camera paths that:

1. Are separate files, each in an HD 1920x1080p Apple ProRes 422 HQ format;

i) **Showcase a minimum of ten directional camera sweeps across the scope of work and the surrounding site contex**

ii) **Showcases a typical pedestrian walk-through perspective of the completed scope of work, for a minimum of four different camera paths;**

3. Showcases a variety of pedestrian walk-through perspectives of the completed scope of work, resulting in a minimum of eight different camera paths at the platform level; and

2. Articulates all integrated finishes, amenities, and elements including lighting design.

3. Note: Animation requirements shall apply on a project-by-project basis. They shall be required for major projects or projects selected because the animation is critical to communicating key aspects of the project to external stakeholders and the public to understand the design proposal. Consult the Design Division for further detail and to determine whether animations are required.

d) **Process:** The consultant shall organize a two-hour meeting with the Metrolinx staff and key external stakeholders to coordinate the content of the submission including:

4. For the three-dimensional photo-realistic animated camera paths:

a) Camera paths and angles;

b) Specific views;

c) Overlaid information significant to the design, whether via text or sound; and

d) The intent of use including Metrolinx communications, marketing, and social media.