Date	Subject	Description
August 01, 2012	CI- 0401 Station Infrastructure	Pages 213 – 222, added Ticket Sales Counters figures and Equipment inventory list showing dimensioned layout and equipment configuration above and below ticket sales counters.
August 01, 2012	CI- 0401 Station Infrastructure	Pages 232-234, added Station sizing information and functional plan showing space allocations and sizing considerations.
August 01, 2012	CI-0305 Park and Ride and Car Pool Lots	Pages 180-185, added design requirements for Park and Ride and Car Pool Lots and schematic figure for typical site layout.
August 01, 2012	CI-0104 Mobility Hubs	Pages 34-35, added overview of Mobility Hubs; performance guideline requirements to follow in next version update of DRM.
August 01, 2012	CI - 0704 Communications	Pages 536-539 and 543, Section: Fare Handling Systems - PRESTO; added plugs requirements for SFTP and CQD; added Patch panel and Demarcation locations requirements; at stations PRESTO equipment is to be installed below middle shelf.
June 20, 2012	CI -0402-03	Inserted 21 pages, Revised Design requirements for Fare Handling - PRESTO
May 02, 2012	CI -0402-05	Page 10; Public Address System; added PA Cabling Specifications
May 02, 2012	CI -0402-06	16 pages; CCTV System added CCTV design requirements
May 02, 2012	CI -0207-02	12 pages; Electrical – revised entire section on Power Supply and Distribution requirements
May 02, 2012	CI -0207-03	12 pages; Electrical – revised entire section on Backup Power Systems requirements
May 02, 2012	CI -0207-04	11 pages; Electrical revised entire section on Service Rooms requirements
May 02, 2012	CI -0207-05	9 pages; Electrical revised entire section on Illumination requirements
May 02, 2012	CI -0207-06	15 pages; Electrical revised entire section on Identification and Labelling requirements
May 02, 2012	CI -0207-07	2 pages; Electrical revised entire section on Testing and Commissioning requirements
May 02, 2012	CI -0207-08	2 pages; Electrical revised entire section on Drawings requirements
May 02, 2012	CI -0303-02	Pages 6-12; Platform Access Buildings – Added revised Elevators Design Requirements
May 02, 2012	CI -0202-07	7 pages; Site Related Items added revised Fences and Bollards requirements
May 02, 2012	CI -0202-03	Pages 4 -7; Bus Terminal Sites added section on Accessible On Street Bus Stops design requirements
May 02, 2012	CI -0308-01	12 pages; Landscaping program revised entire section on Landscaping requirements
May 02, 2012	CI -0305-02	Page 7; Bus Operational Facilities, revised section on Vertical Clearances in Bus Operational Facilities
Mar. 31, 2012	All sections	Consolidation into one document. Formatting changes. Style and content edits.
December 22, 2011	CI -0402-03	Inserted 16 pages, Design requirements for Fare Handling - PRESTO
December 01, 2011	CI-0202-02	Page 5; Included Bike Shelters requirements text and re Guarantess
December 01, 2011	CI-0202-03	Pages 4, 6 and 8. Bus Platform Clearances; Reserved parking and Figure: Bus Bay Guidelines for D4500 bus with Bike rack Deployed
December 01, 2011	CI-0207-02	Pages 10 and 11, Electrical Enclosures (handholes and manholes)
December 01, 2011	CI-0303-01	Pages 1, 7 and 8, Maintenance Room Design Requirements
December 01, 2011	CI-0304-02	Inserted 17 pages Multilevel Parking Structures Design Requirements
December 01, 2011	CI-0304-03	Inserted 6 pages, Air Rail Link Line station design requirements
December 01, 2011	CI-0305-02	Inserted 30 pages, Bus Operational Facilities
December 01, 2011	CI-0502-01	Page 1, Drawing Media and Close Out Drawings
June 29, 2011	CI-0502-01	Page 2 of 29 – Top Heading – changed from AutoCAD 2004 format to 'AutoCAD 2007'
June 15, 2011	CI-0202-06	Page 11 of 11 – changed "Approved" date from March 30, 2011 to May 8, 2011.
May 26, 2011	CI-0307-01	Section: Materials Subject: Program Page 9 of 22 – Heading FLOORS – Foot grilles – Bullet 6 DELETE 'and the recess shall be connected to drain.' and INSERT last sentence 'The pans shall be removable for cleaning'.
May 20, 2011	CI-0602-08	Page 1 of 2 – Under heading entitled PEDESTRIAN TUNNELS, change from 'Coopers' to 'Cooper'.
March 31, 2011	CI-0104-01	Overview; CI-0104-02 – Basis of Criteria; CI-0104-03 Key Elements; CI-0104-04 –Easier Access Features; CI-0104-05 Figure: Accessible Route Addition of a new Section dealing with Accessibility and Easier Access Design Features including Figure: Accessible Route on Page 11 of 11.
March 30, 2011	CI-0202-02	Page 7 Complete revision of Motorcycle/ Scooter Section of Page 7 – DELETION of figure: Scooter/Motorcycle Parking Stalls – Page 16. Page 5 – Addition of information on Parking Lots – re: material of 'kill strip'.
March 30, 2011	CI-0202-04	Page 5 of 9 Page 7 of 7 Parking Lot - removal of mention of asphalt strip from parking stalls. DELETION of text 'Sodding shall not be located under car overhangs (see parking lot paving item regarding a 1.0 wide miscellaneous perimeter parking overhang strip.". from Landscaping Heading. 2nd sentence to read 'Material for 1 m car overhang shall be determined.'
Mar. 30, 2011	CI-0202-06	Page 1 of 11

		Heading Specifications last point – deletion of the words 'Asphalt walkways, if required and miscellaneous items car overhang beyond curbs: 40mm HL3 on granular.'
Mar. 30, 2011	CI-0202-06	Page 1 of 11 Revision to wording on "Specifications re: Asphalt walkways.
Mar. 22, 2011	CI-0307-01	(old format) Figure: Standard Material & Colour Selections – deletion of Product Name, Colours and Type for Interior and Exterior Finishes. Page 20-21.
Mar. 18, 2011 Mar. 18, 2011	CI-0601-01 CI-0202-02	Changes Elevator section – Page 1 - 12 Re: Designated Waiting Area (DWA) - Addition of DWA Figure, Page 21 of 21 to this section.
Mar. 18, 2011	CI-0202-06	Page 11 of 11 Yellow Detectable Tiles - changes drawings re: yellow detectable tiles for both Rail Platform and the Mini-Platform.
Mar. 10, 2011	CI-0501-04	Static Signage – Design Requirements Page 1 of 3 – changed "including" to "excludes Union Station" in the 3rd paragraph.
Jan. 18, 2011	CI-0202-06	Delete "Asphaltic and concrete pavements shall be in accordance with OPSS. Delete – "Asphalt Mixtureen-0202-06 Page 1 of 11" as well.
Dec. 14, 2010	CI-0501-01	New Tab 5 – Signage (this is in the new format but put in the old DRM at the end, after Section 6.)
Sept. 17, 2010	EN-2020-07	Site Development – Site Related Items Page 3 change to "Bus layover rear wheel stop-curbs shall be per OPSD 600.100 (concrete mountable curb with narrow gutter) with load transfer joints per OPSD 552.01, complete with a 0.6 m heavy duty concrete skill strip at the back of the curb." (changes by CU)
Sept. 15, 2010	EN-0206-01	Page 8 – Delete "See Technical Standards." (BN)
Sept. 15, 2010	EN-0307-01	Page 15 – DELETE "See Exteriors above and Technical Standard". Page 16 (DELETE "See Technical Design Manual". Page 17 – DELETE "For standard laminate colours and finishes, also see the Technical Design Manual and Standard Specification." (BN)
Sept. 15, 2010	EN-0308-01	Page 10 of 11 – DELETE "Refer to Technical Design manual for see mixture." (last sentence on the page). (BN)
Aug.18, 2010	EN-0202-03	Site Development – Bus Terminal Sites - Bus Radii Guidelines – correction to spelling and grammatical errors. Remove entire old section and replace pages 1 – 7. (VB)
May 18, 2010	EN-0202-08	Site Development - Yard and Shop Sites – REMOVE entire section – this section to be deleted in Manual.
May 18, 2010	EN-0202-08	Site Development - Yard and Shop Sites – REMOVE entire section – this section to be deleted in Manual.
May 18, 2010	EN-0202-08	Site Development - Yard and Shop Sites – REMOVE entire section – this section to be deleted in Manual.
May 17, 2010	En-0202-03	Site Development – Bus Terminal Sites REPLACE the old section [7 pages with the new section (6 pages)].
May 18, 2010	EN-0202-01	Site Development – General Design Criteria Major revisions – remove old section and replace with new 0202-01 (2 pages)
May 18, 2010	EN-0202-02	Site Development – Rail Station Sites Major revisions – remove and replace entire section (all pages).
May 14, 2010	EN-0603-01	Standard Drawings – Track Material – Revisions to Page 1 of 23, 115 Re Running Rail Section (VB)
May 10, 2010	EN-0202-02	Site Development – Rail Station Sites Addition of paragraph on "Shared Pedestrian and Cyclists Path" and new figure on Page 14 of 21 "Typical Cross Section of Shared Pedestrian/Cyclists Path". (VB)
May 04, 2010	EN-0202-02	Site Development – Rail Station Sites Page 10 of 17 – Under Rail Platforms, added paragraph re: addition of ramps as an accessible means of egress onto site grade level.
May 04, 2010	EN-0302-01	Architectural Design - General Page 1 of 8 – Under CONFIGURATIONS added "Where site conditions permit, side platforms should be designed with ramps as an accessible means of egress onto site grade level." (BN)
May 04, 2010	EN-0303-02	Station Buildings – Platform Access Buildings Page 3 of 9 – Under Code Classification – added "Where site conditions permit, side platforms should be designed with ramps as an accessible means of egress onto site grade level." (BN)

Type B:

The type of receptacles are as follows:

- One (1) L6-20R (240V, 20A) and one (1) NEMA L5-30R (120V, 30A) for PRESTO WLAN solution at main CC rack.
- One (1) NEMA 5-15R (120V, 15A) receptacle at main CC rack if Transit Safety is included for HCR cradles.

Type C:

The type of receptacles are as follows:

- One (1) NEMA L5-30R (120V, 30A) and one (1) NEMA L6-20R (240V, 20A) for Bus WLAM solution at main CC rack.

Devices

SFTPs and CQDs require dedicated power circuits from UPS located in the CC Rack (UPS provided by Presto equipment supplier). Power for up to four (4) devices (SFTP and CQD) can be daisy-chain connected to the UPS in the CC Rack. If devices are daisy-chained, they shall be staggered such that devices in close proximity to each other will be fed on separate circuits. Each such circuit shall be protected by a circuit breaker (or fuse) which will also serve as an isolation point (see standard diagram P3 for power wiring termination details at CC Rack location).

An individual ground wire for each SFTP and CQD shall be run and terminated in the copper ground bus at power junction box at CC Rack location. The plugs for the SFTP and CQD must be SOW Service Cord C/W Commercial specification grade plugs to be connected to the PRESTO System UPS in CC Rack.

In order to facilitate operations and maintenance, the power cables that are connected to the Presto system UPS must be clearly labeled to indicate which device is connected to each receptacle, following Design Requirements Manual labeling guidelines.

Each SPOS (in sellers booth) is locally backed-up by its own UPS (provided by Presto equipment supplier) and requires a separate NEMA 5-15R (120V, 15A) receptacle fed from a dedicated normal power circuit. The power outlet shall be located within a maximum 2 m of the wicket.

If a Fiber Transceiver is required, the power shall be provide by electrical trade in enclosure with a pull fuse disconnect. Grounding wire to be connected to the enclosure and door of enclosure.

Wiring and circuit protection will be sized to suit the total wattage on circuit, to address potential voltage drops, and derating requirements for multiple circuits run in the same conduit. The following table provides an estimate of the maximum wattage that each device requires.

Table 1 shows power requirements for each device.

Device	Watts
SPOS (Station Point of Sale)	200
SFTP (Station Fare Transaction Processor)	35
CQD (Card Query Device)	35
HCR (Handheld Card Reader) Cradles	120

Table 1: Power Requirements

DATA CONNECTIVITY AND WIRING

The main CC Rack shall be placed in the communications room close to the demarcation point.

PATCH PANEL

The patch panel is to be supplied and installed in the PRESTO CC rack by the electrical trade.

These panels are to terminate the cabling coming from the field devices and also to terminate the cabling that connects the presto rack to the Bell demarcation point.

Demarcation Location

1 Cat3 (telephone) cable (required for PRESTO out of band modem) shall be terminated in patch panel (and labeled). From the patch panel to be run to the bell demarcation point terminated with male RJ11 male connector at demarcation end. (leaving 1 meter coiled)

1 Cat6 cable (required for PRESTO router) shall be terminated in patch panel (with label) and run to bell demarcation point terminated with male RJ 45 male connectors at demarcation end. (leaving 1 meter coiled)

SFTP & CQD

Where possible, fare devices (SFTP & CQD) will be aggregated such that wired distances do not exceed 90 m (300 ft) from the Concentrator Complex rack. For distances within 90 m, Ethernet cable (Cat 6) shall be used and terminated with 8P8C (RJ-45) male connectors leaving 1 meter coiled at the device end and RJ45 female end into patch panel (installed by electrical trade) at the CC rack end.

SPOS

Ethernet data cable (Cat6) for SPOS shall be terminated into 8P8C (RJ-45) wall jack at device end and 8P8C (RJ-45) female connectors into patch panel at CC Rack (see standard diagram P4 for data wiring termination details at CC Rack location).

HCR

The HCR cradles will connect to the Tranist Safety CC in the Main Rack using Ethernet Cable (Cat6) for a distance of up to 90m. The cabling shall be terminated into 8P8C (RJ-45) wall jack at the HCR cradle end and 8P8C (RJ-45) female end into the patch panel in main rack.

ACCESS POINTS (AP)

The AP (Access Points) for the WLAN solution at Bus Facilities shall be connected to the BUS CC rack in the main rack or secondary rack using Ethernet cable (Cat6) for distances of up to 90m. The cabling shall be terminated with 8P8C (RJ-45) male connectors leaving 10 meter coiled at the AP end and 8P8C (RJ-45) female ends into patch panel in rack.

FIBER CABLING

Fiber optic cable shall be used for distances exceeding 90 m for connection to Fibre Transceiver (installed by PRESTO).

Rack to Fibre Transceiver - Multimode fiber that can extend up to 2 km shall be employed and shall be terminated with LC connectors at CC rack patch panel (installed by electrical trade) and terminated with SC connectors into a patch panel (installed by electrical trade) in Fibre Transceiver enclosure (Stations).

Rack to Rack – Multimode fiber that can extend up to 2 km shall be employed and shall be terminated with LC connectors at main CC rack patch panel (installed by electrical trade) and terminated with LC connectors in secondary CC rack patch panel (installed by electrical trade)

Fiber optic cable shall be 62.5/125 um, 6-strand, tight buffered, OFNP. Cable shall be comprised of individually, jacketed and uniquely identified fibers with an overall orange sheath suitable for outdoor underground installation.

Fiber optic cable shall be converted into Cat 6 cable through a transceiver (provided by Presto equipment supplier) close to device locations at stations. Each transceiver is equipped with 4 - 8 Ethernet outputs to serve 4 - 8 devices. An enclosure to house a fiber transceiver shall be provided by electrical trade (see standard diagram P5 for transceiver enclosure detail) at Stations. At Bus Facilities, secondary racks shall be provided by PRESTO equipment providers to house the network switch with fibre for the APs. Cat 6 cable shall be terminated with 8P8C (RJ-45) male ends in the rack patch panel.

CC RACK

Stations

At all new rail stations, Presto and Network equipment will share the same rack; (supplied by construction contract); the rack is physically segregated and separately locked doors are provided for each section. The rack is also to include a 21 RU Security front and rear door for the lower half. This is to protect

Presto equipment from tampering. This is also to include a full depth shelf installed directly in-line with the top of the security door to provide further separation and protection.

The network rack front rails are to be set back from the front of the rack by 120mm for proper cable bend radius with the door closed.

All rack frames and accessories are to be Middle Atlantic WMRK Series and are to conform to IT current standards and are to conform to the following specifications.

Overall dimensions shall be 2034H x 650W x 1124D; depth suitable for the installation of deeper hardware such as a server.

- All racks are to included 70% vented locking front door
- All racks are to include split 79% vented locking rear doors
- All racks are to include locking, removable side panels
- All racks are to be grounded to the communications room grounding bus-bar
- All racks are to be ganged together for stability

All Metrolinx equipment is to be installed above the middle shelf and all PRESTO equipment is to be installed below middle shelf.

If the space is limited at existing facilities, a wall mounted CC Rack may be used and installed. The maximum capacity of the rack and weight shall be stamped on the rack for future information and mounting requirements.

Bus Facilities

At bus maintenance and storage facilities, the PRESTO equipment shall be in a separate CC Rack from GO Network rack. These CC racks will be supplied by the PRESTO equipment providers but shall be installed by the electrical trade.

Type A facilities - The rack is installed in the main communications room and is typically an HP Rack 10636 G2 36U or equivalent with the following dimensions:

HxDxW: 68.6 x 39.691 x 24 in (173.5 x 101.5 x 59.7 cm)

Any secondary racks will be installed in the Garage area and is typically an APC NetShelter WX 13U w/vented frond door or equivalent with the following dimensions:

HxDxW: 26 x 24.5 x 23 in (654 x 622 x 584 mm)

CI-0704	**TAB 7: TECHNICAL DISCIPLINES** Communications

Installation and Testing of Presto system infrastructure (conduit, wiring, bases, etc) as described in this document and shown on standard drawings shall be completed at least six(6) to eight(8) weeks prior to new area/device/station opening to allow for device installation and testing by supplier.

These design requirements shall be also read in conjunction with the PRESTO installations guidelines provided by Metrolinx's Fare Systems department.

CI-0104 MOBILITY HUBS 

OVERVIEW

MOBILITY HUBS

Outlined in the Metrolinx' Regional Transportation Plan, The Big Move, are key transit stations across the GTHA that will become mobility hubs, where transportation modes, including rapid, local transit service, cycling and accessible pedestrian networks come together seamlessly.

Mobility hub principles address topics such as:

- Priority modes of access - pedestrian / bicycle / public transit / drop-off & pick-up / parking
- Traffic movement and vehicular circulation
- Land use and surrounding site conditions
- Urban design and respect of neighboring community
- Multiuse and joint development opportunities
- Sustainable development considerations
- Way finding
- Amenities such as heated waiting areas, seating, information centers and various services

Although not all GO Stations are part of a larger Mobility Hub plan, mobility hub principles are to be considered in all designs whose final product is one that serves the public. It is intended that strategic decision making and accommodations will be made so as to not compromise safety, efficient functionality, operational costs, and customer level of service.

In each section of the DRM, mobility hub guidelines and principles have been translated into performance requirements and design guidelines to inform the development of detailed design and specifically relate as shown below (but not limited to):

Site Infrastructure & Development

- Priority access to site for rail stations and bus terminals
- Integration between transit modes
- Pedestrian and bicycle access options

- Holistic approach to way finding and signage between various transportation modes

Station & Terminal Building Infrastructure

- Station and terminal design in context to its surroundings
- Opportunities for joint development for stations and terminals
- Artwork that draws upon neighborhood heritage significance or artefacts

As one of its guiding principles, the DRM has incorporated design requirements to support mobility hub principles throughout the document, and is identified by means of the following icon:

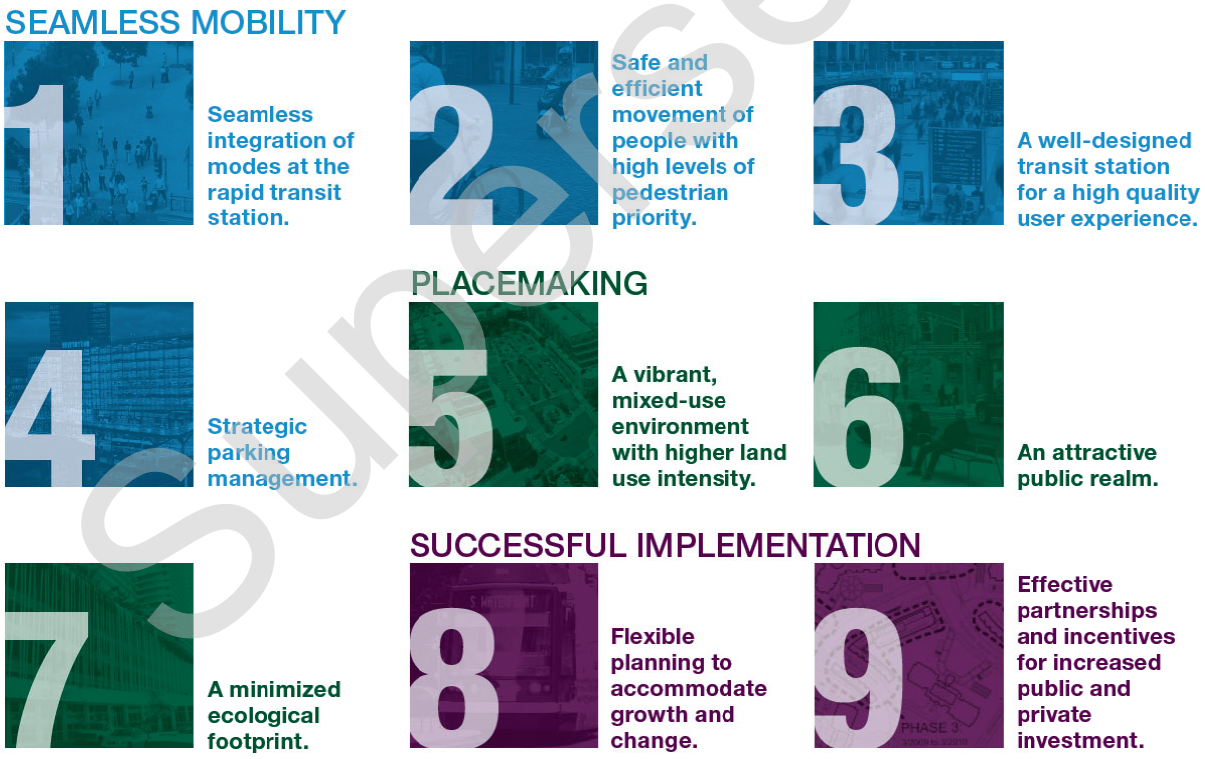


Chart 1: Mobility Hub Objectives

CI-0305	**TAB 3: BUS INFRASTRUCTURE** Park and Ride and Car Pool Lots

OVERVIEW

Park & Ride lots are intermodal transfer facilities. They provide a location for travelers to transfer between the auto mode and transit or between the single occupant vehicle (SOV) and other higher occupancy vehicle (HOV or carpool) modes. Other modes potentially supported by a park-and-ride facility can include: pedestrian, bicycle, paratransit, carpool and vanpool, intercity bus transit, airport service, intercity rail, and other modes, based on the location, surrounding community and opportunities available.

Park & Ride Lots are typically on MTO property and operated by GO Transit. The lots are serviced by GO transit and may be used by other local and regional carriers. When designing a Park & Ride Lot GO standards will govern, along with the consideration of any higher third party standards or requirements for enforcement.

Carpool Lots are owned by the regions or MTO and may be serviced by GO Transit and other transit agencies. When designing a Carpool Lot MTO standards govern, with consideration to GO standards and requirements such as lighting levels.

Each Park & Ride Lot shall be designed to best suit the particular site, and to maximize the number of parking spaces within the available area.

Typical site components and features for those facilities are:

- Site Access: Bus access and parking access
- Bus loop
- Passenger platform
- Heated shelter
- Vehicle parking lot, pavement markings
- Kiss & Ride
- Static signage, pylon sign, information display case, trail blazing and temporary signs
- Electronic signage
- Fences and railings
- Landscaping
- Bicycle shelter or rack

- Pay phone
  Fare Equipment - if required
- Public art – if required
- Bear proof waste containers required in rural locations

BASIS OF CRITERIA

Various Park & Ride may have to accommodate local transit or other carriers, which may have their own specific design requirements.

The bus access and bus loop shall be designed to meet movement and turning radius performance requirements and ensure safe and smooth vehicle movements with minimal restrictions.

DESIGN REQUIREMENTS

BUS LOOP

The factors affecting the layout of areas for bus loops are the “turning space” and

“turning radius”. Park-and-ride lots are intermodal transfer facilities and these factors are of prime importance to operating efficiency and safety.

Where the buses turn and stop the pavement shall be concrete with final texturing meeting OPSS 350 recommendations to achieve desired skid resistant surface.

Bus driving roads and lanes should be heavy asphalt as a minimum as per Tab 3 of this manual. Concrete may be considered for bus driving roads and lanes, the pavement design should be based on geotechnical information.

VEHICLE PARKING LOT

For parking lot design guidelines and criteria including kiss and ride (if applicable) refer to Parking Infrastructure, Tab 2 of this manual.

PASSENGER PLATFORM

Passenger platform shall be located and designed to minimize passenger path of travel and ideally to avoid passengers crossing any vehicular roads or bus loop. Platform configuration shall be dictated by the number of bus bays.

Passenger safety shall be given consideration when locating the passenger platform to minimize danger from overhead ice accumulation which may occur on hydro cables and support structures.

Grading shall be flat and allow space for bus barrier free lift deployment. Platform shall be hard, level material that is resistant to slipping and capable of clearing during the winter months by motorized equipment.

HEATED PASSENGER SHELTER

The passenger shelter shall be one of the GO typical heated shelters. The size of the shelter is determined by usage (number of customers).

shelter rain water leaders shall discharge into subgrade where available to avoid slippery conditions on platforms.

SITE SERVICES

Electrical and communications service shall be brought into separately locked compartments of a power / communications cabinet.

Payphone shall be an accessible unit with illuminated telephone directory and illuminated signage (phone symbol minimum), located in proximity to the bus stop/shelter.

ILLUMINATION

Refer to Design Requirements Manual – Tab 7 – Electrical.

COMMUNICATIONS

A telephone pedestal shall be provided by the shelter.

If requested by GO, provision shall be made for CCTV, PA systems, TVM, electronic signage and related infrastructure including ducting and handholes where applicable.

Communications equipment shall be housed in the communications compartment.

Each compartment separately locked.

Combination cabinets are to be considered, containing electrical and communication equipment but physical separation is required.

LANDSCAPING

Landscaping for all surfaces involves planting trees and plants, providing good quality soil and generous landscaped areas, enhancing pedestrian and cycling infrastructure, managing storm-water on-site, reducing the urban heat island effect, and using sustainable materials and technologies.

Landscaping design should reflect the following objectives:

- Respect the existing or planned context
- Enhance the safety and attractiveness of the public realm
- Create direct, comfortable and safe pedestrian routes
- Provide shade and high-quality landscaping
- Mitigate the urban heat island effect
- Manage storm-water quality and quantity on site
- Incorporate sustainable materials and technologies

Design details for Landscaping are part of the Tab 2 Section of this manual.

SIGNS

Signs serve four primary functions:

- Identify
- Direct
- Inform
- Regulate

Design criteria for static signs include best practices and compliance with OBC (Ontario Building Code), AODA (Accessibility for Ontarians with Disabilities Act), FLSA (French Language Services Act) and corporate branding standards.

Refer to Static Signage Catalogue.

BUS LOOP/PLATFORM

For bus loop and platform guidelines and criteria refer to Bus Infrastructure, TAB 3 of this manual.

PARKING LOT

For parking lot design guidelines and criteria refer to Parking Infrastructure, TAB 2 of this manual.

PASSENGER WAITING SHELTER

Passenger waiting shelter shall be one of GO typical heated shelters, refer to TAB 7 of this manual.

SERVICES

Existing services shall be protected as required. New services required are electrical and telephone.

ILLUMINATION

Refer to Electrical section of this manual for illumination requirements in conjunction with IESNA.

COMMUNICATIONS

A telephone line for pay telephone shall be provided.

Provision shall be made for CCTV and PA systems if required.

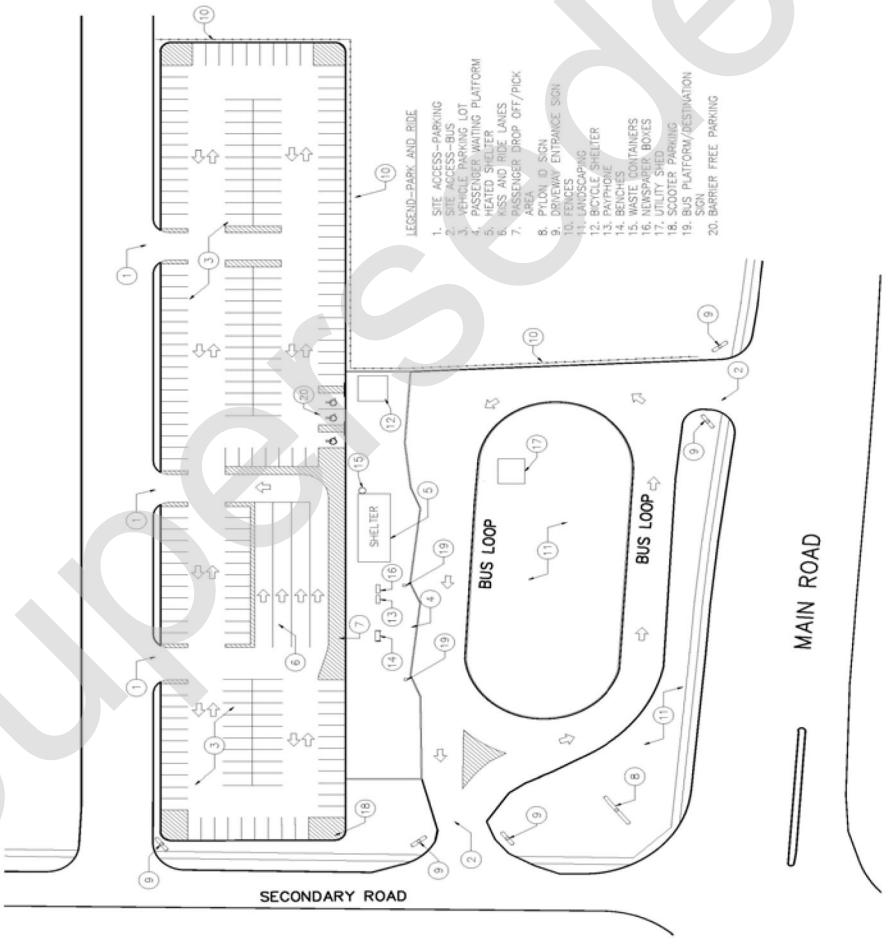
Communications equipment shall be housed in the communications compartment of the shelter or the electrical service cabinet. Physical separation from the electrical compartment is required. Refer to TAB 7 of this manual.

CI-0305	**TAB 3: BUS INFRASTRUCTURE** Park and Ride and Car Pool Lots

FIGURE: TYPICAL PARK AND RIDE AND CAR POOL LOT CONFIGURATION

SECTION:
Tab 3: Bus Infrastructure

FIGURE:
Typical Park and Ride and Car Pool Lot Configuration



STATION SIZING

The following table shows typical space allocations for components of a GO Transit Rail Station building with a two (2) seller ticket sales layout. These spatial allocations are a guide for design and layout of the GO Station Building. The information provided below should be read in conjunction with the functional figure showing spatial relationships. Further analysis is required based on specific site conditions such as ridership projections, arrival modes, interface with other Transit Services, stations designated as "Mobility Hubs", line station, or terminal station, bus terminal or Lay-By requirements (including drivers facilities), and other station specific requirements.

When more than two ticket sellers are required, provide incremental space allocations subject to GO approval.

ROOM	MIN. SIZE	REMARKS
Waiting Area	40 m²	This consists of 20 m² of waiting area and 20 m² of queuing area* (for two ticket attendants). * 1 m² per person queuing
Concession/Retail	16 m²	Adjacent to the waiting area and includes 4 m² for retail storage.
Ticket Sales Office	2.1 m x 1.6 m*	*Space allocation per ticket sales counter for each attendant wicket (access and back counter space not included here). Mandatory view to Kiss & Ride. View to platform area where possible.
	16 m²	Total Ticket Sales Office area for two ticket attendants, including back counter space, wickets, and entry with coat closet.
Station attendants back office	12 m²	Attached to the station attendants area includes lockers, kitchenette, safe and counting area hidden from view of the public.

Staff Washroom	5 m²	Staff washroom attached to the station attendants back office.
Multi-Use Public Washroom	16 m² each sex	Door-less multi-use male or female accessible washroom having two water closets each. Determination of multi-use washroom design is based on station ridership, bus-meets-train service, and code requirements and subject to direction from GO staff.
Single-Use Public Washroom	5 m²	Universal, barrier free washroom. Determination of single use washroom design is based on station ridership, bus-meets-train service, and code requirements and subject to direction from GO staff.
Maintenance Room	15 m²	3.0 m x 5.0 m
Electrical Room	Minimum 17 m of linear wall space for mounted material.	Electrical Room size will be based on the project specific electrical equipment space requirements. Ensure that 25% of extra space is designated for future expansion.
Communications Room		Minimum 3.2 m x 4.8 m Communications Room size will be based on station type and project specific IT requirements.
Mechanical Room	Approx. 8 m²	Mechanical Room size will be based on the project specific mechanical equipment required.
Snowmelting Boiler Room		Boiler Room size based on snowmelt mechanical equipment space requirements. Ensure that 25% of extra space is designated for future expansion.

FIGURE: STANDARD RAIL STATION – FUNCTIONAL PLAN

SECTION:
Tab 4: Station Infrastructure

FIGURE:
Standard Rail Station – Functional Plan

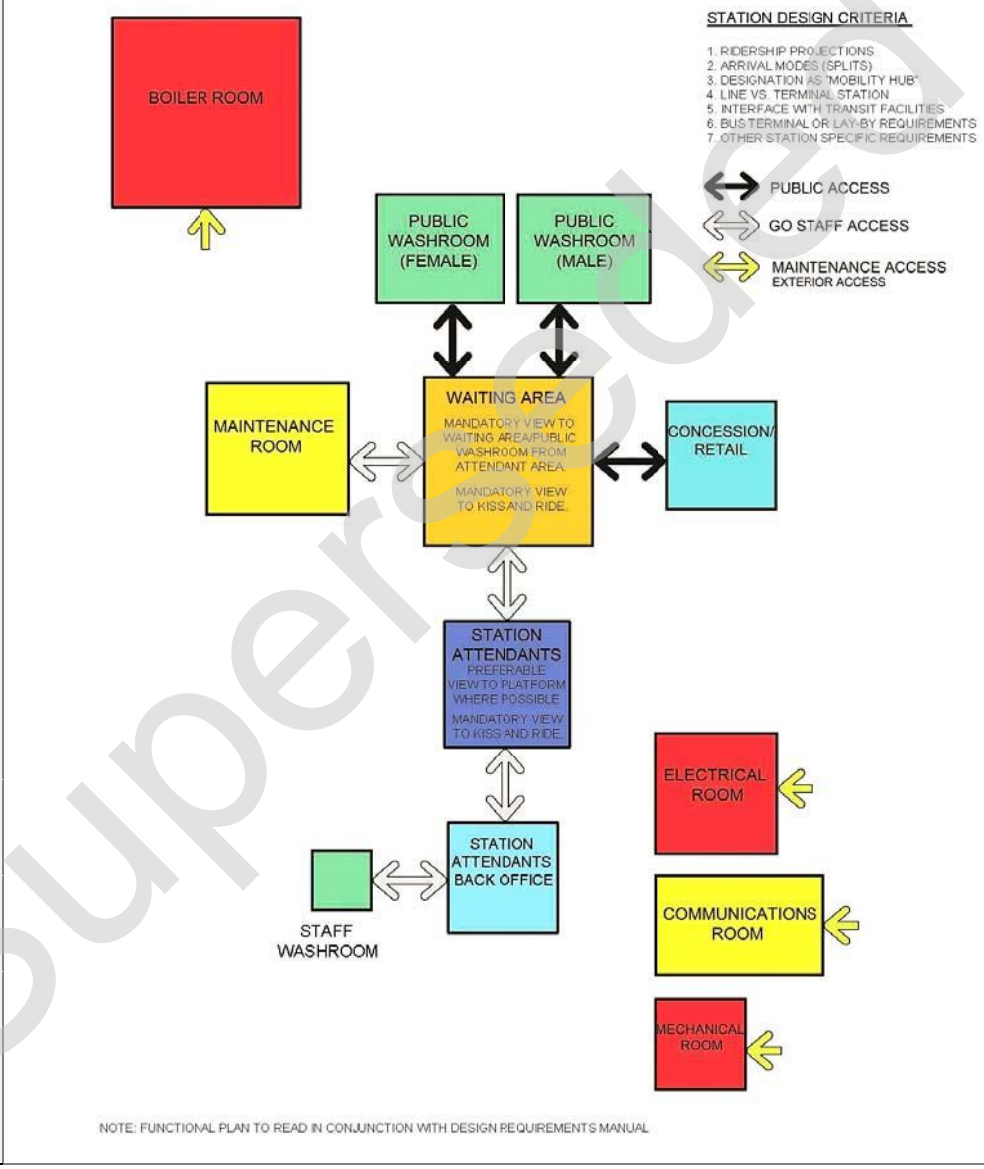


FIGURE: TICKET SALES COUNTER – DIMENSIONED LAYOUT

SECTION:
Tab 4: Station Infrastructure

FIGURE:
Ticket Sales Counter - Dimensioned Layout

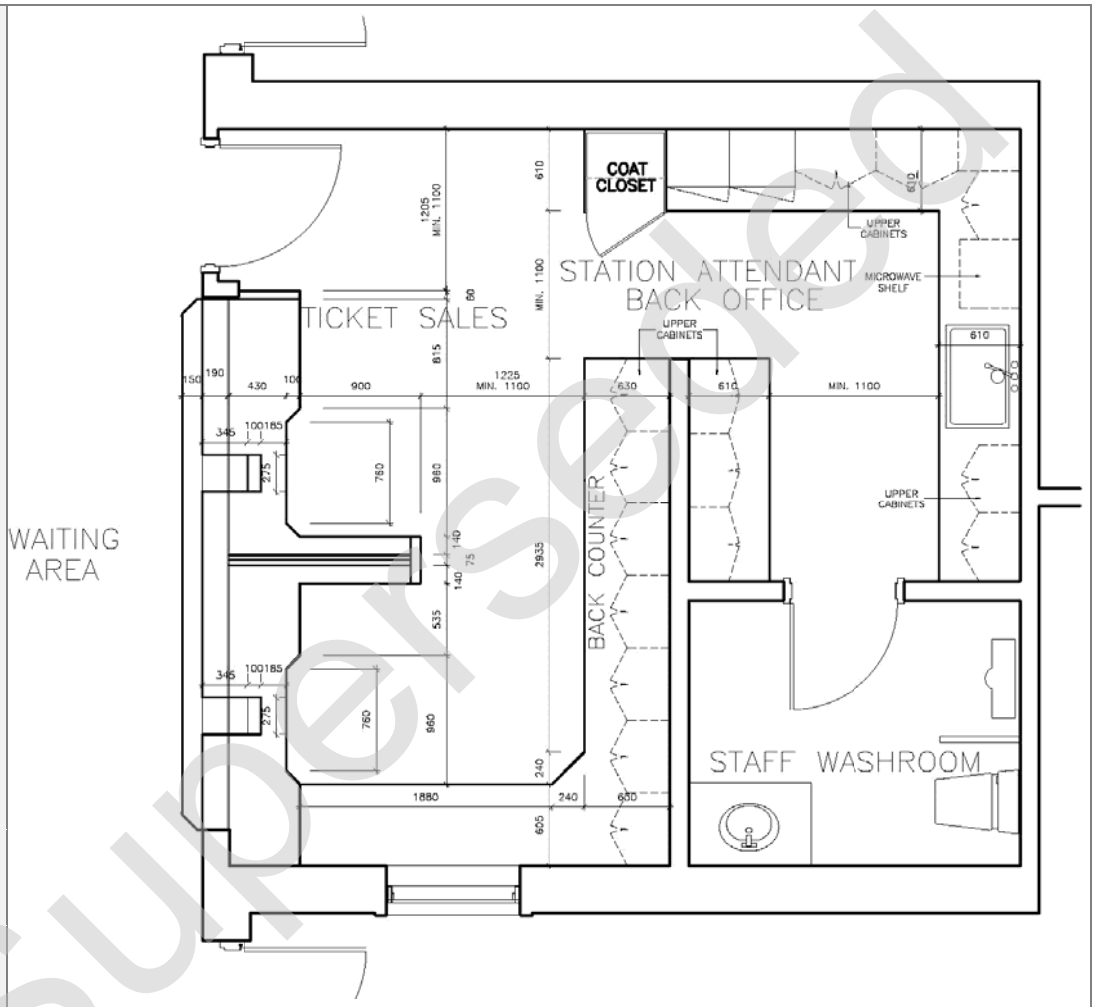


FIGURE: TICKET SALES – UNDER COUNTER LAYOUT

SECTION:
Tab 4: Station Infrastructure

FIGURE:
Ticket Sales – Under Counter Layout

Note: For equipment numbering reference, refer Ticket Sales Counter Equipment List

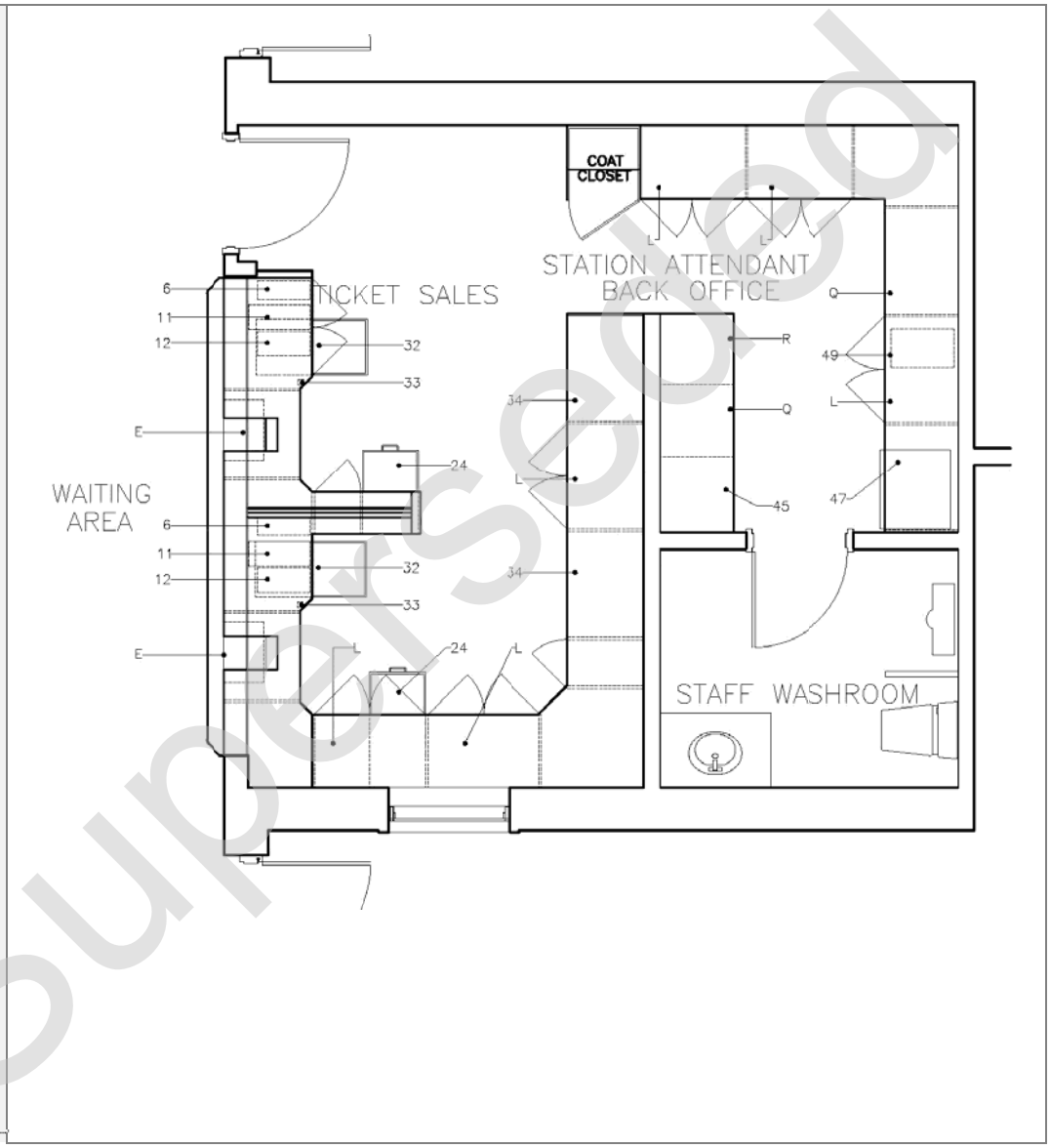
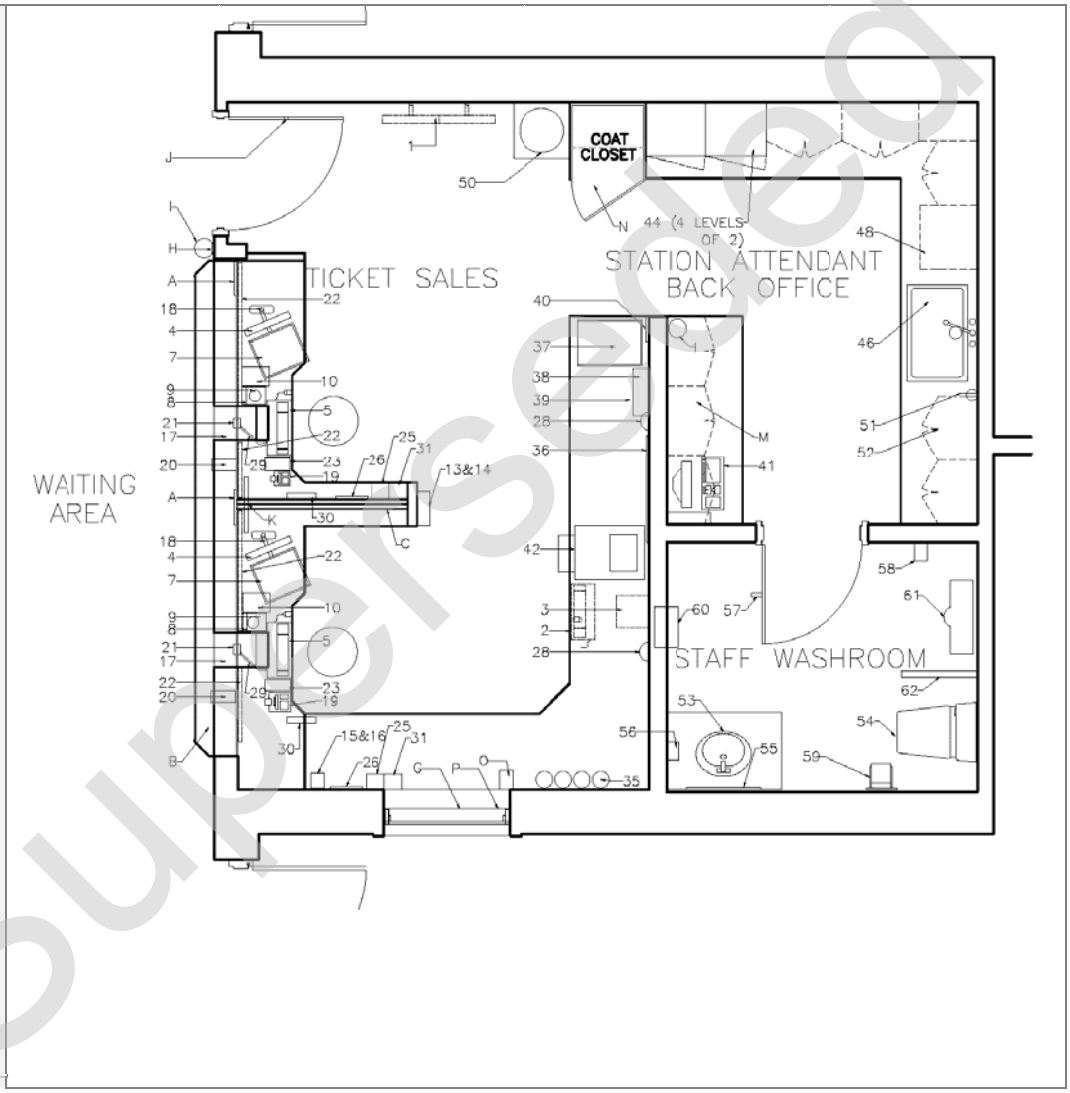


FIGURE: TICKET SALES – ABOVE COUNTER LAYOUT

SECTION:
Tab 4: Station Infrastructure

FIGURE:
Ticket Sales – Above Counter Layout

Note: For equipment numbering reference, refer Ticket Sales Counter Equipment List.



TICKET SALES COUNTER EQUIPMENT LIST

NO.	COUNTER TOP	UNDER COUNTER	BACK COUNTER	BACK OFFICE	GENERAL
CCTV security system					
1	2 ceiling mounted 485mm (19") monitors				For 3 or more ticket booths, 2 or more CCTV cameras needed
2	1 keyboard & mouse				
3		1 CPU 675x400mm (cable to monitor max 3.9m)			
Corporate PC					
4	1 - 485mm (19") monitor				1 system per booth; Includes ATLS, PC Whiteboard, & Fare Guarnatee
5	1 keyboard & mouse	1 KVM switch (works with PRESTO)			
6		1 CPU 675x400mm (cable to monitor max 3.9m)			
PRESTO system					
7	1 - 485mm (19") Touch Screen monitor (mouse & keyboard shared with ATLS)				1 system per booth
8	1 - customer PRESTO balance display				
9	1 Card Interface Device (reader)				
10	1 receipt printer				
11		1 PRESTO CPU 177 x 400 x 530mm (cable to monitor max 1.8m)			

TICKET SALES COUNTER EQUIPMENT LIST

NO.	COUNTER TOP	UNDER COUNTER	BACK COUNTER	BACK OFFICE	GENERAL
12		1 UPS 147 x 148 x 419mm			
Telephone System					
13	1 Red Phone				1 system per booth
14	1 Regular Phone				
15	1 Interpreter Handset located at primary ticket booth				
16	1 Handset Recharge Station				
GENERAL EQUIPMENT LIST					
17	1 cash scoop built into counter				1 of each at every booth
18	Monitor arm to accommodate 2 monitors (ATLS & PRESTO)				
19	1 Calculator with power plug				
20	1 Moneris Pin Pad (customer side of division glass)				
21	1 Voice link communication in the center of the ticket seller's position in division glass				
22	1 Semi-Transparent Booth Blinds				
23	1 Moneris Pad (booth side of division glass)				

TICKET SALES COUNTER EQUIPMENT LIST

NO.	COUNTER TOP	UNDER COUNTER	BACK COUNTER	BACK OFFICE	GENERAL
24	General Stationary Storage space				
25	Presto card storage space				
26	GO Schedules storage space				
27	1 Button for Station PA System				
28	1 Hold-up Camera				
29	1 Microphone for a Phone/Radio connection				
30	1 Counterfeit Detector				
31	Receipt Organization Storage space				
32		1 cash drawer (right side of seller position)			
33		1 Chubb wired Hold-Up Button (located in proximity of cash drawer)			
34		1 - 914mm (36") Lateral Filing Drawer			
35			Rolls of paper		Drop/Float Safe must not be viewable by public
36			Cork Board wall mounted		
37			1 Courier Box (outgoing and inter-office mail)		
38			1 Defibrillator 340x300x150mm		
39			1 First Aid Kit 270x400x70mm		

TICKET SALES COUNTER EQUIPMENT LIST

NO.	COUNTER TOP	UNDER COUNTER	BACK COUNTER	BACK OFFICE	GENERAL
40			1 Intercom AI Phone mounted on back wall of ticket office		
41			1 Back Room PC		
42			1 Multi Functional Printer & printer paper		
43				2 Filing Cabinets in back office	
44				8 - Half Sized Lockable Lockers (pad lock)	
45				Drop Safe and Float Safe w/300mm raised base	
KITCHENETTE					
46				1 Single Stainless steel sink	
47				1 mini fridge	
48				1 microwave	
49				Waste Bin	
50				1 Water Cooler	
51				15 Amp GFI receptacles	
52				1 designated cabinet for dish storage	
WASHROOM					
53				Vanity w/sink	

TICKET SALES COUNTER EQUIPMENT LIST

NO.	COUNTER TOP	UNDER COUNTER	BACK COUNTER	BACK OFFICE	GENERAL
54				Floor mounted tank toilet	
55				Mirror	
56				Soap Dispenser	
57				Coat hook	
58				Wall mounted air freshener	
59				Single Roll toilet paper dispenser	
60				Stainless Steel Recessed Paper towel dispenser w/ waste receptacle	
61				Wall mounted Urinal Fixture	
62				Wall mounted Privacy Screen	
TICKET BOOTH AND OFFICE DESIGN REQUIREMENTS					
A	Provision for display on public side of divider glass				General design requirements to be considered
B	Public side of divider glass to be AODA compliant				
C	Slat wall and glass divider is potential option between booths (height can be determined by existing GO counters)				
D	Frosting on glazing facing public preferred by GO				

TICKET SALES COUNTER EQUIPMENT LIST

NO.	COUNTER TOP	UNDER COUNTER	BACK COUNTER	BACK OFFICE	GENERAL
E	Substantial foot rest				
F	HVAC should not blow into faces of station attendants seated at ticket booths				
G	Anti-glare glass for heavy glass and glazing south of the ticket office				
H	Chubb alarm pin pad to be located by ticket office access door				
I	Fire Extinguisher to be installed below Chubb pin pad alarm by ticket office access door				
J	Solid Door with 'spy hole' for entry into ticket office				
K	GPS Digital Clock in ticket office				
L		Under counter cabinets w/adjustable shelves			
M			Lockable cabinets for Lost & Found		
N			A coat closet w/louvered doors		
O			Recharge station for flashlight(s)		
P			One-way glass in any exterior windows to the ticket office		
Q			Open shelves w/adjustable shelves		

TICKET SALES COUNTER EQUIPMENT LIST

NO.	COUNTER TOP	UNDER COUNTER	BACK COUNTER	BACK OFFICE	GENERAL
R			Bank of drawers in cabinet		
3- 4 ZONE LIGHTING SYSTEM					
S	Ticket Booth Entry Lights				Guidelines for lighting
T	Counter Top Task Lights				
U				Back of office Lights	
V		Under Counter Lights			